

NAKANISHI SPINDLE E2000

00001

Specifications and design are subject to change without notice.



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NAKANISHI INC. 2018

PR-K333E Ver.3 '18.11.03. ㊞

Nature of Tochigi, Japan
Mt.Nasu in Summer

SERIES **E2000**
ULTRA-HIGH-SPEED & SUPER-PRECISION

Baby-E

Smallest model in Nakanishi E series

✔ **Spindle runout within 1 μ m**

- Optimum for high-precision machining
- Longer tool life

✔ **Ceramic Bearing**

- Higher rigidity for heavy cutting
- Longer bearing life





✔ **Brushless motor**

- Maintenance free
- Longer product life thanks to no dust from carbon brushes to the bearing






Index


Straight type motor spindle

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- NR-2351  p.5
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- AMH-301  p.7

Angle type motor spindle

- RA-100  p.9
- RA-200  p.9
- RAS-101  p.11

Motor

- EM-2350J  p.13
1,000~50,000min⁻¹

Reduction gear

- ARG-01  p.13
Reduction gear (1:3.92)
- ARG-02  p.13
Reduction gear (1:15.39)

Motor cord

- EMCD-2350J Motor cord p.16
Motor cord [Length] 4m, 6m, 8m

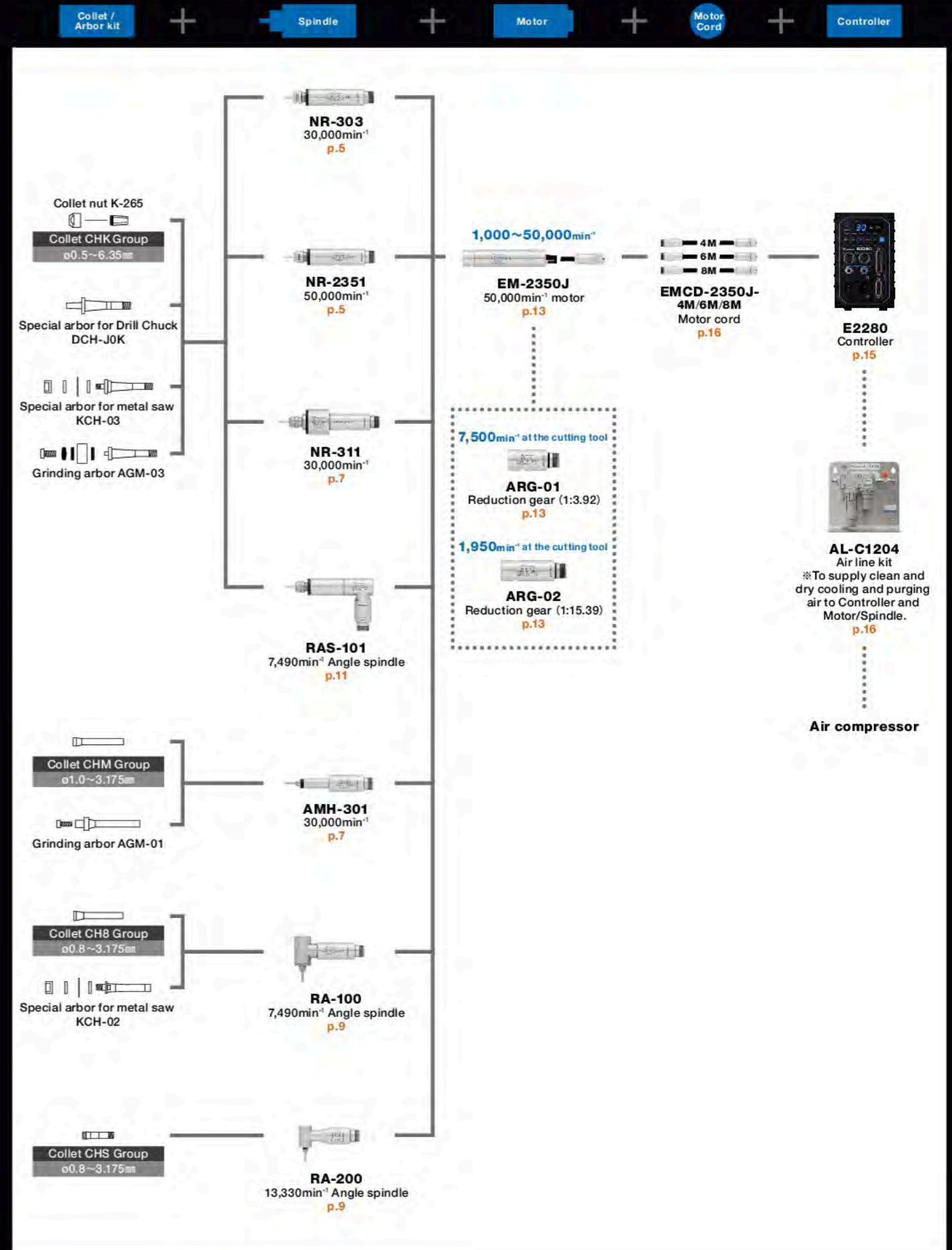
Controller

Accessories

-  **E2280 Controller** p.15
Controller
-  **AL-C1204** p.16
Air line kit
-  **GR-22.8** p.16
Grip ring
-  **CHK / CHM
CHS / CH8** p.17
Collet

System Chart

[E2000]

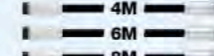


Spindle
GuideCHK
p.17

NR-303



NR-2351

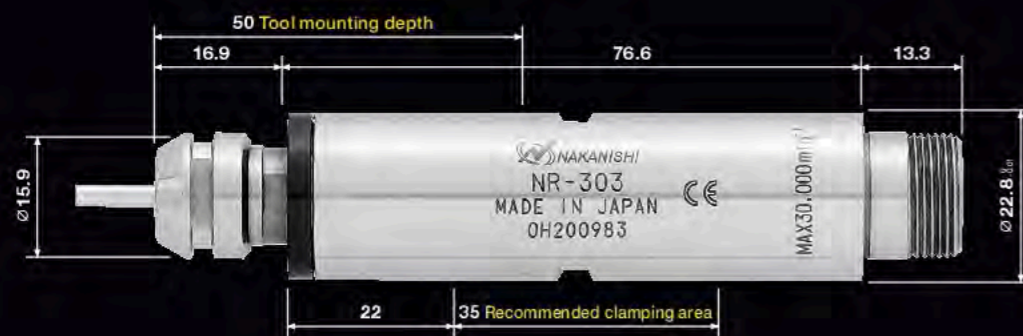
EM-2350J
p.13EMCD-2350J
p.16E2280
p.15AL-C1204
p.16

E2000 SERIES

Shown In Actual Size

Straight type motor spindle

NR-303

O.D. ϕ 22.8mm

Specifications

DXF data DXF files are available on our website

Order by Code No.

NR-303



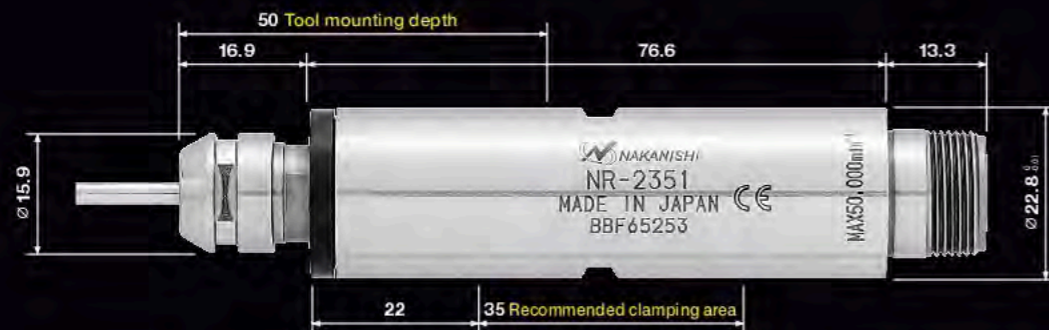
Code No. 1830

Model NR-303

DXF-data

O.D.	Max. rpm	Spindle runout	Collet	Weight
ϕ 22.8mm	30,000min ⁻¹	Within 2 μ m	CHK group (ϕ 0.5 ~ ϕ 6.35mm)	215g
Standard Accessories	Collet : ϕ 3.0mm (CHK-3.0) / Collet nut (K-265) Spanner (12 \times 14) : 2pcs (20 \times 24) : 1pc			
Options	Collet (CHK group) : ϕ 0.5~ ϕ 6.35mm p.17			

NR-2351

O.D. ϕ 22.8mm

NR-2351

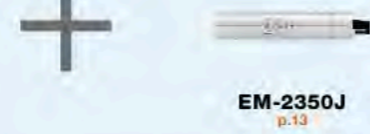
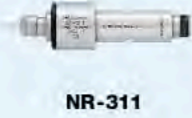
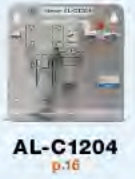
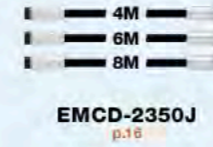


Code No. 8220

Model NR-2351

DXF-data

O.D.	Max. rpm	Spindle runout	Collet	Weight
ϕ 22.8mm	50,000min ⁻¹	Within 1 μ m	CHK group (ϕ 0.5 ~ ϕ 6.35mm)	215g
Standard Accessories	Collet : ϕ 3.0mm (CHK-3.0) / Collet nut (K-265) Spanner (12 \times 14) : 2pcs (20 \times 24) : 1pc			
Options	Collet (CHK group) : ϕ 0.5~ ϕ 6.35mm p.17			

Spindle
GuideEM-2350J
p.13

E2000 SERIES

Shown In Actual Size

Straight type motor spindle

NR-311

O.D. ϕ 22.8mm

Specifications

DXF data DXF files are available on our website

Order by Code No.

NR-311

Code No. 2511

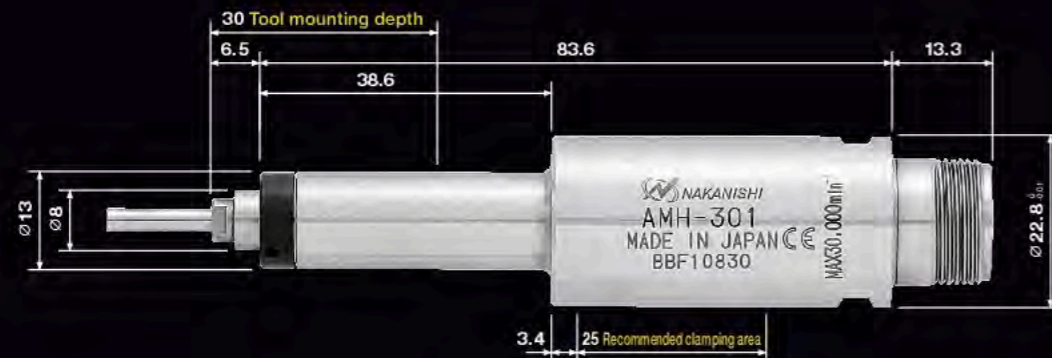
Model NR-311



DXF-data

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

AMH-301

O.D. ϕ 22.8mm

AMH-301

Code No. 1074

Model AMH-301



DXF-data

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

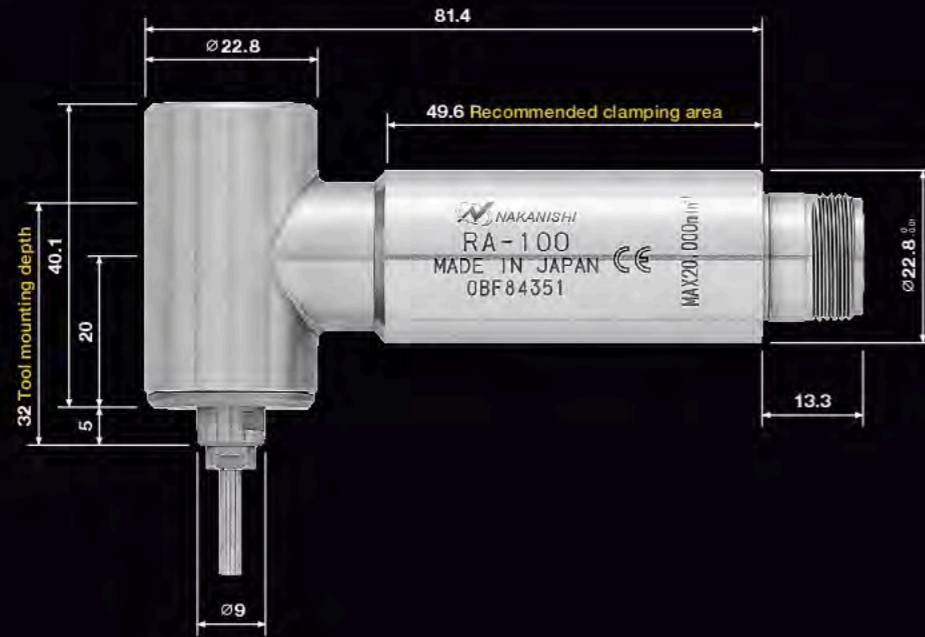
Spindle
Guide

E2000 SERIES

Shown In Actual Size

Angle type motor spindle

RA-100



Specifications

DXF data DXF files are available on our website

Order by Code No.

RA-100

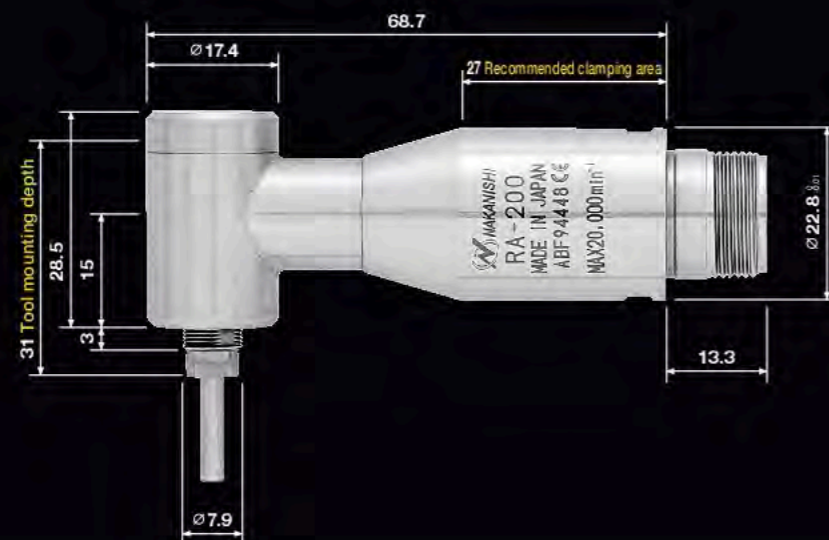
Code No. 1024 Model RA-100



DXF-data

O.D.	Max. speed at the cutting tool	Reduction ratio	Max. Allowable Motor Speed for The Spindle	Collet	Weight
ϕ 22.8mm	7,490min ⁻¹	$\frac{1}{2.67}$	20,000min ⁻¹	CH8 group (ϕ 0.8 ~ ϕ 3.175mm)	271g
Standard Accessories	Collet : ϕ 3.0mm (CH8-3.0) Spanner (7×5.5) · (8×5) · (20×24) : 1pc each				
Options	Collet (CH8 group) : ϕ 0.8~ ϕ 3.175mm p.17 Special arbor for metal saw (KCH-02) : ϕ 6 (I.D.) × ϕ 30 (O.D.)				

RA-200



RA-200

Code No. 1075 Model RA-200

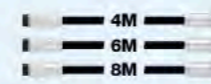


DXF-data

O.D.	Max. speed at the cutting tool	Reduction ratio	Max. Allowable Motor Speed for The Spindle	Collet	Weight
ϕ 22.8mm	13,330min ⁻¹	$\frac{1}{1.5}$	20,000min ⁻¹	CHS group (ϕ 0.8 ~ ϕ 3.175mm)	165g
Standard Accessories	Collet : ϕ 3.0mm (CHS-3.0) Spanner (7×5.1) · (8×5) · (20×24) : 1pc each				
Options	Collet (CHS group) : ϕ 0.8~ ϕ 3.175mm p.17				

Spindle
GuideCHK
p.17

RAS-101

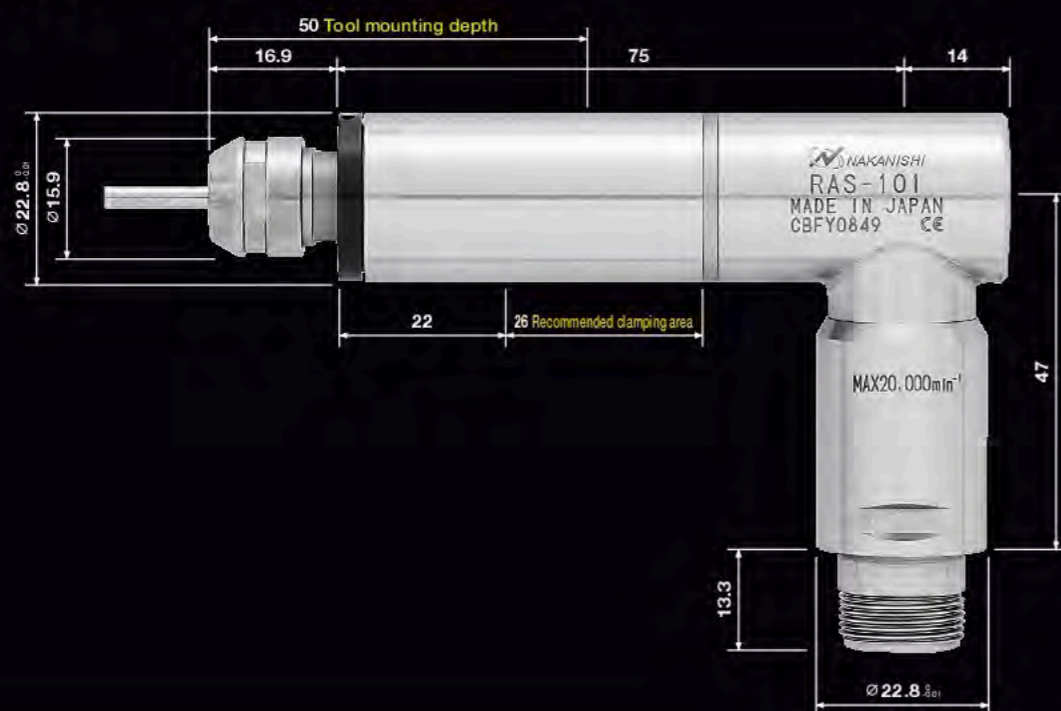
EM-2350J
p.13EMCD-2350J
p.16E2280
p.15AL-C1204
p.16

E2000 SERIES

Shown In Actual Size

Angle type motor spindle

RAS-101

O.D. ϕ 22.8mm

Specifications

DXF data DXF files are available on our website

Order by Code No.

RAS-101



DXF-data

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
ϕ 22.8mm	7,490min ⁻¹	$\frac{1}{2.67}$	20,000min ⁻¹	Within 2 μ m	CHK group (ϕ 0.5 ~ ϕ 6.35mm)	325g
Standard Accessories		Collet : ϕ 3.0mm (CHK-3.0) / Collet nut (K-265) Spanner (12 \times 14) : 2pcs · (20 \times 24) : 1pc				
Options		Collet (CHK group) : ϕ 0.5~ ϕ 6.35mm p.17				

Motor / Reduction gear

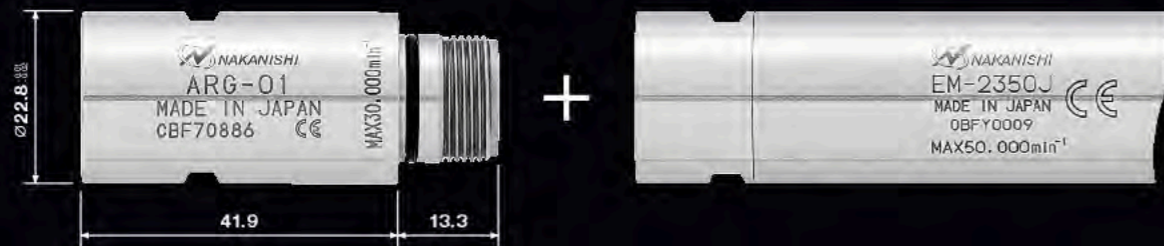
EM-2350J

Motor

O.D. \varnothing 22.8mm

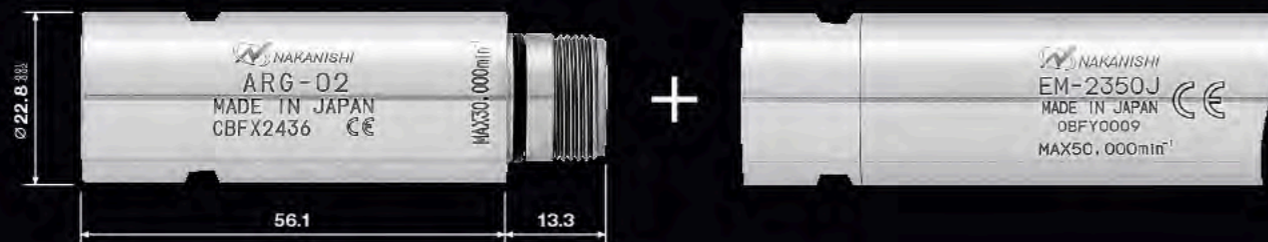
ARG-01

Reduction gear (1:3.92)

O.D. \varnothing 22.8mm

ARG-02

Reduction gear (1:15.39)

O.D. \varnothing 22.8mm

Specifications

DXF data DXF files are available on our website

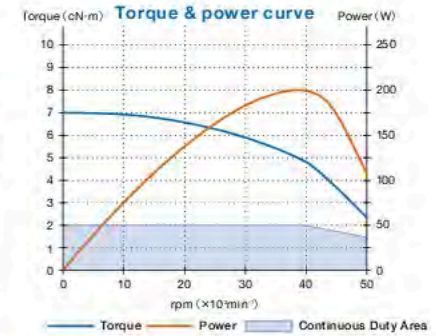
Order by Code No.

EM-2350J

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

DXF-data

O.D.	Speed Range	Max. power	Weight
\varnothing 22.8mm	1,000~50,000min ⁻¹	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**

DXF-data

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

ARG-02

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

DXF-data

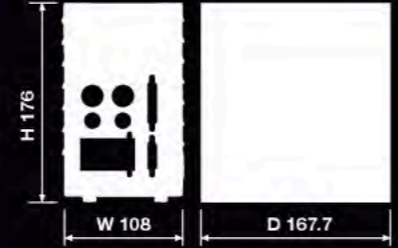
O.D.	Max. speed at the cutting tool	Reduction ratio	Max. rpm	Weight
\varnothing 22.8mm	1,950min ⁻¹	$\frac{1}{15.39}$	30,000min ⁻¹	148g

E2280 Controller



E2280 Controller

Code No. **7720** DXF-data DXF-data
 Bottom Back



Equipped with selector

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

External Input / Output Control Signal Operation

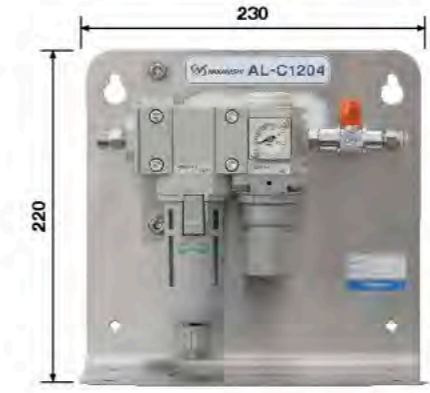
- External Input
 Motor Rotating / Stopped, Error Released, Rotating Direction, Motor Speed Setting and etc.
- External Monitor
 Motor Current, Error, Warning, Rotating pulse and etc.
- Parameter Setting
 Maximum motor speed setting, Fix the motor speed
※For more information, please refer to the operation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

Speed Range		Input Voltage	Max. power
1,000~50,000min ⁻¹		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 / Power cord hook			
Connector cap (Included) / Connector cover (Included)			
Bracket / Air branching joint / Fuse			
Mounting screw / Reducer			

Accessories

AL-C1204

Air line kit



DXF-data

※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

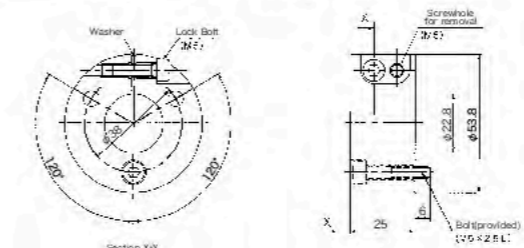
Motor cord	Code No.	Model	Length	Standard Accessories	Compatible model
4M	7722	EMCD-2350J-4M	3.7m	Air hose Connector cap (Included)	EM-2350J
6M	7723	EMCD-2350J-6M	5.7m		
8M	7724	EMCD-2350J-8M	7.7m		

GR-22.8

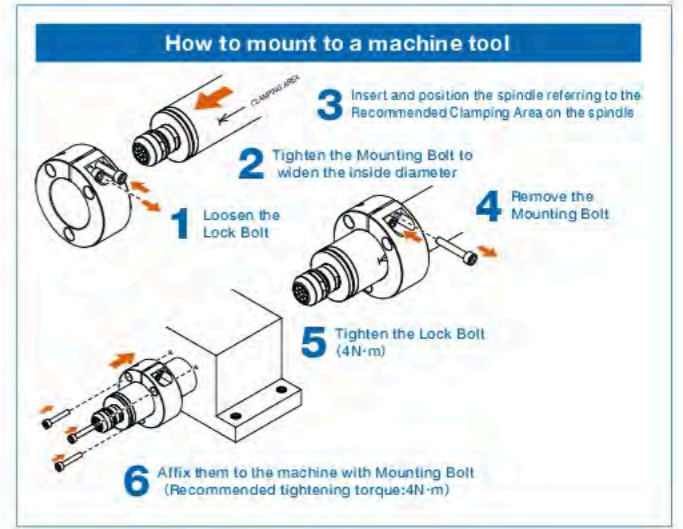
Grip Ring



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>Model : 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</p>	91592	CHK-2.35	ø2.35	NR-2351 · NR-303 · NR-311 RAS-101 ※High precision type AA (Spindle runout within 2μm)
	91530	CHK-3.0	ø3.0	
	91593	CHK-3.175	ø3.175	
	91540	CHK-4.0	ø4.0	
	91560	CHK-6.0	ø6.0	
	91596	CHK-6.35	ø6.35	
	—	CHK-□□	ø0.5,ø0.6,ø0.7,ø0.8,ø0.9 ø1.0,ø1.5,ø2.0,ø2.5,ø3.5,ø4.5,ø4.76,ø5.5 ø1.1,ø1.2,ø1.3,ø1.4,ø1.7,ø1.8,ø1.9 ø2.1,ø2.2,ø2.3,ø2.4,ø2.6,ø2.7,ø2.8,ø2.9 ø3.1,ø3.2,ø3.3,ø3.4,ø3.6,ø3.7,ø3.8,ø3.9 ø4.1,ø4.2,ø4.3,ø4.4,ø4.6,ø4.7,ø4.8,ø4.9 ø5.1,ø5.2,ø5.3,ø5.4,ø5.6,ø5.7,ø5.8,ø5.9	
	91597	CHK-3.0AA	ø1.6,ø5.0 ø3.0AA※	
	91598	CHK-3.175AA	ø3.175AA※	
	91599	CHK-4.0AA	ø4.0AA※	
<p>Model : Except above</p>	91600	CHK-6.0AA	ø6.0AA※	
	91601	CHK-6.35AA	ø6.35AA※	
	90992	CHM-2.35	ø2.35	AMH-301
	90930	CHM-3.0	ø3.0	
	90993	CHM-3.175	ø3.175	
90916	CHM-1.6	ø1.6		
—	CHM-□□	ø1.0,ø2.0		
	90592	CHS-2.35	ø2.35	RA-200
	90530	CHS-3.0	ø3.0	
	90593	CHS-3.175	ø3.175	
	90516	CHS-1.6	ø1.6	
	—	CHS-□□	ø0.8,ø0.9 ø1.0,ø2.0,ø2.5 ø1.1,ø1.2,ø1.3,ø1.4,ø1.5,ø1.7,ø1.8,ø1.9, ø2.1,ø2.2,ø2.3,ø2.4,ø2.6,ø2.7,ø2.8,ø2.9	
	91092	CH8-2.35	ø2.35	RA-100
	91030	CH8-3.0	ø3.0	
	91093	CH8-3.175	ø3.175	
	—	CH8-□□	ø0.8,ø0.9 ø1.0,ø1.5,ø2.0,ø2.5 ø1.1,ø1.2,ø1.3,ø1.4,ø1.6,ø1.7,ø1.8,ø1.9, ø2.1,ø2.2,ø2.3,ø2.4,ø2.6,ø2.7,ø2.8,ø2.9	
	2129	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
	2132	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
	2146	KCH-02 (5.0)	Special arbor for metal saw ød (I.D.) x ø30mm (O.D.) and under Spindle runout : within 0.02mm	RA-100
	1077	KCH-02 (6.0)		
	2147	KCH-02 (8.0)		
	2148	KCH-03 (5.0)		
	2130	KCH-03 (6.0)		
2149	KCH-03 (8.0)	ø8.0 (I.D.)		
	1029	AGM-01	Grinding arbor Spindle runout : within 0.02mm for grindstone I.D. ø5.0mm	AMH-301
	2131	AGM-03	Grinding arbor Spindle runout : within 0.02mm for grindstone I.D. ø5.0mm	NR-2351 · NR-303 · RAS-101

* For right hand (cw) rotation only.

NAKANISHI Solutions LINE UP

Electric Motors & Spindles

Brushless Motors & Spindles

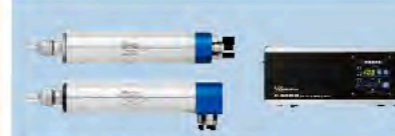


Application for CNC lathes / Special purpose machines

Application for machining centers and milling machines

E4000 SERIES

1,000 ~ 40,000 min⁻¹ Max. 1,200W
[ø40mm]



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

E3000 SERIES

1,000 ~ 80,000 min⁻¹ Max. 350W
[ø30/25/20mm]



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

HES SERIES

Max. 80,000 min⁻¹
[For small diameter endmills and drills only]



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

E2000 SERIES

1,000 ~ 50,000 min⁻¹ Max. 200W
[ø22.8/25mm]



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

iSpeed3 SERIES

1,000 ~ 80,000 min⁻¹ Max. 150W
[ø19.05/20/22/25mm]



- Super short motor spindle
- High efficiency brushless motor



- 50,000 min⁻¹, 8.75cN·m
- BT, NT, CAT, I, 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

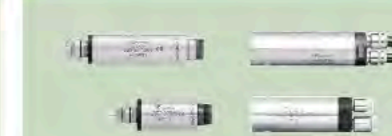
1,000 ~ 60,000 min⁻¹ Max. 350W
[ø30/25/20mm]



- 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

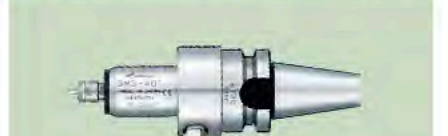
5,000 ~ 30,000 min⁻¹ Max. 125W
[ø22.8mm]



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

SMS SERIES

40,000 min⁻¹
[For small diameter endmills and drills only]



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

Air Turbine Spindles

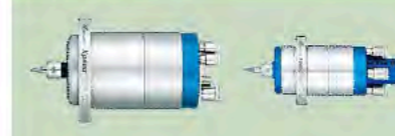


Application for CNC lathes / Special purpose machines

Application for machining centers and milling machines

Xpeed SERIES

Max. 160,000 min⁻¹
[ø85/40mm]



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

PLANET SERIES

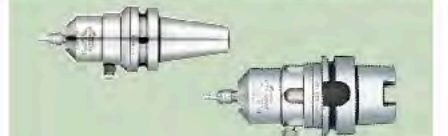
Max. 65,000 min⁻¹



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

HTS SERIES

150,000 min⁻¹
[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⁻¹ with higher rigidity thanks to ceramic bearings
- BT, HSK E and straight (M2040) shanks are available