

E-speed **E2530 Series**

Ultra-high-Speed & Super-Precision



*Please mention "Code Number" upon your order.

• Specifications may be changed without notice.

NAKANISHI INC. www.nakanishi-inc.com

Headquarters | 700 Shimohinata, Kanuma-shi, Tochigi-ken 322-8666, Japan
TEL : +81(0)289-64-3380 FAX : +81(0)289-62-5636

TokyoOffice | 9F TIXTOWER UENO, 4-8-1, Higashiueno, Taito-ku, Tokyo 110-0015, Japan
TEL : +81(0)3-5828-7740 FAX : +81(0)3-5828-0064

Ultra Precision Brushless Motor

- Excellent durability and high rigidity are obtained using a high-speed brushless motor.
- Designed for high speed milling and drilling, etc on CNC lathes and special purpose machines.

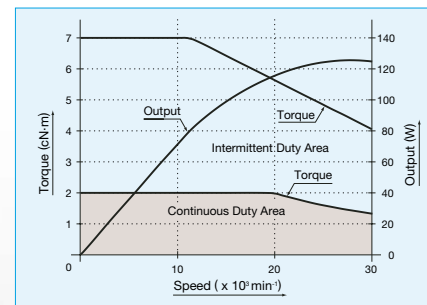
Separate Type Spindle

- Designed for high speed milling and drilling, etc on CNC lathes and special purpose machines.
- Free to connect the spindle to the motor for applications
- Easy to exchange for repairs



Torque Characteristics Graph

- **Output** : Output means that the working capacity by the brushless motor. Output depends on Motor Speed and Torque.
- **Torque** : Maximum Torque means the torque by the combination of the control unit & the brushless motor. Stop the motor when loading the motor over the maximum torque.
- **Continuous Duty Area** : Rating Torque means the torque by the brushless motor continuously. The torque area from the rating power to the maximum power means that the torque by the brushless motor intermittently.



Angle Spindle

(Separate 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

(Separate Type)

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

ELECTRIC SYSTEM Separate Type ø22.8mm

Grindstone Axis AGM-03
Chuck Nut K-265
Collet Chuck CHK Group ø0.5-6.0mm
Axis for Metal Saw KCH-03

Grindstone Flange NGF2-19

Collet Chuck CHM Group ø1.0-3.0mm
Grindstone Axis AGM-01

Collet Chuck CH8 Group ø0.8-3.0mm
Axis for Metal Saw KCH-02

Collet Chuck CHS Group ø0.8-3.0mm

Chuck Nut K-265
Collet Chuck CHK Group ø0.5-6.0mm
Axis for Metal Saw KCH-03
Grindstone Axis AGM-03

Spindle NR-303 (30,000min⁻¹)
Spindle NR-2351 (30,000min⁻¹)
Spindle NR-311 (30,000min⁻¹)
Slim Neck Spindle AMH-301 (30,000min⁻¹)
90° Angle Spindle RA-100 (1/2.67 Reduction) (7,490min⁻¹)
90° Angle Spindle RA-200 (1/1.5 Reduction) (13,330min⁻¹)
90° Angle Spindle RAS-101 (1/2.67 Reduction) (7,490min⁻¹)

Brushless Motor (Cord with Quick Disconnect) EM25-5000-J4 (5,000min⁻¹-30,000min⁻¹)

Speed Reducer ARG-01 (1/3.92 Reduction) (7,650min⁻¹(*1) 30,000min⁻¹(*2))
Speed Reducer ARG-02 (1/15.39 Reduction) (1,940min⁻¹(*1) 30,000min⁻¹(*2))

Control Unit E2530 (115V 230V)

Air Line Kit AL-0201 (*Cooled-air is supplied.)
Compressor

Collet Chuck, Special Axis Refer to P.10

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

*1 : Maximum rotating speed at the cutting tool.
*2 : Maximum allowable motor speed for the spindle.

*Please refer to the concerned product introduction page about the details.

▼ BRUSHLESS MOTOR & SPINDLE (Separate Type)

Straight Spindle

Outside Diameter $\phi 22.8\text{mm}$
Max. $30,000\text{min}^{-1}$
Max. Power 125W

Brushless Motor
EM25-5000-J4 → Refer to P.7

E2530 Control Unit
OPTION → Refer to P.8

Collet Chuck :
Max. $\phi 6.0\text{mm}$

Collet Chuck
CHK-3.0
OPTION → Refer to P.10

*Other collet sizes are available.

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

Torque Characteristics of EM25-5000-J4

ELECTRIC SYSTEM Spindle **NR-303**

O.D.	Allowable Motor Speed	Spindle Runout	Collet Chuck	Weight
$\phi 22.8\text{mm}$	$30,000\text{min}^{-1}$ (Motor Speed)	Within $2\ \mu\text{m}$	$\phi 0.5\sim\phi 6.0\text{mm}$ (CHK Group)	215g

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

< Standard Equipment · Accessories >

- Collet Chuck $\phi 3.0\text{mm}$ (CHK-3.0) • Chuck Nut (K-265)
- Spanner (12 x 14) : 2pcs., (20 x 24) : 1pc.

< Optional >

- Collet Chuck (CHK Group) : $\phi 0.5\sim\phi 6.0\text{mm}$ See Page 10 for details
- Metal Saw Axis (KCH-03) : For $\phi 6.0$ (I.D.) x $\phi 30\text{mm}$ (O.D.)
- Grindstone Axis (AGM-03) : For grinding wheel with I.D. of $\phi 5.0\text{mm}$

ELECTRIC SYSTEM Spindle **NR-2351**

O.D.	Allowable Motor Speed	Spindle Runout	Collet Chuck	Weight
$\phi 22.8\text{mm}$	$30,000\text{min}^{-1}$ (Motor Speed)	Within $1\ \mu\text{m}$	$\phi 0.5\sim\phi 6.0\text{mm}$ (CHK Group)	215g

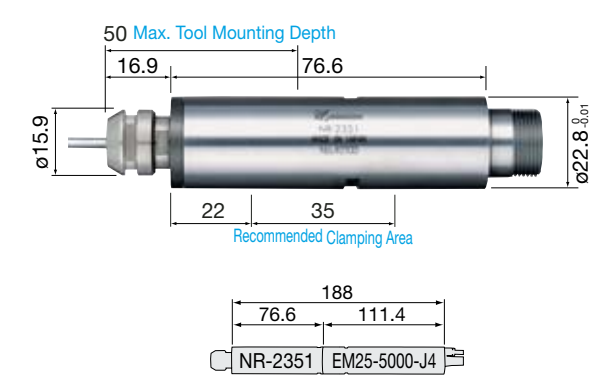
Code No. **8220** Model **NR-2351**

< Standard Equipment · Accessories >

- Collet Chuck $\phi 3.0\text{mm}$ (CHK-3.0) • Chuck Nut (K-265)
- Spanner (12 x 14) : 2pcs., (20 x 24) : 1pc.

< Optional >

- Collet Chuck (CHK Group) : $\phi 0.5\sim\phi 6.0\text{mm}$ See Page 10 for details
- Metal Saw Axis (KCH-03) : For $\phi 6.0$ (I.D.) x $\phi 30\text{mm}$ (O.D.)
- Grindstone Axis (AGM-03) : For grinding wheel with I.D. of $\phi 5.0\text{mm}$



ELECTRIC SYSTEM Spindle **NR-311**

O.D.	Allowable Motor Speed	Spindle Runout	Collet Chuck	Weight
$\phi 22.8\text{mm}$	$30,000\text{min}^{-1}$ (Motor Speed)	Within $2\ \mu\text{m}$	$\phi 0.5\sim\phi 6.0\text{mm}$ (CHK Group)	370g

* Marked specs is changed from NR-310.

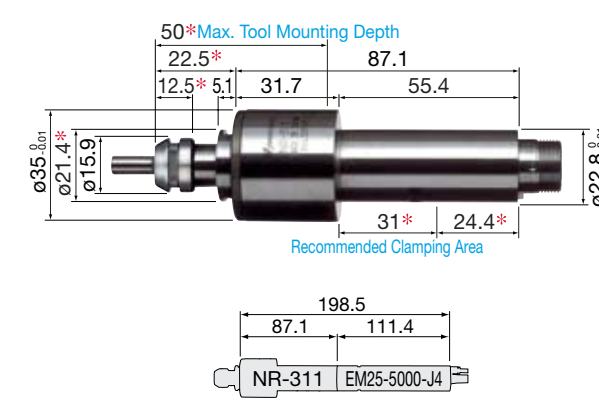
Code No. **2511** Model **NR-311**

< Standard Equipment · Accessories >

- Collet Chuck $\phi 3.0\text{mm}$ (CHK-3.0*) • Chuck Nut (K-265*)
- Spanner (12 x 14) : 2pc., (20 x 24) : 1pc.

< Optional >

- Collet Chuck (CHK Group*) : $\phi 0.5\sim\phi 6.0\text{mm}$ See Page 10 for details
- Metal Saw Axis (KCH-03*) : For $\phi 6.0$ (I.D.) x $\phi 30\text{mm}$ (O.D.)
- Grindstone Flange (NGF2-19*) : $\phi 19.05$ (I.D.) x $\phi 40$ (O.D.) x 7(W) mm



ELECTRIC SYSTEM Spindle **AMH-301**

O.D.	Allowable Motor Speed	Collet Chuck	Weight
$\phi 22.8\text{mm}$	$30,000\text{min}^{-1}$ (Motor Speed)	$\phi 1.0\sim\phi 3.0\text{mm}$ (CHM Group)	171g

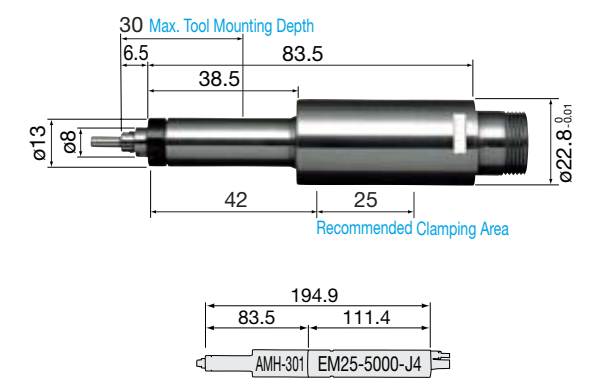
Code No. **1074** Model **AMH-301**

< Standard Equipment · Accessories >

- Collet Chuck $\phi 3.0\text{mm}$ (CHM-3.0)
- Spanner (7 x 5.1), (6 x 4.5), (20 x 24) : 1pc. each

< Optional >

- Collet Chuck (CHM Group) : $\phi 1.0\sim\phi 3.0\text{mm}$ See Page 10 for details
- Grindstone Axis (AGM-01) : For grinding wheel with I.D. of $\phi 5.0\text{mm}$



⚠ When using an angle type spindle or a speed reducer, do not exceed “the maximum motor speed” or “the maximum rotating speed at the reducer” for the spindle and the reducer.

▼ BRUSHLESS MOTOR & SPINDLE (Separate Type)

Angle Spindle

COOLANT CE

Outside Diameter **ø22.8mm**

Max. **7,490min⁻¹** (RA-100)

Max. Power **125W**

Brushless Motor EM25-5000-J4 → Refer to P.7

90° Angle Spindle RA-100

E2530 Control Unit

OPTION → Refer to P.8

Angle Spindle Select Sheet

Model	RA-100	RA-200	RAS-101
Angle Head Size O.D.	ø22.8mm	ø17.4mm	ø22.8mm
Max. Rotating Speed at The Cutting Tool	7,490min ⁻¹	13,330min ⁻¹	7,490min ⁻¹
Using Tools	ø0.8~ø3.0mm	ø0.5~ø6.0mm	ø0.5~ø6.0mm

Collet Chuck : Max. ø3.0mm

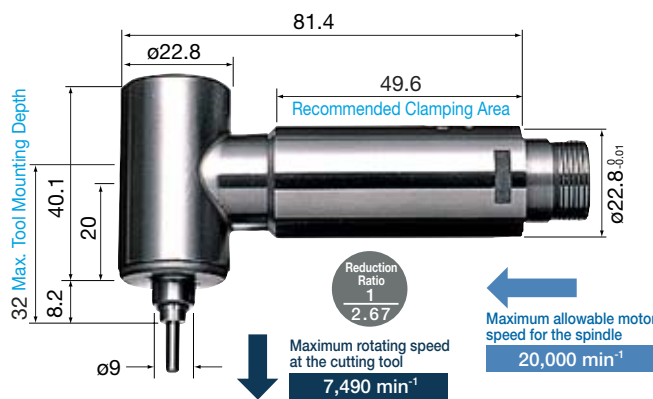
Collet Chuck CH8-3.0

OPTION → Refer to P.10

* Do not exceed the allowable motor speed for the spindle.
* Set the allowable motor speed for the spindle by the Parameter Setting with the E2530 Control Unit.

ELECTRIC SYSTEM	90° Angle Spindle	O.D.	Max. Rotating Speed at The Cutting Tool	Reduction Ratio	Max. Allowable Motor Speed for The Spindle	Collet Chuck	Weight
	RA-100	ø22.8mm	7,490min⁻¹*	1/2.67	20,000min⁻¹ (Allowable Rotating Speed)	ø0.8~ø3.0mm (CH8 Group)	271g

* Maximum rotating speed at the cutting tool for the reduction ratio



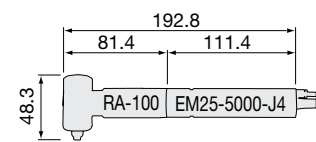
Code No. **1024** Model **RA-100**

< Standard Equipment · Accessories >

- Collet Chuck ø3.0mm (CH8-3.0)
- Spanner (7 x 5.5), (8 x 5), (20 x 24) : 1pc. each

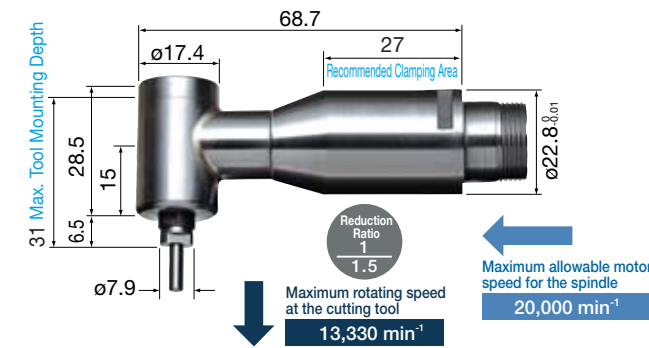
< Optional >

- Collet Chuck (CH8 Group) : ø0.8~ø3.0mm See Page 10 for details
- Metal Saw Axis (KCH-02) : For ø6.0 (I.D.) x ø30mm (O.D.)



ELECTRIC SYSTEM	90° Angle Spindle	O.D.	Max. Rotating Speed at The Cutting Tool	Reduction Ratio	Max. Allowable Motor Speed for The Spindle	Collet Chuck	Weight
	RA-200	ø22.8mm	13,330min⁻¹*	1/1.5	20,000min⁻¹ (Allowable Rotating Speed)	ø0.8~ø3.0mm (CHS Group)	165g

* Maximum rotating speed at the cutting tool for the reduction ratio



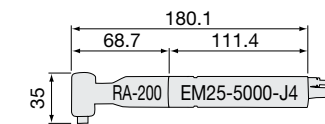
Code No. **1075** Model **RA-200**

< Standard Equipment · Accessories >

- Collet Chuck ø3.0mm (CHS-3.0)
- Spanner (7 x 5.1), (8 x 5), (20 x 24) : 1pc. each

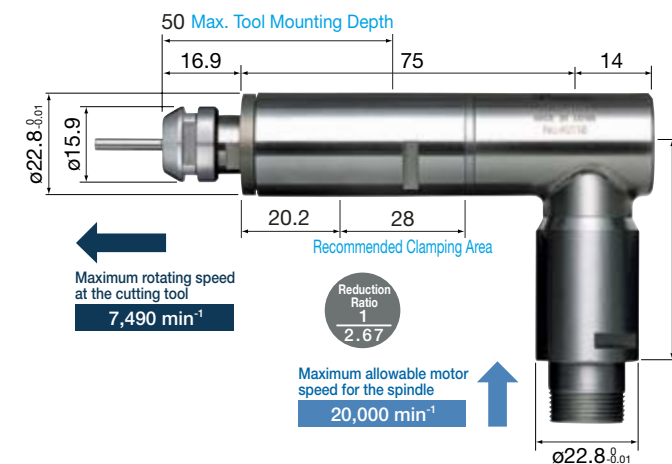
< Optional >

- Collet Chuck (CHS Group) : ø0.8~ø3.0mm See Page 10 for details



ELECTRIC SYSTEM	90° Angle Spindle	O.D.	Max. Rotating Speed at The Cutting Tool	Reduction Ratio	Max. Allowable Motor Speed for The Spindle	Spindle Runout	Collet Chuck	Weight
	RAS-101	ø22.8mm	7,490min⁻¹*	1/2.67	20,000min⁻¹ (Allowable Rotating Speed)	Within 2 μm	ø0.5~ø6.0mm (CHK Group)	325g

* Maximum rotating speed at the cutting tool for the reduction ratio



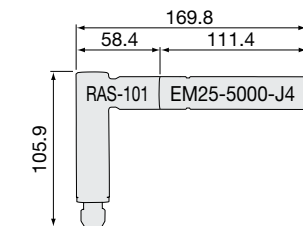
Code No. **1094** Model **RAS-101**

< Standard Equipment · Accessories >

- Collet Chuck ø3.0mm (CHK-3.0) • Chuck Nut (K-265)
- Spanner (12 x 14) : 2pcs., (20 x 24) : 1pc.

< Optional >

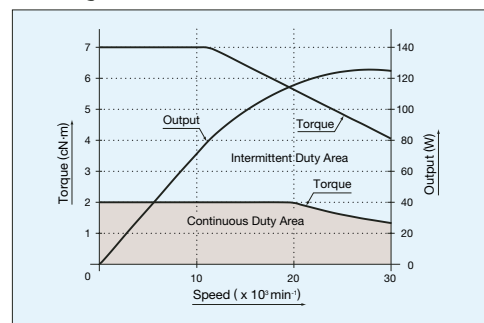
- Collet Chuck (CHK Group) : ø0.5~ø6.0mm See Page 10 for details
- Metal Saw Axis (KCH-03) : For ø6.0 (I.D.) x ø30mm (O.D.)
- Grindstone Axis (AGM-03) : For grinding wheel with I.D. of ø5.0mm



⚠ When using an angle type spindle or a speed reducer, do not exceed “the maximum motor speed” or “the maximum rotating speed at the reducer” for the spindle and the reducer.

ELECTRIC SYSTEM	Brushless Motor (Cord with Quick Disconnect)	O.D.	Max. Power	Motor Speed	Weight
	EM25-5000-J4	ø25mm	125W	5,000~30,000min ⁻¹	250g (w/o Cord)

● Torque Characteristics of EM25-5000-J4



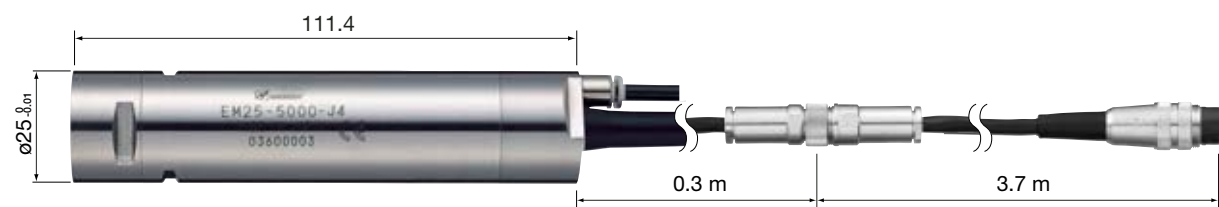
Code No. **8333** Model **EM25-5000-J4**

< Standard Equipment · Accessories >

- Cord with Quick Disconnect • Air Coolant Hose • Reducer
- Spanner (22 x 27) : 1pc.

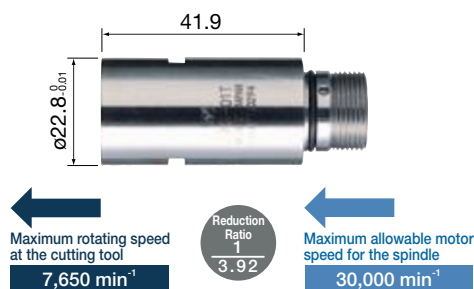
< Optional >

- Cord : Length 4m
- Air Coolant Hose : Length 4m

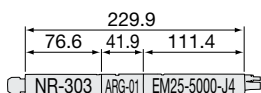


ELECTRIC SYSTEM	Speed Reducer (1/3.92)	O.D.	Max. Rotating Speed at The Cutting Tool	Reduction Ratio	Max. Allowable Motor Speed for The Spindle	Weight
	ARG-01	ø22.8mm	7,650min ⁻¹ *	1/3.92	30,000min ⁻¹ (Allowable Rotating Speed)	108g

* Maximum rotating speed at the cutting tool for the reduction ratio

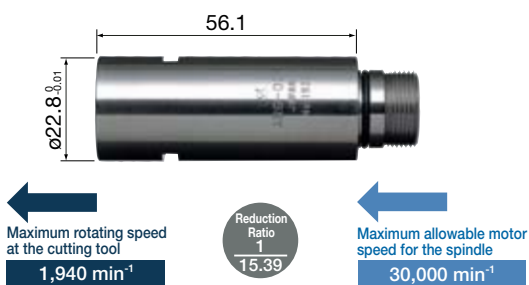


Code No. **1022** Model **ARG-01**

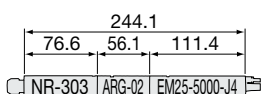


ELECTRIC SYSTEM	Speed Reducer (1/15.39)	O.D.	Max. Rotating Speed at The Cutting Tool	Reduction Ratio	Max. Allowable Motor Speed for The Spindle	Weight
	ARG-02	ø22.8mm	1,940min ⁻¹ *	1/15.39	30,000min ⁻¹ (Allowable Rotating Speed)	148g

* Maximum rotating speed at the cutting tool for the reduction ratio



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



ELECTRIC SYSTEM	E2530 Control Unit	Max. Power	Rating Power Consumption	Motor Speed	Weight
		125W	92W	5,000~30,000min ⁻¹	3.6kg

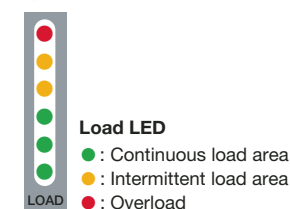
● High-Performance Electric Circuit

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

● Motor Speed Display

Motor speed is displayed precisely and digitally.

● Load Meter



■ Cooled-air is supplied (0.25-0.3MPa)

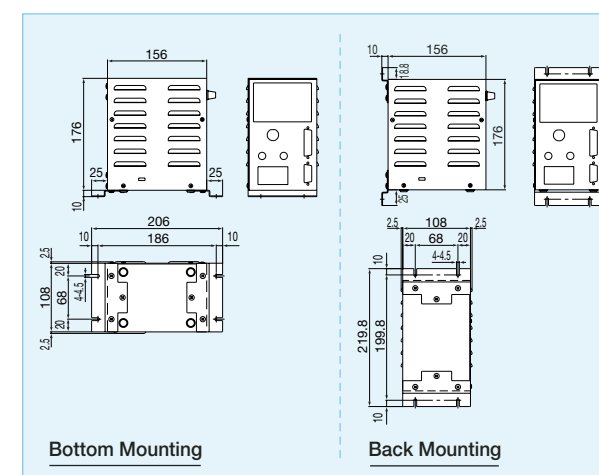
Air Line Kit AL-0201

OPTION → Refer to p9



Plug Type	For 100V (A type)	Code No.	8601	Product E2530 Control Unit
Plug Type	For 115V (B type)	Code No.	8602	
Plug Type	For 200V (C type)	Code No.	8603	
Plug Type	For 230V (D type)	Code No.	8604	

▼ Mounting Bracket



● Warning / Error Function

Motor/Spindle is stopped safety, Warning/Error LED is lit, and Warning/Error Signal is output to external when there is something wrong with the motor/spindle, or any breakage is detected.

- Warning :
- Air shortage • Overload operation • Motor cord disconnection and etc.
- Error :
- Internal Circuit Error • Voltage/Electric currency Error • Overheat/Overload operation • Operation Error • Air shortage • Locked Motor and others (Total 13 items)

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

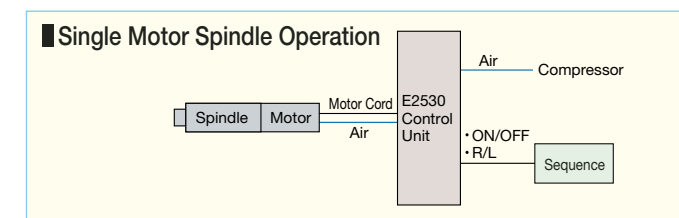
< Specifications >

Power Source	: AC 115V/230V, 50-60 Hz (switchable type)
Rating Power Consumption	: 92W
Weight	: 3.6kg
Dimensions	: W108 x D156 x H175mm

< Standard Equipment · Accessories >

- Power Cord • Air Hose with filter (K-251) : ø6mm x 2m • Bracket (2pcs.)
- Connector Cap • Power Cord Grip • Air Plug • Screw (7pcs.)

■ Automatic Control System Chart

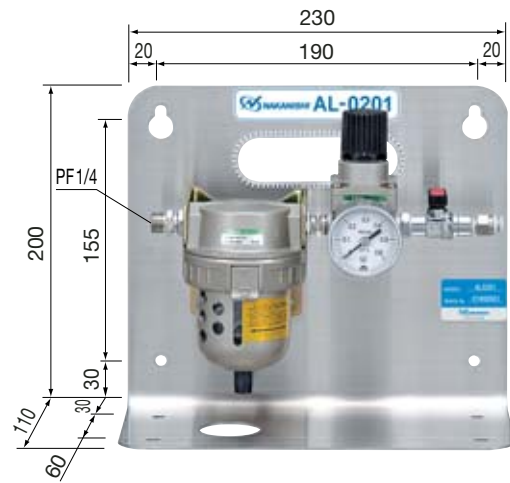


▼ Power Source Plug

Plug Type	Main Usable Area	Product
For 100V (A type)	For Japan	
For 115V (B type)	For U.S.A. and Canada	
For 200V (C type)	Without Plug	
For 230V (D type)	For Europe	

Air Line Kit

AL-0201 (For ø6mm Hose)



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

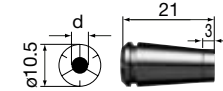
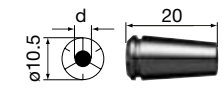
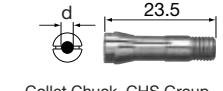
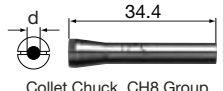
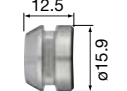
Filter Mesh 0.3 μm

Code No. **1541** Model **AL-0201**

< Standard Equipment · Accessories >

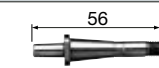


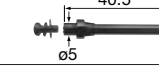
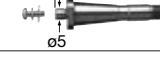
- Air Filter • Air Regulator • Air Pressure Gauge
- Air ON-OFF Valve • Hose for Piping (K-275) : 2m

■ Collet Chuck · Chuck Nut

Product	Inside Diameter : ød	Fit to	Model	Code No.
 <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>	ø2.35	NR-2351, NR-303, NR-311 RAS-101 *High precision type	CHK-2.35	91592
	ø3.0		CHK-3.0	91530
	ø3.175		CHK-3.175	91593
	ø4.0		CHK-4.0	91540
	ø6.0		CHK-6.0	91560
	ø6.35		CHK-6.35	91596
	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			
 <p>Model : Besides the above</p>	ø1.0, ø1.5, ø2.0, ø2.5, ø3.5, ø4.5, ø4.76, ø5.5	AMH-301		
	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			
	ø1.6, ø5.0			
	ø3.0AA*			
	ø3.175AA*			
	ø4.0AA*			
	ø1.6, ø5.0	RA-200		
	ø3.0AA*			
	ø3.175AA*			
	ø4.0AA*			
	ø6.0AA*			
	ø6.35AA*			
	ø2.35			
	ø3.0			
	ø3.175			
	ø1.6			
	ø1.0, ø2.0	RA-100		
	ø2.35			
	ø3.0			
	ø3.175			
	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			
	ø2.35			
	ø3.0			
	ø1.0, ø1.5, ø2.0, ø2.5	NR-2351, NR-303, NR-311, RAS-101	CHS-2.35	90592
	ø1.1, ø1.2, ø1.3, ø1.4, ø1.6, ø1.7, ø1.8, ø1.9		CHS-3.0	90530
	ø2.1, ø2.2, ø2.3, ø2.4, ø2.6, ø2.7, ø2.8, ø2.9		CHS-3.175	90593
			CHS-1.6	90516
			CHS-□□	—
			CH8-2.35	91092
			CH8-3.0	91030
			CH8-3.175	91093
			CH8-□□	—
			K-265	2129

■ Special Axis · Grindstone Axis

* : For right hand (cw) rotation only.

Product	Inside Diameter : ød	Fit to	Model	Code No.
	Special Drill Chuck Axis For Drill Chuck Jacob's Taper No.0 Run-out Accuracy : Within 0.05 mm	NR-2351, NR-303, NR-311, RAS-101	DCH-J0K	2132
	Special Metal Saw Axis Dimensions of Metal Saw ød (I.D.) x ø30 (O.D.) mm Run-out Accuracy : Within 0.02 mm	RA-100	KCH-02 (5.0)	2146
			KCH-02 (6.0)	1077
			KCH-02 (8.0)	2147
	Special Metal Saw Axis Dimensions of Metal Saw ød (I.D.) x ø30 (O.D.) mm Run-out Accuracy : Within 0.02 mm	NR-2351, NR-303, NR-311, RAS-101	KCH-03 (5.0)	2148
			KCH-03 (6.0)	2130
			KCH-03 (8.0)	2149
	Grindstone Axis Run-out Accuracy : Within 0.02 mm For Grindstone with ø5.0 mm I.D.	AMH-301	AGM-01	1029
	Grindstone Axis Run-out Accuracy : Within 0.02 mm For Grindstone with ø5.0 mm I.D.	NR-2351, NR-303, RAS-101	AGM-03	2131