

# PGRJ-SERIES

## 產品特點 Product Features



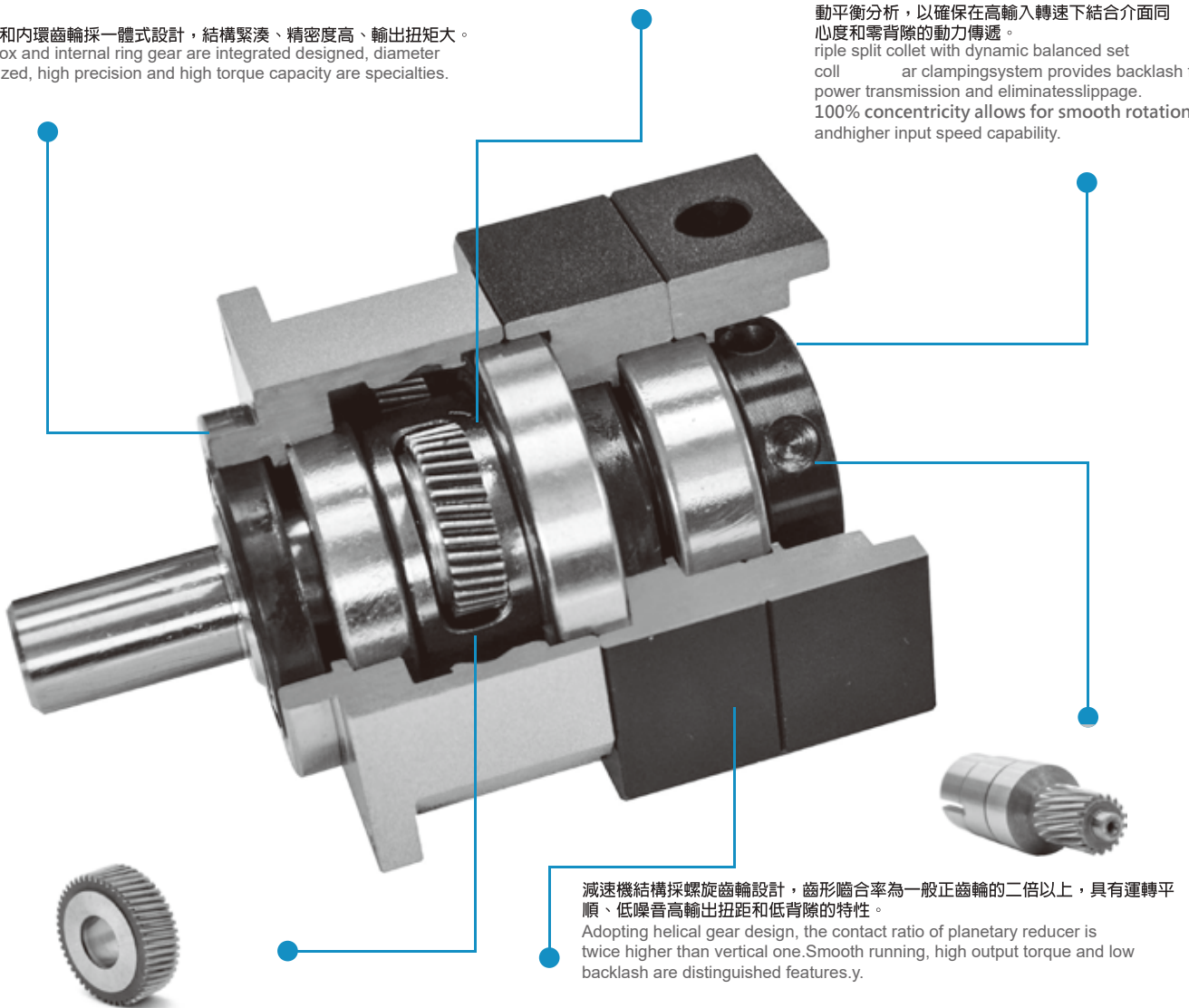
齒輪箱和內環齒輪採一體式設計，結構緊湊、精密度高、輸出扭矩大。  
Gear box and internal ring gear are integrated designed, diameter maximized, high precision and high torque capacity are specialties.



行星臂架與輸出軸採一體式的設計結構，確保最大耐扭力剛性及穩定性。  
Integrated design of planet carrier and output shaft ensures the maximum torque stiffness and stability.



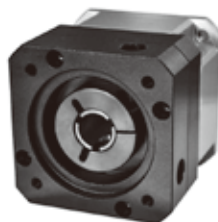
輸入端與馬達的連結機構，採用筒夾式的鎖緊經動平衡分析，以確保在高輸入轉速下結合介面同心度和零背隙的動力傳遞。  
split collet with dynamic balanced set collar provides backlash free power transmission and eliminates slippage. 100% concentricity allows for smooth rotation and higher input speed capability.



減速機結構採螺旋齒輪設計，齒形嚙合率為一般正齒輪的二倍以上，具有運轉平順、低噪音高輸出扭矩和低背隙的特性。  
Adopting helical gear design, the contact ratio of planetary reducer is twice higher than vertical one. Smooth running, high output torque and low backlash are distinguished features.

齒輪材質選用鉻鉬鉭合金鋼，經調質熱處理至基材硬度 HRC25 度，在利用氣體氮化方式將齒輪表面硬度提昇至 600HV，以獲得

To gain the best abrasion performance and impact resistance · Chromium Molybdenum Vanadium Alloy steel is selected as raw material. Accompany with quenching and tempering heat treatment process · the core hardness is increased to 25 HRC. Accompany with plasma nitriding heat treatment process · the surface hardness is increased to 600 HV.



馬達連接板和襯套採模組化設計，適用於任何廠牌、型式的伺服馬達。  
Motor adapter and bushing module are modularized designed · which applied to types of servomotors.

## 減速機性能資料

### Reducer Performance Information

規格 Model NO.	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142	180
額定輸出力矩 $T_{2N}$ Rated Output Torque	Nm	L1	3	21	57	135	216	352	603
			4	20	52	145	298	552	1065
			5	23	62	165	338	660	1215
			6	21	57	155	318	610	1115
			7	20	52	145	308	560	1115
			8	18	47	125	268	510	1015
			9	15	42	105	238	460	915
			10	15	42	105	238	460	915
			15	21	57	135	216	352	603
			20	20	52	145	298	552	1065
		25	23	62	165	338	660	1215	
		30	21	57	155	318	610	1115	
		35	20	52	145	308	560	1115	
		40	18	47	125	268	510	1015	
		50	23	62	165	338	660	1215	
		60	21	57	155	318	610	1115	
		70	20	52	145	308	560	1115	
		80	18	47	125	268	510	1015	
		90	15	42	105	238	460	915	
		100	15	42	105	238	460	915	
最大輸入轉速 $n_{1B}$ Max. Input Speed	rpm	L1 / L2	3~100	10,000	10,000	8,000	8,000	6,000	6,000
額定輸入轉速 $n_{1N}$ Rated Input Speed	rpm	L1 / L2	3~100	5,000	5,000	4,000	4,000	3,000	3,000
標準背隙 Backlash	arcmin	L1	3~10	≤ 8					
		L2	15~100	≤ 12					
最大加速扭矩 $T_{2B}$ Max. Acceleration Torque	Nm	L1 / L2	3~100	1.8倍額定輸出力矩/ 1.8 Times of nominal output torque					
最大輸出(急停)扭矩 $T_{2NOT}$ Max. Output(Emergency Stop) Torque	Nm	L1 / L2	3~100	3倍額定輸出力矩/ 3 Times of nominal output torque					
扭轉剛性 Torsional Rigidity	Nm / arcmin	L1 / L2	3~100	3	7	14	25	50	145
容許徑向力 $F_{2rB}$ Max. Radial Force	N	L1 / L2	3~100	780	1,530	3,250	6,700	9,400	14,500
容許軸向力 $F_{2aB}$ Max. Axial Force	N	L1 / L2	3~100	390	765	1,625	3,350	4,700	7,250
使用壽命 Service Life	hr	L1 / L2	3~100	S5週期運轉 > 20,000 ; (S1連續運轉 > 10,000 hrs) S5 Cycle Operation ; > 20,000 (S1 Continuous Operation ; > 10,000 hrs)					
使用溫度 Operation Temperature	°C	L1 / L2	3~100	-25°C - 90°C					
效率 $\eta$ Efficiency	%	L1	3~10	≤ 97					
		L2	15~100	≤ 94					
潤滑 Lubrication		L1 / L2	3~100	合成潤滑油脂/ Synthetic Lubrication Grease					
噪音值 Noise Level	dB	L1	3~10	≤ 56	≤ 60	≤ 63	≤ 63	≤ 65	≤ 67
		L2	15~100	≤ 56	≤ 60	≤ 63	≤ 63	≤ 65	≤ 67
防護等級 Protection Class	IP	L1 / L2	3~100	IP 65					
安裝方向 Mounting Position		L1 / L2	3~100	任意方向 / Any direction					
重量 Weight	kg	L1	3~10	0.5	1.2	3.5	7.5	15.5	38
		L2	15~100	0.8	1.8	5.2	11.2	22.5	48

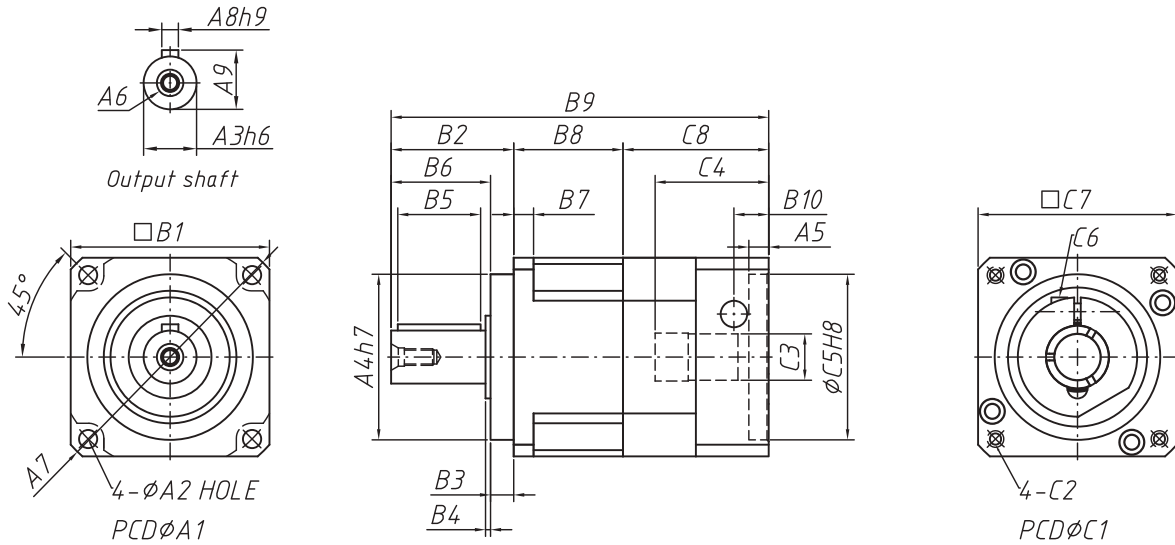
## 減速機轉動慣量

### Reducer Moment of inertia

規格 Model NO.	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142	180
轉動慣量 $J_1$	kg.cm <sup>2</sup>	L1	3	0.03	0.16	0.61	3.25	9.21	28.98
			4	0.03	0.14	0.48	2.74	7.54	23.67
			5	0.03	0.13	0.47	2.71	7.42	23.29
			6	0.03	0.13	0.45	2.65	7.25	22.75
			7	0.03	0.13	0.45	2.62	7.14	22.48
			8	0.03	0.13	0.44	2.58	7.07	22.59
			9	0.03	0.13	0.44	2.57	7.04	22.53
			10	0.03	0.13	0.44	2.57	7.03	22.51
			15	0.03	0.03	0.13	0.47	2.71	7.42
			20	0.03	0.03	0.13	0.47	2.71	7.42
		25	0.03	0.03	0.13	0.47	2.71	7.42	
		30	0.03	0.03	0.13	0.47	2.71	7.42	
		35	0.03	0.03	0.13	0.47	2.71	7.42	
		40	0.03	0.03	0.13	0.47	2.71	7.42	
		50	0.03	0.03	0.13	0.44	2.57	7.03	
		60	0.03	0.03	0.13	0.44	2.57	7.03	
		70	0.03	0.03	0.13	0.44	2.57	7.03	
		80	0.03	0.03	0.13	0.44	2.57	7.03	
		90	0.03	0.03	0.13	0.44	2.57	7.03	
		100	0.03	0.03	0.13	0.44	2.57	7.03	

# MODEL : PGRJ SERIES

## 1-Stage (Ratio:3~10)

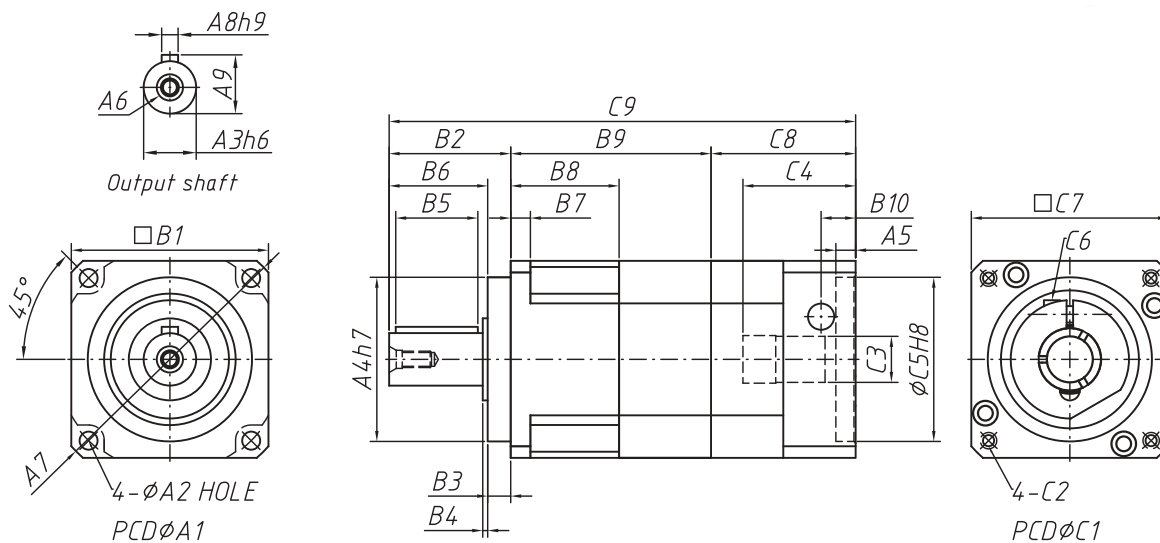


Unit: mm

Code \ Model	42	60	90	115	142	180
A1	50	70	100	130	165	215
A2	3.5	5.5	6.5	8.5	10.5	13.5
A3	13	16	22	32	40	55
A4	35	50	80	110	130	160
A5	6	6	7.5	22.5	11	12
A6	M4 X P0.7	M5 X P0.8	M8 X P1.25	M12 X P1.75	M16 X P2.0	M20 X P2.5
A7	56	80	116	148	185	240
A8	5	5	6	10	12	16
A9	15	18	24.5	35	43	60
B1	42.6	60	90	115	142	180
B2	25.8	37	48	65	97	104.5
B3	5.5	7	10	12	15	20
B4	1.6	1.5	1.5	2	3	2.5
B5	15	25	30	40	63	70
B6	20.5	30	38	53	82	84.5
B7	4	6	8	10	12	16
B8	28.3	33	43	54	72	87.5
B9	88.65	114	138	190	251	292
B10	11	13.5	14	15	23	27.5
C1	46	70	90	145	165	200
C2	M4 X P0.7	M5 X P0.8	M6 X P1.0	M8 X P1.25	M10 X P1.5	M12 X P1.75
C3	8	14,19	19,24	24,28	35,42	42
C4	26	34	43	67.5	68	72.5
C5	30	50	70	110	130	114.3
C6	M3 X P0.5	M5 X P0.8	M6 X P1.0	M8 X P1.25	M10 X P1.5	M12 X P1.75
C7	42.6	60	90	130	142	180
C8	34.35	44	47	71	82	100

# MODEL : PGRJ SERIES

## 2-Stage (Ratio:15~100)

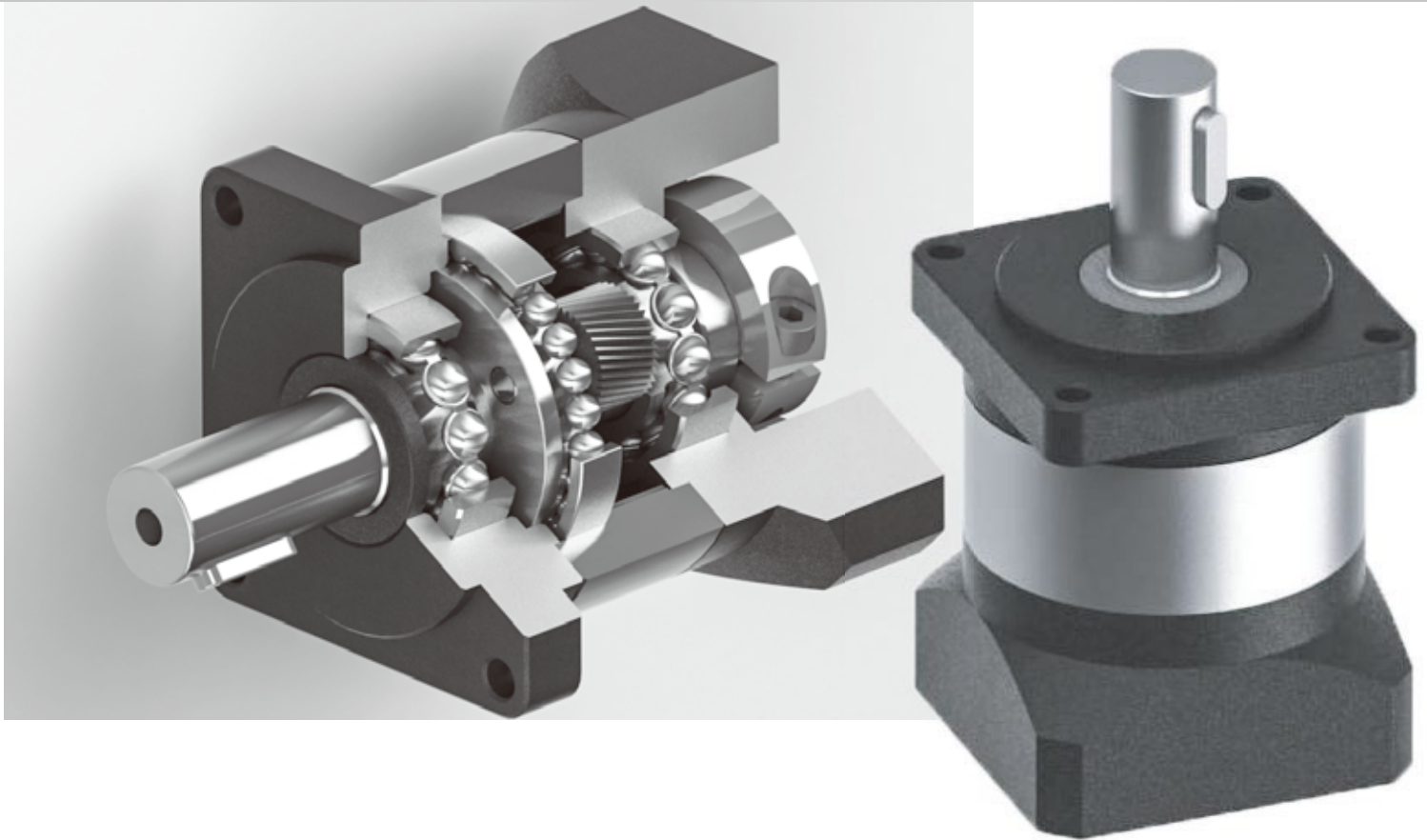


Unit: mm

Code \ Model	42	60	90	115	142	180
A1	50	70	100	130	165	215
A2	3.5	5.5	6.5	8.5	10.5	13.5
A3	13	16	22	32	40	55
A4	35	50	80	110	130	160
A5	6	6	7.5	22.5	11	12
A6	M4 X P0.7	M5 X P0.8	M8 X P1.25	M12 X P1.75	M16 X P2.0	M20 X P2.5
A7	56	80	116	148	185	240
A8	5	5	6	10	12	16
A9	15	18	24.5	35	43	60
B1	42.6	60	90	115	142	180
B2	25.8	37	48	65	97	104.5
B3	5.5	7	10	12	15	20
B4	1.6	1.5	1.5	2	3	2.5
B5	15	25	30	40	63	70
B6	20.5	30	38	53	82	84.5
B7	4	6	8	10	12	16
B8	28.3	33	43	54	72	87.5
B9	54.3	61	83	102	123	177.5
B10	11	13.5	14	15	23	27.5
C1	46	70	90	145	165	200
C2	M4 X P0.7	M5 X P0.8	M6 X P1.0	M8 X P1.25	M10 X P1.5	M12 X P1.75
C3	8	14,19	19,24	24,28	35,42	42
C4	26	34	43	67.5	68	72.5
C5	30	50	70	110	130	114.3
C6	M3 X P0.5	M5 X P0.8	M6 X P1.0	M8 X P1.25	M10 X P1.5	M12 X P1.75
C7	42.6	60	90	130	142	180
C8	34.35	44	47	71	82	100
C9	114.65	142	178	238	312	382

# PGR6 系列精密行星螺旋齒輪減速機

## PGR6 HELICAL GEAR PLANETARY REDUCERS



### 產品特性 Product Features

- ◆ 獨特多段減速比，高效率輸出扭力之行星齒輪式減速裝置是伺服馬達，步進馬達等精密傳動機構的最佳組合。
- The best combination for precise motion control products like Step Motor, Servo Motor. due to unique multi-stage gear-reduction. high-efficiency output torque precision planetary gearbox.
- ◆ 專利內齒環設計，確保耐用與低噪音，密閉式全油封設計確保潤滑油不漏。
- Patented Inner-Gear design, prolonged life and low noise level; fully enclosure design ensure no lubricant leakage.
- ◆ 低耗損精密螺旋齒設計傳動效率高達95%。
- High drive efficiency up to 95%. due to low wear and helical planetary gear design.
- ◆ 適合NEMA馬達安裝標準規範，安裝最容易。
- Compatible with all nema motor mounting standard, easy installation.
- ◆ 同級產品中體積最小，最適合有限之設備空間。
- Smallest dimension among products of same level; Most suitable for limited mounting space.
- ◆ 高精度低背隙5弧分，精準型10弧分皆可供應。
- Precision grade with backlash 5 arcmin; standard grade 10 arcmin.
- ◆ 內部組件採用經過熱處理之高強度合金鋼材，足堪應付嚴峻的惡劣工作環境。
- All internal components are made from high-duty alloy metal. suits for tough operating environment.
- ◆ 有低背隙及標準背隙機種以滿足各類設計需求。
- Suitable for various applications with precision and standard grade backlash.

# PGR6 系列精密行星螺旋齒輪減速機

## PGR6 HELICAL GEAR PLANETARY REDUCERS

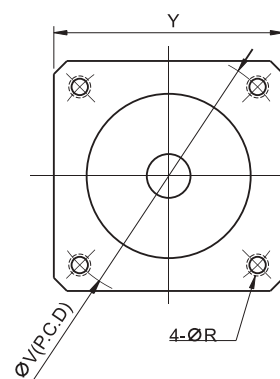
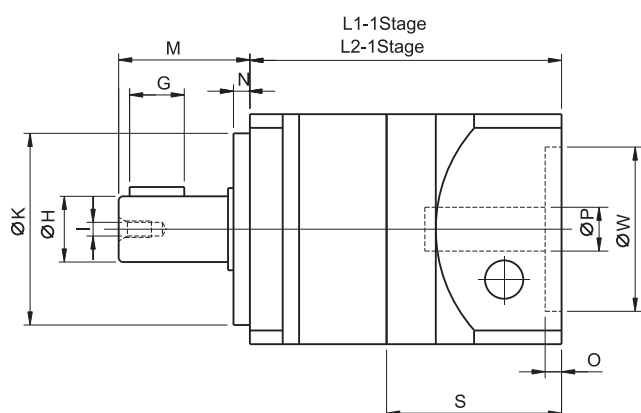
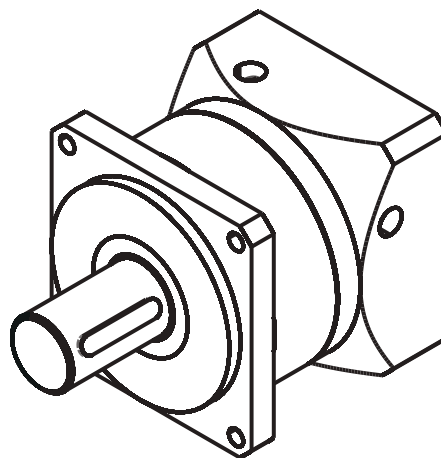
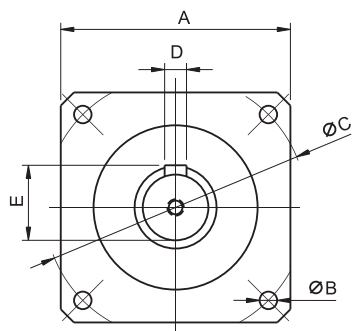
MODEL		段 Stage	減速比Ratio	042	060	090	120
額定出力軸轉矩 Rated Output torque	Nm	1	4、5	10	16	60	120
			3、7	8	15	54	100
			9、10	6	12	40	80
		2	12、15	14	30	96	185
			20、25	16	36	104	208
			30、40、50、70	13	28	88	160
		100	8	18	60	120	
最大出力轉矩 Max.Output torque	Nm	1、2	3~100	額定出力轉矩值之2倍 (Rated Output torque) x2			
額定入力端馬達轉速 Rated Input Speed	RPM	1、2	3~100	4000	4000	3000	3000
入力端馬達最高轉速 Max.Input Speed	RPM	1、2	3~100	6000	6000	5000	4500
入力軸轉動慣量 Rotational inertia	Kg <sup>2</sup> -cm	1	4、5	0.02	0.09	0.50	1.80
			3、7	0.03	0.14	0.80	2.50
			10	0.016	0.06	0.40	1.20
		2	15	0.023	0.12	0.75	2.80
			20、25	0.02	0.08	0.45	1.50
			30、40、50、70	0.016	0.07	0.40	1.40
		100	0.02	0.08	0.45	1.50	
容許最大徑向負載 Max.Radial Force	Nm	1	3~100	200	50	1500	3000
容許最大軸向負載 Max.Axial Force		2	12~100	300	600	2000	4000
扭轉剛性 Torsional stiffness	Nn/弧分	1、2	3~100	0.5	1.5	2	14
全載傳動效率 Transmission efficiency	%	1、2	3~100	1段>95%, 2段>92%			
平均使用壽命 Service Life	hr	1、2	3~100	10000			
可選用減速比 Ratio		1	3~10	3.4.5.7.9.10	3.4.5.6.7.8.9.10		3.4.5.7.10
		2	12~100	12~100	12~100	12~100	12~100
最高淨重 Weight	Kg	1	3~10	0.4	1.1	2.9	6.4
		2	12~100	0.6	1.6	4.1	8.1
背隙 Backlash	弧分	1	3~10	低背隙 ≤ 6			
				標準背隙 ≤ 10			
2	12~100	低背隙 ≤ 10					
		標準背隙 ≤ 15					
噪音值 Noise Level	d B (A)	1、2	3~100	< 70			
				測量值係在距離減速機一公尺及馬達無負載轉速每分鐘3000轉時測得之噪音值			
減速機保護等級 Protection		1、2	3~100	IP64			
容許操作溫度區間 Operating Temp	°C	1、2	3~100	-20°C ~ +100°C			
可安裝方向 Mounting Direction		1、2	3~100	沒有限制			

### # 備註:

- 以上數據係在單段減速比5:1及兩段減速比25:1的情況下測得
- 額定出力轉矩,單段依減速比4:1&5:1→3:1&7:1→10:1兩段依減速比20:1&25:1→49:1&70:1→100:1各約以10%遞減
- 本公司有權針對以上數據規格進行設計變更不告知。請隨時參閱本公司網頁內最新之更新資料。

# PGR6 系列精密行星螺旋齒輪減速機

## PGR6 HELICAL GEAR PLANETARY REDUCERS



(Unit:mm)

Model / Size	A	B	C	D	E	G	H	I	K	L1	L2	M	N	Y
PGR6042	42	3.2	48	4	13.5	10	12	M3	35	56	72	23	3	42
PGR6060	60	5.3	70	4	15.7	15	14	M5	50	78	102	28	3	60
PGR6090	93	7	105	6	22.5	25	20	M6	80	99.5	131	45	5	93
PGR6120	120	9	140	8	28.3	30	25	M12	110	124.7	158	54	5	120

O、P、R、S、V、W 皆可配合馬達尺寸  
O、P、R、S、V、W -With motor size