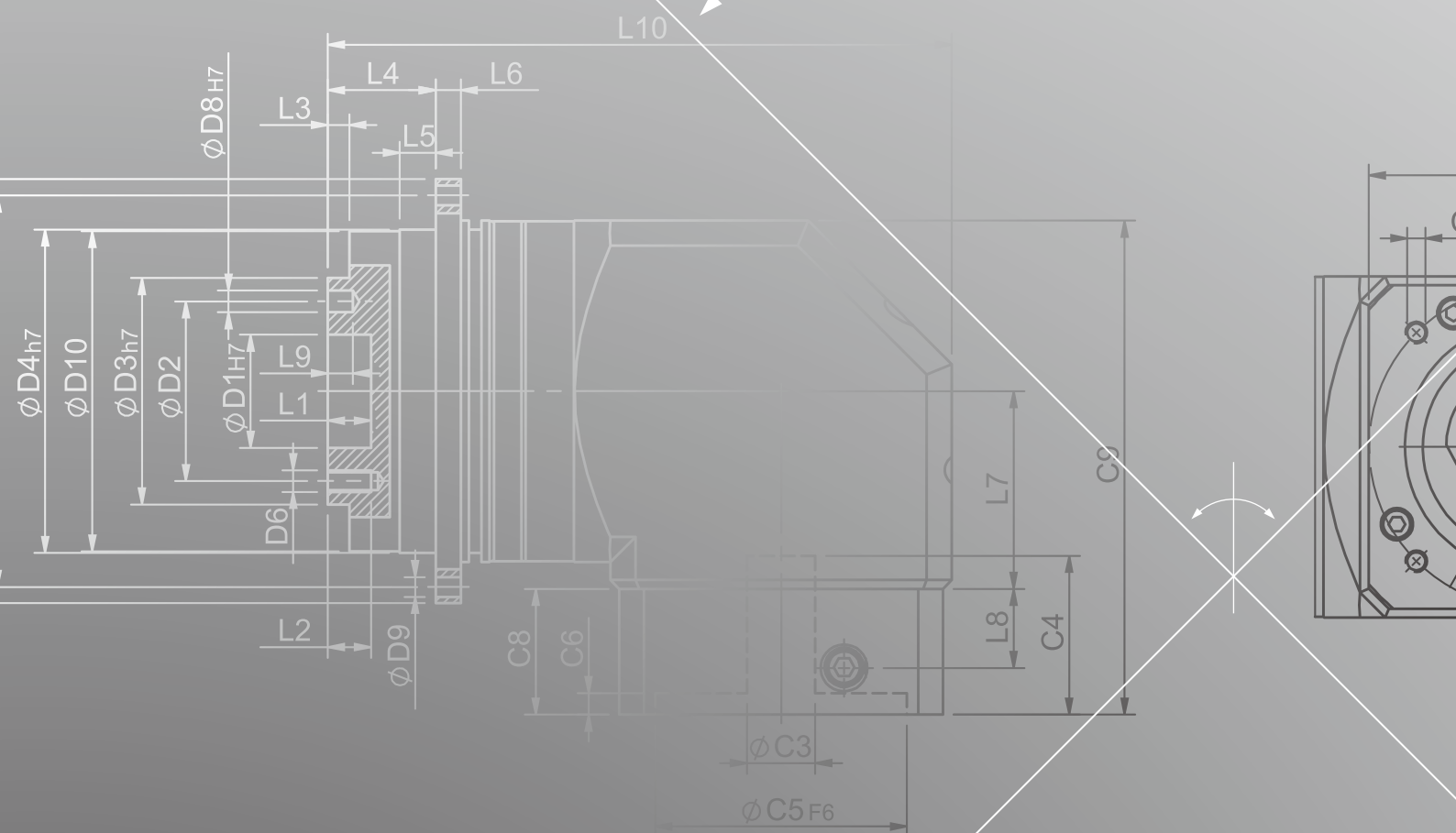
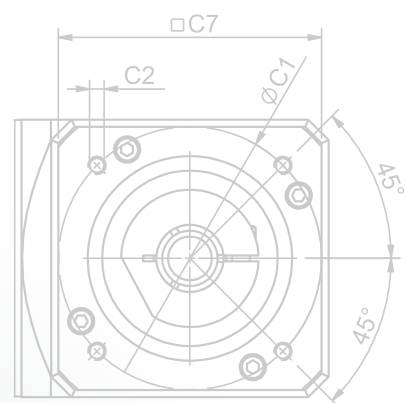
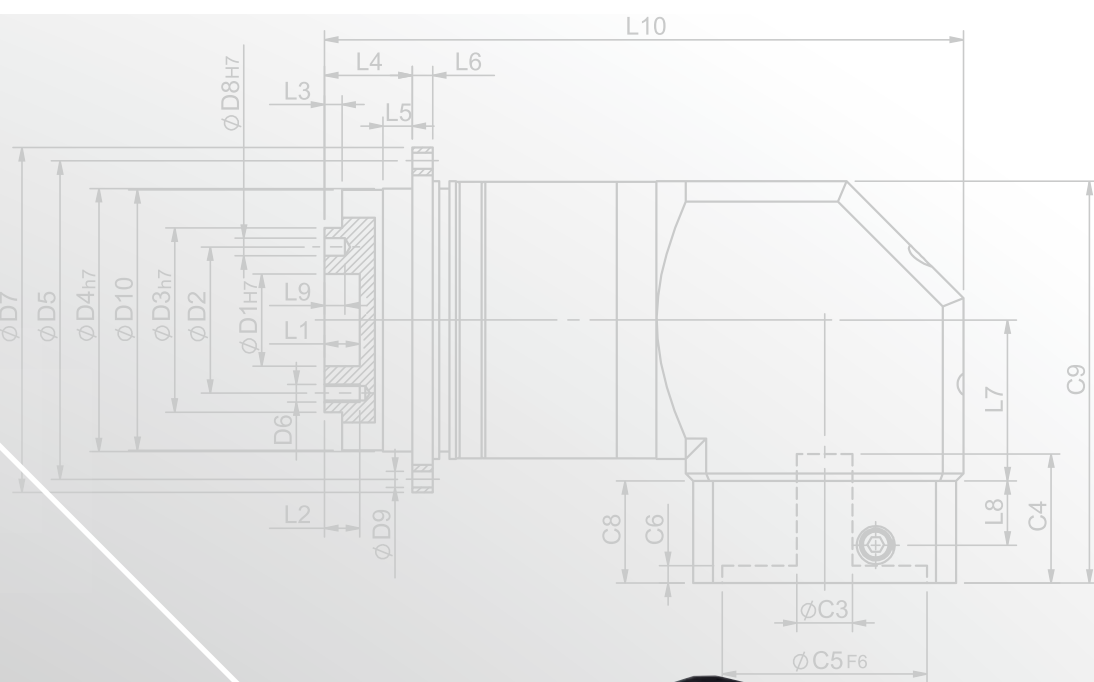
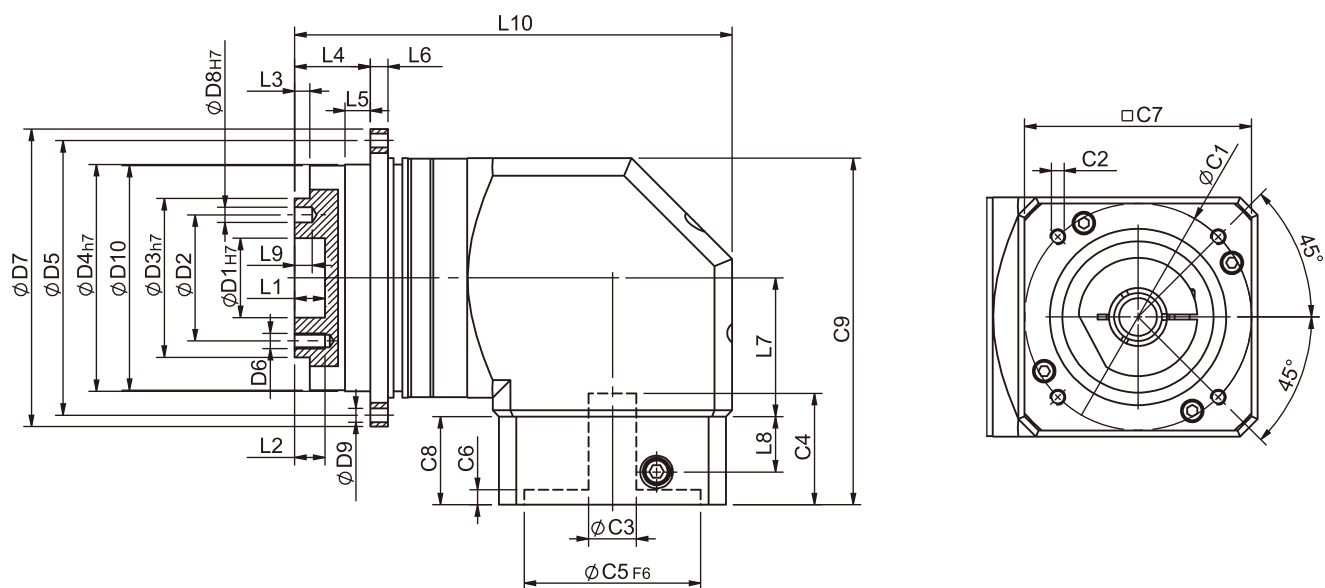


***PHFR** SERIES*





PHFR Single Stage Dimensions PHFR單段外型尺寸圖



Specifications 規格

Unit:mm

尺寸 Dimensions	PHFR42	PHFR60	PHFR90	PHFR115	PHFR142	PHFR200	PHFR255
D1 _{H7}	12	20	31.5	40	50	80	100
D2	20	31.5	50	63	80	125	140
D3 _{H7}	28	40	63	80	100	160	180
D4 _{H7}	47	64	90	110	140	200	255
D5	67	79	109	135	168	233	280
D6	M3x0.5P	M5x0.8P	M6x1.0P	M6x1.0P	M8x1.25P	M10x1.5P	M16x2.0P
D7	72	86	118	145	179	247	300
D8 _{H7}	3	5	6	6	8	10	12
D9	3.4	4.5	5.5	5.5	6.6	9	13.5
D10	46.2	63.2	89.2	109.2	139.2	199.2	254.2
L1	4	8	12	12	12	16	20
L2	6	7.2	12	13.5	16	22.5	30.5
L3	3	3	6	6	6	8	12
L4	19.5	19.5	30	29	38	50	66
L5	7	7	10	10	14.6	15	20
L6	4	4	7	8	10	12	18
L7	32.2	44.8	55	69	71	92.5	92.5
L8	13.5	21.5	22	32	44.7	44	60
L9	4	6	7	7	7	10	10
L10	92.2	128.3	173.6	204.2	250.7	330.7	392.2
C1 ²	46	70	90	90	145	200	215
C2 ²	M4x0.7P	M5x0.8P	M6x1.0P	M6x1.0P	M8x1.25P	M12x1.75P	M12x1.75P
C3 ²	≤8/≤11	≤14/≤19	≤19/≤24	≤24/≤32	≤35	≤50	≤55
C4 ²	29	34	44	53.5	76.8	78.8	98.7
C5 ² _{F6}	30	50	70	70	110	114.3	180
C6 ²	6	5	5	5.5	9	6	6
C7 ²	42.6	60	90	115	140	180	220
C8 ²	25	33	35	48	65	65	85
C9 ²	78.5	112.8	137.5	176.5	225.5	246.5	266.5

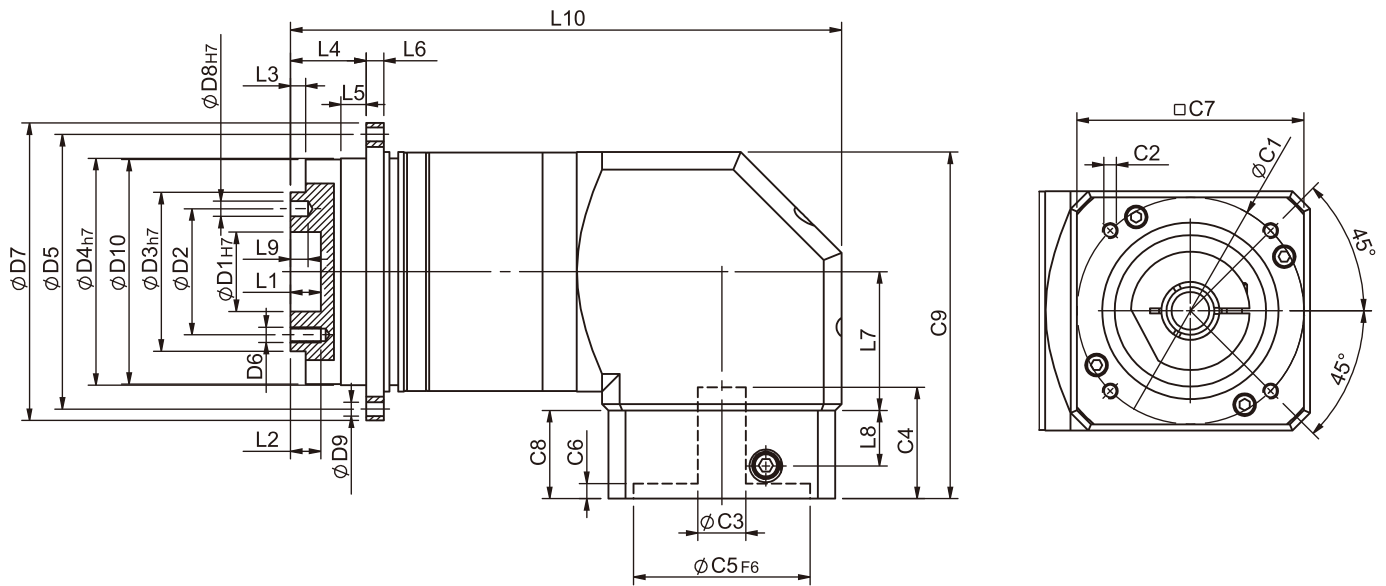
★ C1~C9是公製標準馬達連接板尺寸,請依所選用的馬達決定。

★ 本公司有權針對以上數據規格逕行設計變更不先行告知。

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

★ Specification subject to change without notice.

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



Specifications 規格

Unit:mm

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

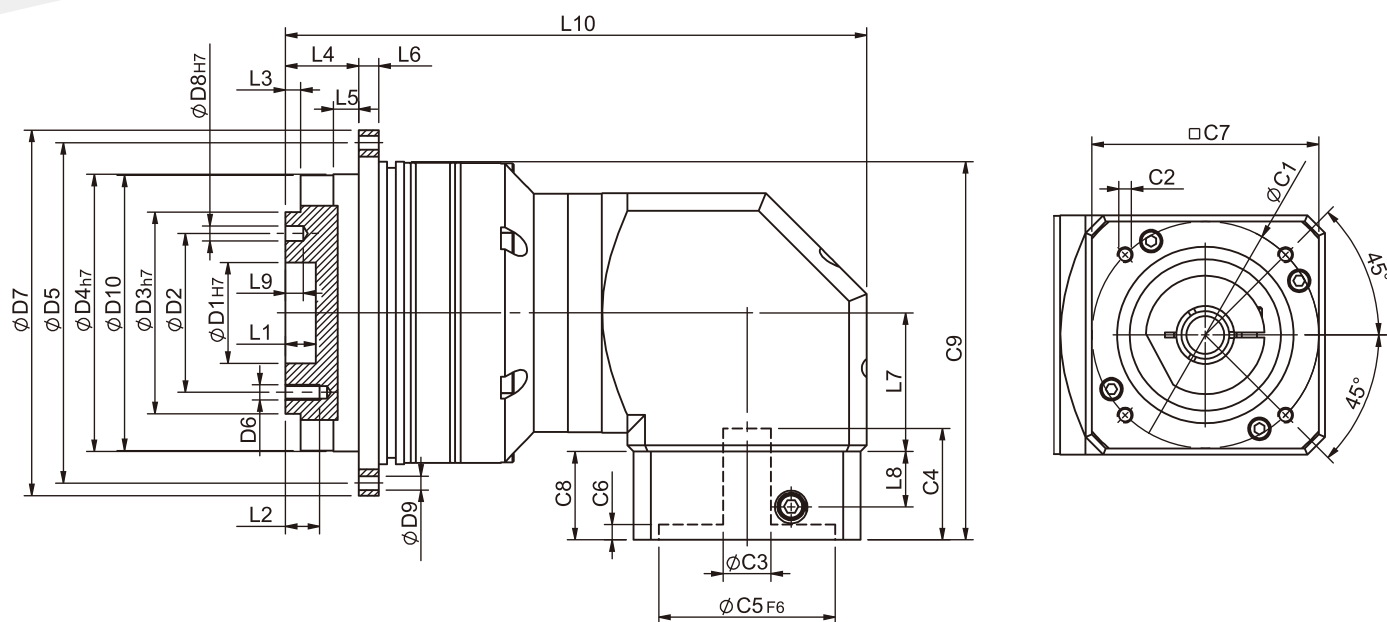
★ C1~C9是公製標準馬達連接板尺寸,請依所選用的馬達決定。

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

★ Specification subject to change without notice.

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



Specifications 規格

Unit:mm

尺寸 Dimensions	PHFR60T	PHFR90T	PHFR115T	PHFR142T	PHFR200T	PHFR255T
D1 _{H7}	20	31.5	40	50	80	100
D2	31.5	50	63	80	125	140
D3 _{h7}	40	63	80	100	160	180
D4 _{h7}	64	90	110	140	200	255
D5	79	109	135	168	233	280
D6	M5x0.8P	M6x1.0P	M6x1.0P	M8x1.25P	M10x1.5P	M16x2.0P
D7	86	118	145	179	247	300
D8 _{H7}	5	6	6	8	10	12
D9	4.5	5.5	5.5	6.6	9	13.5
D10	63.2	89.2	109.2	139.2	199.2	254.2
L1	8	12	12	12	16	20
L2	7.2	12	13.5	16	22.5	30.5
L3	3	6	6	6	8	12
L4	19.5	30	29	38	50	66
L5	7	10	10	14.6	15	20
L6	4	7	8	10	12	18
L7	32.2	44.8	55	69	71	92.5
L8	13.5	21.5	22	32	44.7	44
L9	6	7	7	7	10	10
L10	130.6	173.8	230.6	270.7	361.4	439.2
C1 ²	46	70	90	90	145	200
C2 ²	M4x0.7P	M5x0.8P	M6x1.0P	M6x1.0P	M8x1.25P	M12x1.75P
C3 ²	≤8/≤11	≤14/≤19	≤19/≤24	≤24/≤32	≤35	≤50
C4 ²	29	34	44	53.5	76.8	78.8
C5 ² _{F6}	30	50	70	70	110	114.3
C6 ²	6	5	5	5.5	9	6
C7 ²	42.6	60	90	115	140	92.5
C8 ²	25	33	35	48	65	65
C9 ²	84.4	125.3	150	176.5	259.5	284

★ C1~C9是公製標準馬達連接板尺寸,請依所選用的馬達決定.

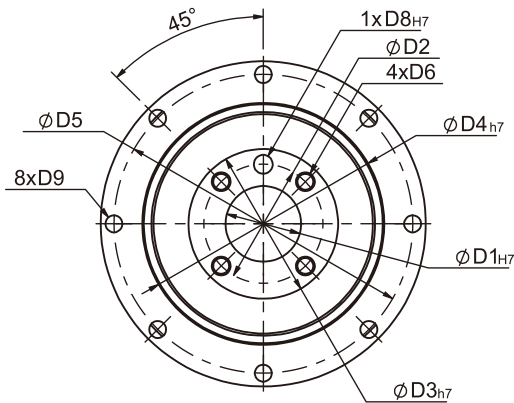
★ 本公司有權針對以上數據規格逕行設計變更不先行告知.

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

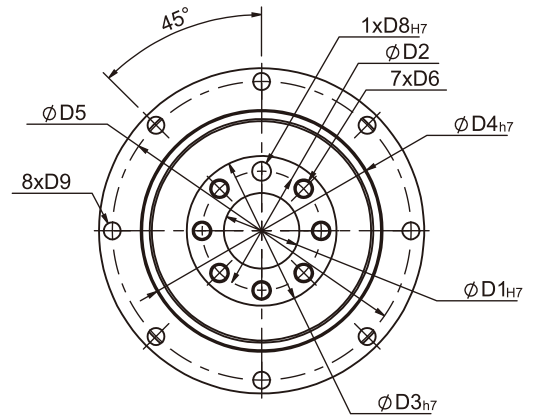
★ Specification subject to change without notice.

PHFR Flange Dimensions PHFR法蘭面尺寸圖

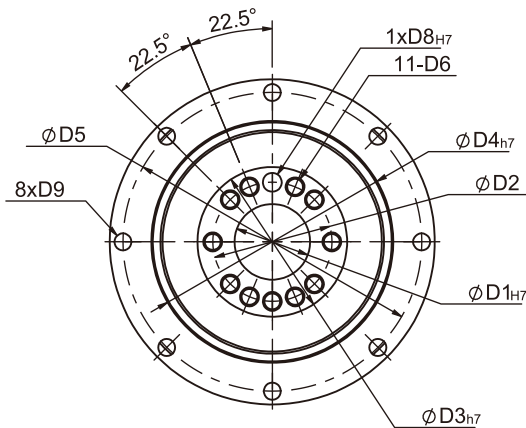
PHFR42



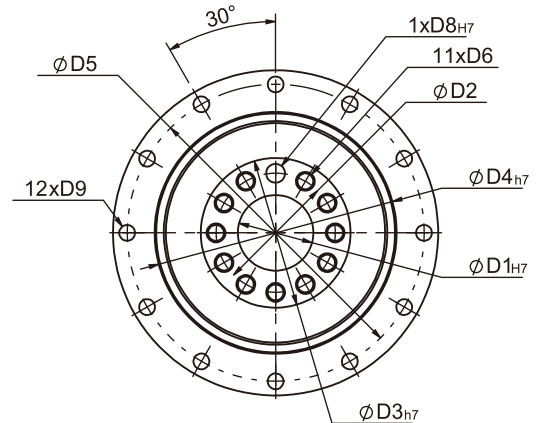
PHFR60 PHFR90



PHFR115



PHFR142 PHFR200



Specifications 規格

Unit:mm

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

★ 本公司有權針對以上數據規格逕行設計變更不先行告知。

★ Specification subject to change without notice.

PHFR Specifications Table PHFR性能規格共表

規格 Specifications		節數 Stage	減速比 Ratio	PHFR-42	PHFR-60	PHFR-90	PHFR-115	PHFR-142	PHFR-200	PHFR-255
額定輸出力矩 T_{2N} Nominal Output Torque	N • m	1	3	-	40	105	180	340	580	950
			4	16	43	110	240	500	1100	1500
			5	17	50	130	290	600	1200	1800
			7	14	44	125	270	530	1100	1750
			10	17	50	130	260	540	900	1500
			14	14	44	125	270	530	1100	1750
		20	11	37	95	220	430	900	1450	
		節數 Stage	減速比 Ratio	PHFR-42	PHFR-60 (T)	PHFR-90(T)	PHFR-115T	PHFR-142T	PHFR-200T	PHFR-255T
		2	15	-	40	105	180	600	1200	2000
			20	16	43	110	240	600	1200	2000
			25	17	50	130	290	600	1200	2000
			30	17	40	105	180	600	1200	2000
			35	17	50	130	290	600	1200	2000
			40	16	43	110	240	600	1200	2000
			50	17	50	130	290	600	1200	2000
			70	14	44	125	270	530	1100	1750
			100	11	37	95	220	430	900	1450
			140	14	44	125	270	530	1100	1750
		200	11	37	95	220	430	900	1450	
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	3-200	5000	5000	4000	4000	3000	3000	2000
最大輸入轉速 n_{1max} Max. Input Speed	rpm	1,2	3-200	10000	10000	8000	8000	6000	6000	4000
超精密背隙 Micro Backlash P0	arcmin	1 2	3-20 15-200	- -	- -	≤ 3 ≤ 5	≤ 2 ≤ 4	≤ 2 ≤ 4	≤ 2 ≤ 4	≤ 2 ≤ 4
精密背隙 Precision Backlash P1	arcmin	1 2	3-20 15-200	≤ 5 ≤ 7	≤ 5 ≤ 7	≤ 5 ≤ 7	≤ 4 ≤ 7	≤ 4 ≤ 7	≤ 4 ≤ 7	≤ 4 ≤ 7
標準背隙 Standard Backlash P2	arcmin	1 2	3-20 15-200	≤ 7 ≤ 9	≤ 7 ≤ 9	≤ 7 ≤ 9	≤ 6 ≤ 9	≤ 6 ≤ 9	≤ 6 ≤ 9	≤ 6 ≤ 9
扭轉剛性 Torsional Rigidity	N • m /arcmin	1,2	3-200	6	12	30	80	150	450	1000
容許彎曲力矩 M_{2kB}^{-1} Max. Bending Moment	N • m	1,2	3-200	43	125	288	503	1470	2950	6500
容許軸向力 F_{2aB}^{-1} Max. Axial Load	N	1,2	3-200	1015	1340	2868	3890	9850	12560	21850
使用溫度 Operating Temp.	°C		3-200	-10 °C ~ +90 °C						
使用壽命 Service Life	hr		3-200	20,000 (10,000/ 連續運轉 Continuous operation)						
效率 Efficiency	%	1 2	3-20 15-200	≥ 95% ≥ 92%						
重量 Weight	kg	1 2	3-20 15-200	1.1 1.6	2.3 3.2/2.2	6.6 8.6/5.3	13.5 14.8	25.1 26.7	50 55	85 88
安裝方向 Mounting Position	-	1,2	3-200	任意方向 Any direction						
噪音值 Noise Level ²	dBA/1m	1,2	3-200	62	64	66	68	70	72	74
防護等級 Protection Class	-	1,2	3-200	IP65						
潤滑 Lubrication	-	1,2	3-200	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		PHFR-42	PHFR-60	PHFR-90	PHFR-115	PHFR-142	PHFR-200	PHFR-255
1	3/4/5/7/9	Kg • cm ²		0.06	0.40	2.28	6.87	24.2	69.8	138.2
	10/14/20			0.05	0.30	1.45	4.76	14.5	50.3	103.6
節數 Stage	減速比 Ratio			PHFR-42	PHFR-60(T)	PHFR-90(T)	PHFR-115T	PHFR-142T	PHFR-200T	PHFR-255T
2	15/20/25/35			0.06	0.40(0.08)	2.28(0.72)	3.02	7.83	27.7	80.3
	others			0.05	0.30(0.06)	1.45(0.38)	1.64	5.00	15.9	55.3
* 1. 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.										

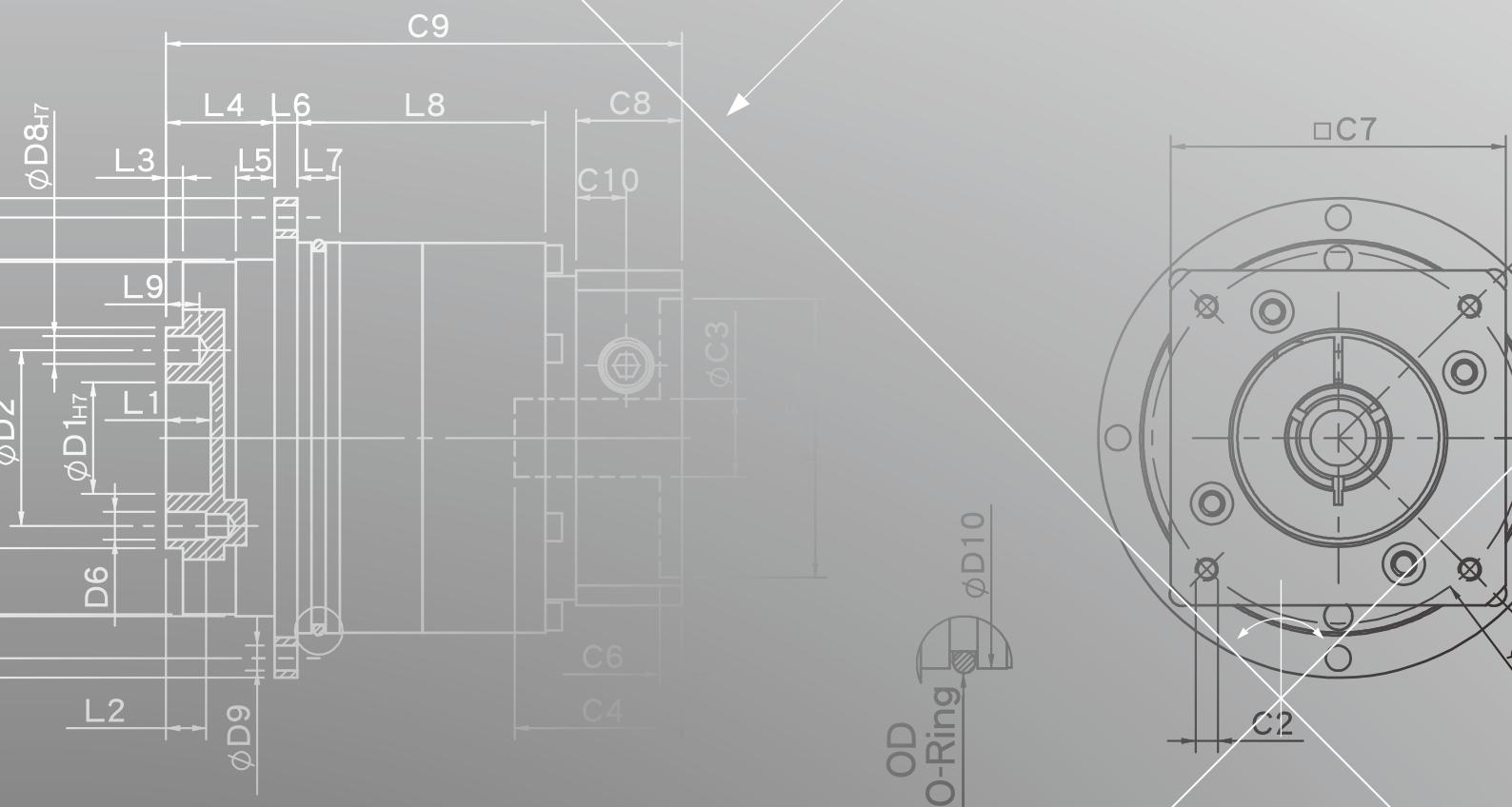
Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.
 產品因人為原因或天災等因素導致不良或損壞，不在保固範圍內。

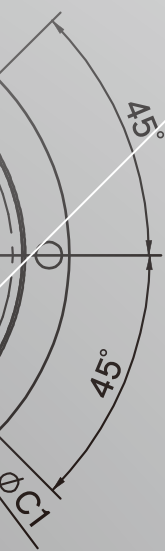
PLANETARY GEARHEADS



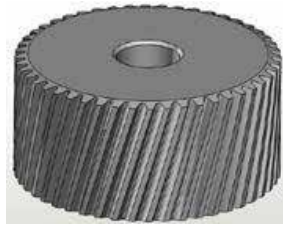
- PHL
- PHFR
- PHF
- PGH
- PUR
- PUL
- PUA
- PGLH
- PGCH
- PGEH
- PGSH
- PGL
- PGC
- PGE
- SGC
- SGE
- PGRH
- PGR
- PGFR
- PGF
- PBC
- PBE
- PAE
- PAC
- PAN
- PGS
- PNS
- PGW

PHF SERIES

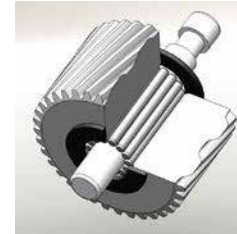




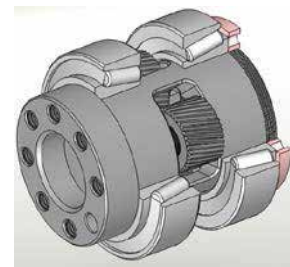
PHF SERIES FEATURES PHF系列 產品特點



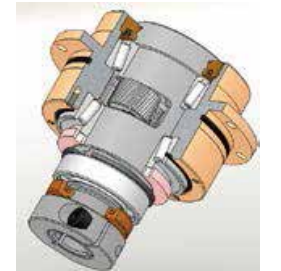
齒輪材質選用高級合金鋼，獨特熱處理至最佳硬度，並經過研磨加工，以獲得最佳的精度、高耐磨耗及高耐衝擊韌性。
Alloy steel gear with unique heat treatment. Additionally, with gear grinding process-ing to get the best accuracy, high wear resistance and high impact toughness.



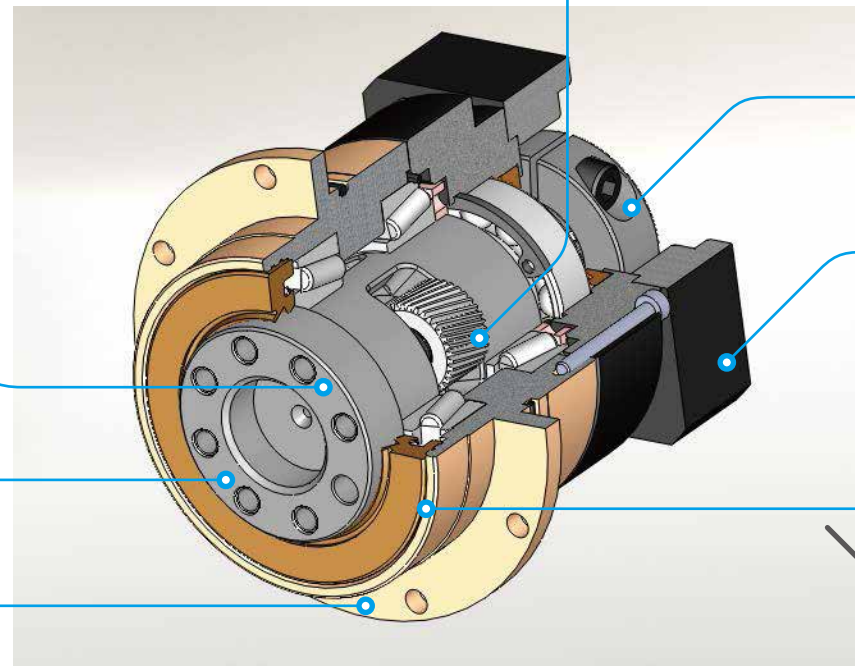
行星齒輪傳動介面採用針狀軸承，滿針排列不含保持器，以達到最大接觸面積最小間隙公差，提高結構剛性及輸出扭力。
Planet gear transmission interface equipped with needle bearings, full needle roller bearings aligned without retainer achieve maximum exposure but smallest gap tolerances. Enhance over-all gear structure rigid and output torque.



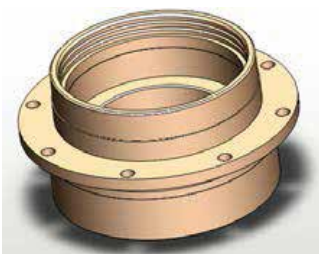
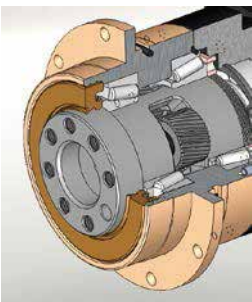
行星固定架及出力軸設計一體成型，且前後使用滾珠軸承，可承受軸向負載及徑向負載大於滾珠軸承，培林設定位置為大跨距，可達到最大扭轉剛性及出力軸高軸向負載及徑向負載能力。
Planetary arm bracket and output shaft are one-piece constructed, using tapered roller bearings can bear the axial load and radial load that are more than deep groove ball bearings. Setting the bearing apart for larger span to reach the largest torsional rigidity and contribute high axial load and radial load capacity.



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.

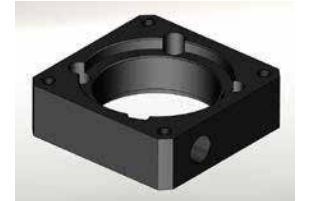


出力軸表面與油封搭配確保最低磨擦係數和減少啓動負載，保持最佳密封性，延長使用壽命且出力軸為中空穴設計，可搭配圓形法蘭面連結，大幅縮小安裝的空間。
Grinding process to smooth surface of output shaft, and with oil seal to minimum friction coefficient and reducing start up load; result in the best seal-ability and extended lifespan. Hollow out-put shaft connect perfectly with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

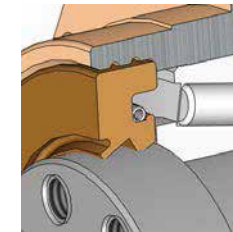


先進無電解鍍表面處理，耐刮，耐腐蝕，最適合高科技設備嚴苛要求。本體齒箱與內環齒一體加工成形，再經德國頂級插齒機加工。具有高精度，高扭力，耐磨耗等特點。
Advanced electroless nickel plating surface treatment resists scratch and corrosion. Suitable for stringent require of high-tech equipment. The gear box and internal gear ring are one-piece constructed, and then processed with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

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.



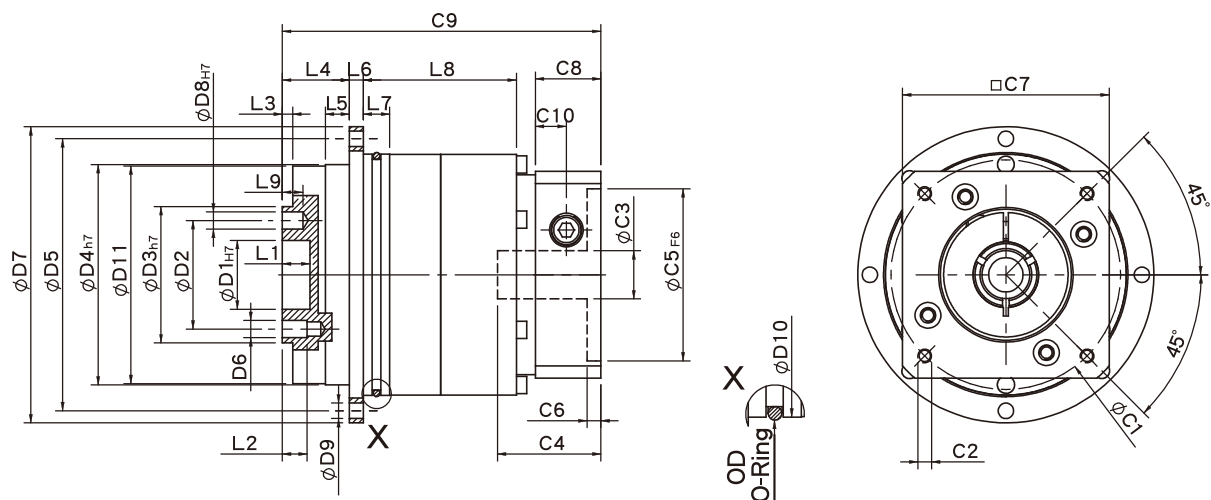
PHF系列整體設計上可容許伺服馬達高轉速的輸入，達到最大扭力輸出。出力軸為中空穴設計，可搭配圓形法蘭面連結，大幅縮小安裝的空間。精密斜齒輪設計及專業齒輪加工，製造出低運轉背隙、高效率、低噪音及長壽命的行星減速機。
PHF series overall design suitable for combination operation with servo motor high-speed input and achieves maximum torque output. Hollow out-put shaft connects perfectly with circular flange drastically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



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.

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。

PHF Single Stage Dimensions PHF單段外型尺寸圖



Specifications 規格

Unit:mm

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

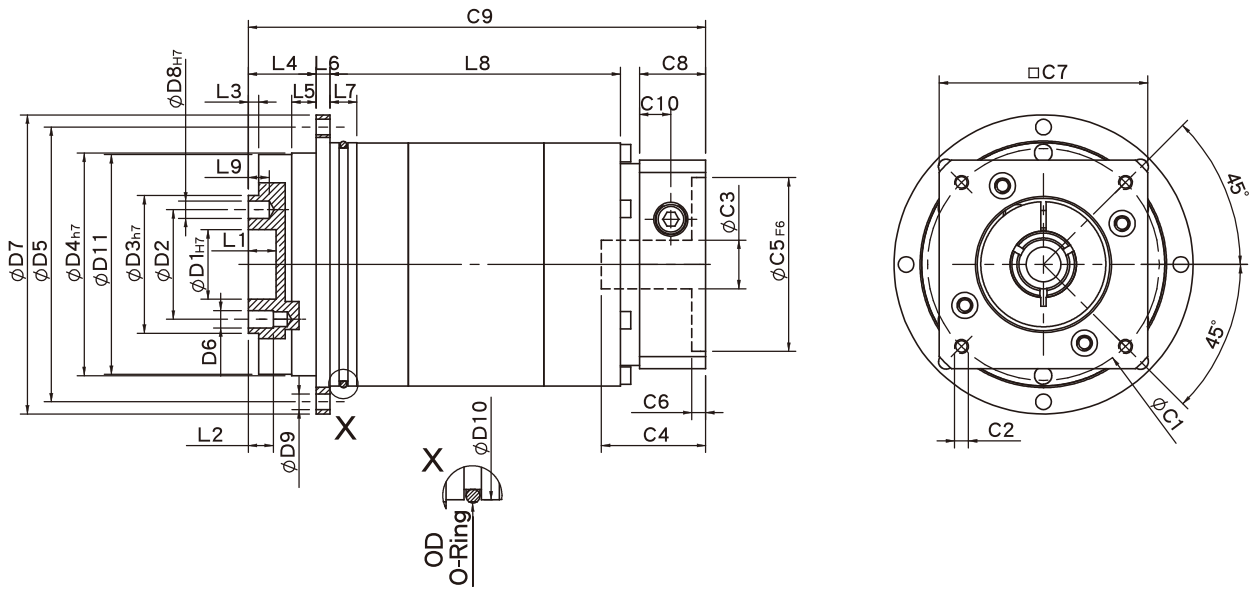
★ C1~C10 是公製標準馬達連接板尺寸,請依所選用的馬達決定。

★ 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 motor flange.

★ Specification subject to change without notice.

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



Specifications 規格

Unit:mm

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

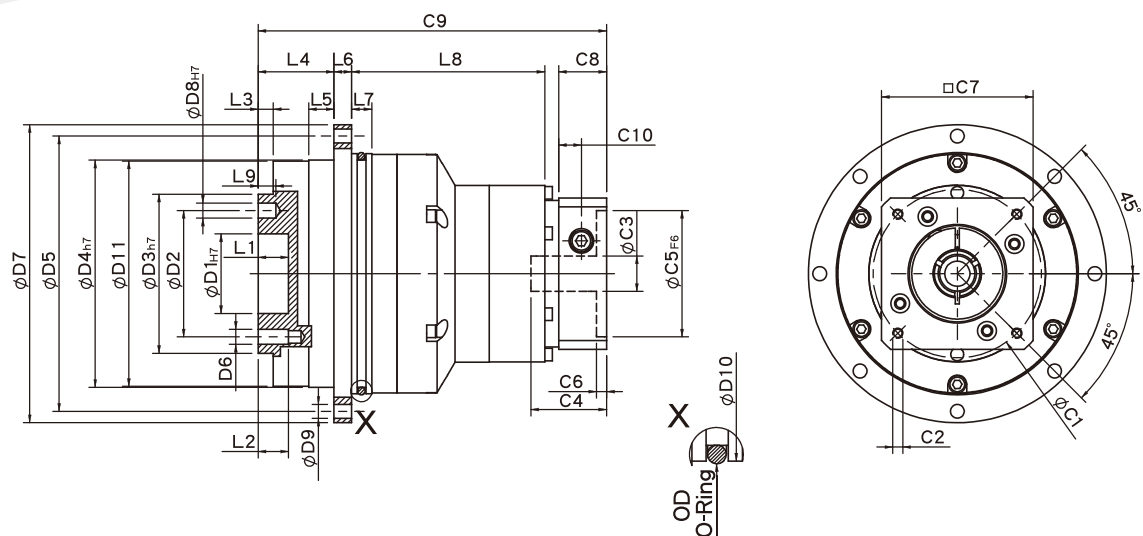
★ C1~C10是公製標準馬達連接板尺寸,請依所選用的馬達決定。

★ 本公司有權針對以上數據規格進行設計變更不先行告知。

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★ Specification subject to change without notice.

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



Specifications 規格

Unit:mm

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

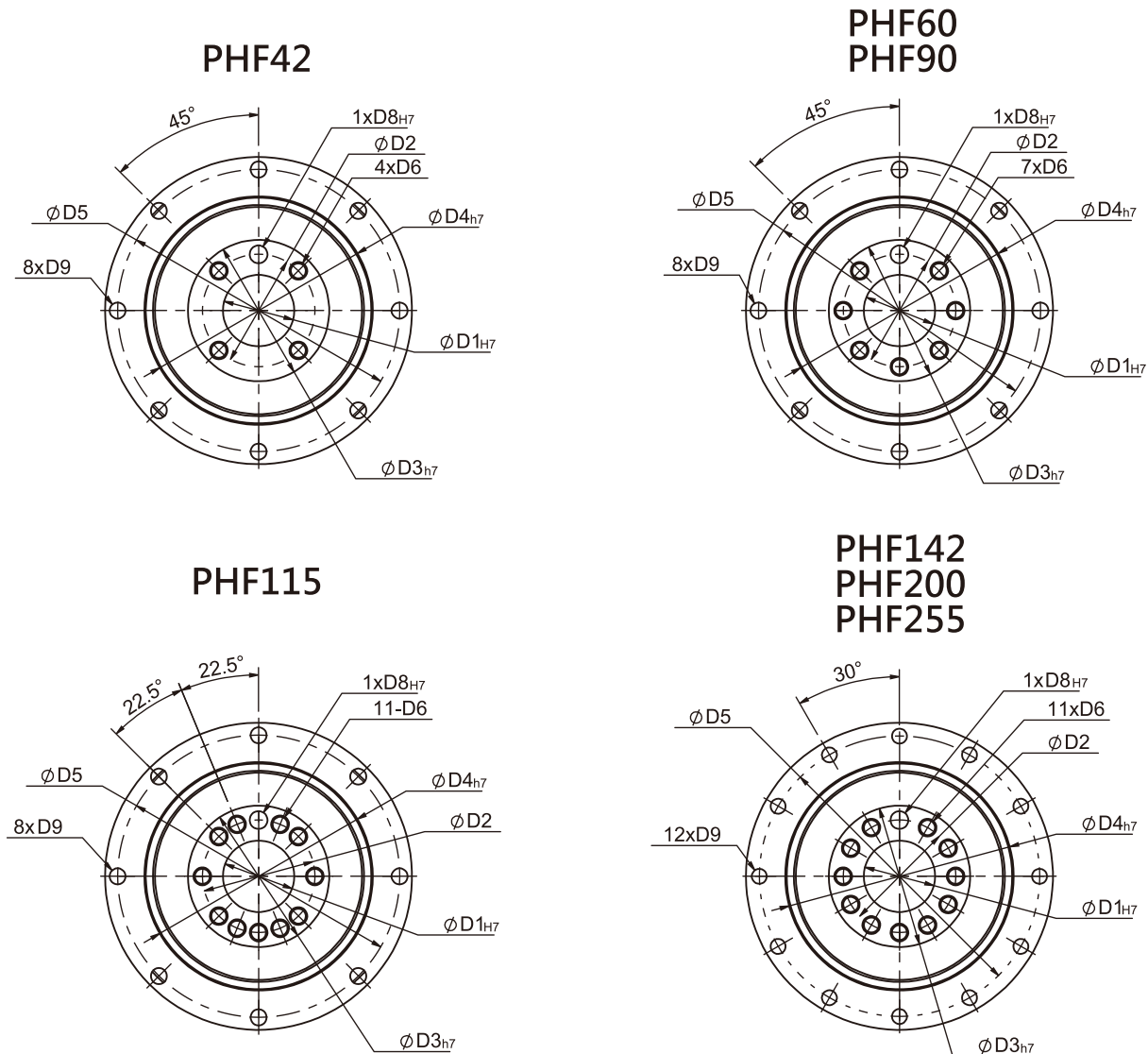
★ C1~C10 是公製標準馬達連接板尺寸,請依所選用的馬達決定。

★ 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 motor flange.

★ Specification subject to change without notice.

PHF Flange Dimensions PHF法蘭面尺寸圖



Specifications 規格

Unit:mm

尺寸 Dimensions	PHF42	PHF60	PHF90	PHF115	PHF142	PHF200	PHF255
D1 _{H7}	12	20	31.5	40	50	80	100
D2	20	31.5	50	63	80	125	140
D3 _{h7}	28	40	63	80	100	160	180
D4 _{h7}	47	64	90	110	140	200	255
D5	67	79	109	135	168	233	280
D6	M3x0.5P	M5x0.8P	M6x1.0P	M6x1.0P	M8x1.25P	M10x1.5P	M16x2.0P
D8 _{H7}	3	5	6	6	8	10	12
D9	3.4	4.5	5.5	5.5	6.6	9	13.5

★ 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.

PHF Specifications Table PHF性能規格共表

規格 Specifications		節數 Stage	減速比 Ratio	PHF-42	PHF-60	PHF-90	PHF-115	PHF-142	PHF-200	PHF-255
額定輸出力矩 T _{2N} Nominal Output Torque	N • m	1	3	-	40	105	180	340	580	1100
			4	16	43	110	240	500	1100	1700
			5	17	50	130	290	600	1200	2000
			7	14	44	125	270	530	1100	1750
			10	11	37	95	220	430	900	1450
		2	減速比 Ratio	PHF-42	PHF-60 (T)	PHF-90(T)	PHF-115T	PHF-142T	PHF-200T	PHF-255T
			15	-	40	105	180	600	1200	2000
			20	16	43	110	240	600	1200	2000
			25	17	50	130	290	600	1200	2000
			30	17	50	130	290	600	1200	2000
			35	17	50	130	290	600	1200	2000
			40	17	50	130	290	600	1200	2000
			50	17	50	130	290	600	1200	2000
		70	14	44	125	270	530	1100	1750	
		100	11	37	95	220	430	900	1450	
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	3000	2000
最大輸入轉速 n _{1max} Max. Input Speed	rpm	1,2	3-100	10000	10000	8000	8000	6000	5000	4000
超精密背隙 Micro Backlash P0	arcmin	1	3-10	≤ 2	≤ 2	≤ 2	≤ 1	≤ 1	≤ 1	≤ 1
		2	12-100	≤ 4	≤ 4	≤ 4	≤ 3	≤ 3	≤ 3	≤ 3
精密背隙 Precision Backlash P1	arcmin	1	3-10	≤ 4	≤ 4	≤ 4	≤ 3	≤ 3	≤ 3	≤ 3
		2	12-100	≤ 6	≤ 6	≤ 6	≤ 5	≤ 5	≤ 5	≤ 5
標準背隙 Standard Backlash P2	arcmin	1	3-10	≤ 6	≤ 6	≤ 6	≤ 5	≤ 5	≤ 5	≤ 5
		2	12-100	≤ 8	≤ 8	≤ 8	≤ 7	≤ 7	≤ 7	≤ 7
扭轉剛性Torsional Rigidity	N • m /arcmin	1,2	3-100	6	12	30	80	150	450	1000
容許彎曲力矩 M _{2kB} ¹ Max. Bending Moment	N • m	1,2	3-100	43	125	288	503	1470	2950	6080
容許軸向力 F _{2aB} ¹ Max. Axial Load	N	1,2	3-100	1015	1340	2868	3890	9850	12560	21850
使用溫度 Operating Temp.	°C		3-100	-10 °C ~+90 °C						
使用壽命Service Life	hr		3-100	30,000 (15,000/ 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	1.5	3.3	6.2	13.6	32.1	63.3
		2	12-100	1.1	2.3(1.8)	6.0(4.1)	8.1	17.9	38.6	79.5
安裝方向 Mounting Position	-	1,2	3-100	任意方向Any direction						
噪音值 Noise Level ²	dBA/1m	1,2	3-100	56	58	60	63	65	67	70
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		PHF-42	PHF-60	PHF-90	PHF-115	PHF-142	PHF-200	PHF-255
1	3	Kg • cm ²		-	0.19	0.72	2.35	9.05	29.80	72.50
	4			0.02	0.18	0.67	1.66	7.17	25.86	58.21
	5			0.02	0.17	0.65	1.50	6.52	23.63	54.36
	7			0.02	0.14	0.60	1.45	6.17	22.92	54.12
	10			0.02	0.14	0.58	1.41	6.10	22.73	53.98
節數Stage	減速比Ratio			PHF-42	PHF-60(T)	PHF-90(T)	PHF-115T	PHF-142T	PHF-200T	PHF-255T
2	15/20			0.02	0.17(0.02)	0.65(0.17)	0.65	2.35	9.05	29.8
	25/30/35/40			0.02	0.14(0.02)	0.60(0.14)	0.60	1.45	6.17	22.92
	50/70/100			0.02	0.14(0.02)	0.58(0.14)	0.58	1.41	6.10	22.73

* 1. 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.

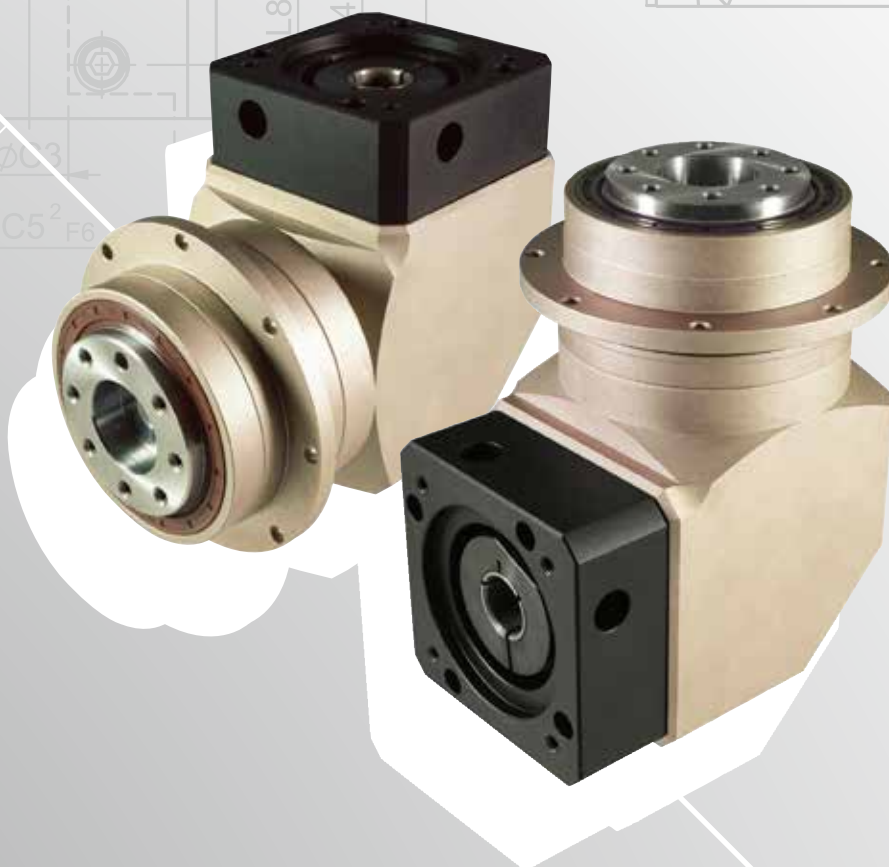
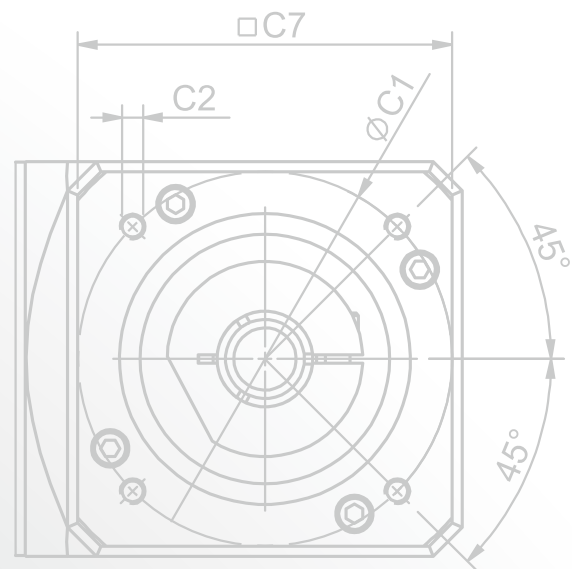
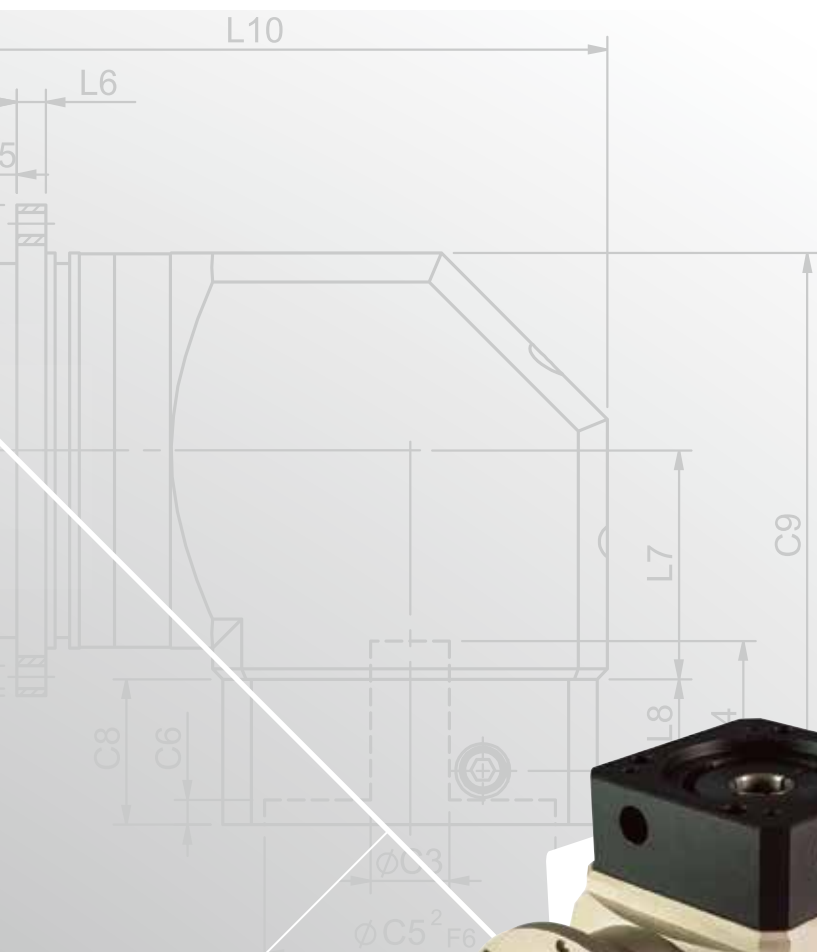
Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.
 產品因人為原因或天災等因素導致不良或損壞，不在保固範圍內。

PLANETARY GEARHEADS

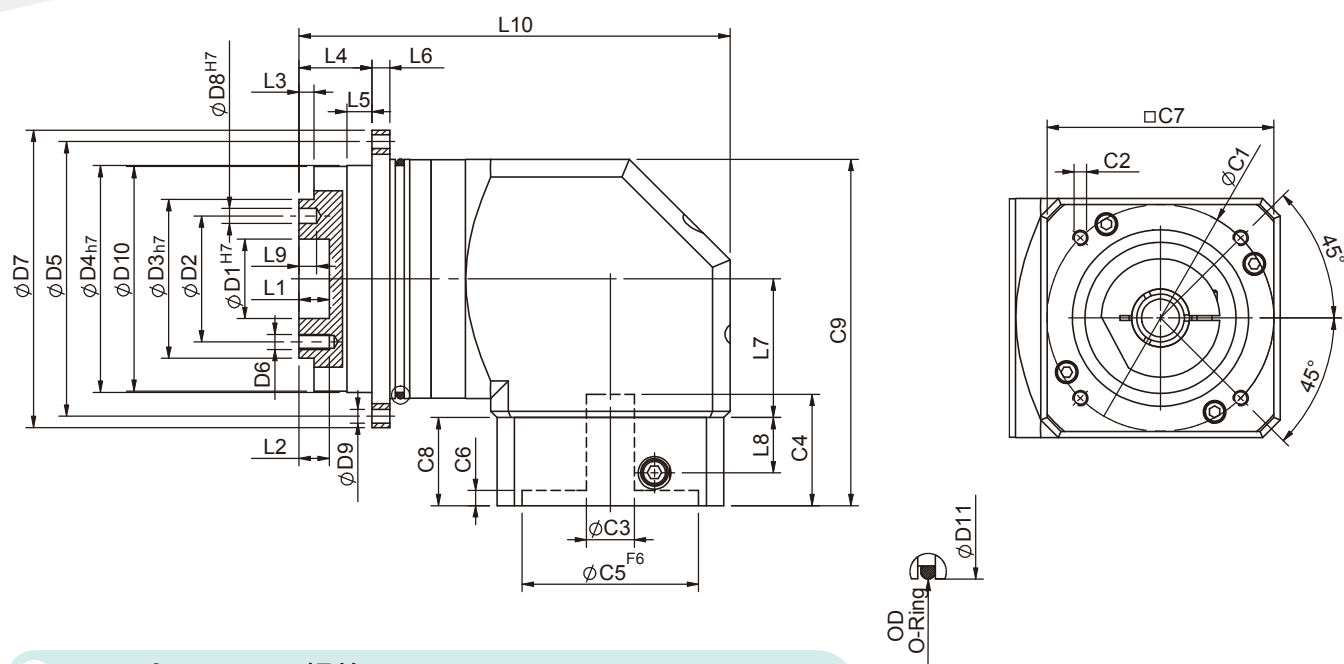


PGFR SERIES





PGFR Single Stage Dimensions PGFR單段外型尺寸圖



Specifications 規格

Unit:mm

尺寸 Dimensions	PGFR42	PGFR60	PGFR90	PGFR115	PGFR142
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	46.2	63.2	89.2	109.2	139.2
D11	60	70	95	120	152
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	32.2	44.8	55	69	71
L8	13.5	21.5	22	32	44.7
L9	4	6	7	7	7
L10	92.2	123.9	171.1	200.2	250.7
C1 *	46	70	90	90	145
C2 *	M4x0.7P	M5x0.8P	M6x1.0P	M6x1.0P	M8x1.25P
C3 *	≤8/≤11	≤14/≤19	≤19/≤24	≤24/≤32	≤35
C4 *	29	34	44	53.5	76.8
C5 ^{F6} *	30	50	70	70	110
C6 *	6	5	5	5.5	9
C7 *	42.6	60	90	115	140
C8 *	25	33	35	48	65
C9 *	78.5	112.8	137.5	176.5	225.5
OD	56x2	66x2	90x3	110x3	145x3

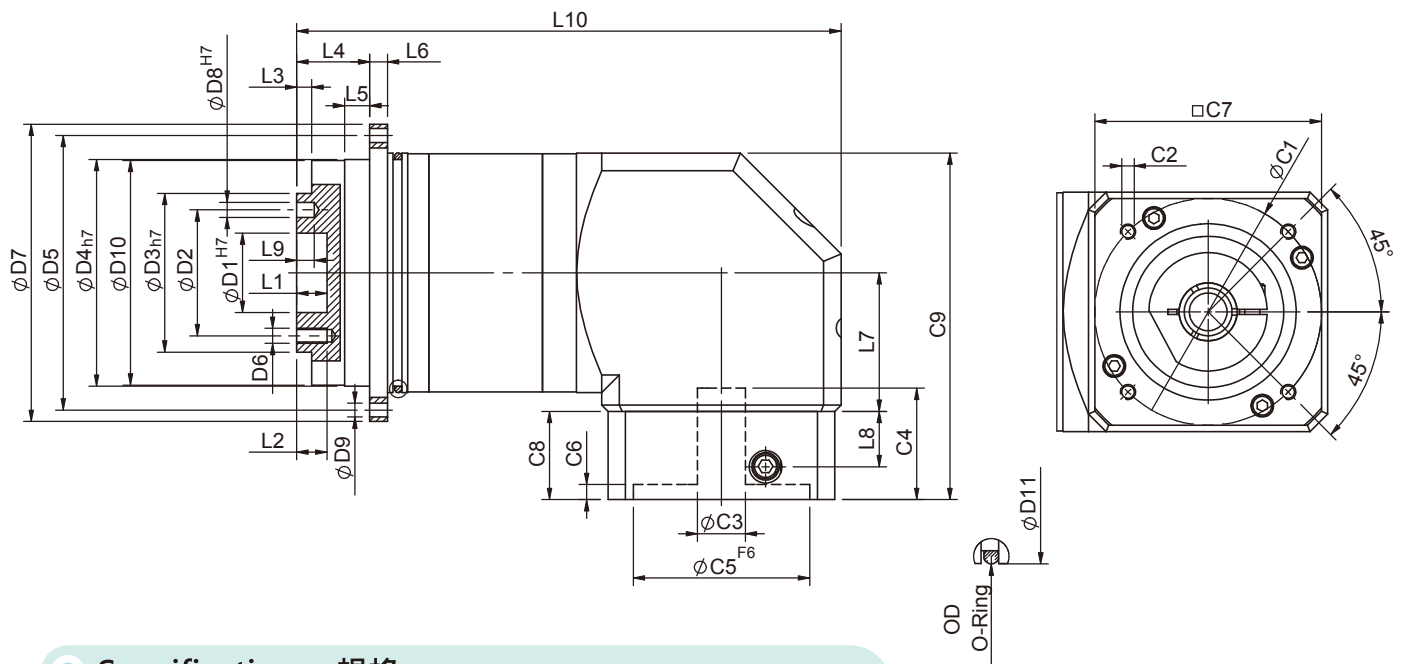
★ C1~C9是公製標準馬達連接板尺寸,請依所選用的馬達決定。

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

★ Specification subject to change without notice.

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



Specifications 規格

Unit:mm

尺寸 Dimensions	PGFR42	PGFR60	PGFR90
D1 ^{H7}	12	20	31.5
D2	20	31.5	50
D3 ^{h7}	28	40	63
D4 ^{h7}	47	64	90
D5	67	79	109
D6	M3x0.5P	M5x0.8P	M6x1.0P
D7	72	86	118
D8 ^{H7}	3	5	6
D9	3.4	4.5	5.5
D10	46.2	63.2	89.2
D11	60	70	95
L1	4	8	12
L2	6	7.2	12
L3	3	3	6
L4	19.5	19.5	29
L5	7	7	10
L6	4	4	7
L7	32.2	44.8	55
L8	13.5	21.5	22
L9	4	6	7
L10	119.9	159.3	216.1
C1 *	46	70	90
C2 *	M4x0.7P	M5x0.8P	M6x1.0P
C3 *	≤8/≤11	≤14/≤19	≤19/≤24
C4 *	29	34	44
C5 ^{F6} *	30	50	70
C6 *	6	5	5
C7 *	42.6	60	90
C8 *	25	33	35
C9 *	78.5	112.8	137.5
OD	56x2	66x2	90x3

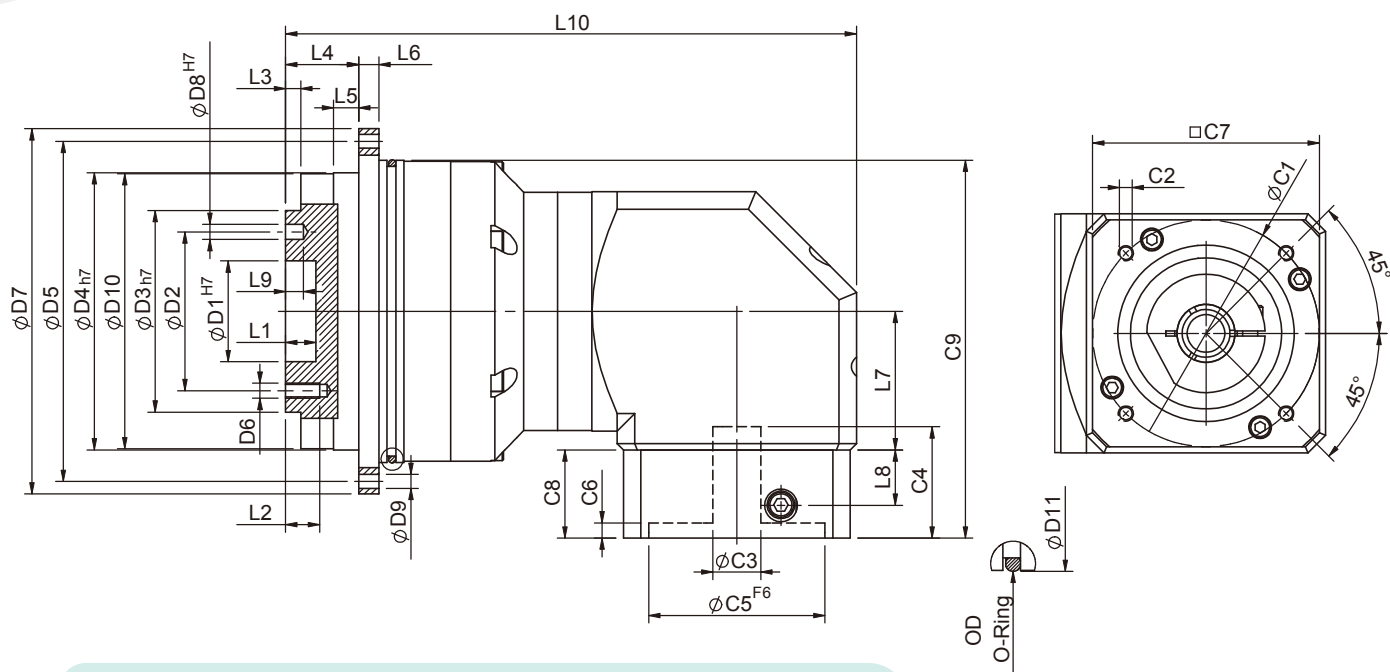
★ C1~C9是公製標準馬達連接板尺寸,請依所選用的馬達決定。

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

★ Specification subject to change without notice.

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



Specifications 規格

Unit:mm

尺寸 Dimensions	PGFR60T	PGFR90T	PGFR115T	PGFR142T
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	63.2	89.2	109.2	139.2
D11	70	95	120	152
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	32.2	44.8	55	69
L8	13.5	21.5	22	32
L9	6	7	7	7
L10	126.6	171.3	226.6	270.7
C1 *	46	70	90	90
C2 *	M4x0.7P	M5x0.8P	M6x1.0P	M6x1.0P
C3 *	≤8/≤11	≤14/≤19	≤19/≤24	≤24/≤32
C4 *	29	34	44	53.5
C5 ^{F6} *	30	50	70	70
C6 *	6	5	5	5.5
C7 *	42.6	60	90	115
C8 *	25	33	35	48
C9 *	84.4	125.3	150	176.5
OD	66x2	90x3	110x3	145x3

★ C1~C9是公製標準馬達連接板尺寸,請依所選用的馬達決定。

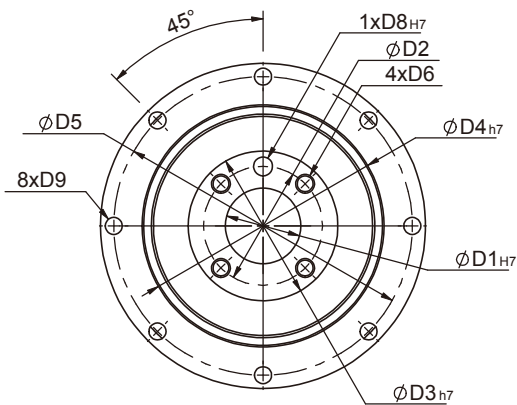
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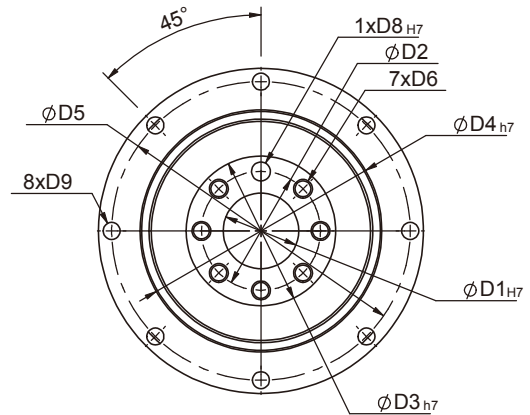
★ Specification subject to change without notice.

PGFR Flange Dimensions PGFR法蘭面尺寸圖

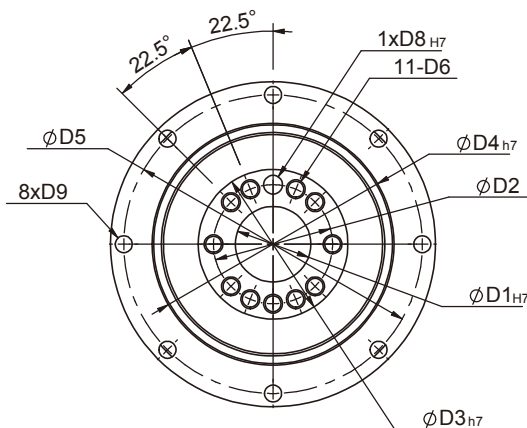
PGFR42



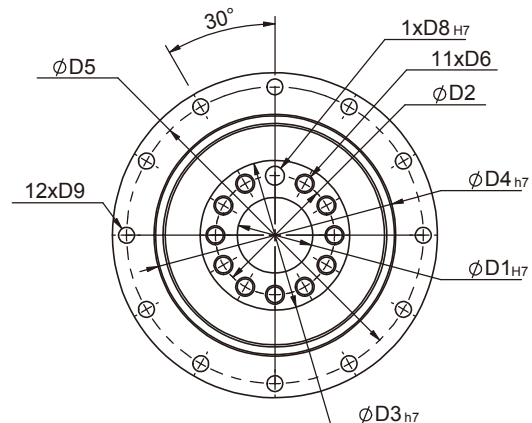
PGFR60
PGFR90



PGFR115



PGFR142



Specifications 規格

Unit:mm

尺寸 Dimensions	PGFR42	PGFR60	PGFR90	PGFR115	PGFR142
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
D8 H7	3	5	6	6	8
D9	3.4	4.5	5.5	5.5	6.6

★ 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.

PGFR Specifications Table PGFR性能規格共表

規格 Specifications		節數 Stage	減速比 Ratio	PGFR-42	PGFR-60	PGFR-90	PGFR-115	PGFR-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	17	50	130	260	540
			14	14	44	125	270	530
			20	11	37	95	220	430
		節數 Stage	減速比 Ratio	PGFR-42	PGFR-60/ PGFR-60T	PGFR-90/ PGFR-90T	PGFR-115T	PGFR-142T
		2	15	-	40	105	180	600
			20	16	43	110	240	600
			25	17	50	130	290	600
			30	17	40	105	180	600
			35	17	50	130	290	600
			40	16	43	110	240	600
			50	17	50	130	290	600
			70	14	44	125	270	530
			100	11	37	95	220	430
			140	14	44	125	270	530
			200	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	3-200	5000	5000	4000	4000	3000
最大輸入轉速 n _{1max} Max. Input Speed	rpm	1,2	3-200	10000	10000	8000	8000	5000
超精密背隙 Micro Backlash P0	arcmin	1 2	3-20 15-200	- -	- -	≤ 4 ≤ 6	≤ 2 ≤ 4	≤ 2 ≤ 4
精密背隙 Precision Backlash P1	arcmin	1 2	3-20 15-200	≤ 6 ≤ 8	≤ 6 ≤ 8	≤ 6 ≤ 8	≤ 4 ≤ 7	≤ 4 ≤ 7
標準背隙 Standard Backlash P2	arcmin	1 2	3-20 15-200	≤ 8 ≤ 10	≤ 8 ≤ 10	≤ 8 ≤ 10	≤ 6 ≤ 9	≤ 6 ≤ 9
扭轉剛性Torsional Rigidity	N • m /arcmin	1,2	3-200	6	12	28	75	145
容許彎曲力矩 M _{2kB} ¹ Max. Bending Moment	N • m	1,2	3-200	22.5	36	76	140	950
容許軸向力 F _{2aB} ¹ Max. Axial Load	N	1,2	3-200	465	635	1060	1580	6400
使用溫度 Operating Temp.	°C		3-200	-10 °C ~ +90 °C				
使用壽命Service Life	hr		3-200	20,000 (10,000/ 連續運轉 Continuous operation)				
效率 Efficiency	%	1 2	3-20 15-200	≥ 95% ≥ 92%				
重量 Weight	kg	1 2	3-20 15-200	1.1 1.6	2.2 2.9/2.1	6.3 8.3/5.0	13.5 14.8	25.1 26.7
安裝方向 Mounting Position	-	1,2	3-200	任意方向 Any direction				
噪音值 Noise Level ²	dBA/1m	1,2	3-200	62	64	66	68	70
防護等級 Protection Class	-	1,2	3-200	IP65				
潤滑 Lubrication	-	1,2	3-200	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		PGFR-42	PGFR-60	PGFR-90	PGFR-115	PGFR-142
1	3/4/5/7	Kg • cm ²		0.06	0.40	2.28	6.87	24.2
	10/14/20			0.05	0.30	1.45	4.76	14.5
節數Stage	減速比Ratio			PGFR-42	PGFR-60(T)	PGFR-90(T)	PGFR-115T	PGFR-142T
2	15/20/25/35			0.06	0.40(0.08)	2.28(0.72)	3.02	7.83
	others			0.05	0.30(0.06)	1.45(0.38)	1.64	5.00

* 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.

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

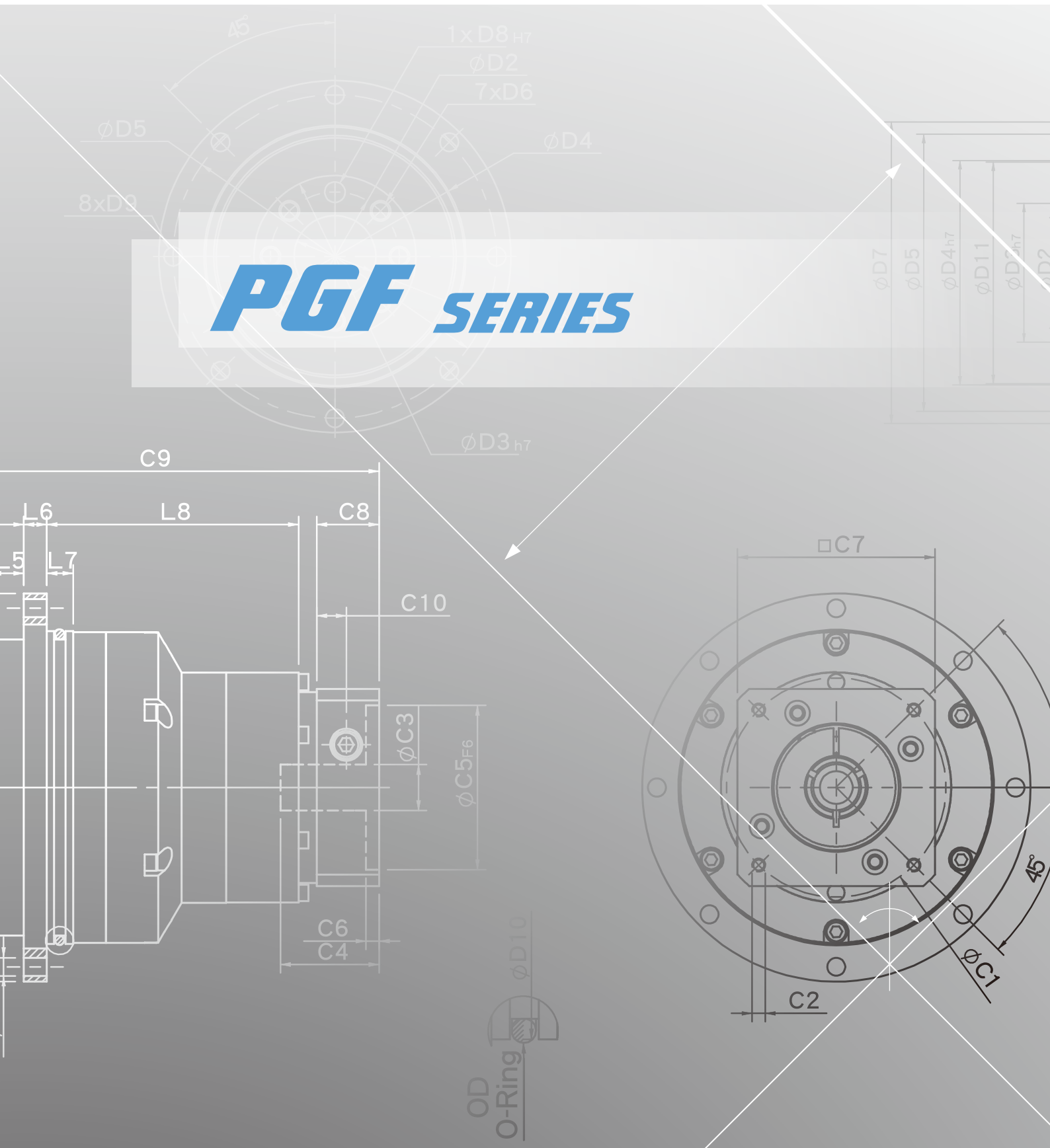
產品因人為原因或天災等因素導致不良或損壞，不在保固範圍內。

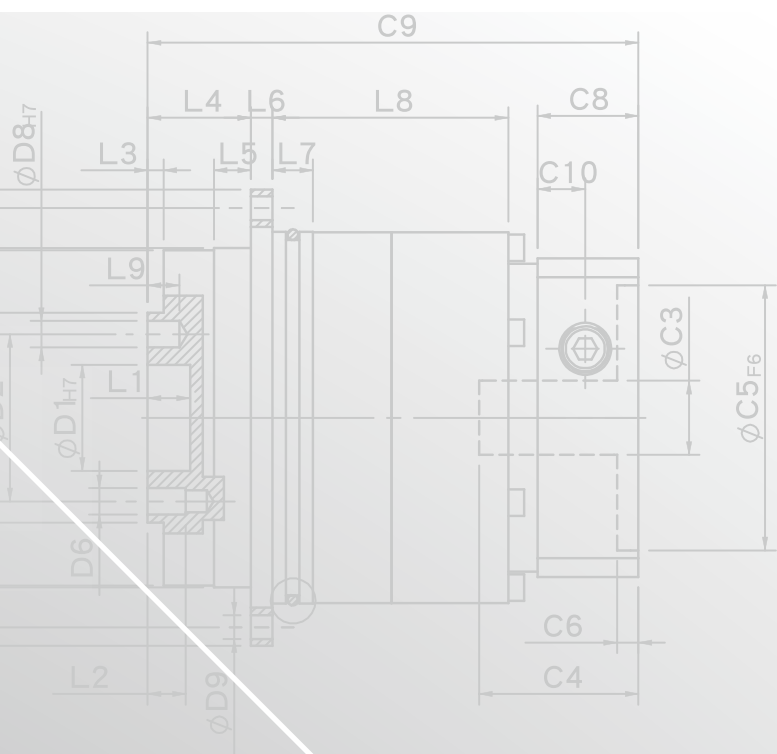
PLANETARY GEARHEADS



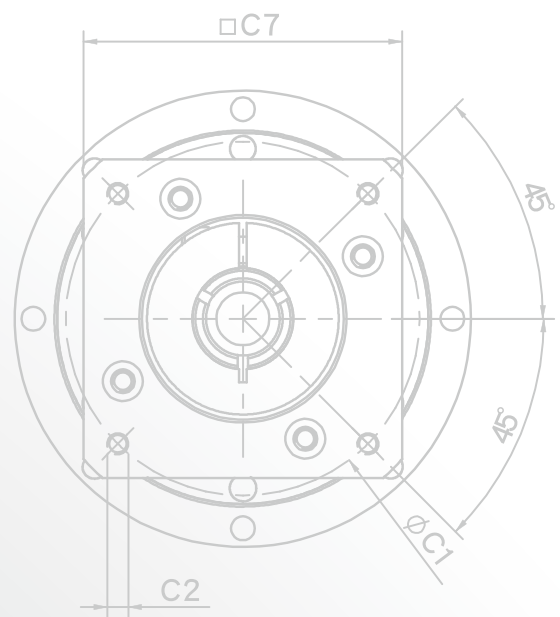
PHL	PHFR	PHF	PGH	PUR	PUL	PUA	PGLH	PGCH	PGEH	PGSH	PGL	PGC	PGE	SGC	SGE	PGRH	PGR	PGFR	PGF	PBC	PBE	PAE	PAC	PAN	PGS	PNS	PGW
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PGF SERIES

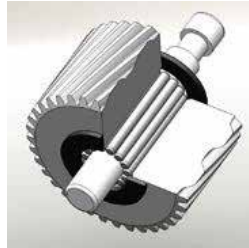




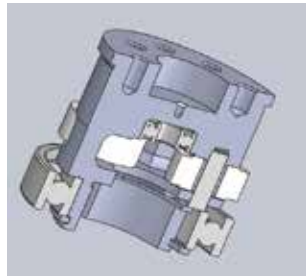
OD
O-Ring $\phi D10$



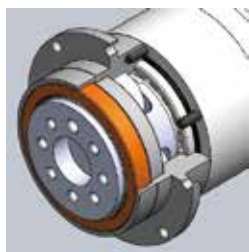
PGF SERIES FEATURES PGF系列 產品特點



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.

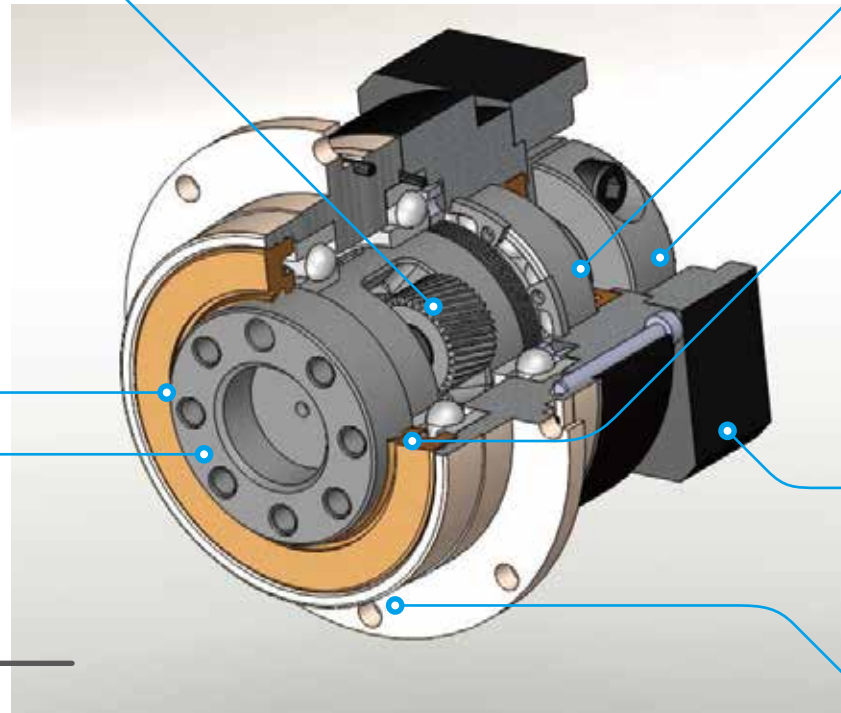


行星固定架及出力軸設計一體成型，且前後培林設定位置為大跨距，可達到最大扭轉剛性及出力軸高徑向負載能力。
Planetary arm bracket and output shaft are one-piece constructed, setting bearing apart for larger span to reach the largest reverse rigid and contribute high axis radial load capacity.

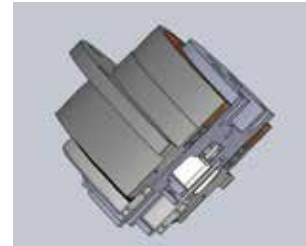


出力軸表面與油封搭配確保最低磨擦係數和減少啟動負載，保持最佳密封性，延長使用壽命且出力軸為中空穴設計，可搭配圓形法蘭面連結，大幅縮小安裝的空間。
Grinding process to smooth surface of output shaft, and with oil-seal to minimum friction coefficient and reducing start up load; result in the best seal-ability and extended lifespan. Hollow out-put shaft connects perfectly with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

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.



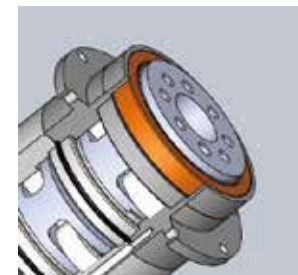
PGF系列整體設計上可容許伺服馬達高轉速的輸入，達到最大扭力輸出。出力軸為中空穴設計，可搭配圓形法蘭面連結，大幅縮小安裝的空間。精密齒輪設計及專業齒輪加工，製造出低運轉背隙、高效率、低噪音及長壽命的行星減速機。
PGF Series overall design suitable for combination operation with servo motor high-speed input and achieves maximum torque output. Hollow out-put shaft connects perfectly with circular flange drastically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



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軸度。
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.



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.



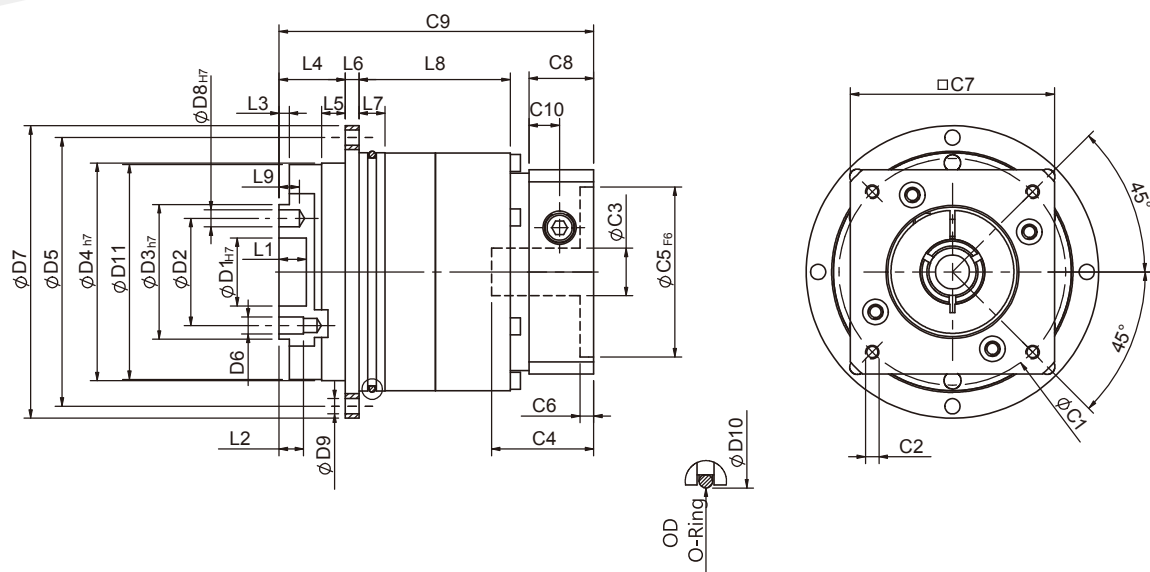
先進馬達連接板設計，配合入力軸襯套，安裝容易，可與各種廠牌之伺服、步進馬達完美搭配組合。
Advanced motor bracket design coupled with the input shaft bushing is easy to mount to any servo or stepper motor.



先進無電解鍍表面處理，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。具有高精密度，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

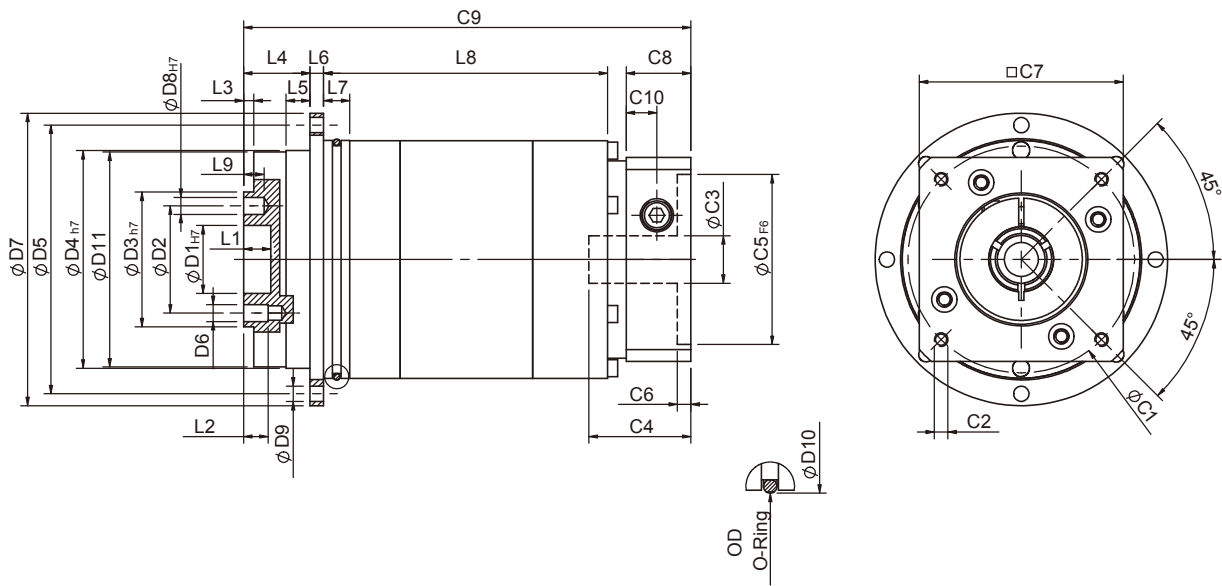
★ C1~C10是公製標準馬達連接板尺寸,請依所選用的馬達決定。

★ 本公司有權針對以上數據規格逕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

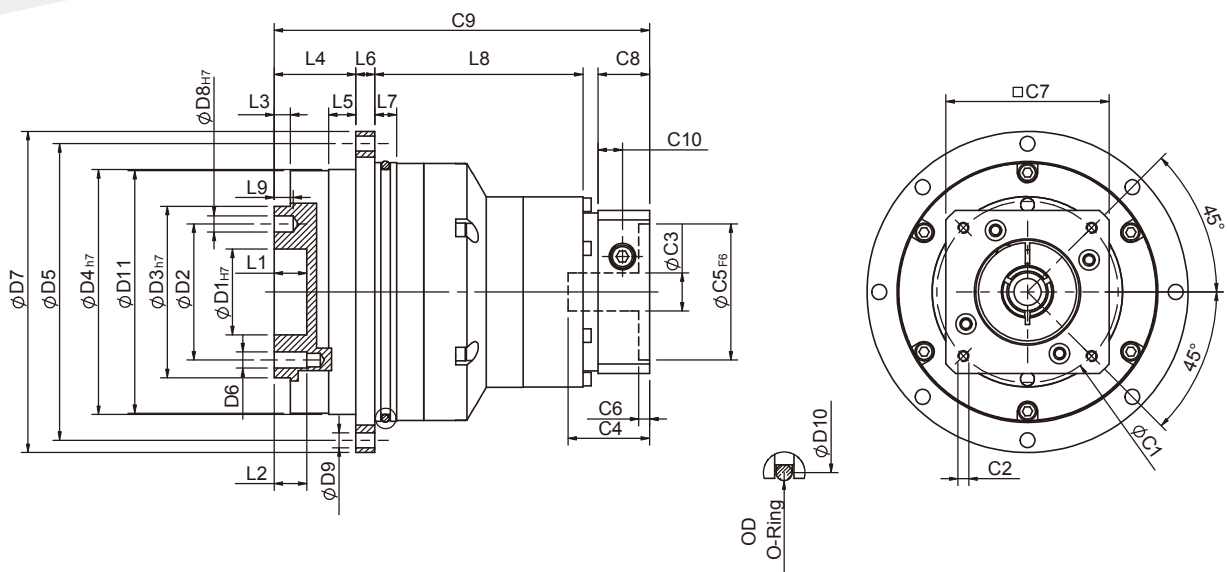
★ C1~C10是公製標準馬達連接板尺寸,請依所選用的馬達決定。

★ 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。

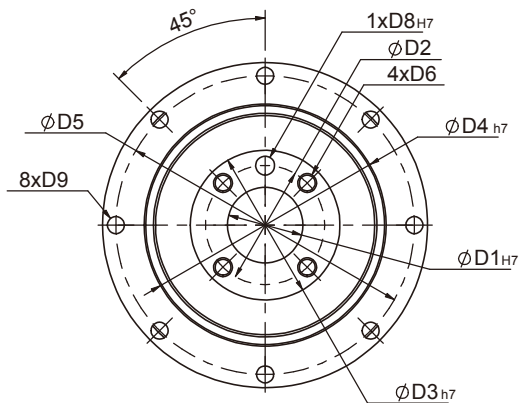
★ 本公司有權針對以上數據規格逕行設計變更不先行告知。

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

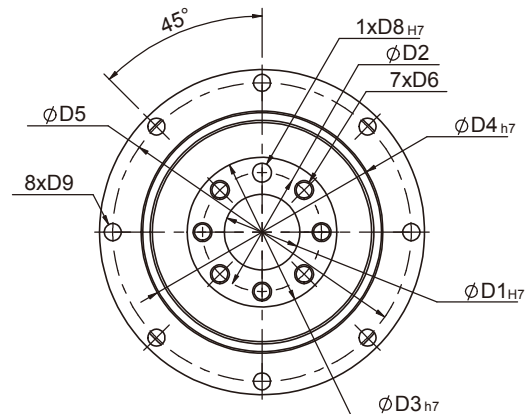
★ Specification subject to change without notice.

PGF Flange Dimensions PGF法蘭面尺寸圖

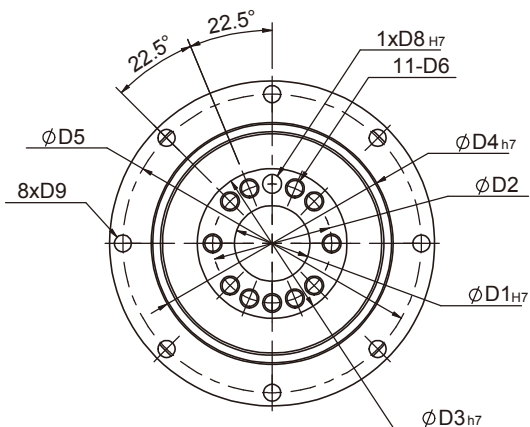
PGF42



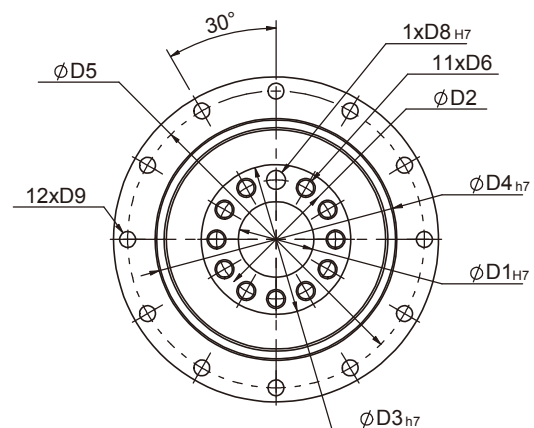
PGF60
PGF90



PGF115



PGF142



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
D8 _{H7}	3	5	6	6	8
D9	3.4	4.5	5.5	5.5	6.6

★ 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 2	3-10 12-100	≤ 3 ≤ 5	≤ 3 ≤ 5	≤ 3 ≤ 5	≤ 1 ≤ 3	≤ 1 ≤ 3
精密背隙 Precision Backlash P1	arcmin	1 2	3-10 12-100	≤ 5 ≤ 7	≤ 5 ≤ 7	≤ 5 ≤ 7	≤ 3 ≤ 5	≤ 3 ≤ 5
標準背隙 Standard Backlash P2	arcmin	1 2	3-10 12-100	≤ 7 ≤ 9	≤ 7 ≤ 9	≤ 7 ≤ 9	≤ 5 ≤ 7	≤ 5 ≤ 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 2	3-10 12-100	≥ 97% ≥ 94%				
重量 Weight	kg	1 2	3-10 12-100	0.7 1.1	1.4 2.2(1.7)	3.2 5.0(4.0)	6.0 7.9	13.6 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.

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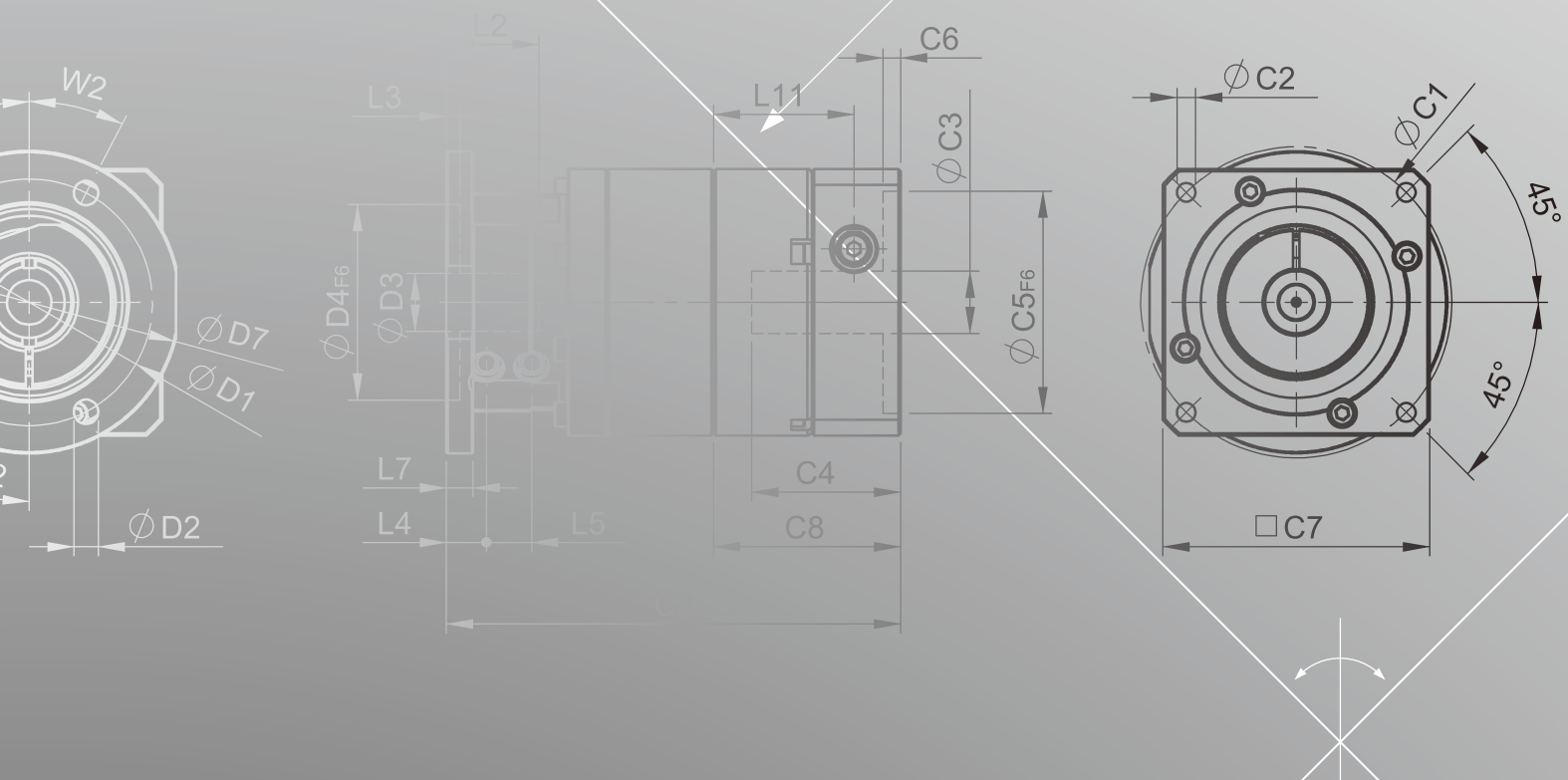
Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.

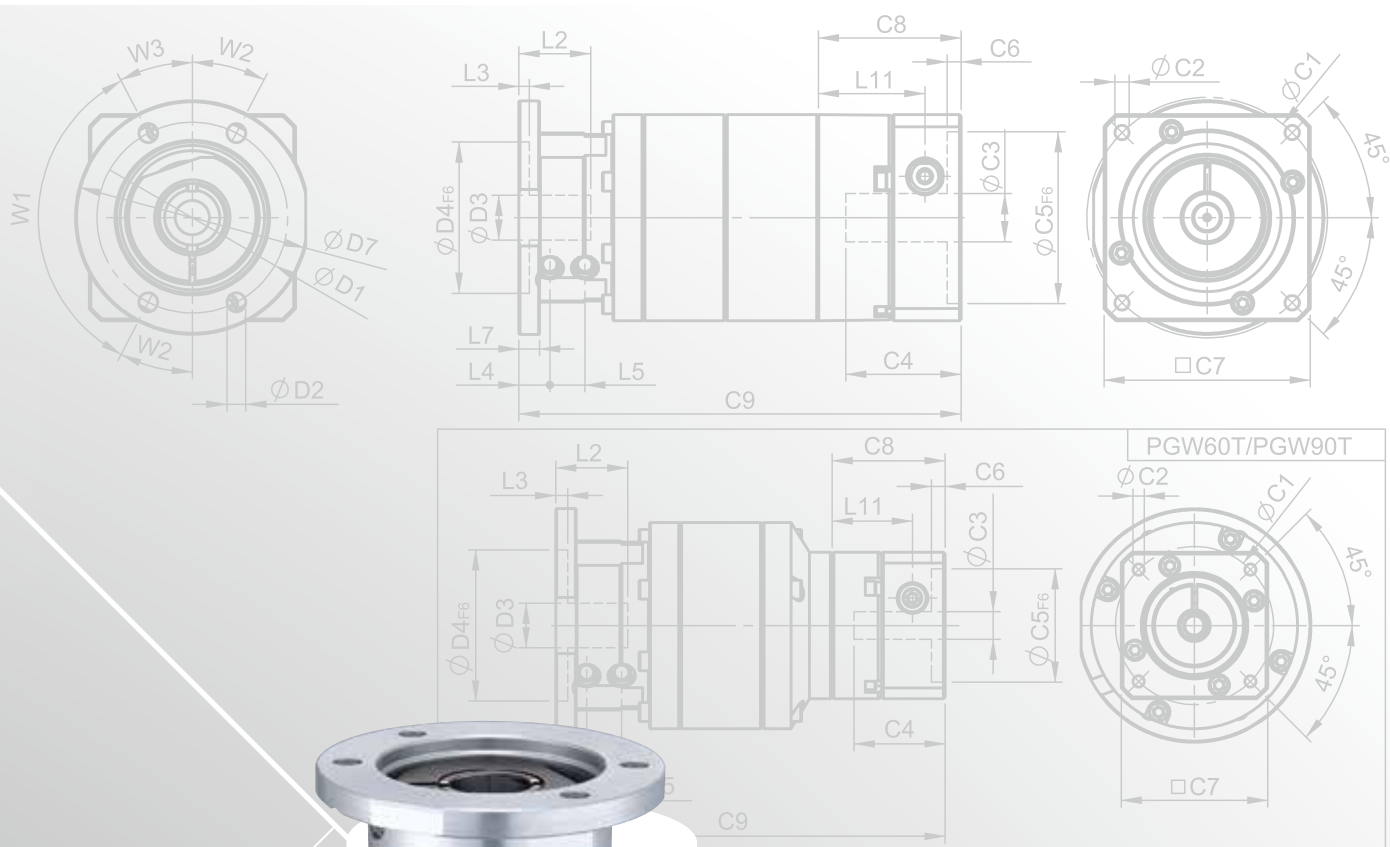
產品因人為原因或天災等因素導致不良或損壞，不在保固範圍內。

PLANETARY GEARHEADS

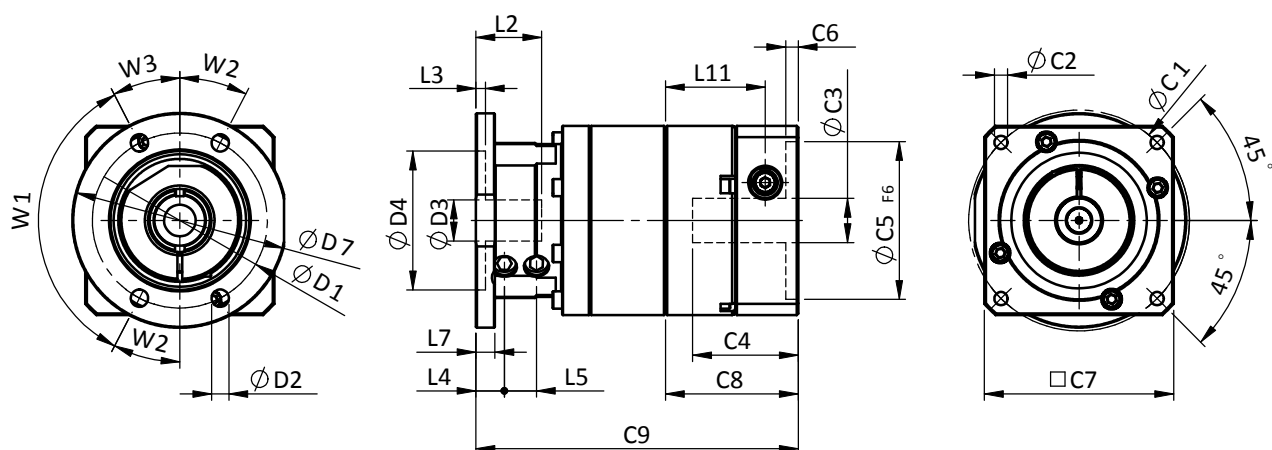


PGW SERIES





PGW Single Stage Dimensions PGW單段外型尺寸圖



Specifications 規格

Unit:mm

尺寸 Dimensions	PGW60	PGW90	PGW115
D1	55.5	73	105
D2	5.5	5.5	6.6
D3	16	20	30
D4	44	60	80
D7	70	84	118
L2	31	31	37
L3	3.5	3.5	3.5
L4	9	10.2	12.5
L5	10.2	10.9	13
L7	6	6	10
L11	31.6	37.3	51.8
W1	125°	90°	90°
W2	27.5°	22.5°	22.5°
W3	27.5°	67.5°	67.5°
C1 ²	70	90	145
C2 ²	M5x0.8P	M6x1.0P	M8x1.25P
C3 ²	≤14/≤19	≤19/≤24/≤28	≤24/≤32/≤38
C4 ²	33.5	41	51.5
C5 ² F6	50	70	110
C6 ²	4	6	6
C7 ²	60	90	130
C8 ²	42.1	51.5	68
C9 ²	102.2	126.5	172

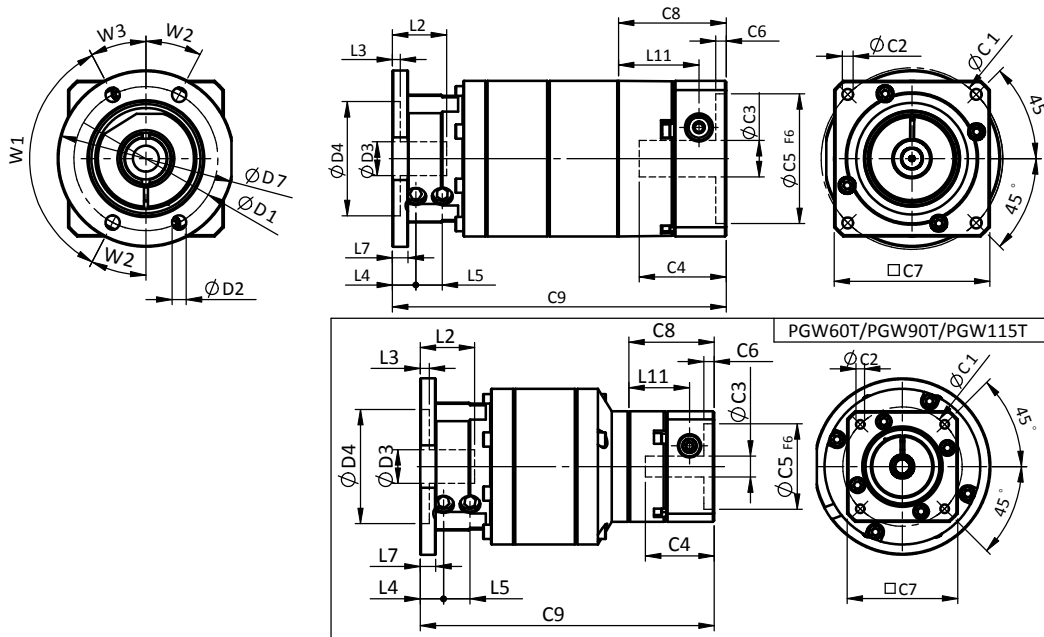
★ C1~C9是公製標準馬達連接板尺寸,請依所選用的馬達決定。

★ 本公司有權針對以上數據規格逕行設計變更不先行告知。

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

★ Specification subject to change without notice.

PGW Double Stage Dimensions PGW雙段外型尺寸圖



Specifications 規格

Unit:mm

尺寸 Dimensions	PGW60	PGW60T	PGW90	PGW90T	PGW115T
D1	55.5		73		105
D2	5.5		5.5		6.6
D3 _{h6}	16		20		30
D4 _{g6}	44		60		80
D7	70		84		118
L2	31		31		37
L3	3.5		3.5		3.5
L4	9		10.2		12.5
L5	10.2		10.9		13
L7	6		6		10
L11	31	23.4	37.3	31	37.3
W1	125°		90°		90°
W2	27.5°		22.5°		22.5°
W3	27.5°		67.5°		67.5°
C1 ²	70	46	90	70	90
C2 ²	M5x0.8P	M4x0.7P	M6x1.0P	M5x0.8P	M6x1.0P
C3 ²	≤14/≤19	≤8/≤11	≤19/≤24/≤28	≤14/≤19	≤19/≤24/≤28
C4 ²	33.5	26.5	41	33.5	41
C5 ² _{F6}	50	30	70	50	70
C6 ²	4	4	6	4	6
C7 ²	60	42.6	90	60	90
C8 ²	41.5	32.9	51.5	41.5	51.5
C9 ²	128.6	113.3	160.3	145.8	193.6

★ C1~C9是公製標準馬達連接板尺寸,請依所選用的馬達決定。

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

★ Specification subject to change without notice.

PGW Specifications Table PGW性能規格共表

規格 Specifications		節數 Stage	減速比 Ratio	PGW-60	PGW-90	PGW-115
額定輸出力矩 T _{2N} Nominal Output Torque	N · m	1	3	28	85	200
			4	32	80	215
			5	35	95	215
			7	28	85	200
			9	23	75	195
			10	21	65	180
		節數 Stage	減速比 Ratio	PGW-60/PGW-60T	PGW-90/PGW-90T	PGW-115T
		2	15	35/24	95/68	168
			20	35/31	95/95	215
			25	35/30	95/95	215
			35	35/28	95/95	215
			45	35/27	95/92	215
			50	35/27	95/82	205
			70	28/28	85/85	200
			90	23/23	75/75	195
			100	21/21	65/65	180
		節數 Stage	減速比 Ratio	PGW-60T	PGW-90T	PGW-115T
		3	125	35	95	215
			175	35	95	215
			225	35	95	215
			245	35	95	215
			315	35	95	215
			405	35	95	215
			567	28	85	200
			729	23	75	195
			1000	21	65	180
急停力矩 T _{2NOT} Emergency Stop Torque	N · m	2.5倍額定輸出力矩(2.5 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	3-1000	4000	3000	2500
最大輸入轉速 n _{1max} Max. Input Speed	rpm	1,2,3	3-1000	6000	6000	5000
標準背隙 Standard Backlash P2	arcmin	1	3-10	≤ 8	≤ 7	≤ 6
		2	15-100	≤10	≤ 9	≤ 8
		3	125~1000	≤12	≤12	≤12
使用溫度 Operating Temp.	°C	1,2,3	3-1000	-10°C ~ +90°C		
使用壽命 Service Life	hr	1,2,3	3-1000	20,000(10,000 連續運轉 Continuous operation)		
效率 Efficiency	%	1	3-10	≥ 95%		
		2	15-100	≥ 90%		
		3	125~1000	≥ 85%		
重量 Weight	kg	1	3-10	1.2	2.9	6.4
		2	15-100	1.6/1.4	4.3/3.2	8.0
		3	125~1000	1.8	4.6	9.4
安裝方向 Mounting Position	-	1,2,3	3-1000	任意方向 Any direction		
噪音值 Noise Level ¹	dBA/1m	1,2,3	3-1000	63	66	67
防護等級 Protection Class	-	1,2,3	3-1000	IP65		
潤滑 Lubrication	-	1,2,3	3-1000	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	PGW-60(ψ14)	PGW-90(ψ19)	PGW-115(ψ24)	
1	3	Kg · cm ²	0.23	0.77	2.30	
	4		0.21	0.67	1.92	
	5~10		0.21	0.61	1.71	
節數 Stage	減速比 Ratio		PGW-60(ψ14)/ -60T(ψ8)	PGW-90(ψ19) / -90T(ψ14)	PGW-115T(ψ19)	
2	15		0.23/(0.04)	0.77/(0.23)	0.77	
	其它比數 Other ratios		0.21/(0.03)	0.61/(0.21)	0.61	
節數 Stage	減速比 Ratio		PGW-60T(ψ8)	PGW-90T(ψ14)	PGW-115T(ψ19)	
3	所有比數 All ratios		0.03	0.21	0.61	
* 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.						
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* 1. 輸出轉速 100rpm 時，作用於輸出軸中心位置。Applied to the output shaft center @100rpm.

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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。

PLANETARY GEARHEADS

