



Sesame Motor Corp., A leading brand in gear technology.

SERVO MOTOR GEARHEADS



100%

Made in Taiwan

www.sesamemotor.com





SESAME



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PREMIUM TYPE (HELICAL GEAR)

- | | | | |
|----|-------------|----|------------|
| 19 | PHL Series | 45 | PGH Series |
| 27 | PHFR Series | 51 | PUR Series |
| 35 | PHF Series | 57 | PUL Series |



PRECISION TYPE (HELICAL GEAR) / PRECISION TYPE (SPUR GEAR)

- | | | | |
|----|-------------|-----|-------------|
| 63 | PGLH Series | 89 | PGRH Series |
| 69 | PGL Series | 97 | PGR Series |
| 77 | PGC Series | 103 | PGFR Series |
| 83 | PGE Series | 111 | PGF Series |



STANDARD TYPE (SPUR GEAR)

- | | | | |
|-----|------------|-----|------------|
| 133 | PAE Series | 151 | PGS Series |
| 139 | PAC Series | 157 | PNS Series |
| 145 | PAN Series | | |



PRIMARY TYPE (SPUR GEAR)

- 121 PBC Series
- 127 PBE Series

- 163 Tightening Torque Table

Company Profile

Sesame Motor Corp., as a leading brand in Motor and gear reducer technology. "SESAME MOTOR CORP." Founded in 1990, have more than 25 years of professional motor and gearbox manufacturing and sales experience. SESAME MOTOR's 7000 square meters factory locates at Sheng Kang. Adding modern workshop facilities with the effective integration of ERP systems, purchase new processing and testing equipment; as we continuously enhance key parts' productivity we had not only expending overall productivity, shorten delivery, and ensure products' quality to achieve customer satisfaction. SESAME MOTOR products have received unanimous praise.



Quality Policy :

- "Honesty" , to provide integrity and pragmatic services
- "Creativity" , to create customer competitive advantage
- "Positivity" , positive support and responsibility
- "Innovation" , moving forward of technical innovation

Environmental Policy :

- Full participation to comply with eco-regulation
- Prevent pollution; save energy and reduce waste
- Keep improving and propagating Green Concept

"SESAME MOTOR" is built base on spirit of "customer satisfaction, priority service" philosophy, providing three privileges "best quality, fastest delivery, and best sale service". Our products have obtained high market share in Taiwan, that had lead "SESAME MOTOR" be a well-known brand. In addition to our official branch in Shanghai, we have agents in the United States, Germany, Denmark, Poland, UK, Turkey, Russia, Korea, Japan, China, Thailand, Malaysia and India.

"SESAME MOTOR" also has a professional R & D team and experienced production-related sectors; can provide high accuracy products for different customer needs; high-quality gear and the surrounding transmission components, develop and produce other kinds of gear; customized motor products, products with detailed-oriented, high precision, low noise, high efficiency, and good quality properties. Product development are aiming three directions "science and technology, environmental protection, and innovation". Product will be used in tool machines, industrial robots, semiconductor devices, aircraft industrial, medical and rehabilitation equipment, electric scooter, electric bike, auto storage devices, green energy-related industries, testing and food machinery, bakery equipment, packaging machinery, agricultural equipment and other sophisticated automation equipment.



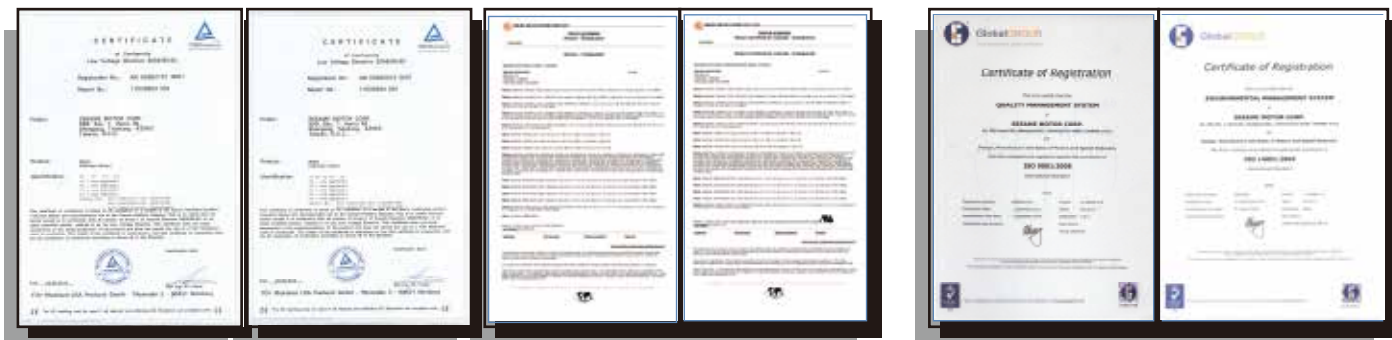


Company Profile

"SESAME MOTOR" has been successively obtained CE, CCC, UL, ISO9001 and ISO14001 certification and honorary awards. As we continuously, progressively for created finest quality products; with "Honesty" for providing integrity and pragmatic service; with "Creativity" given customer "Positivity" to support & responsible for the efficiency of productivity; with "Innovation" on profession and knowledge of knowhow, by these four philosophy management, we aims to become the first market trend indicators. "SESAME MOTOR" strong operating team adhere to the blue ocean strategy of entering the international market and high-tech field, to create the future more professional, better quality of sustainable management systems, establishment of "a combination of leading technology and brand reputation" for competitive advantage.



Trade Mark & Certification



CE Certification

UL Certification

ISO 9001:2008

ISO 14001:2004



China Compulsory Certification (CCC)



Gearhead PHL Series China SIPO Patent



Registration Number: 8580921716



Registration Number: 38E08580



SESA ME MOTOR CORP.



Cert.No.E209009



The United States, European Union, China, Taiwan, Korea, Philippines, Vietnam, Malaysia, Singapore ...etc. trade mark certifications.

Corporate Environment



SERVO MOTOR GEARHEADS





SESAME

Production Line



Servo Motor Gearheads Production Line



Induction Motor and Speed Reducer Production Line



Precision Gear Motor Production Line

Applications

Applications of Gearhead

Machine Tools

Metal Cutting Machines, Machining Centers, CNC Drilling Machines, Lathes and Turning Machines, Milling and Boring Machines, Grinding Machines, Drilling Machines, Planing Machines, Metal Forming Machine Tools, Presses, Tube and Wire Processing Machines.

Industry Machinery

Packaging Machinery, Food and Beverage Processing Machinery, Bakery Equipment, Agricultural Machinery, Textile Machinery, Shoemaking Machinery, Wood Working Machinery, Printing Machinery, Plastic processing Machinery, Laser Cutting and Welding Machines.

Automation Equipment

Industrial Robots, Semiconductor Devices, Automatic Storage System, Surface Treatment Equipments.

Aerospace Industry

Medical and Rehabilitation Equipment

Electric Scooter



Green Energy-Related Industries

Testing Devices

Automation and Precise Positioning Equipment with Servo Motors



SERVO MOTOR GEARHEADS SERIES LINEUP

| | Output Shaft | Output Flange | Right Angle |
|----------------------------------|---|---|--|
| Premium Type (Helical Gear) |  PHL Series High Precision  PGH Series High Performance  PUL Series High Radial Load |  PHF Series |  PHFR Series  PUR Series |
| Precision Type (Helical Gear) |  PGLH Series |  PGF Series |  PGFR Series  PGRH Series |
| Precision Type (Spur Gear) |  PGL Series  PGC Series  PGE Series | |  PGR Series |
| Standard Type (Spur Gear) |  PAC Series  PAE Series  PAN Series (NEMA)  PGS Series  PNS Series | | |
| Primary Type (Spur Gear) |  PBC Series High Ratio (max. i=1000)  PBE Series High Ratio (max. i=1000) | | |

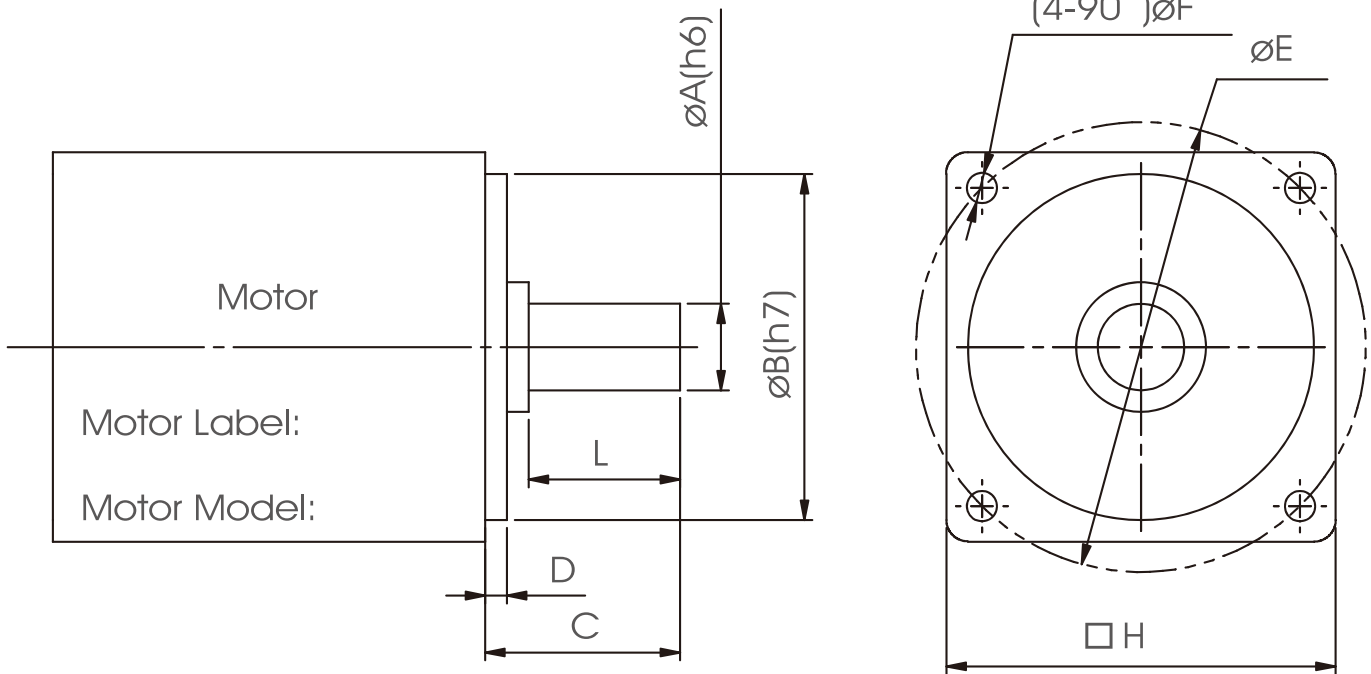
Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty. 產品因人為原因或天災等因素導致不良或損壞，不在保固範圍內。

○ CODING SYSTEM



| | | | |
|---|-------|--------------------------|--|
| P G L 60 30 P1 Y MOTOR | P | (Servo Motor Gearhead) | |
| | G | (Grade) | H: Premium Type Helical Series G: Precision Series E: Standard Series U: Heavy Duty Series B: Multi-Ratio Series T: Multi-Shafted Series |
| | L | (Connection) | L: Square Housing with Flange C: Round Housing without Flange E: Round Housing with Flange R: Right Angle F: Plate Type H : Square Flange Helical Gear (Square Flange Helical Gear for G Grade (Precision Series) Only) LH: Square Flange Helical Gear RH: Right Angle Helical Gear FR: Output Flange Right Angle Type |
| | ----- | | |
| | 60 | (Size) | 42: □42 60: □60 90: □90 115: □115 142: □142 180: □180 220: □220 |
| | 30 | (Speed Reduction Ratio) | Single Stage: 3,4,5,6,7,8,9,10 Double Stage: 12,15,20,25,30,35,40,45,50,60,70,80,90,100 Multi-Stage: 125~1000 |
| | P1 | (Backlash) | P0: Micro Backlash P1: Precision Backlash P2: Standard Backlash |
| | Y | (Customer Specification) | |
| | MOTOR | (Motor Model) | |

FILL IN DATA OF MOTOR



SPECIFICATIONS

| Motor Shaft Dia. | Flange Dia. | Motor Shaft Length | Flange Height | P.C.D of Bore | Bore Dia. | Motor Flange Square | Actual Length of Motor Shaft | Backlash |
|---------------------|---------------------|--------------------|---------------|-----------------|-----------------|---------------------|------------------------------|----------|
| $\varnothing A(h6)$ | $\varnothing B(h7)$ | C | D | $\varnothing E$ | $\varnothing F$ | $\square H$ | L | P0/P1/P2 |
| | | | | | | | | |

*Sesame Servo Motor Gearheads are produced under strictly exclusive pairing process to ensure accuracy and lifespan.

1.NOTE

1.1 Preparation before installation

- Please read this operation manual before using this gearbox. Any problems caused by inappropriate operation contrary with the manual, or damage caused by natural disasters, or restructure the gearbox without our permission, Sesame will not hold any responsibility nor will the gearbox be covered by warranty.
- Warranty is one year after purchase of the gearbox. Within warranty period, if gearbox damage is not caused by operation error nor by natural disaster, then please send back the gearbox, we should replace the damage spare part at free of charge.
- Installation, disassemble, maintenance on the gearbox, needed to be performed by trained technicians.
- According to the application and operation environment, the gearbox temperature might be raising after period of running. Please do not touch the gearbox directly during operation, or right off from operation.
- Do not touch any rotating components when the gearbox is running. Ensure that the plugs of the gearbox were inserted after installation. Avoid any small object fall into the gearbox.
- Handle the gearbox gently during installation, do not knock the gearbox by any tool, to avoid the influence of running accuracy.
- Do not disassemble or modify gearbox to prevent injury or equipment damage .
- Synthetic lubricant is sealed in gearbox, there is no need to change lubricant.

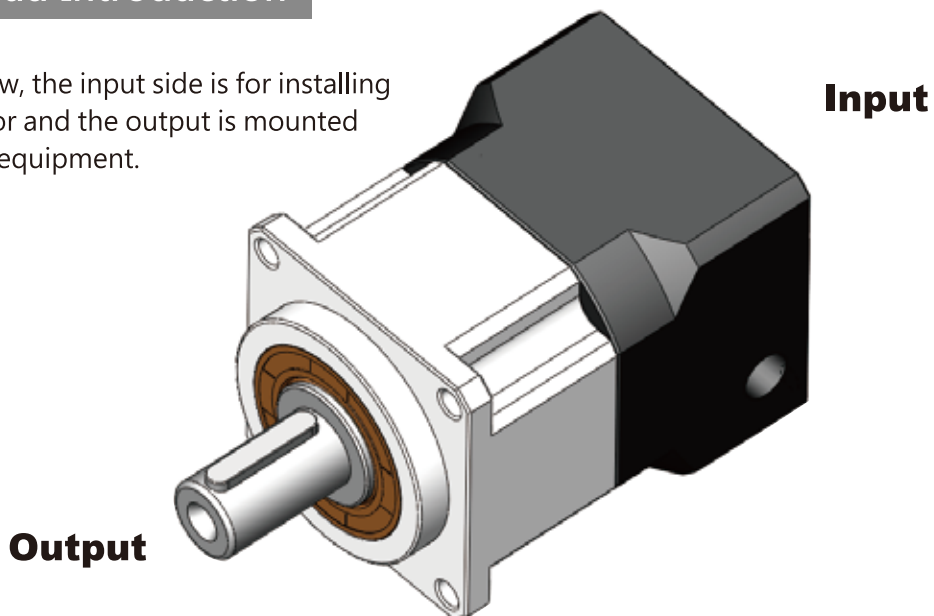
1.2 Installation environment limitation

Gearbox must be installed under following terms to prevent damages which are not covered by warranty.

- Gearbox is designed or manufactured to be used with other mechanical equipment assembly.
- Operate temperature is between $-10\text{ }^{\circ}\text{C}$ to $+90\text{ }^{\circ}\text{C}$.
- Operate altitude may not be higher than 1000m above sea-level
- Avoid continuity vibration or impact.
- Avoid gearbox used in flammable gas or corrosion gas environment.
- Humidity: no more than 85%, in order to avoid condensation.
- Avoid direct sunlight, dust accumulation.
- Avoid water or oil splashed.
- Used in good ventilated place.

2. Gearhead Introduction

As shown below, the input side is for installing the servo motor and the output is mounted to application equipment.



To ensure the product performance, both the input and output ends must be protected carefully to avoid any damage and cause improper operation.

SERVO MOTOR GEARHEAD WITH MOTOR MOUNTING INSTRUCTIONS

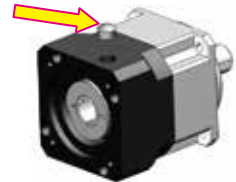
For Parallel Type

1



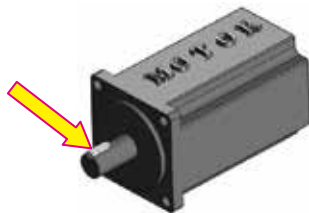
Check the motor and gearbox size. Clean the mounting surface.

2



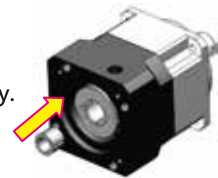
Take off the plug from the bracket. Revolve the set collar until the bolt is aligned with the hole.

3



Remove the key from the motor shaft. Mounting the balance key if necessary.

4

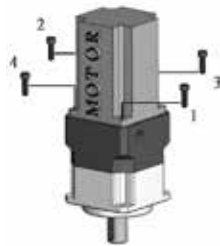


Make sure the motor shaft size. Choose the right bushing if necessary.



As installing on flatted shaft, be sure to align the collet gap over the flat and the set collar bolt perpendicular to the flat.

5



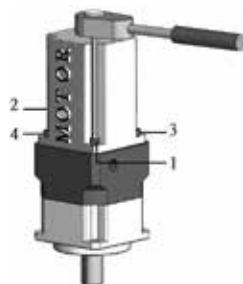
Tighten the mounting bolts in 1~4 order with torque wrench to 5% specified torque. (See Page 163.)

6



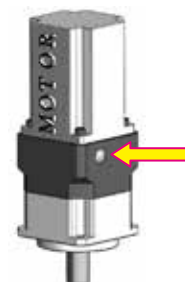
Install gearbox and motor vertically. Tighten the set collar bolt with torque wrench to specified torque. (See Page 163.)

7



Tighten the mounting bolts in 1~4 order with torque wrench to specified torque. (See Page 163.)

8



Put the plug back.

For Hollow Spindle

1



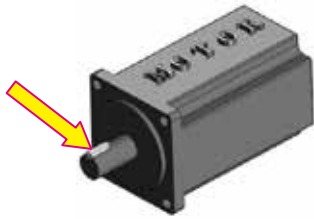
Check the motor and gearbox size. Clean the mounting surface.

2



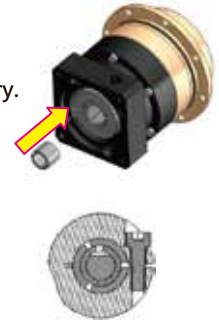
Take off the plug from the adapter plate. Revolve the set collar until the bolt is aligned with the hole.

3



Remove the key from the motor shaft. Mounting the balance key if necessary.

4



Make sure the motor shaft size. Choose the right bushing if necessary.

As installing on flatted shaft, be sure to align the collet gap over the flat and the set collar bolt perpendicular to the flat.

5



Tighten the mounting bolts in 1~4 order with torque wrench to 5% specified torque. (See Page 163.)

6



Install gearbox and motor vertically. Tighten the set collar bolt with torque wrench to specified torque. (See Page 163.)

7



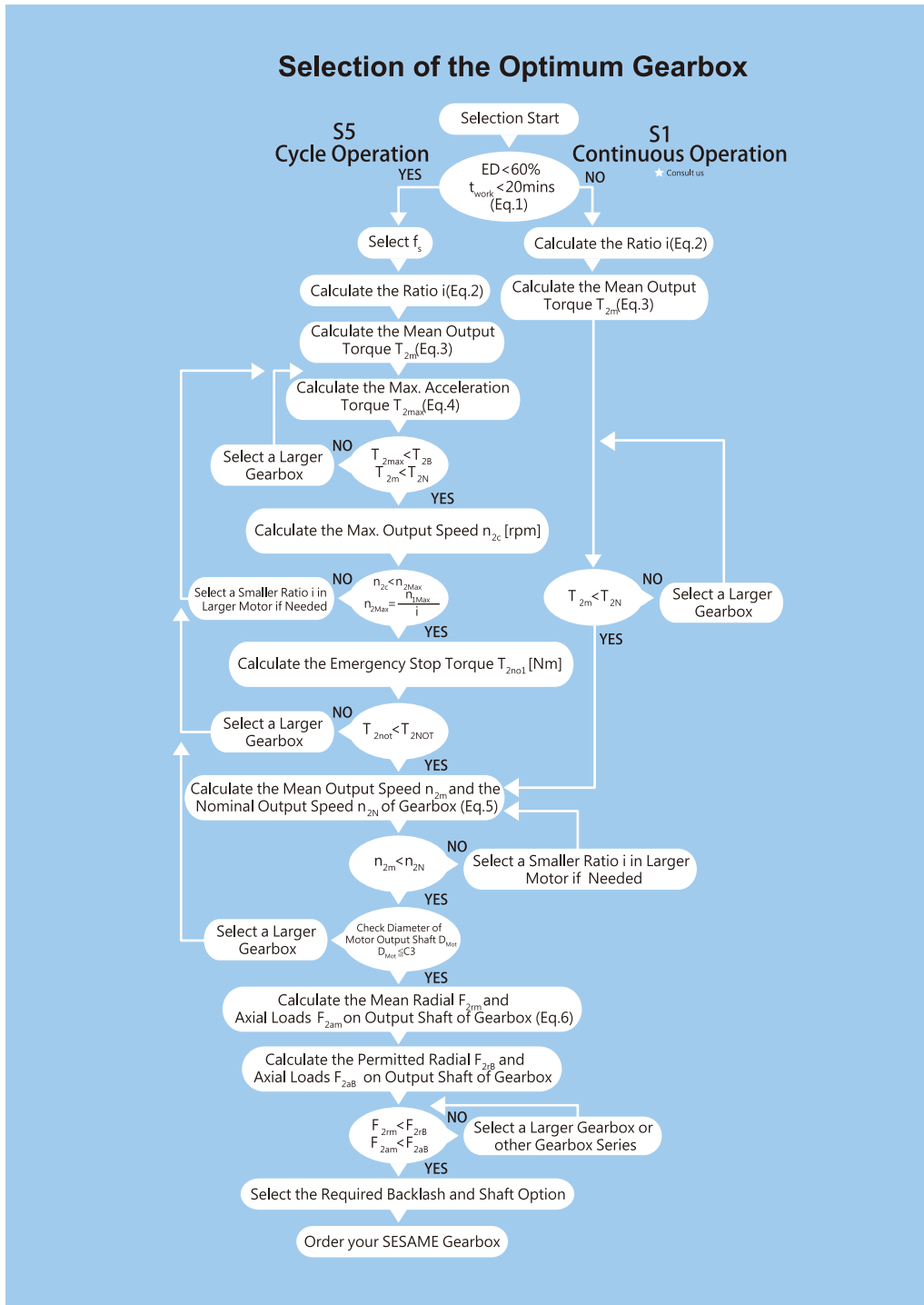
Tighten the mounting bolts in 1~4 order with torque wrench to specified torque. (See Page 163.)

8



Put the plug back.

SELECTION OF THE OPTIMUM GEARBOX



Recommended (for S5 Cycle Operation)

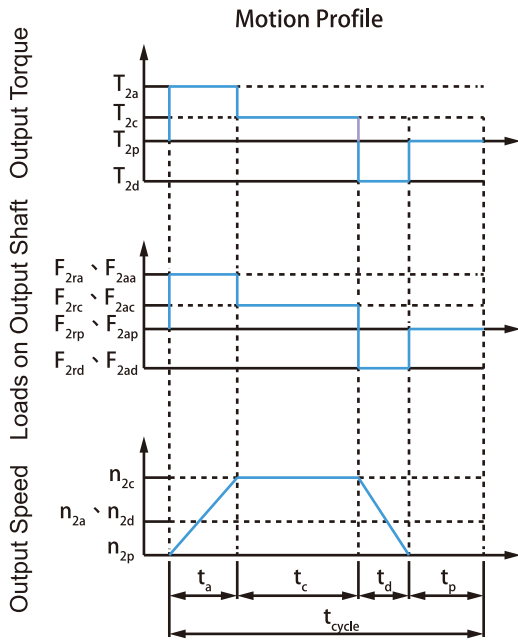
The general design is given for

$$\frac{J_L}{i^2} \leq 4 \times J_m$$

The optimal design is given for

$$\frac{J_L}{i^2} \leq J_m$$

J_L Load Inertia
 J_m Motor Inertia



$$1. ED = \frac{t_{work}}{t_{cycle}} \times 100\%, t_{work} = t_a + t_c + t_d$$

Index : a. Acceleration, c. Constant, d. Deceleration, p. Pause (Eq.1)

$$2. i \cong \frac{n_m}{n_{work}}$$

n_m Output Speed of the Motor
 n_{work} Working Speed (Eq.2)

$$3. T_{2m} = 3 \sqrt{\frac{n_{2a} \times t_a \times T_{2a}^3 + n_{2c} \times t_c \times T_{2c}^3 + n_{2d} \times t_d \times T_{2d}^3}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$$

(Eq.3)

$$4. T_{2max} = T_{mB} \times i \times f_s \times \eta$$

Where f_s is

| f_s | No. of Cycles / hr |
|-------|--------------------|
| 1.0 | 0 ~ 1,000 |
| 1.1 | 1,000 ~ 1,500 |
| 1.3 | 1,500 ~ 2,000 |
| 1.6 | 2,000 ~ 3,000 |
| 1.8 | 3,000 ~ 5,000 |

T_{mB} Max. Output Torque of the Motor
 η Efficiency of the Gearbox (Eq.4)

$$5. n_{2a} = n_{2d} = \frac{1}{2} \times n_{2c}$$

$$n_{2m} = \frac{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}{t_a + t_c + t_d}$$

$$n_{2N} = \frac{n_{1N}}{i}$$

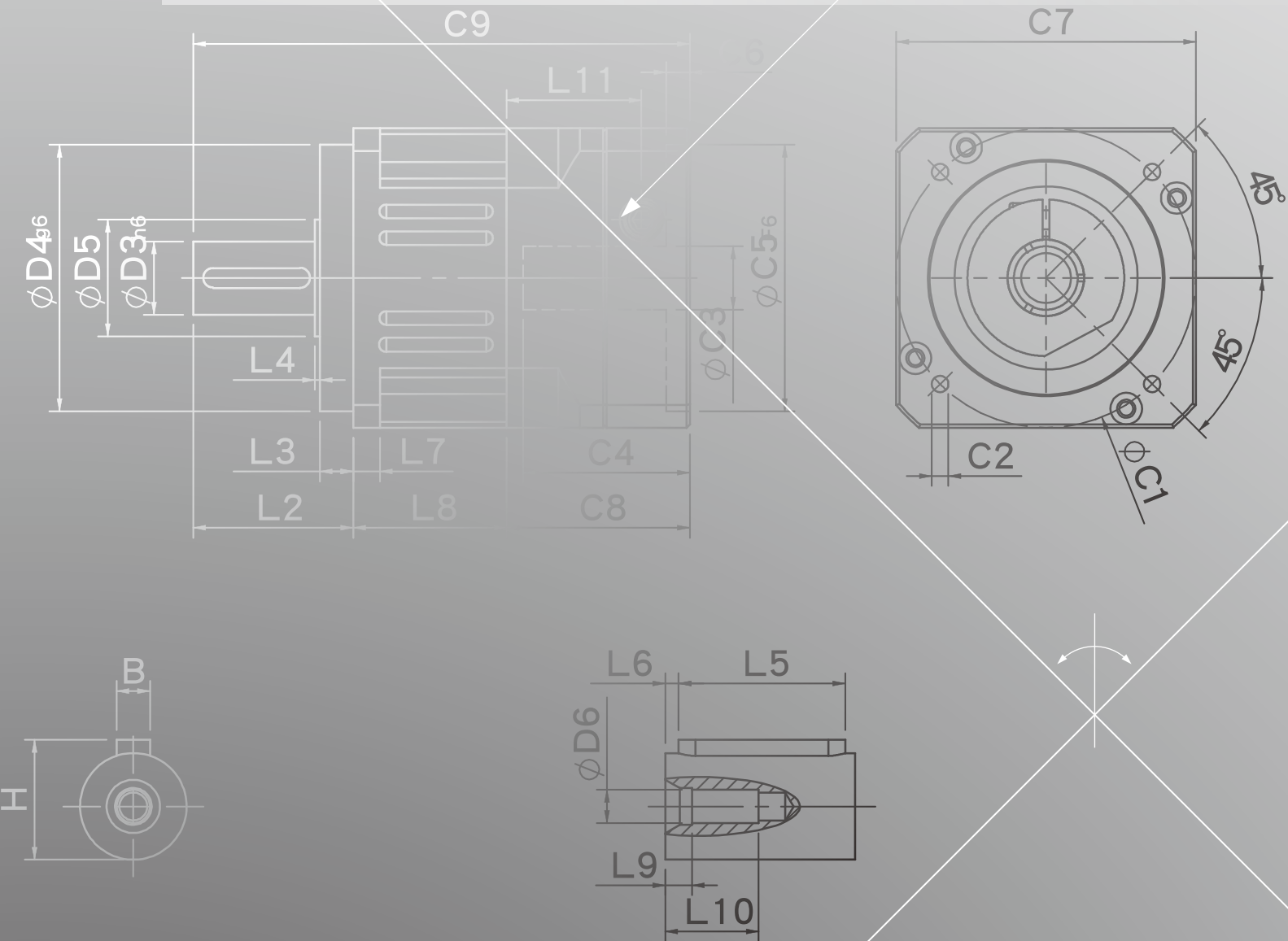
(Eq.5)

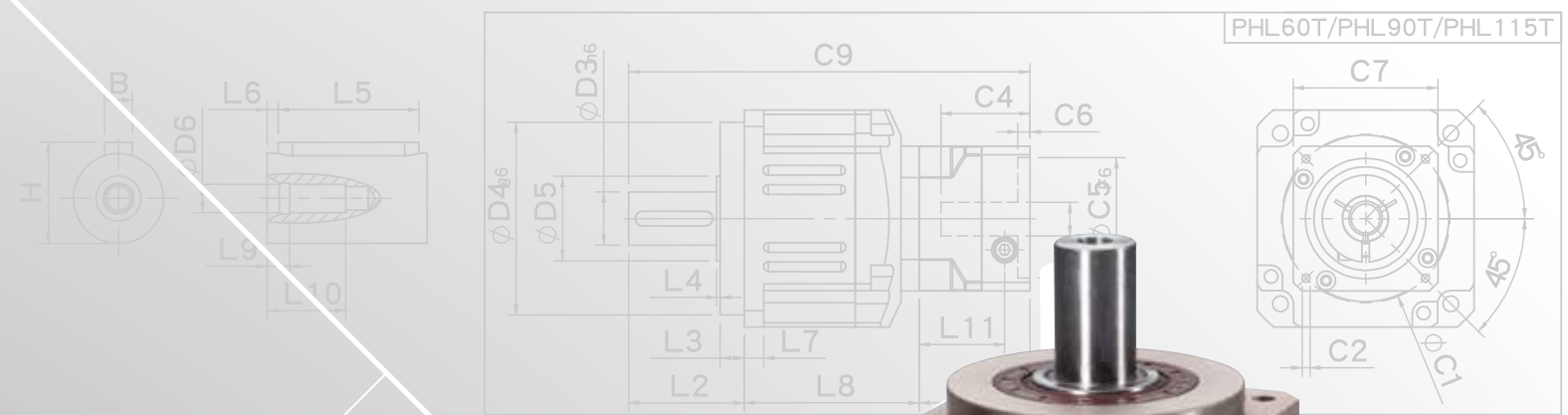
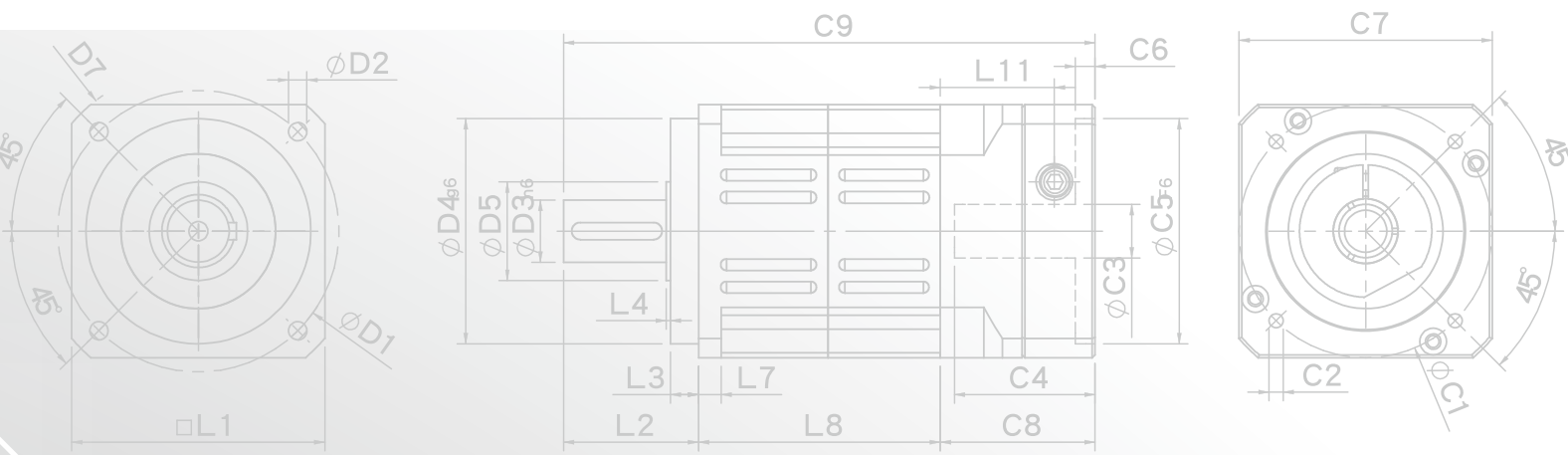
$$6. F_{2m} = 3 \sqrt{\frac{n_{2a} \times t_a \times F_{2ra}^3 + n_{2c} \times t_c \times F_{2rc}^3 + n_{2d} \times t_d \times F_{2rd}^3}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$$

$$F_{2am} = 3 \sqrt{\frac{n_{2a} \times t_a \times F_{2aa}^3 + n_{2c} \times t_c \times F_{2ac}^3 + n_{2d} \times t_d \times F_{2ad}^3}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$$

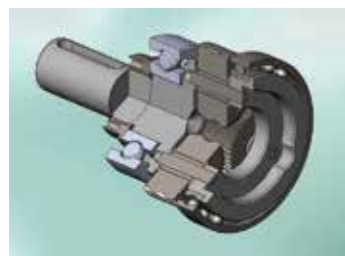
(Eq.6)

PHL SERIES





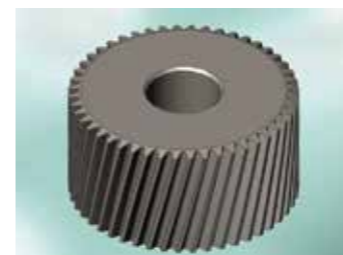
PHL SERIES FEATURES



Planetary arm bracket and output shaft are one-piece constructed, setting bearing apart for larger span to reach the largest reverse rigid and contribute high axis radial load capacity.



Special locking mechanisms designed of the output shaft ensure its integration closely with positioning gear, power transmission efficiency, and eternal precision.



Alloy steel gear with unique heat treatment. Additionally, with gear grinding processing to get the best accuracy, high wear resistance and high impact toughness.



The sun gear bearing is placed directly into the planetary arm bracket, the overall mechanical structure designed to ensure concentricity of the transmission components.



Grinding process to smooth surface of output shaft, and with oil-seal to minimum friction coefficient and reducing start up load; result in the best seal-ability and extended lifespan.



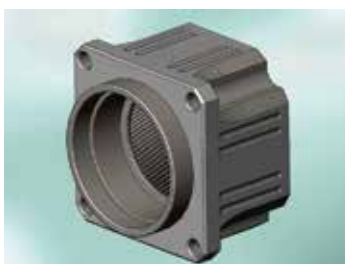
PHL series helical gear design, enhance tooth engagement rate of 30% or more, special helix design, which reduces the axial thrust, allowing high-speed servo motor input, maximum torque output. Precision gear design and professional gear processing create a low backlash operation, high efficiency, smooth running, low noise and long life of the planetary gear.



High-tech oil seal design on the upper lip guard against dust intruder, lower lip to guard against oil leak. Protection grade IP65 safeguards fully avoid leaking problem, and given it maintenance-free.



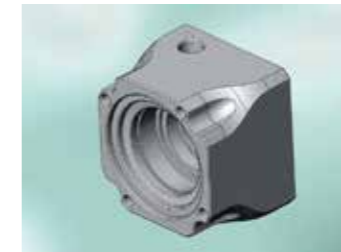
Input-end and motor shaft are coupled through a dynamic balanced collar clamping mechanism to ensure connection interface concentricity and zero slip power transmission at high speed.



The gear box and internal gear ring are one-piece constructed, and then processed with advanced Germany gear shaper machinery for high-precision, high torque and abrade consumption. Advanced electroless nickel plating surface treatment resists scratch and corrosion. Suitable for stringent require of high-tech equipment.



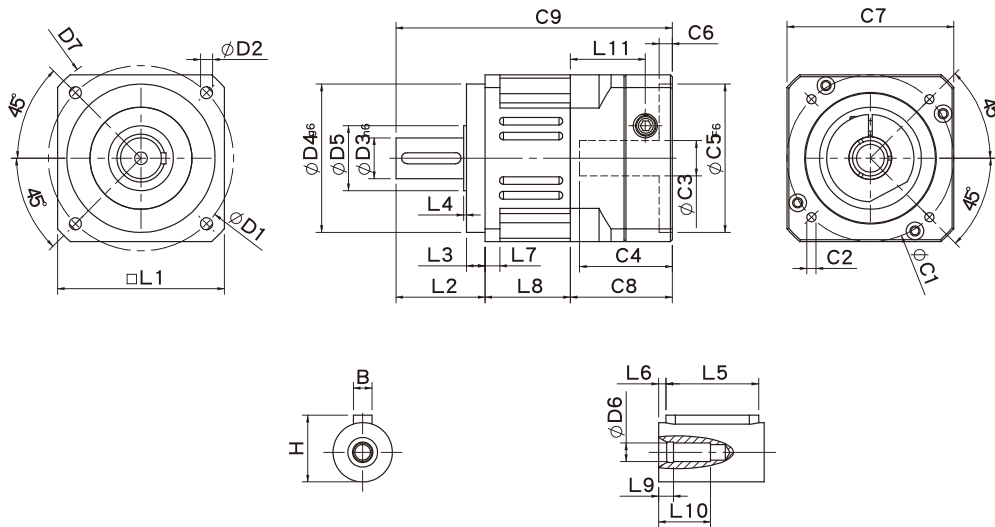
Planet gear transmission interface equipped with needle bearings, full needle roller bearings aligned without retainer achieve maximum exposure but smallest gap tolerances. Enhance over-all gear structure rigid and output torque.



Advanced motor bracket design coupled with the input shaft bushing is easy to mount to any servo or stepper motor.

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

PHL Single Stage Dimensions



Specifications

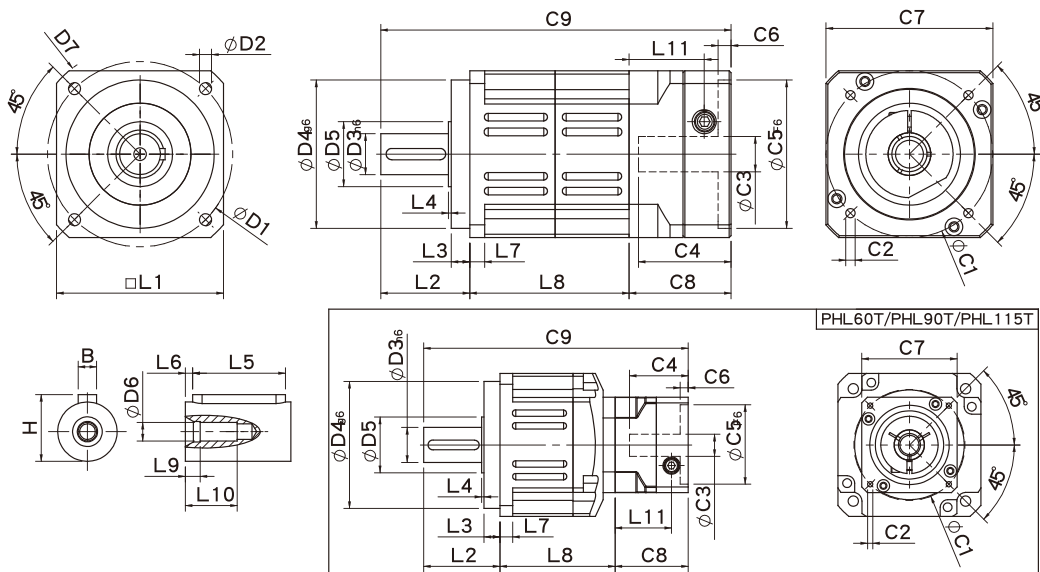
Unit:mm

| Dimensions | PHL42 | PHL60 | PHL90 |
|-------------------------------|---------|---------|----------|
| D1 | 50 | 70 | 100 |
| D2 | 3.4 | 5.5 | 6.5 |
| D3 _{h6} | 13 | 16 | 22 |
| D4 _{g6} | 35 | 50 | 80 |
| D5 | 15 | 25 | 35 |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P |
| D7 | 56 | 80 | 118 |
| L1 | 42.6 | 60 | 90 |
| L2 | 26 | 37 | 48 |
| L3 | 5.5 | 7 | 10 |
| L4 | 1 | 1.5 | 1.5 |
| L5 | 15 | 25 | 32 |
| L6 | 2 | 2 | 3 |
| L7 | 4 | 6 | 8 |
| L8 | 28.3 | 37 | 46 |
| L9 | 4 | 4 | 4.5 |
| L10 | 14 | 16.5 | 20.5 |
| L11 | 29 | 35.5 | 40.5 |
| C1 ² | 46 | 70 | 90 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P |
| C3 ² | ≤8/≤11 | ≤14 | ≤19/≤24 |
| C4 ² | 27 | 37 | 47 |
| C5 ² _{F6} | 30 | 50 | 70 |
| C6 ² | 4 | 4 | 6 |
| C7 ² | 42.6 | 60 | 90 |
| C8 ² | 38.5 | 46 | 55 |
| C9 ² | 92.8 | 120 | 149 |
| B | 5 | 5 | 6 |
| H | 15 | 18 | 24.5 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

★ Specification subject to change without notice.

PHL Double Stage Dimensions



Specifications

Unit:mm

| Dimensions | PHL42 | PHL60 | PHL60T | PHL90 | PHL90T |
|--------------------|---------|---------|---------|---------|----------|
| D1 | 50 | | 70 | | 100 |
| D2 | 3.4 | | 5.5 | | 6.5 |
| D3 h6 | 13 | | 16 | | 22 |
| D4 g6 | 35 | | 50 | | 80 |
| D5 | 15 | | 25 | | 35 |
| D6 | M4x0.7P | | M5x0.8P | | M8x1.25P |
| D7 | 56 | | 80 | | 118 |
| L1 | 42.6 | | 60 | | 90 |
| L2 | 26 | | 37 | | 48 |
| L3 | 5.5 | | 7 | | 10 |
| L4 | 1.5 | | 1.5 | | 1.5 |
| L5 | 15 | | 25 | | 32 |
| L6 | 2 | | 2 | | 3 |
| L7 | 4 | | 6 | | 8 |
| L8 | 55.3 | 70 | 65.5 | 86 | 78.5 |
| L9 | 4 | | 4 | | 4.5 |
| L10 | 14 | | 16.5 | | 20.5 |
| L11 | 29 | 35.5 | 29 | 40.5 | 35.5 |
| C1 ² | 46 | 70 | 46 | 90 | 70 |
| C2 ² | M4x0.7P | M5x0.8P | M5x0.8P | M6x1.0P | M5x0.8P |
| C3 ² | ≤8/≤11 | ≤14 | ≤8/≤11 | ≤19/≤24 | ≤14 |
| C4 ² | 27 | 37 | 27 | 47 | 37 |
| C5 ² F6 | 30 | 50 | 30 | 70 | 50 |
| C6 ² | 4 | 4 | 4 | 6 | 4 |
| C7 ² | 42.6 | 60 | 42.6 | 90 | 60 |
| C8 ² | 38.5 | 46 | 38.5 | 55 | 46 |
| C9 ² | 119.8 | 153 | 141 | 189 | 172.5 |
| B | 5 | | 5 | | 6 |
| H | 15 | | 18 | | 24.5 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

★ Specification subject to change without notice.

PHL Specifications Table

| Specifications | | Stage | Ratio | PHL-42 | PHL-60 | PHL-90 |
|--|-----------------------|---|--------|---------------------|------------|------------|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | 19 | 53 | 145 |
| | | | 4 | 20 | 55 | 150 |
| | | | 5 | 17 | 54 | 140 |
| | | | 6 | 15 | 46 | 135 |
| | | | 7 | 14 | 44 | 125 |
| | | | 8 | 12 | 41 | 110 |
| | | | 9 | 11 | 37 | 95.0 |
| | | 10 | 11 | 37 | 95.0 | |
| | | Stage | Ratio | PHL-42 | PHL-60(T) | PHL-90(T) |
| | | 2 | 15 | 19 | 53 | 145 |
| | | | 20 | 20 | 55 | 150 |
| | | | 25 | 17 | 54 | 140 |
| | | | 30 | 17 | 54 | 140 |
| | | | 35 | 17 | 54 | 140 |
| | | | 40 | 17 | 54 | 140 |
| | | | 45 | 17 | 54 | 140 |
| | | | 50 | 17 | 54 | 140 |
| | | | 60 | 15 | 46 | 135 |
| | | | 70 | 14 | 44 | 125 |
| 80 | 12 | | 41 | 110 | | |
| 90 | 11 | | 37 | 95 | | |
| 100 | 11 | 37 | 95 | | | |
| Emergency Stop Torque T_{2NOT} | N • m | 3.0 times of Nominal Output Torque (*Max. Output Torque T_{2B} = 60% of Emergency Stop Torque) | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2 | 3-100 | 5000 | 5000 | 4000 |
| Max. Input Speed n_{1max} | rpm | 1,2 | 3-100 | 10000 | 10000 | 8000 |
| Micro Backlash P0 | arcmin | 1 | 3-10 | ≤ 1 | ≤ 1 | ≤ 1 |
| | | 2 | 12-100 | ≤ 3 | ≤ 3 | ≤ 3 |
| Precision Backlash P1 | arcmin | 1 | 3-10 | ≤ 3 | ≤ 3 | ≤ 3 |
| | | 2 | 12-100 | ≤ 5 | ≤ 5 | ≤ 5 |
| Standard Backlash P2 | arcmin | 1 | 3-10 | ≤ 5 | ≤ 5 | ≤ 5 |
| | | 2 | 12-100 | ≤ 7 | ≤ 7 | ≤ 7 |
| Torsional Rigidity | N • m /arcmin | 1,2 | 3-100 | 2.5 | 6 | 12 |
| Max. Radial Load F_{2rB}^1 | N | 1,2 | 3-100 | 760 | 1570 | 2780 |
| Max. Axial Load F_{2aB}^1 | N | 1,2 | 3-100 | 410 | 750 | 1870 |
| Operating Temp. | °C | -10 °C ~ +90 °C | | | | |
| Service Life | hr | 20,000 (10,000/ Continuous operation) | | | | |
| Efficiency | % | 1 | 3-10 | $\geq 97\%$ | | |
| | | 2 | 12-100 | $\geq 94\%$ | | |
| Weight | kg | 1 | 3-10 | 0.6 | 1.3 | 3.5 |
| | | 2 | 12-100 | 0.9 | 2.0/1.6 | 5.6/3.9 |
| Mounting Position | - | 1,2 | 3-100 | Any direction | | |
| Noise Level ² | dB(A)/1m | 1,2 | 3-100 | 56 | 58 | 60 |
| Protection Class | - | 1,2 | 3-100 | IP65 | | |
| Lubrication | - | 1,2 | 3-100 | Synthetic Lubricant | | |
| Inertia(J1) | | | | | | |
| Stage | Ratio | unit | | PHL-42 | PHL-60 | PHL-90 |
| 1 | 3 | Kg • cm ² | | 0.03 | 0.23 | 0.97 |
| | 4 | | | 0.02 | 0.18 | 0.67 |
| | 5 | | | 0.02 | 0.17 | 0.65 |
| | 6/7/8 | | | 0.02 | 0.14 | 0.60 |
| | 9/10 | | | 0.02 | 0.14 | 0.58 |
| Stage | Ratio | | | PHL-42 | PHL-60(T) | PHL-90(T) |
| 2 | 15/20/25 | | | 0.02 | 0.17(0.02) | 0.65(0.17) |
| | 30/35/40 | | | 0.02 | 0.14(0.02) | 0.60(0.14) |
| | 45/50/60/70/80/90/100 | | | 0.02 | 0.14(0.02) | 0.58(0.14) |
| * 1. Applied to the output shaft center @100rpm. | | | | | | |
| * 2. Measured at 3000rpm with no load | | | | | | |
| ※ 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.

SERVO MOTOR GEARHEADS



PHL

PHFR

PHF

PGH

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PCR

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PBE

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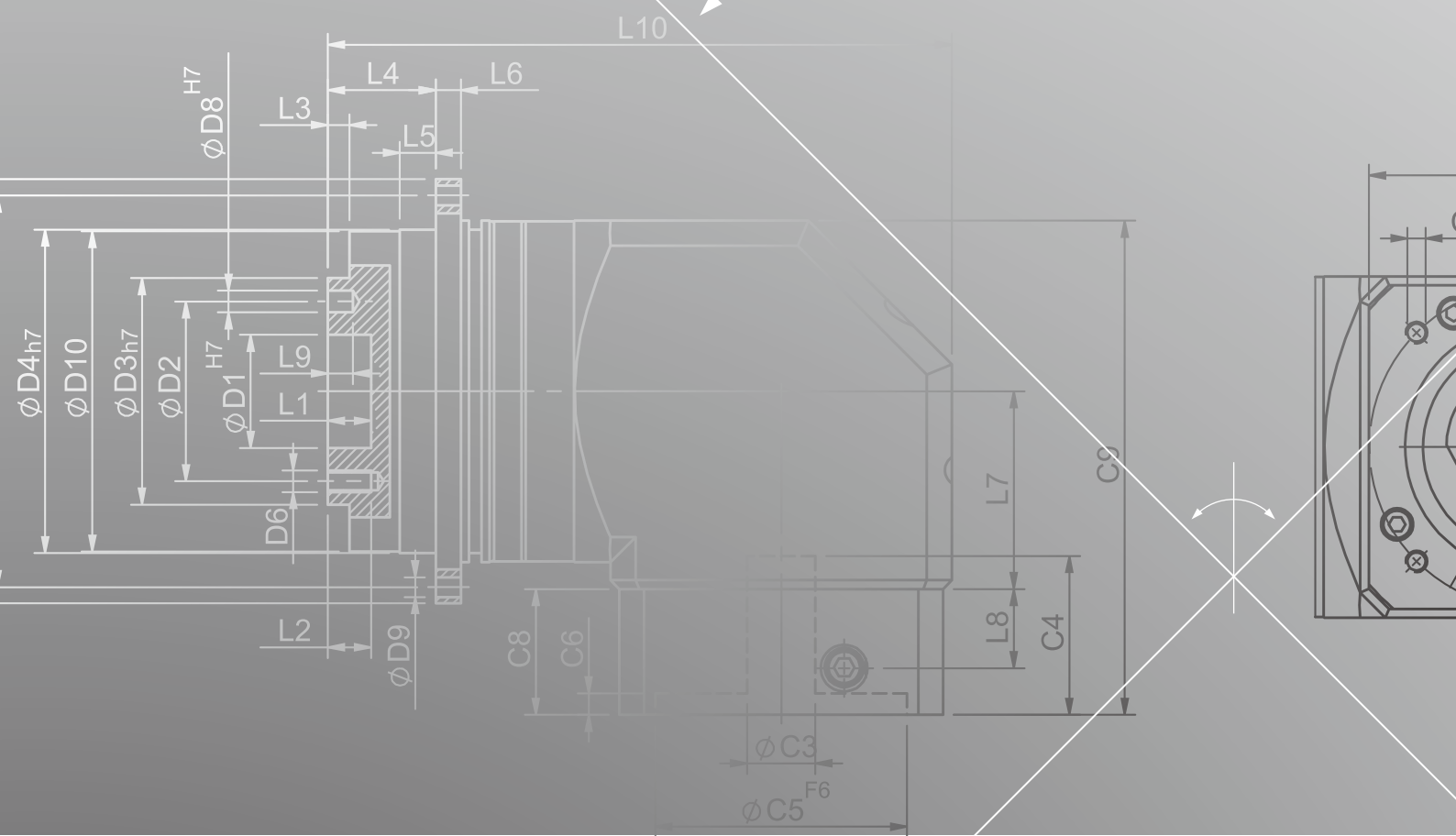
PAC

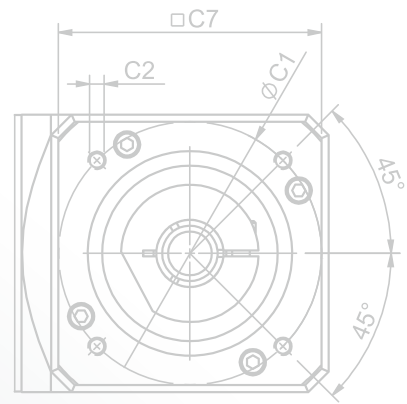
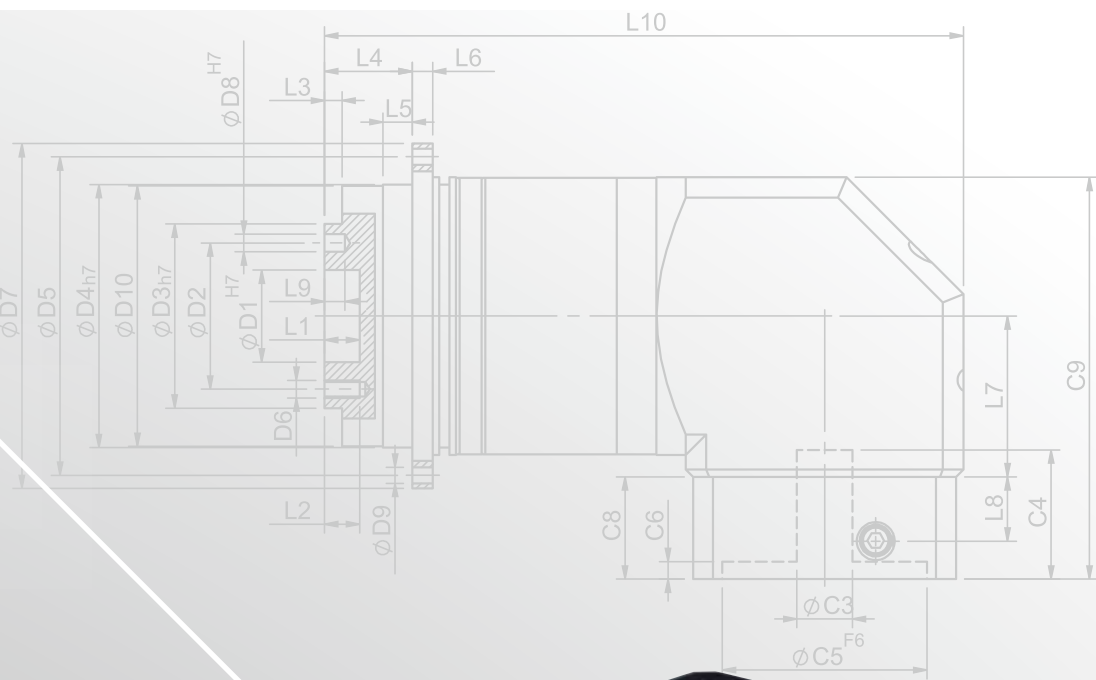
PAN

PGS

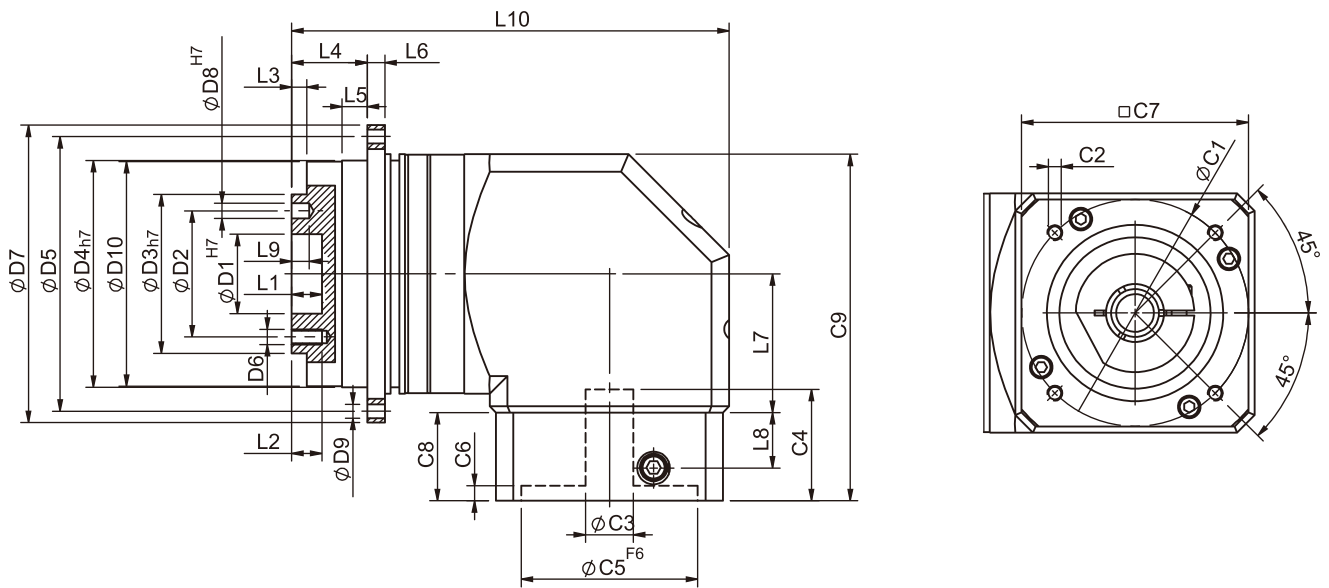
PNS

PHFR SERIES





PHFR Single Stage Dimensions



Specifications

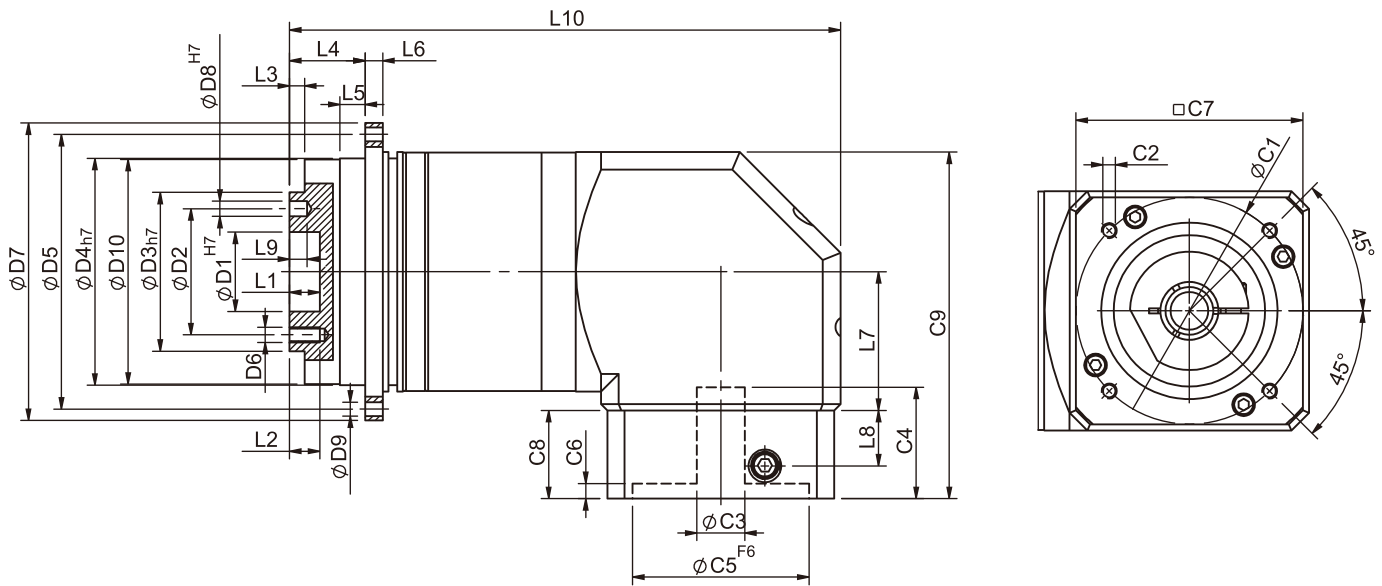
Unit:mm

| Dimensions | PHFR42 | PHFR60 | PHFR90 | PHFR115 | PHFR142 | PHFR200 |
|-------------------------------|---------|---------|-----------|---------|---------|---------|
| D1 _{H7} | 12 | 20 | 31.5 | - | - | - |
| D2 | 20 | 31.5 | 50 | - | - | - |
| D3 _{h7} | 28 | 40 | 63 | - | - | - |
| D4 _{h7} | 47 | 64 | 90 | - | - | - |
| D5 | 67 | 79 | 109 | - | - | - |
| D6 | M3x0.5P | M5x0.8P | M6x1.0P | - | - | - |
| D7 | 72 | 86 | 118 | - | - | - |
| D8 _{H7} | 3 | 5 | 6 | - | - | - |
| D9 | 3.4 | 4.5 | 5.5 | - | - | - |
| D10 | 46.2 | 63.2 | 89.2 | - | - | - |
| L1 | 4 | 8 | 12 | - | - | - |
| L2 | 6 | 7.2 | 12 | - | - | - |
| L3 | 3 | 3 | 6 | - | - | - |
| L4 | 19.5 | 19.5 | 30 | - | - | - |
| L5 | 7 | 7 | 10 | - | - | - |
| L6 | 4 | 4 | 7 | - | - | - |
| L7 | 32.2 | 44.8 | 55 | - | - | - |
| L8 | 13.5 | 21.5 | 22 | - | - | - |
| L9 | 4 | 6 | 7 | - | - | - |
| L10 | 92.2 | 128.3 | 173.6 | - | - | - |
| C1 ² | 46 | 70 | 90 | - | - | - |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | - | - | - |
| C3 ² | ≤ 8 | ≤ 14 | ≤ 19/≤ 24 | - | - | - |
| C4 ² | 29 | 34 | 44 | - | - | - |
| C5 ² _{F6} | 30 | 50 | 70 | - | - | - |
| C6 ² | 6 | 5 | 5 | - | - | - |
| C7 ² | 42.6 | 60 | 90 | - | - | - |
| C8 ² | 25 | 33 | 35 | - | - | - |
| C9 ² | 78.5 | 112.8 | 137.5 | - | - | - |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

★ Specification subject to change without notice.

PHFR Double Stage Dimensions-1



Specifications

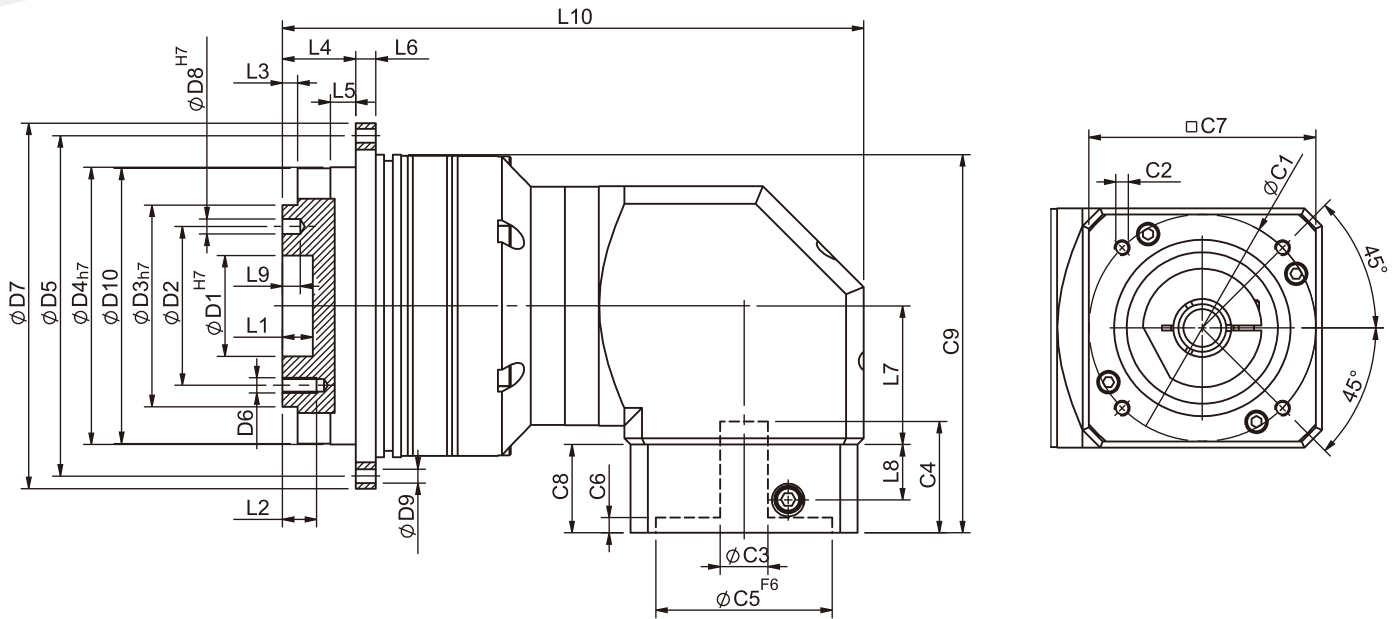
Unit:mm

| Dimensions | PHFR42 | PHFR60 | PHFR90 |
|-------------------------------|---------|---------|-----------|
| D1 _{H7} | 12 | 20 | 31.5 |
| D2 | 20 | 31.5 | 50 |
| D3 _{h7} | 28 | 40 | 63 |
| D4 _{h7} | 47 | 64 | 90 |
| D5 | 67 | 79 | 109 |
| D6 | M3x0.5P | M5x0.8P | M6x1.0P |
| D7 | 72 | 86 | 118 |
| D8 _{H7} | 3 | 5 | 6 |
| D9 | 3.4 | 4.5 | 5.5 |
| D10 | 46.2 | 63.2 | 89.2 |
| L1 | 4 | 8 | 12 |
| L2 | 6 | 7.2 | 12 |
| L3 | 3 | 3 | 6 |
| L4 | 19.5 | 19.5 | 30 |
| L5 | 7 | 7 | 10 |
| L6 | 4 | 4 | 7 |
| L7 | 32.2 | 44.8 | 55 |
| L8 | 13.5 | 21.5 | 22 |
| L9 | 4 | 6 | 7 |
| L10 | 119.9 | 163.3 | 218.6 |
| C1 ² | 46 | 70 | 90 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P |
| C3 ² | ≤ 8 | ≤ 14 | ≤ 19/≤ 24 |
| C4 ² | 29 | 34 | 44 |
| C5 ² _{F6} | 30 | 50 | 70 |
| C6 ² | 6 | 5 | 5 |
| C7 ² | 42.6 | 60 | 90 |
| C8 ² | 25 | 33 | 35 |
| C9 ² | 78.5 | 112.8 | 137.5 |

* C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

* Specification subject to change without notice.

PHFR Double Stage Dimensions-2



Specifications

Unit:mm

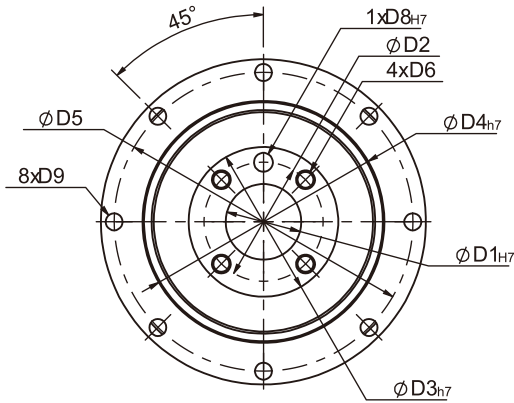
| Dimensions | PHFR60T | PHFR90T | PHFR115T | PHFR142T | PHFR200T | PHFR255T |
|-------------------------------|---------|---------|-----------|----------|----------|----------|
| D1 _{H7} | 20 | 31.5 | 40 | - | - | - |
| D2 | 31.5 | 50 | 63 | - | - | - |
| D3 _{h7} | 40 | 63 | 80 | - | - | - |
| D4 _{h7} | 64 | 90 | 110 | - | - | - |
| D5 | 79 | 109 | 135 | - | - | - |
| D6 | M5x0.8P | M6x1.0P | M6x1.0P | - | - | - |
| D7 | 86 | 118 | 145 | - | - | - |
| D8 _{H7} | 5 | 6 | 6 | - | - | - |
| D9 | 4.5 | 5.5 | 5.5 | - | - | - |
| D10 | 63.2 | 89.2 | 109.2 | - | - | - |
| L1 | 8 | 12 | 12 | - | - | - |
| L2 | 7.2 | 12 | 13.5 | - | - | - |
| L3 | 3 | 6 | 6 | - | - | - |
| L4 | 19.5 | 30 | 29 | - | - | - |
| L5 | 7 | 10 | 10 | - | - | - |
| L6 | 4 | 7 | 8 | - | - | - |
| L7 | 32.2 | 44.8 | 55 | - | - | - |
| L8 | 13.5 | 21.5 | 22 | - | - | - |
| L9 | 4 | 7 | 7 | - | - | - |
| L10 | 130.6 | 173.8 | 230.6 | - | - | - |
| C1 ² | 46 | 70 | 90 | - | - | - |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | - | - | - |
| C3 ² | ≤ 8 | ≤ 14 | ≤ 19/≤ 24 | - | - | - |
| C4 ² | 29 | 34 | 44 | - | - | - |
| C5 ² _{F6} | 30 | 50 | 70 | - | - | - |
| C6 ² | 6 | 5 | 5 | - | - | - |
| C7 ² | 42.6 | 60 | 90 | - | - | - |
| C8 ² | 25 | 33 | 35 | - | - | - |
| C9 ² | 84.4 | 125.3 | 150 | - | - | - |

* C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

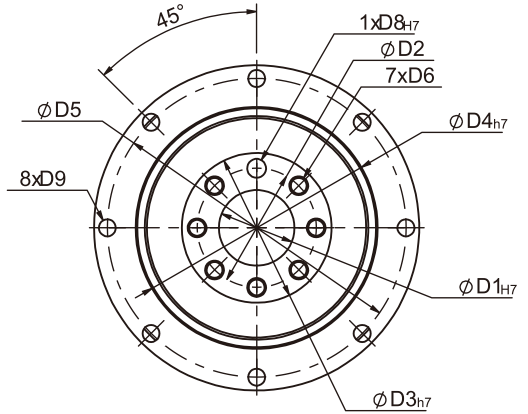
* Specification subject to change without notice.

PHFR Flange Dimensions

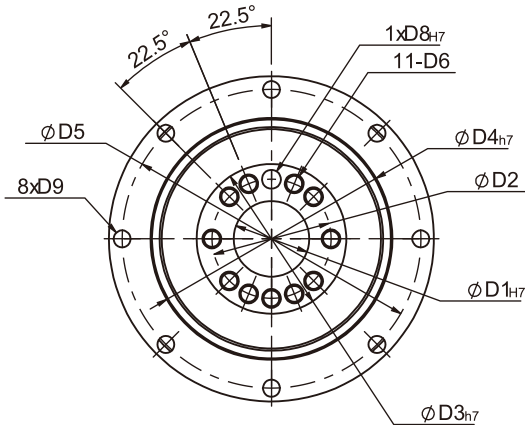
PHFR42



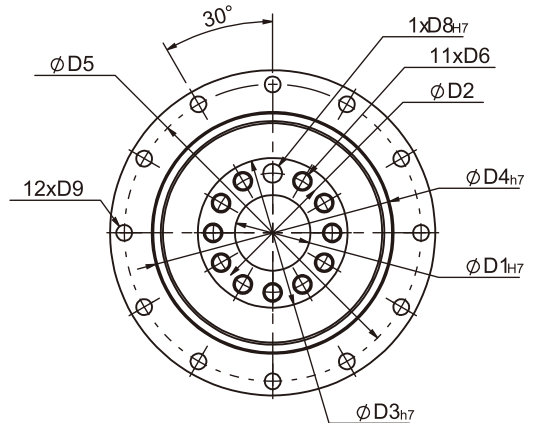
PHFR60 PHFR90



PHFR115



PHFR142 PHFR200



Specifications

Unit:mm

| Dimensions | PHFR42 | PHFR60 | PHFR90 | PHFR115 | PHFR142 | PHFR200 |
|------------|---------|---------|---------|---------|----------|----------|
| D1 H7 | 12 | 20 | 31.5 | 40 | 50 | 80 |
| D2 | 20 | 31.5 | 50 | 63 | 80 | 125 |
| D3 h7 | 28 | 40 | 63 | 80 | 100 | 160 |
| D4 h7 | 47 | 64 | 90 | 110 | 140 | 200 |
| D5 | 67 | 79 | 109 | 135 | 168 | 233 |
| D6 | M3x0.5P | M5x0.8P | M6x1.0P | M6x1.0P | M8x1.25P | M10x1.5P |
| D8 H7 | 3 | 5 | 6 | 6 | 8 | 10 |
| D9 | 3.4 | 4.5 | 5.5 | 5.5 | 6.6 | 9 |

★ Specification subject to change without notice.

PHFR Specifications Table

| Specifications | | Stage | Ratio | PHFR-42 | PHFR-60 | PHFR-90 | PHFR-115 | PHFR-142 | PHFR-200 | PHFR-255 |
|---|----------------|----------------------|---|---------------------------------------|-------------|------------|-----------|-----------|-----------|-----------|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | - | 40 | 105 | 180 | 310 | 580 | 1100 |
| | | | 4 | 16 | 43 | 110 | 240 | 450 | 1100 | 1700 |
| | | | 5 | 17 | 50 | 130 | 290 | 530 | 1200 | 2000 |
| | | | 7 | 14 | 44 | 125 | 270 | 450 | 1100 | 1750 |
| | | | 10 | 11 | 37 | 95 | 220 | 360 | 900 | 1450 |
| | | | 14 | 14 | 44 | 125 | 270 | 450 | 1100 | 1750 |
| | | 20 | 11 | 37 | 95 | 220 | 360 | 900 | 1450 | |
| | | Stage | Ratio | PHFR-42 | PHFR-60 (T) | PHFR-90(T) | PHFR-115T | PHFR-142T | PHFR-200T | PHFR-255T |
| | | 2 | 15 | - | 40 | 105 | 180 | 310 | 580 | 2000 |
| | | | 20 | 16 | 43 | 110 | 240 | 450 | 1100 | 2000 |
| | | | 25 | 17 | 50 | 130 | 290 | 530 | 1200 | 2000 |
| | | | 30 | 17 | 50 | 130 | 290 | 530 | 1200 | 2000 |
| | | | 35 | 17 | 50 | 130 | 290 | 530 | 1200 | 2000 |
| | | | 40 | 17 | 50 | 130 | 290 | 530 | 1200 | 2000 |
| | | | 50 | 17 | 50 | 130 | 290 | 530 | 1200 | 2000 |
| | | | 70 | 14 | 44 | 125 | 270 | 450 | 1100 | 1750 |
| | | | 100 | 11 | 37 | 95 | 220 | 360 | 900 | 1450 |
| | | | 140 | 14 | 44 | 125 | 270 | 450 | 1100 | 1750 |
| 200 | 11 | 37 | 95 | 220 | 360 | 900 | 1450 | | | |
| Emergency Stop Torque T_{2NOT} | N • m | | 3.0 times of Nominal Output Torque (*Max. Output Torque T_{2B} = 60% of Emergency Stop Torque) | | | | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2 | 3-200 | 5000 | 5000 | 4000 | 4000 | 3000 | 3000 | 2000 |
| Max. Input Speed n_{1max} | rpm | 1,2 | 3-200 | 10000 | 10000 | 8000 | 8000 | 6000 | 6000 | 4000 |
| Micro Backlash P_0 | arcmin | 1 | 3-20 | - | - | ≤ 3 | ≤ 2 | ≤ 2 | ≤ 2 | ≤ 2 |
| | | 2 | 15-200 | - | - | ≤ 5 | ≤ 4 | ≤ 4 | ≤ 4 | ≤ 4 |
| Precision Backlash P_1 | arcmin | 1 | 3-20 | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 4 | ≤ 4 | ≤ 4 | ≤ 4 |
| | | 2 | 15-200 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 |
| Standard Backlash P_2 | arcmin | 1 | 3-20 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 6 | ≤ 6 | ≤ 6 | ≤ 6 |
| | | 2 | 15-200 | ≤ 9 | ≤ 9 | ≤ 9 | ≤ 9 | ≤ 9 | ≤ 9 | ≤ 9 |
| Torsional Rigidity | N • m / arcmin | 1,2 | 3-100 | 6 | 12 | 30 | 80 | 150 | 450 | 1000 |
| Max. Bending Moment M_{2kB}^1 | N • m | 1,2 | 3-100 | 43 | 125 | 288 | 503 | 1470 | 2950 | 6500 |
| Max. Axial Load F_{2aB}^1 | N | 1,2 | 3-100 | 1015 | 1340 | 2868 | 3890 | 9850 | 12560 | 21850 |
| Operating Temp. | °C | | 3-100 | -10 °C ~ +90 °C | | | | | | |
| Service Life | hr | | 3-100 | 20,000 (10,000/ Continuous operation) | | | | | | |
| Efficiency | % | 1 | 3-10 | ≥ 95% | | | | | | |
| | | 2 | 12-100 | ≥ 92% | | | | | | |
| Weight | kg | 1 | 3-10 | 1.0 | 2.6 | 6.6 | 13.5 | 25.1 | 50 | 85 |
| | | 2 | 12-100 | 1.1 | 3.3/2.2 | 8.6/5.3 | 14.8 | 26.7 | 55 | 88 |
| Mounting Position | - | 1,2 | 3-100 | Any direction | | | | | | |
| Noise Level ² | dBA/1m | 1,2 | 3-100 | 62 | 64 | 66 | 68 | 70 | 72 | 74 |
| Protection Class | - | 1,2 | 3-100 | IP65 | | | | | | |
| Lubrication | - | 1,2 | 3-100 | Synthetic Lubricant | | | | | | |
| Inertia(J1) | | | | | | | | | | |
| Stage | Ratio | unit | | PHFR-42 | PHFR-60 | PHFR-90 | PHFR-115 | PHFR-142 | PHFR-200 | PHFR-255 |
| 1 | 3/4/5/7/9 | Kg • cm ² | | 0.06 | 0.40 | 2.28 | 6.87 | 24.2 | 69.8 | 138.2 |
| | 10/14/20 | | | 0.05 | 0.30 | 1.45 | 4.76 | 14.5 | 50.3 | 103.6 |
| Stage | Ratio | | | PHFR-42 | PHFR-60(T) | PHFR-90(T) | PHFR-115T | PHFR-142T | PHFR-200T | PHFR-255T |
| 2 | 15/20/25/35 | | | 0.06 | 0.40(0.08) | 2.28(0.72) | 3.02 | 7.83 | 27.7 | 80.3 |
| | others | | | 0.05 | 0.30(0.06) | 1.45(0.38) | 1.64 | 5.00 | 15.9 | 55.3 |
| * 1. Applied to the output shaft center @100rpm. * 2. Measured at 3000rpm with no load ※ 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.

SERVO MOTOR GEARHEADS



PHL

PHFR

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PGH

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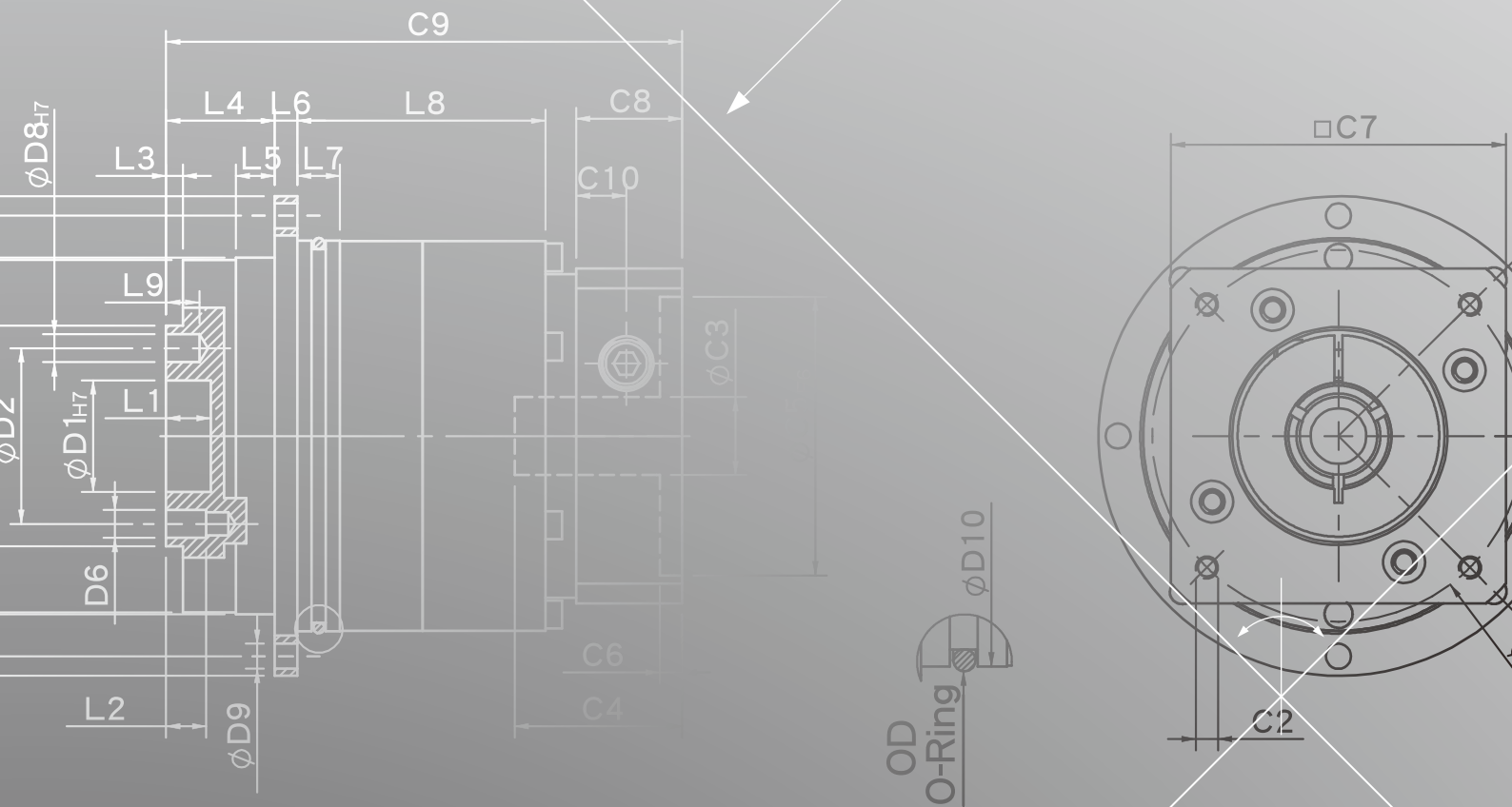
PAC

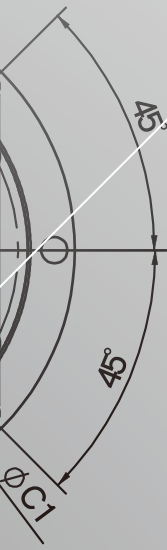
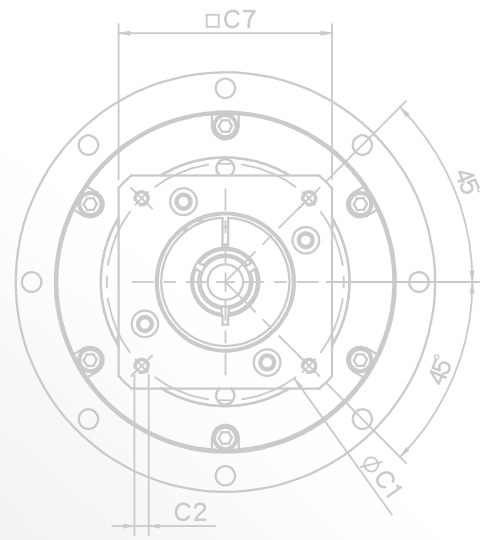
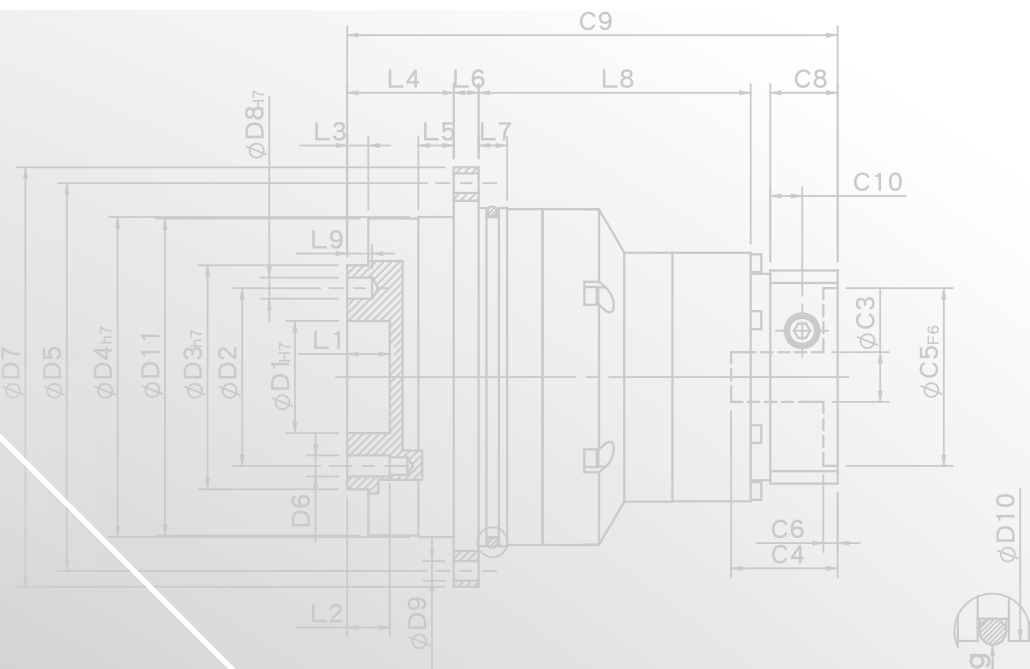
PAN

PGS

PNS

PHF SERIES

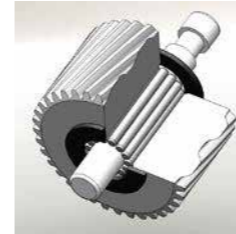




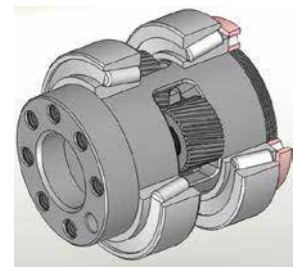
PHF SERIES FEATURES



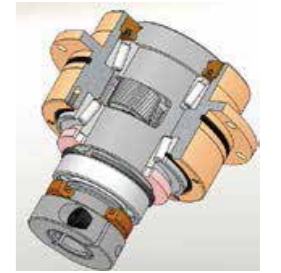
Alloy steel gear with unique heat treatment. Additionally, with gear grinding process-ing to get the best accuracy, high wear resistance and high impact toughness.



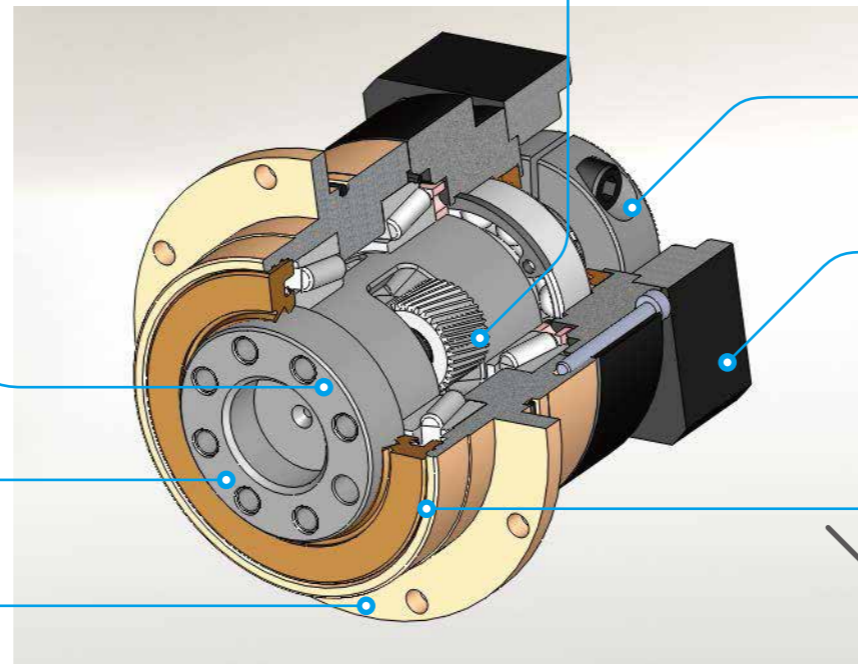
Planet gear transmission interface equipped with needle bearings, full needle roller bearings aligned without retainer achieve maximum exposure but smallest gap tolerances. Enhance over-all gear structure rigid and output torque.



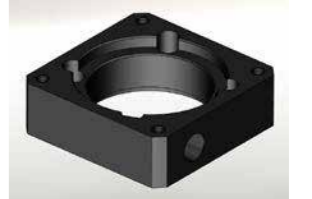
Planetary arm bracket and output shaft are one-piece constructed, using tapered roller bearings can bear the axial load and radial load that are more than deep groove ball bearings. Setting the bearing apart for larger span to reach the largest torsional rigidity and contribute high axial load and radial load capacity.



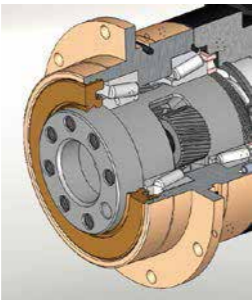
Input-end and motor shaft are coupled through a dynamic balanced collar clamping mechanism to ensure connection interface concentricity and zero slip power transmission at high speed.



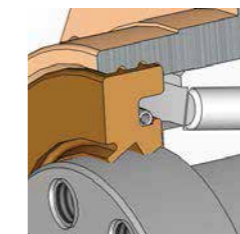
Advanced motor bracket design coupled with the input shaft bushing is easy to mount to any servo or stepper motor.



Grinding process to smooth surface of output shaft, and with oil seal to minimum friction coefficient and reducing start up load; result in the best seal-ability and extended lifespan. Hollow out-put shaft connect perfectly with circular flange drastically reducing the installation space.



PHF series overall design suitable for combination operation with servo motor high-speed input and achieves maximum torque output. Hollow out-put shaft connects perfectly with circular flange drastically reducing the installation space. Precision helical gear design and gear processing create a planetary gearhead with low backlash operation, high efficiency, low noise and long lifespan.



High-tech oil seal design on the upper lip guard against dust intruder, lower lip to guard against oil leak. Protection grade IP65 safeguards fully avoid leaking problem, and given it maintenance-free.

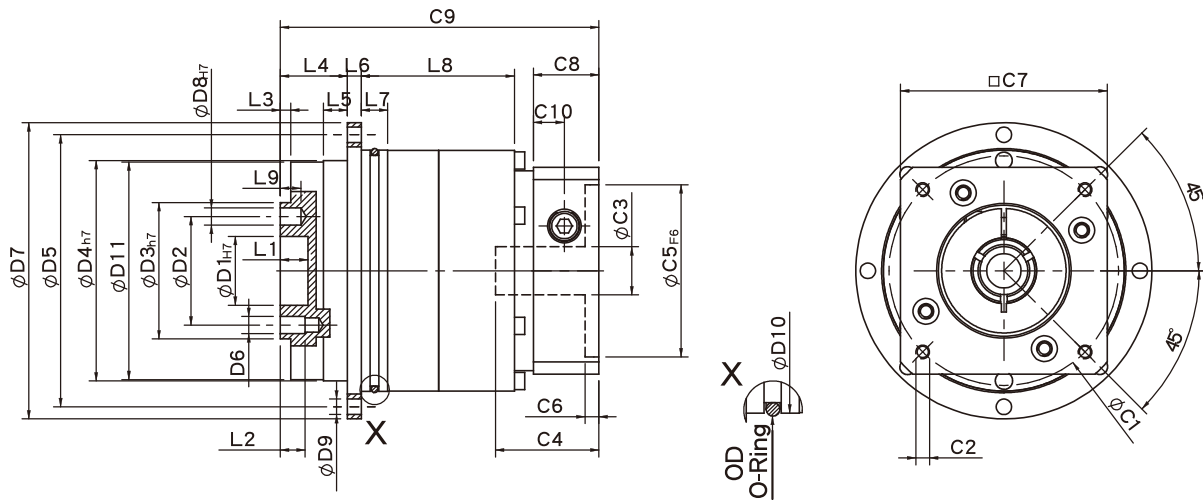


Advanced electroless nickel plating surface treatment resists scratch and corrosion. Suitable for stringent require of high-tech equipment. The gear box and internal gear ring are one-piece constructed, and then processed with advanced Germany gear shaper machinery for high-precision, high torque and abrade consumption.

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

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PHF Single Stage Dimensions



Specifications

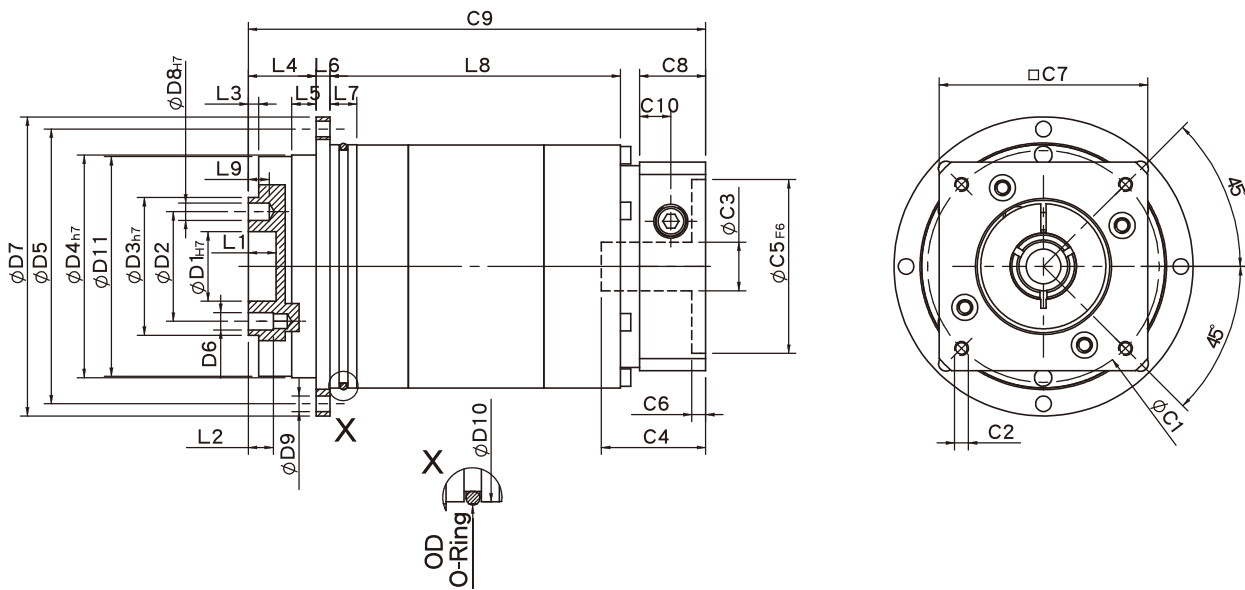
Unit:mm

| Dimensions | PHF42 | PHF60 | PHF90 | PHF115 | PHF142 | PHF200 | PHF255 |
|-------------------------------|---------|---------|---------|----------|----------|-----------|-----------|
| D1 _{H7} | 12 | 20 | 31.5 | 40 | 50 | 80 | 100 |
| D2 | 20 | 31.5 | 50 | 63 | 80 | 125 | 140 |
| D3 _{H7} | 28 | 40 | 63 | 80 | 100 | 160 | 180 |
| D4 _{H7} | 47 | 64 | 90 | 110 | 140 | 200 | 255 |
| D5 | 67 | 79 | 109 | 135 | 168 | 233 | 280 |
| D6 | M3x0.5P | M5x0.8P | M6x1.0P | M6x1.0P | M8x1.25P | M10x1.5P | M16x2.0P |
| D7 | 72 | 86 | 118 | 145 | 179 | 247 | 300 |
| D8 _{H7} | 3 | 5 | 6 | 6 | 8 | 10 | 12 |
| D9 | 3.4 | 4.5 | 5.5 | 5.5 | 6.6 | 9 | 13.5 |
| D10 | 60 | 70 | 95 | 120 | 152 | 212 | 255 |
| D11 | 46.2 | 63.2 | 89.2 | 109.2 | 139.2 | 199.2 | 254.2 |
| L1 | 4 | 8 | 12 | 12 | 12 | 12 | 20 |
| L2 | 6 | 7.2 | 12 | 13.5 | 16 | 22.5 | 30.5 |
| L3 | 3 | 3 | 6 | 6 | 6 | 8 | 12 |
| L4 | 19.5 | 19.5 | 30 | 29 | 38 | 50 | 66 |
| L5 | 7 | 7 | 10 | 10 | 14.6 | 15 | 20 |
| L6 | 4 | 4 | 7 | 8 | 10 | 12 | 18 |
| L7 | 5 | 7.7 | 8 | 10 | 12 | 17 | 39.5 |
| L8 | 25 | 37.5 | 36.5 | 54.5 | 65 | 92 | 118 |
| L9 | 4 | 6 | 7 | 7 | 7 | 10 | 10 |
| C1 ² | 46 | 70 | 90 | 115 | 145 | 200 | 235 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | M8x1.25P | M8x1.25P | M12x1.75P | M12x1.75P |
| C3 ² | ≤8/≤11 | ≤14 | ≤19/≤24 | ≤24/≤32 | ≤35/≤38 | ≤50 | ≤55 |
| C4 ² | 28.1 | 36.5 | 41.2 | 51.1 | 69.7 | 81 | 112 |
| C5 ² _{F6} | 30 | 50 | 70 | 95 | 110 | 114.3 | 200 |
| C6 ² | 4 | 4 | 6.7 | 6 | 8.5 | 6 | 6 |
| C7 ² | 42 | 60 | 90 | 115 | 140 | 182 | 220 |
| C8 ² | 16.5 | 19 | 25.5 | 30 | 38 | 40 | 50 |
| C9 ² | 74.8 | 92.5 | 107 | 131.5 | 171.5 | 215 | 271 |
| C10 ² | 7.4 | 9 | 11.3 | 13.9 | 17.8 | 21 | 21 |
| OD | 56x2 | 66x2 | 90x3 | 110x3 | 145x3 | 200x5 | 238x5 |

* C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

* Specification subject to change without notice.

PHF Double Stage Dimensions-1



Specifications

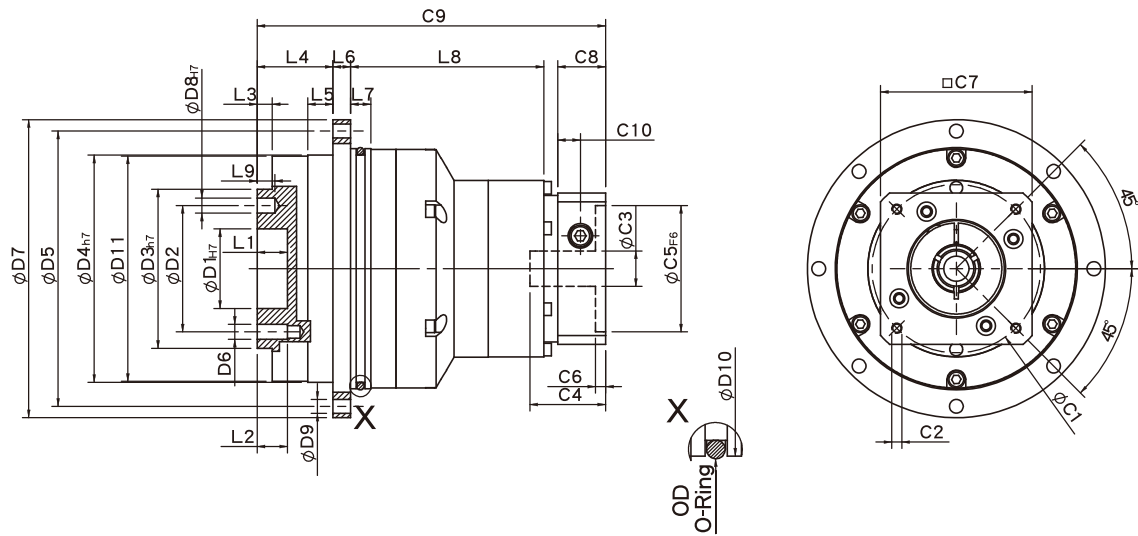
Unit:mm

| Dimensions | PHF42 | PHF60 | PHF90 |
|-------------------------------|---------|---------|---------|
| D1 _{H7} | 12 | 20 | 31.5 |
| D2 | 20 | 31.5 | 50 |
| D3 _{h7} | 28 | 40 | 63 |
| D4 _{h7} | 47 | 64 | 90 |
| D5 | 67 | 79 | 109 |
| D6 | M3x0.5P | M5x0.8P | M6x1.0P |
| D7 | 72 | 86 | 118 |
| D8 _{H7} | 3 | 5 | 6 |
| D9 | 3.4 | 4.5 | 5.5 |
| D10 | 60 | 70 | 95 |
| D11 | 46.2 | 63.2 | 89.2 |
| L1 | 4 | 8 | 12 |
| L2 | 6 | 7.2 | 12 |
| L3 | 3 | 3 | 6 |
| L4 | 19.5 | 19.5 | 30 |
| L5 | 7 | 7 | 10 |
| L6 | 4 | 4 | 7 |
| L7 | 5 | 7.7 | 8 |
| L8 | 54.5 | 72.5 | 81.5 |
| L9 | 4 | 6 | 7 |
| C1 ² | 46 | 70 | 90 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P |
| C3 ² | ≤8/≤11 | ≤14 | ≤19/≤24 |
| C4 ² | 28.1 | 36.4 | 41.2 |
| C5 ² _{F6} | 30 | 50 | 70 |
| C6 ² | 4 | 4 | 6.7 |
| C7 ² | 42 | 60 | 90 |
| C8 ² | 16.5 | 19 | 25.5 |
| C9 ² | 102.5 | 127.5 | 151.1 |
| C10 ² | 7.4 | 9 | 11.3 |
| OD | 56x2 | 66x2 | 90x3 |

* C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

* Specification subject to change without notice.

PHF Double Stage Dimensions-2



Specifications

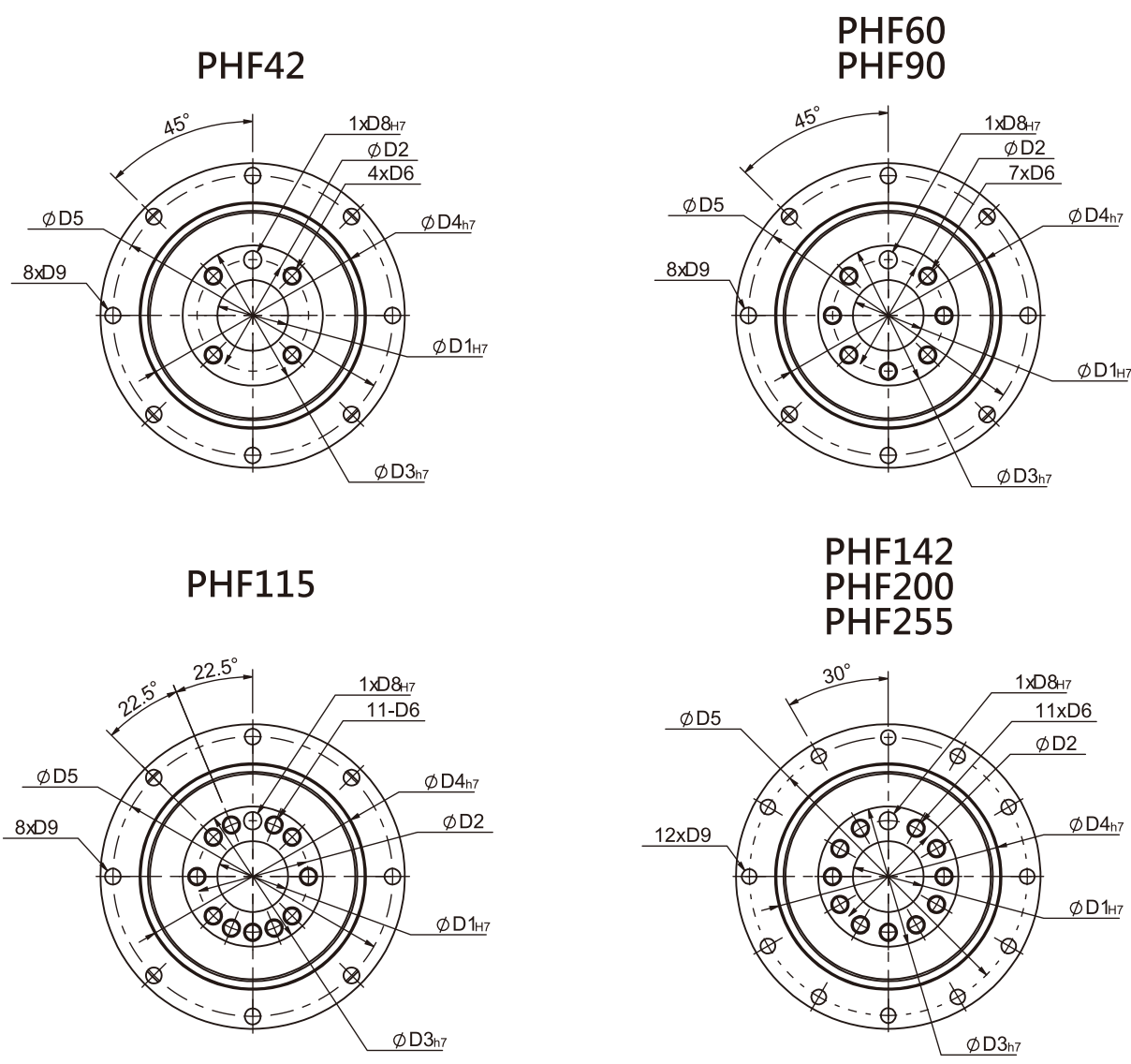
Unit:mm

| Dimensions | PHF60T | PHF90T | PHF115T | PHF142T | PHF200T | PHF255T |
|-------------------------------|---------|---------|---------|----------|----------|-----------|
| D1 _{H7} | 20 | 31.5 | 40 | 50 | 80 | 100 |
| D2 | 31.5 | 50 | 63 | 80 | 125 | 140 |
| D3 _{h7} | 40 | 63 | 80 | 100 | 160 | 180 |
| D4 _{h7} | 64 | 90 | 110 | 140 | 200 | 255 |
| D5 | 79 | 109 | 135 | 168 | 233 | 280 |
| D6 | M5x0.8P | M6x1.0P | M6x1.0P | M8x1.25P | M10x1.5P | M16x2.0P |
| D7 | 86 | 118 | 145 | 179 | 247 | 300 |
| D8 _{H7} | 5 | 6 | 6 | 8 | 10 | 12 |
| D9 | 4.5 | 5.5 | 5.5 | 6.6 | 9 | 13.5 |
| D10 | 70 | 95 | 120 | 152 | 212 | 255 |
| D11 | 63.2 | 89.2 | 109.2 | 139.2 | 199.2 | 254.2 |
| L1 | 8 | 12 | 12 | 12 | 12 | 20 |
| L2 | 7.2 | 12 | 13.5 | 16 | 22.5 | 30.5 |
| L3 | 3 | 6 | 6 | 6 | 8 | 12 |
| L4 | 19.5 | 30 | 29 | 38 | 50 | 66 |
| L5 | 7 | 10 | 10 | 14.6 | 15 | 20 |
| L6 | 4 | 7 | 8 | 10 | 12 | 18 |
| L7 | 7.7 | 8 | 10 | 12 | 17 | 39.5 |
| L8 | 65.2 | 69.5 | 93.5 | 110 | 161.7 | 192 |
| L9 | 6 | 7 | 7 | 7 | 10 | 10 |
| C1 ² | 46 | 70 | 90 | 115 | 145 | 200 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | M8x1.25P | M8x1.25P | M12x1.75P |
| C3 ² | ≤8/≤11 | ≤14 | ≤19/≤24 | ≤24/≤32 | ≤35/≤38 | ≤50 |
| C4 ² | 28.1 | 36.5 | 41.2 | 51.1 | 69.7 | 81 |
| C5 ² _{F6} | 30 | 50 | 70 | 95 | 110 | 114.3 |
| C6 ² | 4 | 4 | 6.7 | 6 | 8.5 | 6 |
| C7 ² | 42 | 60 | 90 | 115 | 140 | 180 |
| C8 ² | 16.5 | 19 | 25.5 | 30 | 38 | 40 |
| C9 ² | 113.2 | 138 | 163.1 | 198 | 281 | 335 |
| C10 ² | 7.4 | 9 | 11.3 | 13.9 | 17.8 | 21 |
| OD | 66x2 | 90x3 | 110x3 | 145x3 | 200x5 | 238x5 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

★ Specification subject to change without notice.

PHF Flange Dimensions



Specifications Unit:mm

| Dimensions | PHF42 | PHF60 | PHF90 | PHF115 | PHF142 | PHF200 | PHF255 |
|------------------|---------|---------|---------|---------|----------|----------|----------|
| D1 _{H7} | 12 | 20 | 31.5 | 40 | 50 | 80 | 100 |
| D2 | 20 | 31.5 | 50 | 63 | 80 | 125 | 140 |
| D3 _{H7} | 28 | 40 | 63 | 80 | 100 | 160 | 180 |
| D4 _{H7} | 47 | 64 | 90 | 110 | 140 | 200 | 255 |
| D5 | 67 | 79 | 109 | 135 | 168 | 233 | 280 |
| D6 | M3x0.5P | M5x0.8P | M6x1.0P | M6x1.0P | M8x1.25P | M10x1.5P | M16x2.0P |
| D8 _{H7} | 3 | 5 | 6 | 6 | 8 | 10 | 12 |
| D9 | 3.4 | 4.5 | 5.5 | 5.5 | 6.6 | 9 | 13.5 |

★ Specification subject to change without notice.

PHF Specifications Table

| Specifications | | Stage | Ratio | PHF-42 | PHF-60 | PHF-90 | PHF-115 | PHF-142 | PHF-200 | PHF-255 |
|----------------------------------|---------------|----------------------|---|---------------------------------------|------------|-----------|----------|----------|----------|----------|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | - | 40 | 105 | 180 | 310 | 580 | 1100 |
| | | | 4 | 16 | 43 | 110 | 240 | 450 | 1100 | 1700 |
| | | | 5 | 17 | 50 | 130 | 290 | 530 | 1200 | 2000 |
| | | | 7 | 14 | 44 | 125 | 270 | 450 | 1100 | 1750 |
| | | | 10 | 11 | 37 | 95 | 220 | 360 | 900 | 1450 |
| | | Stage | Ratio | PHF-42 | PHF-60 (T) | PHF-90(T) | PHF-115T | PHF-142T | PHF-200T | PHF-255T |
| | | 2 | 15 | - | 40 | 105 | 180 | 310 | 580 | 2000 |
| | | | 20 | 16 | 43 | 110 | 240 | 450 | 1100 | 2000 |
| | | | 25 | 17 | 50 | 130 | 290 | 530 | 1200 | 2000 |
| | | | 30 | 17 | 50 | 130 | 290 | 530 | 1200 | 2000 |
| | | | 35 | 17 | 50 | 130 | 290 | 530 | 1200 | 2000 |
| | | | 40 | 17 | 50 | 130 | 290 | 530 | 1200 | 2000 |
| | | | 50 | 17 | 50 | 130 | 290 | 530 | 1200 | 2000 |
| | | | 70 | 14 | 44 | 125 | 270 | 450 | 1100 | 1750 |
| 100 | 11 | 37 | 95 | 220 | 360 | 900 | 1450 | | | |
| Emergency Stop Torque T_{2NOT} | N • m | | 3.0 times of Nominal Output Torque (* Max. Output Torque $T_{2B}=60\%$ of Emergency Stop Torque) | | | | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2 | 3-100 | 5000 | 5000 | 4000 | 4000 | 3000 | 3000 | 2000 |
| Max. Input Speed n_{1max} | rpm | 1,2 | 3-100 | 10000 | 10000 | 8000 | 8000 | 6000 | 5000 | 4000 |
| Micro Backlash P0 | arcmin | 1 | 3-10 | ≤ 2 | ≤ 2 | ≤ 2 | ≤ 1 | ≤ 1 | ≤ 1 | ≤ 1 |
| | | 2 | 12-100 | ≤ 4 | ≤ 4 | ≤ 4 | ≤ 3 | ≤ 3 | ≤ 3 | ≤ 3 |
| Precision Backlash P1 | arcmin | 1 | 3-10 | ≤ 4 | ≤ 4 | ≤ 4 | ≤ 3 | ≤ 3 | ≤ 3 | ≤ 3 |
| | | 2 | 12-100 | ≤ 6 | ≤ 6 | ≤ 6 | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 5 |
| Standard Backlash P2 | arcmin | 1 | 3-10 | ≤ 6 | ≤ 6 | ≤ 6 | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 5 |
| | | 2 | 12-100 | ≤ 8 | ≤ 8 | ≤ 8 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 |
| Torsional Rigidity | N • m /arcmin | 1,2 | 3-100 | 6 | 12 | 30 | 80 | 150 | 450 | 1000 |
| Max. Bending Moment M_{2kB}^1 | N • m | 1,2 | 3-100 | 43 | 125 | 288 | 503 | 1470 | 2950 | 6080 |
| Max. Axial Load F_{2aB}^1 | N | 1,2 | 3-100 | 1015 | 1340 | 2868 | 3890 | 9850 | 12560 | 21850 |
| Operating Temp. | °C | | 3-100 | -10 °C ~ +90 °C | | | | | | |
| Service Life | hr | | 3-100 | 30,000 (15,000/ Continuous operation) | | | | | | |
| Efficiency | % | 1 | 3-10 | ≥ 97% | | | | | | |
| | | 2 | 12-100 | ≥ 94% | | | | | | |
| Weight | kg | 1 | 3-10 | 0.7 | 1.5 | 3.3 | 6.2 | 13.6 | 32.1 | 63.3 |
| | | 2 | 12-100 | 1.1 | 2.3/1.8 | 6.0/4.1 | 8.1 | 17.9 | 38.6 | 79.5 |
| Mounting Position | - | 1,2 | 3-100 | Any direction | | | | | | |
| Noise Level ² | dB(A)/1m | 1,2 | 3-100 | 56 | 58 | 60 | 63 | 65 | 67 | 70 |
| Protection Class | - | 1,2 | 3-100 | IP65 | | | | | | |
| Lubrication | - | 1,2 | 3-100 | Synthetic Lubricant | | | | | | |
| Inertia(J1) | | | | | | | | | | |
| Stage | Ratio | unit | PHF-42 | PHF-60 | PHF-90 | PHF-115 | PHF-142 | PHF-200 | PHF-255 | |
| 1 | 3 | Kg • cm ² | - | 0.19 | 0.72 | 2.35 | 9.05 | 29.80 | 72.50 | |
| | 4 | | 0.02 | 0.18 | 0.67 | 1.66 | 7.17 | 25.86 | 58.21 | |
| | 5 | | 0.02 | 0.17 | 0.65 | 1.50 | 6.52 | 23.63 | 54.36 | |
| | 7 | | 0.02 | 0.14 | 0.60 | 1.45 | 6.17 | 22.92 | 54.12 | |
| | 10 | | 0.02 | 0.14 | 0.58 | 1.41 | 6.10 | 22.73 | 53.98 | |
| Stage | Ratio | PHF-42 | PHF-60(T) | PHF-90(T) | PHF-115T | PHF-142T | PHF-200T | PHF-255T | | |
| 2 | 15/20/25 | 0.02 | 0.17(0.02) | 0.65(0.17) | 0.65 | 1.50 | 6.52 | 23.63 | | |
| | 30/35/40 | 0.02 | 0.14(0.02) | 0.60(0.14) | 0.60 | 1.45 | 6.17 | 22.92 | | |
| | 50/70/100 | 0.02 | 0.14(0.02) | 0.58(0.14) | 0.58 | 1.41 | 6.10 | 22.73 | | |

* 1. Applied to the output shaft center @100rpm.

* 2. Measured at 3000rpm with no load

※ 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.

SERVO MOTOR GEARHEADS



PHL

PHFR

PHF

PGH

PUR

PUL

PGLH

PGL

PGC

PGE

PGRH

PCR

PGFR

PGF

PBC

PBE

PAE

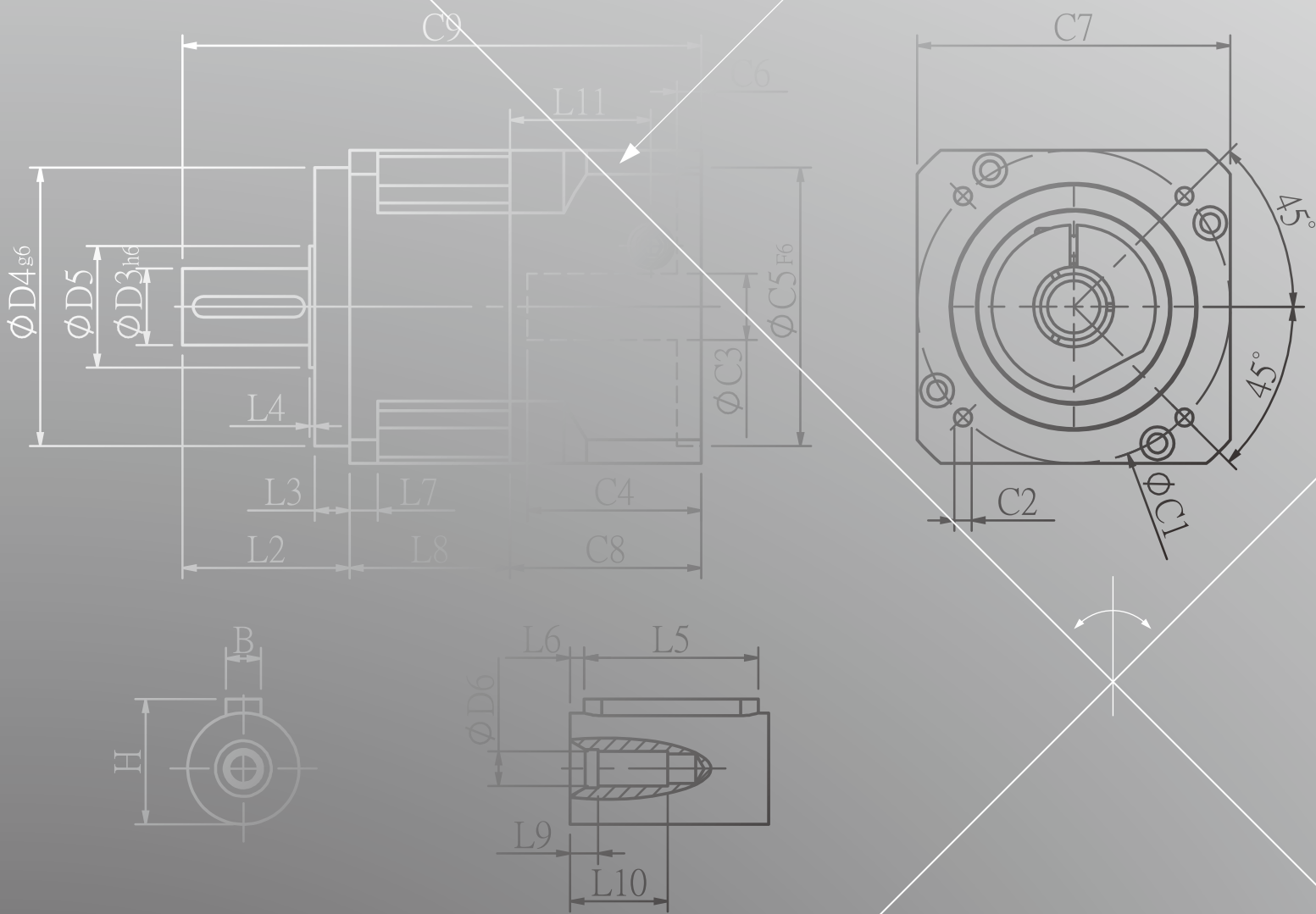
PAC

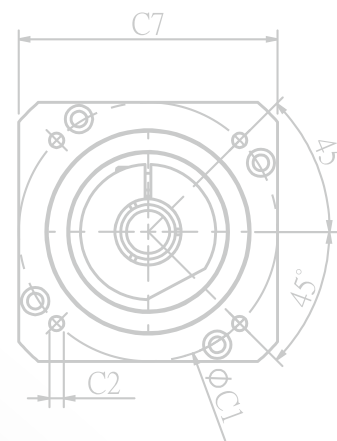
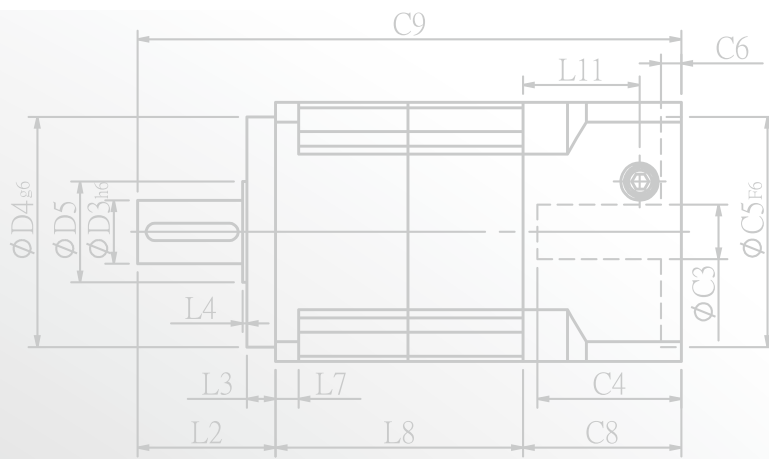
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PGS

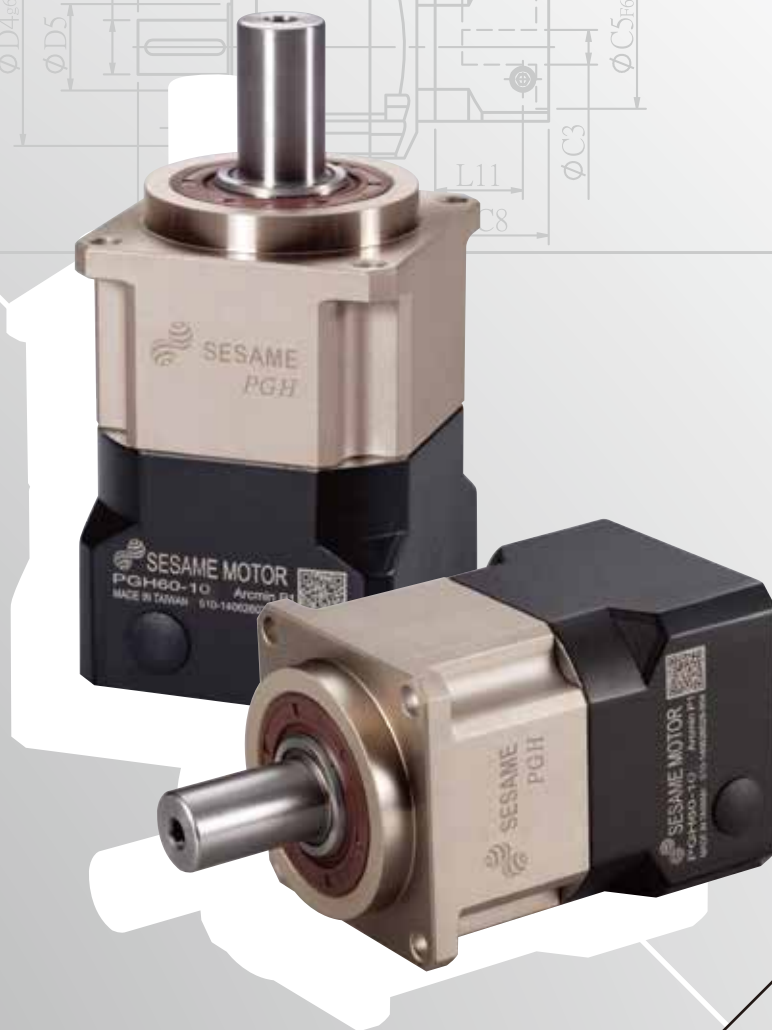
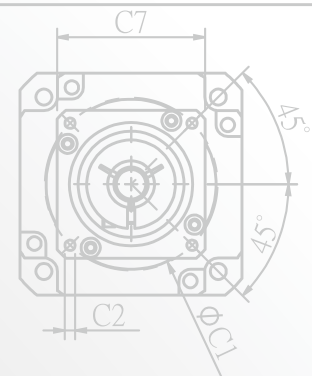
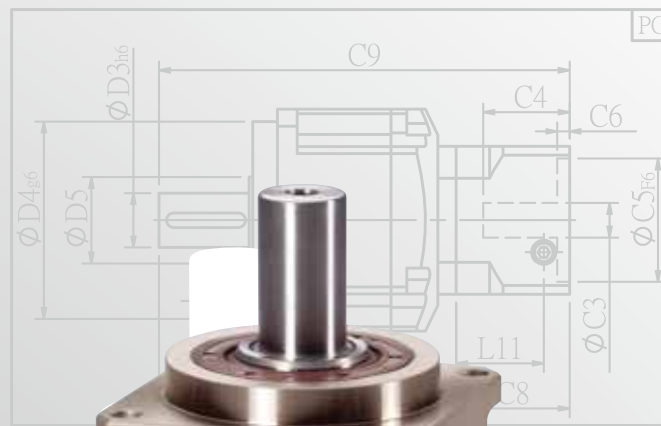
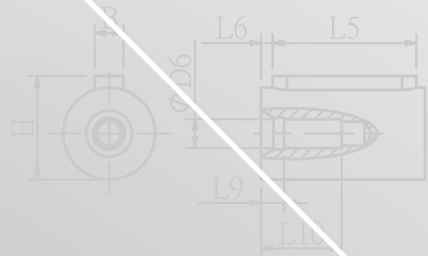
PNS

PGH SERIES

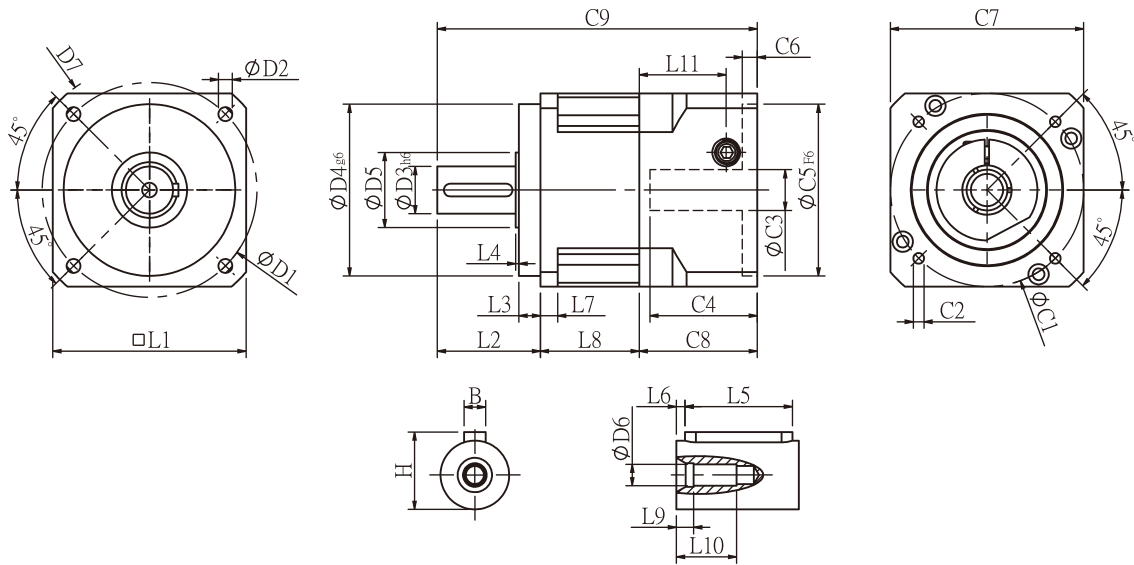




PGH60T/PGH90T/PGH115T/PGH142T/PGH180T



PGH Single Stage Dimensions



Specifications

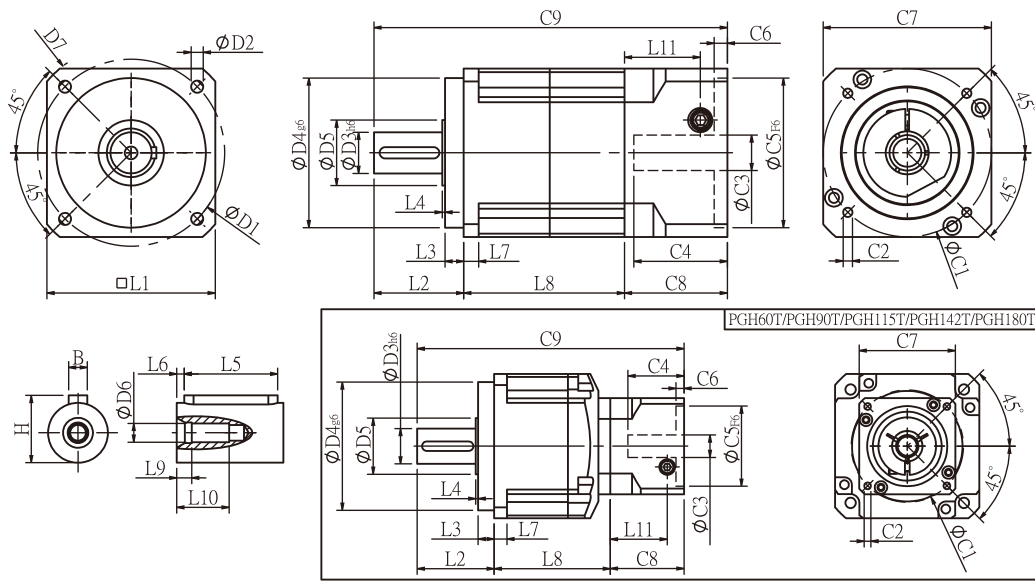
Unit:mm

| Dimensions | PGH42 | PGH60 | PGH90 | PGH115 | PGH142 | PGH180 | PGH220 |
|-------------------------------|---------|---------|----------|-----------|----------|-----------|-----------|
| D1 | 50 | 70 | 100 | 130 | 165 | 215 | 250 |
| D2 | 3.4 | 5.5 | 6.5 | 8.5 | 10.5 | 13 | 17 |
| D3 _{h6} | 13 | 16 | 22 | 32 | 40 | 55 | 75 |
| D4 _{g6} | 35 | 50 | 80 | 110 | 130 | 160 | 180 |
| D5 | 15 | 25 | 35 | 45 | 50 | 70 | 114.4 |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P | M12x1.75P | M16x2.0P | M20x2.5P | M20x2.5P |
| D7 | 56 | 80 | 118 | 148 | 186 | 239 | 292 |
| L1 | 42.6 | 60 | 90 | 115 | 142 | 182 | 220 |
| L2 | 26 | 37 | 48 | 63 | 91.5 | 100.5 | 138 |
| L3 | 5.5 | 7 | 10 | 10 | 10 | 16 | 30 |
| L4 | 1 | 1.5 | 1.5 | 3.5 | 2.5 | 2.5 | 3 |
| L5 | 15 | 25 | 32 | 40 | 60 | 70 | 90 |
| L6 | 2 | 2 | 3 | 5 | 5 | 6 | 7 |
| L7 | 4 | 6 | 8 | 11 | 16 | 18 | 20 |
| L8 | 28.3 | 37 | 46 | 57 | 75.5 | 94 | 111 |
| L9 | 4 | 4 | 4.5 | 6 | 6 | 8 | 15 |
| L10 | 14 | 16.5 | 20.5 | 30 | 38 | 48 | 42 |
| L11 | 29 | 35.5 | 40.5 | 42 | 63 | 69.5 | 96 |
| C1 ² | 46 | 70 | 90 | 115 | 145 | 200 | 235 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | M8x1.25P | M8x1.25P | M12x1.75P | M12x1.75P |
| C3 ² | ≤8/≤11 | ≤14 | ≤19/≤24 | ≤24/≤32 | ≤35/≤38 | ≤50 | ≤55 |
| C4 ² | 27 | 37 | 47 | 56 | 66.5 | 82 | 112 |
| C5 ² _{F6} | 30 | 50 | 70 | 95 | 110 | 114.3 | 200 |
| C6 ² | 4 | 4 | 6 | 10 | 6 | 13 | 6 |
| C7 ² | 42.6 | 60 | 90 | 115 | 140 | 180 | 220 |
| C8 ² | 38.5 | 46 | 55 | 63 | 80 | 95 | 120 |
| C9 ² | 92.8 | 120 | 149 | 183 | 247 | 289.5 | 369 |
| B | 5 | 5 | 6 | 10 | 12 | 16 | 20 |
| H | 15 | 18 | 24.5 | 35 | 43 | 59 | 79.5 |

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

★ Specification subject to change without notice.

PGH Double Stage Dimensions



Specifications

Unit:mm

| Dimensions | PGH42 | PGH60 | PGH60T | PGH90 | PGH90T | PGH115T | PGH142T | PGH180T | PGH220T |
|--------------------|---------|---------|---------|----------|---------|-----------|----------|----------|-----------|
| D1 | 50 | 70 | | 100 | | 130 | 165 | 215 | 250 |
| D2 | 3.4 | 5.5 | | 6.5 | | 8.5 | 10.5 | 13 | 17 |
| D3 h6 | 13 | 16 | | 22 | | 32 | 40 | 55 | 75 |
| D4 g6 | 35 | 50 | | 80 | | 110 | 130 | 160 | 180 |
| D5 | 15 | 25 | | 35 | | 45 | 50 | 70 | 114.4 |
| D6 | M4x0.7P | M5x0.8P | | M8x1.25P | | M12x1.75P | M16x2.0P | M20x2.5P | M20x1.5P |
| D7 | 56 | 80 | | 118 | | 148 | 186 | 239 | 292 |
| L1 | 42.6 | 60 | | 90 | | 115 | 142 | 182 | 220 |
| L2 | 26 | 37 | | 48 | | 63 | 91.5 | 100.5 | 138 |
| L3 | 5.5 | 7 | | 10 | | 10 | 10 | 16 | 30 |
| L4 | 1 | 1.5 | | 1.5 | | 3.5 | 2.5 | 2.5 | 3 |
| L5 | 15 | 25 | | 32 | | 40 | 60 | 70 | 90 |
| L6 | 2 | 2 | | 3 | | 5 | 5 | 6 | 7 |
| L7 | 4 | 6 | | 8 | | 11 | 16 | 18 | 20 |
| L8 | 55.3 | 70 | 65.5 | 86 | 78.5 | 99.5 | 127.5 | 166 | 202 |
| L9 | 4 | 4 | | 4.5 | | 6 | 6 | 8 | 15 |
| L10 | 14 | 16.5 | | 20.5 | | 30 | 38 | 48 | 42 |
| L11 | 29 | 35.5 | 29 | 40.5 | 35.5 | 40.5 | 42 | 63 | 74 |
| C1 ² | 46 | 70 | 46 | 90 | 70 | 90 | 115 | 145 | 200 |
| C2 ² | M4x0.7P | M5x0.8P | M4x0.7P | M6x1.0P | M5x0.8P | M6x1.0P | M8x1.25P | M8x1.25P | M12x1.75P |
| C3 ² | ≤8/≤11 | ≤14 | ≤8/≤11 | ≤19/≤24 | ≤14 | ≤19/≤24 | ≤24/≤32 | ≤35/≤38 | ≤50 |
| C4 ² | 27 | 37 | 27 | 47 | 37 | 47 | 56 | 66.5 | 81 |
| C5 ² F6 | 30 | 50 | 30 | 70 | 50 | 70 | 95 | 110 | 114.3 |
| C6 ² | 4 | 4 | 4 | 6 | 4 | 6 | 10 | 6 | 6 |
| C7 ² | 42.6 | 60 | 42.6 | 90 | 60 | 90 | 115 | 140 | 180 |
| C8 ² | 38.5 | 46 | 38.5 | 55 | 46 | 55 | 63 | 80 | 93 |
| C9 ² | 119.8 | 153 | 141 | 189 | 172.5 | 217.5 | 282 | 346.5 | 433 |
| B | 5 | 5 | | 6 | | 10 | 12 | 16 | 20 |
| H | 15 | 18 | | 24.5 | | 35 | 43 | 59 | 79.5 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to the motor flange chosen.

★ Specification subject to change without notice.

PGH Specifications Table

| Specifications | | Stage | Ratio | PGH-42 | PGH-60 | PGH-90 | PGH-115 | PGH-142 | PGH-180 | PGH-220 | |
|----------------------------------|-----------------------|----------------------|--|---------------------------------------|------------|------------|-----------|----------|----------|----------|----------|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | 19 | 53 | 145 | 290 | 520 | 950 | 1100 | |
| | | | 4 | 20 | 55 | 150 | 300 | 550 | 1000 | 1700 | |
| | | | 5 | 17 | 54 | 140 | 290 | 530 | 1050 | 2000 | |
| | | | 6 | 15 | 46 | 135 | 280 | 490 | 1000 | 1850 | |
| | | | 7 | 14 | 44 | 125 | 270 | 450 | 960 | 1750 | |
| | | | 8 | 12 | 41 | 110 | 240 | 390 | 900 | 1550 | |
| | | | 9 | 11 | 37 | 95 | 220 | 360 | 800 | 1500 | |
| | | | 10 | 11 | 37 | 95 | 220 | 360 | 800 | 1450 | |
| | | | Stage | Ratio | PGH-42 | PGH-60 (T) | PGH-90(T) | PGH-115T | PGH-142T | PGH-180T | PGH-220T |
| | | | 15 | 19 | 53 | 145 | 290 | 520 | 950 | 2000 | |
| | | 20 | 20 | 55 | 150 | 300 | 550 | 1000 | 2000 | | |
| | | 25 | 17 | 54 | 140 | 290 | 530 | 1050 | 2000 | | |
| | | 30 | 17 | 54 | 140 | 290 | 530 | 1050 | 2000 | | |
| | | 35 | 17 | 54 | 140 | 290 | 530 | 1050 | 2000 | | |
| | | 40 | 17 | 54 | 140 | 290 | 530 | 1050 | 2000 | | |
| | | 45 | 17 | 54 | 140 | 290 | 530 | 1050 | 2000 | | |
| | | 50 | 17 | 54 | 140 | 290 | 530 | 1050 | 2000 | | |
| | | 60 | 15 | 46 | 135 | 280 | 490 | 1000 | 1850 | | |
| | | 70 | 14 | 44 | 125 | 270 | 450 | 960 | 1750 | | |
| | | 80 | 12 | 41 | 110 | 240 | 390 | 900 | 1550 | | |
| 90 | 11 | 37 | 95 | 220 | 360 | 800 | 1500 | | | | |
| 100 | 11 | 37 | 95 | 220 | 360 | 800 | 1450 | | | | |
| Emergency Stop Torque T_{2NOT} | N • m | | 3.0 times of Nominal Output Torque (*Max. Output Torque T_{2B} =60% of Emergency Stop Torque) | | | | | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2 | 3-100 | 5000 | 5000 | 4000 | 4000 | 3000 | 3000 | 2000 | |
| Max. Input Speed n_{1max} | rpm | 1,2 | 3-100 | 10000 | 10000 | 8000 | 8000 | 6000 | 6000 | 4000 | |
| Micro Backlash P0 | arcmin | 1 | 3-10 | ≤ 2 | ≤ 2 | ≤ 2 | ≤ 1 | ≤ 1 | ≤ 1 | ≤ 1 | |
| | | 2 | 12-100 | ≤ 4 | ≤ 4 | ≤ 4 | ≤ 3 | ≤ 3 | ≤ 3 | ≤ 3 | |
| Precision Backlash P1 | arcmin | 1 | 3-10 | ≤ 4 | ≤ 4 | ≤ 4 | ≤ 3 | ≤ 3 | ≤ 3 | ≤ 3 | |
| | | 2 | 12-100 | ≤ 6 | ≤ 6 | ≤ 6 | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 5 | |
| Standard Backlash P2 | arcmin | 1 | 3-10 | ≤ 6 | ≤ 6 | ≤ 6 | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 5 | |
| | | 2 | 12-100 | ≤ 8 | ≤ 8 | ≤ 8 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 | |
| Torsional Rigidity | N • m /arcmin | 1,2 | 3-100 | 2.5 | 6 | 12 | 23 | 45 | 75 | 130 | |
| Max. Radial Load F_{2rB}^1 | N | 1,2 | 3-100 | 760 | 1570 | 2780 | 5340 | 8400 | 13000 | 13810 | |
| Max. Axial Load F_{2aB}^1 | N | 1,2 | 3-100 | 410 | 750 | 1870 | 3310 | 4670 | 6460 | 18530 | |
| Operating Temp. | °C | | 3-100 | -10 °C ~ +90 °C | | | | | | | |
| Service Life | hr | | 3-100 | 20,000 (10,000/ Continuous operation) | | | | | | | |
| Efficiency | % | 1 | 3-10 | ≥ 97% | | | | | | | |
| | | 2 | 12-100 | ≥ 94% | | | | | | | |
| Weight | kg | 1 | 3-10 | 0.6 | 1.3 | 3.5 | 7.8 | 16.1 | 27 | 55 | |
| | | 2 | 12-100 | 0.9 | 2.0/1.6 | 5.6/3.9 | 9.5 | 19 | 34 | 68.5 | |
| Mounting Position | - | 1,2 | 3-100 | Any direction | | | | | | | |
| Noise Level ² | dB(A)/1m | 1,2 | 3-100 | 56 | 58 | 60 | 63 | 65 | 67 | 70 | |
| Protection Class | - | 1,2 | 3-100 | IP65 | | | | | | | |
| Lubrication | - | 1,2 | 3-100 | Synthetic Lubricant | | | | | | | |
| Inertia(J1) | | | | | | | | | | | |
| Stage | Ratio | unit | | PGH-42 | PGH-60 | PGH-90 | PGH-115 | PGH-142 | PGH-180 | PGH-220 | |
| 1 | 3 | Kg • cm ² | | 0.03 | 0.23 | 0.97 | 2.35 | 10.00 | 30.50 | 79.50 | |
| | 4 | | | 0.02 | 0.18 | 0.67 | 1.66 | 7.17 | 25.86 | 58.21 | |
| | 5 | | | 0.02 | 0.17 | 0.65 | 1.50 | 6.52 | 23.63 | 54.36 | |
| | 6/7/8 | | | 0.02 | 0.14 | 0.60 | 1.45 | 6.17 | 22.92 | 54.12 | |
| | 9/10 | | | 0.02 | 0.14 | 0.58 | 1.41 | 6.10 | 22.73 | 53.98 | |
| Stage | Ratio | | | PGH-42 | PGH-60(T) | PGH-90(T) | PGH-115T | PGH-142T | PGH-180T | PGH-220T | |
| 2 | 15/20/25 | | | 0.02 | 0.17(0.02) | 0.65(0.17) | 0.65 | 1.50 | 6.52 | 23.63 | |
| | 30/35/40 | | | 0.02 | 0.14(0.02) | 0.60(0.14) | 0.60 | 1.45 | 6.17 | 22.92 | |
| | 45/50/60/70/80/90/100 | | | 0.02 | 0.14(0.02) | 0.58(0.14) | 0.58 | 1.41 | 6.10 | 22.73 | |

* 1. Applied to the output shaft center @100rpm.

* 2. Measured at 3000rpm with no load

※ The above figures/specifications are subject to change without prior notice.

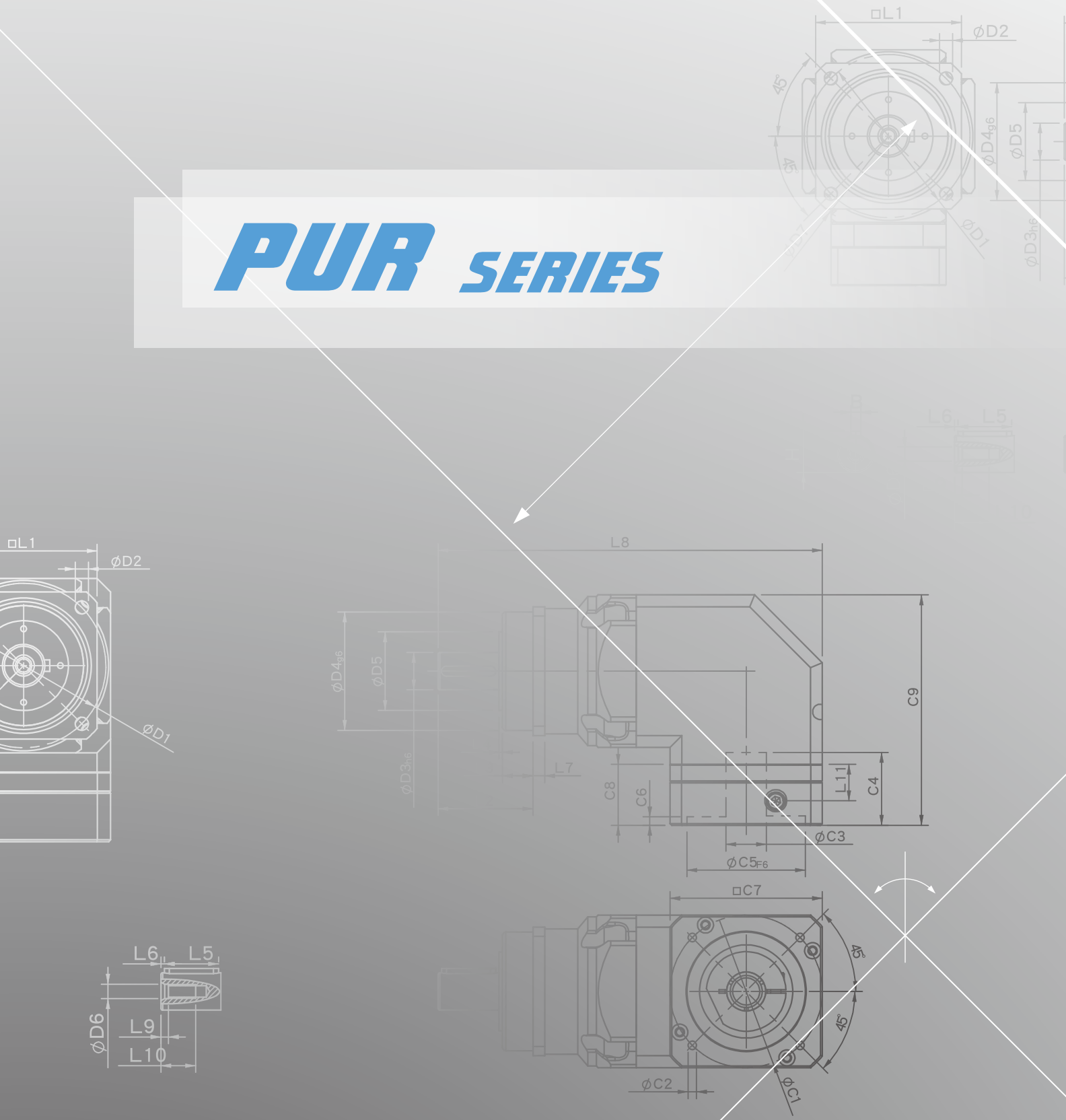
Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.

SERVO MOTOR GEARHEADS

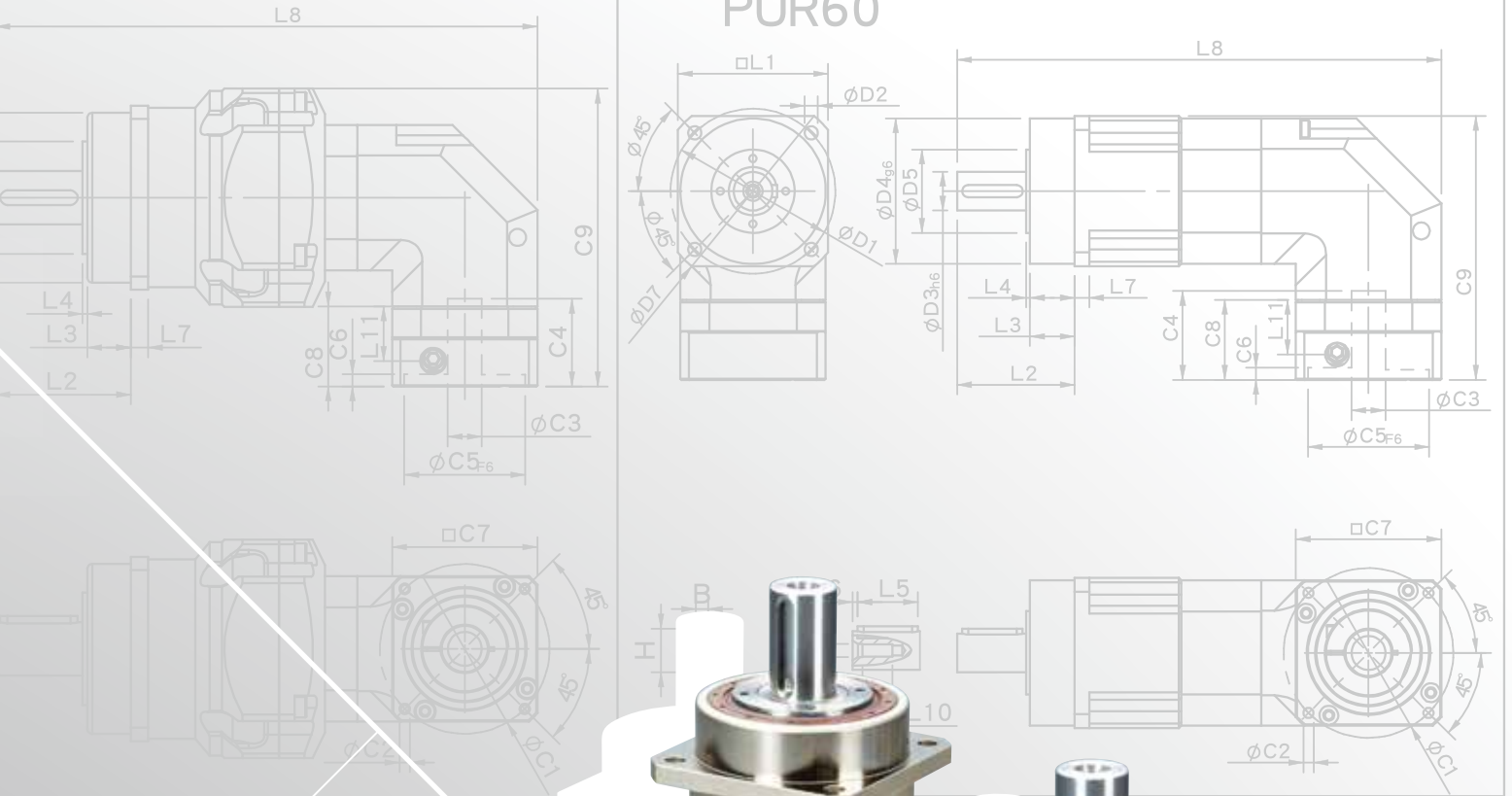


- PHL
- PHFR
- PHF
- PGH**
- PUR
- PUL
- PGLH
- PGL
- PGC
- PGE
- PGRH
- PCR
- PGFR
- PGF
- PBC
- PBE
- PAE
- PAC
- PAN
- PGS
- PNS

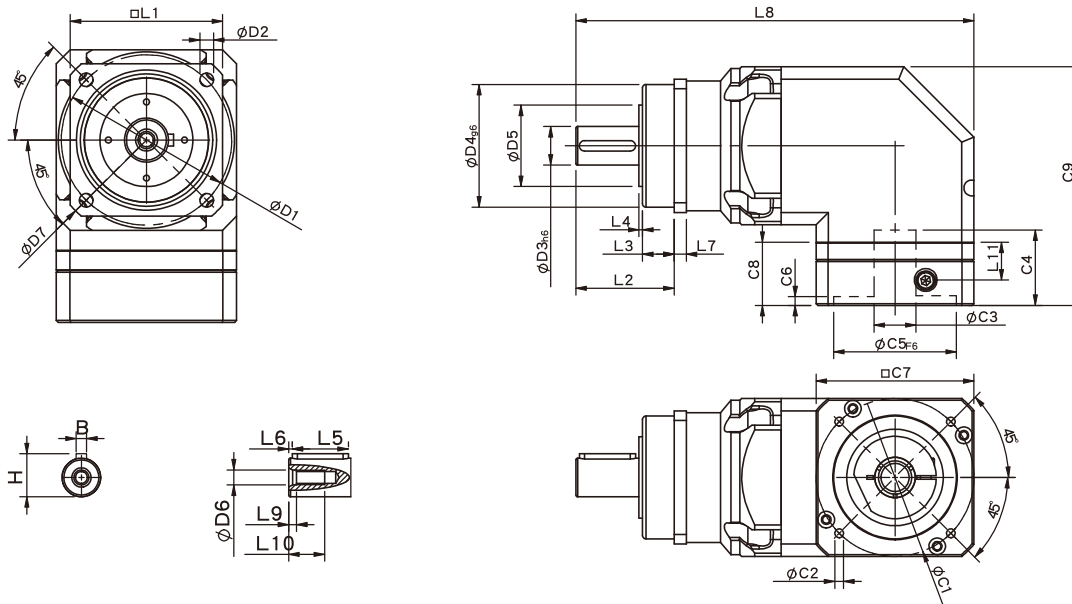
PUR SERIES



PUR60



PUR Single Stage Dimensions



Specifications

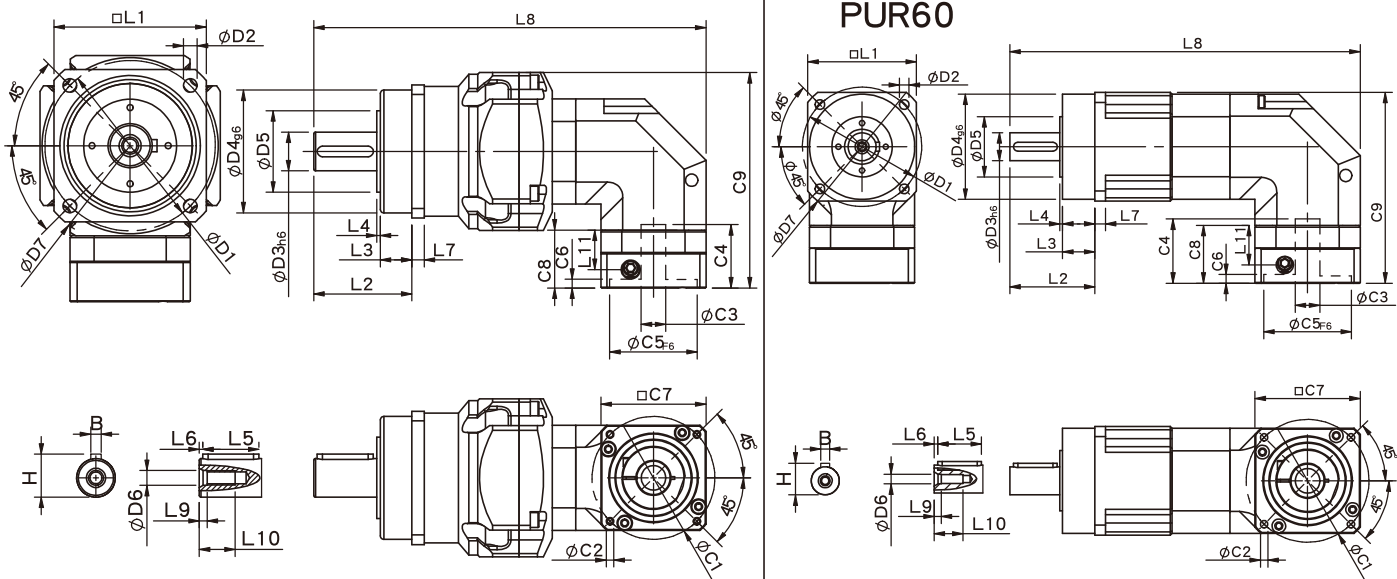
Unit:mm

| Dimensions | PUR60 | PUR75 | PUR100 | PUR140 |
|--------------------|-------------------|-------------------|-------------------|--------|
| D1 | 68 | 85 | 120 | - |
| D2 | 5.5 | 6.8 | 9 | - |
| D3 h6 | 16 | 22 | 32 | - |
| D4 g6 | 60 | 70 | 90 | - |
| D5 | 34.6 | 46.4 | 59.6 | - |
| D6 | M5x0.8P | M8x1.25P | M12x1.75P | - |
| D7 | 80 | 100 | 138 | - |
| L1 | 62 | 76 | 105 | - |
| L2 | 48.5 | 56 | 88 | - |
| L3 | 18.5 | 18 | 28 | - |
| L4 | 1.5 | 2 | 2 | - |
| L5 | 25 | 32 | 40 | - |
| L6 | 2 | 2 | 5 | - |
| L7 | 6 | 7 | 10 | - |
| L8 | 166.7 | 227 | 260.5 | - |
| L9 | 4 | 4.5 | 6 | - |
| L10 | 16.5 | 20.5 | 30 | - |
| L11 | 22.5 | 21.5 | 31.8 | - |
| C1 ² | 70 | 90 | 115 | - |
| C2 ² | M5x0.8P | M6x1.0P | M8x1.25P | - |
| C3 ² | $\leq 14/\leq 19$ | $\leq 14/\leq 19$ | $\leq 24/\leq 32$ | - |
| C4 ² | 34 | 45 | 53 | - |
| C5 ² F6 | 50 | 70 | 95 | - |
| C6 ² | 4 | 4 | 6 | - |
| C7 ² | 60 | 90 | 115 | - |
| C8 ² | 33 | 36 | 48 | - |
| C9 ² | 108.8 | 136 | 174.5 | - |
| B | 5 | 6 | 10 | - |
| H | 18 | 24.5 | 35 | - |

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

★ Specification subject to change without notice.

PUR Double Stage Dimensions



Specifications

Unit:mm

| Dimensions | PUR60 | PUR60T | PUR75T | PUR100T |
|--------------------|---------|---------|----------|-----------|
| D1 | 68 | 68 | 85 | 120 |
| D2 | 5.5 | 5.5 | 6.8 | 9 |
| D3 h6 | 16 | 16 | 22 | 32 |
| D4 g6 | 60 | 60 | 70 | 90 |
| D5 | 34.6 | 34.6 | 46.4 | 59.6 |
| D6 | M5x0.8P | M5x0.8P | M8x1.25P | M12x1.75P |
| D7 | 80 | 80 | 100 | 138 |
| L1 | 62 | 62 | 76 | 105 |
| L2 | 48.5 | 48.5 | 56 | 88 |
| L3 | 18.5 | 18.5 | 18 | 28 |
| L4 | 1.5 | 1.5 | 2 | 2 |
| L5 | 25 | 25 | 32 | 40 |
| L6 | 2 | 2 | 2 | 5 |
| L7 | 6 | 6 | 7 | 10 |
| L8 | 199.7 | 170.3 | 223.7 | 286.5 |
| L9 | 4.5 | 4 | 4.5 | 6 |
| L10 | 20.5 | 16.5 | 20.5 | 30 |
| L11 | 22.5 | 15.5 | 22.5 | 21.5 |
| C1 ² | 70 | 46 | 70 | 90 |
| C2 ² | M5x0.8P | M4x0.7P | M5x0.8P | M6x1.0P |
| C3 ² | ≤14/≤19 | ≤8 | ≤14/≤19 | ≤19/≤24 |
| C4 ² | 34 | 29 | 34 | 45 |
| C5 ² F6 | 50 | 30 | 50 | 70 |
| C6 ² | 4 | 4 | 4 | 6 |
| C7 ² | 60 | 42.6 | 60 | 90 |
| C8 ² | 33 | 25 | 33 | 36 |
| C9 ² | 108.8 | 80.5 | 122.8 | 148.5 |
| B | 6 | 5 | 6 | 10 |
| H | 24.5 | 18 | 24.5 | 35 |

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

* Specification subject to change without notice.

PUR Specifications Table

| Specifications | | Stage | Ratio | PUR-60 | PUR-75 | PUR-100 | PUR-140 | PUR-180 | PUR-220 | |
|----------------------------------|----------------|----------------------|---|--------------------------------------|------------|----------|----------|----------|----------|----------|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | 53 | 145 | 290 | 520 | 580 | 1100 | |
| | | | 4 | 55 | 150 | 300 | 550 | 1100 | 1700 | |
| | | | 5 | 54 | 140 | 290 | 530 | 1200 | 2000 | |
| | | | 6 | 46 | 135 | 280 | 490 | 1100 | 1850 | |
| | | | 7 | 44 | 125 | 270 | 450 | 1100 | 1750 | |
| | | | 8 | 41 | 110 | 240 | 390 | 1000 | 1550 | |
| | | | 9 | 37 | 95 | 220 | 360 | 900 | 1500 | |
| | | | 10 | 37 | 95 | 220 | 360 | 900 | 1450 | |
| | | 2 | 14 | 44 | 125 | 270 | 450 | 1100 | 1750 | |
| | | | 20 | 37 | 95 | 220 | 360 | 900 | 1450 | |
| | | | Stage | Ratio | PUR-60 (T) | PUR-75T | PUR-100T | PUR-140T | PUR-180T | PUR-220T |
| | | | 15 | 53 | 145 | 290 | 520 | 580 | 2000 | |
| | | | 20 | 55 | 150 | 300 | 550 | 1100 | 2000 | |
| | | | 25 | 54 | 140 | 290 | 530 | 1200 | 2000 | |
| | | | 30 | 54 | 140 | 290 | 530 | 1200 | 2000 | |
| | | | 35 | 54 | 140 | 290 | 530 | 1200 | 2000 | |
| | | | 40 | 54 | 140 | 290 | 530 | 1200 | 2000 | |
| | | | 45 | 54 | 140 | 290 | 530 | 1200 | 2000 | |
| | | | 50 | 54 | 140 | 290 | 530 | 1200 | 2000 | |
| | | | 60 | 46 | 135 | 280 | 490 | 1100 | 1850 | |
| 70 | 44 | 125 | 270 | 450 | 1100 | 1750 | | | | |
| 80 | 41 | 110 | 240 | 390 | 1000 | 1550 | | | | |
| 90 | 37 | 95 | 220 | 360 | 900 | 1500 | | | | |
| 100 | 37 | 95 | 220 | 360 | 900 | 1450 | | | | |
| 120 | 46 | 135 | 280 | 490 | 1100 | 1850 | | | | |
| 140 | 44 | 125 | 270 | 450 | 1100 | 1750 | | | | |
| 160 | 41 | 110 | 240 | 390 | 1000 | 1550 | | | | |
| 180 | 37 | 95 | 220 | 360 | 900 | 1500 | | | | |
| 200 | 37 | 95 | 220 | 360 | 900 | 1450 | | | | |
| Emergency Stop Torque T_{2NOT} | N • m | | 3.0 times of Nominal Output Torque (*Max. Output Torque T_{2B} = 60% of Emergency Stop Torque) | | | | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2 | 3-200 | 5000 | 4000 | 4000 | 3000 | 3000 | 2000 | |
| Max. Input Speed n_{1max} | rpm | 1,2 | 3-200 | 10000 | 8000 | 8000 | 6000 | 6000 | 4000 | |
| Micro Backlash P0 | arcmin | 1 | 3-20 | - | ≤ 3 | ≤ 2 | ≤ 2 | ≤ 2 | ≤ 2 | |
| | | 2 | 15-200 | - | ≤ 5 | ≤ 4 | ≤ 4 | ≤ 4 | ≤ 4 | |
| Precision Backlash P1 | arcmin | 1 | 3-20 | ≤ 5 | ≤ 5 | ≤ 4 | ≤ 4 | ≤ 4 | ≤ 4 | |
| | | 2 | 15-200 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 | |
| Standard Backlash P2 | arcmin | 1 | 3-20 | ≤ 7 | ≤ 7 | ≤ 6 | ≤ 6 | ≤ 6 | ≤ 6 | |
| | | 2 | 15-200 | ≤ 9 | ≤ 9 | ≤ 9 | ≤ 9 | ≤ 9 | ≤ 9 | |
| Torsional Rigidity | N • m /arcmin | 1,2 | 3-100 | 7 | 14 | 25 | 50 | 150 | 220 | |
| Max. Radial Load F_{2rB}^1 | N | 1,2 | 3-100 | 4130 | 5220 | 10650 | 17600 | 22000 | 27800 | |
| Max. Axial Load F_{2aB}^1 | N | 1,2 | 3-100 | 2500 | 3300 | 5700 | 11300 | 14000 | 16200 | |
| Operating Temp. | °C | | 3-100 | -10 °C ~ +90 °C | | | | | | |
| Service Life | hr | | 3-100 | 30,000 (15,000/Continuous operation) | | | | | | |
| Efficiency | % | 1 | 3-10 | ≥ 95% | | | | | | |
| | | 2 | 12-100 | ≥ 92% | | | | | | |
| Weight | kg | 1 | 3-10 | 3.1 | 5.46 | 12.5 | - | - | - | |
| | | 2 | 12-100 | 3.7/3.3 | 4.87 | 13.6 | - | - | - | |
| Mounting Position | - | 1,2 | 3-100 | Any direction | | | | | | |
| Noise Level ² | dBA/1m | 1,2 | 3-100 | 64 | 66 | 68 | 70 | 72 | 74 | |
| Protection Class | - | 1,2 | 3-100 | IP65 | | | | | | |
| Lubrication | - | 1,2 | 3-100 | Synthetic Lubricant | | | | | | |
| Inertia(J1) | | | | | | | | | | |
| Stage | Ratio | unit | | PUR-60 | PUR-90 | PUR-115 | PUR-140 | PUR-180 | PUR-220 | |
| 1 | 3/4/5/7/9 | Kg • cm ² | | 0.40 | 2.28 | 6.87 | 24.2 | 69.8 | 138.2 | |
| | 6/8/10/14/20 | | | 0.30 | 1.45 | 4.76 | 14.5 | 50.3 | 103.6 | |
| Stage | Ratio | | | PUR-60(T) | PUR-90T | PUR-115T | PUR-140T | PUR-180T | PUR-220T | |
| 2 | 15/20/25/35/45 | | | 0.40(0.08) | 0.72 | 3.02 | 7.83 | 27.7 | 80.3 | |
| | others | | | 0.30(0.06) | 0.38 | 1.64 | 5.00 | 15.9 | 55.3 | |

* 1. Applied to the output shaft center @100rpm.

* 2. Measured at 3000rpm with no load

※ The above figures/specifications are subject to change without prior notice.

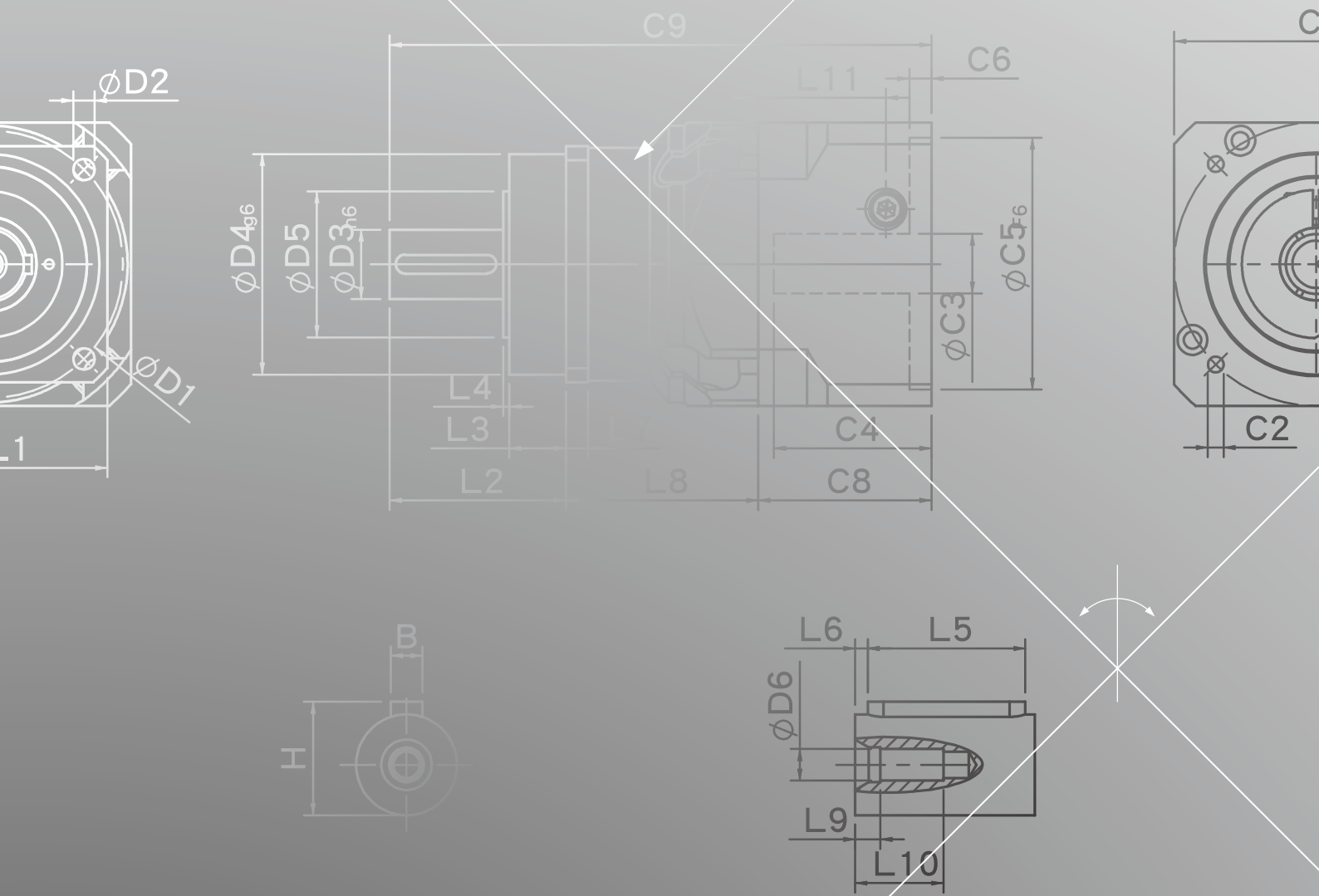
Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.

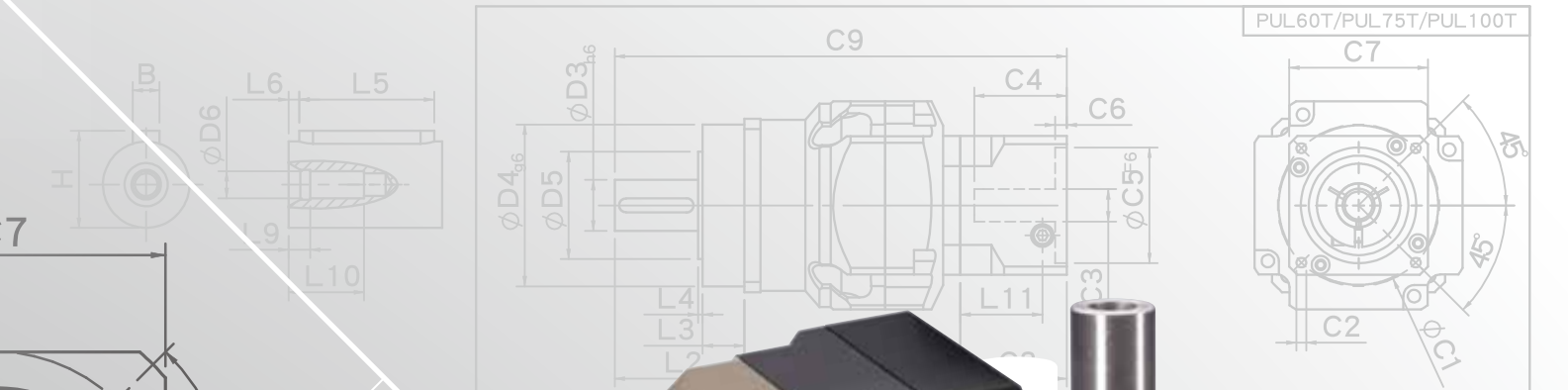
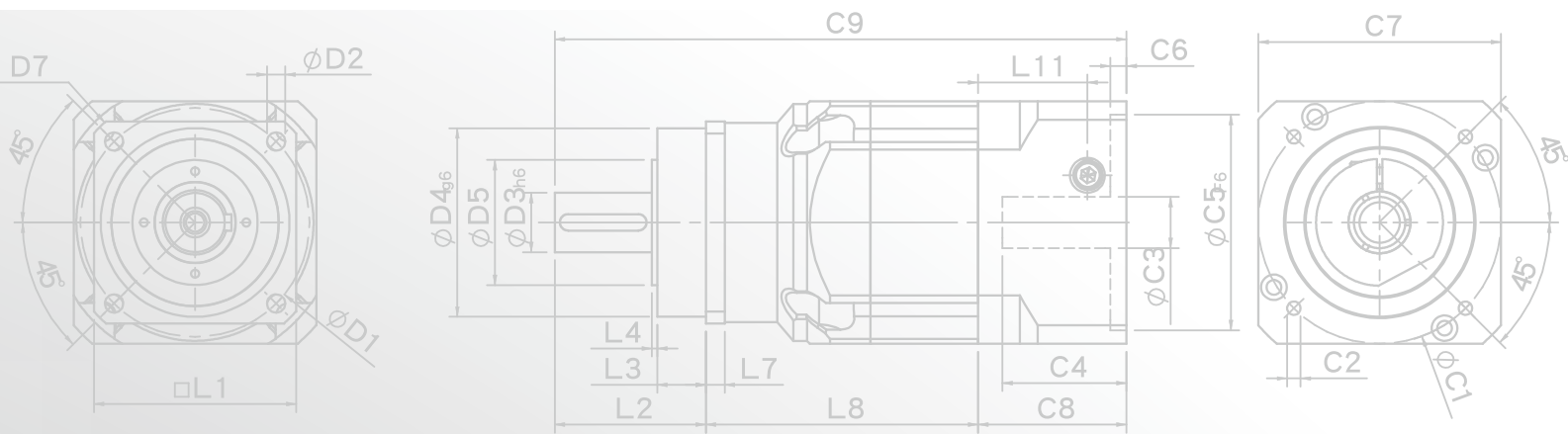
SERVO MOTOR GEARHEADS



- PHL
- PHFR
- PHF
- PGH
- PUR**
- PUL
- PGLH
- PGL
- PGC
- PGE
- PGRH
- PCR
- PGFR
- PGF
- PBC
- PBE
- PAE
- PAC
- PAN
- PGS
- PNS

PUL SERIES

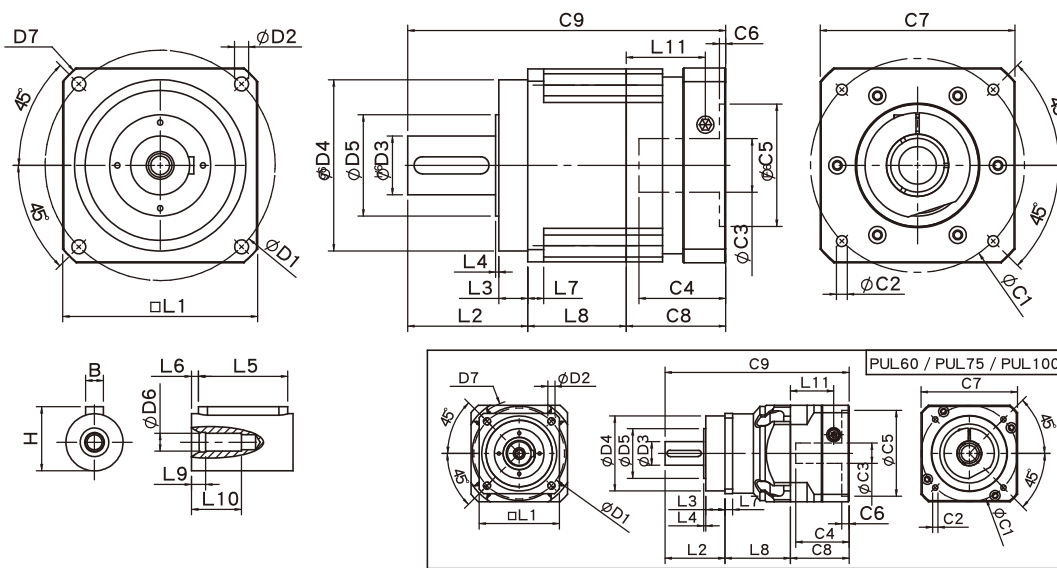




PUL60T/PUL75T/PUL100T



PUL Single Stage Dimensions



Specifications

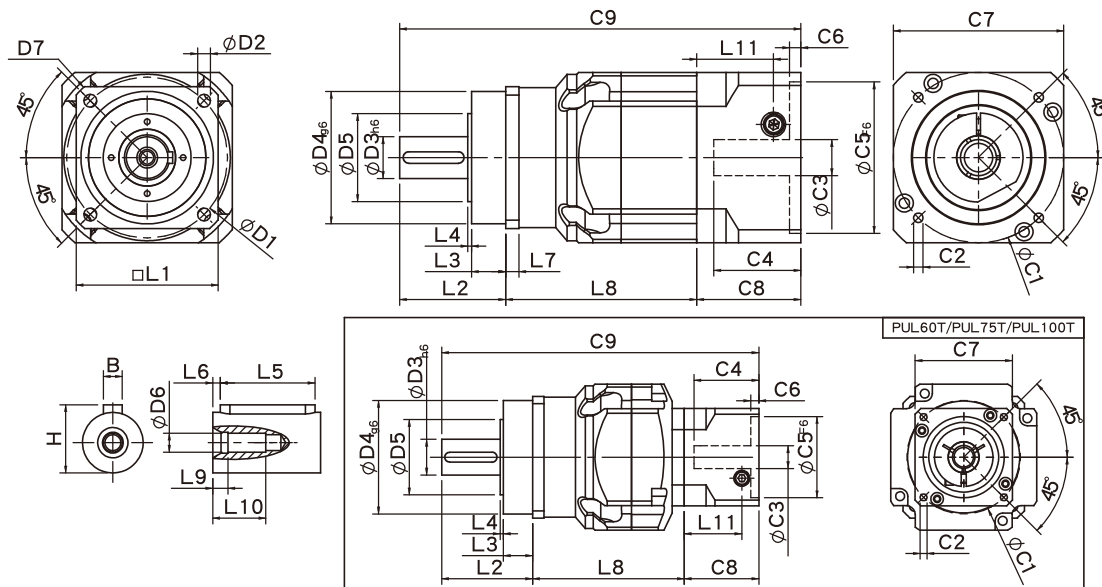
Unit:mm

| Dimensions | PUL60 | PUL75 | PUL100 | PUL140 | PUL180 | PUL220 |
|-------------------------------|---------|----------|-----------|----------|-----------|-----------|
| D1 | 68 | 85 | 120 | 165 | 215 | 250 |
| D2 | 5.5 | 6.8 | 9 | 11 | 13 | 17 |
| D3 _{h6} | 16 | 22 | 32 | 40 | 55 | 75 |
| D4 _{g6} | 60 | 70 | 90 | 130 | 160 | 180 |
| D5 | 34.6 | 46.4 | 59.6 | 79.2 | 94.5 | 114.4 |
| D6 | M5x0.8P | M8x1.25P | M12x1.75P | M16x2.0P | M20x2.5P | M20x2.5P |
| D7 | 80 | 100 | 138 | 186 | 239 | 292 |
| L1 | 62 | 76 | 105 | 142 | 180 | 220 |
| L2 | 48.5 | 56 | 88 | 112 | 112 | 138 |
| L3 | 18.5 | 18 | 28 | 27 | 27 | 30 |
| L4 | 1.5 | 2 | 2 | 3 | 3 | 3 |
| L5 | 25 | 32 | 40 | 60 | 70 | 90 |
| L6 | 2 | 2 | 5 | 5 | 6 | 7 |
| L7 | 6 | 7 | 10 | 12 | 15 | 20 |
| L8 | 44 | 61 | 46 | 64.5 | 92 | 111 |
| L9 | 4 | 4.5 | 6 | 6 | 8 | 15 |
| L10 | 16.5 | 20.5 | 30 | 38 | 48 | 42 |
| L11 | 35.5 | 40.5 | 41.8 | 70 | 74 | 96 |
| C1 ² | 70 | 90 | 115 | 165 | 200 | 235 |
| C2 ² | M5x0.8P | M6x1P | M8x1.25P | M10x1.5P | M12x1.75P | M12x1.75P |
| C3 ² | ≤14 | ≤19/≤24 | ≤24/≤32 | ≤35/≤38 | ≤50 | ≤55 |
| C4 ² | 37 | 47 | 51 | 66.7 | 81 | 112 |
| C5 ² _{F6} | 50 | 70 | 95 | 130 | 114.3 | 200 |
| C6 ² | 4 | 6 | 6 | 5.5 | 6 | 6 |
| C7 ² | 60 | 90 | 115 | 140 | 182 | 220 |
| C8 ² | 46 | 55 | 58 | 87.2 | 93 | 120 |
| C9 ² | 138.5 | 172 | 192 | 263.7 | 297 | 369 |
| B | 5 | 6 | 10 | 12 | 16 | 20 |
| H | 18 | 24.5 | 35 | 43 | 59 | 79.5 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to the motor flange chosen.

★ Specification subject to change without notice.

PUL Double Stage Dimensions-1



Specifications

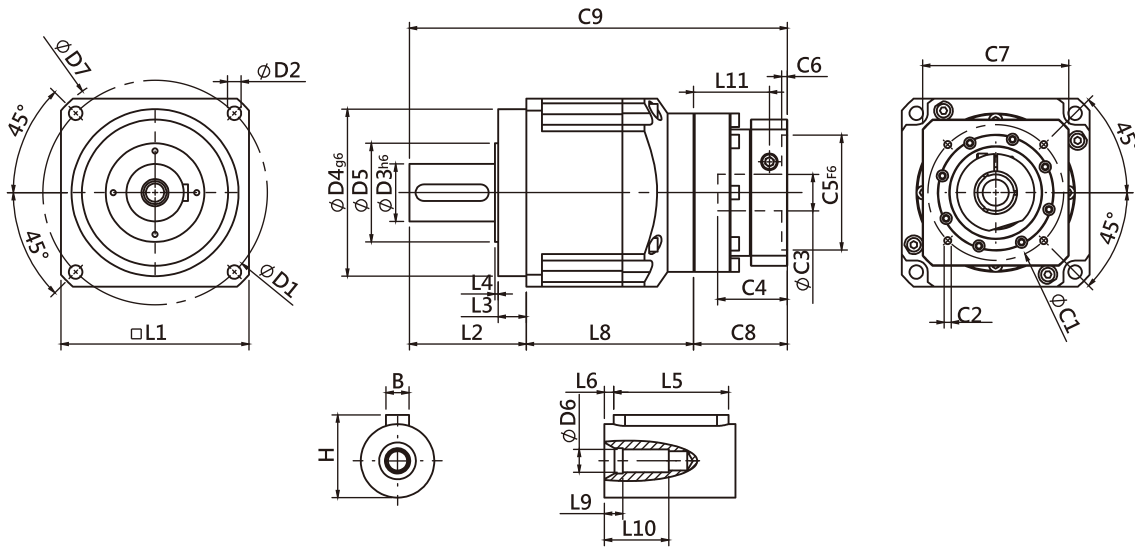
Unit:mm

| Dimensions | PUL60/PUL60T | | PUL75/PUL75T | | PUL100T |
|-------------------------------|--------------|---------|--------------|---------|-----------|
| D1 | 68 | | 85 | | 120 |
| D2 | 5.5 | | 6.8 | | 9 |
| D3 _{h6} | 16 | | 22 | | 32 |
| D4 _{g6} | 60 | | 70 | | 90 |
| D5 | 34.6 | | 46.4 | | 59.6 |
| D6 | M5x0.8P | | M8x1.25P | | M12x1.75P |
| D7 | 80 | | 100 | | 138 |
| L1 | 62 | | 76 | | 105 |
| L2 | 48.5 | | 56 | | 88 |
| L3 | 18.5 | | 18 | | 28 |
| L4 | 1.5 | | 2 | | 2 |
| L5 | 25 | | 32 | | 40 |
| L6 | 2 | | 2 | | 5 |
| L7 | 6 | | 7 | | 10 |
| L8 | 77 | 72.5 | 101 | 93.5 | 88.5 |
| L9 | 4 | | 4.5 | | 6 |
| L10 | 16.5 | | 20.5 | | 30 |
| L11 | 35.5 | 29 | 40.5 | 35.5 | 40.5 |
| C1 ² | 70 | 46 | 90 | 70 | 90 |
| C2 ² | M5x0.8P | M4x0.7P | M6x1P | M5x0.8P | M6x1P |
| C3 ² | ≤14 | ≤8 | ≤19/≤24 | ≤14 | ≤19/≤24 |
| C4 ² | 37 | 27 | 47 | 37 | 47 |
| C5 ² _{F6} | 50 | 30 | 70 | 50 | 70 |
| C6 ² | 4 | 4 | 6 | 4 | 6 |
| C7 ² | 60 | 42.6 | 90 | 60 | 90 |
| C8 ² | 46 | 38.5 | 55 | 46 | 55 |
| C9 ² | 171.5 | 159.5 | 212 | 195.5 | 231.5 |
| B | 5 | | 6 | | 10 |
| H | 18 | | 24.5 | | 35 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to the motor flange chosen.

★ Specification subject to change without notice.

PUL Double Stage Dimensions-2



Specifications

Unit:mm

| Dimensions | PUL140T | PUL180T | PUL220T |
|-------------------------------|---------------------|---------------------|-----------|
| D1 | 165 | 215 | 250 |
| D2 | 11 | 13 | 17 |
| D3 _{h6} | 40 | 55 | 75 |
| D4 _{g6} | 130 | 160 | 180 |
| D5 | 79.2 | 94.5 | 114.4 |
| D6 | M16x2.0P | M20x2.5P | M20x2.5P |
| D7 | 186 | 239 | 292 |
| L1 | 142 | 180 | 220 |
| L2 | 112 | 112 | 138 |
| L3 | 27 | 27 | 30 |
| L4 | 3 | 3 | 3 |
| L5 | 60 | 70 | 90 |
| L6 | 5 | 6 | 7 |
| L7 | 12 | 15 | 20 |
| L8 | 120 | 160.2 | 202 |
| L9 | 6 | 8 | 15 |
| L10 | 38 | 48 | 42 |
| L11 | 41.8 | 72.6 | 74 |
| C1 ² | 130 | 130 | 200 |
| C2 ² | M8x1.25P | M8x1.25P | M12x1.75P |
| C3 ² | $\leq 24 / \leq 32$ | $\leq 35 / \leq 38$ | ≤ 50 |
| C4 ² | 51 | 66.7 | 81 |
| C5 ² _{F6} | 110 | 110 | 114.3 |
| C6 ² | 6 | 5.5 | 6 |
| C7 ² | 115 | 140 | 180 |
| C8 ² | 58 | 89.8 | 93 |
| C9 ² | 290 | 362 | 433 |
| B | 12 | 16 | 20 |
| H | 43 | 59 | 79.5 |

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

★ Specification subject to change without notice.

PUL Specifications Table

| Specifications | | Stage | Ratio | PUL-60 | PUL-75 | PUL-100 | PUL-140 | PUL-180 | PUL-220 | |
|----------------------------------|-----------------------|----------------------|--|---------------------------------------|------------|-----------|----------|----------|----------|----------|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | 53 | 145 | 290 | 520 | 580 | 1100 | |
| | | | 4 | 55 | 150 | 300 | 550 | 1100 | 1700 | |
| | | | 5 | 54 | 140 | 290 | 530 | 1200 | 2000 | |
| | | | 6 | 46 | 135 | 280 | 490 | 1100 | 1850 | |
| | | | 7 | 44 | 125 | 270 | 450 | 1100 | 1750 | |
| | | | 8 | 41 | 110 | 240 | 390 | 1000 | 1550 | |
| | | | 9 | 37 | 95 | 220 | 360 | 900 | 1500 | |
| | | | 10 | 37 | 95 | 220 | 360 | 900 | 1450 | |
| | | | Stage | Ratio | PUL-60 (T) | PUL-75(T) | PUL-100T | PUL-140T | PUL-180T | PUL-220T |
| | | | 2 | 15 | 53 | 145 | 290 | 520 | 580 | 2000 |
| | | 20 | | 55 | 150 | 300 | 550 | 1100 | 2000 | |
| | | 25 | | 54 | 140 | 290 | 530 | 1200 | 2000 | |
| | | 30 | | 54 | 140 | 290 | 530 | 1200 | 2000 | |
| | | 35 | | 54 | 140 | 290 | 530 | 1200 | 2000 | |
| | | 40 | | 54 | 140 | 290 | 530 | 1200 | 2000 | |
| | | 45 | | 54 | 140 | 290 | 530 | 1200 | 2000 | |
| | | 50 | | 54 | 140 | 290 | 530 | 1200 | 2000 | |
| | | 60 | | 46 | 135 | 280 | 490 | 1200 | 1850 | |
| | | 70 | | 44 | 125 | 270 | 450 | 1100 | 1750 | |
| | | 80 | 41 | 110 | 240 | 390 | 1000 | 1550 | | |
| 90 | 37 | 95 | 220 | 360 | 900 | 1500 | | | | |
| 100 | 37 | 95 | 220 | 360 | 900 | 1450 | | | | |
| Emergency Stop Torque T_{2NOT} | N • m | | 3.0 times of Nominal Output Torque (* Max. Output Torque T_{2B} = 60% of Emergency Stop Torque) | | | | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2 | 3-100 | 5000 | 4000 | 4000 | 3000 | 3000 | 2000 | |
| Max. Input Speed n_{1max} | rpm | 1,2 | 3-100 | 10000 | 8000 | 8000 | 6000 | 6000 | 4000 | |
| Micro Backlash P0 | arcmin | 1 | 3-10 | ≤ 2 | ≤ 2 | ≤ 1 | ≤ 1 | ≤ 1 | ≤ 1 | |
| | | 2 | 12-100 | ≤ 4 | ≤ 4 | ≤ 3 | ≤ 3 | ≤ 3 | ≤ 3 | |
| Precision Backlash P1 | arcmin | 1 | 3-10 | ≤ 4 | ≤ 4 | ≤ 3 | ≤ 3 | ≤ 3 | ≤ 3 | |
| | | 2 | 12-100 | ≤ 6 | ≤ 6 | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 5 | |
| Standard Backlash P2 | arcmin | 1 | 3-10 | ≤ 6 | ≤ 6 | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 5 | |
| | | 2 | 12-100 | ≤ 8 | ≤ 8 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 | |
| Torsional Rigidity | N • m /arcmin | 1,2 | 3-100 | 7 | 14 | 25 | 50 | 150 | 220 | |
| Max. Radial Load F_{2rB}^{-1} | N | 1,2 | 3-100 | 4130 | 5220 | 10650 | 17600 | 22000 | 27800 | |
| Max. Axial Load F_{2aB}^{-1} | N | 1,2 | 3-100 | 2500 | 3300 | 5700 | 11300 | 14000 | 16200 | |
| Operating Temp. | °C | | 3-100 | -10 °C ~ +90 °C | | | | | | |
| Service Life | hr | | 3-100 | 30,000 (15,000/ Continuous operation) | | | | | | |
| Efficiency | % | 1 | 3-10 | ≥ 97% | | | | | | |
| | | 2 | 12-100 | ≥ 94% | | | | | | |
| Weight | kg | 1 | 3-10 | 1.8 | 4.0 | 6.7 | 15.0 | 30.8 | 55 | |
| | | 2 | 12-100 | 2.4/2.0 | 5.7/4.5 | 8.2 | 18.0 | 37 | 68.5 | |
| Mounting Position | - | 1,2 | 3-100 | Any direction | | | | | | |
| Noise Level ² | dB(A)/1m | 1,2 | 3-100 | 58 | 60 | 63 | 65 | 67 | 70 | |
| Protection Class | - | 1,2 | 3-100 | IP65 | | | | | | |
| Lubrication | - | 1,2 | 3-100 | Synthetic Lubricant | | | | | | |
| Inertia(J1) | | | | | | | | | | |
| Stage | Ratio | unit | | PUL-60 | PUL-75 | PUL-100 | PUL-140 | PUL-180 | PUL-220 | |
| 1 | 3 | Kg • cm ² | | 0.23 | 0.97 | 2.35 | 10.00 | 30.50 | 79.50 | |
| | 4 | | | 0.18 | 0.67 | 1.66 | 7.17 | 25.86 | 58.21 | |
| | 5 | | | 0.17 | 0.65 | 1.50 | 6.52 | 23.63 | 54.36 | |
| | 6/7/8 | | | 0.14 | 0.60 | 1.45 | 6.17 | 22.92 | 54.12 | |
| | 9/10 | | | 0.14 | 0.58 | 1.41 | 6.10 | 22.73 | 53.98 | |
| Stage | Ratio | | | PUL-60(T) | PUL-75(T) | PUL-100T | PUL-140T | PUL-180T | PUL-220T | |
| 2 | 15/20/25 | | | 0.17(0.02) | 0.65(0.17) | 0.65 | 1.50 | 6.52 | 23.63 | |
| | 30/35/40 | | | 0.14(0.02) | 0.60(0.14) | 0.60 | 1.45 | 6.17 | 22.92 | |
| | 45/50/60/70/80/90/100 | | | 0.14(0.02) | 0.58(0.14) | 0.58 | 1.41 | 6.10 | 22.73 | |

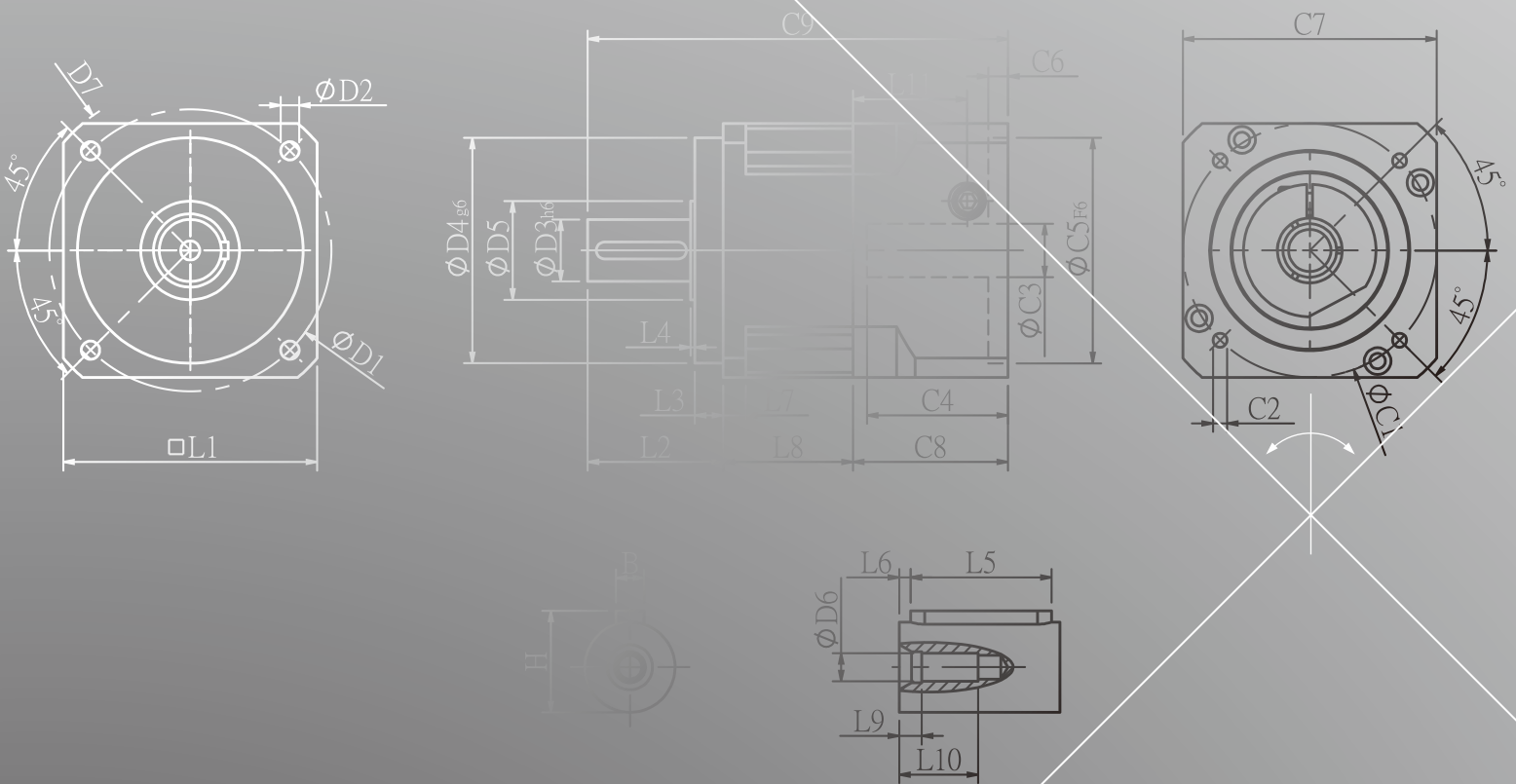
* 1. Applied to the output shaft center @100rpm.

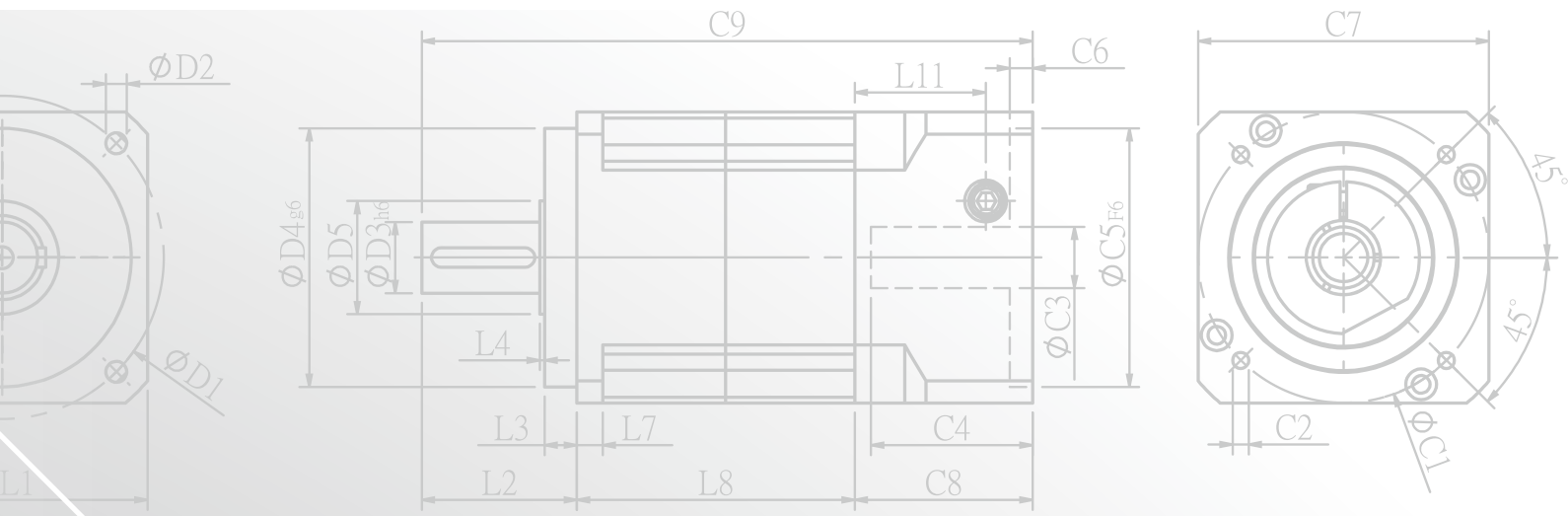
* 2. Measured at 3000rpm with no load

※ The above figures/specifications are subject to change without prior notice.

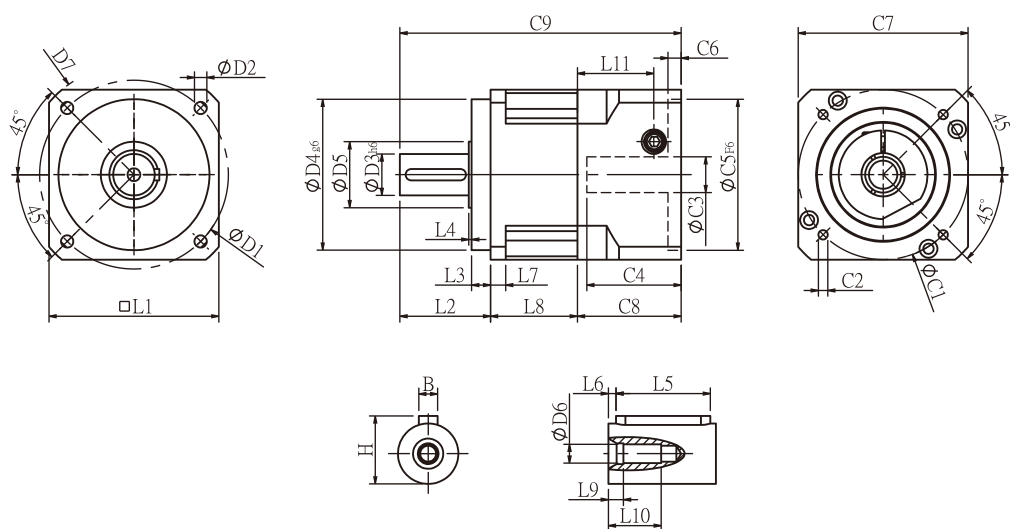
Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.

PGLH SERIES





PGLH Single Stage Dimensions



Specifications

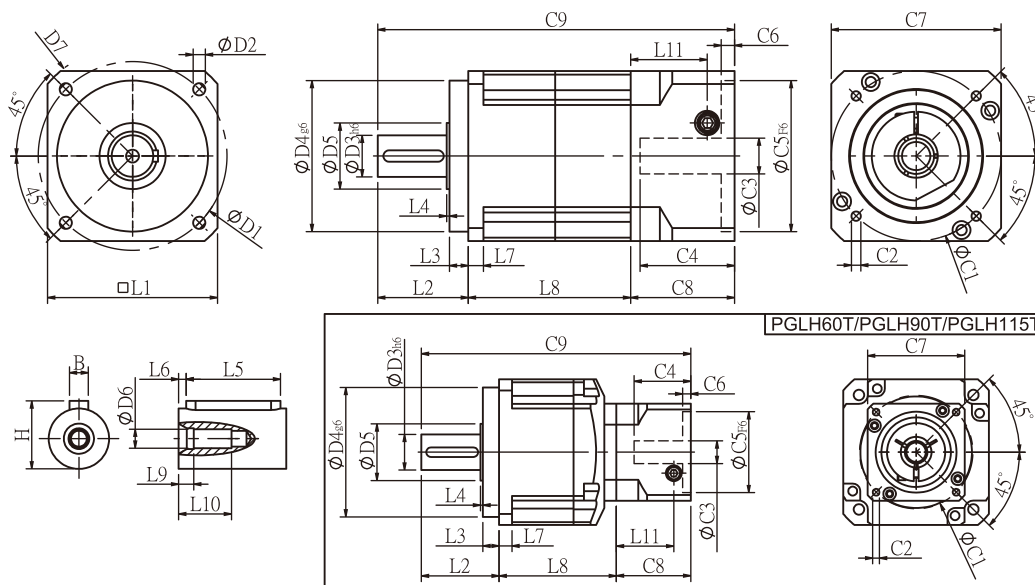
Unit:mm

| Dimensions | PGLH42 | PGLH60 | PGLH90 | PGLH115 |
|-------------------------------|---------|---------|----------|-------------|
| D1 | 50 | 70 | 100 | 130 |
| D2 | 3.4 | 5.5 | 6.5 | 8.5 |
| D3 _{h6} | 13 | 16 | 22 | 32 |
| D4 _{g6} | 35 | 50 | 80 | 110 |
| D5 | 15 | 25 | 35 | 45 |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P | M12x1.75P |
| D7 | 56 | 80 | 118 | 148 |
| L1 | 42.6 | 60 | 90 | 115 |
| L2 | 26 | 37 | 48 | 63 |
| L3 | 5.5 | 7 | 10 | 10 |
| L4 | 1 | 1.5 | 1.5 | 3.5 |
| L5 | 15 | 25 | 32 | 40 |
| L6 | 2 | 2 | 3 | 5 |
| L7 | 4 | 6 | 8 | 11 |
| L8 | 28.3 | 37 | 46 | 57 |
| L9 | 4 | 4 | 4.5 | 6 |
| L10 | 14 | 16.5 | 20.5 | 30 |
| L11 | 29 | 35.5 | 40.5 | 53.7 |
| C1 ² | 46 | 70 | 90 | 115 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | M8x1.25P |
| C3 ² | ≤8/≤14 | ≤14/≤19 | ≤19/≤24 | ≤24/≤32/≤38 |
| C4 ² | 27 | 37 | 41 | 56.3 |
| C5 ² _{F6} | 30 | 50 | 70 | 95 |
| C6 ² | 4 | 4 | 6 | 10 |
| C7 ² | 42.6 | 60 | 90 | 115 |
| C8 ² | 38.5 | 46 | 55 | 75 |
| C9 ² | 92.8 | 120 | 149 | 195 |
| B | 5 | 5 | 6 | 10 |
| H | 15 | 18 | 24.5 | 35 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

★ Specification subject to change without notice.

PGLH Double Stage Dimensions



Specifications

Unit:mm

| Dimensions | PGLH42 | PGLH60 | PGLH60T | PGLH90 | PGLH90T | PGLH115T |
|--------------------|---------|---------|---------|----------|---------|-----------|
| D1 | 50 | 70 | | 100 | | 130 |
| D2 | 3.4 | 5.5 | | 6.5 | | 8.5 |
| D3 h6 | 13 | 16 | | 22 | | 32 |
| D4 g6 | 35 | 50 | | 80 | | 110 |
| D5 | 15 | 25 | | 35 | | 45 |
| D6 | M4x0.7P | M5x0.8P | | M8x1.25P | | M12x1.75P |
| D7 | 56 | 80 | | 118 | | 148 |
| L1 | 42.6 | 60 | | 90 | | 115 |
| L2 | 26 | 37 | | 48 | | 63 |
| L3 | 5.5 | 7 | | 10 | | 10 |
| L4 | 1 | 1.5 | | 1.5 | | 3.5 |
| L5 | 15 | 25 | | 32 | | 40 |
| L6 | 2 | 2 | | 3 | | 5 |
| L7 | 4 | 6 | | 8 | | 11 |
| L8 | 55.3 | 70 | 65.5 | 90 | 78.5 | 99.5 |
| L9 | 4 | 4 | | 4.5 | | 6 |
| L10 | 14 | 16.5 | | 20.5 | | 30 |
| L11 | 29 | 35.5 | 29 | 40.5 | 35.5 | 40.7 |
| C1 ² | 46 | 70 | 46 | 90 | 70 | 90 |
| C2 ² | M4x0.7P | M5x0.8P | M4x0.7P | M6x1.0P | M5x0.8P | M6x1.0P |
| C3 ² | ≤8/≤14 | ≤14/≤19 | ≤8/≤14 | ≤19/≤24 | ≤14/≤19 | ≤19/≤24 |
| C4 ² | 27 | 37 | 27 | 41 | 37 | 46 |
| C5 ² F6 | 30 | 50 | 30 | 70 | 50 | 70 |
| C6 ² | 4 | 4 | 4 | 6 | 4 | 10 |
| C7 ² | 42.6 | 60 | 42.6 | 90 | 60 | 90 |
| C8 ² | 38.5 | 46 | 38.5 | 55 | 46 | 60 |
| C9 ² | 119.8 | 153 | 141 | 193 | 172.5 | 222.5 |
| B | 5 | 5 | | 6 | | 10 |
| H | 15 | 18 | | 24.5 | | 35 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

★ Specification subject to change without notice.

PGLH Specifications Table

| Specifications | | Stage | Ratio | PGLH-42 | PGLH-60 | PGLH-90 | PGLH-115 |
|--|---------------|---|--------|---------------------|------------|------------|-----------|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | 19 | 53 | 145 | 290 |
| | | | 4 | 20 | 55 | 150 | 300 |
| | | | 5 | 17 | 54 | 140 | 290 |
| | | | 7 | 14 | 44 | 125 | 270 |
| | | | 10 | 11 | 37 | 95 | 220 |
| | | Stage | Ratio | PGLH-42 | PGLH-60(T) | PGLH-90(T) | PGLH-115T |
| | | 2 | 15 | 19 | 53 | 145 | 290 |
| | | | 20 | 20 | 55 | 150 | 300 |
| | | | 25 | 17 | 54 | 140 | 290 |
| | | | 30 | 17 | 54 | 140 | 290 |
| | | | 35 | 17 | 54 | 140 | 290 |
| | | | 40 | 17 | 54 | 140 | 290 |
| | | | 50 | 17 | 54 | 140 | 290 |
| 70 | 14 | 44 | 125 | 270 | | | |
| 100 | 11 | 37 | 95 | 220 | | | |
| Emergency Stop Torque T_{2NOT} | N • m | 3.0 times of Nominal Output Torque (*Max. Output Torque T_{2B} = 60% of Emergency Stop Torque) | | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2 | 3-100 | 4000 | 4000 | 3000 | 3000 |
| Max. Input Speed n_{1max} | rpm | 1,2 | 3-100 | 8000 | 8000 | 6000 | 6000 |
| Precision Backlash P1 | arcmin | 1 | 3-10 | ≤ 6 | ≤ 6 | ≤ 6 | ≤ 5 |
| | | 2 | 12-100 | ≤ 8 | ≤ 8 | ≤ 8 | ≤ 7 |
| Standard Backlash P2 | arcmin | 1 | 3-10 | ≤ 8 | ≤ 8 | ≤ 8 | ≤ 7 |
| | | 2 | 12-100 | ≤ 10 | ≤ 10 | ≤ 10 | ≤ 9 |
| Torsional Rigidity | N • m /arcmin | 1,2 | 3-100 | 2.5 | 6 | 12 | 23 |
| Max. Radial Load F_{2rB}^{-1} | N | 1,2 | 3-100 | 640 | 1260 | 2230 | 4300 |
| Max. Axial Load F_{2aB}^{-1} | N | 1,2 | 3-100 | 410 | 600 | 1500 | 3310 |
| Operating Temp. | °C | -10 °C ~ +90 °C | | | | | |
| Service Life | hr | 20,000 (10,000/ Continuous operation) | | | | | |
| Efficiency | % | 1 | 3-10 | ≥ 97% | | | |
| | | 2 | 12-100 | ≥ 94% | | | |
| Weight | kg | 1 | 3-10 | 0.6 | 1.3 | 3.5 | 7.8 |
| | | 2 | 12-100 | 0.9 | 2.0/1.56 | 5.6/3.9 | 9.5 |
| Mounting Position | - | 1,2 | 3-100 | Any direction | | | |
| Noise Level ² | dB(A)/1m | 1,2 | 3-100 | 58 | 60 | 63 | 65 |
| Protection Class | - | 1,2 | 3-100 | IP65 | | | |
| Lubrication | - | 1,2 | 3-100 | Synthetic Lubricant | | | |
| Inertia(J1) | | | | | | | |
| Stage | Ratio | unit | | PGLH-42 | PGLH-60 | PGLH-90 | PGLH-115 |
| 1 | 3 | Kg • cm ² | | 0.03 | 0.23 | 0.97 | 2.35 |
| | 4 | | | 0.02 | 0.18 | 0.67 | 1.66 |
| | 5 | | | 0.02 | 0.17 | 0.65 | 1.50 |
| | 7 | | | 0.02 | 0.14 | 0.60 | 1.45 |
| | 10 | | | 0.02 | 0.14 | 0.58 | 1.41 |
| Stage | Ratio | | | PGLH-42 | PGLH-60(T) | PGLH-90(T) | PGLH-115T |
| 2 | 15/20/25 | | | 0.02 | 0.17(0.02) | 0.65(0.17) | 0.65 |
| | 30/35/40 | | | 0.02 | 0.14(0.02) | 0.60(0.14) | 0.60 |
| | 50/70/100 | | | 0.02 | 0.14(0.02) | 0.58(0.14) | 0.58 |
| <p>* 1. Applied to the output shaft center @100rpm. * 2. Measured at 3000rpm with no load ※ The above figures/specifications are subject to change without prior notice.</p> | | | | | | | |

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

SERVO MOTOR GEARHEADS



PHL

PHFR

PHF

PGH

PUR

PUL

PGLH

PGL

PGC

PGE

PGRH

PCR

PGFR

PGF

PBC

PBE

PAE

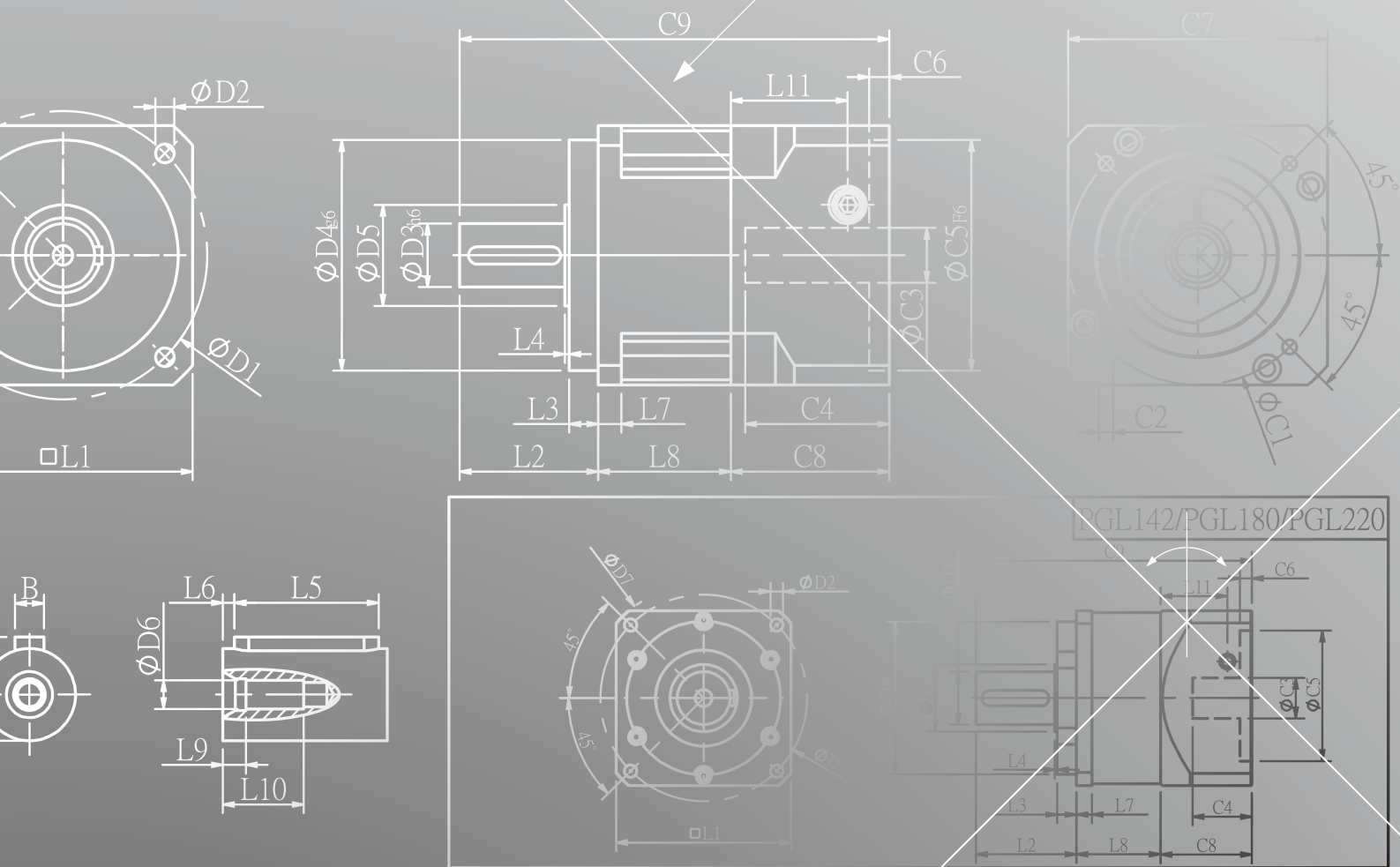
PAC

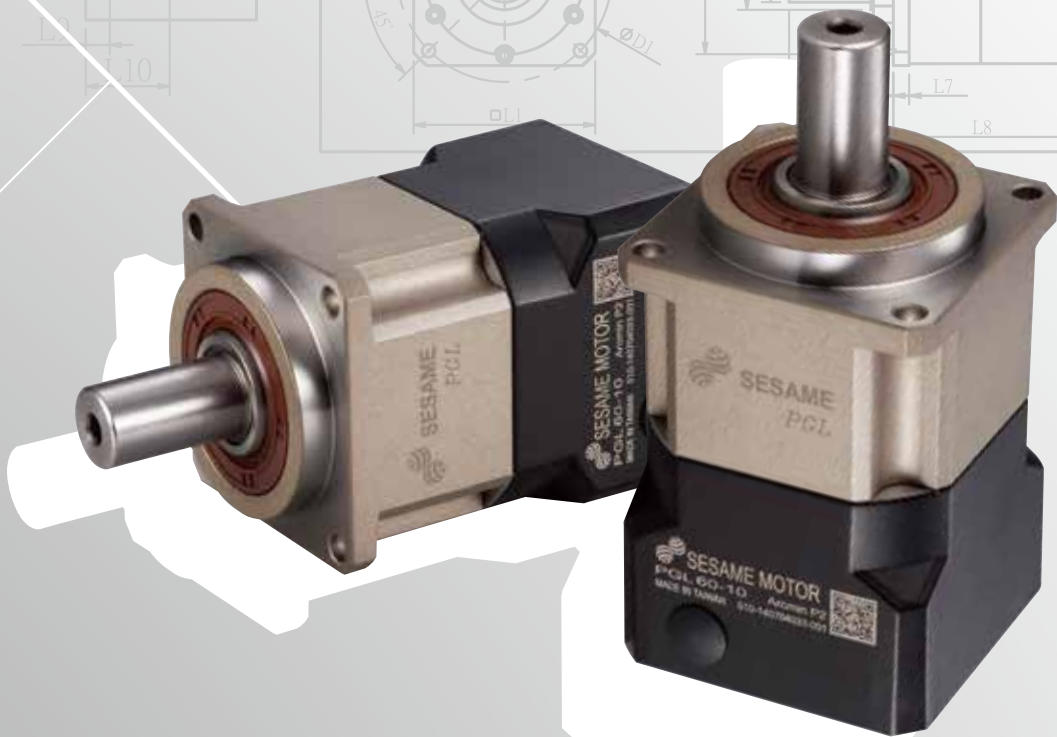
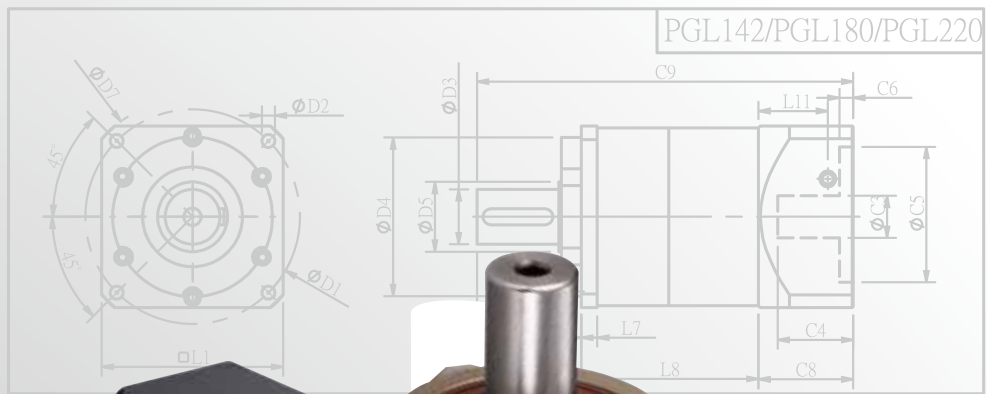
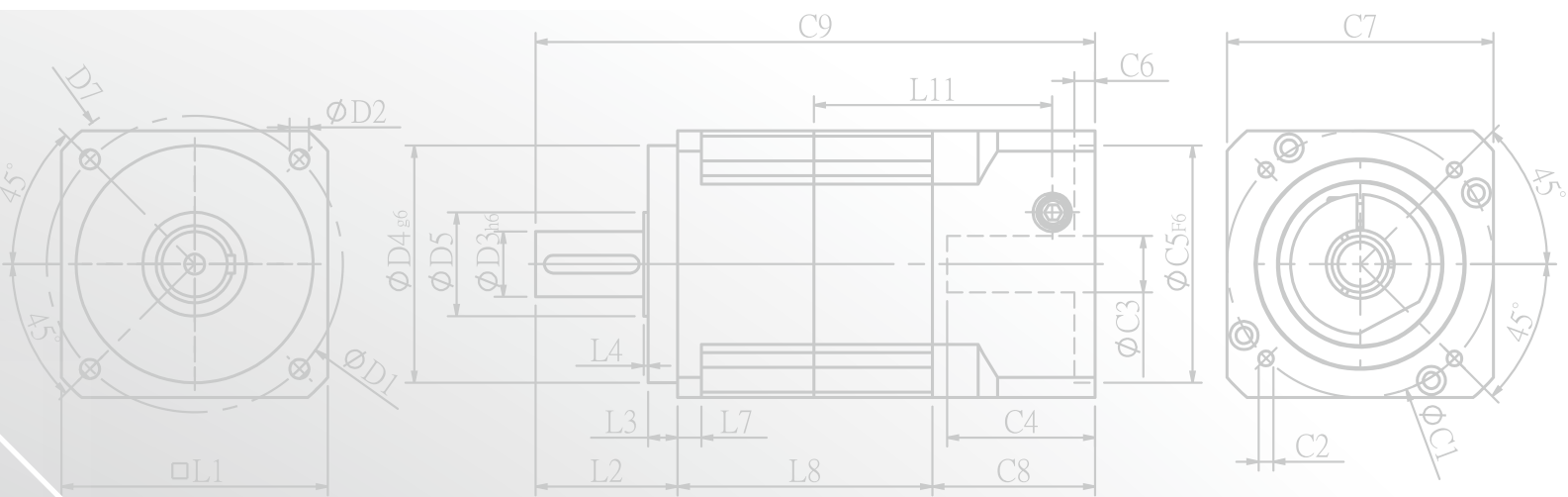
PAN

PGS

PNS

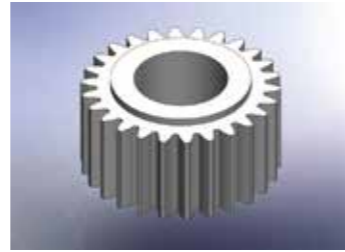
PGL SERIES





PGL SERIES FEATURES

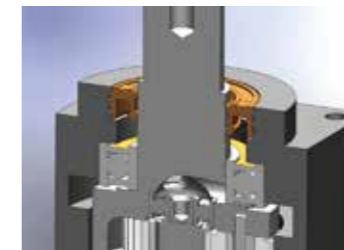
Alloy steel gear with unique heat treatment. Additionally, with gear grinding processing to get the best accuracy, high wear resistance and high impact toughness.



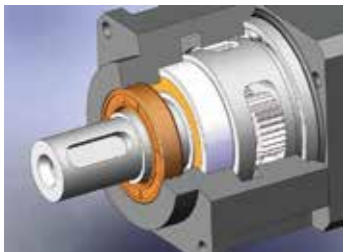
The sun gear bearing is placed directly into the planetary arm bracket, the overall mechanical structure designed to ensure concentricity of the transmission components.



Planetary arm bracket and output shaft are one-piece constructed, setting bearing apart for larger span to reach the largest reverse rigid and contribute high axis radial load capacity.

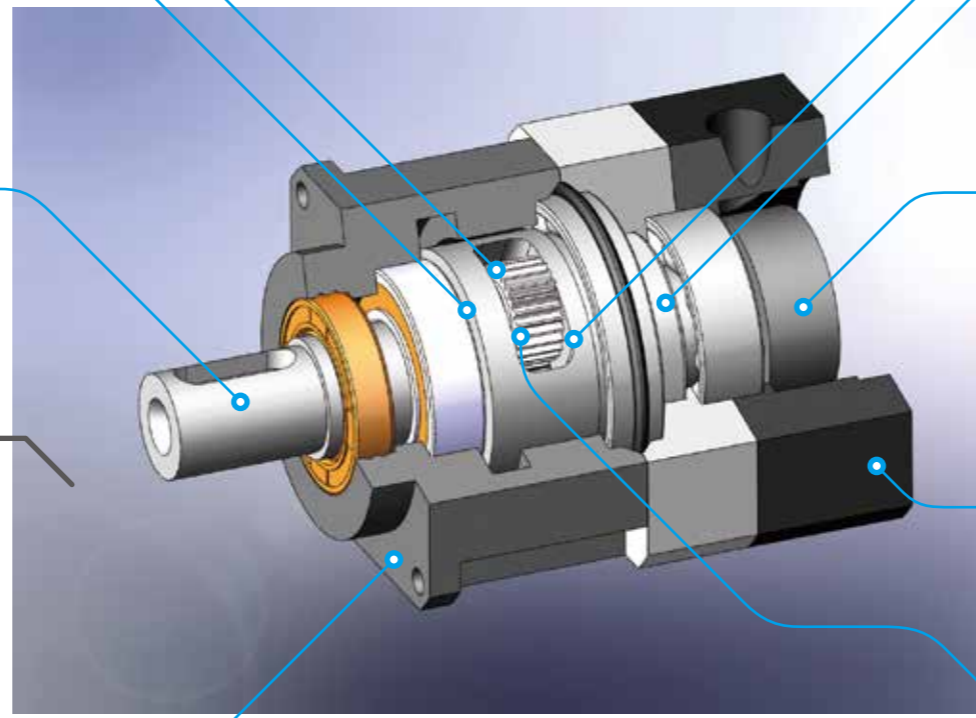


High-tech oil seal design on the upper lip guard against dust intruder, lower lip to guard against oil leak. Advanced lubricants grease and IP65 protection safeguards fully avoid leaking and given it maintenance-free.

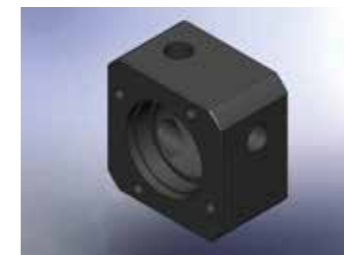


Grinding process to smooth surface of output shaft, and with oil-seal to minimum friction coefficient and reducing start up load; result in the best seal-ability and extended lifespan.

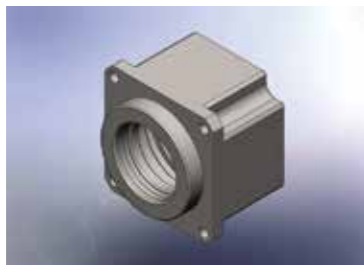
PGL Series overall design suitable for combination operation with servo motor high-speed input and achieves maximum torque output. Precision gear design and gear processing, create a low backlash operation, high efficiency, low noise and long-life of the planetary gear.



Input-end and motor shaft are coupled through a dynamic balanced collar clamping mechanism to ensure connection interface concentricity and zero slip power transmission at high speed.



Advanced motor bracket design coupled with the input shaft bushing is easy to mount to any servo or stepper motor.



Advanced electroless nickel plating surface treatment resists scratch and corrosion. Suitable for stringent require of high-tech equipment. The gear box and internal gear ring are one-piece constructed, and then processed with advanced Germany gear shaper machinery for high-precision, high torque and abrade consumption.

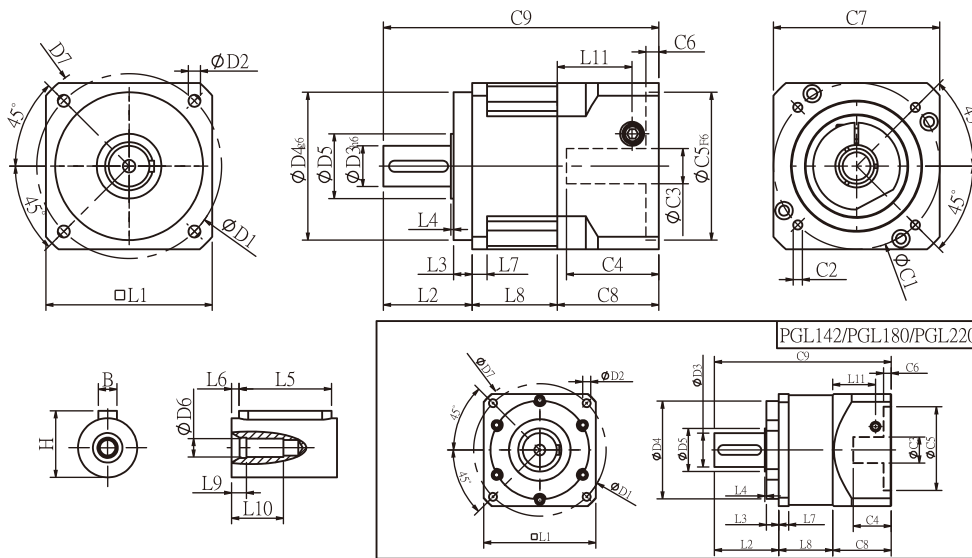


Planet gear transmission interface equipped with needle bearings, full needle roller bearings aligned without retainer achieve maximum exposure but smallest gap tolerances. Enhance over-all gear structure rigid and output torque.

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

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PGL Single Stage Dimensions



Specifications

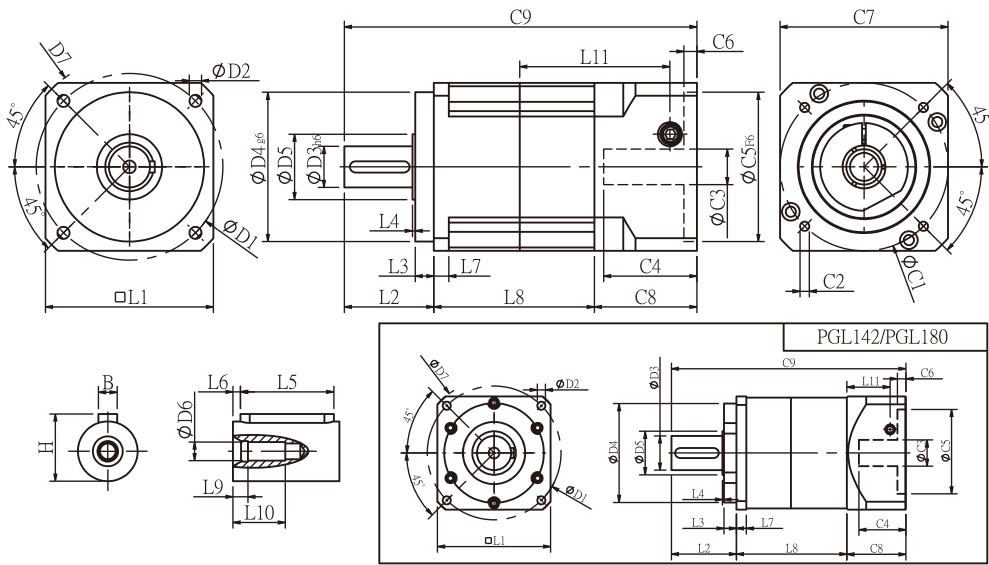
Unit:mm

| Dimensions | PGL42 | PGL60 | PGL90 | PGL115 | PGL142 | PGL180 | PGL220 |
|--------------------|---------|---------|----------|-----------|----------|-----------|-----------|
| D1 | 50 | 70 | 100 | 130 | 165 | 215 | 250 |
| D2 | 3.4 | 5.5 | 6.5 | 8.5 | 10.5 | 13 | 17 |
| D3 h6 | 13 | 16 | 22 | 32 | 40 | 55 | 75 |
| D4 g6 | 35 | 50 | 80 | 110 | 130 | 160 | 180 |
| D5 | 15 | 25 | 35 | 45 | 50 | 70 | 90 |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P | M12x1.75P | M16x2.0P | M20x2.5P | M20x2.5P |
| D7 | 56 | 80 | 118 | 148 | 186 | 239 | 292 |
| L1 | 42.6 | 60 | 90 | 115 | 142 | 182 | 220 |
| L2 | 26 | 37 | 48 | 62 | 93 | 104.5 | 138 |
| L3 | 5.5 | 7 | 10 | 8 | 8 | 20 | 30 |
| L4 | 1.5 | 1.5 | 1.5 | 3 | 6 | 2.5 | 3 |
| L5 | 15 | 25 | 32 | 40 | 60 | 70 | 90 |
| L6 | 2 | 2 | 3 | 5 | 5 | 6 | 7 |
| L7 | 4 | 6 | 8 | 12 | 18 | 16 | 20 |
| L8 | 28.3 | 36 | 46 | 59 | 79 | 87.5 | 117.5 |
| L9 | 4 | 4 | 4.5 | 6 | 6 | 8 | 7 |
| L10 | 14 | 16.5 | 20.5 | 30 | 38 | 48 | 42 |
| L11 | 29 | 35.5 | 40.5 | 42 | 63 | 69.5 | 102.2 |
| C1 ² | 46 | 70 | 90 | 115 | 145 | 200 | 235 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | M8x1.25P | M8x1.25P | M12x1.75P | M12x1.75P |
| C3 ² | ≤8 | ≤14 | ≤19/≤24 | ≤24/≤28 | ≤35 | ≤50 | ≤55 |
| C4 ² | 27 | 37 | 47 | 58 | 66 | 82 | 98 |
| C5 ² F6 | 30 | 50 | 70 | 95 | 110 | 114.3 | 200 |
| C6 ² | 4 | 4 | 6 | 10 | 6 | 13 | 12 |
| C7 ² | 42.6 | 60 | 90 | 115 | 140 | 182 | 220 |
| C8 ² | 38.5 | 46 | 55 | 63 | 80 | 95 | 130 |
| C9 ² | 92.8 | 119 | 149 | 184 | 252 | 287 | 385.5 |
| B | 5 | 5 | 6 | 10 | 12 | 16 | 20 |
| H | 15 | 18 | 24.5 | 35 | 43 | 59 | 79.5 |

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

★ Specification subject to change without notice.

PGL Double Stage Dimensions-1



Specifications

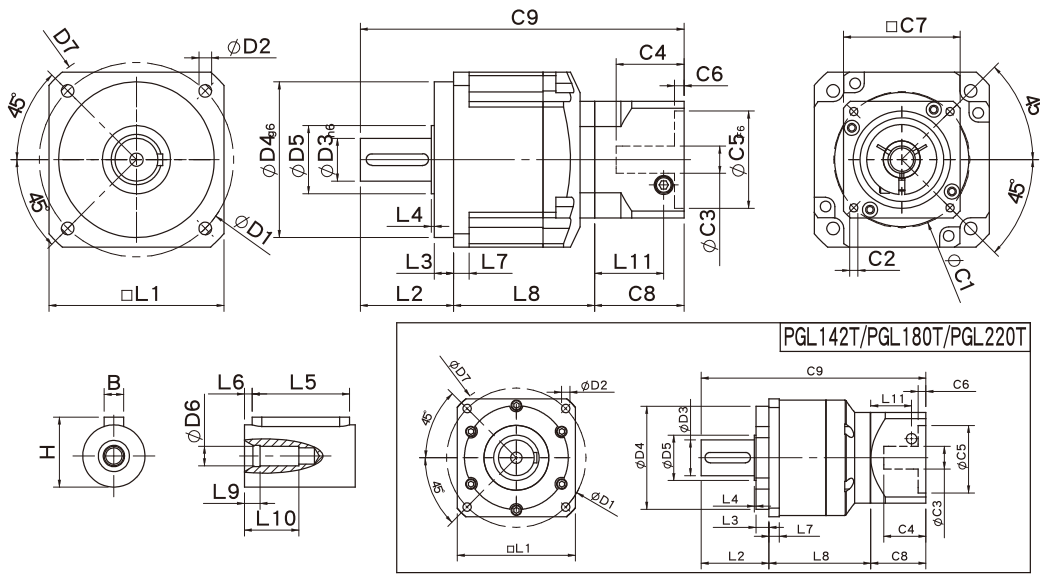
Unit:mm

| Dimensions | PGL42 | PGL60 | PGL90 | PGL115 | PGL142 | PGL180 |
|--------------------|---------|---------|----------|-----------|----------|-----------|
| D1 | 50 | 70 | 100 | 130 | 165 | 215 |
| D2 | 3.4 | 5.5 | 6.5 | 8.5 | 10.5 | 13 |
| D3 h6 | 13 | 16 | 22 | 32 | 40 | 55 |
| D4 g6 | 35 | 50 | 80 | 110 | 130 | 160 |
| D5 | 15 | 25 | 35 | 45 | 50 | 70 |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P | M12x1.75P | M16x2.0P | M20x2.5P |
| D7 | 56 | 80 | 118 | 148 | 186 | 239 |
| L1 | 42.6 | 60 | 90 | 115 | 142 | 182 |
| L2 | 26 | 37 | 48 | 62 | 93 | 104.5 |
| L3 | 5.5 | 7 | 10 | 8 | 8 | 20 |
| L4 | 1.5 | 1.5 | 1.5 | 3 | 6 | 2.5 |
| L5 | 15 | 25 | 32 | 40 | 60 | 70 |
| L6 | 2 | 2 | 3 | 5 | 5 | 6 |
| L7 | 4 | 6 | 8 | 12 | 18 | 16 |
| L8 | 54.3 | 64 | 86 | 107 | 140 | 177.5 |
| L9 | 4 | 4 | 4.5 | 6 | 6 | 8 |
| L10 | 14 | 16.5 | 20.5 | 30 | 38 | 48 |
| L11 | 29 | 35.5 | 40.5 | 42 | 63 | 69.5 |
| C1 ² | 46 | 70 | 90 | 115 | 145 | 200 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | M8x1.25P | M8x1.25P | M12x1.75P |
| C3 ² | ≤8 | ≤14 | ≤19/≤24 | ≤24/≤28 | ≤35 | ≤50 |
| C4 ² | 27 | 37 | 47 | 58 | 66 | 82 |
| C5 ² F6 | 30 | 50 | 70 | 95 | 110 | 114.3 |
| C6 ² | 4 | 4 | 6 | 10 | 6 | 13 |
| C7 ² | 42.6 | 60 | 90 | 115 | 140 | 182 |
| C8 ² | 38.5 | 46 | 55 | 63 | 80 | 95 |
| C9 ² | 118.8 | 147 | 189 | 232 | 313 | 377 |
| B | 5 | 5 | 6 | 10 | 12 | 16 |
| H | 15 | 18 | 24.5 | 35 | 43 | 59 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to the motor flange chosen.

★ Specification subject to change without notice.

PGL Double Stage Dimensions-2



Specifications

Unit:mm

| Dimensions | PGL60T | PGL90T | PGL115T | PGL142T | PGL180T | PGL220T |
|-------------------------------|---------|----------|-----------|----------|----------|-----------|
| D1 | 70 | 100 | 130 | 165 | 215 | 250 |
| D2 | 5.5 | 6.5 | 8.5 | 10.5 | 13 | 17 |
| D3 _{h6} | 16 | 22 | 32 | 40 | 55 | 75 |
| D4 _{g6} | 50 | 80 | 110 | 130 | 160 | 180 |
| D5 | 25 | 35 | 45 | 50 | 70 | 90 |
| D6 | M5x0.8P | M8x1.25P | M12x1.75P | M16x2.0P | M20x2.5P | M20x2.5P |
| D7 | 80 | 118 | 148 | 186 | 239 | 292 |
| L1 | 60 | 90 | 115 | 142 | 182 | 220 |
| L2 | 37 | 48 | 62 | 93 | 104.5 | 138 |
| L3 | 7 | 10 | 8 | 8 | 20 | 30 |
| L4 | 1.5 | 1.5 | 3 | 6 | 2.5 | 3 |
| L5 | 25 | 32 | 40 | 60 | 70 | 90 |
| L6 | 2 | 3 | 5 | 5 | 6 | 7 |
| L7 | 6 | 8 | 12 | 18 | 16 | 20 |
| L8 | 58.8 | 72.5 | 97.4 | 127 | 157 | 199.5 |
| L9 | 4 | 4.5 | 6 | 6 | 8 | 7 |
| L10 | 16.5 | 20.5 | 30 | 38 | 48 | 42 |
| L11 | 29 | 35.5 | 40.5 | 42 | 63 | 69.5 |
| C1 ² | 46 | 70 | 90 | 115 | 145 | 200 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | M8x1.25P | M8x1.25P | M12x1.75P |
| C3 ² | ≤8 | ≤14 | ≤19/≤24 | ≤24/≤28 | ≤35 | ≤50 |
| C4 ² | 27 | 37 | 47 | 58 | 66 | 82 |
| C5 ² _{F6} | 30 | 50 | 70 | 95 | 110 | 114.3 |
| C6 ² | 4 | 4 | 6 | 10 | 6 | 13 |
| C7 ² | 42.6 | 60 | 90 | 115 | 140 | 182 |
| C8 ² | 38.5 | 46 | 55 | 63 | 80 | 95 |
| C9 ² | 134.3 | 166.5 | 214.4 | 283 | 341.5 | 432.5 |
| B | 5 | 6 | 10 | 12 | 16 | 20 |
| H | 18 | 24.5 | 35 | 43 | 59 | 79.5 |

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

★ Specification subject to change without notice.

PGL Specifications Table

| Specifications | | Stage | Ratio | PGL-42 | PGL-60 | PGL-90 | PGL-115 | PGL-142 | PGL-180 | PGL-220 | |
|----------------------------------|-----------------------|----------------------|--|--------------------------------------|------------|------------|------------|------------|------------|------------|-----------|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | 13.8 | 44.2 | 95.2 | 283 | 482 | 1151 | 1670 | |
| | | | 4 | 11.9 | 35.9 | 74.6 | 249 | 490 | 1055 | 1574 | |
| | | | 5 | 13.8 | 43.0 | 95.2 | 283 | 473 | 1151 | 1670 | |
| | | | 6 | 12.5 | 39.4 | 90.9 | 266 | 436 | 1055 | 1574 | |
| | | | 7 | 11.9 | 36.0 | 85.6 | 219 | 400 | 1055 | 1574 | |
| | | | 8 | 10.9 | 32.4 | 85.0 | 216 | 363 | 860 | 1184 | |
| | | | 9 | 9.8 | 28.7 | 80.0 | 210 | 320 | 764 | 1185 | |
| | | | 10 | 10.1 | 25.0 | 75.0 | 210 | 320 | 763 | 1184 | |
| | | | Stage | Ratio | PGL-42 | PGL-60 (T) | PGL-90(T) | PGL-115(T) | PGL-142(T) | PGL-180(T) | PGL-220 T |
| | | | 15 | 13.8 | 44.2 | 95.2 | 283 | 482 | 1151 | 1670 | |
| | | 20 | 11.9 | 35.9 | 74.6 | 249 | 490 | 1055 | 1574 | | |
| | | 25 | 13.8 | 43.0 | 95.2 | 283 | 473 | 1151 | 1670 | | |
| | | 30 | 13.8 | 43.0 | 95.2 | 283 | 473 | 1151 | 1670 | | |
| | | 35 | 13.8 | 43.0 | 95.2 | 283 | 473 | 1151 | 1670 | | |
| | | 40 | 13.8 | 43.0 | 95.2 | 283 | 473 | 1151 | 1670 | | |
| | | 45 | 13.8 | 43.0 | 95.2 | 283 | 473 | 1151 | 1670 | | |
| | | 50 | 13.8 | 43.0 | 95.2 | 283 | 473 | 990 | 1670 | | |
| | | 60 | 12.5 | 39.4 | 90.9 | 266 | 436 | 1055 | 1574 | | |
| | | 70 | 11.9 | 36.0 | 85.6 | 219 | 400 | 1055 | 1574 | | |
| | | 80 | 10.9 | 32.4 | 85.0 | 216 | 363 | 860 | 1184 | | |
| 90 | 9.8 | 28.7 | 80.0 | 210 | 320 | 764 | 1185 | | | | |
| 100 | 10.1 | 25.0 | 75.0 | 210 | 320 | 763 | 1184 | | | | |
| Emergency Stop Torque T_{2NOT} | N • m | | 3.0 times of Nominal Output Torque (* Max. Output Torque T_{2B} = 60% of Emergency Stop Torque) | | | | | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2 | 3-100 | 3000 | 3000 | 3000 | 2500 | 2000 | 2000 | 2000 | |
| Max. Input Speed n_{1max} | rpm | 1,2 | 3-100 | 6000 | 6000 | 6000 | 5000 | 4000 | 4000 | 4000 | |
| Micro Backlash P0 | arcmin | 1 | 3-10 | - | - | - | ≤ 3 | ≤ 3 | ≤ 3 | ≤ 3 | |
| | | 2 | 12-100 | - | - | - | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 5 | |
| Precision Backlash P1 | arcmin | 1 | 3-10 | - | ≤ 6 | ≤ 6 | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 5 | |
| | | 2 | 12-100 | - | ≤ 9 | ≤ 9 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 | |
| Standard Backlash P2 | arcmin | 1 | 3-10 | ≤ 12 | ≤ 9 | ≤ 9 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 | |
| | | 2 | 12-100 | ≤ 15 | ≤ 12 | ≤ 12 | ≤ 9 | ≤ 9 | ≤ 9 | ≤ 9 | |
| Torsional Rigidity | N • m / arcmin | 1,2 | 3-100 | 1.0 | 2.8 | 7.5 | 15.5 | 30 | 57 | 110 | |
| Max. Radial Load F_{2rB}^1 | N | 1,2 | 3-100 | 350 | 960 | 1630 | 3380 | 6150 | 7260 | 11120 | |
| Max. Axial Load F_{2aB}^1 | N | 1,2 | 3-100 | 320 | 900 | 1420 | 2930 | 5510 | 5550 | 8560 | |
| Operating Temp. | °C | | 3-100 | -10 °C ~ +90 °C | | | | | | | |
| Service Life | hr | | 3-100 | 20,000 (10,000/Continuous operation) | | | | | | | |
| Efficiency | % | 1 | 3-10 | ≥ 96% | | | | | | | |
| | | 2 | 12-100 | ≥ 92% | | | | | | | |
| Weight | kg | 1 | 3-10 | 0.6 | 1.2 | 3.2 | 7.5 | 15.6 | 26 | 56 | |
| | | 2 | 12-100 | 0.8 | 1.9/1.5 | 5.3/3.6 | 12/8.8 | 20.7/17.2 | 36/31 | 80/62 | |
| Mounting Position | - | 1,2 | 3-100 | Any direction | | | | | | | |
| Noise Level ² | dB(A)/1m | 1,2 | 3-100 | 60 | 62 | 65 | 65 | 70 | 70 | 75 | |
| Protection Class | - | 1,2 | 3-100 | IP65 | | | | | | | |
| Lubrication | - | 1,2 | 3-100 | Synthetic Lubricant | | | | | | | |
| Inertia(J1) | | | | | | | | | | | |
| Stage | Ratio | unit | | PGL-42 | PGL-60 | PGL-90 | PGL-115 | PGL-142 | PGL-180 | PGL-220 | |
| 1 | 3 | Kg • cm ² | | 0.03 | 0.20 | 0.81 | 2.20 | 7.89 | 25.2 | 77.9 | |
| | 4 | | | 0.02 | 0.16 | 0.65 | 1.80 | 5.83 | 19.8 | 56.5 | |
| | 5 | | | 0.02 | 0.15 | 0.62 | 1.61 | 5.38 | 18.3 | 53.3 | |
| | 6/7/8 | | | 0.02 | 0.14 | 0.60 | 1.55 | 5.22 | 17.8 | 53.0 | |
| | 9/10 | | | 0.02 | 0.14 | 0.60 | 1.53 | 5.20 | 17.6 | 52.9 | |
| Stage | Ratio | | | PGL-42 | PGL-60(T) | PGL-90(T) | PGL-115(T) | PGL-142(T) | PGL-180(T) | PGL-220 T | |
| 2 | 15/20/25 | | | 0.02 | 0.15(0.02) | 0.62(0.15) | 1.61(0.62) | 5.38(1.61) | 18.3(5.38) | 53.9(18.3) | |
| | 30/35/40 | | | 0.02 | 0.14(0.02) | 0.60(0.14) | 1.55(0.60) | 5.22(1.55) | 17.8(5.22) | 53.0(17.8) | |
| | 45/50/60/70/80/90/100 | | | 0.02 | 0.14(0.02) | 0.60(0.14) | 1.53(0.60) | 5.20(1.53) | 17.6(5.20) | 52.9(17.6) | |

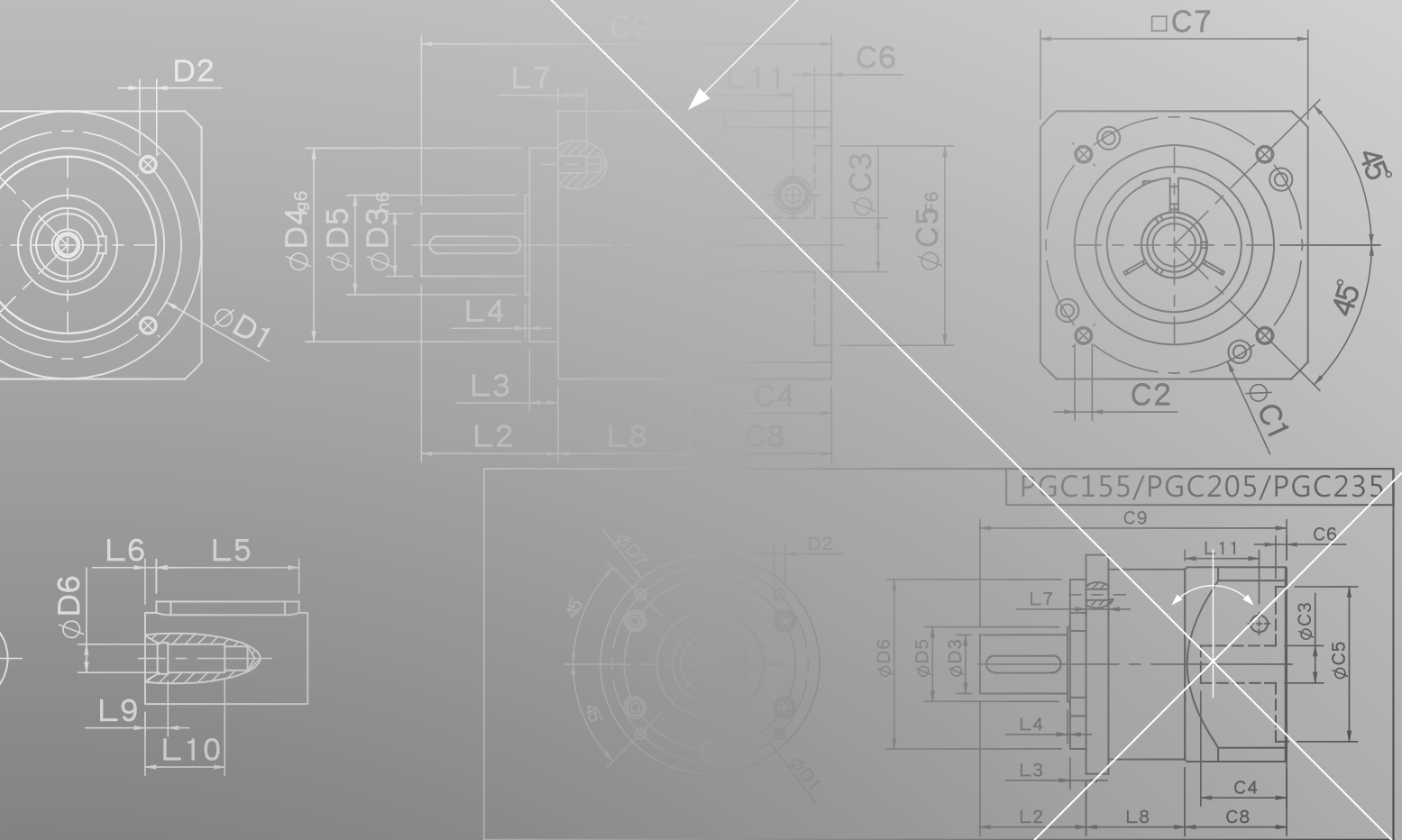
* 1. Applied to the output shaft center @100rpm. * 2. Measured at 3000rpm with no load

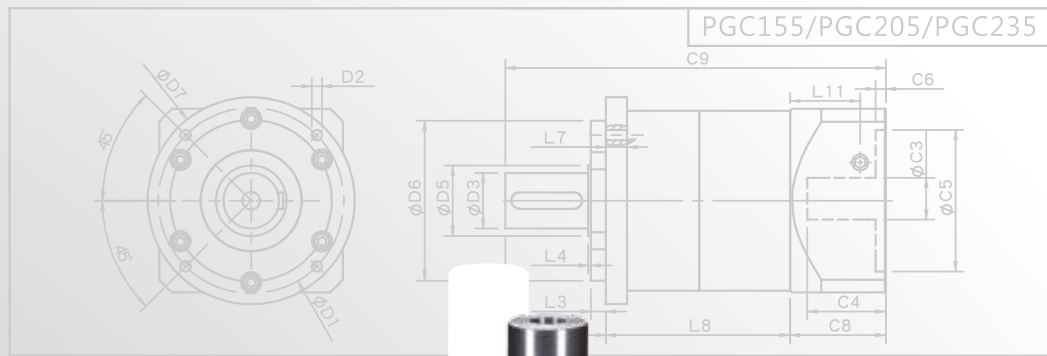
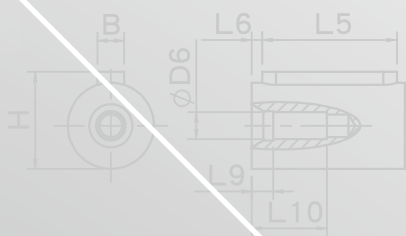
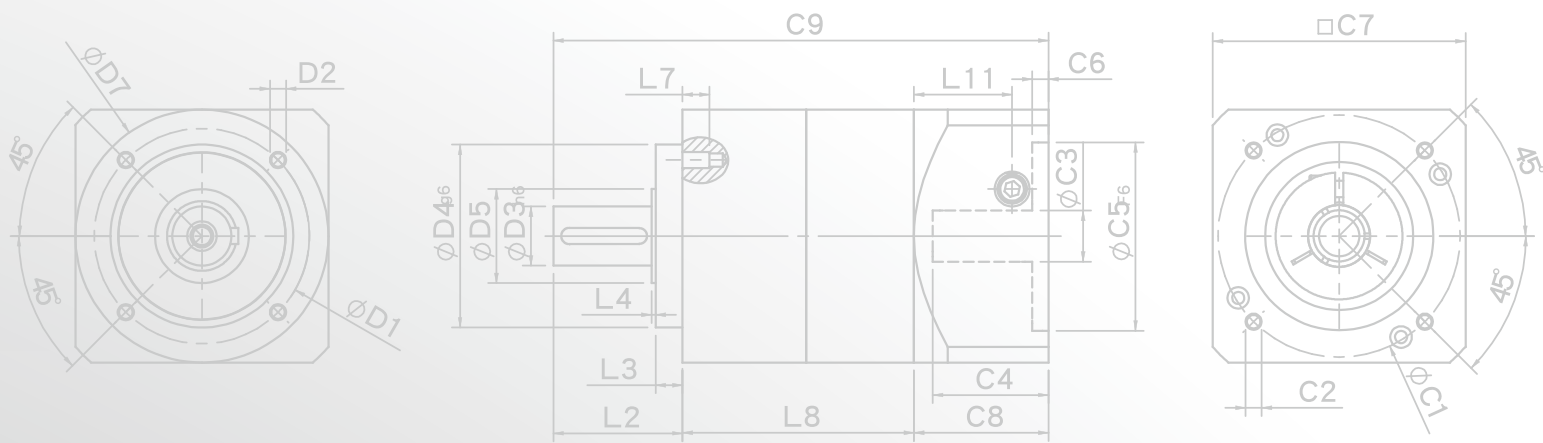
* 3. PGL60T - □□ - P1 · PGL90T - □□ - P1, and PGL115T - □□ - P0, are not applicable.

※ The above figures/specifications are subject to change without prior notice.

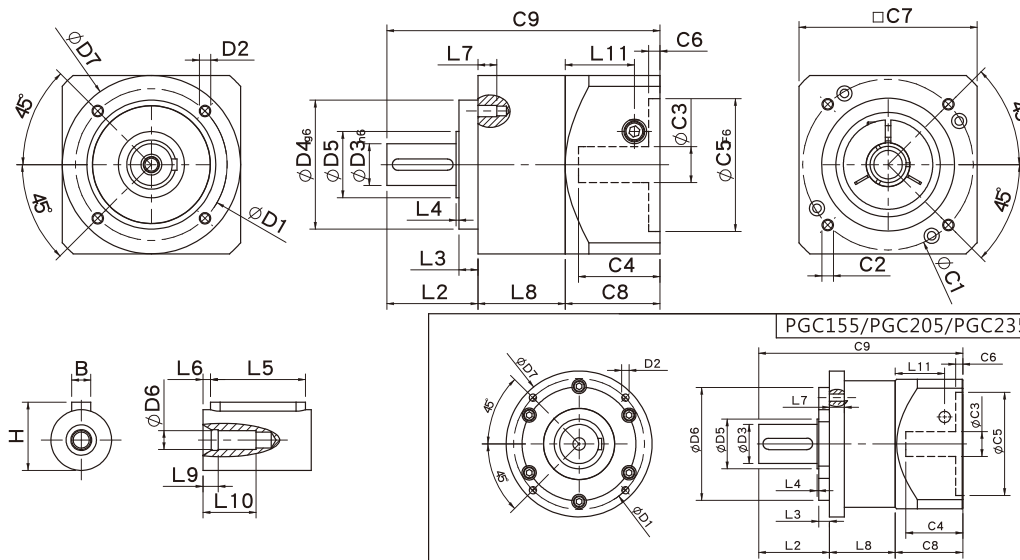
Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.

PGC SERIES





PGC Single Stage Dimensions



Specifications

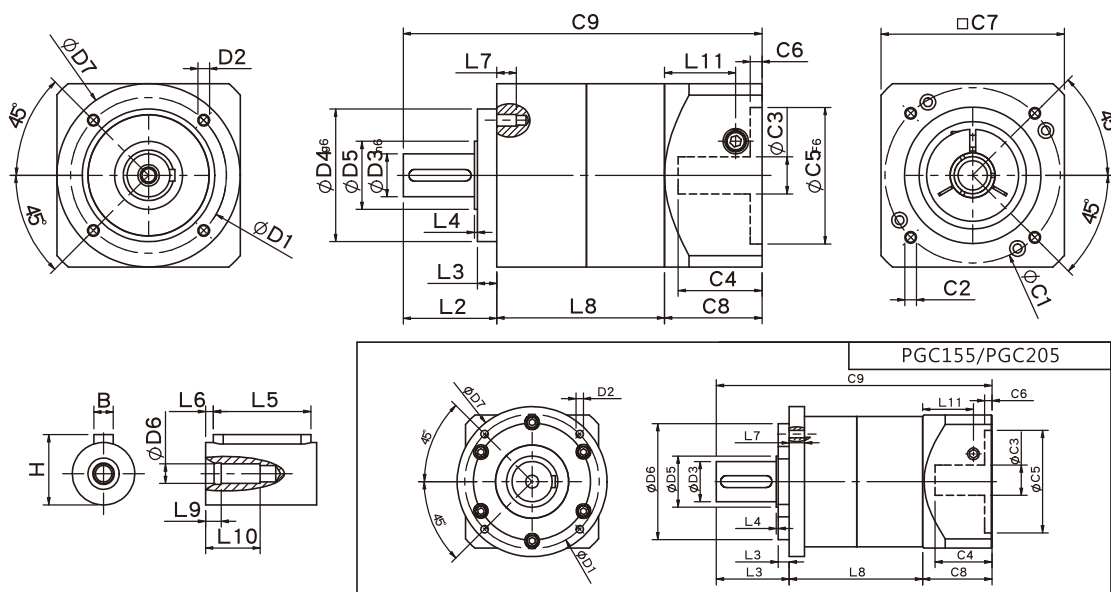
Unit:mm

| Dimensions | PGC50 | PGC70 | PGC90 | PGC120 | PGC155 | PGC205 | PGC235 |
|-------------------------------|---------|---------|----------|-----------|----------|-----------|-----------|
| D1 | 44 | 62 | 80 | 108 | 140 | 184 | 210 |
| D2 | M4x0.7P | M5x0.8P | M6x1.0P | M8x1.25P | M10x1.5P | M12x1.75P | M16x2.0P |
| D3 _{h6} | 13 | 16 | 22 | 32 | 40 | 55 | 75 |
| D4 _{g6} | 35 | 52 | 68 | 90 | 120 | 160 | 180 |
| D5 | 15 | 25 | 35 | 45 | 50 | 70 | 90 |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P | M12x1.75P | M16x2.0P | M20x2.5P | M20x2.5P |
| D7 | 50 | 70 | 94 | 120 | 155 | 205 | 235 |
| L2 | 24.5 | 35 | 48 | 60 | 93 | 99.5 | 126 |
| L3 | 4 | 5 | 10 | 6 | 8 | 15 | 18 |
| L4 | 1.5 | 1.5 | 1.5 | 3 | 6 | 2.5 | 3 |
| L5 | 15 | 25 | 32 | 40 | 60 | 70 | 90 |
| L6 | 2 | 2 | 3 | 5 | 5 | 6 | 7 |
| L7 | 8 | 10 | 10 | 15 | 18 | 21 | 32 |
| L8 | 30 | 38 | 46 | 61 | 79 | 92.5 | 129.5 |
| L9 | 4 | 4 | 4.5 | 6 | 6 | 8 | 7 |
| L10 | 14 | 16.5 | 20.5 | 30 | 38 | 48 | 42 |
| L11 | 24.4 | 31.5 | 36.5 | 42 | 63 | 69.5 | 102.2 |
| C1 ² | 46 | 70 | 90 | 115 | 145 | 200 | 235 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | M8x1.25P | M8x1.25P | M12x1.75P | M12x1.75P |
| C3 ² | ≤8 | ≤14 | ≤19/≤24 | ≤24/≤28 | ≤35 | ≤50 | ≤55 |
| C4 ² | 27 | 35 | 43 | 58 | 66 | 82 | 98 |
| C5 ² _{F6} | 30 | 50 | 70 | 95 | 110 | 114.3 | 200 |
| C6 ² | 4 | 5 | 5 | 8 | 6 | 13 | 12 |
| C7 ² | 50 | 70 | 94 | 120 | 140 | 182 | 220 |
| C8 ² | 38.5 | 46 | 55 | 63 | 80 | 95 | 130 |
| C9 ² | 93 | 119 | 149 | 184 | 252 | 287 | 385.5 |
| B | 5 | 5 | 6 | 10 | 12 | 16 | 20 |
| H | 15 | 18 | 24.5 | 35 | 43 | 59 | 79.5 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to the motor flange chosen.

★ Specification subject to change without notice.

PGC Double Stage Dimensions-1



Specifications

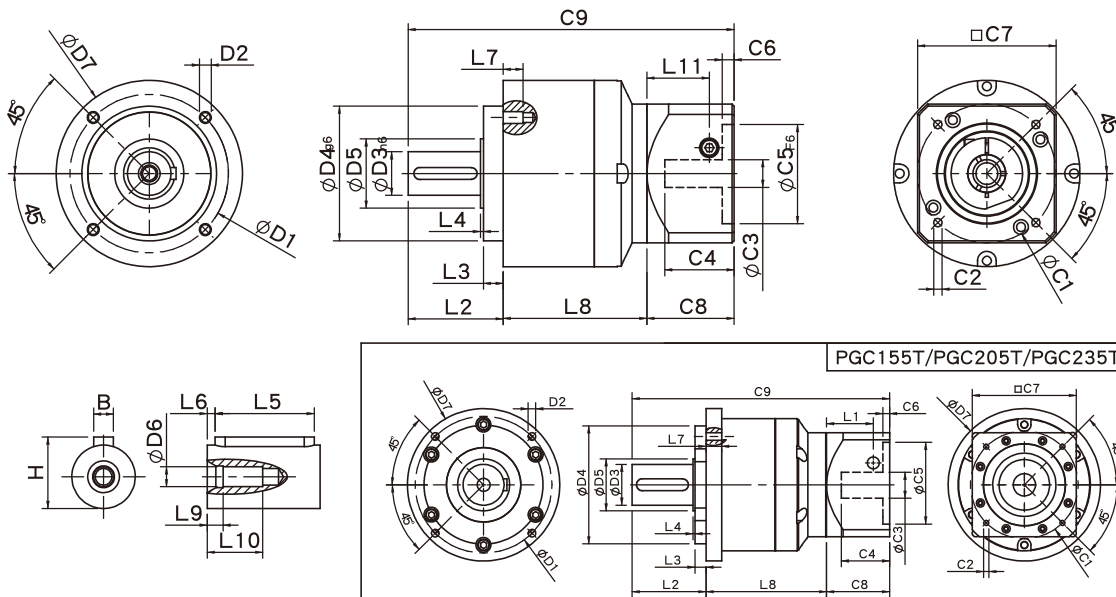
Unit:mm

| Dimensions | PGC50 | PGC70 | PGC90 | PGC120 | PGC155 | PGC205 |
|-------------------------------|---------|---------|----------|-----------|----------|-----------|
| D1 | 44 | 62 | 80 | 108 | 140 | 184 |
| D2 | M4x0.7P | M5x0.8P | M6x1.0P | M8x1.25P | M8x1.5P | M12x1.75P |
| D3 _{h6} | 13 | 16 | 22 | 32 | 40 | 55 |
| D4 _{g6} | 35 | 52 | 68 | 90 | 120 | 160 |
| D5 | 15 | 25 | 35 | 45 | 50 | 70 |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P | M12x1.75P | M16x2.0P | M20x2.5P |
| D7 | 50 | 70 | 94 | 120 | 155 | 205 |
| L2 | 24.5 | 35 | 48 | 60 | 93 | 99.5 |
| L3 | 4 | 5 | 10 | 6 | 8 | 15 |
| L4 | 1.5 | 1.5 | 1.5 | 3 | 6 | 2.5 |
| L5 | 15 | 25 | 32 | 40 | 60 | 70 |
| L6 | 2 | 2 | 3 | 5 | 5 | 6 |
| L7 | 8 | 10 | 10 | 15 | 18 | 21 |
| L8 | 56 | 66 | 86 | 109 | 140 | 182.5 |
| L9 | 4 | 4 | 4.5 | 6 | 6 | 8 |
| L10 | 14 | 16.5 | 20.5 | 30 | 38 | 48 |
| L11 | 24.4 | 31.5 | 36.5 | 42 | 63 | 69.5 |
| C1 ² | 46 | 70 | 90 | 115 | 145 | 200 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | M8x1.25P | M8x1.25P | M12x1.75P |
| C3 ² | ≤8 | ≤14 | ≤19/≤24 | ≤24/≤28 | ≤35 | ≤50 |
| C4 ² | 27 | 35 | 43 | 58 | 66 | 82 |
| C5 ² _{F6} | 30 | 50 | 70 | 95 | 110 | 114.3 |
| C6 ² | 4 | 5 | 5 | 8 | 6 | 13 |
| C7 ² | 50 | 70 | 94 | 120 | 140 | 182 |
| C8 ² | 38.5 | 46 | 55 | 63 | 80 | 95 |
| C9 ² | 119 | 147 | 189 | 232 | 313 | 377 |
| B | 5 | 5 | 6 | 10 | 12 | 16 |
| H | 15 | 18 | 24.5 | 35 | 43 | 59 |

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

* Specification subject to change without notice.

PGC Double Stage Dimensions-2



Specifications

Unit:mm

| Dimensions | PGC70T | PGC90T | PGC120T | PGC155T | PGC205T | PGC235T |
|-------------------------------|---------|----------|-----------|----------|-----------|-----------|
| D1 | 62 | 80 | 108 | 140 | 184 | 210 |
| D2 | M5x0.8P | M6x1.0P | M8x1.25P | M10x1.5P | M12x1.75P | M16x2.0P |
| D3 _{h6} | 16 | 22 | 32 | 40 | 55 | 75 |
| D4 _{g6} | 52 | 68 | 90 | 120 | 160 | 180 |
| D5 | 25 | 35 | 45 | 50 | 70 | 90 |
| D6 | M5x0.8P | M8x1.25P | M12x1.75P | M16x2.0P | M20x2.5P | M20x2.5P |
| D7 | 70 | 94 | 120 | 155 | 205 | 235 |
| L2 | 35 | 48 | 60 | 93 | 99.5 | 126 |
| L3 | 5 | 10 | 6 | 8 | 15 | 18 |
| L4 | 1.5 | 1.5 | 3 | 6 | 2.5 | 3 |
| L5 | 25 | 32.5 | 40 | 60 | 70 | 90 |
| L6 | 2 | 3 | 5 | 5 | 6 | 7 |
| L7 | 10 | 10 | 15 | 18 | 21 | 32 |
| L8 | 60.8 | 70.5 | 99.4 | 127 | 162 | 211.5 |
| L9 | 4 | 4.5 | 6 | 6 | 8 | 7 |
| L10 | 16.5 | 20.5 | 30 | 38 | 48 | 42 |
| L11 | 29 | 35.5 | 40.5 | 42 | 63 | 69.5 |
| C1 ² | 66.67 | 70 | 90 | 115 | 145 | 200 |
| C2 ² | M5x0.8P | M5x0.8P | M6x1.0P | M8x1.25P | M8x1.25P | M12x1.75P |
| C3 ² | ≤8 | ≤14 | ≤19/≤24 | ≤24/≤28 | ≤35 | ≤50 |
| C4 ² | 27 | 41 | 47.75 | 58 | 66 | 82 |
| C5 ² _{F6} | 38.1 | 50 | 70 | 95 | 110 | 114.3 |
| C6 ² | 4 | 8 | 6 | 8 | 6 | 13 |
| C7 ² | 60 | 70 | 94 | 120 | 140 | 182 |
| C8 ² | 38.5 | 50 | 55 | 63 | 80 | 95 |
| C9 ² | 134.3 | 170.5 | 214.4 | 283 | 341.5 | 432.5 |
| B | 5 | 6 | 10 | 12 | 16 | 20 |
| H | 18 | 24.5 | 35 | 43 | 59 | 79.5 |

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

★ Specification subject to change without notice.

PGC Specifications Table

| Specifications | | Stage | Ratio | PGC-50 | PGC-70 | PGC-90 | PGC-120 | PGC-155 | PGC-205 | PGC-235 |
|----------------------------------|----------------|---|------------|---------------------|------------|------------|------------|------------|------------|----------|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | 13.8 | 44.2 | 95.2 | 283 | 482 | 1151 | 1670 |
| | | | 4 | 11.9 | 35.9 | 74.6 | 249 | 490 | 1055 | 1574 |
| | | | 5 | 13.8 | 43.0 | 95.2 | 283 | 473 | 1151 | 1670 |
| | | | 7 | 11.9 | 36.0 | 85.6 | 219 | 400 | 1055 | 1574 |
| | | | 10 | 10.1 | 25.0 | 75.0 | 210 | 320 | 763 | 1184 |
| | | Stage | Ratio | PGC-50 | PGC-70(T) | PGC-90(T) | PGC-120(T) | PGC-155(T) | PGC-205(T) | PGC-235T |
| | | 2 | 15 | 13.8 | 44.2 | 95.2 | 283 | 482 | 1151 | 1670 |
| | | | 20 | 11.9 | 35.9 | 74.6 | 249 | 490 | 1055 | 1574 |
| | | | 25 | 13.8 | 43.0 | 95.2 | 283 | 473 | 1151 | 1670 |
| | | | 30 | 13.8 | 43.0 | 95.2 | 283 | 473 | 1151 | 1670 |
| | | | 35 | 13.8 | 43.0 | 95.2 | 283 | 473 | 1151 | 1670 |
| | | | 40 | 13.8 | 43.0 | 95.2 | 283 | 473 | 1151 | 1670 |
| | | | 50 | 13.8 | 43.0 | 95.2 | 283 | 473 | 1151 | 1670 |
| | | | 70 | 11.9 | 36.0 | 85.6 | 219 | 400 | 1055 | 1574 |
| 100 | 10.1 | 25.0 | 75.0 | 210 | 320 | 763 | 1184 | | | |
| Emergency Stop Torque T_{2NOT} | N • m | 3.0 times of Nominal Output Torque (*Max. Output Torque T_{2B} = 60% of Emergency Stop Torque) | | | | | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2 | 3-100 | 3000 | 3000 | 3000 | 2500 | 2000 | 2000 | 2000 |
| Max. Input Speed n_{1max} | rpm | 1,2 | 3-100 | 6000 | 6000 | 6000 | 5000 | 4000 | 4000 | 4000 |
| Micro Backlash P0 | arcmin | 1 | 3-10 | - | - | - | ≤ 3 | ≤ 3 | ≤ 3 | ≤ 3 |
| | | 2 | 12-100 | - | - | - | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 5 |
| Precision Backlash P1 | arcmin | 1 | 3-10 | - | ≤ 6 | ≤ 6 | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 5 |
| | | 2 | 12-100 | - | ≤ 9 | ≤ 9 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 |
| Standard Backlash P2 | arcmin | 1 | 3-10 | ≤ 12 | ≤ 9 | ≤ 9 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 |
| | | 2 | 12-100 | ≤ 15 | ≤ 12 | ≤ 12 | ≤ 9 | ≤ 9 | ≤ 9 | ≤ 9 |
| Torsional Rigidity | N • m / arcmin | 1,2 | 3-100 | 1.0 | 2.8 | 7.5 | 15.5 | 30 | 57 | 110 |
| Max. Radial Load F_{2RB}^1 | N | 1,2 | 3-100 | 350 | 960 | 1630 | 3380 | 6150 | 7260 | 11120 |
| Max. Axial Load F_{2aB}^1 | N | 1,2 | 3-100 | 320 | 900 | 1420 | 2930 | 5510 | 5550 | 8560 |
| Operating Temp. | °C | -10 °C ~ +90 °C | | | | | | | | |
| Service Life | hr | 20,000 (10,000/ Continuous operation) | | | | | | | | |
| Efficiency | % | 1 | 3-10 | ≥ 96% | | | | | | |
| | | 2 | 12-100 | ≥ 92% | | | | | | |
| Weight | kg | 1 | 3-10 | 0.7 | 1.4 | 3.0 | 7.3 | 15.6 | 26 | 56 |
| | | 2 | 12-100 | 0.9 | 2.2/1.7 | 5.0/3.4 | 11.5/8.5 | 20.7/17.2 | 36/31 | 80/62 |
| Mounting Position | - | 1,2 | 3-100 | Any direction | | | | | | |
| Noise Level ² | dB(A)/1m | 1,2 | 3-100 | 60 | 62 | 65 | 65 | 70 | 70 | 75 |
| Protection Class | - | 1,2 | 3-100 | IP65 | | | | | | |
| Lubrication | - | 1,2 | 3-100 | Synthetic Lubricant | | | | | | |
| Inertia(J1) | | | | | | | | | | |
| Stage | Ratio | unit | PGC-50 | PGC-70 | PGC-90 | PGC-120 | PGC-155 | PGC-205 | PGC-235 | |
| 1 | 3 | Kg • cm ² | 0.03 | 0.20 | 0.81 | 2.20 | 7.89 | 25.2 | 77.9 | |
| | 4 | | 0.02 | 0.16 | 0.65 | 1.80 | 5.83 | 19.8 | 56.5 | |
| | 5 | | 0.02 | 0.15 | 0.62 | 1.61 | 5.38 | 18.3 | 53.3 | |
| | 7 | | 0.02 | 0.14 | 0.60 | 1.55 | 5.22 | 17.8 | 53.0 | |
| | 10 | | 0.02 | 0.14 | 0.60 | 1.53 | 5.20 | 17.6 | 52.9 | |
| Stage | Ratio | PGC-50 | PGC-70(T) | PGC-90(T) | PGC-120(T) | PGC-155(T) | PGC-205(T) | PGC-235T | | |
| 2 | 15/20/25 | 0.02 | 0.15(0.02) | 0.62(0.15) | 1.61(0.62) | 5.38(1.61) | 18.3(5.38) | 53.9(18.3) | | |
| | 30/35/40 | 0.02 | 0.14(0.02) | 0.60(0.14) | 1.55(0.60) | 5.22(1.55) | 17.8(5.22) | 53.0(17.8) | | |
| | 50/70/100 | 0.02 | 0.14(0.02) | 0.60(0.14) | 1.53(0.60) | 5.20(1.53) | 17.6(5.20) | 52.9(17.6) | | |

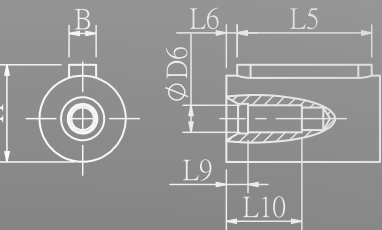
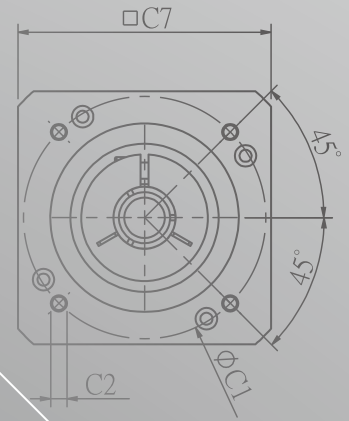
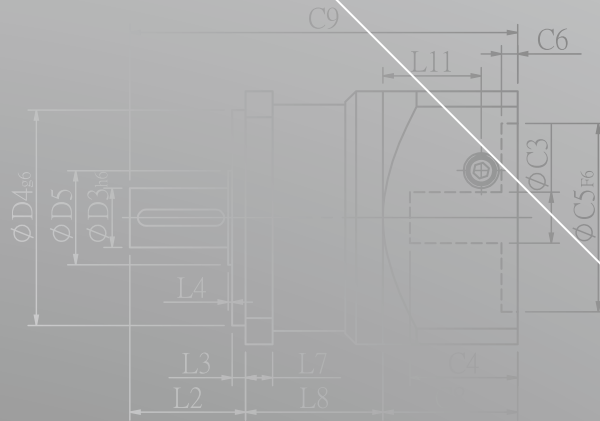
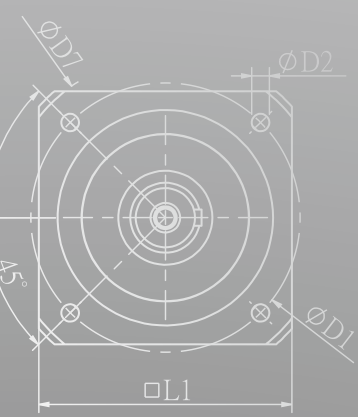
* 1. Applied to the output shaft center @100rpm. * 2. Measured at 3000rpm with no load

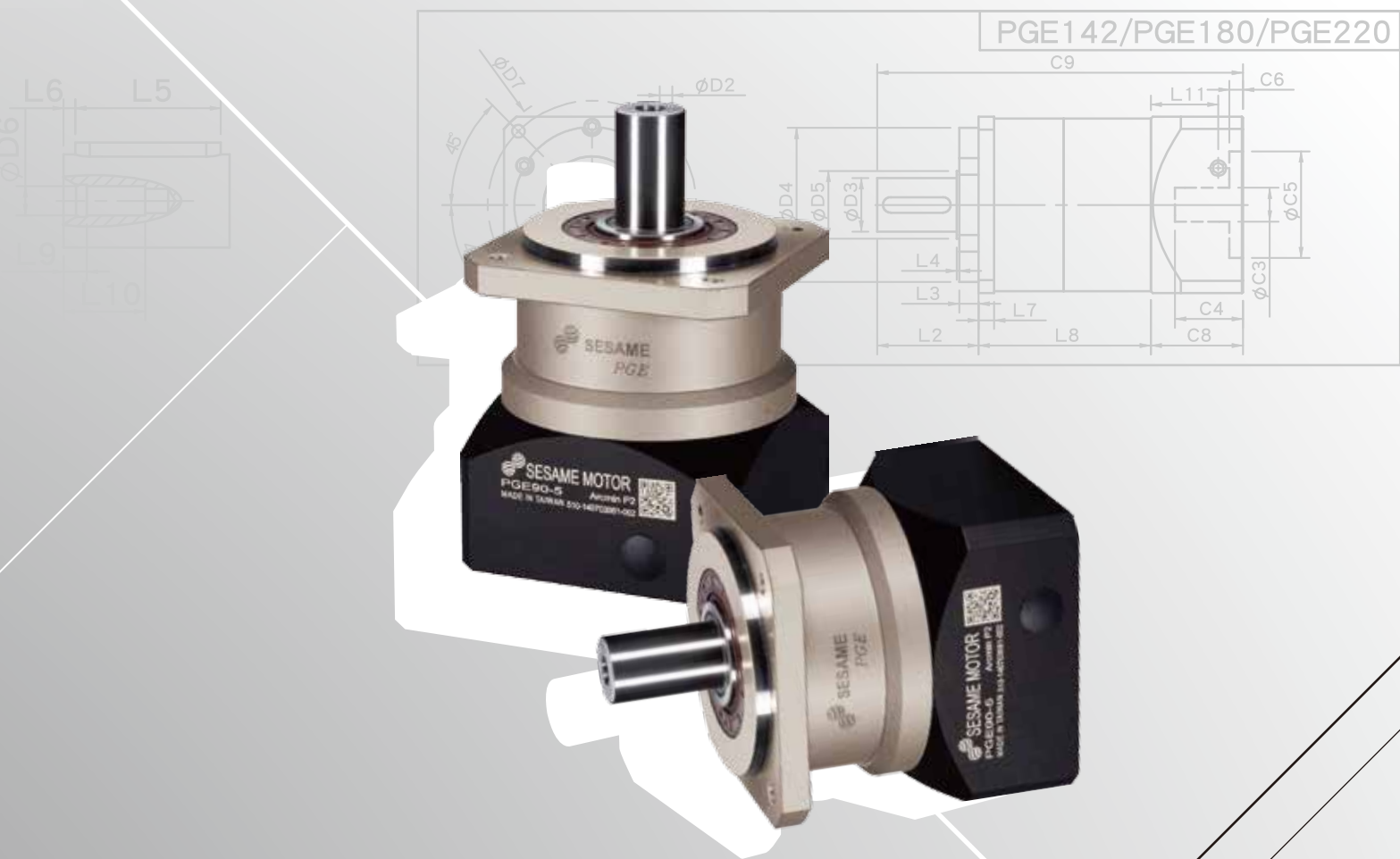
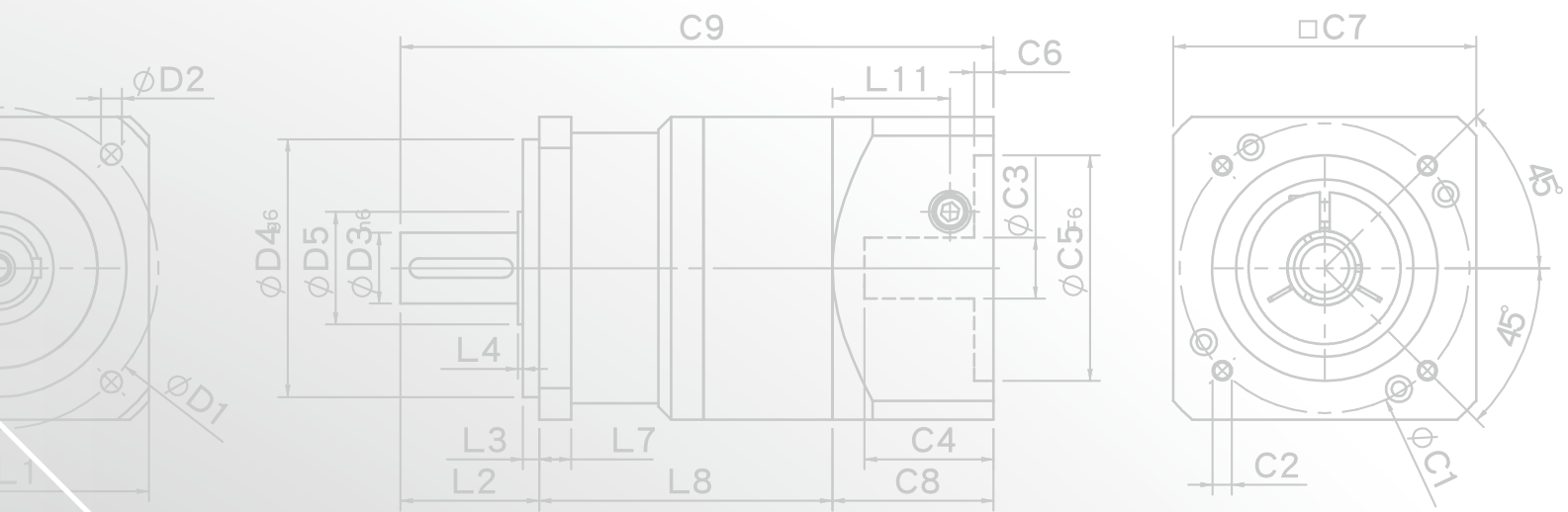
* 3. PGL60T - □□ - P1, PGL90T - □□ - P1, and PGL115T - □□ - P0, are not applicable.

※ The above figures/specifications are subject to change without prior notice.

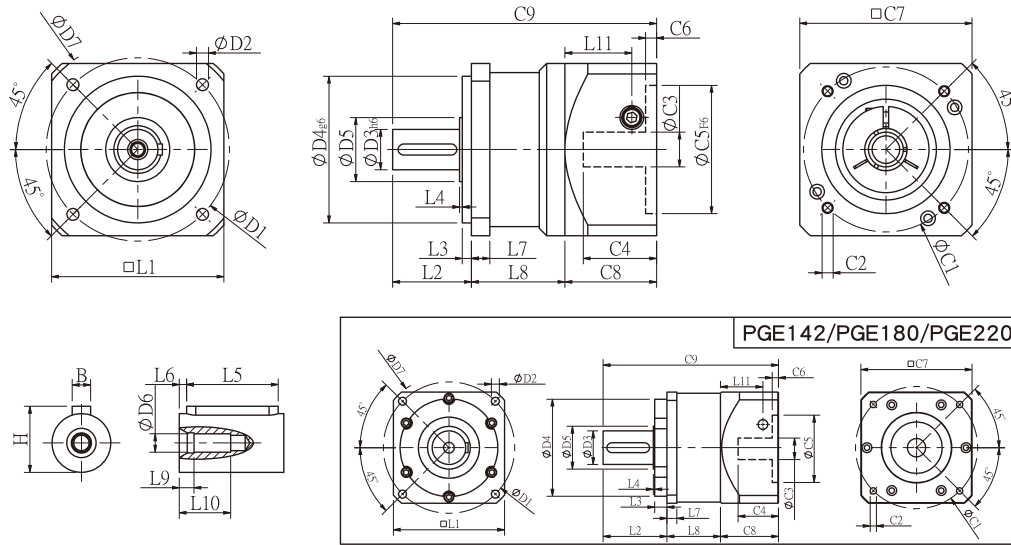
Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.

PGE SERIES





PGE Single Stage Dimensions



Specifications

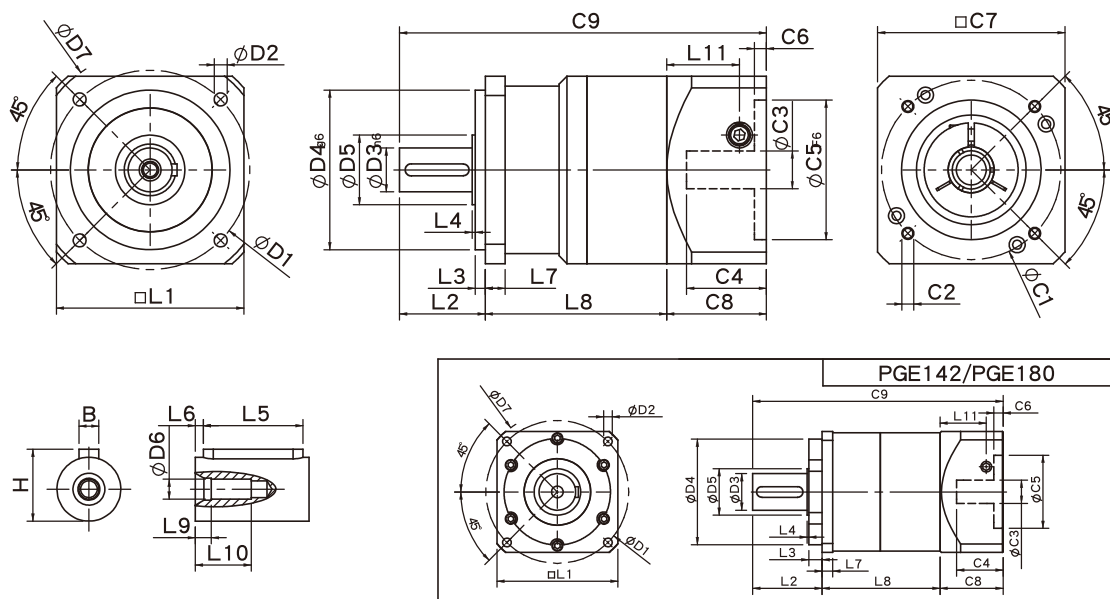
Unit:mm

| Dimensions | PGE50 | PGE70 | PGE90 | PGE120 | PGE142 | PGE180 | PGE220 |
|-------------------------------|---------|---------|----------|-----------|----------|-----------|-----------|
| D1 | 50 | 70 | 100 | 130 | 165 | 215 | 250 |
| D2 | 3.4 | 6 | 6.5 | 8.5 | 10.5 | 13 | 17 |
| D3 _{h6} | 13 | 16 | 22 | 32 | 40 | 55 | 75 |
| D4 _{g6} | 35 | 50 | 80 | 110 | 130 | 160 | 180 |
| D5 | 15 | 25 | 35 | 45 | 50 | 70 | 90 |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P | M12x1.75P | M16x2.0P | M20x2.5P | M20x2.5P |
| D7 | 64 | 90 | 120 | 152 | 186 | 239 | 292 |
| L1 | 50 | 70 | 94 | 120 | 142 | 182 | 220 |
| L2 | 24.5 | 37 | 43 | 60 | 93 | 104.5 | 138 |
| L3 | 4 | 7 | 5 | 6 | 8 | 20 | 30 |
| L4 | 1.5 | 1.5 | 1.5 | 3 | 6 | 2.5 | 3 |
| L5 | 15 | 25 | 32 | 40 | 60 | 70 | 90 |
| L6 | 2 | 2 | 3 | 5 | 5 | 6 | 7 |
| L7 | 5 | 6 | 10 | 12 | 18 | 16 | 20 |
| L8 | 30 | 36 | 51 | 61 | 79 | 87.5 | 117.5 |
| L9 | 4 | 4 | 4.5 | 6 | 6 | 8 | 7 |
| L10 | 14 | 16.5 | 20.5 | 30 | 38 | 48 | 42 |
| L11 | 24.4 | 31.5 | 36.5 | 42 | 63 | 69.5 | 102.2 |
| C1 ² | 46 | 70 | 90 | 115 | 145 | 200 | 235 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | M8x1.25P | M8x1.25P | M12x1.75P | M12x1.75P |
| C3 ² | ≤8 | ≤14 | ≤19/≤24 | ≤24/≤28 | ≤35 | ≤50 | ≤55 |
| C4 ² | 27 | 35 | 43 | 58 | 66 | 82 | 98 |
| C5 ² _{F6} | 30 | 50 | 70 | 95 | 110 | 114.3 | 200 |
| C6 ² | 4 | 5 | 5 | 8 | 6 | 13 | 12 |
| C7 ² | 50 | 70 | 94 | 120 | 140 | 182 | 220 |
| C8 ² | 38.5 | 46 | 55 | 63 | 80 | 95 | 130 |
| C9 ² | 93 | 119 | 149 | 184 | 252 | 287 | 385.5 |
| B | 5 | 5 | 6 | 10 | 12 | 16 | 20 |
| H | 15 | 18 | 24.5 | 35 | 43 | 59 | 79.5 |

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

★ Specification subject to change without notice.

PGE Double Stage Dimensions-1



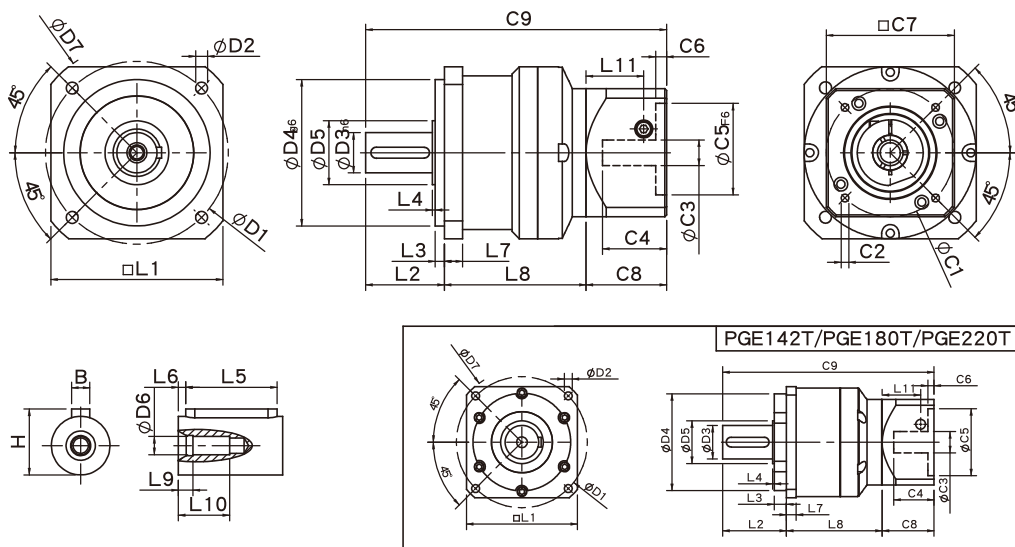
Specifications Unit:mm

| Dimensions | PGE50 | PGE70 | PGE90 | PGE120 | PGE142 | PGE180 |
|--------------------------------|---------|---------|----------|-----------|----------|-----------|
| D1 | 50 | 70 | 100 | 130 | 165 | 215 |
| D2 | 3.4 | 6 | 6.5 | 8.5 | 10.5 | 13 |
| D3 h ₆ | 13 | 16 | 22 | 32 | 40 | 55 |
| D4 g ₆ | 35 | 50 | 80 | 110 | 130 | 160 |
| D5 | 15 | 25 | 35 | 45 | 50 | 70 |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P | M12x1.75P | M16x2.0P | M20x2.5P |
| D7 | 64 | 90 | 120 | 152 | 186 | 239 |
| L1 | 50 | 70 | 94 | 120 | 142 | 182 |
| L2 | 24.5 | 37 | 43 | 60 | 93 | 104.5 |
| L3 | 4 | 7 | 5 | 6 | 8 | 20 |
| L4 | 1.5 | 1.5 | 1.5 | 3 | 6 | 2.5 |
| L5 | 15 | 25 | 32 | 40 | 60 | 70 |
| L6 | 2 | 2 | 3 | 5 | 5 | 6 |
| L7 | 5 | 6 | 10 | 12 | 18 | 16 |
| L8 | 56 | 64 | 91 | 109 | 140 | 177.5 |
| L9 | 4 | 4 | 4.5 | 6 | 6 | 8 |
| L10 | 14 | 16.5 | 20.5 | 30 | 38 | 48 |
| L11 | 24.4 | 31.5 | 36.5 | 42 | 63 | 69.5 |
| C1 ² | 46 | 70 | 90 | 115 | 145 | 200 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | M8x1.25P | M8x1.25P | M12x1.75P |
| C3 ² | ≤8 | ≤14 | ≤19/≤24 | ≤24/≤28 | ≤35 | ≤50 |
| C4 ² | 27 | 35 | 43 | 58 | 66 | 82 |
| C5 ² F ₆ | 30 | 50 | 70 | 95 | 110 | 114.3 |
| C6 ² | 4 | 5 | 5 | 8 | 6 | 13 |
| C7 ² | 50 | 70 | 94 | 120 | 140 | 182 |
| C8 ² | 38.5 | 46 | 55 | 63 | 80 | 95 |
| C9 ² | 119 | 147 | 189 | 232 | 313 | 377 |
| B | 5 | 5 | 6 | 10 | 12 | 16 |
| H | 15 | 18 | 24.5 | 35 | 43 | 59 |

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

* Specification subject to change without notice.

● PGE Double Stage Dimensions-2



● Specifications

Unit:mm

| Dimensions | PGE70T | PGE90T | PGE120T | PGE142T | PGE180T | PGE220T |
|-------------------------------|---------|----------|-----------|----------|----------|-----------|
| D1 | 70 | 100 | 130 | 165 | 215 | 250 |
| D2 | 6 | 6.5 | 8.5 | 10.5 | 13 | 17 |
| D3 _{h6} | 16 | 22 | 32 | 40 | 55 | 75 |
| D4 _{g6} | 50 | 80 | 110 | 130 | 160 | 180 |
| D5 | 25 | 35 | 45 | 50 | 70 | 90 |
| D6 | M5x0.8P | M8x1.25P | M12x1.75P | M16x2.0P | M20x2.5P | M20x2.5P |
| D7 | 90 | 120 | 152 | 186 | 239 | 292 |
| L1 | 70 | 94 | 120 | 142 | 182 | 220 |
| L2 | 37 | 43 | 60 | 93 | 104.5 | 138 |
| L3 | 7 | 5 | 6 | 8 | 20 | 30 |
| L4 | 1.5 | 1.5 | 3 | 6 | 2.5 | 3 |
| L5 | 25 | 32 | 40 | 60 | 70 | 90 |
| L6 | 2 | 3 | 5 | 5 | 6 | 7 |
| L7 | 6 | 10 | 12 | 18 | 16 | 20 |
| L8 | 58.8 | 77.5 | 99.4 | 127 | 157 | 199.5 |
| L9 | 4 | 4.5 | 6 | 6 | 8 | 7 |
| L10 | 16.5 | 20.5 | 30 | 38 | 48 | 42 |
| L11 | 29 | 35.5 | 40.5 | 42 | 63 | 69.5 |
| C1 ² | 66.67 | 70 | 90 | 115 | 145 | 200 |
| C2 ² | M5x0.8P | M5x0.8P | M6x1.0P | M8x1.25P | M8x1.25P | M12x1.75P |
| C3 ² | ≤8 | ≤14 | ≤19/≤24 | ≤24/≤28 | ≤35 | ≤50 |
| C4 ² | 27 | 41 | 47.75 | 58 | 66 | 82 |
| C5 ² _{F6} | 38.1 | 50 | 70 | 95 | 110 | 114.3 |
| C6 ² | 4 | 8 | 6 | 8 | 6 | 13 |
| C7 ² | 60 | 70 | 94 | 120 | 140 | 182 |
| C8 ² | 38.5 | 50 | 55 | 63 | 80 | 95 |
| C9 ² | 134.3 | 170.5 | 214.4 | 283 | 341.5 | 432.5 |
| B | 5 | 6 | 10 | 12 | 16 | 20 |
| H | 18 | 24.5 | 35 | 43 | 59 | 79.5 |

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

★ Specification subject to change without notice.

PGE Specifications Table

| Specifications | | Stage | Ratio | PGE-50 | PGE-70 | PGE-90 | PGE-120 | PGE-142 | PGE-180 | PGE-220 |
|----------------------------------|---------------|---|--------|---------------------|------------|------------|------------|------------|------------|------------|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | 13.8 | 44.2 | 95.2 | 283 | 482 | 1151 | 1670 |
| | | | 4 | 11.9 | 35.9 | 74.6 | 249 | 490 | 1055 | 1574 |
| | | | 5 | 13.8 | 43.0 | 95.2 | 283 | 473 | 1151 | 1670 |
| | | | 7 | 11.9 | 36.0 | 85.6 | 219 | 400 | 1055 | 1574 |
| | | | 10 | 10.1 | 25.0 | 75.0 | 210 | 320 | 763 | 1184 |
| | | Stage | Ratio | PGE-50 | PGE-70(T) | PGE-90(T) | PGE-120(T) | PGE-142(T) | PGE-180(T) | PGE-220 T |
| | | 2 | 15 | 13.8 | 44.2 | 95.2 | 283 | 482 | 1151 | 1670 |
| | | | 20 | 11.9 | 35.9 | 74.6 | 249 | 490 | 1055 | 1574 |
| | | | 25 | 13.8 | 43.0 | 95.2 | 283 | 473 | 1151 | 1670 |
| | | | 30 | 13.8 | 43.0 | 95.2 | 283 | 473 | 1151 | 1670 |
| | | | 35 | 13.8 | 43.0 | 95.2 | 283 | 473 | 1151 | 1670 |
| | | | 40 | 13.8 | 43.0 | 95.2 | 283 | 473 | 1151 | 1670 |
| | | | 50 | 13.8 | 43.0 | 95.2 | 283 | 473 | 1151 | 1670 |
| | | | 70 | 11.9 | 36.0 | 85.6 | 219 | 400 | 1055 | 1574 |
| 100 | 10.1 | 25.0 | 75.0 | 210 | 320 | 763 | 1184 | | | |
| Emergency Stop Torque T_{2NOT} | N • m | 3.0 times of Nominal Output Torque (*Max. Output Torque T_{2B} = 60% of Emergency Stop Torque) | | | | | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2 | 3-100 | 3000 | 3000 | 3000 | 2500 | 2000 | 2000 | 2000 |
| Max. Input Speed n_{1max} | rpm | 1,2 | 3-100 | 6000 | 6000 | 6000 | 5000 | 4000 | 4000 | 4000 |
| Micro Backlash P0 | arcmin | 1 | 3-10 | - | - | - | ≤ 3 | ≤ 3 | ≤ 3 | ≤ 3 |
| | | 2 | 12-100 | - | - | - | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 5 |
| Precision Backlash P1 | arcmin | 1 | 3-10 | - | ≤ 6 | ≤ 6 | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 5 |
| | | 2 | 12-100 | - | ≤ 9 | ≤ 9 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 |
| Standard Backlash P2 | arcmin | 1 | 3-10 | ≤ 12 | ≤ 9 | ≤ 9 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 |
| | | 2 | 12-100 | ≤ 15 | ≤ 12 | ≤ 12 | ≤ 9 | ≤ 9 | ≤ 9 | ≤ 9 |
| Torsional Rigidity | N • m /arcmin | 1,2 | 3-100 | 1.0 | 2.8 | 7.5 | 15.5 | 30 | 57 | 110 |
| Max. Radial Load F_{2rB}^{-1} | N | 1,2 | 3-100 | 350 | 960 | 1630 | 3380 | 6150 | 7260 | 11120 |
| Max. Axial Load F_{2aB}^{-1} | N | 1,2 | 3-100 | 320 | 900 | 1420 | 2930 | 5510 | 5550 | 8560 |
| Operating Temp. | °C | -10 °C ~ +90 °C | | | | | | | | |
| Service Life | hr | 20,000 (10,000/ Continuous operation) | | | | | | | | |
| Efficiency | % | 1 | 3-10 | ≥ 96% | | | | | | |
| | | 2 | 12-100 | ≥ 92% | | | | | | |
| Weight | kg | 1 | 3-10 | 0.7 | 1.4 | 3.0 | 7.3 | 15.6 | 26 | 56 |
| | | 2 | 12-100 | 0.9 | 2.2/1.7 | 5.0/3.4 | 11.5/8.5 | 20.7/17.2 | 36/31 | 80/62 |
| Mounting Position | - | 1,2 | 3-100 | Any direction | | | | | | |
| Noise Level ² | dB(A)/1m | 1,2 | 3-100 | 60 | 62 | 65 | 65 | 70 | 70 | 75 |
| Protection Class | - | 1,2 | 3-100 | IP65 | | | | | | |
| Lubrication | - | 1,2 | 3-100 | Synthetic Lubricant | | | | | | |
| Inertia(J1) | | | | | | | | | | |
| Stage | Ratio | unit | | PGE-50 | PGE-70 | PGE-90 | PGE-120 | PGE-142 | PGE-180 | PGE-220 |
| 1 | 3 | Kg • cm ² | | 0.03 | 0.20 | 0.81 | 2.20 | 7.89 | 25.2 | 77.9 |
| | 4 | | | 0.02 | 0.16 | 0.65 | 1.80 | 5.83 | 19.8 | 56.5 |
| | 5 | | | 0.02 | 0.15 | 0.62 | 1.61 | 5.38 | 18.3 | 53.3 |
| | 7 | | | 0.02 | 0.14 | 0.60 | 1.55 | 5.22 | 17.8 | 53.0 |
| | 10 | | | 0.02 | 0.14 | 0.60 | 1.53 | 5.20 | 17.6 | 52.9 |
| Stage | Ratio | | | PGE-50 | PGE-70(T) | PGE-90(T) | PGE-120(T) | PGE-142(T) | PGE-180(T) | PGE-220 T |
| 2 | 15/20/25 | | | 0.02 | 0.15(0.02) | 0.62(0.15) | 1.61(0.62) | 5.38(1.61) | 18.3(5.38) | 53.9(18.3) |
| | 30/35/40 | | | 0.02 | 0.14(0.02) | 0.60(0.14) | 1.55(0.60) | 5.22(1.55) | 17.8(5.22) | 53.0(17.8) |
| | 50/70/100 | | | 0.02 | 0.14(0.02) | 0.60(0.14) | 1.53(0.60) | 5.20(1.53) | 17.6(5.20) | 52.9(17.6) |

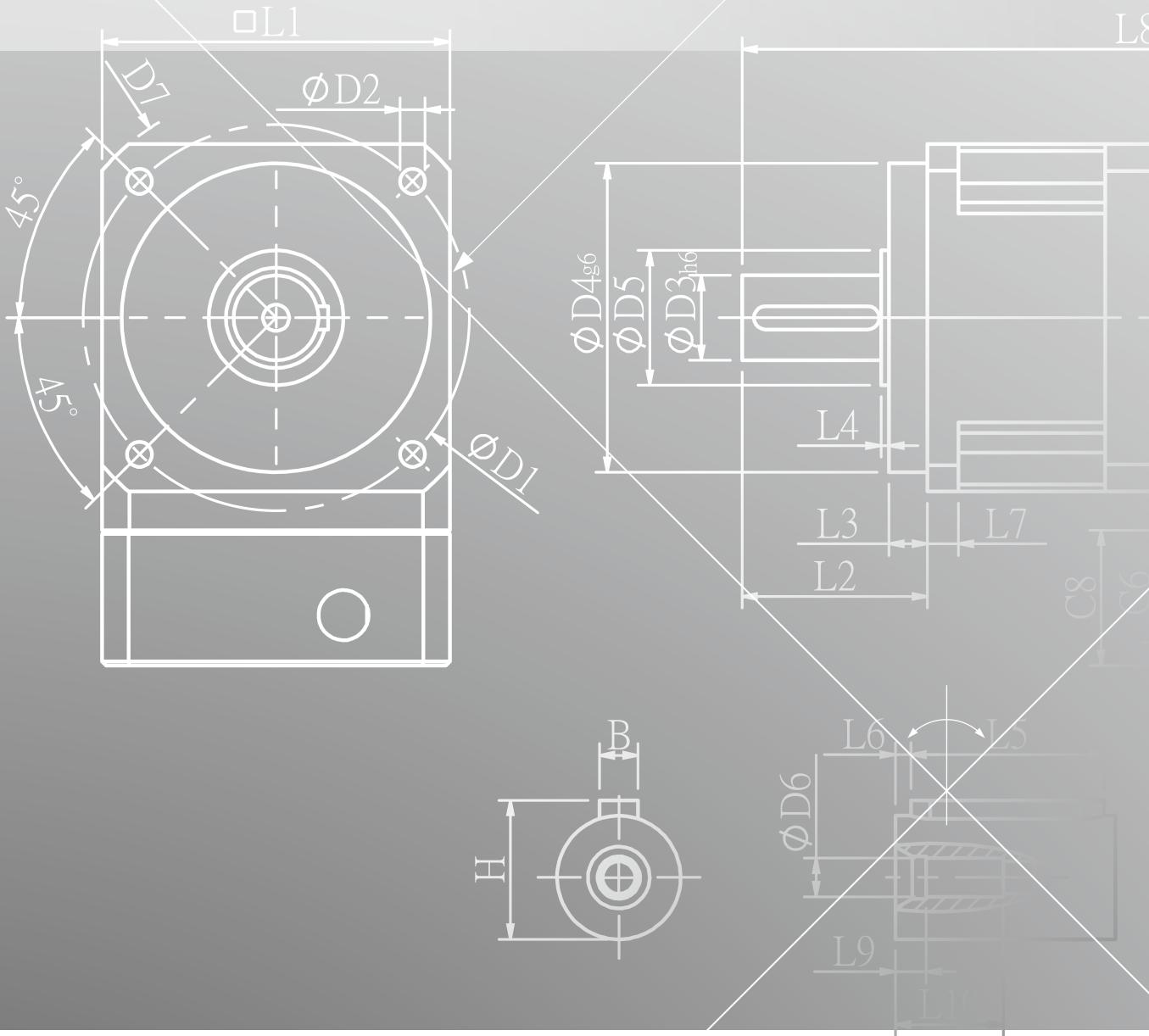
* 1. Applied to the output shaft center @100rpm. * 2. Measured at 3000rpm with no load

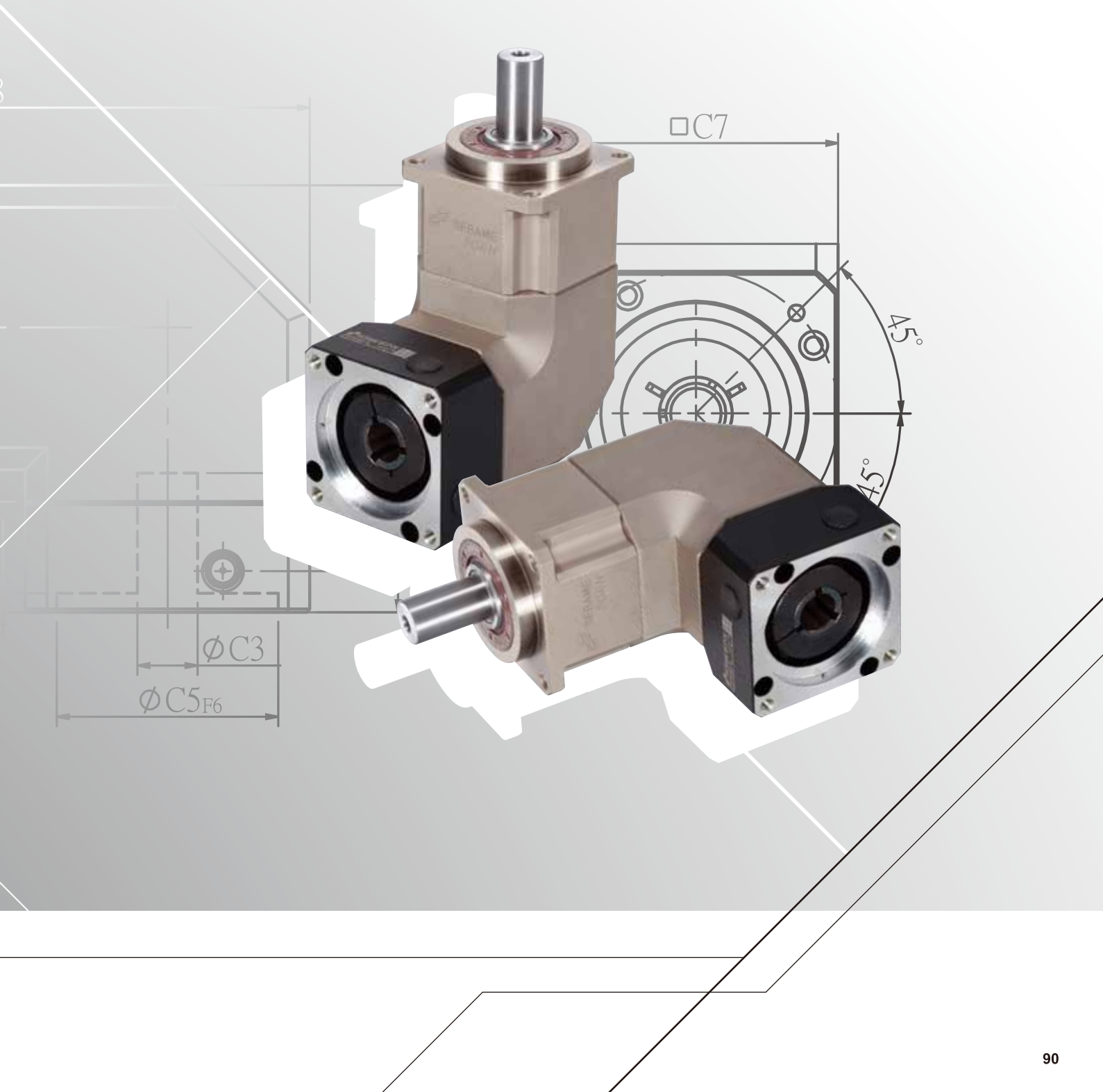
* 3. PGL60T - □□ - P1 · PGL90T - □□ - P1, and PGL115T - □□ - P0, are not applicable.

※ The above figures/specifications are subject to change without prior notice.

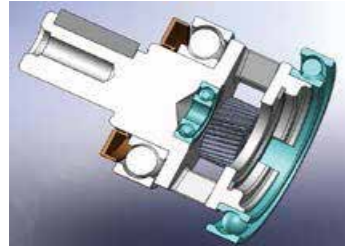
Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.

PGRH SERIES





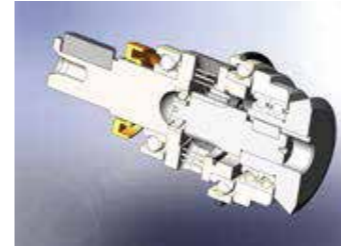
PGRH SERIES FEATURES



Planetary arm bracket and output shaft are one-piece constructed, setting bearing apart for larger span to reach the largest reverse rigid and contribute high axis radial load capacity.



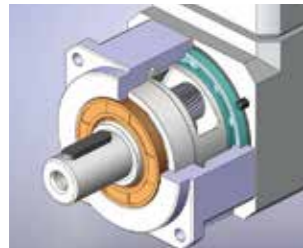
Alloy steel gear with unique heat treatment. Additionally, with gear grinding processing to get the best accuracy, high wear resistance and high impact toughness.



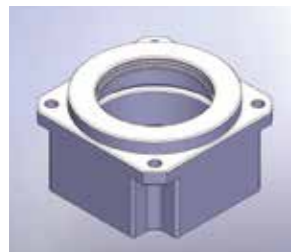
The sun gear bearing is placed directly into the planetary arm bracket, the overall mechanical structure designed to ensure concentricity of the transmission components.



Alloy steel spiral bevel gears selected after hobbing and heat treatment to ensure high accuracy of the engagement point, low backlash and low noise.

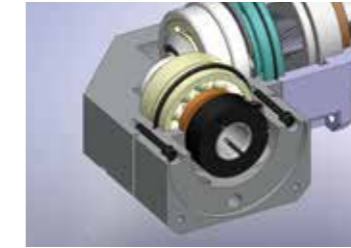
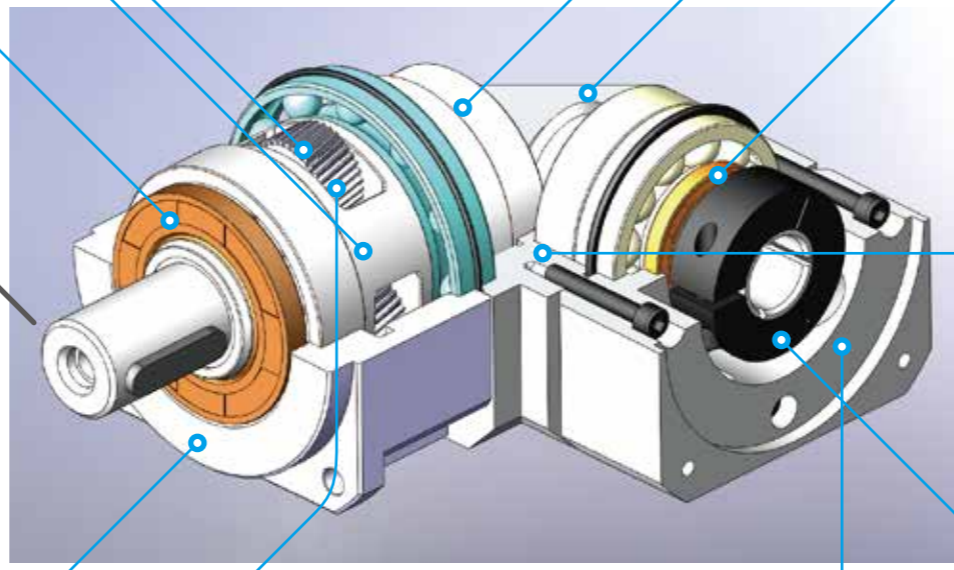


Grinding process to smooth surface of output shaft, and with oil-seal to minimum friction coefficient and reducing start up load; result in the best seal-ability and extended lifespan.

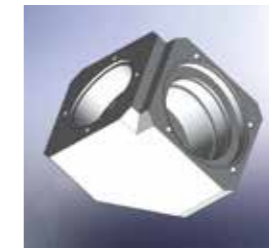


Advanced electroless nickel plating surface treatment resists scratch and corrosion. Suitable for stringent require of high-tech equipment. The gear box and internal gear ring are one-piece constructed, and then processed with advanced Germany gear shaper machinery for high-precision, high torque and abrade consumption.

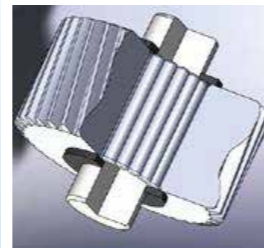
PGRH Series overall design suitable for combination operation with servo motor high-speed input and achieves maximum torque output. Right-angular designed drastically reducing the installation space. Precision gear design and gear processing create a planetary gearhead with low backlash operation, high efficiency, low noise and long lifespan.



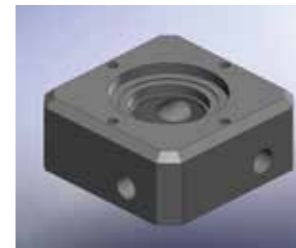
High-tech oil seal design on the upper lip guard against dust intruder, lower lip to guard against oil leak. Advanced lubricants grease and IP65 protection safeguards fully avoid leaking and given it maintenance-free.



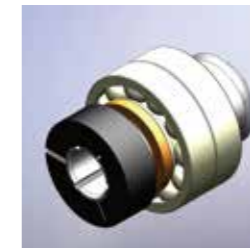
Right angular gear box processed by precision CNC equipment to obtain the highest combination with spiral bevel gears. Advanced electroless nickel plating surface treatment resists scratch and corrosion. Suitable for stringent require of high-tech equipment.



Planet gear transmission interface equipped with needle bearings, full needle roller bearings aligned without retainer achieve maximum exposure but smallest gap tolerances. Enhance over-all gear structure rigid and output torque.



Advanced motor bracket design coupled with the input shaft bushing is easy to mount to any servo or stepper motor.

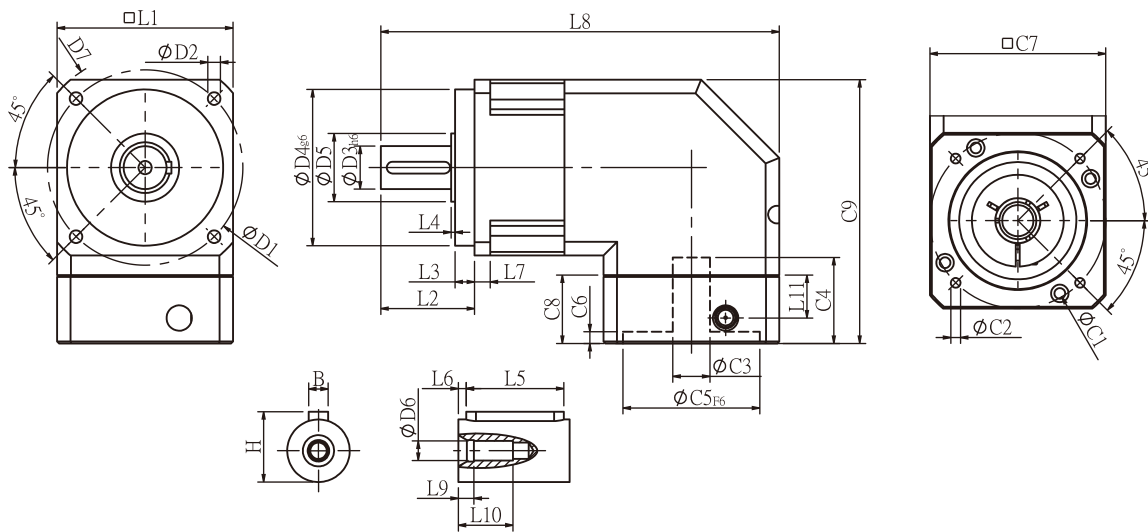


Input-end and motor shaft are coupled through a dynamic balanced collar clamping mechanism to ensure connection interface concentricity and zero slip power transmission at high speed.

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

PHL
PHR
PI
PGH
PUR
PUL
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PCL
PGC
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PBC
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PAE
PAC
PAN
PGS
PNS

PGRH Single Stage Dimensions



Specifications

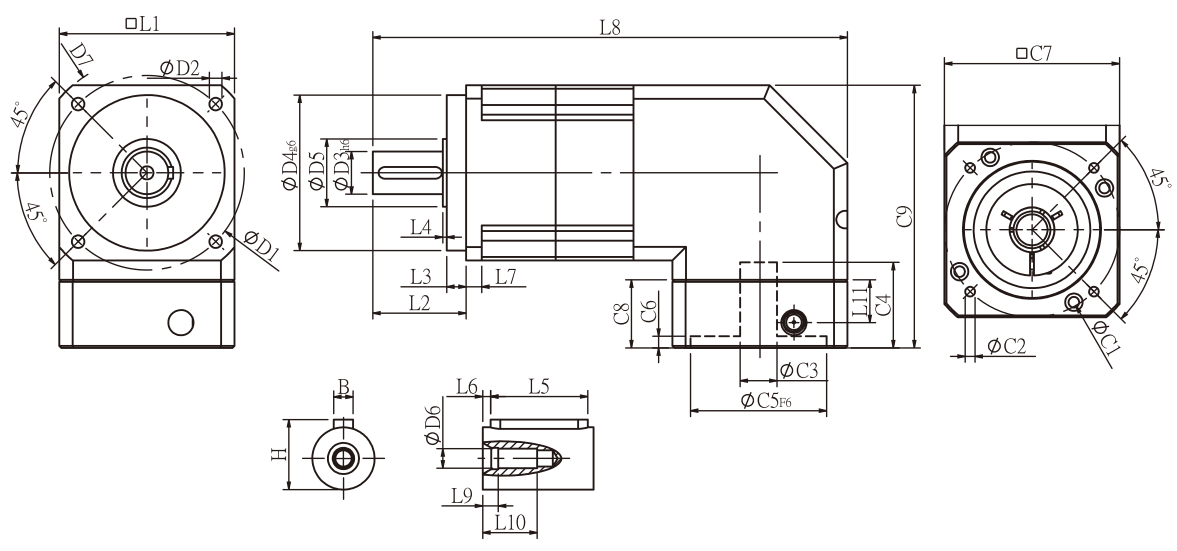
Unit:mm

| Dimensions | PGRH42 | PGRH60 | PGRH90 | PGRH115 | PGRH142 |
|-------------------------------|---------|---------|----------|-----------|----------|
| D1 | 50 | 70 | 100 | 130 | 165 |
| D2 | 3.4 | 5.5 | 6.5 | 8.5 | 10.5 |
| D3 _{h6} | 13 | 16 | 22 | 32 | 40 |
| D4 _{g6} | 35 | 50 | 80 | 110 | 130 |
| D5 | 15 | 25 | 35 | 45 | 50 |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P | M12x1.75P | M16x2P |
| D7 | 56 | 80 | 118 | 148 | 186 |
| L1 | 42.6 | 60 | 90 | 115 | 142 |
| L2 | 26 | 37 | 48 | 63 | 91.5 |
| L3 | 5.5 | 7 | 10 | 10 | 10 |
| L4 | 1.5 | 1.5 | 1.5 | 3.5 | 3.5 |
| L5 | 15 | 25 | 32 | 40 | 60 |
| L6 | 2 | 2 | 3 | 5 | 5 |
| L7 | 4 | 6 | 8 | 12 | 18 |
| L8 | 103.6 | 148.2 | 204 | 246.5 | 325 |
| L9 | 4 | 4 | 4.5 | 6 | 6 |
| L10 | 14 | 16.5 | 20.5 | 30 | 38 |
| L11 | 13.5 | 21.5 | 22 | 32 | 44.7 |
| C1 ² | 46 | 70 | 90 | 115 | 145 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1P | M8x1.25P | M8x1.25P |
| C3 ² | ≤8 | ≤14 | ≤19/≤24 | ≤24/≤32 | ≤35 |
| C4 ² | 29 | 34 | 44 | 53 | 76 |
| C5 ² _{F6} | 30 | 50 | 70 | 95 | 110 |
| C6 ² | 6 | 5 | 5 | 6 | 9 |
| C7 ² | 42.6 | 60 | 90 | 115 | 140 |
| C8 ² | 25 | 33 | 35 | 48 | 65 |
| C9 ² | 70.8 | 107.8 | 135 | 174.5 | 207 |
| B | 5 | 5 | 6 | 10 | 12 |
| H | 15 | 18 | 24.5 | 35 | 43 |

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

★ Specification subject to change without notice.

PGRH Double Stage Dimensions-1



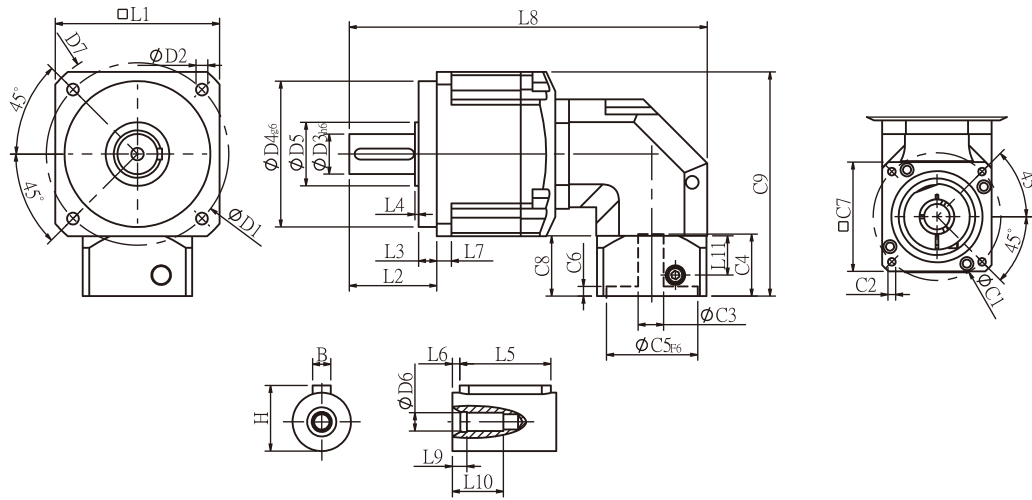
Specifications

Unit:mm

| Dimensions | PGRH42 | PGRH60 | PGRH90 |
|--------------------|---------|---------|----------|
| D1 | 50 | 70 | 100 |
| D2 | 3.4 | 5.5 | 6.5 |
| D3 h6 | 13 | 16 | 22 |
| D4 g6 | 35 | 50 | 80 |
| D5 | 15 | 25 | 35 |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P |
| D7 | 56 | 80 | 118 |
| L1 | 42.6 | 60 | 90 |
| L2 | 26 | 37 | 48 |
| L3 | 5.5 | 7 | 10 |
| L4 | 1.5 | 1.5 | 1.5 |
| L5 | 15 | 25 | 32 |
| L6 | 2 | 2 | 3 |
| L7 | 4 | 6 | 8 |
| L8 | 130.6 | 181.2 | 248 |
| L9 | 4 | 4 | 4.5 |
| L10 | 14 | 16.5 | 20.5 |
| L11 | 13.5 | 21.5 | 22 |
| C1 ² | 46 | 70 | 90 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P |
| C3 ² | ≤8 | ≤14 | ≤19/≤24 |
| C4 ² | 29 | 34 | 44 |
| C5 ² F6 | 30 | 50 | 70 |
| C6 ² | 6 | 5 | 5 |
| C7 ² | 42.6 | 60 | 90 |
| C8 ² | 25 | 33 | 35 |
| C9 ² | 70.8 | 107.8 | 135 |
| B | 5 | 5 | 6 |
| H | 15 | 18 | 24.5 |

* C1~C9 are motor specific dimensions(metric std shown), Size may vary according to the motor flange chosen.
* Specification subject to change without notice.

PGRH Double Stage Dimensions-2



Specifications

Unit:mm

| Dimensions | PGRH60T | PGRH90T | PGRH115T | PGRH142T | PGRH180T | PGRH220T |
|--------------------|---------|----------|-----------|----------|----------|----------|
| D1 | 70 | 100 | 130 | 165 | 215 | - |
| D2 | 5.5 | 6.5 | 8.5 | 10.5 | 13 | - |
| D3 _{h6} | 16 | 22 | 32 | 40 | 55 | - |
| D4 _{g6} | 50 | 80 | 110 | 130 | 160 | - |
| D5 | 25 | 35 | 45 | 50 | 70 | - |
| D6 | M5x0.8P | M8x1.25P | M12x1.75P | M16x2.0P | M20x2.5P | - |
| D7 | 80 | 118 | 148 | 186 | 239 | - |
| L1 | 60 | 90 | 115 | 142 | 182 | - |
| L2 | 37 | 48 | 63 | 91.5 | 100.5 | - |
| L3 | 7 | 10 | 10 | 10 | 16 | - |
| L4 | 1.5 | 1.5 | 3 | 6 | 2.5 | - |
| L5 | 25 | 32 | 40 | 60 | 70 | - |
| L6 | 2 | 3 | 5 | 5 | 6 | - |
| L7 | 6 | 8 | 11 | 16 | 18 | - |
| L8 | 151.8 | 200.7 | 272.5 | 345.5 | 424.5 | - |
| L9 | 4 | 4.5 | 6 | 6 | 8 | - |
| L10 | 16.5 | 20.5 | 30 | 38 | 48 | - |
| L11 | 13.5 | 21.5 | 22 | 32 | 44.7 | - |
| C1 ² | 46 | 70 | 90 | 115 | 145 | - |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | M8x1.25P | M8x1.25P | - |
| C3 ² | ≤8 | ≤14 | ≤19/≤24 | ≤24/≤32 | ≤35 | - |
| C4 ² | 29 | 34 | 44 | 53 | 76 | - |
| C5 ² F6 | 30 | 50 | 70 | 95 | 110 | - |
| C6 ² | 6 | 5 | 5 | 6 | 9 | - |
| C7 ² | 42.6 | 60 | 90 | 115 | 140 | - |
| C8 ² | 25 | 33 | 35 | 48 | 65 | - |
| C9 ² | 79.5 | 122.8 | 147.5 | 188 | 207 | - |
| B | 5 | 6 | 10 | 12 | 16 | - |
| H | 18 | 24.5 | 35 | 43 | 59 | - |

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

★ Specification subject to change without notice.

PGRH Specifications Table

| Specifications | | Stage | Ratio | PGRH-42 | PGRH-60 | PGRH-90 | PGRH-115 | PGRH-142 | PGRH-180 | PGRH-220 |
|----------------------------------|----------------|----------------------|---|---------------------------------------|-------------|-------------|-------------|-------------|-----------|-----------|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | 19 | 53 | 145 | 290 | 520 | 950 | 1100 |
| | | | 4 | 20 | 55 | 150 | 300 | 550 | 1000 | 1700 |
| | | | 5 | 17 | 54 | 140 | 290 | 530 | 1050 | 2000 |
| | | | 6 | 15 | 46 | 135 | 280 | 490 | 1000 | 1850 |
| | | | 7 | 14 | 44 | 125 | 270 | 450 | 960 | 1750 |
| | | | 8 | 12 | 41 | 110 | 240 | 390 | 900 | 1700 |
| | | | 9 | 11 | 37 | 95 | 220 | 360 | 800 | 1500 |
| | | | 10 | 11 | 37 | 95 | 220 | 360 | 800 | 1450 |
| | | 14 | 14 | 44 | 125 | 270 | 450 | 960 | 1750 | |
| | | 20 | 11 | 37 | 95 | 220 | 360 | 800 | 1450 | |
| | | Stage | Ratio | PGRH-42 | PGRH-60 (T) | PGRH-90(T) | PGRH-115(T) | PGRH-142(T) | PGRH-180T | PGRH-220T |
| | | 2 | 15 | 19 | 53 | 145 | 290 | 520 | 950 | 2000 |
| | | | 20 | 20 | 55 | 150 | 300 | 550 | 1000 | 2000 |
| | | | 25 | 17 | 54 | 140 | 290 | 530 | 1050 | 2000 |
| | | | 30 | 17 | 54 | 140 | 290 | 530 | 1050 | 2000 |
| | | | 35 | 17 | 54 | 140 | 290 | 530 | 1050 | 2000 |
| | | | 40 | 17 | 54 | 140 | 290 | 530 | 1050 | 2000 |
| | | | 45 | 17 | 54 | 140 | 290 | 530 | 1050 | 2000 |
| | | | 50 | 17 | 54 | 140 | 290 | 530 | 1050 | 2000 |
| | | | 60 | 15 | 46 | 135 | 280 | 490 | 1000 | 2000 |
| | | | 70 | 14 | 44 | 125 | 270 | 450 | 960 | 1750 |
| | | | 80 | 12 | 41 | 110 | 240 | 390 | 900 | 1700 |
| | | | 90 | 11 | 37 | 95 | 220 | 360 | 800 | 1500 |
| | | | 100 | 11 | 37 | 95 | 220 | 360 | 800 | 1450 |
| 120 | 15 | | 46 | 135 | 280 | 490 | 1000 | 1850 | | |
| 140 | 14 | | 44 | 125 | 270 | 450 | 960 | 1750 | | |
| 160 | 12 | | 41 | 110 | 240 | 390 | 900 | 1550 | | |
| 180 | 11 | 37 | 95 | 220 | 360 | 800 | 1500 | | | |
| 200 | 11 | 37 | 95 | 220 | 360 | 800 | 1450 | | | |
| Emergency Stop Torque T_{2NOT} | N • m | | 3.0 times of Nominal Output Torque (*Max. Output Torque T_{2B} = 60% of Emergency Stop Torque) | | | | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2 | 3-200 | 5000 | 5000 | 4000 | 4000 | 3000 | 3000 | 2000 |
| Max. Input Speed n_{1max} | rpm | 1,2 | 3-200 | 10000 | 10000 | 8000 | 8000 | 6000 | 6000 | 4000 |
| Micro Backlash P0 | arcmin | 1 | 3-20 | - | - | ≤ 3 | ≤ 2 | ≤ 2 | ≤ 2 | ≤ 2 |
| | | 2 | 15-200 | - | - | ≤ 5 | ≤ 4 | ≤ 4 | ≤ 4 | ≤ 4 |
| Precision Backlash P1 | arcmin | 1 | 3-20 | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 4 | ≤ 4 | ≤ 4 | ≤ 4 |
| | | 2 | 15-200 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 |
| Standard Backlash P2 | arcmin | 1 | 3-20 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 6 | ≤ 6 | ≤ 6 | ≤ 6 |
| | | 2 | 15-200 | ≤ 9 | ≤ 9 | ≤ 9 | ≤ 9 | ≤ 9 | ≤ 9 | ≤ 9 |
| Torsional Rigidity | N • m / arcmin | 1,2 | 3-100 | 2.5 | 6 | 12 | 23 | 45 | 75 | 130 |
| Max. Radial Load F_{2RB}^1 | N | 1,2 | 3-100 | 760 | 1570 | 2780 | 5340 | 8400 | 13000 | 31810 |
| Max. Axial Load F_{2aB}^1 | N | 1,2 | 3-100 | 410 | 750 | 1870 | 3310 | 4670 | 6460 | 18530 |
| Operating Temp. | °C | | 3-100 | -10 °C ~ +90 °C | | | | | | |
| Service Life | hr | | 3-100 | 20,000 (10,000/ Continuous operation) | | | | | | |
| Efficiency | % | 1 | 3-10 | ≥ 95% | | | | | | |
| | | 2 | 12-100 | ≥ 92% | | | | | | |
| Weight | kg | 1 | 3-10 | 1.0 | 2.6 | 6.8 | 13.5 | 25.1 | 42 | 75 |
| | | 2 | 12-100 | 1.4 | 3.3/2.9 | 8.9/7.2 | 14.8 | 26.7 | 46 | 88 |
| Mounting Position | - | 1,2 | 3-100 | Any direction | | | | | | |
| Noise Level ² | dBA/1m | 1,2 | 3-100 | 62 | 64 | 66 | 68 | 70 | 72 | 74 |
| Protection Class | - | 1,2 | 3-100 | IP65 | | | | | | |
| Lubrication | - | 1,2 | 3-100 | Synthetic Lubricant | | | | | | |
| Inertia(J1) | | | | | | | | | | |
| Stage | Ratio | unit | PGRH-42 | PGRH-60 | PGRH-90 | PGRH-115 | PGRH-142 | PGRH-180 | PGRH-220 | |
| 1 | 3/4/5/7/9 | Kg • cm ² | 0.06 | 0.40 | 2.28 | 6.87 | 24.2 | 69.8 | 138.2 | |
| | 6/8/10/14/20 | | 0.05 | 0.30 | 1.45 | 4.76 | 14.5 | 50.3 | 103.6 | |
| Stage | Ratio | | PGRH-42 | PGRH-60(T) | PGRH-90(T) | PGRH-115(T) | PGRH-142(T) | PGRH-180T | PGRH-220T | |
| 2 | 15/20/25/35/45 | | 0.06 | 0.40(0.08) | 2.28(0.72) | 3.02 | 7.83 | 27.7 | 80.3 | |
| | others | 0.05 | 0.30(0.06) | 1.45(0.38) | 1.64 | 5.00 | 15.9 | 55.3 | | |

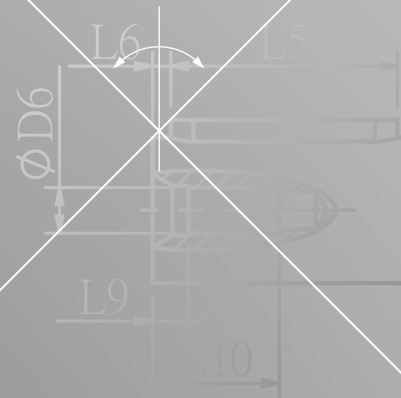
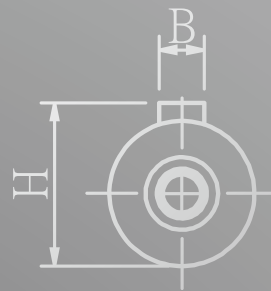
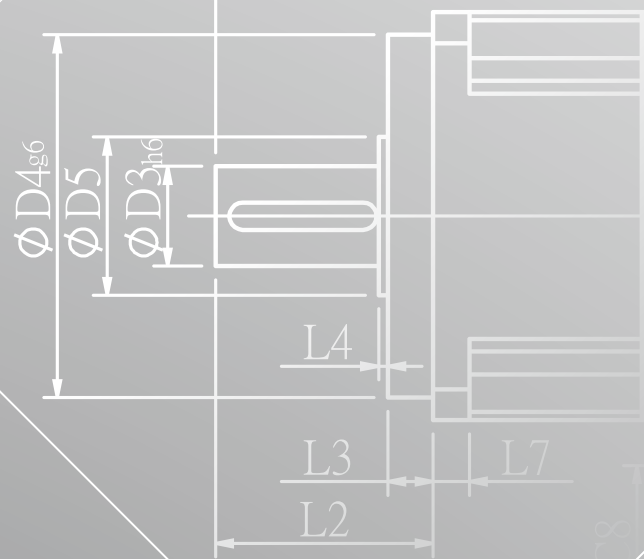
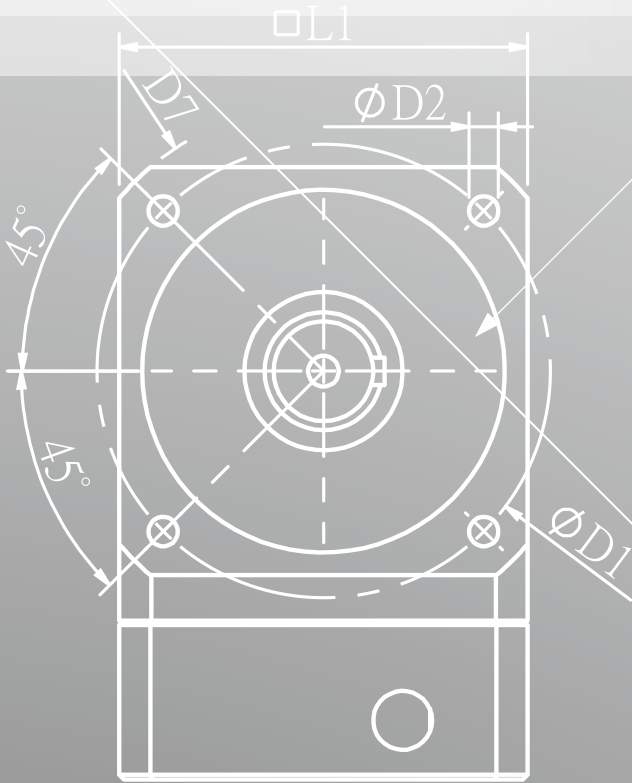
* 1. Applied to the output shaft center @100rpm.

* 2. Measured at 3000rpm with no load

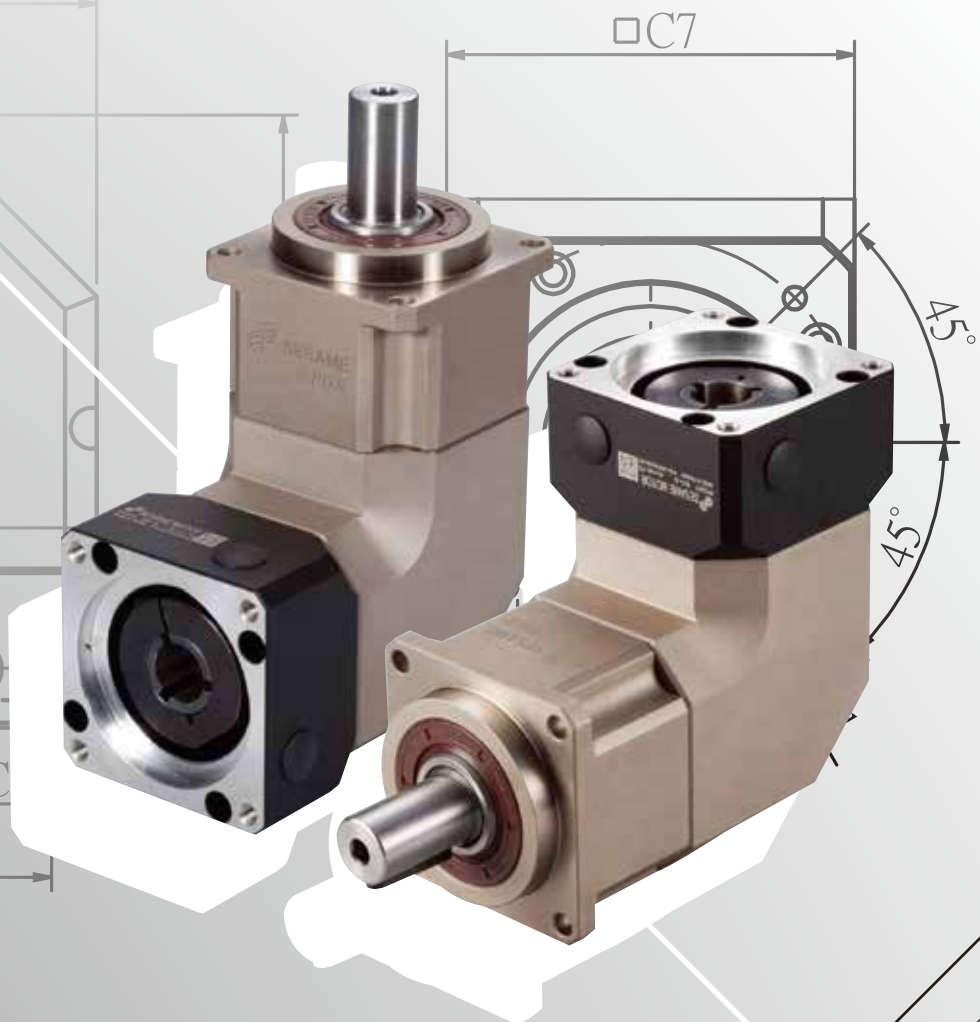
※ The above figures/specifications are subject to change without prior notice.

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

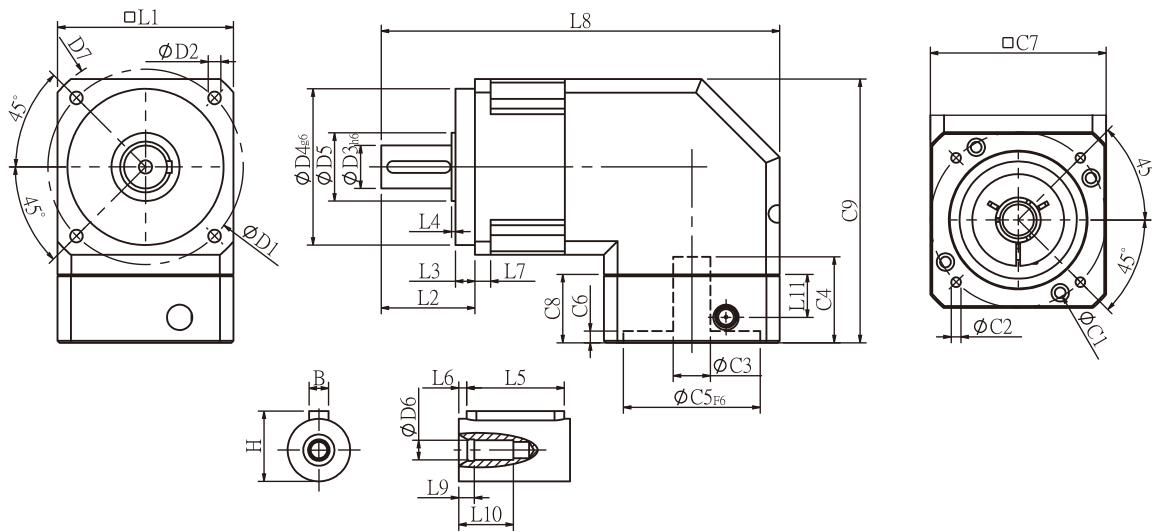
PGR SERIES



L8



PGR Single Stage Dimensions



Specifications

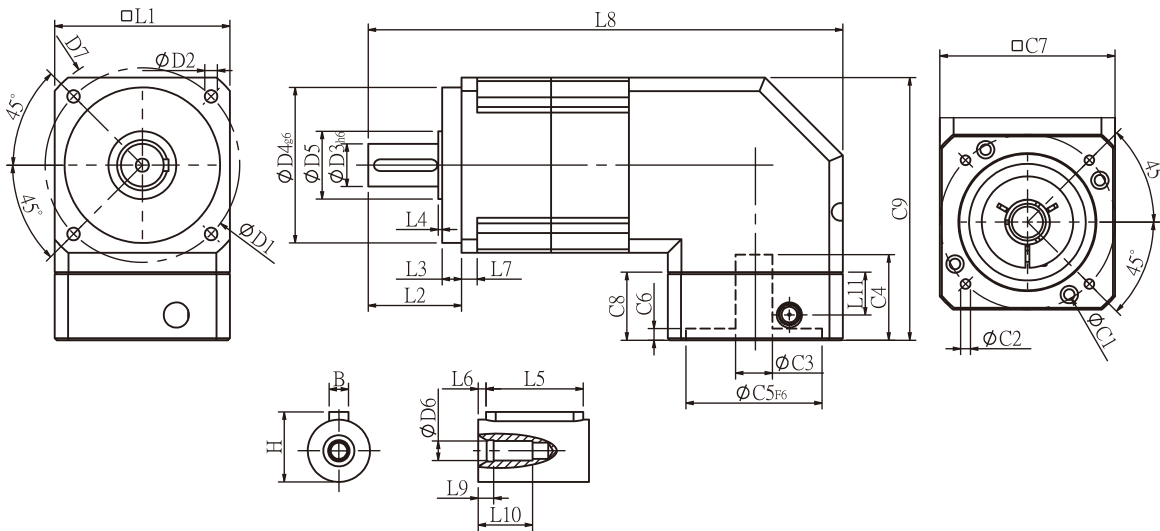
Unit:mm

| Dimensions | PGR42 | PGR60 | PGR90 | PGR115 | PGR142 |
|--------------------|---------|---------|----------|-----------|----------|
| D1 | 50 | 70 | 100 | 130 | 165 |
| D2 | 3.4 | 5.5 | 6.5 | 8.5 | 10.5 |
| D3 h6 | 13 | 16 | 22 | 32 | 40 |
| D4 g6 | 35 | 50 | 80 | 110 | 130 |
| D5 | 15 | 25 | 35 | 45 | 50 |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P | M12x1.75P | M16x2.0P |
| D7 | 56 | 80 | 118 | 148 | 186 |
| L1 | 42.6 | 60 | 90 | 115 | 142 |
| L2 | 26 | 37 | 48 | 62 | 93 |
| L3 | 5.5 | 7 | 10 | 8 | 8 |
| L4 | 1.5 | 1.5 | 1.5 | 3 | 6 |
| L5 | 15 | 25 | 32 | 40 | 60 |
| L6 | 2 | 2 | 3 | 5 | 5 |
| L7 | 4 | 6 | 8 | 12 | 18 |
| L8 | 103.6 | 148.7 | 204 | 244.5 | 330 |
| L9 | 4 | 4 | 4.5 | 6 | 6 |
| L10 | 14 | 16.5 | 20.5 | 30 | 38 |
| L11 | 13.5 | 21.5 | 22 | 32 | 44.7 |
| C1 ² | 46 | 70 | 90 | 115 | 145 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | M8x1.25P | M8x1.25P |
| C3 ² | ≤8 | ≤14 | ≤19/≤24 | ≤24/≤32 | ≤35 |
| C4 ² | 29 | 34 | 44 | 53 | 75 |
| C5 ² F6 | 30 | 50 | 70 | 95 | 110 |
| C6 ² | 6 | 5 | 5 | 6 | 9 |
| C7 ² | 42.6 | 60 | 90 | 115 | 140 |
| C8 ² | 25 | 33 | 35 | 48 | 65 |
| C9 ² | 70.8 | 107.8 | 135 | 174.5 | 207 |
| B | 5 | 5 | 6 | 10 | 12 |
| H | 15 | 18 | 24.5 | 35 | 43 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to the motor flange chosen.

★ Specification subject to change without notice.

PGR Double Stage Dimensions-1



Specifications

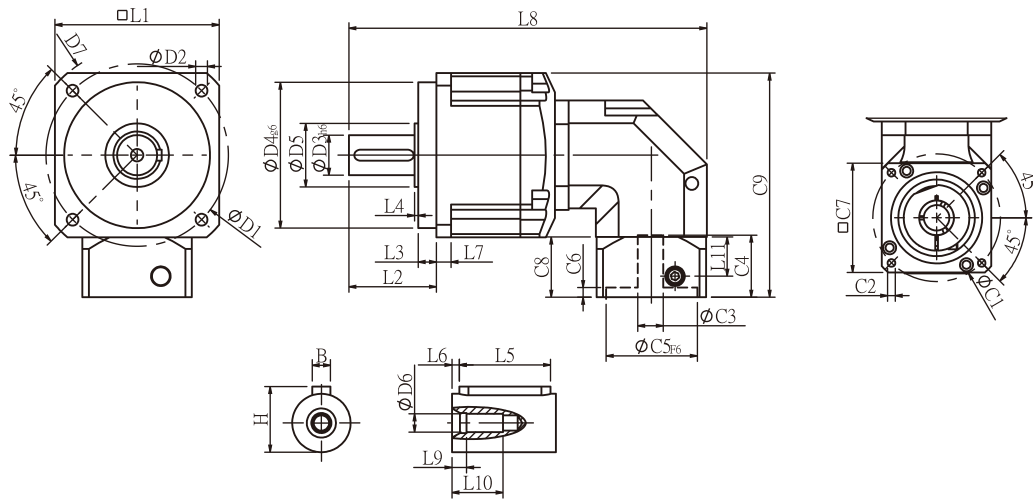
Unit:mm

| Dimensions | PGR42 | PGR60 | PGR90 | PGR115 | PGR142 |
|-------------------------------|---------|---------|----------|-----------|----------|
| D1 | 50 | 70 | 100 | 130 | 165 |
| D2 | 3.4 | 5.5 | 6.5 | 8.5 | 10.5 |
| D3 _{h6} | 13 | 16 | 22 | 32 | 40 |
| D4 _{g6} | 35 | 50 | 80 | 110 | 130 |
| D5 | 15 | 25 | 35 | 45 | 50 |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P | M12x1.75P | M16x2.0P |
| D7 | 56 | 80 | 118 | 148 | 186 |
| L1 | 42.6 | 60 | 90 | 115 | 142 |
| L2 | 26 | 37 | 48 | 62 | 93 |
| L3 | 5.5 | 7 | 10 | 8 | 8 |
| L4 | 1.5 | 1.5 | 1.5 | 3 | 6 |
| L5 | 15 | 25 | 32 | 40 | 60 |
| L6 | 2 | 2 | 3 | 5 | 5 |
| L7 | 4 | 6 | 8 | 12 | 18 |
| L8 | 129.6 | 176.7 | 244 | 292.5 | 391 |
| L9 | 4 | 4 | 4.5 | 6 | 6 |
| L10 | 14 | 16.5 | 20.5 | 30 | 38 |
| L11 | 13.5 | 21.5 | 22 | 32 | 44.7 |
| C1 ² | 46 | 70 | 90 | 115 | 145 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | M8x1.25P | M8x1.25P |
| C3 ² | ≤8 | ≤14 | ≤19/≤24 | ≤24/≤32 | ≤35 |
| C4 ² | 29 | 34 | 44 | 53 | 75 |
| C5 ² _{F6} | 30 | 50 | 70 | 95 | 110 |
| C6 ² | 6 | 5 | 5 | 6 | 9 |
| C7 ² | 42.6 | 60 | 90 | 115 | 140 |
| C8 ² | 25 | 33 | 35 | 48 | 65 |
| C9 ² | 70.8 | 107.8 | 135 | 174.5 | 207 |
| B | 5 | 5 | 6 | 10 | 12 |
| H | 15 | 18 | 24.5 | 35 | 43 |

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

* Specification subject to change without notice.

PGR Double Stage Dimensions-2



Specifications

Unit:mm

| Dimensions | PGR60T | PGR90T | PGR115T | PGR142T |
|--------------------|---------|----------|-----------|----------|
| D1 | 70 | 100 | 130 | 165 |
| D2 | 5.5 | 6.5 | 8.5 | 10.5 |
| D3 h6 | 16 | 22 | 32 | 40 |
| D4 g6 | 50 | 80 | 110 | 130 |
| D5 | 25 | 35 | 45 | 50 |
| D6 | M5x0.8P | M8x1.25P | M12x1.75P | M16x2.0P |
| D7 | 80 | 118 | 148 | 186 |
| L1 | 60 | 90 | 115 | 142 |
| L2 | 37 | 48 | 62 | 93 |
| L3 | 7 | 10 | 8 | 8 |
| L4 | 1.5 | 1.5 | 3 | 6 |
| L5 | 25 | 32 | 40 | 60 |
| L6 | 2 | 3 | 5 | 5 |
| L7 | 6 | 8 | 12 | 18 |
| L8 | 145.1 | 196.2 | 269.4 | 343.5 |
| L9 | 4 | 4.5 | 6 | 6 |
| L10 | 16.5 | 20.5 | 30 | 38 |
| L11 | 13.5 | 21.5 | 22 | 32 |
| C1 ² | 46 | 70 | 90 | 115 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | M8x1.25P |
| C3 ² | ≤8 | ≤14 | ≤19/≤24 | ≤24/≤32 |
| C4 ² | 29 | 34 | 44 | 53 |
| C5 ² F6 | 30 | 50 | 70 | 95 |
| C6 ² | 6 | 5 | 5 | 6 |
| C7 ² | 42.6 | 60 | 90 | 115 |
| C8 ² | 25 | 33 | 35 | 48 |
| C9 ² | 79.5 | 122.8 | 147.5 | 188 |
| B | 5 | 6 | 10 | 12 |
| H | 18 | 24.5 | 35 | 43 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to the motor flange chosen.

★ Specification subject to change without notice.

PGR Specifications Table

| Specifications | | Stage | Ratio | PGR-42 | PGR-60 | PGR-90 | PGR-115 | PGR-142 | |
|----------------------------------|----------------|----------------------|---|---------------------------------------|------------|------------|------------|------------|------------|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | 13.8 | 35.3 | 76.2 | 220 | 380 | |
| | | | 4 | 11.9 | 35.9 | 74.6 | 249 | 450 | |
| | | | 5 | 13.8 | 43.0 | 95.2 | 283 | 473 | |
| | | | 6 | 12.5 | 39.4 | 90.9 | 266 | 436 | |
| | | | 7 | 11.9 | 36.0 | 85.6 | 219 | 400 | |
| | | | 8 | 10.9 | 32.4 | 85.0 | 216 | 363 | |
| | | | 9 | 9.8 | 28.7 | 80.0 | 210 | 320 | |
| | | | 10 | 10.1 | 25.0 | 75.0 | 210 | 320 | |
| | | | Stage | Ratio | PGR-42 | PGR-60 (T) | PGR-90(T) | PGR-115(T) | PGR-142(T) |
| | | | 2 | 15 | 13.8 | 44.2 | 95.2 | 283 | 482 |
| | | 20 | 11.9 | 35.9 | 74.6 | 249 | 490 | | |
| | | 25 | 13.8 | 43.0 | 95.2 | 283 | 473 | | |
| | | 30 | 13.8 | 43.0 | 95.2 | 283 | 473 | | |
| | | 35 | 13.8 | 43.0 | 95.2 | 283 | 473 | | |
| | | 40 | 13.8 | 43.0 | 95.2 | 283 | 473 | | |
| | | 45 | 13.8 | 43.0 | 95.2 | 283 | 473 | | |
| | | 50 | 13.8 | 43.0 | 95.2 | 283 | 473 | | |
| | | 60 | 12.5 | 39.4 | 90.9 | 266 | 436 | | |
| | | 70 | 11.9 | 36.0 | 85.6 | 219 | 400 | | |
| | | 80 | 10.9 | 32.4 | 85.0 | 216 | 363 | | |
| 90 | 9.8 | 28.7 | 80.0 | 210 | 320 | | | | |
| 100 | 10.1 | 25.0 | 75.0 | 210 | 320 | | | | |
| Emergency Stop Torque T_{2NOT} | N • m | | 3.0 times of Nominal Output Torque (*Max. Output Torque T_{2B} = 60% of Emergency Stop Torque) | | | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2 | 3-100 | 3000 | 3000 | 3000 | 2500 | 2000 | |
| Max. Input Speed n_{1max} | rpm | 1,2 | 3-100 | 6000 | 6000 | 6000 | 5000 | 4000 | |
| Micro Backlash P0 | arcmin | 1 | 3-10 | - | - | - | ≤ 4 | ≤ 4 | |
| | | 2 | 12-100 | - | - | - | ≤ 6 | ≤ 6 | |
| Precision Backlash P1 | arcmin | 1 | 3-10 | - | - | ≤ 6 | ≤ 6 | ≤ 6 | |
| | | 2 | 12-100 | - | - | ≤ 9 | ≤ 8 | ≤ 8 | |
| Standard Backlash P2 | arcmin | 1 | 3-10 | ≤ 12 | ≤ 9 | ≤ 9 | ≤ 9 | ≤ 9 | |
| | | 2 | 12-100 | ≤ 15 | ≤ 12 | ≤ 12 | ≤ 11 | ≤ 11 | |
| Torsional Rigidity | N • m / arcmin | 1,2 | 3-100 | 1.0 | 2.8 | 7.5 | 15.5 | 30 | |
| Max. Radial Load F_{2rB}^1 | N | 1,2 | 3-100 | 350 | 960 | 1630 | 3380 | 6150 | |
| Max. Axial Load F_{2aB}^1 | N | 1,2 | 3-100 | 320 | 900 | 1420 | 2930 | 5510 | |
| Operating Temp. | °C | | 3-100 | -10 °C ~ +90 °C | | | | | |
| Service Life | hr | | 3-100 | 20,000 (10,000/ Continuous operation) | | | | | |
| Efficiency | % | 1 | 3-10 | ≥ 94% | | | | | |
| | | 2 | 12-100 | ≥ 90% | | | | | |
| Weight | kg | 1 | 3-10 | 1.0 | 2.5 | 6.5 | 13.2 | 24.6 | |
| | | 2 | 12-100 | 1.3 | 3.2/2.8 | 8.6/6.9 | 17.7/14.5 | 29.7/26.2 | |
| Mounting Position | - | 1,2 | 3-100 | Any direction | | | | | |
| Noise Level ² | dBA/1m | 1,2 | 3-100 | 65 | 67 | 70 | 70 | 75 | |
| Protection Class | - | 1,2 | 3-100 | IP65 | | | | | |
| Lubrication | - | 1,2 | 3-100 | Synthetic Lubricant | | | | | |
| Inertia(J1) | | | | | | | | | |
| Stage | Ratio | unit | PGR-42 | PGR-60 | PGR-90 | PGR-115 | PGR-142 | | |
| 1 | 3/4/5/7/9 | Kg • cm ² | 0.06 | 0.40 | 2.28 | 6.87 | 24.2 | | |
| | 6/8/10 | | 0.05 | 0.30 | 1.45 | 4.76 | 14.5 | | |
| Stage | Ratio | | PGR-42 | PGR-60(T) | PGR-90(T) | PGR-115(T) | PGR-142(T) | | |
| 2 | 15/20/25/35/45 | | 0.06 | 0.40(0.08) | 2.28(0.72) | 6.87(3.02) | 24.2(7.83) | | |
| | others | 0.05 | 0.30(0.06) | 1.45(0.38) | 4.76(1.64) | 14.5(5.00) | | | |

* 1. Applied to the output shaft center @100rpm.

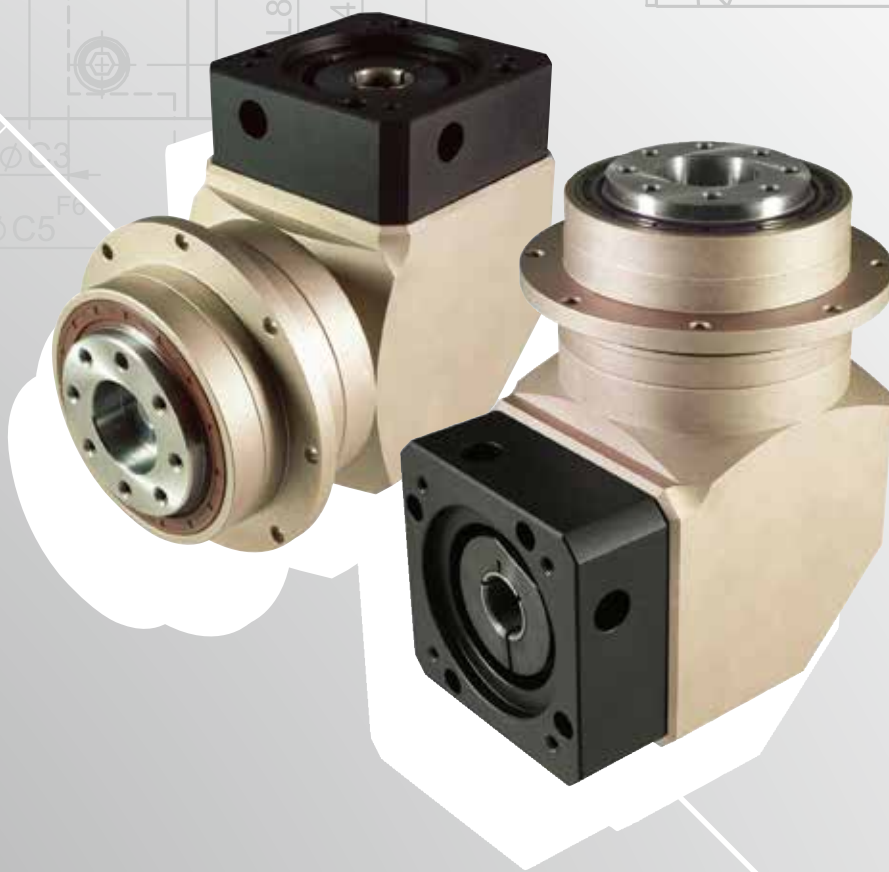
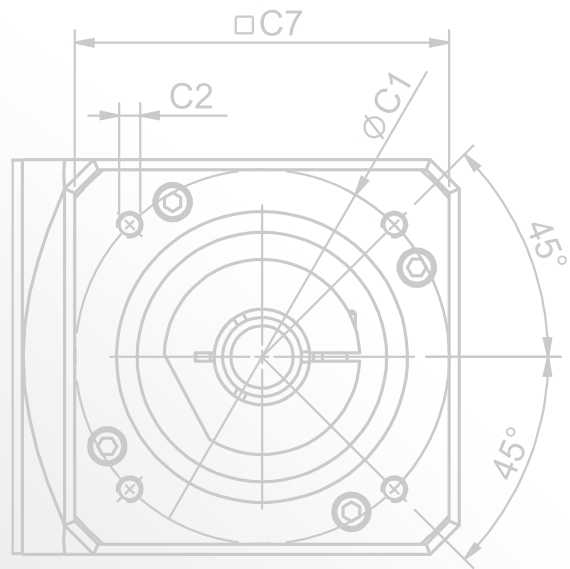
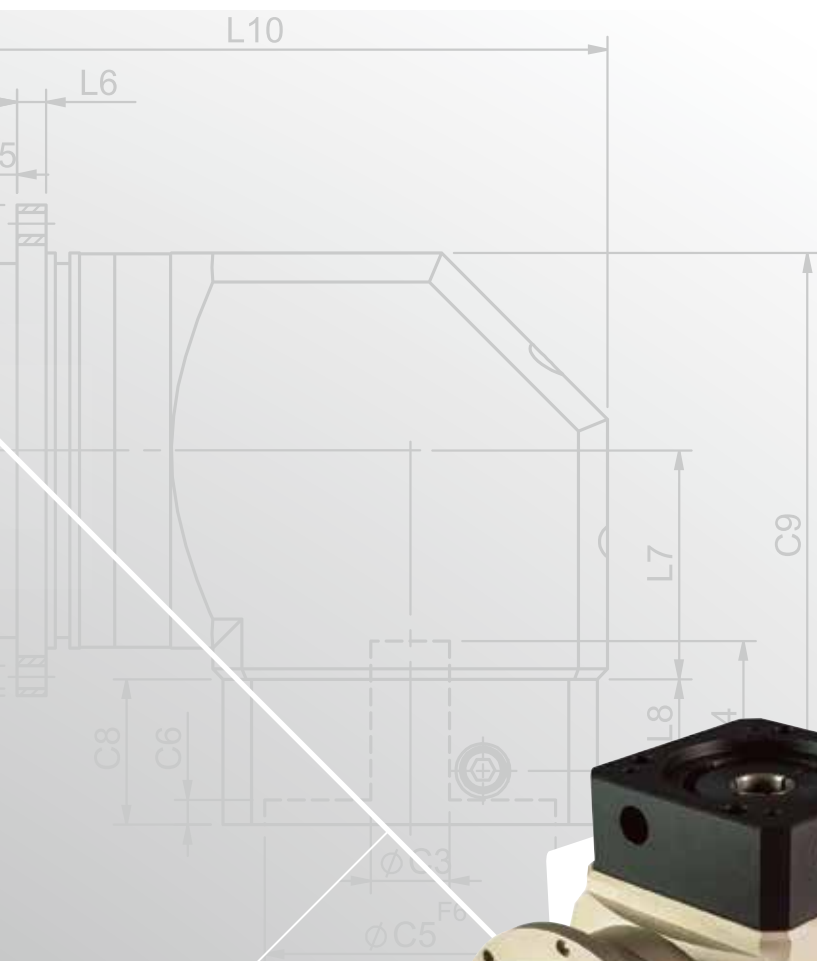
* 2. Measured at 3000rpm with no load. * 3. PGR115T - □□ - P0 is not applicable.

※ The above figures/specifications are subject to change without prior notice.

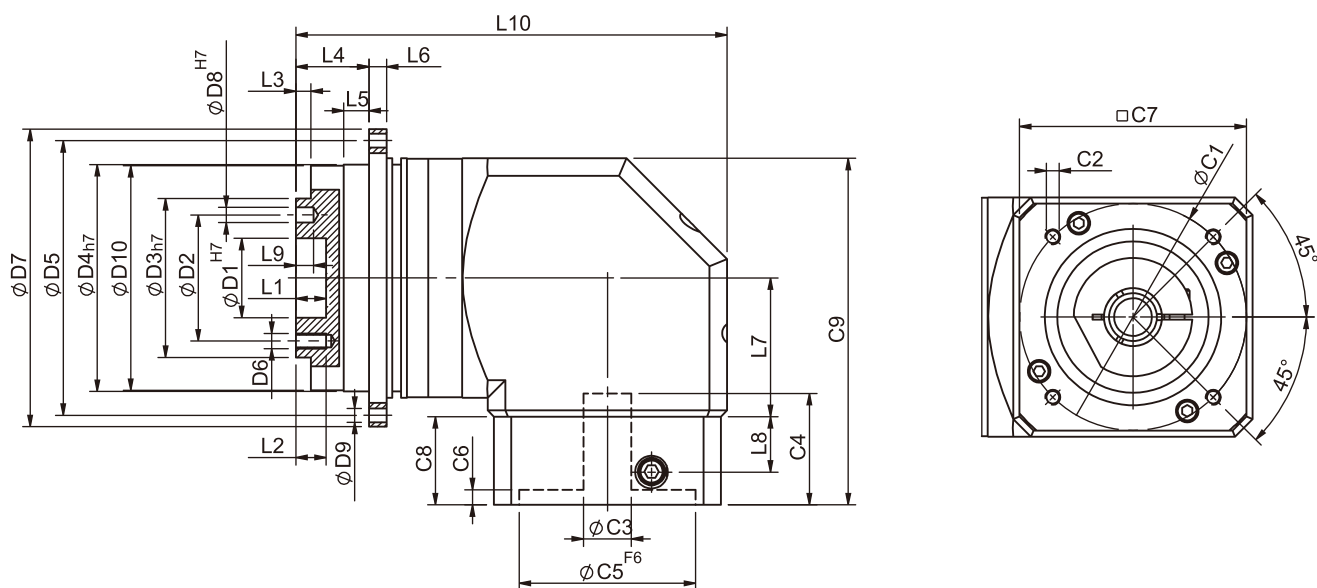
Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.

PGFR SERIES





PGFR Single Stage Dimensions



Specifications

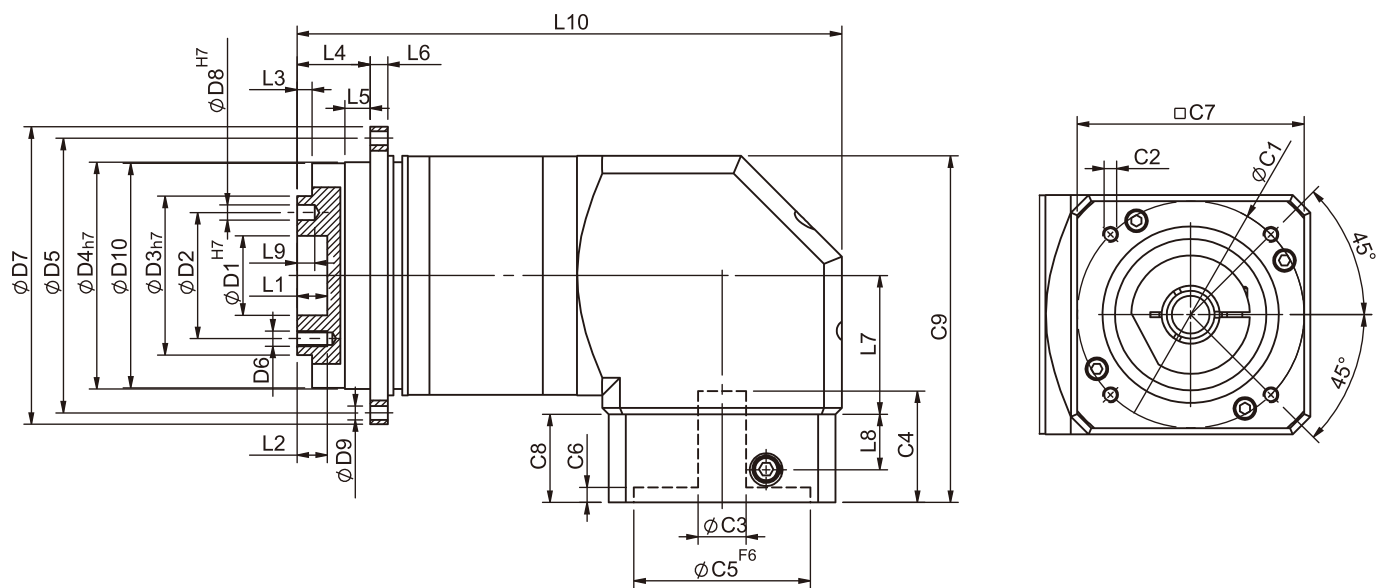
Unit:mm

| Dimensions | PGFR42 | PGFR60 | PGFR90 | PGFR115 |
|-------------------------------|---------|---------|-----------|---------|
| D1 _{H7} | 12 | 20 | 31.5 | - |
| D2 | 20 | 31.5 | 50 | - |
| D3 _{h7} | 28 | 40 | 63 | - |
| D4 _{h7} | 47 | 64 | 90 | - |
| D5 | 67 | 79 | 109 | - |
| D6 | M3x0.5P | M5x0.8P | M6x1.0P | - |
| D7 | 72 | 86 | 118 | - |
| D8 _{H7} | 3 | 5 | 6 | - |
| D9 | 3.4 | 4.5 | 5.5 | - |
| D10 | 46.2 | 63.2 | 89.2 | - |
| L1 | 4 | 8 | 12 | - |
| L2 | 6 | 7.2 | 12 | - |
| L3 | 3 | 3 | 6 | - |
| L4 | 19.5 | 19.5 | 29 | - |
| L5 | 7 | 7 | 10 | - |
| L6 | 4 | 4 | 7 | - |
| L7 | 32.2 | 44.8 | 55 | - |
| L8 | 13.5 | 21.5 | 22 | - |
| L9 | 4 | 6 | 7 | - |
| L10 | 92.2 | 123.9 | 171.1 | - |
| C1 ² | 46 | 70 | 90 | - |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | - |
| C3 ² | ≤ 8 | ≤ 14 | ≤ 19/≤ 24 | - |
| C4 ² | 29 | 34 | 44 | - |
| C5 ² _{F6} | 30 | 50 | 70 | - |
| C6 ² | 6 | 5 | 5 | - |
| C7 ² | 42.6 | 60 | 90 | - |
| C8 ² | 25 | 33 | 35 | - |
| C9 ² | 78.5 | 112.8 | 137.5 | - |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

★ Specification subject to change without notice.

PGFR Double Stage Dimensions-1



Specifications

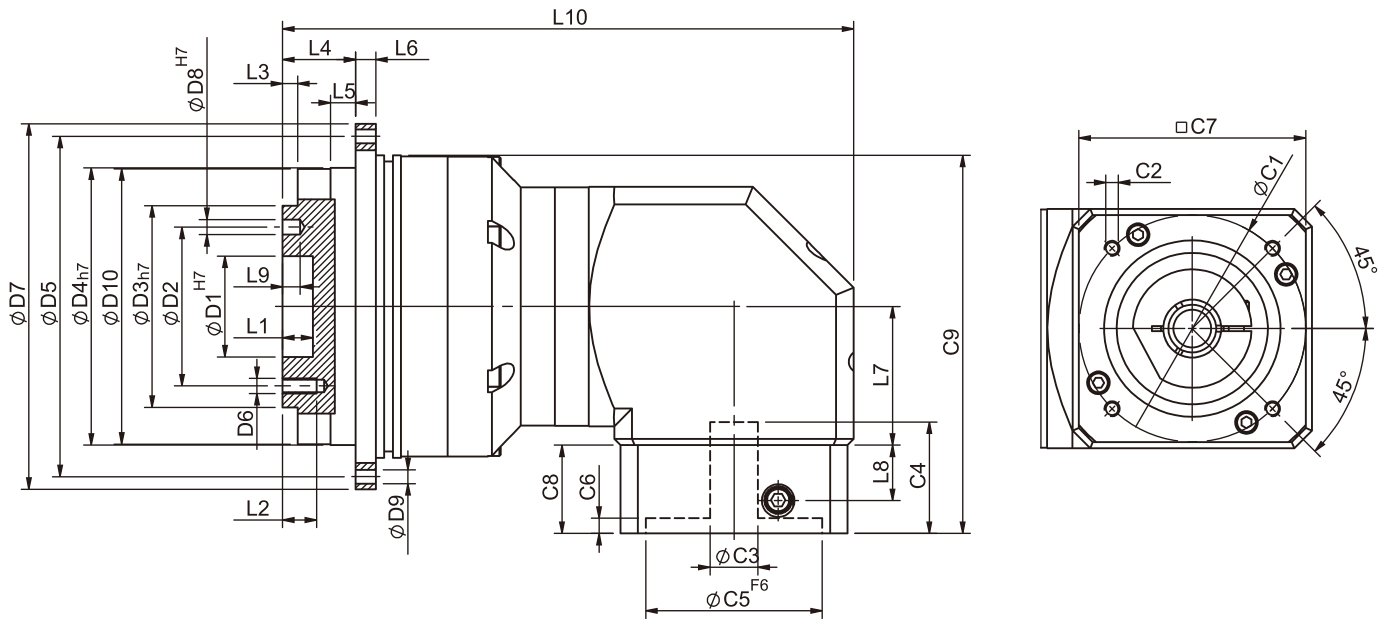
Unit:mm

| Dimensions | PGFR42 | PGFR60 | PGFR90 | PGFR115 |
|-------------------------------|---------|---------|-----------|---------|
| D1 _{H7} | 12 | 20 | 31.5 | - |
| D2 | 20 | 31.5 | 50 | - |
| D3 _{H7} | 28 | 40 | 63 | - |
| D4 _{H7} | 47 | 64 | 90 | - |
| D5 | 67 | 79 | 109 | - |
| D6 | M3x0.5P | M5x0.8P | M6x1.0P | - |
| D7 | 72 | 86 | 118 | - |
| D8 _{H7} | 3 | 5 | 6 | - |
| D9 | 3.4 | 4.5 | 5.5 | - |
| D10 | 46.2 | 63.2 | 89.2 | - |
| L1 | 4 | 8 | 12 | - |
| L2 | 6 | 7.2 | 12 | - |
| L3 | 3 | 3 | 6 | - |
| L4 | 19.5 | 19.5 | 29 | - |
| L5 | 7 | 7 | 10 | - |
| L6 | 4 | 4 | 7 | - |
| L7 | 32.2 | 44.8 | 55 | - |
| L8 | 13.5 | 21.5 | 22 | - |
| L9 | 4 | 6 | 7 | - |
| L10 | 119.9 | 159.3 | 216.1 | - |
| C1 ² | 46 | 70 | 90 | - |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | - |
| C3 ² | ≤ 8 | ≤ 14 | ≤ 19/≤ 24 | - |
| C4 ² | 29 | 34 | 44 | - |
| C5 ² _{F6} | 30 | 50 | 70 | - |
| C6 ² | 6 | 5 | 5 | - |
| C7 ² | 42.6 | 60 | 90 | - |
| C8 ² | 25 | 33 | 35 | - |
| C9 ² | 78.5 | 112.8 | 137.5 | - |

* C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

* Specification subject to change without notice.

PGFR Double Stage Dimensions-2



Specifications

Unit:mm

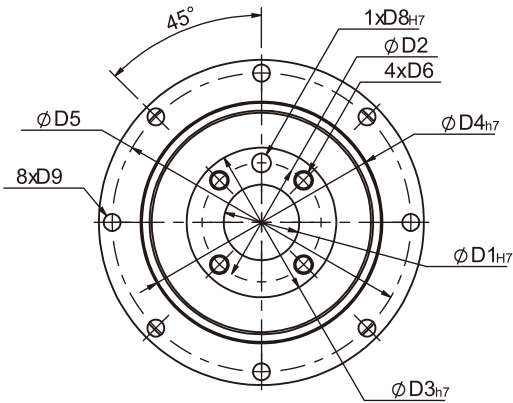
| Dimensions | PGFR60T | PGFR90T | PGFR115T |
|-------------------------------|---------|---------|-----------|
| D1 ^{H7} | 20 | 31.5 | 40 |
| D2 | 31.5 | 50 | 63 |
| D3 ^{H7} | 40 | 63 | 80 |
| D4 ^{H7} | 64 | 90 | 110 |
| D5 | 79 | 109 | 135 |
| D6 | M5x0.8P | M6x1.0P | M6x1.0P |
| D7 | 86 | 118 | 145 |
| D8 ^{H7} | 5 | 6 | 6 |
| D9 | 4.5 | 5.5 | 5.5 |
| D10 | 63.2 | 89.2 | 109.2 |
| L1 | 8 | 12 | 12 |
| L2 | 7.2 | 12 | 13.5 |
| L3 | 3 | 6 | 6 |
| L4 | 19.5 | 29 | 29 |
| L5 | 7 | 10 | 10 |
| L6 | 4 | 7 | 8 |
| L7 | 32.2 | 44.8 | 55 |
| L8 | 13.5 | 21.5 | 22 |
| L9 | 6 | 7 | 7 |
| L10 | 126.6 | 171.3 | 226.6 |
| C1 ² | 46 | 70 | 90 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P |
| C3 ² | ≤ 8 | ≤ 14 | ≤ 19/≤ 24 |
| C4 ² | 29 | 34 | 44 |
| C5 ² _{F6} | 30 | 50 | 70 |
| C6 ² | 6 | 5 | 5 |
| C7 ² | 42.6 | 60 | 90 |
| C8 ² | 25 | 33 | 35 |
| C9 ² | 84.4 | 125.3 | 150 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

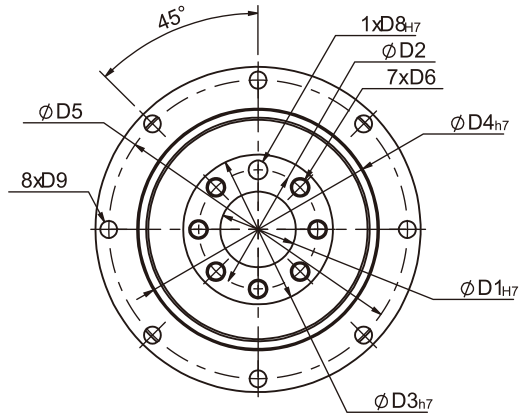
★ Specification subject to change without notice.

PGFR Flange Dimensions

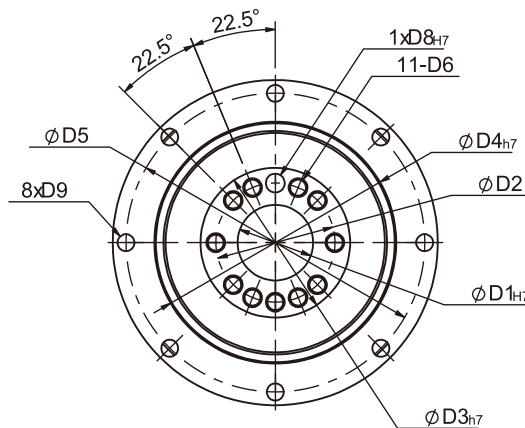
PGFR42



PGFR60 PGFR90



PGFR115



Specifications Unit:mm

| Dimensions | PGFR42 | PGFR60 | PGFR90 | PGFR115 |
|------------------|---------|---------|---------|---------|
| D1 _{H7} | 12 | 20 | 31.5 | 40 |
| D2 | 20 | 31.5 | 50 | 63 |
| D3 _{h7} | 28 | 40 | 63 | 80 |
| D4 _{h7} | 47 | 64 | 90 | 110 |
| D5 | 67 | 79 | 109 | 135 |
| D6 | M3x0.5P | M5x0.8P | M6x1.0P | M6x1.0P |
| D8 _{H7} | 3 | 5 | 6 | 6 |
| D9 | 3.4 | 4.5 | 5.5 | 5.5 |

★ Specification subject to change without notice.

PGFR Specifications Table

| Specifications | | Stage | Ratio | PGFR-42 | PGFR-60 | PGFR-90 | PGFR-115 |
|----------------------------------|----------------|----------------------|---|--------------------------------------|------------|------------|-----------|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | - | 40 | 105 | 180 |
| | | | 4 | 16 | 43 | 110 | 240 |
| | | | 5 | 17 | 50 | 130 | 290 |
| | | | 7 | 14 | 44 | 125 | 270 |
| | | | 10 | 11 | 37 | 95 | 220 |
| | | | 14 | 14 | 44 | 125 | 270 |
| | | 20 | 11 | 37 | 95 | 220 | |
| | | Stage | Ratio | PGFR-42 | PGFR-60(T) | PGFR-90(T) | PGFR-115T |
| | | 2 | 15 | - | 40 | 105 | 180 |
| | | | 20 | 16 | 43 | 110 | 240 |
| | | | 25 | 17 | 50 | 130 | 290 |
| | | | 30 | 17 | 50 | 130 | 290 |
| | | | 35 | 17 | 50 | 130 | 290 |
| | | | 40 | 17 | 50 | 130 | 290 |
| | | | 50 | 17 | 50 | 130 | 290 |
| | | | 70 | 14 | 44 | 125 | 270 |
| | | | 100 | 11 | 37 | 95 | 220 |
| | | | 140 | 14 | 44 | 125 | 270 |
| | | 200 | 11 | 37 | 95 | 220 | |
| Emergency Stop Torque T_{2NOT} | N • m | | 3.0 times of Nominal Output Torque (*Max. Output Torque T_{2B} = 60% of Emergency Stop Torque) | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2 | 3-100 | 5000 | 5000 | 4000 | 4000 |
| Max. Input Speed n_{1max} | rpm | 1,2 | 3-100 | 10000 | 10000 | 8000 | 8000 |
| Micro Backlash P_0 | arcmin | 1 | 3-10 | - | - | ≤ 4 | ≤ 2 |
| | | 2 | 12-100 | - | - | ≤ 6 | ≤ 4 |
| Precision Backlash P_1 | arcmin | 1 | 3-10 | ≤ 6 | ≤ 6 | ≤ 6 | ≤ 4 |
| | | 2 | 12-100 | ≤ 8 | ≤ 8 | ≤ 8 | ≤ 7 |
| Standard Backlash P_2 | arcmin | 1 | 3-10 | ≤ 8 | ≤ 8 | ≤ 8 | ≤ 6 |
| | | 2 | 12-100 | ≤ 10 | ≤ 10 | ≤ 10 | ≤ 9 |
| Torsional Rigidity | N • m / arcmin | 1,2 | 3-100 | 6 | 12 | 28 | 75 |
| Max. Bending Moment M_{2kB}^1 | N • m | 1,2 | 3-100 | 22.5 | 36 | 76 | 140 |
| Max. Axial Load F_{2aB}^1 | N | 1,2 | 3-100 | 465 | 635 | 1060 | 1580 |
| Operating Temp. | °C | | 3-100 | -10 °C ~ +90 °C | | | |
| Service Life | hr | | 3-100 | 20,000 (10,000/Continuous operation) | | | |
| Efficiency | % | 1 | 3-10 | ≥ 95% | | | |
| | | 2 | 12-100 | ≥ 92% | | | |
| Weight | kg | 1 | 3-10 | 1.1 | 2.2 | 6.3 | 13.5 |
| | | 2 | 12-100 | 1.6 | 2.9/2.1 | 8.3/5.0 | 14.8 |
| Mounting Position | - | 1,2 | 3-100 | Any direction | | | |
| Noise Level ² | dBA/1m | 1,2 | 3-100 | 62 | 64 | 66 | 68 |
| Protection Class | - | 1,2 | 3-100 | IP65 | | | |
| Lubrication | - | 1,2 | 3-100 | Synthetic Lubricant | | | |
| Inertia(J1) | | | | | | | |
| Stage | Ratio | unit | | PGFR-42 | PGFR-60 | PGFR-90 | PGFR-115 |
| 1 | 3/4/5/7/9 | Kg • cm ² | | 0.06 | 0.40 | 2.28 | 6.87 |
| | 10/14/20 | | | 0.05 | 0.30 | 1.45 | 4.76 |
| 2 | 15/20/25/35 | | | 0.06 | 0.40(0.08) | 2.28(0.72) | 3.02 |
| | others | | | 0.05 | 0.30(0.06) | 1.45(0.38) | 1.64 |

* 1. Applied to the output shaft center @100rpm.

* 2. Measured at 3000rpm with no load

※ The above figures/specifications are subject to change without prior notice.

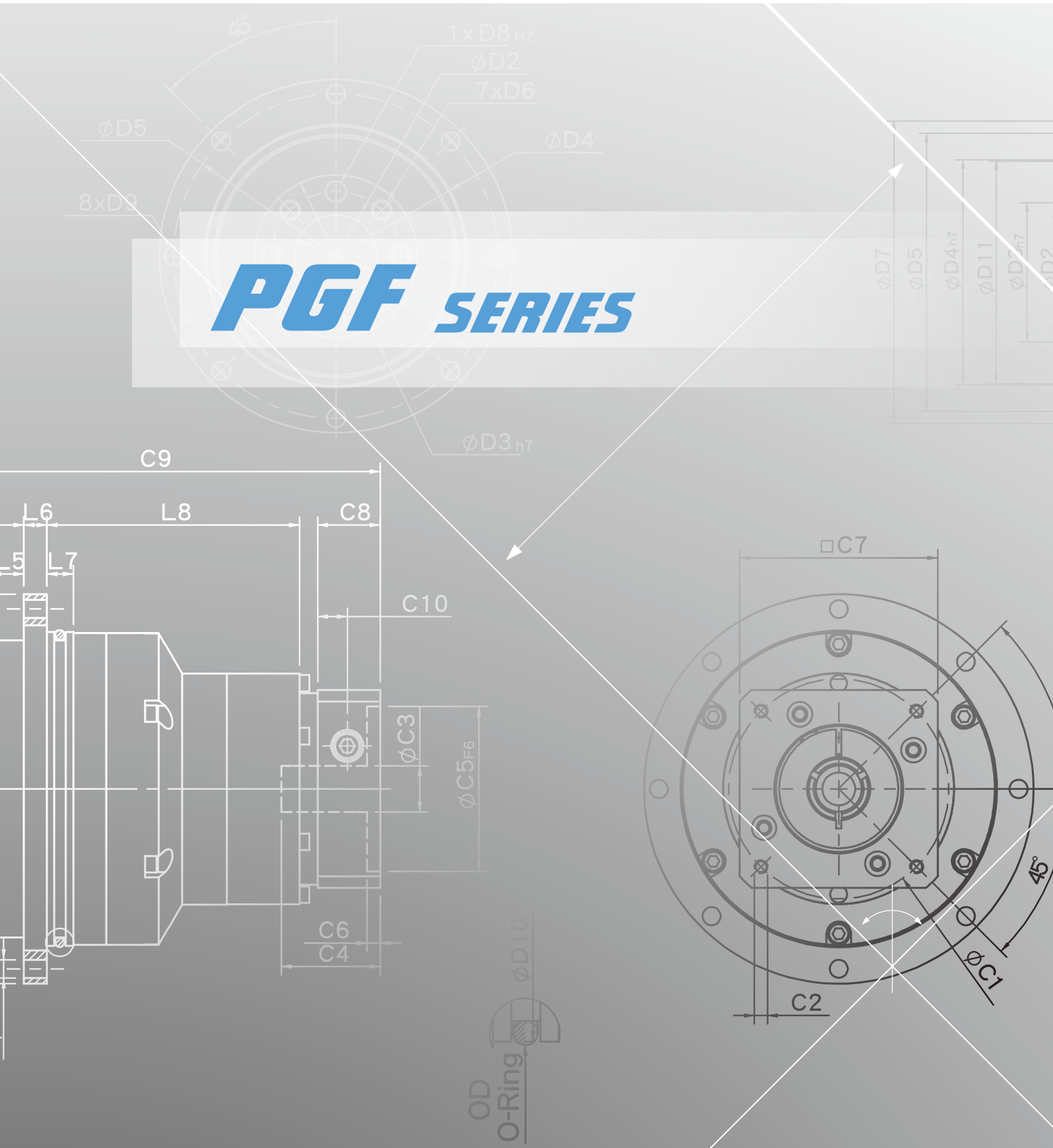
Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.

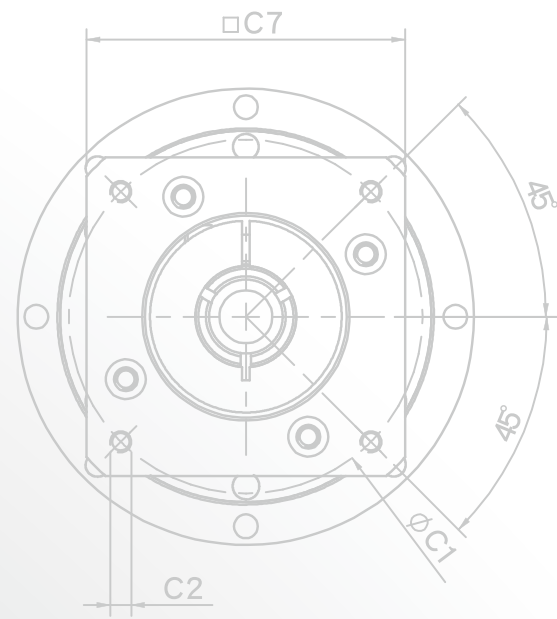
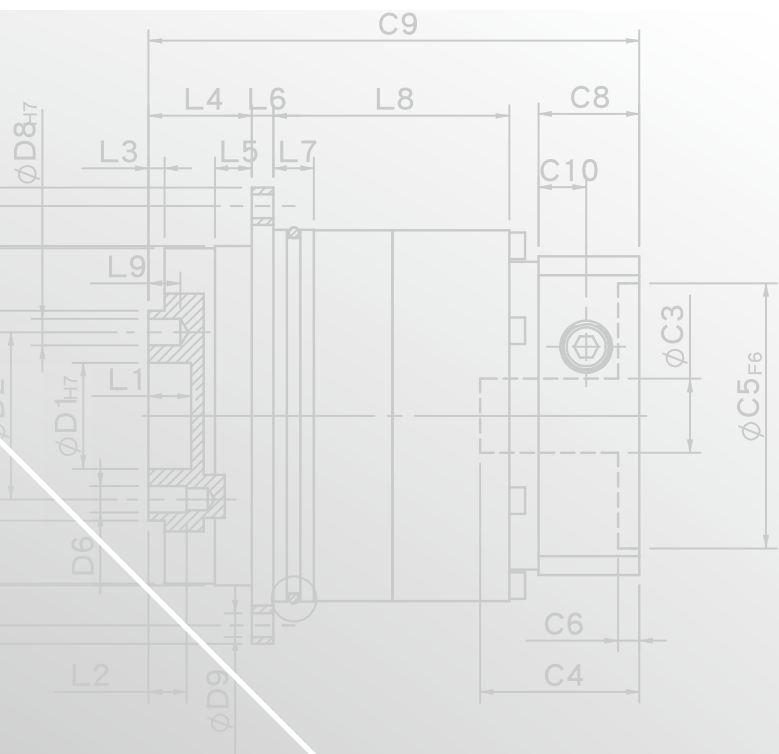
SERVO MOTOR GEARHEADS



- PHL
- PHFR
- PHF
- PGH
- PUR
- PUL
- PGLH
- PGL
- PGC
- PGE
- PGRH
- PCR
- PGFR
- PGF
- PBC
- PBE
- PAE
- PAC
- PAN
- PGS
- PNS

PGF SERIES

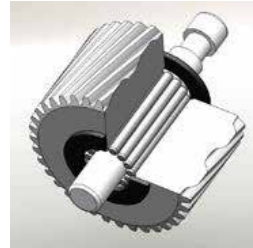




OD
O-Ring ØD10

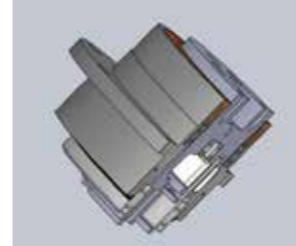


PGF SERIES FEATURES



Planet gear transmission interface equipped with needle bearings, full needle roller bearings aligned without retainer achieve maximum exposure but smallest gap tolerances. Enhance over-all gear structure rigid and output torque.

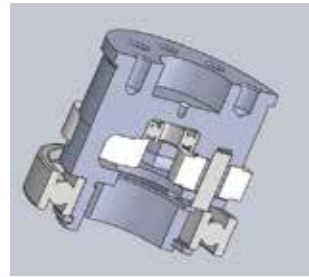
Alloy steel gear with unique heat treatment. Additionally, with gear grinding processing to get the best accuracy, high wear resistance and high impact toughness.



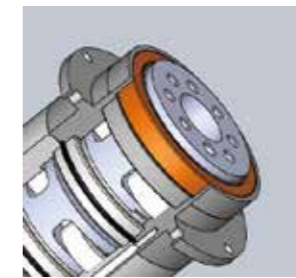
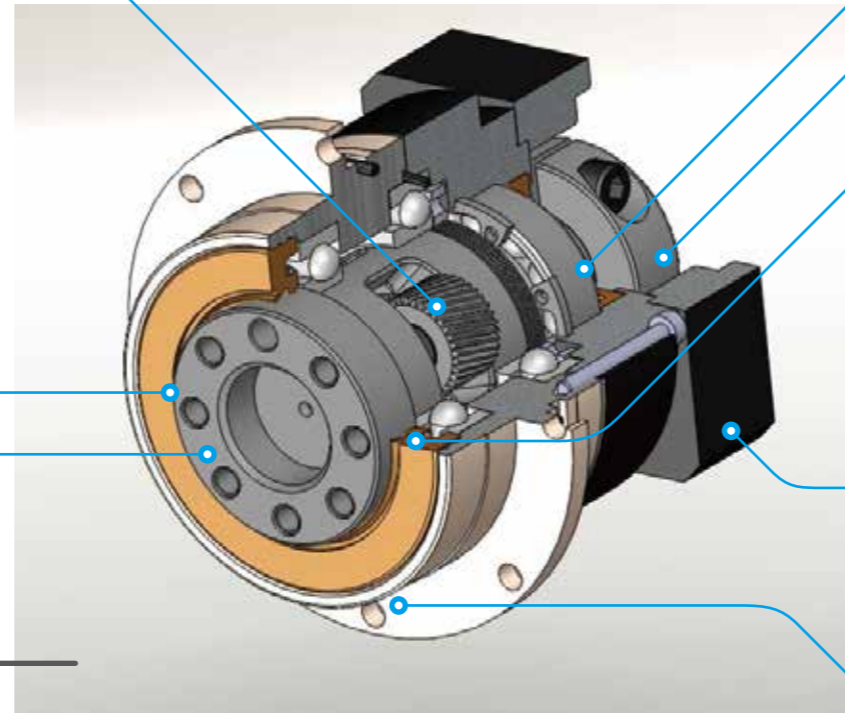
The sun gear bearing is placed directly into the planetary arm bracket, the overall mechanical structure designed to ensure concentricity of the transmission components.



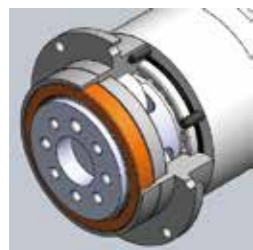
Input-end and motor shaft are coupled through a dynamic balanced collar clamping mechanism to ensure connection interface concentricity and zero slip power transmission at high speed.



Planetary arm bracket and output shaft are one-piece constructed, setting bearing apart for larger span to reach the largest reverse rigid and contribute high axis radial load capacity.

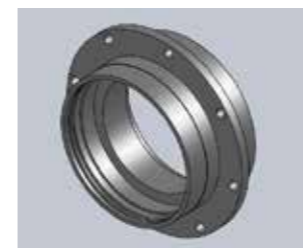


High-tech oil seal design on the upper lip guard against dust intruder, lower lip to guard against oil leak. Protection grade IP65 safeguards fully avoid leaking problem, and given it maintenance-free.



Grinding process to smooth surface of output shaft, and with oil-seal to minimum friction coefficient and reducing start up load; result in the best seal-ability and extended lifespan. Hollow out-put shaft connects perfectly with circular flange drastically reducing the installation space.

PGF Series overall design suitable for combination operation with servo motor high-speed input and achieves maximum torque output. Hollow out-put shaft connects perfectly with circular flange drastically reducing the installation space. Precision gear design and gear processing create a planetary gearhead with low backlash operation, high efficiency, low noise and long lifespan.

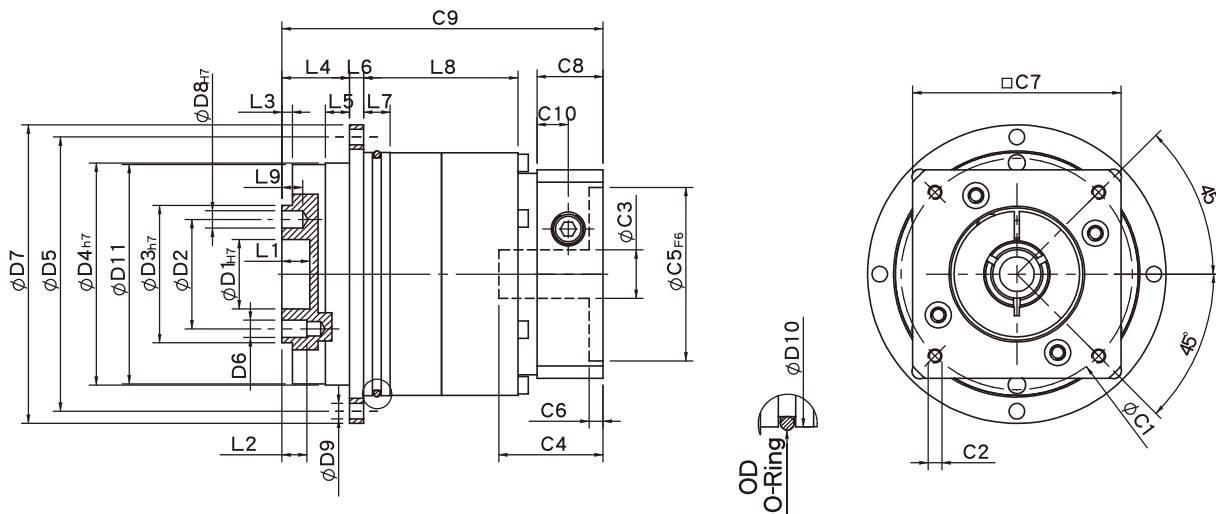


Advanced electroless nickel plating surface treatment resists scratch and corrosion. Suitable for stringent require of high-tech equipment. The gear box and internal gear ring are one-piece constructed, and then processed with advanced Germany gear shaper machinery for high-precision, high torque and abrade consumption.

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

- PHL
- PHR
- PHL
- PGH
- PUR
- PUL
- PGH
- PGLH
- PCL
- PGC
- PGE
- PGRH
- PGR
- PGFR
- PGF
- PBC
- PBE
- PAE
- PAC
- PAN
- PGS
- PNS

PGF Single Stage Dimensions



Specifications

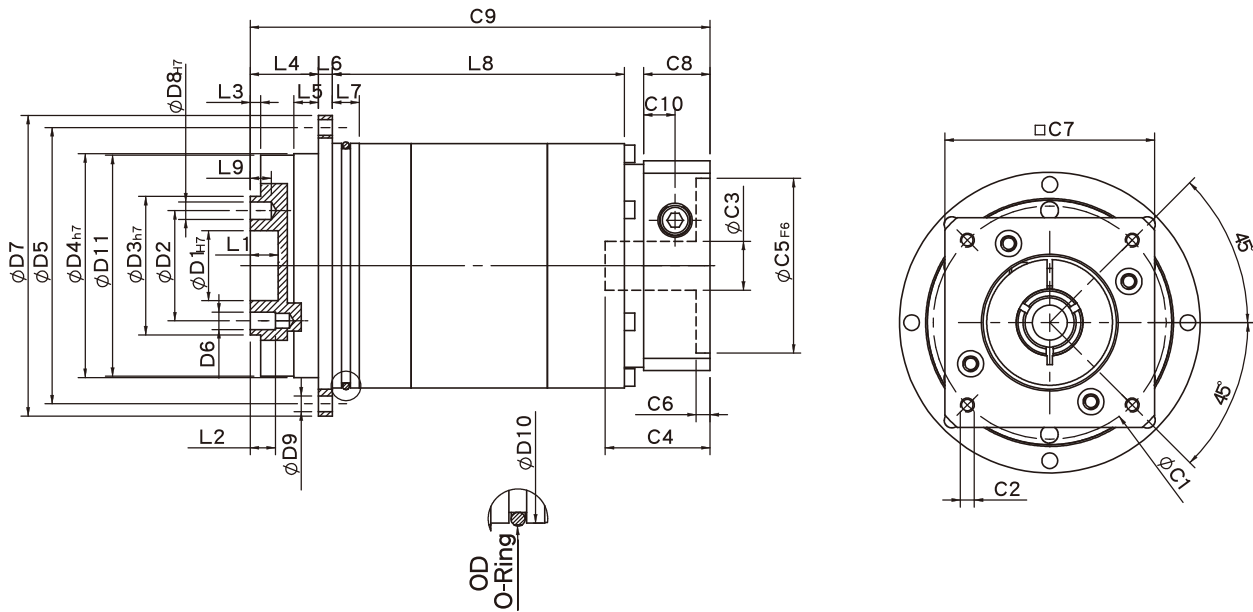
Unit:mm

| Dimensions | PGF42 | PGF60 | PGF90 | PGF115 |
|-------------------------------|---------|---------|---------|----------|
| D1 _{H7} | 12 | 20 | 31.5 | 40 |
| D2 | 20 | 31.5 | 50 | 63 |
| D3 _{h7} | 28 | 40 | 63 | 80 |
| D4 _{h7} | 47 | 64 | 90 | 110 |
| D5 | 67 | 79 | 109 | 135 |
| D6 | M3x0.5P | M5x0.8P | M6x1.0P | M6x1.0P |
| D7 | 72 | 86 | 118 | 145 |
| D8 _{H7} | 3 | 5 | 6 | 6 |
| D9 | 3.4 | 4.5 | 5.5 | 5.5 |
| D10 | 60 | 70 | 95 | 120 |
| D11 | 46.2 | 63.2 | 89.2 | 109.2 |
| L1 | 4 | 8 | 12 | 12 |
| L2 | 6 | 7.2 | 12 | 13.5 |
| L3 | 3 | 3 | 6 | 6 |
| L4 | 19.5 | 19.5 | 29 | 29 |
| L5 | 7 | 7 | 10 | 10 |
| L6 | 4 | 4 | 7 | 8 |
| L7 | 5 | 7.7 | 8 | 10 |
| L8 | 25 | 29.5 | 35 | 50.5 |
| L9 | 4 | 6 | 7 | 7 |
| C1 ² | 46 | 70 | 90 | 115 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | M8x1.25P |
| C3 ² | ≤8/≤11 | ≤14 | ≤19/≤24 | ≤24/≤32 |
| C4 ² | 28.1 | 36.5 | 41.2 | 51.1 |
| C5 ² _{F6} | 30 | 50 | 70 | 95 |
| C6 ² | 4 | 4 | 6.7 | 6 |
| C7 ² | 42 | 60 | 90 | 115 |
| C8 ² | 16.5 | 19 | 25.5 | 30 |
| C9 ² | 74.8 | 84.5 | 104.5 | 127.5 |
| C10 ² | 7.4 | 9 | 11.3 | 13.9 |
| OD | 56x2 | 66x2 | 90x3 | 110x3 |

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

★ Specification subject to change without notice.

PGF Double Stage Dimensions-1



Specifications

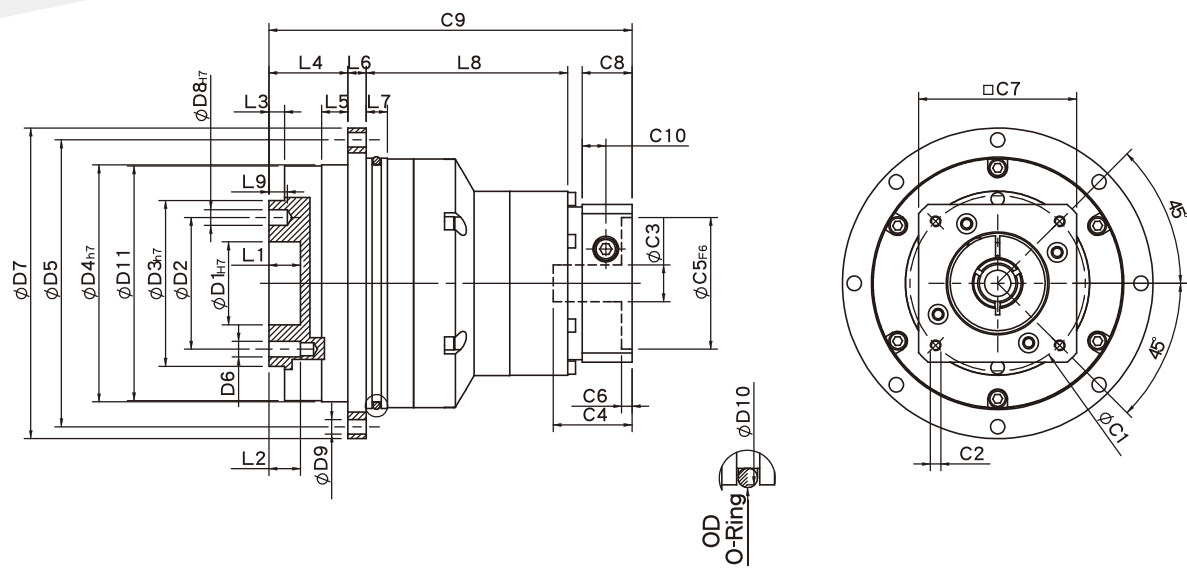
Unit:mm

| Dimensions | PGF42 | PGF60 | PGF90 |
|--------------------|---------|---------|---------|
| D1 H7 | 12 | 20 | 31.5 |
| D2 | 20 | 31.5 | 50 |
| D3 h7 | 28 | 40 | 63 |
| D4 h7 | 47 | 64 | 90 |
| D5 | 67 | 79 | 109 |
| D6 | M3x0.5P | M5x0.8P | M6x1.0P |
| D7 | 72 | 86 | 118 |
| D8 H7 | 3 | 5 | 6 |
| D9 | 3.4 | 4.5 | 5.5 |
| D10 | 60 | 70 | 95 |
| D11 | 46.2 | 63.2 | 89.2 |
| L1 | 4 | 8 | 12 |
| L2 | 6 | 7.2 | 12 |
| L3 | 3 | 3 | 6 |
| L4 | 19.5 | 19.5 | 29 |
| L5 | 7 | 7 | 10 |
| L6 | 4 | 4 | 7 |
| L7 | 5 | 7.7 | 8 |
| L8 | 54.5 | 68.5 | 80 |
| L9 | 4 | 6 | 7 |
| C1 ² | 46 | 70 | 90 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P |
| C3 ² | ≤8 | ≤14 | ≤19/≤24 |
| C4 ² | 28.1 | 36.5 | 41.2 |
| C5 ² F6 | 30 | 50 | 70 |
| C6 ² | 4 | 4 | 6.7 |
| C7 ² | 42 | 60 | 90 |
| C8 ² | 16.5 | 19 | 25.5 |
| C9 ² | 102.5 | 123.5 | 148.6 |
| C10 ² | 7.4 | 9 | 11.3 |
| OD | 56x2 | 66x2 | 90x3 |

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

* Specification subject to change without notice.

PGF Double Stage Dimensions-2



Specifications

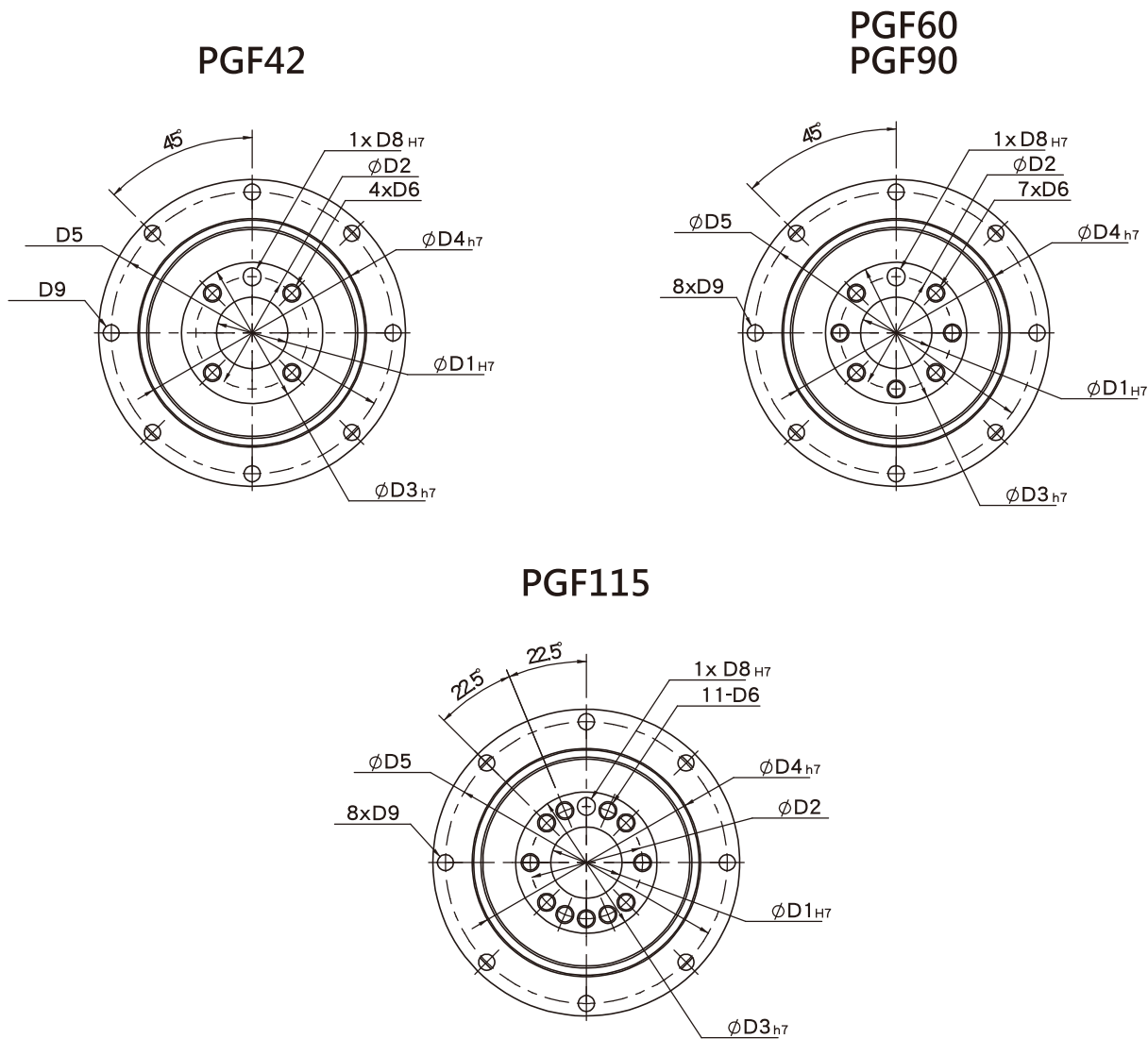
Unit:mm

| Dimensions | PGF60T | PGF90T | PGF115T |
|-------------------------------|---------|---------|---------|
| D1 _{H7} | 20 | 31.5 | 40 |
| D2 | 31.5 | 50 | 63 |
| D3 _{H7} | 40 | 63 | 80 |
| D4 _{H7} | 64 | 90 | 110 |
| D5 | 79 | 109 | 135 |
| D6 | M5x0.8P | M6x1.0P | M6x1.0P |
| D7 | 86 | 118 | 145 |
| D8 _{H7} | 5 | 6 | 6 |
| D9 | 4.5 | 5.5 | 5.5 |
| D10 | 70 | 95 | 120 |
| D11 | 63.2 | 89.2 | 109.2 |
| L1 | 8 | 12 | 12 |
| L2 | 7.2 | 12 | 13.5 |
| L3 | 3 | 6 | 6 |
| L4 | 19.5 | 29 | 29 |
| L5 | 7 | 10 | 10 |
| L6 | 4 | 7 | 8 |
| L7 | 7.7 | 8 | 10 |
| L8 | 61.2 | 68 | 89.5 |
| L9 | 6 | 7 | 7 |
| C1 ² | 46 | 70 | 90 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P |
| C3 ² | ≤8/≤11 | ≤14 | ≤19/≤24 |
| C4 ² | 28.1 | 36.5 | 41.7 |
| C5 ² _{F6} | 30 | 50 | 70 |
| C6 ² | 4 | 4 | 6.7 |
| C7 ² | 42 | 60 | 90 |
| C8 ² | 16.5 | 19 | 25.5 |
| C9 ² | 109.2 | 135.5 | 159.1 |
| C10 ² | 7.4 | 9 | 11.3 |
| OD | 66x2 | 90x3 | 110x3 |

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

★ Specification subject to change without notice.

PGF Flange Dimensions



Specifications Unit:mm

| Dimensions | PGF42 | PGF60 | PGF90 | PGF115 |
|------------------|---------|---------|---------|---------|
| D1 _{H7} | 12 | 20 | 31.5 | 40 |
| D2 | 20 | 31.5 | 50 | 63 |
| D3 _{H7} | 28 | 40 | 63 | 80 |
| D4 _{H7} | 47 | 64 | 90 | 110 |
| D5 | 67 | 79 | 109 | 135 |
| D6 | M3x0.5P | M5x0.8P | M6x1.0P | M6x1.0P |
| D8 _{H7} | 3 | 5 | 6 | 6 |
| D9 | 3.4 | 4.5 | 5.5 | 5.5 |

★ Specification subject to change without notice.

PGF Specifications Table

| Specifications | | Stage | Ratio | PGF-42 | PGF-60 | PGF-90 | PGF-115 |
|---|---------------|--|--------|---------------------|------------|------------|----------|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | - | 40 | 105 | 180 |
| | | | 4 | 16 | 43 | 110 | 240 |
| | | | 5 | 17 | 50 | 130 | 290 |
| | | | 7 | 14 | 44 | 125 | 270 |
| | | | 10 | 11 | 37 | 95 | 220 |
| | | Stage | Ratio | PGF-42 | PGF-60(T) | PGF-90(T) | PGF-115T |
| | | 2 | 15 | - | 40 | 105 | 180 |
| | | | 20 | 16 | 43 | 110 | 240 |
| | | | 25 | 17 | 50 | 130 | 290 |
| | | | 30 | 17 | 50 | 130 | 290 |
| | | | 35 | 17 | 50 | 130 | 290 |
| | | | 40 | 17 | 50 | 130 | 290 |
| | | | 50 | 17 | 50 | 130 | 290 |
| | | | 70 | 14 | 44 | 125 | 270 |
| 100 | 11 | 37 | 95 | 220 | | | |
| Emergency Stop Torque T_{2NOT} | N • m | 3.0 times of Nominal Output Torque (*Max. Output Torque T_{2B} =60% of Emergency Stop Torque) | | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2 | 3-100 | 5000 | 5000 | 4000 | 4000 |
| Max. Input Speed n_{1max} | rpm | 1,2 | 3-100 | 10000 | 10000 | 8000 | 8000 |
| Micro Backlash P0 | arcmin | 1 | 3-10 | ≤ 3 | ≤ 3 | ≤ 3 | ≤ 1 |
| | | 2 | 12-100 | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 3 |
| Precision Backlash P1 | arcmin | 1 | 3-10 | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 3 |
| | | 2 | 12-100 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 5 |
| Standard Backlash P2 | arcmin | 1 | 3-10 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 5 |
| | | 2 | 12-100 | ≤ 9 | ≤ 9 | ≤ 9 | ≤ 7 |
| Torsional Rigidity | N • m /arcmin | 1,2 | 3-100 | 6 | 12 | 28 | 75 |
| Max. Bending Moment M_{2kB}^1 | N • m | 1,2 | 3-100 | 22.5 | 36 | 76 | 140 |
| Max. Axial Load F_{2aB}^1 | N | 1,2 | 3-100 | 465 | 635 | 1060 | 1580 |
| Operating Temp. | °C | -10 °C ~ +90 °C | | | | | |
| Service Life | hr | 20,000 (10,000/ Continuous operation) | | | | | |
| Efficiency | % | 1 | 3-10 | ≥ 97% | | | |
| | | 2 | 12-100 | ≥ 94% | | | |
| Weight | kg | 1 | 3-10 | 0.7 | 1.4 | 3.2 | 6.0 |
| | | 2 | 12-100 | 1.1 | 2.2/1.7 | 5.9/4.0 | 7.9 |
| Mounting Position | - | 1,2 | 3-100 | Any direction | | | |
| Noise Level ² | dB(A)/1m | 1,2 | 3-100 | 56 | 58 | 60 | 63 |
| Protection Class | - | 1,2 | 3-100 | IP65 | | | |
| Lubrication | - | 1,2 | 3-100 | Synthetic Lubricant | | | |
| Inertia(J1) | | | | | | | |
| Stage | Ratio | unit | | PGF-42 | PGF-60 | PGF-90 | PGF-115 |
| 1 | 3 | Kg • cm ² | | - | 0.19 | 0.72 | 2.35 |
| | 4 | | | 0.02 | 0.18 | 0.67 | 1.66 |
| | 5 | | | 0.02 | 0.17 | 0.65 | 1.50 |
| | 7 | | | 0.02 | 0.14 | 0.60 | 1.45 |
| | 10 | | | 0.02 | 0.14 | 0.58 | 1.41 |
| Stage | Ratio | | | PGF-42 | PGF-60(T) | PGF-90(T) | PGF-115T |
| 2 | 15/20/25 | | | 0.02 | 0.17(0.02) | 0.65(0.17) | 0.65 |
| | 30/35/40 | | | 0.02 | 0.14(0.02) | 0.60(0.14) | 0.60 |
| | 50/70/100 | | | 0.02 | 0.14(0.02) | 0.58(0.14) | 0.58 |
| * 1. Applied to the output shaft center @100rpm. * 2. Measured at 3000rpm with no load ※ The above figures/specifications are subject to change without prior notice. | | | | | | | |

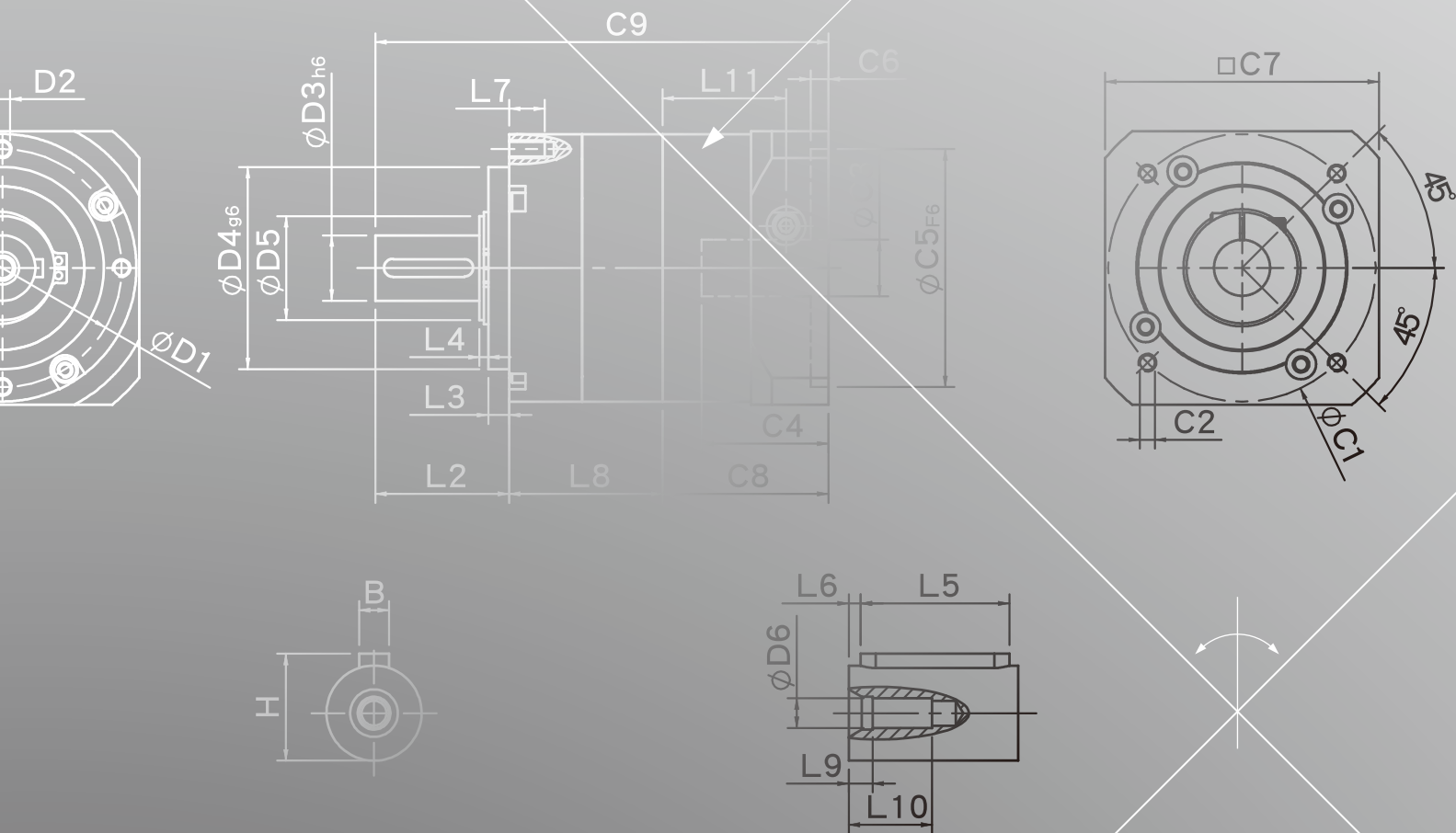
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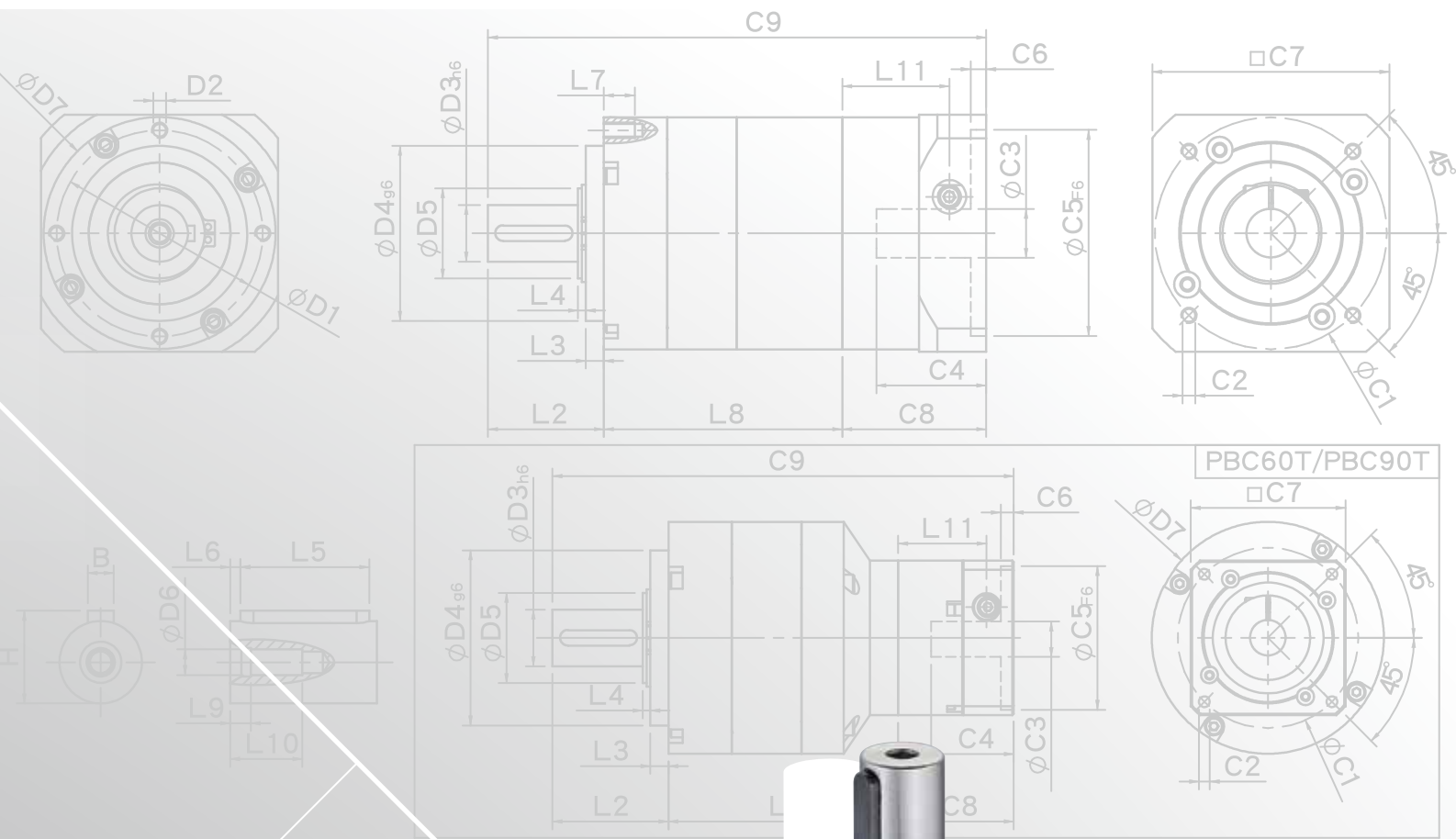
SERVO MOTOR GEARHEADS



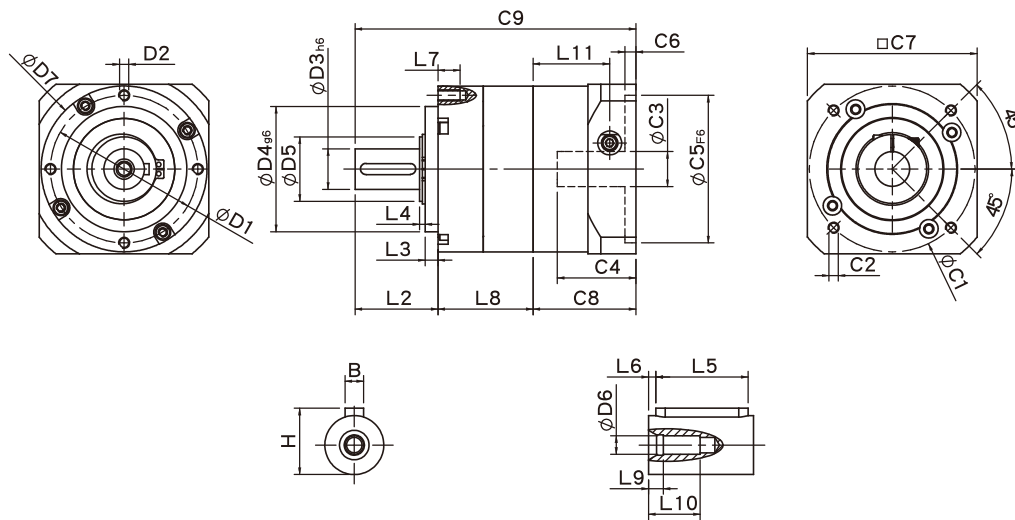
- PHL
- PHFR
- PHF
- PGH
- PUR
- PUL
- PGLH
- PGL
- PGC
- PGE
- PGRH
- PCR
- PGFR
- PGF
- PBC
- PBE
- PAE
- PAC
- PAN
- PGS
- PNS

PBC SERIES





PBC Single Stage Dimensions



Specifications

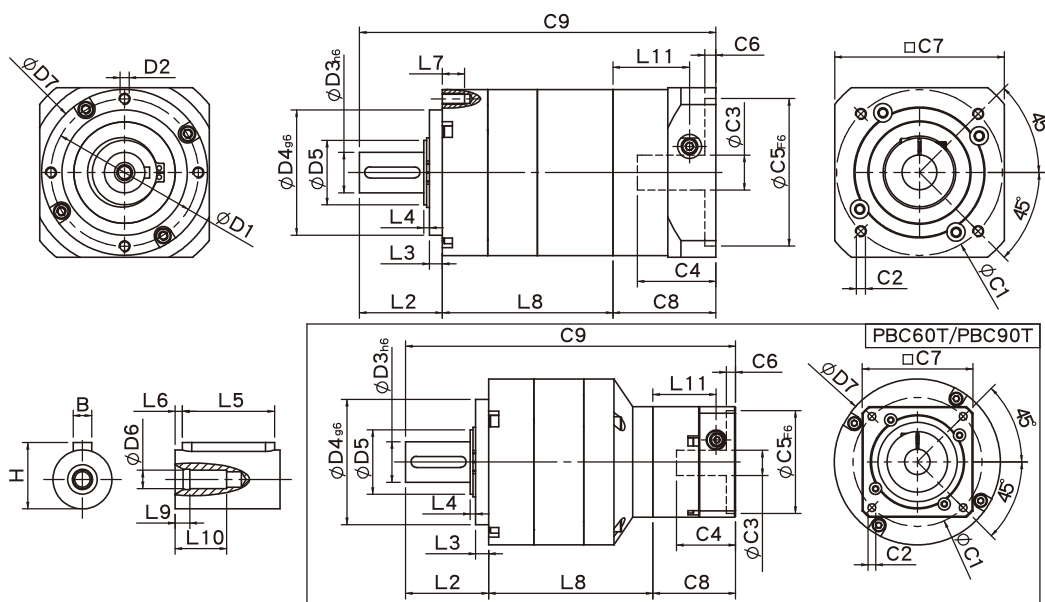
Unit:mm

| Dimensions | PBC50 | PBC70 | PBC90 |
|-------------------------------|------------------|-------------------|---------------------------|
| D1 | 44 | 62 | 80 |
| D2 | M4x0.7P | M5x0.8P | M6x1.0P |
| D3 _{h6} | 12 | 16 | 22 |
| D4 _{g6} | 35 | 52 | 68 |
| D5 | 15 | 20 | 35 |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P |
| D7 | 50 | 70 | 90 |
| L2 | 26 | 36 | 45 |
| L3 | 5.5 | 5 | 7 |
| L4 | 2.6 | 2.7 | 3 |
| L5 | 15 | 25 | 30 |
| L6 | 2 | 2 | 3 |
| L7 | 8 | 10 | 12 |
| L8 | 32.4 | 49.6 | 54.4 |
| L9 | 4 | 4 | 4.5 |
| L10 | 14 | 16.5 | 20.5 |
| L11 | 26.9 | 34.3 | 41.55 |
| C1 ² | 46 | 70 | 90 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P |
| C3 ² | $\leq 8/\leq 11$ | $\leq 14/\leq 19$ | $\leq 19/\leq 24/\leq 28$ |
| C4 ² | 26.5 | 33.5 | 41 |
| C5 ² _{F6} | 30 | 50 | 70 |
| C6 ² | 4 | 4 | 6 |
| C7 ² | 42.6 | 60 | 92 |
| C8 ² | 36.4 | 44.8 | 55.8 |
| C9 ² | 94.8 | 130.4 | 155.2 |
| B | 5 | 5 | 6 |
| H | 15 | 18 | 24.5 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

★ Specification subject to change without notice.

PBC Double Stage Dimensions



Specifications

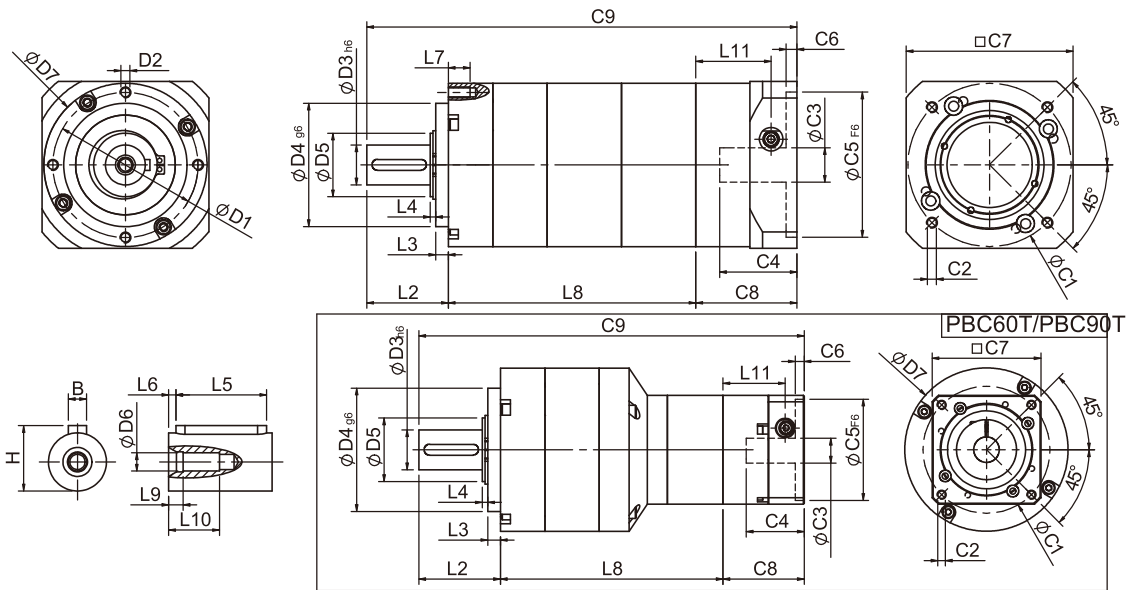
Unit:mm

| Dimensions | PBC50 | PBC70 | PBC70T | PBC90 | PBC90T |
|-------------------------------|---------|---------|---------|-------------|---------|
| D1 | 44 | 62 | | 80 | |
| D2 | M4x0.7P | M5x0.8P | | M6x1.0P | |
| D3 _{h6} | 12 | 16 | | 22 | |
| D4 _{g6} | 35 | 52 | | 68 | |
| D5 | 15 | 20 | | 35 | |
| D6 | M4x0.7P | M5x0.8P | | M8x1.25P | |
| D7 | 50 | 70 | | 90 | |
| L2 | 26 | 36 | | 45 | |
| L3 | 5.5 | 5 | | 7 | |
| L4 | 2.6 | 2.7 | | 3 | |
| L5 | 15 | 25 | | 30 | |
| L6 | 2 | 2 | | 3 | |
| L7 | 8 | 10 | | 12 | |
| L8 | 57.3 | 80.3 | 75.9 | 95.4 | 92 |
| L9 | 4 | 4 | | 4.5 | |
| L10 | 14 | 16.5 | | 20.5 | |
| L11 | 26.9 | 34.3 | 26.9 | 41.55 | 34.3 |
| C1 ² | 46 | 70 | 46 | 90 | 70 |
| C2 ² | M4x0.7P | M5x0.8P | M4x0.7P | M6x1.0P | M5x0.8P |
| C3 ² | ≤8/≤11 | ≤14/≤19 | ≤8/≤11 | ≤19/≤24/≤28 | ≤14/≤19 |
| C4 ² | 26.5 | 33.5 | 26.5 | 41 | 33.5 |
| C5 ² _{F6} | 30 | 50 | 30 | 70 | 50 |
| C6 ² | 4 | 4 | 4 | 6 | 4 |
| C7 ² | 42.6 | 60 | 42.6 | 92 | 60 |
| C8 ² | 36.4 | 44.8 | 36.4 | 55.8 | 44.8 |
| C9 ² | 119.7 | 161.1 | 148.3 | 196.2 | 181.8 |
| B | 5 | 5 | | 6 | |
| H | 15 | 18 | | 24.5 | |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

★ Specification subject to change without notice.

PBC Triple Stage Dimensions



Specifications

Unit:mm

| Dimensions | PBC50 | PBC70T | PBC90T |
|-------------------------------|---------|---------|----------|
| D1 | 44 | 62 | 80 |
| D2 | M4x0.7P | M5x0.8P | M6x1.0P |
| D3 _{h6} | 12 | 16 | 22 |
| D4 _{g6} | 35 | 52 | 68 |
| D5 | 15 | 20 | 35 |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P |
| D7 | 50 | 70 | 90 |
| L2 | 26 | 36 | 45 |
| L3 | 5.5 | 5 | 7 |
| L4 | 2.6 | 2.7 | 3 |
| L5 | 15 | 25 | 30 |
| L6 | 2 | 2 | 3 |
| L7 | 8 | 10 | 12 |
| L8 | 82.2 | 100.8 | 122.7 |
| L9 | 4 | 4 | 4.5 |
| L10 | 14 | 16.5 | 20.5 |
| L11 | 26.9 | 26.9 | 34.3 |
| C1 ² | 46 | 46 | 70 |
| C2 ² | M4x0.7P | M4x0.7P | M5x0.8P |
| C3 ² | ≤8/≤11 | ≤8/≤11 | ≤14/≤19 |
| C4 ² | 26.5 | 26.5 | 33.5 |
| C5 ² _{F6} | 30 | 30 | 50 |
| C6 ² | 4 | 4 | 4 |
| C7 ² | 42.6 | 42.6 | 60 |
| C8 ² | 36.4 | 36.4 | 44.8 |
| C9 ² | 144.6 | 173.2 | 212.5 |
| B | 4 | 5 | 6 |
| H | 13.5 | 18 | 24.5 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

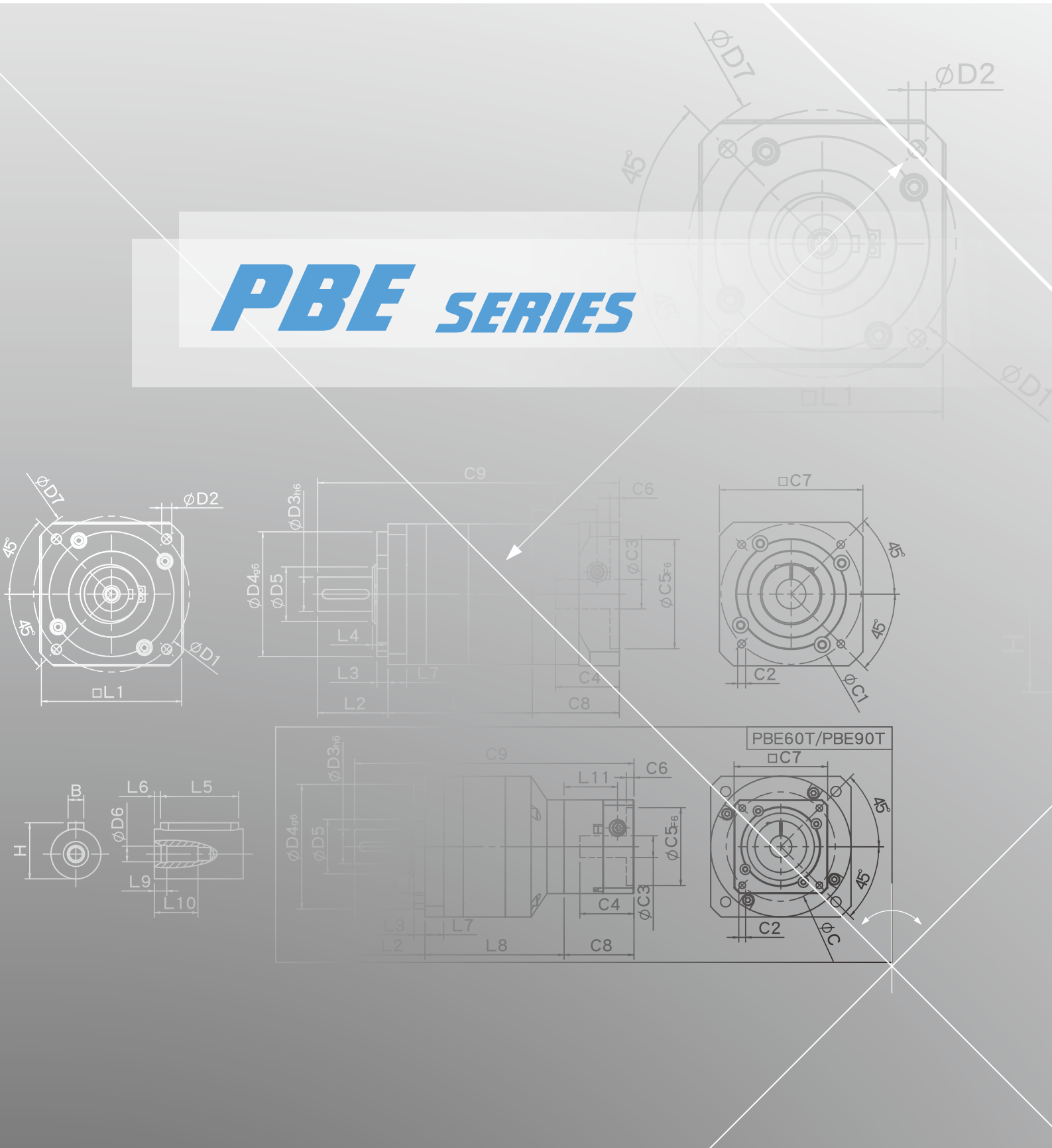
★ Specification subject to change without notice.

PBC Specifications Table

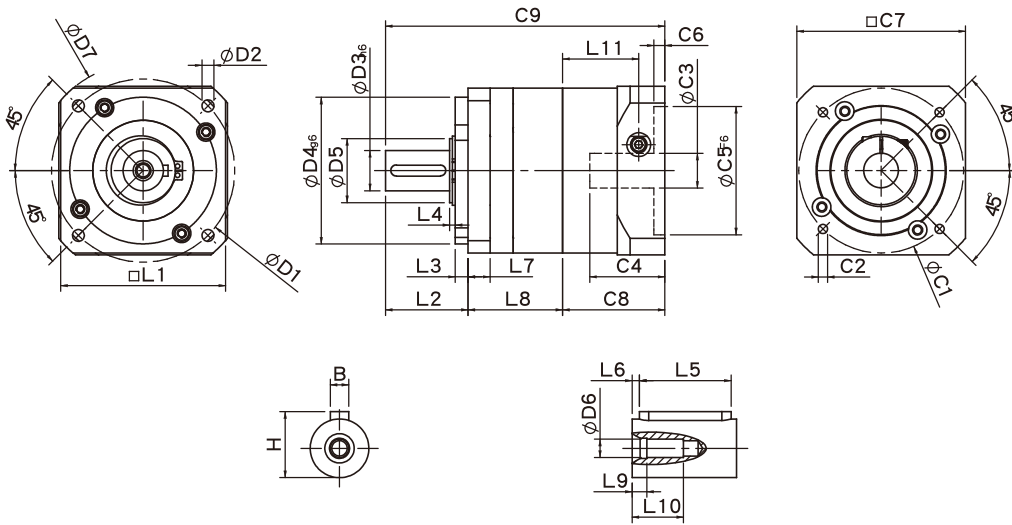
| Specifications | | Stage | Ratio | PBC-50 | PBC-70 | PBC-90 | | |
|---|----------------|-------|---|---------------------------------------|---------|---------|-----------|-----------|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | 4.8 | 13.6 | 33.5 | | |
| | | | 4 | 6.3 | 21.6 | 58.6 | | |
| | | | 5 | 6.0 | 20.5 | 55.1 | | |
| | | | 7 | 5.6 | 19.2 | 51.8 | | |
| | | | 9 | 5.4 | 18.5 | 50.0 | | |
| | | | 10 | 5.4 | 17.0 | 48.0 | | |
| | | | | Stage | Ratio | PBC-50 | PBC-70(T) | PBC-90(T) |
| | | | | 2 | 15 | 4.8 | 13.6 | 33.5 |
| | | | | | 20 | 6.3 | 21.6 | 58.6 |
| | | | | | 25 | 6.0 | 20.5 | 55.1 |
| | | | | | 35 | 6.0 | 20.5 | 55.1 |
| | | | | | 45 | 6.0 | 20.5 | 55.1 |
| | | | | | 49 | 5.6 | 19.2 | 51.8 |
| | | | | | 63 | 5.6 | 19.2 | 51.8 |
| | | | | | 81 | 5.4 | 18.5 | 50.0 |
| | | | | Stage | Ratio | PBC-50 | PBC-70(T) | PBC-90(T) |
| | | | | 3 | 125 | 6.0 | 20.5 | 55.1 |
| | | | | | 175 | 6.0 | 20.5 | 55.1 |
| | | | | | 225 | 6.0 | 20.5 | 55.1 |
| | | | | | 245 | 6.0 | 20.5 | 55.1 |
| | | | | | 315 | 6.0 | 20.5 | 55.1 |
| | | | | | 405 | 6.0 | 20.5 | 55.1 |
| | | | | | 567 | 5.6 | 19.2 | 51.8 |
| | | | | | 729 | 5.4 | 18.5 | 50.0 |
| Emergency Stop Torque T_{2NOT} | N • m | | 3.0 times of Nominal Output Torque (*Max. Output Torque T_{2B} = 60% of Emergency Stop Torque) | | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2,3 | 3-729 | 4000 | 4000 | 3000 | | |
| Max. Input Speed n_{1max} | rpm | 1,2,3 | 3-729 | 8000 | 6000 | 6000 | | |
| Backlash | arcmin | 1 | 3-10 | ≤ 9 | ≤ 8 | ≤ 7 | | |
| | | 2 | 15-81 | ≤ 12 | ≤ 10 | ≤ 9 | | |
| | | 3 | 125-729 | ≤ 15 | ≤ 12 | ≤ 12 | | |
| Torsional Rigidity | N • m / arcmin | 1,2,3 | 3-729 | 0.8 | 2.0 | 7.0 | | |
| Max. Radial Load F_{2rB}^1 | N | 1,2,3 | 3-729 | 540 | 1040 | 1700 | | |
| Max. Axial Load F_{2aB}^1 | N | 1,2,3 | 3-729 | 360 | 720 | 735 | | |
| Operating Temp. | °C | 1,2,3 | 3-729 | -10 °C ~ +90 °C | | | | |
| Service Life | hr | 1,2,3 | 3-729 | 20,000 (10,000/ Continuous operation) | | | | |
| Efficiency | % | 1 | 3-10 | ≥ 95% | | | | |
| | | 2 | 15-81 | ≥ 90% | | | | |
| | | 3 | 125-729 | ≥ 85% | | | | |
| Weight | kg | 1 | 3-10 | 0.5 | 1.2 | 3.1 | | |
| | | 2 | 15-81 | 0.7 | 1.7/1.5 | 4.7/3.6 | | |
| | | 3 | 125-729 | 0.9 | 2.0/1.8 | 5.3/4.0 | | |
| Mounting Position | - | 1,2,3 | 3-729 | Any direction | | | | |
| Noise Level ² | dBA/1m | 1,2,3 | 3-729 | ≤ 62 | ≤ 64 | ≤ 67 | | |
| Protection Class | - | 1,2,3 | 3-729 | IP64 | | | | |
| Lubrication | - | 1,2,3 | 3-729 | Synthetic Lubricant | | | | |
| * 1. Applied to the output shaft center @100rpm. * 2. Measured at 3000rpm with no load ※ 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.

PBE SERIES



PBE Single Stage Dimensions



Specifications

Unit:mm

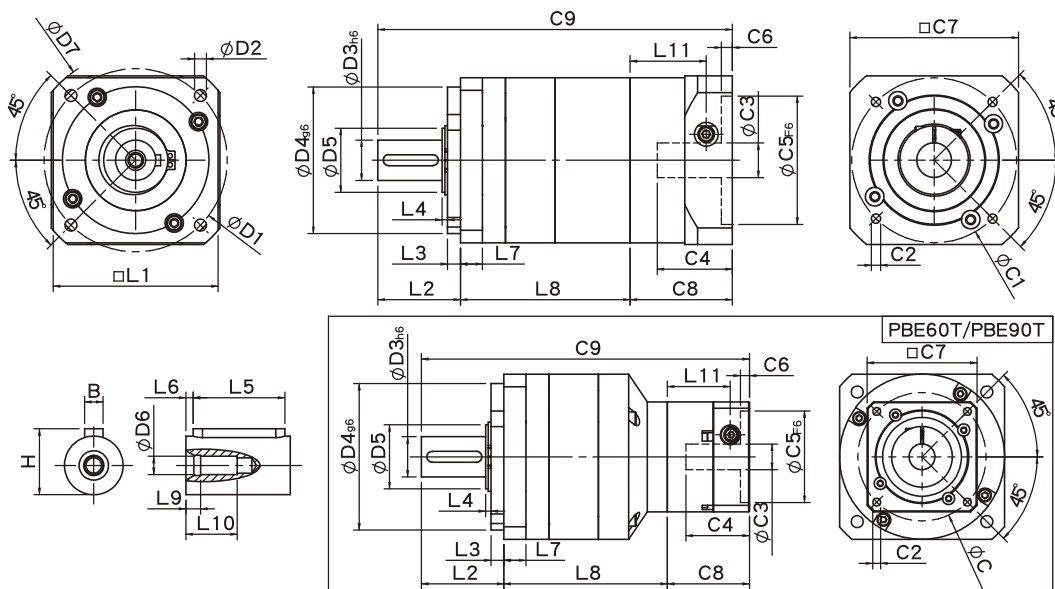
| Dimensions | PBE42 | PBE60 | PBE90 |
|-------------------------------|-----------------------|---------|-------------|
| D1 | 50 | 70 | 100 |
| D2 | 3.4 | 5.5 | 6.5 |
| D3 _{h6} | 13 | 16 | 22 |
| D4 _{g6} | 35 | 50 | 80 |
| D5 | 15 | 20 | 35 |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P |
| D7 | 56 | 80 | 118 |
| L1 | 42.6(44) ¹ | 60 | 90 |
| L2 | 26 | 36 | 45 |
| L3 | 5.5 | 5 | 7 |
| L4 | 2.6 | 2.7 | 3 |
| L5 | 15 | 25 | 30 |
| L6 | 2 | 2 | 3 |
| L7 | 8 | 10 | 12 |
| L8 | 32.4 | 49.6 | 54.4 |
| L9 | 4 | 4 | 4.5 |
| L10 | 14 | 16.5 | 20.5 |
| L11 | 26.9 | 34.3 | 41.5 |
| C1 ² | 46 | 70 | 90 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P |
| C3 ² | ≤8/≤11 | ≤14/≤19 | ≤19/≤24/≤28 |
| C4 ² | 26.5 | 33.5 | 41 |
| C5 ² _{F6} | 30 | 50 | 70 |
| C6 ² | 4 | 4 | 6 |
| C7 ² | 42.6 | 60 | 92 |
| C8 ² | 36.4 | 44.8 | 55.8 |
| C9 ² | 94.8 | 130.4 | 155.2 |
| B | 5 | 5 | 6 |
| H | 15 | 18 | 24.5 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

★ Specification subject to change without notice.

★ L1=44 when gear ratio is 10.

PBE Double Stage Dimensions



Specifications

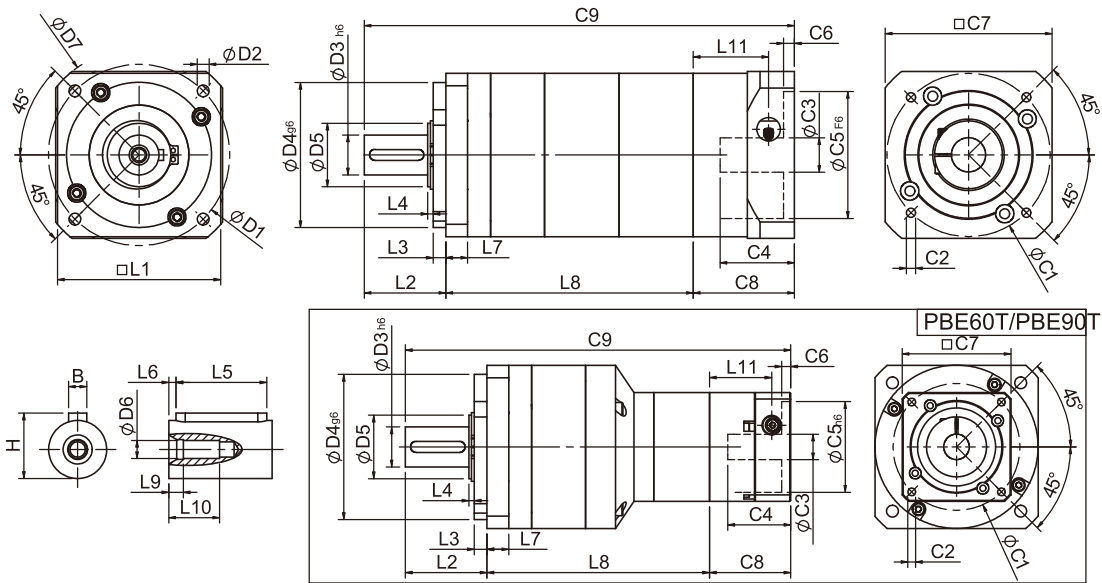
Unit:mm

| Dimensions | PBE42 | PBE60/PBE60T | | PBE90/PBE 90T | |
|--------------------------------|---------|--------------|---------|---------------|---------|
| D1 | 50 | 70 | | 100 | |
| D2 | 3.4 | 5.5 | | 6.5 | |
| D3 _{h6} | 13 | 16 | | 22 | |
| D4 _{g6} | 35 | 50 | | 80 | |
| D5 | 15 | 20 | | 35 | |
| D6 | M4x0.7P | M5x0.8P | | M8x1.25P | |
| D7 | 56 | 80 | | 118 | |
| L1 | 42.6 | 60 | | 90 | |
| L2 | 26 | 36 | | 45 | |
| L3 | 5.5 | 5 | | 7 | |
| L4 | 2.6 | 2.7 | | 3 | |
| L5 | 15 | 25 | | 30 | |
| L6 | 2 | 2 | | 3 | |
| L7 | 8 | 10 | | 12 | |
| L8 | 57.3 | 80.3 | 75.9 | 95.4 | 92 |
| L9 | 4 | 4 | | 4.5 | |
| L10 | 14 | 16.5 | | 20.5 | |
| L11 | 26.9 | 34.3 | 26.9 | 41.55 | 34.3 |
| C1 ² | 46 | 70 | 46 | 90 | 70 |
| C2 ² | M4x0.7P | M5x0.8P | M4x0.7P | M6x1.0P | M5x0.8P |
| C3 ² | ≤8/≤11 | ≤14/≤19 | ≤8/≤11 | ≤19/≤24/≤28 | ≤14/≤19 |
| C4 ² | 26.5 | 33.5 | 26.5 | 41 | 33.5 |
| C5 ² F ₆ | 30 | 50 | 30 | 70 | 50 |
| C6 ² | 4 | 4 | 4 | 6 | 4 |
| C7 ² | 42.6 | 60 | 42.6 | 92 | 60 |
| C8 ² | 36.4 | 44.8 | 36.4 | 55.8 | 44.8 |
| C9 ² | 119.7 | 161.1 | 148.3 | 196.2 | 181.8 |
| B | 5 | 5 | | 6 | |
| H | 15 | 18 | | 24.5 | |

* C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

* Specification subject to change without notice.

PBE Triple Stage Dimensions



Specifications

Unit:mm

| Dimensions | PBE42 | PBE60T | PBE90T |
|-------------------------------|---------|---------|----------|
| D1 | 50 | 70 | 100 |
| D2 | 3.4 | 5.5 | 6.5 |
| D3 _{h6} | 13 | 16 | 22 |
| D4 _{g6} | 35 | 50 | 80 |
| D5 | 15 | 20 | 35 |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P |
| D7 | 56 | 80 | 118 |
| L1 | 42.6 | 60 | 90 |
| L2 | 26 | 36 | 45 |
| L3 | 5.5 | 5 | 7 |
| L4 | 2.6 | 2.7 | 3 |
| L5 | 15 | 25 | 30 |
| L6 | 2 | 2 | 3 |
| L7 | 8 | 10 | 12 |
| L8 | 82.2 | 100.8 | 122.7 |
| L9 | 4 | 4 | 4.5 |
| L10 | 14 | 16.5 | 20.5 |
| L11 | 26.9 | 26.9 | 34.3 |
| C1 ² | 46 | 46 | 70 |
| C2 ² | M4x0.7P | M4x0.7P | M5x0.8P |
| C3 ² | ≤8/≤11 | ≤8/≤11 | ≤14/≤19 |
| C4 ² | 26.5 | 26.5 | 33.5 |
| C5 ² _{F6} | 30 | 30 | 50 |
| C6 ² | 4 | 4 | 4 |
| C7 ² | 42.6 | 42.6 | 60 |
| C8 ² | 36.4 | 36.4 | 44.8 |
| C9 ² | 144.6 | 173.2 | 212.5 |
| B | 5 | 5 | 6 |
| H | 15 | 18 | 24.5 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

★ Specification subject to change without notice.

★ L1=44 when gear ratio is 10.

PBE Specifications Table

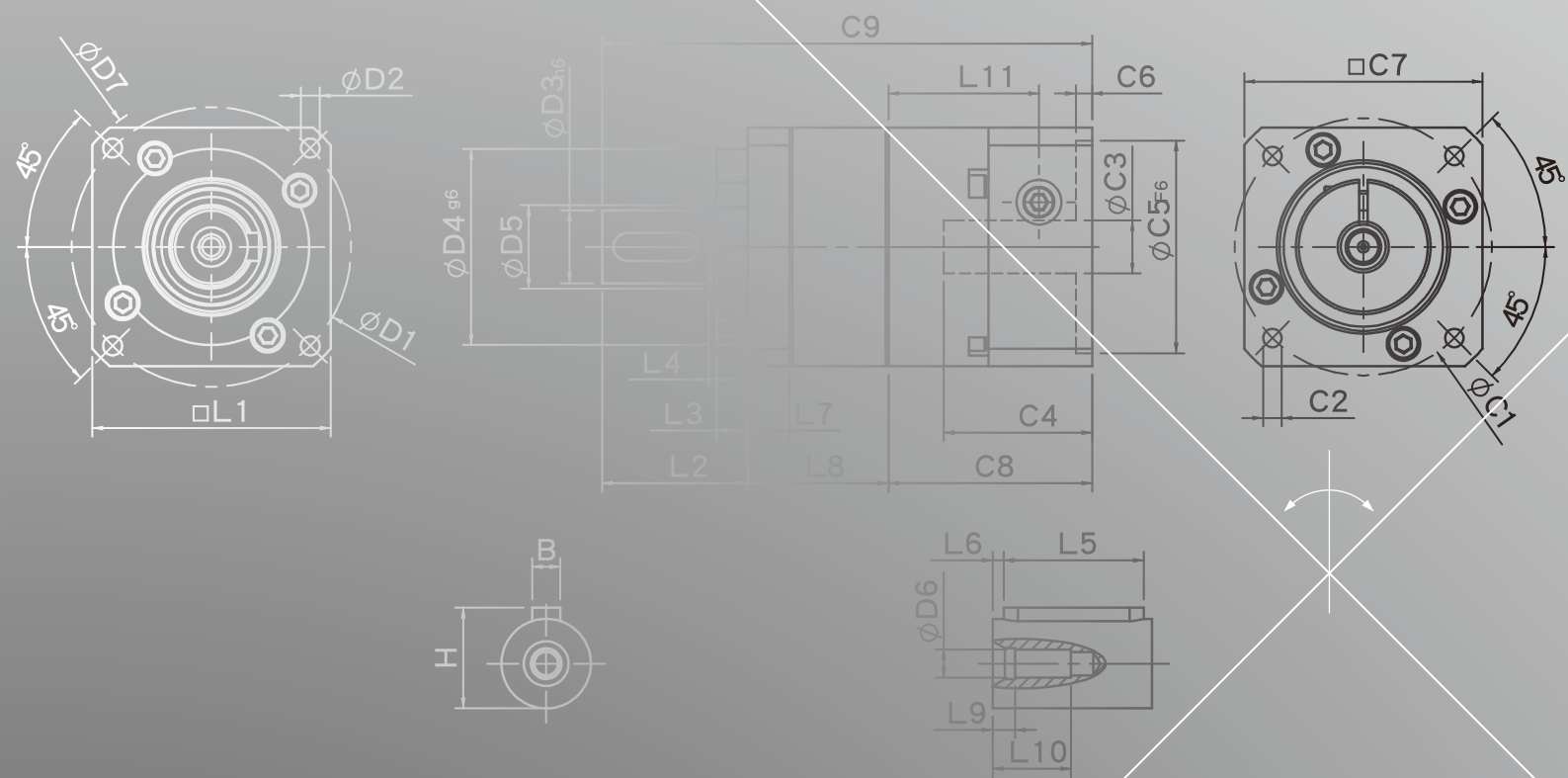
| Specifications | | Stage | Ratio | PBE-42 | PBE-60 | PBE-90 | | |
|--------------------------------|----------------|----------------------------------|---------|---------------------------------------|--|-----------|------|------|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | 4.8 | 13.6 | 33.5 | | |
| | | | 4 | 6.3 | 21.6 | 58.6 | | |
| | | | 5 | 6.0 | 20.5 | 55.1 | | |
| | | | 7 | 5.6 | 19.2 | 51.8 | | |
| | | | 9 | 5.4 | 18.5 | 50.0 | | |
| | | | 10 | 5.4 | 17.0 | 48.0 | | |
| | | Stage | Ratio | PBE-42 | PBE-60(T) | PBE-90(T) | | |
| | | 2 | 15 | 4.8 | 13.6 | 33.5 | | |
| | | | 20 | 6.3 | 21.6 | 58.6 | | |
| | | | 25 | 6.0 | 20.5 | 55.1 | | |
| | | | 35 | 6.0 | 20.5 | 55.1 | | |
| | | | 45 | 6.0 | 20.5 | 55.1 | | |
| | | | 49 | 5.6 | 19.2 | 51.8 | | |
| | | | 63 | 5.6 | 19.2 | 51.8 | | |
| | | | 81 | 5.4 | 18.5 | 50.0 | | |
| | | Stage | Ratio | PBE-42 | PBE-60(T) | PBE-90(T) | | |
| | | 3 | 125 | 6.0 | 20.5 | 55.1 | | |
| | | | 175 | 6.0 | 20.5 | 55.1 | | |
| | | | 225 | 6.0 | 20.5 | 55.1 | | |
| | | | 245 | 6.0 | 20.5 | 55.1 | | |
| | | | 315 | 6.0 | 20.5 | 55.1 | | |
| | | | 405 | 6.0 | 20.5 | 55.1 | | |
| | | | 567 | 5.6 | 19.2 | 51.8 | | |
| | | | 729 | 5.4 | 18.5 | 50.0 | | |
| | | Emergency Stop Torque T_{2NOT} | N • m | | 3.0 times of Nominal Output Torque (* Max. Output Torque T_{2B} = 60% of Emergency Stop Torque) | | | |
| | | Nominal Input Speed n_{1N} | rpm | 1,2,3 | 3-729 | 4000 | 4000 | 3000 |
| | | Max. Input Speed n_{1max} | rpm | 1,2,3 | 3-729 | 8000 | 6000 | 6000 |
| | | Backlash | arcmin | 1 | 3-10 | ≤ 9 | ≤ 8 | ≤ 7 |
| 2 | 15-81 | | | ≤ 12 | ≤ 10 | ≤ 9 | | |
| 3 | 125-729 | | | ≤ 15 | ≤ 12 | ≤ 12 | | |
| Torsional Rigidity | N • m / arcmin | 1,2,3 | 3-729 | 0.8 | 2.0 | 7 | | |
| Max. Radial Load F_{2rB}^1 | N | 1,2,3 | 3-729 | 540 | 1040 | 1700 | | |
| Max. Axial Load F_{2aB}^1 | N | 1,2,3 | 3-729 | 360 | 720 | 735 | | |
| Operating Temp. | °C | 1,2,3 | 3-729 | -10 °C ~ +90 °C | | | | |
| Service Life | hr | 1,2,3 | 3-729 | 20,000 (10,000/ Continuous operation) | | | | |
| Efficiency | % | 1 | 3-10 | ≥ 95% | | | | |
| | | 2 | 15-81 | ≥ 90% | | | | |
| | | 3 | 125-729 | ≥ 85% | | | | |
| Weight | kg | 1 | 3-10 | 0.5 | 1.2 | 3.1 | | |
| | | 2 | 15-81 | 0.7 | 1.7/1.5 | 4.7/3.6 | | |
| | | 3 | 125-729 | 0.9 | 2.0/1.8 | 5.3/4.0 | | |
| Mounting Position | - | 1,2,3 | 3-729 | Any direction | | | | |
| Noise Level ² | dBA/1m | 1,2,3 | 3-729 | ≤ 62 | ≤ 64 | ≤ 67 | | |
| Protection Class | - | 1,2,3 | 3-729 | IP64 | | | | |
| Lubrication | - | 1,2,3 | 3-729 | Synthetic Lubricant | | | | |

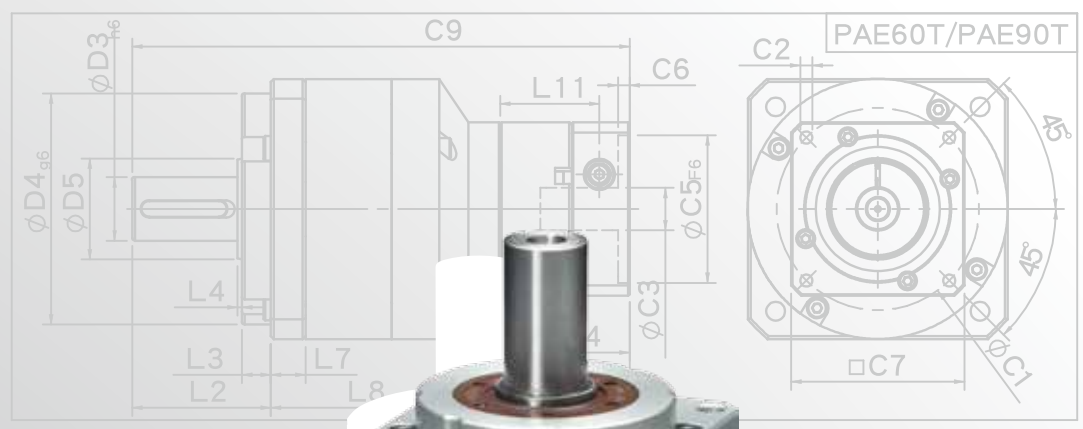
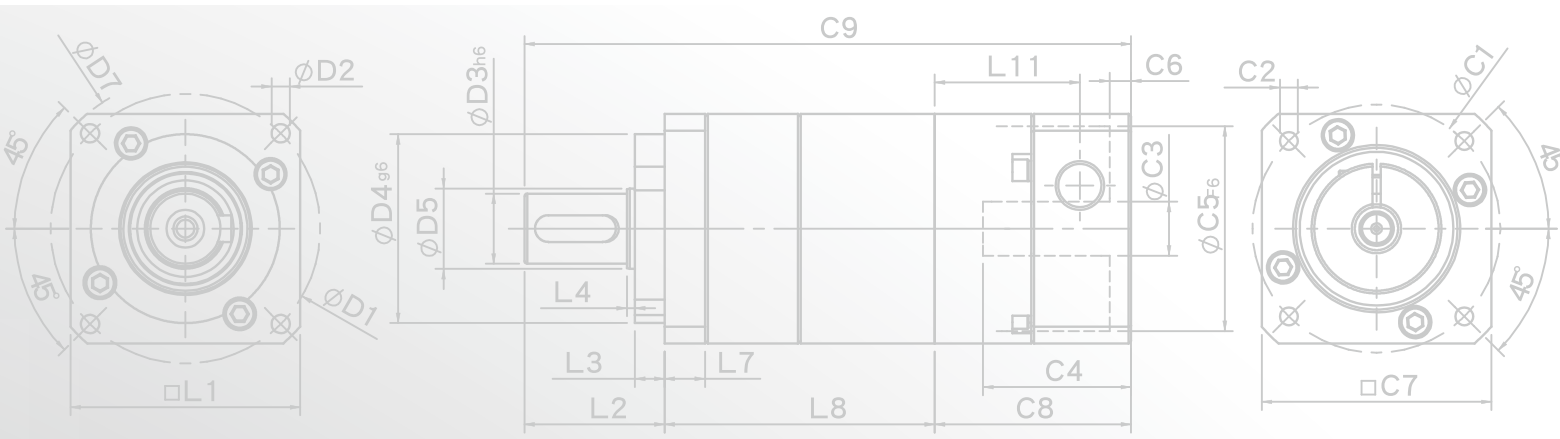
* 1. Applied to the output shaft center @100rpm.

* 2. Measured at 3000rpm with no load

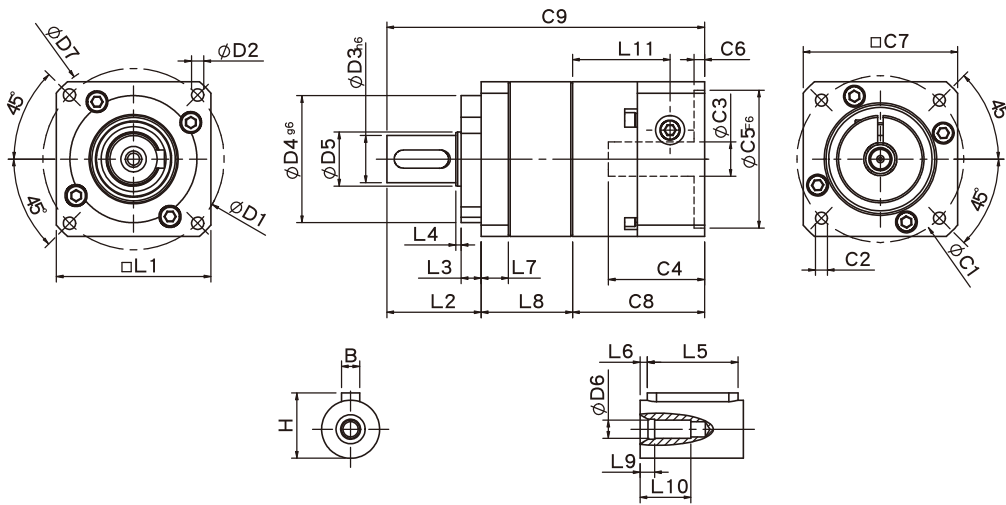
※ The above figures/specifications are subject to change without prior notice.

PAE SERIES





PAE Single Stage Dimensions



Specifications

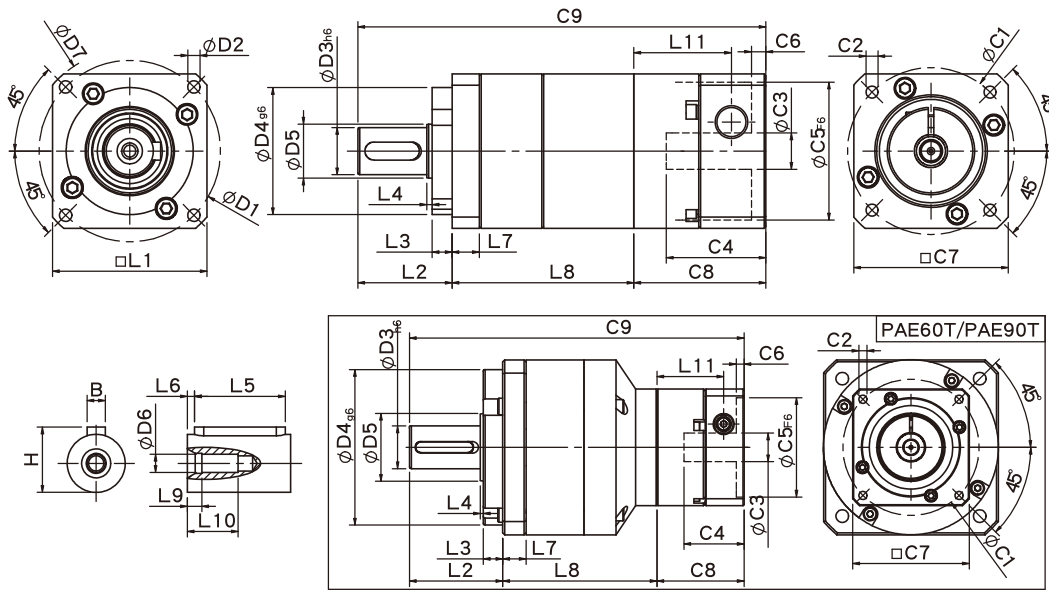
Unit:mm

| Dimensions | PAE42 | PAE60 | PAE90 | PAE115 |
|-------------------------------|---------|---------|-------------|--------|
| D1 | 50 | 70 | 100 | - |
| D2 | 3.4 | 5.5 | 6.5 | - |
| D3 _{h6} | 13 | 16 | 22 | - |
| D4 _{g6} | 35 | 50 | 80 | - |
| D5 | 15 | 20 | 35 | - |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P | - |
| D7 | 56 | 80 | 118 | - |
| L1 | 42.6 | 60 | 90 | - |
| L2 | 26 | 37 | 48 | - |
| L3 | 5.5 | 7 | 10 | - |
| L4 | 1.5 | 1.5 | 1.5 | - |
| L5 | 15 | 25 | 32 | - |
| L6 | 2 | 2 | 3 | - |
| L7 | 7.5 | 10 | 12 | - |
| L8 | 25.2 | 36.3 | 41.8 | - |
| L9 | 4 | 4 | 4.5 | - |
| L10 | 14 | 16.5 | 20.5 | - |
| L11 | 26.9 | 34.3 | 41.5 | - |
| C1 ² | 46 | 70 | 90 | - |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | - |
| C3 ² | ≤8/≤11 | ≤14/≤19 | ≤19/≤24/≤28 | - |
| C4 ² | 26.5 | 33.5 | 41 | - |
| C5 ² _{F6} | 30 | 50 | 70 | - |
| C6 ² | 4 | 4 | 6 | - |
| C7 ² | 42.6 | 60 | 92 | - |
| C8 ² | 36.4 | 44.8 | 55.8 | - |
| C9 ² | 87.6 | 118.1 | 145.6 | - |
| B | 5 | 5 | 6 | - |
| H | 15 | 18 | 24.5 | - |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

★ Specification subject to change without notice.

PAE Double Stage Dimensions



Specifications

Unit:mm

| Dimensions | PAE42 | PAE60/PAE60T | | PAE90/PAE 90T | | PAE115T |
|--------------------|---------|--------------|---------|---------------|---------|---------|
| D1 | 50 | 70 | | 100 | | - |
| D2 | 3.4 | 5.5 | | 6.5 | | - |
| D3 _{h6} | 13 | 16 | | 22 | | - |
| D4 _{g6} | 35 | 50 | | 80 | | - |
| D5 | 15 | 20 | | 35 | | - |
| D6 | M4x0.7P | M5x0.8P | | M8x1.25P | | - |
| D7 | 56 | 80 | | 118 | | - |
| L1 | 42.6 | 60 | | 90 | | - |
| L2 | 26 | 37 | | 48 | | - |
| L3 | 5.5 | 7 | | 10 | | - |
| L4 | 1.5 | 1.5 | | 1.5 | | - |
| L5 | 15 | 25 | | 32 | | - |
| L6 | 2 | 2 | | 3 | | - |
| L7 | 7.5 | 10 | | 12 | | - |
| L8 | 50.1 | 67 | 62.6 | 82.8 | 79.4 | - |
| L9 | 4 | 4 | | 4.5 | | - |
| L10 | 14 | 16.5 | | 20.5 | | - |
| L11 | 26.9 | 34.3 | 26.9 | 41.5 | 34.3 | - |
| C1 ² | 46 | 70 | | 90 | | 70 |
| C2 ² | M4x0.7P | M5x0.8P | M4x0.7P | M6x1.0P | M5x0.8P | - |
| C3 ² | ≤8/≤11 | ≤14/≤19 | ≤8/≤11 | ≤19/≤24/≤28 | ≤14/≤19 | - |
| C4 ² | 26.5 | 33.5 | 26.5 | 41 | 33.5 | - |
| C5 ² F6 | 30 | 50 | 30 | 70 | 50 | - |
| C6 ² | 4 | 4 | 4 | 6 | 4 | - |
| C7 ² | 42.6 | 60 | 42.6 | 92 | 60 | - |
| C8 ² | 36.4 | 44.8 | 36.4 | 55.8 | 44.8 | - |
| C9 ² | 112.5 | 148.8 | 136 | 186.6 | 172.2 | - |
| B | 5 | 5 | | 6 | | - |
| H | 15 | 18 | | 24.5 | | - |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

★ Specification subject to change without notice.

PAE Specifications Table

| Specifications | | Stage | Ratio | PAE-42 | PAE-60 | PAE-90 | PAE-115 |
|----------------------------------|---------------|----------------------|---|--------------------------------------|------------|------------|----------|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | 9 | 28 | 85 | 250 |
| | | | 4 | 10 | 32 | 80 | 240 |
| | | | 5 | 11 | 35 | 95 | 270 |
| | | | 7 | 10 | 28 | 85 | 220 |
| | | | 9 | 8 | 23 | 75 | 210 |
| | | 10 | 8 | 21 | 65 | 190 | |
| | | Stage | Ratio | PAE-42 | PAE-60(T) | PAE-90(T) | PAE-115T |
| | | 2 | 15 | 11 | 34 | 90 | 250 |
| | | | 20 | 10 | 32 | 80 | 240 |
| | | | 25 | 11 | 35 | 95 | 270 |
| | | | 35 | 11 | 35 | 95 | 270 |
| | | | 45 | 11 | 35 | 95 | 270 |
| | | | 49 | 10 | 28 | 85 | 220 |
| | | | 63 | 10 | 28 | 85 | 220 |
| 81 | 8 | | 23 | 75 | 210 | | |
| 100 | 8 | 21 | 65 | 190 | | | |
| Emergency Stop Torque T_{2NOT} | N • m | | 3.0 times of Nominal Output Torque (* Max. Output Torque T_{2B} =60% of Emergency Stop Torque) | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2 | 3-100 | 4000 | 4000 | 3000 | 2500 |
| Max. Input Speed n_{1max} | rpm | 1,2 | 3-100 | 8000 | 6000 | 6000 | 5000 |
| Standard Backlash P2 | arcmin | 1 | 3-10 | ≤ 9 | ≤ 8 | ≤ 7 | ≤ 6 |
| | | 2 | 12-100 | ≤ 12 | ≤ 10 | ≤ 9 | ≤ 8 |
| Torsional Rigidity | N • m /arcmin | 1,2 | 3-100 | 1.5 | 4 | 8.5 | 17 |
| Max. Radial Load F_{2rB}^{-1} | N | 1,2 | 3-100 | 760 | 1250 | 2030 | 4200 |
| Max. Axial Load F_{2aB}^{-1} | N | 1,2 | 3-100 | 410 | 700 | 1200 | 2600 |
| Operating Temp. | °C | | 3-100 | -10 °C ~ +90 °C | | | |
| Service Life | hr | | 3-100 | 20,000 (10,000/Continuous operation) | | | |
| Efficiency | % | 1 | 3-10 | ≥ 95% | | | |
| | | 2 | 12-100 | ≥ 90% | | | |
| Weight | kg | 1 | 3-10 | 0.6 | 1.3 | 3.2 | 7.5 |
| | | 2 | 12-100 | 0.8 | 1.8/1.6 | 4.8/3.7 | 9.2 |
| Mounting Position | - | 1,2 | 3-100 | Any direction | | | |
| Noise Level ² | dB(A)/1m | 1,2 | 3-100 | 61 | 63 | 66 | 67 |
| Protection Class | - | 1,2 | 3-100 | IP65 | | | |
| Lubrication | - | 1,2 | 3-100 | Synthetic Lubricant | | | |
| Inertia(J1) | | | | | | | |
| Stage | Ratio | unit | | PAE-42 | PAE-60 | PAE-90 | PAE-115 |
| 1 | 3 | Kg • cm ² | | 0.04 | 0.23 | 0.77 | 2.30 |
| | 4 | | | 0.03 | 0.21 | 0.67 | 1.92 |
| | 5 | | | 0.03 | 0.21 | 0.61 | 1.71 |
| | 7 | | | 0.03 | 0.21 | 0.60 | 1.65 |
| | 9 | | | 0.03 | 0.21 | 0.60 | 1.63 |
| | 10 | | | 0.03 | 0.21 | 0.60 | 1.61 |
| Stage | Ratio | | | PAE-42 | PAE-60(T) | PAE-90(T) | PAE-115T |
| 2 | 15/20/25 | | | 0.03 | 0.21(0.03) | 0.61(0.21) | 0.61 |
| | 35/49 | | | 0.03 | 0.21(0.03) | 0.60(0.21) | 0.60 |
| | 45/63/81/100 | | | 0.03 | 0.21(0.03) | 0.60(0.21) | 0.60 |

* 1. Applied to the output shaft center @100rpm.
* 2. Measured at 3000rpm with no load
※ The above figures/specifications are subject to change without prior notice.

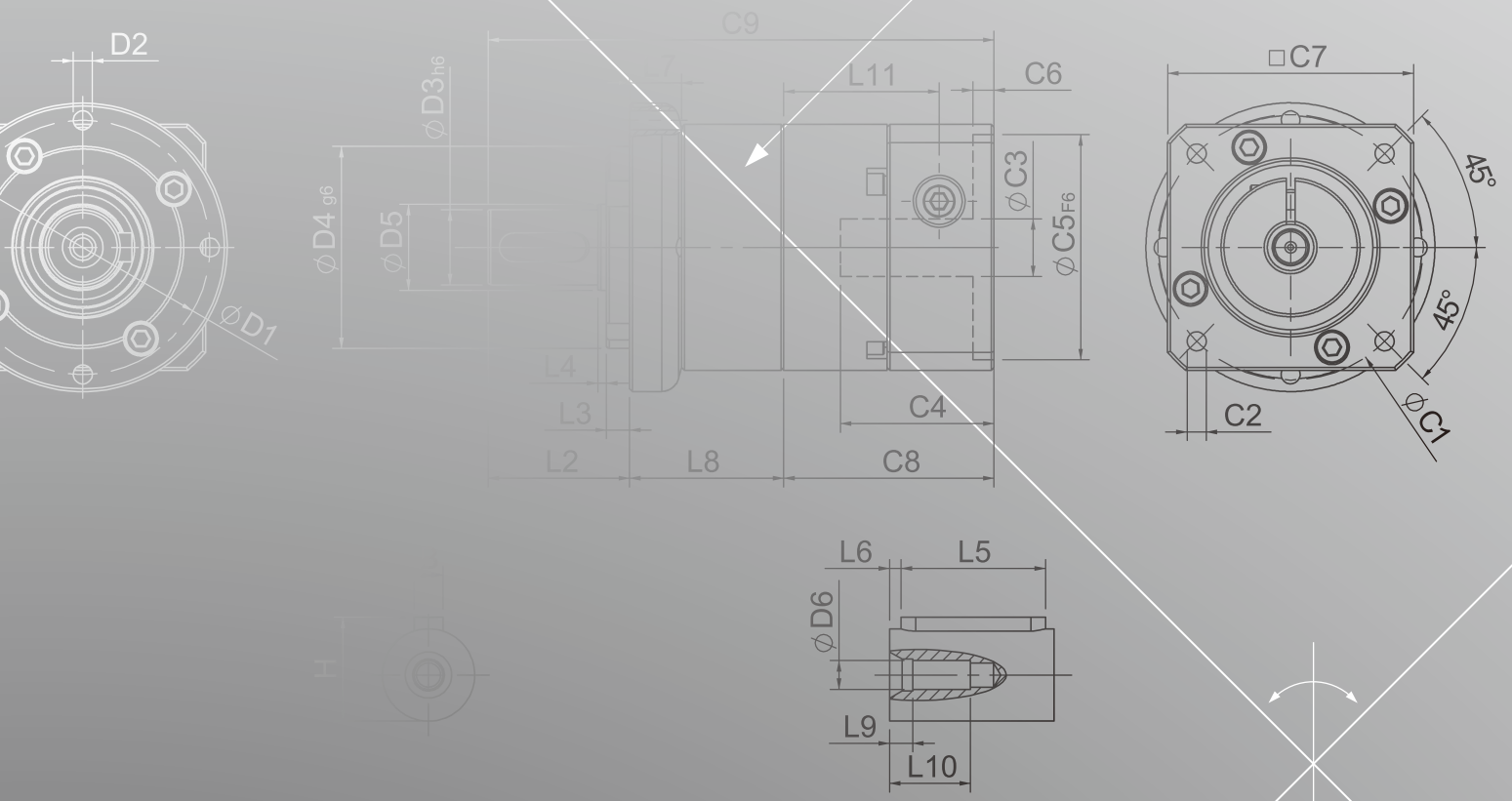
Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.

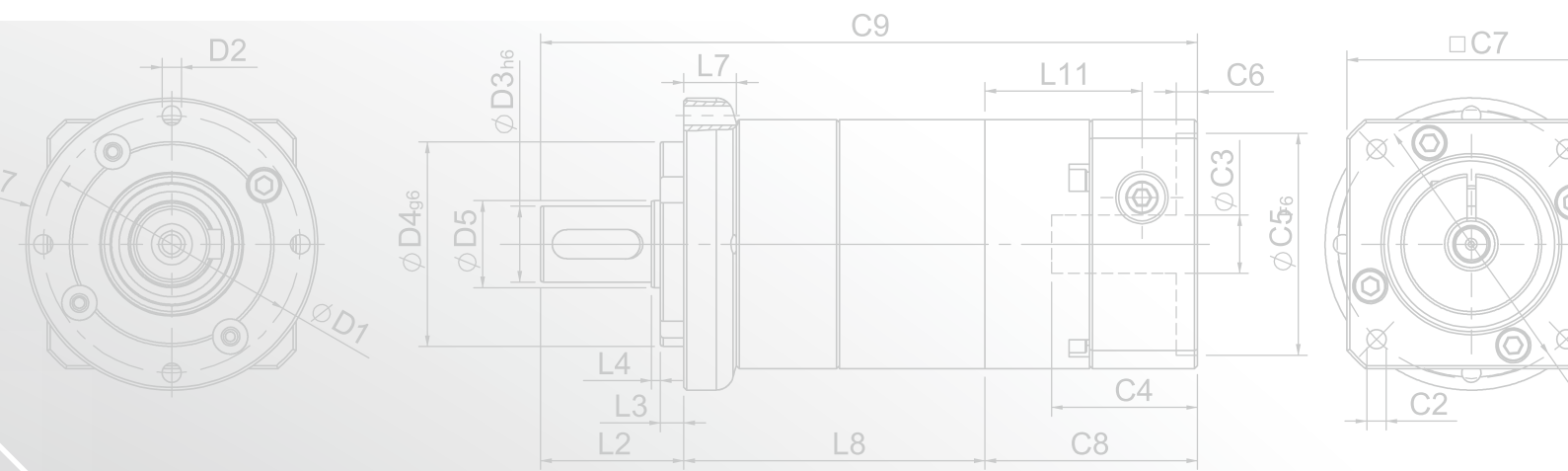
SERVO MOTOR GEARHEADS



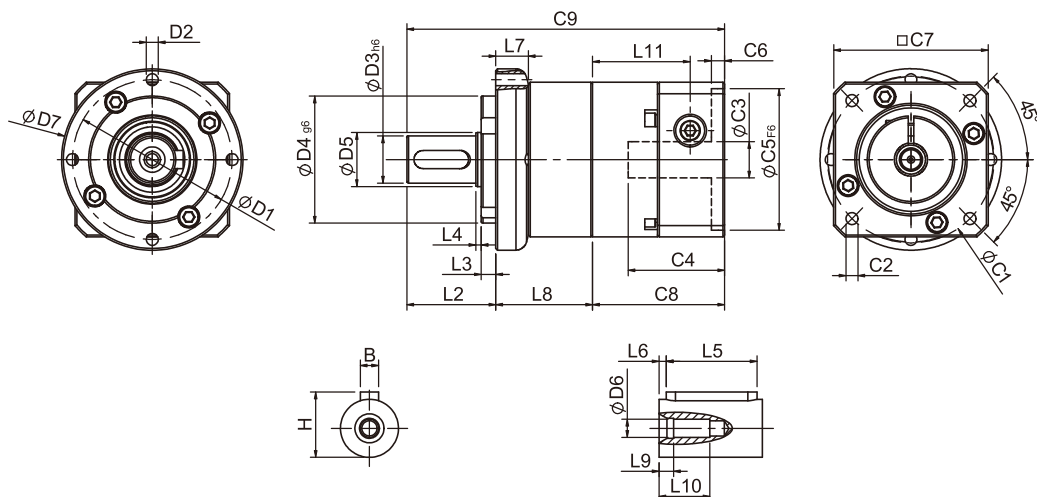
- PHL
- PHFR
- PHF
- PGH
- PUR
- PUL
- PGLH
- PGL
- PGC
- PGE
- PGRH
- PCR
- PGFR
- PGF
- PBC
- PBE
- PAE**
- PAC
- PAN
- PGS
- PNS

PAC SERIES





PAC Single Stage Dimensions



Specifications

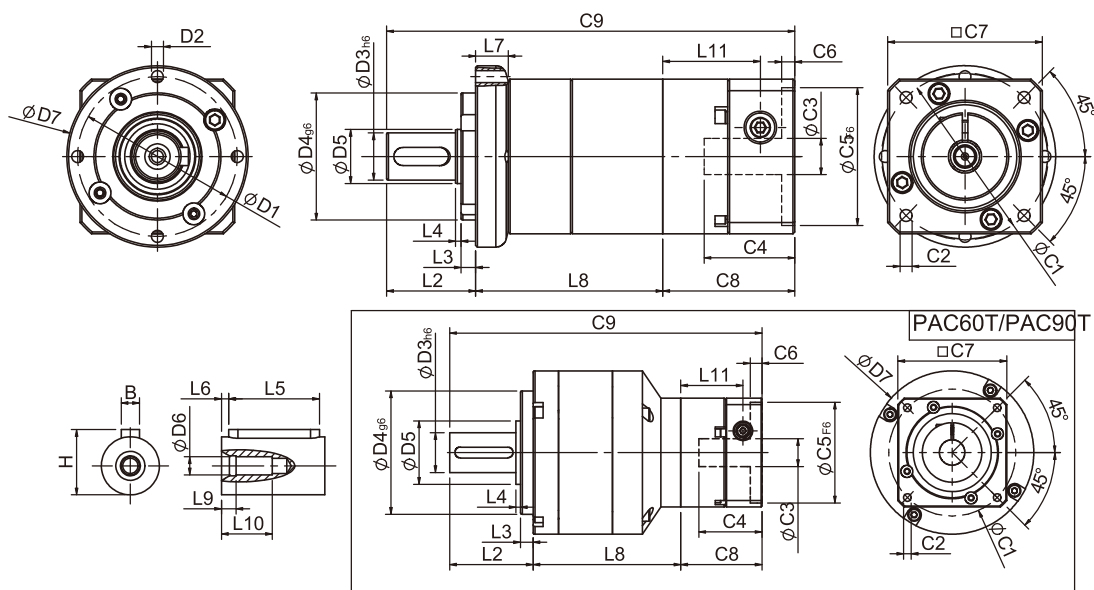
Unit:mm

| Dimensions | PAC50 | PAC70 | PAC90 | PAC115 |
|-------------------------------|---------|---------|-------------|--------|
| D1 | 44 | 62 | 80 | - |
| D2 | M4x0.7P | M5x0.8P | M6x1.0P | - |
| D3 _{h6} | 12 | 16 | 22 | - |
| D4 _{g6} | 35 | 52 | 68 | - |
| D5 | 15 | 20 | 35 | - |
| D6 | M4x0.7P | M5x0.8P | M8x1.25P | - |
| D7 | 50 | 70 | 90 | - |
| L2 | 24.5 | 36 | 46 | - |
| L3 | 4 | 6 | 7 | - |
| L4 | 1.5 | 1.5 | 2.5 | - |
| L5 | 15 | 25 | 32 | - |
| L6 | 2 | 2 | 3 | - |
| L7 | 9 | 13.3 | 14 | - |
| L8 | 26.7 | 37.3 | 43.8 | - |
| L9 | 4 | 4 | 4.5 | - |
| L10 | 14 | 16.5 | 20.5 | - |
| L11 | 26.9 | 34.3 | 41.5 | - |
| C1 ² | 46 | 70 | 90 | - |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P | - |
| C3 ² | ≤8/≤11 | ≤14/≤19 | ≤19/≤24/≤28 | - |
| C4 ² | 26.5 | 33.5 | 41 | - |
| C5 ² _{F6} | 30 | 50 | 70 | - |
| C6 ² | 4 | 4 | 6 | - |
| C7 ² | 42.6 | 60 | 90 | - |
| C8 ² | 36.4 | 44.8 | 55.8 | - |
| C9 ² | 87.6 | 118.1 | 145.6 | - |
| B | 4 | 5 | 6 | - |
| H | 13.5 | 18 | 24.5 | - |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

★ Specification subject to change without notice.

PAC Double Stage Dimensions



Specifications

Unit:mm

| Dimensions | PAC50 | PAC70 | PAC70T | PAC90 | PAC90T | PAC115T |
|-------------------------------|---------|---------|---------|-------------|---------|---------|
| D1 | 44 | 62 | | 80 | | - |
| D2 | M4x0.7P | M5x0.8P | | M6x1.0P | | - |
| D3 _{h6} | 12 | 16 | | 22 | | - |
| D4 _{g6} | 35 | 52 | | 68 | | - |
| D5 | 15 | 20 | | 35 | | - |
| D6 | M4x0.7P | M5x0.8P | | M8x1.25P | | - |
| D7 | 50 | 70 | | 90 | | - |
| L2 | 24.5 | 36 | | 46 | | - |
| L3 | 4 | 6 | | 7 | | - |
| L4 | 1.5 | 1.5 | | 2.5 | | - |
| L5 | 15 | 25 | | 32 | | - |
| L6 | 2 | 2 | | 3 | | - |
| L7 | 9 | 13.3 | | 14 | | - |
| L8 | 51.6 | 68 | 63.6 | 84.8 | 81.4 | - |
| L9 | 4 | 4 | | 4.5 | | - |
| L10 | 14 | 16.5 | | 20.5 | | - |
| L11 | 26.9 | 34.3 | 26.9 | 41.5 | 34.3 | - |
| C1 ² | 46 | 70 | | 90 | | - |
| C2 ² | M4x0.7P | M5x0.8P | M4x0.7P | M6x1.0P | M5x0.8P | - |
| C3 ² | ≤8/≤11 | ≤14/≤19 | ≤8/≤11 | ≤19/≤24/≤28 | ≤14/≤19 | - |
| C4 ² | 26.5 | 33.5 | 26.5 | 41 | 33.5 | - |
| C5 ² _{F6} | 30 | 50 | 30 | 70 | 50 | - |
| C6 ² | 4 | 4 | 4 | 6 | 4 | - |
| C7 ² | 42.6 | 60 | 42.6 | 90 | 60 | - |
| C8 ² | 36.4 | 44.8 | 36.4 | 55.8 | 44.8 | - |
| C9 ² | 112.5 | 148.8 | 136 | 186.6 | 172.2 | - |
| B | 4 | 5 | | 6 | | - |
| H | 13.5 | 18 | | 24.5 | | - |

* C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

* Specification subject to change without notice.

PAC Specifications Table

| Specifications | | Stage | Ratio | PAC-50 | PAC-70 | PAC-90 | PAC-120 |
|----------------------------------|---------------|----------------------|--|--------------------------------------|-----------------------------|------------------------------|-------------------|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | 9 | 28 | 85 | 250 |
| | | | 4 | 10 | 32 | 80 | 240 |
| | | | 5 | 11 | 35 | 95 | 270 |
| | | | 7 | 10 | 28 | 85 | 220 |
| | | | 9 | 8 | 23 | 75 | 210 |
| | | 10 | 8 | 21 | 65 | 190 | |
| | | Stage | Ratio | PAC-50 | PAC-60/ PAC-60T | PAC-90/ PAC-90T | PAC-120T |
| | | 2 | 15 | 11 | 34 | 90 | 250 |
| | | | 20 | 10 | 32 | 80 | 240 |
| | | | 25 | 11 | 35 | 95 | 270 |
| | | | 35 | 11 | 35 | 95 | 270 |
| | | | 45 | 11 | 35 | 95 | 270 |
| | | | 49 | 10 | 28 | 85 | 220 |
| | | | 63 | 10 | 28 | 85 | 220 |
| 81 | 8 | | 23 | 75 | 210 | | |
| 100 | 8 | 21 | 65 | 190 | | | |
| Emergency Stop Torque T_{2NOT} | N • m | | 3.0 times of Nominal Output Torque (* Max. Output Torque T_{2B} = 60% of Emergency Stop Torque) | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2 | 3-81 | 4000 | 4000 | 3000 | 2500 |
| Max. Input Speed n_{1max} | rpm | 1,2 | 3-81 | 8000 | 6000 | 6000 | 5000 |
| Standard Backlash P2 | arcmin | 1 | 3-9 | ≤ 9 | ≤ 8 | ≤ 7 | ≤ 6 |
| | | 2 | 15-81 | ≤ 12 | ≤ 10 | ≤ 9 | ≤ 8 |
| Torsional Rigidity | N • m /arcmin | 1,2 | 3-81 | 1.5 | 4 | 8.5 | 17 |
| Max. Radial Load F_{2rB}^{-1} | N | 1,2 | 3-81 | 760 | 1250 | 2030 | 4200 |
| Max. Axial Load F_{2aB}^{-1} | N | 1,2 | 3-81 | 410 | 700 | 1200 | 2600 |
| Operating Temp. | °C | | 3-81 | -10 °C ~ +90 °C | | | |
| Service Life | hr | | 3-81 | 20,000 (10,000/Continuous operation) | | | |
| Efficiency | % | 1 | 3-9 | ≥ 95% | | | |
| | | 2 | 15-81 | ≥ 90% | | | |
| Weight | kg | 1 | 3-9 | 0.6 | 1.3 | 3.2 | 7.5 |
| | | 2 | 15-81 | 0.8 | 1.8/1.6 | 4.8/3.7 | 9.2 |
| Mounting Position | - | 1,2 | 3-81 | Any direction | | | |
| Noise Level ² | dB(A)/1m | 1,2 | 3-81 | 61 | 63 | 66 | 67 |
| Protection Class | - | 1,2 | 3-81 | IP65 | | | |
| Lubrication | - | 1,2 | 3-81 | Synthetic Lubricant | | | |
| Inertia(J1) | | | | | | | |
| Stage | Ratio | unit | | PAC-50(ψ8) | PAC-70(ψ14) | PAC-90(ψ19) | PAC-120(ψ24) |
| 1 | 3 | Kg • cm ² | | 0.04 | 0.23 | 0.77 | 2.30 |
| | 4 | | | 0.03 | 0.21 | 0.67 | 1.92 |
| | 5 | | | 0.03 | 0.21 | 0.61 | 1.71 |
| | 7 | | | 0.03 | 0.21 | 0.60 | 1.65 |
| | 9 | | | 0.03 | 0.21 | 0.60 | 1.63 |
| | 10 | | | 0.03 | 0.21 | 0.60 | 1.63 |
| Stage | Ratio | | | PAC-50(ψ8) | PAC-70(ψ14)/ PAC-70T(ψ8) | PAC-90(ψ19)/ PAC-90T(ψ14) | PAC-120T (ψ19) |
| 2 | 15/20/25 | | | 0.03 | 0.21(0.03) | 0.61(0.21) | 0.61 |
| | 35/49 | | | 0.03 | 0.21(0.03) | 0.60(0.21) | 0.60 |
| | 45/63/81/100 | | | 0.03 | 0.21(0.03) | 0.60(0.21) | 0.60 |

* 1. Applied to the output shaft center @100rpm.

* 2. Measured at 3000rpm with no load

※ 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.

SERVO MOTOR GEARHEADS



PHL

PHFR

PHF

PGH

PUR

PUL

PGLH

PGL

PGC

PGE

PGRH

PCR

PGFR

PGF

PBC

PBE

PAE

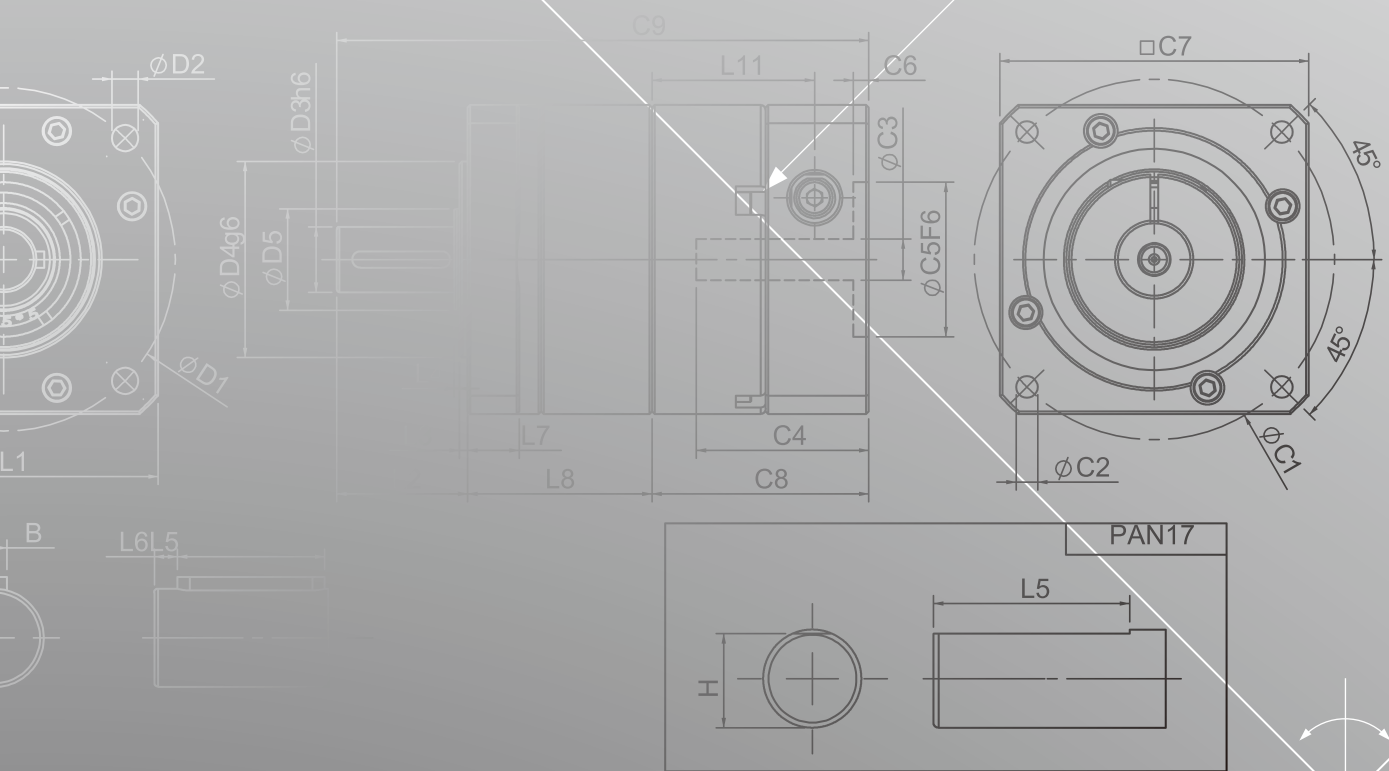
PAC

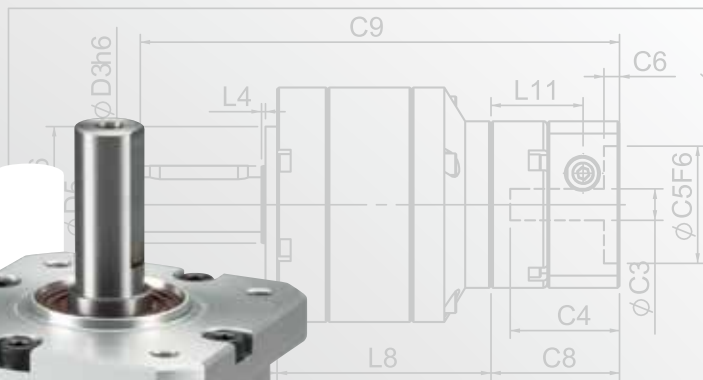
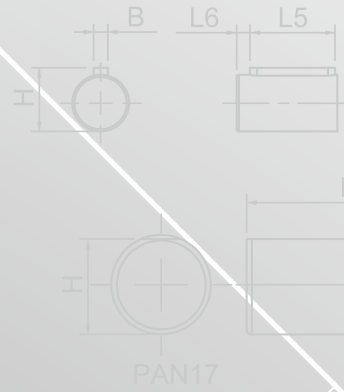
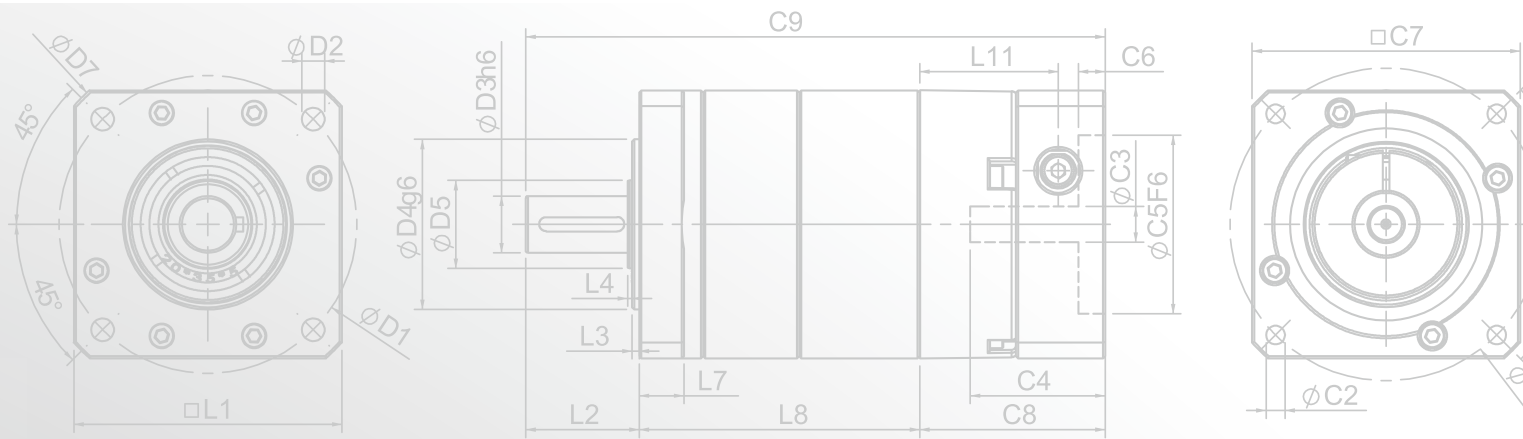
PAN

PGS

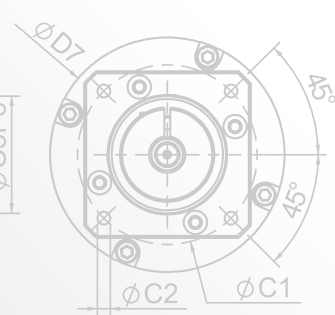
PNS

PAN SERIES

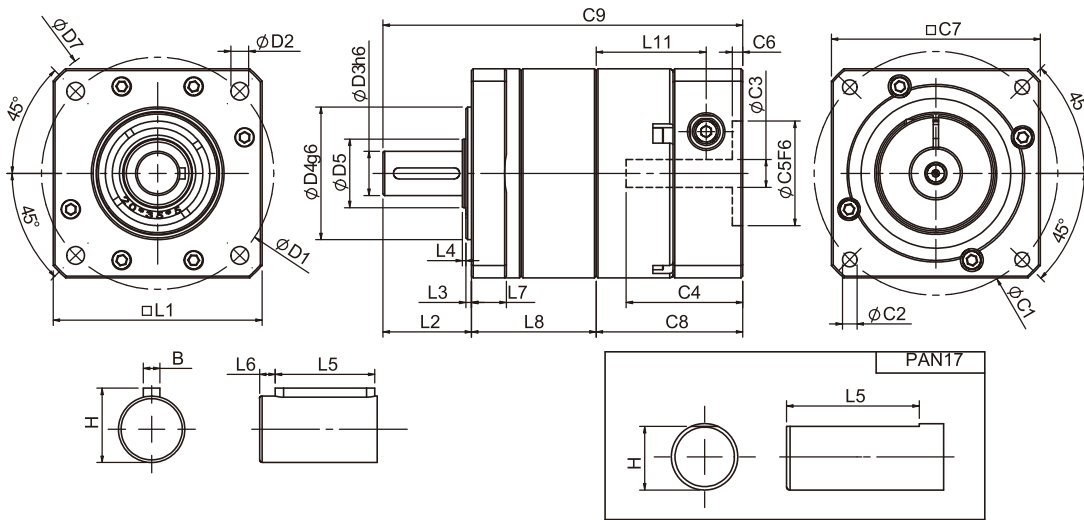




PAN23T/PAN3



PAN Single Stage Dimensions



Specifications

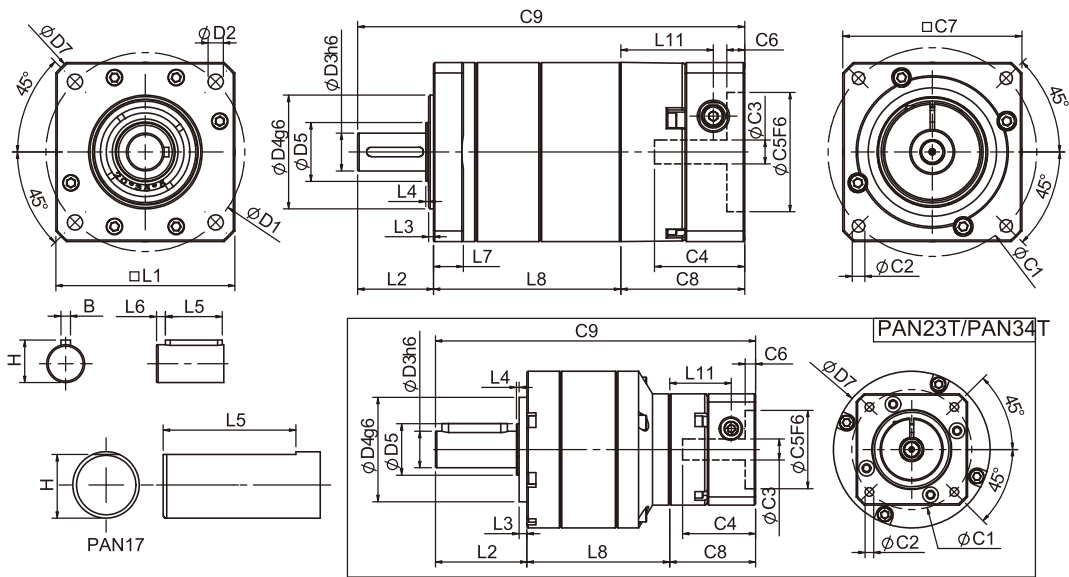
Unit:mm

| Dimensions | PAN17 | PAN23 | PAN34 |
|-------------------------------|----------|---------|-------------|
| D1 | 43.8 | 66.67 | 98.425 |
| D2 | 3.25 | 5.1 | 5.6 |
| D3 _{h6} | 9.525 | 12.7 | 19.05 |
| D4 _{g6} | 21.97 | 38.1 | 73.025 |
| D5 | 12 | 20 | 35 |
| D7 | 56 | 80 | 118 |
| L1 | 44(42.6) | 60 | 90 |
| L2 | 25.4 | 25.4 | 31.75 |
| L3 | 1.6 | 1.6 | 1.7 |
| L4 | 1 | 1 | 1 |
| L5 | 19.05 | 19.05 | 25.4 |
| L6 | - | 3 | 3 |
| L7 | 6.5 | 10 | 12 |
| L8 | 28.8 | 35.8 | 43.5 |
| L11 | 26.9 | 31.6 | 37.25 |
| C1 ² | 46 | 70 | 90 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P |
| C3 ² | ≤8/≤11 | ≤14/≤19 | ≤19/≤24/≤28 |
| C4 ² | 26.5 | 33.5 | 41 |
| C5 ² _{F6} | 30 | 50 | 70 |
| C6 ² | 4 | 4 | 6 |
| C7 ² | 42.6 | 60 | 90 |
| C8 ² | 36.4 | 42.1 | 51.5 |
| C9 ² | 90.6 | 103.3 | 126.75 |
| B | - | 3.175 | 4.763 |
| H | 9.14 | 14.22 | 21.25 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

★ Specification subject to change without notice.

PAN Double Stage Dimensions



Specifications

Unit:mm

| Dimensions | PAN17 | PAN23 | PAN23T | PAN34 | PAN34T |
|-------------------------------|----------|---------|---------|-------------|---------|
| D1 | 43.8 | | 66.67 | | 98.425 |
| D2 | 3.25 | | 5.1 | | 5.6 |
| D3 _{h6} | 9.525 | | 12.7 | | 19.05 |
| D4 _{g6} | 21.97 | | 38.1 | | 73.025 |
| D5 | 12 | | 20 | | 35 |
| D7 | 56 | | 80 | | 118 |
| L1 | 44(42.6) | | 60 | | 90 |
| L2 | 25.4 | | 25.4 | | 31.75 |
| L3 | 1.6 | | 1.6 | | 1.7 |
| L4 | 1 | | 1 | | 1 |
| L5 | 19.05 | | 19.05 | | 25.4 |
| L6 | - | | 3 | | 3 |
| L7 | 6.5 | | 10 | | 12 |
| L8 | 51.25 | 62.8 | 56.1 | 77.3 | 72.8 |
| L11 | 23.4 | 31 | 23.4 | 37.25 | 31 |
| C1 ² | 46 | 70 | 46 | 90 | 70 |
| C2 ² | M4x0.7P | M5x0.8P | M4x0.7P | M6x1.0P | M5x0.8P |
| C3 ² | ≤8/≤11 | ≤14/≤19 | ≤8/≤11 | ≤19/≤24/≤28 | ≤14/≤19 |
| C4 ² | 26.5 | 33.5 | 26.5 | 41 | 33.5 |
| C5 ² _{F6} | 30 | 50 | 30 | 70 | 50 |
| C6 ² | 4 | 4 | 4 | 6 | 4 |
| C7 ² | 42.6 | 60 | 42.6 | 90 | 60 |
| C8 ² | 32.9 | 41.5 | 32.9 | 51.5 | 41.5 |
| C9 ² | 109.55 | 129.7 | 114.4 | 160.55 | 146.05 |
| B | - | | 3.175 | | 4.763 |
| H | 9.14 | | 14.22 | | 21.25 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

★ Specification subject to change without notice.

PAN Specifications Table

| Specifications | Stage | Ratio | PAN-17 | PAN-23 | PAN-34 | PAN-42 | PAN-56 | | |
|--|----------------------------------|----------------------|---|---------------------------------------|----------------------------|------------------|--------------|---------|---------|
| Nominal Output Torque T_{2N} | 1 | 3 | 9 | 28 | 85 | 200 | 200 | | |
| | | 4 | 10 | 32 | 80 | 215 | 215 | | |
| | | 5 | 11 | 35 | 95 | 215 | 215 | | |
| | | 7 | 10 | 28 | 85 | 200 | 200 | | |
| | | 9 | 8 | 23 | 75 | 195 | 195 | | |
| | | 10 | 8 | 21 | 65 | 180 | 180 | | |
| | 2 | Stage | Ratio | PAN-17 | PAN-23 / PAN-23T | PAN-34 / PAN-34T | PAN-42T | PAN-56T | |
| | | 15 | 11 | 35/24 | 95/68 | 168 | 168 | | |
| | | 20 | 11 | 35/31 | 95/95 | 215 | 215 | | |
| | | 25 | 11 | 35/30 | 95/95 | 215 | 215 | | |
| | | 35 | 11 | 35/28 | 95/95 | 215 | 215 | | |
| | | 45 | 11 | 35/27 | 95/92 | 215 | 215 | | |
| | | 50 | 11 | 35/27 | 95/82 | 205 | 205 | | |
| | | 70 | 10 | 28/28 | 85/85 | 200 | 200 | | |
| | | 90 | 8 | 23/23 | 75/75 | 195 | 195 | | |
| | | 100 | 8 | 21/21 | 65/65 | 180 | 180 | | |
| | | 3 | Stage | Ratio | PAN-17 | PAN-23T | PAN-34T | PAN-42T | PAN-56T |
| | | | 125 | 11 | 35 | 95 | 215 | 215 | |
| | | | 175 | 11 | 35 | 95 | 215 | 215 | |
| | | | 225 | 11 | 35 | 95 | 215 | 215 | |
| | | | 245 | 11 | 35 | 95 | 215 | 215 | |
| | 315 | | 11 | 35 | 95 | 215 | 215 | | |
| | 405 | | 11 | 35 | 95 | 215 | 215 | | |
| | 567 | | 10 | 28 | 85 | 200 | 200 | | |
| | 729 | 8 | 23 | 75 | 195 | 195 | | | |
| | 1000 | 8 | 21 | 65 | 180 | 180 | | | |
| | Emergency Stop Torque T_{2NOT} | N • m | 2.5 times of Nominal Output Torque (* Max. Output Torque T_{2B} =60% of Emergency Stop Torque) | | | | | | |
| Nominal Input Speed N_{1N} | rpm | 1,2,3 | 3-1000 | 4000 | 4000 | 3000 | 2500 | 2500 | |
| Max. Input Speed N_{1max} | rpm | 1,2,3 | 3-1000 | 6000 | 6000 | 6000 | 5000 | 5000 | |
| Standard Backlash P_2 | arcmin | 1 | 3-10 | ≤ 9 | ≤ 8 | ≤ 7 | ≤ 6 | ≤ 6 | |
| | | 2 | 15-100 | ≤ 12 | ≤ 10 | ≤ 9 | ≤ 8 | ≤ 8 | |
| | | 3 | 125~1000 | ≤ 15 | ≤ 12 | ≤ 12 | ≤ 12 | ≤ 12 | |
| Torsional Rigidity | N • m /arcmin | 1,2,3 | 3-1000 | 1.2 | 3.5 | 8.5 | 17 | 17 | |
| Max. Radial Load F_{2rB}^1 | N | 1,2,3 | 3-1000 | 580 | 960 | 2160 | - | - | |
| Max. Axial Load F_{2aB}^1 | N | 1,2,3 | 3-1000 | 410 | 430 | 790 | - | - | |
| Operating Temp. | °C | 1,2,3 | 3-1000 | -10°C ~ +90°C | | | | | |
| Service Life | hr | 1,2,3 | 3-1000 | 20,000(10,000 / Continuous operation) | | | | | |
| Efficiency | % | 1 | 3-10 | ≥ 95% | | | | | |
| | | 2 | 15-100 | ≥ 90% | | | | | |
| | | 3 | 125~1000 | ≥ 85% | | | | | |
| Weight | kg | 1 | 3-10 | 0.5 | 1.1 | 2.8 | - | - | |
| | | 2 | 15-100 | 0.7 | 1.5/1.3 | 4.2/3.1 | - | - | |
| | | 3 | 125~1000 | - | - | - | - | - | |
| Mounting Position | - | 1,2,3 | 3-1000 | Any direction | | | | | |
| Noise Level ² | dB(A)/1m | 1,2,3 | 3-1000 | 60 | 63 | 66 | 67 | 67 | |
| Protection Class | - | 1,2,3 | 3-1000 | IP 65 | | | | | |
| Lubrication | - | 1,2,3 | 3-1000 | Synthetic Lubricant | | | | | |
| Inertia (J1) | | | | | | | | | |
| Stage | Ratio | unit | PAN-17(ψ8) | PAN-23(ψ14) | PAN-34(ψ19) | PAN-42(ψ24) | PAN-56(ψ24) | | |
| 1 | 3 | Kg • cm ² | 0.04 | 0.23 | 0.77 | 2.30 | 2.30 | | |
| | 4 | | 0.03 | 0.21 | 0.67 | 1.92 | 1.92 | | |
| | 5~10 | | 0.03 | 0.21 | 0.61 | 1.71 | 1.71 | | |
| Stage | Ratio | | PAN-17(ψ8) | PAN-23(ψ14) / PAN-23T(ψ8) | PAN-34(ψ19) / PAN-34T(ψ14) | PAN-42T(ψ19) | PAN-56T(ψ19) | | |
| 2 | 15 | | 0.04 | 0.23(0.04) | 0.77(0.23) | 0.77 | 0.77 | | |
| | Other ratios | | 0.03 | 0.21(0.03) | 0.61(0.21) | 0.61 | 0.61 | | |
| Stage | Ratio | | PAN-17(ψ8) | PAN-23T(ψ8) | PAN-34T(ψ14) | PAN-42T(ψ19) | PAN-56T(ψ19) | | |
| 3 | All ratios | | 0.03 | 0.03 | 0.21 | 0.61 | 0.61 | | |
| * 1. Applied to the output shaft center @100rpm. * 2.Measured at 3000rpm with no load ※ 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.

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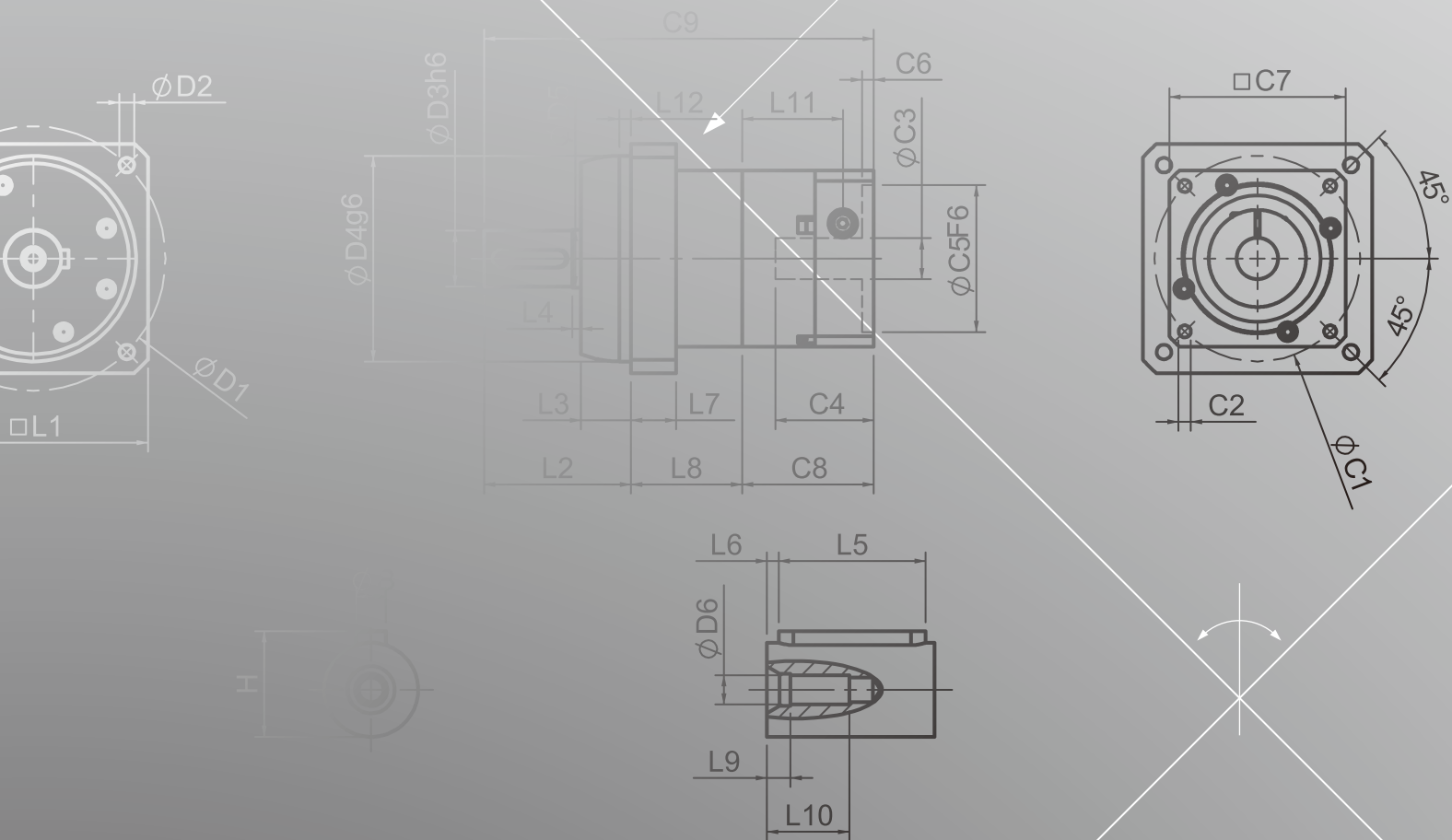
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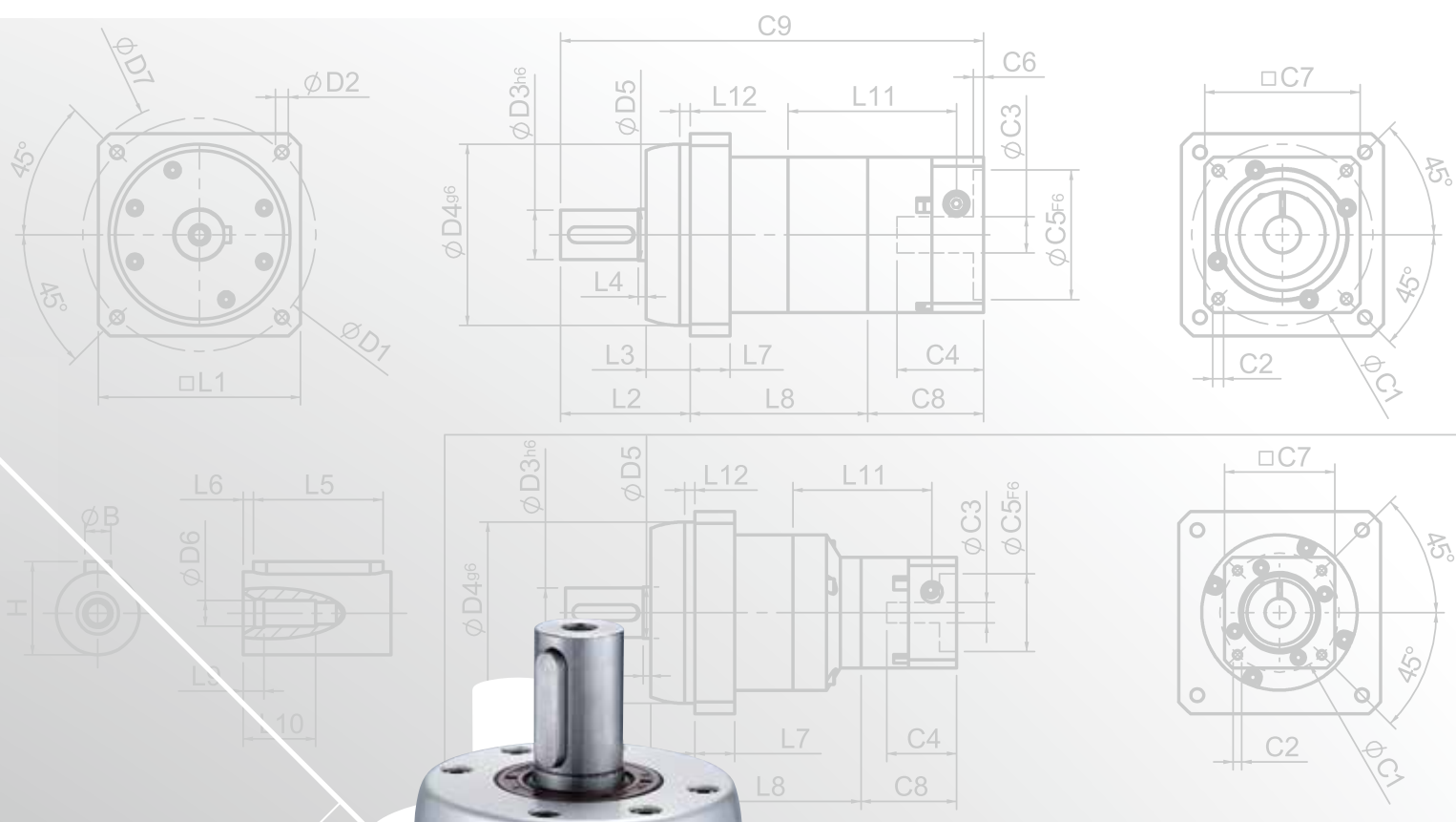
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PGS

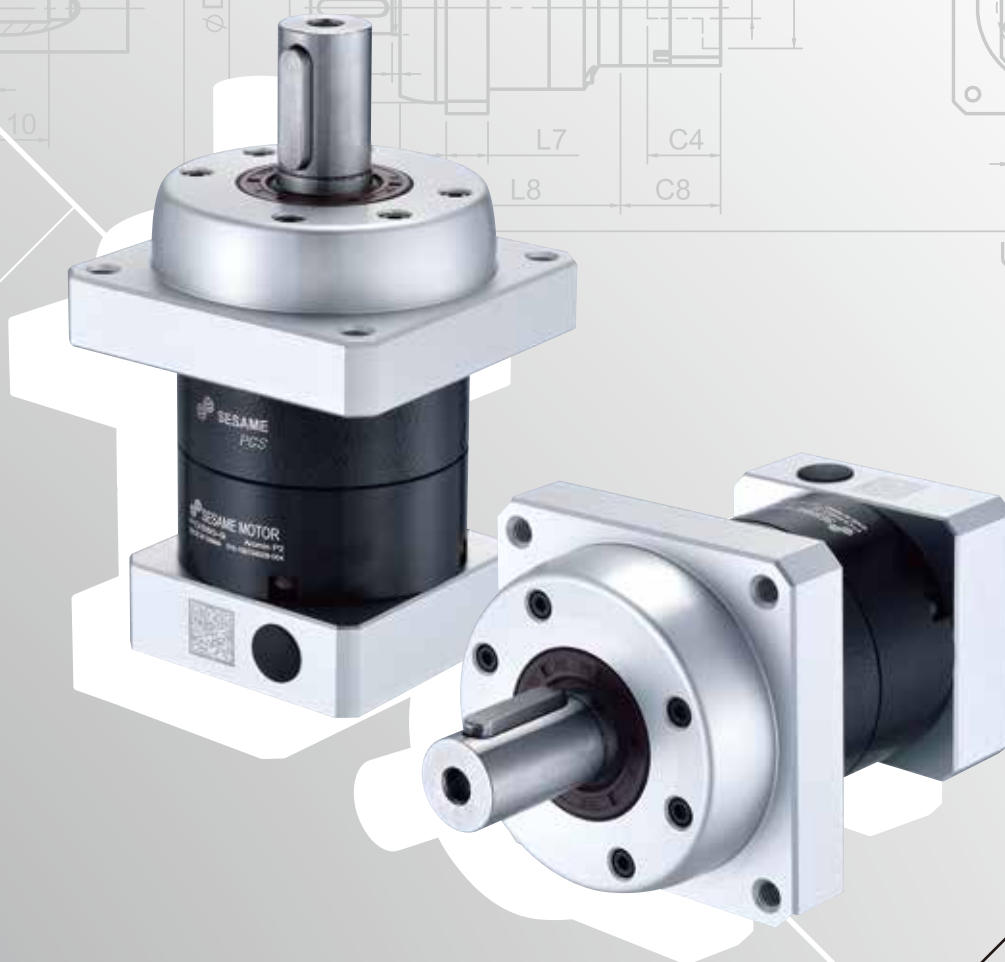
PNS

PGS SERIES

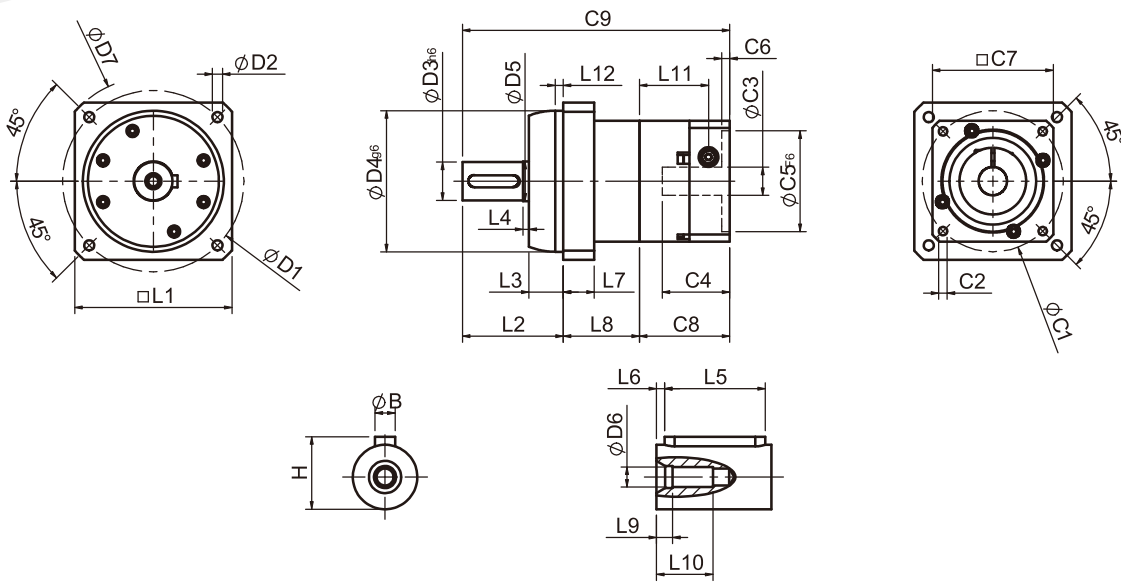




Unit:mm



PGS Single Stage Dimensions



Specifications

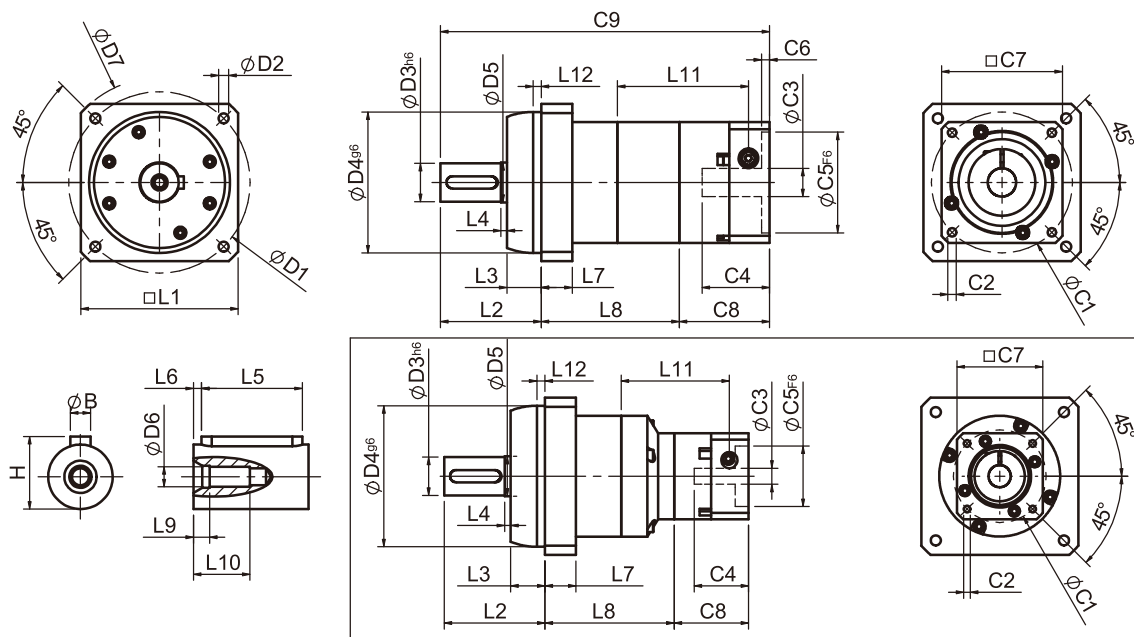
Unit:mm

| Dimensions | PGS42 | PGS60 | PGS90 |
|-------------------------------|------------------|-------------------|---------------------------|
| D1 | 60 | 90 | 115 |
| D2 | M5x0.8P | M6x1.0P | M8x1.25P |
| D3 _{h6} | 12 | 19 | 24 |
| D4 _{g6} | 50 | 70 | 90 |
| D5 | 17 | 20 | 30 |
| D6 | M4x0.7P | M6x1.0P | M8x1.25P |
| D7 | 70 | 104 | 132 |
| L1 | 52 | 78 | 98 |
| L2 | 32 | 50 | 61 |
| L3 | 10 | 17 | 18 |
| L4 | 2 | 3 | 1.5 |
| L5 | 16 | 25 | 32 |
| L6 | 2 | 3 | 3 |
| L7 | 11.5 | 15.4 | 18 |
| L8 | 27.6 | 37.8 | 46.2 |
| L9 | 4 | 4 | 4.5 |
| L10 | 14 | 16.5 | 20.5 |
| L11 | 26.9 | 34.3 | 41.55 |
| L12 | 3 | 4 | 5 |
| C1 ² | 46 | 70 | 90 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P |
| C3 ² | $\leq 8/\leq 11$ | $\leq 14/\leq 19$ | $\leq 19/\leq 24/\leq 28$ |
| C4 ² | 26.5 | 33.5 | 41 |
| C5 ² _{F6} | 30 | 50 | 70 |
| C6 ² | 4 | 4 | 6 |
| C7 ² | 42.6 | 60 | 90 |
| C8 ² | 36.4 | 44.8 | 55.8 |
| C9 ² | 96 | 132.6 | 163 |
| B | 4 | 6 | 8 |
| H | 13.5 | 21.5 | 27 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

★ Specification subject to change without notice.

PGS Double Stage Dimensions



Specifications

Unit:mm

| Dimensions | PGS42 | PGS60 | PGS60T | PGS90 | PGS90T |
|-------------------------------|---------|---------|---------|-------------|---------|
| D1 | 60 | 90 | | 115 | |
| D2 | M5x0.8P | M6x1.0P | | M8x1.25P | |
| D3 _{h6} | 12 | 19 | | 24 | |
| D4 _{g6} | 50 | 70 | | 90 | |
| D5 | 17 | 20 | | 30 | |
| D6 | M4x0.7P | M6x1.0P | | M8x1.25P | |
| D7 | 70 | 104 | | 132 | |
| L1 | 52 | 78 | | 98 | |
| L2 | 32 | 50 | | 61 | |
| L3 | 10 | 17 | | 18 | |
| L4 | 2 | 3 | | 1.5 | |
| L5 | 16 | 25 | | 32 | |
| L6 | 2 | 3 | | 3 | |
| L7 | 11.5 | 15.4 | | 18 | |
| L8 | 52.5 | 68.5 | 64.1 | 87.2 | 83.8 |
| L9 | 4 | 4 | | 4.5 | |
| L10 | 14 | 16.5 | | 20.5 | |
| L11 | 51.8 | 34.3 | 26.9 | 41.55 | 34.3 |
| L12 | 3 | 4 | | 5 | |
| C1 ² | 46 | 70 | 46 | 90 | 70 |
| C2 ² | M4x0.7P | M5x0.8P | M4x0.7P | M6x1.0P | M5x0.8P |
| C3 ² | ≤8/≤11 | ≤14/≤19 | ≤8/≤11 | ≤19/≤24/≤28 | ≤14/≤19 |
| C4 ² | 26.5 | 33.5 | 26.5 | 41 | 33.5 |
| C5 ² _{F6} | 30 | 50 | 30 | 70 | 50 |
| C6 ² | 4 | 4 | 4 | 6 | 4 |
| C7 ² | 42.6 | 60 | 42.6 | 90 | 60 |
| C8 ² | 36.4 | 44.8 | 36.4 | 55.8 | 44.8 |
| C9 ² | 120.9 | 163.3 | 150.5 | 204 | 189.6 |
| B | 4 | 6 | | 8 | |
| H | 13.5 | 21.5 | | 27 | |

* C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

* Specification subject to change without notice.

PGS Specifications Table

| Specifications | | Stage | Ratio | PGS-42 | PGS-60 | PGS-90 | PGS-115 | |
|--|---------------|--|--------------|--------------------------------------|---|--|-----------------------|--|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | 9 | 28 | 85 | 250 | |
| | | | 4 | 10 | 32 | 80 | 230 | |
| | | | 5 | 11 | 35 | 95 | 255 | |
| | | | 7 | 10 | 28 | 85 | 210 | |
| | | | 9 | 8 | 23 | 75 | 180 | |
| | | Stage | Ratio | PGS-42 | PGS-60/ PGS-60T | PGS-90/ PGS-90T | PGS-115T | |
| | | 2 | 15 | 11 | 34 | 90 | 250 | |
| | | | 20 | 10 | 32 | 80 | 230 | |
| | | | 25 | 11 | 35 | 95 | 255 | |
| | | | 35 | 11 | 35 | 95 | 255 | |
| | | | 45 | 11 | 35 | 95 | 255 | |
| | | | 49 | 10 | 28 | 85 | 210 | |
| | | | 63 | 10 | 28 | 85 | 210 | |
| | | 81 | 8 | 23 | 75 | 180 | | |
| Emergency Stop Torque T_{2NOT} | N • m | 3.0 times of Nominal Output Torque (* Max. Output Torque T_{2B} = 60% of Emergency Stop Torque) | | | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2 | 3-81 | 4000 | 4000 | 3000 | 2500 | |
| Max. Input Speed n_{1max} | rpm | 1,2 | 3-81 | 8000 | 6000 | 6000 | 5000 | |
| Standard Backlash P2 | arcmin | 1 2 | 3-9 15-81 | ≤ 9 ≤ 12 | ≤ 8 ≤ 10 | ≤ 7 ≤ 9 | ≤ 6 ≤ 8 | |
| Torsional Rigidity | N • m /arcmin | 1,2 | 3-81 | 1.8 | 5.0 | 10.5 | 20 | |
| Max. Radial Load F_{2rB}^{-1} | N | 1,2 | 3-81 | 1120 | 1720 | 2800 | 4600 | |
| Max. Axial Load F_{2aB}^{-1} | N | 1,2 | 3-81 | 520 | 830 | 1730 | 2950 | |
| Operating Temp. | °C | | 3-81 | -10 °C ~ +90 °C | | | | |
| Service Life | hr | | 3-81 | 20,000 (10,000/Continuous operation) | | | | |
| Efficiency | % | 1 2 | 3-9 15-81 | $\geq 95\%$ $\geq 90\%$ | | | | |
| Weight | kg | 1 2 | 3-9 15-81 | 0.6 0.9 | 1.5 2.0/1.8 | 3.4 5.1/4.0 | 7.8 9.5 | |
| Mounting Position | - | 1,2 | 3-81 | Any direction | | | | |
| Noise Level ² | dBA/1m | 1,2 | 3-81 | 61 | 63 | 66 | 67 | |
| Protection Class | - | 1,2 | 3-81 | IP65 | | | | |
| Lubrication | - | 1,2 | 3-81 | Synthetic Lubricant | | | | |
| Inertia(J1) | | | | | | | | |
| Stage | Ratio | unit | | PGS-42($\psi 8$) | PGS-60($\psi 14$) | PGS-90($\psi 19$) | PGS-115($\psi 24$) | |
| 1 | 3 | Kg • cm ² | | 0.04 | 0.23 | 0.77 | 2.30 | |
| | 4 | | | 0.03 | 0.21 | 0.67 | 1.92 | |
| | 5 | | | 0.03 | 0.21 | 0.61 | 1.71 | |
| | 7 | | | 0.03 | 0.21 | 0.60 | 1.65 | |
| | 9 | | | 0.03 | 0.21 | 0.60 | 1.63 | |
| Stage | Ratio | | | PGS-42($\psi 8$) | PGS-60($\psi 14$)/ PGS-60T($\psi 8$) | PGS-90($\psi 19$)/ PGS-90T($\psi 14$) | PGS-115T($\psi 19$) | |
| 2 | 15/20/25 | | | 0.03 | 0.21(0.03) | 0.61(0.21) | 0.61 | |
| | 35/49 | | | 0.03 | 0.21(0.03) | 0.60(0.21) | 0.60 | |
| | 45/63/81 | | | 0.03 | 0.21(0.03) | 0.60(0.21) | 0.60 | |
| * 1. Applied to the output shaft center @100rpm. | | | | | | | | |
| * 2. Measured at 3000rpm with no load | | | | | | | | |
| ※ The above figures/specifications are subject to change without prior notice. | | | | | | | | |

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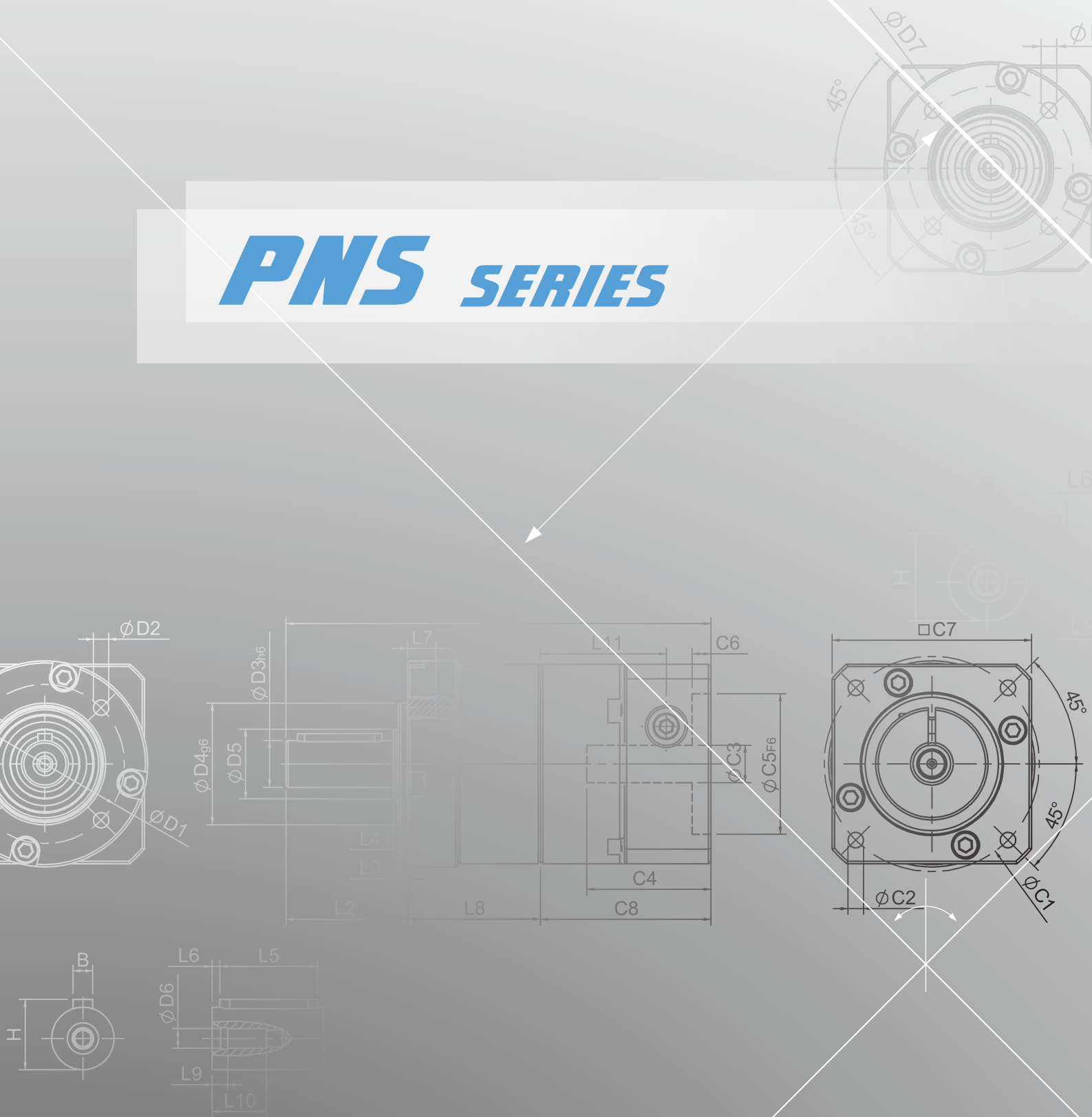
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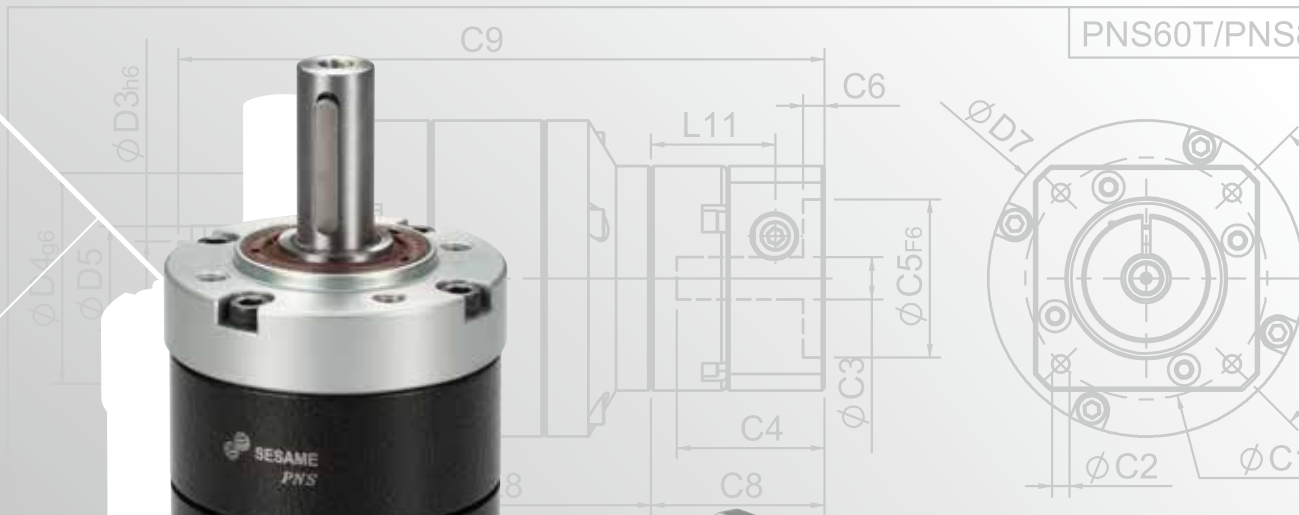
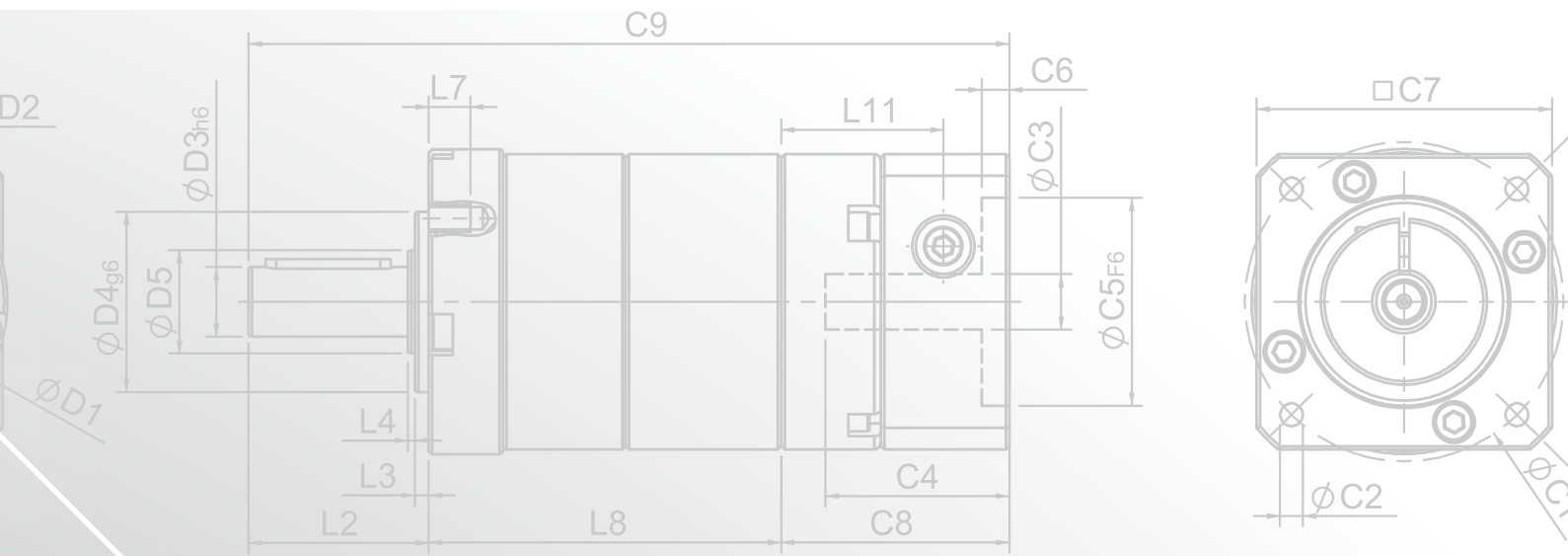
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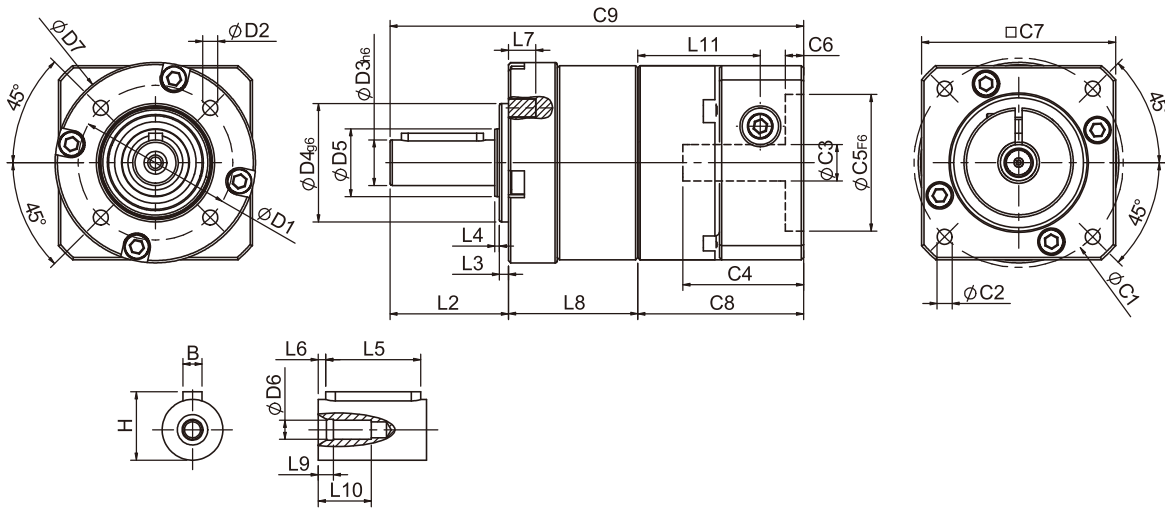
PNS

PNS SERIES





PNS Single Stage Dimensions



Specifications

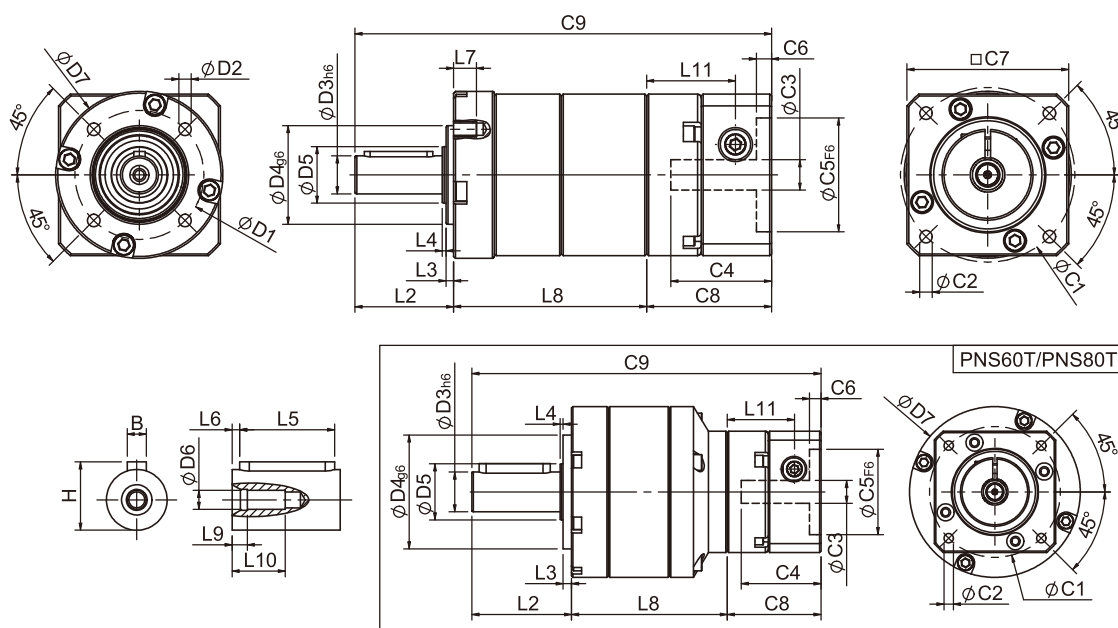
Unit:mm

| Dimensions | PNS40 | PNS60 | PNS80 |
|-------------------------------|---------|---------|-------------|
| D1 | 34 | 52 | 70 |
| D2 | M4x0.7P | M5x0.8P | M6x1.0P |
| D3 _{h6} | 10 | 14 | 20 |
| D4 _{g6} | 26 | 40 | 60 |
| D5 | 15 | 20 | 35 |
| D6 | M3x0.5P | M5x0.8P | M6x1.0P |
| D7 | 44 | 60 | 90 |
| L2 | 26 | 35 | 40 |
| L3 | 2 | 3 | 3 |
| L4 | 1 | 1 | 1 |
| L5 | 18 | 25 | 28 |
| L6 | 2.5 | 2.5 | 4 |
| L7 | 6 | 8 | 10 |
| L8 | 28.4 | 34.4 | 42.2 |
| L9 | 3 | 4 | 4.5 |
| L10 | 9 | 16.5 | 16.5 |
| L11 | 26.9 | 31.6 | 37.3 |
| C1 ² | 46 | 70 | 90 |
| C2 ² | M4x0.7P | M5x0.8P | M6x1.0P |
| C3 ² | ≤8/≤11 | ≤14/≤19 | ≤19/≤24/≤28 |
| C4 ² | 26.5 | 33.5 | 41 |
| C5 ² _{F6} | 30 | 50 | 70 |
| C6 ² | 4 | 4 | 6 |
| C7 ² | 42.6 | 60 | 90 |
| C8 ² | 36.4 | 42.1 | 51.5 |
| C9 ² | 90.8 | 111.5 | 133.7 |
| B | 3 | 5 | 6 |
| H | 11.2 | 16 | 22.5 |

★ C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

★ Specification subject to change without notice.

PNS Double Stage Dimensions



Specifications

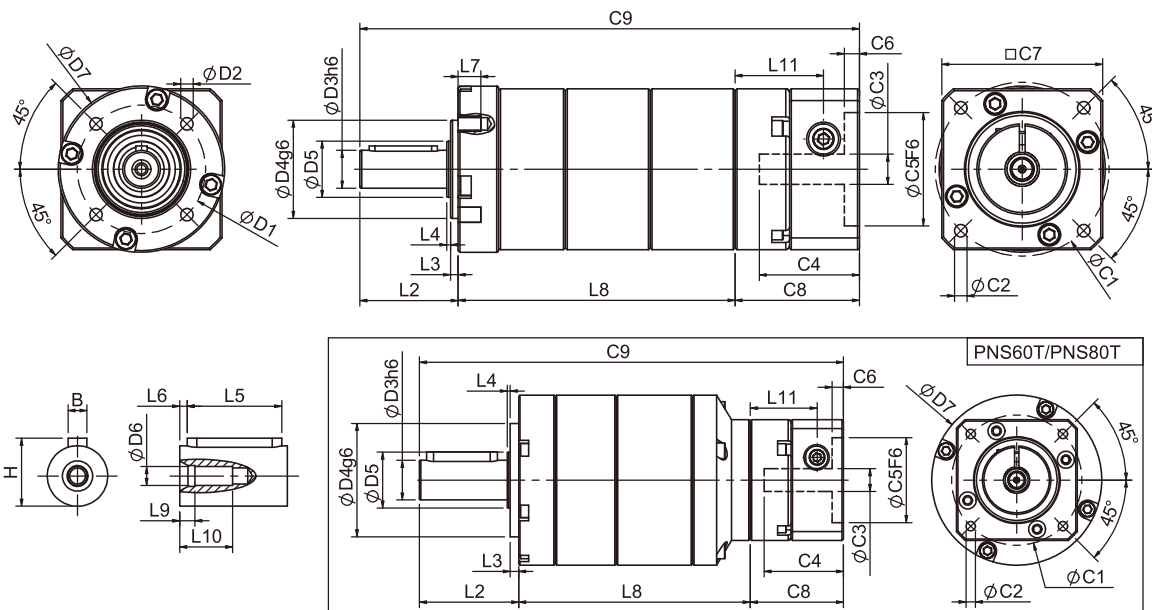
Unit:mm

| Dimensions | PNS40 | PNS60 | PNS60T | PNS80 | PNS80T |
|-------------------------------|---------|---------|---------|-------------|---------|
| D1 | 34 | | 52 | | 70 |
| D2 | M4x0.7P | | M5x0.8P | | M6x1.0P |
| D3 _{h6} | 10 | | 14 | | 20 |
| D4 _{g6} | 26 | | 40 | | 60 |
| D5 | 15 | | 20 | | 35 |
| D6 | M3x0.5P | | M5x0.8P | | M6x1.0P |
| D7 | 44 | | 60 | | 90 |
| L2 | 26 | | 35 | | 40 |
| L3 | 2 | | 3 | | 3 |
| L4 | 1 | | 1 | | 1 |
| L5 | 18 | | 25 | | 28 |
| L6 | 2.5 | | 2.5 | | 4 |
| L7 | 6 | | 8 | | 10 |
| L8 | 50.9 | 61.4 | 54.7 | 76 | 71.5 |
| L9 | 3 | | 4 | | 4.5 |
| L10 | 9 | | 16.5 | | 16.5 |
| L11 | 23.4 | 31 | 23.4 | 37.3 | 31 |
| C1 ² | 46 | 70 | 46 | 90 | 70 |
| C2 ² | M4x0.7P | M5x0.8P | M4x0.7P | M6x1.0P | M5x0.8P |
| C3 ² | ≤8/≤11 | ≤14/≤19 | ≤8/≤11 | ≤19/≤24/≤28 | ≤14/≤19 |
| C4 ² | 26.5 | 33.5 | 26.5 | 41 | 33.5 |
| C5 ² _{F6} | 30 | 50 | 30 | 70 | 50 |
| C6 ² | 4 | 4 | 4 | 6 | 4 |
| C7 ² | 42.6 | 60 | 42.6 | 90 | 60 |
| C8 ² | 32.9 | 41.5 | 32.9 | 51.5 | 41.5 |
| C9 ² | 109.8 | 137.9 | 122.6 | 167.5 | 153 |
| B | 3 | | 5 | | 6 |
| H | 11.2 | | 16 | | 22.5 |

* C1~C9 are motor specific dimensions(metric std shown), Size may vary according to motor flange.

* Specification subject to change without notice.

PNS Triple Stage Dimensions



Specifications

Unit:mm

| Dimensions | PNS40 | PNS60T | PNS80T |
|-------------------------------|---------|---------|---------|
| D1 | 34 | 52 | 70 |
| D2 | M4x0.7P | M5x0.8P | M6x1.0P |
| D3 _{h6} | 10 | 14 | 20 |
| D4 _{g6} | 26 | 40 | 60 |
| D5 | 15 | 20 | 35 |
| D6 | M3x0.5P | M5x0.8P | M6x1.0P |
| D7 | 44 | 60 | 90 |
| L2 | 26 | 35 | 40 |
| L3 | 2 | 3 | 3 |
| L4 | 1 | 1 | 1 |
| L5 | 18 | 25 | 28 |
| L6 | 2.5 | 2.5 | 4 |
| L7 | 6 | 8 | 10 |
| L8 | 73.3 | 81.7 | 105.3 |
| L9 | 3 | 4 | 4.5 |
| L10 | 9 | 16.5 | 16.5 |
| L11 | 23.4 | 23.4 | 31 |
| C1 ² | 46 | 46 | 70 |
| C2 ² | M4x0.7P | M4x0.7P | M5x0.8P |
| C3 ² | ≤8/≤11 | ≤8/≤11 | ≤14/≤19 |
| C4 ² | 26.5 | 26.5 | 33.5 |
| C5 ² _{F6} | 30 | 30 | 50 |
| C6 ² | 4 | 4 | 4 |
| C7 ² | 42.6 | 42.6 | 60 |
| C8 ² | 32.9 | 32.9 | 41.5 |
| C9 ² | 132.2 | 149.6 | 186.8 |
| B | 3 | 5 | 6 |
| H | 11.2 | 16 | 22.5 |

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

★ Specification subject to change without notice.

PNS Specifications Table

| Specifications | | Stage | Ratio | PNS-40 | PNS-60 | PNS-80 | PNS-120 | |
|--------------------------------|----------------|----------------------------------|----------|--|------------------------------|-------------------------------|---------------|--|
| Nominal Output Torque T_{2N} | N • m | 1 | 3 | 9 | 28 | 85 | 200 | |
| | | | 4 | 10 | 32 | 80 | 215 | |
| | | | 5 | 11 | 35 | 95 | 215 | |
| | | | 7 | 10 | 28 | 85 | 200 | |
| | | | 9 | 8 | 23 | 75 | 195 | |
| | | | 10 | 8 | 21 | 65 | 180 | |
| | | Stage | Ratio | PNS-40 | PNS-60/ PNS-60T | PNS-80/ PNS-80T | PNS-120T | |
| | | 2 | 15 | 11 | 35/24 | 95/68 | 168 | |
| | | | 20 | 11 | 35/31 | 95/95 | 215 | |
| | | | 25 | 11 | 35/30 | 95/95 | 215 | |
| | | | 35 | 11 | 35/28 | 95/95 | 215 | |
| | | | 45 | 11 | 35/27 | 95/92 | 215 | |
| | | | 50 | 11 | 35/27 | 95/82 | 205 | |
| | | | 70 | 10 | 28/28 | 85/85 | 200 | |
| | | | 90 | 8 | 23/23 | 75/75 | 195 | |
| | | 100 | 8 | 21/21 | 65/65 | 180 | | |
| | | Stage | Ratio | PNS-40 | PNS-60T | PNS-80T | PNS-120T | |
| | | 3 | 125 | 11 | 35 | 95 | 215 | |
| | | | 175 | 11 | 35 | 95 | 215 | |
| | | | 225 | 11 | 35 | 95 | 215 | |
| | | | 245 | 11 | 35 | 95 | 215 | |
| | | | 315 | 11 | 35 | 95 | 215 | |
| | | | 405 | 11 | 35 | 95 | 215 | |
| | | | 567 | 10 | 28 | 85 | 200 | |
| | | | 729 | 8 | 23 | 75 | 195 | |
| | | | 1000 | 8 | 21 | 65 | 180 | |
| | | Emergency Stop Torque T_{2NOT} | N • m | 2.5 times of Nominal Output Torque (* Max. Output Torque T_{2B} = 60% of Emergency Stop Torque) | | | | |
| Nominal Input Speed n_{1N} | rpm | 1,2,3 | 3-1000 | 4000 | 4000 | 3000 | 2500 | |
| Max. Input Speed n_{1max} | rpm | 1,2,3 | 3-1000 | 6000 | 6000 | 6000 | 5000 | |
| Standard Backlash P2 | arcmin | 1 | 3-10 | ≤ 9 | ≤ 8 | ≤ 7 | ≤ 6 | |
| | | 2 | 15-100 | ≤ 12 | ≤ 10 | ≤ 9 | ≤ 8 | |
| | | 3 | 125~1000 | ≤ 15 | ≤ 12 | ≤ 12 | ≤ 12 | |
| Torsional Rigidity | N • m / arcmin | 1,2,3 | 3-1000 | 1.2 | 3.5 | 8.5 | 17 | |
| Max. Radial Load F_{2rB}^1 | N | 1,2,3 | 3-1000 | 580 | 960 | 2160 | - | |
| Max. Axial Load F_{2aB}^1 | N | 1,2,3 | 3-1000 | 410 | 430 | 790 | - | |
| Operating Temp. | °C | 1,2,3 | 3-1000 | -10°C ~ +90°C | | | | |
| Service Life | hr | 1,2,3 | 3-1000 | 20,000(10,000 / Continuous operation) | | | | |
| Efficiency | % | 1 | 3-10 | ≥ 95% | | | | |
| | | 2 | 15-100 | ≥ 90% | | | | |
| | | 3 | 125~1000 | ≥ 85% | | | | |
| Weight | kg | 1 | 3-10 | 0.5 | 1.1 | 2.8 | - | |
| | | 2 | 15-100 | 0.7 | 1.5/1.3 | 4.2/3.1 | - | |
| | | 3 | 125~1000 | - | - | - | - | |
| Mounting Position | - | 1,2,3 | 3-1000 | Any direction | | | | |
| Noise Level ² | dBA/1m | 1,2,3 | 3-1000 | 60 | 63 | 66 | 67 | |
| Protection Class | - | 1,2,3 | 3-1000 | IP 65 | | | | |
| Lubrication | - | 1,2,3 | 3-1000 | Synthetic Lubricant | | | | |
| Inertia (J1) | | | | | | | | |
| Stage | Ratio | unit | | PNS-40(ψ8) | PNS-60(ψ14) | PNS-80(ψ19) | PNS-120(ψ24) | |
| 1 | 3 | Kg • cm ² | | 0.04 | 0.23 | 0.77 | 2.30 | |
| | 4 | | | 0.03 | 0.21 | 0.67 | 1.92 | |
| | 5~10 | | | 0.03 | 0.21 | 0.61 | 1.71 | |
| Stage | Ratio | | | PNS-40(ψ8) | PNS-60(ψ14) / PNS-60T(ψ8) | PNS-80(ψ19) / PNS-80T(ψ14) | PNS-120T(ψ19) | |
| 2 | 15 | | | 0.04 | 0.23(0.04) | 0.77(0.23) | 0.77 | |
| | Other ratios | | | 0.03 | 0.21(0.03) | 0.61(0.21) | 0.61 | |
| Stage | Ratio | | | PNS-40(ψ8) | PNS-60T(ψ8) | PNS-80T(ψ14) | PNS-120T(ψ19) | |
| 3 | All ratios | | | 0.03 | 0.03 | 0.21 | 0.61 | |

* 1. Applied to the output shaft center @100rpm.

* 2. Measured at 3000rpm with no load

※ The above figures/specifications are subject to change without prior notice.

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Tightening Torque Table

Tightening Torque Recommended for Motor Mounting Bolt

| Bolt Size | Width Across Flats | Strength 12.9 Tightening Torque | |
|-----------|--------------------|------------------------------------|--------|
| | | N-m | In-lbs |
| M3*0.5P | 2.5 | 2.1 | 19 |
| M4*0.7P | 3 | 4.9 | 44 |
| M5*0.8P | 4 | 9.8 | 87 |
| M6*1P | 5 | 17 | 151 |
| M8*1.25P | 6 | 41 | 364 |
| M10*1.5P | 8 | 80 | 709 |
| M12*1.75P | 10 | 139 | 1232 |
| M14*2P | 12 | 223 | 1976 |
| M16*2P | 14 | 343 | 3038 |



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V.3.3