



AMERICAN ROTARY TOOLS CO. (ARTCO TOOLS)
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Motors & Spindles Micro-grinders

Ultra-Precision Electrically / Pneumatically Driven

NSK America

Precision & Reliability



2012/13
Edition

1

EmaxEVO

ESPERT

ROTUS

ECOMO

IMPULSE

PRESTO II

SHEENUS
1190

SONIC
CUTTER

2

ISpeed3

E2530

E2550

E3000
- One Piece

E3000
- Modular

ø1.18"

ø1.0"
ø0.98"

ø0.897"

E3200
- Modular

E4000

3

MA

ø0.897"

ø1.0"
ø0.98"

ø1.18"

MS

ø0.75"
ø0.73"

ø0.87"
ø0.81"

ø1.0"
ø0.98"

4

HES510

HES810

HTS

HPS

5

AIR LINE KIT

6

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E2530 SERIES

5,000~30,000 min⁻¹(rpm)
Output 125W

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

- The E2530 Series is capable of up to 30,000 min⁻¹(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.

E2530 Series



E2550 SERIES

5,000~50,000 min⁻¹(rpm)
Output 125W

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

- The E2550 Series is capable of up to 50,000 min⁻¹(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.

E2550 Series



E3000 SERIES

5,000~60,000 min⁻¹(rpm)
Output 350W

Outside Diameter

- One Piece Type : $\phi 0.79''$, $\phi 0.98''$, $\phi 1.18''$
($\phi 20$, $\phi 25$, $\phi 30$ mm)
- Modular Type : $\phi 0.897''$, $\phi 0.98''$, $\phi 1.0''$, $\phi 1.18''$
($\phi 22.8$, $\phi 25$, $\phi 25.4$, $\phi 30$ mm)

E3000 Series



E3200 SERIES

1,000~80,000 min⁻¹(rpm)
Output 350W

Outside Diameter

- Modular Type : $\phi 1.18''$ ($\phi 30$ mm)
- Modular Type (Air Bearing) : $\phi 1.97''$ ($\phi 50$ mm)

E3200 Series



E4000 SERIES

2,000~40,000 min⁻¹(rpm)
Max. Output 1,200W

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

- Up to $\phi 0.375''$ Collet Capacity
- Designed for use on CNC Lathes, Robots and Special Application Machines for precision milling, drilling grinding, slitting and deburring applications

E4000 Series



HIGH POWER SOLUTIONS

E4000 Series

Electric System



Outside Diameter **Ø1.57" (Ø40 mm)**

2,000~40,000 min⁻¹(rpm)
Max. Output 1,200W

- 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

● **One Piece Type**



1

EmaxEVO

ESPERT

ROTUS

ECOMO

IMPULSE

PRESTO II

SHEENUS neo

SONIC CUTTER

2

iSpeed

E2530

E2550

E3000

- One Piece

E3000

- Modular

Ø1.18"

Ø1.0"

Ø0.98"

Ø0.897"

E3200

- Modular

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

HES510

HES810

HTS

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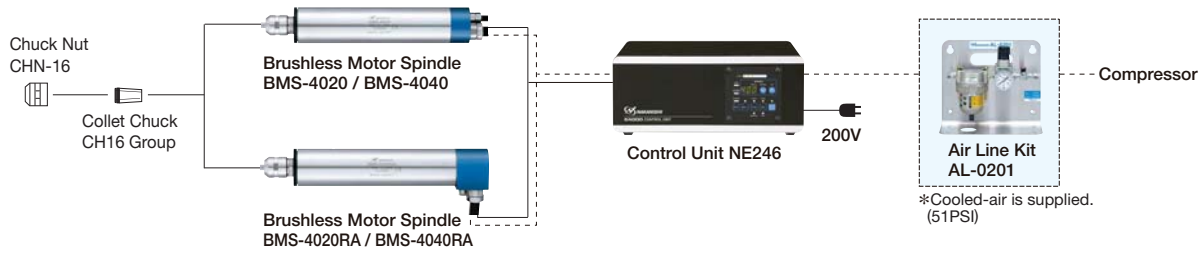
AMERICAN ROTARY TOOLS CO.

Toll Free US & CA +1 (800) 645-3824

BRUSHLESS MOTOR SPINDLE "E4000 SERIES"

- High Speed, Power and Torque in a Brushless DC Motor/Spindle
- 2,000 ~ 40,000 min⁻¹(rpm) with 1,200 Watts (1.6 HP) of Power
- 40 mm (1.57 Dia.) Body Diameter
- .375" Collet Capacity

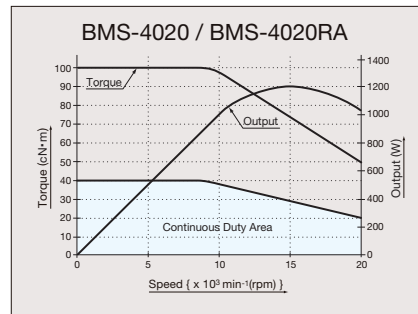
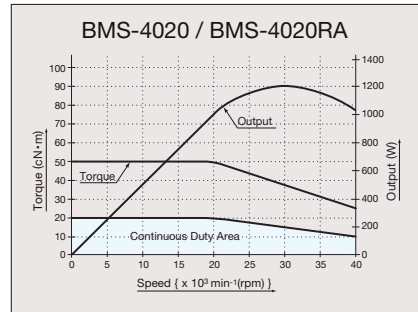
E4000 Series System Chart



Features of E4000 Series

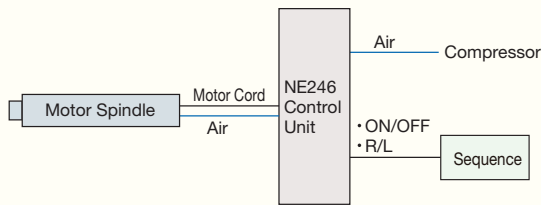
- 2,000~40,000 min⁻¹(rpm), 500 min⁻¹(rpm) (for centering rotation)
- Rated output 400W (Max. output 1,200W) ● Spindle accuracy 1 μm or less.
- Achieved continuous run of over 5,000 hours.
{NAKANISHI's factory test without load at 40,000 min⁻¹(rpm)}
- Motor weight 3 lb. 4.91 oz. (BMS-4020, BMS-4040)
4 lb. 6.55 oz. (BMS-4020RA, BMS-4040RA)
- Proper coolant air pressure 51PSI ● Coolant 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.

● Torque Characteristics



■ Automatic Control System Chart

■ Single Motor Spindle Operation



E4000 Series Combination Example

40,000 min⁻¹(rpm)



E4000, BMS-4040 Combination Example

CAT. No.	Model	Product	Price
8472	NE246	Control Unit	4,635.00
1791	BMS-4040	Motor Spindle	5,974.00
9253	EMCD-4000-2M	Motor Power Cable	150.00
9257	EMCD-4000S-2M	Motor Signal Cable	250.00
AL0201	AL-0201	Air Line Kit	306.00

Total 11,315.00

“E4000 SERIES” CONTROL UNIT

AMERICAN ROTARY TOOLS CO.

Toll Free US & CA +1 (800) 645-3824

CAT. No. **8472 CONTROL UNIT NE246**

40,000 min⁻¹(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 • Control Unit Overheat

Error : • Internal Circuit Error • Voltage/Currency Error
• Overheat/Overload operation • Operation Error
• Air shortage

● **Maximum RPM Setting by Parameter**

Capable of setting the maximum motor speed for the allowable motor speed by the Parameter Setting

● **External Input-Output Connector**

(Refer to Technical Data 7-p22~p27 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.

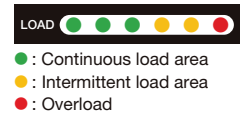
● **Motor Speed Display**

Motor speed is displayed precisely and digitally.

● **Operation Panel Extension Cord 4 meter (13 ft.) is available**



*: Load Meter



[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)

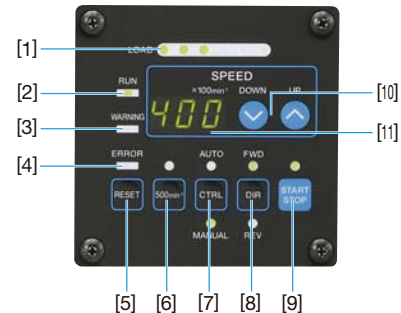
[10] Motor Speed Adjustment Switch (SPEED)

[11] Display

● **E4000 Optional Safety Relay Box**

The Safety Relay Box is for use with the E4000 Control Unit. 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 Control Unit to supply power to the motor. Any system errors, trouble with the machining center or the connections between the E4000 Control Unit 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

Model : NE246
Power Source : AC200V
Motor Speed : 2,000-40,000 min⁻¹(rpm)
Max. Output Power : 1,200W
Power Consumption : 3.2A
Air Flow Volume : 3.53FM (51PSI)
Weight : 14 lb. 12.34 oz.
Dimensions : W9.84" x D11.42" x H3.94"

E4000 Control Unit

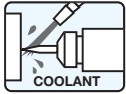
CAT. No.	Plug Type	Model	Standard Equipment · Accessories	Price
8472	200V	NE246	<ul style="list-style-type: none"> • Power Cord : 13 ft • Air Hose with filter : 6 ft • Connector Cap (Provided) • Connector Cover (Provided) • Bracket : 4 pcs. • Rubber Pad 	4,635.00

*Please refer to Technical Data 7-p22~p27 in detail about External Input-Output Connector.

* Order by catalog number. 2-p93

1
EmaxEVO
ESPRT
ROTUS
ECOMD
IMPULSE
PRESTO II
SHEENUS
HS9
SONIC
CUTTER
2
iSpeed
E2530
E2550
E3000
— One Piece
E3000
— Modular
ø1.18"
ø1.0"
ø0.98"
ø0.897"
E3200
— Modular
E4000
3
MA
ø0.897"
ø1.0"
ø0.98"
ø1.18"
MS
ø0.75"
ø0.79"
ø0.87"
ø0.91"
ø1.0"
ø0.98"
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"E4000 SERIES" BRUSHLESS MOTOR SPINDLE



E4000 Series can be used in conjunction with water or oil based coolants.

BRUSHLESS MOTOR SPINDLE BMS SERIES

40,000 · 20,000 min⁻¹(rpm)

● STRAIGHT TYPE

BMS-4020
BMS-4040



● 90° ANGLE TYPE (RA)

BMS-4020RA
BMS-4040RA



*1 : When the tool shank diameter is between 6.9mm and 10mm
*2 : When the tool shank diameter is less than 6.9mm

- Proper Air Pressure 51PSI
- Air Consumption 3.53CFM
- Min. Bending Cord Radius R70 mm
- < Optional >
- Collet (CH16-□□) ø3.0 mm~ø8.0 mm
(See Page 6-p5 for details)
- Motor Power Cable ø1.18"
- Motor Signal Cable ø0.39"
- Air Hose ø6mm

Note : Motor Cable is sold separately.

40,000 min⁻¹(rpm)

CAT. No.	Model	Shape	Max. Torque	Spindle Accuracy	Max. Output	Rated Output	Weight *	Cord Length	Price
1791	BMS-4040	Straight	0.5 N · m	Within 1 μm	1,200W	400W	3 lb 4.91 oz.	1 ft	5,974.00
1792	BMS-4040RA	90° Angle					4 lb 6.55 oz.	6 ft	6,180.00

* w/o Motor Cable

20,000 min⁻¹(rpm)

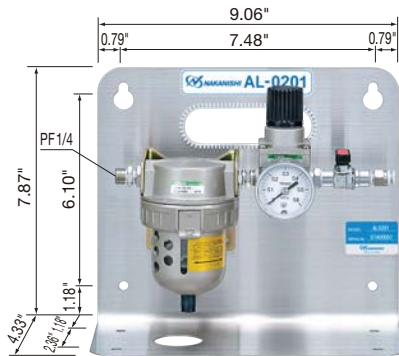
CAT. No.	Model	Shape	Max. Torque	Spindle Accuracy	Max. Output	Rated Output	Weight *	Cord Length	Price
1789	BMS-4020	Straight	1.0 N · m	Within 1 μm	1,200W	400W	3 lb 4.91 oz.	1 ft	5,459.00
1790	BMS-4020RA	90° Angle					4 lb 6.55 oz.	6 ft	5,665.00

* w/o Motor Cable

Standard Equipment · Accessories									
• Collet ø1/4" (CH16-6.35) : 1 pc. • Collet Nut (CHN-16) • Wrench (15 x 17), (22 x 27) : 1 pc. each									

"E4000 SERIES" AIR LINE KIT & MOTOR CABLE

CAT. No. AL0201 AIR LINE KIT AL-0201



● The AL-0201 is a **Clean air** supply unit for E4000 Series control unit. Dust in the compressed air is eliminated by the filter in the first stage and the regulator provides accurate and stable air to the control unit.

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

CAT. No.	Model	Standard Equipment · Accessories	Price
AL0201	AL-0201	<ul style="list-style-type: none"> • Air Filter • Air Regulator • Air Pressure Gauge • Air ON-OFF Valve • Hose for Piping (K-275) : 6 ft 	306.00

MOTOR POWER CABLE with Air Hose

Product	CAT. No.	Model	Length	Std. Accessories	Fit to	Price
<p>Connector Diameter : ø1.18"</p>	9253	EMCD-4000-2M	6 ft (2.0m)	• Air Hose	BMS-4020 BMS-4040 BMS-4020RA BMS-4040RA	150.00
	9254	EMCD-4000-4M	13 ft (4.0m)			250.00
	9255	EMCD-4000-6M	20 ft (6.0m)			350.00
	9256	EMCD-4000-8M	26 ft * (8.0m)			450.00

* Not for use with the 90-Degree Angle Motor (RA)

MOTOR SIGNAL CABLE

Product	CAT. No.	Model	Length	Std. Accessories	Fit to	Price
<p>Connector Diameter : ø0.39"</p>	9257	EMCD-4000S-2M	6 ft (2.0m)	—	BMS-4020 BMS-4040 BMS-4020RA BMS-4040RA	250.00
	9258	EMCD-4000S-4M	13 ft (4.0m)			400.00
	9259	EMCD-4000S-6M	20 ft (6.0m)			550.00
	9260	EMCD-4000S-8M	26 ft * (8.0m)			690.00

* Not for use with the 90-Degree Angle Motor (RA)



Please purchase both the Motor Power Cable and the Motor Signal Cable

"E4000 SERIES" SAFETY RELAY BOX

1
EmaxEVO
ESPERT
ROTUS
ECOMO
IMPULSE
PRESTO II
SHEENUS 1199
SONIC CUTTER
2
iSpeed3
E2530
E2550
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.0"
ø0.98"
ø0.897"
E3200 - Modular
E4000
3
MA
ø0.897"
ø1.0"
ø0.98"
ø1.18"
MS
ø0.75"
ø0.79"
ø0.87"
ø0.91"
ø1.0"
ø0.98"
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CAT. No. 8475 SAFETY RELAY BOX

- Mounts directly on E4000 Control Unit. Allows Emergency Stop Signal from the CNC to stop the E4000 Motor Spindle or the E4000 Control Unit to stop the machine operation.

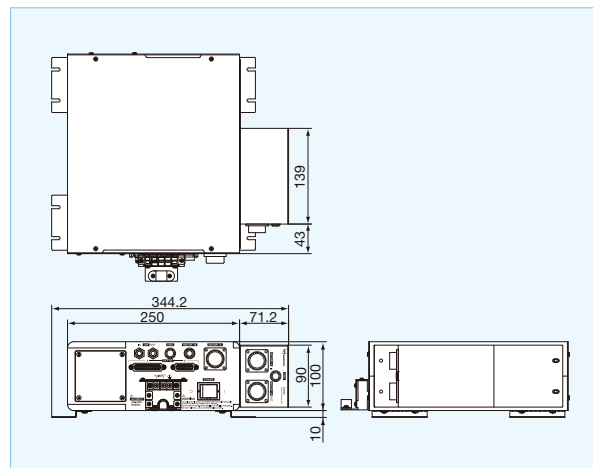


Safety Relay Box

CAT. No.	Model	Standard Equipment - Accessories	Price
8475	E4000-SRB	<ul style="list-style-type: none"> • Relay Cord (Motor Power Line) • Emergency Stop Cord 	711.00

Please contact NSK America for specification and pricing.

▼ Example of using an E4000 control unit with the Safety Relay Box



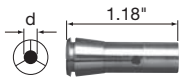
Operation Panel Extension Cord / Box For Control Panel

CAT. No.	Model	Product	Description / Specifications	Fit to	Price
8474	E4000-PEX4		Operation Panel Extension Cord (4m)	E4000 Control Unit	210.00
8473	E4000-PB		Box For Control Panel • Case A • Case B • Blind Plate • Screw (M3) : 6 pcs. • Screw (M4) : 2 pcs.	E4000 Control Unit	334.00

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Toll Free USA Tel: (800) 624-2212 Fax: (800) 624-2210
Email: info@artcotools.com

CH5 Group

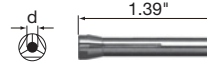


Fit to : K-218
: CHN-02

Fit to _____
PLANET 550 · BANTAM 150 · AMS-150R · AMS-150L · AMS-600
AMS-20R · AMS-20L · AMS-50R · AMS-50L · MSTN-23 · NR-310 · FG-02S

CAT. No.	Model	Inside Diameter d	Price	
91203	CH5-0.3	ø0.3	237.00	
91204	CH5-0.4	ø0.4		
91205	CH5-0.5	ø0.5		
PL11464	CH5-0.6	ø0.6		
PL11465	CH5-0.7	ø0.7		
PL11467	CH5-0.8	ø0.8		
PL11468	CH5-0.9	ø0.9	83.00	
PL11488	CH5-1.0	ø1.0		
PL11469	CH5-1.1	ø1.1		
PL11470	CH5-1.2	ø1.2	106.00	
91213	CH5-1.3	ø1.3		
91214	CH5-1.4	ø1.4		
PL11494	CH5-1.5	ø1.5	83.00	
PL11495	CH5-1.6	ø1.6		
91217	CH5-1.7	ø1.7	106.00	
PL11498	CH5-1.8	ø1.8		
91219	CH5-1.9	ø1.9		
PL11489	CH5-2.0	ø2.0	83.00	
91221	CH5-2.1	ø2.1		
PL11492	CH5-2.2	ø2.2	106.00	
91223	CH5-2.3	ø2.3		
91292	CH5-2.35	ø2.35		
91224	CH5-2.4	ø2.4		
PL10672	CH5-2.5	ø2.5	83.00	
91226	CH5-2.6	ø2.6		
PL10683	CH5-2.7	ø2.7	106.00	
PL10670	CH5-2.8	ø2.8		
91229	CH5-2.9	ø2.9		
PL11490	CH5-3.0	ø3.0	71.00	
91231	CH5-3.1	ø3.1		
PL11466	CH5-3.175	ø1/8"	71.00	
91232	CH5-3.2	ø3.2		
91233	CH5-3.3	ø3.3	106.00	
PL10671	CH5-3.4	ø3.4		
PL10673	CH5-3.5	ø3.5		
PL10674	CH5-3.6	ø3.6		
PL10682	CH5-3.7	ø3.7		
91238	CH5-3.8	ø3.8		
91239	CH5-3.9	ø3.9		
PL10677	CH5-4.0	ø4.0		71.00
91241	CH5-4.1	ø4.1		
91242	CH5-4.2	ø4.2		106.00
PL10681	CH5-4.3	ø4.3		
PL10679	CH5-4.4	ø4.4		
PL10678	CH5-4.5	ø4.5		
91246	CH5-4.6	ø4.6	83.00	
91247	CH5-4.7	ø4.7		
91294	CH5-4.76	ø4.76	106.00	
91248	CH5-4.8	ø4.8		
91249	CH5-4.9	ø4.9		
PL10676	CH5-5.0	ø5.0	71.00	
91251	CH5-5.1	ø5.1		
91252	CH5-5.2	ø5.2	106.00	
91253	CH5-5.3	ø5.3		
91254	CH5-5.4	ø5.4		
91255	CH5-5.5	ø5.5		
91256	CH5-5.6	ø5.6		
91257	CH5-5.7	ø5.7		
91258	CH5-5.8	ø5.8		
91259	CH5-5.9	ø5.9		
PL11502	CH5-6.0	ø6.0		71.00
PL10675	CH5-6.35	ø1/4"		

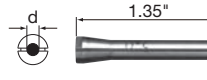
CH6 Group



Fit to _____
ABS-1600

CAT. No.	Model	Inside Diameter d	Price
90830	CH6-3.0	ø3.0	83.00
90893	CH6-3.175	ø1/8"	

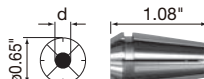
CH8 Group



Fit to _____
RA-100 · RA-151E · RA-2511 · RA-H2511

CAT. No.	Model	Inside Diameter d	Price
PL11539	CH8-0.8	ø0.8	214.00
91009	CH8-0.9	ø0.9	
PL11540	CH8-1.0	ø1.0	71.00
PL11531	CH8-1.1	ø1.1	
PL11536	CH8-1.2	ø1.2	95.00
PL11533	CH8-1.3	ø1.3	
PL11555	CH8-1.4	ø1.4	
PL11556	CH8-1.5	ø1.5	71.00
PL11517	CH8-1.6	ø1.6	
PL11568	CH8-1.7	ø1.7	95.00
PL11569	CH8-1.8	ø1.8	
91019	CH8-1.9	ø1.9	
PL11574	CH8-2.0	ø2.0	71.00
91021	CH8-2.1	ø2.1	
PL11532	CH8-2.2	ø2.2	95.00
91023	CH8-2.3	ø2.3	
PL11521	CH8-2.35	ø2.35	
PL11522	CH8-2.4	ø2.4	
PL11523	CH8-2.5	ø2.5	71.00
PL11525	CH8-2.6	ø2.6	
91027	CH8-2.7	ø2.7	95.00
PL11578	CH8-2.8	ø2.8	
91029	CH8-2.9	ø2.9	
PL11588	CH8-3.0	ø3.0	59.00
PL10637	CH8-3.175	ø1/8"	

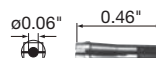
CH16 Group



Fit to _____
BMS-4020 · BMS-4020RA
BMS-4040 · BMS-4040RA

CAT. No.	Model	Inside Diameter d	Price
93130	CH16-3.0	ø3.0	217.00
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	

CH20-16



Fit to _____
PLANET 2000

CAT. No.	Model	Inside Diameter d	Price
PL10641	CH20-16	ø1/16"	37.00

■ indicates Hand Grinder use
■ indicates Machine Spindle use

1
EmaxEVO
ESPERT
ROTUS
ECOMO
IMPULSE
PRESTO II
SHEENUS neo
SONIC CUTTER

2
iSpeed 2
E2530
E2550
E3000 - One Piece
E3000 - Modular
ø1.18"
ø1.0"
ø0.98"
ø0.897"
E3200 - Modular
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
HES510
HES810
HTS
HPS

5
AIR LINE KIT

6
PARTS

7
TECHNICAL DATA

8
APPLICATION EXAMPLES

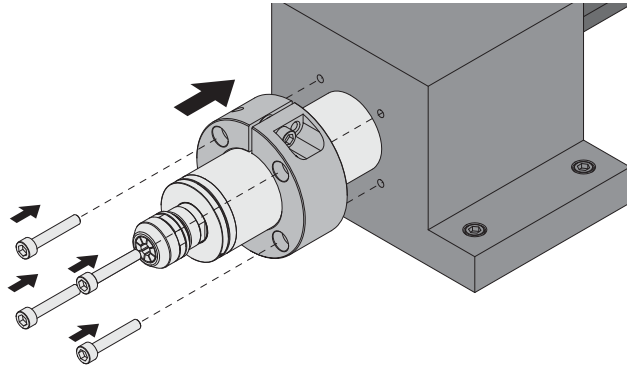
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< PARTS > GRIP RING

AMERICAN ROTARY TOOLS CO.

www.artcotools.com

GRIP RING

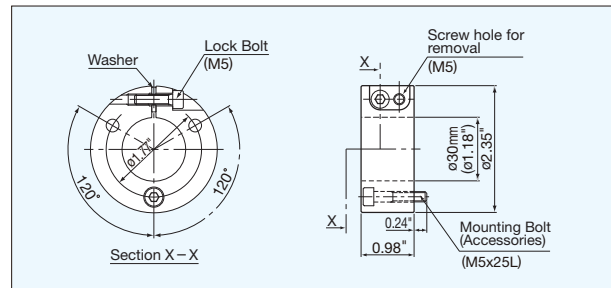
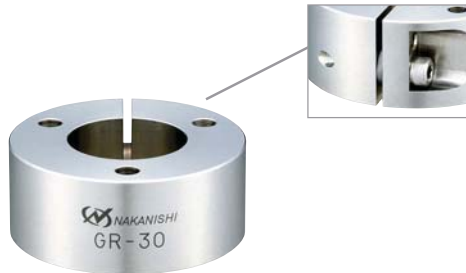


- The Grip Ring is an adjustable position split type flange for 40mm and 30mm spindles.
- The Grip Ring can easily mounted or removed from any CNC machine or specialty machine tool block or tool post.
- Eliminates the chance of over tightening and damaging the spindle in the sleeve during installation.

⚠ Caution

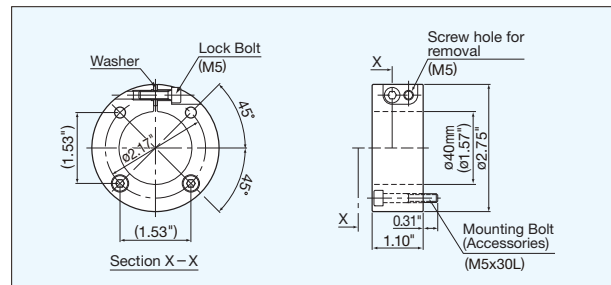
- Do not remove the Lock Bolt. If the Lock Bolt is removed, the Washer inside may move. Once the Washer is moved, it may make it impossible to attach the Lock Bolt.
- Do not remove the spindle while the Grip Ring is attached to the machines' holder. This may cause deformation and / or damage to the Grip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

CAT. No. 1885 GRIP RING GR-30



CAT. No.	Model	Standard Equipment - Accessories	Price
1885	GR-30	• Mounting Bolt (M5x25) : 3 pcs.	167.00

CAT. No. 1886 GRIP RING GR-40



CAT. No.	Model	Standard Equipment - Accessories	Price
1886	GR-40	• Mounting Bolt (M5x30) : 4 pcs.	200.00