

NAKANISHI SPINDLE Air-Speed / SMS

Air-Speed / SMS



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NAKANISHI INC. 2019

PR-K329E Ver.3 '19.03.03. ㊞

Specifications and design are subject to change without notice.



Nature of Tochigi, Japan

▶ “Air-Speed” MOTOR SPINDLE

One Piece Type Spindle

- Shorten total spindle length suitable for the compact sized NC or CNC Lathe, and special purpose machines.
- Hardened and precision ground for high rigidity & excellent durability.
- External housing is one-piece with the spindle & the motor for machine attachments.



Outside Diameter $\varnothing 30, \varnothing 25, \varnothing 23, \varnothing 22, \varnothing 20, \varnothing 19.05\text{mm}$

Max. $30,000\text{min}^{-1}$

Max. Power **130W**

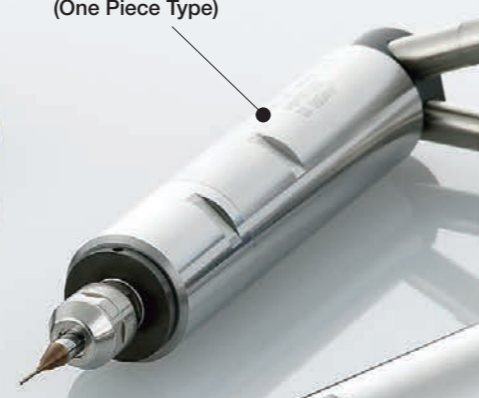
O.D. $\varnothing 30\text{mm}$
(One Piece Type)
Angle Type Spindles and Straight Type
Spindles are available.



O.D. $\varnothing 23\text{mm}$
(One Piece Type)



O.D. $\varnothing 22\text{mm}$
(One Piece Type)



O.D. $\varnothing 19.05\text{mm}$
(One Piece Type)



O.D. $\varnothing 20\text{mm}$
(One Piece Type)



O.D. $\varnothing 25\text{mm}$
(One Piece Type)



Separate Type Spindle

- Free to connect the spindle to the motor for applications.
- Easy to exchange for repairs.



Outside Diameter $\varnothing 30, \varnothing 25, \varnothing 22.8\text{mm}$

Max. $58,000\text{min}^{-1}$

Max. Power **130W**

O.D. $\varnothing 22.8\text{mm}$
(Separate Type)
Angle Spindles and
Straight Spindles are available.



O.D. $\varnothing 30\text{mm}$
(Separate Type)
Angle Spindles and
Straight Spindles
are available.



O.D. $\varnothing 25\text{mm}$
(Separate Type)
Straight Spindles
are available.



One Piece Type $\phi 30\text{mm}$

Collet Nut K-265
Collet CHK Group
 $\phi 0.5 - \phi 6.35\text{mm}$

Axis for Metal Saw KCH-03

Grindstone Axis AGM-03

Grindstone Flange EGF-19

Collet Nut CHN-A
Collet CHA Group
 $\phi 0.5 - \phi 4.0\text{mm}$

Collet Nut K-265
Collet CHK Group
 $\phi 0.5 - \phi 6.35\text{mm}$

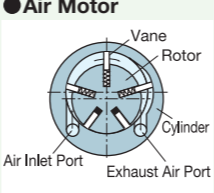
Axis for Metal Saw KCH-03

Collet Nut K-265
Collet CHK Group
 $\phi 0.5 - \phi 6.35\text{mm}$

Axis for Metal Saw KCH-03

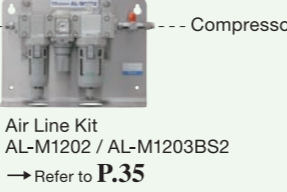
Grindstone Axis AGM-03

Collet CHSS Group
 $\phi 1.0 - \phi 3.175\text{mm}$



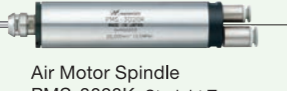

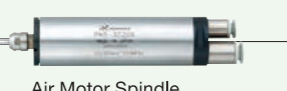
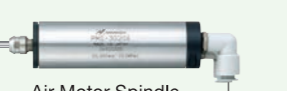

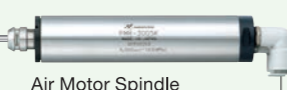
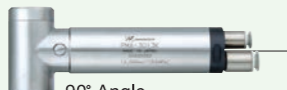

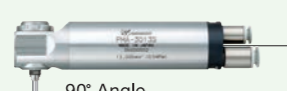
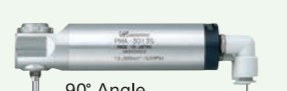
● Air Motor

The rotor of the air motor rotates off center in the cylinder. The vanes are pushed by compressed air and this rotates the rotor.



Compressor

Air Line Kit
AL-M1202 / AL-M1203BS2
→ Refer to **P.35**

20,000min ⁻¹	 Air Motor Spindle PMS-3020K Straight Type
20,000min ⁻¹	 Air Motor Spindle PMS-3020K-RA Angle Type
20,000min ⁻¹	 Air Motor Spindle PMS-3020A Straight Type
20,000min ⁻¹	 Air Motor Spindle PMS-3020A-RA Angle Type
5,000min ⁻¹	 Air Motor Spindle PMR-3005K Straight Type
5,000min ⁻¹	 Air Motor Spindle PMR-3005K-RA Angle Type
13,000min ⁻¹	 90° Angle Air Motor Spindle PMA-3013K Straight Type
13,000min ⁻¹	 90° Angle Air Motor Spindle PMA-3013K-RA Angle Type
13,300min ⁻¹	 90° Angle Air Motor Spindle PMA-3013S Straight Type
13,300min ⁻¹	 90° Angle Air Motor Spindle PMA-3013S-RA Angle Type

*Please maintain not to exceed speed limit. Excess speed will dramatically reduce bearing life.

One Piece Type $\phi 25, \phi 23, \phi 22, \phi 20, \phi 19.05\text{mm}$

Collet Nut K-265
Collet CHK Group
 $\phi 0.5 - \phi 6.35\text{mm}$

Axis for Metal Saw KCH-03

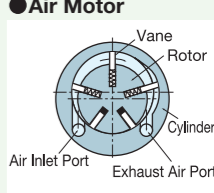
Grindstone Axis AGM-03

Collet Nut CHN-A
Collet CHA Group
 $\phi 0.5 - \phi 4.0\text{mm}$

Collet Nut K-265
Collet CHK Group
 $\phi 0.5 - \phi 6.35\text{mm}$


Axis for Metal Saw KCH-01A

Grindstone Axis AGM-01A




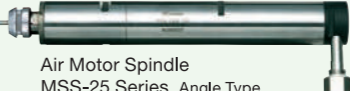
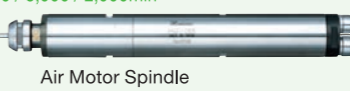
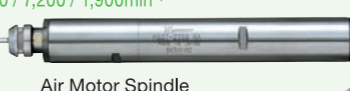
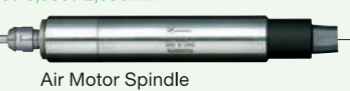
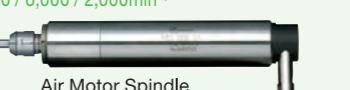
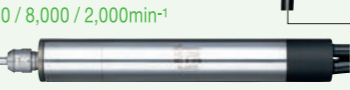

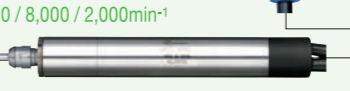
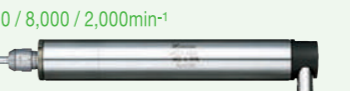
● Air Motor

The rotor of the air motor rotates off center in the cylinder. The vanes are pushed by compressed air and this rotates the rotor.



Compressor


Air Line Kit
AL-M1202 / AL-M1203BS2
→ Refer to **P.35**

24,000 / 6,000 / 1,500min ⁻¹	 Air Motor Spindle MSS-25 Series Straight Type
22,000 / 5,500 / 1,400min ⁻¹	 Air Motor Spindle MSS-25 Series Angle Type
30,000 / 8,000 / 2,000min ⁻¹	 Air Motor Spindle MSST-23 Series Straight Type
27,000 / 7,200 / 1,900min ⁻¹	 Air Motor Spindle MSST-23 Series Angle Type
30,000 / 8,000 / 2,000min ⁻¹	 Air Motor Spindle MSS-22 Series Straight Type
30,000 / 8,000 / 2,000min ⁻¹	 Air Motor Spindle MSS-22 Series Angle Type
30,000 / 8,000 / 2,000min ⁻¹	 Air Motor Spindle MSS-20 Series Straight Type
30,000 / 8,000 / 2,000min ⁻¹	 Air Motor Spindle MSS-20 Series Angle Type
30,000 / 8,000 / 2,000min ⁻¹	 Air Motor Spindle MSS-19 Series Straight Type
30,000 / 8,000 / 2,000min ⁻¹	 Air Motor Spindle MSS-19 Series Angle Type

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

▼ AIR MOTOR SPINDLE (One Piece Type)

Straight Spindle



Outside Diameter $\phi 30\text{mm}$

Max. $20,000\text{min}^{-1}$ (0.5MPa : PMS-3020K)

Max. Power **130W**

Spindle Runout :
Within 1 μm

Collet : Max. $\phi 6.35\text{mm}$

Collet
CHK-3.0
OPTION → Refer to **P.36**

*Other collet sizes are available. Air Line Kit AL-M1202
OPTION → Refer to **P.35**

*Please maintain not to exceed speed limit.

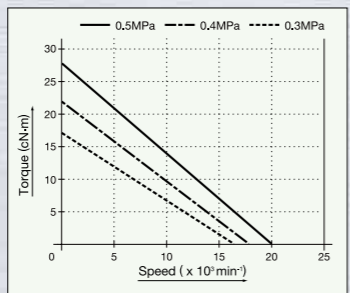
Shorten Total Spindle Length
Suitable for the compact sized NC or CNC Lathe.

External housing is one-piece with the spindle & the motor for machine attachments

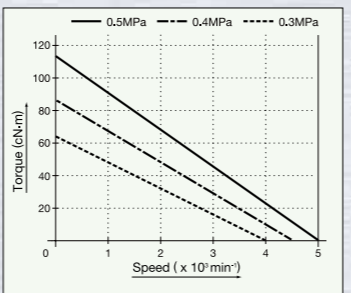
Hardened and precision ground for high rigidity & excellent durability

Straight Air Motor Spindle PMS-3020K

● PMS-3020K PMS-3020A Torque-Speed Characteristics



● PMR-3005K Torque-Speed Characteristics



Air Motor Spindle	O.D.	Speed	Spindle Runout	Max. Power	Max. Torque	Weight
PMS-3020K	$\phi 30\text{mm}$	$20,000\text{min}^{-1}$ (0.5MPa)	Within 1 μm	130W	28cN·m	480g



Straight Type PMS-3020K

Angle Type PMS-3020K-RA



< Specifications >

Proper Air Pressure : 0.3~0.5MPa

Air Consumption : 215N ℓ /min

Motor Hose (Diameter / Length)

Air Inlet : $\phi 4.0$ (I.D.) x $\phi 6.0\text{mm}$ (O.D.) x 2m

Exhaust Air : $\phi 6.0$ (I.D.) x $\phi 8.0\text{mm}$ (O.D.) x 0.1m

< Optional >

Collet (CHK Group) : $\phi 0.5\text{--}\phi 6.35\text{mm}$ See Page 36 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 $\phi 5.0\text{mm}$

Grindstone Flange (EGF-19) : $\phi 19.05$ (I.D.) x $\phi 40$ (O.D.) x 7 (W) mm

< Standard Equipment Accessories >

- Collet : $\phi 3.0\text{mm}$ (CHK-3.0) • Collet Nut (K-265) • Silencer (K-209)
- Inlet Air Hose : $\phi 6\text{mm}$ x 2m (K-215) • Exhaust Air Hose : $\phi 8\text{mm}$ x 0.1m (K-256)
- Spanner (12 x 14) : 2pcs. • Filter Joint (FJ-01)

Air Motor Spindle	O.D.	Speed	Spindle Runout	Max. Power	Max. Torque	Weight
PMS-3020A	$\phi 30\text{mm}$	$20,000\text{min}^{-1}$ (0.5MPa)	Within 1 μm	130W	28cN·m	410g

For light duty grinding



Straight Type PMS-3020A

Angle Type PMS-3020A-RA



< Specifications >

Proper Air Pressure : 0.3~0.5MPa

Air Consumption : 215N ℓ /min

Motor Hose (Diameter / Length)

Air Inlet : $\phi 4.0$ (I.D.) x $\phi 6.0\text{mm}$ (O.D.) x 2m

Exhaust Air : $\phi 6.0$ (I.D.) x $\phi 8.0\text{mm}$ (O.D.) x 0.1m

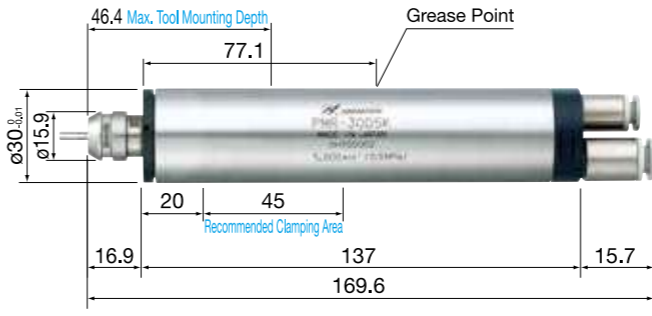
< Optional >

Collet (CHA Group) : $\phi 0.5\text{--}\phi 4.0\text{mm}$ See Page 36 for details

< Standard Equipment Accessories >

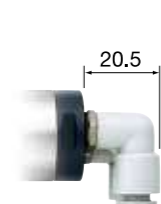
- Collet : $\phi 3.0\text{mm}$ (CHA-3.0) • Collet Nut (CHN-A) • Silencer (K-209)
- Inlet Air Hose : $\phi 6\text{mm}$ x 2m (K-215) • Exhaust Air Hose : $\phi 8\text{mm}$ x 0.1m (K-256)
- Spanner (8 x 5), (9 x 11) : 1pc. each • Filter Joint (FJ-01)

Air Motor Spindle	O.D.	Max. Rotating Speed at the Cutting Tool	Reduction Ratio	Spindle Runout	Max. Power	Max. Torque	Weight
PMR-3005K	$\phi 30\text{mm}$	$5,000\text{min}^{-1}$ (0.5MPa)	$\frac{1}{4}$	Within 1 μm	130W	112cN·m	565g



Straight Type PMR-3005K

Angle Type PMR-3005K-RA



< Specifications >

Proper Air Pressure : 0.3~0.5MPa

Air Consumption : 215N ℓ /min

Motor Hose (Diameter / Length)

Air Inlet : $\phi 4.0$ (I.D.) x $\phi 6.0\text{mm}$ (O.D.) x 2m

Exhaust Air : $\phi 6.0$ (I.D.) x $\phi 8.0\text{mm}$ (O.D.) x 0.1m

< Optional >


Collet (CHK Group) : $\phi 0.5\text{--}\phi 6.35\text{mm}$ See Page 36 for details

Metal Saw Axis (KCH-03) : For $\phi 6.0$ (I.D.) x $\phi 30\text{mm}$ (O.D.)

< Standard Equipment Accessories >

- Collet : $\phi 3.0\text{mm}$ (CHK-3.0) • Collet Nut (K-265) • Filter Joint (FJ-01)
- Inlet Air Hose : $\phi 6\text{mm}$ x 2m (K-215) • Exhaust Air Hose : $\phi 8\text{mm}$ x 0.1m (K-256)
- Silencer (K-209) • Spanner (12 x 14) : 2pcs. • Grease for Reducer (10m ℓ)
- Grease Dispenser : 1pc. • Grease Nipple : 1pc.

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 : Do not exceed max. allowable air pressure.

▼ AIR MOTOR SPINDLE (One Piece Type)

Angle Spindle



Outside Diameter **ø30mm**

Max. **13,000min⁻¹** (0.5MPa)

Max. Power **130W**

External housing is one-piece with the spindle & the motor for machine attachments

90° Angle Type is available

Angle Spindle Select Sheet

Model	PMA-3013K	PMA-3013S
Angle Head Size O.D.	ø30 x 76.2mm	27 x 36.5mm
Maximum rotating speed at the cutting tool	13,000min ⁻¹	
Collet	ø0.5~ø6.35mm	ø1.0~ø3.175mm



90° Angle Air Motor Spindle PMA-3013K

Shorten Total Spindle Length

Suitable for the compact sized NC or CNC Lathe.

Hardened and precision ground for high rigidity & excellent durability

Collet : **Max. ø6.35mm**

Collet CHK-3.0

OPTION → Refer to P.36

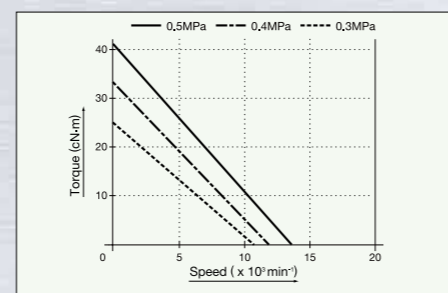
*Other collet sizes are available.



Air Line Kit AL-M1202

OPTION → Refer to P.35

● PMA-3013K PMA-3013S Torque-Speed Characteristics

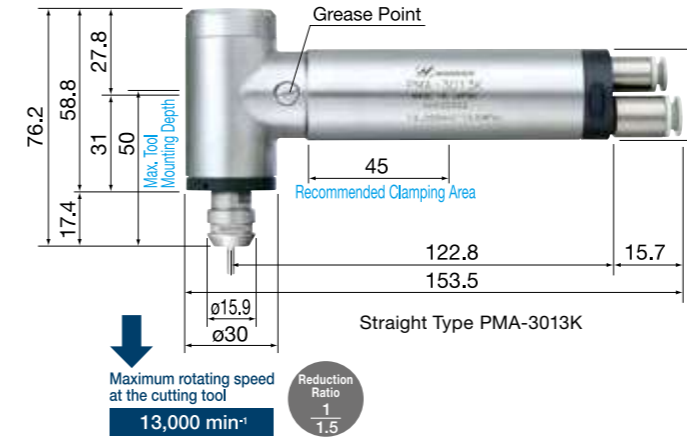


*Please maintain not to exceed speed limit.

90° Angle Air Motor Spindle

PMA-3013K

O.D.	Max. Rotating Speed at The Cutting Tool	Reduction Ratio	Spindle Runout	Max. Power	Max. Torque	Weight
ø30mm	13,000min ⁻¹ (0.5MPa)	1/1.5	Within 2 μm	130W	42cN·m	675g



Maximum rotating speed at the cutting tool
13,000 min⁻¹

Reduction Ratio
1/1.5



< Specifications >

Proper Air Pressure	: 0.3~0.5MPa
Air Consumption	: 215Nℓ/min
Motor Hose (Diameter / Length)	
Air Inlet	: ø4.0 (I.D.) x ø6.0mm (O.D.) x 2m
Exhaust Air	: ø6.0 (I.D.) x ø8.0mm (O.D.) x 0.1m

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.

Code No.	1764	Model	PMA-3013K
Code No.	1774	Model	PMA-3013K-RA

< Standard Equipment Accessories >

- Collet : ø3.0mm (CHK-3.0) • Collet Nut (K-265) • Filter Joint (FJ-01)
- Inlet Air Hose : ø6mm x 2m (K-215) • Exhaust Air Hose : ø8mm x 0.1m (K-256)
- Silencer (K-209) • Spanner (12 x 14) : 2pcs. • Grease Dispenser : 1pc.
- Grease Nipple : 1pc.

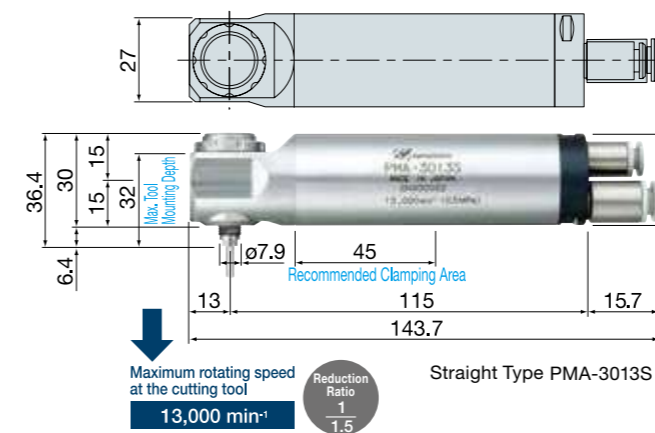
< Optional >

Collet (CHK Group)	: ø0.5~ø6.35mm See Page 36 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

90° Angle Air Motor Spindle

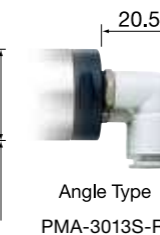
PMA-3013S

O.D.	Max. Rotating Speed at The Cutting Tool	Reduction Ratio	Spindle Runout	Max. Power	Max. Torque	Weight
ø30mm	13,000min ⁻¹ (0.5MPa)	1/1.5	Within 3 μm	130W	42cN·m	520g



Maximum rotating speed at the cutting tool
13,000 min⁻¹

Reduction Ratio
1/1.5



< Specifications >

Proper Air Pressure	: 0.3~0.5MPa
Air Consumption	: 215Nℓ/min
Motor Hose (Diameter / Length)	
Air Inlet	: ø4.0 (I.D.) x ø6.0mm (O.D.) x 2m
Exhaust Air	: ø6.0 (I.D.) x ø8.0mm (O.D.) x 0.1m

Code No.	1763	Model	PMA-3013S
Code No.	1773	Model	PMA-3013S-RA

< Standard Equipment Accessories >

- Collet : ø3.0mm (CHSS-3.0) • Silencer (K-209) • Filter Joint (FJ-01)
- Inlet Air Hose : ø6mm x 2m (K-215) • Exhaust Air Hose : ø8mm x 0.1m (K-256)
- Spanner (7 x 5.1), (8 x 6.1) : 1pc. each

< Optional >

Collet (CHSS Group)	: ø1.0~ø3.175mm See Page 36 for details
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▼ AIR MOTOR SPINDLE (One Piece Type)

Straight Spindle



Outside Diameter $\phi 25, \phi 23, \phi 22, \phi 20, \phi 19.05\text{mm}$

Max. $30,000\text{min}^{-1}$

Max. Power 130W

Model Code Example		•Straight Type				•90° Angle Type											
[1] SERIES CODE	MSS	[2]	19	[3]	08	[4]	R	[1]	MSS	[2]	19	[3]	08	[4]	R	[5]	A
[2] OUTSIDE DIAMETER		[1]		[2]		[3]		[4]									
[3] SPEED																	
[4] R=FORWARD (Right)																	
[5] CODE FOR 90° ANGLE TYPE																	

Spindle Runout :
Within $2\ \mu\text{m}$



● **Outer Housing Material**

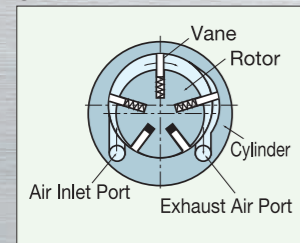
Made from stainless steel (SUS416)

● **Configuration**

2 Types available, Straight type & 90° Angle type.

● **Highest output power in the class.**

● **Air Motor**



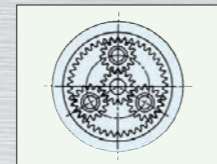
The rotor of the air motor rotates off center in the cylinder. The vanes are pushed by compressed air and this rotates the rotor. This small air motor produces high torque making it suitable for small diameter drilling, milling, slitting and grinding.

● **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.



1/4 1/16 :
Planetary Gear System

Air Line Kit
AL-M1202

OPTION → Refer to P.35



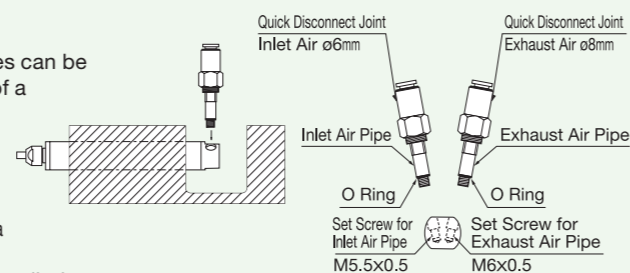
● **Installation of 90° Angle Type**

● 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

- Remove Inlet and Exhaust Air Pipes from motor spindle.
- Insert the straight spindle from the front side of holder and fix it.
- Mount the inlet 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 inlet air and 8 x 5 for exhaust air can be installed.

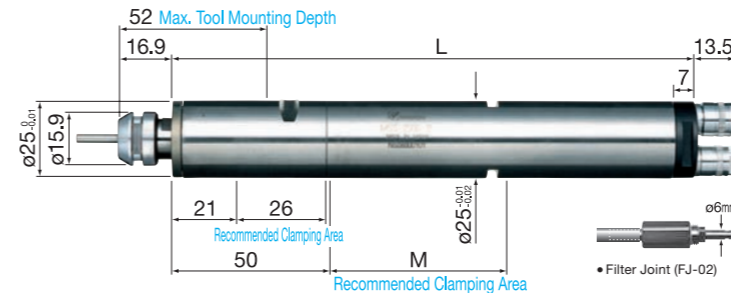


*The motor speed of 90° Angle air connection type motor / spindles are 10% less than that of the straight type.

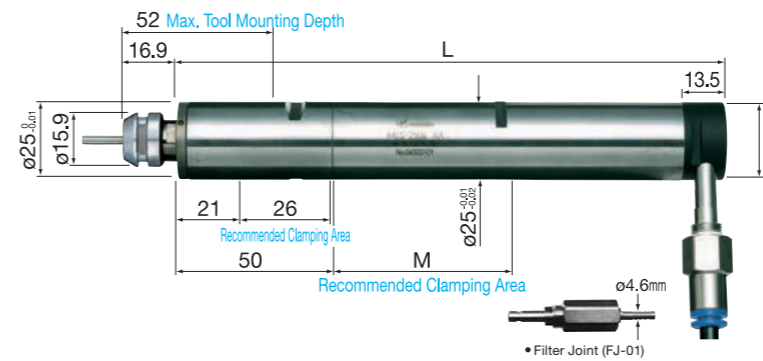
Air Motor Spindle MSS-25 Series

	O.D.	Collet	Spindle Runout	Max. Power	Air Consumption
	$\phi 25\text{mm}$	$\phi 0.5\sim\phi 6.35\text{mm}$ (CHK Group)	Within $2\ \mu\text{m}$	130W	205Nl/min (R) 170Nl/min (RA)

▼ MSS-25 Series STRAIGHT TYPE (R)



▼ MSS-25 Series 90° ANGLE TYPE (RA)

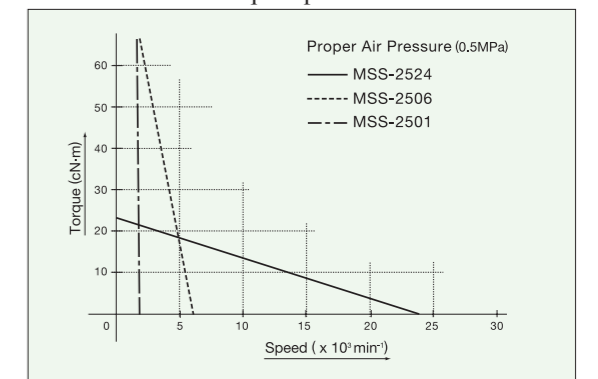


< Specifications >

Motor Hose (Diameter / Length)

R-Type	Air Inlet	$\phi 6.7\text{mm (O.D.)} \times 2\text{m}$
	Exhaust Air	$\phi 7.5\text{mm (O.D.)} \times 1\text{m}$
RA-Type	Air Inlet	$\phi 6.0\text{mm (O.D.)} \times 2\text{m}$
	Exhaust Air	$\phi 8.0\text{mm (O.D.)} \times 1\text{m}$

● MSS-25 Series Torque-Speed Characteristics



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

R 24,000min⁻¹ (0.5MPa) / RA 22,000min⁻¹ (0.5MPa)

Code No.	Model	Shape	Max. Torque	Weight	L	M
1690	MSS-2524R	Straight	22.5cN·m	395g	131.3mm	25mm
1692	MSS-2524RA	90° Angle		436g	137.8mm	

R 6,000min⁻¹ (0.5MPa) / RA 5,500min⁻¹ (0.5MPa) 1/4 Speed Reduction

Code No.	Model	Shape	Max. Torque	Weight	L	M
1698	MSS-2506R	Straight	85cN·m	485g	164.1mm	58mm
1700	MSS-2506RA	90° Angle		526g	170.6mm	

R 1,500min⁻¹ (0.5MPa) / RA 1,400min⁻¹ (0.5MPa) 1/16 Speed Reduction

Code No.	Model	Shape	Max. Torque	Weight	L	M
1706	MSS-2501R	Straight	332cN·m	475g	168.5mm	62mm
1708	MSS-2501RA	90° Angle		516g	175.0mm	

< Standard Equipment Accessories >

- Collet : $\phi 3.0\text{mm (CHK-3.0)}$ ● Collet Nut (K-265)
- Spanner (12 x 14) : 2pcs. ● Hose (K-204) (R-type) : 1pc.
- Hose (K-215) (RA-type) : 1pc.
- Hose (K-216) (RA-type) : 1pc.
- Filter Joint (FJ-02) (R-type) ● Filter Joint (FJ-01) (RA-type)
- Silencer (K-209) (R-type) ● Silencer (K-208) (RA-type)

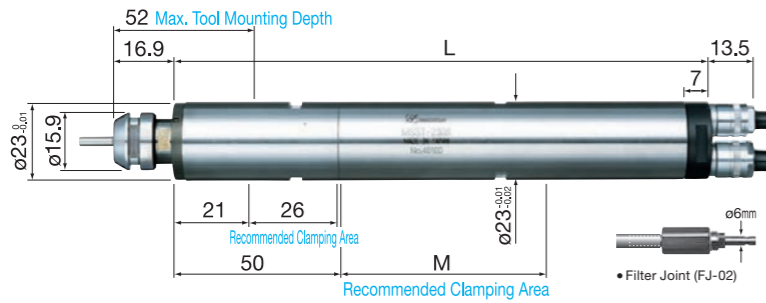
< Optional >

- Collet (CHK Group) : $\phi 0.5\sim\phi 6.35\text{mm}$ See Page 36 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 $\phi 5.0\text{mm}$

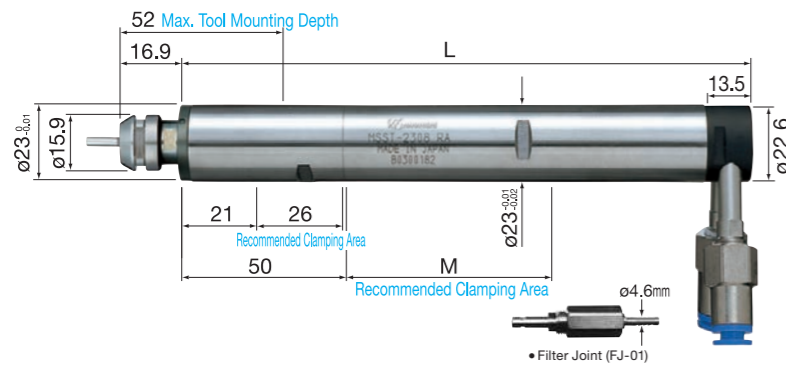
*Refer to Page p.9 for mounting instructions for the 90° Angle Type.
*Outside diameter $\phi 25.4\text{mm}$ type are also available.

Air Motor Spindle	O.D.	Collet	Spindle Runout	Max. Power	Air Consumption
MSST-23 Series	ø23mm	ø0.5~ø6.35mm (CHK Group)	Within 2 µm	108W	190Nℓ/min (R) 170Nℓ/min (RA)

▼ MSST-23 Series STRAIGHT TYPE (R)



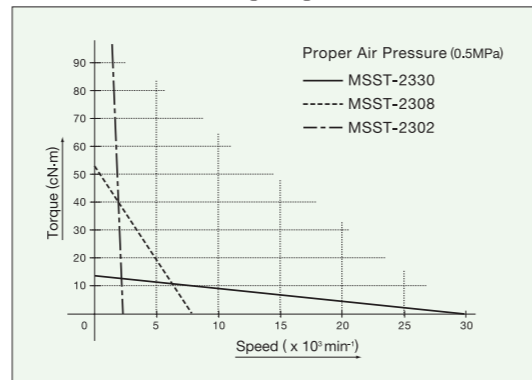
▼ MSST-23 Series 90° ANGLE TYPE (RA)



< Specifications >

Proper Air Pressure	: 0.3~0.5MPa
Motor Hose (Diameter / Length)	
R-Type Air Inlet	: ø6.7mm (O.D.) x 2m
Exhaust Air	: ø7.5mm (O.D.) x 1m
RA-Type Air Inlet	: ø6.0mm (O.D.) x 2m
Exhaust Air	: ø8.0mm (O.D.) x 1m

● MSST-23 Series Torque-Speed Characteristics



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

R 30,000min⁻¹ (0.5MPa) / RA 27,000min⁻¹ (0.5MPa)

Code No. 1637	Model MSST-2330R	Shape Straight	Max. Torque 13.7cN·m	Weight 328g	L 127.3mm	M 25mm
Code No. 1639	Model MSST-2330RA	Shape 90° Angle		Weight 369g	L 133.8mm	

R 8,000min⁻¹ (0.5MPa) / RA 7,200min⁻¹ (0.5MPa) 1/4 Speed Reduction

Code No. 1645	Model MSST-2308R	Shape Straight	Max. Torque 52cN·m	Weight 415g	L 160.1mm	M 58mm
Code No. 1647	Model MSST-2308RA	Shape 90° Angle		Weight 456g	L 166.6mm	

R 2,000min⁻¹ (0.5MPa) / RA 1,900min⁻¹ (0.5MPa) 1/16 Speed Reduction

Code No. 1653	Model MSST-2302R	Shape Straight	Max. Torque 202cN·m	Weight 405g	L 164.4mm	M 62mm
Code No. 1655	Model MSST-2302RA	Shape 90° Angle		Weight 446g	L 170.9mm	

< Standard Equipment Accessories >

- Collet : ø3.0mm (CHK-3.0) • Collet Nut (K-265)
- Spanner (12 x 14) : 2pcs. • Hose (K-204) (R-type) : 1pc.
- Hose (K-215) (RA-type) : 1pc.
- Hose (K-216) (RA-type) : 1pc.
- Filter Joint (FJ-02) (R-type) • Filter Joint (FJ-01) (RA-type)
- Silencer (K-209) (R-type) • Silencer (K-208) (RA-type)

< Optional >

- Collet (CHK Group) : ø0.5~ø6.35mm See Page 36 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

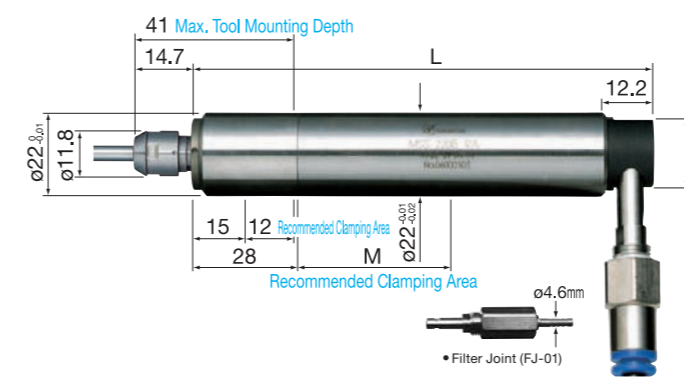
*Refer to Page p.9 for mounting instructions for the 90° Angle Type.

Air Motor Spindle	O.D.	Collet	Spindle Runout	Max. Power	Air Consumption
MSS-22 Series	ø22mm	ø0.5~ø4.0mm (CHA Group)	Within 2 µm	72W	155Nℓ/min (R · RA)

▼ MSS-22 Series STRAIGHT TYPE (R)



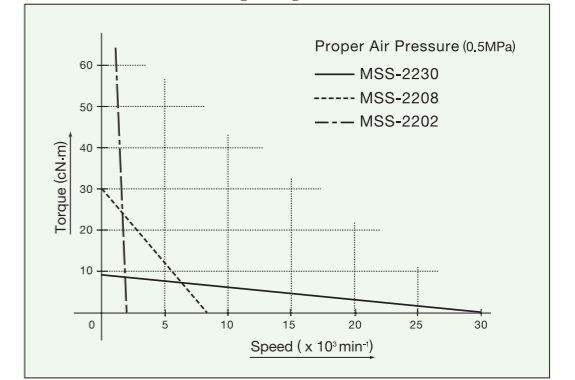
▼ MSS-22 Series 90° ANGLE TYPE (RA)



< Specifications >

Proper Air Pressure	: 0.3~0.5MPa
Motor Hose (Diameter / Length)	
R-Type Air Inlet	: ø3.7 (I.D.) x ø5.7mm (O.D.) x 2m
Exhaust Air	: ø5.0 (I.D.) x ø6.5mm (O.D.) x 1m
RA-Type Air Inlet	: ø4.0 (I.D.) x ø6.0mm (O.D.) x 2m
Exhaust Air	: ø6.0 (I.D.) x ø8.0mm (O.D.) x 1m

● MSS-22 Series Torque-Speed Characteristics



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

30,000min⁻¹ (0.5MPa)

Code No. 1714	Model MSS-2230R	Shape Straight	Max. Torque 9.2cN·m	Weight 232g	L 110.9mm	M 23mm
Code No. 1716	Model MSS-2230RA	Shape 90° Angle		Weight 280g	L 103.1mm	

8,000min⁻¹ (0.5MPa) 1/4 Speed Reduction

Code No. 1680	Model MSS-2208R	Shape Straight	Max. Torque 36cN·m	Weight 275g	L 126.8mm	M 39mm
Code No. 1682	Model MSS-2208RA	Shape 90° Angle		Weight 323g	L 119.0mm	

2,000min⁻¹ (0.5MPa) 1/16 Speed Reduction

Code No. 1684	Model MSS-2202R	Shape Straight	Max. Torque 141cN·m	Weight 290g	L 141.0mm	M 53mm
Code No. 1686	Model MSS-2202RA	Shape 90° Angle		Weight 338g	L 133.2mm	

< Standard Equipment Accessories >

- Collet : ø3.0mm (CHA-3.0) • Collet Nut (CHN-A)
- Spanner (8 x 5), (9 x 11) : 1pc. each • Hose (K-221) (R-type) : 1pc.
- Hose (K-215) (RA-type) : 1pc.
- Hose (K-216) (RA-type) : 1pc.
- Filter Joint (FJ-01) (RA-type)
- Silencer (K-209) (R-type) • Silencer (K-208) (RA-type)

< Optional >

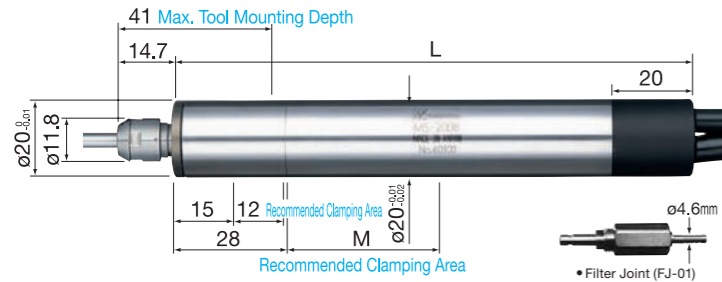
- Collet (CHA Group) : ø0.5~ø4.0mm See Page 36 for details
- Metal Saw Axis (KCH-01A) : For ø6.0 (I.D.) x ø30mm (O.D.)
- Grindstone Axis (AGM-01A) : For grinding wheel with I.D. of ø5.0mm

*Refer to Page p.9 for mounting instructions for the 90° Angle Type.

Air Motor Spindle
MSS-20 Series

	O.D.	Collet	Spindle Runout	Max. Power	Air Consumption
	ø20mm	ø0.5~ø4.0mm (CHA Group)	Within 2 μm	72W	155Nℓ/min (R · RA)

▼ MSS-20 Series STRAIGHT TYPE (R)



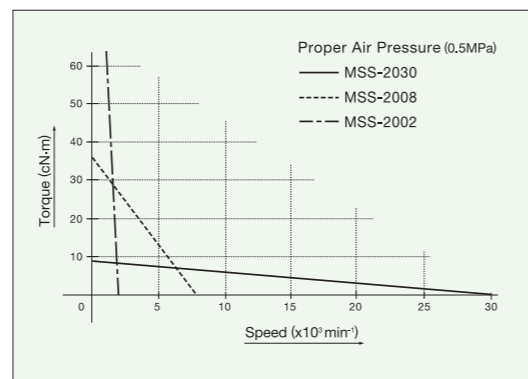
< Specifications >

Proper Air Pressure : 0.3~0.5MPa

Motor Hose (Diameter / Length)

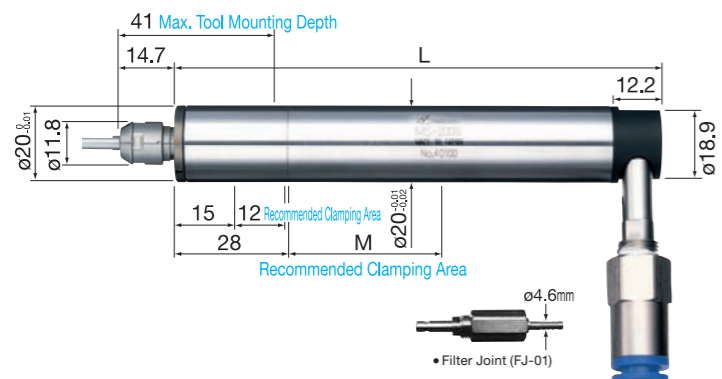
R-Type	Air Inlet	: ø3.7 (I.D.) x ø5.7mm (O.D.) x 2m
	Exhaust Air	: ø5.0 (I.D.) x ø6.5mm (O.D.) x 1m
RA-Type	Air Inlet	: ø4.0 (I.D.) x ø6.0mm (O.D.) x 2m
	Exhaust Air	: ø6.0 (I.D.) x ø8.0mm (O.D.) x 1m

● MSS-20 Series Torque-Speed Characteristics



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

▼ MSS-20 Series 90° ANGLE TYPE (RA)



30,000 min⁻¹ (0.5MPa)

Code No.	Model	Shape	Max. Torque	Weight	L	M
1710	MSS-2030R	Straight	9.2cN·m	190g	110.9mm	23mm
1712	MSS-2030RA	90° Angle		239g	103.1mm	

8,000 min⁻¹ (0.5MPa) 1/4 Speed Reduction

Code No.	Model	Shape	Max. Torque	Weight	L	M
1609	MSS-2008R	Straight	36cN·m	225g	126.8mm	39mm
1611	MSS-2008RA	90° Angle		274g	119.0mm	

2,000 min⁻¹ (0.5MPa) 1/16 Speed Reduction

Code No.	Model	Shape	Max. Torque	Weight	L	M
1613	MSS-2002R	Straight	141cN·m	241g	141.0mm	53mm
1615	MSS-2002RA	90° Angle		290g	133.2mm	

< Standard Equipment Accessories >

- Collet : ø3.0mm (CHA-3.0) • Collet Nut (CHN-A)
- Spanner (8 x 5), (9 x 11) : 1pc. each • Hose (K-221) (R-type) : 1pc.
- Hose (K-215) (RA-type) : 1pc.
- Hose (K-216) (RA-type) : 1pc.
- Filter Joint (FJ-01) (RA-type)
- Silencer (K-209) (R-type) • Silencer (K-208) (RA-type)

< Optional >

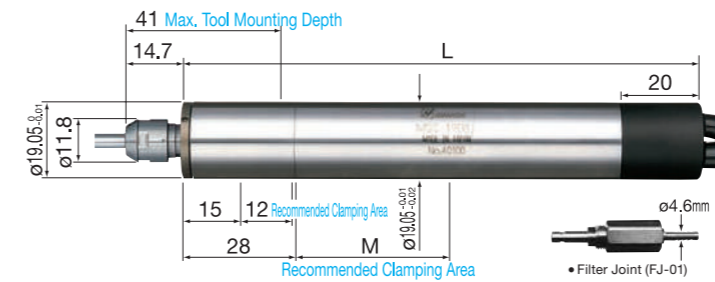
- Collet (CHA Group) : ø0.5~ø4.0mm See Page 36 for details
- Metal Saw Axis (KCH-01A) : For ø6.0 (I.D.) x ø30mm (O.D.)
- Grindstone Axis (AGM-01A) : For grinding wheel with I.D. of ø5.0mm

*Refer to Page p.9 for mounting instructions for the 90° Angle Type.

Air Motor Spindle
MSS-19 Series

	O.D.	Collet	Spindle Runout	Max. Power	Air Consumption
	ø19.05mm	ø0.5~ø4.0mm (CHA Group)	Within 2 μm	72W	155Nℓ/min (R · RA)

▼ MSS-19 Series STRAIGHT TYPE (R)



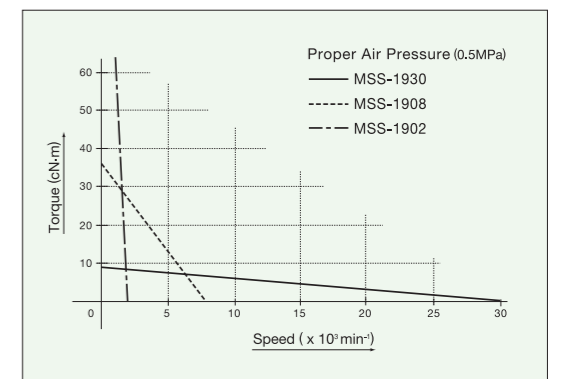
< Specifications >

Proper Air Pressure : 0.3~0.5MPa

Motor Hose (Diameter / Length)

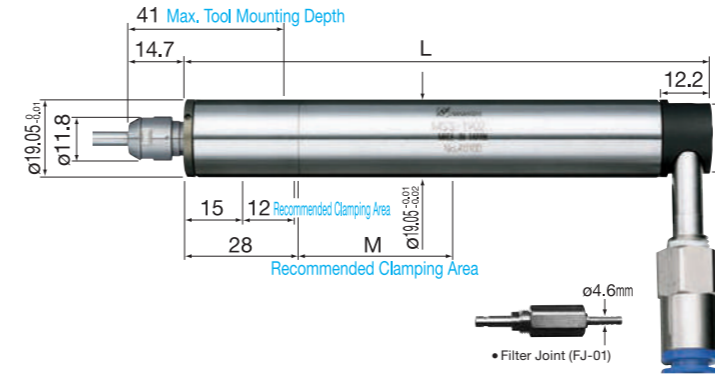
R-Type	Air Inlet	: ø3.7 (I.D.) x ø5.7mm (O.D.) x 2m
	Exhaust Air	: ø5.0 (I.D.) x ø6.5mm (O.D.) x 1m
RA-Type	Air Inlet	: ø4.0 (I.D.) x ø6.0mm (O.D.) x 2m
	Exhaust Air	: ø6.0 (I.D.) x ø8.0mm (O.D.) x 1m

● MSS-19 Series Torque-Speed Characteristics



⚠ 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 90° ANGLE TYPE (RA)



30,000 min⁻¹ (0.5MPa)

Code No.	Model	Shape	Max. Torque	Weight	L	M
1676	MSS-1930R	Straight	9.2cN·m	171g	110.9mm	23mm
1678	MSS-1930RA	90° Angle		219g	103.1mm	

8,000 min⁻¹ (0.5MPa) 1/4 Speed Reduction

Code No.	Model	Shape	Max. Torque	Weight	L	M
1601	MSS-1908R	Straight	36cN·m	202g	126.8mm	39mm
1603	MSS-1908RA	90° Angle		250g	119.0mm	

2,000 min⁻¹ (0.5MPa) 1/16 Speed Reduction

Code No.	Model	Shape	Max. Torque	Weight	L	M
1605	MSS-1902R	Straight	141cN·m	216g	141.0mm	53mm
1607	MSS-1902RA	90° Angle		264g	133.2mm	

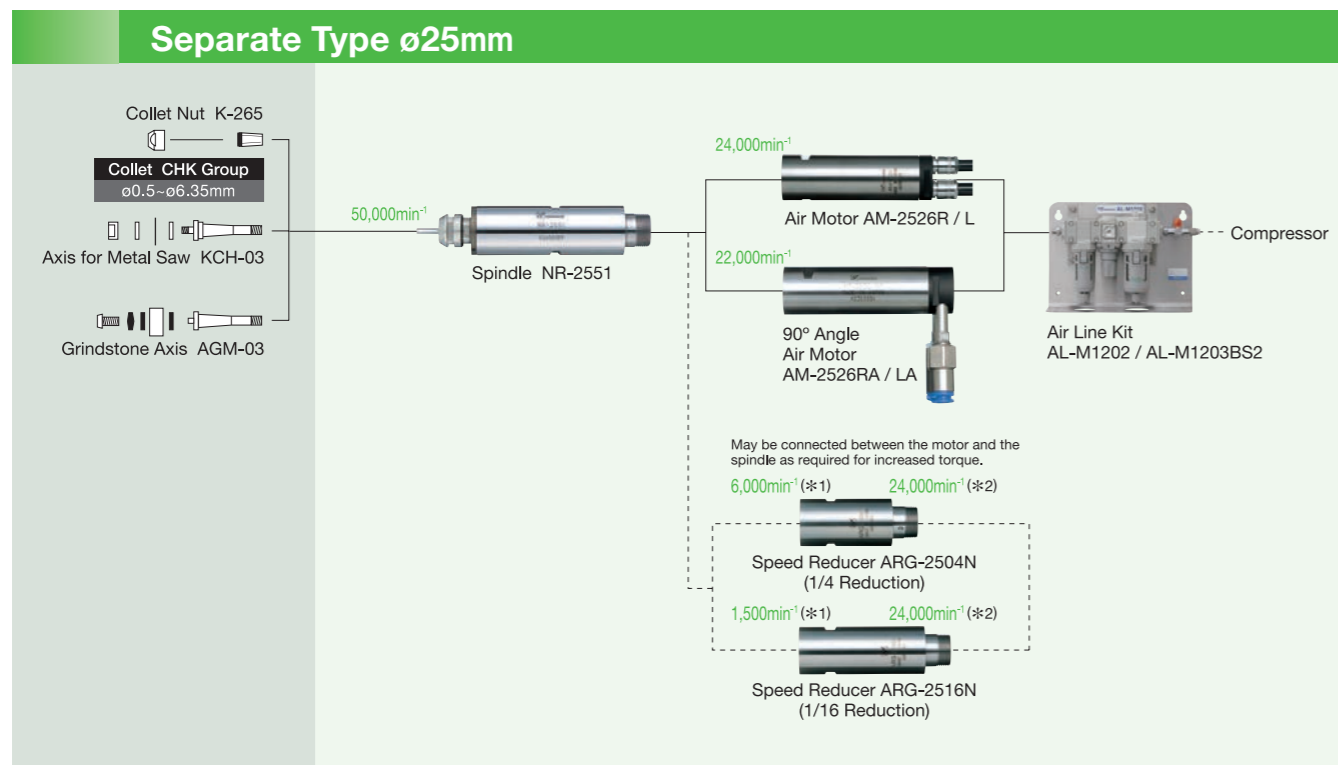
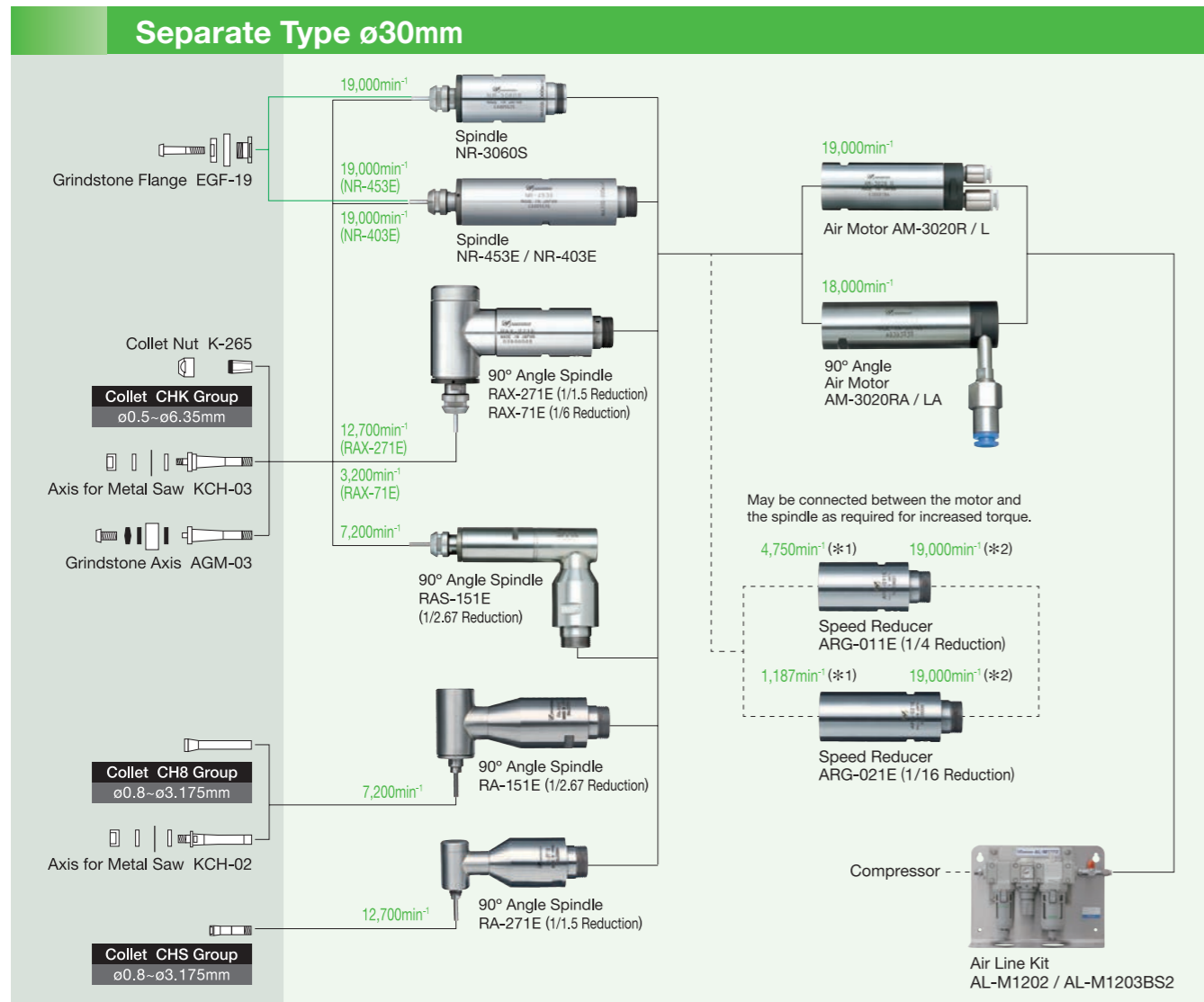
< Standard Equipment Accessories >

- Collet : ø3.0mm (CHA-3.0) • Collet Nut (CHN-A)
- Spanner (8 x 5), (9 x 11) : 1pc. each • Hose (K-221) (R-type) : 1pc.
- Hose (K-215) (RA-type) : 1pc.
- Hose (K-216) (RA-type) : 1pc.
- Filter Joint (FJ-01) (RA-type)
- Silencer (K-209) (R-type) • Silencer (K-208) (RA-type)

< Optional >

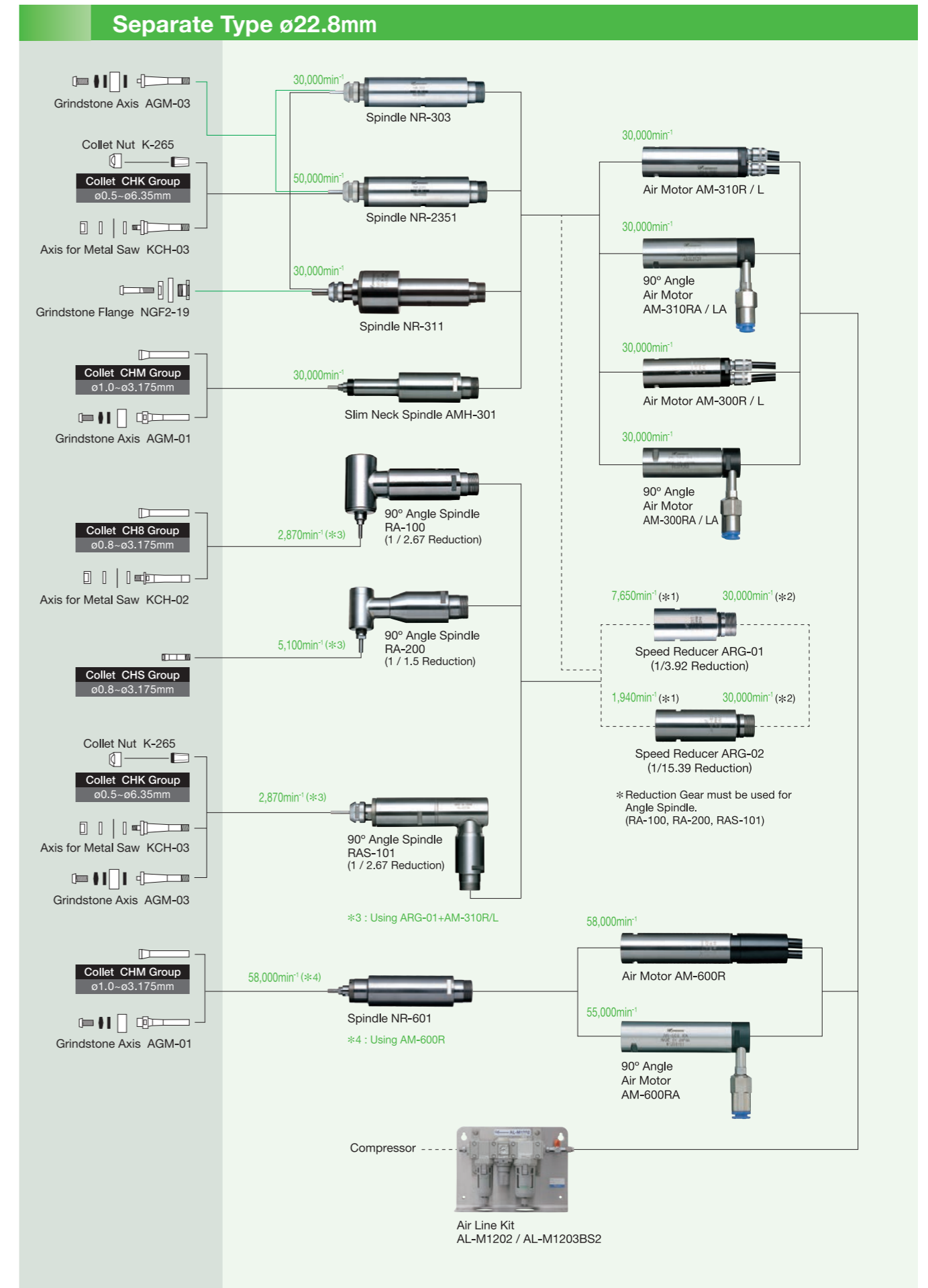
- Collet (CHA Group) : ø0.5~ø4.0mm See Page 36 for details
- Metal Saw Axis (KCH-01A) : For ø6.0 (I.D.) x ø30mm (O.D.)
- Grindstone Axis (AGM-01A) : For grinding wheel with I.D. of ø5.0mm

*Refer to Page p.9 for mounting instructions for the 90° Angle Type.



*Please maintain not to exceed speed limit. 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.

▼ AIR MOTOR & SPINDLE (Separate Type)

Straight Spindle

Outside Diameter $\phi 30\text{mm}$

Max. $19,000\text{min}^{-1}$ (Using 0.5MPa : AM-3020R/L)

Max. Power 130W

Spindle Runout :
Within 1 μm

Collet :
Max. $\phi 6.35\text{mm}$

Collet
CHK-3.0
OPTION → Refer to P.36
*Other collet sizes are available.

90° Angle Type Air Motor is available

Air Motor AM-3020R
→ Refer to P.21

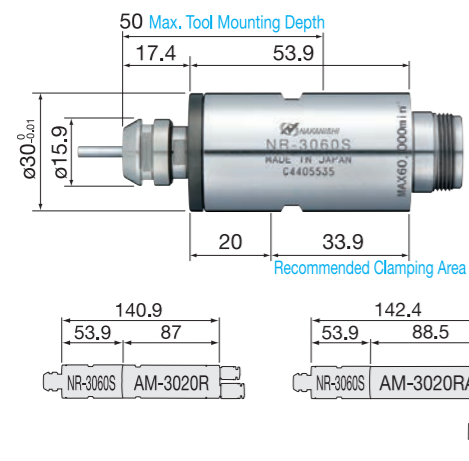
Air Line Kit
AL-M1202
OPTION → Refer to P.35

AM-3020R Torque-Speed Characteristics

Straight Spindle NR-3060S

COOLANT

Spindle < Ceramic Bearings >	O.D.	Speed	Spindle Runout	Collet	Weight
NR-3060S	$\phi 30\text{mm}$	$19,000\text{min}^{-1}$ (Using AM-3020R/L)	Within 1 μm	$\phi 0.5\sim\phi 6.35\text{mm}$ (CHK Group)	260g



Code No. **1583** Model **NR-3060S**

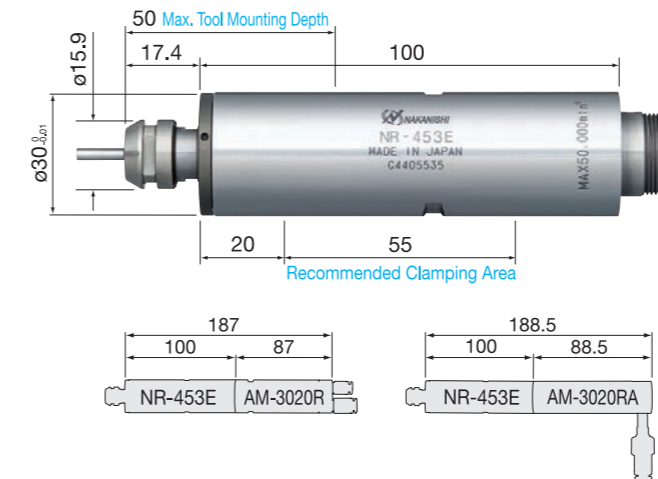
< Standard Equipment Accessories >

- Collet : $\phi 3.0\text{mm}$ (CHK-3.0) • Collet Nut (K-265)
- Spanner (12 x 14) : 2pcs., (22 x 27) : 1pc.

< Optional >

- Collet (CHK Group) : $\phi 0.5\sim\phi 6.35\text{mm}$ See Page 36 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 $\phi 5.0\text{mm}$
- Grindstone Flange (EGF-19) : $\phi 19.05$ (I.D.) x $\phi 40$ (O.D.) x 7 (W) mm

Spindle < Ceramic Bearings >	O.D.	Speed	Spindle Runout	Collet	Weight
NR-453E	$\phi 30\text{mm}$	$19,000\text{min}^{-1}$ (Using AM-3020R/L)	Within 1 μm	$\phi 0.5\sim\phi 6.35\text{mm}$ (CHK Group)	440g



Code No. **1566** Model **NR-453E**

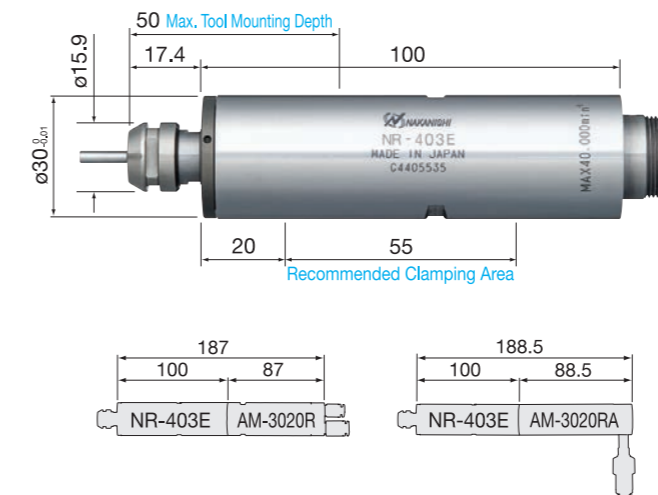
< Standard Equipment Accessories >

- Collet : $\phi 3.0\text{mm}$ (CHK-3.0) • Collet Nut (K-265)
- Spanner (12 x 14) : 2pcs., (22 x 27) : 1pc.

< Optional >

- Collet (CHK Group) : $\phi 0.5\sim\phi 6.35\text{mm}$ See Page 36 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 $\phi 5.0\text{mm}$
- Grindstone Flange (EGF-19) : $\phi 19.05$ (I.D.) x $\phi 40$ (O.D.) x 7 (W) mm

Spindle	O.D.	Speed	Spindle Runout	Collet	Weight
NR-403E	$\phi 30\text{mm}$	$19,000\text{min}^{-1}$ (Using AM-3020R/L)	Within 1 μm	$\phi 0.5\sim\phi 6.35\text{mm}$ (CHK Group)	440g



Code No. **1565** Model **NR-403E**

< Standard Equipment Accessories >

- Collet : $\phi 3.0\text{mm}$ (CHK-3.0) • Collet Nut (K-265)
- Spanner (12 x 14) : 2pcs., (22 x 27) : 1pc.

< Optional >

- Collet (CHK Group) : $\phi 0.5\sim\phi 6.35\text{mm}$ See Page 36 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 $\phi 5.0\text{mm}$
- Grindstone Flange (EGF-19) : $\phi 19.05$ (I.D.) x $\phi 40$ (O.D.) x 7 (W) mm

Please maintain not to exceed speed limit.

▼ AIR MOTOR & SPINDLE (Separate Type)

Angle Spindle

Outside Diameter $\phi 30\text{mm}$

Max. $12,700\text{min}^{-1}$ (Rotating speed at the cutting tool) (Using 0.5MPa : AM-3020R/L)

Max. Power 130W

90° Angle Spindle RAX-271E

Air Motor AM-3020R → Refer to P.21

Air Line Kit AL-M1202 → Refer to P.35

Collet : Max. $\phi 6.35\text{mm}$

OPTION → Refer to P.36

*Other collet sizes are available.

Angle Spindle Select Sheet

Model	RAX-271E	RAX-71E	RAS-151E	RA-151E	RA-271E
Angle Head Size O.D.	$\phi 30\text{mm}$	$\phi 30\text{mm}$	$\phi 23\text{mm}$	$\phi 22.8\text{mm}$	$\phi 17.4\text{mm}$
Rotating speed at the cutting tool*1	$12,700\text{min}^{-1}$	$3,200\text{min}^{-1}$	$7,200\text{min}^{-1}$	$7,200\text{min}^{-1}$	$12,700\text{min}^{-1}$
Using Tools	$\phi 0.5 \sim \phi 6.35\text{mm}$		$\phi 0.8 \sim \phi 3.175\text{mm}$		

*1 Using AM-3020R/L

90° Angle Spindle	O.D.	Rotating speed at the cutting tool	Reduction Ratio	Allowable motor speed for the spindle	Spindle Runout	Collet	Weight
RAX-271E	$\phi 30\text{mm}$	$12,700\text{min}^{-1}$ *	$\frac{1}{1.5}$	$19,000\text{min}^{-1}$ (Using AM-3020R/L)	Within $2\ \mu\text{m}$	$\phi 0.5 \sim \phi 6.35\text{mm}$ (CHK Group)	580g
RAX-71E	$\phi 30\text{mm}$	$3,200\text{min}^{-1}$ *	$\frac{1}{6}$	$19,000\text{min}^{-1}$ (Using AM-3020R/L)	Within $2\ \mu\text{m}$	$\phi 0.5 \sim \phi 6.35\text{mm}$ (CHK Group)	580g

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

Code No. 1578 Model RAX-271E

Code No. 1579 Model RAX-71E

< Standard Equipment Accessories >

- Collet : $\phi 3.0\text{mm}$ (CHK-3.0) • Collet Nut (K-265)
- Spanner (12 x 14) : 2pcs., (22 x 27) : 1pc. • Grease for Reducer (10mL)
- Grease Dispenser : 1pc. • Grease Nipple : 1pc.

< Optional >

Collet (CHK Group) : $\phi 0.5 \sim \phi 6.35\text{mm}$ See Page 36 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 $\phi 5.0\text{mm}$

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.

Code No. 1578 Model RAX-271E

Code No. 1579 Model RAX-71E

< Standard Equipment Accessories >

- Collet : $\phi 3.0\text{mm}$ (CHK-3.0) • Collet Nut (K-265)
- Spanner (12 x 14) : 2pcs., (22 x 27) : 1pc. • Grease for Reducer (10mL)
- Grease Dispenser : 1pc. • Grease Nipple : 1pc.

< Optional >

Collet (CHK Group) : $\phi 0.5 \sim \phi 6.35\text{mm}$ See Page 36 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 $\phi 5.0\text{mm}$

90° Angle Spindle	O.D.	Rotating speed at the cutting tool	Reduction Ratio	Allowable motor speed for the spindle	Spindle Runout	Collet	Weight
RAS-151E	$\phi 30\text{mm}$	$7,200\text{min}^{-1}$ *	$\frac{1}{2.67}$	$19,000\text{min}^{-1}$ (Using AM-3020R/L)	Within $2\ \mu\text{m}$	$\phi 0.5 \sim \phi 6.35\text{mm}$ (CHK Group)	413g

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

Code No. 1559 Model RAS-151E

< Standard Equipment Accessories >

- Collet : $\phi 3.0\text{mm}$ (CHK-3.0) • Collet Nut (K-265)
- Spanner (12 x 14) : 2pcs., (22 x 27) : 1pc.

< Optional >

Collet (CHK Group) : $\phi 0.5 \sim \phi 6.35\text{mm}$ See Page 36 for details

Code No. 1559 Model RAS-151E

< Standard Equipment Accessories >

- Collet : $\phi 3.0\text{mm}$ (CHK-3.0) • Collet Nut (K-265)
- Spanner (12 x 14) : 2pcs., (22 x 27) : 1pc.

< Optional >

Collet (CHK Group) : $\phi 0.5 \sim \phi 6.35\text{mm}$ See Page 36 for details

90° Angle Spindle	O.D.	Rotating speed at the cutting tool	Reduction Ratio	Allowable motor speed for the spindle	Collet	Weight
RA-151E	$\phi 30\text{mm}$	$7,200\text{min}^{-1}$ *	$\frac{1}{2.67}$	$19,000\text{min}^{-1}$ (Using AM-3020R/L)	$\phi 0.8 \sim \phi 3.175\text{mm}$ (CH8 Group)	385g

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

Code No. 1505 Model RA-151E

< Standard Equipment Accessories >

- Collet : $\phi 3.0\text{mm}$ (CH8-3.0)
- Spanner (7 x 5.5), (8 x 5), (22 x 27) : 1pc. each

< Optional >

Collet (CH8 Group) : $\phi 0.8 \sim \phi 3.175\text{mm}$ See Page 36 for details

Code No. 1505 Model RA-151E

< Standard Equipment Accessories >

- Collet : $\phi 3.0\text{mm}$ (CH8-3.0)
- Spanner (7 x 5.5), (8 x 5), (22 x 27) : 1pc. each

< Optional >

Collet (CH8 Group) : $\phi 0.8 \sim \phi 3.175\text{mm}$ See Page 36 for details

90° Angle Spindle	O.D.	Rotating speed at the cutting tool	Reduction Ratio	Allowable motor speed for the spindle	Collet	Weight
RA-271E	$\phi 30\text{mm}$	$12,700\text{min}^{-1}$ *	$\frac{1}{1.5}$	$19,000\text{min}^{-1}$ (Using AM-3020R/L)	$\phi 0.8 \sim \phi 3.175\text{mm}$ (CHS Group)	240g

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

Code No. 1506 Model RA-271E

< Standard Equipment Accessories >

- Collet : $\phi 3.0\text{mm}$ (CHS-3.0)
- Spanner (7 x 5.1), (8 x 5), (22 x 27) : 1pc. each

< Optional >

Collet (CHS Group) : $\phi 0.8 \sim \phi 3.175\text{mm}$ See Page 36 for details

Code No. 1506 Model RA-271E

< Standard Equipment Accessories >

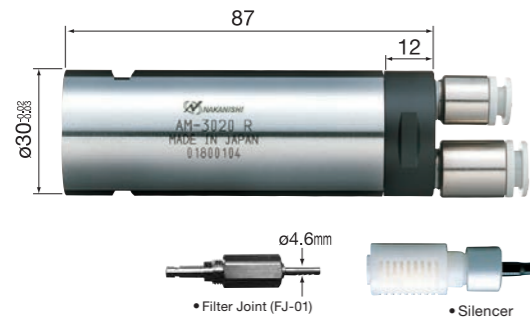
- Collet : $\phi 3.0\text{mm}$ (CHS-3.0)
- Spanner (7 x 5.1), (8 x 5), (22 x 27) : 1pc. each

< Optional >

Collet (CHS Group) : $\phi 0.8 \sim \phi 3.175\text{mm}$ See Page 36 for details

Please maintain not to exceed speed limit.

Air Motor (Forward Rotation / Reverse Rotation)	O.D.	Motor Speed	Max. Power	Proper Air Pressure	Air Consumption	Weight
AM-3020R / L	ø30mm	19,000 min ⁻¹ (0.5MPa)	130 W	0.3~0.5 MPa	180 Nℓ/min	298 g (w/o hose)



Code No.	1797	Model	AM-3020R
Code No.	1798	Model	AM-3020L

< Specifications >

Motor Hose (Diameter / Length)

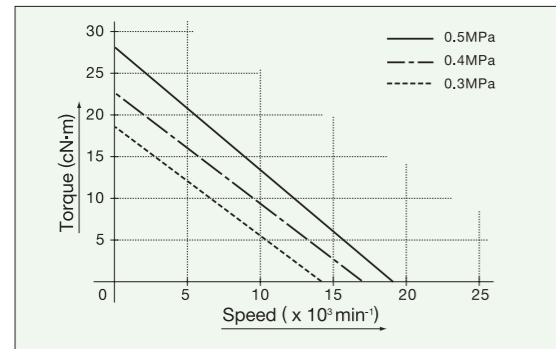
Air Inlet : ø4.0 (I.D.) x ø6.0mm (O.D.) x 2m

Exhaust Air : ø6.0 (I.D.) x ø8.0mm (O.D.) x 1m

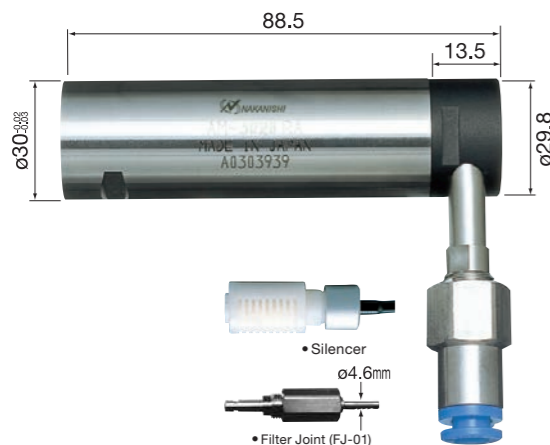
< Standard Equipment Accessories >

- Hose (K-215) : ø6mm x 2m • Hose (K-256) : ø8mm x 1m
- Filter Joint (FJ-01) • Silencer (K-208) • Spanner (22 x 27) : 1pc.

● AM-3020R Torque-Speed Characteristics



90° Angle Air Motor (Forward Rotation / Reverse Rotation)	O.D.	Motor Speed	Max. Power	Proper Air Pressure	Air Consumption	Weight
AM-3020RA / LA	ø30mm	18,000 min ⁻¹ (0.5MPa)	125 W	0.3~0.5 MPa	175 Nℓ/min	339 g (w/o hose)



Code No.	1799	Model	AM-3020RA
Code No.	1800	Model	AM-3020LA

< Specifications >

Motor Hose (Diameter / Length)

Air Inlet : ø4.0 (I.D.) x ø6.0mm (O.D.) x 2m

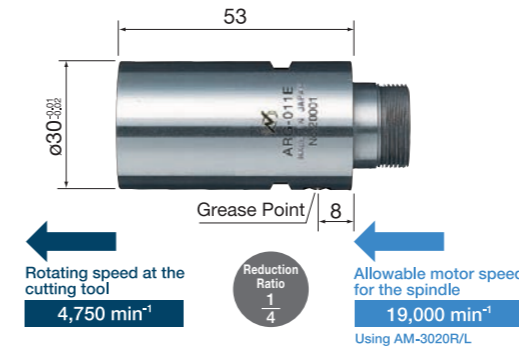
Exhaust Air : ø6.0 (I.D.) x ø8.0mm (O.D.) x 1m

< Standard Equipment Accessories >

- Hose (K-215) : ø6mm x 2m • Hose (K-256) : ø8mm x 1m
- Filter Joint (FJ-01) • Silencer (K-208) • Spanner (22 x 27) : 1pc.

Speed Reducer (1/4)	O.D.	Rotating speed at the cutting tool	Reduction Ratio	Allowable motor speed for the spindle	Weight
ARG-011E	ø30mm	4,750 min ⁻¹ *	1/4	19,000 min ⁻¹ (Using AM-3020R/L)	242 g

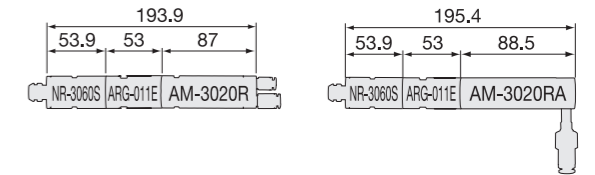
* Maximum rotating speed at the cutting tool for the reduction ratio.



Code No.	1507	Model	ARG-011E
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< Standard Equipment Accessories >

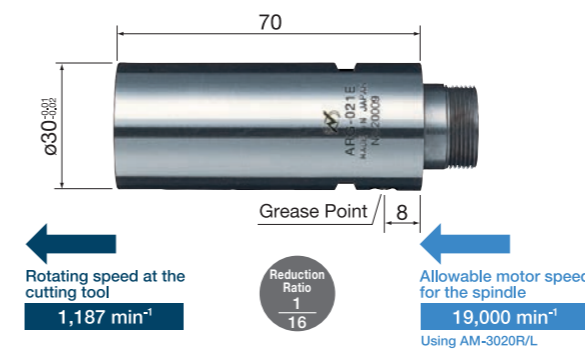
- Grease Dispenser : 1pc. • Grease Nipple : 1pc.



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.

Speed Reducer (1/16)	O.D.	Rotating speed at the cutting tool	Reduction Ratio	Allowable motor speed for the spindle	Weight
ARG-021E	ø30mm	1,187 min ⁻¹ *	1/16	19,000 min ⁻¹ (Using AM-3020R/L)	325 g

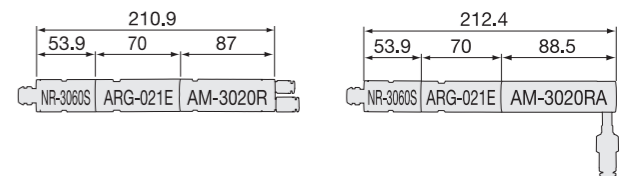
* Maximum rotating speed at the cutting tool for the reduction ratio.



Code No.	1508	Model	ARG-021E
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< Standard Equipment Accessories >

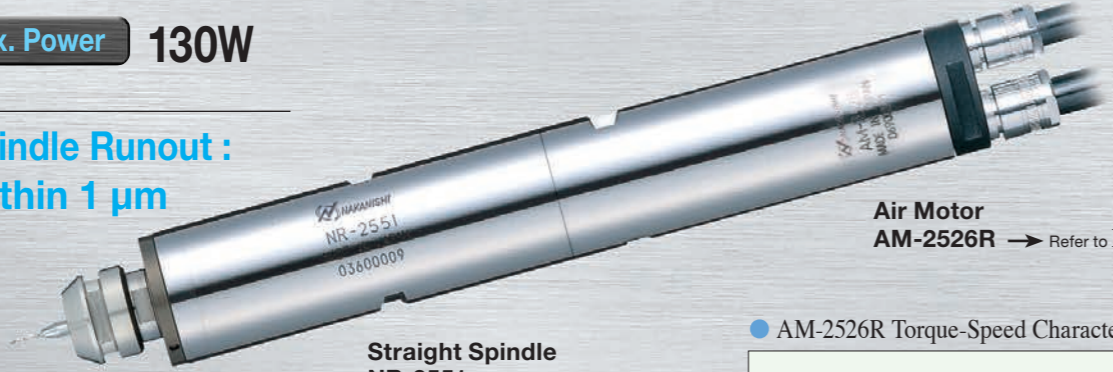
- Grease Dispenser : 1pc. • Grease Nipple : 1pc.



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.

▼ AIR MOTOR & SPINDLE (Separate Type)

Straight Spindle



Outside Diameter $\varnothing 25\text{mm}$

Max. $24,000\text{min}^{-1}$ (Using 0.5MPa : AM-2526R / L)

Max. Power **130W**

Spindle Runout : Within 1 μm

Collet : Max. $\varnothing 6.35\text{mm}$

Collet CHK-3.0 → Refer to **P.36**

Air Line Kit AL-M1202 → Refer to **P.35**

OPTION → Refer to **P.36**

OPTION → Refer to **P.35**

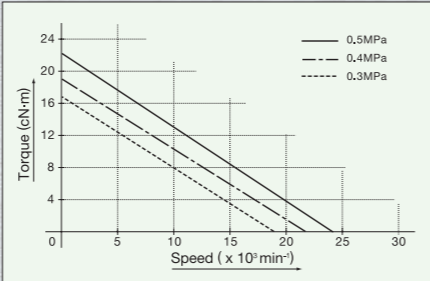
*Other collet sizes are available.

90° Angle Type Air Motor is available

Air Motor AM-2526R → Refer to **P.24**

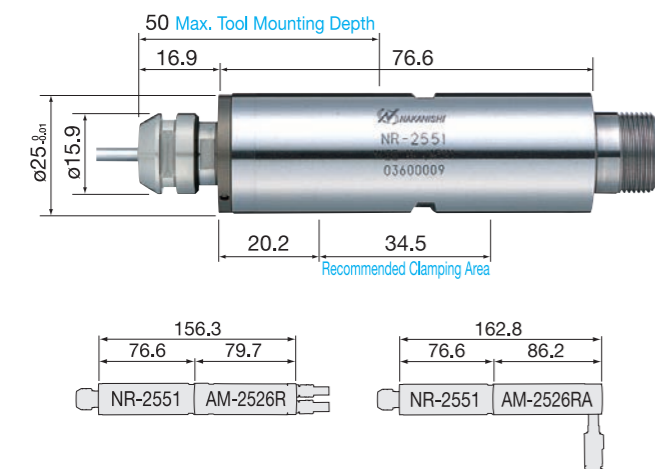
Straight Spindle NR-2551

AM-2526R Torque-Speed Characteristics



COOLANT

Spindle <Ceramic Bearings>	O.D.	Speed	Spindle Runout	Collet	Weight
NR-2551	$\varnothing 25\text{mm}$	$50,000\text{min}^{-1}$	Within 1 μm	$\varnothing 0.5 \sim \varnothing 6.35\text{mm}$ (CHK Group)	253g



Code No.	Model
1819	NR-2551

< Standard Equipment Accessories >

- Collet : $\varnothing 3.0\text{mm}$ (CHK-3.0) • Collet Nut (K-265)
- Spanner (12 x 14) : 2pcs., (22 x 27) : 1pc.

< Optional >

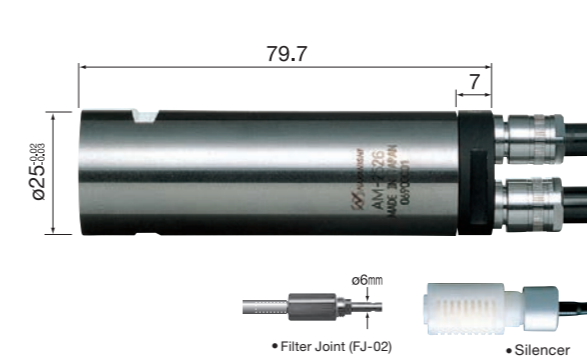
Collet (CHK Group) : $\varnothing 0.5 \sim \varnothing 6.35\text{mm}$ See Page 36 for details

Metal Saw Axis (KCH-03) : For $\varnothing 6.0$ (I.D.) x $\varnothing 30\text{mm}$ (O.D.)

Grindstone Axis (AGM-03) : For grinding wheel with I.D. of $\varnothing 5.0$ mm

*Outside diameter $\varnothing 25.4\text{mm}$ type is also available.

Air Motor (Forward Rotation / Reverse Rotation)	O.D.	Motor Speed	Max. Power	Proper Air Pressure	Air Consumption	Weight
AM-2526R / L	$\varnothing 25\text{mm}$	$24,000\text{min}^{-1}$ (0.5MPa)	130W	0.3~0.5MPa	205Nℓ/min	200g (w/o hose)



Code No.	Model
1801	AM-2526R
1802	AM-2526L

< Specifications >

Motor Hose (Diameter / Length)

Air Inlet : $\varnothing 4.5$ (I.D.) x $\varnothing 6.7\text{mm}$ (O.D.) x 2m

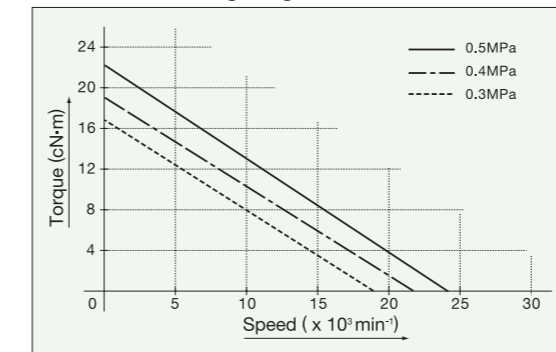
Exhaust Air : $\varnothing 5.5$ (I.D.) x $\varnothing 7.5\text{mm}$ (O.D.) x 1m

< Standard Equipment Accessories >

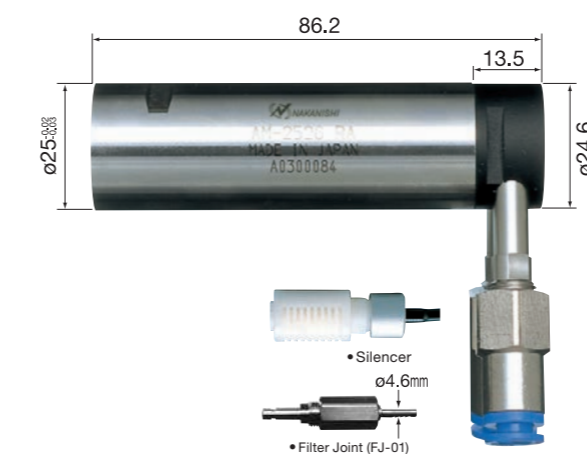
- Hose (K-204) : 2m • Filter Joint (FJ-02) • Silencer (K-208)
- Spanner (22 x 27) : 1pc.

*Outside diameter $\varnothing 25.4\text{mm}$ type is also available.

● AM-2526R Torque-Speed Characteristics



90° Angle Air Motor (Forward Rotation / Reverse Rotation)	O.D.	Motor Speed	Max. Power	Proper Air Pressure	Air Consumption	Weight
AM-2526RA / LA	$\varnothing 25\text{mm}$	$22,000\text{min}^{-1}$ (0.5MPa)	120W	0.3~0.5MPa	170Nℓ/min	241g (w/o hose)



Code No.	Model
1803	AM-2526RA
1804	AM-2526LA

< Specifications >

Motor Hose (Diameter / Length)


Air Inlet : $\varnothing 4.0$ (I.D.) x $\varnothing 6.0\text{mm}$ (O.D.) x 2m

Exhaust Air : $\varnothing 5.5$ (I.D.) x $\varnothing 8.0\text{mm}$ (O.D.) x 1m

< Standard Equipment Accessories >

- Hose (K-215) : $\varnothing 6\text{mm}$ x 2m • Hose (K-256) : $\varnothing 8\text{mm}$ x 1m
- Filter Joint (FJ-01) • Silencer (K-209) • Spanner (22 x 27) : 1pc.

*Outside diameter $\varnothing 25.4\text{mm}$ type is also available.

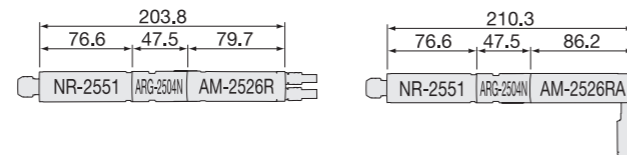
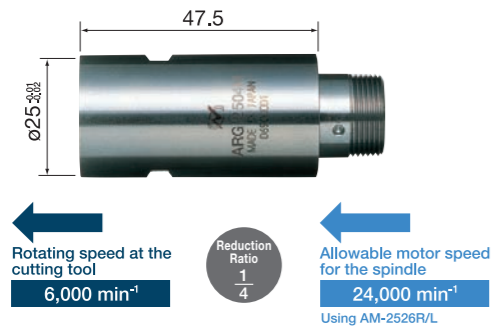
 Please maintain not to exceed speed limit.

Speed Reducer (1/4)	O.D.	Rotating speed at the cutting tool	Reduction Ratio	Allowable motor speed for the spindle	Weight
ARG-2504N	ø25mm	6,000 min ⁻¹ *	$\frac{1}{4}$	24,000 min ⁻¹ (Using AM-2526R/L)	150g

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

Code No. **1822** Model **ARG-2504N**

*Outside diameter ø25.4mm type is also available.

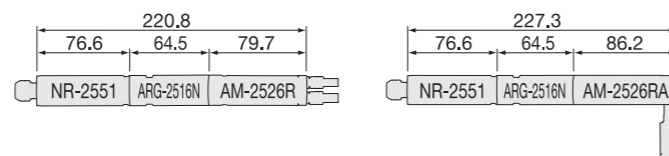
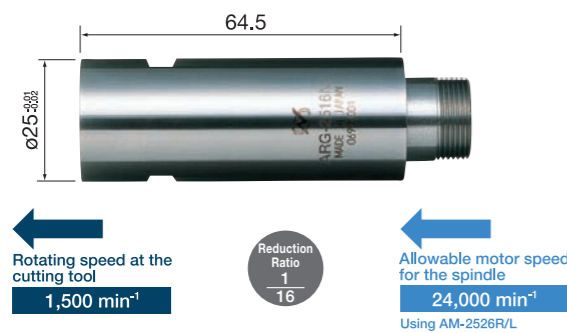


Speed Reducer (1/16)	O.D.	Rotating speed at the cutting tool	Reduction Ratio	Allowable motor speed for the spindle	Weight
ARG-2516N	ø25mm	1,500 min ⁻¹ *	$\frac{1}{16}$	24,000 min ⁻¹ (Using AM-2526R/L)	205g

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

Code No. **1824** Model **ARG-2516N**

*Outside diameter ø25.4mm type is also available.



▼ AIR MOTOR & SPINDLE (Separate Type)

Straight Spindle

Outside Diameter $\phi 22.8\text{mm}$

Max. $30,000\text{min}^{-1}$ (0.5MPa)

Max. Power 108W

90° Angle Type Air Motor is available

Air Motor AM-310R → Refer to P.31

Straight Spindle NR-303

OPTION → Refer to P.35

Collet : Max. $\phi 6.35\text{mm}$

Collet CHK-3.0 → Refer to P.36

*Please maintain not to exceed speed limit.

AM-310R Torque-Speed Characteristics

Proper Air Pressure
— 0.5MPa
- - 0.4MPa
... 0.3MPa

Spindle **NR-303**

O.D.	Speed	Spindle Runout	Collet	Weight
$\phi 22.8\text{mm}$	$30,000\text{min}^{-1}$ (Using AM-310R/L)	Within $2\ \mu\text{m}$	$\phi 0.5\sim\phi 6.35\text{mm}$ (CHK Group)	215g

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

< Standard Equipment Accessories >

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

< Optional >

Collet (CHK Group) : $\phi 0.5\sim\phi 6.35\text{mm}$ See Page 36 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 $\phi 5.0\text{mm}$

Spindle < Ceramic Bearings > **NR-2351**

O.D.	Speed	Spindle Runout	Collet	Weight
$\phi 22.8\text{mm}$	$50,000\text{min}^{-1}$	Within $1\ \mu\text{m}$	$\phi 0.5\sim\phi 6.35\text{mm}$ (CHK Group)	215g

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

< Standard Equipment Accessories >

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

< Optional >

Collet (CHK Group) : $\phi 0.5\sim\phi 6.35\text{mm}$ See Page 36 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 $\phi 5.0\text{mm}$

*Allowable Motor Speed : $50,000\text{min}^{-1}$

Spindle **NR-311**

O.D.	Speed	Spindle Runout	Collet	Weight
$\phi 22.8\text{mm}$	$30,000\text{min}^{-1}$ (Using AM-310R/L)	Within $2\ \mu\text{m}$	$\phi 0.5\sim\phi 6.35\text{mm}$ (CHK Group)	370g

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

< Standard Equipment Accessories >

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

< Optional >

Collet (CHK Group) : $\phi 0.5\sim\phi 6.35\text{mm}$ See Page 36 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

Spindle **AMH-301**

O.D.	Speed	Collet	Weight
$\phi 22.8\text{mm}$	$30,000\text{min}^{-1}$ (Using AM-310R/L)	$\phi 1.0\sim\phi 3.175\text{mm}$ (CHM Group)	171g

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

< Standard Equipment Accessories >

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

< Optional >

Collet (CHM Group) : $\phi 1.0\sim\phi 3.175\text{mm}$ See Page 36 for details

Grindstone Axis (AGM-01) : For grinding wheel with I.D. of $\phi 5.0\text{mm}$

Please maintain not to exceed speed limit.

▼ AIR MOTOR & SPINDLE (Separate Type)

Angle Spindle

Outside Diameter $\phi 22.8\text{mm}$

Max. $2,870\text{min}^{-1}$ Rotating speed at the cutting tool (Using 0.5MPa : ARG-01+AM-300R/L)

Max. Power 57W (Using AM-300R/L)

90° Angle Spindle RA-100

Air Motor AM-300R → Refer to P.32

Reducer must be used for Angle Spindle

Speed Reducer ARG-01
OPTION → Refer to P.33

Air Line Kit AL-M1202
OPTION → Refer to P.35

Collet :
Max. $\phi 3.175\text{mm}$

Collet CH8-3.0
OPTION → Refer to P.36

*Other collet sizes are available.

Angle Spindle Select Sheet

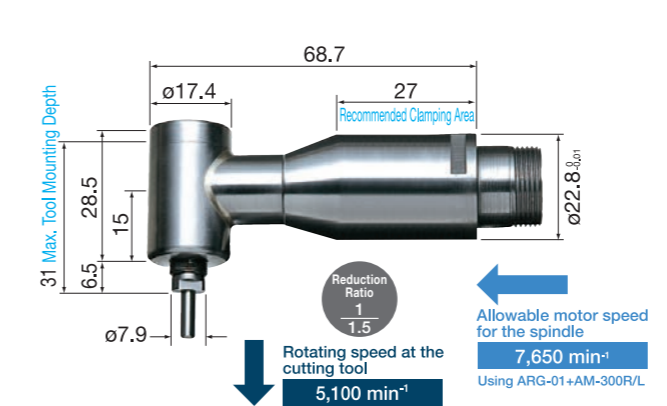
Model	RA-100	RA-200	RAS-101
Angle Head Size O.D.	$\phi 22.8\text{mm}$	$\phi 17.4\text{mm}$	$\phi 22.8\text{mm}$
Rotating speed at the cutting tool*1	$2,870\text{min}^{-1}$ *1	$5,100\text{min}^{-1}$ *1	$2,870\text{min}^{-1}$ *2
Using Tools	$\phi 0.8\sim\phi 3.175\text{mm}$		$\phi 0.5\sim\phi 6.35\text{mm}$

*1 Using ARG-01+AM-300R *2 Using ARG-01+AM-310R

*Please maintain not to exceed speed limit.

90° Angle Spindle	O.D.	Rotating speed at the cutting tool	Reduction Ratio	Allowable motor speed for the spindle	Collet	Weight
RA-200	$\phi 22.8\text{mm}$	$5,100\text{min}^{-1}$ *	$\frac{1}{1.5}$	$7,650\text{min}^{-1}$ (Using ARG-01+AM-300R/L)	$\phi 0.8\sim\phi 3.175\text{mm}$ (CHS Group)	165g

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



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

< Standard Equipment Accessories >

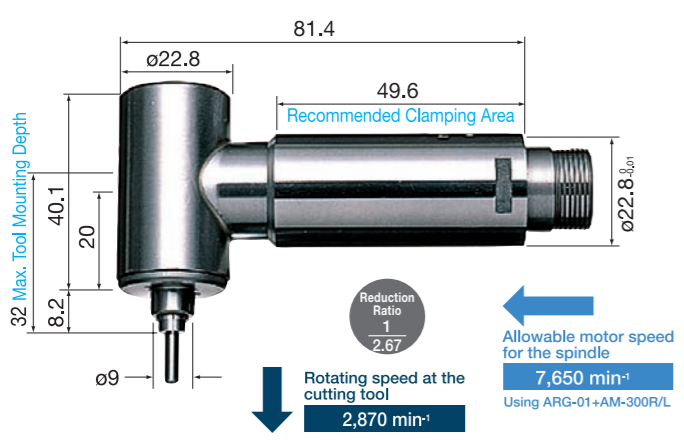
- Collet : $\phi 3.0\text{mm}$ (CHS-3.0)
- Spanner (7 x 5.1), (8 x 5), (20 x 24) : 1pc. each

< Optional >

Collet (CHS Group) : $\phi 0.8\sim\phi 3.175\text{mm}$ See Page 36 for details

90° Angle Spindle	O.D.	Rotating speed at the cutting tool	Reduction Ratio	Allowable motor speed for the spindle	Collet	Weight
RA-100	$\phi 22.8\text{mm}$	$2,870\text{min}^{-1}$ *	$\frac{1}{2.67}$	$7,650\text{min}^{-1}$ (Using ARG-01+AM-300R/L)	$\phi 0.8\sim\phi 3.175\text{mm}$ (CH8 Group)	271g

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



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

< Standard Equipment Accessories >

- Collet : $\phi 3.0\text{mm}$ (CH8-3.0)
- Spanner (7 x 5.5), (8 x 5), (20 x 24) : 1pc. each

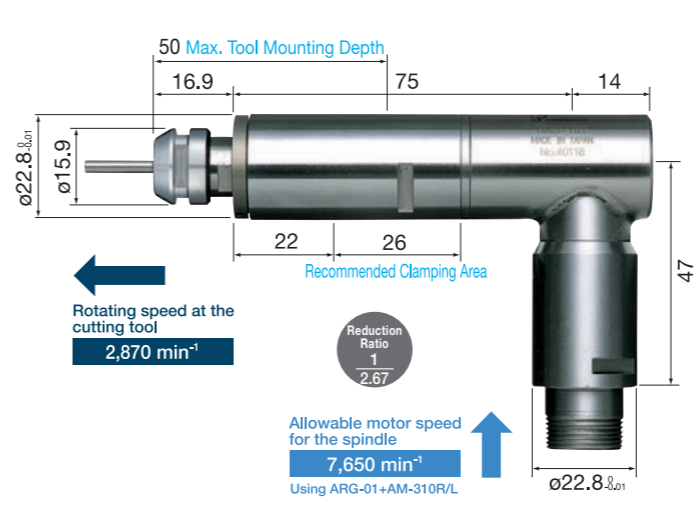
< Optional >

Collet (CH8 Group) : $\phi 0.8\sim\phi 3.175\text{mm}$ See Page 36 for details

Metal Saw Axis (KCH-02) : For $\phi 6.0$ (I.D.) x $\phi 30\text{mm}$ (O.D.)

90° Angle Spindle	O.D.	Rotating speed at the cutting tool	Reduction Ratio	Allowable motor speed for the spindle	Spindle Runout	Collet	Weight
RAS-101	$\phi 22.8\text{mm}$	$2,870\text{min}^{-1}$ *	$\frac{1}{2.67}$	$7,650\text{min}^{-1}$ (Using ARG-01+AM-310R/L)	Within $2\mu\text{m}$	$\phi 0.5\sim\phi 6.35\text{mm}$ (CHK Group)	325g

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



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

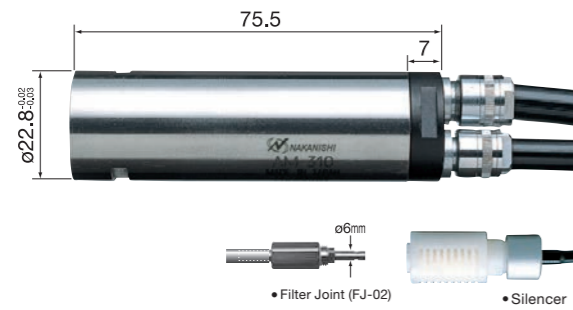
< Standard Equipment Accessories >

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

< Optional >

Collet (CHK Group) : $\phi 0.5\sim\phi 6.35\text{mm}$ See Page 36 for details

Air Motor (Forward Rotation / Reverse Rotation)	O.D.	Motor Speed	Max. Power	Proper Air Pressure	Air Consumption	Weight
AM-310R / L	ø22.8mm	30,000min ⁻¹ (0.5MPa)	108W	0.3~0.5MPa	190Nℓ/min	203g (w/o hose)



Code No.	1079	Model	AM-310R
Code No.	1085	Model	AM-310L

< Specifications >

Motor Hose (Diameter / Length)

Air Inlet : ø4.5 (I.D.) x ø6.7mm (O.D.) x 2m

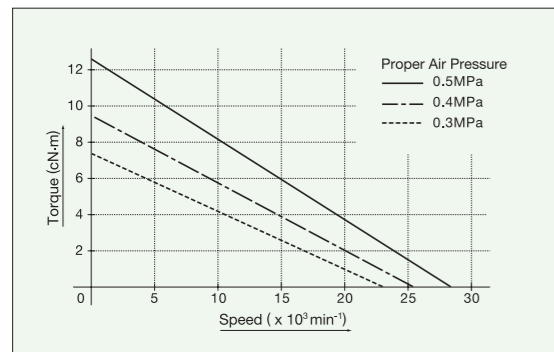
Exhaust Air : ø5.5 (I.D.) x ø7.5mm (O.D.) x 1m

< Standard Equipment Accessories >

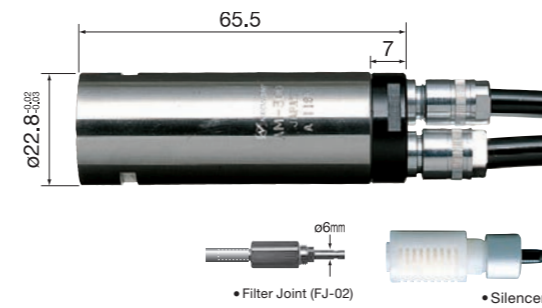
• Hose (K-204) : 2m • Filter Joint (FJ-02) • Silencer (K-208)

• Spanner (20 x 24) : 1pc.

● AM-310R Torque-Speed Characteristics



Air Motor (Forward Rotation / Reverse Rotation)	O.D.	Motor Speed	Max. Power	Proper Air Pressure	Air Consumption	Weight
AM-300R / L	ø22.8mm	30,000min ⁻¹ (0.4MPa)	57W	0.3~0.5MPa	90Nℓ/min	135g (w/o hose)



Code No.	1021	Model	AM-300R
Code No.	1083	Model	AM-300L

< Specifications >

Motor Hose (Diameter / Length)

Air Inlet : ø3.7 (I.D.) x ø5.7mm (O.D.) x 2m

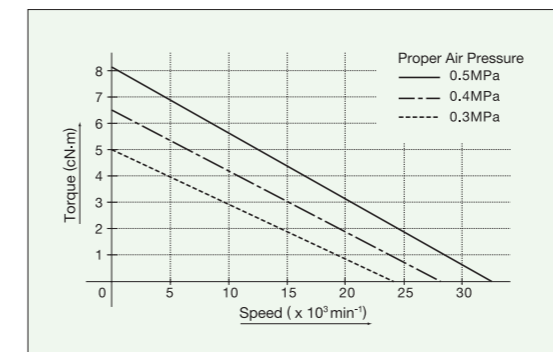
Exhaust Air : ø5.0 (I.D.) x ø6.5mm (O.D.) x 1m

< Standard Equipment Accessories >

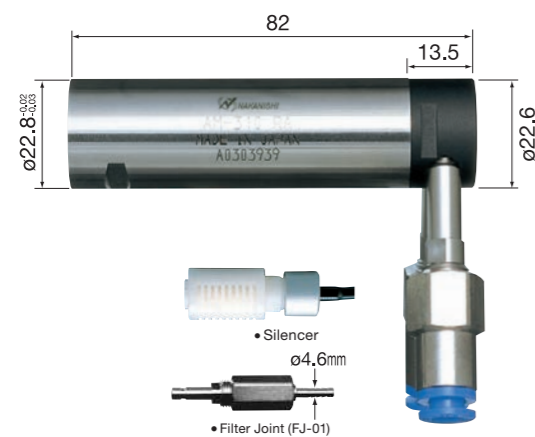
• Hose (K-221) : 2m • Filter Joint (FJ-02) • Silencer (K-209)

• Spanner (20 x 24) : 1pc.

● AM-300R Torque-Speed Characteristics



90° Angle Air Motor (Forward Rotation / Reverse Rotation)	O.D.	Motor Speed	Max. Power	Proper Air Pressure	Air Consumption	Weight
AM-310RA / LA	ø22.8mm	30,000min ⁻¹ (0.5MPa)	108W	0.3~0.5MPa	170Nℓ/min	244g (w/o hose)



Code No.	1081	Model	AM-310RA
Code No.	1082	Model	AM-310LA

< Specifications >

Motor Hose (Diameter / Length)

Air Inlet : ø4.0 (I.D.) x ø6.0mm (O.D.) x 2m

Exhaust Air : ø5.5 (I.D.) x ø8.0mm (O.D.) x 1m

< Standard Equipment Accessories >

• Hose (K-215) : ø6mm x 2m • Hose (K-216) : ø8mm x 1m

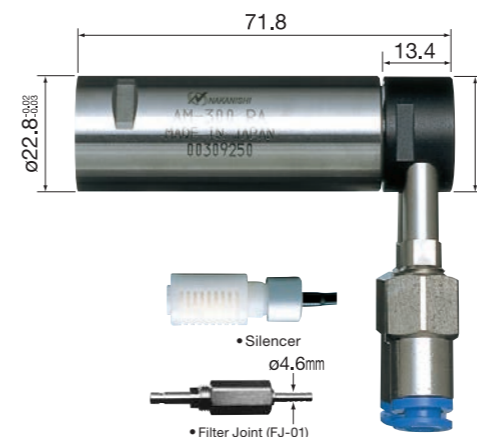
• Filter Joint (FJ-01) • Silencer (K-208) • Spanner (20 x 24) : 1pc.

Air Line Kit
AL-M1202

OPTION → Refer to P.35



90° Angle Air Motor (Forward Rotation / Reverse Rotation)	O.D.	Motor Speed	Max. Power	Proper Air Pressure	Air Consumption	Weight
AM-300RA / LA	ø22.8mm	30,000min ⁻¹ (0.4MPa)	57W	0.3~0.5MPa	90Nℓ/min	176g (w/o hose)



Code No.	1018	Model	AM-300RA
Code No.	1084	Model	AM-300LA

< Specifications >

Motor Hose (Diameter / Length)

Air Inlet : ø4.0 (I.D.) x ø6.0mm (O.D.) x 2m

Exhaust Air : ø5.5 (I.D.) x ø8.0mm (O.D.) x 1m

< Standard Equipment Accessories >

• Hose (K-215) : ø6mm x 2m • Hose (K-216) : ø8mm x 1m

• Filter Joint (FJ-01) • Silencer (K-208) • Spanner (20 x 24) : 1pc.

Air Line Kit
AL-M1202

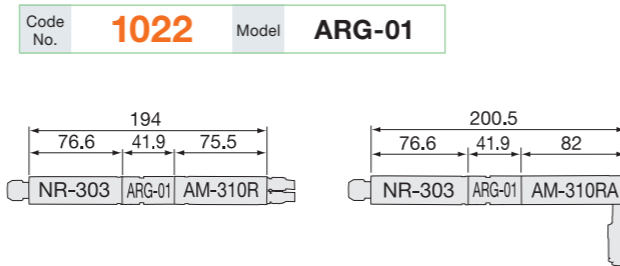
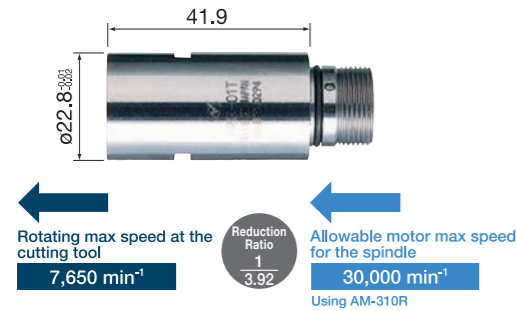
OPTION → Refer to P.35



Please maintain not to exceed speed limit.

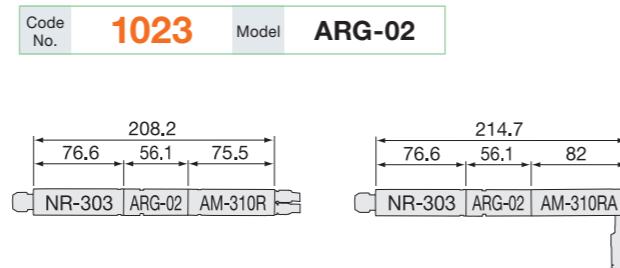
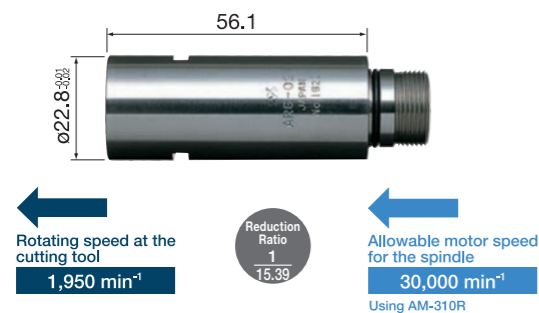
Speed Reducer (1/3.92)	O.D.	Rotating Max. speed at the cutting tool	Reduction Ratio	Allowable motor Max. speed for the spindle	Weight
ARG-01	ø22.8mm	7,650 min ⁻¹ * (0.5MPa)	1 3.92	30,000 min ⁻¹ (Using AM-310R)	108g

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

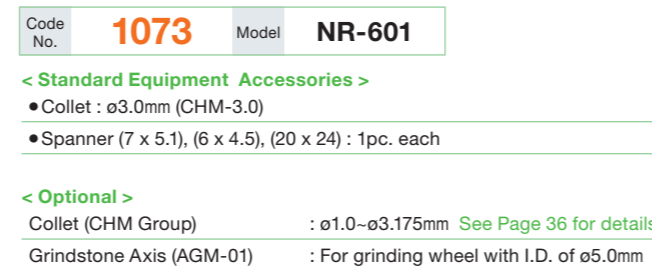
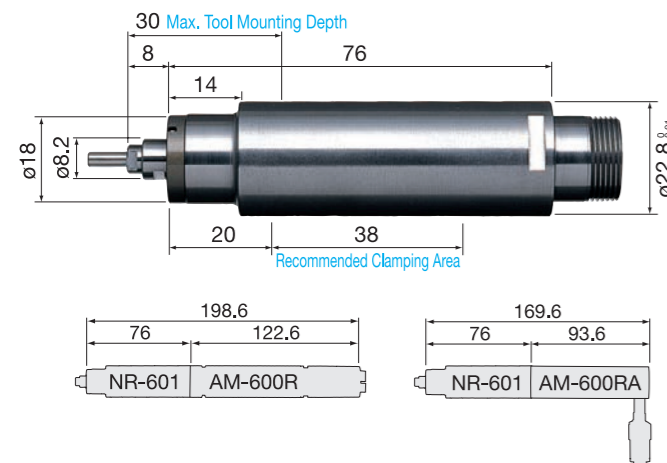


Speed Reducer (1/15.39)	O.D.	Rotating speed at the cutting tool	Reduction Ratio	Allowable motor speed for the spindle	Weight
ARG-02	ø22.8mm	1,950 min ⁻¹ * (0.5MPa)	1 15.39	30,000 min ⁻¹ (Using AM-310R)	148g

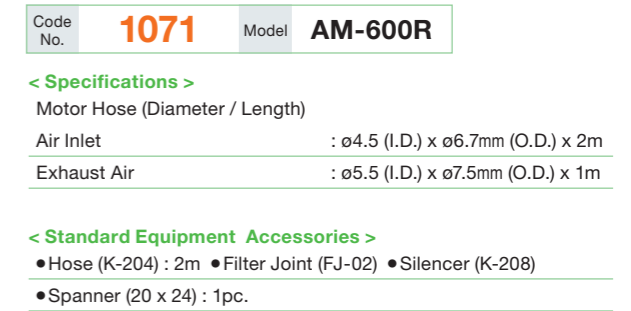
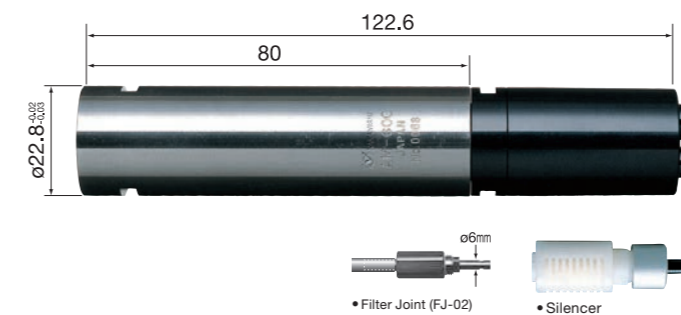
* Maximum rotating speed at the cutting tool for the reduction ratio.



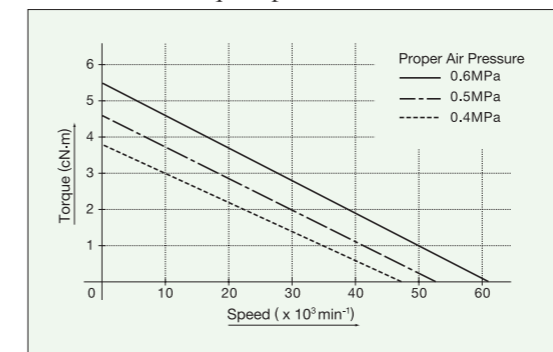
Spindle	O.D.	Max. Speed	Fit to	Collet	Weight
NR-601	ø22.8mm	58,000 min ⁻¹ (Using AM-600R)	AM-600R / AM-600RA	ø1.0~ø3.175 mm (CHM Group)	208g



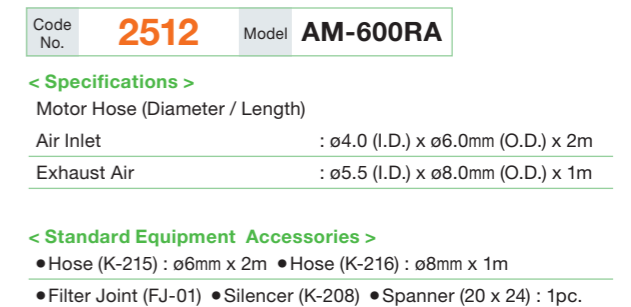
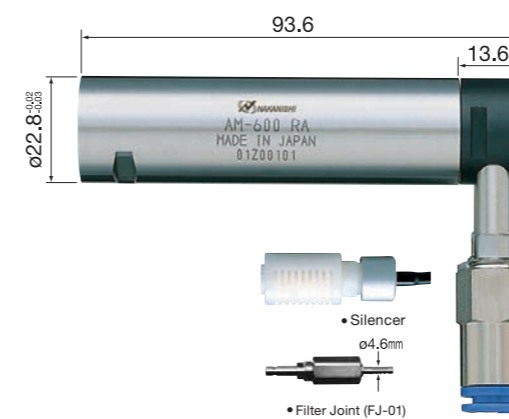
Air Motor (Forward Rotation)	O.D.	Motor Max. Speed	Max. Power	Proper Air Pressure	Air Consumption	Weight
AM-600R	ø22.8mm	58,000 min ⁻¹ (0.6MPa)	76W	0.4~0.6 MPa	145 Nℓ/min	215g (w/o hose)



● AM-600R Torque-Speed Characteristics



90° Angle Air Motor (Forward Rotation)	O.D.	Motor Speed	Max. Power	Proper Air Pressure	Air Consumption	Weight
AM-600RA	ø22.8mm	55,000 min ⁻¹ (0.6MPa)	69W	0.4~0.6 MPa	140 Nℓ/min	255g (w/o hose)



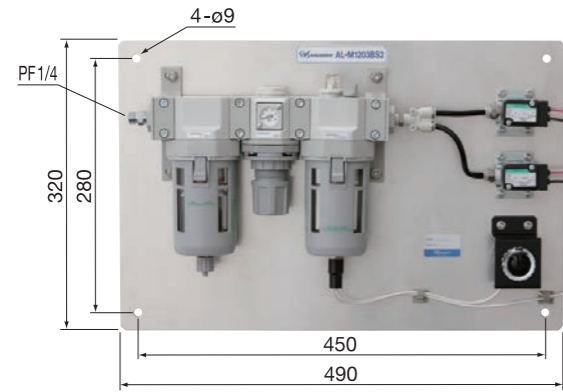
Air Line Kit
AL-M1202

OPTION → Refer to P.35



Air Line Kit

AL-M1203BS2 (For ø6mm Hose)



■ The AL-M1203BS2 is fitted with 2 (DC+24V) solenoid operated air valves a large capacity filter and lubricator a high flow regulator, and low oil warning system making this the ideal air line system for installation on NC and CNC machinery. This Air Line Kit allows for operation of 2 air motors.

Filter Mesh 0.3 µm

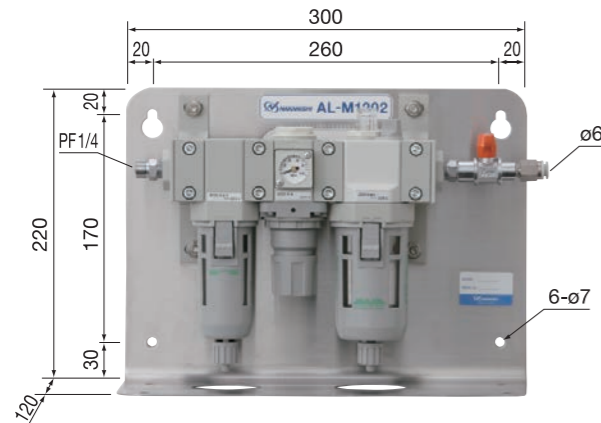
Code No. **4503** Model **AL-M1203BS2**

< Standard Equipment Accessories >

- Connection Hose (K-260) : 2m
- Lubricating Oil (K-202) : 1pc.

Air Line Kit

AL-M1202 (ø6mm Air Output One-Touch Connector)



■ 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 to proper air pressure and the lubricator ensures proper oil flow to the motor and spindle. This Air Line Kit is wall mountable.

Filter Mesh 0.3 µm

Code No. **4502** Model **AL-M1202**

< Standard Equipment Accessories >

- Connection Hose (K-275) : 2m
- Lubricating Oil (K-211) : 1pc.

Accessories

GR-30 / GR-22.8

GR-30
Grip Ring

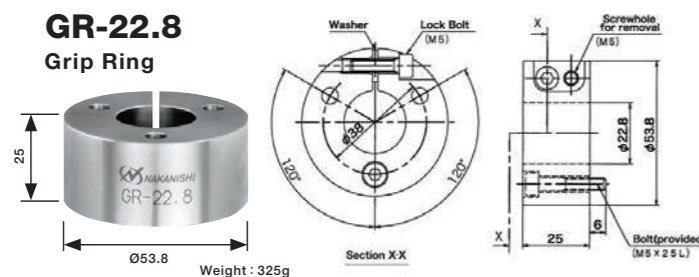


Weight : 385g

Standard Accessories

Mounting Bolt (GR-30) M5x25:3pcs

GR-22.8
Grip Ring

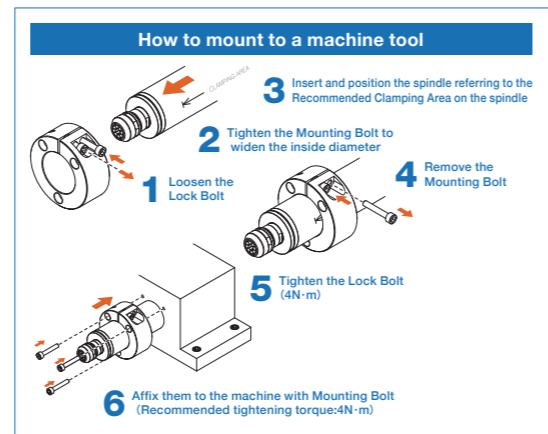


Weight : 325g

Standard Accessories

Mounting Bolt (GR-22.8) M5x25:3pcs

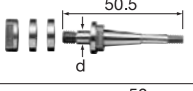
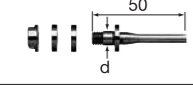
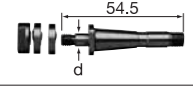
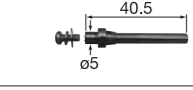
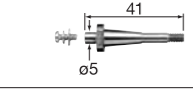
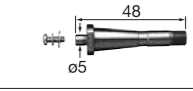
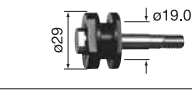
Code No. **1885** Model **GR-30**
Code No. **1888** Model **GR-22.8**



■ Collet · Collet Nut

Product	Inside Diameter : ød	Fit to	Model	Code No.
 ø1.0~ø4.0 ø0.5~ø0.9 Collet CHA Group	ø3.0AA* ø3.175AA* ø4.0AA* ø2.35 ø3.0 ø3.175 ø4.0 ø0.5, ø0.6, ø0.7, ø0.8, ø0.9 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 ø1.0, ø1.5, ø2.0, ø2.5, ø3.5 ø1.6	MSS-19, MSS-20, MSS-22 PMS-3020A ※ High precision type AA (Spindle runout within 2µm)	CHA-3.0AA CHA-3.175AA CHA-4.0AA CHA-2.35 CHA-3.0 CHA-3.175 CHA-4.0	91494 91496 91495 91492 91430 91493 91440
	CHA-□□		—	
 ø1.0~ø6.35 ø0.5~ø0.9 Collet CHK Group	ø3.0AA* ø3.175AA* ø4.0AA* ø6.0AA* ø6.35AA* ø2.35 ø3.0 ø3.175 ø4.0 ø6.0 ø6.35 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 ø1.6, ø5.0	MSS-25, MSST-23, NR-2351, NR-2551 NR-303, NR-311, NR-3060S, NR-403E NR-453E, PMA-3013K, PMS-3020K PMR-3005K, RAS-101, RAS-151E RAX-71E, RAX-271E ※ High precision type AA (Spindle runout within 2µm)	CHK-3.0AA CHK-3.175AA CHK-4.0AA CHK-6.0AA CHK-6.35AA CHK-2.35 CHK-3.0 CHK-3.175 CHK-4.0 CHK-6.0 CHK-6.35	91597 91598 91599 91600 91601 91592 91530 91593 91540 91560 91596
	CHK-□□		—	
 Collet CHM Group	ø2.35 ø3.0 ø3.175 ø1.6 ø1.0, ø2.0	AMH-301, NR-601	CHM-2.35 CHM-3.0 CHM-3.175 CHM-1.6 CHM-□□	90992 90930 90993 90916 —
	CHM-□□		—	
 Collet CHS Group	ø2.35 ø3.0 ø3.175 ø1.6 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	RA-200, RA-271E	CHS-2.35 CHS-3.0 CHS-3.175 CHS-1.6 CHS-□□	90592 90530 90593 90516 —
	CHS-□□		—	
 Collet CHSS Group	ø2.35 ø3.0 ø3.175 ø1.0, ø1.5, ø2.0, ø2.5	PMA-3013S	CHSS-2.35 CHSS-3.0 CHSS-3.175 CHSS-□□	93092 93030 93093 —
	CHSS-□□		—	
 Collet CH8 Group	ø2.35 ø3.0 ø3.175 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	RA-100, RA-151E	CH8-2.35 CH8-3.0 CH8-3.175 CH8-□□	91092 91030 91093 —
	CH8-□□		—	
 Collet Nut for Collet (CHA)		MSS-19, MSS-20, MSS-22 PMS-3020A	CHN-A	2102
 Collet Nut for Collet (CHK)		MSS-25, MSST-23, NR-2351, NR-2551, NR-303 NR-311, NR-3060S, NR-403E, NR-453E PMA-3013K, PMS-3020K, PMR-3005K, RAS-101 RAS-151E, RAX-71E, RAX-271E	K-265	2129


■ Special Axis Grindstone Axis

Product	Inside Diameter : ød	Fit to	Model	Code No.
	ø5.0	MSS-19, MSS-20, MSS-22	KCH-01A (5.0)	2152
	ø6.0		KCH-01A (6.0)	2135
	ø8.0		KCH-01A (8.0)	2155
	ø5.0	RA-100, RA-151E	KCH-02 (5.0)	2146
	ø6.0		KCH-02 (6.0)	1077
	ø8.0		KCH-02 (8.0)	2147
	ø5.0	MSS-25, MSST-23, NR-2351, NR-2551 NR-303, NR-311, NR-3060S, NR-403E NR-453E, PMA-3013K, PMS-3020K, PMR-3005K RAS-101, RAS-151E, RAX-71E, RAX-271E	KCH-03 (5.0)	2148
	ø6.0		KCH-03 (6.0)	2130
	ø8.0		KCH-03 (8.0)	2149
		AMH-301, NR-601	AGM-01	1029
		MSS-19, MSS-20, MSS-22	AGM-01A	2137
		MSS-25, MSST-23, NR-2351, NR-2551 NR-303, NR-3060S, NR-403E, NR-453E PMA-3013K, PMS-3020K, RAS-101 RAS-151E, RAX-71E, RAX-271E	AGM-03	2131
		NR-311	NGF2-19	2143
		NR-3060S, NR-403E, NR-453E PMS-3020K	EGF-19	2138

* : For right hand (cw) rotation only.

■ Bush

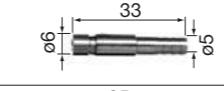
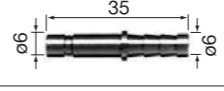
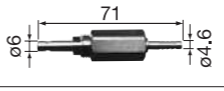
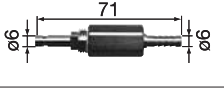
Bushes to allow smaller dia. spindles to be mounted in larger dia. holders.

Product	Description x I.D. x O.D.	Model	Code No.
	ø25.4Bush Dimensions: ø19.05xø25.4x36mm	RB-19.05x25.4x36L	1887
	ø22Bush Dimensions: ø20xø22x40mm	RB-20x22	1877
	ø22.8Bush Dimensions: ø20xø22.8x40mm	RB-20x22.8	1876
	ø23Bush Dimensions: ø20xø23x40mm	RB-20x23	1875
	ø25Bush Dimensions: ø20xø25x40mm	RB-20x25	1878
	ø25.4Bush Dimensions: ø20xø25.4x40mm	RB-20x25.4	1879
	ø25Bush Dimensions: ø22xø25x33.5mm	RB-22x25x34L	1883
	ø25.4Bush Dimensions: ø22xø25.4x33.5mm	RB-22x25.4x34L	1884
	ø25Bush Dimensions: ø22.8xø25x25mm	RBS-22.8x25	1872
	ø25Bush Dimensions: ø22.8xø25x44mm	RB-22.8x25	1871
	ø25.4Bush Dimensions: ø22.8xø25.4x25mm	RBS-22.8x25.4	1874
	ø25.4Bush Dimensions: ø22.8xø25.4x44mm	RB-22.8x25.4	1873


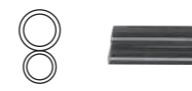
■ Position Set Ring

Product		Model		Code No.	
Inside Diameter: dmm	Outside Diameter: Dmm				
ø19.05	ø36.5	R-19		1981	
ø20	ø37.5	R-20		1982	
ø22	ø38.5	R-22		1976	
ø22.8	ø39.5	R-22.8		1078	
ø23	ø39.5	R-23		1983	
ø25	ø41.5	R-25		1977	
ø25.4	ø41.5	R-25.4		1978	
ø30	ø45.9	R-30		1979	



■ Metal Fitting & Filter Joint

Product	Description	Fit to	Model	Code No.
	Metal Fitting (for ø6 Quick Disconnecting Joint)	(For K-215 Hose) (For K-259 Hose)	K-241	2035
	Metal Fitting (for ø6 Quick Disconnecting Joint)	(For K-204 Hose)	K-242	2036
	Filter Joint (for ø6 Quick Disconnecting Joint)	(For K-215 Hose) (For K-221 Hose) (For K-247 Hose) (For K-254 Hose) (For K-259 Hose)	FJ-01	2038
	Filter Joint (for ø6 Quick Disconnecting Joint)	(For K-204 Hose)	FJ-02	2039



■ Hose

Product	Description	Fit to	Model	Code No.
	Hose ø6mm (O.D.) (INLET) 2m	AM-2525 (RA LA) AM-2526 (RA LA) AM-300 (RA LA) AM-310 (RA LA) AM-3020 AM-600RA PMA-3013K PMA-3013S PMA-3020A PMS-3020K MSS-19 20 22 25 (RA) MSST-23 (RA) MSST-23 (RA)	K-215	2028
	Hose ø8mm (O.D.) (EXHAUST) 1m	AM-300 (RA LA) AM-310 (RA LA) AM-600RA MSS-19 20 22 (RA) MSST-23 (RA) MSST-23 (RA)	K-216	2029
	Hose ø8mm (O.D.) (EXHAUST) 1m	AM-3020 PMA-3013K PMA-3013S PMR-3005K PMS-3020A PMS-3020K AM-2526 (RA LA) MSS-25 (RA)	K-256	2052
	Hose 2m	AM-2526 (R L) AM-310 (R L) AM-600R MSST-23 (R)	K-204	2030
	Hose 2m	AM-300 (R L) MSS-19 20 22 (R)	K-221	2049

■ Grease

Product	Description	Description	Model	Code No.
	Grease for Reducer (2.5mL)	ARG-011E, ARG-021E PMR-3005K, PMA-3013K RAX-271E, RAX-71E	—	1547
	Grease for Reducer (10mL)		—	1550
	Grease for Reducer (100mL)		—	1549

■ Oil

Product	Description	Fit to	Model	Code No.
	Lubricating Oil (70cc)	Air Line Kit (AL-M1202, AL-M1203BS2)	K-211	1057
	Lubricating Oil (1L)		K-202	1058

AIR MOTOR SPINDLE

SMS Series



Max. 40,000min⁻¹ (0.5MPa)

Max. Power 52W (0.5MPa)

High Cost Performance for MC High Speed Main Spindle Solution

Large Variety of Tapers Available
SHANK
Straight, BT30 / 40
NT30 / 40 (M)

Air Motor
The SMS Series use an advanced air motor system allowing for long continuous operation and no heat generation.

Collet
Max. ϕ 4.0mm

► “SMS SERIES” AIR LINE KIT, PARTS

UPGRADE MACHINING CENTERS TO
HIGH SPEED MACHINES SOLUTION

▼ AIR MOTOR SPINDLE

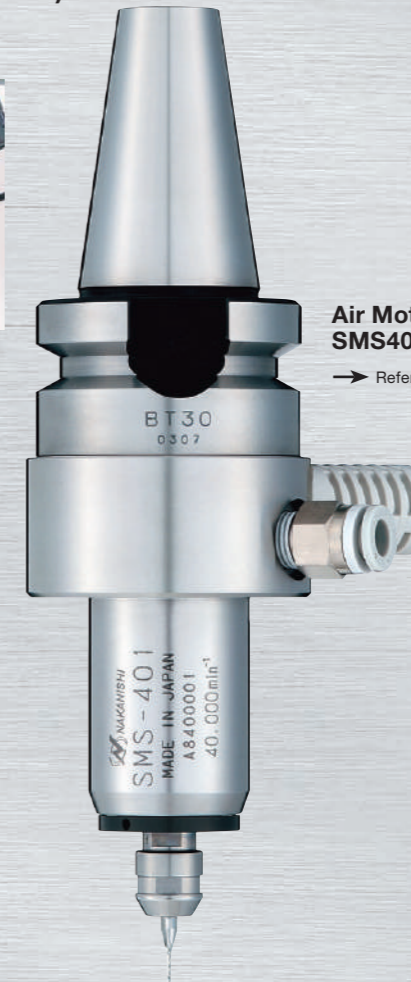
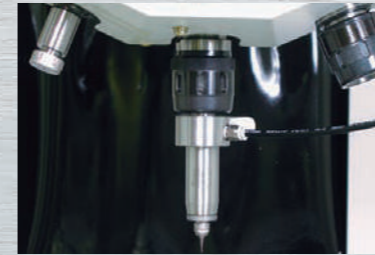
SMS Series



Max. 40,000min⁻¹ (0.5MPa)

Max. Power 52W (0.5MPa)

Upgrade rigidity 30%
more than SMS400 Series
with Ceramic Bearings



Air Motor Spindle
SMS401-BT30
→ Refer to P.42

Air Line Kit
AL-M1202
OPTION → Refer to P.43



Spindle Runout :
Within 1 μ m

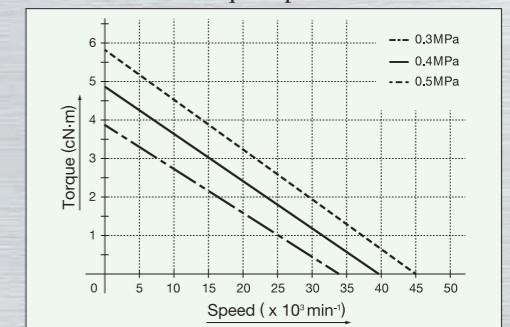
Collet :
Max. ϕ 4.0mm

Collet
CHA-4.0

OPTION → Refer to P.44

*Other collet sizes are available.

● SMS Series Torque-Speed Characteristics



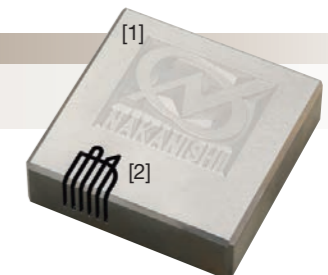
SMS Series Connection Diagram

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



SMS Series

Case Studies

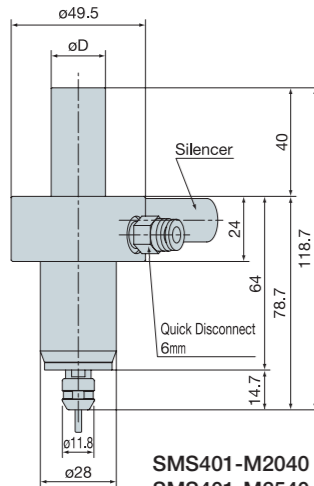


Sample No.	Usable Tool	STAVAX (HRC 52)			
		Motor Speed min ⁻¹	Work Feed mm/min	Cutting Depth Ad (mm)	Total Time
[1]	R0.3x3	40,000	2,000	Rough cutting : 0.025 Finishing : 0.005	80min
[2]	R0.5x12			0.01 Depth : 10	

Air Motor Spindle
< Ceramic Bearings >

SMS401 Straight Type

Max. Power	Speed	Spindle Runout	Air Consumption
52W (0.5MPa)	40,000min ⁻¹ (0.5MPa)	Within 1 μm	120Nℓ/min



SMS401-M2040
SMS401-M2540
SMS401-H2540

< Specifications >

Proper Air Pressure : 0.3MPa~0.5MPa
Hose Diameter Air Inlet : ø6.0mm (O.D.) x 2m

< Standard Equipment Accessories >

- Collet : ø4.0mm (CHA-4.0) • Collet Nut (CHN-A)
- Spanner (8 x 5), (9 x 11) : 1pc. each
- Hose (K-215) : ø6.0mm x 2m • Filter Joint (FJ-01)

*SMS401-H2540 – Standard Equipment is Collet ø3.175mm(CHA-3.175).

< Optional >

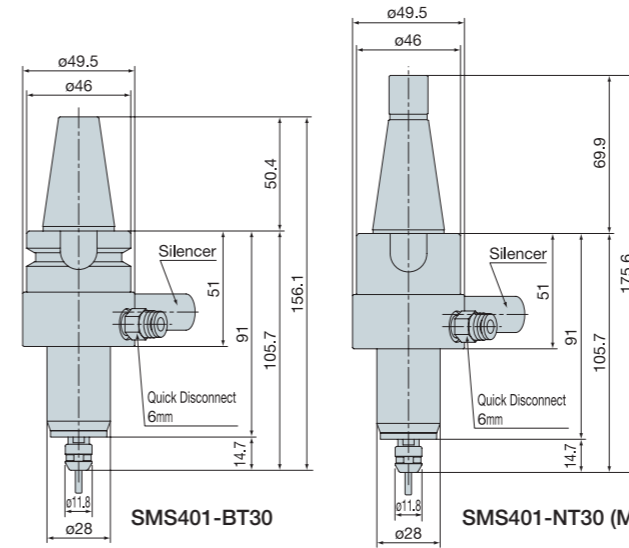
Collet (CHA Group) : ø0.5~ø4.0mm See Page 44 for details
Grindstone Axis (AGM-01A) : For grinding wheel with I.D. of ø5.0mm

Code No.	Model	Shank (øD)	Weight
9121	SMS401-M2040	ø20mm	555g
9122	SMS401-M2540	ø25mm	705g
9123	SMS401-H2540	ø25.4mm	715g

Air Motor Spindle
< Ceramic Bearings >

SMS401-BT30 / NT30 (M)

Max. Power	Speed	Spindle Runout	Air Consumption
52W (0.5MPa)	40,000min ⁻¹ (0.5MPa)	Within 1 μm	120Nℓ/min



SMS401-BT30

SMS401-NT30 (M)

< Specifications >

Proper Air Pressure : 0.3MPa~0.5MPa
Hose Diameter Air Inlet : ø6.0mm (O.D.) x 2m

< Standard Equipment Accessories >

- Collet : ø4.0mm (CHA-4.0) • Collet Nut (CHN-A)
- Spanner (8 x 5), (9 x 11) : 1pc. each
- Hose (K-215) : ø6.0mm x 2m • Filter Joint (FJ-01)

< Optional >

Collet (CHA Group) : ø0.5~ø4.0mm See Page 44 for details
Grindstone Axis (AGM-01A) : For grinding wheel with I.D. of ø5.0mm

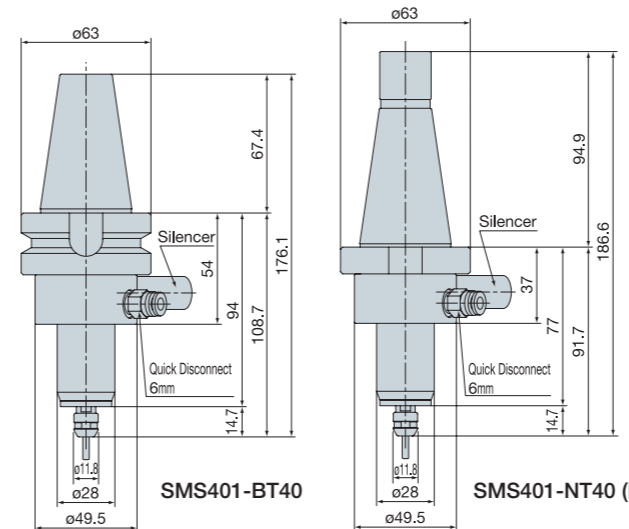
*NT30M – Retention knob threads are metric.

Code No.	Model	Weight
9126	SMS401-BT30	935g
9127	SMS401-NT30	965g
9128	SMS401-NT30M	975g

Air Motor Spindle
< Ceramic Bearings >

SMS401-BT40 / NT40 (M)

Max. Power	Speed	Spindle Runout	Air Consumption
52W (0.5MPa)	40,000min ⁻¹ (0.5MPa)	Within 1 μm	120Nℓ/min



SMS401-BT40

SMS401-NT40 (M)

< Specifications >

Proper Air Pressure : 0.3MPa~0.5MPa
Hose Diameter Air Inlet : ø6.0mm (O.D.) x 2m

< Standard Equipment Accessories >

- Collet : ø4.0mm (CHA-4.0) • Collet Nut (CHN-A)
- Spanner (8 x 5), (9 x 11) : 1pc. each
- Hose (K-215) : ø6.0mm x 2m • Filter Joint (FJ-01)

< Optional >

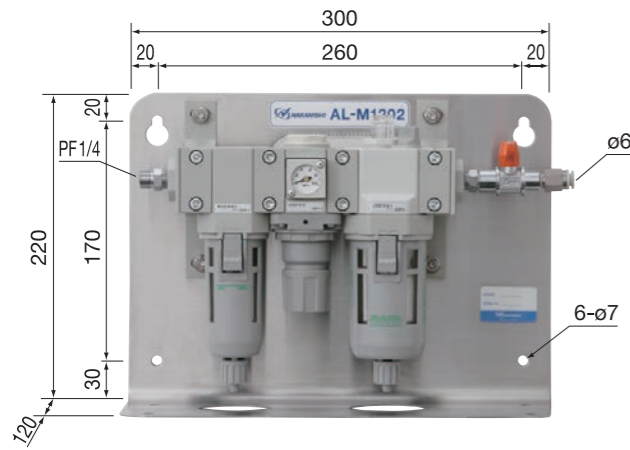
Collet (CHA Group) : ø0.5~ø4.0mm See Page 44 for details
Grindstone Axis (AGM-01A) : For grinding wheel with I.D. of ø5.0mm

*NT40M – Retention knob threads are metric.

Code No.	Model	Weight
9129	SMS401-BT40	1,555g
9130	SMS401-NT40	1,285g
9131	SMS401-NT40M	1,285g

Air Line Kit

AL-M1202 (ø6mm Air Output One-Touch Connector)



■ 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 to proper air pressure and the lubricator ensures proper oil flow to the motor and spindle. This Air Line Kit is wall mountable.

Filter Mesh 0.3 μm

Code No. **4502** Model **AL-M1202**

< Standard Equipment Accessories >

- Connection Hose (K-275) : 2m
- Lubricating Oil (K-211) : 1pc.

■ Parts

Product	Inside Diameter : ød	Fit to	Model	Code No.
 ø1.0~ø4.0	ø3.0AA*	SMS series ※ High precision type AA (Spindle runout within 2μm)	CHA-3.0AA	91494
	ø3.175AA*		CHA-3.175AA	91496
ø4.0AA*	CHA-4.0AA		91495	
ø2.35	CHA-2.35		91492	
ø3.0	CHA-3.0		91430	
ø3.175	CHA-3.175		91493	
ø4.0	CHA-4.0		91440	
 ø0.5~ø0.9	ø0.5, ø0.6, ø0.7, ø0.8, ø0.9		CHA-□□	—
	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			
Collet CHA Group	ø1.0, ø1.5, ø2.0, ø2.5, ø3.5 ø1.6			
	Collet Nut for Collet (CHA)	SMS series	CHN-A	2102
	Grindstone Axis Run-out Accuracy : Within 0.02 mm For Grindstone with ø5.0 mm I.D.	SMS series	AGM-01A	2137
	Lubricating Oil (70cc)	Air Line Kit (AL-M1202)	K-211	1057
	Lubricating Oil (1L)	Air Line Kit (AL-M1202)	K-202	1058

*: For right hand (cw) rotation only.