

スイングラスター アタッチメント / SWING - LUSTER Attachment

SLS - 16

取扱説明書 / OPERATION MANUAL

日本語：P1 - P5 / English：P7 - P12

OM-K0246 003

Thank you for purchasing SWING - LUSTER Attachment " SLS - 16 ". This Attachment is designed for polishing narrow grooves, details, etc. The Emax EVOLution Control Unit, Motor or ROTUS air motor and Air Line Kit are required to drive this Attachment. Read this and all the associated component Operation Manuals carefully before use. Always keep this Operation Manual in a place where a user can referred to for reference at any time.

1. CAUTIONS FOR HANDLING AND OPERATION

- Read these warnings and cautions carefully and only use in the manner intended.
- These warnings and cautions are intended to avoid potential hazards that could result in personal injury to the operator or damage to the device. These are classified as follows in accordance with the seriousness of the risk.

Class	Degree of Risk
 WARNING	A safety hazard could result in bodily injury or damage to the device if the safety instructions are not properly followed.
 CAUTION	A hazard that could result in light or moderate bodily injury or damage to the device if the safety instructions are not followed.

WARNING

- ① This Attachment is designed for hand use. Never install this Attachment or any hand tool on a machine such as a special purpose machine, NC lathe or mill.
- ② Do not exceed the " Maximum Allowable Motor Rotation Speed " (Refer to " 6 - 1 Specifications ").
- ③ When sensing that the Attachment and motor are overheated during operation, reduce the working force or the motor rotation speed, or stop the operation until the Attachment cools down before restarting.
- ④ Do not touch tool-holder, cutting tool etc, while they are in the reciprocating motion.
- ⑤ Wear safety glasses, dust mask, and use a protective cover around the Attachment whenever the Attachment is reciprocating.
- ⑥ Be sure to keep this Attachment / motor away from water. It could cause an electric shock to the operator.
- ⑦ Check if the cutting tool / file has been mounted firmly, before operation.
- ⑧ Make sure that the transmission clutches engage firmly, when connecting the motor to the Attachment.
- ⑨ Do not apply excessive force. This may cause cutting tool slippage, cutting tool damage, injury to the operator, and loss of concentricity and precision of the this Attachment and motor.
- ⑩ Repeated or long-term exposure to excessive vibration may cause temporary or permanent physical injury, particularly to the hands and the arms.
- ⑪ Suitable gloves should be worn to reduce the vibration effects on the user.

CAUTION ON VIBRATION

General Warnings for All Vibrating Equipment

- ① Repeated or long-term exposure to excessive vibration may cause temporary or permanent physical injury, particularly to the hands, arms and shoulders.
- ② It is strongly recommended that anyone using vibrating equipment, such as power hand tools, first be physically examined by a doctor and then have regular medical check-ups to make sure the user doesn't have any medical problems that are being caused or worsened by using vibrating equipment. People who have impaired blood circulation to the hand, past hand injuries, nervous system disorders and Raynaud's disease should not use vibrating equipment.
- ③ If you feel any medical or physical symptoms related to vibration (such as tingling, numbness and white or blue fingers), report the situation to your employer and seek medical advice as soon as possible.
- ④ Avoid smoking while using vibrating equipment, as nicotine reduces the blood supply to the hands and fingers.
- ⑤ Suitable gloves should be worn to reduce the vibration effects on the user.
- ⑥ Tools with the lowest vibration should be used when there is a choice between different processes.
- ⑦ Work schedules should be arranged to include vibration-free periods throughout each day.

Additional Warnings for the Safe Use of SWING - LUSTER (SLS - 16)

- ① SWING - LUSTER should only be used after reading and understanding the Operation Manual.
- ② Grip SWING - LUSTER as lightly as possible (while still keeping safe control of it).
Let SWING - LUSTER do the work.

⚠ CAUTION ON VIBRATION

- ③ To ensure your safety, SWING - LUSTER should be maintained as explained in this Operation Manual.
- ④ Do not use SWING - LUSTER at vibration levels of 2.5 m/s^2 and higher. Select the combination of Motor Rotation Speed and Stroke Range so that the vibration level stays in the shaded area as shown on the chart lower right (Fig. 1).
- ⑤ Do not use SWING - LUSTER with vibration at 2.5 m/s^2 or higher each day for an extended period of time.
- ⑥ If any abnormal vibration occurs stop using SWING - LUSTER immediately and return to NAKANISHI for service.

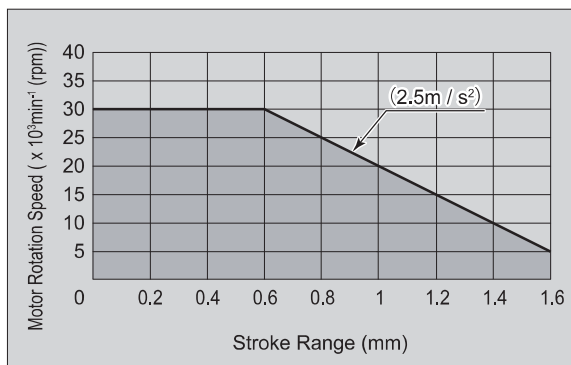


Fig. 1

⚠ CAUTION

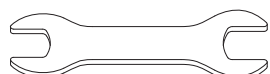
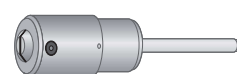
- ① Do not drop or hit this Attachment, as shock can damage to the internal components.
- ② When cleaning an Attachment, stop the motor and remove dirt with a brush or a cloth. Do not blow compressed air into the Attachment. Foreign particles or cutting chips may get into the ball bearings.
- ③ Always clean the tool shank before installing the tool in the Attachment.
- ④ Select suitable products or cutting tools for each application. Do not exceed the recommend conditions as abnormal vibrations may occur.
- ⑤ Keep everything in order not to place the rag which could be caught near the hand tool.
- ⑥ Stop operating immediately when abnormal rotation or any unusual vibrations are observed. Afterwards, please check the content of section " 11. TROUBLESHOOTING ".
- ⑦ Always check if the cutting tool, tool-holder and tool fastening screw are damaged before and after operating.
- ⑧ No lubrication is required because grease impregnated ball bearings are used.
- ⑨ In case a tool is used, or a tool with long shank is used for swing motion, start at a slow speed and gradually increase the speed.
- ⑩ After installation, repair, initial operation, or long periods of non operation, please carry out break-in as follow. Start rotating slowly and over a short period of 5 - 10 minutes, increase speed gradually until allowable maximum speed.
- ⑪ Do not disassemble, modify or attempt to repair the Attachment. Additional damage will occur to the internal components. Service must be performed by NSK NAKANISHI or an authorized service center.

2. BASIC PACKAGE

When opening the package, check if it includes all items listed in " Table. 1 Packing List Contents ".

In the event of any shortage, please contact either NAKANISHI (see the " 4. CONTACT US " section) or your local dealer.

Table. 1 Packing List Contents

Attachment • • 1pc. 	Wrench (16 x 18), (20 x 24) • • 1pc. Each. 	Ceramic Fiber Holder • • 1pc. 
Electroplated Diaoad File (1.2 x 4 x 50 # 100) • • 1pc. 	Ceramic Fider Grindstone Tip (1 x 6 x 50 # 1200) • • 1pc. 	Allen Wrench (1.5mm) • • 1pc. 
Operation Manual • • 1set 		

3. WARRANTY

We provide a limited warranty for our products. We will repair or replace the products if the cause of failure is due to the following manufactures defects. Please contact us or your local distributor for details.

- ① Defect in manufacturing.
- ② Any shortage of components in the package.
- ③ Where damaged components are found when initially opening the package.
(This shall not apply if the damage was caused by the negligence of a customer.)

4. CONTACT US

For your safety and convenience when purchasing our products, we welcome your questions.

If you have any questions about operation, maintenance and repair of the product, please contact us.

Contact Us

- For U.S. Market

Company Name	: NSK America Corp Industrial Div.
Business Hours	: 8:30am to 17:00pm (CST) (closed Saturday, Sunday and Public Holidays)
U.S. Toll Free No.	: 800-585-4675
Telephone No.	: 847-843-7664
Fax No.	: 847-843-7622
Web Address	: www.nskamericacorp.com

- For Other Markets

Company Name	: NAKANISHI INC. 
Business Hours	: 8:00am to 17:00pm (closed Saturday, Sunday and Public Holidays)
Telephone No.	: +81 (0) 289-64-3520
e-mail Address	: webmaster-ie@nsk-nakanishi.co.jp

5. FEATURES

- ① Designed for easy holding and easy working.
- ② The speed and the stroke of swing motion are adjustable.
- ③ Variety of tools can be used on SWING - LUSTER.

6. SPECIFICATIONS AND DIMENSIONS

6 - 1 Specifications

Model	SLS - 16	
Applicable Control Unit	Emax EVOLution Control Unit (NE249)	-
Applicable Motor	ENK - 410S, ENK - 250T (Emax EVOLution)	IM - 301, IM - 300 (ROTUS)
Maximum Allowable Motor Rotation Speed	Less than 30,000min ⁻¹ (rpm) (Refer to Fig. 1)	
Stroke Range	0 - 1.6mm	
Reciprocating Stroke	0 - 7,650 times / min	
Maximum Dia. of Tool	5mm	
Weight	127g	
Vibration Level	Use the Attachment less than 2.5m / s ² (Refer to Fig. 1)	
Noise Level at 1m distans	Less than 70dB (A)	

	Temperature	Humidity	Atmospheric Pressure
Operation Environment	0 - 40°C	MAX.75% (No condensation)	800 - 1,060hPa
Transportation and Storage Environment	-10 - 50°C	10 - 85%	500 - 1,060hPa

⚠ WARNING

- Do not exceed the " Maximum Allowable Motor Rotation Speed ".
- When sensing that the Attachment and motor are overheated during operation, reduce the working force or the motor rotation speed, or stop the operation until the Attachment cools down before restarting.

6 - 2 Outside View

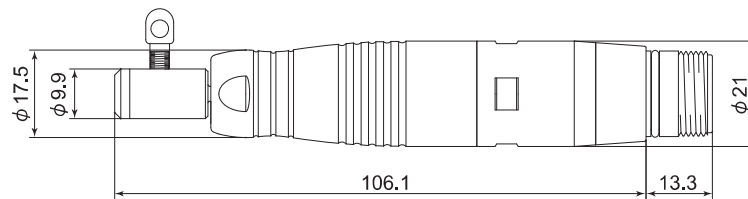


Fig. 2

7. CONNECTION OF THE ATTACHMENT TO THE MOTOR

⚠ CAUTION

Make sure your hands and all interlocking parts of the Attachment and motor are clean before connecting the motor to the Attachment. This is critical in preventing contaminants from entering the motor or Attachment.

Align the thread on the front end of the brushless motor and the rear of the Attachment, and turn the Attachment clockwise. If the drive shaft of the brushless motor does not engage properly to the drive dog on the Attachment, it may only turn approximately two threads before stopping. DO NOT FORCE THEM TOGETHER. Loosen the Attachment from the brushless motor, swing the tool holder a few times to engage the drive shaft and the drive dog, and make the finally tighten the this Attachment firmly.

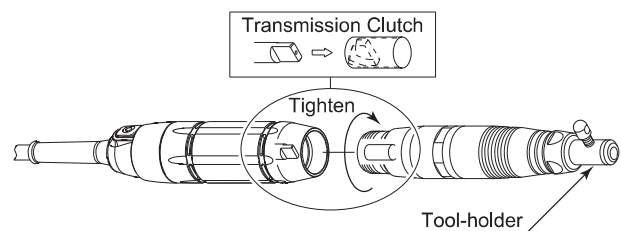


Fig. 3

8. CHANGING THE CUTTING TOOL OR FILE

⚠ CAUTION

- For your safety, remove the plug of motor of control unit, before replacing the cutting tool.
- Make sure the cutting tool has been mounted firmly, before motor rotation.

8 - 1 Mounting

Insert cutting tool into Holder and tighten the cutting tool with Tool Set-screw by using the Allen wrench provided.

8 - 2 Removing

Loosen Tool Set-screw with the Allen wrench provided and pull out the cutting tool.



Fig. 4

9. ADJUSTING STROKE LENGTH

⚠ CAUTION

Pull out plug from the power supply when adjusting the stroke length, for safety reasons.

- ① Place the wrench (20mm) on the body and the wrench (16mm) on Nose. Turn it counterclockwise and remove Nose.
- ② Loosen Adjusting Shaft Set-screw by using allen wrench (1.5mm) provided.
- ③ Align the amplitude graduation of Eccentric Shaft to the mark (1mm hole) of Adjusting Shaft and determine the stroke range.
- ④ Tighten Adjusting Shaft Set-screw with allen wrench (1.5mm) provided.
- ⑤ Assemble Nose back on the body.

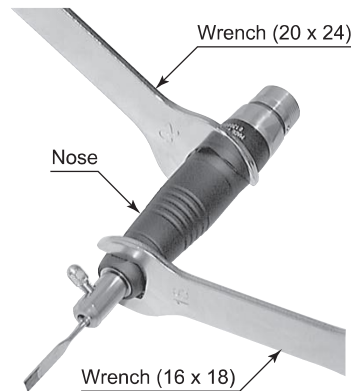


Fig. 5

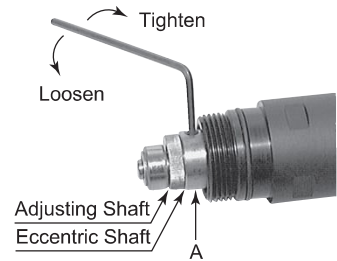


Fig. 6

- Calculation of amplitude at the tip of cutting tool

$$\text{Amplitude} = \frac{A \times (B + 30)}{20} \text{ (mm)}$$

A : Amplitude Graduation.

B : Distance from the tip of cutting tool to the holder.

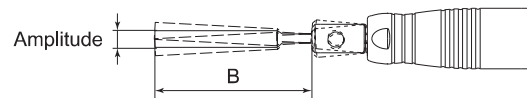


Fig. 7

- Change the motor speed or supply air pressure for the stroke and the length of cutting tool used.
If a long cutting tool is used with large stroke amplitude graduation and the wide amplitude at the tip of cutting tool, use SWING - LUSTER at a slow motor speed.

10. APPLICATIONS

- ① Grinding of corner radius and flat surface of work.
- ② File finishing and final polishing of deep groove.

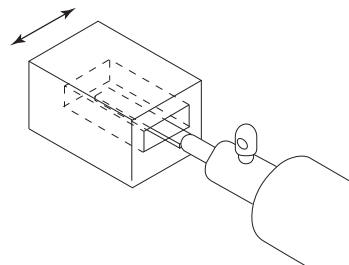


Fig. 8

11. TROUBLESHOOTING

If a problem or concern occur, please check the following items prior to consulting your dealer.

Trouble	Cause	Inspection / Corrective Action
left-right swing motion is poor.	Internal components are worn.	Replacing the internal components. (Return to NAKANISHI dealer service.)
Overheating during reciprocating motion.	Ball bearing worn out by the reason ground particles stock in the air of ball bearing.	Replace the ball bearings. (Return to NAKANISHI dealer service.)
Abnormal noise or unusual vibration during reciprocating motion.	Grinding debris has contaminated the ball bearings. The ball bearings are worn.	
Cutting tool slippage.	The tool mounting setscrew has loosened.	Check if the cutting tool mounting setscrew is properly positioned. Clean it and retighten.

In case of using a brushless motor, refer to the Emax EVOLution Control Unit Operation Manuals.

In case of using an air motor, refer to the ROTUS air motor and the Air Line Kit Operation Manuals.

12. DISPOSAL OF THE ATTACHMENT

When disposal of an Attachment is necessary, follow the instructions from your local government agency for proper disposal of industrial components.