# PGHA
# PGHX

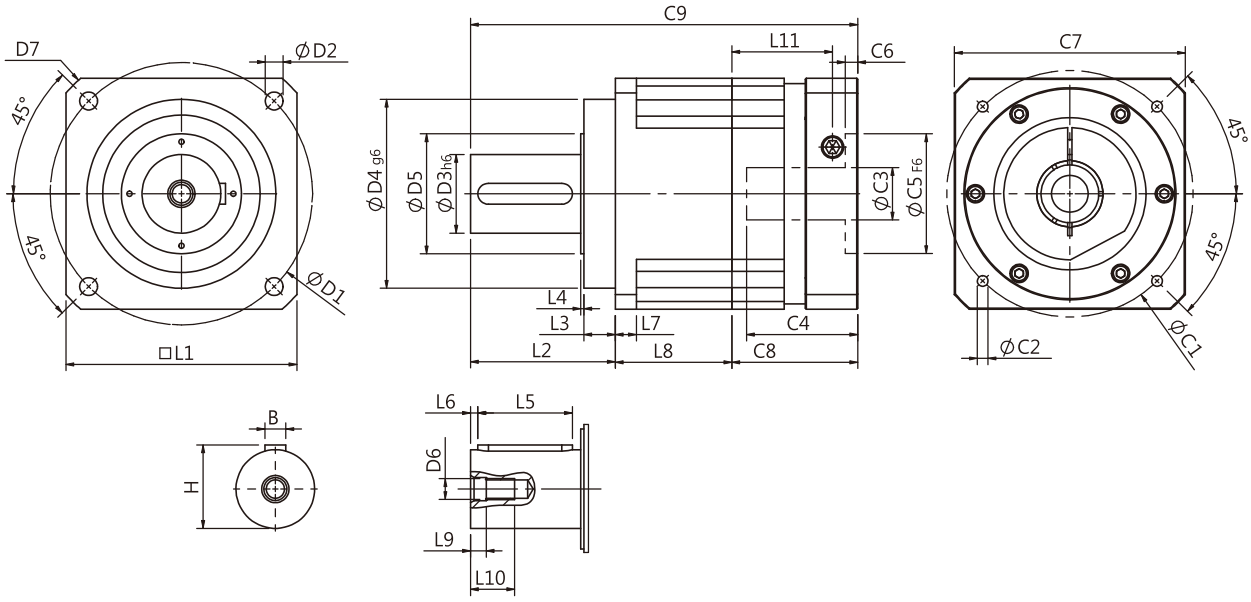
The high rigidity model is mainly used for extremely large double column machine center or horizontal machine tools. The planetary gearboxes will not be distorted or shaken under high torque and emergency stop condition. The turret can be edited instantly without waiting. This rugged gearbox is not only able to withstand the challenges of harsh, high and low temperature environments, but also retains the original low backlash, low noise and other properties of the servo planetary gearbox.

| | |
|---|---|
| Frame Size (mm) | 220, 240 |
| Ratio | 3 : 1 - 100:1 |
| Nominal Input Speed (rpm) | 1,500 - 2,000 |
| Max Input Speed (rpm) | 2,500 - 4,000 |
| Backlash (arc-min) | 1 Stage: 1 - 5<br>2 Stages: 3 - 7 |
| Noise Level (dBA / 1m) | 70 - 72 |

## Features

- ▶ Designed for large double column machine center or horizontal machine tools.
- ▶ Backlash as low as 1 arc-minute, ultimate performance.
- ▶ One-piece planet carrier/output shaft, high rigidity and radial load capacity.
- ▶ Hardened and ground gearing, high wear resistance and impact toughness.
- ▶ One-piece ring gear/housing, high precision and torque output.
- ▶ Planets with full needle bearing support.
- ▶ IP65 enclosure and synthetic lubricant, maintenance-free service life.

# PGHA & PGHX Single Stage Dimensions




## Specifications

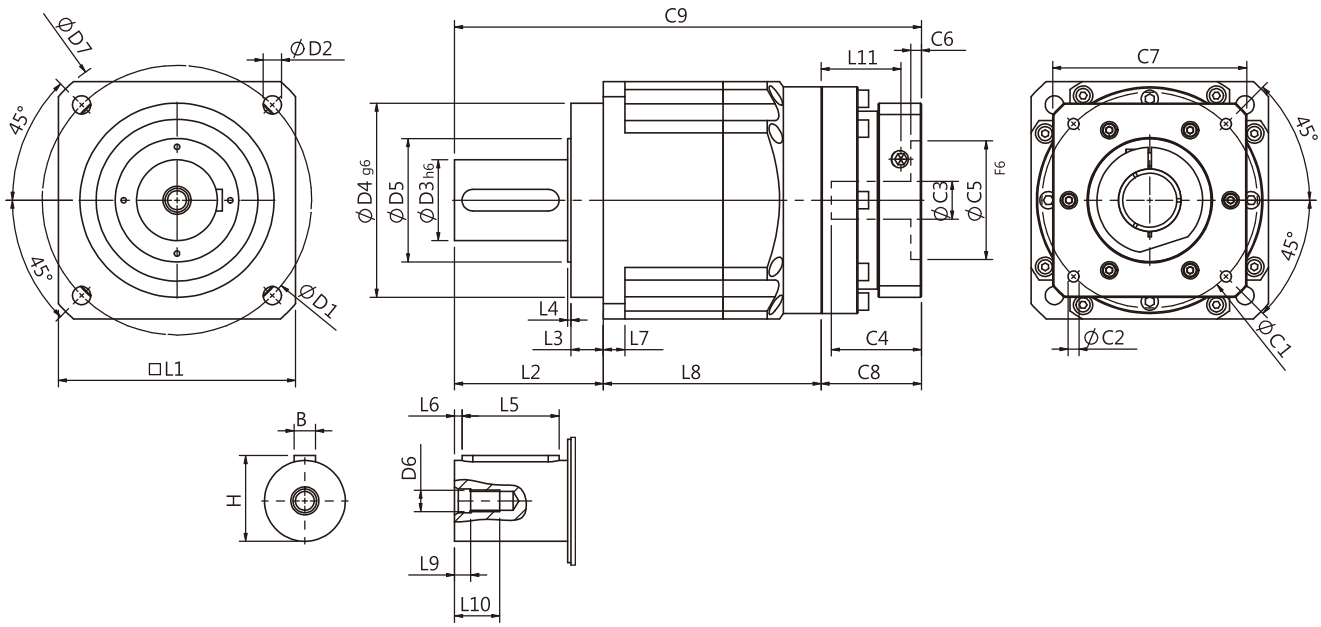
Unit:mm

| Dimensions | PGHA220 | PGHA240 | PGHX220 | PGHX240 |
|---|---|---|---|---|
| D1 | 250 | - | 250 | - |
| D2 | 17 | - | 17 | - |
| D3 h6 | 75 | - | 75 | - |
| D4 g6 | 180 | - | 180 | - |
| D5 | 114.4 | - | 114.4 | - |
| D6 | M20x2.5P | - | M20x2.5P | - |
| D7 | 292 | - | 292 | - |
| L1 | 220 | - | 220 | - |
| L2 | 138 | - | 138 | - |
| L3 | 30 | - | 30 | - |
| L4 | 3 | - | 3 | - |
| L5 | 90 | - | 90 | - |
| L6 | 7 | - | 7 | - |
| L7 | 20 | - | 20 | - |
| L8 | 111 | - | 111 | - |
| L9 | 15 | - | 15 | - |
| L10 | 42 | - | 42 | - |
| L11 | 96 | - | 96 | - |
| C1[2] | 235 | - | 235 | - |
| C2[2] | M12x1.75P | - | M12x1.75P | - |
| C3[2] | ≦55 | - | ≦55 | - |
| C4[2] | 112 | - | 112 | - |
| C5[2] F6 | 200 | - | 200 | - |
| C6[2] | 6 | - | 6 | - |
| C7[2] | 220 | - | 220 | - |
| C8[2] | 120 | - | 120 | - |
| C9[2] | 369 | - | 369 | - |
| B | 20 | - | 20 | - |
| H | 79.5 | - | 79.5 | - |

*2. C1~C9 are motor specific dimensions (metric std shown). Sizes may vary according to the motor flange chosen.

★ Specification subject to change without notice.

# PGHA & PGHX Double Stage Dimensions




## Specifications

Unit:mm

| Dimensions | PGHA220T | PGHA240T | PGHX220T | PGHX240T |
|---|---|---|---|---|
| D1 | 250 | - | 250 | - |
| D2 | 17 | - | 17 | - |
| D3 h6 | 75 | - | 75 | - |
| D4 g6 | 180 | - | 180 | - |
| D5 | 114.4 | - | 114.4 | - |
| D6 | M20x2.5P | - | M20x2.5P | - |
| D7 | 292 | - | 292 | - |
| L1 | 220 | - | 220 | - |
| L2 | 138 | - | 138 | - |
| L3 | 30 | - | 30 | - |
| L4 | 3 | - | 3 | - |
| L5 | 90 | - | 90 | - |
| L6 | 7 | - | 7 | - |
| L7 | 20 | - | 20 | - |
| L8 | 202 | - | 202 | - |
| L9 | 15 | - | 15 | - |
| L10 | 42 | - | 42 | - |
| L11 | 74 | - | 74 | - |
| C1[2] | 200 | - | 200 | - |
| C2[2] | M12x1.75P | - | M12x1.75P | - |
| C3[2] | ≦50 | - | ≦50 | - |
| C4[2] | 81 | - | 81 | - |
| C5[2] F6 | 114.3 | - | 114.3 | - |
| C6[2] | 6 | - | 6 | - |
| C7[2] | 180 | - | 180 | - |
| C8[2] | 93 | - | 93 | - |
| C9[2] | 433 | - | 433 | - |
| B | 20 | - | 20 | - |
| H | 79.5 | - | 79.5 | - |

*2. C1~C9 are motor specific dimensions (metric std shown). Sizes may vary according to the motor flange chosen.

★ Specification subject to change without notice.

# PGHA & PGHX Specifications

| Specifications | | Stage | Ratio | PGHA-220 | PGHA-240 | PGHX-220 | PGHX-240 |
|---|---|---|---|---|---|---|---|
| Nominal Output Torque $T_{2N}$ | N • m | 1 | 3 | 1200 | 1500 | 1650 | 2000 |
| | | | 4 | 1850 | 2550 | 2600 | 3500 |
| | | | 5 | 2200 | 3020 | 3020 | 4100 |
| | | | 6 | 2050 | 2800 | 2900 | 3900 |
| | | | 7 | 1900 | 2600 | - | - |
| | | | 8 | 1750 | 2400 | - | - |
| | | | 9 | 1600 | 2200 | - | - |
| | | | 10 | 1600 | 2200 | - | - |
| | | Stage | Ratio | PGHA-220T | PGHA-240T | PGHX-220T | PGHX-240T |
| | | 2 | 15 | 2200 | 3020 | 2800 | 4100 |
| | | | 20 | 2200 | 3020 | 3020 | 4100 |
| | | | 25 | 2200 | 3020 | 3020 | 4100 |
| | | | 30 | 2200 | 3020 | 3020 | 4100 |
| | | | 35 | 2200 | 3020 | 3020 | 4100 |
| | | | 40 | 2200 | 3020 | 3020 | 4100 |
| | | | 45 | 2200 | 3020 | 3020 | 4100 |
| | | | 50 | 2200 | 3020 | 3020 | 4100 |
| | | | 60 | 2050 | 2800 | 2900 | 3900 |
| | | | 70 | 1900 | 2600 | - | - |
| | | | 80 | 1750 | 2400 | - | - |
| | | | 90 | 1600 | 2200 | - | - |
| | | | 100 | 1600 | 2200 | - | - |
| Emergency Stop Torque $T_{2NOT}$ | N • m | 3.0 Times of Nominal Output Torque) ( * Max. Output Torque $T_{2B}$ =60% of Nominal Output Torque) | | | | | |
| Nominal Input Speed $n_{1N}$ | rpm | 1,2 | 3-300 | 2000 | 1500 | 2000 | 1500 |
| Max. Input Speed $n_{1max}$ | rpm | 1,2 | 3-300 | 4000 | 2500 | 4000 | 2500 |
| Micro Backlash P0 | arcmin | 1 | 3-10 | ≦1 | ≦1 | ≦1 | ≦1 |
| | | 2 | 15-100 | ≦3 | ≦3 | ≦3 | ≦3 |
| Precision Backlash P1 | arcmin | 1 | 3-10 | ≦3 | ≦3 | ≦3 | ≦3 |
| | | 2 | 15-100 | ≦5 | ≦5 | ≦5 | ≦5 |
| Standard Backlash P2 | arcmin | 1 | 3-10 | ≦5 | ≦5 | ≦5 | ≦5 |
| | | 2 | 15-100 | ≦7 | ≦7 | ≦7 | ≦7 |
| Torsional Rigidity | N • m /arcmin | 1,2 | 3-100 | 350 | 500 | 460 | 650 |
| Max. Radial Load $F_{2rB}$ [1] | N | 1,2 | 3-100 | 33000 | 46500 | 33000 | 46500 |
| Max. Axial Load $F_{2aB}$ [1] | N | 1,2 | 3-100 | 18530 | 27000 | 18530 | 27000 |
| Operating Temp. | ℃ | | 3-300 | -10℃ ~ +90℃ | | | |
| Service Life | hr | | 3-300 | 20,000 (10,000 Continuous Operation) | | | |
| Efficiency | % | 1 | 3-10 | ≧97% | | | |
| | | 2 | 15-100 | ≧94% | | | |
| Weight | kg | 1 | 3-10 | 57 | - | 58 | - |
| | | 2 | 15-100 | 71.5 | - | 72.5 | - |
| Mounting Position | - | 1,2 | 3-300 | Any Direction | | | |
| Noise Level [2] | dBA/1m | 1,2 | 3-300 | 70 | 72 | 70 | 72 |
| Protection Class | - | 1,2 | 3-300 | IP65 | | | |
| Lubrication | - | 1,2 | 3-300 | Synthetic Lubricant | | | |

Inertia (J1)

| Stage | Ratio | unit | PGHA-220 | PGHA-240 | PGHX-220 | PGHX-240 |
|---|---|---|---|---|---|---|
| 1 | 3 | Kg • $cm^2$ | 79.50 | - | 79.50 | - |
| | 4 | | 58.21 | - | 58.21 | - |
| | 5 | | 54.36 | - | 54.36 | - |
| | 6/7/8 | | 54.12 | - | 54.12 | - |
| | 9/10 | | 53.98 | - | 53.98 | - |
| Stage | Ratio | | PGHA-220T | PGHA-240T | PGHX-220T | PGHX-240T |
| 2 | 15 | | 30.5 | 79.50 | 30.5 | 79.50 |
| | 20/25/30/35/40 | | 25.86 | 58.21 | 25.86 | 58.21 |
| | 45/50/60/70/80/90/100 | | 22.73 | 53.98 | 22.73 | 53.98 |

* 1. Applied to the output shaft center at 100 rpm.
* 2. Environment noise level 30 dB; distance 1m; measured under free loading with input speed 3000 rpm; ratio = 10 (1-stage) or ratio = 100 (2-stage).
※The above figures/specifications are subject to change without prior notice.

Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.