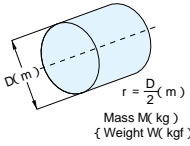
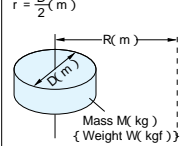
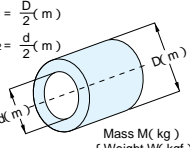
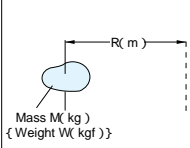


Calculation of Inertia Moment I { GD² (Flywheel Effect) }

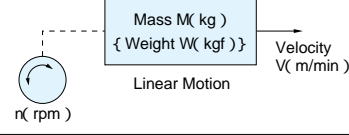
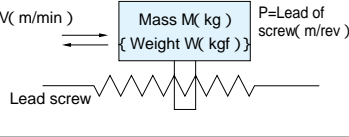
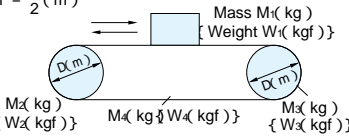
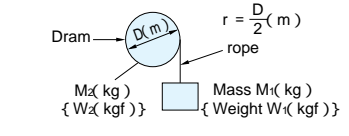
The conversion between the inertia moment(kg·m²)-(SI units) and the gravimetric units GD² (kg·m²) are calculated as follows:

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

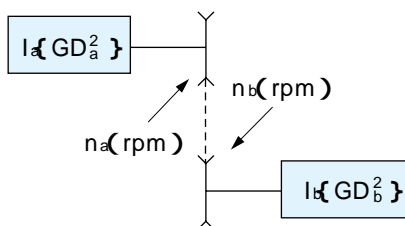
Inertia Moment in Rotation { GD² }

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 ²)	$GD^2 = \frac{1}{2} WD^2$ { kgf·m ² }	
	$I = \frac{1}{2} Mr^2 + MR^2$ (kg·m ²)	$GD^2 = \frac{1}{2} WD^2 + 4WR^2$ { kgf·m ² }	
	$I = \frac{1}{2} M(r_1^2 + r_2^2)$ (kg·m ²)	$GD^2 = \frac{1}{2} W(D^2 + d^2)$ { kgf·m ² }	
	(when you can ignore size) $I = MR^2$ (kg·m ²)	(when you can ignore size) $GD^2 = 4WR^2$ { kgf·m ² }	

Inertia Moment in Linear Motion { GD² }

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

Conversion of Inertia Moment when Speed Ratio is available



The inertia moment Ib (GD_b²) 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 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