

6mm Torque Type Attachment

HG-200

OPERATION MANUAL

Thank you for purchasing 6mm Torque Type Attachment "HG - 200". This Attachment is Torque Type Attachment and tool to the $\phi 6$ mm diameter can be used. The Emax EVolution Control Unit, Motor or ROTUS Air Motor / 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 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

- 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.
- Do not touch the cutting tool while it is running. It is very dangerous.
- Wear safety glasses, dust mask and use a protective cover around the Attachment whenever the Attachment is rotating.
- When installing a cutting tool, tighten the collet correctly and recheck the collet before use. Do not over-tighten the collet. This may cause damage to the spindle.
- Do not use grindstones with an outside diameter over $\phi 20$ mm when rotating it in a maximum speed.
- Do not exceed 13mm of overhang for mounted grindstones as shown in Fig. 1. If the overhang must exceed 13mm, reduce the motor speed in accordance with Table 1.
- Do not use bent, broken, chipped, out of round or sub-standard cutting tools as they may cause shatter or explode. The cutting tool with cracked, bended may cause some injury to operator. When using a new cutting tool, rotate it in a low speed and increase speed gradually for safety.
- Always operate cutting tools within the cutting tool manufacturer's recommended speed limits. Use of a cutting tool higher than the manufacturer's recommended speed limits could cause damage to the spindle and injury to the operator.
- Do not apply excessive force. This may cause tool slippage, tool damage, injury to the operator, loss of concentricity and precision.

Table 1. Overhang and Speed

| Overhang (mm) | Max. Speed (min ⁻¹) (rpm) |
|---------------|---------------------------------------|
| 20 | N x 0.5 |
| 25 | N x 0.3 |
| 50 | N x 0.1 |

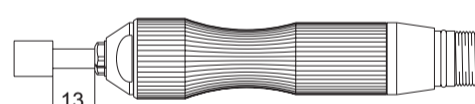


Fig. 1

*N=Max. Operating Speed with 13mm overhang.

CAUTION

- Use less than the maximum allowable motor speed 30,000min⁻¹ (rpm).
- Do not drop or hit this Attachment, as shock can cause damage to the internal components.
- Be sure to clean the collet, the inside of the spindle before replacing the cutting tool. If ground particles or metal chips stick to the inside of spindle or the collet, damage to the collet or spindle can occur due to the loss of precision.
- 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.
- Always clean the cutting tool shank before installing the tool in the spindle.
- When sizing the correct collet size to the cutting tool shank diameter, a tolerance of +0 ~ -0.01mm is strongly recommended. A tool shank within the +0 ~ -0.1mm range is mountable, however, this may cause poor concentricity and or insufficient cutting tool shank gripping force.
- Select suitable products or tools for all applications. Do not exceed the capabilities of the Attachment or cutting tools.
- Keep everything in order not to place the rag which could be caught near the hand tool.
- Stop working immediately when abnormal rotation or unusual vibration are observed. Immediately, please check the content of section " 10. TROUBLESHOOTING ".
- Always check if the cutting tool, collet are damaged before and after operating.
- If the collet show signs of wear or damage, replace it before a malfunction or additional damage occurs.
- No lubrication is required because grease impregnated ball bearings are used.
- 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 - 10minutes, increase speed gradually until allowable maximum speed.
- 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. 2 Packing List Contents ". In the event of any shortage, please contact either Nakanishi (see the "4. CONTACT US" section) or your local dealer.

Table. 2 Packing List Contents

| | | |
|-----------------------------------|--|-------------------------------|
| Attachment • • 1pc. | Collet $\phi 6.0$ mm (CHG - 6.0) • • 1pc. (For U.S. market $\phi 6.35$ mm (CHG-6.35)) | Wrench (10 x 10) • • 1pc. |
| Pin Wrench (K - 233) • • 1pc. | Bar Wrench (K - 212) • • 1pc. | Operation Manual • • 1set |

* The collet is attached to the Attachment.

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.

- Defect in manufacturing.
- Any shortage of components in the package.
- 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 : 8:00 to 17:00 (CST)
(closed Saturday, Sunday and Public Holidays)
 - U.S. Toll Free No. : +1 800 585 4675
 - Telephone No. : +1 847 843 7664
 - Fax No. : +1 847 843 7622
 - Website : www.nskamericacorp.com
- For Other Markets
 - Company Name : **NAKANISHI INC.**
 - Business Hours : 8:00 to 17:00 (JST)
(closed Saturday, Sunday and Public Holidays)
 - Telephone No. : +81 289 64 3520
 - e-mail : webmaster-ie@nsk-nakanishi.co.jp

5. FEATURES

- Torque type attachment used with $\phi 6.35$ mm collet diameter.
- Nicely fits in hand-grip.

6. SPECIFICATIONS AND DIMENSIONS

6 - 1 Specifications

| | | | |
|------------------------------|---|--|--|
| Model | HG - 200 | | |
| Maximum Motor Rotation Speed | Less than 30,000min ⁻¹ (rpm) | | |
| Applicable motors | ENK - 250T (Emax EVolution), IM - 301 (ROTUS) | | |
| Vibration Level | Less than 2.5m / s ² | | |
| Noise Level at 1m distance | Less than 70dB (A) | | |
| Weight | 210g | | |

| | 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 |

<Option>

| | |
|-------------------|--|
| Collet (CHG - □□) | $\phi 1.0$ mm, $\phi 1.5$ mm, $\phi 1.6$ mm, $\phi 2.0$ mm, $\phi 2.5$ mm, $\phi 3.0$ mm, $\phi 4.0$ mm, $\phi 5.0$ mm, $\phi 6.0$ mm, and $\phi 2.35$ mm, $\phi 3.175$ mm, $\phi 4.76$ mm, $\phi 6.35$ mm |
|-------------------|--|

6 - 2 Outside View

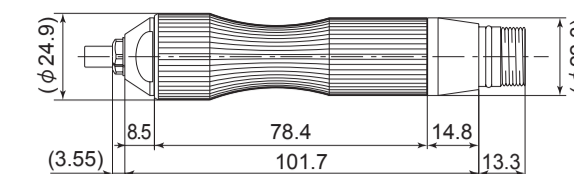


Fig. 2

7. CONNECTING THE ATTACHMENT TO THE MOTOR

CAUTION

- Never connect Electer Emax motor (NK - 351) and Emax EVolution motor (ENK - 410) with HG - 200.
- Make sure your hands and all interlocking parts of the motor and Attachment are clean before connecting the Attachment to the motor. This is critical to preventing contaminants from entering the Attachment or motor.

Align the thread on the front end of the motor and the rear of the Attachment, and turn the Attachment clockwise. If the drive shaft of the motor does not engage properly to the drive dog on the Attachment, it may only turn approximately two threads before stopping. DO NOT FORCE THE TOGETHER. Loosen the Attachment from the motor, rotate the Attachment shaft by hand then re-try. The drive shaft and the drive dog must be fully engaged. When fully engaged, secure the motor and Attachment using the provided pin wrench (K - 233) (Fig. 3).

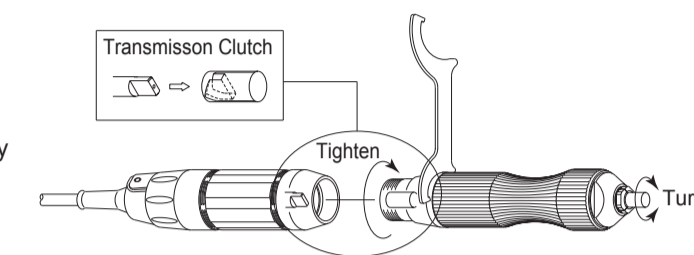


Fig. 3

8. CHANGING THE CUTTING TOOL

CAUTION

- Do not tighten the collet without inserting a cutting tool or dummy bur as this will result in damage to the collet.

- Align the hole in the head with the hole in the spindle and insert the provided bar wrench.
- Place the provided 10mm wrench on the collet and turn counterclockwise to remove the cutting tool.
- Insert the new cutting tool with the overhang as shortly as possible. Turn the wrench clockwise to tighten.

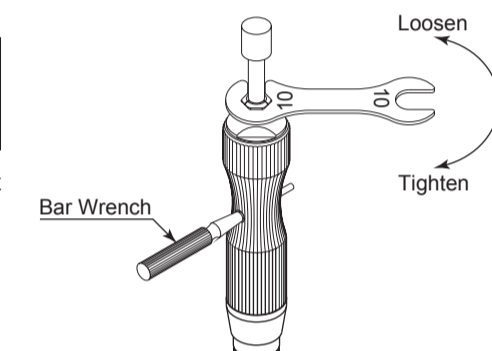


Fig. 4

9. REPLACING THE COLLET

- Remove the tool as detailed in Section " 8. CHANGING THE CUTTING TOOL " procedure and remove the collet (Fig. 5).
- Insert the bar wrench provided into the hole in the housing, align the spindle to lock.
- Rotate the collet counterclockwise to release.
- Insert the new collet into the spindle and turn clockwise.

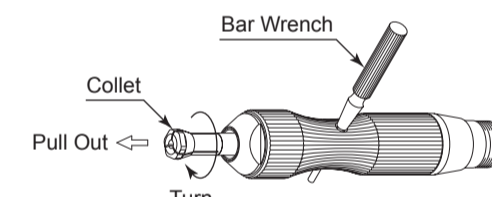


Fig. 5

10. TROUBLESHOOTING

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

| Trouble | Cause | Inspection/Corrective Action |
|--|--|---|
| Attachment does not rotate or rotate smoothly. | The spindle ball bearings have been damaged. | Replace the ball bearings. (Return to NAKANISHI dealer service.) |
| | The motor has been damaged. | Replace the motor. (Return to NAKANISHI dealer service.) |
| Overheating during rotation. | Cutting debris has contaminated the ball bearing, and the ball bearings are damaged. | Replace the ball bearings. (Return to NAKANISHI dealer service.) |
| Abnormal vibration or noise during rotation. | The cutting tool shank is bent. | Replace the cutting tool. |
| | Cutting debris has contaminated the ball bearings. The spindle ball bearings have been damaged. | Replace the ball bearings. (Return to NAKANISHI dealer service.) |
| Cutting tool slippage. | Collet is not correctly installed. | Check and clean the collet. Reinstall the collet and re-tighten. Check the accuracy. |
| | The collet is worn. | Replace the collet. |
| High run-out. | Cutting tool is bent. | Replace the cutting tool. |
| | Collet is not correctly installed. | Secure the collet correctly. |
| | The collet is worn. | Replace the collet. |
| | Inside of the spindle is worn. | Replace the spindle shaft. (Return to NAKANISHI dealer service.) |
| | Contaminants inside the collet or the spindle. The spindle ball bearings have been damaged. | Clean the collet and the inside of the spindle. (Return to NAKANISHI dealer service.) |

11. DISPOSAL OF THE TORQUE TYPE ATTACHMENT

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