

4. Installation



DANGER

- Do not use a standard unit in an explosive atmosphere (which is likely to be filled with explosive gas or steam). Under such conditions, an explosion-proof motor should be used; otherwise, electric shock, personal injury, fire, explosion, or damage to the equipment may result.



CAUTION

- Do not use the cyclo gearmotor for purposes other than those shown on the rating plate or in the manufacturing specifications; otherwise, electric shock, personal injury, or damage to the equipment may result.
- Do not place flammable objects around the gearmotor; otherwise, fire may result.
- Do not place any object around the gearmotor; that will hinder ventilation; otherwise, excessive heat may build-up and cause burns or even fire.
- Do not step on or hang from the gearmotor; otherwise injury may result.
- Do not touch the shaft end of the gearmotor, inside keyways, or the edge of the motor cooling fan with bare hands; otherwise, injury may result.
- When the unit is used in food processing applications vulnerable to oil contamination, install an oil pan or other such device to cope with oil leakage due to failure or breakdown; otherwise, oil leakage may damage products.

4-1) Installation Location

Ambient temperature: -10°C to +40°C

Ambient humidity: 85% max.

Altitude: 1000 m max.

Ambient atmosphere: There should be no corrosive gas, explosive gas, or steam.
The location should be well ventilated without dust.

Installation location: Indoors, with minimal dust and no water contact.

Water proof/Dust proof type

Note) IP65 is not available for underwater or high water pressured condition.

IP65: The IP indication that represents dust-proofing and water-proofing grades is prescribed by IEC529 and IEC34-5. "6" of IP65 represents a "perfect dust-proofing structure" that is the highest-grade protection from contact or entry of solids, while "5" represents protection from water, ensuring protection from water jets in all directions.

The motor has a structure that permits motor operation without any trouble even if it is exposed to water jets in all directions from a nozzle.

Test conditions: A nozzle of 6.3 mm in I.D. is placed at a distance of 3 m from the test piece and water jetted out of the nozzle under pressure of 30 kPa at the flow rate of 12.5 l/min is directed at the test piece in all directions for three minutes. After that, there should be no abnormality. The motor cannot be used underwater or in places exposed to high-pressure water jets.

- Units made to special specifications are necessary for installation under conditions other than the above.
- Units made according to the outdoor, explosion-proof or other specifications can be used under the specified conditions without any problem.
- Install units where inspection, maintenance, and other such operations can be easily carried out.
- Install units on a sufficiently rigid base.

4–2) Installation Angle

There is no restriction on the installation angle.
 (For outdoor type gearmotors, standard installation angle is horizontal in the axial direction. Contact us for other axial directions.)

4–3) Flange mounting (RNFM series), Foot mounting (RNHM series)

Use bolt shown under Table 2. and refer to 5. coupling with other machines. (P14-18)

Table 2 Bolt Size

Series	Frame Size	Size of bolt	
RNFM	01#, 03#	Hexagon socket head bolt M5	
	05#, 07#, 15#, 17#, 190#	Hexagon socket head bolt M6	
	20#, 23#, 25#, 270#	Hexagon socket head bolt M8	
	30#, 33#, 35#, 36#, 370#	Hexagon socket head bolt M10	
	40#, 43#, 45#, 46#, 470#	Hexagon socket head bolt M10	
	50#, 53#, 54#, 55#, 56#	Hexagon socket head bolt M12	
RNHM	20#, 23#, 25#, 190#, 270#	Bolt M8	
	30#, 33#, 35#, 36#, 370#	Bolt M10	
	40#, 43#, 45#, 46#, 470#	Bolt M12	
	50#, 53#, 54#, 55#, 56#	Bolt M16	
	60#, 63#, 64#	Bolt M20	

4–4) Hollow shaft (RNYM series)

There are (1) Torque arm mounting and (2) Flange and On-bed mounting for Hollow shaft.

(1) Torque arm mounting

(a-1) How to set the shaft (03#, 07#, 17#, 1010#)

Apply molybdenum disulfide grease to the surface of a driven shaft and the inner surface of a hollow shaft. Then insert the Drive into the driven shaft.

If the fitting is too tight, lightly knock the end face of a hollow output shaft with a wooden hammer for smooth insertion. Do avoid knocking the casing. We recommend making a jig shown Fig 2. Using this jig, you can insert the Drive smoothly.

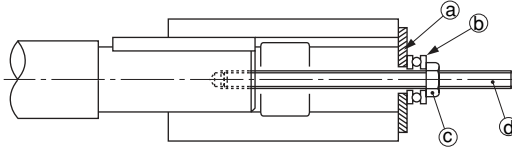


Fig.2 Jig

- (a).....Spacer
- (b).....Thrust Bearing
- (c).....Nut
- (d).....Bolt

The hollow shaft is made according to the tolerances of JIS H8. If you experience impact or notice a large radial load with the hollow shaft, further tighten the fitting between the hollow shaft and the driven shaft. (We recommend JIS js6 or k6 as the tolerance of a driven shaft.)

(b-1) Method to avoid the Drive from slipping away from a driven machine. (Fig.3-5)
(03#, 07#, 17#, 1010#)

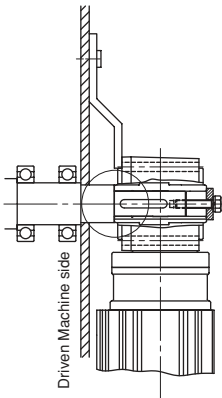


Fig.3 Fixed by spacer and plate

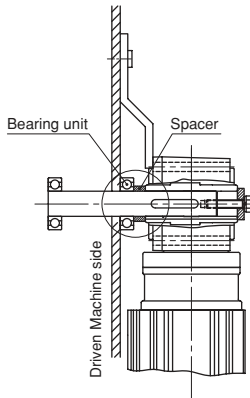


Fig.4 Fixed by end plate

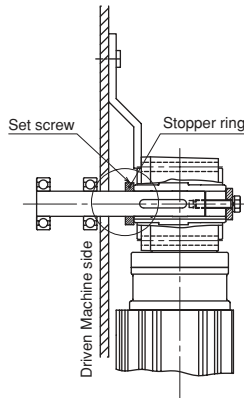


Fig.5 Fixed by set screw and stopper ring

Method to avoid the Drive from slipping reactor to a driven machine. (Fig.6-7)

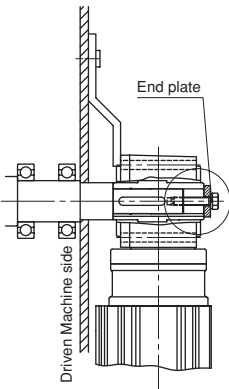


Fig.6 Fixed by spacer

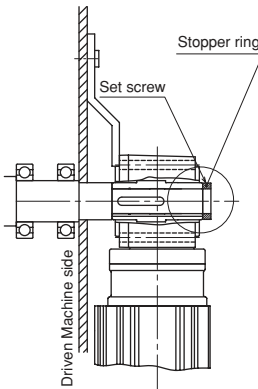


Fig.7 Fixed by set screw

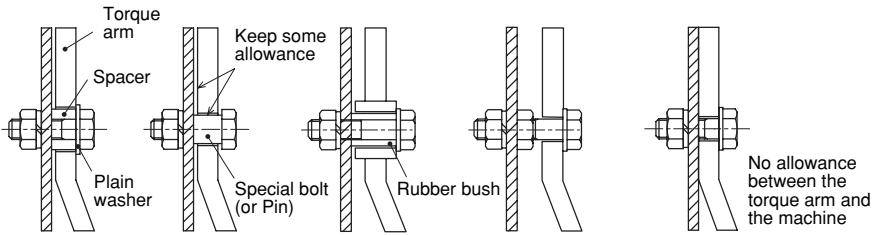
(c-1) How to set a torque arm (03#, 07#, 17#, 1010#)

Mount a torque arm on the driven machine side of the Drive casing. Use hexagon socket head bolts for mounting. (See Table 3 for bolt sizes.)

Torque arm anti-rotation stopper should be designed so as to allow movement of the torque arm to make sure that the contact surface between the Drive and shaft are free from excess force.

Don't fix the torque arm by anti-rotation bolts.

For such applications as requiring frequent start and stop or frequent reversing of the rotating direction, insert a rubber bushing between the torque arm and securing bolt (or spacer) in order to relax impact load.



(Adjust the allowance according to the movement of the machine.)

(Excessive force on the whirl stop bolt, machine, and Hyponic may cause damage.)

Good example

Bad example

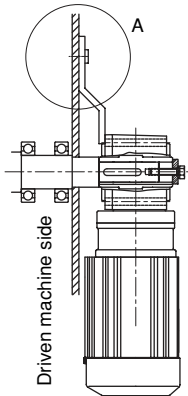


Fig.8 A-part securing methods

Table 3 Size of hexagon socket head bolt

Frame size	Bolt
03#	M5
07#, 17#	M6
1010#	M8

(d-1) How to remove the shaft (03#, 07#, 17#, 1010#)

Make sure that excess force does not act on Drive and shaft.

(a-2) How to set the shaft (20#-64#, 190#-471#, 1110#-1531#)

Apply molybdenum disulfide grease to the surface of a driven shaft and the inner surface of a hollow shaft. Then insert the Drive into the driven shaft.

If the fitting is too tight, lightly knock the end face of a hollow output shaft with a wooden hammer for smooth insertion. Do avoid knocking the casing. We recommend making a jig shown Fig 9. Using this jig, you can insert the Drive smoothly.

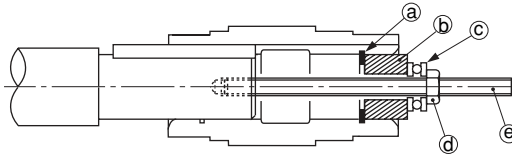


Fig.9 Jig

- a.....plate
- b.....Spacer
- c.....Thrust Bearing
- d.....Nut
- e.....Bolt

The hollow shaft is made according to the tolerances of JIS H8. If you experience impact or notice a large radial load with the hollow shaft, further tighten the fitting between the hollow shaft and the driven shaft, (We recommend JIS js6 or k6 as the tolerance of a driven shaft.)

(b-2) Method to avoid the Drive from slipping away from a driven machine. (Fig.10-12)
(20#-64#, 190#-471#, 1110#-1531#)

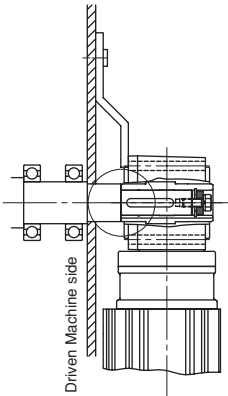


Fig.10 Fixed by spacer and plate

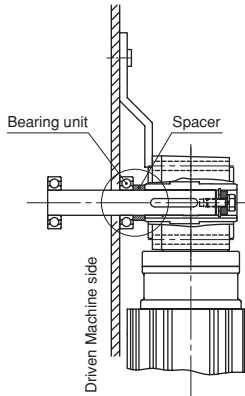


Fig.11 Fixed by end plate

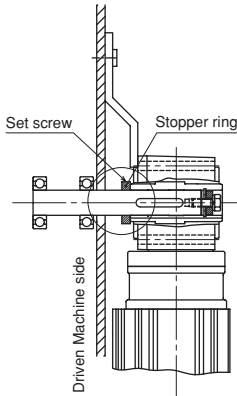


Fig.12 Fixed by set screw and stopper ring

Method to avoid the drive from slipping reactor to a driven machine (Fig.13–15)

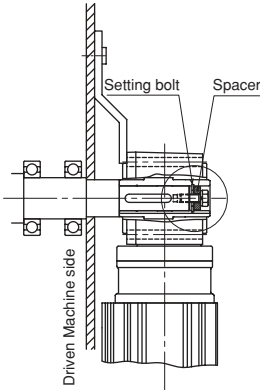


Fig.13 Fixed by stopping shaft

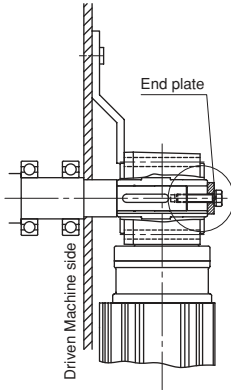


Fig.14 Fixed by spacer

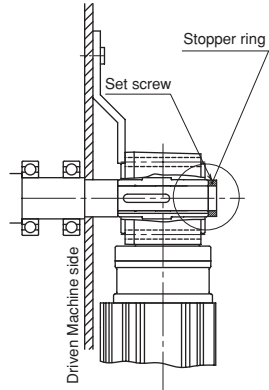


Fig.15 Fixed by set screw

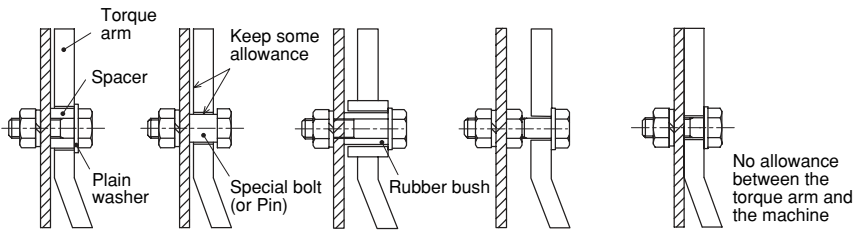
(c-2) How to set a torque arm (20#-64#, 190#-471#, 1110#-1531#)

Mount a torque arm on the driven machine side of the Drive casing. Use hexagon socket head bolts for mounting. (See Table 4 for bolt sizes.)

Torque arm anti-rotation stopper should be designed so as to allow movement of the torque arm to make sure that the contact surface between the Drive and shaft are free from excess force.

Don't fix the torque arm by anti-rotation bolts.

For such applications as requiring frequent start and stop or frequent reversing of the rotating direction, insert a rubber bushing between the torque arm and securing bolt (or spacer) in order to relax impact load.



(Adjust the allowance according to the movement of the machine.)

(Excessive force on the whirl stop bolt, machine, and Hyponic may cause damage.)

Good example

Bad example

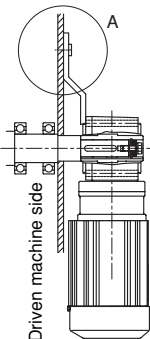


Fig.16 A-part securing methods

Table 4 Size of hexagon socket head bolt

Frame size	Bolt
190#	M6
1110#, 1120#	M8
1210#, 1220#	M10
20#, 201#, 23#, 231#, 25#, 251#, 271#, 1230#	M8
1310#, 1320#	M12
30#, 301#, 33#, 331#, 35#, 351#, 361#, 371#, 1330#	M10
1410#, 1420#, 1510#	M16
40#, 401#, 43#, 431#, 45#, 451#, 461#, 471#, 1430#	M12
1520#	M20
50#, 53#, 54#, 55#, 56#, 1530#, 1531#	M16
60#, 63#, 64#	M20

(d-2) How to remove the shaft (20#-64#, 190#-471#, 1110#-1531#)

Make sure that excess force does not act on the Drive and shaft. Using a jig as shown in Fig. 17 will facilitate removal of the shaft.

Parts for setting, securing or removing the shaft should be prepared by the user.

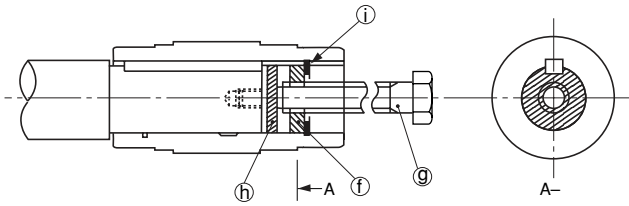
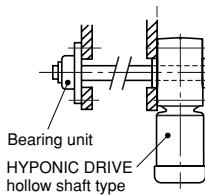


Fig.17 Removing Jig

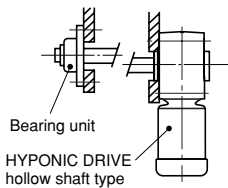
- (f).....Spacer
- (g).....Bolt
- (h).....Plate
- (i).....Shaft retaining c-ring

(2) **Flange and On-bed mounting (optional)**

When installing the Drive, pay attention to the alignment between the Drive and shaft to be driven so that the Drive is free from excess force.

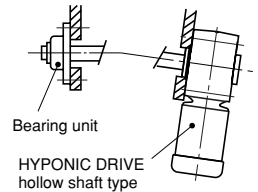


Good example



(The concentricity between the shaft and spigot joint is out of allowable range.)

Bad example



(The shaft centerline is not positioned at right angles to the flange.)

Bad example

Fig.18 Flange coupling