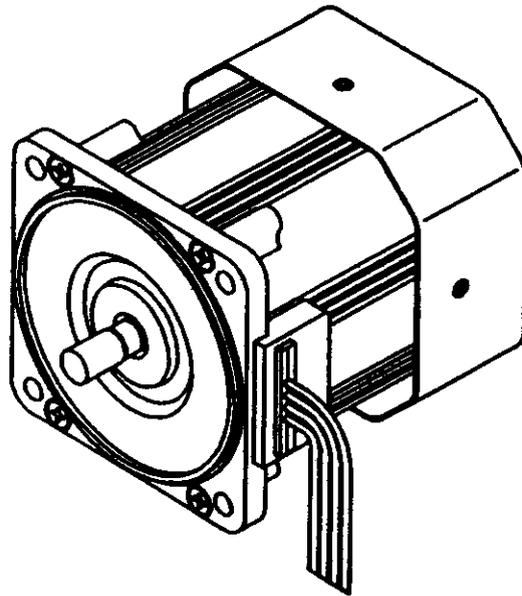


Small Geared Motor
<GPLUS Series>

Operation Manual



- Thank you for buying and using Panasonic Small Geared Motor, GPLUS series.
- This manual describes how to use this product and caution for safety.
- Handling and operation of this product is easy and simple, however, misuse may result in an unexpected accident, may shorten the life of the product, or deteriorate a performance.
- Keep this manual at convenient place for further reference.

Unit

SI unit is used in this manual together with conventional unit.

CAUTION FOR SAFETY

Read this manual carefully before installation, operation, maintenance, or inspection of this product. Pay an attention to the safety of the machine which this product is incorporated as well.

In this manual, caution items are classified into 「WARNING」 and 「CAUTION」



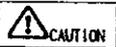
WARNING

: Indicates the risk of serious situation which might lead to a death or serious injury due to a misuse of the product.



CAUTION

: Indicates the risk of serious situation which might lead to a personal injury, or property damage, due to a misuse of the product.



item may result in a serious result depending on a situation. Read and follow the instructions in this manual.



WARNING

- Ground the motor with a grounding terminal without fail.
Risk of electric shock.
- Don't pull the lead wires or cables, or don't pinch them by other equipment.
Risk of electric shock.
- Turn off the power without fail at installation, transferring, wiring or inspection. Risk of electric shock.
- Don't touch the rotating portion of the motor.
Risk of injury.
- Turn off the main switch at power shutdown or when the thermal protector is activated.
Risk of injury due to a sudden resumption.



- Don't use a damaged motor.
Risk of electric shock and injury.
- Don't insert any objects or fingers to the motor openings.
Risk of electric shock and injury.
- Check if the product is what you ordered.
Risk of injury and fire.
- In case of the motor without thermal protector, install an overcurrent protector, leakage current breaker and thermal protector. Risk of electric shock and fire.
- In case of the motor with thermal protector, install an overcurrent protector and leakage current breaker for further safety. Risk of electric shock and fire.
- Don't lay the combustible material nearby the motor.
Risk of burn and fire.
- Don't lay the object which blocks the ventilation around the motor. Risk of electric shock and fire.
- Don't touch the motor during the operation and for a while after the operation.
Surface of the motor becomes hot. Risk of burn.
- Don't step on the motor.
Risk of injury.
- Make a wiring per the wiring diagram.
Risk of fire due to the motor burn.
- Turn off the power and stop operation when any malfunctions are identified. Risk of electric shock, injury and fire.
- Don't modify the product at customer end, or this exempts the warranty.
Risk of electric shock and fire.
- When any repair is required, contact to a dealer.
- When the product is to be scrapped, treat this as an industrial waste material.

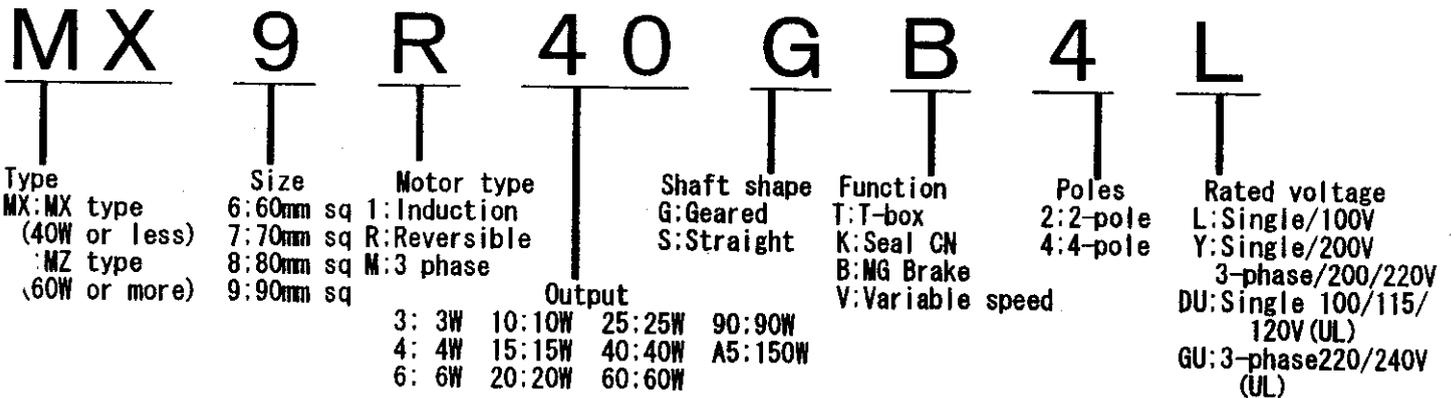
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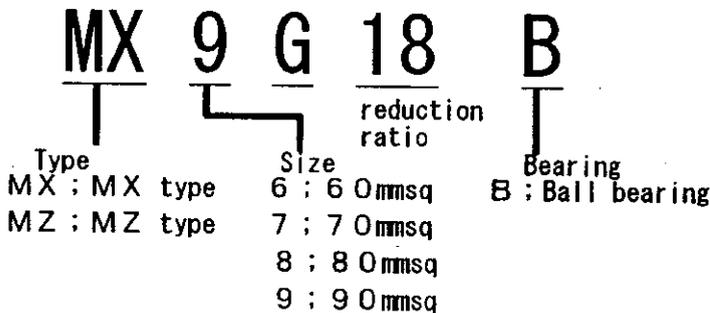
When opening the package

1. Check if the model is what you ordered.
Correct part number ? ; Output ? ; Voltage ? ;
2. Check if the capacitor is attached for single phase unit (except for UL type).
Gearheads are options.
3. Check if the product is damaged during transportation.
4. If any malfunctions are identified, contact to a dealer.

Model identification



Applicable gearhead(option)

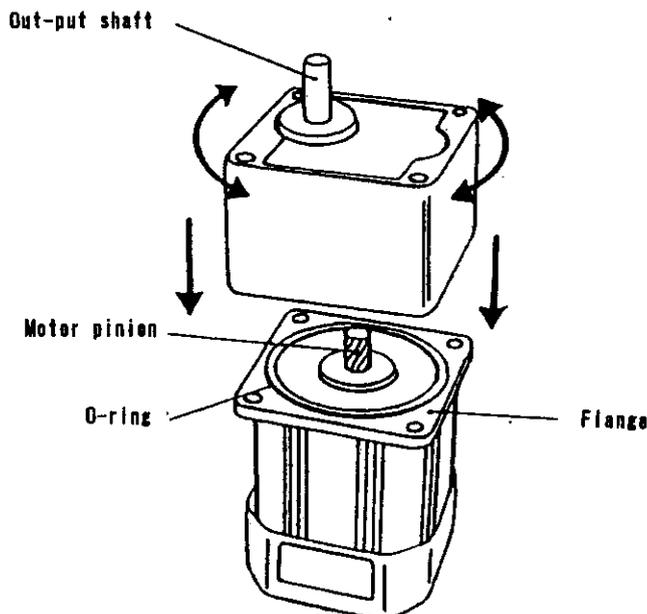


Select the gearhead which has the same size and type as the motor.

■ Installation

1. Before assembly

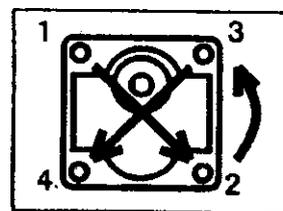
1. Make sure that the O-ring is inserted to the far end of the faucet.
Note): If not, it may cause the grease leak.
2. If the oil is at the gearcase edge, wipe it off completely.
Note): If not, it may cause the oil exude.



2. Assembly

1. Lay down the motor so that the motor pinion faces upward, and adjust the position of the motor leads and the output gear.
2. Assemble the gear head to the motor by rotating slightly. Don't hit the pinion gear edge with gear head tooth edge.
3. For assembling the motor and gear head to the machine, use the attached 「mounting screws」. Tighten them so that the motor flange and the gear head faucet fits completely. Pay attention so that the O-ring may not be pinched.
4. For the tightening torque of the 「mounting screws」, refer the table below.

gear	screw	tightening torque
6 0mmsq	M 4	2. 0N·m (2 0kgf·cm)
7 0mmsq	M 5	2. 5N·m (2 5kgf·cm)
8 0mmsq	M 5	2. 5N·m (2 5kgf·cm)
9 0mmsq	M 6	2. 9N·m (3 0kgf·cm)



Fasten 4 screws diagonally

Note)1. Don't force to assemble the motor and gear head, or avoid hurting the pinion gear edge or gear head tooth edge, otherwise it may shorten the life or generate abnormal noise.

3. Storage of gear head

Store the gear head with output shaft facing downward.

Note) Otherwise, it may cause the grease leak.

4. Others

1. Don't subject the product to direct sunlight, water, or oil.
2. Don't use the product where heavy vibration, shock, inflammable gas or erosive gas is expected, or dusty place.
3. Don't take off the name plate.
4. There is a risk of fire or smoke at such malfunction as motor lock. Install overcurrent protector, leakage current breaker and thermal protector.
5. Don't use the product at other conditions than what is specified in name plate, manual and catalogue.
6. Use the variable speed motor at specified speed range.
7. Don't pull the lead wires or cables, or pinch them.
8. Turn off the power at installation, transferring or inspection.
9. Don't touch rotating portion. Don't touch the motor surface during, or just after operation.
10. Don't lay combustible object or others which block ventilation around the product.

■ Wiring

- Make wiring as per below.
- Rotating direction is specified viewed from the motor output shaft. Note that there are some cases gearhead rotating direction doesn't match to that of motor shaft.
- Make sure that the wiring is correct when such malfunctions are identified as the motor doesn't run, makes reverse run, or torque is too small.

	CW (Clockwise)	CCW (Counter clockwise)
Induction motor		
Induction motor (UL recognized)		
Reversible motor (Including UL recognized)		
3-phase motor (Including UL recognized)	Change any 2 wires among white, gray or black of the right diagram for CW rotation,	
MG brake motor single phase (Including UL recognized)		
MG brake motor 3-phase	Change any 2 wires among white, gray or black of the right diagram for CW rotation.	

- Colors represents motor leads, and number represents terminal of the motor with T-box.
- For the wiring of the variable speed motor, refer to the manual attached in the speed controller.
- As to UL recognized product, impedance protect is adopted to 60 mm sq. type, and thermal Cutoff is adopted for other size.
- Ground the grounding terminal the motor with T-box.

■ Maintenance

Daily maintenance is important to prevent unexpected malfunctions caused by an effect of environment (temperature, humidity, dust or vibration etc.), aging or life of the components.

1. Is the operation smooth ?
2. Does the product generate abnormal noise during operation ?
3. Does the product generate abnormal heat ?

Note) • Don't step on the product.

- Turn off the power when any malfunctions are identified.
- Don't modify the product at customer end.
- When the motor is to be scrapped, treat this as industrial waste material.
- Don't use the damaged motor.

■ Troubleshooting

Symptom	Where to check	Correction
Motor doesn't run	• Is the wiring correct ?	• Make a correct wiring.
	• Is the supply voltage correct ?	• Supply the correct voltage.
	• Is the correct capacitor used ?	• Use the specified capacitor.
	• Is the load correct ?	• Reduce the load, or use the higher output motor.
• Motor makes reverse run.	• Is the wiring correct ?	• Make a correct wiring per the wiring diagram.
	• Rotational direction of the output shaft is different from that of gearhead.	• Check the direction carefully, and make a wiring based on the direction of the motor shaft.
	• Is the capacitor installed per the wiring diagram ?	• Make a correct wiring per the wiring diagram.
	• Is the viewing direction correct ?	• Wiring diagram indicates when viewed from the motor shaft.
• Motor becomes too hot.	• Is the correct voltage supplied? (100V vs 200V ?)	• Supply the correct voltage.
	• Is the capacitor correct ?	• Use the specified capacitor.
	• Motor surface temp. is subject to environment temp., load condition and frequency of start/stop. 90°C or more at the surface may cause motor malfunction	• If motor surface exceeds 90°C, use higher output motor, or reduce the load.

Note 1) Use a thermometer, thermotape for measurement at the motor surface.

■ Working conditions

Working voltage	$\pm 10\%$ (of the rated voltage)
Frequency	50/60 Hz
Working temp.	-10~+40°C
Humidity	85%RH or less (free from dew)

■ Specifications - Dimensions

For detailed specifications and dimensions (catalogue or drawing), contact to a dealer if necessary.

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