



ARA GEAR BOX

INSTALLATION & MAINTENANCE INSTRUCTION



Tsubaki

Thank you for purchasing the ARA GEAR BOX.

- Only experienced engineers should handle the ARA GEAR BOX. Before using this product, please read entire contents of the instruction manual, to understand it's operation fully.
- Please ensure that the instruction manual is delivered directly to the customer who will actually use it.
- Please ensure that the instruction manual stays with the product at all times, so it may be reviewed anytime before operating.
- Safety precautions in this manual are classified into two categories; "DANGER" and "ATTENTION". These are defined as follows;

 DANGER	A dangerous situation may occur if incorrectly handled and the possibility of subsequent death or serious injury is possible.
 ATTENTION	A dangerous situation may occur if incorrectly handled and the possibility of subsequent medium level or slight injury, or equipment damage only is possible.

Any points classified as "ATTENTION" can lead to serious results depending on the surrounding situation. Important contents are contained in each of these points. Do not fail to follow those instructions.

 DANGER
<ul style="list-style-type: none"> •Such jobs as transportation, installation, wiring, operating and maintenance or inspection must be carried out by skilled and professional engineers, otherwise explosion, fires, electrical shock, injury or damage to the device may occur. •When the ARA GEAR BOX is to be used for vehicles for transportation of people, install a suitable protection device on the vehicle side for safety purposes, otherwise an accident resulting in death, injury or damage to the device may occur due to accidental falling and runaway. •When the ARA GEAR BOX is to be used for an elevator, install a safety device on the elevator side in order to protect from falling, otherwise an accident resulting in death, injury or damage to the device may occur due to accidental falling of the elevator.
 ATTENTION
<ul style="list-style-type: none"> •Do not use the ARA GEAR BOX for specifications other than those specified on its nameplate or manufacturing specifications, otherwise injury, damage to the device, etc. may occur. •Do not insert your fingers or other objects in the opening of the ARA GEAR BOX, otherwise injury, fire or damage to the device may occur. •Do not use a damaged ARA GEAR BOX, otherwise injury, fire, etc. may occur. •Do not remove the nameplate. •Any remodeling carried out by the customer is not covered by our guarantee and therefore we cannot be hold responsible. <p>(Upon receipt of the ARA GEAR BOX you purchased)</p> <ul style="list-style-type: none"> •Check the top and bottom sides of the packing and prior to opening, otherwise injury may occur. •Check whether or not the ARA GEAR BOX you received is exactly what you have ordered. If an incorrect product is installed, injury, damage to the device, etc. may occur.

1 Upon receipt of the ARA GEAR BOX you purchased

When the ARA GEAR BOX is delivered to you, firstly check the following things.


- 1-1. Ensure that reduction ratio, type, etc. printed on the nameplate correspond to your requirements. Especially, please confirm whether shaft arrangement and rotating relation agree in the position of input shaft, output shaft, oil gauge, and each plug.
- 1-2. Check if any part of the product has been damaged during its transportation.
- 1-3. Check that the screws and bolts are fastened securely.
If you find any defect or failure, please notify the place of purchase or our business office in your area, of such defect or failure.

2 Installation



2-1. Environmental condition

Location of use	Indoor
Ambient temp.	−10°C to 50°C
Humidity	Below 95%
Altitude	Below 1000m
Atmosphere	Avoid corrosive or volatile gases, vapor condensation, and dust.

2-2. Transportation

 ATTENTION
<ul style="list-style-type: none"> •Pay full attention to avoid falling or overturning during transportation. In case of a ARA GEAR BOX fitted with lifting rings, check that these rings are fastened securely before using them for lifting. However, after the ARA GEAR BOX has been installed on a machine, never lift the machine by the ARA GEAR BOX by using these lifting rings, otherwise injury or damage to the device may occur due to the rings being damaged or falling down or overturning. •Before lifting the ARA GEAR BOX, check its weight from the packing, outline drawings, catalog, etc. Never lift any ARA GEAR BOX having a larger load than the rated load of the lifting rings, otherwise injury or damage to the device may occur due to damaged the lifting ring, falling or overturning. And do not lift the ARA GEAR BOX by holding the terminal box, it may come off and fall.


2-3. Installation

 DANGER
<ul style="list-style-type: none"> •Never step under the product when it is elevated for transportation, otherwise an accident resulting in death or injury may occur due to falling.
 ATTENTION
<ul style="list-style-type: none"> •Never place any obstacles which bars ventilation around the ARA GEAR BOX. Otherwise cooling of the ARA GEAR BOX will become less effective and burns or fires may occur due to abnormal overheating. •Never mount or hang on to the ARA GEAR BOX, otherwise injury may occur. •Do not touch the key seat of the shaft of the ARA GEAR BOX with bare hands, otherwise injury may occur. •When the ARA GEAR BOX has been mounted on food processing machinery, etc. that should not come into contact with machine oil, install devices such as oil pans, etc. just in case any grease leaks from the ARA GEAR BOX due to failures, operating life, etc. Otherwise the products produced by those machinery may be damaged by the grease leaks from the ARA GEAR BOX.

- ① ARA GEAR BOX can be mounted in any direction.
- ② Install the reducer properly not to be vibrated abnormally.
- ③ Make sure the following points when sprockets, couplings installed on the shaft of ARA GEAR BOX.

- Do not hammer on the shaft ends.
- Be careful not to damage to the oil seal and the case face due to the shafts have no step.
- When the reducer's shafts are connected to the other shafts using a coupling, make sure that the shafts are aligned before operating. The misalignment may damage to the gears, bearings, and shafts, and may cause abnormal noise, vibration.
- Check the rotational direction before operating.
- When surface temperature of the speed reducer exceeds 93°C, check each part. The defective installation, the overload, etc. may be occurred.



2-4. Connecting to machinery

 ATTENTION
<ul style="list-style-type: none"> • In motor and motive-ee and the case in which the speed reducer is coupled, pay attention to the centering, belt tension, pulley's parallelism, etc. In case of a direct coupling, pay attention to the accuracy of the connection. In case of belt-drive, adjust the belt tension correctly. Before starting the operation, firmly tighten the bolts of the pulley or coupling, otherwise injury or damage to the device may occur. • Install a cover, etc. so that the rotating parts cannot be touched, otherwise injury may occur. • Please detach the key tacked in the output shaft, when it is made to rotate only by the speed reducer. There is the possibility of the injury. • Before connecting to machinery, check the rotating direction. Incorrect rotating direction may cause injury or damage to the device.

3 Lubricant

- ARA GEAR BOX is shipped filled with grease and is ready for immediate use.
- Grease need not be changed for ARA GEAR BOX

4 Operation

 DANGER
<ul style="list-style-type: none"> • During operation never stand near any rotating section (shaft, etc.), otherwise injury may occur.
 ATTENTION
<ul style="list-style-type: none"> • During operation, the surface temperature of the ARA GEAR BOX becomes considerably high. Be careful not to touch the motor, otherwise burn injury may occur. • Stop operation immediately when any troubles happen, otherwise electrical shock, injury or fires may occur. • Do not operate under higher than rated load, otherwise injury or damage to the device may occur. • The oil supply plug is not loosened and is given under operation. The lubricating oil spouts out, and there is the possibility of the burn. • Please make the inversion starting, after that it comes, when the inversion is put on, once stops certainly. There is the possibility of the equipment damage by the positive reverse operation by plugging.

4-1. Safety check before operating

After installation, check the following points before use.

- Is the rotational direction correct?

- Is the reducer securely connected with other equipment?
- Don't each mounting and clamping bolt have the looseness?

In order to prevent any damage, take precautions against all of the foreseeable dangerous situations.

4-2. Trial Running

Before commencing actual operation, run the reducer with no load, and check for abnormal vibration, noise, or excessive heat and if every thing is normal, gradually apply the load.

4-3. Operation

After the reducer is started, check the following points.



- Is there any abnormal vibration or noise?
- Is there any occurrence of shock load?

Note) It becomes a cause that it gives the bad effect in the life of the gear and damages the speed reducer, when it applies on the load over the permission. It is warned and is given so that there may be no that the permission torque is exceeded.

Note) It runs, it may be feverish a little in the first 2~3 day, and this is not the abnormality.

However, please check each part, when surface temperature of speed reducer exceeds 93 °C , Because deficiency and excess and installation inferior of lubricating oil, etc. are considered. Still, please check the top of the enough attention in this time, because there is the danger of "burn", when the speed reducer is touched in direct bare hands.

5 Maintenance

 DANGER
<ul style="list-style-type: none"> • When carrying out maintenance or checking during the operation, never touch any rotating section (shaft, etc.), otherwise accidents resulting in death or injury may occur. • You have to construct always ventilating an inside, after performing certainly the rotation stop of a drive machine and a motive-ed and fully cooling the inside of a product, when coming into the inside of a product and checking at the time of a stop. Furthermore, during check work, please station the staff of a safe check outside and always perform a safe check with a worker. Moreover, the inside of a product should recognize enough that it is in the state of being easy to slide to lubricating oil, and should take a positive safe measure. There is fear of an accident resulting in injury or death.
 ATTENTION
<ul style="list-style-type: none"> • Certainly the specialist carries out repair, decomposition, and assembly. There is the possibility of electric shock, injury, fire, etc. • Please construct the exchange of the lubricating oil by the manual. Certainly please use the result which the manufacturer is recommending the oil type. There is the possibility of the equipment damage. • It is given by surfacing speed reducer in bare hands, because it becomes a high temperature, and there is no straw. There is the possibility of the burn. • The lubricating oil and grease are not exchanged and are given right after operation and right after the stop. There is the possibility of the burn. • Please carry out the diagnosis as the abnormality arose based on the manual. It absolutely does not run, until the cause of the abnormality is investigated, and until the countermeasure treatment is conducted, and it is given.

5-1. In the maintenance

- Wear suitable clothing and protective equipment (safety glasses, gloves and safety shoes).

- The circumference is arranged so that it may not cause the secondary disaster, and it is done in the safe condition.
- Certainly the power supply is cut, and it is done in the condition that the machine perfectly stopped. And, please do it so that the power supply may not come in the accidental.
- Take care to prevent burn due to touch the surface of the reducer during operation.
- Safety equipment must be provided in accordance with provisions of ANSI/ASME B15.1-1984 "Safety Standards for Mechanical Power Transmission Apparatus", and ANSI/ASME B20.1-1990 "Safety Standards for Conveyors And Related Equipment", or other applicable safety standards. When revisions of these standards are published, the updated edition shall apply

5-2. Maintenance Item

Execute daily maintenance as follows.

Item	Contents
Noise	Is the reducer noisier than usual? Is there any periodical noise from the reducer?
Vibration	Is there any abnormal vibration?
Temperature rise	Is there any abnormal temperature rise on the reducer?
Lubricant leakage	Is there any lubricant leakage from the reducer?

Note) If you can see abnormal condition, stop the operation and check the detail.

Note) In case of unknown cause or impossible repair, inform your distributor.

7. when our product has suffered from secondary damage owing to the failure of customer's equipment,
8. when damaged owing to the parts which were supplied by the customer and built-in our product, or the parts which were designated by the customer and used in our product, or
9. when any damage other than the above has been caused by reason we shall not be held

•Warranty period

The warranty period shall be either 18 months after shipment from our factory or 12 months after starting operation, whichever is shorter. Any and all inspection/repair undertaken by us after the above warranty period has passed will be charged. We will be willingly accepting at cost your request for any inspection and repair arising by reasons outside our warranty as above even during the warranty period. Please do not hesitate to contact our dealers from who purchased.

•Miscellaneous

Any matters described in this instruction manual may be changed without notice, to which your understanding is appreciated. We have tried our best in preparing the contents of this instruction manual so that any mistakes or oversights may be minimized. Should any mistake or oversight be found, we would be more than happy if you would advice us of them.

6 Other



ATTENTION

Please deal with it as a general industrial waste, when speed reducer and lubricating oil are disposed of.

7 Limited Warranty

Limited Warranty

•Range of warranty

With regard to any troubles happened to our products, replacement or repair of such troubled parts will be provided for free of charge during the effective period of warranty, provided that installation and maintenance / management of said products have been performed properly pursuant to the description of this instruction manual and said products have been used under the condition described in the brochures or agreed separately through mutual consultations.

The content of warranty is limited only to the ARA GEAR BOX itself delivered to you and the judgment thereof will be made by our selection because such judgment pertaining to the range of warranty is often complex.

Items falling under any of the following points shall be excluded from our warranty:

1. when used under other conditions than the same described in the brochures or agreed separately,
2. when any failure is found in the installation, wiring or coupling with other equipment,
3. in case either the customer or supplier has altered the structure of our products by undertaking remodeling, etc.,
4. in case the product is repaired by other facility than our company or our designated factory,
5. in case the customer's maintenance/management has been insufficient and operational environment is not appropriate,
6. when damaged by such unavoidable situations as an act of God or disaster,