

ATTACHMENT TYPE MICRO AIR GRINDER

# ROTUS Series

## ROTUS SERIES ◀◀



ROTUS Standard Set  
Code No. **1163** Model **ROTUS-IR**



- Interchangeability with a variety of attachments ideal for any applications.
- To achieve high torque, ROTUS air motor is assembled with micron precision between the vanes and the internal surface of the cylinder using NAKANISHI's proprietary techniques.
- Lightweight and compact design.
- Assembled with ON/OFF, speed control and FWD./REV. by the Ring Switch.

### A Special Rotary Vane Air Motor is Incorporated

The air motor utilizes a special vane design which keeps constant speed even under load providing stable grinding and polishing operation.

### Excellent quietness with Silencer

By attaching the silencer to the end of the exhaust air tubing, the motor is operated extremely quiet.

### Twist Free Hose

To prevent twisting of the hose, 360° Twist-Free Joint connects the motor and the hose. (IM-301)

**30,000 min<sup>-1</sup>**



### 14 Types of Attachments Available

14 different types of attachments making an almost infinite number of applications possible.



\* ROTUS Attachment is exchangeable for Emax EVOLUTION. System Chart Emax EVOLUTION Series / ROTUS Series (P.11-12)

#### Ring Type Attachment

Code No. **1147** Model **IR-310**

#### ROTUS Air Motor

Code No. **1004** Model **IM-301**

#### Set-Up Drawing



■ Use Air Line Kit AL-H1207F or air supply 3 pieces set. (Air Filter, Air Regulator, Lubricator)



ROTUS Series System Chart

Code No.	Model	Attachment
1147	IR-310	Ring Type
1005	IH-300	Lever Type
2811	IG-400	Straight Type
1016	HG-200	6 mm Torque Type
1017	BMH-300	Long Type
1012	MFC-300S	90° Mini Angle Type
1013	MFC-300M	90° Mini Angle Type (Very Small Head)
1006	IC-300	90° Angle Type
1014	KC-300	50° Angle Type
<b>LUSTER</b>		
1302	LS-100	Pistol-Type Polisher (Reciprocating motion)
<b>MINI-LUSTER</b>		
1307	ML-8	Pencil-Type Reciprocating Polishing Finisher (Reciprocating motion)
<b>SWING-LUSTER</b>		
1380	SLS-16	Pencil-Type Reciprocating Polishing Finisher (Right to left motion)
<b>Hammer Action Type</b>		
8060	HA-500	Engraving and Ornament Processing Work Hammer
<b>FINE BELT SANDER</b>		
1146	KBS-101	Small-sized Handy Belt Sander

**Speed Reducer-Extension Joint**

Extension Joint  
1015 CN-01

1/4 Speed Reducer  
1009 RG-01

1/15 Speed Reducer  
1010 RG-02

• May be connected between the motor and the attachment when required increased torque.

**Motor**

• Air Motor with Hose  
360° Twist-Free Joint Mechanism  
1004 IM-301 3,000~30,000 min<sup>-1</sup>

**Air Driven**

• Air Line Kit  
4507 AL-H1207F

• Foot Controller  
1064 AFC-45

\*This air line kit is designed for use with the AFC-45 foot controller, Code No.1064.

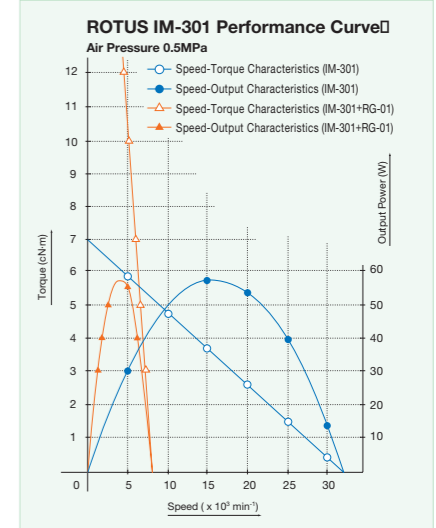
ROTUS SERIES

PRECISION HIGH TORQUE AIR MOTOR · STANDARD SET

# ROTUS Air Motor · Standard Set

3,000~30,000 min<sup>-1</sup>

- To achieve high torque, ROTUS air motor is assembled with micron precision between the vanes and the internal surface of the cylinder using NAKANISHI's proprietary techniques.
- This high performance air motor with minimal power loss from load fluctuation has excellent performance in its grinding stability. Moreover, the motor with minimal air consumption runs quietly and the energy-saving mechanism makes it possible to operate with a 0.75KW (1hp) air compressor.
- Lightweight and compact design. 130 g (w/o hose)
- 14 types of attachments for all types of applications.
- ON/OFF, FWD./REV. Rotation Direction and Motor Speed can be controlled only by the Ring Switch.
  - ◆ Foot controller is available (P.44) : used as an ON/OFF switch as well as a variable speed control.
- Air cooling system generates no heat for continuous operation.
- By attaching the silencer to the end of the exhaust air tubing, the motor is operated extremely quiet.
- Twist-Free Joint mechanism is installed in IM-301 to solve the problem of hose twisting.



ROTUS Air Motor (with Twist-Free Joint Mechanism)

2,000~30,000 min<sup>-1</sup>

Code No.	1004	Model	IM-301
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- ◆ Speed : Max. 30,000 min<sup>-1</sup> (0.4 MPa)
- ◆ Proper Air Pressure : 0.3~0.45 MPa
- ◆ Air Consumption : 75 NL/min ◆ Output Power : 46 W
- ◆ Max. Torque : 6.6 cN·m (0.4 MPa) ◆ Weight : 130 g (w/o hose)

Standard Accessories  
 • Hose (K-206) : 2 m • Silencer (K-209) • Pin Spanner (K-233) : 1 pc.



<Air Motor with 360° Twist-Free Joint Mechanism>

- Adopted Twist-Free Joint mechanism between the motor and the hose has solved the problem of hose twisting.



ROTUS Standard Set



30,000 min<sup>-1</sup> (Speed)

The ROTUS System is a hand-held grinder with an energy saving air motor. Since it is an air driven system, there is virtually no heat generation resulting in excellent durability. Select from a variety of attachments depending on the application.

The Ring type IR-310 is a standard attachment for ROTUS standard set ROTUS-IR.

Code No.	1163	Model	ROTUS-IR
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- Standard Equipment
- Air Grinder (IR-310+IM-301) : 1 pc.
  - Collet ø3.0mm (CHH-3.0), ø2.35 mm (CHH-2.35) : 1 pc. each
  - Air Line Kit (AL-H1207F) : 1 pc. • Foot Controller (AFC-45) : 1 pc.
  - Accessories : Piping Hose 2m (K-275) : 1 pc., Lubricating Oil (K-211) : 1 pc. Spanner (7x5.1) : 1 pc., Pin Spanner (K-233) : 2 pcs. L Shaped Spanner (9) : 1 pc.

Specifications (IM-301 + IR-310)

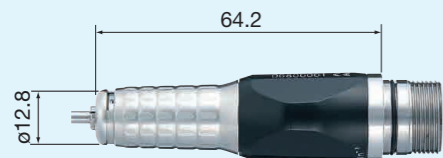
Weight	Max. Torque	Speed	Proper Air Pressure	Air Consumption	Output Power	Collet
222g(*)	6.6 cN·m (0.4 MPa)	30,000 min <sup>-1</sup>	0.3~0.45 MPa	75 NL/min	46 W (Motor)	ø0.3~ø3.175 mm CHH Group (P.55)

\* Weight (w/o Hose)

⚠ Details of Maximum Allowable speed on intermittent use or continuous use P.41~44

### Ring Type Attachment

Code No. **1147** Model **IR-310**



40,000 min<sup>-1</sup> Max.

- High precision and high reliability is realized by micron precision.
- Slim, lightweight design allows for fine finishing of delicate parts.
- One-touch ring type bur replacement.



◆ Weight : 92 g  
 Standard Size Collet  
 ø3.0 mm (CHH-3.0) ø2.35 mm (CHH-2.35)  
 Optional Collets : CHH group are shown in page (P.55)  
 Standard Accessories  
 • Spanner (7x5.1) : 1 pc. • Pin Spanner (K-233) : 1 pc.  
 • L Shaped Spanner (9) : 1 pc.

### Lever Type Attachment

Code No. **1005** Model **IH-300**



40,000 min<sup>-1</sup> Max.

- High precision and high reliability is realized by micron precision.
- Slim, lightweight design allows for fine finishing of delicate parts.
- Lever Type one touch bur release.

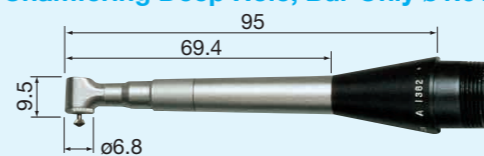


◆ Weight : 62 g  
 Standard Size Collet  
 ø3.0 mm (CHH-3.0) ø2.35 mm (CHH-2.35)  
 Optional Collets : CHH group are shown in page (P.55)  
 Standard Accessories  
 • Spanner (7x5.1) : 1 pc.  
 • Pin Spanner (K-233) : 1 pc.

### 90° Mini Angle Type Attachment

Code No. **1013** Model **MFC-300M**

For Chamfering Deep Hole, Bur Only ø1.6 mm



15,000 min<sup>-1</sup> Max.

Please use it with Speed Reducer.

- The world's smallest angle type attachment.
- Suitable for chamfering and deburring the inside of the slit pipe.

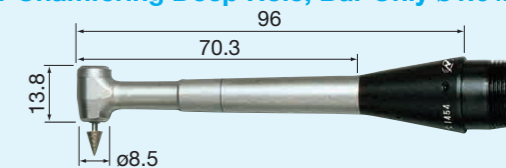


◆ Minimum Inner Diameter : ø13 mm  
 ◆ Holding tool width : 7.2 mm ◆ Weight : 47 g  
 ◆ Speed Reduction Ratio : 10/11  
 Standard Size Collet  
 ø1.6 mm (K-253) P.56  
 Standard Accessories  
 • Chuck Wrench (K-232) : 1 pc. • Pin Spanner (K-233) : 1 pc.

### 90° Mini Angle Type Attachment

Code No. **1012** Model **MFC-300S**

For Chamfering Deep Hole, Bur Only ø1.6 mm



15,000 min<sup>-1</sup> Max.

Please use it with Speed Reducer.

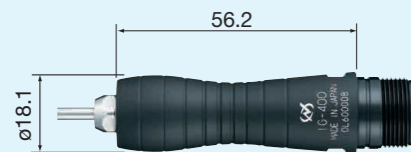
- Suitable for chamfering and deburring the inside of the slit pipe.
- Minimum Inner Diameter : ø20 mm



◆ Holding tool width : 11.9 mm  
 ◆ Weight : 50 g  
 ◆ Speed Reduction Ratio : 10/11  
 Standard Size Collet  
 ø1.6 mm (K-252) P.56  
 Standard Accessories  
 • Chuck Wrench (K-232) : 1 pc. • Pin Spanner (K-233) : 1 pc.

### Straight Type Attachment

Code No. **2811** Model **IG-400**



40,000 min<sup>-1</sup> Max.

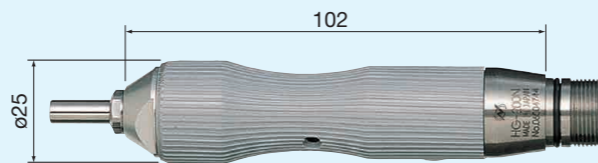
- Lightweight ergonomically designed with minimal vibration for extended use.
- NK Micron Collet permits strong retention and high precision performance.



◆ Weight : 55 g  
 Standard Size Collet  
 ø3.0 mm (NKM6-3.0)  
 Optional Collets : NKM6 group are shown in page (P.56)  
 Standard Accessories  
 • Collet Nut (CHN-6) • Bar Wrench (PCR-30) : 1 pc.  
 • Spanner (9 x 9), (15 x 17) : 1 pc. each

### 6 mm Torque Type Attachment

Code No. **1016** Model **HG-200**



30,000 min<sup>-1</sup> Max.

Please use it with Speed Reducer.

- Permits the use of ø6.0 mm shank burs.
- The resistance produced by cutting and grinding is absorbed by a special rubber grip to eliminate slipping.
- Collet is tightened by a spanner.



◆ Weight : 210 g  
 Standard Size Collet  
 ø6.0 mm (CHG-6.0)  
 Optional Collets : CHG group are shown in page (P.55)  
 Standard Accessories  
 • Spanner (10 x 10) : 1 pc. • Bar Wrench (K-212) : 1 pc.  
 • Pin Spanner (K-233) : 1 pc.

### SWING-LUSTER Attachment

Code No. **1380** Model **SLS-16**

Right to Left motion



30,000 min<sup>-1</sup> Max.

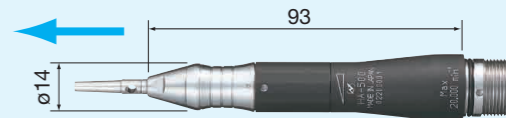
- High speed grinding and polishing operations can be performed while maintaining the fine and delicate feeling of hand polishing.
- Lightweight pencil type design makes it easy to work in tight areas.
- Easily adjustable stroke length allows efficient work on minute areas or large sections.
- Weight : 127 g ◆ Stroke Range (variable) : 0~1.6 mm
- Reciprocating Stroke (variable) : 0~7,650 times/min.
- Max. tool shank diameter ø5.0 mm, Screw clamp type.

Standard Accessories  
 • Spanner (16 x 18), (20 x 24) : 1 pc. each  
 • Allen Wrench (1.5 mm) : 1 pc. • Standard Accessories : 1 set

Code No.	Description	Package
60737	Ceramic Fiber Grindstone 1 x 6 x 50 #1200	1 pc. each
62814	Electroplated Diamond File 1.2 x 4 x 50 #100	
62510	Ceramic Fiber Grindstone Holder	

### Hammer Attachment

Code No. **8060** Model **HA-500**



16,000 min<sup>-1</sup> Max.

Please use it with Speed Reducer.

- A wide variety of patterns can be produced by varying the spring pressure and hammer speed.
- Light weight, pencil type grip makes the handpiece very comfortable to hold and easy to use.
- Adjustable spring pressure. ◆ Weight : 95 g
- Self lubricating hammer mechanism ensure excellent durability.
- Stroke Range : 0.4 mm ◆ Stroke Times : 25~4,000 times/min.
- Stroke Spring Pressure : 4.4~7.1 N (Ring Adjustment Type)

Standard Accessories  
 • Spanner (7 x 5.5) : 1 pc. • Bar Wrench (K-212) : 1 pc.  
 • Oil and Oil offer machine • Hammer Bit (For replacement) : 2 pcs.

Hammer Bit to be machined to required shapes (SUS-420, heat treated, approx, HRC50)

Code No.	Package
65301	3 pcs./pack

### Long Type Attachment

Code No. **1017** Model **BMH-300**

Tip diameter ø13 mm (For Deep Hole Grinding)



35,000 min<sup>-1</sup> Max.

- This unique slim body makes it ideal for cutting and grinding the bottom surface of deep ribs or holes.
- Collet is tightened by a spanner.



◆ Weight : 156 g  
 Standard Size Collet  
 ø3.0 mm (CHM-3.0)  
 Optional Collets : CHM group are shown in page (P.56)  
 Standard Accessories  
 • Spanner (7 x 5.1), (6 x 4.5) : 1 pc. each  
 • Pin Spanner (K-233) : 1 pc.

### ROTUS Air Motor (with Chip Air Mechanism)

Code No. **1003** Model **IM-300**



- Speed : 3,000~30,000 min<sup>-1</sup> ◆ Proper Air Pressure : 0.3~0.45 MPa
- Air Consumption : 75 NL/min ◆ Output Power : 46 W
- Max. Torque : 6.6 cN·m (0.4MPa) ◆ Weight : 130 g (w/o hose)

Standard Accessories  
 • Hose (K-207) : 2 m • Silencer (K-209) • Pin Spanner (K-233) : 1 pc.

#### <Air Motor with Chip Air Mechanism>

- Air motor IM-300 with Chip Air Mechanism blows away the cutting dust with clean air coming through the top end of the attachment. The hand-held cutting work remains cool by the chip air allowing comfort through out the working process.

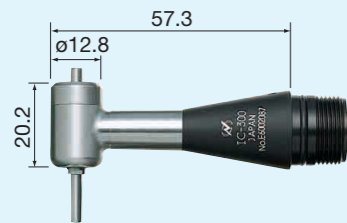


This is only with the attachment IH-300.



### 90° Angle Attachment

Code No. **1006** Model **IC-300**



30,000 min<sup>-1</sup> Max.  
Please use it with Speed Reducer.

- Suitable for polishing a flat surface at speed with a grinding disk pad.
- Capable of applications for rough cutting to mirror finishing.
- Speed Reduction Ratio : 3/4



◆ Weight : 45 g  
Standard Size Collet  
Exclusive Tools P.69 ~ 71

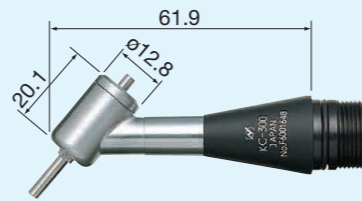
◆ **3.0 mm (CHC-3.0)**  
Optional Collets : CHC group are shown in page (P.55)

- Standard Accessories
- Chuck Wrench (K-231) : 1 pc.
  - Pin Spanner (K-233) : 1 pc.
  - Standard Accessories : 1 set

Code No.	Description	Package
64101	Rubber Pad (Small) O.D. $\phi$ 10 mm	1 pc./pack
64102	Rubber Pad (Med) O.D. $\phi$ 20 mm	
64103	Rubber Pad (Large) O.D. $\phi$ 30 mm	
64133	Sand Paper Disk for small pad $\phi$ 11 #180	5 pcs./pack
64137	Sand Paper Disk for small pad $\phi$ 11 #600	
64153	Sand Paper Disk for med. pad $\phi$ 21 #180	
64157	Sand Paper Disk for med. pad $\phi$ 21 #600	
64173	Sand Paper Disk for large pad $\phi$ 31 #180	
64177	Sand Paper Disk for large pad $\phi$ 31 #600	

### 50° Angle Attachment

Code No. **1014** Model **KC-300**



30,000 min<sup>-1</sup> Max.  
Please use it with Speed Reducer.

- Perfect for finishing bottom surfaces and other tight, hard to reach areas.
- Suitable for polishing a flat surface at speed with a grinding disk pad.
- Speed Reduction Ratio : 3/4

Use the motor in reverse rotation for clockwise rotation.



◆ Weight : 45 g  
Standard Size Collet  
Exclusive Tools P.69 ~ 71

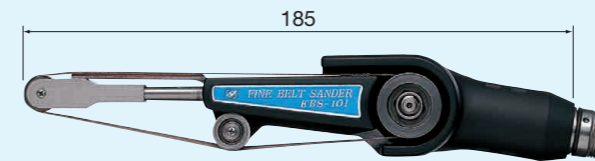
◆ **3.0 mm (CHC-3.0)**  
Optional Collets : CHC group are shown in page (P.55)

- Standard Accessories
- Chuck Wrench (K-231) : 1 pc.
  - Pin Spanner (K-233) : 1 pc.
  - Standard Accessories : 1 set

Code No.	Description	Package
64101	Rubber Pad (Small) O.D. $\phi$ 10 mm	1 pc./pack
64102	Rubber Pad (Med) O.D. $\phi$ 20 mm	
64103	Rubber Pad (Large) O.D. $\phi$ 30 mm	
64133	Sand Paper Disk for small pad $\phi$ 11 #180	5 pcs./pack
64137	Sand Paper Disk for small pad $\phi$ 11 #600	
64153	Sand Paper Disk for med. pad $\phi$ 21 #180	
64157	Sand Paper Disk for med. pad $\phi$ 21 #600	
64173	Sand Paper Disk for large pad $\phi$ 31 #180	
64177	Sand Paper Disk for large pad $\phi$ 31 #600	

### FINE BELT SANDER Attachment

Code No. **1146** Model **KBS-101**



30,000 min<sup>-1</sup> Max.

- Very high belt speed, ideal for applications from deburring to finishing.
- The angle of the belt section is fully adjustable.



- ◆ Belt Speed : 0~705 m/min.
- ◆ Weight : 350 g
- ◆ Belt Sizes : 4, 6, 8 mm Wide x 300mm long

- Standard Accessories
- Allen Wrench (3 mm) : 1 pc.
  - Standard Accessories : 1 set

Exclusive Tools P.72 ~ 73

Code No.	Description	Package
64902	Abrasive Belt Width 4mm #120	2 pcs. each
64904	Abrasive Belt Width 4mm #240	
64906	Abrasive Belt Width 4mm #400	
64912	Abrasive Belt Width 6mm #120	
64914	Abrasive Belt Width 6mm #240	
64916	Abrasive Belt Width 6mm #400	
64922	Abrasive Belt Width 8mm #120	
64924	Abrasive Belt Width 8mm #240	
64926	Abrasive Belt Width 8mm #400	

### Air Line Kit

Code No. **4507** Model **AL-H1207F**



300(W) x 120(D) x 220(H) mm

This air line kit is designed for use with the AFC-45 foot controller, Code No.1064.

- Ensures a smooth operation and long life by supplying stable, conditioned air to the air motor.
- Three functions : air filter, regulator, mist lubricator can also be used to adjust motor speed.

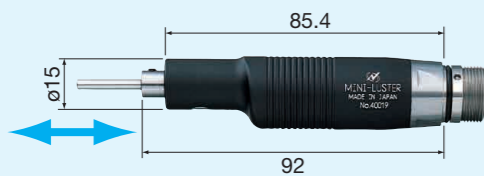
◆ Weight : 2.2 kg ◆ Filter Mesh : 5  $\mu$ m

- Standard Accessories
- Air Pressure Gauge • Air Regulator • Air Filter • Lubricator
  - Air Control Valve (CV-05) • Piping Hose (K-275) • Lubricating Oil (K-211)

### MINI-LUSTER Attachment (Pencil-Type Reciprocating Polishing Finisher)

Code No. **1307** Model **ML-8** Stroke (0.8 mm)

#### Reciprocating motion



- 25,000 min<sup>-1</sup> Max.
- Due to pencil type grip, it is most suitable for polishing narrow grooves, details, etc.
  - Stroke Range (Fixed) : 0.8 mm
  - Reciprocating Stroke (Variable) : 0~6,380 times/min.



◆ Weight : 130 g  
◆ Max. tool shank diameter  $\phi$ 3.2 mm, Screw clamp type

- Standard Accessories
- Allen Wrench (1.5 mm) : 1 pc.
  - Standard Accessories : 1 set

Exclusive Tools P.67 ~ 69

Code No.	Description	Package
62751	Spring Holder	1 pc./pack
62510	Ceramic Fiber Grindstone Holder	
62814	Electroplated Diamond File 1.2 x 4 x 50 #100	
60737	Ceramic Fiber Grindstone 1 x 6 x 50 #1200	

### LUSTER Attachment (Pistol-Type Polisher)

Code No. **1302** Model **LS-100**

#### Reciprocating motion



- 25,000 min<sup>-1</sup> Max.
- High performance grinding & polishing with high power and reciprocating stroke.
  - Well-balanced, rubber-grip absorbs vibration.
  - Stroke Range : 0~6 mm (variable)
  - Reciprocating Stroke (variable) : 0~6,300 times/min.



◆ Weight : 680 g  
◆ Max. tool shank diameter  $\phi$ 6.4 mm, Screw clamp type

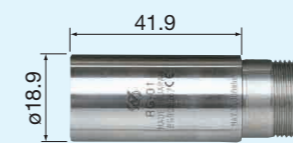
- Standard Accessories
- Allen Wrench (2 mm), (3 mm) : 1 pc. each
  - Lubricating Oil • Lubrication Nozzle for LUSTER
  - Standard Accessories : 1 set

Exclusive Tools P.67 ~ 69

Code No.	Description	Package
62502	Stone Holder	1 pc./pack
62505	Stone Holder	
62751	Spring Holder	
62525	Rectangular Pad	
62526	Rod for Rectangular Pad	
62527	Angle Rod	10 pcs./pack
62552	Sand Paper Tip #120	
62555	Sand Paper Tip #320	
62557	Sand Paper Tip #600	
62559	Sand Paper Tip #1000	

### 1/4 Speed Reducer

Code No. **1009** Model **RG-01**



30,000 min<sup>-1</sup> Max.

- Mounted between an attachment and a motor.
- The speed is reduced to 1/4 but the torque is multiplied by 4 times.
- Suitable for high torque grinding process or drilling. ◆ Weight : 68 g

- Standard Accessories
- Pin Spanner (K-233) : 1 pc.

### 1/15 Speed Reducer

Code No. **1010** Model **RG-02**



30,000 min<sup>-1</sup> Max.

- Mounted between an attachment and a motor.
- The speed is reduced to 1/15 but the torque is multiplied by 15 times.
- Suitable for high torque grinding process or drilling.

◆ Weight : 93 g

- Standard Accessories
- Pin Spanner (K-233) : 1 pc.

### Foot Controller

Code No. **1064** Model **AFC-45**



This foot controller is necessary for use with the AL-H1207F air line kit.

- Designed to depress from any direction.
- Fine adjustment of speed control is possible.

### Extension Joint

Code No. **1015** Model **CN-01**



35,000 min<sup>-1</sup> Max.

- Speed Ratio 1 : 1
- This is a joint to be connected between a motor and an attachment to extend the total length of the attachment.

◆ Weight : 83 g

- Standard Accessories
- Pin Spanner (K-233) : 1 pc.



# Precautions for using Nakanishi Tools

## For safe use of the tools





- Please read operation manuals before using any tools.
- Please keep all operation manuals on hand for reference whenever necessary.

**Caution** Incorrect use of the tools, or ignoring 'CAUTIONS for safety' described in the operating manuals, could cause fatal or serious bodily injury.

## CAUTIONS

 <p><b>Always use safety glasses, mask, face guard for your safety.</b></p>	 <p><b>Fasten the collet firmly.</b> Make sure the tool is fully installed in the collet to avoid tool slippage.</p>										
 <p><b>Do not touch the tools when in operation.</b> Make sure the work area is neat and there is sufficient light.</p>	 <p><b>Do not use damaged or broken electric cords and air hoses.</b></p>										
 <p><b>Do not use the tool where flammable liquids or gases exist.</b></p>	 <p><b>Start at low speed and increase gradually to insure safe work.</b> This is particularly important for the use of new tools, large cutting tools and elastic tools such as rubber grindstone, sander and brush tools.</p>										
 <p><b>Do not leave operating tools.</b> Confirm that the tool has stopped completely after switching off.</p>	 <p><b>Keep the tools and products in a cool, dry place.</b></p>										
 <p><b>Select proper tools and products for your application.</b> Select tools carefully considering the performance of the tools, work procedure and type/shape of the material.</p>	 <p><b>Check the tools carefully before use.</b> Confirm that the tools are free of chips, cracks, splits, scratches, irregular bondings, and out of round shanks, etc.</p>										
 <p><b>Fix the work material firmly in a vise and/or other clamping fixture.</b></p>	 <p><b>Stop grinding or polishing immediately whenever unusual sounds, vibrations, or wear are found.</b> Restart the work only after the problem is found and corrected.</p>										
 <p><b>Do not wear loose clothing and/or accessories that may be caught in machinery.</b> Long hair should be secured prior to machine operation.</p>	 <p><b>Only use attachments, parts, consumable articles and accessories produced by NAKANISHI.</b></p>										
 <p><b>Check all tools carefully before use.</b> Clean the inside of the collet and tool shank, chips or fine metals inside the collet could cause tool slippage and result in damage to machinery or bodily injury.</p>	 <p><b>Do not apply high pressure to or pry with the tools.</b> This can break and/or bend the tools. Use the tools within their design limitation. Excessive pressure will decrease the efficiency of your work and cause excessive wear of the tools.</p>										
 <p><b>The tools should be used by taking care of the overhang and below maximum allowable speed.</b> The catalogue shows the maximum allowable speed at 13 mm overhang (distance between the face of the collet and the top of the tool shank).</p>	<p>Decrease the speed as shown in the table below, if you are using a longer overhang than 13 mm.</p> <table border="1"> <thead> <tr> <th>Overhang</th> <th>Maximum allowable speed (min<sup>-1</sup>)</th> </tr> </thead> <tbody> <tr> <td>Less than 13 mm</td> <td>Shown in the catalogue (A)</td> </tr> <tr> <td>Less than 20 mm</td> <td>(A) x 0.5</td> </tr> <tr> <td>Less than 25 mm</td> <td>(A) x 0.3</td> </tr> <tr> <td>Less than 50 mm</td> <td>(A) x 0.1</td> </tr> </tbody> </table>	Overhang	Maximum allowable speed (min <sup>-1</sup> )	Less than 13 mm	Shown in the catalogue (A)	Less than 20 mm	(A) x 0.5	Less than 25 mm	(A) x 0.3	Less than 50 mm	(A) x 0.1
Overhang	Maximum allowable speed (min <sup>-1</sup> )										
Less than 13 mm	Shown in the catalogue (A)										
Less than 20 mm	(A) x 0.5										
Less than 25 mm	(A) x 0.3										
Less than 50 mm	(A) x 0.1										

# Symbols used in NAKANISHI Tools Catalogue

	<p><b>Shank Diameter</b> Shows shank diameter of the tools. Nakanishi produces tools with several shank diameters. * Nakanishi micro grinders utilize a collet system, which insures maximum precision. Therefore, please use the collet that best corresponds to the tool shank diameter.</p>
	<p><b>Standard Package</b> One package is the minimum shipping unit. This number shows the number of pieces in the standard package (bag, box and etc.). Please order the number of packages needed for the desired quantity.</p>
	<p><b>Maximum allowable speed</b> Do not exceed the maximum allowable tool speed. For your safety, use the tools below the indicated allowable speed. Start at low speed and increase gradually to insure safety. The preceding is particularly important for the use of new tools and machines. * Maximum allowable speed assumes an overhang of less than 13mm. Decrease speed if the overhang is more than 13mm. Refer to "Precautions for using Nakanishi Tools" on the next page. * Check the tools and machinery for mechanical defects prior to each use.</p>
	<p><b>Grit</b> This shows grain size of various grinding tools. Rough Cutting..... 46, 54, 60, 70, 80, 90 Medium Cutting..... 100, 120, 150, 180 Pre Finishing..... 220, 240, 280, 320, 400 Finishing..... 500, 600, 700, 800, 1000 Fine Finishing and Mirror Polishing..... 1200, 1500, 1800, 2000, 3000, 4000, 6000, 8000 ...</p>

Code No. **62801~** End Code number on each page

**NAKANISHI's EXCLUSIVE TOOLS**

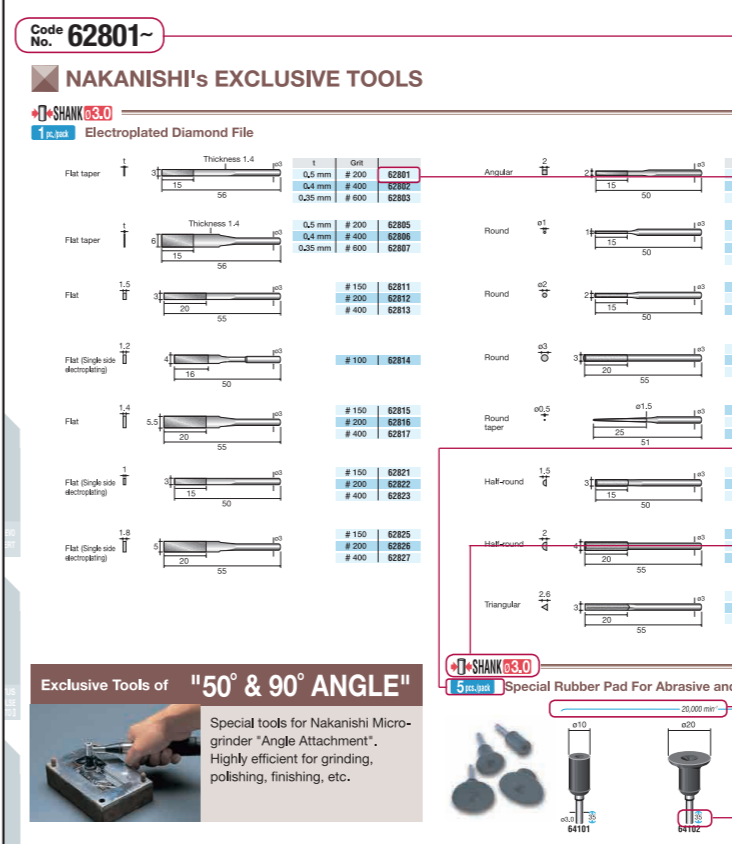
Code number (Order number)

Standard package quantity

Shank diameter of the tool

Maximum allowable speed

Total length of the tool (mm)




Note : Specifications may be changed without notice. Colors of the tools in this catalogue may not be the same as actual colors due to printing limitations.



**NAKANISHI's EXCLUSIVE TOOLS**

**NAKANISHI's EXCLUSIVE TOOLS**

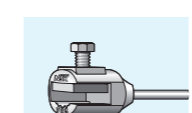
Exclusive Tools of Electromotive Polisher **"LUSTER", "MINI-LUSTER", "SWING-LUSTER"**




**LUSTER**

Best for finishing large open work areas.

**1 pc./pack Stone Holder**



Maximum clamping thickness 4.5 x Width 11 mm



Maximum clamping thickness 11 x Width 13.5 mm

Angle can be freely set (90°)

**SHANK 03.0**

**1 pc./pack Electroplated Diamond File**

Flat taper	Thickness 1.4	Grit	
0.3	15	# 200	62301
	70	# 400	62302
		# 600	62303
Flat taper	Thickness 1.4	Grit	
0.3	15	# 200	62305
	72	# 400	62306
		# 600	62307
Flat	1.7	Grit	
4.2	45	# 150	62311
	90		
Half-round	2	Grit	
15	45	# 150	62313
	90		
Round	0.3	Grit	
15	45	# 150	62315
	90		
Angular	2.5	Grit	
12.5	45	# 150	62317
	90		

**2 pcs./pack Ceramic Fiber Grindstone (Total Length 50 mm)**

Alumina fiber abrasive with the strength and the flexibility for rough or fine finishing.

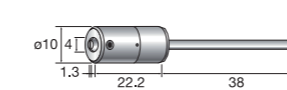
Grit	Color	W = 4 mm	W = 6 mm	W = 10 mm	Grit	Color	W = 4 mm	W = 6 mm	W = 10 mm
# 180	Ivory	60701	60711	62961	# 180	Ivory	60721	60731	62961
# 300	Brown	60702	60712	62962	# 300	Brown	60722	60732	62962
# 400	Orange	60703	60713	62963	# 400	Orange	60723	60733	62963
# 600	Black	60704	60714	62964	# 600	Black	60724	60734	62964
# 800	Blue	60705	60715	62965	# 800	Blue	60725	60735	62965
# 1,000	White	60706	60716	62966	# 1,000	White	60726	60736	62966
# 1,200	Pink	60707	60717	62967	# 1,200	Pink	60727	60737	62967

**1 pc./pack Diamond File Flat Type**

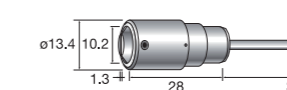
\* Use with stone holder No.62502.

Grit	
# 150	62351
# 200	62352
# 400	62353
Grit	
# 150	62361
# 200	62362
# 400	62363

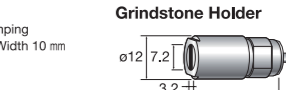
**1 pc./pack Ceramic Fiber Grindstone Holder - Grindstone Holder**



Maximum clamping thickness 1 x Width 4 mm



Maximum clamping thickness 1 x Width 10 mm



Maximum clamping thickness 3 x Width 6 mm

**SHANK 03.0, 03.5**

**3 pcs./pack Precision Finishing Files (Flat, Round, Angular, Triangular, Half-Round)**

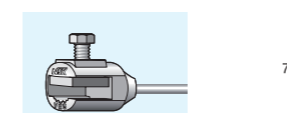
Total length The length of file	140mm 70mm		180mm 90mm	
	Standard	Fine	Standard	Fine
1(1.3) 5(6) (Flat)	57301	57311	57321	
3(3.5) (Round)	57302	57312	57322	
2.5(2.7) (Angular)	57303	57313	57323	
3.3(4.1) (Triangular)	57304	57314	57324	
2 (Half-round)	57305	57315	57325	

5 files-pack set

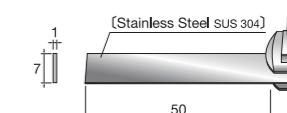
- Standard (total length 140mm) set (No.57301~No.57305 : 1pc. each) ..... 57309
- Fine (total length 140mm) set (No.57311~No.57315 : 1pc. each) ..... 57319
- Standard (total length 180mm) set (No.57321~No.57325 : 1pc. each) ..... 57329

**1 pc./pack Flat Holder**

Tip for use with abrasive sheets.



62512



62982

**SHANK 03.0**

**3 pcs./pack Rasps for plastics and wood working (Flat, Round, Angular, Triangular, Half-Round)**


2.2 5.7 (Flat)	57401
3.8 (Round)	57402
3.3 (Angular)	57403
3.8 (Triangular)	57404
2.3 5.7 (Half-round)	57405

5 files-pack set

- Rasps set for plastics and wood working for plastics and woodworking (No.57401~No.57405 : 1pc. each) ..... 57410

**1 pc./pack Angular Pad Holder**

Holder for use with abrasive tips for polishing flat surfaces.



62521


①	62525
②	62526
③	62527
④	62751

**100 pcs./pack Sand Paper Tip**

Grit		Grit	
# 120	62552	# 600	62557
# 180	62553	# 1,000	62559
# 320	62555	# 1,500	62560


Adhesive Back

**3 pcs./pack Wood Tip Holder**



w	
10 mm	62621
15 mm	62622
20 mm	62623

**1 pc./pack Spring Holder**



62751

\* Mountable shaft diameter range  $\phi 1-\phi 3.3$  mm



**NAKANISHI's EXCLUSIVE TOOLS**

SHANK  $\phi 3.0$

**1 pc./pack Electroplated Diamond File**

Flat taper		Thickness 1.4	t	Grit		Angular		2	Grit		
		0.5 mm	# 200	<b>62801</b>	# 150						<b>62831</b>
		0.4 mm	# 400	<b>62802</b>	# 200						<b>62832</b>
		0.35 mm	# 600	<b>62803</b>				# 400	<b>62833</b>		
Flat taper		Thickness 1.4	0.5 mm	# 200	<b>62805</b>	Round		1	Grit		
		0.4 mm	# 400	<b>62806</b>	# 150						<b>62841</b>
		0.35 mm	# 600	<b>62807</b>	# 200						<b>62842</b>
			# 400	<b>62807</b>				# 400	<b>62843</b>		
Flat		1.5	# 150	<b>62811</b>	Round		2	Grit			
		# 200	<b>62812</b>	# 150						<b>62845</b>	
		# 400	<b>62813</b>	# 200						<b>62846</b>	
			# 400	<b>62813</b>				# 400	<b>62847</b>		
Flat (Single side electroplating)		1.2	# 100	<b>62814</b>	Round		3	Grit			
				# 150						<b>62851</b>	
				# 200						<b>62852</b>	
			# 400	<b>62814</b>				# 400	<b>62853</b>		
Flat		1.4	# 150	<b>62815</b>	Round taper		3	Grit			
		# 200	<b>62816</b>	# 150						<b>62855</b>	
		# 400	<b>62817</b>	# 200						<b>62856</b>	
			# 400	<b>62817</b>				# 400	<b>62857</b>		
Flat (Single side electroplating)		1	# 150	<b>62821</b>	Half-round		3	Grit			
		# 200	<b>62822</b>	# 150						<b>62865</b>	
		# 400	<b>62823</b>	# 200						<b>62866</b>	
			# 400	<b>62823</b>				# 400	<b>62867</b>		
Flat (Single side electroplating)		1.8	# 150	<b>62825</b>	Half-round		4	Grit			
		# 200	<b>62826</b>	# 150						<b>62871</b>	
		# 400	<b>62827</b>	# 200						<b>62872</b>	
			# 400	<b>62827</b>				# 400	<b>62873</b>		
Triangular		2.6	# 150	<b>62881</b>	Triangular		3	Grit			
		# 200	<b>62882</b>	# 150						<b>62881</b>	
		# 400	<b>62883</b>	# 200						<b>62882</b>	
			# 400	<b>62883</b>				# 400	<b>62883</b>		

**NAKANISHI's EXCLUSIVE TOOLS**

**100 pcs./pack Zirconium Disk**

• Best for finishing aluminum, stainless steel, copper alloy, brass, etc.

Grit	o11	o21	o31
# 60	<b>64251</b>	<b>64261</b>	<b>64271</b>
# 80	<b>64252</b>	<b>64262</b>	<b>64272</b>
# 120	<b>64253</b>	<b>64263</b>	<b>64273</b>
# 150	<b>64254</b>	<b>64264</b>	<b>64274</b>

Adhesive Back

**20 pcs./pack Fiber Disk**

• Soft finishing can be done on flat & curved surfaces, due to superior flexibility.

Grit	Color	o11	o21	o31
# 120	Brown	<b>64281</b>	<b>64291</b>	<b>64301</b>
# 240	Violet	<b>64282</b>	<b>64292</b>	<b>64302</b>
# 320	Red Brown	<b>64283</b>	<b>64293</b>	<b>64303</b>
# 600	Dark Blue	<b>64284</b>	<b>64294</b>	<b>64304</b>
# 800	Gray	<b>64285</b>	<b>64295</b>	<b>64305</b>
# 1,000	Orange	<b>64286</b>	<b>64296</b>	<b>64306</b>

\*Thickness 3 mm Adhesive Back

**20 pcs./pack Felt Disk**

• Ideal for finishing using abrasives and diamond compounds.

Description	o11	o21	o31
Soft Type Felt Disk (1mm thickness)	<b>64331</b>	<b>64332</b>	<b>64333</b>
Soft Type Felt Disk (2mm thickness)	<b>64335</b>	<b>64336</b>	<b>64337</b>

Adhesive Back

**20 pcs./pack Felt Disk Chromium Oxide (Blue Rouge) Embedded Type.**

• Useful for speedy finishing because of Chromium Oxide (Blue Rouge) Embedded.

Description	o11	o21	o31
Felt Disk Chromium Oxide (Blue Rouge) Embedded Type. (2mm thickness)	<b>64341</b>	<b>64342</b>	<b>64343</b>

Adhesive Back

**20 pcs./pack Rubber Points Disk**

• Best for coarse finishing, pre-finishing with great polishing power.

Grit	Color	o20	o30
# 60	Brown	<b>64391</b>	<b>64401</b>
# 80	Red	<b>64392</b>	<b>64402</b>
# 120	Dark Green	<b>64393</b>	<b>64403</b>
# 180	Olive	<b>64394</b>	<b>64404</b>
# 220	Green	<b>64395</b>	<b>64405</b>
# 320	Brown	<b>64396</b>	<b>64406</b>

\*Thickness 3 mm. Adhere to special rubber pads and use. Adhesive Back.

SHANK  $\phi 3.0$

**5 pcs./pack Mounted Rubber Disks (Rubber Pad Integration)**

• Moderately hard abrasive grain have great polishing ability.

For finishing			
Grit	Color	WA	GC
# 80	Pink	<b>64411</b>	<b>64421</b>
# 120	Blue	<b>64412</b>	<b>64422</b>
# 180	Yellow	<b>64413</b>	<b>64423</b>
# 220	Green	<b>64414</b>	<b>64424</b>
# 320	Purple	<b>64415</b>	<b>64425</b>
# 500	Brown	<b>64416</b>	<b>64426</b>

15,000 min <sup>-1</sup>	
For finishing o30	For preliminary finishing o30

For preliminary finishing (Fast grinding)		
Grit	Color	WA
# 80	Black (Red Line)	<b>64431</b>
# 120	Black (Blue Line)	<b>64432</b>

**Exclusive Tools of "60° & 90° ANGLE"**



Special tools for Nakanishi Micro-grinder "Angle Attachment". Highly efficient for grinding, polishing, finishing, etc.

SHANK  $\phi 3.0$

**5 pcs./pack Special Rubber Pad For Abrasive and Felt Disks**

20,000 min <sup>-1</sup>		
o10	o20	o30
# 35	# 35	# 35
<b>64101</b>	<b>64102</b>	<b>64103</b>

**100 pcs./pack Sand Paper Disk**

**Cloth Type**

• For Metals ... Both for dry and wet finishing (Adhesive is resistant to water and oil)

For Metals	Grit	o11	o21	o31
	# 60	<b>64111</b>	<b>64121</b>	<b>64141</b>
	# 80	<b>64112</b>	<b>64122</b>	<b>64142</b>
	# 120	<b>64113</b>	<b>64123</b>	<b>64143</b>
	# 180	<b>64114</b>	<b>64124</b>	<b>64144</b>
	# 240	<b>64115</b>	<b>64125</b>	<b>64145</b>
	# 320	<b>64116</b>	<b>64126</b>	<b>64146</b>
	# 400	<b>64117</b>	<b>64127</b>	<b>64147</b>
	# 600	<b>64118</b>	<b>64128</b>	<b>64148</b>
	# 800	<b>64119</b>	<b>64129</b>	<b>64149</b>
# 1,000	<b>64120</b>	<b>64130</b>	<b>64150</b>	

Adhesive Back

**Paper Type**

• For Metals ... Both for dry and wet finishing (Adhesive is resistant to water and oil)

For Metals (Black)	Grit	o11	o21	o31
	# 80	<b>64131</b>	<b>64151</b>	<b>64171</b>
	# 120	<b>64132</b>	<b>64152</b>	<b>64172</b>
	# 180	<b>64133</b>	<b>64153</b>	<b>64173</b>
	# 240	<b>64134</b>	<b>64154</b>	<b>64174</b>
	# 320	<b>64135</b>	<b>64155</b>	<b>64175</b>
	# 400	<b>64136</b>	<b>64156</b>	<b>64176</b>
	# 600	<b>64137</b>	<b>64157</b>	<b>64177</b>
	# 800	<b>64138</b>	<b>64158</b>	<b>64178</b>
	# 1,000	<b>64139</b>	<b>64159</b>	<b>64179</b>
# 1,500	<b>64140</b>	<b>64160</b>	<b>64180</b>	

Adhesive Back

**Paper Type**

• Dry type ... For Metal, Woodwork, Paint, Putty polishing, Dry use

For Dry type (White)	Grit	o11	o21	o31
	# 80	<b>64201</b>	<b>64211</b>	<b>64221</b>
	# 120	<b>64202</b>	<b>64212</b>	<b>64222</b>
	# 180	<b>64203</b>	<b>64213</b>	<b>64223</b>
	# 240	<b>64204</b>	<b>64214</b>	<b>64224</b>
	# 320	<b>64205</b>	<b>64215</b>	<b>64225</b>
	# 400	<b>64206</b>	<b>64216</b>	<b>64226</b>
	# 600	<b>64207</b>	<b>64217</b>	<b>64227</b>

Adhesive Back

**1 pc./pack Diamond Disk (Fully Electroplated Type)**

• Superior in sharpness and durability.

For Metals	Grit	o11	o21	o31
	# 100	<b>64451</b>	<b>64461</b>	<b>64471</b>
	# 140	<b>64452</b>	<b>64462</b>	<b>64472</b>
	# 200	<b>64453</b>	<b>64463</b>	<b>64473</b>
	# 280	<b>64454</b>	<b>64464</b>	<b>64474</b>
	# 400	<b>64455</b>	<b>64465</b>	<b>64475</b>
	# 600	<b>64456</b>	<b>64466</b>	<b>64476</b>
	# 800	<b>64457</b>	<b>64467</b>	<b>64477</b>
	# 1,000	<b>64458</b>	<b>64468</b>	<b>64478</b>

Adhesive Back

**1 pc./pack Diamond Disk (Dot Electroplated Type, Wet Type)**

• Electroplated nickel-alloy pellet is strongly adhered to resin base.

For Metals	Grit	Color	o11	o21	o31
	# 60	Green	<b>64501</b>	<b>64511</b>	<b>64521</b>
	# 120	Black	<b>64502</b>	<b>64512</b>	<b>64522</b>
	# 200	Red	<b>64503</b>	<b>64513</b>	<b>64523</b>
	# 400	Yellow	<b>64504</b>	<b>64514</b>	<b>64524</b>
	# 800	Gray	<b>64505</b>	<b>64515</b>	<b>64525</b>

Adhesive Back



## NAKANISHI's EXCLUSIVE TOOLS

### 3 pcs./pack Resin Bond Diamond Disk Star Pattern

Grit	o11	o21	o31
# 80	64531	64541	64551
# 120	64532	64542	64552
# 180	64533	64543	64553
# 240	64534	64544	64554
# 400	64535	64545	64555
# 600	64536	64546	64556
# 800	64537	64547	64557
# 1,000	64538	64548	64558
# 2,000	64539	64549	64559

Adhesive Back

\*Patterns may be changed without notice

### 3 pcs./pack Lapping Film Disk Diamond Abrasive

Grit	Color	o11	o21	o31
# 400	Ivory	64601	64606	64611
# 800	Ivory	64602	64607	64612
# 1,500	Ivory	64603	64608	64613
# 3,000	Ivory	64604	64609	64614

Adhesive Back

### 50 pcs./pack Lapping Film Disk WA Abrasive

Grit	Color	o11	o21	o31
# 320	Pink	64621	64626	64631
# 600	Green	64622	64627	64632
# 1,000	Orange	64623	64628	64633
# 1,500	Olive	64624	64629	64634
# 3,000	Violet	64625	64630	64635

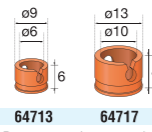
Adhesive Back

### SHANK o3.0 Lap Ring



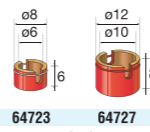
• Plastic and brass lapping rings for use with abrasive and diamond compounds.

### 10 pcs./pack Replacement Plastic Ring



64713 64717

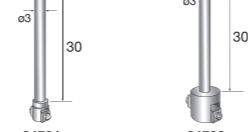
### 5 pcs./pack Replacement Brass Ring



64723 64727

### 1 pc./pack Replacement Holder

For internal diameter o6 mm For internal diameter o10 mm



64731 64732

## Exclusive Tools of "90° MINI ANGLE TYPE ATTACHMENT"



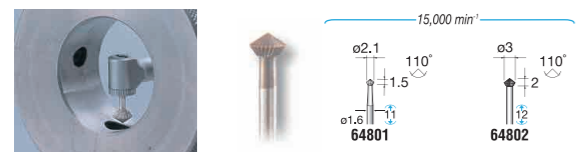
Steel cutters for radius grinding of deep cross holes for "Mini-Angle attachment". Ideal for radius grinding of holes or removing burrs from cross jigs, precision parts and inside surfaces of pipes.



MINI ANGLE TYPE Attachment (Very Small Head)  
MINI ANGLE TYPE Attachment

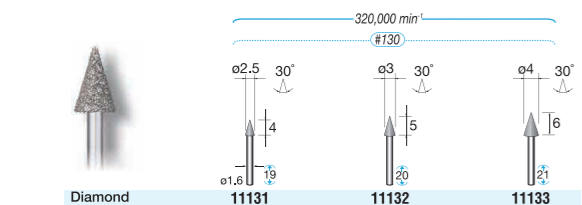
### SHANK o1.6 Steel Cutters For Deep Cross Hole Finishing

### 1 pc./pack Steel Cutters For Deep Cross Hole Finishing

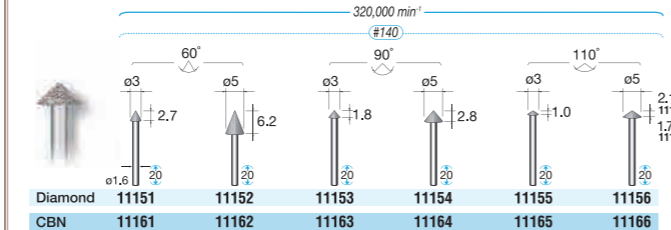


### SHANK o1.6 Diamond Coated Burs For Deep Cross Hole Finishing

### 1 pc./pack Diamond Coated Burs For Deep Cross Hole Finishing



### 5 pcs./pack Diamond and CBN Coated Burs For Deep Cross Hole Finishing



## NAKANISHI's EXCLUSIVE TOOLS

### Exclusive Tools of "IMPULSE"

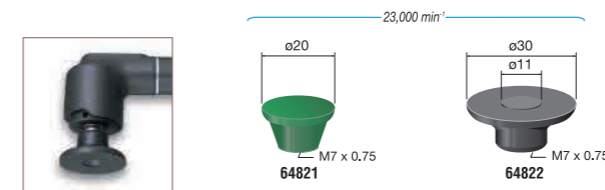


Special tools for Nakanishi Micro-grinder "IMPULSE". Excellent for grinding or polishing flat surfaces, edges with Nakanishi's high-power air grinder.



90° ANGLE IMPULSE · NA90-230  
60° ANGLE IMPULSE · NA45-230

### 5 pcs./pack Special Rubber Pad for Disk Abrasives



23,000 min<sup>-1</sup>  
o20 M7 x 0.75 64821  
o30 M7 x 0.75 64822

### 12 pcs./pack Cup Wheel



Grit	Grade Hardness	o20	o30
# 36	Standard	64830	64835
# 46	Hard	64831	64836
# 80	Standard	64832	64837
# 80	Hard	—	64838

### 5 pcs./pack Polishing Sander

• Abrasive Disk for high speed rotation is made from overlapping abrasive cloths.



Grit	
# 80	64842
# 120	64844
# 180	64846
# 240	64847
# 400	64849

23,000 min<sup>-1</sup>  
o30 M7 x 0.75

• Convenient Assorted set for trial polishing  
All grain size (5 types x each 1 pc.)  
Total 5 pcs.-pack ..... 64850

### 10 pcs./pack Rubber Cup Wheel

• Rubber Cup Wheel with high elasticity for grinding & polishing.



Grit	Color	o20	o30
# 60	Brown	64851	—
# 80	Red	64852	—
# 120	Blue	64853	—
# 180	Olive	64854	—
# 220	Green	64855	—
# 320	Brown	64856	—

23,000 min<sup>-1</sup>  
o30 M7 x 0.75

• Convenient Assorted set for trial polishing  
All grain size (6 types x each 2 pcs.)  
Total 12 pcs.-pack ..... 64859

## Exclusive Tools of "FINE BELT SANDER"



FINE BELT SANDER Attachment

### 30 pcs./pack Abrasive Belts

• High Quality Abrasive Belts are superior in grinding & durability.



For Grinding or Polishing of Metals (Length 300 mm)

Grit	W = 4 mm	W = 6 mm	W = 8 mm
# 80	64901	64911	64921
# 120	64902	64912	64922
# 180	64903	64913	64923
# 240	64904	64914	64924
# 320	64905	64915	64925
# 400	64906	64916	64926
# 600	—	—	64927
# 800	—	—	64928



For Woodwork (Length 300 mm)

Grit	8 mm Width
# 80	64941
# 120	64942
# 240	64943

• Assorted set for preliminary finishing (● Mark)  
Grain size (4 types x each 10 pcs.), W = 8 mm  
Total 40 pcs.-pack ..... 64931

• Assorted set for finishing (● Mark)  
Grain size (4 types x each 10 pcs.), W = 8 mm  
Total 40 pcs.-pack ..... 64932

• Assorted set for woodwork  
All grain size (3 types x each 10 pcs.)  
Total 30 pcs.-pack ..... 64955

**NAKANISHI's EXCLUSIVE TOOLS**

**3 pcs./pack Diamond Belt**

• For grinding and polishing of Carbide, Hardened steel, Steel, Special steels, Ceramic, FRP, etc.



**Hard Type** (Length 300 mm)

Grit	8 mm Width
# 80	<b>65011</b>
# 120	<b>65012</b>
# 240	<b>65014</b>
# 320	<b>65015</b>
# 600	<b>65017</b>

• **Assorted set**

All grain size (5 types x each 1 pc.)  
Total 5 pcs.-pack ..... **65019**



**Soft Type** (Length 300 mm)

Grit	8 mm Width	Grit	8 mm Width
# 120	<b>65021</b>	# 600	<b>65025</b>
# 180	<b>65022</b>	# 800	<b>65026</b>
# 240	<b>65023</b>	#1,000	<b>65027</b>
# 320	<b>65024</b>		
# 400	<b>65028</b>		

• **Assorted set**

All grain size (8 types x each 1 pc.)  
Total 8 pcs.-pack ..... **65030**

**30 pcs./pack Zirconium Belt**

• Best for polishing aluminum, stainless steel, brass



(Length 300 mm)

Grit	8 mm Width
# 80	<b>64971</b>
# 100	<b>64972</b>
# 120	<b>64973</b>

• **Assorted set**

All grain size (3 types x each 10 pcs.)  
Total 30 pcs.-pack ..... **64975**

Electrically Driven  
EmaEVO ESPERT  
Air Driven  
ROTUS IMPULSE PRESTO II  
General Parts  
GENERAL PARTS  
CAUTION  
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INDEX  
Protective Equip.

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