



Battery Powered Gearmotor SD Series Detailed Instruction Manual

<Read this Manual before using the product.>

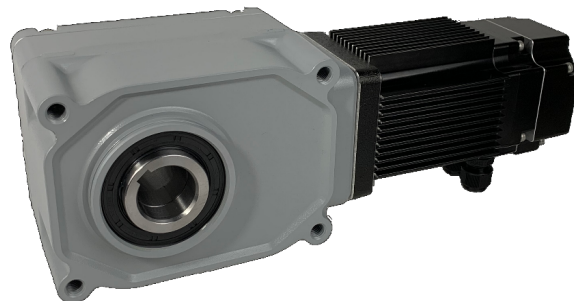
APG (Inline Shaft)



AFC (Right Angle Shaft)



F3S (Right Angle Shaft)



NISSEI CORPORATION




Introduction

Thank you very much for purchasing our product.

Safety Precautions








- Be sure to carefully read the contents described in this instruction manual and to understand how to use product correctly before using it.
- The extent 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.

■ Description of the symbol

 Danger	Cases where it is expected that a degree of danger is extremely high such that improper handling possibly causes a dangerous situation to occur, which may lead to death or serious injury.
 Warning	Cases where improper handling possibly causes a dangerous situation to occur, which may lead to death or serious injury.
 Caution	Cases where improper handling possibly causes a dangerous situation to occur, from which a minor or medium degree of injury may be incurred.









Even items described in "CAUTION" may lead to a serious results depending on the situation. Be sure to observe every instruction which deals with important contents.

■ The types of contents to be observed are explained with classification by graphical symbols below.

	Indicates "What You Must Pay Attention To."		Indicates "What You Must Not Do."
	Indicates "Burn Hazard."		Indicates "Do Not Disassemble."
	Indicates "Electric Shock Hazard."		Indicates "What You Must Do."
	Indicates "Fire Hazard."		Indicates "Ground Connection."









Danger

■ General



 	If the product is used in an application such as a personnel transport device, make sure to install a protective device for safety purposes. Failure to implement safety measures may result in personal injury, death, and/or damage to the application.
 	If the product is used in an elevator, install a safety device on the application to prevent it from falling. Failure to implement safety measures may result in personal injury, death, and/or damage to the application due to the falling of the elevator.
 	Do not use the product under the explosive atmosphere. Failure to follow this precaution may result in explosions, ignition of fire, fire, electric shock, injury, and/or damage to the application.
■ Wiring	
 	Do not change the wiring while the product is energized. Failure to follow this precaution may result in fire, electric shock, and/or damage to the application.

Warning







■ General

-   The operators in charge of installation, piping, wiring, operation, handling, maintenance, and inspection should have enough knowledge and technical skill related to the product. Failure to follow this precaution may result in fire, electric shock, injury, and/or damage to the application.
-   Do not repair, disassemble or remodel the product. Failure to observe this precaution may result in injury, fire, electric shock, and/or burns.
-   When replacing the product equipped with holding brake, make sure to secure the application side. Failure to follow this precaution may result in injury and/or damage to the application due to the falling of the device.
-   Be sure not to get water or oil/grease into the brake unit. Failure to follow this precaution may result in falling or out-of-control accident due to the decreased brake torque.

■ Installation



















-   Do not operate the product where it is exposed to water (except IP65), corrosive atmosphere, flammable gas atmosphere, and near the combustible material. Failure to follow this precaution may result in fire and/or accident.

■ Operation

-   When the operation has stopped due to the occurrence of error or activated safeguards, do not restart the operation until the causes of error are determined and countermeasures are taken. Failure to follow this precaution may result in damage to the application, injury, fire, electric shock, and/or burns.
-   Be sure not to approach to the application after a power failure. Otherwise, sudden power recovery may cause injury.
-   When performing trial operation, fix the product in place and disconnect it from the application. Failure to follow this precaution may result in injury.







Caution

■ General













-   Never perform operations with wet hands. Failure to follow this precaution may result in electric shock.
-   When operating the gearmotor with our driver, use it under the specified combination. Failure to follow this precaution may result in damage to the application and/or fire.
-   Operate the product under the conditions specified in this instruction manual. Failure to follow this precaution may result in damage to the application and/or injury.
-   Do not expose the product to strong impacts/shocks. Failure to observe this precaution may result in failure of the product and/or injury.
-   If a dangerous situation is expected due to the movement by external force (gravity, etc.) when the power is shut off or stopped abnormally, safety cannot be ensured with the holding brake of the gearmotor. In this case, be sure to provide an external brake structure to ensure safety. Failure to follow this precaution may result in damage of the product and/or injury.
-   When reversing the rotation, be sure to stop the motor completely before starting the reverse rotation. Otherwise, the application may be damaged.
-   Do not perform withstand voltage test which applies 12V or more to the sensor circuit built in the motor. Failure to follow this precaution may result in damage of the product and/or injury.
-   Make sure the temperature of motor surface should not exceed 90°C. Failure to follow this precaution may result in damage of the product and/or burn injury.
-   Do not remove the nameplate.

⚠ Caution





■ Transportation

-   The product must be transported correctly in accordance with its weight. Failure to follow this precaution may result in injury and/or malfunction.
-   Do not transport the gearmotor by holding the cable or the output shaft. Failure to follow this precaution may result in damage to the application and/or injury.
-   Do not overload/over stack the products. Failure to follow this precaution may result in injury and/or malfunction.







■ Installation

-   When handling the gearmotor, be careful with the sharp edges/points of the application. Failure to follow this precaution may result in injury.
-   Fix the gearmotor firmly in place. Failure to follow this precaution may result in damage to the application and/or injury.
-   Do not put any combustible material near the product. Failure 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 precaution may cause burns due to abnormal overheating, and/or fire.
-   Do not stand on or place any heavy object on the product. Failure to follow this precaution may result in injury.
-   Install an oil pan for a food machinery and other applications in which leakage cannot be present and may occur in the event of a failure, service life, etc. Otherwise, products may be defective due to oil leakage.

■ Wiring

-   Be careful not to cause damage to the cable nor pull it strongly. Failure to follow this precaution may result in injury, fire, and/or electric shock.
-   Make sure that the gearmotor is correctly wired. Failure to follow this precaution may result in injury due to damaged equipment.

■ Operation

-   Immediately stop the operation if there is any abnormality. Failure to follow this precaution may result in electric shock, injury, and/or fire.
-   Do not touch the gearmotor when the power is on or immediately after turning off the power, as their surfaces may be hot for a while. Failure to follow this precaution may cause burns.
-   Do not touch the rotating part of the gearmotor. Failure to follow this precaution may result in injury.

Important

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 waste accordingly.

Notice

We shall assume no responsibility or liability for any troubles caused by use that violates the cautions this manual.

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

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

■ CCC Certification

Units with the CCC indication on the nameplate are subject to CCC and Chinese efficiency regulations.

Please use the product with our company's controller.

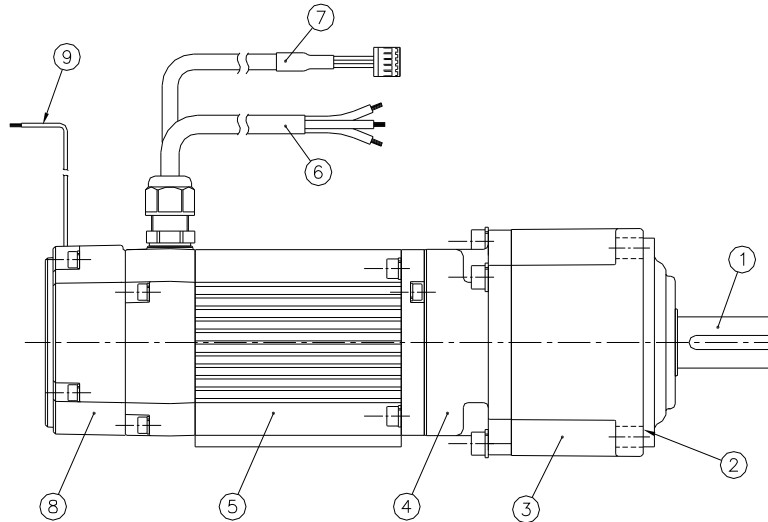
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1. Before Using This Product

1-1 Names of Part

■ Gearmotor



*Its appearance differs according to classification by mount form.

No.	Name	No.	Name
1	Output shaft	6	Motor power line
2	Assembling Flange	7	Motor signal line
3	Gearhead	8	Brake
4	Bracket	9	Brake lead wire
5	Motor		

1-2 Inspection upon Unpacking

■ Checking Package Contents

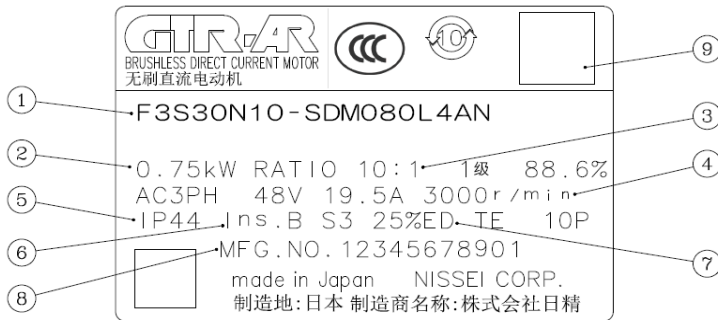
Check for the following items when unpacking the package.

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

1. Is the information on the nameplate consistent with your order?
(Gearmotor Model, Reduction Ratio, Motor Power, Voltage, etc.)
2. Were any parts damaged during transportation?
3. Are there any loose screws, bolts, or nuts?
4. Do the accessories included in the package match the contents of the accessory list?
(The accessory list is not included if there are no accessories.)

1-3 Information provided on Nameplate

The following is a typical nameplate.



No.	Description
1	Gearmotor Model
2	Motor Power
3	Reduction ratio
4	Rated Voltage
5	IP Rating
6	Insulation class
7	Rating
8	Manufacturing No.(MFG NO.)
9	QR code

- Check the following chart for Gearmotor Model.
- In case of inquiry, inform us the Gearmotor Model and MFG NO.

1-4 Gearmotor Model

The contents of Gearmotor Model's codes are as follows.

Make sure the Gearmotor Model on nameplate is consistent with your order.

Gearhead Type			
[1]	[2]	[3]	[4]
Mount Form	Frame Number	Shaft Form	Reduction ratio
APG	22	N	15

Motor Model						option
[5]	[6]	[7]	[8]	[9]	[10]	[11]
Motor Classification	Motor Specification	Motor Power	Power supply voltage	Standards	Brake	Auxiliary Code
SD	M	080	L4	A	N	X

Gearhead Type	[1] Mount Form	APG	Inline Shaft Compact Flange Mount						
		AFC	Right Angle Shaft Compact Flange Mount						
		F3S	Right Angle Shaft Flange Mount						
	[2] Frame Number	* *	Output Shaft Diameter						
[3] Shaft Form (material)	N	Inline Shaft (Carbon Steel)	S	APG		AFC		F3S	
				N	hollow shaft (Carbon Steel)	S	hollow shaft (Carbon Steel)	N	hollow shaft (Carbon Steel)
[3] Shaft Form (material)	S	hollow shaft (Carbon Steel)	N	APG		AFC		F3S	
				S	hollow shaft (Stainless Steel)	N	hollow shaft (Stainless Steel)	S	hollow shaft (Stainless Steel)
[4] Reduction ratio	10~60	10:1/10	15:1/15	20:1/20	25:1/25	30:1/30	40:1/40	50:1/50	60:1/60
Motor Model	[5] Motor Classification	SD	Brushless Motor SD series						
	[6] Motor Specification	APG		AFC		F3S			
		M	IP44	M	IP40	M	IP44		
	W	IP65	W			IP65			
	[7] Motor Power	080	0.75kW						
	[8] Power supply voltage	L4	DC48V						
[9] Standards	A	CCC and China efficiency Standard							
[10] Brake	N	No Brake							
	B	With Brake							
option [11] Auxiliary Code	Blank	Standard Specification							
	X	Designates a special option							

- [2] Frame Number is changed by Mount Form.

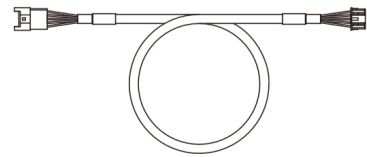
2. Connection method and Installation

2-1 Connection method

Connect each device as shown in the following figure.

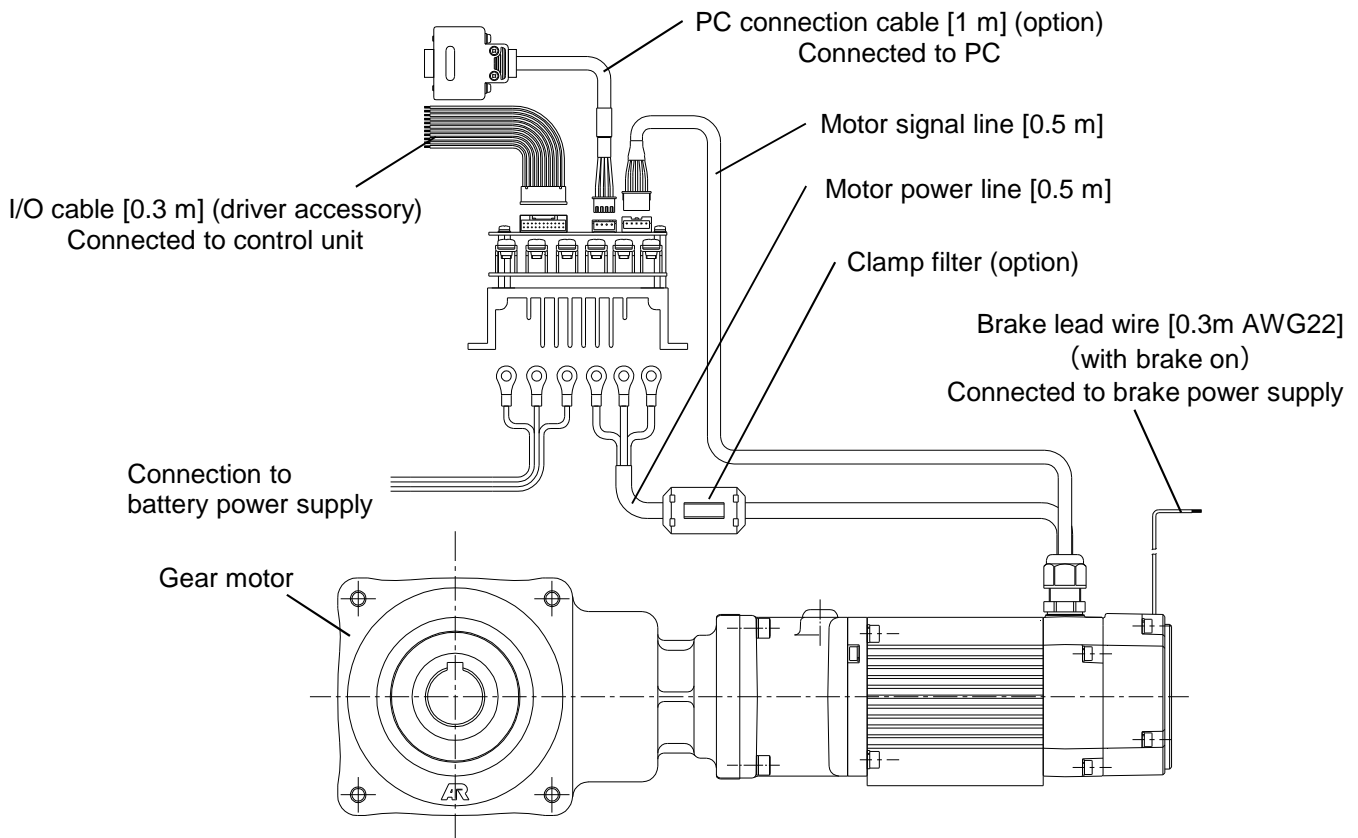
- The length of the cords from the gearmotor is 0.5 m.
- Please use the extension cord (Option) if you need to extend the motor signal line.
If it is extended by connecting optional extension cords, its overall length must be 4.5 m or less (i.e. up to four extension cords can be used).
- Extension cords are not available for the motor power line and brake lead wire. Extend it to 5 m or less using cords with a diameter not smaller than the specified wire diameter (P17 ■ Motor Specification). Make the motor power line as short as possible in order to avoid deterioration of motor characteristics.

■ Extension cord [1 m]
(optional part: OP-ACDSG1)



* Shipped with the extension cord having a connector on both ends.

■ Example of connecting to our driver



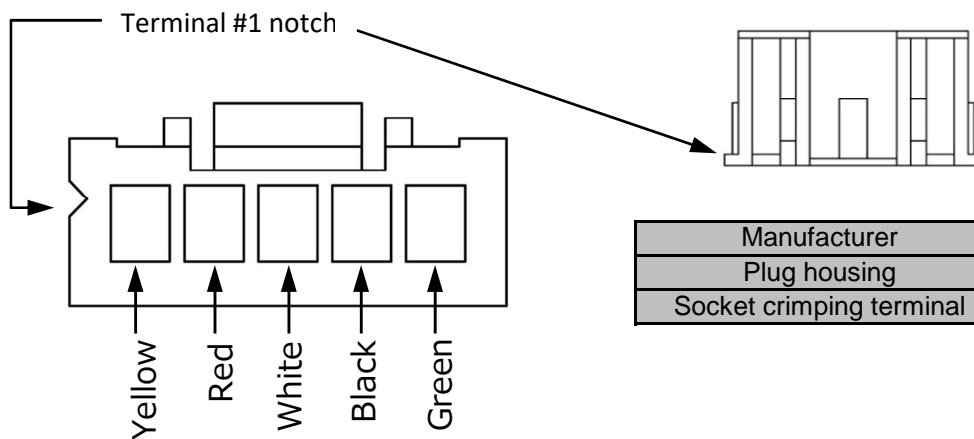
- Note: 1. The maximum extension length for the motor signal line, motor power line, and brake lead wire is 5 m.
If the motor signal line is extended by connecting optional extension cords, its overall length must be 4.5 m or less (i.e., up to four extension cords can be used).
2. The motor power line is not equipped with a round terminal.
Such terminal must be prepared by the user.
3. The connector is not waterproof specification.

2-2 Motor signal line and power line

■ Signal line colors and functions

Line color	Function
Yellow	Pole sensor power supply (15 V for our driver)
Red	U-phase pole signal output (open collector)
White	V-phase pole signal output (open collector)
Black	W-phase pole signal output (open collector)
Green	GND

■ Connector pin configuration



Manufacturer	J.S.T. MFG.
Plug housing	XAP-05V-1
Socket crimping terminal	SXA-001T-P0.6

■ Motor power line colors and descriptions

Line color	Description
Red	U-phase
White	V-phase
Black	W-phase

■ Brake lead wire colors and voltage specifications

Wire color	Voltage specification
Brown	48V specification

2-3 Installation

■ Installation Environment

Item	Standard specification	Water-resistant specification
Ingress protection rating	IP40 / IP44 Differs depending on the model	IP65
Ambient Temperature	0°C~40°C	0°C~40°C
Ambient Humidity	85%RH or lower (no condensation)	100%RH or lower (no condensation)
Altitude	1000m or lower	1000m 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 directly.	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.

■ Installation Orientation

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

■ Installation Procedure

[1] Foot Mount, Flange Mount

Secure the gearmotor with four bolts on a vibration-free and flat machine-processed surface (0.1 mm or less of flatness).

[2] Shaft Mount (torque arm)

The driven shaft must be able to carry the weight of the reducer.

Note) Force other than the rotation reaction force should not be applied to the torque arm.

Tightening torque for installation bolts (reference value)

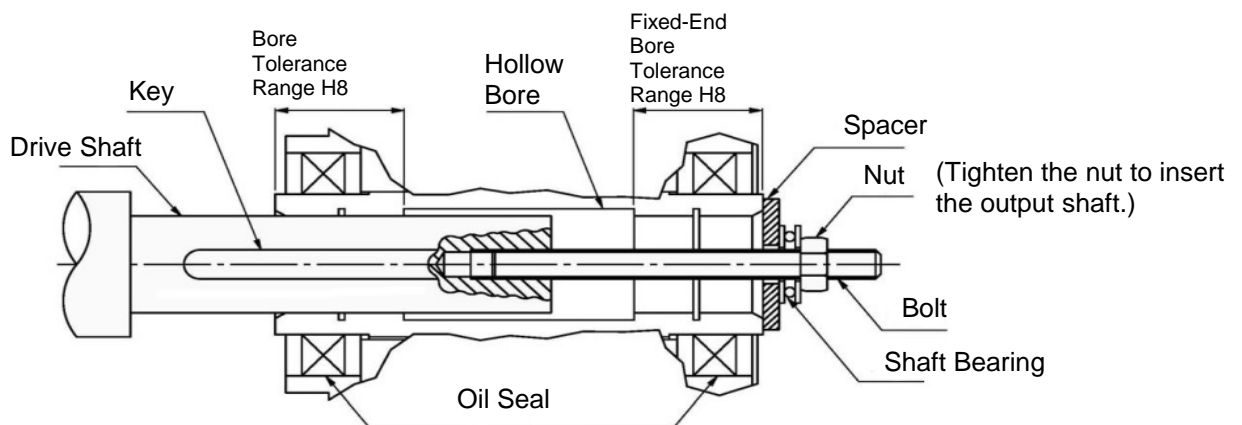
Mounting Hole (mm)	Bolt Size	Tightening Torque	
		(N·m)	{(kgf·m)}
9	M8	13	{1.3}
11	M10	25	{2.6}

2-4 Connecting with other equipment

■ Installing and removing the hollow bore (AFC,F3S)

● Attaching the Hollow Bore of the Reducer to the Drive Shaft

- [1] Coat the drive shaft surface and bore surface with a lubricant (molybdenum disulfide) suitable to the atmosphere in which they are used and connect the reducer to the drive shaft.
- [2] When used with uniform loads, a drive shaft tolerance of h7 is recommended. Additionally, when dealing with impact loads or large radial loads, make sure they fit each other tightly. The tolerance of the interior surface of hollow bore is designed to be H8.
- [3] If the shafts are a tight fit, use a plastic hammer on the end of the hollow bore to insert it. When doing so, be sure not to hit the casing. If you make a jig like the one in the diagram below, drive shaft insertion will be easier.



(Customers need to provide their own spacer, nuts, bolts, keys and shaft bearings.)

- [4] For the length of the turn-stop key for the drive shaft, tolerance range H8 for the bore on the fixed side is recommended.
- [5] It is recommended that axial runout for the shaft be 0.05 mm or less at the shaft end. If major wobbling occurs during operation, it may have a negative effect on the reducer.

- Connecting Reducer to the Drive Shaft
- [1] When there are steps on the drive shaft

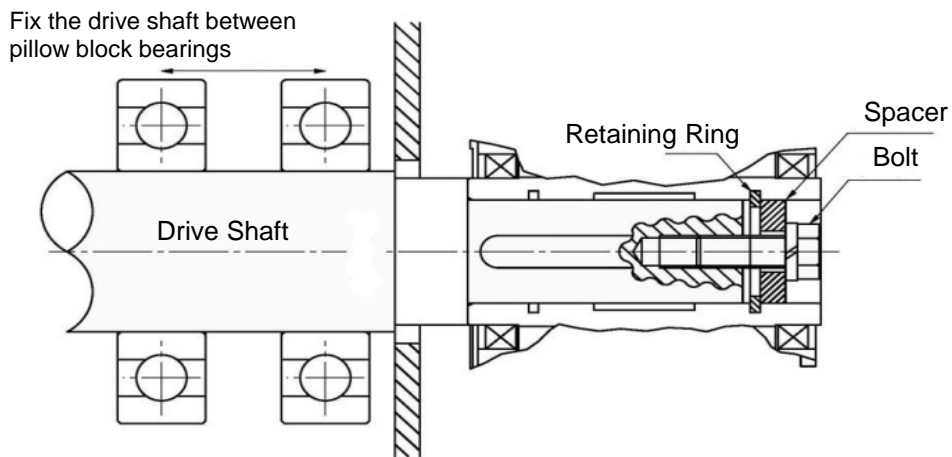


Fig. : Attachment Using a Spacer and Retaining Ring
(Customers need to provide their own spacer, bolts, and retaining rings.)

Note: Be careful when tightening the bolt, as tightening it too much can distort the shape of the retaining ring.

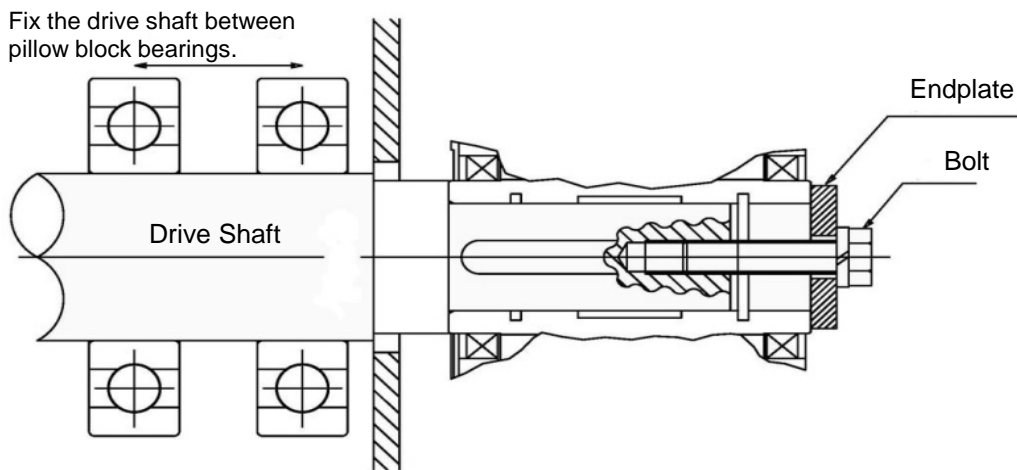


Fig. : Attachment Using an Endplate
(Customers need to provide their own endplates and bolts.)

[2] When there are no steps on the drive shaft

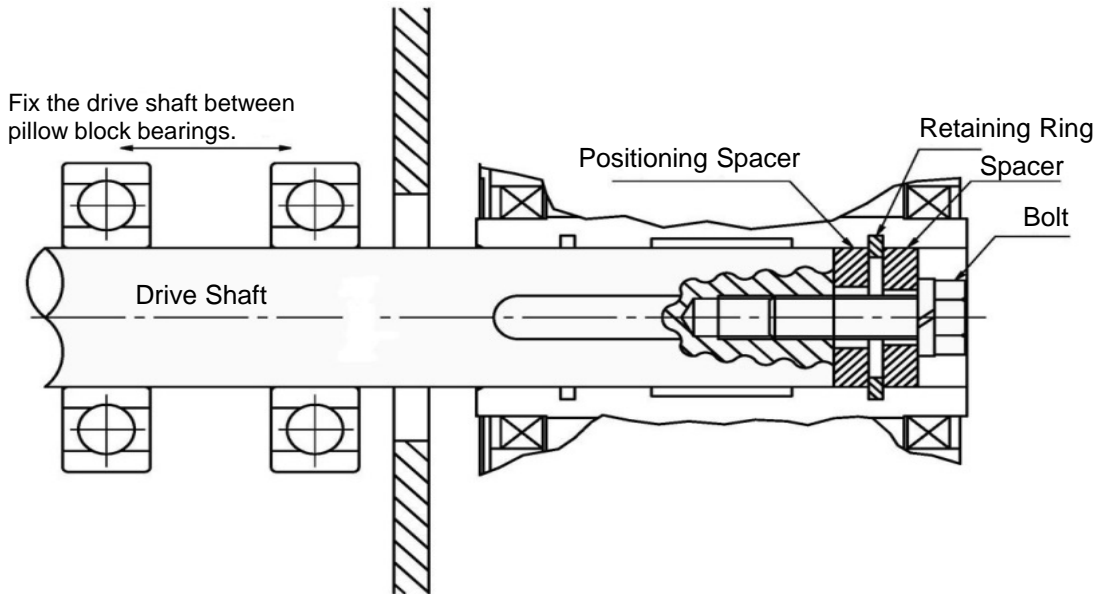


Fig. : Attachment Using a Spacer and Retaining Ring
(Customers need to provide their own spacer, positioning spacers, bolts, and retaining rings.)

Make sure there is a gap between the outer diameter of the spacer and the bore diameter of the hollow bore. If the fit is too tight and the outer diameter of the spacer is inaccurate, burning and axial runout of the drive shaft and hollow bore can result.

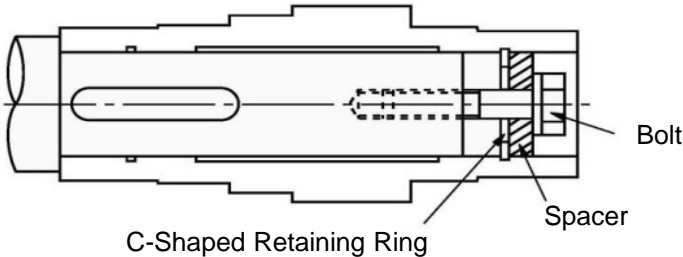
The positioning spacer is used to position the reducer. It is not required if you know the length of the drive shaft in advance. In addition, attaching the positioning spacer allows for smooth removal from the hollow bore. (Refer to "● Removal from the Hollow Bore" on the next page for more on removal from the hollow bore.)

● Recommended Sizes for the Fixing Elements of the Drive Shaft

For the attachment of the hollow bore in general use, we recommend you to refer to the dimensions shown on the right as a guide line for the strength when

Recommended Sizes for the Fixing Elements of the Drive Shaft(mm)

Hollow Bore Hole Diameter	Bolt Size	Spacer Dimensions			C-Shaped Retaining Ring for Holes
		Outer Diameter	Inner Diameter	Width	
φ30	M8	φ29.5	φ9	5	30

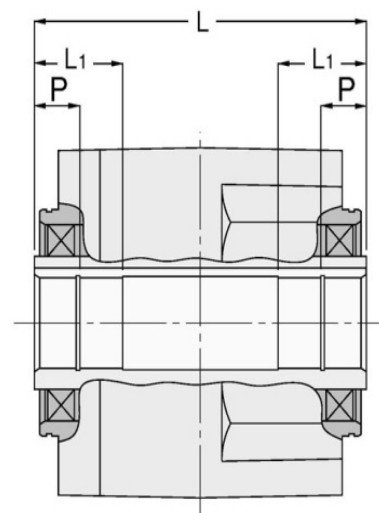


● Drive Shaft Length

Make sure the drive shaft reaches both ends of L1. (See figure at right.) However, look at the dimension leeway for spacers in the section titled "Removal from the Hollow Bore."

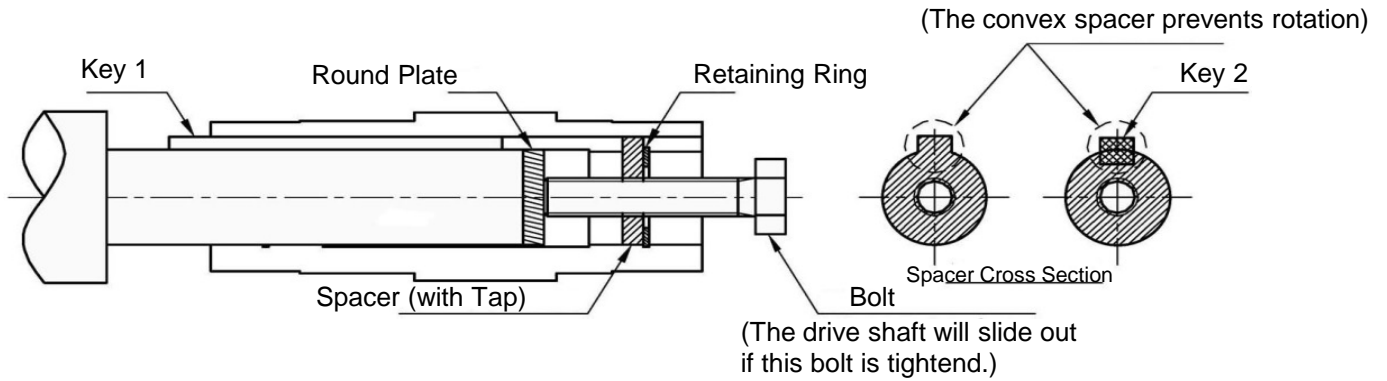
● Drive Shaft Key Length

The length of the key should be at least 1.5 times the width of the hollow bore. Additionally, the key is inserted in such a position that at least half its length is in L1. (See figure at right.)



● Removal from the Hollow Bore

Make sure there is room to spare between the casing and the hollow bore. If you make and use a jig like the one below, drive shaft removal will be easier.

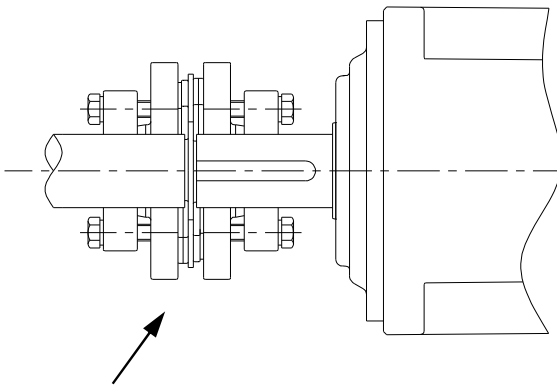


(Customers needs to provide their own spacers, round plates, bolts and retaining ring keys.)

■ Connecting with Inline Shaft(APG)

● Against solid shaft

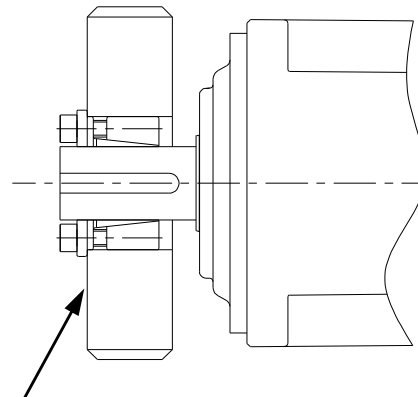
(Tightening with ball screw, etc.)



Commercial flexible coupling

● Against hollow Bore

(Tightening with pulley, etc.)



Commercial tightening device

■ Connecting with other equipment

For connecting the reducer to the other equipment, be sure to observe following points.

- "H7" fit is recommended for the couplings, sprockets, pulleys, gears, etc. when attaching to the reducer shaft.

1. When directly connected

Connect the reducer to the other equipment precisely, so that the center of the shaft of both machines will be fully aligned.

2. Attaching Chains, V-Belts, Gears, etc.

- In any connection, the shaft center of the reducer and the shaft center of the other equipment must be set parallel to each other. Also, be sure that the centerline of the sprockets and pulleys are perpendicular to the shaft.
- In case excessive load is applied to the end of the output shaft, unexpected force could arise, which may result in crack of the case. Therefore, insert the sprockets, pulley, gear, etc. to the shoulder of the shaft, so that the load point could be as close to the reducer as possible.
- When operating by using belt, be sure not to give too much tension in order to avoid slipping. Excessive tensioning may result in damage to the bearings of the shaft.
- When operating by using chain, if the chain is installed loosely, shock load will occur when the drive shaft starts rotation, and this can result in damage to the reducer and the other equipment. Therefore, care should be given to the tension of the chain.

2-5 Installing Flange/Torque Arm(F3S)

<Advantages and disadvantages of flange and torque arm installation>

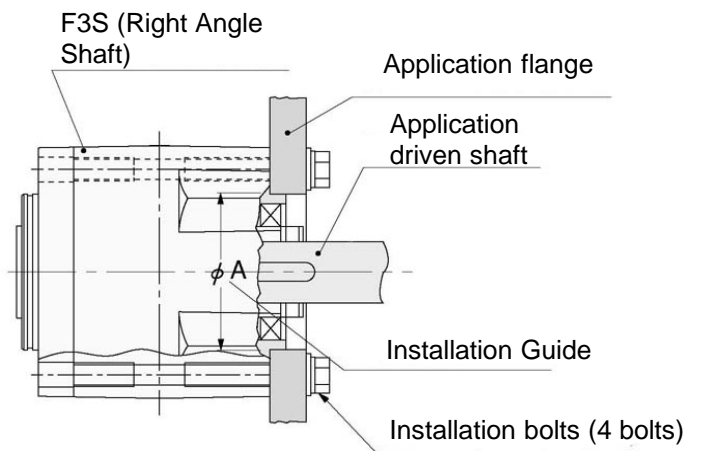
	Advantages	Disadvantages
Flange Installation	<ul style="list-style-type: none"> ● Can be installed directly on the device. ● Saves space. 	<ul style="list-style-type: none"> ● Centering with the application is required.
Torque Arm Installation	<ul style="list-style-type: none"> ● Makes centering with the application easy. ● Fastening to the application only requires one detent. 	<ul style="list-style-type: none"> ● Requires a torque arm. ● Requires space for installing a torque arm.

■ Installing flange

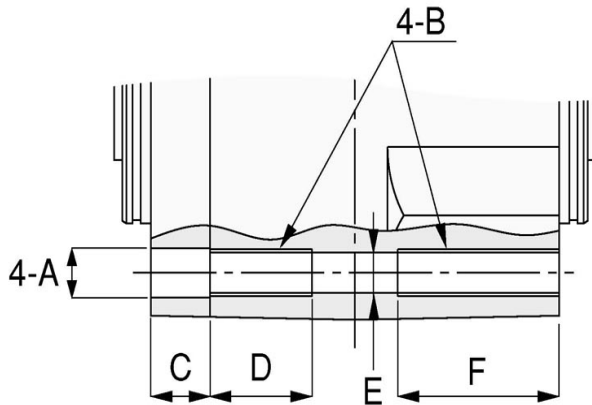
When the hollow bore is installed directly to the flange of an application, it can cause motor burn-out or bearing damage if it is off-center, so be sure to center it properly.

There is an installation guide, as shown in the diagram at the right. The dimension tolerance for ϕA for the installation guide is h7 in the case of F3S. The installation bolts are installed as shown in the diagram at the right.

Four bolts should be used.

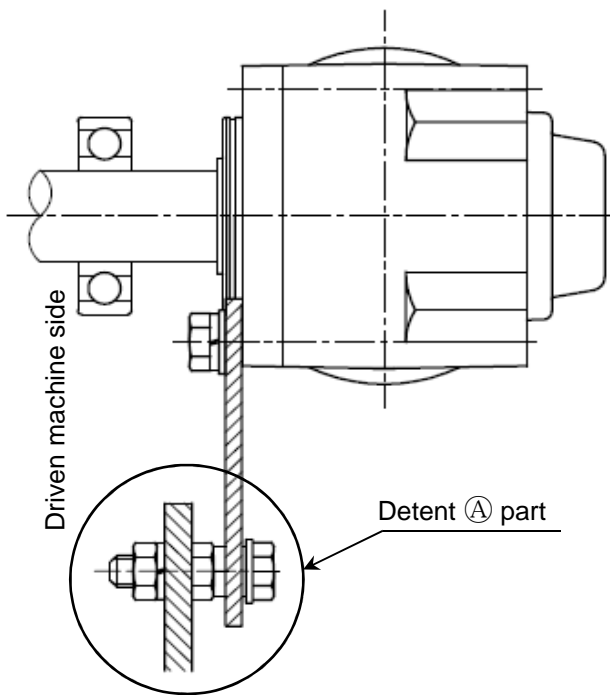


■ Detailed diagram of tapped holes for F3S flange mount installation (standard specification)



Frame No.	Reduction Ratio	Motor Power	A	B	C	D	E	F
30	1/10 to 1/60	0.75 kW	φ10.5	M10×P1.5	15.5	25	φ8.6	40.5

■ Fastening the Reducer and Torque Arm



- Install the the torque arm detent to the driven machine side.
- Because the torque arm sustains a reactive force from rotation, consideration needs to be given to impact loads particularly during startup and braking, Bolts and plates that are sufficiently strong must be used. It is best to use an optional torque arm.
- To install the torque arm and reducer, fasten them using spring washers and flat washers with the installation bolts.

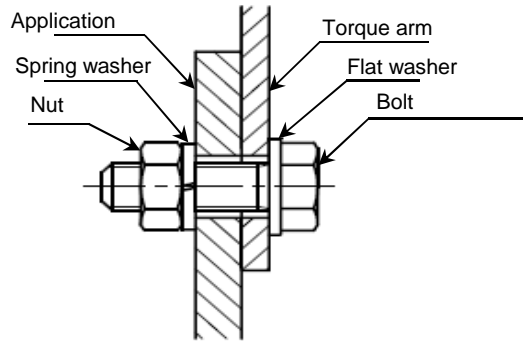
<Bolt Size and Tightening Torque> (Reference value)

Bolt size	Tightening torque N•m {kgf•m}
M10	25 { 2.6 }

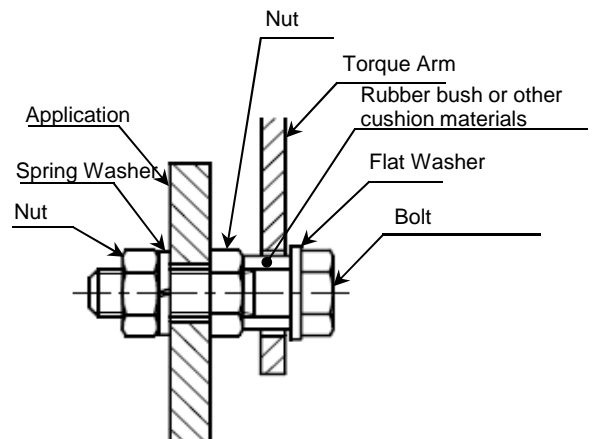
● How to install the Torque Arm Detent (A) part

[1] For normal/reverse rotation operation and unidirectional operation (intermittently)

Fasten the torque arm detent so there is no looseness or wobble. When doing this, center the detent hole with that of the application to make sure that no radial load (suspension load) is applied against the driven shaft and hollow shaft of the reducer. (Refer to the diagram below.)



Note) If mounting has a looseness, impact may be applied to the torque arm with each startup and defects such as loosen bolts may occur. If mounting without looseness are not allowed for some reason, rubber bush or other cushion materials shall be used between the torque arm and the bolt as a protective measure. Bolts with sufficient strength shall be used. (Refer to the right diagram.)

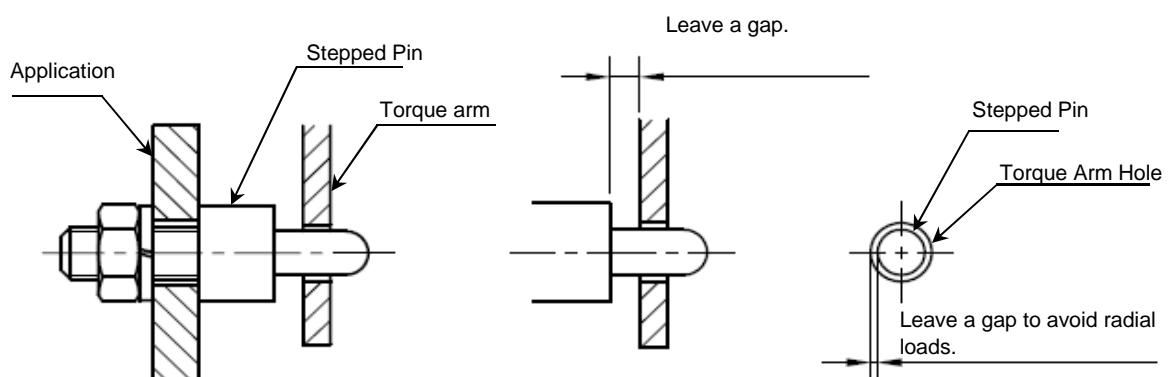


[2] Unidirectional operation (consecutive)

For unidirectional operation (consecutive) which has no frequent start-up torque applied, the torque arm can be used without a detent. However, it is still necessary to fasten the driven shaft to the hollow shaft.

(Refer to "● Connecting Reducer to the Drive Shaft".)

In this case, it is necessary to provide sufficient clearance for looseness in both radial and thrust directions for alignment between the application and detent. (Refer to the diagram below.)



Example of Stepped Pin Usage

3. Specifications and Performance

3-1 Motor and Electromagnetic Brake Specifications

■ Motor Specifications

Motor	Battery Powered Brushless Motor	
Motor Power	0.75 kW	
Voltage	DC 48V	
Rated Current	19.5 A	
Rating	S3 25%	
Motor Lead Wire Size	2 mm ² (AWG14)	
Maximum Extended Length	5 m	
Ambient Temperature	0~40 °C	
Ambient Humidity	IP40/IP44	85%RH or lower (no condensation)
	IP65	100%RH or lower (no condensation)
Ambient Storage Temperature	-10~60 °C (no freezing)	
Ambient Storage Humidity	IP40/IP44	85%RH or lower (no condensation)
	IP65	100%RH or lower (no condensation)
Vibration	2.0G or lower	
Altitude	1,000m or lower	
Atmosphere	IP40/IP44	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 directly.
	IP65	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.

* Rated current value is a reference value for motor only.(without the gearhead)
About Gearmotor, please refer the Gearmotor Characteristics(P.18).

■ Electromagnetic Brake Specifications

Motor Power	0.75 kW
Brake Type	Power-Off (Spring Close)
Static Torque (motor shaft)	3.0 N·m
Excitation Voltage	DC 48V ±10%
Current Draw (at20°C)	0.21 A
Power Draw (at20°C)	10.0 W
Brake Lead Wire Size	0.3 mm ² (AWG22)

* Electromagnetic Brake is meant for holding and should not be used for braking.



Be sure to insert a surge protector to protect the driver from surge generated by turning on/off the electromagnetic brake.
Use the varistor (82V, 1J or higher) included in the package or a diode (100V, 1A or higher).

3-2 Range of use of Gearmotor

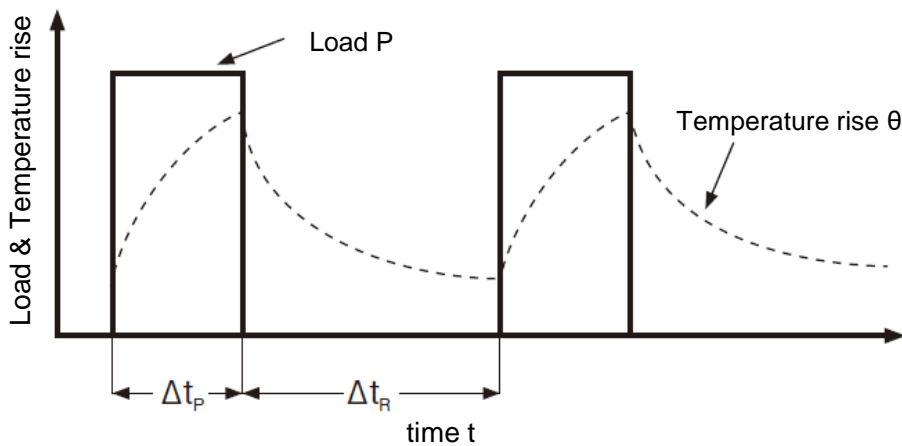
■ Rating

Rating class of this product is Intermittent Rating(S3 25%).

Intermittent Rating(S3) is repeating the cycle which is operation period with constant load and suspension period without apply voltage,

Duty Factor of this product is 25%.

$$\text{Duty Factor} = \frac{\Delta t_P}{\Delta t_P + \Delta t_R} \times 100$$



■ Gearmotor Characteristics

The coefficient of rotation speed to load and the coefficient of current draw to load for gearmotor units are shown in these graphs.

These characteristics are gearmotor unit characteristics.

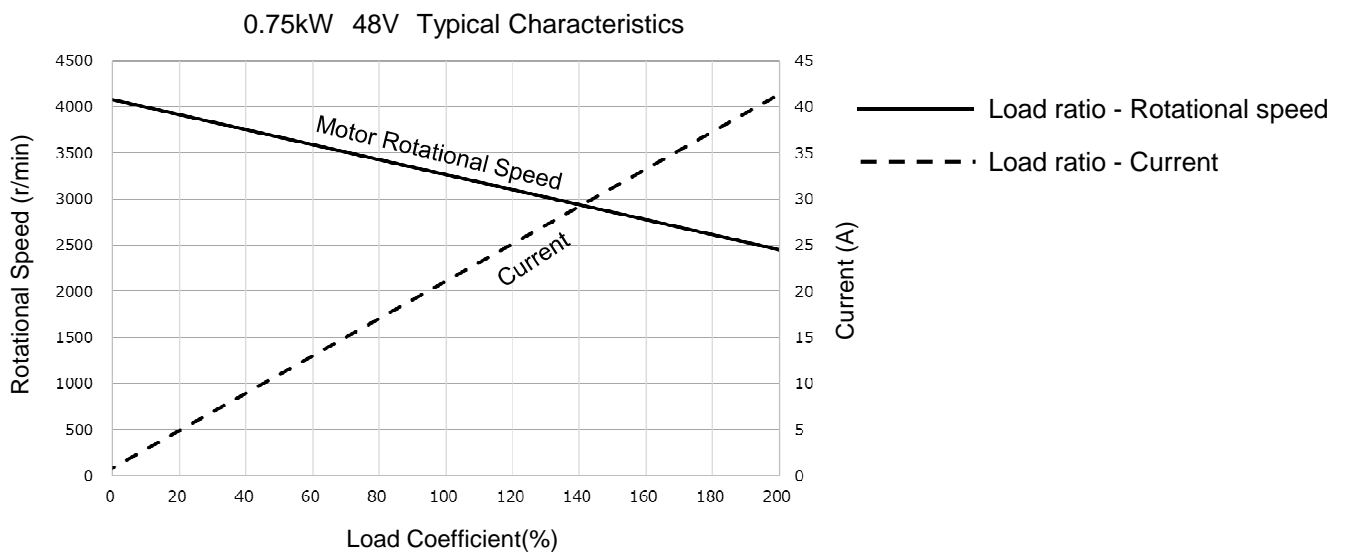
Customers may refer to these graphs when creating drivers.

* The rotational speed in the graphs below corresponds to the motor shaft.

Use the gear ratio to calculate the output rotational speed.

* In the graphs below, 100% corresponds to output allowable torque in the performance tables.

* Take care to keep the surface temperature of the motor below 90°C.



When using our driver

Used within the rated speed range (80 to 3000 r/min) at 100% load factor.

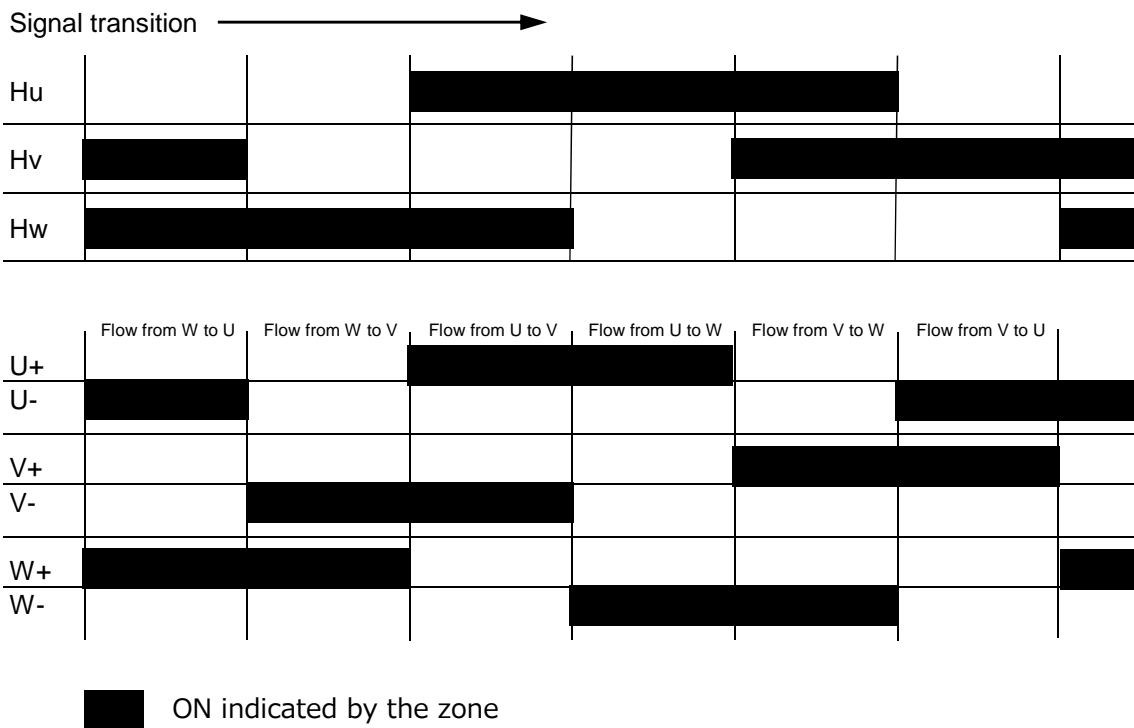
3-3 When making a driver

■ Type and specifications of Hall IC

Manufacturer	Asahi Kasei Micro devices
Model	EW-710B
Power Supply Voltage	18V
Output Current	15mA
Operating Temperature	-20~115°C

■ Excitation pattern

- It rotates in the forward direction as illustrated below.
- Excitation current flows in the reverse direction through the power lines when rotating in the reverse direction.



■ Specifications of Motor and Electromagnetic Brake

- Electromotive force constant and torque constant of a single motor are described below.

Motor Characteristics	0.75kW
	48V
Electromotive Force Constant (V/kr/min)	8.2
Torque Constant (Nm/A)	0.12
Line Resistance (Ω) at 20°C	0.061

- The resistance values of the electromagnetic brake are described below.

Electromagnetic Brake Characteristics	0.75kW
	48V
Coil Resistance (Ω) at 20°C	230

4. Maintenance, Service Life, and Inspection

4-1 Maintenance and Service Life

■ Gearmotor

- All the models that we offer utilize grease for lubrication so replacement and replenishment of the grease is not required.
The gearmotor is designed for 10,000 hour mark.
- The service life of the oil seal may differ depending on the environment and usage.
Oil seals may need to be replaced before the 10,000 hour mark.

4-2 Periodic Inspection

Gearmotor inspection items are described in the table below.

Based on the inspection guideline, determine the best inspection time by judging the usage and environment.

Inspection items	Inspection frequency	Inspection and maintenance procedure	Remarks
Checking of connection between gearmotor and machine	Before the start of operations	<ul style="list-style-type: none"> • Make sure that the gearmotor-machine mounting screws are tight enough. • Make sure that the gearmotor is firmly connected to the load. • Check for misalignment. 	—
Vibrational and acoustic check	Everyday	<ul style="list-style-type: none"> • Check by touch and hearing. 	No increase from the normal level
Appearance check	Whenever required	<ul style="list-style-type: none"> • Perform cleaning with a cloth, compressed air, etc. 	—
Checking for grease leakage	Every 2 to 3 days	<ul style="list-style-type: none"> • Make sure that the connections of the gearmotor case, oil seal, bracket, etc. are free from leakage. 	—

5. Storage

1.Storage location

- (1) When the product is stored, it shall be stored in a dry place indoors, with good ventilation, without direct sunlight, extreme 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 bearing 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

- (1) 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) Apply rust prevention to the output shaft and the flange side and other uncoated processed surfaces every six months.

3.Usage after storage

- (1) Check that there is no abnormal sound, vibration, heat generation and other abnormalities during the 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.

6. Warranty

1.Warranty period

18 months from the factory shipment date or 12 months after installation; whichever comes first.

2.Warranty coverage

- (1) The warranty coverage is limited to our production range.
- (2) If a failure that prevents function of the delivered product occurs under the conditions with normal installation/connection and handling (inspection/maintenance) described in this instruction manual during the warranty period, the product will be repaired without any additional cost.
However, NISSEI CORPORATION will not be liable for any costs for removing or installing our products from the user's device for replacement or repair, costs for transportation for repairs, and/or indirect damages.

3.Warranty exclusions

- (1) Repair, parts replacement or delivery of alternative products caused due to product wear of disassembling and remodeling by customers.
- (2) When the product is operated under conditions that are outside of the rated data described in our catalog/instruction manual or specifications mutually agreed.
- (3) When there is a defect(centering of coupling etc.) in the power transmission part with the customer's device.
- (4) When inevitable accidents such as extraordinary natural disaster (Example: Earthquake, lightning, fire, and flooding) or artificial malfunction is a cause of a failure.
- (5) Secondary failure caused by defects of customer's equipment.
- (6) Failure due to a part supplied by the customer or designated parts, drive units (Example: motor, servo motor, hydraulic unit, etc)
- (7) When storage, maintenance management of the delivered product is not performed properly and handling is not carried out correctly.(For storage, see "5.Storage".)
- (8) Failure due to items that cannot be attributed to our manufacturing responsibility other than the above.

Contact Us

■ Inquiries about quote, purchase, repair, and inspection

Overseas Sales	
Address	1-1 Inoue, Izumi-cho, Anjo, Aichi 444-1297, Japan
Tel	+81-566-92-5312
Fax	+81-566-92-7002
E-mail	oversea@nissei-gtr.co.jp

■ Related instruction manual and software

Name	Battery Powered Gearmotor SD Series Detailed Instruction Manual (this manual)
Description	Detailed instruction manual with wiring method of the gearmotor, notes, etc.
URL	https://www.nissei-gtr.co.jp/pdf/data/gtr/manual/sd/battery-msd-e.pdf

Name	Battery Powered Driver SD Series Detailed Instruction Manual
Description	Deatiled Instruction Manual for the Specialized Driver including details of Parameters, etc.
URL	https://www.nissei-gtr.co.jp/pdf/data/gtr/manual/sd/battery-dsd-e.pdf

Name	Parameter Setting Software for the Battery Powered Driver (ACD-PSTool)
Description	Parameter Setting Software for this Driver.
URL	https://english.nissei-gtr.co.jp/gtr/download/agreement-e/

Name	Parameter Setting Software for the Battery Powered Driver (ACD-PSTool) Instruction Manual
Description	Instruction Manual for Driver Parameter Setting Tool including Connection Method, etc.
URL	https://www.nissei-gtr.co.jp/pdf/data/gtr/manual/gtr2-cd/acd-pc-e.pdf

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