



SUN US 堅持以不斷的創新、研發，追求產品的卓越超群，並遵循ISO9001國際品質管理系統的要求，以提供符合客戶滿意的產品和服務。

本公司具有優質卓越的設計能力，熟練的組裝技術與五十年以上的零組件加工經驗和誠信的經營理念，秉持品質保證、顧客滿意的精神，提供客戶高品質、低背隙長壽命的伺服馬達專用行星式減速機。

SUN US insist on innovation and development continuous to pursuit the best quality and follow the principle of ISO9001 and provide the satisfying product and service . Our company own the excellent designing ability , sophisticated assembly-technique and process experience more than 50 years , based on quality warranty , spirit of satisfying service , further provide the customer the superior planetary gear reducer combined with high quality , low backlash and long service life .

我們提供下列客製化服務

1. 行星式減速機、減速傳動機構、精密傳動元件等設計製造。
2. 承接客戶委託, 設計製造之減速機。
3. 精密研磨級齒輪齒條、蝸桿及蝸輪製造。

We offer the following customized servies :

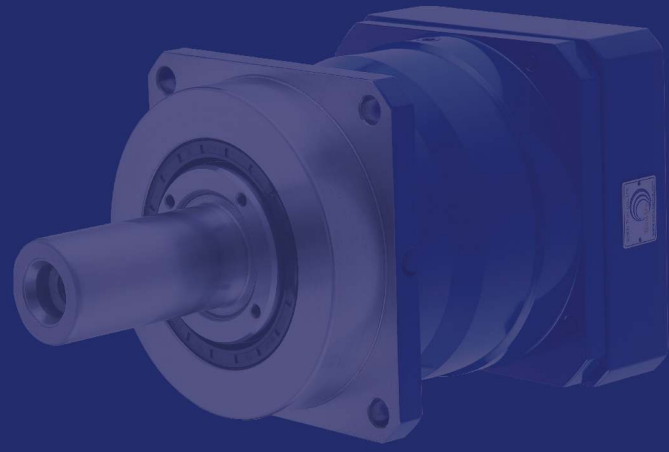
- 1.Design and manufacture planetary gear reduce & Precision Power parts.
- 2.Design and manufacture for customer's special requirements.
- 3.Produce the precise grinding gears, worm and worm gears.



善爾斯

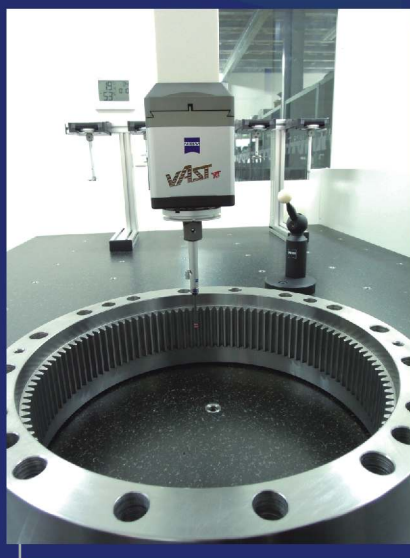
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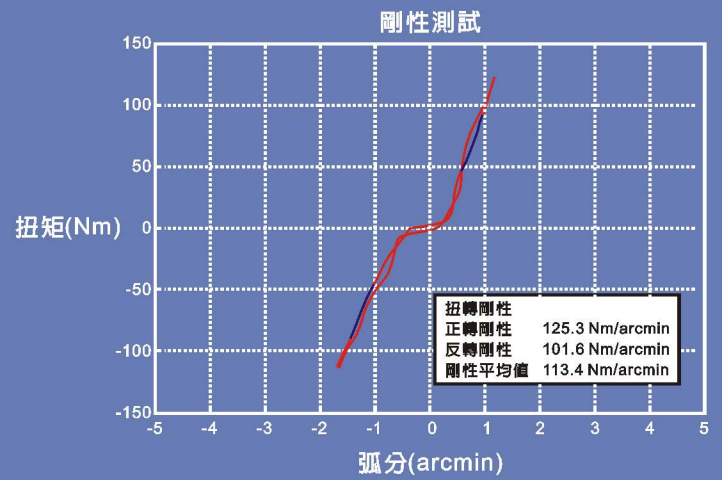


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ZEISS 三次元檢驗



扭轉剛性 Torsional rigidity



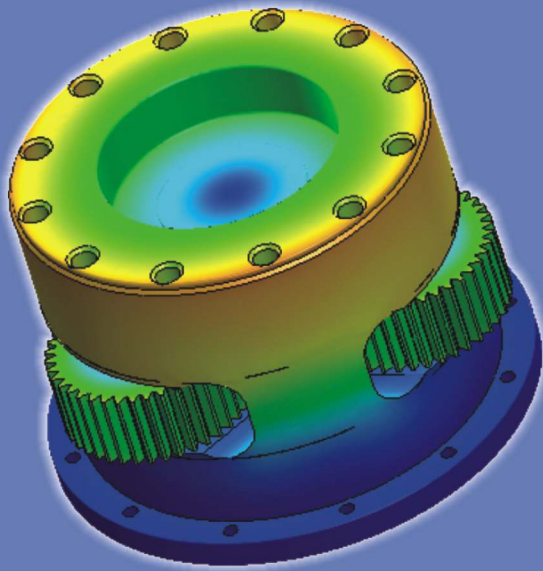
SUN Us

善爾斯

KLINGELNBERG

齒形檢驗

CAE 分析
CAE analysis



SUN Us TECH CO.,LTD.

www.sunusdrive.com



此為泛用於CNC機械之減速機，輸出端採用歐製雙滾錐軸承，較市面使用滾珠軸承之減速機可承受更大之軸徑向負載。箱體內環齒及行星托架皆為一體結構。

PG series can be applied to universal CNC machine tools. Its output shaft, including double Europe-made taper roller bearings, can sustain more radial and axial load than those with ball bearings in the market do. Inner ring gear and planet carrier are one-piece structure.

高定位精度 High Positioning Accuracy

- 精密齒輪研磨，齒面光滑，齒形精準。
- 齒輪箱和內環齒採整體結構設計，特殊合金鋼材，穩定性高。
- Precision ground gears have smooth surfaces and accurate profiles.
- The series case and inner ring gear, designed into one structure, are made of special stable alloy steel.

高扭力 High Torsional Rigidity

- 高品質滾錐軸承，輸出軸能承受更大的軸向和徑向的負荷，超大扭力，應用範圍廣。
- For the precision of ground gears, the well-designed structure and high-duty materia of gearbox and bracket

高起動性 High Dynamics

- 行星式結構平衡特性及高精度，低慣性矩，配合伺服馬達具有高起動特性。
- For an excellent design, high accuracy, and low moments of inertia

低噪音 Low Noise

- 採用精密研磨齒輪，齒面平滑，精度高，齒輪運轉平順而噪音小。
- 採用德製精選人工合成潤滑油，非一般減速機使用油脂潤滑，流動性佳，齒輪能在充分油膜保護下運轉，降低噪音。
- For the high standard of ground gears and best-chosen synthetic oil
- For the professional gear producing experience and the serious quality control of manufacturing processes

易安裝 Easy Installation

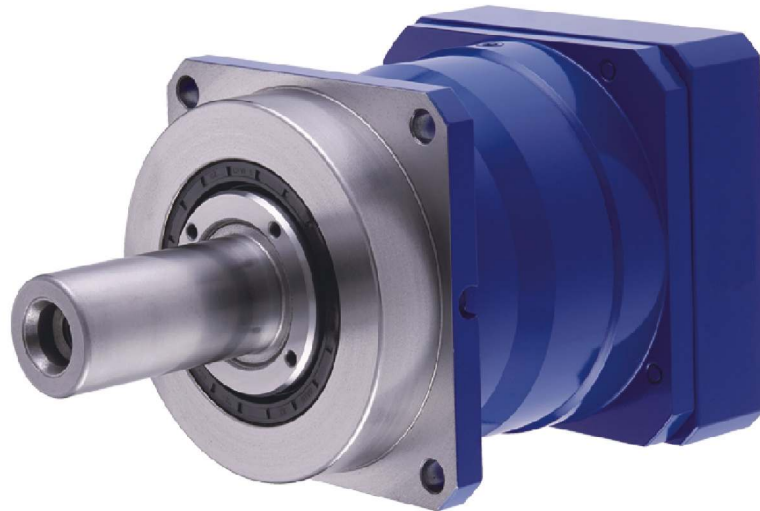
- 減速機聯接板及輸入軸孔尺寸採彈性設計，能與各廠牌的伺服馬達相結合。
- For the modular input bushing and the changeable connection plate according to customer's brand of servo-motor

低齒背隙 Low gear backlash

- 精密加工和嚴格品質管制：
 - Precision manufacture under quality control
- 超精密齒背隙在一段為1弧分；兩段為3弧分。
 - Micro backlash: stage one ≤ 1 arcmin; stage two ≤ 3 arcmins
- 精密齒背隙在一段為2~3弧分；兩段為4~5弧分。
 - Reduced backlash: stage one ≤ 3 arcmins; stage two ≤ 5 arcmins
- 標準齒背隙在一段為4~5弧分；兩段為6~7弧分。
 - Standard backlash: stage one ≤ 5 arcmins; stage two ≤ 7 arcmins

長壽命，免保養 Long life and maintenance free

- 採用高級鎳鉻鉬合金鋼材，經深層的滲碳硬化處理後，再經精密齒面研磨，使得齒輪剛性大，且齒面光滑耐磨性佳，可延長使用壽命。
- 採用德製優質人工合成潤滑油，流動性佳，富含極壓抗壓劑，齒箱內各零件間充分得到潤滑及保護，可免換機油。
- 採用特製高品質、耐熱、耐磨不易變質之油封，使得密封性佳。
- Gears are made of a quality alloy of nickel, chrome, and molybdenum steel, and produced with deep carburizing and hardening treatment. Gear surfaces under accurate grind feature better rigid, smooth, and wear resistance.
- Premium Germany-made synthetic oil, flowable better and including anti-ultra-pressure additive, is used in lubrication and protection of all components in the gearbox. Oil change is never required.
- High-grade oil seals, stable and both heat and wear resistant, are in use to serve well airtightness.



應用範圍 SCOPES :

↓ 工具機業 MACHINE TOOLS

| | |
|---------------------|---|
| CNC龍門銑床 / CNC龍門磨床 | CNC Gantry Milling Machine / CNC Gantry Grinding Machine |
| CNC綜合加工機 / CNC深孔加工機 | CNC Integrated Processing Machine / CNC Deephole Processing Machine |
| CNC落地搪床 / CNC鑽孔機 | CNC Floor Boring Machine / CNC Drilling Machine |
| CNC龍門鉋床 / CNC沖床 | CNC Gantry Planing Mill / CNC Punching Machine |
| CNC重型臥車·立車 | CNC Heavy Duty Lathe (Horizontal or Vertical Spindle) |

↓ 產業機械 SPECIAL PURPOSE MACHINE

| | |
|----------------------|--|
| 包裝機械 / 印刷機 / 攻牙機 | Packaging Machinery / Print Machine / Tapping machine |
| 紡織機械 / 彎管機 / CNC沖壓機 | Textile Machinery / Tube Bending Machine / CNC Press |
| 木工機 / 吹瓶機 / 雕刻機 | Woodworking Machine / Blow Molding Machine / Engraving Machine |
| 充填機 / 射出成型機 / CNC彈簧機 | Filling Machine / Injection Molding Machine / Spring Machine |
| 雷射切割機 / 雷射焊接機 | Laser Cutting Machine / Laser Welding Machine |

↓ 工廠自動化工業 FACTORY AUTOMATION

| | |
|-----------------|--|
| 半導體機械設備 / 光電面板業 | Semiconductor Machinery and Equipment / Photoelectric Panel Industry |
| 機械手臂 / 自動倉儲運搬系統 | Gantry Loader / Automated Storage and Retrieval System |
| 醫療產業 / 金屬表面處理設備 | Medical Industry / Metal Surface Treatment Equipment |
| 高扭力定位系統應用 | High Torque Positioning System Applications |
| 搭配伺服馬達之自動化機械裝置 | Automatic Mechanical Device with Servo Motor Collocation |

| 規 格 Size | | | PG060 | PG080 | PG100 | PG120 | PG140 | PG160 | PG180 | PG210 | PG240 | |
|--|-----------------------|----------|------------------------------------|-------|-------|-------|-------|-------|-----------|-------|--------|--|
| 最大加速扭矩 $T_{2B}^{(1)}$ Output Torque | Nm | 減速比 i | | | | | | | | | | |
| | | 3 | 25 | 90 | 202 | 330 | 440 | 735 | 1055 | 1750 | 3600 | |
| | | 4/5 | 47 | 115 | 270 | 350 | 510 | 810 | 1300 | 2600 | 4100 | |
| | | 6 | 40 | 103 | 250 | 340 | 445 | 730 | 1180 | 2150 | 3780 | |
| | | 7 | 40 | 100 | 240 | 310 | 440 | 700 | 1130 | 1680 | 3500 | |
| | | 8 | 33 | 91 | 215 | 285 | 410 | 650 | 1040 | 1600 | 3300 | |
| 緊急停止扭矩 $T_{2Not}^{(2)}$ Emergency Stop Torque | Nm | 3 | 60 | 240 | 630 | 800 | 1100 | 1700 | 3000 | 6200 | 9000 | |
| | | 4/5 | 100 | 310 | 710 | 900 | 1260 | 1850 | 3250 | 6480 | 9500 | |
| | | 6 | 85 | 280 | 650 | 800 | 1120 | 1700 | 2880 | 5500 | 8950 | |
| | | 7 | 85 | 270 | 625 | 780 | 1100 | 1600 | 2800 | 5000 | 8650 | |
| | | 8 | 77 | 250 | 550 | 690 | 1025 | 1470 | 2560 | 4600 | 7200 | |
| | | 10 | 75 | 200 | 500 | 650 | 900 | 1250 | 2220 | 3900 | 6800 | |
| 額定輸出扭矩 T_{2N} Nominal output Torque | Nm | 3 | 15 | 60 | 135 | 195 | 315 | 500 | 880 | 1200 | 2000 | |
| | | 4/5 | 26 | 78 | 185 | 240 | 340 | 550 | 1100 | 1900 | 2600 | |
| | | 6 | 23 | 70 | 155 | 210 | 320 | 460 | 845 | 1580 | 2250 | |
| | | 7 | 23 | 65 | 125 | 180 | 315 | 430 | 820 | 1050 | 1700 | |
| | | 8 | 18 | 64 | 120 | 175 | 293 | 410 | 755 | 1000 | 1660 | |
| | | 10 | 15 | 43 | 115 | 160 | 220 | 350 | 650 | 950 | 1550 | |
| 減速比 i | 單段 | | 3/4/5/6/7/8/10 | | | | | | | | | |
| 額定輸入轉速 n_{1N} Nominal Input Speed | rpm | 3/4/5 | 3300 | 3000 | 2600 | 2300 | 2200 | 1800 | 1500 | 1200 | 1100 | |
| | | 6/7/8/10 | 4000 | 3200 | 2900 | 2700 | 2700 | 2500 | 2400 | 1700 | 1600 | |
| 最大輸入轉速 n_{1Max} Max. Input Speed | rpm | 3~10 | 6000 | 6000 | 4500 | 4000 | 3600 | 3200 | 3000 | 2500 | 2200 | |
| 徑向負荷力 $F_{rMax}^{(3)}$ Radial Load | N | 3~10 | 2600 | 3800 | 6000 | 7500 | 9000 | 11500 | 14000 | 18000 | 27000 | |
| 軸向負荷力 $F_{aMax}^{(3)}$ Axial Load | N | 3~10 | 2300 | 3200 | 5400 | 6700 | 9000 | 11300 | 14000 | 18000 | 27000 | |
| 超精密背隙 Micro Backlash | arcmin | 3~10 | - | ≤1 | ≤1 | ≤1 | ≤1 | ≤1 | ≤1 | ≤1 | ≤1 | |
| 精密背隙 Reduced Backlash | arcmin | 3~10 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | ≤2 | ≤2 | ≤2 | |
| 標準背隙 Standard Backlash | arcmin | 3~10 | ≤5 | ≤5 | ≤5 | ≤5 | ≤5 | ≤5 | ≤4 | ≤4 | ≤4 | |
| 扭轉剛性 Torsional Rigidity | Nm/ arcmin | 3~10 | 3 | 8.5 | 23 | 35 | 50 | 95 | 150 | 220 | 355 | |
| 滿載時使用效率 Efficiency with Full Load | % | 3~10 | ≥97 | | | | | | | | | |
| 使用壽命 L_{h2} Service Life | h | 3~10 | 20000 | | | | | | | | | |
| 重量 | kg | 3~10 | 2.5 | 4 | 8 | 12 | 16 | 23 | 33 | 56 | 85 | |
| 噪音值 $^{(4)}$ Noise Level | dB | | ≤60 | ≤62 | | ≤65 | | | ≤66 | ≤68 | | |
| 使用溫度範圍 Permissible Gear Reducer Temp | °C | | - 10°C ~ + 90°C | | | | | | | | | |
| 防護等級 Protection Class | | | IP 64 | | | | | | | | | |
| 潤滑油 Lubrication | | | 人工合成潤滑油 Synthetic oil viscosity | | | | | | ISO VG220 | | | |
| 轉動慣量 J_1 Mass Moments of Inertia | kg cm ² | 3 | 0.31 | 0.75 | 4.73 | 5.90 | 10.50 | 16.22 | 37.40 | 72.10 | 140.80 | |
| | | 4 | 0.30 | 0.60 | 4.22 | 5.09 | 9.10 | 12.90 | 29.80 | 50.50 | 97.10 | |
| | | 5 | 0.29 | 0.59 | 4.13 | 4.93 | 8.85 | 12.30 | 28.43 | 45.20 | 87.40 | |
| | | 6 | - | 0.58 | 4.08 | 4.89 | 8.63 | 11.88 | 27.67 | 44.10 | 84.50 | |
| | | 7 | 0.28 | 0.58 | 4.05 | 4.83 | 8.50 | 11.83 | 27.55 | 42.60 | 81.40 | |
| | | 8 | - | 0.57 | 4.04 | 4.83 | 8.48 | 11.80 | 27.47 | 42.20 | 80.10 | |
| | | 10 | 0.27 | 0.57 | 4.04 | 4.81 | 8.46 | 11.70 | 27.45 | 41.90 | 79.80 | |

註(1) 本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。

註(2) 滿載期內可作1000次之動作。

註(3) 輸出轉速100rpm作用於輸出軸中心。

註(4) 噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。

- 連續運轉將會減少減速機二分之一的使用壽命。
- 客戶所需之減速比，若非表內所有，可與本公司洽詢。

Note (1) The data can be applied to starting frequency less than 1000 times per hour. Please contact us if more.

Note (2) Operation can be up to 1000 times in product life.

Note (3) It acts on in the output shaft center at output speed 100 rpm.

Note (4) Noise inspection of ratio-5 reducers measure at input speed 3000 rpm, in 1-meter distance, and with free-load operation.

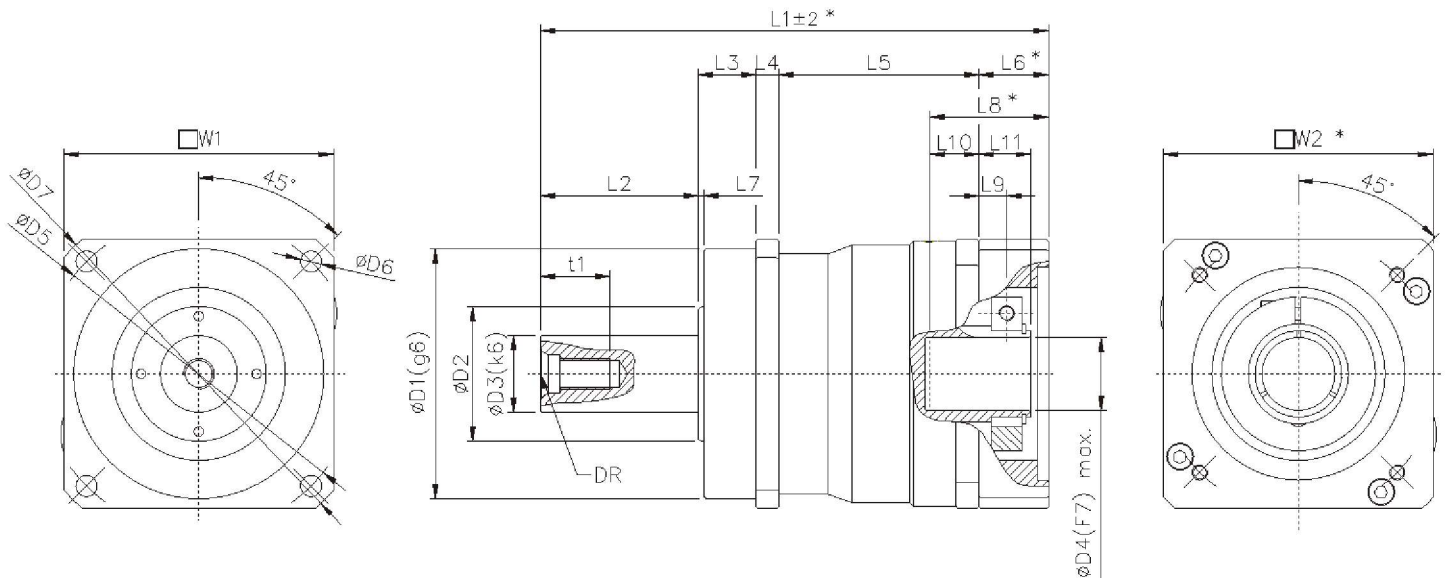
· Continuous operation will cause half of reducer life decreased.

· If any customized ratios are not available from above, please contact us.

PG外觀尺寸(單段 3/4/5/6/7/8/10比)[mm]



Dimensions (1-Stage 3/4/5/6/7/8/10 Ratio) [mm]



| 規格 Size | PG060 | PG080 | PG100 | PG120 | PG140 | PG160 | PG180 | PG210 | PG240 |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| W1 | 62 | 80 | 100 | 120 | 140 | 160 | 182 | 210 | 240 |
| ※ W2 min. | 75 | 88 | 118 | 130 | 140 | 175 | 190 | 190 | 240 |
| DR | M5 | M8 | M12 | M12 | M16 | M16 | M20 | M20 | M20 |
| t1 | 12.5 | 19 | 28 | 28 | 36 | 36 | 42 | 42 | 42 |
| D1(g6) | 60 | 70 | 90 | 110 | 130 | 145 | 160 | 180 | 200 |
| D2 | 30 | 40 | 55 | 60 | 70 | 85 | 95 | 125 | 140 |
| D3(k6) | 16 | 22 | 32 | 35 | 40 | 50 | 55 | 75 | 85 |
| D4(F7) max. | 14 | 19 | 32 | 35 | 38 | 42 | 48 | 55 | 60 |
| D5 | 68 | 85 | 120 | 130 | 165 | 190 | 215 | 250 | 290 |
| D6 | 5.5 | 6.6 | 9 | 9 | 11 | 13 | 13 | 17 | 17 |
| D7 | 79 | 103 | 135 | 155 | 185 | 215 | 240 | 279 | 320 |
| ※ L1 | 135.5 | 161 | 213.5 | 232.5 | 262.5 | 266.5 | 297 | 349.5 | 422 |
| L2 | 28 | 36 | 58 | 70 | 82 | 82 | 82 | 105 | 130 |
| L3 | 20 | 20 | 30 | 30 | 30 | 30 | 30 | 38 | 40 |
| L4 | 6 | 7 | 10 | 11 | 12 | 13.5 | 15 | 17 | 20 |
| L5 | 60.5 | 73 | 87.5 | 93 | 104 | 106.5 | 122 | 139.5 | 154 |
| ※ L6 min. | 22.5 | 25 | 28 | 28.5 | 34.5 | 34.5 | 48 | 50 | 78 |
| L7 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| ※ L8 min. | 33 | 40 | 52 | 52 | 60 | 60 | 82 | 82 | 110 |
| L9 | 10 | 11.5 | 11.5 | 12.8 | 14.3 | 14.3 | 17.8 | 18.5 | 22.5 |
| L10 | 12 | 15 | 24 | 24 | 25.5 | 25.5 | 34 | 32 | 32 |
| L11 | 18 | 20 | 22 | 24.5 | 27 | 27 | 33.5 | 34.5 | 41 |

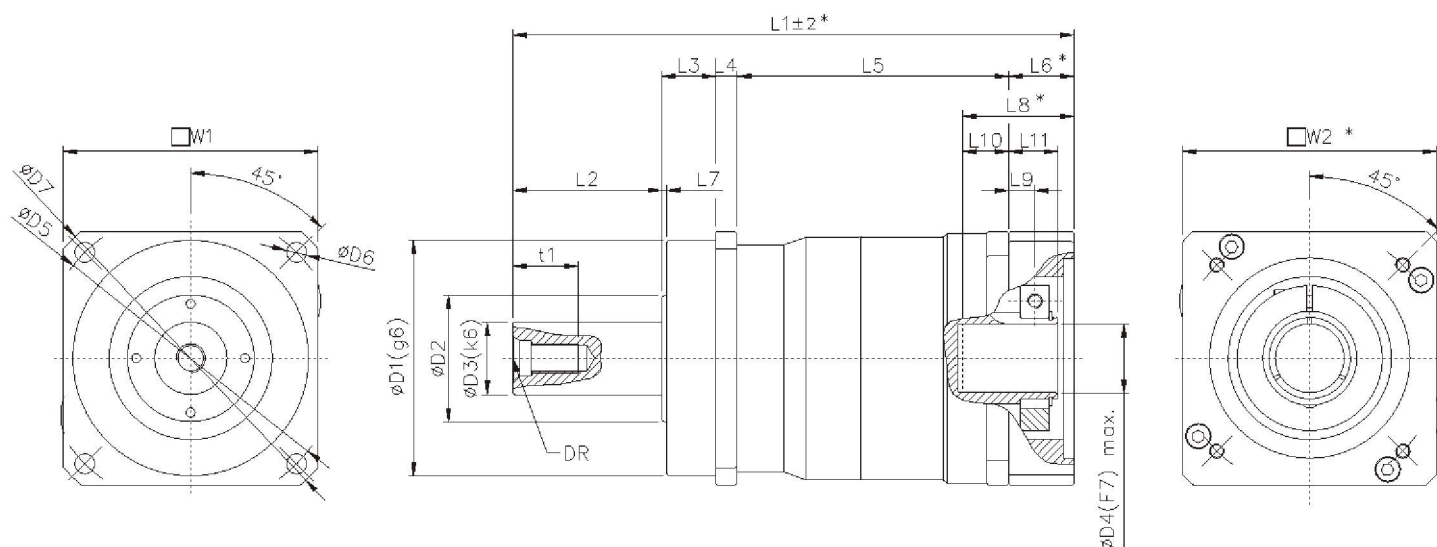
- ※此記號表示之尺寸視聯結之伺服馬達不同而有所變動。
- ※本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如需確實之尺寸，可洽本公司。
- ※Actual dimensions may vary with different servo motor collocation.
- We persistently research in and develop our products, and we have made every effort to maintain the specification data above correct. If there is any discrepancy between the data and real dimensions, please refer to products or may contact us for updated data.

| 規 格 Size | | | PG060 | PG080 | PG100 | PG120 | PG140 | PG160 | PG180 | PG210 | PG240 | |
|--|-----------------------|----------------|--|-------|-------|-------|-------|-------|-----------|-------|-------|--|
| 最大加速扭矩 $T_{2B}^{(1)}$ Output Torque | Nm | 減速比 I | | | | | | | | | | |
| | | 12/15 | 25 | 90 | 202 | 330 | 440 | 735 | 1055 | 1750 | 3600 | |
| | | 16/20/25/40/50 | 47 | 115 | 270 | 350 | 510 | 810 | 1300 | 2600 | 4100 | |
| | | 30/60 | 40 | 103 | 250 | 340 | 445 | 730 | 1180 | 2150 | 3780 | |
| | | 28/35/70 | 40 | 100 | 240 | 310 | 440 | 700 | 1130 | 1680 | 3500 | |
| | | 80 | 33 | 91 | 215 | 285 | 410 | 650 | 1040 | 1600 | 3300 | |
| 緊急停止扭矩 $T_{2Not}^{(2)}$ Emergency Stop Torque | Nm | 12/15 | 60 | 240 | 630 | 800 | 1100 | 1700 | 3000 | 6200 | 9000 | |
| | | 16/20/25/40/50 | 100 | 310 | 710 | 900 | 1260 | 1850 | 3250 | 6480 | 9500 | |
| | | 30/60 | 85 | 280 | 650 | 800 | 1120 | 1700 | 2880 | 5500 | 8950 | |
| | | 28/35/70 | 85 | 270 | 625 | 780 | 1100 | 1600 | 2800 | 5000 | 8650 | |
| | | 80 | 77 | 250 | 550 | 690 | 1025 | 1470 | 2560 | 4600 | 7200 | |
| | | 100 | 75 | 200 | 500 | 650 | 900 | 1250 | 2220 | 3900 | 6800 | |
| 額定輸出扭矩 T_{2N} Nominal output Torque | Nm | 12/15 | 15 | 60 | 135 | 195 | 315 | 500 | 880 | 1200 | 2000 | |
| | | 16/20/25/40/50 | 26 | 78 | 185 | 240 | 340 | 550 | 1100 | 1900 | 2600 | |
| | | 30/60 | 23 | 70 | 155 | 210 | 320 | 460 | 845 | 1580 | 2250 | |
| | | 28/35/70 | 23 | 65 | 125 | 180 | 315 | 430 | 820 | 1050 | 1700 | |
| | | 80 | 18 | 64 | 120 | 175 | 293 | 410 | 755 | 1000 | 1660 | |
| | | 100 | 15 | 43 | 115 | 160 | 220 | 350 | 650 | 950 | 1550 | |
| 減速比 I | 雙段 | | 12/15/16/20/25/28/30/35/40/50/60/70/80/100 | | | | | | | | | |
| 額定輸入轉速 n_{1N} Nominal Input Speed | rpm | 12~40 | 4400 | 3600 | 3200 | 3000 | 3000 | 2900 | 2800 | 2200 | 2000 | |
| | | 50~60 | 4800 | 3900 | 3600 | 3300 | 3200 | 3100 | 3000 | 2400 | 2200 | |
| | | 70~100 | 5500 | 4500 | 4200 | 3900 | 3500 | 3300 | 3200 | 2800 | 2400 | |
| 最大輸入轉速 n_{1Max} Max. Input Speed | rpm | 12~100 | 6000 | 6000 | 4500 | 4000 | 3600 | 3600 | 3600 | 3000 | 3000 | |
| 徑向負荷力 $F_{rMax}^{(3)}$ Radial Load | N | 12~100 | 2600 | 3800 | 6000 | 7500 | 9000 | 11500 | 14000 | 18000 | 27000 | |
| 軸向負荷力 $F_{aMax}^{(3)}$ Axial Load | N | 12~100 | 2300 | 3200 | 5400 | 6700 | 9000 | 11300 | 14000 | 18000 | 27000 | |
| 超精密背隙 Micro Backlash | arcmin | 12~100 | - | - | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | |
| 精密背隙 Reduced Backlash | arcmin | 12~100 | ≤5 | ≤5 | ≤5 | ≤5 | ≤5 | ≤5 | ≤4 | ≤4 | ≤4 | |
| 標準背隙 Standard Backlash | arcmin | 12~100 | ≤7 | ≤7 | ≤7 | ≤7 | ≤7 | ≤7 | ≤6 | ≤6 | ≤6 | |
| 扭轉剛性 Torsional Rigidity | Nm/ arcmin | 12~100 | 3 | 8.5 | 23 | 35 | 50 | 95 | 150 | 220 | 355 | |
| 滿載時使用效率 Efficiency with Full Load | % | 12~100 | ≥94 | | | | | | | | | |
| 使用壽命 L_{h2} Service Life | h | 12~100 | 20000 | | | | | | | | | |
| 重量 | kg | 12~100 | 3.1 | 4.6 | 9.2 | 15.2 | 20.3 | 23.7 | 35.5 | 59 | 87 | |
| 噪音值 (4) Noise Level | dB | | ≤60 | ≤62 | | ≤65 | | | ≤66 | ≤68 | | |
| 使用溫度範圍 Permissible Gear Reducer Temp | °C | | - 10°C ~ + 90°C | | | | | | | | | |
| 防護等級 Protection Class | | | IP 64 | | | | | | | | | |
| 潤滑油 Lubrication | | | 人工合成潤滑油 Synthetic oil viscosity | | | | | | ISO VG220 | | | |
| 轉動慣量 J_1 Mass Moments of Inertia | kg cm ² | 12 | 0.31 | 0.75 | 4.73 | 5.90 | 10.50 | 10.5 | 11.0 | 37.50 | 37.70 | |
| | | 15 | 0.31 | 0.75 | 4.73 | 5.90 | 10.50 | 10.5 | 11.0 | 37.50 | 37.70 | |
| | | 16 | 0.30 | 0.60 | 4.20 | 5.09 | 9.00 | 9.30 | 9.30 | 30.00 | 31.30 | |
| | | 20 | 0.30 | 0.60 | 4.20 | 5.07 | 9.00 | 9.20 | 9.30 | 30.00 | 31.00 | |
| | | 25 | 0.29 | 0.59 | 4.12 | 4.91 | 8.83 | 9.00 | 9.05 | 28.70 | 30.10 | |
| | | 28 | 0.30 | 0.59 | 4.20 | 5.07 | 9.00 | 9.20 | 9.20 | 29.90 | 31.00 | |
| | | 30 | - | 0.58 | 4.08 | 4.90 | 8.63 | 8.65 | 9.65 | 27.70 | 29.05 | |
| | | 35 | 0.30 | 0.58 | 4.12 | 4.91 | 8.82 | 8.90 | 9.03 | 28.80 | 30.08 | |
| | | 40 | 0.27 | 0.56 | 4.04 | 4.80 | 8.45 | 8.50 | 8.52 | 27.70 | 28.70 | |
| | | 50 | 0.27 | 0.56 | 4.04 | 4.80 | 8.45 | 8.49 | 8.52 | 27.70 | 28.70 | |
| | | 60 | 0.27 | 0.56 | 4.04 | 4.80 | 8.45 | 8.49 | 8.52 | 27.70 | 28.55 | |
| | | 70 | 0.27 | 0.56 | 4.04 | 4.80 | 8.45 | 8.49 | 8.50 | 27.70 | 28.50 | |
| 80 | 0.27 | 0.56 | 4.04 | 4.80 | 8.45 | 8.48 | 8.50 | 27.70 | 28.50 | | | |
| 100 | 0.27 | 0.56 | 4.04 | 4.80 | 8.45 | 8.48 | 8.50 | 27.70 | 28.50 | | | |

PG外觀尺寸 (雙段 12~100比) [mm]



Dimensions (2-Stage 12~100 Ratio) [mm]



| 規格 Size | PG060 | PG080 | PG100 | PG120 | PG140 | PG160 | PG180 | PG210 | PG240 |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| W1 | 62 | 80 | 100 | 120 | 140 | 160 | 182 | 210 | 240 |
| ※ W2 min. | 72 | 88 | 118 | 130 | 140 | 140 | 140 | 190 | 190 |
| DR | M5 | M8 | M12 | M12 | M16 | M16 | M20 | M20 | M20 |
| t1 | 12.5 | 19 | 28 | 28 | 36 | 36 | 42 | 42 | 42 |
| D1(g6) | 60 | 70 | 90 | 110 | 130 | 145 | 160 | 180 | 200 |
| D2 | 30 | 40 | 55 | 60 | 70 | 85 | 95 | 125 | 140 |
| D3(k6) | 16 | 22 | 32 | 35 | 40 | 50 | 55 | 75 | 85 |
| D4(F7) max. | 14 | 19 | 32 | 35 | 38 | 38 | 38 | 48 | 48 |
| D5 | 68 | 85 | 120 | 130 | 165 | 190 | 215 | 250 | 290 |
| D6 | 5.5 | 6.6 | 9 | 9 | 11 | 13 | 13 | 17 | 17 |
| D7 | 79 | 103 | 135 | 155 | 185 | 215 | 240 | 279 | 320 |
| ※ L1 | 157.5 | 193 | 252 | 272.5 | 305.5 | 309.5 | 318 | 395.5 | 440 |
| L2 | 28 | 36 | 58 | 70 | 82 | 82 | 82 | 105 | 130 |
| L3 | 20 | 20 | 30 | 30 | 30 | 30 | 30 | 38 | 40 |
| L4 | 6 | 7 | 10 | 11 | 12 | 13.5 | 15 | 17 | 20 |
| L5 | 82.5 | 105 | 126 | 133 | 147 | 149.5 | 156.5 | 187.5 | 202 |
| ※ L6 min. | 22.5 | 25 | 28 | 28.5 | 34.5 | 34.5 | 34.5 | 48 | 48 |
| L7 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| ※ L8 min. | 33 | 40 | 52 | 52 | 60 | 60 | 60 | 82 | 82 |
| L9 | 10 | 11.5 | 11.5 | 12.8 | 14.3 | 14.3 | 14.3 | 17.8 | 17.8 |
| L10 | 12 | 15 | 24 | 24 | 25.5 | 25.5 | 25.5 | 34 | 34 |
| L11 | 18 | 20 | 22 | 24.5 | 27 | 27 | 27 | 33.5 | 33.5 |

※此記號表示之尺寸視聯結之伺服馬達不同而有所變動。

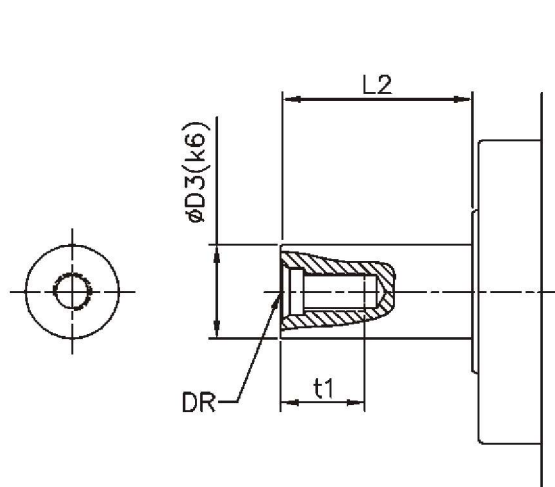
※本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如需確實之尺寸，可洽本公司。

※Actual dimensions may vary with different servo motor collocation.

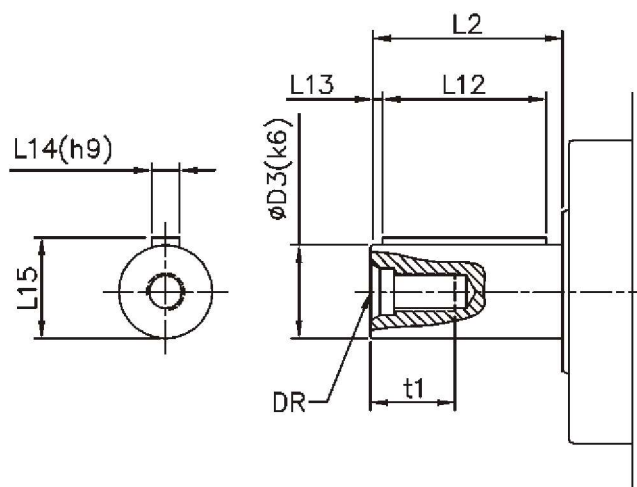
We persistently research in and develop our products, and we have made every effort to maintain the specification data above correct. If there is any discrepancy between the data and real dimensions, please refer to products or may contact us for updated data.

1. 平滑式輸出軸 [mm] Smooth output shaft [mm]

| 規格 Size | | PG060 | PG080 | PG100 | PG120 | PG140 | PG160 | PG180 | PG210 | PG240 |
|--|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 輸出軸直徑- ϕ Output shaft-diameter | D3(k6) | 16 | 22 | 32 | 35 | 40 | 50 | 55 | 75 | 85 |
| 輸出軸長度 Output shaft length | L2 | 28 | 36 | 58 | 70 | 82 | 82 | 82 | 105 | 130 |
| 中心孔 Centering bore | DR | M5 | M8 | M12 | M12 | M16 | M16 | M20 | M20 | M20 |
| 中心孔螺紋深度 Depth of thread, centering bore | t1 | 12.5 | 19 | 28 | 28 | 36 | 36 | 42 | 42 | 42 |



1. 平滑式 [mm]



2. 鍵槽式 [mm]

2. 鍵槽式輸出軸 [mm] Keyway output shaft [mm]

| 規格 Size | | PG060 | PG080 | PG100 | PG120 | PG140 | PG160 | PG180 | PG210 | PG240 |
|--|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 輸出軸直徑- ϕ Output shaft-diameter | D3(k6) | 16 | 22 | 32 | 35 | 40 | 50 | 55 | 75 | 85 |
| 輸出軸長度 Output shaft length | L2 | 28 | 36 | 58 | 70 | 82 | 82 | 82 | 105 | 130 |
| 鍵長 Key length | L12 | 25 | 32 | 50 | 63 | 70 | 70 | 70 | 90 | 125 |
| 鍵槽與軸端距離 Key location | L13 | 2 | 2 | 4 | 4 | 5 | 5 | 6 | 7 | 3 |
| 鍵寬 Key width | L14(h9) | 5 | 6 | 10 | 10 | 12 | 14 | 16 | 20 | 22 |
| 輸出軸加鍵高度 Output shaft with key | L15 | 18 | 24.5 | 35 | 38 | 43 | 53.5 | 59 | 79.5 | 90 |
| 中心孔 Centering bore | DR | M5 | M8 | M12 | M12 | M16 | M16 | M20 | M20 | M20 |
| 中心孔螺紋深度 Depth of thread, centering bore | t1 | 12.5 | 19 | 28 | 28 | 36 | 36 | 42 | 42 | 42 |

↓ 精度高/低齒背隙 High Precision / Low Backlash

- 製作嚴謹，穩定性高。
- 單段齒背隙 <1~<5 弧分。
- 雙段齒背隙 <3~<7 背隙。
- Strict manufacturing and assembly process, High quality stability.
- One-stage backlash <1~<5 arcmin.
- Two-stage backlash <3~<7 arcmin.

↓ 效率高 High Efficiency

- 單段97% 雙段94%
- One-stage 97%
- Two-stage 94%

↓ 體積小 Small Volume

- 行星式運轉平順，結構緊湊，體積小，輸出扭力大，在有限空間限制下，極有優勢。
- Smooth operation, compact structure, small volume, high output torque, excellent performance under limited space.

↓ 易安裝 Easy Installation

- 聯接板與軸套採用模組化設計，適合各式馬達組裝。
- The modular input bushing and the changeable connecting plate, mount with any brand of servo motor.

↓ 長壽命、免保養 Long Service Life and Easy Maintenance

- 採用優質人工合成潤滑油，流動性佳，齒箱內各零件間充分得到潤滑及保護，可免換油。
- 採用高品質、耐熱、耐磨之油封，密封性佳。
- Best-chosen synthetic oil, lubricate and protect the components inside the gear box, oil-filled free.
- Select superior quality, heat-resistance, wear-resistance, get better sealing performance.



應用範圍 SCOPES :

↓ 工具機業 MACHINE TOOLS

| | |
|----------------------|---|
| CNC龍門銑床 / CNC龍門磨床 | CNC Gantry Milling Machine / CNC Gantry Grinding Machine |
| CNC綜合加工機 / CNC深孔加工機 | CNC Integrated Processing Machine / CNC Deephole Processing Machine |
| CNC落地搪床 / CNC鑽孔機 | CNC Floor Boring Machine / CNC Drilling Machine |
| CNC龍門刨床 / CNC重型臥車·立車 | CNC Gantry Planing Mill / CNC Heavy Duty Lathe (Horizontal or Vertical Spindle) |

↓ 產業機械 SPECIAL PURPOSE MACHINE

| | |
|----------------------|--|
| 包裝機械 / 印刷機 / 攻牙機 | Packaging Machinery / Print Machine / Tapping machine |
| 紡織機械 / 彎管機 / 彎板機 | Textile Machinery / Tube Bending Machine / Plate Bending Machine |
| 木工機 / 吹瓶機 / 雕刻機 | Woodworking Machine / Blow Molding Machine / Engraving Machine |
| 充填機 / 射出成型機 / CNC彈簧機 | Filling Machine / Injection Molding Machine / Spring Machine |
| 雷射切割機 / 雷射焊接機 | Laser Cutting Machine / Laser Welding Machine |

↓ 工廠自動化工業 FACTORY AUTOMATION

| | |
|-----------------|--|
| 半導體機械設備 / 光電面板業 | Semiconductor Machinery and Equipment / Photoelectric Panel Industry |
| 機械手臂 / 自動倉儲運搬系統 | Gantry Loader / Automated Storage and Retrieval System |
| 醫療產業 / 金屬表面處理設備 | Medical Industry / Metal Surface Treatment Equipment |

| 規 格 Size | | | AG042 | AG060 | AG090 | AG115 | AG142 | AG160 | AG180 | AG220 |
|--|----------------------|-------|------------------------------------|-------|-------|-------|-----------|-------|-------|-------|
| 最大加速扭矩 $T_{2B}^{(1)}$ Output Torque | Nm | 減速比 i | | | | | | | | |
| | | 3 | - | 45 | 113 | 222 | 440 | 770 | 1165 | 1960 |
| | | 4 | 18 | 55 | 130 | 300 | 560 | 880 | 1450 | 2400 |
| | | 5 | 18 | 55 | 130 | 278 | 560 | 880 | 1450 | 2400 |
| | | 6 | 15 | 45 | 115 | 267 | 480 | 800 | 1220 | 2020 |
| | | 7 | 13 | 40 | 110 | 240 | 425 | 760 | 1085 | 1800 |
| | | 8 | 10 | 38 | 103 | 222 | 410 | 700 | 1045 | 1740 |
| 緊急停止扭矩 $T_{2Not}^{(2)}$ Emergency Stop Torque | Nm | 3~10 | 2.5倍輸出扭矩 2.5 Times Output Torque | | | | | | | |
| 額定輸入轉速 n_{1N} Nominal Input Speed | rpm | 3~10 | 5000 | 4000 | 3000 | 3000 | 2000 | 2000 | 1500 | 1500 |
| 最大輸入轉速 n_{1Max} Max. Input Speed | rpm | 3~10 | 10000 | 8000 | 6000 | 6000 | 4000 | 3500 | 3000 | 3000 |
| 徑向負荷力 $Fr_{Max}^{(a)}$ Radial Load | N | 3~10 | 560 | 1000 | 3200 | 5800 | 7000 | 9400 | 12000 | 20000 |
| 軸向負荷力 $Fa_{Max}^{(a)}$ Axial Load | N | 3~10 | 280 | 500 | 1600 | 2900 | 3500 | 4700 | 6000 | 10000 |
| 超精密背隙 Micro Backlash | arcmin | 3~10 | - | - | ≤1 | ≤1 | ≤1 | ≤1 | ≤1 | ≤1 |
| 精密背隙 Reduced Backlash | arcmin | 3~10 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 |
| 標準背隙 Standard Backlash | arcmin | 3~10 | ≤5 | ≤5 | ≤5 | ≤5 | ≤5 | ≤5 | ≤5 | ≤5 |
| 扭轉剛性 Torsional Rigidity | Nm/ arcmin | 3~10 | 2 | 5 | 10 | 24 | 50 | 95 | 150 | 220 |
| 滿載時使用效率 Efficiency with Full Load | % | 3~10 | ≥97 | | | | | | | |
| 使用壽命 L_{h2} Service Life | h | 3~10 | 20000 | | | | | | | |
| 重量 | kg | 3~10 | 0.7 | 2.0 | 4.3 | 8.5 | 15.5 | 22.5 | 32 | 55 |
| 噪音值 ($n_1=3000$ rpm) Noise Level | dB | 3~10 | ≤56 | ≤58 | ≤60 | ≤63 | ≤65 | ≤65 | ≤66 | ≤68 |
| 使用溫度範圍 Permissible Gear Reducer Temp | °C | 3~10 | - 10°C ~ + 90°C | | | | | | | |
| 防護等級 Protection Class | | 3~10 | IP 64 | | | | | | | |
| 潤滑油 Lubrication | | 3~10 | 人工合成潤滑油 Synthetic oil viscosity | | | | ISO VG220 | | | |
| 安裝方向 Mounting Position | | 3~10 | 任意方向 III† | | | | | | | |
| 轉動慣量 J_1 Mass Moments of Inertia | kg · cm ² | 3 | - | 0.29 | 1.76 | 4.70 | 10.00 | 15.98 | 37.15 | 62.90 |
| | | 4 | 0.10 | 0.28 | 1.61 | 4.15 | 8.60 | 12.72 | 29.55 | 41.30 |
| | | 5 | 0.09 | 0.27 | 1.60 | 4.05 | 8.35 | 12.15 | 28.17 | 35.97 |
| | | 6 | 0.09 | 0.26 | 1.59 | 4.00 | 8.10 | 11.32 | 27.95 | 35.62 |
| | | 7 | 0.09 | 0.26 | 1.59 | 3.97 | 8.00 | 11.17 | 27.30 | 33.40 |
| | | 8 | 0.09 | 0.26 | 1.59 | 3.97 | 7.98 | 11.14 | 27.10 | 33.00 |
| | | 10 | 0.09 | 0.25 | 1.58 | 3.96 | 7.96 | 11.12 | 27.00 | 32.68 |

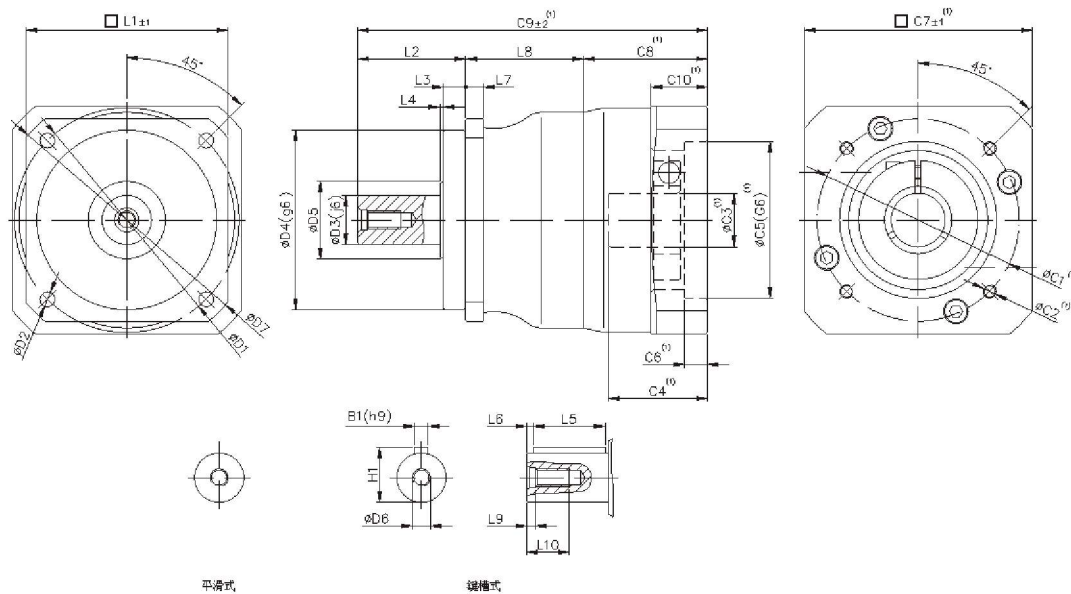
(a) Fr_{Max} , Fa_{Max} 輸出轉速 100rpm 作用於輸出軸中心。
· 連續運轉將會減少減速機二分之一的使用壽命。

(a) Fr_{Max} and Fa_{Max} act on in the output shaft center at output speed 100 rpm.
· Continuous operation will cause half of reducer life decreased.

AG外觀尺寸 (單段 3/4/5/6/7/8/10比)[mm]



Dimensions (1-Stage 3/4/5/6/7/8/10 Ratio) [mm]



| 規格 Size | AG042 | AG060 | AG090 | AG115 | AG142 | AG160 | AG180 | AG220 |
|-----------|---------|---------|----------|-----------|----------|-----------|-----------|-----------|
| D1 | 50 | 70 | 100 | 130 | 165 | 190 | 215 | 250 |
| D2 | 3.4 | 5.5 | 6.6 | 9 | 11 | 13 | 13 | 17 |
| D3(j6) | 13 | 16 | 22 | 32 | 40 | 50 | 55 | 75 |
| D4(g6) | 35 | 50 | 80 | 110 | 130 | 145 | 160 | 180 |
| D5 | 15 | 20 | 35 | 40 | 50 | 60 | 65 | 85 |
| D6 | M4*0.7P | M8*0.8P | M8*1.25P | M12*1.75P | M16*2P | M16*2P | M20*2.5P | M20*2.5P |
| D7 | 56 | 80 | 116 | 152 | 185 | 215 | 240 | 292 |
| L1 | 42 | 60 | 90 | 115 | 142 | 160 | 180 | 220 |
| L2 | 26 | 37 | 48 | 65 | 97 | 97 | 105 | 138 |
| L3 | 5.5 | 7 | 10 | 12 | 15 | 15 | 20 | 30 |
| L4 | 1 | 1.5 | 1.5 | 2 | 3 | 3 | 3 | 3 |
| L5 | 16 | 25 | 32 | 40 | 63 | 70 | 70 | 90 |
| L6 | 2 | 2 | 3 | 5 | 5 | 5 | 6 | 7 |
| L7 | 4 | 6 | 8 | 10 | 12 | 13.5 | 15 | 20 |
| L8 | 34.5 | 44.5 | 52.5 | 70.5 | 78 | 90 | 93 | 108 |
| L9 | 3 | 4 | 4 | 6 | 14 | 10 | 12 | 12 |
| L10 | 10 | 12.5 | 19 | 24 | 36 | 36 | 42 | 42 |
| C1(1) | 46 | 70 | 90 | 145 | 165 | 200 | 215 | 215 |
| C2(1) | M4*0.7P | M5*0.8P | M6*1P | M8*1.25P | M10*1.5P | M12*1.75P | M12*1.75P | M12*1.75P |
| C3(1) | ≤ 11 | ≤ 14 | ≤ 24 | ≤ 32 | ≤ 38 | ≤ 42 | ≤ 48 | ≤ 55 |
| C4(1) | 28.5 | 31.5 | 44 | 58 | 66.5 | 82 | 82 | 81 |
| C5(G6)(1) | 30 | 50 | 70 | 110 | 130 | 114.3 | 180 | 114.3 |
| C6(1) | 4 | 5 | 10 | 16 | 10 | 20 | 15 | 15 |
| C7(1) | 57 | 67 | 101.6 | 129 | 152.4 | 178 | 203 | 242 |
| C8(1) | 31.5 | 35.5 | 55 | 67 | 75 | 88 | 87.5 | 83 |
| C9(1) | 92 | 117 | 155.5 | 202.5 | 250 | 275 | 285.5 | 329 |
| C10(1) | 12 | 20 | 25 | 34 | 35 | 45 | 43 | 42 |
| B1(h9) | 5 | 5 | 6 | 10 | 12 | 14 | 16 | 20 |
| H1 | 15 | 18 | 24.5 | 35 | 43 | 53.5 | 59 | 79.5 |

(1) C1~C10表示之尺寸,隨伺服馬達不同而有所變動。

※如需確實之尺寸,請洽本公司。

a) The dimensions from C1 to C10 may vary with different servo motor collocation.
 • Please contact us for actual dimensions.

| 規 格 Size | | | AG042 | AG060 | AG090 | AG115 | AG142 | AG160 | AG180 | AG220 |
|--|----------------------|----------|------------------------------------|-------|-------|-------|-----------|-------|-------|-------|
| 最大加速扭矩 $T_{2B}^{(1)}$ Output Torque | Nm | 減速比 i | | | | | | | | |
| | | 12/15 | - | 45 | 113 | 222 | 440 | 770 | 1165 | 1960 |
| | | 20/25 | 18 | 55 | 130 | 300 | 560 | 880 | 1450 | 2400 |
| | | 30 | 15 | 45 | 113 | 222 | 440 | 800 | 1165 | 1960 |
| | | 35/40/50 | 18 | 55 | 130 | 300 | 560 | 880 | 1450 | 2400 |
| | | 60 | 15 | 45 | 115 | 278 | 480 | 800 | 1220 | 2020 |
| | | 70 | 13 | 40 | 110 | 267 | 425 | 760 | 1085 | 1800 |
| | | 80 | 10 | 38 | 103 | 240 | 410 | 700 | 1045 | 1740 |
| | | 100 | 7 | 35 | 90 | 210 | 350 | 520 | 1000 | 1635 |
| 緊急停止扭矩 $T_{2Not}^{(2)}$ Emergency Stop Torque | Nm | 12~100 | 2.5倍輸出扭矩 2.5 Times Output Torque | | | | | | | |
| 額定輸入轉速 n_{1N} Nominal Input Speed | rpm | 12~100 | 5000 | 4000 | 3000 | 3000 | 2000 | 2000 | 1500 | 1500 |
| 最大輸入轉速 n_{1Max} Max. Input Speed | rpm | 12~100 | 10000 | 8000 | 6000 | 6000 | 4000 | 3500 | 3000 | 3000 |
| 徑向負荷力 $F_{rMax}^{(a)}$ Radial Load | N | 12~100 | 560 | 1000 | 3200 | 5800 | 7000 | 9400 | 12000 | 20000 |
| 軸向負荷力 $F_{aMax}^{(a)}$ Axial Load | N | 12~100 | 280 | 500 | 1600 | 2900 | 3500 | 4700 | 6000 | 10000 |
| 超精密背隙 Micro Backlash | arcmin | 12~100 | - | - | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 |
| 精密背隙 Reduced Backlash | arcmin | 12~100 | ≤5 | ≤5 | ≤5 | ≤5 | ≤5 | ≤5 | ≤5 | ≤5 |
| 標準背隙 Standard Backlash | arcmin | 12~100 | ≤7 | ≤7 | ≤7 | ≤7 | ≤7 | ≤7 | ≤7 | ≤7 |
| 扭轉剛性 Torsional Rigidity | Nm/ arcmin | 12~100 | 2 | 5 | 10 | 24 | 50 | 95 | 150 | 220 |
| 滿載時使用效率 Efficiency with Full Load | % | 12~100 | ≥ 94 | | | | | | | |
| 使用壽命 L_{h2} Service Life | h | 12~100 | 20000 | | | | | | | |
| 重量 | kg | 12~100 | 1.7 | 2.7 | 5.0 | 10.0 | 19.5 | 24.5 | 34.5 | 58.5 |
| 噪音值 ($n_1=3000$ rpm) Noise Level | dB | 12~100 | ≤56 | ≤58 | ≤60 | ≤63 | ≤65 | ≤65 | ≤66 | ≤68 |
| 使用溫度範圍 Permissible Gear Reducer Temp | °C | 12~100 | - 10°C ~ + 90°C | | | | | | | |
| 防護等級 Protection Class | | 12~100 | IP 64 | | | | | | | |
| 潤滑油 Lubrication | | 12~100 | 人工合成潤滑油 Synthetic oil viscosity | | | | ISO VG220 | | | |
| 安裝方向 Mounting Position | | 12~100 | 任意方向 IIII | | | | | | | |
| 轉動慣量 J_1 Mass Moments of Inertia | kg · cm ² | 12 | - | 0.29 | 1.76 | 4.70 | 10.00 | 13.25 | 15.10 | 37.00 |
| | | 15 | - | 0.29 | 1.76 | 4.70 | 10.00 | 13.25 | 15.10 | 37.00 |
| | | 20 | 0.10 | 0.28 | 1.61 | 4.15 | 8.60 | 11.86 | 11.90 | 29.40 |
| | | 25 | 0.10 | 0.27 | 1.60 | 4.05 | 8.35 | 11.60 | 11.75 | 28.05 |
| | | 30 | - | 0.27 | 1.60 | 4.05 | 8.35 | 11.60 | 11.75 | 28.05 |
| | | 35 | 0.10 | 0.26 | 1.59 | 3.97 | 8.00 | 10.20 | 10.25 | 27.30 |
| | | 40 | 0.09 | 0.25 | 1.58 | 3.96 | 7.96 | 10.14 | 10.05 | 27.00 |
| | | 50 | 0.09 | 0.25 | 1.58 | 3.96 | 7.96 | 10.14 | 10.05 | 27.00 |
| | | 60 | 0.09 | 0.25 | 1.58 | 3.96 | 7.96 | 10.14 | 10.05 | 27.00 |
| | | 70 | 0.09 | 0.25 | 1.58 | 3.96 | 7.96 | 10.14 | 10.05 | 27.00 |
| 80 | 0.09 | 0.25 | 1.58 | 3.96 | 7.96 | 10.14 | 10.05 | 27.00 | | |
| 100 | 0.09 | 0.25 | 1.58 | 3.96 | 7.96 | 10.14 | 10.05 | 27.00 | | |

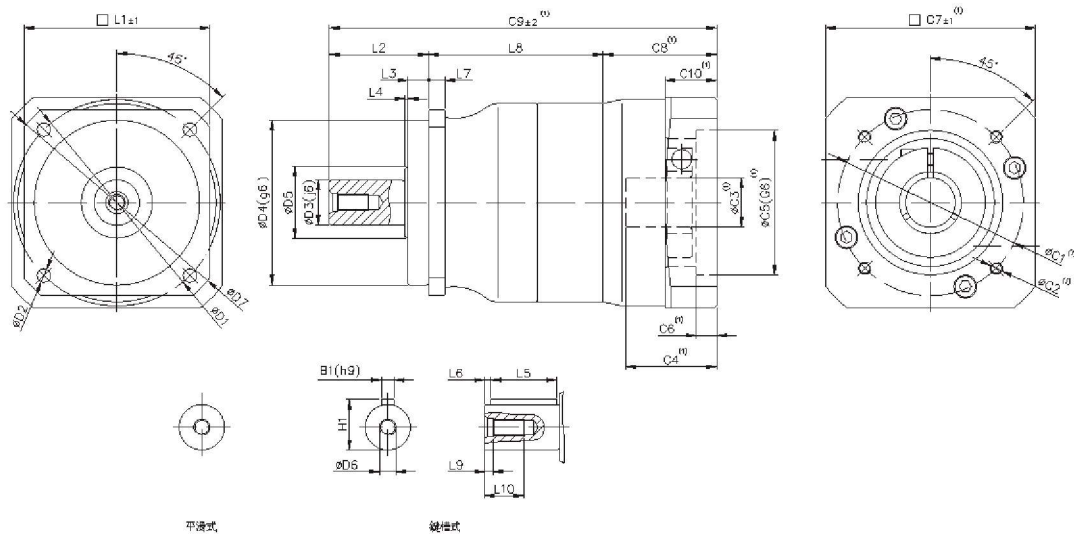
(a) F_{rMax} , F_{aMax} 輸出轉速 100rpm 作用於輸出軸中心。
 · 連續運轉將會減少減速機二分之一的使用壽命。

(a) F_{rMax} and F_{aMax} act on in the output shaft center at output speed 100 rpm.
 · Continuous operation will cause half of reducer life decreased.

AG外觀尺寸 (雙段 12~100比) [mm]



Dimensions (2-Stage 12~100 Ratio) [mm]



| 規格 Size | AG042 | AG060 | AG090 | AG115 | AG142 | AG160 | AG180 | AG220 |
|-----------|---------|---------|----------|-----------|----------|-----------|----------|-----------|
| D1 | 50 | 70 | 100 | 130 | 165 | 190 | 215 | 250 |
| D2 | 3.4 | 5.5 | 6.6 | 9 | 11 | 13 | 13 | 17 |
| D3(j6) | 13 | 16 | 22 | 32 | 40 | 50 | 55 | 75 |
| D4(g6) | 35 | 50 | 80 | 110 | 130 | 145 | 160 | 180 |
| D5 | 15 | 20 | 35 | 40 | 50 | 60 | 65 | 85 |
| D6 | M4*0.7P | M8*0.8P | M8*1.25P | M12*1.75P | M16*2P | M16*2P | M20*2.5P | M20*2.5P |
| D7 | 56 | 80 | 116 | 152 | 185 | 215 | 240 | 292 |
| L1 | 42 | 60 | 90 | 115 | 142 | 160 | 180 | 220 |
| L2 | 26 | 37 | 48 | 65 | 97 | 97 | 105 | 138 |
| L3 | 5.5 | 7 | 10 | 12 | 15 | 15 | 20 | 30 |
| L4 | 1 | 1.5 | 1.5 | 2 | 3 | 3 | 3 | 3 |
| L5 | 16 | 25 | 32 | 40 | 63 | 70 | 70 | 90 |
| L6 | 2 | 2 | 3 | 5 | 5 | 5 | 6 | 7 |
| L7 | 4 | 6 | 8 | 10 | 12 | 13.5 | 15 | 20 |
| L8 | 57 | 67.5 | 84.5 | 111.5 | 125.5 | 138 | 156 | 178 |
| L9 | 3 | 4 | 4 | 6 | 14 | 10 | 12 | 12 |
| L10 | 10 | 12.5 | 19 | 28 | 36 | 36 | 42 | 42 |
| C1(1) | 46 | 70 | 90 | 145 | 145 | 200 | 145 | 200 |
| C2(1) | M4*0.7P | M5*0.8P | M6*1P | M8*1.25P | M8*1.25P | M12*1.75P | M8*1.25P | M12*1.75P |
| C3(1) | ≤ 11 | ≤ 14 | ≤ 24 | ≤ 32 | ≤ 38 | ≤ 38 | ≤ 38 | ≤ 48 |
| C4(1) | 28.5 | 31.5 | 44 | 58 | 66.5 | 67.5 | 81 | 116 |
| C5(G6)(1) | 30 | 50 | 70 | 110 | 130 | 114.3 | 114.3 | 114.3 |
| C6(1) | 4 | 5 | 10 | 16 | 10 | 20 | 25 | 30 |
| C7(1) | 57 | 67 | 101.6 | 129 | 152.4 | 178 | 178 | 203 |
| C8(1) | 31.5 | 35.5 | 55 | 67 | 75 | 90 | 96 | 137.5 |
| C9(1) | 114.5 | 140 | 187.5 | 243.5 | 297.5 | 325 | 351 | 446 |
| C10(1) | 12 | 20 | 25 | 34 | 35 | 50 | 58 | 78 |
| B1(h9) | 5 | 5 | 6 | 10 | 12 | 14 | 16 | 20 |
| H1 | 15 | 18 | 24.5 | 35 | 43 | 53.5 | 59 | 79.5 |

(1) C1~C10表示之尺寸,隨伺服馬達不同而有所變動。

※如需確實之尺寸,請洽本公司。

a) The dimensions from C1 to C10 may vary with different servo motor collocation.
• Please contact us for actual dimensions.

選用範例：**AG 142 - 005 - RSAM 1 /MITSUBISHI-HC-KFS43**

Example: - - /Motor

系列選擇: Type
AG

規格: Size
042 / 060 / 090 / 115 / 142 / 160 /
180 / 220

減速比: Ratio
003 / 004 / 005 / 006 / 007 / 008 / 010
012 / 015 / 020 / 025 / 030 / 035 /
040 / 050 / 060 / 070 / 080 / 100

馬達廠牌和型號
Motor brand and type

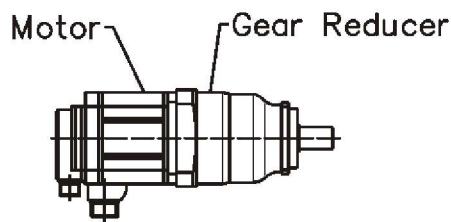
安裝方位: Mounting Directions
M1 M2 M3 (See below)

運轉方式: Operation
A(間歇cycle) B(連續continuous)

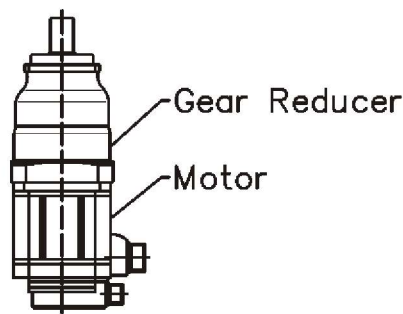
輸出軸型式: Output shaft
S(平滑式 smooth) K(鍵槽式keyway)

齒背隙: Backlash
M(超精密micro) R(精密reduced) S(標準standard)

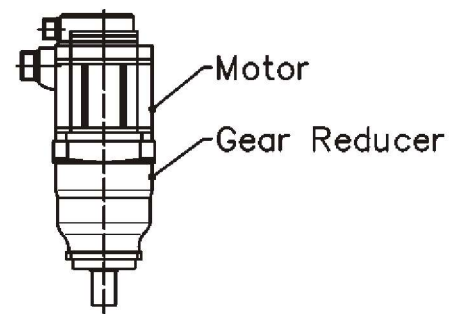
安裝方位 Directions



M1 水平
Horizontal



M2 垂直朝上
Upwards



M3 垂直朝下
Downwards

- 本公司產品陸續增加，如資料有所不符，將以本公司提供之最新資料為準，恕不另行通知。
- Our products have been developing generally, so has their information updating. If there is any discrepancy, it is subject to the updated information we offer without any notice.

輸出端滾珠軸承使用壽命計算方式 Lh2

Calculation of service life of output ball bearing Lh2



參考表1 Please see Table 1

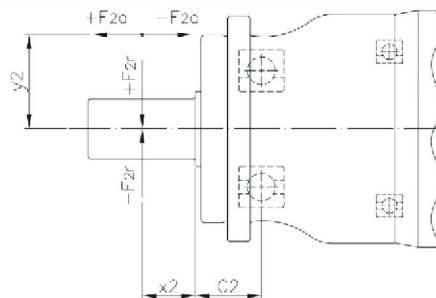
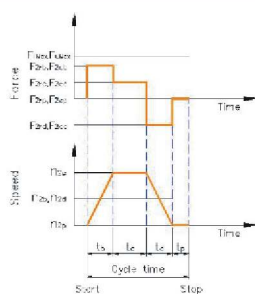
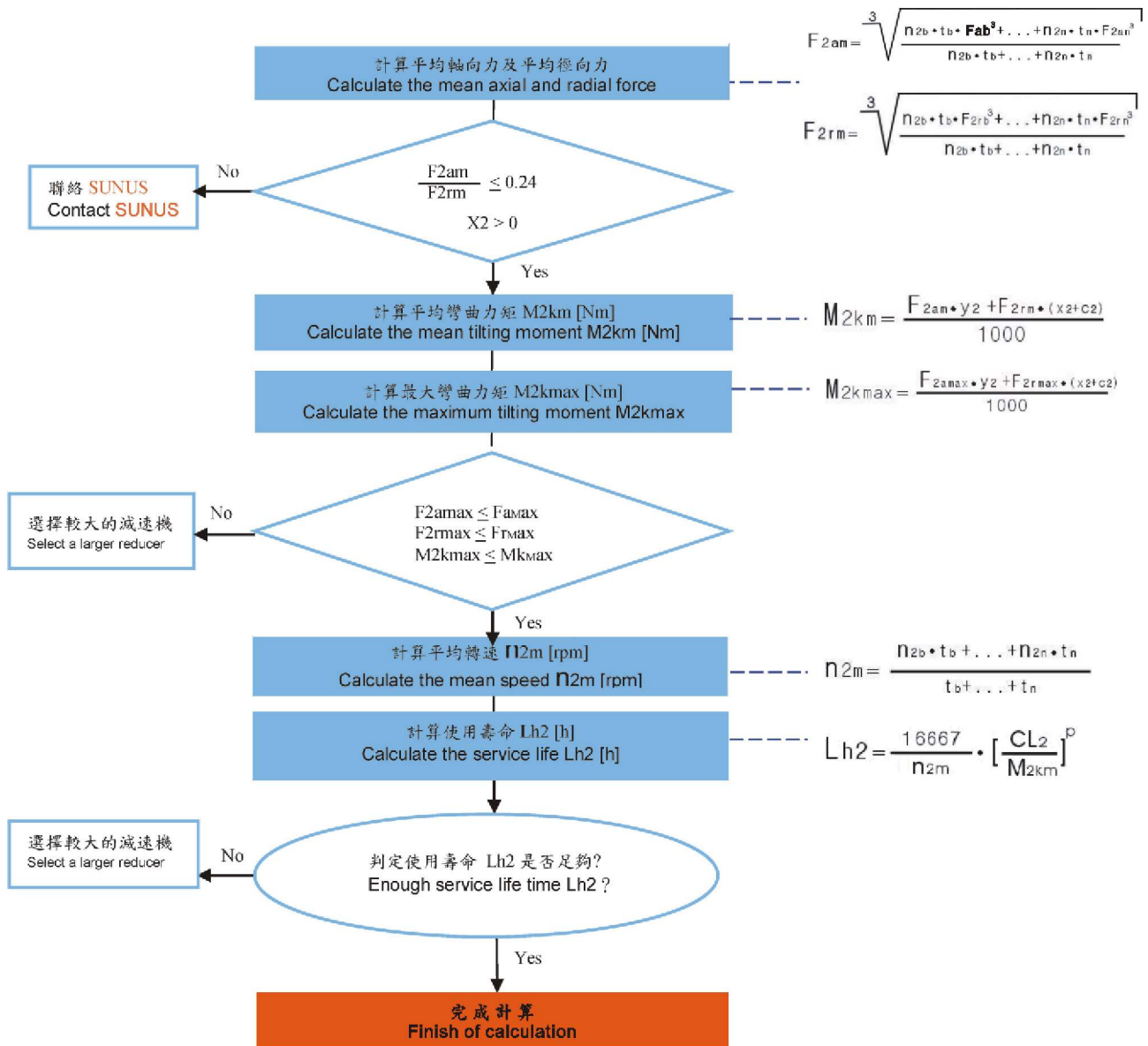


表1 Table1

| 規格 Size | AG042 | AG060 | AG090 | AG115 | AG142 | AG180 | AG220 |
|------------|-------|-------|-------|-------|-------|-------|-------|
| C2 [mm] | 13 | 17.5 | 20 | 25 | 25 | 31.7 | 38 |
| FrMax [N] | 560 | 1000 | 3200 | 5800 | 7000 | 12000 | 20000 |
| FaMax [N] | 280 | 500 | 1600 | 2900 | 3500 | 6000 | 10000 |
| MkMax [Nm] | 6 | 32 | 123 | 292 | 452 | 873 | 1810 |
| CL2 [Nm] | 27 | 156 | 604 | 1438 | 2227 | 4303 | 8928 |
| P | 3 | 3 | 3 | 3 | 3 | 3 | 3 |

此減速機為獨特中空軸設計，輸出端可裝置較少齒數齒輪，伺服馬達可選用較小規格，獲得最小啓動扭矩，達到高經濟效益。

HG series is designed to have a unique hollow output shaft, available for installation of a gear with fewer teeth and compatible with a smaller servo motor. Less torque is required to start operation, which produces higher economic benefits.

運轉順暢、低噪音 Operating smooth、Low noise

- 小齒輪及齒條採螺旋系配合，並經硬化處理和精密研磨。
- Hardened and ground rack and pinion adopt helical and spur system

易安裝、省空間及重量 Easy installation, space and weight saving

- 小齒輪與減速機中空軸以高強韌聯軸器相聯結。
- Pinion and output shaft of reducer are connected with high stiffness coupling

減速機可承受大負荷軸/徑向推力 Affording huge radial and axial load

- 減速機輸出軸裝有一組高強度的滾錐軸承。
- Using high quality taper roller bearing to strengthen the radial and axial load

小齒輪與齒條可調整至最佳精度 Rack and pinion can be adjusted to best precision

- 透過偏心的聯接板，結構簡單，小齒輪位置易調整。
- With eccentric plate and simplified structure could be adjusted the position of pinion easily

高起動性及加速時間短 High dynamics

- 優良的結構設計以獲得低慣性矩，啓動、停止靈敏。
- For an excellent design, high accuracy, and low moments of inertia

高經濟效益 High economical effect

- 由於低慣性矩，因而能選配較小的伺服馬達，節省成本。
- low moment characteristic could select the smaller kilowatt servo motor, further carry the cost-down out.

極佳的線性定位精度 Perfect for linear positioning

- 小齒輪與齒條採用研磨級系列製品，齒條累積節距誤差精度為0.03/1000mm。
- Adopting ground rack and pinion; cumulative pitch error 0.03/1000mm

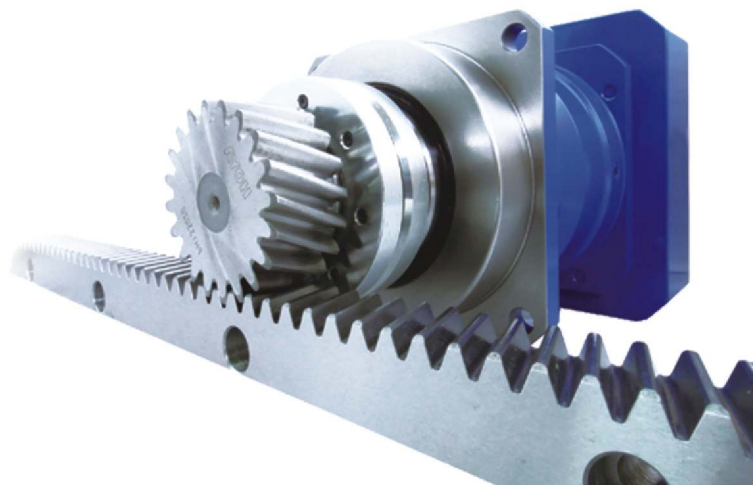
壽命長 Long service life

集合下列整體綜效

- 歐規的設計結構
- 精選的西歐名牌軸承
- 德製的油封
- 齒輪經硬化處理和精密研磨
- 採高防護指數的油潤滑

Due to these characteristics as below

- Well design and structure
- Using high quality taper roller bearing
- High quality German seal
- Harden and ground gear
- Best-chosen synthetic oil



應用範圍 SCOPES :

↓ 工具機業 MACHINE TOOLS

CNC龍門銑床 / CNC龍門磨床
CNC綜合加工機 / CNC鑽孔機
CNC龍門鉋床 / CNC沖床
CNC重型臥車·立車

CNC Gantry Milling Machine / CNC Gantry Grinding Machine
CNC Integrated Processing Machine / CNC Drilling Machine
CNC Gantry Planing Mill / CNC Punching Machine
CNC Heavy Duty Lathe (Horizontal or Vertical Spindle)

↓ 產業機械 SPECIAL PURPOSE MACHINE

包裝機械 / 印刷機 / 攻牙機
紡織機械 / 彎管機 / CNC沖壓機
木工機 / 吹瓶機 / 雕刻機
充填機 / 射出成型機 / CNC彈簧機
雷射切割機

Packaging Machinery / Print Machine / Tapping machine
Textile Machinery / Tube Bending Machine / CNC Press
Woodworking Machine / Blow Molding Machine / Engraving Machine
Filling Machine / Injection Molding Machine / Spring Machine
Laser Cutting Machine

↓ 工廠自動化工業 ACTORY AUTOMATION

半導體機械設備 / 光電面板業
機械手臂 / 自動倉儲運搬系統
醫療產業 / 金屬表面處理設備
高扭力定位系統應用
搭配伺服馬達之自動化機械裝置

Semiconductor Machinery and Equipment / Photoelectric Panel Industry
Gantry Loader / Automated Storage and Retrieval System
Medical Industry / Metal Surface Treatment Equipment
High Torque Positioning System Applications
Automatic Mechanical Device with Servo Motor Collocation

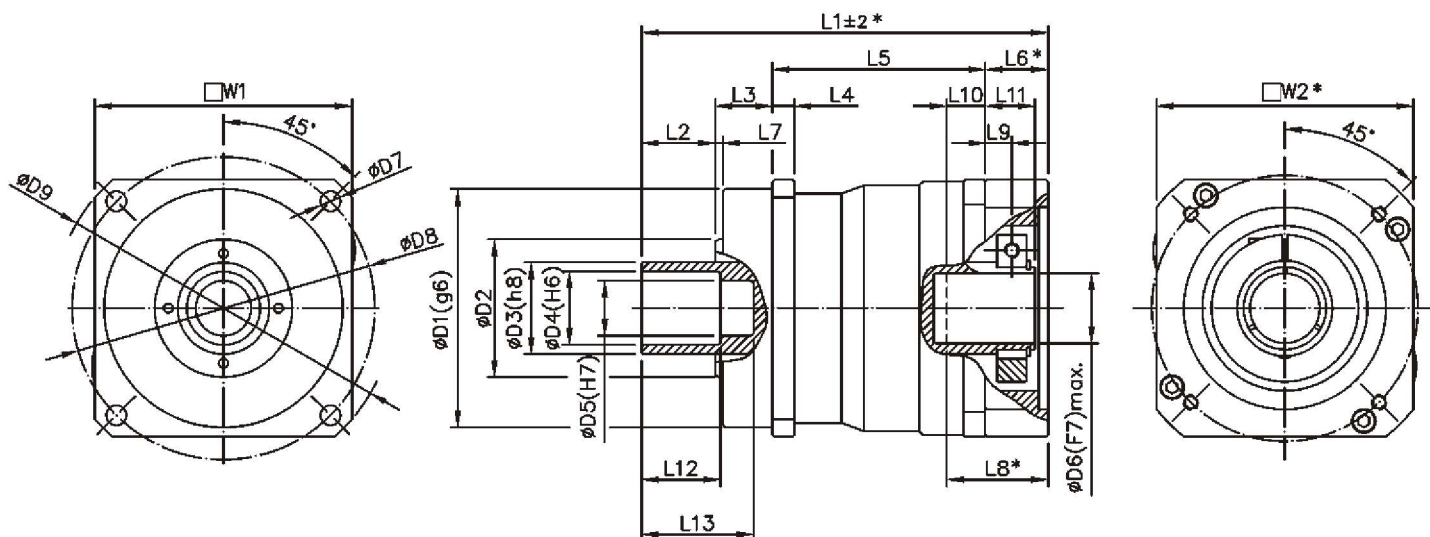
| 規 格 Size | | | HG100 | HG120 | HG140 | HG160 | HG180 | HG210 | HG240 | |
|---|----------------------|--|------------------------------------|----------------|-------|-------|-----------|-------|--------|------|
| 最大加速扭矩 $T_{2B(1)}$ Output Torque | Nm | 減速比 i | | | | | | | | |
| | | 3 | 202 | 330 | 440 | 735 | 1055 | 1750 | 3600 | |
| | | 4/5 | 270 | 350 | 510 | 810 | 1300 | 2600 | 4100 | |
| | | 6 | 250 | 340 | 445 | 730 | 1180 | 2150 | 3780 | |
| | | 7 | 240 | 310 | 440 | 700 | 1130 | 1680 | 3500 | |
| | | 8 | 215 | 285 | 410 | 650 | 1040 | 1600 | 3300 | |
| 緊急停止扭矩 $T_{2No1(2)}$ Emergency Stop Torque | Nm | 10 | 190 | 245 | 340 | 500 | 900 | 1500 | 2700 | |
| | | 3 | 630 | 800 | 1100 | 1700 | 3000 | 6200 | 9000 | |
| | | 4/5 | 710 | 900 | 1260 | 1850 | 3250 | 6480 | 9500 | |
| | | 6 | 650 | 800 | 1120 | 1700 | 2880 | 5000 | 8950 | |
| | | 7 | 625 | 780 | 1100 | 1600 | 2800 | 5500 | 8650 | |
| 額定輸出扭矩 T_{2N} Nominal output Torque | Nm | 8 | 550 | 690 | 1025 | 1470 | 2560 | 4600 | 7200 | |
| | | 10 | 500 | 650 | 900 | 1250 | 2220 | 3900 | 6800 | |
| | | 3 | 135 | 195 | 315 | 500 | 880 | 1200 | 2000 | |
| | | 4/5 | 185 | 240 | 340 | 550 | 1100 | 1900 | 2600 | |
| | | 6 | 155 | 210 | 320 | 460 | 845 | 1580 | 2250 | |
| 減速比 i | 單段 | 7 | 125 | 180 | 315 | 430 | 820 | 1050 | 1700 | |
| | | 8 | 120 | 175 | 293 | 410 | 755 | 1000 | 1660 | |
| | | 10 | 115 | 160 | 220 | 350 | 650 | 950 | 1550 | |
| | | | | 3/4/5/6/7/8/10 | | | | | | |
| | | 額定輸入轉速 n_{1N} Nominal Input Speed | rpm | 3/4/5 | 2600 | 2300 | 2200 | 1800 | 1500 | 1200 |
| 最大輸入轉速 n_{1Max} Max. Input Speed | rpm | 6/7/8/10 | 2900 | 2700 | 2700 | 2500 | 2400 | 1700 | 1600 | |
| | | 3~10 | 4500 | 4000 | 3600 | 3200 | 3000 | 2500 | 2200 | |
| 徑向負荷力 $F_{rMax(3)}$ Radial Load | N | 3~10 | 6000 | 7500 | 9000 | 11500 | 14000 | 18000 | 27000 | |
| 軸向負荷力 $F_{dMax(3)}$ Axial Load | N | 3~10 | 5400 | 6700 | 9000 | 11300 | 14000 | 18000 | 27000 | |
| 超精密背隙 Micro Backlash | arcmin | 3~10 | ≤1 | ≤1 | ≤1 | ≤1 | ≤1 | ≤1 | ≤1 | |
| 精密背隙 Reduced Backlash | arcmin | 3~10 | ≤3 | ≤3 | ≤3 | ≤3 | ≤2 | ≤2 | ≤2 | |
| 標準背隙 Standard Backlash | arcmin | 3~10 | ≤5 | ≤5 | ≤5 | ≤5 | ≤4 | ≤4 | ≤4 | |
| 扭轉剛性 Torsional Rigidity | Nm/ arcmin | 3~10 | 23 | 35 | 50 | 95 | 150 | 220 | 355 | |
| 滿載時使用效率 Efficiency with Full Load | % | 3~10 | ≥97 | | | | | | | |
| 使用壽命 L_{h2} Service Life | h | 3~10 | 20000 | | | | | | | |
| 重量 | kg | 3~10 | 8 | 12 | 16 | 23 | 33 | 56 | 85 | |
| 噪音值 (4) Noise Level | dB | | ≤62 | ≤65 | | | ≤66 | ≤68 | | |
| 使用溫度範圍 Permissible Gear Reducer Temp | °C | | - 10°C ~ + 90°C | | | | | | | |
| 防護等級 Protection Class | | | IP 64 | | | | | | | |
| 潤滑油 Lubrication | | | 人工合成潤滑油 Synthetic oil viscosity | | | | ISO VG220 | | | |
| 轉動慣量 J_1 Mass Moments of Inertia | kg · cm ² | 3 | 4.73 | 5.90 | 10.50 | 16.22 | 37.40 | 72.10 | 140.80 | |
| | | 4 | 4.22 | 5.09 | 9.10 | 12.90 | 29.80 | 50.50 | 97.10 | |
| | | 5 | 4.13 | 4.93 | 8.85 | 12.30 | 28.43 | 45.20 | 87.40 | |
| | | 6 | 4.08 | 4.89 | 8.63 | 11.88 | 27.67 | 44.10 | 84.50 | |
| | | 7 | 4.05 | 4.83 | 8.50 | 11.83 | 27.55 | 42.60 | 81.40 | |
| | | 8 | 4.04 | 4.83 | 8.48 | 11.80 | 27.47 | 42.20 | 80.10 | |
| | | 10 | 4.04 | 4.81 | 8.46 | 11.70 | 27.45 | 41.90 | 79.80 | |

註(1)本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。
 註(2)場用期內可作1000次之動作。
 註(3)輸出轉速100rpm作用於輸出軸中心。
 註(4)噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。
 Note (1) The data can be applied to starting frequency less than 1000 times per hour. Please contact us if more.
 Note (2) Operation can be up to 1000 times in product life.
 Note (3) It acts on in the output shaft center at output speed 100 rpm.
 Note (4) Noise inspection of ratio-5 reducers measure at input speed 3000 rpm, in 1-meter distance, and with free-load operation.
 · 連續運轉將會減少減速機二分之一的使用壽命。
 · 客戶所需之減速比，若非表內所有，可與本公司洽詢。
 · Continuous operation will cause half of reducer life decreased.
 · If any customized ratios are not available from above, please contact us.

HG外觀尺寸 (單段 3/4/5/6/7/8/10比) [mm]



Dimensions (1-Stage 3/4/5/6/7/8/10 Ratio) [mm]



| 規格 Size | HG100 | HG120 | HG140 | HG160 | HG180 | HG210 | HG240 |
|------------|-------|-------|-------|-------|-------|-------|-------|
| W1 | 100 | 120 | 140 | 160 | 182 | 210 | 240 |
| ※ W2 min. | 118 | 130 | 140 | 175 | 190 | 190 | 240 |
| D1(g6) | 90 | 110 | 130 | 145 | 160 | 180 | 200 |
| D2 | 60 | 65 | 75 | 85 | 95 | 125 | 140 |
| D3(h8) | 36 | 44 | 50 | 55 | 62 | 75 | 90 |
| D4(H6) | 29 | 35 | 40 | 45 | 50 | 60 | 70 |
| D5(H7) | 24 | 30 | 30 | 36 | 40 | 50 | 60 |
| D6(F7)max. | 32 | 35 | 38 | 42 | 48 | 55 | 60 |
| D7 | 9 | 9 | 11 | 13 | 13 | 17 | 17 |
| D8 | 120 | 130 | 165 | 190 | 215 | 250 | 290 |
| D9 | 135 | 155 | 185 | 215 | 240 | 279 | 320 |
| ※ L1 | 183.5 | 197.5 | 221.5 | 226.5 | 260 | 292.5 | 348 |
| L2 | 36 | 35 | 40 | 42 | 45 | 48 | 56 |
| L3 | 32 | 30 | 31 | 30 | 30 | 38 | 40 |
| L4 | 10 | 11 | 12 | 13.5 | 15 | 17 | 20 |
| L5 | 97.5 | 104 | 116 | 120 | 137 | 156.5 | 174 |
| ※ L6 | 28 | 28.5 | 34.5 | 34.5 | 48 | 50 | 78 |
| L7 | 4 | 3 | 4 | 3 | 3 | 3 | 3 |
| ※ L8 | 52 | 52 | 60 | 60 | 82 | 82 | 110 |
| L9 | 11.5 | 12.8 | 14.3 | 14.3 | 17.8 | 18.5 | 22.5 |
| L10 | 24 | 24 | 25.5 | 25.5 | 34 | 32 | 32 |
| L11 | 22 | 24.5 | 27 | 27 | 33.5 | 34.5 | 41 |
| L12 | 30 | 42 | 43 | 50 | 55 | 66 | 76 |
| L13 | 45 | 62 | 63 | 75 | 85 | 100 | 112 |

- ※此記號表示之尺寸視聯結之伺服馬達不同而有所變動。
- 本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如需確實之尺寸，可洽本公司。
- ※Actual dimensions may vary with different servo motor collocation.
- We persistently research in and develop our products, and we have made every effort to maintain the specification data above correct. If there is any discrepancy between the data and real dimensions, please refer to products or may contact us for updated data.

| 規 格 Size | | 減速比 I | HG100 | HG120 | HG140 | HG160 | HG180 | HG210 | HG240 | |
|--|----------------------|----------------|--|-------|-------|-------|-----------|-------|-------|--|
| 最大加速扭矩 $T_{2B}^{(1)}$ Output Torque | Nm | 12/15 | 202 | 330 | 440 | 735 | 1055 | 1750 | 3600 | |
| | | 16/20/25/40/50 | 270 | 350 | 510 | 810 | 1300 | 2600 | 4100 | |
| | | 30/60 | 250 | 340 | 445 | 730 | 1180 | 2150 | 3780 | |
| | | 28/35/70 | 240 | 310 | 440 | 700 | 1130 | 1680 | 3500 | |
| | | 80 | 215 | 285 | 410 | 650 | 1040 | 1600 | 3300 | |
| | | 100 | 190 | 245 | 340 | 500 | 900 | 1500 | 2700 | |
| 緊急停止扭矩 $T_{2Not}^{(2)}$ Emergency Stop Torque | Nm | 12/15 | 630 | 800 | 1100 | 1700 | 3000 | 6200 | 9000 | |
| | | 16/20/25/40/50 | 710 | 900 | 1260 | 1850 | 3250 | 6480 | 9500 | |
| | | 30/60 | 650 | 800 | 1120 | 1700 | 2880 | 5500 | 8950 | |
| | | 28/35/70 | 625 | 780 | 1100 | 1600 | 2800 | 5000 | 8650 | |
| | | 80 | 550 | 690 | 1025 | 1470 | 2560 | 4600 | 7200 | |
| | | 100 | 500 | 650 | 900 | 1250 | 2220 | 3900 | 6800 | |
| 額定輸出扭矩 T_{2N} Nominal output Torque | Nm | 12/15 | 135 | 195 | 315 | 500 | 880 | 1200 | 2000 | |
| | | 16/20/25/40/50 | 185 | 240 | 340 | 550 | 1100 | 1900 | 2600 | |
| | | 30/60 | 155 | 210 | 320 | 460 | 845 | 1580 | 2250 | |
| | | 28/35/70 | 125 | 180 | 315 | 430 | 820 | 1050 | 1700 | |
| | | 80 | 120 | 175 | 293 | 410 | 755 | 1000 | 1660 | |
| | | 100 | 115 | 160 | 220 | 350 | 650 | 950 | 1550 | |
| 減速比 I | | 雙段 | 12/15/16/20/25/28/30/35/40/50/60/70/80/100 | | | | | | | |
| 額定輸入轉速 n_{1N} Nominal Input Speed | rpm | 12~40 | 3200 | 3000 | 3000 | 2900 | 2800 | 2200 | 2000 | |
| | | 50~60 | 3600 | 3300 | 3200 | 3100 | 3000 | 2400 | 2200 | |
| | | 70~100 | 4200 | 3900 | 3500 | 3300 | 3200 | 2800 | 2400 | |
| 最大輸入轉速 n_{1Max} Max. Input Speed | rpm | 12~100 | 4500 | 4000 | 3600 | 3600 | 3600 | 3000 | 3000 | |
| 徑向負荷力 $F_{rMax}^{(3)}$ Radial Load | N | 12~100 | 6000 | 7500 | 9000 | 11500 | 14000 | 18000 | 27000 | |
| 軸向負荷力 $F_{aMax}^{(3)}$ Axial Load | N | 12~100 | 5400 | 6700 | 9000 | 11300 | 14000 | 18000 | 27000 | |
| 超精密背隙 Micro Backlash | arcmin | 12~100 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | |
| 精密背隙 Reduced Backlash | arcmin | 12~100 | ≤5 | ≤5 | ≤5 | ≤5 | ≤4 | ≤4 | ≤4 | |
| 標準背隙 Standard Backlash | arcmin | 12~100 | ≤7 | ≤7 | ≤7 | ≤7 | ≤6 | ≤6 | ≤6 | |
| 扭轉剛性 Torsional Rigidity | Nm/ arcmin | 12~100 | 23 | 35 | 50 | 95 | 150 | 220 | 355 | |
| 滿載時使用效率 Efficiency with Full Load | % | 12~100 | ≥94 | | | | | | | |
| 使用壽命 L_{h2} Service Life | h | 12~100 | 20000 | | | | | | | |
| 重量 | kg | 12~100 | 9.2 | 15.2 | 20.3 | 23.7 | 35.5 | 59 | 87 | |
| 噪音值 $^{(4)}$ Noise Level | dB | | ≤60 | ≤65 | | | ≤66 | ≤68 | | |
| 使用溫度範圍 Permissible Gear Reducer Temp | °C | | - 10°C ~ + 90°C | | | | | | | |
| 防護等級 Protection Class | | | IP 64 | | | | | | | |
| 潤滑油 Lubrication | | | 人工合成潤滑油 Synthetic oil viscosity | | | | ISO VG220 | | | |
| 轉動慣量 J_1 Mass Moments of Inertia | kg · cm ² | 12 | 4.73 | 5.90 | 10.50 | 10.50 | 11.00 | 37.50 | 37.70 | |
| | | 15 | 4.73 | 5.90 | 10.50 | 10.50 | 11.00 | 37.50 | 37.70 | |
| | | 16 | 4.20 | 5.09 | 9.00 | 9.30 | 9.30 | 30.00 | 31.30 | |
| | | 20 | 4.20 | 5.07 | 9.00 | 9.20 | 9.30 | 30.00 | 31.00 | |
| | | 25 | 4.12 | 4.91 | 8.83 | 9.00 | 9.05 | 28.70 | 30.10 | |
| | | 28 | 4.20 | 5.07 | 9.00 | 9.20 | 9.20 | 29.90 | 31.00 | |
| | | 30 | 4.08 | 4.90 | 8.63 | 8.65 | 8.65 | 27.70 | 29.05 | |
| | | 35 | 4.12 | 4.91 | 8.82 | 8.90 | 9.03 | 28.80 | 30.08 | |
| | | 40 | 4.04 | 4.80 | 8.45 | 8.50 | 8.52 | 27.70 | 28.70 | |
| | | 50 | 4.04 | 4.80 | 8.45 | 8.49 | 8.52 | 27.70 | 28.70 | |
| | | 60 | 4.04 | 4.80 | 8.45 | 8.49 | 8.50 | 27.70 | 28.55 | |
| 70 | 4.04 | 4.80 | 8.45 | 8.49 | 8.50 | 27.70 | 28.50 | | | |
| 80 | 4.04 | 4.80 | 8.45 | 8.49 | 8.50 | 27.70 | 28.50 | | | |
| 100 | 4.04 | 4.80 | 8.45 | 8.48 | 8.50 | 27.70 | 28.50 | | | |

註(1)本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。 Note (1) The data can be applied to starting frequency less than 1000 times per hour. Please contact us if more.

註(2)滿用期內可作1000次之動作。 Note (2) Operation can be up to 1000 times in product life.

註(3)輸出轉速100rpm作用於輸出軸中心。 Note (3) It acts on in the output shaft center at output speed 100 rpm.

註(4)噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。 Note (4) Noise inspection of ratio-5 reducers measure at input speed 3000 rpm, in 1-meter distance, and with free-load operation.

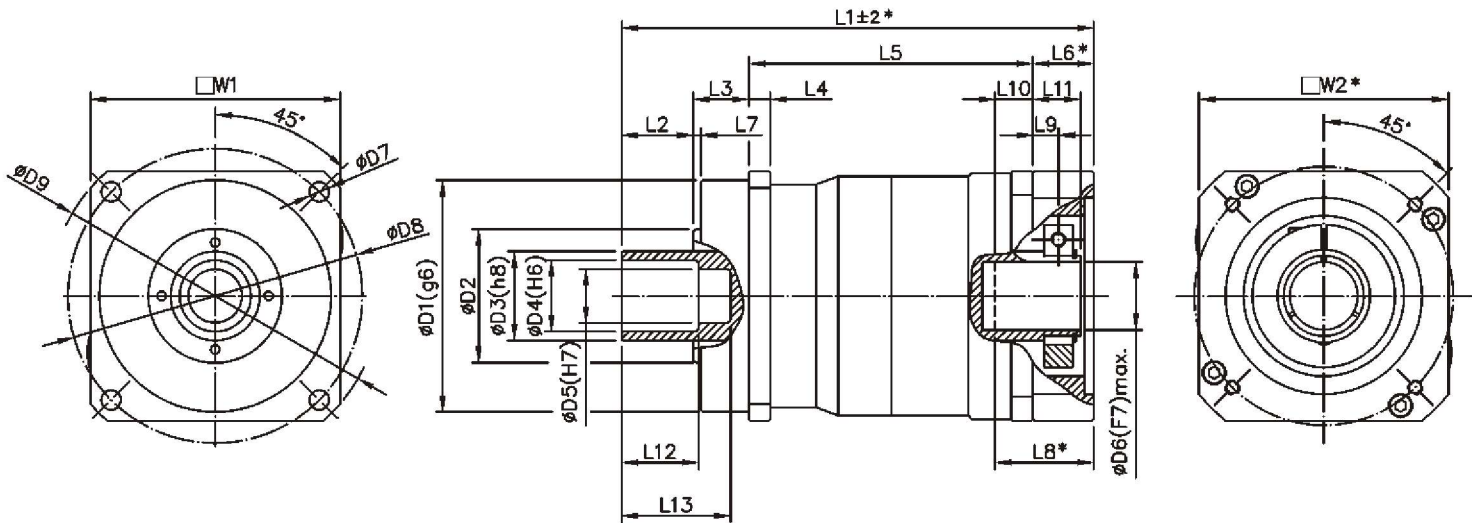
- 連續運轉將會減少減速機二分之一的使用壽命。
- 客戶所需之減速比，若非表內所有，可與本公司洽詢。

- Continuous operation will cause half of reducer life decreased.
- If any customized ratios are not available from above, please contact us.

HG外觀尺寸 (雙段12~100比) [mm]



Dimensions (2-Stage 12~100 Ratio) [mm]



| 規格 Size | HG100 | HG120 | HG140 | HG160 | HG180 | HG210 | HG240 |
|-------------|-------|-------|-------|-------|-------|-------|-------|
| W1 | 100 | 120 | 140 | 160 | 182 | 210 | 240 |
| ※ W2 min. | 118 | 130 | 140 | 140 | 140 | 190 | 190 |
| D1(g6) | 90 | 110 | 130 | 145 | 160 | 180 | 200 |
| D2 | 60 | 65 | 75 | 85 | 95 | 125 | 140 |
| D3(h8) | 36 | 44 | 50 | 55 | 62 | 75 | 90 |
| D4(H6) | 29 | 35 | 40 | 45 | 50 | 60 | 70 |
| D5(H7) | 24 | 30 | 30 | 36 | 40 | 50 | 60 |
| D6(F7) max. | 32 | 35 | 38 | 38 | 38 | 48 | 48 |
| D7 | 9 | 9 | 11 | 13 | 13 | 17 | 17 |
| D8 | 120 | 130 | 165 | 190 | 215 | 250 | 290 |
| D9 | 135 | 155 | 185 | 215 | 240 | 279 | 320 |
| ※ L1 | 222 | 237.5 | 264.5 | 269.5 | 281 | 338.5 | 366 |
| L2 | 36 | 35 | 40 | 42 | 45 | 48 | 56 |
| L3 | 32 | 30 | 31 | 30 | 30 | 38 | 40 |
| L4 | 10 | 11 | 12 | 13.5 | 15 | 17 | 20 |
| L5 | 136 | 144 | 159 | 163 | 171.5 | 204.5 | 222 |
| ※ L6 | 28 | 28.5 | 34.5 | 34.5 | 34.5 | 48 | 48 |
| L7 | 4 | 3 | 4 | 3 | 3 | 3 | 3 |
| ※ L8 | 52 | 52 | 60 | 60 | 60 | 82 | 82 |
| L9 | 11.5 | 12.8 | 14.3 | 14.3 | 14.3 | 17.8 | 17.8 |
| L10 | 24 | 24 | 25.5 | 25.5 | 25.5 | 34 | 34 |
| L11 | 22 | 24.5 | 27 | 27 | 27 | 33.5 | 33.5 |
| L12 | 30 | 42 | 43 | 50 | 55 | 66 | 76 |
| L13 | 45 | 62 | 63 | 75 | 85 | 100 | 112 |

• ※此記號表示之尺寸視聯結之伺服馬達不同而有所變動。
 • 本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如需確實之尺寸，可洽本公司。

• ※Actual dimensions may vary with different servo motor collocation.

• We persistently research in and develop our products, and we have made every effort to maintain the specification data above correct. If there is any discrepancy between the data and real dimensions, please refer to products or may contact us for updated data.

此為獨特中空軸設計，輸出端可用較少齒數齒輪，伺服馬達可選用較小規格達到高經濟效益，且輸出端增加外罩箱體及軸承，可大幅提升徑向負乘載，特別適用於高起動性和反應靈敏的機械。

HP series is designed to have a unique hollow output shaft, available for installation of a gear with fewer teeth and compatible with a smaller servo motor. Less torque is required to start operation, which produces higher economic benefits. An outer cover with bearing, added on the output side, is able to much increase radial load. As a result, this series is suitable for use in high dynamic and versatile machines.

高經濟效益 High dynamics and economical effects

- 高強度較少齒數齒輪，伺服馬達可選用較小規格，獲得最小啓動扭矩、較大剛性達到高經濟效益。
- Unique hollow output shaft design, could select the less teeth of pinion, smaller servo motor, achieve the low moment of inertia of start-up and the better economical effects. Operate smoothly and low noise.

運轉順暢、低噪音 Operate smooth, low noise

- 小齒輪及齒條採螺旋系配合，並經硬化處理和精密研磨。
- Hardened and ground pinion and rack adopt helical teeth.

可承受較大彎曲力矩 Loading the huge bending torque

- 小齒輪輔以一滾珠軸承支撐。
- Pinion supported by bearings on both side.

減速機可承受大負荷軸/徑向推力 Affording the huge radial and axial load

- 減速機輸出軸裝有一組高強度的滾錐軸承。
- Using high quality taper roller bearing to strength tne radial and axial force

小齒輪與齒條可調整至最佳精度 Rack and pinion can be adjusted to best precision

- 透過偏心的聯接板，結構簡單，小齒輪位置易調整。
- With the eccentric plate and simplified structure could be adjuted the position of pinion easily

反應靈敏 High dynamics and prompt response

- 由於啓動扭矩小，使系統反應靈敏。
- Agile reactiov due to low moment of the inertia.

極佳的線性定位精度 High positioning accuracy

- 小齒輪與齒條採用研磨級系列製品，齒條累積節距誤差精度為0.03/1000mm。
- Adopting ground rack and pinion; cumulative pitch error 0.03/1000mm

壽命長 Long service life

集合下列整體綜效

- 歐規的設計結構
- 精選的西歐名牌軸承
- 德製的油封
- 齒輪經硬化處理和精密研磨
- 採高防護指數的油潤滑

Due to these characteristics as below

- Well design and structure
- Using high quality taper roller bearing
- High quality German seal
- Harden and ground gear
- Best-cnosen synthetic oil



應用範圍 SCOPES :

↓ 工具機業 MACHINE TOOLS

CNC龍門銑床 / CNC龍門磨床
CNC綜合加工機 / CNC鑽孔機
CNC龍門刨床 / CNC沖床
CNC重型臥車·立車

CNC Gantry Milling Machine / CNC Gantry Grinding Machine
CNC Integrated Processing Machine / CNC Drilling Machine
CNC Gantry Planing Mill / CNC Punching Machine
CNC Heavy Duty Lathe (Horizontal or Vertical Spindle)

↓ 產業機械 SPECIAL PURPOSE MACHINE

包裝機械 / 印刷機 / 攻牙機
紡織機械 / 彎管機 / CNC沖壓機
木工機 / 吹瓶機 / 雕刻機
充填機 / 射出成型機 / CNC彈簧機
雷射切割機

Packaging Machinery / Print Machine / Tapping machine
Textile Machinery / Tube Bending Machine / CNC Press
Woodworking Machine / Blow Molding Machine / Engraving Machine
Filling Machine / Injection Molding Machine / Spring Machine
Laser Cutting Machine

↓ 工廠自動化工業 ACTORY AUTOMATION

半導體機械設備 / 光電面板業
機械手臂 / 自動倉儲運搬系統
醫療產業 / 金屬表面處理設備
高扭力定位系統應用
搭配伺服馬達之自動化機械裝置

Semiconductor Machinery and Equipment / Photoelectric Panel Industry
Gantry Loader / Automated Storage and Retrieval System
Medical Industry / Metal Surface Treatment Equipment
High Torque Positioning System Applications
Automatic Mechanical Device with Servo Motor Collocation

| 規 格 Size | | | HP111 | HP131 | HP151 | HP171 | HP191 | HP221 | HP251 | |
|---|----------------------|----------|------------------------------------|-------|-------|-------|-----------|-------|--------|--|
| 最大加速扭矩 $T_{2B(1)}$ Output Torque | Nm | 減速比 i | | | | | | | | |
| | | 3 | 208 | 338 | 450 | 750 | 1080 | 1800 | 3690 | |
| | | 4/5 | 280 | 362 | 530 | 850 | 1360 | 2720 | 4295 | |
| | | 6 | 260 | 350 | 455 | 745 | 1205 | 2210 | 3870 | |
| | | 7 | 247 | 320 | 450 | 720 | 1160 | 1730 | 3610 | |
| | | 8 | 220 | 295 | 420 | 668 | 1055 | 1645 | 3400 | |
| 緊急停止扭矩 $T_{2Not(2)}$ Emergency Stop Torque | Nm | 3 | 630 | 800 | 1100 | 1700 | 3000 | 6200 | 9000 | |
| | | 4/5 | 710 | 900 | 1260 | 1850 | 3250 | 6480 | 9500 | |
| | | 6 | 650 | 800 | 1120 | 1700 | 2880 | 5500 | 8950 | |
| | | 7 | 625 | 780 | 1100 | 1600 | 2800 | 5000 | 8650 | |
| | | 8 | 550 | 690 | 1025 | 1470 | 2560 | 4600 | 7200 | |
| | | 10 | 500 | 650 | 900 | 1250 | 2220 | 3900 | 6800 | |
| 額定輸出扭矩 T_{2N} Nomlnal output Torque | Nm | 3 | 138 | 200 | 322 | 515 | 900 | 1230 | 2060 | |
| | | 4/5 | 192 | 250 | 355 | 580 | 1150 | 1990 | 2720 | |
| | | 6 | 158 | 215 | 325 | 470 | 865 | 1620 | 2315 | |
| | | 7 | 130 | 185 | 320 | 443 | 843 | 1080 | 1750 | |
| | | 8 | 125 | 180 | 300 | 420 | 775 | 1025 | 1700 | |
| | | 10 | 118 | 165 | 226 | 360 | 670 | 970 | 1588 | |
| 減速比 i | | 單段 | 3/4/5/6/7/8/10 | | | | | | | |
| 額定輸入轉速 n_{1N} Nomlnal Input Speed | rpm | 3/4/5 | 2600 | 2300 | 2200 | 1800 | 1500 | 1200 | 1100 | |
| | | 6/7/8/10 | 2900 | 2700 | 2700 | 2500 | 2400 | 1700 | 1600 | |
| 最大輸入轉速 n_{1Max} | rpm | 3~10 | 4500 | 4000 | 3600 | 3200 | 3000 | 2500 | 2200 | |
| 徑向負荷力 $F_{rMax(3)}$ Radial Load | N | 3~10 | 9600 | 12000 | 14400 | 18400 | 22400 | 28800 | 43200 | |
| 軸向負荷力 $F_{aMax(3)}$ Axial Load | N | 3~10 | 5400 | 6700 | 9000 | 11300 | 14000 | 18000 | 27000 | |
| 超精密背隙 Micro Backlash | arcmin | 3~10 | ≤1 | ≤1 | ≤1 | ≤1 | ≤1 | ≤1 | ≤1 | |
| 精密背隙 Reduced Backlash | arcmin | 3~10 | ≤3 | ≤3 | ≤3 | ≤3 | ≤2 | ≤2 | ≤2 | |
| 標準背隙 Standard Backlash | arcmin | 3~10 | ≤5 | ≤5 | ≤5 | ≤5 | ≤4 | ≤4 | ≤4 | |
| 扭轉剛性 Torsional Rigidity | Nm/ arcmin | 3~10 | 23 | 35 | 50 | 95 | 150 | 220 | 355 | |
| 滿載時使用效率 Efficiency with Full Load | % | 3~10 | ≥97 | | | | | | | |
| 使用壽命 L_{h2} Service Life | h | 3~10 | 20000 | | | | | | | |
| 重量 | kg | 3~10 | 10 | 15 | 18.5 | 26 | 36 | 62 | 91 | |
| 噪音值 (4) Noise Level | dB | | ≤62 | ≤65 | | | ≤66 | ≤68 | | |
| 使用溫度範圍 Permissible Gear Reducer Temp | °C | | - 10°C ~ + 90°C | | | | | | | |
| 防護等級 Protection Class | | | IP 64 | | | | | | | |
| 潤滑油 Lubrication | | | 人工合成潤滑油 Synthetic oil viscosity | | | | ISO VG220 | | | |
| 轉動慣量 J_1 Mass Moments of Inertia | kg · cm ² | 3 | 4.73 | 5.90 | 10.50 | 16.22 | 37.40 | 72.10 | 140.80 | |
| | | 4 | 4.22 | 5.09 | 9.10 | 12.90 | 29.80 | 50.50 | 97.10 | |
| | | 5 | 4.13 | 4.93 | 8.85 | 12.30 | 28.43 | 45.20 | 87.40 | |
| | | 6 | 4.08 | 4.89 | 8.63 | 11.88 | 27.67 | 44.10 | 84.50 | |
| | | 7 | 4.05 | 4.83 | 8.50 | 11.83 | 27.55 | 42.60 | 81.40 | |
| | | 8 | 4.04 | 4.83 | 8.48 | 11.80 | 27.47 | 42.20 | 80.10 | |
| 10 | 4.04 | 4.81 | 8.46 | 11.70 | 27.45 | 41.90 | 79.80 | | | |

註(1) 本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。
 Note (1) The data can be applied to starting frequency less than 1000 times per hour. Please contact us if more.

註(2) 場用期內可作1000次之動作。
 Note (2) Operation can be up to 1000 times in product life.

註(3) 輸出轉速100rpm作用於輸出軸中心。
 Note (3) It acts on in the output shaft center at output speed 100 rpm.

註(4) 噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。
 Note (4) Noise inspection of ratio-5 reducers measure at input speed 3000 rpm, in 1-meter distance, and with free-load operation.

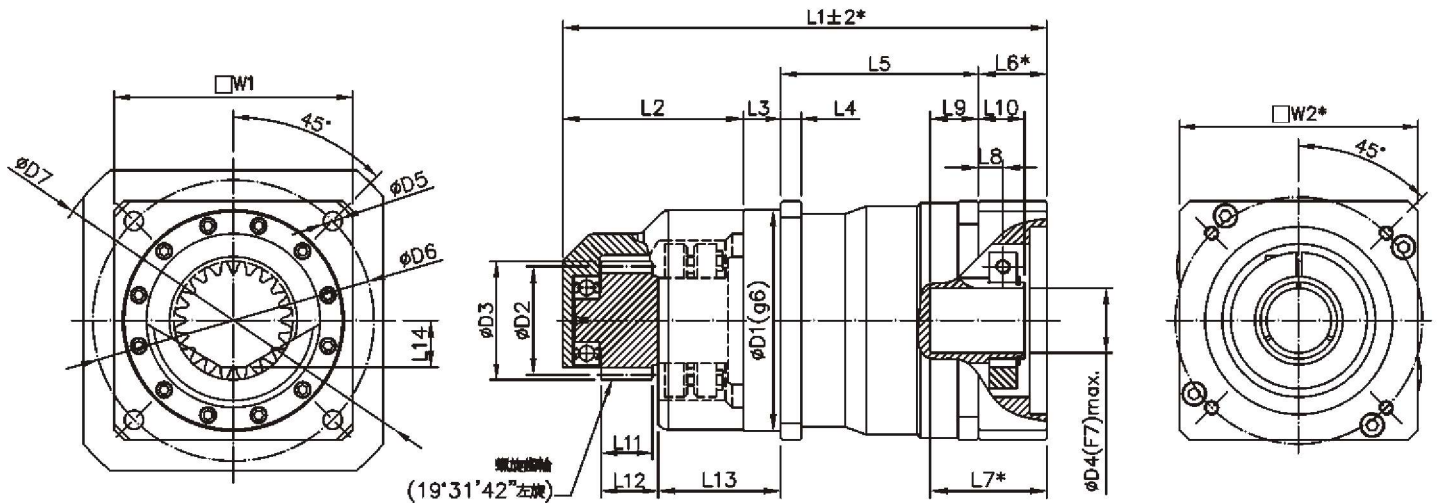
· 連續運轉將會減少減速機二分之一的使用壽命。
 · Continuous operation will cause half of reducer life decreased.

· 客戶所需之減速比，若非表內所有，可與本公司洽詢。
 · If any customized ratios are not available from above, please contact us.

HP 外觀尺寸 (單段 3/4/5/6/7/8/10比) [mm]



Dimensions (1-Stage 3/4/5/6/7/8/10 Ratio) [mm]



| 尺寸規格 | HP111 | | | HP131 | | | HP151 | | | HP171 | | | HP191 | | | HP221 | | | HP251 | | | | | | | | | | | | |
|--------|-------|-------|-------|--------|-------|-------|-------|-------|--------|-------|-------|--------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--|--|----|--|--|----|--|--|----|--|
| | 模數 m | 齒數 Z | | 移位係數 X | | W1 | | | *W2min | | | D1(g6) | | | D2 | | | D3 | | | D4(F7) | | | D5 | | | D6 | | | D7 | |
| 模數 m | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 齒數 Z | 18 | 21 | 24 | 24 | 27 | 30 | 20 | 22 | 25 | 15 | 18 | 21 | 15 | 18 | 21 | 15 | 18 | 21 | 15 | 18 | 20 | | | | | | | | | | |
| 移位係數 X | - | - | - | - | - | - | - | - | - | 0.355 | - | - | 0.355 | - | - | 0.3723 | - | - | 0.3756 | - | - | | | | | | | | | | |
| W1 | 100 | | | 120 | | | 140 | | | 160 | | | 182 | | | 210 | | | 240 | | | | | | | | | | | | |
| *W2min | 118 | | | 130 | | | 140 | | | 175 | | | 190 | | | 190 | | | 240 | | | | | | | | | | | | |
| D1(g6) | 90 | | | 110 | | | 130 | | | 145 | | | 160 | | | 180 | | | 200 | | | | | | | | | | | | |
| D2 | 38.2 | 44.56 | 50.93 | 50.93 | 57.29 | 63.66 | 63.66 | 70.03 | 79.58 | 63.66 | 76.39 | 89.13 | 63.66 | 76.39 | 89.13 | 79.58 | 95.49 | 111.41 | 95.49 | 114.59 | 127.32 | | | | | | | | | | |
| D3 | 42.2 | 48.56 | 54.93 | 54.93 | 61.29 | 67.66 | 69.66 | 76.03 | 85.58 | 74.5 | 84.39 | 97.13 | 74.5 | 84.39 | 97.13 | 93.3 | 105.49 | 121.41 | 112 | 126.59 | 139.32 | | | | | | | | | | |
| D4(F7) | 32 | | | 35 | | | 38 | | | 42 | | | 48 | | | 55 | | | 60 | | | | | | | | | | | | |
| D5 | 9 | | | 9 | | | 11 | | | 13 | | | 13 | | | 17 | | | 17 | | | | | | | | | | | | |
| D6 | 120 | | | 130 | | | 165 | | | 190 | | | 215 | | | 250 | | | 290 | | | | | | | | | | | | |
| D7 | 135 | | | 155 | | | 185 | | | 215 | | | 240 | | | 279 | | | 320 | | | | | | | | | | | | |
| *L1 | 225.5 | | | 243 | | | 277.5 | | | 291 | | | 325.5 | | | 372.5 | | | 439 | | | | | | | | | | | | |
| L2 | 75 | | | 87.5 | | | 105 | | | 114.5 | | | 118.5 | | | 136 | | | 156 | | | | | | | | | | | | |
| L3 | 25 | | | 23 | | | 22 | | | 22 | | | 22 | | | 30 | | | 31 | | | | | | | | | | | | |
| L4 | 10 | | | 11 | | | 12 | | | 13.5 | | | 15 | | | 17 | | | 20 | | | | | | | | | | | | |
| L5 | 97.5 | | | 104 | | | 116 | | | 120 | | | 137 | | | 156.5 | | | 174 | | | | | | | | | | | | |
| *L6 | 28 | | | 28.5 | | | 34.5 | | | 34.5 | | | 48 | | | 50 | | | 78 | | | | | | | | | | | | |
| *L7 | 52 | | | 52 | | | 60 | | | 60 | | | 82 | | | 82 | | | 110 | | | | | | | | | | | | |
| L8 | 11.5 | | | 12.8 | | | 14.3 | | | 14.3 | | | 17.8 | | | 18.5 | | | 22.5 | | | | | | | | | | | | |
| L9 | 24 | | | 24 | | | 25.5 | | | 25.5 | | | 34 | | | 32 | | | 32 | | | | | | | | | | | | |
| L10 | 22 | | | 24.5 | | | 27 | | | 27 | | | 33.5 | | | 34.5 | | | 41 | | | | | | | | | | | | |
| L11 | 25 | | | 25 | | | 30 | | | 40 | | | 40 | | | 50 | | | 60 | | | | | | | | | | | | |
| L12 | 28.5 | | | 28.5 | | | 33.5 | | | 43.5 | | | 45.5 | | | 55.5 | | | 68 | | | | | | | | | | | | |
| L13 | 58 | | | 64.75 | | | 72 | | | 71.75 | | | 72.75 | | | 86 | | | 91.5 | | | | | | | | | | | | |
| L14 | 16.2 | | | 22.5 | | | 27.5 | | | 27.5 | | | 27.5 | | | 34.5 | | | 41 | | | | | | | | | | | | |

| 規 格 Size | | 減速比 I | HP112 | HP132 | HP152 | HP172 | HP192 | HP222 | HP252 | |
|---|----------------------|----------------|--|-------|-------|-------|-----------|-------|-------|--|
| 最大加速扭矩 $T_{2B(1)}$ Output Torque | Nm | 12/15 | 208 | 338 | 450 | 750 | 1080 | 1800 | 3690 | |
| | | 16/20/25/40/50 | 280 | 362 | 530 | 850 | 1360 | 2720 | 4295 | |
| | | 30/60 | 260 | 350 | 455 | 745 | 1205 | 2210 | 3870 | |
| | | 28/35/70 | 247 | 320 | 450 | 720 | 1160 | 1730 | 3610 | |
| | | 80 | 220 | 295 | 420 | 668 | 1055 | 1645 | 3400 | |
| | | 100 | 194 | 250 | 347 | 510 | 920 | 1535 | 2760 | |
| 緊急停止扭矩 $T_{2Not(2)}$ Emergency Stop Torque | Nm | 12/15 | 630 | 800 | 1100 | 1700 | 3000 | 6200 | 9000 | |
| | | 16/20/25/40/50 | 710 | 900 | 1260 | 1850 | 3250 | 6480 | 9500 | |
| | | 30/60 | 650 | 800 | 1120 | 1700 | 2880 | 5500 | 8950 | |
| | | 28/35/70 | 625 | 780 | 1100 | 1600 | 2800 | 5000 | 8650 | |
| | | 80 | 550 | 690 | 1025 | 1470 | 2560 | 4600 | 7200 | |
| | | 100 | 500 | 650 | 900 | 1250 | 2220 | 3900 | 6800 | |
| 額定輸出扭矩 T_{2N} Nominal output Torque | Nm | 12/15 | 138 | 200 | 322 | 515 | 900 | 1230 | 2060 | |
| | | 16/20/25/40/50 | 192 | 250 | 355 | 580 | 1150 | 1990 | 2720 | |
| | | 30/60 | 158 | 215 | 325 | 470 | 865 | 1620 | 2315 | |
| | | 28/35/70 | 130 | 185 | 320 | 443 | 843 | 1080 | 1750 | |
| | | 80 | 125 | 180 | 300 | 420 | 775 | 1025 | 1700 | |
| | | 100 | 118 | 165 | 226 | 360 | 670 | 970 | 1588 | |
| 減速比 I | | 雙段 | 12/15/16/20/25/28/30/35/40/50/60/70/80/100 | | | | | | | |
| 額定輸入轉速 n_{1N} Nominal Input Speed | rpm | 12~40 | 3200 | 3000 | 3000 | 2900 | 2800 | 2200 | 2000 | |
| | | 50~60 | 3600 | 3300 | 3200 | 3100 | 3000 | 2400 | 2200 | |
| | | 70~100 | 4200 | 3900 | 3500 | 3300 | 3200 | 2800 | 2400 | |
| 最大輸入轉速 n_{1Max} Max. Input Speed | rpm | 12~100 | 4500 | 4000 | 3600 | 3600 | 3600 | 3000 | 3000 | |
| 徑向負荷力 $F_{rMax(3)}$ Radial Load | N | 12~100 | 9600 | 12000 | 14400 | 18400 | 22400 | 28800 | 43200 | |
| 軸向負荷力 $F_{aMax(3)}$ Axial Load | N | 12~100 | 5400 | 6700 | 9000 | 11300 | 14000 | 18000 | 27000 | |
| 超精密背隙 Micro Backlash | arcmin | 12~100 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | |
| 精密背隙 Reduced Backlash | arcmin | 12~100 | ≤5 | ≤5 | ≤5 | ≤5 | ≤4 | ≤4 | ≤4 | |
| 標準背隙 Standard Backlash | arcmin | 12~100 | ≤7 | ≤7 | ≤7 | ≤7 | ≤6 | ≤6 | ≤6 | |
| 扭轉剛性 Torsional Rigidity | Nm/ arcmin | 12~100 | 23 | 35 | 50 | 95 | 150 | 220 | 355 | |
| 滿載時使用效率 Efficiency with Full Load | % | 12~100 | ≥94 | | | | | | | |
| 使用壽命 L_{h2} Service Life | h | 12~100 | 20000 | | | | | | | |
| 重量 | kg | 12~100 | 11.2 | 18.2 | 22.8 | 26.7 | 38.5 | 65 | 93 | |
| 噪音值 (4) Noise Level | dB | | ≤62 | ≤65 | | | ≤66 | ≤68 | | |
| 使用溫度範圍 Permissible Gear Reducer Temp | °C | | - 10°C ~ + 90°C | | | | | | | |
| 防護等級 Protection Class | | | IP 64 | | | | | | | |
| 潤滑油 Lubrication | | | 人工合成潤滑油 Synthetic oil viscosity | | | | ISO VG220 | | | |
| 轉動慣量 J_1 Mass Moments of Inertia | kg · cm ² | 12 | 4.73 | 5.90 | 10.50 | 10.50 | 11.00 | 37.50 | 37.70 | |
| | | 15 | 4.73 | 5.90 | 10.50 | 10.50 | 11.00 | 37.50 | 37.70 | |
| | | 16 | 4.20 | 5.09 | 9.00 | 9.30 | 9.30 | 30.00 | 31.30 | |
| | | 20 | 4.20 | 5.07 | 9.00 | 9.20 | 9.30 | 30.00 | 31.00 | |
| | | 25 | 4.12 | 4.91 | 8.83 | 9.00 | 9.05 | 28.70 | 30.10 | |
| | | 28 | 4.20 | 5.07 | 9.00 | 9.20 | 9.20 | 29.90 | 31.00 | |
| | | 30 | 4.08 | 4.90 | 8.63 | 8.65 | 8.65 | 27.70 | 29.05 | |
| | | 35 | 4.12 | 4.91 | 8.82 | 8.90 | 9.03 | 28.80 | 30.08 | |
| | | 40 | 4.04 | 4.80 | 8.45 | 8.50 | 8.52 | 27.70 | 28.70 | |
| | | 50 | 4.04 | 4.80 | 8.45 | 8.49 | 8.52 | 27.70 | 28.70 | |
| | | 60 | 4.04 | 4.80 | 8.45 | 8.49 | 8.52 | 27.70 | 28.55 | |
| | | 70 | 4.04 | 4.80 | 8.45 | 8.49 | 8.50 | 27.70 | 28.50 | |
| 80 | 4.04 | 4.80 | 8.45 | 8.48 | 8.50 | 27.70 | 28.50 | | | |
| 100 | 4.04 | 4.80 | 8.45 | 8.48 | 8.50 | 27.70 | 28.50 | | | |

註(1)本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。 Note (1) The data can be applied to starting frequency less than 1000 times per hour. Please contact us if more.

註(2)堪用期內可作1000次之動作。 Note (2) Operation can be up to 1000 times in product life.

註(3)輸出轉速100rpm作用於輸出軸中心。 Note (3) It acts on in the output shaft center at output speed 100 rpm.

註(4)噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。 Note (4) Noise inspection of ratio-5 reducers measure at input speed 3000 rpm, in 1-meter distance, and with free-load operation.

· 連續運轉將會減少減速機二分之一的使用壽命。

· Continuous operation will cause half of reducer life decreased.

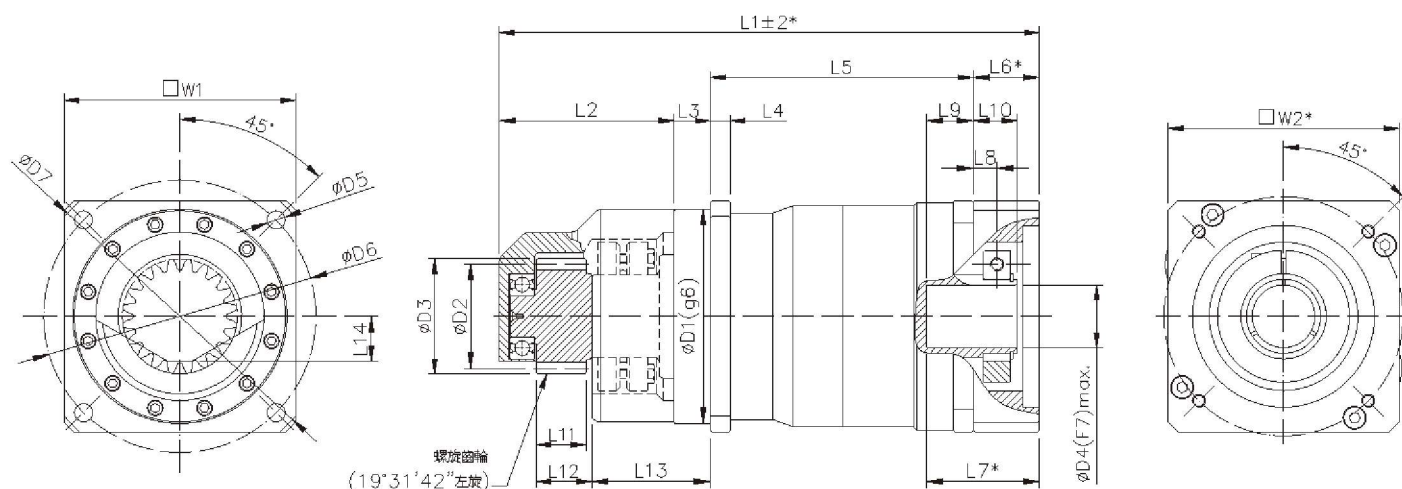
· 客戶所需之減速比，若非表內所有，可與本公司洽詢。

· If any customized ratios are not available from above, please contact us.

HP 外觀尺寸 (雙段 12~100比) [mm]



Dimensions (2-Stage 12~100 Ratio) [mm]



| 尺寸規格 | HP112 | | | HP132 | | | HP152 | | | HP172 | | | HP192 | | | HP222 | | | HP252 | | |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|
| | 模數 m | 2 | | | 2 | | | 3 | | | 4 | | | 4 | | | 5 | | | 6 | |
| 齒數 Z | 18 | 21 | 24 | 24 | 27 | 30 | 20 | 22 | 25 | 15 | 18 | 21 | 15 | 18 | 21 | 15 | 18 | 21 | 15 | 18 | 20 |
| 移位係數 X | - | - | - | - | - | - | - | - | - | 0.355 | - | - | 0.355 | - | - | 0.3723 | - | - | 0.3756 | - | - |
| W1 | 100 | | | 120 | | | 140 | | | 160 | | | 182 | | | 210 | | | 240 | | |
| ※W2min | 118 | | | 130 | | | 140 | | | 140 | | | 140 | | | 190 | | | 190 | | |
| D1(g6) | 90 | | | 110 | | | 130 | | | 145 | | | 160 | | | 180 | | | 200 | | |
| D2 | 38.2 | 44.56 | 50.93 | 50.93 | 57.29 | 63.66 | 63.66 | 70.03 | 79.58 | 63.66 | 76.39 | 89.13 | 63.66 | 76.39 | 89.13 | 79.58 | 95.49 | 111.41 | 95.49 | 114.59 | 127.32 |
| D3 | 42.2 | 48.56 | 54.93 | 54.93 | 61.29 | 67.66 | 67.66 | 76.03 | 85.58 | 74.5 | 84.39 | 97.13 | 74.5 | 84.39 | 97.13 | 93.3 | 105.49 | 121.41 | 112 | 126.59 | 139.32 |
| D4(F7) | 32 | | | 35 | | | 38 | | | 38 | | | 38 | | | 48 | | | 48 | | |
| D5 | 9 | | | 9 | | | 11 | | | 13 | | | 13 | | | 17 | | | 17 | | |
| D6 | 120 | | | 130 | | | 165 | | | 190 | | | 215 | | | 250 | | | 290 | | |
| D7 | 135 | | | 155 | | | 185 | | | 215 | | | 240 | | | 279 | | | 320 | | |
| ※L1 | 264 | | | 283 | | | 320.5 | | | 334 | | | 360 | | | 420.5 | | | 487 | | |
| L2 | 75 | | | 87.5 | | | 105 | | | 114.5 | | | 118.5 | | | 136 | | | 156 | | |
| L3 | 25 | | | 23 | | | 22 | | | 22 | | | 22 | | | 30 | | | 31 | | |
| L4 | 10 | | | 11 | | | 12 | | | 13.5 | | | 15 | | | 17 | | | 20 | | |
| L5 | 136 | | | 144 | | | 159 | | | 163 | | | 171.5 | | | 204.5 | | | 222 | | |
| ※L6 | 28 | | | 28.5 | | | 34.5 | | | 34.5 | | | 48 | | | 50 | | | 78 | | |
| ※L7 | 52 | | | 52 | | | 60 | | | 60 | | | 82 | | | 82 | | | 82 | | |
| L8 | 11.5 | | | 12.8 | | | 14.3 | | | 14.3 | | | 14.3 | | | 17.8 | | | 17.8 | | |
| L9 | 24 | | | 24 | | | 25.5 | | | 25.5 | | | 25.5 | | | 34 | | | 34 | | |
| L10 | 22 | | | 24.5 | | | 27 | | | 27 | | | 27 | | | 33.5 | | | 33.5 | | |
| L11 | 25 | | | 25 | | | 30 | | | 40 | | | 40 | | | 50 | | | 60 | | |
| L12 | 28.5 | | | 28.5 | | | 33.5 | | | 43.5 | | | 45.5 | | | 55.5 | | | 68 | | |
| L13 | 58 | | | 64.75 | | | 72 | | | 71.75 | | | 72.75 | | | 86 | | | 91.5 | | |
| L14 | 16.2 | | | 22.5 | | | 27.5 | | | 27.5 | | | 27.5 | | | 34.5 | | | 41 | | |



選用範例：**H G 1 1 1 - 0 0 5 - R 2 1 8 A M 1 /MITSUBISHI/HCSFS102**

Example: - - /Motor

系列選擇: Type
HG / HP

規格: Size
11 / 13 / 15 / 17 / 19 / 22 / 25

段數: 1(單段) 2(雙段)
Stage 1(stage) 2(stage)

減速比: Ratio
003 004 005 006 007 008 010
012 015 016 020 025 028 030 035
040 050 060 070 080 100

馬達廠牌和型號
Motor brand and type

安裝方位: Mounting Directions
M1 M2 M3 (See below)

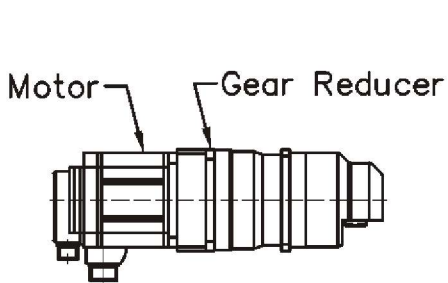
運轉方式: Operation
A(間歇cycle) B(連續continuous)

螺旋齒輪齒數: 15 18 20 21 22
24 25 27 30

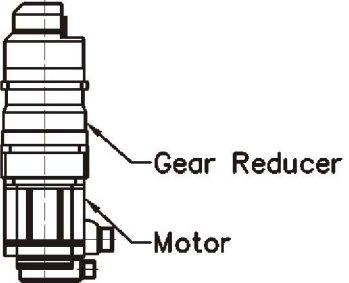
螺旋齒輪模數: Helical pinion part no as below
2 3 4 5 6

齒背隙: M(超精密) R(精密) S(標準)
Backlash: M(micro) R(reduced) S(standard)

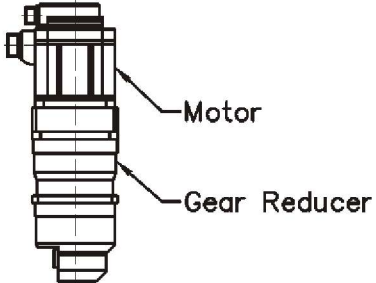
安裝方位 Directions



M1 水平
Horizontal



M2 垂直朝上
Upwards



M3 垂直朝下
Downwards

● 本公司產品陸續增加，如資料有所不符，將以本公司提供之最新資料為準，恕不另行通知。
● Our products have been developing generally, so has their information updating. If there is any discrepancy, it is subject to the updated information we offer without any notice.

免鍵軸套尺寸 Dimensions of shrink disc

| 件號 Part No. | 減速機規格 Reducer Type | d | dw | D | L1 | L2 | L3 | 螺絲數量 # Locking screws quantity | 螺絲規格 G Locking screws | 鎖緊扭力值 TA Tightening (Nm) |
|----------------|-----------------------|----|----|-----|----|------|------|-----------------------------------|--------------------------|-----------------------------|
| HY-036 | HG100/HP111/HP112 | 36 | 29 | 72 | 18 | 23.5 | 27.5 | 5 | M6 | 12 |
| HY-044 | HG120/HP131/HP132 | 44 | 35 | 80 | 20 | 25.5 | 29.5 | 7 | M6 | 12 |
| HY-050 | HG140/HP151/HP152 | 50 | 40 | 90 | 22 | 27.5 | 31.5 | 8 | M6 | 12 |
| HY-055 | HG160/HP171/HP172 | 55 | 45 | 100 | 23 | 30.5 | 34.5 | 8 | M6 | 12 |
| HY-062 | HG180/HP191/HP192 | 62 | 50 | 110 | 23 | 30.5 | 34.5 | 10 | M6 | 12 |
| HY-075 | HG210/HP221/HP222 | 75 | 60 | 138 | 25 | 32.5 | 38 | 7 | M8 | 30 |
| HY-090 | HG240/HP251/HP252 | 90 | 70 | 155 | 30 | 39 | 44.5 | 10 | M8 | 30 |

軸配合公差 $\phi d : h8$

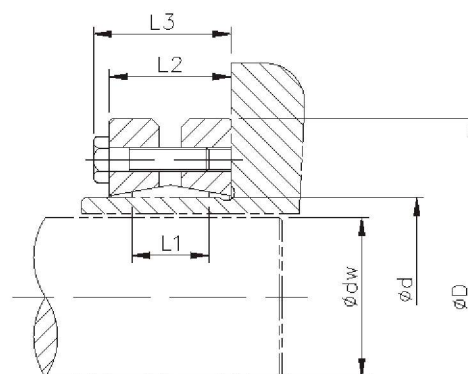
clearance

dw 配合公差 $\leq 30mm : H6/j6$

clearance $30mm \sim 50mm : H6/h6$

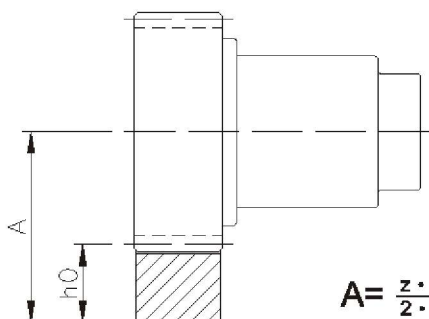
$50mm \sim 80mm : H6/g6$

$80mm \sim 500mm : H7/g6$



螺旋齒輪和螺旋齒條之中心距計算 A

Calculation of Centre Distance of Helical system



$$A = \frac{z \cdot m}{2 \cdot \cos \beta} + x \cdot m + h_0$$

Z = 齒數 Number of teeth

M = 模數 Module

β = 螺旋角(19°31'42")
helix angle

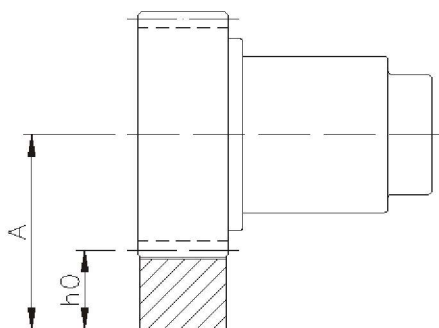
h_0 = 節線高度
height of pitch circle

x = 移位係數
addendum modification coefficient

c = 齒輪節圓周長 = $\phi d \times \pi$
circumference of = $\phi d \times \pi$

正齒輪和正齒條之中心距計算 A

Calculation of Centre Distance of Spur system



$$A = \frac{z \cdot m}{2} + x \cdot m + h_0$$

Z = 齒數 Number of teeth

M = 模數 Module

h_0 = 節線高度
height of pitch circle

x = 移位係數
addendum modification coefficient

c = 齒輪節圓周長 = $\phi d \times \pi$
circumference of = $\phi d \times \pi$

高定位精度 High positioning accuracy

- 精密齒輪研磨，齒面光滑，齒形精準。
- 背隙可達到 <1 arcmin。
- Precision grinding gear , smooth of gear surface , high accuracy of tooth profile
- Backlash ≤ 1 arcmin

省空間設計 Compact design

- 較一般輸出軸型減速機長度短，適用於有限空間設計。
- Shorter than general shaft type reducer , suited on the limited space .

易安裝 Easy Installation

- 減速機聯接板及輸入軸孔尺寸採彈性設計，能與各廠牌的伺服馬達相結合。
- For the modular input bushing and the changeable connecting plate according to customer's brand of servo-motor.

免保養 Easy maintenance

- 採用高級鎳鉻鉬合金鋼材，經深層的滲碳硬化處理後，再經精密齒面研磨，使得齒輪剛性大，且齒面光滑耐磨性佳，可延長使用壽命。
- 採用德製優質人工合成潤滑油，流動性佳，富含極壓抗壓劑，齒箱內各零件間充分得到潤滑及保護，可免換潤滑油。
- 採用特製高品質、耐熱、耐磨不易變質之油封、使得密封性佳。
- The gear with the deepen carburizing heat treatment and precision grinding process , make its high stiffness and mesh accurate , prolong the service life nad low noise .
- Best-chosen Germany synthetic oil lubricate and protect the components inside the gear box , oil-filled free .
- Select superior quality , heat-resistance , wear-resistance seal , get the better sealing performance .



DG系列 DG SERIES 減速機輸入端為馬達軸

應用範圍 SCOPES :

工廠自動化設備 / 半導體機械設備 / 光電面板 / 自動倉儲運搬系統 / 造紙機械 / 醫療產業

Factory Automation Equipment / Semiconductor Machinery and Equipment / Photoelectric Panel Industry /
Automated Storage and Retrieval System / Paper Machinery / Medical Industry



DGS系列 DGS SERIES 減速機輸入端為入力軸設計

Gear box is designed to shaft input.

應用範圍 SCOPES :

工廠自動化設備 / 半導體機械設備 / 光電面板 / 自動倉儲運搬系統 / 造紙機械 / 醫療產業

Factory Automation Equipment / Semiconductor Machinery and Equipment / Photoelectric Panel Industry /
Automated Storage and Retrieval System / Paper Machinery / Medical Industry

| 規 格 Size | | | DG164 | DG290 | DG310 | DG440 | DG500 | DG655 | DG785 | |
|---|-----------------------|-------|------------------------------------|-------|-------|-------|-----------|-------|--------|--|
| 最大加速扭矩 T _{2B} (1) Output Torque | Nm | 減速比 i | | | | | | | | |
| | | ★ 4/5 | 58 | 145 | 360 | 710 | 1700 | 3600 | 6100 | |
| | | 7 | 55 | 125 | 335 | 650 | 1650 | 3350 | 5050 | |
| 緊急停止扭矩 T _{2Not} (2) Emergency Stop Torque | Nm | ★ 4/5 | 115 | 310 | 700 | 1260 | 3250 | 8800 | 15000 | |
| | | 7 | 105 | 270 | 625 | 1150 | 2800 | 8300 | 13650 | |
| | | 10 | 100 | 220 | 500 | 900 | 2300 | 5000 | 10500 | |
| 額定輸出扭矩 T _{2N} Nominal output Torque | Nm | ★ 4/5 | 30 | 80 | 190 | 375 | 800 | 2250 | 3300 | |
| | | 7 | 28 | 75 | 175 | 340 | 750 | 1830 | 2820 | |
| | | 10 | 18 | 60 | 125 | 265 | 700 | 1050 | 1750 | |
| 減速比 i | | 單段 | 4/5/7/10 | | | | | | | |
| 額定輸入轉速 n _{1N} Nominal Input Speed | rpm | 4/5 | 3300 | 3000 | 2300 | 2000 | 1500 | 1200 | 1000 | |
| | | 7/10 | 4000 | 3200 | 2600 | 2500 | 2200 | 1700 | 1500 | |
| 最大輸入轉速 n _{1Max} Max. Input Speed | rpm | 4~10 | 6000 | 6000 | 4500 | 4000 | 3500 | 2500 | 2200 | |
| 軸向負荷力 Fa _{Max} (3) Axial Load | N | 4~10 | 1650 | 2200 | 4200 | 6150 | 10000 | 33000 | 50000 | |
| 精密背隙 Reduced Backlash | arcmin | 4~10 | ≤2 | ≤1 | ≤1 | ≤1 | ≤1 | ≤2 | ≤2 | |
| 標準背隙 Standard Backlash | arcmin | 4~10 | ≤4 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | |
| 扭轉剛性 Torsional Rigidity | Nm/ arcmin | 4~10 | 12 | 32 | 83 | 155 | 580 | 950 | 1380 | |
| 滿載時使用效率 Efficiency with Full Load | % | 4~10 | ≥97 | | | | | | | |
| 使用壽命 L _{h2} Service Life | h | 4~10 | 20000 | | | | | | | |
| 重量 | kg | 4~10 | 1.6 | 4.0 | 7.0 | 14.5 | 31 | 62 | 83.5 | |
| 噪音值 (4) Noise Level | dB | | ≤60 | ≤62 | ≤65 | | ≤66 | ≤68 | | |
| 使用溫度範圍 Permissible Gear Reducer Temp | °C | | - 10°C ~ + 90°C | | | | | | | |
| 防塵等級 Protection Class | | | IP 64 | | | | | | | |
| 潤滑油 Lubrication | | | 人工合成潤滑油 Synthetic oil viscosity | | | | ISO VG220 | | | |
| 轉動慣量 J ₁ Mass Moments of Inertia | kg cm ² | 4 | 0.32 | 0.65 | 4.40 | 9.10 | 30.45 | - | - | |
| | | 5 | 0.31 | 0.63 | 4.33 | 8.90 | 28.85 | 52.92 | 108.05 | |
| | | 7 | 0.29 | 0.62 | 4.25 | 8.52 | 28.15 | 40.06 | 100.20 | |
| | | 10 | 0.28 | 0.60 | 4.23 | 8.45 | 27.77 | 39.52 | 97.80 | |

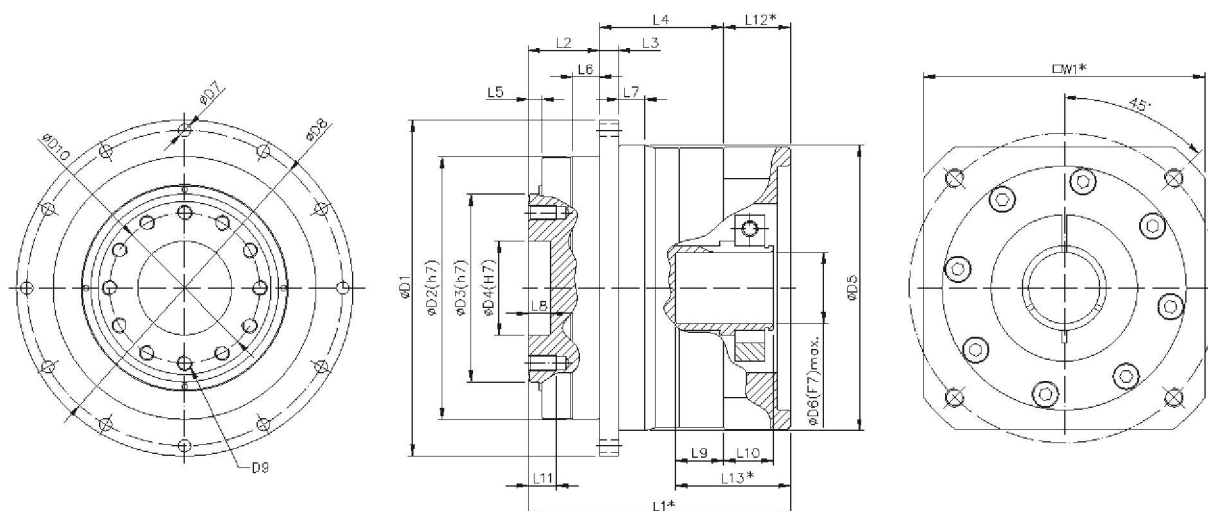
註(1) 本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。
 註(2) 堪用期內可作1000次之動作。
 註(3) 輸出轉速100rpm作用於輸出軸中心。
 註(4) 噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。
 · 連續運轉將會減少減速機二分之一的使用壽命。
 · 客戶所需之減速比，若非表內所有，可與本公司洽詢。

Note (1) The data can be applied to starting frequency less than 1000 times per hour. Please contact us if more.
 Note (2) Operation can be up to 1000 times in product life.
 Note (3) It acts on in the output shaft center at output speed 100 rpm.
 Note (4) Noise inspection of ratio-5 reducers measure at input speed 3000 rpm, in 1-meter distance, and with free-load operation.
 · Continuous operation will cause half of reducer life decreased.
 · If any customized ratios are not available from above, please contact us.
 ★Ratio 4 is not available for DG655 and Dg785.

DG外觀尺寸 (單段 4/5/7/10比) [mm]



Dimensions (1-Stage 4/5/7/10 Ratio) [mm]



| 規格 Size | DG164 | DG290 | DG310 | DG440 | DG500 | DG655 | DG785 |
|-------------|---------|-------|--------|----------|----------|--------|----------|
| ※□W1 min. | 70 | 95 | 120 | 152 | 210 | 190 | 240 |
| ØD1 | 86 | 118 | 145 | 179 | 247 | 300 | 330 |
| ØD2(h7) | 64 | 90 | 110 | 140 | 200 | 255 | 285 |
| ØD3(h7) | 40 | 63 | 80 | 100 | 160 | 180 | 200 |
| ØD4(H7) | 20 | 31.5 | 40 | 50 | 80 | 100 | 100 |
| ØD5 | 70 | 95 | 120.5 | 152.5 | 212.5 | 255 | 285 |
| ØD6(F7)max. | 14 | 19/24 | 32 | 38 | 48 | 55 | 60 |
| ØD7 | 4.5 | 5.5 | 5.5 | 6.6 | 9 | 13.5 | 13.5 |
| ØD8 | 79 | 109 | 135 | 168 | 233 | 280 | 310 |
| D9 | M5*P0.8 | M6*P1 | M6*P1 | M8*P1.25 | M10*P1.5 | M16*P2 | M20*P2.5 |
| ØD10 | 31.5 | 50 | 63 | 80 | 125 | 140 | 160 |
| ※L1 | 82 | 109 | 133.75 | 140.2 | 180 | 229 | 248.5 |
| L2 | 19.5 | 30 | 29 | 38 | 50 | 66 | 75 |
| L3 | 4 | 7 | 8 | 10 | 12 | 18 | 20 |
| L4 | 40 | 51 | 71.25 | 69.2 | 84 | 81.5 | 123.5 |
| L5 | 4 | 7 | 7 | 7.5 | 8.5 | 13.5 | 16.5 |
| L6 | 8 | 10 | 10 | 18 | 23 | 28 | 35 |
| L7 | 7 | 8 | 9 | 14 | 15 | 20 | 21 |
| L8 | 8 | 12 | 12 | 12 | 16 | 20 | 20 |
| L9 | 9 | 15 | 30.5 | 29.2 | 37.5 | 44.5 | 47 |
| L10 | 18 | 22.5 | 22.5 | 25.8 | 45 | 40 | 39 |
| L11 | 7 | 10 | 12 | 15 | 20 | 25 | 30 |
| ※L12 | 22.5 | 28 | 33.5 | 33 | 46 | 47 | 50 |
| ※L13 | 31.5 | 43 | 64 | 62.2 | 83.5 | 91.5 | 97 |

- ※此記號表示之尺寸視聯結之伺服馬達不同而有所變動。
- ※本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如需確實之尺寸，可洽本公司。
- ※Actual dimensions may vary with different servo motor collocation.
- We persistently research in and develop our products, and we have made every effort to maintain the specification data above correct. If there is any discrepancy between the data and real dimensions, please refer to products or may contact us for updated data.

| 規 格 Size | | | DG164 | DG290 | DG310 | DG440 | DG500 | DG655 | DG785 | |
|---|----------------------|-----------------------|---|-------|-------|-------|-----------|-------|-------|--|
| 最大加速扭矩 $T_{2B(1)}$ Output Torque | Nm | 減速比 I | | | | | | | | |
| | | ★16/20/25/28/35/40/50 | 58 | 145 | 360 | 760 | 1650 | 3600 | 6100 | |
| | | 21 | 42 | 102 | 310 | 610 | 1400 | 3450 | 5050 | |
| | | 31 | 42 | 115 | 300 | 630 | 1600 | 3600 | 6000 | |
| | | 61 | 46 | 115 | 285 | 560 | 1400 | 2850 | 4820 | |
| | | 70 | 55 | 130 | 335 | 700 | 1500 | 3350 | 5050 | |
| | | 91 | 33 | 85 | 255 | 510 | 1310 | 2800 | 4810 | |
| 緊急停止扭矩 $T_{2Not(2)}$ Emergency Stop Torque | Nm | ★16/20/25/28/35/40/50 | 115 | 310 | 700 | 1260 | 3250 | 8500 | 14500 | |
| | | 21 | 105 | 260 | 610 | 1050 | 2800 | 8300 | 12100 | |
| | | 31 | 105 | 260 | 610 | 1100 | 2800 | 8500 | 14000 | |
| | | 61 | 105 | 240 | 570 | 930 | 2700 | 7300 | 10500 | |
| | | 70 | 105 | 270 | 625 | 1100 | 2750 | 8300 | 13650 | |
| | | 91 | 100 | 220 | 490 | 850 | 2200 | 5000 | 10500 | |
| | | 100 | 100 | 220 | 500 | 900 | 2300 | 5000 | 10500 | |
| 額定輸出扭矩 T_{2N} Nomlnal output Torque | Nm | ★16/20/25/28/35/40/50 | 40 | 92 | 215 | 410 | 1080 | 2450 | 3800 | |
| | | 21 | 30 | 82 | 175 | 360 | 860 | 2150 | 3300 | |
| | | 31 | 30 | 72 | 180 | 370 | 1250 | 2250 | 3720 | |
| | | 61 | 32 | 72 | 175 | 370 | 1120 | 1620 | 2910 | |
| | | 70 | 28 | 88 | 180 | 405 | 900 | 1830 | 2820 | |
| | | 91 | 16 | 40 | 110 | 230 | 710 | 1600 | 2910 | |
| | | 100 | 18 | 60 | 125 | 265 | 800 | 1600 | 2910 | |
| 減速比 I | | 雙段 | 16/20/21/25/28/31/35/40/50/61/70/91/100 | | | | | | | |
| 額定輸入轉速 n_{1N} Nomlnal Input Speed | rpm | 16~40 | 4000 | 3500 | 2800 | 3000 | 2500 | 2000 | 1500 | |
| | | 50~61 | 5000 | 4000 | 3000 | 3200 | 3000 | 2400 | 2000 | |
| | | 70~100 | 5500 | 4500 | 3500 | 3800 | 3300 | 2500 | 2200 | |
| 最大輸入轉速 n_{1Max} Max. Input Speed | rpm | 16~100 | 6000 | 6000 | 5000 | 5000 | 4000 | 3500 | 3500 | |
| 軸向負荷力 $F_{aMax(3)}$ Axial Load | N | 16~100 | 1650 | 2200 | 4200 | 6150 | 10000 | 33000 | 50000 | |
| 精密背隙 Reduced Backlash | arcmin | 16~100 | ≤2 | ≤1 | ≤1 | ≤1 | ≤1 | ≤2 | ≤2 | |
| 標準背隙 Standard Backlash | arcmin | 16~100 | ≤4 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | |
| 扭轉剛性 Torsional Rigidity | Nm/ arcmin | 16~100 | 12 | 32 | 83 | 155 | 565 | 900 | 1380 | |
| 滿載時使用效率 Efficiency with Full Load | % | 16~100 | ≥94 | | | | | | | |
| 使用壽命 L_{h2} Service Life | h | 16~100 | 20000 | | | | | | | |
| 重量 | kg | 16~100 | 1.7 | 4.2 | 7.2 | 15 | 35 | 60 | 80 | |
| 噪音值 (4) Noise Level | dB | | ≤60 | ≤62 | ≤65 | | ≤66 | ≤68 | | |
| 使用溫度範圍 Permissible Gear Reducer Temp | °C | | - 10°C ~ + 90°C | | | | | | | |
| 防護等級 Protection Class | | | IP 64 | | | | | | | |
| 潤滑油 Lubrication | | | 人工合成潤滑油 Synthetic oil viscosity | | | | ISO VG220 | | | |
| 轉動慣量 J_1 Mass Moments of Inertia | kg · cm ² | 16 | 0.19 | 0.31 | 0.63 | 4.35 | 9.30 | - | - | |
| | | 20 | 0.16 | 0.30 | 0.61 | 4.28 | 9.10 | 29.00 | 30.05 | |
| | | 21 | 0.17 | 0.31 | 0.62 | 4.30 | 9.05 | 29.10 | 30.08 | |
| | | 25 | 0.16 | 0.30 | 0.61 | 4.28 | 9.10 | 29.00 | 30.10 | |
| | | 28 | 0.20 | 0.28 | 0.60 | 4.10 | 8.75 | - | - | |
| | | 31 | 0.18 | 0.32 | 0.63 | 4.30 | 9.12 | 29.05 | 29.00 | |
| | | 35 | 0.15 | 0.28 | 0.60 | 4.10 | 8.75 | 28.30 | 28.48 | |
| | | 40 | 0.12 | 0.27 | 0.58 | 4.05 | 8.60 | - | - | |
| | | 50 | 0.12 | 0.27 | 0.58 | 4.05 | 8.60 | 27.95 | 28.07 | |
| | | 61 | 0.13 | 0.28 | 0.59 | 4.10 | 8.70 | 28.05 | 28.07 | |
| | | 70 | 0.12 | 0.26 | 0.57 | 4.05 | 8.60 | 27.95 | 28.07 | |
| 91 | 0.11 | 0.27 | 0.58 | 4.08 | 8.65 | 27.90 | 28.05 | | | |
| 100 | 0.10 | 0.25 | 0.57 | 4.05 | 8.55 | 27.85 | 28.05 | | | |

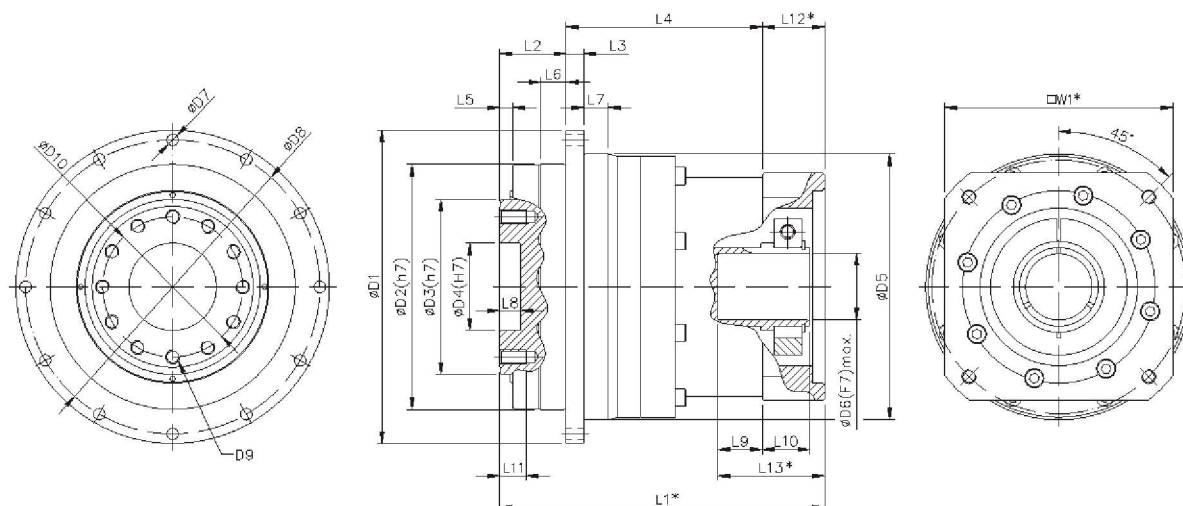
註(1) 本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。
 註(2) 堪用期內可作1000次之動作。
 註(3) 輸出轉速100rpm作用於輸出軸中心。
 註(4) 噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。
 · 連續運轉將會減少減速機二分之一的使用壽命。
 · 客戶所需之減速比，若非表內所有，可與本公司洽詢。

Note (1) The data can be applied to starting frequency less than 1000 times per hour. Please contact us if more.
 Note (2) Operation can be up to 1000 times in product life.
 Note (3) It acts on in the output shaft center at output speed 100 rpm.
 Note (4) Noise inspection of ratio-5 reducers measure at input speed 3000 rpm, in 1-meter distance, and with free-load operation.
 · Continuous operation will cause half of reducer life decreased.
 · If any customized ratios are not available from above, please contact us.
 ★Ratio 4 is not available for DG655 and Dg785.

DG外觀尺寸 (雙段 16~100比) [mm]



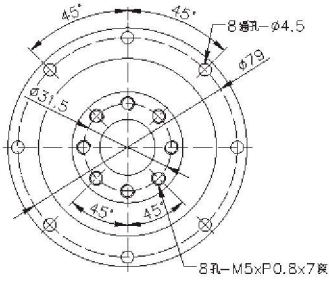
Dimensions (2-Stage 16~100 Ratio) [mm]



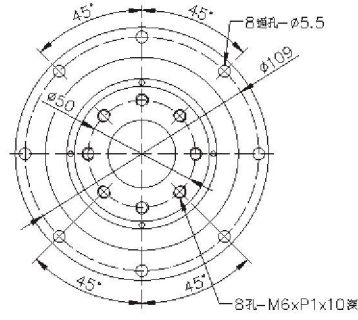
| 規格 Size | DG164 | DG290 | DG310 | DG440 | DG500 | DG655 | DG785 |
|-------------|---------|-------|--------|----------|----------|--------|----------|
| ※□W1 min. | 70 | 95 | 100 | 130 | 150 | 210 | 210 |
| ØD1 | 86 | 118 | 145 | 179 | 247 | 300 | 330 |
| ØD2(h7) | 64 | 90 | 110 | 140 | 200 | 255 | 285 |
| ØD3(h7) | 40 | 63 | 80 | 100 | 160 | 180 | 200 |
| ØD4(H7) | 20 | 31.5 | 40 | 50 | 80 | 100 | 100 |
| ØD5 | 70 | 95 | 120.5 | 152.5 | 212.5 | 255 | 285 |
| ØD6(F7)max. | 14 | 19 | 24 | 32/38 | 38 | 48 | 48 |
| ØD7 | 4.5 | 5.5 | 5.5 | 6.6 | 9 | 13.5 | 13.5 |
| ØD8 | 79 | 109 | 135 | 168 | 233 | 280 | 310 |
| D9 | M5*P0.8 | M6*P1 | M6*P1 | M8*P1.25 | M10*P1.5 | M16*P2 | M20*P2.5 |
| ØD10 | 31.5 | 50 | 63 | 80 | 125 | 140 | 160 |
| ※L1 | 108.5 | 139 | 152.75 | 187 | 208.5 | 300.5 | 310 |
| L2 | 19.5 | 30 | 29 | 38 | 50 | 66 | 75 |
| L3 | 4 | 7 | 8 | 10 | 12 | 18 | 20 |
| L4 | 63.5 | 81 | 96.75 | 118.5 | 125 | 187.5 | 190 |
| L5 | 4 | 7 | 7 | 7.5 | 8.5 | 13.5 | 16.5 |
| L6 | 8 | 10 | 10 | 18 | 23 | 28 | 35 |
| L7 | 7 | 8 | 9 | 14 | 15 | 20 | 21 |
| L8 | 8 | 12 | 12 | 12 | 16 | 20 | 20 |
| L9 | 15.5 | 14.5 | 20.5 | 30.5 | 28.5 | 38.8 | 38.8 |
| L10 | 18 | 21 | 21 | 22.5 | 26.5 | 33.2 | 33.2 |
| L11 | 7 | 10 | 12 | 15 | 20 | 25 | 30 |
| ※L12 | 22.5 | 28 | 27 | 30.5 | 33.5 | 47 | 45 |
| ※L13 | 38 | 42.5 | 47.5 | 61 | 62 | 85.2 | 83.8 |

- ※此記號表示之尺寸視聯結之伺服馬達不同而有所變動。
- 本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如需確實之尺寸，可洽本公司。
- ※Actual dimensions may vary with different servo motor collocation.
- We persistently research in and develop our products, and we have made every effort to maintain the specification data above correct. If there is any discrepancy between the data and real dimensions, please refer to products or may contact us for updated data.

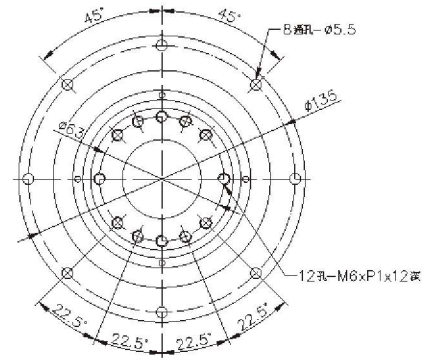
DG164



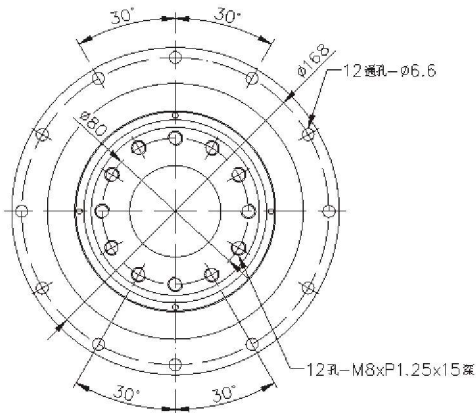
DG290



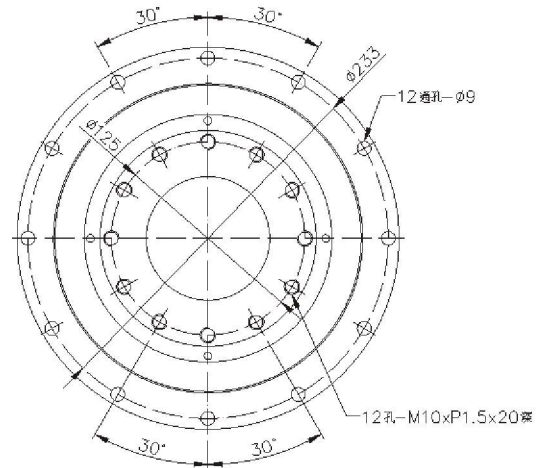
DG310



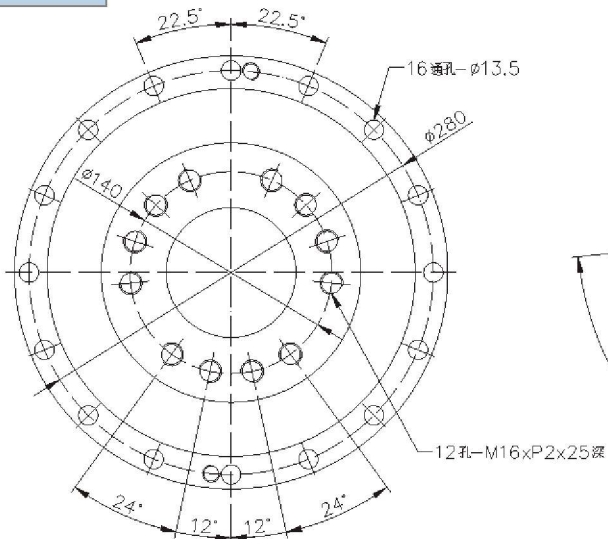
DG440



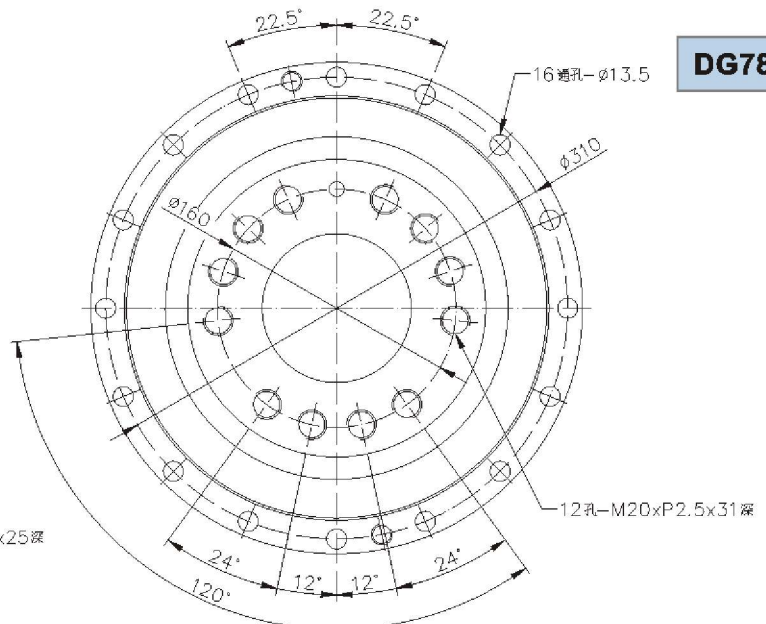
DG500



DG655



DG785





選用範例：**D G 1 6 4 - 0 0 5 - R S A M 1** /ITSUBISHI-HC-KFS43

Example: - - /Motor

系列選擇: Type
DG

規格: Size
164 / 290 / 310 / 440 / 500 / 655 / 785

減速比: Ratio
*004 005 007 010
*016 020 021 025 028 031 035 040 050
061 070 091 100
*代表DG655與DG785系列沒有

馬達廠牌和型號
Motor brand and type

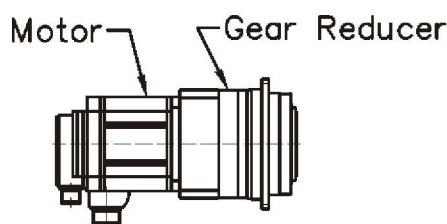
安裝方位: Mounting Directions
M1 M2 M3 (See below)

運轉方式: Operation
A(間歇cycle) B(連續continuous)

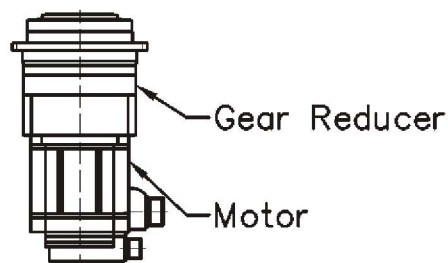
輸出軸型式: Output shaft S(標準盤面型)

齒背隙: R(精密) S(標準)
Backlash: R(Reduced) S(standard)

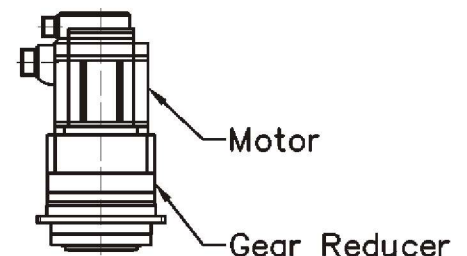
安裝方位 Directions



M1 水平
Horizontal



M2 垂直朝上
Upwards



M3 垂直朝下
Downwards

- 本公司產品陸續增加，如資料有所不符，將以本公司提供之最新資料為準，恕不另行通知。
- Our products have been developing generally, so has their information updating. If there is any discrepancy, it is subject to the updated information we offer without any notice.

為重負荷、高精密、耐久性的機械而設計製造的減速機。

UM series is designed and manufactured for machines of heavy-duty, accuracy, and durability.

超大扭力 Huge Torsional Rigidity

- 大型高品質滾錐軸承，能承受更大的軸向和徑向的負荷及加大盤面設計，使輸出軸能夠承受超大的輸出扭力及剛性極佳，適用大扭力的重型機械。
- For the well-designed structure and high duty material of taper roller bearing, the output shaft of the reducer can bear the huge axial and radial load.
- The enlarged flange design could bear the biggest output torque and obtain the optimal rigidity, be proper on heavy machine.

高起動性 High Dynamics

- 行星式結構平衡特性及高精度，低慣性矩，配合伺服馬達具有高起動性。
- Planetary structure of balance, precision, and low inertia creates high dynamics while collocating with servo motors.

高定位精度 High Positioning Accuracy

- 精密齒輪研磨，齒面光滑，齒形精準。
- 齒輪箱和內環齒輪採整體結構設計，特殊合金鋼材，穩定性高。
- Precision ground gears have smooth surfaces and accurate profiles
- The series case and inner ring gear, designed into one-piece structure, are made of special stable alloy steel.

低噪音 Low Noise

- 採用精密研磨齒輪，齒面平滑，精度高，齒輪運轉平順而噪音小。
- 採用德製精選人工合成潤滑油，流動性佳，齒輪能在充分油膜保護下運轉，降低噪音。
- For the high standard of ground gears and best-chosen synthetic oil.
- For the professional gear producing experience and the serious quality control of manufacturing processes.

易安裝 Easy Installation

- 減速機連接板及輸入軸孔尺寸採彈性設計，能與各廠牌的伺服馬達相結合。
- For the modular input bushing and the changeable connecting plate according to customer's brand of servo-motor.

輸出端易結合 Variety output choice

- 輸出軸採標準型，中空型，栓槽孔型供客戶選擇。亦可接受客戶指定之結合方式製作。
- Standard, hollow, splined output shaft could be selected. Even customized output type.

低齒背隙 Low gear backlash

- 精密加工和嚴格品質管制：
標準齒背隙在單段為2~3弧分；雙段為3~4弧分；三段為4~7弧分。
精密齒背隙在單段為1~2弧分；雙段為2~3弧分；三段為2~4弧分。
- Precision manufacture under quality control
 - Reduced backlash: stage one = 1-2 arcmins; stage two = 2-3 arcmins; stage three = 2-4 arcmins
 - Standard backlash: stage one = 2-3 arcmins; stage two = 3-4 arcmins; stage three = 4-7 arcmins
- 亦可接受更低背隙之委製。
Customization of further lower backlash is available.

長壽命，免保養 Durability and maintenance

- 採用高級鎳鉻鋁合金鋼材，經深層的滲碳硬化處理後，再經精密齒面研磨，使得齒輪剛性大，且齒面光滑耐磨性佳，可延長使用壽命。
- 採用德製優質人工合成潤滑油，流動性佳，富含極壓抗壓劑，齒箱內各零件間充分得到潤滑及保護，可免換機油。
- 採用特製高品質、耐熱、耐磨不易變質之油封，使得密封性佳。
- The gear with the deepen carburizing heat treatment and precision grinding process, make its high stiffness and mesh accurate, prolong the service life.
- Best-chosen Germany synthetic oil lubricate and protect the components inside the gear box, oil-filled free.
- Select superior quality, heat-resistance, wear-resistance seal, get the better sealing performance.



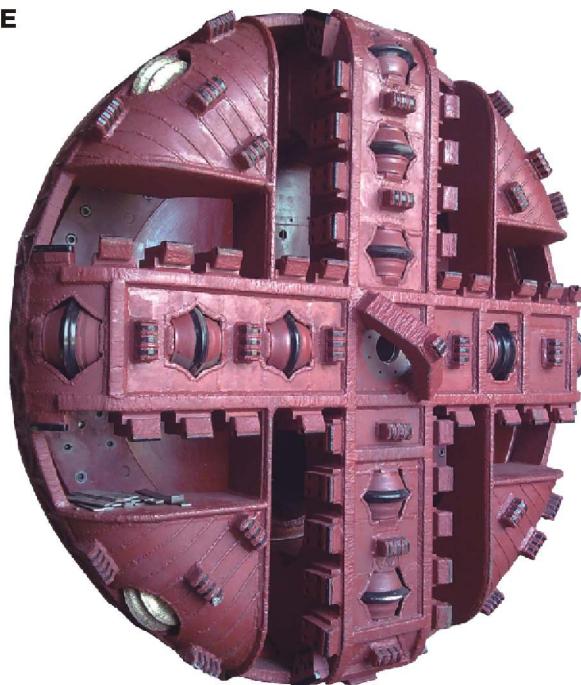
應用範圍 SCOPES :

精密重負荷機械 / 數控重型龍門銑床 / 風力發電機 / 重型CNC彎管機 / 塑膠押出機 / 全電式塑膠射出成型機
潛道機 / 重型工程機械 / 造紙機械/CNC深孔加工機 / CNC重型臥車.立車 / CNC動柱式龍門銑床

Precision Heavy Duty Machinery / CNC Heavy Duty Milling Machine / Wind Turbines / CNC Heavy Duty Tube Bending Machine /
Plastic Extrusion Machine / Electric Plastic Injection Molding Machine / Tunnel Boring Machine / Heavy Construction Machinery /
Paper Machine / CNC Deephole Processing Machine / CNC Heavy Duty Lathe (Horizontal or Vertical Spindle) /
CNC Sliding Double Column Gantry Milling Machine

實例 EX:

潛盾機 TUNNEL BORING MACHINE



| 規 格 Size | | | UM210 | UM240 | UM270 | UM300 | UM330 | UM360 | UM390 |
|---|-----------------------|-------|--|--------|--------|-------|-------|-------|--------|
| 最大加速扭矩 T _{2B} (1) Output Torque | Nm | 減速比 i | | | | | | | |
| | | 4 | 4190 | 6410 | 9165 | 11220 | 15330 | 20342 | 25285 |
| 緊急停止扭矩 T _{2Not} (2) Emergency Stop Torque | Nm | 4 | 9100 | 13870 | 19800 | 24230 | 33075 | 43830 | 53640 |
| | | 5.5 | 7800 | 11935 | 17010 | 20860 | 28470 | 37710 | 46000 |
| 額定輸出扭矩 T _{2N} Nominal output Torque | Nm | 4 | 2725 | 4170 | 5970 | 7310 | 9995 | 13270 | 16800 |
| | | 5.5 | 2325 | 3360 | 4680 | 6335 | 8660 | 11490 | 14300 |
| 減速比 i | | 單段 | 4/5.5 | | | | | | |
| 額定輸入轉速 n _{1N} Nominal Input Speed | rpm | 4/5.5 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1000 |
| 最大輸入轉速 n _{1Max} Max. Input Speed | rpm | 4/5.5 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 1500 |
| 最大軸向力(3) FaMax Radial Load | N | 4/5.5 | 25280 | 37750 | 48300 | 68700 | 73350 | 80050 | 113500 |
| 標準背隙 Standard Backlash | arcmin | 單段 | ≤3 | ≤2 | ≤2 | ≤2 | ≤2 | ≤2 | ≤2 |
| 精密背隙 Reduced Backlash | arcmin | 單段 | ≤2 | ≤1 | ≤1 | ≤1 | ≤1 | ≤1 | ≤1 |
| 滿載時使用效率 Efficiency with Full Load | % | 單段 | ≥94 | | | | | | |
| 使用壽命 Lh ₂ Service Life | h | 單段 | 20000 | | | | | | |
| 重量 | kg | 單段 | 85 | 100 | 110 | 130 | 165 | 195 | 300 |
| 噪音值 Noise Level | dB | | ≤70 | | | | | | |
| 使用溫度範圍 Permissible Gear Reducer Temp | °C | | - 10°C ~ + 90°C | | | | | | |
| 防護等級 Protection Class | | | IP 64 | | | | | | |
| 潤滑油 Lubrication | | | 人工合成潤滑油 Synthetic oil viscosity ISO VG220 | | | | | | |
| 轉動慣量 J1 Mass Moments of Inertia | kg cm ² | 4 | 210.28 | 337.9 | 394.94 | - | - | - | - |
| | | 5.5 | 204.5 | 327.23 | 376.85 | - | - | - | - |

(1) 本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。

(2) 堪用期內可作1000次之動作。

(3) 作用於法蘭中心。

- 如您所需之減速比，非表內所有，請與本公司洽詢。
- 若為連續運轉使用，請與本公司洽詢。

Note (1) The data can be applied to starting frequency less than 1000 times per hour. Please contact us if more.

Note (2) Operation can be up to 1000 times in product life.

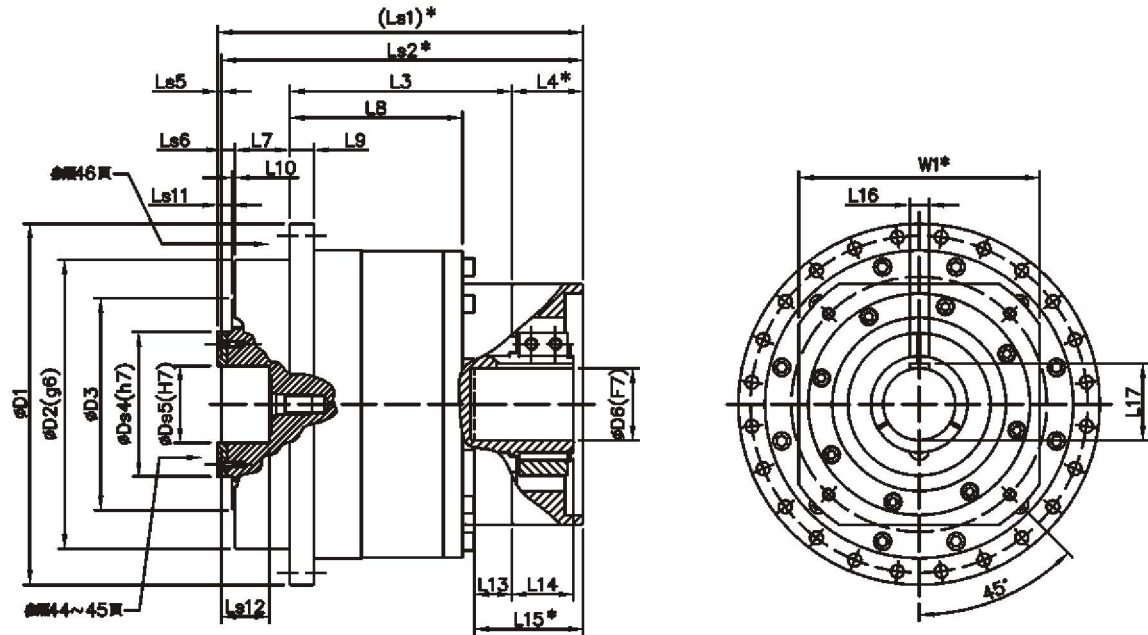
Note (3) It acts on in the flange center.

- If any customized ratios are not available from above, please contact us.
- If it is operated continuously, please contact us.

UM外觀尺寸 (單段 4/5.5比) [mm]



Dimensions (1-Stage 4/5.5 Ratio) [mm]



| 規格 Size | UM210 | UM240 | UM270 | UM300 | UM330 | UM360 | UM390 |
|--------------|-------|-------|-------|-------|-------|-------|-------|
| 段數 Stage | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| ※ W1 min. | 200 | 220 | 250 | 250 | 270 | 320 | 370 |
| D1 | 305 | 325 | 350 | 375 | 430 | 475 | 550 |
| D2 (g6) | 230 | 270 | 280 | 300 | 320 | 385 | 420 |
| D3 | 160 | 190 | 200 | 220 | 240 | 280 | 320 |
| Ds4 (h7) | 125 | 145 | 160 | 170 | 180 | 220 | 250 |
| Ds5 (H7) | 45 | 50 | 50 | 50 | 60 | 80 | 100 |
| D6 (F7) max. | 65 | 70 | 75 | 75 | 85 | 100 | 100 |
| Ls1 | 342.5 | 367 | 423 | 413 | 456 | 525.5 | 603 |
| Ls2 | 338.5 | 362 | 417 | 407 | 451 | 517.5 | 594 |
| L3 | 174 | 196 | 223 | 226 | 240 | 281.5 | 313 |
| ※ L4 | 84 | 82 | 94 | 74 | 87 | 102 | 105 |
| Ls5 | 4 | 5 | 5 | 6 | 5 | 8 | 9 |
| Ls6 | 15 | 18 | 18 | 17 | 18 | 20 | 36 |
| L7 | 45 | 51 | 54 | 57 | 62 | 86 | 92 |
| L8 | 162.5 | 175 | 207 | 214 | 237 | 244.5 | 270 |
| L9 | 18 | 20 | 22 | 25 | 25 | 25 | 30 |
| L10 | 3 | 3 | 3 | 3 | 3 | 3 | 4 |
| Ls11 | 18 | 23 | 23 | 24 | 27 | 29 | 45 |
| Ls12 | 25 | 35 | 50 | 50 | 60 | 60 | 80 |
| L13 | 33 | 34 | 46 | 39 | 40 | 43 | 70 |
| L14 | 74 | 72 | 79 | 64 | 77 | 75 | 90.5 |
| ※ L15 min. | 117 | 116 | 140 | 113 | 127 | 140 | 175 |
| L16 | 18 | 20 | 20 | 20 | 22 | 28 | 28 |
| L17 | 69.4 | 74.9 | 79.9 | 79.9 | 90.4 | 106.4 | 106.4 |

| 規 格 Size | | UM210 | UM240 | UM270 | UM300 | UM330 | UM360 | UM390 | | |
|---|--------------------|-------------------------|------------------------------------|-------|-------|--------|-----------|--------|--------|---|
| 最大加速扭矩 T _{2B} (1) Output Torque | Nm | 減速比 i | | | | | | | | |
| | | 12 | 4375 | 6920 | 10400 | 12745 | 15755 | 24380 | 29500 | |
| | | 16/22 | 4375 | 6920 | 11250 | 13120 | 16980 | 24940 | 30500 | |
| | | 36/48 | 4395 | 8225 | 10220 | 14210 | 16990 | 27645 | 32000 | |
| | | 66/88/110 | 5540 | 8650 | 12330 | 14350 | 18945 | 27640 | 32500 | |
| 154/220 | 5105 | 8118 | 12185 | 14300 | 18690 | 23670 | 33000 | | | |
| 緊急停止扭矩 T _{2Not} (2) Emergency Stop Torque | Nm | 12 | 9600 | 15180 | 21970 | 26955 | 33160 | 50850 | 61000 | |
| | | 16/22 | 9600 | 15180 | 23320 | 28640 | 37000 | 51730 | 62400 | |
| | | 36/48 | 10460 | 16870 | 23180 | 29155 | 38060 | 55720 | 64400 | |
| | | 66/88/110 | 11150 | 17480 | 24935 | 29155 | 42210 | 55720 | 65400 | |
| | | 154/220 | 10230 | 17600 | 19490 | 29155 | 42335 | 55800 | 65800 | |
| 額定輸出扭矩 T _{2N} Nominal output Torque | Nm | 12 | 3095 | 4985 | 7165 | 8400 | 10595 | 15900 | 19300 | |
| | | 16/22 | 3095 | 4985 | 7590 | 8800 | 10800 | 16840 | 19950 | |
| | | 36/48 | 3115 | 5475 | 7115 | 9470 | 10810 | 17900 | 20910 | |
| | | 66/88/110 | 3330 | 5540 | 8075 | 9500 | 10820 | 17935 | 21250 | |
| | | 154/220 | 2905 | 4620 | 8115 | 9500 | 10680 | 13505 | 21500 | |
| 減速比 i | | 12/16/22 | | | | | | | | |
| | | 36/48/66/88/110/154/220 | | | | | | | | |
| 額定輸入轉速 n _{1N} Nominal Input Speed | rpm | 12~220 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | |
| 最大輸入轉速 n _{1Max} Max. Input Speed | rpm | 12~220 | 3000 | 3000 | 3000 | 3000 | 2500 | 2000 | 1500 | |
| 最大軸向力(3) FaMax Radial Load | N | 12~220 | 25280 | 37750 | 48300 | 68700 | 73350 | 80050 | 113500 | |
| 標準背隙 Standard Backlash | arcmin | 雙段 | ≤4 | ≤4 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | |
| | | 三段 | ≤7 | ≤6 | ≤6 | ≤5 | ≤5 | ≤4 | ≤4 | |
| 精密背隙 Reduced Backlash | arcmin | 雙段 | ≤3 | ≤2 | ≤2 | ≤2 | ≤2 | ≤2 | ≤2 | |
| | | 三段 | ≤4 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | |
| 滿載時使用效率 Efficiency with Full Load | % | 12~220 | ≥90 | | | | | | | |
| 使用壽命 L _{h2} Service Life | h | 12~220 | 20000 | | | | | | | |
| 重量 | kg | 雙段 | 90 | 125 | 138 | 162 | 200 | 235 | 290 | |
| | | 三段 | 95 | 135 | 150 | 175 | 220 | 250 | 380 | |
| 噪音值 (4) Noise Level | dB | | ≤70 | | | | | | | |
| 使用溫度範圍 Permissible Gear Reducer Temp | °C | | - 10°C ~ + 90°C | | | | | | | |
| 防護等級 Protection Class | | | IP 64 | | | | | | | |
| 潤滑油 Lubrication | | | 人工合成潤滑油 Synthetic oil viscosity | | | | ISO VG220 | | | |
| 轉動慣量 J ₁ Mass Moments of Inertia | kg cm ² | 二段 | 12 | 61.61 | 94.96 | 149.5 | - | 455.38 | - | - |
| | | | 16 | 54.49 | 83.93 | 128.26 | - | 396.1 | - | - |
| | | | 22 | 53.77 | 82.33 | 121.96 | - | 381.1 | - | - |
| | | 三段 | 36 | 20.24 | 47.42 | 57.97 | - | 90.1 | - | - |
| | | | 48 | 18.29 | 43.14 | 53.55 | - | 82.07 | - | - |
| | | | 66 | 20.24 | 47.42 | 57.97 | - | 90.1 | - | - |
| | | | 88 | 18.29 | 43.14 | 53.55 | - | 82.07 | - | - |
| | | | 110 | 18.04 | 42.54 | 52.95 | 78.68 | 80.58 | - | - |
| | | | 154 | 17.41 | 42.05 | 52.51 | - | 102.95 | - | - |
| | | | 220 | 17.38 | 42.00 | 52.46 | - | 102.25 | - | - |

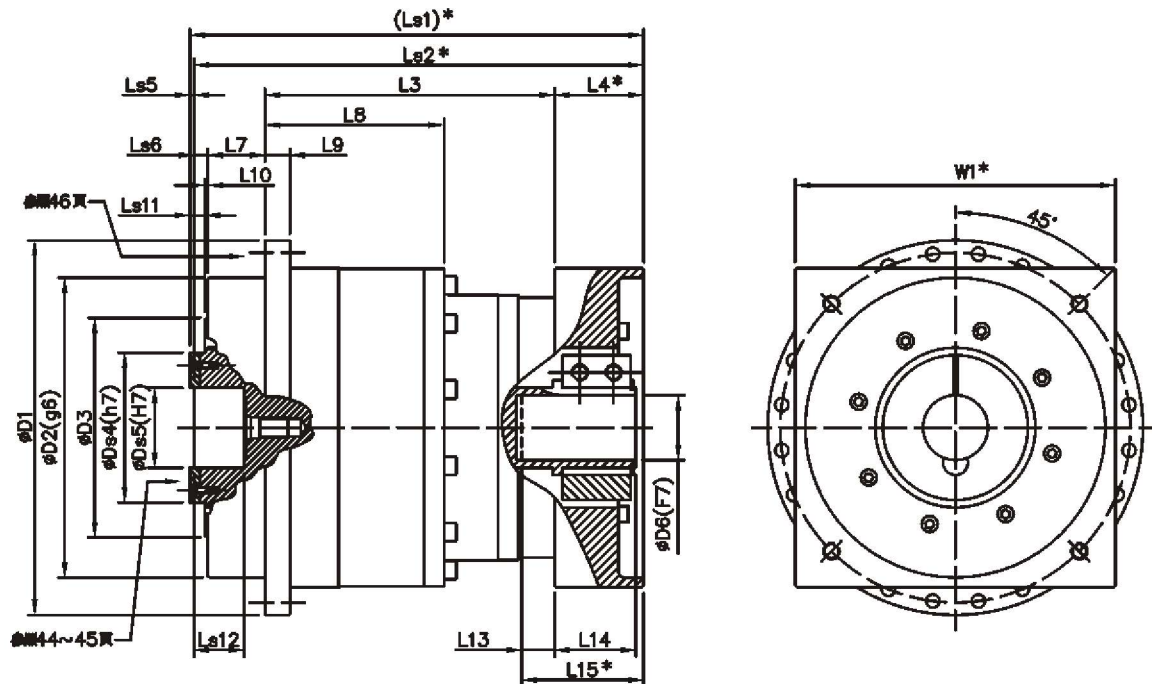
- (1) 本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。
 (2) 堪用期內可作1000次之動作。
 (3) 作用於法蘭中心。
 · 如您所需之減速比，非表內所有，請與本公司洽詢。
 · 若為連續運轉使用，請與本公司洽詢。

- Note (1) The data can be applied to starting frequency less than 1000 times per hour. Please contact us if more.
 Note (2) Operation can be up to 1000 times in product life.
 Note (3) It acts on in the flange center.
 · If any customized ratios are not available from above, please contact us.
 · If it is operated continuously, please contact us.

UM外觀尺寸 (雙段、三段12~220比) [mm]



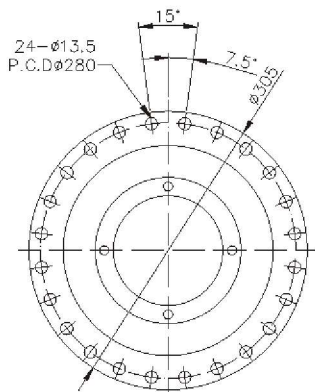
Dimensions (2-Stage, 3-Stage 12~220 Ratio) [mm]



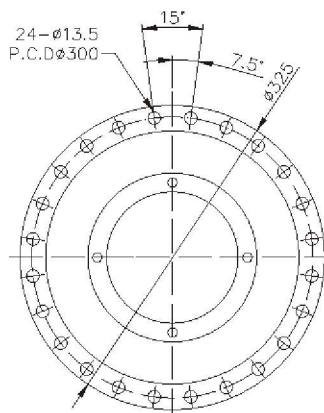
| 規格 Size | UM210 | | UM240 | | UM270 | | UM300 | | UM330 | | UM360 | | UM390 | |
|--------------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 |
| 段數 Stage | | | | | | | | | | | | | | |
| ※ W1 min. | 180 | 150 | 220 | 180 | 240 | 190 | 250 | 220 | 220 | 190 | 260 | 220 | 310 | 370 |
| D1 | 305 | | 325 | | 350 | | 375 | | 430 | | 475 | | 550 | |
| D2 (g6) | 230 | | 270 | | 280 | | 300 | | 320 | | 385 | | 420 | |
| D3 | 160 | | 190 | | 200 | | 220 | | 240 | | 280 | | 320 | |
| Ds4 (h7) | 125 | | 145 | | 160 | | 170 | | 180 | | 220 | | 250 | |
| Ds5 (H7) | 45 | | 50 | | 50 | | 50 | | 60 | | 80 | | 100 | |
| D6 (F7) max. | 55 | 42 | 60 | 48 | 65 | 55 | 65 | 60 | 70 | 60 | 80 | 70 | 80 | 70 |
| Ls1 | 394 | 309.5 | 418.5 | 466 | 470 | 497.5 | 480 | 523.5 | 503 | 555.5 | 573 | 639 | 630 | 687.5 |
| Ls2 | 390 | 305.5 | 413.5 | 461 | 465 | 492.5 | 474 | 517.5 | 498 | 550.5 | 565 | 631 | 621 | 678.5 |
| L3 | 246 | 290.5 | 262.5 | 313 | 309 | 359.5 | 313 | 366.5 | 336 | 388.5 | 381 | 441.5 | 408 | 465.5 |
| ※ L4 | 84 | 55 | 82 | 79 | 84 | 61 | 89 | 79 | 82 | 82 | 78 | 83.5 | 85 | 85 |
| Ls5 | 4 | | 5 | | 5 | | 6 | | 5 | | 8 | | 9 | |
| Ls6 | 15 | | 18 | | 18 | | 17 | | 18 | | 20 | | 36 | |
| L7 | 45 | | 51 | | 54 | | 57 | | 62 | | 86 | | 92 | |
| L8 | 162.5 | | 175 | | 207 | | 214 | | 237 | | 244.5 | | 270 | |
| L9 | 18 | | 20 | | 22 | | 25 | | 25 | | 25 | | 30 | |
| L10 | 3 | | 3 | | 3 | | 3 | | 3 | | 3 | | 4 | |
| Ls11 | 18 | | 23 | | 23 | | 24 | | 27 | | 29 | | 45 | |
| Ls12 | 25 | | 35 | | 50 | | 50 | | 60 | | 60 | | 80 | |
| L13 | 29 | 24 | 34 | 34 | 32 | 31 | 33 | 37 | 38 | 34 | 32 | 32.5 | 40 | 35 |
| L14 | 57.5 | 43.5 | 63.5 | 52.5 | 84 | 53.5 | 81 | 62 | 74 | 67 | 71.5 | 71.5 | 70 | 77 |
| ※ L15 min. | 93 | 78 | 104 | 100 | 116 | 92 | 122 | 103 | 120 | 108 | 110 | 116 | 125 | 120 |

※此記號表示之尺寸視聯結之何服馬達不同而有所變動。

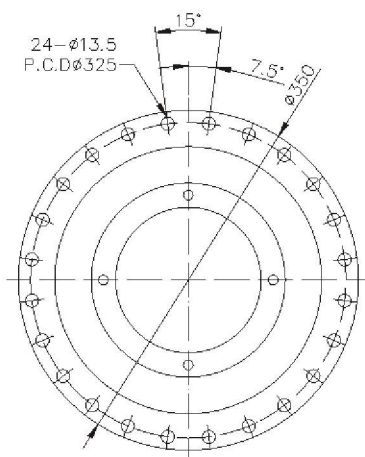
※ Actual dimensions may vary with different servo motor collocation.



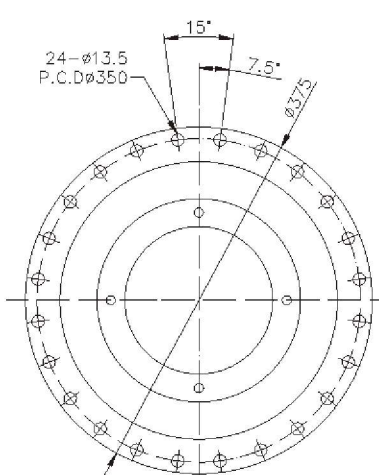
UM210



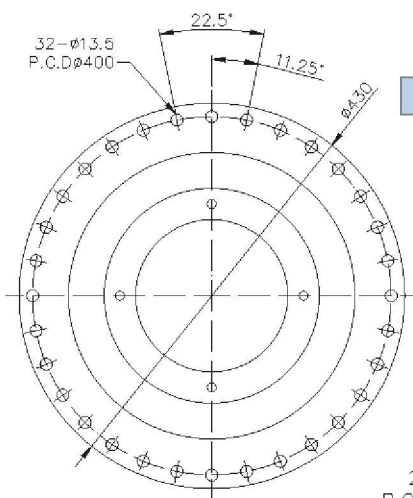
UM240



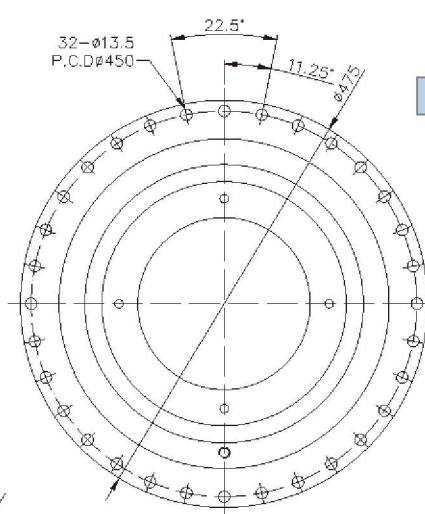
UM270



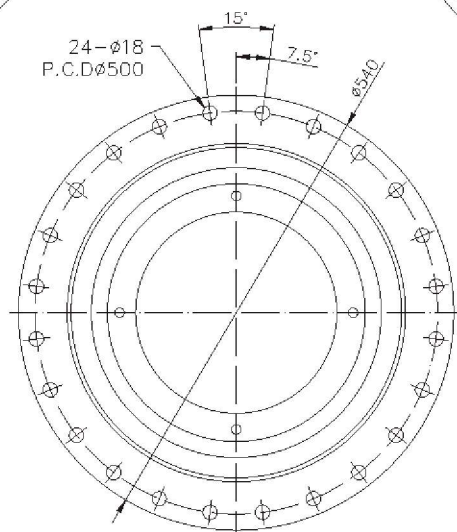
UM300



UM330



UM360



UM390

- 螺旋傘齒輪設計，精密研磨齒輪，齒面平滑精度高。
- 高容許輸入轉速。
- 直角齒輪箱採用高強度鋁合金設計，使輕量化。
- Spiral bevel gear and precision grinding gears, smooth teeth surface and high accuracy
- High input speed
- High strength and light-weight aluminum casing

高定位精度 High Positioning Accuracy

- 精密齒輪研磨，齒面光滑，齒形精準。
- 齒輪箱和內環齒採整體結構設計，特殊合金鋼材，穩定性高。
- Precision grinding gears, smooth teeth surface and high accuracy
- Single-piece structured ring gear with housing, alloy steel, high reliable.

高扭力 High Torsional Rigidity

- 高品質滾錐軸承，輸出軸能承受更大的軸向和徑向的負荷，超大扭力，應用範圍廣。
- Use superior taper roller bearing can bear the much more the axial and radial loads, high torque and widespread application.

高起動性 High Dynamics

- 行星式結構平衡特性及高精度，低慣性矩，配合伺服馬達具有高起動特性。
- The characteristics of planet structure are balance and high accuracy and low moment of inertia, high dynamics performance with servo motor

低噪音 Low Noise

- 採用精密研磨齒輪，齒面平滑，精度高，齒輪運轉平順而噪音小。
- 採用德製精選人工合成潤滑油，非一般減速機使用油脂潤滑，流動性佳，齒輪能在充分油膜保護下運轉，降低噪音。
- Use precision grinding gear, smooth teeth surface, high accuracy, operate smooth and low noise.
- Best-chosen Germany synthetic oil, not normal grease, excellent fluidity, lubricate and protect the components inside the casing completely, lower the noise.

易安裝 Easy Installation

- 減速機聯接板及輸入軸孔尺寸採彈性設計，能與各廠牌的伺服馬達相結合。
- For the modular input bushing and the changeable connection plate according to customer's brand of servo-motor

低齒背隙 Low gear backlash

- 精密加工和嚴格品質管制：
 - Precision process and strict quality control:
 - Micro backlash one stage ≤ 2 arcmin, two stage ≤ 4 arcmin
 - Reduced backlash one stage ≤ 4 arcmin, two stage ≤ 6 arcmin
 - Standard backlash one stage ≤ 6 arcmin, two stage ≤ 8 arcmin
- 超精密齒背隙在一段為2弧分；兩段為4弧分。
- 精密齒背隙在一段為3~4弧分；兩段為5~6弧分。
- 標準齒背隙在一段為5~6弧分；兩段為7~8弧分。

長壽命，免保養 Long life and maintenance free

- 採用高級鎳鉻鋁合金鋼材，經深層的滲碳硬化處理後，再經精密齒面研磨，使得齒輪剛性大，且齒面光滑耐磨性佳，可延長使用壽命。
- 採用德製優質人工合成潤滑油，流動性佳，富含極壓抗壓劑，齒箱內各零件間充分得到潤滑及保護，可免換機油。
- 採用特製高品質、耐熱、耐磨不易變質之油封，使得密封性佳。
- Gears are made of a quality alloy of nickel, chrome, and molybdenum steel, and produced with deep carburizing and hardening treatment. Gear surfaces under accurate grind feature better rigid, smooth, and wear resistance.
- Premium Germany-made synthetic oil, flowable better and including anti-ultra-pressure additive, is used in lubrication and protection of all components in the gearbox. Oil change is never required.
- High-grade oil seals, stable and both heat and wear resistant, are in use to serve well airtightness.



應用範圍 SCOPES :

↓ 工具機業 MACHINE TOOLS

CNC龍門銑床 / CNC龍門磨床

CNC綜合加工機 / CNC深孔加工機

CNC落地搪床 / CNC鑽孔機

CNC龍門刨床 / CNC沖床

CNC重型臥車·立車

CNC Gantry Milling Machine / CNC Gantry Grinding Machine

CNC Integrated Processing Machine / CNC Deephole Processing Machine

CNC Floor Boring Machine / CNC Drilling Machine

CNC Gantry Planing Mill / CNC Punching Machine

CNC Heavy Duty Lathe (Horizontal or Vertical Spindle)

↓ 產業機械 SPECIAL PURPOSE MACHINE

包裝機械 / 印刷機 / 攻牙機

紡織機械 / 彎管機 / CNC沖壓機

木工機 / 吹瓶機 / 雕刻機

充填機 / 射出成型機 / CNC彈簧機

雷射切割機 / 雷射焊接機

Packaging Machinery / Print Machine / Tapping machine

Textile Machinery / Tube Bending Machine / CNC Press

Woodworking Machine / Blow Molding Machine / Engraving Machine

Filling Machine / Injection Molding Machine / Spring Machine

Laser Cutting Machine / Laser Welding Machine

↓ 工廠自動化工業 FACTORY AUTOMATION

半導體機械設備 / 光電面板業

機械手臂 / 自動倉儲運搬系統

醫療產業 / 金屬表面處理設備

高扭力定位系統應用

搭配伺服馬達之自動化機械裝置

Semiconductor Machinery and Equipment / Photoelectric Panel Industry

Gantry Loader / Automated Storage and Retrieval System

Medical Industry / Metal Surface Treatment Equipment

High Torque Positioning System Applications

Automatic Mechanical Device with Servo Motor Collocation

| 規 格 Size | | | PGR060 | PGR080 | PGR100 | PGR120 | PGR140 | PGR160 | PGR180 | PGR210 |
|---|----------------------|-------|------------------------------------|--------|--------|--------|-----------|--------|--------|--------|
| 最大加速扭矩 $T_{2B(1)}$ Output Torque | Nm | 減速比 | | | | | | | | |
| | | 3 | 25 | 90 | 202 | 330 | 440 | 735 | 1055 | 1750 |
| | | 4/5 | 47 | 115 | 270 | 350 | 510 | 810 | 1300 | 2600 |
| | | 6 | 40 | 103 | 250 | 340 | 445 | 730 | 1180 | 2150 |
| | | 7 | 40 | 100 | 240 | 310 | 440 | 700 | 1130 | 1680 |
| | | 8 | 33 | 91 | 215 | 285 | 410 | 650 | 1040 | 1600 |
| | | 10 | 32 | 77 | 190 | 245 | 340 | 500 | 900 | 1500 |
| | | 14 | 40 | 100 | 240 | 310 | 440 | 700 | 1130 | 1680 |
| 緊急停止扭矩 $T_{2Not(2)}$ Emergency Stop Torque | Nm | 3 | 60 | 240 | 630 | 800 | 1100 | 1700 | 3000 | 6200 |
| | | 4/5 | 100 | 310 | 710 | 900 | 1260 | 1850 | 3250 | 6480 |
| | | 6 | 85 | 280 | 650 | 800 | 1120 | 1700 | 2880 | 5500 |
| | | 7 | 85 | 270 | 625 | 780 | 1100 | 1600 | 2800 | 5000 |
| | | 8 | 77 | 250 | 550 | 690 | 1025 | 1470 | 2560 | 4600 |
| | | 10 | 75 | 200 | 500 | 650 | 900 | 1250 | 2220 | 3900 |
| | | 14 | 85 | 270 | 625 | 780 | 1100 | 1600 | 2800 | 5000 |
| | | 20 | 75 | 200 | 500 | 650 | 900 | 1250 | 2220 | 3900 |
| 額定輸出扭矩 T_{2N} Nominal output Torque | Nm | 3 | 15 | 60 | 135 | 195 | 315 | 500 | 880 | 1200 |
| | | 4/5 | 26 | 78 | 185 | 240 | 340 | 550 | 1100 | 1900 |
| | | 6 | 23 | 70 | 155 | 210 | 320 | 460 | 845 | 1580 |
| | | 7 | 23 | 65 | 125 | 180 | 315 | 430 | 820 | 1050 |
| | | 8 | 18 | 64 | 120 | 175 | 293 | 410 | 755 | 1000 |
| | | 10 | 15 | 43 | 115 | 160 | 220 | 350 | 650 | 950 |
| | | 14 | 23 | 65 | 125 | 180 | 315 | 430 | 820 | 1050 |
| | | 20 | 15 | 43 | 115 | 160 | 220 | 350 | 650 | 950 |
| 減速比 I | | 單段 | 3/4/5/6/7/8/10/14/20 | | | | | | | |
| 額定輸入轉速 n_{1N} Nominal Input Speed | rpm | | 4000 | 3000 | 3000 | 3000 | 2000 | 2000 | 1500 | 1500 |
| 最大輸入轉速 n_{1Max} Max. Input Speed | rpm | 3~20 | 6000 | 5000 | 4500 | 4000 | 3500 | 3000 | 2500 | 2000 |
| 徑向負荷力 $F_{rMax(3)}$ Radial Load | N | 3~20 | 2600 | 3800 | 6000 | 7500 | 9000 | 11500 | 14000 | 18000 |
| 軸向負荷力 $F_{aMax(3)}$ Axial Load | N | 3~20 | 2300 | 3200 | 5400 | 6700 | 9000 | 11300 | 14000 | 18000 |
| 超精密背隙 Micro Backlash | arcmin | 3~20 | - | ≤2 | ≤2 | ≤2 | ≤2 | ≤2 | ≤2 | ≤2 |
| 精密背隙 Reduced Backlash | arcmin | 3~20 | ≤4 | ≤4 | ≤4 | ≤4 | ≤4 | ≤4 | ≤3 | ≤3 |
| 標準背隙 Standard Backlash | arcmin | 3~20 | ≤6 | ≤6 | ≤6 | ≤6 | ≤6 | ≤6 | ≤5 | ≤5 |
| 扭轉剛性 Torsional Rigidity | Nm/ arcmin | 3~20 | 3 | 8.5 | 23 | 35 | 50 | 95 | 150 | 220 |
| 滿載時使用效率 Efficiency with Full Load | % | 3~20 | ≥97 | | | | | | | |
| 使用壽命 L_{h2} Service Life | h | 3~20 | 20000 | | | | | | | |
| 重量 | kg | 3~20 | 3.8 | 6.2 | 11.5 | 18.5 | 24 | 35 | 50 | 82 |
| 噪音值 (4) Noise Level | dB | | ≤65 | ≤67 | | ≤70 | | | ≤71 | ≤73 |
| 使用溫度範圍 Permissible Gear Reducer Temp | °C | | - 10°C ~ + 90°C | | | | | | | |
| 防護等級 Protection Class | | | IP 64 | | | | | | | |
| 潤滑油 Lubrication | | | 人工合成潤滑油 Synthetic oil viscosity | | | | ISO VG220 | | | |
| 轉動慣量 J_1 Mass Moments of Inertia | kg · cm ² | 3~10 | 0.93 | 3.45 | 10.6 | 14.75 | 22.95 | 43.4 | 77.3 | 166.7 |
| | | 14/20 | 0.77 | 2.9 | 9.15 | 12.3 | 18.1 | 30.6 | 59.1 | 102.4 |

註(1)本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。

註(2)堪用期內可作1000次之動作。

註(3)輸出轉速100rpm作用於輸出軸中心。

註(4)噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。

· 連續運轉將會減少減速機二分之一的使用壽命。
· 客戶所需之減速比，若非表內所有，可與本公司洽詢。

Note (1) The data can be applied to starting frequency less than 1000 times per hour. Please contact us if more.

Note (2) Operation can be up to 1000 times in product life.

Note (3) It acts on in the output shaft center at output speed 100 rpm.

Note (4) Noise inspection of ratio-5 reducers measure at input speed 3000 rpm, in 1-meter distance, and with free-load operation.

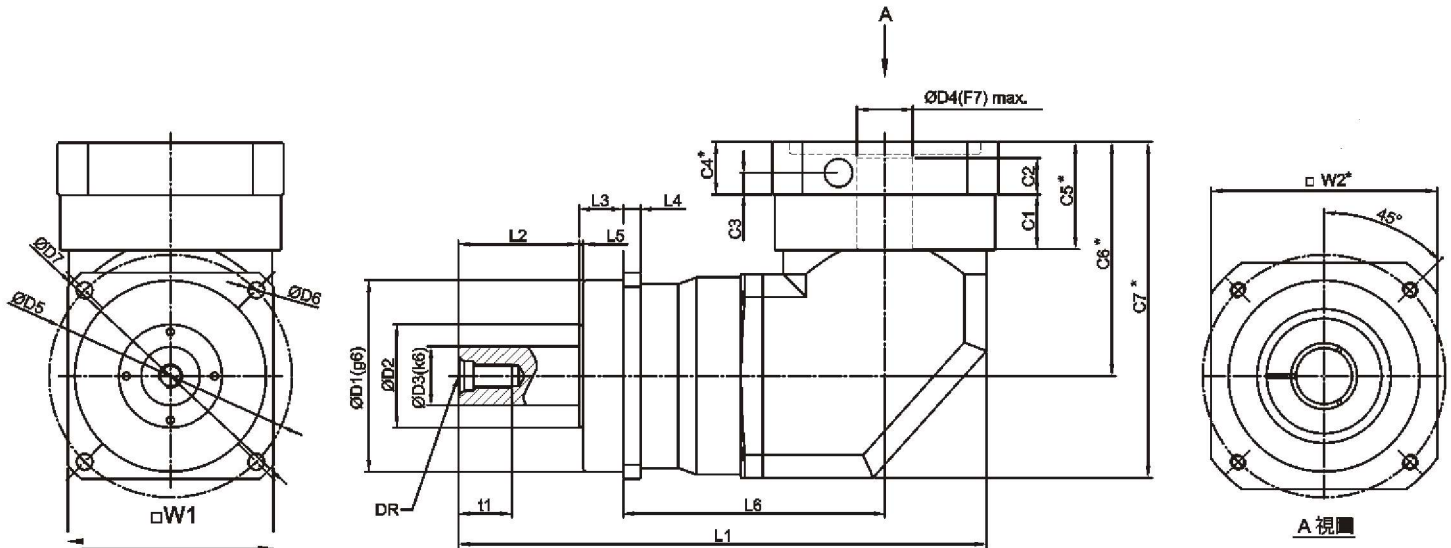
· Continuous operation will cause half of reducer life decreased.

· If any customized ratios are not available from above, please contact us.

PGR 外觀尺寸 (單段 3~20比)[mm]



Dimensions (1-Stage 3~10/14/20 Ratio) [mm]



| 規格 Size | PGR060 | PGR080 | PGR100 | PGR120 | PGR140 | PGR160 | PGR180 | PGR210 |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|
| W1 | 62 | 80 | 100 | 120 | 140 | 160 | 182 | 210 |
| ※ W2 min. | 76.2 | 95 | 118 | 145 | 153.5 | 176 | 176 | 190 |
| DR | M5 | M8 | M12 | M12 | M16 | M16 | M20 | M20 |
| t1 | 12.5 | 19 | 28 | 28 | 36 | 36 | 42 | 42 |
| D1(g6) | 60 | 70 | 90 | 110 | 130 | 145 | 160 | 180 |
| D2 | 30 | 40 | 55 | 60 | 70 | 85 | 95 | 125 |
| D3(k6) | 16 | 22 | 32 | 35 | 40 | 50 | 55 | 75 |
| D4(F7) max. | 14 | 24 | 32 | 35 | 38 | 42 | 48 | 55 |
| D5 | 68 | 85 | 120 | 130 | 165 | 190 | 215 | 250 |
| D6 | 5.5 | 6.6 | 9 | 9 | 11 | 13 | 13 | 17 |
| D7 | 79 | 103 | 135 | 155 | 185 | 215 | 240 | 279 |
| L1 | 182.5 | 217.5 | 282 | 319.3 | 358.8 | 393.8 | 432.3 | 517 |
| L2 | 28 | 36 | 58 | 70 | 82 | 82 | 82 | 105 |
| L3 | 20 | 20 | 30 | 29.8 | 29.8 | 29.8 | 29.8 | 38 |
| L4 | 6 | 7 | 10 | 11 | 12 | 13.5 | 15 | 17 |
| L5 | 2 | 2 | 2 | 2.75 | 2.75 | 2.75 | 2.75 | 3 |
| L6 | 101 | 120 | 142 | 158 | 178 | 200 | 223.5 | 263 |
| C1 | 12 | 21.7 | 29 | 27.2 | 37.2 | 39.3 | 44 | 46.5 |
| C2 | 18 | 22.5 | 24.2 | 25.3 | 26.8 | 28 | 34 | 38.5 |
| C3 | 10.5 | 12.8 | 13.2 | 13.8 | 14.8 | 15.5 | 18.5 | 20.5 |
| ※ C4 min. | 24 | 28 | 31 | 32 | 35 | 36 | 42 | 47 |
| ※ C5 min. | 36 | 49.7 | 60 | 59.2 | 72.2 | 75.2 | 86 | 93.5 |
| ※ C6 min. | 87.5 | 107.5 | 129.5 | 138.7 | 158.5 | 176.5 | 201 | 226 |
| ※ C7 min. | 122.5 | 149 | 181.5 | 200.2 | 227.5 | 258.5 | 298 | 337 |

- ※ 此記號表示之尺寸視聯結之伺服馬達不同而有所變動。
- ※ 本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如需確實之尺寸，可洽本公司。
- ※ Actual dimensions may vary with different servo motor collocation.
- ※ We persistently research in and develop our products, and we have made every effort to maintain the specification data above correct. If there is any discrepancy between the data and real dimensions, please refer to products or may contact us for updated data.

| 規 格 Size | | | PGR060 | PGR080 | PGR100 | PGR120 | PGR140 | PGR160 | PGR180 | PGR210 | PGR240 |
|--|-----------------------|--|------------------------------------|--------|--------|--------|--------|--------|-----------|--------|--------|
| 最大加速扭矩 $T_{2B}^{(1)}$ Output Torque | Nm | 減速比 | | | | | | | | | |
| | | 12/15/16/20/25/28/35/40/50 | 47 | 115 | 270 | 350 | 510 | 810 | 1300 | 2600 | 4100 |
| | | 30/60/120 | 40 | 103 | 250 | 340 | 445 | 730 | 1180 | 2150 | 3780 |
| | | 70/140 | 40 | 100 | 240 | 310 | 440 | 700 | 1130 | 1680 | 3500 |
| | | 80/160 | 33 | 91 | 215 | 285 | 410 | 650 | 1040 | 1600 | 3300 |
| 100/200 | 32 | 77 | 190 | 245 | 340 | 500 | 900 | 1500 | 2700 | | |
| 緊急停止扭矩 $T_{2Not}^{(2)}$ Emergency Stop Torque | Nm | 12/15/16/20/25/28/35/40/50 | 100 | 310 | 710 | 900 | 1260 | 1850 | 3250 | 6480 | 9500 |
| | | 30/60/120 | 85 | 280 | 650 | 800 | 1120 | 1700 | 2880 | 5500 | 8950 |
| | | 70/140 | 85 | 270 | 625 | 780 | 1100 | 1600 | 2800 | 5000 | 8650 |
| | | 80/160 | 77 | 250 | 550 | 690 | 1025 | 1470 | 2560 | 4600 | 7200 |
| | | 100/200 | 75 | 200 | 500 | 650 | 900 | 1250 | 2220 | 3900 | 6800 |
| 額定輸出扭矩 T_{2N} Nomlnal output Torque | Nm | 12/15/16/20/25/28/35/40/50 | 26 | 78 | 185 | 240 | 340 | 550 | 1100 | 1900 | 2600 |
| | | 30/60/120 | 23 | 70 | 155 | 210 | 320 | 460 | 845 | 1580 | 2250 |
| | | 70/140 | 23 | 65 | 125 | 180 | 315 | 430 | 820 | 1050 | 1700 |
| | | 80/160 | 18 | 64 | 120 | 175 | 293 | 410 | 755 | 1000 | 1660 |
| | | 100/200 | 15 | 43 | 115 | 160 | 220 | 350 | 650 | 950 | 1550 |
| 減速比 | 雙段 | 12/15/16/20/25/28/30/35/40/50/60/70/80/100/120/140/160/200 | | | | | | | | | |
| 額定輸入轉速 n_{1N} Nomlnal Input Speed | rpm | 12~200 | 4000 | 3000 | 3000 | 3000 | 2000 | 2000 | 2000 | 1500 | 1500 |
| 最大輸入轉速 n_{1Max} Max. Input Speed | rpm | 12~200 | 6000 | 5000 | 4500 | 4000 | 3500 | 3500 | 3500 | 2500 | 2500 |
| 徑向負荷力 $F_{rMax}^{(3)}$ Radial Load | N | 12~200 | 2600 | 3800 | 6000 | 7500 | 9000 | 11500 | 14000 | 18000 | 27000 |
| 軸向負荷力 $F_{aMax}^{(3)}$ Axial Load | N | 12~200 | 2300 | 3200 | 5400 | 6700 | 9000 | 11300 | 14000 | 18000 | 27000 |
| 超精密背隙 Micro Backlash | arcmin | 12~200 | - | - | ≤4 | ≤4 | ≤4 | ≤4 | ≤4 | ≤4 | ≤4 |
| 精密背隙 Reduced Backlash | arcmin | 12~200 | ≤6 | ≤6 | ≤6 | ≤6 | ≤6 | ≤6 | ≤5 | ≤5 | ≤5 |
| 標準背隙 Standard Backlash | arcmin | 12~200 | ≤8 | ≤8 | ≤8 | ≤8 | ≤8 | ≤8 | ≤7 | ≤7 | ≤7 |
| 扭轉剛性 Torsional Rigidity | Nm/ arcmin | 12~200 | 3 | 8.5 | 23 | 35 | 50 | 95 | 150 | 220 | 355 |
| 滿載時使用效率 Efficiency with Full Load | % | 12~200 | ≥94 | | | | | | | | |
| 使用壽命 L_{h2} Service Life | h | 12~200 | 20000 | | | | | | | | |
| 重量 | kg | 12~200 | 4.3 | 6.8 | 12.7 | 21.7 | 28.5 | 32 | 44 | 76 | 104 |
| 噪音值 (4) Noise Level | dB | | ≤65 | ≤67 | | ≤70 | | | ≤71 | ≤73 | |
| 使用溫度範圍 Permissible Gear Reducer Temp | °C | | - 10°C ~ + 90°C | | | | | | | | |
| 防護等級 Protection Class | | | IP 64 | | | | | | | | |
| 潤滑油 Lubrication | | | 人工合成潤滑油 Synthetic oil viscosity | | | | | | ISO VG220 | | |
| 轉動慣量 J_1 Mass Moments of Inertia | kg cm ² | 12~100 | 0.93 | 3.45 | 10.6 | 14.75 | 22.95 | 22.95 | 22.95 | 77.3 | 77.3 |
| | | 120~200 | 0.77 | 2.87 | 9.15 | 12.3 | 18.1 | 18.1 | 18.1 | 59.1 | 59.1 |

註(1) 本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。

註(2) 堪用期內可作1000次之動作。

註(3) 輸出轉速100rpm作用於輸出軸中心。

註(4) 噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。

- 連續運轉將會減少減速機二分之一的使用壽命。
- 客戶所需之減速比，若非表內所有，可與本公司洽詢。

Note (1) The data can be applied to starting frequency less than 1000 times per hour. Please contact us if more.

Note (2) Operation can be up to 1000 times in product life.

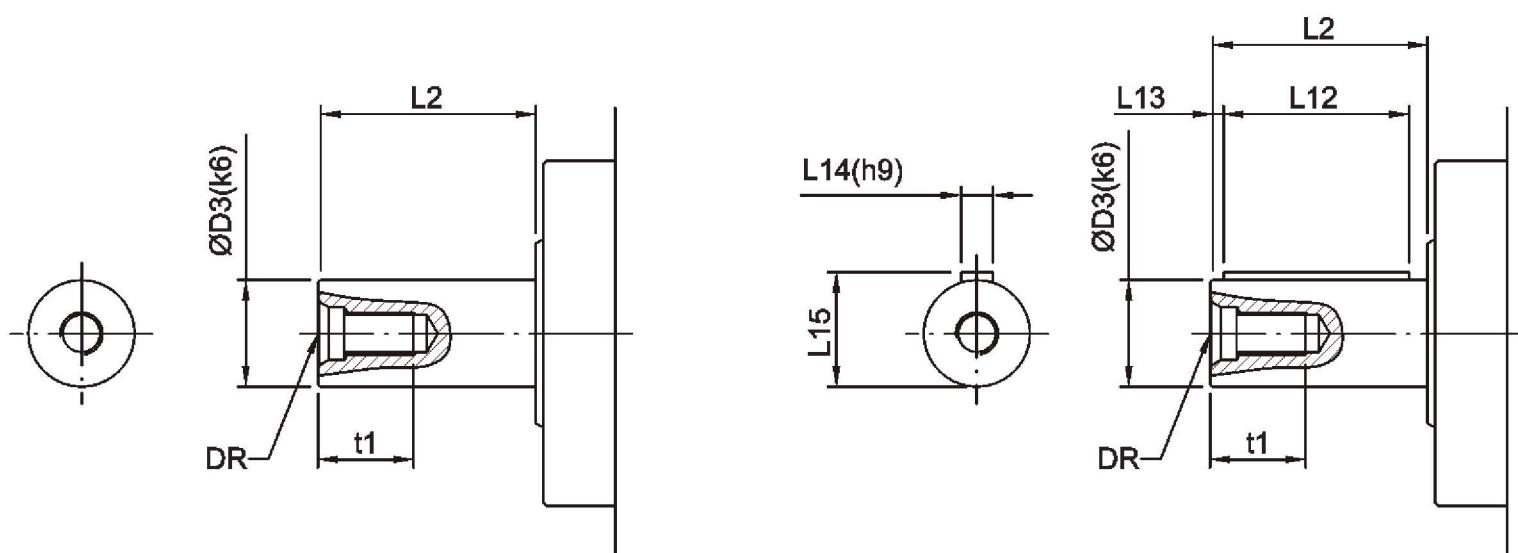
Note (3) It acts on in the output shaft center at output speed 100 rpm.

Note (4) Noise inspection of ratio-5 reducers measure at input speed 3000 rpm, in 1-meter distance, and with free-load operation.

- Continuous operation will cause half of reducer life decreased.
- If any customized ratios are not available from above, please contact us.

1. 平滑式輸出軸 [mm] Smooth output shaft [mm]

| 規格 Size | | PGR060 | PGR080 | PGR100 | PGR120 | PGR140 | PGR160 | PGR180 | PGR210 | PGR240 |
|---|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 輸出軸直徑- \varnothing Output shaft-diameter | D3(k6) | 16 | 22 | 32 | 35 | 40 | 50 | 55 | 75 | 85 |
| 輸出軸長度 Output shaft length | L2 | 28 | 36 | 58 | 70 | 82 | 82 | 82 | 105 | 130 |
| 中心孔 Centering bore | DR | M5 | M8 | M12 | M12 | M16 | M16 | M20 | M20 | M20 |
| 中心孔螺紋深度 Depth of thread, centering bore | t1 | 12.5 | 19 | 28 | 28 | 36 | 36 | 42 | 42 | 42 |



2. 鍵槽式輸出軸 [mm] Keyway output shaft [mm]

| 規格 Size | | PGR060 | PGR080 | PGR100 | PGR120 | PGR140 | PGR160 | PGR180 | PGR210 | PGR240 |
|---|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 輸出軸直徑- \varnothing Output shaft-diameter | D3(k6) | 16 | 22 | 32 | 35 | 40 | 50 | 55 | 75 | 85 |
| 輸出軸長度 Output shaft length | L2 | 28 | 36 | 58 | 70 | 82 | 82 | 82 | 105 | 130 |
| 鍵長 Key length | L12 | 25 | 32 | 50 | 63 | 70 | 70 | 70 | 90 | 125 |
| 鍵槽與軸端距離 Key location | L13 | 2 | 2 | 4 | 4 | 5 | 5 | 6 | 7 | 3 |
| 鍵寬 Key width | L14(h9) | 5 | 6 | 10 | 10 | 12 | 14 | 16 | 20 | 22 |
| 輸出軸加鍵高度 Output shaft with key | L15 | 18 | 24.5 | 35 | 38 | 43 | 53.5 | 59 | 79.5 | 90 |
| 中心孔 Centering bore | DR | M5 | M8 | M12 | M12 | M16 | M16 | M20 | M20 | M20 |
| 中心孔螺紋深度 Depth of thread, centering bore | t1 | 12.5 | 19 | 28 | 28 | 36 | 36 | 42 | 42 | 42 |



選用範列：

PGR 060 - 005 - RSAM1 /MITSUBISHI-HC-KFS43

/Motor

系列選擇: Example
PGR

馬達廠牌和型號
Motor brand and type

安裝方位: Mounting Directions
M1 M2 M3 (See below)

運轉方式: Operation
A(間歇cycle) B(連續continuous)

輸出軸型式: Output shaft
S(平滑式 smooth) K(鍵槽式keyway)

齒背隙: Backlash
M(超精密micro) R(精密reduced) S(標準standard)

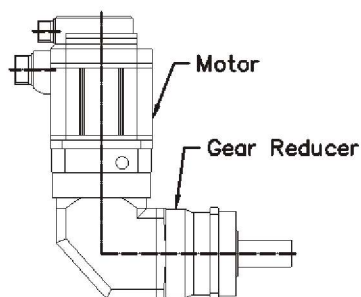
規格: Size

060 080 100 120 140 160
180 210 240

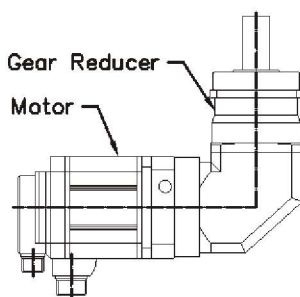
減速比: Ratio

003 004 005 006 007 008 010 014 020
012 015 016 020 025 028 030 035 040
050 060 070 080 100 120 140 160 200

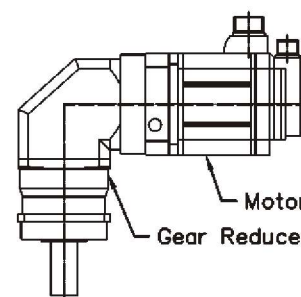
安裝方位 Directions



M1 水平
Horizontal



M2 垂直朝上
Upwards



M3 垂直朝下
Downwards

- 本公司產品陸續增加，如資料有所不符，將以本公司提供之最新資料為準，恕不另行通知。
- Our products have been developing generally, so has their information updating. If there is any discrepancy, it is subject to the updated information we offer without any notice.

- 螺旋傘齒輪設計，精密研磨齒輪，齒面平滑精度高。
- 高容許輸入轉速。
- 直角齒輪箱採用高強度鋁合金設計，便輕量化。
- Spiral bevel gear and precision grinding gears , smooth teeth surface and high accuracy
- High input speed
- High strength and light-weight aluminum casing

↓ 運轉順暢、低噪音 Operating smooth · Low noise

- 小齒輪及齒條採螺旋系配合，並經硬化處理和精密研磨。
- Pinion with less teeth mesh with rack , both hardened and grounded process

↓ 易安裝、省空間及重量 Easy installation, space and weight saving

- 小齒輪與減速機中空軸以高強韌聯軸器相聯結。
- Pinion and output shaft of reducer are connected with high stiffness coupling

↓ 減速機可承受大負荷軸/徑向推力 Affording huge radial and axial load

- 減速機輸出軸裝有一組高強度的滾錐軸承。
- Using high quality taper roller bearing to strengthen the radial and axial load

↓ 小齒輪與齒條可調整至最佳精度 Rack and pinion can be adjusted to best precision

- 透過偏心的聯接板，結構簡單，小齒輪位置易調整。
- With eccentric plate and simplified strure could be adjusted the position of pinion easily

↓ 高起動性及加速時間短 High dynamics

- 優良的結構設計以獲得低慣性矩，啟動、停止靈敏。
- For an excellent design, high accuracy, and low moments of inertia

↓ 高經濟效益 High economical effect

- 由於低慣性矩，因而能選配較小的伺服馬達，節省成本。
- low moment characteristic could select the smaller kilowatt servo motor , further carry the cost-down out .

↓ 極佳的線性定位精度 Perfect for linear positioning

- 小齒輪與齒條採用研磨級系列製品，齒條累積節距誤差精度為0.03/1000mm。
- Adopting ground rack and pinion , cumulative pitch error under 0.03/1000mm

↓ 壽命長 Long service life

- | | |
|--|--|
| <p>集合下列整體綜效</p> <ul style="list-style-type: none"> ● 歐規的設計結構 ● 精選的西歐名牌軸承 ● 德製的油封 ● 齒輪經硬化處理和精密研磨 ● 採高防護指數的油潤滑 | <p>Due to these characteristics as below</p> <ul style="list-style-type: none"> ● Well design and structure ● Using high quality taper roller bearing ● High quality German seal ● Harden and ground gear ● Best-nosen synthetic oil |
|--|--|

HGR 系列 HGR SERIES



應用範圍 SCOPES :

↓ 工具機業 MACHINE TOOLS

CNC 龍門銑床 / CNC 龍門磨床
CNC 綜合加工機 / CNC 鑽孔機
CNC 龍門刨床 / CNC 沖床
CNC 重型臥車 · 立車

CNC Gantry Milling Machine / CNC Gantry Grinding Machine
CNC Integrated Processing Machine / CNC Drilling Machine
CNC Gantry Planing Mill / CNC Punching Machine
CNC Heavy Duty Lathe (Horizontal or Vertical Spindle)

↓ 產業機械 SPECIAL PURPOSE MACHINE

包裝機械 / 印刷機 / 攻牙機
紡織機械 / 彎管機 / CNC 沖壓機
木工機 / 吹瓶機 / 雕刻機
充填機 / 射出成型機 / CNC 彈簧機
雷射切割機

Packaging Machinery / Print Machine / Tapping machine
Textile Machinery / Tube Bending Machine / CNC Press
Woodworking Machine / Blow Molding Machine / Engraving Machine
Filling Machine / Injection Molding Machine / Spring Machine
Laser Cutting Machine

↓ 工廠自動化工業 ACTORY AUTOMATION

半導體機械設備 / 光電面板業
機械手臂 / 自動倉儲運搬系統
醫療產業 / 金屬表面處理設備

Semiconductor Machinery and Equipment / Photoelectric Panel Industry
Gantry Loader / Automated Storage and Retrieval System
Medical Industry / Metal Surface Treatment Equipment

高扭力定位系統應用
搭配伺服馬達之自動化機械裝置

High Torque Positioning System Applications
Automatic Mechanical Device with Servo Motor Collocation

| 規 格 Size | | | HGR100 | HGR120 | HGR140 | HGR160 | HGR180 | HGR210 |
|---|----------------------|-------|------------------------------------|--------|--------|--------|-----------|--------|
| 最大加速扭矩 $T_{2B(1)}$ Output Torque | Nm | 減速比 | | | | | | |
| | | 3 | 202 | 330 | 440 | 735 | 1055 | 1750 |
| | | 4/5 | 270 | 350 | 510 | 810 | 1300 | 2600 |
| | | 6 | 250 | 340 | 445 | 730 | 1180 | 2150 |
| | | 7 | 240 | 310 | 440 | 700 | 1130 | 1680 |
| | | 8 | 215 | 285 | 410 | 650 | 1040 | 1600 |
| | | 10 | 190 | 245 | 340 | 500 | 900 | 1500 |
| | | 14 | 240 | 310 | 440 | 700 | 1130 | 1680 |
| 緊急停止扭矩 $T_{2No1(2)}$ Emergency Stop Torque | Nm | 3 | 630 | 800 | 1100 | 1700 | 3000 | 6200 |
| | | 4/5 | 710 | 900 | 1260 | 1850 | 3250 | 6480 |
| | | 6 | 650 | 800 | 1120 | 1700 | 2880 | 5500 |
| | | 7 | 625 | 780 | 1100 | 1600 | 2800 | 5000 |
| | | 8 | 550 | 690 | 1025 | 1470 | 2560 | 4600 |
| | | 10 | 500 | 650 | 900 | 1250 | 2220 | 3900 |
| | | 14 | 625 | 780 | 1100 | 1600 | 2800 | 5000 |
| | | 20 | 500 | 650 | 900 | 1250 | 2220 | 3900 |
| 額定輸出扭矩 T_{2N} Nominal output Torque | Nm | 3 | 135 | 195 | 315 | 500 | 880 | 1200 |
| | | 4/5 | 185 | 240 | 340 | 550 | 1100 | 1900 |
| | | 6 | 155 | 210 | 320 | 460 | 845 | 1580 |
| | | 7 | 125 | 180 | 315 | 430 | 820 | 1050 |
| | | 8 | 120 | 175 | 293 | 410 | 755 | 1000 |
| | | 10 | 115 | 160 | 220 | 350 | 650 | 950 |
| | | 14 | 125 | 180 | 315 | 430 | 820 | 1050 |
| | | 20 | 115 | 160 | 220 | 350 | 650 | 950 |
| 減速比 I | | 單段 | 3/4/5/6/7/8/10/14/20 | | | | | |
| 額定輸入轉速 n_{1N} Nominal Input Speed | rpm | | 3000 | 3000 | 2000 | 2000 | 1500 | 1500 |
| 最大輸入轉速 n_{1Max} Max. Input Speed | rpm | 3~20 | 4500 | 4000 | 3500 | 3000 | 2500 | 2000 |
| 徑向負荷力 $F_{rMax(3)}$ Radial Load | N | 3~20 | 6000 | 7500 | 9000 | 11500 | 14000 | 18000 |
| 軸向負荷力 $F_{aMax(3)}$ Axial Load | N | 3~20 | 5400 | 6700 | 9000 | 11300 | 14000 | 18000 |
| 超精密背隙 Micro Backlash | arcmin | 3~20 | ≤2 | ≤2 | ≤2 | ≤2 | ≤2 | ≤2 |
| 精密背隙 Reduced Backlash | arcmin | 3~20 | ≤4 | ≤4 | ≤4 | ≤4 | ≤3 | ≤3 |
| 標準背隙 Standard Backlash | arcmin | 3~20 | ≤6 | ≤6 | ≤6 | ≤6 | ≤5 | ≤5 |
| 扭轉剛性 Torsional Rigidity | Nm/ arcmin | 3~20 | 23 | 35 | 50 | 95 | 150 | 220 |
| 滿載時使用效率 Efficiency with Full Load | % | 3~20 | ≥97 | | | | | |
| 使用壽命 L_{h2} Service Life | h | 3~20 | 20000 | | | | | |
| 重量 | kg | 3~20 | 15.5 | 23 | 32 | 47 | 72.5 | 113 |
| 噪音值 (4) Noise Level | dB | | ≤67 | ≤70 | | | ≤71 | ≤73 |
| 使用溫度範圍 Permissible Gear Reducer Temp | °C | | - 10°C ~ + 90°C | | | | | |
| 防護等級 Protection Class | | | IP 64 | | | | | |
| 潤滑油 Lubrication | | | 人工合成潤滑油 Synthetic oil viscosity | | | | ISO VG220 | |
| 轉動慣量 J_1 Mass Moments of Inertia | kg · cm ² | 3~10 | 10.6 | 14.75 | 22.94 | 43.4 | 77.3 | 166.7 |
| | | 14/20 | 9.15 | 12.3 | 18.1 | 30.6 | 59.1 | 102.4 |

註(1) 本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。

註(2) 堪用期內可作1000次之動作。

註(3) 輸出轉速100rpm作用於輸出軸中心。

註(4) 噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。

· 連續運轉將會減少減速機二分之一的使用壽命。
· 客戶所需之減速比，若非表內所有，可與本公司洽詢。

Note (1) The data can be applied to starting frequency less than 1000 times per hour. Please contact us if more.

Note (2) Operation can be up to 1000 times in product life.

Note (3) It acts on in the output shaft center at output speed 100 rpm.

Note (4) Noise inspection of ratio-5 reducers measure at input speed 3000 rpm, in 1-meter distance, and with free-load operation.

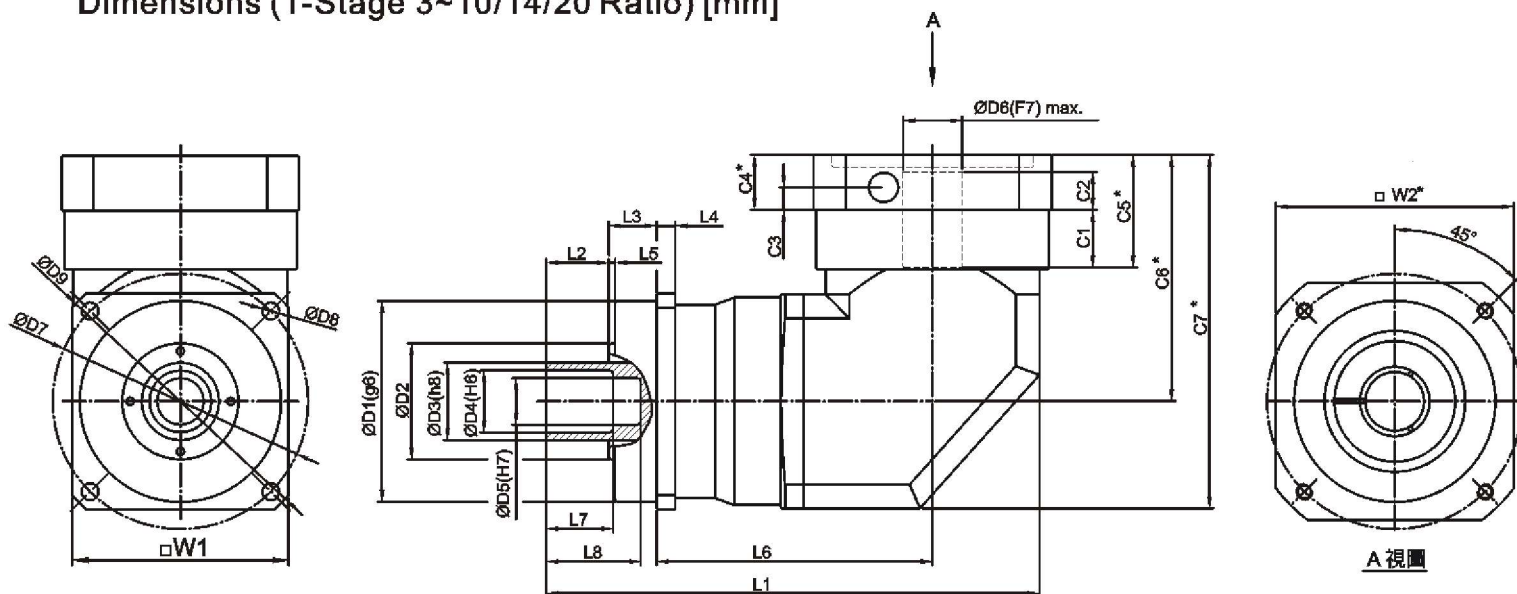
· Continuous operation will cause half of reducer life decreased.

· If any customized ratios are not available from above, please contact us.

HGR外觀尺寸 (單段 3~20比)[mm]



Dimensions (1-Stage 3~10/14/20 Ratio) [mm]



| 規格 Size | HGR100 | HGR120 | HGR140 | HGR160 | HGR180 | HGR210 |
|------------|--------|--------|--------|--------|--------|--------|
| W1 | 100 | 120 | 140 | 160 | 182 | 210 |
| ※ W2 min. | 118 | 145 | 153.5 | 176 | 176 | 190 |
| D1(g6) | 90 | 110 | 130 | 145 | 160 | 180 |
| D2 | 55 | 65 | 75 | 85 | 95 | 125 |
| D3(H8) | 30 | 44 | 50 | 55 | 62 | 75 |
| D4(H6) | 25 | 35 | 40 | 45 | 50 | 60 |
| D5(H7) | 20 | 30 | 30 | 36 | 40 | 50 |
| D6(H7)max. | 32 | 35 | 38 | 42 | 48 | 55 |
| D7 | 120 | 130 | 165 | 190 | 215 | 250 |
| D8 | 9 | 9 | 11 | 13 | 13 | 17 |
| D9 | 135 | 155 | 185 | 215 | 240 | 279 |
| L1 | 252 | 284.3 | 318 | 353.8 | 395.3 | 460 |
| L2 | 28 | 34 | 40 | 42 | 45 | 48 |
| L3 | 30 | 30 | 31 | 29.8 | 29.8 | 38 |
| L4 | 10 | 11 | 12 | 13.5 | 15 | 17 |
| L5 | 2 | 3 | 4 | 2.75 | 2.75 | 3 |
| L6 | 142 | 158 | 178 | 200 | 223.5 | 263 |
| L7 | 30 | 50 | 43 | 50 | 55 | 66 |
| L8 | 45 | 70 | 63 | 75 | 85 | 100 |
| C1 | 29 | 27.2 | 37.2 | 39.3 | 44 | 46.5 |
| C2 | 24.2 | 25.3 | 26.8 | 28 | 34 | 38.5 |
| C3 | 13.2 | 13.8 | 14.8 | 15.5 | 18.5 | 20.5 |
| ※ C4 min. | 31 | 32 | 35 | 36 | 42 | 47 |
| ※ C5 min. | 60 | 59.2 | 72.2 | 75.2 | 86 | 93.5 |
| ※ C6 min. | 129.5 | 138.7 | 158.5 | 176.5 | 201 | 226 |
| ※ C7 min. | 181.5 | 200.2 | 227.5 | 258.5 | 298 | 337 |

※此記號表示之尺寸視聯結之伺服馬達不同而有所變動。

※本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如需確實之尺寸，可洽本公司。

※Actual dimensions may vary with different servo motor collocation.

We persistently research in and develop our products, and we have made every effort to maintain the specification data above correct. If there is any discrepancy between the data and real dimensions, please refer to products or may contact us for updated data.

| 規 格 Size | | | HGR100 | HGR120 | HGR140 | HGR160 | HGR180 | HGR210 | HGR240 | |
|--|-----------------------|--|------------------------------------|--------|--------|--------|-----------|--------|--------|--|
| 最大加速扭矩 $T_{2B}^{(1)}$ Output Torque | Nm | 減速比 | | | | | | | | |
| | | 12/15/16/20/25/28 /35/40/50 | 270 | 350 | 510 | 810 | 1300 | 2600 | 4100 | |
| | | 30/60/120 | 250 | 340 | 445 | 730 | 1180 | 2150 | 3780 | |
| | | 70/140 | 240 | 310 | 440 | 700 | 1130 | 1680 | 3500 | |
| | | 80/160 | 215 | 285 | 410 | 650 | 1040 | 1600 | 3300 | |
| 100/200 | 190 | 245 | 340 | 500 | 900 | 1500 | 2700 | | | |
| 緊急停止扭矩 $T_{2Not}^{(2)}$ Emergency Stop Torque | Nm | 12/15/16/20/25/28 /35/40/50 | 710 | 900 | 1260 | 1850 | 3250 | 6480 | 9500 | |
| | | 30/60/120 | 650 | 800 | 1120 | 1700 | 2880 | 5500 | 8950 | |
| | | 70/140 | 625 | 780 | 1100 | 1600 | 2800 | 5000 | 8650 | |
| | | 80/160 | 550 | 690 | 1025 | 1470 | 2560 | 4600 | 7200 | |
| | | 100/200 | 500 | 650 | 900 | 1250 | 2220 | 3900 | 6800 | |
| 額定輸出扭矩 T_{2N} Nomlnal output Torque | Nm | 12/15/16/20/25/28 /35/40/50 | 185 | 240 | 340 | 550 | 1100 | 1900 | 2600 | |
| | | 30/60/120 | 155 | 210 | 320 | 460 | 845 | 1580 | 2250 | |
| | | 70/140 | 125 | 180 | 315 | 430 | 820 | 1050 | 1700 | |
| | | 80/160 | 120 | 175 | 293 | 410 | 755 | 1000 | 1660 | |
| | | 100/200 | 115 | 160 | 220 | 350 | 650 | 950 | 1550 | |
| 減速比 | 雙段 | 12/15/16/20/25/28/30/35/40/50/60/70/80/100/120/140/160/200 | | | | | | | | |
| 額定輸入轉速 n_{1N} Nomlnal Input Speed | rpm | 12~200 | 3000 | 3000 | 2000 | 2000 | 2000 | 1500 | 1500 | |
| 最大輸入轉速 n_{1Max} Max. Input Speed | rpm | 12~200 | 4500 | 4000 | 3500 | 3500 | 3500 | 2500 | 2500 | |
| 徑向負荷力 $Fr_{Max}^{(3)}$ Radial Load | N | 12~200 | 6000 | 7500 | 9000 | 11500 | 14000 | 18000 | 27000 | |
| 軸向負荷力 $Fa_{Max}^{(3)}$ Axlal Load | N | 12~200 | 5400 | 6700 | 9000 | 11300 | 14000 | 18000 | 27000 | |
| 超精密背隙 Micro Backlash | arcmin | 12~200 | ≤ 4 | ≤ 4 | ≤ 4 | ≤ 4 | ≤ 4 | ≤ 4 | ≤ 4 | |
| 精密背隙 Reduced Backlash | arcmin | 12~200 | ≤ 6 | ≤ 6 | ≤ 6 | ≤ 6 | ≤ 5 | ≤ 5 | ≤ 5 | |
| 標準背隙 Standard Backlash | arcmin | 12~200 | ≤ 8 | ≤ 8 | ≤ 8 | ≤ 8 | ≤ 7 | ≤ 7 | ≤ 7 | |
| 扭轉剛性 Torsional Rigidity | Nm/ arcmin | 12~200 | 23 | 35 | 50 | 95 | 150 | 220 | 355 | |
| 滿載時使用效率 Efficiency with Full Load | % | 12~200 | ≥ 94 | | | | | | | |
| 使用壽命 L_{h2} Service Life | h | 12~200 | 20000 | | | | | | | |
| 重量 | kg | 12~200 | 16.7 | 26.2 | 36 | 40 | 51.5 | 99 | 128 | |
| 噪音值 (4) Noise Level | dB | | ≤ 60 | ≤ 70 | | | ≤ 71 | ≤ 73 | | |
| 使用溫度範圍 Permissible Gear Reducer Temp | °C | | - 10°C ~ + 90°C | | | | | | | |
| 防護等級 Protection Class | | | IP 64 | | | | | | | |
| 潤滑油 Lubrication | | | 人工合成潤滑油 Synthetic oil viscosity | | | | ISO VG220 | | | |
| 轉動慣量 J_1 Mass Moments of Inertia | kg cm ² | 12~100 | 10.6 | 14.75 | 22.95 | 22.95 | 22.95 | 77.3 | 77.3 | |
| | | 120~200 | 9.15 | 12.3 | 18.1 | 18.1 | 18.1 | 59 | 59 | |

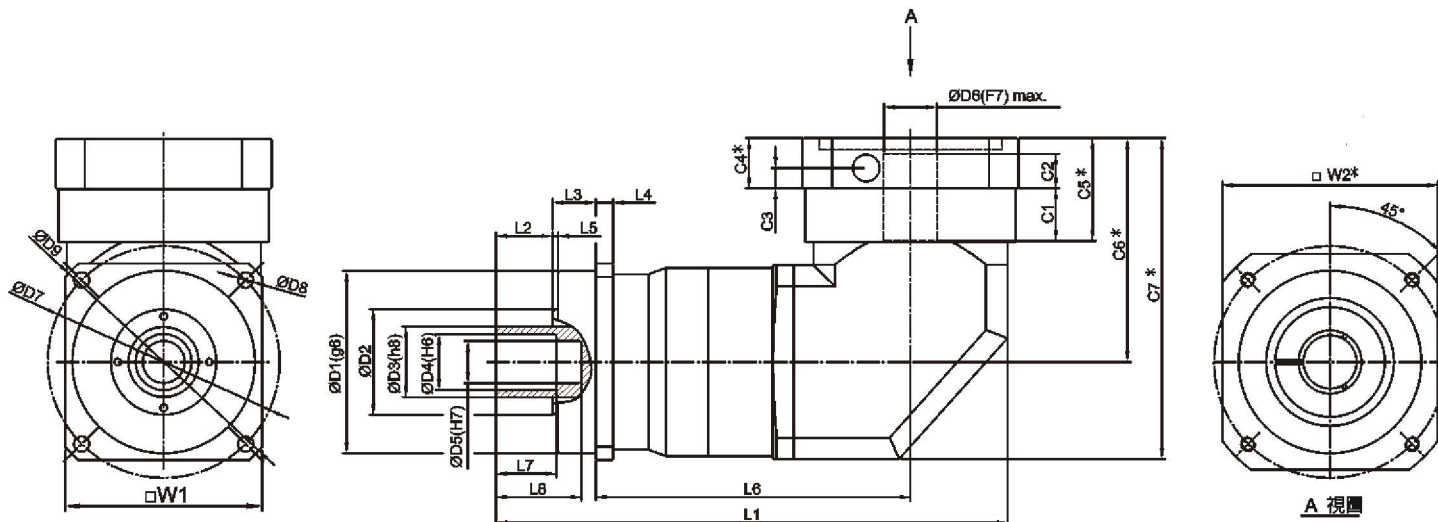
註(1) 本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。
 註(2) 堪用期內可作1000次之動作。
 註(3) 輸出轉速100rpm作用於輸出軸中心。
 註(4) 噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。
 · 連續運轉將會減少減速機二分之一的使用壽命。
 · 客戶所需之減速比，若非表內所有，可與本公司洽詢。

Note (1) The data can be applied to starting frequency less than 1000 times per hour. Please contact us if more.
 Note (2) Operation can be up to 1000 times in product life.
 Note (3) It acts on in the output shaft center at output speed 100 rpm.
 Note (4) Noise inspection of ratio-5 reducers measure at input speed 3000 rpm, in 1-meter distance, and with free-load operation.
 · Continuous operation will cause half of reducer life decreased.
 · If any customized ratios are not available from above, please contact us.

HGR外觀尺寸(雙段 12~200比) [mm]



Dimensions (2-Stage 12~200 Ratio) [mm]



| 規格 Size | HGR100 | HGR120 | HGR140 | HGR160 | HGR180 | HGR210 | HGR240 |
|------------|--------|--------|--------|--------|--------|--------|--------|
| W1 | 100 | 120 | 140 | 160 | 182 | 210 | 240 |
| ※ W2 min. | 118 | 145 | 153.5 | 153.5 | 153.5 | 176 | 176 |
| D1(g6) | 90 | 110 | 130 | 145 | 160 | 180 | 200 |
| D2 | 55 | 65 | 75 | 85 | 95 | 125 | 140 |
| D3(H8) | 30 | 44 | 50 | 55 | 62 | 75 | 90 |
| D4(H6) | 25 | 35 | 40 | 45 | 50 | 60 | 70 |
| D5(H7) | 20 | 30 | 30 | 36 | 40 | 50 | 60 |
| D6(H7)max. | 32 | 35 | 38 | 38 | 38 | 48 | 48 |
| D7 | 120 | 130 | 165 | 190 | 215 | 250 | 290 |
| D8 | 9 | 9 | 11 | 13 | 13 | 17 | 17 |
| D9 | 135 | 155 | 185 | 215 | 240 | 279 | 320 |
| L1 | 290.5 | 324.3 | 363.8 | 380.3 | 377.3 | 475.3 | 501.8 |
| L2 | 28 | 34 | 40 | 42 | 45 | 48 | 56 |
| L3 | 30 | 30 | 31 | 29.8 | 29.8 | 38 | 40 |
| L4 | 10 | 11 | 12 | 13.5 | 15 | 17 | 20 |
| L5 | 2 | 3 | 4 | 2.75 | 2.75 | 3 | 3 |
| L6 | 180.5 | 198 | 223.8 | 225 | 233.5 | 292.3 | 308.8 |
| L7 | 30 | 50 | 43 | 50 | 55 | 66 | 76 |
| L8 | 45 | 70 | 63 | 75 | 85 | 100 | 112 |
| C1 | 29 | 27.2 | 37.2 | 37.2 | 37.2 | 44 | 44 |
| C2 | 24.2 | 25.3 | 26.8 | 26.8 | 26.8 | 34 | 34 |
| C3 | 13.2 | 13.8 | 14.8 | 14.8 | 14.8 | 18.5 | 18.5 |
| ※C4 min. | 31 | 32 | 35 | 35 | 35 | 42 | 42 |
| ※C5 min. | 60 | 59.2 | 72.2 | 72.2 | 72.2 | 86 | 86 |
| ※C6 min. | 129.5 | 138.7 | 158.5 | 158.5 | 158.5 | 201 | 201 |
| ※C7 min. | 181.5 | 200.2 | 227.5 | 227.5 | 227.5 | 298 | 298 |

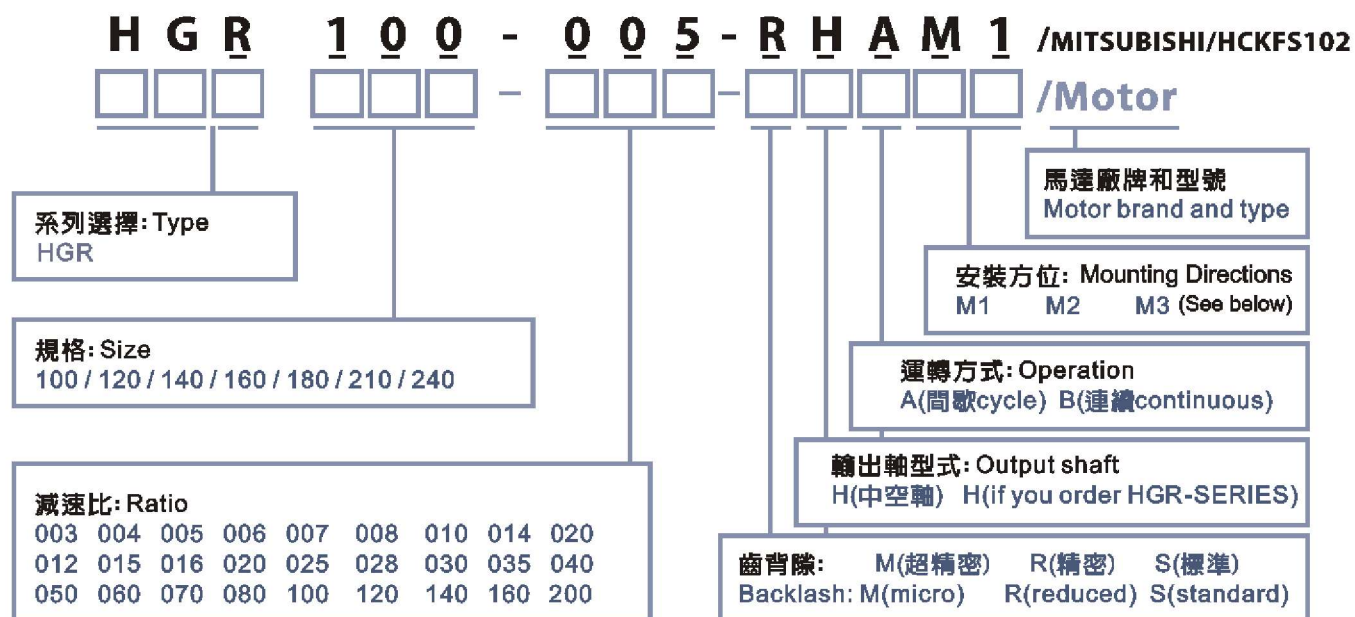
· ※此記號表示之尺寸視聯結之伺服馬達不同而有所變動。

· 本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如需確實之尺寸，可洽本公司。

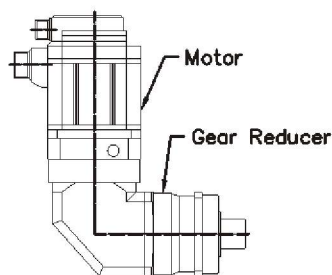
· ※Actual dimensions may vary with different servo motor collocation.

· We persistently research in and develop our products, and we have made every effort to maintain the specification data above correct. If there is any discrepancy between the data and real dimensions, please refer to products or may contact us for updated data.

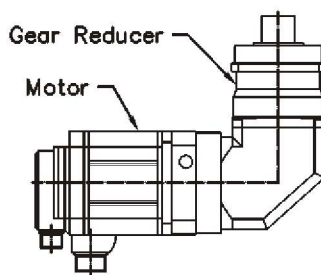
選用範列：



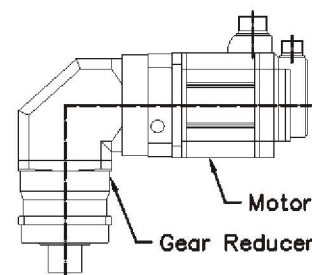
安裝方位 Directions



M1 水平
Horizontal



M2 垂直朝上
Upwards



M3 垂直朝下
Downwards

- 本公司產品陸續增加，如資料有所不符，將以本公司提供之最新資料為準，恕不另行通知。
- Our products have been developing generally, so has their information updating. If there is any discrepancy, it is subject to the updated information we offer without any notice.

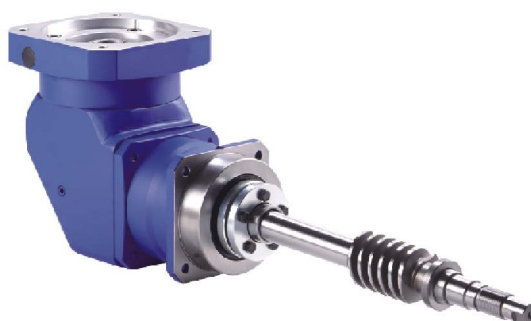
- 輸出端搭接螺旋齒輪或直齒輪，來與齒條或轉盤軸承搭配，作直線或旋轉移動。
- ◎ The output side could be mounted helical or spur pinion, to linear or rotational movement with rack and turntable bearing.



- 加強型輸出端搭接外罩箱體及軸承來強化剛性，可應用於超高速度及反應靈敏之機械。
- ◎ Reinforce type : the output side comprised the robust supporting cover and bearing , could gain the maximum rigidity .Especially ,be appropriate to the machine of high speed and quick reaction.



- 輸出端搭接滾珠螺桿及蝸桿。
- ◎ The output side could be mounted ball screw and worm.



- 螺旋傘齒輪設計，精密Lapping齒輪，齒面平滑精度高。
- 高容許輸入轉速。
- 直角齒輪箱採用高強度鋁合金設計，使輕量化。
- Spiral bevel gear designed and gear lapping processed: gear surfaces are smooth and precision.
- High speed input available
- Right-angle case is designed and made of high strengthened aluminum alloy for weight decreasing

↓ 精度高/低齒背隙 High Precision / Low Backlash

- 製作嚴謹，穩定性高。
- 單段齒背隙 <2~<6 弧分。
- 雙段齒背隙 <4~<8 背隙。
- Exact manufacture; high stability
- Stage one backlash: =2-6 arcmins
- Stage two backlash: =4-8 arcmins

↓ 效率高 High Efficiency

- 單段97% 雙段94%
- Stage one: =97%, Stage two: =94%

↓ 體積小 Small Volume

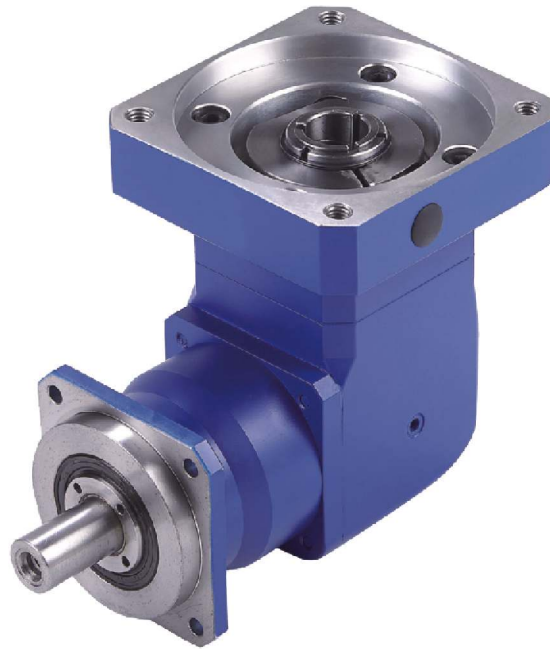
- 行星式運轉平衡，結構緊湊，體積小，輸出扭力大，在有限空間限制下，極有優勢。
- Planetary balanced operation, compact structure, small volume, high output torque, and excellent performance in limited space

↓ 易安裝 Easy Installation

- 聯接板與軸套採用模組化設計，適合各式馬達組裝。
- Modularized connecting plates and input bushings are compatible with a variety of servo motor brands.

↓ 長壽命、免保養 Long Service Life and Easy Maintenance

- 採用優質人工合成潤滑油，流動性佳，齒箱內各零件間充分得到潤滑及保護，可免換油。
- 採用高品質、耐熱、耐磨之油封，密封性佳。
- Premium synthetic oil, flowable better, is used in lubrication and protection of all components in the gearbox. Oil change is never required.
- High-grade oil seals, heat and wear resistant, are in use to serve well airtightness.



應用範圍 SCOPES :

↓ 工具機業 MACHINE TOOLS

| | |
|----------------------|---|
| CNC龍門銑床 / CNC龍門磨床 | CNC Gantry Milling Machine / CNC Gantry Grinding Machine |
| CNC綜合加工機 / CNC深孔加工機 | CNC Integrated Processing Machine / CNC Deephole Processing Machine |
| CNC落地搪床 / CNC鑽孔機 | CNC Floor Boring Machine / CNC Drilling Machine |
| CNC龍門刨床 / CNC重型臥車·立車 | CNC Gantry Planing Mill / CNC Heavy Duty Lathe (Horizontal or Vertical Spindle) |

↓ 產業機械 SPECIAL PURPOSE MACHINE

| | |
|----------------------|--|
| 包裝機械 / 印刷機 / 攻牙機 | Packaging Machinery / Print Machine / Tapping machine |
| 紡織機械 / 彎管機 / 彎板機 | Textile Machinery / Tube Bending Machine / Plate Bending Machine |
| 木工機 / 吹瓶機 / 雕刻機 | Woodworking Machine / Blow Molding Machine / Engraving Machine |
| 充填機 / 射出成型機 / CNC彈簧機 | Filling Machine / Injection Molding Machine / Spring Machine |
| 雷射切割機 / 雷射焊接機 | Laser Cutting Machine / Laser Welding Machine |

↓ 工廠自動化工業 ACTORY AUTOMATION

| | |
|-----------------|--|
| 半導體機械設備 / 光電面板業 | Semiconductor Machinery and Equipment / Photoelectric Panel Industry |
| 機械手臂 / 自動倉儲運搬系統 | Gantry Loader / Automated Storage and Retrieval System |
| 醫療產業 / 金屬表面處理設備 | Medical Industry / Metal Surface Treatment Equipment |

| 規 格 Size | | | AGR060 | AGR090 | AGR115 | AGR140 | AGR160 | AGR180 | AGR220 | |
|--|----------------------|-------|------------------------------------|--------|--------|--------|-----------|--------|--------|--|
| 最大加速扭矩 $T_{2B}^{(1)}$ Output Torque | Nm | 減速比 | | | | | | | | |
| | | 3 | 35 | 113 | 222 | 440 | 770 | 1165 | 1960 | |
| | | 4 | 55 | 130 | 300 | 560 | 880 | 1450 | 2400 | |
| | | 5 | 55 | 130 | 278 | 560 | 880 | 1450 | 2400 | |
| | | 6 | 45 | 115 | 267 | 480 | 800 | 1220 | 2020 | |
| | | 7 | 40 | 110 | 240 | 425 | 760 | 1085 | 1800 | |
| | | 8 | 38 | 103 | 222 | 410 | 700 | 1045 | 1740 | |
| | | 10 | 35 | 90 | 210 | 350 | 520 | 1000 | 1635 | |
| | | 14 | 40 | 110 | 222 | 410 | 700 | 1045 | 1740 | |
| 20 | 35 | 90 | 210 | 350 | 520 | 1000 | 1635 | | | |
| 緊急停止扭矩 $T_{2Not}^{(2)}$ Emergency Stop Torque | Nm | 3~20 | 2.5倍輸出扭矩 | | | | | | | |
| 額定輸入轉速 n_{1N} Nominal Input Speed | rpm | 3~20 | 4000 | 3000 | 3000 | 2000 | 2000 | 1500 | 1500 | |
| 最大輸入轉速 n_{1Max} Max. Input Speed | rpm | 3~20 | 6000 | 5000 | 4500 | 3500 | 3000 | 2500 | 2000 | |
| 徑向負荷力 $F_{rMax}^{(3)}$ Radial Load | N | 3~20 | 1000 | 3200 | 5800 | 7000 | 9400 | 12000 | 20000 | |
| 軸向負荷力 $F_{aMax}^{(3)}$ Axial Load | N | 3~20 | 500 | 1600 | 2900 | 3500 | 4700 | 6000 | 10000 | |
| 超精密背隙 Micro Backlash | arcmin | 3~20 | . | ≤2 | ≤2 | ≤2 | ≤2 | ≤2 | ≤2 | |
| 精密背隙 Reduced Backlash | arcmin | 3~20 | ≤4 | ≤4 | ≤4 | ≤4 | ≤4 | ≤4 | ≤4 | |
| 標準背隙 Standard Backlash | arcmin | 3~20 | ≤6 | ≤6 | ≤6 | ≤6 | ≤6 | ≤6 | ≤6 | |
| 扭轉剛性 Torsional Rigidity | Nm/ arcmin | 3~20 | 5 | 10 | 24 | 50 | 95 | 150 | 220 | |
| 滿載時使用效率 Efficiency with Full Load | % | 3~20 | ≥97 | | | | | | | |
| 使用壽命 L_{h2} Service Life | h | 3~20 | 20000 | | | | | | | |
| 重量 | kg | 3~20 | 4.5 | 7.5 | 15.5 | 32 | 47 | 72.5 | 113 | |
| 噪音值 $^{(4)}$ Noise Level | dB | 3~20 | ≤63 | ≤65 | ≤68 | ≤70 | ≤70 | ≤71 | ≤73 | |
| 使用溫度範圍 Permissible Gear Reducer Temp | °C | 3~20 | - 10°C ~ + 90°C | | | | | | | |
| 防護等級 Protection Class | | 3~20 | IP 64 | | | | | | | |
| 潤滑油 Lubrication | | 3~20 | 人工合成潤滑油 Synthetic oil viscosity | | | | ISO VG220 | | | |
| 轉動慣量 J_1 Mass Moments of Inertia | kg · cm ² | 減速比 | AGR060 | AGR090 | AGR115 | AGR142 | AGR160 | AGR180 | AGR220 | |
| | | 3~10 | 0.93 | 3.45 | 10.6 | 22.95 | 43.4 | 77.3 | 166.7 | |
| | | 14/20 | 0.77 | 2.9 | 9.15 | 18.1 | 30.6 | 59.1 | 102.4 | |

註(1)本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。

註(2)堪用期內可作1000次之動作。

註(3)輸出轉速100rpm作用於輸出軸中心。

註(4)噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。

- 連續運轉將會減少減速機二分之一的使用壽命。
- 客戶所需之減速比，若非表內所有，可與本公司洽詢。

Note (1) The data can be applied to starting frequency less than 1000 times per hour. Please contact us if more.

Note (2) Operation can be up to 1000 times in product life.

Note (3) It acts on in the output shaft center at output speed 100 rpm.

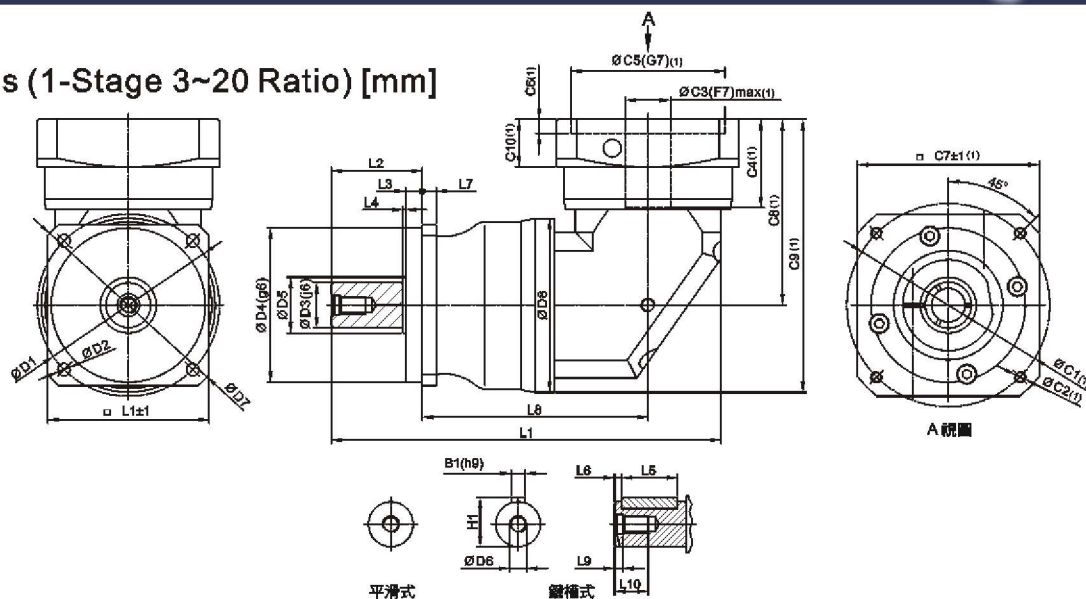
Note (4) Noise inspection of ratio-5 reducers measure at input speed 3000 rpm, in 1-meter distance, and with free-load operation.

- Continuous operation will cause half of reducer life decreased.
- If any customized ratios are not available from above, please contact us.

AGR外觀尺寸 (單段 3~20比)[mm]



Dimensions (1-Stage 3~20 Ratio) [mm]



| 規格 Size | AGR060 | AGR090 | AGR115 | AGR142 | AGR160 | AGR180 | AGR220 |
|---------------|---------|----------|-----------|----------|-----------|-----------|-----------|
| D1 | 70 | 100 | 130 | 165 | 190 | 215 | 250 |
| D2 | 5.5 | 6.6 | 9 | 11 | 13 | 13 | 17 |
| D3(f6) | 16 | 22 | 32 | 40 | 50 | 55 | 75 |
| D4(g6) | 50 | 80 | 110 | 130 | 145 | 160 | 180 |
| D5 | 20 | 35 | 40 | 50 | 60 | 65 | 85 |
| D6 | M5*P0.8 | M8*P1.25 | M12*P1.75 | M16*P2 | M16*P2 | M20*P2.5 | M20*P2.5 |
| D7 | 80 | 116 | 152 | 185 | 215 | 240 | 292 |
| L1 | 172.5 | 213 | 280 | 355 | 395 | 436 | 519.5 |
| L2 | 37 | 48 | 65 | 97 | 97 | 105 | 138 |
| L3 | 7 | 10 | 12 | 15 | 15 | 20 | 30 |
| L4 | 1.5 | 1.5 | 2 | 3 | 3 | 3 | 3 |
| L5 | 25 | 32 | 40 | 63 | 70 | 70 | 90 |
| L6 | 2 | 3 | 5 | 5 | 5 | 6 | 7 |
| L7 | 6 | 8 | 10 | 12 | 13.5 | 15 | 20 |
| L8 | 102 | 123.5 | 161 | 189 | 216 | 234 | 270.5 |
| L9 | 4 | 4 | 6 | 7.5 | 10 | 12 | 12 |
| L10 | 12.5 | 19 | 28 | 36 | 36 | 42 | 42 |
| C1(1) | 70 | 90 | 145 | 165 | 200 | 215 | 215 |
| C2(1) | M5*P0.8 | M6*P1 | M8*P1.25 | M10*P1.5 | M12*P1.75 | M12*P1.75 | M12*P1.75 |
| C3(F7)max.(1) | <14 | <24 | <32 | <38 | <42 | <48 | <55 |
| C4(1) | 36 | 49.7 | 60 | 72.2 | 75.2 | 86 | 93.5 |
| C5(G7)(1) | 50 | 70 | 110 | 130 | 114.3 | 180 | 180 |
| C6(1) | 6 | 5 | 6 | 8 | 7 | 8 | 8 |
| C7(1). | 76.2 | 95 | 118 | 153.5 | 176 | 190 | 190 |
| C8(1) | 89 | 107.5 | 129.5 | 158.5 | 176.5 | 201 | 226 |
| C9(1) | 122.5 | 157.5 | 191.4 | 235.5 | 265 | 301 | 342 |
| C10(1) | 24 | 28 | 31 | 35 | 36 | 42 | 47 |
| B1(h9) | 5 | 6 | 10 | 12 | 14 | 16 | 20 |
| H1 | 18 | 24.5 | 35 | 43 | 53.5 | 59 | 79.5 |

(1)C1~C10表示之尺寸，隨伺服馬達不同而有所變動。

※本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如須確實之尺寸，可洽本公司。

· (1)The dimensions from C1 to C10 may vary with different servo motor collocation.

· We persistently research in and develop our products, and we have made every effort to maintain the specification data above correct.

· If there is any discrepancy between the data and real dimensions, please refer to products or may contact us for updated data.

| 規 格 Size | | | AGR060 | AGR090 | AGR115 | AGR140 | AGR160 | AGR180 | AGR220 |
|--|----------------------|----------|--|--------|--------|--------|--------|--------|--------|
| 最大加速扭矩 $T_{2B}^{(1)}$ Output Torque | Nm | 減速比 | | | | | | | |
| | | 12/15 | 35 | 113 | 222 | 440 | 770 | 1165 | 1960 |
| | | 20/25 | 55 | 130 | 300 | 560 | 880 | 1450 | 2400 |
| | | 30 | 45 | 113 | 222 | 440 | 800 | 1165 | 1960 |
| | | 35/40/50 | 55 | 130 | 300 | 560 | 880 | 1450 | 2400 |
| | | 60/120 | 45 | 115 | 278 | 480 | 800 | 1220 | 2020 |
| | | 70/140 | 40 | 110 | 267 | 425 | 760 | 1085 | 1800 |
| | | 80/160 | 38 | 103 | 240 | 410 | 700 | 1045 | 1740 |
| 100/200 | 35 | 90 | 210 | 350 | 520 | 1000 | 1635 | | |
| 緊急停止扭矩 $T_{2Not}^{(2)}$ Emergency Stop Torque | Nm | 12~200 | 2.5倍輸出扭矩 | | | | | | |
| 額定輸入轉速 n_{1N} Nominal Input Speed | rpm | 12~200 | 4000 | 3000 | 3000 | 2000 | 2000 | 2000 | 1500 |
| 最大輸入轉速 n_{1Max} Max. Input Speed | rpm | 12~200 | 6000 | 5000 | 4500 | 3500 | 3000 | 3500 | 2500 |
| 徑向負荷力 $F_{rMax}^{(3)}$ Radial Load | N | 12~200 | 1000 | 3200 | 5800 | 7000 | 9400 | 12000 | 20000 |
| 軸向負荷力 $F_{aMax}^{(3)}$ Axial Load | N | 12~200 | 500 | 1600 | 2900 | 3500 | 4700 | 6000 | 10000 |
| 超精密背隙 Micro Backlash | arcmin | 12~200 | . | ≤4 | ≤4 | ≤4 | ≤4 | ≤4 | ≤4 |
| 精密背隙 Reduced Backlash | arcmin | 12~200 | ≤6 | ≤6 | ≤6 | ≤6 | ≤6 | ≤6 | ≤6 |
| 標準背隙 Standard Backlash | arcmin | 12~200 | ≤8 | ≤8 | ≤8 | ≤8 | ≤8 | ≤8 | ≤8 |
| 扭轉剛性 Torsional Rigidity | Nm/ arcmin | 12~200 | 5 | 10 | 24 | 50 | 95 | 150 | 220 |
| 滿載時使用效率 Efficiency with Full Load | % | 12~200 | ≥97 | | | | | | |
| 使用壽命 L_{h2} Service Life | h | 12~200 | 20000 | | | | | | |
| 重量 | kg | 12~200 | 4.0 | 7.2 | 13.5 | 27.5 | 36.5 | 51.5 | 84.5 |
| 噪音值 (4) Noise Level | dB | | ≤63 | ≤65 | ≤68 | ≤68 | ≤70 | ≤71 | ≤73 |
| 使用溫度範圍 Permissible Gear Reducer Temp | °C | | - 10°C ~ + 90°C | | | | | | |
| 防護等級 Protection Class | | | IP 64 | | | | | | |
| 潤滑油 Lubrication | | | 人工合成潤滑油 Synthetic oil viscosity ISO VG220 | | | | | | |
| 轉動慣量 J_1 Mass Moments of Inertia | kg · cm ² | 減速比 | AGR060 | AGR090 | AGR115 | AGR142 | AGR160 | AGR180 | AGR220 |
| | | 12~100 | 0.93 | 3.45 | 10.6 | 22.95 | 22.95 | 22.95 | 77.3 |
| | | 120/200 | 0.77 | 2.87 | 9.15 | 18.1 | 18.1 | 18.1 | 59.1 |

註(1)本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。

註(2)極用期內可作1000次之動作。

註(3)輸出轉速100rpm作用於輸出軸中心。

註(4)噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。

- 連續運轉將會減少減速機二分之一的使用壽命。
- 客戶所需之減速比，若非表內所有，可與本公司洽詢。

Note (1) The data can be applied to starting frequency less than 1000 times per hour. Please contact us if more.

Note (2) Operation can be up to 1000 times in product life.

Note (3) It acts on in the output shaft center at output speed 100 rpm.

Note (4) Noise inspection of ratio-5 reducers measure at input speed

3000 rpm, in 1-meter distance, and with free-load operation.

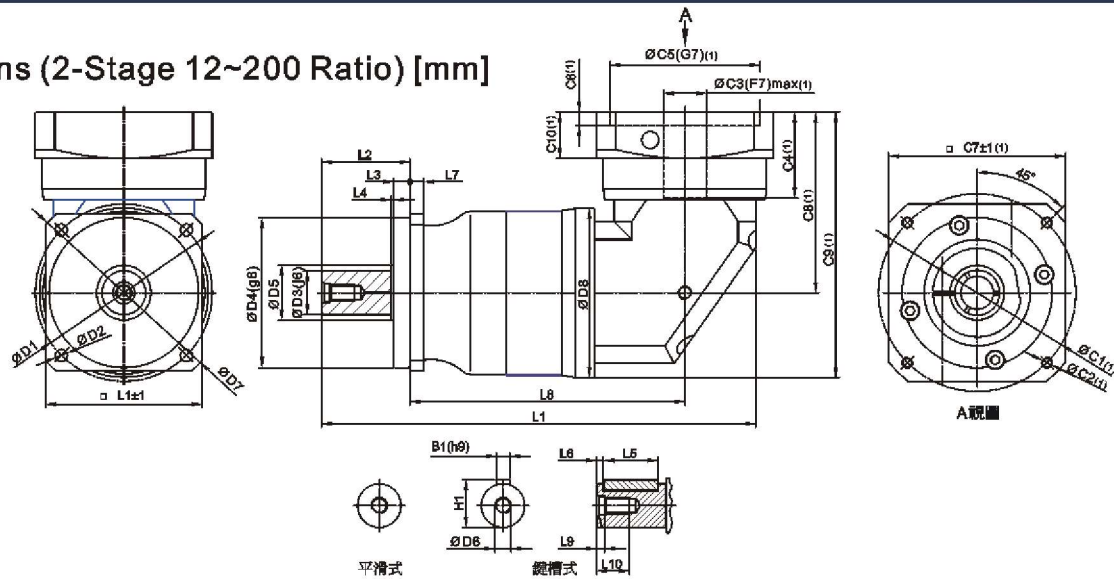
· Continuous operation will cause half of reducer life decreased.

· If any customized ratios are not available from above, please contact us.

AGR外觀尺寸 (雙段 12~200比) [mm]



Dimensions (2-Stage 12~200 Ratio) [mm]



| 規格 Size | AGR060 | AGR090 | AGR115 | AGR142 | AGR160 | AGR180 | AGR220 |
|---------------|---------|----------|-----------|----------|-----------|-----------|-----------|
| D1 | 70 | 100 | 130 | 165 | 190 | 215 | 250 |
| D2 | 5.5 | 6.6 | 9 | 11 | 13 | 13 | 17 |
| D3(j6) | 16 | 22 | 32 | 40 | 50 | 55 | 75 |
| D4(g6) | 50 | 80 | 110 | 130 | 145 | 160 | 180 |
| D5 | 20 | 35 | 40 | 50 | 60 | 65 | 85 |
| D6 | M5*P0.8 | M8*P1.25 | M12*P1.75 | M16*P2 | M16*P2 | M20*P2.5 | M20*P2.5 |
| D7 | 80 | 116 | 152 | 185 | 215 | 240 | 292 |
| L1 | 195.5 | 245 | 321 | 402.5 | 423 | 447 | 542.5 |
| L2 | 37 | 48 | 65 | 97 | 97 | 105 | 138 |
| L3 | 7 | 10 | 12 | 15 | 15 | 20 | 30 |
| L4 | 1.5 | 1.5 | 2 | 3 | 3 | 3 | 3 |
| L5 | 25 | 32 | 40 | 63 | 70 | 70 | 90 |
| L6 | 2 | 3 | 5 | 5 | 5 | 6 | 7 |
| L7 | 6 | 8 | 10 | 12 | 13.5 | 15 | 20 |
| L8 | 125 | 155.5 | 202 | 236.5 | 257 | 273 | 307.5 |
| L9 | 4 | 4 | 6 | 7.5 | 10 | 12 | 12 |
| L10 | 12.5 | 19 | 28 | 36 | 36 | 42 | 42 |
| C1(1) | 70 | 90 | 145 | 165 | 200 | 215 | 215 |
| C2(1) | M5*P0.8 | M6*P1 | M8*P1.25 | M10*P1.5 | M12*P1.75 | M12*P1.75 | M12*P1.75 |
| C3(F7)max.(1) | <14 | <24 | <32 | <38 | <38 | <38 | <48 |
| C4(1) | 36 | 49.7 | 60 | 72.2 | 72.2 | 72.2 | 86 |
| C5(G7)(1) | 50 | 70 | 110 | 130 | 130 | 130 | 180 |
| C6(1) | 6 | 5 | 6 | 8 | 8 | 8 | 8 |
| C7(1). | 76.2 | 95 | 118 | 153.5 | 153.5 | 153.5 | 190 |
| C8(1) | 89 | 107.5 | 129.5 | 158.5 | 158.5 | 158.5 | 201 |
| C9(1) | 122.5 | 157.5 | 191.4 | 235.5 | 243.5 | 257.5 | 316 |
| C10(1) | 24 | 28 | 31 | 35 | 35 | 35 | 42 |
| B1(h9) | 5 | 6 | 10 | 12 | 14 | 16 | 20 |
| H1 | 18 | 24.5 | 35 | 43 | 53.5 | 59 | 79.5 |

(1)C1~C10表示之尺寸，隨伺服馬達不同而有所變動。

*本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如須確實之尺寸，可洽本公司。

• (1)The dimensions from C1 to C10 may vary with different servo motor collocation.

• We persistently research in and develop our products, and we have made every effort to maintain the specification data above correct. If there is any discrepancy between the data and real dimensions, please refer to products or may contact us for updated data.



選用範列：

AGR 060 - 005 - R S A M 1 /MITSUBISHI-HC-KFS43
 - - /Motor

系列選擇: Example
AGR

馬達廠牌和型號
Motor brand and type

安裝方位: Mounting Directions
M1 M2 M3 (See below)

運轉方式: Operation
A(間歇cycle) B(連續continuous)

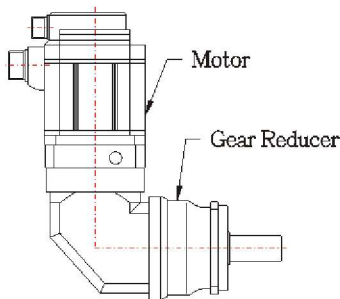
輸出軸型式: Output shaft
S(平滑式 smooth) K(鍵槽式keyway)

齒背隙: Backlash
M(超精密micro) R(精密reduced) S(標準standard)

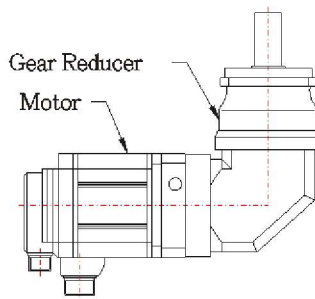
規格: Size
060 090 115 142 160
180 220

減速比: Ratio
003 004 005 006 007 008 010 014 020
012 015 020 025 030 035 040 050 060
070 080 100 120 140 160 200

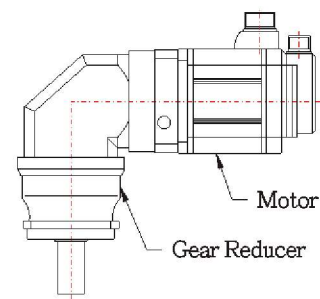
安裝方位 Directions



M1 水平
Horizontal



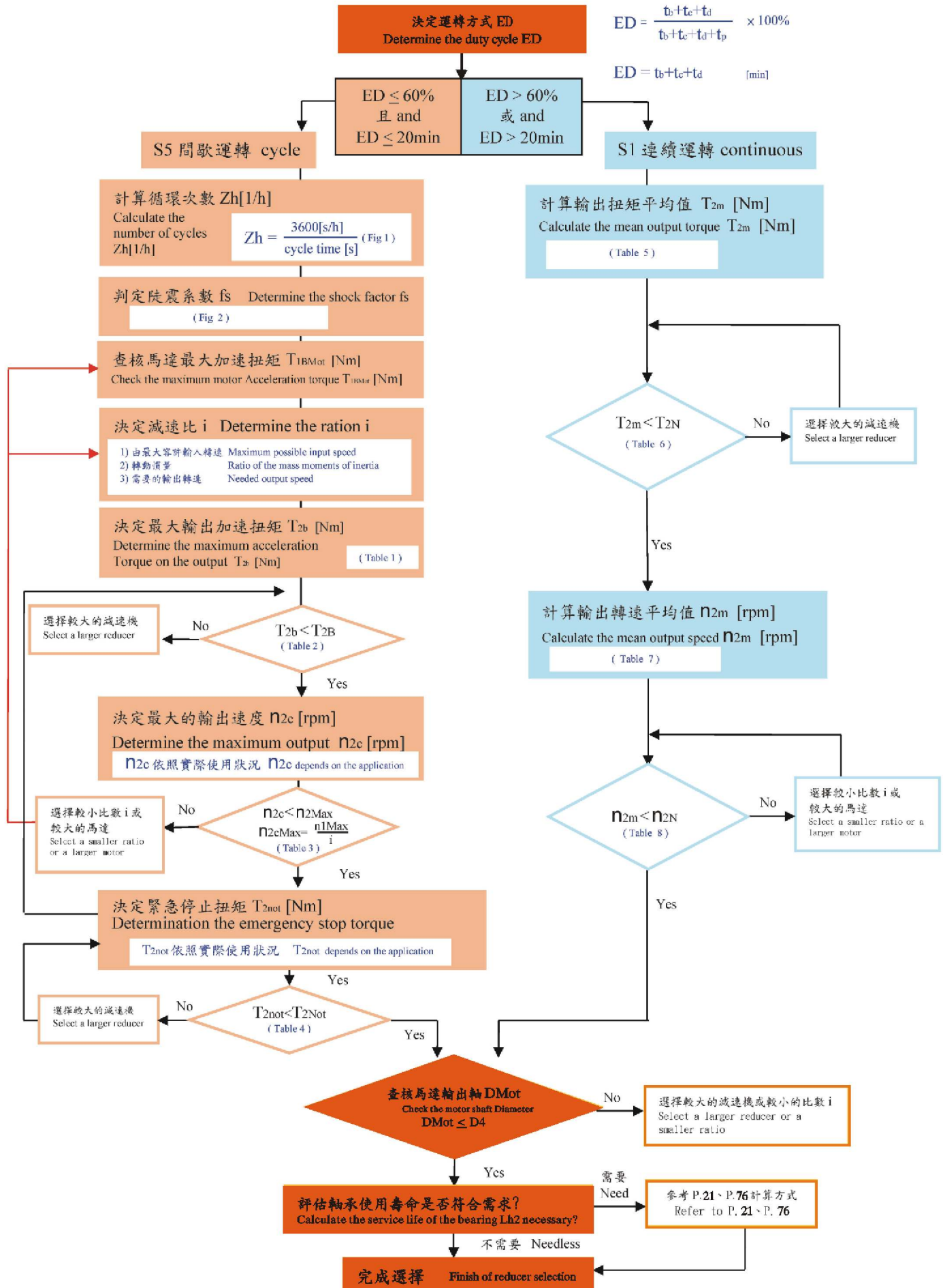
M2 垂直朝上
Upwards

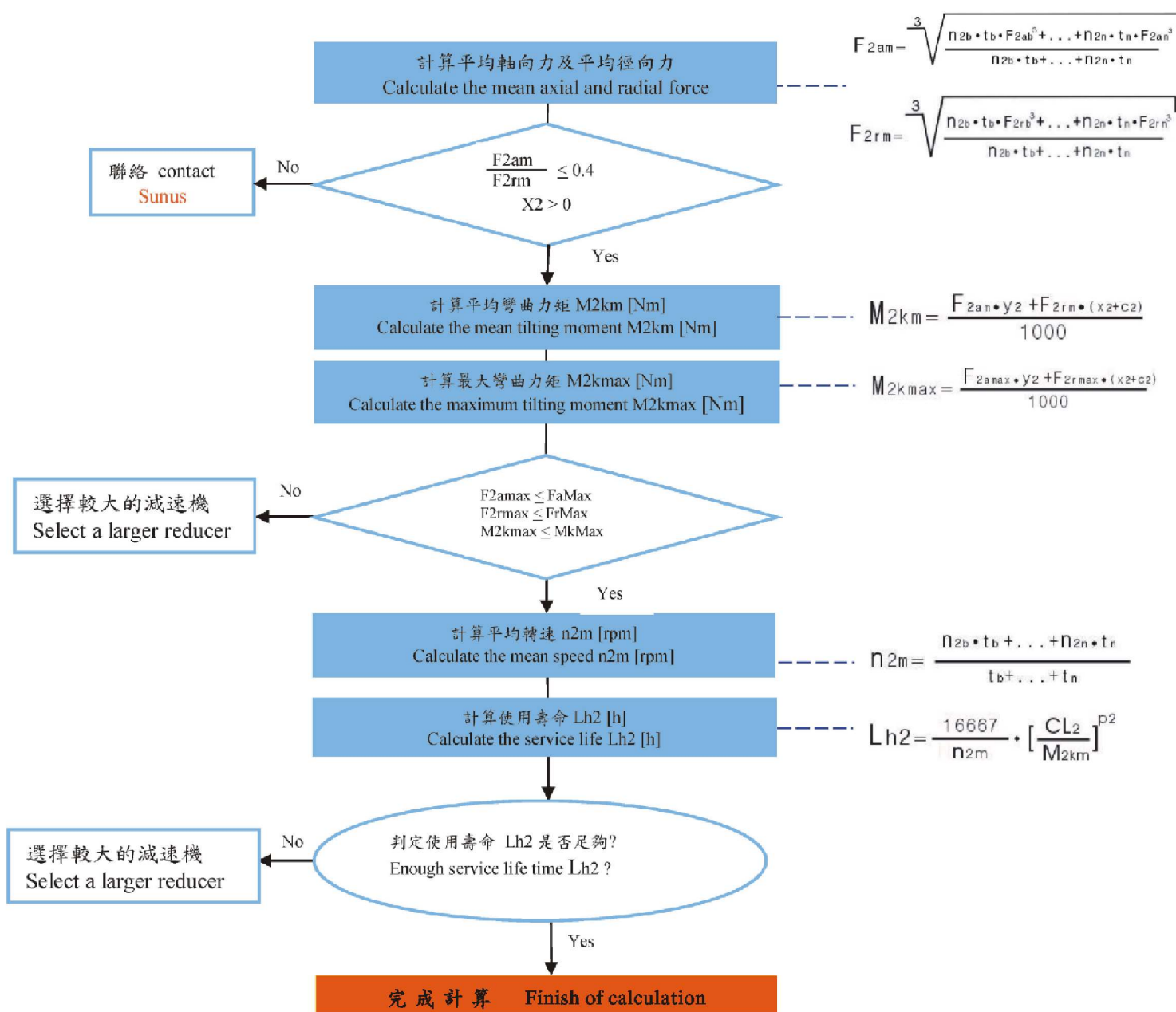


M3 垂直朝下
Downwards

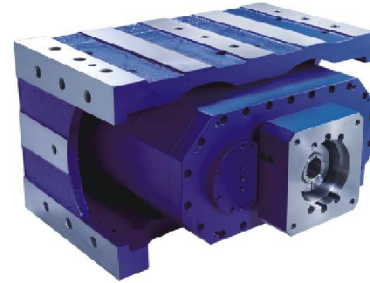
- 本公司產品陸續增加，如資料有所不符，將以本公司提供之最新資料為準，恕不另行通知。
- Our products have been developing generally, so has their information updating. If there is any discrepancy, it is subject to the updated information we offer without any notice.

減速機選擇方式 Selection of Reducer





為各種負荷、高精密、耐久性的機械設計製造的減速機
DMU series designed for huge load, high precision and durability



全封閉式消隙 Enclosed Gearbox

- 特別設計的機械結構，消除減速機內部及齒輪齒條間的空隙，徹底解決一般減速機驅動齒輪齒條時，針對製造或安裝上的誤差所產生的背隙，給予彌補或消除。
- ⊙ Specially designed machinery is able to eliminate clearance from gearbox inner and from between pinions and racks. This completely supplements and clears up backlash of manufacture or/and installation while gearboxes drive both pinions and racks.

節省成本 Saving

- 只需使用單顆伺服馬達驅動，即可達到雙顆伺服馬達及驅動器的消隙效果，可降低NC控制器的成本。
- 由於背隙消除，加工刀具軌跡穩定，壽命增長。
- ⊙ Mechanical preload system, driven by single servo motor, can reach the goal of Electrical preload system, save controller and driver cost.
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容易設定 Easy to set up

- 全封閉式機械消隙由單顆伺服馬達驅動，在電腦參數的設定上，比使用雙顆伺服馬達的電機消隙更為容易。
- ⊙ Parameter setting can be easier for enclosed mechanical preload system, driven by single servo motor, than electrical preload system.

可獲得更佳的加工表面光滑度及精度 Better processing surface smooth and accuracy

- 背隙消除後，刀具軌跡穩定，可獲得更佳的加工表面光滑度及精度。
- ⊙ Backlash reducing enables improved processing surface smooth and accuracy.

超大扭力 Huge Torsional Rigidity

- 大型高品質滾珠軸承，輸出軸能承受更大的軸向和徑向的負荷，承受超大扭力和剛性，應用範圍廣。
- ⊙ For the well-designed structure and high duty material of taper roller bearing, the output shaft of the reducer can bear the huge axial and radial load, which could be wide application.

高起動性 High Dynamics

- 整體式輸出齒軸設計，特製高強度較少齒數齒輪，伺服馬達可選用較小規格，獲得最小啓動扭矩，較大剛性。
- ⊙ One-piece output design, special high strength the less teeth of pinion and smaller servo motor, achieve the low moment of inertia.

高定位精度 Precise Positioning

- 精密齒輪研磨，齒面光滑，齒形精準。
- 齒輪箱和內環齒輪採整體結構設計，特殊合金鋼材，穩定性高。
- ⊙ Precision gear grinding tooth surface smooth, precise tooth.
- ⊙ For an excellent design, high accuracy and low moments of inertia.

長壽命、低噪音 Long Service Life and Low Noise

- 採用精密研磨齒輪，經深層滲碳硬化處理後，再經精密齒面研磨，使得齒輪剛性大，且齒面光滑耐磨性佳，可延長使用壽命及低噪音。
- ⊙ For the professional gear producing experience and the serious quality control of manufacturing processes.
- 經長時間操作使用，仍維持消隙功能。
- ⊙ After a long time operation the preloading force is still maintained.

| 規 格 Size | | DMU140 | DMU160 | DMU180 | DMU210 | DMU240 |
|---|-------------------------|--|--------|--------|--------|--------|
| 最大加速扭矩 (1) Output Torque T2B [Nm] | 減速比 available ratios | | | | | |
| | 32 / 40 | 1120 | 1770 | 2500 | 5920 | 9395 |
| | 44/55/66/ 77/88/110 | 950 | 1545 | 2220 | 5430 | 7950 |
| 緊急停止扭矩 (2) Emergency Stop Torque T2Not [Nm] | 32 / 40 | 2320 | 3650 | 5150 | 12800 | 19300 |
| | 44/55/66/77/88/110 | 1950 | 3140 | 4330 | 10990 | 16110 |
| 額定輸出扭矩 Nominal output torque T2N [Nm] | 32 / 40 | 735 | 1150 | 1645 | 3890 | 6180 |
| | 44/55/66/77/88/110 | 625 | 1000 | 1460 | 3570 | 5230 |
| 減速比 i Ratio | 雙段2-stage | 32 / 40 / 44 / 55 / 66 / 77 / 88 / 110 | | | | |
| 額定輸入轉 Nominal Input Speed n1N [rpm] | 32~110 | 3000 | 3000 | 3000 | 2500 | 2000 |
| 最大輸入轉速 Max. Input Speed n1Max [rpm] | 32~110 | 4000 | 4000 | 4000 | 3500 | 3500 |
| 滿載時使用效率 % | 32~110 | ≥ 93 | | | | |
| 使用壽命 Lh2 [h] Efficiency with Full Load | 32~110 | 20000 | | | | |
| 重量 [kg] Weight | 雙段2-stage | | | | | |

| 規 格 Size | | DMU140 | DMU160 | DMU180 | DMU210 | DMU240 |
|---|-----------|--------|--------|--------|--------|--------|
| 轉動慣量 Mass Moments of Inertia J1 [kg · cm ²] | 減速比 Ratio | | | | | |
| | 32~110 | 39.77 | 42.8 | 95.73 | 228.5 | 360 |

輸出齒輪資料 Output Pinion data

| 規 格 Size | | DMU140 | DMU160 | DMU180 | DMU210 | DMU240 |
|--|------------------------------|--------|--------|--------|---------|---------|
| 螺旋齒輪 Helical tooth pinion (螺旋角Helical 19° 31'42") | 模數 Module | M4 | M4 | M5 | M6 | M8 |
| | 齒數 N# of teeth | 15T | 18T | 15T | 18T | 15T |
| 正齒輪 spur tooth pinion | 模數 Module | M4 | M4 | M5 | M6 | M8 |
| | 齒數 N# of teeth | 16T | 19T | 16T | 19T | 16T |
| 節圓直徑 Pitch circle diameter | 螺旋齒輪 Helical tooth pinion | φ63.66 | φ79.39 | φ79.58 | φ114.59 | φ127.32 |
| | 正齒輪 Spur tooth pinion | φ64 | φ76 | φ80 | φ114 | φ128 |
| 圓周長 circumference | 螺旋齒輪Helical tooth pinion | 200 | 240 | 250 | 360 | 400 |
| | 正齒輪 Spur tooth pinion | 201.06 | 238.76 | 251.33 | 358.14 | 402.12 |
| 轉位係數 addendum modification coefficient | 螺旋齒輪Helical tooth pinion | 0.355 | - | 0.3723 | - | 0.355 |
| | 正齒輪 Spur tooth pinion | 0.475 | - | 0.45 | - | 0.4375 |

(1)本表適用於起動頻率1000次/小時以內，若超出時；請與本公司洽詢。

(2)場用期內可作1000次之動作。

(3)如您所需之減速比，非表內所有，請與本公司洽詢。

(4)若為連續運轉使用，請與本公司洽詢。

(1) The data can be applied to starting frequency less than 1000 times per hour. Please contact us if more.

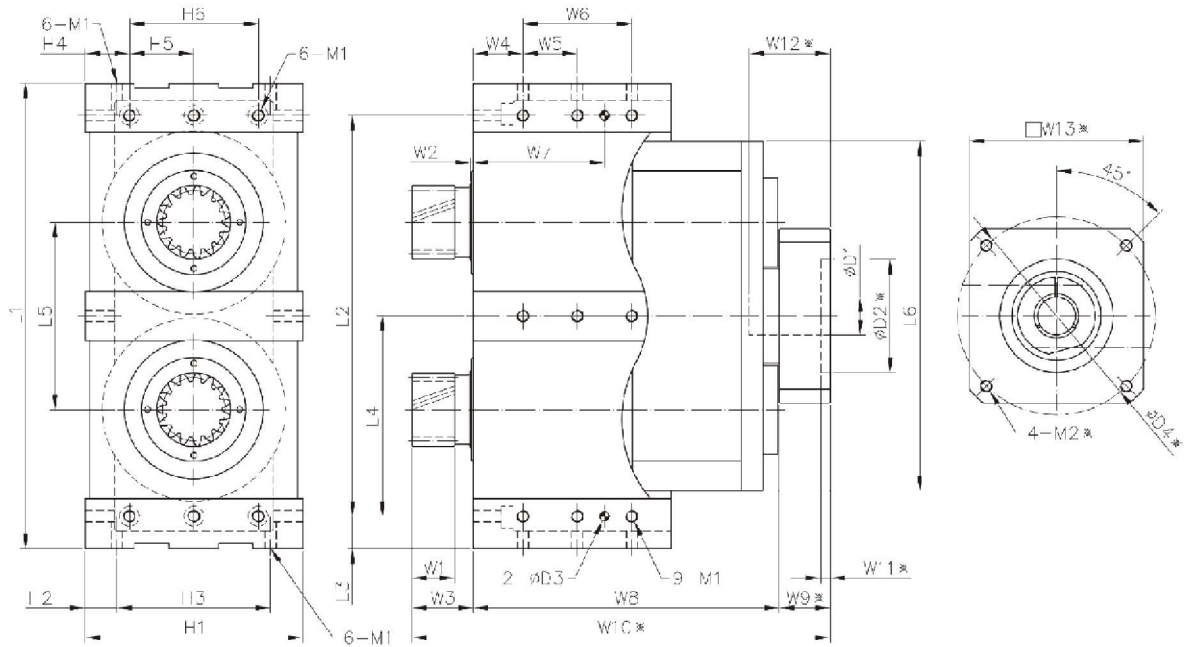
(2) Operation can be up to 1000 times in product life.

(3) If any customized ratios are not available from above, please contact us.

(4) If it is operated continuously, please contact us.

DMU 外觀尺寸 (雙段32/ 40/ 44/ 55/ 66/ 77/ 88/ 110比) [mm]

(2-Stage 32/ 40/ 44/ 55/ 66/ 77/ 88/ 110 Ratio) [mm]



| 規格 Size | DMU140 | DMU160 | DMU180 | DMU210 | DMU240 |
|-------------|-----------|-----------|-----------|-----------|-----------|
| 段數 Stage | 2 | 2 | 2 | 2 | 2 |
| H1 | 220 | 270 | 320 | 380 | 420 |
| H2 | 32.5 | 35 | 35 | 50 | 60 |
| H3 | 155 | 200 | 250 | 280 | 300 |
| H4 | 45 | 60 | 70 | 100 | 90 |
| H5 | 65 | 75 | 90 | 90 | 120 |
| H6 | 130 | 150 | 180 | 180 | 24 |
| L1 | 470 | 530 | 600 | 720 | 815 |
| L2 | 405 | 460 | 530 | 620 | 695 |
| L3 | 32.5 | 35 | 35 | 50 | 60 |
| L4 | 202.5 | 230 | 265 | 310 | 347.5 |
| L5 | 189 | 207 | 240 | 270 | 320 |
| L6 | 353 | 386 | 458 | 512 | 600 |
| W1 | 43 | 43 | 54 | 65 | 88 |
| W2 | 3 | 6 | - | - | 4 |
| W3 | 62 | 64 | 68 | 86.5 | 115 |
| W4 | 50 | 60 | 80 | 90 | 90 |
| W5 | 55 | 65 | 75 | 105 | 95 |
| W6 | 110 | 130 | 150 | 210 | 180 |
| W7 | 132.5 | 157.5 | 192.5 | 247.5 | 232.5 |
| W8 | 309 | 336.5 | 385 | 480.5 | 519.5 |
| W9 ※ | 51.5 | 52 | 61 | 56 | 48 |
| W10 ※ | 422.5 | 452.5 | 514 | 623 | 682.5 |
| W11 ※ | 10 | 15 | 15 | 10 | 10 |
| W12 ※ | 82 | 82.5 | 98 | 85 | 83.5 |
| W13 ※ | 176 | 176 | 176 | 176 | 190 |
| D1(F7) max. | 38 | 38 | 42 | 48 | 55 |
| D2 ※ | 114.3 | 114.3 | 114.3 | 114.3 | 180 |
| D3 | 9.5 | 9.5 | 11.5 | 13.5 | 13.5 |
| D4 ※ | 200 | 200 | 200 | 200 | 215 |
| M1 | M12*P1.75 | M16*P2 | M20*P2.5 | M20*P2.5 | M20*P2.5 |
| M2 ※ | M12*P1.75 | M12*P1.75 | M12*P1.75 | M12*P1.75 | M12*P1.75 |

※此記號表示之尺寸視聯結之伺服馬達不同而有所變動。

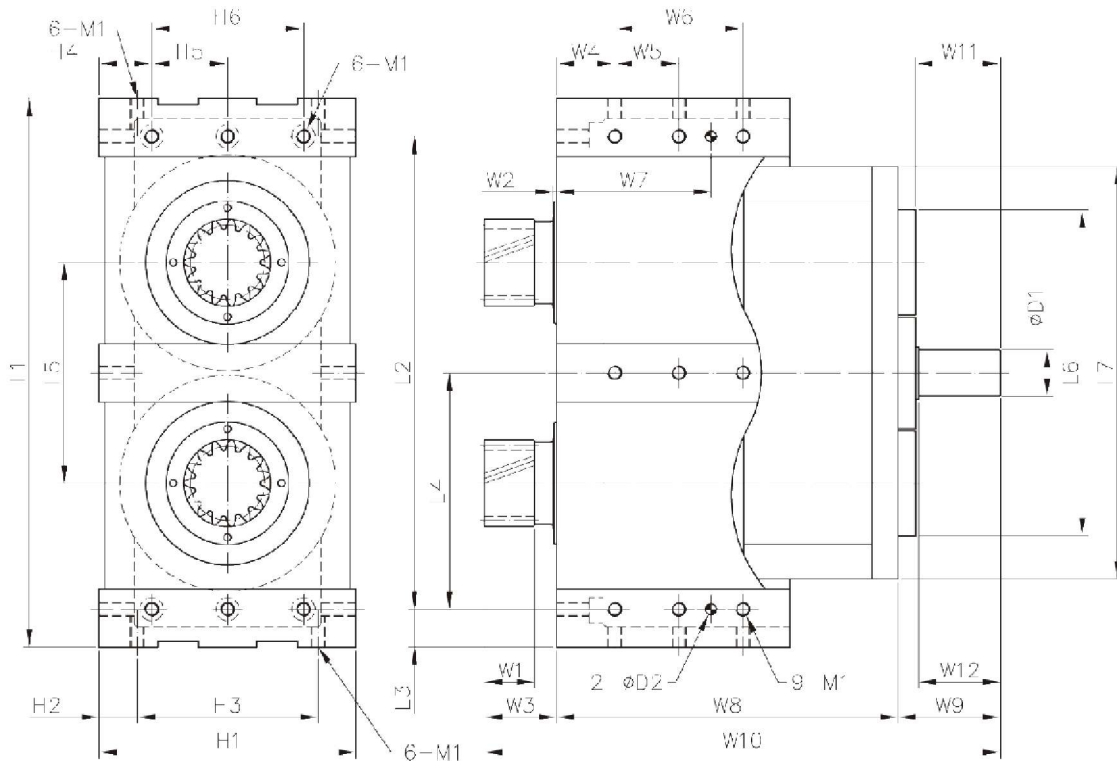
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DMU (入力軸式) (雙段32/ 40/ 44/ 55/ 66/ 77/ 88/ 110比) [mm]

外觀尺寸 (2-Stage32/ 40/ 44/ 55/ 66/ 77/ 88/ 110 Ratio) [mm]



| 規格 Size | DMU140 | DMU160 | DMU180 | DMU210 | DMU240 |
|-------------|-----------|--------|----------|--------|----------|
| 段數 Stage | 2 | 2 | 2 | 2 | 2 |
| H1 | 220 | 270 | 320 | 380 | 420 |
| H2 | 32.5 | 35 | 35 | 50 | 60 |
| H3 | 155 | 200 | 250 | 280 | 300 |
| H4 | 45 | 60 | 70 | 100 | 90 |
| H5 | 65 | 75 | 90 | 90 | 120 |
| H6 | 130 | 150 | 180 | 180 | 24 |
| L1 | 470 | 530 | 600 | 720 | 815 |
| L2 | 405 | 460 | 530 | 620 | 695 |
| L3 | 32.5 | 35 | 35 | 50 | 60 |
| L4 | 202.5 | 230 | 265 | 310 | 347.5 |
| L5 | 189 | 207 | 240 | 270 | 320 |
| L6 | 353 | 386 | 458 | 512 | 600 |
| W1 | 43 | 43 | 54 | 65 | 88 |
| W2 | 3 | 6 | - | - | 4 |
| W3 | 62 | 64 | 68 | 86.5 | 115 |
| W4 | 50 | 60 | 80 | 90 | 90 |
| W5 | 55 | 65 | 75 | 105 | 95 |
| W6 | 110 | 130 | 150 | 210 | 180 |
| W7 | 132.5 | 157.5 | 192.5 | 247.5 | 232.5 |
| W8 | 292.5 | 313 | 366 | 450.5 | 493.5 |
| W9 | 88 | 88 | 102 | 115 | 111 |
| W10 | 422.5 | 465 | 536 | 652 | 719.5 |
| W11 | 73 | 73 | 83 | 85 | 85 |
| W12 | 70 | 70 | 80 | 82 | 82 |
| D1(k6) max. | 40 | 40 | 42 | 50 | 55 |
| D2 | 9.5 | 9.5 | 11.5 | 13.5 | 13.5 |
| M1 | M12*P1.75 | M16*P2 | M20*P2.5 | M24*P3 | M30*P3.5 |

※ 本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如須確實之尺寸，可洽本公司。
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為各種負荷、高精密、耐久性的機械設計製造的減速機
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- 特別設計的機械結構，消除減速機內部及齒輪齒條間的空隙，徹底解決一般減速機驅動齒輪齒條時，針對製造或安裝上的誤差所產生的背隙，給予彌補或消除。
- Specially designed machinery is able to eliminate clearance from gearbox inner and from between pinions and racks. This completely supplements and clears up backlash of manufacture or/and installation while gearboxes drive both pinions and racks.

節省成本 Saving

- 只需使用單顆伺服馬達驅動，即可達到雙顆伺服馬達及驅動器的消隙效果，可降低NC控制器的成本。
- 由於背隙消除，加工刀具軌跡穩定，壽命增長。
- Mechanical preload system, driven by single servo motor, can reach the goal of electrical preload system, save controller and driver cost.
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容易設定 Easy to set up

- 全封閉式機械消隙由單顆伺服馬達驅動，在電腦參數的設定上，比使用雙顆伺服馬達的電機消隙更為容易。
- Parameter setting can be easier for enclosed mechanical preload system, driven by single servo motor, than electrical preload system.

可獲得更佳的加工表面光滑度及精度 Better processing surface smooth and accuracy

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- 大型高品質滾錐軸承，輸出軸能承受更大的軸向和徑向的負荷，承受超大扭力和剛性，應用範圍廣。
- For the well-designed structure and high duty material of taper roller bearing, the output shaft of the reducer can bear the huge axial and radial load, which could be wide application.

高起動性 High Dynamics

- 整體式輸出齒軸設計，特製高強度較少齒數齒輪，伺服馬達可選用較小規格，獲得最小啓動扭矩，較大剛性。
- One-piece output design, special high strength the less teeth of pinion and smaller servo motor, achieve the low moment of inertia.

高定位精度 Precise Positioning

- 精密齒輪研磨，齒面光滑，齒形精準。
- 齒輪箱和內環齒輪採整體結構設計，特殊合金鋼材，穩定性高。
- Precision gear grinding tooth surface smooth, precise tooth.
- For an excellent design, high accuracy and low moments of inertia.

長壽命、低噪音 Long Service Life and Low Noise

- 採用精密研磨齒輪，經深層滲碳硬化處理後，再經精密齒面研磨，使得齒輪剛性大，且齒面光滑耐磨性佳，可延長使用壽命及低噪音。
- For the professional gear producing experience and the serious quality control of manufacturing processes.
- 經長時間操作使用，仍維持消隙功能。
- After a long time operation the preloading force is still maintained.

| 規 格 Size | | BMU140 | BMU160 | BMU180 | BMU210 | BMU240 |
|---|-------------------------|--|--------|--------|--------|--------|
| 最大加速扭矩 (1) Output Torque T2B [Nm] | 減速比 available ratios | | | | | |
| | 32 / 40 | 1120 | 1770 | 2000 | 5920 | 9395 |
| | 44/55/66/ 77/88/110 | 950 | 1545 | 2220 | 5430 | 7950 |
| 緊急停止扭矩 (2) Emergency Stop Torque T2Not [Nm] | 32 / 40 | 2320 | 3650 | 5150 | 12800 | 19300 |
| | 44/55/66/77/88/110 | 1950 | 3140 | 4330 | 10990 | 16110 |
| 額定輸出扭矩 Nominal output torque T2N [Nm] | 32 / 40 | 735 | 1150 | 1645 | 3890 | 6180 |
| | 44/55/66/77/88/110 | 625 | 1000 | 1460 | 3570 | 5230 |
| 減速比 i Ratio | 雙段2-stage | 32 / 40 / 44 / 55 / 66 / 77 / 88 / 110 | | | | |
| 額定輸入轉 Nominal Input Speed n1N [rpm] | 32~110 | 3000 | 3000 | 3000 | 2500 | 2000 |
| 最大輸入轉速 Max. Input Speed n1Max [rpm] | 32~110 | 4000 | 4000 | 4000 | 3500 | 3500 |
| 滿載時使用效率 % | 32~110 | ≥ 93 | | | | |
| 使用壽命 Lh2 [h] Efficiency with Full Load | 32~110 | 20000 | | | | |
| 重量 [kg] Weight | 雙段2-stage | | | | | |

| 規 格 Size | | BMU140 | BMU160 | BMU180 | BMU210 | BMU240 |
|---|-----------|--------|--------|--------|--------|--------|
| 轉動慣量 Mass Moments of Inertia J1 [kg · cm ²] | 減速比 Ratio | | | | | |
| | 32~110 | 39.77 | 42.8 | 95.73 | 228.5 | 360 |

輸出齒輪資料 Output Pinion data

| 規 格 Size | | BMU140 | BMU160 | BMU180 | BMU210 | BMU240 |
|--|------------------------------|---------|---------|---------|----------|----------|
| 螺旋齒輪 Helical tooth pinion (螺旋角Helical 19° 31'42") | 模數 Module | M4 | M4 | M5 | M6 | M8 |
| | 齒數 N# of teeth | 15T | 18T | 15T | 18T | 15T |
| 正齒輪 spur tooth pinion | 模數 Module | M4 | M4 | M5 | M6 | M8 |
| | 齒數 N# of teeth | 16T | 19T | 16T | 19T | 16T |
| 節圓直徑 Pitch circle diameter | 螺旋齒輪 Helical tooth pinion | φ 63.66 | φ 79.39 | φ 79.58 | φ 114.59 | φ 127.32 |
| | 正齒輪 Spur tooth pinion | φ 64 | φ 76 | φ 80 | φ 114 | φ 128 |
| 圓周長 circumference | 螺旋齒輪Helical tooth pinion | 200 | 240 | 250 | 360 | 400 |
| | 正齒輪 Spur tooth pinion | 201.06 | 238.76 | 251.33 | 358.14 | 402.12 |
| 轉位係數 addendum modification coefficient | 螺旋齒輪Helical tooth pinion | 0.355 | - | 0.3723 | - | 0.355 |
| | 正齒輪 Spur tooth pinion | 0.475 | - | 0.45 | - | 0.4375 |

(1)本表適用於起動頻率1000次/小時以內，若超出時；請與本公司洽詢。

(2)場用期內可作1000次之動作。

(3)如您所需之減速比，非表內所有，請與本公司洽詢。

(4)若為連續運轉使用，請與本公司洽詢。

(1) The data can be applied to starting frequency less than 1000 times per hour. Please contact us if more.

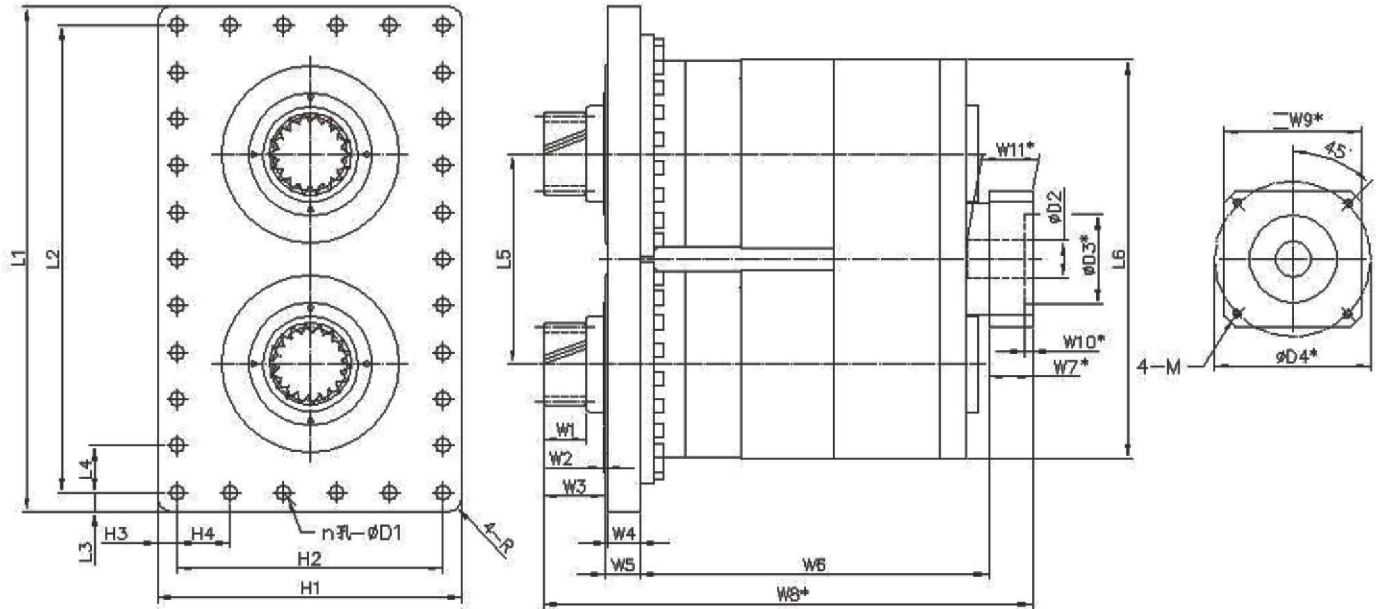
(2) Operation can be up to 1000 times in product life.

(3) If any customized ratios are not available from above, please contact us.

(4) If it is operated continuously, please contact us.

BMU 外觀尺寸 (雙段40/ 44/ 55/ 66/ 77/ 88/ 100比) [mm]

(2-Stage 40/ 44/ 55/ 66/ 77/ 88/ 100 Ratio) [mm]



| 規格 Size | BMU140 | BMU160 | BMU180 | BMU210 | BMU240 |
|------------|--------|--------|--------|--------|--------|
| 段數 Stage | 2 | 2 | 2 | 2 | 2 |
| H1 | 220 | 285 | 300 | 380 | 400 |
| H2 | 200 | 255 | 275 | 340 | 360 |
| H3 | 10 | 15 | 12.5 | 20 | 20 |
| H4 | 40 | 51 | 55 | 68 | 72 |
| L1 | 410 | 490 | 540 | 650 | 720 |
| L2 | 390 | 460 | 515 | 610 | 680 |
| L3 | 10 | 15 | 12.5 | 20 | 20 |
| L4 | 39 | 46 | 51.5 | 61 | 68 |
| L5 | 189 | 207 | 240 | 270 | 320 |
| L6 | 353 | 386 | 458 | 512 | 600 |
| W1 | 43 | 43 | 54 | 65 | 86 |
| W2 | 2 | 4.5 | 3 | 3 | 3 |
| W3 | 62 | 62.5 | 77 | 89.5 | 114 |
| W4 | 20 | 22 | 25 | 35 | 40 |
| W5 | 30 | 36.5 | 46 | 45 | 51 |
| W6 | 279 | 301.5 | 353 | 446 | 469.5 |
| W7 ※ | 51.5 | 52 | 32.5 | 54 | 48 |
| W8 | 422.5 | 452.5 | 514 | 623 | 682.5 |
| ※ W9 | 176 | 176 | 176 | 176 | 190 |
| ※W10 | 10 | 15 | 15 | 10 | 10 |
| ※W11 | 82 | 82.5 | 98 | 85 | 83.5 |
| D1 | 9 | 11 | 11 | 18 | 18 |
| D2(F7)max. | 38 | 38 | 42 | 48 | 55 |
| D3 | 114.3 | 114.3 | 114.3 | 114.3 | 180 |
| D4 | 200 | 200 | 200 | 200 | 215 |
| n | 30 | 30 | 30 | 30 | 30 |
| R | 10 | 10 | 10 | 20 | 20 |

※此記號表示之尺寸視聯結之伺服馬達不同而有所變動。

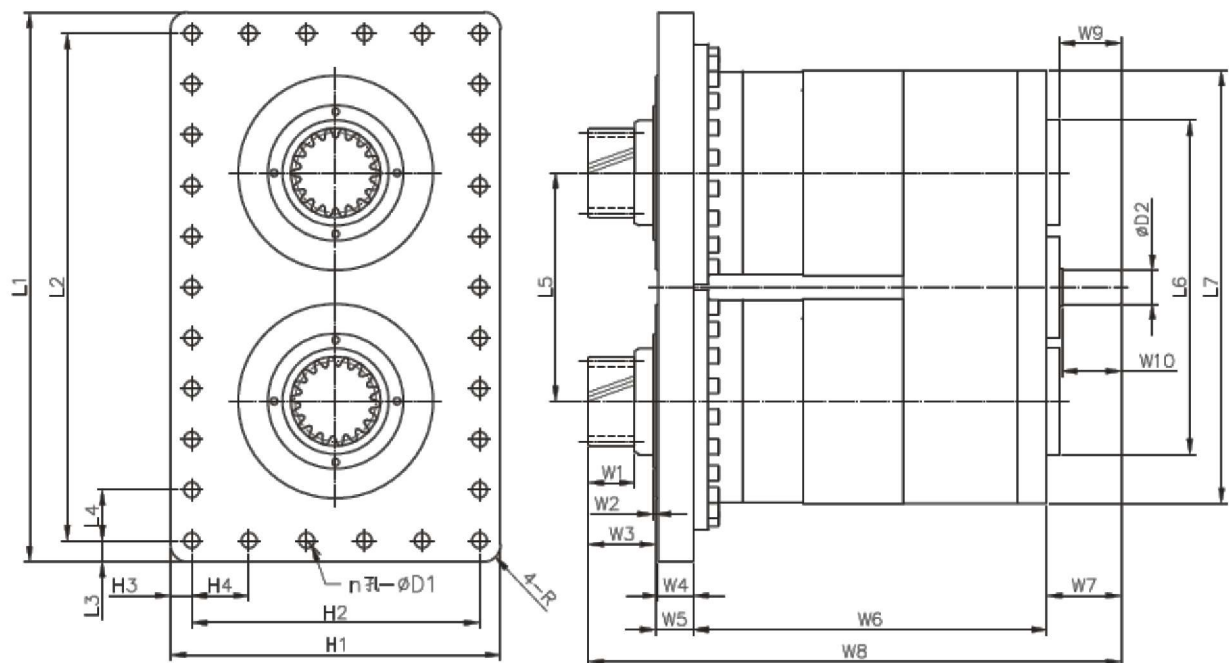
※本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如須確實之尺寸，可洽本公司。

※Actual dimensions may vary with different servo motor collocation.

※We persistently research in and develop our products, and we have made every effort to maintain the specification data above correct. If there is any discrepancy between the data and real dimensions, please refer to products or may contact us for updated data.

BMU (入力軸式) (雙段32/ 40/ 44/ 55/ 66/ 77/ 88/ 110比) [mm]

外觀尺寸 (2-Stage32/ 40/ 44/ 55/ 66/ 77/ 88/ 110 Ratio) [mm]



| 規格 Size | BMU140 | BMU160 | BMU180 | BMU210 | BMU240 |
|-------------|--------|--------|--------|--------|--------|
| 段數 Stage | 2 | 2 | 2 | 2 | 2 |
| H1 | 220 | 285 | 300 | 380 | 400 |
| H2 | 200 | 255 | 275 | 340 | 360 |
| H3 | 10 | 15 | 12.5 | 20 | 20 |
| H4 | 40 | 51 | 55 | 68 | 72 |
| L1 | 410 | 490 | 540 | 650 | 720 |
| L2 | 390 | 460 | 515 | 610 | 680 |
| L3 | 10 | 15 | 12.5 | 20 | 20 |
| L4 | 39 | 46 | 51.5 | 21 | 68 |
| L5 | 189 | 207 | 240 | 270 | 320 |
| L6 | 353 | 386 | 458 | 512 | 600 |
| W1 | 43 | 43 | 54 | 65 | 86 |
| W2 | 2 | 4.5 | 3 | 3 | 3 |
| W3 | 62 | 62.5 | 77 | 89.5 | 114 |
| W4 | 20 | 22 | 25 | 35 | 40 |
| W5 | 30 | 36.5 | 46 | 45 | 51 |
| W6 | 262.5 | 278 | 308 | 402.5 | 443.5 |
| W7 | 88 | 88 | 105 | 115 | 111 |
| W8 | 442.5 | 465 | 536 | 652 | 719.5 |
| W9 | 73 | 73 | 83 | 85 | 85 |
| W10 | 70 | 70 | 80 | 82 | 82 |
| D1 | 9 | 11 | 11 | 18 | 18 |
| D2(k6) max. | 40 | 40 | 42 | 50 | 55 |
| n | 30 | 30 | 30 | 30 | 30 |
| R | 10 | 10 | 10 | 20 | 20 |

※ 本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如須確實之尺寸，可洽本公司。
 ※ We persistently research in and develop our products, and we have made every effort to maintain the specification data above correct. If there is any discrepancy between the data and real dimensions, please refer to products or may contact us for updated data.

無背隙設計(雙導程，雙軸承設計，耐重負荷)

- Backlash-Free design (duplex lead worm , twin bearing , heavy load)

特殊合金材質之蝸桿，進口精密軸承，可維持長久之定位精度

- Worm gear made of Special alloy steel , high quality bearing , maintain long-period positioning accuracy.

緊實結構，高剛性箱體

- Impact structure ; high rigidity boxing.

大型孔設計，螺桿可直接穿入主軸

- Big hole design , insert the ballscrew directly.

應用範圍 APPLICATION :

動樑式龍門磨床 W 軸

The W axle of double column moving-cross rail machine center.

機台應用實例

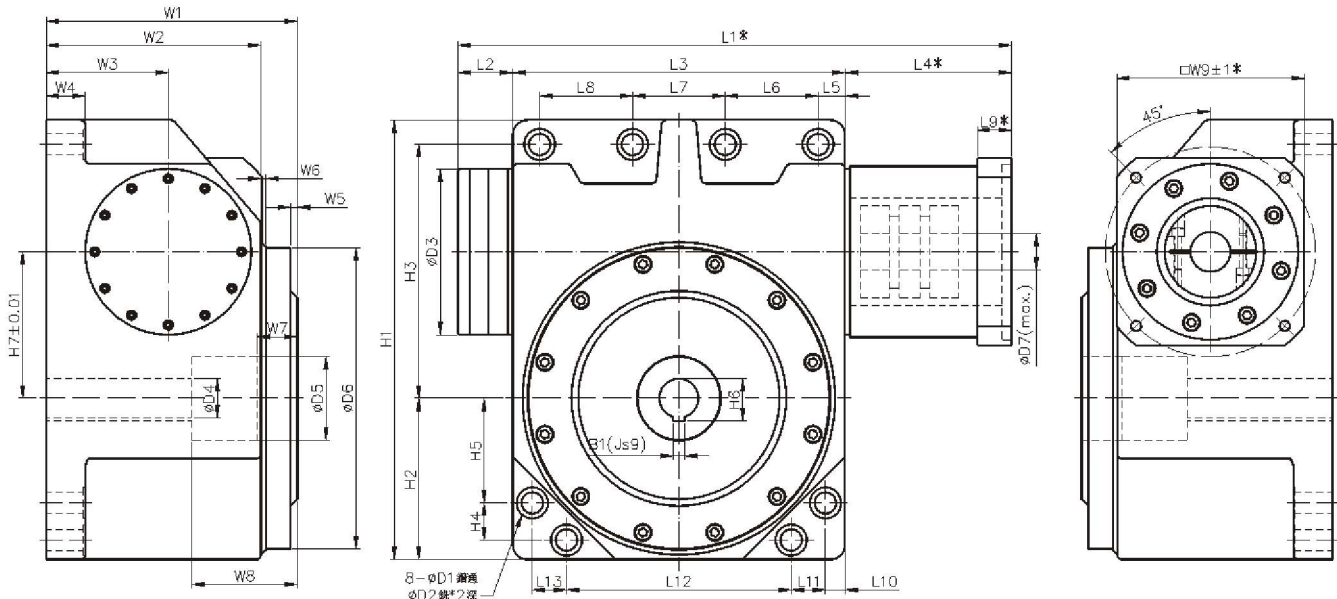
技術資料

The forth axle as index table

| 規 格 Size | | 減速比 ↓ | DWG | DWG | DWG | DWG | DWG |
|------------------|---|----------|-----|-----|------|------|------|
| 輸入轉速 Input Speed | | | 100 | 125 | 150 | 175 | 200 |
| 4000 | 額定扭矩 Nominal Output Torque T2N(Nm) | 40 | 192 | 357 | 492 | 565 | 1000 |
| | 最大加速扭矩 Maximum Acceleration Torque T2B(Nm) | | 259 | 482 | 664 | 762 | 1300 |
| | 效率 η Efficiency (%) | | 84 | 84 | 84 | 85 | 85 |
| 3000 | 額定扭矩 Nominal Output Torque T2N(Nm) | | 216 | 384 | 588 | 866 | 1200 |
| | 最大加速扭矩 Maximum Acceleration Torque T2B(Nm) | | 291 | 518 | 794 | 1169 | 1560 |
| | 效率 η Efficiency (%) | | 81 | 83 | 84 | 84 | 84 |
| 2000 | 額定扭矩 Nominal Output Torque T2N(Nm) | | 259 | 493 | 743 | 976 | 1590 |
| | 最大加速扭矩 Maximum Acceleration Torque T2B(Nm) | | 348 | 665 | 1003 | 1315 | 2060 |
| | 效率 η Efficiency (%) | | 79 | 80 | 81 | 82 | 83 |
| 1000 | 額定扭矩 Nominal Output Torque T2N(Nm) | | 335 | 586 | 988 | 1190 | 2100 |
| | 最大加速扭矩 Maximum Acceleration Torque T2B(Nm) | | 452 | 790 | 1333 | 1605 | 2700 |
| | 效率 η Efficiency (%) | | 75 | 75 | 77 | 77 | 78 |



外觀尺寸 Dimensions

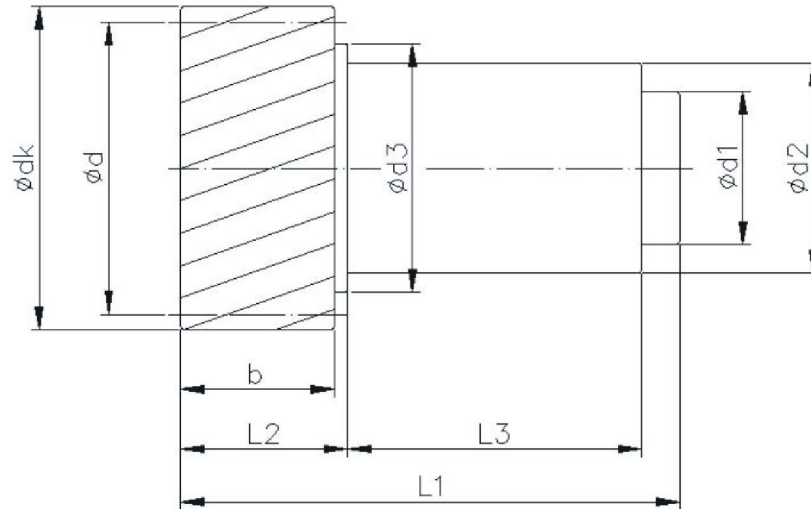


| 規格 Size | DWG100L | DWG125L | DWG150L | DWG175L | DWG200L |
|----------|---------|---------|---------|---------|---------|
| B1 | 12 | 14 | 16 | 20 | 22 |
| D1 | 13.5 | 17.5 | 22 | 26 | 26 |
| D2 | 20 | 26 | 32 | 39 | 39 |
| D3 | 145 | 155 | 170 | 235 | 245 |
| D4 | 40 | 45 | 50 | 75 | 80 |
| D5 | - | 75 | 85 | 95 | 115 |
| D6 | 226 | 267 | 308 | 361 | 407 |
| D7(max.) | 35 | 38 | 42 | 42 | 45 |
| H1 | 330 | 390 | 450 | 530 | 605 |
| H2 | 130 | 150 | 165 | 210 | 230 |
| H3 | 182.5 | 220 | 260 | 290 | 350 |
| H4 | 24.3 | 28 | 38 | 60 | 45 |
| H5 | 88.4 | 102.2 | 107 | 120 | 155 |
| H6 | 43.3 | 48.8 | 54.3 | 79.9 | 85.4 |
| H7 | 100 | 125 | 150 | 175 | 200 |
| ※L1 | 489 | 541 | 566.5 | 667.5 | 732.5 |
| L2 | 67 | 81 | 56 | 84.5 | 112.5 |
| L3 | 251 | 280 | 340 | 410 | 430 |
| L4 | 171 | 180 | 170.5 | 173 | 190 |
| L5 | 28 | 20 | 27.5 | 65 | 27.5 |
| L6 | 65 | 60 | 95 | 90 | 125 |
| L7 | 65 | 120 | 95 | 100 | 125 |
| L8 | 65 | 60 | 95 | 90 | 125 |
| ※L9 | 35 | 33 | 35 | 35 | 40 |
| L10 | 17.2 | 18.2 | 20 | 30 | 30 |
| L11 | 26.5 | 30.6 | 35 | 35 | 45 |
| L12 | 157.7 | 182.4 | 230 | 280 | 280 |
| L13 | 26.5 | 30.6 | 35 | 35 | 45 |
| W1 | 183 | 219 | 257 | 291 | 334 |
| W2 | 156.5 | 189.5 | 220 | 256 | 295 |
| W3 | 85.75 | 103 | 125 | 138 | 160 |
| W4 | 30.5 | 34.5 | 40 | 45 | 45 |
| W5 | 3.5 | 5 | 7 | - | - |
| W6 | 3 | 3 | 5 | 5 | 7 |
| W7 | - | 27.5 | 41 | 32.3 | 35 |
| W8 | - | 72.5 | 108 | 94.3 | 110 |

- ※此記號表示之尺寸視聯結之伺服馬達不同而有所變動。
- 本公司的產品不斷的研究創新，所示的各尺寸，若有變動，恕不另行通知，如需確實尺寸，可洽本公司。
- B1、D4、D5、H6、W7、W8如需變動尺寸，請與SUNUS聯絡。
- ※ Actual dimensions may vary with different servo motor collocation.
- Our products have been developing and innovating generally, so has their specification data above updating.
- If there is any change, it is subject to the updated dimensions we offer without any notice. Please contact us for updated data.
- If customized dimensions of B1, D4, D5, H6, W7, and W8 are necessary, please contact us.

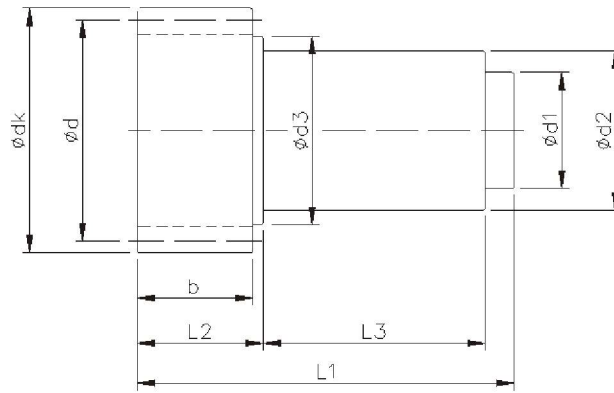
螺旋齒輪尺寸 (模數2/3/4/5/6/8/10/12)

Dimensions of helical tooth pinion (Module 2/3/4/5/6/8/10/12)



| 件號 Part No. | 減速機規格 Reducer Type | 模數 m | 齒數 z | 移位 係數 x | d | dk | d1 (g6) | d2 (h6) | d3 | b | L1 | L2 | L3 | C (mm) |
|----------------|-----------------------|---------|---------|---------------|--------|--------|------------|------------|-----|-----|-------|------|-----|-----------|
| PH132018 | HG100 | 2 | 18 | - | 38.2 | 42.2 | 20 | 25 | 32 | 25 | 71.5 | 28.5 | 28 | 120 |
| PH132021 | HG100 | 2 | 21 | - | 44.56 | 48.56 | 20 | 25 | 36 | 25 | 71.5 | 28.5 | 28 | 140 |
| PH132024 | HG100 | 2 | 24 | - | 50.93 | 54.93 | 20 | 25 | 36 | 25 | 71.5 | 28.5 | 28 | 160 |
| PH132024 | HG120 | 2 | 24 | - | 50.93 | 54.93 | 22 | 30 | 36 | 25 | 88.5 | 28.5 | 40 | 160 |
| PH132027 | HG120 | 2 | 27 | - | 57.3 | 61.3 | 22 | 30 | 42 | 25 | 88.5 | 28.5 | 40 | 180 |
| PH132030 | HG120 | 2 | 30 | - | 63.66 | 67.66 | 22 | 30 | 42 | 25 | 88.5 | 28.5 | 40 | 200 |
| PH133020 | HG140 | 3 | 20 | - | 63.66 | 69.66 | 30 | 40 | 52 | 30 | 93.5 | 33.5 | 40 | 200 |
| PH133022 | HG140 | 3 | 22 | - | 70.03 | 76.03 | 30 | 40 | 60 | 30 | 93.5 | 33.5 | 40 | 220 |
| PH133025 | HG140 | 3 | 25 | - | 79.58 | 85.58 | 30 | 40 | 60 | 30 | 93.5 | 33.5 | 40 | 250 |
| PH134015 | HG160 | 4 | 15 | 0.355 | 63.66 | 74.5 | 36 | 45 | 52 | 40 | 115.5 | 43.5 | 47 | 200 |
| PH134018 | HG160 | 4 | 18 | - | 76.39 | 84.4 | 36 | 45 | 65 | 40 | 115.5 | 43.5 | 47 | 240 |
| PH134021 | HG160 | 4 | 21 | - | 89.13 | 97.13 | 36 | 45 | 65 | 40 | 115.5 | 43.5 | 47 | 280 |
| PH134015 | HG180 | 4 | 15 | 0.355 | 63.66 | 74.5 | 40 | 50 | 52 | 40 | 125.5 | 43.5 | 52 | 200 |
| PH134018 | HG180 | 4 | 18 | - | 76.39 | 84.4 | 40 | 50 | 65 | 40 | 125.5 | 43.5 | 52 | 240 |
| PH134021 | HG180 | 4 | 21 | - | 89.13 | 97.13 | 40 | 50 | 65 | 40 | 125.5 | 43.5 | 52 | 280 |
| PH135015 | HG210 | 5 | 15 | 0.3723 | 79.58 | 93.3 | 50 | 60 | 68 | 50 | 150.5 | 53.5 | 63 | 250 |
| PH135018 | HG210 | 5 | 18 | - | 95.49 | 105.49 | 50 | 60 | 75 | 50 | 150.5 | 53.5 | 63 | 300 |
| PH135021 | HG210 | 5 | 21 | - | 111.41 | 121.41 | 50 | 60 | 75 | 50 | 150.5 | 53.5 | 63 | 350 |
| PH136015 | HG240 | 6 | 15 | 0.3756 | 95.49 | 112.0 | 60 | 70 | 80 | 60 | 172.5 | 63.5 | 73 | 300 |
| PH136018 | HG240 | 6 | 18 | - | 114.59 | 126.59 | 60 | 70 | 98 | 60 | 172.5 | 63.5 | 73 | 360 |
| PH136020 | HG240 | 6 | 20 | - | 127.32 | 139.32 | 60 | 70 | 98 | 60 | 172.5 | 63.5 | 73 | 400 |
| PH138015 | UG/UM | 8 | 15 | 0.355 | 127.32 | 149.0 | 80 | 90 | 105 | 80 | 230 | 84 | 100 | 400 |
| PH138018 | UG/UM | 8 | 18 | - | 152.79 | 168.79 | 80 | 90 | 120 | 80 | 230 | 84 | 100 | 480 |
| PH138021 | UG/UM | 8 | 21 | - | 178.25 | 194.25 | 80 | 90 | 120 | 80 | 230 | 84 | 100 | 560 |
| PH13A015 | UG/UM | 10 | 15 | 0.4825 | 159.16 | 188.81 | 95 | 110 | 135 | 100 | 280 | 104 | 120 | 500 |
| PH13A018 | UG/UM | 10 | 18 | - | 190.99 | 210.99 | 95 | 110 | 150 | 100 | 280 | 104 | 120 | 600 |
| PH13A021 | UG/UM | 10 | 21 | - | 222.82 | 242.82 | 95 | 110 | 150 | 100 | 280 | 104 | 120 | 700 |
| PH13A215 | UG/UM | 12 | 15 | 0.4589 | 190.99 | 226 | 130 | 150 | 165 | 130 | 370 | 136 | 160 | 600 |
| PH13A218 | UG/UM | 12 | 18 | - | 229.18 | 253.18 | 130 | 150 | 180 | 130 | 370 | 136 | 160 | 720 |
| PH13A220 | UG/UM | 12 | 20 | - | 254.65 | 278.65 | 130 | 150 | 180 | 130 | 370 | 136 | 160 | 800 |

Dimensions of Spur tooth pinion



(模數 2/3/4/5/6/8/10/12) Dimensions of spur tooth pinion (Module 2/3/4/5/6/8/10/12)

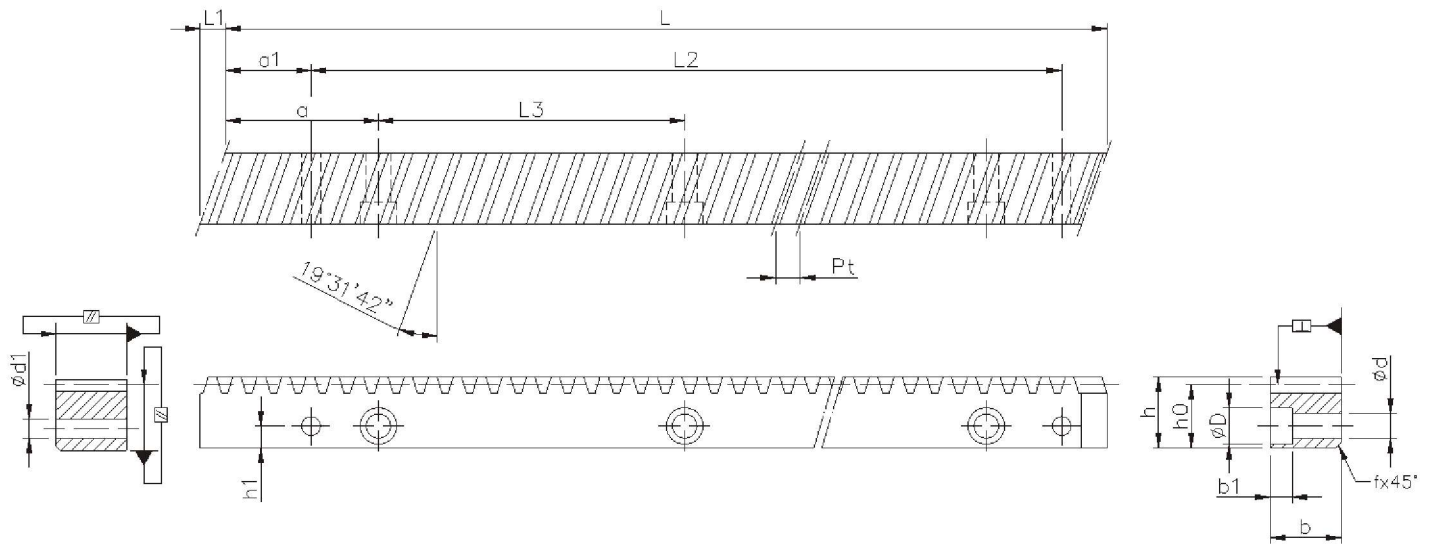
| 件號 Part No. | 減速機規格 Reducer Type | 模數 m | 齒數 Z | 移位 係數 x | d | dk | d1 (g6) | d2 (h6) | d3 | b | L1 | L2 | L3 | C (mm) |
|----------------|--------------------------|---------|---------|---------------|-----|-------|------------|------------|-----|-----|-------|------|-----|-----------|
| PS132018 | HG100 | 2 | 18 | - | 36 | 40 | 20 | 25 | 30 | 25 | 71.5 | 28.5 | 28 | 113.1 |
| PS132022 | HG100 | 2 | 22 | - | 44 | 48 | 20 | 25 | 36 | 25 | 71.5 | 28.5 | 28 | 138.23 |
| PS132025 | HG100 | 2 | 25 | - | 50 | 54 | 20 | 25 | 36 | 25 | 71.5 | 28.5 | 28 | 157.08 |
| PS132025 | HG120 | 2 | 25 | - | 50 | 54 | 22 | 30 | 36 | 25 | 88.5 | 28.5 | 40 | 167.08 |
| PS132028 | HG120 | 2 | 28 | - | 56 | 60 | 22 | 30 | 45 | 25 | 88.5 | 28.5 | 40 | 175.93 |
| PS132032 | HG120 | 2 | 32 | - | 64 | 68 | 22 | 30 | 45 | 25 | 88.5 | 28.5 | 40 | 201.06 |
| PS133019 | HG140 | 3 | 19 | - | 57 | 63 | 30 | 40 | 48 | 30 | 93.5 | 33.5 | 40 | 179.07 |
| PS133022 | HG140 | 3 | 22 | - | 66 | 72 | 30 | 40 | 58 | 30 | 93.5 | 33.5 | 40 | 207.35 |
| PS133026 | HG140 | 3 | 26 | - | 78 | 84 | 30 | 40 | 58 | 30 | 93.5 | 33.5 | 40 | 245.04 |
| PS134016 | HG160 | 4 | 16 | 0.475 | 64 | 75.8 | 36 | 45 | 53 | 40 | 115.5 | 43.5 | 47 | 201.06 |
| PS134018 | HG160 | 4 | 18 | - | 72 | 80 | 36 | 45 | 60 | 40 | 115.5 | 43.5 | 47 | 226.19 |
| PS134022 | HG160 | 4 | 22 | - | 88 | 96 | 36 | 45 | 65 | 40 | 115.5 | 43.5 | 47 | 276.46 |
| PS134016 | HG180 | 4 | 16 | 0.475 | 64 | 75.8 | 40 | 50 | 53 | 40 | 125.5 | 43.5 | 52 | 201.06 |
| PS134018 | HG180 | 4 | 18 | - | 72 | 80 | 40 | 50 | 60 | 40 | 125.5 | 43.5 | 52 | 226.19 |
| PS134022 | HG180 | 4 | 22 | - | 88 | 96 | 40 | 50 | 65 | 40 | 125.5 | 43.5 | 52 | 276.46 |
| PS135017 | HG210 | 5 | 17 | - | 85 | 95 | 50 | 60 | 72 | 50 | 150.5 | 53.5 | 63 | 267.46 |
| PS135020 | HG210 | 5 | 20 | - | 100 | 110 | 50 | 60 | 80 | 50 | 150.5 | 53.5 | 63 | 314.16 |
| PS135024 | HG210 | 5 | 24 | - | 120 | 130 | 50 | 60 | 80 | 50 | 150.5 | 53.5 | 63 | 376.99 |
| PS136016 | HG240 | 6 | 16 | 0.4834 | 96 | 113.8 | 60 | 70 | 80 | 60 | 172.5 | 63.5 | 73 | 301.59 |
| PS136018 | HG240 | 6 | 18 | - | 108 | 120 | 60 | 70 | 92 | 60 | 172.5 | 63.5 | 73 | 339.29 |
| PS136020 | HG240 | 6 | 20 | - | 120 | 132 | 60 | 70 | 92 | 60 | 172.5 | 63.5 | 73 | 376.99 |
| PS138016 | UG/UM | 8 | 16 | 0.4375 | 128 | 151 | 80 | 90 | 105 | 80 | 230 | 84 | 100 | 402.12 |
| PS138018 | UG/UM | 8 | 18 | - | 144 | 160 | 80 | 90 | 115 | 80 | 230 | 84 | 100 | 452.39 |
| PS138020 | UG/UM | 8 | 20 | - | 160 | 176 | 80 | 90 | 115 | 80 | 230 | 84 | 100 | 502.65 |
| PS13A016 | UG/UM | 10 | 16 | 0.4 | 160 | 188 | 95 | 110 | 135 | 100 | 280 | 104 | 120 | 502.65 |
| PS13A018 | UG/UM | 10 | 18 | - | 180 | 200 | 95 | 110 | 150 | 100 | 280 | 104 | 120 | 565.49 |
| PS13A020 | UG/UM | 10 | 20 | - | 200 | 220 | 95 | 110 | 150 | 100 | 280 | 104 | 120 | 628.32 |
| PS13A216 | UG/UM | 12 | 16 | 0.5 | 192 | 225.6 | 130 | 150 | 165 | 130 | 370 | 136 | 160 | 603.19 |
| PS13A218 | UG/UM | 12 | 18 | - | 216 | 240 | 130 | 150 | 180 | 130 | 370 | 136 | 160 | 678.58 |
| PS13A220 | UG/UM | 12 | 20 | - | 240 | 264 | 130 | 150 | 180 | 130 | 370 | 136 | 160 | 753.98 |

(CP 5/7.5/10/ 16/20/25) Dimensions of spur tooth pinion (CP 5/7.5/10/16/20/25)

| 件號 Part No. | 減速機規格 Reducer Type | 模數 m | 周節 CP | 齒數 Z | 移位 係數 x | d | dk | d1 (g6) | d2 (h6) | d3 | b | L1 | L2 | L3 | C (mm) |
|----------------|--------------------------|---------|----------|---------|---------------|--------|--------|------------|------------|-----|----|-------|------|-----|-----------|
| PC131524 | HG100 | 1.59155 | 5 | 24 | - | 38.20 | 41.40 | 20 | 25 | 32 | 20 | 66.5 | 23.5 | 28 | 120 |
| PC131528 | HG100 | 1.59155 | 5 | 28 | - | 44.56 | 47.75 | 20 | 25 | 36 | 20 | 66.5 | 23.5 | 28 | 140 |
| PC131532 | HG100 | 1.59155 | 5 | 32 | - | 50.93 | 54.11 | 20 | 25 | 36 | 20 | 66.5 | 23.5 | 28 | 160 |
| PC132320 | HG120 | 2.38732 | 7.5 | 20 | - | 47.75 | 52.52 | 22 | 30 | 40 | 25 | 88.5 | 28.5 | 40 | 150 |
| PC132324 | HG120 | 2.38732 | 7.5 | 24 | - | 57.29 | 62.07 | 22 | 30 | 48 | 25 | 88.5 | 28.5 | 40 | 180 |
| PC132328 | HG120 | 2.38732 | 7.5 | 28 | - | 66.84 | 71.62 | 22 | 30 | 48 | 25 | 88.5 | 28.5 | 40 | 210 |
| PC133120 | HG140 | 3.1831 | 10 | 20 | - | 63.66 | 70.00 | 30 | 40 | 52 | 30 | 93.5 | 33.5 | 40 | 200 |
| PC133122 | HG140 | 3.1831 | 10 | 22 | - | 70.00 | 76.39 | 30 | 40 | 60 | 30 | 93.5 | 33.5 | 40 | 220 |
| PC133125 | HG140 | 3.1831 | 10 | 25 | - | 79.58 | 85.90 | 30 | 40 | 60 | 30 | 93.5 | 33.5 | 40 | 250 |
| PC135115 | HG210 | 5.09296 | 16 | 15 | 0.3717 | 76.39 | 90.37 | 50 | 60 | 65 | 50 | 150.5 | 53.5 | 63 | 240 |
| PC135120 | HG210 | 5.09296 | 16 | 20 | - | 101.86 | 112.05 | 50 | 60 | 80 | 50 | 150.5 | 53.5 | 63 | 320 |
| PC135125 | HG210 | 5.09296 | 16 | 25 | - | 127.32 | 137.51 | 50 | 60 | 80 | 50 | 150.5 | 53.5 | 63 | 400 |
| PC136315 | HG240 | 6.3662 | 20 | 15 | - | 95.49 | 113.47 | 60 | 70 | 82 | 60 | 172.5 | 63.5 | 73 | 300 |
| PC136318 | HG240 | 6.3662 | 20 | 18 | - | 114.59 | 127.32 | 60 | 70 | 98 | 60 | 172.5 | 63.5 | 73 | 360 |
| PC136320 | HG240 | 6.3662 | 20 | 20 | - | 127.32 | 140.00 | 60 | 70 | 98 | 60 | 172.5 | 63.5 | 73 | 400 |
| PC137916 | UG/UM | 7.95775 | 25 | 16 | 0.4145 | 127.32 | 149.84 | 80 | 90 | 110 | 80 | 230 | 84 | 100 | 400 |
| PC137918 | UG/UM | 7.95775 | 25 | 18 | - | 143.24 | 159.16 | 80 | 90 | 120 | 80 | 230 | 84 | 100 | 450 |
| PC137920 | UG/UM | 7.95775 | 25 | 20 | - | 159.16 | 175.07 | 80 | 90 | 120 | 80 | 230 | 84 | 100 | 500 |

螺旋齒條尺寸 (模數2/3/4/5/6/8/10/12)

Dimensions of helical tooth rack (Module 2/3/4/5/6/8/10/12)



| 件號 Part No. | Pt | M | z | a | a1 | b | b1 | d | d1 | D | f ^{+0.5} | h | h0 | h1 | L | L1 | L2 | L3 | 孔數 Hole | m [kg] |
|----------------|-------|----|-----|------|------|-----|----|----|------|----|-------------------|-----|-----|----|--------|-------|-------|-----|------------|-----------|
| RH112005A | 6.67 | 2 | 75 | 62.5 | 31.7 | 24 | 7 | 7 | 5.7 | 11 | 2 | 24 | 22 | 8 | 500 | 8.5 | 436.6 | 125 | 4 | 2.1 |
| RH112010A | 6.67 | 2 | 150 | 62.5 | 31.7 | 24 | 7 | 7 | 5.7 | 11 | 2 | 24 | 22 | 8 | 1000 | 8.5 | 936.6 | 125 | 8 | 4.1 |
| RH113005A | 10 | 3 | 50 | 62.5 | 35 | 29 | 9 | 10 | 7.7 | 15 | 2 | 29 | 26 | 9 | 500 | 10.3 | 430 | 125 | 4 | 3.0 |
| RH113010A | 10 | 3 | 100 | 62.5 | 35 | 29 | 9 | 10 | 7.7 | 15 | 2 | 29 | 26 | 9 | 1000 | 10.3 | 930 | 125 | 8 | 5.9 |
| RH114005A | 13.33 | 4 | 38 | 62.5 | 33.3 | 39 | 9 | 10 | 7.7 | 15 | 3 | 39 | 35 | 12 | 506.67 | 13.8 | 433 | 125 | 4 | 5.4 |
| RH114010A | 13.33 | 4 | 75 | 62.5 | 33.3 | 39 | 9 | 10 | 7.7 | 15 | 3 | 39 | 35 | 12 | 1000 | 13.8 | 933.4 | 125 | 8 | 10.7 |
| RH115005A | 16.67 | 5 | 30 | 62.5 | 37.5 | 49 | 13 | 14 | 11.7 | 20 | 3 | 39 | 34 | 12 | 500 | 17.4 | 425 | 125 | 4 | 6.5 |
| RH115010A | 16.67 | 5 | 60 | 62.5 | 37.5 | 49 | 13 | 14 | 11.7 | 20 | 3 | 39 | 34 | 12 | 1000 | 17.4 | 925 | 125 | 8 | 13.0 |
| RH116005A | 20 | 6 | 25 | 62.5 | 37.5 | 59 | 17 | 18 | 15.7 | 26 | 3 | 49 | 43 | 16 | 500 | 20.9 | 425 | 125 | 4 | 10.0 |
| RH116010A | 20 | 6 | 50 | 62.5 | 37.5 | 59 | 17 | 18 | 15.7 | 26 | 3 | 49 | 43 | 16 | 1000 | 20.9 | 925 | 125 | 8 | 19.8 |
| RH118005A | 26.67 | 8 | 18 | 60 | 120 | 79 | 21 | 22 | 19.7 | 33 | 3 | 79 | 71 | 25 | 480 | 28 | 240 | 120 | 4 | 21.3 |
| RH118010A | 26.67 | 8 | 36 | 60 | 120 | 79 | 21 | 22 | 19.7 | 33 | 3 | 79 | 71 | 25 | 960 | 28 | 720 | 120 | 8 | 42.7 |
| RH11A005A | 33.33 | 10 | 15 | 62.5 | 125 | 99 | 32 | 33 | 19.7 | 48 | 3 | 99 | 89 | 32 | 500 | 35.1 | 250 | 125 | 4 | 34.0 |
| RH11A010A | 33.33 | 10 | 30 | 62.5 | 125 | 99 | 32 | 33 | 19.7 | 48 | 3 | 99 | 89 | 32 | 1000 | 35.1 | 750 | 125 | 8 | 68.0 |
| RH11A210A | 40 | 12 | 25 | 62.5 | 125 | 120 | 38 | 39 | 24.7 | 58 | 4 | 120 | 108 | 38 | 1000 | 42.56 | 750 | 125 | 8 | 84.5 |

Pt=節距
Transverse/tooth

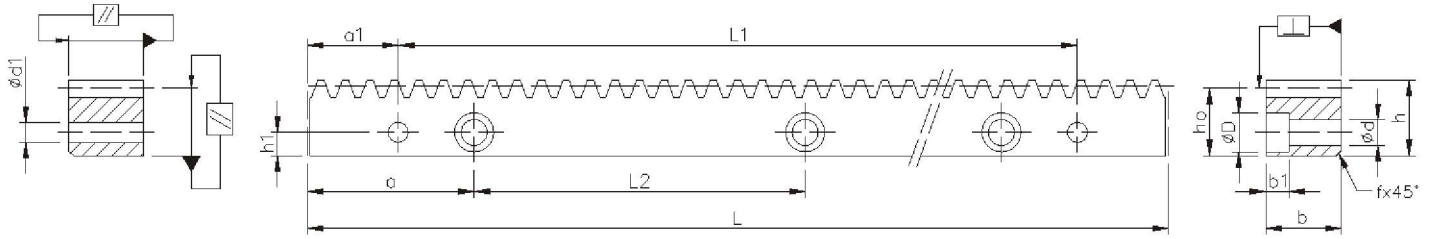
= 6.66668.....M2
=10.00002.....M3
=13.33335.....M4
=16.66669.....M5
=20.00003.....M6
=26.66670.....M8
=33.33339.....M10
=40.00006.....M12

M=模數
Module
Z=齒數
Number of teeth

品質 Quality : 6h23
材質 Material : C45K DIN 1.0503
外觀 Profile : 所有面向均研磨 all faces ground
齒部 Teeth : 經硬化並研磨, 壓力角 $\alpha = 20^\circ$
Hardened and ground/pressure angle $\alpha = 20^\circ$
螺旋方向右旋, 螺旋角 $19^\circ 31' 42''$
Helical tooth system right/helix angle $19^\circ 31' 42''$
累積節距誤差GTf: 0.027/ 300 mm
Cumulative pitch error GTf: 0.027/ 300 mm
相鄰節距誤差fp(mm): 模數 ≤ 3 ; 0.006 模數 > 3 ; 0.008
Adjacent pitch error:fp(mm): Modul ≤ 3 ; 0.006 Modul > 3 ; 0.008

正齒條尺寸

Dimensions of Spur tooth rack



(模數 2/3/4/5/6/8/10/12) Dimensions of spur tooth rack (Module 2/3/4/5/6/8/10/12)

| 件號 Part No. | Pt | M | z | a | a1 | b | b1 | d | d1 | D | f ^{+0.5} | h | h0 | h1 | L | L1 | L2 | 孔數 Hole | m [kg] |
|----------------|-------|----|-----|------|-------|-----|----|----|------|----|-------------------|-----|-----|----|--------|-------|--------|------------|-----------|
| RS112005A | 6.28 | 2 | 80 | 62.8 | 31.3 | 24 | 7 | 7 | 5.7 | 11 | 2 | 24 | 22 | 8 | 502.7 | 440.1 | 125.66 | 4 | 2.1 |
| RS112010A | 6.28 | 2 | 160 | 62.8 | 31.3 | 24 | 7 | 7 | 5.7 | 11 | 2 | 24 | 22 | 8 | 1005.3 | 942.7 | 125.66 | 8 | 4.2 |
| RS113005A | 9.42 | 3 | 54 | 63.6 | 34.4 | 29 | 9 | 10 | 7.7 | 15 | 2 | 29 | 26 | 9 | 508.9 | 440.1 | 127.23 | 4 | 3.0 |
| RS113010A | 9.42 | 3 | 108 | 63.6 | 34.4 | 29 | 9 | 10 | 7.7 | 15 | 2 | 29 | 26 | 9 | 1017.9 | 949.1 | 127.23 | 8 | 6.0 |
| RS114005A | 12.56 | 4 | 40 | 62.8 | 37.5 | 39 | 9 | 10 | 7.7 | 15 | 3 | 39 | 35 | 12 | 502.7 | 427.7 | 125.66 | 4 | 5.3 |
| RS114010A | 12.56 | 4 | 80 | 62.8 | 37.5 | 39 | 9 | 10 | 7.7 | 15 | 3 | 39 | 35 | 12 | 1005.3 | 930.3 | 125.66 | 8 | 10.6 |
| RS115005A | 15.71 | 5 | 32 | 62.8 | 30.1 | 49 | 13 | 14 | 11.7 | 20 | 3 | 39 | 34 | 12 | 502.6 | 442.4 | 125.66 | 4 | 6.7 |
| RS115010A | 15.71 | 5 | 64 | 62.8 | 30.1 | 49 | 13 | 14 | 11.7 | 20 | 3 | 39 | 34 | 12 | 1005.3 | 945.0 | 125.66 | 8 | 13.4 |
| RS116005A | 18.85 | 6 | 27 | 63.6 | 31.4 | 59 | 17 | 18 | 15.7 | 26 | 3 | 49 | 43 | 16 | 508.9 | 446.1 | 127.23 | 4 | 10.3 |
| RS116010A | 18.85 | 6 | 54 | 63.6 | 31.4 | 59 | 17 | 18 | 15.7 | 26 | 3 | 49 | 43 | 16 | 1017.8 | 955.0 | 127.23 | 8 | 20.5 |
| RS118005A | 25.13 | 8 | 20 | 62.8 | 26.7 | 79 | 21 | 22 | 19.7 | 33 | 3 | 79 | 71 | 25 | 502.7 | 449.3 | 125.66 | 4 | 22.1 |
| RS118010A | 25.13 | 8 | 40 | 62.8 | 26.7 | 79 | 21 | 22 | 19.7 | 33 | 3 | 79 | 71 | 25 | 1005.3 | 952.0 | 125.66 | 8 | 44.3 |
| RS11A005A | 31.42 | 10 | 16 | 62.8 | 125.2 | 99 | 32 | 33 | 19.7 | 48 | 3 | 99 | 89 | 32 | 502.7 | 252.3 | 125.66 | 4 | 34.8 |
| RS11A010A | 31.42 | 10 | 32 | 62.8 | 125.2 | 99 | 32 | 33 | 19.7 | 48 | 3 | 99 | 89 | 32 | 1005.3 | 755.0 | 125.66 | 8 | 69.5 |
| RS11A210A | 37.70 | 12 | 27 | 63.6 | 127.2 | 120 | 38 | 39 | 24.7 | 58 | 4 | 120 | 108 | 38 | 1017.9 | 763.5 | 127.23 | 8 | 86.5 |

(CP 5/7.5/10/16/20/25) Dimensions of spur tooth rack (CP 5/7.5/10/16/20/25)

| 件號 Part No. | M | CP | z | a | a1 | b | b1 | d | d1 | D | f ^{+0.5} | h | h0 | h1 | L | L1 | L2 | 孔數 Hole | m [kg] |
|----------------|---------|-----|-----|------|-----|----|----|----|------|----|-------------------|----|-------|------|-------|-------|-----|------------|-----------|
| RC111505A | 1.59155 | 5 | 100 | 62.5 | 35 | 19 | 7 | 7 | 5.7 | 11 | 2 | 19 | 17.41 | 7 | 500 | 430 | 125 | 4 | 1.2 |
| RC111510A | 1.59155 | 5 | 200 | 62.5 | 35 | 19 | 7 | 7 | 5.7 | 11 | 2 | 19 | 17.41 | 7 | 1000 | 930 | 125 | 8 | 2.5 |
| RC112305A | 2.38732 | 7.5 | 67 | 63.7 | 35 | 24 | 7 | 7 | 5.7 | 11 | 2 | 24 | 21.61 | 8 | 502.5 | 432.5 | 125 | 4 | 2.1 |
| RC112310A | 2.38732 | 7.5 | 134 | 63.7 | 35 | 24 | 7 | 7 | 5.7 | 11 | 2 | 24 | 21.61 | 8 | 1005 | 935 | 125 | 8 | 4.2 |
| RC133105A | 3.1831 | 10 | 50 | 62.5 | 35 | 29 | 9 | 10 | 7.7 | 15 | 2 | 29 | 25.82 | 11.5 | 500 | 430 | 125 | 4 | 3.1 |
| RC133110A | 3.1831 | 10 | 100 | 62.5 | 35 | 29 | 9 | 10 | 7.7 | 15 | 2 | 29 | 25.82 | 11.5 | 1000 | 930 | 125 | 8 | 6.2 |
| RC135110A | 5.09296 | 16 | 63 | 64.5 | 35 | 49 | 13 | 14 | 11.7 | 20 | 3 | 49 | 43.91 | 24 | 1008 | 938 | 125 | 8 | 13.2 |
| RC136310A | 6.3662 | 20 | 50 | 62.5 | 35 | 59 | 17 | 18 | 15.7 | 26 | 3 | 59 | 52.63 | 29 | 1000 | 930 | 125 | 8 | 20 |
| RC137910A | 7.95775 | 25 | 40 | 62.5 | 120 | 79 | 21 | 22 | 19.7 | 33 | 3 | 79 | 71.04 | 39 | 1000 | 760 | 125 | 8 | 44 |

Pt.CP=節距
Pt.CP=transverse/tooth

M=模數
M=Module

Z=齒數
Z=Number of teeth

品質：6h23
Quality:6h25
材質：C45K DIN 1.0503
Material:C45K DIN 1.0503
外觀：所有面向均研磨
Profile:all faces ground
齒部：經硬化並研磨，壓力角 $\alpha=20^\circ$ 。
Teeth:hardened and ground /pressure angle $\alpha=20^\circ$

累積節距誤差GTf: 0.027/ 300 mm
Cumulative pitch error
GTf:0.027/300mm

相鄰節距誤差fp(mm)：
模數 ≤ 3 ; 0.006 模數 > 3 ; 0.008
Adjacent pitch error:fp(mm) :
Modul ≤ 3 ; 0.006 Modul > 3 ; 0.008

◎填寫完成，請回傳 Fax:04-25288829 E-mail:sun-us@umail.hinet.net

應用規劃表/PROJECT DATA FOR LINEAR DRIVE APPLICATIONS

| | | | |
|-------------------------|--|-------------|--|
| 公司/Company | | 產業/Industry | |
| 地址/Address | | 郵箱/E-mail | |
| 電話/Phone | | 傳真/Fax | |
| 聯絡人/Name | | | |
| 機械種類 Type of machine | | | |
| 敘述 Description | | | |

應用資料/APPLIATION DATA

| | | | |
|--------------------------------|--|--|--|
| 傳動方式 Driving mode | <input type="checkbox"/> 螺桿 Ball screw | <input type="checkbox"/> 齒輪·齒條 Rack and Pinion | <input type="checkbox"/> 其他 Other |
| 運行方向 Travelling mode | <input type="checkbox"/> 水平 Horizontal | <input type="checkbox"/> 垂直 Vertical | |
| 平衡力量 Balanced driving force | <input type="checkbox"/> 100% | <input type="checkbox"/> 66-33% | <input type="checkbox"/> 50-50% <input type="checkbox"/> 其他 Other |
| 行程 Travel distance(m) | | | |
| 承受沖壓負載狀況 Loading condition | <input type="checkbox"/> 均勻沖擊 Middle Impact | <input type="checkbox"/> 輕微沖擊 Light Impact | <input type="checkbox"/> 較大沖擊 Heavy Impact |
| 運行時間狀況 Operation time | <input type="checkbox"/> 4-8小時/天 4-8hours/day | <input type="checkbox"/> 8-12小時/天 8-12hours/day | <input type="checkbox"/> >12小時/天 >12hours/day |
| 導軌形式 Guide mode | <input type="checkbox"/> 硬軌 Box guide way | <input type="checkbox"/> 線軌 Linear guide way | 摩擦係數 Friction coefficient |
| | <input type="checkbox"/> 液靜壓 Hydrostatic slideway | <input type="checkbox"/> 其他 Other | |

操作資料/OPERATION DATA

| 說明 Description | 單位 Unit | 無加工時移動 Motion Without machining | 粗加工 Machining:Roughing | 精加工前 Machining:Pre-Finishing | 精加工 Machining:Finishing |
|---------------------------------------|------------------|------------------------------------|-----------------------------------|---------------------------------|----------------------------|
| 工作狀況分配比例 Working phase repartition | % | | | | |
| 切削力 Feed force(from cutting) | N | | | | |
| 加速度 Acceleration | m/s ² | | | | |
| 線速度 Linear speed | m/min | | | | |
| 移動重量 Mass to move | kg | | 最大工件重量 Max.weight of workpiece | kg | |

齒輪箱/GEAR BOX SELECTION

| | | | | | |
|---------------------------|---|---|---|--|--|
| 減速機型式 Type of gear box | <input type="checkbox"/> PG <input type="checkbox"/> AG <input type="checkbox"/> HG <input type="checkbox"/> HP <input type="checkbox"/> DG <input type="checkbox"/> UM <input type="checkbox"/> PGR <input type="checkbox"/> HGR <input type="checkbox"/> AGR <input type="checkbox"/> DMU <input type="checkbox"/> BMU <input type="checkbox"/> 其他 Other | | | | |
| 減速比 Reduction ratio | | 減速機數量 Number of gear box | | | |
| 安裝方位 Mounting position | <input type="checkbox"/> 水平 Horizontal | <input type="checkbox"/> 垂直朝上 Upward | <input type="checkbox"/> 垂直朝下 Downward | | |

齒輪·齒條/RACK, PINION SELECTION

| | | | | |
|---|-------------------------------------|--|---------------------------------|---------------------------------|
| 齒條形式 Type of rack | <input type="checkbox"/> 直齒 Spur | <input type="checkbox"/> 斜齒 Helical | <input type="checkbox"/> 模數 () | <input type="checkbox"/> CP () |
| 齒輪規格 Spec. of pinion (Number of teeth) | 模數M: | | 齒數T: | |

螺桿/BALLSCREW DATA

| | | | |
|---------------|--|------------------|--|
| 螺桿導程 Pitch | | 螺桿直徑 Diameter | |
|---------------|--|------------------|--|

馬達資料/MOTOR DATA

| | | | |
|---------------------------------|--|-----------------------|--------------------|
| 廠牌 Maker | | 型號 Code | |
| 最大加速扭力 Max.accelerion torque | | 額定扭力 Rated torque | Nm |
| 額定轉速 Rated Speed | | 轉動慣量 Rator Inertia | kg.cm ² |

會依製造商所建議扭力值作額定及最大扭矩設定/Limit motor output torque according to manufacture's suggestion

不會對控制器上作扭力設定/No limit of motor output torque