



NSK AMERICA



INDUSTRIAL
HIGH SPEED SPINDLE & MICRO GRINDER
PRODUCT GUIDE

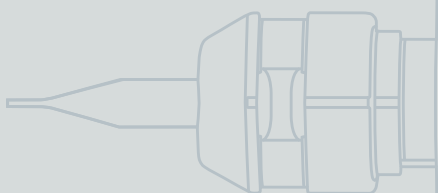
NSK America Corporation

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:

www.nskamericacorp.com

Dental Division:

www.nskdental.us.com

Medical Department:

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.



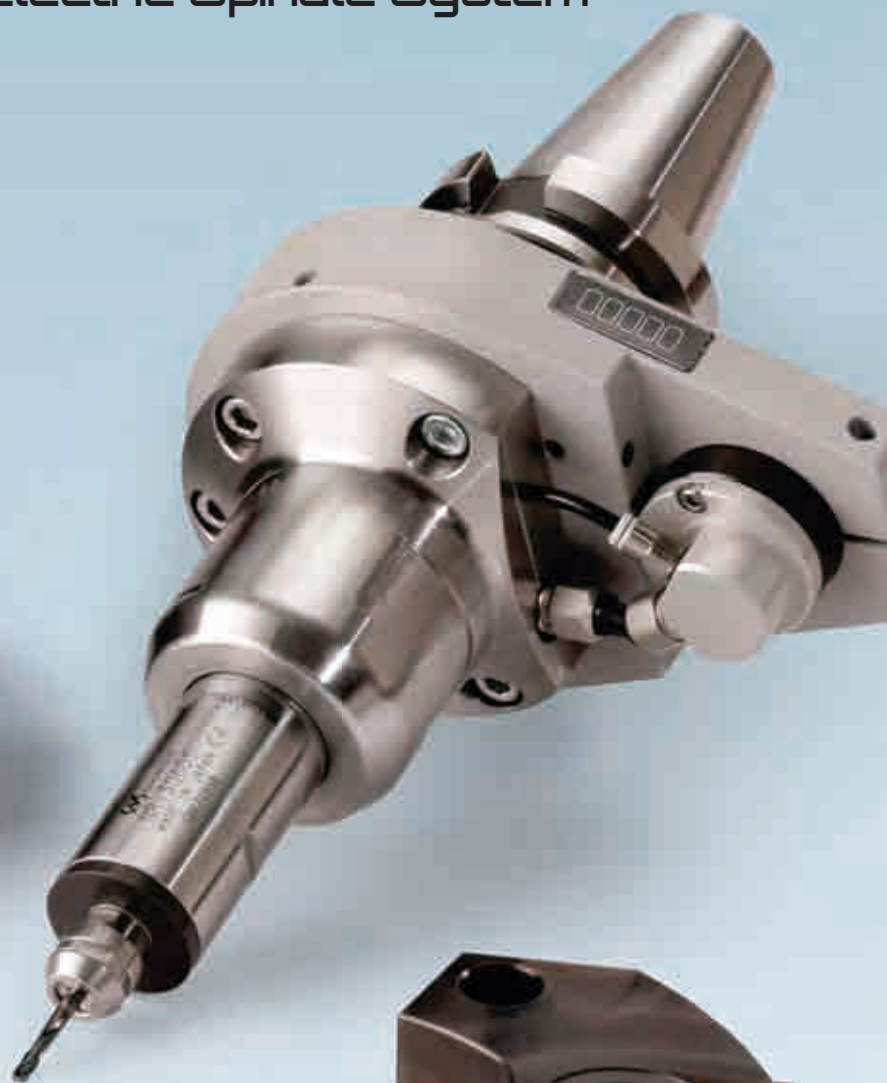
- Our 12,000sq/ft. warehouse provides a substantial inventory for all markets served.



- 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.



TABLE OF CONTENTS **HAND TOOLS**

1 Hand Tools

ELECTRIC HAND GRINDER

Emax EVolution *Modular Type Brushless Micro Grinder*.....
1,000–40,000 rpm **ELECTRICALLY DRIVEN**



.....**1** p2–19

ESPERT 500 *Modular Type Brushless Micro Grinder*.....
1,000–50,000 rpm **ELECTRICALLY DRIVEN**



.....**1** p20–27

PNEUMATIC HAND GRINDER

ROTUS *Modular Type High Torque Air Grinder*.....
30,000 rpm **PNEUMATICALLY DRIVEN**



.....**1** p30–33

IMPULSE SERIES *Pencil Type Air Grinder*.....
60,000 rpm **PNEUMATICALLY DRIVEN**



.....**1** p34–37

PRESTO II *Ultra-Precision High Speed Air Turbine Grinder*.....
320,000 rpm **PNEUMATICALLY DRIVEN**



.....**1** p38

ULTRASONIC PRODUCT

Sheenus ZERO *Ultrasonic Polisher*.....



1 p40-41

Sonic Cutter ZERO *Ultrasonic Cutter*.....



1 p42-44

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

7

TECHNICAL
DATA

8

APPLICATION
EXAMPLES

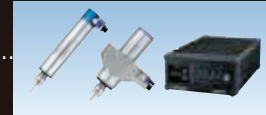
INDEX

TABLE OF CONTENTS MACHINE TOOL SPINDLES

LATHES, SPECIALTY PURPOSE, ROBOTIC APPLICATIONS

2 Electric Motor Spindles

iSpeed3 SERIES *Electric Micro Spindle*..... **2** p1-15
1,000-80,000 rpm 19.05mm, 20mm, 22mm **ONE PIECE TYPE**



E2000 SERIES *Brushless Motor Spindle*..... **2** p17-35
1,000-50,000 rpm \varnothing 0.897", \varnothing 0.98", \varnothing 1.0" **MODULAR TYPE**



E3000 SERIES *Brushless Motor Spindle*..... **2** p37-51
1,000-60,000 rpm \varnothing 0.79", \varnothing 0.98", \varnothing 1.18" **ONE PIECE TYPE**



E3000 SERIES *Brushless Motor Spindle*..... **2** p52-69
1,000-60,000 rpm \varnothing 0.897", \varnothing 0.98", \varnothing 1.0", \varnothing 1.18" **MODULAR TYPE**



E3000 SERIES *Brushless Motor Spindle*..... **2** p70-76
1,000-80,000 rpm \varnothing 1.18", \varnothing 1.97" **MODULAR TYPE**



E4000 SERIES *Brushless Motor Spindle*..... **2** p77-89
1,000-40,000 rpm \varnothing 1.57" **ONE PIECE TYPE & MODULAR TYPE**



3 Pneumatic Motor Spindles

MA SERIES *Air Spindles & Motors*..... **3** p1-25
 \varnothing 0.75", \varnothing 0.79", \varnothing 0.87", \varnothing 0.98", \varnothing 1.0" **MODULAR TYPE**



MS SERIES *Air Motor Spindle*..... **3** p27-34
 \varnothing 0.75", \varnothing 0.79", \varnothing 0.87", \varnothing 0.98", \varnothing 1.0" **ONE PIECE TYPE**



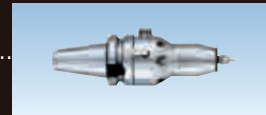
4 Milling Machine Spindles

ELECTRIC SPINDLES

HES510 *Ultra-Precision High-Speed Milling Spindle*..... **4** p3–9
 Max. 50,000 rpm ELECTRICALLY DRIVEN



HES810 *Ultra-Precision High-Speed Milling Spindle*..... **4** p10–15
 Max. 80,000 rpm ELECTRICALLY DRIVEN

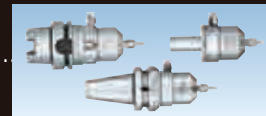


iSpeed5 *High-Speed Motor Spindle & Controller*..... **4** p17–24
 1,000-80,000 rpm ELECTRICALLY DRIVEN FULLY TOOL CHANGEABLE



PNEUMATIC SPINDLES

HTS SERIES *Ultra-High Speed Air Turbine Milling Spindle*..... **4** p25–30
 150,000 rpm PNEUMATICALLY DRIVEN



PLANET SERIES *High-Speed Air Turbine Jig Grinder*..... **4** p41–44
 65,000 rpm PNEUMATICALLY DRIVEN



AIR BEARING SPINDLES

Xpeed SERIES *Air Bearing Air Turbine Spindle*..... **4** p47–50
 120,000/160,000 rpm PNEUMATICALLY DRIVEN



ABT SERIES *Air Bearing Air Turbine Spindle*..... **4** p51–53
 100,000 rpm PNEUMATICALLY DRIVEN



5 Air Line Kits..... **5** p1–5

6 Parts..... **6** p1–19

7 Technical Data..... **7** p1–39

8 Application Examples..... **8** p1–16

INDEX Index..... **C** p1–23

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000
ø1.0"/ø0.98"/ø0.937"
E3000
– One Piece
E3000
– Modular
ø1.18"
ø1.0"/ø0.98"/ø0.937"
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
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

MACHINE TOOL SPINDLE DIAMETER INDEX

Spindle Diameter	Type	Product Name	Page
ø0.75" (ø19.05 mm)	Electric Micro Spindle	BM-319	2-p6
		BMJ-319	2-p10
	Air Motor Spindle	MSS-19 SERIES	3-p30
ø0.79" (ø20 mm)	Electric Micro Spindle	BM-320 / BM-320F	2-p6, 2-p7
		BMJ-320	2-p10
	Electric Motor Spindle	EM20-S6000	2-p49
	Air Motor Spindle	MSS-20 SERIES	3-p30
ø0.87" (ø22 mm)	Electric Micro Spindle	BM-322	2-p7
		BM-322FL / BM-322FR	2-p8
		BM-322FS	2-p9
		BMJ-322	2-p11
ø0.897" (ø22.8 mm)	Spindle	NR-2351 / NR-303	2-p31, 3-p6
		NR-311	2-p33, 3-p8
		RAS-101	2-p32, 3-p7
		RA-100 / RA-200	2-p32, 3-p7
		AMH-301	2-p33, 3-p8
ø0.91" (ø23 mm)	Air Motor Spindle	MSST-23 SERIES	3-p32
ø0.98" (ø25 mm)	Electric Motor Spindle	EM25-S6000	2-p48
	Spindle	NRR-2651	2-p23
		NR-2551	2-p23, 3-p14
	Air Motor Spindle	MSS-25 SERIES	3-p33
ø1.0" (ø25.4 mm)	Spindle	NR-H2551	2-p23, 3-p14

Spindle Diameter	Type	Product Name	Page
ø1.18" (ø30 mm)	Brushless Motor Spindle	EMS-3060K	2-p44
		EMR-3008K	2-p45
		EMSF-3060K	2-p46
		EM30-S6000	2-p48
		EMA-3020K	2-p50
		EMA-3020S	2-p50
	Spindle	NR-3060S	2-p58, 3-p20
		NR-3080S	2-p75
		NR-403E	2-p59, 3-p21
		RAS-151E	2-p60, 3-p22
		RAX-271E / RAX-71E	2-p60, 3-p22
		RA-151E	2-p61, 3-p23
		RA-271E	2-p61, 3-p23
		NRR-3060	2-p63
ø1.57" (ø40 mm)	Spindle	NR40-5100 ATC	2-p62
		NR-4040	2-p83
		NR4040-AQC	2-p86
		NRR4040-QC	2-p87
	Brushless Motor Spindle	BMS-4020, BMS-4020 2M, BMS-4020RA, BMS-4040, BMS-4040 2M, BMS-4040RA	2-p81
	Brushless Coolant Through Motor Spindle	BMS-4040-MQL BMS-4040-MQL-2M	2-p84
	Air Bearing Spindle	Xpeed1600	4-p48
		ABT-1000	4-p52
ø1.97" (ø50 mm)	Spindle	NR50-5100 ATC-RS	2-p62
		NRAF-5080	2-p75
ø2.56" (ø65 mm)	Air Bearing Spindle	Xpeed1200	4-p49

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
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
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
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

HAND TOOLS

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

— One Piece

E3000

— Modular

— 80,000rpm

E4000

3

MA

— 80,000rpm

— 80,000rpm

— 80,000rpm

MS

— 80,000rpm

— 80,000rpm

— 80,000rpm

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL

DATA

8

APPLICATION

EXAMPLES

INDEX



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.



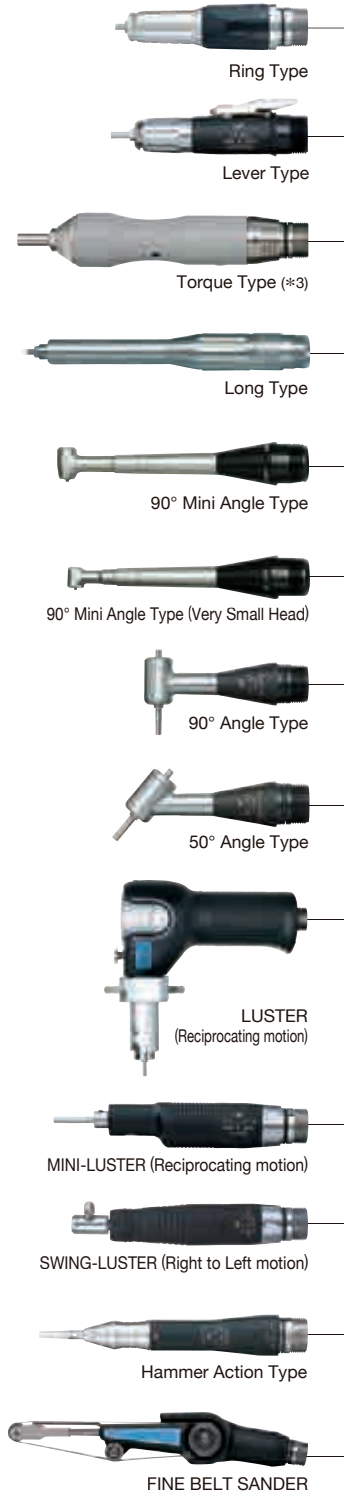
1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 — 90,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.73"
ø0.87" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

Emax EVOLution System Chart

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
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

Product Code	Product Name	
1144	IR-310	
40,000 rpm Max. (*1)	40,000 rpm Max. (*2)	Page 1-p8
7097	IH-300	
40,000 rpm Max. (*1)	40,000 rpm Max. (*2)	Page 1-p8
2810	HG-200	
27,000 rpm Max. (*1)	27,000 rpm Max. (*2)	Page 1-p9
2904	BMH-300	
35,000 rpm Max. (*1)	35,000 rpm Max. (*2)	Page 1-p9
1012	MFC-300S	
15,000 rpm Max. (*1)	15,000 rpm Max. (*2)	Page 1-p9
1013	MFC-300M	
15,000 rpm Max. (*1)	15,000 rpm Max. (*2)	Page 1-p9
2900	IC-300	
35,000 rpm Max. (*1)	20,000 rpm Max. (*2)	Page 1-p10
2901	KC-300	
35,000 rpm Max. (*1)	20,000 rpm Max. (*2)	Page 1-p10
1302	LS-100	
30,000 rpm Max. (*1)	30,000 rpm Max. (*2)	Page 1-p12
1307	ML-8	
35,000 rpm Max. (*1)	30,000 rpm Max. (*2)	Page 1-p13
1380	SLS-16	
35,000 rpm Max. (*1)	24,000 rpm Max. (*2)	Page 1-p13
8060	HA-500	
20,000 rpm Max. (*1)	16,000 rpm Max. (*2)	Page 1-p16
1146	KBS-101	
35,000 rpm Max. (*1)	35,000 rpm Max. (*2)	Page 1-p16

Attachment

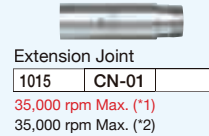


LUSTER
(Reciprocating motion)
Built-in Motor

1483	NLS-110	
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
1015 CN-01
35,000 rpm Max. (*1)
35,000 rpm Max. (*2)



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



1/15 Speed Reducer
1010 RG-02
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	



• Standard Type Motor with Cord
1,000~40,000 rpm Max.

8086	ENK-410S	
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• Torque Type Motor with Cord
1,000~25,000 rpm Max.


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

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 — 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
8
APPLICATION EXAMPLES
INDEX

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"> • Weight : 5 lb. 1.13 oz. • Power Source : AC120V, 50-60Hz • Dimensions : W5.12" x D10.0" x H3.82"

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

ø1.0"/ø0.99"/ø0.987"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.07"/ø0.98"

ø0.97"

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

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

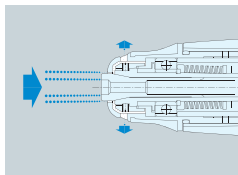


Various Collet Sizes

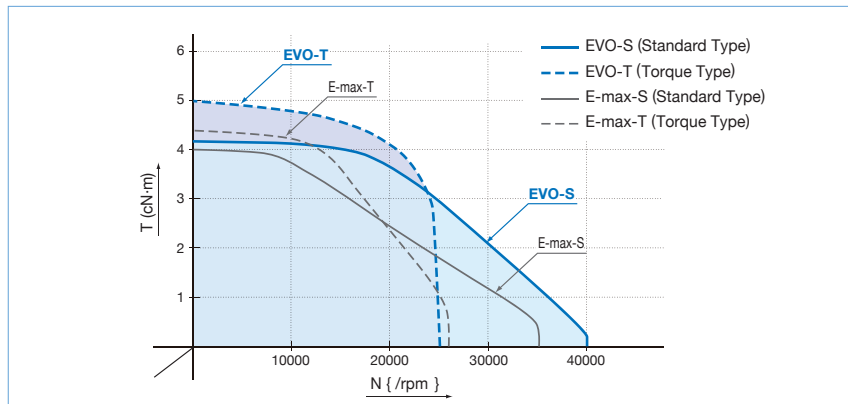
A variety of collet sizes ranging from 1.0 mm to 3.175 mm are available for most attachments.

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.



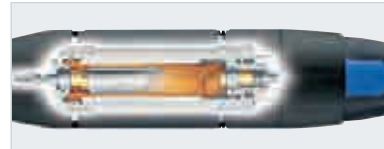
Emax EVOlution



Electer E-max

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
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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
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ø1.18"
MS
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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

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"> • Micro Grinder (IR-310+ENK-410S) : 1 pc. • Collet $\phi 1/8"$ (CHH-3.175), • $\phi 2.35$mm (CHH-2.35) : 1 pc. each • Controller (NE249 120) : 1 pc. • Handpiece Holder : 1 pc. • Handpiece Stand : 1 pc. • Power Supply Cord : 1 pc. • Wrench (7 x 5.1) : 1 pc. • Pin Wrench (K-233) : 2 pcs. • L Shaped Wrench (9) : 1 pc. 		

*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"> • Micro Grinder (IR-310+ENK-410S) : 1 pc. • Collet $\phi 1/8"$ (CHH-3.175), • $\phi 2.35$ mm (CHH-2.35) : 1 pc. each • Controller (NE249 120) : 1 pc. • Handpiece Holder : 1 pc. • Handpiece Stand : 1 pc. • Power Supply Cord : 1 pc. • Wrench (7 x 5.1) : 1 pc. • Pin Wrench (K-233) : 2 pcs. • L Shaped Wrench (9) : 1 pc. 		

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"> • Micro Grinder (IR-310+ENK-250T) : 1 pc. • Collet $\phi 1/8"$ (CHH-3.175), • $\phi 2.35$ mm (CHH-2.35) : 1 pc. each • Controller (NE249 120) : 1 pc. • Handpiece Holder : 1 pc. • Handpiece Stand : 1 pc. • Power Supply Cord : 1 pc. • Wrench (7 x 5.1) : 1 pc. • Pin Wrench (K-233) : 1 pc. • L Shaped Wrench (9) : 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

— 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

6

PARTS

7

TECHNICAL

DATA

8

APPLICATION

EXAMPLES

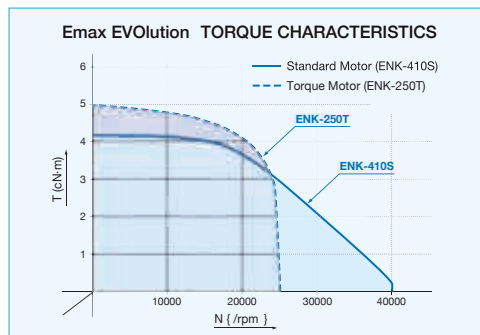
INDEX

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

ø1.0"/ø0.98"/ø0.897"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.07"/ø0.98"

ø1.07"

E3000

— ø0.000rpm

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

TECHNICAL DATA

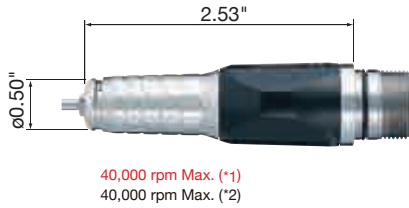
8

APPLICATION EXAMPLES

INDEX

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
1144	IR-310	• 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
7097	IH-300	• 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 - One Piece

E3000 - Modular

$\phi 1.18"$

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

E3000 - 50,000rpm

E4000

3

MA

$\phi 0.897"$

$\phi 1.0"$

$\phi 0.98"$

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

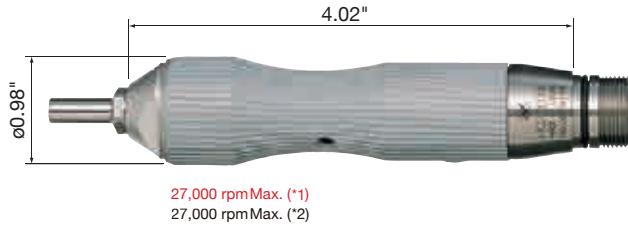
8

APPLICATION EXAMPLES

INDEX

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)

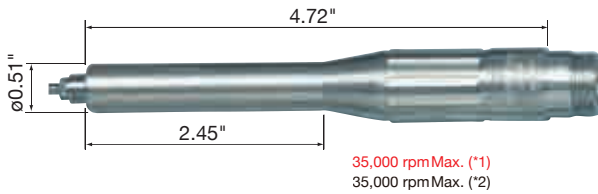
Torque Type Attachment

*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
2810	HG-200	• 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



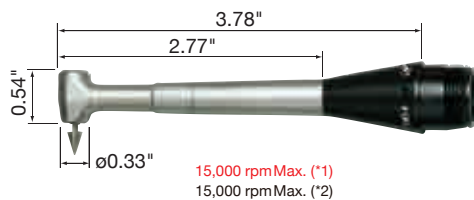
- This unique slim body makes it ideal for cutting and grinding the bottom surface of deep ribs or holes.
- Weight : 5.50 oz.
- Wrench is not required to exchange the chuck.
- Collet
Standard Size : $\phi 1/8"$ (CHM-3.175)
Optional Collets : CHM-□□ are shown in page (6-p4)

Long Attachment for Deep Hole Grinding

Product Code	Product Name	Standard Accessories
2904	BMH-300	• 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
1012	MFC-300S	• 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
1013	MFC-300M	• 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

$\phi 1/2"$ $\phi 0.98"$ $\phi 0.897"$

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

$\phi 0.75"$

$\phi 0.79"$

$\phi 0.897"$

$\phi 0.91"$

$\phi 1.0"$

$\phi 0.98"$

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

8

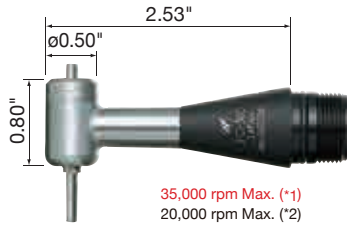
APPLICATION EXAMPLES

INDEX

1-p9

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)

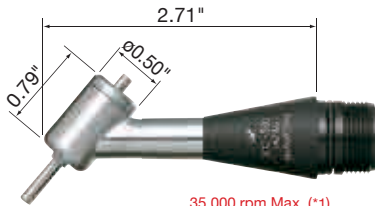


90° Angle Attachment *Please use it with Speed Reducer. (ROTUS Air Motor)

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

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"> • Collet $\phi 1/8"$ (CHC-3.175) : 1 pc. • Standard Accessories : 1 set • Chuck Wrench (K-231) : 1 pc. • Pin Wrench (K-233) : 1 pc.

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	

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" ø0.73"
	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

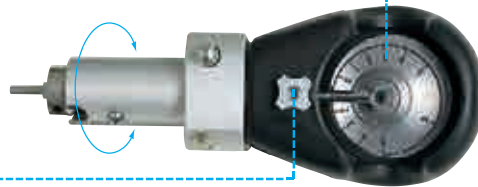
The Features of LUSTER Emax EVOLution NLS-110 (Built-in Motor)



- **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

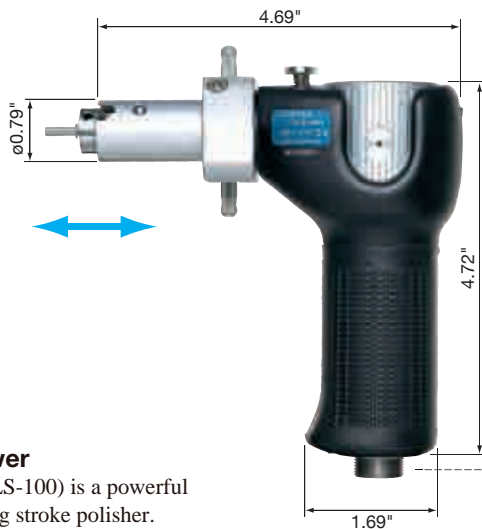
- Weight : 1 lb. 12.22 oz. (w/o cord)
- Max. tool shank diameter $\phi 0.25"$, Screw clamp type.
- Various types of attachment tools are provided as standard accessories.

Reciprocating Motion Polishing Finisher LUSTER

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

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

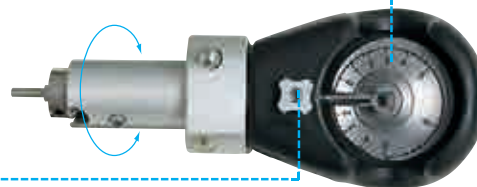
The Features of LUSTER LS-100



- **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"> • Standard Accessories : 1 set • Allen Wrench (2 mm), (3 mm) : 1 pc. each • Lubrication Oil • Lubrication Nozzle for LUSTER

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
 $\phi 1.0"$ $\phi 0.99"$ $\phi 0.987"$
E3000
- One Piece
E3000
- Modular
 $\phi 1.18"$
 $\phi 1.07"$ $\phi 0.98"$
 $\phi 0.97"$
E3000
- 50,000rpm
E4000

3
MA
 $\phi 0.997"$
 $\phi 1.0"$
 $\phi 0.98"$
 $\phi 1.18"$
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
APPLICATION
EXAMPLES
INDEX

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

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"> • Wrench (16 x 18), (20 x 24) : 1 pc. each • Allen Wrench (1.5 mm) : 1 pc. • Standard Accessories : 1 set

35,000 rpm Max. (*1) 24,000 rpm Max. (*2)

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

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
 $\phi 0.75'' \phi 0.79''$
 $\phi 0.87'' \phi 0.91''$
 $\phi 1.0'' \phi 0.98''$

4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT

5
AIR LINE KIT

6
PARTS

7
TECHNICAL DATA

8
APPLICATION EXAMPLES

INDEX

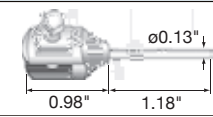
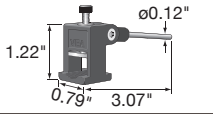

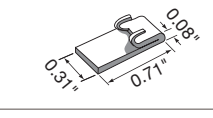
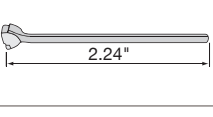
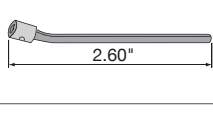
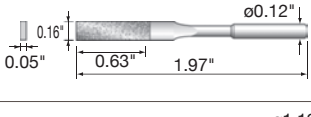
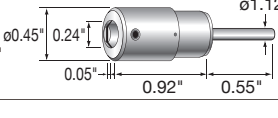
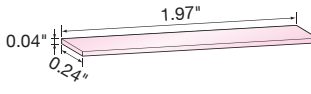
*Maximum Allowable Speed, continuous use may change depending on the material being cut and other application variables.

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

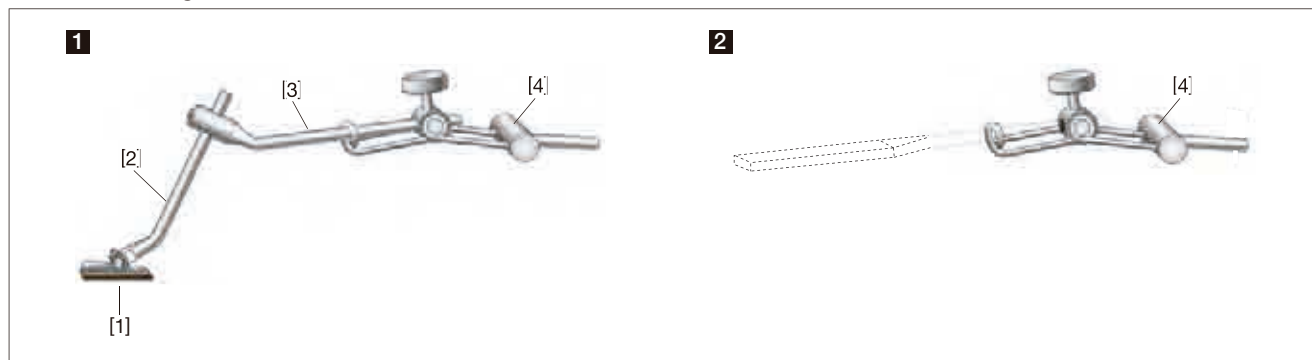
1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.07"/ø0.99"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07"/ø0.98" ø0.997"
E3000 — 60,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.87" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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
ø1.07/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

8

APPLICATION
EXAMPLES

INDEX

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.987"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07"/ø0.98" ø0.987"
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
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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	• Wrench (7 x 5.5) : 1 pc. • Bar Wrench (K-212) : 1 pc. • Oil and Oil offer machine • Hammer Bit (For replacement) : 2 pcs.

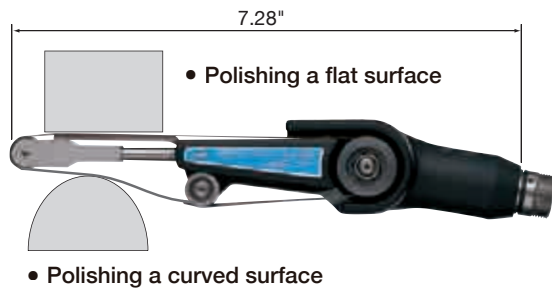
20,000 rpm Max. (*1) 16,000 rpm Max. (*2)

*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	• 8 mm Belt (3 kinds 2 pcs. each) • 6 mm Belt (3 kinds 2 pcs. each) • 4 mm Belt (3 kinds 2 pcs. each) • Allen Wrench (3 mm) : 1 pc.

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"

ø0.897"

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

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.987"
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E4000
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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
APPLICATION EXAMPLES
INDEX

Product Code **1009** **SPEED REDUCER RG-01**



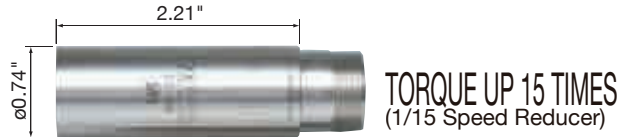
- The speed is reduced to 1/4 but the torque is multiplied by 4 times.
- Weight : 2.40 oz.

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**



- 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**



- 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**

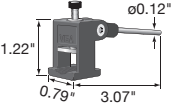
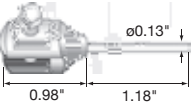
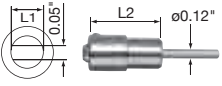

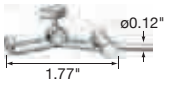
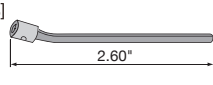
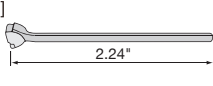
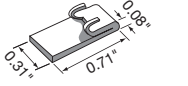


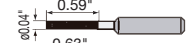
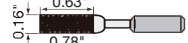
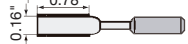
- Used as an ON/OFF switch as well as a variable speed control.

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

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

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"

ø0.897"

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

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

● 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.

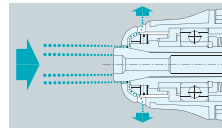
- NAKANISHI Smart Switch Color
- Compact Type (ENK-500C) 140W Blue
 - Torque Type (ENK-500T) 200W Gray

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.



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



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.

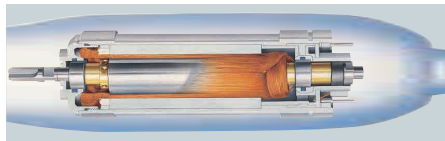
Micro Grinder & Handpiece Stand

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.



Excellent Durability

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



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

ø1.0"/ø0.99"/ø0.987"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.07"/ø0.98"

ø1.01"/ø0.987"

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

PARTS

7

TECHNICAL DATA

8

APPLICATION EXAMPLES

INDEX

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"> • Power Source : AC120V, 50-60Hz • Dimensions : W6.77" x D9.06" x H3.70" • Weight : 5 lb. 11.71 oz. • Accessories : Handpiece Stand : 1 pc. Handpiece Holder : 1 pc.

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
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	ø0.897"
	ø1.0"
	ø0.98"
	ø1.18"
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	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

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.0"/ø0.99"/ø0.987"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.07"/ø0.98"

ø0.987"

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

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PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL

DATA

8

APPLICATION

EXAMPLES

INDEX

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"> • Controller (NE96) : 1 pc. • Compact Motor Handpiece (ENK50C-HR) : 1 pc. • Collet ø1/8" (CHH-3.175) : 1 pc. • Collet ø2.35 mm (CHH-2.35) : 1 pc. • Handpiece Holder : 1 pc. • Handpiece Stand : 1 pc. • Wrench (7 x 5.1) : 1 pc. • Pin Wrench (K-233) : 1 pc. • L Shaped Wrench (9) : 1 pc. 		

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"> • Collet ø1/8" (CHH-3.175) : 1 pc. • Collet ø2.35 mm (CHH-2.35) : 1 pc. • Wrench (7 x 5.1) : 1 pc. Pin Wrench (K-233) : 1 pc. • L Shaped Wrench (9) : 1 pc. 		

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"> • Controller (NE96) : 1 pc. • Torque Motor Handpiece (ENK50T-HR) : 1 pc. • Collet ø1/8" (CHH-3.175) : 1 pc. • Collet ø2.35 mm (CHH-2.35) : 1 pc. • Handpiece Holder : 1 pc. • Handpiece Stand : 1 pc. • Wrench (7 x 5.1) : 1 pc. Pin Wrench (K-233) : 1 pc. • L Shaped Wrench (9) : 1 pc. 		

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"> • Collet ø1/8" (CHH-3.175) : 1 pc. • Collet ø2.35 mm (CHH-2.35) : 1 pc. • Wrench (7 x 5.1) : 1 pc. Pin Wrench (K-233) : 1 pc. • L Shaped Wrench (9) : 1 pc. 		

System Chart

Product Code	Product Name
--------------	--------------

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"

ø0.87"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xspeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

8

APPLICATION EXAMPLES

INDEX

*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.

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 : ø1/8" (CHH-3.175), ø2.35 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 ø1/8" (CHH-3.175), ø2.35 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 : ø1/8" (CHH-3.175), ø2.35 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 ø1/8" (CHH-3.175), ø2.35 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

ø1.07"/ø0.98" 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

PARTS

7

TECHNICAL DATA

8

APPLICATION EXAMPLES

INDEX

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.

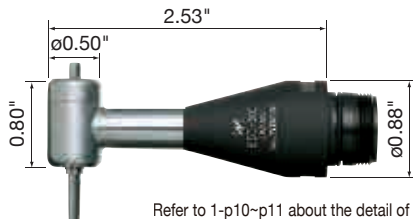
40,000 rpm Max. (*1) 30,000 rpm Max. (*2)
*Please use it with Speed Reducer.

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.

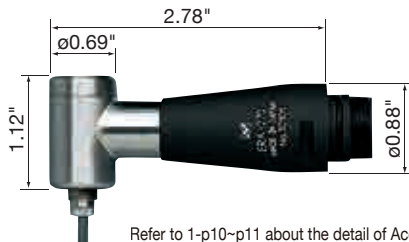
40,000 rpm Max. (*1) 20,000 rpm Max. (*2)

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

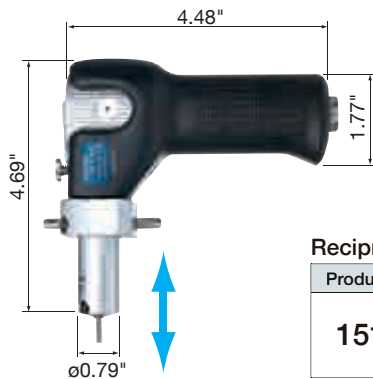
Product Code	Product Name	Standard Accessories
2923	ERA-270	• Collet $\phi 1/8$ " (CHS-3.175) : 1 pc. • Wrench (8 x 5), (7 x 5.1), (20 x 24) : 1 pc. each

*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.

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1/2$ " $\phi 0.98$ " $\phi 0.897$ "
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
$\phi 0.75$ " $\phi 0.79$ "
$\phi 0.87$ " $\phi 0.81$ "
$\phi 1.0$ " $\phi 0.98$ "
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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"> • Standard Accessories : 1 set • Allen Wrench (2 mm), (3 mm) : 1 pc. each • Lubrication Oil • Lubrication Nozzle for LUSTER

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

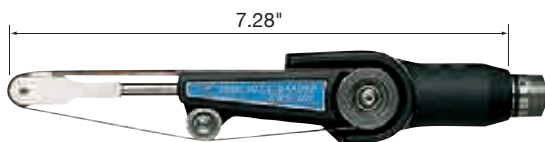


- Reciprocating Stroke (variable) : 0~10,000 times/min (Max.)
 - Stroke Range : 0.8 mm
 - Max. tool shank diameter $\phi 0.13"$, Screw clamp type.
 - Weight : 4.59 oz.
- 40,000 rpm Max. (*1) 30,000 rpm Max. (*2)

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

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"> • 8 mm Belt (3 different kinds) : 2 pcs. each • 6 mm Belt (3 different kinds) : 2 pcs. each • 4 mm Belt (3 different kinds) : 2 pcs. each • Allen Wrench (3 mm) : 1 pc.

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

$\phi 1.07"/\phi 0.59"/\phi 0.837"$

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

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

8

APPLICATION EXAMPLES

INDEX

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

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
8	APPLICATION EXAMPLES
	INDEX

*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
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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
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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

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

E3000

- One Piece

E3000

- Modular

o1.18"

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

E3000

- 60,000rpm

E4000

3

MA

o0.897"

o1.0"

o0.98"

o1.18"

MS

o0.75"

o0.79"

o0.897"

o0.91"

o1.0"

o0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

8

APPLICATION EXAMPLES

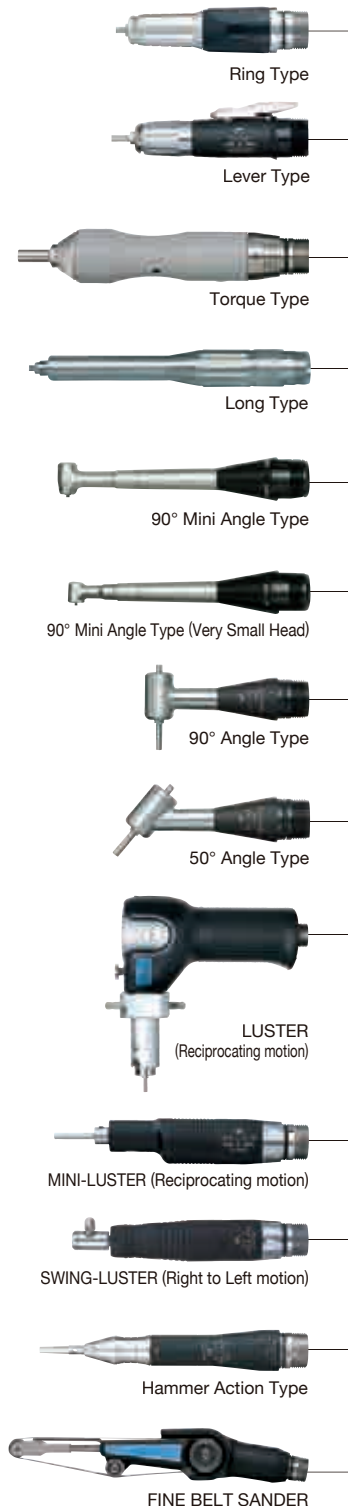
INDEX

ROTUS System Chart

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
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

Product Code	Product Name	
1144	IR-310	
40,000 rpm Max. (*1) 40,000 rpm Max. (*2) Page 1-p8		
7097	IH-300	
40,000 rpm Max. (*1) 40,000 rpm Max. (*2) Page 1-p8		
2810	HG-200	
30,000 rpm Max. (*1) 27,000 rpm Max. (*2) Page 1-p9		
2904	BMH-300	
35,000 rpm Max. (*1) 35,000 rpm Max. (*2) Page 1-p9		
1012	MFC-300S	
15,000 rpm Max. (*1) 15,000 rpm Max. (*2) Page 1-p9		
1013	MFC-300M	
15,000 rpm Max. (*1) 15,000 rpm Max. (*2) Page 1-p9		
2900	IC-300	
35,000 rpm Max. (*1) 20,000 rpm Max. (*2) Page 1-p10		
2901	KC-300	
35,000 rpm Max. (*1) 20,000 rpm Max. (*2) Page 1-p10		
1302	LS-100	
30,000 rpm Max. (*1) 30,000 rpm Max. (*2) Page 1-p12		
1307	ML-8	
35,000 rpm Max. (*1) 30,000 rpm Max. (*2) Page 1-p13		
1380	SLS-16	
35,000 rpm Max. (*1) 24,000 rpm Max. (*2) Page 1-p13		
8060	HA-500	
20,000 rpm Max. (*1) 16,000 rpm Max. (*2) Page 1-p16		
1146	KBS-101	
35,000 rpm Max. (*1) 35,000 rpm Max. (*2) Page 1-p16		

Attachment



Speed Reducer · Extension Joint

Extension Joint	
1015	CN-01
35,000 rpm Max. (*1) Page 1-p18	
35,000 rpm Max. (*2)	
1/4 Speed Reducer	
1009	RG-01
30,000 rpm Max. (*1) Page 1-p18	
30,000 rpm Max. (*2)	
1/15 Speed Reducer	
1010	RG-02
30,000 rpm Max. (*1) Page 1-p18	
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

1003	IM-300	
Page 1-p33		

• Air Motor with 360° Twist-Free Joint
3,000~30,000 rpm

1004	IM-301	
Page 1-p33		

• Air Line kit

4507	AL-H1207F	
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*This air line kit is designed for use with the Page 5-p2
AFC-45 foot control, Product Code AF10045.

• Foot Control

1064	AFC-45	
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Page 6-p9

*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

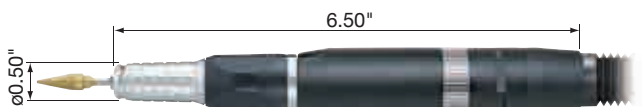
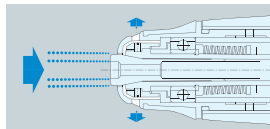
Capable of infinite applications with 13 different attachments.

*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 ø1.0"/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"
ø0.87" 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

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
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ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.897" ø0.91"
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4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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

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

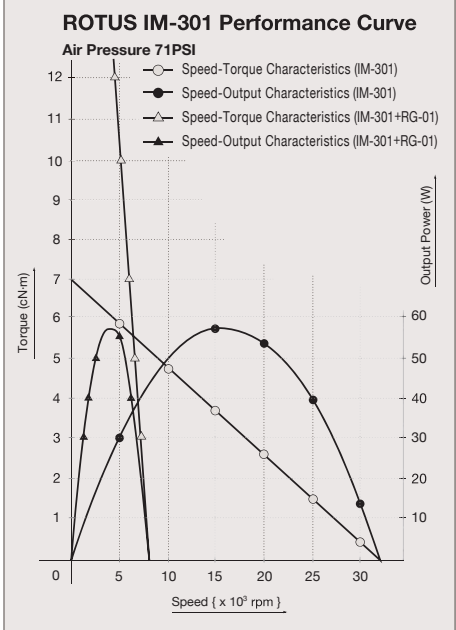
Forward/Reverse Rotating Direction Control Ring located at the end of the motor can control the motor speed as well.

Speed control by Foot Control

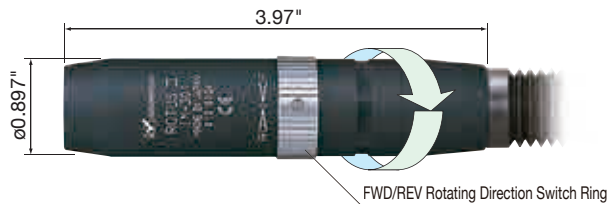
Fine adjustment of variable speed can be controlled by Foot Control.

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)



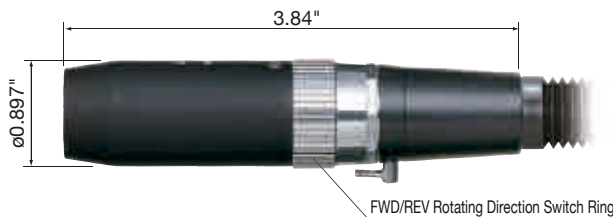
3,000~30,000 rpm

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 ø1.0"/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
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

- 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.

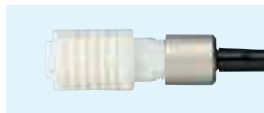
Product Code	Product Name	Standard Accessories
2990	NSP-601A	• Collet $\phi 1/8"$ (CHS-3.175) : 1 pc. • Wrench (8 x 5) : 1 pc. • Bar Wrench (K-212) : 1 pc. • Hose (K-213) 4.5 ft • Silencer (K-208) : 1 pc.

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.

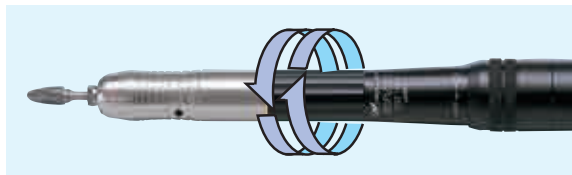
● Excellent Silencer

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.



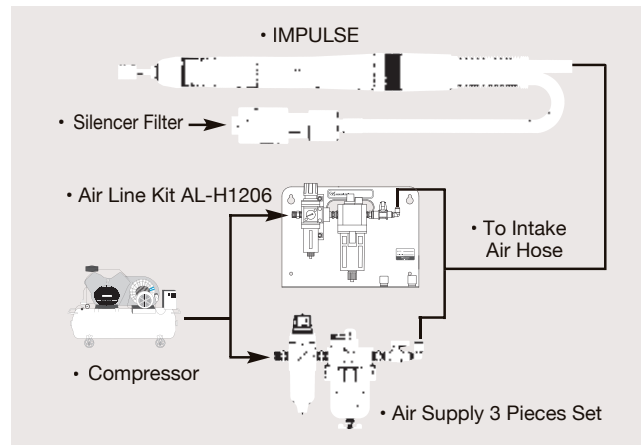
● Mounting & Dismounting Cutting Tool

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

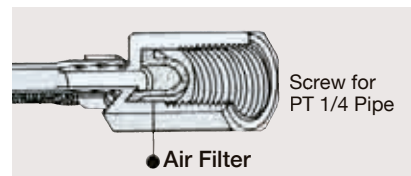
- Standard Size : $\phi 1/8"$ (CHS-3.175)
- Optional Collets : CHS-□□ are shown in page (6-p4)

● 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

$\phi 1.18"$

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

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

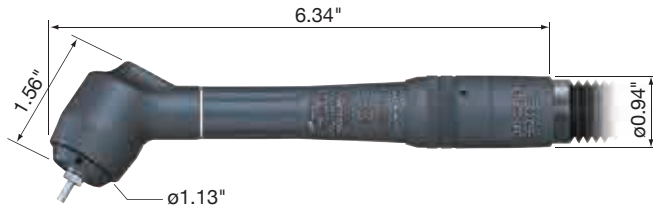
8

APPLICATION EXAMPLES

INDEX

Product Code 2905 60° IMPULSE NA45-400

40,000 rpm

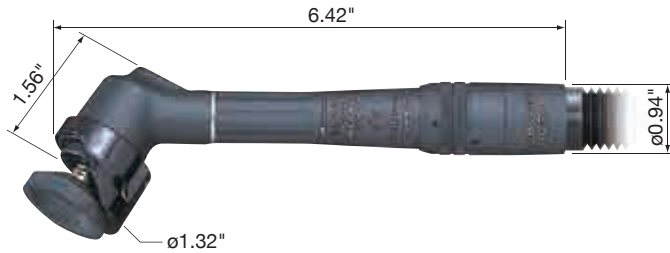


- Angled model housings are all aluminum alloy.
- Collet
Standard Size : ø1/8" (CHS-3.175)
Optional Collets : CHS-□□ are shown in page (6-p4)
- Weight : 7.41 oz.

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

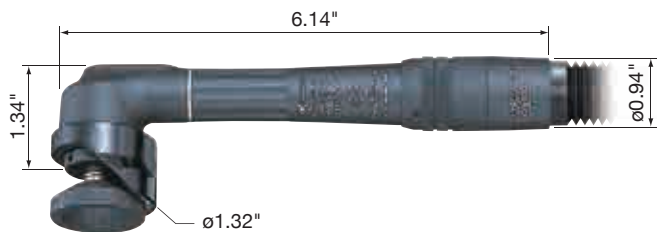


- Angled model housings are all aluminum alloy.
- Collet
Standard Size : ø1/8" (CHS-3.175)
Optional Collets : CHS-□□ are shown in page (6-p4)
- Weight : 6.70 oz.

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

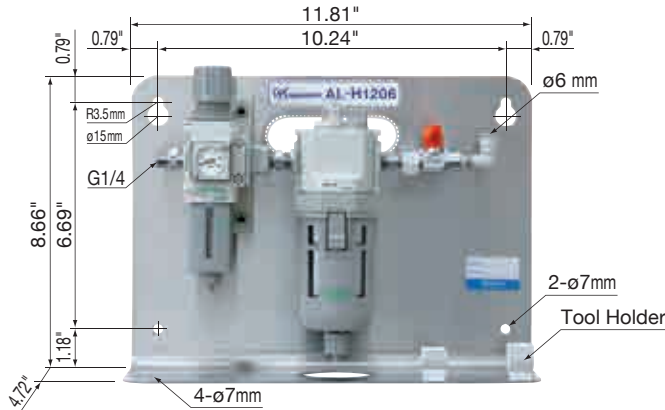
1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.07"/ø0.98"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 — ø0,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.87" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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 $\phi 6$ mm Hose · Filter Mesh 5 μ m)

Product Code	Product Name	Standard Equipment · Accessories	
4506	AL-H1206	<ul style="list-style-type: none"> • 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. 	

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EmaxEVO
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ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
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iSpeed3
E2000 $\phi 1.07''/\phi 0.99''/\phi 0.93''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.07''/\phi 0.98''/\phi 0.93''$
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
APPLICATION EXAMPLES
INDEX

Optional Accessories

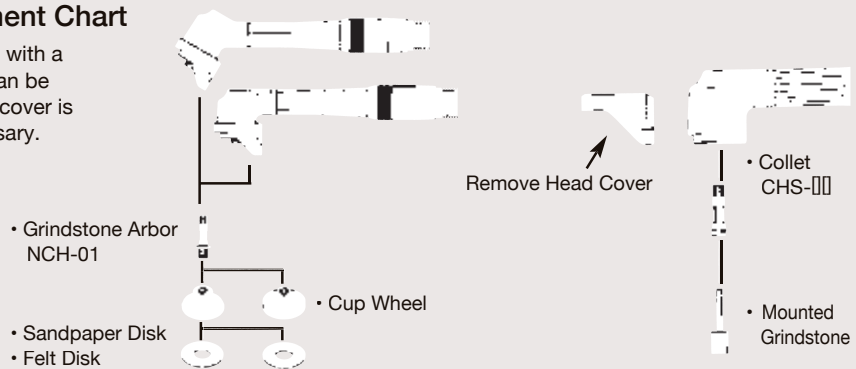
Product	Product Code	Grit	O.D. (mm)	Description • Product Name
	64830	# 36	ø 20	Standard
	64831	# 46		Hard
	64832	# 80		Standard
	64835	# 36	ø 30	Standard
	64836	# 46		Hard
	64837	# 80		Standard
	64838	# 80		Hard
	64842	# 80	ø 30	Polishing Sander (5 pcs./pack)
	64844	# 120		
	64846	# 180		
	64847	# 240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

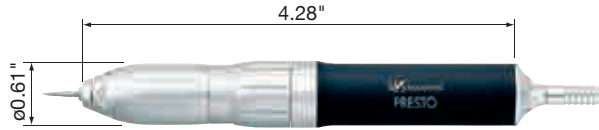


IMPULSE Spare Parts

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	: ϕ 1.6 mm Bur Only
Air Consumption	: 1.41CFM

PRESTO II Standard Set

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

Product	Product Code	Product Name	Standard Accessories
	1122	PR-304	• 6 ft Hose

PRESTO II Spare Parts

Product	Product Code	Description · Product Name	Specifications
	Z307015	PRESTO II Air Line Kit PR2-06 (w/o Lubricator · Filter Mesh 5 μ m)	
	1124	PRESTO Foot Control AFC-40	
	1120	PRESTO II Cartridge PR-03	
	Z101240	Piping Hose K-237	<ul style="list-style-type: none"> • 6 ft Long • ϕ0.24"
	T815220	Air Turbine Hose K-238	<ul style="list-style-type: none"> • 6 ft Long • ϕ0.20"
	2002	Pin Wrench T-751	

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ϕ 1.0"/ ϕ 0.99"/ ϕ 0.987"

E3000

— One Piece

E3000

— Modular

ϕ 1.18"

ϕ 1.07"/ ϕ 0.98"

ϕ 0.97"

E3000

— 50,000rpm

E4000

3

MA

ϕ 0.897"

ϕ 1.0"

ϕ 0.98"

ϕ 1.18"

MS

ϕ 0.75"

ϕ 0.79"

ϕ 0.87"

ϕ 0.91"

ϕ 1.0"

ϕ 0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

8

APPLICATION EXAMPLES

INDEX

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
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ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 — 60,000rpm
E4000
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MA
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ø1.18"
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ø0.897" 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

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

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
7778	NE330 120V	• 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
7780	US-50P	<ul style="list-style-type: none"> • Oscillator : PZT piezoelectric type • Attachment fixing : M6 screw • Cable length : 6 ft (2.12 oz.) • Dimensions : ø0.63" (Max. ø1.10") x L5.28" • Weight : 5.29 oz. (excluding cable)

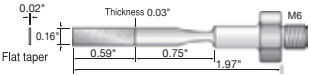
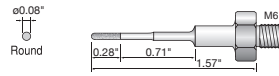
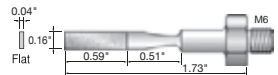
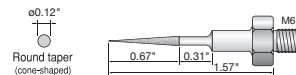
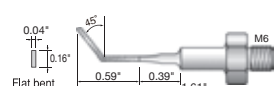
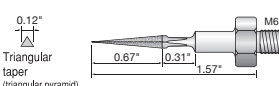
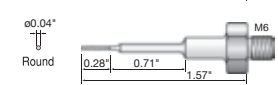
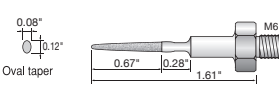
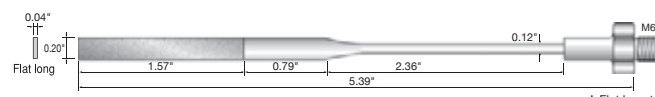
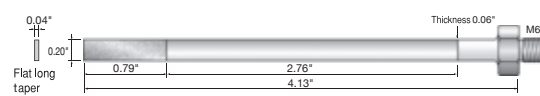
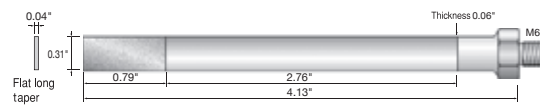
Tip holder and Ceramic fiber grindstone in this picture are not provided when only handpiece US-50P is purchased.

Sheenus ZERO Spare Parts

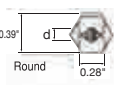
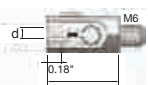
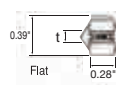
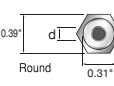
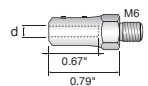
Product	Product Code	Description
	8103	FC-24 Foot Pedal (ON/OFF switch only)
	8104	K-274 Handpiece Stand

Product	Description
	Wrench - 10mm
	Allen Wrench - 2.5mm

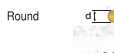

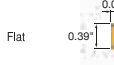

Electroplated diamond file (comes with 1 piece)

	<table border="1"> <thead> <tr> <th>Grit</th> <th>Product Code</th> </tr> </thead> <tbody> <tr> <td># 200</td> <td>60101</td> </tr> <tr> <td># 320</td> <td>60102</td> </tr> <tr> <td># 600</td> <td>60103</td> </tr> </tbody> </table>	Grit	Product Code	# 200	60101	# 320	60102	# 600	60103		<table border="1"> <thead> <tr> <th>Grit</th> <th>Product Code</th> </tr> </thead> <tbody> <tr> <td># 200</td> <td>60155</td> </tr> <tr> <td># 320</td> <td>60156</td> </tr> <tr> <td># 600</td> <td>60157</td> </tr> </tbody> </table>	Grit	Product Code	# 200	60155	# 320	60156	# 600	60157
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# 600	60117																		
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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=φ0.08"</td> <td>60901</td> </tr> <tr> <td>d=φ0.12"</td> <td>60902</td> </tr> <tr> <td>d=φ0.126"</td> <td>60904</td> </tr> <tr> <td>d=φ0.13"</td> <td>60903</td> </tr> </tbody> </table>	Grain diameter	Product Code	d=φ0.08"	60901	d=φ0.12"	60902	d=φ0.126"	60904	d=φ0.13"	60903		<table border="1"> <thead> <tr> <th>Grain diameter</th> <th>Product Code</th> </tr> </thead> <tbody> <tr> <td>t=φ0.03"</td> <td>60921</td> </tr> <tr> <td>t=φ0.04"</td> <td>60922</td> </tr> <tr> <td>t=φ0.08"</td> <td>60923</td> </tr> <tr> <td>t=φ0.12"</td> <td>60924</td> </tr> <tr> <td>t=φ0.126"</td> <td>60925</td> </tr> </tbody> </table>	Grain diameter	Product Code	t=φ0.03"	60921	t=φ0.04"	60922	t=φ0.08"	60923	t=φ0.12"	60924	t=φ0.126"	60925
Grain diameter	Product Code																									
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d=φ0.08"	60911																									
d=φ0.12"	60912																									
d=φ0.126"	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=φ0.08"</td> <td>60801</td> </tr> <tr> <td>d=φ0.12"</td> <td>60802</td> </tr> </tbody> </table>	Grain diameter	Product Code	d=φ0.08"	60801	d=φ0.12"	60802
Grain diameter	Product Code							
d=φ0.08"	60801							
d=φ0.12"	60802							
		<table border="1"> <tbody> <tr> <td>60805</td> </tr> </tbody> </table>	60805					
60805								

**while supplies last

*Order by product code. 1-p41

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus
ZERO

Sonic-Cutter
ZERO

2

iSpeed3

E2000

φ1.0"/φ0.98"/φ0.897"

E3000

- One Piece

E3000

- Modular

φ1.18"

E3000

- φ0.000rpm

E4000

3

MA

φ0.897"

φ1.0"/φ0.98"

φ1.18"

MS

φ0.75"/φ0.73"

φ0.897"/φ0.91"

φ1.0"/φ0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL
DATA

8

APPLICATION
EXAMPLES

INDEX

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.0" / ø0.98" / ø0.987"

E3000

— One Piece

E3000

— Modular

ø1.18"

ø1.07" / ø0.98"

ø0.987"

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

8

APPLICATION

EXAMPLES

INDEX

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	: ϕ 0.984 in. x L 6.54 in.
Weight	: 120 g (excluding cable)

Sonic Cutter ZERO Standard Set

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

Product Code **7785** CONTROLLER 120V



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

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

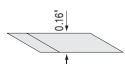
Product Code **7787** HANDPIECE UA-40C




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

Product Code	Product Name	Specifications
7787	UA-40C	<ul style="list-style-type: none"> • Oscillator: Bolt-clamped Langevin type • Setting the blade: screwed the blade W 0.16 x thickness 0.015 in. • Cable length: 118 in. • Dimensions: Max. ϕ0.984 in. x L 6.54 in. • Weight: 120 g (excluding cable)

Sonic Cutter ZERO Spare Parts

Product	Product Code	Description
	DC200	Spare Blade (40 pack)

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

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

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 — 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
Xspeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

Sonic Cutter ZERO Applications

- 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



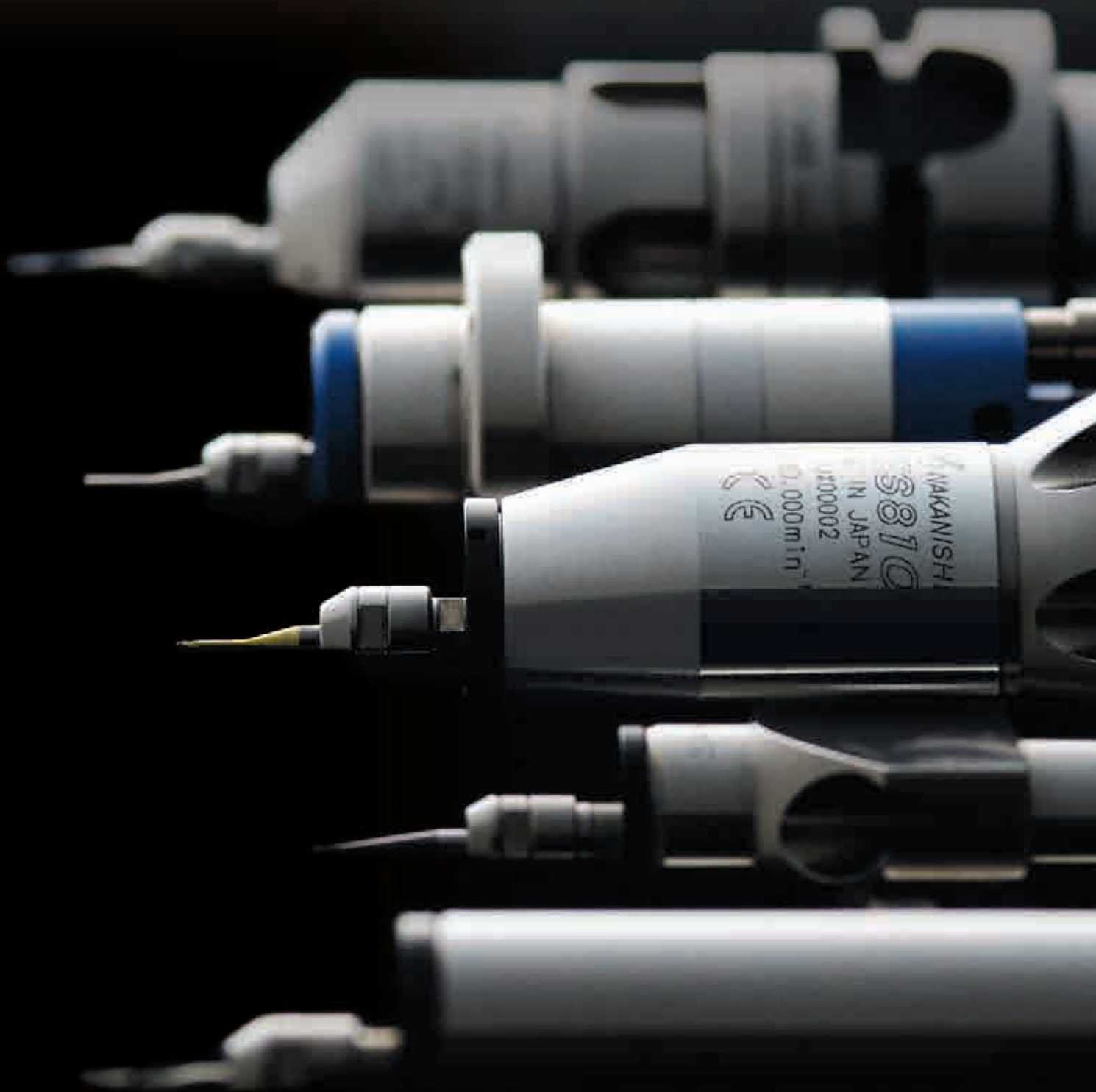
Most suitable for accurate correction work required on PCB.

- 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
 $\phi 1.0^{\circ}/\phi 0.98^{\circ}/\phi 0.897^{\circ}$
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
 $\phi 0.75^{\circ}/\phi 0.73^{\circ}$
 $\phi 0.87^{\circ}/\phi 0.91^{\circ}$
 $\phi 1.0^{\circ}/\phi 0.98^{\circ}$

4

HES
iSpeed5
HTS
PLANET
Xpeed
ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL
DATA

8

APPLICATION
EXAMPLES

INDEX



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

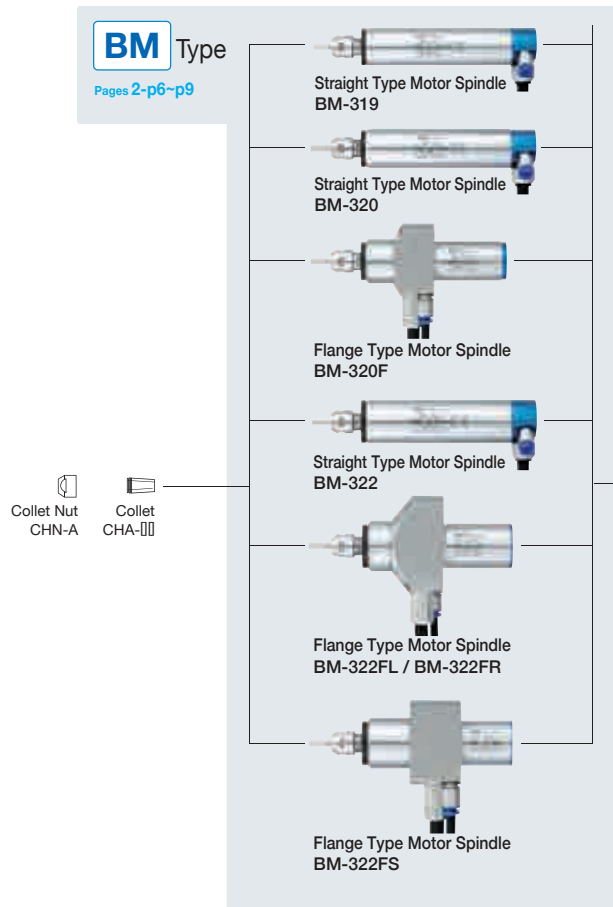
- Shorter spindle length is suitable for compact sized automatic CNC lathes.
- The iSpeed3 series have sensorless motors and are equipped with super precision hybrid ceramic bearings for longer spindle life.



1
EmaxEVC
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
$\varnothing 0.75''/\varnothing 0.79''$
$\varnothing 0.89''/\varnothing 0.91''$
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4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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"
∅0.897"/∅0.81"
∅1.0"/∅0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

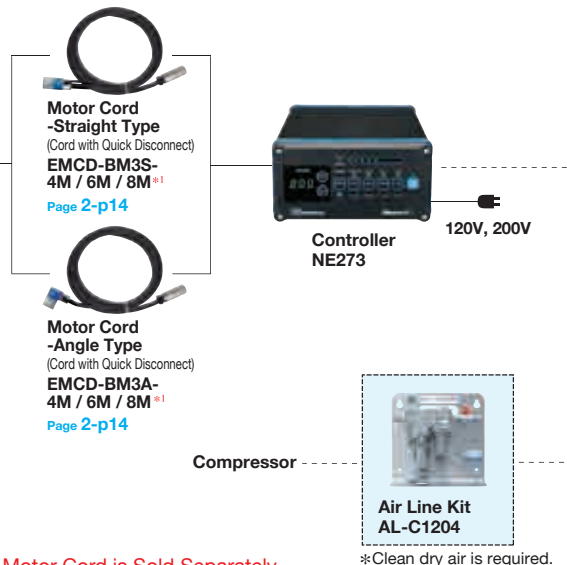
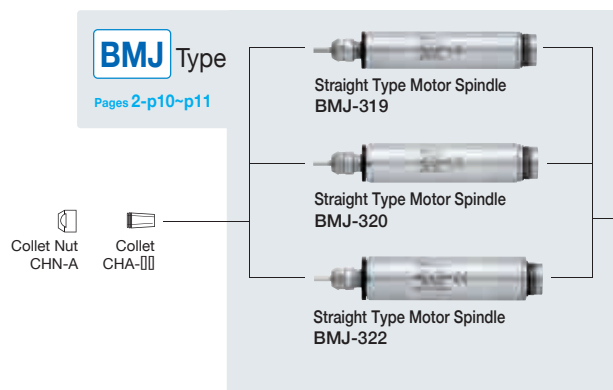
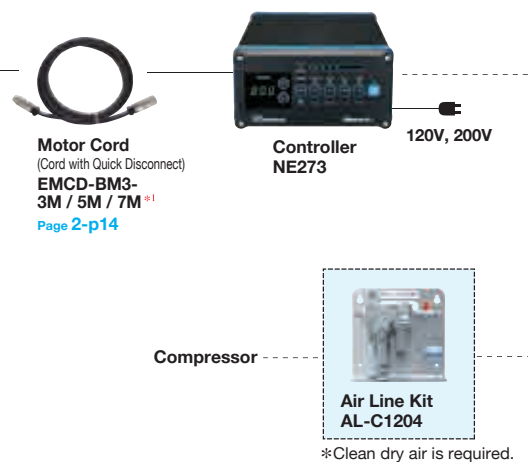
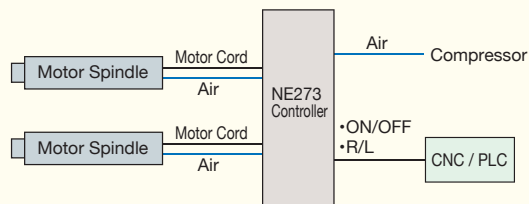
iSpeed3 Series System Chart



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 μm (TIR).

- **High Rigidity, Short Body**

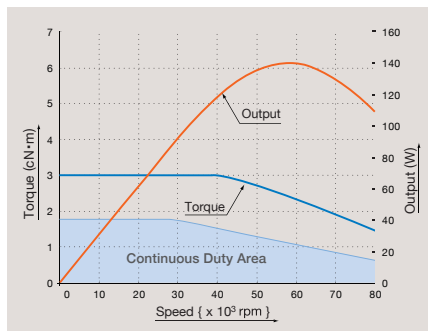
iSpeed3 series uses a short body that is hardened and precision ground for excellent durability.

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

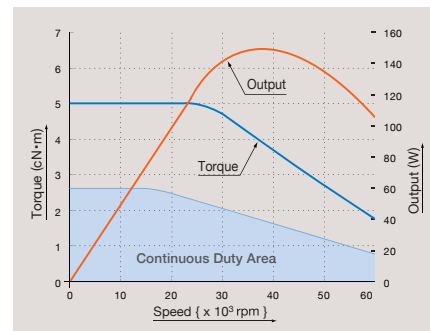
Simple screw-lock connector makes changing motors extremely easy. Electric and Air feed incorporated into a single connector.

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

E3000

E3000

E3000

E3000

E3000

E4000

3

MA

MS

MS

MS

MS

MS

MS

MS

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

8

APPLICATION EXAMPLES

INDEX

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
- 60,000rpm
- 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

7

- TECHNICAL DATA

8

- APPLICATION EXAMPLES

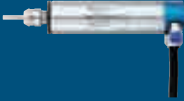
- INDEX

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.

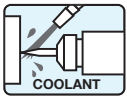
*Please check the power source plug type and order accordingly.

Interface Cable

Page 2-p14



1
EmaxEVC
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98" ø0.89"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98" ø0.89"
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
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX



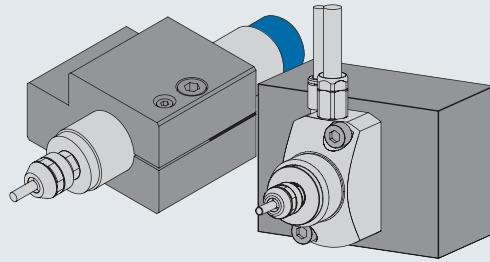
iSpeed3 Series can be used in conjunction with water or oil based coolants.

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
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

Straight and Flange Type with Quick Disconnect

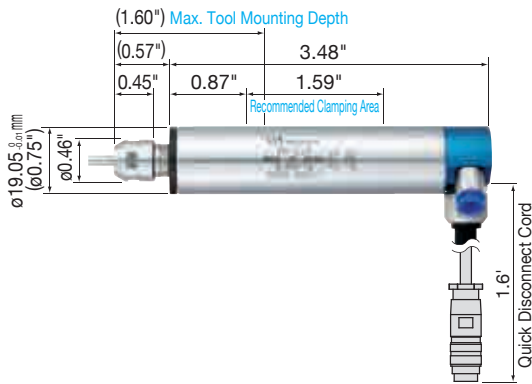
Features:

- 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:

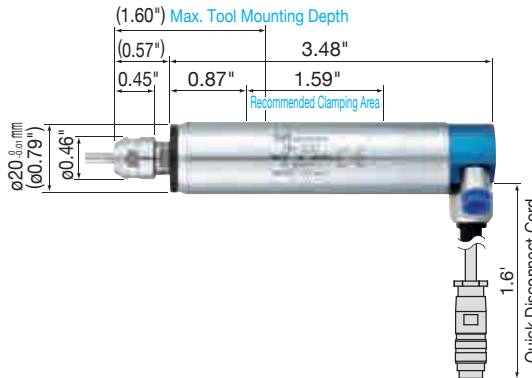
- Collet Series CHA-XX ø0.5mm~ø4.0mm
Recommended CHA-3.175 ø1/8"
(See Page 6-p2 for additional sizes)
- Motor Cord Length 10 ft, 16 ft, 22 ft

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")**



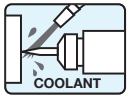
- Motor Speed 1,000~80,000 rpm
- Spindle Accuracy Within 1 µm
- Max. Output Power 140W
- Weight 8.11 oz.

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

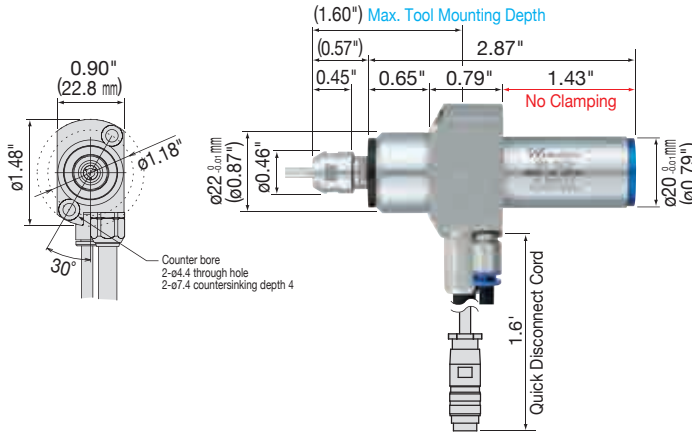
Straight Type Motor Spindle ø0.79"(ø20 mm)

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")**



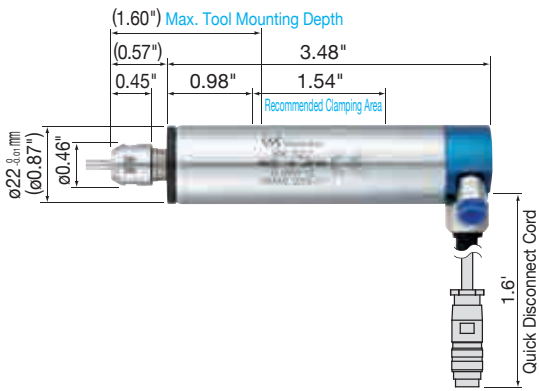
- Motor Speed 1,000~80,000 rpm
- Spindle Accuracy Within 1 µm
- Max. Output Power 140W
- Weight 9.52 oz.
- **Additional collet purchase required:**
 - Collet Series CHA-XX ø0.5mm~ø4.0mm
 - Recommended CHA-3.175 ø1/8"
 - (See Page 6-p2 for additional sizes)
- Motor Cord Length 10 ft, 16 ft, 22 ft

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

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

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

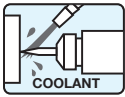
Straight Type Motor Spindle ø0.87"(ø22 mm)

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

Motor Cord
Page 2-p14

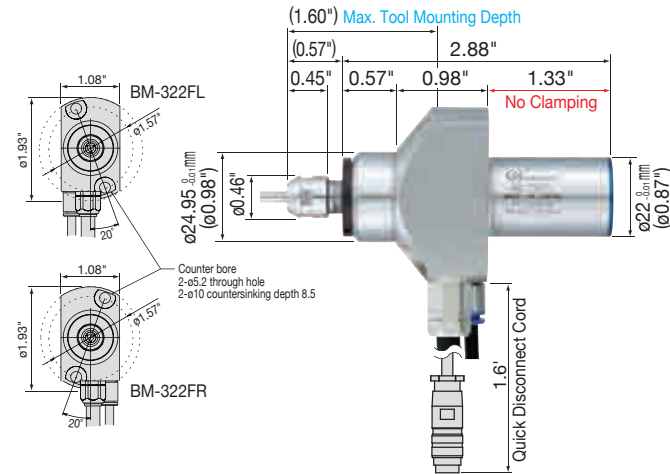


1
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79" ø0.81" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX



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

Outside Diameter **ø22mm (ø0.87")**

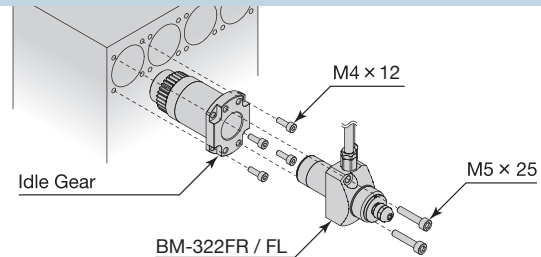
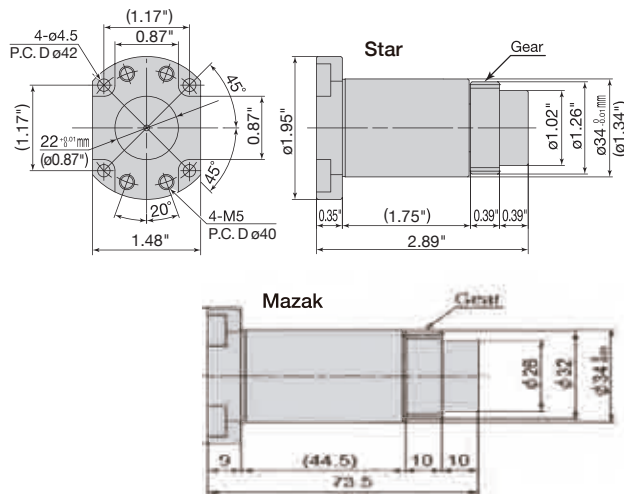


- Motor Speed 1,000~60,000 rpm
- Spindle Accuracy Within 1 μ m
- Max. Output Power 150W
- Weight 12.70 oz.
- **Additional collet purchase required:**
 - Collet Series CHA-XX ø0.5mm~ø4.0mm
 - Recommended CHA-3.175 ø1/8"
 - (See Page 6-p2 for additional sizes)
- Motor Cord Length 10 ft, 16 ft, 22 ft

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

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

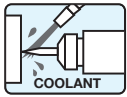
Product Code	Product Name	Specifications	
1882	SP-22x10L	Dimensions ø22 (I.D.) x 10mm	

SPLIT BUSHING



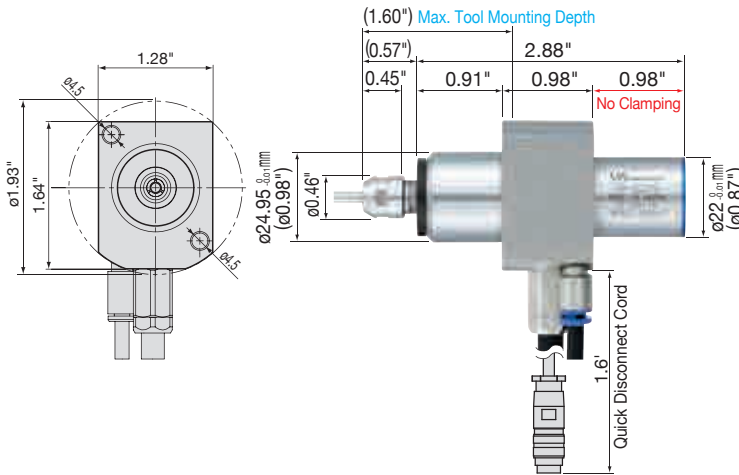
- Hardened and ground split bushings are available in several sizes to fit most NSK Spindle/Motors.

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

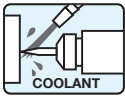
Flange Type Motor Spindle ø0.87"(ø22 mm)

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

Motor Cord
Page 2-p14



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"
ø0.89" 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

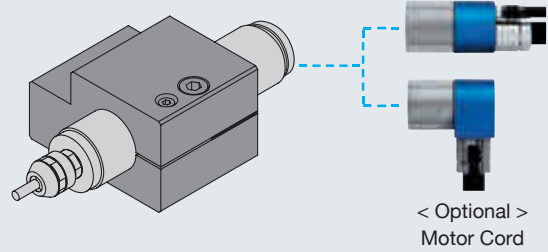


1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 One Piece
E3000 Modular
ø1.18"
ø1.0"/ø0.98"/ø0.897"
E3000 80,000rpm
E4000
3
MA
ø0.897"
ø1.0"/ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.81" ø0.83"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

BMJ Straight Type without Motor Cord

Features:

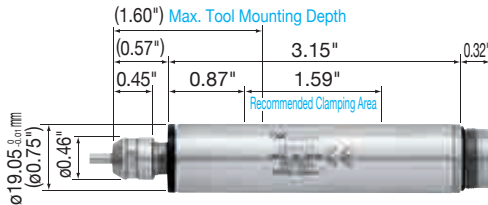
- Straight Motor/Spindles with O.D. sizes for all Swiss type machines.
- Uses a Straight or 90-Degree Motor Cord that attach to the rear of the Motor/Spindle.
- Ability to insert the Motor/Spindle from the front or rear of the tool block.



< Optional >
Motor Cord

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

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



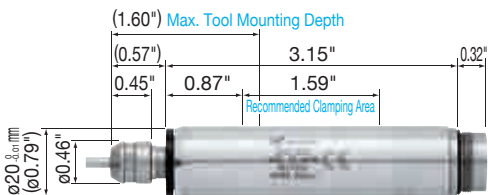
- Motor Speed 1,000~80,000 rpm
- Spindle Accuracy Within 1 µm
- Max. Output Power 140W
- Weight 5.11 oz.
- **Additional collet purchase required:**
Collet Series CHA-XX ø0.5mm~ø4.0mm
Recommended CHA-3.175 ø1/8"
(See Page 6-p2 for additional sizes)
- Motor Cord Length 13 ft, 19 ft, 26 ft

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

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

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

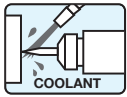
Outside Diameter **ø20mm (ø0.79")**



- 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

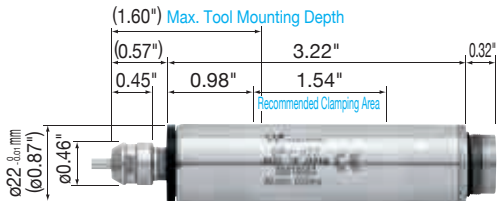
Straight Type Motor Spindle ø0.79"(ø20 mm)

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



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

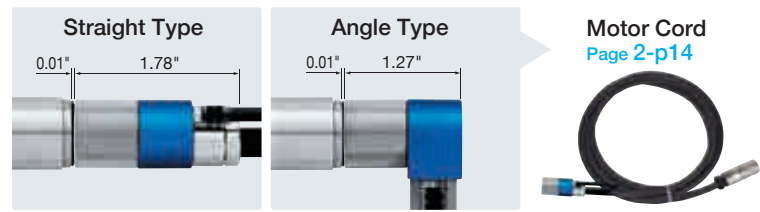
Outside Diameter **ø22mm (ø0.87")**



- 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	
7821	BMJ-322	<ul style="list-style-type: none"> • Collet Nut (CHN-A) : 1 pc. • Wrench (8 x 5), (9 x 11) : 1 pc. each 	




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"
ø1.07"/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
8
APPLICATION EXAMPLES
INDEX

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"> • Air Hose • Connector Cap (Provided) 	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"> • Air Hose • Connector Cap (Provided) 	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"> • Air Hose • Connector Cap (Provided) 	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

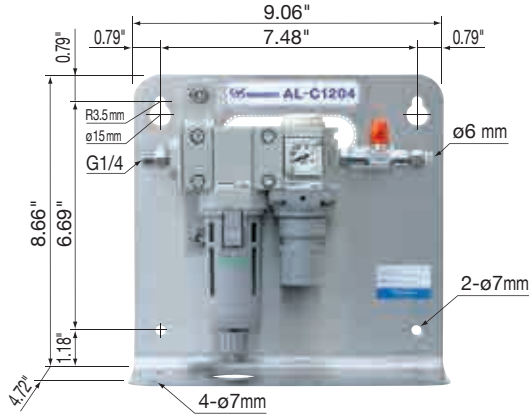


- 3 Meter long Interface Cable provides a DB15 Male Connector at one end and a blunt cut on the opposite end. Includes a pin-out wire diagram for easy interfacing of the (OP1) "E-Stop Input Circuit" and "Safety Relay Circuit" from the NSK Control to a CNC Control.

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 06 mm Hose · Filter Mesh 0.3 μm)

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

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

8

APPLICATION EXAMPLES

INDEX

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

TECHNICAL DATA

8

APPLICATION EXAMPLES

INDEX

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)

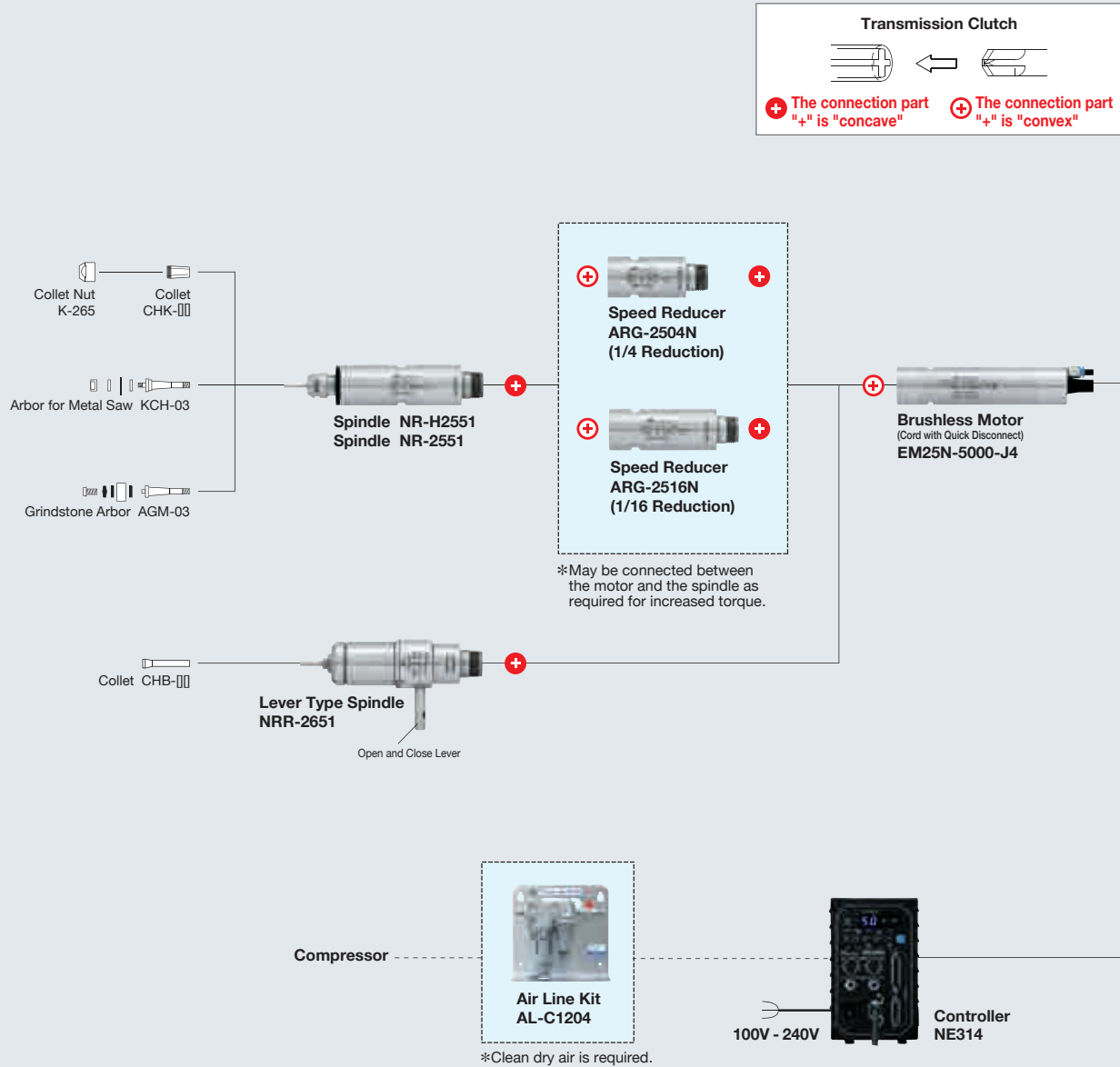
Suitable for small diameter milling & drilling, slitting, chamfer and grinding operation.

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
$\phi 0.75''$
$\phi 0.75''$
$\phi 0.87''$
$\phi 0.91''$
$\phi 1.0''/\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

- 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 - 00,000rpm
- E4000
- 3
- MA
- $\varnothing 0.897''$
- $\varnothing 1.0''/\varnothing 0.98''$
- $\varnothing 1.18''$
- MS
- $\varnothing 0.75''/\varnothing 0.79''$
- $\varnothing 0.87''/\varnothing 0.91''$
- $\varnothing 1.0''/\varnothing 0.98''$
- 4
- HES
- iSpeed5
- HTS
- PLANET
- Xpeed
- ABT
- 5
- AIR LINE KIT
- 6
- PARTS
- 7
- TECHNICAL DATA
- 8
- APPLICATION EXAMPLES
- INDEX

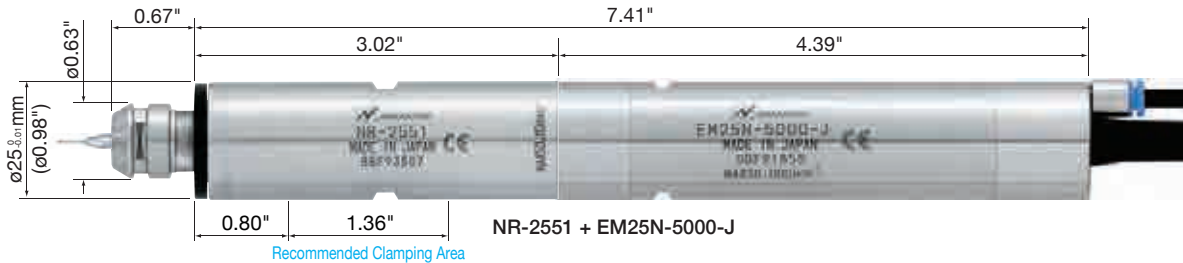
E2000 Series $\varnothing 1.0''$, $\varnothing 0.98''$ ($\varnothing 25.4$, $\varnothing 25$ mm) System Chart

● 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

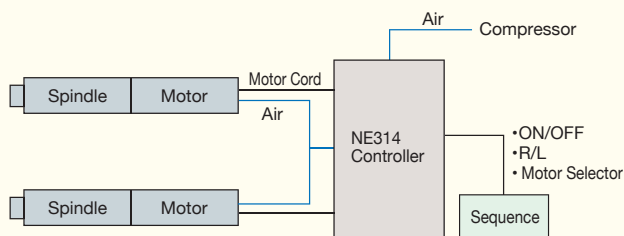
The housings of the motor and spindle are made from precision ground stainless steel (SUS416).

● 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
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
iSpeed5
HTS
PLANET
Xpeed
ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL
DATA

8

APPLICATION
EXAMPLES

INDEX

1

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

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"

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	

4

HES
 iSpeed5
 HTS
 PLANET
 Xpeed
 ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

8

APPLICATION EXAMPLES

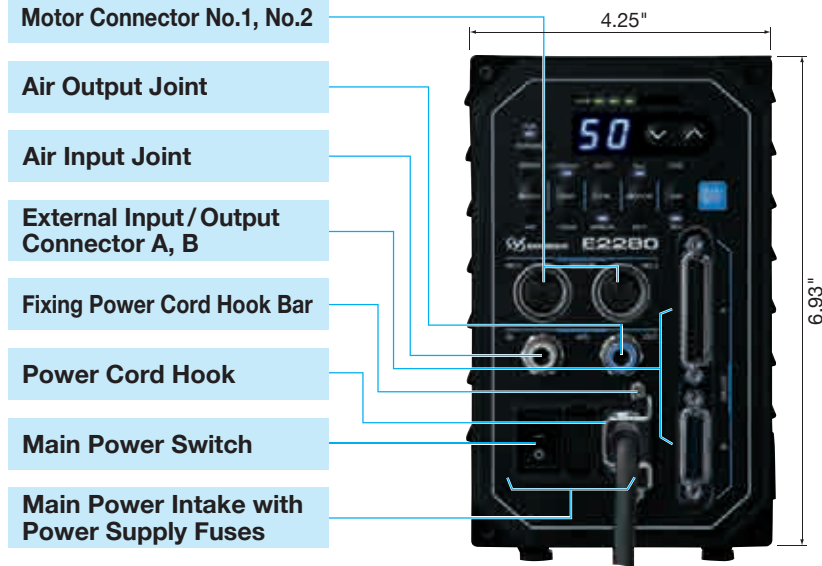
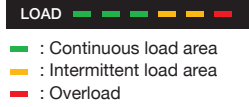
INDEX

E2000 SERIES CONTROLLER

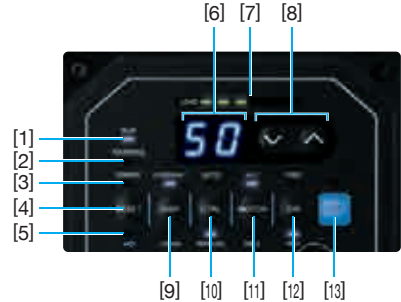
- 1,000~50,000 rpm ● Maximum Output 200W
- 2 motors can be connected (No Simultaneous Operation).
- External Input / Output Control Signal (Refer to 7-p10~p17 page of this catalog)

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

* : Load Monitor




- [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

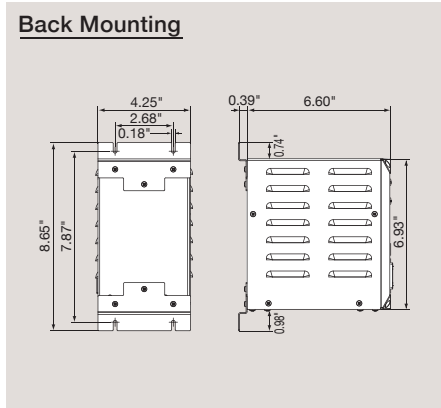
Product Code	Plug Type	Product Name	Standard Equipment · Accessories
7720	100 - 240V (Without Plug) 	NE314	<ul style="list-style-type: none"> • Power Cord · ø6mm Air Hose with Filter · Power Cord Hook · Reducer • Connector Cap (Provided) : 2 pcs. · Connector Cover A / B (Provided) • Bracket : 2 pcs.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

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

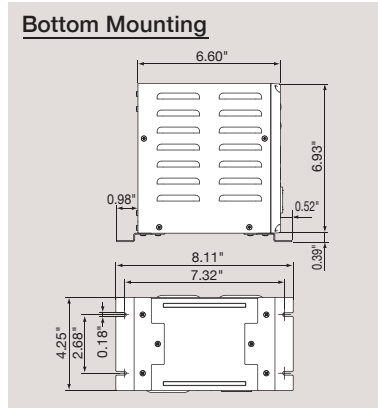
Interface Cable
 Page 2-p24 

● Mounting Bracket

Back Mounting



Bottom Mounting



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

1
EmaxEV
ESPRT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
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
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

E2000 SERIES $\phi 0.98"$ ($\phi 25$ mm) MOTOR

EM Product Symbol	25 Outside Diameter	N Clutch	-	5000 Max. Motor Speed	-	J Cord Variety	N = ⊕ Clutch
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New Model Name for E2000 Series Motor

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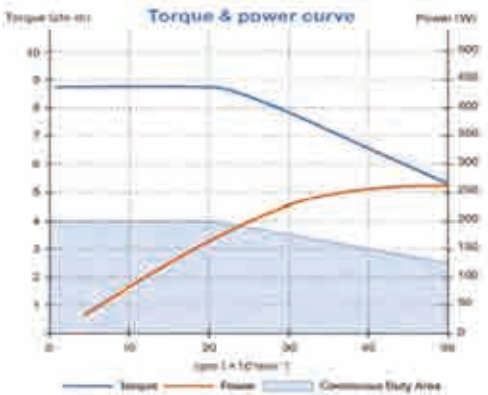
- Motor Speed 1,000~50,000 rpm
- Max. Output Power 250W
- Housing Stainless steel (SUS416)
- Cord Length 1 ft
- Air Coolant Hose Length 1 ft
- Weight 8.92 oz.

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"> • Cord with Quick Disconnect • Air Coolant Hose • Reducer • Wrench (22 x 27) : 1 pc.

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

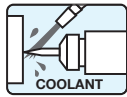
Torque Characteristics of EM25N-5000-J



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"> • Air Hose • Connector Cap (Provided) 	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)		

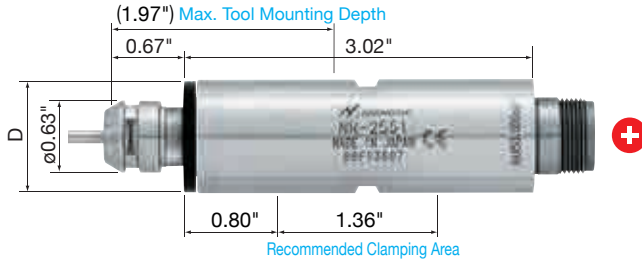
E2000 SERIES $\phi 1.0''$, $\phi 0.98''$ ($\phi 25.4$, $\phi 25$ mm) MOTOR



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.

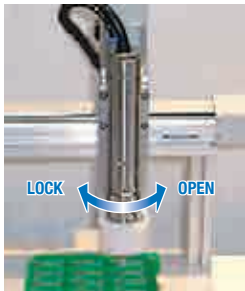
- Allowable Motor Speed 50,000 rpm
- Spindle Accuracy Within 1 μ m
- Weight 8.92 oz.
- **Additional collet purchase required:**
 - Collet Series CHK-XX $\phi 0.5$ mm~ $\phi 6.35$ mm
 - Recommended CHK-3.175 $\phi 1/8''$ (See Page 6-p3 for additional sizes)
- Collet Nut (K-265) For Collet (CHK)
- Metal 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)

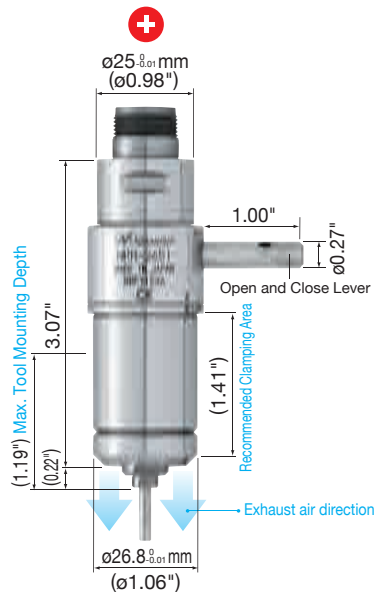
Product Code	Product Name	Outside Diameter	Standard Equipment - Accessories
7854	NR-H2551	$\phi 1.0''$ ($\phi 25.4$ mm)	• Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs., (22 x 27) : 1 pc.
7853	NR-2551	$\phi 0.98''$ ($\phi 25$ mm)	

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 μ 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
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

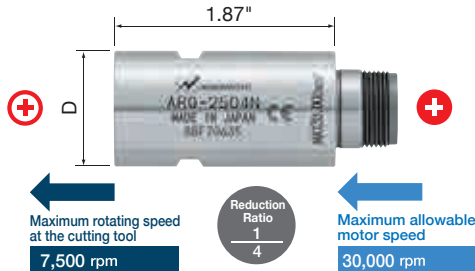
E2000 SERIES $\phi 0.98''$ ($\phi 25$ mm) SPEED REDUCER



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
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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**

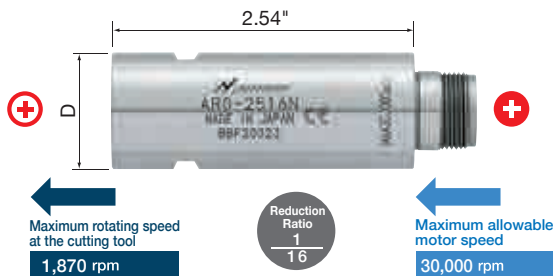
- Speed Reducing Mechanism By planetary gear system
- Weight 5.29 oz.

- 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

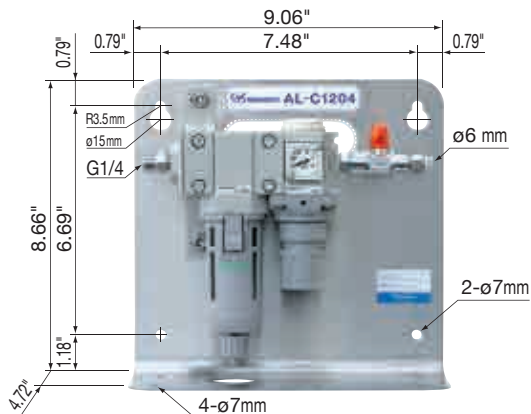


- 3 Meter long Interface Cable provides a DB15 Male Connector at one end and a blunt cut on the opposite end. Includes a pin-out wire diagram for easy interfacing of the (OP1) "E-Stop Input Circuit" and "Safety Relay Circuit" from the NSK Control to a CNC Control.

15 Pin Interface Cable

Product Code	Product Name	
DB15M	DB15M	For NSK Control Connector B

Product Code 4504 AIR LINE KIT AL-C1204



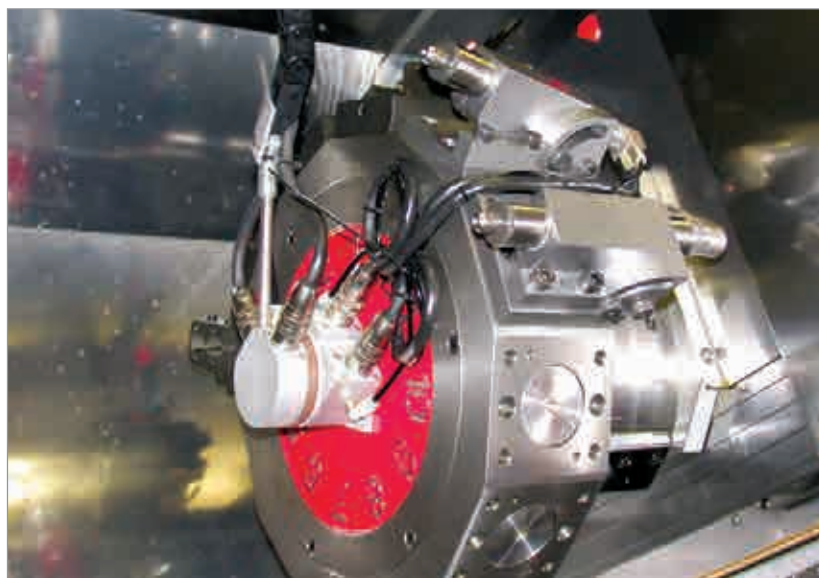
- The AL-C1204 Air Line Kit is designed to deliver clean, dry air to Electric Motors via the Controller. The filter removes small amounts of debris while the adjustable regulator provides the correct air pressure for cooling and purging.

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"> • Air Filter • Air Regulator • Air Pressure Gauge • Air ON-OFF Valve • Hose for Piping (K-275) : 6 ft

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

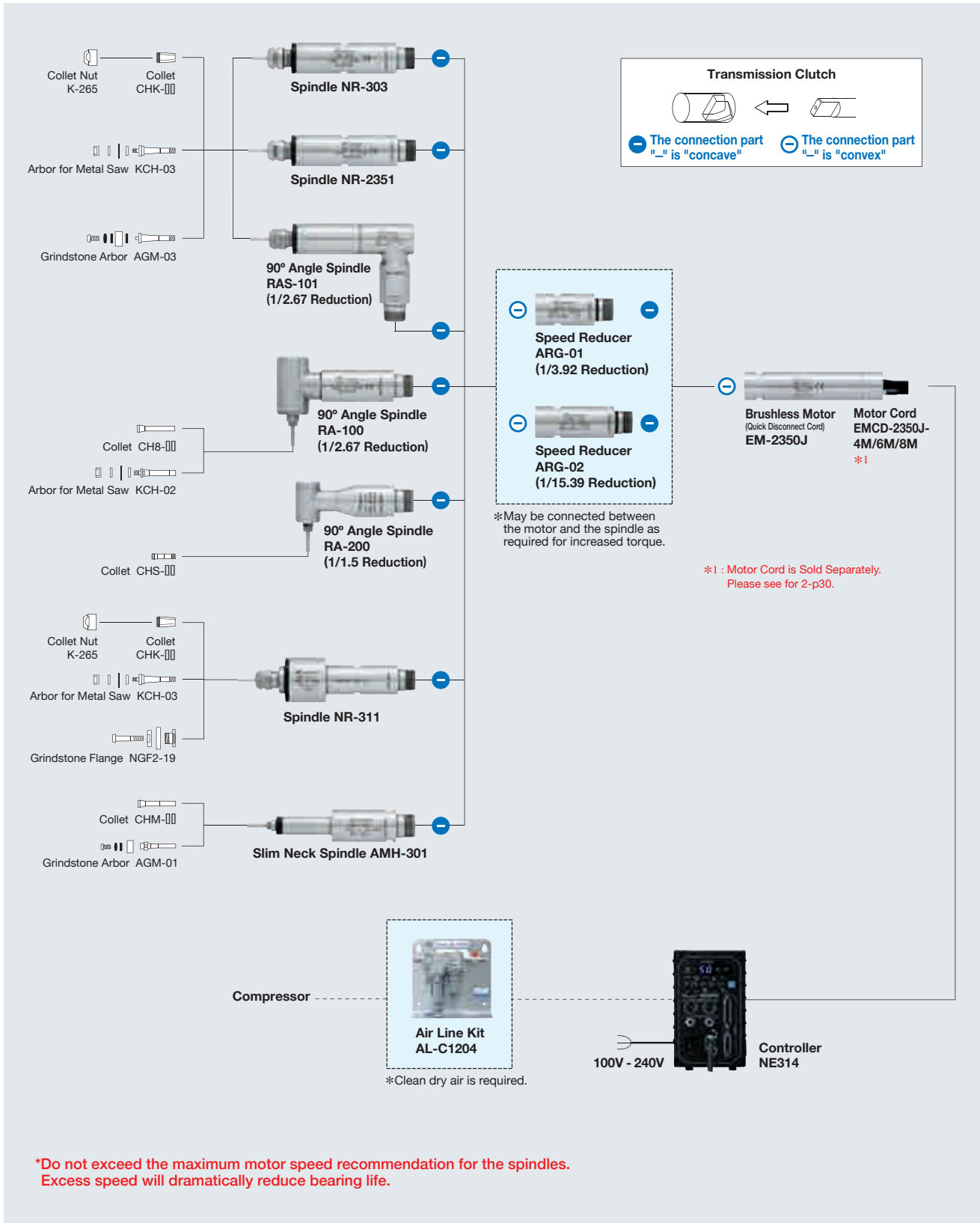
8

APPLICATION
EXAMPLES

INDEX

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"
∅0.81" ∅0.83"
∅1.0" ∅0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

E2000 Series ∅0.897" (∅22.8 mm) System Chart



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

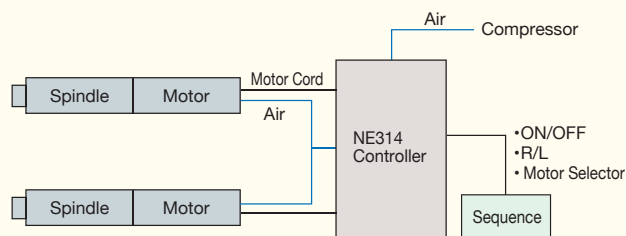
The housings of the motor and spindle are made from precision ground stainless steel (SUS416).

● 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

E3000

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E4000

E2000 SERIES COMBINATION EXAMPLE

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"
ø0.871" 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

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	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

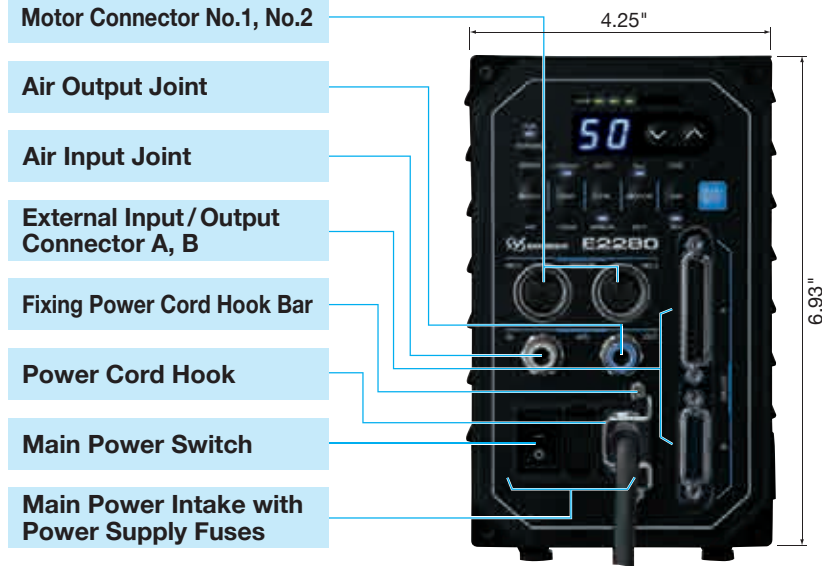
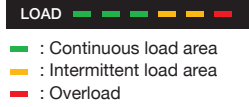
Product Code	Product Name	Product	
7720	NE314	Controller	
7721	EM-2350J	Brushless Motor	
7855	NR-2351	Spindle	
4504	AL-C1204	Air Line Kit	

E2000 SERIES CONTROLLER

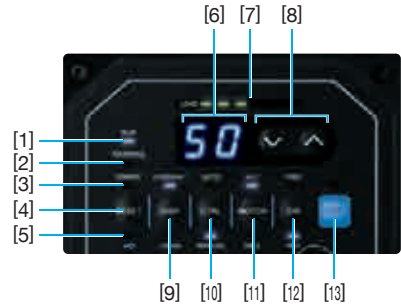
- 1,000~50,000 rpm
- Maximum Output 200W
- 2 motors can be connected (No Simultaneous Operation).
- External Input / Output Control Signal (Refer to 7-p10~p17 page of this catalog)

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

* : Load Monitor




- [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

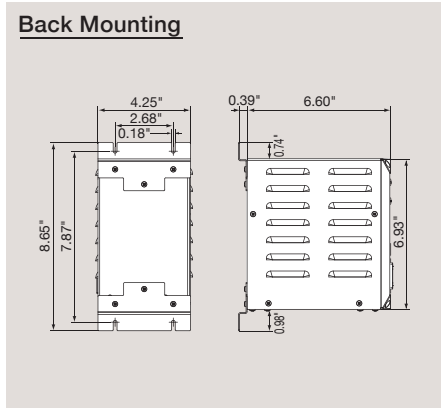
Product Code	Plug Type	Product Name	Standard Equipment · Accessories
7720	100 - 240V (Without Plug) 	NE314	<ul style="list-style-type: none"> • Power Cord · ø6mm Air Hose with Filter · Power Cord Hook · Reducer • Connector Cap (Provided) : 2 pcs. · Connector Cover A / B (Provided) • Bracket : 2 pcs.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

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

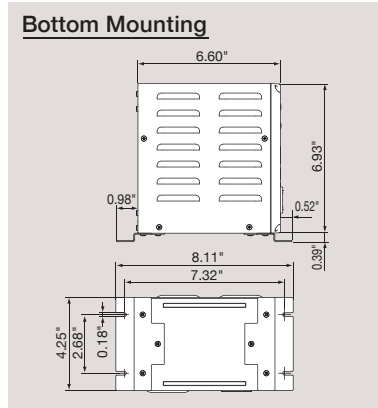
Interface Cable
 Page 2-p24 

● Mounting Bracket

Back Mounting



Bottom Mounting



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

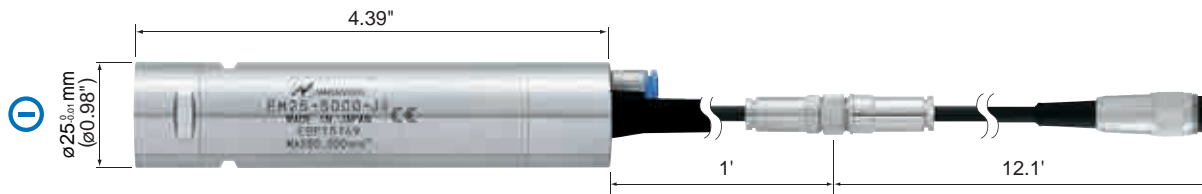
1
EmaxEV
ESPRT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
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MA
ø0.897"
ø1.0" ø0.98"
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ø0.81" 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
INDEX

E2000 SERIES BRUSHLESS MOTOR

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

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
8333	EM25-5000-J4	ø0.98" (ø25 mm)	<ul style="list-style-type: none"> • Cord with Quick Disconnect • Air Coolant Hose • Reducer • Wrench (22 x 27) : 1 pc.

*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)

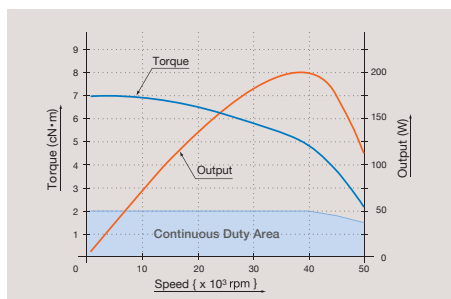
Brushless Motor

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

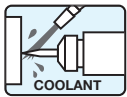
Motor Cord

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"> • Air Hose • Connector Cap (Provided) 	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)		

Torque Characteristics of EM-2350J



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

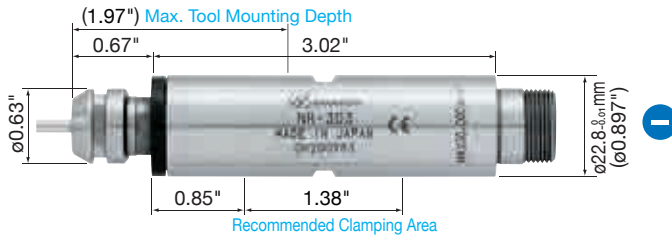


E2000 Series can be used in conjunction with water or oil based coolants.

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 μ 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.*

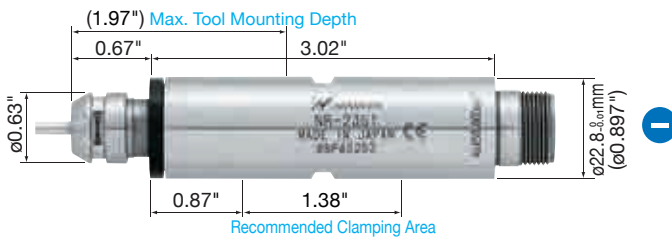
Spindle

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

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 μ 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"> Collet Nut (K-265) : 1 pc. Wrench (12 x 14) : 2 pcs., (20 x 24) : 1 pc. 	

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

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

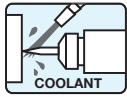
TECHNICAL DATA

8

APPLICATION EXAMPLES

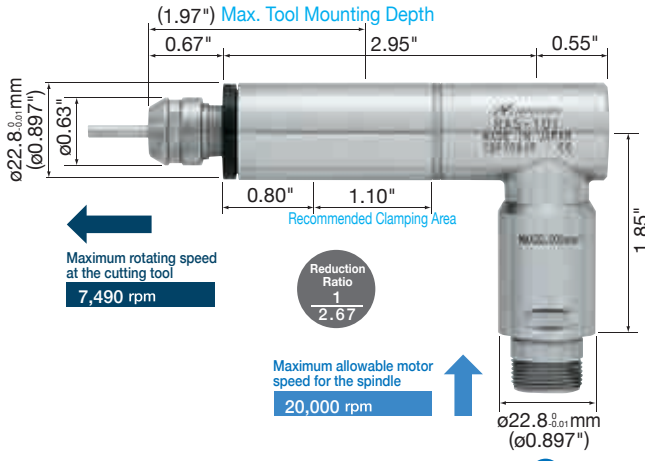
INDEX

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**

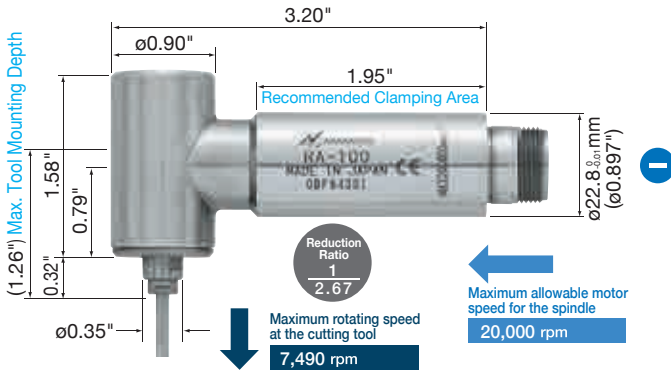
- Spindle Accuracy Within 2 μ m
- Weight 11.46 oz.
- **Additional collet purchase required:**
 - Collet Series CHK-XX $\phi 0.5$ mm~ $\phi 6.35$ mm
 - Recommended CHK-3.175 $\phi 1/8"$
(See Page 6-p3 for additional sizes)
 - Collet Nut (K-265) For Collet (CHK)
 - Metal Saw Arbor (KCH-03) For $\phi 0.24"$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

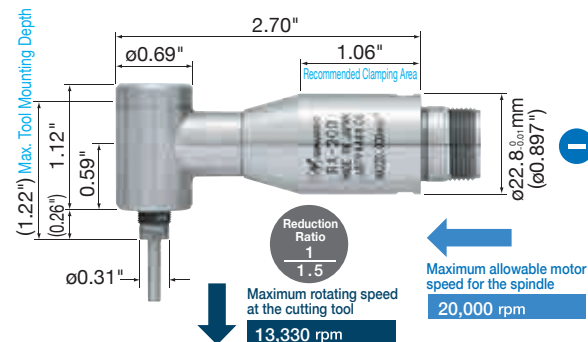
- Standard Size Collet (CH8-3.175) $\phi 1/8"$
- Weight 9.56 oz.
- < Optional >
 - Collet (CH8-□□) $\phi 0.8$ mm~ $\phi 3.175$ mm
(See Page 6-p5 for details)
 - Metal Saw Arbor (KCH-02) For $\phi 0.24"$ (I.D.) x $\phi 1.18"$ (O.D.)

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**

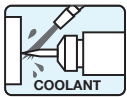
Maximum rotating speed at the cutting tool
<Reduction Ratio : 1/1.5> **13,330 rpm**

- 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.

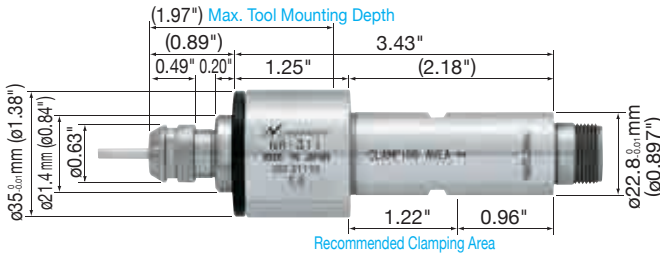
- This spindle can be used for working on corners difficult to work or unfit for working with straight type, drilling on side face, etc.



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 μm
- 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

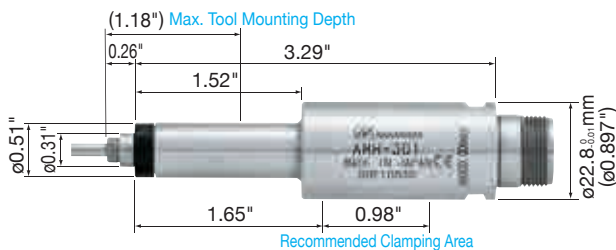
Spindle

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

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"> • Collet $\phi 1/8$" (CHM-3.175) : 1 pc. • Wrench (7 x 5.1), (6 x 4.5), (20 x 24) : 1 pc. each 	

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

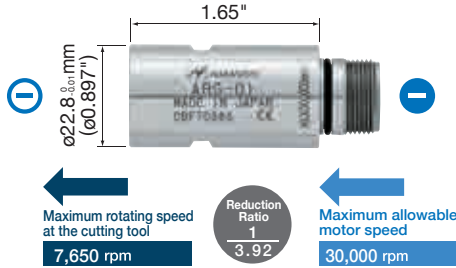
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EmaxEV
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0"/\phi 0.98"/\phi 0.897$
E3000 - One Piece
E3000 - Modular
$\phi 1.18"$
$\phi 1.07"/\phi 0.98"/\phi 0.897$
E3000 - 30,000rpm
E4000
3
MA
$\phi 0.897"$
$\phi 1.0"/\phi 0.98"$
$\phi 1.18"$
MS
$\phi 0.75"/\phi 0.719"$
$\phi 0.81"/\phi 0.811"$
$\phi 1.0"/\phi 0.98"$
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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**

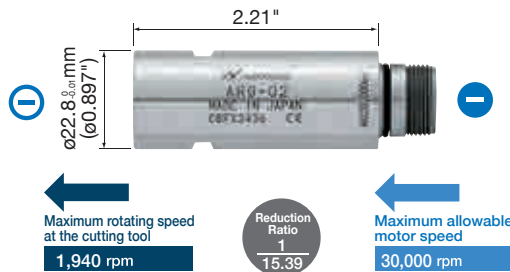
- Speed Reducing Mechanism By planetary gear system
- Weight 3.81 oz.

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

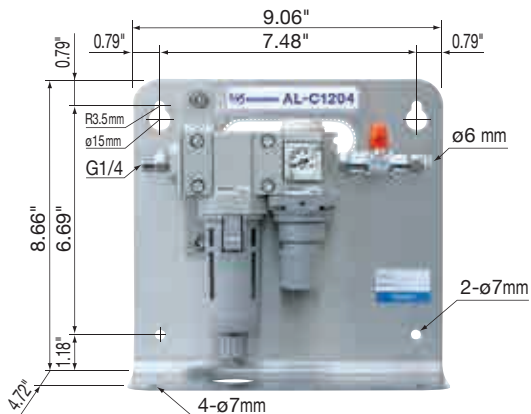


- 3 Meter long Interface Cable provides a DB15 Male Connector at one end and a blunt cut on the opposite end. Includes a pin-out wire diagram for easy interfacing of the (OP1) "E-Stop Input Circuit" and "Safety Relay Circuit" from the NSK Control to a CNC Control.

15 Pin Interface Cable

Product Code	Product Name	
DB15M	DB15M	For NSK Control Connector B

Product Code 4504 AIR LINE KIT AL-C1204



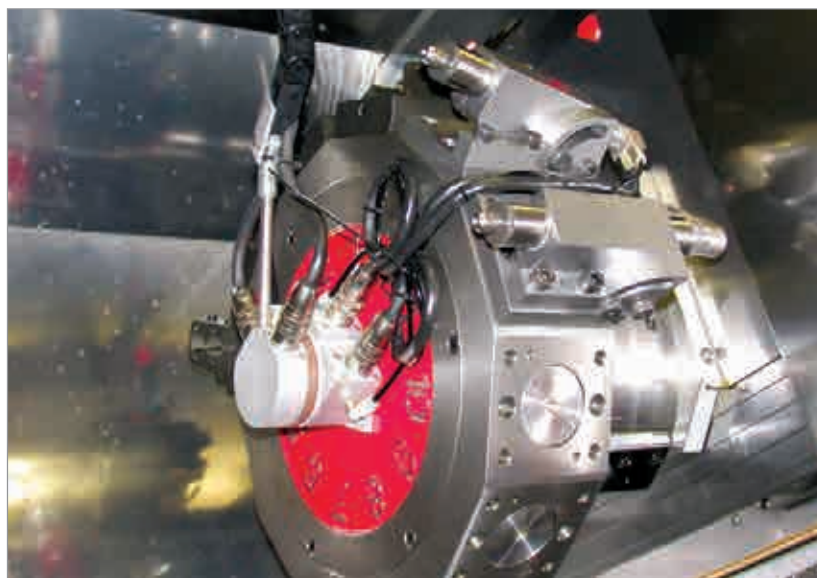
- The AL-C1204 Air Line Kit is designed to deliver clean, dry air to Electric Motors via the Controller. The filter removes small amounts of debris while the adjustable regulator provides the correct air pressure for cooling and purging.

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"> • Air Filter · Air Regulator • Air Pressure Gauge • Air ON-OFF Valve • Hose for Piping (K-275) : 6 ft 	

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 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
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

TO INFINITY AND BEYOND

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

TECHNICAL
DATA

8

APPLICATION
EXAMPLES

INDEX



E-Speed

The Possibilities Are Endless
with the Versatile E-Speed

1,000~60,000 rpm

● One Piece Type

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

● Modular Type

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

1,000~80,000 rpm

● Modular Type






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



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 - 80,000rpm
E4000
3
MA
$\varnothing 0.897''$
$\varnothing 1.0''$ $\varnothing 0.98''$
$\varnothing 1.18''$
MS
$\varnothing 0.75''$ $\varnothing 0.73''$
$\varnothing 0.87''$ $\varnothing 0.91''$
$\varnothing 1.0''$ $\varnothing 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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	ø0.98" (ø25mm)	EM30-S6000	CHK		2-p48
		EM25-S6000	CHA		2-p48
		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

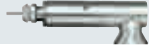







Modular Type

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		NR-403E	CHK	2-p59	60,000 EM-3060J	2-p55
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	50,000 EM25-5000-J4	2-p30
	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
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80,000		2-p74
EM-3080J		

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
iSpeed5
HTS
PLANET
Xspeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL
DATA

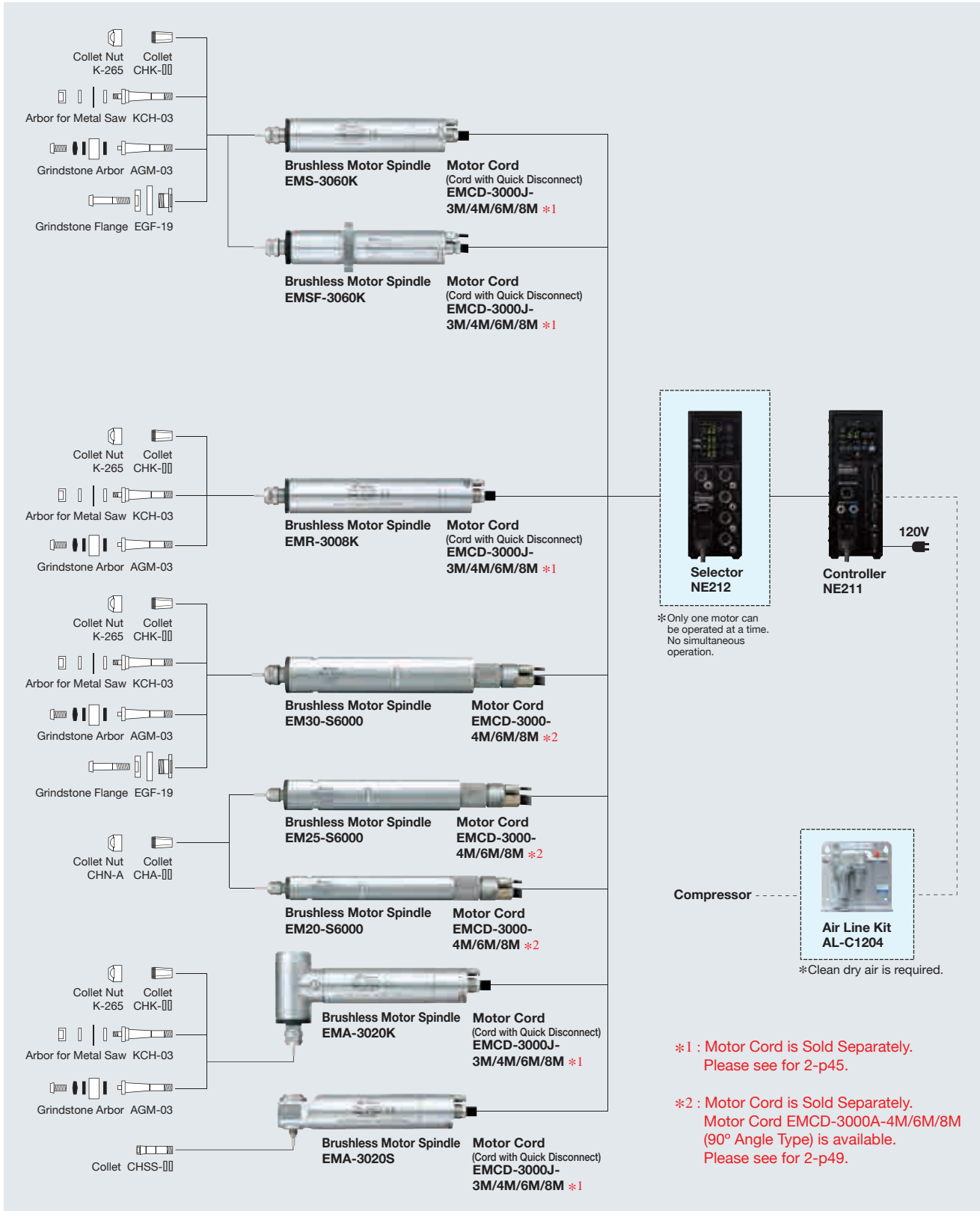
8

APPLICATION
EXAMPLES

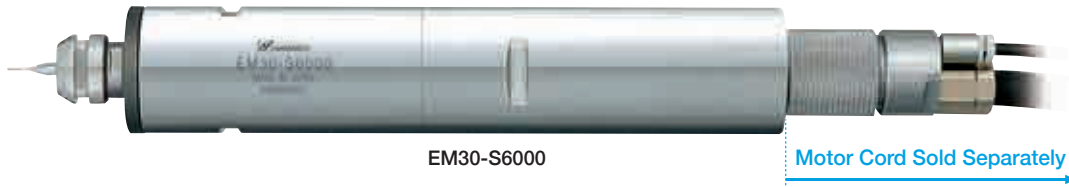
INDEX

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
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

One Piece Type - System Chart



Features of E3000 Series



EM30-S6000

Motor Cord Sold Separately

● 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 μ 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

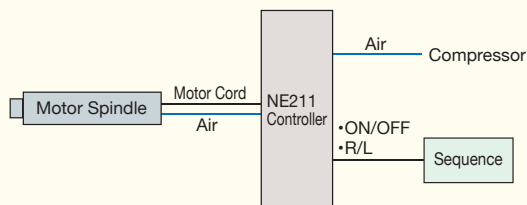
E2280 motor & spindle can be used with E3000 controller. {Less than 50,000 rpm}

● $\phi 0.897"$ ($\phi 22.8$ mm) Spindle Usage

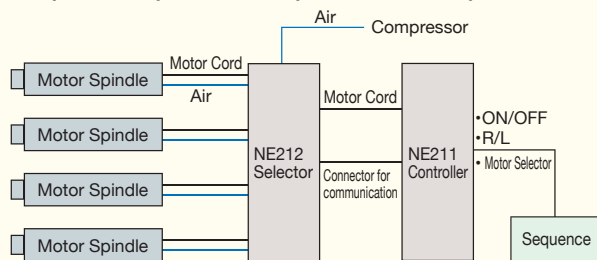
Use $\phi 0.897"$ ($\phi 22.8$ mm) spindles from our general catalog and an EM25-5000-J4 and EM-2350J motors { $\phi 0.98"$ ($\phi 25$ mm) 200W} with NE211.

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

$\phi 0.75"$

$\phi 0.79"$

$\phi 0.897"$

$\phi 0.98"$

$\phi 1.0"$

$\phi 0.98"$

4

HES

iSpeed5

HTS

PLANET

Xspeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL

DATA

8

APPLICATION

EXAMPLES

INDEX

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 ø6 mm

Air Input Joint ø6 mm

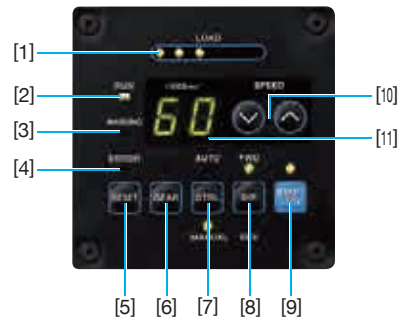
Power Switch

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 : 1,000-60,000 rpm
 Max. Output Power : 350W (For ø1.18")
 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"

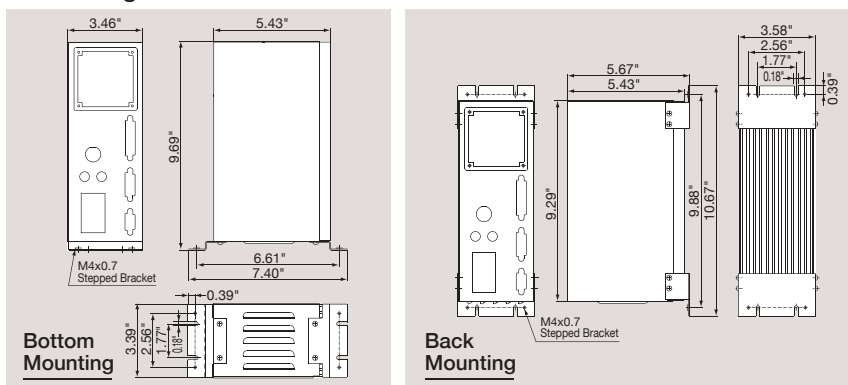
E3000 Controller

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

*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

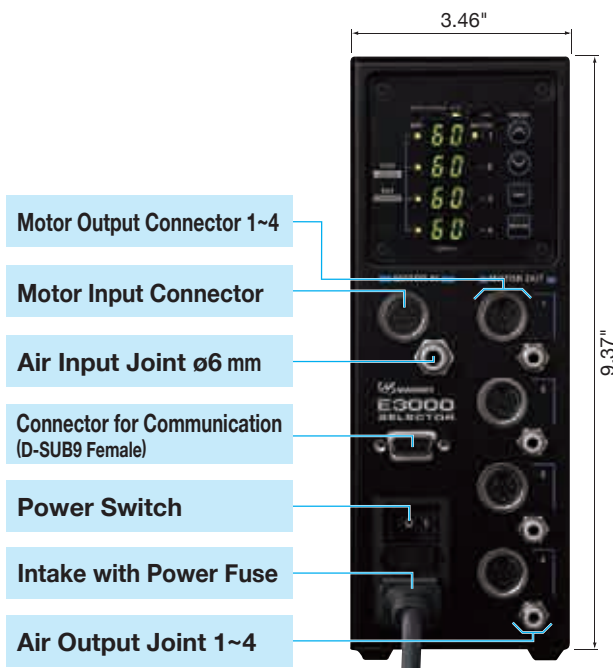
Product Code	Product Name	Fit to
DB25M	DB25M	NE211
DB25MXL	DB25MXL	NE211
DB15M	DB15M	NE211

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)

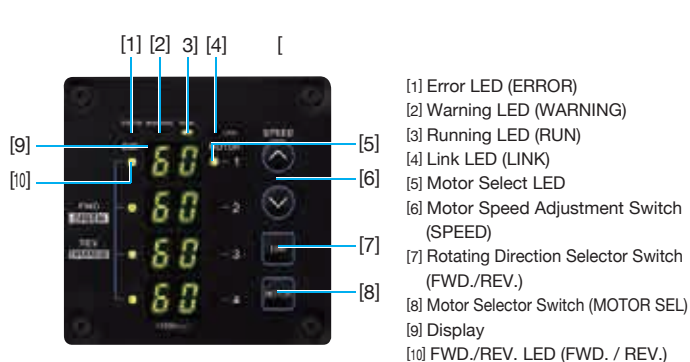
Product Code **9781** **SELECTOR NE212**

60,000 rpm

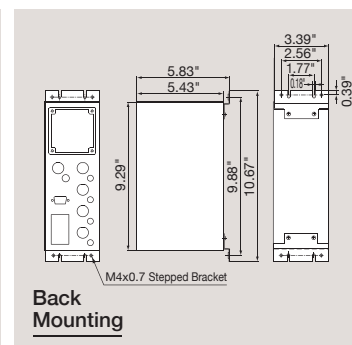
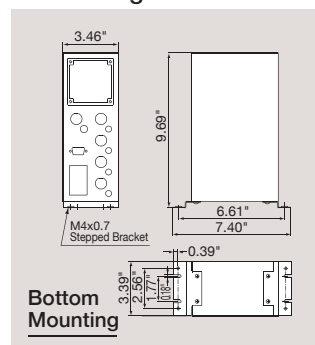


Specifications

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"> • Power Cord : 6 ft • Connect NE211 to NE212 Cable : 23.62" • Communication Cable : 23.62" • Connector Cap (Provided) • Plug to avoid Air Flow • Bracket • Nylon Clip • Screw • Rubber Pad • Fuse (T1.6AL) 250V: 2 pcs.

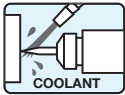
*Power Source for Global Operation (AC100-240V). Please check the power source plug type and order accordingly.

● 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
- AIR LINE KIT
- 6
- PARTS
- 7
- TECHNICAL DATA
- 8
- APPLICATION EXAMPLES
- INDEX

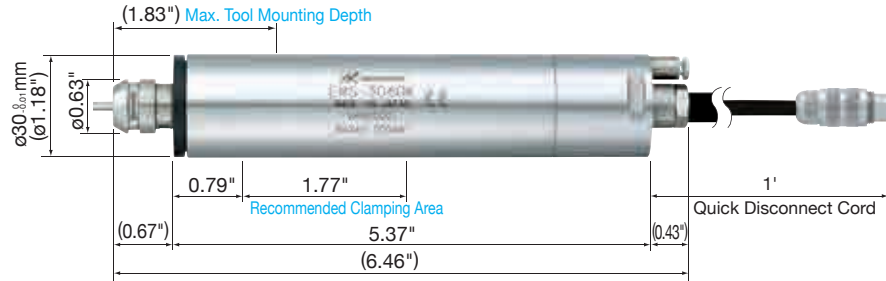
E3000 SERIES $\phi 1.18''$ ($\phi 30$ mm) BRUSHLESS MOTOR SPINDLE



E3000 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 $\phi 1.07''/\phi 0.98''/\phi 0.897''$
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 $\phi 0.897''$ $\phi 1.0''/\phi 0.98''$ $\phi 1.18''$
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
APPLICATION EXAMPLES
INDEX

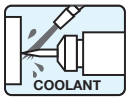
Product Code 7862 BRUSHLESS MOTOR SPINDLE EMS-3060K 60,000 rpm



- Motor Speed 60,000 rpm
- Spindle Accuracy Within 1 μ 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

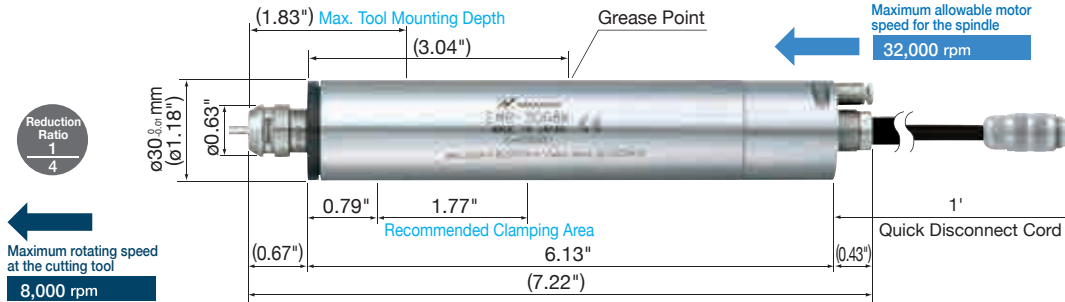
Brushless Motor Spindle

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



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 μ m
- Max. Output Power 350W
- Weight 1 lb. 6.93 oz.
- **Additional collet purchase required:**
 - Collet Series CHK-XX ϕ 0.5mm~ ϕ 6.35mm
Recommended CHK-3.175 ϕ 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 ϕ 0.24" (I.D.) x ϕ 1.18" (O.D.)
 - Grindstone Arbor (AGM-03) For grinding wheel with I.D. of ϕ 5 mm

Brushless Motor Spindle

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



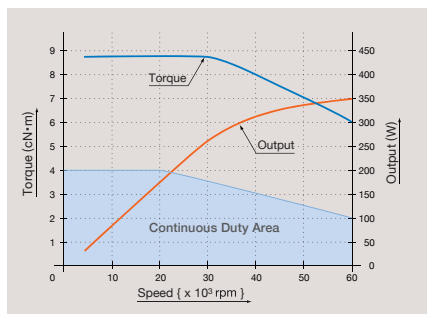
To extend the life expectancy of the Speed Reducer, inject grease every 70 to 100 hours. Grease injection prevents friction of the internal gears as well as heat generation. Adding grease also prevents the degradation of the existing grease in the reducer. Please maintain a reducer grease maintenance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

MOTOR CORD

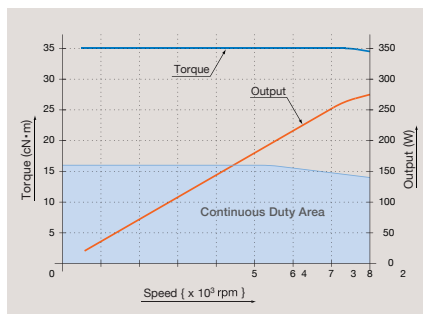
Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to
	1778	Motor Cord 3M EMCD-3000J-3M	10 ft (3.0m)	<ul style="list-style-type: none"> • Air Hose • Connector Cap (Provided) 	EMS-3060K EMR-3008K
	1768	Motor Cord 4M EMCD-3000J-4M	12.1 ft (3.7m)		
	1767	Motor Cord 6M EMCD-3000J-6M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

Torque Characteristics Graph

● EMS-3060K

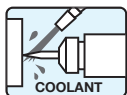


● EMR-3008K



1
EmaxEV
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ϕ 1.0"/ ϕ 0.98"/ ϕ 0.897"
E3000 - One Piece
E3000 - Modular
ϕ 1.18"
ϕ 1.07"/ ϕ 0.98"/ ϕ 0.897"
E3000 - 80,000rpm
E4000
3
MA
ϕ 0.897"
ϕ 1.0"/ ϕ 0.98"
ϕ 1.18"
MS
ϕ 0.75"/ ϕ 0.79"
ϕ 0.89"/ ϕ 0.91"
ϕ 1.0"/ ϕ 0.98"
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

E3000 SERIES $\phi 1.18"$ ($\phi 30$ mm) FLANGE TYPE BRUSHLESS MOTOR SPINDLE

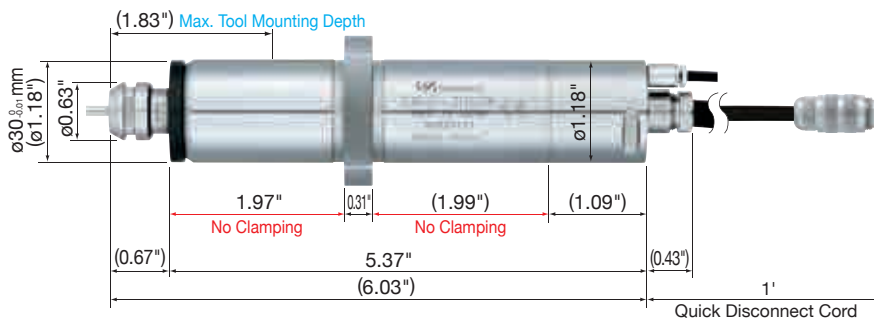
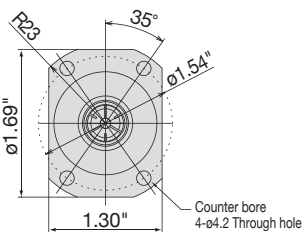
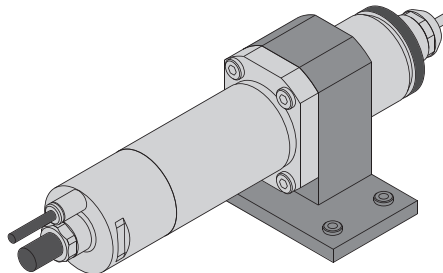


1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.07"/\phi 0.98"/\phi 0.897"$
E3000 - One Piece
E3000 - Modular
$\phi 1.18"$
$\phi 1.07"/\phi 0.98"/\phi 0.897"$
E3000 - $\phi 0.000$ rpm
E4000
3
MA
$\phi 0.897"$
$\phi 1.0"$ $\phi 0.96"$
$\phi 1.18"$
MS
$\phi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

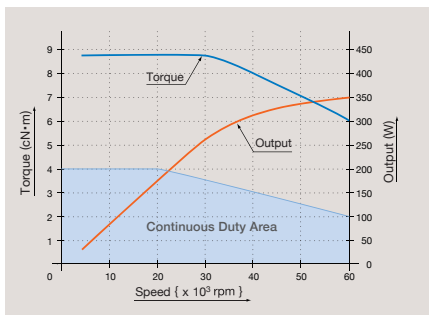
- Motor Cord Length 10 ft, 12.1 ft, 18.7 ft, 25.3 ft
- Metal Saw Arbor (KCH-03) For $\phi 0.24"$ (I.D.) x $\phi 1.18"$ (O.D.)
- Grindstone Arbor (AGM -03) For grinding wheel with I.D. of $\phi 5$ mm
- Grindstone Flange (EGF-19) $\phi 19.05$ (I.D.) x $\phi 40$ (O.D.) x 7 (W)mm

Flange Type Brushless Motor Spindle


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

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"> · Air Hose · Connector Cap (Provided) 	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

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"

ø1.0"/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"

ø0.91"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

ABT

5

AIR LINE KIT

6

6

PARTS

7

7

TECHNICAL

DATA

8

8

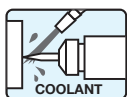
APPLICATION

EXAMPLES

INDEX

INDEX

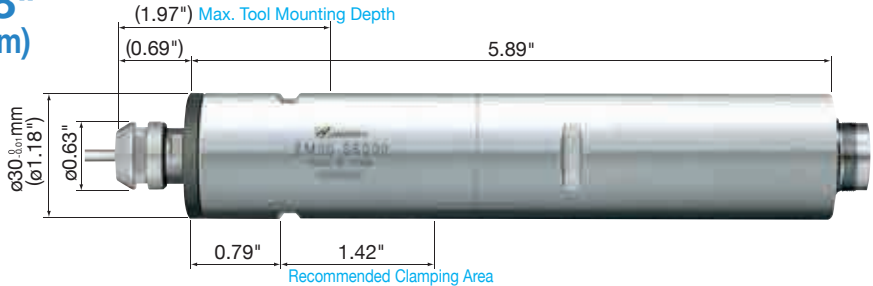
E3000 SERIES BRUSHLESS MOTOR SPINDLE



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"
ø1.0"/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

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.

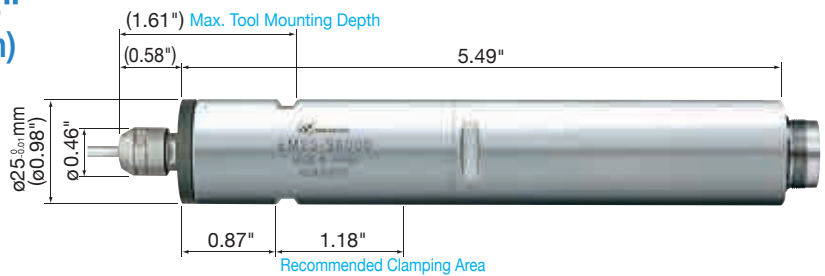
- Motor Cord Length 13 ft, 19 ft, 26 ft
- Metal Saw Arbor (KCH-03) For ø0.24" (I.D.) x ø1.18" (O.D.)
- Grindstone Arbor (AGM -03) For grinding wheel with I.D. of ø5 mm
- Grindstone Flange (EGF-19) ø19.05 (I.D.) x ø40 (O.D.)x 7 (W)mm

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)



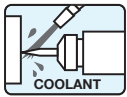
- Motor Speed 60,000 rpm
- Spindle Accuracy Within 1 µm
- Max. Output Power 250 W
- Weight 13.23 oz.

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	
7860	EM20-S6000	<ul style="list-style-type: none"> • Collet Nut (CHN-A) : 1 pc. • Wrench (8 x 5) : 1 pc. • Wrench (9 x 11) : 1 pc. 	

MOTOR CORD Straight Type

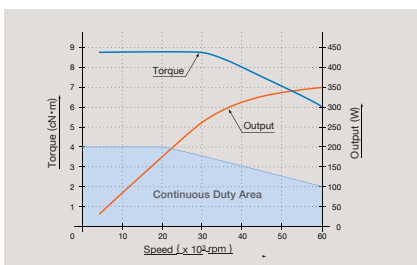
Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to
	1748	Motor Cord 4M EMCD-3000-4M	13 ft	<ul style="list-style-type: none"> • Air Hose • Connector Cap (Provided) 	EM30-S6000 EM25-S6000 EM20-S6000
	1749	Motor Cord 6M EMCD-3000-6M	19 ft		
	1750	Motor Cord 8M EMCD-3000-8M	26 ft		

MOTOR CORD 90° Angle Type

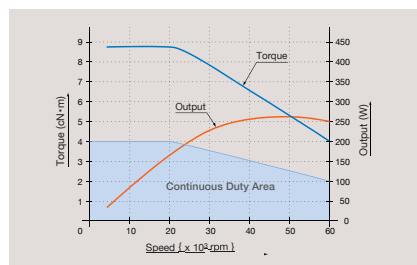
Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to
	1744	Motor Cord 4M EMCD-3000A-4M	13 ft	<ul style="list-style-type: none"> • Air Hose • Connector Cap (Provided) 	EM30-S6000 EM25-S6000 EM20-S6000
	1743	Motor Cord 6M EMCD-3000A-6M	19 ft		
	1742	Motor Cord 8M EMCD-3000A-8M	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

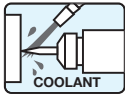
5
AIR LINE KIT

6
PARTS

7
TECHNICAL DATA

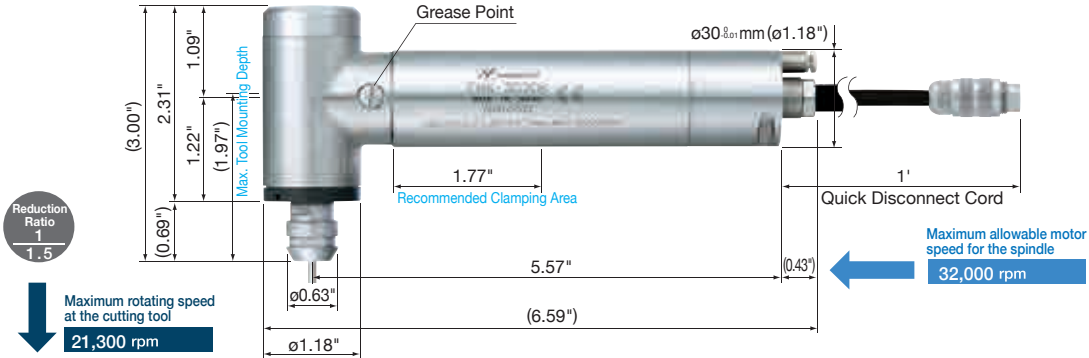
8
APPLICATION EXAMPLES
INDEX

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 μ 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

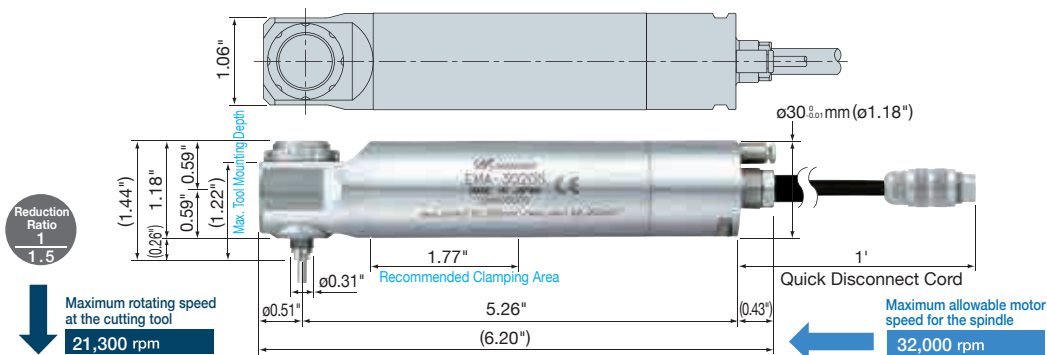
90° Angle Brushless Motor Spindle

Product Code	Product Name	Standard Equipment · Accessories	
7874	EMA-3020K	<ul style="list-style-type: none"> • Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs. • Gear Grease (10 mL) · 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 **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 μ 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

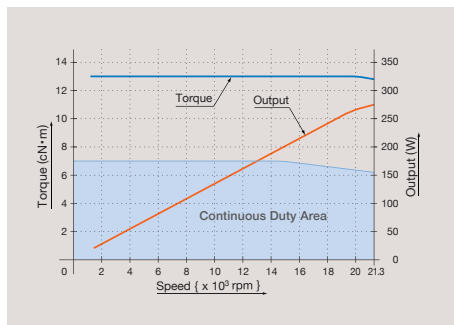
Product Code	Product Name	Standard Equipment · Accessories	
7605	EMA-3020S	<ul style="list-style-type: none"> • Collet $\phi 1/8''$ (CHSS-3.175) : 1 pc. • Wrench (7 x 5.1), (8 x 6.1) : 1 pc. each 	

MOTOR CORD

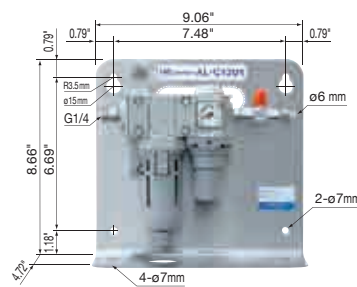
Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to
	1778	Motor Cord 3M EMCD-3000J-3M	10 ft (3.0m)	• Air Hose • Connector Cap (Provided)	EMA-3020K EMA-3020S
	1768	Motor Cord 4M EMCD-3000J-4M	12.1 ft (3.7m)		
	1767	Motor Cord 6M EMCD-3000J-6M	18.7 ft (5.7m)		
	1766	Motor Cord 8M EMCD-3000J-8M	25.3 ft (7.7m)		

Torque Characteristics Graph

- EMA-3020K, EMA-3020S



Product Code 4504 AIR LINE KIT AL-C1204



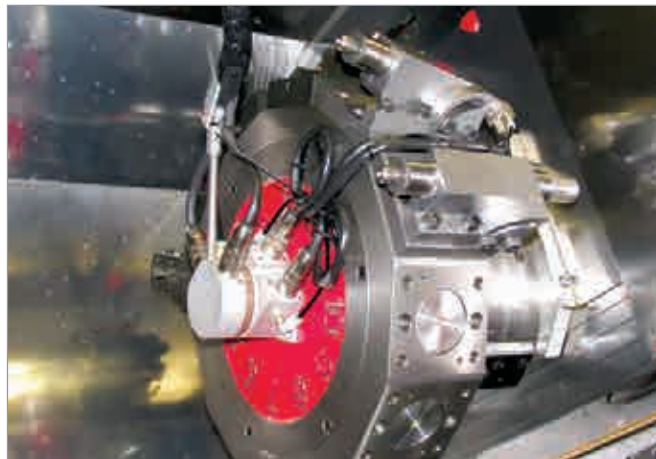
- The AL-C1204 Air Line Kit is designed to deliver clean, dry air to Electric Motors via the Controller. The filter removes small amounts of debris while the adjustable regulator provides the correct air pressure for cooling and purging.

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

Product Code	Product Name	Standard Equipment · Accessories
4504	AL-C1204	• Air Filter · Air Regulator • Air Pressure Gauge • Air ON-OFF Valve • Hose for Piping (K-275) : 6 ft

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
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

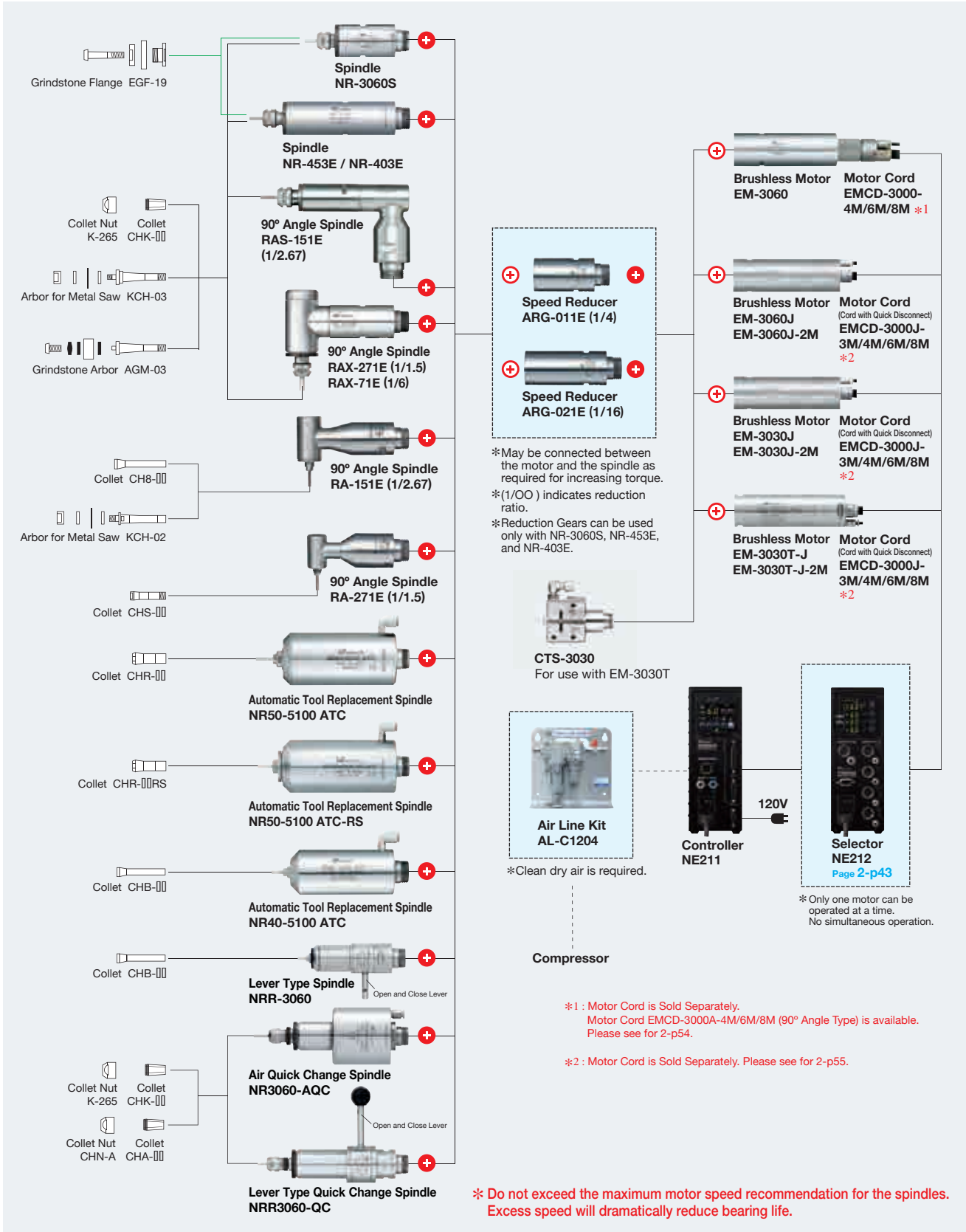
8

APPLICATION EXAMPLES

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 ∅1.18" (∅30 mm) System Chart



1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ∅1.07"/∅0.98"/∅0.897"
E3000 One Piece
E3000 Modular
∅1.18"
∅1.07"/∅0.98"/∅0.897"
E3000 ∅0.000rpm
E4000
3
MA ∅0.897"
∅1.0"/∅0.96"
∅1.18"
MS ∅0.75"/∅0.79"
∅0.87"/∅0.83"
∅1.0"/∅0.96"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

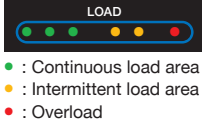
E3000 SERIES CONTROLLER

- AC100-240V for international operation
- 1,000~60,000 rpm
- Maximum Output 350W
- $\phi 0.79''(\phi 20 \text{ mm})$, $\phi 0.897''(\phi 22.8 \text{ mm})$, $\phi 0.98''(\phi 25 \text{ mm})$, $\phi 1.0''(\phi 25.4 \text{ mm})$, $\phi 1.18''(\phi 30 \text{ mm})$ 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 $\phi 6 \text{ mm}$

Air Input Joint $\phi 6 \text{ mm}$

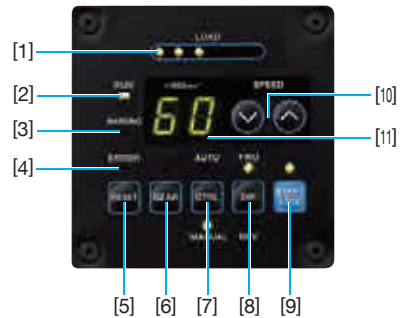
Power Switch

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"> • Power Cord : 6 ft • Air Hose with filter • Reducer • Connector Cap (Provided) • Bracket • Nylon Clip • Screw • Rubber Pad • Fuse (T6.3AL) 250V: 2 pcs.

*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

EmaxEVO

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

PARTS

7

TECHNICAL DATA

8

APPLICATION EXAMPLES

INDEX

E3000 SERIES $\phi 1.18''$ ($\phi 30$ mm) BRUSHLESS MOTOR

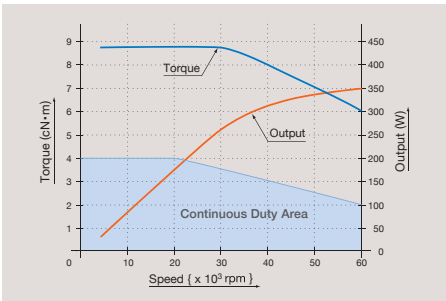
1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.0''/\phi 0.98''/\phi 0.897''$
E3000 - 60,000rpm
E4000
3
MA $\phi 0.897''$
$\phi 1.0''/\phi 0.98''$
$\phi 1.18''$
MS $\phi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

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

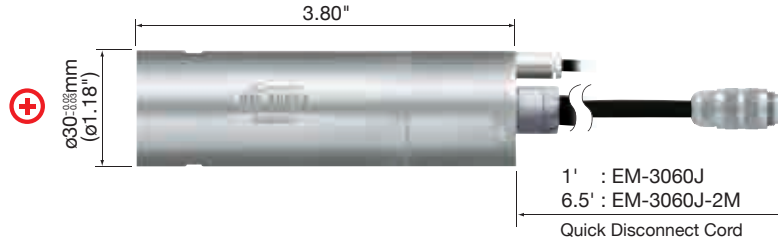
Product	Product Code	Description · Product Name	Length	Std. Accessories	Fit to	
	1744	Motor Cord 4M EMCD-3000A-4M	13 ft	• Air Hose • Connector Cap (Provided)	EM-3060	
	1743	Motor Cord 6M EMCD-3000A-6M	19 ft			
	1742	Motor Cord 8M EMCD-3000A-8M	26 ft			



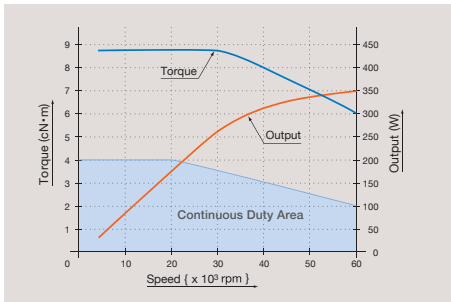
Caution : Brushless Motor with 6.5 ft (2 m) long quick disconnect cord can not used with EMCD-3000J-8M.

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

EmaxEVC

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus
ZERO

Sonic-Cutter
ZERO

2

iSpeed3

E2000

— 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"

ø1.0"

ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xspeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL
DATA

8

APPLICATION
EXAMPLES

INDEX

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

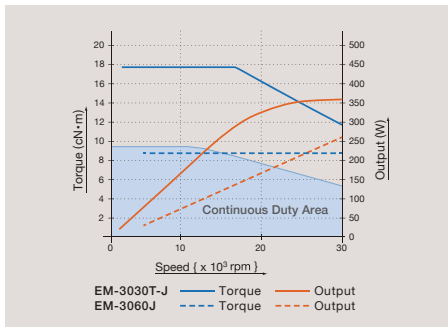
30,000 rpm

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



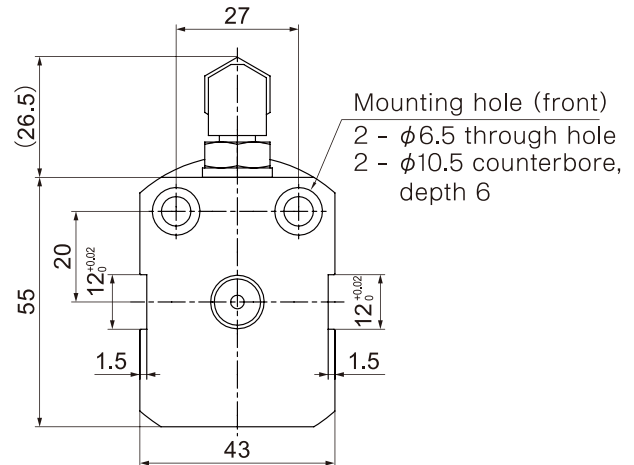
First letter : " D "

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 $\phi 3.0$, $\phi 3.175$, $\phi 4.0$ mm
- Spindle Accuracy Within 1 μ m

< Optional >

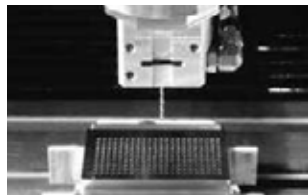
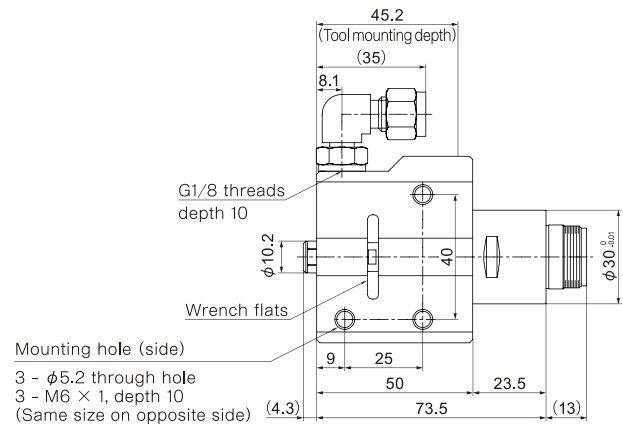
- Collet²: CHA-3.0AA (91494), CHA-3.175AA (91496), CHA-4.0AA (91495) Collet, CHA-3.0 (91430), CHA-3.175 (91493), CHA-4.0 (91440)
- Collet Nut: CHN-CTA-3.0 (7798), CHN-CTA-3.175 (7799), CHN-CTA-4.0 (7800)

Coolant Through Spindle

Product Code	Product Name	Standard Equipment · Accessories	
7797	CTS-3030	<ul style="list-style-type: none"> • Wrench (8 x 5): 1 pc. • Wrench (9 x 11): 1 pc. • Wrench (22 x 27): 1 pc. 	

The collet and the collet nut are sold separately. Please match the collet and collet nut size.

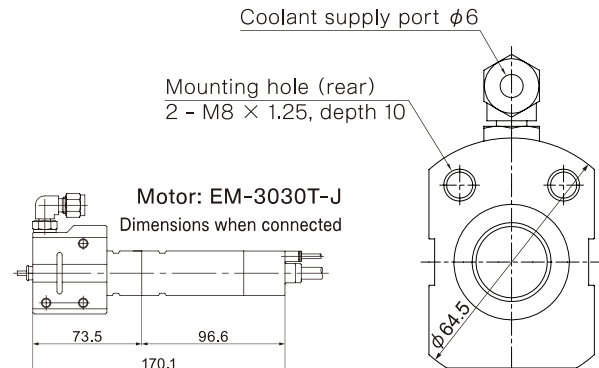
*2 High precision AA grade types are highly recommended.



S50C Drilling Example
Tool Diameter: $\phi 2.0$
Depth: 20mm, No Peck



Lathe Installation Image
When connected to the EM-3030T-J motor

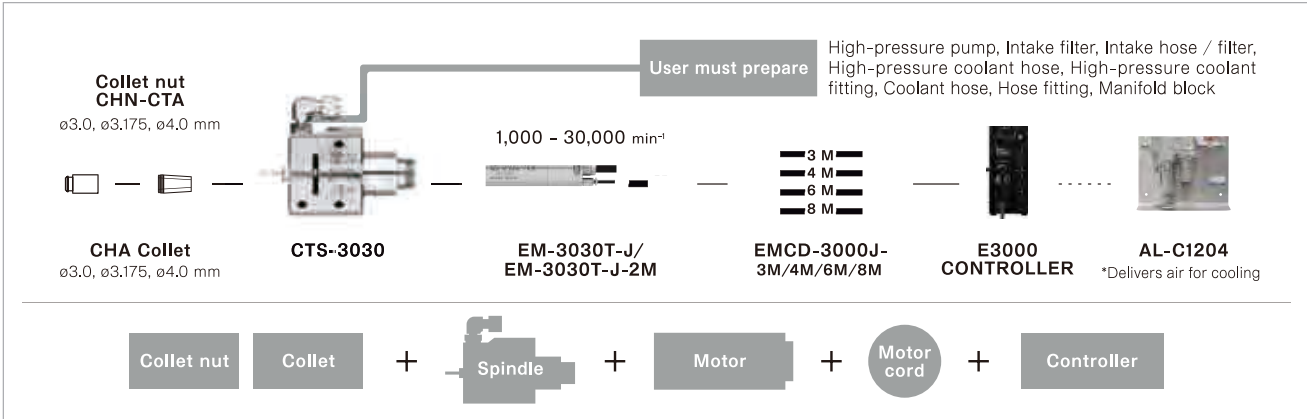


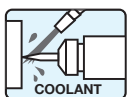
1
EmaxEVC
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000
$\phi 1.0^{\circ}/\phi 0.95^{\circ}/\phi 0.897^{\circ}$
E3000
- One Piece
E3000
- Modular
$\phi 1.18^{\circ}$
$\phi 1.0^{\circ}/\phi 0.98^{\circ}/\phi 0.897^{\circ}$
E3000
- 30,000rpm
E4000
3
MA
$\phi 0.897^{\circ}$
$\phi 1.0^{\circ}/\phi 0.98^{\circ}$
$\phi 1.18^{\circ}$
MS
$\phi 0.75^{\circ}/\phi 0.79^{\circ}$
$\phi 0.897^{\circ}/\phi 0.91^{\circ}$
$\phi 1.0^{\circ}/\phi 0.98^{\circ}$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

E3000 SERIES $\phi 1.18''$ ($\phi 30$ 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 $\phi 0.897''/\phi 0.81''/\phi 0.73''$
E4000
3
MA $\phi 0.897''$
$\phi 1.0''/\phi 0.98''$
$\phi 1.18''$
MS $\phi 0.75''/\phi 0.79''$
$\phi 0.897''/\phi 0.81''/\phi 0.73''$
$\phi 1.0''/\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

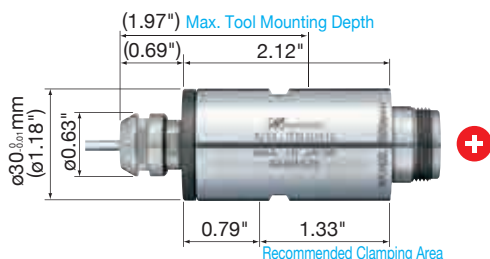
CTS-3030 CONNECTION DRAWING





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 μ m
- Weight 9.17 oz.
- Ceramic Bearing

Additional collet purchase required:

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

- Collet Nut (K-265) For Collet (CHK)
- Metal Saw Arbor (KCH-03) For \varnothing 0.24" (I.D.) x \varnothing 1.18" (O.D.)
- Grindstone Arbor (AGM-03) For grinding wheel with I.D. of \varnothing 5 mm
- Grindstone Flange (EGF-19) \varnothing 19.05 (I.D.) x \varnothing 40 (O.D.) x 7 (W) mm

Spindle

Product Code	Product Name	Standard Equipment · Accessories	
7859	NR-3060S	<ul style="list-style-type: none"> • Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs. • Wrench (22 x 27) : 1 pc. 	

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 μ m
- Standard Size Collet (CHK-3.175) \varnothing 1/8"
- Weight 15.52 oz.
- Steel Bearing

Additional collet purchase required:

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

- Collet Nut (K-265) For Collet (CHK)
- Metal Saw Arbor (KCH-03) For \varnothing 0.24" (I.D.) x \varnothing 1.18" (O.D.)
- Grindstone Arbor (AGM-03) For grinding wheel with I.D. of \varnothing 5 mm
- Grindstone Flange (EGF-19) \varnothing 19.05 (I.D.) x \varnothing 40 (O.D.) x 7 (W) mm

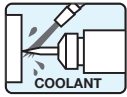
Spindle

Product Code	Product Name	Standard Equipment · Accessories	
7847	NR-403E	<ul style="list-style-type: none"> • Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs. • Wrench (22 x 27) : 1 pc. 	

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

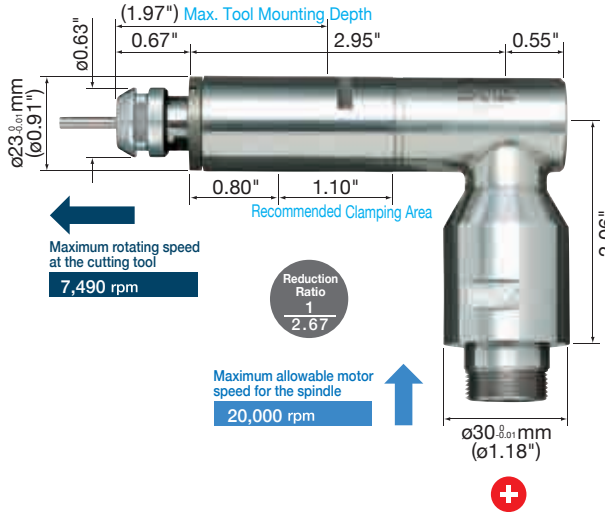
1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 \varnothing 1.0"/ \varnothing 0.98"/ \varnothing 0.897"
E3000 - One Piece
E3000 - Modular
\varnothing 1.18"
\varnothing 1.07"/ \varnothing 0.98"/ \varnothing 0.897"
E3000 - 80,000rpm
E4000
3
MA
\varnothing 0.897"
\varnothing 1.0"/ \varnothing 0.98"
\varnothing 1.18"
MS
\varnothing 0.75"/ \varnothing 0.79"
\varnothing 0.897"/ \varnothing 0.81"
\varnothing 1.0"/ \varnothing 0.98"
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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 μ 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

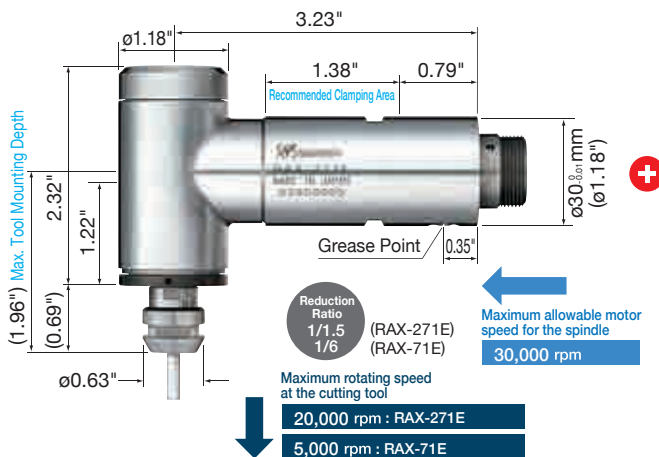
90° Angle Spindle

Product Code	Product Name	Standard Equipment · Accessories
7840	RAS-151E	<ul style="list-style-type: none"> • Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs. • Wrench (22 x 27) : 1 pc.

- 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 μ 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

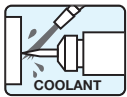
90° Angle Spindle

Product Code	Product Name	Standard Equipment · Accessories
7856	RAX-271E	<ul style="list-style-type: none"> • Collet $\phi 1/8''$ (CHK-3.175) • Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs.
7857	RAX-71E	<ul style="list-style-type: none"> • Wrench (22 x 27) : 1 pc. • Gear Grease (10mL) • Grease Nipple : 1 pc.

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

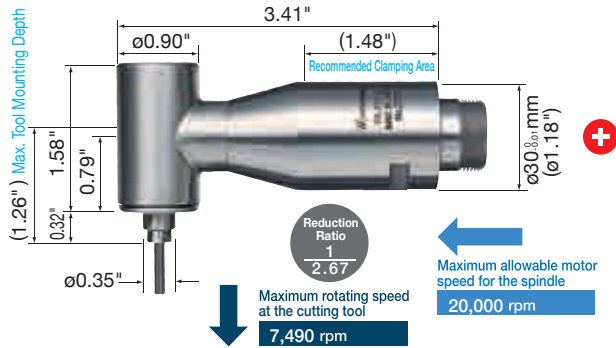


To extend the life expectancy of the Speed Reducer, inject grease every 70 to 100 hours. Grease injection prevents friction of the internal gears as well as heat generation. Adding grease also prevents the degradation of the existing grease in the reducer. Please maintain a reducer grease maintenance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

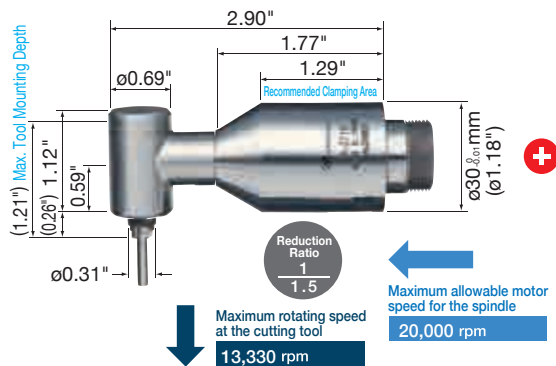
Maximum rotating speed at the cutting tool <Reduction Ratio : 1/2.67> **7,490 rpm**

- 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"> • Collet $\phi 1/8$" (CH8-3.175) : 1 pc. • Wrench (7 x 5.5) : 1 pc. • Wrench (8 x 5) : 1 pc. • Wrench (22 x 27) : 1 pc. 	

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**

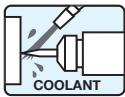
- Standard Size Collet (CHS-3.175) $\phi 1/8$ "
- Weight 8.47 oz.
- < Optional >
- Collet (CHS- []) $\phi 0.8$ mm~ $\phi 3.175$ mm (See Page 6-p4 for details)

90° Angle Spindle

Product Code	Product Name	Standard Equipment · Accessories	
2911	RA-271E	<ul style="list-style-type: none"> • Collet $\phi 1/8$" (CHS-3.175) : 1 pc. • Wrench (7 x 5.1) : 1 pc. • Wrench (8 x 5) : 1 pc. • Wrench (22 x 27) : 1 pc. 	

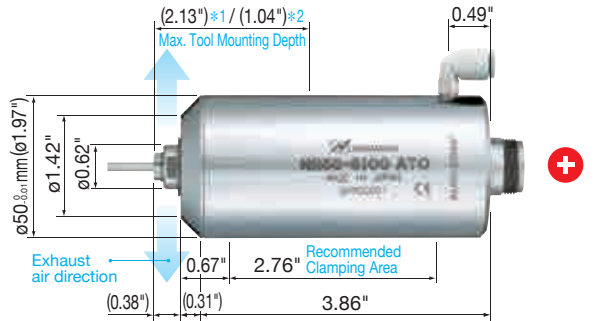
1
EmaxEV
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0$ "($\phi 0.98$ "/ $\phi 0.897$ "
E3000 - One Piece
E3000 - Modular
$\phi 1.18$ "
$\phi 1.07$ "/ $\phi 0.98$ "/ $\phi 0.897$ "
E3000 - 80,000rpm
E4000
3
MA
$\phi 0.897$ "
$\phi 1.0$ "/ $\phi 0.98$ "
$\phi 1.18$ "
MS
$\phi 0.75$ "/ $\phi 0.719$ "
$\phi 0.897$ "/ $\phi 0.81$ "
$\phi 1.0$ "/ $\phi 0.98$ "
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

E3000 SERIES $\phi 1.18''$ ($\phi 30$ 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 - $\phi 0.000$ rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''/\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''/\phi 0.79''$
$\phi 0.81''/\phi 0.81''$
$\phi 1.0''/\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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 μ m
- Air for Collet Opening 80~87PSI
- Standard Size Collet (CHR-3.175) $\phi 1/8''$
- Weight 3 lb. 0.33 oz.

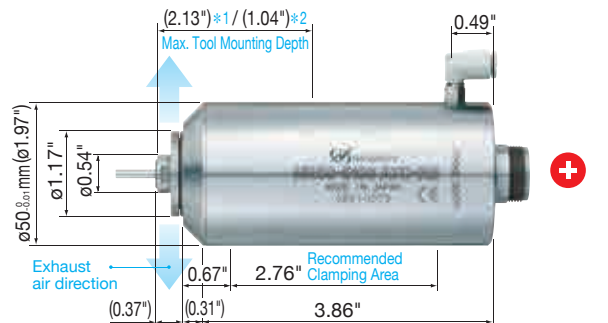
< Optional >

- Collet (CHR-□□) $\phi 2.0$, $\phi 3.0$ mm, $\phi 1/8''$, $\phi 4.0$, $\phi 6.0$ 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"> • Collet $\phi 1/8''$ (CHR-3.175) • Air Hose with filter (K-251) : $\phi 6$ mm x 6 ft • Wrench (9 x 11) : 1 pc. • Wrench (12 x 14) : 1 pc. • Bar Wrench (K-236) : 1 pc 	

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 μ m
- Air for Collet Opening 80~87PSI
- Weight 3 lb. 0.33 oz.
- Standard Size Collet (CHR-3.175 RS)

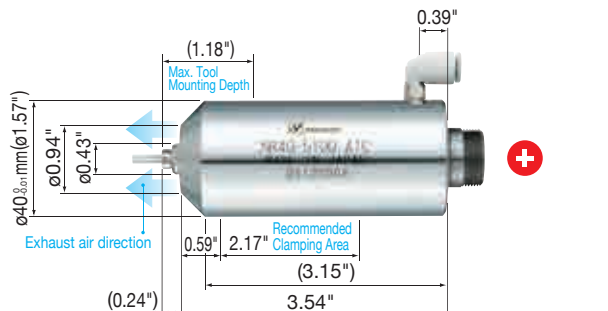
< Optional >

- Collet (CHR-□□ RS) $\phi 3.0$ mm, $\phi 1/8''$, $\phi 4.0$, $\phi 6.0$ 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"> • Air Hose with filter (K-251) : $\phi 6$ mm x 6 ft • Wrench (9 x 11) : 1 pc. • Wrench (12 x 14) : 1 pc. • Bar Wrench (K-236) : 1 pc 	

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.

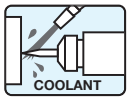
- Allowable Motor Speed 50,000 rpm
- Spindle Accuracy Within 2 μ m
- Air for Collet Opening 80~87PSI
- Standard Size Collet (CHB-3.175) $\phi 1/8''$
- Weight 1 lb. 10.10 oz.

< Optional >

- Collet (CHB-□□) $\phi 2.0$, $\phi 3.0$ mm, $\phi 1/8''$, $\phi 4.0$ mm
 (See Page 6-p2 for details)

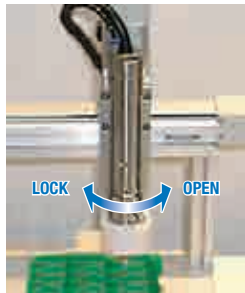
Automatic Tool Replacement Spindle

Product Code	Product Name	Standard Equipment · Accessories	
1582	NR40-5100 ATC	<ul style="list-style-type: none"> • Collet $\phi 1/8''$ (CHB-3.175) • Air Hose with filter (K-251) : $\phi 6$ mm x 6 ft • Wrench (6.1 x 8) : 1 pc. • Wrench (9 x 11) : 1 pc. • Bar Wrench (K-236) : 1 pc 	



Product Code **1836** **LEVER TYPE SPINDLE NRR-3060** **60,000 rpm**

No wrenches are required for tool changing.



NRR-3060 Installed Example



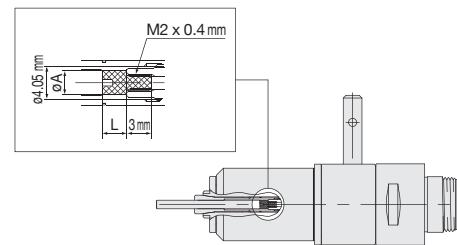
- Allowable Motor Speed 60,000 rpm
 - Spindle Accuracy Within 1 μm
 - Standard Size Collet (CHB-3.175) $\phi 1/8''$
 - Weight 12.35 oz.
- < Optional >
- Collet (CHB- []) $\phi 2.0, \phi 3.0 \text{ mm}, \phi 1/8'', \phi 4.0 \text{ mm}$
(See Page 6-p2 for details)

Lever Type Spindle

Product Code	Product Name	Standard Equipment · Accessories	
1836	NRR-3060	<ul style="list-style-type: none"> • Collet $\phi 1/8''$ (CHB-3.175) • Wrench (6.1 x 8) : 2 pcs., (22 x 27): 1 pc. 	

Features:

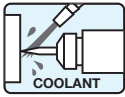
- Dust protection mechanism design exhausts air sideways. Side exhaust discharge keeps chips from being disbursed away from the machining area.
- The bottom of the spindle is equipped with an internal thread (M2 x 0.4mm / 3mm long). This enables tool length pre-setting.



*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
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

E3000 SERIES $\phi 1.18''$ ($\phi 30$ mm) SPINDLE

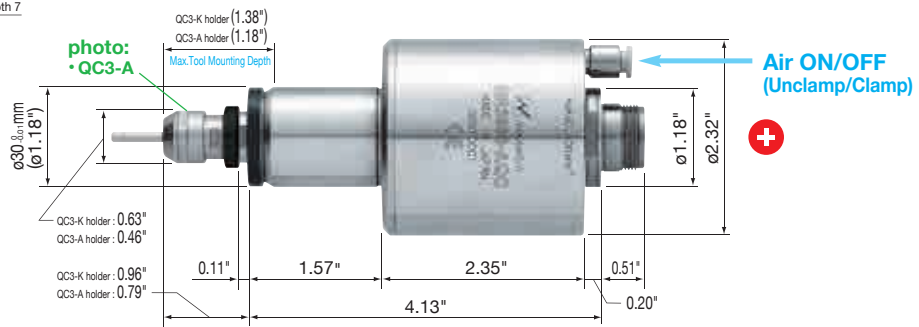
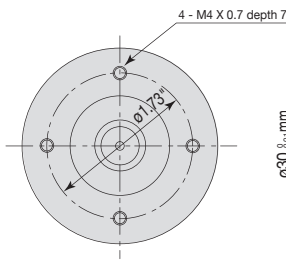
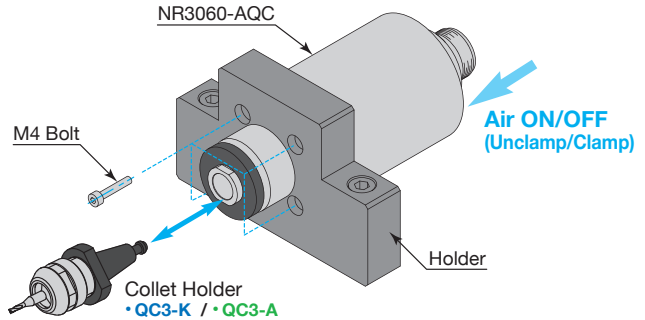


Product Code **9220** **AIR QUICK CHANGE SPINDLE NR3060-AQC** **60,000 rpm**

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 μ 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

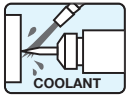
Product Code	Product Name	Standard Equipment · Accessories
9220	NR3060-AQC	<ul style="list-style-type: none"> • Air Hose with filter (K-251) : $\phi 6$ mm x 6 ft • Wrench (22 x 27) : 1 pc.

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

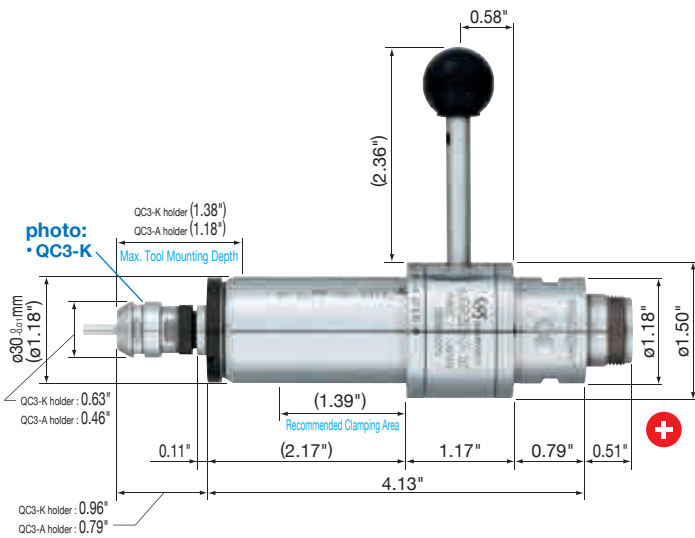
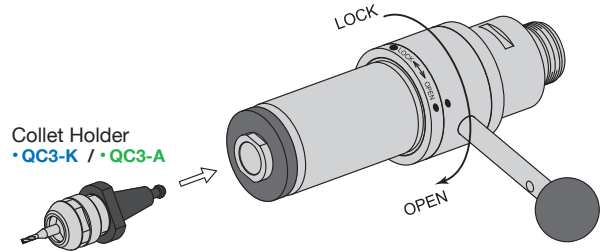
*Do not exceed the allowable motor speed for the spindle.



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)

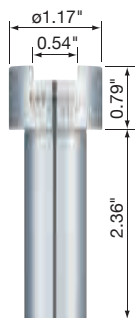
Lever Type Quick Change Spindle

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.

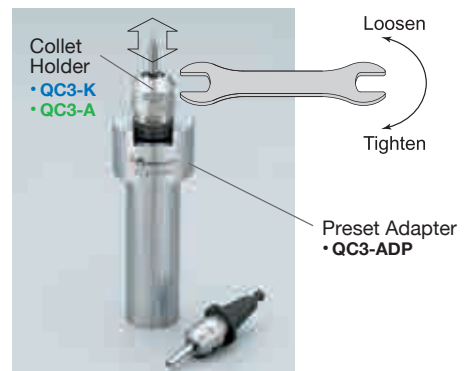
PRESET ADAPTER



- 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
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
Xspeed
ABT

5
AIR LINE KIT

6
PARTS

7
TECHNICAL DATA

8
APPLICATION EXAMPLES

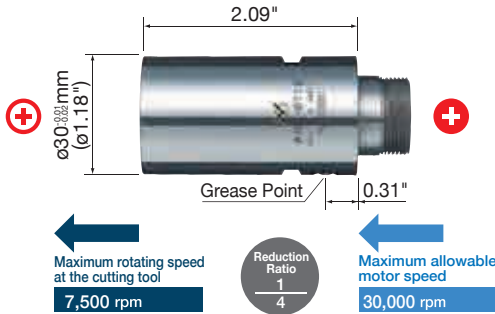
INDEX

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



- 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.

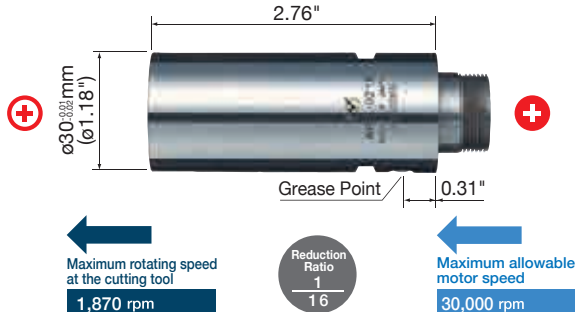
Speed Reducer 1/4

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.

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

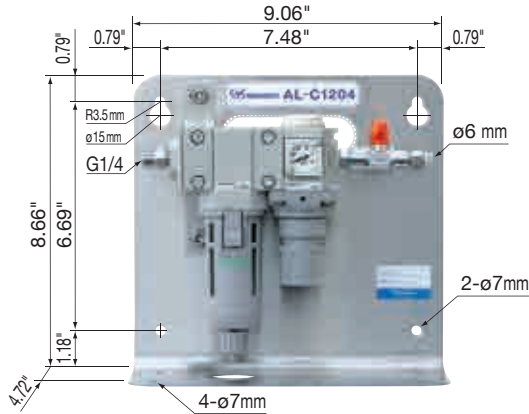


- 3 Meter long Interface Cable provides a DB15 Male Connector at one end and a blunt cut on the opposite end. Includes a pin-out wire diagram for easy interfacing of the (OP1) "E-Stop Input Circuit" and "Safety Relay Circuit" from the NSK Control to a CNC Control.

15 Pin Interface Cable

Product Code	Product Name	
DB15M	DB15M	For NSK Control Connector B

Product Code 4504 AIR LINE KIT AL-C1204



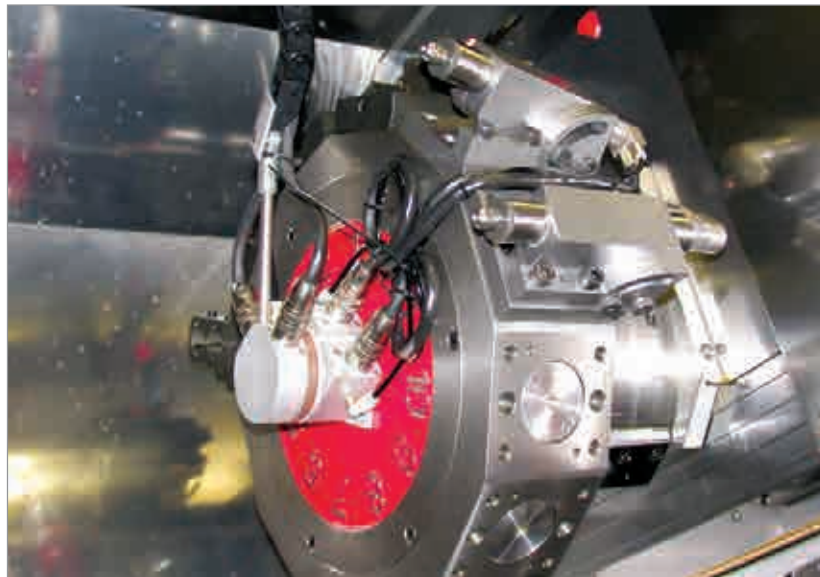
- The AL-C1204 Air Line Kit is designed to deliver clean, dry air to Electric Motors via the Controller. The filter removes small amounts of debris while the adjustable regulator provides the correct air pressure for cooling and purging.

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"> • Air Filter · Air Regulator • Air Pressure Gauge • Air ON-OFF Valve • Hose for Piping (K-275) : 6 ft 	

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

EmaxEVC

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

$\phi 0.75''$

$\phi 0.79''$

$\phi 0.81''$

$\phi 0.91''$

$\phi 1.0''$

$\phi 0.98''$

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

8

APPLICATION EXAMPLES

INDEX

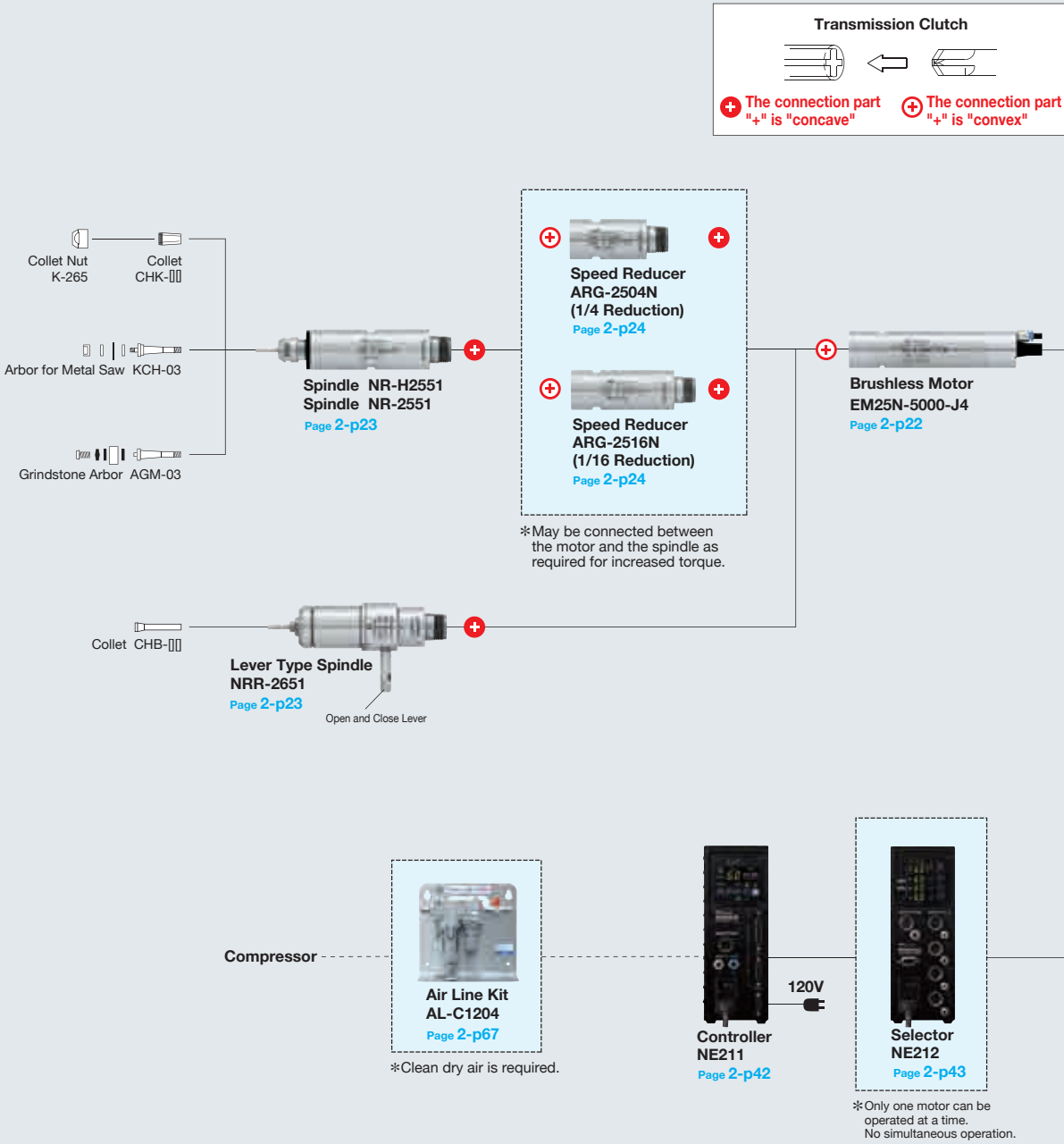
$\varnothing 1.0''$ / $\varnothing 0.98''$
 ($\varnothing 25.4$ mm) / ($\varnothing 25$ mm)

- 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 $\varnothing 0.75''/\varnothing 0.79''$
$\varnothing 0.897''/\varnothing 0.91''$
$\varnothing 1.0''/\varnothing 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

Modular Type $\varnothing 1.0''$, $\varnothing 0.98''$ ($\varnothing 25.4$, $\varnothing 25$ mm) System Chart

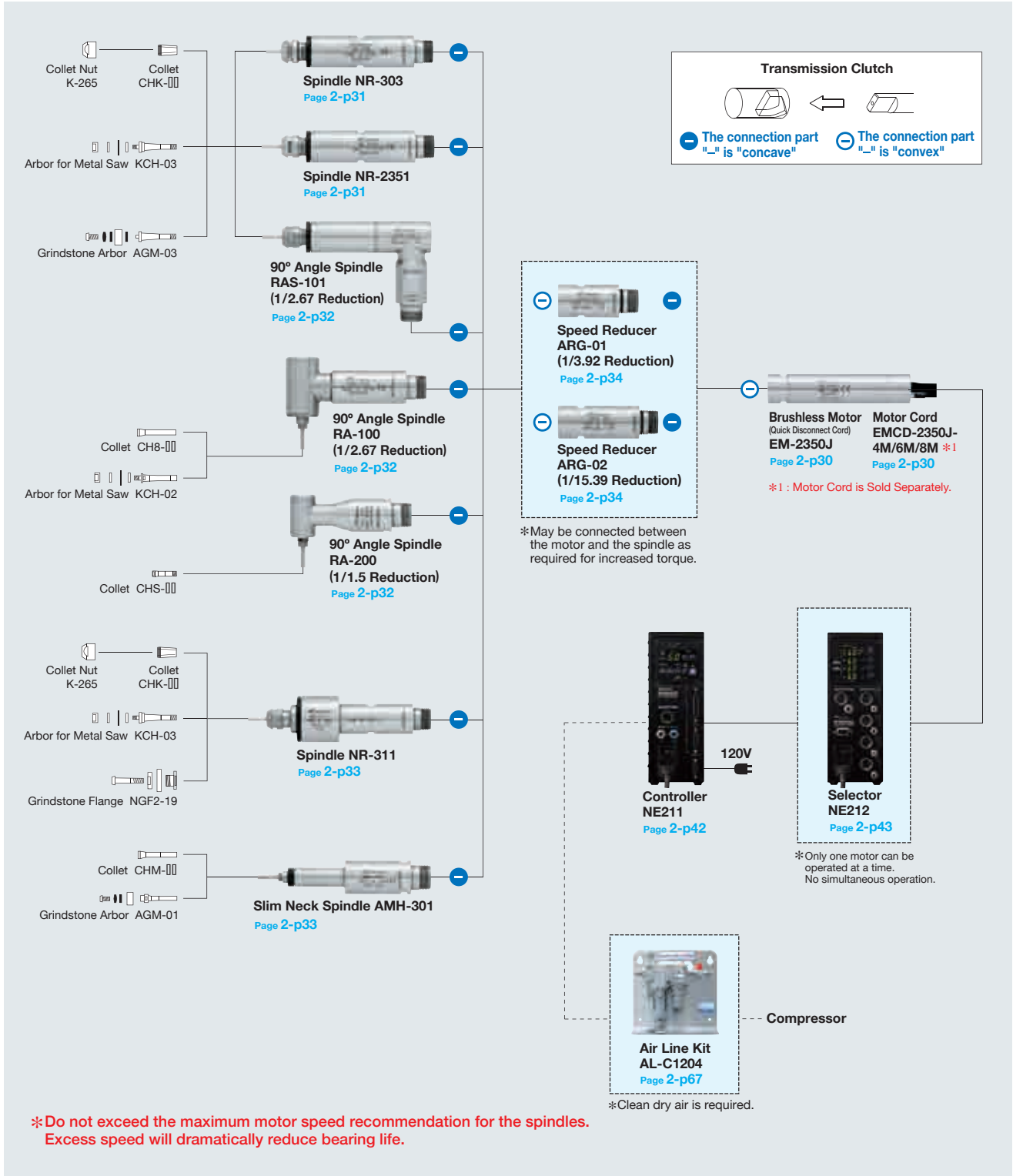
***Take note that product names and specifications will be changed.**



*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



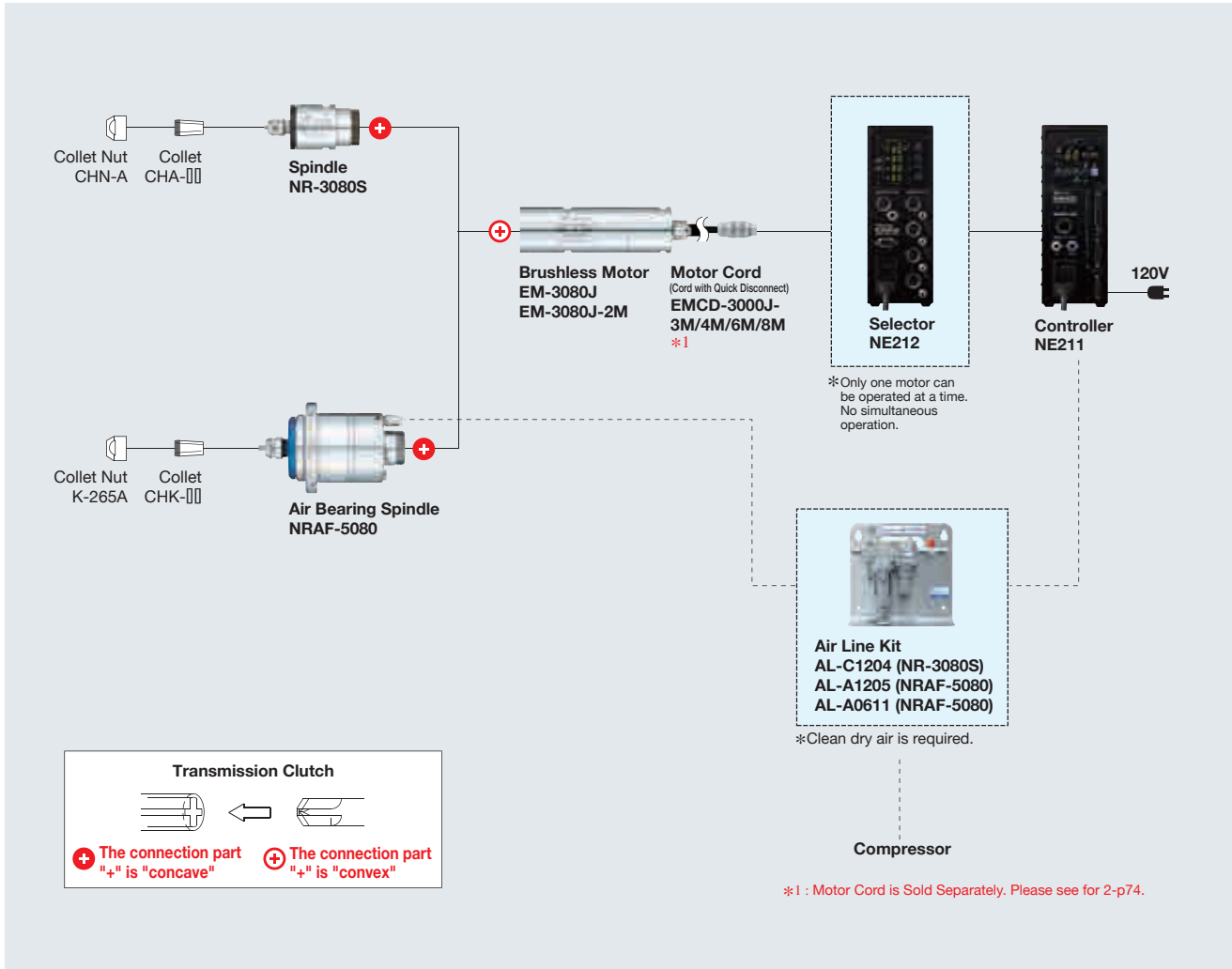
*Do not exceed the maximum motor speed recommendation for the spindles. Excess speed will dramatically reduce bearing life.

1
EmaxEV
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.0"/ø0.98"
E3000 - 80,000rpm
E4000
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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
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

$\varnothing 1.18''$ / $\varnothing 1.97''$
 ($\varnothing 30$ mm) ($\varnothing 50$ 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 $\varnothing 1.18''$, $\varnothing 1.97''$ ($\varnothing 30$, $\varnothing 50$ mm) System Chart



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 - 80,000rpm
E4000
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$\varnothing 1.18''$
MS
$\varnothing 0.75''/\varnothing 0.79''$
$\varnothing 0.87''/\varnothing 0.91''$
$\varnothing 1.0''/\varnothing 0.98''$
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iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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 μm (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

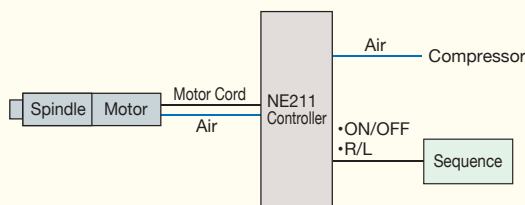
Power Source is 100-240V for international operation. Eliminate the need of setting the voltage or changing fuses.

● Protection System, External Input / Output Control Signal

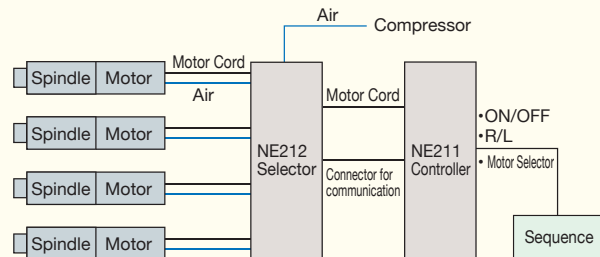
Error function : Motor/Spindle is stopped safety, Error LED is lit. ex.) Overload operation, Air shortage, Motor Spindle can be controlled and monitored by external input-output connector. ex.) Control ; Start/Stop, FWD./REV., Motor Speed Control Monitor ; Motor rotating, Torque Load.

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

— One Piece

E3000

— Modular

— One Piece

E3000

— 80,000rpm

E4000

3

MA

— One Piece

— One Piece

— One Piece

MS

— One Piece

— One Piece

— One Piece

4

HES

iSpeed5

HTS

PLANET

Xspeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

8

APPLICATION EXAMPLES

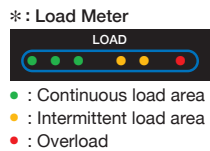
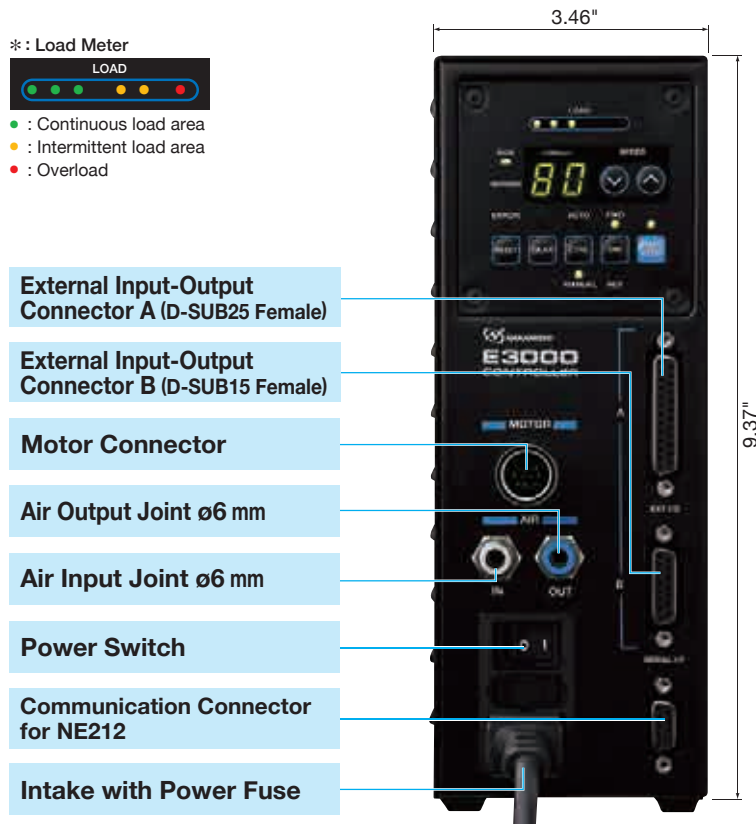
INDEX

E3000 SERIES CONTROLLER

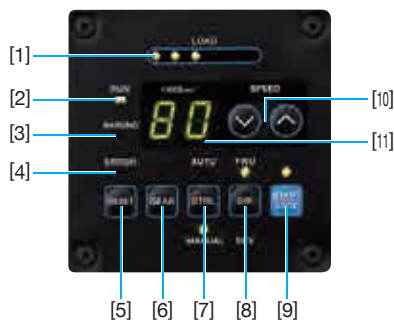
- AC100-240V for international operation
- 1,000~80,000 rpm ● Maximum Output 350W
- External Input / Output Control Signal (Refer to 7-p2~p9 page of this catalog)

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"
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iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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"

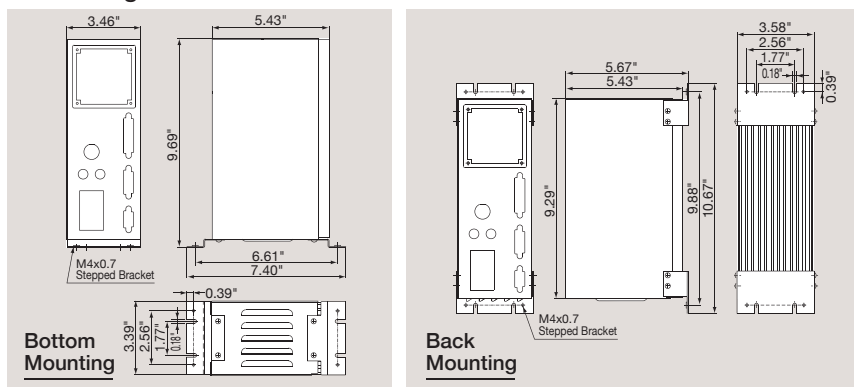
E3000 Controller

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

*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

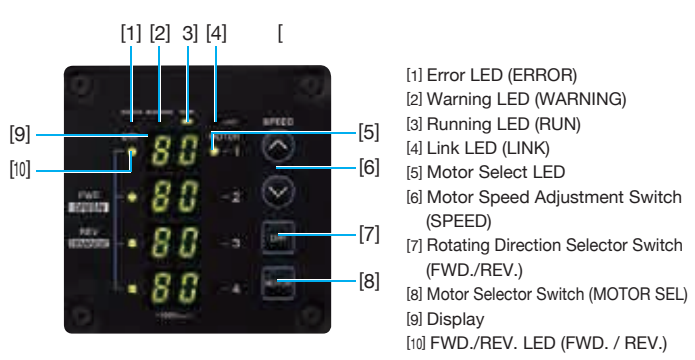
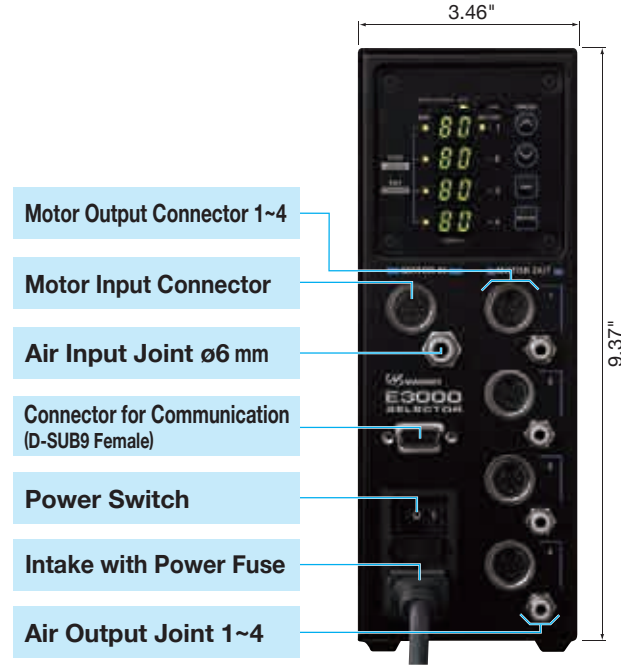
25 / 15 Pin Interface Cable

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)

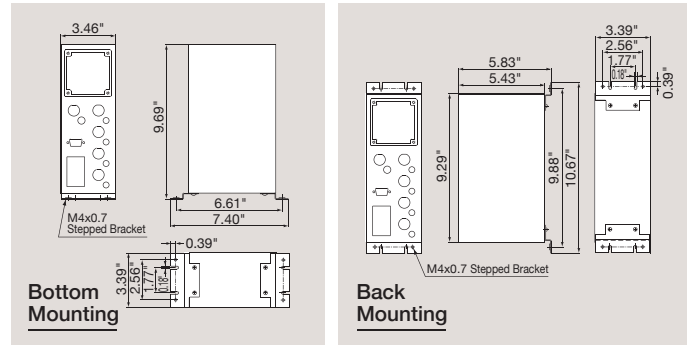
Product Code **9781** **SELECTOR NE212** **80,000 rpm**



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"> • Power Cord : 6 ft • Connect NE211 to NE212 Cable : 23.62" • Communication Cable : 23.62" • Connector Cap (Provided) • Plug to avoid Air Flow • Bracket • Nylon Clip • Screw • Rubber Pad • Fuse (T1.6AL) 250V: 2 pcs.

*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"
- ø0.99" 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

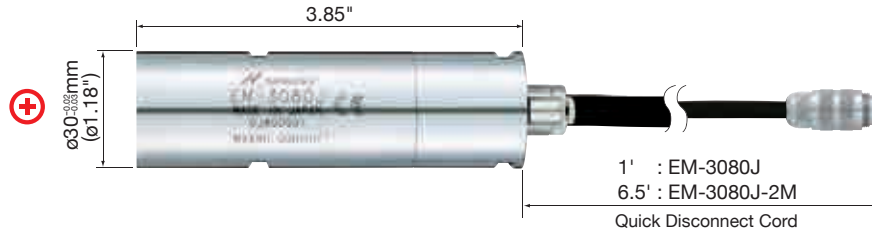
E3000 SERIES ø1.18" (ø30 mm) BRUSHLESS MOTOR



Caution : Brushless Motor with 6.5 ft (2 m) long quick disconnect cord can not used with EMCD-3000J-8M.

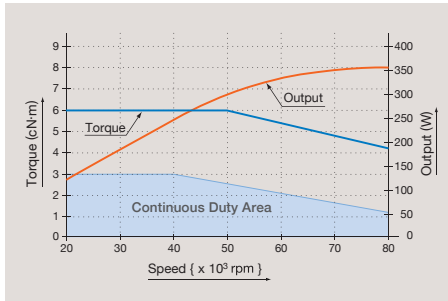
BRUSHLESS MOTOR EM-3080J

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

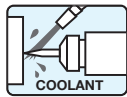
Product Code	Product Name	Standard Equipment · Accessories	
1788	EM-3080J-2M	• Wrench (22 x 27) : 1 pc.	

*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	

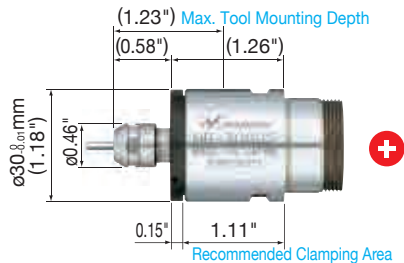
E3000 SERIES $\phi 1.18"$, $1.97"$ ($\phi 30$, $\phi 50$ mm) SPINDLE



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.

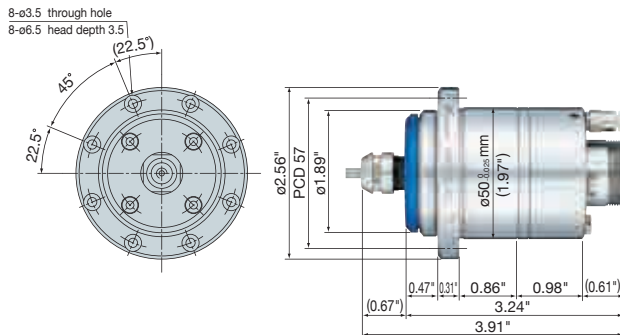
- Allowable Motor Speed 80,000 rpm
- Spindle Accuracy Within 1 μ m
- Weight 6.00 oz.
- Ceramic Bearing
- Additional collet purchase required:
 - Collet Series CHA-XX $\phi 0.5$ mm~ $\phi 4.0$ mm
 - Recommended CHA-3.175 $\phi 1/8"$
 (See Page 6-p2 for additional sizes)

Spindle

Product Code	Product Name	Standard Equipment · Accessories
7876	NR-3080S	<ul style="list-style-type: none"> • Collet Nut (CHN-A) : 1 pc. • Wrench (8 x 5), (9 x 11), (22 x 27) : 1 pc. each

Product Code **1793** AIR BEARING SPINDLE NRAF-5080

80,000 rpm



- 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 μ 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

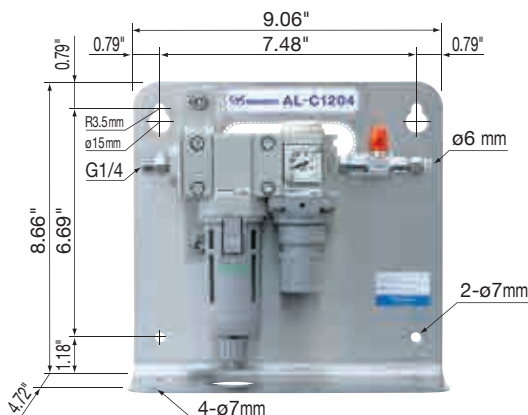
Product Code	Product Name	Standard Equipment · Accessories
1793	NRAF-5080	<ul style="list-style-type: none"> • Collet $\phi 1/8"$ (CHK-3.175) • Collet Nut (K-265A) : 1 pc. • Wrench (12 x 14) : 2 pcs., (22 x 27) : 1 pc. • Fitting (KQ2H04-M5-X2) : 1pc. • Plug (KQ2P-04) : 1pc. • Intake Air Hose : $\phi 4$mm x 13ft, 1pc. • Bar Wrench (K-236) : 1pc.

*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 $\phi 1.0"/\phi 0.95"/\phi 0.897"$
E3000 - One Piece
E3000 - Modular
$\phi 1.18"$
$\phi 1.07"/\phi 0.98"/\phi 0.897"$
$\phi 0.81"/\phi 0.814"$
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E4000
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$\phi 1.0"/\phi 0.98"$
$\phi 1.18"$
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$\phi 0.75"/\phi 0.79"$
$\phi 0.81"/\phi 0.814"$
$\phi 1.0"/\phi 0.98"$
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iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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
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ø1.0" ø0.96"
ø1.18"
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ø0.75" ø0.79"
ø0.871" ø0.831"
ø1.0" ø0.98"
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HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

Product Code 4504 AIR LINE KIT AL-C1204

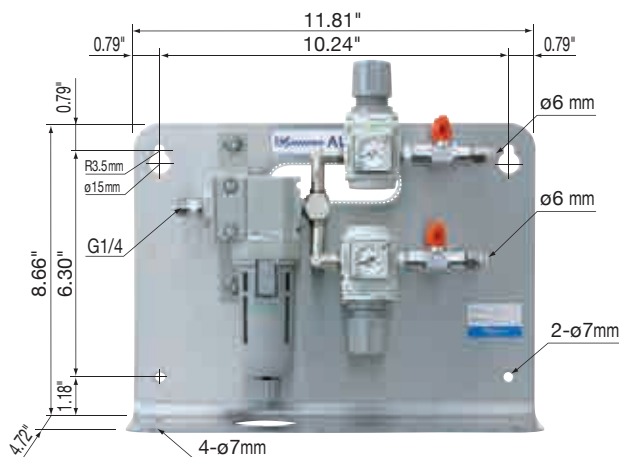


- The AL-C1204 Air Line Kit is designed to deliver clean, dry air to Electric Motors via the Controller. The filter removes small amounts of debris while the adjustable regulator provides the correct air pressure for cooling and purging.

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"> • Air Filter • Air Regulator • Air Pressure Gauge • Air ON-OFF Valve • Hose for Piping (K-275) : 6 ft

Product Code 4505 AIR LINE KIT AL-A1205 (For Air Bearing Spindles)

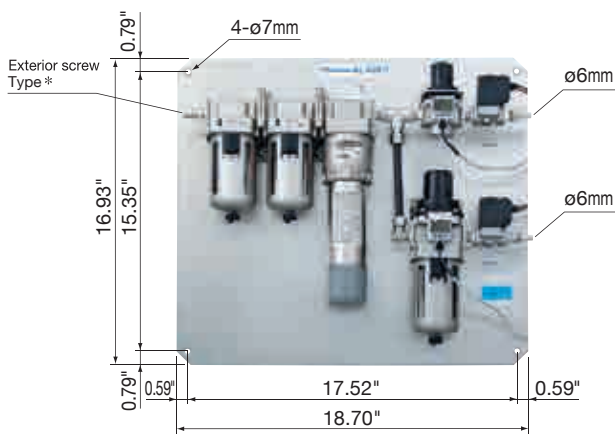


- The AL-A1205 is a dual output dry air, Air Line Kit designed for use on Electric Motor Systems that use the NRAF-5080 Air Bearing Spindle and the NE211 (E3000) Controller. One output is for the Electric Motor cooling, and the second output is for the Air Bearing operation. This unit is also designed 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"> • Air Filter • Air Regulator • Air Pressure Gauge • Air ON-OFF Valve • Hose for Piping (K-275) : 6 ft

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"> • Mist Separator • Micro Mist Separator • Membrane Air Dryer • Regulator • Solenoid Valve • Digital Pressure Switch

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

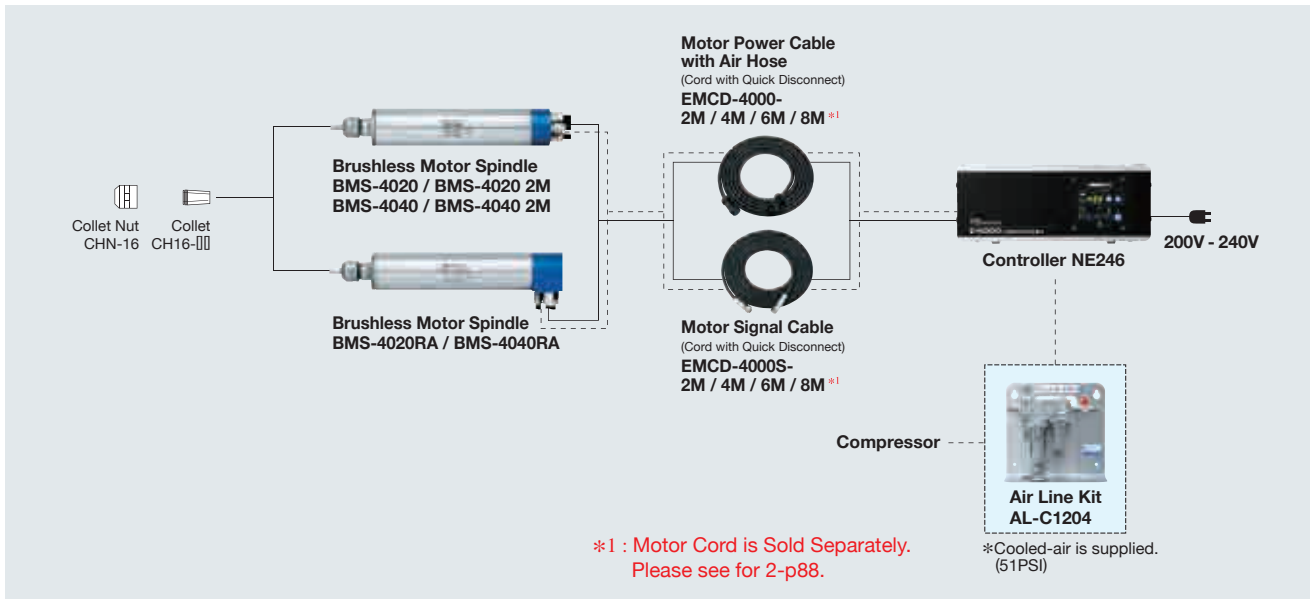
- Up to Ø0.375" Collet Capacity
- Designed for use on CNC Lathes, Robots and Special Application Machines for precision milling, drilling grinding, slitting and deburring applications.



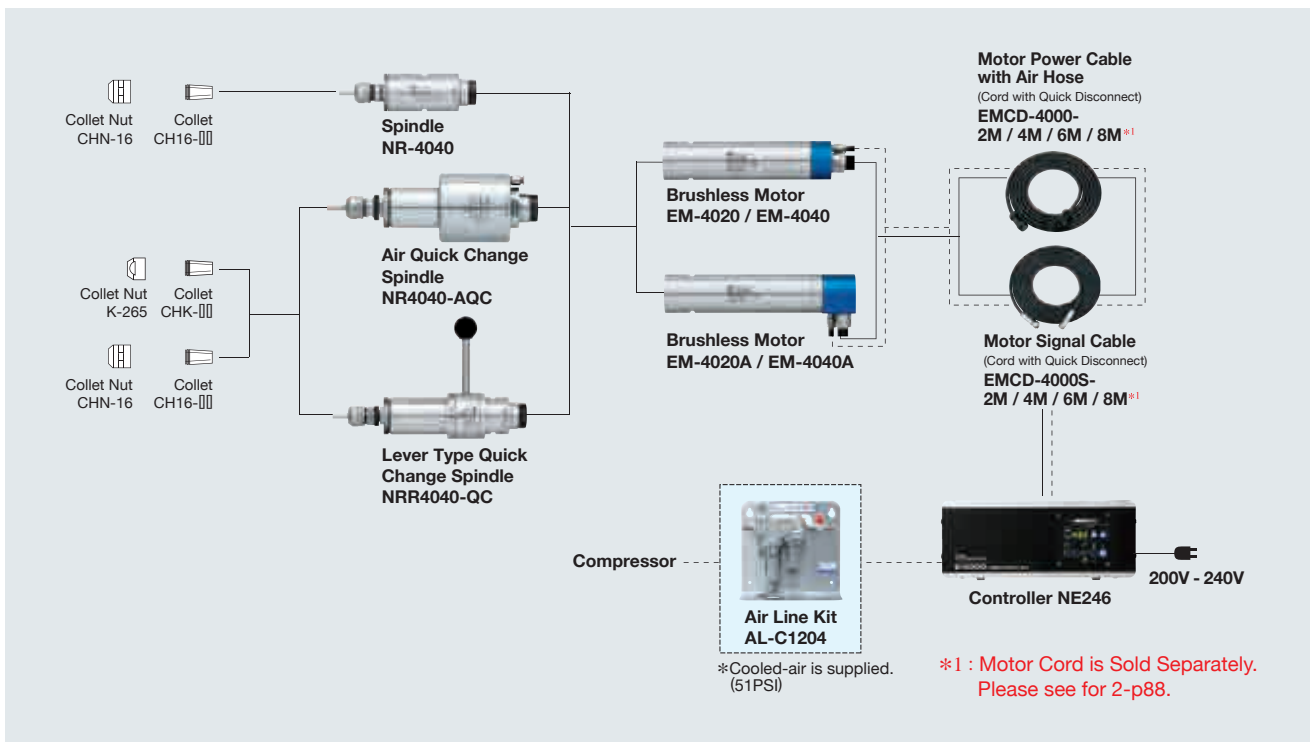
1
EmaxEVC
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 Ø1.0"/Ø0.98"/Ø0.897"
E3000 - One Piece
E3000 - Modular
Ø1.18"
Ø1.07"/Ø0.98" Ø0.897"
E3000 - 80,000rpm
E4000
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Ø1.0" Ø0.98"
Ø1.18"
MS
Ø0.75" Ø0.79"
Ø0.897" Ø0.91"
Ø1.0" Ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

- 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



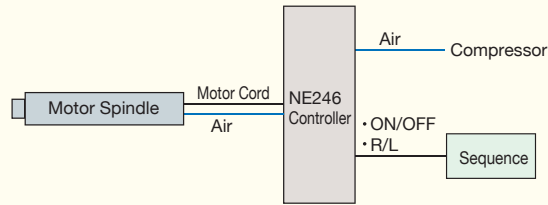
1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.0"/ø0.98" ø0.897"
E3000 - ø0,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.87" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed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

Features of E4000 Series

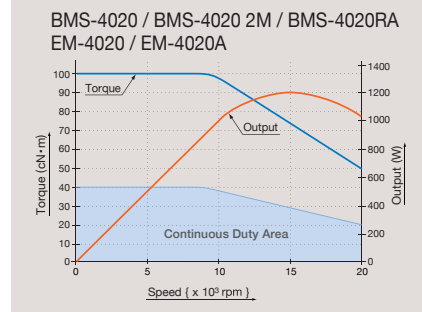
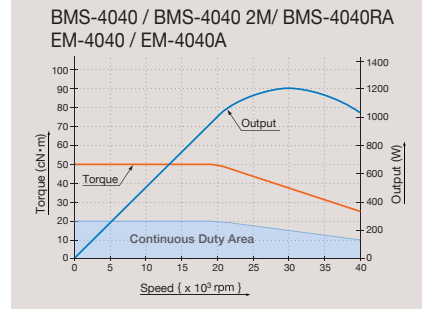
- 1,000~40,000 rpm, 500 rpm (for centering rotation)
- Rated output 400W (Max. output 1,200W) ● Spindle accuracy 1 μm or less.
- Achieved continuous run of over 5,000 hours.
{NAKANISHI's factory test without load at 40,000 min-1(rpm)}
- Motor weight : 3 lb. 4.91 oz. (BMS-4020 / 4020 2M / 4040 / 4040 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

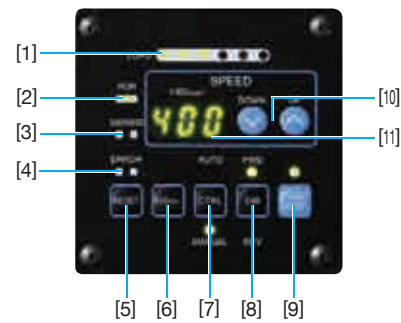
Product Code	Product Name	Product	
8472	NE246	Controller	
8346	EM-4040	Motor	
7902	NR-4040	Spindle	
9253	EMCD-4000-2M	Motor Power Cable	
9257	EMCD-4000S-2M	Motor Signal Cable	
4504	AL-C1204	Air Line Kit	

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"
4
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iSpeed5
HTS
PLANET
Xpeed
ABT
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6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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"

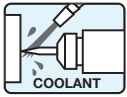
E4000 Controller

Product Code	Plug Type	Product Name	Standard Equipment · Accessories
8472	200 - 240V (Without Plug) 	NE246	<ul style="list-style-type: none"> • Power Cord : 13 ft • Air Hose with filter : 6 ft • Connector Cap (Provided) • Connector Cover (Provided) • Bracket : 4 pcs. • Rubber Pad : 4 pcs.

*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 $\varnothing 3.0\text{mm} \sim \varnothing 10.0\text{mm}$
Recommended CH16-6.35 $\varnothing 1/4"$
(See Page 6-p5 for additional sizes)

- Motor Power Cable *3 $\varnothing 1.18"$
- Motor Signal Cable *3 $\varnothing 0.63"$
- Air Hose $\varnothing 6\text{mm}$

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 $\varnothing 1/4"$ (CH16-6.35) : 1 pc. • Collet Nut (CHN-16) • Wrench (17 x 22) : 2 pcs.

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
$\varnothing 0.75"/\varnothing 0.71"$
$\varnothing 0.89"/\varnothing 0.81"$
$\varnothing 1.0"/\varnothing 0.98"$
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

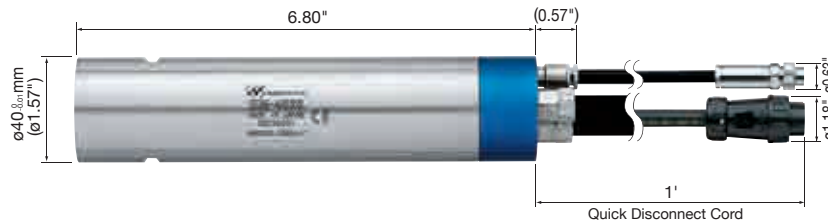
E4000 SERIES BRUSHLESS MOTOR

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000
o1.07"/o0.98" / 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" / o0.96"
o1.18"
MS
o0.75" / o0.79"
o0.87" / o0.83"
o1.0" / o0.96"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

BRUSHLESS MOTOR 20,000 · 40,000 rpm

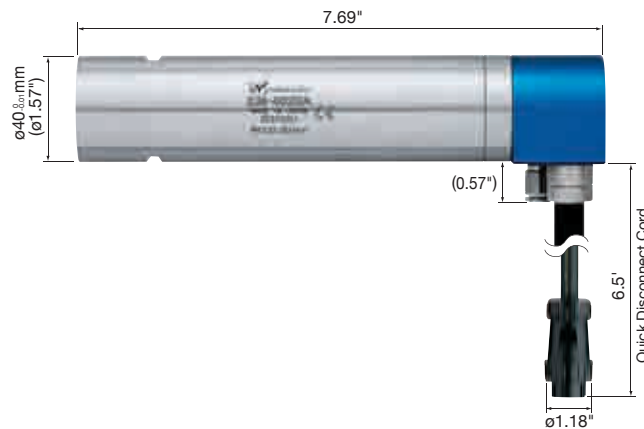
● STRAIGHT TYPE

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

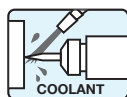
40,000 rpm

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

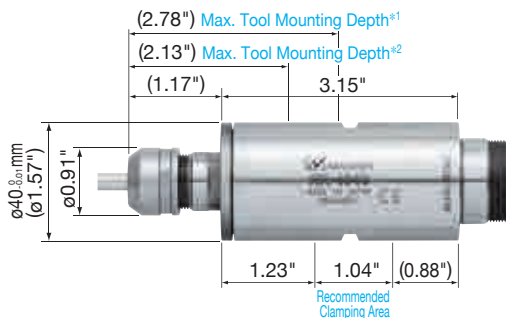
Standard Equipment · Accessories	
• Wrench (36) : 1 pc.	

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.

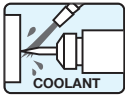
Spindle

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.

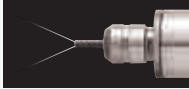
1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 — One Piece
E3000 — Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 — 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.719"
ø0.897" ø0.814"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

E4000 SERIES BRUSHLESS MOTOR 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"
ø1.0"/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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AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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

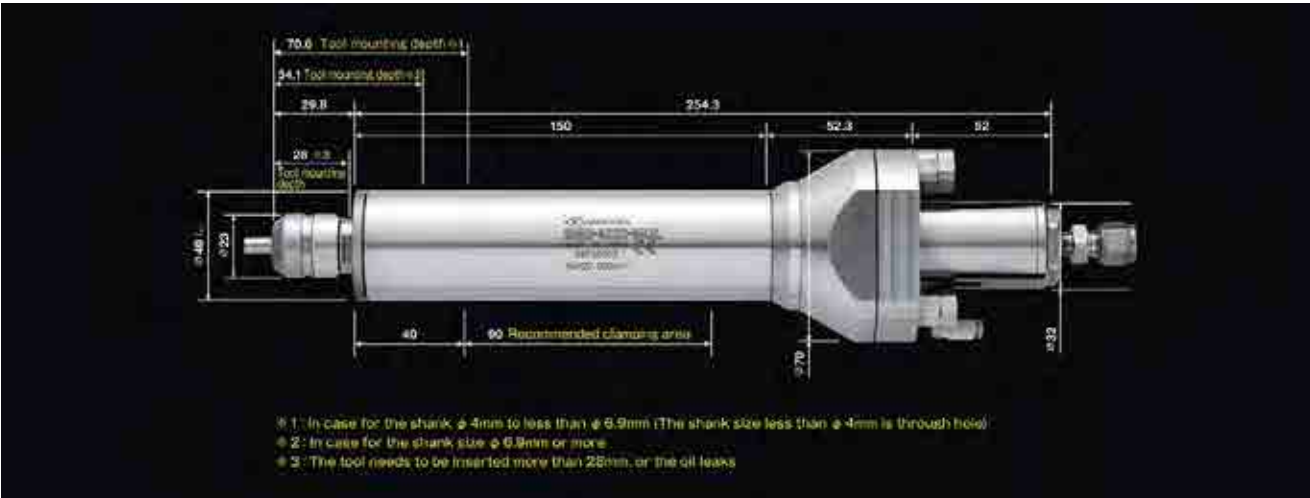
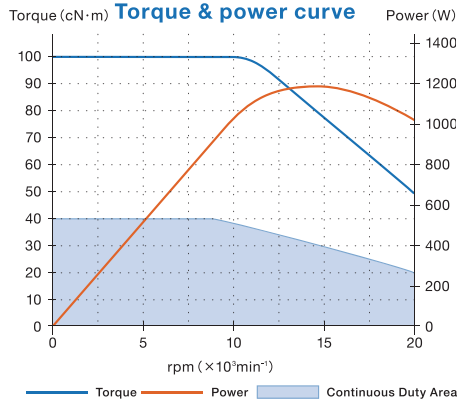
Collet Nut (CHN-16) / Insert / Ferrule Set
Spanner (17 x 22) 2 pcs.

Specifications

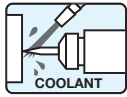
Coolant Pressure: 0.2 - 3.0MPa
Oil Mist Pressure: 0.2-1.0MPa
Power Cable with Air Hose: Connector Diameter: ø30mm
Signal Cable: Connector Diameter: ø16mm / Air hose: ø6mm

Options

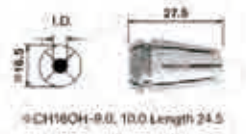
Collet (Ch16OH Group): ø3.0 - ø10.0mm
Power Cable with Air Hose: Length 2m (9253), 4m (9254), 6m (9255), 8m (9256)
Signal cable: Length 2m (9257), 4m (9258), 6m (9259), 8m (9260)



E4000 SERIES COLLETS



Collet CH16OH Group



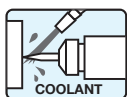
Product Code	Product Name	Inside Diameter d	Compatible Model	Price
93330	CH16OH-3.0	ø3.0	BMS-4020-MQL BMS-4040-MQL BMS-4020-MQL-2M BMS-4040-MQL-2M	
93331	CH16OH-3.175	ø3.175		
93340	CH16OH-4.0	ø4.0		
93350	CH16OH-5.0	ø5.0		
93360	CH16OH-6.0	ø6.0		
93363	CH16OH-6.35	ø6.35		
93370	CH16OH-7.0	ø7.0		
93380	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"
- MS
- ø0.75"
ø0.79"
- ø0.897"
ø0.91"
- ø1.0"
ø0.98"
- 4
- HES
- iSpeed5
- HTS
- PLANET
- Xpeed
- ABT
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- AIR LINE KIT
- 6
- PARTS
- 7
- TECHNICAL DATA
- 8
- APPLICATION EXAMPLES
- INDEX

E4000 SERIES SPINDLE



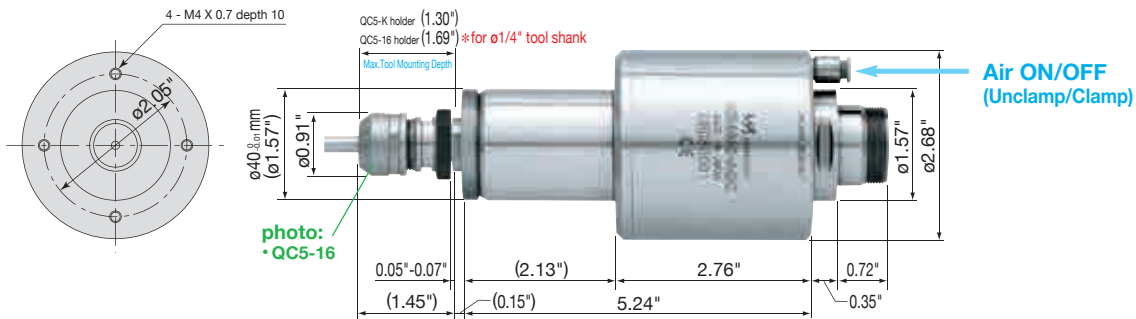
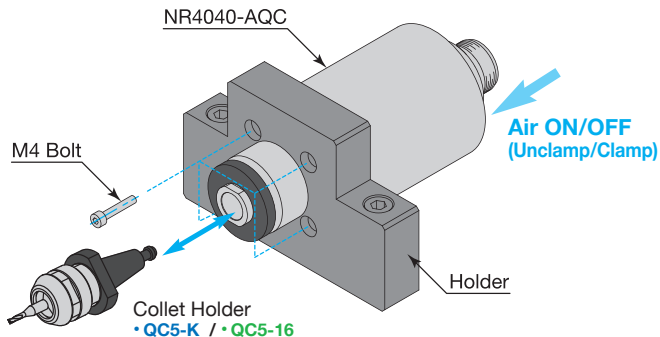
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ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.07"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98"/ø0.897"
E3000 - ø0,000rpm
E400
3
MA ø0.897"
ø1.0" ø0.96"
ø1.18"
MS ø0.75" ø0.79"
ø0.87" ø0.83"
ø1.0" ø0.98"
4
HES
iSpeed5
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ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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

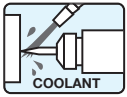
Product Code	Product Name	Standard Equipment · Accessories
9219	NR4040-AQC	<ul style="list-style-type: none"> • Air Hose with filter (K-251) : ø6 mm x 6 ft • Wrench (36) : 1 pc.

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

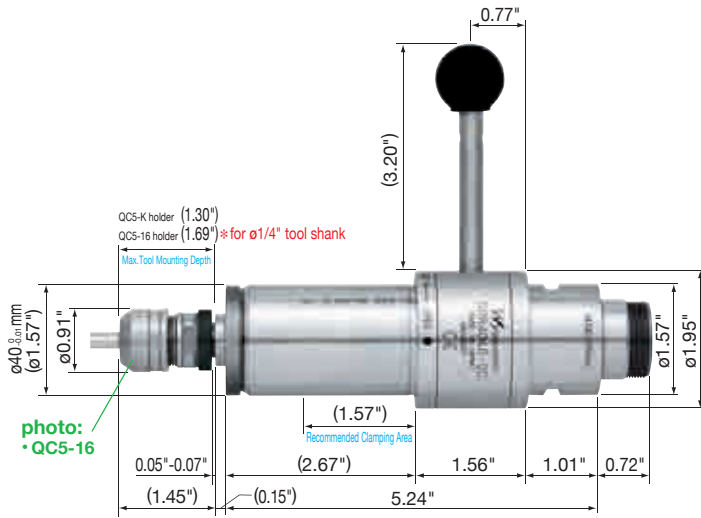
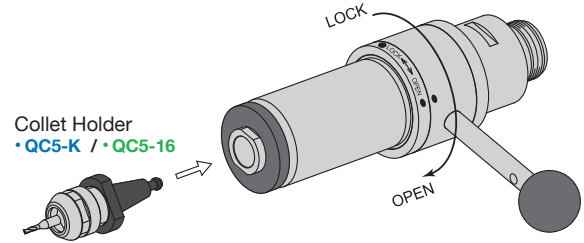
Product	Product Code	Product Name	Collet	Std. Accessories	Attaches to
	9215	• QC5-K	CHK	• Collet Nut (K-265) : 1 pc.	NR4040-AQC NRR4040-QC
	9216	• QC5-16	CH16	• Collet Nut (CHN-16) : 1 pc.	NR4040-AQC NRR4040-QC



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 μm
- Lever Operating Angle 90°
- Weight 2 lb. 13.86 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)

Lever Type Quick Change Spindle

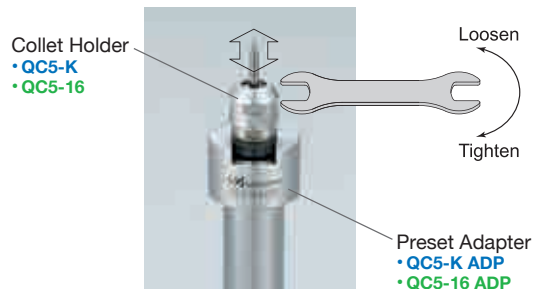
Product Code	Product Name	Standard Equipment · Accessories
9214	NRR4040-QC	• Wrench (36) : 1 pc.

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
	9217	• QC5-K ADP
	9218	• QC5-16 ADP



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"
ø0.84"
ø1.0"
ø0.98"

4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT

5
AIR LINE KIT

6
PARTS

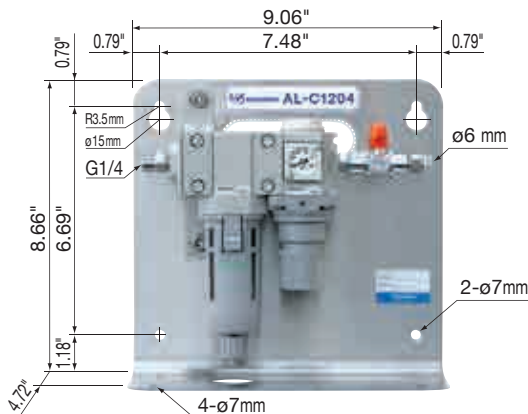
7
TECHNICAL DATA

8
APPLICATION EXAMPLES
INDEX

E4000 SERIES AIR LINE KIT & MOTOR CABLE

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"
ø0.96"
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

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"> • Air Filter • Air Regulator • Air Pressure Gauge • Air ON-OFF Valve • Hose for Piping (K-275) : 6 ft 	

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.



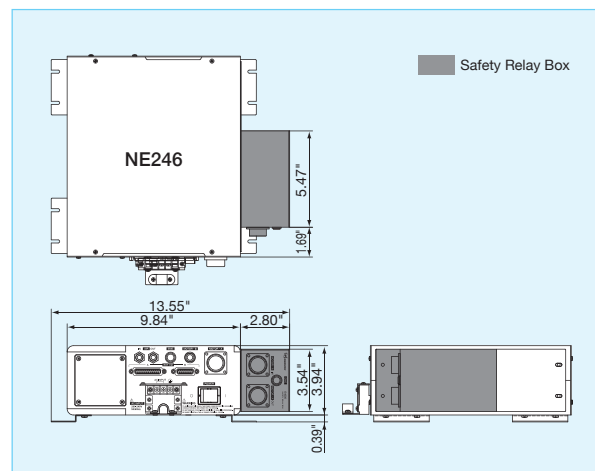
Weight : 11 lb. 13.98 oz.
Size : W3.54" x H2.80"

Safety Relay Box

Product Code	Product Name	Standard Equipment - Accessories
8475	E4000-SRB	<ul style="list-style-type: none"> Relay Cord (Motor Power Line) : 1.3 ft Emergency Stop Cord : 1.3 ft

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"

ø0.897"

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

8

APPLICATION

EXAMPLES

INDEX

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

— 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

8

APPLICATION EXAMPLES

INDEX

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. ϕ 0.897"
(ϕ 22.8mm)
 (Modular Type)
 Angle Spindles and
 Straight Spindles are available.

O.D. ϕ 1.18"
(ϕ 30mm)
 (Modular Type)
 Angle Spindles and
 Straight Spindles are
 available.

O.D. ϕ 0.98"/1.0"
(ϕ 25/25.4mm)
 (Modular Type)
 Straight Spindles are
 available.

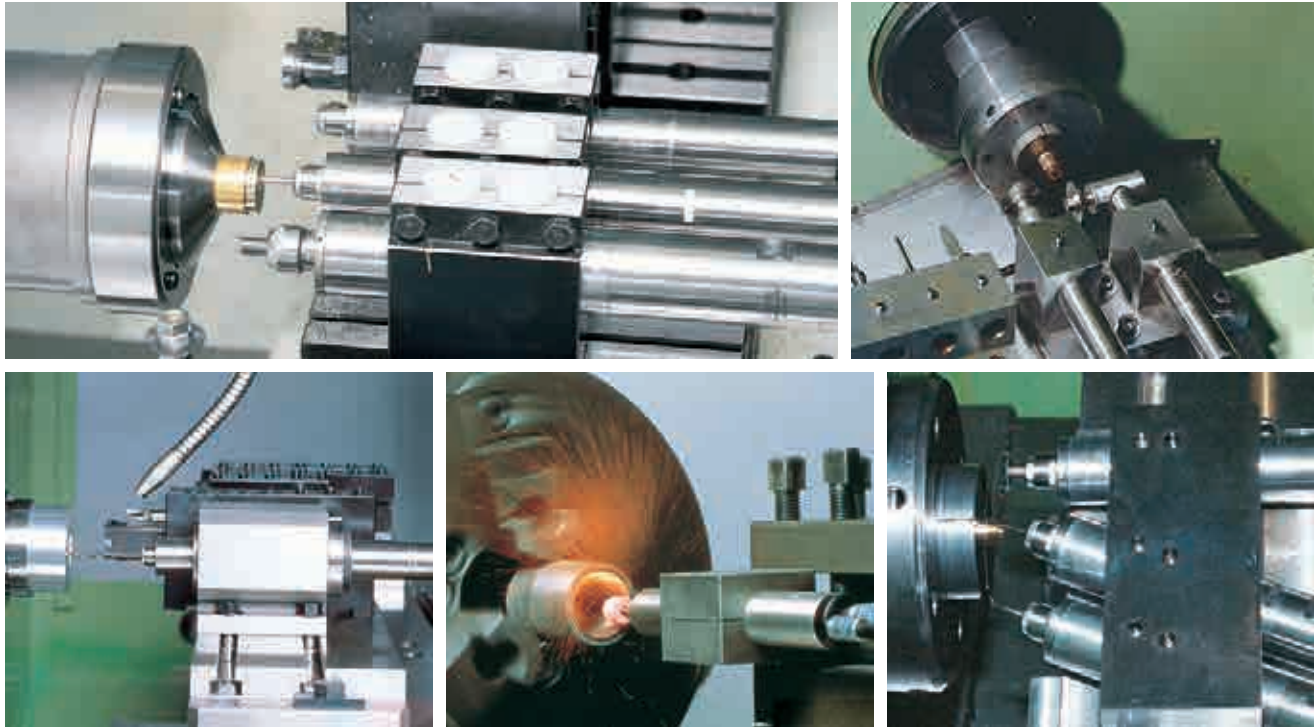
1
EmaxEVC
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ϕ 1.0"/ ϕ 0.98"/ ϕ 0.897"
E3000 — One Piece
E3000 — Modular
ϕ 1.18"
ϕ 1.07"/ ϕ 0.98" ϕ 0.897"
E3000 — 80,000rpm
E4000
3
MA
ϕ 0.897"
ϕ 1.0"
ϕ 0.98"
ϕ 1.18"
MS
ϕ 0.75"
ϕ 0.75"
ϕ 0.897"
ϕ 0.91"
ϕ 1.0"
ϕ 0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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

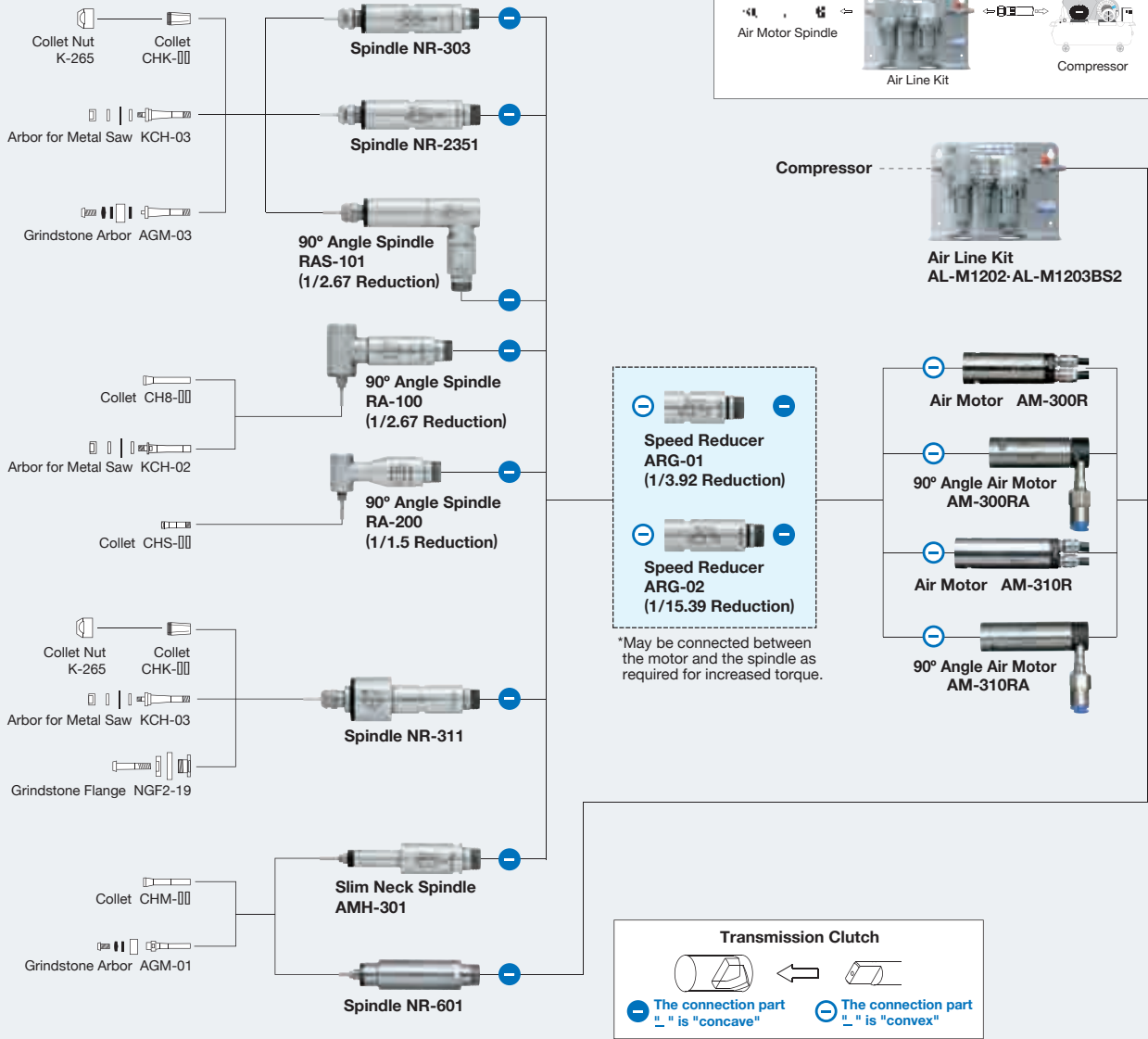
This table summarizes the drilling capacity for the MA Series spindles. Please use this table as a guide for the selection of the proper model given the torque, speed and size requirements for your application. Data is given for three materials Medium Carbon Steel (S45C), aluminum and brass.

*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.

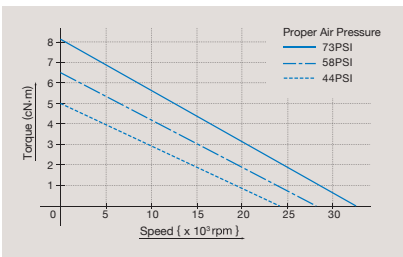
Combination as System			Speed {min ⁻¹ {rpm}}	Output (W)	Max. Torque (cN·m)	Max. Drill Diameter for drilling (mm)		
Motor	Speed Reducer	Spindle				S45C	Aluminum	Brass
AM-300R	—	NR-2351	30,000	57	6.9	ø1.0	ø1.5	ø2.0
AM-300R	ARG-01 (1/3.92)	NR-2351	8,000	57	26.5	ø1.9	ø2.9	ø3.4
AM-300R	ARG-02 (1/15.39)	NR-2351	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

MA Series ø0.897" (ø22.8 mm) System Chart

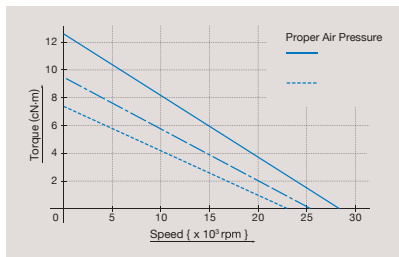
- MA Series has been designed to operate smoothly at high speed for long continuous cutting and grinding by connecting an air line kit directly between the air compressor and the air motor. (Air Line Kit Refer to 3-p10 in detail)
- Air supply and exhaust air hoses are supplied with an air motor. Air 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.

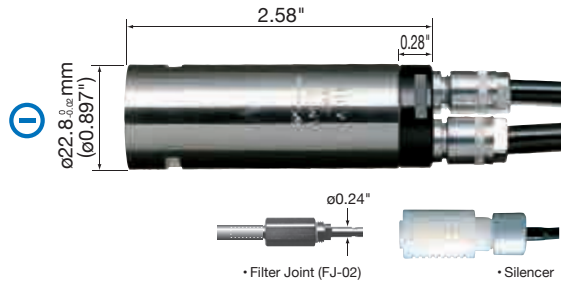
1	EmaxEV
	ESPERT
	ROTUS
	IMPULSE
	PRESTO II
	Sheenus ZERO
	Sonic-Cutter ZERO
2	iSpeed3
	E2000 ø1.0"/ø0.99"/ø0.897"
	E3000 - One Piece
	E3000 - Modular
	ø1.18"
	ø1.0"/ø0.98" ø0.897"
	E3000 - 80,000rpm
	E4000
3	MA
	ø0.897"
	ø1.0" ø0.98"
	ø1.18"
	MS
	ø0.75" ø0.75"
	ø0.89" ø0.81"
	ø1.0" ø0.98"
4	HES
	iSpeed5
	HTS
	PLANET
	Xpeed
	ABT
5	AIR LINE KIT
6	PARTS
7	TECHNICAL DATA
8	APPLICATION EXAMPLES
	INDEX

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
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

Product Code 1021 AIR MOTOR AM-300R (Forward Rotation) 57W 30,000 rpm



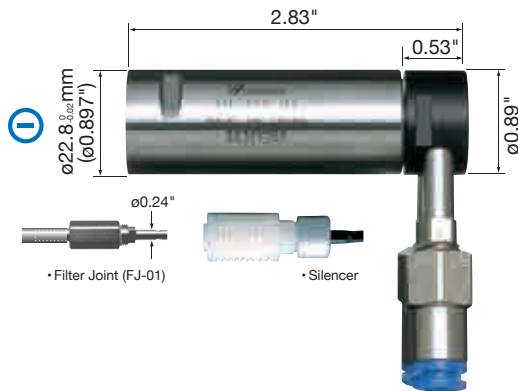
- Motor Speed 30,000 rpm(58PSI)
- Max. Output Power 57W
- Proper Air Pressure 44~73PSI
- Air Consumption 3.18CFM
- Motor Hose (Diameter / Length)
- Air Intake $\phi 3.7$ (I.D.) x $\phi 5.7$ (O.D.) mm / 6 ft
- Exhaust Air $\phi 5.0$ (I.D.) x $\phi 6.5$ (O.D.) mm / 3 ft
- Weight (w/o hose) 4.76 oz.

- 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"> • Hose (K-221) : 6 ft • Filter Joint (FJ-02) • Silencer (K-209) • Wrench (20 x 24) : 1 pc.

Product Code 1018 90° ANGLE TYPE AIR MOTOR AM-300RA (Forward Rotation) 57W 30,000 rpm



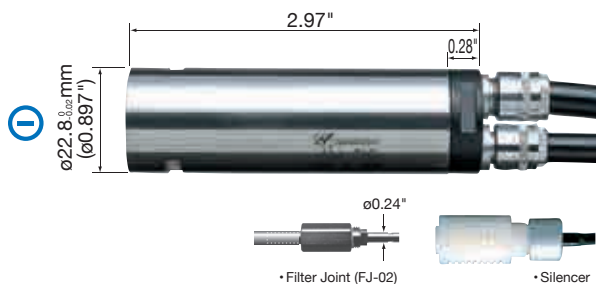
- Motor Speed 30,000 rpm(58PSI)
- Max. Output Power 57W
- Proper Air Pressure 44~73PSI
- Air Consumption 3.18CFM
- Motor Hose (Diameter / Length)
- Air Intake $\phi 4.0$ (I.D.) x $\phi 6.0$ (O.D.) mm / 6 ft
- Exhaust Air $\phi 5.5$ (I.D.) x $\phi 8.0$ (O.D.) mm / 3 ft
- Weight (w/o hose) 6.21 oz.

- 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"> • Hose (K-215) : $\phi 6\text{ mm}$ x 6 ft • Hose (K-216) : $\phi 8\text{ mm}$ x 3 ft • Filter Joint (FJ-01) · Silencer (K-208) • Wrench (20 x 24) : 1 pc.

Product Code 1079 AIR MOTOR AM-310R (Forward Rotation) 108W 30,000 rpm



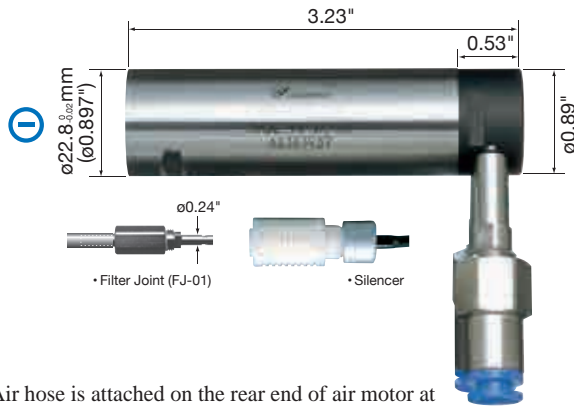
- Motor Speed 30,000 rpm(73PSI)
- Max. Output Power 108W
- Proper Air Pressure 44~73PSI
- Air Consumption 6.71CFM
- Motor Hose (Diameter / Length)
- Air Intake $\phi 4.5$ (I.D.) x $\phi 6.7$ (O.D.) mm / 6 ft
- Exhaust Air $\phi 5.5$ (I.D.) x $\phi 7.5$ (O.D.) mm / 3 ft
- Weight (w/o hose) 7.16 oz.

- 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"> • Hose (K-204) : 6 ft • Filter Joint (FJ-02)
1085	AM-310L	<ul style="list-style-type: none"> • Silencer (K-208) • Wrench (20 x 24) : 1 pc.

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"> • Hose (K-215) : $\varnothing 6$ mm x 6 ft • Hose (K-216) : $\varnothing 8$ mm x 3 ft • Filter Joint (FJ-01) · Silencer (K-208) • Wrench (20 x 24) : 1 pc. 	

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
 $\varnothing 0.75''$
 $\varnothing 0.79''$
 $\varnothing 0.89''$
 $\varnothing 0.91''$
 $\varnothing 1.0''$
 $\varnothing 0.98''$

4

HES
iSpeed5
HTS
PLANET
Xpeed
ABT

5

AIR LINE KIT

6

PARTS

7

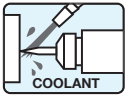
TECHNICAL DATA

8

APPLICATION EXAMPLES

INDEX

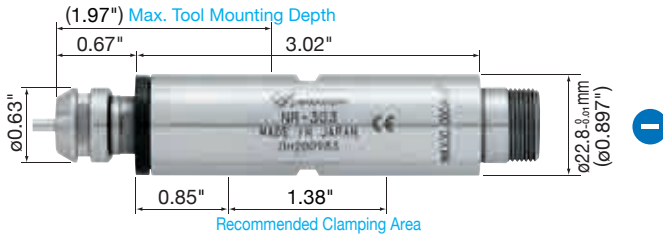
SPINDLE O.D. $\phi 0.897''$ ($\phi 22.8\text{mm}$)



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
$\phi 0.75''/\phi 0.79''$
$\phi 0.897''/\phi 0.91''$
$\phi 1.0''/\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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 μm
- Weight 7.58 oz.

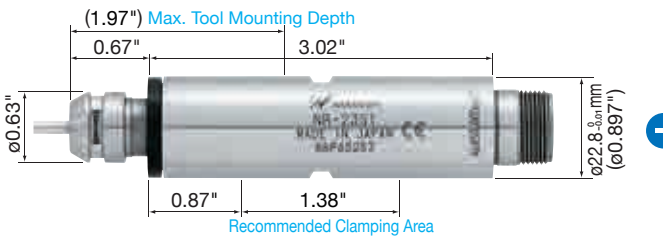
Additional collet purchase required:

- 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"> • Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs., (20 x 24) : 1 pc. 	

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 μm
- Weight 7.58 oz.

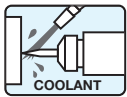
Additional collet purchase required:

- 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

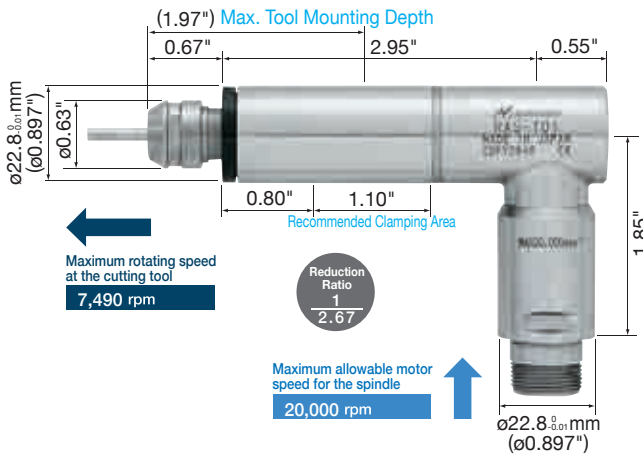
Product Code	Product Name	Standard Equipment · Accessories	
7855	NR-2351	<ul style="list-style-type: none"> • Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs., (20 x 24) : 1 pc. 	

*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



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

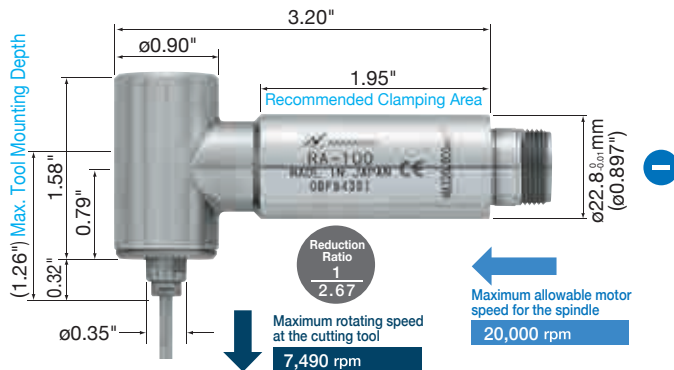
- Spindle Accuracy Within 2 μm
- Weight 11.46 oz.
- **Additional collet purchase required:**
 - Collet Series CHK-XX ø0.5mm~ø6.35mm Recommended CHK-3.175 ø1/8" (See Page 6-p3 for additional sizes)
 - Collet Nut (K-265) For Collet (CHK)
 - Metal Saw Arbor (KCH-03) For ø0.24" (I.D.) x ø1.18" (O.D.)
 - Grindstone Arbor (AGM-03) For grinding wheel I.D. of ø5 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 ø1/4" (ø6.35 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

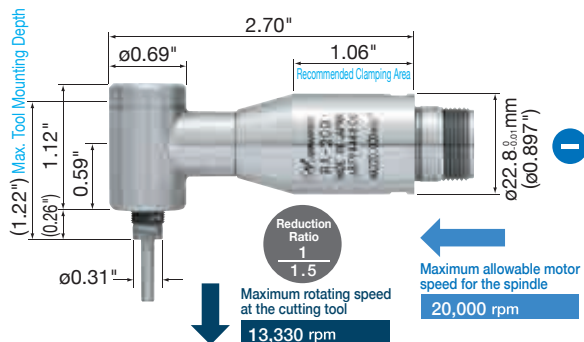
- Standard Size Collet (CH8-3.175) ø1/8"
- Weight 9.56 oz.
- < Optional >
- Collet (CH8- []) ø0.8 mm~ø3.175 mm (See Page 6-p5 for details)
- Metal Saw Arbor (KCH-02) For ø0.24" (I.D.) x ø1.18" (O.D.)

90° Angle Spindle

Product Code	Product Name	Standard Equipment · Accessories	
2902	RA-100	• Collet ø1/8" (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 ø1.18" (ø30 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) ø1/8"
- Weight 5.82 oz.
- < Optional >
- Collet (CHS- []) ø0.8 mm~ø3.175 mm (See Page 6-p4 for details)

90° Angle Spindle

Product Code	Product Name	Standard Equipment · Accessories	
2903	RA-200	• Collet ø1/8" (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.

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"
ø1.97"/ø0.98"/ø0.897"
E3000 - ø0.000rpm
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
Xspeed
ABT

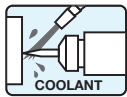
5
AIR LINE KIT

6
PARTS

7
TECHNICAL DATA

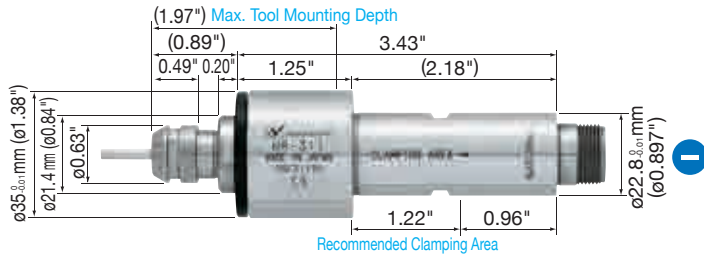
8
APPLICATION EXAMPLES
INDEX

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 $\phi 0.75''/\phi 0.79''$
$\phi 0.897''/\phi 0.91''$
$\phi 1.0''/\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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 μm
- Weight 13.05 oz.

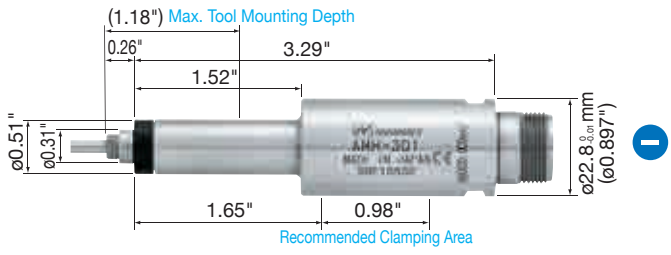
• **Additional collet purchase required:**
 Collet Series CHK-XX $\phi 0.5\text{mm} \sim \phi 6.35\text{mm}$
 Recommended CHK-3.175 $\phi 1/8''$
 (See Page 6-p3 for additional sizes)

- 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	• Collet Nut (K-265) : 1 pc. • Wrench (12 x 14), (20 x 24) : 1 pc. each	

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	• Collet $\phi 1/8''$ (CHM-3.175) : 1 pc. • Wrench (7 x 5.1), (6 x 4.5), (20 x 24) : 1 pc. each	

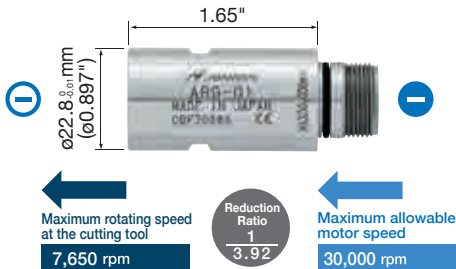
*Do not exceed the allowable motor speed for the spindle.

SPEED REDUCER O.D. $\phi 0.897''$ ($\phi 22.8\text{mm}$)



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 **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

$\phi 1.0''$ / $\phi 0.99''$ / $\phi 0.897''$

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

$\phi 0.75''$

$\phi 0.75''$

$\phi 0.89''$

$\phi 0.81''$

$\phi 1.0''$

$\phi 0.98''$

4

HES

iSpeed5

HTS

PLANET

Xspeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

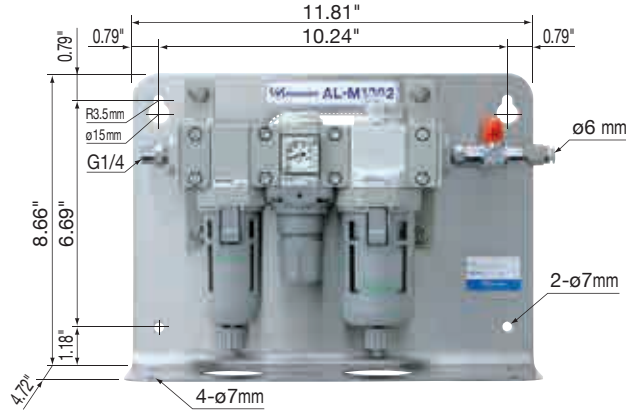
8

APPLICATION EXAMPLES

INDEX

1

Product Code 4502 AIR LINE KIT AL-M1202



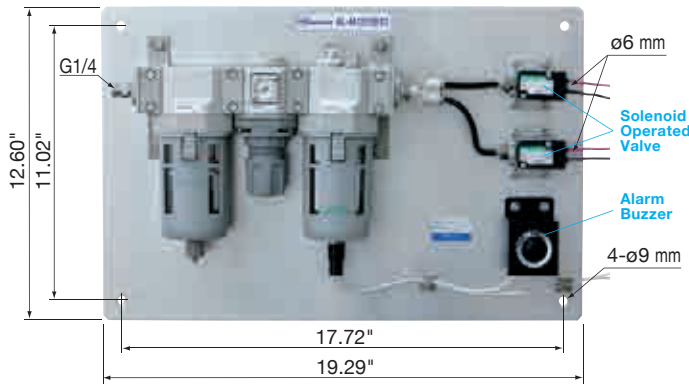
- The AL-M1202 provides simple, automatic conditioning of the air supplied to NAKANISHI Air Motors. The filter removes water and impure substances from the input air supply. The regulator maintains the proper air pressure, and the lubricator ensures proper oil flow to the motor and spindle. This Air Line Kit is wall mountable.

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

Product Code	Product Name	Standard Equipment · Accessories
4502	AL-M1202	<ul style="list-style-type: none"> • 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.

2

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"> • Air Filter · Air Regulator • Air Pressure Gauge · Lubricator • Solenoid Valve (DC 24V) : 2 pcs. • Buzzer (DC 24V) · Hose for Piping (K-275) : 6 ft • Lubricating Oil (K-202) : 1 pc.

3

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
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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

PARTS

7

TECHNICAL

DATA

8

APPLICATION

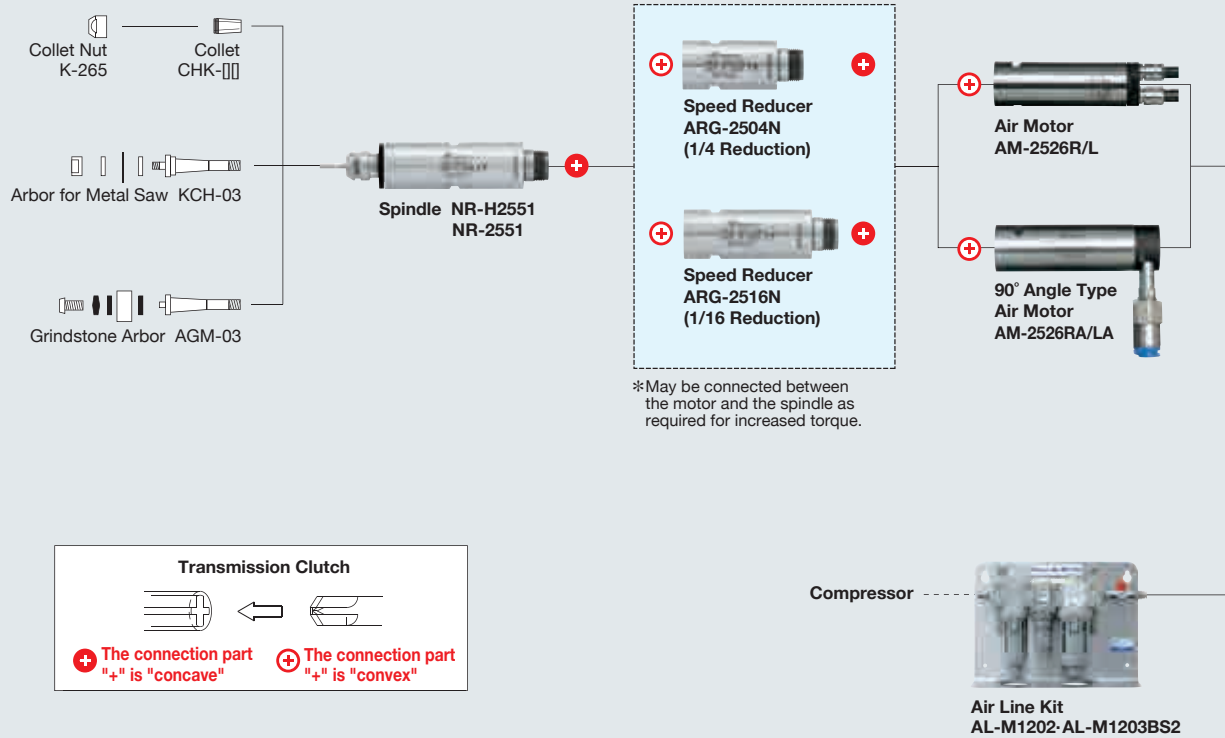
EXAMPLES

INDEX

- 1 EmaxEVO
- ESPRT
- 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 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 HES
- iSpeed5
- HTS
- PLANET
- Xpeed
- ABT
- 5 AIR LINE KIT
- 6 PARTS
- 7 TECHNICAL DATA
- 8 APPLICATION EXAMPLES
- INDEX

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.

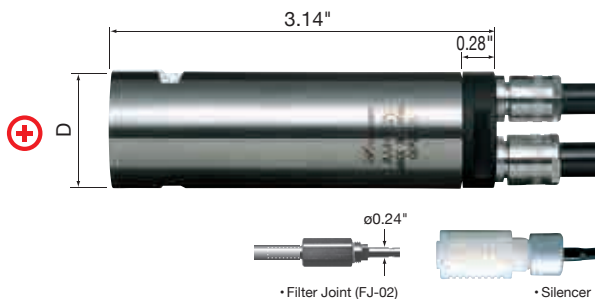


***Do not exceed the maximum motor speed recommendation for the spindles. Excess speed will dramatically reduce bearing life.**

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



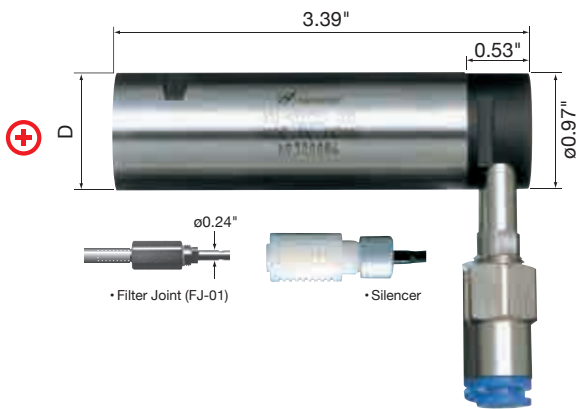
- Motor Speed 24,000 rpm (73PSI)
- Max. Output Power 130W
- Proper Air Pressure 44~73PSI
- Air Consumption 7.24CFM
- Motor Hose (Diameter / Length)
 - Air Intake $\phi 4.5$ (I.D.) x $\phi 6.7$ (O.D.) mm / 6 ft
 - Exhaust Air $\phi 5.5$ (I.D.) x $\phi 7.5$ (O.D.) mm / 3 ft
- Weight (w/o hose) 7.05 oz.

- 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"> • Hose (K-204) : 6 ft • Filter Joint (FJ-02) • Silencer (K-208) • Wrench (22 x 27) : 1 pc.

Product Code 1803 AIR MOTOR AM-2526RA (Forward Rotation) 120W 22,000 rpm



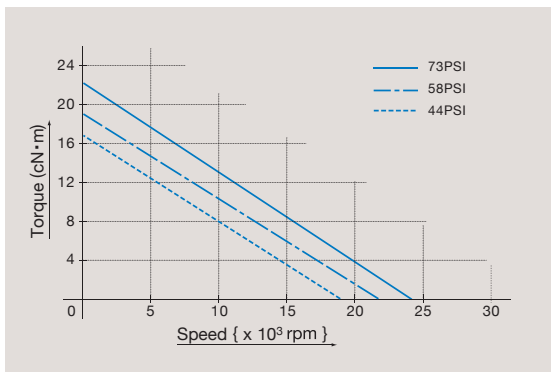
- Motor Speed 22,000 rpm (73PSI)
- Max. Output Power 120W
- Proper Air Pressure 44~73PSI
- Air Consumption 6.00CFM
- Motor Hose (Diameter / Length)
 - Air Intake $\phi 4.0$ (I.D.) x $\phi 6.0$ (O.D.) mm / 6 ft
 - Exhaust Air $\phi 5.5$ (I.D.) x $\phi 8.0$ (O.D.) mm / 3 ft
- Weight (w/o hose) 8.50 oz.

- The installation space is reduced by installing the air intake and exhaust air hoses at 90° 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)

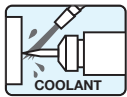
Product Code	Product Name	Outside Diameter	Standard Equipment - Accessories
1803	AM-2526RA	$\phi 0.98''$ ($\phi 25\text{ mm}$)	<ul style="list-style-type: none"> • Hose (K-215) : $\phi 6\text{ mm}$ x 6 ft • Hose (K-256) : $\phi 8\text{ mm}$ x 3 ft • Filter Joint (FJ-01) • Silencer (K-209) • Wrench (22 x 27) : 1 pc.

• AM-2526R Torque-Speed Characteristics



1
EmaxEV
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''$ ($\phi 25.4$ mm) / $\phi 0.897''$
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
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

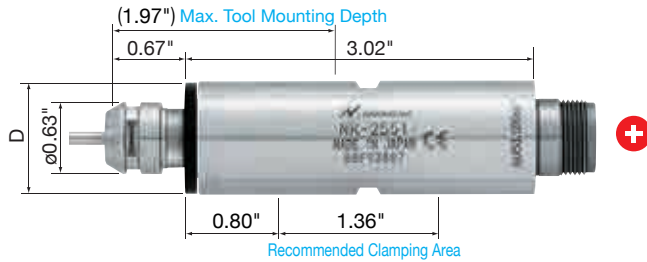
SPINDLE O.D. $\phi 1.0''$, $\phi 0.98''$ ($\phi 25.4$, $\phi 25\text{mm}$)



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
$\phi 0.75''/\phi 0.79''$
$\phi 0.897''/\phi 0.91''$
$\phi 1.0''/\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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 μm
- 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 $\phi 5\text{mm}$

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	$\phi 0.98''$ ($\phi 25\text{mm}$)	

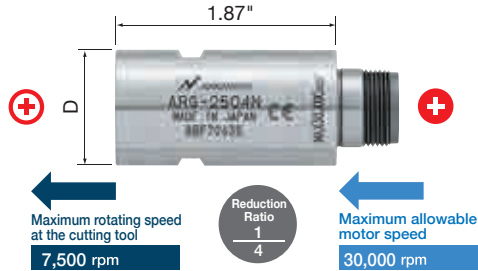
*Do not exceed the allowable motor speed for the spindle.

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**

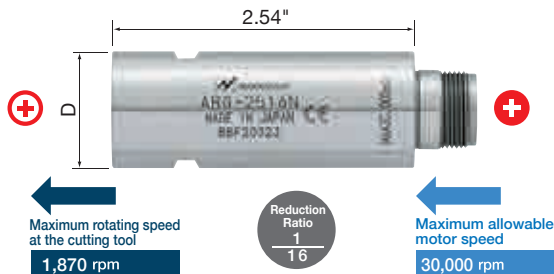
- Speed Reducing Mechanism By planetary gear system
- Weight 5.29 oz.

- 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

E3000

E3000

E3000

E3000

E3000

E4000

3

MA

$\phi 0.897"$

$\phi 1.0"$

$\phi 0.98"$

$\phi 1.18"$

MS

$\phi 0.75"$

$\phi 0.75"$

$\phi 0.897"$

$\phi 0.98"$

$\phi 1.0"$

$\phi 0.98"$

4

HES

iSpeed5

HTS

PLANET

Xspeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

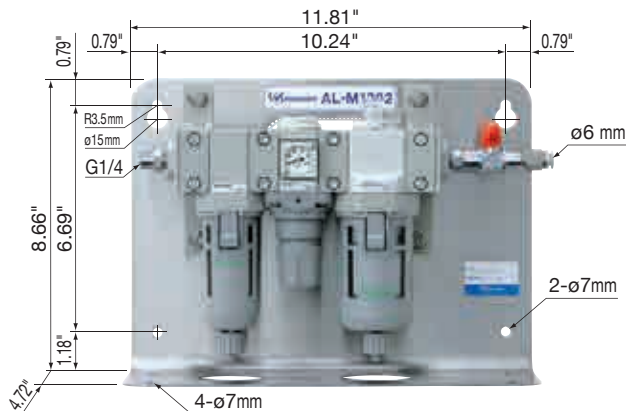
8

APPLICATION EXAMPLES

INDEX

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
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

Product Code 4502 AIR LINE KIT AL-M1202

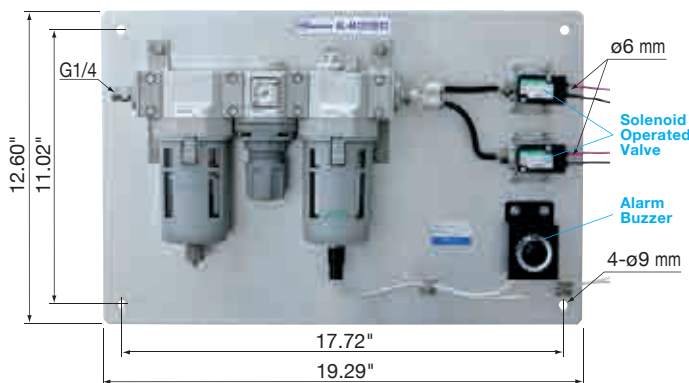


- The AL-M1202 provides simple, automatic conditioning of the air supplied to NAKANISHI Air Motors. The filter removes water and impure substances from the input air supply. The regulator maintains the proper air pressure, and the lubricator ensures proper oil flow to the motor and spindle. This Air 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"> • 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.

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"> • Air Filter · Air Regulator • Air Pressure Gauge · Lubricator • Solenoid Valve (DC 24V) : 2 pcs. • Buzzer (DC 24V) · Hose for Piping (K-275) : 6 ft • Lubricating Oil (K-202) : 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" / ø0.99" / 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

PARTS

7

TECHNICAL

DATA

8

APPLICATION

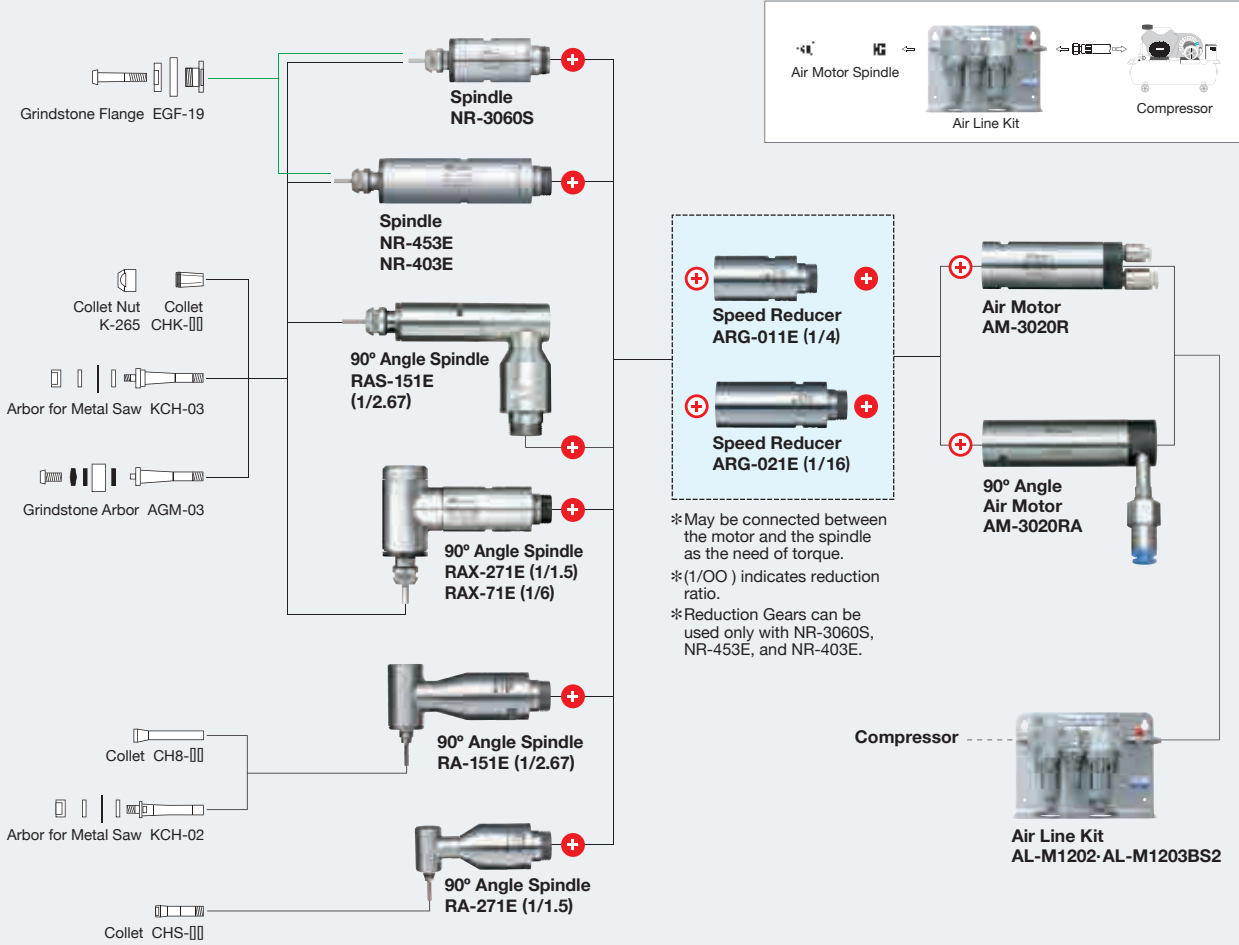
EXAMPLES

INDEX

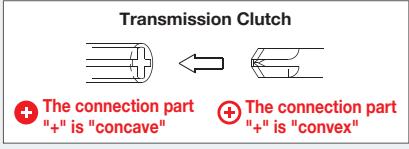
- MA Series consists of 3 kinds of air motors, AM-3020R {19,000 rpm, 130W}, AM-3020RA {18,000 rpm, 125W}, enabling a wide variety of operations by the combination of various kinds of spindles. Higher torque is provided by connecting speed reducers.

MA Series ø1.18" (ø30 mm) System Chart

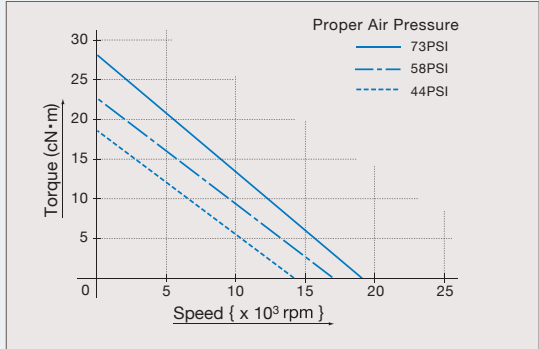
- MA Series has been designed to operate smoothly at high speed for long continuous cutting and grinding by connecting an air line kit directly between the air compressor and the air motor. (Air Line Kit Refer to 3-p25 in detail)
- Air supply and exhaust air hoses are supplied with an air motor. Air supply hose is provided with metal fitting to connect to ø6 mm one-touch joint. Air exhaust hose is supplied with silencer.



*May be connected between the motor and the spindle as the need of torque.
 *(1/00) indicates reduction ratio.
 *Reduction Gears can be used only with NR-3060S, NR-453E, and NR-403E.



AM-3020R Torque-Speed Characteristics



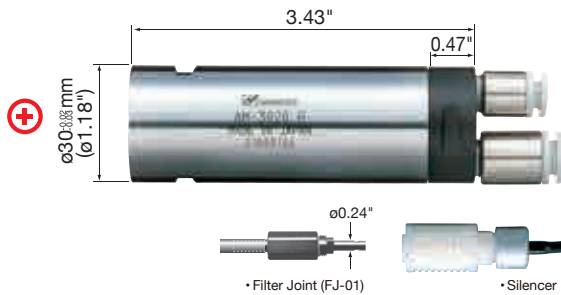
***Do not exceed the maximum motor speed recommendation for the spindles. Excess speed will dramatically reduce bearing life.**

- 1 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"
- ø0.98"
- 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

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



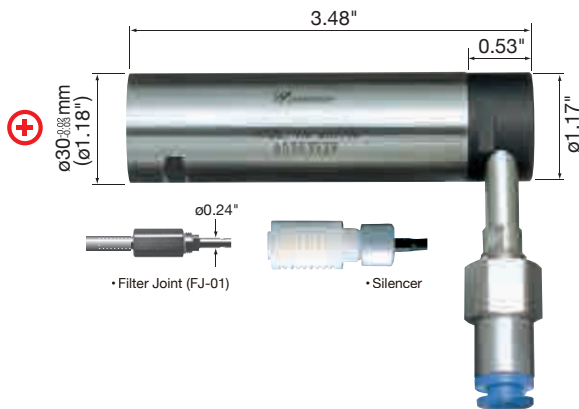
- Ultra precision, compact, vane-type air motor provides high torque with small volume of air consumption. Withstands long continuous operation without heat generation. Silencer keeps noise to a minimum.

- 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"> • Hose (K-215) : $\phi 6$ mm x 6 ft • Hose (K-256) : $\phi 8$ mm x 3 ft • Filter Joint (FJ-01) · Silencer (K-208) • Wrench (22 x 27) : 1 pc. 	

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.

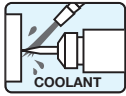
- Motor Speed 18,000 rpm (73PSI)
- Max. Output Power 125W
- Proper Air Pressure 44~73PSI
- Air Consumption 6.18CFM
- Motor Hose (Diameter / Length)
- Air Intake $\phi 4.0$ (I.D.) x $\phi 6.0$ (O.D.) mm / 6 ft
- Exhaust Air $\phi 6.0$ (I.D.) x $\phi 8.0$ (O.D.) mm / 3 ft
- Weight (w/o hose) 11.96 oz.

90° Angle Type Air Motor

Product Code	Product Name	Standard Equipment · Accessories	
1799	AM-3020RA	<ul style="list-style-type: none"> • Hose (K-215) : $\phi 6$ mm x 6 ft • Hose (K-256) : $\phi 8$ mm x 3 ft • Filter Joint (FJ-01) · Silencer (K-208) • Wrench (22 x 27) : 1 pc. 	

1
EmaxEVC
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
$\phi 1.18''$
$\phi 1.0''$ / $\phi 0.98''$ / $\phi 0.897''$
E3000
- 80,000rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''$ / $\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''$ / $\phi 0.75''$
$\phi 0.897''$ / $\phi 0.81''$
$\phi 1.0''$ / $\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

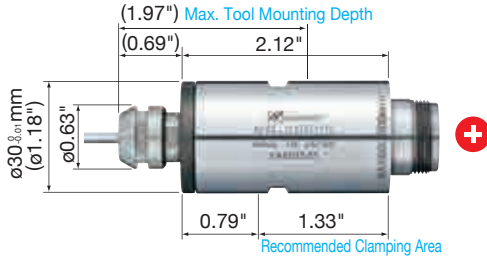
SPINDLE O.D. $\phi 1.18''$ ($\phi 30\text{mm}$)



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 - $\phi 0.000\text{rpm}$
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
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

Product Code **7859 SPINDLE NR-3060S** **60,000 rpm**



- This spindle can be used for small-diameter milling, drilling, slitting, chamfering, grinding, etc.

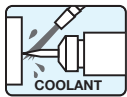
- Allowable Motor Speed 60,000 rpm
- Spindle Accuracy Within 1 μm
- Weight 9.17 oz.
- Ceramic Bearing

Additional collet purchase required:

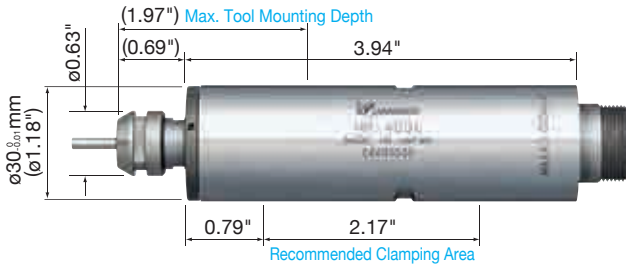
- Collet Series CHK-XX $\phi 0.5\text{mm} \sim \phi 6.35\text{mm}$
Recommended CHK-3.175 $\phi 1/8''$
(See Page 6-p3 for additional sizes)
- Collet Nut (K-265) For Collet (CHK)
- Metal Saw Arbor (KCH-03) For $\phi 0.24''$ (I.D.) x $\phi 1.18''$ (O.D.)
- Grindstone Arbor (AGM -03) For grinding wheel with I.D. of $\phi 5\text{ mm}$
- 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"> • Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs., (22 x 27) : 1 pc. 	



Product Code 7847 SPINDLE NR-403E 40,000 rpm



- 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

- This spindle can be used for small-diameter milling, drilling, slitting, chamfering, grinding, etc.

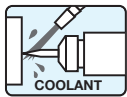
Spindle

Product Code	Product Name	Standard Equipment · Accessories	
7847	NR-403E	<ul style="list-style-type: none"> • Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs., (22 x 27) : 1 pc. 	

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

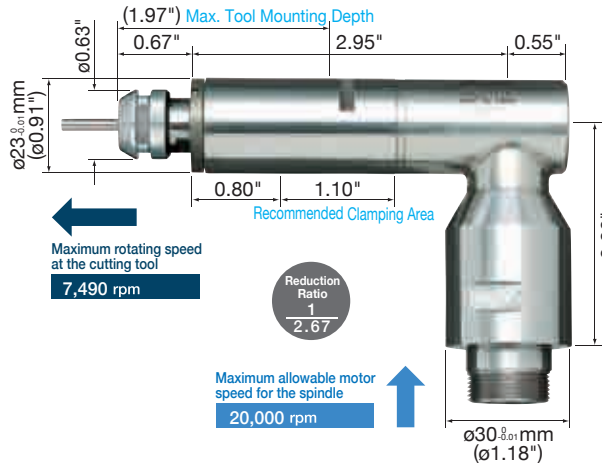
- 1**
- EmaxEVC
- ESPERT
- ROTUS
- IMPULSE
- PRESTO II
- Sheenus ZERO
- Sonic-Cutter ZERO
- 2**
- iSpeed3
- E2000 ø1.0"/ø0.98"/ø0.897"
- E3000 - One Piece
- E3000 - Modular
- ø1.18"
- ø1.07"/ø0.98"/ø0.897"
- E3000 - 30,000rpm
- E4000
- 3**
- MA
- ø0.897"
- ø1.0"
- ø0.98"
- ø1.18"
- MS
- ø0.75"
- ø0.75"
- ø0.897"
- ø0.81"
- ø1.0"
- ø0.98"
- 4**
- HES
- iSpeed5
- HTS
- PLANET
- Xspeed
- 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 μm
- 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 $\phi 5\text{mm}$

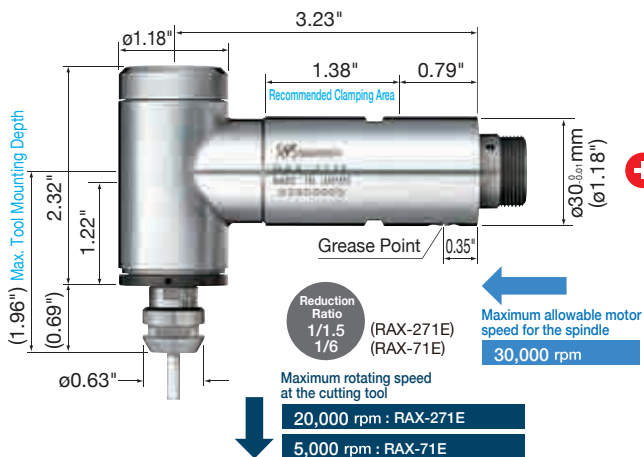
90° Angle Spindle

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 μm
- 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 $\phi 5\text{mm}$

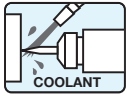
90° Angle Spindle

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.



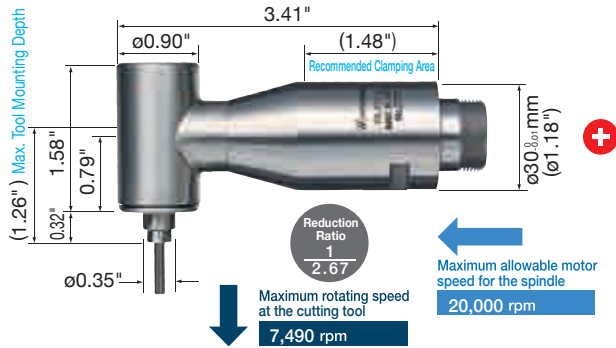
To extend the life expectancy of the Speed Reducer, inject grease every 70 to 100 hours. Grease injection prevents friction of the internal gears as well as heat generation. Adding grease also prevents the degradation of the existing grease in the reducer. Please maintain a reducer grease maintenance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

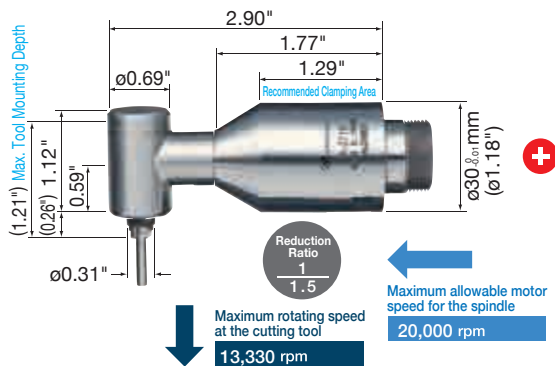
Maximum rotating speed at the cutting tool <Reduction Ratio : 1/2.67> **7,490 rpm**

- 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	

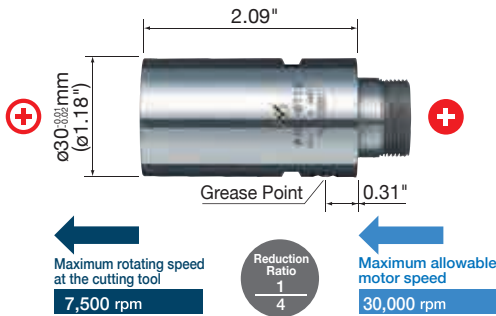
1
EmaxEV
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0''$ ($\phi 25.4$) / $\phi 0.897''$
E3000 - One Piece
E3000 - Modular
$\phi 1.18''$
$\phi 1.0''$ / $\phi 0.98''$ / $\phi 0.897''$
E3000 - 80,000rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''$ / $\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''$ / $\phi 0.75''$
$\phi 0.897''$ / $\phi 0.897''$
$\phi 1.0''$ / $\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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.

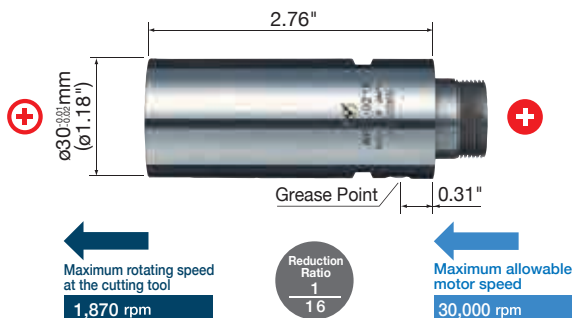
Speed Reducer 1/4

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.

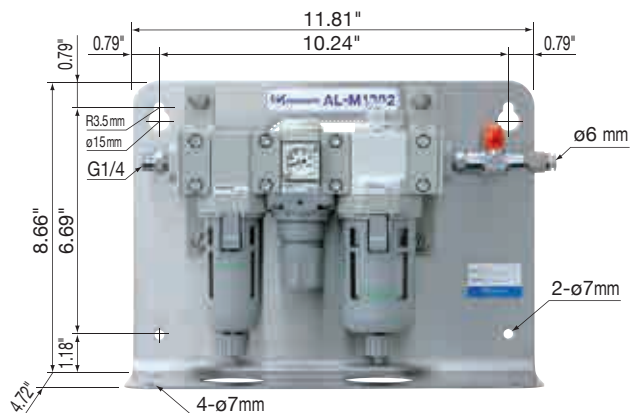
Speed Reducer 1/16

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

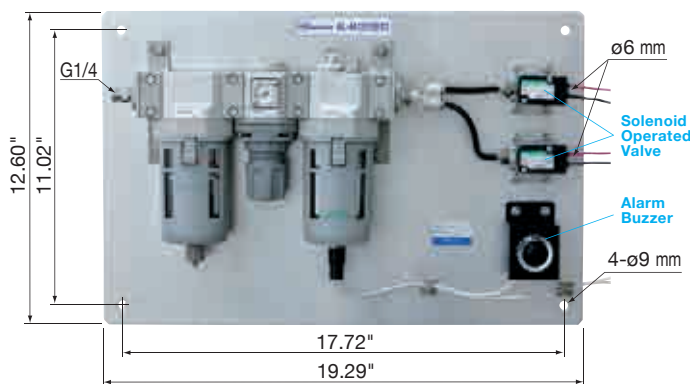


- The AL-M1202 provides simple, automatic conditioning of the air supplied to NAKANISHI Air Motors. The filter removes water and impure substances from the input air supply. The regulator maintains the proper air pressure, and the lubricator ensures proper oil flow to the motor and spindle. This Air Line Kit is wall mountable.

Air Line Kit (For 6 mm Hose · Filter Mesh 0.3 μm)

Product Code	Product Name	Standard Equipment · Accessories	
4502	AL-M1202	<ul style="list-style-type: none"> • 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. 	

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"> • Air Filter · Air Regulator • Air Pressure Gauge · Lubricator • Solenoid Valve (DC 24V) : 2 pcs. • Buzzer (DC 24V) · Hose for Piping (K-275) : 6 ft • Lubricating Oil (K-202) : 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"/ø0.99"/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
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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
— 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

8

APPLICATION
EXAMPLES

INDEX

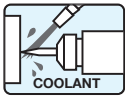
One Piece Type Spindle

- 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
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" / ø0.79" / ø0.897" / ø0.91" / ø1.0" / ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

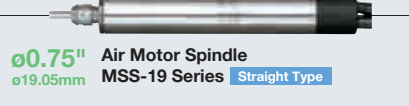
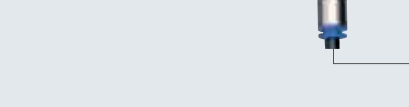
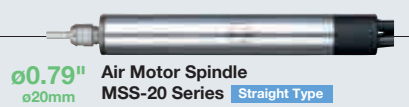
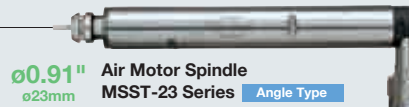
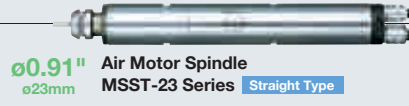
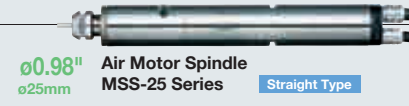
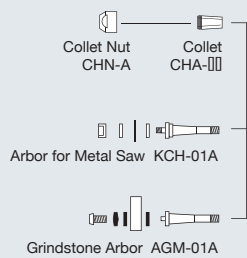
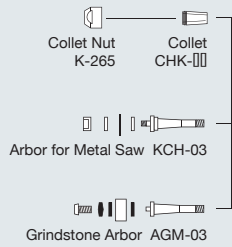
SYSTEM CHART



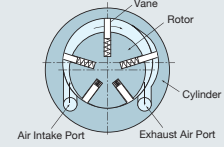
MS Series can be used in conjunction with water or oil based coolants.

MS Series System Chart

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.07"/ø0.987"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.987"/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



● Air Motor



Air Line Kit
AL-M1202-AL-M1203BS2

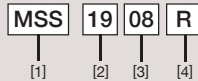
Compressor

Configuration & Characteristics

Model Code Example

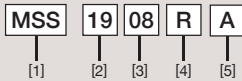
• Straight Type

- [1] SERIES CODE
- [2] OUTSIDE DIAMETER
- [3] SPEED
- [4] R=FORWARD (Right)



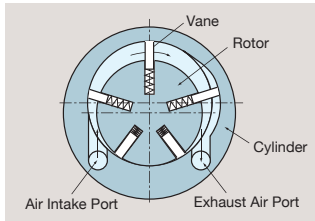
• 90° Angle Type

- [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



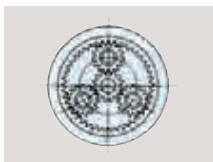
The rotor of the air motor rotates off center in the cylinder. The vanes are pushed by compressed air and this rotates the rotor. This small air motor produces high torque making it suitable for small diameter drilling, milling, slitting and grinding.

• 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

• Outer Housing Material

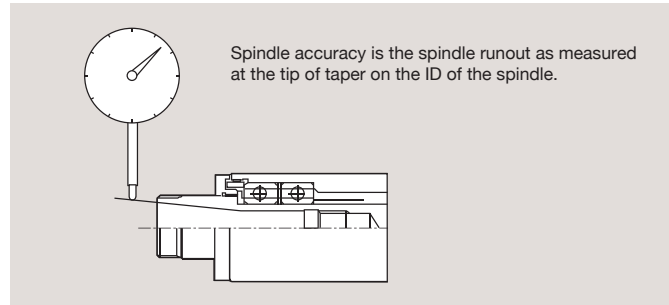
The outer housing is (SUS416) precision ground to +0/-0.01mm.

• 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.

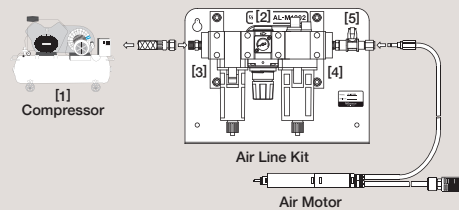
• Spindle Accuracy



• 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.



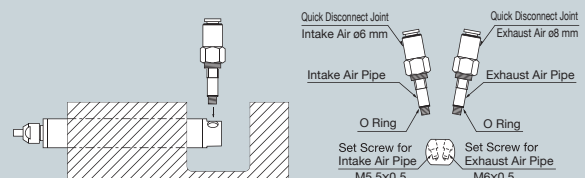
Air Line Kit Refer to 3-p34

• 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

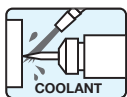
- [1] Remove Intake and Exhaust Air Pipes from motor spindle.
 - [2] Insert the straight spindle from the front side of holder and fix it.
 - [3] Mount the intake and exhaust air pipes to the spindle fixed on the holder and attach a hose to the quick disconnect joint.
- Urethane hose of 6 x 4 for intake air and 8 x 5 for exhaust air can be installed.



*The motor speed of 90° Angle air connection type motor / spindles are 10% less than that of the straight type.

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 - 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.75"
ø0.89" 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
INDEX

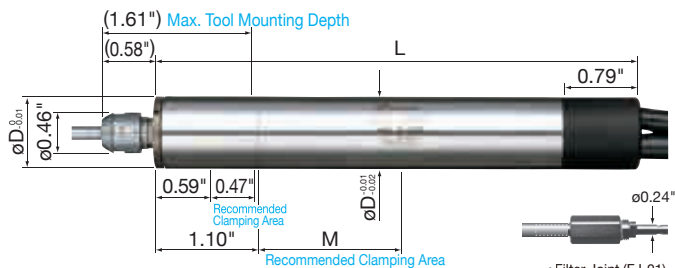
AIR MOTOR SPINDLE O.D. $\phi 0.75''(\phi 19.05\text{mm})$, $\phi 0.79''(\phi 20\text{mm})$ Output 72W



MSS-19 · MSS-20 SERIES STRAIGHT · 90° ANGLE TYPE

30,000 · 8,000 · 2,000 rpm

● STRAIGHT TYPE (R)

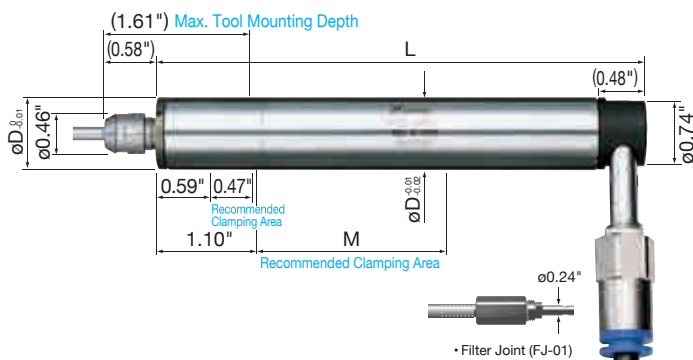


- Proper Air Pressure 44~73PSI
- Air Consumption 5.47CFM
- Spindle Accuracy Within 2 μm
- Motor Hose (Diameter / Length)
 - [R-type] Air Intake $\phi 3.7$ (I.D.) x $\phi 5.7$ (O.D.) mm / 6 ft
 - Exhaust Air $\phi 5.0$ (I.D.) x $\phi 6.5$ (O.D.) mm / 3 ft
 - [RA-type] Air Intake $\phi 4.0$ (I.D.) x $\phi 6.0$ (O.D.) mm / 6 ft
 - Exhaust Air $\phi 5.5$ (I.D.) x $\phi 8.0$ (O.D.) mm / 3 ft

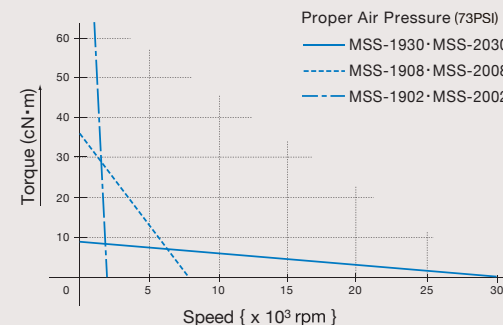
• Additional collet purchase required:

- 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



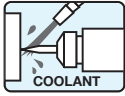
Caution: Two recommended clamp areas are laser-marked on the spindle. Select one of them for clamping, and do not clamp both areas.

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.
8,000 rpm (73PSI) 1/4 Speed Reduction										
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.
2,000 rpm (73PSI) 1/16 Speed Reduction										
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)

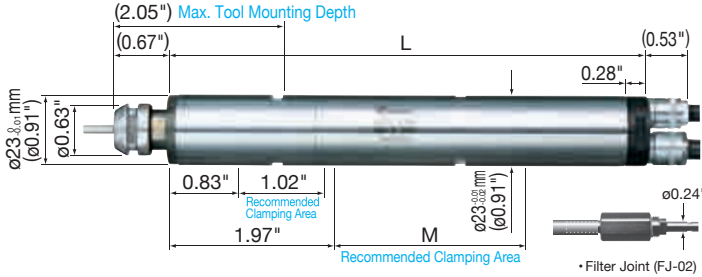
AIR MOTOR SPINDLE O.D. $\phi 0.91"$ ($\phi 23\text{mm}$) Output 109W



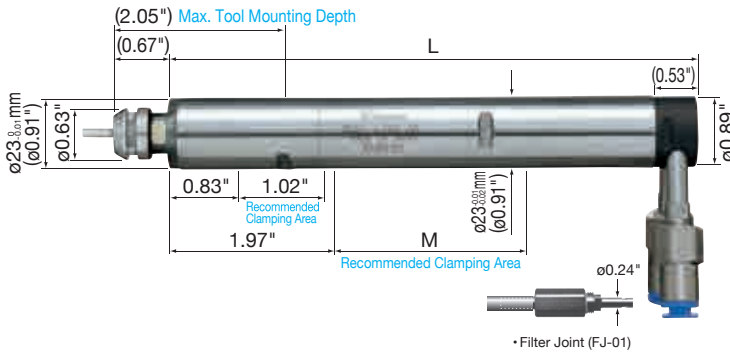
MSST-23 SERIES STRAIGHT · 90° ANGLE TYPE

30,000 · 8,000 · 2,000 rpm

● STRAIGHT TYPE (R)

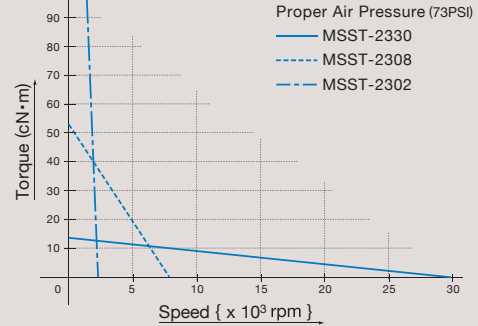


● 90° ANGLE TYPE (RA)



- Proper Air Pressure 44~73PSI
- Air Consumption (R-type) : 6.71CFM
(RA-type) : 6.00CFM
- Spindle Accuracy Within 2 μm
- 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

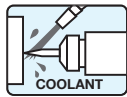
Product Code	Product Name	Shape	Rotating Direction	Max. Output	Max. Torque	Length	M	Weight
7837	MSST-2302R	Straight	FWD. (CW)	108W	202 cN · m	6.47"	2.44"	14.29 oz.
7838	MSST-2302RA	90° Angle				6.73"		15.73 oz.

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
	$\phi 0.75"/\phi 0.79"/\phi 0.897"/\phi 0.91"$
	$\phi 1.0"/\phi 0.98"$
4	
	HES
	iSpeed5
	HTS
	PLANET
	Xspeed
	ABT
5	
	AIR LINE KIT
6	
	PARTS
7	
	TECHNICAL DATA
8	
	APPLICATION EXAMPLES
	INDEX

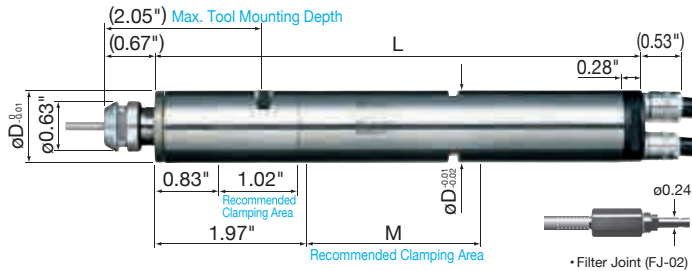
ø0.99" (ø25mm) Output 130W



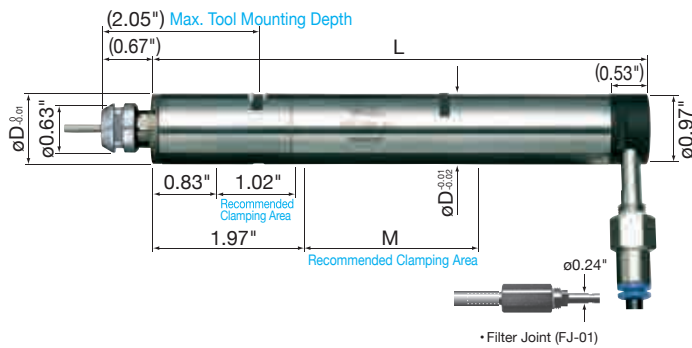
MSS-25 SERIES STRAIGHT · 90° ANGLE TYPE

24,000 · 6,000 · 1,500 rpm

● STRAIGHT TYPE (R)

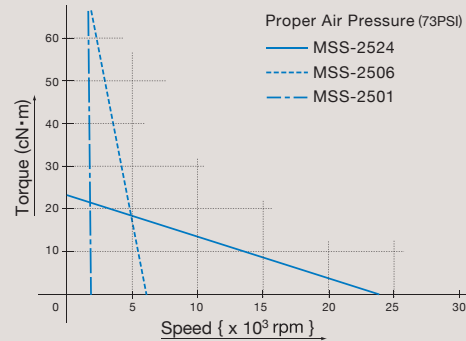


● 90° ANGLE TYPE (RA)



- 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.

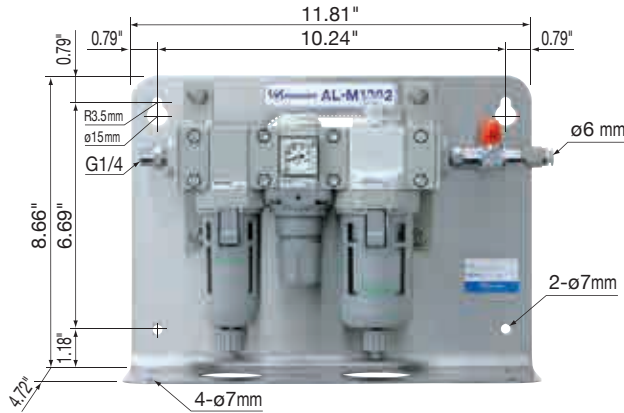
R : 1,500 rpm (73PSI) / RA : 1,400 rpm (73PSI) 1/16 Speed Reduction

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

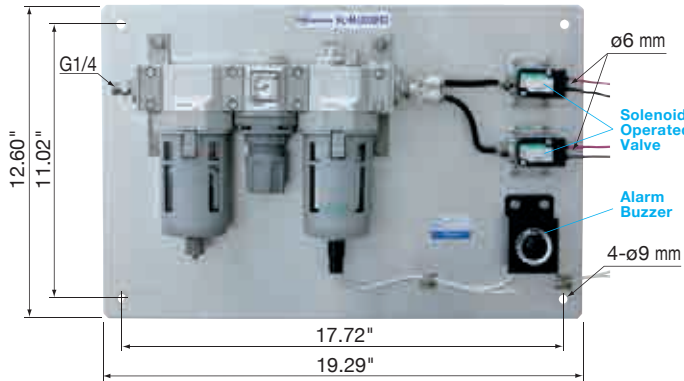


- The AL-M1202 provides simple, automatic conditioning of the air supplied to NAKANISHI Air Motors. The filter removes water and impure substances from the input air supply. The regulator maintains the proper air pressure, and the lubricator ensures proper oil flow to the motor and spindle. This Air 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"> • 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. 	

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"> • Air Filter · Air Regulator • Air Pressure Gauge · Lubricator • Solenoid Valve (DC 24V) : 2 pcs. • Buzzer (DC 24V) · Hose for Piping (K-275) : 6 ft • Lubricating Oil (K-202) : 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
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
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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
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AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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
8
APPLICATION EXAMPLES
INDEX

UPGRADE YOUR EXISTING NC MILLING MACHINES AND CNC MACHINING CENTERS TO HIGH SPEED MACHINES

1

● ULTRA-PRECISION HIGH-SPEED MILLING SPINDLE
HES SERIES

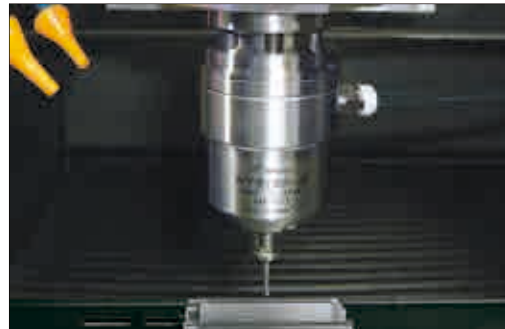


● FULLY TOOL CHANGEABLE ULTRA-PRECISION
HIGH-SPEED MILLING SPINDLE
iSpeed5 SERIES








2

● ULTRA-HIGH SPEED AIR TURBINE MILLING SPINDLE
HTS SERIES



3

Milling System Comparison

Series	Drive Type	Type		Consumption	Product Name	Max Speed	Output Power	Max Collet Size	Shank
HES 	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
iSpeed5 	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
HTS 	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
Xpeed 	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
ABT 	Pneumatic	Air Turbine	80PSI	< 1.77 CFM	ABT1000	100,000	88W	4.0 mm	Grip Ring

HES510

ULTRA-PRECISION HIGH-SPEED MILLING SPINDLE

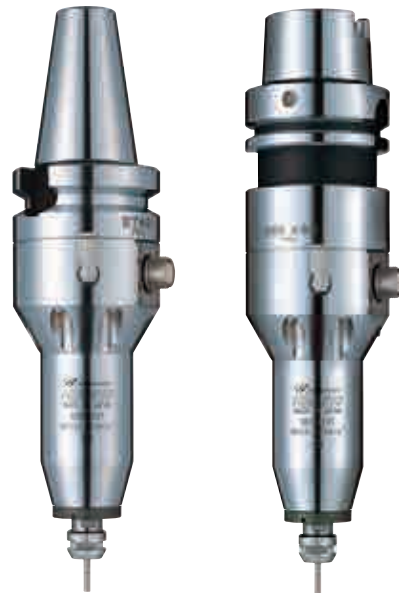
ELECTRIC SYSTEM

- 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.

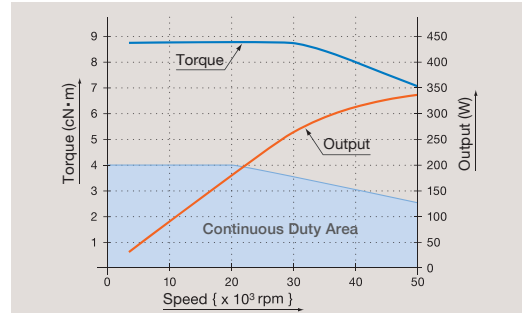
- **Cooling Air**
Clean dry air is required to cool the motor and protect the spindle from contaminants. Please use a filter and regulator. (Proper air pressure 29-44PSI) (Use Air Line Kit AL-C1204)
- **Large Variety of Tapers Available**
BT, CAT, ST32 and HSK A tapers are available.
- **Protection Circuit**
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

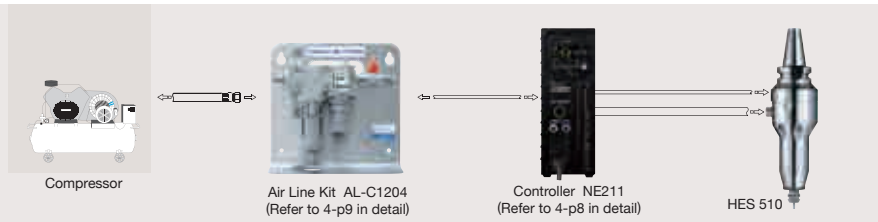
- Speed 5,000-50,000 rpm
 - Max. Output Power 340W
 - Spindle Accuracy Within 1 μ m
- < Additional Equipment Required >
- NE-211 Control Unit
 - Motor Cord (EMCD)
 - Air Line Kit (AL-C1204)
- **Additional collet purchase required:**
- Collet Series CHK-XX $\phi 0.5$ mm~ $\phi 6.35$ mm
 - Recommended 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



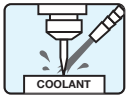
HES510 Connection Drawing

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.

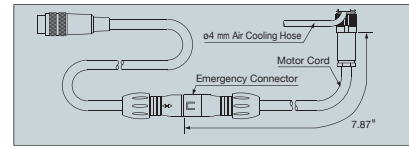


1
EmaxEV
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0"/\phi 0.99"/\phi 0.997"$
E3000 - One Piece
E3000 - Modular
$\phi 1.18"$
$\phi 1.0"/\phi 0.98"/\phi 0.997"$
E3000 - 80,000rpm
E4000
3
MA
$\phi 0.897"$
$\phi 1.0"/\phi 0.98"$
$\phi 1.18"$
MS
$\phi 0.75"$
$\phi 0.79"$
$\phi 0.89"$
$\phi 0.94"$
$\phi 1.0"/\phi 0.98"$
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



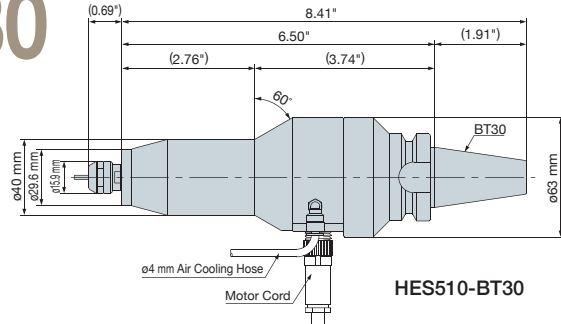
HES Series can be used in conjunction with water or oil based coolants.



*All HES Series Spindles incorporate an emergency connector

HES510-BT30

30



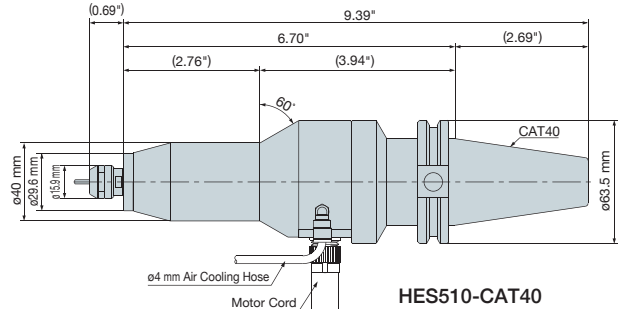
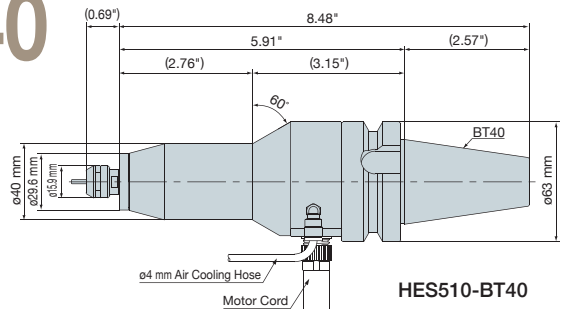
• Additional collet purchase required:

Collet Series CHK-XX ø0.5mm~ø6.35mm
 RecommendedCHK-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

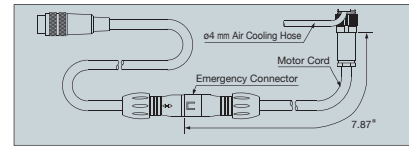
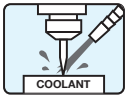
40



• Additional collet purchase required:

Collet Series CHK-XX ø0.5mm~ø6.35mm
 RecommendedCHK-3.175 ø1/8"
 (See Page 6-p3 for additional sizes)

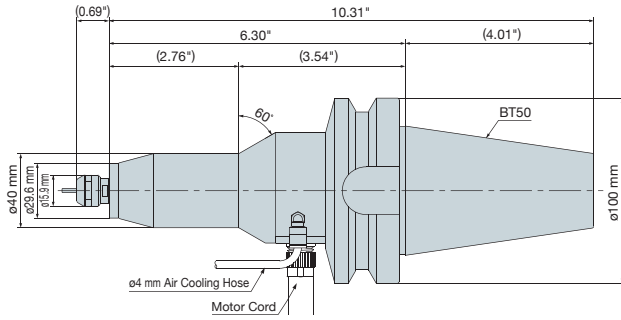
Product Code	Product Name	Standard Equipment · Accessories	Weight
7891	HES510-BT40	• Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs.	5.07 lb.
7893	HES510-CAT40		5.75 lb.



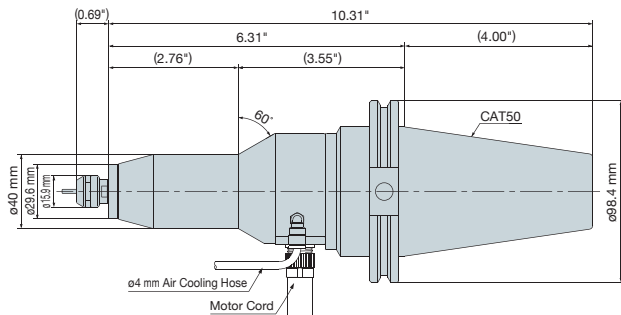
*All HES Series Spindles incorporate an emergency connector

HES510-BT50 / CAT50

50



HES510-BT50



HES510-CAT50

• 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
7892	HES510-BT50	• Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs.	11.02 lb.
7894	HES510-CAT50		9.70 lb.

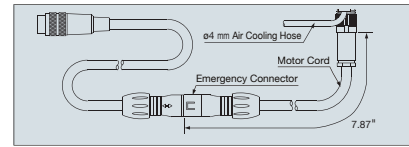
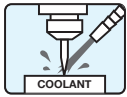


Caution

- 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 $\varnothing 1.0'' (\varnothing 25.4) / \varnothing 0.897''$
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
$\varnothing 0.75''$ $\varnothing 0.75''$
$\varnothing 0.897''$ $\varnothing 0.897''$
$\varnothing 1.0''$ $\varnothing 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

HES510 ULTRA-PRECISION HIGH-SPEED MILLING SPINDLE



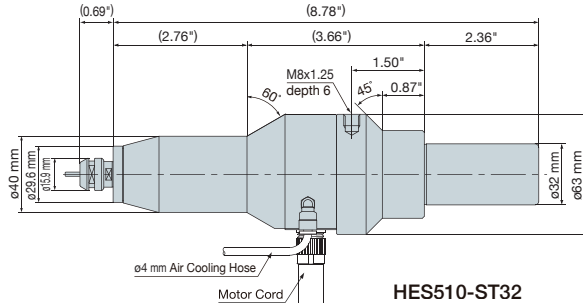
*All HES Series Spindles incorporate an emergency connector

HES510-ST32

ST32

• 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-ST32

Product Code	Product Name	Standard Equipment - Accessories	Weight
7899	HES510-ST32	• Collet Nut (K-265) : 1 pc. • Wrench (12 x 14) : 2 pcs.	5.29 lb.

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus ZERO

Sonic-Cutter ZERO

2

iSpeed3

E2000 $\varnothing 1.0 / \varnothing 0.98 / \varnothing 0.987$

E3000 - One Piece

E3000 - Modular

$\varnothing 1.18"$

$\varnothing 1.0 / \varnothing 0.98 / \varnothing 0.987$

E3000 - $\varnothing 0.000\text{rpm}$

E4000

3

MA

$\varnothing 0.897"$

$\varnothing 1.0 / \varnothing 0.98"$

$\varnothing 1.18"$

MS

$\varnothing 0.75"$

$\varnothing 0.79"$

$\varnothing 0.897"$

$\varnothing 0.91"$

$\varnothing 1.0"$

$\varnothing 0.98"$

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

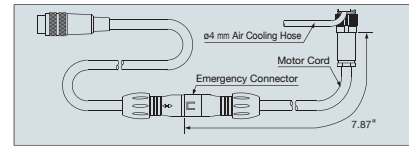
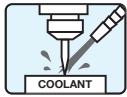
7

TECHNICAL DATA

8

APPLICATION EXAMPLES

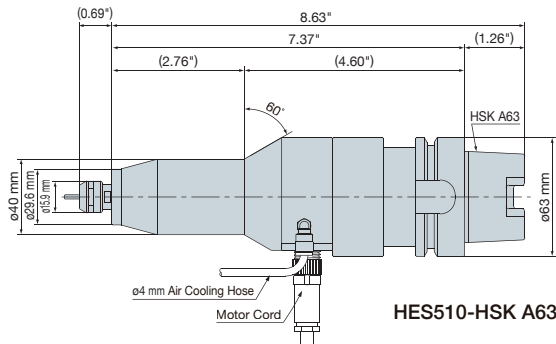
INDEX



*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

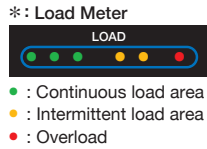
Product Code	Product Name	
DB15M	DB15M	For NSK Control Connector B

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
$\varnothing 1.18"$
$\varnothing 1.07"/\varnothing 0.98"/\varnothing 0.897"$
E3000 - 80,000rpm
E4000
3
MA
$\varnothing 0.897"$
$\varnothing 1.0"/\varnothing 0.98"$
$\varnothing 1.18"$
MS
$\varnothing 0.75"/\varnothing 0.71"$
$\varnothing 0.89"/\varnothing 0.81"$
$\varnothing 1.0"/\varnothing 0.98"$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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

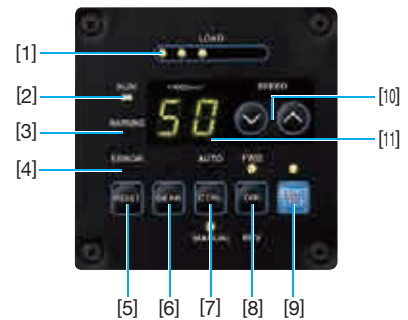
Power Switch

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"> • Power Cord : 6 ft • Air Hose with filter • Reducer • Connector Cap (Provided) • Bracket • Nylon Clip • Screw • Rubber Pad • Fuse (T6.3AL) 250V: 2 pcs.

*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

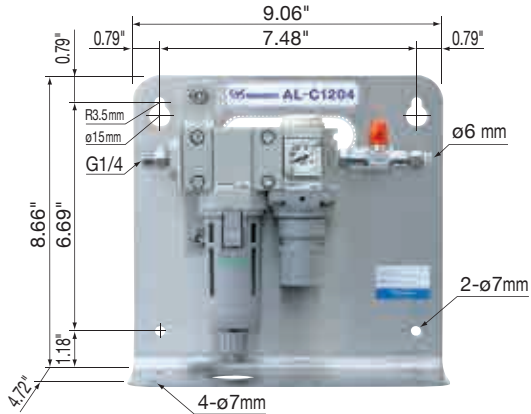


● Power Source Plug

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"> • Air Filter · Air Regulator • Air Pressure Gauge • Air ON-OFF Valve • Hose for Piping (K-275) : 6 ft 	

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"> • Air Cooling Hose : $\phi 4$ mm • Reducer • Connector Cap (Provided) 	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
$\phi 0.75''/\phi 0.75''$
$\phi 0.89''/\phi 0.91''$
$\phi 1.0''/\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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 μ m

< Additional Equipment Required >

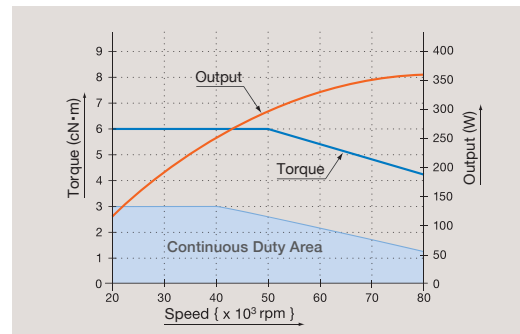
- NE-211 Control Unit
- Motor Cord (EMCD)
- Air Line Kit (AL-C1204)

- 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)

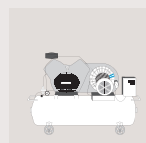
- Motor Cord (EMCD-810-□□) Length 13 ft (9248) / 19 ft (9249) / 26 ft (9250)
- Provided with Air Cooling Hose $\phi 4$ mm

- 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.



Compressor



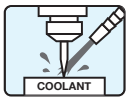
Air Line Kit AL-C1204
(Refer to 4-p15 in detail)



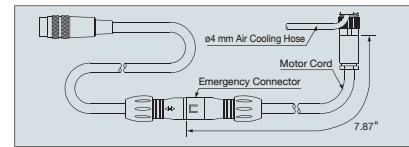
Controller NE211
(Refer to 4-p14 in detail)



HES810



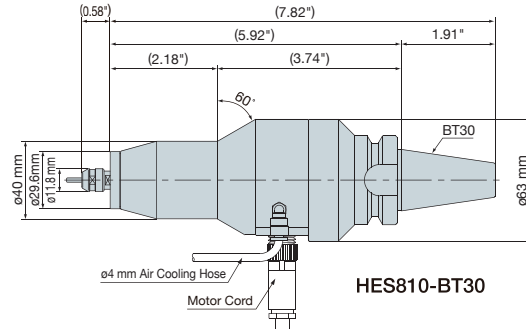
HES Series can be used in conjunction with water or oil based coolants.



*All HES Series Spindles incorporate an emergency connector

HES810-BT30

30



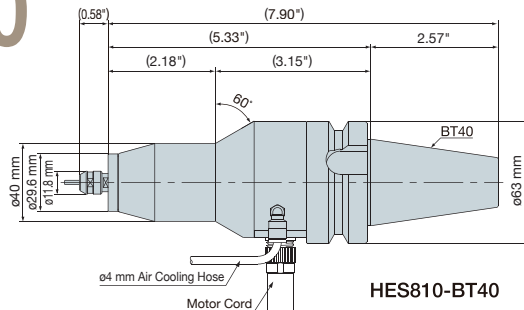
• Additional collet purchase required:

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"> Collet Nut (CHN-A) : 1 pc. Wrench (8 x 5), (9 x 11) : 1 pc. each 	4.41 lb.

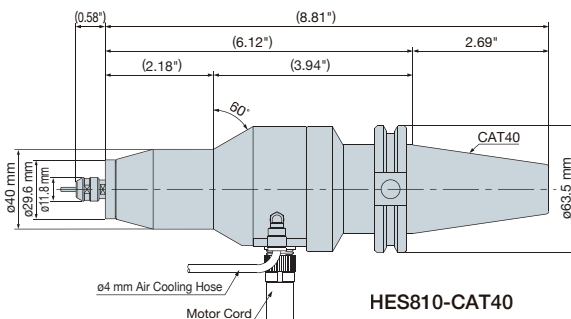
HES810-BT40 / CAT40

40



• Additional collet purchase required:

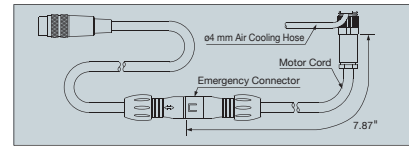
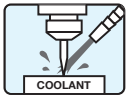
Collet Series CHA-XX $\varnothing 0.5\text{mm} \sim \varnothing 4.0\text{mm}$
 Recommended CHA-3.175 $\varnothing 1/8"$
 (See Page 6-p2 for additional sizes)



Product Code	Product Name	Standard Equipment · Accessories	Weight
7897	HES810-BT40	<ul style="list-style-type: none"> Collet Nut (CHN-A) : 1 pc. Wrench (8 x 5), (9 x 11) : 1 pc. each 	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
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

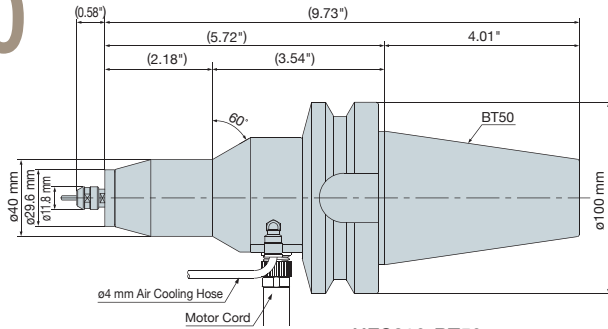
HES810 ULTRA-PRECISION HIGH-SPEED MILLING SPINDLE



*All HES Series Spindles incorporate an emergency connector

HES810-BT50

50



HES810-BT50

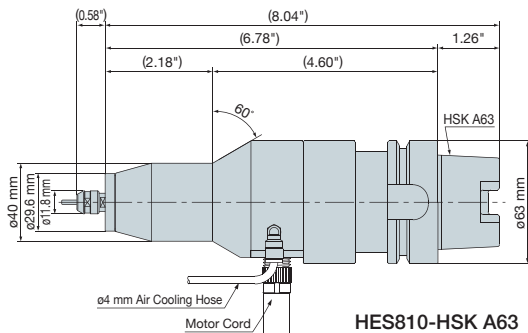
• Additional collet purchase required:

- 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"> • Collet Nut (CHN-A) : 1 pc. • Wrench (8 x 5), (9 x 11) : 1 pc. each 	10.80 lb.

HES810-HSK A63

HSK A63

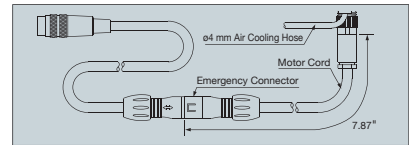
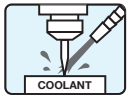


HES810-HSK A63

• 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)

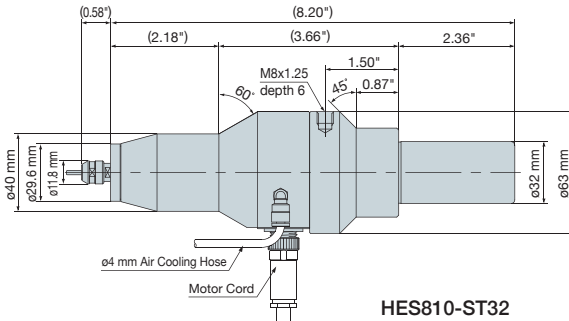
Product Code	Product Name	Standard Equipment · Accessories	Weight
7884	HES810-HSK A63	<ul style="list-style-type: none"> • Collet Nut (CHN-A) : 1 pc. • Wrench (8 x 5), (9 x 11) : 1 pc. each 	5.73 lb.



*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"> Collet Nut (CHN-A) : 1 pc. Wrench (8 x 5), (9 x 11) : 1 pc. each 	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

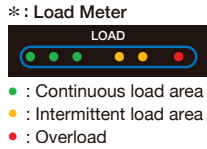
Product Code	Product Name	
DB15M	DB15M	For NSK Control Connector B

1
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
$\varnothing 1.18"$
$\varnothing 1.07"/\varnothing 0.98"/\varnothing 0.957"$
E3000 - 80,000rpm
E4000
3
MA
$\varnothing 0.897"$
$\varnothing 1.0"/\varnothing 0.98"$
$\varnothing 1.18"$
MS
$\varnothing 0.75"/\varnothing 0.719"$
$\varnothing 0.897"/\varnothing 0.814"$
$\varnothing 1.0"/\varnothing 0.98"$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

HES810 CONTROLLER

- AC100-240V for international operation
- 1,000~80,000 rpm
- Maximum Output 350W

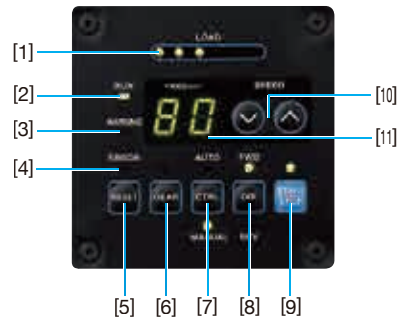
Product Code **9775** **CONTROLLER NE211** **80,000 rpm**



- 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
- Inlet 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"> • Power Cord : 6 ft • Air Hose with filter • Reducer • Connector Cap (Provided) • Bracket • Nylon Clip • Screw • Rubber Pad • Fuse (T6.3AL) 250V: 2 pcs.

*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

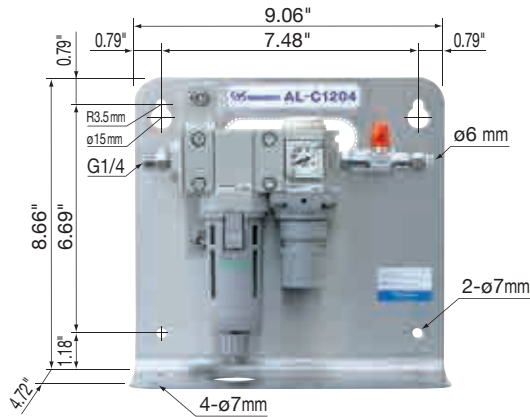


● Power Source Plug

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 6 mm Hose · Filter Mesh 0.3 μm)

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

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"> • Air Cooling Hose : 4 mm • Reducer • Connector Cap (Provided) 	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

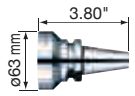
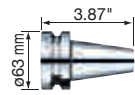
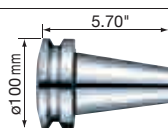
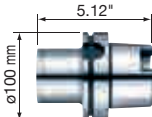
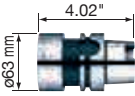
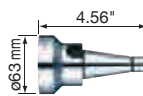
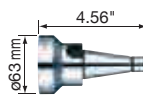
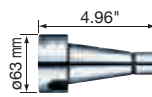
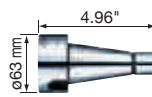
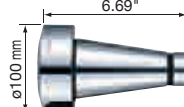
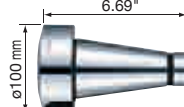
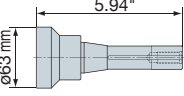
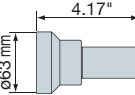
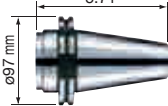

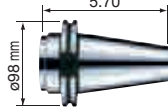
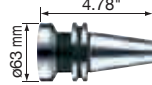


HES Purchasing Example

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
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

HES SERIES SHANKS

Product	Product Code	Product Name	Description	Fit to
 3.80" ø63 mm	9148	HES510-BT30-SK	• Type : BT30 • Weight : 23.28 oz.	HES510-BT30 HES810-BT30
 3.87" ø63 mm	9149	HES510-BT40-SK	• Type : BT40 • Weight : 27.87 oz.	HES510-BT40 HES810-BT40
 5.70" ø100 mm	9150	HES510-BT50-SK	• Type : BT50 • Weight : 122.75 oz.	HES510-BT50 HES810-BT50
 5.12" ø100 mm	9151	HES510-HSK A100-SK	• Type : HSK A100 • Weight : 102.65 oz.	HES510-HSK A100
 4.02" ø63 mm	9152	HES510-HSK A63-SK	• Type : HSK A63 • Weight : 43.03 oz.	HES510-HSK A63 HES810-HSK A63
 4.56" ø63 mm	9153	HES510-NT30-SK	• Type : NT30 • Weight : 24.69 oz.	HES510-NT30
 4.56" ø63 mm	9154	HES510-NT30M-SK	• Type : NT30M *Metric threads • Weight : 24.69 oz.	HES510-NT30M
 4.96" ø63 mm	9155	HES510-NT40-SK	• Type : NT40 • Weight : 32.80 oz.	HES510-NT40 HES810-NT40
 4.96" ø63 mm	9156	HES510-NT40M-SK	• Type : NT40M *Metric threads • Weight : 32.80 oz.	HES510-NT40M
 6.69" ø100 mm	9157	HES510-NT50-SK	• Type : NT50 • Weight : 135.80 oz.	HES510-NT50
 6.69" ø100 mm	9158	HES510-NT50M-SK	• Type : NT50M *Metric threads • Weight : 136.16 oz.	HES510-NT50M
 5.94" ø63 mm	9159	HES510-R8-SK	• Type : R8 • Weight : 32.00 oz.	HES510-R8
 4.17" ø63 mm	9160	HES510-ST32-SK	• Type : ST32 • Weight : 31.82 oz.	HES510-ST32 HES810-ST32
 5.71" ø97 mm	9190	HES510-IT50-SK	• Type : IT50 • Weight : 103.56 oz.	HES510-IT50
 4.79" ø72 mm	9191	HES510-IT40-SK	• Type : IT40 • Weight : 37.81 oz.	HES510-IT40 HES810-IT40
 5.70" ø98 mm	9192	HES510-CAT50-SK	• Type : CAT50 • Weight : 103.53 oz.	HES510-CAT50
 4.78" ø63 mm	9193	HES510-CAT40-SK	• Type : CAT40 • Weight : 38.20	HES510-CAT40 HES810-CAT40

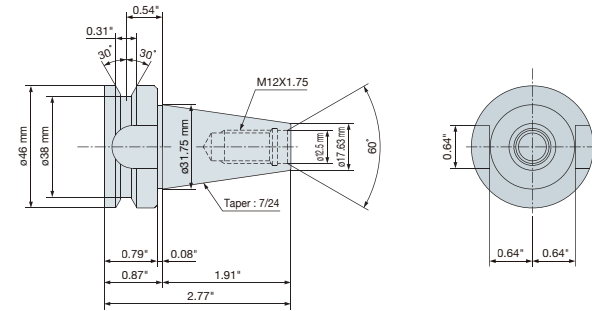
1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000
ø1.0"/ø0.98"/ø0.897"
E3000
- One Piece
E3000
- Modular
ø1.18"
ø1.0"/ø0.98"/ø0.897"
E3000
- ø0.000rpm
E4000
3
MA
ø0.897"
ø1.0"
ø0.98"
ø1.18"
MS
ø0.75"
ø0.79"
ø0.91"
ø0.91"
ø1.0"
ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed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

TAPER SHANKS

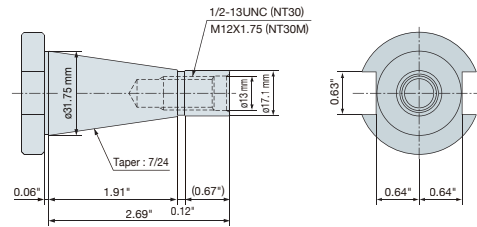
Taper Shanks Dimensions

30

BT30

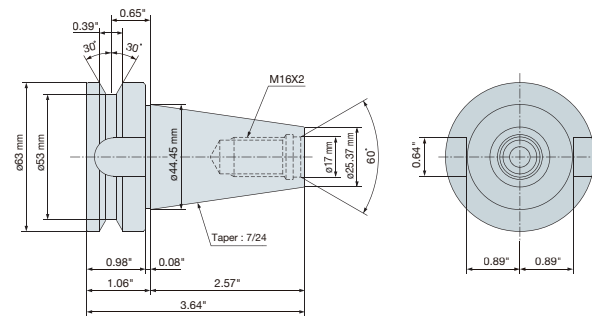


NT30 (M)

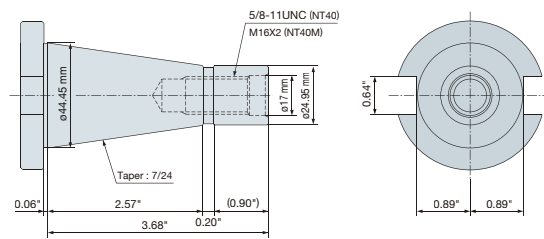


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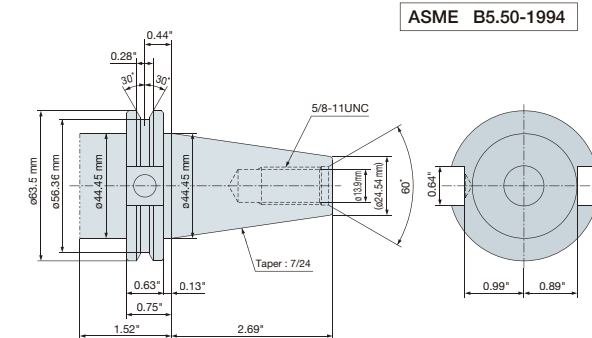
BT40



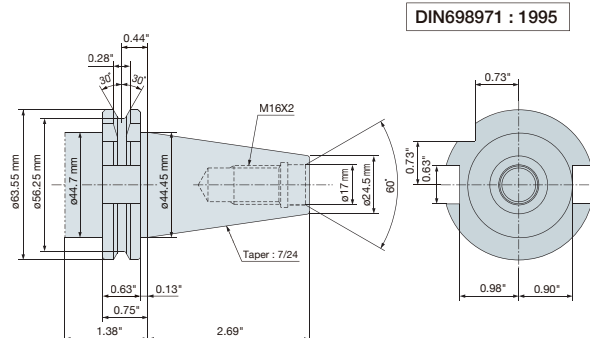
NT40 (M)



CAT40



IT40



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

$\phi 1.18$

$\phi 1.07$ / $\phi 0.98$

$\phi 0.99$

E3000

- 30,000rpm

E4000

3

MA

$\phi 0.897$

$\phi 1.0$

$\phi 0.98$

$\phi 1.18$

MS

$\phi 0.75$

$\phi 0.79$

$\phi 0.99$

$\phi 0.91$

$\phi 1.0$

$\phi 0.98$

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL

DATA

8

APPLICATION

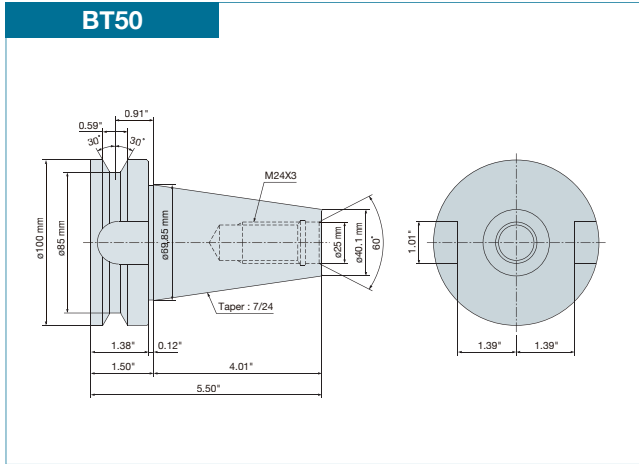
EXAMPLES

INDEX

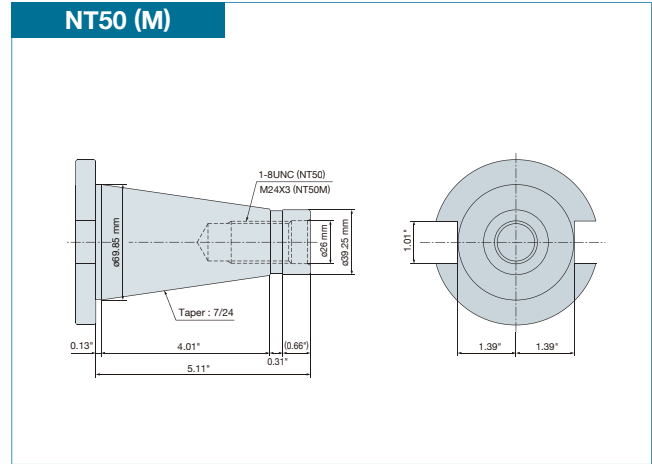
Taper Shanks Dimensions

50

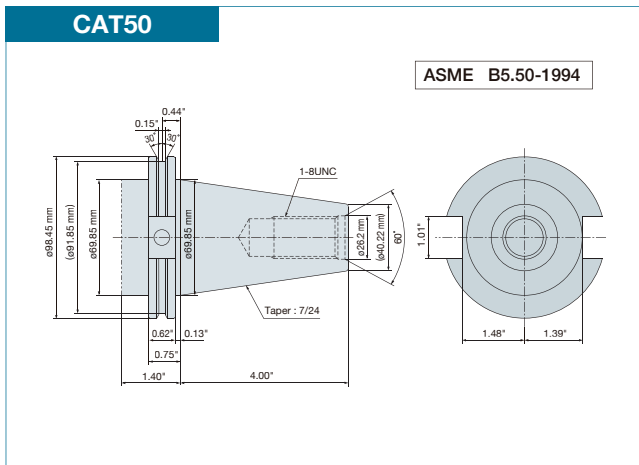
BT50



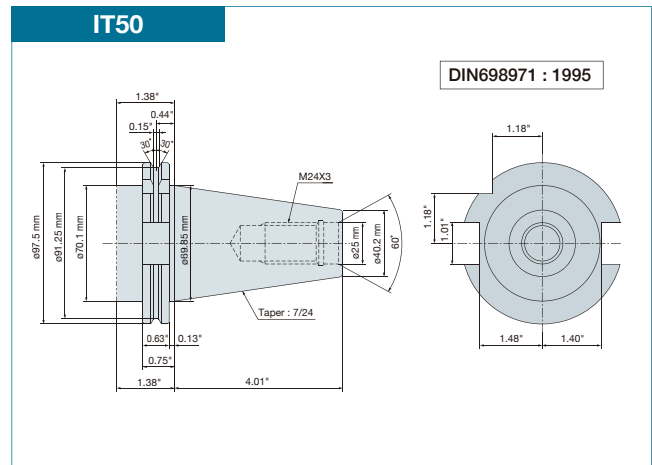
NT50 (M)



CAT50

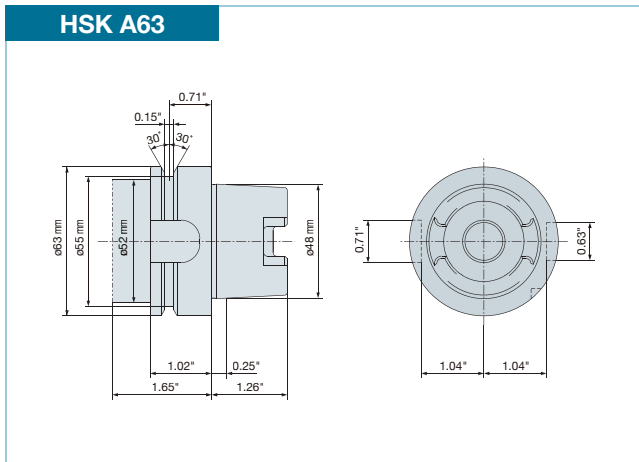


IT50



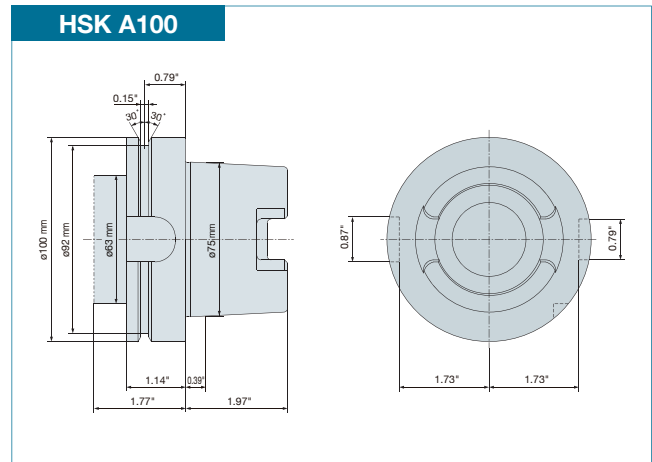
HSK A63

HSK A63



HSK A100

HSK A100

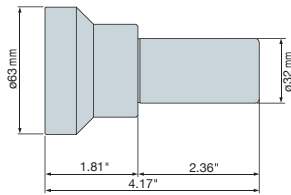


1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus
ZERO
Sonic-Cutter
ZERO
2
iSpeed3
E2000
$\phi 1.07/\phi 0.98^\circ/\phi 0.89^\circ$
E3000
- One Piece
E3000
- Modular
$\phi 1.18^\circ$
$\phi 1.07/\phi 0.98^\circ/\phi 0.89^\circ$
E3000
- $\phi 0.000$ rpm
E4000
3
MA
$\phi 0.897^\circ$
$\phi 1.0^\circ$
$\phi 0.96^\circ$
$\phi 1.18^\circ$
MS
$\phi 0.75^\circ$
$\phi 0.79^\circ$
$\phi 0.91^\circ$
$\phi 1.0^\circ$
$\phi 0.98^\circ$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

Taper Shanks Dimensions

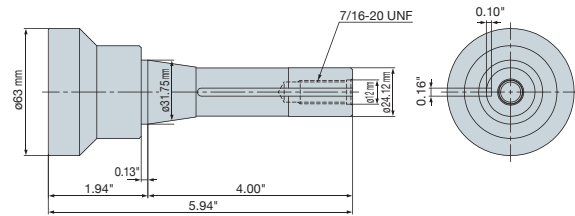
ST32

ST32



R8

R8



1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

— One Piece

E3000

— Modular

ø1.0" / ø0.98"

ø0.89"

E3000

— 80,000rpm

E4000

3

MA

ø0.897"

ø1.0"

ø0.98"

ø1.18"

MS

ø0.75"

ø0.75"

ø0.89"

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

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

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL

DATA

8

APPLICATION

EXAMPLES

INDEX

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"
	ø1.0" / 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
8	APPLICATION EXAMPLES
	INDEX

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

TECHNICAL

DATA

8

APPLICATION

EXAMPLES

INDEX

- Upgrade your existing CNC machining centers to high speed machines with full automatic tool changeability.

60,000 ~ 80,000 max rpm
Output 350 W



- 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 >

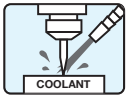
- Air Line Kit (AL-C1204) For Controller NE287
- Collet (CHK- □□) ø0.5 mm-ø6.35 mm
- Collet (CHA- □□) ø0.5 mm-ø4.0 mm

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
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"
ø0.897" 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



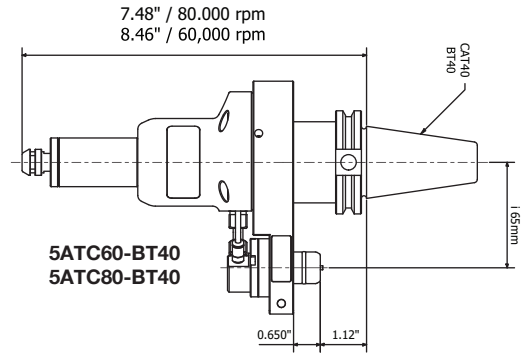
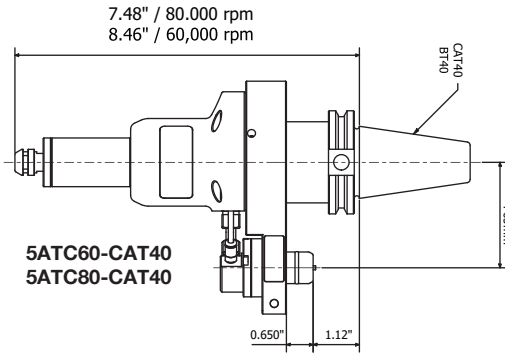
iSpeed5 Series can be used in conjunction with water or oil based coolants.

- 1 EmaxEVO
- ESPERT
- ROTUS
- IMPULSE
- PRESTO II
- Sheenus ZERO
- Sonic-Cutter ZERO
- 2 iSpeed3
- E2000 $\phi 1.0''/\phi 0.98''/\phi 0.897''$
- 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
- $\phi 0.75''/\phi 0.79''$
- $\phi 0.87''/\phi 0.91''$
- $\phi 1.0''/\phi 0.98''$
- 4
- HES
- iSpeed5
- HTS
- PLANET
- Xpeed
- ABT
- 5
- AIR LINE KIT
- 6
- PARTS
- 7
- TECHNICAL DATA
- 8
- APPLICATION EXAMPLES
- INDEX

5ATC60-CAT40 / BT40

5ATC80-CAT40 / BT40

40

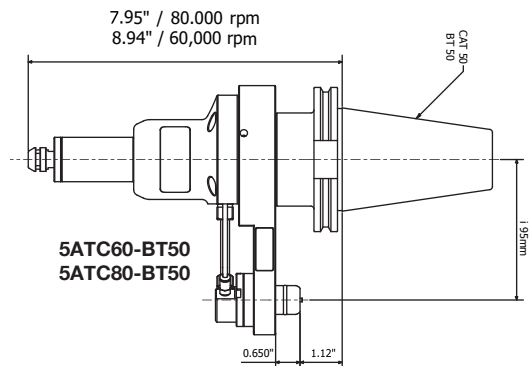
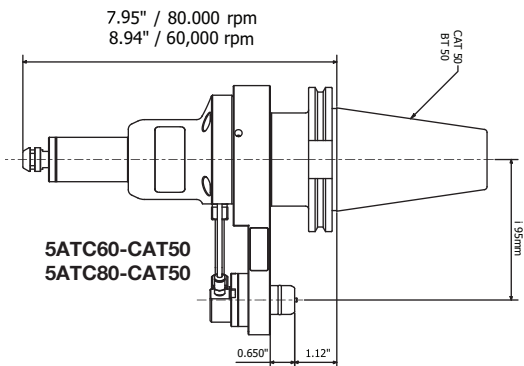


Product Code	Product Name	Description
506001	5ATC60-CAT40	60,000 RPM ATC Spindle CAT40 iSpeed5
506002	5ATC60-BT40	60,000 RPM ATC Spindle BT40 iSpeed5
508001	5ATC80-CAT40	80,000 RPM ATC Spindle CAT40 iSpeed5
508002	5ATC80-BT40	80,000 RPM ATC Spindle BT40 iSpeed5

5ATC60-CAT50 / BT50

5ATC80-CAT50 / BT50

50

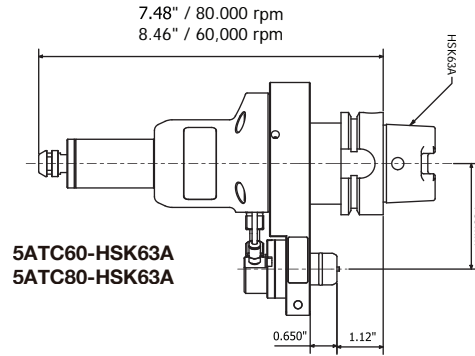


Product Code	Product Name	Description
506003	5ATC60-CAT50	60,000 RPM ATC Spindle CAT50 iSpeed5
506004	5ATC60-BT50	60,000 RPM ATC Spindle BT50 iSpeed5
508003	5ATC80-CAT50	80,000 RPM ATC Spindle CAT50 iSpeed5
508004	5ATC80-BT50	80,000 RPM ATC Spindle BT50 iSpeed5

5ATC60-HSK63A

5ATC80-HSK63A

HSK 63A



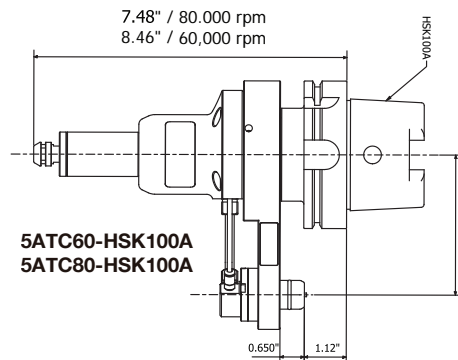
5ATC60-HSK63A
5ATC80-HSK63A

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



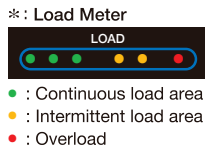
5ATC60-HSK100A
5ATC80-HSK100A

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
8491	C type	NE287	<ul style="list-style-type: none"> • Power Cord : 6 ft • Air Hose with filter • Reducer • Connector Cap (Provided) • Bracket • Nylon Clip • Screw • Rubber Pad • Fuse (T6.3AL) 250V: 2 pcs.

*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
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
- 30,000rpm
E4000

3
MA
ø0.897"
ø1.0"/ø0.98"
ø1.18"
MS
ø0.75"
ø0.75"
ø0.897"
ø0.897"
ø1.0"/ø0.98"

4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT

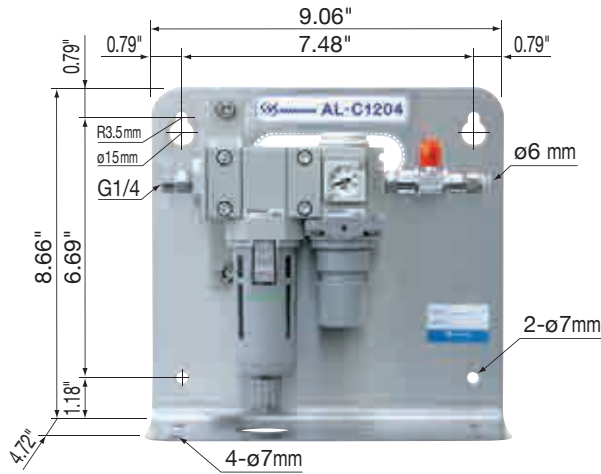
5
AIR LINE KIT

6
PARTS

7
TECHNICAL DATA

8
APPLICATION EXAMPLES
INDEX

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 06 mm Hose · Filter Mesh 0.3 μm)

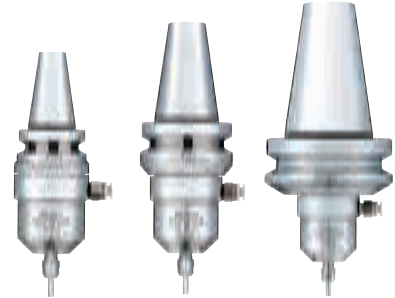
Product Code	Product Name	Standard Equipment · Accessories	
4504	AL-C1204	<ul style="list-style-type: none"> • Air Filter • Air Regulator • Air Pressure Gauge • Air ON-OFF Valve • Hose for Piping (K-275) : 6 ft 	

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 - 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.96"
ø1.18"
MS
ø0.75" ø0.79"
ø0.897" ø0.91"
ø1.0" ø0.96"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

Dramatically shorten mold cavity machining time.

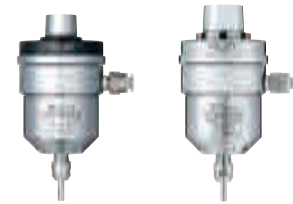
HTS1501S-BT30 / 40 / 50

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
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" ø0.75"
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
INDEX

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.
- **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 ϕ 1 mm
- **Spindle Accuracy is within 1 μ m**
- **Dramatically shorten mold cavity machining time**

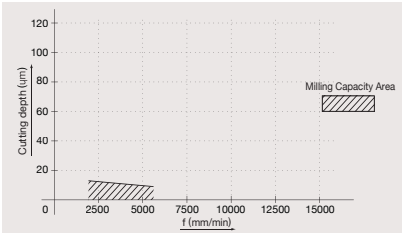
2

HTS Series Milling Capacity Reference

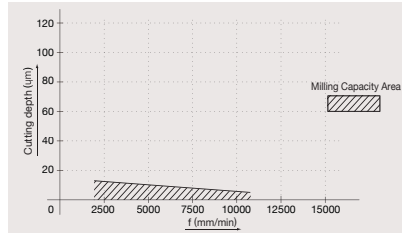
Milling : Straight Milling / Work : NAK80 / Motor Speed : 150,000 rpm

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.

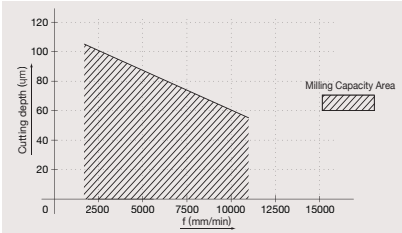
- Ball End Mill Size : R0.05 mm L = 0.1 mm



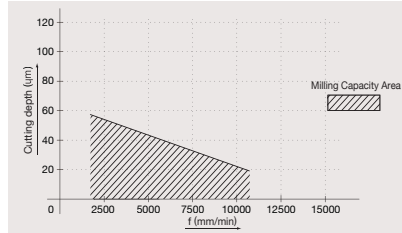
- Ball End Mill Size : R0.1 mm L = 0.5 mm



- Ball End Mill Size : R0.2 mm L = 1.0 mm



- Ball End Mill Size : R0.5 mm L = 2.5 mm



3

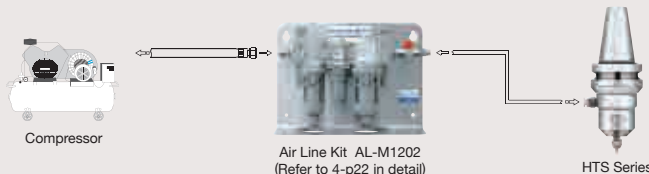
4

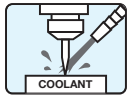
HTS Series Specifications

- 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 μ m
 - Hose Diameter (Air Intake) ϕ 6 mm (O.D.)
 - Standard Size Collet (CHA-4.0) ϕ 4.0 mm
- < Optional >
- Collet (CHA-□□) ϕ 0.5 mm~ ϕ 4.0 mm
(See Page 6-p2 for details)

HTS Series Connection Drawing

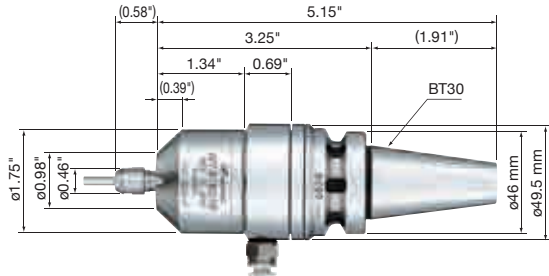
Clean, lubricated, and regulated air is required for HTS Series spindles. Please refer to the diagram to the right for proper connections. AL-M1202 incorporates a filter, regulator and lubricator to provide the appropriate air.





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.

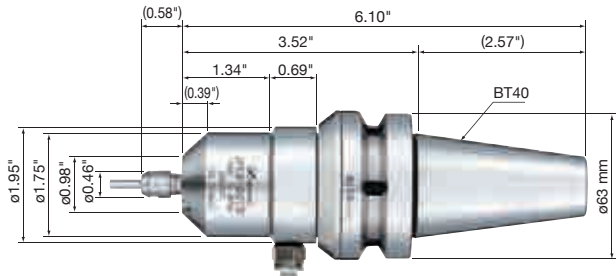
Air Turbine Spindle

Product Code	Product Name	Weight	
8296	HTS1501S-BT30	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.

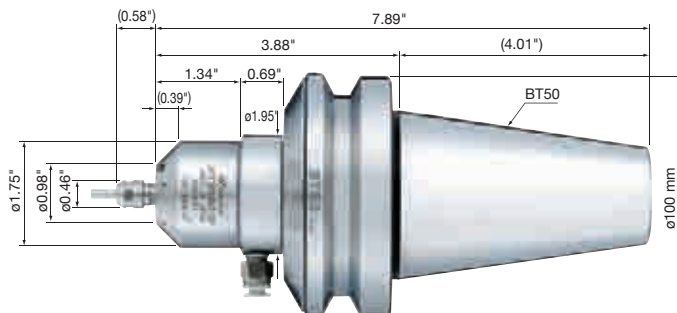
Air Turbine Spindle

Product Code	Product Name	Weight	
8297	HTS1501S-BT40	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	
8281	HTS1501S-BT50	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

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

2
iSpeed3
E2000
 $\phi 1.0^{\circ}/\phi 0.95^{\circ}/\phi 0.897^{\circ}$
E3000
- One Piece
E3000
- Modular
 $\phi 1.18^{\circ}$
 $\phi 1.0^{\circ}/\phi 0.98^{\circ}/\phi 0.93^{\circ}$
E3000
- 30,000rpm
E4000

3
MA
 $\phi 0.897^{\circ}$
 $\phi 1.0^{\circ}/\phi 0.98^{\circ}$
 $\phi 1.18^{\circ}$
MS
 $\phi 0.75^{\circ}/\phi 0.79^{\circ}$
 $\phi 0.81^{\circ}/\phi 0.81^{\circ}$
 $\phi 1.0^{\circ}/\phi 0.98^{\circ}$

4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT

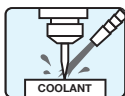
5
AIR LINE KIT

6
PARTS

7
TECHNICAL DATA

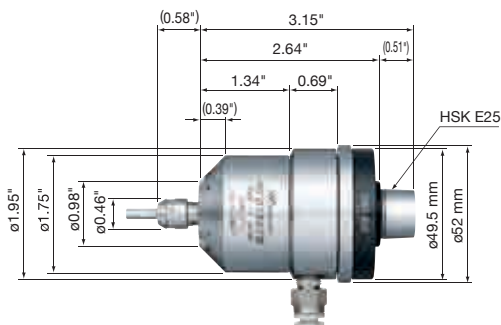
8
APPLICATION EXAMPLES
INDEX

HTS SERIES ULTRA-HIGH SPEED AIR TURBINE MILLING 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"
- ø1.0"/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"/ø0.911"
- ø1.0"/ø0.98"
- 4
- HES
- iSpeed5
- HTS
- PLANET
- Xpeed
- ABT
- 5
- AIR LINE KIT
- 6
- PARTS
- 7
- TECHNICAL DATA
- 8
- APPLICATION EXAMPLES
- INDEX

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.

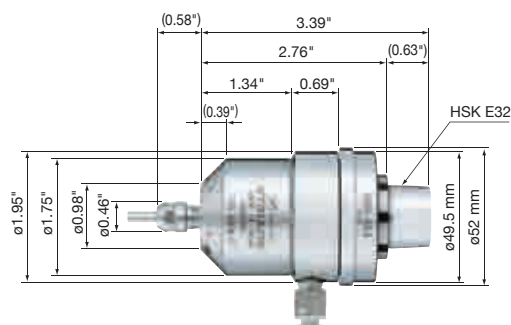
Air Turbine Spindle

Product Code	Product Name	Weight
8300	HTS1501S-HSK E25	26.81 oz.

Standard Equipment · Accessories

- Collet ø4.0 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) : ø6 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.

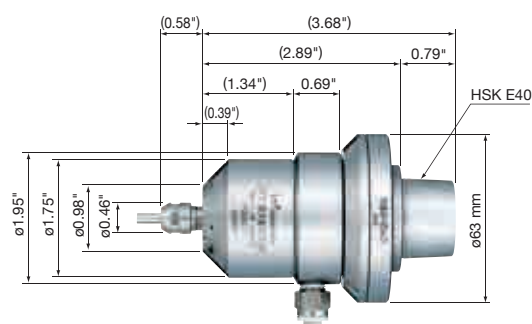
Air Turbine Spindle

Product Code	Product Name	Weight
8283	HTS1501S-HSK E32	27.87 oz.

Standard Equipment · Accessories

- Collet ø4.0 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) : ø6 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.

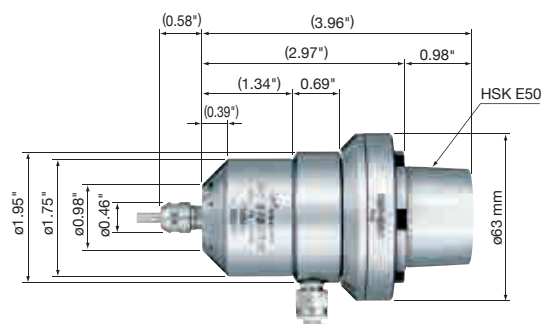
Air Turbine Spindle

Product Code	Product Name	Weight
8279	HTS1501S-HSK E40	34.57 oz.

Standard Equipment · Accessories

- Collet ø4.0 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) : ø6 mm x 13 ft

Product Code **8280** HTS1501S-HSK E50



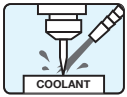
● HSK E50 taper shanks make this spindle very easy to attach to your machining centers. Very High speed milling is possible.

Air Turbine Spindle

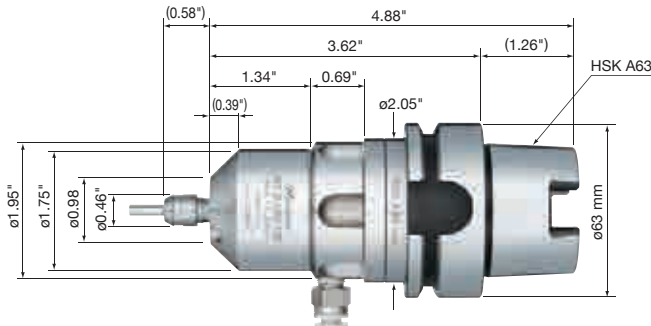
Product Code	Product Name	Weight
8280	HTS1501S-HSK E50	37.74 oz.

Standard Equipment · Accessories

- Collet ø4.0 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) : ø6 mm x 13 ft



Product Code 8298 HTS1501S-HSK A63



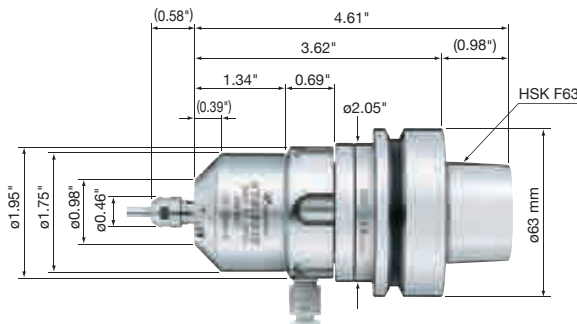
● HSK A63 taper shanks make this spindle very easy to attach to your machining centers. Very High speed milling is possible.

Air Turbine Spindle

Product Code	Product Name	Weight
8298	HTS1501S-HSK A63	49.38 oz.

Standard Equipment · Accessories	
• Collet 04.0 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) : 06 mm x 13 ft	

Product Code 8282 HTS1501S-HSK F63



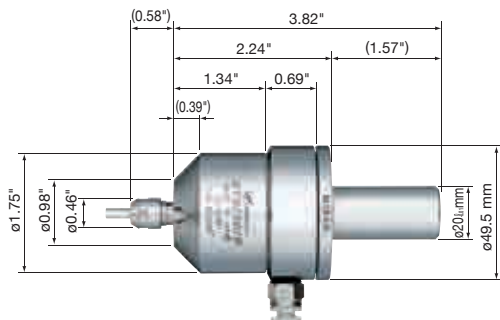
● HSK F63 taper shanks make this spindle very easy to attach to your machining centers. Very High speed milling is possible.

Air Turbine Spindle

Product Code	Product Name	Weight
8282	HTS1501S-HSK F63	48.68 oz.

Standard Equipment · Accessories	
• Collet 04.0 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) : 06 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 04.0 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) : 06 mm x 13 ft	

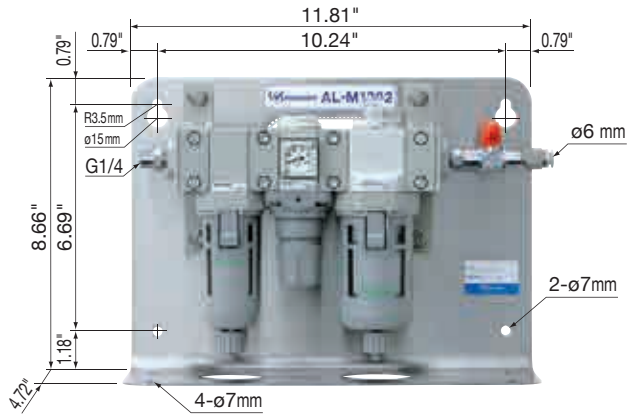


Caution

- 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
01.0" 06.99" 00.897"
E3000
— One Piece
E3000
— Modular
01.18"
01.07" 0.98"
00.897"
E3000
— 80,000rpm
E4000
3
MA
00.897"
01.0"
00.98"
01.18"
MS
00.75"
00.79"
00.897"
00.91"
01.0"
00.98"
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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"> • 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 AIR LINE KIT
- 6 PARTS
- 7 TECHNICAL DATA
- 8 APPLICATION EXAMPLES
- INDEX

PLANET 600

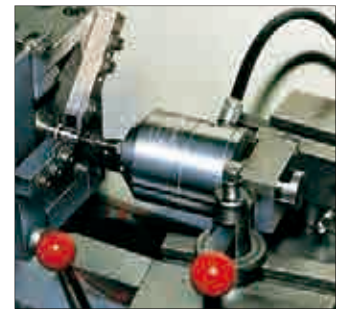
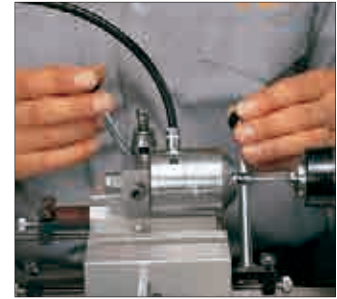
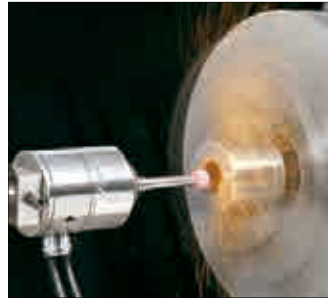
65,000 rpm

- 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.

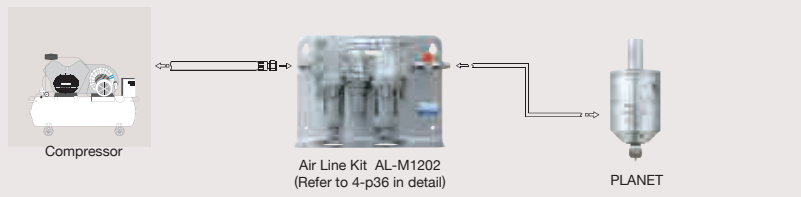
Special Built-In type high speed bearings will withstand extended periods of operation.

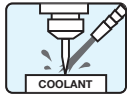
Ultra Precision ball bearing technology has been developed due to several years of cooperative studies between Nakanishi and several major bearing manufacturers.



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.

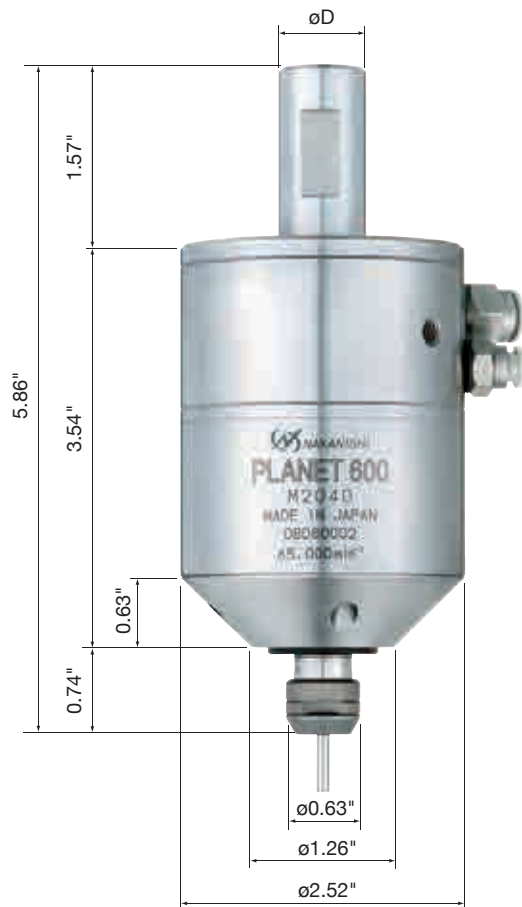




PLANET Series can be used in conjunction with water or oil based coolants.

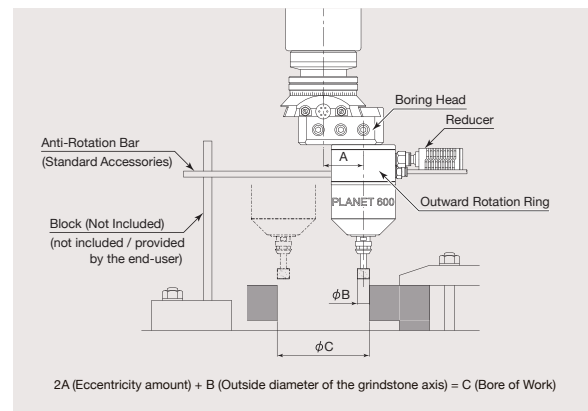
PLANET 600

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.	3 lb.13.38 oz.
7356	ø3/4" x 1.57"	PL600-H3440	• Silencer : 1 pc. • Anti-Rotation Bar : 1 set • Wrench (12 x 14) : 2 pcs.	3 lb.13.20 oz.

1

EmaxEVC

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

ø1.0" ø0.99" ø0.997"

E3000

- One Piece

E3000

- Modular

ø1.18"

ø1.07" ø0.98"

ø0.99"

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

PARTS

7

TECHNICAL DATA

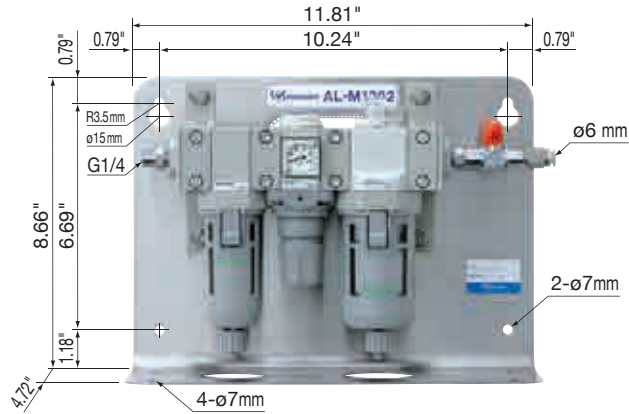
8

APPLICATION EXAMPLES

INDEX

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 06 mm Hose · Filter Mesh 0.3 μm)

Product Code	Product Name	Standard Equipment · Accessories
4502	AL-M1202	<ul style="list-style-type: none"> • 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.

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

- PARTS

7

- TECHNICAL DATA

8

- APPLICATION EXAMPLES

- INDEX

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"

ø0.897"

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

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"
ø0.96"

ø1.18"

MS

ø0.75"
ø0.79"

ø0.897"
ø0.91"

ø1.0"
ø0.96"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL
DATA

8

APPLICATION
EXAMPLES

INDEX

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)



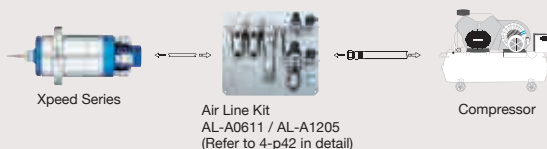
◀ AIR BEARING ▶ Xpeed Series

Xpeed1600 160,000 rpm Output 56W
Xpeed1200 120,000 rpm Output 192W

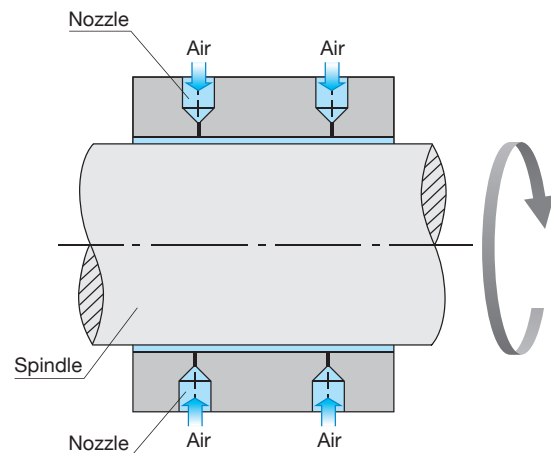
- Ideal for extremely high precision, small diameter machining applications.
- Air bearings use compressed air blown into a small gap between the spindle and the bearing surface. The spindle floats on an even cushion of compressed air. This non-contact type of bearing means the spindle has a very long 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
 $\phi 1.0"$ ($\phi 0.98"$ / $\phi 0.997"$)
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
 $\phi 0.75"$
 $\phi 0.79"$
 $\phi 0.89"$
 $\phi 0.91"$
 $\phi 1.0"$
 $\phi 0.98"$

4

HES
iSpeed5
HTS
PLANET
Xpeed
ABT

5

AIR LINE KIT

6

PARTS

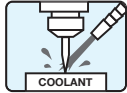
7

TECHNICAL
DATA

8

APPLICATION
EXAMPLES

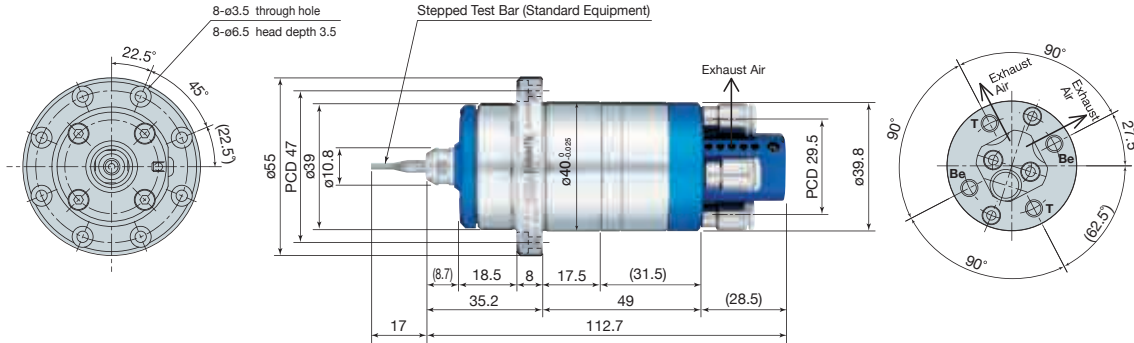
INDEX



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

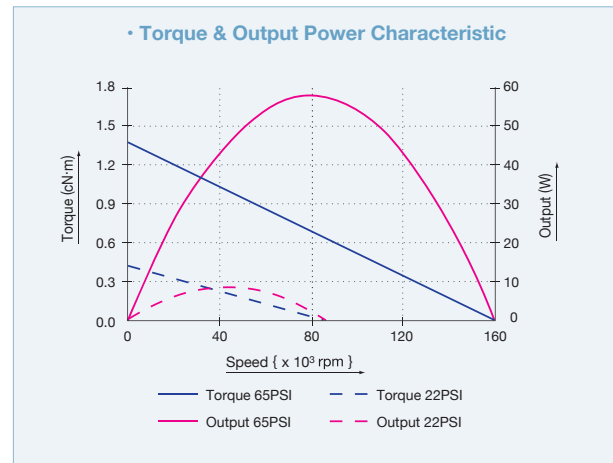


< Specifications >

Spindle Accuracy :	Within 1 μ 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

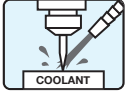
< Optional >

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.

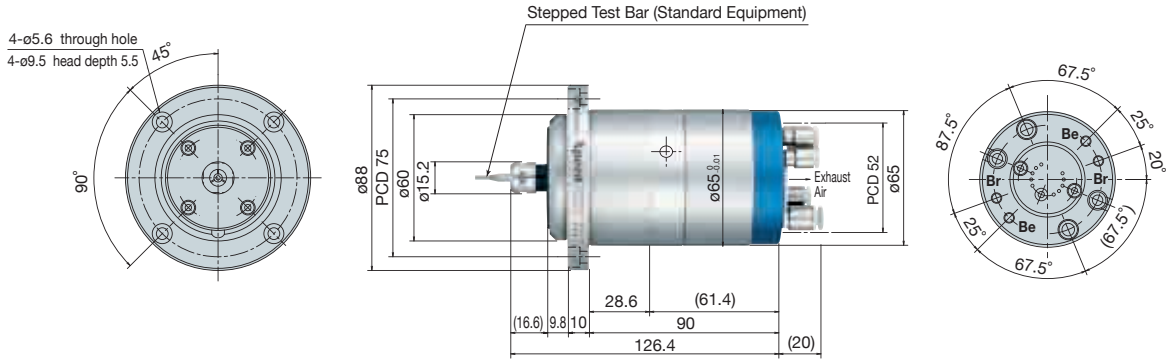
Standard Equipment · Accessories	Standard Equipment · Accessories
	<ul style="list-style-type: none"> • Collet $\phi 4.0$ mm (CHA-4.0AA) · Collet Nut (CHN-3A) · $\phi 4$ mm Hose (transparent 4.5 ft) : 1 pc. · $\phi 6$ mm Hose (blue 4.5 ft) : 1 pc. • $\phi 6$ mm Air Plug : 2 pcs. · $\phi 4$ mm Air Plug : 2 pcs. · Stepped Test Bar ($\phi 2.0$ mm x $\phi 4.0$ mm x 34L) : 1 pc. • Bar Wrench (K-277) : 1 pc. · Torque Wrench (10 mm) : 1 pc. · Allen Wrench (2 mm) : 1 pc. • Hexagon Socket Button Head Bolt (M3 x 5L) : 1 pc. · Gasket (for M3 Screw) : 1 pc.



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. ϕ 2.56"(ϕ 65 mm) <Output 192W> 120,000 rpm

Flange Mount

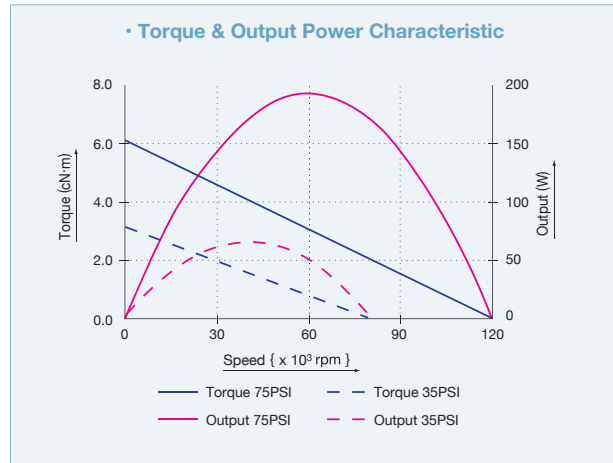


< Specifications >

Spindle Accuracy :	Within 1 μ m
Standard Size Collet (CHK-4.0AA) :	ϕ 4.0 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 ϕ 2.0 mm (For ϕ 4.0 mm shank)
Hose Diameter :	Bearing supply ϕ 6 mm (2 locations) Break Air supply ϕ 6 mm (2 locations) Turbine Air supply ϕ 6 mm (2 locations)
Others :	Detection of Rotation Speed Mark

< Optional >

Collet (CHK-□□AA) : ϕ 3.0 mm, ϕ 1/8", ϕ 4.0 mm, ϕ 6.0 mm, ϕ 1/4" (See Page 6-p3 for details)



Product Code	Product Name	Speed	Max. Output	Weight
1854	Xpeed1200	120,000 rpm	192W	5 lb. 1.13 oz.

Standard Equipment · Accessories

- Collet ϕ 4.0 mm (CHK-4.0AA) · Collet Nut (K-265A) · ϕ 6 mm Hose (transparent 6 ft) : 1 pc. · ϕ 6 mm Hose (blue 6 ft) : 1 pc.
- ϕ 6 mm Air Plug : 6 pcs. · Stepped Test Bar (ϕ 2.0 mm x ϕ 4.0 mm x 34L) : 1 pc. · Wrench (12 x 14) : 1 pc.
- Torque Wrench (14 mm) : 1 pc.

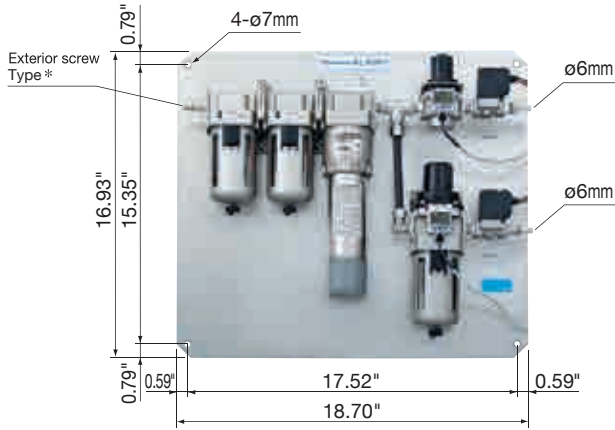
⚠ Caution

- 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 ϕ 1.0"/ ϕ 0.99"/ ϕ 0.897"
E3000 - One Piece
E3000 - Modular
ϕ 1.18"
ϕ 1.0"/ ϕ 0.98"
E3000 - 80,000rpm
E4000
3
MA
ϕ 0.897"
ϕ 1.0"/ ϕ 0.98"
ϕ 1.18"
MS
ϕ 0.75"
ϕ 0.79"
ϕ 0.89"
ϕ 0.91"
ϕ 1.0"/ ϕ 0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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"
ø0.897" 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

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)

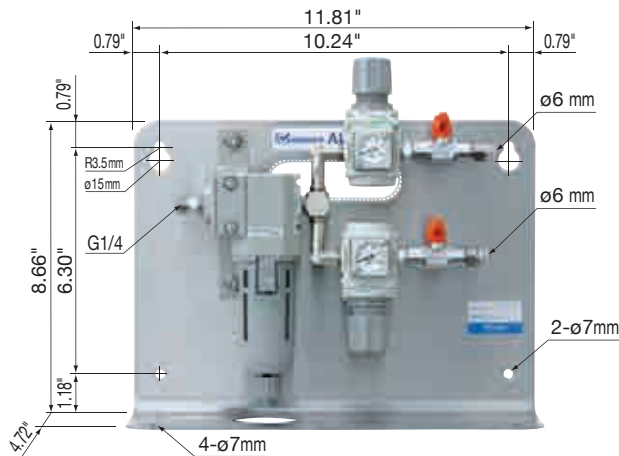
Air Line Kit (For ø6 mm Hose · Filter Mesh 0.01 µm)

Product Code	Product Name	Standard Equipment · Accessories
1548	AL-A0611	<ul style="list-style-type: none"> • Mist Separator • Micro Mist Separator • Membrane Air Dryer • Regulator · Solenoid Valve • Digital Pressure Switch

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"> • Air Filter · Air Regulator • Air Pressure Gauge • Air ON-OFF Valve • Hose for Piping (K-275) : 6 ft

Fit to

Spindle	Xpeed1600
---------	-----------

ABT-1000

100,000 rpm Output : 88W

<Straight Type>

Outside Diameter $\phi 1.57"$ ($\phi 40$ mm)

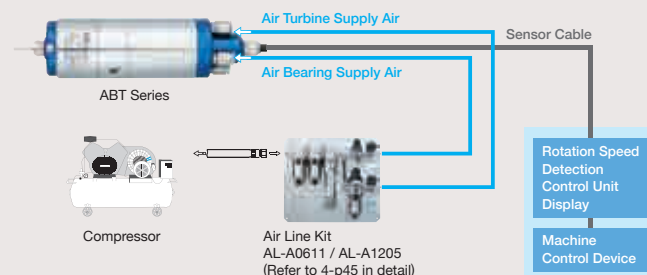


Features

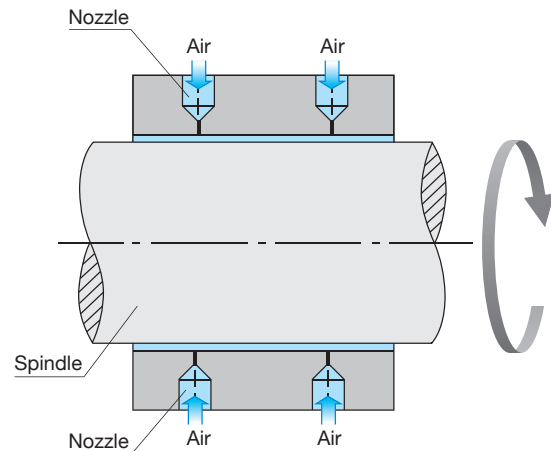
- Ideal for extremely high precision, small diameter machining applications.
- Air bearings use compressed air blown into a small gap between the spindle and the bearing surface. The spindle floats on an even cushion of compressed air. This non-contact type of bearing means the spindle has a very long 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

$\phi 1.0"$ ($\phi 0.99"$ / $\phi 0.997"$)

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

$\phi 0.75"$

$\phi 0.79"$

$\phi 0.99"$

$\phi 1.0"$

$\phi 0.98"$

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL

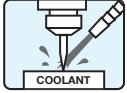
DATA

8

APPLICATION

EXAMPLES

INDEX

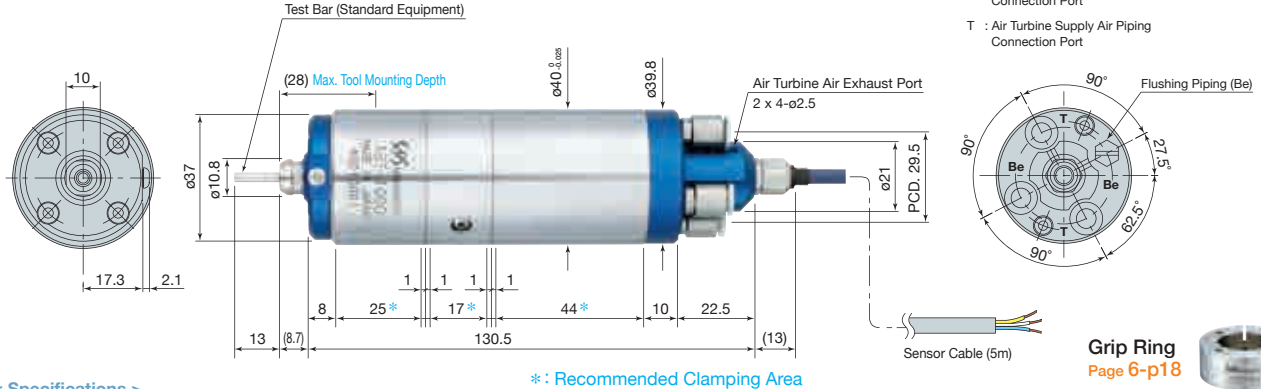


ABT Series can be used in conjunction with water or oil based coolants.

Note : all in metric (mm). Please divide them by 25.4 for conversion to inch.

Product Code 1856 ABT-1000 O. D. ϕ 1.57"(ϕ 40 mm) <Output 88W> 100,000 rpm

Straight Type

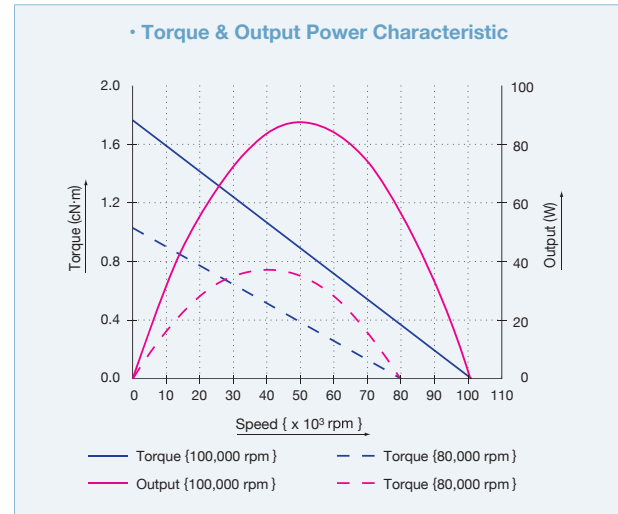


< Specifications >

Spindle Accuracy :	Within 1 μ 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 ϕ 2.0 mm (For ϕ 4.0 mm shank)
Hose Diameter :	Bearing supply ϕ 6 mm (1 location) Turbine Air supply ϕ 6 mm (2 locations)
Others :	Rotational Speed Detection Sensor with 5 meter cable

< Optional >

Collet (CHA-□□) : ϕ 0.5 mm ~ ϕ 4.0 mm (See Page 6-p2 for details)



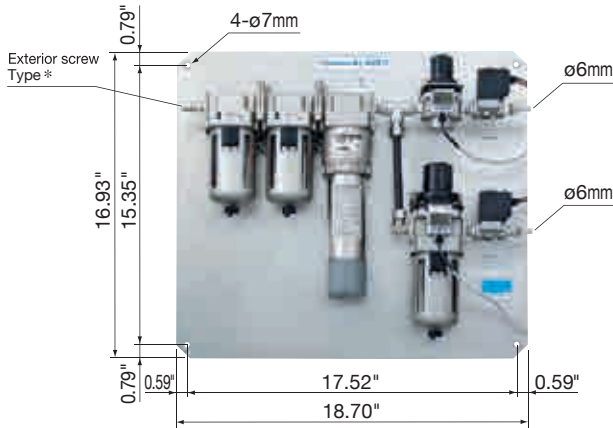
Product Code	Product Name	Speed	Max. Output	Weight
1856	ABT-1000	100,000 rpm	88W	1 lb. 12.92 oz.

Standard Equipment · Accessories	<ul style="list-style-type: none"> • Collet Nut (CHN-3A) · Test Bar (ϕ3.0 mm x 40L) : 1 pc. · Bar Wrench (K-277) : 1 pc. • Wrench (10 x 10) : 1 pc. · Allen Wrench (2 mm) : 1 pc. · Hexagon Socket Button Head Bolt (M3 x 5L) : 1 pc. • Gasket (for M3 Screw) : 1 pc. · Protective Cover : 1 pc. · Connection Joint (KQ2S06-M5N) : 3 pcs. • Connection Joint (M-5P) : 1 pc. · Cap (K1020A223) : 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.

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)

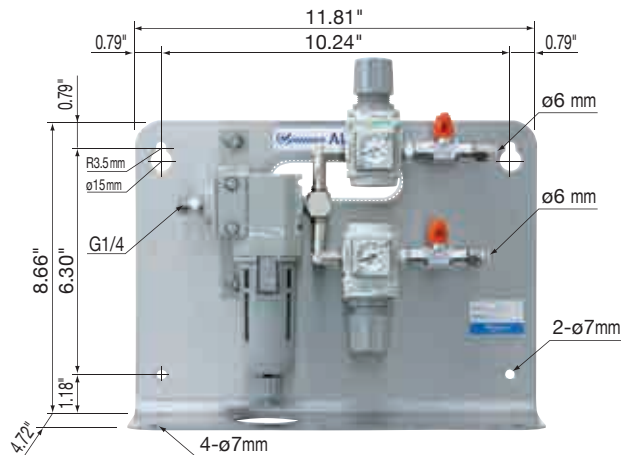
Air Line Kit (For ø6 mm Hose · Filter Mesh 0.01 µm)

Product Code	Product Name	Standard Equipment · Accessories	
1548	AL-A0611	<ul style="list-style-type: none"> • Mist Separator • Micro Mist Separator • Membrane Air Dryer • Regulator · Solenoid Valve • Digital Pressure Switch 	

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	
4505	AL-A1205	<ul style="list-style-type: none"> • Air Filter · Air Regulator • Air Pressure Gauge • Air ON-OFF Valve • Hose for Piping (K-275) : 6 ft 	

Fit to

Spindle	ABT-1000
---------	----------

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"
ø0.897" 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
INDEX

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

AIR LINE KIT

6

PARTS

7

TECHNICAL
DATA

8

APPLICATION
EXAMPLES

INDEX

AIR LINE KIT

FOR HAND WORK / MACHINE SPINDLES

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.

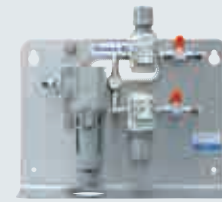


FOR MACHINE SPINDLES

• 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



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
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

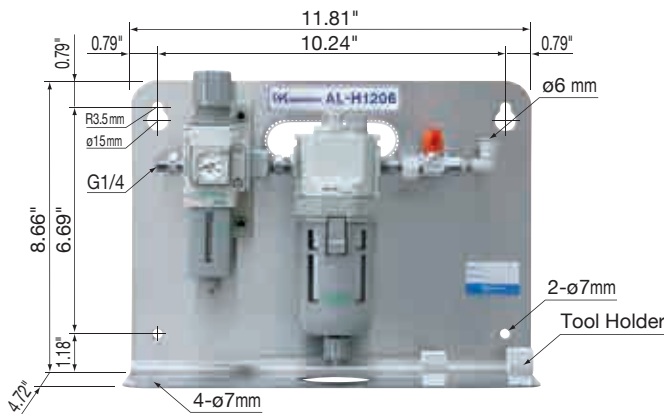
- When using Air Motors, be sure to install either an NSK Air Line Kit shown below or a similar Air Line Kit system. To ensure the longevity of Air Motors and Spindles, proper lubrication and air pressure are very important.
- The Air Line Kits offered by NAKANISHI are micron filter, regulator / lubricators 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.

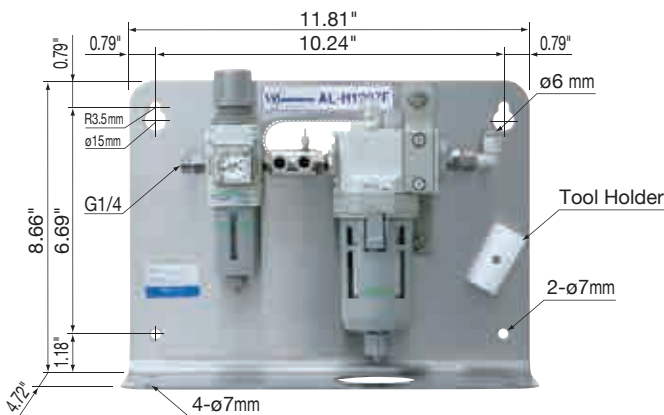
Air Line Kit (For ø6 mm Hose · Filter Mesh 5 µm)

Product Code	Product Name	Standard Equipment · Accessories
4506	AL-H1206	<ul style="list-style-type: none"> • 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.

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"> • Air Filter · Air Regulator • Air Pressure Gauge · Lubricator • Air Control Valve (CV-05) • Hose for Piping (K-275) : 6 ft • Lubricating Oil (K-211) : 1 pc.

Fit to

ROTUS	IM-300 · IM-301
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Product Code **1064** FOOT CONTROL AFC-45

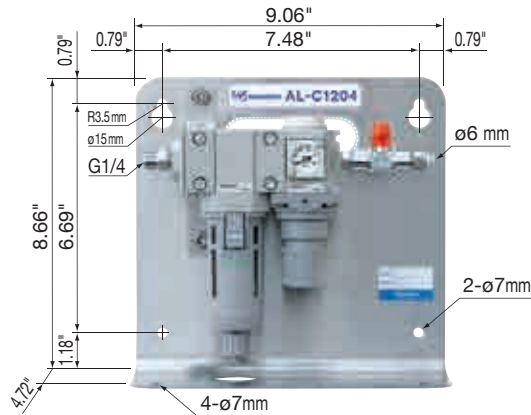
*Use Air Line Kit AL-H1207F, Product Code 4507 with this Foot Control.



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.

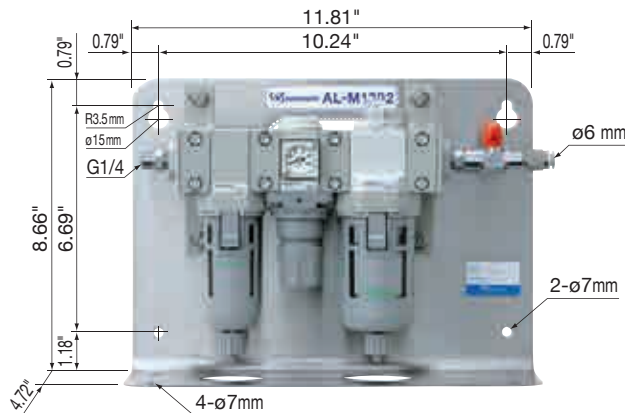
Air Line Kit (For $\phi 6$ mm Hose · Filter Mesh $0.3 \mu\text{m}$)

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

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.

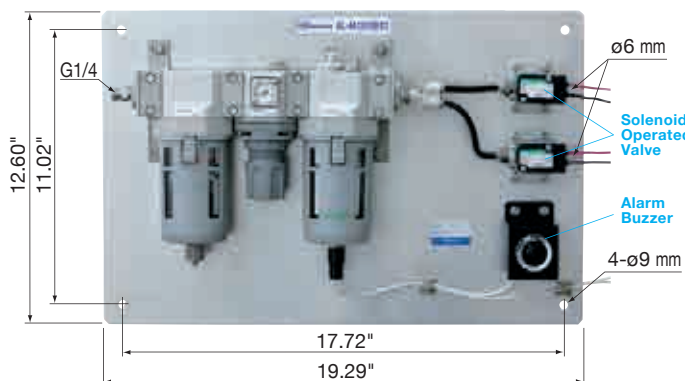
Air Line Kit (For $\phi 6$ mm Hose · Filter Mesh $0.3 \mu\text{m}$)

Product Code	Product Name	Standard Equipment · Accessories	
4502	AL-M1202	<ul style="list-style-type: none"> • 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. 	

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"> • Air Filter · Air Regulator • Air Pressure Gauge · Lubricator • Solenoid Valve (DC 24V) : 2 pcs. • Buzzer (DC 24V) · Hose for Piping (K-275) : 6 ft • Lubricating Oil (K-202) : 1 pc. 	

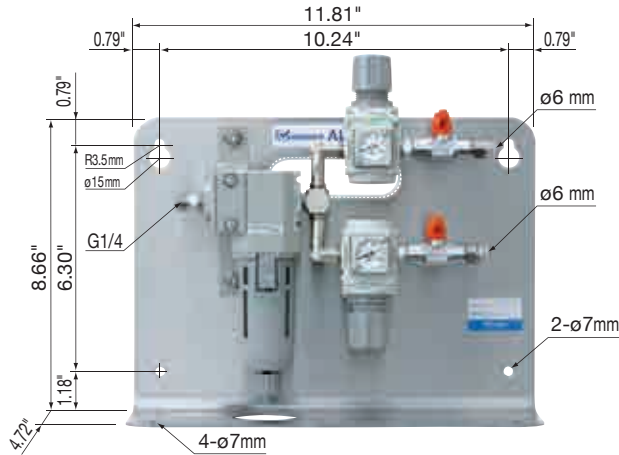
Fit to

MA SERIES	Every Air Motor
MS SERIES	Every Air Motor Spindle

1
EmaxEV
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
$\phi 1.18''$
$\phi 1.9''/\phi 0.98''/\phi 0.987''$
E3000
- 30,000rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''/\phi 0.98''$
$\phi 1.18''$
MS
$\phi 0.75''/\phi 0.75''$
$\phi 0.8''/\phi 0.81''$
$\phi 1.0''/\phi 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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.

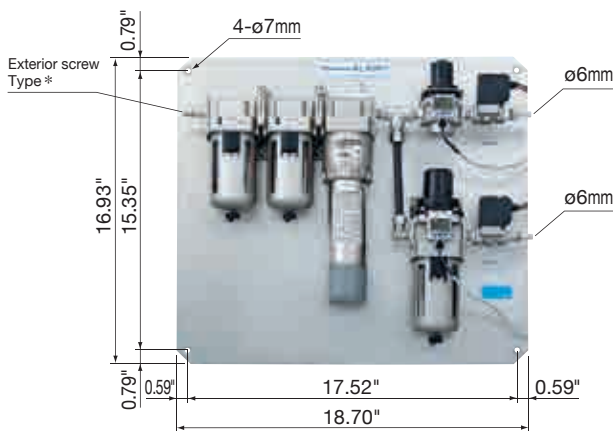
Air Line Kit (For ø6 mm Hose · Filter Mesh 0.3 µm)

Product Code	Product Name	Standard Equipment · Accessories
4505	AL-A1205	<ul style="list-style-type: none"> • Air Filter · Air Regulator • Air Pressure Gauge • Air ON-OFF Valve • Hose for Piping (K-275) : 6 ft

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"> • Mist Separator • Micro Mist Separator • Membrane Air Dryer • Regulator · Solenoid Valve • Digital Pressure Switch

Fit to

Controller	NE211
Spindle	NRAF-5080 · Xpeed1600 · Xpeed1200 ABT-1000

Product Code **1544** **REDUCER** (ø6 - ø4 Adaptor)



Reducer

Product Code	Product Name	Specifications	
1544	Reducer	• ø6 - ø4 mm Adaptor	

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		

The following products need Lubricating oil to use the AIR LINE KIT.

- ROTUS
- MS Series
- HTS Series
- IMPULSE
- MA Series
- PLANET Series

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" ø0.81"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL
DATA

8

APPLICATION
EXAMPLES

INDEX

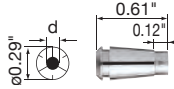


Index

Collet	6-p2~6-p6
Collet Nut	6-p6~6-p7
Motor Cord	6-p8~6-p9
Foot Pedal & Handpiece Stand etc.	6-p9
Parts for Air Turbine & FINE BELT SANDER etc.	6-p10
Oil, Grease, Grease Nipple & Silencer	6-p11
Hose	6-p12~6-p13
Metal Fitting, Filter Joint & Grindstone Flange etc.	6-p13
Special Arbor	6-p14~6-p15
Wrench	6-p16~6-p17
Grip Ring, Split Bushing	6-p18~6-p19

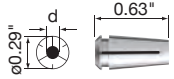
1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.07"/ø0.98" ø0.897"
E3000 - 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.897" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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

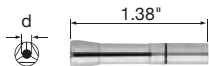


Product Name :
Besides the above

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

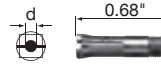
CHB Group



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

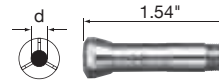
CHC Group



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"

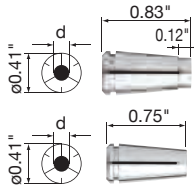
CHH Group



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

■ 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

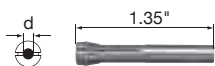
Product Code	Product Name	Inside Diameter d
91551	CHK-5.1	ø5.1
91552	CHK-5.2	ø5.2
91553	CHK-5.3	ø5.3
91554	CHK-5.4	ø5.4
91555	CHK-5.5	ø5.5
91556	CHK-5.6	ø5.6
91557	CHK-5.7	ø5.7
91558	CHK-5.8	ø5.8
91559	CHK-5.9	ø5.9
91560	CHK-6.0	ø6.0
91600	CHK-6.0AA*	ø6.0
91596	CHK-6.35	ø1/4"
91601	CHK-6.35AA*	ø1/4"

■ 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 - 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	PARTS
7	TECHNICAL DATA
8	APPLICATION EXAMPLES
	INDEX

CHM Group

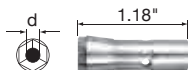


Fit to _____
MH-300 · BMH-300

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"	

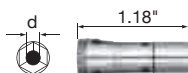
CHR Group



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"	

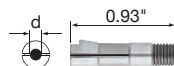
CHR RS Group



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

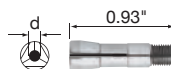


Fit to _____
ERA-270 · IMPULSE SERIES

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

DATA

8

APPLICATION

EXAMPLES

INDEX

CH6 Group



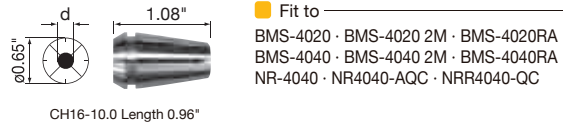
Product Code	Product Name	Inside Diameter d	
90830	CH6-3.0	ø3.0	
90893	CH6-3.175	ø1/8"	

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

Emax EVO
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
— 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

TECHNICAL DATA

8

APPLICATION EXAMPLES

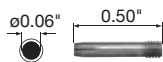
INDEX

■ indicates Hand Grinder use
■ indicates Machine Spindle use

*Order by product code.

6-p5

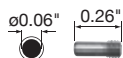
K-252



Fit to _____
MFC-300S

Product Code	Product Name	Inside Diameter d	
90316	K-252	ø1/16"	

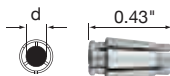
K-253



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"

ø0.875"

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

Collet Nut CHN-3A

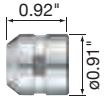


Fit to : CHA

Fit to
Xpeed1600 · ABT-1000

Product Code	Product Name	Fit to	
2160	CHN-3A	CHA	

Collet Nut CHN-16

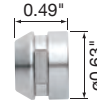


Fit to : CH16

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

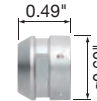


Fit to : CHK

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
E3000
E3000
E3000
E3000
E4000

3

MA
MS
MS

4

HES
iSpeed5
HTS
PLANET
Xpeed
ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL
DATA

8

APPLICATION
EXAMPLES



INDEX

■ 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"

ø0.897"

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

< PARTS > FOOT PEDAL & HANDPIECE

■ Foot Pedal

Product	Description	Product Code	Product Name	Fit to
	Foot Pedal ON-OFF and speed change can be accomplished.	8106	FC-64	Controller Emax EVOLution NE249
	Foot Pedal ON-OFF and speed change can be accomplished.	1440	FC-40	Controller ELECTER E-max NE129 · ELECTER-GX NE22E ESPERT 400 NE51 · ESPERT 500 NE96 SONIC-CUTTER NE80
	Foot Pedal ON-OFF switch only	8103	FC-24	SHEENUS NE124 · SHEENUS neo NE240
	Foot Control	1064	AFC-45	MIRACLE · ROTUS FINE BELT SANDER ROTUS Air Line Kit AL-0306 · AL-H1207F
		1124	AFC-40	PRESTO II PR2-06 · PRESTO PR-06

■ Handpiece Stand, Handpiece Holder & Head Cover

Product	Description	Product Code	Product Name	Fit to
	Handpiece Stand	8104	K-274	Emax EVOLution · ELECTER E-max SHEENUS · SHEENUS neo ESPERT 500
		1519	Z095101	ESPERT 400
	Handpiece Holder	8107	K-273	Controller Emax EVOLution NE249


■ indicates Hand Grinder use
■ indicates Machine Spindle use

*Order by product code.


6-p9

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"
ø0.89"
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



■ 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

TECHNICAL

DATA

8



APPLICATION

EXAMPLES




INDEX

< 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"> ROTUS AMS-20 · 50 · 150 · 250 · 600 · AM-300 (R · L) AM-2526 (RA · LA) · AM-H2526 (RA · LA) · MS-19 · 20 · 22 (R · L) MSS-19 · 20 · 22 (R) · MS-23 (R · L) · MST-23 (R · L) MSTN-23 (R · L) · MS-25 (R · L) · MSH-25 (R · L) · MSS-25 (R) MSSH-25 (R) · MSST-23 (R) · PLANET 550
	Silencer Small (with Metal Fitting)	1061	K-208	<ul style="list-style-type: none"> IMPULSE · MIRACLE AM-300 (RA · LA) · AM-600 · AM-310 · AM-2526 (R · L) AM-H2526 (R · L) · 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-600 · AM-3020
	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
φ1.0"/φ0.99"/φ0.897"
E3000
— One Piece
E3000
— Modular
φ1.18"
φ1.07"/φ0.98"
φ0.897"
E3000
— 80,000rpm
E4000
3
MA
φ0.897"
φ1.0"
φ0.98"
φ1.18"
MS
φ0.75"
φ0.79"
φ0.897"
φ0.91"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX


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) · MSST-23 (RA) · MSTN-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

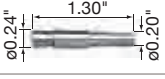
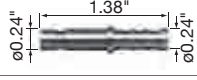


1	EmaxEVO
2	iSpeed3
3	MA
4	HES
5	AIR LINE KIT
6	PARTS
7	TECHNICAL DATA
8	APPLICATION EXAMPLES
	INDEX

< PARTS > HOSE, METAL, FITTING, FILTER JOINT, & GRINDSTONE FLANGE ETC.

■ Hose List

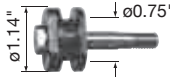
Product	Description	Product Code	Product Name	Fit to
	EMCD-3000 Air Hose	E304052	E304052	■ EMCD-3000 · EMCD-3000A

■ 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"
ø1.0"/ø0.99"/ø0.897"
E3000 — 80,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.99"
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
8
APPLICATION EXAMPLES
INDEX

■ indicates Hand Grinder use
■ indicates Machine Spindle use

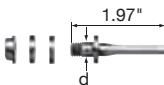
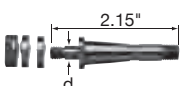
Special Drill Chuck Arbor

*For right hand (cw) rotation only.

Product	Description	Product Code	Product Name	Fit to
	Special Drill Chuck Arbor 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
	Special Metal Saw Arbor Dimensions of Metal Saw ϕd (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)	
	Special Metal Saw Arbor Dimensions of Metal Saw ϕd (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

6

PARTS

7

TECHNICAL

DATA

8

APPLICATION

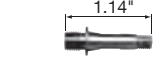
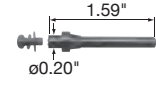
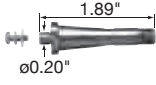
EXAMPLES

INDEX

< PARTS > GRINDSTONE ARBOR

■ Grindstone Arbor


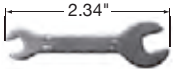
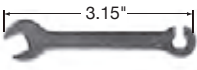


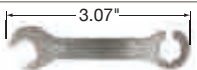



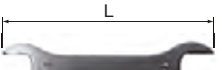




*For right hand (cw) rotation only.

Product	Description	Product Code	Product Name	Fit to	Price
	Grindstone Arbor (for Cup Wheel & Rubber Pad)	1045	NCH-01	■ IMPULSE	
	Grindstone Arbor Run-out Accuracy : Within 0.02 mm For Grindstone with ø5.0 mm I.D.	1029	AGM-01	■ AMH-300 · AMH-301 NR-600 · NR-601 · SMS401	
	Grindstone Arbor Run-out Accuracy : Within 0.02 mm For Grindstone with ø5.0 mm I.D.	2131	AGM-03	■ 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	






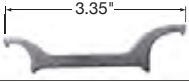









1
EmaxEVC
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
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iSpeed3
E2000 ø1.0" / ø0.95" / ø0.897"
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E3000 — Modular
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4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

■ 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 550 · 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

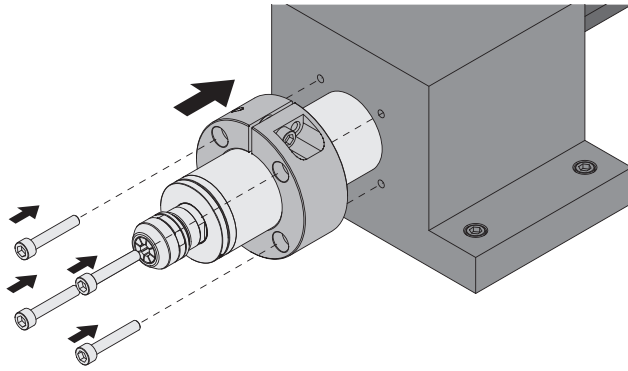
Wrench List

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 · EH-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

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"
ϕ1.07"/ϕ0.98" ϕ0.897"
E3000
— 30,000rpm
E4000
3
MA
ϕ0.897"
ϕ1.0"
ϕ0.98"
ϕ1.18"
MS
ϕ0.75"
ϕ0.79"
ϕ0.897"
ϕ0.91"
ϕ1.0"
ϕ0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

GRIP RING

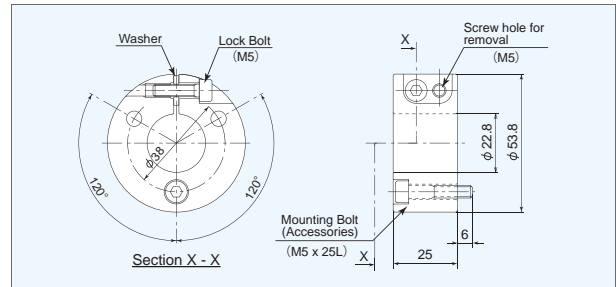
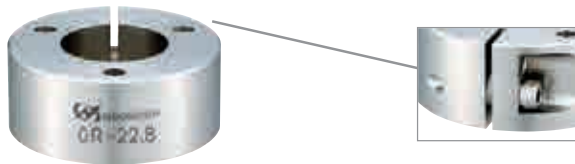


- The Grip Ring is an adjustable position split type flange for 40mm and 30mm spindles.
- The Grip Ring can easily mounted or removed from any CNC machine or specialty machine tool block or tool post.
- Eliminates the chance of over tightening and damaging the spindle in the sleeve during installation.

Caution

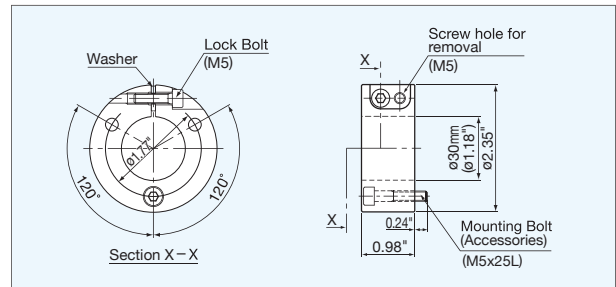
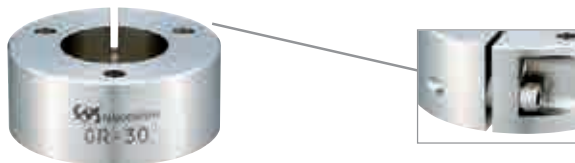
- Do not remove the Lock Bolt. If the Lock Bolt is removed, the Washer inside may move. Once the Washer is moved, it may make it impossible to attach the Lock Bolt.
- Do not remove the spindle while the Grip Ring is attached to the machines' holder. This may cause deformation and / or damage to the Grip Ring.

Product Code **1888** GRIP RING GR-22.8



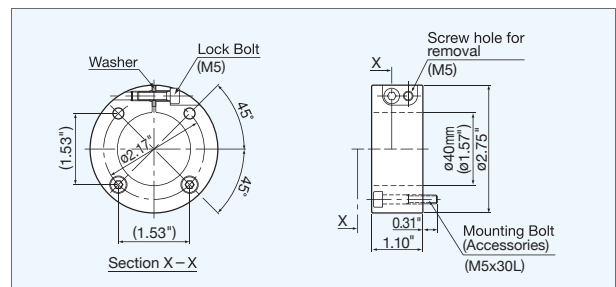
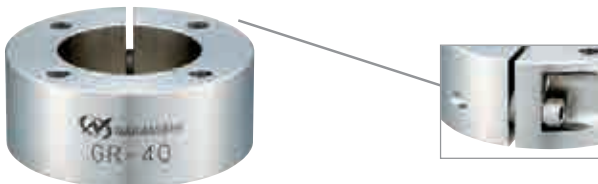
Product Code	Product Name	Standard Equipment · Accessories
1888	GR-22.8	• Mounting Bolt (M5x25) : 3 pcs.

Product Code **1885** GRIP RING GR-30



Product Code	Product Name	Standard Equipment · Accessories
1885	GR-30	• Mounting Bolt (M5x25) : 3 pcs.

Product Code **1886** GRIP RING GR-40



Product Code	Product Name	Standard Equipment · Accessories
1886	GR-40	• 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**

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 - 30,000rpm
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

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

6

PARTS

7

TECHNICAL
DATA

8

APPLICATION
EXAMPLES

INDEX

TECHNICAL DATA

• External Input / Output Control Signal Specifications

E2000	7-p2~7-p9
E3000	7-p10~7-p17
E4000	7-p18~7-p23
iSpeed3	7-p24~7-p29
iSpeed5	7-p30~7-p39

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" ø0.81"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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.

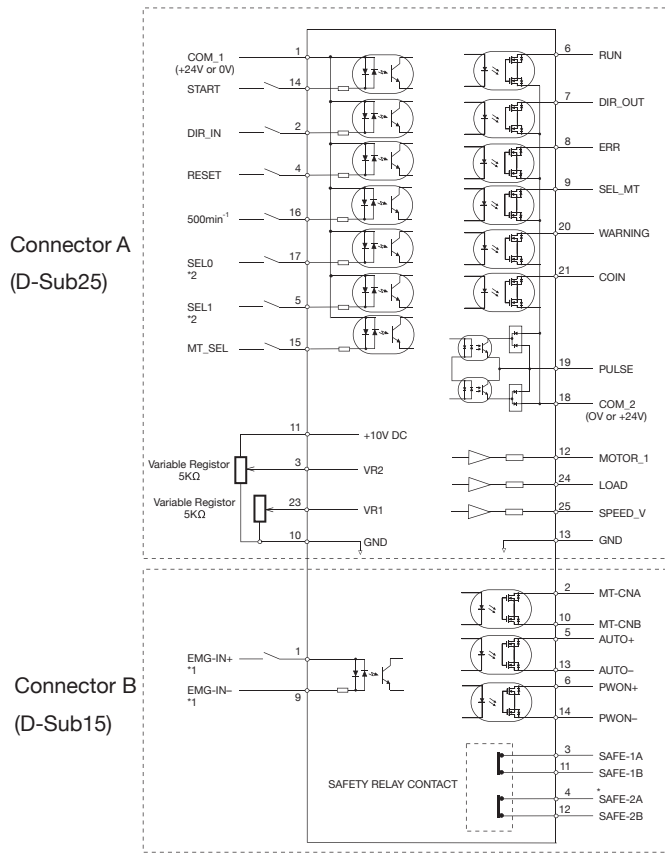
Table. 6

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 $\overline{P}B$, can start with reverse rotation. (Refer to P107 " 18 - 4 ⑧ $\overline{P}B$ 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 $\overline{P}R$ (Refer to P108 " 18 - 4 ⑩ $\overline{P}R$ 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 $\overline{P}T$ setting. (Refer to P106 " 18 - 4 ⑦ $\overline{P}T$ 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, " $\overline{L}1$ " - " $\overline{L}4$ ", and when using Motor No. 2, " $\overline{L}2$ " - " $\overline{L}4$ ") 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 $\overline{P}T$. (Refer to P106 " 18 - 4 ⑦ $\overline{P}T$ 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 $\overline{P}J$, Error Output Mode can be changed. (Refer to P104 " 18 - 4 ① $\overline{P}J$ 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 ⁻¹ (rpm)	Set motor rotation speed will be 500min ⁻¹ (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	—	—	—	*Note : Never use a pin labeled not used.
23	VR1	Motor No.1 Speed Control Voltage	Input	Set rotating speed (x 10,000min ⁻¹) = 1 / 16 x (9VR-1) 0.28V or less : 1,000min ⁻¹ 9V or more : 50,000min ⁻¹ 0V ≤ VR ≤ 10V	Sets rotating speed of the motor. When using 30,000min ⁻¹ 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
EmaxEV
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" ø0.75" ø0.81" ø0.91" ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

(2) Input / Output Diagram



- *1 When using the "EMG - IN" Signal, set parameter Pb . (Refer to P108 "18 - 4 Pb 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 $P7$. (Refer to P106 "18 - 4 P7 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.

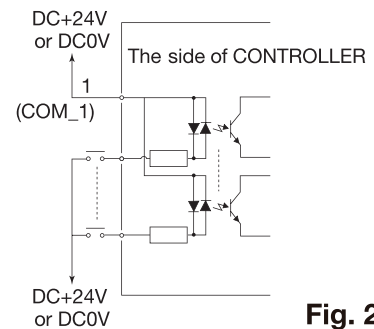


Fig. 22

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.

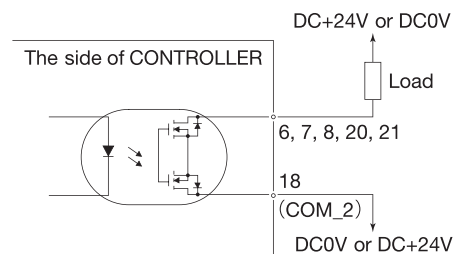


Fig. 23

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

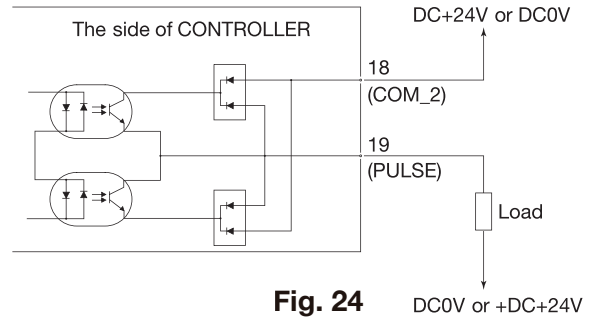


Fig. 24

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.

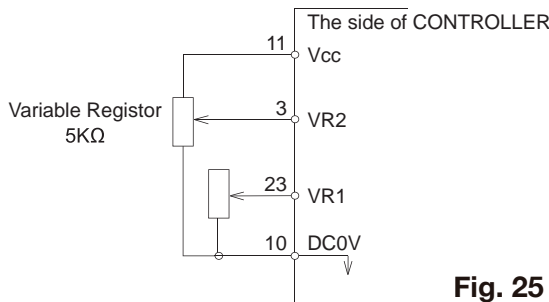


Fig. 25

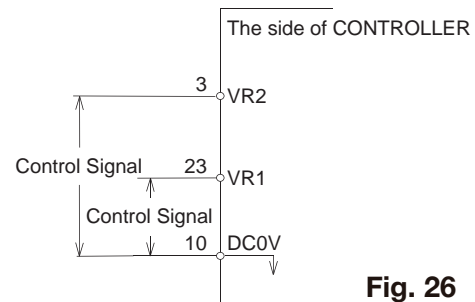


Fig. 26

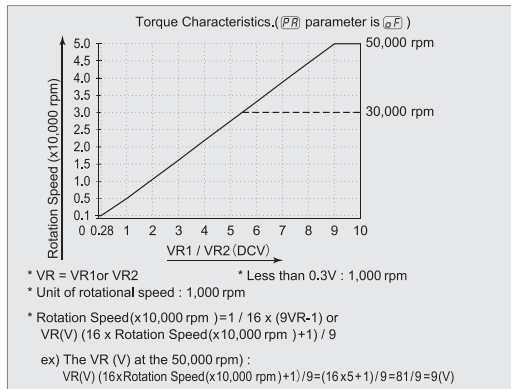


Fig. 27

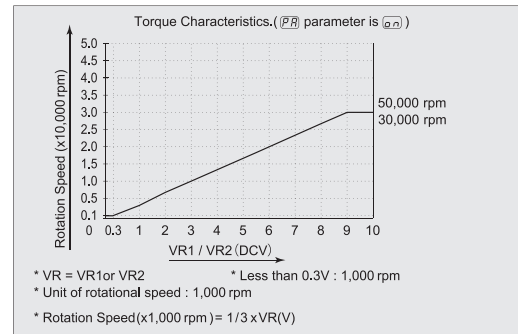


Fig. 28

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.

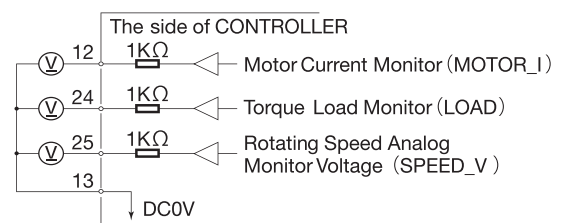


Fig. 29

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
Xspeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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 ' 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 (PB). (Refer to P108 " 18 - 4 (PB) 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	—	—	—	*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) '	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 (PB). (Refer to P108 " 18 - 4 (PB) 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) '	When Control Mode AUTO is being used, this 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	If the Main Power Switch ⑨ is ON, Pin No. 6 and Pin No. 14 are ' ON (Closed) '.
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.

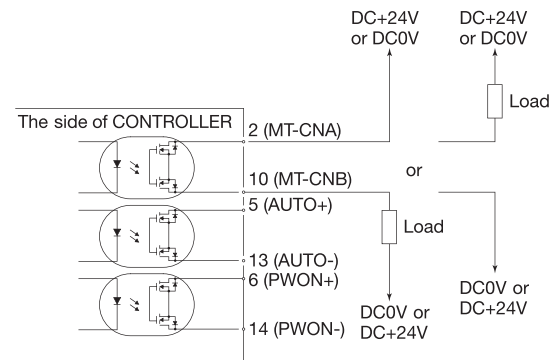


Fig. 30

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.

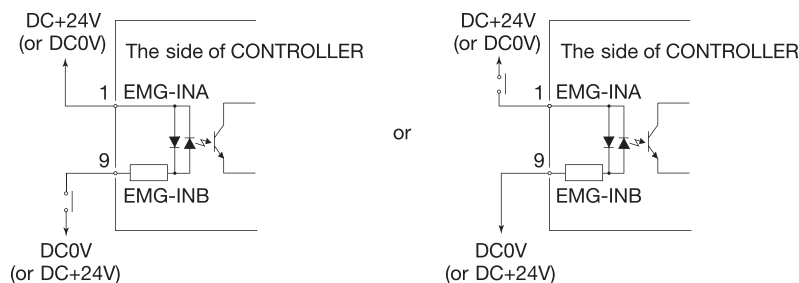


Fig. 31

1
EmaxEVO
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
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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 $P6$ (Refer to P108 " 18 - 4 ① $P6$ 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.

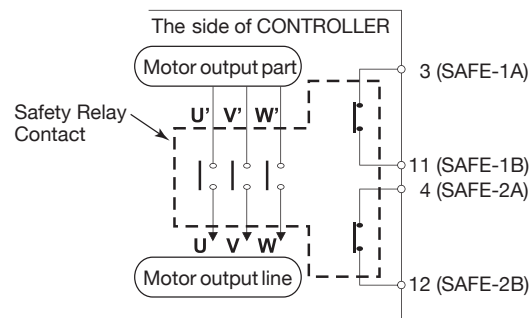


Fig. 32

* 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

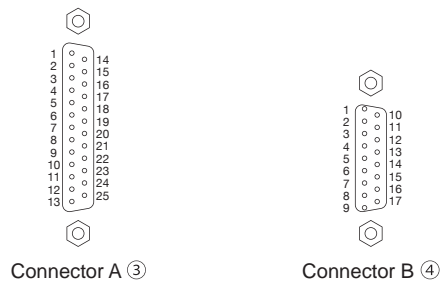


Fig. 33

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897" 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
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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 (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 (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 (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 (1). 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	—	—	—	*Note : Never use pin labeled not used.

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 ⁻¹	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	—	—	—	*Note : Never use a pin labeled not used.
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 ⁻¹ / V	Output the rotation speed of rotating motor with Analog Monitor Voltage. 10,000min ⁻¹ / V DC0V - DC+10V

1
EmaxEV
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" ø0.79"
ø0.81" ø0.81"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

(2) Input / Output Diagram

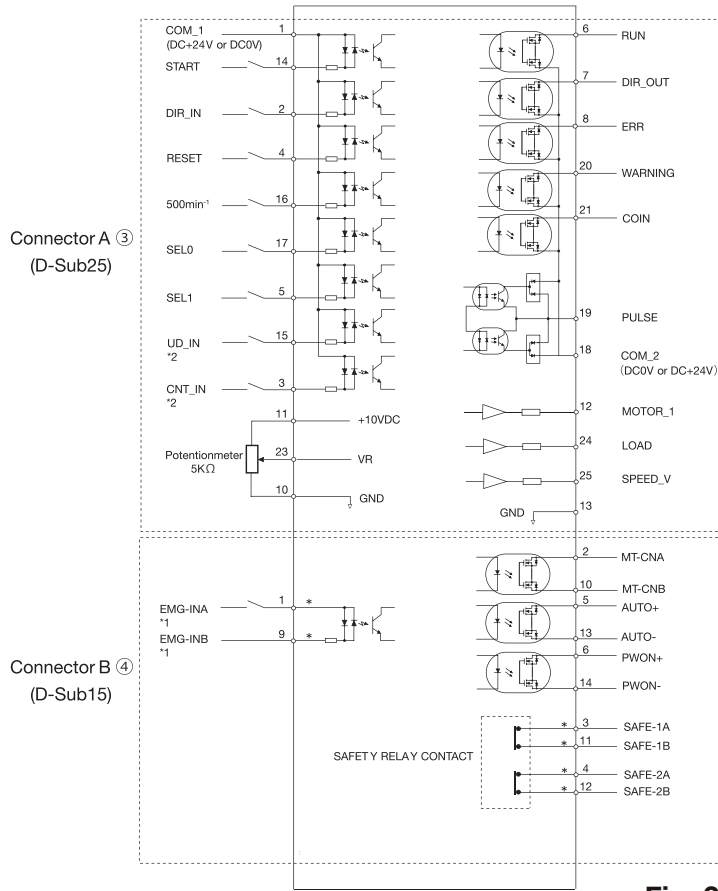


Fig. 29

*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⁻¹)", "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.

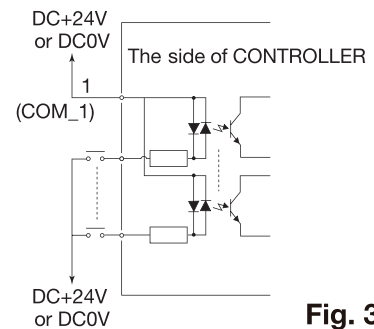


Fig. 30

② Output Signal I

There are 5 different output signals : "Rotating (RUN)", "Rotating Direction (DIR_OUT)", "Error (ERR)", "Warning (WARNING)" and "Speed Achievement (COIN)". 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. 31 for connections.

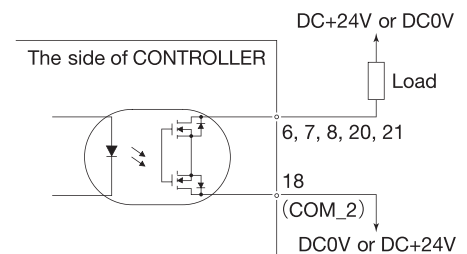


Fig. 31

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

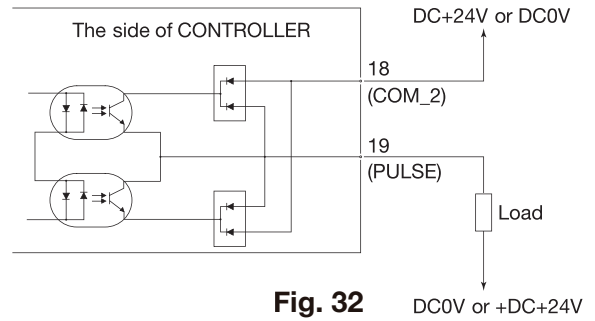


Fig. 32

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.

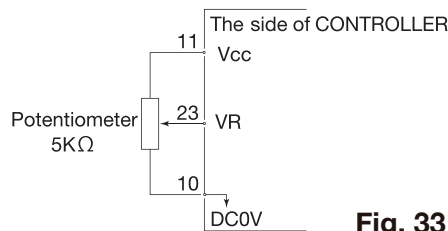


Fig. 33

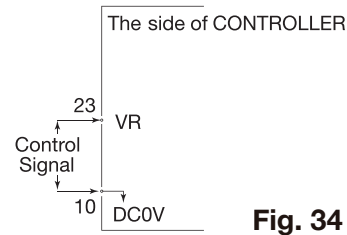


Fig. 34

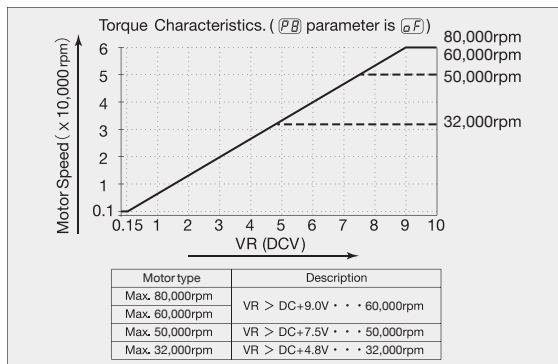


Fig. 35

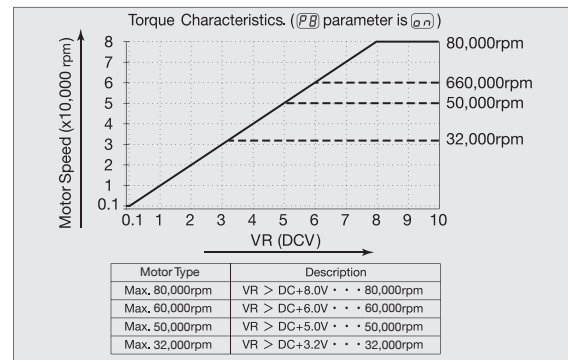


Fig. 36

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.

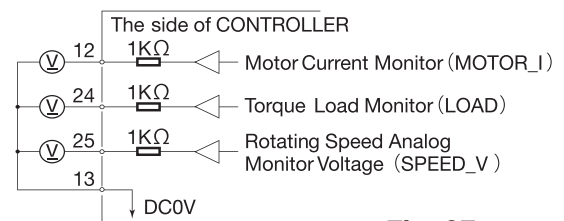


Fig. 37

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 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" ø0.79"
ø0.897" ø0.931"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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	—	—	*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. 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)	When Control Mode AUTO is being used, this 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.

(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.

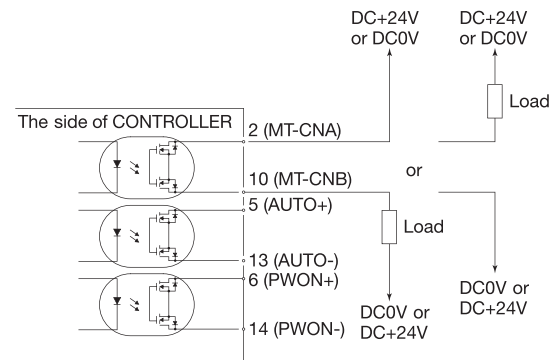


Fig. 38

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.

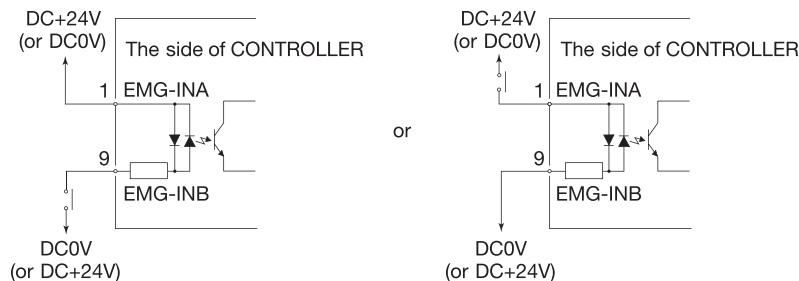


Fig. 39

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

$\phi 1.18^{\circ}$

$\phi 1.0^{\circ}/\phi 0.98^{\circ}$

$\phi 0.98^{\circ}$

$\phi 1.18^{\circ}$

MS

$\phi 0.75^{\circ}$

$\phi 0.75^{\circ}$

$\phi 0.81^{\circ}$

$\phi 0.91^{\circ}$

$\phi 1.0^{\circ}$

$\phi 0.98^{\circ}$

3

MA

$\phi 0.897^{\circ}$

$\phi 1.0^{\circ}$

$\phi 0.98^{\circ}$

$\phi 1.18^{\circ}$

MS

$\phi 0.75^{\circ}$

$\phi 0.75^{\circ}$

$\phi 0.81^{\circ}$

$\phi 0.91^{\circ}$

$\phi 1.0^{\circ}$

$\phi 0.98^{\circ}$

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

8

APPLICATION EXAMPLES

INDEX

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 P9 . (Refer to P87 "15-4 ⑨ 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.

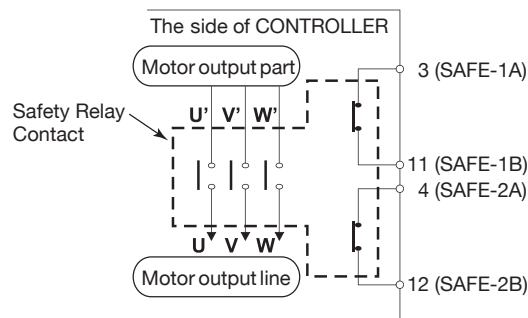


Fig. 40

* 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

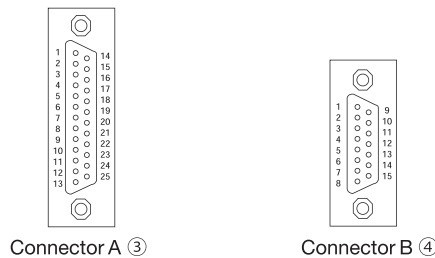


Fig. 41

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897" 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
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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)	SEL0 (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

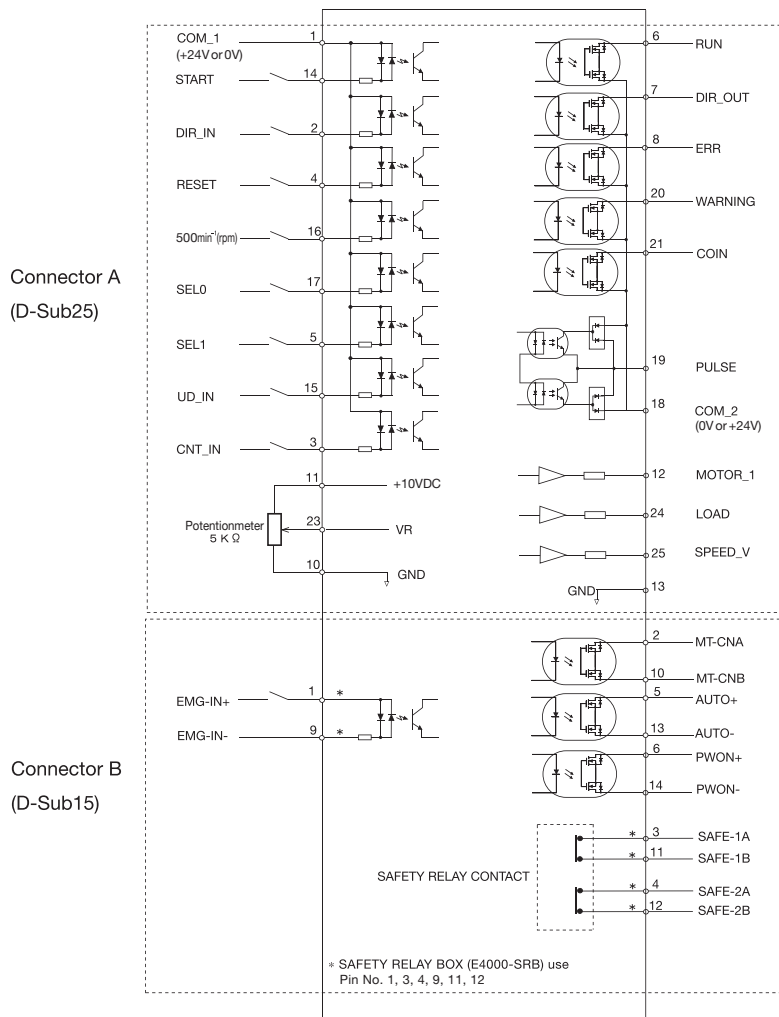


Fig. 27

1
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"
ø1.97"/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
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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".

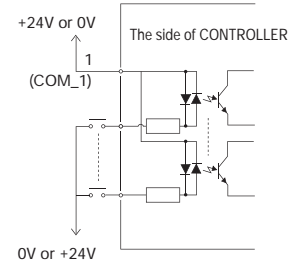


Fig. 28

(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.

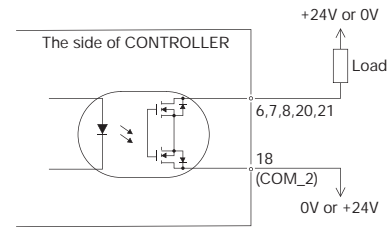


Fig. 29

(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

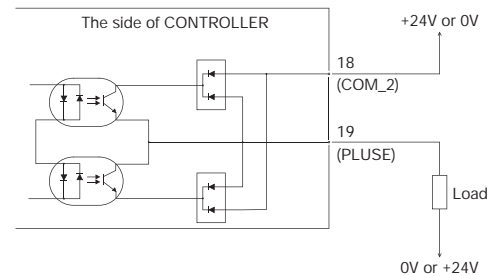


Fig. 30

(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.

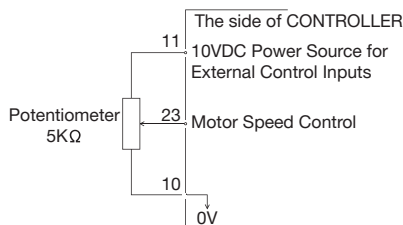


Fig. 31

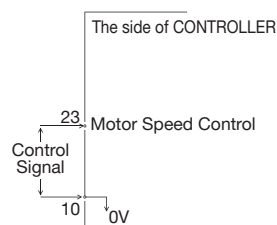


Fig. 32

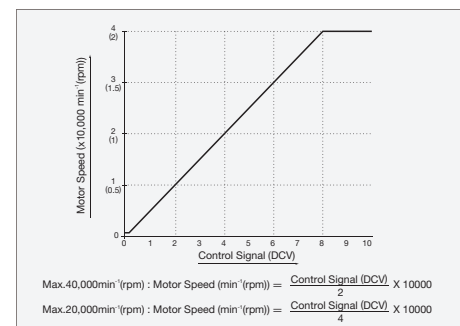


Fig. 33

(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

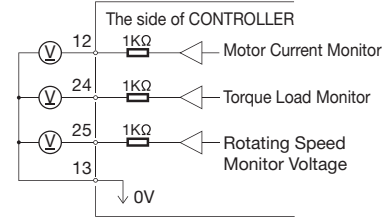


Fig. 34

(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

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus ZERO

Sonic-Cutter ZERO

2

iSpeed3

E2000

— One Piece

E3000

— Modular

— 1.18"

— 1.0"/0.98"/0.95"

E3000

— 30,000rpm

E4000

3

MA

— 0.897"

— 1.0"/0.98"

— 1.18"

MS

— 0.75"

— 0.875"

— 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

INDEX

⚠ 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.

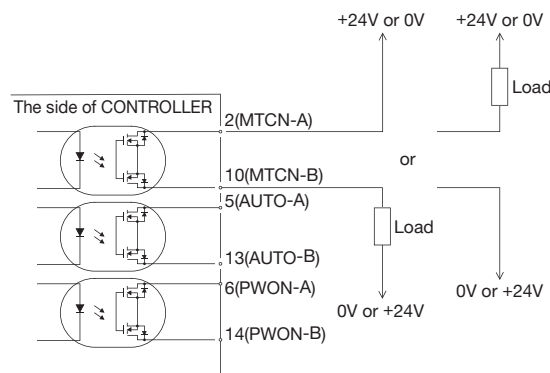


Fig. 35

(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.

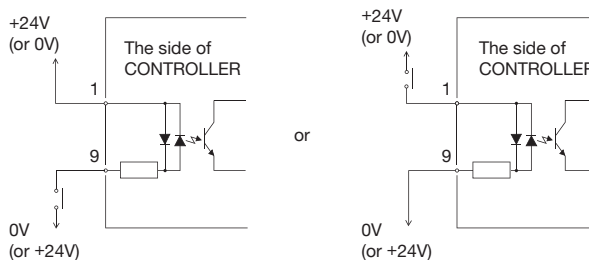


Fig. 36

(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

$\phi 0.991^\circ$

E4000

E4000

3

MA

$\phi 0.997^\circ$

$\phi 1.0^\circ$

$\phi 0.98^\circ$

$\phi 1.18^\circ$

MS

$\phi 0.75^\circ$

$\phi 0.79^\circ$

$\phi 0.87^\circ$

$\phi 0.91^\circ$

$\phi 1.0^\circ$

$\phi 0.98^\circ$

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

8

APPLICATION EXAMPLES

INDEX

- Refer to Fig. 37 for connecting relationship between the relay contact output and the safety BOX.

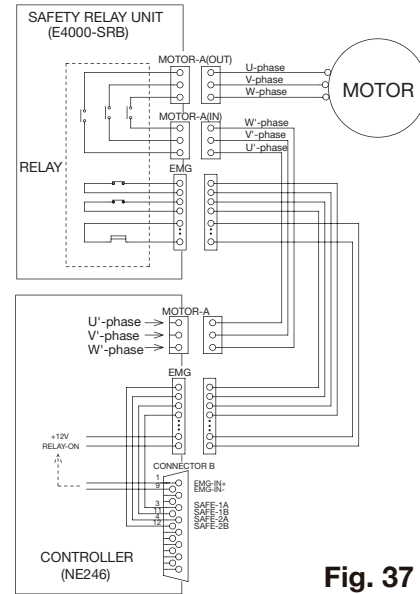


Fig. 37

(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
ESPRT
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"
ø1.0"/ø0.98" ø0.897"
E3000 — 30,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.79"
ø0.897" 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
INDEX

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

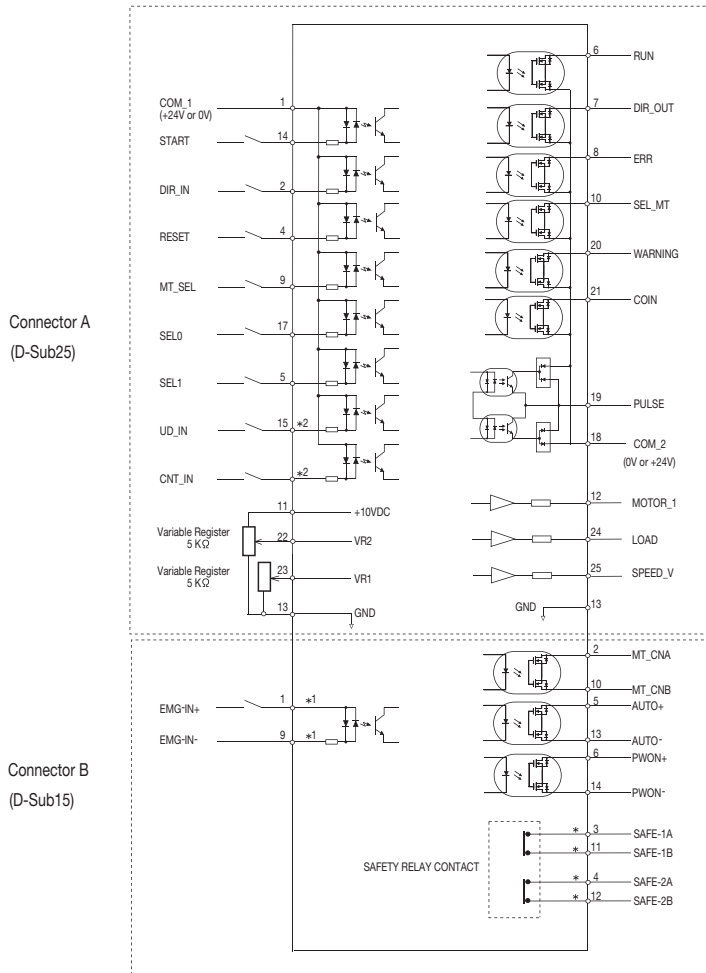


Fig. 26

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.

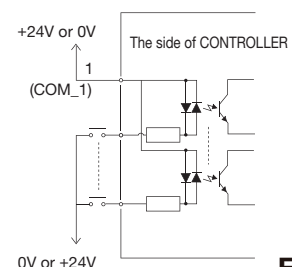


Fig. 27

1
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
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

(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.

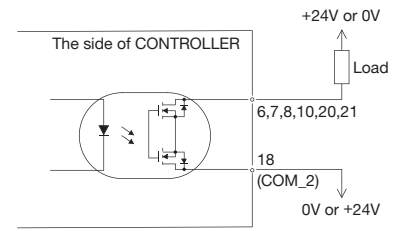


Fig. 28

(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

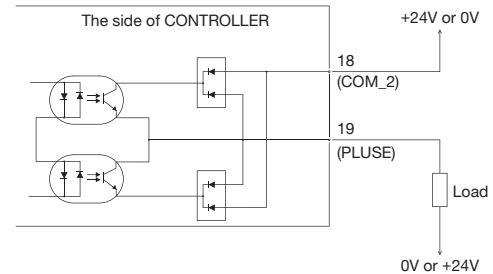


Fig. 29

(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)

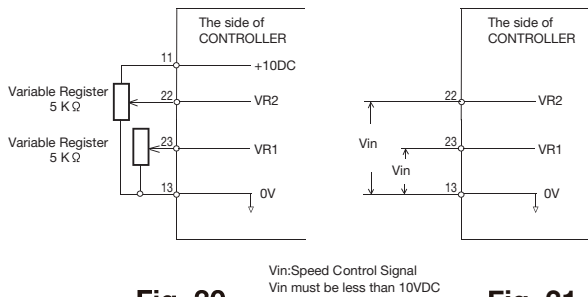


Fig. 30

Fig. 31

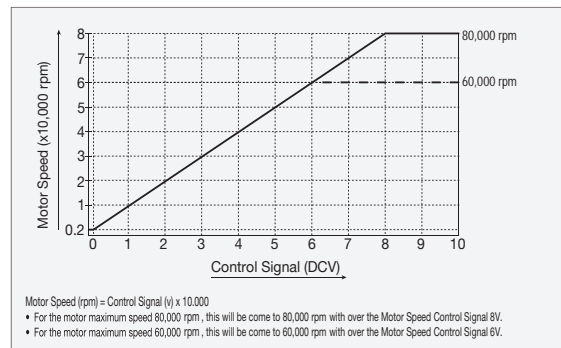


Fig. 32

(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

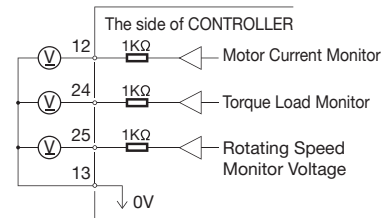


Fig. 33

(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

AIR LINE KIT

6

PARTS

7

TECHNICAL

DATA

8

APPLICATION

EXAMPLES

INDEX

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.

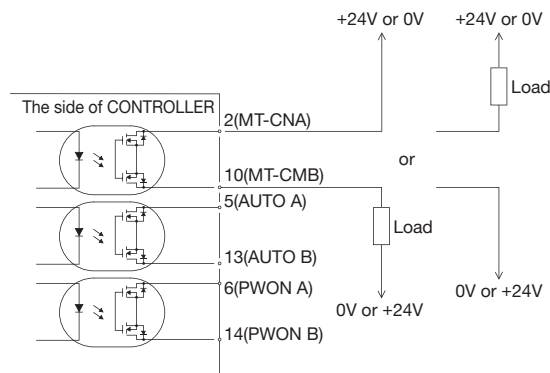


Fig. 34

(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.

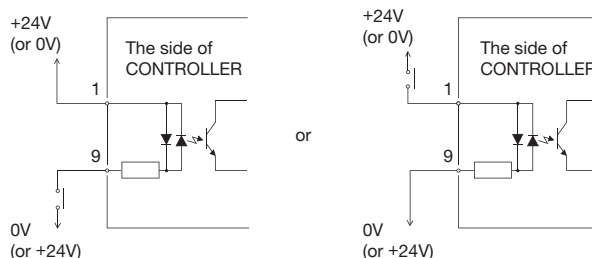


Fig. 35

(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 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

- The voltage/current specifications of PIN3-11 and PIN4-12.
 - Applied Voltage (V max) \leq 30VDC
 - Working Current (Ip) \leq 2A

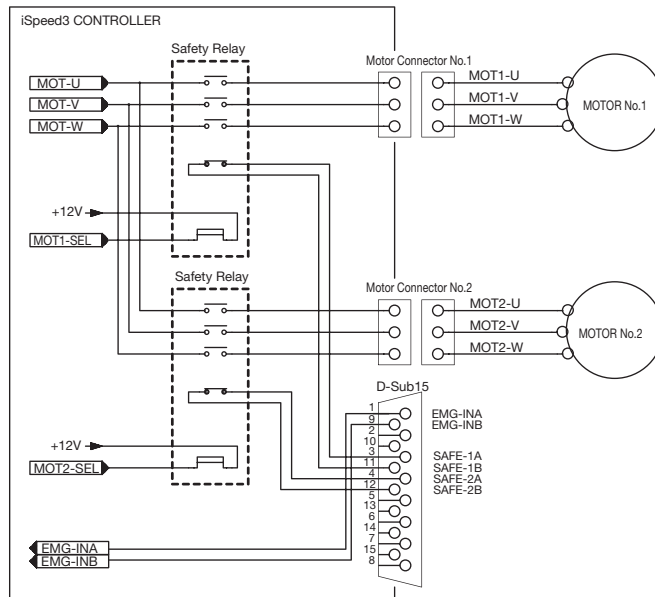


Fig. 36

(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

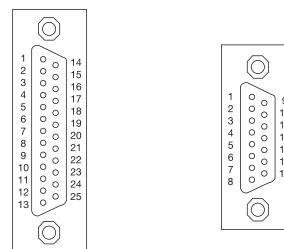
Plug Part Number : XM2A-1501 OMRON (or other similar high-quality product)
 Cover Part Number : XM2S-1511 OMRON (or other similar high-quality product)

- 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"
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
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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 100min^{-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

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL

DATA

8

APPLICATION

EXAMPLES

INDEX

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

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 ⁻¹) = 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 ⁻¹ / V	Output the rotation speed of rotating motor with Analog Monitor Voltage. 10,000min ⁻¹ / V DC0V - DC+10V

(2) Input / Output Diagram

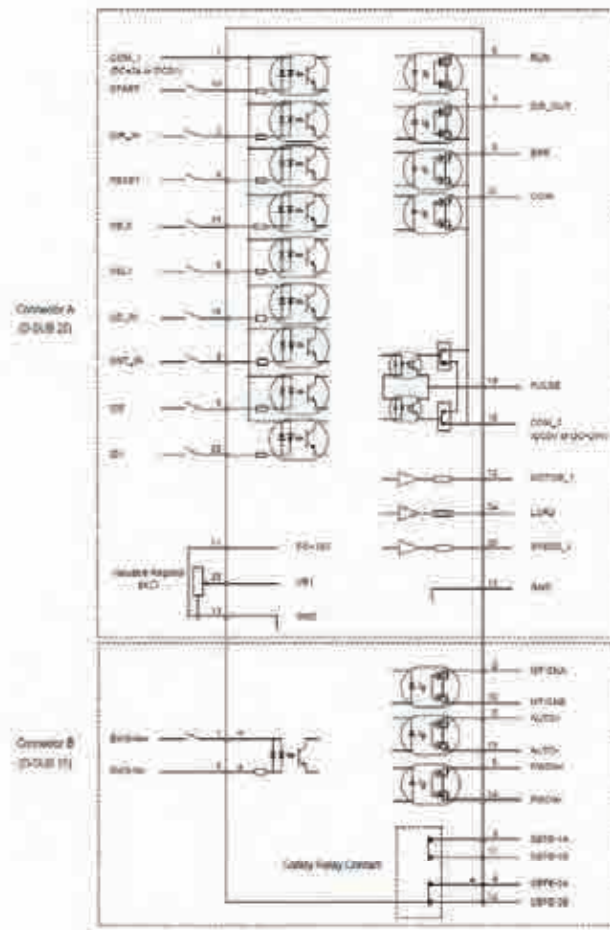


Fig. 40

- *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 - 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
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

(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 .

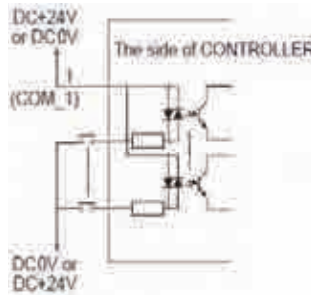


Fig. 41

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 (Ip) \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.

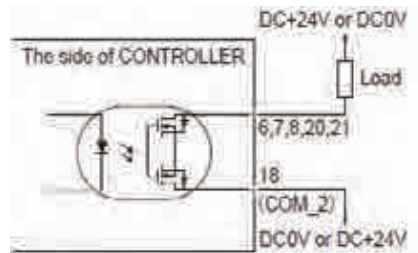


Fig. 42

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

Sonic-Cutter

ZERO

2

iSpeed3

E2000

±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°

±0.897°/±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

INDEX

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.

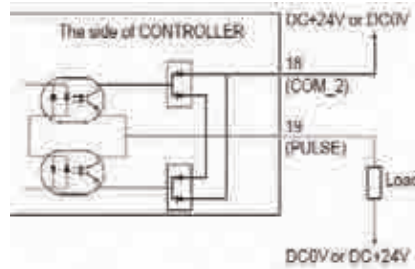


Fig. 43

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

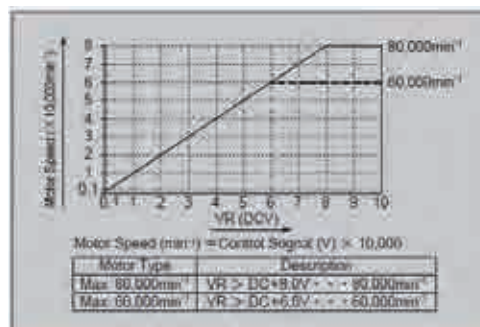


Fig. 46

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
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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.

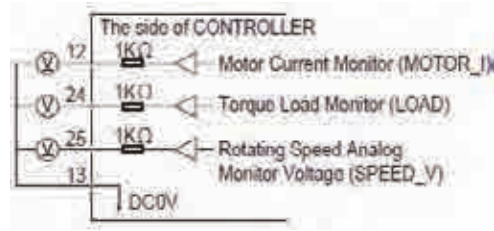


Fig. 47

1

EmaxEVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus
ZERO

Sonic-Cutter
ZERO

2

iSpeed3

E2000

σ1.0°/σ0.98°/σ0.897°

E3000

— One Piece

E3000

— Modular

σ1.18°

σ1.0°/σ0.98°/σ0.897°

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

6

PARTS

7

TECHNICAL
DATA

8

APPLICATION
EXAMPLES

INDEX

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. 1 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

AIR LINE KIT

6

PARTS

7

TECHNICAL

DATA

8

APPLICATION

EXAMPLES

INDEX

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.

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

MS

MS

MS

MS

MS

MS

MS

5

AIR LINE KIT

6

PARTS

7

TECHNICAL DATA

8

APPLICATION EXAMPLES

INDEX

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.

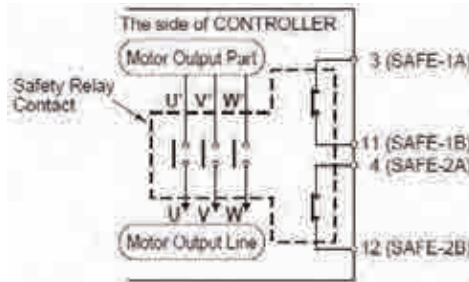


Fig. 50

- * 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.

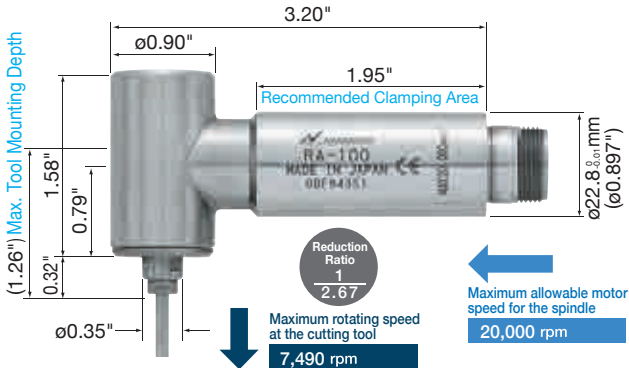
1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.997"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.97"/ø0.98" ø0.997"
E3000 - 30,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.75"
ø0.897" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

MACHINE TOOL SPINDLES INFORMATION

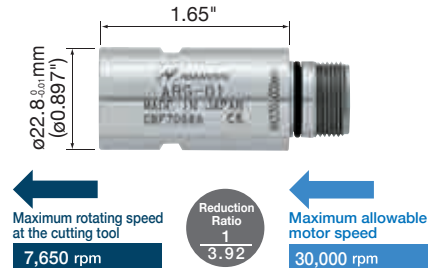
Maximum Motor Speed for Angle Type Spindles / Speed Reducers.

- 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)



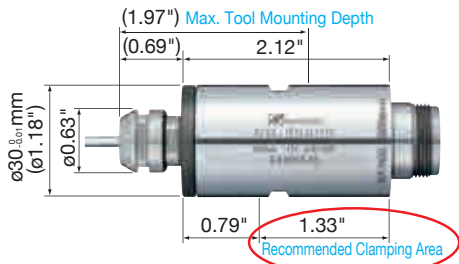
Example : Speed Reducer ARG-01
(Reduction Ratio = 1 : 3.92)



"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



Allowable Motor Speed

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

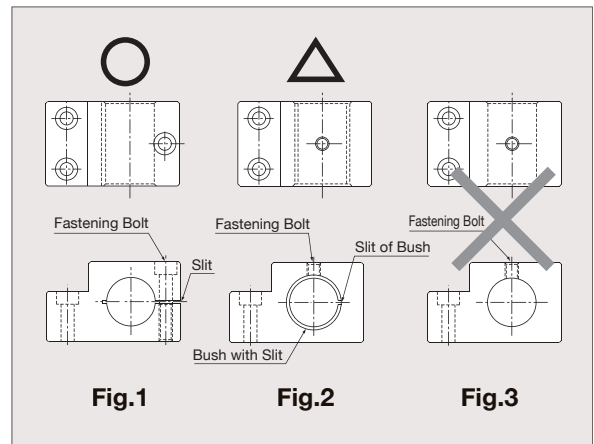


• E4000



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.

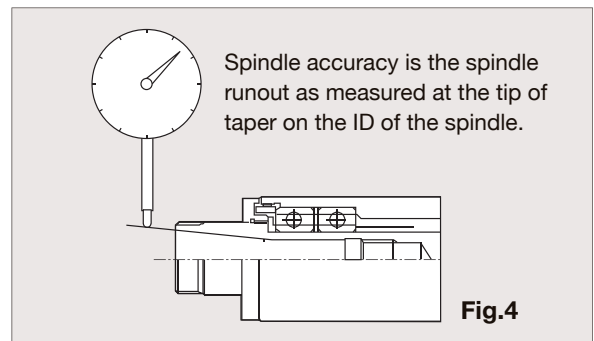


Caution

- 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.

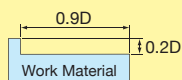
ø : Tool Size (mm) S : Spindle Motor Speed {rpm} F : Feed Rate (mm/min) f : Drilling Step (mm/rev)

	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.

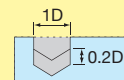
*Milling Depth/per
1D : End Mill Size



*Drilling Conditions

- Use Micro Drill with ultra hard coating
- Used in conjunction with water or oil based coolants.

*Drilling/Step
D : Drilling Size



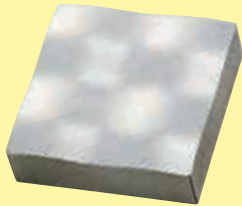
MA Series (Page 3-p1~)

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~)



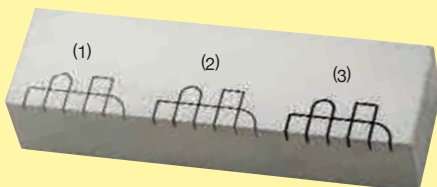
Material		STAVAX (HRC 52) 50 x 50 x 15 (mm)								
Usable Tool		Ultra-Hard Coated Ball End Mill R1.0		CBN Ball End Mill R1.0						
Cutting Process		1. Rough Cutting	2. Semi-Finishing Cutting	3. Finishing Cutting						
Cutting Depth		0.2 x 0.3mm	0.1 x 0.2mm	0.02 x 0.03mm		Total Time	Surface Roughness			
							Cutting Direction		Pf Direction	
M/C Main Spindle 20,000 rpm	Work Feed mm / min	1,600	1,600	1,000		2h12min	Ry μ m	Ra μ m	Ry μ m	Ra μ m
HES810 80,000 rpm		6,400	6,400	4,000		45min	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

APPLICATION
EXAMPLES

INDEX

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.

Index

E3000 SERIES	8-p2~8-p7
MA SERIES	8-p7~8-p12
MS SERIES	8-p4, 8-p12~8-p14
HES SERIES	8-p15, 8-p16

1
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
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
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
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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

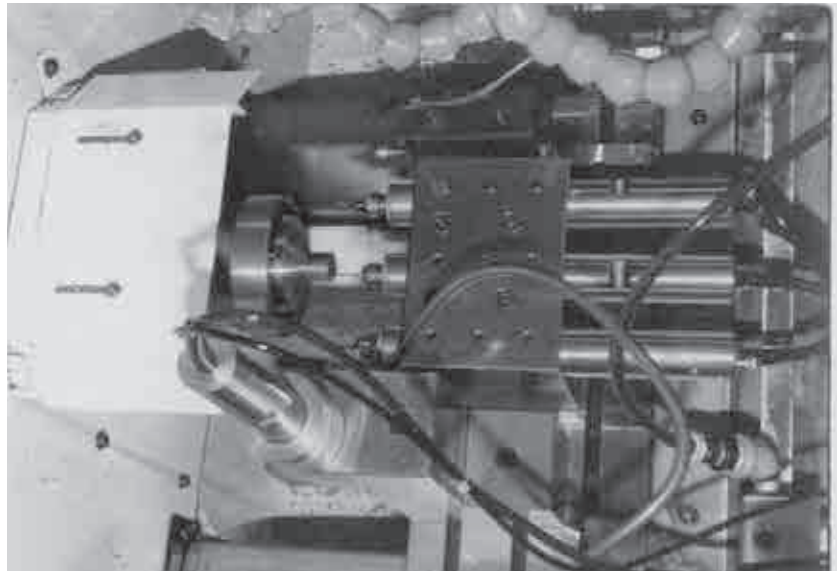
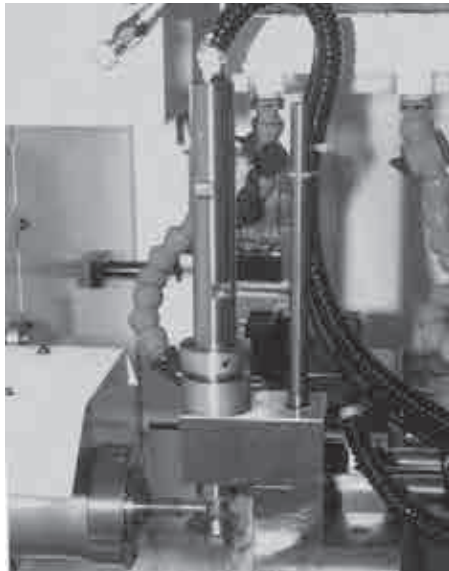
(3) EM-3060 + ARG-011E + NR-453E

∅3 DRILLING ; TOOL SPEED : 4,000 rpm ; FEED : 80 mm/min

• INSTALLATION : NC LATHE



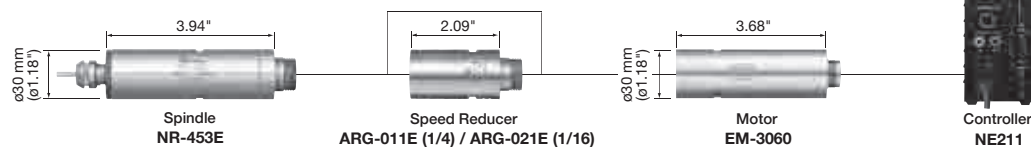
INSTALLATION



<Application Example, Installation>

E3000 SERIES

1,000~60,000 rpm Output 350 W

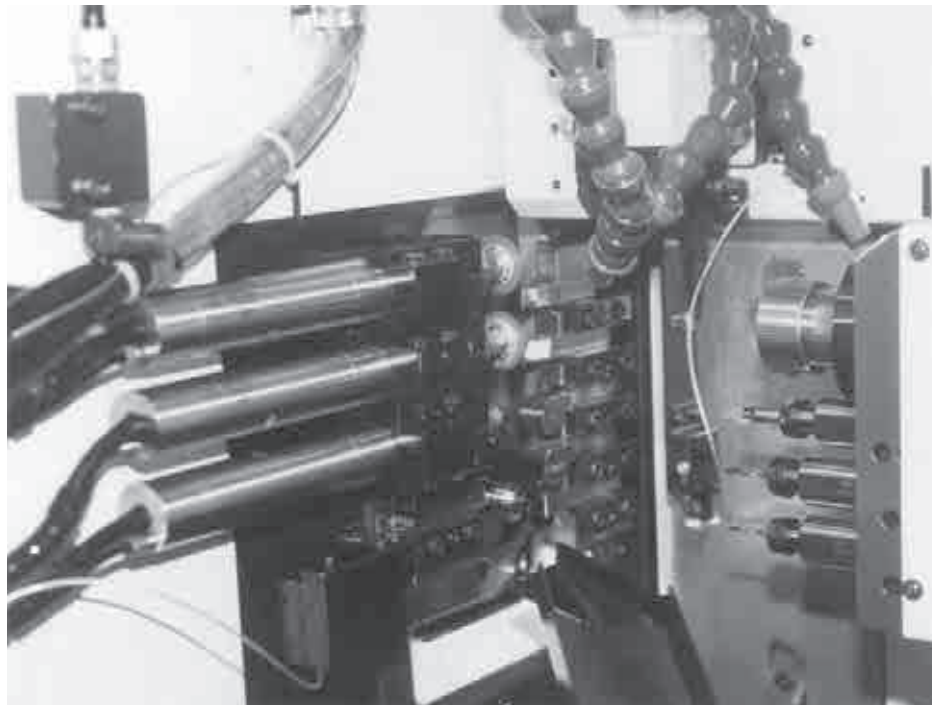


E3000 SERIES

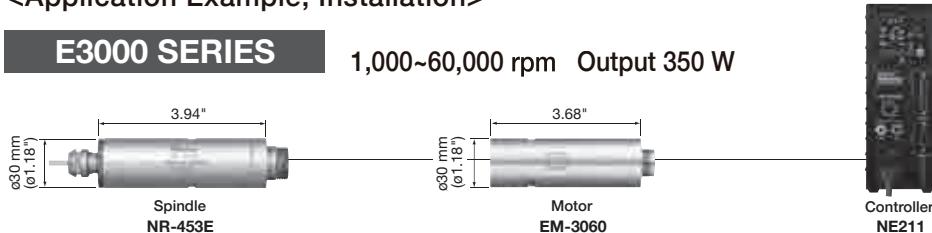
- APPLICATION EXAMPLE : COMPLEX PROCESS
- WORK PIECE : RESIN
- WORK CONDITIONS :
 - (1) EM-3060 + NR-453E
 $\phi 1.0$ DRILLING ; TOOL SPEED : 3,000 rpm ; FEED : 180 mm/min
 - (2) EM-3060 + NR-453E
 $\phi 30$ GRINDING STONE ; TOOL SPEED : 35,000 rpm ; FEED : 250 mm/min
- INSTALLATION : NC LATHE



INSTALLATION



<Application Example, Installation>



1
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\phi 1.0^{\circ}/\phi 0.98^{\circ}/\phi 0.897^{\circ}$
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
$\phi 0.75^{\circ}/\phi 0.73^{\circ}$
$\phi 0.87^{\circ}/\phi 0.91^{\circ}$
$\phi 1.0^{\circ}/\phi 0.98^{\circ}$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

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

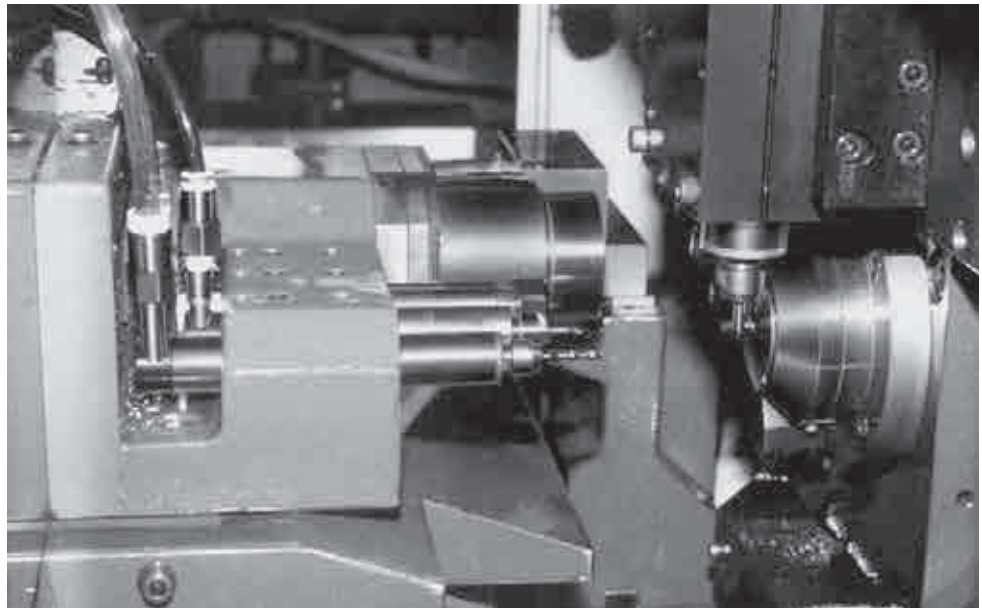
(3) MSS-1908RA

ø1 DRILLING ; TOOL SPEED : 8,000 rpm ; FEED : 100 mm/min

• INSTALLATION : NC LATHE



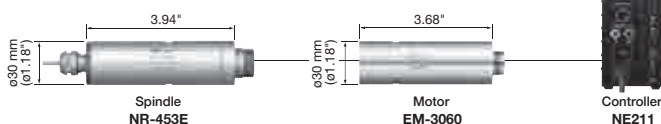
INSTALLATION



<Application Example, Installation>

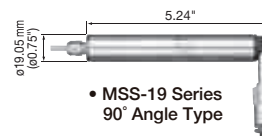
E3000 SERIES

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

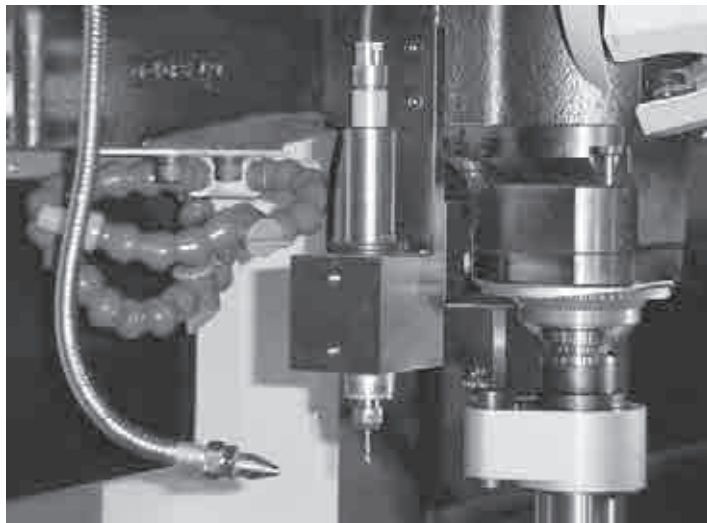
- WORK CONDITIONS :

(1) SPINDLE : E3000 EM30-S6000

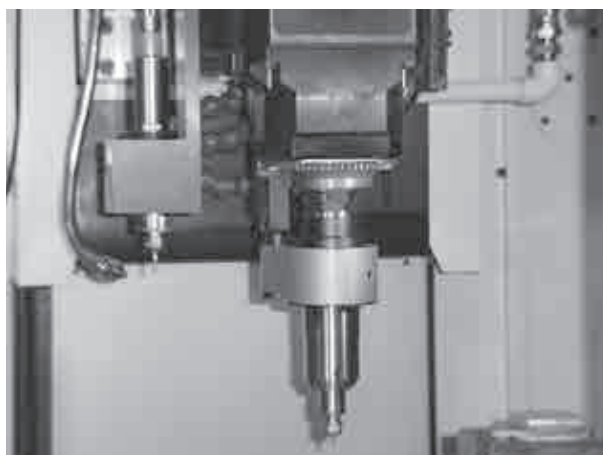
MAX POWER : 350 W ; MAX RPM : 60,000 rpm ; SPINDLE SIZE : $\phi 30$ mm

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.

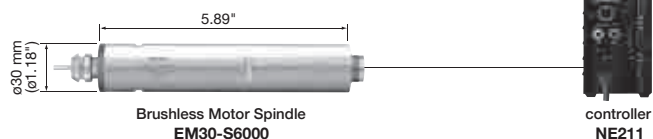


ALL NAKANISHI SPINDLE FUNCTIONS ARE COMMANDED AND MONITORED FROM THE MACHINES CONTROLLER. (Shown with HPS500-BT30 Tool Changeable Air Spindle in machines main spindle)

<Application Example, Installation>

E3000 SERIES

1,000~60,000 rpm Output 350 W



1
Emax EVO
ESPRT
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
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

E3000 SERIES

• APPLICATION EXAMPLE : END MILLING

• WORK PIECE : RESIN

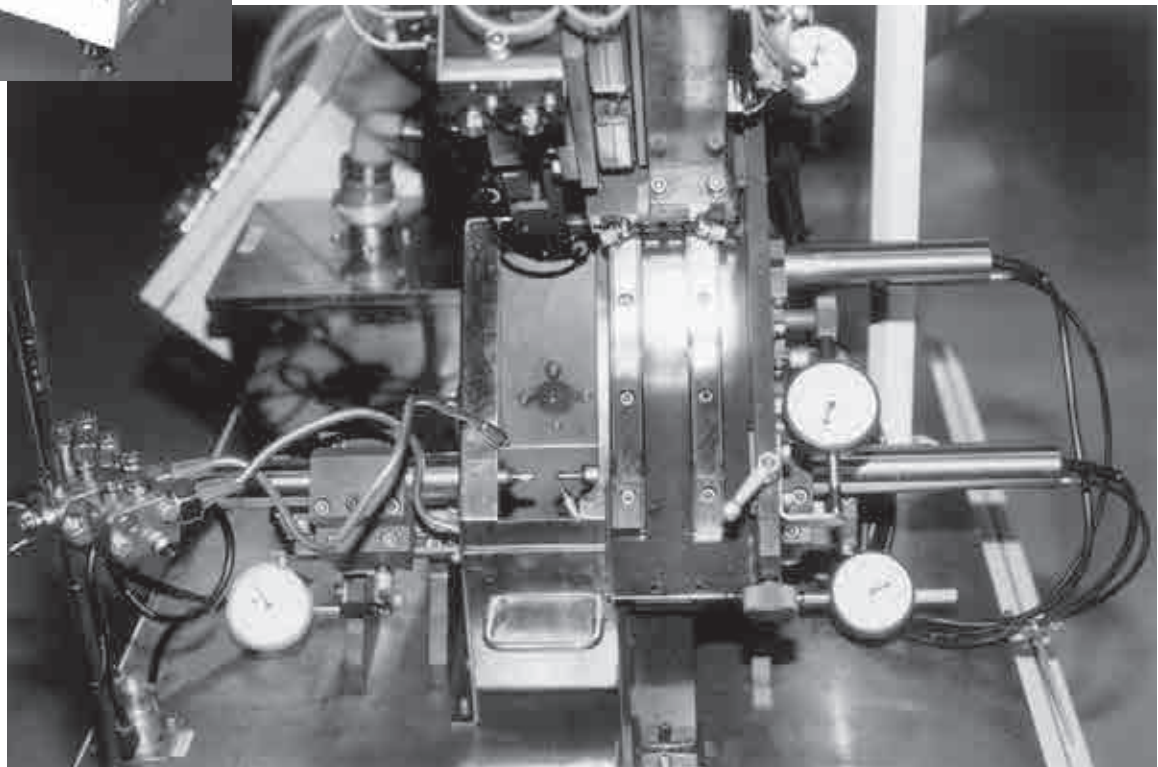
• WORK CONDITIONS :

(1) EM-3060 + ARG-011E + NR-453E

ø6 END MILLING ; TOOL SPEED : 5,000 rpm ; FEED : 500 mm/min

• INSTALLATION : SPECIAL PURPOSE MACHINE

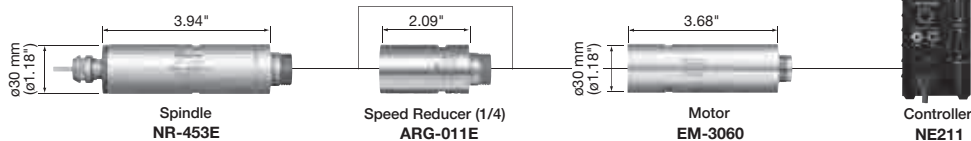
INSTALLATION



<Application Example, Installation>

E3000 SERIES

1,000~60,000 rpm Output 350 W



MA SERIES / E3000 SERIES

• APPLICATION EXAMPLE : AIR MOTOR CYLINDER PLATE

• WORK PIECE : BRASS

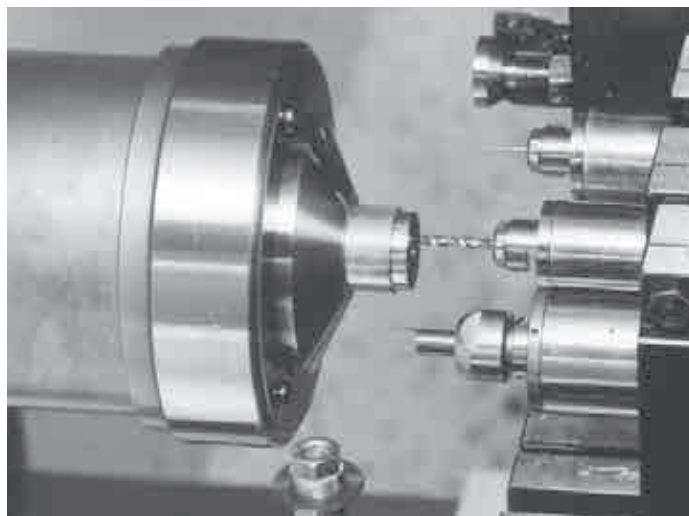
• WORK CONDITIONS :

- (1) AM-300R + ARG-02 + NR-303
 $\varnothing 24 \times t 1.1$ METAL SAWING ; TOOL SPEED : 2,000 rpm ; FEED : 50 mm/min
- (2) EM-3060 + ARG-021E + NR-453E
 $\varnothing 3.6^{+0.04}_{+0.03}$ END MILLING ; TOOL SPEED : 1,750 rpm ; FEED : 50 mm/min
- (3) AM-300R + ARG-02 + NR-303
 $\varnothing 2.5$ DRILLING ; TOOL SPEED : 2,000 rpm ; FEED : 70 mm/min
- (4) AM-300RA + ARG-01 + NR-303
 $\varnothing 1.1$ DRILLING ; TOOL SPEED : 8,000 rpm ; FEED : 50 mm/min

• INSTALLATION : GANG TOOL NC LATHE

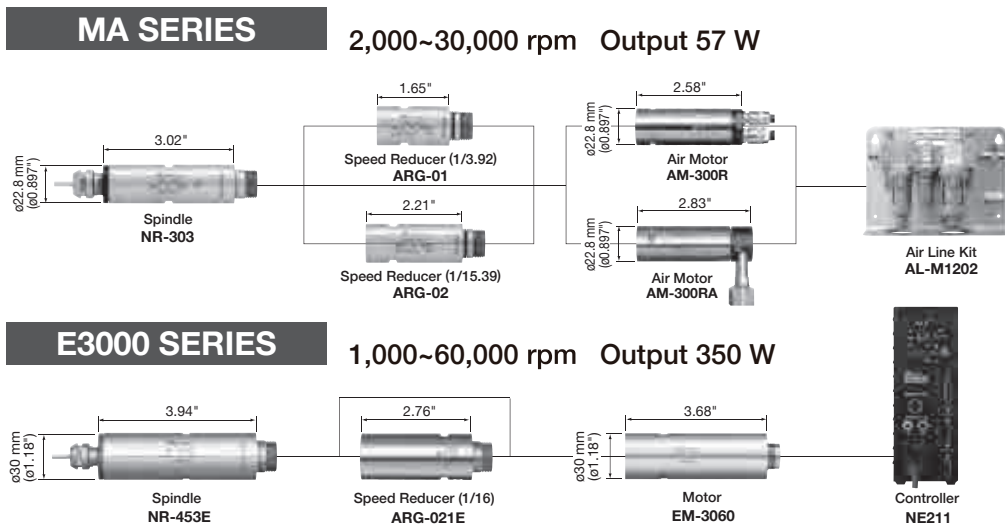


INSTALLATION



1
Emax EVO
ESPRT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 $\varnothing 1.0^{\circ}/\varnothing 0.98^{\circ}/\varnothing 0.897^{\circ}$
E3000 - One Piece
E3000 - Modular
$\varnothing 1.18^{\circ}$
$\varnothing 1.0^{\circ}/\varnothing 0.98^{\circ}/\varnothing 0.897^{\circ}$
E3000 - 80,000rpm
E4000
3
MA
$\varnothing 0.897^{\circ}$
$\varnothing 1.0^{\circ}$
$\varnothing 0.98^{\circ}$
$\varnothing 1.18^{\circ}$
MS
$\varnothing 0.75^{\circ}$
$\varnothing 0.79^{\circ}$
$\varnothing 0.897^{\circ}$
$\varnothing 0.91^{\circ}$
$\varnothing 1.0^{\circ}$
$\varnothing 0.98^{\circ}$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

<Application Example, Installation>

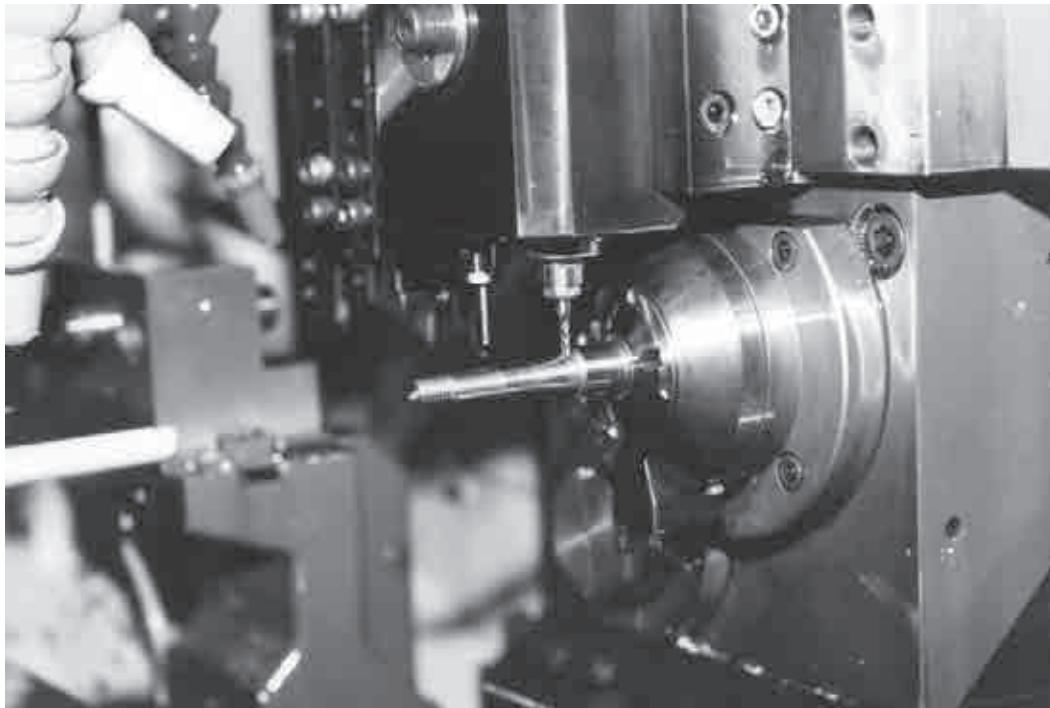


MA SERIES

- 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

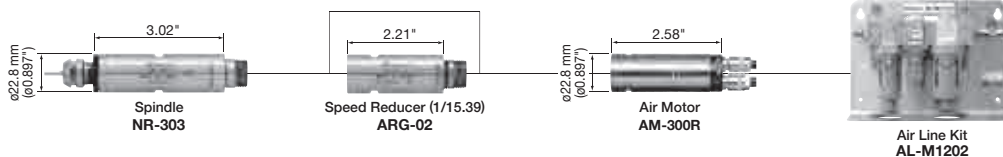


INSTALLATION



<Application Example, Installation>

MA SERIES 2,000~30,000 rpm Output 57 W



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

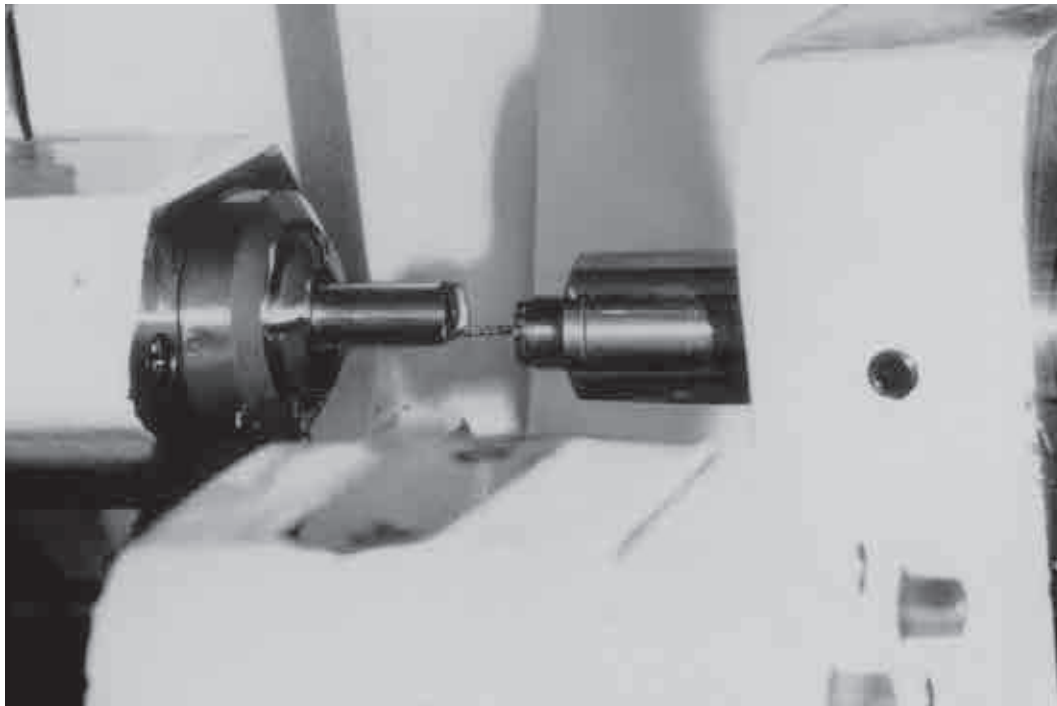
8
APPLICATION EXAMPLES
INDEX

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



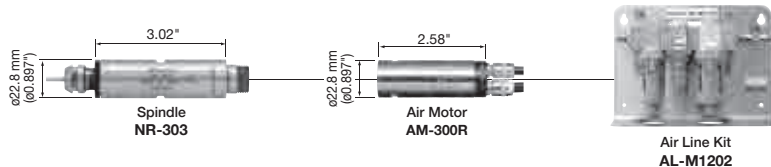
INSTALLATION



<Application Example, Installation>

MA SERIES

2,000~30,000 rpm Output 57 W



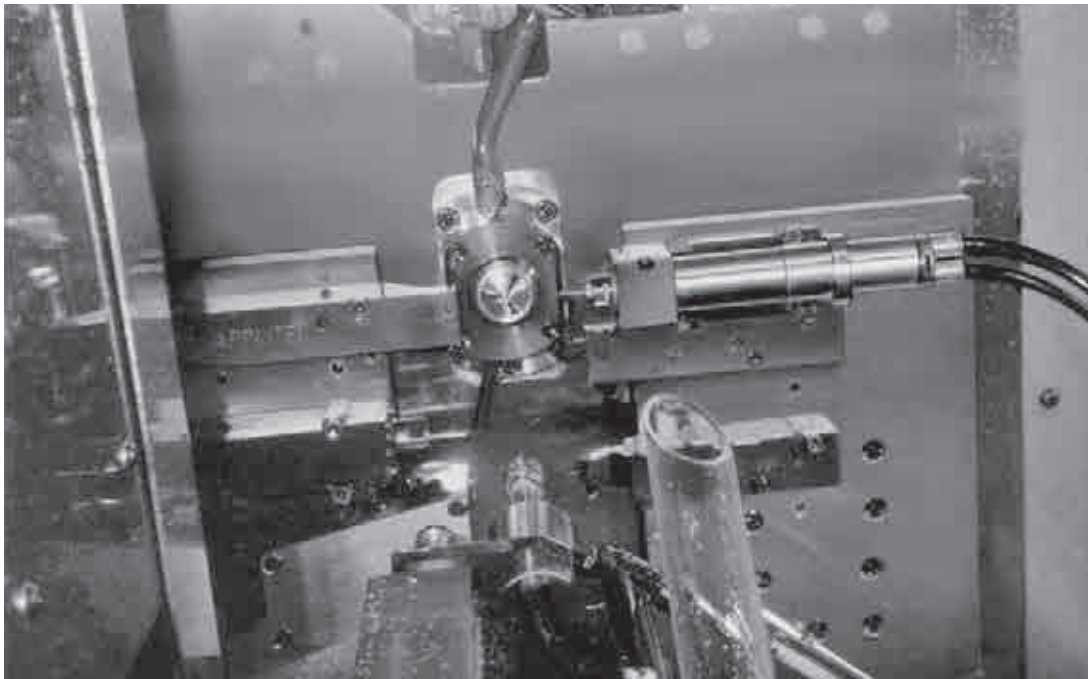
1
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000
$\phi 1.0''$ / $\phi 0.98''$ / $\phi 0.897''$
E3000
— One Piece
E3000
— Modular
$\phi 1.18''$
$\phi 1.0''$ / $\phi 0.98''$ / $\phi 0.897''$
E3000
— 80,000rpm
E4000
3
MA
$\phi 0.897''$
$\phi 1.0''$ / $\phi 0.98''$
$\phi 1.18''$
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
TECHNICAL DATA
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)

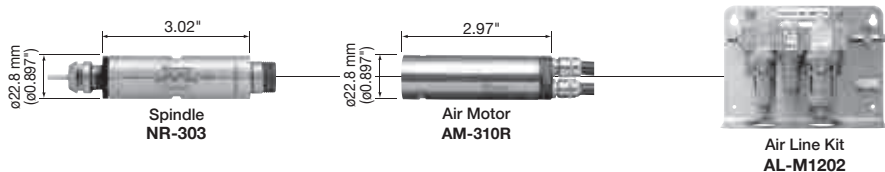


INSTALLATION



<Application Example, Installation>

MA SERIES 2,000~30,000 rpm Output 108 W



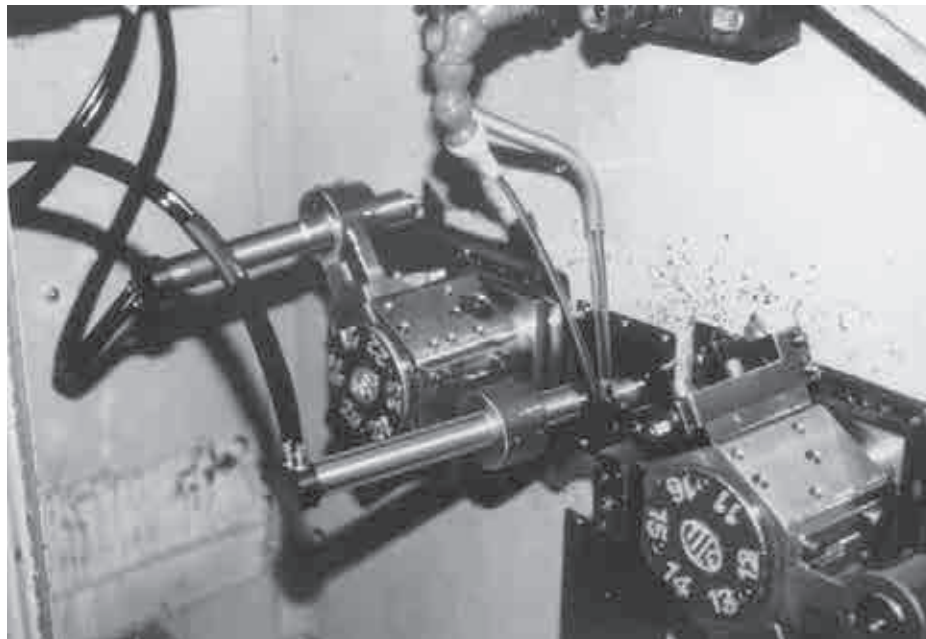
1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
Sonic-Cutter ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.97"
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.0"/ø0.98" ø0.97"
E3000 - ø0,000rpm
E4000
3
MA
ø0.897"
ø1.0" ø0.98"
ø1.18"
MS
ø0.75" ø0.73"
ø0.87" ø0.91"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

MA SERIES

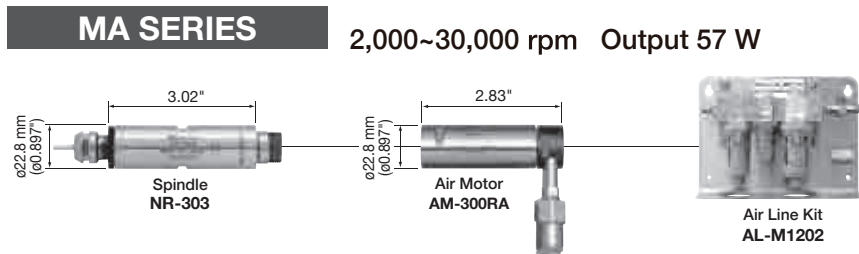
- APPLICATION EXAMPLE : END MILLING
- WORK PIECE : SUS
- WORK CONDITIONS :
 - (1) AM-300RA + NR-303
 $\varnothing 1.2$ END MILLING ; TOOL SPEED : 30,000 rpm ; FEED : 50 mm/min
 - (2) AM-300RA + NR-303
 $\varnothing 0.6$ END MILLING ; TOOL SPEED : 30,000 rpm ; FEED : 50 mm/min
- INSTALLATION : NC LATHE



INSTALLATION



<Application Example, Installation>



1
Emax EVO
ESPRT
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 — 80,000rpm
E4000
3
MA
$\varnothing 0.897''$
$\varnothing 1.0''$ $\varnothing 0.98''$
$\varnothing 1.18''$
MS
$\varnothing 0.75''$ $\varnothing 0.79''$
$\varnothing 0.87''$ $\varnothing 0.91''$
$\varnothing 1.0''$ $\varnothing 0.98''$
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
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"/ø0.99"
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"
ø0.87"
ø0.91"
ø1.0"
ø0.98"

4

HES
iSpeed5
HTS
PLANET
Xpeed
ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL
DATA

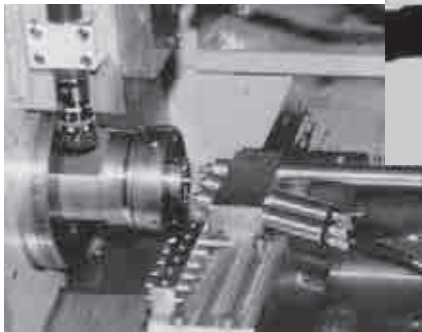
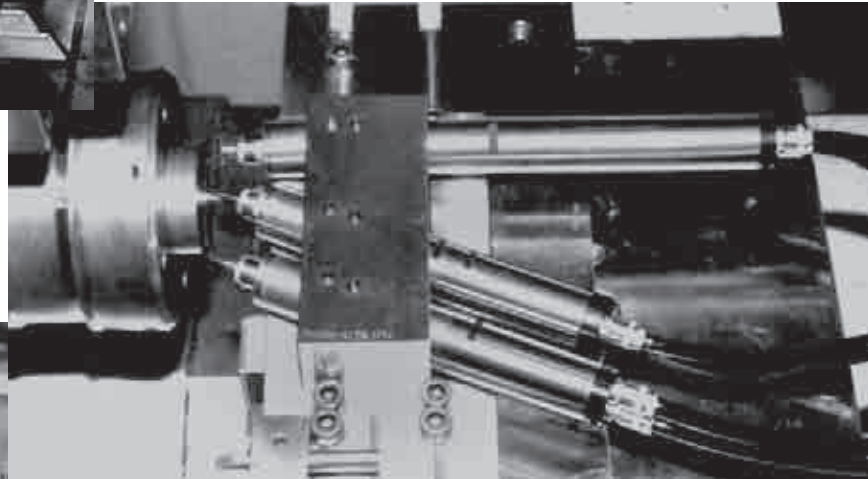
8

APPLICATION
EXAMPLES

INDEX



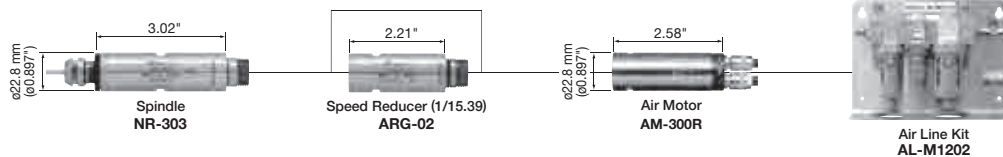
INSTALLATION



<Application Example, Installation>

MA SERIES

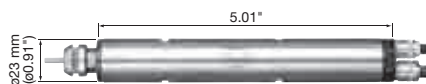
2,000~30,000 rpm Output 57 W



MS SERIES

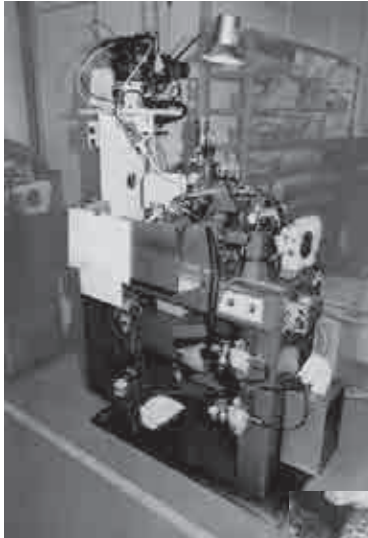
30,000 · 8,000 · 2,000 rpm Output 108 W

• MSST-23 Series Straight Type

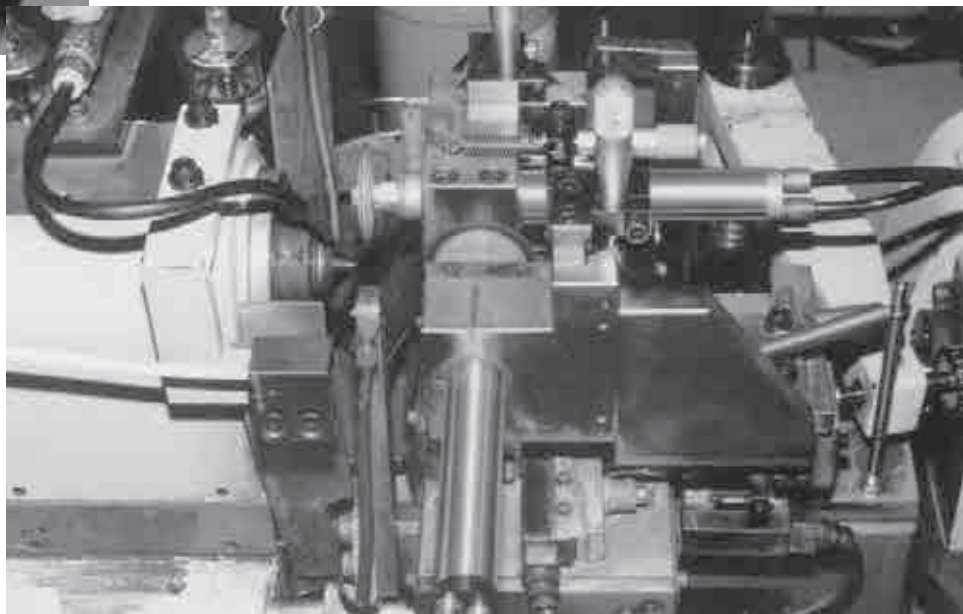


MS SERIES

- 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

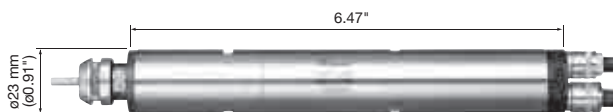


<Application Example, Installation>

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°/ø0.73°
ø0.89°/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

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

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

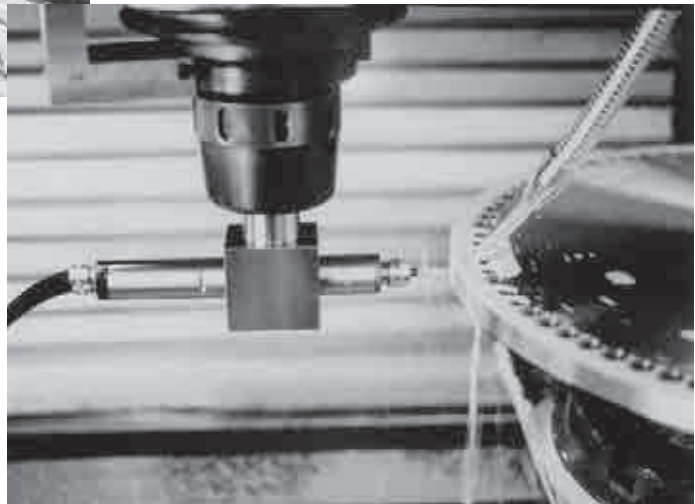
7

TECHNICAL
DATA

8

APPLICATION
EXAMPLES

INDEX

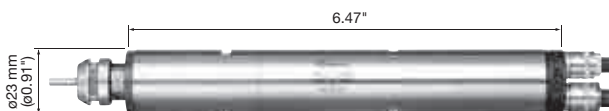


<Application Example, Installation>

MS SERIES

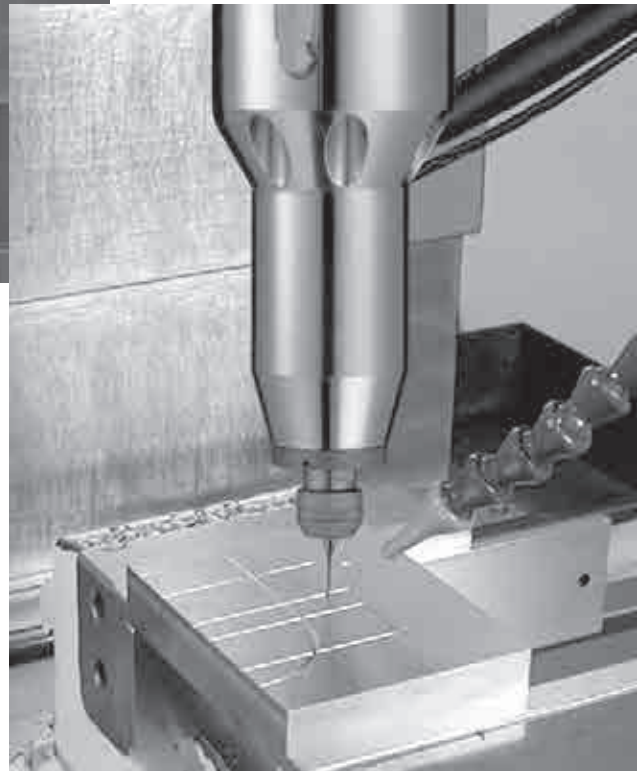
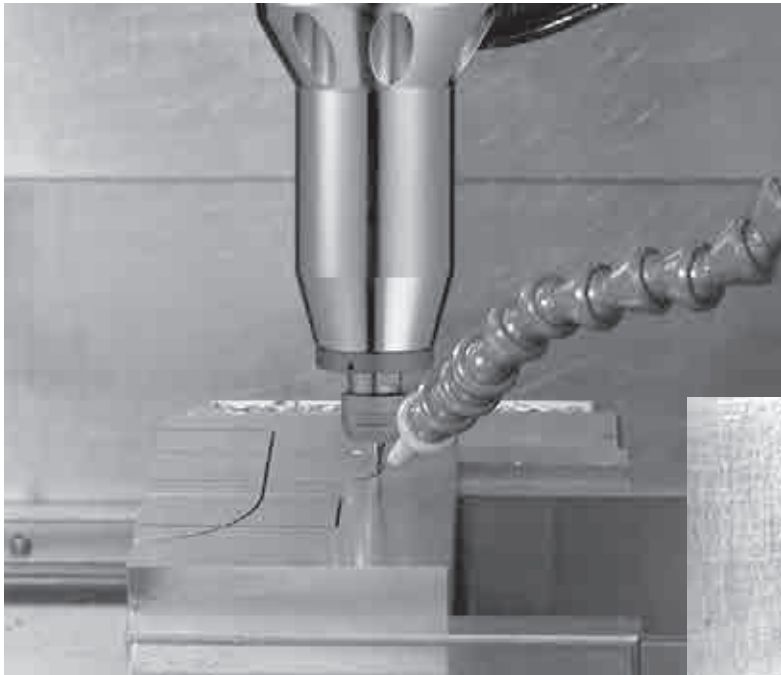
30,000 · 8,000 · 2,000 rpm Output 108 W

- MSST-23 Series Straight Type



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 μ m
- INSTALLATION : NC MILLING LATHE

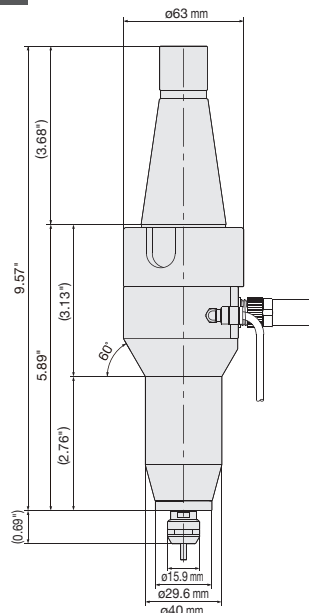


<Application Example, Installation>

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
$\phi 0.75^{\circ}$
$\phi 0.79^{\circ}$
$\phi 0.89^{\circ}$
$\phi 0.91^{\circ}$
$\phi 1.0^{\circ}$
$\phi 0.98^{\circ}$
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

HES SERIES

• APPLICATION EXAMPLE : COMPLEX PROCESS

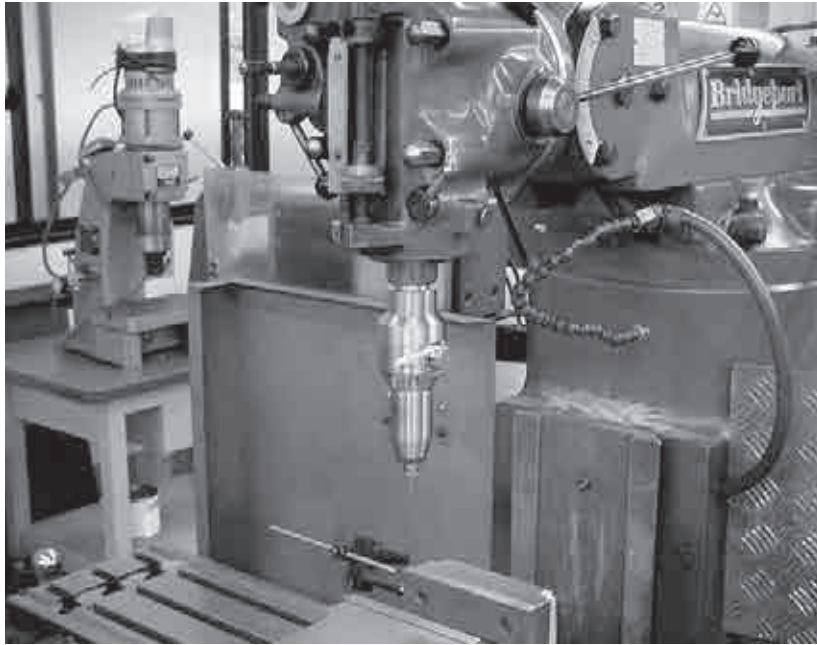
• WORK CONDITIONS :

(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

±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°

±0.897°

±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

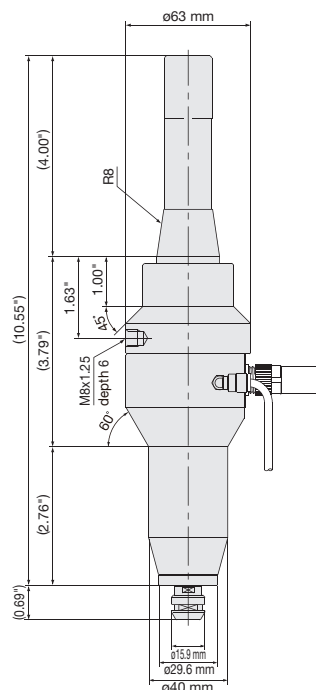
INDEX

<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

6

PARTS

7

TECHNICAL

DATA

8

APPLICATION

EXAMPLES

INDEX

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

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL
DATA

8

APPLICATION
EXAMPLES

INDEX

INDEX

Product Code ▶

1
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
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
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

INDEX (Product Code)

Product Code	Product Name	Legacy	Page
1003	IM-300	RO10163A	1-p33
1004	IM-301	RO10163	1-p33
1009	RG-01	RO10214	1-p18
1010	RG-02	RO10228	1-p18
1012	MFC-300S	RE10247	1-p09
1013	MFC-300M	RE10252	1-p09
1015	CN-01	RE10210	1-p18
1018	AM-300RA	AS11395	3-p04
1021	AM-300R	AS11397	3-p04
1022	ARG-01	AS11414	2-p32
1023	ARG-02	AS11428	2-p32
1029	AGM-01	AS11029	6-p15
1038	K-213	K076211	6-p12
1045	NCH-01	NK11045	6-p15
1060	K-209	AA10040	6-p11
1061	K-208	AA10055	6-p11
1064	AFC-45	AF10045	6-p09
1077	KCH-02 (6.0)		6-p14
1079	AM-310R	AS41079	3-p04
1081	AM-310RA	AS41081	3-p05
1085	AM-310L	AS81085	3-p04
1103	TP-12A		6-p10
1104	TPA-12A		6-p10
1120	PR-03	T8150161	6-p10
1122	PR-304	T8150011	1-p38
1124	AFC-40	Z100001	6-p09
1125	PR2-304S	Y1500221	1-p38
1126	PR2-06	Z3070151	1-p38
1144	IR-310	RE11008	1-p08
1145	EBS-101	KBS61557	1-p26
1146	KBS-101	KBS61065	1-p16
1164	R301-IR	1148	1-p32
1302	LS-100	LS10815	1-p12
1307	ML-8	LS51307	1-p13
1380	SLS-16	LS11380	1-p13
1424	E023011		6-p10
1425	E037011	EO37011	6-p10
1440	FC-40	EG11404	6-p09
1483	NLS-110		1-p12
1484	K-269		6-p10
1507	ARG-011E	ASE1507	2-p64
1508	ARG-021E	ASE1508	2-p64
1516	ELS-100	ES11516	1-p26
1517	ERG-01	ES11517	1-p27
1518	ECN-011	ES11518	1-p27
1519	Z095101		6-p09
1544	U235406	U235406	5-p05
1546	K-246	AS1546	6-p11
1547	GR2.5ML		6-p11
1548	AL-A0611		5-p04
1549	GR100ML		6-p11
1550	GR10ML		6-p11
1553	ERG-01B	ES41553	1-p27
1554	EML-8	ES51554	1-p26
1580	NR50-5100 ATC		2-p60
1582	NR40-5100 ATC		2-p60
1597	EM-3060		2-p52
1742	EMCD-3000A-8M		2-p47
1743	EMCD-3000A-6M		2-p47
1744	EMCD-3000A-4M		2-p47
1748	EMCD-3000-4M		2-p47
1749	EMCD-3000-6M		2-p47
1750	EMCD-3000-8M		2-p47
1765	EM-3060J		2-p53
1766	EMCD-3000J-8M		2-p45
1767	EMCD-3000J-6M		2-p45
1768	EMCD-3000J-4M		2-p45
1778	EMCD-3000J-3M		2-p45

Product Code	Product Name	Legacy	Page
1779	EM-3060J-2M		2-p53
1781	EM-3080J		2-p72
1788	EM-3080J-2M		2-p72
1793	NRAF-5080		2-p73
1797	AM-3020R	AS11797	3-p19
1799	AM-3020RA	AS11799	3-p19
1801	AM-2526R	AS81801P	3-p13
1803	AM-2526RA	AS81803P	3-p13
1822	ARG-2504N	AS81822P	2-p22
1824	ARG-2516N	AS81824P	2-p22
1835	NRR-2651	AS81835P	2-p21
1836	NRR-3060		2-p61
1854	Xpeed1200		4-p43
1855	Xpeed1600		4-p42
1856	ABT-1000		4-p46
1871	RB-22.8x25		6-p19
1872	RBS-22.8x25		6-p19
1873	RB-22.8x25.4		6-p19
1874	RBS-22.8x25.4		6-p19
1875	RB-20x23		6-p19
1876	RB-20x22.8		6-p19
1877	RB-20x22		6-p19
1878	RB-20x25		6-p19
1879	RB-20x25.4		6-p19
1880	RB-30x32		6-p19
1881	RB-30x36		6-p19
1882	SP-22x10L		6-p19
1883	RB-22x25x34L		6-p19
1884	RB-22x25.4x34L		6-p19
1885	GR-30		6-p18
1886	GR-40		6-p18
1888	GR-22.8		6-p18
2001	WR6X4.5	RE22001	6-p16
2002	T-751	HR10303	6-p17
2006	K-232	RE10389	6-p17
2007	K-231	RE10394	6-p17
2008	WR10X10	RA10406	6-p16
2009	WR7X5.1	RE10207	6-p16
2010	WR7X5.5	RE10290	6-p16
2012	WR8X5	RA12012	6-p16
2013	K-212	RE22015	6-p17
2014	K-233	RE22014	6-p17
2016	K-248	LS22016	6-p17
2017	K-249	LS22017	6-p17
2018	WR20X24	RA12018	6-p16
2020	K-207		6-p12
2026	WR12X14	AS42026	6-p16
2027	K-206	AA10426	6-p12
2028	K-215	0911406020	6-p12
2029	K-216	0911508010	6-p12
2030	K-204	K155211	6-p12
2035	K-241	AS12035	6-p13
2036	K-242	AS12036	6-p13
2038	FJ-01	AA82038	6-p13
2039	FJ-02	AA82039	6-p13
2043	K-223		6-p12
2045	WR22X27	RA12045	6-p16
2046	K-236	RE82046	6-p17
2047	WR16X18		6-p16
2048	WR15X17		6-p16
2049	K-221		6-p12
2052	K-256		6-p12
2054	WR9X11		6-p16
2055	WRL9		6-p17
2056	K-247	K-247	6-p12
2058	K-251		6-p12
2059	K-254		6-p12
2064	WR9X9		6-p16

Product Code	Product Name	Legacy	Page
2067	PCR-30		6-p17
2068	WR4X7		6-p17
2069	WR6.1X8		6-p16
2070	K-275	AA10411	6-p12
2073	K-277		6-p17
2080	WR36		6-p17
2081	WRT14		6-p17
2082	WRT10		6-p17
2083	WR17X22		6-p16
2102	CHN-A		6-p06
2123	CHN-B	AS12123	6-p06
2129	K-265	RA11900	6-p07
2130	KCH-03 (6.0)	AS42130A	6-p14
2131	AGM-03	AS42131	6-p15
2132	DCH-J0K	AS42132	6-p14
2138	EGF-19	AS2138	6-p13
2143	NGF2-19	AS42127	6-p13
2146	KCH-02 (5.0)		6-p14
2147	KCH-02 (8.0)	K070085	6-p14
2148	KCH-03 (5.0)	K301085	6-p14
2149	KCH-03 (8.0)		6-p14
2158	K-265A		6-p07
2159	CHN-AA		6-p06
2160	CHN-3A		6-p07
2161	CHN-16		6-p07
2164	KCH-03 (6.35)	AS42130, K301082	6-p14
2810	HG-200	RE10188	1-p09
2900	IC-300	RE10182	1-p10
2901	KC-300	RE10266	1-p10
2902	RA-100	AS11411	2-p30
2903	RA-200	AS11412	2-p30
2904	BMH-300	RE10235	1-p09
2905	NA45-400	NK45400	1-p35
2906	NA45-230	NK45230	1-p35
2907	NA90-230	NK90230	1-p35
2910	RA-151E	ASE1505	2-p59
2911	RA-271E	ASE1506	2-p59
2912	EHL-401	ES11515	1-p24
2923	ERA-270	ES41551	1-p25
2932	EKC-300	ES81526	1-p25
2933	EIC-300	ES81525	1-p25
2973	EHG-400	ES41552	1-p25
2974	AMH-301	AS11510	2-p31
2990	NSP-601A	NK60100	1-p34
4502	AL-M1202		5-p03
4503	AL-M1203BS2		5-p03
4504	AL-C1204		5-p03
4505	AL-A1205		5-p04
4506	AL-H1206		5-p02
4507	AL-H1207F		5-p02
7097	IH-300	RE10178	1-p08
7182	EHR-500	ES9090	1-p24
7339	ENK50C-HR	ES9091	1-p22
7340	ES50C-HR	ES9085	1-p22
7341	ENK50T-HR	ES9092	1-p22
7342	ES50T-HR	ES9086	1-p22
7355	PL600-M2040		4-p37
7356	PL600-H3440		4-p37
7358	EM-3030T-J		2-p54
7359	EM-3030T-J-2M		2-p54
7605	EMA-3020S	1758	2-p48
7690	NR50-5100 ATC-RS		2-p60
7714	BMS-4040-MQL		2-p82
7715	BMS-4040-MQL-2M		2-p82
7720	NE314		2-p19
7721	EM-2350J		2-p28
7722	EMCD-2350J-4M		2-p20
7723	EMCD-2350J-6M		2-p20

Product Code	Product Name	Legacy	Page
7724	EMCD-2350J-8M		2-p20
7739	Adjuster Bolt		2-p83
7775	US-50P Set 120V		1-p40
7778	NE330		1-p40
7780	US-50P		1-p40
7803	BMS-4020	1784, 1789	2-p79
7804	BMS-4020RA	1785, 1790	2-p79
7805	BMS-4020 2M	7683	2-p79
7806	BMS-4040	1786, 1791	2-p79
7807	BMS-4040RA	1787, 1792	2-p79
7809	BMS-4040 2M	7684, 7685	2-p79
7810	BM-319	7626	2-p06
7811	BM-320	7628	2-p06
7814	BM-322	7635	2-p07
7815	BM-322FL	7639	2-p08
7816	BM-320F	7633	2-p07
7817	BM-322FR	7641	2-p08
7819	BMJ-319	7651	2-p10
7820	BMJ-320	7652	2-p10
7821	BMJ-322	7653	2-p11
7822	BMF-319	7655	-
7823	BM-322FS	7702	2-p09
7824	MSS-1908R	AS41601, 2913	3-p30
7825	MSS-1908RA	AS41603, 2914	3-p30
7826	MSS-1902R	AS41605, 2915	3-p30
7827	MSS-1902RA	AS41607, 2916	3-p30
7828	MSS-2008R	AS41609, 2975	3-p30
7829	MSS-2008RA	AS41611, 2976	3-p30
7830	MSS-2002R	AS41613, 2977	3-p30
7831	MSS-2002RA	AS41615, 2978	3-p30
7832	NR-311	AS42511, 2917	2-p31
7833	MSST-2330R	AS41637, 2979	3-p31
7834	MSST-2330RA	AS41639, 2980	3-p31
7835	MSST-2308R	AS41645, 2981	3-p31
7836	MSST-2308RA	AS41647, 2982	3-p31
7837	MSST-2302R	AS41653, 2918	3-p31
7838	MSST-2302RA	AS41655, 2919	3-p31
7839	RAS-101	AS51094, 2924	2-p30
7840	RAS-151E	ASE1559, 2925	2-p58
7841	MSS-2524R	AS81690, 2926	3-p32
7842	MSS-2524RA	AS81692, 2984	3-p32
7843	MSS-2506R	AS81698, 2985	3-p32
7844	MSS-2506RA	AS81700, 2927	3-p32
7845	MSS-2501R	AS81706, 2986	3-p32
7846	MSS-2501RA	AS81708, 2987	3-p32
7847	NR-403E	ASE1514, 2936	2-p57
7849	MSS-1930R	AS91676, 2939	3-p30
7850	MSS-1930RA	AS91678, 2940	3-p30
7851	MSS-2030R	AS41710, 2941	3-p30
7852	MSS-2030RA	AS41712, 2942	3-p30
7853	NR-2551	AS81819P, 2955	2-p21
7854	NR-H2551	AS81820P, 2956	2-p21
7855	NR-2351	AS18220, 2958	2-p29
7856	RAX-271E	ASE1579, 2961	2-p58
7857	RAX-71E	ASE1576, 2962	2-p58
7858	EM25-S6000	1746, 7583	2-p46
7859	NR-3060S	1583, 7590	2-p57
7860	EM20-S6000	1745, 7584	2-p47
7861	NR-303	AS41830, 7591	2-p29
7862	EMS-3060K	1756, 7593	2-p42
7863	EMSF-3060K	7644	2-p44
7869	EMR-3008K	1757, 7596	2-p43
7874	EMA-3020K	1759, 7601	2-p48
7876	NR-3080S	1783, 7588	2-p73
7878	HES810-BT30	7611	4-p11
7879	HES810-HSKA63	7612	-
7880	HES810-BT50	7614	4-p12
7881	HES810-CAT40	9201	4-p11

1

Emax EVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

ZERO

2

iSpeed3

E2000

E3000

E3000

E3000

E3000

E3000

E4000

3

MA

e0.897"

e1.0"

e1.18"

MS

e0.75"

e0.897"

e0.91"

e1.0"

e0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL

DATA

8

APPLICATION

EXAMPLES

INDEX

INDEX (Product Code)

Product Code	Product Name	Legacy	Page
7884	HES810-HSK A63	7615	4-p12
7885	HES810-ST32	7616	4-p13
7890	HES510-BT30	1943, 7621	4-p04
7891	HES510-BT40	1946, 7619	4-p04
7892	HES510-BT50	1951, 7617	4-p05
7893	HES510-CAT40	1949	4-p04
7894	HES510-CAT50	1954	4-p05
7897	HES510-HSKA63	1956, 7624	4-p11
7899	HES510-ST32	9197, 7623	4-p06
7902	NR-4040	9213	2-p81
7903	EM30-S6000	1747, 7589	2-p46
8004	NCL-351C	EMX8004	6-p08
8005	NCL-351S	EMX8005	6-p08
8013	NCL-261C	EMX8013	6-p08
8014	NCL-261S	EMX8014	6-p08
8051	NCL-EXT	EMX8051	6-p08
8060	HA-500	RE18060	1-p16
8086	ENK-410S		1-p07
8087	ENK-250T		1-p07
8088	ENKCD-410S		6-p08
8089	ENKCD-250T		6-p08
8090	ENKCD-410C		6-p08
8091	ENKCD-250C		6-p08
8103	FC-24	SHE8103	6-p09
8104	K-274		6-p09
8106	FC-64		6-p09
8107	K-273		6-p09
8222	EV410-IH		1-p06
8224	NE249 120		1-p04
8231	EV410-IR		1-p06
8232	EV250-IR		1-p06
8279	HTS1501S-HSK E40		4-p32
8280	HTS1501S-HSK E50		4-p32
8281	HTS1501S-BT50		4-p31
8282	HTS1501S-HSK F63		4-p33
8283	HTS1501S-HSK E32		4-p32
8296	HTS1501S-BT30		4-p31
8297	HTS1501S-BT40		4-p31
8298	HTS1501S-HSK A63		4-p33
8299	HTS1501S-M2040		4-p33
8300	HTS1501S-HSK E25		4-p32
8333	EM25-5000-J4	AS88322	-
8346	EM-4040		2-p80
8347	EM-4040A		2-p80
8348	EM-4020		2-p80
8349	EM-4020A		2-p80
8407	E3000-PEX4		2-p40
8472	NE246		2-p78
8473	E4000-PB		2-p87
8474	E4000-PEX4		2-p87
8475	E4000-SRB		2-p87
8478	NE273 120V		2-p05
8490	NE273 230V		2-p05
8491	NE287		4-p26
8492	NE287 HC		4-p27
8493	BRACKET (L-Type)		4-p27
8494	BRACKET (H-Type)		4-p27
8533	BM3-IG		2-p08
9088	ENK-500C	ES9088	1-p24
9089	ENK-500T	ES9089	1-p24
9093	ENKCD-50C	ES9093	6-p08
9094	ENKCD-50T	ES9094	6-p08
9095	ENKCD-50C 3M		6-p08
9096	ENKCD-50T 3M		6-p08
9148	HES510-BT30-SK	ASE9148	4-p16
9149	HES510-BT40-SK	ASE9149	4-p16
9150	HES510-BT50-SK	ASE9150	4-p16
9151	HES510-HSK A100-SK	ASE9151	4-p16

Product Code	Product Name	Legacy	Page
9152	HES510-HSK A63-SK	ASE9152	4-p16
9153	HES510-NT30-SK	ASE9153	4-p16
9154	HES510-NT30M-SK	ASE9154	4-p16
9155	HES510-NT40-SK	ASE9155	4-p16
9156	HES510-NT40M-SK	ASE9156	4-p16
9157	HES510-NT50-SK	ASE9157	4-p16
9158	HES510-NT50M-SK	ASE9158	4-p16
9159	HES510-R8-SK	K812A271	4-p16
9160	HES510-ST32-SK	K812A272	4-p16
9190	HES510-IT50-SK		4-p16
9191	HES510-IT40-SK		4-p16
9192	HES510-CAT50-SK	ASE9192	4-p16
9193	HES510-CAT40-SK	ASE9193	4-p16
9208	NRR3060-QC		2-p63
9209	QC3-A		2-p62
9210	QC3-K		2-p62
9211	QC3-ADP		2-p63
9214	NRR4040-QC		2-p85
9215	QC5-K		2-p84
9216	QC5-16		2-p84
9217	QC5-K ADP		2-p85
9218	QC5-16 ADP		2-p85
9219	NR4040-AQC		2-p84
9220	NR3060-AQC		2-p62
9248	EMCD-810-4M		4-p09
9249	EMCD-810-6M		4-p09
9250	EMCD-810-8M		4-p09
9253	EMCD-4000-2M		2-p86
9254	EMCD-4000-4M		2-p86
9255	EMCD-4000-6M		2-p86
9256	EMCD-4000-8M		2-p86
9257	EMCD-4000S-2M		2-p86
9258	EMCD-4000S-4M		2-p86
9259	EMCD-4000S-6M		2-p86
9260	EMCD-4000S-8M		2-p86
9261	EMCD-BM3-3M		2-p12
9262	EMCD-BM3-5M		2-p12
9263	EMCD-BM3-7M		2-p12
9264	EMCD-BM3S-4M		2-p12
9265	EMCD-BM3S-6M		2-p12
9266	EMCD-BM3S-8M		2-p12
9267	EMCD-BM3A-4M		2-p12
9268	EMCD-BM3A-6M		2-p12
9269	EMCD-BM3A-8M		2-p12
9775	NE211		2-p40
9781	NE212		2-p41
9793	NE96	ES9087	1-p21
42423	GS100G4mm		1-p37
60101	4mm200GFLT		1-p41
60102	4mm320GFLT		1-p41
60103	4mm600GFLT		1-p41
60105	4mm200GFL		1-p41
60106	4mm320GFL		1-p41
60107	4mm600GFL		1-p41
60111	4mm200GFLB		1-p41
60112	4mm320GFLB		1-p41
60113	4mm600GFLB		1-p41
60115	5mm200GFLXXL		1-p41
60116	5mm320GFLXXL		1-p41
60117	5mm600GFLXXL		1-p41
60151	1mm200GRD		1-p41
60152	1mm320GRD		1-p41
60153	1mm600GRD		1-p41
60155	2mm200GRD		1-p41
60156	2mm320GRD		1-p41
60157	2mm600GRD		1-p41
60181	3mm200GRD		1-p41
60182	3mm320GRD		1-p41

Product Code	Product Name	Legacy	Page
60183	3mm600GRD		1-p41
60185	3mm200TRT		1-p41
60186	3mm320TRT		1-p41
60187	3mm600TRT		1-p41
60191	2mm200OT		1-p41
60192	2mm320OT		1-p41
60193	2mm600OT		1-p41
60231	5mm200GFLXL		1-p41
60232	5mm320GFLXL		1-p41
60233	5mm600GFLXL		1-p41
60235	8mm200GFLXL		1-p41
60236	8mm320GFLXL		1-p41
60237	8mm600GFLXL		1-p41
60801	2mmRDBR		1-p41
60802	3mmRDBR		1-p41
60805	10mmX2mmX40mmRDBR		1-p41
60901	2mmRDSFT		1-p41
60902	3mmRDSFT		1-p41
60903	3.3mmRDSFT		1-p41
60904	3.2mmRDSFT		1-p41
60911	2mmRDHD		1-p41
60912	3mmRDHD		1-p41
60913	3.2mmRDHD		1-p41
60921	.8mmFLSFTHD		1-p41
60922	1mmFLSFTHD		1-p41
60923	2mmFLSFTHD		1-p41
60924	3mmFLSFTHD		1-p41
60925	3.3mmFLSFTHD		1-p41
62502	VES	LS10875	1-p19
62505	VEA	LS10834	1-p19
62506	62506	Z094007	1-p19
62507	62507	Z094006	1-p19
62508	62508	Z094005	1-p19
62509	62509	Z095008	1-p19
62510	62510		1-p14
62525	LKE-2A	LS10891	1-p19
62526	FBA-2	LS10848	1-p19
62527	NGA	LS10853	1-p19
62552	62552	LS10919	-
62555	62555	LS10923	-
62557	62557	LS10927	-
62559	62559	LS10931	-
62751	FVA	LS10867	1-p19
62814	62814	LS10918	1-p19
62840	62840	LS10963	1-p19
62871	62871	LS10922	1-p19
64105	64105	RE11915	1-p11
64106	64106	RE11916	1-p11
64107	64107	RE11917	1-p19
64821	RP20mm		1-p37
64822	RP30mm	NK11033	1-p37
64830	CWS36G20mm		1-p37
64831	CWH46G20mm		1-p37
64832	CWS80G20mm	NK06104	1-p37
64835	CWS36G30mm		1-p37
64836	CWH46G30mm	NK86A46S	1-p37
64837	CWS80G30mm	NK45800	1-p37
64838	CWH80G30mm	NK45801	1-p37
64842	FD80G30mm		1-p37
64844	FD120G30mm		1-p37
64846	FD180G30mm		1-p37
64847	FD240G30mm		1-p37
64849	FD400G30mm		1-p37
64901	BELT80G4mm		1-p17
64902	BELT120G4mm		1-p17
64903	BELT180G4mm		1-p17
64904	BELT240G4mm		1-p17
64905	BELT320G4mm		1-p17

Product Code	Product Name	Legacy	Page
64906	BELT400G4mm		1-p17
64911	BELT80G6mm		1-p17
64912	BELT120G6mm		1-p17
64913	BELT180G6mm		1-p17
64914	BELT240G6mm		1-p17
64915	BELT320G6mm		1-p17
64916	BELT400G6mm		1-p17
64921	BELT80G8mm		1-p17
64922	BELT120G8mm		1-p17
64923	BELT180G8mm		1-p17
64924	BELT240G8mm		1-p17
64925	BELT320G8mm		1-p17
64926	BELT400G8mm		1-p17
64927	BELT600G8mm		1-p17
64928	BELT800G8mm		1-p17
64971	BELTZ80G8mm		1-p17
64972	BELTZ100G8mm		1-p17
64973	BELTZ120G9mm		1-p17
65011	BELTDH80G8mm		1-p17
65012	BELTDH120G8mm		1-p17
65014	BELTDH240G8mm		1-p17
65015	BELTDH320G8mm		1-p17
65017	BELTDH600G8mm		1-p17
65021	BELTDS120G8mm		1-p17
65022	BELTDS180G8mm		1-p17
65023	BELTDS240G8mm		1-p17
65024	BELTDS320G8mm		1-p17
65025	BELTDS600G8mm		1-p17
65026	BELTDS00G8mm		1-p17
65027	BELTDS1000G8mm		1-p17
65028	BELTDS400G8mm		1-p17
65301	65301		1-p16
90016	K-253	RE10356	6-p06
90216	CH20-16	PL10641	6-p05
90316	K-252	RE10360	6-p06
90416	CHC-1.6	RE11611	6-p02
90430	CHC-3.0	RE10444	6-p02
90492	CHC-2.35	RE11593	6-p02
90493	CHC-3.175	RE11606	6-p02
90508	CHS-0.8	NK10216	6-p04
90509	CHS-0.9		6-p04
90510	CHS-1.0	NK10218	6-p02
90511	CHS-1.1		6-p02
90512	CHS-1.2		6-p02
90513	CHS-1.3		6-p02
90514	CHS-1.4		6-p02
90515	CHS-1.5	NK10219	6-p02
90516	CHS-1.6	NK10220	6-p02
90517	CHS-1.7		6-p02
90518	CHS-1.8		6-p02
90519	CHS-1.9		6-p02
90520	CHS-2.0	NK10221	6-p02
90521	CHS-2.1		6-p02
90522	CHS-2.2		6-p02
90523	CHS-2.3		6-p02
90524	CHS-2.4	NK10224	6-p02
90525	CHS-2.5	NK10222	6-p02
90526	CHS-2.6		6-p02
90527	CHS-2.7		6-p02
90528	CHS-2.8		6-p02
90529	CHS-2.9	NK10209	6-p02
90530	CHS-3.0	NK10223	6-p02
90592	CHS-2.35	NK10215	6-p02
90593	CHS-3.175	NK10210	6-p02
90610	CHH-1.0	RE11729	6-p02
90615	CHH-1.5		6-p02
90616	CHH-1.6	RE11659	6-p02
90620	CHH-2.0	RE11734	6-p02

1
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus 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"
ø0.897" 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

INDEX (Product Code)

Product Code	Product Name	Legacy	Page
90625	CHH-2.5		6-p02
90630	CHH-3.0	RE11739	6-p02
90692	CHH-2.35	RE11625	6-p02
90693	CHH-3.175	RE11630	6-p02
90830	CH6-3.0		6-p05
90893	CH6-3.175		6-p05
90910	CHM-1.0	RE11605	6-p04
90916	CHM-1.6	RE11600	6-p04
90920	CHM-2.0	RE11609	6-p04
90930	CHM-3.0	RE10459	6-p04
90992	CHM-2.35	RE11602	6-p04
90993	CHM-3.175	RE11604	6-p04
91008	CH8-0.8	PL11539	6-p05
91009	CH8-0.9		6-p05
91010	CH8-1.0	PL11540	6-p05
91011	CH8-1.1	PL11531	6-p05
91012	CH8-1.2	PL11536	6-p05
91013	CH8-1.3	PL11533	6-p05
91014	CH8-1.4	PL11555	6-p05
91015	CH8-1.5	PL11556	6-p05
91016	CH8-1.6	PL11517	6-p05
91017	CH8-1.7	PL11568	6-p05
91018	CH8-1.8	PL11569	6-p05
91019	CH8-1.9		6-p05
91020	CH8-2.0	PL11574	6-p05
91021	CH8-2.1		6-p05
91022	CH8-2.2	PL11532	6-p05
91023	CH8-2.3		6-p05
91024	CH8-2.4	PL11522	6-p05
91025	CH8-2.5	PL11523	6-p05
91026	CH8-2.6	PL11525	6-p05
91027	CH8-2.7		6-p05
91028	CH8-2.8	PL11578	6-p05
91029	CH8-2.9		6-p05
91030	CH8-3.0	PL11588	6-p05
91092	CH8-2.35	PL11521	6-p05
91093	CH8-3.175	PL10637	6-p05
91110	CHG-1.0	RA11777	6-p02
91115	CHG-1.5	RA11778	6-p02
91116	CHG-1.6	RA11766	6-p02
91120	CHG-2.0	RA11780	6-p02
91125	CHG-2.5	RA11781	6-p02
91130	CHG-3.0	RA11772	6-p02
91140	CHG-4.0	RA11697	6-p02
91150	CHG-5.0	RA11709	6-p02
91160	CHG-6.0	RA11773	6-p02
91192	CHG-2.35	RA11771	6-p02
91193	CHG-3.175	RA11452	6-p02
91194	CHG-4.76	RA11698	6-p02
91196	CHG-6.35	RA11714	6-p02
91405	CHA-0.5		6-p02
91406	CHA-0.6		6-p02
91407	CHA-0.7		6-p02
91408	CHA-0.8	RA11805	6-p02
91409	CHA-0.9	RA11804	6-p02
91410	CHA-1.0	RA11806	6-p02
91411	CHA-1.1	RA11807	6-p02
91412	CHA-1.2	RA11808	6-p02
91413	CHA-1.3	RA11803	6-p02
91414	CHA-1.4	RA11815	6-p02
91415	CHA-1.5	RA11814	6-p02
91416	CHA-1.6	RA11809	6-p02
91417	CHA-1.7		6-p02
91418	CHA-1.8	RA11810	6-p02
91419	CHA-1.9	RA11822	6-p02
91420	CHA-2.0	RA11811	6-p02
91421	CHA-2.1	RA11831	6-p02
91422	CHA-2.2		6-p02

Product Code	Product Name	Legacy	Page
91423	CHA-2.3		6-p02
91424	CHA-2.4	RA11824	6-p02
91425	CHA-2.5	RA11821	6-p02
91426	CHA-2.6	RA11826	6-p02
91427	CHA-2.7		6-p02
91428	CHA-2.8	RA11828	6-p02
91429	CHA-2.9	RA11829	6-p02
91430	CHA-3.0	RA11813	6-p02
91431	CHA-3.1	RA11830	6-p02
91432	CHA-3.2		6-p02
91433	CHA-3.3		6-p02
91434	CHA-3.4		6-p02
91435	CHA-3.5	RA11823	6-p02
91436	CHA-3.6		6-p02
91437	CHA-3.7		6-p02
91438	CHA-3.8		6-p02
91439	CHA-3.9		6-p02
91440	CHA-4.0	RA11819	6-p02
91492	CHA-2.35	RA11812	6-p02
91493	CHA-3.175	RA11818	6-p02
91494	CHA-3.0AA		6-p02
91495	CHA-4.0AA		6-p02
91496	CHA-3.175AA		6-p02
91505	CHK-0.5	PL42665	6-p03
91506	CHK-0.6		6-p03
91507	CHK-0.7	PL42667	6-p03
91508	CHK-0.8	PL42668	6-p03
91509	CHK-0.9	PL42692	6-p03
91510	CHK-1.0	PL42691	6-p03
91511	CHK-1.1	PL42699	6-p03
91512	CHK-1.2	PL42682	6-p03
91513	CHK-1.3	PL42693	6-p03
91514	CHK-1.4	PL42700	6-p03
91515	CHK-1.5	PL42695	6-p03
91516	CHK-1.6	PL42696	6-p03
91517	CHK-1.7	PL42709	6-p03
91518	CHK-1.8	PL42698	6-p03
91519	CHK-1.9		6-p03
91520	CHK-2.0	PL42672	6-p03
91521	CHK-2.1	PL42681	6-p03
91522	CHK-2.2	PL42662	6-p03
91523	CHK-2.3		6-p03
91524	CHK-2.4	PL42710	6-p03
91525	CHK-2.5	PL42663	6-p03
91526	CHK-2.6	PL42712	6-p03
91527	CHK-2.7	PL42617	6-p03
91528	CHK-2.8	PL42694	6-p03
91529	CHK-2.9	PL42689	6-p03
91530	CHK-3.0	PL42669	6-p03
91531	CHK-3.1	PL42670	6-p03
91532	CHK-3.2		6-p03
91533	CHK-3.3	PL42705	6-p03
91534	CHK-3.4	PL42701	6-p03
91535	CHK-3.5	PL42707	6-p03
91536	CHK-3.6	PL42706	6-p03
91537	CHK-3.7		6-p03
91538	CHK-3.8	PL42702	6-p03
91539	CHK-3.9		6-p03
91540	CHK-4.0	PL42678	6-p03
91541	CHK-4.1	PL42711	6-p03
91542	CHK-4.2		6-p03
91543	CHK-4.3	PL42671	6-p03
91544	CHK-4.4	PL42673	6-p03
91545	CHK-4.5	PL42687	6-p03
91546	CHK-4.6		6-p03
91547	CHK-4.7	PL42674	6-p03
91548	CHK-4.8		6-p03
91549	CHK-4.9		6-p03

Product Code	Product Name	Legacy	Page
91550	CHK-5.0	PL42676	6-p03
91551	CHK-5.1	PL42677	6-p03
91552	CHK-5.2	PL42708	6-p03
91553	CHK-5.3		6-p03
91554	CHK-5.4	PL42703	6-p03
91555	CHK-5.5	PL42704	6-p03
91556	CHK-5.6	PL42679	6-p03
91557	CHK-5.7		6-p03
91558	CHK-5.8		6-p03
91559	CHK-5.9	PL42697	6-p03
91560	CHK-6.0	PL42686	6-p03
91592	CHK-2.35	PL42690	6-p03
91593	CHK-3.175	PL42685	6-p03
91594	CHK-4.76	PL42680	6-p03
91596	CHK-6.35	PL42675	6-p03
91597	CHK-3.0AA		6-p03
91598	CHK-3.175AA		6-p03
91599	CHK-4.0AA		6-p03
91600	CHK-6.0AA		6-p03
91601	CHK-6.35AA		6-p03
91920	CHR-2.0		6-p04
91930	CHR-3.0		6-p04
91940	CHR-4.0		6-p04
91960	CHR-6.0		6-p04
91993	CHR-3.175		6-p04
91996	CHR-6.35		6-p04
92030	NKM6-2.35		6-p06
92092	NKM6-3.0		6-p06
92093	NKM6-3.175		6-p06
92820	CHB-2.0		6-p02
92830	CHB-3.0		6-p02
92840	CHB-4.0		6-p02
92893	CHB-3.175		6-p02
93010	CHSS-1.0		6-p04
93015	CHSS-1.5		6-p04
93020	CHSS-2.0		6-p04
93025	CHSS-2.5		6-p04
93030	CHSS-3.0		6-p04
93092	CHSS-2.35		6-p04
93093	CHSS-3.175		6-p04
93100	CH16-10.0		6-p05
93130	CH16-3.0		6-p05
93140	CH16-4.0		6-p05
93160	CH16-6.0		6-p05
93180	CH16-8.0		6-p05
93193	CH16-3.175		6-p05
93196	CH16-6.35		6-p05
93201	CHR-3.0 RS		6-p04
93202	CHR-3.175 RS		6-p04
93203	CHR-4.0 RS		6-p04
93204	CHR-6.0 RS		6-p04
93205	CHR-6.35 RS		6-p04
93330	CH16OH-3.0		6-p04
93331	CH16OH-3.175		6-p04
93340	CH16OH-4.0		6-p04
93350	CH16OH-5.0		6-p04
93360	CH16OH-6.0		6-p04
93363	CH16OH-6.35		6-p04
93370	CH16OH-7.0		6-p04
93380	CH16OH-8.0		6-p04
93390	CH16OH-9.0		6-p04
93400	CH16OH-10.0		6-p04
500101	SB-1		4-p27
500102	SB-2		4-p27
500103	SB-3		4-p27
500104	SB-4		4-p27
506001	5ATC60-CAT40		4-p24
506002	5ATC60-BT40		4-p24

Product Code	Product Name	Legacy	Page
506003	5ATC60-CAT50		4-p24
506004	5ATC60-BT50		4-p24
506005	5ATC60-HSK63A		4-p25
506006	5ATC60-HSK100A		4-p25
508001	5ATC80-CAT40		4-p24
508002	5ATC80-BT40		4-p24
508003	5ATC80-CAT50		4-p24
508004	5ATC80-BT50		4-p24
508005	5ATC80-HSK63A		4-p25
508006	5ATC80-HSK100A		4-p25
60000518	60000518		6-p17
AA10478C	K-211		6-p11
AA10480C	K-202		6-p11
DB15M	DB15M		2-p12
DB25M	DB25M		2-p12
E304052	E304052		6-p13
ISE30A	5ATC-PS		4-p27
K1049101	SLR		6-p11
K137A251	GN		6-p11
T815220	K-238	T815220	6-p12
Z101240	K-237		6-p12

1

Emax EVO

ESPERT

ROTUS

IMPULSE

PRESTO II

Sheenus

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"

ø0.897"

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

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

$\alpha 1.18^\circ$

$\alpha 1.0^\circ / \alpha 0.98^\circ / \alpha 0.897^\circ$

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

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL
DATA

8

APPLICATION
EXAMPLES

INDEX

INDEX

Product Name ▶

1
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
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
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

INDEX (Product Name)

	Product Name	Product Code	Legacy	Page
	62506	62506	Z094007	1-p19
	62507	62507	Z094006	1-p19
	62508	62508	Z094005	1-p19
	62509	62509	Z095008	1-p19
	62510	62510		1-p14
	62552	62552	LS10919	-
	62555	62555	LS10923	-
	62557	62557	LS10927	-
	62559	62559	LS10931	-
	62814	62814	LS10918	1-p19
	62840	62840	LS10963	1-p19
	62871	62871	LS10922	1-p19
	64105	64105	RE11915	1-p11
	64106	64106	RE11916	1-p11
	64107	64107	RE11917	1-p19
	65301	65301		1-p16
	60000518	60000518		6-p17
	.8mmFLSFTHD	60921		1-p41
	10mmX2mmX40mmRDBR	60805		1-p41
	1mm200GRD	60151		1-p41
	1mm320GRD	60152		1-p41
	1mm600GRD	60153		1-p41
	1mmFLSFTHD	60922		1-p41
	2mm200GRD	60155		1-p41
	2mm200OT	60191		1-p41
	2mm320GRD	60156		1-p41
	2mm320OT	60192		1-p41
	2mm600GRD	60157		1-p41
	2mm600OT	60193		1-p41
	2mmFLSFTHD	60923		1-p41
	2mmRDBR	60801		1-p41
	2mmRDHD	60911		1-p41
	2mmRDSFT	60901		1-p41
	3.2mmRDHD	60913		1-p41
	3.2mmRDSFT	60904		1-p41
	3.3mmFLSFTHD	60925		1-p41
	3.3mmRDSFT	60903		1-p41
	3mm200GRD	60181		1-p41
	3mm200TRT	60185		1-p41
	3mm320GRD	60182		1-p41
	3mm320TRT	60186		1-p41
	3mm600GRD	60183		1-p41
	3mm600TRT	60187		1-p41
	3mmFLSFTHD	60924		1-p41
	3mmRDBR	60802		1-p41
	3mmRDHD	60912		1-p41
	3mmRDSFT	60902		1-p41
	4mm200GFL	60105		1-p41
	4mm200GFLB	60111		1-p41
	4mm200GFLT	60101		1-p41
	4mm320GFL	60106		1-p41
	4mm320GFLB	60112		1-p41
	4mm320GFLT	60102		1-p41
	4mm600GFL	60107		1-p41
	4mm600GFLB	60113		1-p41
	4mm600GFLT	60103		1-p41
	5ATC60-BT40	506002		4-p24
	5ATC60-BT50	506004		4-p24
	5ATC60-CAT40	506001		4-p24
	5ATC60-CAT50	506003		4-p24
	5ATC60-HSK100A	506006		4-p25
	5ATC60-HSK63A	506005		4-p25
	5ATC80-BT40	508002		4-p24
	5ATC80-BT50	508004		4-p24
	5ATC80-CAT40	508001		4-p24
	5ATC80-CAT50	508003		4-p24
	5ATC80-HSK100A	508006		4-p25
	5ATC80-HSK63A	508005		4-p25

	Product Name	Product Code	Legacy	Page
	5ATC-PS	ISE30A		4-p27
	5mm200GFLXL	60231		1-p41
	5mm200GFLXXL	60115		1-p41
	5mm320GFLXL	60232		1-p41
	5mm320GFLXXL	60116		1-p41
	5mm600GFLXL	60233		1-p41
	5mm600GFLXXL	60117		1-p41
	8mm200GFLXL	60235		1-p41
	8mm320GFLXL	60236		1-p41
	8mm600GFLXL	60237		1-p41
	ABT-1000	1856		4-p46
	Adjuster Bolt	7739		2-p83
	AFC-40	1124	Z100001	6-p09
	AFC-45	1064	AF10045	6-p09
	AGM-01	1029	AS11029	6-p15
	AGM-03	2131	AS42131	6-p15
	AL-A0611	1548		5-p04
	AL-A1205	4505		5-p04
	AL-C1204	4504		5-p03
	AL-H1206	4506		5-p02
	AL-H1207F	4507		5-p02
	AL-M1202	4502		5-p03
	AL-M1203BS2	4503		5-p03
	AM-2526R	1801	AS81801P	3-p13
	AM-2526RA	1803	AS81803P	3-p13
	AM-300R	1021	AS11397	3-p04
	AM-300RA	1018	AS11395	3-p04
	AM-3020R	1797	AS11797	3-p19
	AM-3020RA	1799	AS11799	3-p19
	AM-310L	1085	AS81085	3-p04
	AM-310R	1079	AS41079	3-p04
	AM-310RA	1081	AS41081	3-p05
	AMH-301	2974	AS11510	2-p31
	ARG-01	1022	AS11414	2-p32
	ARG-011E	1507	ASE1507	2-p64
	ARG-02	1023	AS11428	2-p32
	ARG-021E	1508	ASE1508	2-p64
	ARG-2504N	1822	AS81822P	2-p22
	ARG-2516N	1824	AS81824P	2-p22
	BELT120G4mm	64902		1-p17
	BELT120G6mm	64912		1-p17
	BELT120G8mm	64922		1-p17
	BELT180G4mm	64903		1-p17
	BELT180G6mm	64913		1-p17
	BELT180G8mm	64923		1-p17
	BELT240G4mm	64904		1-p17
	BELT240G6mm	64914		1-p17
	BELT240G8mm	64924		1-p17
	BELT320G4mm	64905		1-p17
	BELT320G6mm	64915		1-p17
	BELT320G8mm	64925		1-p17
	BELT400G4mm	64906		1-p17
	BELT400G6mm	64916		1-p17
	BELT400G8mm	64926		1-p17
	BELT600G8mm	64927		1-p17
	BELT800G8mm	64928		1-p17
	BELT80G4mm	64901		1-p17
	BELT80G6mm	64911		1-p17
	BELT80G8mm	64921		1-p17
	BELTDH120G8mm	65012		1-p17
	BELTDH240G8mm	65014		1-p17
	BELTDH320G8mm	65015		1-p17
	BELTDH600G8mm	65017		1-p17
	BELTDH80G8mm	65011		1-p17
	BELTDS00G8mm	65026		1-p17
	BELTDS1000G8mm	65027		1-p17
	BELTDS120G8mm	65021		1-p17
	BELTDS180G8mm	65022		1-p17

Product Name	Product Code	Legacy	Page
BELTDS240G8mm	65023		1-p17
BELTDS320G8mm	65024		1-p17
BELTDS400G8mm	65028		1-p17
BELTDS600G8mm	65025		1-p17
BELTZ100G8mm	64972		1-p17
BELTZ120G9mm	64973		1-p17
BELTZ80G8mm	64971		1-p17
BM-319	7810	7626	2-p06
BM-320	7811	7628	2-p06
BM-320F	7816	7633	2-p07
BM-322	7814	7635	2-p07
BM-322FL	7815	7639	2-p08
BM-322FR	7817	7641	2-p08
BM-322FS	7823	7702	2-p09
BM3-IG	8533		2-p08
BMF-319	7822	7655	-
BMH-300	2904	RE10235	1-p09
BMJ-319	7819	7651	2-p10
BMJ-320	7820	7652	2-p10
BMJ-322	7821	7653	2-p11
BMS-4020	7803	1784, 1789	2-p79
BMS-4020 2M	7805	7683	2-p79
BMS-4020RA	7804	1785, 1790	2-p79
BMS-4040	7806	1786, 1791	2-p79
BMS-4040 2M	7809	7684, 7685	2-p79
BMS-4040-MQL	7714		2-p82
BMS-4040-MQL-2M	7715		2-p82
BMS-4040RA	7807	1787, 1792	2-p79
BRACKET (H-Type)	8494		4-p27
BRACKET (L-Type)	8493		4-p27
CH16-10.0	93100		6-p05
CH16-3.0	93130		6-p05
CH16-3.175	93193		6-p05
CH16-4.0	93140		6-p05
CH16-6.0	93160		6-p05
CH16-6.35	93196		6-p05
CH16-8.0	93180		6-p05
CH16OH-10.0	93400		6-p04
CH16OH-3.0	93330		6-p04
CH16OH-3.175	93331		6-p04
CH16OH-4.0	93340		6-p04
CH16OH-5.0	93350		6-p04
CH16OH-6.0	93360		6-p04
CH16OH-6.35	93363		6-p04
CH16OH-7.0	93370		6-p04
CH16OH-8.0	93380		6-p04
CH16OH-9.0	93390		6-p04
CH20-16	90216	PL10641	6-p05
CH6-3.0	90830		6-p05
CH6-3.175	90893		6-p05
CH8-0.8	91008	PL11539	6-p05
CH8-0.9	91009		6-p05
CH8-1.0	91010	PL11540	6-p05
CH8-1.1	91011	PL11531	6-p05
CH8-1.2	91012	PL11536	6-p05
CH8-1.3	91013	PL11533	6-p05
CH8-1.4	91014	PL11555	6-p05
CH8-1.5	91015	PL11556	6-p05
CH8-1.6	91016	PL11517	6-p05
CH8-1.7	91017	PL11568	6-p05
CH8-1.8	91018	PL11569	6-p05
CH8-1.9	91019		6-p05
CH8-2.0	91020	PL11574	6-p05
CH8-2.1	91021		6-p05
CH8-2.2	91022	PL11532	6-p05
CH8-2.3	91023		6-p05
CH8-2.35	91092	PL11521	6-p05
CH8-2.4	91024	PL11522	6-p05

Product Name	Product Code	Legacy	Page
CH8-2.5	91025	PL11523	6-p05
CH8-2.6	91026	PL11525	6-p05
CH8-2.7	91027		6-p05
CH8-2.8	91028	PL11578	6-p05
CH8-2.9	91029		6-p05
CH8-3.0	91030	PL11588	6-p05
CH8-3.175	91093	PL10637	6-p05
CHA-0.5	91405		6-p02
CHA-0.6	91406		6-p02
CHA-0.7	91407		6-p02
CHA-0.8	91408	RA11805	6-p02
CHA-0.9	91409	RA11804	6-p02
CHA-1.0	91410	RA11806	6-p02
CHA-1.1	91411	RA11807	6-p02
CHA-1.2	91412	RA11808	6-p02
CHA-1.3	91413	RA11803	6-p02
CHA-1.4	91414	RA11815	6-p02
CHA-1.5	91415	RA11814	6-p02
CHA-1.6	91416	RA11809	6-p02
CHA-1.7	91417		6-p02
CHA-1.8	91418	RA11810	6-p02
CHA-1.9	91419	RA11822	6-p02
CHA-2.0	91420	RA11811	6-p02
CHA-2.1	91421	RA11831	6-p02
CHA-2.2	91422		6-p02
CHA-2.3	91423		6-p02
CHA-2.35	91492	RA11812	6-p02
CHA-2.4	91424	RA11824	6-p02
CHA-2.5	91425	RA11821	6-p02
CHA-2.6	91426	RA11826	6-p02
CHA-2.7	91427		6-p02
CHA-2.8	91428	RA11828	6-p02
CHA-2.9	91429	RA11829	6-p02
CHA-3.0	91430	RA11813	6-p02
CHA-3.0AA	91494		6-p02
CHA-3.1	91431	RA11830	6-p02
CHA-3.175	91493	RA11818	6-p02
CHA-3.175AA	91496		6-p02
CHA-3.2	91432		6-p02
CHA-3.3	91433		6-p02
CHA-3.4	91434		6-p02
CHA-3.5	91435	RA11823	6-p02
CHA-3.6	91436		6-p02
CHA-3.7	91437		6-p02
CHA-3.8	91438		6-p02
CHA-3.9	91439		6-p02
CHA-4.0	91440	RA11819	6-p02
CHA-4.0AA	91495		6-p02
CHB-2.0	92820		6-p02
CHB-3.0	92830		6-p02
CHB-3.175	92893		6-p02
CHB-4.0	92840		6-p02
CHC-1.6	90416	RE11611	6-p02
CHC-2.35	90492	RE11593	6-p02
CHC-3.0	90430	RE10444	6-p02
CHC-3.175	90493	RE11606	6-p02
CHG-1.0	91110	RA11777	6-p02
CHG-1.5	91115	RA11778	6-p02
CHG-1.6	91116	RA11766	6-p02
CHG-2.0	91120	RA11780	6-p02
CHG-2.35	91192	RA11771	6-p02
CHG-2.5	91125	RA11781	6-p02
CHG-3.0	91130	RA11772	6-p02
CHG-3.175	91193	RA11452	6-p02
CHG-4.0	91140	RA11697	6-p02
CHG-4.76	91194	RA11698	6-p02
CHG-5.0	91150	RA11709	6-p02
CHG-6.0	91160	RA11773	6-p02

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

AIR LINE KIT

6

PARTS

7

TECHNICAL

DATA

8

APPLICATION

EXAMPLES

INDEX

INDEX (Product Name)

	Product Name	Product Code	Legacy	Page
	CHG-6.35	91196	RA11714	6-p02
	CHH-1.0	90610	RE11729	6-p02
	CHH-1.5	90615		6-p02
	CHH-1.6	90616	RE11659	6-p02
	CHH-2.0	90620	RE11734	6-p02
	CHH-2.35	90692	RE11625	6-p02
	CHH-2.5	90625		6-p02
	CHH-3.0	90630	RE11739	6-p02
	CHH-3.175	90693	RE11630	6-p02
	CHK-0.5	91505	PL42665	6-p03
	CHK-0.6	91506		6-p03
	CHK-0.7	91507	PL42667	6-p03
	CHK-0.8	91508	PL42668	6-p03
	CHK-0.9	91509	PL42692	6-p03
	CHK-1.0	91510	PL42691	6-p03
	CHK-1.1	91511	PL42699	6-p03
	CHK-1.2	91512	PL42682	6-p03
	CHK-1.3	91513	PL42693	6-p03
	CHK-1.4	91514	PL42700	6-p03
	CHK-1.5	91515	PL42695	6-p03
	CHK-1.6	91516	PL42696	6-p03
	CHK-1.7	91517	PL42709	6-p03
	CHK-1.8	91518	PL42698	6-p03
	CHK-1.9	91519		6-p03
	CHK-2.0	91520	PL42672	6-p03
	CHK-2.1	91521	PL42681	6-p03
	CHK-2.2	91522	PL42662	6-p03
	CHK-2.3	91523		6-p03
	CHK-2.35	91592	PL42690	6-p03
	CHK-2.4	91524	PL42710	6-p03
	CHK-2.5	91525	PL42663	6-p03
	CHK-2.6	91526	PL42712	6-p03
	CHK-2.7	91527	PL42617	6-p03
	CHK-2.8	91528	PL42694	6-p03
	CHK-2.9	91529	PL42689	6-p03
	CHK-3.0	91530	PL42669	6-p03
	CHK-3.0AA	91597		6-p03
	CHK-3.1	91531	PL42670	6-p03
	CHK-3.175	91593	PL42685	6-p03
	CHK-3.175AA	91598		6-p03
	CHK-3.2	91532		6-p03
	CHK-3.3	91533	PL42705	6-p03
	CHK-3.4	91534	PL42701	6-p03
	CHK-3.5	91535	PL42707	6-p03
	CHK-3.6	91536	PL42706	6-p03
	CHK-3.7	91537		6-p03
	CHK-3.8	91538	PL42702	6-p03
	CHK-3.9	91539		6-p03
	CHK-4.0	91540	PL42678	6-p03
	CHK-4.0AA	91599		6-p03
	CHK-4.1	91541	PL42711	6-p03
	CHK-4.2	91542		6-p03
	CHK-4.3	91543	PL42671	6-p03
	CHK-4.4	91544	PL42673	6-p03
	CHK-4.5	91545	PL42687	6-p03
	CHK-4.6	91546		6-p03
	CHK-4.7	91547	PL42674	6-p03
	CHK-4.76	91594	PL42680	6-p03
	CHK-4.8	91548		6-p03
	CHK-4.9	91549		6-p03
	CHK-5.0	91550	PL42676	6-p03
	CHK-5.1	91551	PL42677	6-p03
	CHK-5.2	91552	PL42708	6-p03
	CHK-5.3	91553		6-p03
	CHK-5.4	91554	PL42703	6-p03
	CHK-5.5	91555	PL42704	6-p03
	CHK-5.6	91556	PL42679	6-p03
	CHK-5.7	91557		6-p03

	Product Name	Product Code	Legacy	Page
	CHK-5.8	91558		6-p03
	CHK-5.9	91559	PL42697	6-p03
	CHK-6.0	91560	PL42686	6-p03
	CHK-6.0AA	91600		6-p03
	CHK-6.35	91596	PL42675	6-p03
	CHK-6.35AA	91601		6-p03
	CHM-1.0	90910	RE11605	6-p04
	CHM-1.6	90916	RE11600	6-p04
	CHM-2.0	90920	RE11609	6-p04
	CHM-2.35	90992	RE11602	6-p04
	CHM-3.0	90930	RE10459	6-p04
	CHM-3.175	90993	RE11604	6-p04
	CHN-16	2161		6-p07
	CHN-3A	2160		6-p07
	CHN-A	2102		6-p06
	CHN-AA	2159		6-p06
	CHN-B	2123	AS12123	6-p06
	CHR-2.0	91920		6-p04
	CHR-3.0	91930		6-p04
	CHR-3.0 RS	93201		6-p04
	CHR-3.175	91993		6-p04
	CHR-3.175 RS	93202		6-p04
	CHR-4.0	91940		6-p04
	CHR-4.0 RS	93203		6-p04
	CHR-6.0	91960		6-p04
	CHR-6.0 RS	93204		6-p04
	CHR-6.35	91996		6-p04
	CHR-6.35 RS	93205		6-p04
	CHS-0.8	90508	NK10216	6-p04
	CHS-0.9	90509		6-p04
	CHS-1.0	90510	NK10218	6-p02
	CHS-1.1	90511		6-p02
	CHS-1.2	90512		6-p02
	CHS-1.3	90513		6-p02
	CHS-1.4	90514		6-p02
	CHS-1.5	90515	NK10219	6-p02
	CHS-1.6	90516	NK10220	6-p02
	CHS-1.7	90517		6-p02
	CHS-1.8	90518		6-p02
	CHS-1.9	90519		6-p02
	CHS-2.0	90520	NK10221	6-p02
	CHS-2.1	90521		6-p02
	CHS-2.2	90522		6-p02
	CHS-2.3	90523		6-p02
	CHS-2.35	90592	NK10215	6-p02
	CHS-2.4	90524	NK10224	6-p02
	CHS-2.5	90525	NK10222	6-p02
	CHS-2.6	90526		6-p02
	CHS-2.7	90527		6-p02
	CHS-2.8	90528		6-p02
	CHS-2.9	90529	NK10209	6-p02
	CHS-3.0	90530	NK10223	6-p02
	CHS-3.175	90593	NK10210	6-p02
	CHSS-1.0	93010		6-p04
	CHSS-1.5	93015		6-p04
	CHSS-2.0	93020		6-p04
	CHSS-2.35	93092		6-p04
	CHSS-2.5	93025		6-p04
	CHSS-3.0	93030		6-p04
	CHSS-3.175	93093		6-p04
	CN-01	1015	RE10210	1-p18
	CWH46G20mm	64831		1-p37
	CWH46G30mm	64836	NK86A46S	1-p37
	CWH80G30mm	64838	NK45801	1-p37
	CWS36G20mm	64830		1-p37
	CWS36G30mm	64835		1-p37
	CWS80G20mm	64832	NK06104	1-p37
	CWS80G30mm	64837	NK45800	1-p37

Product Name	Product Code	Legacy	Page
DB15M	DB15M		2-p12
DB25M	DB25M		2-p12
DCH-JOK	2132	AS42132	6-p14
E023011	1424		6-p10
E037011	1425	EO37011	6-p10
E3000-PEX4	8407		2-p40
E304052	E304052		6-p13
E4000-PB	8473		2-p87
E4000-PEX4	8474		2-p87
E4000-SRB	8475		2-p87
EBS-101	1145	KBS61557	1-p26
ECN-011	1518	ES11518	1-p27
EGF-19	2138	AS2138	6-p13
EHG-400	2973	ES41552	1-p25
EHL-401	2912	ES11515	1-p24
EHR-500	7182	ES9090	1-p24
EIC-300	2933	ES81525	1-p25
EKC-300	2932	ES81526	1-p25
ELS-100	1516	ES11516	1-p26
EM20-S6000	7860	1745, 7584	2-p47
EM-2350J	7721		2-p28
EM25-5000-J4	8333	AS88322	-
EM25-S6000	7858	1746, 7583	2-p46
EM-3030T-J	7358		2-p54
EM-3030T-J-2M	7359		2-p54
EM-3060	1597		2-p52
EM-3060J	1765		2-p53
EM-3060J-2M	1779		2-p53
EM-3080J	1781		2-p72
EM-3080J-2M	1788		2-p72
EM30-S6000	7903	1747, 7589	2-p46
EM-4020	8348		2-p80
EM-4020A	8349		2-p80
EM-4040	8346		2-p80
EM-4040A	8347		2-p80
EMA-3020K	7874	1759, 7601	2-p48
EMA-3020S	7605	1758	2-p48
EMCD-2350J-4M	7722		2-p20
EMCD-2350J-6M	7723		2-p20
EMCD-2350J-8M	7724		2-p20
EMCD-3000-4M	1748		2-p47
EMCD-3000-6M	1749		2-p47
EMCD-3000-8M	1750		2-p47
EMCD-3000A-4M	1744		2-p47
EMCD-3000A-6M	1743		2-p47
EMCD-3000A-8M	1742		2-p47
EMCD-3000J-3M	1778		2-p45
EMCD-3000J-4M	1768		2-p45
EMCD-3000J-6M	1767		2-p45
EMCD-3000J-8M	1766		2-p45
EMCD-4000-2M	9253		2-p86
EMCD-4000-4M	9254		2-p86
EMCD-4000-6M	9255		2-p86
EMCD-4000-8M	9256		2-p86
EMCD-4000S-2M	9257		2-p86
EMCD-4000S-4M	9258		2-p86
EMCD-4000S-6M	9259		2-p86
EMCD-4000S-8M	9260		2-p86
EMCD-810-4M	9248		4-p09
EMCD-810-6M	9249		4-p09
EMCD-810-8M	9250		4-p09
EMCD-BM3-3M	9261		2-p12
EMCD-BM3-5M	9262		2-p12
EMCD-BM3-7M	9263		2-p12
EMCD-BM3A-4M	9267		2-p12
EMCD-BM3A-6M	9268		2-p12
EMCD-BM3A-8M	9269		2-p12
EMCD-BM3S-4M	9264		2-p12

Product Name	Product Code	Legacy	Page
EMCD-BM3S-6M	9265		2-p12
EMCD-BM3S-8M	9266		2-p12
EML-8	1554	ES51554	1-p26
EMR-3008K	7869	1757, 7596	2-p43
EMS-3060K	7862	1756, 7593	2-p42
EMSF-3060K	7863	7644	2-p44
ENK-250T	8087		1-p07
ENK-410S	8086		1-p07
ENK-500C	9088	ES9088	1-p24
ENK-500T	9089	ES9089	1-p24
ENK50C-HR	7339	ES9091	1-p22
ENK50T-HR	7341	ES9092	1-p22
ENKCD-250C	8091		6-p08
ENKCD-250T	8089		6-p08
ENKCD-410C	8090		6-p08
ENKCD-410S	8088		6-p08
ENKCD-50C	9093	ES9093	6-p08
ENKCD-50C 3M	9095		6-p08
ENKCD-50T	9094	ES9094	6-p08
ENKCD-50T 3M	9096		6-p08
ERA-270	2923	ES41551	1-p25
ERG-01	1517	ES11517	1-p27
ERG-01B	1553	ES41553	1-p27
ES50C-HR	7340	ES9085	1-p22
ES50T-HR	7342	ES9086	1-p22
EV250-IR	8232		1-p06
EV410-IH	8222		1-p06
EV410-IR	8231		1-p06
FBA-2	62526	LS10848	1-p19
FC-24	8103	SHE8103	6-p09
FC-40	1440	EG11404	6-p09
FC-64	8106		6-p09
FD120G30mm	64844		1-p37
FD180G30mm	64846		1-p37
FD240G30mm	64847		1-p37
FD400G30mm	64849		1-p37
FD80G30mm	64842		1-p37
FJ-01	2038	AA82038	6-p13
FJ-02	2039	AA82039	6-p13
FVA	62751	LS10867	1-p19
GN	K137A251		6-p11
GR100ML	1549		6-p11
GR10ML	1550		6-p11
GR2.5ML	1547		6-p11
GR-22.8	1888		6-p18
GR-30	1885		6-p18
GR-40	1886		6-p18
GS100G4mm	42423		1-p37
HA-500	8060	RE18060	1-p16
HES510-BT30	7890	1943, 7621	4-p04
HES510-BT30-SK	9148	ASE9148	4-p16
HES510-BT40	7891	1946, 7619	4-p04
HES510-BT40-SK	9149	ASE9149	4-p16
HES510-BT50	7892	1951, 7617	4-p05
HES510-BT50-SK	9150	ASE9150	4-p16
HES510-CAT40	7893	1949	4-p04
HES510-CAT40-SK	9193	ASE9193	4-p16
HES510-CAT50	7894	1954	4-p05
HES510-CAT50-SK	9192	ASE9192	4-p16
HES510-HSK A100-SK	9151	ASE9151	4-p16
HES510-HSK A63-SK	9152	ASE9152	4-p16
HES510-HSKA63	7897	1956, 7624	4-p11
HES510-IT40-SK	9191		4-p16
HES510-IT50-SK	9190		4-p16
HES510-NT30M-SK	9154	ASE9154	4-p16
HES510-NT30-SK	9153	ASE9153	4-p16
HES510-NT40M-SK	9156	ASE9156	4-p16
HES510-NT40-SK	9155	ASE9155	4-p16

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°

e0.75°

e0.897°

e0.91°

e1.0°

e0.98°

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL

DATA

8

APPLICATION

EXAMPLES

INDEX

INDEX (Product Name)

Product Name	Product Code	Legacy	Page
HES510-NT50M-SK	9158	ASE9158	4-p16
HES510-NT50-SK	9157	ASE9157	4-p16
HES510-R8-SK	9159	K812A271	4-p16
HES510-ST32	7899	9197, 7623	4-p06
HES510-ST32-SK	9160	K812A272	4-p16
HES810-BT30	7878	7611	4-p11
HES810-BT50	7880	7614	4-p12
HES810-CAT40	7881	9201	4-p11
HES810-HSK A63	7884	7615	4-p12
HES810-HSKA63	7879	7612	-
HES810-ST32	7885	7616	4-p13
HG-200	2810	RE10188	1-p09
HTS1501S-BT30	8296		4-p31
HTS1501S-BT40	8297		4-p31
HTS1501S-BT50	8281		4-p31
HTS1501S-HSK A63	8298		4-p33
HTS1501S-HSK E25	8300		4-p32
HTS1501S-HSK E32	8283		4-p32
HTS1501S-HSK E40	8279		4-p32
HTS1501S-HSK E50	8280		4-p32
HTS1501S-HSK F63	8282		4-p33
HTS1501S-M2040	8299		4-p33
IC-300	2900	RE10182	1-p10
IH-300	7097	RE10178	1-p08
IM-300	1003	RO10163A	1-p33
IM-301	1004	RO10163	1-p33
IR-310	1144	RE11008	1-p08
K-202	AA10480C		6-p11
K-204	2030	K155211	6-p12
K-206	2027	AA10426	6-p12
K-207	2020		6-p12
K-208	1061	AA10055	6-p11
K-209	1060	AA10040	6-p11
K-211	AA10478C		6-p11
K-212	2013	RE22015	6-p17
K-213	1038	K076211	6-p12
K-215	2028	0911406020	6-p12
K-216	2029	0911508010	6-p12
K-221	2049		6-p12
K-223	2043		6-p12
K-231	2007	RE10394	6-p17
K-232	2006	RE10389	6-p17
K-233	2014	RE22014	6-p17
K-236	2046	RE82046	6-p17
K-237	Z101240		6-p12
K-238	T815220	T815220	6-p12
K-241	2035	AS12035	6-p13
K-242	2036	AS12036	6-p13
K-246	1546	AS1546	6-p11
K-247	2056	K-247	6-p12
K-248	2016	LS22016	6-p17
K-249	2017	LS22017	6-p17
K-251	2058		6-p12
K-252	90316	RE10360	6-p06
K-253	90016	RE10356	6-p06
K-254	2059		6-p12
K-256	2052		6-p12
K-265	2129	RA11900	6-p07
K-265A	2158		6-p07
K-269	1484		6-p10
K-273	8107		6-p09
K-274	8104		6-p09
K-275	2070	AA10411	6-p12
K-277	2073		6-p17
KBS-101	1146	KBS61065	1-p16
KC-300	2901	RE10266	1-p10
KCH-02 (5.0)	2146		6-p14
KCH-02 (6.0)	1077		6-p14

Product Name	Product Code	Legacy	Page
KCH-02 (8.0)	2147	K070085	6-p14
KCH-03 (5.0)	2148	K301085	6-p14
KCH-03 (6.0)	2130	AS42130A	6-p14
KCH-03 (6.35)	2164	AS42130, K301082	6-p14
KCH-03 (8.0)	2149		6-p14
LKE-2A	62525	LS10891	1-p19
LS-100	1302	LS10815	1-p12
MFC-300M	1013	RE10252	1-p09
MFC-300S	1012	RE10247	1-p09
ML-8	1307	LS51307	1-p13
MSS-1902R	7826	AS41605, 2915	3-p30
MSS-1902RA	7827	AS41607, 2916	3-p30
MSS-1908R	7824	AS41601, 2913	3-p30
MSS-1908RA	7825	AS41603, 2914	3-p30
MSS-1930R	7849	AS91676, 2939	3-p30
MSS-1930RA	7850	AS91678, 2940	3-p30
MSS-2002R	7830	AS41613, 2977	3-p30
MSS-2002RA	7831	AS41615, 2978	3-p30
MSS-2008R	7828	AS41609, 2975	3-p30
MSS-2008RA	7829	AS41611, 2976	3-p30
MSS-2030R	7851	AS41710, 2941	3-p30
MSS-2030RA	7852	AS41712, 2942	3-p30
MSS-2501R	7845	AS81706, 2986	3-p32
MSS-2501RA	7846	AS81708, 2987	3-p32
MSS-2506R	7843	AS81698, 2985	3-p32
MSS-2506RA	7844	AS81700, 2927	3-p32
MSS-2524R	7841	AS81690, 2926	3-p32
MSS-2524RA	7842	AS81692, 2984	3-p32
MSST-2302R	7837	AS41653, 2918	3-p31
MSST-2302RA	7838	AS41655, 2919	3-p31
MSST-2308R	7835	AS41645, 2981	3-p31
MSST-2308RA	7836	AS41647, 2982	3-p31
MSST-2330R	7833	AS41637, 2979	3-p31
MSST-2330RA	7834	AS41639, 2980	3-p31
NA45-230	2906	NK45230	1-p35
NA45-400	2905	NK45400	1-p35
NA90-230	2907	NK90230	1-p35
NCH-01	1045	NK11045	6-p15
NCL-261C	8013	EMX8013	6-p08
NCL-261S	8014	EMX8014	6-p08
NCL-351C	8004	EMX8004	6-p08
NCL-351S	8005	EMX8005	6-p08
NCL-EXT	8051	EMX8051	6-p08
NE211	9775		2-p40
NE212	9781		2-p41
NE246	8472		2-p78
NE249 120	8224		1-p04
NE273 120V	8478		2-p05
NE273 230V	8490		2-p05
NE287	8491		4-p26
NE287 HC	8492		4-p27
NE314	7720		2-p19
NE330	7778		1-p40
NE96	9793	ES9087	1-p21
NGA	62527	LS10853	1-p19
NGF2-19	2143	AS42127	6-p13
NKM6-2.35	92030		6-p06
NKM6-3.0	92092		6-p06
NKM6-3.175	92093		6-p06
NLS-110	1483		1-p12
NR-2351	7855	AS18220, 2958	2-p29
NR-2551	7853	AS81819P, 2955	2-p21
NR-303	7861	AS41830, 7591	2-p29
NR3060-AQC	9220		2-p62
NR-3060S	7859	1583, 7590	2-p57
NR-3080S	7876	1783, 7588	2-p73
NR-311	7832	AS42511, 2917	2-p31
NR-403E	7847	ASE1514, 2936	2-p57

Product Name	Product Code	Legacy	Page
NR-4040	7902	9213	2-p81
NR4040-AQC	9219		2-p84
NR40-5100 ATC	1582		2-p60
NR50-5100 ATC	1580		2-p60
NR50-5100 ATC-RS	7690		2-p60
NRAF-5080	1793		2-p73
NR-H2551	7854	AS81820P, 2956	2-p21
NRR-2651	1835	AS81835P	2-p21
NRR-3060	1836		2-p61
NRR3060-QC	9208		2-p63
NRR4040-QC	9214		2-p85
NSP-601A	2990	NK60100	1-p34
PCR-30	2067		6-p17
PL600-H3440	7356		4-p37
PL600-M2040	7355		4-p37
PR-03	1120	T815016I	6-p10
PR2-06	1126	Z307015I	1-p38
PR2-304S	1125	Y150022I	1-p38
PR-304	1122	T815001I	1-p38
QC3-A	9209		2-p62
QC3-ADP	9211		2-p63
QC3-K	9210		2-p62
QC5-16	9216		2-p84
QC5-16 ADP	9218		2-p85
QC5-K	9215		2-p84
QC5-K ADP	9217		2-p85
R301-IR	1164	1148	1-p32
RA-100	2902	AS11411	2-p30
RA-151E	2910	ASE1505	2-p59
RA-200	2903	AS11412	2-p30
RA-271E	2911	ASE1506	2-p59
RAS-101	7839	AS51094, 2924	2-p30
RAS-151E	7840	ASE1559, 2925	2-p58
RAX-271E	7856	ASE1579, 2961	2-p58
RAX-71E	7857	ASE1576, 2962	2-p58
RB-20x22	1877		6-p19
RB-20x22.8	1876		6-p19
RB-20x23	1875		6-p19
RB-20x25	1878		6-p19
RB-20x25.4	1879		6-p19
RB-22.8x25	1871		6-p19
RB-22.8x25.4	1873		6-p19
RB-22x25.4x34L	1884		6-p19
RB-22x25x34L	1883		6-p19
RB-30x32	1880		6-p19
RB-30x36	1881		6-p19
RBS-22.8x25	1872		6-p19
RBS-22.8x25.4	1874		6-p19
RG-01	1009	RO10214	1-p18
RG-02	1010	RO10228	1-p18
RP20mm	64821		1-p37
RP30mm	64822	NK11033	1-p37
SB-1	500101		4-p27
SB-2	500102		4-p27
SB-3	500103		4-p27
SB-4	500104		4-p27
SLR	K1049101		6-p11
SLS-16	1380	LS11380	1-p13
SP-22x10L	1882		6-p19
T-751	2002	HR10303	6-p17
TP-12A	1103		6-p10
TPA-12A	1104		6-p10
U235406	1544	U235406	5-p05
US-50P	7780		1-p40
US-50P Set 120V	7775		1-p40
VEA	62505	LS10834	1-p19
VES	62502	LS10875	1-p19
WR10X10	2008	RA10406	6-p16

Product Name	Product Code	Legacy	Page
WR12X14	2026	AS42026	6-p16
WR15X17	2048		6-p16
WR16X18	2047		6-p16
WR17X22	2083		6-p16
WR20X24	2018	RA12018	6-p16
WR22X27	2045	RA12045	6-p16
WR36	2080		6-p17
WR4X7	2068		6-p17
WR6.1X8	2069		6-p16
WR6X4.5	2001	RE22001	6-p16
WR7X5.1	2009	RE10207	6-p16
WR7X5.5	2010	RE10290	6-p16
WR8X5	2012	RA12012	6-p16
WR9X11	2054		6-p16
WR9X9	2064		6-p16
WRL9	2055		6-p17
WRT10	2082		6-p17
WRT14	2081		6-p17
Xpeed1200	1854		4-p43
Xpeed1600	1855		4-p42
Z095101	1519		6-p09

1
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus 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"
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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
8
APPLICATION EXAMPLES
INDEX

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

$\alpha 1.18^\circ$

$\alpha 1.0^\circ / \alpha 0.98^\circ$
 $\alpha 0.897^\circ$

E3000
- 80,000rpm

E4000

3

MA

$\alpha 0.897^\circ$

$\alpha 1.0^\circ$
 $\alpha 0.98^\circ$

$\alpha 1.18^\circ$

MS

$\alpha 0.75^\circ$
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$\alpha 1.0^\circ$
 $\alpha 0.98^\circ$

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL
DATA

8

APPLICATION
EXAMPLES

INDEX

INDEX

Legacy ▶

1
Emax EVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus
ZERO
2
iSpeed3
E2000 ø1.0"/ø0.98"/ø0.897"
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ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xpeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

INDEX (Legacy)

	Legacy	Product Code	Product Name	Page
	1148	1164	R301-IR	1-p32
	1583	7859	NR-3060S	2-p57
	1745	7860	EM20-S6000	2-p47
	1746	7858	EM25-S6000	2-p46
	1747	7903	EM30-S6000	2-p46
	1755	7587	EMS-3060A	-
	1756	7862	EMS-3060K	2-p42
	1757	7869	EMR-3008K	2-p43
	1758	7605	EMA-3020S	2-p48
	1759	7874	EMA-3020K	2-p48
	1783	7876	NR-3080S	2-p73
	1784	7803	BMS-4020	2-p79
	1785	7804	BMS-4020RA	2-p79
	1786	7806	BMS-4040	2-p79
	1787	7807	BMS-4040RA	2-p79
	1789	7803	BMS-4020	2-p79
	1790	7804	BMS-4020RA	2-p79
	1791	7806	BMS-4040	2-p79
	1792	7807	BMS-4040RA	2-p79
	1943	7890	HES510-BT30	4-p04
	1946	7891	HES510-BT40	4-p04
	1947	7889	HES510-NT50	-
	1949	7893	HES510-CAT40	4-p04
	1951	7892	HES510-BT50	4-p05
	1952	7887	HES510-NT40	-
	1954	7894	HES510-CAT50	4-p05
	1956	7897	HES510-HSKA63	4-p11
	1957	7898	HES510-HSKA100	-
	2812	2811	IG-400	-
	2913	7824	MSS-1908R	3-p30
	2914	7825	MSS-1908RA	3-p30
	2915	7826	MSS-1902R	3-p30
	2916	7827	MSS-1902RA	3-p30
	2917	7832	NR-311	2-p31
	2918	7837	MSST-2302R	3-p31
	2919	7838	MSST-2302RA	3-p31
	2924	7839	RAS-101	2-p30
	2925	7840	RAS-151E	2-p58
	2926	7841	MSS-2524R	3-p32
	2927	7844	MSS-2506RA	3-p32
	2936	7847	NR-403E	2-p57
	2939	7849	MSS-1930R	3-p30
	2940	7850	MSS-1930RA	3-p30
	2941	7851	MSS-2030R	3-p30
	2942	7852	MSS-2030RA	3-p30
	2955	7853	NR-2551	2-p21
	2956	7854	NR-H2551	2-p21
	2958	7855	NR-2351	2-p29
	2961	7856	RAX-271E	2-p58
	2962	7857	RAX-71E	2-p58
	2975	7828	MSS-2008R	3-p30
	2976	7829	MSS-2008RA	3-p30
	2977	7830	MSS-2002R	3-p30
	2978	7831	MSS-2002RA	3-p30
	2979	7833	MSST-2330R	3-p31
	2980	7834	MSST-2330RA	3-p31
	2981	7835	MSST-2308R	3-p31
	2982	7836	MSST-2308RA	3-p31
	2984	7842	MSS-2524RA	3-p32
	2985	7843	MSS-2506R	3-p32
	2986	7845	MSS-2501R	3-p32
	2987	7846	MSS-2501RA	3-p32
	7583	7858	EM25-S6000	2-p46
	7584	7860	EM20-S6000	2-p47
	7588	7876	NR-3080S	2-p73
	7589	7903	EM30-S6000	2-p46
	7590	7859	NR-3060S	2-p57
	7591	7861	NR-303	2-p29

	Legacy	Product Code	Product Name	Page
	7593	7862	EMS-3060K	2-p42
	7596	7869	EMR-3008K	2-p43
	7601	7874	EMA-3020K	2-p48
	7611	7878	HES810-BT30	4-p11
	7612	7879	HES810-HSKA63	-
	7614	7880	HES810-BT50	4-p12
	7615	7884	HES810-HSK A63	4-p12
	7616	7885	HES810-ST32	4-p13
	7617	7892	HES510-BT50	4-p05
	7618	7887	HES510-NT40	-
	7619	7891	HES510-BT40	4-p04
	7620	7889	HES510-NT50	-
	7621	7890	HES510-BT30	4-p04
	7623	7899	HES510-ST32	4-p06
	7624	7897	HES510-HSKA63	4-p11
	7625	7898	HES510-HSKA100	-
	7626	7810	BM-319	2-p06
	7628	7811	BM-320	2-p06
	7633	7816	BM-320F	2-p07
	7635	7814	BM-322	2-p07
	7639	7815	BM-322FL	2-p08
	7641	7817	BM-322FR	2-p08
	7644	7863	EMSF-3060K	2-p44
	7651	7819	BMJ-319	2-p10
	7652	7820	BMJ-320	2-p10
	7653	7821	BMJ-322	2-p11
	7655	7822	BMF-319	-
	7683	7805	BMS-4020 2M	2-p79
	7684	7809	BMS-4040 2M	2-p79
	7685	7809	BMS-4040 2M	2-p79
	7702	7823	BM-322FS	2-p09
	9196	7900	HES510-R8	-
	9197	7899	HES510-ST32	4-p06
	9201	7881	HES810-CAT40	4-p11
	9213	7902	NR-4040	2-p81
	9221	7882	HES810-CAT50	-
	60735	60519	60519	-
	0911406020	2028	K-215	6-p12
	0911508010	2029	K-216	6-p12
	AA10040	1060	K-209	6-p11
	AA10055	1061	K-208	6-p11
	AA10411	2070	K-275	6-p12
	AA10426	2027	K-206	6-p12
	AA82038	2038	FJ-01	6-p13
	AA82039	2039	FJ-02	6-p13
	AA82040	2040	FJ-03	-
	AF10045	1064	AFC-45	6-p09
	AS02135	2152	KCH-01A (5.0)	-
	AS02136	2136	DCH-J0A	-
	AS02137	2137	AGM-01A	-
	AS10073	2909	NR-601	-
	AS11029	1029	AGM-01	6-p15
	AS11071	1071	AM-600R	-
	AS11395	1018	AM-300RA	3-p04
	AS11397	1021	AM-300R	3-p04
	AS11411	2902	RA-100	2-p30
	AS11412	2903	RA-200	2-p30
	AS11414	1022	ARG-01	2-p32
	AS11428	1023	ARG-02	2-p32
	AS11510	2974	AMH-301	2-p31
	AS11797	1797	AM-3020R	3-p19
	AS11798	1798	AM-3020L	-
	AS11799	1799	AM-3020RA	3-p19
	AS11800	1800	AM-3020LA	-
	AS12035	2035	K-241	6-p13
	AS12036	2036	K-242	6-p13
	AS12037	2037	K-244	-
	AS12123	2123	CHN-B	6-p06

Legacy	Product Code	Product Name	Page
AS12512	2512	AM-600RA	-
AS1546	1546	K-246	6-p11
AS18220	7855	NR-2351	2-p29
AS2138	2138	EGF-19	6-p13
AS32124	2124	CHN-02	-
AS41079	1079	AM-310R	3-p04
AS41081	1081	AM-310RA	3-p05
AS41601	7824	MSS-1908R	3-p30
AS41603	7825	MSS-1908RA	3-p30
AS41605	7826	MSS-1902R	3-p30
AS41607	7827	MSS-1902RA	3-p30
AS41609	7828	MSS-2008R	3-p30
AS41611	7829	MSS-2008RA	3-p30
AS41613	7830	MSS-2002R	3-p30
AS41615	7831	MSS-2002RA	3-p30
AS41637	7833	MSST-2330R	3-p31
AS41639	7834	MSST-2330RA	3-p31
AS41645	7835	MSST-2308R	3-p31
AS41647	7836	MSST-2308RA	3-p31
AS41653	7837	MSST-2302R	3-p31
AS41655	7838	MSST-2302RA	3-p31
AS41710	7851	MSS-2030R	3-p30
AS41712	7852	MSS-2030RA	3-p30
AS41830	7861	NR-303	2-p29
AS42026	2026	WR12X14	6-p16
AS42127	2143	NGF2-19	6-p13
AS42130	2164	KCH-03 (6.35)	6-p14
AS42130A	2130	KCH-03 (6.0)	6-p14
AS42131	2131	AGM-03	6-p15
AS42132	2132	DCH-J0K	6-p14
AS42133	2153	KCH-01N (5.0)	-
AS42134	2134	DCH-J0N	-
AS42511	7832	NR-311	2-p31
AS43737	3737	AX-105	-
AS51094	7839	RAS-101	2-p30
AS72115	90720	CHP-2.0	-
AS72116	90730	CHP-3.0	-
AS72117	90793	CHP-3.175	-
AS81082	1082	AM-310LA	-
AS81083	1083	AM-300L	-
AS81084	1084	AM-300LA	-
AS81085	1085	AM-310L	3-p04
AS81680	2983	MSS-2208R	-
AS81682	2920	MSS-2208RA	-
AS81684	2921	MSS-2202R	-
AS81686	2922	MSS-2202RA	-
AS81690	7841	MSS-2524R	3-p32
AS81692	7842	MSS-2524RA	3-p32
AS81698	7843	MSS-2506R	3-p32
AS81700	7844	MSS-2506RA	3-p32
AS81706	7845	MSS-2501R	3-p32
AS81708	7846	MSS-2501RA	3-p32
AS81721	2928	MSSH-2524R	-
AS81723	2929	MSSH-2524RA	-
AS81729	2988	MSSH-2506R	-
AS81731	2930	MSSH-2506RA	-
AS81737	2989	MSSH-2501R	-
AS81739	2931	MSSH-2501RA	-
AS81801P	1801	AM-2526R	3-p13
AS81802P	1802	AM-2526L	-
AS81803P	1803	AM-2526RA	3-p13
AS81804P	1804	AM-2526LA	-
AS81805P	1805	AM-H2526R	-
AS81806P	1806	AM-H2526L	-
AS81807P	1807	AM-H2526RA	-
AS81808P	1808	AM-H2526LA	-
AS81819P	7853	NR-2551	2-p21
AS81820P	7854	NR-H2551	2-p21

Legacy	Product Code	Product Name	Page
AS81822P	1822	ARG-2504N	2-p22
AS81824P	1824	ARG-2516N	2-p22
AS81826P	1826	ARG-H2504N	-
AS81828P	1828	ARG-H2516N	-
AS81835P	1835	NR-2651	2-p21
AS88322	8333	EM25-5000-J4	-
AS88322P	8334	EM25N-5000-J4	-
AS91676	7849	MSS-1930R	3-p30
AS91678	7850	MSS-1930RA	3-p30
AS91710	2943	MSS-2230R	-
AS91712	2944	MSS-2230RA	-
ASE1505	2910	RA-151E	2-p59
ASE1506	2911	RA-271E	2-p59
ASE1507	1507	ARG-011E	2-p64
ASE1508	1508	ARG-021E	2-p64
ASE1514	7847	NR-403E	2-p57
ASE1559	7840	RAS-151E	2-p58
ASE1566	2937	NR-453E	-
ASE1576	7857	RAX-71E	2-p58
ASE1579	7856	RAX-271E	2-p58
ASE9148	9148	HES510-BT30-SK	4-p16
ASE9149	9149	HES510-BT40-SK	4-p16
ASE9150	9150	HES510-BT50-SK	4-p16
ASE9151	9151	HES510-HSK A100-SK	4-p16
ASE9152	9152	HES510-HSK A63-SK	4-p16
ASE9153	9153	HES510-NT30-SK	4-p16
ASE9154	9154	HES510-NT30M-SK	4-p16
ASE9155	9155	HES510-NT40-SK	4-p16
ASE9156	9156	HES510-NT40M-SK	4-p16
ASE9157	9157	HES510-NT50-SK	4-p16
ASE9158	9158	HES510-NT50M-SK	4-p16
ASE9192	9192	HES510-CAT50-SK	4-p16
ASE9193	9193	HES510-CAT40-SK	4-p16
E096B012	9046	ENKCD-401	-
EG11404	1440	FC-40	6-p09
EL11330	1404	FC-35	-
EMX8004	8004	NCL-351C	6-p08
EMX8005	8005	NCL-351S	6-p08
EMX8013	8013	NCL-261C	6-p08
EMX8014	8014	NCL-261S	6-p08
EMX8023	8023	NCL-151C	-
EMX8024	8024	NCL-151S	-
EMX8050	8050	HH-01	-
EMX8051	8051	NCL-EXT	6-p08
EO37011	1425	E037011	6-p10
ES11515	2912	EHL-401	1-p24
ES11516	1516	ELS-100	1-p26
ES11517	1517	ERG-01	1-p27
ES11518	1518	ECN-011	1-p27
ES41551	2923	ERA-270	1-p25
ES41552	2973	EHG-400	1-p25
ES41553	1553	ERG-01B	1-p27
ES51554	1554	EML-8	1-p26
ES81525	2933	EIC-300	1-p25
ES81526	2932	EKC-300	1-p25
ES9085	7340	ES50C-HR	1-p22
ES9086	7342	ES50T-HR	1-p22
ES9087	9793	NE96	1-p21
ES9088	9088	ENK-500C	1-p24
ES9089	9089	ENK-500T	1-p24
ES9090	7182	EHR-500	1-p24
ES9091	7339	ENK50C-HR	1-p22
ES9092	7341	ENK50T-HR	1-p22
ES9093	9093	ENKCD-50C	6-p08
ES9094	9094	ENKCD-50T	6-p08
HPS01	7005	HPS250-BT30A	-
HPS02	7006	HPS250-BT30B	-
HPS03	7007	HPS250-BT30C	-

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus ZERO
2
iSpeed3
E2000 ø1.0"/ø0.99"/ø0.897"
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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
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

INDEX (Legacy)

Legacy	Product Code	Product Name	Page
HPS04	7011	HPS500-BT30A	-
HPS05	7012	HPS500-BT30B	-
HPS06	7013	HPS500-BT30C	-
HPS07	7008	HPS250-CAT40A	-
HPS08	7009	HPS250-CAT40B	-
HPS09	7010	HPS250-CAT40C	-
HPS10	7014	HPS500-CAT40A	-
HPS11	7015	HPS500-CAT40B	-
HPS12	7016	HPS500-CAT40C	-
HR10303	2002	T-751	6-p17
K070085	2147	KCH-02 (8.0)	6-p14
K076211	1038	K-213	6-p12
K155211	2030	K-204	6-p12
K-247	2056	K-247	6-p12
K301082	2164	KCH-03 (6.35)	6-p14
K301085	2148	KCH-03 (5.0)	6-p14
K812A271	9159	HES510-R8-SK	4-p16
K812A272	9160	HES510-ST32-SK	4-p16
KBS1067	1067	TP-12	-
KBS61065	1146	KBS-101	1-p16
KBS61557	1145	EBS-101	1-p26
LS10815	1302	LS-100	1-p12
LS10834	62505	VEA	1-p19
LS10848	62526	FBA-2	1-p19
LS10853	62527	NGA	1-p19
LS10867	62751	FVA	1-p19
LS10875	62502	VES	1-p19
LS10891	62525	LKE-2A	1-p19
LS10900	64131	S-008	-
LS10902	64132	S-012	-
LS10904	64133	S-018	-
LS10905	64134	S-024	-
LS10906	64135	S-032	-
LS10908	64136	S-040	-
LS10910	64137	S-060	-
LS10912	64138	S-080	-
LS10914	64139	S-100	-
LS10915	64140	S-150	-
LS10918	62814	62814	1-p19
LS10919	62552	62552	-
LS10922	62871	62871	1-p19
LS10923	62555	62555	-
LS10927	62557	62557	-
LS10931	62559	62559	-
LS10963	62840	62840	1-p19
LS11380	1380	SLS-16	1-p13
LS22016	2016	K-248	6-p17
LS22017	2017	K-249	6-p17
LS51307	1307	ML-8	1-p13
NK06104	64832	CWS80G20mm	1-p37
NK10209	90529	CHS-2.9	6-p02
NK10210	90593	CHS-3.175	6-p02
NK10215	90592	CHS-2.35	6-p02
NK10216	90508	CHS-0.8	6-p04
NK10218	90510	CHS-1.0	6-p02
NK10219	90515	CHS-1.5	6-p02
NK10220	90516	CHS-1.6	6-p02
NK10221	90520	CHS-2.0	6-p02
NK10222	90525	CHS-2.5	6-p02
NK10223	90530	CHS-3.0	6-p02
NK10224	90524	CHS-2.4	6-p02
NK11033	64822	RP30mm	1-p37
NK11043	1043	CNA	-
NK11045	1045	NCH-01	6-p15
NK45230	2906	NA45-230	1-p35
NK45400	2905	NA45-400	1-p35
NK45800	64837	CWS80G30mm	1-p37
NK45801	64838	CWH80G30mm	1-p37

Legacy	Product Code	Product Name	Page
NK60100	2990	NSP-601A	1-p34
NK86A46S	64836	CWH46G30mm	1-p37
NK90230	2907	NA90-230	1-p35
PL10622	2011	K-220	-
PL10637	91093	CH8-3.175	6-p05
PL10641	90216	CH20-16	6-p05
PL10670	91228	CH5-2.8	-
PL10671	91234	CH5-3.4	-
PL10672	91225	CH5-2.5	-
PL10673	91235	CH5-3.5	-
PL10674	91236	CH5-3.6	-
PL10675	91296	CH5-6.35	-
PL10676	91250	CH5-5.0	-
PL10677	91240	CH5-4.0	-
PL10678	91245	CH5-4.5	-
PL10679	91244	CH5-4.4	-
PL10681	91243	CH5-4.3	-
PL10682	91237	CH5-3.7	-
PL10683	91227	CH5-2.7	-
PL11464	91206	CH5-0.6	-
PL11465	91207	CH5-0.7	-
PL11466	91293	CH5-3.175	-
PL11467	91208	CH5-0.8	-
PL11468	91209	CH5-0.9	-
PL11469	91211	CH5-1.1	-
PL11470	91212	CH5-1.2	-
PL11488	91210	CH5-1.0	-
PL11489	91220	CH5-2.0	-
PL11490	91230	CH5-3.0	-
PL11492	91222	CH5-2.2	-
PL11494	91215	CH5-1.5	-
PL11495	91216	CH5-1.6	-
PL11498	91218	CH5-1.8	-
PL11502	91260	CH5-6.0	-
PL11517	91016	CH8-1.6	6-p05
PL11521	91092	CH8-2.35	6-p05
PL11522	91024	CH8-2.4	6-p05
PL11523	91025	CH8-2.5	6-p05
PL11525	91026	CH8-2.6	6-p05
PL11531	91011	CH8-1.1	6-p05
PL11532	91022	CH8-2.2	6-p05
PL11533	91013	CH8-1.3	6-p05
PL11536	91012	CH8-1.2	6-p05
PL11539	91008	CH8-0.8	6-p05
PL11540	91010	CH8-1.0	6-p05
PL11555	91014	CH8-1.4	6-p05
PL11556	91015	CH8-1.5	6-p05
PL11568	91017	CH8-1.7	6-p05
PL11569	91018	CH8-1.8	6-p05
PL11574	91020	CH8-2.0	6-p05
PL11578	91028	CH8-2.8	6-p05
PL11588	91030	CH8-3.0	6-p05
PL12022	2022	K-257	-
PL12023	2023	K-258	-
PL12024	2024	K-259	-
PL42617	91527	CHK-2.7	6-p03
PL42662	91522	CHK-2.2	6-p03
PL42663	91525	CHK-2.5	6-p03
PL42665	91505	CHK-0.5	6-p03
PL42667	91507	CHK-0.7	6-p03
PL42668	91508	CHK-0.8	6-p03
PL42669	91530	CHK-3.0	6-p03
PL42670	91531	CHK-3.1	6-p03
PL42671	91543	CHK-4.3	6-p03
PL42672	91520	CHK-2.0	6-p03
PL42673	91544	CHK-4.4	6-p03
PL42674	91547	CHK-4.7	6-p03
PL42675	91596	CHK-6.35	6-p03

Legacy	Product Code	Product Name	Page
PL42676	91550	CHK-5.0	6-p03
PL42677	91551	CHK-5.1	6-p03
PL42678	91540	CHK-4.0	6-p03
PL42679	91556	CHK-5.6	6-p03
PL42680	91594	CHK-4.76	6-p03
PL42681	91521	CHK-2.1	6-p03
PL42682	91512	CHK-1.2	6-p03
PL42685	91593	CHK-3.175	6-p03
PL42686	91560	CHK-6.0	6-p03
PL42687	91545	CHK-4.5	6-p03
PL42689	91529	CHK-2.9	6-p03
PL42690	91592	CHK-2.35	6-p03
PL42691	91510	CHK-1.0	6-p03
PL42692	91509	CHK-0.9	6-p03
PL42693	91513	CHK-1.3	6-p03
PL42694	91528	CHK-2.8	6-p03
PL42695	91515	CHK-1.5	6-p03
PL42696	91516	CHK-1.6	6-p03
PL42697	91559	CHK-5.9	6-p03
PL42698	91518	CHK-1.8	6-p03
PL42699	91511	CHK-1.1	6-p03
PL42700	91514	CHK-1.4	6-p03
PL42701	91534	CHK-3.4	6-p03
PL42702	91538	CHK-3.8	6-p03
PL42703	91554	CHK-5.4	6-p03
PL42704	91555	CHK-5.5	6-p03
PL42705	91533	CHK-3.3	6-p03
PL42706	91536	CHK-3.6	6-p03
PL42707	91535	CHK-3.5	6-p03
PL42708	91552	CHK-5.2	6-p03
PL42709	91517	CHK-1.7	6-p03
PL42710	91524	CHK-2.4	6-p03
PL42711	91541	CHK-4.1	6-p03
PL42712	91526	CHK-2.6	6-p03
PS12119	2119	CHN-E	-
RA10406	2008	WR10X10	6-p16
RA11452	91193	CHG-3.175	6-p02
RA11697	91140	CHG-4.0	6-p02
RA11698	91194	CHG-4.76	6-p02
RA11709	91150	CHG-5.0	6-p02
RA11714	91196	CHG-6.35	6-p02
RA11766	91116	CHG-1.6	6-p02
RA11771	91192	CHG-2.35	6-p02
RA11772	91130	CHG-3.0	6-p02
RA11773	91160	CHG-6.0	6-p02
RA11777	91110	CHG-1.0	6-p02
RA11778	91115	CHG-1.5	6-p02
RA11780	91120	CHG-2.0	6-p02
RA11781	91125	CHG-2.5	6-p02
RA11803	91413	CHA-1.3	6-p02
RA11804	91409	CHA-0.9	6-p02
RA11805	91408	CHA-0.8	6-p02
RA11806	91410	CHA-1.0	6-p02
RA11807	91411	CHA-1.1	6-p02
RA11808	91412	CHA-1.2	6-p02
RA11809	91416	CHA-1.6	6-p02
RA11810	91418	CHA-1.8	6-p02
RA11811	91420	CHA-2.0	6-p02
RA11812	91492	CHA-2.35	6-p02
RA11813	91430	CHA-3.0	6-p02
RA11814	91415	CHA-1.5	6-p02
RA11815	91414	CHA-1.4	6-p02
RA11818	91493	CHA-3.175	6-p02
RA11819	91440	CHA-4.0	6-p02
RA11820	2122	K-263	-
RA11821	91425	CHA-2.5	6-p02
RA11822	91419	CHA-1.9	6-p02
RA11823	91435	CHA-3.5	6-p02

Legacy	Product Code	Product Name	Page
RA11824	91424	CHA-2.4	6-p02
RA11826	91426	CHA-2.6	6-p02
RA11828	91428	CHA-2.8	6-p02
RA11829	91429	CHA-2.9	6-p02
RA11830	91431	CHA-3.1	6-p02
RA11831	91421	CHA-2.1	6-p02
RA11900	2129	K-265	6-p07
RA12012	2012	WR8X5	6-p16
RA12018	2018	WR20X24	6-p16
RA12045	2045	WR22X27	6-p16
RE10178	7097	IH-300	1-p08
RE10182	2900	IC-300	1-p10
RE10188	2810	HG-200	1-p09
RE10207	2009	WR7X5.1	6-p16
RE10210	1015	CN-01	1-p18
RE10235	2904	BMH-300	1-p09
RE10247	1012	MFC-300S	1-p09
RE10252	1013	MFC-300M	1-p09
RE10266	2901	KC-300	1-p10
RE10290	2010	WR7X5.5	6-p16
RE10356	90016	K-253	6-p06
RE10360	90316	K-252	6-p06
RE10389	2006	K-232	6-p17
RE10394	2007	K-231	6-p17
RE10444	90430	CHC-3.0	6-p02
RE10459	90930	CHM-3.0	6-p04
RE11008	1144	IR-310	1-p08
RE11593	90492	CHC-2.35	6-p02
RE11600	90916	CHM-1.6	6-p04
RE11602	90992	CHM-2.35	6-p04
RE11604	90993	CHM-3.175	6-p04
RE11605	90910	CHM-1.0	6-p04
RE11606	90493	CHC-3.175	6-p02
RE11609	90920	CHM-2.0	6-p04
RE11611	90416	CHC-1.6	6-p02
RE11625	90692	CHH-2.35	6-p02
RE11630	90693	CHH-3.175	6-p02
RE11659	90616	CHH-1.6	6-p02
RE11729	90610	CHH-1.0	6-p02
RE11734	90620	CHH-2.0	6-p02
RE11739	90630	CHH-3.0	6-p02
RE11800	64151	M-008	-
RE11802	64152	M-012	-
RE11804	64153	M-018	-
RE11805	64154	M-024	-
RE11806	64155	M-032	-
RE11808	64156	M-040	-
RE11810	64157	M-060	-
RE11812	64158	M-080	-
RE11814	64159	M-100	-
RE11815	64160	M-150	-
RE11900	64171	L-008	-
RE11902	64172	L-012	-
RE11904	64173	L-018	-
RE11905	64174	L-024	-
RE11906	64175	L-032	-
RE11908	64176	L-040	-
RE11910	64177	L-060	-
RE11912	64178	L-080	-
RE11914	64179	L-100	-
RE11915	64105	64105	1-p11
RE11916	64106	64106	1-p11
RE11917	64107	64107	1-p19
RE11925	64180	L-150	-
RE18060	8060	HA-500	1-p16
RE22001	2001	WR6X4.5	6-p16
RE22014	2014	K-233	6-p17
RE22015	2013	K-212	6-p17

1
EmaxEVO
ESPERT
ROTUS
IMPULSE
PRESTO II
Sheenus 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" ø0.71"
ø0.81" ø0.81"
ø1.0" ø0.98"
4
HES
iSpeed5
HTS
PLANET
Xspeed
ABT
5
AIR LINE KIT
6
PARTS
7
TECHNICAL DATA
8
APPLICATION EXAMPLES
INDEX

INDEX (Legacy)

Legacy	Product Code	Product Name	Page
RE82046	2046	K-236	6-p17
RO10163	1004	IM-301	1-p33
RO10163A	1003	IM-300	1-p33
RO10214	1009	RG-01	1-p18
RO10228	1010	RG-02	1-p18
SHE8103	8103	FC-24	6-p09
T815001I	1122	PR-304	1-p38
T815016I	1120	PR-03	6-p10
T815220	T815220	K-238	6-p12
U235406	1544	U235406	5-p05
Y150022I	1125	PR2-304S	1-p38
Z094005	62508	62508	1-p19
Z094006	62507	62507	1-p19
Z094007	62506	62506	1-p19
Z095008	62509	62509	1-p19
Z100001	1124	AFC-40	6-p09
Z307015I	1126	PR2-06	1-p38

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

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL
DATA

8

APPLICATION
EXAMPLES

INDEX

1

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"
ø0.79"

ø0.897"
ø0.91"

ø1.0"
ø0.98"

4

HES

iSpeed5

HTS

PLANET

Xpeed

ABT

5

AIR LINE KIT

6

PARTS

7

TECHNICAL
DATA

8

APPLICATION
EXAMPLES

INDEX



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 for discontinued items.



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