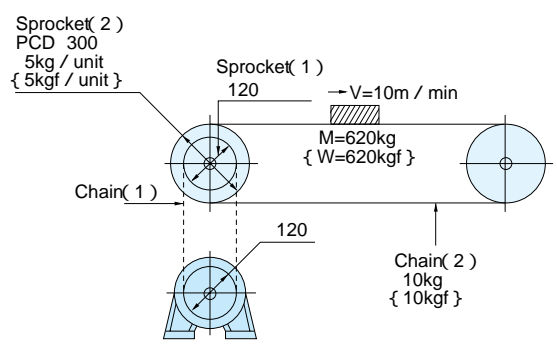


# Process of selection and example of selection

## An example of Selection In Case of Foot or Flange Mount

Application ..... Conveyor (Moderate shock load)  
 Conveyor Speed ..... 10m/min  
 Weight of Work ..... 620Kg  
 (Mass of Work ..... 620kgf)  
 Type of Drive ..... Chain(Located on the center of shaft)  
 Operating Time ..... 12 hours/day  
 Starting & Stopping Frequency... 720 times/day  
 Area of Use ..... Area of Power Supply Frequency of 60Hz  
 Coefficient of Friction ..... Supposed to be 0.2

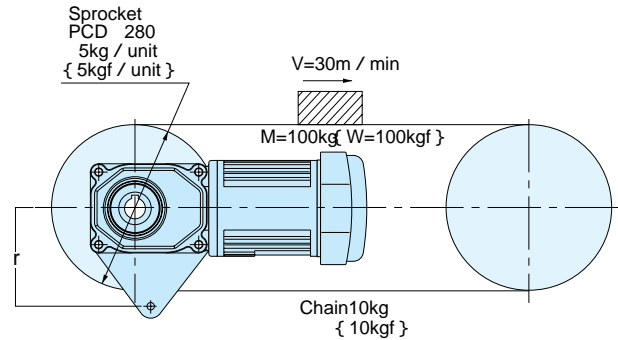


Chain(1), Sprocket(1) and other conditions were neglected for this calculation.

Process of Selection		Example of Selection		
		SI Unit	Gravimetric Unit	
Deciding Type	Decide on Parallel Shaft, Right Angle Shaft or Hollow Shaft	Decide on a G3 Series(parallel shaft) considering the mounting space.		
Determining Reduction Ratio	Determine Reduction Ratio: $i = \frac{\text{Required rotating speed for output shaft}}{\text{Power supply frequency} \times 30}$	Required Rotation Speed of Conveyor Shaft = $\frac{10 \times 1000}{300 \times}$ 10.6 rpm Since the diameter of sprocket for conveyor shaft and that of reducer output shaft are the same, we obtain. $i = \frac{10.6}{60 \times 30} = \frac{1}{160}$		
Checking Torque	Calculate Actual Load Torque(TL)	$T_L = 9.8 \times (620 + 2 \times 5 + 10) \times 0.2 \times \frac{300}{2 \times 1000} = 188\text{N} \cdot \text{m}$	$T_L = (620 + 2 \times 5 + 10) \times 0.2 \times \frac{300}{2 \times 1000} = 19.2\text{kgf} \cdot \text{m}$	
	Calculate equivalent torque(TLE) of output shaft from service factor: (sf given in Table-1 on page E4) $T_{LE} = T_L \times Sf$	Adjust Actual Load Torque(TL) using a Service Factor (Sf). $T_{LE} = 188 \times 1.25 = 235\text{N} \cdot \text{m}$	$T_{LE} = 19.2 \times 1.25 = 24\text{kgf} \cdot \text{m}$	
	Choose the allowable torque(TA) of output shaft from the performance table, which should be greater than TLE	Select an appropriate model of TLE TA G3LM-32-160-T040		
Checking Inertia	Calculate Actual Load Inertia	Calculate Actual Load Inertia Moment(IL) $I_L = \{620 \times (\frac{0.3}{2})^2\} + \{ \frac{1}{2} \times 5 \times (\frac{0.3}{2})^2 \times 2\} + \{10 \times (\frac{0.3}{2})^2\}$ = 14.29kg·m <sup>2</sup>	Calculate Actual Load GD <sup>2</sup> (GD <sub>L</sub> <sup>2</sup> ) $GD_L^2 = (620 \times 0.3^2) + (\frac{1}{2} \times 5 \times 0.3^2 \times 2) + (10 \times 0.3^2)$ = 57.15kgf·m <sup>2</sup>	
	Calculate Load Inertia converted to Motor Shaft	Convert IL into the equivalent value at the motor shaft( I <sub>l</sub> ) $I_l = I_L \times (i)^2$ $I_l = 14.29 \times (\frac{1}{160})^2$ 0.000558kg·m <sup>2</sup>	Convert GD <sub>L</sub> <sup>2</sup> into the equivalent value at the motor shaft (GD <sub>l</sub> <sup>2</sup> ) $GD_l^2 = GD_L^2 \times (i)^2$ $GD_l^2 = 57.15 \times (\frac{1}{160})^2$ 0.00223kgf·m <sup>2</sup>	
	Calculate Equivalent Inertia using the correction factor corresponding to the operating condition.	Correction factor from the operating condition is 3.		
	From Table-2 on page E4, choose the model which satisfy Equivalent Inertia Allowable Inertia.	Calculate Equivalent Inertia Moment ( I <sub>lE</sub> ) $I_{lE} = I_l \times (\text{Correction factor})$ Table-3 on page E-3 $I_{lE} = 0.000558 \times 3 = 0.001674\text{kg} \cdot \text{m}^2$ Choose the model which satisfy I <sub>lE</sub> Allowable Inertia Moment( I <sub>A</sub> )	Calculate Equivalent GD <sup>2</sup> ( GD <sub>lE</sub> <sup>2</sup> ) $GD_{lE}^2 = GD_l^2 \times (\text{Correction factor})$ Table-3 on page E-3 $GD_{lE}^2 = 0.00223 \times 3 = 0.0067\text{kgf} \cdot \text{m}^2$ Choose the model which satisfy GD <sub>lE</sub> <sup>2</sup> Allowable GD <sup>2</sup> ( GD <sub>A</sub> <sup>2</sup> )	
Option	From Table-2 on page E4, choose the model which satisfy Equivalent Inertia Allowable Inertia.	G3LM-40-160-075		
Checking O.H.L.	Determine K1 by the type of drive Table 4 on page E6 Determine k2 by the location of the load Table-5 on page E6	K1 = 1 K2 = 1		
	O.H.L. = $\frac{T_{LE} \times K_1 \times K_2}{R}$ *R: Pitch Circle Radius of sprocket, etc. equipped to reducer shaft Select O.H.L. Allowable O.H.L. from the performance table	O.H.L. = $\frac{235 \times 1 \times 1}{2 \times 1000} = 3917\text{N}$	O.H.L. = $\frac{24 \times 1 \times 1}{2 \times 1000} = 400\text{kgf}$	
Final Decision	Select the most appropriate model which satisfy all the conditions required from torque, inertia and O.H.L.	The most appropriate model is G3LM-40-160-075		

### Example of Selection In case of Shaft Mount

- Application ..... Conveyor (Moderate shock load)
- Conveyor Speed ..... 30m / min
- Weight of Work ..... 100kg
- { Mass of Work ..... 100kgf }
- Type of Drive ..... Chain
- Operating Time ..... 12 hours/day
- Starting & Stopping Frequency ... 720 times/day
- Area of Use ..... Area of Power Supply Frequency of 60Hz
- Coefficient of Friction ..... Supposed to be 0.2



Conditions other than above stated were not considered in this calculation.

Process of Selection		Example of Selection	
		SI Unit	Gravimetric Unit
Deciding Type	Selection of hollow shaft, right angle shaft, or parallel shaft	Decide on F3-Series, F3S-Type (hollow shaft) model considering from the shaft mounting.	
Determining Reduction Ratio	<p>Determine Reduction Ratio:</p> $i = \frac{\text{Required rotating speed for output shaft}}{\text{Power supply frequency} \times 30}$	<p>Required Rotation Speed of Conveyor Shaft = <math>\frac{30 \times 1000}{280 \times}</math> 34.1 rpm</p> <p>Since the rotation speed of the conveyor shaft and that of the reducer's output shaft are the same.</p> $i = \frac{34.1}{60 \times 30} = \frac{1}{50}$	
Checking Torque	Calculate Actual Load Torque(TL)	$T_L = 9.8 \times (100 + 2 \times 5 + 10) \times 0.2 \times \frac{280}{2 \times 1000} = 32.9 \text{N} \cdot \text{m}$	$T_L = (100 + 2 \times 5 + 10) \times 0.2 \times \frac{280}{2 \times 1000} = 3.36 \text{kgf} \cdot \text{m}$
	Calculate equivalent torque(TLE) of output shaft from service factor: (sf given in Table-1 on page E4)	Adjust Actual Load Torque(TL) using a Service Factor (Sf).	
	$T_{LE} = T_L \times Sf$	$T_{LE} = 32.9 \times 1.25 = 41.1 \text{N} \cdot \text{m}$	$T_{LE} = 3.36 \times 1.25 = 4.2 \text{kgf} \cdot \text{m}$
Checking Inertia	Choose the allowable torque(TA) of output shaft from the performance table, which should be greater than TLE	Select an appropriate model of TLE TA F2SM-25-50-T020A	
	Calculate Actual Load Inertia	<p>Calculate Actual Load Inertia Moment(IL)</p> $I_L = \{100 \times (\frac{0.28}{2})^2\} + \{ \frac{1}{2} \times 5 \times (\frac{0.28}{2})^2 \times 2\} + \{10 \times (\frac{0.28}{2})^2\}$ $= 2.25 \text{kg} \cdot \text{m}^2$ <p>Convert IL into the equivalent value at the motor shaft( I<sub>ℓ</sub>)</p> $I_{\ell} = I_L \times (i)^2$ $I_{\ell} = 2.25 \times (\frac{1}{50})^2$ $= 0.0009 \text{kg} \cdot \text{m}^2$	<p>Calculate Actual load GD<sup>2</sup>(GD<sub>L</sub><sup>2</sup>)</p> $GD_L^2 = (100 \times 0.28^2) + (\frac{1}{2} \times 5 \times 0.28^2 \times 2) + (10 \times 0.28^2)$ $= 9.02 \text{kgf} \cdot \text{m}^2$ <p>Convert GD<sub>L</sub><sup>2</sup> into the equivalent value at the motor shaft (GD<sub>ℓ</sub><sup>2</sup>)</p> $GD_{\ell}^2 = GD_L^2 \times (i)^2$ $GD_{\ell}^2 = 9.02 \times (\frac{1}{50})^2$ $= 0.00361 \text{kgf} \cdot \text{m}^2$
	Calculate Load Inertia converted to Motor Shaft	Correction factor from the operating condition is 3.	
	Calculate Equivalent Inertia using the correction factor corresponding to the operating condition.	<p>Calculate Equivalent Inertia Moment (I<sub>ℓE</sub>)</p> $I_{\ell E} = I_{\ell} \times (\text{Correction factor}) \text{ Table-3 on page E4}$ $I_{\ell E} = 0.0009 \times 3 = 0.0027 \text{kg} \cdot \text{m}^2$ <p>Choose the model which satisfy I<sub>ℓE</sub> Allowable Inertia Moment(I<sub>A</sub>)</p>	<p>Calculate Equivalent GD<sup>2</sup>(GD<sub>ℓE</sub><sup>2</sup>)</p> $GD_{\ell E}^2 = GD_{\ell}^2 \times (\text{Correction factor}) \text{ Table-3 on page E4}$ $GD_{\ell E}^2 = 0.00361 \times 3 = 0.0108 \text{kgf} \cdot \text{m}^2$ <p>Choose the model which satisfy GD<sub>ℓE</sub><sup>2</sup> Allowable GD<sup>2</sup>(GD<sub>A</sub><sup>2</sup>)</p>
From Table-2 on page E4, choose the model which satisfy Equivalent Inertia Allowable Inertia.	F3SM-35-50-075		
Final Decision	Select the most appropriate model which satisfy all the conditions required from torque, inertia and O.H.L.	<p>Finally we can determine the model F3SM-35-50-075</p> <p>Torque Arm TAF2S-35(OPTION NUMBER) is recommended. Refer to page E62.</p> <p>In case the torque arm is to be made by customer, the distance(r) from the center of the output shaft to the fixing point, should be no less than 12.4mm by the calculation below:</p> $r = \frac{\text{Actual Load Torque} \times 1000}{\text{Allowable O.H.L.} - \text{mass of Reducer}} = \frac{41.1 \times \{4.2\} \times 1000}{3480 \{355\} - 9.8 \times 17} = 12.4$ <p>*As for calculation of torque arm, please see page E62 of MIDI SERIES (0.1kW - 2.2kW) Catalog.</p>	

- Parallel Shaft (Performance Table/Dimension)
- Gearmotor with Brake
- Water-resistant, Outdoor Gearmotor with Brake
- Gearmotor with Clutch/Brake
- Reducer (Double Shaft)
- S-Type Reducer
- Right Angle Shaft (Performance Table/Dimension)
- Gearmotor with Brake
- Water-resistant, Outdoor Gearmotor with Brake
- Gearmotor with Clutch /Brake
- Reduce (Double Shaft)
- S-Type Reducer
- Hollow Shaft Solid Shaft Performance Table/Dimension
- Gearmotor with Brake
- Water-Resistant, Outdoor Gearmotor with Brake
- Reduce (Double Shaft)
- S-Type Reducer
- Concentric Hollow Shaft Concentric Solid Shaft Performance Table/Dimension
- Gearmotor with Brake
- Water-Resistant, Outdoor Gearmotor with Brake
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- Cautions for Safety
- Option
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# Technical Note

## Service Factor (Sf)

G3 Series, H2 Series and F-F3 Series gearmotors and reducers are designed for the operation of 10 hrs/day with moderate shock loads. In case of using in severer condition, adjust the load torque with the Table-1 below.

Table-1

Load Condition	Service Factor(Sf)			Application
	Under 3 hrs/day	3 ~ 10 hrs./day	Over 10 hrs/day	
Uniform Load	1	1	1	Conveyors(uniform load), Screens, Agitators(low viscosity), Sewage Disposal Equipments(light load), Machine Tools(feed shaft), Elevators, Extruders, Distillers
Moderate Shock Load	1	1	1.25	Conveyors(non-uniform or heavy load), Agitators(high viscosity), Machines for Vehicles, Sewage Disposal Equipments(moderate load), Hoists(light load), Paper Mills, Feeders, Food Machines, Pumps, Sugar Mills, Textile Machines
Heavy Shock Load	1	1.25	1.5	Hoists(heavy load), Hammer Mills, Metal Mills, Crushers, Tumblers

## Allowable Inertia Moment (I<sub>A</sub>) Allowable GD<sup>2</sup> (GD<sub>A</sub><sup>2</sup>)

When operating gearmotors intermittently under high inertia load, critical torque may instantaneously arise at the starting(or stopping in brake gearmotor). This may cause unexpected accident, therefore, be sure that the inertia of the connecting machine should be within the allowable value listed in the Table below, which may vary according to the connecting type and/or starting frequency.

### Allowable Inertia Moment I by Capacity { GD<sup>2</sup> } ( Motor shaft or Input Shaft Equivalent )

Unit: Inertia Moment I ( kg·m<sup>2</sup> } GD<sup>2</sup>( kgf·m<sup>2</sup> ) } Table-2

3-Phase	1-Phase	Allowable Inertia Moment( I <sub>A</sub> } AllowableGD <sup>2</sup> ( GD <sub>A</sub> <sup>2</sup> ) }
50W Reduction Ratio 1/10 ~ 1/240		0.0002 { 0.0008 }
50W Reduction Ratio 1/300 ~ 1/900		0.0001 { 0.0004 }
50W Reduction Ratio 1/1200 ~ 1/1800		0.0002 { 0.0008 }
0.1kW	100W	0.0008 { 0.003 }
0.2kW	200W	0.0010( 0.0013 ) } 0.004( 0.005 ) }
0.4kW	400W	0.0015( 0.0019 ) } 0.006( 0.0075 ) }
0.75kW		0.0030( 0.0038 ) } 0.012( 0.015 ) }
1.5kW		0.008 { 0.032 }
2.2kW		0.011 { 0.042 }

- Note 1** ) In case of reducers, operating with the input rotation speed of over 1800rpm, the allowable inertia moment I (GD<sup>2</sup>) can be obtained by multiplying the value in the left by (1800/Input rpm)<sup>2</sup>. (Example: In case the input shaft rpm is 3600, the allowable inertia moment I (GD<sup>2</sup>) will be 1/4).
- 2** ) Motor shaft(input shaft) equivalent inertia moment I  
= Output shaft inertia moment I × (reduction ratio)<sup>2</sup>  
(Motor shaft(input shaft) equivalent GD<sup>2</sup> = Output shaft GD<sup>2</sup> × (reduction ratio)<sup>2</sup>)  
(Example: In case the reduction ratio is 1/20, the answer is 1/400.)
- 3** ) The values in ( ) in the Allowable Inertia Moment (Allowable GD<sup>2</sup>) in the Table are the ones of gearmotors with reinforced clutch/brake.

### Correction Factor for Allowable Inertia Moment I by Operating Condition { Allowable GD<sup>2</sup> }

Table-3

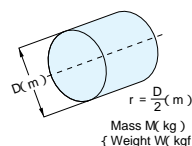
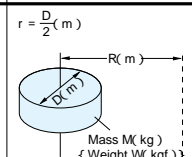
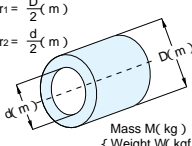
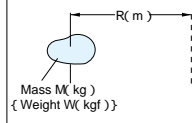
Connection Type	Starting Frequency	Correction Factor
Direct Coupling (without slack)	Under 70 times/day	1
	Over 70 times/day	1.5
By Chain (with slack)	Under 70 times/day	2
	Over 70 times/day	3

## Calculation of Inertia Moment I (GD<sup>2</sup> (Flywheel Effect))

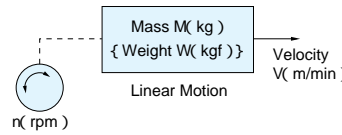
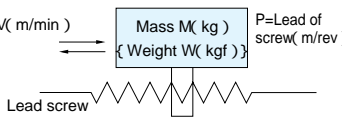
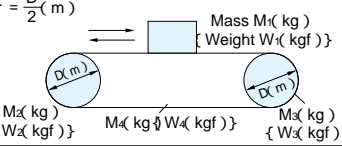
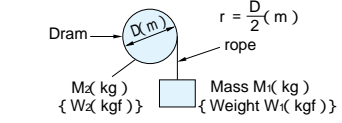
The conversion between the inertia moment(kg·m<sup>2</sup>)-(SI units) and the gravimetric units GD<sup>2</sup> (kg·m<sup>2</sup>) are calculated as follows:

$$I = \frac{GD^2}{4} \begin{cases} G : \text{Gravity(kgf)} \\ D : \text{Rotation Diameter(m)} \\ I : \text{Inertia Moment(kg}\cdot\text{m}^2) \end{cases}$$

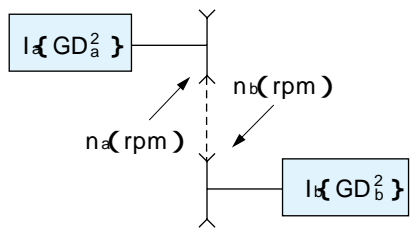
### Inertia Moment in Rotation{ GD<sup>2</sup> }

When the center of rotation is concentric with the center of gravity		When the center of rotation is not concentric with the center of gravity	
	SI Unit	Gravimetric Unit	
	$I = \frac{1}{2} Mr^2$ ( kg·m <sup>2</sup> )	$GD^2 = \frac{1}{2} WD^2$ { kgf·m <sup>2</sup> }	
	$I = \frac{1}{2} M(r_1^2 + r_2^2)$ ( kg·m <sup>2</sup> )	$GD^2 = \frac{1}{2} W(D^2 + d^2)$ { kgf·m <sup>2</sup> }	
	$I = \frac{1}{2} Mr^2 + MR^2$ ( kg·m <sup>2</sup> )	$GD^2 = \frac{1}{2} WD^2 + 4WR^2$ { kgf·m <sup>2</sup> }	$I = MR^2$ (when you can ignore size) ( kg·m <sup>2</sup> )
			$GD^2 = 4WR^2$ (when you can ignore size) { kgf·m <sup>2</sup> }

### Inertia Moment in Linear Motion{ GD<sup>2</sup> }

		SI Unit	Gravimetric Unit
Ordinary Use		$I = \frac{1}{4} M \cdot \left( \frac{V}{\cdot n} \right)^2$ ( kg·m <sup>2</sup> )	$GD^2 = W \cdot \left( \frac{V}{\cdot n} \right)^2$ { kgf·m <sup>2</sup> }
Horizontal Linear Motion (driven with lead screw)		$I = \frac{1}{4} M \cdot \left( \frac{P}{\cdot} \right)^2$ $= \frac{1}{4} M \cdot \left( \frac{V}{\cdot n} \right)^2$ ( kg·m <sup>2</sup> )	$GD^2 = W \cdot \left( \frac{P}{\cdot} \right)^2$ $= W \cdot \left( \frac{V}{\cdot n} \right)^2$ { kgf·m <sup>2</sup> }
Horizontal Linear Motion (conveyors, etc.)		$I = M_1 r^2 + \frac{1}{2} M_2 r^2$ $+ \frac{1}{2} M_3 r^2 + M_4 r^2$ ( kg·m <sup>2</sup> )	$GD^2 = W_1 D^2 + \frac{1}{2} W_2 D^2$ $+ \frac{1}{2} W_3 D^2 + W_4 D^2$ { kgf·m <sup>2</sup> }
Vertical Linear Motion (cranes, winches, etc.)		$I = M_1 r^2 + \frac{1}{2} M_2 r^2$ ( kg·m <sup>2</sup> )	$GD^2 = W_1 D^2 + \frac{1}{2} W_2 D^2$ { kgf·m <sup>2</sup> }

### Conversion of Inertia Moment when Speed Ratio is available



The inertia moment Ib (GD<sub>b</sub><sup>2</sup>) of the load can be converted into the equivalent value at the na shaft as shown below:

$$I = I_a + \left( \frac{n_b}{n_a} \right)^2 \times I_b$$

$$\{ GD^2 = GD_a^2 + \left( \frac{n_b}{n_a} \right)^2 \times GD_b^2 \}$$

- Parallel Shaft (Performance Table/Dimension)
- Gearmotor with Brake
- Water-resistant, Outdoor Gearmotor with Brake
- Gearmotor with Clutch/Brake
- Reducer (Double Shaft)
- S-Type Reducer
- Right Angle Shaft (Performance Table/Dimension)
- Gearmotor with Brake
- Water-resistant, Outdoor Gearmotor with Brake
- Gearmotor with Clutch/Brake
- Reduce (Double Shaft)
- S-Type Reducer
- Hollow Shaft Solid Shaft Performance Table/Dimension
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- S-Type Reducer
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- Gearmotor with Brake
- Water-Resistant, Outdoor Gearmotor with Brake
- Reducer (Parallel Shaft)
- S-Type Reducer
- Technical Information
- Standard Motors
- Cautions for Safety
- Option
- GT-STEP Index Gearmotor
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# Technical Note

## 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.

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

$T_{LE}$  : 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-4)  
 $K_2$  : Factor for the load point (Refer to Table-5)

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>

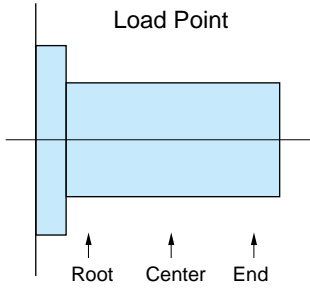
Table-4

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

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

Table-5

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



## Thrust Load

The thrust load values of F and F2 Series hollow shaft type are listed in the performance table. If there is a possibility of having excessive thrust load in the operating condition, consult us.

- Parallel Shaft (Performance Table/Dimension)
- Gearmotor with Brake
- Water-resistant, Outdoor Gearmotor with Brake
- Gearmotor with Clutch/Brake
- Reducer (Double Shaft)
- S-Type Reducer
- Right Angle Shaft (Performance Table/Dimension)
- Gearmotor with Brake
- Water-resistant, Outdoor Gearmotor with Brake
- Gearmotor with Clutch /Brake
- Reduce (Double Shaft)
- S-Type Reducer
- Hollow Shaft Solid Shaft Performance Table/Dimension
- Gearmotor with Brake
- Water-resistant, Outdoor Gearmotor with Brake
- Reduce (Double Shaft)
- S-Type Reducer
- Concentric Hollow Shaft Concentric Solid Shaft Performance Table Dimension
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- Cautions for Safety
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## F Series 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

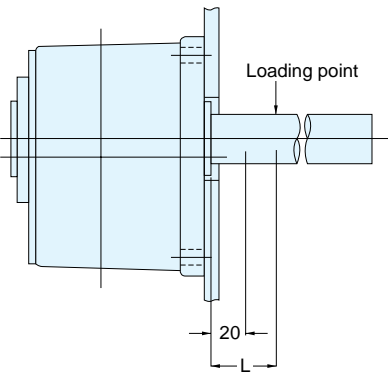
When load point of O.H.L. (L) become greater than 20mm, the allowable O.H.L. can be corrected by the following formula:

$$\text{Bearable O.H.L. (N } \times \text{ kgf )} = \frac{A + 20}{A + L} \times \text{Allowable O.H.L. (N } \times \text{ kgf )}$$

Note ) Refer Table-6-1 for A.

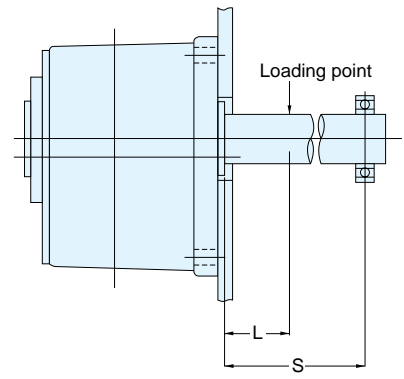
Table-6-1

Frame Number	A ( mm )
20	68.5
25	84.5
30	91
35	98
45	113
55	150



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

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



## F3 Series 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

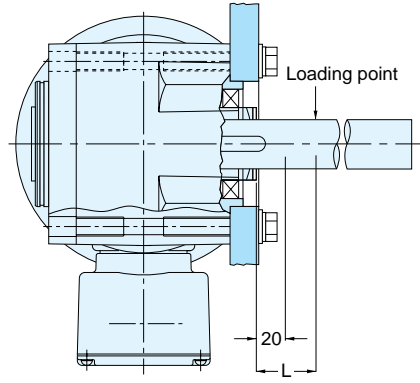
When load point of O.H.L. ( L ) become greater than 20mm, the allowable O.H.L. can be corrected by the following formula:

$$\frac{A + 20}{A + L}$$

Note ) Refer Table-6-2 for A.

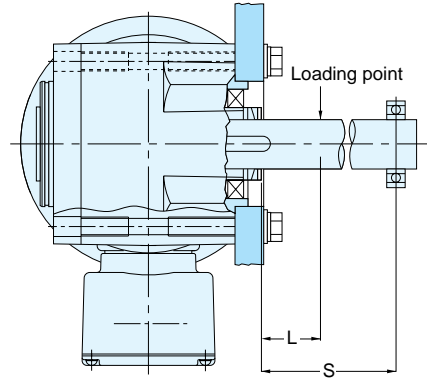
Table-6-2

Frame Number	A ( mm )
20	68.5
25	84.5
30	91
35	98
45	113
50	139
55	184.5



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

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



Parallel Shaft ( Performance Table/Dimension )

- Gearmotor with Brake
- Water-resistant, Outdoor Gearmotor with Brake
- Gearmotor with Clutch/Brake
- Reducer ( Double Shaft )
- S-Type Reducer

Right Angle Shaft ( Performance Table/Dimension )

- Gearmotor with Brake
- Water-resistant, Outdoor Gearmotor with Brake
- Gearmotor with Clutch /Brake
- Reduce ( Double Shaft )
- S-Type Reducer

Hollow Shaft Solid Shaft Performance Table/Dimension

- Gearmotor with Brake
- Water-Resistant, Outdoor Gearmotor with Brake
- Reduce ( Double Shaft )
- S-Type Reducer

Concentric Hollow Shaft Concentric Solid Shaft Performance Table/ Dimension

- Gearmotor with Brake
- Water-Resistant, Outdoor Gearmotor with Brake
- Reducer ( Parallel Shaft )
- S-Type Reducer

Technical Information

- Standard Motors
- Cautions for Safety
- Option
- GT-STEP Index Gearmotor
- KOMPASS Gearbox