

MID SERIES

Induction Gearmotor

Instruction Manual

(abridged edition) lease read this manual before using the product.

Introduction

Thank you for purchasing our product. A Simple Instruction Manual (this document) and a Detailed Instruction Manual are available for this product or more information, please see the Detailed Instruction Manual. ■ Related Instruction Manual

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Name				
MID SERIES 1/8HP to	MID SERIES 1/8HP to 3HP (0.1kW to 2.2kW)			
AC Induction Gearmotor D	AC Induction Gearmotor Detailed Instruction Manual			
How to	How to Obtain			
< From our website > < QR code >				
www.brother-usa.com /induction-gm-3ph-manual				

Safety Precautions

- Be sure to carefully read the contents described in this instruction manual to understand how to use the product correctly before using it.
- The extents of hazard/damage expected to occur in the case of improper handling are classified and indicated in ranks of "DANGER", "WARNING", and "CAUTION." The definitions and indications are as follows.

	4	DANGER	cases where it is expected into a degree or danger is extremely high such that improper handling possibly causes a dangerous situation to occur, which may lead to death or serious injury.			
			Cases where improper handling possibly causes a dangerous situation to occur, which may lead to death or serious injury.			
			Cases where improper handling possibly causes a dangerous situation to occur, from which a minor or medium degree of injury may be incurred.			
1	E	First items described in #OALITIONE and Indianate the				

Be sure to observe every instruction which deals with important contents

\blacksquare The types of contents to be observed are explained

with classification by graphical symbols below.						
\triangle	Indicates "What You Must Pay Attention To."	0	Indicates "What You Must Not Do."			
	Indicates "Burn Hazard."	(1)	Indicates "Do Not Disassemble."			
Indicates "Electric Shock Hazard."		0	Indicates "What You Must Do."			
	Indicates "Fire Hazard."	•	Indicates "Ground Connection."			
▲ DANGER						

General



f the product is used in a device such as a personnel transport device, make sure to install a protective device f safety purposes. Failure to implement safety measures may esult in personal injury, death, and/or damage to the

the product is used in an elevator, install a safety device n the device side to prevent it from falling. Failure to $oldsymbol{\Lambda}$ $oldsymbol{\Phi}$ implement safety measures may result in personal injury eath, and/or damage to the device due to the falling of th

Jse an explosion-proof motor that complies with operation nder the explosive atmosphere. Failure to follow this Δ δ ecaution may result in explosions, ignition of fire, fire, ectric shocks, injuries, and/or damage to the device.

ever perform operations with wet hands. Failure to follo nis precaution may result in electric shock.

Do not work while the product is energized. Be sure to turn off the power before work. Failure to follow this precaution may result in electric shock. 4

may result in electric shock

lake sure not to come close or touch the rotating parts butput shaft, etc.) during operation. Otherwise, it may result injury due to entanglement to the product. Δ

↑ WARNING

he operators in charge of installation, piping, wiring, peration, handling, maintenance and inspection should ave enough knowledge and technical skill related to the roduct. Failure to follow this precaution may result in xplosion, ignition of fire, fire, electric shock, injury, and/o

Be sure not to get water or oil/grease into the brake unit. Φ ailure to follow this precaution may result in falling or outcontrol accident due to the decreased brake torque o not repair, disassemble or remodel the product. Failure observe this precaution may result in injury, fire, electr ◮ ock, and/or burns.

When performing a trial operation, fix the product in place Λ Φ

nd disconnect it from the machine. Failure to observe thi recaution may result in injury.

CAUTION General perate the product under the conditions specified in this

struction manual. Failure to follow this precaution may esult in injury or damage to the equipment. not expose the product to strong impacts/shocks. Fail observe this precaution may result in failure of the Δ δ oduct and/or injury. On not use the gearmotor under conditions other than

ecified on the nameplate or the product specification ailure to follow this precaution may result in electric shock ury, fire, and/or damage to the device. Oo not use damaged products. Failure to follow this precaution may result in injury, fire, Δ nd/or damage to the device.

Do not insert fingers or objects in the open parts of the Δ δ roduct. Failure to follow this precaution may result in lectric shock, injury, fire, and/or damage to the device Do not remove the namenlate ◮

roducts modified by a customer will not be covered by th Λ

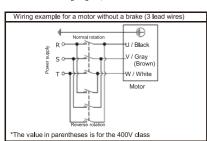
ne product must be transported correctly in accordance vith its weight.

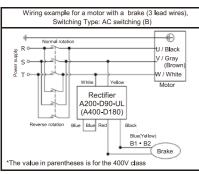
Otherwise, it may result in injury and/or failure. $oldsymbol{\Lambda}$ $oldsymbol{0}$ not overload/over stack the products. Failure to follow this precaution may result in injury and/or equipmen



Wiring diagram (3-phase)

(Note) Typical wiring examples are shown below. For the wiring diagram, see detailed instruction manual.





Installation

Location						
Item	Standard specification	Water-resistant specification				
Ingress protection rating	Differs depending on the model	IP65				
Ambient temperature	-10°C~40°C	-10°C~40°C				
Ambient	85%RH or less	100%RH or less				
humidity	(no dew condensation)	(no dew condensation)				
Altitude	1000 m or lower	1000 m or lower				
Atmosphere	A well ventilated place free from corrosive gas, explosive gas, vapor and/or chemicals. Not to be exposed to rain and direct sunlight. The brake should not be exposed to water, powders, grease, and/or oil mists. Models with protection rating of IPX0 should not be exposed to water directiv.	A place free from corrosive gas, explosive gas and/or vapor. Not to be exposed to strong rain, wind and direct sunlight. Not suitable for use under water, under environments with exposure to high pressure water splashes, and under exposure to cleansing chemicals.				

Orientation

No restriction on installation orientation. (Since it uses a grease lubrication system)

Foot mount, Flange mount

- Secure the gearmotor with four bolts on a vibration-free and
- Shaft mount (torque arm)
- The driven shaft must be able to carry the weight of the reducer.(Forces other than the rotation reaction force should not be applied to the torque arm.)

Tightening torque for bolts for installation

Mounting hole	Bolt size	Tightening torque		ue
(mm)	DOIT SIZE	(N•m)	(kgf•m)	(Ibf•in)
5.5	M5	2.9	0.3	26
6.5	M6	4.9	0.5	43
8.5	M8	13	1.3	115
9	M8	13	1.3	115
11	M10	25	2.6	221
13	M12	44	4.5	390
15	M14	69	7	611
18	M16	108	11	956
22	22 M20		30	2602

Operation

Pre-Operation Checks (1) Is the wiring correctly performed

(2) Is the product correctly installed? (3) Is the ground connection properly done?

Trial Operation Checks

(1) Switch on for 1 to 2 seconds under no load to check the rotational direction before installing to the driven r If the direction is wrong, refer to the wiring diagram in the detailed instruction manual and change the wiring

(2) Connect to the machine and operate at no load. If there is no abnormality, gradually increase the load up to full load.

Routine Operation Checks

- the state of operation.
- Immediately stop the operation if there is any abnormality. Otherwise, device damage, injury, fire, an electric shock
- (2) Refer to the detailed instruction manual for the diagnosis when an abnormality occurs and do not operate the motor until the causes of the error are found and corrective actions are taken.

Daily inspection

To be performed every 2 to 3 days.				
Inspection Item	Method	Inspection Details		
Load current	Ammeter	Within the rated current described on the nameplate.		
Noise	Auditory Observation	No abnormal sound (rattling sound, periodic sound). *Apply a listening rod to the bearing part to check abnormal sound.		
Vibration	By touch	No abnormal vibration of the gear case and motor frame.		
Surface temperature	Thermometer	No rapid increase or decrease of normal temperature.		
Grease leakage		No leakage from the joint part of the case,		



hen handling the gearmotor, be careful with the sharp edges/points of the device. Failure to follow this precaution nay result in injury.

Do not stand on or place any heavy object on the product. Failure to follow this precaution may result in injury. ⚠ o not put any combustible material near the product.

◬ ailure to follow this precaution may result in fire.

Do not put any object that may prevent air from being circulated around the product. Failure to follow this recaution can cause abnormal overheating of the produc may result in fire or burns. e careful not to cause damage to the cable nor pull it

trongly. Failure to follow this precaution may result in

 Δ δ Operati

jury, fire, and/or electric shock mmediately stop the operation if there is any abnormality. Failure to follow this precaution may result in fire, and/or

 Λ 0

Do not touch the gearmotor when the power is on or mmediately after turning off the power, as their surfaces nay be hot for a while. Failure to follow this precaution may

Note

When disposing of the product, dispose of it as a general industrial waste Please follow local laws and regulations if any apply and take care of the aste accordingly.

Notice

We shall assume no responsibility or liability for any trouble caused by se that violates the caution instructions given on the left

he contents of this manual are subject to change without notice.

We have made every possible effort to make the contents of this manu asy to understand. If there is anything that is unclear or hard to nderstand, please feel free to contact us.

Inspection upon unpacking

Checking package contents

Contact the dealer from where you purchased the product or your nearest service office if you have any questions or if there are any

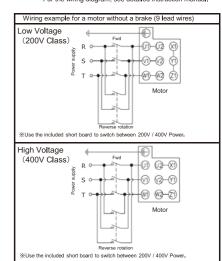
- (1) Is the information on the nameplate consistent with your order? (gearmotor type, reduction ratio, motor capacity, voltage, frequency, etc.)
- (2) Were any parts damaged during transportation?
- (3) Are there any loose screws, bolts, and nuts?(4) In the case of a gearmotor with a brake, is there a rectifier included in the package?
 In case of a terminal box with built-in rectifier(option), check if the
 - rectifier is built in to the terminal box.

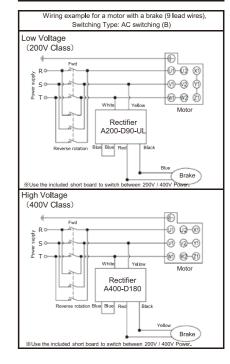
Wiring

- (1) Wire the gearmotor in accordance with the wire connection diagram (2) Since electric shock may occur, make sure to ground the grounding terminal. The grounding terminal is located near the lead wire opening for motors without terminal box(lead wire type), or in the terminal box for motors with a terminal box
- (3) For the motor rotation direction of the connection below, "Forward" is defined as clockwise rotation seen from the back-side of the motor. The rotation direction of the output shaft depends on the reduction ratio of the gear head.
- (4) The rectifier may become damaged due to improper connection. Pay attention when connecting wires.

Wiring diagram (3-phase)

e) Typical wiring examples are shown below. For the wiring diagram, see detailed instruction manual







	Based on 8 hours/day operation.					
	Inspection Item	Inspection	Inspection Details			
	Mounting bolt	Every 6 months	Check the looseness with a spann Tighten it if it is loose.			
ľ	Chain V-be i t	Every 6 months	Check the tension. Adjust if too loose or too tight.			
	Motor insulation resistance	Every 6 months	Measure with an insulation			
	Gap amount (Brake)	1 year or every 1 mil to 1.5 mil times of brake usage.	Please confirm that the gap is below the gap limit. For inspection and adjustment methods, please see the Detailed Instruction Manual.			

Maintenance and Product Life

- All models are equipped with a grease lubrication system, and replenishment of grease is not required.
 However, if you replace it every ~10,000 hours, the reducer can last longer
- Grease replacement must be performed at our factory and is considered a repair order.
- Although gearmotors have 10,000 hours of operating life, oil seals may need to be replaced before the 10,000 hour mark depending on the environment and usage.

 Oil seals must be replaced at our factory and are considered a
- Though the oil seals and O-rings should prevent grease leaka from the motor, we recommend using additional protection such as
- oil pans to prevent potential accidents. • Due to the structure of the brake, operating the motor via an inverter may increase the noise level coming from the brake part. This however, does not affect the performance of the brake.

Storage

(1) Storage location

- 1. When the product is stored for six months or longer, it shall be stored in a place indoors, with good ventilation, without direct sunlight, temperature change, humidity, dust, and/or corrosive gas.
- 2. Do not directly place the product on the ground when it is stored. 3. If there is a micro vibration, the bearings may be damaged by fretting corrosion even when the product is stored. Please store the product in a place without vibration.

(2) Operation during storage

- To prevent the bearings from getting rusty, operate the motor every six months to check if the motor rotates smoothly and there is no abnormal sound.
- 2. Measure the insulation resistance with an insulation resistance tester at 500V measuring voltage to check if it is 1 M Ω or higher. 3. Apply rust prevention to the output shaft and the flange side and other uncoated processed surfaces for every six months

- 1. Check that there is no abnormal sound, vibration, heat generation and other abnormalities on initial operation.
- 2. For gearmotors with a brake, check that the brake operates properly. If any abnormality is found, please immediately contact our nearest service office.

Terms and Conditions Full Terms and Conditions can be found at the link below

www.brother-usa.com/GM-terms-conditions



Efficiency values for High-Efficiency Gearmotor for Europe ed efficiency value under 50Hz and under 75 % and 50 % rated load

*Please refer to the product name plate for the rated efficiency at 100% load. Efficiency Motor Voltage Voltage Frequency Load factor

		voltage				
Class pov	power	codes	Voltage	Frequency	50%	75%
		N	200V	50Hz	64.1	68.2
			380V	50Hz	64.9	68.8
		W	400V	50Hz	63.7	68.2
			220V	50Hz	66.1	70.2
	0.2kW	С	230V	50Hz	64.5	69.4
			380V	50Hz	64.9	68.8
		Α	400V	50Hz	64.1	68.7
		Е	415V	50Hz	64.9	67.9
IE2		_	440V	50Hz	63.3	67.3
ILZ		N	200V	50Hz	72.7	75.0
		W	380V	50Hz	74.3	75.4
		**	400V	50Hz	74.4	75.4
			220V	50Hz	73.6	74.9
	0.4kW	С	230V	50Hz	72.2	74.8
			380V	50Hz	74.3	75.4
		Α	400V	50Hz	70.1	73.3
		Е	415V	50Hz	72.6	74.5
		_	440V	50Hz	69.4	73.1
		N	200V	50Hz	85.1	85.9
		W	380V	50Hz	85.9	86.1
		l w	400V	50Hz	85.0	86.0
	0.75kW		220V	50Hz	84.6	85.3
		75kW C	230V	50Hz	84.1	85.3
			380V	50Hz	85.9	86.1
IE3 1.5k			400V	50Hz	85.2	86.3
		Е	415V	50Hz	83.3	85.0
			440V	50Hz	83.9	85.9
	1.5kW	N	200V	50Hz	87.1	88.0
		w	380V	50Hz	86.5	87.1
		.,	400V	50Hz	85.6	86.9
		С	220V	50Hz	85.7	87.0
			230V	50Hz	85.1	86.8
			380V	50Hz	86.5	87.1
		Α	400V	50Hz	86.5	87.8
		Е	415V	50Hz	86.5	87.8
			440V	50Hz	84.3	86.6
ſ	L	N	200V	50Hz	89.0	89.7
		W	380V	50Hz	89.6	89.9
			400V	50Hz	89.4	90.1
			220V	50Hz	87.9	89.1
	2.2kW	С	230V	50Hz	87.4	89.0
			380V	50Hz	89.6	89.9
		Α	400V	50Hz	88.6	89.9
		E	415V	50Hz	87.0	88.9
			440V	50Hz	85.9	88.4

brother **Brother International Corporation**

Gearmotor Division

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