

Technical Note

Service Factor (Sf)

GTR Mini Series, GTR-L Series and gearmotors 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 (I_A) Allowable GD² (GD_A²)

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 { GD² } (Motor shaft or Input Shaft Equivalent)

Unit: Inertia Moment I (kg·m² } GD²(kgf·m²) } Table-2

| GTR Mini Series | | | | | | Allowable Inertia Moment I (I _A) { AllowableGD ² (GD _A ²) } |
|--|---------|--------------------------|--|--------------|--------------|---|
| G-Type | GT-Type | Clutch/ Brake | H-Type | F2-Type | | |
| Frame G-12 Frame G-22 (15-25-40-60W) | GT8 | Frame G-12 Frame G-15 | Frame H-15 Frame H-22 (15-25-40-60W) | Frame F2S-12 | Frame F2F-15 | 0.0001 { 0.0004 } |
| Frame G-15 Frame G-28 Frame G-32 | GT9 | Frame G-18 | Frame H-18 Frame H-28 Frame H-32 | Frame F2S-15 | Frame F2F-18 | 0.0002 { 0.0008 } |
| Frame G-18 Frame G-40 | — | — | Frame H-40 | — | — | 0.0006 { 0.0025 } |

Unit: Inertia Moment I (kg·m² } GD²(kgf·m²) } Table-3

| GTR-L Series | | |
|--------------------|---|---|
| G-Type | Allowable Inertia Moment I (I _A) { AllowableGD ² (GD _A ²) } | Low-torque type Allowable Inertia Moment I (I _A) { AllowableGD ² (GD _A ²) } |
| Frame G-10 | 0.00004 { 0.00015 } | — |
| Frame G-12 | 0.0001 { 0.0004 } | 0.00005 { 0.0002 } |
| Frame G-15 (25W) | 0.0002 { 0.0008 } | 0.0001 { 0.0004 } |
| Frame G-15 (40W) | 0.0002 { 0.0008 } | 0.00004 { 0.00015 } |

Note 1) Motor shaft(input shaft) equivalent inertia moment I = Output shaft inertia moment I × (reduction ratio)²
{ GD² = Output shaft GD² × (reduction ratio)² } (Example: In case the reduction ratio is 1/20, the answer is 1/400.)

Correction Factor for Allowable Inertia Moment I by Operating Condition { Allowable GD² }

Table-4

| 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 |