



**NSK AMERICA**



**INDUSTRIAL**  
**HIGH SPEED SPINDLE & MICRO GRINDER**  
**PRODUCT GUIDE**

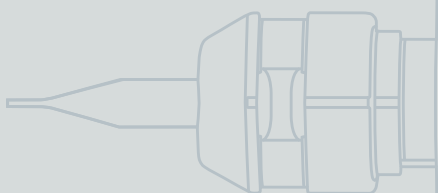
# ***NSK America Corporation***

[www.nskamericacorp.com](http://www.nskamericacorp.com)



Established in 1984 as a wholly owned subsidiary of NSK Nakanishi, Inc., NSK America Corporation serves as the North American Headquarters in Nakanishi's global network. NSK America provides sales, application support, and repair service for all Nakanishi industrial tools for the North, Central and South American markets.

Nakanishi Machine tool spindles and hand tools are engineered to meet the industry's demand for speed and precision. Meeting the challenge with the latest technology, NSK offers high speed milling and drilling spindles for turning, machining centers, and robotics. Our high speed precision hand tool offering includes electric and pneumatic drilling, polishing, grinding, engraving and deburring micro grinders as well as ultrasonic polishing equipment. Air, electric and air turbine spindles and motors are also available for small diameter milling, drilling, slitting, chamfering and grinding applications. Let our applications engineering department help you select the correct solution for your application.





NSK America is deeply committed to providing total solutions and customer satisfaction to its customers through our three vertical markets:



- Lobby at our Hoffman Estates, IL North American Headquarters

- A wide variety of Industrial and Dental products are on display in our showroom

**Industrial Division:**

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**Dental Division:**

[www.nskdental.us.com](http://www.nskdental.us.com)

**Medical Department:**

[www.nsk-surgery.com](http://www.nsk-surgery.com)

NSK America expert sales, customer service and technical support specialists utilize advanced industry knowledge to ensure every NSK product meets and exceeds your strictest requirements.

Our dedicated sales and support teams from each market look forward to thoroughly assisting you before, during and after the sale.



- Comprehensive parts crib for hand tool and spindle maintenance.



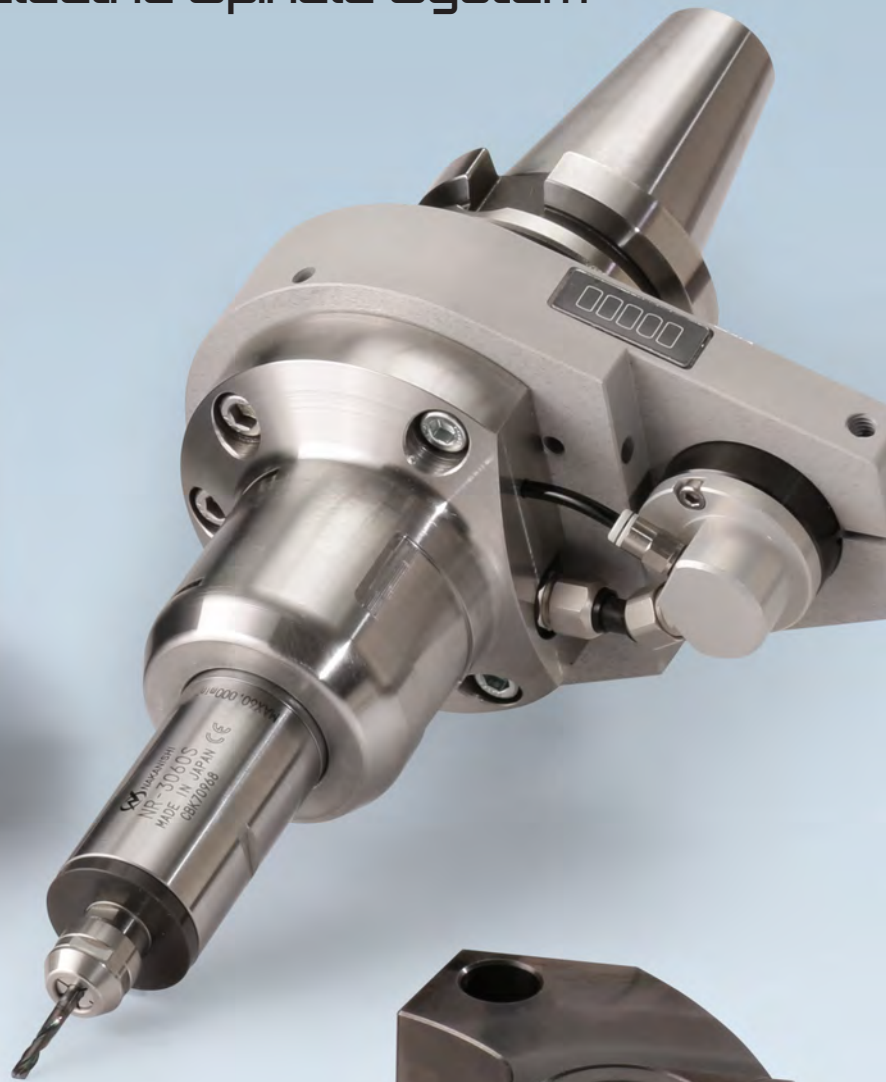
- Our 12,000sq/ft. warehouse provides a substantial inventory for all markets served.



- Our factory trained technicians provide in-house service to bring product back to original factory specifications.

# iSpeed5

Fully Tool Changeable High Speed Electric Spindle System





# ULTRASONIC TOOLS

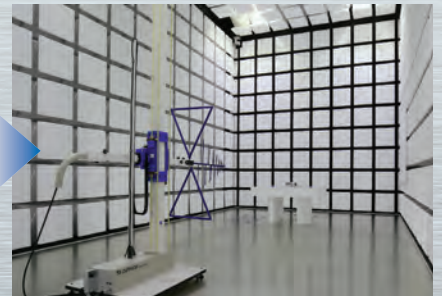
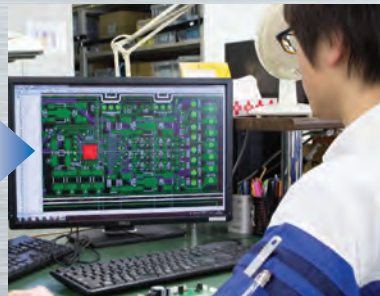
SONIC CUTTER ZERO AND SHEENUS ZERO  
Ultrasonic Cutter and Polisher







## *Nakanishi Inc.* utilizes new



### **“In-house built components” exceeds 85%**

Nakanishi has specialized in ultra high-speed rotary cutting technology. Based on “Develop a product that satisfies users potential needs concept”, Nakanishi Inc. focuses on meeting our customers diverse requirements through timely product development, backed by our unparalleled production engineering and innovated technology.

Our highly technical manufacturing facility houses the most advanced CNC micro machining machines.

A vast wealth of knowledge in the fields of micro-machining, precision processing and manufacturing contributes to lower manufacturing costs while providing the finest products.

All products are inspected and performance tested before shipping.

Nakanishi Inc. products are shipped to over 130 countries around the world.

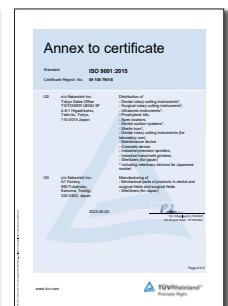
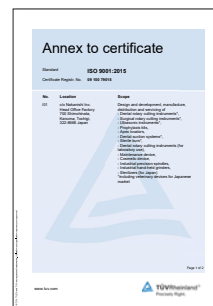
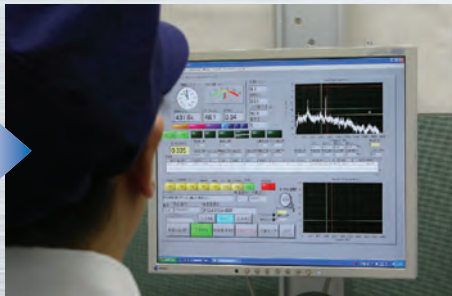






More than 160 of the most advanced CNC machines running 24 hours a day in our state of the art manufacturing facility

# technologies for superior precision.



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E3000 - Modular
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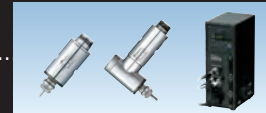
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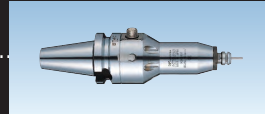




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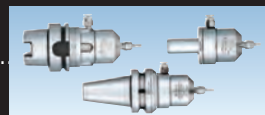


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E3000
– Modular
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ø1.0"/ø0.98"/ø0.897"
E3000
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Spindle Diameter	Type	Product Name	Page
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E2280 Ø1.0"/Ø0.98"
E2280 Ø0.897"
E3000 - One Piece
E3000 - Modular
Ø1.18"
Ø1.0"/Ø0.98" Ø0.897"
E3000 - 80,000rpm
E4000
<b>3</b>
MA
Ø0.897"
Ø1.0" Ø0.98"
Ø1.18"
MS
Ø0.75" Ø0.79"
Ø0.87" Ø0.91"
Ø1.0" Ø0.98"
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 ZERO  
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 ZERO

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iSpeed3  
 E2000  
 ø1.0"/ø0.98"/ø0.897"  
 E3000  
 - One Piece  
 E3000  
 - Modular  
 ø1.18"  
 ø1.0"/ø0.98"  
 ø0.897"  
 E3000  
 - 80,000rpm  
 E4000

3

MA  
 ø0.897"  
 ø1.0"  
 ø0.98"  
 ø1.18"  
 MS  
 ø0.75"  
 ø0.72"  
 ø0.87"  
 ø0.91"  
 ø1.0"  
 ø0.98"

4

HES  
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## Emax EVOLution

1,000–40,000 rpm

### MODULAR TYPE BRUSHLESS MICRO GRINDER

- Digital display enhances safety and efficiency.
- Compact and functional design makes the controller portable.
- Soft touch switches permit easy operation and long service life.



## ESPERT 500

1,000–50,000 rpm

### MODULAR TYPE BRUSHLESS MICRO GRINDER

- High output power, 200W, and high reliability are achieved by combining a hall-element brushless DC motor and high grade electronics.



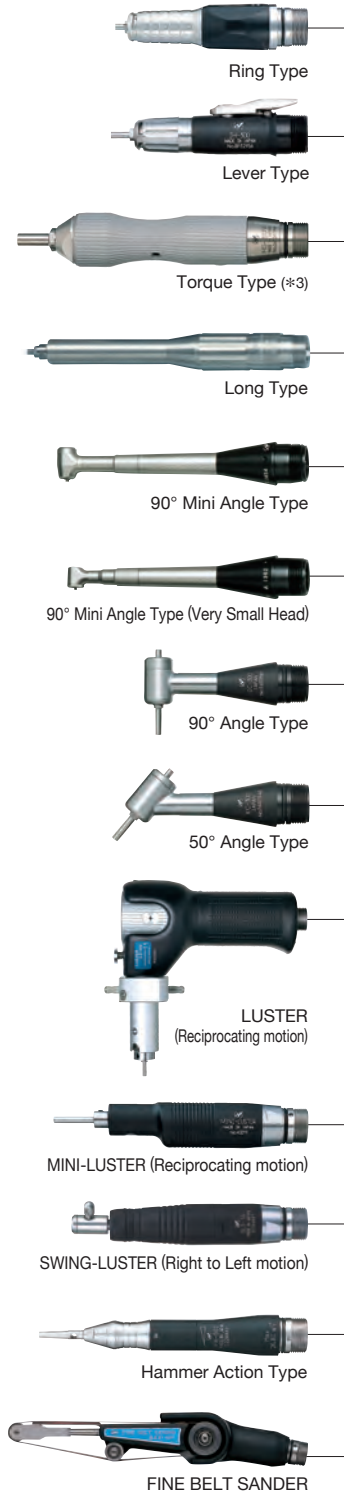
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Sheenus ZERO
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iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 — One Piece
E3000 — Modular
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### Emax EVOLution System Chart

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Product Code	Product Name	
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40,000 rpm Max. (*1)	40,000 rpm Max. (*2)	Page 1-p8
<b>7097</b>	<b>IH-300</b>	
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<b>2810</b>	<b>HG-200</b>	
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<b>1307</b>	<b>ML-8</b>	
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<b>1380</b>	<b>SLS-16</b>	
35,000 rpm Max. (*1)	24,000 rpm Max. (*2)	Page 1-p13
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<b>1146</b>	<b>KBS-101</b>	
35,000 rpm Max. (*1)	35,000 rpm Max. (*2)	Page 1-p16

### Attachment



<b>1483</b>	<b>NLS-110</b>	
30,000 rpm Max. (*1)	30,000 rpm Max. (*2)	

- Wide selection of attachments available depending on the application.

### Speed Reducer · Extension Joint

Extension Joint	
<b>1015</b>	<b>CN-01</b>
35,000 rpm Max. (*1)	35,000 rpm Max. (*2)

1/4 Speed Reducer	
<b>1009</b>	<b>RG-01</b>
30,000 rpm Max. (*1)	30,000 rpm Max. (*2)

1/15 Speed Reducer	
<b>1010</b>	<b>RG-02</b>
30,000 rpm Max. (*1)	30,000 rpm Max. (*2)

\*May be connected between the motor and the attachment as required for increased torque.

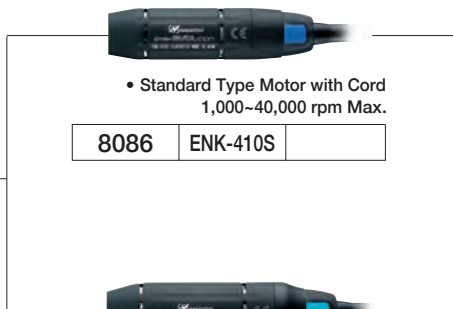
\*Maximum Allowable Speed, continuous use may change depending on the material being cut and other application variables.

\*1 : Maximum Allowable Speed, intermittent use. \*2 : Maximum Allowable Speed, continuous use. \*3 : Use 6mm torque Type HG-200 to connect ENK-250T



Motor		
Product Code	Product Name	

Controller		
Product Code	Product Name	



8086	ENK-410S	
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8087	ENK-250T	
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Emax  
• **EVOLution**



8224	NE249 120	
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### Optional



Coiled Cord : 4.5 ft  
<with Switch>

8090	ENKCD-410C		for ENK-410S
8091	ENKCD-250C		for ENK-250T

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EmaxEVO
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E3000 — One Piece
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# Emax EVOLution FEATURES

- Digital display enhances safety and efficiency.
- Compact and functional design makes the controller portable.
- Soft touch switches permit easy operation and long service life.

## New Advanced Design Controller

### Advanced Control Function

Upgraded Digital Display.  
**EVOLUTION** Speed Control with Flash Load Indicator.



Motor speed digital display

Load Meter

- : Continuous load area
- : Intermittent load area
- : Overload

### Diversity for work efficiency

2 Motors A and B can be connected to cover multiple work requirements.

\*Simultaneous motor operation is not allowable



### Memory Speed Function FiXpeed®

An exclusive new feature of the Emax EVOLution is the FiXpeed® system allowing independent foot switch operation for the A and B Motors. A Motor foot switch can be on/off and B Motor foot switch can be variable speed. This function brings unprecedented versatility and workability.

### Advanced User Friendly Design

New Industrial Design.  
**EVOLUTION** new user friendly case meets design and performance requirements.



### Auto Cruise Function

The controller is equipped with an Auto Cruise Function. While using foot control for work, anyone could fix the motor at any speed by the embedded motor switch.

Once speed is set, foot pedal control is not required. This function eliminates foot fatigue during operation.

#### Forward / Reverse Select Switch

Forward/Reverse rotation can be selected.

#### ø4.72" Speed Control Volume

Easy to operate by one finger

#### Memory Speed Function FiXpeed®

#### Motor B ON/OFF Function

#### Motor A ON/OFF Function



#### Emax EVOLution Controller

Product Code	Product Name	Specifications
8224	NE249 120	<ul style="list-style-type: none"> <li>• Weight : 5 lb. 1.13 oz.</li> <li>• Power Source : AC120V, 50-60Hz</li> <li>• Dimensions : W5.12" x D10.0" x H3.82"</li> </ul>

Accessories : Handpiece Holder : 1 pc., Handpiece Stand : 1 pc.  
 Power Supply Cord : 1 pc.

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus ZERO

Sonic-Cutter ZERO

2

iSpeed3

E2000

o1.07" o0.99" o0.897"

E3000

One Piece

E3000

Modular

o1.18"

o1.07" o0.98" o0.897"

E3000

o0.000rpm

E4000

3

MA

o0.897"

o1.0"

o0.98"

o1.18"

MS

o0.75"

o0.79"

o0.87"

o0.91"

o1.0"

o0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

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# Ultra-Precision Micro Grinder



## NAKANISHI Smart Switch

The switch provides a click sensation. A confirmation tone is reacted by the controller when the switch is operated. The motor type is distinguishable by the switch color.



## One Touch Tool Changing

- Ring Type (IR-310)  
Easy twist open/close chuck

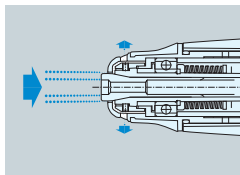


## Various Collet Sizes

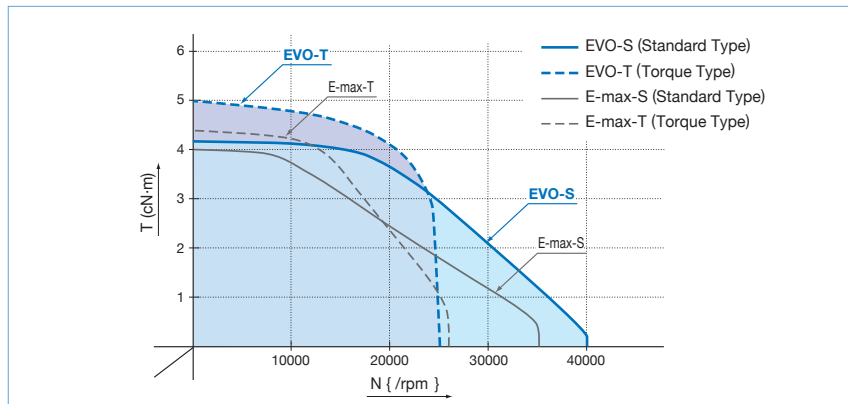
A variety of collet sizes ranging from 1.0 mm to 3.175 mm are available for most attachments.

## Special Dust Protection Mechanism (patented)

The chuck section of Emax EVOLUTION has a special built-in dust protection mechanism that prevents entry of foreign materials such as chips, and provides superior durability as well.



## Emax EVOLUTION vs E-max Torque Characteristic



## 2 Types of Motors

Provides choice of various applications.

- Standard Type Motor 1,000~40,000 rpm (ENK-410S) Blue
- Torque Type Motor 1,000~25,000 rpm (ENK-250T) Green

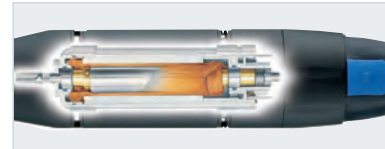
**\*Exclusive use for Emax EVOLUTION**

Emax EVOLUTION and Electer E-max have different motor cord pin configurations.



## Excellent Durability

- High performance brushless motor eliminates the need of changing carbon brushes.
- RPM variation is minimal even when load changes. Allowing difficult and stable cutting in stress free motion. Suitable performance for finish grinding.
- Provides superior quietness and smoothness from low speed to high speed.



## 13 Types of Attachments for All Types of Applications

Capable of infinite applications with 13 different attachments.

\*Interchangeable with attachments form the E-max and ROTUS system.

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.07/ø0.98/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07/ø0.98/ø0.897"
E3000 — ø0.000rpm
E4000
3
MA
ø0.897"
ø1.0"
ø0.98"
ø1.18"
MS
ø0.75"
ø0.79"
ø0.87"
ø0.91"
ø1.0"
ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
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## Emax EVOLution RING TYPE STANDARD SET

Capabilities for a wide variety of applications. Excellent balance and motor power for smooth speed and handling.

1,000~40,000 rpm



Product Code	8231	Product Name	EV410-IR
Attachment		Motor	
IR-310		ENK-410S	
Standard Equipment	<ul style="list-style-type: none"> <li>• Micro Grinder (IR-310+ENK-410S) : 1 pc.</li> <li>• Collet <math>\phi 1/8"</math> (CHH-3.175),</li> <li>• <math>\phi 2.35</math>mm (CHH-2.35) : 1 pc. each</li> <li>• Controller (NE249 120) : 1 pc.</li> <li>• Handpiece Holder : 1 pc.</li> <li>• Handpiece Stand : 1 pc.</li> <li>• Power Supply Cord : 1 pc.</li> <li>• Wrench (7 x 5.1) : 1 pc.</li> <li>• Pin Wrench (K-233) : 2 pcs.</li> <li>• L Shaped Wrench (9) : 1 pc.</li> </ul>		

\*Standard set with IH-300 is also available. (Product Code 8222, Product Name EV410-IH, Price 1,127.00)

Product Code	8222	Product Name	EV410-IH
Attachment		Motor	
IH-300		ENK-410S	
Standard Equipment	<ul style="list-style-type: none"> <li>• Micro Grinder (IR-310+ENK-410S) : 1 pc.</li> <li>• Collet <math>\phi 1/8"</math> (CHH-3.175),</li> <li>• <math>\phi 2.35</math> mm (CHH-2.35) : 1 pc. each</li> <li>• Controller (NE249 120) : 1 pc.</li> <li>• Handpiece Holder : 1 pc.</li> <li>• Handpiece Stand : 1 pc.</li> <li>• Power Supply Cord : 1 pc.</li> <li>• Wrench (7 x 5.1) : 1 pc.</li> <li>• Pin Wrench (K-233) : 2 pcs.</li> <li>• L Shaped Wrench (9) : 1 pc.</li> </ul>		

## Emax EVOLution RING TYPE TORQUE SET

For heavy duty and larger tools, torque type extends to extend operation ranges.

1,000~25,000 rpm



Product Code	8232	Product Name	EV250-IR
Attachment		Motor	
IR-310		ENK-250T	
Standard Equipment	<ul style="list-style-type: none"> <li>• Micro Grinder (IR-310+ENK-250T) : 1 pc.</li> <li>• Collet <math>\phi 1/8"</math> (CHH-3.175),</li> <li>• <math>\phi 2.35</math> mm (CHH-2.35) : 1 pc. each</li> <li>• Controller (NE249 120) : 1 pc.</li> <li>• Handpiece Holder : 1 pc.</li> <li>• Handpiece Stand : 1 pc.</li> <li>• Power Supply Cord : 1 pc.</li> <li>• Wrench (7 x 5.1) : 1 pc.</li> <li>• Pin Wrench (K-233) : 1 pc.</li> <li>• L Shaped Wrench (9) : 1 pc.</li> </ul>		

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

$\phi 1.0"$ / $\phi 0.99"$ / $\phi 0.987"$

E3000

— One Piece

E3000

— Modular

$\phi 1.18"$

$\phi 1.07"$ / $\phi 0.98"$

$\phi 0.97"$

E3000

— 50,000rpm

E4000

3

MA

$\phi 0.897"$

$\phi 1.0"$

$\phi 0.98"$

$\phi 1.18"$

MS

$\phi 0.75"$

$\phi 0.79"$

$\phi 0.87"$

$\phi 0.91"$

$\phi 1.0"$

$\phi 0.98"$

4

HES

iSpeed5

HTS

PLANET

Xspeed

ABT

5

AIR LINE KIT

6

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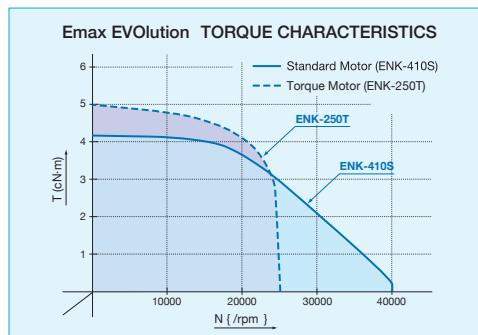


## Motor for *Emax EVOLution* (Electrically Driven)

- NAKANISHI Smart Switch.
- High performance samarium cobalt magnet.
- High accuracy, lightweight, compact, high reliability and superior durability.
- Major reduction of RF noise.
- Provides extremely quiet operation from low to high speed with stepless speed adjustment.

### Motor Specifications

Motor Model	ENK-410S	ENK-250T
Speed	1,000~40,000 rpm	1,000~25,000 rpm
Weight (w/o Cord)	3.17 oz.	5.19 oz.
Max. Torque	4.3 cN·m	4.8 cN·m
Output Power	73W	76W



## Product Code **8086** STANDARD TYPE MOTOR ENK-410S



### 1,000~40,000 rpm

- Excellent combination of high speed, lightweight, small diameter and high torque. This lightweight and compact general-use type is perfect for precision work.

Product Code	Product Name	Standard Accessories
8086	ENK-410S	• Straight Cord : 4.5 ft

## Product Code **8087** TORQUE TYPE MOTOR ENK-250T



### 1,000~25,000 rpm

- Combines the best of both high speed and high torque. It is perfect for applications requiring large burs.

Product Code	Product Name	Standard Accessories
8087	ENK-250T	• Straight Cord : 4.5 ft

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.07/ø0.98/ø0.897"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.07/ø0.98"

ø0.897"

E3000

— ø0.000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.73"

ø0.897"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

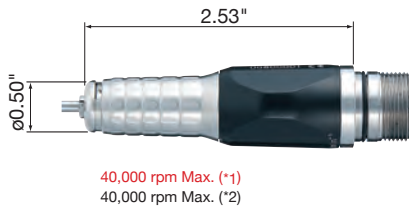
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Product Code **1144**

## RING TYPE ATTACHMENT IR-310



- Perfectly designed for powerful and delicate cutting and grinding, and made slim and light weight for comfortable gripping.

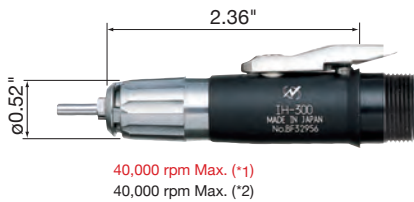
- Weight : 3.25 oz.
- Simple, no wrench bur replacement.
- Wrench is not required to exchange the chuck.
- Collet  
Standard Size :  $\phi 1/8"$  (CHH-3.175),  
 $\phi 2.35$  mm (CHH-2.35)  
Optional Collets: CHH-□□ are shown in page (6-p2)

### Ring Type Attachment

Product Code	Product Name	Standard Accessories
<b>1144</b>	<b>IR-310</b>	• Collet $\phi 1/8"$ (CHH-3.175), $\phi 2.35$ mm (CHH-2.35) : 1 pc. each • Wrench (7 x 5.1) : 1 pc. • Pin Wrench (K-233) : 1 pc. • L Shaped Wrench (9) : 1 pc.

Product Code **7097**

## LEVER TYPE ATTACHMENT IH-300



- Perfectly designed for powerful and delicate cutting and grinding, and made slim and light weight for comfortable gripping.

- Weight : 2.19 oz.
- Just turn the lever to exchange the bur.
- Wrench is not required to exchange the chuck.
- Collet  
Standard Size :  $\phi 1/8"$  (CHH-3.175),  
 $\phi 2.35$  mm (CHH-2.35)  
Optional Collets: CHH-□□ are shown in page (6-p2)

### Lever Type Attachment

Product Code	Product Name	Standard Accessories
<b>7097</b>	<b>IH-300</b>	• Collet $\phi 1/8"$ (CHH-3.175), $\phi 2.35$ mm (CHH-2.35) : 1 pc. each • Wrench (7 x 5.1) : 1 pc. • Pin Wrench (K-233) : 1 pc.

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

$\phi 1.07$ / $\phi 0.98$ / $\phi 0.897$ "

E3000

— Modular

$\phi 1.18$ "

$\phi 1.07$ / $\phi 0.98$ / $\phi 0.897$ "

E3000

— 60,000rpm

E4000

3

MA

$\phi 0.897$ "

$\phi 1.0$ / $\phi 0.98$ "

$\phi 1.18$ "

MS

$\phi 0.75$ / $\phi 0.79$ "

$\phi 0.87$ / $\phi 0.91$ "

$\phi 1.0$ / $\phi 0.98$ "

4

HES

iSpeed5

HTS

PLANET

Xspeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

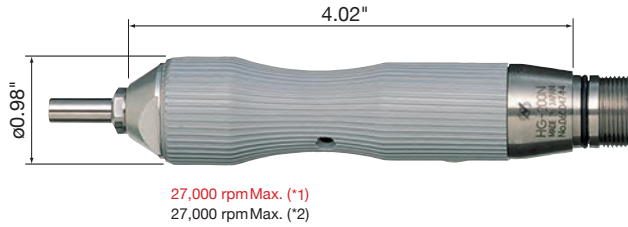
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Product Code **2810**

## TORQUE TYPE ATTACHMENT HG-200



- The resistance produced by cutting and grinding is absorbed by a special rubber grip to eliminate slipping.
- Chuck is tightened by a Wrench.
- Weight : 7.41 oz.
- Collet  
Standard Size :  $\phi 1/4"$  (CHG-6.35)  
Optional Collets : CHG-□□ are shown in page (6-p2)

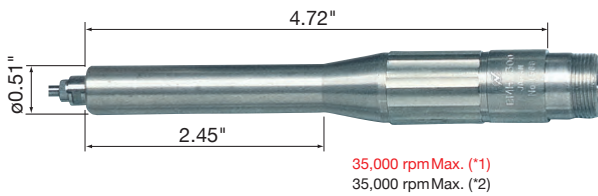
### Torque Type Attachment

\*Use 6mm torque Type HG-200 to connect ENK-250T \*Please use it with Speed Reducer. (ROTUS Air Motor)

Product Code	Product Name	Standard Accessories
<b>2810</b>	<b>HG-200</b>	• Collet $\phi 1/4"$ (CHG-6.35) : 1 pc. • Wrench (10 x 10) : 1 pc. • Bar Wrench (K-212) : 1 pc. • Pin Wrench (K-233) : 1 pc.

Product Code **2904**

## For Deep Hole Grinding LONG ATTACHMENT BMH-300



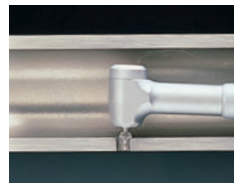
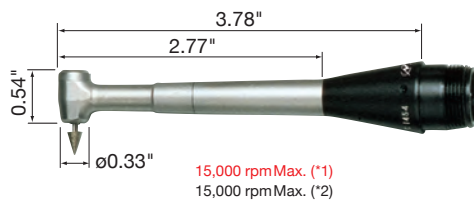
- This unique slim body makes it ideal for cutting and grinding the bottom surface of deep ribs or holes.
- Weight : 5.50 oz.
- Wrench is not required to exchange the chuck.
- Collet  
Standard Size :  $\phi 1/8"$  (CHM-3.175)  
Optional Collets : CHM-□□ are shown in page (6-p4)

### Long Attachment for Deep Hole Grinding

Product Code	Product Name	Standard Accessories
<b>2904</b>	<b>BMH-300</b>	• Collet $\phi 1/8"$ (CHM-3.175) : 1 pc. • Wrench (7 x 5.1), (6 x 4.5) : 1 pc. each • Pin Wrench (K-233) : 1 pc.

Product Code **1012**

## For Chamfering Deep Hole 90° MINI ANGLE TYPE ATTACHMENT MFC-300S



- Ideal for chamfering and deburring the inside of slit pipe.
- Minimum Inner Diameter :  $\phi 0.79"$
- Weight : 1.76 oz.
- Standard Collet :  $\phi 1.6$  mm (K-252)
- Speed Reduction Ratio : 10/11

### 90° MINI ANGLE TYPE Attachment for Chamfering Deep Hole, Bur Only $\phi 1.6$ mm \*Please use it with Speed Reducer. (ROTUS Air Motor)

Product Code	Product Name	Standard Accessories
<b>1012</b>	<b>MFC-300S</b>	• Collet $\phi 1.6$ mm (K-252) : 1 pc. • Chuck Wrench (K-232) : 1 pc. • Pin Wrench (K-233) : 1 pc.

Product Code **1013**

## For Chamfering Deep Hole 90° MINI ANGLE TYPE ATTACHMENT MFC-300M



- The smallest 90° Angle type head is suitable for chamfering and deburring the inside of the slit pipe.
- Minimum Inner Diameter :  $\phi 0.51"$
- Weight : 1.66 oz.
- Standard Collet :  $\phi 1.6$  mm (K-253)
- Speed Reduction Ratio : 10/11

### 90° MINI ANGLE TYPE Attachment for Chamfering Deep Hole, Bur Only $\phi 1.6$ mm (Very Small Head) \*Please use it with Speed Reducer. (ROTUS Air Motor)

Product Code	Product Name	Standard Accessories
<b>1013</b>	<b>MFC-300M</b>	• Collet $\phi 1.6$ mm (K-253) : 1 pc. • Chuck Wrench (K-232) : 1 pc. • Pin Wrench (K-233) : 1 pc.

\*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 product code.

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

$\phi 1.97/\phi 0.98/\phi 0.897"$

E3000

- One Piece

E3000

- Modular

$\phi 1.18"$

$\phi 1.07/\phi 0.98/\phi 0.897"$

E3000

-  $\phi 0.000$ rpm

E4000

3

MA

$\phi 0.897"$

$\phi 1.0"$

$\phi 0.98"$

$\phi 1.18"$

MS

$\phi 0.75"$

$\phi 0.79"$

$\phi 0.87"$

$\phi 0.91"$

$\phi 1.0"$

$\phi 0.98"$

4

HES

iSpeed5

HTS

PLANET

Xspeed

ABT

5

AIR LINE KIT

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Product Code **2900**

## 90° ANGLE ATTACHMENT IC-300



35,000 rpm Max. (\*1)  
20,000 rpm Max. (\*2)

### Drive Motor & Controller

Electric Motor (ENK-410S) (ENK-250T)  
Page 1-p7

Emax EVOLution Controller (NE249 120)  
Page 1-p4

or

Air Motor (IM-301)  
Page 1-p33

ROTUS Air Line Kit (AL-H1207F) & AFC-45  
Page 5-p2

- 90° Angle attachment with  $\phi 1/8$ " ( $\phi 3.175$  mm) Collet. Most suitable for polishing flat surfaces, corners and internal surfaces of pipes with paper disk mounted on rubber pad.

- Reduction Ratio : 3/4
- Weight : 1.59 oz.
- Collet  
Standard Size :  $\phi 1/8$ " (CHC-3.175)  
Optional Collets : CHC-□□ are shown in page (6-p2)



### 90° Angle Attachment \*Please use it with Speed Reducer. (ROTUS Air Motor)

Product Code	Product Name	Standard Accessories	
2900	IC-300	<ul style="list-style-type: none"> <li>• Collet <math>\phi 1/8</math>" (CHC-3.175) : 1 pc.</li> <li>• Standard Accessories : 1 set</li> <li>• Chuck Wrench (K-231) : 1 pc.</li> <li>• Pin Wrench (K-233) : 1 pc.</li> </ul>	

Product Code **2901**

## 50° ANGLE ATTACHMENT KC-300



35,000 rpm Max. (\*1)  
20,000 rpm Max. (\*2)

### Drive Motor & Controller

Electric Motor (ENK-410S) (ENK-250T)  
Page 1-p7

Emax EVOLution Controller (NE249 120)  
Page 1-p4

or

Air Motor (IM-301)  
Page 1-p33

ROTUS Air Line Kit (AL-H1207F) & AFC-45  
Page 5-p2

- Ideal for the work at 50° angle, especially corners and deep concaves.

- Use the motor in reverse rotation for clockwise rotation.
- Speed Reduction Ratio : 3/4
- Weight : 1.59 oz.
- Collet  
Standard Size :  $\phi 1/8$ " (CHC-3.175)  
Optional Collets : CHC-□□ are shown in page (6-p2)



### 50° Angle Attachment \*Please use it with Speed Reducer. (ROTUS Air Motor)

Product Code	Product Name	Standard Accessories	
2901	KC-300	<ul style="list-style-type: none"> <li>• Collet <math>\phi 1/8</math>" (CHC-3.175) : 1 pc.</li> <li>• Standard Accessories : 1 set</li> <li>• Chuck Wrench (K-231) : 1 pc.</li> <li>• Pin Wrench (K-233) : 1 pc.</li> </ul>	

## Standard Accessories for IC-300 and KC-300


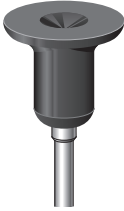
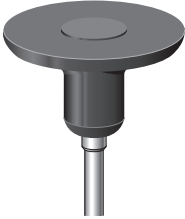
Description	Product Code	Product Name	O.D.	Grits	Q'ty	
Rubber Pad	(Small)	64105	—	$\phi 10$ mm ( $\phi 0.39$ " )	—	1
	(Med)	64106	—	$\phi 20$ mm ( $\phi 0.79$ " )	—	1
	(Large)	64107	—	$\phi 30$ mm ( $\phi 1.18$ " )	—	1
Sandpaper Disk	64133	S-018	$\phi 11$ mm ( $\phi 0.43$ " )	# 180	5	
	64137	S-060	$\phi 11$ mm ( $\phi 0.43$ " )	# 600	5	
	64153	M-018	$\phi 21$ mm ( $\phi 0.83$ " )	# 180	5	
	64157	M-060	$\phi 21$ mm ( $\phi 0.83$ " )	# 600	5	
	64173	L-018	$\phi 31$ mm ( $\phi 1.22$ " )	# 180	5	
	64177	L-060	$\phi 31$ mm ( $\phi 1.22$ " )	# 600	5	

\*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.

## Optional Accessories for IC-300 and KC-300

### Rubber Pad

Product	Description	Product Code	Product Name	O.D.	Grits	package
	Rubber Pad (Small)	64105	64105	ø10 mm (ø0.39")	-	1 pc./pack
	Rubber Pad (Med)	64106	64106	ø20 mm (ø0.79")	-	1 pc./pack
	Rubber Pad (Large)	64107	64107	ø30 mm (ø1.18")	-	1 pc./pack

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.07"/ø0.98"/ø0.897"

E3000

- One Piece

E3000

- Modular

ø1.18"

ø1.07"/ø0.98"

ø0.897"

E3000

- 60,000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.79"

ø0.87"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL

DATA

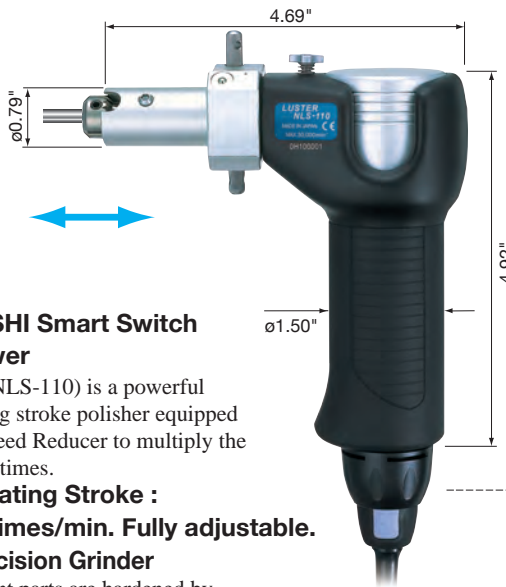
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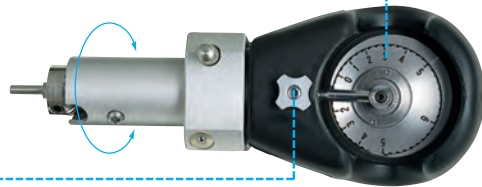
## The Features of LUSTER Emax EVOLution NLS-110 (Built-in Motor)



- **NAKANISHI Smart Switch**
- **High Power**  
LUSTER (NLS-110) is a powerful reciprocating stroke polisher equipped with 1/4 Speed Reducer to multiply the torque by 4 times.
- **Reciprocating Stroke : 0~7,600 times/min. Fully adjustable.**
- **Ultra-Precision Grinder**  
All important parts are hardened by heat treatment to provide excellent durability.
- **Designed with comfortable rubber-grip**  
Well balanced, rubber-grip absorbs vibration from reciprocating strokes reducing fatigue and allowing long, continuous operation.



- **Stroke Range : 0~6 mm adjustable by stroke cam**



- **The tilt angle of grindstone arbor is adjustable.**  
The grinding surface can be set at any angle between 0 and 360° enabling grinding of bottom, right, left and top surfaces without moving the machine itself.

Controller



Emax EVOLution Controller (NE249 120)  
Page 1-p4

- Weight : 1 lb. 12.22 oz. (w/o cord)
- Max. tool shank diameter  $\phi 0.25"$ , Screw clamp type.
- Various types of attachment tools are provided as standard accessories.

### Reciprocating Motion Polishing Finisher LUSTER

Product Code	Product Name	Standard Accessories
1483	NLS-110	<ul style="list-style-type: none"> <li>• Standard Accessories : 1 set</li> <li>• Allen Wrench (2 mm), (3 mm) : 1 pc. each</li> <li>• Lubrication Oil</li> <li>• Lubrication Nozzle for LUSTER</li> </ul>

30,000 rpm Max. (\*1) 30,000 rpm Max. (\*2)

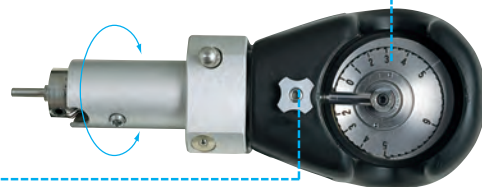
## The Features of LUSTER LS-100



- **High Power**  
LUSTER (LS-100) is a powerful reciprocating stroke polisher.
- **Reciprocating Stroke : 0~7,600 times/min. Fully adjustable.**
- **Ultra-Precision Grinder**  
All important parts are hardened by heat treatment to provide excellent durability.
- **Designed with comfortable rubber-grip**  
Well balanced, rubber-grip absorbs vibration from reciprocating strokes reducing fatigue and allowing long, continuous operation.



- **Stroke Range : 0~6 mm adjustable by stroke cam**



- **The tilt angle of grindstone arbor is adjustable.**  
The grinding surface can be set at any angle between 0 and 360° enabling grinding of bottom, right, left and top surfaces without moving the machine itself.

Drive Motor & Controller



- Weight : 1 lb. 7.99 oz.
- Max. tool shank diameter  $\phi 0.25"$ , Screw clamp type.
- Various types of attachment tools are provided as standard accessories.

### Reciprocating Motion Miniature Polisher LUSTER

Product Code	Product Name	Standard Accessories
1302	LS-100	<ul style="list-style-type: none"> <li>• Standard Accessories : 1 set</li> <li>• Allen Wrench (2 mm), (3 mm) : 1 pc. each</li> <li>• Lubrication Oil</li> <li>• Lubrication Nozzle for LUSTER</li> </ul>

30,000 rpm Max. (\*1) 30,000 rpm Max. (\*2)

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000
E3000
E3000
E3000
E4000
3
MA
MS
4
HES
iSpeed5
HTS
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## The Features of MINI-LUSTER ML-8



- Reciprocating Stroke (variable) : Approx 0~9,000 times/min.
- Stroke Range (fixed) : 0.8 mm.
- Due to pencil type grip, it is most suitable for polishing narrow grooves, details, etc.
- Lightweight, compact design and minimal vibration keep the hand free from fatigue for long continuous operation.
- By using the grindstone holder provided, various tools such as oil stone, super stone, diamond files, etc. can be used.



Drive Motor & Controller

 Electric Motor (ENK-410S) (ENK-250T) Page 1-p7	or	 Air Motor (IM-301) ROTUS Air Line Kit (AL-H1207F) & AFC-45 Page 1-p33 Page 5-p2
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- Weight : 5.12 oz.
- Max. tool shank diameter  $\phi 0.13$ ". Screw clamp type.
- Various attachment tools and holders are provided as standard accessories.

### Pencil-Type Reciprocating Polishing Finisher MINI-LUSTER Attachment

Product Code	Product Name	Stroke Range	Standard Accessories
1307	ML-8	0.8mm	<ul style="list-style-type: none"> <li>• Allen Wrench (1.5 mm) : 1 pc.</li> <li>• Standard Accessories : 1 set</li> </ul>

35,000 rpm Max. (\*1) 30,000 rpm Max. (\*2)

## The Features of SWING-LUSTER SLS-16



- High speed grinding and polishing operations can be performed while maintaining the fine and delicate feeling of hand polishing.
- Lightweight pencil type design makes it easy to work in tight areas.
- Ergonomically designed to provide high sensitivity for precision work.
- Easily adjustable stroke length allows efficient work on minute areas or large sections.

- Weight : 5.00 oz. • Reciprocating Stroke (variable) : 0~9,000 times/min
- Stroke range (variable) : 0~1.6 mm
- Max. tool shank diameter  $\phi 0.20$ ". Screw clamp type.

Drive Motor & Controller

 Electric Motor (ENK-410S) (ENK-250T) Page 1-p7	or	 Air Motor (IM-301) ROTUS Air Line Kit (AL-H1207F) & AFC-45 Page 1-p33 Page 5-p2
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### Pencil-Type Reciprocating Polishing Finisher SWING-LUSTER Attachment

Product Code	Product Name	Standard Accessories
1380	SLS-16	<ul style="list-style-type: none"> <li>• Wrench (16 x 18), (20 x 24) : 1 pc. each</li> <li>• Allen Wrench (1.5 mm) : 1 pc.</li> <li>• Standard Accessories : 1 set</li> </ul>

35,000 rpm Max. (\*1) 24,000 rpm Max. (\*2)  
 \*Please use it with Speed Reducer. (ROTUS Air Motor)

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

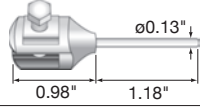
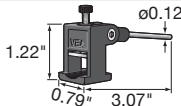
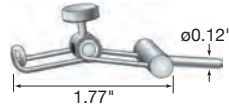
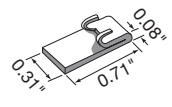
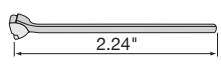
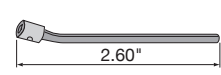
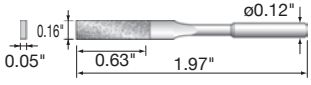
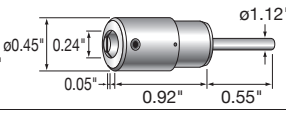
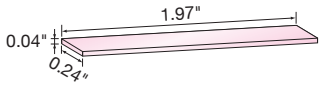
\*1 : Maximum Allowable Speed, intermittent use.  
 \*2 : Maximum Allowable Speed, continuous use.

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.07$ / $\phi 0.98$ / $\phi 0.897$ "
E3000 - One Piece
E3000 - Modular
$\phi 1.18$ "
$\phi 1.07$ / $\phi 0.98$ / $\phi 0.897$ "
E3000 - 60,000rpm
E4000
3
MA
$\phi 0.897$ "
$\phi 1.0$ " $\phi 0.98$ "
$\phi 1.18$ "
MS
$\phi 0.75$ " $\phi 0.79$ "
$\phi 0.87$ " $\phi 0.91$ "
$\phi 1.0$ " $\phi 0.98$ "
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HES
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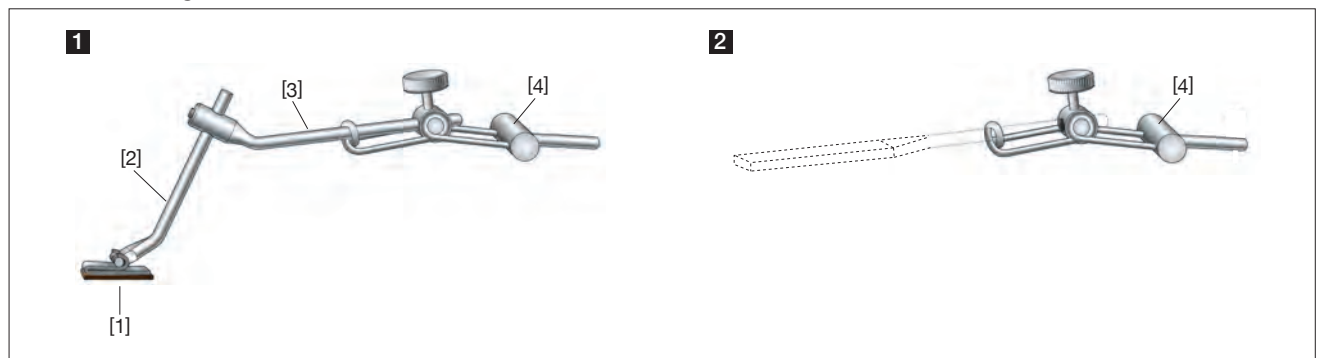
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IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 ø1.07"/ø0.98"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 — 60,000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.87" ø0.91"
ø1.0" ø0.98"
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## Tool and standard accessories for LUSTER, MINI-LUSTER, SWING-LUSTER

• Each product is provided with tool ● as standard.

Product	Product Code	Product Name	LUSTER NLS-110 / LS-100 ELS-100	MINI-LUSTER ML-8 / EML-8	SWING-LUSTER SLS-16
Max. clampable size : Thickness 0.18" x width 0.43" 	62502	Grindstone Holder VES	● (1 pc.)		
Max. clampable size : Thickness 0.43" x width 0.53" 	62505	Grindstone Holder VEA	● (1 pc.)		
[4] 	62751	Tool Holder with Spring FVA	● (1 pc.)	● (1 pc.)	
[1] 	62525	Rectangular Pad LKE-2A	● (1 pc.)		
[2] 	62526	Rod for Rectangular Pad FBA-2	● (1 pc.)		
[3] 	62527	Angle Rod NGA	● (1 pc.)		
	62814	62814		● (1 pc.)	● (1 pc.)
Max. clampable size : Thickness 0.04" x width 0.24" 	62510	Ceramic Fiber Grindstone Holder		● (1 pc.)	● (1 pc.)
	60737	Ceramic Fiber Grindstone (#1,200)		● (1 pc.)	● (1 pc.)

### • Illustration Usage



# memo

## 1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

## 2

iSpeed3

E2000  
ø1.0"/ø0.98"/ø0.897"

E3000  
— One Piece

E3000  
— Modular

ø1.18"

ø1.07/ø0.98"  
ø0.897"

E3000  
— 60,000rpm

E4000

## 3

MA

ø0.897"

ø1.0"  
ø0.98"

ø1.18"

MS

ø0.75"  
ø0.79"

ø0.87"  
ø0.91"

ø1.0"  
ø0.98"

## 4

HES

iSpeed5

HTS

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ABT

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AIR LINE KIT

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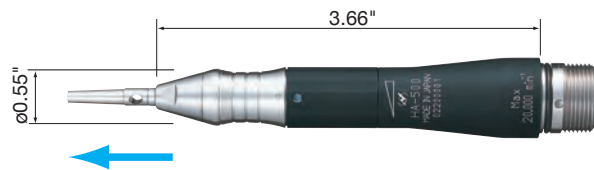
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E3000 - Modular
ø1.18"
ø1.07"/ø0.98" ø0.97"
E3000 - 50,000rpm
E4000
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ø1.0" ø0.98"
ø1.18"
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ø0.75" ø0.79"
ø0.87" ø0.91"
ø1.0" ø0.98"
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## The Features of HA-500



- Stroke speed : 25~5,000 strokes/min
- A wide variety of patterns can be produced by varying the spring pressure and hammer speed.
- Light weight, pencil type grip makes the handpiece very comfortable to hold and easy to use.
- Adjustable spring pressure.
- Self lubricating hammer mechanism ensure excellent durability.

- Weight : 3.35 oz.
- Stroke range : 0.4 mm • Stroke Spring Pressure : 4.4~7.1N (Ring Adjustment Type)

### Drive Motor & Controller

 Electric Motor (ENK-410S) (ENK-250T) Page 1-p7	or	 Air Motor (IM-301) ROTUS Air Line Kit (AL-H1207F) & AFC-45 Page 1-p33 Page 5-p2
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### Engraving and Ornament Processing Work Hammer Attachment

Product Code	Product Name	Standard Accessories
8060	HA-500	<ul style="list-style-type: none"> <li>• Wrench (7 x 5.5) : 1 pc.</li> <li>• Bar Wrench (K-212) : 1 pc.</li> <li>• Oil and Oil offer machine</li> <li>• Hammer Bit (For replacement) : 2 pcs.</li> </ul>

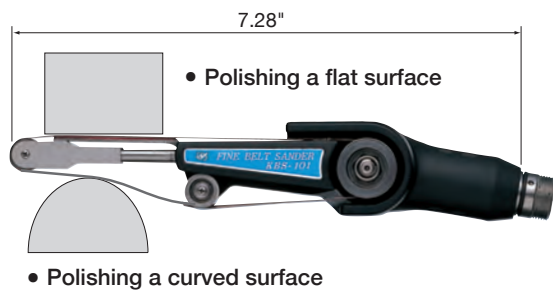
20,000 rpm Max. (\*1) 16,000 rpm Max. (\*2)

\*Please use it with Speed Reducer. (ROTUS Air Motor)

Hammer Bit to be machined to required shapes (SUS-420, heat treated, approx, HRC50)

Product Code	Product	Package
65301		3 pcs./pack

## The Features of FINE BELT SANDER KBS-101



- Belt runs Approx. 0~2,700 ft/min
- 8 mm, 6 mm and 4 mm width belts are available.
- The angle of the belt section is fully adjustable.
- Exchanging the belt is simply done by lever release.
- Weight : 12.35 oz.
- Light-weight, compact, minimal vibration and a small diameter grip design keep the hand free from fatigue for long, continuous operation.
- When polishing a curved surface, the tension between the front and central pulley can be utilized. When polishing a flat surface or a groove, use the flat part of belt.



### Drive Motor & Controller





 Electric Motor (ENK-410S) (ENK-250T) Page 1-p7	or	 Air Motor (IM-301) ROTUS Air Line Kit (AL-H1207F) & AFC-45 Page 1-p33 Page 5-p2
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### FINE BELT SANDER Attachment

Product Code	Product Name	Standard Accessories
1146	KBS-101	<ul style="list-style-type: none"> <li>• 8 mm Belt (3 kinds 2 pcs. each)</li> <li>• 6 mm Belt (3 kinds 2 pcs. each)</li> <li>• 4 mm Belt (3 kinds 2 pcs. each)</li> <li>• Allen Wrench (3 mm) : 1 pc.</li> </ul>

35,000 rpm Max. (\*1) 35,000 rpm Max. (\*2)

## Belt for FINE BELT SANDER

Product	Description	Product Code	Grit	Width (mm)	Length (mm)	Package	
	Abrasive Belt	64901	# 80	4	300	30 pcs./pack	
		64902	# 120				
		64903	# 180				
		64904	# 240				
		64905	# 320				
		64906	# 400				
		64911	# 80	6			
		64912	# 120				
		64913	# 180				
		64914	# 240				
		64915	# 320				
		64916	# 400				
		64921	# 80	8			
		64922	# 120				
		64923	# 180				
		64924	# 240				
64925	# 320						
64926	# 400						
64927	# 600						
64928	# 800						
	Zirconia Belt	64971	# 80	8	300	30 pcs./pack	
		64972	# 100				
		64973	# 120				
	Diamond Belt (Hard Type)	65011	# 80	8	300	3 pcs./pack	
		65012	# 120				
		65014	# 240	8			
		65015	# 320				
		65017	# 600				
	Diamond Belt (Soft Type)	65021	# 120	8	300	3 pcs./pack	
		65022	# 180				
		65023	# 240				
		65024	# 320	8			
		65028	# 400				
		65025	# 600				
		65026	# 800				
65027	#1,000						

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.07/ø0.98/ø0.897"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.07/ø0.98"

ø0.897"

E3000

— 60,000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.739"

ø0.87"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

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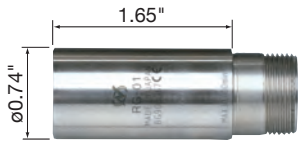
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E2000 ø1.0"/ø0.99"/ø0.987"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07/ø0.98" ø0.97"
E3000 — 50,000rpm
E4000
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MS ø0.75" ø0.79" ø0.87" ø0.91" ø1.0" ø0.98"
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Product Code **1009** **SPEED REDUCER RG-01**



**TORQUE UP 4 TIMES**  
(1/4 Speed Reducer)

- The speed is reduced to 1/4 but the torque is multiplied by 4 times.
- Weight : 2.40 oz.

30,000 rpm Max. (\*1) 30,000 rpm Max. (\*2)

**Speed Reducer (1/4)**

Product Code	Product Name	Standard Accessories	
1009	RG-01	• Pin Wrench (K-233) : 1 pc.	

Product Code **1010** **SPEED REDUCER RG-02**



**TORQUE UP 15 TIMES**  
(1/15 Speed Reducer)

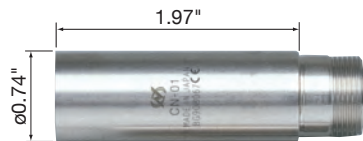
- The speed is reduced to 1/15 but the torque is multiplied by 15 times.
- Weight : 3.28 oz.

30,000 rpm Max. (\*1) 30,000 rpm Max. (\*2)

**Speed Reducer (1/15)**

Product Code	Product Name	Standard Accessories	
1010	RG-02	• Pin Wrench (K-233) : 1 pc.	

Product Code **1015** **EXTENSION JOINT CN-01**



(Speed 1 : 1)

- This is a joint to be connected between a motor and an attachment to extend the total length of the attachment.

• Weight : 2.93 oz.

35,000 rpm Max. (\*1) 35,000 rpm Max. (\*2)

**Extension Joint (Speed 1 : 1)**

Product Code	Product Name	Standard Accessories	
1015	CN-01	• Pin Wrench (K-233) : 1 pc.	

Product Code **8106** **FOOT PEDAL FC-64**



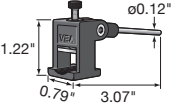
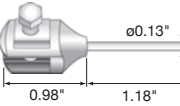
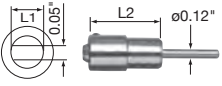
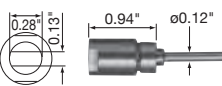
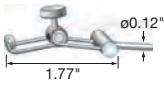
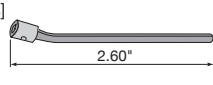
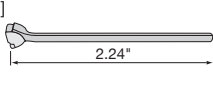
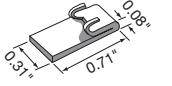
- Used as an ON/OFF switch as well as a variable speed control.

**Foot Pedal**

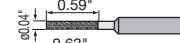
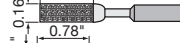

Product Code	Product Name	Fit to	
8106	FC-64	Emax EVOLution (NE249)	



## Common Tools for LUSTER, MINI-LUSTER

Product	Product Code	Description · Product Name
	62505	Grindstone Holder VEA for (W 0.53" x T 0.43")
	62502	Grindstone Holder VES for (W 0.43" x T 0.18")
	62508 62507 62506	Holder for Super Stone ...SH-10 (L1=0.40" (L2=1.10") ...SH-6 (L1=0.24" (L2=0.92") ...SH-4 (L1=0.16" (L2=0.87")
	62509	Oil Stone Lapping Stick Holder for (W 0.24" x T 0.12")
[4] 	62751	Tool Holder with Spring FVA
[3] 	62527	Angle Rod NGA
[2] 	62526	Rod for Lapping FBA-2
[1] 	62525	LKE-2A with Hinge Use with FBA-2

[1]~[4] : Please See Page 1-p14 for Illustration Usage.

Product	Product Code	Description · Product Name
	62840	DLA-1-100
	62814	DLA4 x 1-100
	62871	DLA1 x 4-100

<b>1</b>
EmaxEVO
ESPRT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 — 60,000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.73"
ø0.87" ø0.91"
ø1.0" ø0.98"
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
<b>5</b>
AIR LINE KIT
<b>6</b>
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<b>7</b>
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● Evolutionary New Design High-Performance Brushless Micro Grinder.

## 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 controller provides optimal control of the motors and allows for increased flexibility in this multi-function system.

### Speed : 1,000~50,000 rpm

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

### 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

### 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.

NAKANISHI Smart Switch

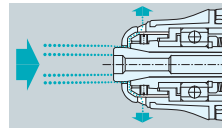


### Low Noise, Low Vibration

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.

### 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.



### 9 Types of Attachments Available

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

### Wide Range of Collets Available

A variety of collet sizes ranging from 1.0 mm to 3.175 mm are available for most attachments.

### 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 wrenches and a spare chuck.



### High Precision

NAKANISHI's ultra-precision technology ensures bur concentricity of 0.02 mm (0.0008") or less, which allows for very high precision finishing.

### Simple Screw on Attachments



1  
EmaxEVO  
ESPERT  
ROTUS  
IMPULSE  
PRESTO II  
Sheenus ZERO  
Sonic-Cutter ZERO

2  
iSpeed3  
E2000  
E3000  
E3000  
E3000  
E4000

3  
MA  
MS

4  
HES  
iSpeed5  
HTS  
PLANET  
Xpeed  
ABT

5  
AIR LINE KIT

6  
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## New Advanced Design 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.

### 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 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.

### 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 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.

### 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



ESPERT 500 Controller

Product Code	Product Name	Specifications
9793	NE96	<ul style="list-style-type: none"> <li>• Power Source : AC120V, 50-60Hz</li> <li>• Dimensions : W6.77" x D9.06" x H3.70"</li> <li>• Weight : 5 lb. 11.71 oz.</li> <li>• Accessories : Handpiece Stand : 1 pc. Handpiece Holder : 1 pc.</li> </ul>

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.07"/ø0.98"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 — 60,000rpm
E4000
3
MA
ø0.897"
ø1.0"
ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.87" ø0.91"
ø1.0"
ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
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# ESPERT 500 STANDARD SET

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter  
ZERO

2

iSpeed3

E2000  
ø1.07"/ø0.99"/ø0.897"

E3000  
— One Piece

E3000  
— Modular

ø1.18"

ø1.07"/ø0.98"  
ø0.897"

E3000  
— 50,000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.79"

ø0.87"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

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DATA

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## Espert 500 Standard Set (Ring Type)



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

Product Code	7340	Product Name	ES50C-HR
Attachment	EHR-500	Motor	ENK-500C
Controller	NE96		
Standard Accessories	<ul style="list-style-type: none"> <li>• Controller (NE96) : 1 pc.</li> <li>• Compact Motor Handpiece (ENK50C-HR) : 1 pc.</li> <li>• Collet ø1/8" (CHH-3.175) : 1 pc.</li> <li>• Collet ø2.35 mm (CHH-2.35) : 1 pc.</li> <li>• Handpiece Holder : 1 pc.</li> <li>• Handpiece Stand : 1 pc.</li> <li>• Wrench (7 x 5.1) : 1 pc. • Pin Wrench (K-233) : 1 pc.</li> <li>• L Shaped Wrench (9) : 1 pc.</li> </ul>		

### Espert 500 Compact Motor Handpiece

NAKANISHI Smart Switch (Blue)



Product Code	7339	Product Name	ENK50C-HR
Attachment	EHR-500	Motor	ENK-500C
Standard Accessories	<ul style="list-style-type: none"> <li>• Collet ø1/8" (CHH-3.175) : 1 pc.</li> <li>• Collet ø2.35 mm (CHH-2.35) : 1 pc.</li> <li>• Wrench (7 x 5.1) : 1 pc. Pin Wrench (K-233) : 1 pc.</li> <li>• L Shaped Wrench (9) : 1 pc.</li> </ul>		

## Espert 500 Torque Set (Ring Type)



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

Product Code	7342	Product Name	ES50T-HR
Attachment	EHR-500	Motor	ENK-500T
Controller	NE96		
Standard Accessories	<ul style="list-style-type: none"> <li>• Controller (NE96) : 1 pc.</li> <li>• Torque Motor Handpiece (ENK50T-HR) : 1 pc.</li> <li>• Collet ø1/8" (CHH-3.175) : 1 pc.</li> <li>• Collet ø2.35 mm (CHH-2.35) : 1 pc.</li> <li>• Handpiece Holder : 1 pc.</li> <li>• Handpiece Stand : 1 pc.</li> <li>• Wrench (7 x 5.1) : 1 pc. Pin Wrench (K-233) : 1 pc.</li> <li>• L Shaped Wrench (9) : 1 pc.</li> </ul>		

### Espert 500 Torque Motor Handpiece

NAKANISHI Smart Switch (Gray)



Product Code	7341	Product Name	ENK50T-HR
Attachment	EHR-500	Motor	ENK-500T
Standard Accessories	<ul style="list-style-type: none"> <li>• Collet ø1/8" (CHH-3.175) : 1 pc.</li> <li>• Collet ø2.35 mm (CHH-2.35) : 1 pc.</li> <li>• Wrench (7 x 5.1) : 1 pc. Pin Wrench (K-233) : 1 pc.</li> <li>• L Shaped Wrench (9) : 1 pc.</li> </ul>		



## System Chart

Product Code	Product Name	
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### Attachment



Ring Type

7182	EHR-500	
------	---------	--

50,000 rpm Max. (\*1)  
40,000 rpm Max. (\*2) Page 1-p24



Lever Type

2912	EHL-401	
------	---------	--

50,000 rpm Max. (\*1)  
40,000 rpm Max. (\*2) Page 1-p24



Torque Type

2973	EHG-400	
------	---------	--

40,000 rpm Max. (\*1)  
30,000 rpm Max. (\*2) Page 1-p25



90° Angle Type

2933	EIC-300	
------	---------	--

40,000 rpm Max. (\*1)  
20,000 rpm Max. (\*2) Page 1-p25



50° Angle Type

2932	EKC-300	
------	---------	--

40,000 rpm Max. (\*1)  
20,000 rpm Max. (\*2) Page 1-p25



90° Angle Torque Type

2923	ERA-270	
------	---------	--

40,000 rpm Max. (\*1)  
20,000 rpm Max. (\*2) Page 1-p25



LUSTER (Reciprocating motion)

1516	ELS-100	
------	---------	--

30,000 rpm Max. (\*1)  
30,000 rpm Max. (\*2) Page 1-p26



MINI-LUSTER (Reciprocating motion)

1554	EML-8	
------	-------	--

40,000 rpm Max. (\*1)  
30,000 rpm Max. (\*2) Page 1-p26



FINE BELT SANDER

1145	EBS-101	
------	---------	--

40,000 rpm Max. (\*1)  
30,000 rpm Max. (\*2) Page 1-p26

• Use ECN-011 or ERG-01 for ELECTER Emax EVOLUTION, ROTUS attachments



Extension Adaptor

1518	ECN-011	
------	---------	--

40,000 rpm Max. (\*1)  
30,000 rpm Max. (\*2) Page 1-p27



Speed Reducer (1/4)

1517	ERG-01	
------	--------	--

40,000 rpm Max. (\*1)  
30,000 rpm Max. (\*2) Page 1-p27

### Speed Reducer



• 1/4 Speed Reducer

1553	ERG-01B	
------	---------	--

40,000 rpm Max. (\*1)  
30,000 rpm 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 rpm

9088	ENK-500C	
------	----------	--



• Torque Motor and Cord  
1,000-50,000 rpm

9089	ENK-500T	
------	----------	--

### Controller



• Espert 500

9793	NE96	
------	------	--

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.07/ø0.98/ø0.897"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.07/ø0.98"

ø0.897"

E3000

— 60,000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.79"

ø0.897"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

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Xpeed

ABT

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## Product Code 9088 COMPACT TYPE MOTOR ENK-500C



**1,000~50,000 rpm**

- Small, lightweight, high-speed brushless DC motor.
- Incorporates the NAKANISHI Smart Switch for easy on/off operation.
- Very low vibration noise and maintenance.
- Weight : 4.06 oz. excluding cord

### Compact Type Motor

Product Code	Product Name	Specifications
9088	ENK-500C	• Output Power : 140W • Maximum Torque : 6.0 cN·m • Cord Length : 4.5 ft

## Product Code 9089 TORQUE TYPE MOTOR ENK-500T



**1,000~50,000 rpm**

- 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 : 5.64 oz. excluding cord

### Torque Type Motor

Product Code	Product Name	Specifications
9089	ENK-500T	• Output Power : 200W • Maximum Torque : 8.7 cN·m • Cord Length : 4.5 ft

## Product Code 7182 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  
Standard Size :  $\phi 1/8"$  (CHH-3.175),  $\phi 2.35$  mm (CHH-2.35) : 1 pc. each  
Optional Collets : CHH-□□ are shown in page (6-p2)  
• Weight : 3.32 oz.
- 50,000 rpm Max. (\*1) 40,000 rpm Max. (\*2)

### Ring Type Attachment

Product Code	Product Name	Standard Accessories
7182	EHR-500	• Collet $\phi 1/8"$ (CHH-3.175), $\phi 2.35$ mm (CHH-2.35) : 1 pc. each • Wrench (7 x 5.1) : 1 pc. • Pin Wrench (K-233) : 1 pc. • L Shaped Wrench (9) : 1 pc.

## Product Code 2912 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  
Standard Size :  $\phi 1/8"$  (CHH-3.175),  $\phi 2.35$  mm (CHH-2.35) : 1 pc. each  
Optional Collets : CHH-□□ are shown in page (6-p2)  
• Weight : 2.47 oz.
- 50,000 rpm Max. (\*1) 40,000 rpm Max. (\*2)

### Lever Type Attachment

Product Code	Product Name	Standard Accessories
2912	EHL-401	• Collet $\phi 1/8"$ (CHH-3.175), $\phi 2.35$ mm (CHH-2.35) : 1 pc. each • Wrench (7 x 5.1) : 1 pc. • Pin Wrench (K-233) : 1 pc.

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

$\phi 1.07"/\phi 0.99"/\phi 0.897"$

E3000

One Piece

E3000

Modular

$\phi 1.18"$

$\phi 1.07"/\phi 0.98"/\phi 0.897"$

E3000

50,000rpm

E4000

3

MA

$\phi 0.897"$

$\phi 1.0"/\phi 0.98"$

$\phi 1.18"$

MS

$\phi 0.75"/\phi 0.79"$

$\phi 0.87"/\phi 0.91"$

$\phi 1.0"/\phi 0.98"$

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

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Product Code **2973**

## TORQUE TYPE ATTACHMENT EHG-400



- Torque type attachment used with  $\phi 1/4$ " chuck diameter as standard and nicely fits in hand-grip.

- Collet  
Standard Size :  $\phi 1/4$ " (CHG-6.35) : 1 pc.  
Optional Collets : CHG-□□ are shown in page (6-p2)
- Weight : 3.88 oz.

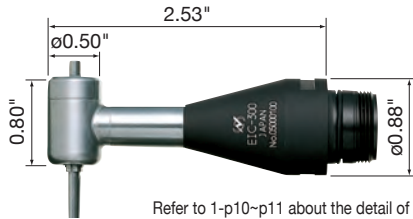
40,000 rpm Max. (\*1) 30,000 rpm Max. (\*2)  
\*Please use it with Speed Reducer.

### Torque Type Attachment

Product Code	Product Name	Standard Accessories
2973	EHG-400	• Collet $\phi 1/4$ " (CHG-6.35) : 1 pc. • Wrench (10 x 10) : 1 pc. • Bar Wrench (K-212) : 1 pc.

Product Code **2933**

## 90° ANGLE ATTACHMENT EIC-300



Refer to 1-p10-p11 about the detail of Accessories.

- 90° Angle Attachment with  $\phi 1/8$ " Collet 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  
Standard Size :  $\phi 1/8$ " (CHC-3.175) : 1 pc.  
Optional Collets : CHC-□□ are shown in page (6-p2)
- Standard Accessories : Rubber Pad, Sandpaper Disk • Weight : 1.90 oz.

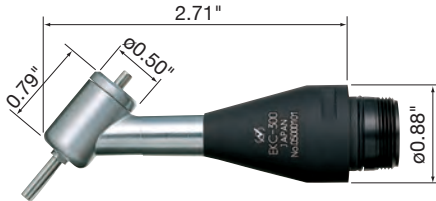
40,000 rpm Max. (\*1) 20,000 rpm Max. (\*2)

### 90° Angle Attachment

Product Code	Product Name	Standard Accessories
2933	EIC-300	• Collet $\phi 1/8$ " (CHC-3.175) : 1 pc. • Chuck Wrench (K-231) : 1 pc. • Wrench (20 x 24) : 1 pc. • Standard Accessories : 1 set

Product Code **2932**

## 50° ANGLE ATTACHMENT EKC-300



Refer to 1-p10-p11 about the detail of Accessories.

- 50° Angle Attachment is suitable for working in corners, cavities, etc.

- Reverse rotation against the motor
- Speed Reduction Ratio : 3/4
- Collet  
Standard Size :  $\phi 1/8$ " (CHC-3.175) : 1 pc.  
Optional Collets : CHC-□□ are shown in page (6-p2)
- Standard Accessories : Rubber Pad, Sandpaper Disk
- Weight : 1.90 oz.

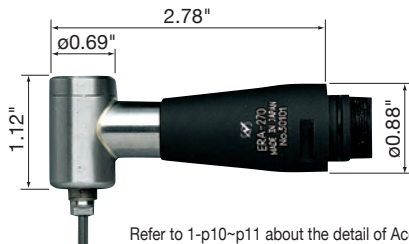
40,000 rpm Max. (\*1) 20,000 rpm Max. (\*2)

### 50° Angle Attachment

Product Code	Product Name	Standard Accessories
2932	EKC-300	• Collet $\phi 1/8$ " (CHC-3.175) : 1 pc. • Chuck Wrench (K-231) : 1 pc. • Wrench (20 x 24) : 1 pc. • Standard Accessories : 1 set

Product Code **2923**

## 90° ANGLE TORQUE ATTACHMENT ERA-270



Refer to 1-p10-p11 about the detail of Accessories.

- 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  
Standard Size :  $\phi 1/8$ " (CHS-3.175) : 1 pc.  
Optional Collets : CHS-□□ are shown in page (6-p4)
- Weight : 3.77 oz.

40,000 rpm Max. (\*1) 20,000 rpm Max. (\*2)

### 90° Angle Torque Attachment

Product Code	Product Name	Standard Accessories
2923	ERA-270	• Collet $\phi 1/8$ " (CHS-3.175) : 1 pc. • Wrench (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 product code.

1-p25

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1/2$ " $\phi 0.98$ " $\phi 0.887$ "
E3000 — One Piece
E3000 — Modular
$\phi 1.18$ "
$\phi 1.07$ / $\phi 0.98$ " $\phi 0.887$ "
E3000 — $\phi 0.000$ rpm
E4000
3
MA
$\phi 0.897$ "
$\phi 1.0$ " $\phi 0.98$ "
$\phi 1.18$ "
MS
$\phi 0.75$ " $\phi 0.79$ "
$\phi 0.87$ " $\phi 0.81$ "
$\phi 1.0$ " $\phi 0.98$ "
4
HES
iSpeed5
HTS
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## Product Code 1516 Reciprocating Motion Polishing Finisher LUSTER ATTACHMENT ELS-100

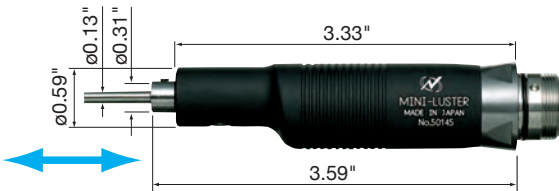


- Reciprocating Stroke (variable) : 0~7,600 times/min (Max.)
  - Perfect for final finishing such as lapping and honing after grinding. Streamlines conventional hand-finishing of metal molds.
  - Reciprocating type compact special polisher for ESPERT motor.
  - Stroke is adjustable from 0~6 mm.
  - Max. tool shank diameter  $\phi 0.25$ " , Screw clamp type.
  - Weight : 1 lb. 7.99 oz.
- 30,000 rpm Max. (\*1) 30,000 rpm Max. (\*2)

### Reciprocating Motion Polishing Finisher LUSTER Attachment

Product Code	Product Name	Standard Accessories
1516	ELS-100	<ul style="list-style-type: none"> <li>• Standard Accessories : 1 set</li> <li>• Allen Wrench (2 mm), (3 mm) : 1 pc. each</li> <li>• Lubrication Oil</li> <li>• Lubrication Nozzle for LUSTER</li> </ul>

## Product Code 1554 Pencil-Type Reciprocating Polishing Finisher MINI-LUSTER ATTACHMENT EML-8

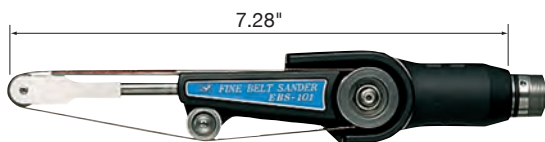


- Reciprocating Stroke (variable) : 0~10,000 times/min (Max.)
  - Stroke Range : 0.8 mm
  - Max. tool shank diameter  $\phi 0.13$ " , Screw clamp type.
  - Weight : 4.59 oz.
- 40,000 rpm Max. (\*1) 30,000 rpm Max. (\*2)

### Pencil-Type Reciprocating Polishing Finisher MINI-LUSTER Attachment

Product Code	Product Name	Stroke Range	Standard Accessories
1554	EML-8	0.8 mm	<ul style="list-style-type: none"> <li>• Standard Accessories : 1 set</li> <li>• Allen Wrench (1.5 mm) : 1 pc.</li> </ul>

## Product Code 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 : 0~3,084 ft/min (Max.)
  - Weight : 12.52 oz.
- 40,000 rpm Max. (\*1) 30,000 rpm Max. (\*2)
- \*Refer to 1-p17 about the detail of Belt.

### FINE BELT SANDER Attachment

Product Code	Product Name	Standard Accessories
1145	EBS-101	<ul style="list-style-type: none"> <li>• 8 mm Belt (3 different kinds) : 2 pcs. each</li> <li>• 6 mm Belt (3 different kinds) : 2 pcs. each</li> <li>• 4 mm Belt (3 different kinds) : 2 pcs. each</li> <li>• Allen Wrench (3 mm) : 1 pc.</li> </ul>

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

$\phi 1.07$ / $\phi 0.99$ / $\phi 0.897$ "

E3000

— One Piece

E3000

— Modular

$\phi 1.18$ "

$\phi 1.07$ / $\phi 0.98$ "

$\phi 0.97$ "

E3000

— 50,000rpm

E4000

3

MA

$\phi 0.897$ "

$\phi 1.0$ "

$\phi 0.98$ "

$\phi 1.18$ "

MS

$\phi 0.75$ "

$\phi 0.79$ "

$\phi 0.87$ "

$\phi 0.91$ "

$\phi 1.0$ "

$\phi 0.98$ "

4

HES

iSpeed5

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# ESPERT 500 SPEED REDUCER & PARTS

## Product Code 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.
- Speed Reduction Ratio 1/4
- Weight : 2.29 oz.
- 40,000 rpm Max. (\*1)
- 30,000 rpm Max. (\*2)

### Speed Reducer (1/4)

Product Code	Product Name	Standard Accessories	
1553	ERG-01B	• Pin Wrench (K-233) : 1 pc.	

## Product Code 1517 SPEED REDUCER (1/4) ERG-01



- The Speed Reducer can be used with the attachments for Emax EVOLUTION and ROTUS you already have.
- Reduces the speed 1/4 and multiplies the torque by 4 times.
- Speed Reduction Ratio 1/4
- Weight : 2.19 oz.
- 40,000 rpm Max. (\*1)
- 30,000 rpm Max. (\*2)

### Speed Reducer (1/4)

Product Code	Product Name	Standard Accessories	
1517	ERG-01	• Pin Wrench (K-233) : 1 pc.	

## Product Code 1518 EXTENSION ADAPTOR ECN-011



- The Adaptor can be used with the attachments for Emax EVOLUTION and ROTUS you already have.
- Speed Ratio 1 : 1
- Weight : 1.09 oz.
- 40,000 rpm Max. (\*1)
- 30,000 rpm Max. (\*2)

### Extension Adaptor

Product Code	Product Name	Standard Accessories	
1518	ECN-011	• Wrench (20 x 24) : 1 pc.	

## ESPERT 500 Spare Parts

Product	Description	Product Code	Product Name	Specifications	
	Foot Pedal	1440	FC-40	• Variable Speed Control Foot Pedal	
	Espert 500 Handpiece Stand	8104	K-274		
	Espert 500 Compact Motor Cord	9093	ENKCD-50C	• Compact Motor Cord • 4.5 ft Long	
	Espert 500 Compact Motor Cord	9095	ENKCD-50C 3M	• Compact Motor Cord • 9.84 ft Long	
	Espert 500 Torque Motor Cord	9094	ENKCD-50T	• Torque Motor Cord • 4.5 ft Long	
	Espert 500 Torque Motor Cord	9096	ENKCD-50T 3M	• Torque Motor Cord • 9.84 ft 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 product code.

1	EmaxEVO
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	ROTUS
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	PRESTO II
	Sheenus ZERO
	Sonic-Cutter ZERO
2	iSpeed3
	E2000 ø1.07"/ø0.98"/ø0.897"
	E3000 — One Piece
	E3000 — Modular
	ø1.18"
	ø1.07"/ø0.98" ø0.897"
	E3000 — 60,000rpm
	E4000
3	MA
	ø0.897"
	ø1.0" ø0.98"
	ø1.18"
	MS
	ø0.75" ø0.79"
	ø0.87" ø0.91"
	ø1.0" ø0.98"
4	HES
	iSpeed5
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E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 — 60,000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.87" ø0.81"
ø1.0" ø0.98"
<b>4</b>
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## ROTUS

30,000 rpm

### MODULAR TYPE HIGH TORQUE AIR GRINDER

- High torque air motor assembled with special vane mechanism.
- Two types of air motors can be selected depending on the application.
- 1/4 and 1/15 Speed Reducers (RG-01, RG-02) can be connected.
- **Lubricating oil is required.**



## IMPULSE

60,000 rpm

### PENCIL TYPE AIR GRINDER

- Durable and quiet high-efficient air grinder.
- The IMPULSE Series also offers 60 degree and 90 degree models. Choose the type that best fits your application requirements.
- **Lubricating oil is required.**



## PRESTO II

320,000 rpm

### ULTRA-PRECISION HIGH SPEED AIR TURBINE GRINDER

- Most suitable for delicate processing works due to no lube air turbine handpiece.



1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.0"/ø0.98"/ø0.897"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.07"/ø0.98"

ø0.897"

E3000

— 60,000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.739"

ø0.897"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

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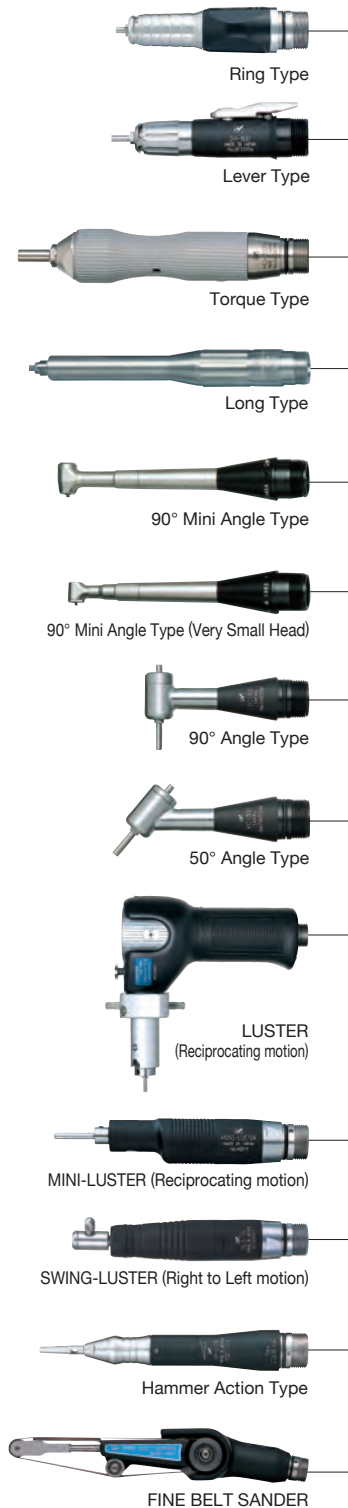
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### ROTUS System Chart

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E3000 — One Piece
E3000 — Modular
ø1.18" ø1.07"/ø0.98" ø0.897"
E3000 — 50,000rpm
E4000
<b>3</b>
MA ø0.897" ø1.0" ø0.98" ø1.18"
MS ø0.75" ø0.79" ø0.87" ø0.91" ø1.0" ø0.98"
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Product Code	Product Name	
<b>1144</b>	<b>IR-310</b>	
40,000 rpm Max. (*1) 40,000 rpm Max. (*2) <span style="float:right">Page 1-p8</span>		
<b>7097</b>	<b>IH-300</b>	
40,000 rpm Max. (*1) 40,000 rpm Max. (*2) <span style="float:right">Page 1-p8</span>		
<b>2810</b>	<b>HG-200</b>	
30,000 rpm Max. (*1) 27,000 rpm Max. (*2) <span style="float:right">Page 1-p9</span>		
<b>2904</b>	<b>BMH-300</b>	
35,000 rpm Max. (*1) 35,000 rpm Max. (*2) <span style="float:right">Page 1-p9</span>		
<b>1012</b>	<b>MFC-300S</b>	
15,000 rpm Max. (*1) 15,000 rpm Max. (*2) <span style="float:right">Page 1-p9</span>		
<b>1013</b>	<b>MFC-300M</b>	
15,000 rpm Max. (*1) 15,000 rpm Max. (*2) <span style="float:right">Page 1-p9</span>		
<b>2900</b>	<b>IC-300</b>	
35,000 rpm Max. (*1) 20,000 rpm Max. (*2) <span style="float:right">Page 1-p10</span>		
<b>2901</b>	<b>KC-300</b>	
35,000 rpm Max. (*1) 20,000 rpm Max. (*2) <span style="float:right">Page 1-p10</span>		
<b>1302</b>	<b>LS-100</b>	
30,000 rpm Max. (*1) 30,000 rpm Max. (*2) <span style="float:right">Page 1-p12</span>		
<b>1307</b>	<b>ML-8</b>	
35,000 rpm Max. (*1) 30,000 rpm Max. (*2) <span style="float:right">Page 1-p13</span>		
<b>1380</b>	<b>SLS-16</b>	
35,000 rpm Max. (*1) 24,000 rpm Max. (*2) <span style="float:right">Page 1-p13</span>		
<b>8060</b>	<b>HA-500</b>	
20,000 rpm Max. (*1) 16,000 rpm Max. (*2) <span style="float:right">Page 1-p16</span>		
<b>1146</b>	<b>KBS-101</b>	
35,000 rpm Max. (*1) 35,000 rpm Max. (*2) <span style="float:right">Page 1-p16</span>		

### Attachment



### Speed Reducer · Extension Joint

Extension Joint	
<b>1015</b>	<b>CN-01</b>
35,000 rpm Max. (*1) <span style="float:right">Page 1-p18</span> 35,000 rpm Max. (*2)	
1/4 Speed Reducer	
<b>1009</b>	<b>RG-01</b>
30,000 rpm Max. (*1) <span style="float:right">Page 1-p18</span> 30,000 rpm Max. (*2)	
1/15 Speed Reducer	
<b>1010</b>	<b>RG-02</b>
30,000 rpm Max. (*1) <span style="float:right">Page 1-p18</span> 30,000 rpm Max. (*2)	

\*May be connected between the motor and the attachment as required for increased torque.

• Air Motor with Chip Air Mechanism 3,000~30,000 rpm	
<b>1003</b>	<b>IM-300</b>
<span style="float:right">Page 1-p33</span>	
• Air Motor with 360° Twist-Free Joint 3,000~30,000 rpm	
<b>1004</b>	<b>IM-301</b>
<span style="float:right">Page 1-p33</span>	

• Air Line kit	
<b>4507</b>	<b>AL-H1207F</b>
*This air line kit is designed for use with the <span style="float:right">Page 5-p2</span> AFC-45 foot control, Product Code AF10045.	
• Foot Control	
<b>1064</b>	<b>AFC-45</b>
<span style="float:right">Page 6-p9</span>	

\*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.



## Ultra-Precision High-Torque Air Grinder

- 30,000 rpm
- High torque air motor assembled with special vane mechanism.
- Two types of air motors can be selected depending on the application.
- 1/4 and 1/15 Speed Reducers (RG-01, RG-02) can be connected.

### One Touch Tool Changing

- Ring Type (IR-310)  
Ring operated open/close chuck



### A Special Rotary Vane Air Motor is Incorporated

The air motor utilizes a special vane design which keeps constant speed even under load providing stable grinding and polishing operation.

### Twist Free Hose

To prevent twisting of the hose, 360° Twist-Free Joint connects the motor and the hose.

### Wide-range of Collet Sizes

Various sizes ranging from ultra-small diameter (0.3 mm) are available for each attachment. Furthermore, collet replacement can be easily performed without wrench.

### Ring Switch

Assembled with ON/OFF, speed control and FWD./REV. control ring switch.

### 13 Types of Attachments for All Types of Applications

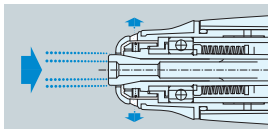
Capable of infinite applications with 13 different attachments.

\*Interchangeable with attachments from the Emax EVOLution series.



### Special Dust Protection Mechanism (patented)

The chuck section of ROTUS has a special built-in dust protection mechanism that prevents entry of foreign matter such as chips and provides superior durability.



Attachment IR-310 + Air motor IM-301

### Specifications

Speed	: Max. 30,000 rpm (58PSI)
Proper Air Pressure	: 44~65PSI
Air Consumption	: 2.65CFM
Output Power	: 46W (motor)
Max. Torque	: 6.6 cN·m (58PSI)
Motor	: Air motor IM-301
Dimensions	: Air motor (IM-301) + Attachment (IR-310) See left figures
Weight	: Air motor (IM-301) + Attachment (IR-310) : 7.83 oz.

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000  
ø1.07"/ø0.98"/ø0.897"

E3000  
— One Piece

E3000  
— Modular

ø1.18"

ø1.07"/ø0.98"  
ø0.897"

E3000  
— 60,000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.79"

ø0.87"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xspeed

ABT

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E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07"/ø0.98" / ø0.897"
E3000 — 60,000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0" / ø0.98"
ø1.18"
MS
ø0.75" / ø0.79"
ø0.897" / ø0.91"
ø1.0" / ø0.98"
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Product Code **1164** **ROTUS STANDARD SET (Ring Type)**



The ROTUS System is a hand-held grinder with an energy saving air motor. Since it is an air driven system, there is virtually no heat generation resulting in excellent durability. Select from a variety of attachments depending on the application.

**30,000 rpm**

Product Code <b>1164</b>	Product Name <b>R301-IR</b>
	Attachment <b>IR-310</b>
	Motor <b>IM-301</b>
Standard Equipment	<ul style="list-style-type: none"> <li>Air Grinder (IM-301+IR-310) : 1 pc.</li> <li>Collet ø1/8" (CHH-3.175), ø2.35 mm (CHH-2.35) : 1 pc. each</li> <li>Air Line Kit (AL-H1207F) : 1 pc.</li> <li>Foot Control (AFC-45) : 1 pc.</li> <li>Hose for Piping (K-275) 6 ft : 1 pc.</li> <li>Lubricating Oil (K-211) : 1 pc.</li> <li>Wrench (7 x 5.1) : 1 pc.</li> <li>Pin Wrench (K-233) : 2 pcs.</li> <li>L Shaped Wrench (9) : 1 pc.</li> </ul>

## Motor for ROTUS (Pneumatically Driven)

### Air motor designed for high-efficiency

To achieve high torque, ROTUS air motor is assembled with micron precision between the vanes and the internal surface of cylinder using NAKANISHI's proprietary techniques. This high performance air motor with minimal power loss from load fluctuation has excellent performance in its grinding stability. Moreover, the motor with minimal air consumption runs quietly and the energy-saving mechanism makes it possible to operate with a 1 hp (0.75KW) air compressor.

### Air Cooling System generates no heat for a continuous operation

The motor prevents heat generation and expansion of metal by air cooling system and provides stable rotation speed.

### Light-weight and compact design

The motor with attachment IR-310 is only 7.83 oz. Its light-weight and well balanced design provides excellent grinding performance.

### Assembled with Speed Control and Forward/Reverse Control Ring

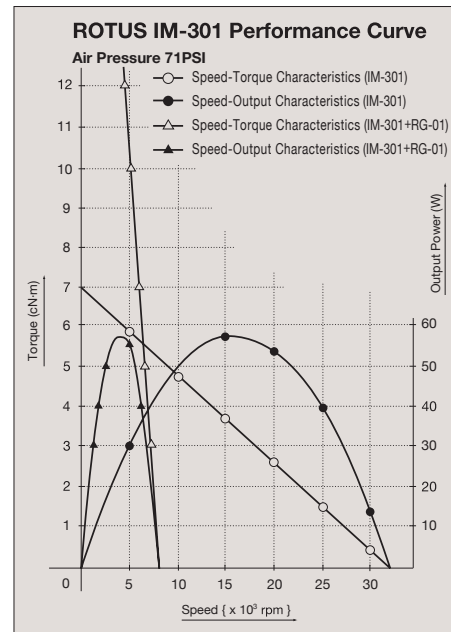
Forward/Reverse Rotating Direction Control Ring located at the end of the motor can control the motor speed as well.

### Speed control by Foot Control

Fine adjustment of variable speed can be controlled by Foot Control.

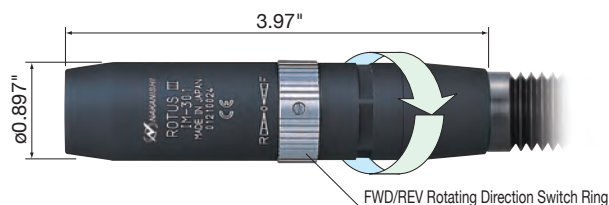
### Excellent quietness with Silencer

By attaching the silencer to the end of the exhaust air tubing, the motor is operated extremely quiet.



Product Code **1004**

## AIR MOTOR IM-301 (with Twist-Free Joint Mechanism)



**3,000~30,000 rpm**

### Air Motor with 360° Twist-Free Joint Mechanism

- Adopted Twist-Free Joint mechanism between the motor and the hose has solved the problem of hose twisting.
- Weight : 4.59 oz. excluding hose

Product Code	Product Name	Standard Accessories	Price
1004	IM-301	• Hose (K-206) : 6 ft • Silencer (K-209) • Pin Wrench (K-233) : 1 pc.	445.00

Product Code **1003**

## AIR MOTOR IM-300 (with Chip Air Mechanism)



**3,000~30,000 rpm**

### Air Motor with Chip Air Mechanism

- Air motor IM-300 with Chip Air mechanism blows away the cutting dust with clean air coming through the top end of the attachment. The handheld cutting work remains cool by the chip air allowing comfort through out the working process.  
**(This is only with the attachment IH-300)**
- Weight : 4.59 oz. excluding hose

Product Code	Product Name	Standard Accessories	Price
1003	IM-300	• Hose (K-207) : 6 ft • Silencer (K-209) • Pin Wrench (K-233) : 1 pc.	445.00

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.07"/ø0.98"/ø0.897"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.07"/ø0.98"

ø0.897"

E3000

— ø0.000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.79"

ø0.87"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

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- 60,000 rpm ● Durable and quiet high-efficient air grinder.
- The IMPULSE Series also offers 60 degree and 90 degree models. Choose the type that best fits your application requirements.

Product Code **2990** **STRAIGHT IMPULSE NSP-601A** 60,000 rpm



The air motor is assembled with a special vane design which keeps constant speed even under load providing stable grinding and polishing operation.

- The shape of the grinder is designed for sensitive finger touch control toward the top of the cutting tool.
- Smooth start is guaranteed.
- The safety design of clamping the chuck up to 1.14" maintains stable rotation of the cutting tool.

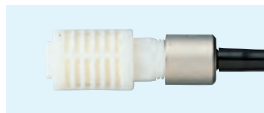
Product Code	Product Name	Standard Accessories
2990	NSP-601A	• Collet $\phi 1/8"$ (CHS-3.175) : 1 pc. • Wrench (8 x 5) : 1 pc. • Bar Wrench (K-212) : 1 pc. • Hose (K-213) 4.5 ft • Silencer (K-208) : 1 pc.

## Features

- The shape of the grinder is specially designed for sensitive finger touch control toward the top of the cutting tool. The front part of the NSP-601 model is made of stainless steel ; the back portion of aluminum alloy. The exhaust air line hose with silencer keeps the noise level to a minimum. To prevent twisting of the double line hose, a 360 degree twist-free joint connects the motor and the hose.

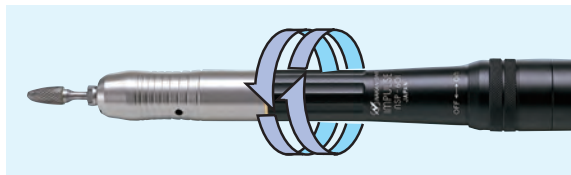
### ● Excellent Silencer

Silencer on the exhaust air hose keeps the grinder very quiet.



### ● Free From Twisting Hose

To prevent the twisting of hose, 360° Twist-Free Joint connects the motor and the hose.



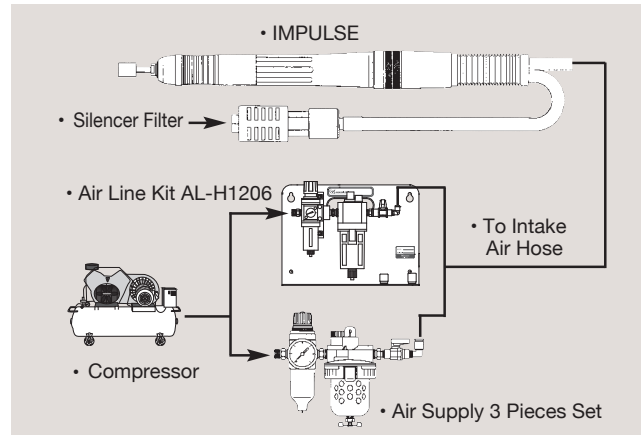
### ● Mounting & Dismounting Cutting Tool

Insert the wrench provided into the hole on the spindle and open or close the chuck with the Chuck Wrench to exchange the cutting tool.

### ● Exchangeable Collet

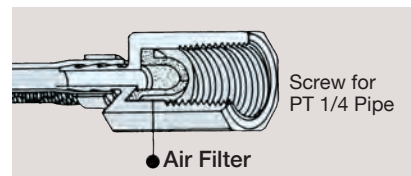
- Standard Size :  $\phi 1/8"$  (CHS-3.175)
- Optional Collets : CHS-□□ are shown in page (6-p4)

## ● Set-Up Drawing



- Use Air Line Kit AL-H1206 or air supply 3 pieces set. (Air Filter, Air Regulator, Lubricator)

## ● Connecting Part To Air Line Kit



## Specifications

Rotating Speed	: 60,000 rpm
Air Consumption	: 5.83CFM
Proper Air Pressure	: 58~87PSI
Hose Length	: 4.5 ft
Weight	: 5.82 oz.
Output	: 70W
Intake Air Hose Length	: 4.5 ft
Eraser Hose Length	: 3.9 ft

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

$\phi 1.07"$   $\phi 0.99"$   $\phi 0.897"$

E3000

— One Piece

E3000

— Modular

$\phi 1.18"$

$\phi 0.75"$   $\phi 0.98"$

$\phi 0.897"$

E3000

— 60,000rpm

E4000

3

MA

$\phi 0.897"$

$\phi 1.0"$   $\phi 0.98"$

$\phi 1.18"$

MS

$\phi 0.75"$   $\phi 0.79"$

$\phi 0.897"$

$\phi 1.0"$   $\phi 0.98"$

4

HES

iSpeed5

HTS

PLANET

Xpeed

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AIR LINE KIT

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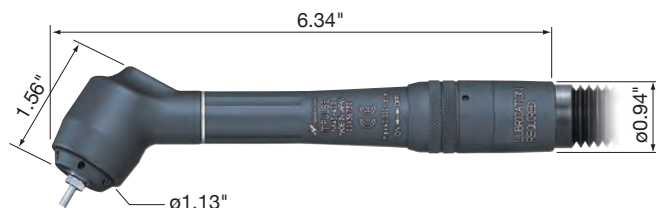
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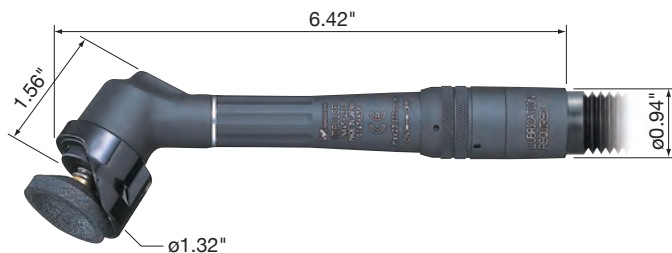
**Product Code 2905 60° IMPULSE NA45-400 40,000 rpm**



- Angled model housings are all aluminum alloy.
- Collet  
Standard Size : ø1/8" (CHS-3.175)  
Optional Collets : CHS-□□ are shown in page (6-p4)
- Weight : 7.41 oz.

Product Code	Product Name	Standard Accessories
2905	NA45-400	• Collet ø1/8" (CHS-3.175) : 1 pc. • Wrench (8 x 5) : 1 pc. • Bar Wrench (K-212) : 1 pc. • Hose (K-213) 4.5 ft • Silencer (K-208) : 1 pc.

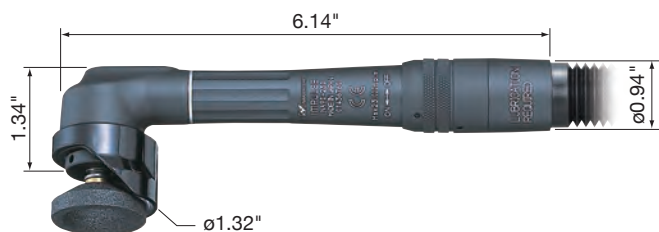
**Product Code 2906 60° IMPULSE HIGH TORQUE NA45-230 23,000 rpm**



- Angled model housings are all aluminum alloy.
- Collet  
Standard Size : ø1/8" (CHS-3.175)  
Optional Collets : CHS-□□ are shown in page (6-p4)
- Weight : 6.70 oz.

Product Code	Product Name	Standard Accessories
2906	NA45-230	• Collet ø1/8" (CHS-3.175) : 1 pc. • Special Grindstone Arbor (NCH-01) : 1 pc. • Wrench (8 x 5) : 1 pc. • Bar Wrench (K-212) : 2 pcs. • Allen Wrench (1.5 mm) : 1 pc. • Hose (K-213) 4.5 ft • Silencer (K-208) : 1 pc. • Cup Wheel (NK06104, NK45800) : 1 pc. each • Mounted Point (42423) : 1pc. • Rubber Pad (NK11033) : 1 pc. • Sandpaper Disk (Grits #120, 320, 600, 1000) : 2 pcs. each

**Product Code 2907 90° IMPULSE NA90-230 23,000 rpm**



- Angled model housings are all aluminum alloy.
- Collet  
Standard Size : ø1/8" (CHS-3.175)  
Optional Collets : CHS-□□ are shown in page (6-p4)
- Weight : 6.70 oz.

Product Code	Product Name	Standard Accessories
2907	NA90-230	• Collet ø1/8" (CHS-3.175) : 1 pc. • Special Grindstone Arbor (NCH-01) : 1 pc. • Wrench (8 x 5) : 1 pc. • Bar Wrench (K-212) : 2 pcs. • Allen Wrench (1.5 mm) : 1 pc. • Hose (K-213) 4.5 ft • Silencer (K-208) : 1 pc. • Cup Wheel (NK06104, NK45800) : 1 pc. each • Mounted Point (42423) : 1pc. • Rubber Pad (NK11033) : 1 pc. • Sandpaper Disk (Grits #120, 320, 600, 1000) : 2 pcs. each

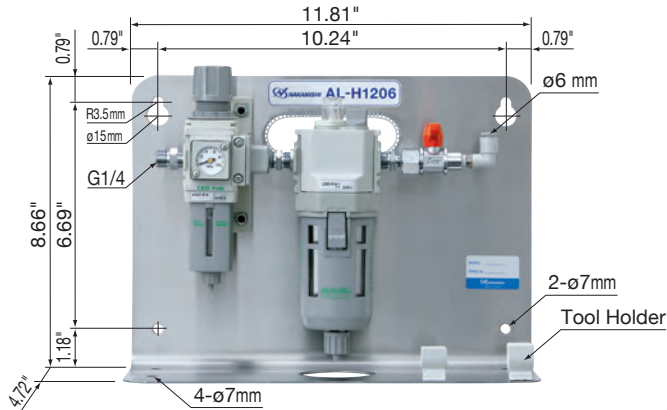
<b>1</b>
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 ø1.07"/ø0.98"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 — ø0.000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.739"
ø0.897" ø0.91"
ø1.0" ø0.98"
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
<b>5</b>
AIR LINE KIT
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# IMPULSE AIR LINE KIT & PARTS

- When using IMPULSE series, use with the air line kit AL-H1206 shown below or equivalent air line kit in order to provide proper air pressure and lubrication to the air motor.

\*All lubricators offered by NAKANISHI are micro-mist type. They are specially designed to supply about 3% of visual drip rate (about 3 drops/min) into the secondary side (air motor).

**Product Code 4506 AIR LINE KIT AL-H1206 (Automatic Lubricating Device)**



- Supplies smooth air flow and automatic lubrication, ensuring stable speed and power.
- Adjustable lubrication and air pressure settings provide longevity to the Air Grinder.
- Best for grinding and polishing applications. This compact Air Line Kit allows for portability or stationary mounting as well as a carrier for the Impulse.

**Air Line Kit (For ø6 mm Hose · Filter Mesh 5 µm)**

Product Code	Product Name	Standard Equipment · Accessories
4506	AL-H1206	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge · Lubricator</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> <li>• Lubricating Oil (K-211) : 1 pc.</li> </ul>

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.07"/ø0.98"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 — 60,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.87" ø0.81"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
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## Optional Accessories

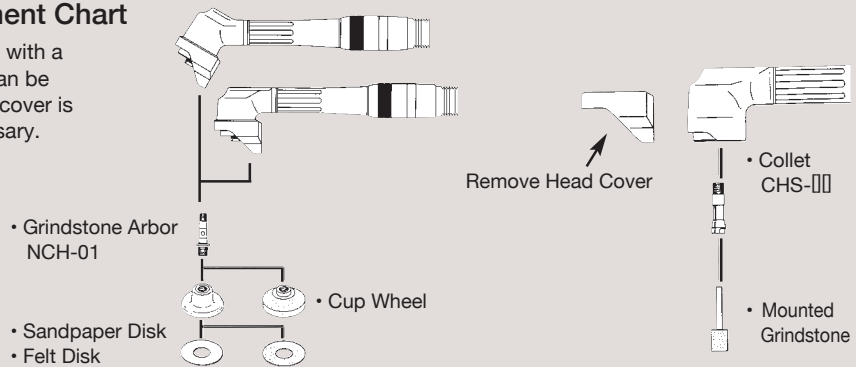
Product	Product Code	Grit	O.D. (mm)	Description • Product Name
	64830	# 36	ø 20	Standard
	64831	# 46		Hard
	64832	# 80		Standard
	64835	# 36	ø 30	Standard
	64836	# 46		Hard
	64837	# 80		Standard
	64838	# 80		Hard
	64842	# 80	ø 30	Polishing Sander (5 pcs./pack)
	64844	# 120		
	64846	# 180		
	64847	# 240		
	64849	# 400		

Product	Product Code	Grit	O.D. (mm)	Description • Product Name
	64821	—	ø 20	Rubber Pad (5 pcs./pack) (use sandpaper)
	64822	—	ø 30	
	42423	# 100	ø 4	Mounted Point (10 pcs./pack)

### • The Exchangeable Attachment Chart

If you replace the Cup Grinding Stone with a ø1/8" Collet, a mounted grindstone can be used. When using a Collet, the wheel cover is removable for better visibility if necessary.

\*When using a rubber pad, slow down the rotating speed.

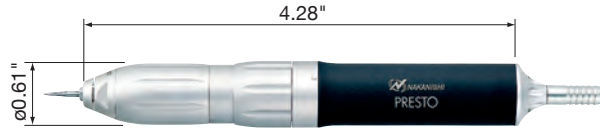


## IMPULSE Spare Parts

Product	Description	Product Code	Product Name	Fit to
	Grindstone Arbor (for Cup Wheel & Rubber Pad)	1045	NCH-01	IMPULSE
	Head Cover	1043	CNA	IMPULSE
	Hose 4.5 ft	1038	K-213	IMPULSE
	Silencer Small (w/Metal Fittings)	1061	K-208	IMPULSE
	Wrench 8 x 5 mm (0.31" x 0.20")	2012	—	IMPULSE
	Bar Wrench (2.83")	2013	K-212	IMPULSE
	Allen Wrench (1.5 mm)	—	—	IMPULSE
	Lubricating Oil (4 oz.)	AA10478C	K-211	For Air Line Kit AL-H1206
	Lubricating Oil (32 oz.)	AA10480C	K-202	For Air Line Kit AL-H1206

- 320,000 rpm
- Ultra-high speed no lube air turbine handpiece ideal for delicate processing application.
- Chip air blows away the cutting powder and cools the cutting tool.
- Built-in dust protect mechanism developed by NAKANISHI ensures long durability.

Product Code **1125** **PRESTO II STANDARD SET**



- PRESTO II is a ultra high speed 320,000 rpm non-lube air turbine. It is most suitable for precision processing works such as small precision parts, ceramic, correction of printed circuit board, etc. due to its non-lube handpiece. Flexible tubing ensures excellent workability reducing fatigue to the operator's hand for long continuous use.



- NAKANISHI's Own Dust Protection Mechanism Chip Air Mechanism blows away the cutting powder to improves cutting efficiency. It also reduces the heat generated by cutting to extend the service life of the bur.

#### Specifications

Rotating Speed	: 320,000 rpm
Proper Air Pressure	: 36PSI
Weight	: 2.50 oz. (w/o Hose)
Inside Diameter	: $\phi$ 1.6 mm Bur Only
Air Consumption	: 1.41CFM

#### PRESTO II Standard Set

Product Code	Product Name	Standard Equipment
<b>1125</b>	<b>PR2-304S</b>	<ul style="list-style-type: none"> <li>• Presto Handpiece (PR-304) : 1pc.</li> <li>• Air Line Kit (PR2-06) : 1pc.</li> <li>• Foot Control (AFC-40) : 1pc.</li> <li>• Handpiece Holder (Z014) : 1pc.</li> </ul>

Product	Product Code	Product Name	Standard Accessories
	<b>1122</b>	<b>PR-304</b>	• 6 ft Hose

#### PRESTO II Spare Parts

Product	Product Code	Description · Product Name	Specifications
	<b>Z307015</b>	<b>PRESTO II Air Line Kit PR2-06</b> (w/o Lubricator · Filter Mesh 5 $\mu$ m)	
	<b>1124</b>	<b>PRESTO Foot Control AFC-40</b>	
	<b>1120</b>	<b>PRESTO II Cartridge PR-03</b>	
	<b>Z101240</b>	<b>Piping Hose K-237</b>	<ul style="list-style-type: none"> <li>• 6 ft Long</li> <li>• <math>\phi</math>0.24"</li> </ul>
	<b>T815220</b>	<b>Air Turbine Hose K-238</b>	<ul style="list-style-type: none"> <li>• 6 ft Long</li> <li>• <math>\phi</math>0.20"</li> </ul>
	<b>2002</b>	<b>Pin Wrench T-751</b>	

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

$\phi$ 1.0"/ $\phi$ 0.99"/ $\phi$ 0.987"

E3000

— One Piece

E3000

— Modular

$\phi$ 1.18"

$\phi$ 1.07"/ $\phi$ 0.98"

$\phi$ 0.97"

E3000

— 50,000rpm

E4000

3

MA

$\phi$ 0.897"

$\phi$ 1.0"

$\phi$ 0.98"

MS

$\phi$ 0.75"

$\phi$ 0.79"

$\phi$ 0.87"

$\phi$ 0.91"

$\phi$ 1.0"

$\phi$ 0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

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## Sheenus ZERO

19 - 29 KHz

### ULTRASONIC POLISHER

- Sheenus ZERO can be used for grinding, polishing and mirror finishing on a wide range of materials from aluminum dies to cemented carbide dies. It is also perfect for plastic molds, press, casting, forging, trimming and header dies.
- This tool quickly removes hard layer of EDM deposits and polishes difficult areas such as complex corners and ribs.



1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.07"/ø0.98"/ø0.897"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.07"/ø0.98"

ø0.897"

E3000

— 60,000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.739"

ø0.897"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

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- Sheenus ZERO can be used for grinding, polishing and mirror finishing on a wide range of materials from aluminum dies to cemented carbide dies. It is also perfect for plastic molds, press, casting, forging, trimming and header dies.
- This tool quickly removes hard layers of EDM deposits and polishes difficult areas such as complex corners and ribs.
- Capabilities include bur removal, grinding and polishing of precision molds, dies electronic and ceramic components.

### Product Code **7775** SHEENUS ZERO STANDARD SET



#### Specifications

Controller Model	: NE330 120V
Power Source	: AC120V/240V, 50-60Hz
Power consumption	: 100VA
Dimensions	: W6.34" x D10.08" x H3.31"
Oscillation frequency	: 19 KHz - 29 KHz
Power conditioning	: Continuous variable type
Frequency control	: Auto-tracking type
Output power	: UNCLAMP mode Max. 45W
	: CLAMP mode Max. 20W
Weight	: 3 lb. 5 oz.
Handpiece Model	: US-50P
Oscillator	: PZT piezoelectric type
Attachment fixing	: M6 screw
Cable length	: 6 ft
Dimensions	: ø0.63" (Max ø1.10) x L5.28"
Weight	: 5.29 oz. (excluding cable)



#### Sheenus ZERO Standard Set

Product Code	Product Name	Standard Equipment
<b>7775</b>	<b>US-50PS 120V</b>	<ul style="list-style-type: none"> <li>• Controller (NE330 120V) • Ultrasonic Handpiece (US-50P) • Power Cable</li> <li>• Included Accessories: 1 set [ Tip Holder (60902, 60922) 2 pcs., Ceramic fiber grindstone (60735) 1 pc., Electroplated diamond file (60101) 1 pc.]</li> <li>• Tool box (plastic): 1 pc. • Wrench (10 mm)</li> <li>• Allen Wrench (2.5 mm) • Foot Pedal (FC-24) : 1 pc. • Fuse AC120V (T1 .6AH 250V) : 2 pcs.</li> </ul>

### Product Code **7778** CONTROLLER NE330 120V



- Power Level Indicator
- 2 Mode Display Selection
- Easy Touch Function Switches
- Powerful and Constant  
Maximum output of 45W (Frequency 19 - 29 KHz) and constant output power.

Product Code	Product Name	Standard Accessories
<b>7778</b>	<b>NE330 120V</b>	• Fuse AC120V (T1.6AH 250V) : 2 pcs.

### Product Code **7780** HANDPIECE US-50P







- Ergonomically comfortable and lightweight for effortless work over long periods.
- Light, resin body ergonomically designed to provide precise control while operating.

Product Code	Product Name	Specifications
<b>7780</b>	<b>US-50P</b>	<ul style="list-style-type: none"> <li>• Oscillator : PZT piezoelectric type</li> <li>• Attachment fixing : M6 screw</li> <li>• Cable length : 6 ft (2.12 oz.)</li> <li>• Dimensions : ø0.63" (Max. ø1.10") x L5.28"</li> <li>• Weight : 5.29 oz. (excluding cable)</li> </ul>

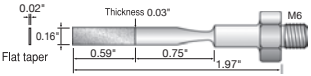
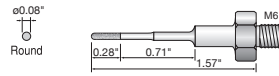
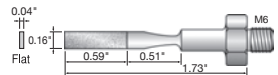
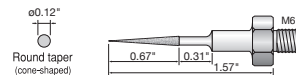
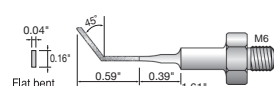
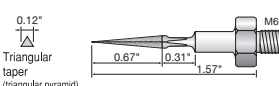
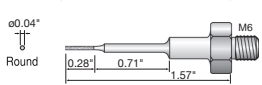
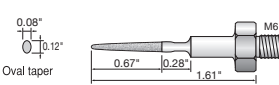
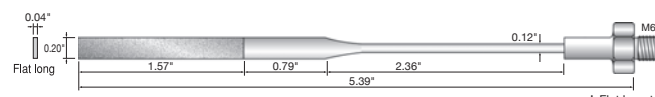
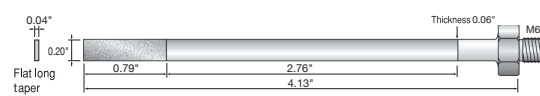
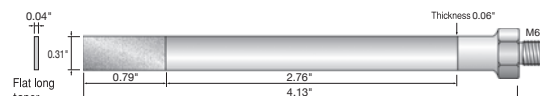
Tip holder and Ceramic fiber grindstone in this picture are not provided when only handpiece US-50P is purchased.

## Sheenus ZERO Spare Parts

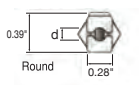
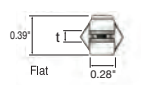
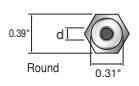
Product	Product Code	Description
	8103	FC-24 Foot Pedal (ON/OFF switch only)
	8104	K-274 Handpiece Stand

Product	Description
	Wrench - 10mm
	Allen Wrench - 2.5mm


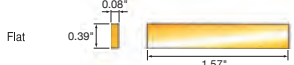
### Electroplated diamond file (comes with 1 piece)

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# 320	60116																		
# 600	60117																		
	<table border="1"> <tbody> <tr> <td># 200</td> <td>60231</td> </tr> <tr> <td># 320</td> <td>60232</td> </tr> <tr> <td># 600</td> <td>60233</td> </tr> </tbody> </table>	# 200	60231	# 320	60232	# 600	60233		<table border="1"> <tbody> <tr> <td># 200</td> <td>60235</td> </tr> <tr> <td># 320</td> <td>60236</td> </tr> <tr> <td># 600</td> <td>60237</td> </tr> </tbody> </table>	# 200	60235	# 320	60236	# 600	60237				
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# 320	60232																		
# 600	60233																		
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# 320	60236																		
# 600	60237																		

### Special tip holder (2 piece pack)\*\*

	<table border="1"> <thead> <tr> <th>Grain diameter</th> <th>Product Code</th> </tr> </thead> <tbody> <tr> <td>d=ø0.08"</td> <td>60901</td> </tr> <tr> <td>d=ø0.12"</td> <td>60902</td> </tr> <tr> <td>d=ø0.126"</td> <td>60904</td> </tr> <tr> <td>d=ø0.13"</td> <td>60903</td> </tr> </tbody> </table>	Grain diameter	Product Code	d=ø0.08"	60901	d=ø0.12"	60902	d=ø0.126"	60904	d=ø0.13"	60903		<table border="1"> <thead> <tr> <th>Grain diameter</th> <th>Product Code</th> </tr> </thead> <tbody> <tr> <td>t=ø0.03"</td> <td>60921</td> </tr> <tr> <td>t=ø0.04"</td> <td>60922</td> </tr> <tr> <td>t=ø0.08"</td> <td>60923</td> </tr> <tr> <td>t=ø0.12"</td> <td>60924</td> </tr> <tr> <td>t=ø0.126"</td> <td>60925</td> </tr> </tbody> </table>	Grain diameter	Product Code	t=ø0.03"	60921	t=ø0.04"	60922	t=ø0.08"	60923	t=ø0.12"	60924	t=ø0.126"	60925
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Grain diameter	Product Code																								
t=ø0.03"	60921																								
t=ø0.04"	60922																								
t=ø0.08"	60923																								
t=ø0.12"	60924																								
t=ø0.126"	60925																								
	<table border="1"> <tbody> <tr> <td>d=ø0.08"</td> <td>60911</td> </tr> <tr> <td>d=ø0.12"</td> <td>60912</td> </tr> <tr> <td>d=ø0.126"</td> <td>60913</td> </tr> </tbody> </table>	d=ø0.08"	60911	d=ø0.12"	60912	d=ø0.126"	60913																		
d=ø0.08"	60911																								
d=ø0.12"	60912																								
d=ø0.126"	60913																								

### Brass lapping tip (5 piece pack)\*\*

	<table border="1"> <thead> <tr> <th>Grain diameter</th> <th>Product Code</th> </tr> </thead> <tbody> <tr> <td>d=ø0.08"</td> <td>60801</td> </tr> <tr> <td>d=ø0.12"</td> <td>60802</td> </tr> </tbody> </table>	Grain diameter	Product Code	d=ø0.08"	60801	d=ø0.12"	60802
Grain diameter	Product Code						
d=ø0.08"	60801						
d=ø0.12"	60802						
	<table border="1"> <tbody> <tr> <td>60805</td> </tr> </tbody> </table>	60805					
60805							

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000
ø1.07"/ø0.98"/ø0.897"
E3000
- One Piece
E3000
- Modular
ø1.18"
ø1.07"/ø0.98"/ø0.897"
E3000
- ø0.000rpm
E4000
3
MA
ø0.897"
ø1.0"/ø0.98"
ø1.18"
MS
ø0.75"/ø0.79"
ø0.897"/ø0.91"
ø1.0"/ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
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1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.07/ø0.98/ø0.897"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.07/ø0.98"

ø0.897"

E3000

— 60,000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.79"

ø0.87"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

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## Sonic Cutter ZERO

38 - 40 kHz

### ULTRASONIC CUTTER

- Sonic Cutter ZERO's vibration-free operation ensures accurate and sharp cutting finishes. Its ergonomic design reduces hand fatigue for long and continuous operation.
- The output power auto adjusts to load and constant frequency provides steady cutting results.





# Sonic Cutter ZERO

ULTRASONIC CUTTER

ULTRASONIC

- Effortlessly perform intricate and Accurate Cutting
- Vibration-Free Operation Ensures Accurate and Sharp Cutting Finishes

## Product Code **7782** SONIC CUTTER ZERO STANDARD SET



### Specifications

Controller Model	: 7782
Dimensions	: W 6.34 x D 10.08 x H 3.31 in.
Oscillation frequency	: 38 kHz - 40 kHz
Frequency Control	: Auto-tracking system
Output	: 30 W
Output Adjustment	: 21 steps variable
Rated input	: AC 100 - 240V
Weight	: 3.09 lbs
Handpiece Model	: UA-40C
Oscillator	: Bolt-clamped Langevin type
Setting the Blade	: screwed the blade W 0.16 x thickness 0.015 in.
Cable Length	: 118 in.
Dimensions	: $\phi$ 0.984 in. x L 6.54 in.
Weight	: 120 g (excluding cable)

### Sonic Cutter ZERO Standard Set

Product Code	Product Name	Standard Equipment
<b>7782</b>	UA-40C Set	<ul style="list-style-type: none"> <li>• Controller: 1 pc.</li> <li>• Handpiece: 1 pc.</li> <li>• Spare blades (BDC-200P 30°): 40 pcs.</li> <li>• Hexagon wrench (0.0787 in.): 2 pcs.</li> <li>• Spare set screws (M4 x P0.7 x L4): 4 pcs.</li> <li>• Spare fuse (T1.6AH 250V): 2 pcs.</li> <li>• O-ring: 1 pc.</li> <li>• Main power cord (78.74 in.): 1 pc. (Plug type: 120V)</li> </ul>

## Product Code **7785** CONTROLLER 120V



- Output Power Auto Adjusts to Load
- Constant Frequency Provides Steady Cutting Results

Product Code	Product Name	Specifications
<b>7785</b>	NE337	<ul style="list-style-type: none"> <li>• Oscillation frequency: 38 kHz - 40 kHz</li> <li>• Frequency control: Auto-tracking system</li> <li>• Output: 30 W</li> <li>• Weight: 3.09 lbs</li> <li>• Dimensions: W 6.34 x D 10.08 x H 3.31 in.</li> </ul>

## Product Code **7787** HANDPIECE UA-40C



- Easy-to-Maneuver Handpiece
- Ergonomic Design Reduces Hand Fatigue for Long and Continuous Operation

Product Code	Product Name	Specifications
<b>7787</b>	UA-40C	<ul style="list-style-type: none"> <li>• Oscillator: Bolt-clamped Langevin type</li> <li>• Setting the blade: screwed the blade W 0.16 x thickness 0.015 in.</li> <li>• Cable length: 118 in.</li> <li>• Dimensions: Max. <math>\phi</math>0.984 in. x L 6.54 in.</li> <li>• Weight: 120 g (excluding cable)</li> </ul>

### Sonic Cutter ZERO Spare Parts

Product	Product Code	Description
	<b>DC200</b>	Spare Blade (40 pack)

Product	Product Code	Description
	<b>8103</b>	FC-24 Foot Pedal (ON/OFF switch only)

<b>1</b>
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 $\phi$ 1.07/ $\phi$ 0.98/ $\phi$ 0.897"
E3000 - One Piece
E3000 - Modular $\phi$ 1.18"
$\phi$ 1.07/ $\phi$ 0.98/ $\phi$ 0.897"
E3000 - 60,000rpm
E4000
<b>3</b>
MA $\phi$ 0.897"
$\phi$ 1.0"/ $\phi$ 0.98"
$\phi$ 1.18"
MS $\phi$ 0.75"/ $\phi$ 0.79"
$\phi$ 0.87"/ $\phi$ 0.91"
$\phi$ 1.0"/ $\phi$ 0.98"
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
<b>5</b>
AIR LINE KIT
<b>6</b>
PARTS
<b>7</b>
TECHNICAL DATA
<b>8</b>
APPLICATION EXAMPLES
INDEX

## 1

### Sonic Cutter ZERO Applications

EmaxEVO  
 ESPERT  
 ROTUS  
 IMPULSE  
 PRESTO II  
 Sheenus  
 ZERO  
 Sonic-Cutter  
 ZERO

2  
 iSpeed3  
 E2000  
 ø1.0" ø0.98" ø0.89"  
 E3000  
 - One Piece  
 E3000  
 - Modular  
 ø1.18"  
 ø1.07" ø0.98"  
 ø0.89"  
 E3000  
 - 60,000rpm  
 E4000

3  
 MA  
 ø0.897"  
 ø1.0"  
 ø0.98"  
 ø1.18"  
 MS  
 ø0.75"  
 ø0.79"  
 ø0.87"  
 ø0.91"  
 ø1.0"  
 ø0.98"

4  
 HES  
 iSpeed5  
 HTS  
 PLANET  
 Xspeed  
 ABT

5  
 AIR LINE KIT  
 6  
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- For cutting and deburring of plastics



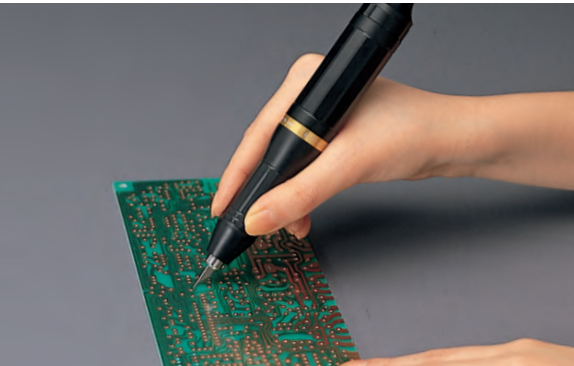
Efficient for cutting and deburring of composite material of FRP and plastic materials.

- For cutting of sheet, cloth, etc.



Delicate and beautiful cutting with a light touch can be made on sheet, cloth, etc.

- For correction of PCB patterns



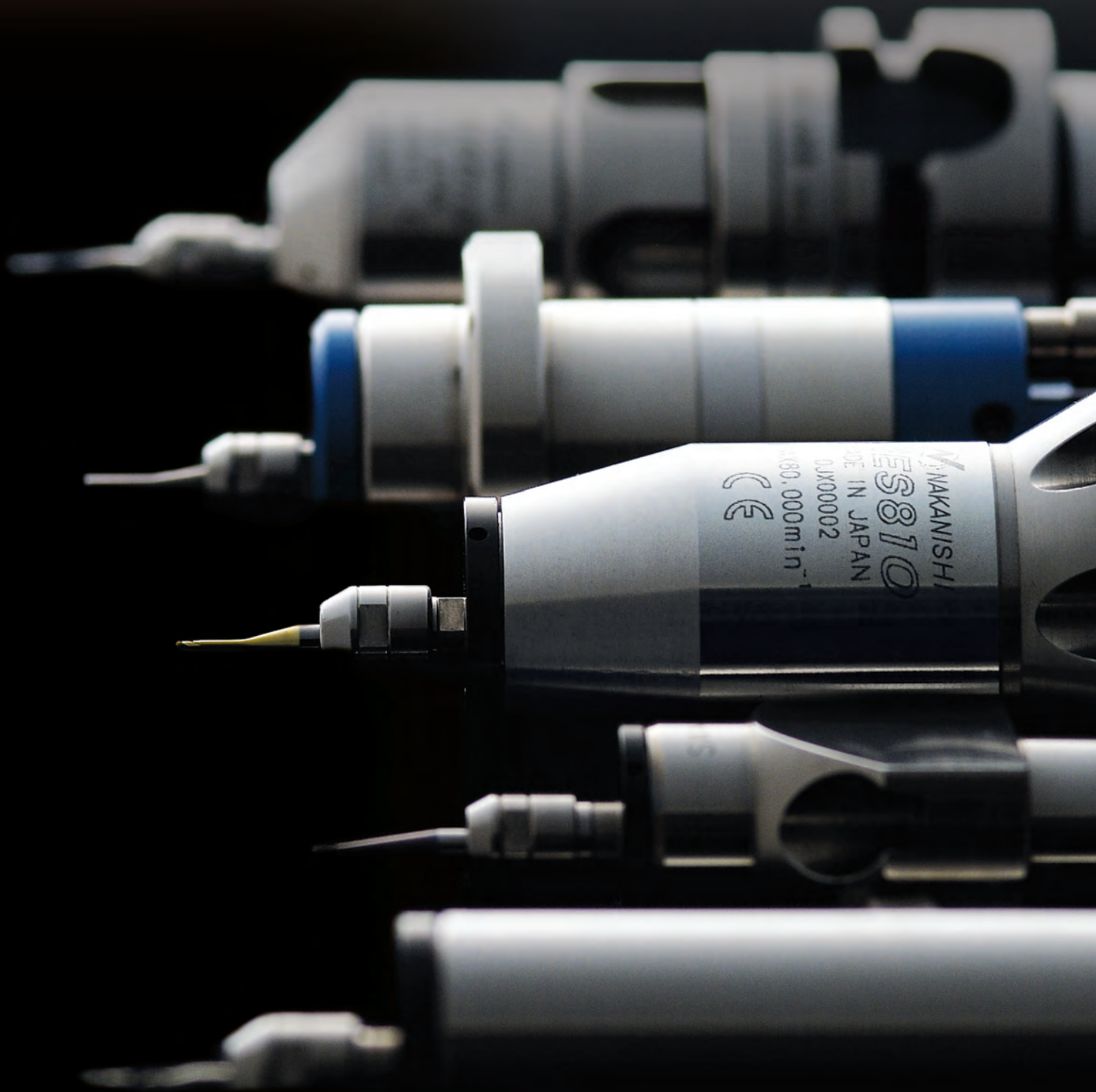
Most suitable for accurate correction work required on PCB.

- For cutting rubber, film, etc.



Beautiful cutting finish is made for cutting out designs and patterns on rubber, POP sheet, paper, etc.

# MACHINE TOOLS SPINDLES





# LIVE LONG AND PROSPER

1

EmaxEVO  
ESPERT  
ROTUS  
IMPULSE  
PRESTO II  
Sheenus  
ZERO  
Sonic-Cutter  
ZERO

2

iSpeed3  
E2000  
ø1.0"/ø0.98"/ø0.897"  
E3000  
— One Piece  
E3000  
— Modular  
ø1.18"  
ø1.0"/ø0.98"  
ø0.897"  
E3000  
— 80,000rpm  
E4000

3

MA  
ø0.897"  
ø1.0"/ø0.98"  
ø1.18"  
MS  
ø0.75"  
ø0.73"  
ø0.87"  
ø0.91"  
ø1.0"/ø0.98"

4

HES  
iSpeed5  
HTS  
PLANET  
Xpeed  
ABT

5

AIR LINE KIT

6

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## iSpeed3

Long Lasting Precision and Productivity



Outside Diameter  $\varnothing 19.05, \varnothing 20, \varnothing 22$

1,000~80,000 rpm  
Output 140W / 150W

### ● One Piece Motor Spindle Type

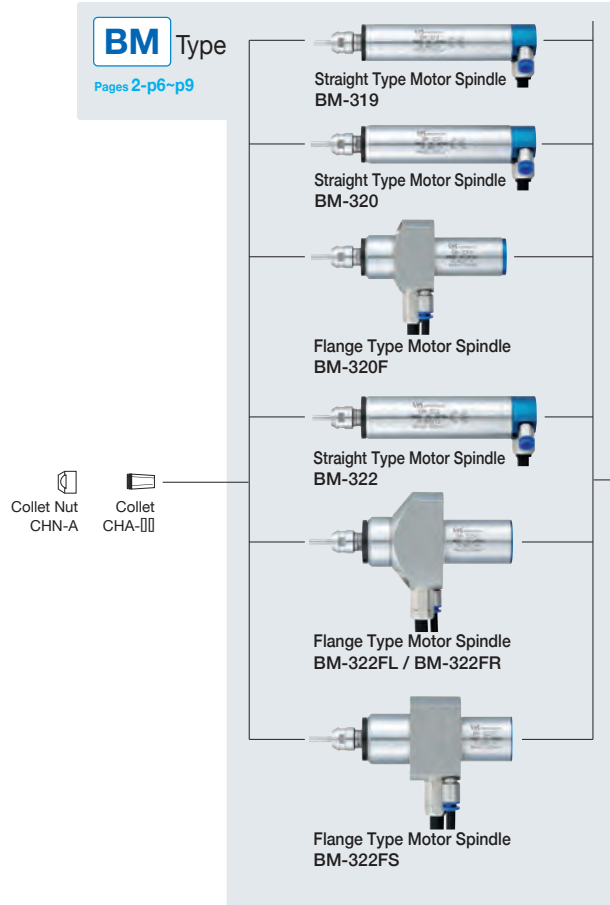
- Shorter spindle length is suitable for compact sized automatic CNC lathes.
- The iSpeed3 series have sensorless motors and are equipped with super precision hybrid ceramic bearings for longer spindle life.



1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\varnothing 1.0''/\varnothing 0.98''/\varnothing 0.89''$
E3000 - One Piece
E3000 - Modular
$\varnothing 1.18''$
$\varnothing 1.07''/\varnothing 0.98''/\varnothing 0.89''$
E3000 - 80,000rpm
E4000
3
MA
$\varnothing 0.89''$
$\varnothing 1.0''/\varnothing 0.98''$
$\varnothing 1.18''$
MS
$\varnothing 0.75''/\varnothing 0.79''$
$\varnothing 0.89''/\varnothing 0.91''$
$\varnothing 1.0''/\varnothing 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
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EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0'' / \phi 0.98'' / \phi 0.997''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.0'' / \phi 0.98'' / \phi 0.997''$
E3000 - 60,000rpm
E4000
3
MA
$\phi 0.997''$
$\phi 1.0'' / \phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75'' / \phi 0.79''$
$\phi 0.98'' / \phi 0.997''$
$\phi 1.0'' / \phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
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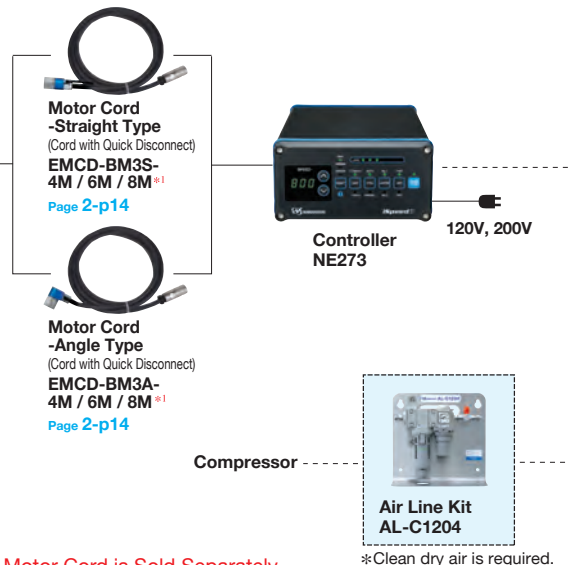
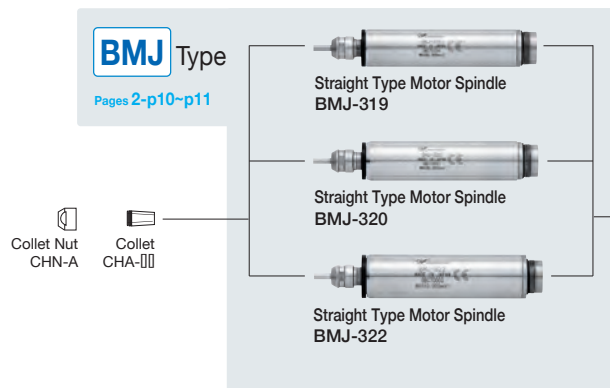
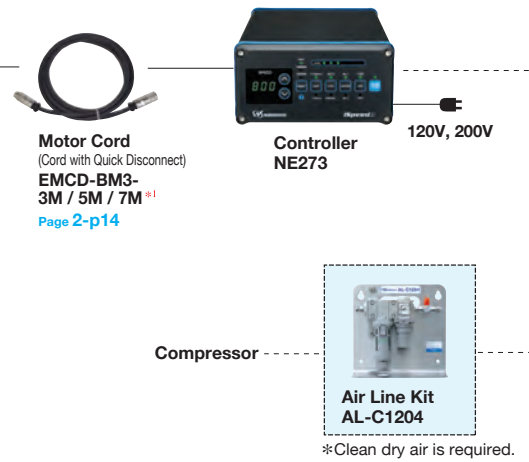
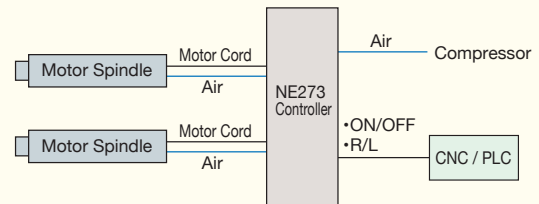
## iSpeed3 Series System Chart



## Automatic Control System Chart

### Sequential Operation of up to 2 Motor / Spindles

\* 2 motors can not be operated simultaneously.



\*1 : Motor Cord is Sold Separately.

## Features

- **Maximum 60,000 / 80,000 rpm**

A maximum motor speed 80,000 rpm (BM-319, BM-320, BM-320F, BMJ-319, BMJ-320) is realized by using a high performance brushless motor and ceramic bearings. A maximum motor speed 60,000 rpm (BM-322, BM-322FL/BM-322FR, BM-322FS, BMJ-322, BMF-322) 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  $\mu\text{m}$  (TIR).

- **High Rigidity, Short Body**

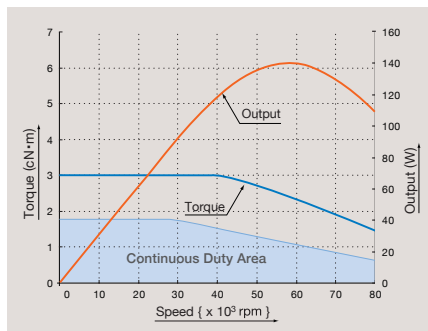
iSpeed3 series uses a short body that is hardened and precision ground for excellent durability.

- **Motor Connector Attaches Directly to the Back of the Motor / Spindle.**

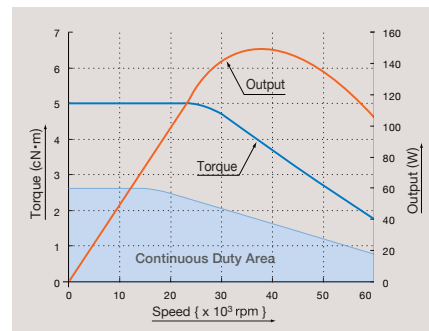
Simple screw-lock connector makes changing motors extremely easy. Electric and Air feed incorporated into a single connector.

## Torque Characteristics Graph

- BM-319
- BM-320
- BM-320F
- BMJ-319
- BMJ-320



- BM-322
- BM-322FL
- BM-322FR
- BM-322FS
- BMJ-322



1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus ZERO

Sonic-Cutter ZERO

2

iSpeed3

E2000

— One Piece

E3000

— Modular

ø1.18"

±0.07°, ±0.98°

±0.897"

E3000

— 80,000rpm

E4000

3

MA

±0.897"

±1.0°

±0.98°

±1.18"

MS

±0.75°

±0.79°

±0.89°

±0.91°

±1.0°

±0.98°

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

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# iSpeed3 SERIES SENSORLESS MOTOR SPINDLE

1

## <Mounting Example>

### Flange Type Flange type for easy mounting.

ø19.05mm

**BM-319FC**

- Max. 80,000 rpm
- Max. 140W



ø22mm

**BM-322FR**

- Max. 60,000 rpm
- Max. 150W



**+ ø25.4 Bush**

- O.D. : ø25.4 mm
- Length : 33.5 mm



2

iSpeed3  
E2000  
ø1.0"/ø0.98"/ø0.897"  
E3000  
- One Piece  
E3000  
- Modular  
ø1.18"  
ø1.0"/ø0.98"/ø0.897"  
E3000  
- ø0,000rpm  
E4000

3

MA  
ø0.897"  
ø1.0"  
ø0.98"  
ø1.18"  
MS  
ø0.75"  
ø0.79"  
ø0.81"  
ø0.83"  
ø1.0"  
ø0.98"

4

HES  
iSpeed5  
HTS  
PLANET  
Xpeed  
ABT

5

AIR LINE KIT

6

PARTS

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### Straight Type Straight type for flexible mounting.

ø22mm

**BM-322**

- Max. 60,000 rpm
- Max. 150W





# iSpeed3 SERIES CONTROLLER

- 1,000~80,000 rpm
- Maximum Output 150W
- External Input / Output Control Signal (Refer to 7-p24~p29 page of this catalog)

Product Code **8478 iSpeed3 CONTROLLER NE273** 80,000 rpm

### ● Power Source Required

Input power required is either 120VAC or 230VAC.

### ● 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.

### ● Emergency Stop Circuit

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 controller to supply power to the motor. Any system errors, trouble with the machine or the connection between the iSpeed3 Series controller and the machine's controller will cause the relay contacts to open and the iSpeed3 Series motor to stop.



\* : Load LED



- : Continuous load area
- : Intermittent load area
- : Overload

### Specifications

Product Name : NE273  
 Power Source : AC 120V 60Hz  
 AC 230V 50Hz (2 types)  
 Motor Speed : 1,000-80,000 rpm  
 Max. Output Power : 150W (For ø22mm, ø25mm)  
 Rated Power Consumption : 1.1A  
 Air Flow Volume : 1.0CFM (23-50PSI)  
 Weight : 7 lb. 11.46 oz.  
 Dimensions : W5.67" x D9.21" x H2.91"

[1] Load LED (LOAD)\* [2] Running LED (RUN) [3] Warning LED (WARNING) [4] Error LED (ERROR) [5] Motor Speed Switch (UP / DOWN)  
 [6] Rotating Speed Display (SPEED) [7] Error Reset Switch (RESET) [8] KEY HOLD Switch [9] DISP (DISPLAY) Switch [10] Control Switch (AUTO / MANUAL)  
 [11] Motor Selection Switch (No.1 / No.2) [12] Rotating Direction Selector Switch (FWD./REV.) [13] Start Switch (START)

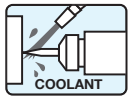
### iSpeed3 Controller

Product Code	Plug Type	Product Name	Standard Equipment · Accessories
8478	120V	NE273	• Power Cord : 6 ft • Air Hose with filter : 6 ft • Motor Connector Cap : 2 pcs. • Bracket : 2 pcs. • Plate nut : 4 pcs. • M3 Bolt : 2 pcs. • Fuse : 2 pcs.
8490	230V		

\*Please refer to Technical Data 7-p24~p29 in detail about External Input-Output Connector.  
 \*Please check the power source plug type and order accordingly.

Interface Cable  
 Page 2-p14

1
EmaxEVC
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98"/ø0.897"
E3000 - 80,000rpm
E4000
3
MA
ø0.897"
ø1.0"/ø0.98"
ø1.18"
MS
ø0.75"/ø0.79"
ø0.87"/ø0.91"
ø1.0"/ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
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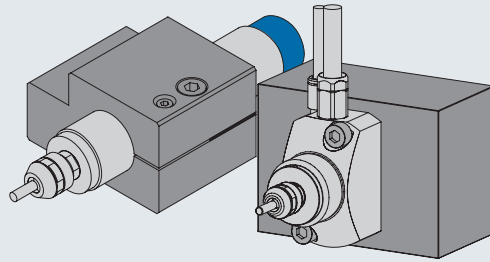
iSpeed3 Series can be used in conjunction with water or oil based coolants.

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.07"/ø0.98" (ø0.897")
E3000 One Piece
E3000 Modular
ø1.18"
ø1.07"/ø0.98" (ø0.897")
E3000 ø0,000rpm
E4000
3
MA
ø0.897"
ø1.0" (ø0.98")
ø1.18"
MS
ø0.75" (ø0.79")
ø0.87" (ø0.81")
ø1.0" (ø0.98")
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
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TECHNICAL DATA
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## BM Straight and Flange Type with Quick Disconnect

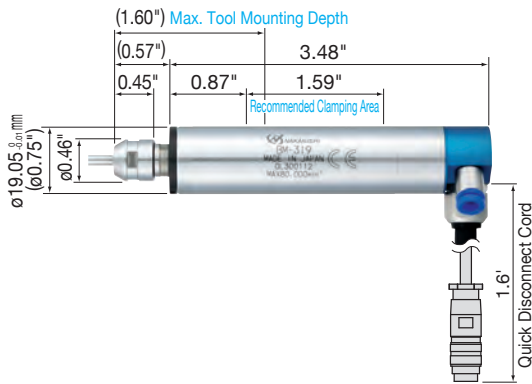
### Features:

- Straight and Flange Type Motor/Spindles with pigtail for Motor cords with Quick-Disconnect.
- Flange Type Motor Spindles for machines with tool block with a blind hole.
- O.D. sizes for all Swiss type machines.



**Product Code 7810 STRAIGHT TYPE MOTOR SPINDLE BM-319 80,000 rpm**

Outside Diameter **ø19.05mm (ø0.75")**



- Motor Speed ..... 1,000~80,000 rpm
- Spindle Accuracy ..... Within 1 µm
- Max. Output Power ..... 140W
- Weight ..... 7.41 oz.

**Additional collet purchase required:**

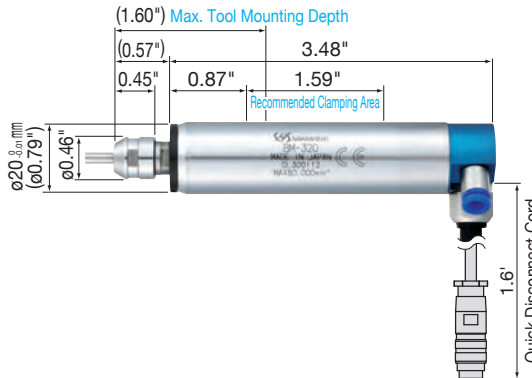
- Collet Series CHA-XX ..... ø0.5mm~ø4.0mm  
Recommended ..... CHA-3.175 ø1/8"  
(See Page 6-p2 for additional sizes)
- Motor Cord ..... Length 10 ft, 16 ft, 22 ft

### Straight Type Motor Spindle ø0.75"(ø19.05 mm)

Product Code	Product Name	Standard Equipment · Accessories
7810	BM-319	• Collet Nut (CHN-A) : 1 pc. • Wrench (8 x 5), (9 x 11) : 1 pc. each

**Product Code 7811 STRAIGHT TYPE MOTOR SPINDLE BM-320 80,000 rpm**

Outside Diameter **ø20mm (ø0.79")**



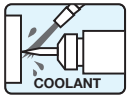
- Motor Speed ..... 1,000~80,000 rpm
- Spindle Accuracy ..... Within 1 µm
- Max. Output Power ..... 140W
- Weight ..... 8.11 oz.

**Additional collet purchase required:**

- Collet Series CHA-XX ..... ø0.5mm~ø4.0mm  
Recommended ..... CHA-3.175 ø1/8"  
(See Page 6-p2 for additional sizes)
- Motor Cord ..... Length 10 ft, 16 ft, 22 ft

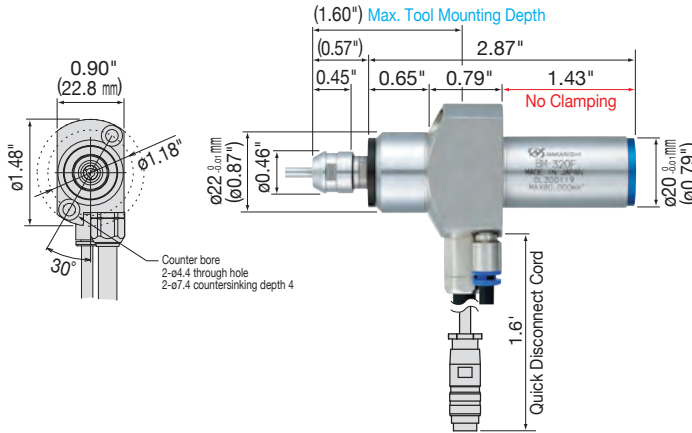
### Straight Type Motor Spindle ø0.79"(ø20 mm)

Product Code	Product Name	Standard Equipment · Accessories
7811	BM-320	• Collet Nut (CHN-A) : 1 pc. • Wrench (8 x 5), (9 x 11) : 1 pc. each



**Product Code 7816 FLANGE TYPE MOTOR SPINDLE BM-320F 80,000 rpm**

Outside Diameter **ø20mm (ø0.79")**



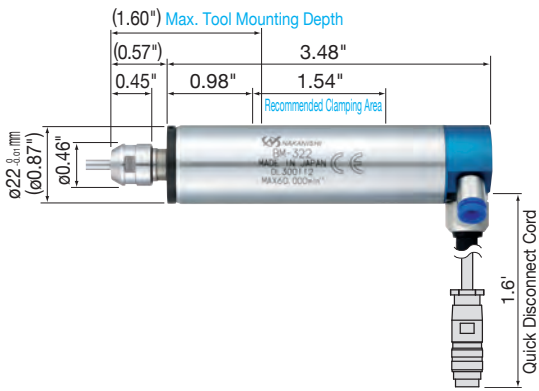
- Motor Speed ..... 1,000~80,000 rpm
- Spindle Accuracy ..... Within 1 µm
- Max. Output Power ..... 140W
- Weight ..... 9.52 oz.
- **Additional collet purchase required:**
  - Collet Series CHA-XX ..... ø0.5mm~ø4.0mm
  - Recommended ..... CHA-3.175 ø1/8"
  - (See Page 6-p2 for additional sizes)
- Motor Cord ..... Length 10 ft, 16 ft, 22 ft

**Flange Type Motor Spindle ø0.79"(ø20 mm)**

Product Code	Product Name	Standard Equipment · Accessories	
7816	BM-320F	<ul style="list-style-type: none"> <li>• Collet Nut (CHN-A) : 1 pc.</li> <li>• Wrench (8 x 5), (9 x 11) : 1 pc. each</li> <li>• Hex socket bolt (M4 x L25) : 2 pcs.</li> </ul>	

**Product Code 7814 STRAIGHT TYPE MOTOR SPINDLE BM-322 60,000 rpm**

Outside Diameter **ø22mm (ø0.87")**



- Motor Speed ..... 1,000~60,000 rpm
- Spindle Accuracy ..... Within 1 µm
- Max. Output Power ..... 150W
- Weight ..... 8.82 oz.
- **Additional collet purchase required:**
  - Collet Series CHA-XX ..... ø0.5mm~ø4.0mm
  - Recommended ..... CHA-3.175 ø1/8"
  - (See Page 6-p2 for additional sizes)
- Motor Cord ..... Length 10 ft, 16 ft, 22 ft

**Straight Type Motor Spindle ø0.87"(ø22 mm)**

Product Code	Product Name	Standard Equipment · Accessories	
7814	BM-322	<ul style="list-style-type: none"> <li>• Collet Nut (CHN-A) : 1 pc.</li> <li>• Wrench (8 x 5), (9 x 11) : 1 pc. each</li> </ul>	

Motor Cord  
Page 2-p14



1  
Emax EVO  
ESPERT  
ROTUS  
IMPULSE  
PRESTO II  
Sheenus ZERO  
Sonic-Cutter ZERO

2  
iSpeed3  
E2000  
ø1.0"/ø0.99"/ø0.897"  
E3000  
- One Piece  
E3000  
- Modular  
ø1.18"  
ø1.07"/ø0.98"  
ø0.897"  
E3000  
- 80,000rpm  
E4000

3  
MA  
ø0.897"  
ø1.0"  
ø0.98"  
ø1.18"  
MS  
ø0.75"  
ø0.79"  
ø0.87"  
ø0.91"  
ø1.0"  
ø0.98"

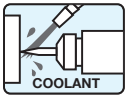
4  
HES  
iSpeed5  
HTS  
PLANET  
Xspeed  
ABT

5  
AIR LINE KIT

6  
PARTS

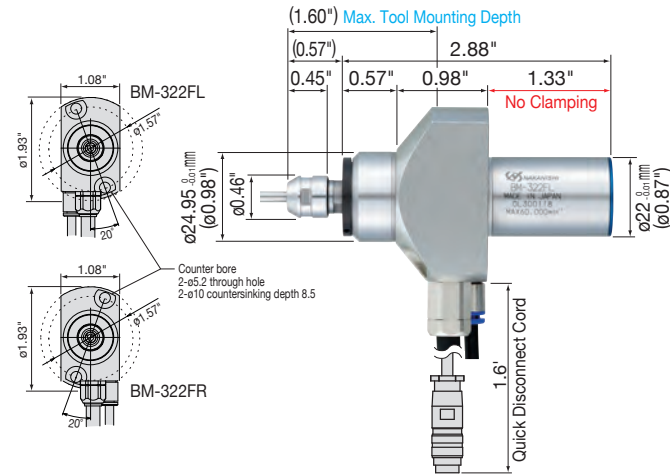
7  
TECHNICAL DATA

8  
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## FLANGE TYPE MOTOR SPINDLE BM-322FL / BM-322FR 60,000 rpm

Outside Diameter **ø22mm (ø0.87")**

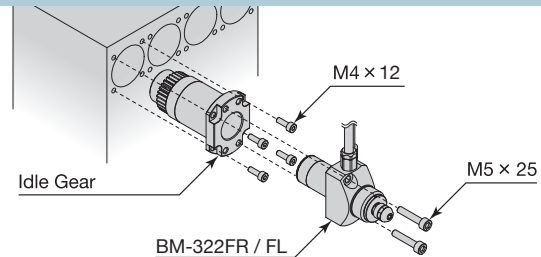
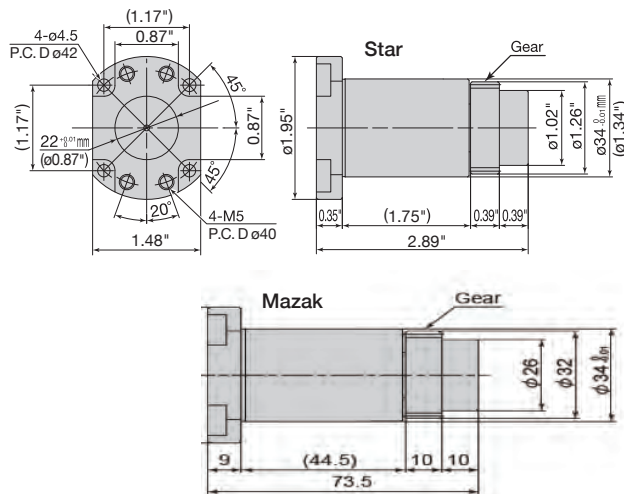


- Motor Speed ..... 1,000~60,000 rpm
- Spindle Accuracy ..... Within 1 μm
- Max. Output Power ..... 150W
- Weight ..... 12.70 oz.
- **Additional collet purchase required:**
  - Collet Series CHA-XX ..... ø0.5mm~ø4.0mm
  - Recommended ..... CHA-3.175 ø1/8"
  - (See Page 6-p2 for additional sizes)
- Motor Cord ..... Length 10 ft, 16 ft, 22 ft

### Flange Type Motor Spindle ø0.87"(ø22 mm)

Product Code	Product Name	Standard Equipment · Accessories
7815	BM-322FL	<ul style="list-style-type: none"> <li>• Collet Nut (CHN-A) : 1 pc.</li> <li>• Wrench (8 x 5), (9 x 11) : 1 pc. each</li> <li>• Hex socket bolt (M5 x L25) : 2 pcs.</li> </ul>
7817	BM-322FR	

## IDLE GEARS for Applicable Swiss Machines



- Weight ..... 12.70 oz.
- Applicable Swiss Machines ..... Star Micronics Co., Ltd : SR-20J type C, SR-20R III, SR-32J, SR-20J type N, SR-32J type N
- ..... Mazak Corp. All SYNCREX Models

### Idle Gear (Star BM322FL & FR / Mazak BM320F)

Product Code	Product Name	Standard Equipment · Accessories
8533	BM3-IG	• Hex socket bolt (M4 x L12) : 4 pcs.
7905	BM3-IG-20	• Hex socket bolt (M4 x L12) : 4 pcs.

## SPACER for BM-322FL / BM-322FR



- Inserting the spacer between the back of the flange and the face of the machines tool block moves the back of the Motor Spindle forward 10mm to eliminate gear face interference.

### Spacer

Product Code	Product Name	Specifications
1882	SP-22x10L	Dimensions ø22 (I.D.) x 10mm

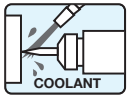
## SPLIT BUSHING



- Hardened and ground split bushings are available in several sizes to fit most NSK Spindle/Motors.

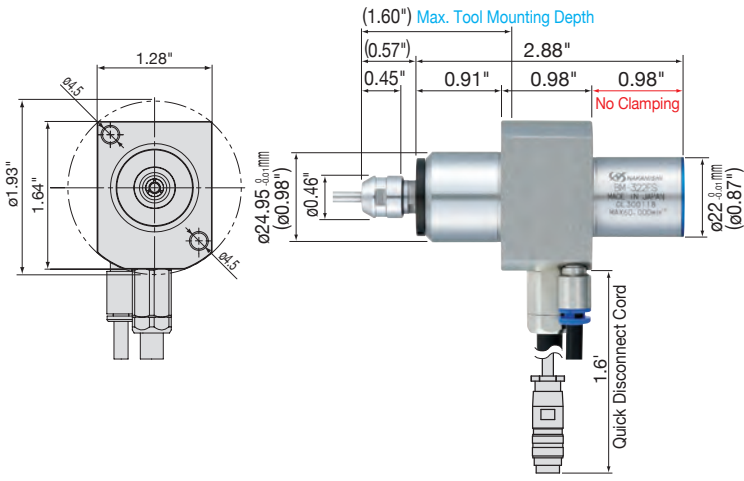
Page 6-p19





Product Code **7823** **FLANGE TYPE MOTOR SPINDLE BM-322FS** **60,000 rpm**

Outside Diameter **ø22mm (ø0.87")**



- Motor Speed ..... 1,000~60,000 rpm
- Spindle Accuracy ..... Within 1 µm
- Max. Output Power ..... 150W
- Weight ..... 14.46 oz.
- **Additional collet purchase required:**
  - Collet Series CHA-XX ..... ø0.5mm~ø4.0mm
  - Recommended ..... CHA-3.175 ø1/8"
  - (See Page 6-p2 for additional sizes)
- Motor Cord ..... Length 10 ft, 16 ft, 22 ft

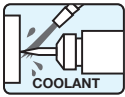
**Flange Type Motor Spindle ø0.87"(ø22 mm)**

Product Code	Product Name	Standard Equipment · Accessories	
<b>7823</b>	<b>BM-322FS</b>	<ul style="list-style-type: none"> <li>• Collet Nut (CHN-A) : 1 pc.</li> <li>• Wrench (8 x 5), (9 x 11) : 1 pc. each</li> <li>• Hex socket bolt (M4 x L35) : 2 pcs.</li> </ul>	

Motor Cord  
Page 2-p14



<b>1</b>
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.89" ø0.91"
ø1.0" ø0.98"
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
<b>5</b>
AIR LINE KIT
<b>6</b>
PARTS
<b>7</b>
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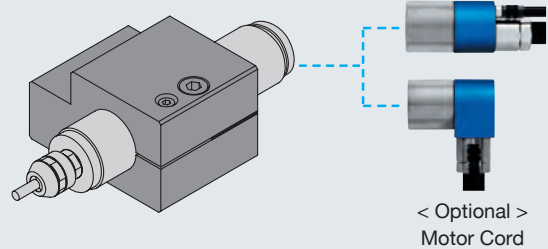


<b>1</b>
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 One Piece
E3000 Modular
ø1.18"
ø1.0"/ø0.98"/ø0.897"
E3000 ø0.000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0"/ø0.98"
ø1.18"
MS
ø0.75"/ø0.79"
ø0.87"/ø0.91"
ø1.0"/ø0.98"
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
<b>5</b>
AIR LINE KIT
<b>6</b>
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<b>7</b>
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## **BMJ** Straight Type without Motor Cord

### Features:

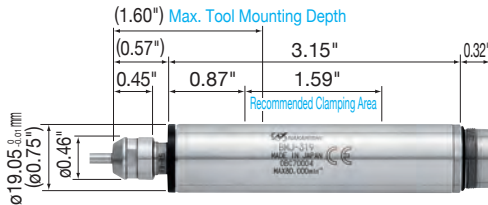
- Straight Motor/Spindles with O.D. sizes for all Swiss type machines.
- Uses a Straight or 90-Degree Motor Cord that attach to the rear of the Motor/Spindle.
- Ability to insert the Motor/Spindle from the front or rear of the tool block.



< Optional >  
Motor Cord

## Product Code **7819** STRAIGHT TYPE MOTOR SPINDLE **BMJ-319** 80,000 rpm

Outside Diameter **ø19.05mm (ø0.75")**



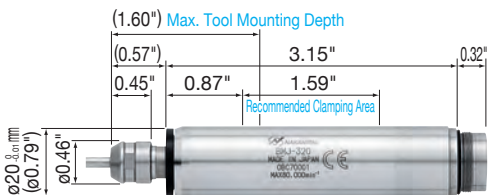
- Motor Speed ..... 1,000~80,000 rpm
- Spindle Accuracy ..... Within 1 µm
- Max. Output Power ..... 140W
- Weight ..... 5.11 oz.
- **Additional collet purchase required:**  
Collet Series CHA-XX ..... ø0.5mm~ø4.0mm  
Recommended ..... CHA-3.175 ø1/8"  
(See Page 6-p2 for additional sizes)
- Motor Cord ..... Length 13 ft, 19 ft, 26 ft

### Straight Type Motor Spindle ø0.75"(ø19.05 mm)

Product Code	Product Name	Standard Equipment · Accessories	
<b>7819</b>	<b>BMJ-319</b>	<ul style="list-style-type: none"> <li>• Collet Nut (CHN-A) : 1 pc.</li> <li>• Wrench (8 x 5), (9 x 11) : 1 pc. each</li> </ul>	

## Product Code **7820** STRAIGHT TYPE MOTOR SPINDLE **BMJ-320** 80,000 rpm

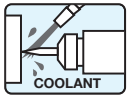
Outside Diameter **ø20mm (ø0.79")**



- Motor Speed ..... 1,000~80,000 rpm
- Spindle Accuracy ..... Within 1 µm
- Max. Output Power ..... 140W
- Weight ..... 5.64 oz.
- **Additional collet purchase required:**  
Collet Series CHA-XX ..... ø0.5mm~ø4.0mm  
Recommended ..... CHA-3.175 ø1/8"  
(See Page 6-p2 for additional sizes)
- Motor Cord ..... Length 13 ft, 19 ft, 26 ft

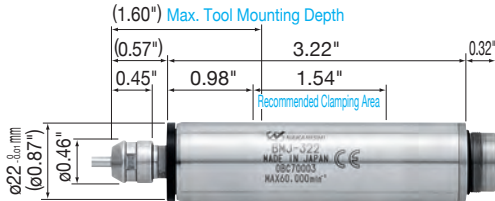
### Straight Type Motor Spindle ø0.79"(ø20 mm)

Product Code	Product Name	Standard Equipment · Accessories	
<b>7820</b>	<b>BMJ-320</b>	<ul style="list-style-type: none"> <li>• Collet Nut (CHN-A) : 1 pc.</li> <li>• Wrench (8 x 5), (9 x 11) : 1 pc. each</li> </ul>	



Product Code **7821** **STRAIGHT TYPE MOTOR SPINDLE BMJ-322** **60,000 rpm**

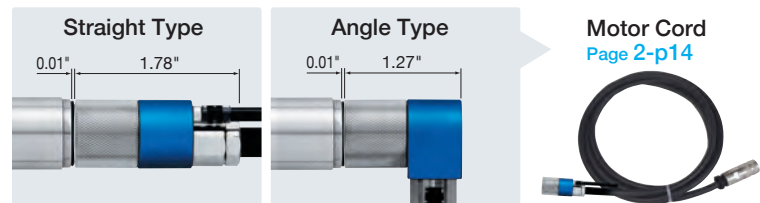
Outside Diameter **ø22mm (ø0.87")**



- Motor Speed ..... 1,000~60,000 rpm
- Spindle Accuracy ..... Within 1 µm
- Max. Output Power ..... 150W
- Weight ..... 6.70 oz.
- **Additional collet purchase required:**
  - Collet Series CHA-XX ..... ø0.5mm~ø4.0mm
  - Recommended ..... CHA-3.175 ø1/8"
  - (See Page 6-p2 for additional sizes)
- Motor Cord ..... Length 13 ft, 19 ft, 26 ft

**Straight Type Motor Spindle ø0.87" (ø22 mm)**

Product Code	Product Name	Standard Equipment · Accessories	
<b>7821</b>	<b>BMJ-322</b>	<ul style="list-style-type: none"> <li>• Collet Nut (CHN-A) : 1 pc.</li> <li>• Wrench (8 x 5), (9 x 11) : 1 pc. each</li> </ul>	




<b>1</b>
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98"/ø0.897"
E3000 - 80,000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0"/ø0.98"
ø1.18"
MS
ø0.75"/ø0.79"
ø0.897"/ø0.91"
ø1.0"/ø0.98"
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
<b>5</b>
AIR LINE KIT
<b>6</b>
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<b>7</b>
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# iSpeed3 SERIES MOTOR CORD & INTERFACE CABLE


1

## MOTOR CORD for **BM** Type


Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to
	9261	Motor Cord 3M EMCD-BM3-3M	10 ft (3.0m)	<ul style="list-style-type: none"> <li>• Air Hose</li> <li>• Connector Cap (Provided)</li> </ul>	BM-319 · BM-320 BM-320F · BM-322 BM-322FL · BM-322FR BM-322FS ·
	9262	Motor Cord 5M EMCD-BM3-5M	16 ft (5.0m)		
	9263	Motor Cord 7M EMCD-BM3-7M	22 ft (7.0m)		

2

## MOTOR CORD for **BMJ** Type

Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to
	9264	Motor Cord 4M EMCD-BM3S-4M	13 ft (4.0m)	<ul style="list-style-type: none"> <li>• Air Hose</li> <li>• Connector Cap (Provided)</li> </ul>	BMJ-319 · BMJ-320 BMJ-322 · BMJ-325 BMF-319
	9265	Motor Cord 6M EMCD-BM3S-6M	19 ft (6.0m)		
	9266	Motor Cord 8M EMCD-BM3S-8M	26 ft (8.0m)		

3

Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to
	9267	Motor Cord 4M EMCD-BM3A-4M	13 ft (4.0m)	<ul style="list-style-type: none"> <li>• Air Hose</li> <li>• Connector Cap (Provided)</li> </ul>	BMJ-319 · BMJ-320 BMJ-322
	9268	Motor Cord 6M EMCD-BM3A-6M	19 ft (6.0m)		
	9269	Motor Cord 8M EMCD-BM3A-8M	26 ft (8.0m)		

4

## 25 Pin INTERFACE CABLE



- 3 Meter long Interface Cable provides a DB25 Male Connector at one end and a blunt cut on the opposite end. Includes a pin-out wire diagram for easy interfacing of I/O signals from any NSK Control to a CNC Control.

### 25 Pin Interface Cable

Product Code	Product Name	
DB25M	DB25M	For NSK Control Connector A 12.5 ft
DB25MXL	DB25MXL	For NSK Control Connector A 25 ft

## 15 Pin INTERFACE CABLE



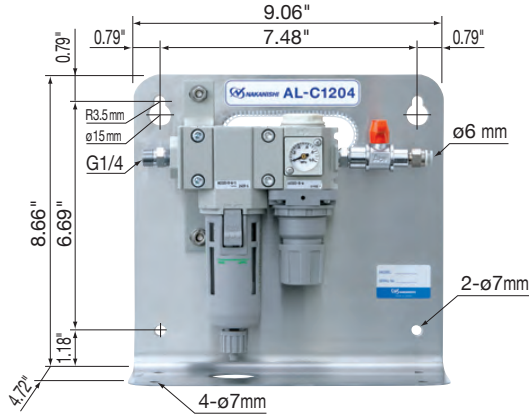
- 3 Meter long Interface Cable provides a DB15 Male Connector at one end and a blunt cut on the opposite end. Includes a pin-out wire diagram for easy interfacing of the (OP1) "E-Stop Input Circuit" and "Safety Relay Circuit" from the NSK Control to a CNC Control.

### 15 Pin Interface Cable

Product Code	Product Name	
DB15M	DB15M	For NSK Control Connector B



**Product Code 4504 AIR LINE KIT AL-C1204**



- The AL-C1204 Air Line Kit is designed to deliver clean, dry air to Electric Motors via the Controller. The filter removes small amounts of debris while the adjustable regulator provides the correct air pressure for cooling and purging.

**Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 µm )**

Product Code	Product Name	Standard Equipment · Accessories	
4504	AL-C1204	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> </ul>	

<b>1</b>
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.75"
ø0.897" ø0.81"
ø1.0" ø0.98"
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
<b>5</b>
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# E-speed

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.0"/ø0.98"/ø0.897"

E3000

- One Piece

E3000

- Modular

ø1.18"

ø1.0"/ø0.98"

ø0.897"

E3000

- 80,000rpm

E4000

3

MA

ø0.897"

ø1.0"/ø0.98"

ø1.18"

MS

ø0.75"/ø0.73"

ø0.87"/ø0.91"

ø1.0"/ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

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## E2000 SERIES

1,000~50,000 rpm  
Output 200W

### Outside Diameter

ø0.897", ø0.98", ø1.0"  
(ø22.8, ø25, ø25.4 mm)

- The E2000 Series is capable of up to 50,000 rpm and employs a high-speed, ultra-quiet brushless motor.
- High-performance system and state of the art design allows high-speed machining and a variety of safety functions.



## E3000 SERIES

1,000~60,000 rpm  
Output 350W

ø25mm (ø0.98")

### Outside Diameter [One Piece Type]

ø0.79", ø0.98", ø1.18"  
(ø20, ø25, ø30 mm)

### Outside Diameter [Modular Type]

ø0.897", ø0.98", ø1.0", ø1.18"  
(ø22.8, ø25, ø25.4, ø30 mm)

### Outside Diameter [Modular Type]

ø1.18" (ø30 mm)  
ø1.97" (ø50 mm) -Air Bearing



## E4000 SERIES

1,000~40,000 rpm Max.  
Output 1,200W

### Outside Diameter

ø1.57"  
(ø40 mm)

- Up to ø0.375" Collet Capacity
- Designed for use on CNC Lathes, Robots and Special Application Machines for precision milling, drilling grinding, slitting and deburring applications.



Outside Diameter  $\phi 1.0''$ ,  $\phi 0.98''$  ( $\phi 25.4$ ,  $\phi 25$  mm)

1,000~50,000 rpm  
Output 200W

● Modular Type

Outside Diameter  $\phi 0.897''$  ( $\phi 22.8$  mm)

1,000~50,000 rpm  
Output 200W

● Modular Type

**Angle Spindle**

(Modular Type)

Capable of working on corners difficult to work with straight type and drilling and milling on side face. Three type Angle Head Sizes available.



**Straight Spindle**

(Modular Type)

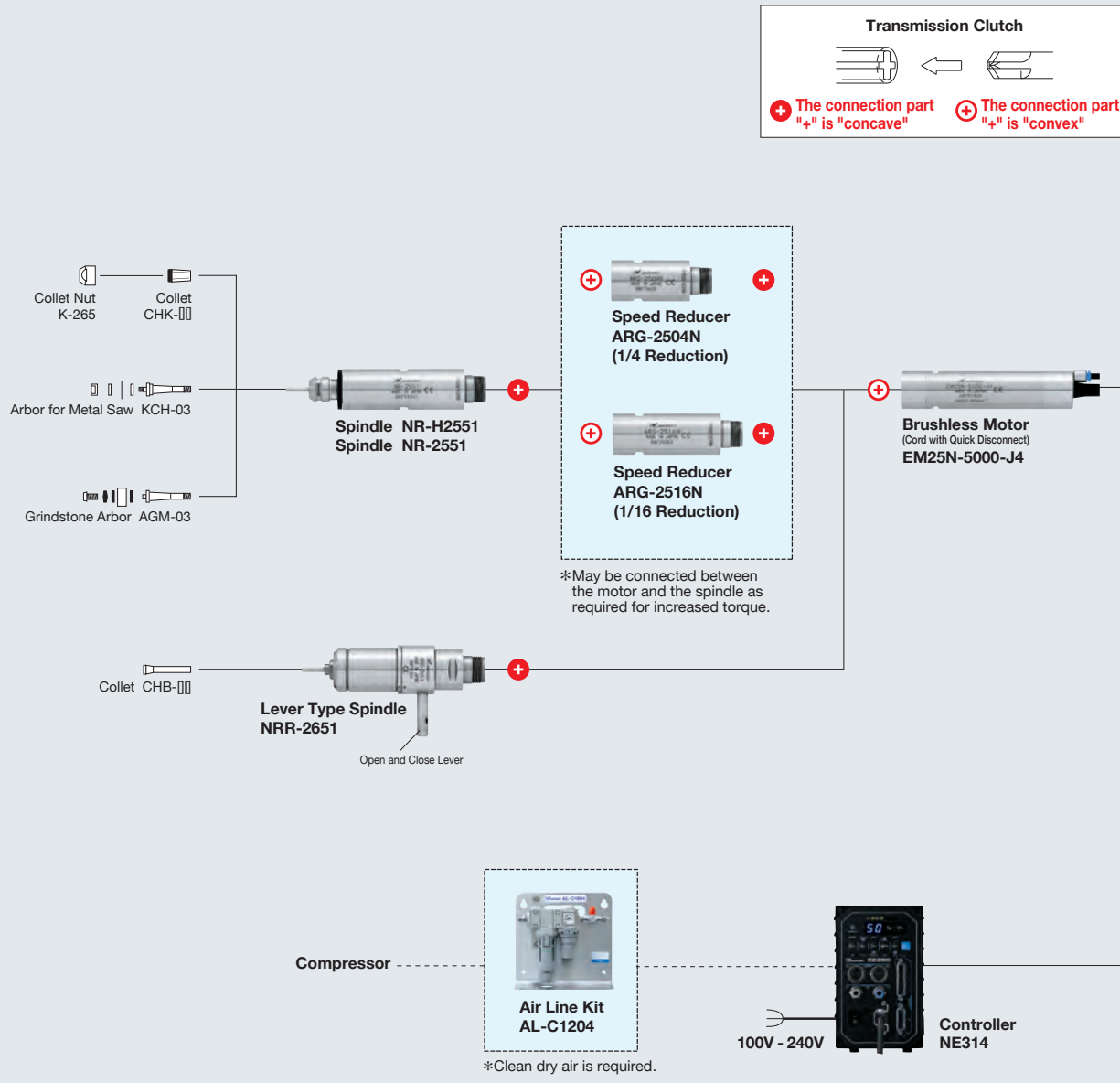
Suitable for small diameter milling & drilling, slitting, chamfer and grinding operation.

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - 80,000rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''/\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''/\phi 0.73''$
$\phi 0.87''/\phi 0.91''$
$\phi 1.0''/\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
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- 1 EmaxEVO
- ESPERT
- ROTUS
- IMPULSE
- PRESTO II
- Sheenus ZERO
- Sonic-Cutter ZERO
- 2
- iSpeed3
- E2000 ∅1.0"/∅0.98"/∅0.897"
- E3000 - One Piece
- E3000 - Modular
- ∅1.18"
- ∅1.0"/∅0.98"/∅0.897"
- E3000 - ∅0,000rpm
- E4000
- 3
- MA
- ∅0.897"
- ∅1.0"/∅0.98"
- ∅1.18"
- MS
- ∅0.75"/∅0.79"
- ∅0.87"/∅0.91"
- ∅1.0"/∅0.98"
- 4
- HES
- iSpeed5
- HTS
- PLANET
- Xpeed
- ABT
- 5
- AIR LINE KIT
- 6
- PARTS
- 7
- TECHNICAL DATA
- 8
- APPLICATION EXAMPLES
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## E2000 Series ∅1.0", ∅0.98"(∅25.4, ∅25 mm) System Chart

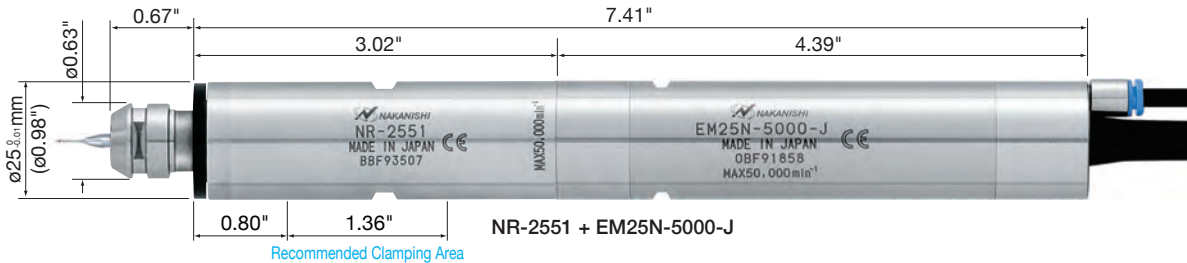
● Interchangeable with a variety of attachments depending on the application.



**\*Do not exceed the maximum motor speed recommendation for the spindles. Excess speed will dramatically reduce bearing life.**



## Features of E2000 Series



### ● Maximum Output 200W

The E2000 Series motor is a brushless DC motor utilizing hall elements and rare-earth magnets in the rotor. The Motor develops 200W.

### ● Brushless Motor

The brushless DC Motor designs allows for excellent reliability and durability. The brushless DC Motor can be steplessly controlled up to 50,000 rpm.

### ● Air-Cooling System

Air-cooled motor uses a small volume of dry air (1.0 CFM) to minimize heat buildup and allow continuous operation. Air pressure required is 36-44 PSI.

### ● Wide Variety of Interchangeable Spindles are Available

Straight-type spindles are available along with speed reducers to increase torque as well as 90° degree spindles to provide outstanding system flexibility.

### ● System Protection Function

The E2000 Series is equipped with a protective function to stop the spindle rotation automatically in case of overload ensuring safe and smooth operation. When the protective circuit is activated, an error code is shown on the digital display. In case of an air supply failure, the protective circuit limits the motor/spindle to 30,000 rpm maximum.

### ● Operating Parameters

The operating parameters can be preset for : \*Fixed Motor Speed \*Maximum Motor Speed \*Operating without Air and several other functions.

### ● 2 Motors can be connected (No Simultaneous Operation)

Up to 2 motors may be connected to 1 controller and operated sequentially making this system very easy to use when multiple live tools are required.

### ● Compact Vertical Controller

The compact, vertical design of the controller makes it extremely easy to mount in cramped control cabinets.

### ● Power Source Auto Detection

The controller is capable of being connected to AC100V or AC240V power sources. The Auto Sensing feature reduces installation time and eliminates the possibility of connecting the incorrect voltage.

### ● Stainless Steel Body

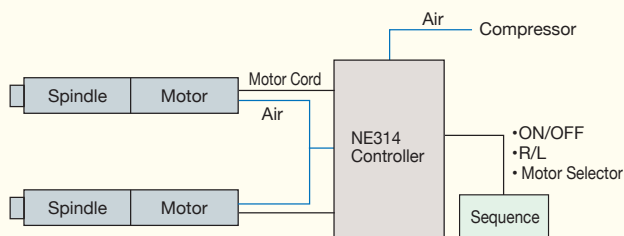
The housings of the motor and spindle are made from precision ground stainless steel (SUS416).

### ● Emergency Stop Function

By setting a parameter, an emergency stop signal can be activated. Using the open detection signal of the motor power line through the safety relay, the E2000 controller can establish a safe operating system.

## Automatic Control System Chart

### ● Sequential Operation of up to 2 Motor / Spindles



\*The E2000 Series controller has the ability to control up to 2 motors sequentially. 2 motors can not be run simultaneously.

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus ZERO

Sonic-Cutter ZERO

2

iSpeed3

E2000

Ø1.0"/Ø0.98"/Ø0.897"

E3000

- One Piece

E3000

- Modular

Ø1.18"

Ø1.07"/Ø0.98"/Ø0.897"

E3000

- 80,000rpm

E4000

3

MA

Ø0.897"

Ø1.0"

Ø0.98"

Ø1.18"

MS

Ø0.75"

Ø0.79"

Ø0.81"

Ø0.91"

Ø1.0"

Ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

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# E2000 SERIES COMBINATION EXAMPLE

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EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 - ø0,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.87" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
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## High Precision and High-Performance Controller

### ● High-Performance Electric Circuit

'High grade feedback loop maintains constant spindle speed even if load is varied', and 'Gentle start/Quick stop functions' are provided.

### ● Warning/Error Functions

Motor/Spindle is stopped when an Error or Warning Code has been detected and indicated on the LED Display. An output signal can be sent to the CNC control.

Warnings Codes : i.e. • High Air Pressure • Low Air Pressure  
• Controller Overheat • Motor Overload  
Errors Codes : i.e. • Rotor Lock • Overheat • Overload  
• Torque Load • External Signal Error  
• E-Stop • Incompatible Motor

### ● Selector Function

Max. 2 motors can be controlled sequentially. 2 motors can not be run simultaneously.

### ● Motor Speed Display

Motor speed is displayed precisely and digitally.

### ● LOAD Monitor LED

Motor load is displayed by 6 LED's to indicate load level.

### ● External Input-Output Signals

(Refer to Technical Data 7-p10~p17 in detail)

Motor/Spindle can be controlled and monitored by external input-output signals. Controls : Start/Stop, Motor Speed Control, FWD./REV. Rotation and etc. Monitor : While Rotating, Rotation Pulse, Controller Power Source Detection, AUTO Mode, Motor Speed Voltage, Torque Load etc.

### ● Selection of Illumination Brightness



Select the brightness of the blue illumination from 4 patterns.

## E2000 Series Combination Example

50,000 rpm



### Controller Specifications

Product Name	NE314
Power Source	AC 100 - 240V, 50-60 Hz 1 Phase
Power Consumption	1.45A
Weight	4 lb. 13.60 oz.
Dimensions	W4.25" x D6.60" x H6.93"

### Motor & Spindle

Motor	EM25N-5000-J
Spindle	NR-2551
Speed	1,000~50,000 rpm
Weight	1 lb. 8.74 oz.
Dimensions	ø0.98" x 8.07"

### E2000, NR-2551 Combination Example

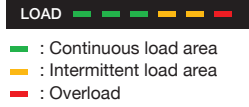
Product Code	Product Name	Product	
7720	NE314	Controller	
7904	EM25N-5000-J	Brushless Motor	
7853	NR-2551	Spindle	
4504	AL-C1204	Air Line Kit	

# E2000 SERIES CONTROLLER

- 1,000~50,000 rpm ● Maximum Output 200W
- 2 motors can be connected (No Simultaneous Operation).
- External Input / Output Control Signal (Refer to 7-p10~p17 page of this catalog)

Product Code **7720** **E2000 CONTROLLER NE314** **50,000 rpm**

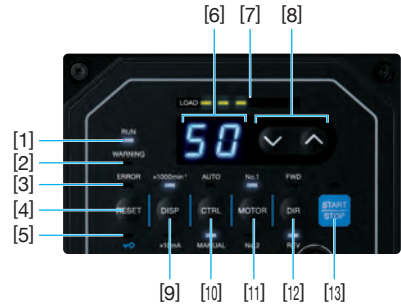
\* : Load Monitor



- Motor Connector No.1, No.2
- Air Output Joint
- Air Input Joint
- External Input / Output Connector A, B
- Fixing Power Cord Hook Bar
- Power Cord Hook
- Main Power Switch
- Main Power Intake with Power Supply Fuses




- [1] Rotating LED (RUN)
- [2] Warning LED (WARNING)
- [3] Error LED (ERROR)
- [4] Error Reset Button (RESET)
- [5] KEY HOLD LED Button
- [6] Digital Speed Indicator
- [7] Load Monitor (LOAD)
- [8] Motor Speed Adjustment Button (SPEED)
- [9] DISPLAY (DISP) Button
- [10] Control Button (CTRL)
- [11] Motor Spindle Selection Button (MOTOR)
- [12] Rotation Direction Button (DIR)
- [13] Start / Stop Button (START / STOP)



### Specifications

Product Name : NE314  
 Power Source : AC 100-240V, 50-60 Hz  
 1 Phase  
 Power Consumption : 1.45A  
 Weight : 4 lb. 13.60 oz.  
 Dimensions : W4.25" x D6.60" x H6.93"

### E2000 Controller

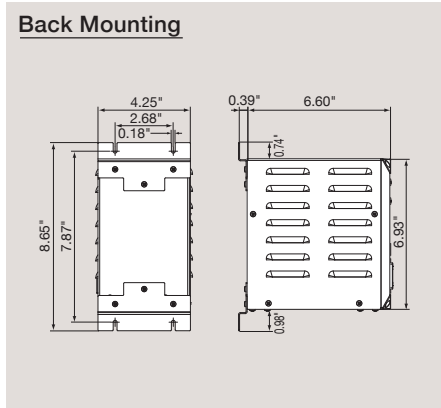
Product Code	Plug Type	Product Name	Standard Equipment · Accessories
7720	100 - 240V (Without Plug) 	NE314	<ul style="list-style-type: none"> <li>• Power Cord · ø6mm Air Hose with Filter · Power Cord Hook · Reducer</li> <li>• Connector Cap (Provided) : 2 pcs. · Connector Cover A / B (Provided)</li> <li>• Bracket : 2 pcs. · Air branching joint : 1 pc. · Fuse : 2 pcs.</li> <li>• Mounting Screw : 6 pcs.</li> </ul>

\*Please refer to Technical Data 7-p10~p17 in detail about External Input-Output Connector.  
 \*AC100-240V for international operation.

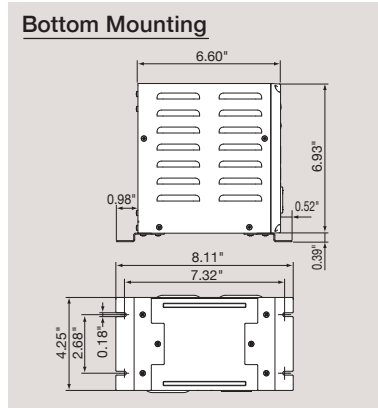
Interface Cable  
[Page 2-p24](#) 

### ● Mounting Bracket

#### Back Mounting



#### Bottom Mounting



\*Order by product code. **2-p19**

1
EmaxEV
ESPRT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.89"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98" ø0.89"
E3000 - 80,000rpm
<b>E4000</b>
<b>3</b>
MA
ø0.89"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.81" ø0.81"
ø1.0" ø0.98"
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
<b>5</b>
AIR LINE KIT
<b>6</b>
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# E2000 SERIES $\phi 0.98''$ ( $\phi 25$ mm) MOTOR

<b>EM</b>	<b>25</b>	<b>N</b>	-	<b>5000</b>	-	<b>J</b>	<b>N = ⊕ Clutch</b>
Product Symbol	Outside Diameter	Clutch		Max. Motor Speed		Cord Variety	

New Model Name for E2000 Series Motor

<b>Product Code</b>	<b>7904</b>	<b>BRUSHLESS MOTOR</b>	<b>EM25N-5000-J</b>	<b>50,000 rpm</b>
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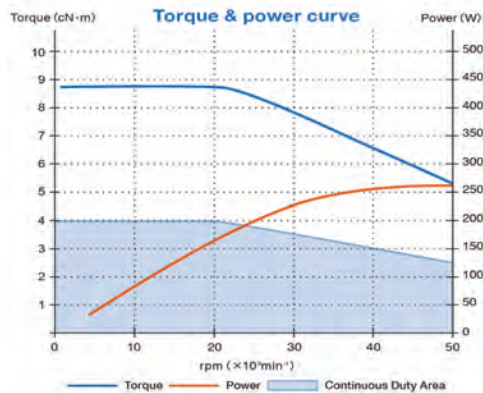
- Motor Speed ..... 1,000~50,000 rpm
- Max. Output Power ..... 250W
- Housing ..... Stainless steel (SUS416)
- Cord ..... Length 1 ft
- Air Coolant Hose ..... Length 1 ft
- Weight ..... 8.92 oz.

### Brushless Motor

Product Code	Product Name	Outside Diameter	Standard Equipment · Accessories
7904	EM25N-5000-J	$\phi 0.98''$ ( $\phi 25$ mm)	<ul style="list-style-type: none"> <li>• Cord with Quick Disconnect</li> <li>• Air Coolant Hose</li> <li>• Reducer</li> <li>• Wrench (22 x 27) : 1 pc.</li> </ul>

\*There is not an outside diameter  $\phi 1.0''$ ( $\phi 25.4$  mm) dimension.

### Torque Characteristics of EM25N-5000-J

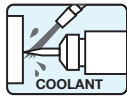


### Motor Cord

Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to
	7722	Motor Cord 4M EMCD-2350J-4M	12.1 ft (3.7m)	<ul style="list-style-type: none"> <li>• Air Hose</li> <li>• Connector Cap (Provided)</li> </ul>	EM-2350J
	7723	Motor Cord 6M EMCD-2350J-6M	18.7 ft (5.7m)		
	7724	Motor Cord 8M EMCD-2350J-8M	25.3 ft (7.7m)		



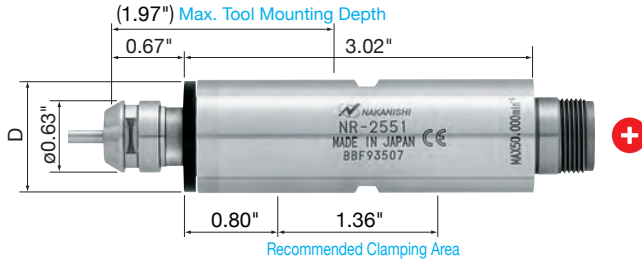
# E2000 SERIES $\phi 1.0''$ , $\phi 0.98''$ ( $\phi 25.4$ , $\phi 25$ mm) MOTOR



E2000 Series can be used in conjunction with water or oil based coolants.

\*Do not exceed the allowable motor speed for the spindle.

## Product Code **7854** SPINDLE NR-H2551 (Ceramic Bearing) 50,000 rpm



- Designed for increased durability by utilizing ceramic bearings, for obtaining strong rigidity in both radial direction and thrust directions by utilizing 2 super-precision ceramic bearings on the front side and 2 on the rear side. This spindle can be used for small-diameter milling, drilling, slitting, chamfering, grinding, etc.

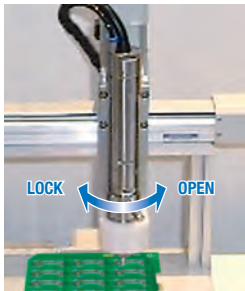
- Allowable Motor Speed ..... 50,000 rpm
- Spindle Accuracy ..... Within 1  $\mu$ m
- Weight ..... 8.92 oz.
- Additional collet purchase required:**
  - Collet Series CHK-XX .....  $\phi 0.5$ mm~ $\phi 6.35$ mm
  - Recommended ..... CHK-3.175  $\phi 1/8''$  (See Page 6-p3 for additional sizes)
- Collet Nut (K-265) ..... For Collet (CHK)
- Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24''$  (I.D.) x  $\phi 1.18''$  (O.D.)
- Grindstone Arbor (AGM -03) ..... For grinding wheel with I.D. of  $\phi 5$  mm

Spindle D= $\phi 1.0''$  ( $\phi 25.4$  mm),  $\phi 0.98''$  ( $\phi 25$  mm)

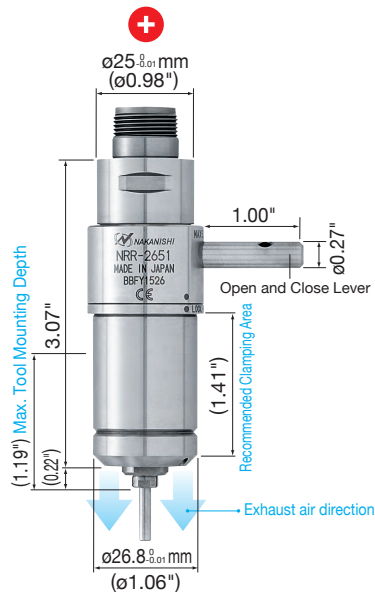
Product Code	Product Name	Outside Diameter	Standard Equipment - Accessories
7854	NR-H2551	$\phi 1.0''$ ( $\phi 25.4$ mm)	• Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs., (22 x 27) : 1 pc.
7853	NR-2551	$\phi 0.98''$ ( $\phi 25$ mm)	

## Product Code **1835** LEVER TYPE SPINDLE NRR-2651 50,000 rpm

No wrenches are required for tool changing.



NRR-2651 Installed Example



- Allowable Motor Speed ..... 50,000 rpm
- Spindle Accuracy ..... Within 1  $\mu$ m
- Standard Size Collet (CHB-3.175) .....  $\phi 1/8''$
- Weight ..... 11.64 oz.
- < Optional >
- Collet (CHB- [ ]) .....  $\phi 2.0$ ,  $\phi 3.0$  mm,  $\phi 1/8''$ ,  $\phi 4.0$  mm (See Page 6-p2 for details)

Lever Type Spindle  $\phi 0.98''$  ( $\phi 25$  mm)

Product Code	Product Name	Outside Diameter	Standard Equipment - Accessories
1835	NRR-2651	$\phi 0.98''$ ( $\phi 25$ mm)	• Collet $\phi 1/8''$ (CHB-3.175) • Wrench (6.1 x 8), (10 x 10), (22 x 27): 1 pc. each

\*There is not an outside diameter  $\phi 1.0''$  ( $\phi 25.4$  mm) dimension.

1
EmaxEV
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''$ ( $\phi 0.98''$ ) ( $\phi 0.897''$ )
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.07''$ , $\phi 0.98''$ , $\phi 0.897''$
E3000 - 80,000rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''$ , $\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''$ , $\phi 0.79''$
$\phi 0.81''$ , $\phi 0.91''$
$\phi 1.0''$ , $\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
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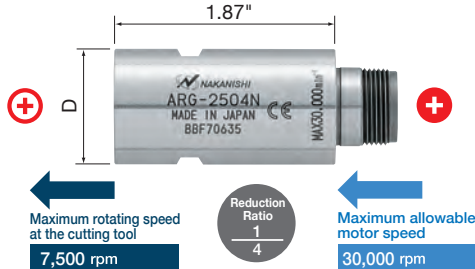
# E2000 SERIES $\phi 0.98''$ ( $\phi 25$ mm) SPEED REDUCER



**Caution :** Use the motor at motor speed less than maximum allowable speed or use a speed reducer. DO NOT exceed the allowable motor speed for the spindle and the reducer.

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - One Piece
E3000 - Modular $\phi 1.18''$
$\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - $\phi 0.000$ rpm
E4000
3
MA $\phi 0.897''$ $\phi 1.0''/\phi 0.98''$ $\phi 1.18''$
MS $\phi 0.75''/\phi 0.79''$ $\phi 0.87''/\phi 0.91''$ $\phi 1.0''/\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
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## Product Code **1822** SPEED REDUCER 1/4 ARG-2504N



Maximum allowable motor speed **30,000 rpm**

Maximum rotating speed at the cutting tool  
<Reduction Ratio : 1/4> **7,500 rpm**

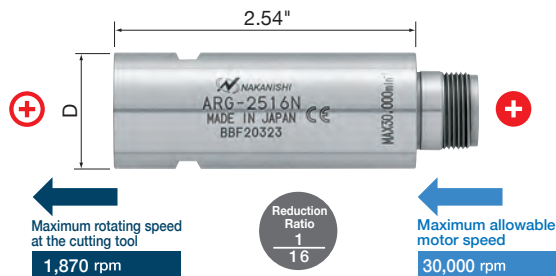
- Speed Reducing Mechanism ..... By planetary gear system
- Weight ..... 5.29 oz.

- If the speed reducer is connected between the motor and the spindle, it reduces the rotating speed and increases the torque while keeping the motor speed unchanged.

Speed Reducer D= $\phi 1.0''$  ( $\phi 25.4$  mm),  $\phi 0.98''$  ( $\phi 25$  mm)

Product Code	Product Name	Outside Diameter	Speed Reduction Ratio
1822	ARG-2504N	$\phi 0.98''$ ( $\phi 25$ mm)	Speed Reduction Ratio 1/4

## Product Code **1824** SPEED REDUCER 1/16 ARG-2516N



Maximum allowable motor speed **30,000 rpm**

Maximum rotating speed at the cutting tool  
<Reduction Ratio : 1/16> **1,870 rpm**

- Speed Reducing Mechanism ..... By planetary gear system
- Weight ..... 7.23 oz.

- If the speed reducer is connected between the motor and the spindle, it reduces the rotating speed and increases the torque while keeping the motor speed unchanged.

Speed Reducer D= $\phi 1.0''$  ( $\phi 25.4$  mm),  $\phi 0.98''$  ( $\phi 25$  mm)

Product Code	Product Name	Outside Diameter	Speed Reduction Ratio
1824	ARG-2516N	$\phi 0.98''$ ( $\phi 25$ mm)	Speed Reduction Ratio 1/16

## 25 Pin INTERFACE CABLE



- 3 Meter long Interface Cable provides a DB25 Male Connector at one end and a blunt cut on the opposite end. Includes a pin-out wire diagram for easy interfacing of I/O signals from any NSK Control to a CNC Control.

### 25 Pin Interface Cable

Product Code	Product Name	
DB25M	DB25M	For NSK Control Connector A 12.5 ft
DB25MXL	DB25MXL	For NSK Control Connector A 25 ft

## 15 Pin INTERFACE CABLE

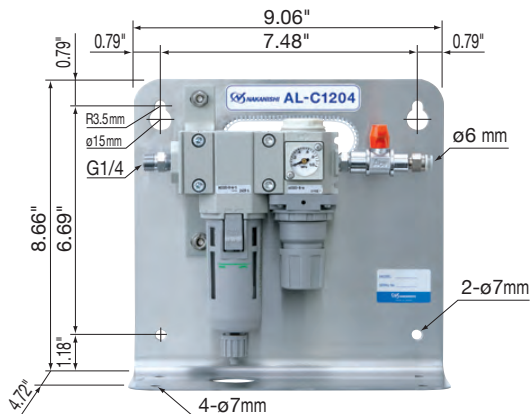


- 3 Meter long Interface Cable provides a DB15 Male Connector at one end and a blunt cut on the opposite end. Includes a pin-out wire diagram for easy interfacing of the (OP1) "E-Stop Input Circuit" and "Safety Relay Circuit" from the NSK Control to a CNC Control.

### 15 Pin Interface Cable

Product Code	Product Name	
DB15M	DB15M	For NSK Control Connector B

**Product Code 4504 AIR LINE KIT AL-C1204**



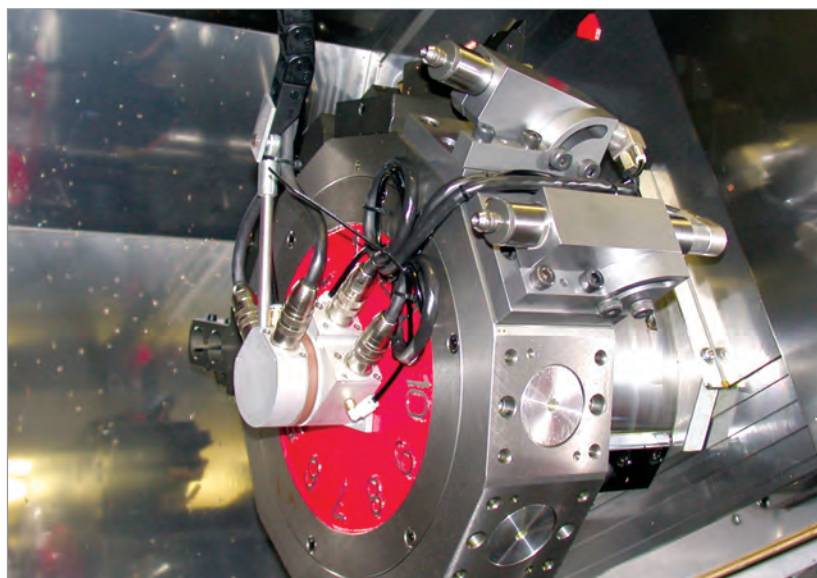
- The AL-C1204 Air Line Kit is designed to deliver clean, dry air to Electric Motors via the Controller. The filter removes small amounts of debris while the adjustable regulator provides the correct air pressure for cooling and purging.

**Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 µm )**

Product Code	Product Name	Standard Equipment · Accessories	
4504	AL-C1204	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> </ul>	

## Rotary Coupling

An electric/pneumatic coupling is now available that allows NAKANISHI Electric Spindles up to 30mm diameter, to be mounted to the turret of a CNC turning machine. The rotary coupling prevents power cable and pneumatic lines from getting tangled when the turret is rotated. Contact NSK America at 800-585-4675 for complete details.



1

EmaxEVO  
ESPRT  
ROTUS  
IMPULSE  
PRESTO II  
Sheenus  
ZERO  
Sonic-Cutter  
ZERO

2

iSpeed3  
E2000  
ø1.0"/ø0.98"/ø0.897"  
E3000  
- One Piece  
E3000  
- Modular  
ø1.18"  
ø1.07"/ø0.98"  
ø0.897"  
E3000  
- 80,000rpm  
E4000

3

MA  
ø0.897"  
ø1.0"  
ø0.98"  
ø1.18"  
MS  
ø0.75"  
ø0.75"  
ø0.897"  
ø0.91"  
ø1.0"  
ø0.98"

4

HES  
iSpeed5  
HTS  
PLANET  
Xpeed  
ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL  
DATA

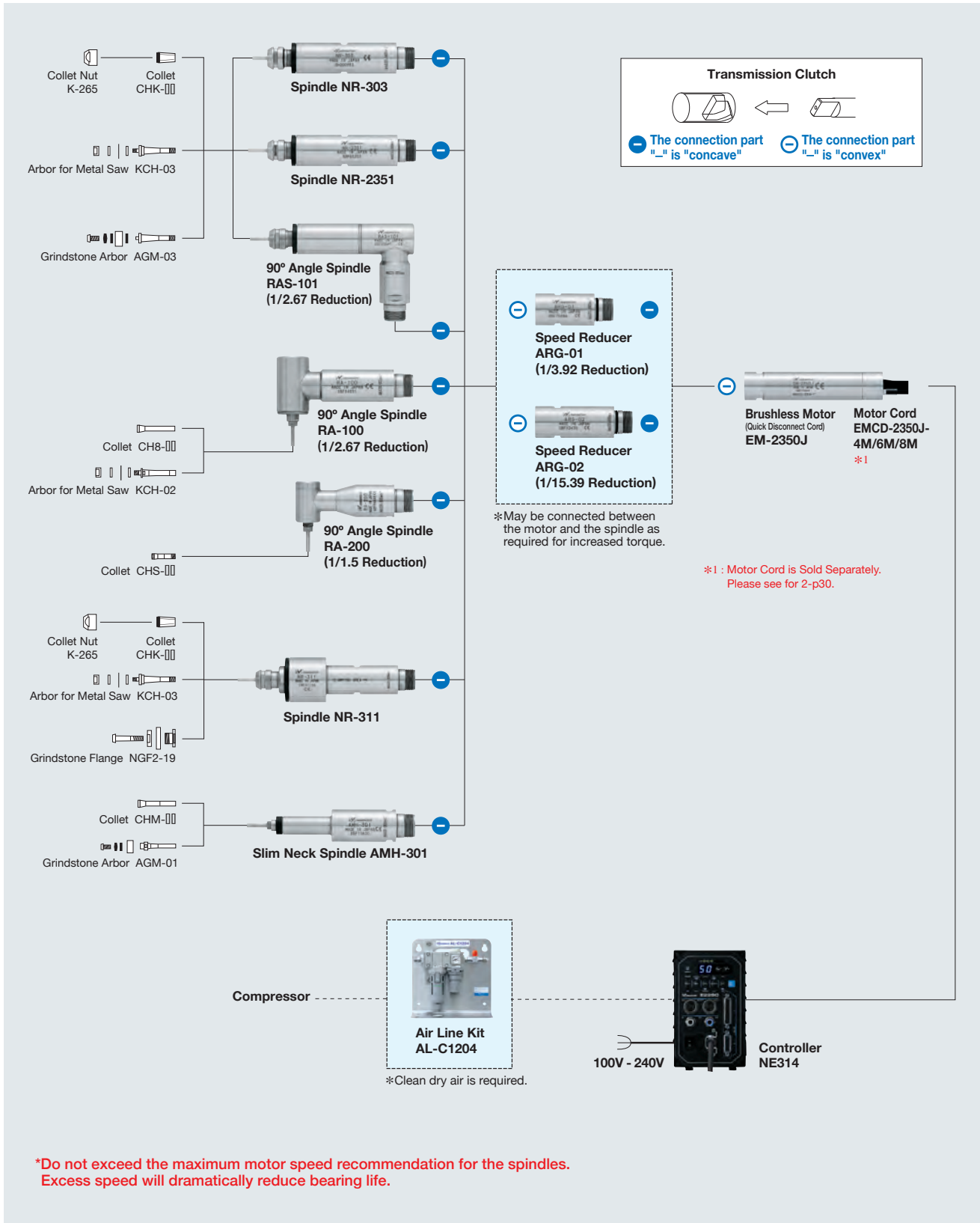
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- EmaxEVO
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- IMPULSE
- PRESTO II
- Sheenus ZERO
- Sonic-Cutter ZERO
- 2
- iSpeed3
- E2000 ø1.0"/ø0.98"/ø0.897"
- E3000 - One Piece
- E3000 - Modular
- ø1.18"
- ø1.0"/ø0.98"/ø0.897"
- E3000 - ø0,000rpm
- E4000
- 3
- MA
- ø0.897"
- ø1.0"
- ø0.98"
- ø1.18"
- MS
- ø0.75"
- ø0.79"
- ø0.81"
- ø0.83"
- ø1.0"
- ø0.98"
- 4
- HES
- iSpeed5
- HTS
- PLANET
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- ABT
- 5
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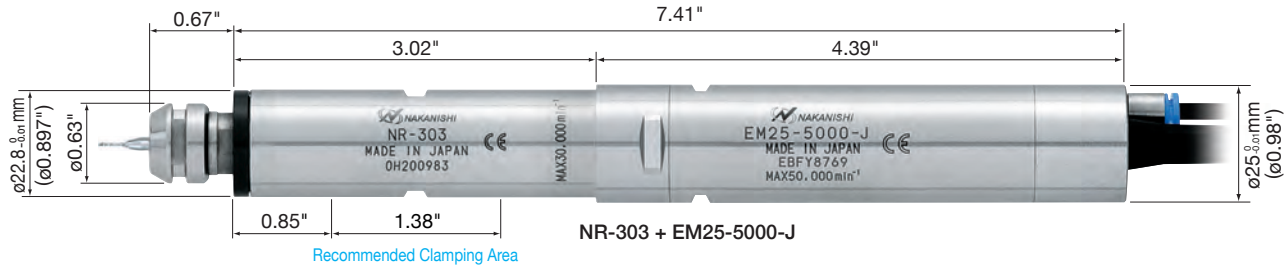
## E2000 Series ø0.897" (ø22.8 mm) System Chart



\*Do not exceed the maximum motor speed recommendation for the spindles. Excess speed will dramatically reduce bearing life.



## Features of E2000 Series



### ● Maximum Output 200W

The E2000 Series motor is a brushless DC motor utilizing hall elements and rare-earth magnets in the rotor. The Motor develops 200W.

### ● Brushless Motor

The brushless DC Motor designs allows for excellent reliability and durability. The brushless DC Motor can be steplessly controlled up to 50,000 rpm.

### ● Air-Cooling System

Air-cooled motor uses a small volume of dry air (1.0 CFM) to minimize heat buildup and allow continuous operation. Air pressure required is 36-44 PSI.

### ● Wide Variety of Interchangeable Spindles are Available

Straight-type spindles are available along with speed reducers to increase torque as well as 90° degree spindles to provide outstanding system flexibility.

### ● System Protection Function

The E2000 Series is equipped with a protective function to stop the spindle rotation automatically in case of overload ensuring safe and smooth operation. When the protective circuit is activated, an error code is shown on the digital display. In case of an air supply failure, the protective circuit limits the motor/spindle to 30,000 rpm maximum.

### ● Operating Parameters

The operating parameters can be preset for : \*Fixed Motor Speed \*Maximum Motor Speed \*Operating without Air and several other functions.

### ● 2 Motors can be connected (No Simultaneous Operation)

Up to 2 motors may be connected to 1 controller and operated sequentially making this system very easy to use when multiple live tools are required.

### ● Compact Vertical Controller

The compact, vertical design of the controller makes it extremely easy to mount in cramped control cabinets.

### ● Power Source Auto Detection

The controller is capable of being connected to AC100V or AC240V power sources. The Auto Sensing feature reduces installation time and eliminates the possibility of connecting the incorrect voltage.

### ● Stainless Steel Body

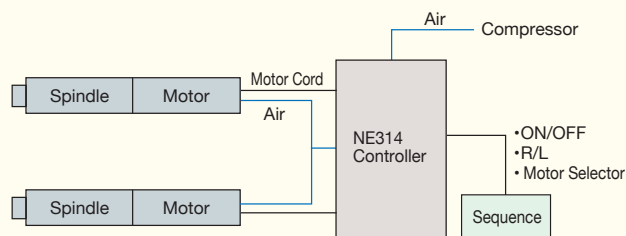
The housings of the motor and spindle are made from precision ground stainless steel (SUS416).

### ● Emergency Stop Function

By setting a parameter, an emergency stop signal can be activated. Using the open detection signal of the motor power line through the safety relay, the E2000 controller can establish a safe operating system.

## Automatic Control System Chart

### ● Sequential Operation of up to 2 Motor / Spindles



\*The E2000 Series controller has the ability to control up to 2 motors sequentially. 2 motors can not be run simultaneously.

1

EmaxEV

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus ZERO

Sonic-Cutter ZERO

2

iSpeed3

E2000

— One Piece

E3000

— Modular

ø1.0"/ø0.98"

ø0.897"

E3000

— 80,000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.79"

ø0.81"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

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## High Precision and High-Performance Controller

- **High-Performance Electric Circuit**  
‘High grade feedback loop maintains constant spindle speed even if load is varied’, and ‘Gentle start/Quick stop functions’ are provided.
- **Warning/Error Functions**  
Motor/Spindle is stopped when an Error or Warning Code has been detected and indicated on the LED Display. An output signal can be sent to the CNC control.  
Warnings Codes : i.e. • High Air Pressure • Low Air Pressure  
• Controller Overheat • Motor Overload  
Errors Codes : i.e. • Rotor Lock • Overheat • Overload  
• Torque Load • External Signal Error  
• E-Stop • Incompatible Motor
- **Selector Function**  
Max. 2 motors can be controlled sequentially. 2 motors can not be run simultaneously.
- **Motor Speed Display**  
Motor speed is displayed precisely and digitally.
- **LOAD Monitor LED**  
Motor load is displayed by 6 LED's to indicate load level.

- **External Input-Output Signals**  
**(Refer to Technical Data 7-p10~p17 in detail)**  
Motor/Spindle can be controlled and monitored by external input-output signals. Controls : Start/Stop, Motor Speed Control, FWD./REV. Rotation and etc. Monitor : While Rotating, Rotation Pulse, Controller Power Source Detection, AUTO Mode, Motor Speed Voltage, Torque Load etc.
- **Selection of Illumination Brightness**



Select the brightness of the blue illumination from 4 patterns.

2

3

4

5

6

7

8

## E2000 Series Combination Example

50,000 rpm



### Controller Specifications

Product Name	NE314
Power Source	AC 100 - 240V, 50-60 Hz 1 Phase
Power Consumption	1.45A
Weight	4 lb. 13.60 oz.
Dimensions	W4.25" x D6.60" x H6.93"

### Motor & Spindle

Motor	EM-2350J
Spindle	NR-2351
Speed	1,000~50,000 rpm
Weight	1 lb. 8.74 oz.
Dimensions	ø0.98" x 8.07"

### E2000, NR-2351 Combination Example

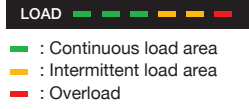
Product Code	Product Name	Product	
7720	NE314	Controller	
7721	EM-2350J	Brushless Motor	
7855	NR-2351	Spindle	
4504	AL-C1204	Air Line Kit	

# E2000 SERIES CONTROLLER

- 1,000~50,000 rpm
- Maximum Output 200W
- 2 motors can be connected (No Simultaneous Operation).
- External Input / Output Control Signal (Refer to 7-p10~p17 page of this catalog)

Product Code **7720** **E2000 CONTROLLER NE314** 50,000 rpm

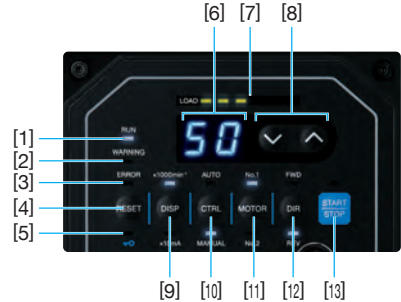
\* : Load Monitor



- Motor Connector No.1, No.2
- Air Output Joint
- Air Input Joint
- External Input / Output Connector A, B
- Fixing Power Cord Hook Bar
- Power Cord Hook
- Main Power Switch
- Main Power Intake with Power Supply Fuses




- [1] Rotating LED (RUN)
- [2] Warning LED (WARNING)
- [3] Error LED (ERROR)
- [4] Error Reset Button (RESET)
- [5] KEY HOLD LED Button
- [6] Digital Speed Indicator
- [7] Load Monitor (LOAD)
- [8] Motor Speed Adjustment Button (SPEED)
- [9] DISPLAY (DISP) Button
- [10] Control Button (CTRL)
- [11] Motor Spindle Selection Button (MOTOR)
- [12] Rotation Direction Button (DIR)
- [13] Start / Stop Button (START / STOP)



### Specifications

Product Name : NE314  
 Power Source : AC 100-240V, 50-60 Hz  
 1 Phase  
 Power Consumption : 1.45A  
 Weight : 4 lb. 13.60 oz.  
 Dimensions : W4.25" x D6.60" x H6.93"

### E2000 Controller

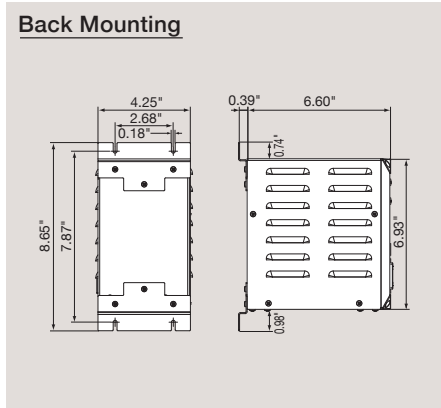
Product Code	Plug Type	Product Name	Standard Equipment · Accessories
7720	100 - 240V (Without Plug) 	NE314	<ul style="list-style-type: none"> <li>• Power Cord · ø6mm Air Hose with Filter · Power Cord Hook · Reducer</li> <li>• Connector Cap (Provided) : 2 pcs. · Connector Cover A / B (Provided)</li> <li>• Bracket : 2 pcs. · Air branching joint : 1 pc. · Fuse : 2 pcs.</li> <li>• Mounting Screw : 6 pcs.</li> </ul>

\*Please refer to Technical Data 7-p10~p17 in detail about External Input-Output Connector.  
 \*AC100-240V for international operation.

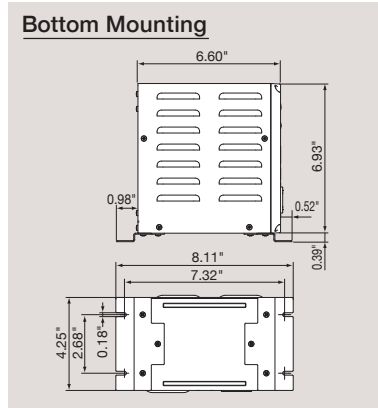
Interface Cable  
[Page 2-p24](#) 

### ● Mounting Bracket

#### Back Mounting



#### Bottom Mounting



\*Order by product code. **2-p27**

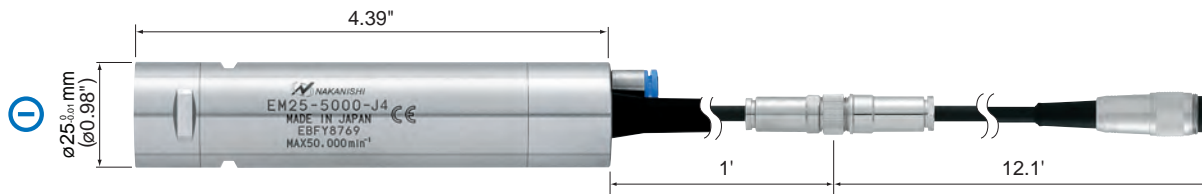
1	EmaxEV
	ESPRT
	ROTUS
	IMPULSE
	PRESTO II
	Sheenus ZERO
	Sonic-Cutter ZERO
2	iSpeed3
	E2000 ø1.0"/ø0.99"/ø0.897"
	E3000 - One Piece
	E3000 - Modular
	ø1.18"
	ø1.07"/ø0.98" ø0.897"
	E3000 - 80,000rpm
	E4000
3	MA
	ø0.897"
	ø1.0" ø0.98"
	ø1.18"
	MS
	ø0.75" ø0.79"
	ø0.81" ø0.81"
	ø1.0" ø0.98"
4	HES
	iSpeed5
	HTS
	PLANET
	Xpeed
	ABT
5	AIR LINE KIT
6	PARTS
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# E2000 SERIES BRUSHLESS MOTOR

<b>EM</b> Product Symbol	<b>23</b> Outside Diameter	<b>50</b> Max. Motor Speed	<b>J4</b> Cord Variety	<b>Clutch</b>
-----------------------------	-------------------------------	-------------------------------	---------------------------	---------------

New Model Name for E2000 Series Motor

## Product Code **8333** BRUSHLESS MOTOR **EM25-5000-J4** (Cord with Quick Disconnect) **50,000 rpm**



- Motor Speed ..... 1,000~50,000 rpm
- Max. Output Power ..... 200W
- Housing ..... Stainless steel (SUS416)
- Cord ..... Length 13 ft
- Air Coolant Hose ..... Length 13 ft
- Weight ..... 8.82 oz. (w/o Cord)

### Brushless Motor

Product Code	Product Name	Outside Diameter	Standard Equipment · Accessories
<b>8333</b>	<b>EM25-5000-J4</b>	ø0.98" (ø25mm)	<ul style="list-style-type: none"> <li>• Cord with Quick Disconnect</li> <li>• Air Coolant Hose</li> <li>• Reducer</li> <li>• Wrench (22 x 27) : 1 pc.</li> </ul>

\*There is not an outside diameter ø1.0"(ø25.4 mm) dimension.

## Product Code **7721** BRUSHLESS MOTOR **EM-2350J** **50,000 rpm**



- Motor Speed ..... 1,000~50,000 rpm
- Max. Output Power ..... 200W
- Housing ..... Stainless steel (SUS416)
- Cord ..... Length 1 ft
- Air Coolant Hose ..... Length 1 ft
- Weight ..... 9.17 oz. (w/ Cord)

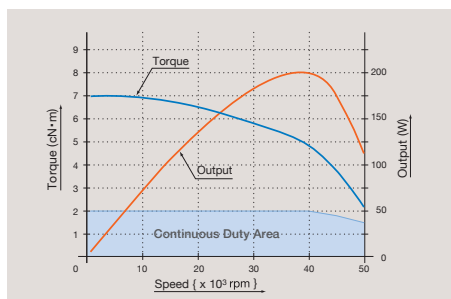
### Brushless Motor

Product Code	Product Name	Standard Equipment · Accessories
<b>7721</b>	<b>EM-2350J</b>	• Wrench (20 x 24) : 1 pc.

### Motor Cord

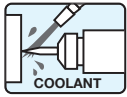
Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to
	<b>7722</b>	Motor Cord 4M EMCD-2350J-4M	12.1 ft (3.7m)	<ul style="list-style-type: none"> <li>• Air Hose</li> <li>• Connector Cap (Provided)</li> </ul>	EM-2350J
	<b>7723</b>	Motor Cord 6M EMCD-2350J-6M	18.7 ft (5.7m)		
	<b>7724</b>	Motor Cord 8M EMCD-2350J-8M	25.3 ft (7.7m)		

### ● Torque Characteristics of EM-2350J





# E2000 SERIES $\phi 0.897''$ ( $\phi 22.8$ mm) SPINDLE

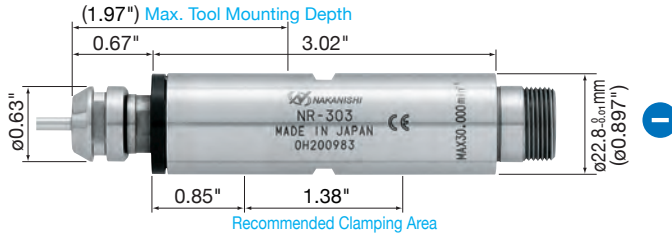


E2000 Series can be used in conjunction with water or oil based coolants.

Product Code **7861**

## SPINDLE NR-303

**30,000 rpm**



- This spindle is ideal for small diameter drilling, milling and grinding. A wide selection of collets and accessories is available.

- Allowable Motor Speed ..... 30,000 rpm
- Spindle Accuracy ..... Within 2  $\mu$ m
- Weight ..... 7.58 oz.

**Additional collet purchase required:**

Collet Series CHK-XX .....  $\phi 0.5$ mm~ $\phi 6.35$ mm  
 Recommended ..... CHK-3.175  $\phi 1/8''$   
 (See Page 6-p3 for additional sizes)

- Collet Nut (K-265) ..... For Collet (CHK)
- Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24''$  (I.D.) x  $\phi 1.18''$  (O.D.)
- Grindstone Arbor (AGM -03) ..... For grinding wheel with I.D. of  $\phi 5$  mm

*\*Do not exceed the allowable motor speed for the spindle.*

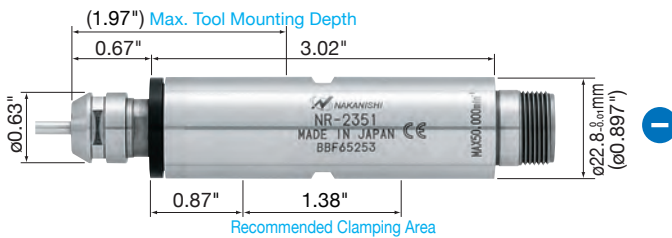
### Spindle

Product Code	Product Name	Standard Equipment · Accessories	
7861	NR-303	<ul style="list-style-type: none"> <li>Collet Nut (K-265) : 1 pc.</li> <li>Wrench (12 x 14) : 2 pcs., (20 x 24) : 1 pc.</li> </ul>	

Product Code **7855**

## SPINDLE NR-2351 (Ceramic Bearings)

**50,000 rpm**



- This spindle is ideal for ultra-precision, small diameter drilling, milling and grinding. A wide selection of collets and accessories is available.

- Allowable Motor Speed ..... 50,000 rpm
- Spindle Accuracy ..... Within 1  $\mu$ m
- Weight ..... 7.58 oz.

**Additional collet purchase required:**

Collet Series CHK-XX .....  $\phi 0.5$ mm~ $\phi 6.35$ mm  
 Recommended ..... CHK-3.175  $\phi 1/8''$   
 (See Page 6-p3 for additional sizes)

- Collet Nut (K-265) ..... For Collet (CHK)
- Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24''$  (I.D.) x  $\phi 1.18''$  (O.D.)
- Grindstone Arbor (AGM -03) ..... For grinding wheel with I.D. of  $\phi 5$  mm

### Spindle

Product Code	Product Name	Standard Equipment · Accessories	
7855	NR-2351	<ul style="list-style-type: none"> <li>Collet Nut (K-265) : 1 pc.</li> <li>Wrench (12 x 14) : 2 pcs., (20 x 24) : 1 pc.</li> </ul>	

1

EmaxEV

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus ZERO

Sonic-Cutter ZERO

2

iSpeed3

E2000

$\phi 1.0''$ / $\phi 0.98''$ / $\phi 0.897''$

E3000

- One Piece

E3000

- Modular

$\phi 1.18''$

$\phi 1.07''$ / $\phi 0.98''$ / $\phi 0.897''$

E3000

- 80,000rpm

E4000

3

MA

$\phi 0.897''$

$\phi 1.0''$ / $\phi 0.98''$

$\phi 1.18''$

MS

$\phi 0.75''$ / $\phi 0.79''$

$\phi 0.897''$ / $\phi 0.91''$

$\phi 1.0''$ / $\phi 0.98''$

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

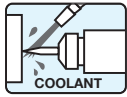
TECHNICAL DATA

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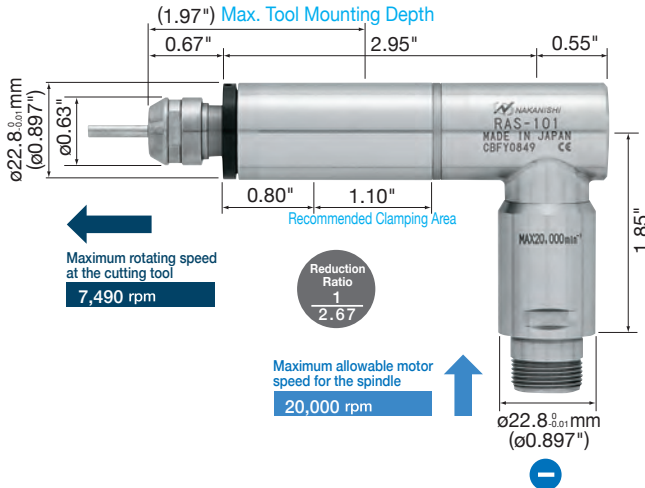
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# E2000 SERIES $\phi 0.897$ "( $\phi 22.8$ mm) SPINDLE



**Caution :** Use the motor at motor speed less than maximum allowable speed or use the speed reducer. DO NOT exceed the allowable motor speed for the spindle and the reducer.

## Product Code **7839** 90° ANGLE SPINDLE **RAS-101**



Maximum allowable motor speed for the spindle **20,000 rpm**

Maximum rotating speed at the cutting tool  
<Reduction Ratio : 1/2.67> **7,490 rpm**

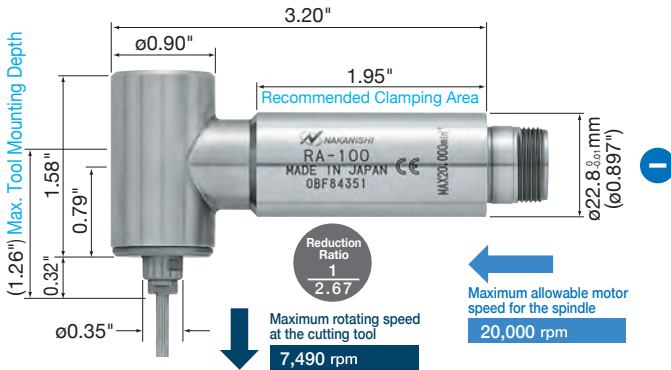
- Spindle Accuracy ..... Within 2  $\mu$ m
- Weight ..... 11.46 oz.
- **Additional collet purchase required:**
  - Collet Series CHK-XX .....  $\phi 0.5$ mm~ $\phi 6.35$ mm
  - Recommended ..... CHK-3.175  $\phi 1/8$ "  
(See Page 6-p3 for additional sizes)
  - Collet Nut (K-265) ..... For Collet (CHK)
  - Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24$ " (I.D.) x  $\phi 1.18$ " (O.D.)
  - Grindstone Arbor (AGM-03) ..... For grinding wheel I.D. of  $\phi 5$  mm

### 90° Angle Spindle

Product Code	Product Name	Standard Equipment · Accessories	
7839	RAS-101	• Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs., (20 x 24) : 1 pc.	

- 90° Angle type spindle with wide chucking range up to  $\phi 1/4$ "( $\phi 6.35$  mm) is suitable for installations where space restrictions exist.

## Product Code **2902** 90° ANGLE SPINDLE **RA-100**



Maximum allowable motor speed for the spindle **20,000 rpm**

Maximum rotating speed at the cutting tool  
<Reduction Ratio : 1/2.67> **7,490 rpm**

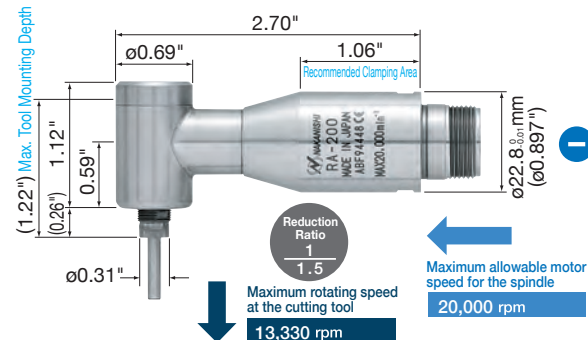
- Standard Size Collet (CH8-3.175) .....  $\phi 1/8$ "
- Weight ..... 9.56 oz.
- < Optional >
  - Collet (CH8-□□) .....  $\phi 0.8$  mm~ $\phi 3.175$  mm  
(See Page 6-p5 for details)
  - Metal Saw Arbor (KCH-02) ..... For  $\phi 0.24$ " (I.D.) x  $\phi 1.18$ " (O.D.)

### 90° Angle Spindle

Product Code	Product Name	Standard Equipment · Accessories	
2902	RA-100	• Collet $\phi 1/8$ " (CH8-3.175) : 1 pc. • Wrench (7 x 5.5), (8 x 5), (20 x 24) : 1 pc. each.	

- This spindle is capable of working on corners difficult to work with straight type, drilling on side face and, slitting of aluminum, brass, etc. with the use of  $\phi 1.18$ "( $\phi 30$  mm) Metal Saw.

## Product Code **2903** 90° ANGLE SPINDLE **RA-200**



Maximum allowable motor speed for the spindle **20,000 rpm**

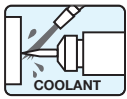
Maximum rotating speed at the cutting tool  
<Reduction Ratio : 1/1.5> **13,330 rpm**

- Standard Size Collet (CHS-3.175) .....  $\phi 1/8$ "
- Weight ..... 5.82 oz.
- < Optional >
  - Collet (CHS-□□) .....  $\phi 0.8$  mm~ $\phi 3.175$  mm  
(See Page 6-p4 for details)

### 90° Angle Spindle

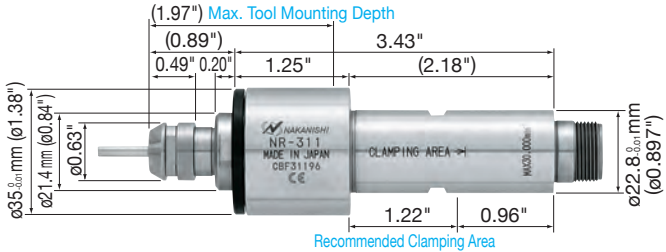
Product Code	Product Name	Standard Equipment · Accessories	
2903	RA-200	• Collet $\phi 1/8$ " (CHS-3.175) : 1 pc. • Wrench (7 x 5.1), (8 x 5), (20 x 24) : 1 pc. each.	

- This spindle can be used for working on corners difficult to work or unfit for working with straight type, drilling on side face, etc.



**Product Code 7832 SPINDLE NR-311**

**30,000 rpm**



- Large precision angular ball bearings are assembled on the front part of the spindle to provide rigidity on both the radial and the thrust sides. This spindle is suitable for grinding of deep hole, grinding by  $\phi 1.57$ " (40 mm) grindstone and small-diameter end milling.

- Allowable Motor Speed ..... 30,000 rpm
- Spindle Accuracy ..... Within 2  $\mu$ m
- Weight ..... 13.05 oz.

**Additional collet purchase required:**

- Collet Series CHK-XX .....  $\phi 0.5$ mm~ $\phi 6.35$ mm
- Recommended ..... CHK-3.175  $\phi 1/8$ " (See Page 6-p3 for additional sizes)

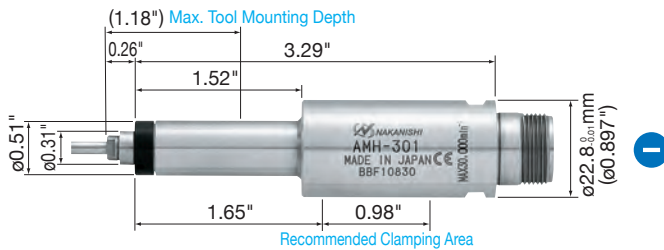
- Collet Nut (K-265) ..... For Collet (CHK)
- Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24$ " (I.D.) x  $\phi 1.18$ " (O.D.)
- Grindstone Flange (NGF2-19) ...  $\phi 19.05$  (I.D.) x  $\phi 40$  (O.D.) x 7 (W) mm

**Spindle**

Product Code	Product Name	Standard Equipment · Accessories	
7832	NR-311	<ul style="list-style-type: none"> <li>• Collet Nut (K-265) : 1 pc.</li> <li>• Wrench (12 x 14), (20 x 24) : 1 pc. each</li> </ul>	

**Product Code 2974 SPINDLE AMH-301**

**30,000 rpm**



- Suitable for the grinding of the inner surface of slender and deep holes. (Example) If a  $\phi 0.55$ " grindstone is mounted on the grinding arbor AGM-01, this spindle is suitable for the inner grinding of  $\phi 0.59$ " or more and with the depth of 1.57" or less.

- Allowable Motor Speed ..... 30,000 rpm
- Standard Size Collet (CHM-3.175) .....  $\phi 1/8$ "
- Weight ..... 6.03 oz.

< Optional >

- Collet (CHM-□□) .....  $\phi 1.0$  mm~ $\phi 3.175$  mm (See Page 6-p4 for details)
- Grindstone Arbor (AGM-01) ..... For grinding wheel with I.D. of  $\phi 5$  mm

**Spindle**

Product Code	Product Name	Standard Equipment · Accessories	
2974	AMH-301	<ul style="list-style-type: none"> <li>• Collet <math>\phi 1/8</math>" (CHM-3.175) : 1 pc.</li> <li>• Wrench (7 x 5.1), (6 x 4.5), (20 x 24) : 1 pc. each</li> </ul>	

\*Do not exceed the allowable motor speed for the spindle.

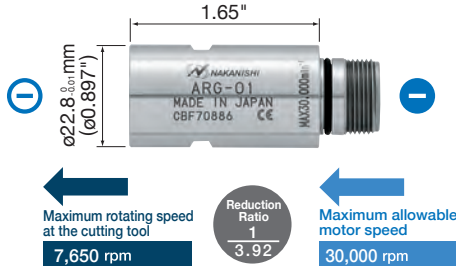
1
EmaxEV
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0$ "( $\phi 0.98$ "/ $\phi 0.897$ "
E3000 - One Piece
E3000 - Modular
$\phi 1.18$ "
$\phi 1.07$ "/ $\phi 0.98$ "/ $\phi 0.897$ "
E3000 - 30,000rpm
E4000
3
MA
$\phi 0.897$ "
$\phi 1.0$ "/ $\phi 0.98$ "
$\phi 1.18$ "
MS
$\phi 0.75$ "/ $\phi 0.719$ "
$\phi 0.81$ "/ $\phi 0.811$ "
$\phi 1.0$ "/ $\phi 0.98$ "
4
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# E2000 SERIES $\phi 0.897"$ ( $\phi 22.8$ mm) SPEED REDUCER



**Caution :** Use the motor at motor speed less than maximum allowable speed or use the speed reducer. DO NOT exceed the allowable motor speed for the spindle and the reducer.

## Product Code 1022 SPEED REDUCER 1/3.92 ARG-01



Maximum allowable motor speed **30,000 rpm**

Maximum rotating speed at the cutting tool <Reduction Ratio : 1/3.92> **7,650 rpm**

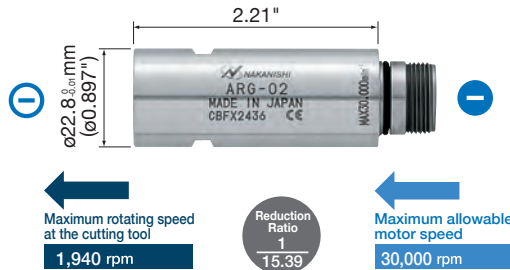
- Speed Reducing Mechanism ..... By planetary gear system
- Weight ..... 3.81 oz.

### Speed Reducer 1/3.92

Product Code	Product Name	Speed Reduction Ratio
1022	ARG-01	Speed Reduction Ratio 1/3.92

- If the speed reducer is connected between the motor and the spindle, it reduces the rotating speed and increases the torque while keeping the motor speed unchanged.

## Product Code 1023 SPEED REDUCER 1/15.39 ARG-02



Maximum allowable motor speed **30,000 rpm**

Maximum rotating speed at the cutting tool <Reduction Ratio : 1/15.39> **1,940 rpm**

- Speed Reducing Mechanism ..... By planetary gear system
- Weight ..... 5.22 oz.

### Speed Reducer 1/15.39

Product Code	Product Name	Speed Reduction Ratio
1023	ARG-02	Speed Reduction Ratio 1/15.39

- If the speed reducer is connected between the motor and the spindle, it reduces the rotating speed and increases the torque while keeping the motor speed unchanged.

## 25 Pin INTERFACE CABLE



- 3 Meter long Interface Cable provides a DB25 Male Connector at one end and a blunt cut on the opposite end. Includes a pin-out wire diagram for easy interfacing of I/O signals from any NSK Control to a CNC Control.

### 25 Pin Interface Cable

Product Code	Product Name	
DB25M	DB25M	For NSK Control Connector A 12.5 ft
DB25MXL	DB25MXL	For NSK Control Connector A 25 ft

## 15 Pin INTERFACE CABLE



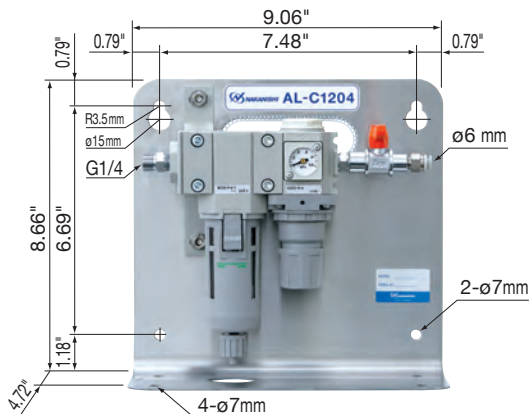
- 3 Meter long Interface Cable provides a DB15 Male Connector at one end and a blunt cut on the opposite end. Includes a pin-out wire diagram for easy interfacing of the (OP1) "E-Stop Input Circuit" and "Safety Relay Circuit" from the NSK Control to a CNC Control.

### 15 Pin Interface Cable

Product Code	Product Name	
DB15M	DB15M	For NSK Control Connector B



**Product Code 4504 AIR LINE KIT AL-C1204**



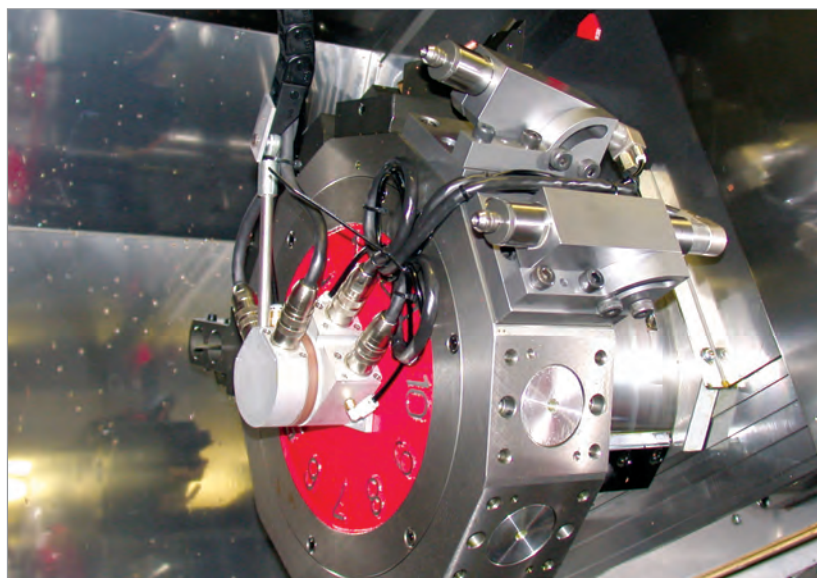
- The AL-C1204 Air Line Kit is designed to deliver clean, dry air to Electric Motors via the Controller. The filter removes small amounts of debris while the adjustable regulator provides the correct air pressure for cooling and purging.

**Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 µm )**

Product Code	Product Name	Standard Equipment · Accessories
4504	AL-C1204	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> </ul>

## Rotary Coupling

An electric/pneumatic coupling is now available that allows NAKANISHI Electric Spindles up to 30mm diameter, to be mounted to the turret of a CNC turning machine. The rotary coupling prevents power cable and pneumatic lines from getting tangled when the turret is rotated. Contact NSK America at 800-585-4675 for complete details.



1

EmaxEVO  
ESPRT  
ROTUS  
IMPULSE  
PRESTO II  
Sheenus ZERO  
Sonic-Cutter ZERO

2

iSpeed3  
E2000  
ø1.0"/ø0.98"/ø0.897"  
E3000  
- One Piece  
E3000  
- Modular  
ø1.18"  
ø1.07"/ø0.98"  
ø0.897"  
E3000  
- 80,000rpm  
E4000

3

MA  
ø0.897"  
ø1.0"  
ø0.98"  
ø1.18"  
MS  
ø0.75"  
ø0.79"  
ø0.897"  
ø0.91"  
ø1.0"  
ø0.98"

4

HES  
iSpeed5  
HTS  
PLANET  
Xspeed  
ABT

5

AIR LINE KIT

6

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# TO INFINITY AND BEYOND

1

EmaxEVO  
ESPERT  
ROTUS  
IMPULSE  
PRESTO II  
Sheenus  
ZERO  
Sonic-Cutter  
ZERO

2

iSpeed3  
E2000  
 $\phi 1.07/\phi 0.98/\phi 0.897$   
E3000  
— One Piece  
E3000  
— Modular  
 $\phi 1.18$   
 $\phi 1.0/\phi 0.98$   
 $\phi 0.897$   
E3000  
— 80,000rpm  
E4000

3

MA  
 $\phi 0.897$   
 $\phi 1.0$   
 $\phi 0.98$   
 $\phi 1.18$   
MS  
 $\phi 0.75$   
 $\phi 0.73$   
 $\phi 0.87$   
 $\phi 0.91$   
 $\phi 1.0$   
 $\phi 0.98$

4

HES  
iSpeed5  
HTS  
PLANET  
Xpeed  
ABT

5

AIR LINE KIT

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## E-Speed

The Possibilities Are Endless  
with the Versatile E-Speed



1,000~60,000 rpm

● One Piece Type

Outside Diameter  $\phi 1.18''$ ,  $\phi 0.98''$ ,  $\phi 0.79''$   
( $\phi 30$ , 25, 20 mm)

● Modular Type

Outside Diameter  $\phi 1.18''$ ,  $\phi 1.0''$ ,  $\phi 0.98''$ ,  $\phi 0.897''$   
( $\phi 30$ , 25.4, 25, 22.8 mm)

1,000~80,000 rpm

● Modular Type






Outside Diameter  $\phi 1.97''$ ,  $\phi 1.18''$   
( $\phi 50$ , 30 mm)



1
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - 80,000rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''/\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''$
$\phi 0.73''$
$\phi 0.87''$
$\phi 0.91''$
$\phi 1.0''/\phi 0.98''$
4
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HTS
PLANET
Xpeed
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## One Piece Type

### Straight Motor Spindles

Max. Speed (rpm)	O.D.	Product Name	Collet	Features	Page
60,000	ø1.18" (ø30mm)	EMS-3060K	CHK		2-p44
8,000		EMR-3008K	CHK		2-p45
60,000		EM30-S6000	CHK		2-p48
60,000	ø0.98" (ø25mm)	EM25-S6000	CHA		2-p48
	ø0.79" (ø20mm)	EM20-S6000	CHA		2-p49

### Straight Motor Spindles (Flange Type)














60,000	Flange Type	EMSF-3060K	CHK		2-p46
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### 90° Angle Motor Spindle

21,300	ø1.18" (ø30mm)	EMA-3020K	CHK		Collet Size : Max. ø6.35mm	2-p50
		EMA-3020S	CHSS		Collet Size : Max. ø3.175mm	2-p50









## Modular Type

### Straight Spindles

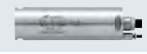

Max. Speed (rpm)	O.D.	Product Name	Collet	Page	Motors	Page
80,000	ø1.18" (ø30mm)	NR-3080S	CHA	 2-p75	80,000 EM-3080J 	2-p74
60,000		NR-3060S	CHK	 2-p58	60,000 EM-3060 	2-p54
50,000					60,000 EM-3060J 	2-p55
40,000		NR-403E	CHK	 2-p59		
50,000	ø1.0" (ø25.4mm)	NR-H2551	CHK	 2-p23	50,000 EM25N-5000-J4 	2-p22
	ø0.98" (ø25mm)	NR-2551	CHK	 2-p23		
	ø0.897" (ø22.8mm)	NR-2351	CHK	 2-p31	50,000 EM25-5000-J4 	2-p30
30,000		NR-303	CHK	 2-p31	50,000 EM-2350J 	2-p30

## Modular Type

### 90°Angle Spindles



Max. Speed (rpm)	O.D.	Product Name	Collet		Page
7,490	ø1.18" (ø30mm)	RAS-151E	CHK		2-p60
20,000		RAX-271E	CHK		2-p60
5,000		RAX-71E	CHK		2-p60
7,490		RA-151E	CH8		2-p61
13,330		RA-271E	CHS		2-p61
7,490	ø0.897" (ø22.8mm)	RAS-101	CHK		2-p32
		RA-100	CH8		2-p32
		RA-200	CHS		2-p32

### Motors



Max. Speed (rpm)		Page
30,000		2-p57
EM-3030T-J		
50,000		2-p30
EM-2350J		

### ATC Spindles

50,000	ø1.97" (ø50mm)	NR50-5100 ATC	CHR		2-p62
		NR50-5100 ATC-RS	CHR-RS		2-p62
	ø1.57" (ø40mm)	NR40-5100 ATC	CHB		2-p62

60,000		2-p54
EM-3060		
60,000		2-p55
EM-3060J		

### Spindle for deep hole grinding

30,000	ø0.897" (ø22.8mm)	NR-311	CHK		2-p33
		AMH-301	CHM		2-p33



50,000		2-p30
EM-2350J		

### Lever Type Spindle

60,000	ø1.06" (ø26.8mm)	NRR-3060	CHB		2-p63
50,000	ø1.06" (ø26.8mm)	NRR-2651	CHB		2-p23

60,000		2-p54
EM-3060		
60,000		2-p55
EM-3060J		
50,000		2-p22

### Quick Change Spindle

60,000	Flange Type	NR3060-AQC	CHK CHA		2-p64
	ø1.18" (ø30mm)	NRR3060-QC	CHK CHA		2-p65

60,000		2-p54
EM-3060		
60,000		2-p55
EM-3060J		

### Air Bearing Spindle (Flange Type)

80,000	Flange Type	NRAF-5080	CHK		2-p75
--------	-------------	-----------	-----	---	-------

80,000		2-p74
EM-3080J		

1

EmaxEVC  
ESPERT  
ROTUS  
IMPULSE  
PRESTO II  
Sheenus  
ZERO  
Sonic-Cutter  
ZERO

2

iSpeed3  
E2000  
ø1.0"/ø0.98"/ø0.897"  
E3000  
- One Piece  
E3000  
- Modular  
ø1.18"  
ø1.07"/ø0.98"  
ø0.897"  
E3000  
- 80,000rpm  
E4000

3

MA  
ø0.897"  
ø1.0"  
ø0.98"  
ø1.18"  
MS  
ø0.75"  
ø0.78"  
ø0.89"  
ø0.91"  
ø1.0"  
ø0.98"

4

HES  
iSpeed5  
HTS  
PLANET  
Xspeed

ABT

5

AIR LINE KIT

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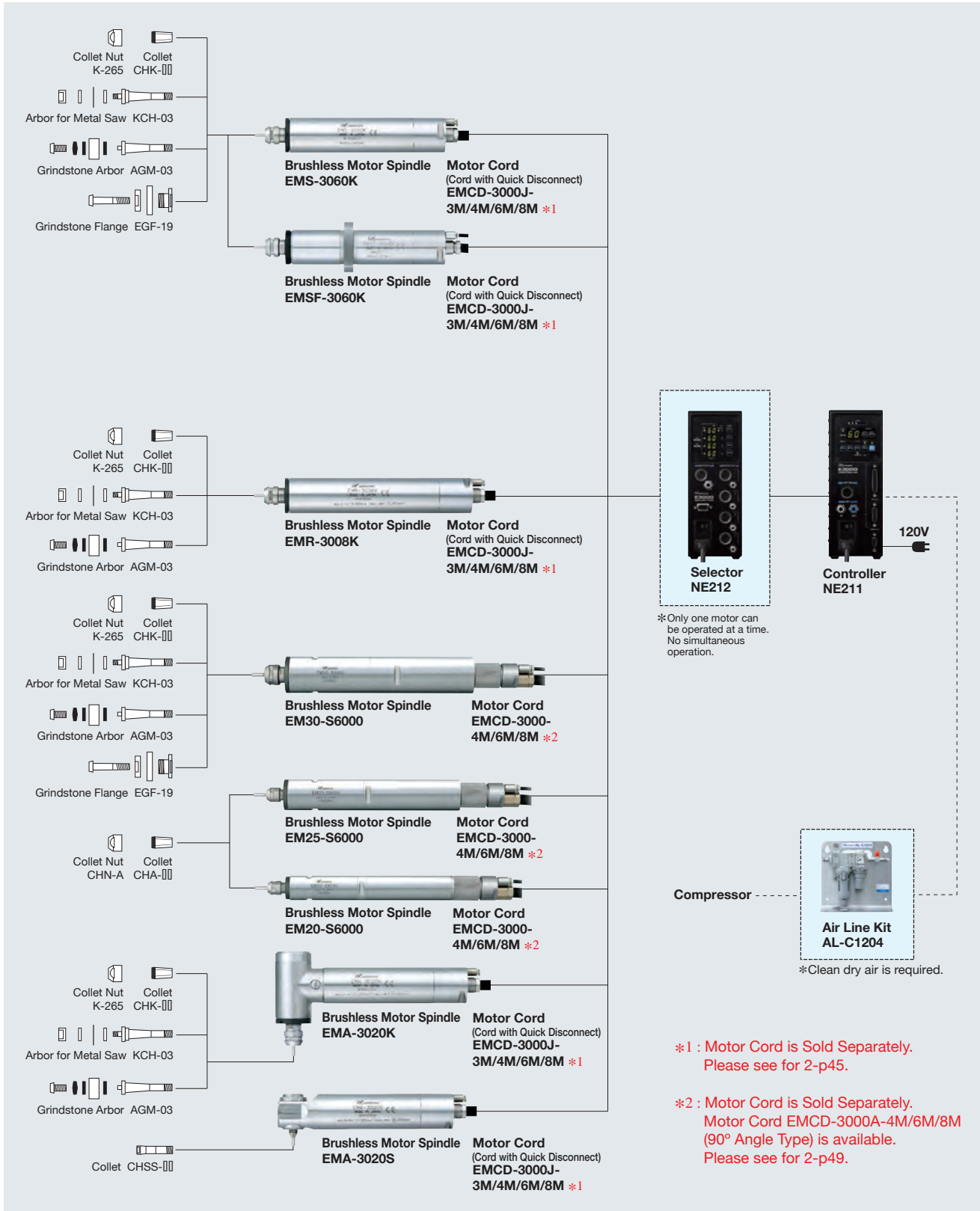
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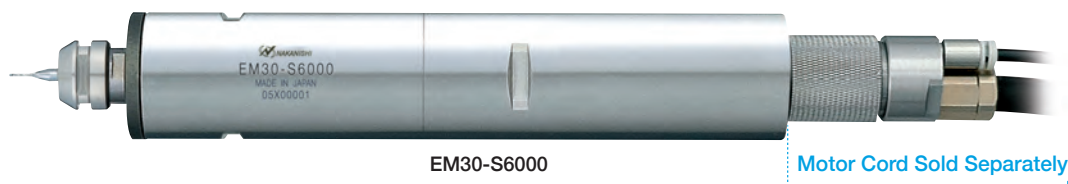


1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 - ø0,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.87" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
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### One Piece Type - System Chart



## Features of E3000 Series



- **Maximum Motor Speed 60,000 rpm**

The maximum motor speed 60,000 rpm is realized by using high performance brushless motor and ceramic bearings.

- **Maximum Motor Output with 350W Power Supply**

350W for  $\phi 1.18"$  ( $\phi 30$  mm) spindle.  
250W for  $\phi 0.98"$  ( $\phi 25$  mm) and  $\phi 0.79"$  ( $\phi 20$  mm) spindle.

- **Motor Spindle Diameter**

A  $\phi 0.79"$  ( $\phi 20$  mm),  $\phi 0.98"$  ( $\phi 25$  mm),  $\phi 1.18"$  ( $\phi 30$  mm) motor spindle diameter are available.

- **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 36-44 PSI.

- **Spindle Accuracy**

Spindle Accuracy is within 1  $\mu$ m (TIR).

- **High Rigidity, Short Body**

E3000 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.

- **Power Source Auto Detection**

Power Source is 100-240V for international operation. Eliminate the need of setting the voltage or changing fuses.

- **Protection System, External Input / Output Control Signal**

Error function : Motor/Spindle is stopped safety, Error LED is lit. ex.) Overload operation, Air shortage, Motor Spindle can be controlled and monitored by external input-output connector. ex.) Control ; Start/Stop, FWD./REV., Motor Speed Control Monitor ; Motor rotating, Torque Load.

- **Use E2280 Motor & Spindle with E3000 Controller**

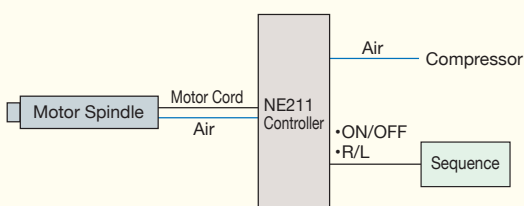
E2280 motor & spindle can be used with E3000 controller. {Less than 50,000 rpm}

- **$\phi 0.897"$  ( $\phi 22.8$  mm) Spindle Usage**

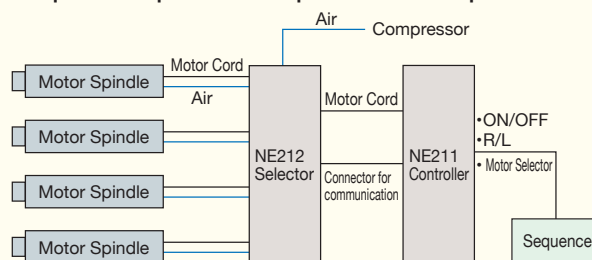
Use  $\phi 0.897"$  ( $\phi 22.8$  mm) spindles from our general catalog and an EM25-5000-J4 and EM-2350J motors { $\phi 0.98"$  ( $\phi 25$  mm) 200W} with NE211.

## Automatic Control System Chart

- **Single Motor Spindle Operation**



- **Sequential Operation of up to 4 Motor / Spindles**



\*When connecting NE211 to NE212, up to 4 motors can be connected to NE212 providing individual control of each motor. (4 motors can not be run simultaneously.)

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

$\phi 1.0"/\phi 0.98"/\phi 0.897"$

E3000

- One Piece

E3000

- Modular

$\phi 1.18"$

$\phi 1.07"/\phi 0.98"$

$\phi 0.897"$

E3000

- 80,000rpm

E4000

3

MA

$\phi 0.897"$

$\phi 1.0"$

$\phi 0.98"$

$\phi 1.18"$

MS

$\phi 0.75"$

$\phi 0.79"$

$\phi 0.897"$

$\phi 0.91"$

$\phi 1.0"$

$\phi 0.98"$

4

HES

iSpeed5

HTS

PLANET

Xspeed

ABT

5

AIR LINE KIT

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# E3000 SERIES CONTROLLER

- AC100-240V for international operation
- 1,000~60,000 rpm ● Maximum Output 350W
- External Input / Output Control Signal (Refer to 7-p2~p9 page of this catalog)

Product Code **9775** **CONTROLLER NE211**

**60,000 rpm**

\* : Load Meter



- : Continuous load area
- : Intermittent load area
- : Overload

External Input-Output Connector A (D-SUB25 Female)

External Input-Output Connector B (D-SUB15 Female)

Motor Connector

Air Output Joint  $\phi 6$  mm

Air Input Joint  $\phi 6$  mm

Power Switch

Communication Connector for NE212

Intake with Power Fuse



- [1] Load Meter\*
- [2] Running LED (RUN)
- [3] Warning LED (WARNING)
- [4] Error LED (ERROR)
- [5] Error Reset Switch (RESET)
- [6] Gear Setting Switch (GEAR)
- [7] Control Switch (AUTO/MANUAL)
- [8] Rotating Direction Selector Switch (FWD./REV.)
- [9] Start Switch (START)
- [10] Motor Speed Adjustment Switch (SPEED)
- [11] Display



### Specifications

Product Name : NE211  
 Power Source : AC120V / 240V  
 Motor Speed : 1,000-60,000 rpm  
 Max. Output Power : 350W (For  $\phi 1.18$ " )  
 Power Consumption : 1.8A  
 Air Flow Volume : 1.0CFM (36-44PSI)  
 Weight : 6 lb. 2.77 oz.  
 Dimensions : W3.46" x D5.43" x H9.37"

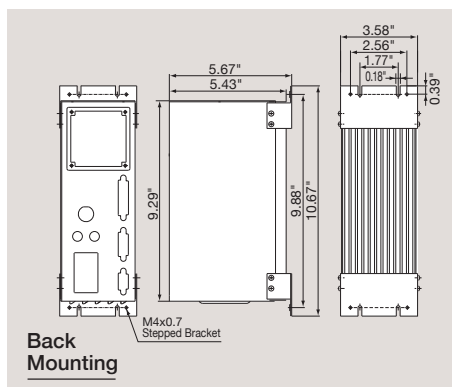
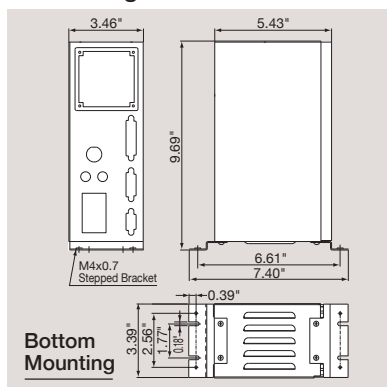
### E3000 Controller

Product Code	Plug Type	Product Name	Standard Equipment · Accessories
9775	120V (B type)	NE211	<ul style="list-style-type: none"> <li>• Power Cord : 6 ft · Air Hose with filter · Reducer</li> <li>• Connector Cap (Provided) · Bracket · Nylon Clip</li> <li>• Screw · Rubber Pad · Fuse (T6.3AL) 250V: 2 pcs.</li> </ul>

\*Please refer to Technical Data 7-p2~p9 in detail about External Input-Output Connector.

\*AC100-240V for international operation. Please check the power source plug type (2-p43) and order accordingly.

### ● Mounting Bracket



### Optional



#### Control Panel Extension Cord

Product Code	Product Name	Fit to
8407	E3000-PEX4	NE211

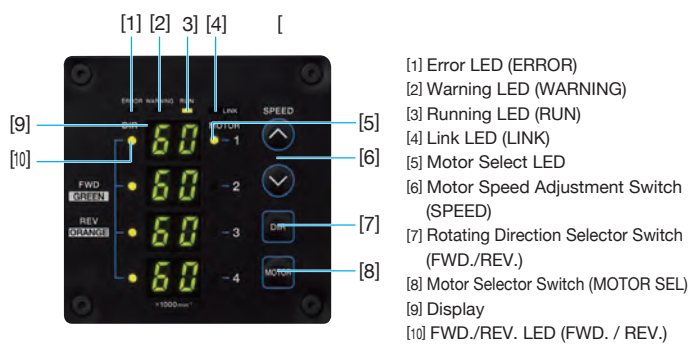
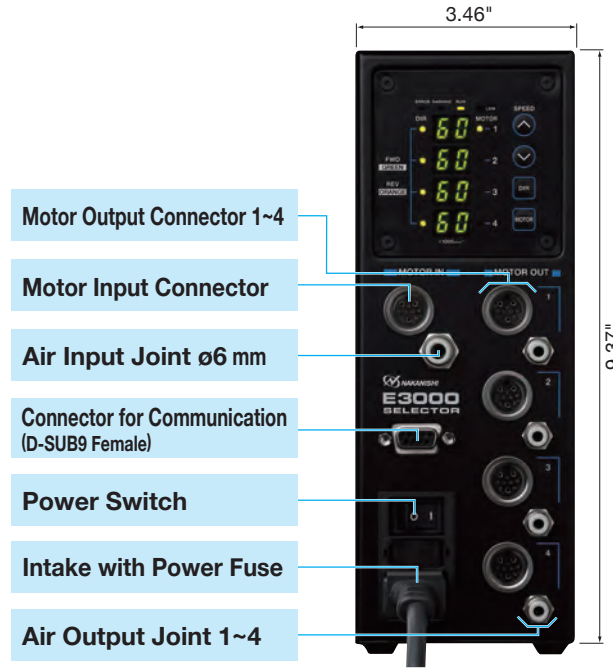
#### 25 / 15 Pin Interface Cable

Product Code	Product Name	Fit to
DB25M	DB25M	NE211
DB25MXL	DB25MXL	NE211
DB15M	DB15M	NE211

# E3000 SERIES SELECTOR

- AC100-240V for international operation
- Up to 4 motors can be connected to NE212 providing individual control of each motor. (Simultaneous motor operation is not possible)

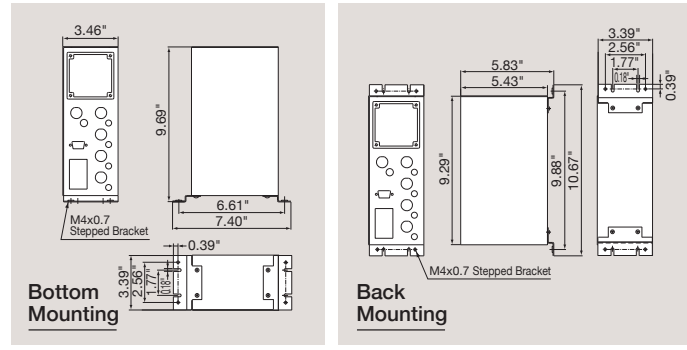
Product Code **9781** **SELECTOR NE212** 60,000 rpm



**Specifications**

Product Name	: NE212
Power Source	: AC120V / 240V
Power Consumption	: 0.15A
Air Flow Volume	: Max. 4.0CFM (51PSI / Using max. 4 motor/spindles)
Weight	: 4 lb. 3.02 oz.
Dimensions	: W3.46" x D5.43" x H9.37"

● **Mounting Bracket**



**E3000 Selector**

Product Code	Plug Type	Product Name	Standard Equipment · Accessories
9781	120V (B type)	NE212	<ul style="list-style-type: none"> <li>• Power Cord : 6 ft</li> <li>• Connect NE211 to NE212 Cable : 23.62"</li> <li>• Communication Cable : 23.62"</li> <li>• Connector Cap (Provided)</li> <li>• Plug to avoid Air Flow</li> <li>• Bracket</li> <li>• Nylon Clip</li> <li>• Screw</li> <li>• Rubber Pad</li> <li>• Fuse (T1.6AL) 250V: 2 pcs.</li> </ul>

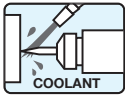
\*Power Source for Global Operation (AC100-240V). Please check the power source plug type and order accordingly.

● **Power Source Plug**

Plug Type	Main Usable Area	Product
For 120V (B type)	For U.S.A. and Canada	

1
EmaxEVC
ESPRT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.89" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
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5
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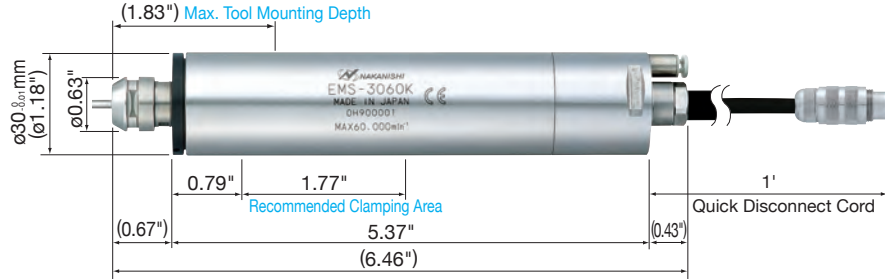
# E3000 SERIES $\phi 1.18''$ ( $\phi 30$ mm) BRUSHLESS MOTOR SPINDLE



E3000 Series can be used in conjunction with water or oil based coolants.

<b>1</b>
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 $\phi 1.07''/\phi 0.98''/\phi 0.897''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.07''/\phi 0.98''/\phi 0.897''$
E3000 - $\phi 0.000$ rpm
E4000
<b>3</b>
MA $\phi 0.897''$ $\phi 1.0''/\phi 0.98''$
MS $\phi 0.75''/\phi 0.79''$ $\phi 0.87''/\phi 0.91''$ $\phi 1.0''/\phi 0.98''$
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
<b>5</b>
AIR LINE KIT
<b>6</b>
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**Product Code 7862 BRUSHLESS MOTOR SPINDLE EMS-3060K 60,000 rpm**

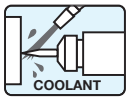


- Motor Speed ..... 60,000 rpm
- Spindle Accuracy ..... Within 1  $\mu$ m
- Max. Output Power ..... 350W
- Weight ..... 1 lb. 3.93 oz.
- **Additional collet purchase required:**
  - Collet Series CHK-XX .....  $\phi 0.5$ mm~ $\phi 6.35$ mm
  - Recommended ..... CHK-3.175  $\phi 1/8''$
  - (See Page 6-p3 for additional sizes)
- Motor Cord ..... Length 10 ft, 12.1 ft, 18.7 ft, 25.3 ft
- Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24''$  (I.D.) x  $\phi 1.18''$  (O.D.)
- Grindstone Arbor (AGM -03) ..... For grinding wheel with I.D. of  $\phi 5$  mm
- Grindstone Flange (EGF-19) .....  $\phi 19.05$  (I.D.) x  $\phi 40$  (O.D.) x 7 (W)mm

### Brushless Motor Spindle

Product Code	Product Name	Standard Equipment - Accessories	
<b>7862</b>	<b>EMS-3060K</b>	<ul style="list-style-type: none"> <li>• Collet Nut (K-265) : 1 pc.</li> <li>• Wrench (12 x 14) : 2 pcs.</li> </ul>	





**Caution :** Use the motor at motor speed less than maximum allowable speed or use the speed reducer. DO NOT exceed the allowable motor speed for the spindle and the reducer.

**Product Code 7869 BRUSHLESS MOTOR SPINDLE EMR-3008K**



Maximum allowable motor speed for the spindle **32,000 rpm**

Maximum rotating speed at the cutting tool <Reduction Ratio : 1/4> **8,000 rpm**

- Spindle Accuracy ..... Within 1  $\mu$ m
- Max. Output Power ..... 350W
- Weight ..... 1 lb. 6.93 oz.
- **Additional collet purchase required:**
  - Collet Series CHK-XX .....  $\phi$ 0.5mm~ $\phi$ 6.35mm
  - Recommended ..... CHK-3.175  $\phi$ 1/8" (See Page 6-p3 for additional sizes)
  - Motor Cord ..... Length 10 ft, 12.1 ft, 18.7 ft, 25.3 ft
  - Metal Saw Arbor (KCH-03) ..... For  $\phi$ 0.24" (I.D.) x  $\phi$ 1.18" (O.D.)
  - Grindstone Arbor (AGM-03) ..... For grinding wheel with I.D. of  $\phi$ 5 mm

**Brushless Motor Spindle**

Product Code	Product Name	Standard Equipment · Accessories
7869	EMR-3008K	<ul style="list-style-type: none"> <li>• Collet Nut (K-265) : 1 pc.</li> <li>• Wrench (12 x 14) : 2 pcs.</li> <li>• Gear Grease (10 mL) · Grease Nipple : 1 pc.</li> </ul>



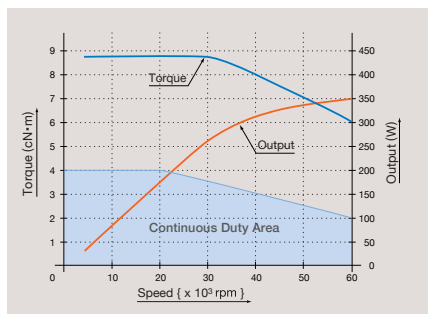
To extend the life expectancy of the Speed Reducer, inject grease every 70 to 100 hours. Grease injection prevents friction of the internal gears as well as heat generation. Adding grease also prevents the degradation of the existing grease in the reducer. Please maintain a reducer grease maintenance program.

**MOTOR CORD**

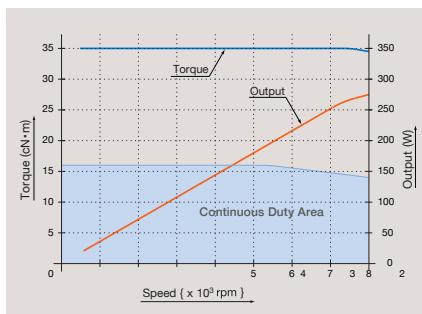
Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to
	1778	Motor Cord 3M EMCD-3000J-3M	10 ft (3.0m)	<ul style="list-style-type: none"> <li>• Air Hose</li> <li>• Connector Cap (Provided)</li> </ul>	EMS-3060K  EMR-3008K
	1768	Motor Cord 4M EMCD-3000J-4M	12.1 ft (3.7m)		
	1767	Motor Cord 6M EMCD-3000J-6M	18.7 ft (5.7m)		
	1766	Motor Cord 8M EMCD-3000J-8M	25.3 ft (7.7m)		

**Torque Characteristics Graph**

● EMS-3060K



● EMR-3008K



1  
EmaxEV  
ESPERT  
ROTUS  
IMPULSE  
PRESTO II  
Sheenus ZERO  
Sonic-Cutter ZERO

2  
iSpeed3  
E2000  
 $\phi$ 1.0"/ $\phi$ 0.95"/ $\phi$ 0.897"  
E3000  
- One Piece  
E3000  
- Modular  
 $\phi$ 1.18"  
 $\phi$ 1.07"/ $\phi$ 0.98"  
 $\phi$ 0.897"  
E3000  
- 80,000rpm  
E4000

3  
MA  
 $\phi$ 0.897"  
 $\phi$ 1.0"  
 $\phi$ 0.98"  
 $\phi$ 1.18"

MS  
 $\phi$ 0.75"  
 $\phi$ 0.79"  
 $\phi$ 0.89"  
 $\phi$ 0.91"  
 $\phi$ 1.0"  
 $\phi$ 0.98"

4  
HES  
iSpeed5  
HTS  
PLANET  
Xspeed  
ABT

5  
AIR LINE KIT

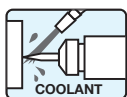
6  
PARTS

7  
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8  
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# E3000 SERIES $\phi 1.18''$ ( $\phi 30$ mm) FLANGE TYPE BRUSHLESS MOTOR SPINDLE

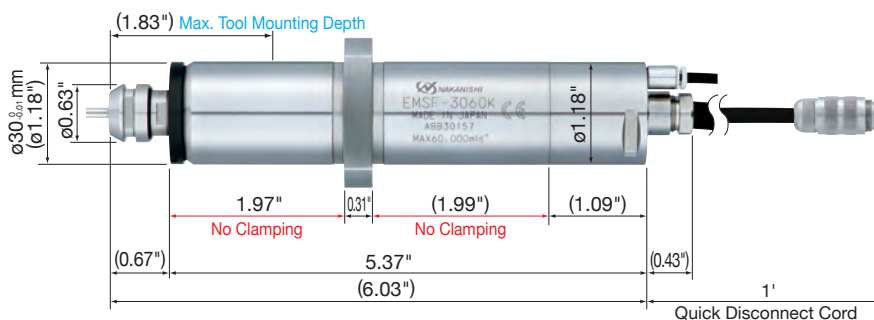
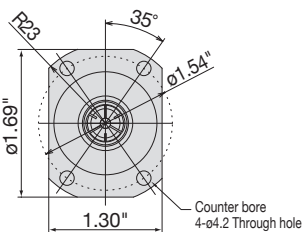
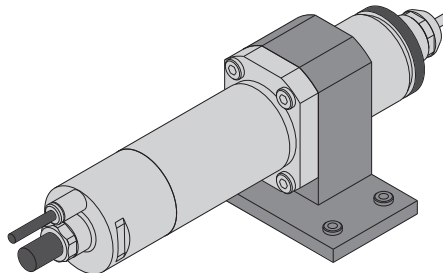


1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.07''/\phi 0.98''/\phi 0.897''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.07''/\phi 0.98''/\phi 0.897''$
E3000 - $\phi 0.000$ rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''/\phi 0.96''$
$\phi 1.18''$
MS
$\phi 0.75''/\phi 0.79''$
$\phi 0.87''/\phi 0.91''$
$\phi 1.0''/\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
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INDEX

**Product Code** **7863** **FLANGE TYPE BRUSHLESS MOTOR SPINDLE EMSF-3060K** **60,000 rpm**

## Features:

- 30mm Spindle with a Pre-mounted (1.3" x 1.69") Flange.
- Pre-mounted flange for easy installation on a machines standard boring bar holder.
- Eliminates the chance of spindle damage due to over tightening.
- Flange is mountable on either side of the machines holder.



- Motor Speed ..... 60,000 rpm
- Spindle Accuracy ..... Within 1  $\mu$ m
- Max. Output Power ..... 350W
- Weight ..... 1 lb. 5.87 oz.

**Additional collet purchase required:**

- Collet Series CHK-XX .....  $\phi 0.5$ mm~ $\phi 6.35$ mm  
Recommended ..... CHK-3.175  $\phi 1/8''$   
(See Page 6-p3 for additional sizes)

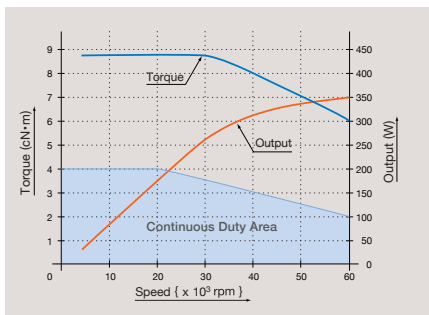
- Motor Cord ..... Length 10 ft, 12.1 ft, 18.7 ft, 25.3 ft
- Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24''$  (I.D.) x  $\phi 1.18''$  (O.D.)
- Grindstone Arbor (AGM -03) ..... For grinding wheel with I.D. of  $\phi 5$  mm
- Grindstone Flange (EGF-19) .....  $\phi 19.05$  (I.D.) x  $\phi 40$  (O.D.) x 7 (W)mm

### Flange Type Brushless Motor Spindle


Product Code	Product Name	Standard Equipment - Accessories
7863	EMSF-3060K	<ul style="list-style-type: none"> <li>• Collet Nut (K-265) : 1 pc.</li> <li>• Wrench (12 x 14) : 2 pcs.</li> <li>• Air Hose 0.3m : 1 pc.</li> <li>• Hex socket bolt (M4 x L16) : 4 pcs.</li> </ul>

## Torque Characteristics Graph

### ● EMSF-3060K



# MOTOR CORD

Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to	
	1778	Motor Cord 3M EMCD-3000J-3M	10 ft (3.0m)	<ul style="list-style-type: none"> <li>· Air Hose</li> <li>· Connector Cap (Provided)</li> </ul>	EMSF-3060K	
	1768	Motor Cord 4M EMCD-3000J-4M	12.1 ft (3.7m)			
	1767	Motor Cord 6M EMCD-3000J-6M	18.7 ft (5.7m)			
	1766	Motor Cord 8M EMCD-3000J-8M	25.3 ft (7.7m)			

1

EmaxEVC  
ESPRT  
ROTUS  
IMPULSE  
PRESTO II  
Sheenus  
ZERO  
Sonic-Cutter  
ZERO

2

iSpeed3  
E2000  
ø1.0"/ø0.98"/ø0.897"  
E3000  
— One Piece  
E3000  
— Modular  
ø1.18"  
ø1.07"/ø0.98"  
ø0.897"  
E3000  
— 80,000rpm  
E4000

3

MA  
ø0.897"  
ø1.0"  
ø0.98"  
ø1.18"  
MS  
ø0.75"  
ø0.75"  
ø0.897"  
ø0.81"  
ø1.0"  
ø0.98"

4

HES  
iSpeed5  
HTS  
PLANET  
Xpeed  
ABT

5

AIR LINE KIT

6

PARTS

7

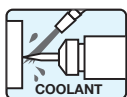
TECHNICAL  
DATA

8

APPLICATION  
EXAMPLES

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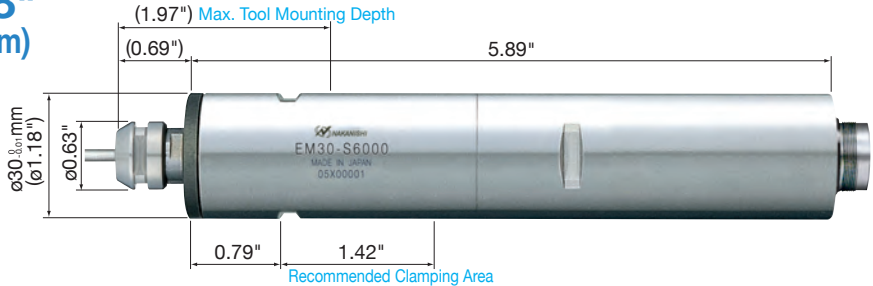
# E3000 SERIES BRUSHLESS MOTOR SPINDLE



<b>1</b>
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.0"/ø0.98"/ø0.897"
E3000 - ø0,000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0"/ø0.98"
ø1.18"
MS
ø0.75"/ø0.79"
ø0.87"/ø0.91"
ø1.0"/ø0.98"
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
<b>5</b>
AIR LINE KIT
<b>6</b>
PARTS
<b>7</b>
TECHNICAL DATA
<b>8</b>
APPLICATION EXAMPLES
INDEX

**Product Code 7903 BRUSHLESS MOTOR SPINDLE EM30-S6000 60,000 rpm**

Outside Diameter **ø1.18"**  
(ø30mm)



- Motor Speed ..... 60,000 rpm
- Spindle Accuracy ..... Within 1 µm
- Max. Output Power ..... 350 W
- Weight ..... 1 lb. 4.28 oz.

**Additional collet purchase required:**  
 Collet Series CHK-XX ..... ø0.5mm~ø6.35mm  
 Recommended ..... CHK-3.175 ø1/8"  
 (See Page 6-p3 for additional sizes)

\*High precision type is also available for CHK-3.0, 3.175, 4.0, 6.0, 6.35  
 Refer to 6-p3 page of this catalog.

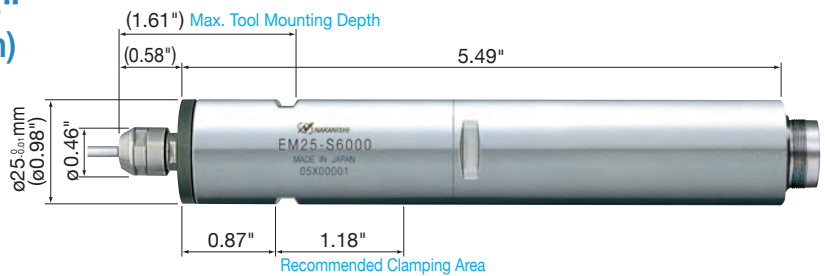
- Motor Cord ..... Length 13 ft, 19 ft, 26 ft
- Metal Saw Arbor (KCH-03) ..... For ø0.24" (I.D.) x ø1.18" (O.D.)
- Grindstone Arbor (AGM -03) ..... For grinding wheel with I.D. of ø5 mm
- Grindstone Flange (EGF-19) ..... ø19.05 (I.D.) x ø40 (O.D.)x 7 (W)mm

**Brushless Motor Spindle ø1.18"(ø30 mm)**

Product Code	Product Name	Standard Equipment · Accessories	
7903	EM30-S6000	• Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs.	

**Product Code 7858 BRUSHLESS MOTOR SPINDLE EM25-S6000 60,000 rpm**

Outside Diameter **ø0.98"**  
(ø25mm)



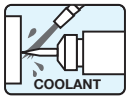
- Motor Speed ..... 60,000 rpm
- Spindle Accuracy ..... Within 1 µm
- Max. Output Power ..... 250 W
- Weight ..... 13.23 oz.

**Additional collet purchase required:**  
 Collet Series CHA-XX ..... ø0.5mm~ø4.0mm  
 Recommended ..... CHA-3.175 ø1/8"  
 (See Page 6-p2 for additional sizes)

- Motor Cord ..... Length 13 ft, 19 ft, 26 ft

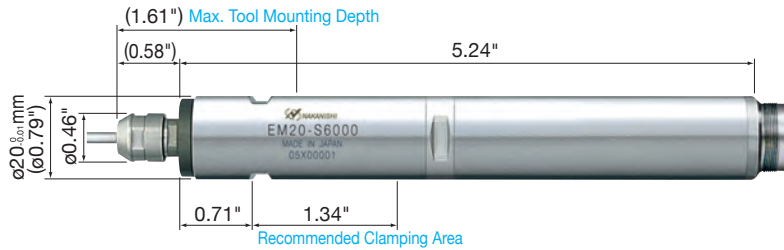
**Brushless Motor Spindle ø0.98"(ø25 mm)**

Product Code	Product Name	Standard Equipment · Accessories	
7858	EM25-S6000	• Collet Nut (CHN-A) : 1 pc. • Wrench (8 x 5) : 1 pc. • Wrench (9 x 11) : 1 pc.	



**Product Code 7860 BRUSHLESS MOTOR SPINDLE EM20-S6000 60,000 rpm**

Outside Diameter **ø0.79"**  
(ø20mm)



- Motor Speed ..... 60,000 rpm
- Spindle Accuracy ..... Within 1 µm
- Max. Output Power ..... 250 W
- Weight ..... 8.11 oz.
- **Additional collet purchase required:**
  - Collet Series CHA-XX ..... ø0.5mm~ø4.0mm
  - Recommended ..... CHA-3.175 ø1/8"
  - (See Page 6-p2 for additional sizes)
- Motor Cord ..... Length 13 ft, 19 ft, 26 ft

**Brushless Motor Spindle ø0.79"(ø20 mm)**

Product Code	Product Name	Standard Equipment · Accessories	
<b>7860</b>	<b>EM20-S6000</b>	<ul style="list-style-type: none"> <li>• Collet Nut (CHN-A) : 1 pc.</li> <li>• Wrench (8 x 5) : 1 pc.</li> <li>• Wrench (9 x 11) : 1 pc.</li> </ul>	

**MOTOR CORD Straight Type**

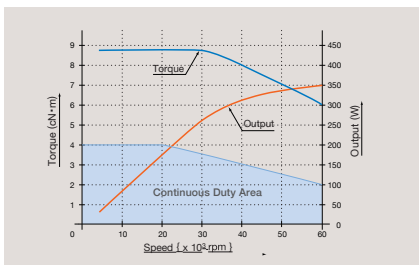
Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to
	<b>1748</b>	Motor Cord 4M EMCD-3000-4M	13 ft	<ul style="list-style-type: none"> <li>• Air Hose</li> <li>• Connector Cap (Provided)</li> </ul>	EM30-S6000 EM25-S6000 EM20-S6000
	<b>1749</b>	Motor Cord 6M EMCD-3000-6M	19 ft		
	<b>1750</b>	Motor Cord 8M EMCD-3000-8M	26 ft		

**MOTOR CORD 90° Angle Type**

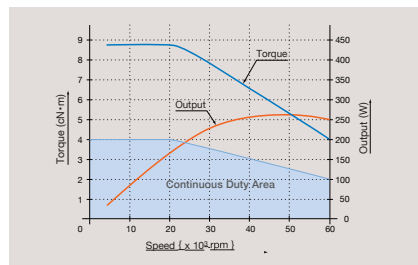
Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to
	<b>1744</b>	Motor Cord 4M EMCD-3000A-4M	13 ft	<ul style="list-style-type: none"> <li>• Air Hose</li> <li>• Connector Cap (Provided)</li> </ul>	EM30-S6000 EM25-S6000 EM20-S6000
	<b>1743</b>	Motor Cord 6M EMCD-3000A-6M	19 ft		
	<b>1742</b>	Motor Cord 8M EMCD-3000A-8M	26 ft		

**Torque Characteristics Graph**

● EM30-S6000



● EM20-S6000, EM25-S6000



**1**  
EmaxEVO  
ESPERT  
ROTUS  
IMPULSE  
PRESTO II  
Sheenus ZERO  
Sonic-Cutter ZERO

**2**  
iSpeed3  
E2000 ø1.0"/ø0.98"/ø0.897"  
E3000 - One Piece  
E3000 - Modular  
ø1.18"  
ø1.07"/ø0.98"/ø0.897"  
E3000 - 80,000rpm  
E4000

**3**  
MA  
ø0.897"  
ø1.0"  
ø0.98"  
ø1.18"  
MS  
ø0.75"  
ø0.79"  
ø0.98"  
ø0.91"  
ø1.0"  
ø0.98"

**4**  
HES  
iSpeed5  
HTS  
PLANET  
Xspeed  
ABT

**5**  
AIR LINE KIT

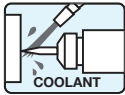
**6**  
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**7**  
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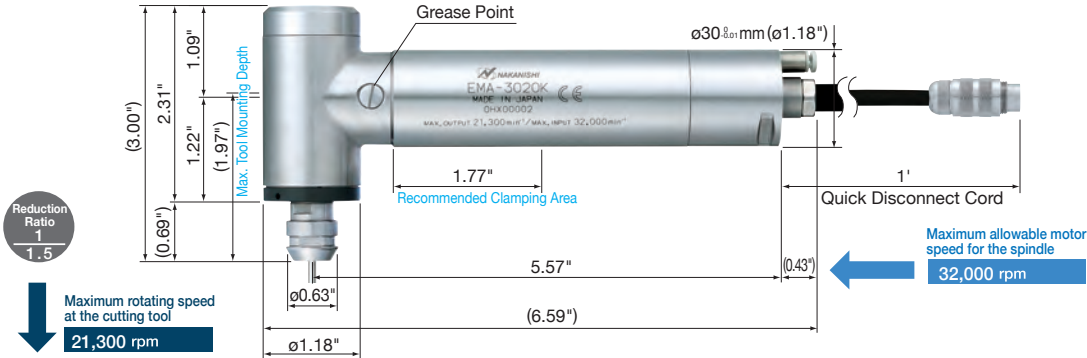


# E3000 SERIES $\phi 1.18"$ ( $\phi 30$ mm) BRUSHLESS MOTOR SPINDLE



**Caution :** Use the motor at motor speed less than maximum allowable speed or use the speed reducer. DO NOT exceed the allowable motor speed for the spindle and the reducer.

## Product Code **7874** 90° ANGLE BRUSHLESS MOTOR SPINDLE **EMA-3020K**



Maximum allowable motor speed for the spindle **32,000 rpm**

Maximum rotating speed at the cutting tool  
<Reduction Ratio : 1/1.5> **21,300 rpm**

- Spindle Accuracy ..... Within 2  $\mu$ m
- Max. Output Power ..... 280W
- Weight ..... 1 lb. 10.81 oz.

**Additional collet purchase required:**

- Collet Series CHK-XX .....  $\phi 0.5$ mm~ $\phi 6.35$ mm  
Recommended ..... CHK-3.175  $\phi 1/8"$   
(See Page 6-p3 for additional sizes)
- Motor Cord ..... Length 10 ft, 12.1 ft, 18.7 ft, 25.3 ft
- Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24"$  (I.D.) x  $\phi 1.18"$  (O.D.)
- Grindstone Arbor (AGM -03) ..... For grinding wheel with I.D. of  $\phi 5$  mm

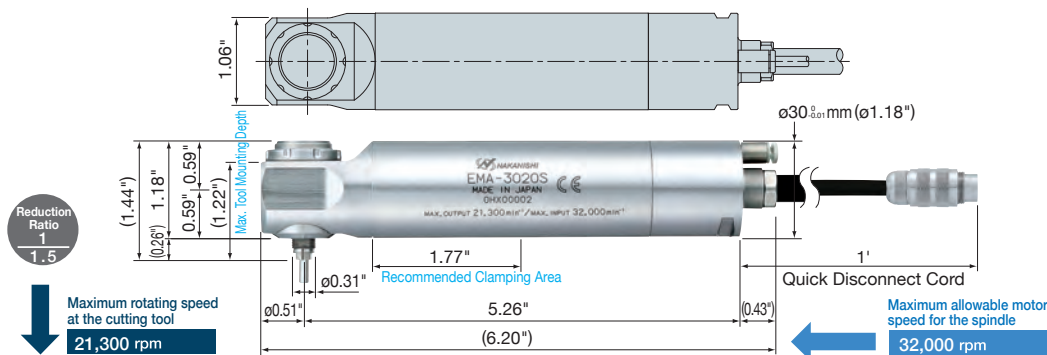
### 90° Angle Brushless Motor Spindle

Product Code	Product Name	Standard Equipment · Accessories	
7874	EMA-3020K	<ul style="list-style-type: none"> <li>• Collet Nut (K-265) : 1 pc.</li> <li>• Wrench (12 x 14) : 2 pcs.</li> <li>• Gear Grease (10 mL) · Grease Nipple : 1 pc.</li> </ul>	



To extend the life expectancy of the Speed Reducer, inject grease every 70 to 100 hours. Grease injection prevents friction of the internal gears as well as heat generation. Adding grease also prevents the degradation of the existing grease in the reducer. Please maintain a reducer grease maintenance program.

## Product Code **7605** 90° ANGLE BRUSHLESS MOTOR SPINDLE **EMA-3020S**



Maximum allowable motor speed for the spindle **32,000 rpm**

Maximum rotating speed at the cutting tool  
<Reduction Ratio : 1/1.5> **21,300 rpm**

- Spindle Accuracy ..... Within 3  $\mu$ m
- Max. Output Power ..... 275W
- Standard Size Collet (CHSS-3.175) .....  $\phi 1/8"$
- Weight ..... 1 lb. 5.34 oz.


< Optional >

- Collet (CHSS- [ ]) .....  $\phi 1.0$  mm~ $\phi 3.175$  mm  
(See Page 6-p4 for details)
- Motor Cord ..... Length 10 ft, 12.1 ft, 18.7 ft, 25.3 ft

### 90° Angle Brushless Motor Spindle

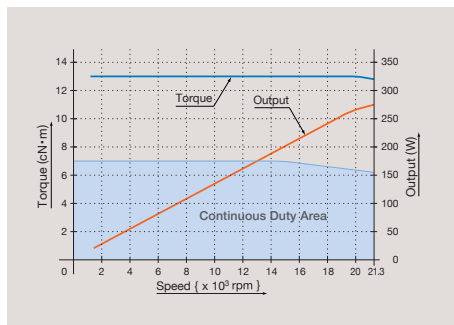
Product Code	Product Name	Standard Equipment · Accessories	
7605	EMA-3020S	<ul style="list-style-type: none"> <li>• Collet <math>\phi 1/8"</math> (CHSS-3.175) : 1 pc.</li> <li>• Wrench (7 x 5.1), (8 x 6.1) : 1 pc. each</li> </ul>	

## MOTOR CORD

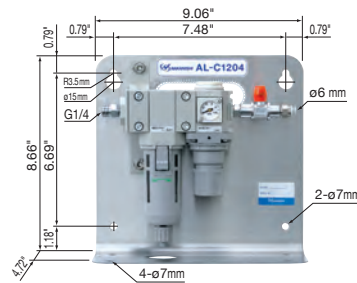
Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to
	1778	Motor Cord 3M EMCD-3000J-3M	10 ft (3.0m)	<ul style="list-style-type: none"> <li>• Air Hose</li> <li>• Connector Cap (Provided)</li> </ul>	EMA-3020K EMA-3020S
	1768	Motor Cord 4M EMCD-3000J-4M	12.1 ft (3.7m)		
	1767	Motor Cord 6M EMCD-3000J-6M	18.7 ft (5.7m)		
	1766	Motor Cord 8M EMCD-3000J-8M	25.3 ft (7.7m)		

## Torque Characteristics Graph

- EMA-3020K, EMA-3020S



## Product Code 4504 AIR LINE KIT AL-C1204



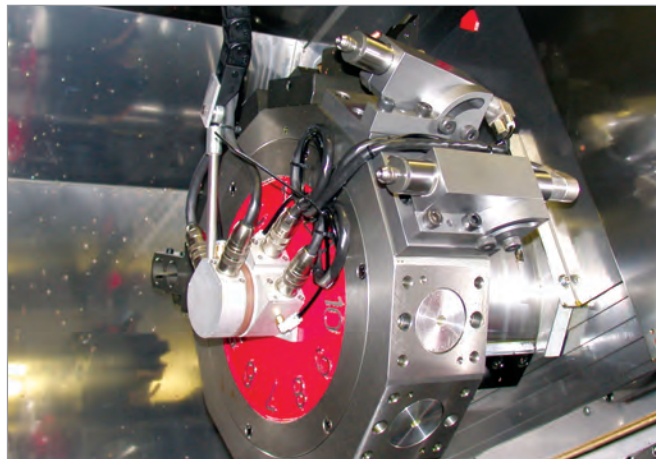
- The AL-C1204 Air Line Kit is designed to deliver clean, dry air to Electric Motors via the Controller. The filter removes small amounts of debris while the adjustable regulator provides the correct air pressure for cooling and purging.

### Air Line Kit (For $\phi 6$ mm Hose · Filter Mesh $0.3 \mu\text{m}$ )

Product Code	Product Name	Standard Equipment · Accessories
4504	AL-C1204	<ul style="list-style-type: none"> <li>• Air Filter</li> <li>• Air Regulator</li> <li>• Air Pressure Gauge</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> </ul>

## Rotary Coupling

An electric/pneumatic coupling is now available that allows NAKANISHI Electric Spindles up to 30mm diameter, to be mounted to the turret of a CNC turning machine. The rotary coupling prevents power cable and pneumatic lines from getting tangled when the turret is rotated. Contact NSK America at 800-585-4675 for complete details.



1

Emax EV  
ESPERT  
ROTUS  
IMPULSE  
PRESTO II  
Sheenus ZERO  
Sonic-Cutter ZERO

2

iSpeed3  
E2000  
 $\phi 1.0''$  /  $\phi 0.98''$  /  $\phi 0.897''$   
E3000  
- One Piece  
E3000  
- Modular  
 $\phi 1.18''$   
 $\phi 1.07''$  /  $\phi 0.98''$  /  $\phi 0.897''$   
E3000  
- 80,000rpm  
E4000

3

MA  
 $\phi 0.897''$   
 $\phi 1.0''$  /  $\phi 0.98''$   
 $\phi 1.18''$   
MS  
 $\phi 0.75''$  /  $\phi 0.79''$   
 $\phi 0.897''$  /  $\phi 0.81''$   
 $\phi 1.0''$  /  $\phi 0.98''$

4

HES  
iSpeed5  
HTS  
PLANET  
Xpeed  
ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

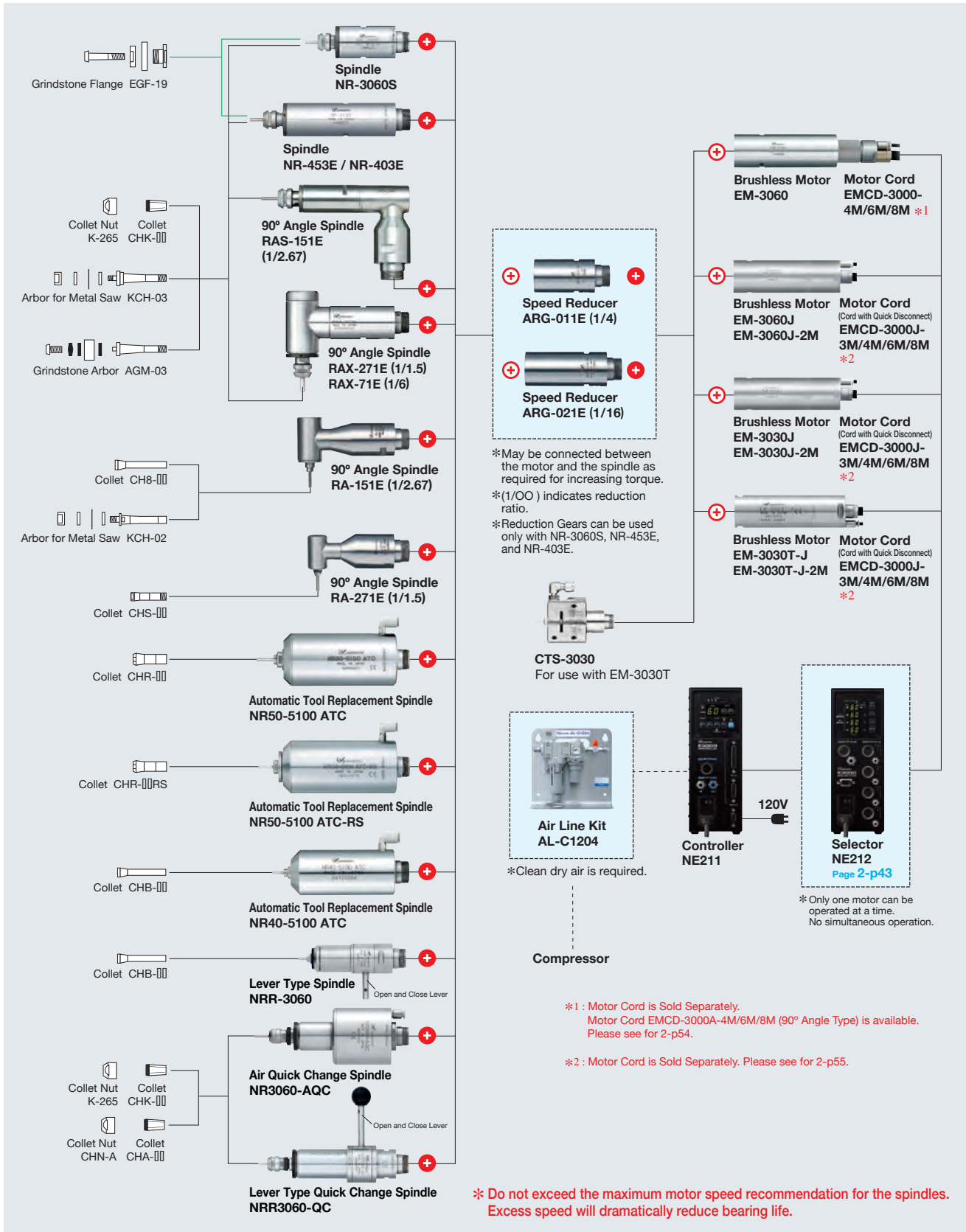
8

APPLICATION EXAMPLES

INDEX

- 1,000~60,000 rpm
- Maximum Output 350W
- Auto or Manual Control Modes.
- Can be installed on Special-Purpose Machines, NC Lathes, Robots, etc.
- Motor speed is displayed accurately on the front panel.

### Modular Type ø1.18"(ø30 mm) System Chart



- 1 EmaxEVO
- ESPERT
- ROTUS
- IMPULSE
- PRESTO II
- Sheenus ZERO
- Sonic-Cutter ZERO
- 2 iSpeed3
- E2000 ø1.0"/ø0.98"/ø0.897"
- E3000 - One Piece
- E3000 - Modular ø1.18"
- ø1.0"/ø0.98"/ø0.897"
- E3000 - ø0.000rpm
- E4000
- 3 MA
- ø0.897"
- ø1.0"/ø0.98"
- ø1.18"
- MS
- ø0.75"/ø0.79"
- ø0.87"/ø0.91"
- ø1.0"/ø0.98"
- 4 HES
- iSpeed5
- HTS
- PLANET
- Xpeed
- ABT
- 5 AIR LINE KIT
- 6 PARTS
- 7 TECHNICAL DATA
- 8 APPLICATION EXAMPLES
- INDEX

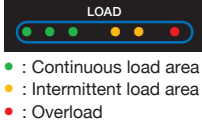
# E3000 SERIES CONTROLLER

- AC100-240V for international operation
- 1,000~60,000 rpm
- Maximum Output 350W
- $\phi 0.79''$ ( $\phi 20$  mm),  $\phi 0.897''$ ( $\phi 22.8$  mm),  $\phi 0.98''$ ( $\phi 25$  mm),  $\phi 1.0''$ ( $\phi 25.4$  mm),  $\phi 1.18''$ ( $\phi 30$  mm) spindles are available.

Product Code **9775** **CONTROLLER NE211**

**60,000 rpm**

\* : Load Meter



External Input-Output Connector A (D-SUB25 Female)

External Input-Output Connector B (D-SUB15 Female)

Motor Connector

Air Output Joint  $\phi 6$  mm

Air Input Joint  $\phi 6$  mm

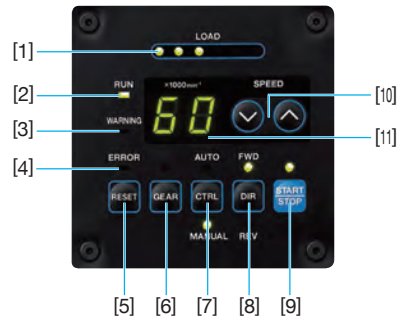
Power Switch

Communication Connector for NE212

Intake with Power Fuse



- [1] Load Meter\*
- [2] Running LED (RUN)
- [3] Warning LED (WARNING)
- [4] Error LED (ERROR)
- [5] Error Reset Switch (RESET)
- [6] Gear Setting Switch (GEAR)
- [7] Control Switch (AUTO/MANUAL)
- [8] Rotating Direction Selector Switch (FWD./REV.)
- [9] Start Switch (START)
- [10] Motor Speed Adjustment Switch (SPEED)
- [11] Display



### Specifications

Product Name : NE211  
 Power Source : AC120V / 240V  
 Motor Speed : 1,000-60,000 rpm  
 Max. Output Power : 350W  
 Power Consumption : 1.8A  
 Air Flow Volume : 1.0CFM (36-44PSI)  
 Weight : 6 lb. 2.77 oz.  
 Dimensions : W3.46" x D5.43" x H9.37"

### E3000 Controller

Product Code	Plug Type	Product Name	Standard Equipment · Accessories
9775	120V (B type)	NE211	<ul style="list-style-type: none"> <li>• Power Cord : 6 ft</li> <li>• Air Hose with filter</li> <li>• Reducer</li> <li>• Connector Cap (Provided)</li> <li>• Bracket</li> <li>• Nylon Clip</li> <li>• Screw</li> <li>• Rubber Pad</li> <li>• Fuse (T6.3AL) 250V: 2 pcs.</li> </ul>

\*Please refer to Technical Data 7-p2~p9 in detail about External Input-Output Connector.

\*AC100-240V for international operation. Please check the power source plug type and order accordingly.

Interface Cable  
Page 2-p66



### ● Power Source Plug

Plug Type	Main Usable Area	Product
For 120V (B type)	For U.S.A. and Canada	

1

EmaxEVC

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus ZERO

Sonic-Cutter ZERO

2

iSpeed3

E2000

E3000

E3000

E3000

E3000

E4000

3

MA

$\phi 0.897''$

$\phi 1.0''$

$\phi 0.98''$

$\phi 1.18''$

MS

$\phi 0.75''$

$\phi 0.79''$

$\phi 0.81''$

$\phi 0.91''$

$\phi 1.0''$

$\phi 0.98''$

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

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# E3000 SERIES $\phi 1.18''$ ( $\phi 30$ mm) BRUSHLESS MOTOR

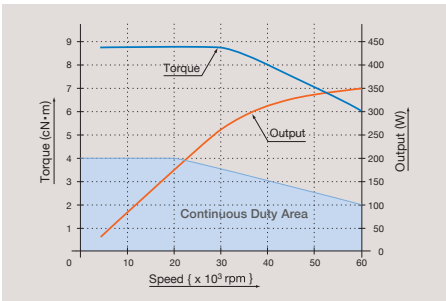
1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - 60,000rpm
E4000
3
MA $\phi 0.897''$
$\phi 1.0''/\phi 0.98''$
$\phi 1.18''$
MS $\phi 0.75''/\phi 0.79''$
$\phi 0.897''/\phi 0.91''/\phi 0.93''$
$\phi 1.0''/\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
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**Product Code 1597 BRUSHLESS MOTOR EM-3060 60,000 rpm**



**⚠** Motor Cord EMCD-3000J-3M / 4M / 6M / 8M on page 2-p55 can not used for this motor.

- Motor Speed ..... 1,000~60,000 rpm
- Max. Output Power ..... 350W
- Housing ..... Stainless steel (SUS416)
- Weight ..... 11.46 oz. (w/o Cord)



**Brushless Motor**

Product Code	Product Name	Standard Equipment · Accessories	
1597	EM-3060	• Wrench (22 x 27) : 1 pc.	

## MOTOR CORD Straight Type

Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to	
	1748	Motor Cord 4M EMCD-3000-4M	13 ft	• Air Hose • Connector Cap (Provided)	EM-3060	
	1749	Motor Cord 6M EMCD-3000-6M	19 ft			
	1750	Motor Cord 8M EMCD-3000-8M	26 ft			

## MOTOR CORD 90° Angle Type

Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to	
	1744	Motor Cord 4M EMCD-3000A-4M	13 ft	• Air Hose • Connector Cap (Provided)	EM-3060	
	1743	Motor Cord 6M EMCD-3000A-6M	19 ft			
	1742	Motor Cord 8M EMCD-3000A-8M	26 ft			

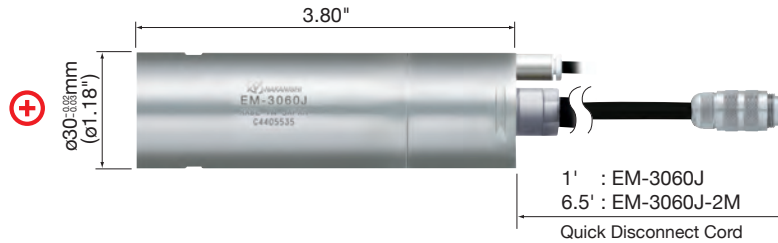




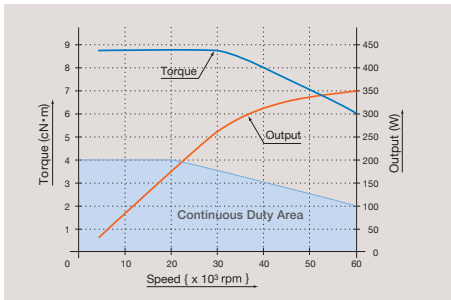
**Caution :** Brushless Motor with 6.5 ft (2 m) long quick disconnect cord can not used with EMCD-3000J-8M.

## BRUSHLESS MOTOR EM-3060J

60,000 rpm



EMCD-3000-4M / 6M / 8M and EMCD-3000A-4M / 6M / 8M on page 2-p54 can not used for this motor.



- Motor Speed ..... 1,000~60,000 rpm
- Max. Output Power ..... 350W
- Housing ..... Stainless steel (SUS416)
- Weight ..... 12.70 oz. (w/o Cord)

### Brushless Motor with 1 ft Cord

Product Code	Product Name	Standard Equipment · Accessories	
1765	EM-3060J	• Wrench (22 x 27) : 1 pc.	

### Brushless Motor with 6.5 ft Cord

Product Code	Product Name	Standard Equipment · Accessories	
1779	EM-3060J-2M	• Wrench (22 x 27) : 1 pc.	

\*EMCD-3000J-8M (25.3 ft / 8m long) can not be used for this motor.

## MOTOR CORD

Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to	
	1778	Motor Cord 3M EMCD-3000J-3M	10 ft (3.0m)	• Air Hose • Connector Cap (Provided)	EM-3060J EM-3060J-2M	
	1768	Motor Cord 4M EMCD-3000J-4M	12.1 ft (3.7m)			
	1767	Motor Cord 6M EMCD-3000J-6M	18.7 ft (5.7m)			
	1766	Motor Cord 8M EMCD-3000J-8M	25.3 ft (7.7m)		EM-3060J	

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

• One Piece

E3000

• Modular

• 1.18"

• 1.07"/0.98"

• 0.897"

E3000

• 80,000rpm

E4000

3

MA

• 0.897"

• 1.0"

• 0.98"

• 1.18"

MS

• 0.75"

• 0.75"

• 0.897"

• 0.91"

• 1.0"

• 0.98"

4

HES

iSpeed5

HTS

PLANET

Xspeed

ABT

5

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# E3000 SERIES $\phi 1.18''$ ( $\phi 30$ mm) BRUSHLESS MOTOR



**Caution :** Brushless Motor with 6.5 ft (2 m) long quick disconnect cord can not used with EMCD-3000J-8M.

## BRUSHLESS MOTOR EM-3030T-J

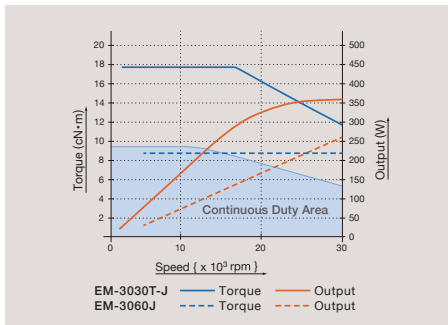
30,000 rpm

**Torque Type** ● EM-3030T-J is designed for high performance (power and torque) at a lower rpm.



EMCD-3000-4M / 6M / 8M and EMCD-3000A-4M / 6M / 8M on page 2-p54 can not used for this motor.

- Motor Speed ..... 1,000~30,000 rpm
- Max. Output Power ..... 350W
- Housing ..... Stainless steel (SUS416)
- Weight ..... 14.64 oz. (w/o Cord)



### Brushless Motor with 1 ft Cord

Product Code	Product Name	Standard Equipment · Accessories	
7358	EM-3030T-J	• Wrench (22 x 27) : 1 pc.	

### Brushless Motor with 6.5 ft Cord

Product Code	Product Name	Standard Equipment · Accessories	
7359	EM-3030T-J-2M	• Wrench (22 x 27) : 1 pc.	

\*EMCD-3000J-8M (25.3 ft / 8m long) can not be used for this motor.



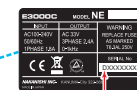
This Brushless Motor should be connected to the Applicable E3000 CONTROLLER.

Color of Air Output Joint



Blue

First letter of the Serial No. on the Rating Plate



First letter : " D "

## MOTOR CORD

Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to
	1778	Motor Cord 3M EMCD-3000J-3M	10 ft (3.0m)	• Air Hose • Connector Cap (Provided)	EM-3030T-J EM-3030T-J-2M
	1768	Motor Cord 4M EMCD-3000J-4M	12.1 ft (3.7m)		
	1767	Motor Cord 6M EMCD-3000J-6M	18.7 ft (5.7m)		
	1766	Motor Cord 8M EMCD-3000J-8M	25.3 ft (7.7m)		EM-3030T-J

## COOLANT THROUGH SPINDLE CTS-3030

30,000 rpm



- Max rpm ..... 30,000 rpm
- Coolant Pressure ..... 3.0 – 20.0 MPa
- Shank Diameter of Corresponding Tool .....  $\varnothing 3.0$ ,  $\varnothing 3.175$ ,  $\varnothing 4.0$  mm
- Spindle Accuracy ..... Within 1  $\mu$ m

< Optional >

- Collet<sup>2</sup>: CHA-3.0AA (91494), CHA-3.175AA (91496), CHA-4.0AA (91495) Collet, CHA-3.0 (91430), CHA-3.175(91493), CHA-4.0 (91440)
- Collet Nut: CHN-CTA-3.0 (7798), CHN-CTA-3.175 (7799), CHN-CTA-4.0 (7800)

### Coolant Through Spindle

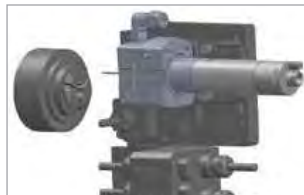
Product Code	Product Name	Standard Equipment · Accessories	
<b>7797</b>	<b>CTS-3030</b>	<ul style="list-style-type: none"> <li>• Wrench (8 x 5): 1 pc.</li> <li>• Wrench (9 x 11): 1 pc.</li> <li>• Wrench (22 x 27): 1 pc.</li> </ul>	

The collet and the collet nut are sold separately. Please match the collet and collet nut size.

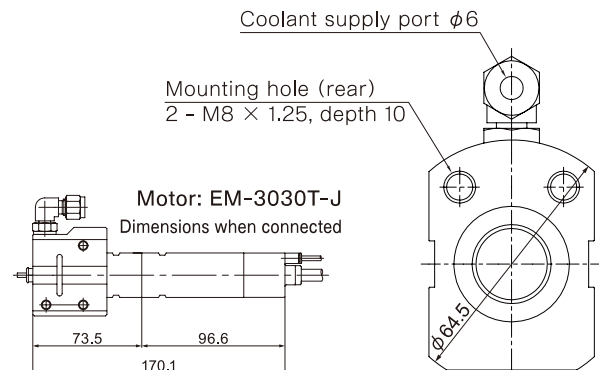
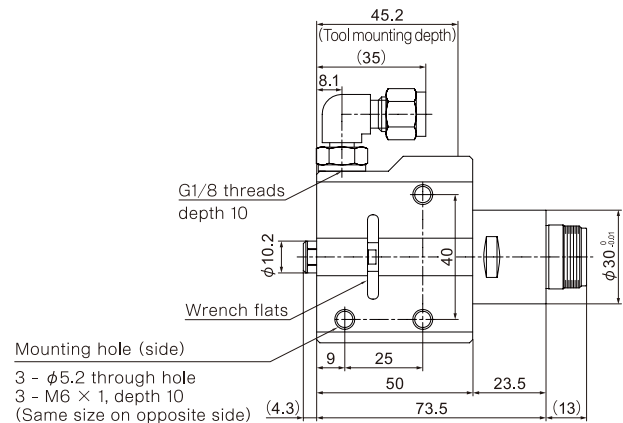
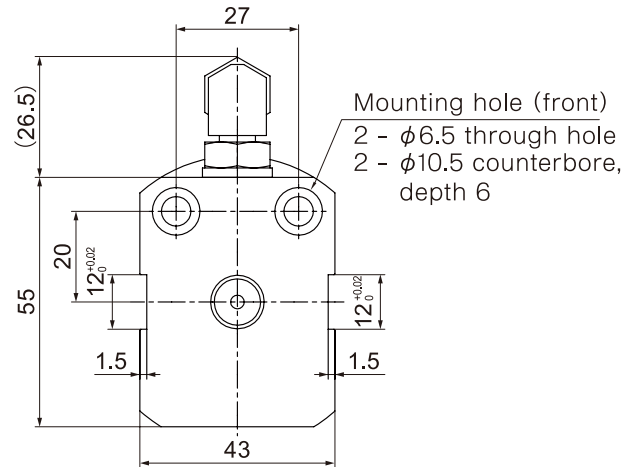
\*2 High precision AA grade types are highly recommended.



**S50C Drilling Example**  
Tool Diameter:  $\varnothing 2.0$   
Depth: 20mm, No Peck



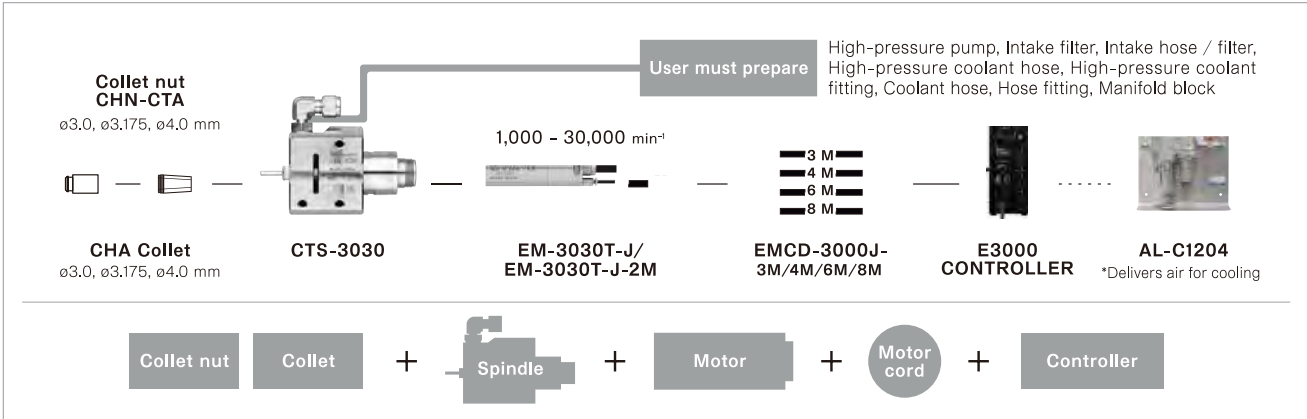
**Lathe Installation Image**  
When connected to the EM-3030T-J motor

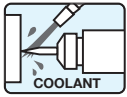


1
EmaxEVC
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000
$\varnothing 1.0^{\circ}/\varnothing 0.98^{\circ}/\varnothing 0.897^{\circ}$
E3000
- One Piece
E3000
- Modular
$\varnothing 1.18^{\circ}$
$\varnothing 1.07^{\circ}/\varnothing 0.98^{\circ}/\varnothing 0.897^{\circ}$
E3000
- 30,000rpm
E4000
3
MA
$\varnothing 0.897^{\circ}$
$\varnothing 1.0^{\circ}$
$\varnothing 0.98^{\circ}$
$\varnothing 1.18^{\circ}$
MS
$\varnothing 0.75^{\circ}$
$\varnothing 0.79^{\circ}$
$\varnothing 0.81^{\circ}$
$\varnothing 0.91^{\circ}$
$\varnothing 1.0^{\circ}$
$\varnothing 0.98^{\circ}$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
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<b>1</b>
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 $\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - $\phi 0,000$ rpm
E4000
<b>3</b>
MA
$\phi 0.897''$
$\phi 1.0''/\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''/\phi 0.79''$
$\phi 0.897''/\phi 0.91''/\phi 0.91''$
$\phi 1.0''/\phi 0.98''$
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
<b>5</b>
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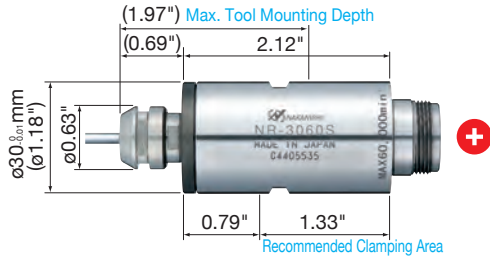
## CTS-3030 CONNECTION DRAWING





**Product Code 7859 SPINDLE NR-3060S**

**60,000 rpm**



- This spindle can be used for small-diameter milling, drilling, slitting, chamfering, grinding, etc.

- Allowable Motor Speed ..... 60,000 rpm
- Spindle Accuracy ..... Within 1 μm
- Weight ..... 9.17 oz.
- Ceramic Bearing

**Additional collet purchase required:**

- Collet Series CHK-XX ..... ø0.5mm~ø6.35mm  
Recommended ..... CHK-3.175 ø1/8"  
(See Page 6-p3 for additional sizes)

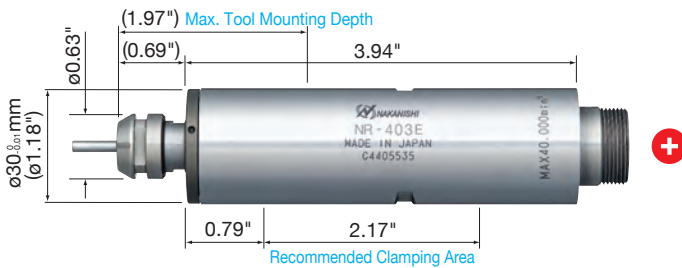
- Collet Nut (K-265) ..... For Collet (CHK)
- Metal Saw Arbor (KCH-03) ..... For ø0.24" (I.D.) x ø1.18" (O.D.)
- Grindstone Arbor (AGM-03) ..... For grinding wheel with I.D. of ø5 mm
- Grindstone Flange (EGF-19) ..... ø19.05 (I.D.) x ø40 (O.D.) x 7 (W) mm

**Spindle**

Product Code	Product Name	Standard Equipment · Accessories	
7859	NR-3060S	<ul style="list-style-type: none"> <li>• Collet Nut (K-265) : 1 pc.</li> <li>• Wrench (12 x 14) : 2 pcs.</li> <li>• Wrench (22 x 27) : 1 pc.</li> </ul>	

**Product Code 7847 SPINDLE NR-403E**

**40,000 rpm**



- This spindle can be used for small-diameter milling, drilling, slitting, chamfering, grinding, etc.

- Allowable Motor Speed ..... 40,000 rpm
- Spindle Accuracy ..... Within 1 μm
- Standard Size Collet (CHK-3.175) ..... ø1/8"
- Weight ..... 15.52 oz.
- Steel Bearing

**Additional collet purchase required:**

- Collet Series CHK-XX ..... ø0.5mm~ø6.35mm  
Recommended ..... CHK-3.175 ø1/8"  
(See Page 6-p3 for additional sizes)

- Collet Nut (K-265) ..... For Collet (CHK)
- Metal Saw Arbor (KCH-03) ..... For ø0.24" (I.D.) x ø1.18" (O.D.)
- Grindstone Arbor (AGM-03) ..... For grinding wheel with I.D. of ø5 mm
- Grindstone Flange (EGF-19) ..... ø19.05 (I.D.) x ø40 (O.D.) x 7 (W) mm

**Spindle**

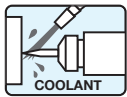
Product Code	Product Name	Standard Equipment · Accessories	
7847	NR-403E	<ul style="list-style-type: none"> <li>• Collet Nut (K-265) : 1 pc.</li> <li>• Wrench (12 x 14) : 2 pcs.</li> <li>• Wrench (22 x 27) : 1 pc.</li> </ul>	

\*Do not exceed the allowable motor speed for the spindle.

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98"/ø0.897"
E3000 - 80,000rpm
E4000
3
MA
ø0.897"
ø1.0"
ø0.98"
ø1.18"
MS
ø0.75"
ø0.79"
ø0.897"
ø0.98"
ø1.0"
ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
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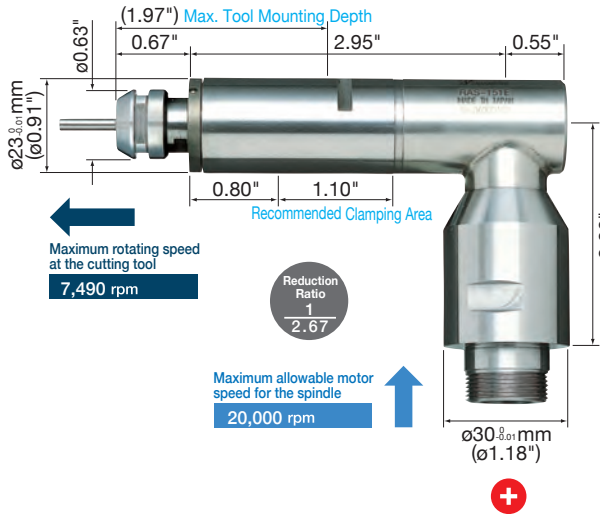


# E3000 SERIES $\phi 1.18''$ ( $\phi 30$ mm) SPINDLE



**Caution :** Use the motor at motor speed less than maximum allowable speed or use the speed reducer. DO NOT exceed the allowable motor speed for the spindle and the reducer.

## Product Code **7840** 90° ANGLE SPINDLE **RAS-151E**



Maximum allowable motor speed for the spindle **20,000 rpm**

Maximum rotating speed at the cutting tool  
<Reduction Ratio : 1/2.67> **7,490 rpm**

- Spindle Accuracy ..... Within 2  $\mu$ m
- Weight ..... 14.57 oz.
- **Additional collet purchase required:**
  - Collet Series CHK-XX .....  $\phi 0.5$ mm~ $\phi 6.35$ mm  
Recommended ..... CHK-3.175  $\phi 1/8''$   
(See Page 6-p3 for additional sizes)
  - Collet Nut (K-265) ..... For Collet (CHK)
  - Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24''$  (I.D.) x  $\phi 1.18''$  (O.D.)
  - Grindstone Arbor (AGM-03) ..... For grinding wheel with I.D. of  $\phi 5$  mm

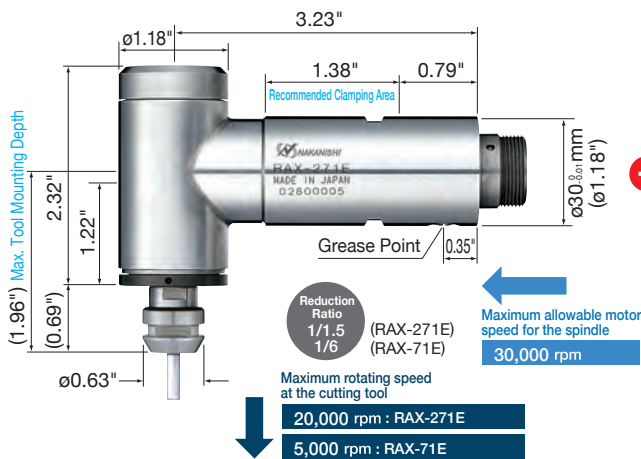
### 90° Angle Spindle

Product Code	Product Name	Standard Equipment · Accessories
7840	RAS-151E	<ul style="list-style-type: none"> <li>• Collet Nut (K-265) : 1 pc.</li> <li>• Wrench (12 x 14) : 2 pcs.</li> <li>• Wrench (22 x 27) : 1 pc.</li> </ul>

- 90° Angle Type Spindle can use up to a  $\phi 1/4''$  ( $\phi 6.35$  mm) collet and is suitable for installation where space restrictions exist.

## Product Code **7856** 90° ANGLE SPINDLE **RAX-271E**

## Product Code **7857** 90° ANGLE SPINDLE **RAX-71E**



Maximum allowable motor speed for the spindle **30,000 rpm**

Maximum rotating speed at the cutting tool  
RAX-271E <Reduction Ratio : 1/1.5> **20,000 rpm**  
RAX-71E <Reduction Ratio : 1/6> **5,000 rpm**

- Spindle Accuracy ..... Within 2  $\mu$ m
- Weight ..... 1 lb. 4.46 oz.
- **Additional collet purchase required:**
  - Collet Series CHK-XX .....  $\phi 0.5$ mm~ $\phi 6.35$ mm  
Recommended ..... CHK-3.175  $\phi 1/8''$   
(See Page 6-p3 for additional sizes)
  - Collet Nut (K-265) ..... For Collet (CHK)
  - Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24''$  (I.D.) x  $\phi 1.18''$  (O.D.)
  - Grindstone Arbor (AGM-03) ..... For grinding wheel with I.D. of  $\phi 5$  mm

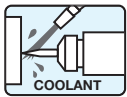
### 90° Angle Spindle

Product Code	Product Name	Standard Equipment · Accessories
7856	RAX-271E	<ul style="list-style-type: none"> <li>• Collet <math>\phi 1/8''</math> (CHK-3.175)</li> <li>• Collet Nut (K-265) : 1 pc.</li> <li>• Wrench (12 x 14) : 2 pcs.</li> </ul>
7857	RAX-71E	<ul style="list-style-type: none"> <li>• Wrench (22 x 27) : 1 pc.</li> <li>• Gear Grease (10mL)</li> <li>• Grease Nipple : 1 pc.</li> </ul>

- This spindle can be used for working on corners difficult to work or unfit for working with straight type, drilling on side face, etc.

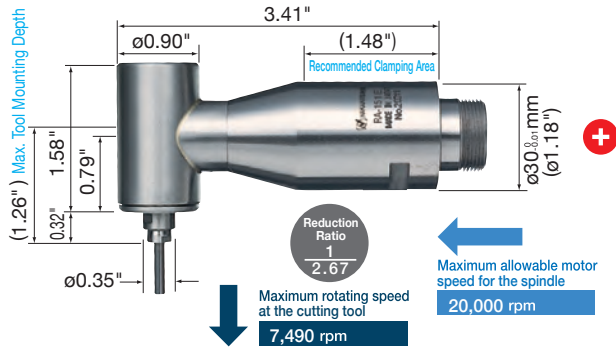


To extend the life expectancy of the Speed Reducer, inject grease every 70 to 100 hours. Grease injection prevents friction of the internal gears as well as heat generation. Adding grease also prevents the degradation of the existing grease in the reducer. Please maintain a reducer grease maintenance program.



**Caution :** Use the motor at motor speed less than maximum allowable speed or use the speed reducer. DO NOT exceed the allowable motor speed for the spindle and the reducer.

**Product Code 2910 90° ANGLE SPINDLE RA-151E**



- This spindle is capable of working on corners difficult to work or unfit for working with straight type, drilling on side face and, slitting of aluminum, brass, etc. with the use of  $\phi 1.18''$  ( $\phi 30$  mm) Metal Saw.

Maximum allowable motor speed for the spindle **20,000 rpm**

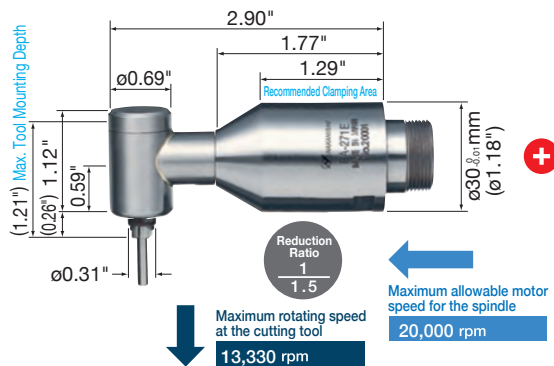
Maximum rotating speed at the cutting tool <Reduction Ratio : 1/2.67> **7,490 rpm**

- Standard Size Collet (CH8-3.175) .....  $\phi 1/8''$
- Weight ..... 13.58 oz.
- < Optional >
- Collet (CH8- [ ]) .....  $\phi 0.8$  mm~ $\phi 3.175$  mm (See Page 6-p5 for details)
- Metal Saw Arbor (KCH-02) ..... For  $\phi 0.24''$  (I.D.) x  $\phi 1.18''$  (O.D.)

**90° Angle Spindle**

Product Code	Product Name	Standard Equipment · Accessories	
2910	RA-151E	<ul style="list-style-type: none"> <li>• Collet <math>\phi 1/8''</math> (CH8-3.175) : 1 pc.</li> <li>• Wrench (7 x 5.5) : 1 pc.</li> <li>• Wrench (8 x 5) : 1 pc.</li> <li>• Wrench (22 x 27) : 1 pc.</li> </ul>	

**Product Code 2911 90° ANGLE SPINDLE RA-271E**



- This spindle can be used for working on corners difficult to work or unfit for working with straight type, drilling on side face, etc.

Maximum allowable motor speed for the spindle **20,000 rpm**

Maximum rotating speed at the cutting tool <Reduction Ratio : 1/1.5> **13,330 rpm**

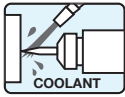
- Standard Size Collet (CHS-3.175) .....  $\phi 1/8''$
- Weight ..... 8.47 oz.
- < Optional >
- Collet (CHS- [ ]) .....  $\phi 0.8$  mm~ $\phi 3.175$  mm (See Page 6-p4 for details)

**90° Angle Spindle**

Product Code	Product Name	Standard Equipment · Accessories	
2911	RA-271E	<ul style="list-style-type: none"> <li>• Collet <math>\phi 1/8''</math> (CHS-3.175) : 1 pc.</li> <li>• Wrench (7 x 5.1) : 1 pc.</li> <li>• Wrench (8 x 5) : 1 pc.</li> <li>• Wrench (22 x 27) : 1 pc.</li> </ul>	

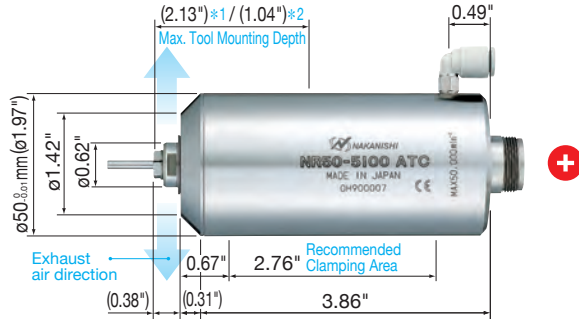
1
EmaxEV
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''$ ( $\phi 0.98''$ / $\phi 0.897''$ )
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.07''$ , $\phi 0.98''$ , $\phi 0.897''$
E3000 - 80,000rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''$ , $\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''$ , $\phi 0.79''$
$\phi 0.89''$ , $\phi 0.91''$
$\phi 1.0''$ , $\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
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7
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# E3000 SERIES $\phi 1.18'' (\phi 30 \text{ mm})$ SPINDLE



1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0'' / \phi 0.98'' / \phi 0.897''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.0'' / \phi 0.98'' / \phi 0.897''$
E3000 - $\phi 0.000\text{rpm}$
E4000
3
MA $\phi 0.897''$
$\phi 1.0'' / \phi 0.98''$
$\phi 1.18''$
MS $\phi 0.75'' / \phi 0.79''$
$\phi 0.81'' / \phi 0.83''$
$\phi 1.0'' / \phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
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7
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## Product Code **1580** AUTOMATIC TOOL REPLACEMENT SPINDLE NR50-5100 ATC 50,000 rpm



\*1 : When the tool shank diameter is less than 1/8"  
 \*2 : When the tool shank diameter is between 4.0mm and 1/4"

- Specially designed for easy tool replacement. The cutting tool can be exchanged automatically by supplying air to the spindle. This high-precision spindle utilizes high precision bearings.

- Allowable Motor Speed ..... 50,000 rpm
- Spindle Accuracy ..... Within 1  $\mu\text{m}$
- Air for Collet Opening ..... 80~87PSI
- Standard Size Collet (CHR-3.175) .....  $\phi 1/8''$
- Weight ..... 3 lb. 0.33 oz.

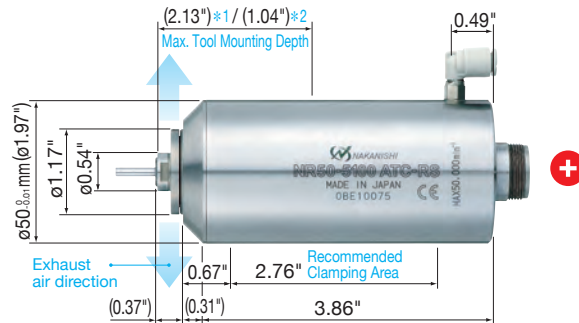
< Optional >

- Collet (CHR-□□) .....  $\phi 2.0, \phi 3.0 \text{ mm}, \phi 1/8'', \phi 4.0, \phi 6.0 \text{ mm}, \phi 1/4''$   
 (See Page 6-p4 for details)

### Automatic Tool Replacement Spindle

Product Code	Product Name	Standard Equipment · Accessories	
1580	NR50-5100 ATC	<ul style="list-style-type: none"> <li>• Collet <math>\phi 1/8''</math> (CHR-3.175)</li> <li>• Air Hose with filter (K-251) : <math>\phi 6 \text{ mm} \times 6 \text{ ft}</math></li> <li>• Wrench (9 x 11) : 1 pc.</li> <li>• Wrench (12 x 14) : 1 pc.</li> <li>• Bar Wrench (K-236) : 1 pc</li> </ul>	

## Product Code **7690** AUTOMATIC TOOL REPLACEMENT SPINDLE NR50-5100 ATC-RS 50,000 rpm



\*1 : When the tool shank diameter is less than 1/8"  
 \*2 : When the tool shank diameter is between 4.0mm and 1/4"

- Specially designed for easy tool replacement. The cutting tool can be exchanged automatically by supplying air to the spindle. This high-precision spindle utilizes high precision bearings. Utilizes a sealed collet to prevent powder debris and residue from entering the spindle during dental, circuit board and other non-ferrous material machining.

- Allowable Motor Speed ..... 50,000 rpm
- Spindle Accuracy ..... Within 1  $\mu\text{m}$
- Air for Collet Opening ..... 80~87PSI
- Weight ..... 3 lb. 0.33 oz.
- Standard Size Collet (CHR-3.175 RS)

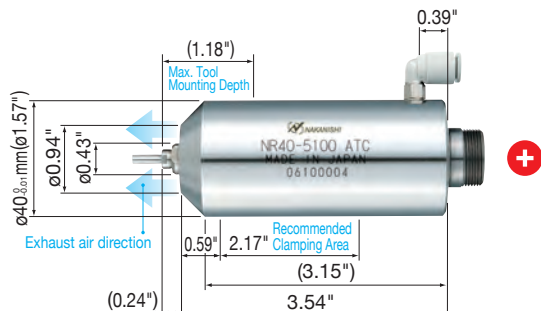
< Optional >

- Collet (CHR-□□ RS) .....  $\phi 3.0 \text{ mm}, \phi 1/8'', \phi 4.0, \phi 6.0 \text{ mm}, \phi 1/4''$   
 (See Page 6-p4 for details)

### Automatic Tool Replacement Spindle

Product Code	Product Name	Standard Equipment · Accessories	
7690	NR50-5100 ATC-RS	<ul style="list-style-type: none"> <li>• Air Hose with filter (K-251) : <math>\phi 6 \text{ mm} \times 6 \text{ ft}</math></li> <li>• Wrench (9 x 11) : 1 pc.</li> <li>• Wrench (12 x 14) : 1 pc.</li> <li>• Bar Wrench (K-236) : 1 pc</li> </ul>	

## Product Code **1582** AUTOMATIC TOOL REPLACEMENT SPINDLE NR40-5100 ATC 50,000 rpm



- Specially designed for easy tool replacement. The cutting tool can be exchanged automatically by supplying air to the spindle. This high-precision spindle utilizes high precision bearings.

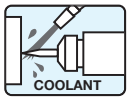
- Allowable Motor Speed ..... 50,000 rpm
- Spindle Accuracy ..... Within 2  $\mu\text{m}$
- Air for Collet Opening ..... 80~87PSI
- Standard Size Collet (CHB-3.175) .....  $\phi 1/8''$
- Weight ..... 1 lb. 10.10 oz.

< Optional >

- Collet (CHB-□□) .....  $\phi 2.0, \phi 3.0 \text{ mm}, \phi 1/8'', \phi 4.0 \text{ mm}$   
 (See Page 6-p2 for details)

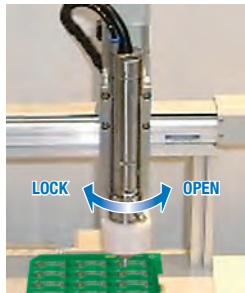
### Automatic Tool Replacement Spindle

Product Code	Product Name	Standard Equipment · Accessories	
1582	NR40-5100 ATC	<ul style="list-style-type: none"> <li>• Collet <math>\phi 1/8''</math> (CHB-3.175)</li> <li>• Air Hose with filter (K-251) : <math>\phi 6 \text{ mm} \times 6 \text{ ft}</math></li> <li>• Wrench (6.1 x 8) : 1 pc.</li> <li>• Wrench (9 x 11) : 1 pc.</li> <li>• Bar Wrench (K-236) : 1 pc</li> </ul>	

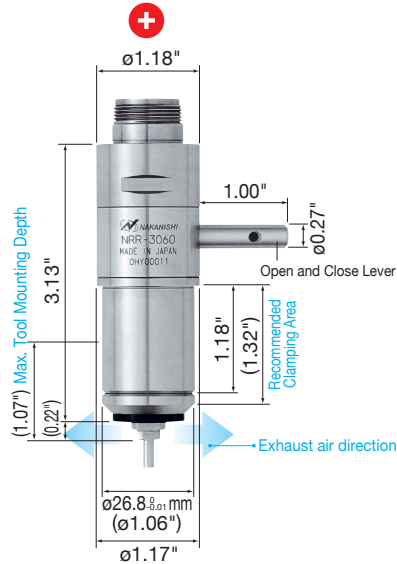


Product Code **1836 LEVER TYPE SPINDLE NRR-3060** 60,000 rpm

No wrenches are required for tool changing.



NRR-3060 Installed Example



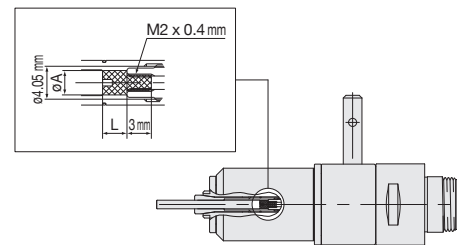
- Allowable Motor Speed ..... 60,000 rpm
  - Spindle Accuracy ..... Within 1  $\mu\text{m}$
  - Standard Size Collet (CHB-3.175) .....  $\phi 1/8''$
  - Weight ..... 12.35 oz.
- < Optional >
- Collet (CHB- [ ]) .....  $\phi 2.0, \phi 3.0 \text{ mm}, \phi 1/8'', \phi 4.0 \text{ mm}$   
(See Page 6-p2 for details)

Lever Type Spindle

Product Code	Product Name	Standard Equipment · Accessories	
<b>1836</b>	<b>NRR-3060</b>	<ul style="list-style-type: none"> <li>• Collet <math>\phi 1/8''</math> (CHB-3.175)</li> <li>• Wrench (6.1 x 8) : 2 pcs., (22 x 27): 1 pc.</li> </ul>	

Features:

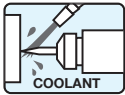
- Dust protection mechanism design exhausts air sideways. Side exhaust discharge keeps chips from being disbursed away from the machining area.
- The bottom of the spindle is equipped with an internal thread (M2 x 0.4mm / 3mm long). This enables tool length pre-setting.



\*Do not exceed the allowable motor speed for the spindle.

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.07''/\phi 0.98''/\phi 0.897''$
E3000 - 80,000rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''/\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''/\phi 0.719''$
$\phi 0.81''/\phi 0.811''$
$\phi 1.0''/\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
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# E3000 SERIES $\phi 1.18''$ ( $\phi 30$ mm) SPINDLE

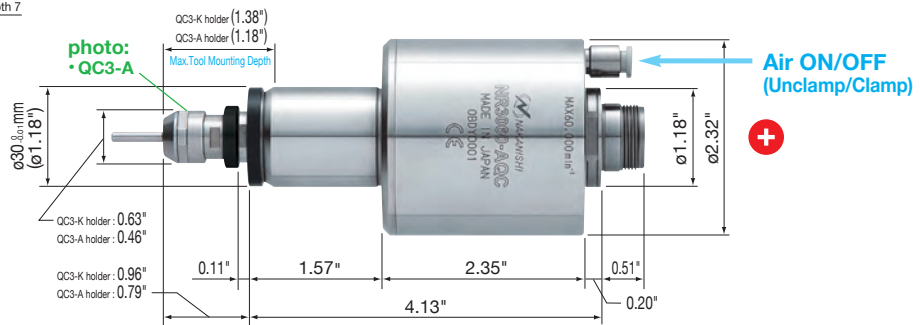
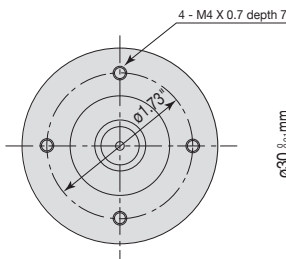
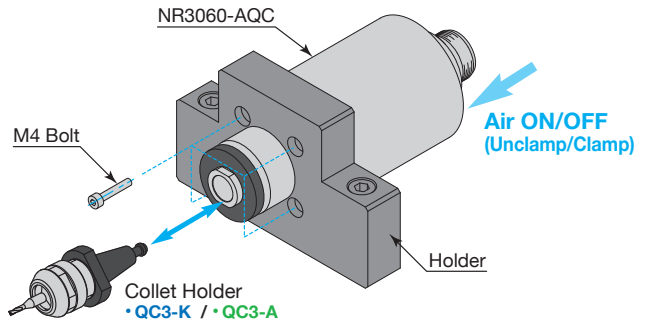


Product Code **9220** **AIR QUICK CHANGE SPINDLE NR3060-AQC** **60,000 rpm**

## Features:

- The collet holder can be replaced by using Air ON/OFF.
- The Spindle housing is made from precision ground, hardened, stainless steel (SUS).
- There are 2 models of collet holders. The collet holder model depends on the collet type selected.

Various sizes of collets are available. (CHK 0.5mm-6.35mm, CHA 0.5mm-4.0mm)



- Allowable Motor Speed ..... 60,000 rpm
- Spindle Accuracy ..... Within 1  $\mu$ m
- Air for Collet Opening ..... 80~87PSI
- Weight ..... 2 lb. 11.39 oz.

### < Optional >

- Collet Holder ..... **QC3-K**
- Collet (CHK-□□□) .....  $\phi 0.5$  mm~ $\phi 6.35$  mm  
(See Page 6-p3 for details)
- Collet Nut (K-265)..... for Collet (CHK)
- Preset Adapter ..... QC3-ADP
- Wrench ..... 12 x 14 (2 pcs. not included)

### < Optional >

- Collet Holder ..... **QC3-A**
- Collet (CHA-□□□) .....  $\phi 0.5$  mm~ $\phi 4.0$  mm  
(See Page 6-p2 for details)
- Collet Nut (CHN-A) ..... for Collet (CHA)
- Preset Adapter ..... QC3-ADP
- Wrench ..... 9 x 11, 8 x 5 (1 pc. each not included)

### Air Quick Change Spindle

Product Code	Product Name	Standard Equipment · Accessories
9220	NR3060-AQC	<ul style="list-style-type: none"> <li>• Air Hose with filter (K-251) : <math>\phi 6</math> mm x 6 ft</li> <li>• Wrench (22 x 27) : 1 pc.</li> </ul>

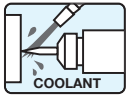
**Note :** Collet and wrenches for the collet holder are sold separately.

## COLLET HOLDER Taper Shank Tools and Collet Nut

Product	Product Code	Product Name	Collet	Std. Accessories	Attaches to
	9210	• QC3-K	CHK	• Collet Nut (K-265) : 1 pc.	NR3060-AQC NRR3060-QC
	9209	• QC3-A	CHA	• Collet Nut (CHN-A) : 1 pc.	NR3060-AQC NRR3060-QC

\*Do not exceed the allowable motor speed for the spindle.

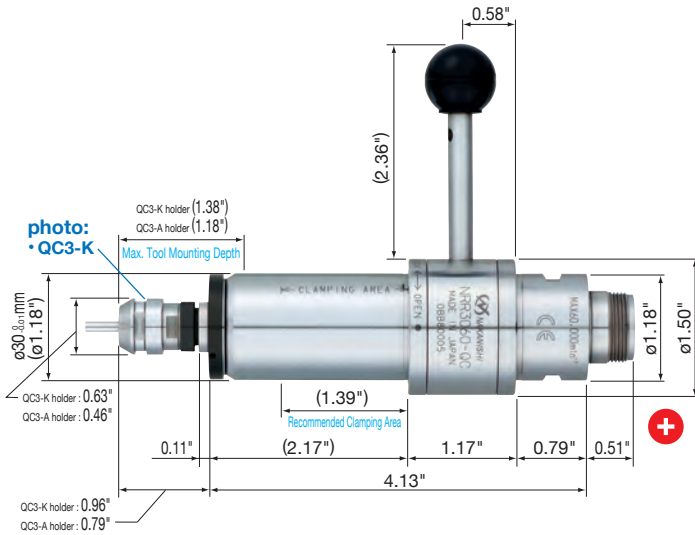
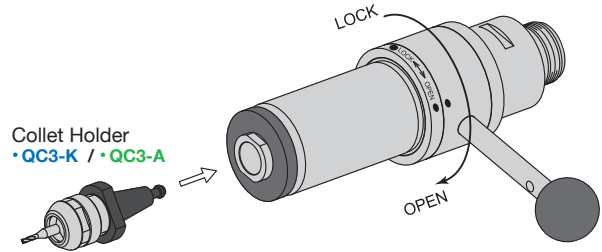




**Product Code 9208 LEVER TYPE QUICK CHANGE SPINDLE NRR3060-QC 60,000 rpm**

**Features:**

- Quick, easy and accurate tool change without the need for wrenches.
- Makes tool pre-setting outside of the machine possible.
- There are 2 models of collet holders. The collet holder model depends on the collet type selected.  
Various sizes of collets are available. (CHK 0.5mm-6.35mm, CHA 0.5mm-4.0mm)
- 10 times the retention force as compared to the NRR-2651.



- Allowable Motor Speed ..... 60,000 rpm
- Spindle Accuracy ..... Within 1 μm
- Lever Operating Angle ..... 90°
- Weight ..... 1 lb. 4.11 oz.

**< Optional >**

- Collet Holder ..... **QC3-K**
- Collet (CHK-□□) ..... ø0.5 mm~ø6.35 mm  
(See Page 6-p3 for details)
- Collet Nut (K-265)..... for Collet (CHK)
- Preset Adapter ..... QC3-ADP
- Wrench ..... 12 x 14 (2 pcs. not included)

**< Optional >**

- Collet Holder ..... **QC3-A**
- Collet (CHA-□□) ..... ø0.5 mm~ø4.0 mm  
(See Page 6-p2 for details)
- Collet Nut (CHN-A) ..... for Collet (CHA)
- Preset Adapter ..... QC3-ADP
- Wrench ..... 9 x 11, 8 x 5 (1 pc. each not included)

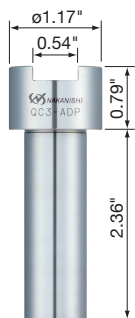
**Lever Type Quick Change Spindle**

Product Code	Product Name	Standard Equipment · Accessories
9208	NRR3060-QC	• Wrench (22 x 27) : 1 pc.

**Note :** Collet and wrenches for the collet holder are sold separately.

\*Do not exceed the allowable motor speed for the spindle.

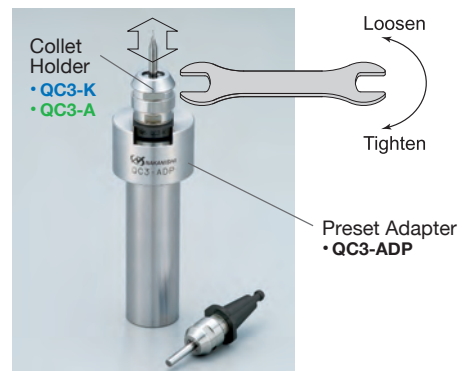
**PRESET ADAPTER**



- Insert the tool holder into the Preset Adapter.
- Align the tool holder with the drive dog notches in the Preset Adapter.
- Attached the Collet Nut and Collet to the tool holder. Lightly finger tighten the Collet Nut.
- Insert the cutting tool into the Collet.
- Place the wrenches on the Collet Nut and Collet Holder and securely tighten in a clockwise direction.

**Preset Adapter**

Product Code	Product Name	Standard Equipment · Accessories
9211	QC3-ADP	—



\*Order by product code. **2-p63**

1  
EmaxEVO  
ESPRT  
ROTUS  
IMPULSE  
PRESTO II  
Sheenus  
ZERO  
Sonic-Cutter  
ZERO

2  
iSpeed3  
E2000  
ø1.0"/ø0.98"/ø0.897"  
E3000  
— One Piece  
E3000  
— Modular  
ø1.18"  
ø1.07"/ø0.98"  
ø0.897"  
E3000  
— 80,000rpm  
E4000

3  
MA  
ø0.897"  
ø1.0"  
ø0.98"  
ø1.18"  
MS  
ø0.75"  
ø0.79"  
ø0.81"  
ø0.91"  
ø1.0"  
ø0.98"

4  
HES  
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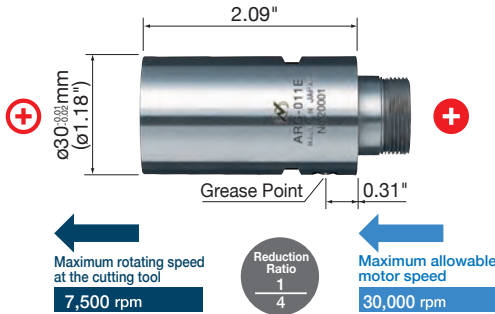
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# E3000 SERIES $\phi 1.18''$ ( $\phi 30$ mm) SPEED REDUCER



**Caution :** Use the motor at motor speed less than maximum allowable speed or use the speed reducer. DO NOT exceed the allowable motor speed for the spindle and the reducer.

## Product Code **1507** SPEED REDUCER 1/4 ARG-011E



Maximum allowable motor speed **30,000 rpm**

Maximum rotating speed at the cutting tool <Reduction Ratio : 1/4> **7,500 rpm**

- Speed Reducing Mechanism ..... By planetary gear system
- Speed Reduction Ratio ..... 1/4
- Weight ..... 8.54 oz.

### Speed Reducer 1/4

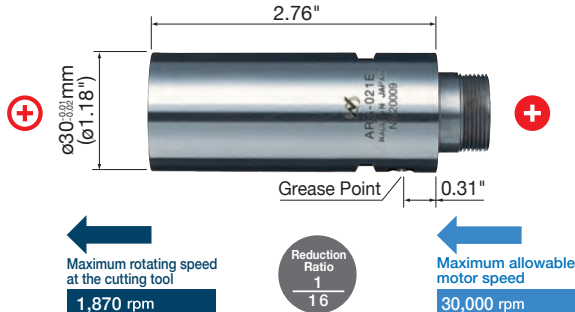
Product Code	Product Name	Standard Equipment · Accessories
1507	ARG-011E	• Gear Grease (10mL) • Grease Nipple : 1 pc.



To extend the life expectancy of the Speed Reducer, inject grease every 70 to 100 hours. Grease injection prevents friction of the internal gears as well as heat generation. Adding grease also prevents the degradation of the existing grease in the reducer. Please maintain a reducer grease maintenance program.

- If the speed reducer is connected between the motor and the spindle, it reduces the rotating speed and increases the torque while keeping the motor speed unchanged.

## Product Code **1508** SPEED REDUCER 1/16 ARG-021E



Maximum allowable motor speed **30,000 rpm**

Maximum rotating speed at the cutting tool <Reduction Ratio : 1/16> **1,870 rpm**

- Speed Reducing Mechanism ..... By planetary gear system
- Speed Reduction Ratio ..... 1/16
- Weight ..... 11.46 oz.

### Speed Reducer 1/16

Product Code	Product Name	Standard Equipment · Accessories
1508	ARG-021E	• Gear Grease (10mL) • Grease Nipple : 1 pc.



To extend the life expectancy of the Speed Reducer, inject grease every 70 to 100 hours. Grease injection prevents friction of the internal gears as well as heat generation. Adding grease also prevents the degradation of the existing grease in the reducer. Please maintain a reducer grease maintenance program.

- If the speed reducer is connected between the motor and the spindle, it reduces the rotating speed and increases the torque while keeping the motor speed unchanged.

## 25 Pin INTERFACE CABLE



- 3 Meter long Interface Cable provides a DB25 Male Connector at one end and a blunt cut on the opposite end. Includes a pin-out wire diagram for easy interfacing of I/O signals from any NSK Control to a CNC Control.

### 25 Pin Interface Cable

Product Code	Product Name	
DB25M	DB25M	For NSK Control Connector A 12.5 ft
DB25MXL	DB25MXL	For NSK Control Connector A 25 ft

## 15 Pin INTERFACE CABLE

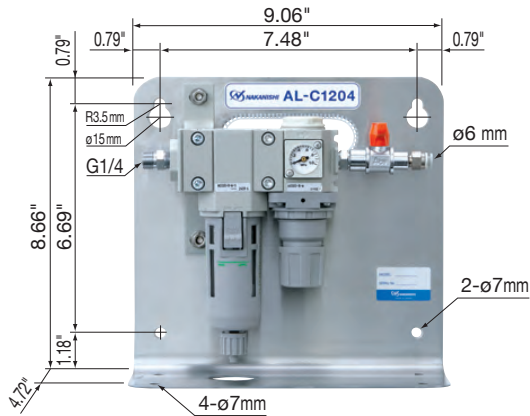


- 3 Meter long Interface Cable provides a DB15 Male Connector at one end and a blunt cut on the opposite end. Includes a pin-out wire diagram for easy interfacing of the (OP1) "E-Stop Input Circuit" and "Safety Relay Circuit" from the NSK Control to a CNC Control.

### 15 Pin Interface Cable

Product Code	Product Name	
DB15M	DB15M	For NSK Control Connector B

**Product Code 4504 AIR LINE KIT AL-C1204**



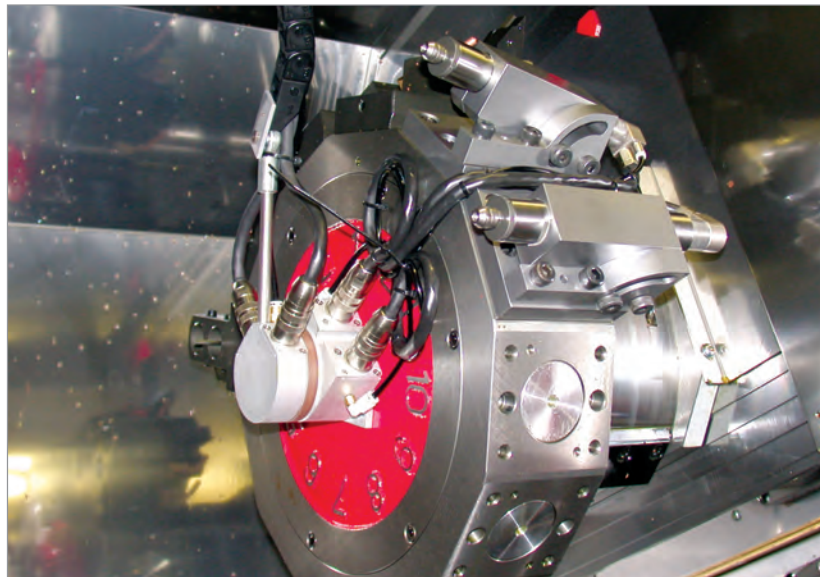
- The AL-C1204 Air Line Kit is designed to deliver clean, dry air to Electric Motors via the Controller. The filter removes small amounts of debris while the adjustable regulator provides the correct air pressure for cooling and purging.

**Air Line Kit (For  $\phi 6$  mm Hose · Filter Mesh  $0.3 \mu\text{m}$  )**

Product Code	Product Name	Standard Equipment · Accessories	
4504	AL-C1204	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> </ul>	

## Rotary Coupling

An electric/pneumatic coupling is now available that allows NAKANISHI Electric Spindles up to 30mm diameter, to be mounted to the turret of a CNC turning machine. The rotary coupling prevents power cable and pneumatic lines from getting tangled when the turret is rotated. Contact NSK America at 800-585-4675 for complete details.



1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''$ / $\phi 0.99''$ / $\phi 0.997''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.07''$ / $\phi 0.98''$ / $\phi 0.997''$
E3000 - 80,000rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''$ / $\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''$ / $\phi 0.79''$
$\phi 0.87''$ / $\phi 0.91''$
$\phi 1.0''$ / $\phi 0.98''$
4
HES
iSpeed5
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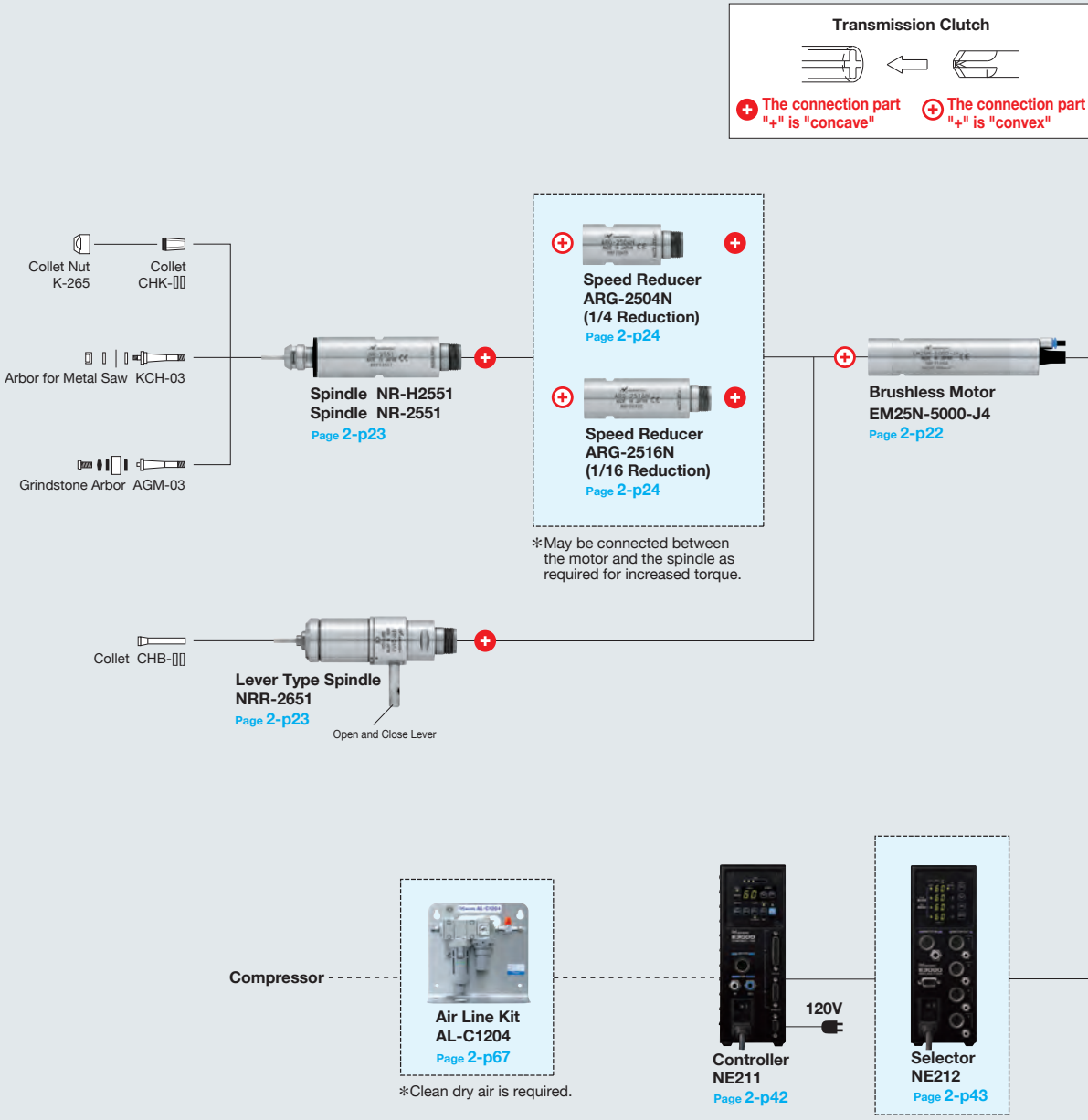
$\varnothing 1.0''$  /  $\varnothing 0.98''$   
 ( $\varnothing 25.4$  mm) / ( $\varnothing 25$  mm)

- Interchangeable with a variety of attachments depending on the application.

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\varnothing 1.0''/\varnothing 0.98''/\varnothing 0.897''$
E3000 - One Piece
E3000 - Modular $\varnothing 1.18''$
$\varnothing 1.0''/\varnothing 0.98''/\varnothing 0.897''$
E3000 - $\varnothing 0.000$ rpm
E4000
3
MA $\varnothing 0.897''$
$\varnothing 1.0''$
$\varnothing 0.98''$
$\varnothing 1.18''$
MS $\varnothing 0.75''$
$\varnothing 0.79''$
$\varnothing 0.87''$
$\varnothing 0.91''$
$\varnothing 1.0''$
$\varnothing 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
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### Modular Type $\varnothing 1.0''$ , $\varnothing 0.98''$ ( $\varnothing 25.4$ , $\varnothing 25$ mm) System Chart

\*Take note that product names and specifications will be changed.



\*May be connected between the motor and the spindle as required for increased torque.

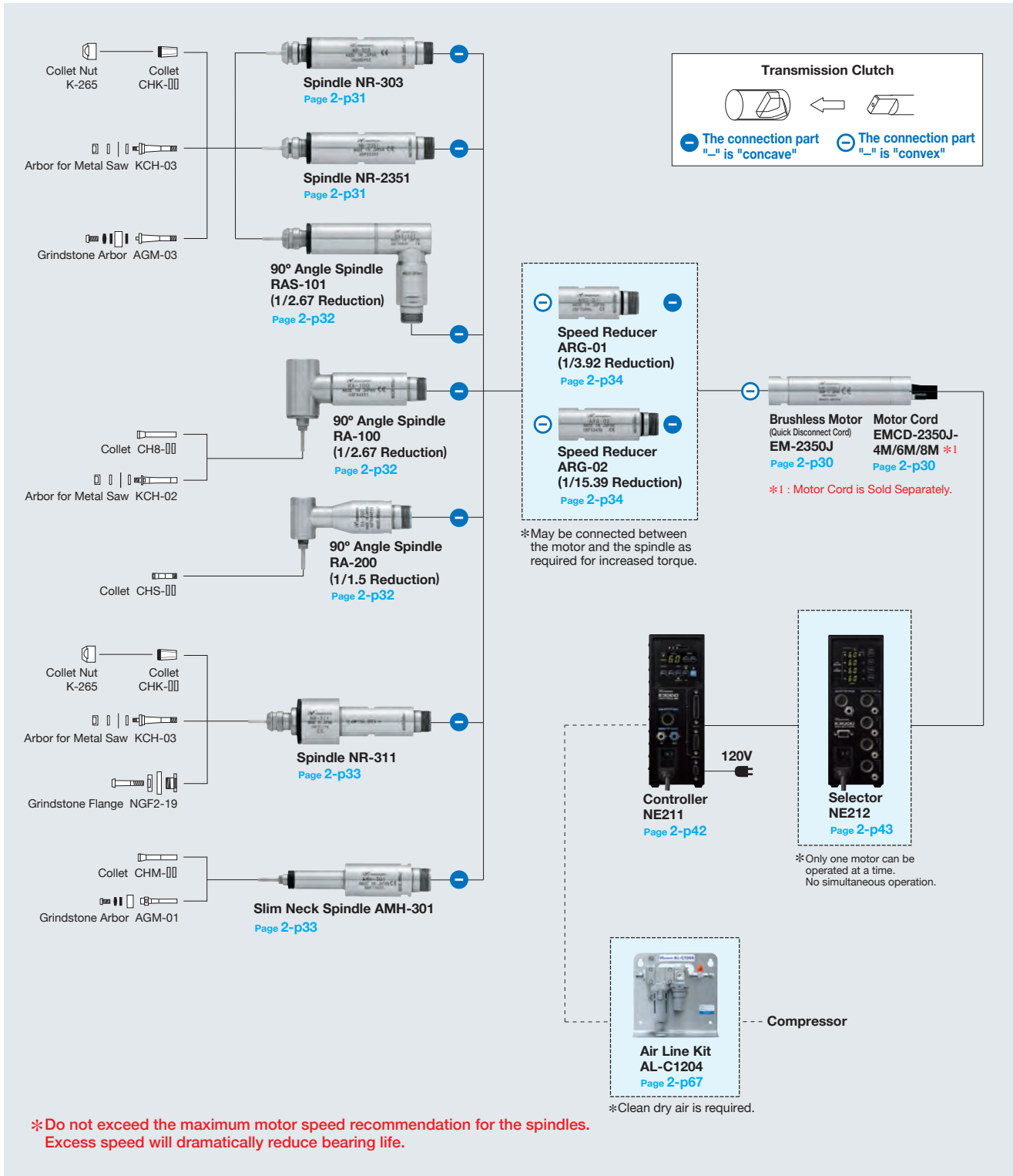
\*Clean dry air is required.

\*Only one motor can be operated at a time. No simultaneous operation.

\*Do not exceed the maximum motor speed recommendation for the spindles. Excess speed will dramatically reduce bearing life.

- High-performance brushless motor which provides compact size, light weight, output (Max. 300W), and excellent durability (motor endurance to 5,000 hours of continuous use by NAKANISHI's internal standard load test). By the combination with high-performance spindles, it can be installed on a NC lathe, special purpose machine, robot, etc.

### Modular Type ø0.897" (ø22.8 mm) System Chart



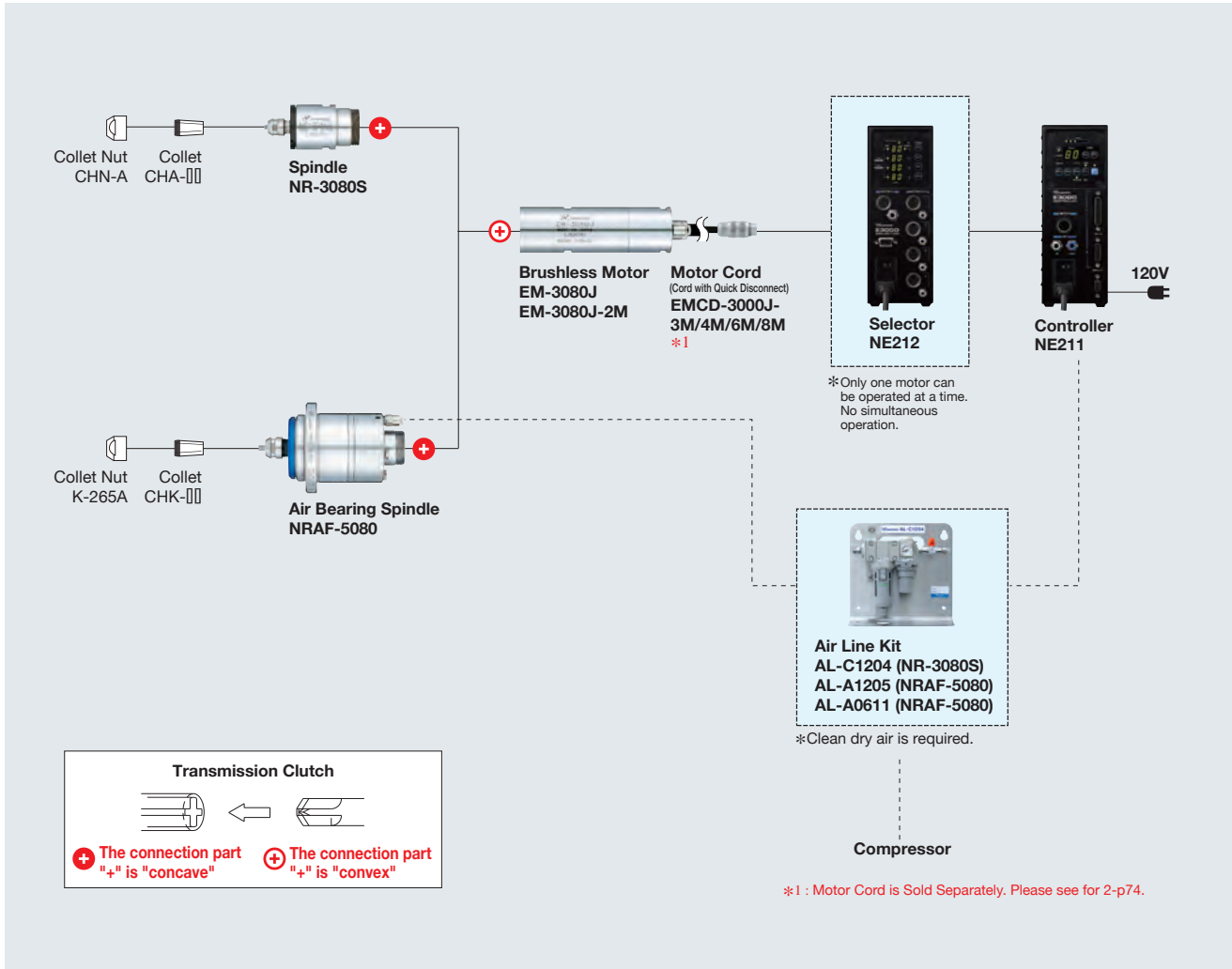
1
Emax EV
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.89" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
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∅1.18" / ∅1.97"  
(∅30 mm) (∅50 mm)

- 1,000~80,000 rpm ● Maximum Output 350W ● Auto or Manual Control Modes.
- Can be installed on a Special-Purpose Machine, NC Lathe, Robot, etc.
- Motor speed is displayed accurately on the front panel.

### Modular Type ∅1.18", ∅1.97"(∅30, ∅50 mm) System Chart



1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

∅1.0"/∅0.98"/∅0.897"

E3000

- One Piece

E3000

- Modular

∅1.18"

∅1.0"/∅0.98"/∅0.897"

E3000

- ∅0,000rpm

E4000

3

MA

∅0.897"

∅1.0"

∅0.98"

∅1.18"

MS

∅0.75"

∅0.79"

∅0.87"

∅0.91"

∅1.0"

∅0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

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## Features of E3000 Series



### ● Maximum Motor Speed 80,000 rpm

The maximum motor speed 80,0 rpm is realized by using high performance brushless motor and ceramic bearings.

### ● Maximum Motor Output with 350W Power Supply

The E Series motor is a brushless DC motor utilizing hall elements, the rotor unit is a rare-earth magnet, motor develops 350W.

### ● Motor Endurance

Brushless motor has no carbon brushes or commutator, minimizing wear and resulting in a long service life. Due to the brushless construction, electrical interference and other noises are minimized.

### ● Smooth Rotation

'The absence of a commutator' and 'the use of a photo coupler sending a feedback signal of 48 pulses per revolution' result in very smooth rotation with little vibration throughout the speed range.

### ● Excellent Durability by air-cooling system

Air-cooled motor uses a small volume of air (1.0CFM) to prevent heat buildup and allow long continuous operation.

Clean dry air is required to cool the motor and protect the spindle from contaminants. Use a filter, regulator and lubricator.  
(Proper air pressure 29~73PSI) (Use Air Line Kit AL-C1204)

### ● Spindle Accuracy

Spindle Accuracy is within 1  $\mu\text{m}$  (TIR).

### ● High Rigidity, Short Body

E3000 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.

### ● Power Source Auto Detection

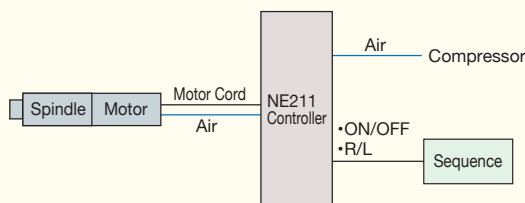
Power Source is 100-240V for international operation. Eliminate the need of setting the voltage or changing fuses.

### ● Protection System, External Input / Output Control Signal

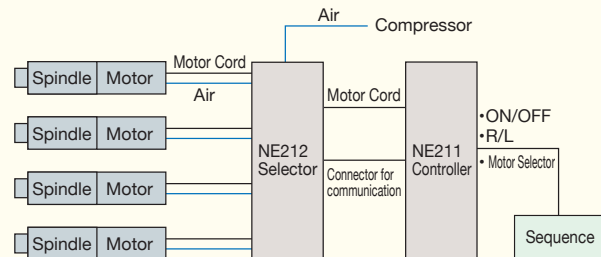
Error function : Motor/Spindle is stopped safety, Error LED is lit. ex.) Overload operation, Air shortage, Motor Spindle can be controlled and monitored by external input-output connector. ex.) Control ; Start/Stop, FWD./REV., Motor Speed Control Monitor ; Motor rotating, Torque Load.

## Automatic Control System Chart

### ● Single Motor Spindle Operation



### ● Sequential Operation of up to 4 Motor / Spindles



\*When connecting NE211 to NE212, up to 4 motors can be connected to NE212 providing individual control of each motor. (4 motors can not be run simultaneously.)

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.0"/ø0.98"/ø0.897"

E3000

- One Piece

E3000

- Modular

ø1.18"

ø1.07"/ø0.98"

ø0.897"

E3000

- 80,000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.75"

ø0.81"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

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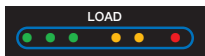
# E3000 SERIES CONTROLLER

- AC100-240V for international operation
- 1,000~80,000 rpm ● Maximum Output 350W
- External Input / Output Control Signal (Refer to 7-p2~p9 page of this catalog)

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 - ø0,000rpm
E4000
3
MA ø0.897"
ø1.0" ø0.98"
ø1.18"
MS ø0.75" ø0.79"
ø0.87" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
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Product Code **9775** **CONTROLLER NE211** **80,000 rpm**

\* : Load Meter



- : Continuous load area
- : Intermittent load area
- : Overload

External Input-Output Connector A (D-SUB25 Female)

External Input-Output Connector B (D-SUB15 Female)

Motor Connector

Air Output Joint ø6 mm

Air Input Joint ø6 mm

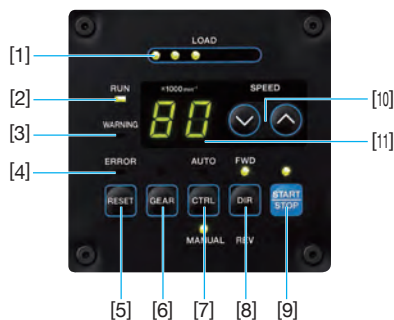
Power Switch

Communication Connector for NE212

Intake with Power Fuse



- [1] Load Meter\*
- [2] Running LED (RUN)
- [3] Warning LED (WARNING)
- [4] Error LED (ERROR)
- [5] Error Reset Switch (RESET)
- [6] Gear Setting Switch (GEAR)
- [7] Control Switch (AUTO/MANUAL)
- [8] Rotating Direction Selector Switch (FWD./REV.)
- [9] Start Switch (START)
- [10] Motor Speed Adjustment Switch (SPEED)
- [11] Display



**Specifications**

Product Name : NE211  
 Power Source : AC120V / 240V  
 Motor Speed : 1,000-80,000 rpm  
 Max. Output Power : 350W  
 Power Consumption : 1.8A  
 Air Flow Volume : 1.0CFM (36-44PSI)  
 Weight : 6 lb. 2.77 oz.  
 Dimensions : W3.46" x D5.43" x H9.37"

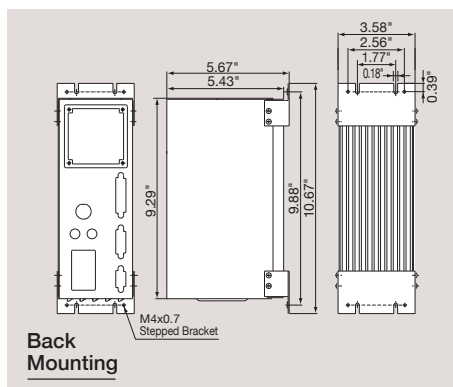
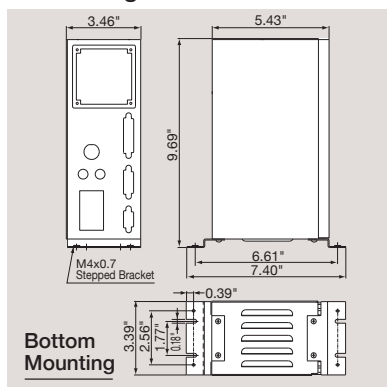
**E3000 Controller**

Product Code	Plug Type	Product Name	Standard Equipment · Accessories
9775	120V (B type)	NE211	<ul style="list-style-type: none"> <li>• Power Cord : 6 ft · Air Hose with filter · Reducer</li> <li>• Connector Cap (Provided) · Bracket · Nylon Clip</li> <li>• Screw · Rubber Pad · Fuse (T6.3AL) 250V: 2 pcs.</li> </ul>

\*Please refer to Technical Data 7-p2~p9 in detail about External Input-Output Connector.

\*AC100-240V for international operation. Please check the power source plug type (2-p73) and order accordingly.

● **Mounting Bracket**



**Optional**

**Control Panel Extension Cord**

Product Code	Product Name	Fit to
8407	E3000-PEX4	NE211

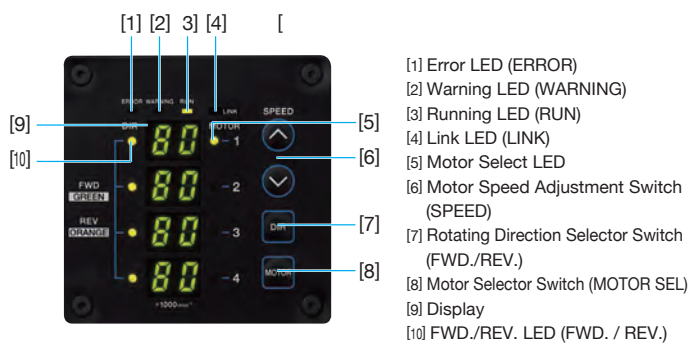
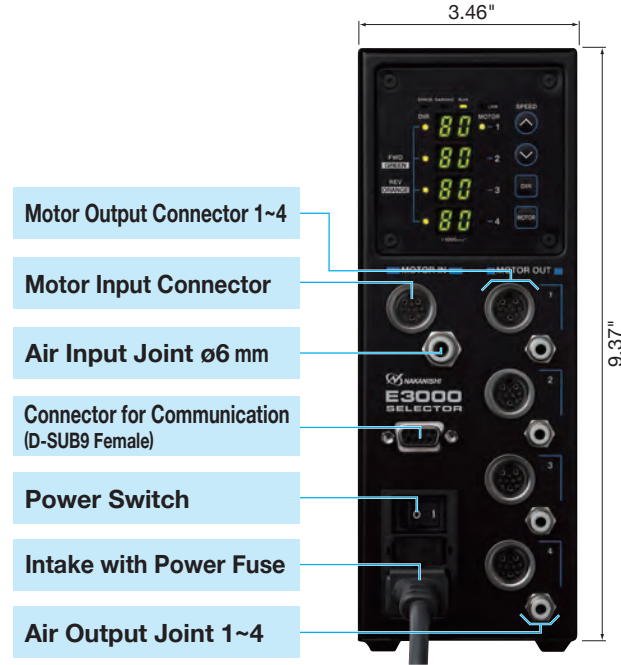
**25 / 15 Pin Interface Cable**

Product Code	Product Name	Fit to
DB25M	DB25M	NE211
DB25MXL	DB25MXL	NE211
DB15M	DB15M	NE211

# E3000 SERIES SELECTOR

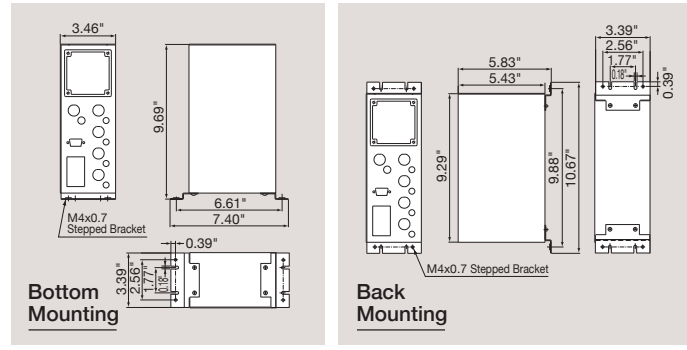
- AC100-240V for international operation
- Up to 4 motors can be connected to NE212 providing individual control of each motor.  
(Simultaneous motor operation is not possible)

Product Code **9781** **SELECTOR NE212** **80,000 rpm**



**Specifications**  
 Product Name : NE212  
 Power Source : AC120V / 240V  
 Power Consumption : 0.15A  
 Air Flow Volume : Max. 4.0CFM  
 (51PSI / Using max. 4 motor/spindles)  
 Weight : 4 lb. 3.02 oz.  
 Dimensions : W3.46" x D5.43" x H9.37"

### ● Mounting Bracket



### E3000 Selector

Product Code	Plug Type	Product Name	Standard Equipment · Accessories
9781	120V (B type)	NE212	<ul style="list-style-type: none"> <li>• Power Cord : 6 ft</li> <li>• Connect NE211 to NE212 Cable : 23.62"</li> <li>• Communication Cable : 23.62"</li> <li>• Connector Cap (Provided)</li> <li>• Plug to avoid Air Flow</li> <li>• Bracket</li> <li>• Nylon Clip</li> <li>• Screw</li> <li>• Rubber Pad</li> <li>• Fuse (T1.6AL) 250V: 2 pcs.</li> </ul>

\*Power Source for Global Operation (AC100-240V). Please check the power source plug type and order accordingly.

### ● Power Source Plug

Plug Type	Main Usable Area	Product
For 120V (B type)	For U.S.A. and Canada	

1
EmaxEVC
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.99" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
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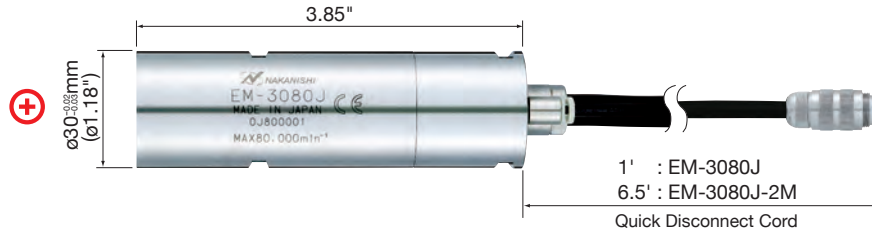
# E3000 SERIES ø1.18" (ø30 mm) BRUSHLESS MOTOR



**Caution :** Brushless Motor with 6.5 ft (2 m) long quick disconnect cord can not used with EMCD-3000J-8M.

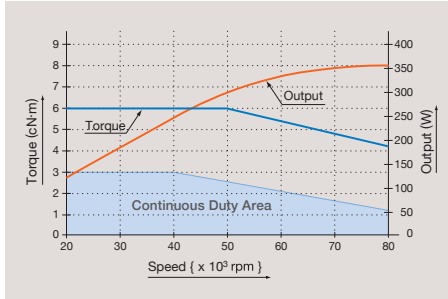
## BRUSHLESS MOTOR EM-3080J

80,000 rpm



EMCD-3000-4M / 6M / 8M and EMCD-3000A-4M / 6M / 8M on page 2-p54 can not used for this motor.

- Motor Speed ..... 20,000~80,000 rpm
- Max. Output Power ..... 350W
- Housing ..... Stainless steel (SUS416)
- Weight ..... 12.70 oz. (w/o Cord)



### Brushless Motor with 1 ft Cord

Product Code	Product Name	Standard Equipment · Accessories	
1781	EM-3080J	• Wrench (22 x 27) : 1 pc.	

### Brushless Motor with 6.5 ft Cord

Product Code	Product Name	Standard Equipment · Accessories	
1788	EM-3080J-2M	• Wrench (22 x 27) : 1 pc.	

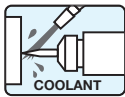
\*EMCD-3000J-8M (25.3 ft / 8m long) can not be used for this motor.

## MOTOR CORD

Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to	
	1778	Motor Cord 3M EMCD-3000J-3M	10 ft (3.0m)	• Air Hose • Connector Cap (Provided)	EM-3080J EM-3080J-2M	
	1768	Motor Cord 4M EMCD-3000J-4M	12.1 ft (3.7m)			
	1767	Motor Cord 6M EMCD-3000J-6M	18.7 ft (5.7m)			
	1766	Motor Cord 8M EMCD-3000J-8M	25.3 ft (7.7m)		EM-3080J	



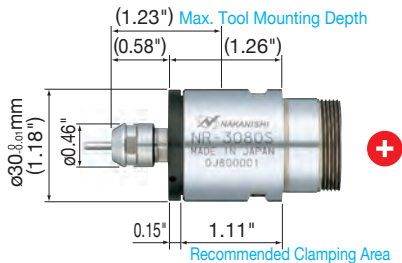
# E3000 SERIES $\phi 1.18"$ , $1.97"$ ( $\phi 30$ , $\phi 50$ mm) SPINDLE



E3000 Series can be used in conjunction with water or oil based coolants.

## Product Code **7876** SPINDLE NR-3080S

**80,000 rpm**



- This spindle can be used for small-diameter milling, drilling, slitting, chamfering, grinding, etc.

- Allowable Motor Speed ..... 80,000 rpm
- Spindle Accuracy ..... Within 1  $\mu$ m
- Weight ..... 6.00 oz.
- Ceramic Bearing
- Additional collet purchase required:
  - Collet Series CHA-XX .....  $\phi 0.5$ mm~ $\phi 4.0$ mm
  - Recommended ..... CHA-3.175  $\phi 1/8"$
 (See Page 6-p2 for additional sizes)

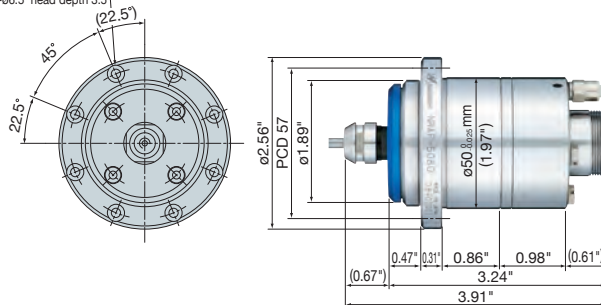
### Spindle

Product Code	Product Name	Standard Equipment · Accessories	
7876	NR-3080S	<ul style="list-style-type: none"> <li>Collet Nut (CHN-A) : 1 pc.</li> <li>Wrench (8 x 5), (9 x 11), (22 x 27) : 1 pc. each</li> </ul>	

## Product Code **1793** AIR BEARING SPINDLE NRAF-5080

**80,000 rpm**

8- $\phi 3.5$  through hole  
8- $\phi 6.5$  head depth 3.5



- This air bearing type spindle incorporates an air pressure bearing that floats the spindle resulting in almost no vibration and extremely high accuracy for extremely high precision machining.
- \*Air line kit AL-A1205 and AL-A0611 are recommendable as air supply system.

- Allowable Motor Speed ..... 80,000 rpm
- Spindle Accuracy ..... Within 1  $\mu$ m
- Standard Size Collet (CHK-3.175) .....  $\phi 1/8"$
- Air Bearing Consumption ..... 1.24CFM (73PSI)
- Weight ..... 1 lb. 3.75 oz.
- Main body mount method ..... Flange mounting method, M3 bolt (8 locations, 45° Angle, PDC57)
- Bearing Type ..... Air static bearing
- Bearing Load Capacity ..... Radial : 20N, Thrust : 40N
- Useable Max. Diameter of Grindstone ..... Less than  $\phi 8$ mm (For  $\phi 6.0$ mm shank)
- Hose Diameter (Air Intake · Bearing) .....  $\phi 4.0$ mm
- Optional >
  - Collet (CHK- [□]) .....  $\phi 0.5$  mm~ $\phi 6.35$  mm
 (See Page 6-p3 for details)

### Air Bearing Spindle

Product Code	Product Name	Standard Equipment · Accessories	
1793	NRAF-5080	<ul style="list-style-type: none"> <li>Collet <math>\phi 1/8"</math> (CHK-3.175)</li> <li>Collet Nut (K-265A) : 1 pc.</li> <li>Wrench (12 x 14) : 2 pcs., (22 x 27) : 1 pc.</li> <li>Fitting (KQ2H04-M5-X2) : 1 pc.</li> <li>Plug (KQ2P-04) : 1 pc.</li> <li>Intake Air Hose : <math>\phi 4</math>mm x 13ft, 1 pc.</li> <li>Bar Wrench (K-236) : 1 pc.</li> </ul>	

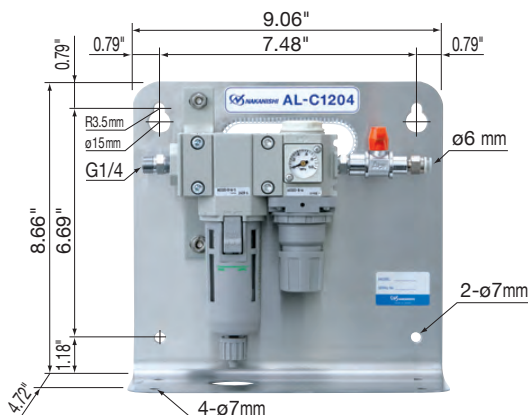
\*Do not exceed the allowable motor speed for the spindle.

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0"/\phi 0.98"/\phi 0.897"$
E3000 - One Piece
E3000 - Modular
$\phi 1.18"$
$\phi 1.07"/\phi 0.98"/\phi 0.897"$
$\phi 0.81"/\phi 0.814"$
E3000 - 80,000rpm
E4000
3
MA
$\phi 0.897"$
$\phi 1.0"/\phi 0.98"$
$\phi 1.18"$
MS
$\phi 0.75"/\phi 0.75"$
$\phi 0.81"/\phi 0.814"$
$\phi 1.0"/\phi 0.98"$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
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# E3000 SERIES AIR LINE KIT

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 One Piece
E3000 Modular
ø1.18"
ø1.0"/ø0.98"/ø0.897"
E3000 ø0.000rpm
E4000
3
MA
ø0.897"
ø1.0"/ø0.98"
ø1.18"
MS
ø0.75"/ø0.79"
ø0.87"/ø0.91"
ø1.0"/ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
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5
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## Product Code 4504 AIR LINE KIT AL-C1204

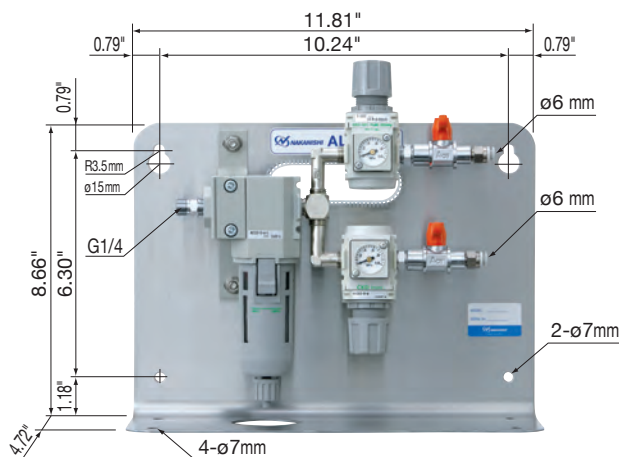


- The AL-C1204 Air Line Kit is designed to deliver clean, dry air to Electric Motors via the Controller. The filter removes small amounts of debris while the adjustable regulator provides the correct air pressure for cooling and purging.

### Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 µm )

Product Code	Product Name	Standard Equipment · Accessories
4504	AL-C1204	<ul style="list-style-type: none"> <li>Air Filter</li> <li>Air Regulator</li> <li>Air Pressure Gauge</li> <li>Air ON-OFF Valve</li> <li>Hose for Piping (K-275) : 6 ft</li> </ul>

## Product Code 4505 AIR LINE KIT AL-A1205 (For Air Bearing Spindles)

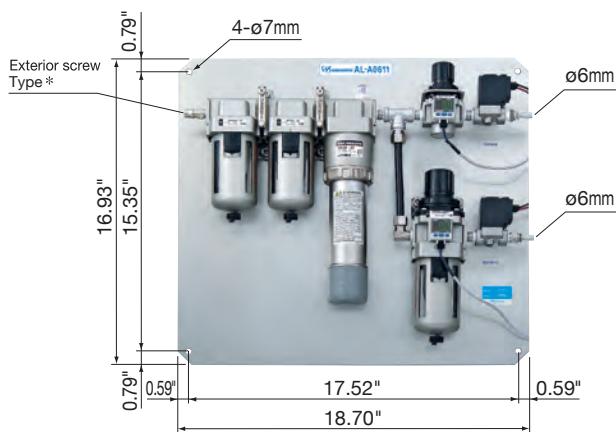


- The AL-A1205 is a dual output dry air, Air Line Kit designed for use on Electric Motor Systems that use the NRAF-5080 Air Bearing Spindle and the NE211 (E3000) Controller. One output is for the Electric Motor cooling, and the second output is for the Air Bearing operation. This unit is also designed for use on Air Turbine / Air Bearing Motor/Spindles such as the Xpeeds series and the ABT Series. One air output drives the Air Turbine Motor. The other air output drives the Air Bearing Spindle.
- Always supply air to the Air Bearing before starting the EM-3080 Motor. When stopping the spindle, always stop the motor before removing the air from the Air Bearing Spindle.
- Always supply air to the Air Bearing Spindle before starting the Air Turbine Motor. When stopping the spindle, always stop the Air Turbine Motor before removing the air from the Air Bearing Spindle.

### Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 µm )

Product Code	Product Name	Standard Equipment · Accessories
4505	AL-A1205	<ul style="list-style-type: none"> <li>Air Filter</li> <li>Air Regulator</li> <li>Air Pressure Gauge</li> <li>Air ON-OFF Valve</li> <li>Hose for Piping (K-275) : 6 ft</li> </ul>

## Product Code 1548 AIR LINE KIT AL-A0611 (For Air Bearing Spindles)



- The AL-A0611 is a high filtered Air Line Kit utilizing a \*0.01µm micro mist filter system for NRAF-5080 Air Bearing Spindles combined with the NE211 (E3000) Controller.
  - This Air Line Kit is highly recommended for use on all Xpeed Series and the ABT series (Air Turbine / Air Bearing motor/spindles).
- \*Exterior screw Type (Model KK13P-02M by SMC Corporation)

### Air Line Kit (For ø6 mm Hose · Filter Mesh 0.01 µm )

Product Code	Product Name	Standard Equipment · Accessories
1548	AL-A0611	<ul style="list-style-type: none"> <li>Mist Separator</li> <li>Micro Mist Separator</li> <li>Membrane Air Dryer</li> <li>Regulator</li> <li>Solenoid Valve</li> <li>Digital Pressure Switch</li> </ul>

# E4000 SERIES

HIGH POWER SOLUTIONS

ELECTRIC SYSTEM

Outside Diameter **Ø1.57" (Ø40 mm)**

1,000~40,000 rpm  
Max. Output 1,200W

● One Piece Type / Modular Type

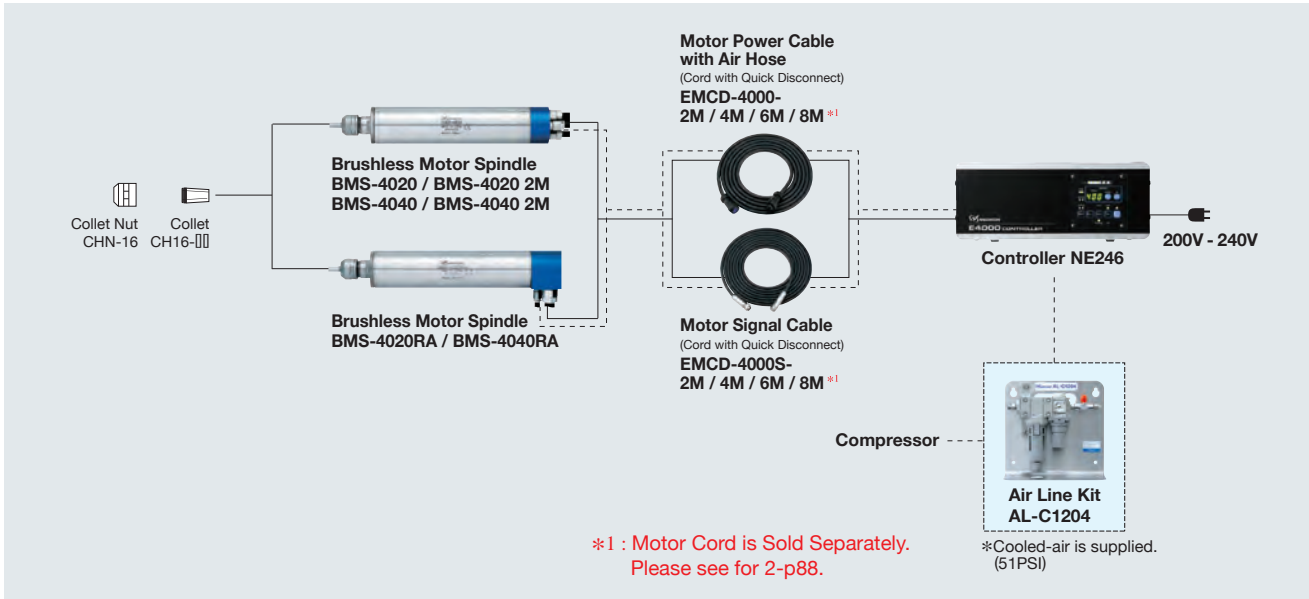
- Up to Ø0.375" Collet Capacity
- Designed for use on CNC Lathes, Robots and Special Application Machines for precision milling, drilling grinding, slitting and deburring applications.



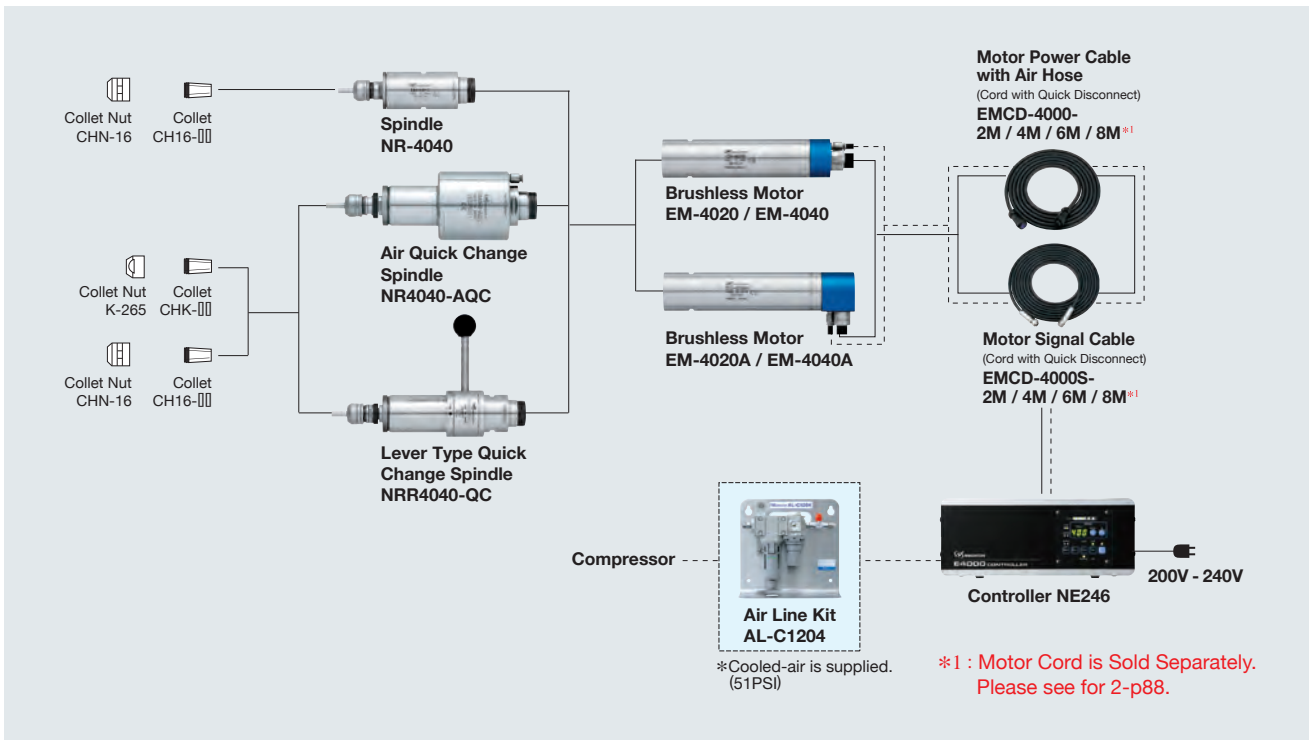
1
EmaxEVC
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 Ø1.0"/Ø0.98"/Ø0.897"
E3000 - One Piece
E3000 - Modular
Ø1.18"
Ø1.07"/Ø0.98" Ø0.897"
E3000 - 80,000rpm
E4000
3
MA
Ø0.897"
Ø1.0" Ø0.98"
Ø1.18"
MS
Ø0.75" Ø0.719"
Ø0.897" Ø0.81"
Ø1.0" Ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
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- High Speed, Power and Torque in a Brushless DC Motor/Spindle
- 1,000 ~ 40,000 rpm with 1,200 Watts (1.6 HP) of Power
- 40 mm (1.57 Dia.) Body Diameter
- .375" Collet Capacity

## One Piece Type System Chart



## Modular Type System Chart



1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.07"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98"/ø0.897"
E3000 - ø0,000rpm
E4000
3
MA
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HTS
PLANET
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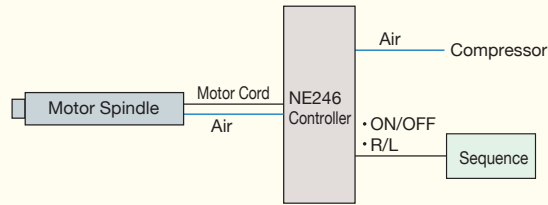


## Features of E4000 Series

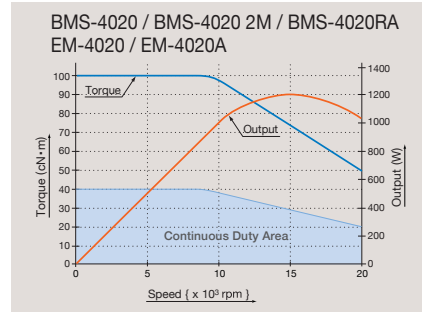
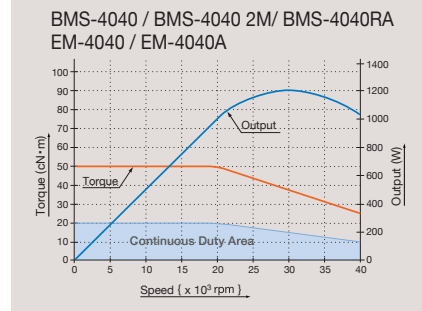
- 1,000~40,000 rpm, 500 rpm (for centering rotation)
- Rated output 400W (Max. output 1,200W)
- Spindle accuracy 1 μm or less.
- Achieved continuous run of over 5,000 hours.  
{NAKANISHI's factory test without load at 40,000 min-1(rpm)}
- Motor weight : 3 lb. 4.91 oz. (BMS-4020 / 4020 2M / 4040 / 4040 2M), 2 lb. 13.86 oz. (EM-4020 / 4040),  
4 lb. 6.55 oz. (BMS-4020RA / 4040RA), 3 lb. 15.49 oz. (EM-4020A / 4040A)
- Proper cooling air pressure 51PSI
- Cooling air consumption 3.53CFM
- Extremely low vibration brushless DC motor.
- Utilizes a double pair of ultra-precision ceramic bearings to obtain high rigidity in both radial and thrust directions. Incorporates 2 ceramic bearings on the front side and 2 on the rear side.
- External housing made of precision ground stainless steel SUS-416.

### Automatic Control System Chart

#### Single Motor Spindle Operation



### Torque Characteristics



## One Piece Type Combination Example

40,000 rpm



### E4000, BMS-4040 Combination Example

Product Code	Product Name	Product	
8472	NE246	Controller	
7806	BMS-4040	Motor Spindle	
9253	EMCD-4000-2M	Motor Power Cable	
9257	EMCD-4000S-2M	Motor Signal Cable	
4504	AL-C1204	Air Line Kit	

## Modular Type Combination Example

40,000 rpm



### E4000, EM-4040, NR-4040 Combination Example

Product Code	Product Name	Product	
8472	NE246	Controller	
8346	EM-4040	Motor	
7902	NR-4040	Spindle	
9253	EMCD-4000-2M	Motor Power Cable	
9257	EMCD-4000S-2M	Motor Signal Cable	
4504	AL-C1204	Air Line Kit	

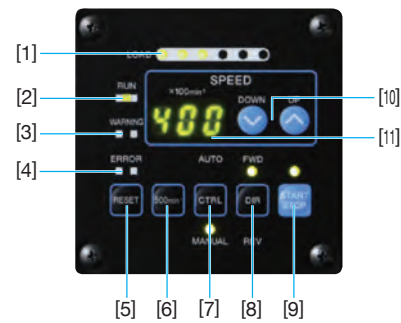


1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.0"/ø0.98"/ø0.897"
E3000 — ø0,000rpm
E4000
3
MA
ø0.897"
ø1.0"/ø0.98"
ø1.18"
MS
ø0.75"/ø0.79"
ø0.87"/ø0.91"
ø1.0"/ø0.98"
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Xpeed
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**Product Code 8472 CONTROLLER NE246 40,000 rpm**

- **High-Performance Electric Circuit**  
‘High grade feedback loop to maintain constant spindle speed even if load is varied’, and ‘Gentle start/Quick stop functions’ are provided.
- **Warning/Error Function**  
Motor Spindle is stopped safely and quickly, Warning/Error LED is lit, Warning/Error Signal is output to external device when a problem or tool breakage is detected.  
Warning : • Air shortage • Overload operation  
                  • Motor Sensor Error • Controller Overheat  
Error : • Internal Circuit Error • Voltage/Currency Error  
          • Overheat/Overload operation • Operation Error  
          • Air shortage

- **Maximum RPM Setting by Parameter**  
Capable of setting a maximum allowable motor speed by Parameter Setting
- **External Input-Output Connector**  
(Refer to Technical Data 7-p18~p23 in detail)
  - **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, Torque Monitoring, Rotating Signal.
- **Motor Speed Display**  
Motor speed is displayed precisely and digitally.
- **Operation Panel Extension Cord 4 meter (13 ft.) is available**



- [1] Load Meter
- [2] Running LED (RUN)
- [3] Warning LED (WARNING)
- [4] Error LED (ERROR)
- [5] Error Reset Switch (RESET)
- [6] Centering Mode
- [7] Control Switch (AUTO/MANUAL)
- [8] Rotating Direction Selector Switch (FWD./REV.)
- [9] Start Switch (START)
- [10] Motor Speed Adjustment Switch (SPEED)
- [11] Display



- **E4000 Optional Safety Relay Box**  
The Safety Relay Box is for use with the E4000 Controller. The Safety Relay “A” contacts switch the Motor Power Line and “B” contacts switch the external outputs to the machining center’s CNC controller.
  - 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 E4000 Controller to supply power to the motor. Any system errors, trouble with the machining center or the connections between the E4000 Controller and the machining center’s controller will cause the relay contacts to open and the E4000 motor to stop.
  - The Emergency Stop Signal Input can be connected to any and all portions of the machine’s safety systems (E-Stop String) to stop the E4000 motor any time that stoppage of the spindle and motor is required.
  - The “B” contact outputs can be used to detect an open circuit on the motor line and integrated with the machines safety systems to stop the machine in case a problem occurs.

**Specifications**

Product Name	: NE246
Power Source	: AC 200-240V
Motor Speed	: 1,000-40,000 rpm
Max. Output Power	: 1,200 W
Power Consumption	: 3.2 A
Air Flow Volume	: 3.53 CFM (29~51PSI)
Weight	: 14 lb. 12.34 oz.
Dimensions	: W9.84" x D11.42" x H3.94"

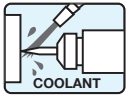
**E4000 Controller**

Product Code	Plug Type	Product Name	Standard Equipment · Accessories
8472	200 - 240V (Without Plug)	NE246	<ul style="list-style-type: none"> <li>• Power Cord : 13 ft</li> <li>• Air Hose with filter : 6 ft</li> <li>• Connector Cap (Provided)</li> <li>• Connector Cover (Provided)</li> <li>• Bracket : 4 pcs.</li> <li>• Rubber Pad : 4 pcs.</li> </ul>

\*Please refer to Technical Data 7-p18~p23 in detail about External Input-Output Connector.



# E4000 SERIES BRUSHLESS MOTOR SPINDLE



E4000 Series can be used in conjunction with water or oil based coolants.

## BRUSHLESS MOTOR SPINDLE BMS SERIES

20,000 · 40,000 rpm

- **STRAIGHT TYPE**  
BMS-4020 / BMS-4020 2M  
BMS-4040 / BMS-4040 2M



- **90° ANGLE TYPE (RA)**  
BMS-4020RA  
BMS-4040RA



- \*1 : When the tool shank diameter is less than 6.9mm
- \*2 : When the tool shank diameter is between 6.9mm and 10mm
- \*3 : Max. Motor Cable length is 6 meter (BMS- 4040 2M / 4020 2M / 4040RA / 4020RA)

- Proper Air Pressure ..... 51PSI
- Air Consumption ..... 3.53CFM
- Min. Bending Cord Radius ..... R70 mm
- **Additional collet purchase required:**  
Collet Series CH16-XX ..... ø3.0mm~ø10.0mm  
Recommended ..... CH16-6.35 ø1/4"  
(See Page 6-p5 for additional sizes)
- Motor Power Cable \*3 ..... ø1.18"
- Motor Signal Cable \*3 ..... ø0.63"
- Air Hose ..... ø6mm

### 20,000 rpm

Product Code	Product Name	Shape	Max. Torque	Spindle Accuracy	Max. Output	Rated Output	Weight *	Cord Length	
7803	BMS-4020	Straight	1.0 N · m	Within 1 µm	1,200W	400W	3 lb 4.91 oz.	1 ft	
7805	BMS-4020 2M	Straight					3 lb 4.91 oz.	6.5 ft	
7804	BMS-4020RA	90° Angle					4 lb 6.55 oz.	6.5 ft	

\* w/o Motor Cable

### 40,000 rpm

Product Code	Product Name	Shape	Max. Torque	Spindle Accuracy	Max. Output	Rated Output	Weight *	Cord Length	
7806	BMS-4040	Straight	0.5 N · m	Within 1 µm	1,200W	400W	3 lb 4.91 oz.	1 ft	
7809	BMS-4040 2M	Straight					3 lb 4.91 oz.	6.5 ft	
7807	BMS-4040RA	90° Angle					4 lb 6.55 oz.	6.5 ft	

\* w/o Motor Cable

#### Standard Equipment · Accessories

- Collet ø1/4" (CH16-6.35) : 1 pc. • Collet Nut (CHN-16) • Wrench (17 x 22) : 2 pcs.

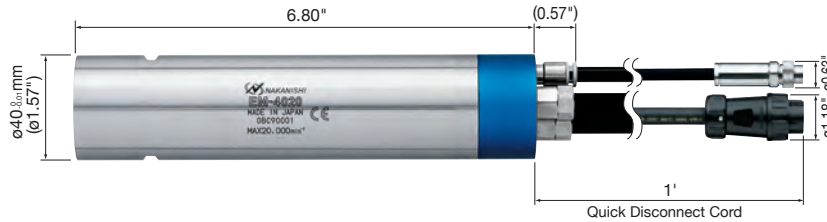
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EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.63" ø0.61"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
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AIR LINE KIT
6
PARTS
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# E4000 SERIES BRUSHLESS MOTOR

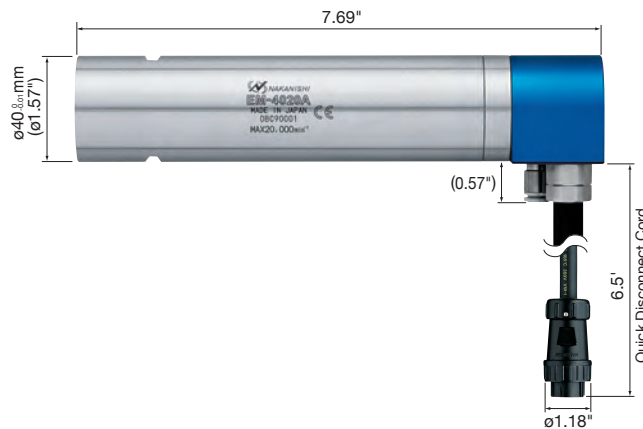
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ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
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o0.000rpm
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o1.18"
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o0.87"/o0.83"/o0.79"
o1.0"/o0.98"
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iSpeed5
HTS
PLANET
Xpeed
ABT
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## BRUSHLESS MOTOR 20,000 · 40,000 rpm

- **STRAIGHT TYPE**  
EM-4020  
EM-4040



- **90° ANGLE TYPE (A)**  
EM-4020A  
EM-4040A



- Proper Air Pressure ..... 51PSI
- Air Consumption ..... 3.53CFM
- Min. Bending Cord Radius ..... R70 mm < Optional >
- Motor Power Cable \*3 ..... ø1.18"
- Motor Signal Cable \*3 ..... ø0.63"
- Air Hose ..... ø6mm

\*3 : Max. Motor Cable length is 6 meter (90° ANGLE TYPE)

### 20,000 rpm

Product Code	Product Name	Shape	Max. Torque	Max. Output	Rated Output	Weight *	Cord Length
8348	EM-4020	Straight	1.0 N · m	1,200W	400W	2 lb 13.86 oz.	1 ft
8349	EM-4020A	90° Angle				3 lb 15.49 oz.	6.5 ft

\* w/o Motor Cable

### 40,000 rpm

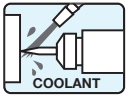
Product Code	Product Name	Shape	Max. Torque	Max. Output	Rated Output	Weight *	Cord Length
8346	EM-4040	Straight	0.5 N · m	1,200W	400W	2 lb 13.86 oz.	1 ft
8347	EM-4040A	90° Angle				3 lb 15.49 oz.	6.5 ft

\* w/o Motor Cable

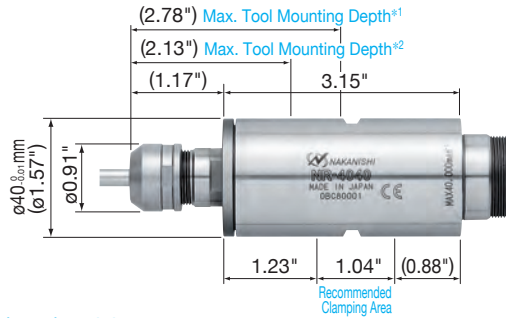
#### Standard Equipment · Accessories

- Wrench (36) : 1 pc.

# E4000 SERIES SPINDLE



Product Code **7902 SPINDLE NR-4040** 40,000 rpm



\*1 : When the tool shank diameter is less than 6.9mm  
 \*2 : When the tool shank diameter is between 6.9mm and 10mm

- Allowable Motor Speed ..... 40,000 rpm
- Spindle Accuracy ..... Within 1 μm
- Weight ..... 1 lb. 8.69 oz.
- **Additional collet purchase required:**
  - Collet Series CH16-XX ..... ø3.0mm~ø10.0mm Recommended ..... CH16-6.35 ø1/4" (See Page 6-p5 for additional sizes)
- Collet Nut (CHN-16) ..... For Collet (CH16)

- This spindle can be used for small-diameter milling, drilling, slitting, chamfering, grinding, etc.

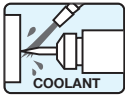
### Spindle

Product Code	Product Name	Standard Equipment · Accessories	
7902	NR-4040	• Collet Nut (CHN-16) : 1 pc. • Wrench (17 x 22) : 2 pcs., (36) : 1 pc.	

\*Do not exceed the allowable motor speed for the spindle.

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98"/ø0.897"
E3000 - 80,000rpm
E4000
3
MA
ø0.897"
ø1.0"/ø0.98"
ø1.18"
MS
ø0.75"/ø0.719"
ø0.897"/ø0.811"
ø1.0"/ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
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# E4000 SERIES BRUSHLESS MOTOR SPINDLE



1
EmaxEVO
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Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
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E3000 Modular
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E3000 ø0.000rpm
E4000
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iSpeed5
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## MOTOR SPINDLE BMS-4040-MQL 40,000 rpm



### CENTER THROUGH COOLANT SPINDLE

- Pressurized coolant entered through the back of the spindle and through the cutting tool at a speed of 40,000 RPM.
- Through coolant improves chip clearance, accuracy, productivity and extends tool-life.
- "High pressure coolant device" or "oil mist supply device" to be arranged by the customer.

- Allowable Motor Speed ..... 40,000 rpm
- Spindle Runout ..... Within 1 µm
- Standard Size Collet ..... ø3.0-ø10.0 mm
- Weight ..... 2.3-2.8 kg
- Min. Bending Cord Radius ..... 70mm
- O.D. .... ø40mm

Product Code	Product Name	Max. Torque	Max. Output	Max RPM	Weight	Cord Length	
7714	BMS-4040-MQL	0.5N * m	1,200W	40,000	2.3kg	0.3m	
7715	BMS-4040-MQL-2M				2.8kg	2.0m	

### Standard Accessories

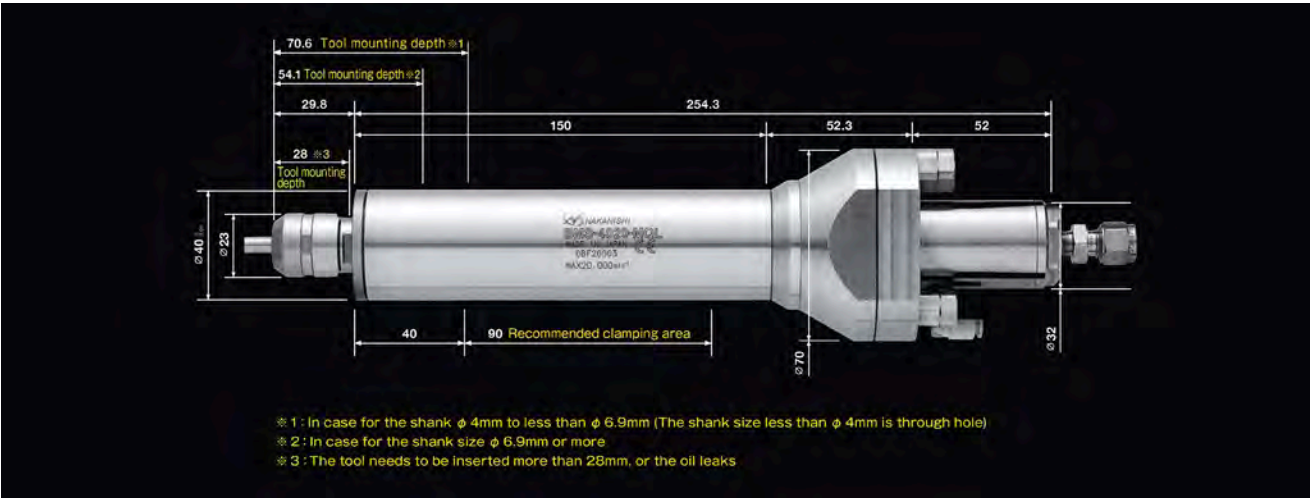
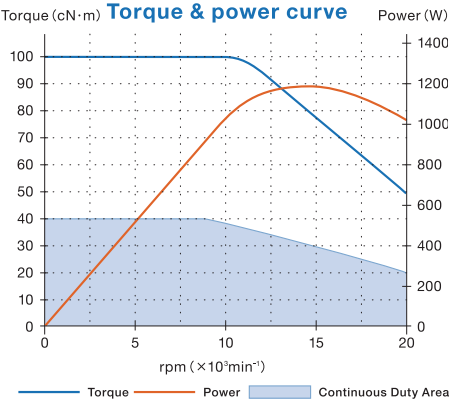
Collet Nut (CHN-16) / Insert / Ferrule Set  
Spanner (17 x 22) 2 pcs.

### Specifications

Coolant Pressure: 0.2 - 3.0MPa  
Oil Mist Pressure: 0.2-1.0MPa  
Power Cable with Air Hose: Connector Diameter: ø30mm  
Signal Cable: Connector Diameter: ø16mm / Air hose: ø6mm

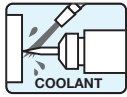
### Options

Collet (Ch16OH Group): ø3.0 - ø10.0mm  
Power Cable with Air Hose: Length 2m (9253), 4m (9254), 6m (9255), 8m (9256)  
Signal cable: Length 2m (9257), 4m (9258), 6m (9259), 8m (9260)

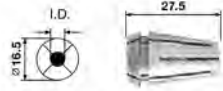




# E4000 SERIES COLLETS



## Collet CH16OH Group



※CH16OH-9.0, 10.0 Length 24.5

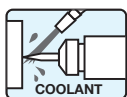
Product Code	Product Name	Inside Diameter d	Compatible Model	Price
93330	CH16OH-3.0	ø3.0	BMS-4020-MQL BMS-4040-MQL BMS-4020-MQL-2M BMS-4040-MQL-2M	
93331	CH16OH-3.175	ø3.175		
93340	CH16OH-4.0	ø4.0		
93350	CH16OH-5.0	ø5.0		
93360	CH16OH-6.0	ø6.0		
93363	CH16OH-6.35	ø6.35		
93370	CH16OH-7.0	ø7.0		
93380	CH16OH-8.0	ø8.0		
93390	CH16OH-9.0	ø9.0		
93400	CH16OH-10.0	ø10.0		

## Adjuster Bolt

Product Code	Product Name	Dimensions	Compatible Model	Price
7739	Adjuster Bolt		BMS-4020-MQL BMS-4040-MQL BMS-4020-MQL-2M BMS-4040-MQL-2M	

- 1
- EmaxEVO
- ESPERT
- ROTUS
- IMPULSE
- PRESTO II
- Sheenus ZERO
- Sonic-Cutter ZERO
- 2
- iSpeed3
- E2000  
ø1.0"/ø0.98"/ø0.897"
- E3000  
- One Piece
- E3000  
- Modular
- ø1.18"
- ø1.07"/ø0.98"  
ø0.897"
- E3000  
- 80,000rpm
- E4000
- 3
- MA
- ø0.897"
- ø1.0"  
ø0.98"
- ø1.18"
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- ø0.75"  
ø0.79"
- ø0.897"  
ø0.91"
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ø0.98"
- 4
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# E4000 SERIES SPINDLE



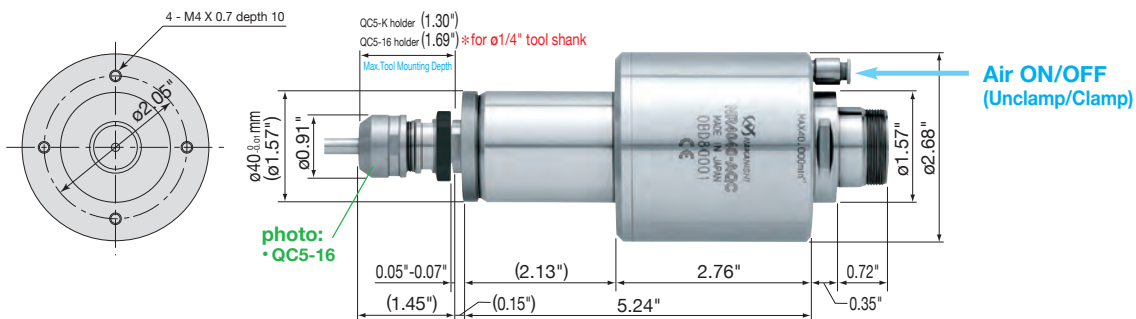
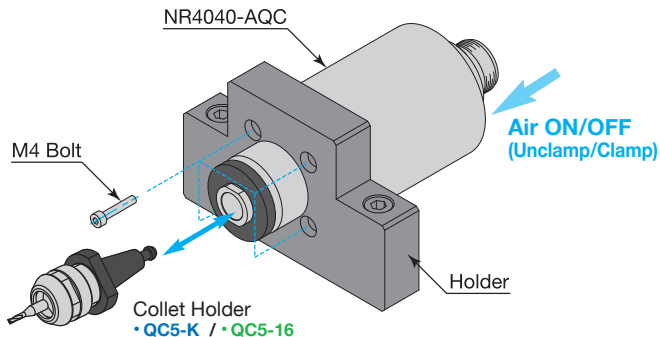
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EmaxEVO
ESPRT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.07"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98"/ø0.897"
E3000 - ø0.000rpm
E4000
3
MA ø0.897"
ø1.0" ø0.96"
ø1.18"
MS ø0.75" ø0.79"
ø0.87" ø0.83"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
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**Product Code** **9219** **AIR QUICK CHANGE SPINDLE NR4040-AQC** **40,000 rpm**

## Features:

- The collet holder can be replaced by using Air ON/OFF.
- The Spindle housing is made from precision ground, hardened, stainless steel (SUS).
- There are 2 models of collet holders. The collet holder model depends on the collet type selected.

Various sizes of collets are available.  
(CHK 0.5mm - 6.35mm, CH16 3.0mm, 3.175mm, 4.0mm, 6.0mm, 6.35mm, 8.0mm and 10.0mm)



- Allowable Motor Speed ..... 40,000 rpm
- Spindle Accuracy ..... Within 1 µm
- Air for Collet Opening ..... 80~87PSI
- Weight ..... 4 lb. 12.19 oz.

### < Optional >

- Collet Holder ..... **QC5-K**
- Collet (CHK-□□) ..... ø0.5 mm~ø6.35 mm  
(See Page 6-p3 for details)
- Collet Nut (K-265)..... for Collet (CHK)
- Preset Adapter ..... QC5-K ADP
- Wrench ..... 12 x 14 (2 pcs. not included)

### < Optional >

- Collet Holder ..... **QC5-16**
- Collet (CH16-□□) ..... ø3.0 mm~ø10.0 mm  
(See Page 6-p5 for details)
- Collet Nut (CHN-16) ..... for Collet (CH16)
- Preset Adapter ..... QC5-16 ADP
- Wrench ..... 17 x 22 (2 pcs. not included)

### Air Quick Change Spindle

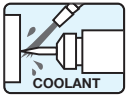
Product Code	Product Name	Standard Equipment · Accessories
9219	NR4040-AQC	<ul style="list-style-type: none"> <li>• Air Hose with filter (K-251) : ø6 mm x 6 ft</li> <li>• Wrench (36) : 1 pc.</li> </ul>

**Note :** Collet and wrenches for collet holder are sold separately.

\*Do not exceed the allowable motor speed for the spindle.

## COLLET HOLDER Taper Shank Tools and Collet Nut

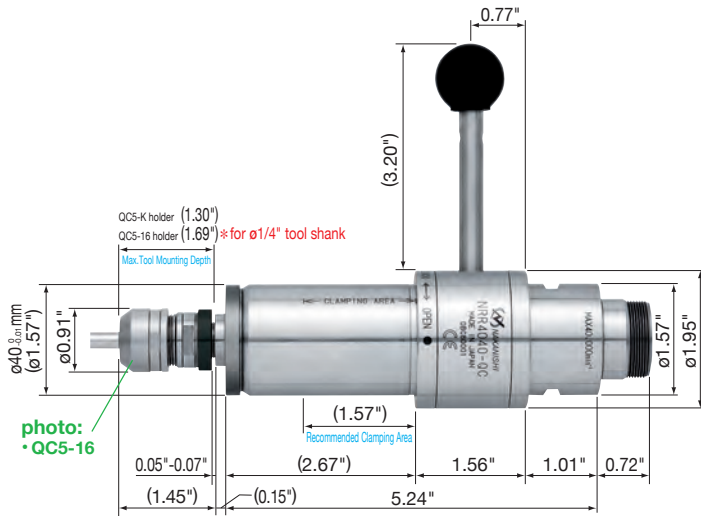
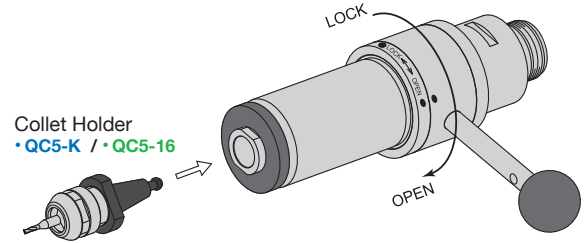
Product	Product Code	Product Name	Collet	Std. Accessories	Attaches to
	9215	• QC5-K	CHK	• Collet Nut (K-265) : 1 pc.	NR4040-AQC NRR4040-QC
	9216	• QC5-16	CH16	• Collet Nut (CHN-16) : 1 pc.	NR4040-AQC NRR4040-QC



**Product Code** **9214** **LEVER TYPE QUICK CHANGE SPINDLE** **NRR4040-QC** **40,000 rpm**

**Features:**

- Quick, easy and accurate tool change without the need for wrenches.
- Makes tool pre-setting outside of the machine possible.
- There are 2 models of collet holders. The collet holder model depends on the collet type selected.  
Various sizes of collets are available.  
(CHK 0.5mm - 6.35mm, CH16 3.0mm, 3.175mm, 4.0mm, 6.0mm, 6.35mm, 8.0mm and 10.0mm)
- 10 times the retention force as compared to the NRR-2651.



- Allowable Motor Speed ..... 40,000 rpm
- Spindle Accuracy ..... Within 1  $\mu$ m
- Lever Operating Angle ..... 90°
- Weight ..... 2 lb. 13.86 oz.

**< Optional >**

- Collet Holder ..... **QC5-K**
- Collet (CHK-□□) .....  $\phi$ 0.5 mm~ $\phi$ 6.35 mm  
(See Page 6-p3 for details)
- Collet Nut (K-265)..... for Collet (CHK)
- Preset Adapter ..... QC5-K ADP
- Wrench ..... 12 x 14 (2 pcs. not included)

**< Optional >**

- Collet Holder ..... **QC5-16**
- Collet (CH16-□□) .....  $\phi$ 3.0 mm~ $\phi$ 10.0 mm  
(See Page 6-p5 for details)
- Collet Nut (CHN-16) ..... for Collet (CH16)
- Preset Adapter ..... QC5-16 ADP
- Wrench ..... 17 x 22 (2 pcs. not included)

**Lever Type Quick Change Spindle**

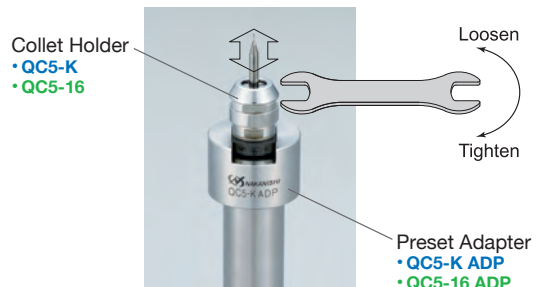
Product Code	Product Name	Standard Equipment · Accessories
<b>9214</b>	<b>NRR4040-QC</b>	• Wrench (36) : 1 pc.

**Note :** Collet and wrenches for collet holder are sold separately.

\*Do not exceed the allowable motor speed for the spindle.

**PRESET ADAPTER**

Product	Product Code	Product Name
	<b>9217</b>	• QC5-K ADP
	<b>9218</b>	• QC5-16 ADP

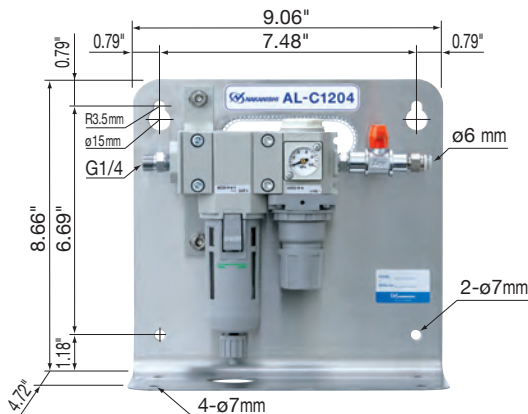


<b>1</b>
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000
$\phi$ 1.0"/ $\phi$ 0.98"/ $\phi$ 0.897"
E3000
- One Piece
E3000
- Modular
$\phi$ 1.18"
$\phi$ 1.07"/ $\phi$ 0.98"/ $\phi$ 0.897"
E3000
- 80,000rpm
E4000
<b>3</b>
MA
$\phi$ 0.897"
$\phi$ 1.0"/ $\phi$ 0.98"
$\phi$ 1.18"
MS
$\phi$ 0.75"/ $\phi$ 0.79"
$\phi$ 0.81"/ $\phi$ 0.81"
$\phi$ 1.0"/ $\phi$ 0.98"
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
<b>5</b>
AIR LINE KIT
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# E4000 SERIES AIR LINE KIT & MOTOR CABLE

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EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.07"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98"/ø0.897"
E3000 - ø0,000rpm
E4000
3
MA
ø0.897"
ø1.0"
ø0.98"
ø1.18"
MS
ø0.75"
ø0.79"
ø0.87"
ø0.91"
ø1.0"
ø0.98"
4
HES
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HTS
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Xpeed
ABT
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## Product Code 4504 AIR LINE KIT AL-C1204



- The AL-C1204 Air Line Kit is designed to deliver clean, dry air to Electric Motors via the Controller. The filter removes small amounts of debris while the adjustable regulator provides the correct air pressure for cooling and purging.

### Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 µm )

Product Code	Product Name	Standard Equipment · Accessories
4504	AL-C1204	<ul style="list-style-type: none"> <li>• Air Filter</li> <li>• Air Regulator</li> <li>• Air Pressure Gauge</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> </ul>

## MOTOR POWER CABLE with Air Hose

Product	Product Code	Product Name	Length	Std. Accessories	Fit to
<p>Connector Diameter : ø1.18"</p>	9253	EMCD-4000-2M	6.5 ft (2.0m)	• Air Hose	BMS-4020 · BMS-4020 2M BMS-4040 · BMS-4040 2M BMS-4020RA BMS-4040RA
	9254	EMCD-4000-4M	13 ft (4.0m)		EM-4020 · EM-4040 EM-4020A · EM-4040A
	9255	EMCD-4000-6M	20 ft (6.0m)		
	9256	EMCD-4000-8M	26 ft * (8.0m)		BMS-4020 · BMS-4040 EM-4020 · EM-4040

\*Not for use with the 90-Degree Angle Motor (RA/A), BMS-4020 2M, BMS-4040 2M.

## MOTOR SIGNAL CABLE

Product	Product Code	Product Name	Length	Std. Accessories	Fit to
<p>Connector Diameter : ø0.63"</p>	9257	EMCD-4000S-2M	6.5 ft (2.0m)		BMS-4020 · BMS-4020 2M BMS-4040 · BMS-4040 2M BMS-4020RA BMS-4040RA
	9258	EMCD-4000S-4M	13 ft (4.0m)		EM-4020 · EM-4040 EM-4020A · EM-4040A
	9259	EMCD-4000S-6M	20 ft (6.0m)		
	9260	EMCD-4000S-8M	26 ft * (8.0m)		BMS-4020 · BMS-4040 EM-4020 · EM-4040

\*Not for use with the 90-Degree Angle Motor (RA/A), BMS-4020 2M, BMS-4040 2M.



Please purchase both the Motor Power Cable and the Motor Signal Cable

## Product Code **8475** SAFETY RELAY BOX

- Mounts directly on E4000 Controller.
- Allows Emergency Stop Signal from the CNC to stop the E4000 Motor Spindle or the E4000 Controller to stop the machine operation.



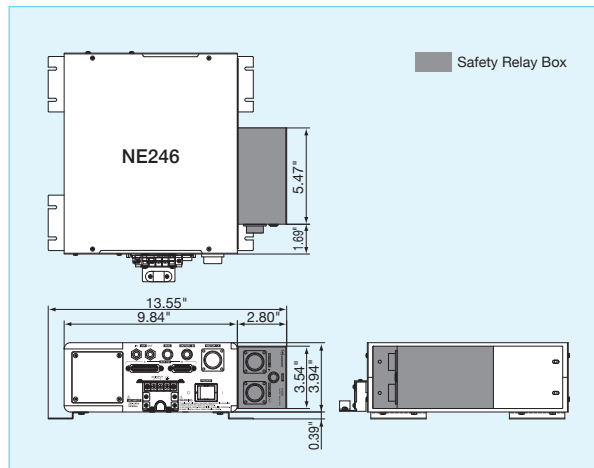
Weight : 11 lb. 13.98 oz.  
Size : W3.54" x H2.80"

### Safety Relay Box

Product Code	Product Name	Standard Equipment - Accessories
8475	E4000-SRB	<ul style="list-style-type: none"> <li>Relay Cord (Motor Power Line) : 1.3 ft</li> <li>Emergency Stop Cord : 1.3 ft</li> </ul>

Please contact NSK America for specification and pricing.

### Example of mounting an E4000 controller with the Safety Relay Box



## Operation Panel Extension Cord / Box For Control Panel

Product Code	Product Name	Product	Description / Specifications	Fit to
8474	E4000-PEX4		Operation Panel Extension Cord (4m) • Screw (M3) : 4 pcs.	E4000 Controller
8473	E4000-PB		Box For Control Panel Weight : 7.62 oz. Size : W3.46" x H3.46" • Case • Blind Plate • Screw (M3) : 6 pcs. • Screw (M4) : 2 pcs.	E4000 Controller

## 25 Pin INTERFACE CABLE



- 3 Meter long Interface Cable provides a DB25 Male Connector at one end and a blunt cut on the opposite end. Includes a pin-out wire diagram for easy interfacing of I/O signals from any NSK Control to a CNC Control.

### 25 Pin Interface Cable

Product Code	Product Name	
DB25M	DB25M	For NSK Control Connector A 12.5 ft
DB25MXL	DB25MXL	For NSK Control Connector A 25 ft

## 15 Pin INTERFACE CABLE



- 3 Meter long Interface Cable provides a DB15 Male Connector at one end and a blunt cut on the opposite end. Includes a pin-out wire diagram for easy interfacing of the (OP1) "E-Stop Input Circuit" and "Safety Relay Circuit" from the NSK Control to a CNC Control.

### 15 Pin Interface Cable

Product Code	Product Name	
DB15M	DB15M	For NSK Control Connector B

1

E-maxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus ZERO

Sonic-Cutter ZERO

2

iSpeed3

E2000

ø1.0"/ø0.98"/ø0.897"

E3000

- One Piece

E3000

- Modular

ø1.18"

ø1.07"/ø0.98"

ø0.98"

E3000

- 80,000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.79"

ø0.98"

ø0.98"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

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# Air-speed

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.0"/ø0.98"/ø0.897"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.0"/ø0.98"/ø0.897"

E3000

— 80,000rpm

E4000

3

MA

ø0.897"

ø1.0"/ø0.98"

ø1.18"

MS

ø0.75"/ø0.79"

ø0.87"/ø0.91"

ø1.0"/ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

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## MA SERIES

- Modular Type
- Outside Diameter :  
ø0.897", ø0.98", ø1.0" and ø1.18"  
(ø22.8, ø25, ø25.4 and ø30 mm)



## MS SERIES

- One Piece Type
- Outside Diameter :  
ø0.75", ø0.79", ø0.87", ø0.91",  
ø0.98" and ø1.0"  
(ø19.05, ø20, ø22, ø23, ø25 and ø25.4 mm)



## Modular Type Spindle

- Separate motor and spindle for flexible application changes.
- Easy to interchange components.



**O.D.  $\phi 0.897''$   
( $\phi 22.8\text{mm}$ )  
(Modular Type)  
Angle Spindles and  
Straight Spindles are available.**

**O.D.  $\phi 1.18''$   
( $\phi 30\text{mm}$ )  
(Modular Type)  
Angle Spindles and  
Straight Spindles are  
available.**

**O.D.  $\phi 0.98''/1.0''$   
( $\phi 25/25.4\text{mm}$ )  
(Modular Type)  
Straight Spindles are  
available.**

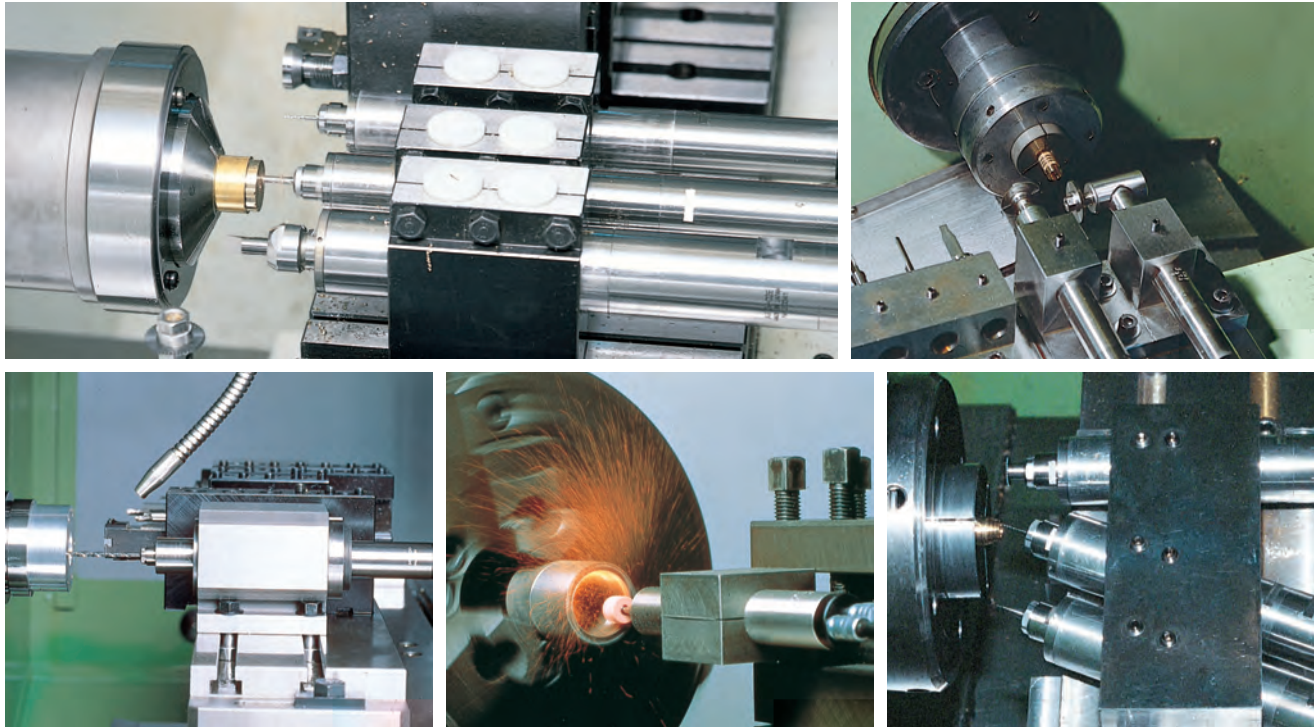
<b>1</b>
EmaxEVC
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 $\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 — One Piece
E3000 — Modular
$\phi 1.18''$
$\phi 1.0''/\phi 0.98''$ $\phi 0.897''$
E3000 — 80,000rpm
E4000
<b>3</b>
<b>MA</b>
$\phi 0.897''$
$\phi 1.0''$ $\phi 0.98''$
$\phi 1.18''$
<b>MS</b>
$\phi 0.75''$ $\phi 0.75''$
$\phi 0.897''$ $\phi 0.91''$
$\phi 1.0''$ $\phi 0.98''$
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
<b>5</b>
AIR LINE KIT
<b>6</b>
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# FEATURES & DRILLING CAPACITY REFERENCE TABLE

## MA Series Features

- Gang slide NC lathes can be transformed into complex machining centers.
- Specialized machine design will be made compact and universal.
- Mounting MA Series on existing equipment can eliminate secondary operations or the equipment can be turned into a special purpose machine.
- The MA Series is applicable to secondary operation machines, single purpose machines or special machining and grinding machines.
- The air motors are explosion proof and do not generate heat even in continuous use.
- When MA Series is used at low motor speed, a speed reducer (ARG-01, or other selections) is added in order to obtain the speed of your choice.
- Collet, Jacobs drill chuck, saw arbor and grinding stone arbor are available for grinding, drilling, milling, slitting, chamfer and deburring operations.

### Application Examples



## Drilling Capacity Reference Table

This table summarizes the drilling capacity for the MA Series spindles. Please use this table as a guide for the selection of the proper model given the torque, speed and size requirements for your application. Data is given for three materials Medium Carbon Steel (S45C), aluminum and brass.

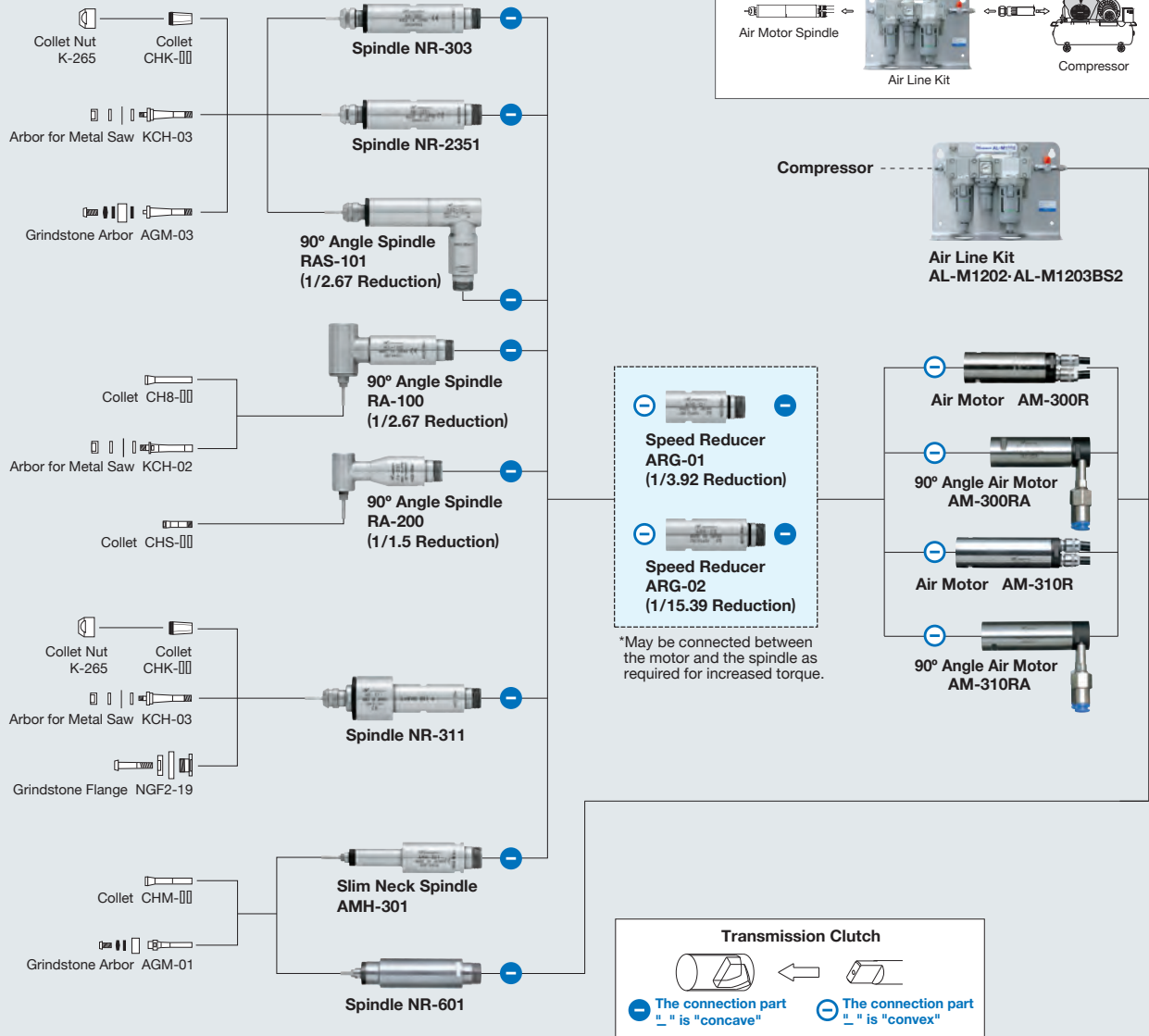
\*Conditions : High speed steel drill was used with a feed rate of 60mm/min. Tool life was not considered in determining the above capacities.  
Use this table as a reference to extrapolate suitability for a given application.

Combination as System			Speed {min <sup>-1</sup> {rpm}}	Output (W)	Max. Torque (cN·m)	Max. Drill Diameter for drilling (mm)		
Motor	Speed Reducer	Spindle				S45C	Aluminum	Brass
<b>AM-300R</b>	—	<b>NR-2351</b>	30,000	57	6.9	ø1.0	ø1.5	ø2.0
<b>AM-300R</b>	ARG-01 (1/3.92)	<b>NR-2351</b>	8,000	57	26.5	ø1.9	ø2.9	ø3.4
<b>AM-300R</b>	ARG-02 (1/15.39)	<b>NR-2351</b>	2,000	57	100.9	ø2.8	ø3.8	ø4.5
<b>AM-310R</b>	—	<b>NR-2351</b>	30,000	108	13.7	ø1.5	ø2.0	ø3.0
<b>AM-310R</b>	ARG-01 (1/3.92)	<b>NR-2351</b>	8,000	108	51.9	ø2.5	ø3.5	ø4.0
<b>AM-310R</b>	ARG-02 (1/15.39)	<b>NR-2351</b>	2,000	108	201.9	ø3.5	ø4.3	ø4.8
<b>AM-2526R</b>	—	<b>NR-2551</b>	24,000	130	22.5	ø2.0	ø3.0	ø3.5
<b>AM-2526R</b>	ARG-2504N (1/4)	<b>NR-2551</b>	6,000	130	85.3	ø2.7	ø3.8	ø4.4
<b>AM-2526R</b>	ARG-2516N (1/16)	<b>NR-2551</b>	1,500	130	332.2	ø4.3	ø5.2	ø5.5
<b>AM-3020R</b>	—	<b>NR-453E</b>	19,000	130	27	ø2.3	ø4.0	ø4.5
<b>AM-3020R</b>	ARG-011E (1/4)	<b>NR-453E</b>	4,750	130	108	ø3.2	ø5.0	ø5.5
<b>AM-3020R</b>	ARG-021E (1/16)	<b>NR-453E</b>	1,190	130	432	ø4.0	ø6.0	ø6.0

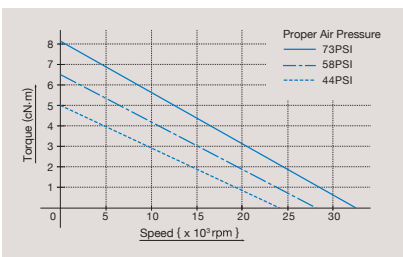


## MA Series ø0.897" (ø22.8 mm) System Chart

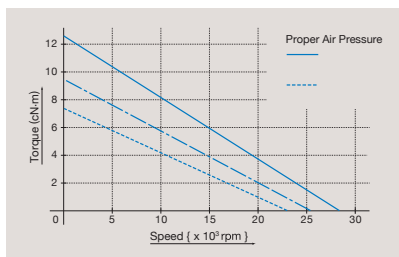
- MA Series has been designed to operate smoothly at high speed for long continuous cutting and grinding by connecting an air line kit directly between the air compressor and the air motor. (Air Line Kit Refer to 3-p10 in detail)
- Air supply and exhaust air hoses are supplied with an air motor. Air supply hose is provided with metal fitting to connect to ø0.24" (ø6 mm) one-touch joint. Air exhaust hose is supplied with silencer.



AM-300R Torque-Speed Characteristics



AM-310R Torque-Speed Characteristics



\*Do not exceed the maximum motor speed recommendation for the spindles. Excess speed will dramatically reduce bearing life.

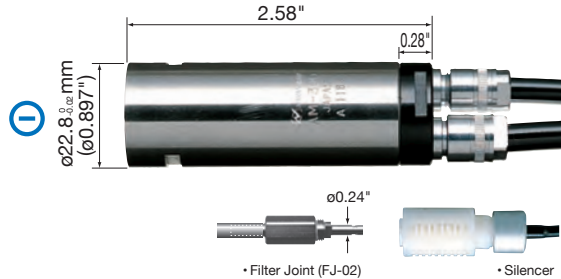
1	EmaxEV
	ESPERT
	ROTUS
	IMPULSE
	PRESTO II
	Sheenus ZERO
	Sonic-Cutter ZERO
2	iSpeed3
	E2000 ø1.0" (ø25.4) / ø0.897"
	E3000 - One Piece
	E3000 - Modular
	ø1.18"
	ø1.07" (ø27.1) / ø0.98" (ø24.9)
	E3000 - 80,000rpm
	E4000
3	MA
	ø0.897"
	ø1.0" (ø25.4)
	ø0.98" (ø24.9)
	ø1.18"
	MS
	ø0.75" (ø19.0)
	ø0.75" (ø19.0)
	ø0.89" (ø22.6)
	ø0.91" (ø23.1)
	ø1.0" (ø25.4)
	ø0.98" (ø24.9)
4	HES
	iSpeed5
	HTS
	PLANET
	Xspeed
	ABT
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# HIGH-TORQUE AIR MOTOR O.D. $\phi 0.897''$ ( $\phi 22.8\text{mm}$ )

- Small diameter  $\phi 0.897''$  ( $\phi 22.8\text{ mm}$ ).
- Ultra-precision vane type air motor.
- Outside housing is made of stainless steel (SUS416).

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - $\phi 0.000\text{rpm}$
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''/\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''/\phi 0.79''$
$\phi 0.897''/\phi 0.91''$
$\phi 1.0''/\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
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## Product Code **1021** AIR MOTOR **AM-300R** (Forward Rotation) **57W** 30,000 rpm



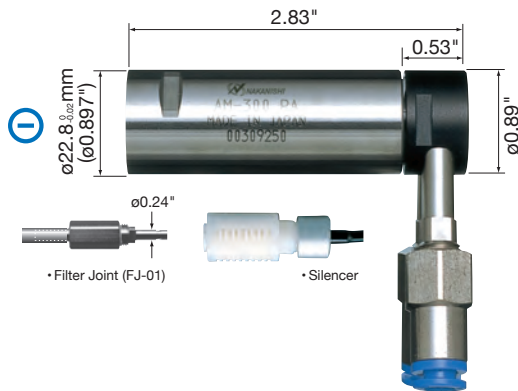
- Motor Speed ..... 30,000 rpm(58PSI)
- Max. Output Power ..... 57W
- Proper Air Pressure ..... 44~73PSI
- Air Consumption ..... 3.18CFM
- Motor Hose (Diameter / Length)
- Air Intake .....  $\phi 3.7$  (I.D.) x  $\phi 5.7$  (O.D.) mm / 6 ft
- Exhaust Air .....  $\phi 5.0$  (I.D.) x  $\phi 6.5$  (O.D.) mm / 3 ft
- Weight (w/o hose) ..... 4.76 oz.

- Ultra precision, compact, vane-type air motor provides high torque with small volume of air consumption. Withstands long continuous operation without heat generation. Silencer keeps noise to a minimum.

### Air Motor (R=Forward, L=Reverse)

Product Code	Product Name	Standard Equipment · Accessories
1021	AM-300R	<ul style="list-style-type: none"> <li>• Hose (K-221) : 6 ft</li> <li>• Filter Joint (FJ-02)</li> <li>• Silencer (K-209)</li> <li>• Wrench (20 x 24) : 1 pc.</li> </ul>

## Product Code **1018** 90° ANGLE TYPE AIR MOTOR **AM-300RA** (Forward Rotation) **57W** 30,000 rpm



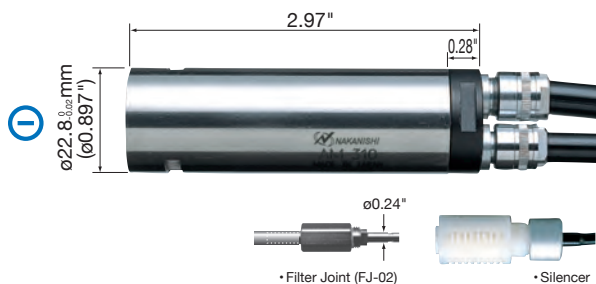
- Motor Speed ..... 30,000 rpm(58PSI)
- Max. Output Power ..... 57W
- Proper Air Pressure ..... 44~73PSI
- Air Consumption ..... 3.18CFM
- Motor Hose (Diameter / Length)
- Air Intake .....  $\phi 4.0$  (I.D.) x  $\phi 6.0$  (O.D.) mm / 6 ft
- Exhaust Air .....  $\phi 5.5$  (I.D.) x  $\phi 8.0$  (O.D.) mm / 3 ft
- Weight (w/o hose) ..... 6.21 oz.

- Air hose is attached on the rear end of air motor at 90° angle which decreases the installation space.

### 90° Angle Type Air Motor (RA=Forward, LA=Reverse)

Product Code	Product Name	Standard Equipment · Accessories
1018	AM-300RA	<ul style="list-style-type: none"> <li>• Hose (K-215) : <math>\phi 6\text{ mm}</math> x 6 ft</li> <li>• Hose (K-216) : <math>\phi 8\text{ mm}</math> x 3 ft</li> <li>• Filter Joint (FJ-01) · Silencer (K-208)</li> <li>• Wrench (20 x 24) : 1 pc.</li> </ul>

## Product Code **1079** AIR MOTOR **AM-310R** (Forward Rotation) **108W** 30,000 rpm



- Motor Speed ..... 30,000 rpm(73PSI)
- Max. Output Power ..... 108W
- Proper Air Pressure ..... 44~73PSI
- Air Consumption ..... 6.71CFM
- Motor Hose (Diameter / Length)
- Air Intake .....  $\phi 4.5$  (I.D.) x  $\phi 6.7$  (O.D.) mm / 6 ft
- Exhaust Air .....  $\phi 5.5$  (I.D.) x  $\phi 7.5$  (O.D.) mm / 3 ft
- Weight (w/o hose) ..... 7.16 oz.

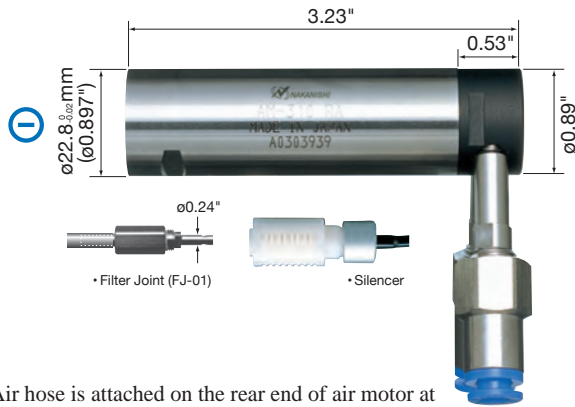
- Ultra-precision, compact, vane-type air motor provides high torque with small volume of air consumption. Withstands long continuous operation without heat generation. Silencer keeps noise to a minimum.

### Air Motor (R=Forward, L=Reverse)

Product Code	Product Name	Standard Equipment · Accessories
1079	AM-310R	<ul style="list-style-type: none"> <li>• Hose (K-204) : 6 ft</li> <li>• Filter Joint (FJ-02)</li> </ul>
1085	AM-310L	<ul style="list-style-type: none"> <li>• Silencer (K-208)</li> <li>• Wrench (20 x 24) : 1 pc.</li> </ul>



**Product Code 1081 90° ANGLE TYPE AIR MOTOR AM-310RA (Forward Rotation) 108W 30,000 rpm**



- Air hose is attached on the rear end of air motor at 90° angle which decreases the installation space.

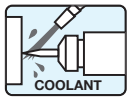
- Motor Speed ..... 30,000 rpm (73PSI)
- Max. Output Power ..... 108W
- Proper Air Pressure ..... 44~73PSI
- Air Consumption ..... 6.00CFM
- Motor Hose (Diameter / Length)
  - Air Intake .....  $\varnothing 4.0$  (I.D.) x  $\varnothing 6.0$  (O.D.) mm / 6 ft
  - Exhaust Air .....  $\varnothing 5.5$  (I.D.) x  $\varnothing 8.0$  (O.D.) mm / 3 ft
- Weight (w/o hose) ..... 8.61 oz.

**90° Angle Type Air Motor (RA=Forward, LA=Reverse)**

Product Code	Product Name	Standard Equipment · Accessories	
1081	AM-310RA	<ul style="list-style-type: none"> <li>• Hose (K-215) : <math>\varnothing 6</math> mm x 6 ft</li> <li>• Hose (K-216) : <math>\varnothing 8</math> mm x 3 ft</li> <li>• Filter Joint (FJ-01) · Silencer (K-208)</li> <li>• Wrench (20 x 24) : 1 pc.</li> </ul>	

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\varnothing 1.0''/\varnothing 0.99''/\varnothing 0.897''$
E3000 — One Piece
E3000 — Modular
$\varnothing 1.18''$
$\varnothing 1.07''/\varnothing 0.98''/\varnothing 0.897''$
E3000 — 30,000rpm
E4000
3
MA
$\varnothing 0.897''$
$\varnothing 1.0''/\varnothing 0.98''$
$\varnothing 1.18''$
MS
$\varnothing 0.75''/\varnothing 0.75''$
$\varnothing 0.89''/\varnothing 0.81''$
$\varnothing 1.0''/\varnothing 0.98''$
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# SPINDLE O.D. $\phi 0.897''$ ( $\phi 22.8\text{mm}$ )



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

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ESPERT
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IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - $\phi 0.000\text{rpm}$
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''/\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''/\phi 0.79''$
$\phi 0.897''/\phi 0.91''$
$\phi 1.0''/\phi 0.98''$
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## Product Code **7861** SPINDLE NR-303 **30,000 rpm**



- This spindle is ideal for small diameter drilling, milling and grinding. A wide selection of collets and accessories is available.

- Allowable Motor Speed ..... 30,000 rpm
- Spindle Accuracy ..... Within 2  $\mu\text{m}$
- Weight ..... 7.58 oz.

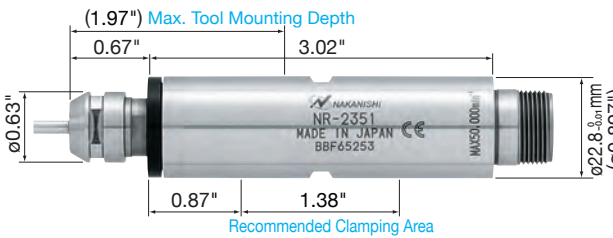
**Additional collet purchase required:**

- Collet Series CHK-XX .....  $\phi 0.5\text{mm} \sim \phi 6.35\text{mm}$   
Recommended ..... CHK-3.175  $\phi 1/8''$   
(See Page 6-p3 for additional sizes)
- Collet Nut (K-265) ..... For Collet (CHK)
- Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24''$  (I.D.) x  $\phi 1.18''$  (O.D.)
- Grindstone Arbor (AGM-03) ..... For grinding wheel with I.D. of  $\phi 5\text{ mm}$

### Spindle

Product Code	Product Name	Standard Equipment · Accessories	
7861	NR-303	<ul style="list-style-type: none"> <li>Collet Nut (K-265) : 1 pc.</li> <li>Wrench (12 x 14) : 2 pcs., (20 x 24) : 1 pc.</li> </ul>	

## Product Code **7855** SPINDLE NR-2351 **50,000 rpm**



- This spindle is ideal for ultra-precision, small diameter drilling, milling and grinding. A wide selection of collets and accessories is available.

- Allowable Motor Speed ..... 50,000 rpm
- Spindle Accuracy ..... Within 1  $\mu\text{m}$
- Weight ..... 7.58 oz.

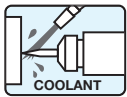
**Additional collet purchase required:**

- Collet Series CHK-XX .....  $\phi 0.5\text{mm} \sim \phi 6.35\text{mm}$   
Recommended ..... CHK-3.175  $\phi 1/8''$   
(See Page 6-p3 for additional sizes)
- Collet Nut (K-265) ..... For Collet (CHK)
- Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24''$  (I.D.) x  $\phi 1.18''$  (O.D.)
- Grindstone Arbor (AGM-03) ..... For grinding wheel with I.D. of  $\phi 5\text{ mm}$

### Spindle

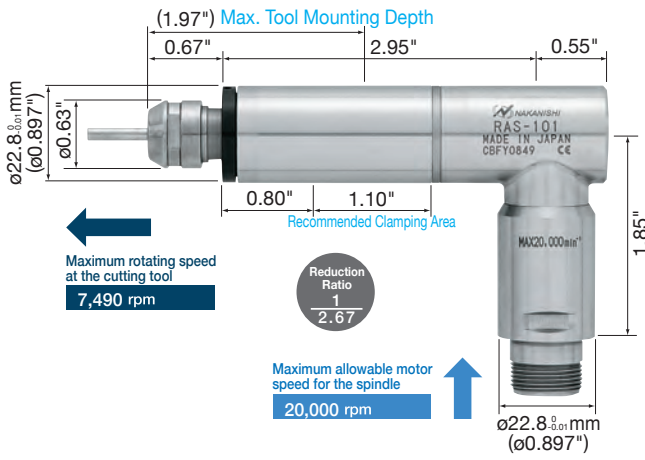
Product Code	Product Name	Standard Equipment · Accessories	
7855	NR-2351	<ul style="list-style-type: none"> <li>Collet Nut (K-265) : 1 pc.</li> <li>Wrench (12 x 14) : 2 pcs., (20 x 24) : 1 pc.</li> </ul>	

\*Do not exceed the allowable motor speed for the spindle.



**Caution :** Use the motor at motor speed less than maximum allowable speed or use the speed reducer. DO NOT exceed the allowable motor speed for the spindle and the reducer.

**Product Code 7839 90° ANGLE SPINDLE RAS-101**



- 90° Angle type spindle with wide chucking range up to  $\phi 1/4"$  ( $\phi 6.35$  mm) is suitable for installations where space restrictions exist.

Maximum allowable motor speed for the spindle **20,000 rpm**

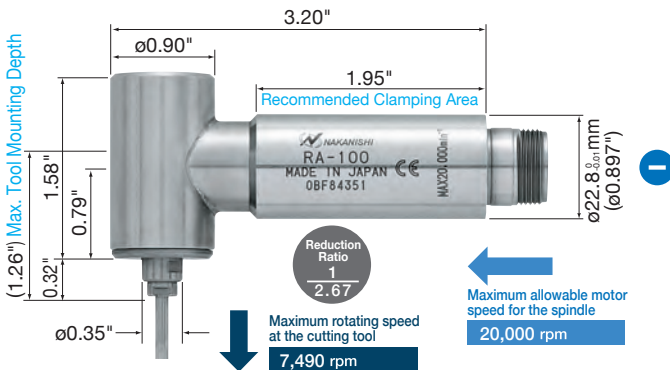
Maximum rotating speed at the cutting tool <Reduction Ratio : 1/2.67> **7,490 rpm**

- Spindle Accuracy ..... Within 2  $\mu$ m
- Weight ..... 11.46 oz.
- Additional collet purchase required:
  - Collet Series CHK-XX .....  $\phi 0.5$ mm~ $\phi 6.35$ mm
  - Recommended ..... CHK-3.175  $\phi 1/8"$  (See Page 6-p3 for additional sizes)
  - Collet Nut (K-265) ..... For Collet (CHK)
  - Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24"$  (I.D.) x  $\phi 1.18"$  (O.D.)
  - Grindstone Arbor (AGM-03) ..... For grinding wheel I.D. of  $\phi 5$  mm

**90° Angle Spindle**

Product Code	Product Name	Standard Equipment - Accessories	
7839	RAS-101	• Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs., (20 x 24) : 1 pc.	

**Product Code 2902 90° ANGLE SPINDLE RA-100**



- This spindle is capable of working on corners difficult to work with straight type, drilling on side face and, slitting of aluminum, brass, etc. with the use of  $\phi 1.18"$  ( $\phi 30$  mm) Metal Saw.

Maximum allowable motor speed for the spindle **20,000 rpm**

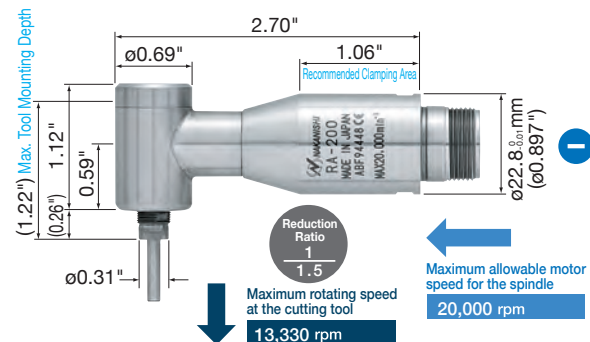
Maximum rotating speed at the cutting tool <Reduction Ratio : 1/2.67> **7,490 rpm**

- Standard Size Collet (CH8-3.175) .....  $\phi 1/8"$
- Weight ..... 9.56 oz.
- < Optional >
- Collet (CH8- □□) .....  $\phi 0.8$  mm~ $\phi 3.175$  mm (See Page 6-p5 for details)
- Metal Saw Arbor (KCH-02) ..... For  $\phi 0.24"$  (I.D.) x  $\phi 1.18"$  (O.D.)

**90° Angle Spindle**

Product Code	Product Name	Standard Equipment - Accessories	
2902	RA-100	• Collet $\phi 1/8"$ (CH8-3.175) : 1 pc. • Wrench (7 x 5.5), (8 x 5), (20 x 24) : 1 pc. each.	

**Product Code 2903 90° ANGLE SPINDLE RA-200**



- This spindle can be used for working on corners difficult to work or unfit for working with straight type, drilling on side face, etc.

Maximum allowable motor speed for the spindle **20,000 rpm**

Maximum rotating speed at the cutting tool <Reduction Ratio : 1/1.5> **13,330 rpm**

- Standard Size Collet (CHS-3.175) .....  $\phi 1/8"$
- Weight ..... 5.82 oz.
- < Optional >
- Collet (CHS- □□) .....  $\phi 0.8$  mm~ $\phi 3.175$  mm (See Page 6-p4 for details)

**90° Angle Spindle**

Product Code	Product Name	Standard Equipment - Accessories	
2903	RA-200	• Collet $\phi 1/8"$ (CHS-3.175) : 1 pc. • Wrench (7 x 5.1), (8 x 5), (20 x 24) : 1 pc. each.	

\*Order by product code.

1

EmaxEV

ESPRT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

$\phi 1.0"$  ( $\phi 25.4$ ) /  $\phi 0.897"$

E3000

- One Piece

E3000

- Modular

$\phi 1.18"$

$\phi 1.97"$  ( $\phi 49.8$ ) /  $\phi 0.897"$

E3000

-  $\phi 0.000$  rpm

E4000

3

MA

$\phi 0.897"$

$\phi 1.0"$  /  $\phi 0.98"$

$\phi 1.18"$

MS

$\phi 0.75"$  /  $\phi 0.75"$

$\phi 0.897"$  /  $\phi 0.897"$

$\phi 1.0"$  /  $\phi 0.98"$

4

HES

iSpeed5

HTS

PLANET

Xspeed

ABT

5

AIR LINE KIT

6

PARTS

7

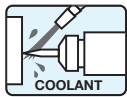
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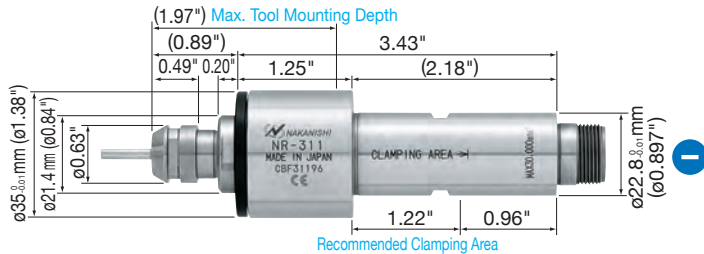
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# SPINDLE O.D. $\phi 0.897''$ ( $\phi 22.8\text{mm}$ )



1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - One Piece
E3000 - Modular $\phi 1.18''$
$\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - $\phi 0.000\text{rpm}$
E4000
3
MA $\phi 0.897''$ $\phi 1.0''/\phi 0.98''$ $\phi 1.18''$
MS $\phi 0.75''/\phi 0.79''$ $\phi 0.897''/\phi 0.91''$ $\phi 1.0''/\phi 0.98''$
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## Product Code **7832** SPINDLE NR-311 30,000 rpm



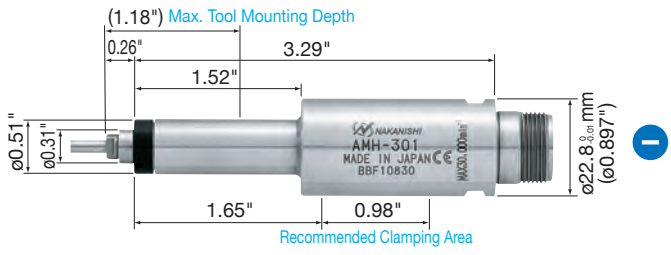
- Large precision angular ball bearings are assembled on the front part of the spindle to provide rigidity on both the radial and the thrust sides. This spindle is suitable for grinding of deep hole, grinding by  $\phi 1.57''$  (40 mm) grindstone and small-diameter end milling.

- Allowable Motor Speed ..... 30,000 rpm
- Spindle Accuracy ..... Within 2  $\mu\text{m}$
- Weight ..... 13.05 oz.
- **Additional collet purchase required:**
  - Collet Series CHK-XX .....  $\phi 0.5\text{mm} \sim \phi 6.35\text{mm}$
  - Recommended ..... CHK-3.175  $\phi 1/8''$
  - (See Page 6-p3 for additional sizes)
- Collet Nut (K-265) ..... For Collet (CHK)
- Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24''$  (I.D.) x  $\phi 1.18''$  (O.D.)
- Grindstone Flange (NGF2-19) .....  $\phi 19.05$  (I.D.) x  $\phi 40$  (O.D.) x 7 (W) mm

### Spindle

Product Code	Product Name	Standard Equipment · Accessories	
7832	NR-311	<ul style="list-style-type: none"> <li>• Collet Nut (K-265) : 1 pc.</li> <li>• Wrench (12 x 14), (20 x 24) : 1 pc. each</li> </ul>	

## Product Code **2974** SPINDLE AMH-301 30,000 rpm



- Suitable for the grinding of the inner surface of slender and deep holes. (Example) If a  $\phi 0.55''$  grindstone is mounted on the grinding arbor AGM-01, this spindle is suitable for the inner grinding of  $\phi 0.59''$  or more and with the depth of 1.57'' or less.

- Allowable Motor Speed ..... 30,000 rpm
- Standard Size Collet (CHM-3.175) .....  $\phi 1/8''$
- Weight ..... 6.03 oz.
- < Optional >
  - Collet (CHM-□□) .....  $\phi 1.0\text{ mm} \sim \phi 3.175\text{ mm}$
  - (See Page 6-p4 for details)
- Grindstone Arbor (AGM-01) ..... For grinding wheel with I.D. of  $\phi 5\text{ mm}$

### Spindle

Product Code	Product Name	Standard Equipment · Accessories	
2974	AMH-301	<ul style="list-style-type: none"> <li>• Collet <math>\phi 1/8''</math> (CHM-3.175) : 1 pc.</li> <li>• Wrench (7 x 5.1), (6 x 4.5), (20 x 24) : 1 pc. each</li> </ul>	

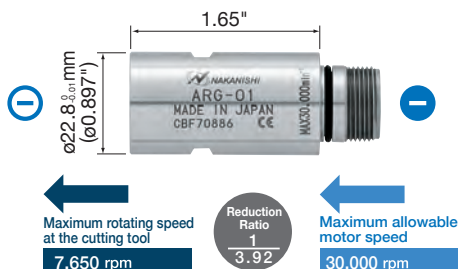
\*Do not exceed the allowable motor speed for the spindle.

# SPEED REDUCER O.D. $\phi 0.897$ "( $\phi 22.8$ mm)



**Caution :** Use the motor at motor speed less than maximum allowable speed or use the speed reducer. DO NOT exceed the allowable motor speed for the spindle and the reducer.

## Product Code **1022** SPEED REDUCER 1/3.92 ARG-01



**Maximum allowable motor speed** **30,000 rpm**

**Maximum rotating speed at the cutting tool**  
<Reduction Ratio : 1/3.92> **7,650 rpm**

- Speed Reducing Mechanism ..... By planetary gear system
- Weight ..... 3.81 oz.

- If the speed reducer is connected between the motor and the spindle, it reduces the rotating speed and increases the torque while keeping the motor speed unchanged.

### Speed Reducer 1/3.92

Product Code	Product Name	Speed Reduction Ratio	
1022	ARG-01	Speed Reduction Ratio 1/3.92	

## Product Code **1023** SPEED REDUCER 1/15.39 ARG-02



**Maximum allowable motor speed** **30,000 rpm**

**Maximum rotating speed at the cutting tool**  
<Reduction Ratio : 1/15.39> **1,940 rpm**

- Speed Reducing Mechanism ..... By planetary gear system
- Weight ..... 5.22 oz.

- If the speed reducer is connected between the motor and the spindle, it reduces the rotating speed and increases the torque while keeping the motor speed unchanged.

### Speed Reducer 1/15.39

Product Code	Product Name	Speed Reduction Ratio	
1023	ARG-02	Speed Reduction Ratio 1/15.39	

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus ZERO

Sonic-Cutter ZERO

2

iSpeed3

E2000

$\phi 1.0$ "( $\phi 25.4$ )/ $\phi 0.897$ "

E3000

- One Piece

E3000

- Modular

$\phi 1.18$ "

$\phi 1.07$ "( $\phi 27.18$ )  
 $\phi 0.897$ "

E3000

- 30,000rpm

E4000

3

MA

$\phi 0.897$ "

$\phi 1.0$ "  
 $\phi 0.98$ "

$\phi 1.18$ "

MS

$\phi 0.75$ "  
 $\phi 0.75$ "

$\phi 0.89$ "  
 $\phi 0.81$ "

$\phi 1.0$ "  
 $\phi 0.98$ "

4

HES

iSpeed5

HTS

PLANET

Xspeed

ABT

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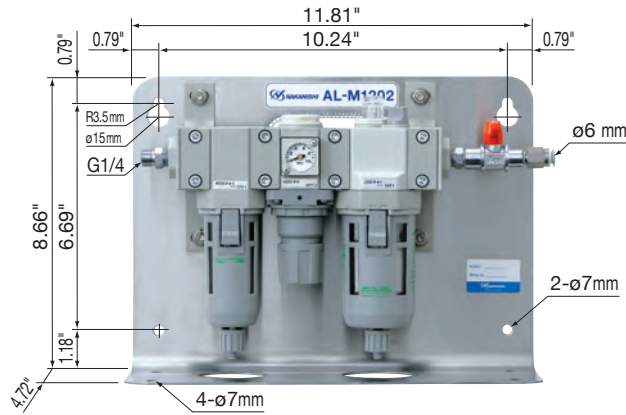
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E3000 - Modular
ø1.18"
ø1.0"/ø0.98"/ø0.897"
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E4000
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ø1.0"/ø0.98"
ø1.18"
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## Product Code 4502 AIR LINE KIT AL-M1202

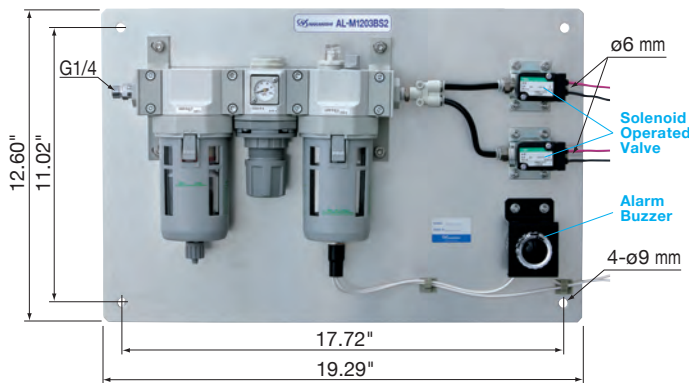


- The AL-M1202 provides simple, automatic conditioning of the air supplied to NAKANISHI Air Motors. The filter removes water and impure substances from the input air supply. The regulator maintains the proper air pressure, and the lubricator ensures proper oil flow to the motor and spindle. This Air Line Kit is wall mountable.

### Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 µm )

Product Code	Product Name	Standard Equipment · Accessories
4502	AL-M1202	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge · Lubricator</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> <li>• Lubricating Oil (K-211) : 1 pc.</li> </ul>

## Product Code 4503 AIR LINE KIT AL-M1203BS2



- The AL-M1203BS2 is equipped with 2 (DC+24V) Air Solenoids, a large capacity filter, large capacity oil reservoir, high flow regulator and a low oil level warning alarm, making this unit ideal for use on CNC machines. This Air Line Kit allows for the operation of 2 Air Motors.

### Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 µm )

Product Code	Product Name	Standard Equipment · Accessories
4503	AL-M1203BS2	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge · Lubricator</li> <li>• Solenoid Valve (DC 24V) : 2 pcs.</li> <li>• Buzzer (DC 24V) · Hose for Piping (K-275) : 6 ft</li> <li>• Lubricating Oil (K-202) : 1 pc.</li> </ul>

## LUBRICATING OIL

### Lubricating Oil (4 oz.)

Product Code	Product Name	Product
AA10478C	K-211	

### Lubricating Oil (32 oz.)

Product Code	Product Name	Product
AA10480C	K-202	

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.0" / ø0.99" / ø0.897"

E3000

- One Piece

E3000

- Modular

ø1.18"

ø1.07" / ø0.98"

ø0.897"

E3000

- 80,000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.75"

ø0.897"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

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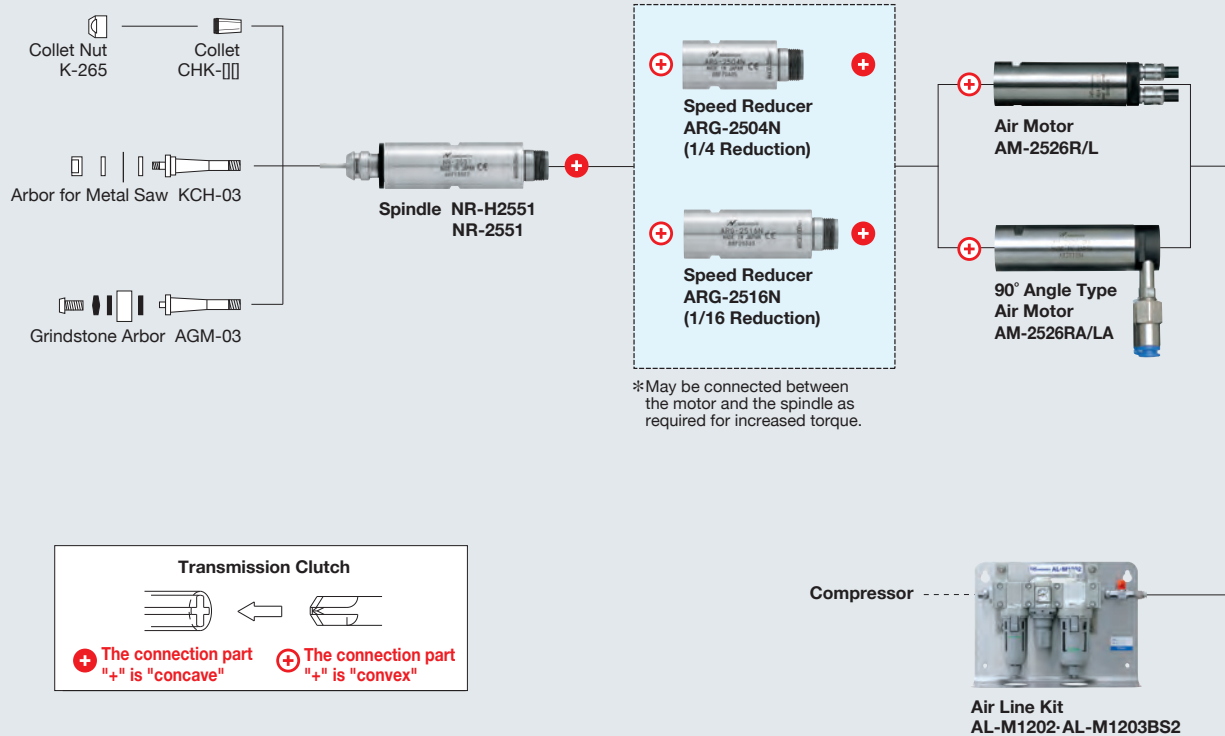
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E3000 One Piece
E3000 Modular
∅1.18"
∅1.0"/∅0.98" ∅0.897"
E3000 80,000rpm
E4000
3
MA
∅0.897"
∅1.0" ∅0.98"
∅1.18"
MS
∅0.75" ∅0.79"
∅0.87" ∅0.91"
∅1.0" ∅0.98"
4
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## MA Series ∅1.0"(∅25.4 mm), ∅0.98"(∅25 mm) System Chart

- MA Series has been designed to operate smoothly at high speed for long continuous cutting and grinding by connecting an air line kit directly between the air compressor and the air motor. (Air Line Kit Refer to 3-p16 in detail)
- Air supply and exhaust air hoses are supplied with an air motor. Air supply hose is provided with metal fitting to connect to ∅0.24"(∅6 mm) one-touch joint. Air exhaust hose is supplied with silencer.

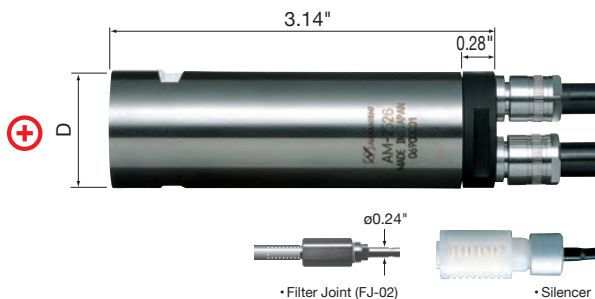


**\*Do not exceed the maximum motor speed recommendation for the spindles. Excess speed will dramatically reduce bearing life.**

# HIGH-TORQUE AIR MOTOR O.D. $\phi 1.0''$ , $\phi 0.98''$ ( $\phi 25.4$ , $\phi 25\text{mm}$ )

- Small diameter  $\phi 0.98''$  ( $\phi 25\text{ mm}$ ).
- Ultra-precision vane type air motor.  
Rigid stainless steel (SUS416) outer housing.

**Product Code 1801 AIR MOTOR AM-2526R (Forward Rotation) 130W 24,000 rpm**



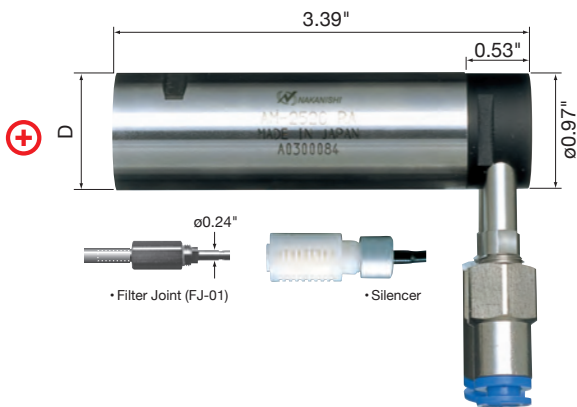
- Motor Speed ..... 24,000 rpm (73PSI)
- Max. Output Power ..... 130W
- Proper Air Pressure ..... 44~73PSI
- Air Consumption ..... 7.24CFM
- Motor Hose (Diameter / Length)
  - Air Intake .....  $\phi 4.5$  (I.D.) x  $\phi 6.7$  (O.D.) mm / 6 ft
  - Exhaust Air .....  $\phi 5.5$  (I.D.) x  $\phi 7.5$  (O.D.) mm / 3 ft
- Weight (w/o hose) ..... 7.05 oz.

- Ultra precision, compact, vane-type air motor provides high torque with small volume of air consumption. Withstands long continuous operation without heat generation. Silencer keeps noise to a minimum.

**Air Motor D= $\phi 1.0''$  ( $\phi 25.4\text{ mm}$ ),  $\phi 0.98''$  ( $\phi 25\text{ mm}$ ) (R=Forward, L=Reverse)**

Product Code	Product Name	Outside Diameter	Standard Equipment - Accessories
1801	AM-2526R	$\phi 0.98''$ ( $\phi 25\text{ mm}$ )	<ul style="list-style-type: none"> <li>• Hose (K-204) : 6 ft</li> <li>• Filter Joint (FJ-02)</li> <li>• Silencer (K-208)</li> <li>• Wrench (22 x 27) : 1 pc.</li> </ul>

**Product Code 1803 AIR MOTOR AM-2526RA (Forward Rotation) 120W 22,000 rpm**



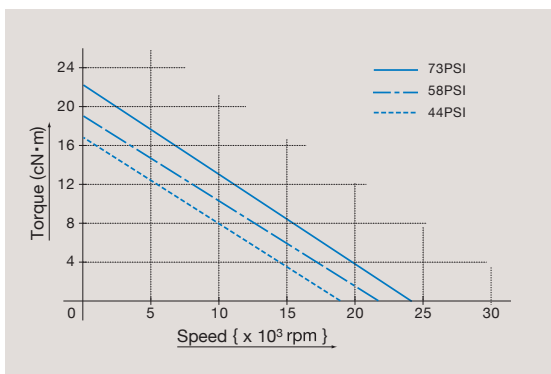
- Motor Speed ..... 22,000 rpm (73PSI)
- Max. Output Power ..... 120W
- Proper Air Pressure ..... 44~73PSI
- Air Consumption ..... 6.00CFM
- Motor Hose (Diameter / Length)
  - Air Intake .....  $\phi 4.0$  (I.D.) x  $\phi 6.0$  (O.D.) mm / 6 ft
  - Exhaust Air .....  $\phi 5.5$  (I.D.) x  $\phi 8.0$  (O.D.) mm / 3 ft
- Weight (w/o hose) ..... 8.50 oz.

- The installation space is reduced by installing the air intake and exhaust air hoses at  $90^\circ$  angle from the rear end of the motor.

**Air Motor D= $\phi 1.0''$  ( $\phi 25.4\text{ mm}$ ),  $\phi 0.98''$  ( $\phi 25\text{ mm}$ ) (R=Forward, L=Reverse)**

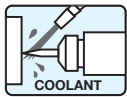
Product Code	Product Name	Outside Diameter	Standard Equipment - Accessories
1803	AM-2526RA	$\phi 0.98''$ ( $\phi 25\text{ mm}$ )	<ul style="list-style-type: none"> <li>• Hose (K-215) : <math>\phi 6\text{ mm}</math> x 6 ft</li> <li>• Hose (K-256) : <math>\phi 8\text{ mm}</math> x 3 ft</li> <li>• Filter Joint (FJ-01)</li> <li>• Silencer (K-209)</li> <li>• Wrench (22 x 27) : 1 pc.</li> </ul>

## • AM-2526R Torque-Speed Characteristics



1
EmaxEV
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''$ ( $\phi 25.4''$ ) / $\phi 0.897''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.97''$ / $\phi 0.98''$ / $\phi 0.897''$
E3000 - 80,000rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''$ / $\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''$ / $\phi 0.75''$
$\phi 0.897''$ / $\phi 0.81''$
$\phi 1.0''$ / $\phi 0.98''$
4
HES
iSpeed5
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PLANET
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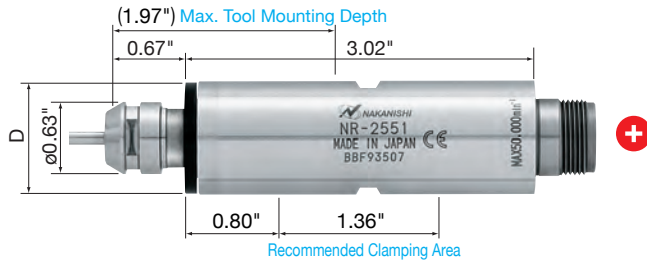
# SPINDLE O.D. $\phi 1.0''$ , $\phi 0.98''$ ( $\phi 25.4$ , $\phi 25\text{mm}$ )



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

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - $\phi 0.000\text{rpm}$
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''/\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''/\phi 0.79''$
$\phi 0.897''/\phi 0.91''$
$\phi 1.0''/\phi 0.98''$
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HES
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HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
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**Product Code 7854 SPINDLE NR-H2551 (Ceramic Bearing) 50,000 rpm**



- Allowable Motor Speed ..... 50,000 rpm
- Spindle Accuracy ..... Within 1  $\mu\text{m}$
- Weight ..... 8.92 oz.
- **Additional collet purchase required:**
  - Collet Series CHK-XX .....  $\phi 0.5\text{mm} \sim \phi 6.35\text{mm}$
  - Recommended ..... CHK-3.175  $\phi 1/8''$
  - (See Page 6-p3 for additional sizes)
- Collet Nut (K-265) ..... For Collet (CHK)
- Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24''$  (I.D.) x  $\phi 1.18''$  (O.D.)
- Grindstone Arbor (AGM -03) ..... For grinding wheel with I.D. of  $\phi 5\text{ mm}$

• Designed for increased durability by utilizing ceramic bearings, for obtaining strong rigidity in both radial direction and thrust directions by utilizing 2 super-precision ceramic bearings on the front side and 2 on the rear side. This spindle can be used for small-diameter milling, drilling, slitting, chamfering, grinding, etc.

**Spindle D =  $\phi 1.0''$  ( $\phi 25.4\text{ mm}$ ),  $\phi 0.98''$  ( $\phi 25\text{ mm}$ )**

Product Code	Product Name	Outside Diameter	Standard Equipment · Accessories
7854	NR-H2551	$\phi 1.0''$ ( $\phi 25.4\text{ mm}$ )	• Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs., (22 x 27) : 1 pc.
7853	NR-2551	$\phi 0.98''$ ( $\phi 25\text{ mm}$ )	

\*Do not exceed the allowable motor speed for the spindle.

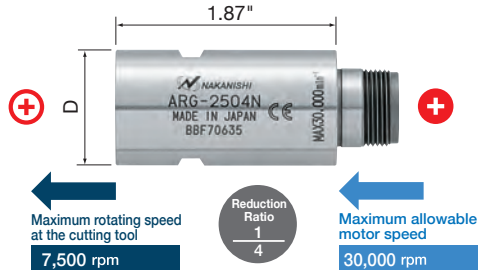


# SPEED REDUCER O.D. $\phi 1.0''$ , $\phi 0.98''$ ( $\phi 25.4$ , $\phi 25\text{mm}$ )



**Caution :** Use the motor at motor speed less than maximum allowable speed or use the speed reducer. DO NOT exceed the allowable motor speed for the spindle and the reducer.

## Product Code **1822** SPEED REDUCER 1/4 ARG-2504N



Maximum allowable motor speed **30,000 rpm**

Maximum rotating speed at the cutting tool <Reduction Ratio : 1/4> **7,500 rpm**

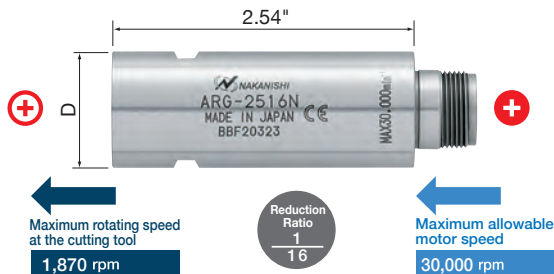
- Speed Reducing Mechanism ..... By planetary gear system
- Weight ..... 5.29 oz.

- If the speed reducer is connected between the motor and the spindle, it reduces the rotating speed and increases the torque while keeping the motor speed unchanged.

Speed Reducer D= $\phi 1.0''$  ( $\phi 25.4$  mm),  $\phi 0.98''$  ( $\phi 25$  mm)

Product Code	Product Name	Outside Diameter	Speed Reduction Ratio
1822	ARG-2504N	$\phi 0.98''$ ( $\phi 25$ mm)	Speed Reduction Ratio 1/4

## Product Code **1824** SPEED REDUCER 1/16 ARG-2516N



Maximum allowable motor speed **30,000 rpm**

Maximum rotating speed at the cutting tool <Reduction Ratio : 1/16> **1,870 rpm**

- Speed Reducing Mechanism ..... By planetary gear system
- Weight ..... 7.23 oz.

- If the speed reducer is connected between the motor and the spindle, it reduces the rotating speed and increases the torque while keeping the motor speed unchanged.

Speed Reducer D= $\phi 1.0''$  ( $\phi 25.4$  mm),  $\phi 0.98''$  ( $\phi 25$  mm)

Product Code	Product Name	Outside Diameter	Speed Reduction Ratio
1824	ARG-2516N	$\phi 0.98''$ ( $\phi 25$ mm)	Speed Reduction Ratio 1/16

1

EmaxEV

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus ZERO

Sonic-Cutter ZERO

2

iSpeed3

E2000

$\phi 1.0''$  ( $\phi 0.98''$  /  $\phi 0.897''$ )

E3000

- One Piece

E3000

- Modular

$\phi 1.18''$

$\phi 1.0''$ ,  $\phi 0.98''$

$\phi 0.897''$

E3000

- 30,000rpm

E4000

3

MA

$\phi 0.897''$

$\phi 1.0''$

$\phi 0.98''$

$\phi 1.18''$

MS

$\phi 0.75''$

$\phi 0.75''$

$\phi 0.897''$

$\phi 0.81''$

$\phi 1.0''$

$\phi 0.98''$

4

HES

iSpeed5

HTS

PLANET

Xspeed

ABT

5

AIR LINE KIT

6

PARTS

7

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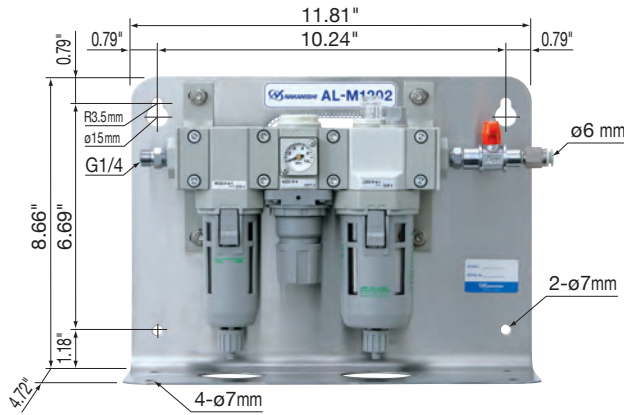
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ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.0"/ø0.98"/ø0.897"
E3000 - ø0.000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.897" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
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## Product Code 4502 AIR LINE KIT AL-M1202

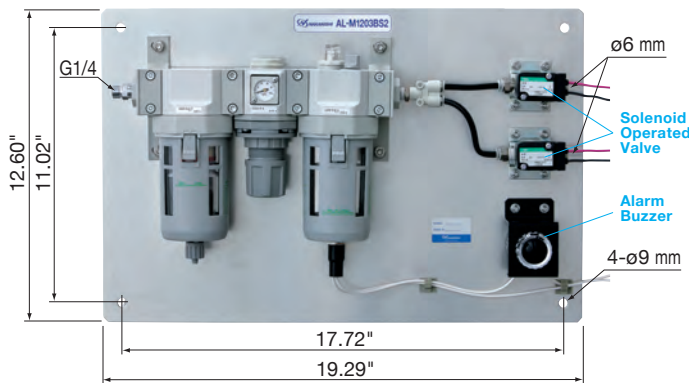


- The AL-M1202 provides simple, automatic conditioning of the air supplied to NAKANISHI Air Motors. The filter removes water and impure substances from the input air supply. The regulator maintains the proper air pressure, and the lubricator ensures proper oil flow to the motor and spindle. This Air Line Kit is wall mountable.

### Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 µm )

Product Code	Product Name	Standard Equipment · Accessories
4502	AL-M1202	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge · Lubricator</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> <li>• Lubricating Oil (K-211) : 1 pc.</li> </ul>

## Product Code 4503 AIR LINE KIT AL-M1203BS2



- The AL-M1203BS2 is equipped with 2 (DC+24V) Air Solenoids, a large capacity filter, large capacity oil reservoir, high flow regulator and a low oil level warning alarm, making this unit ideal for use on CNC machines. This Air Line Kit allows for the operation of 2 Air Motors.

### Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 µm )

Product Code	Product Name	Standard Equipment · Accessories
4503	AL-M1203BS2	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge · Lubricator</li> <li>• Solenoid Valve (DC 24V) : 2 pcs.</li> <li>• Buzzer (DC 24V) · Hose for Piping (K-275) : 6 ft</li> <li>• Lubricating Oil (K-202) : 1 pc.</li> </ul>

## LUBRICATING OIL

### Lubricating Oil (4 oz.)

Product Code	Product Name	Product
AA10478C	K-211	

### Lubricating Oil (32 oz.)

Product Code	Product Name	Product
AA10480C	K-202	

# 1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

# 2

iSpeed3

E2000

ø1.0" / ø0.99" / ø0.897"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.07" / ø0.98"

ø0.897"

E3000

— 80,000rpm

E4000

# 3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.75"

ø0.897"

ø0.91"

ø1.0"

ø0.98"

# 4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

# 5

AIR LINE KIT

# 6

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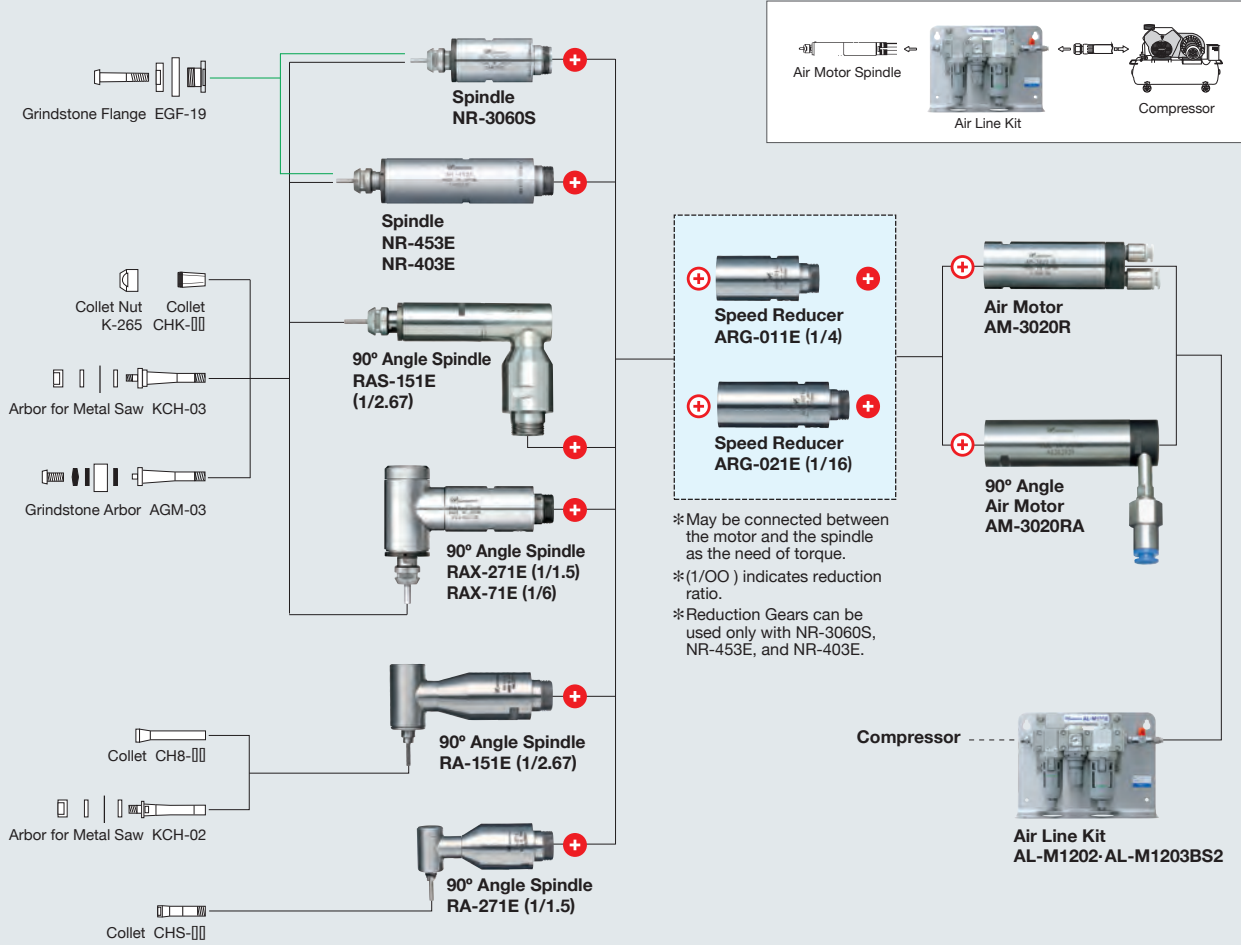
EXAMPLES

INDEX

- MA Series consists of 3 kinds of air motors, AM-3020R {19,000 rpm, 130W}, AM-3020RA {18,000 rpm, 125W}, enabling a wide variety of operations by the combination of various kinds of spindles. Higher torque is provided by connecting speed reducers.

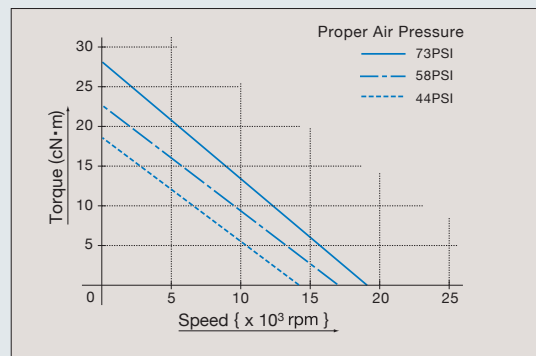
## MA Series ø1.18" (ø30 mm) System Chart

- MA Series has been designed to operate smoothly at high speed for long continuous cutting and grinding by connecting an air line kit directly between the air compressor and the air motor. (Air Line Kit Refer to 3-p25 in detail)
- Air supply and exhaust air hoses are supplied with an air motor. Air supply hose is provided with metal fitting to connect to ø6 mm one-touch joint. Air exhaust hose is supplied with silencer.



**\*Do not exceed the maximum motor speed recommendation for the spindles. Excess speed will dramatically reduce bearing life.**

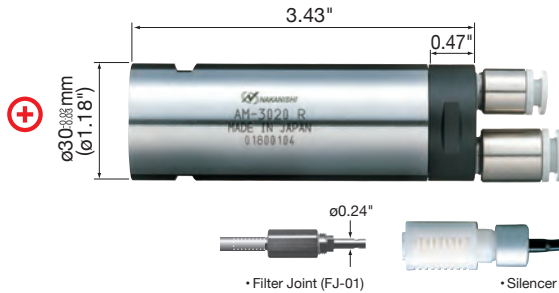
### AM-3020R Torque-Speed Characteristics



# HIGH-TORQUE AIR MOTOR O.D. $\phi 1.18''$ ( $\phi 30\text{mm}$ )

- Ultra-precision vane type air motor.
- Rigid stainless steel (SUS416) outer housing.

**Product Code 1797 AIR MOTOR AM-3020R (Forward Rotation) 130W 19,000 rpm**



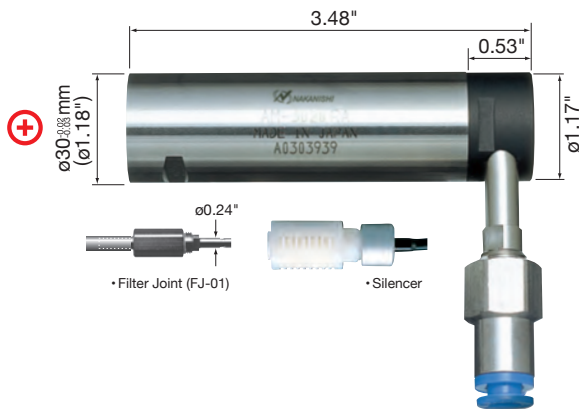
- Ultra precision, compact, vane-type air motor provides high torque with small volume of air consumption. Withstands long continuous operation without heat generation. Silencer keeps noise to a minimum.

- Motor Speed ..... 19,000 rpm (73PSI)
- Max. Output Power ..... 130W
- Proper Air Pressure ..... 44~73PSI
- Air Consumption ..... 6.36CFM
- Motor Hose (Diameter / Length)
  - Air Intake .....  $\phi 4.0$  (I.D.) x  $\phi 6.0$  (O.D.) mm / 6 ft
  - Exhaust Air .....  $\phi 6.0$  (I.D.) x  $\phi 8.0$  (O.D.) mm / 3 ft
- Weight (w/o hose) ..... 10.51 oz.

### Air Motor

Product Code	Product Name	Standard Equipment · Accessories	
1797	AM-3020R	<ul style="list-style-type: none"> <li>• Hose (K-215) : <math>\phi 6</math> mm x 6 ft</li> <li>• Hose (K-256) : <math>\phi 8</math> mm x 3 ft</li> <li>• Filter Joint (FJ-01) · Silencer (K-208)</li> <li>• Wrench (22 x 27) : 1 pc.</li> </ul>	

**Product Code 1799 AIR MOTOR AM-3020RA (Forward Rotation) 125W 18,000 rpm**



- The installation space is reduced by installing the air intake and exhaust air hoses at 90° angle from the rear end of the motor.

- Motor Speed ..... 18,000 rpm (73PSI)
- Max. Output Power ..... 125W
- Proper Air Pressure ..... 44~73PSI
- Air Consumption ..... 6.18CFM
- Motor Hose (Diameter / Length)
  - Air Intake .....  $\phi 4.0$  (I.D.) x  $\phi 6.0$  (O.D.) mm / 6 ft
  - Exhaust Air .....  $\phi 6.0$  (I.D.) x  $\phi 8.0$  (O.D.) mm / 3 ft
- Weight (w/o hose) ..... 11.96 oz.

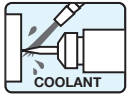
### 90° Angle Type Air Motor

Product Code	Product Name	Standard Equipment · Accessories	
1799	AM-3020RA	<ul style="list-style-type: none"> <li>• Hose (K-215) : <math>\phi 6</math> mm x 6 ft</li> <li>• Hose (K-256) : <math>\phi 8</math> mm x 3 ft</li> <li>• Filter Joint (FJ-01) · Silencer (K-208)</li> <li>• Wrench (22 x 27) : 1 pc.</li> </ul>	

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''$ ( $\phi 25.4$ ) / $\phi 0.897''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.0''$ ( $\phi 25.4$ ) / $\phi 0.897''$
E3000 - 80,000rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''$ ( $\phi 25.4$ ) / $\phi 0.897''$
$\phi 1.18''$
MS
$\phi 0.75''$ ( $\phi 19.05$ ) / $\phi 0.75''$
$\phi 0.897''$ ( $\phi 22.83$ ) / $\phi 0.897''$
$\phi 1.0''$ ( $\phi 25.4$ ) / $\phi 0.897''$
4
HES
iSpeed5
HTS
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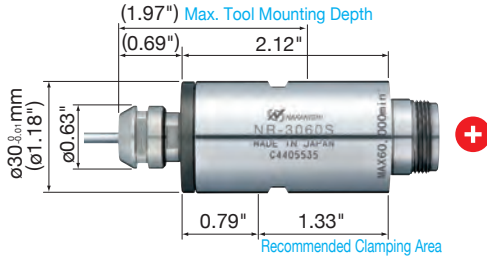
# SPINDLE O.D. $\phi 1.18''$ ( $\phi 30\text{mm}$ )



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

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - 60,000rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''/\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''/\phi 0.79''$
$\phi 0.897''/\phi 0.91''$
$\phi 1.0''/\phi 0.98''$
4
HES
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**Product Code 7859 SPINDLE NR-3060S 60,000 rpm**

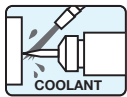


- This spindle can be used for small-diameter milling, drilling, slitting, chamfering, grinding, etc.

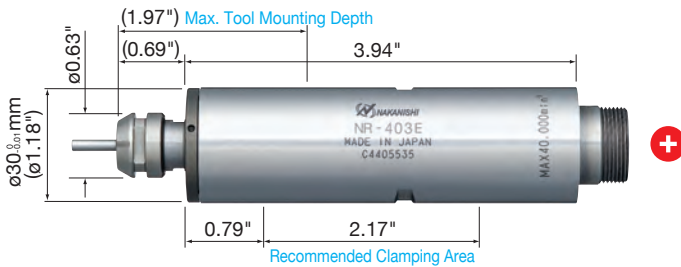
- Allowable Motor Speed ..... 60,000 rpm
- Spindle Accuracy ..... Within 1  $\mu\text{m}$
- Weight ..... 9.17 oz.
- Ceramic Bearing
- Additional collet purchase required:
  - Collet Series CHK-XX .....  $\phi 0.5\text{mm} \sim \phi 6.35\text{mm}$
  - Recommended ..... CHK-3.175  $\phi 1/8''$
  - (See Page 6-p3 for additional sizes)
- Collet Nut (K-265) ..... For Collet (CHK)
- Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24''$  (I.D.) x  $\phi 1.18''$  (O.D.)
- Grindstone Arbor (AGM -03) ..... For grinding wheel with I.D. of  $\phi 5$  mm
- Grindstone Flange (EGF-19) .....  $\phi 19.05$  (I.D.) x  $\phi 40$  (O.D.) x 7 (W) mm

### Spindle

Product Code	Product Name	Standard Equipment · Accessories	
7859	NR-3060S	<ul style="list-style-type: none"> <li>• Collet Nut (K-265) : 1 pc.</li> <li>• Wrench (12 x 14) : 2 pcs., (22 x 27) : 1 pc.</li> </ul>	



**Product Code 7847 SPINDLE NR-403E 40,000 rpm**



- This spindle can be used for small-diameter milling, drilling, slitting, chamfering, grinding, etc.

- Allowable Motor Speed ..... 40,000 rpm
- Spindle Accuracy ..... Within 1 µm
- Weight ..... 15.52 oz.
- **Additional collet purchase required:**
  - Collet Series CHK-XX ..... ø0.5mm~ø6.35mm
  - Recommended ..... CHK-3.175 ø1/8" (See Page 6-p3 for additional sizes)
- Collet Nut (K-265) ..... For Collet (CHK)
- Metal Saw Arbor (KCH-03) ..... For ø0.24" (I.D.) x ø1.18" (O.D.)
- Grindstone Arbor (AGM -03) ... For grinding wheel with I.D. of ø5 mm
- Grindstone Flange (EGF-19) ..... ø19.05 (I.D.) x ø40 (O.D.) x 7 (W) mm

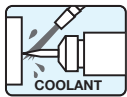
**Spindle**

Product Code	Product Name	Standard Equipment · Accessories	
7847	NR-403E	<ul style="list-style-type: none"> <li>• Collet Nut (K-265) : 1 pc.</li> <li>• Wrench (12 x 14) : 2 pcs., (22 x 27) : 1 pc.</li> </ul>	

\*Do not exceed the allowable motor speed for the spindle.

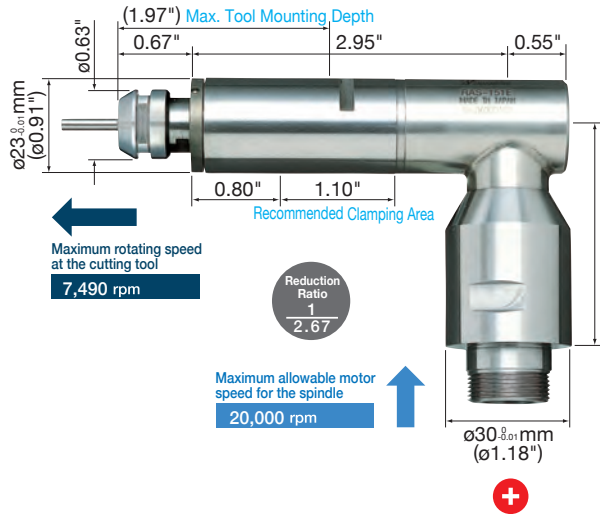
- 1**
- EmaxEVC
- ESPERT
- ROTUS
- IMPULSE
- PRESTO II
- Sheenus ZERO
- Sonic-Cutter ZERO
- 2**
- iSpeed3
- E2000 ø1.0"/ø0.98"/ø0.897"
- E3000 - One Piece
- E3000 - Modular
- ø1.18"
- ø1.07"/ø0.98"/ø0.897"
- E3000 - 30,000rpm
- E4000
- 3**
- MA
- ø0.897"
- ø1.0"/ø0.98"
- ø1.18"
- MS
- ø0.75"/ø0.75"/ø0.897"
- ø0.897"/ø0.897"
- ø1.0"/ø0.98"
- 4**
- HES
- iSpeed5
- HTS
- PLANET
- Xpeed
- ABT
- 5**
- AIR LINE KIT
- 6**
- PARTS
- 7**
- TECHNICAL DATA
- 8**
- APPLICATION EXAMPLES
- INDEX

# SPINDLE O.D. $\phi 1.18''$ ( $\phi 30\text{mm}$ )



**Caution :** Use the motor at motor speed less than maximum allowable speed or use the speed reducer. DO NOT exceed the allowable motor speed for the spindle and the reducer.

## Product Code **7840** 90° ANGLE SPINDLE **RAS-151E**



Maximum allowable motor speed for the spindle **20,000 rpm**

Maximum rotating speed at the cutting tool  
<Reduction Ratio : 1/2.67> **7,490 rpm**

- Spindle Accuracy ..... Within 2  $\mu\text{m}$
- Weight ..... 14.57 oz.
- **Additional collet purchase required:**
  - Collet Series CHK-XX .....  $\phi 0.5\text{mm} \sim \phi 6.35\text{mm}$
  - Recommended ..... CHK-3.175  $\phi 1/8''$
  - (See Page 6-p3 for additional sizes)
  - Collet Nut (K-265) ..... For Collet (CHK)
  - Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24''$  (I.D.) x  $\phi 1.18''$  (O.D.)
  - Grindstone Arbor (AGM-03) ..... For grinding wheel with I.D. of  $\phi 5\text{mm}$

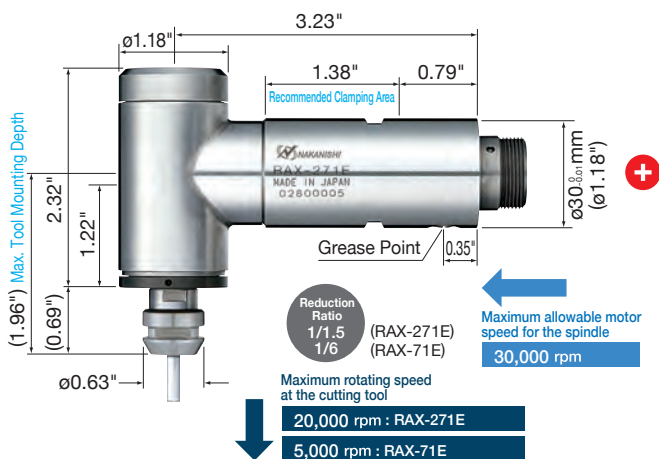
### 90° Angle Spindle

Product Code	Product Name	Standard Equipment · Accessories
7840	RAS-151E	• Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs., (22 x 27) : 1 pc.

- 90° Angle Type Spindle can use up to a  $\phi 1/4''$  ( $\phi 6.35\text{mm}$ ) collet and is suitable for installation where space restrictions exist.

## Product Code **7856** 90° ANGLE SPINDLE **RAX-271E** (Speed Reduction Ratio 1/1.5)

## Product Code **7857** 90° ANGLE SPINDLE **RAX-71E** (Speed Reduction Ratio 1/6)



Maximum allowable motor speed for the spindle **30,000 rpm**

Maximum rotating speed at the cutting tool  
RAX-271E <Reduction Ratio : 1/1.5> **20,000 rpm**  
RAX-71E <Reduction Ratio : 1/6> **5,000 rpm**

- Spindle Accuracy ..... Within 2  $\mu\text{m}$
- Weight ..... 1 lb. 4.46 oz.
- **Additional collet purchase required:**
  - Collet Series CHK-XX .....  $\phi 0.5\text{mm} \sim \phi 6.35\text{mm}$
  - Recommended ..... CHK-3.175  $\phi 1/8''$
  - (See Page 6-p3 for additional sizes)
  - Collet Nut (K-265) ..... For Collet (CHK)
  - Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24''$  (I.D.) x  $\phi 1.18''$  (O.D.)
  - Grindstone Arbor (AGM-03) ..... For grinding wheel with I.D. of  $\phi 5\text{mm}$

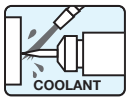
### 90° Angle Spindle

Product Code	Product Name	Standard Equipment · Accessories
7856	RAX-271E	• Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs., (22 x 27) : 1 pc.
7857	RAX-71E	• Gear Grease (10mL) • Grease Nipple : 1 pc.



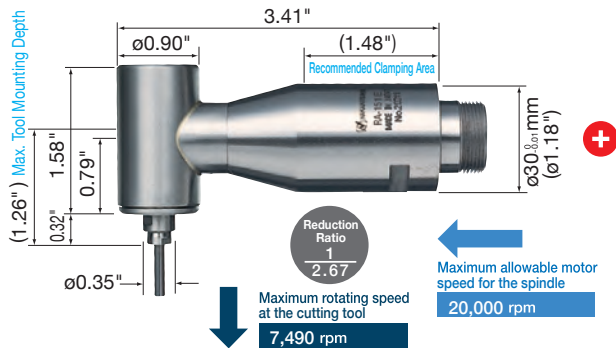
To extend the life expectancy of the Speed Reducer, inject grease every 70 to 100 hours. Grease injection prevents friction of the internal gears as well as heat generation. Adding grease also prevents the degradation of the existing grease in the reducer. Please maintain a reducer grease maintenance program.

- This spindle is capable of working on corners difficult to work with straight type, drilling on side faces and milling of grooves.



**Caution :** Use the motor at motor speed less than maximum allowable speed or use the speed reducer. DO NOT exceed the allowable motor speed for the spindle and the reducer.

**Product Code 2910 90° ANGLE SPINDLE RA-151E**



- This spindle is capable of working on corners difficult to work or unfit for working with straight type, drilling on side face and, slitting of aluminum, brass, etc. with the use of  $\phi 1.18''$  ( $\phi 30$  mm) Metal Saw.

Maximum allowable motor speed for the spindle **20,000 rpm**

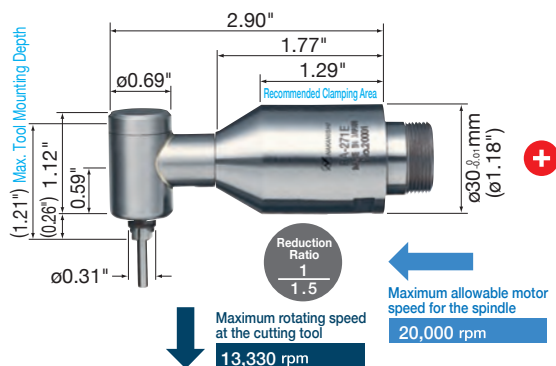
Maximum rotating speed at the cutting tool <Reduction Ratio : 1/2.67> **7,490 rpm**

- Standard Size Collet (CH8-3.175) .....  $\phi 1/8''$
- Weight ..... 13.58 oz.
- < Optional >
- Collet (CH8- [ ]) .....  $\phi 0.8$  mm~ $\phi 3.175$  mm (See Page 6-p5 for details)
- Metal Saw Arbor (KCH-02) ..... For  $\phi 0.24''$  (I.D.) x  $\phi 1.18''$  (O.D.)

**90° Angle Spindle**

Product Code	Product Name	Standard Equipment · Accessories	
2910	RA-151E	• Collet $\phi 1/8''$ (CH8-3.175) : 1 pc. • Wrench (7 x 5.5), (8 x 5), (22 x 27) : 1 pc. each	

**Product Code 2911 90° ANGLE SPINDLE RA-271E**



- This spindle can be used for working on corners difficult to work or unfit for working with straight type, drilling on side face, etc.

Maximum allowable motor speed for the spindle **20,000 rpm**

Maximum rotating speed at the cutting tool <Reduction Ratio : 1/1.5> **13,330 rpm**

- Standard Size Collet (CHS-3.175) .....  $\phi 1/8''$
- Weight ..... 8.47 oz.
- < Optional >
- Collet (CHS- [ ]) .....  $\phi 0.8$  mm~ $\phi 3.175$  mm (See Page 6-p4 for details)

**90° Angle Spindle**

Product Code	Product Name	Standard Equipment · Accessories	
2911	RA-271E	• Collet $\phi 1/8''$ (CHS-3.175) : 1 pc. • Wrench (7 x 5.1), (8 x 5), (22 x 27) : 1 pc. each	

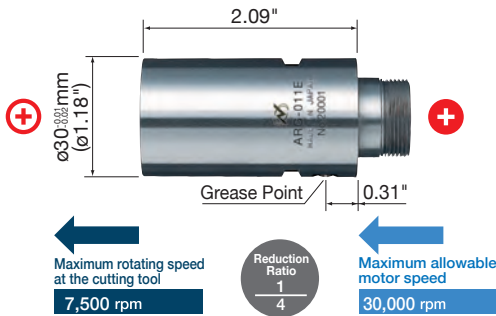
1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''$ ( $\phi 25.4$ ) / $\phi 0.897''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.0''$ / $\phi 0.98''$ / $\phi 0.897''$
E3000 - 80,000rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''$ / $\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''$ / $\phi 0.75''$ / $\phi 0.897''$ / $\phi 0.897''$ / $\phi 0.897''$
$\phi 1.0''$ / $\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
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# SPEED REDUCER O.D. $\phi 1.18''$ ( $\phi 30\text{mm}$ )



**Caution :** Use the motor at motor speed less than maximum allowable speed or use the speed reducer. DO NOT exceed the allowable motor speed for the spindle and the reducer.

## Product Code **1507** SPEED REDUCER 1/4 ARG-011E



- If the speed reducer is connected between the motor and the spindle, it reduces the rotating speed and increases the torque while keeping the motor speed unchanged.

Maximum allowable motor speed **30,000 rpm**

Maximum rotating speed at the cutting tool <Reduction Ratio : 1/4> **7,500 rpm**

- Speed Reducing Mechanism ..... By planetary gear system
- Speed Reduction Ratio ..... 1/4
- Weight ..... 8.54 oz.

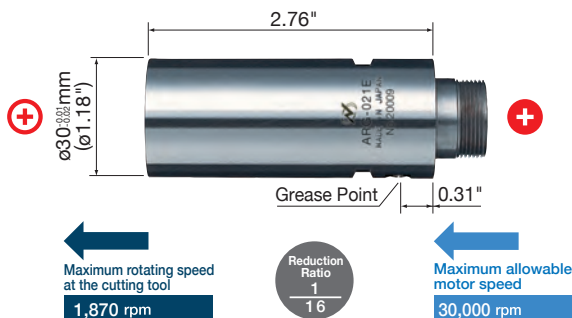
### Speed Reducer 1/4

Product Code	Product Name	Standard Equipment · Accessories
1507	ARG-011E	• Gear Grease (10mL) • Grease Nipple : 1 pc.



To extend the life expectancy of the Speed Reducer, inject grease every 70 to 100 hours. Grease injection prevents friction of the internal gears as well as heat generation. Adding grease also prevents the degradation of the existing grease in the reducer. Please maintain a reducer grease maintenance program.

## Product Code **1508** SPEED REDUCER 1/16 ARG-021E



- If the speed reducer is connected between the motor and the spindle, it reduces the rotating speed and increases the torque while keeping the motor speed unchanged.

Maximum allowable motor speed **30,000 rpm**

Maximum rotating speed at the cutting tool <Reduction Ratio : 1/16> **1,870 rpm**

- Speed Reducing Mechanism ..... By planetary gear system
- Speed Reduction Ratio ..... 1/16
- Weight ..... 11.46 oz.

### Speed Reducer 1/16

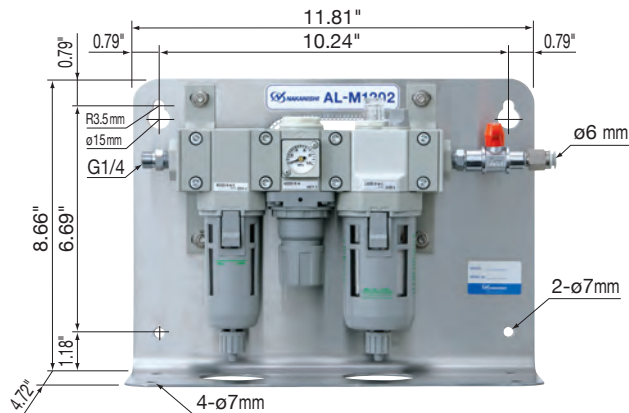
Product Code	Product Name	Standard Equipment · Accessories
1508	ARG-021E	• Gear Grease (10mL) • Grease Nipple : 1 pc.



To extend the life expectancy of the Speed Reducer, inject grease every 70 to 100 hours. Grease injection prevents friction of the internal gears as well as heat generation. Adding grease also prevents the degradation of the existing grease in the reducer. Please maintain a reducer grease maintenance program.



**Product Code 4502 AIR LINE KIT AL-M1202**

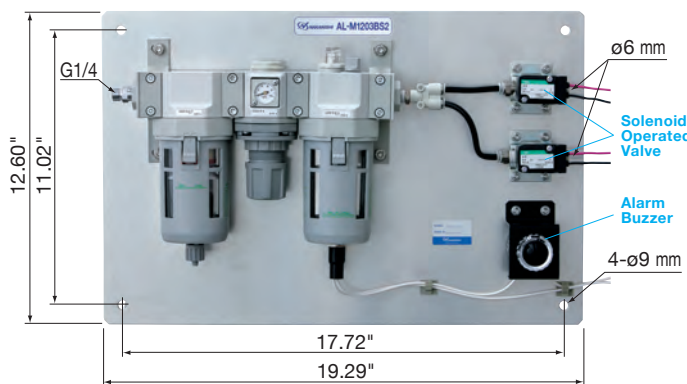


- The AL-M1202 provides simple, automatic conditioning of the air supplied to NAKANISHI Air Motors. The filter removes water and impure substances from the input air supply. The regulator maintains the proper air pressure, and the lubricator ensures proper oil flow to the motor and spindle. This Air Line Kit is wall mountable.

**Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 µm )**

Product Code	Product Name	Standard Equipment · Accessories	
4502	AL-M1202	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge · Lubricator</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> <li>• Lubricating Oil (K-211) : 1 pc.</li> </ul>	

**Product Code 4503 AIR LINE KIT AL-M1203BS2**



- The AL-M1203BS2 is equipped with 2 (DC+24V) Air Solenoids, a large capacity filter, large capacity oil reservoir, high flow regulator and a low oil level warning alarm, making this unit ideal for use on CNC machines. This Air Line Kit allows for the operation of 2 Air Motors.

**Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 µm )**

Product Code	Product Name	Standard Equipment · Accessories	
4503	AL-M1203BS2	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge · Lubricator</li> <li>• Solenoid Valve (DC 24V) : 2 pcs.</li> <li>• Buzzer (DC 24V) · Hose for Piping (K-275) : 6 ft</li> <li>• Lubricating Oil (K-202) : 1 pc.</li> </ul>	

## LUBRICATING OIL

**Lubricating Oil (4 oz.)**

Product Code	Product Name	Product	
AA10478C	K-211		

**Lubricating Oil (32 oz.)**

Product Code	Product Name	Product	
AA10480C	K-202		

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.97"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.75" ø0.897" ø0.81"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
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# 1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus  
ZERO

Sonic-Cutter  
ZERO

# 2

iSpeed3

E2000  
 $\phi 1.07 / \phi 0.987 / \phi 0.897$

E3000  
- One Piece

E3000  
- Modular

$\phi 1.18"$

$\phi 1.07 / \phi 0.98"$   
 $\phi 0.897$

E3000  
- 60,000rpm

E4000

# 3

MA

$\phi 0.897"$

$\phi 1.0"$   
 $\phi 0.98"$

$\phi 1.18"$

MS

$\phi 0.75"$   
 $\phi 0.79"$

$\phi 0.87"$   
 $\phi 0.91"$

$\phi 1.0"$   
 $\phi 0.98"$

# 4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

# 5

AIR LINE KIT

# 6

PARTS

# 7

TECHNICAL  
DATA

# 8

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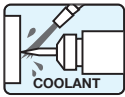
## One Piece Type Spindle

- Shorter overall length suitable for CNC lathes and special purpose machines.
- Hardened and precision ground for high rigidity & excellent durability.
- External one-piece housing includes both the motor & spindle.



1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\varnothing 1.0''/\varnothing 0.98''/\varnothing 0.897''$
E3000 - One Piece
E3000 - Modular
$\varnothing 1.18''$
$\varnothing 1.07''/\varnothing 0.98''/\varnothing 0.897''$
E3000 - 80,000rpm
E4000
3
MA
$\varnothing 0.897''$
$\varnothing 1.0''/\varnothing 0.98''$
$\varnothing 1.18''$
MS
$\varnothing 0.75''/\varnothing 0.79''$
$\varnothing 0.897''/\varnothing 0.91''$
$\varnothing 1.0''/\varnothing 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
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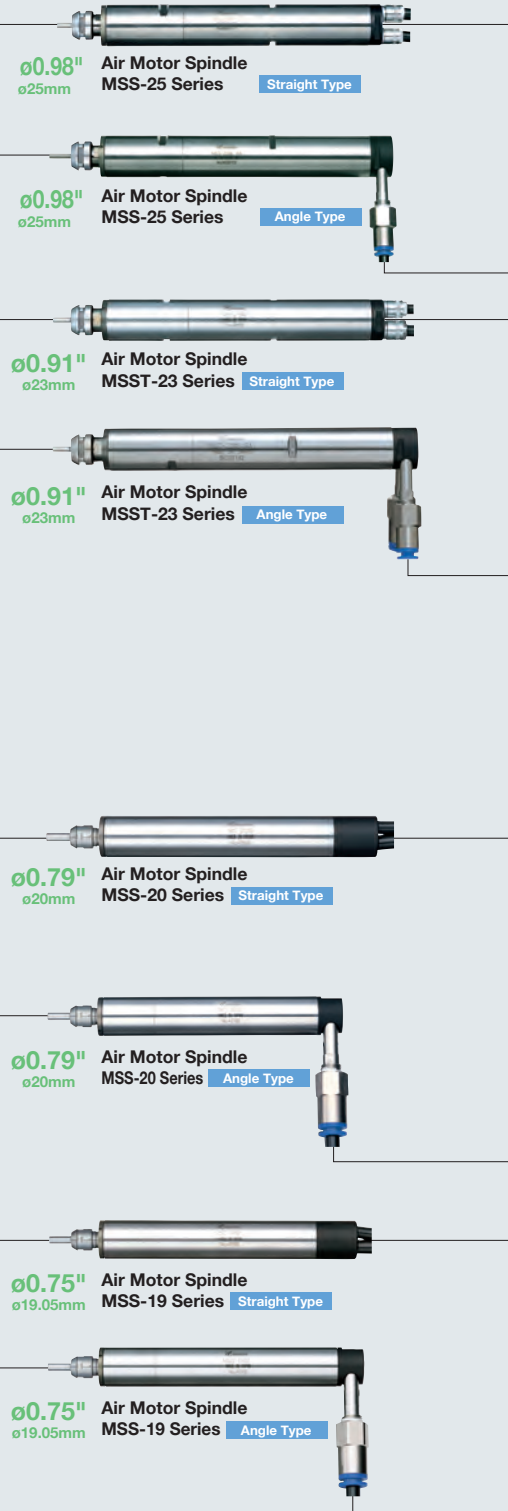
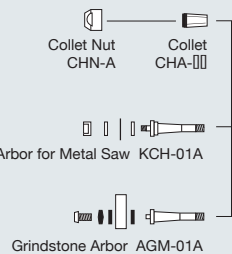
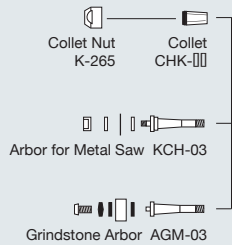
# SYSTEM CHART



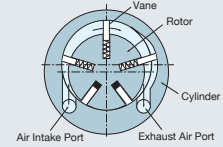
MS Series can be used in conjunction with water or oil based coolants.

## MS Series System Chart

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 - ø0,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.87" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
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### ● Air Motor



**Air Line Kit  
AL-M1202-AL-M1203BS2**

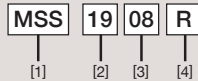
Compressor

## Configuration & Characteristics

### Model Code Example

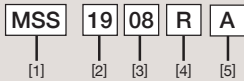
#### • Straight Type

- [1] SERIES CODE
- [2] OUTSIDE DIAMETER
- [3] SPEED
- [4] R=FORWARD (Right)



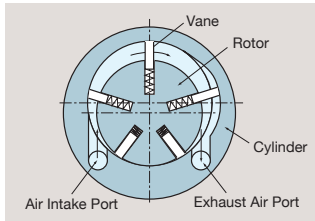
#### • 90° Angle Type

- [1] SERIES CODE
- [2] OUTSIDE DIAMETER
- [3] SPEED
- [4] R=FORWARD (Right)
- [5] CODE FOR 90° ANGLE TYPE



- The design of NAKANISHI's air motors gives the highest output power in this small spindle class.

#### • Air Motor



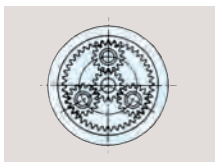
The rotor of the air motor rotates off center in the cylinder. The vanes are pushed by compressed air and this rotates the rotor. This small air motor produces high torque making it suitable for small diameter drilling, milling, slitting and grinding.

#### • Silencer

By utilizing a silencer on the exhaust air tubing the noise generated by the motor or turbine is greatly reduced.

#### • Speed Reduction System

A planetary gear speed reduction system is incorporated in some of the MS Series motor/spindles. The speed reduction ratio is either 1/4 or 1/16. This maintains a high motor speed while giving very high torque, low speed rotation at the spindle. By carefully selecting only the highest grade materials for the planetary gear reducers we can ensure high load capacity.



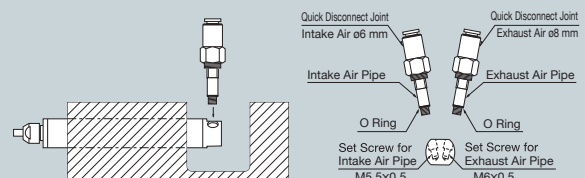
1/4 · 1/16 :  
Planetary Gear System

#### • Installation of 90° Angle Type

- MSS · MSST series angle (RA) type drive air and exhaust air pipes can be removed enabling the motor spindle installed through the front of a holder with backside restriction as shown in the illustration.

##### Installation

- [1] Remove Intake and Exhaust Air Pipes from motor spindle.
  - [2] Insert the straight spindle from the front side of holder and fix it.
  - [3] Mount the intake and exhaust air pipes to the spindle fixed on the holder and attach a hose to the quick disconnect joint.
- Urethane hose of 6 x 4 for intake air and 8 x 5 for exhaust air can be installed.



#### • Outer Housing Material

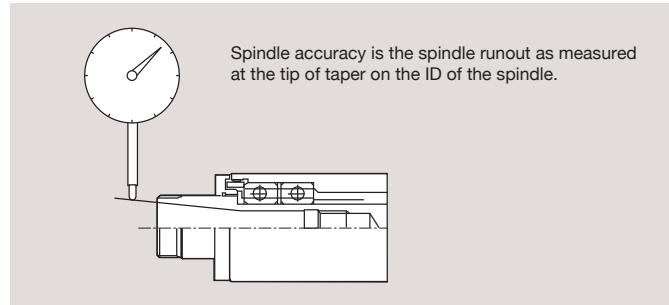
The outer housing is (SUS416) precision ground to +0/-0.01mm.

#### • Configuration

Either straight or 90° air connection types are available depending on the mounting and plumbing restrictions in your installation.

#### • Very high spindle accuracy makes ultra-precision machining possible.

#### • Spindle Accuracy

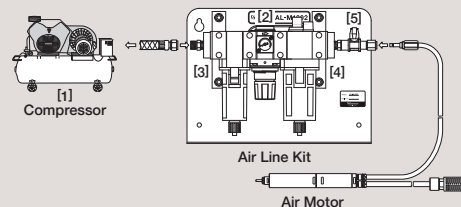


Spindle accuracy is the spindle runout as measured at the tip of taper on the ID of the spindle.

#### • MS Series Set-Up Chart (Air line kit is required for operation)

The MS Series spindles are specifically designed for long term continuous use in high speed machining applications such as small diameter drilling, milling, slitting and grinding applications.

It runs by connecting the air line kit to Compressor [1] directly. Stably adjusted air pressure is supplied through Air Regulator [2] that also controls the speed of spindle. Air is purified by Air Filter [3] and Lubricator [4] supplies lubricant automatically to the air spindle while in operation. Switch [5] controls the operation of air spindle ON and OFF.



Air Line Kit Refer to 3-p34

1

EmaxEVC

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

±1.0°/±0.99°/±0.897°

E3000

— One Piece

E3000

— Modular

±1.18°

±1.0°/±0.98°/±0.897°

E3000

— 80,000rpm

E4000

3

MA

±0.897°

±1.0°/±0.98°

±1.18°

MS

±0.75°

±0.75°

±0.897°

±0.91°

±1.0°/±0.98°

4

HES

iSpeed5

HTS

PLANET

Xspeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

8

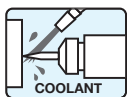
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\*The motor speed of 90° Angle air connection type motor / spindles are 10% less than that of the straight type.



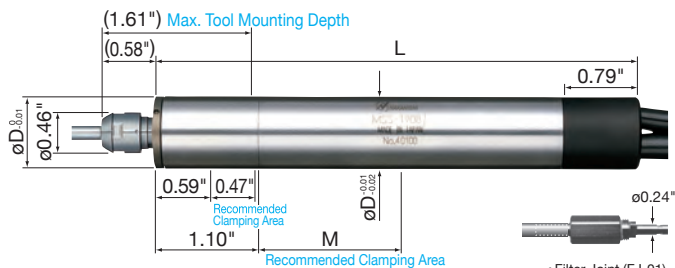
# AIR MOTOR SPINDLE O.D. $\phi 0.75"$ ( $\phi 19.05\text{mm}$ ), $\phi 0.79"$ ( $\phi 20\text{mm}$ ) Output 72W



## MSS-19 · MSS-20 SERIES STRAIGHT · 90° ANGLE TYPE

30,000 · 8,000 · 2,000 rpm

### ● STRAIGHT TYPE (R)

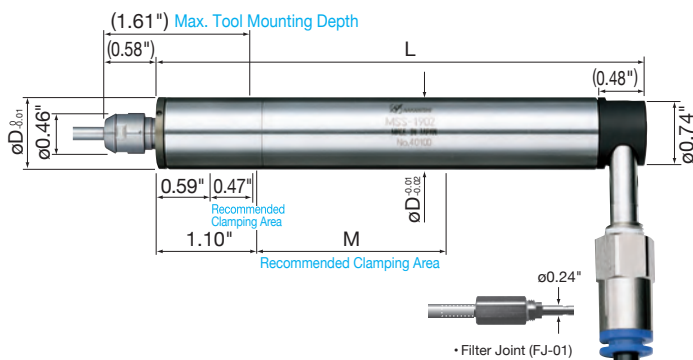


- Proper Air Pressure ..... 44~73PSI
- Air Consumption ..... 5.47CFM
- Spindle Accuracy ..... Within 2  $\mu\text{m}$
- Motor Hose (Diameter / Length)
  - [R-type] Air Intake .....  $\phi 3.7$  (I.D.) x  $\phi 5.7$  (O.D.) mm / 6 ft
  - Exhaust Air .....  $\phi 5.0$  (I.D.) x  $\phi 6.5$  (O.D.) mm / 3 ft
  - [RA-type] Air Intake .....  $\phi 4.0$  (I.D.) x  $\phi 6.0$  (O.D.) mm / 6 ft
  - Exhaust Air .....  $\phi 5.5$  (I.D.) x  $\phi 8.0$  (O.D.) mm / 3 ft

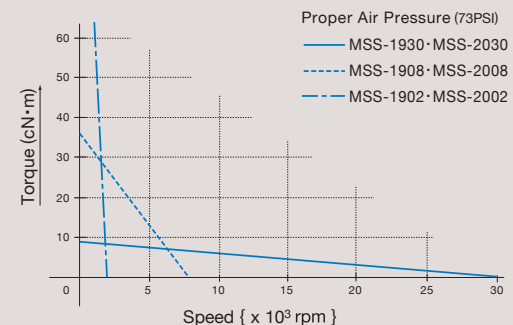
#### • Additional collet purchase required:

- Collet Series CHA-XX .....  $\phi 0.5\text{mm} \sim \phi 4.0\text{mm}$
- Recommended ..... CHA-3.175  $\phi 1/8"$   
(See Page 6-p2 for additional sizes)
- Collet Nut (CHN-A) ..... For Collet (CHA)
- Metal Saw Arbor (KCH-01A) ..... For  $\phi 0.24"$  (I.D.) x  $\phi 1.18"$  (O.D.)
- Grindstone Arbor (AGM-01A) ..... For grinding wheel with I.D. of  $\phi 5\text{mm}$

### ● 90° ANGLE TYPE (RA)



MSS-19 · MSS-20 SERIES Torque-Speed Characteristics



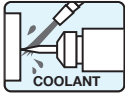
**Caution:** Two recommended clamp areas are laser-marked on the spindle. Select one of them for clamping, and do not clamp both areas.

MSS-19 Series D = $\phi 0.75"$ ( $\phi 19.05\text{mm}$ )		MSS-20 Series D = $\phi 0.79"$ ( $\phi 20\text{mm}$ )		30,000 rpm (73PSI)						
Product Code	Product Name	Product Code	Product Name	Shape	Rotating Direction	Max. Output	Max. Torque	Length	M	Weight (MSS-19 / MSS-20)
7849	MSS-1930R	7851	MSS-2030R	Straight	FWD. (CW)	72W	9.2 cN · m	4.37"	0.91"	6.03 oz. / 6.70 oz.
7850	MSS-1930RA	7852	MSS-2030RA	90° Angle				4.06"		7.73 oz. / 8.43 oz.
<b>8,000 rpm (73PSI) 1/4 Speed Reduction</b>										
Product Code	Product Name	Product Code	Product Name	Shape	Rotating Direction	Max. Output	Max. Torque	Length	M	Weight (MSS-19 / MSS-20)
7824	MSS-1908R	7828	MSS-2008R	Straight	FWD. (CW)	72W	36 cN · m	4.99"	1.54"	7.13 oz. / 7.94 oz.
7825	MSS-1908RA	7829	MSS-2008RA	90° Angle				4.69"		8.82 oz. / 9.67 oz.
<b>2,000 rpm (73PSI) 1/16 Speed Reduction</b>										
Product Code	Product Name	Product Code	Product Name	Shape	Rotating Direction	Max. Output	Max. Torque	Length	M	Weight (MSS-19 / MSS-20)
7826	MSS-1902R	7830	MSS-2002R	Straight	FWD. (CW)	72W	141 cN · m	5.55"	2.09"	7.62 oz. / 8.50 oz.
7827	MSS-1902RA	7831	MSS-2002RA	90° Angle				5.24"		9.31 oz. / 10.23 oz.

#### Standard Equipment · Accessories

- Collet Nut (CHN-A) · Wrench (8 x 5), (9 x 11) : 1 pc. each · Hose (K-221 : R type) : 6 ft · Hose (K-215 : RA type) :  $\phi 6\text{mm}$  x 6 ft
- Hose (K-216 : RA type) :  $\phi 8\text{mm}$  x 3 ft · Filter Joint (FJ-01) · Silencer (K-209 : R type), (K-208 : RA type)

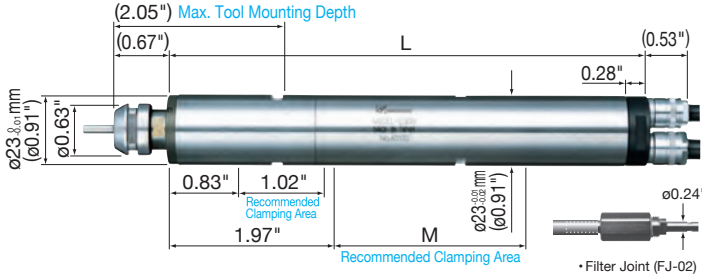
# AIR MOTOR SPINDLE O.D. $\phi 0.91''$ ( $\phi 23\text{mm}$ ) Output 109W



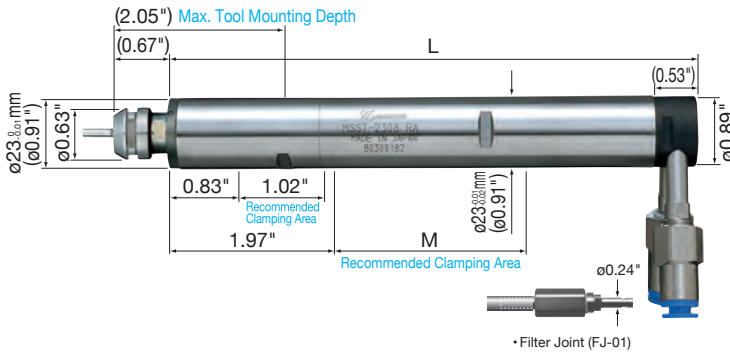
## MSST-23 SERIES STRAIGHT · 90° ANGLE TYPE

30,000 · 8,000 · 2,000 rpm

### ● STRAIGHT TYPE (R)

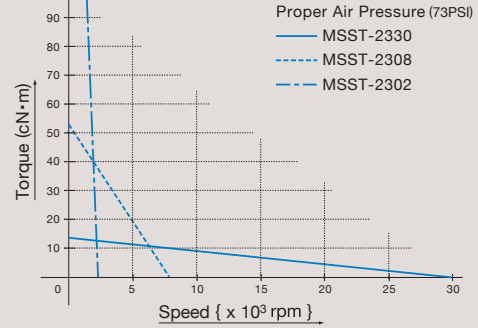


### ● 90° ANGLE TYPE (RA)



- Proper Air Pressure ..... 44~73PSI
- Air Consumption (R-type) : ..... 6.71CFM  
(RA-type) : ..... 6.00CFM
- Spindle Accuracy ..... Within 2  $\mu\text{m}$
- Motor Hose (Diameter / Length)  
[R-type] Air Intake .....  $\phi 4.5$  (I.D.) x  $\phi 6.7$  (O.D.) mm / 6 ft  
Exhaust Air .....  $\phi 5.5$  (I.D.) x  $\phi 7.5$  (O.D.) mm / 3 ft  
[RA-type] Air Intake .....  $\phi 4.0$  (I.D.) x  $\phi 6.0$  (O.D.) mm / 6 ft  
Exhaust Air .....  $\phi 5.5$  (I.D.) x  $\phi 8.0$  (O.D.) mm / 3 ft
- **Additional collet purchase required:**  
Collet Series CHK-XX .....  $\phi 0.5\text{mm}$ ~ $\phi 6.35\text{mm}$   
Recommended ..... CHK-3.175  $\phi 1/8''$   
(See Page 6-p3 for additional sizes)
- Collet Nut (K-265) ..... For Collet (CHK)
- Metal Saw Arbor (KCH-03) ..... For  $\phi 0.24''$  (I.D.) x  $\phi 1.18''$  (O.D.)
- Grindstone Arbor (AGM-03) ... For grinding wheel with I.D. of  $\phi 5$  mm

### MSST-23 SERIES Torque-Speed Characteristics



**Caution** : Two recommended clamp areas are laser-marked on the spindle. Select one of them for clamping, and do not clamp both areas.

**R** : 30,000 rpm (73PSI) / **RA** : 27,000 rpm (73PSI)

Product Code	Product Name	Shape	Rotating Direction	Max. Output	Max. Torque	Length	M	Weight
7833	MSST-2330R	Straight	FWD. (CW)	108W	13.7 cN · m	5.01"	0.98"	11.57 oz.
7834	MSST-2330RA	90° Angle				5.27"		13.02 oz.

**R** : 8,000 rpm (73PSI) / **RA** : 7,200 rpm (73PSI) **1/4 Speed Reduction**

Product Code	Product Name	Shape	Rotating Direction	Max. Output	Max. Torque	Length	M	Weight
7835	MSST-2308R	Straight	FWD. (CW)	108W	52 cN · m	6.30"	2.28"	14.64 oz.
7836	MSST-2308RA	90° Angle				6.56"		16.08 oz.

**R** : 2,000 rpm (73PSI) / **RA** : 1,900 rpm (73PSI) **1/16 Speed Reduction**

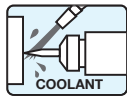
Product Code	Product Name	Shape	Rotating Direction	Max. Output	Max. Torque	Length	M	Weight
7837	MSST-2302R	Straight	FWD. (CW)	108W	202 cN · m	6.47"	2.44"	14.29 oz.
7838	MSST-2302RA	90° Angle				6.73"		15.73 oz.

### Standard Equipment · Accessories

- Collet Nut (K-265) · Wrench (12 x 14) : 2 pcs. · Hose (K-204 : R type) : 6 ft · Hose (K-215 : RA type) :  $\phi 6$  mm x 6 ft
- Hose (K-216 : RA type) :  $\phi 8$  mm x 3 ft · Filter Joint (FJ-02 : R type), (FJ-01 : RA type) · Silencer (K-209 : R type), (K-20 8 : RA type)

1	EmaxEV
ESPRT	
ROTUS	
IMPULSE	
PRESTO II	
Sheenus ZERO	
Sonic-Cutter ZERO	
2	
iSpeed3	
E2000	$\phi 1.0''$ / $\phi 0.99''$ / $\phi 0.897''$
E3000	- One Piece
E3000	- Modular
$\phi 1.18''$	
$\phi 1.97''$ / $\phi 0.98''$ / $\phi 0.897''$	
E3000	- 80,000rpm
E4000	
3	
MA	
$\phi 0.897''$	
$\phi 1.0''$ / $\phi 0.98''$	
$\phi 1.18''$	
MS	
$\phi 0.75''$ / $\phi 0.79''$	
$\phi 0.89''$ / $\phi 0.91''$	
$\phi 1.0''$ / $\phi 0.98''$	
4	
HES	
iSpeed5	
HTS	
PLANET	
Xspeed	
ABT	
5	
AIR LINE KIT	
6	
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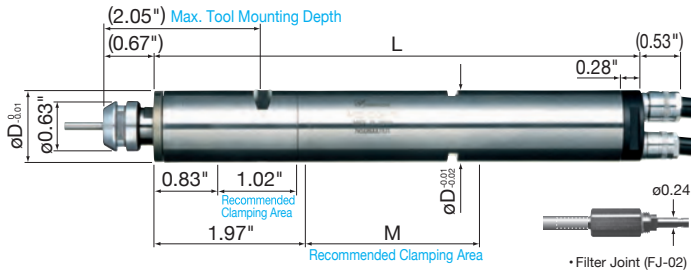
# ø0.99" (ø25mm) Output 130W



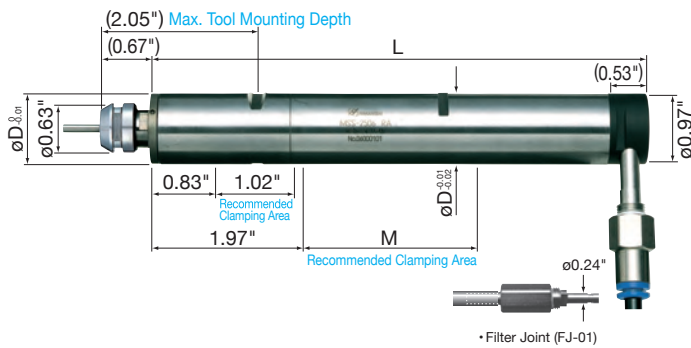
## MSS-25 SERIES STRAIGHT · 90° ANGLE TYPE

24,000 · 6,000 · 1,500 rpm

### ● STRAIGHT TYPE (R)

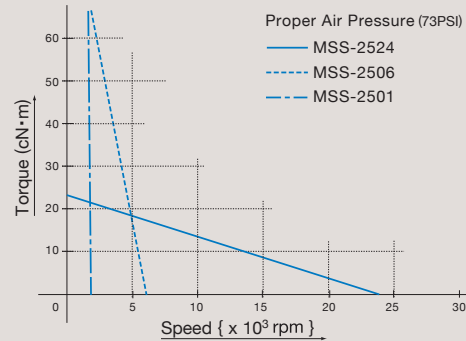


### ● 90° ANGLE TYPE (RA)



- Proper Air Pressure ..... 44~73PSI
- Air Consumption (R-type) : ..... 7.24CFM  
(RA-type) : ..... 6.00CFM
- Spindle Accuracy ..... Within 2 µm
- Motor Hose (Diameter / Length)  
[R-type] Air Intake ..... ø4.5 (I.D.) x ø6.7 (O.D.) mm / 6 ft  
Exhaust Air ..... ø5.5 (I.D.) x ø7.5 (O.D.) mm / 3 ft  
[RA-type] Air Intake ..... ø4.0 (I.D.) x ø6.0 (O.D.) mm / 6 ft  
Exhaust Air ..... ø5.5 (I.D.) x ø8.0 (O.D.) mm / 3 ft
- **Additional collet purchase required:**  
Collet Series CHK-XX ..... ø0.5mm~ø6.35mm  
Recommended ..... CHA-3.175 ø1/8"  
(See Page 6-p3 for additional sizes)
- Collet Nut (K-265) ..... For Collet (CHK)
- Metal Saw Arbor (KCH-03) ..... For ø0.24" (I.D.) x ø1.18" (O.D.)
- Grindstone Arbor (AGM-03) ... For grinding wheel with I.D. of ø5 mm

MSS-25 SERIES Torque-Speed Characteristics



**Caution:** Two recommended clamp areas are laser-marked on the spindle. Select one of them for clamping, and do not clamp both areas.

MSS Series D = ø0.98" (ø25 mm)		R : 24,000 rpm (73PSI) / RA : 22,000 rpm (73PSI)						
Product Code	Product Name	Shape	Rotating Direction	Max. Output	Max. Torque	Length	M	Weight
7841	MSS-2524R	Straight	FWD. (CW)	130W	22.5 cN · m	5.17"	0.98"	13.93 oz.
7842	MSS-2524RA	90° Angle				5.43"		15.38 oz.

R : 6,000 rpm (73PSI) / RA : 5,500 rpm (73PSI) 1/4 Speed Reduction

Product Code	Product Name	Shape	Rotating Direction	Max. Output	Max. Torque	Length	M	Weight
7843	MSS-2506R	Straight	FWD. (CW)	130W	85 cN · m	6.46"	2.28"	1 lb. 1.11 oz.
7844	MSS-2506RA	90° Angle				6.72"		1 lb. 2.55 oz.

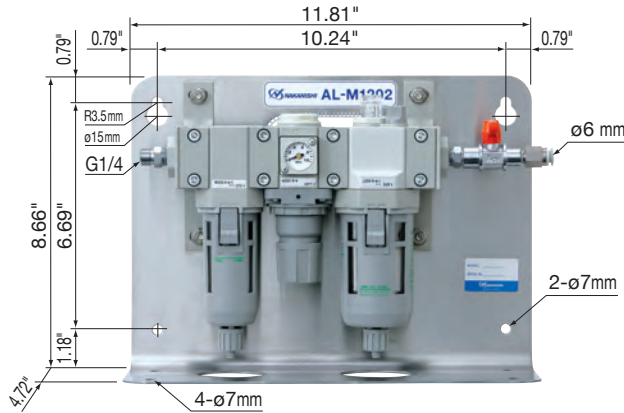
R : 1,500 rpm (73PSI) / RA : 1,400 rpm (73PSI) 1/16 Speed Reduction

Product Code	Product Name	Shape	Rotating Direction	Max. Output	Max. Torque	Length	M	Weight
7845	MSS-2501R	Straight	FWD. (CW)	130W	332 cN · m	6.63"	2.44"	1 lb. 0.76 oz.
7846	MSS-2501RA	90° Angle				6.89"		1 lb. 2.20 oz.

#### Standard Equipment · Accessories

- Collet Nut (K-265) • Wrench (12 x 14) : 2 pcs. • Hose (K-204 : R type) : 6 ft • Hose (K-215 : RA type) : ø6 mm x 6 ft
- Hose (K-216 : RA type) : ø8 mm x 3 ft • Filter Joint (FJ-02 : R type), (FJ-01 : RA type) • Silencer (K-209 : R type), (K-208 : RA type)

## Product Code 4502 AIR LINE KIT AL-M1202

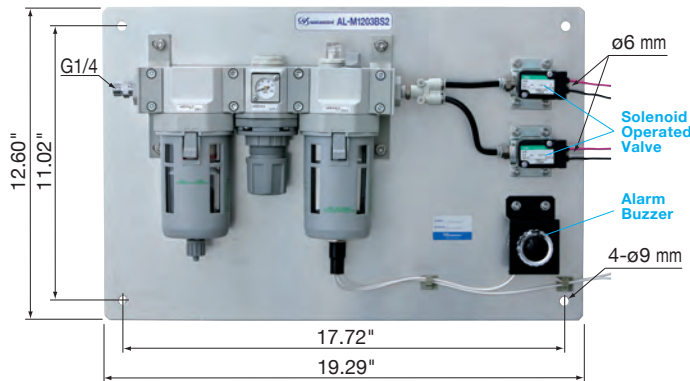


- The AL-M1202 provides simple, automatic conditioning of the air supplied to NAKANISHI Air Motors. The filter removes water and impure substances from the input air supply. The regulator maintains the proper air pressure, and the lubricator ensures proper oil flow to the motor and spindle. This Air Line Kit is wall mountable.

### Air Line Kit (For 6 mm Hose · Filter Mesh 0.3 μm )

Product Code	Product Name	Standard Equipment · Accessories	
4502	AL-M1202	<ul style="list-style-type: none"> <li>Air Filter · Air Regulator</li> <li>Air Pressure Gauge · Lubricator</li> <li>Air ON-OFF Valve</li> <li>Hose for Piping (K-275) : 6 ft</li> <li>Lubricating Oil (K-211) : 1 pc.</li> </ul>	

## Product Code 4503 AIR LINE KIT AL-M1203BS2



- The AL-M1203BS2 is equipped with 2 (DC+24V) Air Solenoids, a large capacity filter, large capacity oil reservoir, high flow regulator and a low oil level warning alarm, making this unit ideal for use on CNC machines. This Air Line Kit allows for the operation of 2 Air Motors.

### Air Line Kit (For 6 mm Hose · Filter Mesh 0.3 μm )

Product Code	Product Name	Standard Equipment · Accessories	
4503	AL-M1203BS2	<ul style="list-style-type: none"> <li>Air Filter · Air Regulator</li> <li>Air Pressure Gauge · Lubricator</li> <li>Solenoid Valve (DC 24V) : 2 pcs.</li> <li>Buzzer (DC 24V) · Hose for Piping (K-275) : 6 ft</li> <li>Lubricating Oil (K-202) : 1 pc.</li> </ul>	

## LUBRICATING OIL

### Lubricating Oil (4 oz.)

Product Code	Product Name	Product	
AA10478C	K-211		

### Lubricating Oil (32 oz.)

Product Code	Product Name	Product	
AA10480C	K-202		

1
EmaxEVO
ESPRT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.97"/ø0.98" ø0.897"
E3000 — 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.75"
ø0.897" ø0.81"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
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# THE TRANSFORMER



**8,000 RPM**  
BEFORE

**80,000 RPM**  
AFTER

## HES SERIES

Transform your Conventional Machine into a High-Speed Machining Center

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.07/ø0.98*/ø0.897*
E3000 — One Piece
E3000 — Modular
ø1.18*
ø1.07/ø0.98* ø0.897*
E3000 — 80,000rpm
E4000
3
MA
ø0.897*
ø1.0* ø0.96*
ø1.18*
MS
ø0.75* ø0.79*
ø0.87* ø0.91*
ø1.0* ø0.96*
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
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Upgrade your existing NC Milling machines and CNC machining centers to high speed machines.

## HES510

5,000~50,000 rpm Output : 340W

BT30 / 40 / 50, CAT40/50  
ST32, HSK A63/A100



## HES810

20,000~80,000 rpm Output : 350W

BT30 / 40 / 50, CAT40  
ST32, HSK A63/A100



1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.897" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
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## UPGRADE YOUR EXISTING NC MILLING MACHINES AND CNC MACHINING CENTERS TO HIGH SPEED MACHINES

1

EmaxEVO  
 ESPERT  
 ROTUS  
 IMPULSE  
 PRESTO II  
 Sheenus  
 ZERO  
 Sonic-Cutter  
 ZERO

2

iSpeed3  
 E2000  
 ø1.0"/ø0.98"/ø0.897"  
 E3000  
 - One Piece  
 E3000  
 - Modular  
 ø1.18"  
 ø1.0"/ø0.98"/ø0.897"  
 E3000  
 - 80,000rpm  
 E4000

3

MA  
 ø0.897"  
 ø1.0"  
 ø0.98"  
 ø1.18"  
 MS  
 ø0.75"  
 ø0.79"  
 ø0.897"  
 ø0.91"  
 ø1.0"  
 ø0.98"

4

HES  
 iSpeed5  
 HTS  
 PLANET  
 Xpeed  
 ABT

5

AIR LINE KIT

6

PARTS

7

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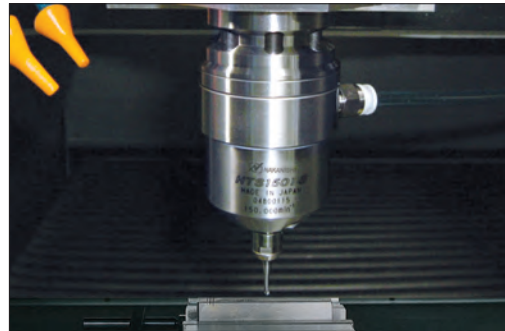
● **ULTRA-PRECISION HIGH-SPEED MILLING SPINDLE**  
**HES SERIES**








● **FULLY TOOL CHANGEABLE ULTRA-PRECISION HIGH-SPEED MILLING SPINDLE**  
**iSpeed5 SERIES**



● **ULTRA-HIGH SPEED AIR TURBINE MILLING SPINDLE**  
**HTS SERIES**



### Milling System Comparison

Series	Drive Type	Type		Consumption	Product Name	Max Speed	Output Power	Max Collet Size	Shank
<b>HES</b> 	Electric	Brushless DC	120V	1.0 CFM (cooling)	HES510	50,000	340W	1/4"	BT30 / 40 / 50 CAT40 / 50 ST32 HSK A63
	Electric	Brushless DC	120V	0.53 CFM (cooling)	HES810	80,000	350W	4.0 mm	BT30 / 40 / 50 CAT40 ST32 HSK A63
<b>iSpeed5</b> 	Electric	Brushless DC	120V	1.0 CFM (cooling)	5ATC60	60,000	350W	6.35 mm	BT40 / 50 CAT40 / 50, IT40 / 50 HSK A63 / A100
	Electric	Brushless DC	120V	1.0 CFM (cooling)	5ATC80	80,000	350W	4.0 mm	BT40 / 50 CAT40 / 50, IT40 / 50 HSK A63 / A100
<b>HTS</b> 	Pneumatic	Air Turbine	73PSI	3.18 CFM	HTS1501	150,000	25W	4.0 mm	Straight ø20 mm BT30 / 40 / 50 HSK E25 / 32 / 40 / 50 HSK A63, HSK F63
<b>Xpeed</b> 	Pneumatic	Air Turbine	87PSI	10.60 CFM	Xpeed1200	120,000	192W	4.0 mm	Flange
	Pneumatic	Air Turbine	87PSI	5.65 CFM	Xpeed1600	160,000	56W	4.0 mm	Flange
<b>ABT</b> 	Pneumatic	Air Turbine	80PSI	< 1.77 CFM	ABT1000	100,000	88W	4.0 mm	Grip Ring

# HES510

## ULTRA-PRECISION HIGH-SPEED MILLING SPINDLE

### ELECTRIC SYSTEM

- The Ultra-Precision, High-Speed HES510 spindles allow you to use your existing equipment for a much larger variety of operations. Conventional milling machines and machining centers can now do high-speed machining, small diameter drilling and milling with extremely good surface finishes with the HES510. • Max. Output 340W

### HES510 Features

- **5,000-50,000 rpm**
- **Maximum Output 340W**  
The HES510 motor is a brushless DC motor that utilizes hall elements and rare-earth magnets to realize max. output 340W in a very compact size.
- **Ceramic Bearings**  
The spindle uses a double pair of ceramic bearings in the front and in the rear. This arrangement maximizes both radial and axial rigidity to insure extremely high-precision cutting. The motor also uses ceramic bearings to maximize life expectancy.
- **Smooth Rotation**  
The absence of a commutator and the use of a photo coupler sending a feedback signal of 48 pulses per revolution result in very smooth rotation with low vibration throughout the speed range.
- **One-Piece motor and spindle construction**  
The motor and spindle are built as a single unit minimizing size and weight and allowing usage on a very wide variety of machines.
- **Emergency Connector**  
The system incorporates an emergency, breakaway connector to help prevent system damage in case the machine's main spindle is rotated accidentally.
- **Excellent Durability by air-cooling system**  
Air-cooling motor uses a small volume of air (1.0 CFM) to prevent heat buildup and allow long, continuous operation.
- **Best for small diameter drilling and milling**  
Less than  $\phi 0.08"$  ( $\phi 2$  mm) small diameter drilling and milling with extremely good surface finishes, using a high-speed brushless motor.

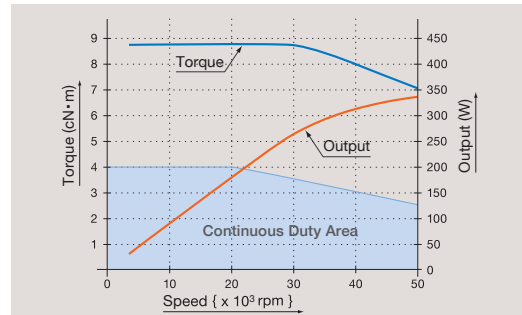
- **Cooling Air**  
Clean dry air is required to cool the motor and protect the spindle from contaminants. Please use a filter and regulator. (Proper air pressure 29-44PSI) (Use Air Line Kit AL-C1204)
- **Large Variety of Tapers Available**  
BT, CAT, ST32 and HSK A tapers are available.
- **Protection Circuit**  
The controller is compact and lightweight. It features a protection circuit to stop the motor automatically in case of overload ensuring safe and smooth operation.



### HES510 Specifications

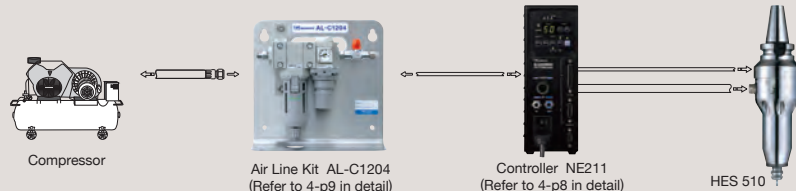
- Speed ..... 5,000-50,000 rpm
  - Max. Output Power ..... 340W
  - Spindle Accuracy ..... Within 1  $\mu$ m
- < Additional Equipment Required >
- NE-211 Control Unit
  - Motor Cord (EMCD)
  - Air Line Kit (AL-C1204)
- **Additional collet purchase required:**
- Collet Series CHK-XX .....  $\phi 0.5$ mm~ $\phi 6.35$ mm
  - Recommended ..... CHK-3.175  $\phi 1/8"$   
(See Page 6-p3 for additional sizes)
- Motor Cord (EMCD-810- [ ]) ..... Length 13 ft (9248) / 19 ft (9249) / 26 ft (9250)  
Provided with Air Cooling Hose  $\phi 4$  mm

### Torque & Output Power Characteristic of HES510



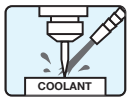
### HES510 Connection Drawing

The HES510 motor and spindle require dry, clean, regulated air. Please refer to the drawing to the right for proper components. Air Line Kit AL-C1204 supplies clean dry air to the controller through the filter and the regulator.

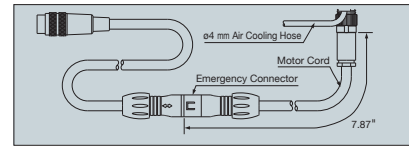


1
EmaxEV
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0"/\phi 0.99"/\phi 0.897"$
E3000 - One Piece
E3000 - Modular
$\phi 1.18"$
$\phi 1.97"/\phi 0.98"/\phi 0.897"$
E3000 - 80,000rpm
E4000
3
MA
$\phi 0.897"$
$\phi 1.0"/\phi 0.98"$
$\phi 1.18"$
MS
$\phi 0.75"/\phi 0.79"$
$\phi 0.89"/\phi 0.91"$
$\phi 1.0"/\phi 0.98"$
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

# HES510 ULTRA-PRECISION HIGH-SPEED MILLING SPINDLE



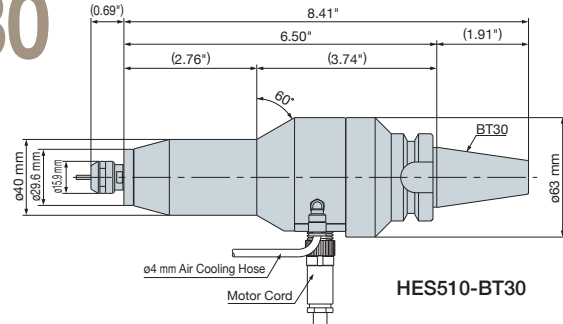
HES Series can be used in conjunction with water or oil based coolants.



\*All HES Series Spindles incorporate an emergency connector

## HES510-BT30

# 30



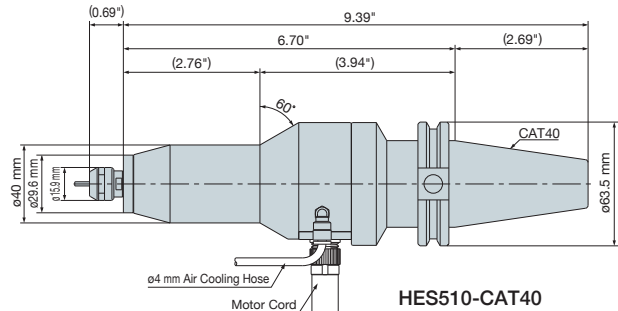
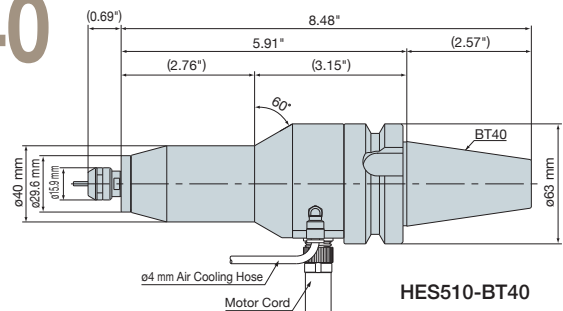
• Additional collet purchase required:

Collet Series CHK-XX ..... ø0.5mm~ø6.35mm  
 Recommended .....CHK-3.175 ø1/8"  
 (See Page 6-p3 for additional sizes)

Product Code	Product Name	Standard Equipment · Accessories	Weight
7890	HES510-BT30	• Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs.	4.85 lb.

## HES510-BT40 / CAT40

# 40

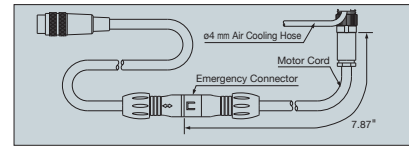
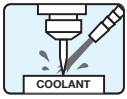


• Additional collet purchase required:

Collet Series CHK-XX ..... ø0.5mm~ø6.35mm  
 Recommended .....CHK-3.175 ø1/8"  
 (See Page 6-p3 for additional sizes)

Product Code	Product Name	Standard Equipment · Accessories	Weight
7891	HES510-BT40	• Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs.	5.07 lb.
7893	HES510-CAT40		5.75 lb.

- 1 EmaxEVO
- ESPERT
- ROTUS
- IMPULSE
- PRESTO II
- Sheenus ZERO
- Sonic-Cutter ZERO
- 2 iSpeed3
- E2000 ø1.0"/ø0.98"/ø0.897"
- E3000 - One Piece
- E3000 - Modular
- ø1.18"
- ø1.0"/ø0.98"
- E3000 - ø0.000rpm
- E4000
- 3 MA
- ø0.897"
- ø1.0"/ø0.98"
- ø1.18"
- MS
- ø0.75"/ø0.79"
- ø0.91"/ø0.91"
- ø1.0"/ø0.98"
- 4 HES
- iSpeed5
- HTS
- PLANET
- Xpeed
- ABT
- 5 AIR LINE KIT
- 6 PARTS
- 7 TECHNICAL DATA
- 8 APPLICATION EXAMPLES
- INDEX



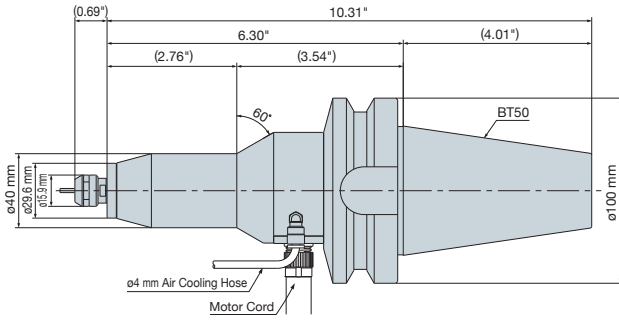
\*All HES Series Spindles incorporate an emergency connector

## HES510-BT50 / CAT50

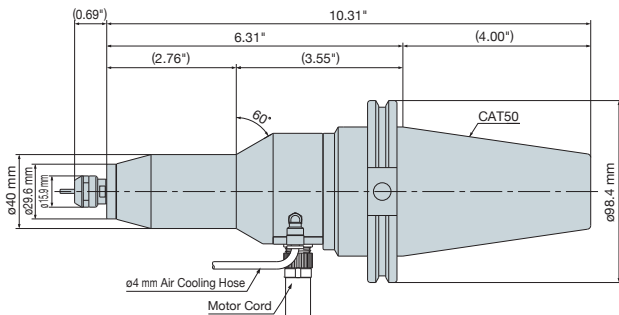
# 50

• Additional collet purchase required:

Collet Series CHK-XX .....  $\varnothing 0.5\text{mm} \sim \varnothing 6.35\text{mm}$   
 Recommended ..... CHK-3.175  $\varnothing 1/8"$   
 (See Page 6-p3 for additional sizes)



HES510-BT50



HES510-CAT50

Product Code	Product Name	Standard Equipment · Accessories	Weight
7892	HES510-BT50	• Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs.	11.02 lb.
7894	HES510-CAT50		9.70 lb.



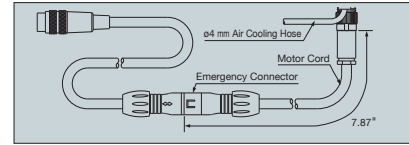
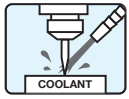
### Caution

- If the machine's main spindle is rotated by mistake, the Emergency Connector on the motor is designed to separate. In order for the Emergency Connector to function as designed it must be set and positioned correctly. Please refer to the owner's manual for proper installation and check the integrity of the Emergency Connector and suspension prior to each use.

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\varnothing 1.0''/\varnothing 0.99''/\varnothing 0.897''$
E3000 - One Piece
E3000 - Modular
$\varnothing 1.18''$
$\varnothing 1.07''/\varnothing 0.98''/\varnothing 0.897''$
E3000 - 30,000rpm
E4000
3
MA
$\varnothing 0.897''$
$\varnothing 1.0''/\varnothing 0.98''$
$\varnothing 1.18''$
MS
$\varnothing 0.75''/\varnothing 0.79''$
$\varnothing 0.897''/\varnothing 0.91''$
$\varnothing 1.0''/\varnothing 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
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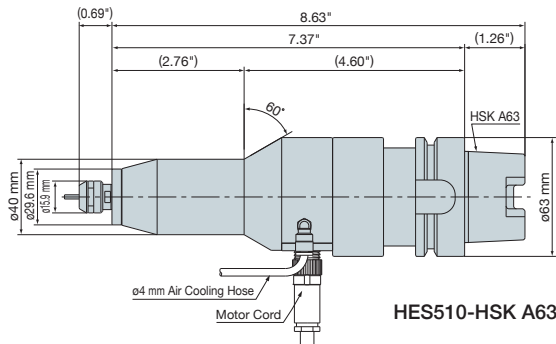




\*All HES Series Spindles incorporate an emergency connector

## HES510-HSK A63

# HSK A63



**Additional collet purchase required:**

Collet Series CHK-XX .....  $\varnothing 0.5\text{mm} \sim \varnothing 6.35\text{mm}$   
 Recommended ..... CHK-3.175  $\varnothing 1/8"$   
 (See Page 6-p3 for additional sizes)

Product Code	Product Name	Standard Equipment · Accessories	Weight
7897	HES510-HSK A63	• Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs.	5.95 lb.

### Caution

- If the machine's main spindle is rotated by mistake, the Emergency Connector on the motor is designed to separate. In order for the Emergency Connector to function as designed it must be set and positioned correctly. Please refer to the owner's manual for proper installation and check the integrity of the Emergency Connector and suspension prior to each use.

## 25 Pin INTERFACE CABLE



● 3 Meter long Interface Cable provides a DB25 Male Connector at one end and a blunt cut on the opposite end. Includes a pin-out wire diagram for easy interfacing of I/O signals from any NSK Control to a CNC Control.

### 25 Pin Interface Cable

Product Code	Product Name	
DB25M	DB25M	For NSK Control Connector A 12.5 ft
DB25MXL	DB25MXL	For NSK Control Connector A 25 ft

## 15 Pin INTERFACE CABLE



● 3 Meter long Interface Cable provides a DB15 Male Connector at one end and a blunt cut on the opposite end. Includes a pin-out wire diagram for easy interfacing of the (OP1) "E-Stop Input Circuit" and "Safety Relay Circuit" from the NSK Control to a CNC Control.

### 15 Pin Interface Cable

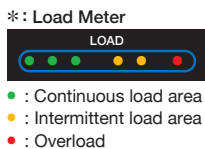
Product Code	Product Name	
DB15M	DB15M	For NSK Control Connector B

1	EmaxEVO
	ESPERT
	ROTUS
	IMPULSE
	PRESTO II
	Sheenus ZERO
	Sonic-Cutter ZERO
2	iSpeed3
	E2000 $\varnothing 1.0"/\varnothing 0.95"/\varnothing 0.897"$
	E3000 - One Piece
	E3000 - Modular
	$\varnothing 1.18"$
	$\varnothing 1.0"/\varnothing 0.98"/\varnothing 0.937"$
	E3000 - 30,000rpm
	E4000
3	MA
	$\varnothing 0.897"$
	$\varnothing 1.0"/\varnothing 0.98"$
	$\varnothing 1.18"$
	MS
	$\varnothing 0.75"/\varnothing 0.71"$
	$\varnothing 0.89"/\varnothing 0.81"$
	$\varnothing 1.0"/\varnothing 0.98"$
4	HES
	iSpeed5
	HTS
	PLANET
	Xpeed
	ABT
5	AIR LINE KIT
6	
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# HES510 CONTROLLER

- AC100-240V for international operation
- 1,000~50,000 rpm
- Maximum Output 350W

Product Code **9775** **CONTROLLER NE211** **50,000 rpm**



External Input-Output Connector A (D-SUB25 Female)

External Input-Output Connector B (D-SUB15 Female)

Motor Connector

Air Output Joint  $\phi 6$  mm

Air Input Joint  $\phi 6$  mm

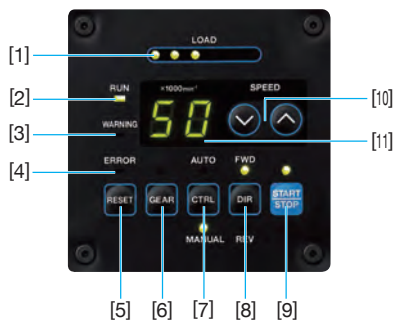
Power Switch

Communication Connector

Intake with Power Fuse



- [1] Load Meter\*
- [2] Running LED (RUN)
- [3] Warning LED (WARNING)
- [4] Error LED (ERROR)
- [5] Error Reset Switch (RESET)
- [6] Gear Setting Switch (GEAR)
- [7] Control Switch (AUTO/MANUAL)
- [8] Rotating Direction Selector Switch (FWD./REV.)
- [9] Start Switch (START)
- [10] Motor Speed Adjustment Switch (SPEED)
- [11] Display



### Specifications

Product Name : NE211  
 Power Source : AC120V / 240V  
 Motor Speed : 1,000-50,000 rpm  
 Max. Output Power : 350W  
 Power Consumption : 1.8A  
 Air Flow Volume : 1.0CFM (36-44PSI)  
 Weight : 6 lb 2.77 oz.  
 Dimensions : W3.46" x D5.43" x H9.37"

### E3000 Controller

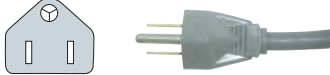
Product Code	Plug Type	Product Name	Standard Equipment · Accessories
9775	120V (B type)	NE211	<ul style="list-style-type: none"> <li>• Power Cord : 6 ft</li> <li>• Air Hose with filter</li> <li>• Reducer</li> <li>• Connector Cap (Provided)</li> <li>• Bracket</li> <li>• Nylon Clip</li> <li>• Screw</li> <li>• Rubber Pad</li> <li>• Fuse (T6.3AL) 250V: 2 pcs.</li> </ul>

\*Please refer to Technical Data 7-p2~p9 in detail about External Input-Output Connector.

\*AC100-240V for international operation. Please check the power source plug type and order accordingly.

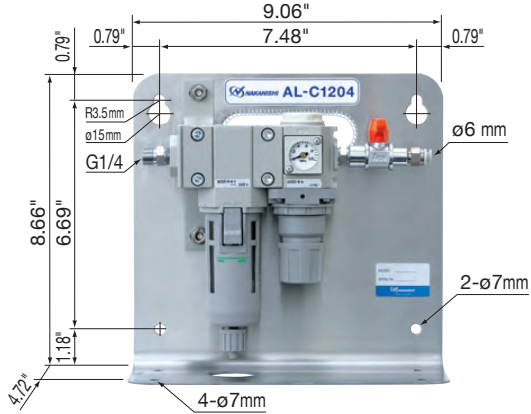
Interface Cable   
 Page 4-p13

### ● Power Source Plug

Plug Type	Main Usable Area	Product
For 120V (B type)	For U.S.A. and Canada	

# HES510 AIR LINE KIT & MOTOR CORD

## Product Code 4504 AIR LINE KIT AL-C1204




- The AL-C1204 Air Line Kit is designed to deliver clean, dry air to Electric Motors via the Controller. The filter removes small amounts of debris while the adjustable regulator provides the correct air pressure for cooling and purging.

### Air Line Kit (For $\phi 6$ mm Hose · Filter Mesh $0.3 \mu\text{m}$ )

Product Code	Product Name	Standard Equipment · Accessories	
4504	AL-C1204	<ul style="list-style-type: none"> <li>Air Filter · Air Regulator</li> <li>Air Pressure Gauge</li> <li>Air ON-OFF Valve</li> <li>Hose for Piping (K-275) : 6 ft</li> </ul>	

## MOTOR CORD

Product	Product Code	Description · Product Name	Length	Standard Equipment · Accessories	Fit to	
	9248	Motor Cord 4M EMCD-810-4M	13 ft	<ul style="list-style-type: none"> <li>Air Cooling Hose : <math>\phi 4</math> mm</li> <li>Reducer</li> <li>Connector Cap (Provided)</li> </ul>	HES510	
	9249	Motor Cord 6M EMCD-810-6M	19 ft			
	9250	Motor Cord 8M EMCD-810-8M	26 ft			

## CONTROL PANEL EXTENSION CORD



### Control Panel Extension Cord

Product Code	Product Name	For use with	
8407	E3000-PEX4	NE211	

## HES Purchasing Example



### HES Purchasing Example

Product Code	Product Name	Description
7893	HES510-CAT40	Spindle with CAT40
9775	NE211	Controller
9248	EMCD-810-4M	13 ft Motor Cord
4504	AL-C1204	Air Line Kit

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''/\phi 0.99''/\phi 0.997''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.97''/\phi 0.98''/\phi 0.987''$
E3000 - 30,000rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''/\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''/\phi 0.75''$
$\phi 0.99''/\phi 0.91''$
$\phi 1.0''/\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
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# HES810

## ULTRA-PRECISION HIGH SPEED MILLING SPINDLE ELECTRIC SYSTEM

- The Ultra-Precision, High-Speed HES810 spindles allow you to use your existing equipment for a much larger variety of operations. Conventional milling machines and machining centers can now do high-speed machining, small diameter drilling and milling with extremely good surface finishes with the HES810. ● Max. Output 350W

### HES810 Features

- **20,000-80,000 rpm**
- **Maximum Output 350W**

The HES810 motor is a brushless DC motor that utilizes hall elements and rare-earth magnets to achieve max. output 350W in a very compact size.

- **Ceramic Bearings**

The spindle uses a double pair of ceramic bearings in the front and in the rear. This arrangement maximizes both radial and axial rigidity to insure extremely high-precision cutting. The motor also uses ceramic bearings to maximize life expectancy.

- **Smooth Rotation**

The absence of a commutator and the use of a photo coupler sending a feedback signal of 48 pulses per revolution result in very smooth rotation with low vibration throughout the speed range.

- **One-Piece motor and spindle construction**

The motor and spindle are built as a single unit minimizing size and weight and allowing usage on a very wide variety of machines.

- **Emergency Connector**

The system incorporates an emergency, breakaway connector to help prevent system damage in case the machine's main spindle is rotated accidentally.

- **Excellent Durability by air-cooling system**

Air-cooling motor uses a small volume of air (0.53 CFM) to prevent heat buildup and allow long, continuous operation.

- **Best for small diameter drilling and milling**

Less than  $\phi 0.08$ " ( $\phi 2$  mm) small diameter drilling and milling with extremely good surface finishes, using a high-speed brushless motor.

- **Cooling Air**

Clean dry air is required to cool the motor and protect the spindle from contaminants. Please use a filter and regulator. (Proper air pressure 29-44PSI) (Use Air Line Kit AL-C1204)

- **Large Variety of Tapers Available**

BT, CAT, ST32 and HSK A tapers are available.

- **Protection Circuit**

The controller is compact and lightweight. It features a protection circuit to stop the motor automatically in case of overload ensuring safe and smooth operation.



### HES810 Specifications

- Speed ..... 20,000-80,000 rpm
- Ideal Operating Speed ..... 50,000-80,000 rpm
- Max. Output Power ..... 350W
- Spindle Accuracy ..... Within 1  $\mu$ m

< Additional Equipment Required >

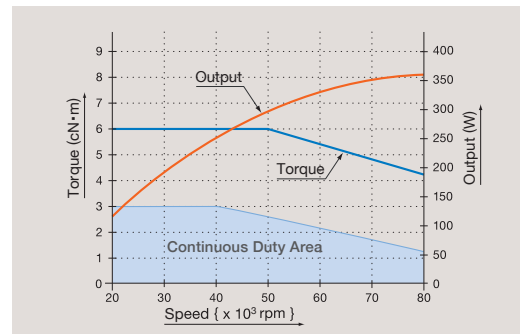
- NE-211 Control Unit
- Motor Cord (EMCD)
- Air Line Kit (AL-C1204)

- **Additional collet purchase required:**

Collet Series CHA-XX .....  $\phi 0.5$ mm~ $\phi 4.0$ mm  
 Recommended ..... CHA-3.175  $\phi 1/8$ "  
 (See Page 6-p2 for additional sizes)

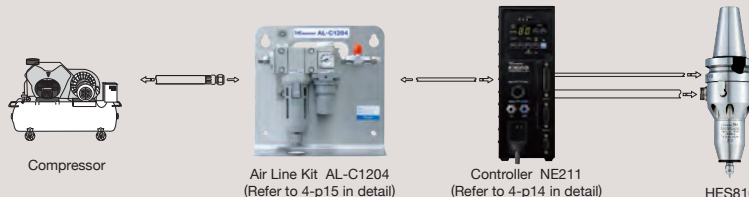
- Motor Cord (EMCD-810-□□) ..... Length 13 ft (9248) / 19 ft (9249) / 26 ft (9250)  
 Provided with Air Cooling Hose  $\phi 4$  mm

- **Torque & Output Power Characteristic of HES810**

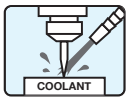


### HES810 Connection Drawing

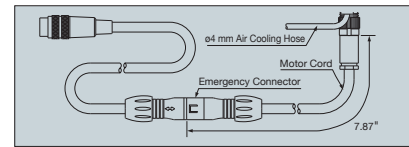
The HES810 motor and spindle require dry, clean, regulated air. Please refer to the drawing to the right for proper components. Air Line Kit AL-C1204 supplies clean dry air to the controller through the filter and the regulator.







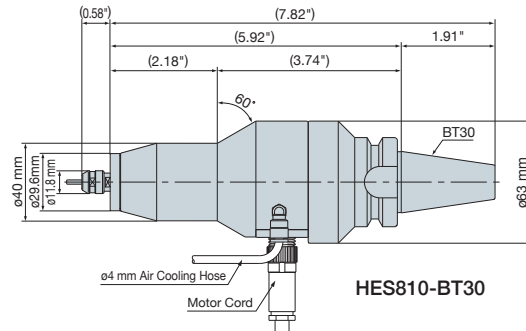
HES Series can be used in conjunction with water or oil based coolants.



\*All HES Series Spindles incorporate an emergency connector

## HES810-BT30

# 30



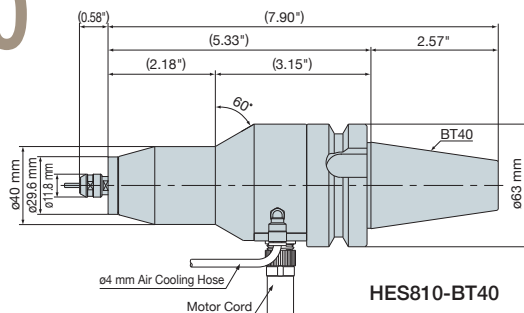
• Additional collet purchase required:

Collet Series CHA-XX .....  $\varnothing 0.5\text{mm} \sim \varnothing 4.0\text{mm}$   
 Recommended ..... CHA-3.175  $\varnothing 1/8''$   
 (See Page 6-p2 for additional sizes)

Product Code	Product Name	Standard Equipment · Accessories	Weight
7878	HES810-BT30	<ul style="list-style-type: none"> <li>Collet Nut (CHN-A) : 1 pc.</li> <li>Wrench (8 x 5), (9 x 11) : 1 pc. each</li> </ul>	4.41 lb.

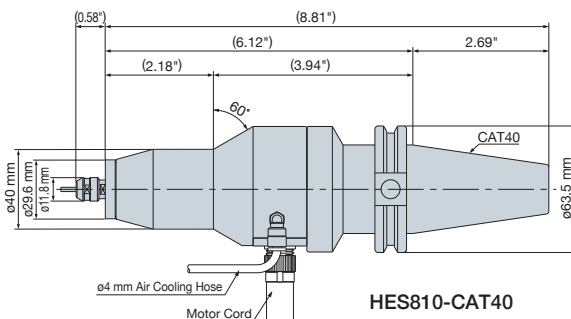
## HES810-BT40 / CAT40

# 40



• Additional collet purchase required:

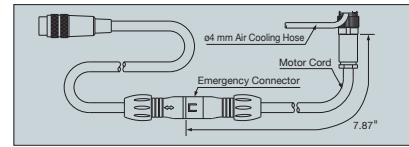
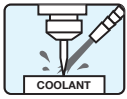
Collet Series CHA-XX .....  $\varnothing 0.5\text{mm} \sim \varnothing 4.0\text{mm}$   
 Recommended ..... CHA-3.175  $\varnothing 1/8''$   
 (See Page 6-p2 for additional sizes)



Product Code	Product Name	Standard Equipment · Accessories	Weight
7897	HES810-BT40	<ul style="list-style-type: none"> <li>Collet Nut (CHN-A) : 1 pc.</li> <li>Wrench (8 x 5), (9 x 11) : 1 pc. each</li> </ul>	4.85 lb.
7881	HES810-CAT40		5.28 lb.

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\varnothing 1.0'' \varnothing 0.99'' \varnothing 0.897''$
E3000 - One Piece
E3000 - Modular
$\varnothing 1.18''$
$\varnothing 1.07'' \varnothing 0.98'' \varnothing 0.897''$
E3000 - 80,000rpm
E4000
3
MA
$\varnothing 0.897''$
$\varnothing 1.0'' \varnothing 0.98''$
$\varnothing 1.18''$
MS
$\varnothing 0.75'' \varnothing 0.79''$
$\varnothing 0.89'' \varnothing 0.81''$
$\varnothing 1.0'' \varnothing 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
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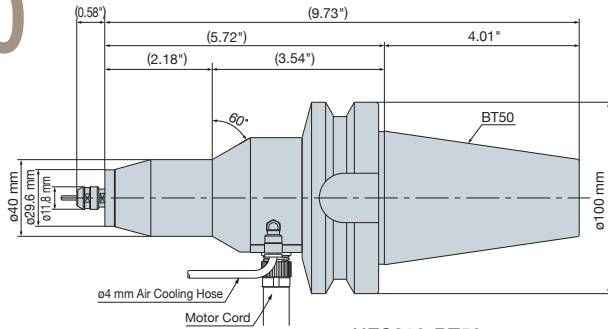
# HES810 ULTRA-PRECISION HIGH-SPEED MILLING SPINDLE



\*All HES Series Spindles incorporate an emergency connector

## HES810-BT50

# 50



HES810-BT50

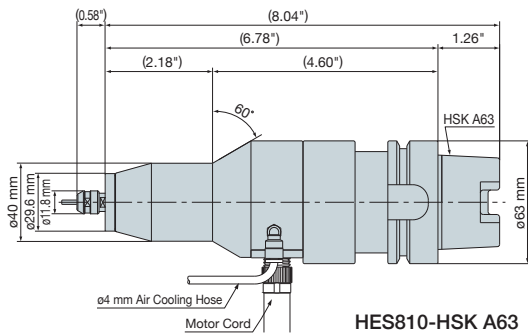
• Additional collet purchase required:

- Collet Series CHA-XX .....  $\varnothing 0.5\text{mm} \sim \varnothing 4.0\text{mm}$
- Recommended ..... CHA-3.175  $\varnothing 1/8"$
- (See Page 6-p2 for additional sizes)

Product Code	Product Name	Standard Equipment · Accessories	Weight
7880	HES810-BT50	<ul style="list-style-type: none"> <li>• Collet Nut (CHN-A) : 1 pc.</li> <li>• Wrench (8 x 5), (9 x 11) : 1 pc. each</li> </ul>	10.80 lb.

## HES810-HSK A63

# HSK A63

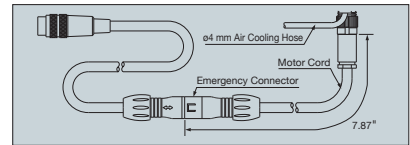
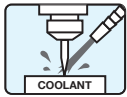


HES810-HSK A63

• Additional collet purchase required:

- Collet Series CHA-XX .....  $\varnothing 0.5\text{mm} \sim \varnothing 4.0\text{mm}$
- Recommended ..... CHA-3.175  $\varnothing 1/8"$
- (See Page 6-p2 for additional sizes)

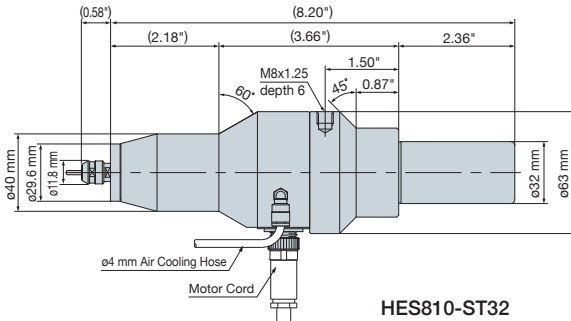
Product Code	Product Name	Standard Equipment · Accessories	Weight
7884	HES810-HSK A63	<ul style="list-style-type: none"> <li>• Collet Nut (CHN-A) : 1 pc.</li> <li>• Wrench (8 x 5), (9 x 11) : 1 pc. each</li> </ul>	5.73 lb.



\*All HES Series Spindles incorporate an emergency connector

## HES810-ST32

# ST32



**Additional collet purchase required:**

Collet Series CHA-XX .....  $\varnothing 0.5\text{mm} \sim \varnothing 4.0\text{mm}$   
 Recommended ..... CHA-3.175  $\varnothing 1/8"$   
 (See Page 6-p2 for additional sizes)

Product Code	Product Name	Standard Equipment · Accessories	Weight
7885	HES810-ST32	<ul style="list-style-type: none"> <li>Collet Nut (CHN-A) : 1 pc.</li> <li>Wrench (8 x 5), (9 x 11) : 1 pc. each</li> </ul>	5.07 lb.

### Caution

- If the machine's main spindle is rotated by mistake, the Emergency Connector on the motor is designed to separate. In order for the Emergency Connector to function as designed it must be set and positioned correctly. Please refer to the owner's manual for proper installation and check the integrity of the Emergency Connector and suspension prior to each use.

## 25 Pin INTERFACE CABLE



● 3 Meter long Interface Cable provides a DB25 Male Connector at one end and a blunt cut on the opposite end. Includes a pin-out wire diagram for easy interfacing of I/O signals from any NSK Control to a CNC Control.

### 25 Pin Interface Cable

Product Code	Product Name	
DB25M	DB25M	For NSK Control Connector A 12.5 ft
DB25MXL	DB25MXL	For NSK Control Connector A 25 ft

## 15 Pin INTERFACE CABLE



● 3 Meter long Interface Cable provides a DB15 Male Connector at one end and a blunt cut on the opposite end. Includes a pin-out wire diagram for easy interfacing of the (OP1) "E-Stop Input Circuit" and "Safety Relay Circuit" from the NSK Control to a CNC Control.

### 15 Pin Interface Cable

Product Code	Product Name	
DB15M	DB15M	For NSK Control Connector B

1

E-maxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus ZERO

Sonic-Cutter ZERO

2

iSpeed3

E2000

$\varnothing 1.0" (\varnothing 0.99" / \varnothing 0.997"$

E3000

— One Piece

E3000

— Modular

$\varnothing 1.18"$

$\varnothing 1.07" / \varnothing 0.98" / \varnothing 0.997"$

E3000

— 80,000rpm

E4000

3

MA

$\varnothing 0.897"$

$\varnothing 1.0" / \varnothing 0.98"$

$\varnothing 1.18"$

MS

$\varnothing 0.75" / \varnothing 0.79"$

$\varnothing 0.89" / \varnothing 0.91"$

$\varnothing 1.0" / \varnothing 0.98"$

4

HES

iSpeed5

HTS

PLANET

Xspeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

8

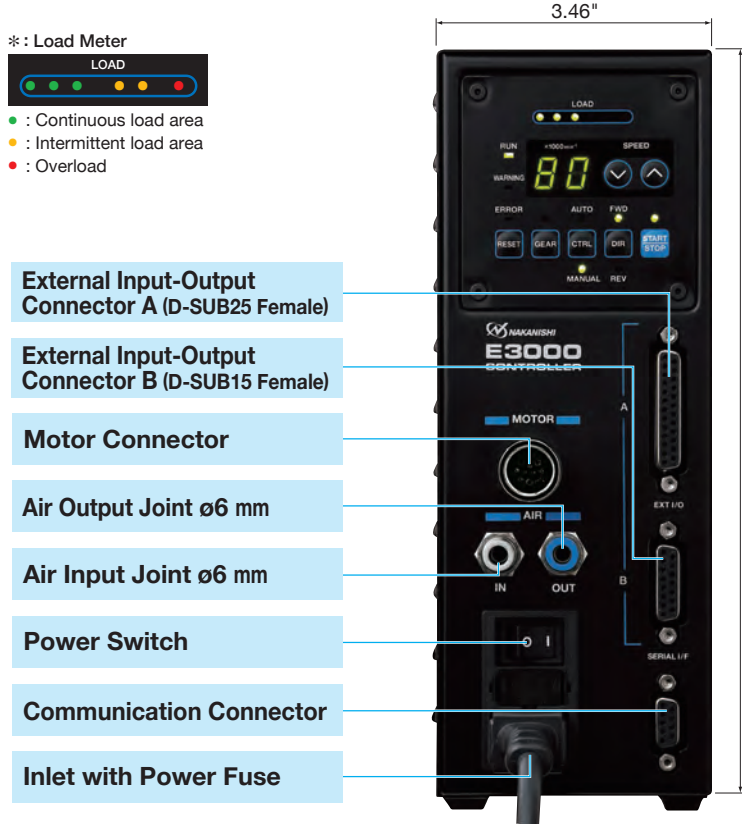
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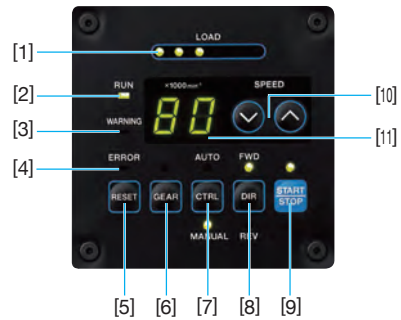
# HES810 CONTROLLER

- AC100-240V for international operation
- 1,000~80,000 rpm
- Maximum Output 350W

Product Code **9775**    **CONTROLLER NE211**    **80,000 rpm**



- [1] Load Meter\*
- [2] Running LED (RUN)
- [3] Warning LED (WARNING)
- [4] Error LED (ERROR)
- [5] Error Reset Switch (RESET)
- [6] Gear Setting Switch (GEAR)
- [7] Control Switch (AUTO/MANUAL)
- [8] Rotating Direction Selector Switch (FWD./REV.)
- [9] Start Switch (START)
- [10] Motor Speed Adjustment Switch (SPEED)
- [11] Display



### Specifications

Product Name : NE211  
 Power Source : AC120V / 240V  
 Motor Speed : 1,000-80,000 rpm  
 Max. Output Power : 350W  
 Power Consumption : 1.8A  
 Air Flow Volume : 1.0CFM (36-44PSI)  
 Weight : 6 lb. 2.77 oz.  
 Dimensions : W3.46" x D5.43" x H9.37"

### E3000 Controller

Product Code	Plug Type	Product Name	Standard Equipment · Accessories
9775	120V (B type)	NE211	<ul style="list-style-type: none"> <li>• Power Cord : 6 ft · Air Hose with filter · Reducer</li> <li>• Connector Cap (Provided) · Bracket · Nylon Clip</li> <li>• Screw · Rubber Pad · Fuse (T6.3AL) 250V: 2 pcs.</li> </ul>

\*Please refer to Technical Data 7-p2~p9 in detail about External Input-Output Connector.

\*AC100-240V for international operation. Please check the power source plug type and order accordingly.

Interface Cable  
Page 4-p13

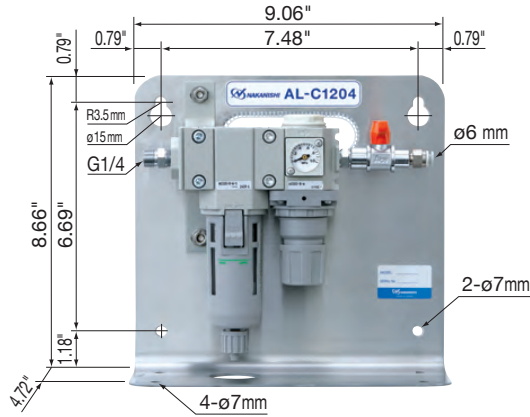


### ● Power Source Plug

Plug Type	Main Usable Area	Product
For 120V (B type)	For U.S.A. and Canada	

# HES810 AIR LINE KIT & MOTOR CORD

## Product Code 4504 AIR LINE KIT AL-C1204



- The AL-C1204 Air Line Kit is designed to deliver clean, dry air to Electric Motors via the Controller. The filter removes small amounts of debris while the adjustable regulator provides the correct air pressure for cooling and purging.

### Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 µm )

Product Code	Product Name	Standard Equipment · Accessories
4504	AL-C1204	<ul style="list-style-type: none"> <li>• Air Filter</li> <li>• Air Regulator</li> <li>• Air Pressure Gauge</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> </ul>

## MOTOR CORD

Product	Product Code	Description · Product Name	Length	Standard Equipment · Accessories	Fit to
	9248	Motor Cord 4M EMCD-810-4M	13 ft	<ul style="list-style-type: none"> <li>• Air Cooling Hose : ø4 mm</li> <li>• Reducer</li> <li>• Connector Cap (Provided)</li> </ul>	HES810
	9249	Motor Cord 6M EMCD-810-6M	19 ft		
	9250	Motor Cord 8M EMCD-810-8M	26 ft		

## CONTROL PANEL EXTENSION CORD



### Control Panel Extension Cord

Product Code	Product Name	For use with
8407	E3000-PEX4	NE211

## HES Purchasing Example



### HES Purchasing Example

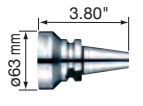
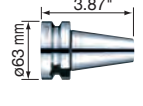
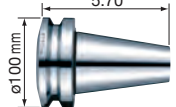
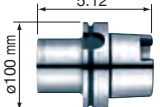
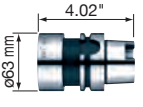
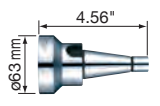
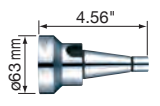
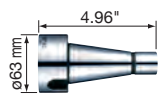
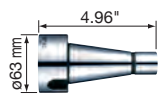
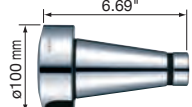
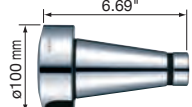
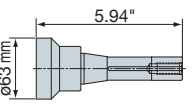
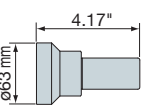
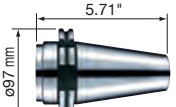
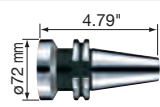
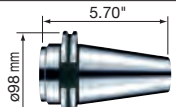
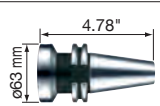
Product Code	Product Name	Description
7881	HES810-CAT40	Spindle with CAT40
9775	NE211	Controller
9248	EMCD-810-4M	13 ft Motor Cord
4504	AL-C1204	Air Line Kit

1
EmaxEVO
ESPRT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 — 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.897" ø0.81"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
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# HES SERIES SHANKS

<b>1</b>
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 - ø0.000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.897" ø0.91"
ø1.0" ø0.98"
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
<b>5</b>
AIR LINE KIT
<b>6</b>
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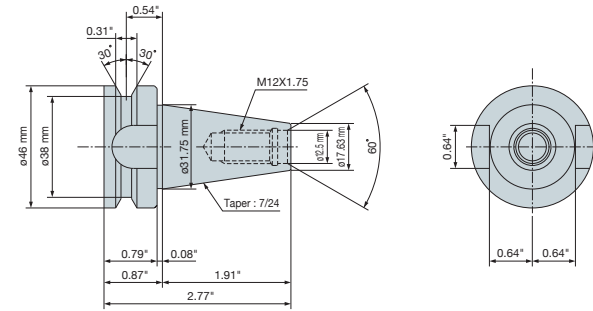
Product	Product Code	Product Name	Description	Fit to
	<b>9148</b>	HES510-BT30-SK	• Type : BT30 • Weight : 23.28 oz.	HES510-BT30 HES810-BT30
	<b>9149</b>	HES510-BT40-SK	• Type : BT40 • Weight : 27.87 oz.	HES510-BT40 HES810-BT40
	<b>9150</b>	HES510-BT50-SK	• Type : BT50 • Weight : 122.75 oz.	HES510-BT50 HES810-BT50
	<b>9151</b>	HES510-HSK A100-SK	• Type : HSK A100 • Weight : 102.65 oz.	HES510-HSK A100
	<b>9152</b>	HES510-HSK A63-SK	• Type : HSK A63 • Weight : 43.03 oz.	HES510-HSK A63 HES810-HSK A63
	<b>9153</b>	HES510-NT30-SK	• Type : NT30 • Weight : 24.69 oz.	HES510-NT30
	<b>9154</b>	HES510-NT30M-SK	• Type : NT30M *Metric threads • Weight : 24.69 oz.	HES510-NT30M
	<b>9155</b>	HES510-NT40-SK	• Type : NT40 • Weight : 32.80 oz.	HES510-NT40 HES810-NT40
	<b>9156</b>	HES510-NT40M-SK	• Type : NT40M *Metric threads • Weight : 32.80 oz.	HES510-NT40M
	<b>9157</b>	HES510-NT50-SK	• Type : NT50 • Weight : 135.80 oz.	HES510-NT50
	<b>9158</b>	HES510-NT50M-SK	• Type : NT50M *Metric threads • Weight : 136.16 oz.	HES510-NT50M
	<b>9159</b>	HES510-R8-SK	• Type : R8 • Weight : 32.00 oz.	HES510-R8
	<b>9160</b>	HES510-ST32-SK	• Type : ST32 • Weight : 31.82 oz.	HES510-ST32 HES810-ST32
	<b>9190</b>	HES510-IT50-SK	• Type : IT50 • Weight : 103.56 oz.	HES510-IT50
	<b>9191</b>	HES510-IT40-SK	• Type : IT40 • Weight : 37.81 oz.	HES510-IT40 HES810-IT40
	<b>9192</b>	HES510-CAT50-SK	• Type : CAT50 • Weight : 103.53 oz.	HES510-CAT50
	<b>9193</b>	HES510-CAT40-SK	• Type : CAT40 • Weight : 38.20	HES510-CAT40 HES810-CAT40

# TAPER SHANKS

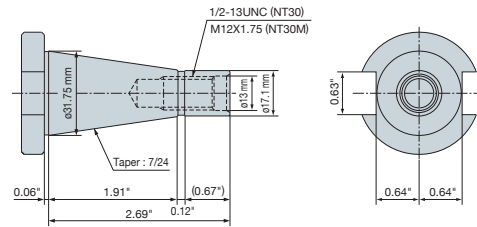
## Taper Shanks Dimensions

### 30

**BT30**

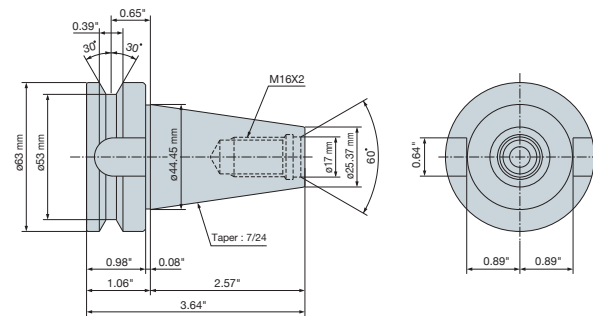


**NT30 (M)**

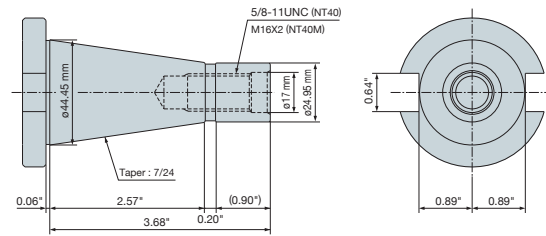


### 40

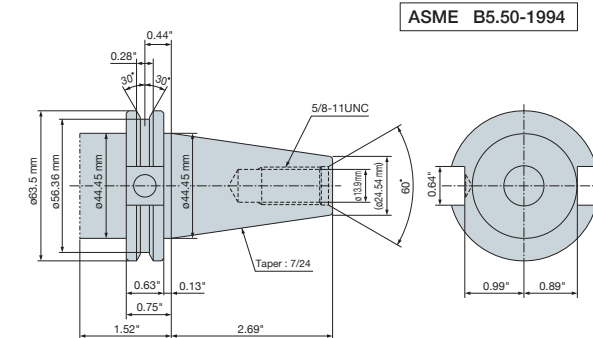
**BT40**



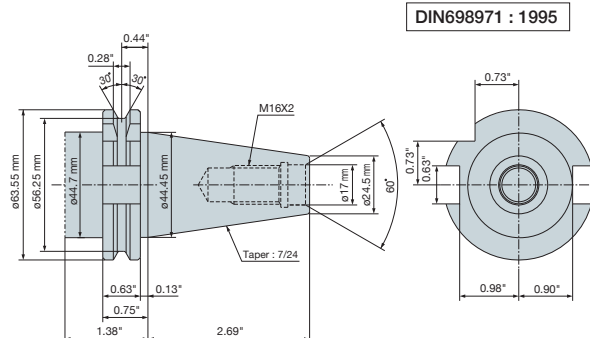
**NT40 (M)**



**CAT40**



**IT40**



1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

$\phi 1.0^\circ$  /  $\phi 0.99^\circ$  /  $\phi 0.897^\circ$

E3000

- One Piece

E3000

- Modular

$\phi 1.18^\circ$

$\phi 1.07^\circ$  /  $\phi 0.98^\circ$  /  $\phi 0.897^\circ$

E3000

- 80,000rpm

E4000

3

MA

$\phi 0.897^\circ$

$\phi 1.0^\circ$  /  $\phi 0.98^\circ$

$\phi 1.18^\circ$

MS

$\phi 0.75^\circ$

$\phi 0.79^\circ$

$\phi 0.93^\circ$

$\phi 0.91^\circ$

$\phi 1.0^\circ$  /  $\phi 0.98^\circ$

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

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7

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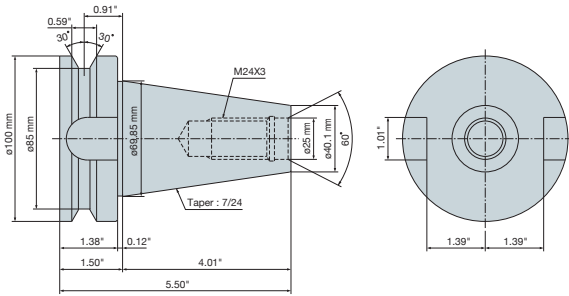
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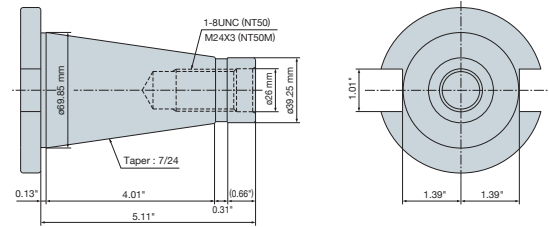
## Taper Shanks Dimensions

# 50

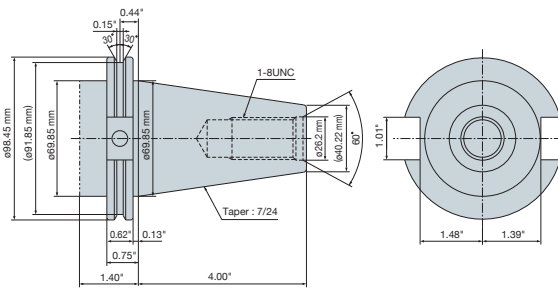
### BT50



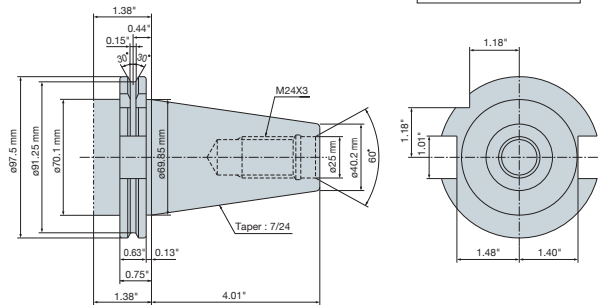
### NT50 (M)



### CAT50

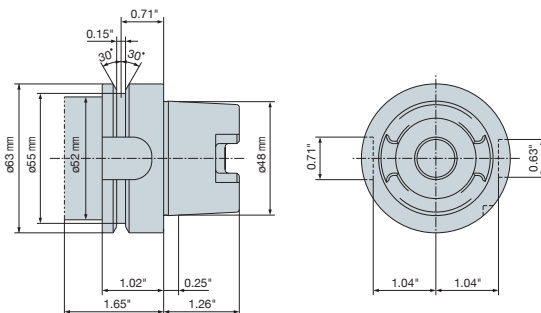


### IT50



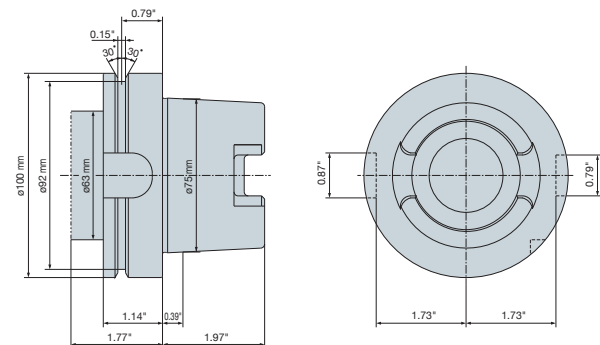
# HSK A63

### HSK A63



# HSK A100

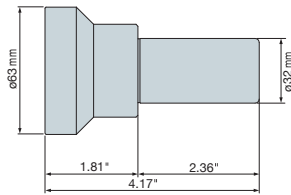
### HSK A100



## Taper Shanks Dimensions

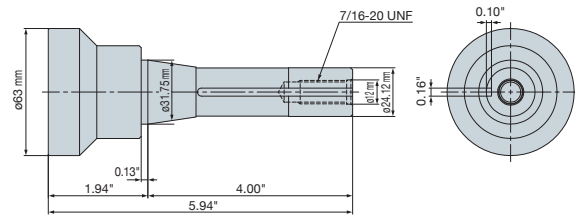
# ST32

ST32



# R8

R8



1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

— One Piece

E3000

— Modular

— One Piece

— Modular

— One Piece

— Modular

— One Piece

— Modular

3

MA

— One Piece

— Modular

— One Piece

— Modular

— One Piece

— Modular

— One Piece

— Modular

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

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# 1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

# 2

iSpeed3

E2000

ø1.0"/ø0.98"/ø0.897"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.0"/ø0.98"

ø0.897"

E3000

— 60,000rpm

E4000

# 3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.79"

ø0.897"

ø0.91"

ø1.0"

ø0.98"

# 4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

# 5

AIR LINE KIT

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# AUTO PILOT ENGAGED



## iSpeed5

Fully Tool-Changeable Electric Spindles  
to Increase Your Machine Tool Speed

1	Emax EV
	ESPERT
	ROTUS
	IMPULSE
	PRESTO II
	Sheenus ZERO
	Sonic-Cutter ZERO
2	iSpeed3
	E2000 ø1.0" / ø0.99" / ø0.897"
	E3000 — One Piece
	E3000 — Modular
	ø1.18"
	ø1.97" / ø0.98" / ø0.897"
	E3000 — 30,000rpm
	E4000
3	MA
	ø0.897"
	ø1.0" / ø0.98"
	ø1.18"
	MS
	ø0.75" / ø0.71"
	ø0.81" / ø0.81"
	ø1.0" / ø0.98"
4	HES
	iSpeed5
	HTS
	PLANET
	Xpeed
	ABT
5	AIR LINE KIT
6	PARTS
7	TECHNICAL DATA
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1

EmaxEVO  
ESPERT  
ROTUS  
IMPULSE  
PRESTO II  
Sheenus  
ZERO  
Sonic-Cutter  
ZERO

● Upgrade your existing CNC machining centers to high speed machines with full automatic tool changeability.

60,000 ~ 80,000 max rpm  
Output 350 W

2

iSpeed3  
E2000  
ø1.0"/ø0.98"/ø0.897"  
E3000  
- One Piece  
E3000  
- Modular  
ø1.18"  
ø1.0"/ø0.98"  
ø0.897"  
E3000  
- 80,000rpm  
E4000

3

MA  
ø0.897"  
ø1.0"  
ø0.98"  
ø1.18"  
MS  
ø0.75"  
ø0.79"  
ø0.897"  
ø0.91"  
ø1.0"  
ø0.98"

4

HES  
iSpeed5  
HTS  
PLANET  
Xpeed  
ABT

5

AIR LINE KIT

6

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- The iSpeed5 System primarily consists of a motor spindle, stop block, air pressure switch and control unit.
- Power, cooling air, and control signals are provided to the spindle when engaged to the innovative electromechanical stop block that attaches to your machine tool spindle.
- The iSpeed5 is created for continuous lights out manufacturing even in the case of cutting fluids and coolants.
- The internal air passage allows the pressurization and cooling of the system while preventing the entry of contaminants into the stop block.

## iSpeed5 Features

- **Maximum 60,000 / 80,000 rpm**  
Variable speed units
- **Maximum Motor Power Output 350W**
- **Available Collets**  
NR3060S: CHK diameter 0.5mm ~ 6.35mm  
NR3080S: CHA diameter 0.5mm ~ 4.0mm

The required components of the iSpeed5 System are as follows:

- iSpeed5 Controller
- iSpeed5 Motor Spindle Unit
- 60,000 or 80,000 rpm High Speed Spindle
- Stop Block Complete with Motor Cord
- Special Flange (if needed)
- 25pin Interface Cable
- Air Line Kit Filter
- Pressure Switch
- CHK or CHA Collet
- Collet Nut Wrenches
- Spindle Wrench
- User Manual



## iSpeed5 Specifications

- Speed ..... 60,000 / 80,000 rpm
- Max. Output Power ..... 350W
- Spindle Accuracy ..... Within 1 μm

< Optional >

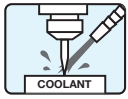
- Air Line Kit (AL-C1204) ..... For Controller NE287
- Collet (CHK- □□) ..... ø0.5 mm-ø6.35 mm
- Collet (CHA- □□) ..... ø0.5 mm-ø4.0 mm

### System Chart (Motor Speed 60,000 rpm and 80,000 rpm)



\*CAT40/BT40/HSK63A weigh less than 9lb. CAT50/HSK100A weigh less than 13lb.

1
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 - One Piece
E3000 - Modular ø1.18" ø1.07"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
3
MA
ø0.897" ø1.0" ø0.98" ø1.18"
MS
ø0.75" ø0.79" ø0.897" ø0.91" ø1.0" ø0.98"
4
HES
iSpeed5
HTS
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iSpeed5 Series can be used in conjunction with water or oil based coolants.

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

±1.0°/±0.98°/±0.897°

E3000

One Piece

E3000

Modular

±1.18°

±1.0°/±0.98°/±0.897°

E3000

±0.000rpm

E4000

3

MA

±0.897°

±1.0°/±0.98°

±1.18°

MS

±0.75°/±0.79°

±0.87°/±0.91°

±1.0°/±0.98°

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

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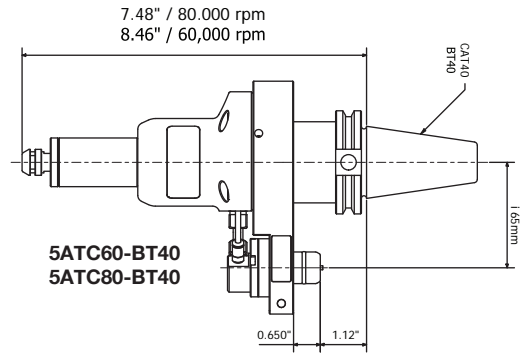
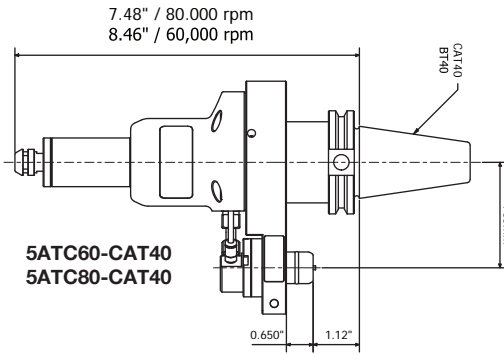
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## 5ATC60-CAT40 / BT40

## 5ATC80-CAT40 / BT40

# 40

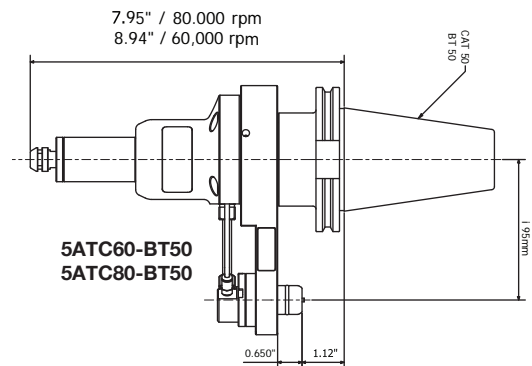
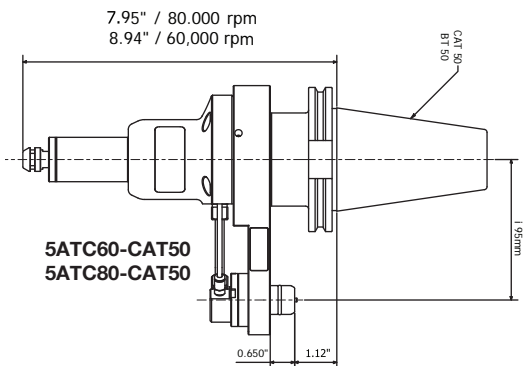


Product Code	Product Name	Description
506001	5ATC60-CAT40	60,000 RPM ATC Spindle CAT40 iSpeed5
506002	5ATC60-BT40	60,000 RPM ATC Spindle BT40 iSpeed5
508001	5ATC80-CAT40	80,000 RPM ATC Spindle CAT40 iSpeed5
508002	5ATC80-BT40	80,000 RPM ATC Spindle BT40 iSpeed5

## 5ATC60-CAT50 / BT50

## 5ATC80-CAT50 / BT50

# 50

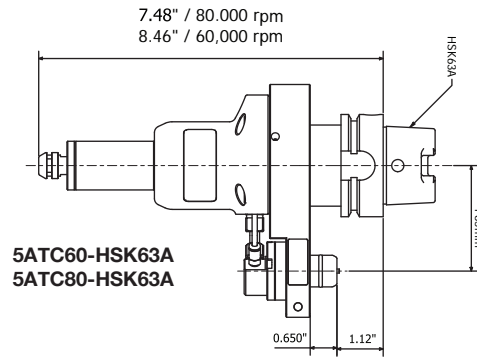


Product Code	Product Name	Description
506003	5ATC60-CAT50	60,000 RPM ATC Spindle CAT50 iSpeed5
506004	5ATC60-BT50	60,000 RPM ATC Spindle BT50 iSpeed5
508003	5ATC80-CAT50	80,000 RPM ATC Spindle CAT50 iSpeed5
508004	5ATC80-BT50	80,000 RPM ATC Spindle BT50 iSpeed5

## 5ATC60-HSK63A

## 5ATC80-HSK63A

## HSK 63A



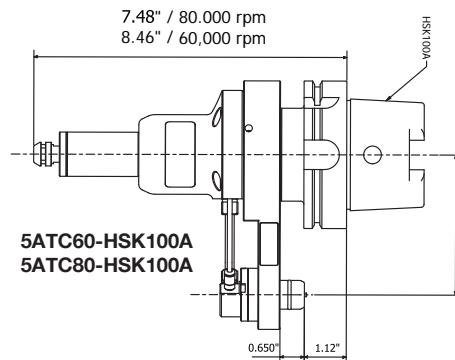
5ATC60-HSK63A  
5ATC80-HSK63A

Product Code	Product Name	Description	
506005	5ATC60-HSK63A	60,000 RPM ATC Spindle HSK63A iSpeed5	
508005	5ATC80-HSK63A	80,000 RPM ATC Spindle HSK63A iSpeed5	

## 5ATC60-HSK100A

## 5ATC80-HSK100A

## 100



5ATC60-HSK100A  
5ATC80-HSK100A

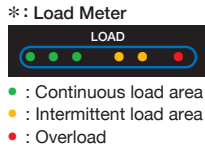
Product Code	Product Name	Description	
506006	5ATC60-HSK100A	60,000 RPM ATC Spindle HSK100A iSpeed5	
508006	5ATC80-HSK100A	80,000 RPM ATC Spindle HSK100A iSpeed5	



- AC100-240V Auto-Sensing
- 1,000~80,000 rpm
- Maximum Output 350W

Product Code **8491** **CONTROLLER NE287**

**80,000 rpm**



- [1] Load Meter
- [2] Display
- [3] Motor Speed Adjustment Switch (SPEED)
- [4] Display Switch (RPM/MILLIAMP)
- [5] Error Reset Switch (RESET)
- [6] Stop Block Connection LED
- [7] Motor Indicator (SPEED 1-4)
- [8] Air Connection LED
- [9] Control Switch (AUTO/MANUAL)
- [10] Handy Controller Connection
- [11] Start Switch (START/STOP)
- [12] Rotating Direction Selector Switch (FWD/REV)

### Specifications

Product Name : NE287  
 Power Source : AC120V/240V  
 Motor Speed : 1,000-80,000 rpm  
 Max. Output Power : 350W  
 Power Consumption : 1.8A  
 Air Flow Volume : 1.0CFM (36-44PSI)  
 Weight : 6 lb. 2.77 oz.  
 Dimensions : W3.46" x D5.43" x H9.37"

### iSpeed5 Controller

Product Code	Plug Type	Product Name	Standard Equipment · Accessories
<b>8491</b>	C type	<b>NE287</b>	<ul style="list-style-type: none"> <li>• Power Cord : 6 ft</li> <li>• Air Hose with filter</li> <li>• Reducer</li> <li>• Connector Cap (Provided)</li> <li>• Bracket</li> <li>• Nylon Clip</li> <li>• Screw</li> <li>• Rubber Pad</li> <li>• Fuse (T6.3AL) 250V: 2 pcs.</li> </ul>

\*Please refer to Operation Manual for details about External Input-Output Connector.

Interface Cable  
DB25M



### ● Power Source Plug

Plug Type	Main Usable Area	Product
For 200V (C type)	Without Plug	

**Product Code 8492 Handy Controller**



- The iSpeed5 handy controller allows hand-held operation of the system from a distance. The device features all of the same buttons and functions as the main controller, including speed adjustment, reverse and reset.

Product Code	Product Name	Description	
8492	NE287 HC	iSpeed5 Handy Controller	

**Product Code 500101 Stop Block**



- The iSpeed5 stop block integrates with the iSpeed5 controller in order to make automatic tool change possible. The stop block shape and size are unique to your machine brand and model. Please contact your NSK Sales Representative for inquiries.

Product Code	Product Name	Description	
500101	SB-1	Stopblock Style 1	
500102	SB-2	Stopblock Style 2	
500103	SB-3	Stopblock Style 3	
500104	SB-4	Stopblock Style 4 Shutter Mazak	

**Product Code ISE30A Pressure Switch**



Product Code	Product Name	Description	
ISE30A	5ATC-PS	Air Pressure Switch for iSpeed5	

**Product Code 8493 Bracket (L-Type)**



Product Code	Description	
8493	BRACKET (L-Type)	

**Product Code 8494 Bracket (H-Type)**



Product Code	Description	
8494	BRACKET (H-Type)	

**1**  
Emax EVO  
ESPERT  
ROTUS  
IMPULSE  
PRESTO II  
Sheenus ZERO  
Sonic-Cutter ZERO

**2**  
iSpeed3  
E2000  
ø1.0"/ø0.99"/ø0.897"  
E3000  
- One Piece  
E3000  
- Modular  
ø1.18"  
ø1.07"/ø0.98"/ø0.897"  
E3000  
- 80,000rpm  
E4000

**3**  
MA  
ø0.897"  
ø1.0"  
ø0.98"  
ø1.18"  
MS  
ø0.75"  
ø0.75"  
ø0.897"  
ø0.81"  
ø1.0"  
ø0.98"

**4**  
HES  
iSpeed5  
HTS  
PLANET  
Xpeed  
ABT

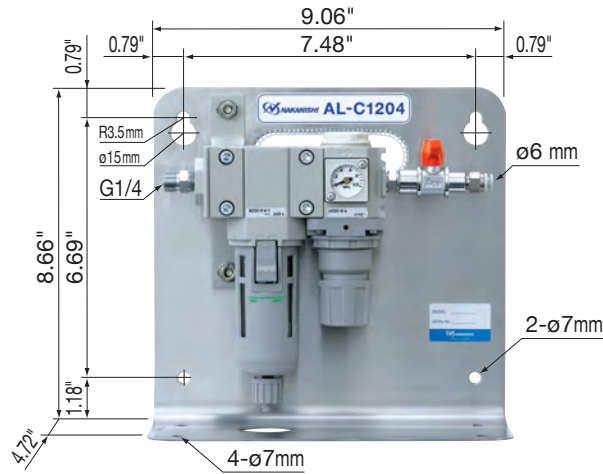
**5**  
AIR LINE KIT

**6**  
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**Product Code 4504 AIR LINE KIT AL-C1204**



- The AL-C1204 Air Line Kit is designed to deliver clean, dry air to Electric Motors via the Controller. The filter removes small amounts of debris while the adjustable regulator provides the correct air pressure for cooling and purging.

**Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 µm )**

Product Code	Product Name	Standard Equipment · Accessories
4504	AL-C1204	<ul style="list-style-type: none"> <li>• Air Filter</li> <li>• Air Regulator</li> <li>• Air Pressure Gauge</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> </ul>

<b>1</b>
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.0"/ø0.98"/ø0.897"
E3000 - ø0,000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.897" ø0.91"
ø1.0" ø0.98"
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
<b>5</b>
AIR LINE KIT
<b>6</b>
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Dramatically shorten mold cavity machining time.

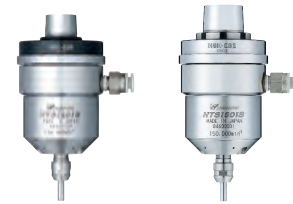
## HTS1501S-BT30 / 40 / 50

150,000 rpm      Output : 25W



## HTS1501S-HSK E25 / 32 / 40 / 50

150,000 rpm      Output : 25W



## HTS1501S-HSK A63

150,000 rpm      Output : 25W



## HTS1501S-HSK F63

150,000 rpm      Output : 25W



## HTS1501S-M2040

150,000 rpm      Output : 25W



1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.95"/ø0.897"
E3000 - One Piece
E3000 - Modular ø1.18" ø1.07"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
3
MA ø0.897" ø1.0" ø0.98" ø1.18"
MS ø0.75" ø0.75" ø0.897" ø0.91" ø1.0" ø0.98"
4
HES
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Xpeed
ABT
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### 1

## HTS Series Features

- **High Speed 150,000 rpm**
- **Suitable for cutting tool diameters of less than R0.5mm in reference to Ball End Mills**
- **Negligible spindle expansion**  
Air Turbine mechanism has extremely low heat generation.  
Up to cutting tool R x 0.1 mm depth of cut is possible.
- **Very High Feed Rates are possible**
- **Highly stable milling conditions are possible even with very small diameter cutting tools.**  
Usable max. cutting tool diameter : Ball End Mill R0.5 mm, Square End Mill  $\phi$ 1 mm
- **Spindle Accuracy is within 1  $\mu$ m**
- **Dramatically shorten mold cavity machining time**

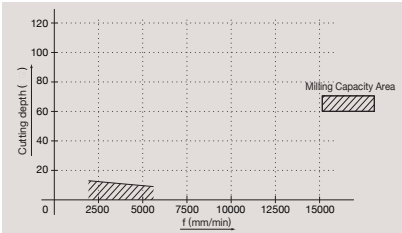
### 2

## HTS Series Milling Capacity Reference

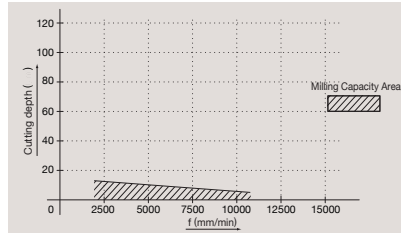
### Milling : Straight Milling / Work : NAK80 / Motor Speed : 150,000 rpm

Caution) 1. Ball End Mill Type with ultra hard coating. Cutting tool capabilities vary depending on the tools being used.  
2. Milling capacity may change depending on the tools being used, the material being cut and other application variables.

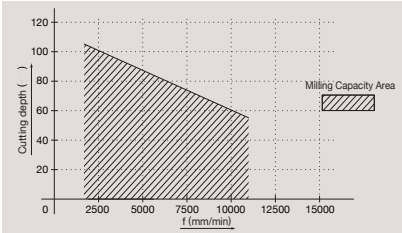
- Ball End Mill Size : R0.05 mm L = 0.1 mm



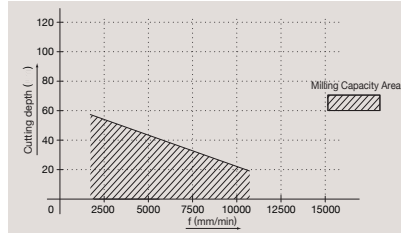
- Ball End Mill Size : R0.1 mm L = 0.5 mm



- Ball End Mill Size : R0.2 mm L = 1.0 mm



- Ball End Mill Size : R0.5 mm L = 2.5 mm



### 3

## HTS Series Specifications

- Speed ..... 150,000 rpm (73PSI)
- Max. Output Power ..... 25W
- Air type ..... Side Air Supply Type
- Shank ..... Straight, BT30 / 40 / 50, HSK E25 / 32 / 40 / 50 / A63 / F63
- Proper Air Pressure ..... 44~73PSI
- Air Consumption ..... 3.18CFM
- Spindle Accuracy ..... Within 1  $\mu$ m
- Hose Diameter (Air Intake) .....  $\phi$ 6 mm (O.D.)
- Standard Size Collet (CHA-4.0) .....  $\phi$ 4.0 mm

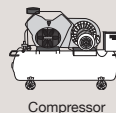
< Optional >

- Collet (CHA-□□) .....  $\phi$ 0.5 mm~ $\phi$ 4.0 mm  
(See Page 6-p2 for details)

### 4

## HTS Series Connection Drawing

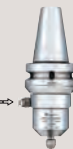
Clean, lubricated, and regulated air is required for HTS Series spindles. Please refer to the diagram to the right for proper connections. AL-M1202 incorporates a filter, regulator and lubricator to provide the appropriate air.



Compressor

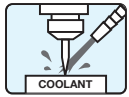


Air Line Kit AL-M1202  
(Refer to 4-p22 in detail)



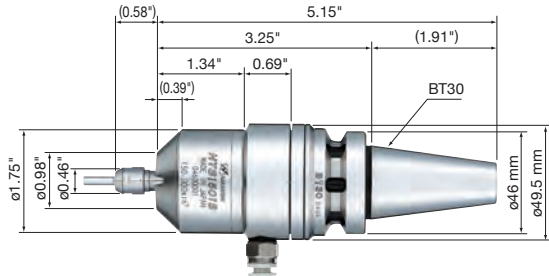
HTS Series





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

**Product Code 8296 HTS1501S-BT30**



●BT30 taper shanks make this spindle very easy to attach to small machining centers. Very High speed milling is possible.

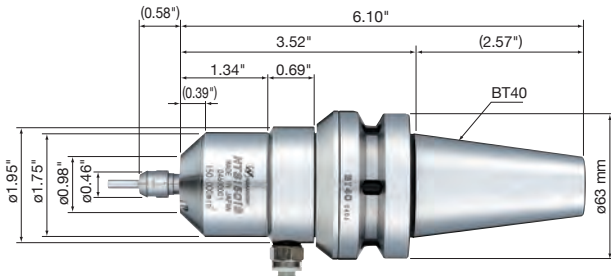
**Air Turbine Spindle**

Product Code	Product Name	Weight	
<b>8296</b>	<b>HTS1501S-BT30</b>	36.33 oz.	

**Standard Equipment · Accessories**

- Collet  $\phi 4.0$  mm (CHA-4.0) • Collet Nut (CHN-AA)
- Wrench (8 x 5), (9 x 11) : 1 pc. each • Filter Joint (FJ-01)
- Hose (K-247) :  $\phi 6$  mm x 13 ft

**Product Code 8297 HTS1501S-BT40**



●BT40 taper shanks make this spindle very easy to attach to a wide variety of machining centers. Very High speed milling is possible.

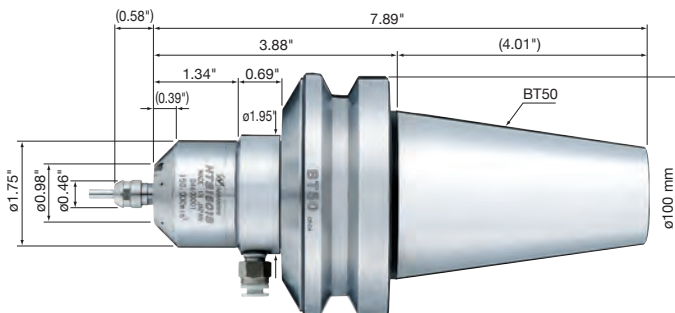
**Air Turbine Spindle**

Product Code	Product Name	Weight	
<b>8297</b>	<b>HTS1501S-BT40</b>	59.97 oz.	

**Standard Equipment · Accessories**

- Collet  $\phi 4.0$  mm (CHA-4.0) • Collet Nut (CHN-AA)
- Wrench (8 x 5), (9 x 11) : 1 pc. each • Filter Joint (FJ-01)
- Hose (K-247) :  $\phi 6$  mm x 13 ft

**Product Code 8281 HTS1501S-BT50**



●BT50 taper shanks make this spindle very easy to attach to a wide variety of machining centers. Very High speed milling is possible.

**Air Turbine Spindle**

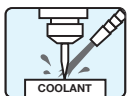
Product Code	Product Name	Weight	
<b>8281</b>	<b>HTS1501S-BT50</b>	158.73 oz.	

**Standard Equipment · Accessories**

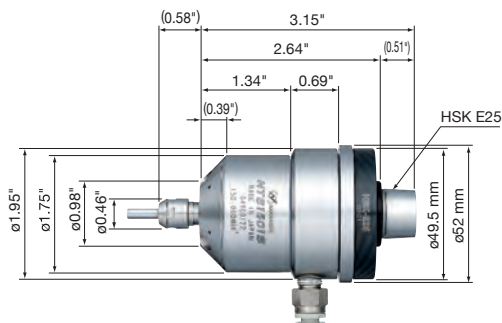
- Collet  $\phi 4.0$  mm (CHA-4.0) • Collet Nut (CHN-AA)
- Wrench (8 x 5), (9 x 11) : 1 pc. each • Filter Joint (FJ-01)
- Hose (K-247) :  $\phi 6$  mm x 13 ft

<b>1</b>
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 $\phi 1.0"/\phi 0.95"/\phi 0.897"$
E3000 - One Piece
E3000 - Modular
$\phi 1.18"$
$\phi 1.07"/\phi 0.98"/\phi 0.897"$
E3000 - 30,000rpm
E4000
<b>3</b>
MA
$\phi 0.897"$
$\phi 1.0"/\phi 0.98"$
$\phi 1.18"$
MS
$\phi 0.75"/\phi 0.79"$
$\phi 0.897"/\phi 0.841"$
$\phi 1.0"/\phi 0.98"$
<b>4</b>
HES
iSpeed5
HTS
PLANET
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# HTS SERIES ULTRA-HIGH SPEED AIR TURBINE MILLING SPINDLE



## Product Code **8300** HTS1501S-HSK E25



● HSK E25 taper shanks make this spindle very easy to attach to your machining centers. Very High speed milling is possible.

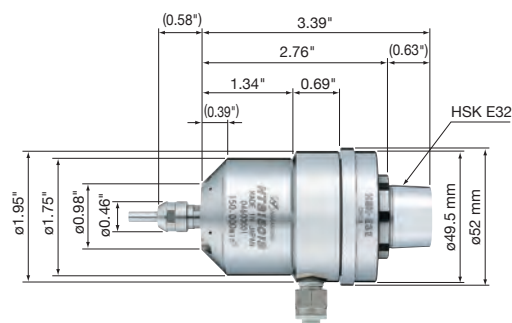
### Air Turbine Spindle

Product Code	Product Name	Weight
<b>8300</b>	<b>HTS1501S-HSK E25</b>	26.81 oz.

#### Standard Equipment · Accessories

- Collet  $\phi 4.0$  mm (CHA-4.0) • Collet Nut (CHN-AA)
- Wrench (8 x 5), (9 x 11) : 1 pc. each • Filter Joint (FJ-01)
- Hose (K-247) :  $\phi 6$  mm x 13 ft

## Product Code **8283** HTS1501S-HSK E32



● HSK E32 taper shanks make this spindle very easy to attach to your machining centers. Very High speed milling is possible.

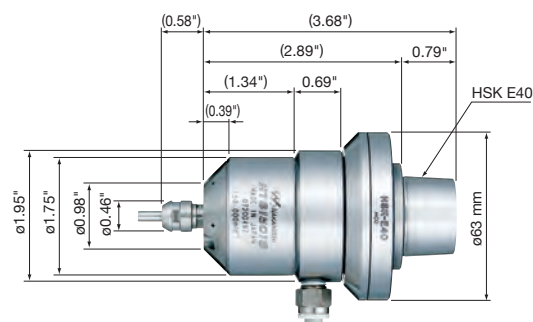
### Air Turbine Spindle

Product Code	Product Name	Weight
<b>8283</b>	<b>HTS1501S-HSK E32</b>	27.87 oz.

#### Standard Equipment · Accessories

- Collet  $\phi 4.0$  mm (CHA-4.0) • Collet Nut (CHN-AA)
- Wrench (8 x 5), (9 x 11) : 1 pc. each • Filter Joint (FJ-01)
- Hose (K-247) :  $\phi 6$  mm x 13 ft

## Product Code **8279** HTS1501S-HSK E40



● HSK E40 taper shanks make this spindle very easy to attach to your machining centers. Very High speed milling is possible.

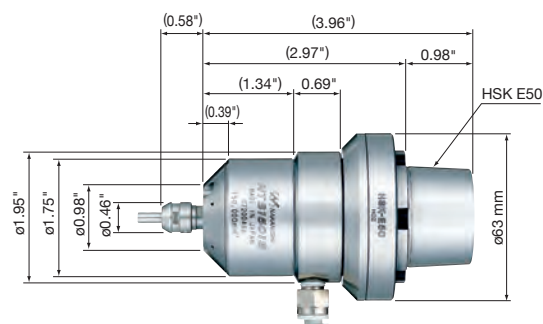
### Air Turbine Spindle

Product Code	Product Name	Weight
<b>8279</b>	<b>HTS1501S-HSK E40</b>	34.57 oz.

#### Standard Equipment · Accessories

- Collet  $\phi 4.0$  mm (CHA-4.0) • Collet Nut (CHN-AA)
- Wrench (8 x 5), (9 x 11) : 1 pc. each • Filter Joint (FJ-01)
- Hose (K-247) :  $\phi 6$  mm x 13 ft

## Product Code **8280** HTS1501S-HSK E50



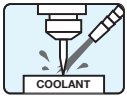
● HSK E50 taper shanks make this spindle very easy to attach to your machining centers. Very High speed milling is possible.

### Air Turbine Spindle

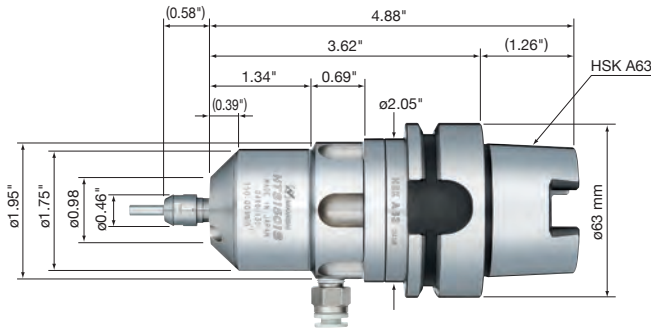
Product Code	Product Name	Weight
<b>8280</b>	<b>HTS1501S-HSK E50</b>	37.74 oz.

#### Standard Equipment · Accessories

- Collet  $\phi 4.0$  mm (CHA-4.0) • Collet Nut (CHN-AA)
- Wrench (8 x 5), (9 x 11) : 1 pc. each • Filter Joint (FJ-01)
- Hose (K-247) :  $\phi 6$  mm x 13 ft



**Product Code 8298 HTS1501S-HSK A63**



● HSK A63 taper shanks make this spindle very easy to attach to your machining centers. Very High speed milling is possible.

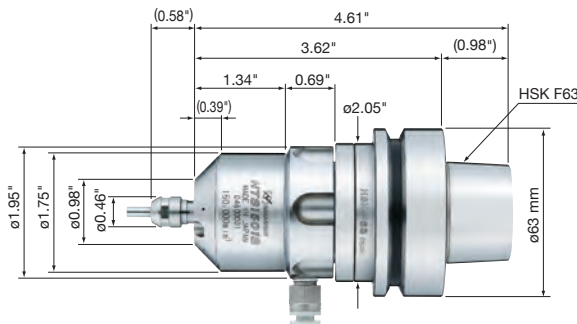
**Air Turbine Spindle**

Product Code	Product Name	Weight
8298	HTS1501S-HSK A63	49.38 oz.

**Standard Equipment · Accessories**

- Collet  $\phi 4.0$  mm (CHA-4.0) • Collet Nut (CHN-AA)
- Wrench (8 x 5), (9 x 11) : 1 pc. each • Filter Joint (FJ-01)
- Hose (K-247) :  $\phi 6$  mm x 13 ft

**Product Code 8282 HTS1501S-HSK F63**



● HSK F63 taper shanks make this spindle very easy to attach to your machining centers. Very High speed milling is possible.

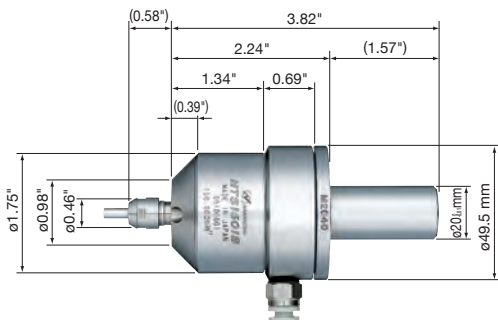
**Air Turbine Spindle**

Product Code	Product Name	Weight
8282	HTS1501S-HSK F63	48.68 oz.

**Standard Equipment · Accessories**

- Collet  $\phi 4.0$  mm (CHA-4.0) • Collet Nut (CHN-AA)
- Wrench (8 x 5), (9 x 11) : 1 pc. each • Filter Joint (FJ-01)
- Hose (K-247) :  $\phi 6$  mm x 13 ft

**Product Code 8299 HTS1501S-M2040**



● Straight shanks make this spindle very easy to attach to smaller machining centers. Very High speed milling is possible.

**Air Turbine Spindle**

Product Code	Product Name	Weight
8299	HTS1501S-M2040	25.04 oz.

**Standard Equipment · Accessories**

- Collet  $\phi 4.0$  mm (CHA-4.0) • Collet Nut (CHN-AA)
- Wrench (8 x 5), (9 x 11) : 1 pc. each • Filter Joint (FJ-01)
- Hose (K-247) :  $\phi 6$  mm x 13 ft

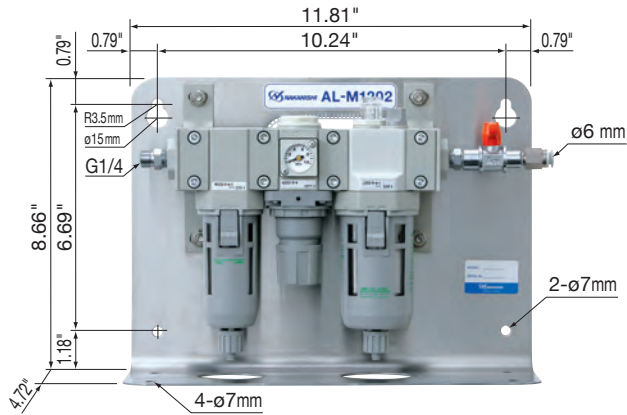


**Caution**

- Do not rotate the machining center's main spindle with the HTS1501 spindle installed.

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000
$\phi 1.0''/\phi 0.99''/\phi 0.997''$
E3000
— One Piece
E3000
— Modular
$\phi 1.18''$
$\phi 1.0''/\phi 0.98''/\phi 0.987''$
E3000
— 80,000rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''/\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''/\phi 0.79''$
$\phi 0.99''/\phi 0.997''$
$\phi 1.0''/\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
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**Product Code 4502 AIR LINE KIT AL-M1202**



- The AL-M1202 provides simple, automatic conditioning of the air supplied to NAKANISHI Air Motors. The filter removes water and impure substances from the input air supply. The regulator maintains the proper air pressure, and the lubricator ensures proper oil flow to the motor and spindle. This Air Line Kit is wall mountable.

**Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 μm )**

Product Code	Product Name	Standard Equipment · Accessories
4502	AL-M1202	• Air Filter · Air Regulator • Air Pressure Gauge · Lubricator • Air ON-OFF Valve • Hose for Piping (K-275) : 6 ft • Lubricating Oil (K-211) : 1 pc.

## LUBRICATING OIL

**Lubricating Oil (4 oz.)**

Product Code	Product Name	Product
AA10478C	K-211	

**Lubricating Oil (32 oz.)**

Product Code	Product Name	Product
AA10480C	K-202	

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.0"/ø0.98"/ø0.897"

E3000

One Piece

E3000

Modular

ø1.18"

ø1.0"/ø0.98"/ø0.897"

E3000

ø0,000rpm

E4000

3

MA

ø0.897"

ø1.0"/ø0.98"

ø1.18"

MS

ø0.75"/ø0.79"

ø0.897"/ø0.91"

ø1.0"/ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

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## PLANET 600

65,000 rpm

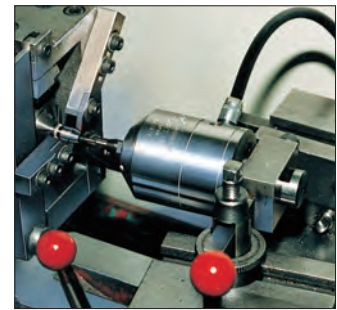
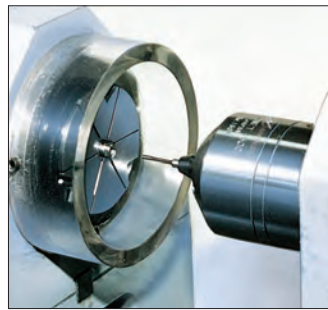
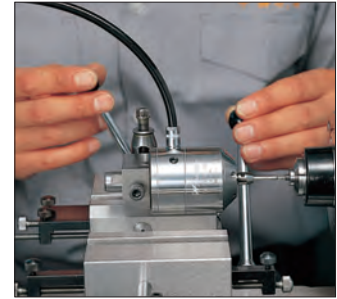
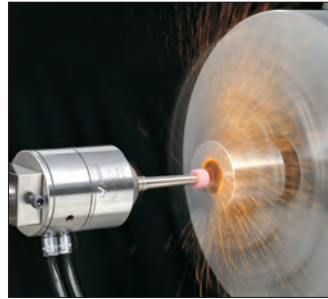
- Turns a Milling Machine into a Jig Grinding Machine, a Lathe into Internal Grinding Machine.





## EASILY MOUNTED ON AVAILABLE BORING HEAD.

Typical application example of jig grinding after material hardening.

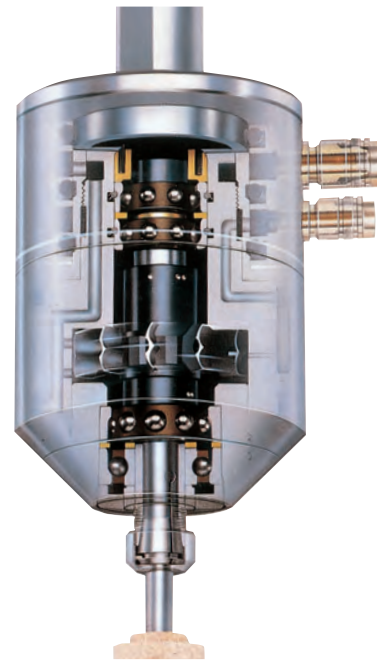


## PLANET Series Features

- The PLANET 600 System has an adapted air exhaust system that keeps noise to a minimum.
- Excellent performance at a relatively low cost.
- Turns a milling machine or machining center into a Jig Grinding machine when attaching a standard adjustable boring head to the machine and utilizing the PLANET 600.
- When mounted in a turning center, the PLANET 600 can be used as a precision internal grinder.
- Can be used as a high speed grinder in specialty built machines.
- Collets ranging from 0.5mm thru 6.35mm are available to accommodate all the most common tool shanks.

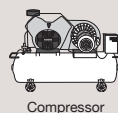
### Special Built-In type high speed bearings will withstand extended periods of operation.

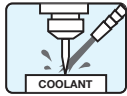
Ultra Precision ball bearing technology has been developed due to several years of cooperative studies between Nakanishi and several major bearing manufacturers.



### PLANET Series Connection Drawing

Clean, lubricated, and regulated air is required for PLANET Series spindles. Please refer to the diagram to the right for proper connections. AL-M1202 incorporates a filter, regulator and lubricator to provide the appropriate air.

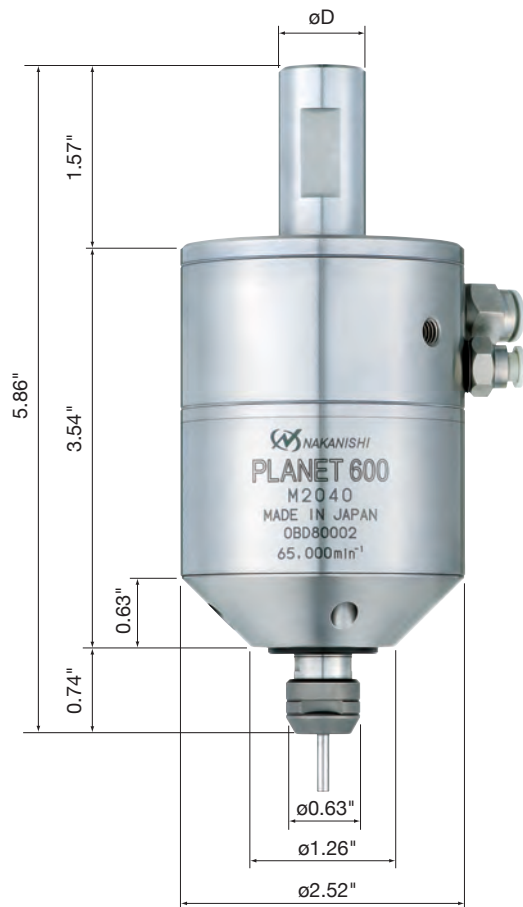




PLANET Series can be used in conjunction with water or oil based coolants.

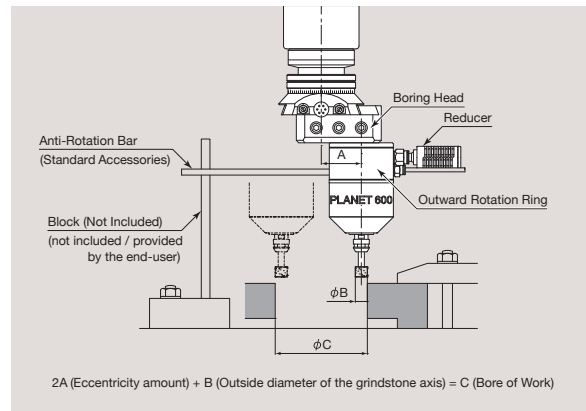
## PLANET 600

65,000 rpm



### Straight Shank : ø20mm, ø3/4"

- Makes Jig Grinding possible for small and large diameter holes ( ~ ø2.76" ).



#### Processable Range

Max. Processable Diameter	ø2.76"
Max. Processable Depth	2.36"
Max. Grindstone Diameter	ø0.63"

- Speed ..... 65,000 rpm
- Air Input ..... Side Air Supply
- Proper Air Pressure ..... 58 PSI
- Air Consumption ..... 6.18 CFM
- Spindle Accuracy ..... Within 1 µm
- Hose Diameter (Air Intake) ..... ø6 mm (O.D.)

#### • Additional collet purchase required:

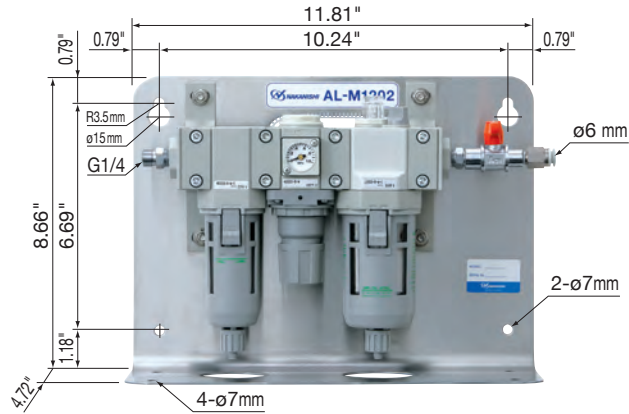
- Collet Series CHK-XX ..... ø0.5mm~ø6.35mm  
Recommended ..... CHK-3.175 ø1/8"  
(See Page 6-p3 for additional sizes)
- Collet Nut ..... K-265

Product Code	Shank øD	Product Name	Standard Equipment · Accessories	Weight
7355	ø20mm x 1.57"	PL600-M2040	• Collet Nut (K-265) : 1 pc. • Intake Air Hose (K-254) with Filter Joint (FJ-01) : ø6 mm x 6 ft : 1 pc. • Silencer : 1 pc. • Anti-Rotation Bar : 1 set • Wrench (12 x 14) : 2 pcs.	3 lb.13.38 oz.
7356	ø3/4" x 1.57"	PL600-H3440		3 lb.13.20 oz.

1
EmaxEVC
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98"/ø0.897"
E3000 - 80,000rpm
E4000
3
MA
ø0.897"
ø1.0"/ø0.98"
ø1.18"
MS
ø0.75"/ø0.79"
ø0.89"/ø0.91"
ø1.0"/ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
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## 1

### Product Code **4502** AIR LINE KIT AL-M1202



- The AL-M1202 provides simple, automatic conditioning of the air supplied to NAKANISHI Air Motors. The filter removes water and impure substances from the input air supply. The regulator maintains the proper air pressure, and the lubricator ensures proper oil flow to the motor and spindle. This Air Line Kit is wall mountable.

#### Air Line Kit (For 6 mm Hose · Filter Mesh 0.3 μm )

Product Code	Product Name	Standard Equipment · Accessories
4502	AL-M1202	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge · Lubricator</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> <li>• Lubricating Oil (K-211) : 1 pc.</li> </ul>

## 2

iSpeed3  
E2000  
ø1.0"/ø0.98"/ø0.897"  
E3000  
— One Piece  
E3000  
— Modular  
ø1.18"  
ø1.0"/ø0.98"/ø0.897"  
E3000  
— 80,000rpm  
E4000

## 3

MA  
ø0.897"  
ø1.0"/ø0.98"  
ø1.18"  
MS  
ø0.75"/ø0.79"  
ø0.897"/ø0.91"  
ø1.0"/ø0.98"

### LUBRICATING OIL

#### Lubricating Oil (4 oz.)

Product Code	Product Name	Product
AA10478C	K-211	

#### Lubricating Oil (32 oz.)

Product Code	Product Name	Product
AA10480C	K-202	

## 4

HES  
iSpeed5  
HTS  
PLANET  
Xpeed  
ABT

## 5

AIR LINE KIT

## 6

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## 7

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# 1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

# 2

iSpeed3

E2000

ø1.0" / ø0.99" / ø0.897"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.07" / ø0.98"

ø0.897"

E3000

— 80,000rpm

E4000

# 3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.75"

ø0.897"

ø0.91"

ø1.0"

ø0.98"

# 4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

# 5

AIR LINE KIT

# 6

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# 7

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INDEX

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus  
ZERO

Sonic-Cutter  
ZERO

2

iSpeed3

E2000  
 $\phi 1.07/\phi 0.98/\phi 0.897$

E3000  
- One Piece

E3000  
- Modular

$\phi 1.18$

$\phi 1.07/\phi 0.98$   
 $\phi 0.897$

E3000  
- 60,000rpm

E4000

3

MA

$\phi 0.897$

$\phi 1.0$   
 $\phi 0.96$

$\phi 1.18$

MS

$\phi 0.75$   
 $\phi 0.79$

$\phi 0.897$   
 $\phi 0.91$

$\phi 1.0$   
 $\phi 0.98$

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

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# Air-Turbine

Air Bearing



## Xpeed1600

160,000 rpm Output : 56W

<Flange Mount>

Outside Diameter  $\phi$ 1.57"( $\phi$ 40 mm)



## Xpeed1200

120,000 rpm Output : 192W

<Flange Mount>

Outside Diameter  $\phi$ 2.56"( $\phi$ 65 mm)



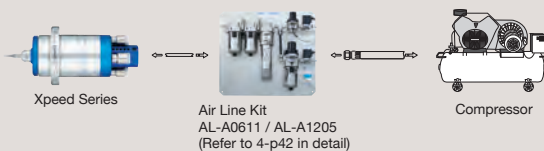
### ◀ AIR BEARING ▶ Xpeed Series

**Xpeed1600** 160,000 rpm Output 56W  
**Xpeed1200** 120,000 rpm Output 192W

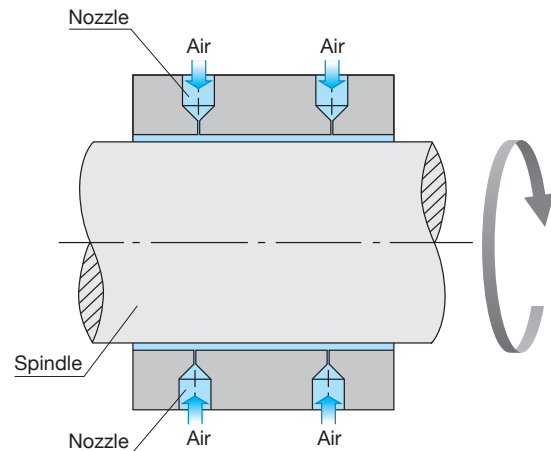
- Ideal for extremely high precision, small diameter machining applications.
- Air bearings use compressed air blown into a small gap between the spindle and the bearing surface. The spindle floats on an even cushion of compressed air. This non-contact type of bearing means the spindle has a very long service life because of low friction and wear ; it also means that the spindle generates almost no heat or vibration.
- The spindle and bearing are finished with a very high-accuracy process to ensure extremely low vibration and very high rotating accuracy.

#### Xpeed Series Connection Drawing

The Xpeed Series motor and spindle require dry, clean, regulated air. Please refer to the drawing for proper components.



#### Principle of Air Bearing



1

EmaxEVC

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

$\phi$ 1.0"( $\phi$ 0.95"/ $\phi$ 0.897"

E3000

- One Piece

E3000

- Modular

$\phi$ 1.18"

$\phi$ 1.07"/ $\phi$ 0.98"

$\phi$ 0.897"

E3000

- 80,000rpm

E4000

3

MA

$\phi$ 0.897"

$\phi$ 1.0"

$\phi$ 0.98"

$\phi$ 1.18"

MS

$\phi$ 0.75"

$\phi$ 0.79"

$\phi$ 0.897"

$\phi$ 0.91"

$\phi$ 1.0"

$\phi$ 0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL

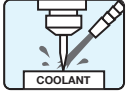
DATA

8

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EXAMPLES

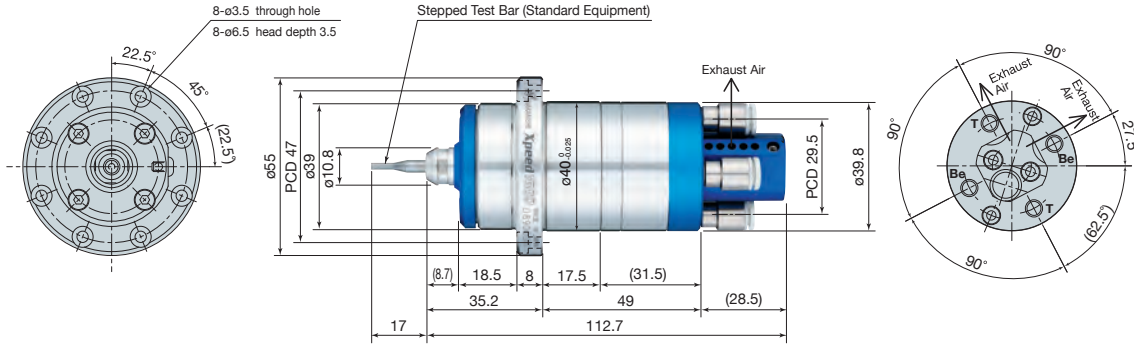
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Xpeed Series can be used in conjunction with water or oil based coolants.

**Product Code 1855 Xpeed1600 O. D.  $\phi 1.57''$  ( $\phi 40$  mm) <Output 56W> 160,000 rpm**

### Flange Mount

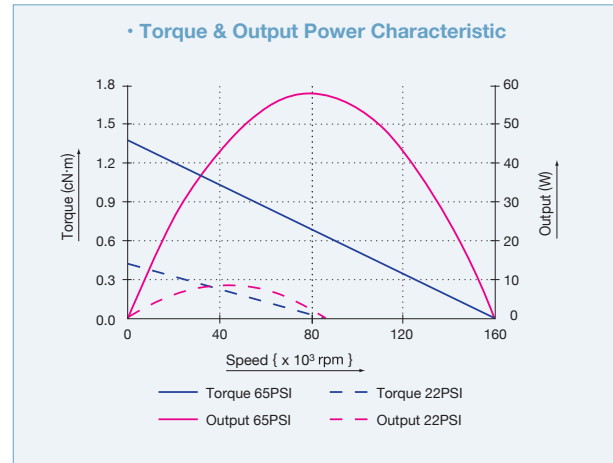


#### < Specifications >

Spindle Accuracy :	Within 1 $\mu$ m
Standard Size Collet (CHA-4.0AA) :	$\phi 4.0$ mm
Main body mount method :	Flange mounting method,
	M3 bolt (8 locations, 45° Angle, PCD47)
Bearing Type :	Static Air Bearing
Proper Air Pressure for Air Bearing :	87 PSI
Air Consumption for Air Bearing :	1.41 CFM
Proper Air Pressure for Air Turbine :	22~65 PSI
Air Consumption for Air Turbine :	5.65 CFM
Bearing Load Capacity :	Radial : Less than 15N
	Thrust : Less than 25N
	(Bearing Air supply pressure 87 PSI)
Useable Max. Diameter of Grindstone :	Less than $\phi 2.0$ mm (For $\phi 4.0$ mm shank)
Hose Diameter :	Bearing supply $\phi 4$ mm (2 locations)
	Turbine Air supply $\phi 6$ mm (2 locations)
Others :	Detection of Rotation Speed Mark

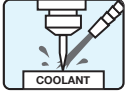
#### < Optional >

Collet (CHA-□□AA) :  $\phi 3.0$  mm,  $\phi 1/8''$ ,  $\phi 4.0$  mm (See Page 6-p2 for details)



Product Code	Product Name	Speed	Max. Output	Weight
1855	Xpeed1600	160,000 rpm	56W	1 lb. 2.34 oz.

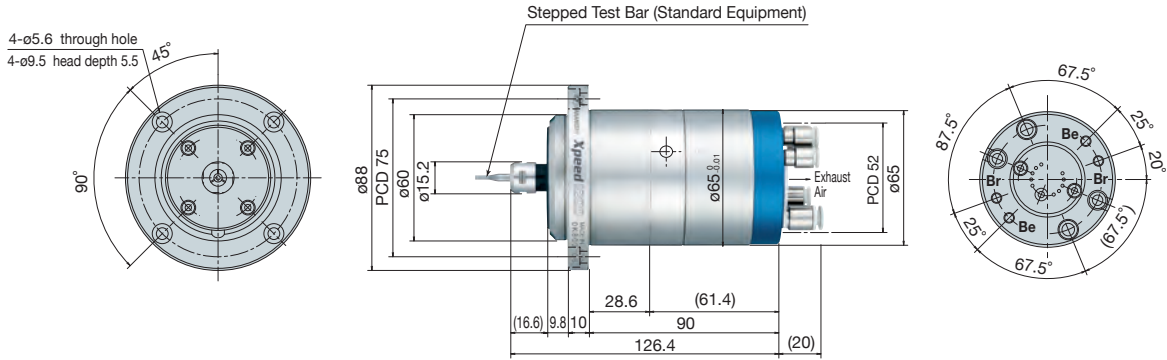
Standard Equipment · Accessories	Parts List
	<ul style="list-style-type: none"> <li>• Collet <math>\phi 4.0</math> mm (CHA-4.0AA) · Collet Nut (CHN-3A) · <math>\phi 4</math> mm Hose (transparent 4.5 ft) : 1 pc. · <math>\phi 6</math> mm Hose (blue 4.5 ft) : 1 pc.</li> <li>• <math>\phi 6</math> mm Air Plug : 2 pcs. · <math>\phi 4</math> mm Air Plug : 2 pcs. · Stepped Test Bar (<math>\phi 2.0</math> mm <math>\times</math> <math>\phi 4.0</math> mm <math>\times</math> 34L) : 1 pc.</li> <li>• Bar Wrench (K-277) : 1 pc. · Torque Wrench (10 mm) : 1 pc. · Allen Wrench (2 mm) : 1 pc.</li> <li>• Hexagon Socket Button Head Bolt (M3 <math>\times</math> 5L) : 1 pc. · Gasket (for M3 Screw) : 1 pc.</li> </ul>



**Note :** Dimensions shown on this page are all in metric (mm). Please divide them by 25.4 for conversion to inch.

Product Code **1854** **Xpeed1200** O. D.  $\phi 2.56'' (\phi 65 \text{ mm})$  <Output 192W> **120,000 rpm**

### Flange Mount

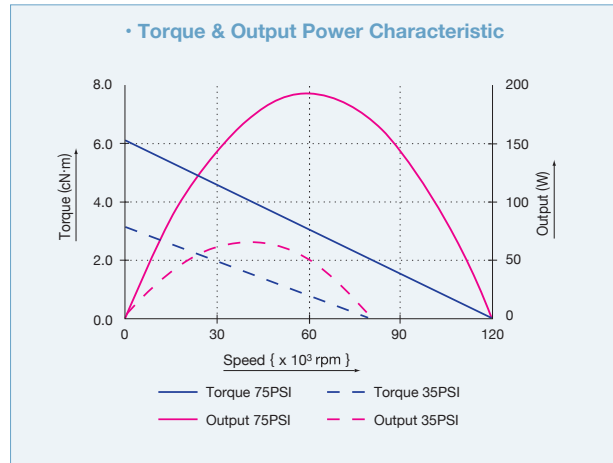


#### < Specifications >

Spindle Accuracy :	Within 1 $\mu\text{m}$
Standard Size Collet (CHK-4.0AA) :	$\phi 4.0 \text{ mm}$
Main body mount method :	Flange mounting method, M5 bolt (4 locations, 90° Angle, PCD75)
Bearing Type :	Static Air Bearing
Proper Air Pressure for Air Bearing :	87 PSI
Air Consumption for Air Bearing :	2.83 CFM
Proper Air Pressure for Air Turbine :	35~75 PSI
Air Consumption for Air Turbine :	10.60 CFM
Bearing Load Capacity :	Radial : Less than 25N Thrust : Less than 70N (Bearing Air supply pressure 87 PSI)
Useable Max. Diameter of Grindstone :	Less than $\phi 2.0 \text{ mm}$ (For $\phi 4.0 \text{ mm}$ shank)
Hose Diameter :	Bearing supply $\phi 6 \text{ mm}$ (2 locations) Break Air supply $\phi 6 \text{ mm}$ (2 locations) Turbine Air supply $\phi 6 \text{ mm}$ (2 locations)
Others :	Detection of Rotation Speed Mark

#### < Optional >

Collet (CHK-□□AA) :  $\phi 3.0 \text{ mm}$ ,  $\phi 1/8''$ ,  $\phi 4.0 \text{ mm}$ ,  $\phi 6.0 \text{ mm}$ ,  $\phi 1/4''$  (See Page 6-p3 for details)



Product Code	Product Name	Speed	Max. Output	Weight
<b>1854</b>	<b>Xpeed1200</b>	120,000 rpm	192W	5 lb. 1.13 oz.

Standard Equipment · Accessories

- Collet  $\phi 4.0 \text{ mm}$  (CHK-4.0AA) · Collet Nut (K-265A) ·  $\phi 6 \text{ mm}$  Hose (transparent 6 ft) : 1 pc. ·  $\phi 6 \text{ mm}$  Hose (blue 6 ft) : 1 pc.
- $\phi 6 \text{ mm}$  Air Plug : 6 pcs. · Stepped Test Bar ( $\phi 2.0 \text{ mm} \times \phi 4.0 \text{ mm} \times 34\text{L}$ ) : 1 pc. · Wrench (12 x 14) : 1 pc.
- Torque Wrench (14 mm) : 1 pc.

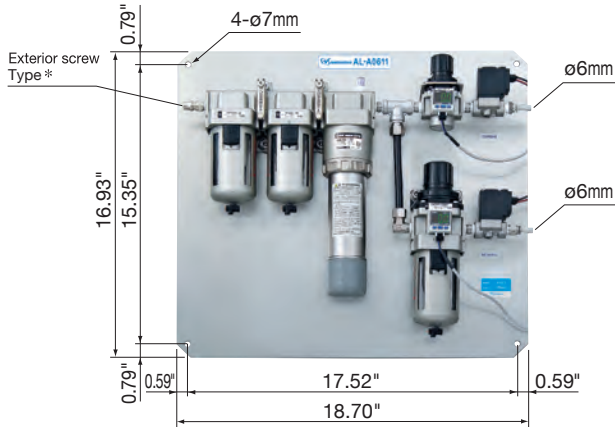
### ⚠ Caution

- Air bearing spindles require clean dry air for proper operation.
- Never rotate the spindle, change cutting tools or collet without supplying clean, dry air to the bearing surfaces.
- Always supply clean, dry air to the bearing surfaces even when the spindle is not being rotated.
- Do not start the machine process until after stable rotation has been established and verified.

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''/\phi 0.99''/\phi 0.997''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.0''/\phi 0.98''/\phi 0.987''$
E3000 - 80,000rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''/\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''$
$\phi 0.75''$
$\phi 0.93''$
$\phi 0.91''$
$\phi 1.0''/\phi 0.98''$
4
HES
iSpeed5
HTS
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PRESTO II
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2
iSpeed3
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E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 - ø0.000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.897" ø0.91"
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**Product Code 1548 AIR LINE KIT AL-A0611**



- The AL-A0611 is a high filtered Air Line Kit utilizing a \*0.01µm micro mist filter system.
- This Air Line Kit is highly recommended for use on all Xpeed Series Air Turbine / Air Bearing motor/spindles.

\*Exterior screw Type (Model KK13P-02M by SMC Corporation)

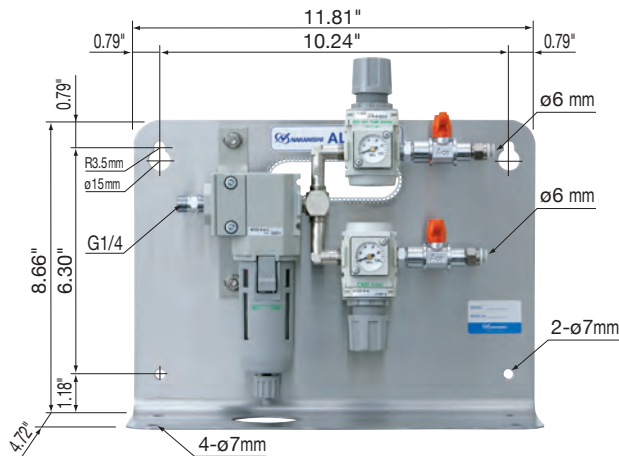
**Air Line Kit (For ø6 mm Hose · Filter Mesh 0.01 µm )**

Product Code	Product Name	Standard Equipment · Accessories
1548	AL-A0611	<ul style="list-style-type: none"> <li>• Mist Separator</li> <li>• Micro Mist Separator</li> <li>• Membrane Air Dryer</li> <li>• Regulator · Solenoid Valve</li> <li>• Digital Pressure Switch</li> </ul>

**Fit to**

Spindle	Xpeed1600 · Xpeed1200
---------	-----------------------

**Product Code 4505 AIR LINE KIT AL-A1205**



- This unit is also designed for use on Air Turbine / Air Bearing Motor/Spindles such as the Xpeed1600. One air output drives the Air Turbine Motor. The other air output drives the Air Bearing Spindle.
- Always supply air to the Air Bearing Spindle before starting the Air Turbine Motor. When stopping the spindle, always stop the Air Turbine Motor before removing the air from the Air Bearing Spindle.

**Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 µm )**

Product Code	Product Name	Standard Equipment · Accessories
4505	AL-A1205	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> </ul>

**Fit to**

Spindle	Xpeed1600
---------	-----------

### ABT-1000

100,000 rpm Output : 88W

<Straight Type>

Outside Diameter  $\phi 1.57"$  ( $\phi 40$  mm)

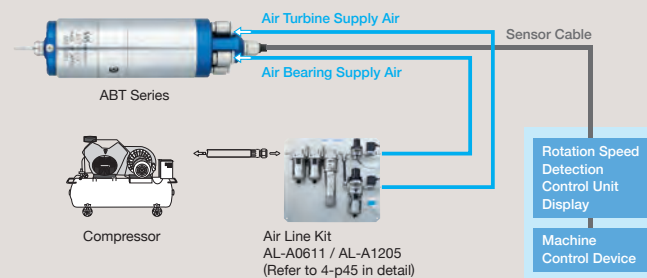


### Features

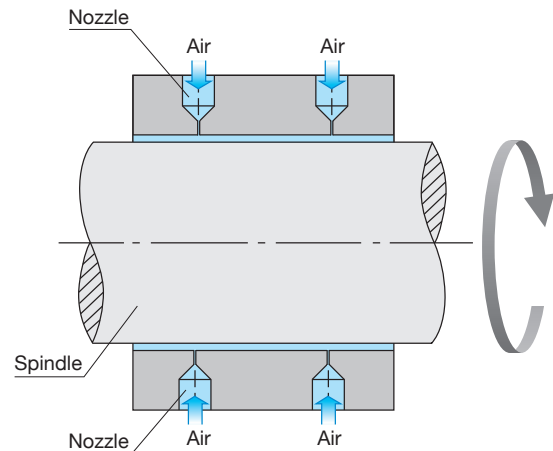
- Ideal for extremely high precision, small diameter machining applications.
- Air bearings use compressed air blown into a small gap between the spindle and the bearing surface. The spindle floats on an even cushion of compressed air. This non-contact type of bearing means the spindle has a very long service life because of low friction and wear ; it also means that the spindle generates almost no heat or vibration.
- The spindle and bearing are finished with a very high-accuracy process to ensure extremely low vibration and very high rotating accuracy.
- The ABT Series are equipped with a Rotational Speed Detection Sensor. When in operation, a digital pulse signal representing the RPM can be output. The rotation speed and load condition can be monitored using a high performance, locally available speed meter.

### ABT Series Connection Drawing

The ABT Series motor and spindle require dry, clean, regulated air. Please refer to the drawing for proper components.

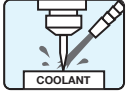


### Principle of Air Bearing



1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0"/\phi 0.95"/\phi 0.897"$
E3000 - One Piece
E3000 - Modular
$\phi 1.18"$
$\phi 1.07"/\phi 0.98"/\phi 0.897"$
E3000 - 80,000rpm
E4000
3
MA
$\phi 0.897"$
$\phi 1.0"/\phi 0.98"$
$\phi 1.18"$
MS
$\phi 0.75"/\phi 0.79"$
$\phi 0.897"/\phi 0.91"$
$\phi 1.0"/\phi 0.98"$
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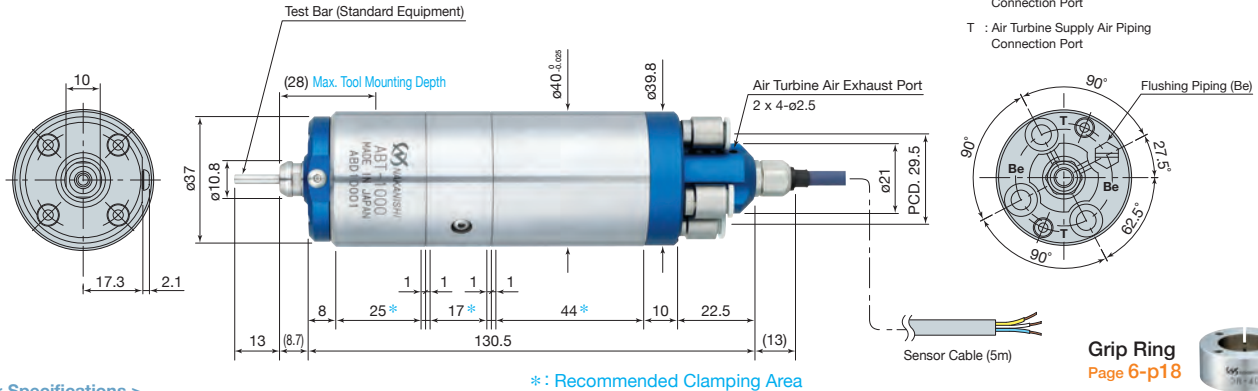


ABT Series can be used in conjunction with water or oil based coolants.

**Note :** all in metric (mm). Please divide them by 25.4 for conversion to inch.

**Product Code 1856 ABT-1000 O. D.  $\phi$ 1.57"( $\phi$ 40 mm) <Output 88W> 100,000 rpm**

### Straight Type

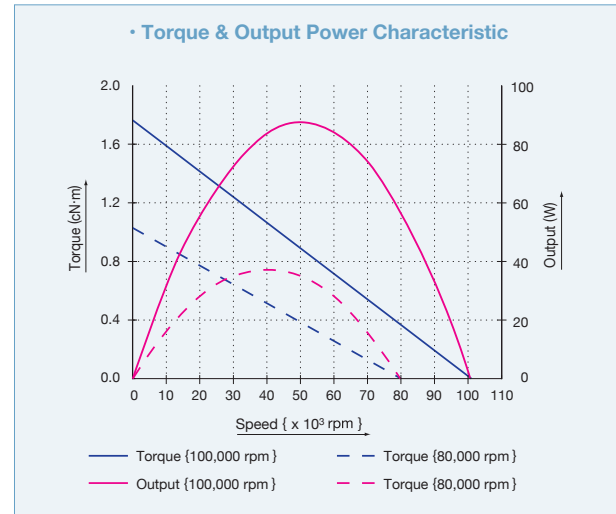


#### < Specifications >

Spindle Accuracy :	Within 1 $\mu$ m
Main body mount method :	Outside Mounting Diameters clamp method
Bearing Type :	Static Air Bearing
Proper Air Pressure for Air Bearing :	80 PSI
Air Consumption for Air Bearing :	Less than 1.77 CFM
Proper Air Pressure for Air Turbine :	80 PSI
Air Consumption for Air Turbine :	4.24 CFM
Bearing Load Capacity :	Radial : Less than 20N Thrust : Less than 35N (Bearing Air supply pressure 80 PSI)
Useable Max. Diameter of Grindstone :	Less than $\phi$ 2.0 mm (For $\phi$ 4.0 mm shank)
Hose Diameter :	Bearing supply $\phi$ 6 mm (1 location) Turbine Air supply $\phi$ 6 mm (2 locations)
Others :	Rotational Speed Detection Sensor with 5 meter cable

#### < Optional >

Collet (CHA-□□) :  $\phi$ 0.5 mm ~  $\phi$ 4.0 mm (See Page 6-p2 for details)



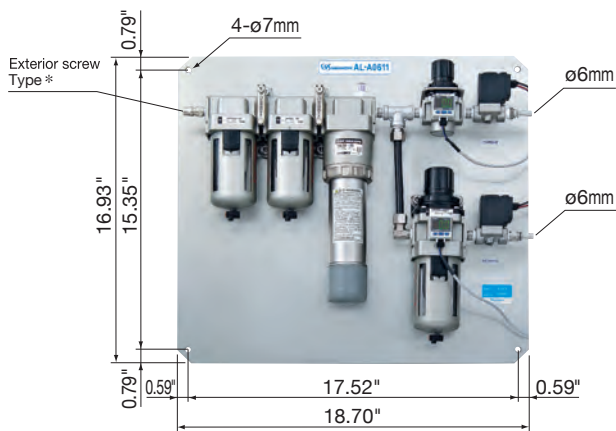
Product Code	Product Name	Speed	Max. Output	Weight
<b>1856</b>	<b>ABT-1000</b>	100,000 rpm	88W	1 lb. 12.92 oz.

Standard Equipment · Accessories	<ul style="list-style-type: none"> <li>• Collet Nut (CHN-3A) · Test Bar (<math>\phi</math>3.0 mm x 40L) : 1 pc. · Bar Wrench (K-277) : 1 pc.</li> <li>• Wrench (10 x 10) : 1 pc. · Allen Wrench (2 mm) : 1 pc. · Hexagon Socket Button Head Bolt (M3 x 5L) : 1 pc.</li> <li>• Gasket (for M3 Screw) : 1 pc. · Protective Cover : 1 pc. · Connection Joint (KQ2S06-M5N) : 3 pcs.</li> <li>• Connection Joint (M-5P) : 1 pc. · Cap (K1020A223) : 1 pc.</li> </ul>
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### ⚠ Caution

- Air bearing spindles require clean dry air for proper operation.
- Never rotate the spindle, change cutting tools or collet without supplying clean, dry air to the bearing surfaces.
- Always supply clean, dry air to the bearing surfaces even when the spindle is not being rotated.
- Do not start the machine process until after stable rotation has been established and verified.

**Product Code 1548 AIR LINE KIT AL-A0611**



- The AL-A0611 is a high filtered Air Line Kit utilizing a \*0.01µm micro mist filter system.
  - This Air Line Kit is highly recommended for use on all ABT Series Air Turbine / Air Bearing motor/spindles.
- \*Exterior screw Type (Model KK13P-02M by SMC Corporation)

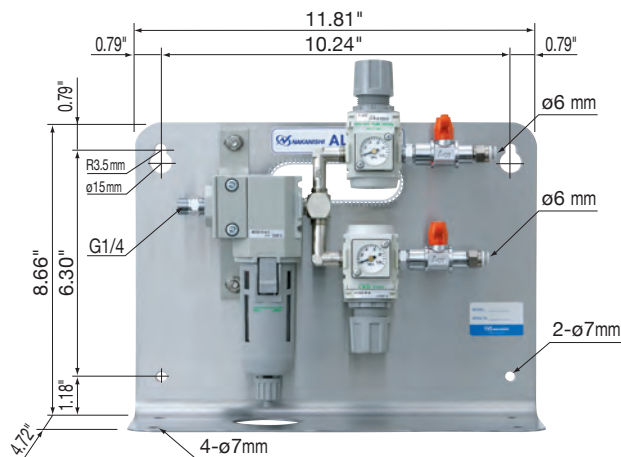
**Air Line Kit (For ø6 mm Hose · Filter Mesh 0.01 µm )**

Product Code	Product Name	Standard Equipment · Accessories	
<b>1548</b>	<b>AL-A0611</b>	<ul style="list-style-type: none"> <li>• Mist Separator</li> <li>• Micro Mist Separator</li> <li>• Membrane Air Dryer</li> <li>• Regulator · Solenoid Valve</li> <li>• Digital Pressure Switch</li> </ul>	

**Fit to**

Spindle	ABT-1000
---------	----------

**Product Code 4505 AIR LINE KIT AL-A1205**



- This unit is also designed for use on Air Turbine / Air Bearing Motor/Spindles such as the ABT Series. One air output drives the Air Turbine Motor. The other air output drives the Air Bearing Spindle.
- Always supply air to the Air Bearing Spindle before starting the Air Turbine Motor. When stopping the spindle, always stop the Air Turbine Motor before removing the air from the Air Bearing Spindle.

**Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 µm )**

Product Code	Product Name	Standard Equipment · Accessories	
<b>4505</b>	<b>AL-A1205</b>	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> </ul>	

**Fit to**

Spindle	ABT-1000
---------	----------

<b>1</b>
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.897" ø0.91"
ø1.0" ø0.98"
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
<b>5</b>
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# 1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus  
ZERO

Sonic-Cutter  
ZERO

# 2

iSpeed3

E2000  
ø1.07/ø0.987/ø0.897\*

E3000  
— One Piece

E3000  
— Modular

ø1.18"

ø1.07/ø0.98"  
ø0.897\*

E3000  
— 60,000rpm

E4000

# 3

MA

ø0.897"

ø1.0"  
ø0.98"

ø1.18"

MS

ø0.75"  
ø0.79"

ø0.897"  
ø0.91"

ø1.0"  
ø0.98"

# 4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

# 5

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## FOR HAND TOOLS

• AIR LINE KIT AL-H1206



• AIR LINE KIT AL-H1207F



• FOOT CONTROL AFC-45

\* Use Air Line Kit AL-H1207F, Product Code 4507 with this foot control.



## FOR MACHINE SPINDLES

• AIR LINE KIT AL-C1204



• AIR LINE KIT AL-A1205



• AIR LINE KIT AL-M1202



• AIR LINE KIT AL-A0611



• AIR LINE KIT AL-M1203BS2



<b>1</b>
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 — 80,000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0" ø0.98"
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MS
ø0.75" ø0.79"
ø0.89" ø0.91"
ø1.0" ø0.98"
<b>4</b>
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iSpeed5
HTS
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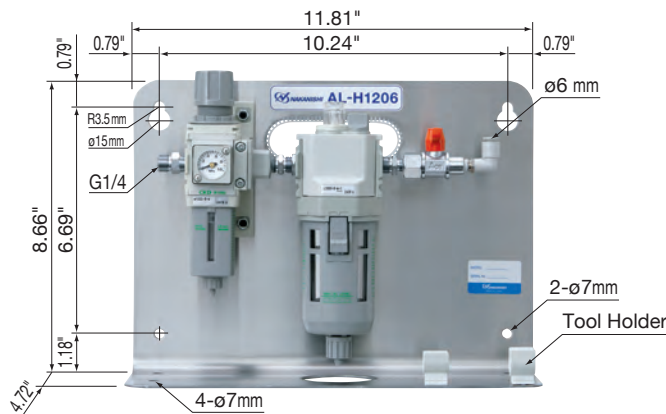
- When using Air Motors, be sure to install either an NSK Air Line Kit shown below or a similar Air Line Kit system. To ensure the longevity of Air Motors and Spindles, proper lubrication and air pressure are very important.
- The Air Line Kits offered by NAKANISHI are micron filter, regulator / lubricators specially designed to control the oil drip volume (3 drops per minute) for maximum efficiency.

## THE ROLE OF AIR LINE KIT

The Air Line Kit is designed to trap small amounts of moisture, debris and rust from the incoming air from the compressor. This provides a stable and accurate air supply through the regulator. The lubricator then meters the correct amount of lubricating oil to the air motor and spindle to ensure efficiency and longevity.

## FOR HAND TOOLS

### Product Code **4506** AIR LINE KIT AL-H1206 (Automatic Lubricating Device)



- Supplies smooth air flow and automatic lubrication, ensuring stable speed and power.
- Adjustable lubrication and air pressure settings provide longevity to the Air Grinder.
- Best for grinding and polishing applications. This compact Air Line Kit allows for portability or stationary mounting as well as a carrier for the Impulse.

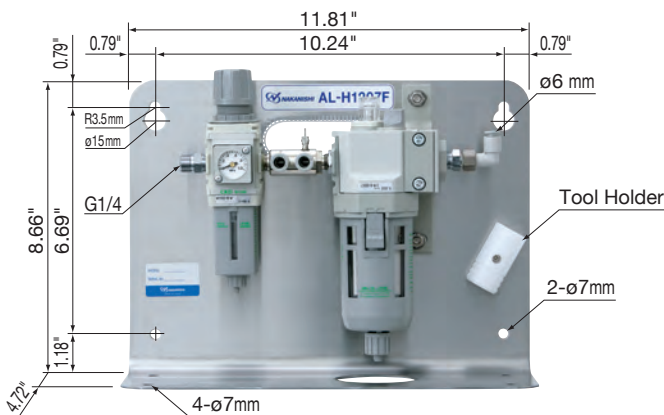
#### Air Line Kit (For ø6 mm Hose · Filter Mesh 5 µm)

Product Code	Product Name	Standard Equipment · Accessories
4506	AL-H1206	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge · Lubricator</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> <li>• Lubricating Oil (K-211) : 1 pc.</li> </ul>

#### Fit to

IMPULSE	NSP-601 A · NA45-230 · NA45-400 · NA90-230
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### Product Code **4507** AIR LINE KIT AL-H1207F (For Rotus System)



\*This Air Line Kit is designed for use with the AFC-45 Foot Control, Product Code AF10045.

- Supplies smooth, conditioned air flow and automatic lubrication to ensure stable speed and power.
- The Filter, Lubricator and Regulator can be used to adjust motor speed.
- Adjustable lubrication and air pressure setting provides longevity to the Air Grinder.
- Its compact size allows for portability or stationary mounting.
- Unit includes a Tool Holder to store the Rotus Motor.

#### Air Line Kit (For ø6 mm Hose · Filter Mesh 5 µm)

Product Code	Product Name	Standard Equipment · Accessories
4507	AL-H1207F	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge · Lubricator</li> <li>• Air Control Valve (CV-05)</li> <li>• Hose for Piping (K-275) : 6 ft</li> <li>• Lubricating Oil (K-211) : 1 pc.</li> </ul>

#### Fit to

ROTUS	IM-300 · IM-301
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### Product Code **1064** FOOT CONTROL AFC-45

\*Use Air Line Kit AL-H1207F, Product Code 4507 with this Foot Control.

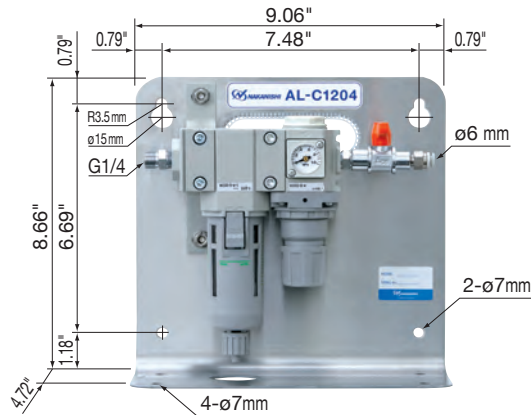


Product Code	Product Name	Standard Accessories
1064	AFC-45	Foot Control only



## FOR MACHINE SPINDLES

### Product Code **4504** AIR LINE KIT **AL-C1204** (For Electric Motors)



- The AL-C1204 Air Line Kit is designed to deliver clean, dry air to Electric Motors via the Controller. The filter removes small amounts of debris while the adjustable regulator provides the correct air pressure for cooling and purging.

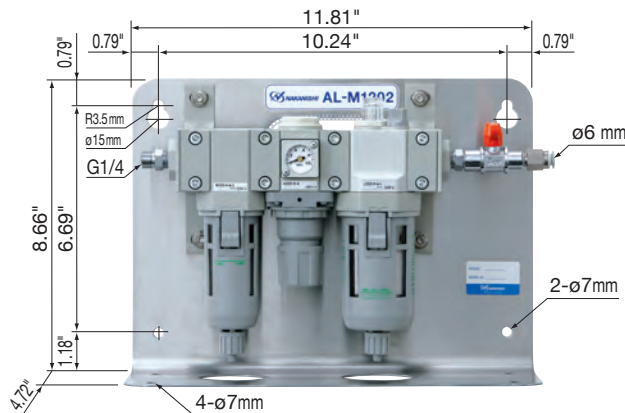
#### Air Line Kit (For $\phi 6$ mm Hose · Filter Mesh $0.3 \mu\text{m}$ )

Product Code	Product Name	Standard Equipment · Accessories	
4504	AL-C1204	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> </ul>	

#### Fit to

Controller	NE273 · NE246 · NE236 · NE211 · NE314
------------	---------------------------------------

### Product Code **4502** AIR LINE KIT **AL-M1202** (For Air Motors)



- The AL-M1202 provides simple, automatic conditioning of the air supplied to NAKANISHI Air Motors. The filter removes water and impure substances from the input air supply. The regulator maintains the proper air pressure, and the lubricator ensures proper oil flow to the motor and spindle. This Air Line Kit is wall mountable.

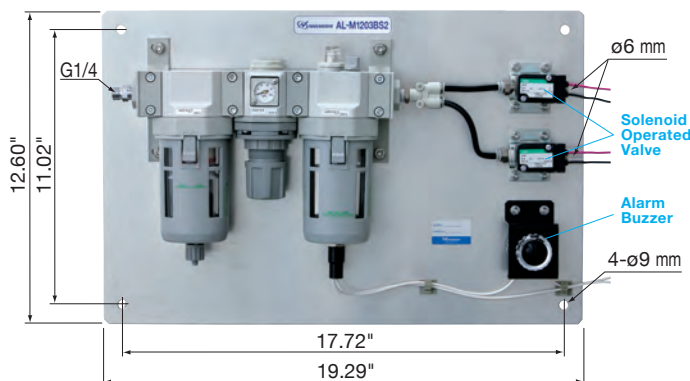
#### Air Line Kit (For $\phi 6$ mm Hose · Filter Mesh $0.3 \mu\text{m}$ )

Product Code	Product Name	Standard Equipment · Accessories	
4502	AL-M1202	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge · Lubricator</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> <li>• Lubricating Oil (K-211) : 1 pc.</li> </ul>	

#### Fit to

MA SERIES	Every Air Motor
MS SERIES	Every Air Motor Spindle
HTS · PLANET SERIES	Every Air Motor Spindle

### Product Code **4503** AIR LINE KIT **AL-M1203BS2** (For Air Motors)



- The AL-M1203BS2 is equipped with 2 (DC+24V) Air Solenoids, a large capacity filter, large capacity oil reservoir, high flow regulator and a low oil level warning alarm, making this unit ideal for use on CNC machines. This Air Line Kit allows for the operation of 2 Air Motors.

#### Air Line Kit (For $\phi 6$ mm Hose · Filter Mesh $0.3 \mu\text{m}$ )

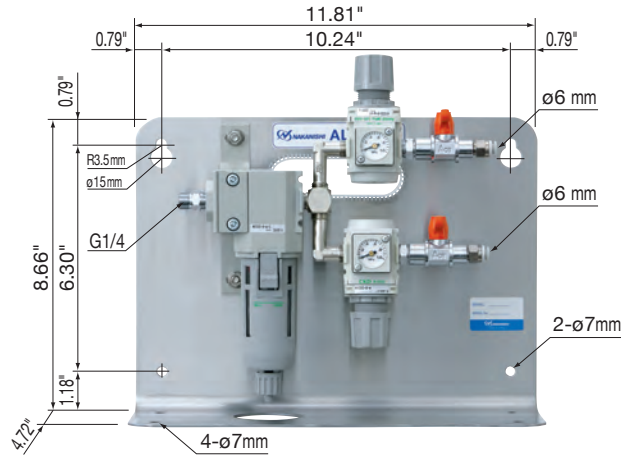
Product Code	Product Name	Standard Equipment · Accessories	
4503	AL-M1203 BS2	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge · Lubricator</li> <li>• Solenoid Valve (DC 24V) : 2 pcs.</li> <li>• Buzzer (DC 24V) · Hose for Piping (K-275) : 6 ft</li> <li>• Lubricating Oil (K-202) : 1 pc.</li> </ul>	

#### Fit to

MA SERIES	Every Air Motor
MS SERIES	Every Air Motor Spindle

## FOR MACHINE SPINDLES

### Product Code **4505** AIR LINE KIT AL-A1205 (For Air Bearing Spindles)



- The AL-A1205 is a dual output dry air, Air Line Kit designed for use on Electric Motor Systems that use the NRAF-5080 Air Bearing Spindle and the NE211 (E3000) Controller. One output is for the Electric Motor cooling, and the second output is for the Air Bearing operation. This unit is also designed for use on Air Turbine / Air Bearing Motor/Spindles such as the Xpeeds series and the ABT Series. One air output drives the Air Turbine Motor. The other air output drives the Air Bearing Spindle.
- Always supply air to the Air Bearing before starting the EM-3080 Motor. When stopping the spindle, always stop the motor before removing the air from the Air Bearing Spindle.
- Always supply air to the Air Bearing Spindle before starting the Air Turbine Motor. When stopping the spindle, always stop the Air Turbine Motor before removing the air from the Air Bearing Spindle.

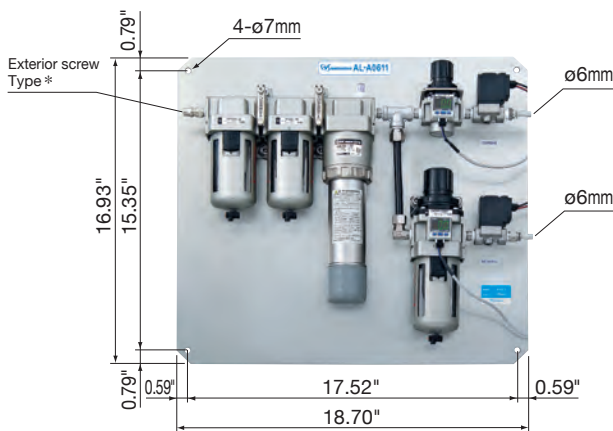
#### Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 µm )

Product Code	Product Name	Standard Equipment · Accessories
4505	AL-A1205	<ul style="list-style-type: none"> <li>• Air Filter · Air Regulator</li> <li>• Air Pressure Gauge</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-275) : 6 ft</li> </ul>

#### Fit to

Controller	NE211 · NE246
Spindle	NRAF-5080 · Xpeed1600 · ABT-1000 NR3060-AQC · NR4040-AQC

### Product Code **1548** AIR LINE KIT AL-A0611 (For Air Bearing Spindles)



- The AL-A0611 is a high filtered Air Line Kit utilizing a \*0.01µm micro mist filter system for NRAF-5080 Air Bearing Spindles combined with the NE211 (E3000) Controller.
  - This Air Line Kit is highly recommended for use on all Xpeed Series and the ABT series (Air Turbine / Air Bearing motor/spindles).
- \*Exterior screw Type (Model KK13P-02M by SMC Corporation)

#### Air Line Kit (For ø6 mm Hose · Filter Mesh 0.01 µm )

Product Code	Product Name	Standard Equipment · Accessories
1548	AL-A0611	<ul style="list-style-type: none"> <li>• Mist Separator</li> <li>• Micro Mist Separator</li> <li>• Membrane Air Dryer</li> <li>• Regulator · Solenoid Valve</li> <li>• Digital Pressure Switch</li> </ul>

#### Fit to

Controller	NE211
Spindle	NRAF-5080 · Xpeed1600 · Xpeed1200 ABT-1000

Product Code **1544** **REDUCER** (ø6 - ø4 Adaptor)



Reducer

Product Code	Product Name	Specifications	
<b>1544</b>	<b>Reducer</b>	• ø6 - ø4 mm Adaptor	

**LUBRICATING OIL**

Lubricating Oil (4 oz.)

Product Code	Product Name	Product	
<b>AA10478C</b>	<b>K-211</b>		

Lubricating Oil (32 oz.)

Product Code	Product Name	Product	
<b>AA10480C</b>	<b>K-202</b>		

The following products need Lubricating oil to use the AIR LINE KIT.

- ROTUS
- MS Series
- HTS Series
- IMPULSE
- MA Series
- PLANET Series

<b>1</b>
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.73"
ø0.897" ø0.81"
ø1.0" ø0.98"
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
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Sheenus  
ZERO

Sonic-Cutter  
ZERO

# 2

iSpeed3

E2000  
ø1.0"/ø0.98"/ø0.897"

E3000  
— One Piece

E3000  
— Modular

ø1.18"

ø1.0"/ø0.98"  
ø0.897"

E3000  
— 60,000rpm

E4000

# 3

MA

ø0.897"

ø1.0"  
ø0.98"

ø1.18"

MS

ø0.75"  
ø0.79"

ø0.897"  
ø0.91"

ø1.0"  
ø0.98"

# 4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

# 5

AIR LINE KIT

# 6

PARTS

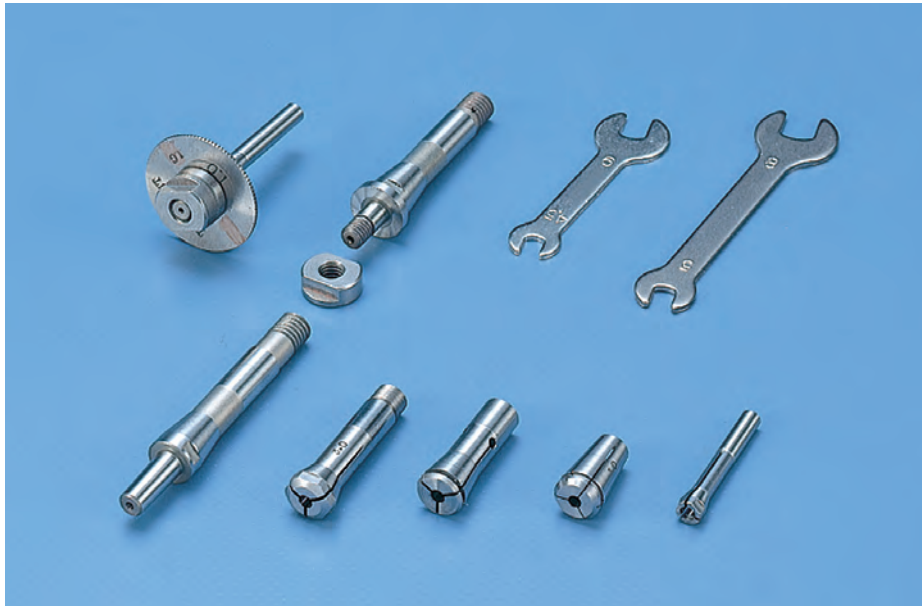
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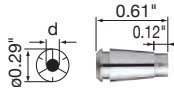
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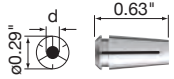


## CHA Group



Product Name :  
CHA-1.0,  
CHA-3.0, CHA-3.0AA,  
CHA-3.175, CHA-3.175AA,  
CHA-4.0, CHA-4.0AA

Fit to : K-263  
: CHN-A



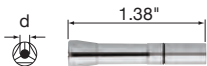
Product Name :  
Besides the above

Fit to

AMS-1200 · AMS-1210 · AMS-1500 · AMS-1501 · AMS-250 · ABS-800 · iSpeed3  
MS-19 · 20 · 22 · MSS-19 · 20 · 22 · NR-3080S · NRA-5080 · NR-320  
PS20-70/120 · PS20S-70 · PSA23-80/130 · PSA23S-80 · PMS-3020A · BANTAM 250  
PLANET 850 · PLANET 1500 · PLANET 2000 · SMS · HTS · EM20-S6000 · EM25-S6000  
EMS-3060A · NR3060-AQC · NRR3060-QC · HES810 · HPS500 · Xpeed1600 · ABT-1000

Product Code	Product Name	Inside Diameter d
91405	CHA-0.5	ø0.5
91406	CHA-0.6	ø0.6
91407	CHA-0.7	ø0.7
91408	CHA-0.8	ø0.8
91409	CHA-0.9	ø0.9
91410	CHA-1.0	ø1.0
91411	CHA-1.1	ø1.1
91412	CHA-1.2	ø1.2
91413	CHA-1.3	ø1.3
91414	CHA-1.4	ø1.4
91415	CHA-1.5	ø1.5
91416	CHA-1.6	ø1.6
91417	CHA-1.7	ø1.7
91418	CHA-1.8	ø1.8
91419	CHA-1.9	ø1.9
91420	CHA-2.0	ø2.0
91421	CHA-2.1	ø2.1
91422	CHA-2.2	ø2.2
91423	CHA-2.3	ø2.3
91492	CHA-2.35	ø2.35
91424	CHA-2.4	ø2.4
91425	CHA-2.5	ø2.5
91426	CHA-2.6	ø2.6
91427	CHA-2.7	ø2.7
91428	CHA-2.8	ø2.8
91429	CHA-2.9	ø2.9
91430	CHA-3.0	ø3.0
91494	CHA-3.0AA*	ø3.0
91431	CHA-3.1	ø3.1
91493	CHA-3.175	ø1/8"
91496	CHA-3.175AA*	ø1/8"
91432	CHA-3.2	ø3.2
91433	CHA-3.3	ø3.3
91434	CHA-3.4	ø3.4
91435	CHA-3.5	ø3.5
91436	CHA-3.6	ø3.6
91437	CHA-3.7	ø3.7
91438	CHA-3.8	ø3.8
91439	CHA-3.9	ø3.9
91440	CHA-4.0	ø4.0
91495	CHA-4.0AA*	ø4.0

## CHB Group

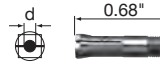


Fit to

NRR-2651 · NRR-3060 · NR40-5100 ATC

Product Code	Product Name	Inside Diameter d
92820	CHB-2.0	ø2.0
92830	CHB-3.0	ø3.0
92893	CHB-3.175	ø1/8"
92840	CHB-4.0	ø4.0

## CHC Group

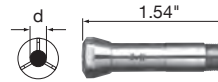


Fit to

IC-300 · KC-300 · EIC-300 · EKC-300 · IC-E · KC-E

Product Code	Product Name	Inside Diameter d
90416	CHC-1.6	ø1.6
90492	CHC-2.35	ø2.35
90430	CHC-3.0	ø3.0
90493	CHC-3.175	ø1/8"

## CHG Group



Fit to

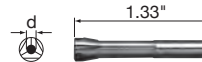
HG-200 · NR-301 · EH-400

Fit to

NR-301

Product Code	Product Name	Inside Diameter d
91110	CHG-1.0	ø1.0
91115	CHG-1.5	ø1.5
91116	CHG-1.6	ø1.6
91120	CHG-2.0	ø2.0
91192	CHG-2.35	ø2.35
91125	CHG-2.5	ø2.5
91130	CHG-3.0	ø3.0
91193	CHG-3.175	ø1/8"
91140	CHG-4.0	ø4.0
91194	CHG-4.76	ø4.76
91150	CHG-5.0	ø5.0
91160	CHG-6.0	ø6.0
91196	CHG-6.35	ø1/4"

## CHH Group

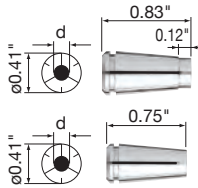


Fit to

IH-300 · IR-310 · EHL-401 · EHR-401 · EHR-500 · VH-E

Product Code	Product Name	Inside Diameter d
90610	CHH-1.0	ø1.0
90615	CHH-1.5	ø1.5
90616	CHH-1.6	ø1.6
90620	CHH-2.0	ø2.0
90692	CHH-2.35	ø2.35
90625	CHH-2.5	ø2.5
90630	CHH-3.0	ø3.0
90693	CHH-3.175	ø1/8"

## CHK Group



Product Name :  
CHK-1.0,  
CHK-3.0, CHK-3.0AA,  
CHK-3.175, CHK-3.175AA,  
CHK-4.0, CHK-4.0AA,  
CHK-6.0, CHK-6.0AA,  
CHK-6.35, CHK-6.35AA

Fit to : K-265  
: CHN-B

Product Name :  
Besides the above



Fit to  
NR-302 · ENR-302



Fit to  
ABS-70P · ABS-400 · AMX-50 · AMX-65 (1/1 Ratio) · AMX-80 (1/1 Ratio)  
EM30-S6000 · EMA-3020K · EMS-3041 · EMS-3045 · EMS-3052 · EMS-3056  
EMS-3046-J4 · EMS-3057-J4 · EMS-6040 · EMS-6040K · EMS-3060K  
EMSF-3060K · EMR-3008K · MS-23 · 25 · MSH-25 · MSS-25 · MSSH-25 · MST-23  
MSST-23 · NR-2351 · NR-2532 · NR-H2532 · NR-2551 · NR-H2551 · NR-303  
NR-303P · NR-311 · NR-3060S · NR-403E · NR-453E · NRAF-5080 · NRL-300  
NRL-300E · NR3060-AQC · NRR3060-QC · NR4040-AQC · NRR4040-QC  
PMA-3013K · PMR-3005K · PMS-3020K · PS23-80/130 · PS23S-80 · PSA25-90/140  
PSA25S-90 · PSA30-100/160 · PSA30S-100 · PSA35-120/180 · PSA35S-120  
RAS-101 · RAS-151E · RAX-271E · RAX-71E · RAS-2511 · RAS-H2511 · FG-01S  
HES510 · HPS250 · PLANET 400 · PLANET 600 · Xpeed1200

\*High precision type

Product Code	Product Name	Inside Diameter d	
91505	CHK-0.5	ø0.5	
91506	CHK-0.6	ø0.6	
91507	CHK-0.7	ø0.7	
91508	CHK-0.8	ø0.8	
91509	CHK-0.9	ø0.9	
91510	CHK-1.0	ø1.0	
91511	CHK-1.1	ø1.1	
91512	CHK-1.2	ø1.2	
91513	CHK-1.3	ø1.3	
91514	CHK-1.4	ø1.4	
91515	CHK-1.5	ø1.5	
91516	CHK-1.6	ø1.6	
91517	CHK-1.7	ø1.7	
91518	CHK-1.8	ø1.8	
91519	CHK-1.9	ø1.9	
91520	CHK-2.0	ø2.0	
91521	CHK-2.1	ø2.1	
91522	CHK-2.2	ø2.2	
91523	CHK-2.3	ø2.3	
91592	CHK-2.35	ø2.35	
91524	CHK-2.4	ø2.4	
91525	CHK-2.5	ø2.5	
91526	CHK-2.6	ø2.6	
91527	CHK-2.7	ø2.7	
91528	CHK-2.8	ø2.8	
91529	CHK-2.9	ø2.9	
91530	CHK-3.0	ø3.0	
91597	CHK-3.0AA*	ø3.0	
91531	CHK-3.1	ø3.1	
91593	CHK-3.175	ø1/8"	
91598	CHK-3.175AA*	ø1/8"	
91532	CHK-3.2	ø3.2	
91533	CHK-3.3	ø3.3	
91534	CHK-3.4	ø3.4	
91535	CHK-3.5	ø3.5	
91536	CHK-3.6	ø3.6	
91537	CHK-3.7	ø3.7	
91538	CHK-3.8	ø3.8	
91539	CHK-3.9	ø3.9	
91540	CHK-4.0	ø4.0	
91599	CHK-4.0AA*	ø4.0	
91541	CHK-4.1	ø4.1	
91542	CHK-4.2	ø4.2	
91543	CHK-4.3	ø4.3	
91544	CHK-4.4	ø4.4	
91545	CHK-4.5	ø4.5	
91546	CHK-4.6	ø4.6	
91547	CHK-4.7	ø4.7	
91594	CHK-4.76	ø4.76	
91548	CHK-4.8	ø4.8	
91549	CHK-4.9	ø4.9	
91550	CHK-5.0	ø5.0	

Product Code	Product Name	Inside Diameter d	
91551	CHK-5.1	ø5.1	
91552	CHK-5.2	ø5.2	
91553	CHK-5.3	ø5.3	
91554	CHK-5.4	ø5.4	
91555	CHK-5.5	ø5.5	
91556	CHK-5.6	ø5.6	
91557	CHK-5.7	ø5.7	
91558	CHK-5.8	ø5.8	
91559	CHK-5.9	ø5.9	
91560	CHK-6.0	ø6.0	
91600	CHK-6.0AA*	ø6.0	
91596	CHK-6.35	ø1/4"	
91601	CHK-6.35AA*	ø1/4"	

Red square icon indicates Hand Grinder use

Yellow square icon indicates Machine Spindle use

\*Order by product code.

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.0"/ø0.99"/ø0.997"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.07"/ø0.98"

ø0.997"

E3000

— 80,000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.79"

ø0.99"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL

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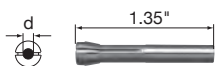
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## CHM Group

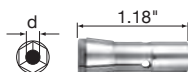


Fit to \_\_\_\_\_  
MH-300 · BMH-300

Fit to \_\_\_\_\_  
NR-600 · NR-601 · AMH-300 · AMH-301

Product Code	Product Name	Inside Diameter d	
90910	CHM-1.0	ø1.0	
90916	CHM-1.6	ø1.6	
90920	CHM-2.0	ø2.0	
90992	CHM-2.35	ø2.35	
90930	CHM-3.0	ø3.0	
90993	CHM-3.175	ø1/8"	

## CHR Group



Fit to \_\_\_\_\_  
NR-5040E ATC · NR-5041E ATC · NR50-5100 ATC

Product Code	Product Name	Inside Diameter d	
91920	CHR-2.0	ø2.0	
91930	CHR-3.0	ø3.0	
91993	CHR-3.175	ø1/8"	
91940	CHR-4.0	ø4.0	
91960	CHR-6.0	ø6.0	
91996	CHR-6.35	ø1/4"	

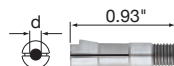
## CHR RS Group



Fit to \_\_\_\_\_  
NR-5040E ATC · NR-5041E ATC · NR50-5100 ATC-RS

Product Code	Product Name	Inside Diameter d	
93201	CHR-3.0 RS	ø3.0	
93202	CHR-3.175 RS	ø1/8"	
93203	CHR-4.0 RS	ø4.0	
93204	CHR-6.0 RS	ø6.0	
93205	CHR-6.35 RS	ø1/4"	

## CHS Group

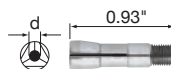


Fit to \_\_\_\_\_  
ERA-270 · IMPULSE SERIES

Fit to \_\_\_\_\_  
RA-200 · RA-271E · RA-2521 · RA-H2521

Product Code	Product Name	Inside Diameter d	
90508	CHS-0.8	ø0.8	
90509	CHS-0.9	ø0.9	
90510	CHS-1.0	ø1.0	
90511	CHS-1.1	ø1.1	
90512	CHS-1.2	ø1.2	
90513	CHS-1.3	ø1.3	
90514	CHS-1.4	ø1.4	
90515	CHS-1.5	ø1.5	
90516	CHS-1.6	ø1.6	
90517	CHS-1.7	ø1.7	
90518	CHS-1.8	ø1.8	
90519	CHS-1.9	ø1.9	
90520	CHS-2.0	ø2.0	
90521	CHS-2.1	ø2.1	
90522	CHS-2.2	ø2.2	
90523	CHS-2.3	ø2.3	
90592	CHS-2.35	ø2.35	
90524	CHS-2.4	ø2.4	
90525	CHS-2.5	ø2.5	
90526	CHS-2.6	ø2.6	
90527	CHS-2.7	ø2.7	
90528	CHS-2.8	ø2.8	
90529	CHS-2.9	ø2.9	
90530	CHS-3.0	ø3.0	
90593	CHS-3.175	ø1/8"	

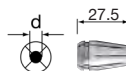
## CHSS Group



Fit to \_\_\_\_\_  
EMA-3020S · PMA-3013S

Product Code	Product Name	Inside Diameter d	
93010	CHSS-1.0	ø1.0	
93015	CHSS-1.5	ø1.5	
93020	CHSS-2.0	ø2.0	
93092	CHSS-2.35	ø2.35	
93025	CHSS-2.5	ø2.5	
93030	CHSS-3.0	ø3.0	
93093	CHSS-3.175	ø1/8"	

## CH16OH Group



Fit to \_\_\_\_\_  
BMS-4040-MQL · BMS-4040-MQL-2M

Product Code	Product Name	Inside Diameter d	Price
93330	CH16OH-3.0	ø3.0	270.00
93331	CH16OH-3.175	ø3.175	
93340	CH16OH-4.0	ø4.0	
93350	CH16OH-5.0	ø5.0	
93360	CH16OH-6.0	ø6.0	
93363	CH16OH-6.35	ø6.35	
93370	CH16OH-7.0	ø7.0	
93380	CH16OH-8.0	ø8.0	
93390	CH16OH-9.0	ø9.0	
93400	CH16OH-10.0	ø10.0	

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.0"/ø0.98"/ø0.897"

E3000

One Piece

E3000

Modular

ø1.18"

ø1.0"/ø0.98"/ø0.897"

E3000

ø0.000rpm

E4000

3

MA

ø0.897"

ø1.0"/ø0.98"

ø1.18"

MS

ø0.75"/ø0.79"

ø0.87"/ø0.915"

ø1.0"/ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL

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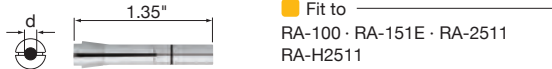
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## CH6 Group



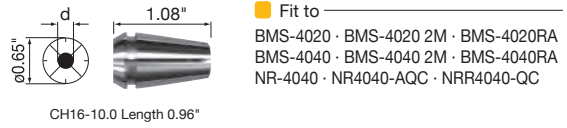
Product Code	Product Name	Inside Diameter d	
90830	CH6-3.0	ø3.0	
90893	CH6-3.175	ø1/8"	

## CH8 Group



Product Code	Product Name	Inside Diameter d	
91008	CH8-0.8	ø0.8	
91009	CH8-0.9	ø0.9	
91010	CH8-1.0	ø1.0	
91011	CH8-1.1	ø1.1	
91012	CH8-1.2	ø1.2	
91013	CH8-1.3	ø1.3	
91014	CH8-1.4	ø1.4	
91015	CH8-1.5	ø1.5	
91016	CH8-1.6	ø1.6	
91017	CH8-1.7	ø1.7	
91018	CH8-1.8	ø1.8	
91019	CH8-1.9	ø1.9	
91020	CH8-2.0	ø2.0	
91021	CH8-2.1	ø2.1	
91022	CH8-2.2	ø2.2	
91023	CH8-2.3	ø2.3	
91092	CH8-2.35	ø2.35	
91024	CH8-2.4	ø2.4	
91025	CH8-2.5	ø2.5	
91026	CH8-2.6	ø2.6	
91027	CH8-2.7	ø2.7	
91028	CH8-2.8	ø2.8	
91029	CH8-2.9	ø2.9	
91030	CH8-3.0	ø3.0	
91093	CH8-3.175	ø1/8"	

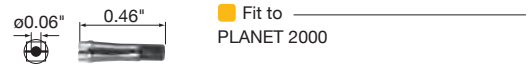
## CH16 Group



CH16-10.0 Length 0.96"

Product Code	Product Name	Inside Diameter d	
93130	CH16-3.0	ø3.0	
93193	CH16-3.175	ø1/8"	
93140	CH16-4.0	ø4.0	
93160	CH16-6.0	ø6.0	
93196	CH16-6.35	ø1/4"	
93180	CH16-8.0	ø8.0	
93100	CH16-10.0	ø10.0	

## CH20 Group



Product Code	Product Name	Inside Diameter d	
90216	CH20-16	ø1/16"	

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.0"/ø0.95"/ø0.897"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.07"/ø0.98"

ø0.897"

E3000

— 80,000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.75"

ø0.897"

ø0.81"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL

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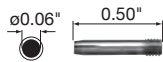
■ indicates Hand Grinder use

■ indicates Machine Spindle use

\*Order by product code.

6-p5

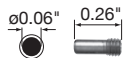
## K-252



Fit to \_\_\_\_\_  
MFC-300S

Product Code	Product Name	Inside Diameter d	
90316	K-252	ø1/16"	

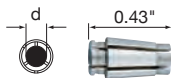
## K-253



Fit to \_\_\_\_\_  
MFC-300M

Product Code	Product Name	Inside Diameter d	
90016	K-253	ø1/16"	

## NKM6 Group (NK Micron Collet)



Fit to : CHN-6

Fit to \_\_\_\_\_  
IG-400

Product Code	Product Name	Inside Diameter d	
92030	NKM6-2.35	ø2.35	
92092	NKM6-3.0	ø3.0	
92093	NKM6-3.175	ø1/8"	

## Collet Nut CHN-A



Fit to : CHA

Fit to \_\_\_\_\_  
iSpeed3 · EM20-S6000 · EM25-S6000 · EMS-3060A · HES810 · HPS500  
MSS-19 · MSS-20 · MSS-22 · NR-3080S · NR3060-AQC · NRR3060-QC  
PMS-3020A · SMS401

Product Code	Product Name	Fit to	
2102	CHN-A	CHA	

## Collet Nut CHN-AA

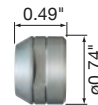


Fit to : CHA

Fit to \_\_\_\_\_  
HTS · AMS-1501/1510 · AMS-1210

Product Code	Product Name	Fit to	
2159	CHN-AA	CHA	

## Collet Nut CHN-B (For EMS-6040/6040K)



Fit to : CHK

Fit to \_\_\_\_\_  
EMS-6040 · EMS-6040K

Product Code	Product Name	Fit to	
2123	CHN-B	CHK	

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.0"/ø0.98"/ø0.997"

E3000

One Piece

E3000

Modular

ø1.18"

ø1.0"/ø0.98"

E3000

ø0.000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.96"

ø1.18"

MS

ø0.75"

ø0.79"

ø0.93"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

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## Collet Nut CHN-3A

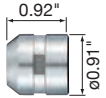


Fit to : CHA

Fit to  
Xpeed1600 · ABT-1000

Product Code	Product Name	Fit to	
2160	CHN-3A	CHA	

## Collet Nut CHN-16

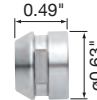


Fit to : CH16

Fit to  
BMS-4020 · BMS-4020 2M · BMS-4020RA · BMS-4040 · BMS-4040 2M  
BMS-4040RA · NR-4040 · NR4040-AQC · NRR4040-QC

Product Code	Product Name	Fit to	
2161	CHN-16	CH16	

## Collet Nut K-265

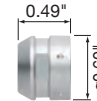


Fit to : CHK

Fit to  
ABS-400 · ABS-70P · AMX-50 · AMX-65 (1/1 Ratio) · AMX-80 (1/1 Ratio)  
EM30-S6000 · EMA-3020K · EMS-3041 · EMS-3046-J4 · EMS-3052 · EMS-3057-J4  
EMS-3060K · EMSF-3060K · EMR-3008K · FG-01S · HES510 · HPS250  
NR-403E · NR-453E · NRL-300E · NR-2532 · NR-H2532 · NR-2511 · NR-H2511  
NR-2551 · NR-H2551 · NR-2351 · NRL-300 · NR-303 · NR-303P · NR-311 · NR-3060S  
NR3060-AQC · NRR3060-QC · NR4040-AQC · NRR4040-QC · MS-23 · MSS-23  
MST-23 · MSST-23 · MS-25 · MSH-25 · MSS-25 · MSSH-25 · PMA-3013K  
PMR-3005K · PMS-3020K · PS23-80/130 · PS23S-80 · PSA25-90/140 · PSA25S-90  
PSA30-100/160 · PSA30S-100 · PSA35-120/180 · PSA35S-120 · PLANET 400  
PLANET 600 · RAS-101 · RAS-151E · RAS-2510 · RAS-H2510 · RAX-271E · RAX-71E

Product Code	Product Name	Fit to	
2129	K-265	CHK	

## Collet Nut K-265A



Fit to : CHK

Fit to  
NRAF-5080 · Xpeed1200

Product Code	Product Name	Fit to	
2158	K-265A	CHK	

1

EmaxEVO  
ESPERT  
ROTUS  
IMPULSE  
PRESTO II  
Sheenus  
ZERO  
Sonic-Cutter  
ZERO

2

iSpeed3  
E2000  
E1.0"/ø0.95"/ø0.897"  
E3000  
One Piece  
E3000  
Modular  
E1.18"  
E1.9"/ø0.98"  
E3000  
80,000rpm  
E4000

3

MA  
E0.897"  
E1.0"  
E0.98"  
E1.18"  
MS  
E0.75"  
E0.79"  
E0.89"  
E0.91"  
E1.0"  
E0.98"

4

HES  
iSpeed5  
HTS  
PLANET  
Xpeed  
ABT

5

AIR LINE KIT

6

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■ indicates Hand Grinder use  
■ indicates Machine Spindle use




\*Order by product code.

6-p7



## ■ Emax EVolution Motor Cord

Product	Description	Product Code	Product Name	Fit to
	Straight Cord : 4.5 ft <with Switch>	8088	ENKCD-410S	ENK-410S (Standard Motor)
		8089	ENKCD-250T	ENK-250T (Torque Motor)
	Coiled Cord : 4.5 ft <with Switch>	8090	ENKCD-410C	ENK-410S (Standard Motor)
		8091	ENKCD-250C	ENK-250T (Torque Motor)

## ■ ELECTER Motor Cord

Product	Description	Product Code	Product Name	Fit to	Switch color
	Coiled Cord : 4.5 ft <with Switch>	8004	NCL-351C	NK-351 (Standard Motor)	Blue
		8013	NCL-261C	NK-261 (Torque Motor)	Green
	Straight Cord : 6 ft <with Switch>	8005	NCL-351S	NK-351 (Standard Motor)	Blue
		8014	NCL-261S	NK-261 (Torque Motor)	Green
	Extension Straight Cord : 10 ft	8051	NCL-EXT	ELECTER E-max Motor (All Types)	

## ■ ESPERT 500 Motor Cord

Product	Description	Product Code	Product Name	Fit to
	ESPERT 500 Compact Motor Cord : 4.5 ft	9093	ENKCD-50C	ENK-500C (Compact Motor Cord)
	ESPERT 500 Compact Motor Cord : 9.84 ft	9095	ENKCD-50C 3M	
	ESPERT 500 Torque Motor Cord : 4.5 ft	9094	ENKCD-50T	ENK-500T (Torque Motor Cord)
	ESPERT 500 Torque Motor Cord : 9.84 ft	9096	ENKCD-50T 3M	

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.0"/ø0.98"/ø0.897"

E3000

- One Piece

E3000

- Modular

ø1.18"

ø1.0"/ø0.98"/ø0.897"

E3000

- ø0.000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.79"

ø0.81"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

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# < PARTS > FOOT PEDAL & HANDPIECE

## ■ Foot Pedal

Product	Description	Product Code	Product Name	Fit to
	<b>Foot Pedal</b> ON-OFF and speed change can be accomplished.	<b>8106</b>	<b>FC-64</b>	Controller Emax EVOLution NE249
	<b>Foot Pedal</b> ON-OFF and speed change can be accomplished.	<b>1440</b>	<b>FC-40</b>	Controller ELECTER E-max NE129 · ELECTER-GX NE22E ESPERT 400 NE51 · ESPERT 500 NE96 SONIC-CUTTER NE80
	<b>Foot Pedal</b> ON-OFF switch only	<b>8103</b>	<b>FC-24</b>	SHEENUS NE124 · SHEENUS neo NE240
	<b>Foot Control</b>	<b>1064</b>	<b>AFC-45</b>	MIRACLE · ROTUS FINE BELT SANDER ROTUS Air Line Kit AL-0306 · AL-H1207F
		<b>1124</b>	<b>AFC-40</b>	PRESTO II PR2-06 · PRESTO PR-06

## ■ Handpiece Stand, Handpiece Holder & Head Cover

Product	Description	Product Code	Product Name	Fit to
	<b>Handpiece Stand</b>	<b>8104</b>	<b>K-274</b>	Emax EVOLution · ELECTER E-max SHEENUS · SHEENUS neo ESPERT 500
		<b>1519</b>	<b>Z095101</b>	ESPERT 400
	<b>Handpiece Holder</b>	<b>8107</b>	<b>K-273</b>	Controller Emax EVOLution NE249

■ indicates Hand Grinder use  
■ indicates Machine Spindle use

\*Order by product code.

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.0"/ø0.99"/ø0.897"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.07"/ø0.98"

ø0.897"

E3000

— 30,000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.79"

ø0.897"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

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## ■ Power Supply Cord

Product	Description	Product Code	Product Name	Fit to
	Power Supply Cord	1484	K-269	Controller Emax EVOLution NE249



## ■ PRESTO II / PRESTO

Product	Description	Product Code	Product Name	Fit to
	PRESTO II Cartridge	1120	PR-03	PRESTO II · PRESTO

## ■ FINE BELT SANDER

Product	Description	Product Code	Product Name	Fit to
	Tension Pulley	1103	TP-12A	KBS-101 · EBS-101
	Tension Pulley Assembly	1104	TPA-12A	KBS-101 · EBS-101

## ■ Carbon Brush

Product	Description	Product Code	Product Name	Fit to
	Carbon Brush (each 2 pcs.)	1424	E023011	NK-351 NK-350 · NK-804T ET II NK-260
		1425	E037011	NK-151 · NK-261 NK-150 ET II NK-260N

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.07/ø0.98"/ø0.897"

E3000

- One Piece

E3000

- Modular

ø1.18"

ø1.07/ø0.98"

ø0.897"

E3000

- ø0.000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.79"

ø0.897"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

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# < PARTS > OIL, GREASE, GREASE NIPPLE & SILENCER



## Oil List

Product	Description	Product Code	Product Name	Fit to
	Lubricating Oil (4 oz.)	AA10478C	K-211	For Air Motor · Air Line Kit
	Lubricating Oil (32 oz.)	AA10480C	K-202	For Air Motor · Air Line Kit

## Grease & Grease Nipple

Product	Description	Product Code	Product Name	Fit to
	Grease for Reducer (2.5mL)	1547	GR35ML	ARG-011E · ARG-021E · EMR-3008K EMA-3020K · RAX-271E · RAX-71E
	Grease for Reducer (10mL)	1550	GR10ML	
	Grease for Reducer (100mL)	1549	GR100ML	
	Grease Nipple	K137A251	GN	

## Silencer




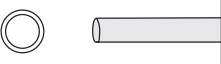
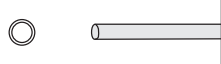






Product	Description	Product Code	Product Name	Fit to
	Silencer Large (with Metal Fitting)	1060	K-209	<ul style="list-style-type: none"> <li>ROTUS</li> <li>AMS-20 · 50 · 150 · 250 · 600 · AM-300 (R · L)</li> <li>AM-2526 (RA · LA) · AM-H2526 (RA · LA) · MS-19 · 20 · 22 (R · L)</li> <li>MSS-19 · 20 · 22 (R) · MS-23 (R · L) · MST-23 (R · L)</li> <li>MSTN-23 (R · L) · MS-25 (R · L) · MSH-25 (R · L) · MSS-25 (R)</li> <li>MSSH-25 (R) · MSST-23 (R) · PLANET 550</li> </ul>
	Silencer Small (with Metal Fitting)	1061	K-208	<ul style="list-style-type: none"> <li>IMPULSE · MIRACLE</li> <li>AM-300 (RA · LA) · AM-600 · AM-310 · AM-2526 (R · L)</li> <li>AM-H2526 (R · L) · MS-19 · 20 · 22 (RA · LA) · MS-19 · 20 · 22 (RA)</li> <li>MS-23 (RA · LA) · MST-23 (RA · LA) · MSST-23 (RA)</li> <li>MSTN-23 (RA · LA) · MS-25 (RA · LA) · MSH-25 (RA · LA) · MSS-25 (RA)</li> <li>MSSH-25 (RA) · ABS-600 · AM-3020</li> </ul>
	Silencer (with Metal Fitting)	1546	K-246	AMX-8003 · AMX-8001
	Silencer	K1049101	—	PLANET 600

■ indicates Hand Grinder use  
■ indicates Machine Spindle use

1
EmaxEVC
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0" / ø0.99" / ø0.897"
E3000 — One Piece
E3000 — Modular ø1.18"
ø1.07" / ø0.98" ø0.897"
E3000 — 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.897" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
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## Hose List

Product	Description	Product Code	Product Name	Fit to
	Hose 6 ft (INTAKE)	2027	K-206	■ ROTUS IM-301
	Hose 6 ft (INTAKE, Chip Air Mechanism)	2020	K-207	■ ROTUS IM-300
	Hose 4.5 ft	1038	K-213	■ IMPULSE & PNEU-SONIC
	Hose for Piping 6 ft (ø6.0 mm)	Z101240	K-237	■ PRESTO II · PRESTO
	Turbine Hose 6 ft (ø5.1 mm)	T815220	K-238	■ PRESTO II · PRESTO
	Hose for Piping 6 ft with Metal Fitting	2070	K-275	■ ■ For Air Line Kit
	Hose ø6 mm (O.D.) (INTAKE) 13 ft · Blue	2056	K-247	■ EMS-6040 · EMS-6040K · HTS SERIES
	Hose ø6 mm (O.D.) (INTAKE) 6 ft · Blue	2059	K-254	■ ABS-400 · 800 · 1600 AMS-1210 · AMS-1501 · PLANET 600
	Hose ø6 mm (O.D.) (INTAKE) 6 ft	2028	K-215	■ AM-300 (RA · LA) · AM-310 (RA · LA) · AM-2526 (RA · LA) · AM-H2526 (RA · LA) · AM-600RA · MS-19 · 20 · 22 (RA · LA) · MSS-19 · 20 · 22 (RA) · MS-23 (RA · LA) · MST-23 (RA · LA) · MSST-23 (RA) · MSTN-23 (RA · LA) · MS-25 (RA · LA) · MSH-25 (RA · LA) · MSS-25 (RA) · MSSH-25 (RA) · ABS-400 · ABS-800 · ABS-1600 · ABS-70P · PLANET 400 · AM-3020 · AMX-50 · AMX-65 · AMX-8008 · SMS400 · 401 · PMA-3020A · PMA-3013K · PMA-3013S · PMS-3020K · PMS-3020A · PMR-3005K
	Hose ø8 mm (O.D.) (EXHAUST) 3 ft	2029	K-216	■ AM-300 (RA · LA) · AM-310 (RA · LA) · MS-19 · 20 · 22 (RA · LA) · MSS-19 · 20 · 22 (RA) · MS-23 (RA · LA) · MST-23 (RA · LA) · MSTN-23 (RA · LA) · MSST-23 (RA) · MS-25 (RA · LA) · MSH-25 (RA · LA) · MSS-25 (RA) · MSSH-25 (RA) · ABS-800 · AM-600RA
	Hose ø8 mm (O.D.) (INTAKE) 6 ft	2043	K-223	■ AMX-8003 · AMX-8001
	Hose ø8 mm (O.D.) (EXHAUST) 3 ft	2052	K-256	■ AM-2526 (RA · LA) · AM-H2526 (RA · LA) · AM-3020 · AMX-50 · AMX-65 · AMX-8008 · PMA-3013K · PMA-3013S · PMR-3005K · PMS-3020A · PMS-3020K
	Hose 6 ft	2030	K-204	■ AM-310 (R · L) · AM-600R · AM-2526 (R · L) · AM-H2526 (R · L) · MST-23 (R · L) · MSTN-23 (R · L) · MSS-25 (R) · MSSH-25 (R) · MSST-23 (R) · AM-H2525 (R · L) · AM-2525 (R · L) · MS-25 (R · L) · MSH-25 (R · L)
	Hose 6 ft	2049	K-221	■ AM-300 (R · L) · MSS-19 · 20 · 22 (R) · MS-19 · 20 · 22 (R · L)
	Air Hose with filter ø6 mm (O.D.) 6 ft	2058	K-251	■ NE123 · NE145 · NE145-OP1 · NE314 · NE147 · NE147-800 · NE147-400 · NE211 · NE211-OP1 · NE236 · NE246 · NE260 · NE273 · NR40-5100 ATC · NR3060-AQC · NR4040-AQC · NR50-5100 ATC · NR50-5100 ATC-RS · NR-5041E ATC


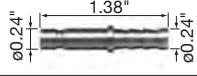
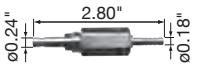
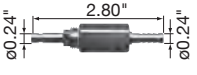
1	EmaxEVO
2	ESPERT
3	ROTUS
4	IMPULSE
5	PRESTO II
6	Sheenus ZERO
7	Sonic-Cutter ZERO
8	iSpeed3
9	E2000 ø1.0"/ø0.98"/ø0.897"
10	E3000 - One Piece
11	E3000 - Modular
12	ø1.18"
13	ø1.0"/ø0.98"/ø0.897"
14	E3000 - ø0.000rpm
15	E4000
16	3
17	MA
18	ø0.897"
19	ø1.0"/ø0.98"
20	ø1.18"
21	MS
22	ø0.75"/ø0.79"
23	ø0.87"/ø0.91"
24	ø1.0"/ø0.98"
25	4
26	HES
27	iSpeed5
28	HTS
29	PLANET
30	Xpeed
31	ABT
32	5
33	AIR LINE KIT
34	6
35	PARTS
36	7
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# < PARTS > HOSE, METAL, FITTING, FILTER JOINT, & GRINDSTONE FLANGE ETC.

## ■ Hose List

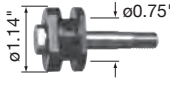
Product	Description	Product Code	Product Name	Fit to
	EMCD-3000 Air Hose	E304052	E304052	■ EMCD-3000 · EMCD-3000A

## ■ Metal Fitting & Filter Joint

Product	Description	Product Code	Product Name	Fit to
	Metal Fitting (for ø6 mm Quick Disconnecting Joint)	2035	K-241	■ (For K-215 Hose) ■ (For K-259 Hose)
	Metal Fitting (for ø6 mm Quick Disconnecting Joint)	2036	K-242	■ (For K-204 Hose)
	Filter Joint (for ø6 mm Quick Disconnecting Joint)	2038	FJ-01	■ (For K-206 Hose) (For K-207 Hose) ■ (For K-211 Hose) (For K-215 Hose) (For K-247 Hose) ■ (For K-254 Hose) (For K-259 Hose)
	Filter Joint (for ø6 mm Quick Disconnecting Joint)	2039	FJ-02	■ (For K-213 Hose) ■ (For K-204 Hose)

## ■ Grindstone Flange

\*NGF2-19, EGF-19 for right hand (cw) rotation only.


Product	Description	Product Code	Product Name	Fit to	Specifications
	Grindstone Flange	2143	NGF2-19	NR-311	Applicable Grindstone Dimensions ø19.05 (I.D.) x ø40 (O.D.) x 7 (W) mm
		2138	EGF-19	NR-403E · NR-453E · NR-3060S · EMS-3041 · EMS-3045 EMS-3052 · EMS-3056 · EMS-3060K · EMSF-3060K EM30-S6000 · PMS-3020K · PS23 · PSA25 · PSA30 · PSA35	

1
EmaxEVC
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 — 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.897" ø0.91"
ø1.0" ø0.98"
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■ indicates Hand Grinder use  
■ indicates Machine Spindle use



## Special Drill Chuck Arbor

\*For right hand (cw) rotation only.

Product	Description	Product Code	Product Name	Fit to
	<b>Special Drill Chuck Arbor</b> For Drill Chuck Jacob's Taper No. 0 Run-out Accuracy : Within 0.05 mm	2132	DCH-J0K	■ ENR-302 ■ RAS-101 · RAS-151E · RAX-271E · RAX-71E · RAS-2511 · RAS-H2511 NR-3060S · NR-311 · NR-303 · NR-2351 · NR-303P · NR-403E · NR-453E NR-2551 · NR-H2551 · NR-2532 · NR-H2532 · MS-23 · MST-23 · MSST-23 MSTN-23 · MS-25 · MSH-25 · MSS-25 · MSSH-25 · EMA-3020K EMS-3041 · EMS-3052 · EMS-3045 · EMS-3056 · EMS-3060K EMR-3008K · EMSF-3060K · EMS-6040 · EMS-6040K · ABS-70P HES · PS23 · PSA25 · PSA30 · PSA35 · NRL-300 · NRL-300E PMA-3013K · PMR-3050K · PMS-3020K

## Special Metal Saw Arbor

\*For right hand (cw) rotation only.

Product	Description	Product Code	Product Name	Fit to
	<b>Special Metal Saw Arbor</b> Dimensions of Metal Saw $\phi d$ (I.D.) x $\phi 1.18"$ (O.D.) Run-out Accuracy : Within 0.02 mm	2146	KCH-02 (5.0)	■ RA-100 · RA-151E · RA-2511 · RA-H2511
		1077	KCH-02 (6.0)	
		2147	KCH-02 (8.0)	
	<b>Special Metal Saw Arbor</b> Dimensions of Metal Saw $\phi d$ (I.D.) x $\phi 1.18"$ (O.D.) Run-out Accuracy : Within 0.02 mm	2148	KCH-03 (5.0)	■ ENR-302 ■ RAS-101 · RAS-151E · RAX-271E · RAX-71E · RAS-2511 · RAS-H2511 NR-3060S · NR-311 · NR-303 · NR-2351 · NR-303P · NR-403E · NR-453E NR-2551 · NR-H2551 · NR-2532 · NR-H2532 · MS-23 · MST-23 · MSST-23 MSTN-23 · MS-25 · MSH-25 · MSS-25 · MSSH-25 · EMA-3020K EMS-3041 · EMS-3052 · EMS-3045 · EMS-3056 · EMS-3060K EMR-3009K · EMS-30600 · EMSF-3060K · EMS-6040 · EMS-6040K ABS-70P · PS23 · PSA25 · PSA30 · PSA35 · NRL-300 · NRL-300E PMA-3013K · PMR-3050K · PMS-3020K
		2130	KCH-03 (6.0)	
		2164	KCH-03 (6.35)	
		2149	KCH-03 (8.0)	

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

 $\phi 1.07/\phi 0.98/\phi 0.897$ 

E3000

- One Piece

E3000

- Modular

 $\phi 1.18"$  $\phi 1.07/\phi 0.98$  $\phi 0.897$ 

E3000

- 80,000rpm

E4000

3

MA

 $\phi 0.897$  $\phi 1.0$  $\phi 0.98$  $\phi 1.18$ 

MS

 $\phi 0.75$  $\phi 0.79$  $\phi 0.897$  $\phi 0.91$  $\phi 1.0$  $\phi 0.98$ 

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

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APPLICATION

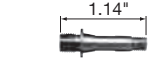
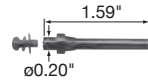
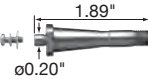
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# < PARTS > GRINDSTONE ARBOR

## ■ Grindstone Arbor






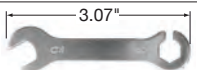


\*For right hand (cw) rotation only.

Product	Description	Product Code	Product Name	Fit to	Price
	<b>Grindstone Arbor (for Cup Wheel &amp; Rubber Pad)</b>	<b>1045</b>	<b>NCH-01</b>	■ IMPULSE	
	<b>Grindstone Arbor</b> Run-out Accuracy : Within 0.02 mm For Grindstone with ø5.0 mm I.D.	<b>1029</b>	<b>AGM-01</b>	■ AMH-300 · AMH-301 NR-600 · NR-601 · SMS401	
	<b>Grindstone Arbor</b> Run-out Accuracy : Within 0.02 mm For Grindstone with ø5.0 mm I.D.	<b>2131</b>	<b>AGM-03</b>	■ ENR-302 ■ RAS-101 · RAS-151E · RAX-271E · RAX-71E · RAS-2511 · RAS-H2511 NR-3060S · NR-311 · NR-303 · NR-2351 · NR-303P · NR-403E · NR-453E NR-2551 · NR-H2551 · NR-2532 · NR-H2532 · MS-23 · MST-23 · MSST-23 MSTN-23 · MS-25 · MSH-25 · MSS-25 · MSSH-25 · EMA-3020K EMS-3041 · EMS-3052 · EMS-3045 · EMS-3056 · EMS-3060K EMR-3008K · EM30-S6000 · EMSF-3060K · EMS-6040 · EMS-6040K ABS-70P · HES · PS23 · PSA25 · PSA30 · PSA35 · NRL-300 NRL-300E · PMA-3013K · PMR-3050K · PMS-3020K · HPS250	

<b>1</b>
EmaxEVC
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
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iSpeed3
E2000 ø1.0" / ø0.99" / ø0.987"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07" / ø0.98" ø0.997"
E3000 — 80,000rpm
E4000
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ø1.0" ø0.98"
ø1.18"
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ø0.75" ø0.79"
ø0.89" ø0.91"
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■ indicates Hand Grinder use  
■ indicates Machine Spindle use

## Wrench List

Product	Description	Product Code	Product Name	Fit to
	Wrench 6 x 4.5 mm (0.24" x 0.18")	2001	—	■ BMH-300 · MH-300 ■ NR-600 · NR-601 · AMH-300 · AMH-301
	Wrench 6.1 x 8 mm (0.24" x 0.31")	2069	—	■ NRR-2651 · NR40-5100 ATC ■ NRR-3060 · EMA-3020S
	Wrench 7 x 5.1 mm (0.28" x 0.20")	2009	—	■ IH-300 · IR-310 · ERA-270 · BMH-300 · MH-300 ■ EHR-401 · EHL-401 · EHR-500 · VH-E ■ NRR-2650 · NR-600 · NR-601 · AMH-300 · AMH-301 ■ RA-200 · RA-271E · RA-2521 · RA-H2520 · NR-3080 ■ ABS-1600 · EMA-3020S · PMA-3013S
	Wrench 7 x 5.5 mm (0.28" x 0.22")	2010	—	■ HA-500 ■ RA-100 · RA-151E · RA-2511 ■ RA-H2510
	Wrench 8 x 5 mm (0.31" x 0.20")	2012	—	■ ERA-270 · K-042 · IMPULSE ■ AMS-250 · AMS-1210 · AMS-1501 · iSpeed3 · EM20-S6000 ■ EM25-S6000 · EMS-3060A · NR-3080S · NR3060-AQC ■ NRR3060-QC · HES810 · HPS500 · HTS · MS-19 · 20 · 22 ■ MSS-19 · 20 · 22 · NR-320 · NRA-5080 · NRR-2650 · PLANET 850 ■ PLANET 1500 · PMS-3020A · PMA-3013S · RA-100 · RA-151E ■ RA-200 · RA-271E · RA-2511 · RA-2521 · SMS400 · SMS401
	Wrench 9 x 9 mm (0.35" x 0.35")	2064	—	■ IG-400
	Wrench 10 x 10 mm (0.39" x 0.39")	2008	—	■ HG-200 · EHG-400 ■ PLANET 650 · PLANET 850 · PLANET 1500 · BANTAM 150 ■ BANTAM 250 · NR-301 · MS-19 · 20 · 22 · AMS-150 · 250 · 600 ■ ABS-800 · HES-50/40 RA · NR-320 · PS20 · NRA-5080 · SMS400 ■ NR-5041E ATC · NRR-2651 · HPS500 · ABT-1000
	Wrench 9 x 11 mm (0.35" x 0.43") (Length 3.54")	2054	—	■ AMS-1210 · 1501 · EM20-S6000 · EM25-S6000 · EMS-3060A ■ HTS · HES810 · iSpeed3 · MSS-19 · 20 · 22 · NR-5041E ATC ■ NR40-5100 ATC · NR50-5100 ATC · NR50-5100 ATC-RS ■ NR-3080S · NR3060-AQC · NRR3060-QC · PMS-3020A · SMS401
	Wrench 12 x 14 mm (0.47" x 0.55") (Length 3.94")	2026	—	■ NR-302 · ENR-302 ■ ABS-400 · ABS-800 · ABS-70P · AMS-20 · AMS-50 · AMX-50 ■ AMX-6510 · AMX-8008 · EM30-S6000 · EMS-6040 · EMS-6040K ■ EMS-3060K · EMSF-3060K · EMS · EMR-3008K · EMA-3020K ■ HES510 · HPS250 · NR-2351 · NR-401E · NR-311 · NR-303 ■ NR-3060S · NR-303P · NRAF-5080 · NR-2532 · NR-H2532 ■ NR-2551 · NR-H2551 · NR-403E · NR-453E · NR50-5100 ATC ■ NR50-5100 ATC-RS · NR3060-AQC · NRR3060-QC · NR4040-AQC ■ NRR4040-QC · MS-23 · MST-23 · MSST-23 · MSTN-23 · MS-25 ■ MSS-25 · MSH-25 · MSSH-25 · NRL-300E · NRL-300 · PLANET 400 ■ PLANET 600 · PMS-3020K · PS23 · PSA23 · PSA25 · PSA30 ■ PSA35 · RAS-101 · RAS-151E · RAX-271E · RAX-71E · RAS-2511 ■ RAS-H2511 · RA-H2530 · PMR-3005K · PMA-3013K · Xpeed1200
	Wrench 15 x 17 mm (0.59" x 0.67") (Length 4.53")	2048	—	■ IG-400 ■ AMX-6501 · AMX-6503 · PSA40
	Wrench 16 x 18 mm (0.63" x 0.71") (Length 4.92")	2047	—	■ SLS-16 ■ EMS-6040 · EMS-6040K · PSA35
	Wrench 17 x 22 mm (0.67" x 0.87") (Length 5.51")	2083	—	■ BMS-4020 · BMS-4020 2M · BMS-4020RA · BMS-4040 · BMS-4040 2M ■ BMS-4040RA · NR-4040 · NR4040-AQC · NRR4040-QC
	Wrench 20 x 24 mm (0.79" x 0.94") (Length 5.91")	2018	—	■ NR-302 · SLS-16 · EIC-300 · EKC-300 · ERA-270 ■ ECN-011 ■ AM-300 · AM-310 · AM-600 · EM-2350J · NR-2351 ■ NR-301 · NR-303 · NR-600 · NR-601 · RAS-101 · RA-100 ■ RA-200 · NR-311 · AMH-300 · AMH-301 · MSTN-23 ■ PSA45 · PSA60 · NRL-300 · NRL-300E · AMX-8001 · AMX-8003
Wrench 22 x 27 mm (0.87" x 1.06") (Length 6.69")	2045	—	■ AM-2526 · AM-H2526 · AM-3020 · AMX-6501 · AMX-6503 ■ EM25-5000-J4 · EM-3060 · EM-3060J · EM25N-5000-J4 ■ EM-805 · EM-3080J · EM-3030J · EM-3030T-J ■ NR-2532 · NR-H2532 · NR-2551/H2551 · NR-3080S ■ NR-3060S · NR-403E · NR-453E · NRAF-5080 · NRR-2651 ■ NRR-3060 · NR3060-AQC · NRR3060-QC · PSA40 · PSA45 ■ PSA50 · PSA60 · PST50 · PST60 · RA-151E · RA-271E ■ RAS-151E · RAX-271E · RAX-71E	



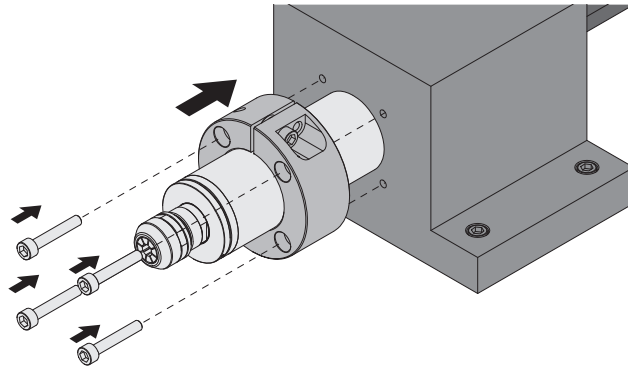
## Wrench List

Product	Description	Product Code	Product Name	Fit to
	Chuck Wrench	2006	K-232	■ MFC-300S · MFC-300M
	Chuck Wrench	2007	K-231	■ IC-300 · KC-300 · EIC-300 · EKC-300 IC-E · KC-E
	Wrench 4 x 7 mm (0.16" x 0.28") (for K-231)	2068	—	■ IC-300 · KC-300 · EIC-300 · EKC-300 IC-E · KC-E
	Bar Wrench (2.83")	2013	K-212	■ HG-200 · HA-500 · EHG-400 · IMPULSE ■ ABS-1600
	Bar Wrench (3.94")	2046	K-236	■ NR-260E ATC · NR-5041E ATC · NRA-5080 · NRAF-5080 NR50-5100 ATC · NR50-5100 ATC-RS · NR40-5100 ATC
	Bar Wrench	2073	K-277	■ Xpeed1600 · ABT-1000
	Bar Wrench	2067	PCR-30	■ IG-400
	Pin Wrench	2014	K-233	■ NK-351 · ENK-410S · IH-300 · IR-310 · HG-200 · SR-300 BMH-300 · MH-300 · MFC-300S · MFC-300M · IC-300 IC-E · KC-300 · KC-E · K-042 · RG-01 · RG-02 · CN-01 EHR-500 · EHL-401 · ERG-01B · ERG-01 · IM-301 · IM-300
	Pin Wrench	2002	T-751	■ PRESTO II / PRESTO · HI-RITE ■ NR-3080
	Allen Wrench (1.5 mm)	—	—	■ ML-2 · ML-4 · ML-8 · EML-8 · SLS-16 IMPULSE · SONIC-CUTTER
	Allen Wrench (2 mm)	—	—	■ NLS-110 · LS-100 · NLS-100 · ELS-100 ■ Xpeed1600 · ABT-1000
	Allen Wrench (2.5 mm)	—	—	■ SHEENUS · SHEENUSneo ■ ABS-1600
	Allen Wrench (3 mm)	—	—	■ KBS-101 · NLS-110 · LS-100 · NLS-100 · ELS-100 · EBS-101
	Allen Wrench (6 mm)	—	—	■ PST50 · PST60
	Wrench with Handle (8 mm)	2016	K-248	Length : 4.09"
	Wrench with Handle (10 mm)	2017	K-249	Length : 4.13"
	Wrench (10 mm)	—	—	■ SHEENUS · SHEENUS neo
	Wrench (36 mm)	2080	—	■ EM-4040 · EM-4040A · EM-4020 EM-4020A · NR-4040 · NR4040-AQC NRR4040-QC
	L Shaped Wrench (9 mm)	2055	—	■ EHR-500 · IR-310 ■ E400Z · E500Z · E800Z
	Torque Wrench Head (10 mm)	2082	—	■ Xpeed1600
	Torque Wrench Head (14 mm)	2081	—	■ Xpeed1200
	Torque Wrench	60000518	60000518	■ Xpeed1600 · Xpeed1200

■ indicates Hand Grinder use  
■ indicates Machine Spindle use

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EmaxEVO
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Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000
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## GRIP RING

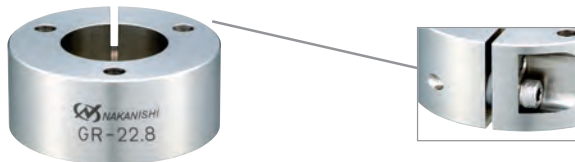


- The Grip Ring is an adjustable position split type flange for 40mm and 30mm spindles.
- The Grip Ring can easily mounted or removed from any CNC machine or specialty machine tool block or tool post.
- Eliminates the chance of over tightening and damaging the spindle in the sleeve during installation.

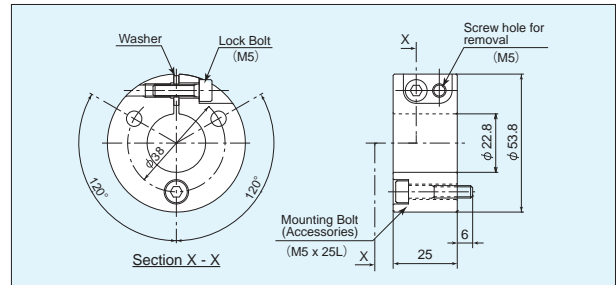
### **⚠ Caution**

- Do not remove the Lock Bolt. If the Lock Bolt is removed, the Washer inside may move. Once the Washer is moved, it may make it impossible to attach the Lock Bolt.
- Do not remove the spindle while the Grip Ring is attached to the machines' holder. This may cause deformation and / or damage to the Grip Ring.

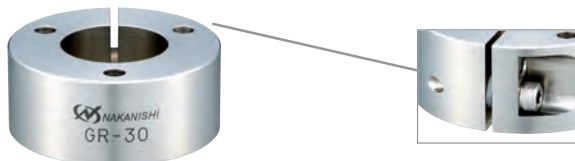
### Product Code **1888** GRIP RING GR-22.8



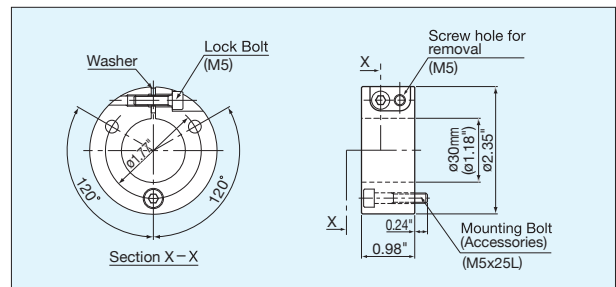
Product Code	Product Name	Standard Equipment · Accessories
<b>1888</b>	<b>GR-22.8</b>	• Mounting Bolt (M5x25) : 3 pcs.



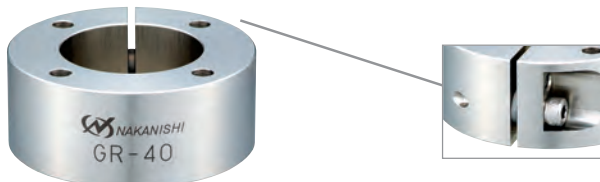
### Product Code **1885** GRIP RING GR-30



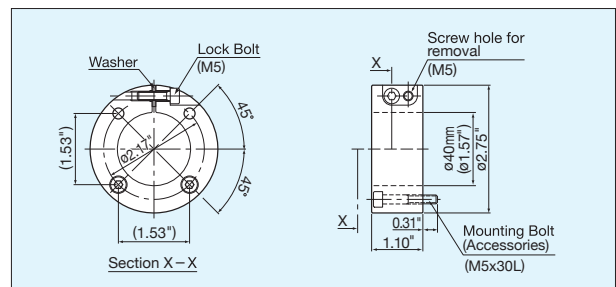
Product Code	Product Name	Standard Equipment · Accessories
<b>1885</b>	<b>GR-30</b>	• Mounting Bolt (M5x25) : 3 pcs.



### Product Code **1886** GRIP RING GR-40



Product Code	Product Name	Standard Equipment · Accessories
<b>1886</b>	<b>GR-40</b>	• Mounting Bolt (M5x30) : 4 pcs.



# < PARTS > SPLIT BUSHING

■ Split Bushing : Bushings to allow smaller dia. spindles to be mounted in larger dia. holders

Description	Product Code	Product Name	I.D.	O.D.	Length	Fit to	
	1871	RB-22.8x25	ø0.897" (ø22.8 mm)	ø0.98" (ø25 mm)	44 mm	RA-100	
	1872	RBS-22.8x25	ø0.897" (ø22.8 mm)	ø0.98" (ø25 mm)	25 mm	NR-303 · NR-2351 NR-311 · AMH-301 RA-200 · RAS-101	
	1873	RB-22.8x25.4	ø0.897" (ø22.8 mm)	ø1.0" (ø25.4 mm)	44 mm	RA-100	
	1874	RBS-22.8x25.4	ø0.897" (ø22.8 mm)	ø1.0" (ø25.4 mm)	25 mm	NR-303 · NR-2351 NR-311 · AMH-301 RA-200 · RAS-101	
	1875	RB-20x23	ø0.79" (ø20 mm)	ø0.91" (ø23 mm)	40 mm	EM20-S6000 MSS2030 · MSS2008 MSS2002	
	1876	RB-20x22.8	ø0.79" (ø20 mm)	ø0.897" (ø22.8 mm)	40 mm	EM20-S6000 MSS2030 · MSS2008 MSS2002	
	1877	RB-20x22	ø0.79" (ø20 mm)	ø0.87" (ø22 mm)	40 mm	EM20-S6000 MSS2030 · MSS2008 MSS2002	
	1878	RB-20x25	ø0.79" (ø20 mm)	ø0.98" (ø25 mm)	40 mm	EM20-S6000 MSS2030 · MSS2008 MSS2002	
	1879	RB-20x25.4	ø0.79" (ø20 mm)	ø1.0" (ø25.4 mm)	40 mm	EM20-S6000 MSS2030 · MSS2008 MSS2002	
	1880	RB-30x32	ø1.18" (ø30 mm)	ø1.26" (ø32 mm)	45 mm	NR-3060S NR-403E	
	1881	RB-30x36	ø1.18" (ø30 mm)	ø1.42" (ø36 mm)	45 mm	NR-3060S NR-403E	
	1883	RB-22x25x34L	ø0.87" (ø22 mm)	ø0.98" (ø25 mm)	33.5 mm	BM-322FL · BM-322FR	
	1884	RB-22x25.4x34L	ø0.87" (ø22 mm)	ø1.0" (ø25.4 mm)	33.5 mm	BM-322FL · BM-322FR	

**Note :** After inserting spindle into bushing, verify the O.D. measurement vs. the machine holder I.D.

■ indicates Hand Grinder use  
■ indicates Machine Spindle use

\*Order by product code. **6-p19**

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EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
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E3000 - Modular
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ø1.0"/ø0.98" ø0.897"
E3000 - 30,000rpm
E4000
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ø1.0" ø0.98"
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ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus  
ZERO

Sonic-Cutter  
ZERO

# 2

iSpeed3

E2000  
ø1.0"/ø0.98"/ø0.897"

E3000  
— One Piece

E3000  
— Modular

ø1.18"

ø1.0"/ø0.98"  
ø0.897"

E3000  
— 80,000rpm

E4000

# 3

MA

ø0.897"

ø1.0"  
ø0.98"

ø1.18"

MS

ø0.75"  
ø0.79"

ø0.897"  
ø0.91"

ø1.0"  
ø0.98"

# 4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

# 5

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EmaxEVO
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IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 — 80,000rpm
E4000
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ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.719"
ø0.897" ø0.81"
ø1.0" ø0.98"
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
<b>5</b>
AIR LINE KIT
<b>6</b>
PARTS
<b>7</b>
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## NE214 CONTROLLER - OPERATION MANUAL [OM-K0681]

### External Input / Output Control Signal Specifications (7-p10~p17)

#### 16. EXTERNAL INPUT / OUTPUT CONNECTOR

##### 16-1 External Input / Output Connector A ③

##### (1) Details of External Input / Output Connector A ③ Signals

###### ⚠ WARNING

- **DO NOT** connect any circuit other than SELV (DC+24V) (Safety Extra Low Voltage) to the External Input / Output Connector A ③ of the CONTROLLER. This will cause I / O board damage in the CONTROLLER.
- Do not supply over voltage or over current into the input / output circuit. Always install a LOAD (resistor) to the output circuit to eliminate the chance of damage to the CONTROLLER.

###### ⚠ CAUTION

Input / Output Connector A ③ do not use Pin No. 22. If pin No. 22 is connected, the CONTROLLER will be damaged.

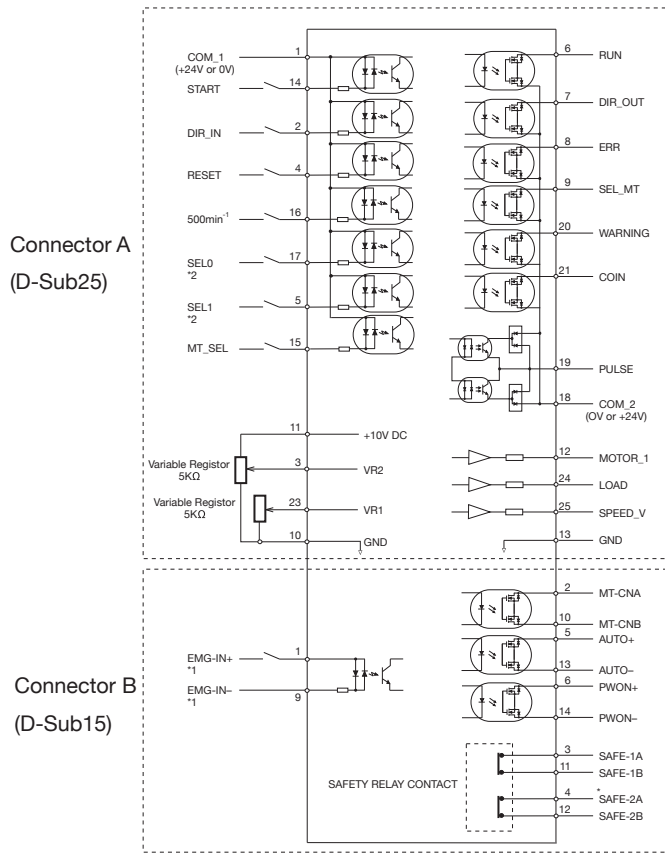
Table. 6

Pin No.	Code	Function	Input / Output	Description	
1	COM_1	External Power source for External input	Input	DC0V or DC+24V Power source to be used for External Inputs Signals.	
2	DIR_IN	Rotating Direction Setting	Input	' OFF (Open) ' : FWD. ' ON (Closed) ' : REV. Controls the rotational direction of the motor spindle. Setting parameter (P <sub>B</sub> ), can start with reverse rotation. (Refer to P107 " 18 - 4 ⑧ (P <sub>B</sub> ) Selection of External Motor Start Signal Control Mode " section.)	
3	VR2	Motor No. 2 Speed Control Voltage	Input	Set rotating speed (x 10,000rpm) = 1/16 x (9VR-1) 0.28V or less : 1,000rpm9V or more : 50,000rpm0V VR ≤ 10V Sets rotating speed of Motor No. 2. When using 30,000rpm motor speed, set parameter (P <sub>A</sub> ) (Refer to P108 " 18 - 4 ⑩ (P <sub>A</sub> ) Selection of Motor Speed Control Voltage / DC+10V Signal Method "). Refer to P87 Fig. 27, 28 regarding relationship between Motor Speed and Motor Speed Control Voltage (VR).	
4	RESET	Error Release	Input	' ON (Closed) ' → ' OFF (Open) ' Error Code can be released and the system restarted by toggling this signal OFF and ON. Error will not be released until cause of the error has been removed.	
5	SEL1	Count Pulse Signal for Setting Motor Speed (CNT_IN)	Input	—	One pulse will increase or decrease 1,000rpm in Spindle Speed depending on parameter (P <sub>7</sub> ) setting. (Refer to P106 " 18 - 4 ⑦ (P <sub>7</sub> ) Selection of External Speed Control Mode " section.)
		Speed Point Select 1 (POINT 1)			Speed Point Signal can be selected. Speed Point (When using Motor No. 1, "(1)" - "(14)", and when using Motor No. 2, "(2)" - "(24)") can be selected by POINT 0 and POINT 1 signal combination. Refer to P79 " 15 - 3 - 2 (4) ③ Set by the Speed Point Signal " section. Need to set parameter (P <sub>7</sub> ). (Refer to P106 " 18 - 4 ⑦ (P <sub>7</sub> ) Selection of External Speed Control Mode " section.)
6	RUN	Rotating	Output	' OFF (Open) ' : Stop ' ON (Closed) ' : Rotating Output shows that the motor is rotating.	
7	DIR_OUT	Rotating Direction	Output	' OFF (Open) ' : FWD. ' ON (Closed) ' : REV. Output shows the direction of the Motor is rotating.	
8	ERR	Error	Output	' OFF (Open) ' : Error ' ON (Closed) ' : Normal Output shows that error has occurred. Error code will be displayed on Control Panel ②. When setting parameter (P <sub>7</sub> ), Error Output Mode can be changed. (Refer to P104 " 18 - 4 ① (P <sub>7</sub> ) Setting of Error Output Mode " section.)	
9	SEL_MT	Motor Select	Output	' OFF (Open) ' : MOTOR1 ' ON (Closed) ' : MOTOR2 Output shows that the selected motor is MOTOR No. 1 or MOTOR No. 2.	

Pin No.	Code	Function	Input / Output	Description	
10	GND	Internal GND for Motor Speed Control Voltage	Output	Internal CONTROLLER GND	This GND will be used for " Motor Speed Control Voltage (VR) " .
11	Vcc	Internal Power Source for Motor Speed Control Voltage	Output	Internal Power Source : DC+10V	Internal Power Source for " Motor Speed Control Voltage (VR) " .
12	MOTOR_I	Motor Current Monitor	Output	2Amp / V, 0V ≤ MOTOR_I ≤ 10V	Output Motor Current Monitor with Analog Monitor Voltage. 2Amp / 1V. Max. 20Amp.
13	GND	Internal GND for Analog Monitor	Output	Internal CONTROLLER GND	This GND will be used for analog monitor (MOTOR_I ,SPEED_V, and LOAD).
14	START	Rotate Command	Input	' OFF (Open) ' : Stop ' ON (Closed) ' : Start	Motor Start and Motor Stop Signal Setting parameter (P8), can start with forward rotation. (Refer to P107 " 18 - 4 (8) (P8) Selection of External Motor Start Signal Control Mode " section.)
15	MT_SEL	Motor Select	Input	' OFF (Open) ' : MOTOR1 ' ON (Closed) ' : MOTOR2	Select MOTOR No. 1 or MOTOR No. 2.
16	500rpm	Rotates Motor at "Centering " speed	Input	' ON (Closed) ' : 500min <sup>-1</sup> (rpm)	Set motor rotation speed will be 500min <sup>-1</sup> (rpm). Use the Centering Mode.
17	SEL0	UP / DOWN Signal for Setting Motor Speed (UD_IN)	Input	—	Determines speed up or speed down. Need to set parameter (P7). (Refer to P106 "18 - 4 (7) (P7) Selection of External Speed Control Mode" section.)
		Speed Point Select 0 (POINT 0)			Speed Point Signal can be selected. Speed Point (When using Motor No. 1, " (11) " - " (14) ", and when using Motor No. 2, " (21) " - " (24) ") can be selected by POINT 0 and POINT 1 signal combination. Refer to P79 " 15 - 3 - 2 (4) (3) Set by the Speed Point Signal " section. Need to set parameter (P7). (Refer to P106 " 18 - 4 (7) (P7) Selection of External Speed Control Mode " section.)
18	COM_2	External Power Source for External Output	Input	DC0V or DC+24V	Power source to be used for External outputs Signals.
19	PULSE	Rotating Pulse	Output	1 pulse / rotation	1 revolution of the motor generates one pulse. Duty 50%.
20	WARNING	WARNING	Output	OFF (Open) : Normal Operation ON (Closed) : Warning	Output shows that warning has occurred. Warning code will be displayed on Control Panel②.
21	COIN	Speed Achievement	Output	OFF (Open) : Set speed not achieved ON (Closed) : Set speed achieved	Shows that the Motor has achieved more than 90% of the set speed.
22	Not used	—	—	—	<b>*Note : Never use a pin labeled not used.</b>
23	VR1	Motor No.1 Speed Control Voltage	Input	Set rotating speed (x 10,000min <sup>-1</sup> ) = 1 / 16 x (9VR-1) 0.28V or less : 1,000min <sup>-1</sup> 9V or more : 50,000min <sup>-1</sup> 0V ≤ VR ≤ 10V	Sets rotating speed of the motor. When using 30,000min <sup>-1</sup> of motor speed, setting parameter (P8) (Refer to P108 " 18 - 4 (10) (P8) Selection of Motor Speed Control Voltage / DC+10V Signal Method " section.) Refer to P87 Fig. 27, 28 about relationship between motor speed and control signal.
24	LOAD	Torque Load Monitor	Output	Torque Load Monitor (%) = Torque Load Monitor Voltage × 20	Shows that the torque being applied to the analog motor. 20%/ V 100% (rating) / DC+ 5V Torque Load Monitor : 0 - 200% (0V ≤ LOAD ≤ 10V)
25	SPEED_V	Rotating Speed Analog Monitor Voltage	Output	10,000rpm / V	Output the rotation speed of rotating motor with Analog Monitor Voltage. 10,000rpm / V 0V ≤ SPEED_V ≤ 10V

1
EmaxEVC
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0" / ø0.98" / ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.97" / ø0.98" / ø0.897"
E3000 — 30,000rpm
E4000
3
MA
ø0.897"
ø1.0" / ø0.98"
ø1.18"
MS
ø0.75" / ø0.73"
ø0.81" / ø0.81"
ø1.0" / ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
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## (2) Input / Output Diagram



- \*1 When using the "EMG - IN" Signal, set parameter  $Pb$ . (Refer to P108 "18 - 4  $\text{①}$  Selection of Emergency Stop Function" sectional.)
- \*2 When using SEL 0 as the UP / DOWN Signal for Setting Motor Speed (UD\_IN) and SEL 1 as Count Pulse Signal for Setting Motor Speed (CNT\_IN), set parameter  $P\eta$ . (Refer to P106 "18 - 4  $\text{⑦}$  Selection of External Speed Control Mode").

Fig. 21

## (3) Input / Output Signal

### ① Input Signal

There are 7 different input signals : " Rotate Command (START) ", " Rotating Direction Setting (DIR\_IN) ", " Rotates Motor at " Centering " speed (500rpm) ", " Error Release (RESET) ", " Speed Point Select 0 (POINT 0) ", " Speed Point Select 1 (POINT 1) " and " Motor Select (MT\_SEL) ". These signals are DC+24V signals from an external signal source. Please use a separate power source that is capable of supplying DC+24V  $\pm$  10%, 100mA. Refer to Fig. 22 for connections.

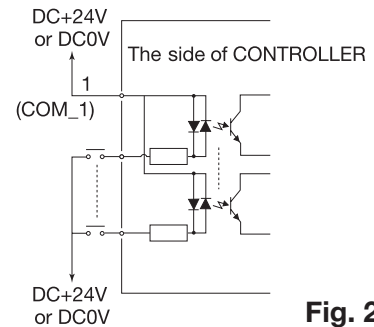


Fig. 22

### ② Output Signal I

There are 6 separate output signals : " Rotating (RUN) ", " Rotating Direction (DIR\_OUT) ", " Error (ERR) ", " WARNING (WARNING) ", " Speed Achievement (COIN) " and " Motor Select (SEL\_MT) ". These signals are MOSS Relay Contact Connections. The output current can be connected to either sinking or sourcing.

Voltage and Current Specifications

- Applied Voltage (V)  $\leq$  DC+30V
- Working Current (Ip)  $\leq$  100mA

Use an external power source for output circuits. It is recommended to use the same DC+24V power source used for input signals. Please refer to Fig. 23 for connections.

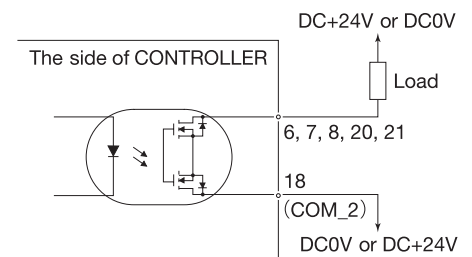


Fig. 23

### ③ Output Signal II

Refer to Fig. 24 regarding the Output Signal of the "Rotating Pulse (PULSE)". The output signal can be connected for either sinking or sourcing. Voltage and Current Specifications

- Applied Voltage (V)  $\leq$  DC+30V
- Working Current (Ip)  $\leq$  50mA

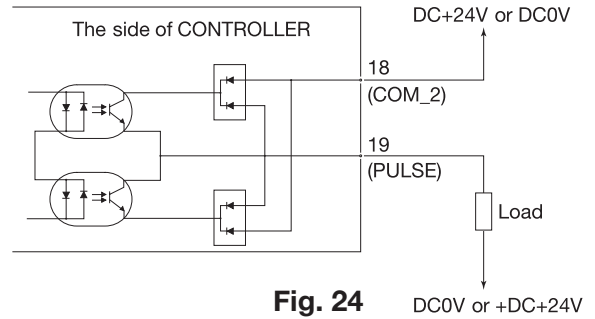


Fig. 24

### ④ Motor Speed Control Signal

Rotation Speed can be selected by, applying analog voltage to VR1 and VR2. Refer to Fig. 25, 26 for connections. Refer to Fig. 27, 28 for the relationship between Motor Speed and " Motor Speed Control Voltage (VR) " .

#### ⚠ CAUTION

When applying the VR, never input more than DC+10V to the CONTROLLER (Fig. 26). This will cause serious damage to the I / O Board in the CONTROLLER.

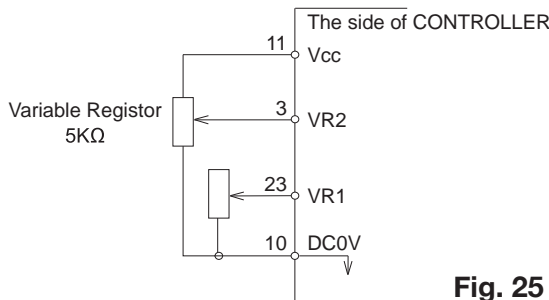


Fig. 25

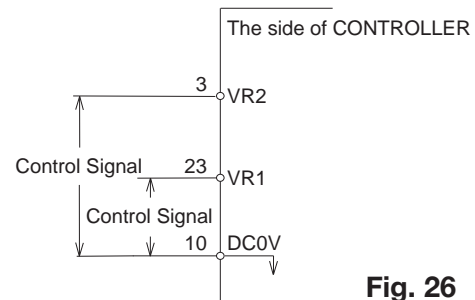


Fig. 26

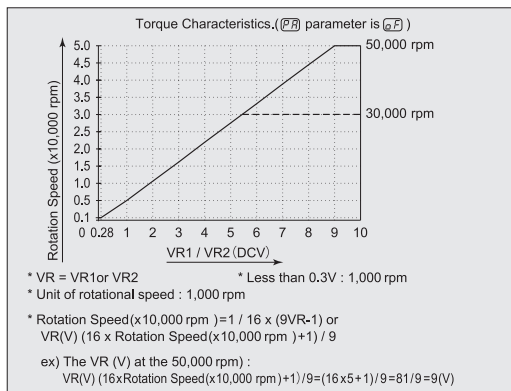


Fig. 27

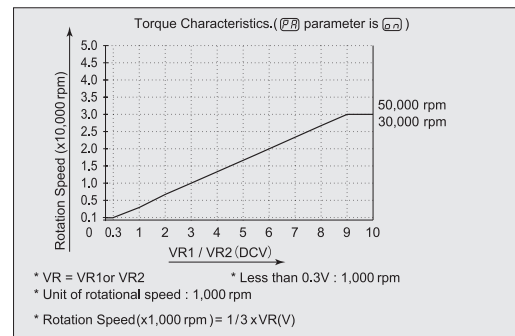


Fig. 28

### ⑤ Analog Monitor Signals

There are 3 types of monitoring signals : " Motor Current Monitor (MOTOR\_I) ", " Torque Load Monitor (LOAD) ", and " Rotating Speed Analog Monitor Voltage (SPEED\_V) ". Please refer to Fig. 29 for connections.

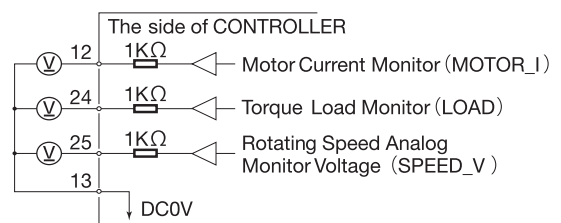


Fig. 29

1
EmaxEVO
ESPRT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0°/ø0.99°/ø0.997°
E3000 - One Piece
E3000 - Modular ø1.18° ø1.9°/ø0.98° ø0.99°
E3000 - 30,000rpm
E4000
3
MA
ø0.897° ø1.0° ø0.98° ø1.18°
MS
ø0.75° ø0.79° ø0.89° ø0.91° ø1.0° ø0.98°
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
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## 16-2 External Input / Output Connector B ④

### (1) Details of External Input / Output Connector B ④ Signals

#### ⚠ WARNING

- **DO NOT** connect any circuit other than **SELV (DC+24V) (Safety Extra Low Voltage)** to the **External Input / Output Connector B ④** of the **CONTROLLER**. This will cause **I / O board damage** in the **CONTROLLER**.
- **Do not supply over voltage or over current** into the **input / output circuit**. Always install a **LOAD (resistor)** to the **output circuit** to eliminate the chance of damage to the **CONTROLLER**.

#### ⚠ CAUTION

**Input / Output Connector B ④ DOES NOT use Pin No. 7, No. 8, and No. 15. If pin No. 7, No. 8, and No. 15 are connected, the CONTROLLER will be damage.**

Table. 7

Pin No.	Code	Function	Input / Output	Description
1	EMG-INA	Emergency Stop A	Input	External Power Source input for Emergency Stop Signal or Emergency Stop Signal. Normal Operation ' ON (Closed) ', Emergency ' OFF (Open) '. When using the Emergency Stop Signal, set parameter (P5). (Refer to P108 " 18 - 4 ⑩ (P5) Selection of Emergency Stop Function " section.)
2	MT-CNA	Motor Connect Contact A	Output	Continuity, ' OFF (Open) ', between Pin No. 2 and Pin No.10 the motor is connected. When there is continuity, OFF, between Pin No. 2 and Pin No. 10 and the selected motor is connected, if no continuity is present, the motor is disconnected or the motor cord is broken.
3	SAFE-1A	Safety Relay Contact 1A	Output	Pin No.3 and Pin No. 11 continuity ' ON (Closed) ' Safety Relay is OFF When there is continuity between Pin No. 3 and Pin No. 11 are ' ON (Closed) ' Safety Relay is OFF (System Stopped), no continuity Safety Relay is ' OFF (Open) ' Normal Operation.
4	SAFE-2A	Safety Relay Contact 2A	Output	Pin No. 4 and Pin No. 12 continuity ' ON (Closed) ' Safety Relay is OFF When there is continuity between Pin No. 4 and Pin No. 12 are ' ON (Closed) ' Safety Relay is OFF (System Stopped), no continuity Safety Relay is ' OFF (Open) ' Normal Operation.
5	AUTO +	Control Mode AUTO Signal (+)	Output	Control Mode AUTO Pin No. 5 and Pin No. 13 are ' ON (Closed) ' When Control Mode AUTO is being used, this Pin No. 5 and Pin No. 13 are ' ON (Closed) '.
6	PWON +	CONTROLLER Power Source Monitor (+)	Output	Pin No. 6 and Pin No. 14 are ' ON (Closed) ': Main Power Supply is connected ' If the Main Power Switch ⑨ is ON, Pin No. 6 and Pin No. 14 are ' ON (Closed) '.
7	Not Used	—	—	<b>*Note : Never use pin labeled not used.</b>
8	Not Used	—	—	<b>*Note : Never use pin labeled not used.</b>
9	EMG-INB	Emergency Stop B	Input	External Power Source input for Emergency Stop Signal or Emergency Stop Signal. Normal Operation ' ON (Closed) ', Emergency ' OFF (Open) '. When using the Emergency Stop Signal, set parameter (P6). (Refer to P108 " 18 - 4 ⑩ (P6) Selection of Emergency Stop Function " section.)
10	MT-CNB	Motor Connect Contact B	Output	Continuity, ' OFF (Open) ', between Pin No. 2 and Pin No. 10 the motor is connected. When there is continuity, OFF, between Pin No. 2 and Pin No. 10 are ' OFF (Open) ', the selected motor is connected, if no continuity the motor is disconnected or the motor cord is broken.
11	SAFE-1B	Safety Relay Contact 1B	Output	Pin No. 3 and Pin No. 11 continuity ' ON (Closed) ' Safety Relay is OFF When there is continuity between Pin No. 3 and Pin No. 11 are ' ON (Closed) ' Safety Relay is OFF (System Stopped), no continuity Safety Relay is ' OFF (Open) ' Normal Operation.
12	SAFE-2B	Safety Relay Contact 2B	Output	Pin No. 4 and Pin No. 12 continuity ' ON (Closed) ' Safety Relay is OFF When there is continuity between Pin No. 4 and Pin No. 12 are ' ON (Closed) ' the Safety Relay is OFF (System Stopped). If there is no continuity, Safety Relay is ' OFF (Open) ' Normal Operation.



Pin No.	Code	Function	Input / Output	Description
13	AUTO -	Control Mode AUTO Signal (-)	Output	Control Mode AUTO Pin No. 5 and Pin No. 13 are ' ON (Closed) '
14	PWON -	CONTROLLER Power Source Monitor (-)	Output	Pin No. 6 and Pin No.14 are ' ON (Closed) ' : Main Power Supply is connected
15	Not Used	—	—	—

**\*Note : Never use pin labeled not used.**

## (2) Input / Output Signals

### ① Output Signal

Pin No. 2-10, 5-13, 6-14

There are 3 different output signals : "Motor Connect Contact (MT-CN)", "Control Mode AUTO Signal (AUTO)", and "CONTROLLER Power Source Monitor (PWON)".

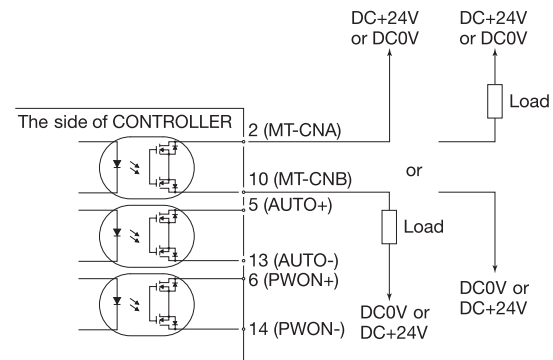
These signals are MOSS Relay Contact Connections.

The output current can be connected for either sinking or sourcing.

Voltage and Current Specifications

- Applied Voltage (V)  $\leq$  DC+30V
- Working Current (Ip)  $\leq$  100mA

Use an external power source for output circuits. It is recommended to use a separate power supply Input / Output Connector B ④ . Please refer to Fig. 30 for connections.



**Fig. 30**

### ② Emergency Stop Signal Input

Pin No. 1-9

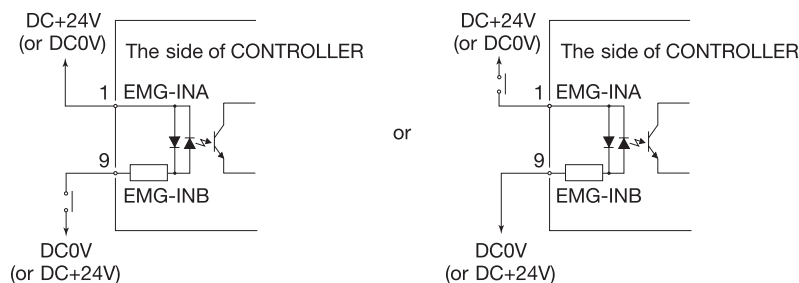
This signal is a switched DC+24V output.

Please use a separate power source that is capable of applying DC+24V $\pm$ 10%,

50mA. Refer to Fig. 31 below for connections.

Normal Operation circuit is ' ON (Closed) ' Emergency Stop circuit is ' OFF (Open) ' .

If the Emergency Stop Signal is ' OFF (Open) ' the Safety Relay is OFF and the power supply to the motor is interrupted and the motor stops.



**Fig. 31**

1
EmaxEVC
ESPRT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000
$\phi 1.0^{\circ}/\phi 0.99^{\circ}/\phi 0.997^{\circ}$
E3000
— One Piece
E3000
— Modular
$\phi 1.18^{\circ}$
$\phi 1.0^{\circ}/\phi 0.98^{\circ}$
$\phi 0.99^{\circ}$
E3000
— 30,000rpm
E4000
3
MA
$\phi 0.897^{\circ}$
$\phi 1.0^{\circ}$
$\phi 0.98^{\circ}$
$\phi 1.18^{\circ}$
MS
$\phi 0.75^{\circ}$
$\phi 0.79^{\circ}$
$\phi 0.81^{\circ}$
$\phi 0.91^{\circ}$
$\phi 1.0^{\circ}$
$\phi 0.98^{\circ}$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
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## ③ Safety Relay Signal

### ⚠ CAUTION

**If the Emergency Stop Function is not installed, the Emergency Stop Signal (EMG - IN) will not function. If enabling the Emergency Stop Function, it is necessary to set parameter  $\text{P6}$  (Refer to P108 " 18 - 4 ①  $\text{P6}$  Selection of Emergency Stop Function " section.)**

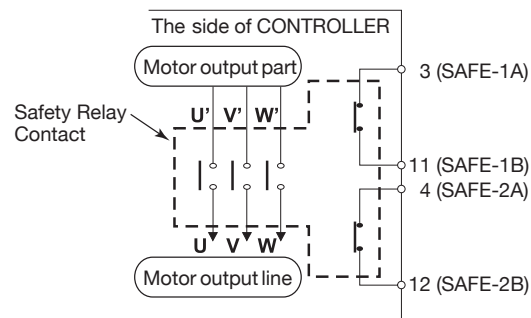
Pin No. 3-11, 4-12

- The Safety Relay will be ON or OFF depending on the state of the " Emergency Stop (Pin No. 1 : EMG - INA - Pin No. 9 : EMG - INB) ".
- When there is continuity between Pin No. 3 (SAFE - 1A) and Pin No. 11 (SAFE - 1B) or between Pin No. 4 (SAFE - 2A) and Pin No. 12 (SAFE - 2B) the motor is off. If there is no continuity between these pairs of pins then the system is operating normally.
- If the Emergency Stop Signal is ' OFF (Open) ' the Safety Relay will be ' OFF (Open) ' and the motor power will be interrupted and the motor will stop.
- If the (NO) Normally Open contacts of the Safety Relay are welded together by an over load or short circuit the (NC) Normally Closed contacts separation are maintained with more than 0.5mm spacing by the relay's recoil mechanism.
- The voltage / current specifications of Pin No. 3 - 11 and Pin No. 4 - 12.

Applied Voltage (V)  $\leq$  DC+30V

Working Current (Ip)  $\leq$  2A

Refer to Fig. 32 below for connections.



**Fig. 32**

### \* Safety Relay

If an N - O contact becomes welded, all N - C contacts will maintain a minimum distance of 0.5 mm when the coil is not energized.

N - O contacts (Normally - opened contacts) : Contacts of U - U', V - V', W - W'.

N - C contacts (Normally - closed contacts) : Contacts of (SAFE - 1A) - (SAFE - 1B), (SAFE - 2A) - (SAFE-2B)

### \* Machine Safety Circuit is possible when using the Safety Relay Contacts Output

• When an Emergency Stop Signal input that is coupled to a door open switch of an Industrial Machine, the Safety Relay will energize and open the Motor Power Line circuit.

• Contact outputs ((SAFE - 1A) - (SAFE - 1B), (SAFE - 2A) - (SAFE - 2B)) of the N - C contacts can be used for detecting the opening of the Motor Power Line. If N - O contacts become welded, contact outputs will maintain an OFF (Open) condition, by Forced Guide Mechanism.

Therefore, Safety Relay can be used as an open signal of a movable guard or operator door with a locking (switch) mechanism for Industrial Machinery.

## 16-3 External Input / Output Connector Specifications

### ⚠ CAUTION

- To minimize RF interference and noise, please keep the length of the cables as short as possible and route them separately or as far away as possible from high voltage electrical cables.
- Use only shielded cables to minimize RF interference and noise. Connect the shield to the plug cover.
- Connect the shielded line to the Input / Output connector (The shielded line is grounded). Do not connect another shielded line to any externally powered instrument.

- ① External Input / Output Connector A ③  
 Plug Part Number : XM3A - 2521 OMRON (or other similar high - quality product)  
 Cover Part Number : XM2S - 2511 OMRON (or other similar high - quality product)
- ② External Input / Output Connector B ④  
 Plug Part Number : XM3A - 1521 OMRON (or other similar high - quality product)  
 Cover Part Number : XM2S - 1511 OMRON (or other similar high - quality product)  
 Please prepare a Cover and Plug.  
 The shielding should be connected to the Cover.  
 \*Use Mounting Screws that are (M2.6)  
 Fasten the Connector to the CONTROLLER using Mounting Screws (M2.6).

## 16-4 External Input / Output Connector A ③ / B ④ Pin configuration

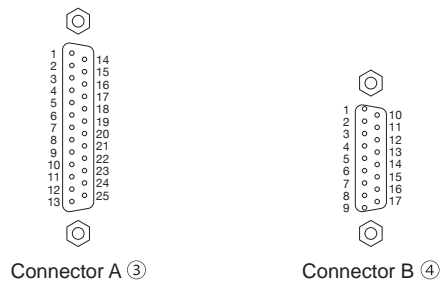


Fig. 33

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.75"
ø0.897" ø0.81"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
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## E3000 CONTROLLER - OPERATION MANUAL [OM-K0438]

### External Input / Output Control Signal Specifications (7-p2~p9)

#### 13. EXTERNAL INPUT / OUTPUT CONNECTOR

##### 13-1 External Input / Output Connector A

###### (1) Details of External Input / Output Connector A Signal

###### **⚠ WARNING**

- **DO NOT** connect any circuit other than SELV (DC+24V) (Safety Extra Low Voltage) to the External Input / Output Connector A of the CONTROLLER. This will cause I / O board damage in the CONTROLLER.
- Do not input voltage any higher than DC+24V or over current into the input / output circuit. Ensure when connecting the LOAD (resister) to the output circuit the proper voltage is present. This will cause damage to the CONTROLLER.

###### **⚠ CAUTION**

**Input / Output Connector A do not use Pins No. 9 and No. 22. If pin No. 9 and No. 22 are connected, the CONTROLLER will be damage.**

Table. 3

Pin No.	Code	Function	Input / Output	Description	
1	COM_1	External Power source for External input	Input	DC0V or DC+24V	Power source to be used for External Inputs Signals.
2	DIR_IN	Rotating Direction Setting	Input	OFF (Open) : FWD. ON (Closed) : REV.	Controls the rotational direction of the motor spindle. Setting parameter (P5), can start with reverse rotation. (Refer to P86 " 15 - 4 ⑥ (P5) Selection of External Motor Start Signal Control Mode " section.)
3	CNT_IN	Count Pulse Signal for Setting Motor Speed	Input	OFF (Open) → ON (Closed)	One pulse will increase or decrease 1,000rpm in Spindle Speed depending on parameter (P5) setting. (Refer to P85 " 15 - 4 ⑤ (P5) Selection of External Speed Control Mode " section.)
4	RESET	Error Release	Input	ON (Closed) → OFF (Open)	Error Code can be released and the system restarted by toggling this signal OFF and ON. Error will not be released until cause of the error has been removed.
5	SEL1	Motor Select 1	Input	—	Use when selecting motor, after connecting CONTROLLER to the SELECTOR. 4 motors can be selected by SEL0 and SEL1 combination. (Refer to P65 "12-2-2 (7) Motor Selection Table. 2.")
		Speed Point Select 1			When only using CONTROLLER, Speed Point Signal can be selected. Speed Point (U1 - U4) can be selected by SEL0 and SEL1 signal combination. Refer to P 64 " 12 - 2 - 2 (5) ③ Set by the Speed Point Signal " section. Need to set parameter (P5). (Refer to P85 " 15 - 4 ⑤ (P5) Selection of External Speed Control Mode " section.)
6	RUN	Rotating	Output	OFF (Open) : Stop ON (Closed) : Rotating	Output shows that the motor is rotating.
7	DIR_OUT	Rotating Direction	Output	OFF (Open) : FWD. ON (Closed) : REV.	Output shows the direction of the Motor is rotating.
8	ERR	Error	Output	OFF (Open) : Error ON (Closed) : Normal	Output shows that error has occurred. Error code will be displayed on Digital Speed Indicator ⑩. When setting parameter (P1), Error Output Mode can be changed. (Refer to P84 " 15 - 4 ① (P1) Setting of Error Output Mode " section.)
9	Not used	—	—	—	<b>*Note : Never use pin labeled not used.</b>

Pin No.	Code	Function	Input / Output	Description	
10	GND	Internal GND for Motor Speed Control Voltage	Output	Internal CONTROLLER GND	This GND will be used for " Motor Speed Control Voltage (VR) " .
11	Vcc	Internal Power Source for Motor Speed Control Voltage	Output	Internal Power Source : DC+10V	Internal Power Source for " Motor Speed Control Voltage (VR) " .
12	MOTOR_I	Motor Current Monitor	Output	2Amp / V, DC0V - DC+10V	Output Motor Current Monitor with Analog Monitor Voltage. 2Amp / 1V. Max. 20Amp.
13	GND	Internal GND for Analog Monitor	Output	Internal CONTROLLER GND	This GND will be used for analog monitor (MOTOR_I, SPEED_V, and LOAD).
14	START	Rotate Command	Input	OFF (Open) : Stop ON (Closed) : Start	Motor Start and Motor Stop Signal Setting parameter (P6), can start with forward rotation. (Refer to P86 " 15 - 4 ⑥ (P6) Selection of External Motor Start Signal Control Mode" section.)
15	UD_IN	UP/DOWN Signal for Setting Motor Speed	Input	OFF (Open) : Speed Down ON (Closed) : Speed Up	Determines speed up or speed down. Need to set parameter (P5). (Refer to P85 " 15 - 4 ⑤ (P5) Selection of External Speed Control Mode " section.)
16	500min <sup>-1</sup>	Rotates Motor at "Centering " speed	Input	ON (Closed) : 500rpm OFF (Open) : Normal Operation	Set motor rotation speed is 500rpm. Use the Centering Mode.
17	SEL0	Motor Select 0	Input	—	Use when selecting motor, after connecting CONTROLLER to the SELECTOR. 4 motors can be selected by SEL 0 and SEL 1 combination. (Refer to P65 " 12 - 2 - 2 (7) Motor Selection Table. 2.")
		Speed Point Select 0			When using CONTROLLER only, Speed Point Signal can be selected. Speed Point (U1 - U4) can be selected by SEL 0 and SEL 1 signal combination. Refer to P64 " 12 - 2 - 2 (5) ③ Set by the Speed Point Signal " section. Need to set parameter (P5). (Refer to P85 " 15 - 4 ⑤ (P5) Selection of External Speed Control Mode " section.)
18	COM_2	External Power Source for External Output	Input	DC0V or DC+24V	Power source to be used for External outputs Signals.
19	PULSE	Rotating Pulse	Output	1 pulse / rotation	1 revolution of the motor generates one pulse. Duty 50%.
20	WARNING	WARNING	Output	OFF (Open) : Normal Operation ON (Closed) : Warning	Output shows that warning has occurred. Warning code will be displayed on Digital Speed Indicator ⑪ .
21	COIN	Speed Achievement	Output	OFF (Open) : Set speed not achieved ON (Closed) : Set speed achieved	Shows that the Motor has achieved more than 90% of the set speed.
22	Not used	—	—	—	<b>*Note : Never use a pin labeled not used.</b>
23	VR	Motor Speed Control Voltage	Input	Speed (rpm) = Speed Control Voltage Signal × 10000 / 1.5 DC0V - DC+10V	Sets rotating speed of the motor. (For 60,000 rpm of motor) When using 80,000rpm of motor speed, setting parameter (P8). (Refer to P87 " 15 - 4 ⑧ (P8) Selection of Motor Speed Control Voltage / DC+10V Signal Method " section.) Refer to Fig.35, 36 about relationship between motor speed and control signal.
24	LOAD	Torque Load Monitor	Output	Torque Load Monitor (%) = Torque Load Monitor Voltage × 20	Shows that the torque being applied to the analog motor. 20%/ V 100% (rating) / DC+ 5V Torque Load Monitor : 0 - 200% (DC0V - DC+10V)
25	SPEED_V	Rotating Speed Analog Monitor Voltage	Output	10,000min <sup>-1</sup> / V	Output the rotation speed of rotating motor with Analog Monitor Voltage. 10,000min <sup>-1</sup> / V DC0V - DC+10V

1
EmaxEVC
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000
±1.0°/±0.99°/±0.897°
E3000
— One Piece
E3000
— Modular
±1.18°
±1.97°/±0.98°/±0.897°
E3000
— 80,000rpm
E4000
3
MA
±0.897°
±1.0°
±0.98°
±1.18°
MS
±0.75°
±0.79°
±0.81°
±0.91°
±1.0°
±0.98°
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
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## (2) Input / Output Diagram

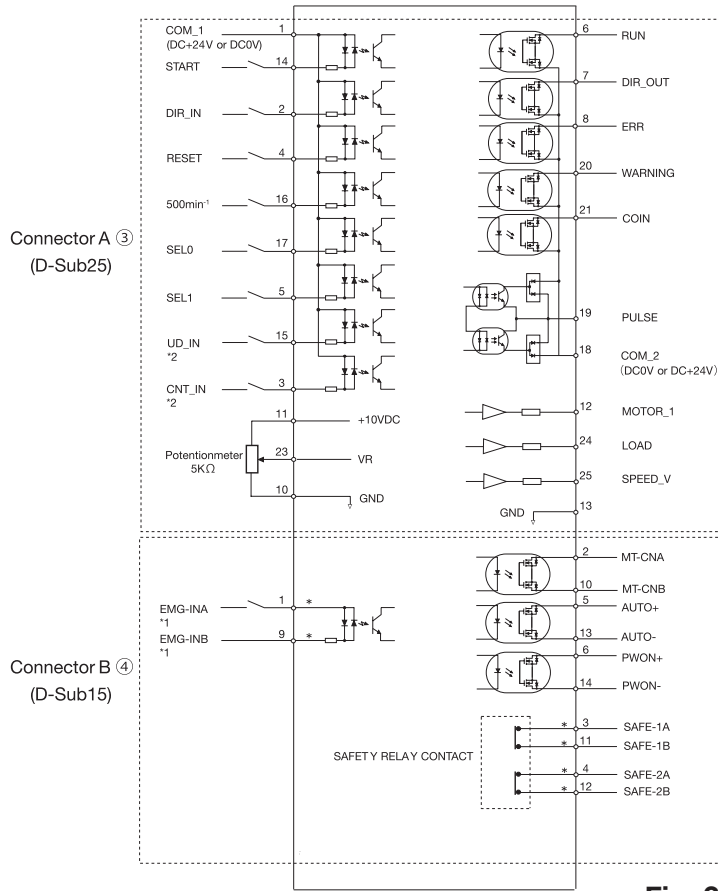


Fig. 29

- \*1 When using the "EMG - IN" Signal, set parameter **P9**. (Refer to P87 "15 - 4 ⑨ Selection of Emergency Stop Function" sectional.)
- \*2 When using the "UD\_IN and CNT\_IN" Signal, set parameter **P5**. (Refer to P85 "15 - 4 ⑤ Selection of External Speed Control Mode" section of the E3000 CONTROLLER Operation Manual.)

## (3) Input / Output Signal

### ① Input Signal

There are 8 different input signals : "Rotate Command (START)", "Rotating Direction Setting (DIR\_IN)", "Rotates Motor at " Centering "speed (500min<sup>-1</sup>)", "Error Release (RESET)", "UP / DOWN Signal for Setting Motor Speed (UD\_IN)", "Count Pulse Signal for Setting Motor Speed (CNT\_IN)", "Motor Select 0 (SEL0)", and "Motor Select 1 (SEL1)". These signals are DC+24V signals from an external signal source. Please use a separate power source that is capable of supplying DC+24V ±10%, 100mA. Refer to Fig.30 for connections.

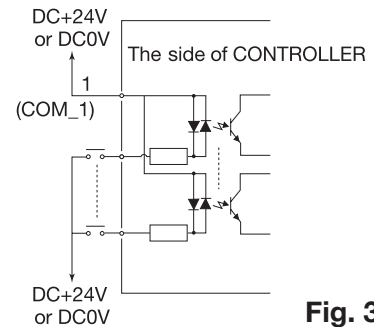


Fig. 30

### ② Output Signal I

There are 5 different output signals : "Rotating (RUN)", "Rotating Direction (DIR\_OUT)", "Error (ERR)", "Warning (WARNING)" and "Speed Achievement (COIN)". There signals are MOSS Relay Contact Connections. The output current can be connected to either sinking or sourcing.

Voltage and Current Specifications

- Applied Voltage (V) ≤ DC+30V
- Working Current (Ip) ≤ 100mA

Use an external power source for output circuits.

It is recommended to use the same DC+24V power source used for input signals. Please refer to Fig. 31 for connections.

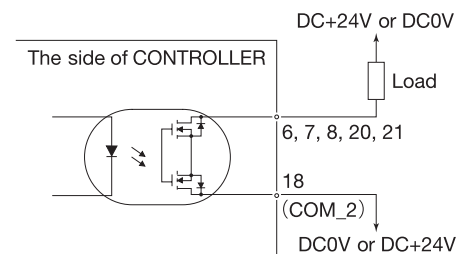


Fig. 31

### ③ Output Signal II

Refer to Fig. 32 regarding the Output Signal of the "Rotating Pulse (PULSE)". The output signal can be connected for either sinking or sourcing. Voltage and Current Specifications

- Applied Voltage (V)  $\leq$  DC+30V
- Working Current (Ip)  $\leq$  50mA

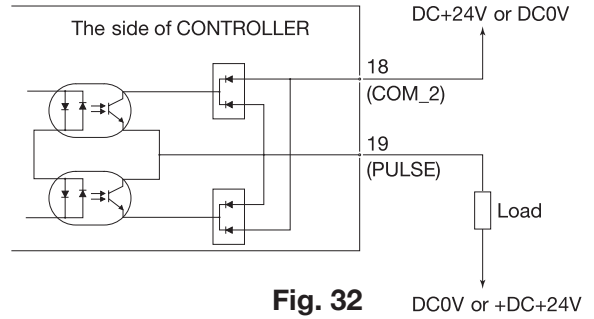


Fig. 32

### ④ Motor Speed Control Signal

Rotation Speed can be selected by, applying analog voltage to the "Motor Speed Control Voltage (VR)" Refer to Fig. 33, 34 for connections. Refer to Fig. 35, 36 about relationship between Motor Speed and Control Signal.

#### ⚠ CAUTION

When applying the DC0V to DC+10V, never input more than DC+10V (Fig.34). This will cause serious damage to the I/O Board in the CONTROLLER.

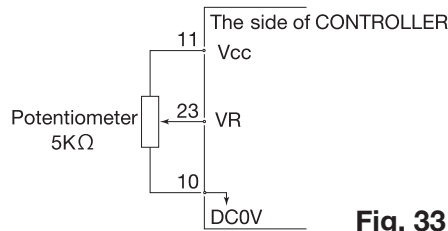


Fig. 33

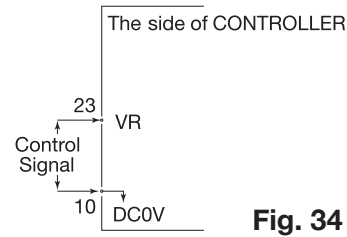


Fig. 34

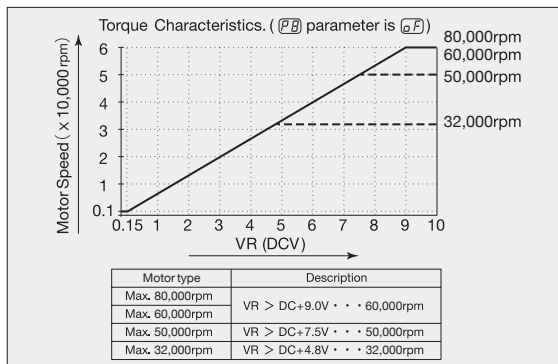


Fig. 35

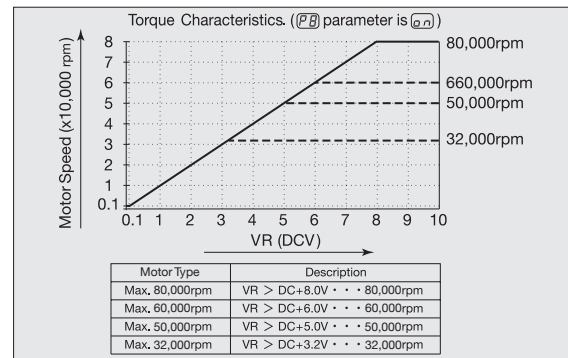


Fig. 36

### ⑤ Analog Monitor Signals

There are 3 types of monitoring signals : "Motor Current Monitor (MOTOR\_I)", "Torque Load Monitor (LOAD)", and "Rotating Speed Analog Monitor Voltage (SPEED\_V)". Please refer to Fig. 37 for connections.

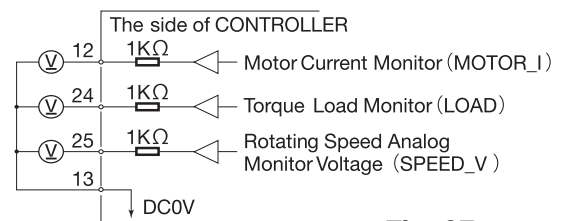


Fig. 37

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000
φ1.0°/φ0.99°/φ0.897°
E3000
- One Piece
E3000
- Modular
φ1.18°
φ1.97°/φ0.98°
φ0.897°
E3000
- 80,000rpm
E4000
3
MA
φ0.897°
φ1.0°
φ0.98°
φ1.18°
MS
φ0.75°
φ0.79°
φ0.89°
φ0.94°
φ1.0°
φ0.98°
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
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## 13-2 External Input / Output Connector B

### (1) Details of External Input / Output Connector B Signals

#### ⚠ WARNING

- **DO NOT** connect any circuit other than SELV (DC+24V) (Safety Extra Low Voltage) to the External Input / Output Connector B of the CONTROLLER. This will cause I/O board damage in the CONTROLLER.
- Do not supply over voltage or over current into the input / output circuit. Always install a LOAD (resistor) to the output circuit to eliminate the chance of damage to the CONTROLLER.

#### ⚠ CAUTION

**Input / Output Connector B DOES NOT use Pin No.7, No.8, and No.15. If pin No.7, No.8, and No.15 are connected, the CONTROLLER will be damage.**

Table. 4

Pin No.	Code	Function	Input / Output	Description
1	EMG-INA	Emergency Stop A	Input	External Power Source input for Emergency Stop Signal or Emergency Stop Signal. Normal Operation ON (Closed), Emergency OFF (Open). When using the Emergency Stop Signal, set parameter (P9). (Refer to P87 "15 - 4 (P9) Selection of Emergency Stop Function" section.)
2	MT-CNA	Motor Connect Contact A	Output	Continuity, OFF (Open), between Pin No. 2 and Pin No. 10 the motor is connected.
3	SAFE-1A	Safety Relay Contact 1A	Output	Pin No.3 and Pin No. 11 continuity ON (Closed) Safety Relay is OFF
4	SAFE-2A	Safety Relay Contact 2A	Output	Pin No. 4 and Pin No. 12 continuity ON (Closed) Safety Relay is OFF
5	AUTO +	Control Mode AUTO Signal (+)	Output	Control Mode AUTO Pin No. 5 and Pin No. 13 are ON (Closed)
6	PWON +	CONTROLLER Power Source Monitor (+)	Output	ON (Closed) : Main Power Supply is connected OFF (Open) : Main Power Supply is disconnected
7	Not Used	—	—	<b>*Note : Never use pin labeled not used.</b>
8	Not Used	—	—	<b>*Note : Never use pin labeled not used.</b>
9	EMG-INB	Emergency Stop B	Input	External Power Source input for Emergency Stop Signal or Emergency Stop Signal. Normal Operation ON (Closed), Emergency OFF (Open). When using the Emergency Stop Signal, set parameter (P9). (Refer to P87 "15 - 4 (P9) Selection of Emergency Stop Function" section.)
10	MT-CNB	Motor Connect Contact B	Output	Continuity, OFF (Open), between Pin No. 2 and Pin No. 10 the motor is connected.
11	SAFE-1B	Safety Relay Contact 1B	Output	Pin No. 3 and Pin No. 11 continuity ON (Closed) Safety Relay is OFF
12	SAFE-2B	Safety Relay Contact 2B	Output	Pin No. 4 and Pin No. 12 continuity ON (Closed) Safety Relay is OFF

Pin No.	Code	Function	Input / Output	Description
13	AUTO -	Control Mode AUTO Signal (-)	Output	Control Mode AUTO Pin No. 5 and Pin No. 13 are ON (Closed)
14	PWON -	CONTROLLER Power Source Monitor (-)	Output	ON (Closed) : Main Power Supply is connected OFF (Open) : Main Power Supply is disconnected
15	Not Used	—	—	—

## (2) Input / Output Signals

### ① Output Signal

PIN No. 2-10, 5-13, 6-14

There are 3 different output signals : "Motor Signal Connect Contact (MT-CN)", "Control Mode AUTO (AUTO)", and "CONTROLLER Power Source Monitor (PWON)".

These signals are MOSS Relay Contact Connections.

The output current can be connected for either sinking or sourcing.

Voltage and Current Specifications

- Applied Voltage (V)  $\leq$  DC+30V
- Working Current (Ip)  $\leq$  100mA

Use an external power source for output circuits. It is recommended to use a separate power supply Input/Output Connector A. Please refer to Fig.38 for connections.

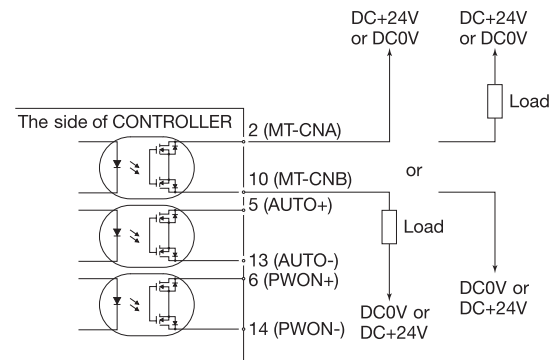


Fig. 38

### ② Emergency Stop Signal Input

PIN No. 1-9

This signal is a switched DC+24V output.

Please use a separate power source that is capable of applying DC+24V $\pm$ 10%,

50mA. Refer to Fig. 39 below for connections.

Normal Operation circuit is ON (Closed) Emergency Stop circuit is OFF (Open).

If the Emergency Stop Signal is OFF (Open) the Safety Relay is OFF and the power supply to the motor is interrupted and the motor stops.

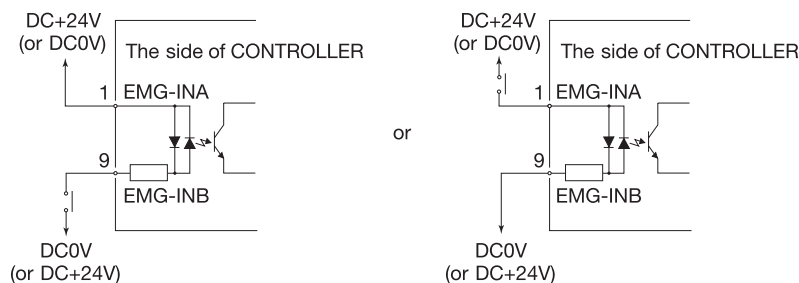


Fig. 39

1

EmaxEVC

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

$\phi 1.0^{\circ}/\phi 0.99^{\circ}/\phi 0.997^{\circ}$

E3000

— One Piece

E3000

— Modular

$\phi 1.18^{\circ}$

$\phi 1.0^{\circ}/\phi 0.98^{\circ}$

E3000

— 30,000rpm

E4000

3

MA

$\phi 0.897^{\circ}$

$\phi 1.0^{\circ}$

$\phi 0.98^{\circ}$

$\phi 1.18^{\circ}$

MS

$\phi 0.75^{\circ}$

$\phi 0.79^{\circ}$

$\phi 0.81^{\circ}$

$\phi 0.91^{\circ}$

$\phi 1.0^{\circ}$

$\phi 0.98^{\circ}$

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

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## ③ Safety Relay Signal

### ⚠ CAUTION

If the Emergency Stop Function is not installed, the Emergency Stop Signal (EMG-IN) will not function. If enabling the Emergency Stop Function, it is necessary to set parameter  $\text{P9}$ . (Refer to P87 "15-4 ⑨  $\text{P9}$  Selection of Emergency Stop Function" section.)

PIN No. 3-11, 4-12

- The Safety Relay will be ON or OFF depending on the state of the "Emergency Stop" Pin No.1-9.
- When there is continuity between Pin No.3 (SAFE-1A) and Pin No.11 (SAFE-1B) or between Pin No.4 (SAFE-2A) and Pin No.12 (SAFE-2B) the motor is off. If there is no continuity between these pairs of pins then the system is operating normally.
- If the Emergency Stop Signal is OFF (Open) the Safety Relay will be OFF (Open) and the motor power will be interrupted and the motor will stop.
- If the (NO) Normally Open contacts of the Safety Relay are welded together by an over load or short circuit the (NC) Normally Closed contacts separation are maintained with more than 0.5 mm spacing by the relay's recoil mechanism.
- The voltage / current specifications of Pin No. 3-11 and Pin No.4-12.  
 Applied Voltage (V)  $\leq$  DC+30V  
 Working Current (Ip)  $\leq$  2A

Refer to Fig. 40 below for connections.

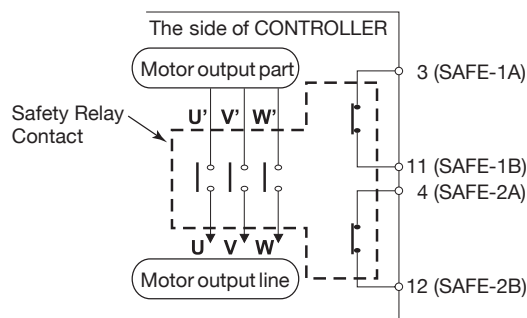


Fig. 40

### \* Safety Relay

If an N - O contact becomes welded, all N - C contacts will maintain a minimum distance of 0.5 mm when the coil is not energized.

N - O contacts (Normally - opened contacts) : Contacts of U - U', V - V', W - W'.

N - C contacts (Normally - closed contacts) : Contacts of (SAFE - 1A) - (SAFE - 1B), (SAFE - 2A) - (SAFE-2B)

### \* Machine Safety Circuit is possible when using the Safety Relay Contacts Output

• When an Emergency Stop Signal input that is coupled to a door open switch of an Industrial Machine, the Safety Relay will energize and open the Motor Power Line circuit.

• Contact outputs ((SAFE - 1A) - (SAFE - 1B), (SAFE - 2A) - (SAFE - 2B)) of the N - C contacts can be used for detecting the opening of the Motor Power Line. If N - O contacts become welded, contact outputs will maintain an OFF condition (Open), by Forced Guide Mechanism.

Therefore, Safety Relay can be used as an open signal of a movable guard or operator door with a locking (switch) mechanism for Industrial Machinery.



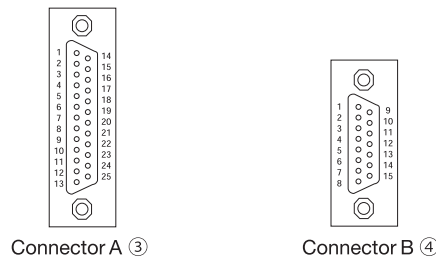
### 13-3 External Input / Output Connector Specifications

#### **⚠ CAUTION**

- To minimize RF interference and noise, please keep the length of the cables as short as possible and route them separately or as far away as possible from high voltage electrical cables.
- Use only shielded cables to minimize RF interference and noise. Connect the shield to the plug cover.
- Connect the shielded line to the Input / Output connector (shielding ground wire). Do not connect another shielded line to any externally powered instrument.

- ① External Input / Output Connector A ③  
 Plug Part Number : XM3A - 2521 OMRON (or other similar high - quality product)  
 Cover Part Number : XM2S-2511 OMRON (or other similar high - quality product)
- ② External Input / Output Connector B ④  
 Plug Part Number : XM3A - 1521 OMRON (or other similar high - quality product)  
 Cover Part Number : XM2S - 1511 OMRON (or other similar high - quality product)  
 Please prepare a Cover and Plug.  
 The shielding should be connected to the Cover.  
 \*Use Mounting Screws that are (M2.6)  
 Fasten the Connector to the CONTROLLER using Mounting Screws (M2.6).

### 13-4 External Input / Output Connector A / B Pin configuration



**Fig. 41**

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.75"
ø0.897" ø0.81"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
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6
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## E4000

### External Input / Output Control Signal Specifications (7-p18~p23)

#### (1) Connector A

##### ① Input / Output Connector A

Pin No.	Pin Name	Description	Input/Output	Signal	Function
1	COM_1	External Power Source for External	Input	0V or +24V DC	Power Source to be used for External Inputs.
2	DIR_IN	Rotating Direction Signal	Input	OFF (Open) : FWD. ON (Closed) : REV.	Controls the direction of rotation of the motor.
3	CNT_IN	Pulse speed change count signal	Input	OFF (Open) → ON (Closed)	Speed of one pulse 100 rpm can be changed in speed mode of pulse signal. (Need to set parameter)
4	RESET	Error Release Signal	Input	ON (Closed) → OFF (Open)	Error code can be released and the system restarted by switching this signal OFF and ON.
5	SEL1	Speed Select Signal	Input	OFF (Open) ON (Closed)	Select motor speed by using both SEL1 and SEL0. (Refer to Table 2)
6	RUN	Rotating Signal	Output	ON (Closed) : Motor Rotating OFF (Open) : Motor Stopped	Voltage output shows that the motor is rotating.
7	DIR_OUT	Rotating Direction Signal	Output	OFF (Open) : FWD. ON (Closed) : REV.	Voltage output shows the direction the motor is rotating.
8	ERR	Error Signal	Output	ON (Closed) : Normal OFF (Open) : Error	Error has occurred. (*1) Error Code is displayed on the Digital Speed Display.
9	-	Not Used	-	-	————— (*2)
10	GND	Internal GND	Output	Internal GND	This GND to be used for motor speed control circuit. (Refer to Fig.31)
11	VCC	Internal Power Source for Analog Signal	Output	+10V DC	Power Source for VR Output +10V DC
12	MOTOR_1	Motor Current Monitor	Output	0-10V DC 0V : 0A 10V : 20A	Voltage Output shows the motor current consumption. Output voltage is proportional to the motor current consumption.
13	GND	Internal GND	Output	Internal GND	This GND to be used for analog outputs (12, 24 and 25) circuit. (Refer to Fig.34)
14	START	Rotate Command Signal	Input	ON (Closed) : Rotation OFF (Open) : Stop	Starts and Stops motor rotation.
15	UD-IN	Pulse speed change up/down signal	Input	ON (Closed) : Speed Up OFF (Open) : Speed Down	When Cut-IN Signal is in, 1,000 rpm speed up.
16	500 rpm	Rotates Motor at 'Centering' Speed	Input	ON (Closed) : 500 rpm OFF (Open) : Normal Operation	Maintains constant 500 rpm motor speed for centering.
17	SEL0	Speed change point select signal 0	Input	OFF (Open) ON (Closed)	Select motor speed by using both SEL1 and SEL0. (Refer to Table 2) (Need to set parameter)
18	COM_2	Power Source for External Outputs	Output	0V or +24V DC	Power Source to be used for External Output Signals.
19	PULSE	Rotating Pulse	Output	1 pulse/rotation	1 revolution of the motor generates one pulse. Duty 50%
20	WARNING	Warning Signal	Output	OFF (Open) : Normal Operation ON (Closed) : Warning	This output shows a Warning has occurred. The Warning Code is shown on the Digital Speed Indicator.
21	COIN	Speed Achievement Signal	Output	ON (Closed) : Ordered Speed Achieved OFF (Open) : Ordered Speed Not Achieved	Voltage output shows that the motor has achieved more than 90% of the set speed.

Pin No.	Pin Name	Description	Input/Output	Signal	Function
22	-	Not Used	-	-	( 2)
23	VR	Motor Speed Control Signal	Input	0-10V DC	Sets rotating speed of Motor. Max.40,000 rpm : Motor Speed (rpm) = $\frac{\text{Control Signal (DCV)}}{2} \times 10000$ (BMS-4040/BMS-4040RA) Max.20,000 rpm : Motor Speed (rpm) = $\frac{\text{Control Signal (DCV)}}{4} \times 10000$ (BMS-4020/BMS-4020RA)
24	LOAD	Torque Load Monitor	Output	0-10V DC 0V : 0% 10V : 200%	Voltage output shows the torque being applied to the motor. Load monitor voltage x 20 equals the torque load %. 20V=Load%
25	SPEED_V	Rotating Speed Monitor Voltage	Output	0-10V DC 10,000 rpm/V	Voltage Output is proportional to the motor speed.

\*1 Output logic of error signal can be set with the user parameter  $P1$  setting. For details, refer to the setting of parameters section of E4000 Operation manual.

\*2 **Caution**  
Never use the pins marked NOT USED.

Table 2  
Speed point can be set with parameter setting  $P5$ .

Speed Point	SEL1 (Pin No. 5)	SELO (Pin No. 17)
U1	OFF (Open)	OFF (Open)
U2	OFF (Open)	ON (Closed)
U3	ON (Closed)	OFF (Open)
U4	ON (Closed)	ON (Closed)

## ② Input / Output Diagram

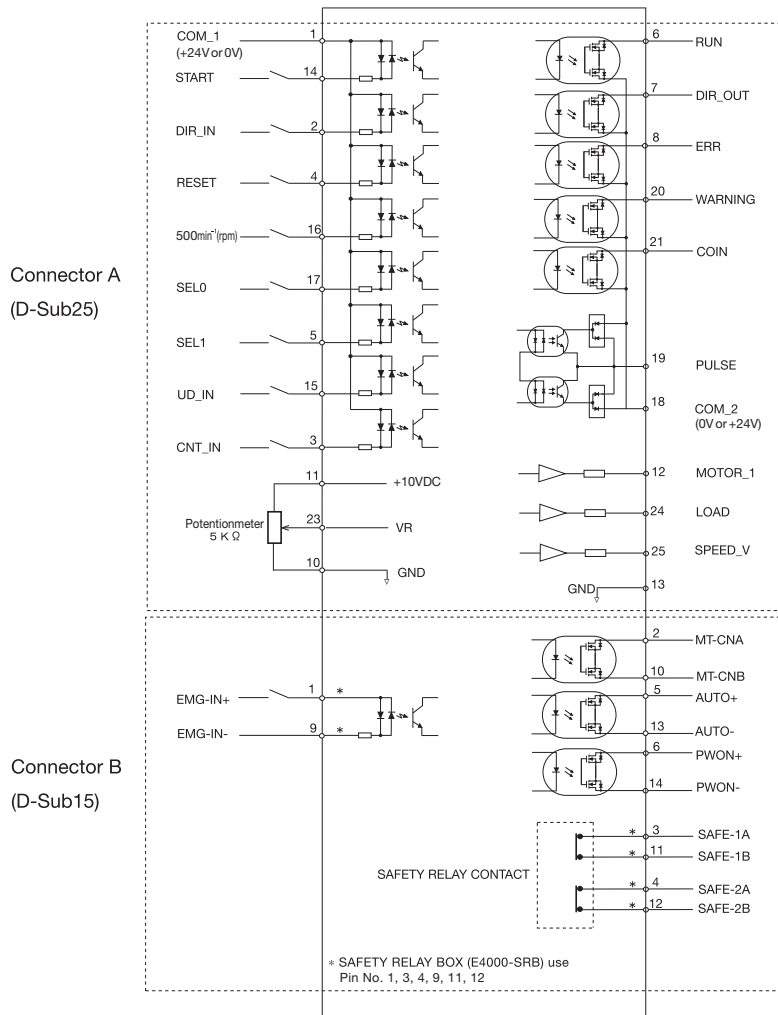


Fig. 27

1
EmaxEVO
ESPRT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.97"/ø0.98" ø0.897"
E3000 - 30,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.897" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
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7
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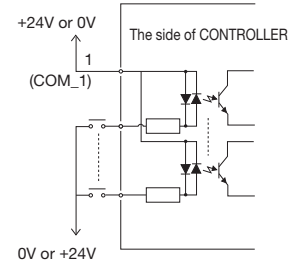
## ③ Input / Output Signal

### (1) Input Signal

There are 8 separate input signals : rotation command, rotation direction, error release, speed up-down signal, speed command pulse signal, Speed Select Signal 0, Speed Select Signal 1, 500 rpm speed command. These signals are +24VDC signals from an external signal source.

Please use a separate power source that is capable of supplying 24VDC±10 %, 100mA. Refer to Figures below for connections.

\*By setting parameter, Motor Speed change is possible by pulse signal. If input "Speed up-down signal" "Speed Command pulse signal".



**Fig. 28**

### (2) Output Signal I

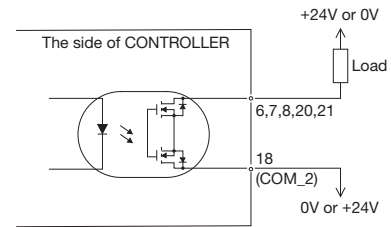
There are 5 separate output signals : rotating, rotating direction, error, warning and rotating speed achieved. These signals are MOSS Relay Contact Connections. The output current can be connected to either Sink or Source.

Voltage and Current Specifications

- Applied Voltage (V max) ≤ 30VDC
- Working Current (Ip) ≤ 100mA

Use an external power source for output circuits.

It is recommended to use the same 24VDC power source used for input signals. Please refer to Fig. 29 for connections.



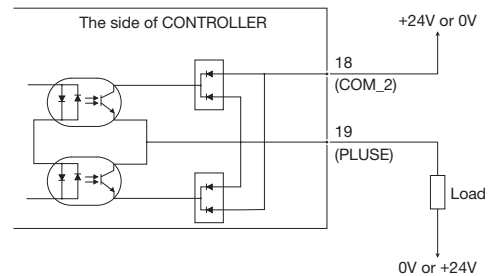
**Fig. 29**

### (3) Output Signal II

Refer to Fig. 30 for about the Output Signal of Rotating Pulse. The output current can be connected to either Sink or Source.

Voltage and Current Specifications

- Applied Voltage (V max) ≤ 30VDC
- Working Current (Ip) ≤ 50mA

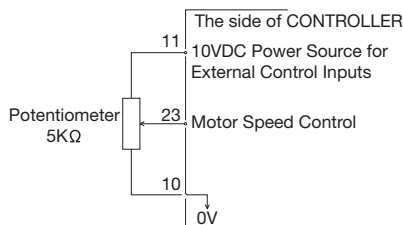


**Fig. 30**

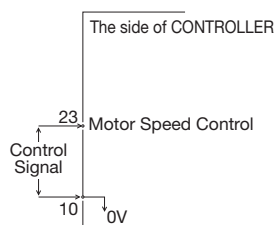
### (4) Motor Speed Control Signal

Refer to Fig. 31, 32, 33 for connections.

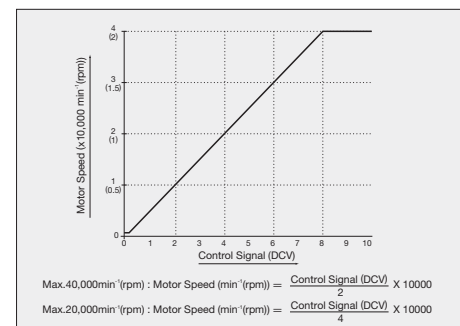
\*When applying the voltage, never input over 10VDC. This will avoid damaging to the CONTROLLER.



**Fig. 31**



**Fig. 32**



**Fig. 33**

### (5) Monitoring Signals

There are 3 separate monitoring signals : Motor Current, Torque Load Monitor and Rotating Speed Monitor. Please refer to Fig. 34 for connections. Output Voltage is 0-10V.

- Motor Current Monitor
- Torque Load Monitor
- Rotating Speed Monitor Voltage

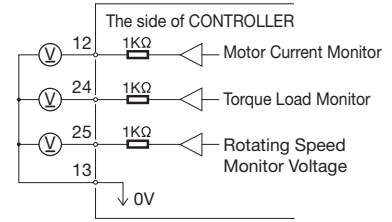


Fig. 34

### (2) Connector B

If you use the SAFETY RELAY BOX (E4000-SRB) connected to a machine tool, connect the signal line of SAFE-1A, SAFE-1B, SAFE-2A, SAFE-2B to the safety circuit on the machine control side in order to build a safety shutdown system with higher reliability.

#### ① Input / Output Connector B

#### ⚠ Caution

**NE246 does not use PIN No. 1, 3, 4, 9, 11, 12.**

**When putting the Safety Relay box (optional) in NE246, PIN No. 1, 3, 4, 9, 11, 12 can be used.**

Pin No.	Pin Name	Description	Input/Output	Signal	Function
1	EMGIN-A	Emergency Stop Signal	Input	External Power Source input for Emergency Stop Signal or Emergency Stop Signal OFF (Open)	External Power Source input for Emergency Stop Signal or Emergency Stop Signal. Normal Operation ON (Closed), Emergency OFF (Open).
2	MTCN-A	Motor Signal Connect Contact A	Output	Continuity, OFF (Open), between PIN2 and PIN10 the motor is connected.	When there is continuity, OFF, between PIN2 and PIN10 the selected motor is connected, if no continuity the motor is disconnected or the motor cord is broken.
3	SAFE-1A	Relay Contact 1A	Output	PIN3 and PIN11 continuity ON (Closed) Relay is OFF	When there is continuity between PIN3 and PIN11 ON (Closed) Safety Relay is OFF (System Stopped), no continuity Safety Relay is OFF (Open) Normal Operation.
4	SAFE-2A	Relay Contact 2A	Output	PIN4 and PIN12 continuity ON (Closed) Relay is OFF	When there is continuity between PIN4 and PIN12 ON (Closed) Safety Relay is OFF (System Stopped), no continuity Safety Relay is OFF (Open) Normal Operation.
5	AUTO-A	AUTO Mode Signal (+)	Output	Auto Mode Operation PIN5 and PIN13 ON (Closed)	When AUTO Mode is being used this PIN5 & PIN13 is ON (Closed).
6	PWON-A	CONTROLLER Power Source Monitor (+)	Output	ON (Closed) : Main Power Supply is connected OFF (Open) : Main Power Supply is disconnected	If the main power supply to the CONTROLLER is connected this output is ON (Closed).
7	—	Not Used	—	—	—
8	—	Not Used	—	—	—
9	EMGIN-B	Emergency Stop Signal (-)	Input	External Power Source input for Emergency Stop Signal or Emergency Stop Signal OFF (Open)	External Power Source input for Emergency Stop Signal or Emergency Stop Signal. Normal Operation ON (Closed), Emergency OFF (Open).
10	MTCN-B	Motor Signal Connect Contact B	Output	Continuity, OFF (Open), between PIN2 and PIN10 the motor is connected.	When there is continuity, OFF, between PIN2 and PIN10 the selected motor is connected, if no continuity the motor is disconnected or the motor cord is broken.
11	SAFE-1B	Relay Contact 1B	Output	PIN3 and PIN11 continuity ON (Closed) Relay is OFF	When there is continuity between PIN3 and PIN11 ON (Closed) Safety Relay is OFF (System Stopped), no continuity Safety Relay is OFF (Open) Normal Operation.
12	SAFE-2B	Relay Contact 2B	Output	PIN4 and PIN12 continuity ON (Closed) Relay is OFF	When there is continuity between PIN4 and PIN12 ON (Closed) Safety Relay is OFF (System Stopped), no continuity Safety Relay is OFF (Open) Normal Operation.
13	AUTO-B	AUTO Mode Signal (-)	Output	Auto Mode Operation ON (Closed)	When AUTO Mode is being used this Pin is ON (Closed).
14	PWON-B	CONTROLLER Power Source Monitor (-)	Output	ON (Closed) : Main Power Supply is connected OFF (Open) : Main Power Supply is disconnected	If the main power supply to the CONTROLLER is connected this output is ON (Closed).
15	—	Not Used	—	—	—

1	EmaxEV
ESPRT	
ROTUS	
IMPULSE	
PRESTO II	
Sheenus ZERO	
Sonic-Cutter ZERO	
2	iSpeed3
E2000	ø1.0"/ø0.98"/ø0.897"
E3000	— One Piece
E3000	— Modular
	ø1.18"
	ø1.97"/ø0.98"/ø0.897"
E3000	— 80,000rpm
E4000	
3	MA
	ø0.897"
	ø1.0"
	ø0.98"
	ø1.18"
MS	
	ø0.75"
	ø0.79"
	ø0.87"
	ø0.91"
	ø1.0"
	ø0.98"
4	HES
iSpeed5	
HTS	
PLANET	
Xpeed	
ABT	
5	AIR LINE KIT
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## ⚠ Caution

When connecting unused PIN 7, 8, and 15, this may cause damage to the product.

### ② Input / Output Signals

#### (1) Output Signal

##### PIN No. 2-10, 5-13, 6-14

There are 3 separate output signals : “Motor Connection Monitoring”, “AUTO MODE” and “CONTROLLER Power Source Monitoring”.

These signals are MOS Relay Contact Connections. The output current can be connected to either Sink or Source.

Voltage and Current Specifications

- Applied Voltage (V max)  $\leq 30\text{VDC}$
- Working Current (Ip)  $\leq 100\text{mA}$

Use an external power source for output circuits. It is recommended to use a separate power from the one used for Input/Output Connector A. Please refer to Fig. 35 for connections.

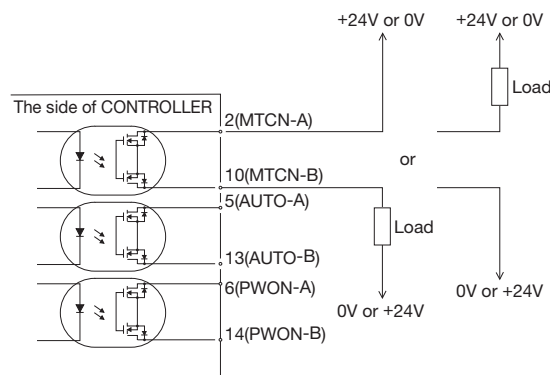


Fig. 35

#### (2) Emergency Stop Signal Input

##### PIN No. 1-9

This signal is a switched 24V DC output. Please use a separate power source that is capable of supplying  $24\text{VDC} \pm 10\%$ , 50mA. Refer to Fig. 36 below for connections. Normal Operation circuit is ON (Closed) Emergency Stop circuit is OFF (Open). When emergency stop signal is turned OFF (Open), the relay in the safety relay BOX is turned OFF and the motor power line is opened, then the motor stops.

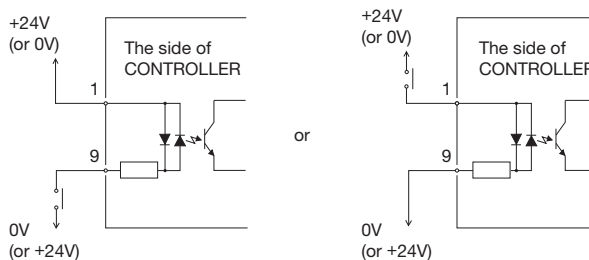


Fig. 36

#### (3) Relay Signal

##### PIN No. 3-11, 4-12

- The Relay will be ON or OFF depending on the state of the Emergency Stop Signal PIN1-9.
- When there is continuity between PIN3 (SAFE-1A) and PIN11 (SAFE-1B) or between PIN4 (SAFE-2A) and PIN12 (SAFE-2B) the motor is off. If there is no continuity between these pairs of pins then the system is operating normally.
- If the Emergency Stop Signal is OFF (Open) the Relay will be OFF (Open) and the motor power will be interrupted and the motor will stop.
- The voltage/current specifications of PIN3-11 & PIN4-12.

Applied Voltage (V max)  $\leq 30\text{VDC}$   
Working Current (Ip)  $\leq 2\text{A}$

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

$\phi 1.0^\circ / \phi 0.98^\circ / \phi 0.997^\circ$

E3000

One Piece

E3000

Modular

$\phi 1.18^\circ$

$\phi 1.0^\circ / \phi 0.98^\circ / \phi 0.997^\circ$

E3000

$\phi 0.991^\circ$

$\phi 0.0007\text{rpm}$

E4000

3

MA

$\phi 0.997^\circ$

$\phi 1.0^\circ$

$\phi 0.98^\circ$

$\phi 1.18^\circ$

MS

$\phi 0.75^\circ$

$\phi 0.79^\circ$

$\phi 0.97^\circ$

$\phi 0.91^\circ$

$\phi 1.0^\circ$

$\phi 0.98^\circ$

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

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- Refer to Fig. 37 for connecting relationship between the relay contact output and the safety BOX.

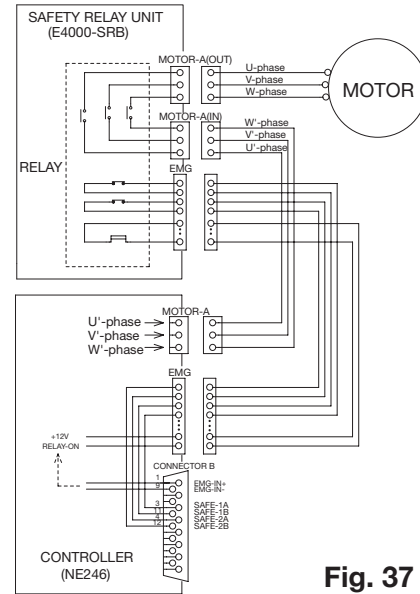


Fig. 37

### (3) Input / Output Signal Connector Specifications

#### ① Input / Output Connector A

Plug Part Number : XM2A-2501 OMRON (or other similar high-quality product)  
 Cover Part Number : XM2S-2511 OMRON (or other similar high-quality product)

#### ② Input / Output Connector B

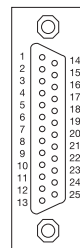
Plug Part Number : XM2A-1501 OMRON (or other similar high-quality product)  
 Cover Part Number : XM2S-1511 OMRON (or other similar high-quality product)

- The Plug and Cover are not provided with the system. Please purchase the specified plug and cover from local suppliers.
- Use only shielded cables to minimize RF interference and noise. Connect the shield to the plug cover.
- Different makers use different names for the cover.

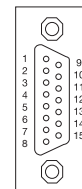
#### ⚠ Caution

To minimize RF interference and noise please keep the length of the cables as short as practical and route separate from power cables.

### (4) Input / Output Connector A, B Pin Configuration



Connector A



Connector B

Fig. 38

1
EmaxEVC
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 - 30,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.73"
ø0.897" ø0.81"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
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## iSpeed3

### External Input / Output Control Signal Specifications (7-p24~p29)

#### (1) Connector A

##### ① Input / Output Connector A

Pin No.	Pin Name	Description	Input/Output	Signal	Function
1	COM_1	External Power Source for External Inputs	Input	0V or +24V DC	Power Source to be used for External Inputs Signals.
2	DIR_IN	Rotating Direction Signal	Input	OFF (Open) : FWD. ON (Closed) : REV.	Controls the direction on rotation of the motor.
3	CNT_IN	Speed Change Pulse Signals	Input	OFF (Open) → ON (Closed)	Speed of one pulse 100rpm can be change in Speed mode of pulse signal. (Parameter [P5])
4	RESET	Error Release Signal	Input	ON (Closed) → OFF (Open)	Error code can be released and the system restarted by switching this signal OFF and ON.
5	SEL1	Speed Section Signal	Input	OFF (Open) ON (Closed)	Select motor speed by using SEL0 and SEL1. (Parameter [P5])
6	RUN	Rotating Signal	Output	ON (Open) : Rotating OFF (Closed) : Stopped	Output shows that the motor is rotating.
7	DIR_OUT	Rotating Direction Signal	Output	OFF (Open) : FWD. ON (Closed) : REV.	Output shows the direction of the motor is rotating.
8	ERR	Error Signal	Output	OFF (Open) : Normal ON (Closed) : Error	Error has occurred. (Parameter [P1])
9	MT_SEL	Motor Select Signal	Input	OFF (Open) : Motor No.1 ON (Closed) : Motor No.2	Select the motor to be used.
10	SEL_MT	Selected Motor Signal	Output	OFF (Open) : Motor No.1 ON (Closed) : Motor No.2	Output shows the selected motor No.
11	VCC	Internal Power Source for Analog Signal	Output	+10V DC	Power Source for VR 1 and VR 2.
12	MOTOR_1	Motor Current Monitor	Output	0-10V DC 1.0A/V	Output shows the motor current consumption. Output voltage is proportional to the motor current consumption.
13	GND	Internal Ground	Output	Internal GND	This GND to be used for analog output circuit.
14	START	Rotate Command Signal	Input	OFF (Open) : Stop ON (Closed) : Rotation	Starts and Stops motor rotation.
15	UD_IN	Pulse Speed Change UP/DOWN Signal	Input	OFF (Open) : Speed Down ON (Closed) : Speed Up	Determine speed up or speed down. (Parameter [P5])
16	-	Not Used	-	-	-
17	SEL0	Speed Change Point Select Signal "0"	Input	OFF (Open) ON (Closed)	Select 4 motor speeds by using SEL0 and SEL1. (Parameter [P5])
18	COM_2	External Power source for External Output	Input	0V or +24V DC	Power Source to be used for External output signals.
19	PULSE	Rotating Pulse	Output	1 Pulse/Rotation	1 revolution of the motor generates one pulse. Duty 50%
20	WARNING	Warning Signal	Output	OFF (Open) : Normal Operation ON (Closed) : Warning	Shows a Warning has Occurred. The Warning Code is shown on the Digital Speed Indicator.
21	COIN	Speed Achievement Signal	Output	OFF (Open) : Ordered Speed not achieved ON (Closed) : Ordered Speed achieved	Shows that the motor has achieved more than 90% of the set Speed. (Parameter [P9])
22	VR2	Motor No.2 Speed Control Signal	Input	Motor No. 2 Speed Control Signal	Sets rotating speed of motor No.2. 10,000rpm /V. (Based on 80,000rpm Max.)
23	VR1	Motor No.1 Speed Control Signal	Input	Motor No. 1 Speed Control Signal	Sets rotating speed of motor No.1. 10,000rpm /V. (Based on 80,000rpm Max.)
24	LOAD	Torque Load Monitor	Output	0-10V DC 20%/V	Shows that the torque being applied to the motor. 20%/V 100%(rating)/5V
25	SPEED_V	Rotating Speed Monitor Voltage	Output	10,000 rpm/V	Voltage Output is proportional to the motor speed.

Table 1 Speed point can be set with parameter setting [P5]

Speed Point	SEL0 (Pin No. 5)	SEL1 (Pin No. 17)
U 1	OFF (Open)	OFF (Open)
U 2	OFF (Open)	ON (Closed)
U 3	ON (Closed)	OFF (Open)
U 4	ON (Closed)	ON (Closed)

## ② Input / Output Diagram

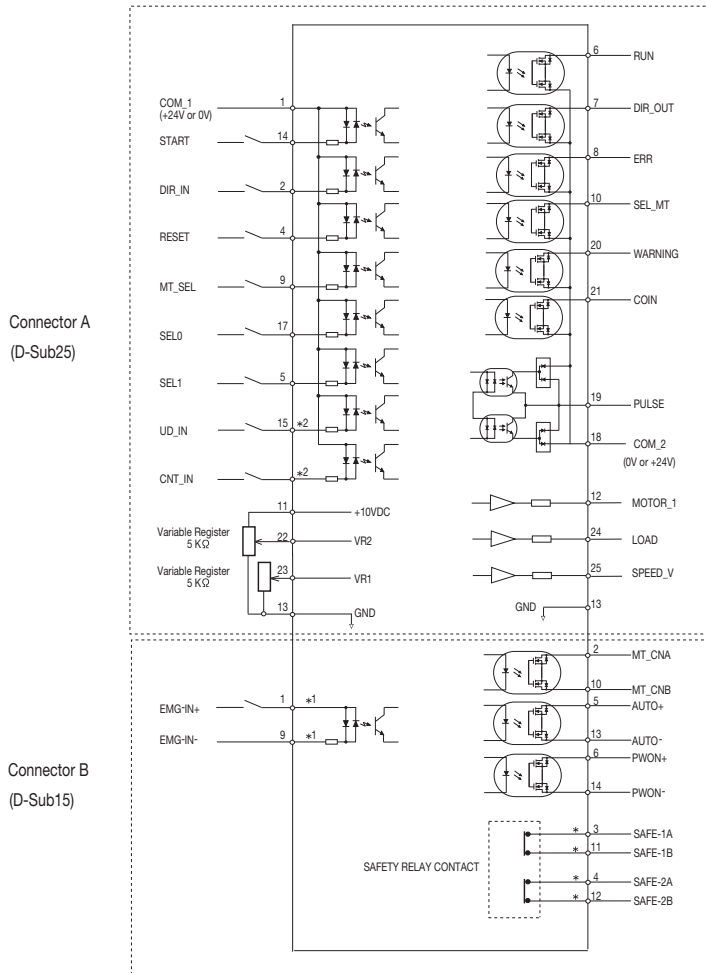


Fig. 26

## ③ Input / Output Signals

### (1) Input Signal

There are 8 separate input signals : Rotation Command, Rotation Direction, Error Release, Speed Up or Down Signal, Speed Command Pulse Signal, Motor Selection Signal, Speed Point for Motor No.1 / Motor No.2.

These signals are +24VDC signals from an external signal source.

Please use a separate power source that is capable of supplying 24VDC±10 %, 100mA (max). Refer to Figures below for connections.

\*By setting parameter [P5] Motor Speed Change possible by Pulse Signal. If input "Speed Up or Down Signal (UD-IN)" "Speed Command Pulse Signal (CNT-IN)".

- \*1 : By setting parameter [P8], EMG-IN signal can be used.
- \*2 : By setting parameter [P5], Motor Speed change is possible by pulse signals.

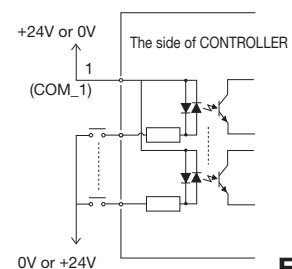


Fig. 27

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.89" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
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## (2) Output Signal I

There are 6 separate output signals : Rotating, Rotating Direction, Error, Warning, Selected Motor, Rotating Speed Achieved.

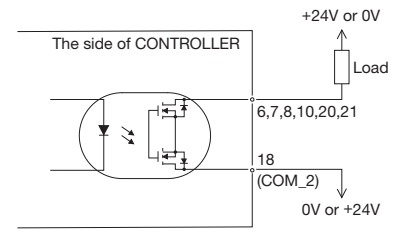
These signals are MOS Relay Connections. The output signal can be connected to either a sinking or source type connection.

Voltage and Current Specifications

- Applied Voltage (V max)  $\leq$  30VDC
- Working Current (Ip)  $\leq$  100mA

Use a separate external power source for output circuits.

It is recommended to use a separate 24VDC power source other than the one used for input signals. Please refer to Fig. 28 for connections.



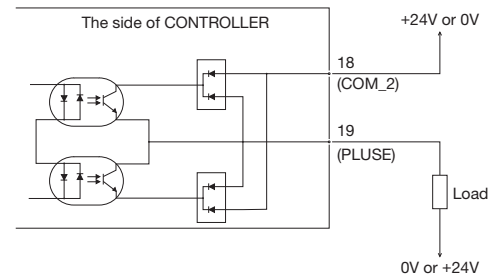
**Fig. 28**

## (3) Output Signal II

Refer to Fig. 29 for about the Output Signal of Rotating Pulse. This signal is A photo coupler connection. This output can be connected to either a sinking or source type connection.

Voltage and Current Specifications

- Applied Voltage (V max)  $\leq$  30VDC
- Working Current (Ip)  $\leq$  100mA

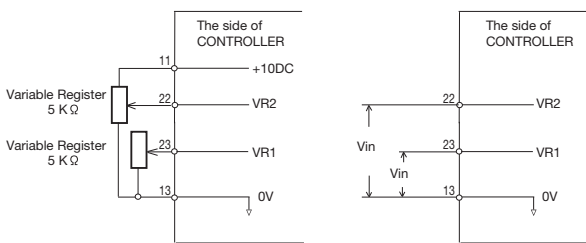


**Fig. 29**

## (4) Motor Speed Control Signal

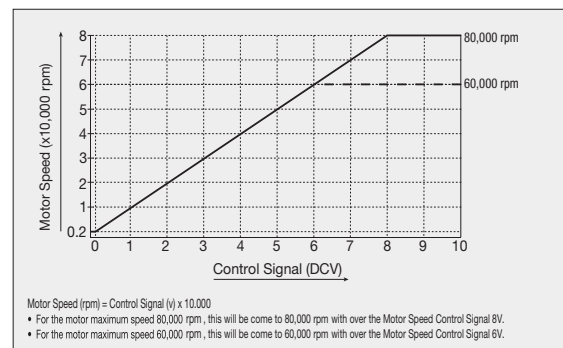
Refer to Fig. 30, 31, 32 for connections.

When applying the voltage, never input over 10VDC. This will avoid damaging to the CONTROLLER. (Fig. 31)



**Fig. 30**

**Fig. 31**

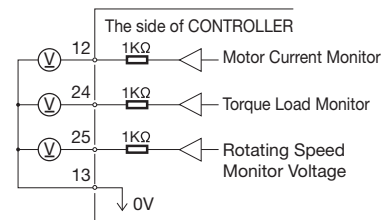


**Fig. 32**

## (5) Monitoring Signals

There are 3 separate monitoring signals : Motor Current, Torque Load Monitor and Rotating Speed Monitor. Please refer to Fig. 33 for connections.

- Motor Current Monitor
- Torque Load Monitor
- Rotating Speed Monitor Voltage



**Fig. 33**

## (2) Connector B

### ① Input / Output Connector B



#### Caution

Connector B does not use PIN No. 7, 8 and 15.

Pin No.	Pin Name	Description	Input/Output	Signal	Function
1	EMGIN-A	Emergency Stop Signal A	Input	Input for Emergency Stop signal.	Emergency Stop Signal. Normal Operation On (Closed). EMERGENCY off (Open).
2	MTCN-A	Motor Signal Contact Connector A	Output	Continuity OFF (Open) between MTCN-A and MTCN-B the motor is connected.	When there is continuity, (OFF), between MTCN-A and MTCN-B the motor is connected. If no continuity the motor is disconnected.
3	SAFE-1A	Relay Contact 1A	Output	SAFE-1A and SAFE-1B continuity ON (Closed) Relay is OFF.	When there is continuity, (OFF), between SAFE-1A and SAFE-1B ON (Closed) Safety Relay is OFF (Emergency Stop), no continuity Safety Relay is OFF (Open) Normal Operation.
4	SAFE-2A	Relay Contact 2A	Output	SAFE-2A and SAFE-2B continuity ON (Closed) Relay is OFF.	When there is continuity, (OFF), between SAFE-2A and SAFE-2B ON (Closed) Safety Relay is OFF (Emergency Stop) no, continuity Safety Relay is OFF (Open) Normal Operation.
5	AUTO-A	AUTO Mode Signal A	Output	AUTO Mode Operation ON (Closed).	When AUTO Mode is being used, AUTO-A and AUTO-B is ON (Closed)
6	PWON-A	CONTROLLER Power Source Monitor A	Output	ON (Closed) :Main Power Supply is connected. OFF (Open) : Main Power Supply is disconnected.	If the main power supply to the CONTROLLER is connected, PWON-A and PWON-B is ON (Closed)
7	—	Not Used	—	—	—
8	—	Not Used	—	—	—
9	EMGIN-B	Emergency Stop Signal B	Input	Input for Emergency Stop signal.	Emergency Stop Signal Normal Operation ON (Closed), Emergency OFF (Open)
10	MTCN-B	Motor Signal Connect Contact B	Output	Continuity OFF (Open) between MTCN-A and MTCN-B the Motor is connected.	When there is continuity, OFF, between MTCN-A and MTCN-B the motor is connected. If no continuity the motor is disconnected.
11	SAFE-1B	Relay contact 1B	Output	SAFE-1A and SAFE-1B continuity ON (Closed) Relay is OFF.	When there is continuity, OFF, between SAFE-1A and SAFE-1B ON (Closed) Safety Relay is OFF (Emergency Stop), no continuity Safety Relay is OFF (Open) Normal Operation.
12	SAFE-2B	Relay Contact 2B	Output	SAFE-2A and SAFE-2B continuity ON (Closed) Relay is OFF.	When there is continuity, OFF, between SAFE-2A and SAFE-2B ON (Closed) Safety Relay is OFF (Emergency Stop), no continuity Safety Relay is OFF (Open) Normal Operation.
13	AUTO-B	AUTO Mode Signal B	Output	Auto Mode Operation ON (Closed)	When AUTO Mode is being used, AUTO-A and AUTO-B is ON (Closed)
14	PWON-B	CONTROLLER Power Source Monitor B	Output	ON (Closed) :Main Power Supply is connected. OFF (Open) : Main Power Supply is disconnected.	If the Main power supply to the CONTROLLER is connected, PWON-A and PWON-B is ON (Closed).
15	—	Not Used	—	—	—



#### Caution

If unused Pins 7, 8 or 15 are connected, the CONTROLLER will be damaged.

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ϕ1.0" ϕ0.99" ϕ0.997"

E3000

— One Piece

E3000

— Modular

ϕ1.18"

ϕ1.97" ϕ0.98"

ϕ0.997"

E3000

— 30,000rpm

E4000

3

MA

ϕ0.897"

ϕ1.0"

ϕ0.98"

ϕ1.18"

MS

ϕ0.75"

ϕ0.79"

ϕ0.81"

ϕ0.91"

ϕ1.0"

ϕ0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

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## ② Input / Output Signals

### (1) Output Signal

#### PIN No. 2-10, 5-13, 6-14

There are 3 separate output signals : “Motor Connection Monitoring”, “AUTO MODE” and “CONTROLLER Power Source Monitoring”.

These signals are MOS Relay Contact Connections. The output signal can be connected to either Sink or Source.

Voltage and Current Specifications

- Applied Voltage (V max)  $\leq$  30VDC
- Working Current (Ip)  $\leq$  100mA

Use an external power source for output circuits. It is recommended to use a separate power from the one used for Input/Output Connector A. Please refer to Fig. 34 for connections.

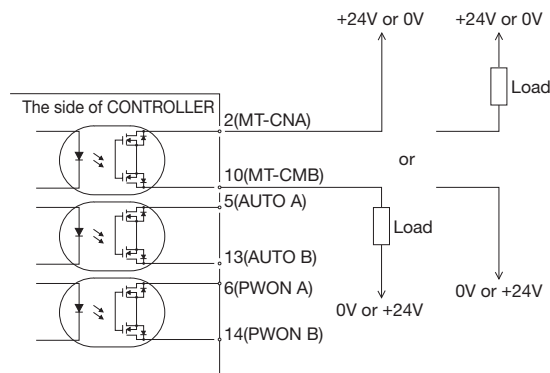


Fig. 34

### (2) Emergency Stop Signal Input

#### PIN No. 1-9

This signal is a +24V DC signal for External signal source.

Please use a separate power source that is capable of supplying 24VDC  $\pm$ 10%, 50mA. Refer to Fig. 35 below for connections.

When Normal Operation circuit is ON (Closed), the safety relay is on.

When the Emergency Stop Signal is OFF (Open) the Safety Relay is OFF and the power supply to the motor is interrupted and the motor stops.

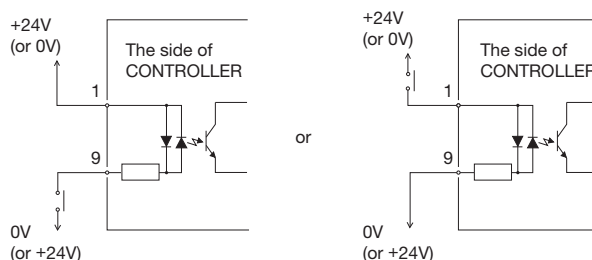


Fig. 35

### (3) Safety Relay Contact Signal

#### PIN No. 3-11, 4-12

- The Safety Relay will be ON or OFF depending on the state of the Emergency Stop Signal PINS 1 and 9.
- When there is continuity between PIN3 (SAFE-1A) and PIN11 (SAFE-1B) or between PIN4 (SAFE-2A) and PIN12 (SAFE-2B) the motor is off. If there is no continuity between these pairs of pins then the system is operating normally.
- If the Emergency Stop Signal is OFF (Open) the Safety Relay will be OFF and the motor power will be interrupted and the motor will stop.

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus ZERO

Sonic-Cutter ZERO

2

iSpeed3

E2000

E3000

E3000

E3000

E3000

E3000

E4000

3

MA

MS

MS

MS

MS

MS

MS

MS

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

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- The voltage/current specifications of PIN3-11 and PIN4-12.
  - Applied Voltage (V max)  $\leq$  30VDC
  - Working Current (Ip)  $\leq$  2A

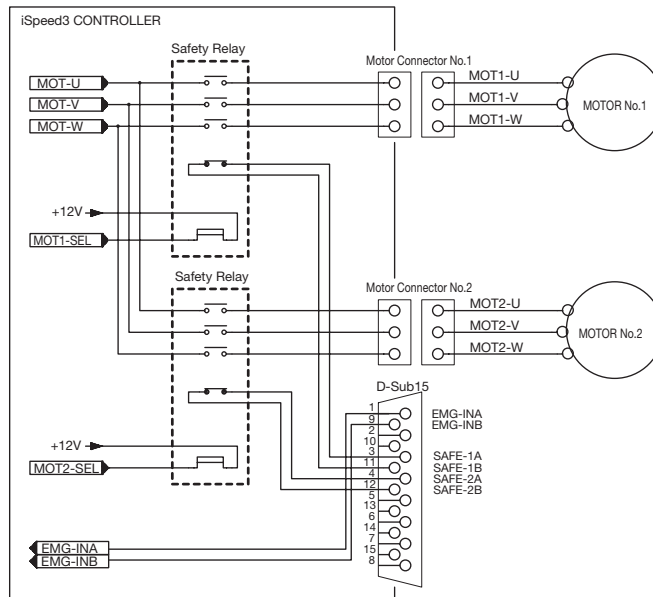


Fig. 36

### (3) Input / Output Signal Connector Specifications

#### ① Input / Output Connector A

Plug Part Number : XM2A-2501 OMRON (or other similar high-quality product)  
 Cover Part Number : XM2S-2511 OMRON (or other similar high-quality product)

#### ② Input / Output Connector B

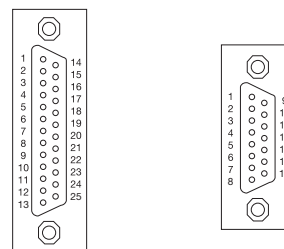
Plug Part Number : XM2A-1501 OMRON (or other similar high-quality product)  
 Cover Part Number : XM2S-1511 OMRON (or other similar high-quality product)

- The Plug and Cover are not provided with the system. Please purchase the specified plug and cover from local suppliers.
- Use only shielded cables to minimize RF interference and noise. Connect the shield to the connector cover.
- Different makers use different names for the cover.

#### ⚠ Caution

To minimize RF interference and noise please keep the length of the cables as short as possible and route separate from high voltage electrical cables.

### (4) Input / Output Connector A, B Pin Configuration



Connector A

Connector B

Fig. 37

1
EmaxEVO
ESPRT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 — 30,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.89" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
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## 15. EXTERNAL INPUT / OUTPUT CONNECTOR

### 15 - 1 External Input / Output Connector A

(1) Details of External Input / Output Connector A Signals

#### WARNING

- **DO NOT** connect any circuit other than SELV (DC+24) (Safety Extra Low Voltage) to the External Input / Output Connector A of the CONTROLLER. This will cause I / O board damage in the CONTROLLER.
- Do not supply over voltage or over current into the input / output circuit. Always install a LOAD (resistor) to the output circuit to eliminate the chance of damage to the CONTROLLER.

#### CAUTION

- External Input / Output Connector A DOES NOT use Pins No. 10, No. 16, No. 20 and No. 22. If Pins No. 10, No. 16 and No. 20 are connected, the CONTROLLER will be damage.
- NEVER Connect the pin No.1 (COM\_1) or No.18 (COM\_2) to the No.13 (GND).

Table 15.

Pin No.	Code	Function	Input / Output	Description	
1	COM_1	External Power source for External input	Input	DC0V or DC+24V	Power source to be used for External Inputs Signals.
2	DIR_IN	Rotating Direction Setting	Input	OFF (Open) : FWD. ON (Closed) : REV.	Controls the rotational direction of the motor spindle. Setting parameter P6, can start with reverse rotation. (Refer to P100 " 17 - 4 ⑥ P6 Selection of External Motor Start Signal Control Mode " section.)
3	CNT_IN	Count Pulse Signal for Setting Motor Speed	Input	OFF (Open) → ON (Closed)	One pulse will increase or decrease $100\text{min}^{-1}$ in Spindle Speed depending on parameter P5 setting. (Refer to P99 " 17 - 4 ⑤ P5 Selection of External Speed Control Mode" section.) The increase speed and decrease speed are set by UD_IN.
4	RESET	Error Release	Input	ON (Closed) → OFF (Open)	Error Code can be released and the system restarted by toggling this signal OFF and ON. Error will not be released until cause of the error has been removed.

Pin No.	Code	Function	Input / Output	Description
5	SEL1	Speed Point Select 1	Input	Refer to P78 " 14 - 3 - 2 (4) ③ Set by the Speed Point Signal Table14 ". Speed Point (U1 – U4) can be selected by SEL0 and SEL1 signal combination. Need to set parameter P5. (Refer to P99 " 17 - 4 ⑤ P5 Selection of External Speed Control Mode " section.)
6	RUN	Rotating	Output	OFF (Open) : Stop ON (Closed) : Rotating Output shows that the motor is rotating.
7	DIR_OUT	Rotating Direction	Output	OFF (Open) : FWD. ON (Closed) : REV. Output shows the direction of the Motor is rotating.
8	ERR	Error	Output	OFF (Open) : Error ON (Closed) : Normal Output shows that error has occurred. Error code will be displayed on Digital Speed Indicator. When setting parameter P1, Error Output Mode can be changed. (Refer to P97 " 17 - 4 ① P1 Setting of Error Output Mode " section.)
9	ID0	Motor Class Signal 0	Input	Refer to P77 "14 - 3 - 2 (3) Setting the Motor Class Signal ". Select the Motor Class by using both ID0 and ID1 signals.
10	Not Used	—	—	— *Note : Never use pin labeled not used.
11	Vcc	Internal Power Source for Motor Speed Control Voltage	Output	DC+10V Internal Power Source for " Motor Speed Control Voltage (VR) " .
12	MOTOR_I	Motor Current Monitor	Output	2Amp / V DC0V - DC+10V Output Motor Current Monitor with Analog Monitor Voltage. 2Amp / 1V. Max. 20Amp.
13	GND	Internal GND for Analog Monitor and Motor Speed Control Voltage ONLY	Output	Internal CONTROLLER GND This GND will be used for analog monitor and Motor Speed Control Voltage (MOTOR_I, SPEED_V, and LOAD).
14	START	Rotate command	Input	OFF (Open) : Stop ON (Closed) : Start Motor Start and Motor Stop Signal Setting parameter P6, can start with forward rotation. (Refer to P100 " 17 - 4 ⑥ P6 Selection of External Motor Start Signal Control Mode" section.)

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.997"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.97"/ø0.98" ø0.997"
E3000 — 30,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.81" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
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Xpeed
ABT
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IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 ø1.0°/ø0.98°/ø0.897°
E3000 — One Piece
E3000 — Modular
ø1.18°
ø1.0°/ø0.98° ø0.897°
E3000 — ø0.000rpm
E4000
<b>3</b>
MA
ø0.897°
ø1.0° ø0.98°
ø1.18°
MS
ø0.75° ø0.79°
ø0.87° ø0.91°
ø1.0° ø0.98°
<b>4</b>
HES
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Xpeed
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Pin No.	Code	Function	Input / Output	Description	
15	UD_IN	UP / DOWN Signal for Setting Motor Speed	Input	OFF (Open) : Speed Down ON (Closed) : Speed Up	This signal is for increasing and decreasing the desired speed by the use of a Pulse Signal. Whether it increases or decreases speed is determined by CNT_IN. It is required that parameter P5 is set. (Refer to P99 " 17 - 4 ⑤ P5 Selection of External Speed Control Mode " section.)
16	Not Used	—	—	—	*Note : Never use pin labeled not used.
17	SEL0	Speed Point Select 0	Input	Refer to P78 " 14 - 3 - 2 (4) ③ Set by the Speed Point Signal Table14 ".	Speed Point (U1 – U4) can be selected by SEL0 and SEL1 signal combination. Need to set parameter P5. (Refer to P99 " 17 - 4 ⑤ P5 Selection of External Speed Control Mode " section.)
18	COM_2	External Power Source for External Output	Input	DC0V or DC+24V	Power source to be used for External Outputs Signals.
19	PULSE	Rotating Pulse	Output	1 pulse / rotation	1 revolution of the motor generates one pulse. Duty 50%.
16	Not Used	—	—	—	*Note : Never use pin labeled not used.
21	COIN	Speed Achievement	Output	OFF (Open) : Set speed not achieved ON (Closed) : Set speed achieved	Shows that the Motor has achieved more than 90% of the set speed. (The Speed Achievement amount can change by parameter P9.)
22	ID1	Motor Class Signal 1	Input	Refer to P77 "14 - 3 - 2 (3) Setting the Motor Class Signal	Select the Motor Class by using both ID0 and ID1 signals.
23	VR	Motor Speed Control Voltage	Input	Speed (min <sup>-1</sup> ) = Speed Control Voltage Signal × 10000 DC 0 - DC+10V	Sets rotating speed of the motor. Refer to Fig. 46 about relationship between motor speed and control signal.
24	LOAD	Torque Load Monitor	Output	Torque Load Monitor (%) = Torque Load Monitor Voltage × 20	Shows that the torque being applied to the motor. 20%/ V 100% (rating) / 5V Torque Load Monitor : 0 - 200% (DC0V - DC+10V)
25	SPEED_V	Rotating Speed	Output	10,000min <sup>-1</sup> / V	Output the rotation speed of rotating motor with Analog Monitor Voltage. 10,000min <sup>-1</sup> / V DC0V - DC+10V

(2) Input / Output Diagram

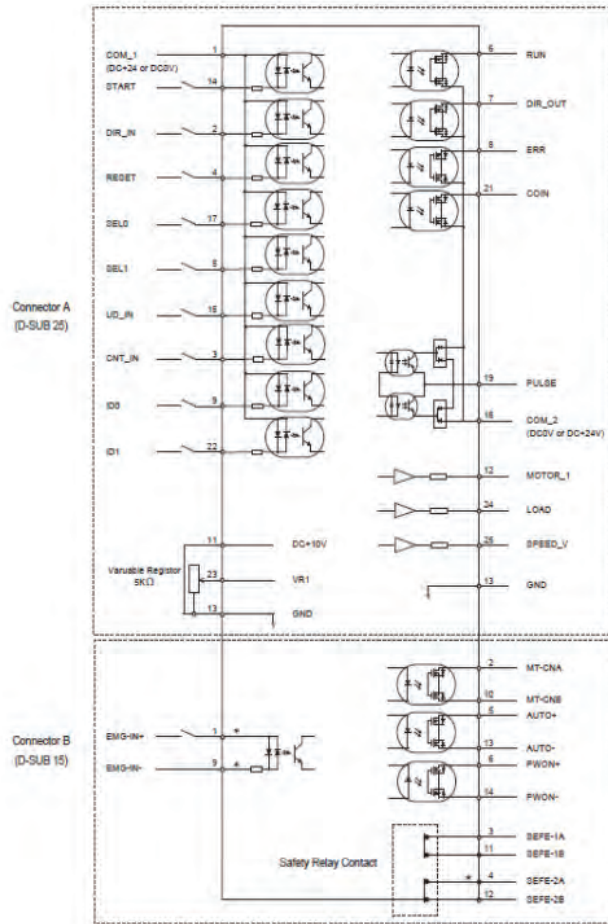


Fig. 40

- \*1 When using the "EMG - IN" Signal, set parameter P8. (Refer to P101 "17 - 4 ⑧ P8 Selection of Emergency Stop Function" sectional.)
- \*2 When using the "UD\_IN and CNT\_IN" Signal, set parameter P5. (Refer to P99 "17 - 4 ⑤ P5 Selection of External Speed Control Mode" section.)

1
EmaxEVO
ESPRT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 — 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.89" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
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### (3) Input / Output Signal

- ① There are 9 different input signals : “Rotate Command (START)”, “Rotating Direction Setting (DIR\_IN)”, “Error Release (RESET)”, Speed Up or Down Signal, Speed Command Pulse Signal, Motor Class Selection Signal, “UP / DOWN Signal for Setting Motor Speed (UD\_IN)”, “Count Pulse Signal for Setting Motor Speed (CNT\_IN)”, “Motor Class Selection Signal '0' and '1' ” and “Speed Point Selection Signal '0' and '1' ”.

Refer to Fig. 41 for connections.

- Please use a separate power source that is Capable of supplying 24VDC±10%, 100mA .

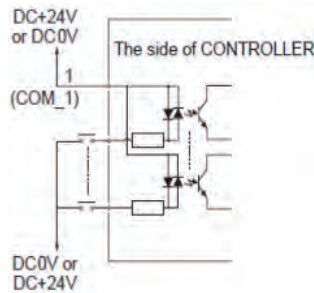


Fig. 41

- ② Output Signal I

There are 4 kinds of output signals : “Rotating (RUN)”, “Rotating Direction (DIR\_OUT)”, “Error (ERR)”, and “Speed Achievement (COIN)”. These signals are MOSS Relay Contact Connections. The output current can be connected to either sinking or sourcing.

Voltage and Current Specifications

- Applied Voltage (V)  $\leq 30V$  DC
- Working Current (I<sub>p</sub>)  $\leq 100mA$

Use an external power source for output circuits. It is recommended to use the same 24VDC power source used for input signals. Please refer to Fig. 42 for connections.

### CAUTION

**Never supply more that 100mA of current to the input / output circuit. It is recommended to add a LOAD (resistor) to the output circuit. Over Current Will Cause Damage To The CONTROLLER.**

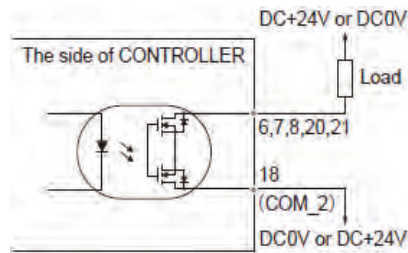


Fig. 42

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 - ø0.000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.87" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
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③ Output Signal II

Refer to Fig. 43 regarding the Output Signal of the "Rotating Pulse (Pulse)".

The output signal can be connected for either sinking or sourcing.

Voltage and Current Specifications

• Applied Voltage (V)  $\leq$  30V DC

• Working Current (Ip)  $\leq$  50mA

**CAUTION**

**Do not send excess current into the input / output circuit. Verify the working-current will be less than 50mA after connected the LOAD (resistor) of the output circuit. EXCESS CURRENT WILL CAUSE DAMAGE TO THE CONTROLLER.**

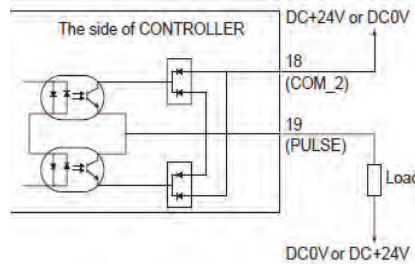


Fig. 43

④ Motor Speed Control Signal

Rotation Speed can be selected by, applying analog voltage to the " Motor Speed Control Voltage (VR)".

Refer to Fig. 44, 45 for connections. Refer to Fig. 46 for the relationship between Motor Speed and Control Signal.

**CAUTION**

**When applying the DC0V to DC+10V, never input more than DC+10V (Fig. 45). This will cause serious damage to the I / O Board in the CONTROLLER.**

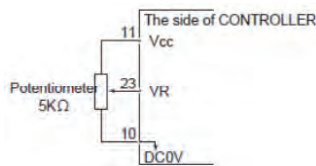


Fig. 44

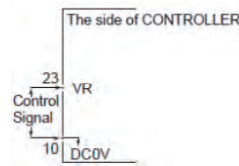


Fig. 45

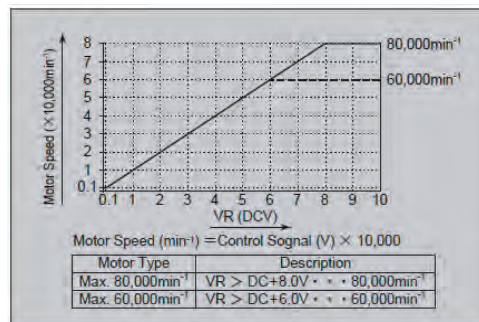


Fig. 46

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0" / ø0.95" / ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07" / ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.89" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
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## ⑤ Analog Monitor Signals

There are 3 types of monitoring signals : “Motor Current Monitor (MOTOR\_I)”, “Torque Load Monitor (LOAD)”, and “Rotating Speed Analog Monitor Voltage (SPEED\_V)”. Please refer to Fig. 47 for connections.

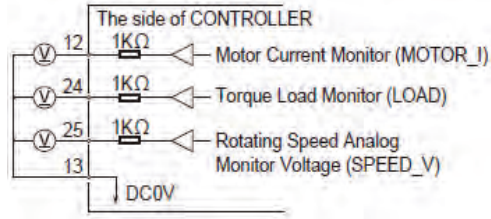


Fig. 47

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus  
ZERO

Sonic-Cutter  
ZERO

2

iSpeed3

E2000

— One Piece

E3000

— Modular

σ1.18°

σ1.0°/σ0.98°

E3000

— 80,000rpm

E4000

3

MA

σ0.897°

σ1.0°

σ0.98°

σ1.18°

MS

σ0.75°

σ0.79°

σ0.897°

σ0.91°

σ1.0°

σ0.98°

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

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## 15 - 2 External Input / Output Connector B

(1) Details of External Input / Output Connector B Signals

### WARNING

- **DO NOT CONNECT** any circuit other than **SELV (DC+24V) (Safety Extra Low Voltage)** to the External Input / Output Connector B of the **CONTROLLER**, this will cause I / O board damage in the **CONTROLLER**.
- **Do not supply over voltage or over current** into the input / output circuit. **Always install a LOAD (resistor)** to the output circuit to eliminate the chance of damage to the **CONTROLLER**.

### CAUTION

- **Input / Output Connector B DOES NOT use Pins No. 7, No. 8 and No. 15.** If Pins No. 7, No. 8 and No. 15 are connected, the **CONTROLLER** will be damage.

Table 16.

Pin No.	Code	Function	Input / Output	Description	
1	EMG-INA	Emergency Stop A	Input	External Power Source input for Emergency Stop Signal or Emergency Stop Signal OFF (Open)	External Power Source input for Emergency Stop Signal or Emergency Stop Signal. Normal Operation ON (Closed), Emergency OFF (Open). When using the Emergency Stop Signal, set parameter P8. (Refer to P101 " 17 – 4 ⑧ P8 Selection of Emergency Stop Function " section.)
2	MT-CNA	Motor Connect Contact A	Output	Continuity, OFF (Open), between Pin No. 2 and Pin No. 10 the motor is connected.	When there is continuity, OFF, between Pin No. 2 and Pin No. 10 and the selected motor is connected, if no continuity is present, the motor is disconnected or the motor cord is broken.
3	SAFE-1A	Safety Relay Contact 1A	Output	Pin No. 3 and Pin No. 11 continuity ON (Closed) Safety Relay is OFF	When there is continuity between Pin No. 3 and Pin No. 11 ON (Closed) Safety Relay is OFF (System Stopped), no continuity Safety Relay is OFF (Open) Normal Operation.
4	SAFE-2A	Safety Relay Contact 2A	Output	Pin No. 4 and Pin No. 12 continuity ON (Closed) Safety Relay is OFF	When there is continuity between Pin No. 4 and Pin No. 12 ( ON / Closed), the Safety Relay is OFF (System Stopped), no continuity Safety Relay is OFF (Open) is Normal Operation.
5	AUTO +	Control Mode AUTO Signal (+)	Output	Control Mode AUTO Pin No. 5 and Pin No. 13 are ON (Closed)	When Control Mode AUTO is being used, this Pin No. 5 and Pin No. 13 are ON (Closed).

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.0" / ø0.99" / ø0.897"

E3000

– One Piece

E3000

– Modular

ø1.18"

ø1.97" / ø0.98"

ø0.897"

E3000

– 30,000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.79"

ø0.81"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

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<b>2</b>
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 — One Piece
E3000 — Modular ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 — ø0.000rpm
E4000
<b>3</b>
MA
ø0.897" ø1.0" ø0.98" ø1.18"
MS
ø0.75" ø0.79" ø0.87" ø0.91" ø1.0" ø0.98"
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
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Pin No.	Code	Function	Input / Output	Description	
6	PWON +	CONTROLLER Power Source Monitor (+)	Output	ON (Closed) : Main Power Supply is connected OFF (Open) : Main Power Supply is disconnected.	If the Main Power Switch is ON, Pin No. 6 and Pin No. 14 are ON (Closed).
7	Not Used	—	—	—	*Note : Never use pin labeled not used.
8	Not Used	—	—	—	*Note : Never use pin labeled not used.
9	EMG-INB	Emergency Stop B	Input	External Power Source input for Emergency Stop Signal or Emergency Stop Signal OFF (Open)	Normal Operation ON (Closed), Emergency OFF (Open). When using the Emergency Stop Signal, set parameter P8. (Refer to P101 " 17 - 4 P8 ⑧ Selection of Emergency Stop Function" section.)
10	MT-CNB	Motor Connect Contact B	Output	Continuity, OFF (Open), between Pin No. 2 and Pin No. 10 the motor is connected.	When there is continuity between the contacts of Pin No. 2 and Pin No. 10 (OFF), the selected motor is connected, if no continuity the motor is disconnected or the motor cord is broken.
11	SAFE-1B	Safety Relay Contact 1B	Output	Pin No. 3 and Pin No. 11 continuity ON (Closed) Safety Relay is OFF	When there is continuity between Pin No. 3 and Pin No. 11 ON (Closed) Safety Relay is OFF (System Stopped). If there is no continuity Safety Relay is OFF (Open) for Normal Operation.
12	SAFE-2B	Safety Relay Contact 2B	Output	Pin No. 4 and Pin No. 12 continuity ON (Closed) Safety Relay is OFF	When there is continuity between Pin No. 4 and Pin No. 12 ON (Closed) the Safety Relay is OFF (System Stopped). If there is no continuity, Safety Relay is OFF (Open) Normal Operation.
13	AUTO -	Control Mode AUTO Signal (-)	Output	Control Mode AUTO Pin No. 5 and Pin No. 13 are ON (Closed)	When Control Mode AUTO is being used, Pin No. 5 and Pin No. 13 are ON (Closed).
14	PWON -	CONTROLLER Power Source Monitor (-)	Output	ON (Closed) : Main Power Supply is connected OFF (Open) : Main Power Supply is disconnected	If the Main Power Switch is ON, Pin No. 6 and Pin No. 14 are ON (Closed).
15	Not Used	—	—	—	*Note : Never use pin labeled not used.

③ Safety Relay Signal

**CAUTION**

If the Emergency Stop Function is not installed, the Emergency Stop Signal (EMG-IN) will not function. If enabling the Emergency Stop function, it is necessary to set parameter P8. (Refer to P101 " 17 - 4 ⑧ P8 Selection of Emergency Stop Function " section.)

Pin No. 3 - No. 11, No. 4 - No. 12

- The Safety Relay will be ON or OFF depending on the state of the Emergency Stop Signal pins No. 1 and No. 9.
- When there is continuity between pin No. 3 (SAFE-1A) and pin No. 11 (SAFE-1B) or between pin No. 4 (SAFE-2A) and pin No. 12 (SAFE-2B) the Motor is off. If there is no continuity between these pairs of pins then the system is operating normally.
- If the Emergency Stop Signal is OFF (Open) the Safety Relay will be OFF and the Motor Power will be interrupted and the Motor will stop.
- If the (NO) Normally Open contacts of the Safety Relay are welded together by an over load or short circuit the (NC) Normally Closed contacts separation are maintained with more than 0.5mm spacing by the relay's recoil mechanism.
- The installed Safety Relay is designated to comply with EN standards.
- If the (NO) Normally Open contacts of the Safety Relay are welded together by an over load or short circuit the (NC) Normally Closed contacts separation are maintained with more than 0.5mm spacing by the relay's recoil mechanism.
- The voltage / current specifications of Pin No. 3 - 11 and Pin No. 4 - 12.  
Applied Voltage (V)  $\leq$  DC+30V  
Working Current (Ip)  $\leq$  2A  
Refer to Fig. 50 below for connections.

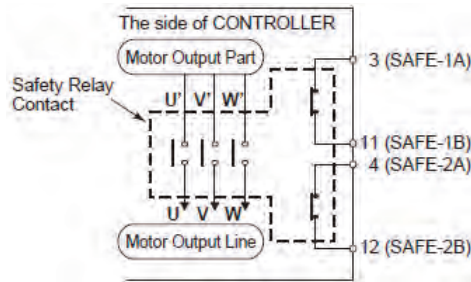


Fig. 50

- \* Safety Relay
  - If an N - O contact becomes welded, all N - C contacts will maintain a minimum distance of 0.5 mm when the coil is not energized.  
N - O contacts (Normally - opened contacts) : Contacts of U - U' , V - V' , W - W' .  
N - C contacts (Normally - closed contacts) : Contacts of (SAFE - 1A) - (SAFE - 1B), (SAFE - 2A) - (SAFE-2B).
- \* Machine Safety Circuit is possible when using the Safety Relay Contacts Output
  - When an Emergency Stop Signal input that is coupled to a door open switch of an Industrial Machine, the Safety Relay will energize and open the Motor Power Line circuit.
  - Contact outputs ((SAFE - 1A) - (SAFE - 1B), (SAFE - 2A) - (SAFE - 2B)) of the N - C contacts can be used for detecting the opening of the Motor Power Line. If N - O contacts become welded, contact outputs will maintain an OFF condition (Open), by Forced Guide Mechanism. Therefore, Safety Relay can be used as an open signal of a movable guard or operator door with a locking (switch) mechanism for Industrial Machinery.

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.97"/ø0.98" ø0.897"
E3000 - 30,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.75"
ø0.81" ø0.81"
ø1.0" ø0.98"
4
HES
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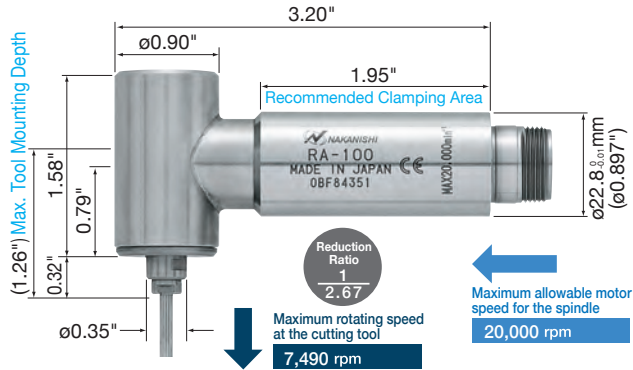


# MACHINE TOOL SPINDLES INFORMATION

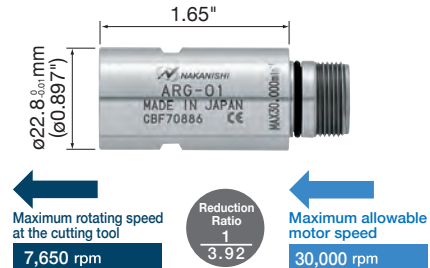
## Maximum Motor Speed for Angle Type Spindles / Speed Reducers.

- When using an angle type spindle or a speed reducer, do not exceed the maximum motor speed or the reducer.

Example : 90° Angle Spindle RA-100  
(Reduction Ratio = 1 : 2.67)



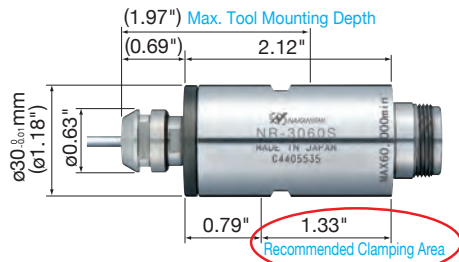
Example : Speed Reducer ARG-01  
(Reduction Ratio = 1 : 3.92)



## "Recommended Clamping Area" and "Maximum Motor Speed"

- Please refer to the picture below for proper clamping location.

Example : Spindle NR-3060S



Please refer to the appropriate spindle's catalog page for dimensions.

- The allowable motor speed is printed on the spindle housing.

Example : Spindle NR-3060S 60,000 rpm



Please refer to the appropriate spindle's catalog page for dimensions.

## "External Input / Output Control Signal Specifications"

- For iSpeed3, iSpeed5, E2000, E3000 & E4000 control signal specifications, please refer to TECHNICAL DATA (7-p2~p39) for complete details.

• iSpeed3



• iSpeed5



• E2000



• E3000

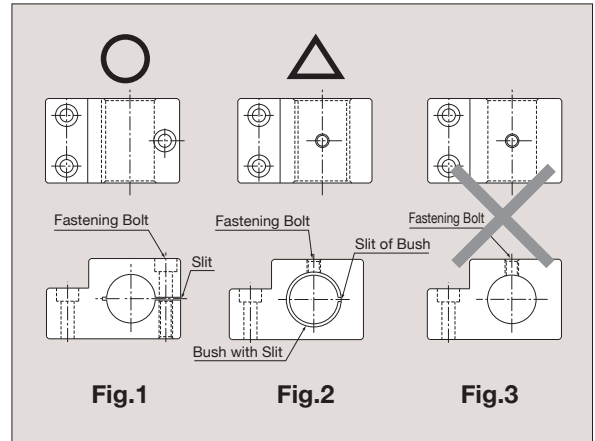


• E4000



## Installation of Motor and Spindle

- When installing a motor and spindle, it is not recommended to fix the motor or spindle with a fastening bolt in direct contact with the spindle body as shown in Fig.3. This can cause deformation of the spindle body and damage internal components. The installation shown in Fig.1 is the recommended installation method. Therefore, the installation as shown in Fig.1 is the most recommendable.  
(In case it is impossible, install as shown in Fig.2.)
- When mounting the spindle avoid the area where ball bearings are located. If the spindle is mounted inappropriately, this will cause damage to the spindle.  
(Refer to the recommended clamping area drawing in this catalog.)
- Tighten the spindle in the holder using a well-calibrated torque wrench. The correct torque will be different depending on the holder type and accuracy.

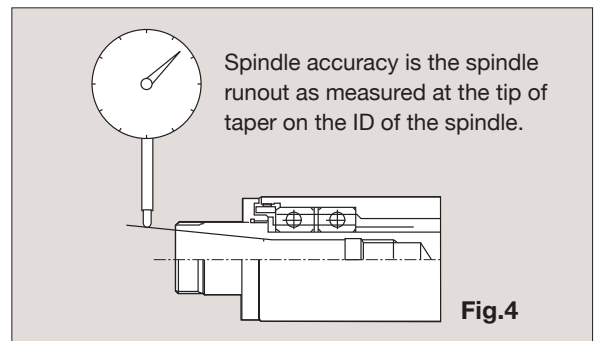


### Caution

- Even when using the recommended installation method it is possible to deform the spindle housing from excessive clamping force. Use only the clamping force needed to secure the spindle. Do not over tighten.

## Spindle Accuracy

- NAKANISHI's spindle accuracy is measured by the method indicated in the drawings shown in Fig.4.



## Lubricating Oil

- Lubricating oil is required for air motors, air turbine motors. Please use our standard lubricating oil, or Chevron Superla white oil #9.



• Lubricating Oil (4 oz.)



• Lubricating Oil (32 oz.)

## Drilling Capacity Reference Table

This table summarizes the drilling capacity for the spindles. Please use this table as a guide for the selection of the proper model given the torque, speed and size requirements for your application. Data is given for three materials, Iron, Stainless Steel and Aluminum.

\*Conditions : High speed steel drill was used with a feed rate of 60 mm/min. Tool life was not considered in determining the above capacities.  
Use this table as a reference to extrapolate suitability for a given application.

\*Cutting tool capabilities vary depending on the tools being used or cutting conditions.

### E3000 Series (Page 2-p37~)

- The following table expresses the E3000 milling & drilling capacity with the max usable cutting tool diameter under our conditions.

ø : Tool Size (mm) S : Spindle Motor Speed {rpm} F : Feed Rate (mm/min) f : Drilling Step (mm/rev)

	Milling			Drilling		
	S50C (Iron)	SUS304 (Stainless Steel)	A2017 (Aluminum)	S50C (Iron)	SUS304 (Stainless Steel)	A2017 (Aluminum)
EM30-S6000	ø2.0	ø2.0	ø2.0	ø2.5	ø1.5	ø3.0
	S16,000 / F480	S12,000 / F250	S57,000 / F2,400	S18,000 / f 0.06	S10,000 / f 0.01	S23,000 / f 0.08
EM25-S6000	ø1.5	ø1.5	ø1.5	ø2.0	ø1.0	ø2.5
	S20,000 / F1,000	S16,000 / F700	S60,000 / F5,000	S20,000 / f 0.05	S12,000 / f 0.01	S23,000 / f 0.07
EM20-S6000	ø1.5	ø1.5	ø1.5	ø2.0	ø1.0	ø2.5
	S20,000 / F100	S16,000 / F100	S60,000 / F1,000	S20,000 / f 0.05	S12,000 / f 0.01	S23,000 / f 0.07

### E2000 Series (Page 2-p17~)

- The following table expresses the E2000 milling & drilling capacity with the max usable cutting tool diameter under our conditions.

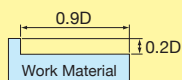
ø : Tool Size (mm) S : Spindle Motor Speed {rpm} F : Feed Rate (mm/min) f : Drilling Step (mm/rev)

	Milling			Drilling		
	S50C (Iron)	SUS304 (Stainless Steel)	A2017 (Aluminum)	S50C (Iron)	SUS304 (Stainless Steel)	A2017 (Aluminum)
NR-303+ EM25-5000-J4	ø1.5	ø1.5	ø2.0	ø1.5	ø1.0	ø2.5
	S20,000 / F600	S18,000 / F540	S30,000 / F1,500	S20,000 / f 0.05	S15,000 / f 0.01	S25,000 / f 0.03
NR-303+ARG-01+ EM25-5000-J4	ø3.0	ø2.5	ø4.0	ø2.5	ø1.5	ø3.5
	S7,500 / F380	S7,500 / F300	S7,500 / F750	S7,500 / f 0.08	S5,000 / f 0.02	S7,500 / f 0.1

#### \*End Mill Cutting Condition

- Use End Mill 2 flutes with ultra hard coating.
- Used in conjunction with water or oil based coolants.

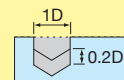
\*Milling Depth/per  
1D : End Mill Size



#### \*Drilling Conditions

- Use Micro Drill with ultra hard coating
- Used in conjunction with water or oil based coolants.

\*Drilling/Step  
D : Drilling Size



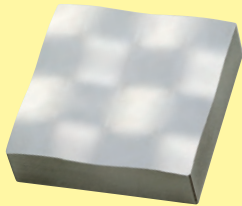
### MA Series (Page 3-p1~)

Combination as System			Speed {rpm}	Output (W)	Max. Torque (cN·m)	Max. Drill Diameter for drilling (mm)		
Motor	Speed Reducer	Spindle				S45C	Aluminum	Brass
AM-300R	—	NR-2351	30,000	57	6.9	ø1.0	ø1.5	ø2.0
AM-300R	ARG-01 (1/3.92)	NR-2351	8,000	57	26.5	ø1.9	ø2.9	ø3.4
AM-300R	ARG-02 (1/15.39)	NR-2351	2,000	57	100.9	ø2.8	ø3.8	ø4.5
AM-310R	—	NR-2351	30,000	108	13.7	ø1.5	ø2.0	ø3.0
AM-310R	ARG-01 (1/3.92)	NR-2351	8,000	108	51.9	ø2.5	ø3.5	ø4.0
AM-310R	ARG-02 (1/15.39)	NR-2351	2,000	108	201.9	ø3.5	ø4.3	ø4.8
AM-2526R	—	NR-2551	24,000	130	22.5	ø2.0	ø3.0	ø3.5
AM-2526R	ARG-2504N (1/4)	NR-2551	6,000	130	85.3	ø2.7	ø3.8	ø4.4
AM-2526R	ARG-2516N (1/16)	NR-2551	1,500	130	332.2	ø4.3	ø5.2	ø5.5
AM-3020R	—	NR-453E	19,000	130	27	ø2.3	ø4.0	ø4.5
AM-3020R	ARG-011E (1/4)	NR-453E	4,750	130	108	ø3.2	ø5.0	ø5.5
AM-3020R	ARG-021E (1/16)	NR-453E	1,190	130	432	ø4.0	ø6.0	ø6.0

## MS Series (Page 3-p27~)

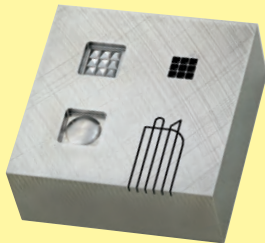
Series Code	Speed {rpm}	Output (W)	Max. Torque (cN·m)	Max. Dia. of Drill (mm)		
				S45C	Aluminum	Brass
MSS-19 Series <Outside Diameter $\phi 0.75''$ >	30,000	72	9.2	$\phi 1.0$	$\phi 1.5$	$\phi 2.0$
MSS-20 Series <Outside Diameter $\phi 0.79''$ >	8,000	72	36	$\phi 2.0$	$\phi 3.0$	$\phi 3.5$
MSS-22 Series <Outside Diameter $\phi 0.87''$ >	2,000	72	141	$\phi 3.0$	$\phi 4.0$	$\phi 4.0$
MSST-23 Series <Outside Diameter $\phi 0.91''$ >	30,000	108	13.7	$\phi 1.5$	$\phi 2.0$	$\phi 3.0$
	8,000	108	52	$\phi 2.5$	$\phi 3.5$	$\phi 4.0$
	2,000	108	202	$\phi 4.0$	$\phi 4.6$	$\phi 5.2$
MSSH-25 Series <Outside Diameter $\phi 1.0''$ > MSS-25 Series <Outside Diameter $\phi 0.98''$ >	24,000	130	22.5	$\phi 2.0$	$\phi 3.0$	$\phi 3.5$
	6,000	130	85	$\phi 2.7$	$\phi 3.8$	$\phi 4.4$
	1,500	130	332	$\phi 4.3$	$\phi 5.2$	$\phi 5.5$

## HES810 (Page 4-p10~)



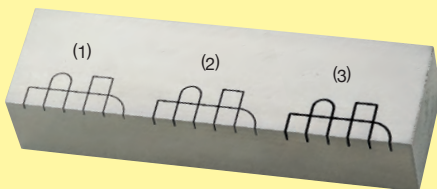
Material		STAVAX (HRC 52) 50 x 50 x 15 (mm)							
Usable Tool		Ultra-Hard Coated Ball End Mill R1.0		CBN Ball End Mill R1.0					
Cutting Process		1. Rough Cutting	2. Semi-Finishing Cutting	3. Finishing Cutting					
Cutting Depth		0.2 x 0.3mm	0.1 x 0.2mm	0.02 x 0.03mm	Total Time	Surface Roughness			
						Cutting Direction		Pf Direction	
M/C Main Spindle 20,000 rpm	Work Feed mm / min	1,600	1,600	1,000	2h12min	Ry $\mu$ m	Ra $\mu$ m	Ry $\mu$ m	Ra $\mu$ m
<b>HES810</b> <b>80,000 rpm</b>			6,400	6,400	4,000	45min	1.1687	0.1420	1.6646
						0.8518	0.1305	1.7495	0.2269

## HTS1501 (Page 4-p17~)



Material	NAK80 (HRC 40)		
Motor Speed	150,000 rpm		
Usable Tool	R 0.2 x 2L Ball End Mill		
Rough Cutting	Ad 0.03 x Rd 0.04mm		
Work Feed	2,000mm/min		
Finishing Cutting	Ad 0.01 x Rd 0.01mm		
Work Feed	1,500mm/min		
Total Time	4h 31min		

## HTS1501 (Page 4-p17~)



Material	NAK80 (HRC 40)		
Motor Speed	150,000 rpm		
Sample No.	(1)	(2)	(3)
Usable Tool	$\phi 0.2 \times 2$	$\phi 0.3 \times 3$	$\phi 0.4 \times 4$
Cutting Depth	Ad 0.003mm	Ad 0.005mm	Ad 0.007mm
Work Feed	2,000mm/min		
Total Time	29min. 50sec.	27min. 43sec.	26min. 22sec.

# 1

EmaxEVO  
ESPERT  
ROTUS  
IMPULSE  
PRESTO II  
Sheenus  
ZERO  
Sonic-Cutter  
ZERO

# 2

iSpeed3  
E2000  
 $\alpha 1.0^\circ / \alpha 0.98^\circ / \alpha 0.897^\circ$   
E3000  
- One Piece  
E3000  
- Modular  
 $\alpha 1.18^\circ$   
 $\alpha 1.0^\circ / \alpha 0.98^\circ$   
 $\alpha 0.897^\circ$   
E3000  
- 80,000rpm  
E4000

# 3

MA  
 $\alpha 0.897^\circ$   
 $\alpha 1.0^\circ / \alpha 0.98^\circ$   
 $\alpha 1.18^\circ$   
MS  
 $\alpha 0.75^\circ$   
 $\alpha 0.79^\circ$   
 $\alpha 0.87^\circ$   
 $\alpha 0.91^\circ$   
 $\alpha 1.0^\circ / \alpha 0.98^\circ$

# 4

HES  
iSpeed5  
HTS  
PLANET  
Xpeed  
ABT

# 5

AIR LINE KIT

# 6

PARTS

# 7

TECHNICAL  
DATA

# 8

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# TYPICAL APPLICATION EXAMPLES OF NAKANISHI INDUSTRIAL TOOLS

## RECOMMENDATION FOR MACHINING USING SMALL, MICRO, AND NANO DRILLS AND END MILLS.

In recent years, manufacturing has experienced a large demand for small hole drilling and cross-hole drilling, small diameter milling as well as micro milling and drilling. Conventional speeds on CNC lathes and machining centers is now inadequate to properly machine with this type of tooling. When using a tool with a diameter of 2.0 mm or smaller, speeds of well over 10,000 rpm are required. Insufficient speed will greatly decrease tool life, extend machining cycle times and offer poor surface finishes. Parts manufacturers who are interested in eliminating second operation work, increasing productivity, performance and part quality as well as staying competitive should consider an ultra precision 2,000 ~ 200,000 rpm spindle developed by NAKANISHI. Please see our “Typical Application Examples of NAKANISHI Industrial Tools” for a few examples of our applications.

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HES SERIES .....	8-p15, 8-p16

<b>1</b>
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
<b>2</b>
iSpeed3
E2000 ø1.0°/ø0.98°/ø0.97° ø0.99°
E3000 — One Piece
E3000 — Modular
ø1.18°
ø1.0°/ø0.98° ø0.99°
E3000 — 80,000rpm
E4000
<b>3</b>
MA
ø0.897°
ø1.0° ø0.98°
ø1.18°
MS
ø0.75° ø0.73°
ø0.87° ø0.91°
ø1.0° ø0.98°
<b>4</b>
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
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## E3000 SERIES

### • APPLICATION EXAMPLE : COMPLEX PROCESS

#### • WORK PIECE : BRASS

#### • WORK CONDITIONS :

(1) EM-3060 + ARG-021E + NR-453E

∅45 x t 1.1 METAL SAWING ; TOOL SPEED : 1,800 rpm ; FEED : 20 mm/min

(2) EM-3060 + NR-453E

∅1 DRILLING ; TOOL SPEED : 10,000 rpm ; FEED : 100 mm/min

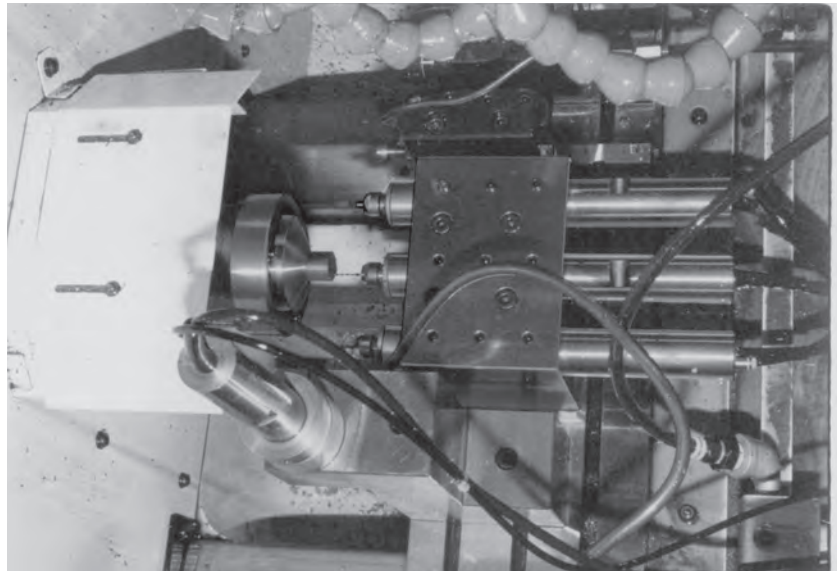
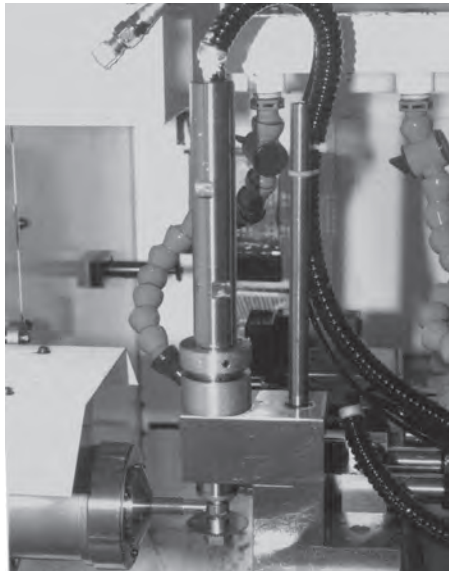
(3) EM-3060 + ARG-011E + NR-453E

∅3 DRILLING ; TOOL SPEED : 4,000 rpm ; FEED : 80 mm/min

#### • INSTALLATION : NC LATHE



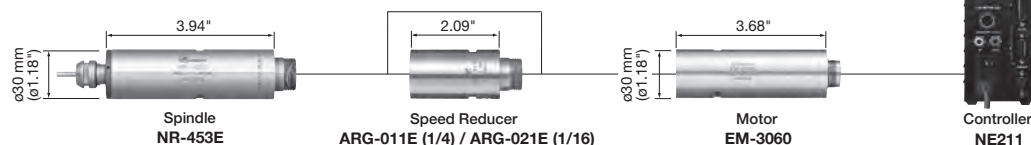
INSTALLATION



### <Application Example, Installation>

#### E3000 SERIES

1,000~60,000 rpm Output 350 W

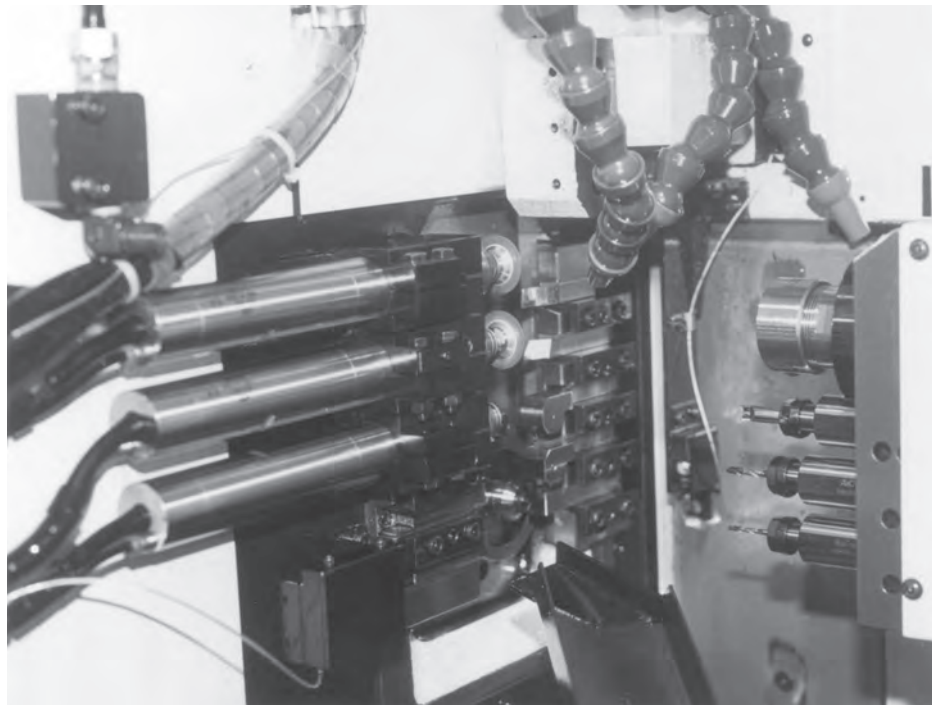


# E3000 SERIES

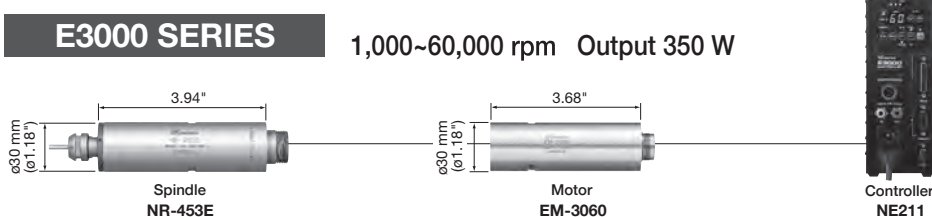
- APPLICATION EXAMPLE : COMPLEX PROCESS
- WORK PIECE : RESIN
- WORK CONDITIONS :
  - (1) EM-3060 + NR-453E  
 $\phi 1.0$  DRILLING ; TOOL SPEED : 3,000 rpm ; FEED : 180 mm/min
  - (2) EM-3060 + NR-453E  
 $\phi 30$  GRINDING STONE ; TOOL SPEED : 35,000 rpm ; FEED : 250 mm/min
- INSTALLATION : NC LATHE



INSTALLATION



<Application Example, Installation>



1
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0$ " ( $\phi 0.98$ " / $\phi 0.997$ "
E3000 — One Piece
E3000 — Modular
$\phi 1.18$ "
$\phi 1.0$ " / $\phi 0.98$ " $\phi 0.997$ "
E3000 — 80,000rpm
E4000
3
MA
$\phi 0.897$ "
$\phi 1.0$ " $\phi 0.98$ "
$\phi 1.18$ "
MS
$\phi 0.75$ " $\phi 0.79$ "
$\phi 0.897$ " $\phi 0.91$ "
$\phi 1.0$ " $\phi 0.98$ "
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
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7
TECHNICAL DATA
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# E3000 SERIES / MS SERIES

• APPLICATION EXAMPLE : COMPLEX PROCESS

• WORK PIECE : BRASS

• WORK CONDITIONS :

(1) EM-3060 + NR-453E

ø1.5 END MILLING ; TOOL SPEED : 7,500 rpm ; FEED : 60 mm/min

(2) MSS-1902RA

ø2 DRILLING ; TOOL SPEED : 2,000 rpm ; FEED : 100 mm/min

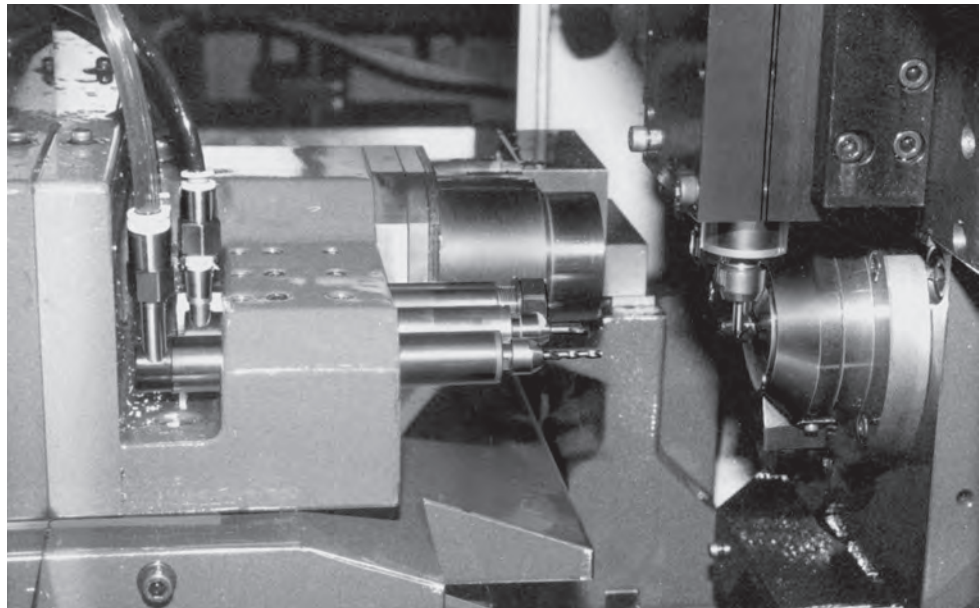
(3) MSS-1908RA

ø1 DRILLING ; TOOL SPEED : 8,000 rpm ; FEED : 100 mm/min

• INSTALLATION : NC LATHE



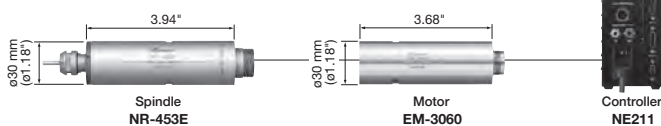
INSTALLATION



<Application Example, Installation>

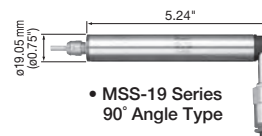
## E3000 SERIES

1,000~60,000 rpm Output 350 W



## MS SERIES

30,000 · 8,000 · 2,000 rpm Output 72 W



## E3000 SERIES

- APPLICATION EXAMPLE : COMPLEX PROCESS

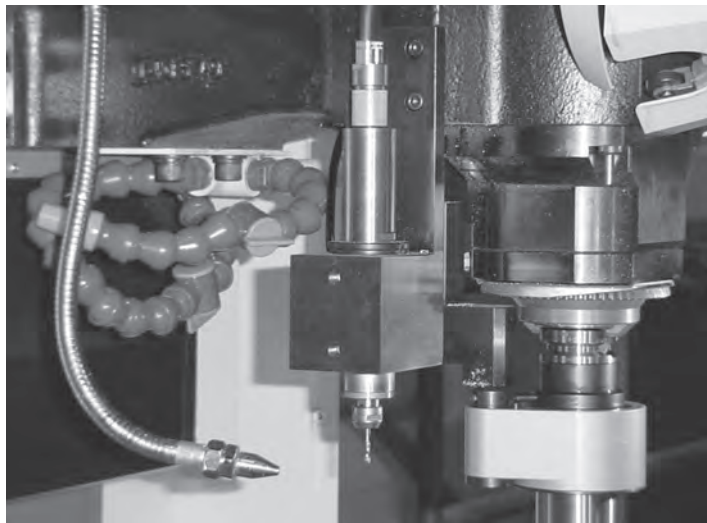
- WORK CONDITIONS :

(1) SPINDLE : E3000 EM30-S6000

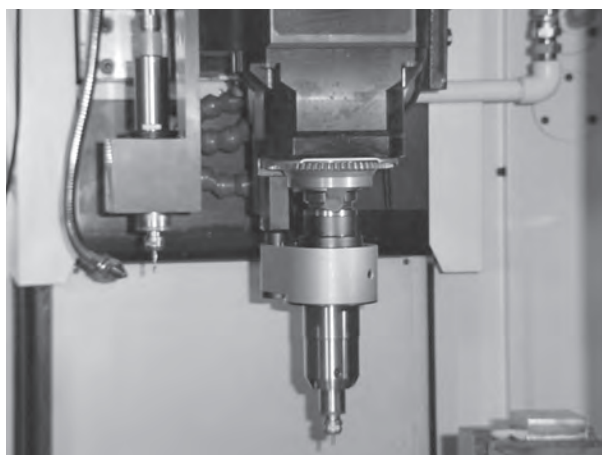
MAX POWER : 350 W ; MAX RPM : 60,000 rpm ; SPINDLE SIZE :  $\phi 30$  mm

MACHINE : FANUC ROBODRILL

MAX RPM : 10,000 rpm



**EXAMPLE:** NAKANISHI E3000 ELECTRIC MOTOR / SPINDLE MOUNTED DIRECTLY INTO THE SIDE OF THE MACHINES MAIN SPINDLE. THIS APPLICATION ALLOWS AN ELECTRIC HIGH SPEED SPINDLE TO BE USED WITHOUT THE NEED FOR A TOOL CHANGEABLE ELECTRIC SPINDLE.

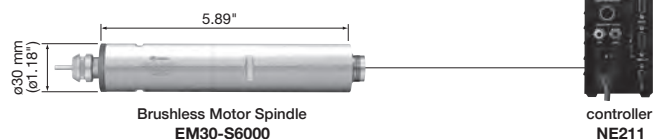


ALL NAKANISHI SPINDLE FUNCTIONS ARE COMMANDED AND MONITORED FROM THE MACHINES CONTROLLER.  
(Shown with HPS500-BT30 Tool Changeable Air Spindle in machines main spindle)

### <Application Example, Installation>

#### E3000 SERIES

1,000~60,000 rpm Output 350 W



1
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0^{\circ}/\phi 0.98^{\circ}/\phi 0.897^{\circ}$
E3000 - One Piece
E3000 - Modular
$\phi 1.18^{\circ}$
$\phi 1.0^{\circ}/\phi 0.98^{\circ}/\phi 0.897^{\circ}$
E3000 - 80,000rpm
E4000
3
MA
$\phi 0.897^{\circ}$
$\phi 1.0^{\circ}$ $\phi 0.98^{\circ}$
$\phi 1.18^{\circ}$
MS
$\phi 0.75^{\circ}$ $\phi 0.73^{\circ}$
$\phi 0.897^{\circ}$ $\phi 0.91^{\circ}$
$\phi 1.0^{\circ}$ $\phi 0.98^{\circ}$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
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# E3000 SERIES

• APPLICATION EXAMPLE : END MILLING

• WORK PIECE : RESIN

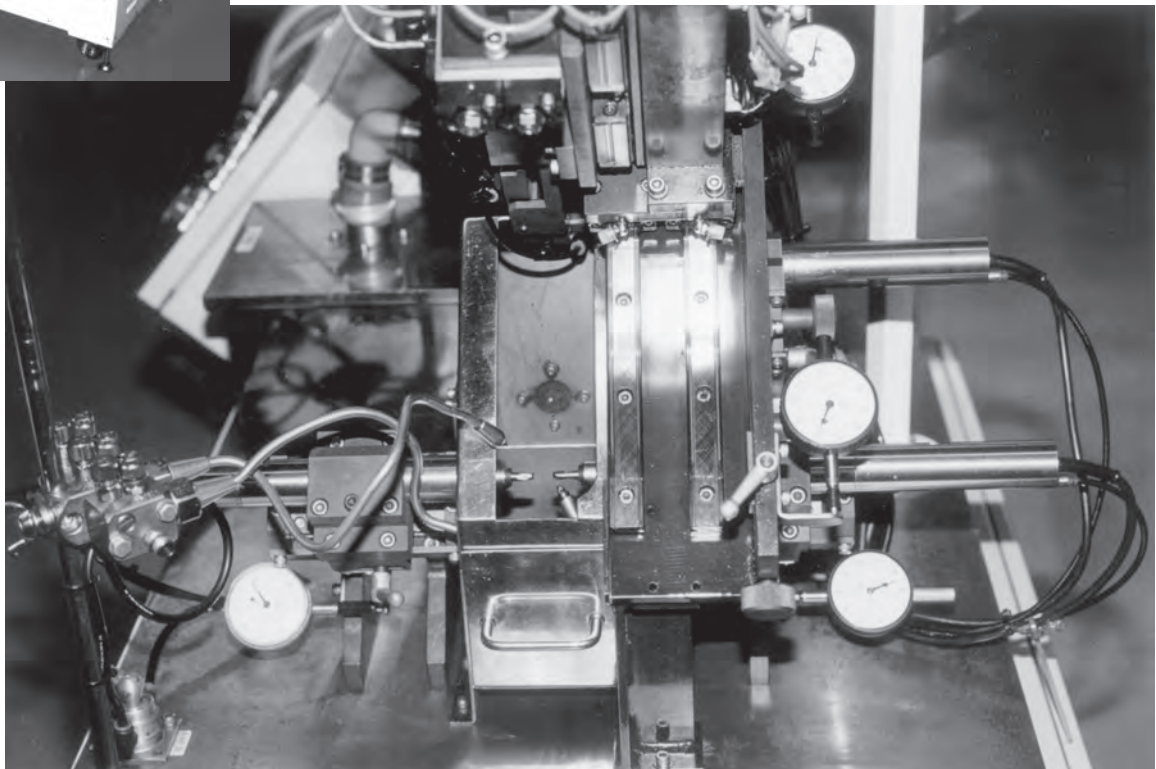
• WORK CONDITIONS :

(1) EM-3060 + ARG-011E + NR-453E

ø6 END MILLING ; TOOL SPEED : 5,000 rpm ; FEED : 500 mm/min

• INSTALLATION : SPECIAL PURPOSE MACHINE

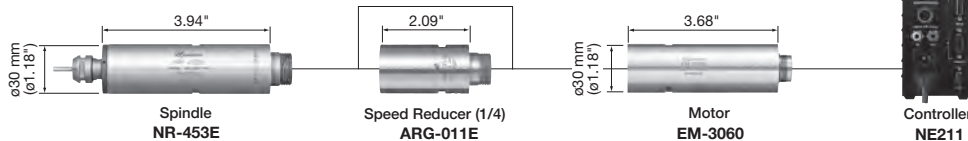
INSTALLATION



<Application Example, Installation>

**E3000 SERIES**

1,000~60,000 rpm Output 350 W



1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.99"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.0"/ø0.98" ø0.99"
E3000 - ø0,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.99" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
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# MA SERIES / E3000 SERIES

• APPLICATION EXAMPLE : AIR MOTOR CYLINDER PLATE

• WORK PIECE : BRASS

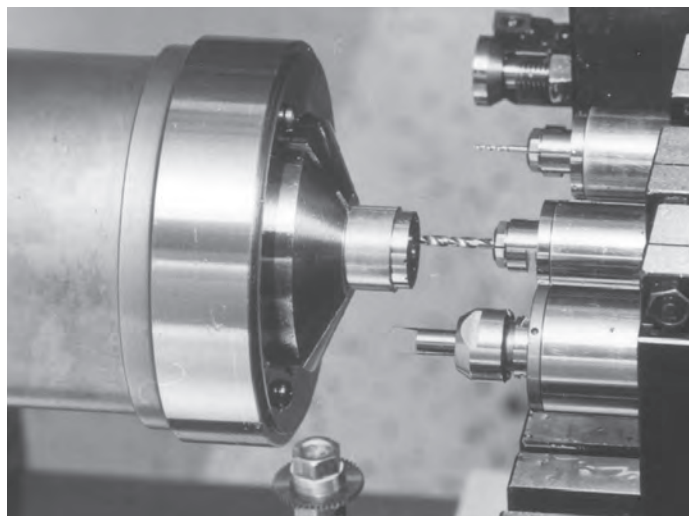
• WORK CONDITIONS :

- (1) AM-300R + ARG-02 + NR-303  
 $\phi 24 \times t 1.1$  METAL SAWING ; TOOL SPEED : 2,000 rpm ; FEED : 50 mm/min
- (2) EM-3060 + ARG-021E + NR-453E  
 $\phi 3.6^{+0.04}_{+0.03}$  END MILLING ; TOOL SPEED : 1,750 rpm ; FEED : 50 mm/min
- (3) AM-300R + ARG-02 + NR-303  
 $\phi 2.5$  DRILLING ; TOOL SPEED : 2,000 rpm ; FEED : 70 mm/min
- (4) AM-300RA + ARG-01 + NR-303  
 $\phi 1.1$  DRILLING ; TOOL SPEED : 8,000 rpm ; FEED : 50 mm/min

• INSTALLATION : GANG TOOL NC LATHE

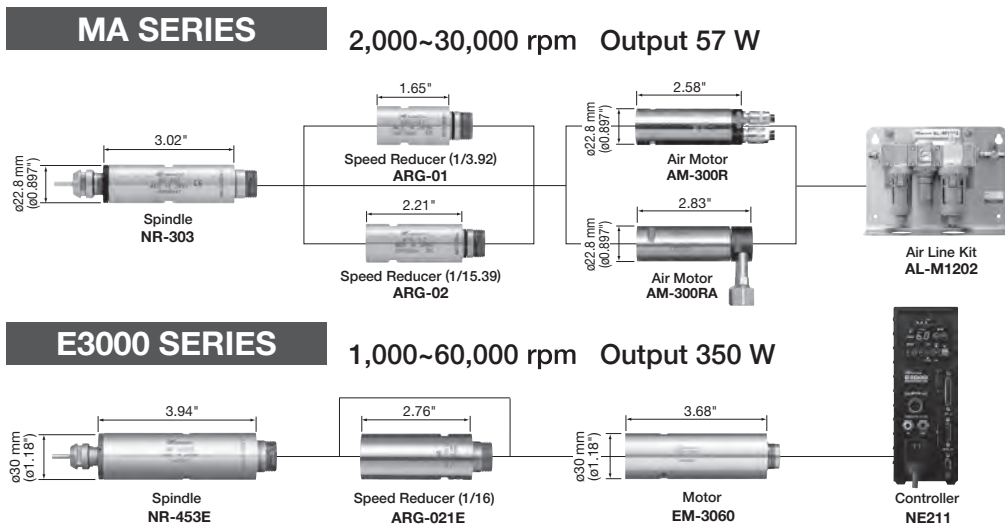


INSTALLATION



1
Emax EVO
ESPRT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0^{\circ}/\phi 0.98^{\circ}/\phi 0.897^{\circ}$
E3000 — One Piece
E3000 — Modular
$\phi 1.18^{\circ}$
$\phi 1.0^{\circ}/\phi 0.98^{\circ}/\phi 0.897^{\circ}$
E3000 — 80,000rpm
E4000
3
MA
$\phi 0.897^{\circ}$
$\phi 1.0^{\circ}$
$\phi 0.98^{\circ}$
$\phi 1.18^{\circ}$
MS
$\phi 0.75^{\circ}$
$\phi 0.79^{\circ}$
$\phi 0.897^{\circ}$
$\phi 0.91^{\circ}$
$\phi 1.0^{\circ}$
$\phi 0.98^{\circ}$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
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<Application Example, Installation>



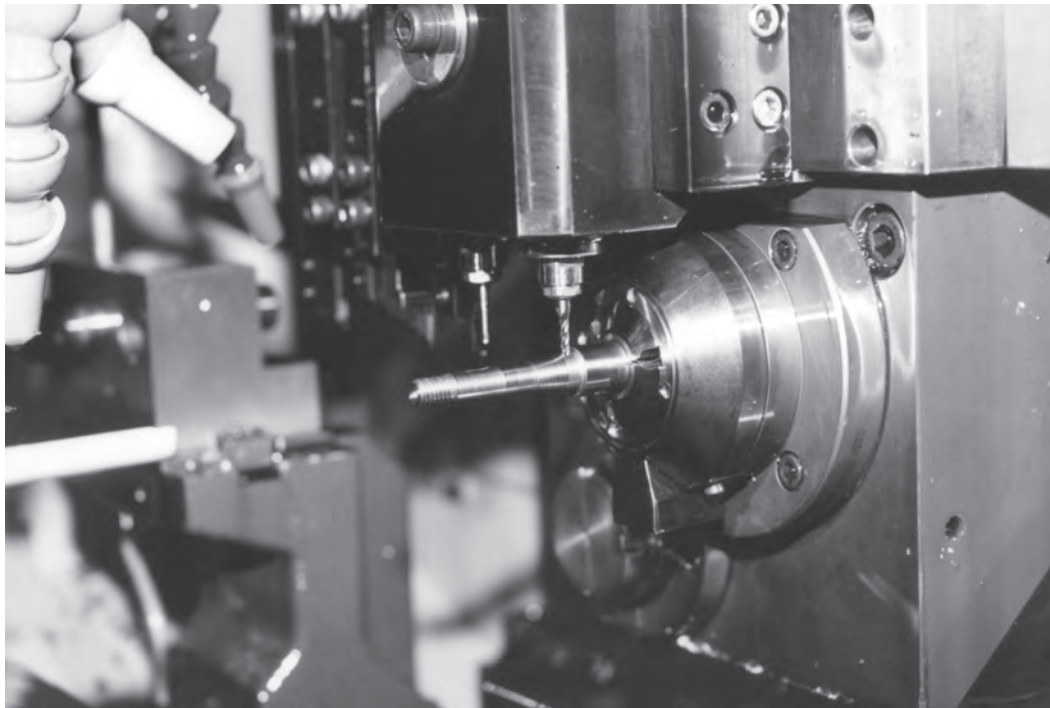


## MA SERIES

- APPLICATION EXAMPLE : METAL SAW SHAFT (END MILLING)
- WORK PIECE : SUS-420
- WORK CONDITIONS :
  - (1) AM-300R + ARG-02 + NR-303
  - ø2 END MILLING ; TOOL SPEED : 2,000 rpm ; FEED : 50 mm/min
- INSTALLATION : NC LATHE



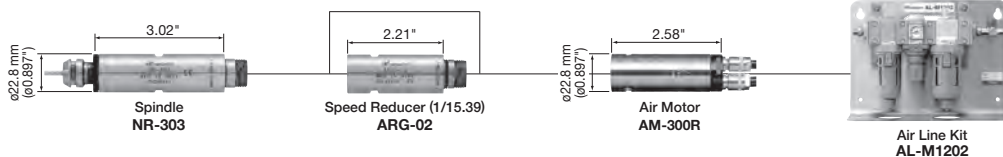
INSTALLATION



### <Application Example, Installation>

#### MA SERIES

2,000~30,000 rpm Output 57 W

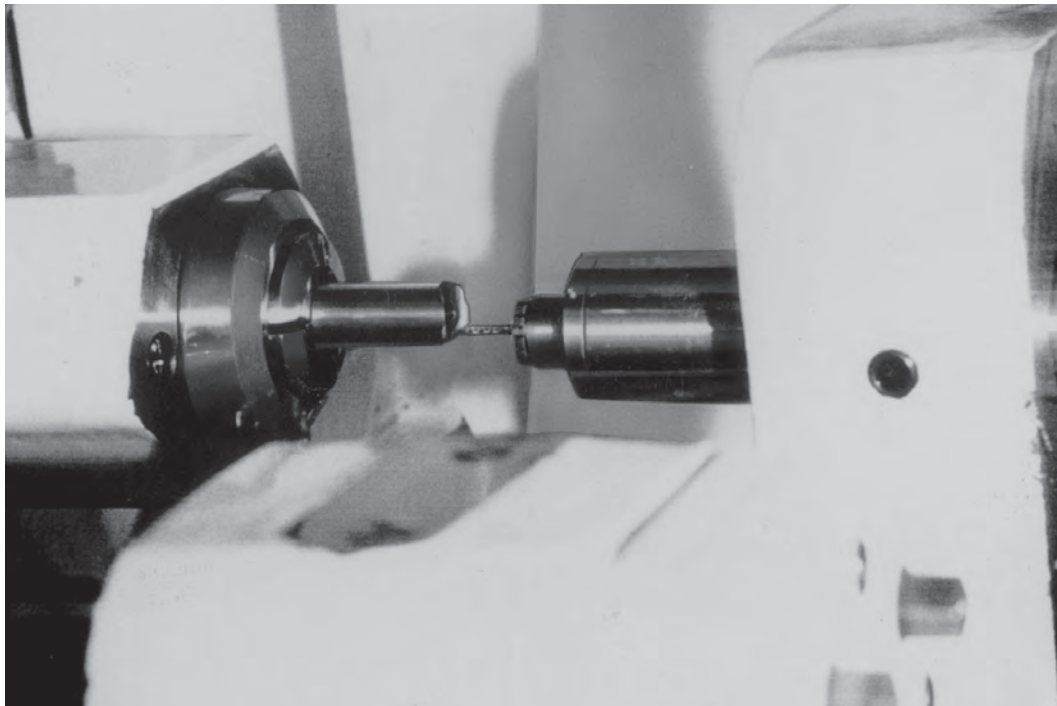


# MA SERIES

- APPLICATION EXAMPLE : SMALL DIAMETER DRILLING
- WORK PIECE : BRASS
- WORK CONDITIONS :
  - (1) AM-300R + NR-303
  - ø0.78 DRILLING 1.5 mm deep ; TOOL SPEED : 30,000 rpm ; FEED : 100 mm/min
- INSTALLATION : NC LATHE



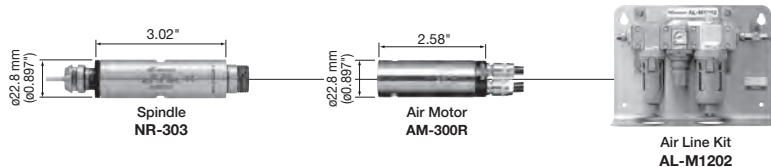
INSTALLATION



<Application Example, Installation>

## MA SERIES

2,000~30,000 rpm Output 57 W



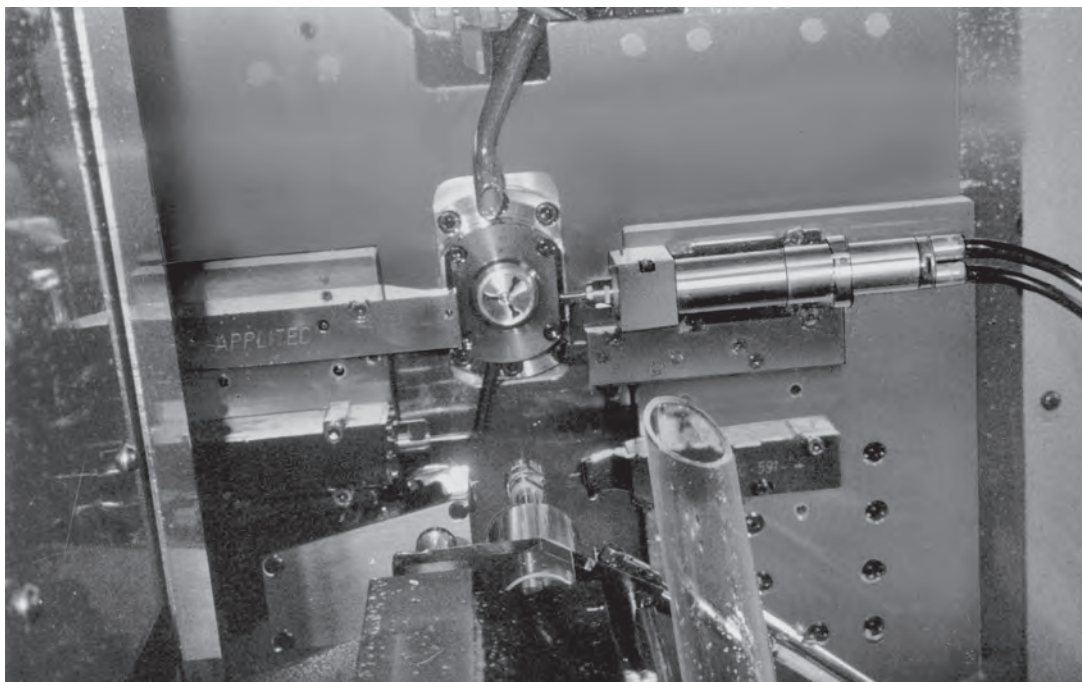
1
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 — 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.897" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
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8
APPLICATION EXAMPLES
INDEX

# MA SERIES

- APPLICATION EXAMPLE : SMALL DIAMETER END MILLING
- WORK PIECE : BRASS
- WORK CONDITIONS :
  - (1) AM-310R + NR-303
  - ø3.0 END MILLING ; TOOL SPEED : 30,000 rpm ; FEED : 60 mm/rev
- INSTALLATION : NC LATHE (TORNOS DECO 2000)

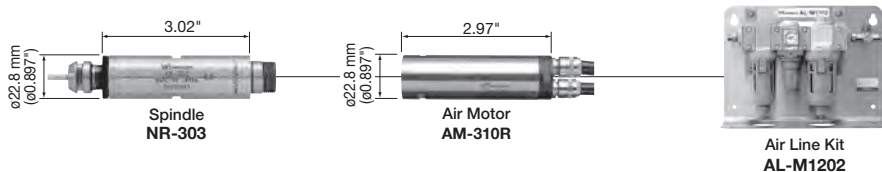


INSTALLATION



<Application Example, Installation>

**MA SERIES** 2,000~30,000 rpm Output 108 W

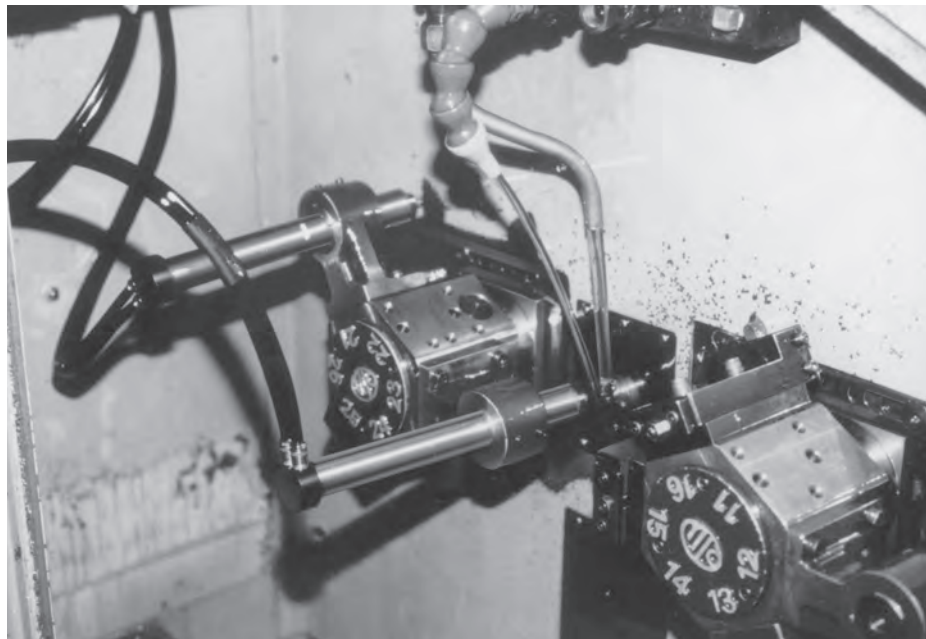


# MA SERIES

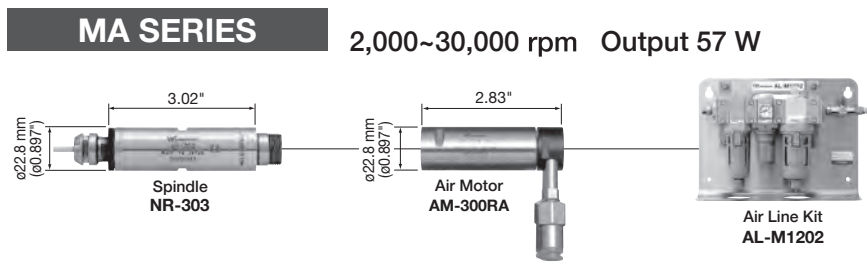
- APPLICATION EXAMPLE : END MILLING
- WORK PIECE : SUS
- WORK CONDITIONS :
  - (1) AM-300RA + NR-303  
 $\phi 1.2$  END MILLING ; TOOL SPEED : 30,000 rpm ; FEED : 50 mm/min
  - (2) AM-300RA + NR-303  
 $\phi 0.6$  END MILLING ; TOOL SPEED : 30,000 rpm ; FEED : 50 mm/min
- INSTALLATION : NC LATHE



INSTALLATION



<Application Example, Installation>



1
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0$ / $\phi 0.98$ / $\phi 0.897$ "
E3000 — One Piece
E3000 — Modular
$\phi 1.18$ "
$\phi 1.0$ / $\phi 0.98$ " $\phi 0.897$ "
E3000 — 80,000rpm
E4000
3
MA
$\phi 0.897$ "
$\phi 1.0$ " $\phi 0.98$ "
$\phi 1.18$ "
MS
$\phi 0.75$ " $\phi 0.73$ "
$\phi 0.897$ " $\phi 0.91$ "
$\phi 1.0$ " $\phi 0.98$ "
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX



# MA SERIES / MS SERIES

• APPLICATION EXAMPLE : COMPLEX PROCESS

• WORK PIECE : BRASS

• WORK CONDITIONS :

(1) AM-300R + ARG-02 + NR-303

ø10 METAL SAWING ; TOOL SPEED : 2,000 rpm ; FEED : 30 mm/min

(2) AM-300R + NR-303 or MSST-2330R

ø0.5 DRILLING ; TOOL SPEED : 30,000 rpm ; FEED : 40 mm/min

• INSTALLATION : NC LATHE

1

EmaxEVO  
 ESPERT  
 ROTUS  
 IMPULSE  
 PRESTO II  
 Sheenus  
 ZERO  
 Sonic-Cutter  
 ZERO

2

iSpeed3  
 E2000  
 ø1.0"/ø0.98"/ø0.997"  
 E3000  
 - One Piece  
 E3000  
 - Modular  
 ø1.18"  
 ø1.0"/ø0.98"  
 ø0.997"  
 E3000  
 - ø0,000rpm  
 E4000

3

MA  
 ø0.897"  
 ø1.0"  
 ø0.98"  
 ø1.18"  
 MS  
 ø0.75"  
 ø0.79"  
 ø0.87"  
 ø0.91"  
 ø1.0"  
 ø0.98"

4

HES  
 iSpeed5  
 HTS  
 PLANET  
 Xpeed  
 ABT

5

AIR LINE KIT

6

PARTS

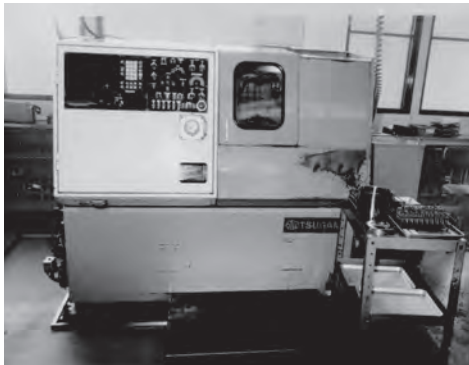
7

TECHNICAL  
 DATA

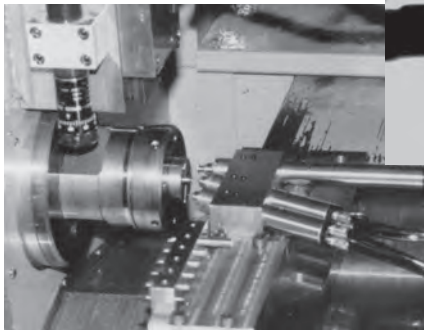
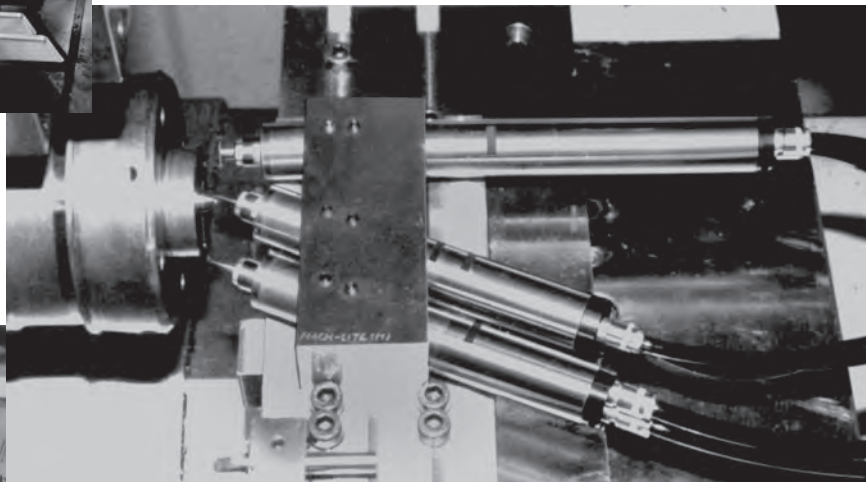
8

APPLICATION  
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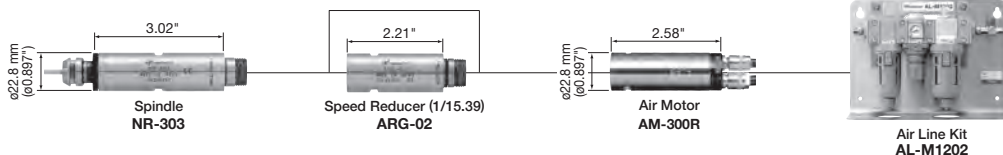
INSTALLATION



<Application Example, Installation>

**MA SERIES**

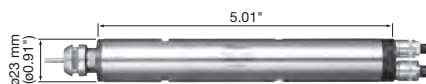
2,000~30,000 rpm Output 57 W



**MS SERIES**

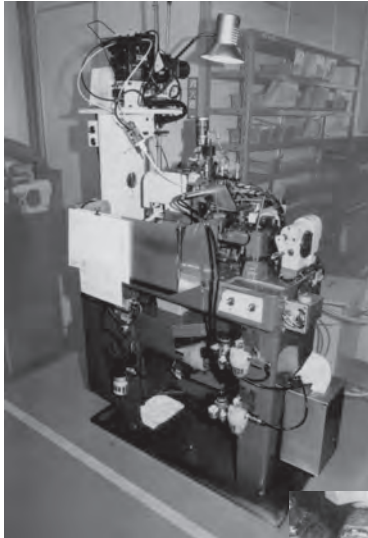
30,000 · 8,000 · 2,000 rpm Output 108 W

• MSST-23 Series Straight Type

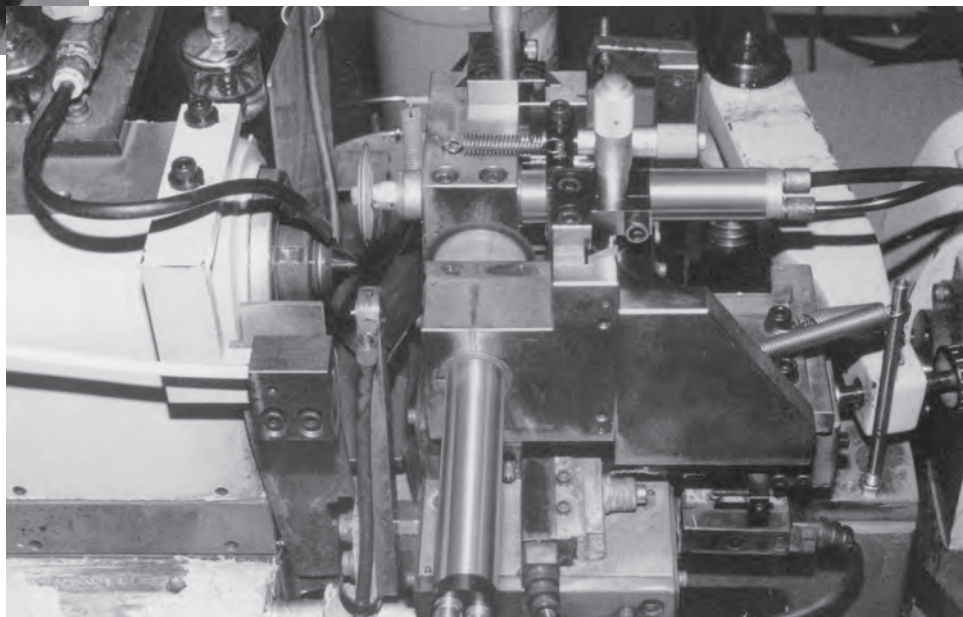


# MS SERIES

- APPLICATION EXAMPLE : METAL SAWING AND SLOTTING
- WORK PIECE : SUS-440C
- WORK CONDITIONS :
  - (1) MSST-2302R
  - ø50 x t 0.3 FINE CUTTER ; TOOL SPEED : 15,000 rpm ; FEED : 0.028 mm/rev
- INSTALLATION : SPECIAL PURPOSE MACHINE



INSTALLATION

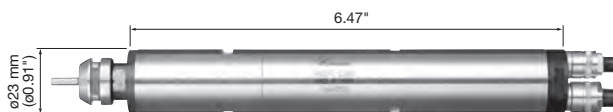


<Application Example, Installation>

**MS SERIES**

30,000 · 8,000 · 2,000 rpm Output 108 W

- MSST-23 Series Straight Type



1
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000
ø1.0°/ø0.98°/ø0.897°
E3000
— One Piece
E3000
— Modular
ø1.18°
ø1.0°/ø0.98°
ø0.897°
E3000
— 80,000rpm
E4000
3
MA
ø0.897°
ø1.0°
ø0.98°
ø1.18°
MS
ø0.75°
ø0.79°
ø0.87°
ø0.91°
ø1.0°
ø0.98°
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
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# MS SERIES

- APPLICATION EXAMPLE : DRILLING
- WORK PIECE : S-45C
- WORK CONDITIONS :
  - (1) MSST-2302R
  - ø5 DRILLING ; TOOL SPEED : 2,000 rpm ; FEED : 30 mm/min
- INSTALLATION : NC MILLING LATHE

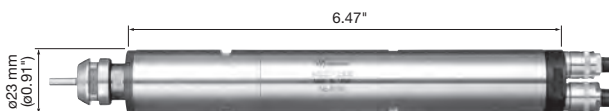


## <Application Example, Installation>

### MS SERIES

30,000 · 8,000 · 2,000 rpm Output 108 W

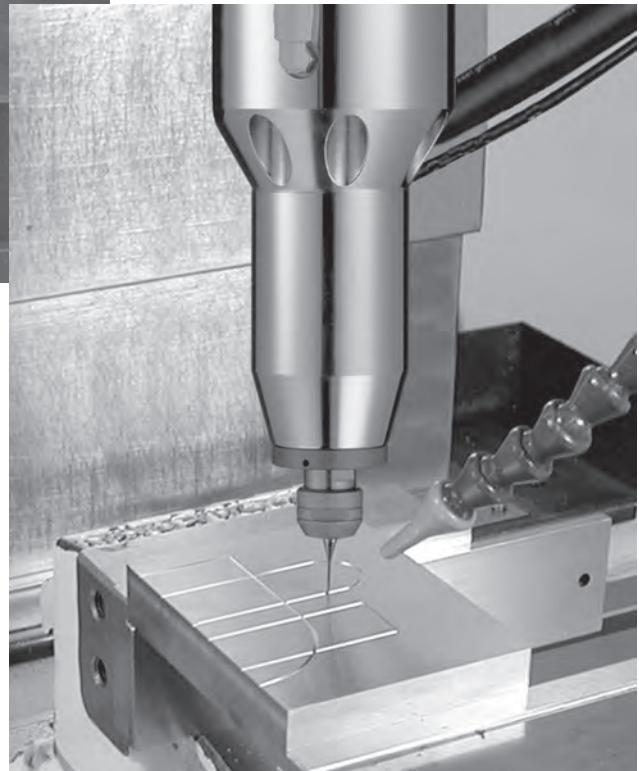
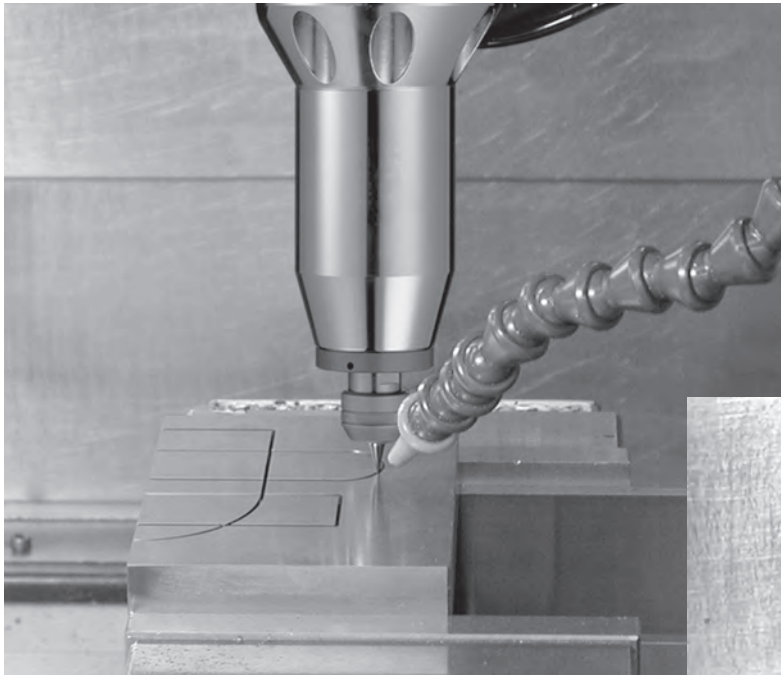
- MSST-23 Series Straight Type



1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0°/ø0.98°/ø0.897°
E3000 - One Piece
E3000 - Modular
ø1.18°
ø1.0°/ø0.98° ø0.897°
E3000 - ø0.000rpm
E4000
3
MA
ø0.897°
ø1.0° ø0.98°
ø1.18°
MS
ø0.75° ø0.79°
ø0.87° ø0.91°
ø1.0° ø0.98°
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
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# HES SERIES

- APPLICATION EXAMPLE : SMALL DIAMETER END MILLING FOR RIB PROCESSING
- WORK PIECE : FPH40 (HRC35-40)
- WORK CONDITIONS :
  - (1) HES510-NT40
  - $\phi 1$  mm END MILLING
  - ; TOOL SPEED : 40,000 rpm ; FEED : 1,000 mm/min ; DEPTH OF CUT : 20  $\mu$ m
- INSTALLATION : NC MILLING LATHE

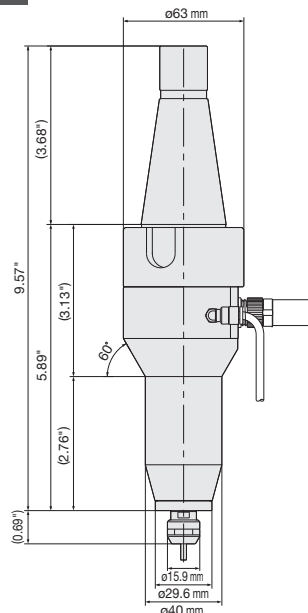


<Application Example, Installation>

## HES SERIES

5,000~50,000 rpm

- HES510-NT40



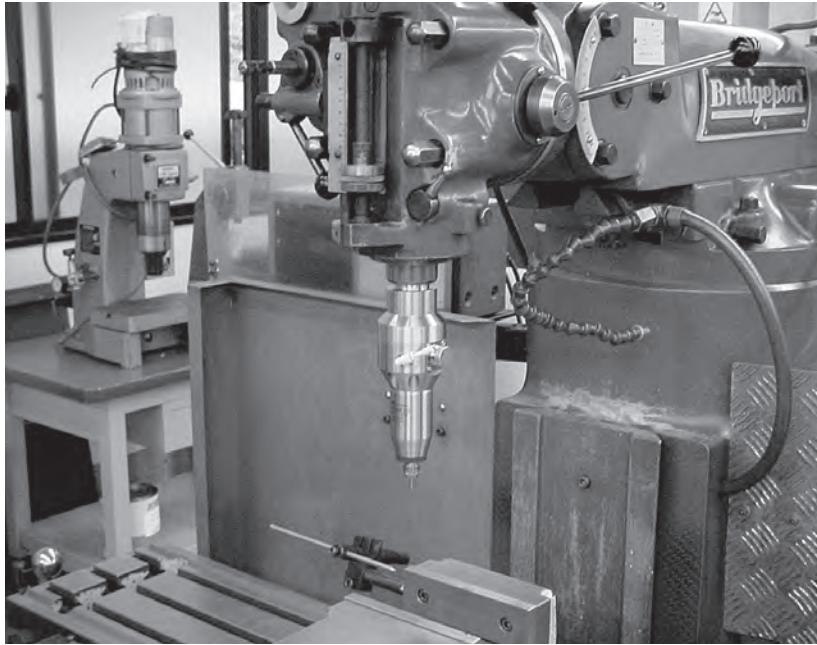
1
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000
$\phi 1.0^\circ / \phi 0.98^\circ / \phi 0.897^\circ$
E3000
— One Piece
E3000
— Modular
$\phi 1.18^\circ$
$\phi 1.0^\circ / \phi 0.98^\circ / \phi 0.897^\circ$
E3000
— 80,000rpm
E4000
3
MA
$\phi 0.897^\circ$
$\phi 1.0^\circ / \phi 0.98^\circ$
$\phi 1.18^\circ$
MS
$\phi 0.75^\circ / \phi 0.73^\circ$
$\phi 0.89^\circ / \phi 0.91^\circ$
$\phi 1.0^\circ / \phi 0.98^\circ$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
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# HES SERIES

• APPLICATION EXAMPLE : COMPLEX PROCESS

• WORK CONDITIONS :

- (1) SPINDLE : HES510-R8
- MAX POWER : 340 W ; MAX RPM : 50,000 rpm
- MACHINE : KNEE MILL
- MAX RPM : 4,000 rpm

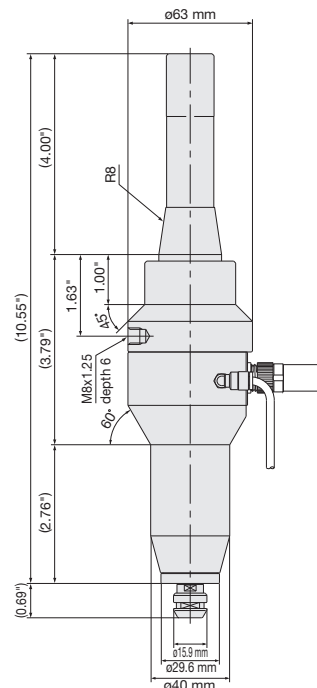


**EXAMPLE:** NAKANISHI HES510-R8 MOUNTED DIRECTLY INTO THE MACHINES SPINDLE TO ALLOW SECOND OPERATION DRILLING, MILLING OR GRINDING ON A MACHINE THAT HAS INSUFFICIENT RPM FOR SMALL DIAMETER CUTTERS.

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 α1.0°/α0.98°/α0.897°
E3000 - One Piece
E3000 - Modular
α1.18°
α1.0°/α0.98° α0.897°
E3000 - α0,000rpm
E4000
3
MA
α0.897°
α1.0° α0.98°
α1.18°
MS
α0.75° α0.79°
α0.897° α0.91°
α1.0° α0.98°
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
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<Application Example, Installation>

**HES SERIES**  
5,000~50,000 rpm  
• HES510-R8



# 1

Emax EVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

# 2

iSpeed3

E2000

ø1.0"/ø0.98"/ø0.897"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.0"/ø0.98"

ø0.897"

E3000

— 80,000rpm

E4000

# 3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.73"

ø0.87"

ø0.91"

ø1.0"

ø0.98"

# 4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

# 5

AIR LINE KIT

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# 1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

# 2

iSpeed3

E2000

α1.0°/α0.98°/α0.897°

E3000

— One Piece

E3000

— Modular

α1.18°

α1.0°/α0.98°

α0.897°

E3000

— 80,000rpm

E4000

# 3

MA

α0.897°

α1.0°

α0.98°

α1.18°

MS

α0.75°

α0.79°

α0.87°

α0.91°

α1.0°

α0.98°

# 4

HES

iSpeed5

HTS

PLANET

Xpeed

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ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
ZERO
<b>2</b>
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 — 80,000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.73"
ø0.87" ø0.91"
ø1.0" ø0.98"
<b>4</b>
HES
iSpeed5
HTS
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ZERO
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E3000 - One Piece
E3000 - Modular
e1.18°
e1.0°/e0.98°/e0.897°
E3000 - 80,000rpm
E4000
<b>3</b>
MA
e0.897°
e1.0°/e0.98°
e1.18°
MS
e0.75°/e0.79°
e0.897°/e0.91°
e1.0°/e0.98°
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ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
<b>2</b>
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 — 80,000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.73"
ø0.897" ø0.91"
ø1.0" ø0.98"
<b>4</b>
HES
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1

Emax EVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

2

iSpeed3

E2000

e1.0°/e0.98°/e0.897°

E3000

— One Piece

E3000

— Modular

e1.18°

e1.0°/e0.98°

e0.897°

E3000

— 80,000rpm

E4000

3

MA

e0.897°

e1.0°

e0.98°

e1.18°

MS

e0.75°

e0.73°

e0.897°

e0.91°

e1.0°

e0.98°

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

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# 1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

# 2

iSpeed3

E2000  
 $\alpha 1.0^\circ / \alpha 0.98^\circ / \alpha 0.897^\circ$

E3000  
- One Piece

E3000  
- Modular

$\alpha 1.18^\circ$

$\alpha 1.0^\circ / \alpha 0.98^\circ$

E3000  
- 80,000rpm

E4000

# 3

MA

$\alpha 0.897^\circ$

$\alpha 1.0^\circ$

$\alpha 0.98^\circ$

$\alpha 1.18^\circ$

MS

$\alpha 0.75^\circ$

$\alpha 0.79^\circ$

$\alpha 0.87^\circ$

$\alpha 0.91^\circ$

$\alpha 1.0^\circ$

$\alpha 0.98^\circ$

# 4

HES

iSpeed5

HTS

PLANET

Xpeed

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Emax EVO
ESPERT
ROTUS
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ZERO
ZERO
<b>2</b>
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 — 80,000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.73"
ø0.87" ø0.91"
ø1.0" ø0.98"
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Emax EVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

2

iSpeed3

E2000

e1.0°/e0.98°/e0.897°

E3000

- One Piece

E3000

- Modular

e1.18°

e1.0°/e0.98°/e0.897°

E3000

- 80,000rpm

E4000

3

MA

e0.897°

e1.0°

e0.98°

e1.18°

MS

e0.75°

e0.73°

e0.897°

e0.91°

e1.0°

e0.98°

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

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E3000 — One Piece
E3000 — Modular
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e1.0°/e0.98°/e0.897°
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MA
e0.897°
e1.0°/e0.98°
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Emax EVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

2

iSpeed3

E2000

e1.0°/e0.98°/e0.897°

E3000

— One Piece

E3000

— Modular

e1.18°

e1.0°/e0.98°

e0.897°

E3000

— 80,000rpm

E4000

3

MA

e0.897°

e1.0°

e0.98°

e1.18°

MS

e0.75°

e0.79°

e0.897°

e0.91°

e1.0°

e0.98°

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

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EmaxEVO

ESPERT

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PRESTO II

Sheenus

ZERO

# 2

iSpeed3

E2000  
 $\alpha 1.0^\circ / \alpha 0.98^\circ / \alpha 0.897^\circ$

E3000  
- One Piece

E3000  
- Modular

$\alpha 1.18^\circ$

$\alpha 1.0^\circ / \alpha 0.98^\circ$   
 $\alpha 0.897^\circ$

E3000  
- 80,000rpm

E4000

# 3

MA

$\alpha 0.897^\circ$

$\alpha 1.0^\circ$   
 $\alpha 0.98^\circ$

$\alpha 1.18^\circ$

MS

$\alpha 0.75^\circ$   
 $\alpha 0.79^\circ$

$\alpha 0.897^\circ$   
 $\alpha 0.91^\circ$

$\alpha 1.0^\circ$   
 $\alpha 0.98^\circ$

# 4

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E2000 ø1.0"/ø0.98"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 — 80,000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.73"
ø0.87" ø0.91" ø1.0" ø0.98"
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<b>1</b>
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
<b>2</b>
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.97"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
<b>3</b>
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.75" ø0.81" ø0.91" ø1.0" ø0.98"
<b>4</b>
HES
iSpeed5
HTS
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Xpeed
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EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

ZERO

2

iSpeed3

E2000

ø1.0"/ø0.99"/ø0.897"

E3000

- One Piece

E3000

- Modular

ø1.18"

ø1.0"/ø0.98"

ø0.897"

E3000

- 80,000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.75"

ø0.81"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xspeed

ABT

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## 1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

## 2

iSpeed3

E2000  
α1.0°/α0.98°/α0.897°

E3000  
— One Piece

E3000  
— Modular

α1.18°

α1.0°/α0.98°  
α0.897°

E3000  
— 60,000rpm

E4000

## 3

MA

α0.897°

α1.0°  
α0.98°

α1.18°

MS

α0.75°  
α0.79°

α0.87°  
α0.91°

α1.0°  
α0.98°

## 4

HES

iSpeed5

HTS

PLANET

Xpeed

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## 5

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iSpeed3  
E2000  
ø1.0"/ø0.99"/ø0.897"  
E3000  
- One Piece  
E3000  
- Modular  
ø1.18"  
ø1.0"/ø0.98"  
ø0.897"  
E3000  
- 80,000rpm  
E4000

3

MA  
ø0.897"  
ø1.0"  
ø0.98"  
ø1.18"  
MS  
ø0.75"  
ø0.79"  
ø0.897"  
ø0.91"  
ø1.0"  
ø0.98"

4

HES  
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# Cautions for Safety

## Cautions for Handling and Operation

- Read these cautions carefully and only use in the manner intended.
- Safety instructions are intended to avoid potential hazards that could result in personal injury or damage to the device. Safety instructions are classified as follows in accordance with the seriousness of the risk.

### **WARNING**

A hazard that could result in bodily injury or damage to the device if the safety instructions are not followed.

### **CAUTION**

A hazard that could result in light or moderate bodily injury or damage to the device if the safety instructions are not followed.

### **WARNING**

- ① **The final responsibility for ensuring a product's suitability for use in a given application is left to the designer of the equipment in which NAKANISHI's motor / spindle is installed.**

NAKANISHI offers motors and spindles with a wide variety of capabilities and specifications. Please carefully check the product's specifications against the requirements of your application and verify suitability and safety prior to initial use.

- ② **NAKANISHI product's are intended for use by trained, knowledgeable, highly experienced professionals only.**

1. Spindles for machine tools are not hand tools. These are designed to be mounted on machines.
2. Never touch the motor, spindle or cutting tools when the spindle is rotating.
3. Always wear safety glasses. Everyday eyeglasses only have impact resistant lenses, they are not safety glasses. Also use a dust or face mask whenever the motor is running.
4. Check that the collet has been securely tightened prior to each use.
5. Do not use unbalanced or low precision tools.

- ③ **Do not apply excessive force.**

Do not apply excessive force (deep per pass cuts, high feed rates). This may cause tool slippage or spindle damage.

- ④ **Never operate or handle the product until you have thoroughly read the owner's manual and safe operation is confirmed.**

1. Handle or operate the product only after sufficient precautions to prevent injury have been taken and safety is confirmed.
2. Prior to operating the product confirm that all of the above safety precautions have been taken. Do not connect the product to an energy source or supply compressed air until all safety checks have been confirmed.

 **CAUTION**

① **Caution for operating**

1. Do not drop or hit spindle, the shock can damage internal components.
2. Confirm if wiring or connection is correct prior to use. Failure to make proper connections may damage the product or cause undesirable operation.
3. Stop working immediately when abnormal rotations or unusual vibrations are observed.
4. If the spindle has not been used for a long period of time, in excess of one month, please read "Break-In Procedure in owner's manual" prior to use.
5. Check if tools, chucks or hoses are damaged and if the compressed air is properly set (Air Line Kit) before working.

② **Cutting tools cautions**

1. Always clean the chuck. If ground particles or metal chips stick to the inside of spindle or the chuck, this will cause damage to the chuck or spindle and loss of precision.
2. Always clean the shank of the tools to avoid loss of precision, if ground particles or metal chips stick to the shank, there will be a loss of precision.
3. Do not over tighten the chuck. This will cause spindle damage.
4. Select suitable products or tools for the application. Do not exceed the capabilities of the spindles or cutting tools.
5. Do not exceed the maximum recommend speed specified by the cutting tool manufacturer.
6. Use only tools with shank diameter tolerance similar to the chuck I.D. tolerance.

③ **Installation of Air Line Kit**

1. All NAKANISHI air motors and air turbines, with the exception of Presto/Presto II and Air Bearing Spindles, require mist lubrication. Failure to use an air line kit and supply proper lubrication can cause motor speed to drop and severely shorten the life of the motor and spindle.
2. Make sure the air line kit's air filter stays clean. Introduction of water or foreign particles into the spindle will cause damage to internal components.

④ **Never use unfiltered air**

Air containing water or foreign particles will cause damage to motor and spindle components and severely shorten the service life. Always use clean, dry air with NAKANISHI's recommended air line kit.

NAKANISHI Products are not user serviceable. Any disassembly or modification of the products are the sole responsibility of the user. NAKANISHI will assume no responsibility nor honor any claims for products that have been disassembled or altered in any way by any party other than NAKANISHI.



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We accept returns only under the following conditions.

- \* No return goods can be accepted without prior approval of our office.
- \* Within 30 days from date of our shipment.
- \* No return will be accepted for factory order products.
- \* Product returned must be unused and in new and sellable condition by our sole determination, or the return will be rejected.
- \* Returned to us with prepaid shipping cost by the purchaser.
- \* In original box and/or packaging, or a cost for a new box/packaging will be charged.
- \* Restocking charge of 15% of the invoiced price or \$20.00 whichever is greater will be charged.

Please contact your local NSK America Representative or our industrial customer service department for a Return Authorization Number.

## **Discontinued Items**

Please refer to [www.nskamericacorp.com](http://www.nskamericacorp.com) for discontinued items.





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