

# NAKANISHI SPINDLE E2000

E2000

Specifications and design are subject to change without notice.



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NAKANISHI INC. 2018





PR-K333E Ver.5 '18.11.03. ©

Nature of Tochigi, Japan  
Mt.Nasu in Summer


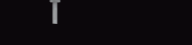



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Controller

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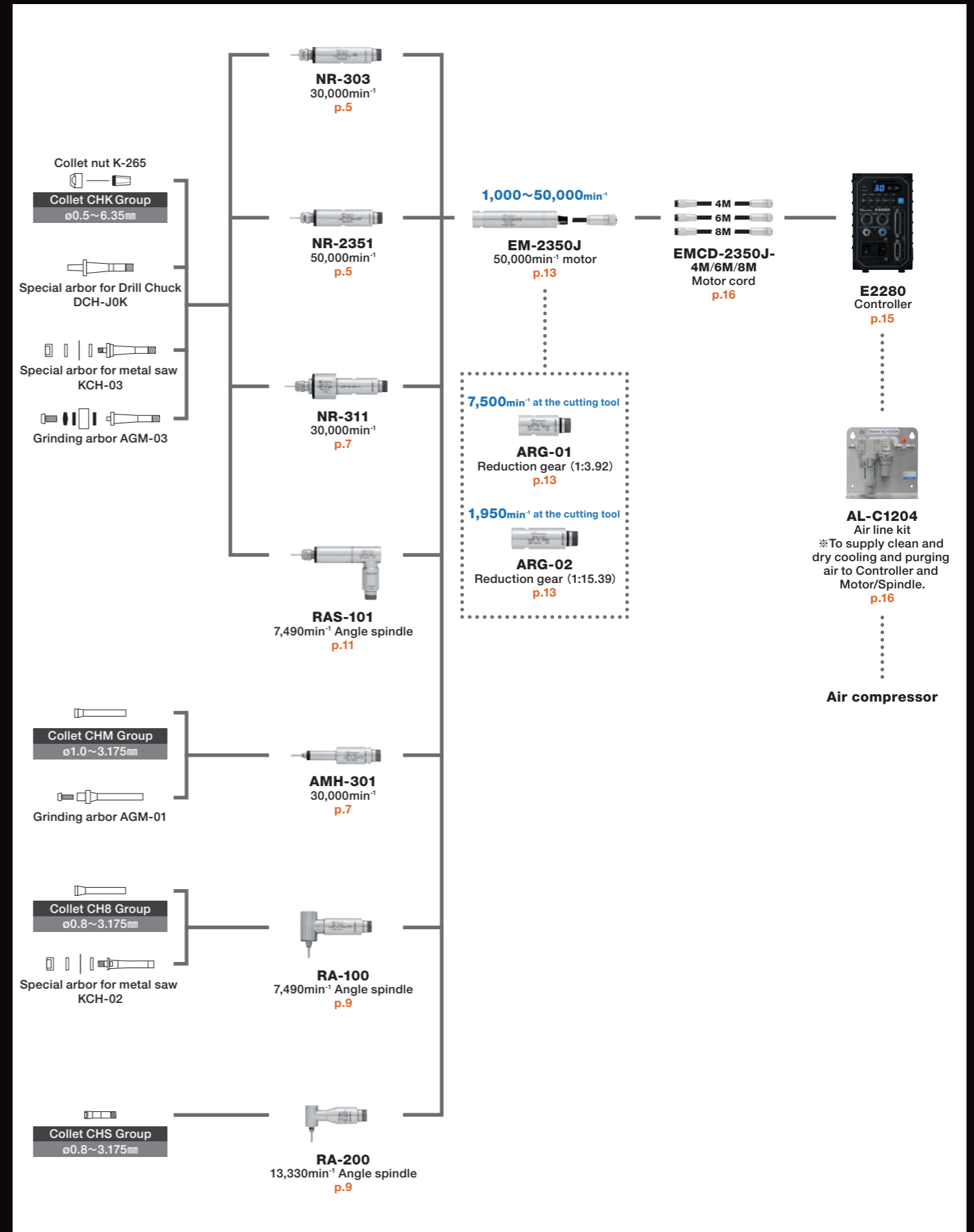
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# System Chart

## [E2000]

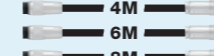


Spindle  
GuideCHK  
p.17

NR-303



NR-2351

EM-2350J  
p.13EMCD-2350J  
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E2000 SERIES

Shown In Actual Size

## Straight type spindle

## NR-303

O.D.  $\varnothing$ 22.8mm

## Specifications

Order by Code No.

## NR-303

Code No. **1830**Model **NR-303**

O.D.	Max. rpm	Spindle runout	Collet	Weight
$\varnothing$ 22.8mm	30,000min <sup>-1</sup>	Within 2 $\mu$ m	CHK group ( $\varnothing$ 0.5 ~ $\varnothing$ 6.35mm)	215g
Standard Accessories	Collet : $\varnothing$ 3.0mm (CHK-3.0) / Collet nut (K-265) Spanner (12 $\times$ 14) : 2pcs·(20 $\times$ 24) : 1pc			
Options	Collet (CHK group) : $\varnothing$ 0.5~ $\varnothing$ 6.35mm <b>p.17</b> Metal Saw Axis (KCH-03) : For $\varnothing$ 6.0 (I.D.) $\times$ $\varnothing$ 30mm (O.D.) Grindstone Axis (AGM-03) : For grinding wheel with I.D. of $\varnothing$ 5.0mm			

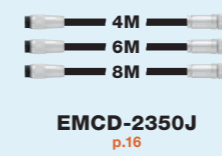
## NR-2351

O.D.  $\varnothing$ 22.8mm

## NR-2351

Code No. **8220**Model **NR-2351**

O.D.	Max. rpm	Spindle runout	Collet	Weight
$\varnothing$ 22.8mm	50,000min <sup>-1</sup>	Within 1 $\mu$ m	CHK group ( $\varnothing$ 0.5 ~ $\varnothing$ 6.35mm)	215g
Standard Accessories	Collet : $\varnothing$ 3.0mm (CHK-3.0) / Collet nut (K-265) Spanner (12 $\times$ 14) : 2pcs·(20 $\times$ 24) : 1pc			
Options	Collet (CHK group) : $\varnothing$ 0.5~ $\varnothing$ 6.35mm <b>p.17</b> Metal Saw Axis (KCH-03) : For $\varnothing$ 6.0 (I.D.) $\times$ $\varnothing$ 30mm (O.D.) Grindstone Axis (AGM-03) : For grinding wheel with I.D. of $\varnothing$ 5.0mm			

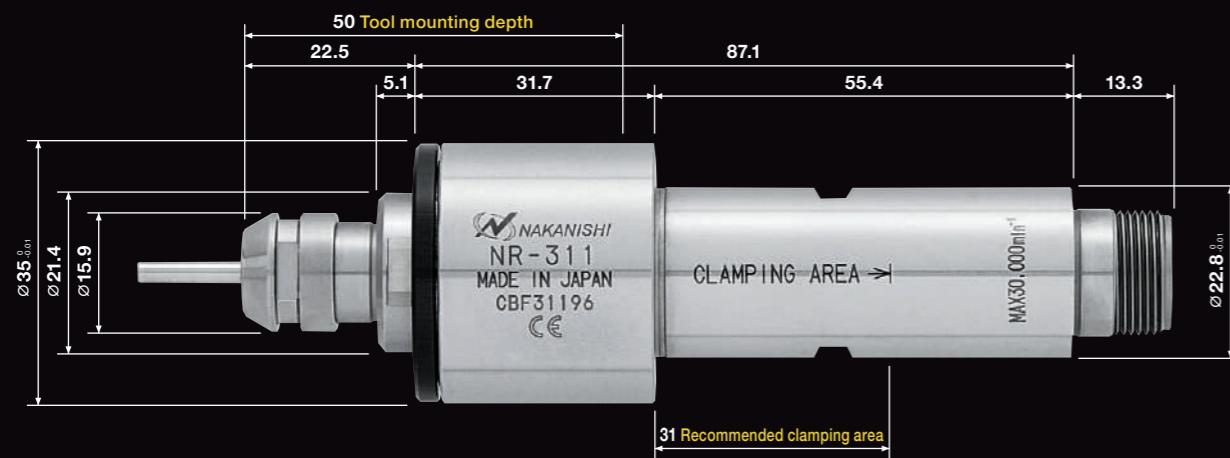
Spindle  
Guide

E2000 SERIES

Shown In Actual Size

## Straight type spindle

NR-311

O.D.  $\phi$ 22.8mm

## Specifications

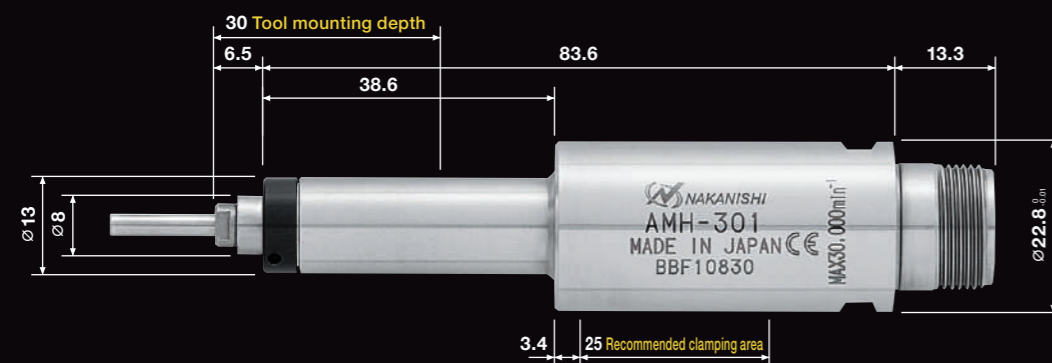
Order by Code No.

NR-311

Code No. **2511** Model **NR-311**

O.D.	Max. rpm	Spindle runout	Collet	Weight
$\phi$ 22.8mm	30,000min <sup>-1</sup>	Within 2 $\mu$ m	CHK group ( $\phi$ 0.5 ~ $\phi$ 6.35mm)	370g
Standard Accessories	Collet : $\phi$ 3.0mm (CHK-3.0) / Collet nut (K-265) Spanner (12 $\times$ 14) · (20 $\times$ 24) : 1pc each			
Options	Collet (CHK group) : $\phi$ 0.5~ $\phi$ 6.35mm <b>p.17</b> Special arbor for metal saw (KCH-03) : $\phi$ 30mm (O.D.) / Grindstone Flange (NGF2-19) : $\phi$ 19.05 (I.D.) $\times$ $\phi$ 40 (O.D.) $\times$ 7mm (W)			

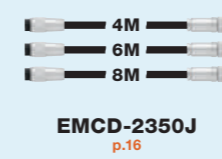
AMH-301

O.D.  $\phi$ 22.8mm

AMH-301

Code No. **1074** Model **AMH-301**

O.D.	Max. rpm	Collet	Weight
$\phi$ 22.8mm	30,000min <sup>-1</sup>	CHM group ( $\phi$ 1.0 ~ $\phi$ 3.175mm)	171g
Standard Accessories	Collet : $\phi$ 3.0mm (CHM-3.0) Spanner (7 $\times$ 5.1) · (6 $\times$ 4.5) · (20 $\times$ 24) : 1pc each		
Options	Collet (CHM group) : $\phi$ 1.0~ $\phi$ 3.175mm <b>p.17</b> Grinding arbor (AGM-01) : for grindstone I.D. $\phi$ 5.0mm		

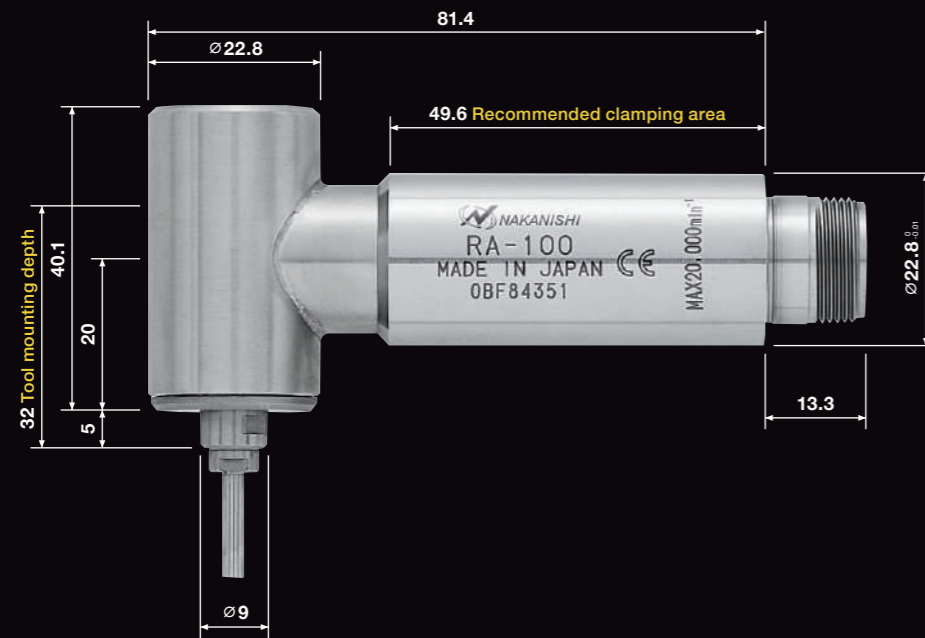
Spindle  
Guide

E2000 SERIES

Shown In Actual Size

## Angle type spindle

## RA-100



## Specifications

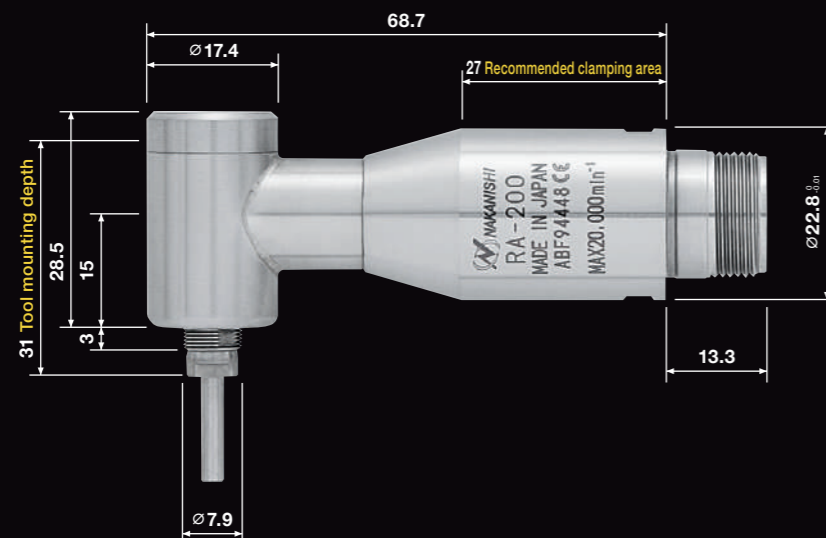
Order by Code No.

## RA-100

Code No. **1024** Model **RA-100**

O.D.	Max. speed at the cutting tool	Reduction ratio	Max. Allowable Motor Speed for The Spindle	Collet	Weight
ø22.8mm	<b>7,490</b> min <sup>-1</sup>	$\frac{1}{2.67}$	<b>20,000</b> min <sup>-1</sup>	<b>CH8</b> group (ø0.8 ~ ø3.175mm)	<b>271g</b>
Standard Accessories	Collet : ø3.0mm (CH8-3.0) Spanner (7×5.5) · (8×5) · (20×24) : 1pc each				
Options	Collet (CH8 group) : ø0.8~ø3.175mm <b>p.17</b> Special arbor for metal saw (KCH-02) : ø6 (I.D.) ×ø30 (O.D.)				

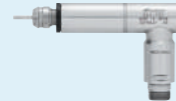
## RA-200



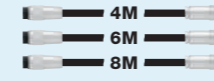
## RA-200

Code No. **1075** Model **RA-200**

O.D.	Max. speed at the cutting tool	Reduction ratio	Max. Allowable Motor Speed for The Spindle	Collet	Weight
ø22.8mm	<b>13,330</b> min <sup>-1</sup>	$\frac{1}{1.5}$	<b>20,000</b> min <sup>-1</sup>	<b>CHS</b> group (ø0.8 ~ ø3.175mm)	<b>165g</b>
Standard Accessories	Collet : ø3.0mm (CHS-3.0) Spanner (7×5.1) · (8×5) · (20×24) : 1pc each				
Options	Collet (CHS group) : ø0.8~ø3.175mm <b>p.17</b>				

Spindle  
GuideCHK  
p.17

RAS-101

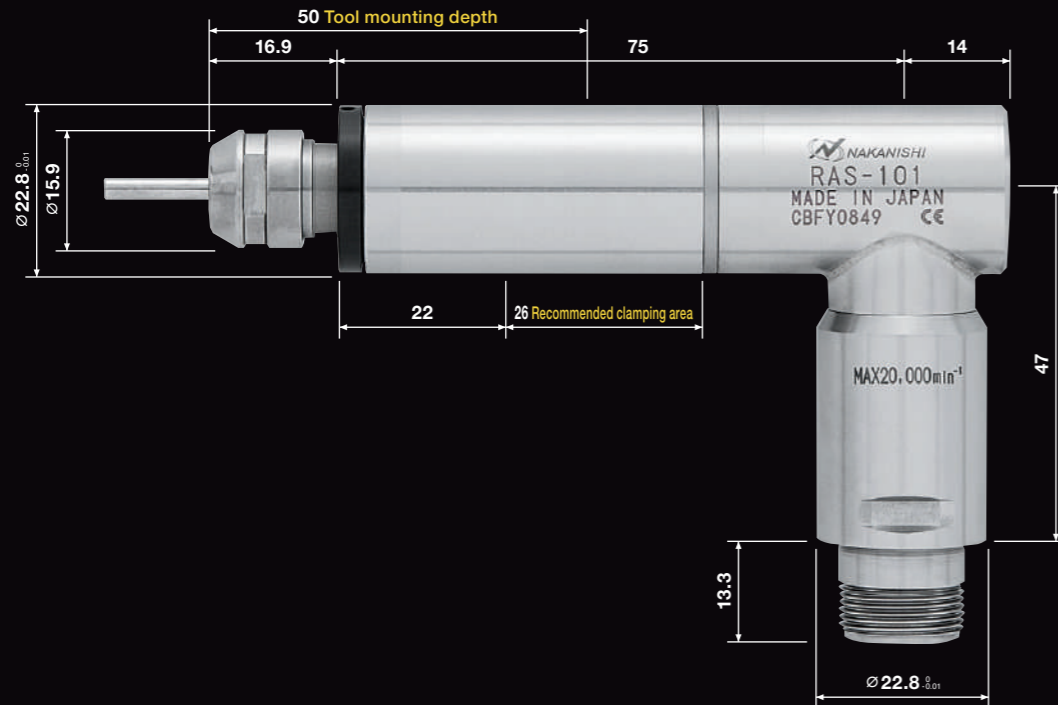
EM-2350J  
p.13EMCD-2350J  
p.16E2280  
p.15AL-C1204  
p.16

E2000 SERIES

Shown In Actual Size

## Angle type spindle

## RAS-101

O.D.  $\varnothing$ 22.8mm

## Specifications

Order by Code No.

RAS-101



Code No.

1094

Model

RAS-101

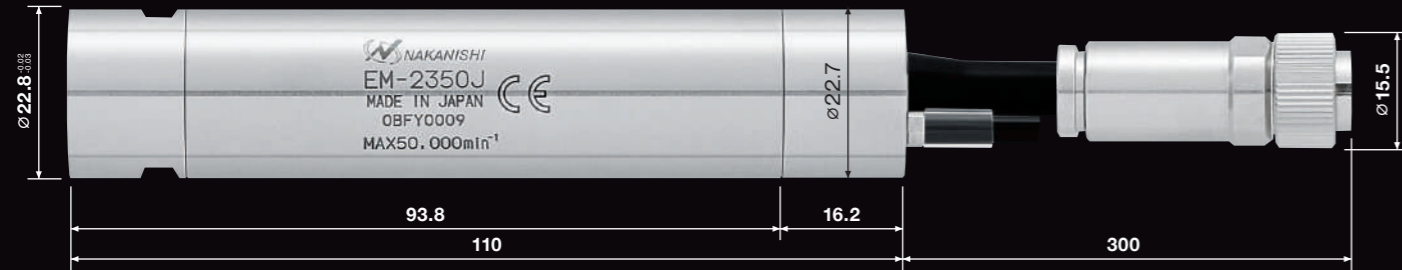
O.D.	Max. speed at the cutting tool	Reduction ratio	Max. Allowable Motor Speed for The Spindle	Spindle runout	Collet	Weight
$\varnothing$ 22.8mm	7,490min <sup>-1</sup>	$\frac{1}{2.67}$	20,000min <sup>-1</sup>	Within 2 $\mu$ m	CHK group ( $\varnothing$ 0.5 ~ $\varnothing$ 6.35mm)	325g
Standard Accessories	Collet : $\varnothing$ 3.0mm (CHK-3.0) / Collet nut (K-265) Spanner (12 $\times$ 14) : 2pcs · (20 $\times$ 24) : 1pc					
Options	Collet (CHK group) : $\varnothing$ 0.5~ $\varnothing$ 6.35mm p.17					



# Motor / Reduction gear

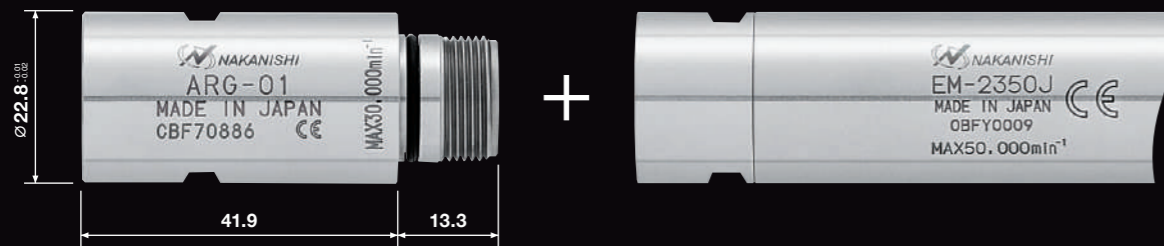
## EM-2350J

Motor

O.D.  $\varnothing$ 22.8mm

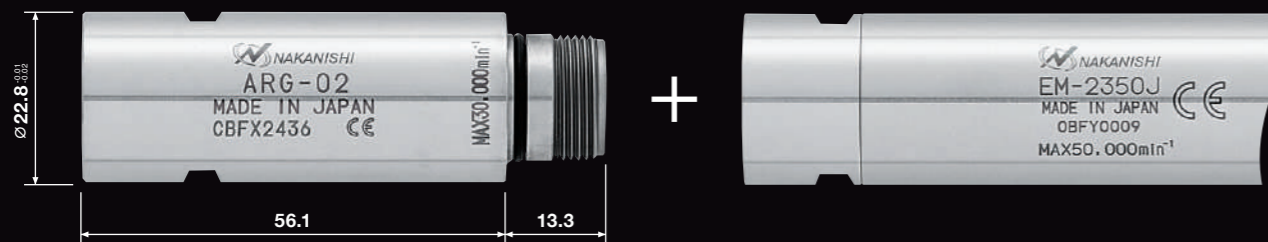
## ARG-01

Reduction gear (1:3.92)

O.D.  $\varnothing$ 22.8mm

## ARG-02

Reduction gear (1:15.39)

O.D.  $\varnothing$ 22.8mm

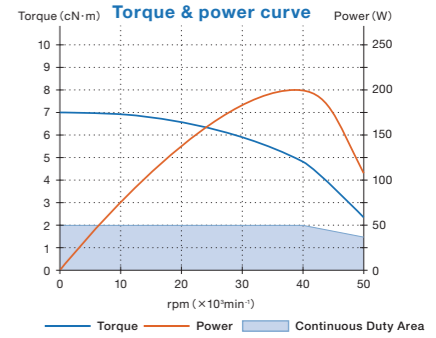
# Specifications

Order by Code No.

## EM-2350J

Code No. **7721** Model **EM-2350J**

O.D.	Speed Range	Max. power	Weight
$\varnothing$ 22.8mm	1,000~50,000min <sup>-1</sup>	200w	260g (Motor cord is included.)
Standard Accessories	Spanner (20×24) : 1pc		
Options	Motor cord : Length 3.7m, 5.7m, 7.7m		



## ARG-01

Code No. **1022** Model **ARG-01**

O.D.	Max. speed at the cutting tool	Reduction ratio	Max. rpm	Weight
$\varnothing$ 22.8mm	7,650min <sup>-1</sup>	$\frac{1}{3.92}$	30,000min <sup>-1</sup>	108g

## ARG-02

Code No. **1023** Model **ARG-02**

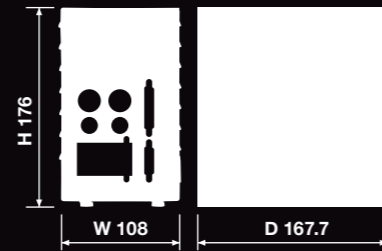
O.D.	Max. speed at the cutting tool	Reduction ratio	Max. rpm	Weight
$\varnothing$ 22.8mm	1,950min <sup>-1</sup>	$\frac{1}{15.39}$	30,000min <sup>-1</sup>	148g

# E2280 Controller



## E2280 Controller

Code No. **7720**



### Equipped with selector

- Up to 2 motors to control  
※not simultaneously
- Providing individual speed control of each motor

### External Input / Output Control Signal Operation

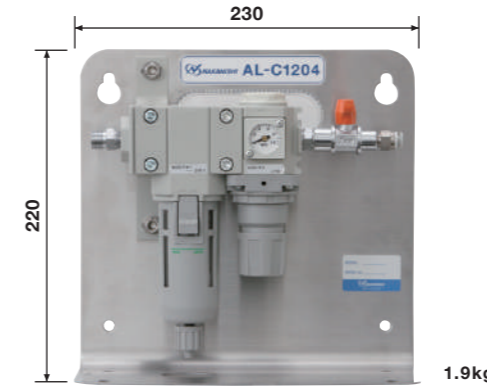
- External Input  
Motor Rotating / Stopped, Error Released, Rotating Direction, Motor Speed Setting and etc.
- External Monitor  
Motor Current, Error, Warning, Rotating pulse and etc.
- Parameter Setting  
Maximum motor speed setting, Fix the motor speed  
※For more information, please refer to the operation manual on our website.

Speed Range		Input Voltage	Max. power
1,000~50,000min <sup>-1</sup>		AC100~240v Without plug Multiple output power	200w
Power consumption	Air consumption		Weight
AC1.4A	1motor : 30Nℓ/min (0.25MPa) / 2motors : 63Nℓ/min (0.30MPa)		2.2kg
Standard Accessories			
Power cord : 3m / Air hose with filter (K-251 : 2058) : 2m / Power cord hook			
Connector cap (Included) / Connector cover (Included)			
Bracket / Air branching joint / Fuse			
Mounting screw / Reducer			

# Accessories

## AL-C1204

Air line kit



※Recommendation of nominal filtration rating:0.3μm, Pressure range:0.1-1.0Mpa  
Recommendation of air filter:M2000-WS (CKD)

Code No. **4504** Model **AL-C1204**

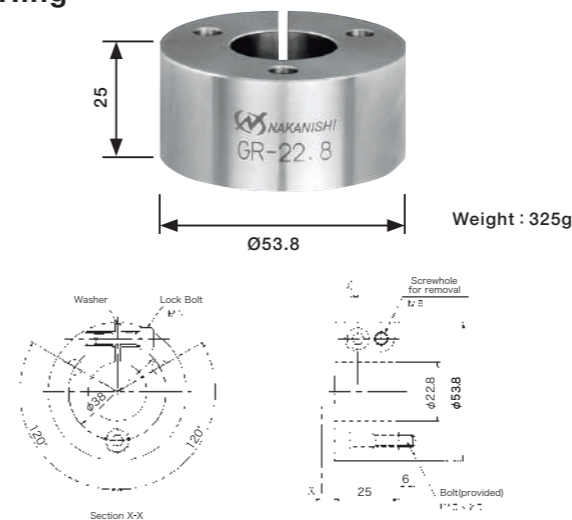
Standard Accessories Hose pipe (K-260) : 2m

Motor cord	Code No.	Model	Length	Standard Accessories	Compatible model
4M	<b>7722</b>	EMCD-2350J-4M	3.7m	Air hose Connector cap (Included)	EM-2350J
6M	<b>7723</b>	EMCD-2350J-6M	5.7m		
8M	<b>7724</b>	EMCD-2350J-8M	7.7m		

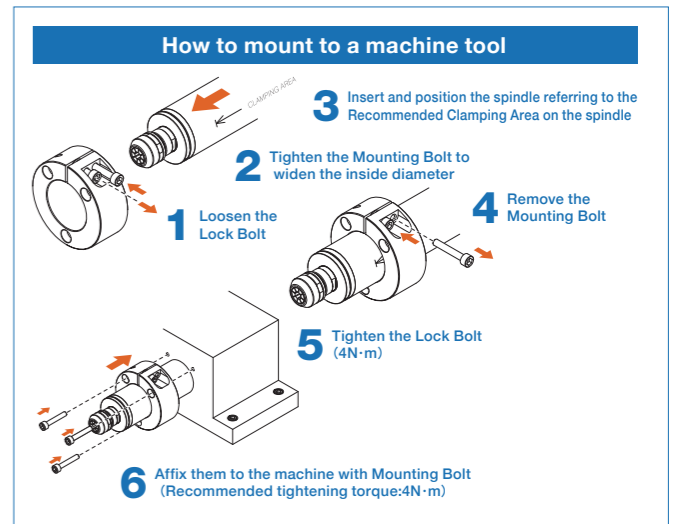
## GR-22.8

Grip Ring

Code No. **1888** Model **GR-22.8**


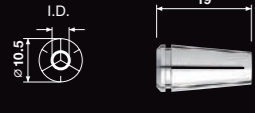

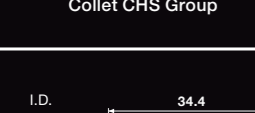







Standard Accessories Mounting Bolt (GR-22.8) M5 × 25 : 3pcs





# Accessories

Collet	Code No.	Model	I.D. / Description / Specifications	Compatible model				
 <p>∅ 1.0 ~ ∅ 6.35</p>	<b>91597</b>	CHK-3.0AA	∅3.0AA*	NR-2351 · NR-303 · NR-311 RAS-101 * High precision type AA (Spindle runout within 2 μm)				
	<b>91598</b>	CHK-3.175AA	∅3.175AA*					
	<b>91599</b>	CHK-4.0AA	∅4.0AA*					
	<b>91600</b>	CHK-6.0AA	∅6.0AA*					
	<b>91601</b>	CHK-6.35AA	∅6.35AA*					
	<b>91592</b>	CHK-2.35	∅2.35					
	<b>91530</b>	CHK-3.0	∅3.0					
	<b>91593</b>	CHK-3.175	∅3.175					
	<b>91540</b>	CHK-4.0	∅4.0					
	<b>91560</b>	CHK-6.0	∅6.0					
	<b>91596</b>	CHK-6.35	∅6.35					
	 <p>∅ 0.5 ~ ∅ 0.9</p> <p>Collet CHK Group</p>	—	CHK-□□		∅0.5, ∅0.6, ∅0.7, ∅0.8, ∅0.9 ∅1.0, ∅1.5, ∅2.0, ∅2.5, ∅3.5, ∅4.5, ∅4.76, ∅5.5  ∅1.1, ∅1.2, ∅1.3, ∅1.4, ∅1.7, ∅1.8, ∅1.9 ∅2.1, ∅2.2, ∅2.3, ∅2.4, ∅2.6, ∅2.7, ∅2.8, ∅2.9 ∅3.1, ∅3.2, ∅3.3, ∅3.4, ∅3.6, ∅3.7, ∅3.8, ∅3.9 ∅4.1, ∅4.2, ∅4.3, ∅4.4, ∅4.6, ∅4.7, ∅4.8, ∅4.9 ∅5.1, ∅5.2, ∅5.3, ∅5.4, ∅5.6, ∅5.7, ∅5.8, ∅5.9  ∅1.6, ∅5.0 ∅2.35	AMH-301		
<b>90992</b>		CHM-2.35	∅2.35					
<b>90930</b>		CHM-3.0	∅3.0					
<b>90993</b>		CHM-3.175	∅3.175					
<b>90916</b>		CHM-1.6	∅1.6					
—		CHM-□□	∅1.0, ∅2.0					
 <p>Collet CHM Group</p>		<b>90592</b>	CHS-2.35	∅2.35	RA-200			
		<b>90530</b>	CHS-3.0	∅3.0				
		<b>90593</b>	CHS-3.175	∅3.175				
		<b>90516</b>	CHS-1.6	∅1.6				
		—	CHS-□□	∅0.8, ∅0.9 ∅1.0, ∅2.0, ∅2.5				
		 <p>Collet CHS Group</p>	<b>91092</b>	CH8-2.35			∅2.35	RA-100
	<b>91030</b>		CH8-3.0	∅3.0				
	<b>91093</b>		CH8-3.175	∅3.175				
	—		CH8-□□	∅0.8, ∅0.9 ∅1.0, ∅1.5, ∅2.0, ∅2.5 ∅1.1, ∅1.2, ∅1.3, ∅1.4, ∅1.6, ∅1.7, ∅1.8, ∅1.9, ∅2.1, ∅2.2, ∅2.3, ∅2.4, ∅2.6, ∅2.7, ∅2.8, ∅2.9				
	 <p>Collet CH8 group</p>		<b>2129</b>	K-265		Collet nut for CHK collet	NR-2351 · NR-303 · NR-311 RAS-101	

Special arbor · Grinding arbor	Code No.	Model	Description	Compatible model	
 <p>56</p>	<b>2132</b>	DCH-J0K	Special arbor for Drill Chuck For drill chuck Jacob's taper No.0 Spindle runout : within 0.05mm	NR-2351 · NR-303 · NR-311 RAS-101	
	<b>2146</b>	KCH-02 (5.0)	∅5.0 (I.D.)	Special arbor for metal saw ∅d (I.D.) x ∅30mm (O.D.) and under Spindle runout : within 0.02mm	RA-100
<b>1077</b>	KCH-02 (6.0)	∅6.0 (I.D.)			
<b>2147</b>	KCH-02 (8.0)	∅8.0 (I.D.)			
 <p>54.5</p>	<b>2148</b>	KCH-03 (5.0)	∅5.0 (I.D.)	Special arbor for metal saw ∅d (I.D.) x ∅30mm (O.D.) and under Spindle runout : within 0.02mm	NR-2351 · NR-303 · NR-311 RAS-101
	<b>2130</b>	KCH-03 (6.0)	∅6.0 (I.D.)		
	<b>2149</b>	KCH-03 (8.0)	∅8.0 (I.D.)		
 <p>40.5</p>	<b>1029</b>	AGM-01	Grinding arbor Spindle runout : within 0.02mm for grindstone I.D. ∅5.0mm		
	 <p>48</p>	<b>2131</b>	AGM-03	Grinding arbor Spindle runout : within 0.02mm for grindstone I.D. ∅5.0mm	NR-2351 · NR-303 · RAS-101

\* For right hand (cw) rotation only.

# NAKANISHI Solutions LINE UP

## Electric Motors & Spindles

Brushless Motors & Spindles



Application for CNC lathes / Special purpose machines

Application for machining centers and milling machines

**E4000 SERIES**  
1,000 ~ 40,000 min<sup>-1</sup> Max. 1,200W  
[ ∅40mm ]



- World's highest power in this class
- Max. power: 1,200W, Max. torque: 1.0N·m

**E3000 SERIES**  
1,000 ~ 80,000 min<sup>-1</sup> Max. 350W  
[ ∅30/25/20mm ]



- The largest product lines for various processing
- Space-saving solution for small CNC lathe

**HES SERIES**  
Max. 80,000 min<sup>-1</sup>  
[ For small diameter endmills and drills only ]



- The most cost effective solution to add high-speed machining capability
- 80,000 min<sup>-1</sup>, 6.0cN·m
- BT, NT, HSK A63, ST shanks are available
- Driven by E3000 Controller

**E2000 SERIES**  
1,000 ~ 50,000 min<sup>-1</sup> Max. 200W  
[ ∅22.8/25mm ]



- Small size spindle allows multi-axis installation in limited space

**iSpeed3 SERIES**  
1,000 ~ 80,000 min<sup>-1</sup> Max. 150W  
[ ∅19.05/20/22/25mm ]



- Super short motor spindle
- High efficiency brushless motor



- [ HES810 ]
- 50,000 min<sup>-1</sup>, 8.75cN·m
- BT, NT, CAT, IT, HSK A, ST shanks are available
- Driven by E3000 Controller

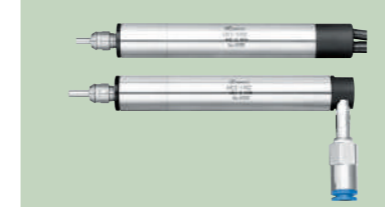
## Air Motors & Spindles



Application for CNC lathes / Special purpose machines

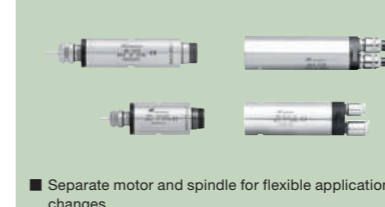
Application for machining centers and milling machines

**AM SERIES One-piece type**  
1,000 ~ 60,000 min<sup>-1</sup> Max. 350W  
[ ∅30/25/20mm ]



- Short body enables the spindle to mount in a limited space on a small NC/CNC lathe or on a special purpose machine

**AM SERIES Modular type**  
5,000 ~ 30,000 min<sup>-1</sup> Max. 125W  
[ ∅22.8mm ]



- Separate motor and spindle for flexible application changes
- Adjustable to various application through changing spindles

**SMS SERIES**  
40,000 min<sup>-1</sup>  
[ For small diameter endmills and drills only ]



- Ceramic bearings for higher rigidity and precision
- Straight and BT, NT shanks are available

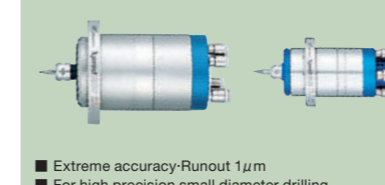
## Air Turbine Spindles



Application for CNC lathes / Special purpose machines

Application for machining centers and milling machines

**Xped SERIES**  
Max. 160,000 min<sup>-1</sup>  
[ ∅65/40mm ]



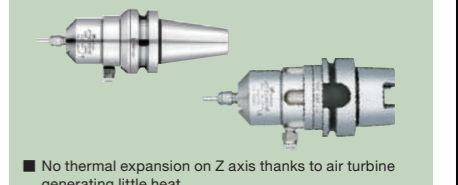
- Extreme accuracy-Runout 1 μm
- For high precision small diameter drilling, internal grinding of ceramics
- Long life of spindle thanks to contactless rotation mechanism

**PLANET SERIES**  
Max. 65,000 min<sup>-1</sup>



- A milling machine turns into a jig grinder
- For high precision internal grinding

**HTS SERIES**  
150,000 min<sup>-1</sup>  
[ For small diameter endmills and drills only ]



- No thermal expansion on Z axis thanks to air turbine generating little heat
- Ultra high speed 150,000 min<sup>-1</sup> with higher rigidity thanks to ceramic bearings
- BT, HSK E and straight (M2040) shanks are available

Electric spindle

Air spindle