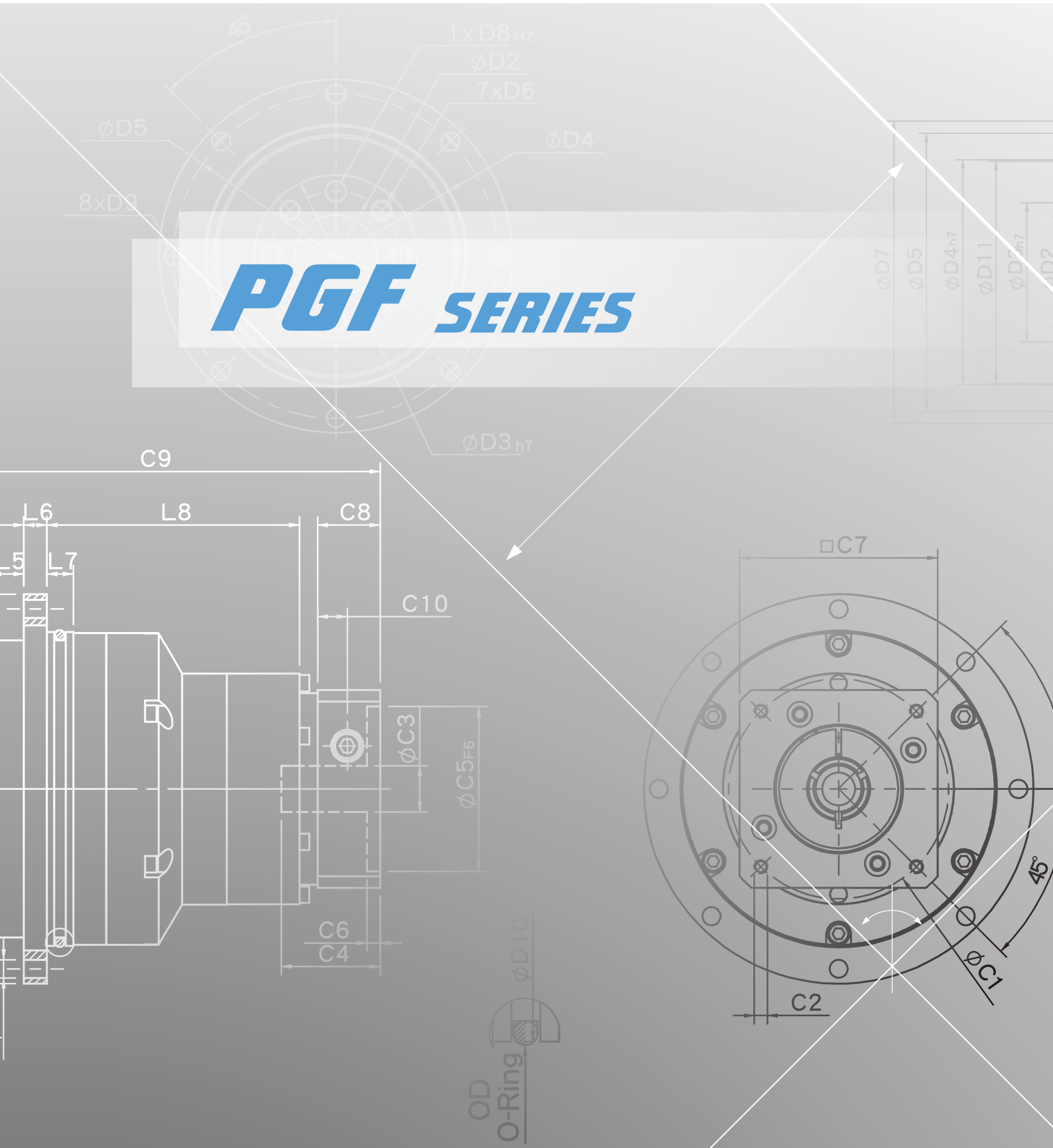
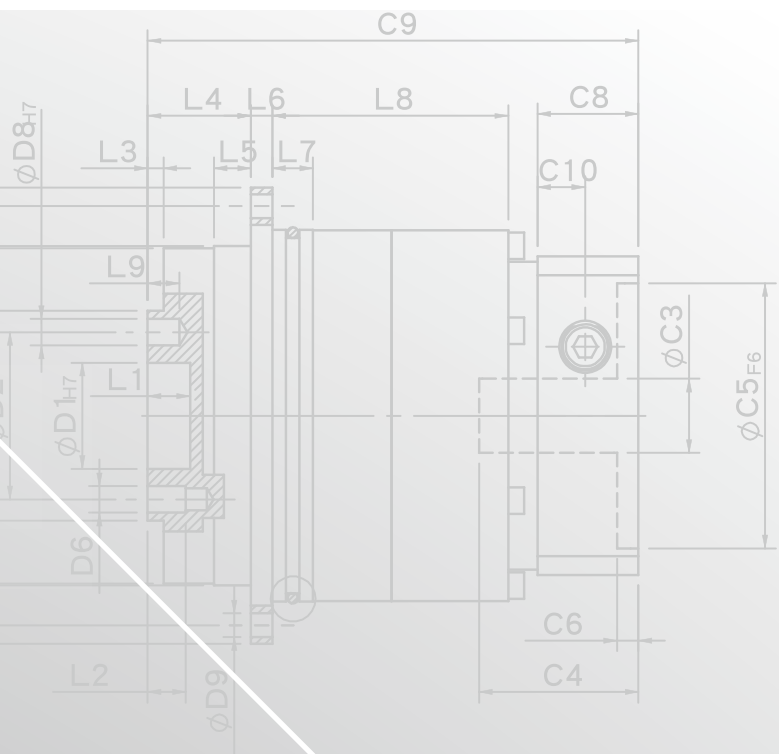
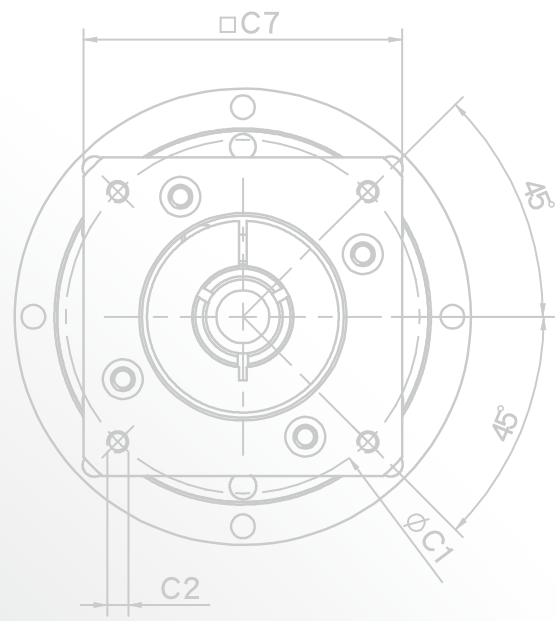


PGF SERIES

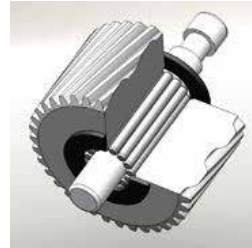




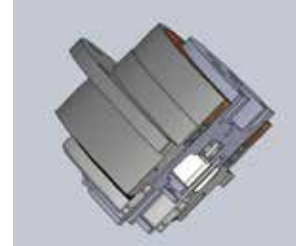
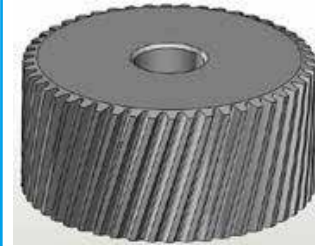
OD
O-Ring $\phi D10$



PGF SERIES FEATURES PGF系列 產品特點



齒輪材質選用高級合金鋼，獨特熱處理至最佳硬度，兼具表面硬度及心部韌度，並經過齒型研磨加工，以獲得最佳的精度、高耐磨耗及高耐衝擊韌性。
Alloy steel gear with unique heat treatment. Additionally, with gear grinding processing to get the best accuracy, high wear resistance and high impact toughness.

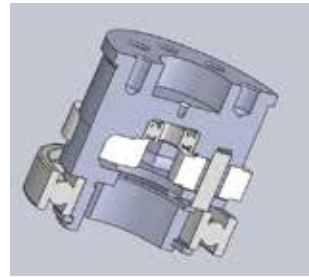


太陽齒前端軸承直接置入於行星固定架內，整體機械結構設計，以確保傳動元件的同心度。
The sun gear bearing is placed directly into the planetary arm bracket, the overall mechanical structure designed to ensure concentricity of the transmission components.

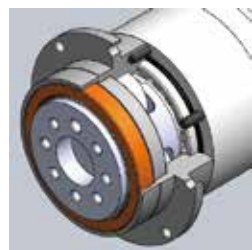


輸入端與馬達入力軸連結方法採用拴緊式機構，鎖緊環經過動平衡分析，確保高轉速下，結合介面的同心度及零滑差動力傳遞。
Input-end and motor shaft are coupled through a dynamic balanced collar clamping mechanism to ensure connection interface concentricity and zero slip power transmission at high speed.

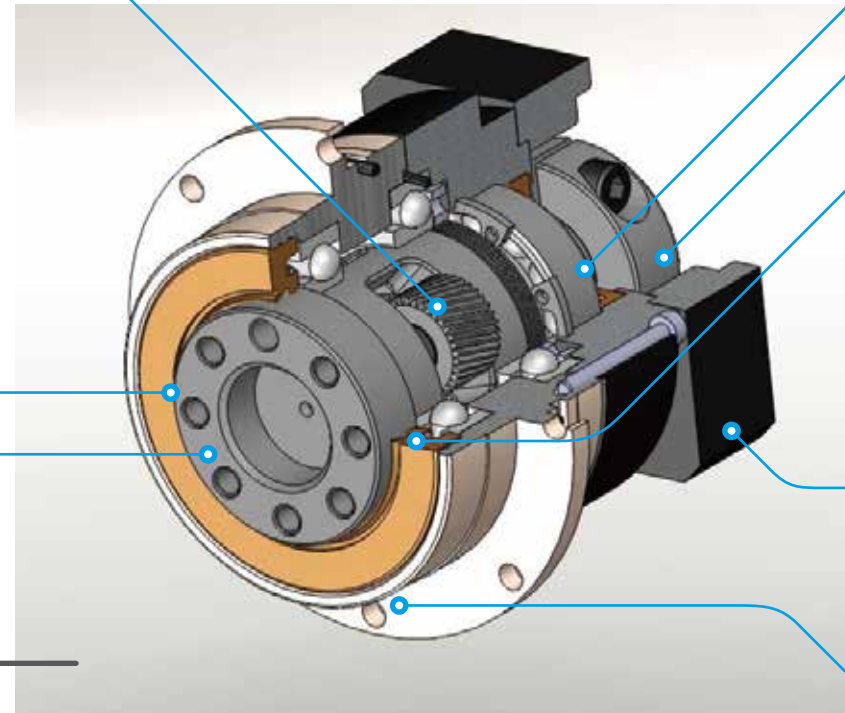
行星齒輪傳動介面採用針狀軸承，滿針排列不含保持器，以達到最大接觸面積最小間隙公差，提高結構剛性及輸出扭力。
Planet gear transmission interface equipped with needle bearings, full needle roller bearings aligned without retainer achieve maximum exposure but smallest gap tolerances. Enhance over-all gear structure rigid and output torque.



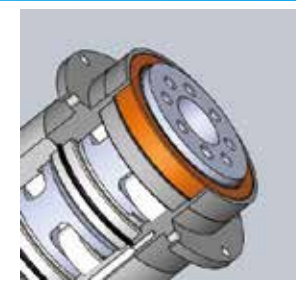
行星固定架及出力軸設計一體成型，且前後培林設定位置為大跨距，可達到最大扭轉剛性及出力軸高徑向負載能力。
Planetary arm bracket and output shaft are one-piece constructed, setting bearing apart for larger span to reach the largest reverse rigid and contribute high axis radial load capacity.



出力軸表面與油封搭配確保最低磨擦係數和減少啟動負載，保持最佳密封性，延長使用壽命且出力軸為中空穴設計，可搭配圓形法蘭面連結，大幅縮小安裝的空間。
Grinding process to smooth surface of output shaft, and with oil-seal to minimum friction coefficient and reducing start up load; result in the best seal-ability and extended lifespan. Hollow out-put shaft connects perfectly with circular flange drastically reducing the installation space.



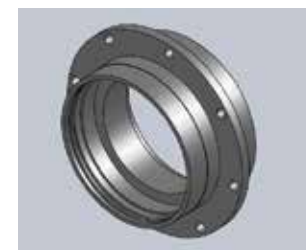
PGF系列整體設計上可容許伺服馬達高轉速的輸入，達到最大扭力輸出。出力軸為中空穴設計，可搭配圓形法蘭面連結，大幅縮小安裝的空間。精密齒輪設計及專業齒輪加工，製造出低運轉背隙、高效率、低噪音及長壽命的行星減速機。
PGF Series overall design suitable for combination operation with servo motor high-speed input and achieves maximum torque output. Hollow out-put shaft connects perfectly with circular flange drastically reducing the installation space. Precision gear design and gear processing create a planetary gearhead with low backlash operation, high efficiency, low noise and long lifespan.



高科技油封設計上唇為防塵唇，下唇為防油唇。採IP65防護等級的密封設計，並採用高級潤滑油脂，不洩漏、免保養。
High-tech oil seal design on the upper lip guard against dust intruder, lower lip to guard against oil leak. Protection grade IP65 safeguards fully avoid leaking problem, and given it maintenance-free.



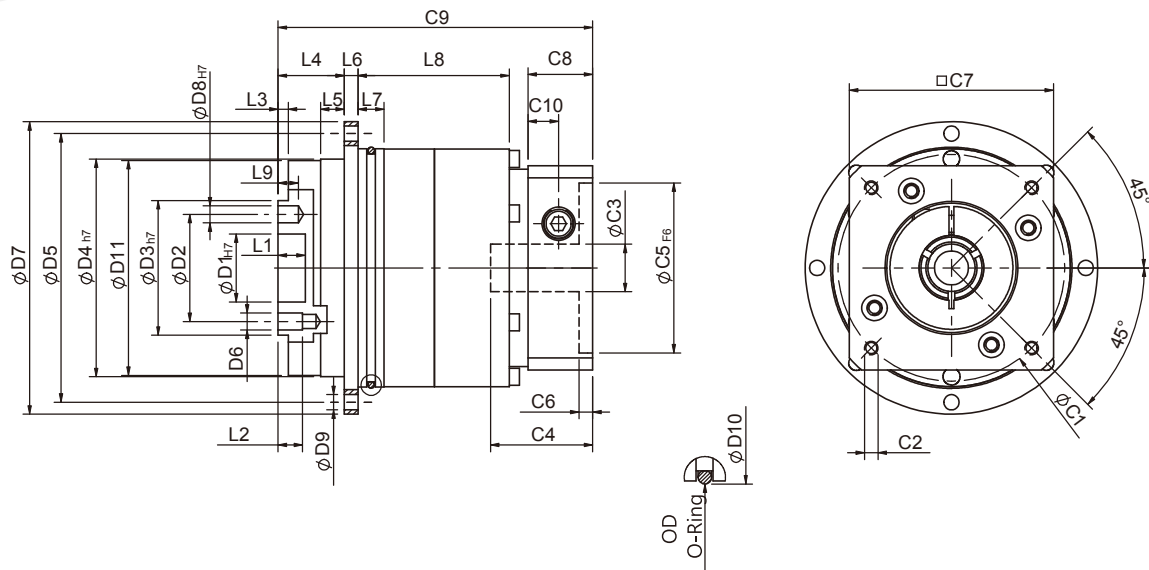
先進馬達連接板設計，配合入力軸襯套，安裝容易，可與各種廠牌之伺服、步進馬達完美搭配組合。
Advanced motor bracket design coupled with the input shaft bushing is easy to mount to any servo or stepper motor.



先進無電鍍表面處理，耐刮，耐腐蝕，最適合高科技設備嚴苛要求。本體齒箱與內環齒一體加工成形，再經德國頂級插齒機加工。具有高精度，高扭力，耐磨耗等特點。
Advanced electroless nickel plating surface treatment resists scratch and corrosion. Suitable for stringent require of high-tech equipment. The gear box and internal gear ring are one-piece constructed, and then processed with advanced Germany gear shaper machinery for high-precision, high torque and abrade consumption.

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

PGF Single Stage Dimensions PGF單段外型尺寸圖



Specifications 規格

Unit:mm

尺寸 Dimensions	PGF42	PGF60	PGF90	PGF115	PGF142
D1 _{H7}	12	20	31.5	40	50
D2	20	31.5	50	63	80
D3 _{h7}	28	40	63	80	100
D4 _{h7}	47	64	90	110	140
D5	67	79	109	135	168
D6	M3x0.5P	M5x0.8P	M6x1.0P	M6x1.0P	M8x1.25P
D7	72	86	118	145	179
D8 _{H7}	3	5	6	6	8
D9	3.4	4.5	5.5	5.5	6.6
D10	60	70	95	120	152
D11	46.2	63.2	89.2	109.2	139.2
L1	4	8	12	12	12
L2	6	7.2	12	13.5	16
L3	3	3	6	6	6
L4	19.5	19.5	29	29	38
L5	7	7	10	10	14.6
L6	4	4	7	8	10
L7	5	7.7	8	10	12
L8	25	29.5	35	50.5	65
L9	4	6	7	7	7
C1 ²	46	70	90	115	145
C2 ²	M4x0.7P	M5x0.8P	M6x1.0P	M8x1.25P	M8x1.25P
C3 ²	≤8/≤11	≤14/≤19	≤19/≤24	≤24/≤32/≤38	≤35/≤38
C4 ²	28.6	37.5	41.7	51.1	66.7
C5 ² _{F6}	30	50	70	95	110
C6 ²	4.1	4.5	6	6	5.5
C7 ²	42	60	90	115	140
C8 ²	17	20	26	30	35
C9 ²	75.3	85.5	105	127.5	168.5
C10 ²	7.4	9	11.3	13.9	17.8
OD	56x2	66x2	90x3	110x3	145x3

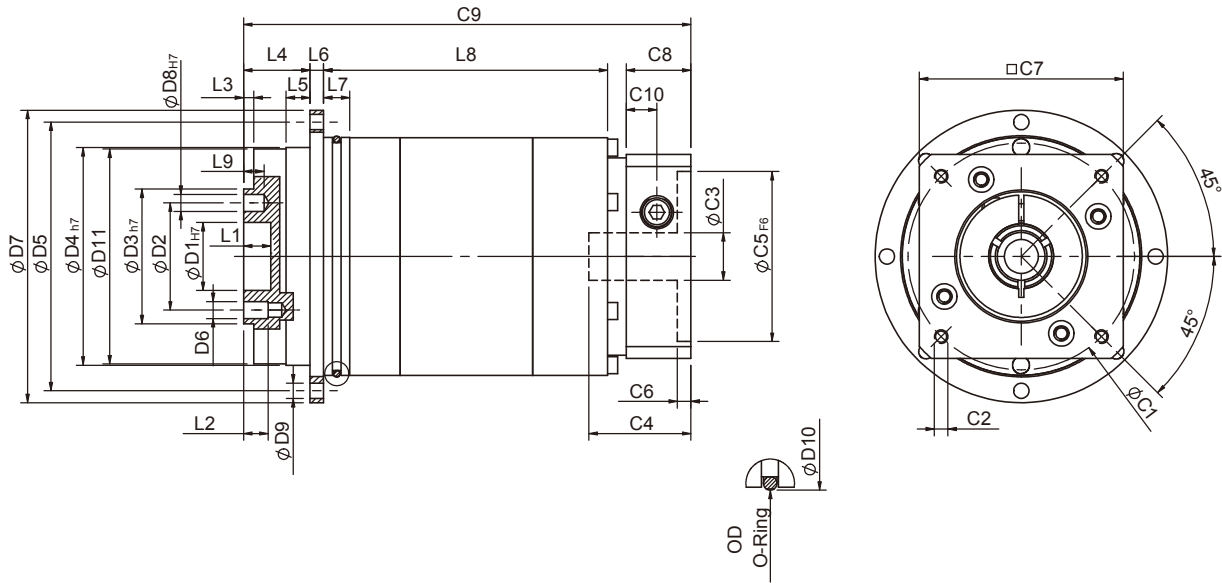
★ C1~C10是公製標準馬達連接板尺寸,請依所選用的馬達決定.

★ 本公司有權針對以上數據規格進行設計變更不先行告知.

★ C1~C10 are motor specific dimensions(metric std shown), Size may vary according to the motor flange chosen.

★ Specification subject to change without notice.

PGF Double Stage Dimensions-1 PGF雙段外型尺寸圖-1



Specifications 規格

Unit:mm

尺寸 Dimensions	PGF42	PGF60	PGF90
D1 _{H7}	12	20	31.5
D2	20	31.5	50
D3 _{h7}	28	40	63
D4 _{h7}	47	64	90
D5	67	79	109
D6	M3x0.5P	M5x0.8P	M6x1.0P
D7	72	86	118
D8 _{H7}	3	5	6
D9	3.4	4.5	5.5
D10	60	70	95
D11	46.2	63.2	89.2
L1	4	8	12
L2	6	7.2	12
L3	3	3	6
L4	19.5	19.5	29
L5	7	7	10
L6	4	4	7
L7	5	7.7	8
L8	54.5	68.5	80
L9	4	6	7
C1 ²	46	70	90
C2 ²	M4x0.7P	M5x0.8P	M6x1.0P
C3 ²	≤8/≤11	≤14/≤19	≤19/≤24
C4 ²	28.6	37.5	41.7
C5 ² _{F6}	30	50	70
C6 ²	4.1	4.5	6
C7 ²	42	60	90
C8 ²	17	20	26
C9 ²	103	124.5	149.1
C10 ²	7.4	9	11.3
OD	56x2	66x2	90x3

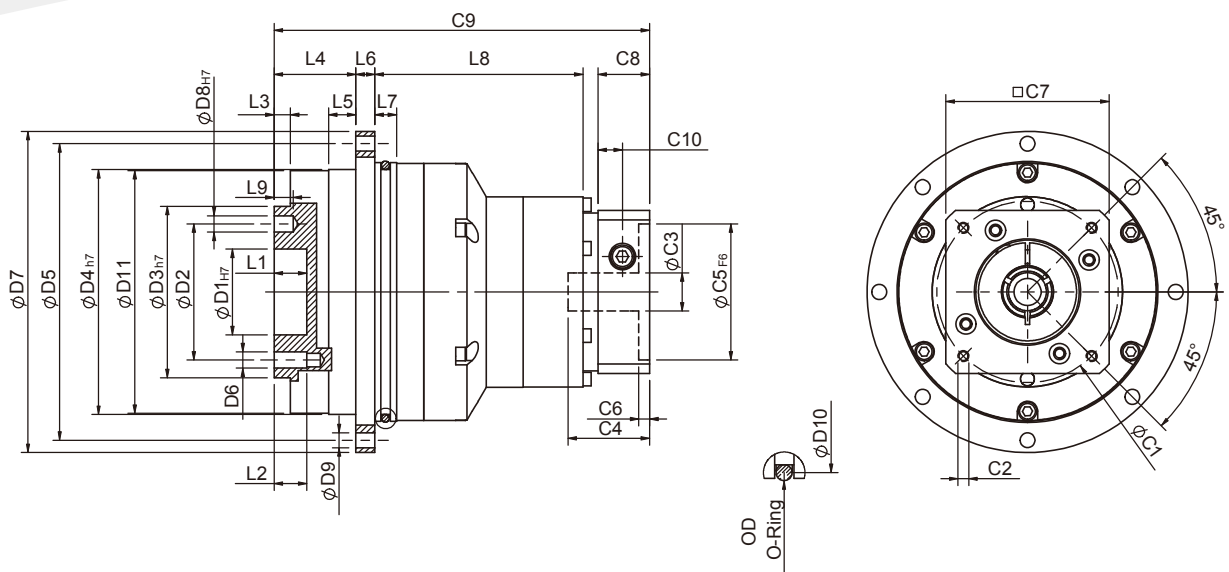
* C1~C10是公製標準馬達連接板尺寸,請依所選用的馬達決定。

* 本公司有權針對以上數據規格進行設計變更不先行告知。

* C1~C10 are motor specific dimensions(metric std shown), Size may vary according to the motor flange chosen.

* Specification subject to change without notice.

PGF Double Stage Dimensions-2 PGF雙段外型尺寸圖-2



Specifications 規格 Unit:mm

尺寸 Dimensions	PGF60T	PGF90T	PGF115T	PGF142T
D1 _{H7}	20	31.5	40	50
D2	31.5	50	63	80
D3 _{h7}	40	63	80	100
D4 _{h7}	64	90	110	140
D5	79	109	135	168
D6	M5x0.8P	M6x1.0P	M6x1.0P	M8x1.25P
D7	86	118	145	179
D8 _{H7}	5	6	6	8
D9	4.5	5.5	5.5	6.6
D10	70	95	120	152
D11	63.2	89.2	109.2	139.2
L1	8	12	12	12
L2	7.2	12	13.5	16
L3	3	6	6	6
L4	19.5	29	29	38
L5	7	10	10	14.6
L6	4	7	8	10
L7	7.7	8	10	12
L8	61.2	68	89.5	110
L9	6	7	7	7
C1 ²	46	70	90	115
C2 ²	M4x0.7P	M5x0.8P	M6x1.0P	M8x1.25P
C3 ²	≤8/≤11	≤14/≤19	≤19/≤24	≤24/≤32/≤38
C4 ²	28.6	37.5	41.7	51.1
C5 ² _{F6}	30	50	70	95
C6 ²	4.1	4.5	6	6
C7 ²	42	60	90	115
C8 ²	17	20	26	30
C9 ²	109.7	136.5	159.6	198
C10 ²	7.4	9	11.3	13.9
OD	66x2	90x3	110x3	145x3

★ C1~C10是公製標準馬達連接板尺寸,請依所選用的馬達決定。 ★ C1~C10 are motor specific dimensions(metric std shown), Size may vary according to the motor flange chosen.
 ★ 本公司有權針對以上數據規格運行設計變更不先行告知。 ★ Specification subject to change without notice.

PGF Specifications Table PGF性能規格共表

規格 Specifications		節數 Stage	減速比 Ratio	PGF-42	PGF-60	PGF-90	PGF-115	PGF-142	
額定輸出力矩 T_{2N} Nominal Output Torque	N • m	1	3	-	40	105	180	340	
			4	16	43	110	240	500	
			5	17	50	130	290	600	
			7	14	44	125	270	530	
			10	11	37	95	220	430	
		節數 Stage	減速比 Ratio	PGF-42	PGF-60(T)	PGF-90(T)	PGF-115T	PGF-142T	
		2	15	-	40	105	180	600	
			20	16	43	110	240	600	
			25	17	50	130	290	600	
			30	17	50	130	290	600	
			35	17	50	130	290	600	
			40	17	50	130	290	600	
			50	17	50	130	290	600	
			70	14	44	125	270	530	
100	11	37	95	220	430				
急停力矩 T_{2NOT} Emergency Stop Torque	N • m	3.0 倍額定輸出力矩 (3.0 times of Nominal Output Torque) (* 最大輸出力矩 Max. Output Torque T_{2B} =60% of Emergency Stop Torque)							
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	1,2	3-100	5000	5000	4000	4000	3000	
最大輸入轉速 n_{1max} Max. Input Speed	rpm	1,2	3-100	10000	10000	8000	8000	5000	
超精密背隙 Micro Backlash P0	arcmin	1	3-10	≤ 3	≤ 3	≤ 3	≤ 1	≤ 1	
		2	12-100	≤ 5	≤ 5	≤ 5	≤ 3	≤ 3	
精密背隙 Precision Backlash P1	arcmin	1	3-10	≤ 5	≤ 5	≤ 5	≤ 3	≤ 3	
		2	12-100	≤ 7	≤ 7	≤ 7	≤ 5	≤ 5	
標準背隙 Standard Backlash P2	arcmin	1	3-10	≤ 7	≤ 7	≤ 7	≤ 5	≤ 5	
		2	12-100	≤ 9	≤ 9	≤ 9	≤ 7	≤ 7	
扭轉剛性 Torsional Rigidity	N • m /arcmin	1,2	3-100	6	12	28	75	145	
容許彎曲力矩 M_{2kB}^1 Max. Bending Moment	N • m	1,2	3-100	22.5	36	76	140	950	
容許軸向力 F_{2aB}^1 Max. Axial Load	N	1,2	3-100	465	635	1060	1580	6400	
使用溫度 Operating Temp.	°C		3-100	-10 °C ~ +90 °C					
使用壽命 Service Life	hr		3-100	20,000 (10,000/ 連續運轉 Continuous operation)					
效率 Efficiency	%	1	3-10	≥ 97%					
		2	12-100	≥ 94%					
重量 Weight	kg	1	3-10	0.7	1.4	3.2	6.0	13.6	
		2	12-100	1.1	2.2(1.7)	5.0(4.0)	7.9	17.9	
安裝方向 Mounting Position	-	1,2	3-100	任意方向 Any direction					
噪音值 Noise Level ²	dB(A)/1m	1,2	3-100	56	58	60	63	65	
防護等級 Protection Class	-	1,2	3-100	IP65					
潤滑 Lubrication	-	1,2	3-100	全合成潤滑油脂 Synthetic Lubricant					
減速機轉動慣量 Inertia(J1)									
節數 Stage	減速比 Ratio	單位 unit	PGF-42	PGF-60	PGF-90	PGF-115	PGF-142		
1	3	Kg • cm ²	-	0.19	0.72	2.35	9.05		
	4		0.02	0.18	0.67	1.66	7.17		
	5		0.02	0.17	0.65	1.50	6.52		
	7		0.02	0.14	0.60	1.45	6.17		
	10		0.02	0.14	0.58	1.41	6.10		
節數 Stage	減速比 Ratio		PGF-42	PGF-60(T)	PGF-90(T)	PGF-115T	PGF-142T		
2	15/20/25		0.02	0.17(0.02)	0.65(0.17)	0.65	2.35		
	30/35/40		0.02	0.14(0.02)	0.60(0.14)	0.60	1.45		
	50/70/100		0.02	0.14(0.02)	0.58(0.14)	0.58	1.41		

* 1. 輸出轉速 100rpm 時，作用於輸出軸中心位置。Applied to the output shaft center @100rpm.
 * 2. 3000rpm 空載量測。Measured at 3000 rpm with no load. These values are measured by gearbox with ratio = 10 (1-stage) or ratio = 100 (2-stage) at nominal input speed or 3000 rpm (if nominal input speed is higher than 3000 rpm) with no load.
 ※本公司有權對以上數據規格逕行設計變更不先行告知。The above figures/specifications are subject to change without prior notice.

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 產品因人為原因或天災等因素導致不良或損壞，不在保固範圍內。