

## Overhung Load (O.H.L.)

An overhung load is a suspending load imposed on a shaft. In the coupling of reducer shaft and other machine, if chains, belts and gears are used, this O.H.L. must be taken into consideration.

$$O.H.L. = \frac{T_{LE} \times K_1 \times K_2}{R} \text{ (N) } \{ \text{kgf} \}$$

$T_{LE}$  : Equivalent output torque imposed on reducer shaft ( N·m } kgf·m }  
 $R$  : Pitch Circle Radius(m) of sprocket, pulley, gear, etc. attached to reducer shaft.  
 $K_1$  : Factor for the connecting method (Refer to Table-5)  
 $K_2$  : Factor for the load point (Refer to Table-6)

Be sure that the OHL value calculated by above formula should not exceed the allowable OHL value listed in the performance table.

### Factor K<sub>1</sub>

Table-5

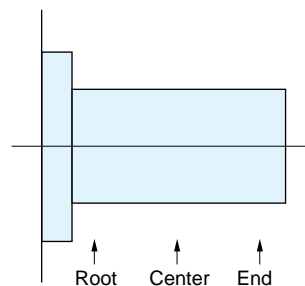
Connecting Method	K <sub>1</sub>
Chain, Timing Belt	1.00
Gear	1.25
V-Belt	1.50

### Factor K<sub>2</sub>

Table-6

Load Point	K <sub>2</sub>
Root of the shaft	0.75
Center of the shaft	1.00
End of the shaft	1.50

Load Point



## Thrust Load

The thrust load values of F2-Type and F2S( hollow shaft ) are listed in the performance table. Please contact us for the other models.

Parallel Shaft Performance Table/ Dimension

Gearmotor with Brake

Water-resistant Gearmotor with Brake

Speed Control Gearmotor

Gearmotor with Clutch /Brake

GT-Type Gearmotor with Brake

Right Angle Shaft Performance Table/ Dimension

Gearmotor with Brake

With Water-resistant Brake Motor

Speed Control Gearmotor

Concentric Hollow Shaft Concentric Solid Shaft Performance Table/ Dimension

Gearmotor with Brake

With Water-resistant Brake Motor

Speed Control Gearmotor

Parallel Shaft GTR-L Series Performance Table/ Dimension

Reversible Gearmotor with Brake

Speed Control Gearmotor with Brake

Technical Information

Standard Motors

Cautions for Safety

Option

## Overhung Load on a Hollow Shaft(O.H.L.)

### Flange Mounting

#### 1. Load Point of O.H.L.

Allowable OHL is calculated at the point 20mm off from the end of output shaft.

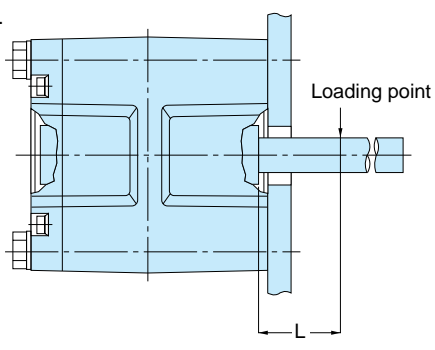
#### 2-1. Adjustment of O.H.L. without any support by pillow

When load point of O.H.L. (L) become greater than 10mm, the allowable O.H.L. can be corrected by the following formula:

$$\text{Bearable O.H.L. (N) (kgf)} = \frac{A+10}{A+L} \times \text{Allowable O.H.L. (N) (kgf)}$$

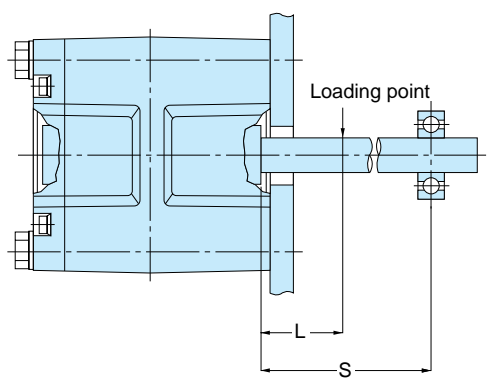
Note) Refer Table-7 for A.

Frame Number	A (mm)
12	43
15	55



#### 2-2. Correction of O.H.L. when supported by pillow at one end

$$\text{Bearable O.H.L. (N) (kgf)} = \frac{S}{S-L} \times \text{Allowable O.H.L. (N) (kgf)}$$



### In case of Shaft Mounting

When a customer-made torque arm instead of the optional part is to be prepared, and:

In case of using the torque arm shown in Fig.2.

The distance: r, from the center of the output shaft to the fixing point, should be as follows:

SI Units

$$r(\text{mm}) = \frac{\text{Actual Load Torque (N}\cdot\text{m)} \times 1000}{\text{Allowable O.H.L. (N)} - 9.8 \times \text{Mass of Gearmotor (kg)}}$$

Gravimetric Units

$$r(\text{mm}) = \frac{\text{Actual Load Torque (N}\cdot\text{m)} \times 1000}{\text{Allowable O.H.L. (kgf)} - \text{Weight of the reducer (kg)}}$$

In case of using the torque arm shown in Fig.3.

The distance: r, from the center of the output shaft to the fixing point, should be as follows:

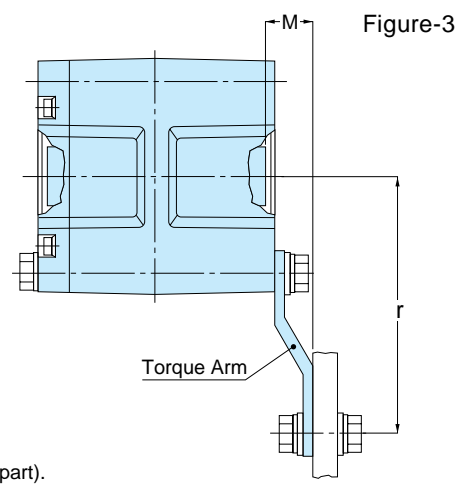
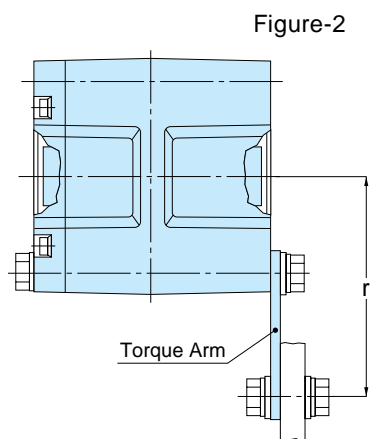
SI Units

$$r(\text{mm}) = \frac{\text{Actual Load Torque (N}\cdot\text{m)} \times (A+M) \times 1000}{\{\text{Allowable O.H.L. (N)} - 9.8 \times \text{Mass of Gearmotor (kg)}\} \times (A+10)}$$

Gravimetric Units

$$r(\text{mm}) = \frac{\text{Actual Load Torque (kgf}\cdot\text{m)} \times (A+M) \times 1000}{\{\text{Allowable O.H.L. (kgf)} - \text{Weight of the reducer (kg)}\} \times (A+10)}$$

Note) Refer to Table-7 for the constant A.



\* For the required thickness of torque arm, refer to P. E85 Torque Arm (optional part).

Parallel Shaft Performance Table/ Dimension

- Gearmotor with Brake
- Water-resistant Gearmotor with Brake
- Speed Control Gearmotor
- Gearmotor with Clutch/Brake
- GT-Type Gearmotor with Brake

Right Angle Shaft Performance Table/ Dimension

- Gearmotor with Brake
- With Water-resistant Brake Motor
- Speed Control Gearmotor

Concentric Hollow Shaft Performance Table/ Dimension

- Gearmotor with Brake
- With Water-resistant Brake Motor
- Speed Control Gearmotor

Parallel Shaft GTR-L Series Performance Table/ Dimension

- Reversible Gearmotor with Brake
- Speed Control Gearmotor with Brake

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