

# Reducer ARG - 01 • ARG - 02

## OPERATION MANUAL

Thank you for purchasing the Reducer " ARG - 01 • ARG - 02 ". This Reducer is developed for reducing the spindle rotation speed and increasing the torque. This Reducer is driven to be connected between " spindle " and " brushless motor " or " air motor ". The brushless motor / air motor and spindle are required to drive this Reducer. 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
<b>WARNING</b>	<b>A safety hazard could result in bodily injury or damage to the device if the safety instructions are not properly followed.</b>
<b>CAUTION</b>	<b>A hazard that could result in light or moderate bodily injury or damage to the device if the safety instructions are not followed.</b>

#### WARNING

- The Reducer is not a hand tool. It is to be connected between the NSK NAKANISHI spindle and brushless / air motor and installed on a CNC machine or a special purpose machines.
- 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 Reducer whenever the Reducer is rotating.
- Never connect, disconnect or touch the Power Cord Plug or Motor Cord Plug with wet hands. This may cause an electric shock.
- Never operate or handle the Reducer, brushless / air motor and spindle until you have thoroughly read the Operation Manuals and safe operation has been confirmed.
  - To prevent injuries / damages, check the Reducer, brushless / air motor, spindle and cutting tool for proper installation, before operating the Reducer, brushless / air motor and spindle.
  - Before disconnecting the Reducer from the brushless / air motor and spindle, always turn the control power off and turn the compressed air supply to the CONTROLLER off. Then it is safe to remove the Reducer, brushless / air motor and spindle.

#### CAUTION

- Do not exceed the maximum allowable motor speed of 30,000min<sup>-1</sup> (rpm).
- Do not drop or hit this Reducer, as shock can damage to the internal components.
- Be sure to read the Operation Manuals thoroughly for the Reducer, brushless / air motor and spindle carefully before use.
- Make sure that the transmission clutches engage firmly, when connecting to the brushless / air motor and the spindle.
- Stop working immediately when abnormal rotation or unusual vibration are observed. Immediately, please check the content of section " 8. TROUBLESHOOTING ".
- 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 15 - 20 minutes, increase speed gradually until allowable maximum speed.
- Do not disassemble, modify or attempt to repair this Reducer. Additional damage will occur to the internal components. Service must be performed by NSK NAKANISHI or an authorized service center.
- When using this Reducer for mass production, please consider the purchase of an additional Reducer to be used as a back-up in case of emergency.

### 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

Reducer • • 1pc.	Operation Manual • • 1set
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### 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	: <b>NSK America Corp</b>
	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	: <b>NAKANISHI INC.</b>
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

- The Reducer housing is made from precision ground, hardened, stainless steel (SUS) with an outside diameter of  $\phi 22.8$ mm.
- When the Reducer is connected between the spindle and the brushless / air motor, it reduces the spindle rotation speed and increases the torque while keeping the motor speed unchanged.
- The Reducer utilizes a planetary gear system.

### 6. SPECIFICATIONS AND DIMENSIONS

#### 6 - 1 Specifications

Model	ARG - 01	ARG - 02
Maximum Allowable Motor Speed	30,000min <sup>-1</sup> (rpm) (at 0.5MPa (72.5psi) Air Pressure)	
Maximum Rotation Speed at the Tool	7,650min <sup>-1</sup> (rpm) (at 0.5MPa (72.5psi) Air Pressure)	1,950min <sup>-1</sup> (rpm) (at 0.5MPa (72.5psi) Air Pressure)
Reduction ratio	1 / 3.92	1 / 15.39
Applicable Motor	For Air Motor	AM - 310R / L, AM - 310RA / LA AM - 300R / L, AM - 300RA / LA
	For Brushless Motor	EM25 - 5000 - J4
Weight	108g	148g

	Temperature	Humidity	Atmospheric Pressure
Operation Environment	0 - 40°C	MAX.75% (No condensation)	700 - 1,060hPa
Transportation and Storage Environment	-10 - + 50°C	10 - 85%	500 - 1,060hPa

#### CAUTION

**DO NOT exceed the maximum allowable motor speed 30,000min<sup>-1</sup> (rpm) for the spindle and the Reducer.**

### 6 - 2 Outside View

① ARG - 01

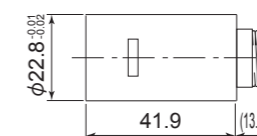


Fig. 1

② ARG - 02

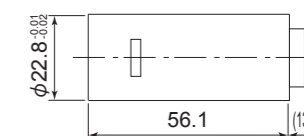


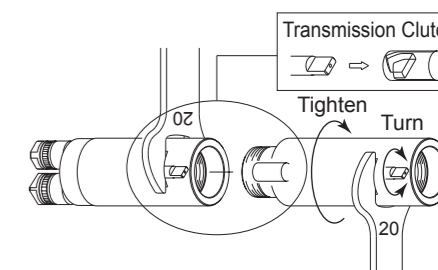
Fig. 2

### 7. CONNECTION OF THE REDUCER TO THE MOTOR

#### CAUTION

**Make sure your hands and all interlocking parts of the Reducer and brushless / air motor are clean before connecting the brushless / air motor. This is critical in preventing contaminants from entering the brushless / air motor or Reducer.**

Align the thread on the front end of the brushless / air motor and the rear of the Reducer, and turn the Reducer clockwise. If the drive shaft of the brushless / air motor does not engage properly to the drive dog on the Reducer, it may only turn approximately two threads before stopping. DO NOT FORCE THEM TOGETHER. Loosen the Reducer from the brushless / air motor, rotate the Reducer shaft by hand then re-try. The drive shaft and the drive dog must be fully engaged. When fully engaged, secure the brushless / air motor and Reducer using the provided 20mm wrench.



The wrenches (2pcs.) used here are attached to the motor and spindle respectively.

Fig. 3

### 8. TROUBLESHOOTING

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

Trouble	Cause	Inspection / Corrective Action
Reducer does not rotate.	The Reducer gears have been damaged.	Replace the inner gears. (Return to NAKANISHI dealer service.)
	The ball bearings have been damaged.	Replace the ball bearings. (Return to NAKANISHI dealer service.)
Overheating during rotation.	Cutting debris has contaminated the ball bearings, and the ball bearings are damaged.	
Abnormal vibration or noise during rotation.	Cutting debris has contaminated the ball bearing.	
	The ball bearings have been damaged.	
	The Reducer gears have been damaged.	Replace the inner gears. (Return to NAKANISHI dealer service.)

### 9. DISPOSAL OF THE REDUCER

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