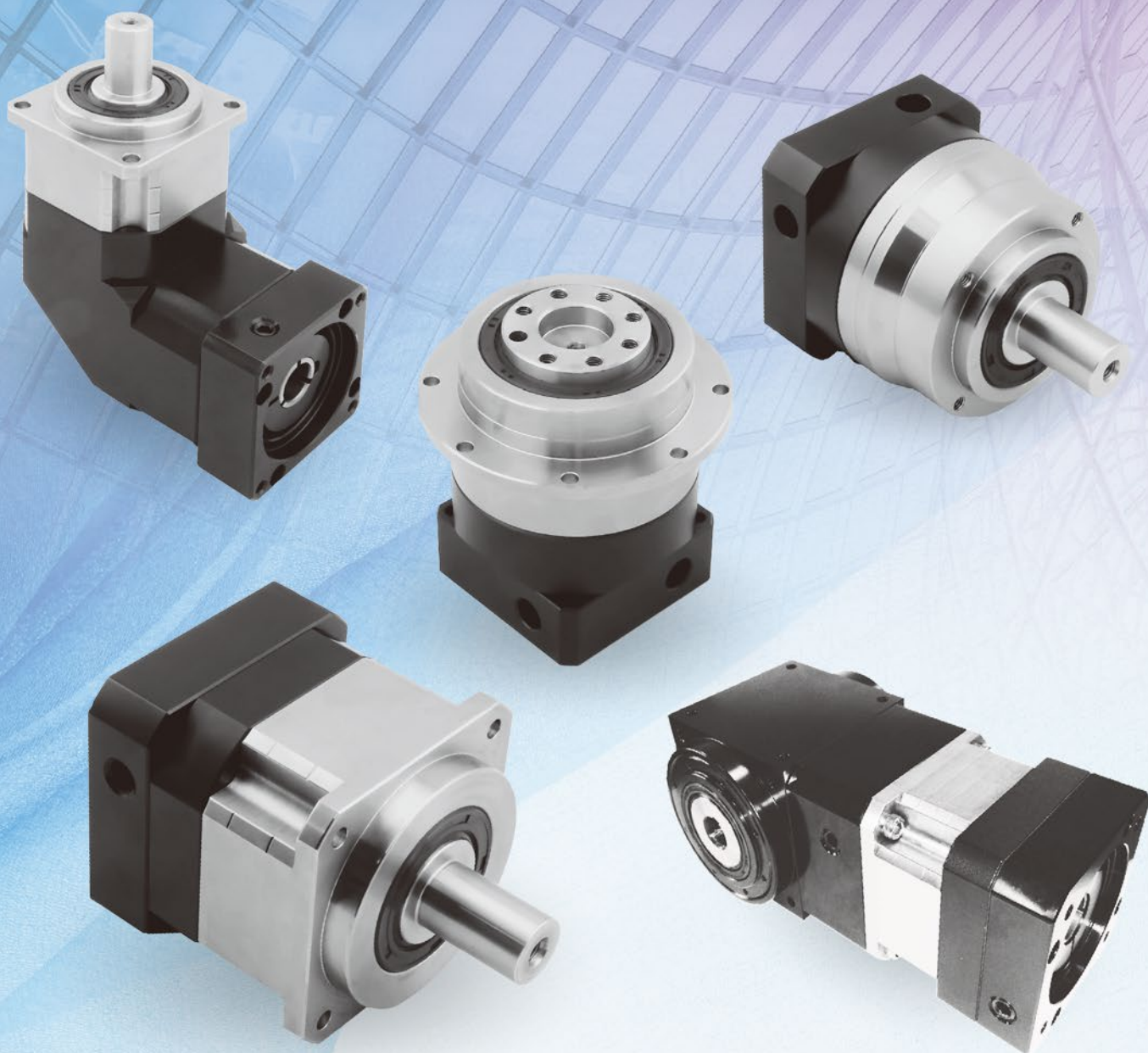


PS / PP Series

*HIGH PRECISION
PLANETARY REDUCER*

行星伺服系列



FOR SERVO MOTOR ONLY

CONC.Ji
gearing the future

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HIGH PRECISION
PLANETARY REDUCER



產品簡述 Product Description

台灣工機行星式減速機以高品質與專業研發、客制化服務供應各界自動化領域之多元化需求，所生產研發之行星式螺旋齒輪減速機是針對高性能的設備需求而設計，於伺服控制的應用上，發揮了良好的伺服剛性效應，準確的精密定位控制，具備了低背隙、高效率、高輸入轉速、運轉平順、低噪音等特性。其外觀及結構設計上也力求緊湊並輕量化，讓伺服馬達具有高效率的運轉，並減低其負載慣量，降低轉速並提高扭矩。伺服用行星式減速機廣泛用於航太工業、半導體設備、工具機械、自動化產業、產業用機器人、醫療檢驗、精密測試儀器等。

Taiwan Gong Ji planetary reducer with high quality, professional R&D, customized service to supply all the diverse needs of the automation field. The planetary helical gear reducer is designed for high-performance equipment needs, and plays a good servo rigidity effect in its control applications. Accurate precision positioning control has the characteristics, such as, low backlash, high efficiency, high input speed, smooth running and low noises. The excellent structure design also achieved to compact and lightweight servo motors with high efficiency operation, lower the load inertia, reduce speed and increase torque. The servo planetary reducer is widely used in the aerospace industry, semiconductor equipment, machine tools, automation industry, industrial robots, medical examinations and precision testing equipments.

機種型號標示 **Indication of Model Numbers**

1	2	3	4	5	6
PSG	90	10	S1	1	Motor

1. / 2. 減速機型及型號 / Type & Model		3. 減速比 / Ratio	
PSG	042 /060 /090 /115 /142 /180	單段 1-STAGE	3~10
PSE	042 /060 /090 /115 /142 /180	雙段 2-STAGE	15~100
PSQ	047 /064 /090 /110 /140 /200	4. 出力軸鍵槽 / Output Shaft keyway	
PSR	042 /060 /090 /115 /142	S1 標準品(有鍵槽)	Standard(Keyway)
PST	060 /090 /115 /142	S2 實心軸(無鍵槽)	Solid Output(No Keyway)
PPG	042 /060 /090 /115 /142 /180 /220	5. 背隙等級 / Backlash Class	
PPE	042 /060 /090 /115 /142 /180	PSE/PPG/PPE	標準背隙 Standard Backlash
		PSG/PSQ PSR/PST	1 極精密背隙 Ultra High Precision Backlash 3 超精密背隙 High Precision Backlash 5 精密備隙 Precision Backlash 7 標準背隙 Standard Backlash
		6. 馬達型號 / Motor Type	
		Motor Brand & Model No.	

減速機型號選定說明：

先以馬達額定輸出扭矩 * 減速比 * 減速機效率來獲得實際輸出扭矩，再依減速機各型號的額定輸出扭矩，來找尋適合的減速機型號。

馬達端的實際輸出扭矩，建議小於減速機端的額定輸出扭矩，以獲得適當的安全系數。

例如：

使用伺服馬達，功效 750W，額定輸出扭矩 2.39Nm，馬達軸心為 Φ19mm，

1. 假設減速比為 1/50 時：輸出扭矩為 2.39Nm x50 x94%(效率)=112.3Nm

* 可選擇 PSG-90-50(額定輸出扭矩 165Nm)

S.F.(安全系數)=1.4

* 亦可選擇 PSG-115-50(額定輸出扭矩 338Nm)

S.F.(安全系數)=3.0

2. 假設減速比為 1/100 時：輸出扭矩為 2.39 x100 x 94%(效率)=224Nm

* 可選用 PSG-115-100(額定輸出扭矩 238Nm)

S.F.(安全系數)=1.0

* 選用 PSG-90-100(額定輸出扭矩 1051Nm) 時

S.F.=0.4 安全系數不足，不建議使用。

How to selection the reducer:

Please refer the example.

Example:

Servo motor 750w, rated output torque 2.39Nm, motor shaft Φ19mm.

1. Suppose the speed reduction ratio is 1/50:

Output torque is 2.39Nm x50x94% (efficiency)=112.3Nm

*You can select PSG-90-50 With rated output torque of 165Nm and S.F.=1.4

*You also can select PSG-115-50 With rated output torque of 338Nm and S.F.=3.0

2. Suppose the speed reduction ratio is 1/100:

Output torque is 2.39 x100 x94% (efficiency)=224 Nm.

*You can select PSG-115-100 and S.F.=1.0

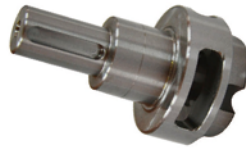
*don't suggested to choose PSG-90-100 because of low S.F.=0.4

PSG 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.



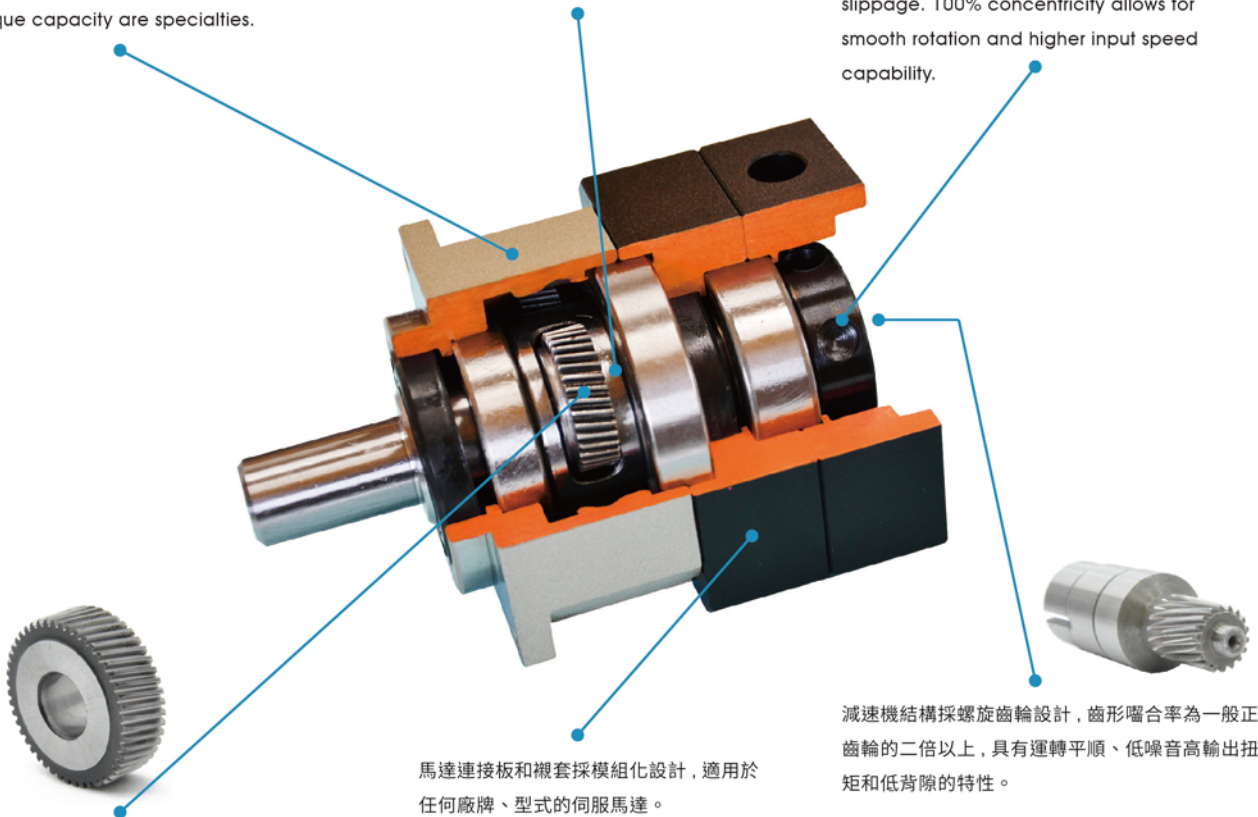
行星臂架與輸出軸採一體式的設計結構，確保最大耐扭力剛性及穩定性。

Integrated design of planet carrier and torque stiffness and stability, output shaft ensures the maximum



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。

Triple split collet with dynamic balanced set collar clamping system provides backlash free power transmission and eliminate slippage. 100% concentricity allows for smooth rotation and higher input speed capability.



齒輪材質選用鉻鉬釩合金鋼，經調質熱處理至基材硬度 HRC 25 度，在利用氣體氮化方式將齒輪表面硬度提昇至 600HV，以得最佳的耐磨耗及耐衝擊韌性。

Gear box and internal ring gear are integrated designed diameter maximized, high precision and high torque capacity are specialties.

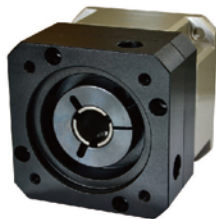
馬達連接板和襯套採模組化設計，適用於任何廠牌、型式的伺服馬達。

Motor adapter and bushing module are modularized designed which applied to types of servo motors.



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.



PSG 減速機性能資料 Reducer Performance Information

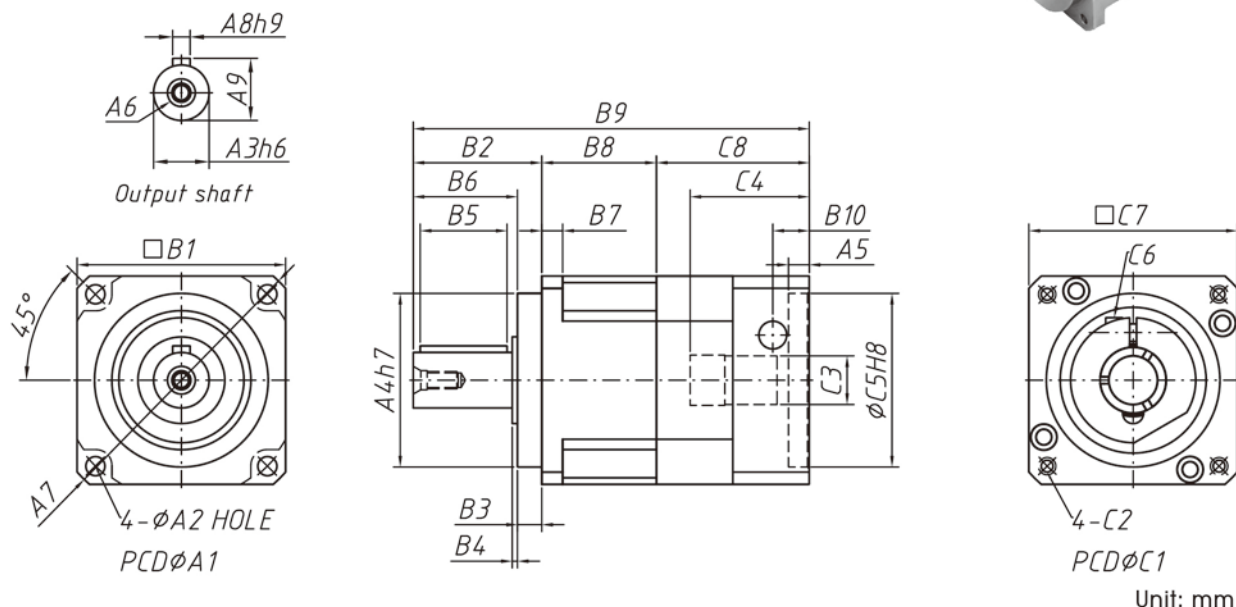
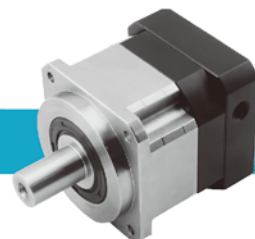
規格 Model No.	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142	180
額定輸出扭矩 T_{2N} Reted Outut Torque	Nm	L1	3	21	57	135	216	352	603
			4	20	52	145	298	552	1065
			5	23	62	165	338	660	1215
			6	21	57	155	318	610	1115
			7	20	52	145	308	560	1115
			8	18	47	125	268	510	1015
			9	15	42	105	238	460	915
			10	15	42	105	238	460	915
			15	21	57	135	216	352	603
		L2	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
超精密背隙 1 Backlash 1	arcmin	L1	3 ~ 10	≤ 1					
		L2	15 ~ 100	≤ 3					
精密背隙 3 Backlash 3	arcmin	L1	3 ~ 10	≤ 3					
		L2	15 ~ 100	≤ 5					
精密背隙 5 Backlash 5	arcmin	L1	3 ~ 10	≤ 5					
		L2	15 ~ 100	≤ 7					
標準背隙 7 Backlash 7	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倍額定輸出扭矩 1.8 Times of nominal output torque					
最大輸出(急停)扭矩 T_{2NOI} Max. Output (Emergency Stop)Torque	Nm	L1/L2	3 ~ 100	3倍額定輸出扭矩 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_{2B} 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 hrs (S1連續運轉 > 10,000 hrs) S5 Cycle Operation > 20,000 hrs (S1 Continuous Operation > 10,000 hrs)					
使用溫度 Operation Temperature	°C	L1/L2	3 ~ 100	-25°C ~ 90°C					
效率 η 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 ²	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	
			L2	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		

PSG SERIES

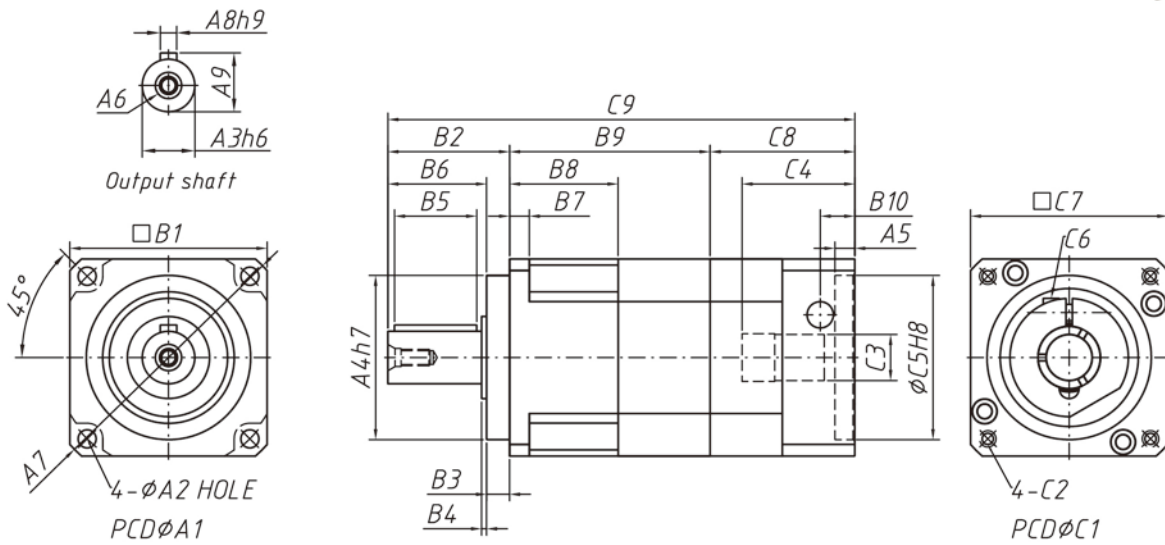
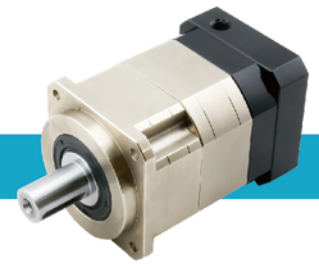
1-Stage (Ratio:3~10)



Model Code	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	26	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

PSG SERIES

2-Stage (Ratio:15~100)

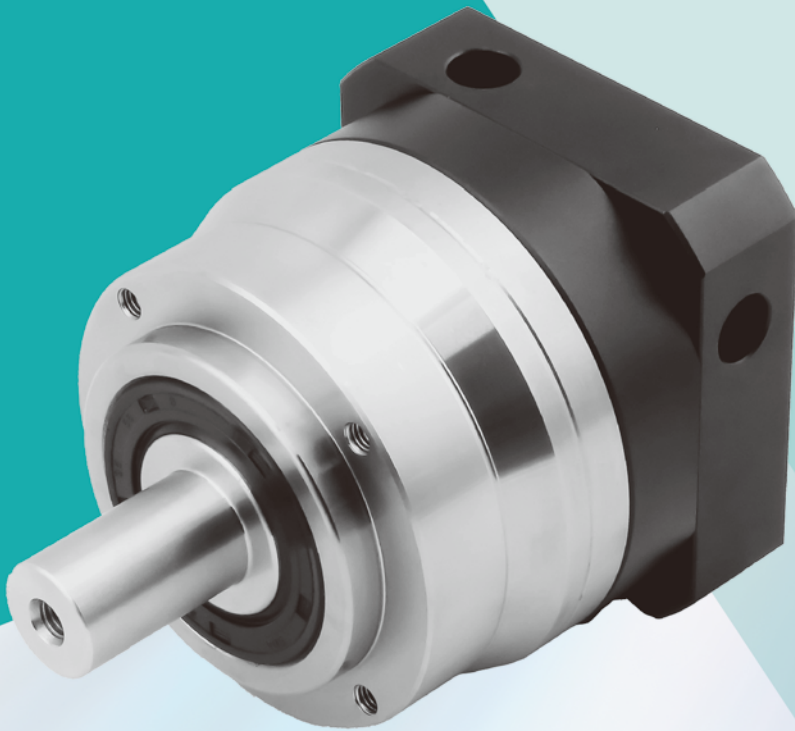


Unit: mm

Model	42	60	90	115	142	180
Code						
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	26	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

PSE SERIES

**HIGH PRECISION
PLANETARY REDUCER**



PSE 減速機性能資料 Reducer Performance Information

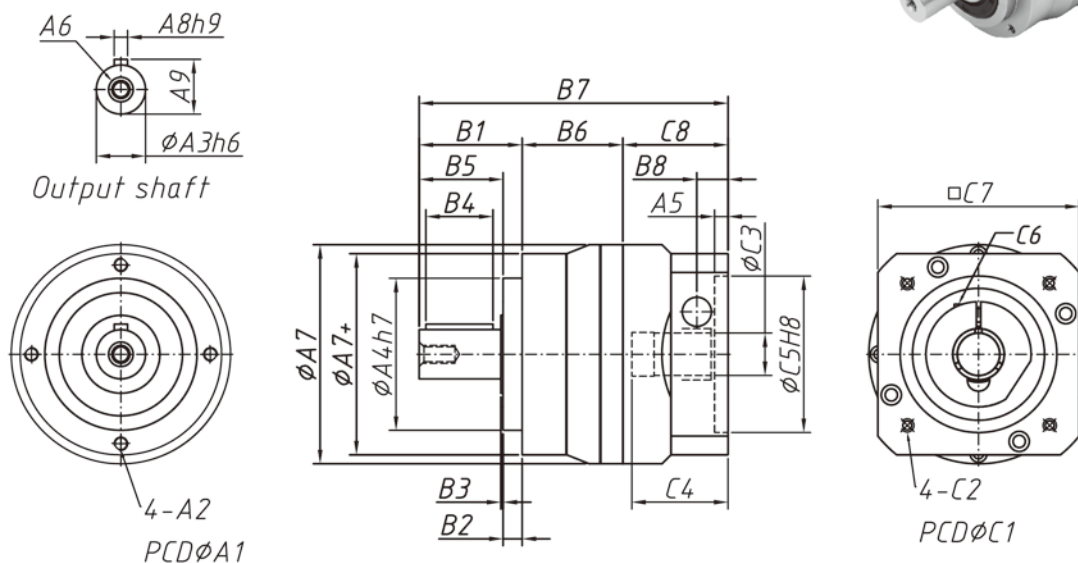
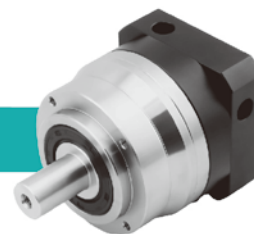
規格 Model No.	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142	180
額定輸出扭矩 T_{2N} Rated Output Torque	Nm	L1	3	21	57	135	216	352	603
			4	20	52	145	298	552	1065
			5	23	62	165	338	660	1215
			6	21	57	155	318	610	1115
			7	20	52	145	308	560	1115
			8	18	47	125	268	510	1015
			9	15	42	105	238	460	915
			10	15	42	105	238	460	915
			15	21	57	135	216	352	603
		L2	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_{18} 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
超精密背隙 1 Backlash 1	arcmin	L1	3 ~ 10	≤ 1					
		L2	15 ~ 100	≤ 3					
精密背隙 3 Backlash 3	arcmin	L1	3 ~ 10	≤ 3					
		L2	15 ~ 100	≤ 5					
精密背隙 5 Backlash 5	arcmin	L1	3 ~ 10	≤ 5					
		L2	15 ~ 100	≤ 7					
標準背隙 7 Backlash 7	arcmin	L1	3 ~ 10	≤ 8					
		L2	15 ~ 100	≤ 12					
最大加速扭矩 T_{2a} Max. Acceleration Torque	Nm	L1/L2	3 ~ 100	1.8倍額定輸出扭矩 1.8 Times of nominal output torque					
最大輸出(急停)扭矩 T_{2NOI} Max. Output (Emergency Stop) Torque	Nm	L1/L2	3 ~ 100	3倍額定輸出扭矩 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_{2a} 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 hrs(S1連續運轉 > 10,000 hrs) S5 Cycle Operation > 20,000 hrs (S1 Continuous Operation > 10,000 hrs)					
使用溫度 Operation Temperature	°C	L1/L2	3 ~ 100	-25°C ~ 90°C					
效率 η 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	0.6	1.4	3.3	6.9	1.3	31
		L2	15 ~ 100	0.9	1.6	4.7	8.7	17	35

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 ²	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
		L2	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			

PSE SERIES

1-Stage (Ratio:3~10)

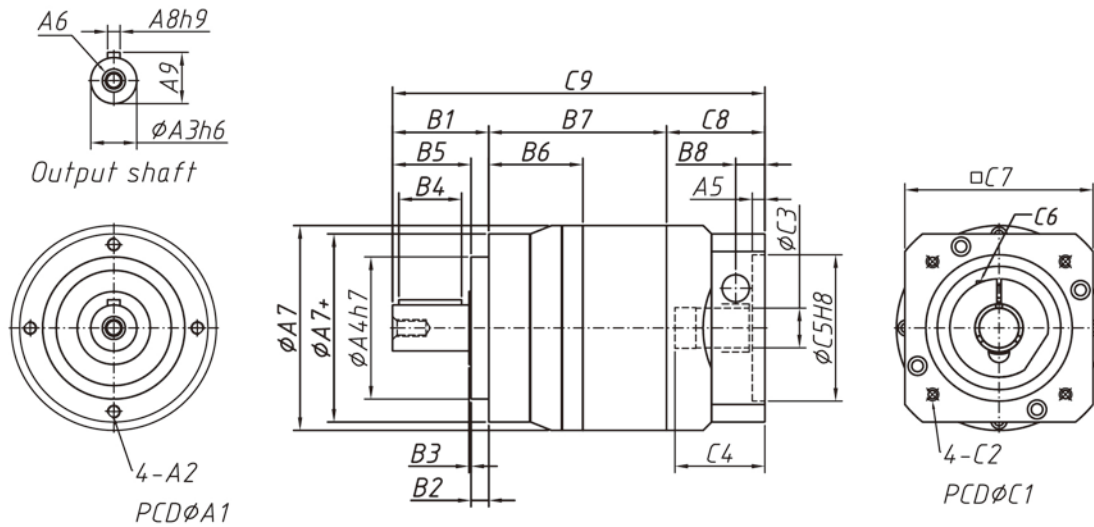


Unit: mm

Model Code	42	60	90	115	142	180
A1	44	62	80	108	140	184
A2	M4 x P0.7	M5 x P0.8	M6 x P1.0	M6 x P1.0	M10 x P1.5	M12 x P1.75
A3	13	16	22	32	40	55
A4	35	52	68	90	120	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	59	70	98	125	156	212
A7+	50	70	90	120	156	205
A8	5	5	6	10	12	16
A9	15	18	24.5	35	43	59
B1	24.5	36.5	46	70	97	99.5
B2	4	6.5	8.5	17	15	15
B3	1.6	1.5	1	2	3	2.5
B4	15	25	30	40	63	70
B5	20.5	30	37.5	53	82	84.5
B6	28.3	33.5	45	49	72	87.5
B7	114.8	114	138	190	251	283
B8	11	10.5	14	30	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	34.1	43	67.5	68.1	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	34.5	44	47	71	82	91

PSE SERIES

2-Stage (Ratio:15~100)

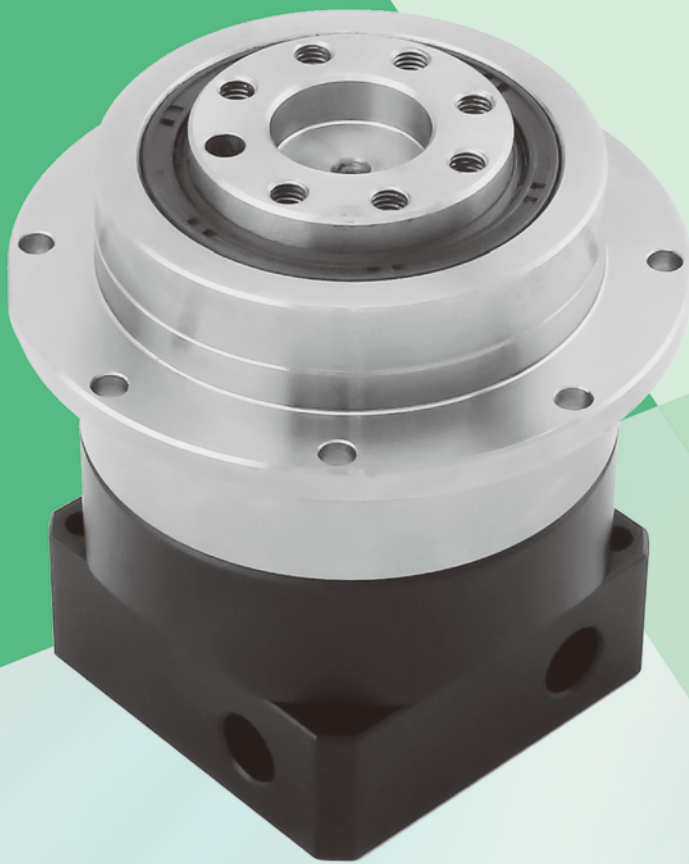


Unit: mm

Model	42	60	90	115	142	180
Code						
A1	44	62	80	108	140	184
A2	M4 x P0.7	M5 x P0.8	M6 x P1.0	M6 x P1.0	M10 x P1.5	M12 x P1.75
A3	13	16	22	32	40	55
A4	35	52	68	90	120	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	59	70	98	125	156	212
A7+	50	70	90	120	156	205
A8	5	5	6	10	12	16
A9	15	18	24.5	35	43	59
B1	24.5	36.5	46	70	97	99.5
B2	4	6.5	8.5	17	15	15
B3	1.6	1.5	1	2	3	2.5
B4	15	25	30	40	63	70
B5	20.5	30	37.5	53	82	84.5
B6	28.3	33.5	45	49	72	87.5
B7	54.3	61.5	85	97	133	177.5
B8	11	10.5	14	30	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	34.1	43	67.5	68.1	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	34.5	44	47	71	82	91
C9	114.8	142	178	238	312	373

PSQ SERIES

**HIGH PRECISION
PLANETARY REDUCER**



PSQ 減速機性能資料 Reducer Performance Information

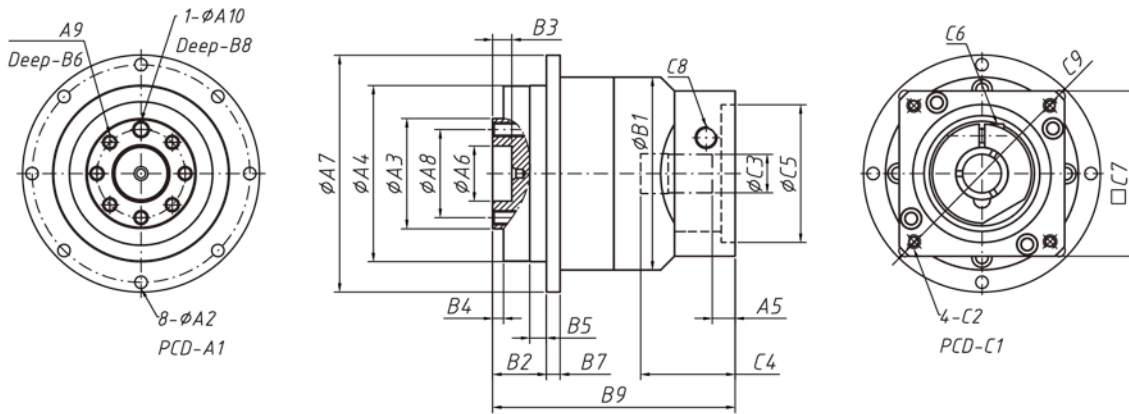
規格 Model No.	單位 Unit	節數 Stage	減速比 Ratio	47	64	90	110	140	200
額定輸出扭矩 T_{2N} Rated Output Torque	Nm	L1	4	20	50	135	278	570	1115
			5	23	62	165	338	660	1215
			7	20	52	145	308	560	1115
			10	15	42	105	238	460	915
		L2	20	20	50	135	278	570	1115
			25	23	62	165	338	660	1215
			35	20	52	145	308	560	1115
			40	20	50	135	278	570	1115
			50	23	62	165	338	660	1215
			70	20	52	145	308	560	1115
100	15	42	105	238	460	915			
最大輸入轉速 n_{1B} Max. Input Speed	rpm	L1/L2	4 ~ 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	4 ~ 100	5,000	5,000	4,000	4,000	3,000	3,000
超精密背隙 1 Backlash 1	arcmin	L1	4 ~ 10	≤ 1					
L2		20 ~ 100	≤ 3						
精密背隙 3 Backlash 3	arcmin	L1	4 ~ 10	≤ 3					
L2		20 ~ 100	≤ 5						
精密背隙 5 Backlash 5	arcmin	L1	4 ~ 10	≤ 5					
L2		20 ~ 100	≤ 7						
標準背隙 7 Backlash 7	arcmin	L1	4 ~ 10	≤ 7					
L2		20 ~ 100	≤ 9						
最大加速扭矩 T_{2B} Max. Acceleration Torque	Nm	L1/L2	4 ~ 100	1.8倍額定輸出扭矩 1.8 Times of nominal output torque					
最大輸出(急停)扭矩 T_{2CO1} Max. Output (Emergency Stop) Torque	Nm	L1/L2	4 ~ 100	3倍額定輸出扭矩 3 Times of nominal output torque					
扭轉剛性 Torsional Rigidity	Nm/arcmin	L1/L2	4 ~ 100	7	13	31	82	151	440
最大彎曲扭矩 M_{2KB} Max. Bending Moment	Nm	L1/L2	4 ~ 100	43	125	235	430	1,300	3,064
容許軸向力 F_{2CB} Max. Axial Force	N	L1/L2	4 ~ 100	990	1,050	2,850	2,990	10,590	16,660
使用壽命 Service Life	hr	L1/L2	4 ~ 100	S5週期運轉 > 20,000 hrs (S1連續運轉 > 10,000 hrs) S5 Cycle Operation hrs > 20,000 hrs (S1 Continuous Operation ; > 10,000 hrs)					
使用溫度 Operation Temperature	°C	L1/L2	4 ~ 100	-25°C ~ 90°C					
效率 η Efficiency	%	L1	4 ~ 10	≤ 97					
L2		20 ~ 100	≤ 94						
潤滑 Lubrication		L1/L2	4 ~ 100	合成潤滑油脂 Synthetic Lubrication Greases					
噪音值 Noise Level	dB	L1	4 ~ 10	≤ 56	≤ 58	≤ 60	≤ 63	≤ 65	≤ 67
L2		20 ~ 100	≤ 56	≤ 58	≤ 60	≤ 63	≤ 65	≤ 67	
防護等級 Protection Class	IP	L1/L2	4 ~ 100	IP 65					
安裝方向 Mounting Position		L1/L2	4 ~ 100	任意方向 Any direction					
重量 Weight	kg	L1	4 ~ 10	0.7	1.4	4.2	7.4	13.9	32.4
L2		20 ~ 100	1	1.9	4.8	9.4	16.7	40.2	

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	47	64	90	110	140	200
轉動慣量 J_1	kg.cm ²	L1	4	0.03	0.14	0.51	2.87	7.54	25.03
			5	0.03	0.13	0.47	2.71	7.42	23.29
			7	0.03	0.13	0.45	2.62	7.14	22.48
			10	0.03	0.13	0.44	2.57	7.03	22.51
		L2	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
			35	0.03	0.03	0.13	0.47	2.71	7.42
			40	0.03	0.03	0.13	0.44	2.57	7.03
			50	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
100	0.03	0.03	0.13	0.44	2.57	7.03			

PSQ SERIES

1-Stage (Ratio:3~10)

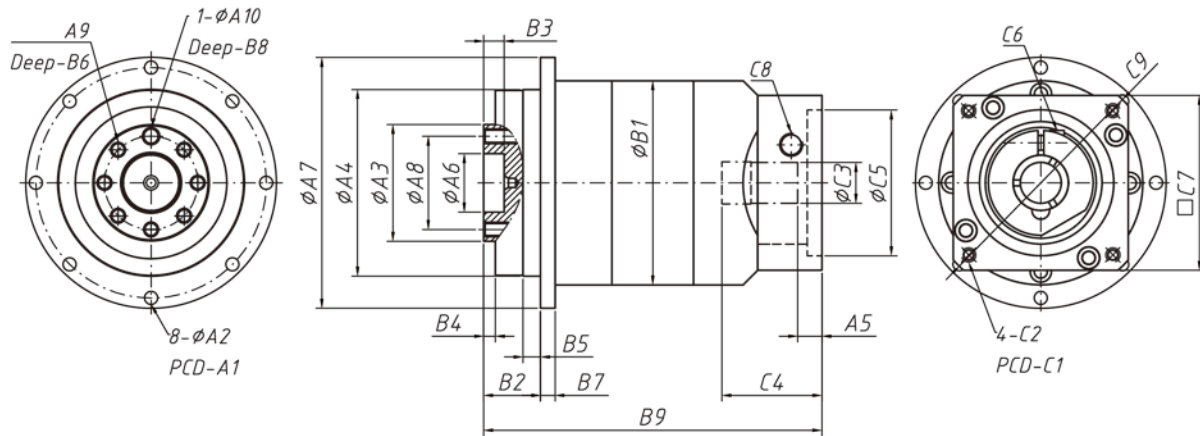


Unit: mm

Model Code	47	64	90	110	140	200
A1	67	79	109	135	168	233
A2	3.4	4.5	5.5	5.5	6.6	12-9.0
A3	28	40	63	80	100	160
A4	47	64	90	110	140	200
A5	6	6	7.5	22.5	11	12
A6	12	20	31.5	40	50	80
A7	72	86	118	146	179	248
A8	20	31.5	50	63	80	125
A9	4-M3 x P0.5	7-M5 x P0.8	7-M6 x P1.0	11-M6 x P1.0	11-M8 x P1.25	11-M10 x P1.5
A10	3	5	6	6	8	10
B1	59	70	98	125	156	212
B2	19.5	19.5	30	29	44	50
B3	5	7	12	12	12	16
B4	3	4	6	6	6	8
B5	5	6	10	10	15	15
B6	6.5	13	18	18	24	24
B7	4	5	7	8	10	12
B8	4	7	8	10	10	10
B9	71.3	88	106	149	175	228.5
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 P.05	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	M8 x P1.25	M8 x P1.25	M12 x P1.75	M16 x P2.0	M16 x P2.0	M16 x P2.0
C9	φ 56	φ 80	φ 116	φ 160	φ 189	φ 240

PSQ SERIES

2-Stage (Ratio:20~100)

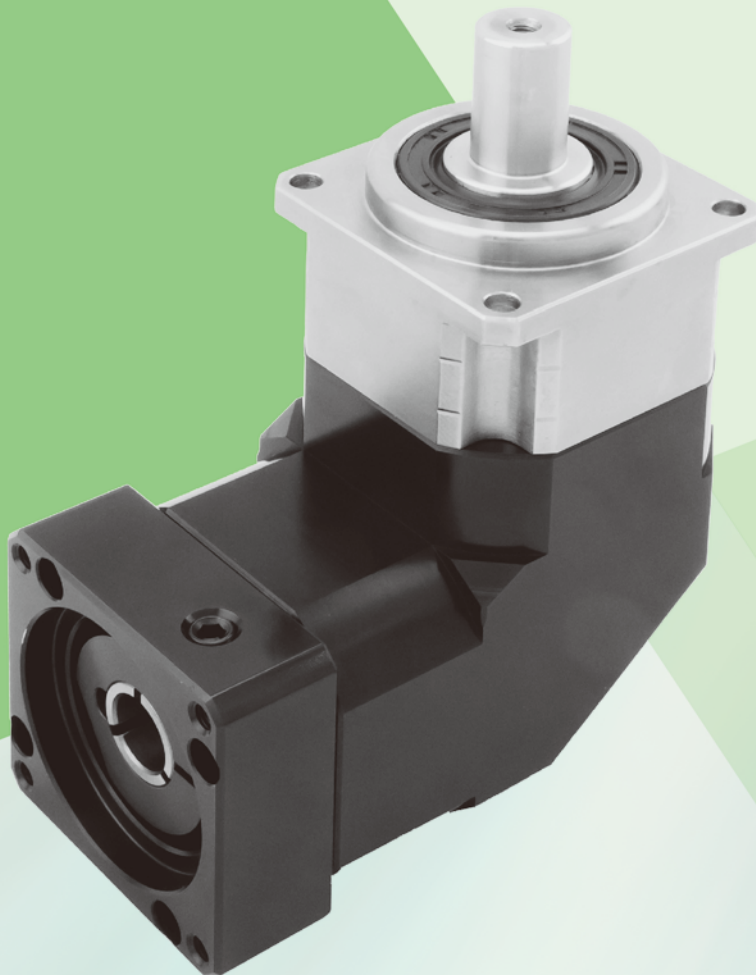


Unit: mm

Model	47	64	90	110	140	200
Code						
A1	67	79	109	135	168	233
A2	3.4	4.5	5.5	5.5	6.6	12-9.0
A3	28	40	63	80	100	160
A4	47	64	90	110	140	200
A5	6	6	7.5	22.5	11	12
A6	12	20	31.5	40	50	80
A7	72	86	118	146	179	248
A8	20	31.5	50	63	80	125
A9	4-M3 x P0.5	7-M5 x P0.8	7-M6 x P1.0	11-M6 x P1.0	11-M8 x P1.25	11-M10 x P1.5
A10	3	5	6	6	8	10
B1	59	70	98	125	156	212
B2	19.5	19.5	30	29	44	50
B3	5	7	12	12	12	16
B4	3	4	6	6	6	8
B5	5	6	10	10	15	15
B6	6.5	13	18	18	24	24
B7	4	5	7	8	10	12
B8	4	7	8	10	10	10
B9	97.3	116	146	197	236	318.5
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 P.05	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	M8 x P1.25	M8 x P1.25	M12 x P1.75	M16 x P2.0	M16 x P2.0	M16 x P2.0
C9	∅ 56	∅ 80	∅ 116	∅ 160	∅ 189	∅ 240

PSR SERIES

**HIGH PRECISION
PLANETARY REDUCER**



PSR 減速機性能資料 Reducer Performance Information

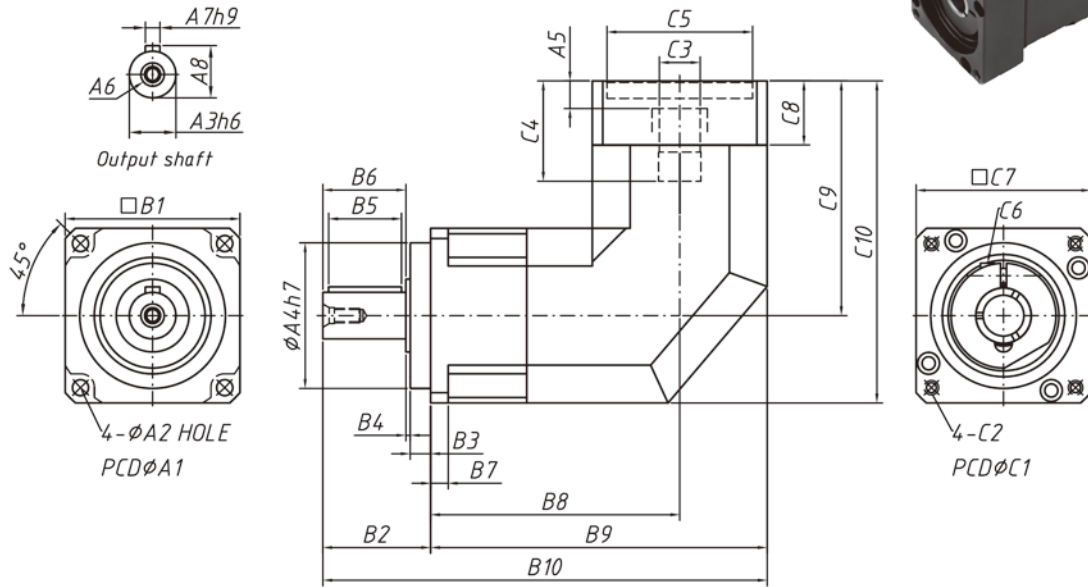
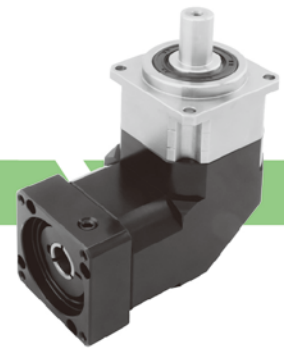
規格 Model No.	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142
額定輸出扭矩 T_{2N} Reted Output Torque	Nm	L1	3	10	38	95	203	352
			4	13	50	125	268	530
			5	16	62	155	333	660
			6	19	57	155	318	610
			7	20	52	145	308	560
			8	18	47	125	268	510
			9	15	42	105	238	460
			10	15	62	155	333	660
			14	15	44	145	308	560
		20	15	42	105	238	460	
		25	16	62	155	333	660	
		30	21	57	155	318	610	
		35	20	52	145	308	560	
		40	18	47	125	268	510	
		50	15	62	105	238	660	
		60	21	57	155	318	610	
		70	20	52	145	308	560	
		80	18	47	125	268	510	
		90	15	42	105	238	460	
100	15	42	105	238	460			
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
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
超精密背隙 1 Backlash 1	arcmin	L1	3 ~ 20	≤ 2				
		L2	25 ~ 100	≤ 4				
精密背隙 3 Backlash 3	arcmin	L1	3 ~ 20	≤ 4				
		L2	25 ~ 100	≤ 7				
精密背隙 5 Backlash 5	arcmin	L1	3 ~ 20	≤ 6				
		L2	25 ~ 100	≤ 9				
標準背隙 7 Backlash 7	arcmin	L1	3 ~ 20	≤ 8				
		L2	25 ~ 100	≤ 12				
最大加速扭矩 T_{2B} Max. Acceleration Torque	Nm	L1/L2	3 ~ 100	1.8倍額定輸出扭矩 1.8 Times of nominal output torque				
最大輸出(急停)扭矩 T_{2NOI} Max. Output (Emergency Stop)Torque	Nm	L1/L2	3 ~ 100	3倍額定輸出扭矩 3 Times of nominal output torque				
扭轉剛性 Torsional Rigidity	Nm/arcmin	L1/L2	3 ~ 100	3	7	14	25	50
容許徑向力 F_{2B} Max. Radial Force	N	L1/L2	3 ~ 100	780	1,530	3,250	6,700	9,400
容許軸向力 F_{2aB} Max. Axial Force	N	L1/L2	3 ~ 100	390	765	1,625	3,350	4,700
使用壽命 Service Life	hr	L1/L2	3 ~ 100	S5週期運轉 > 20,000 hrs(S1連續運轉 > 10,000 hrs) S5 Cycle Operation > 20,000 hrs (S1 Continuous Operation > 10,000 hrs)				
使用溫度 Operation Temperature	°C	L1/L2	3 ~ 100	-25°C ~ 90°C				
效率 η Efficiency	%	L1	3 ~ 20	≤ 95				
		L2	25 ~ 100	≤ 92				
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	≤ 61	≤ 63	≤ 65	≤ 68	≤ 70
		L2	25 ~ 100	≤ 61	≤ 63	≤ 65	≤ 68	≤ 70
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 ~ 20	1	2.3	6.6	13.2	24.5
		L2	25 ~ 100	1.2	3	8.2	14.2	27.5

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
轉動慣量 J_1	kg.cm ²	L1	3	0.09	0.35	2.25	6.84	23.4
			4	0.09	0.35	2.25	6.84	23.4
			5	0.09	0.35	2.25	6.84	23.4
			6	0.09	0.35	2.25	6.84	23.4
			7	0.09	0.35	2.25	6.84	23.4
			8	0.09	0.35	2.25	6.84	23.4
			9	0.09	0.35	2.25	6.84	23.4
			10	0.09	0.35	2.25	6.84	23.4
			14	0.09	0.07	1.87	6.25	21.8
		20	0.09	0.07	1.87	6.25	21.8	
		25	0.09	0.09	0.35	2.25	6.84	
		30	0.09	0.09	0.35	2.25	6.84	
		35	0.09	0.09	0.35	2.25	6.84	
		40	0.09	0.09	0.35	2.25	6.84	
		50	0.09	0.09	0.35	2.25	6.84	
		60	0.09	0.09	0.35	2.25	6.84	
		70	0.09	0.09	0.35	2.25	6.84	
		80	0.09	0.09	0.35	2.25	6.84	
		90	0.09	0.09	0.35	2.25	6.84	
100	0.09	0.09	0.35	2.25	6.84			

PSR SERIES

1-Stage (Ratio:3~10)

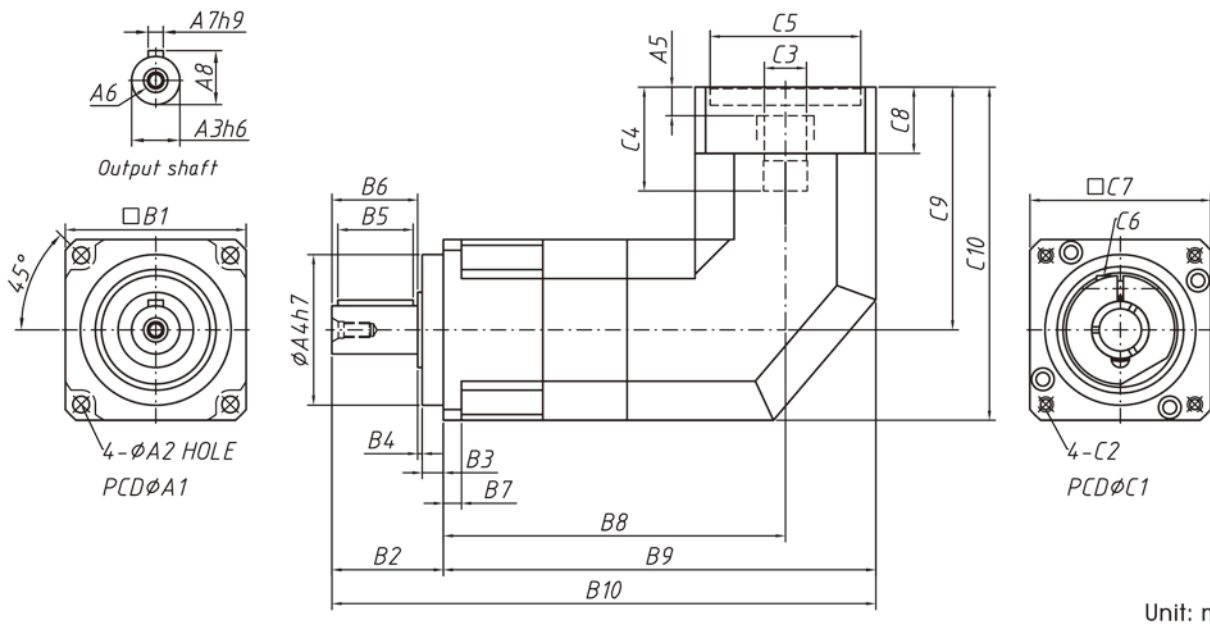


Unit: mm

Model	42	60	90	115	142
Code					
A1	50	70	100	130	165
A2	3.5	5.5	6.5	8.5	10.5
A3	13	16	22	32	40
A4	35	50	80	110	130
A5	6.14	6.47	7.5	19.1	11
A6	M4 x P0.7	M5 x P0.8	M8 x P1.25	M12 x P1.75	M16 x P2.0
A7	5	5	6	10	12
A8	15	18	24.5	35	43
B1	42.6	60	90	115	142
B2	26	37	48	65	97
B3	5.5	7	10	12	15
B4	1.6	1.5	1.5	2	3
B5	15	25	30	40	63
B6	18.9	28.5	36.5	51	79
B7	4	6	8	10	12
B8	76	85.5	122.1	140	178
B9	97.3	115.5	167.1	197.5	249
B10	123.3	152.5	215.1	262.5	346
C1	46	70	90	145	165
C2	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
C3	8				
C4	26	34	53	78	74
C5	30	50	70	110	130
C6	M3 x P0.5	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
C7	42.6	60	90	130	142
C8	20	22	25.5	45	35
C9	61	80.6	106.35	144.2	151
C10	82.3	110.6	151.35	201.7	222

PSR SERIES

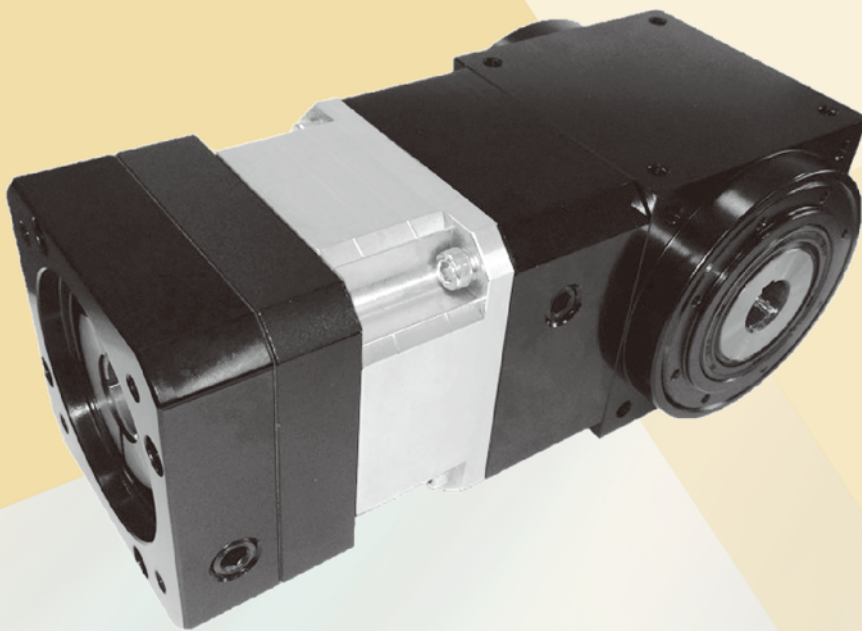
2-Stage (Ratio: 15~100)



Model	42	60	90	115	142
Code					
A1	50	70	100	130	165
A2	3.5	5.5	6.5	8.5	10.5
A3	13	16	22	32	40
A4	35	50	80	110	130
A5	6	6	7.5	19	11
A6	M4 x P0.7	M5 x P0.8	M8 x P1.25	M12 x P1.75	M16 x P2.0
A7	5	5	6	10	12
A8	15	18	24.5	35	43
B1	42.6	60	90	115	142
B2	26	37	48	65	97
B3	5.5	7	10	12	15
B4	1.6	1.5	1.5	2	3
B5	15	25	30	40	63
B6	18.9	28.5	36.5	51	79
B7	4	6	8	10	12
B8	102	113.5	162.1	188	239
B9	123.3	143.5	207.1	245.5	310
B10	149.3	180.5	255.1	310.5	407
C1	46	70	90	145	165
C2	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
C3	8	14	19	24	35
C4	26	34	53	78	74
C5	30	50	70	110	130
C6	M3 x P0.5	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
C7	42.6	60	90	130	142
C8	20	22	25.5	45	35
C9	61	80.6	106.35	144.2	151
C10	82.3	110.6	151.35	201.7	222

PST SERIES

**HIGH PRECISION
PLANETARY REDUCER**



PST 減速機性能資料 Reducer Performance Information

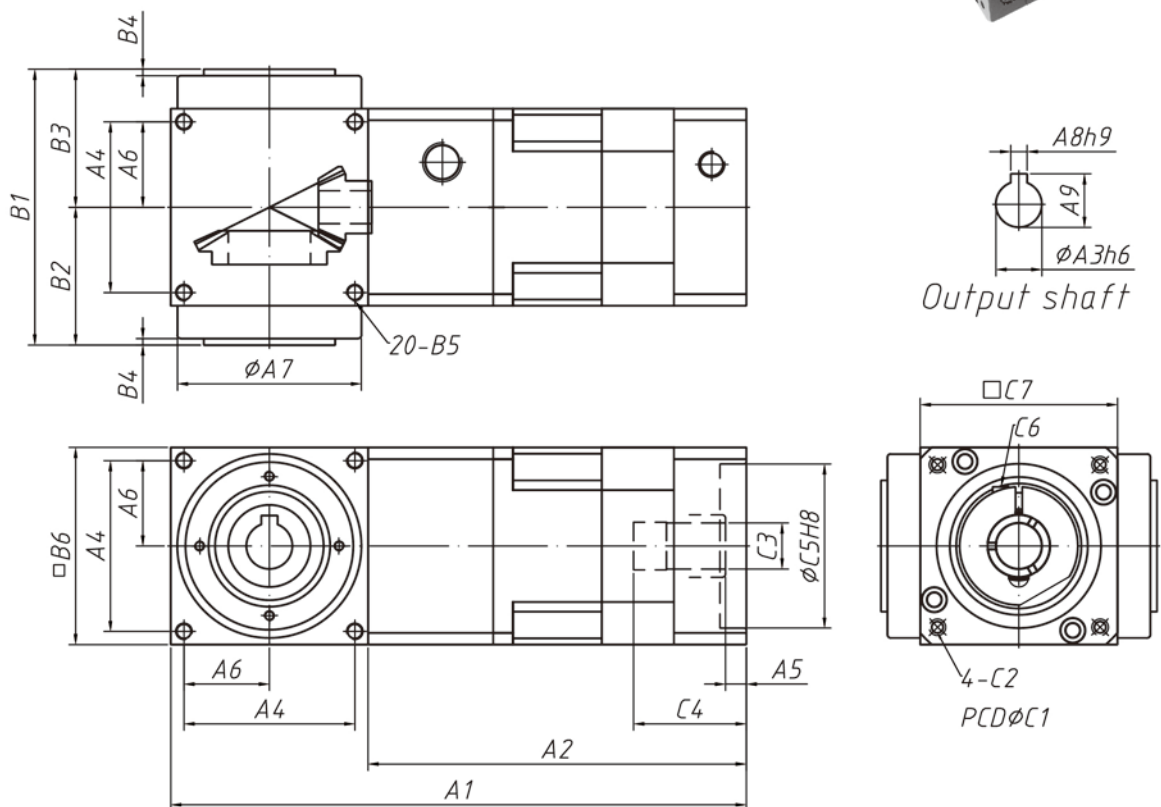
規格 Model No.	單位 Unit	節數 Stage	減速比 Ratio	60	90	115	142
額定輸出扭矩 T_{2N} Rated Output Torque	Nm	L1	3	25	78	150	360
			4	25	78	150	360
			5	25	78	150	360
			10	24	68	150	330
			20	24	68	150	330
		L2	15	25	78	150	360
			25	25	78	150	360
			30	24	68	150	330
			40	24	68	150	330
			50	25	78	150	360
最大輸入轉速 n_{1B} Max. Input Speed	rpm	L1/L2	3 ~ 50	6,000	6,000	6,000	6,000
額定輸入轉速 n_{1N} Rated Input Speed	rpm	L1/L2	3 ~ 50	3,000	3,000	3,000	3,000
超精密背隙 1 Backlash 1	arcmin	L1	3 ~ 20	≤ 4			
		L2	15 ~ 50	≤ 6			
精密背隙 3 Backlash 3	arcmin	L1	3 ~ 20	≤ 7			
		L2	15 ~ 50	≤ 9			
精密背隙 5 Backlash 5	arcmin	L1	3 ~ 20	≤ 10			
		L2	15 ~ 50	≤ 12			
最大加速扭矩 T_{2B} Max. Acceleration Torque	Nm	L1/L2	3 ~ 50	1.5倍額定輸出扭矩 1.5 Times of nominal output torque			
最大輸出(急停)扭矩 T_{2NOI} Max. Output (Emergency Stop) Torque	Nm	L1/L2	3 ~ 50	3倍額定輸出扭矩 3 Times of nominal output torque			
容許徑向力 F_{2B} Max. Radial Force	N	L1/L2	3 ~ 50	600	1,000	2,000	3,000
容許軸向力 F_{2aB} Max. Axial Force	N	L1/L2	3 ~ 50	300	500	1,000	1,500
使用壽命 Service Life	hr	L1/L2	3 ~ 50	S5週期運轉 > 20,000 hrs (S1連續運轉 > 10,000 hrs) S5 Cycle Operation > 20,000 hrs (S1 Continuous Operation > 10,000 hrs)			
使用溫度 Operation Temperature	°C	L1/L2	3 ~ 50	-25°C ~ 90°C			
效率 η Efficiency	%	L1	3 ~ 20	≤ 94			
		L2	15 ~ 50	≤ 90			
潤滑 Lubrication		L1/L2	3 ~ 50	合成潤滑油脂 Synthetic Lubrication Grease			
噪音值 Noise Level	dB	L1	3 ~ 20	≤ 68	≤ 73	≤ 74	≤ 75
		L2	15 ~ 50	≤ 71	≤ 76	≤ 77	≤ 78

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	60	90	115	142
轉動慣量 J_1	kg.cm ²	L1	3	0.05	0.18	0.41	0.56
			4	0.05	0.18	0.41	0.56
			5	0.05	0.18	0.41	0.56
			10	0.05	0.18	0.41	0.56
			20	0.05	0.18	0.41	0.56
		L2	15	0.05	0.18	0.41	0.56
			25	0.05	0.18	0.41	0.56
			30	0.05	0.16	0.38	0.53
			40	0.05	0.16	0.38	0.53
			50	0.05	0.16	0.38	0.53

PST SERIES

1-Stage (Ratio:1 ~ 10)

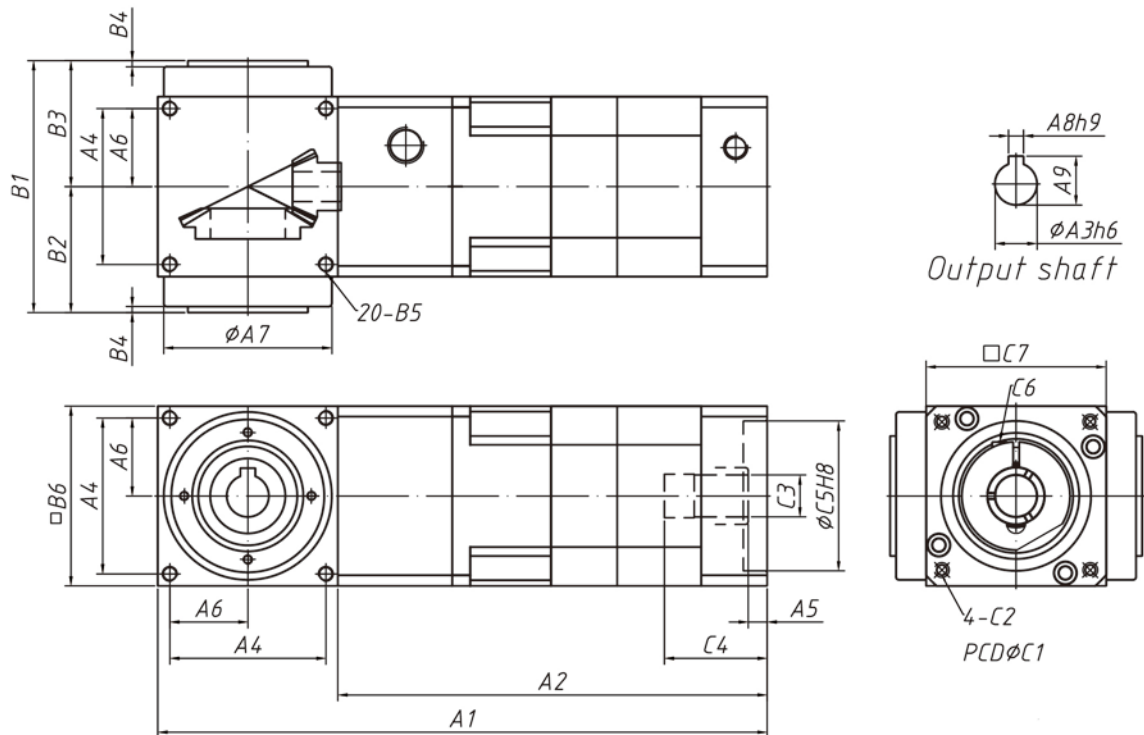


Unit: mm

Model	60	90	115	142
Code				
A1	175.1	225.8	310.5	385
A2	115.1	135.8	195.5	243
A3	14	18	22	32
A4	52	72	88	110
A5	6	7.5	22.5	11.9
A6	26	36	44	55
A7	62	88	106	135
A8	5	6	8	10
A9	16.3	20.8	25.3	35.3
B1	84	118	144	174
B2	42	59	72	87
B3	42	59	72	87
B4	2	2	2	2
B5	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
B6	60	90	115	142
C1	70	90	145	165
C2	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
C3	14, 19	19, 24	24, 28	35, 42
C4	34	43	67.5	69
C5	50	70	110	130
C6	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
C7	60	90	130	142

PST SERIES

2-Stage (Ratio:15~50)



Unit: mm

Model	60	90	115	142
Code				
A1	203.1	265.8	358.5	446
A2	143.1	175.8	243.5	304
A3	14	18	22	32
A4	52	72	88	110
A5	6	7.5	22.5	11.9
A6	26	36	44	55
A7	62	88	106	135
A8	5	6	8	10
A9	16.3	20.8	25.3	35.3
B1	84	118	144	174
B2	42	59	72	87
B3	42	59	72	87
B4	2	2	2	2
B5	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
B6	60	90	115	142
C1	70	90	145	165
C2	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
C3	14, 19	19, 24	24, 28	35, 42
C4	34	43	67.5	69
C5	50	70	110	130
C6	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
C7	60	90	130	142

PPG 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.



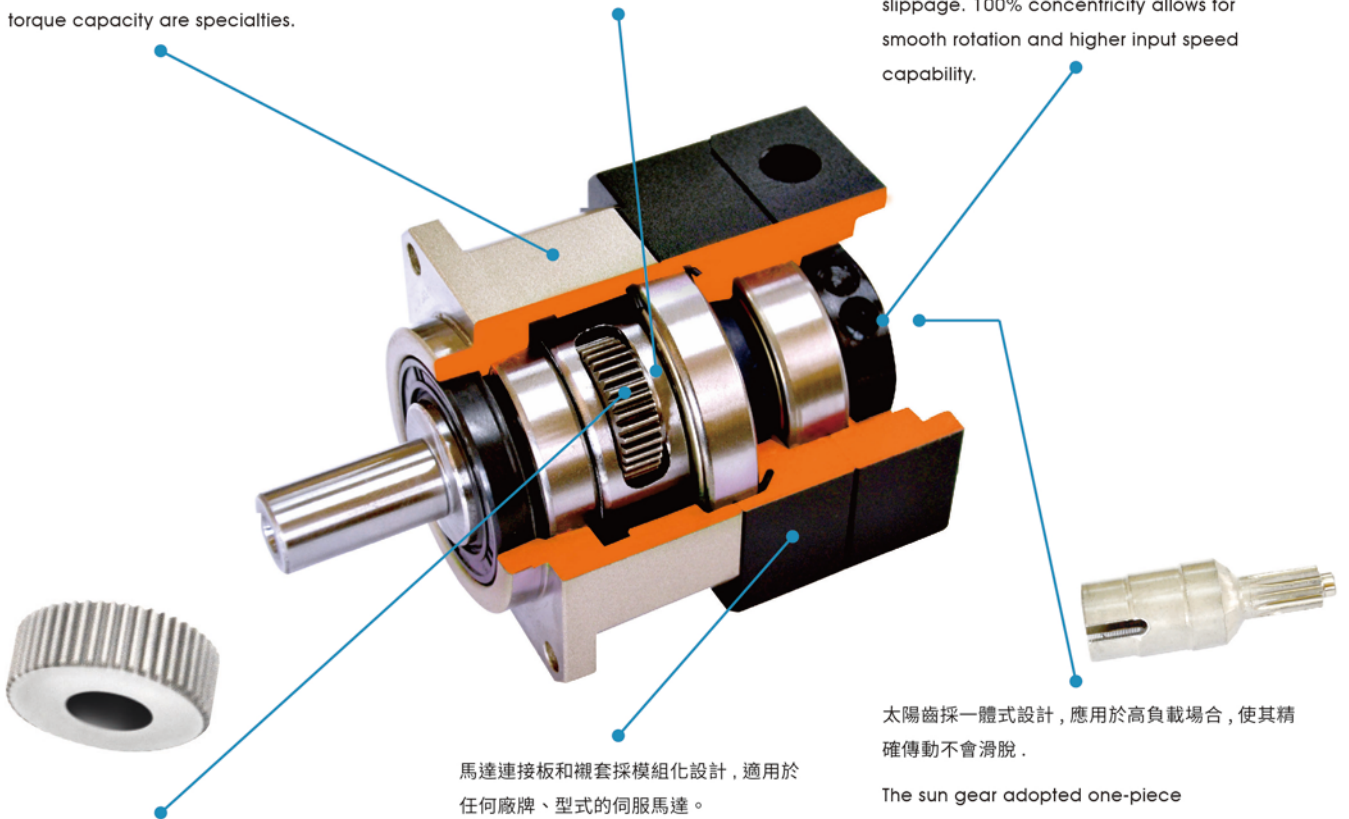
行星臂架與輸出軸採一體式的設計結構，確保最大耐扭力剛性及穩定性。

Integrated design of planet carrier and torque stiffness and stability. output shaft ensures the maximum



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。

Triple split collet with dynamic balanced set collar clamping system provides backlash free power transmission and eliminate slippage. 100% concentricity allows for smooth rotation and higher input speed capability.



齒輪材質選用鉻鎢鈹合金鋼，經調質熱處理至基材硬度 HRC 25 度，在利用氣體氮化方式將齒輪表面硬度提昇至 600HV，以得最佳的耐磨耗及耐衝擊韌性。

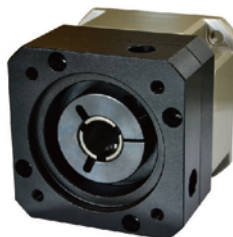
Gear box and internal ring gear are integrated designed diameter maximized, high precision and high torque capacity are specialties.

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 servo motors.

太陽齒採一體式設計，應用於高負載場合，使其精確傳動不會滑脫。

The sun gear adopted one-piece design, integrate with all components perfectly. It's for heavy duty and high speed load application. Acts with accurate transmission without slippage and escape.



PPG 減速機性能資料 Reducer Performance Information

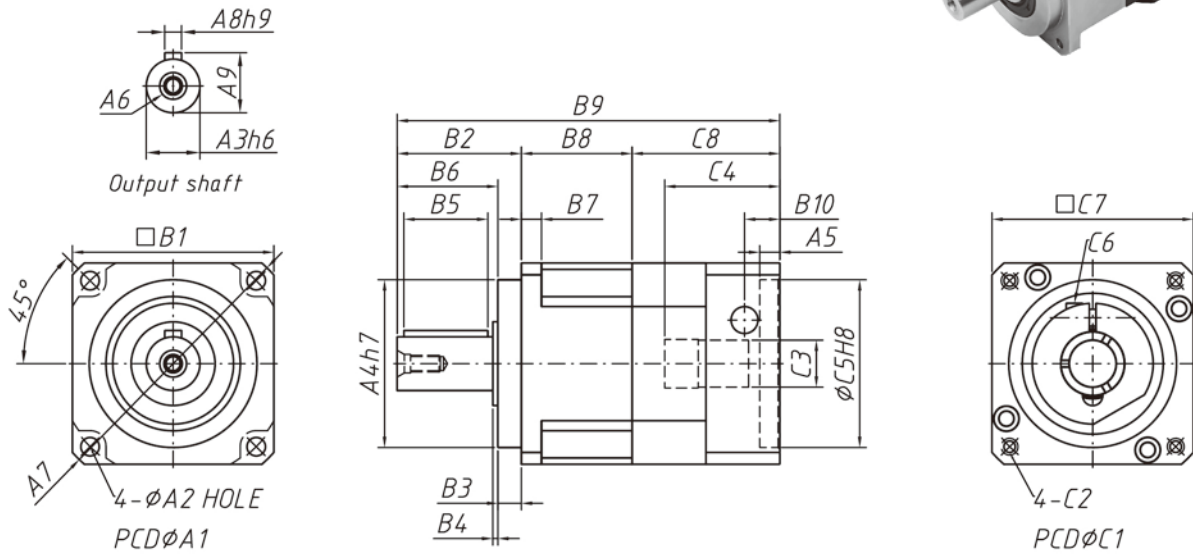
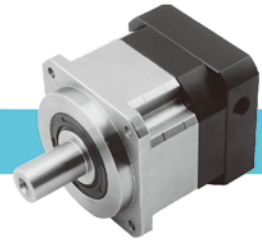
規格 Model No.	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142	180	220
額定輸出扭矩 T_{2N} Rated Output Torque	Nm	L1	3	18	52	130	276	492	955	1440
			4	16	47	116	246	436	875	1320
			5	15	44	109	231	411	850	1290
			7	14	41	103	216	383	805	1200
			10	13	39	97	206	366	775	1160
		L2	15	18	52	130	276	492	955	1440
			20	16	47	116	246	436	875	1320
			25	15	44	109	231	411	850	1290
			30	18	52	130	276	492	955	1440
			35	14	41	103	216	383	805	1200
			40	16	47	116	246	436	875	1320
			50	15	44	109	231	411	850	1290
			70	14	41	103	216	383	805	1200
			100	13	39	97	206	366	775	1160
最大輸入轉速 n_{1B} Max. Input Speed	rpm	L1/L2	3 ~ 100	5,000	5,000	5,000	5,000	5,000	3,000	3,000
額定輸入轉速 n_{1N} Rated Input Speed	rpm	L1/L2	3 ~ 100	3,000	3,000	3,000	3,000	3,000	2,000	2,000
標準背隙 7 Backlash 7	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倍額定輸出扭矩 1.8 Times of nominal output torque						
最大輸出(急停)扭矩 T_{2NO1} Max. Output (Emergency Stop) Torque	Nm	L1/L2	3 ~ 100	3倍額定輸出扭矩 3 Times of nominal output torque						
扭轉剛性 Torsional Rigidity	Nm/arcmin	L1/L2	3 ~ 100	2.3	5	15	45	69	140	220
容許徑向力 F_{2B} Max. Radial Force	N	L1/L2	3 ~ 100	750	1,180	3,000	6,500	9,100	11,150	35,000
容許軸向力 F_{2aB} Max. Axial Force	N	L1/L2	3 ~ 100	325	590	1,500	3,250	4,550	5,575	17,500
使用壽命 Service Life	hr	L1/L2	3 ~ 100	S5週期運轉 > 20,000 hrs (S1連續運轉 > 10,000 hrs) S5 Cycle Operation > 20,000 hrs (S1 Continuous Operation > 10,000 hrs)						
使用溫度 Operation Temperature	°C	L1/L2	3 ~ 100	-25°C ~ 90°C						
效率 η 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	≤ 62	≤ 62	≤ 65	≤ 68	≤ 70	≤ 70	≤ 70
		L2	15 ~ 100	≤ 65	≤ 65	≤ 68	≤ 70	≤ 72	≤ 72	≤ 72
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	54
		L2	15 ~ 100	0.8	1.8	5.2	11.2	22.5	48	75

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	220
轉動慣量 J_1	kg.cm ²	L1	3	0.04	0.14	0.61	3.25	8.75	24.63	50.67
			4	0.04	0.13	0.48	2.74	7.16	20.12	46.21
			5	0.04	0.11	0.47	2.74	6.84	19.8	45.28
			7	0.04	0.11	0.44	2.58	6.78	19.21	43.32
			10	0.04	0.11	0.44	2.57	6.68	19.13	42.98
		L2	15	0.04	0.14	0.61	3.25	8.75	24.63	50.67
			20	0.04	0.13	0.48	2.74	7.16	20.12	46.21
			25	0.04	0.11	0.47	2.74	6.84	19.8	45.28
			30	0.04	0.14	0.61	3.25	8.75	24.63	50.67
			35	0.04	0.11	0.44	2.58	6.78	19.21	43.32
			40	0.04	0.11	0.48	2.74	7.16	20.12	46.21
			50	0.04	0.11	0.47	2.74	6.84	19.8	45.28
			70	0.04	0.11	0.44	2.58	6.78	19.21	43.32
			100	0.04	0.11	0.44	2.57	6.68	19.13	42.98

PPG SERIES

1-Stage (Ratio:3~10)

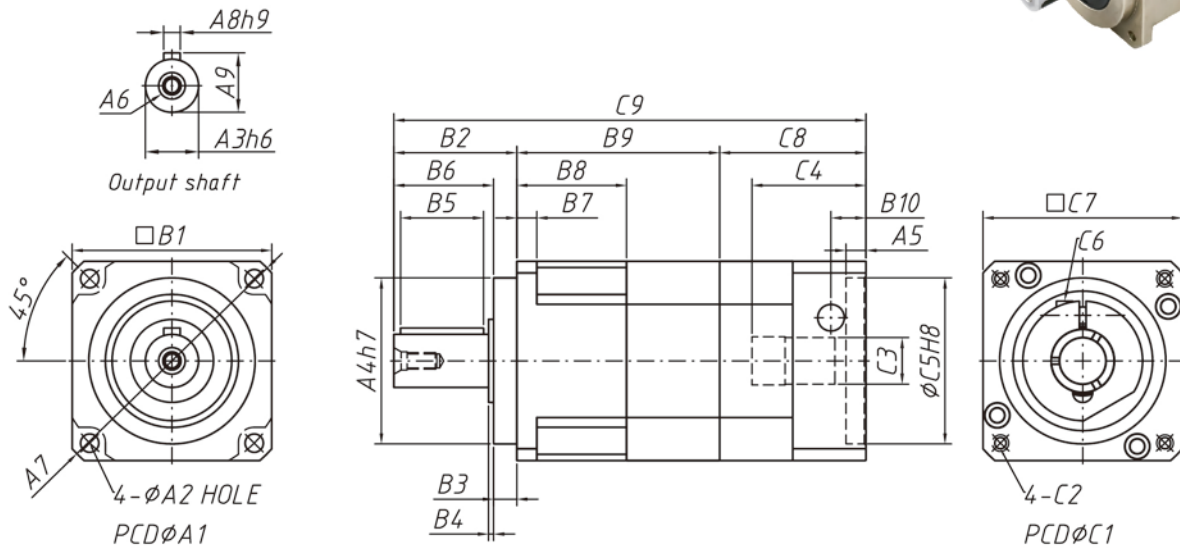


Unit: mm

Model Code	42	60	90	115	142	180	220
A1	50	70	100	130	165	215	250
A2	3.5	5.5	6.5	8.5	10.5	13.5	17
A3	13	16	22	32	40	55	75
A4	35	50	80	110	130	160	180
A5	6	6	7.5	22.5	11	12	35
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	M20 x P2.5
A7	56	80	116	148	185	240	292
A8	5	5	6	10	12	16	20
A9	15	18	24.5	35	43	60	79.5
B1	42.6	60	90	115	142	180	220
B2	26	37	48	65	97	104.5	150
B3	5.5	7	10	12	15	20	30
B4	1.6	1.5	1.5	2	3	2.5	15
B5	15	25	30	40	63	70	90
B6	20.5	30	38	53	82	84.5	120
B7	4	6	8	10	12	16	20
B8	28.3	33	43	54	72	87.5	97.4
B9	88.65	114	138	190	251	292	384.4
B10	11	13.5	14	15	23	27.5	45
C1	46	70	90	145	165	200	265
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	M14 x P2.0
C3	8	14, 19	19, 24	24, 28	35, 42	42	55
C4	26	34	43	67.5	68	72.5	121
C5	30	50	70	110	130	114.3	230
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	M12 x P1.75
C7	42.6	60	90	130	142	180	250
C8	34.35	44	47	71	82	100	144

PPG SERIES

2-Stage (Ratio:15~100)

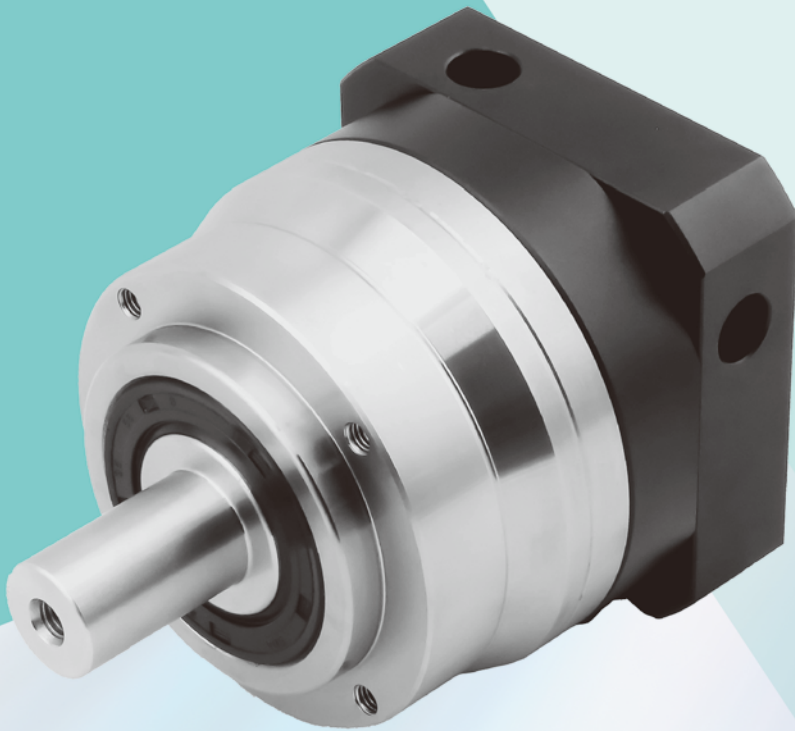


Unit: mm

Model Code	42	60	90	115	142	180	220
A1	50	70	100	130	165	215	250
A2	3.5	5.5	6.5	8.5	10.5	13.5	17
A3	13	16	22	32	40	55	75
A4	35	50	80	110	130	160	180
A5	6	6	7.5	22.5	11	12	35
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	M20 x P2.5
A7	56	80	116	148	185	240	292
A8	5	5	6	10	12	16	20
A9	15	18	24.5	35	43	60	79.5
B1	42.6	60	90	115	142	180	220
B2	26	37	48	65	97	104.5	150
B3	5.5	7	10	12	15	20	30
B4	1.6	1.5	1.5	2	3	2.5	15
B5	15	25	30	40	63	70	90
B6	20.5	30	38	53	82	84.5	120
B7	4	6	8	10	12	16	20
B8	28.3	33	43	54	72	87.5	97.4
B9	54.3	61	83	102	123	177.5	211.4
B10	11	13.5	14	15	23	27.5	45
C1	46	70	90	145	165	200	265
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	M14 x P2.0
C3	8	14, 19	19, 24	24, 28	35, 42	42	55
C4	26	34	43	67.5	68	72.5	121
C5	30	50	70	110	130	114.3	230
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	M12 x P1.75
C7	42.6	60	90	130	142	180	250
C8	34.35	44	47	71	82	100	144
C9	114.65	142	178	238	312	382	505.4

PPE SERIES

**HIGH PRECISION
PLANETARY REDUCER**



PPE 減速機性能資料 Reducer Performance Information

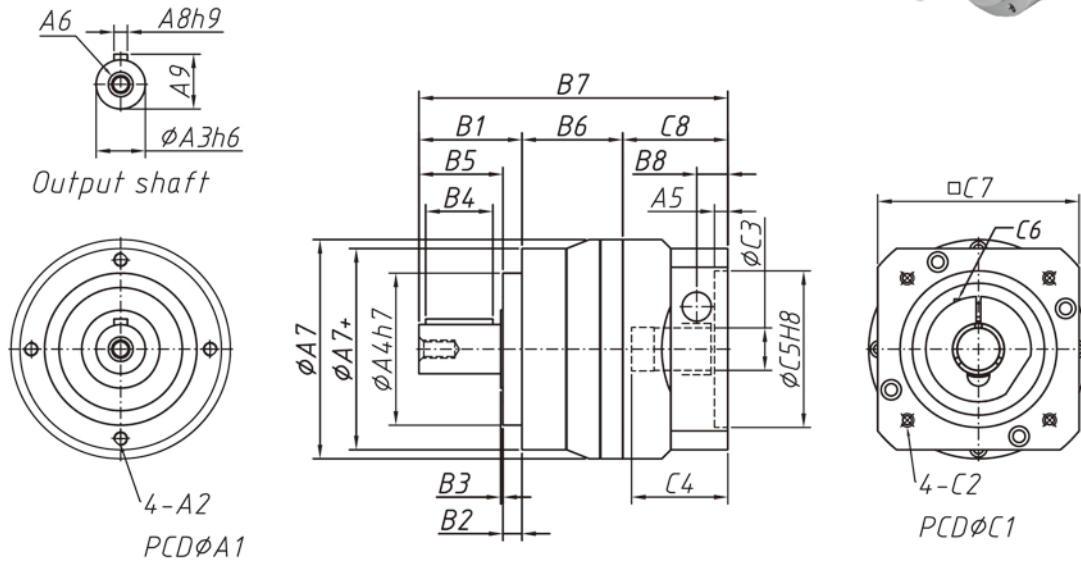
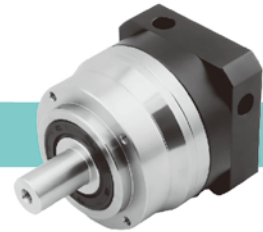
規格 Model No.	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142	180
額定輸出扭矩 T_{2N} Rated Output Torque	Nm	L1	3	17	44	115	225	440	955
			4	17	44	118	231	450	875
			5	16	42	123	228	445	850
			7	13	37	101	206	376	805
			10	11	29	73	163	305	775
		L2	15	16	42	114	221	434	955
			20	17	44	121	238	464	875
			25	16	42	128	236	460	850
			30	16	42	113	220	432	955
			35	13	37	105	214	392	805
			40	17	45	122	240	469	875
			50	16	42	128	236	460	850
			70	13	37	105	214	392	805
			100	11	29	75	170	318	775
最大輸入轉速 n_{1B} Max. Input Speed	rpm	L1/L2	3 ~ 100	8,000	6,000	6,000	4,800	3,600	3,000
額定輸入轉速 n_{1N} Rated Input Speed	rpm	L1/L2	3 ~ 100	4,500	4,000	3,600	3,600	2,500	2,000
標準背隙 7 Backlash 7	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倍額定輸出扭矩 1.8 Times of nominal output torque					
最大輸出(急停)扭矩 T_{2NO1} Max. Output (Emergency Stop) Torque	Nm	L1/L2	3 ~ 100	3倍額定輸出扭矩 3 Times of nominal output torque					
扭轉剛性 Torsional Rigidity	Nm/arcmin	L1/L2	3 ~ 100	3	7	14	25	50	140
容許徑向力 F_{2B} Max. Radial Force	N	L1/L2	3 ~ 100	810	1,150	1,530	3,260	4,550	11,150
容許軸向力 F_{2aB} Max. Axial Force	N	L1/L2	3 ~ 100	405	575	765	1,630	2,275	5,575
使用壽命 Service Life	hr	L1/L2	3 ~ 100	S5週期運轉 > 20,000 hrs (S1連續運轉 > 10,000 hrs) S5 Cycle Operation > 20,000 hrs (S1 Continuous Operation > 10,000 hrs)					
使用溫度 Operation Temperature	°C	L1/L2	3 ~ 100	-25°C ~ 90°C					
效率 η 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	≤ 60	≤ 62	≤ 64	≤ 66	≤ 68	≤ 70
		L2	15 ~ 100	≤ 60	≤ 62	≤ 64	≤ 66	≤ 68	≤ 72
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	0.6	1.4	3.3	6.9	13	38
		L2	15 ~ 100	0.9	1.6	4.7	8.7	17	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 ²	L1	3	0.04	0.14	0.61	3.25	8.75	24.63
			4	0.04	0.13	0.48	2.74	7.16	20.12
			5	0.04	0.11	0.47	2.74	6.84	19.8
			7	0.04	0.11	0.44	2.58	6.78	19.21
			10	0.04	0.11	0.44	2.57	6.68	19.13
		L2	15	0.04	0.14	0.61	3.25	8.75	24.63
			20	0.04	0.13	0.48	2.74	7.16	20.12
			25	0.04	0.11	0.47	2.74	6.84	19.8
			30	0.04	0.14	0.61	3.25	8.75	24.63
			35	0.04	0.11	0.44	2.58	6.78	19.21
			40	0.04	0.11	0.48	2.74	7.16	20.12
			50	0.04	0.11	0.47	2.74	6.84	19.8
			70	0.04	0.11	0.44	2.58	6.78	19.21
			100	0.04	0.11	0.44	2.57	6.68	19.13

PPE SERIES

1-Stage (Ratio:3~10)

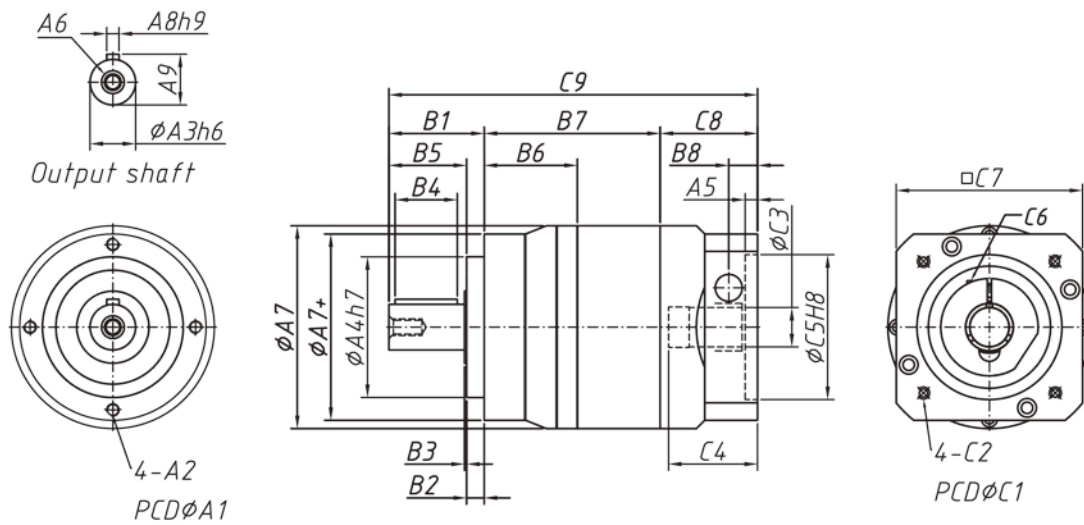


Unit: mm

Model Code	42	60	90	115	142	180
A1	44	62	80	108	140	184
A2	M4 x P0.7	M5 x P0.8	M6 x P1.0	M6 x P1.0	M10 x P1.25	M12 x P1.75
A3	13	16	22	32	40	55
A4	35	52	68	90	120	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	59	70	98	125	156	212
A7+	50	70	90	120	156	205
A8	5	5	6	10	12	16
A9	15	18	24.5	35	43	59
B1	24.5	36.5	46	70	97	99.5
B2	4	6.5	8.5	17	15	15
B3	1.6	1.5	1	2	3	2.5
B4	15	25	30	40	63	70
B5	20.5	30	37.5	53	82	84.5
B6	28.3	33.5	45	49	72	87.5
B7	114.8	114	138	190	251	283
B8	11	10.5	14	30	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	34.1	43	67.5	68.1	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	34.5	44	47	71	82	91

PPE SERIES

2-Stage (Ratio:15~100)



Unit: mm

Model Code	42	60	90	115	142	180
A1	44	62	80	108	140	184
A2	M4 x P0.7	M5 x P0.8	M6 x P1.0	M6 x P1.0	M10 x P1.5	M12 x P1.75
A3	13	16	22	32	40	55
A4	35	52	68	90	120	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	59	70	98	125	156	212
A7+	50	70	90	120	156	205
A8	5	5	6	10	12	16
A9	15	18	24.5	35	43	59
B1	24.5	36.5	46	70	97	99.5
B2	4	6.5	8.5	17	15	15
B3	1.6	1.5	1	2	3	2.5
B4	15	25	30	40	63	70
B5	20.5	30	37.5	53	82	84.5
B6	28.3	33.5	45	49	72	87.5
B7	54.3	61.5	85	97	133	177.5
B8	11	10.5	14	30	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	34.1	43	67.5	68.1	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	34.5	44	47	71	82	91
C9	114.8	142	178	238	312	373

轉動慣量 **Mass Moments of Inertia**

規格 Specifications	節數 Stage	減速比 Ratio	42	60	90	115	142	180
轉動慣量 J (kg.Cm ²)	1	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	0.44	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	0.14	0.46	2.63	7.3
		20	0.03	0.03	0.14	0.46	2.63	7.3
	2	25	0.03	0.03	0.14	0.46	2.63	7.1
		30	0.03	0.03	0.14	0.46	2.43	7.1
		35	0.03	0.03	0.14	0.44	2.43	7.1
		40	0.03	0.03	0.14	0.44	2.43	7.1
		50	0.03	0.03	0.14	0.44	2.43	6.92
		60	0.03	0.03	0.14	0.43	2.39	6.92
		70	0.03	0.03	0.14	0.43	2.39	6.72
		80	0.03	0.03	0.14	0.43	2.39	6.72
		90	0.03	0.03	0.14	0.40	2.39	6.72
		100	0.03	0.03	0.14	0.40	2.39	6.72

1. 減速比 Ratio ($i=N_{in}/N_{out}$)
2. 最大加速扭矩 $T_{2B}=60\%$ of T_{2NOT}
Max. Acceleration Input Speed $T_{2B}=60\%$ of T_{2NOT}
3. 輸出轉速 100 rpm 時，作用於輸出軸中心位置
Apply to the output shaft center at 100 rpm
4. 連續運轉，使用壽命為 10,000 小時
10,000 hrs service life under consecutive operation

減速機選用參考表 **Reducer Selectable (by Power of Servo-motor)**

PSG、PSE、PPG、PPE 1-Stage 單段

馬達功率 Power	型號 Model	42	60	90	115	142	180
100 W		●	●				
200 W		●	●				
400 W			●	●			
750 W				●	●		
1 KW					●	●	
1.5 KW					●	●	
2.2 KW					●	●	
3.75KW					●	●	
5.5 KW						●	●
7.5 KW						●	●
11 KW							●
15 KW							●
22 KW							●
30 KW							●

PSG、PSE、PPG、PPE 2-Stage 雙段

馬達功率 Power	型號 Model	42	60	90	115	142	180
100 W		●	●				
200 W		●	●				
400 W			●	●			
750 W				●	●		
1 KW				●	●	●	
1.5 KW				●	●	●	
2.2 KW					●	●	
3.75KW					●	●	
5.5 KW						●	●
7.5 KW						●	●
11 KW							●
15 KW							●
22 KW							●
30 KW							●

※ 以上表格僅供參考，選用時仍需以額定輸出扭矩為依據

This table is for reference only, Shall be selected based on rated output torque.

馬達迫緊螺絲建議扭力表

The Tightening Torque of Motor Mounting Bolt Recommend Sheet

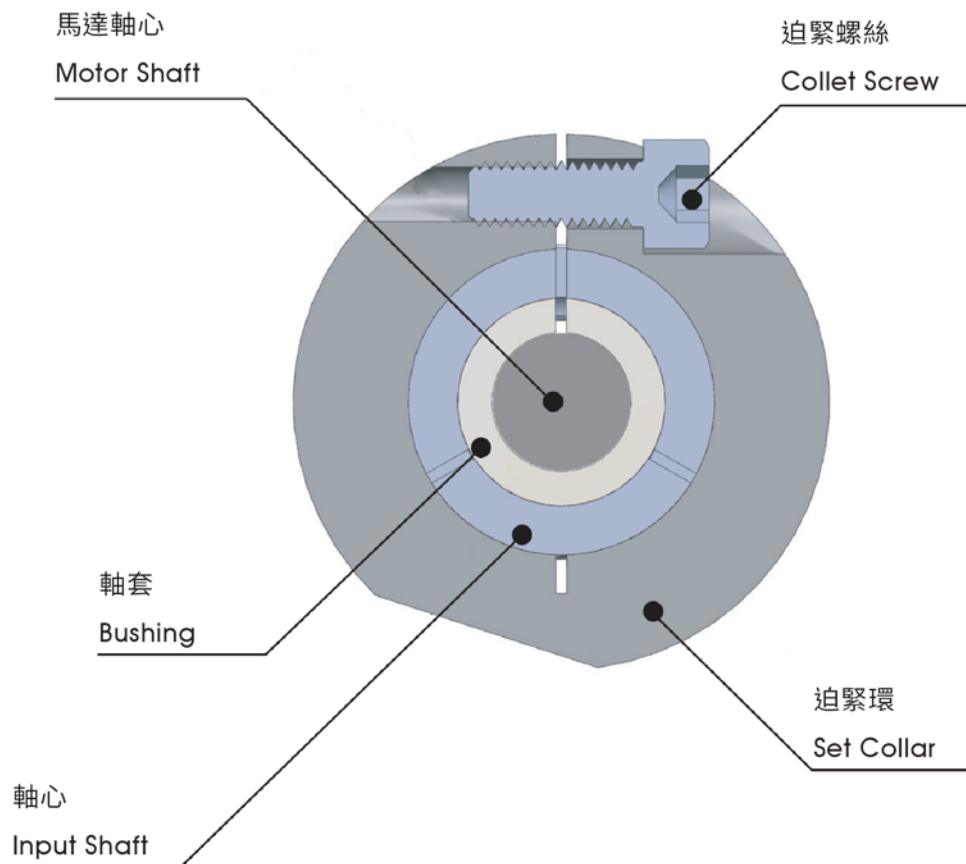
型號 Model PSG、PSE、PSR PST、PPG、PPE	迫緊螺絲規格 Bolt Size	螺絲強度 Strength of Bolt	鎖緊扭力值 Tightening Torque (Nm)
042、047	M3 * P0.5	12.9	2.1
060、064	M5 * P0.8	12.9	9.8
090	M6 * P1.0	12.9	17
110、115	M8 * P1.25	12.9	41
140、142	M10 * P1.5	12.9	80
180	M12 * P1.75	12.9	139
220	M12 * P1.75	12.9	139

※ 當馬達的扭矩過大時，有可能會造成螺絲打滑

When the torque of motor was over clenched torque , it will be cause bolt slip

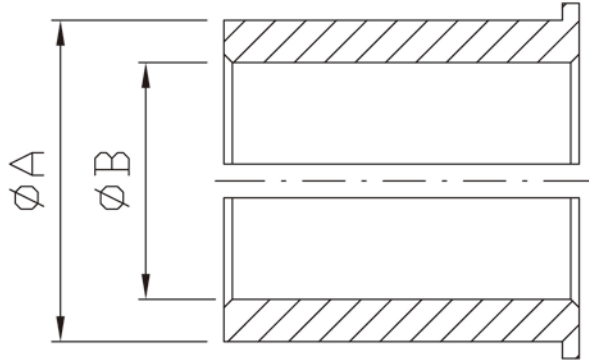
※ 若有必要時，請適當增加上述鎖緊扭力值的 20%，以防止打滑現象發生

If necessary please increase the tightening torque 20% to prevent bolt slip



軸套 Bushing

軸套內徑為所使用伺服馬達的輸入軸軸徑



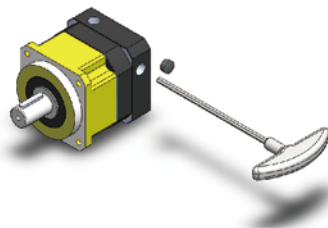
軸套孔徑 ϕB Bushing Bore	8	11	14	19	22	24	28	35	38	42	48	60
5	●											
6	●	●	●									
6.35	●		●									
8		●	●									
9		●	●									
10			●	●								
11			●	●								
12			●	●								
12.7			●	●								
14				●		●						
16				●		●	●					
19					●	●	●					
22						●	●	●				
24							●	●				
28								●		●		
32								●	●			
35									●	●		
38										●		
42											●	
48												●
55												●

台灣工機行星減速機與馬達安裝指南

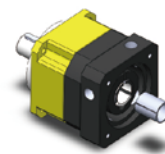
Planetary Gearbox and Motor Mounting Instructions



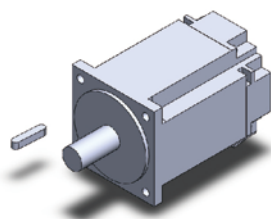
1. 確認行星減速機及馬達規格，並將安裝面用乾淨的布擦拭乾淨。
Double check the motor and gearbox size, then clean the mounting surface.



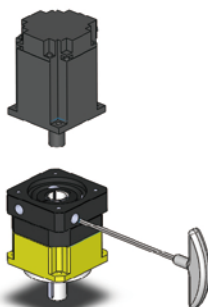
2. 用六角板手將塞頭栓螺絲取下，並旋轉內部迫緊環，使迫緊螺絲對正孔位以利安裝。
Remove the plug on the adapter plate, then rotate the set collar till the bolt is line up.



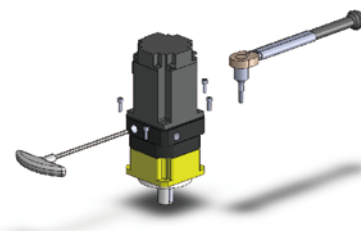
3. 部份型號於出廠前已配好軸套，如有必要請檢查軸套是否掉落或是被移除。
Check motor shaft size and insert bushing if necessary.



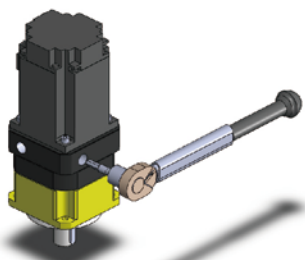
4. 將馬達上的鍵取下，如有必要請另行安裝平衡鍵。
Remove the key of motor, insert the balance key if necessary.



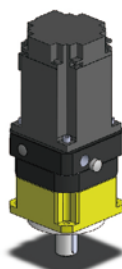
5. 以直立的方式安裝馬達，並注意迫緊環是否偏位影響安裝。
Set at vertical position, and make sure set collar at correct position.



6. 使用扭力板手將四支固定螺絲對角對稱上緊，鎖緊扭力請依馬達廠商建議值。
Tighten the mounting bolts in 1 ~ 4 order with torque wrench.



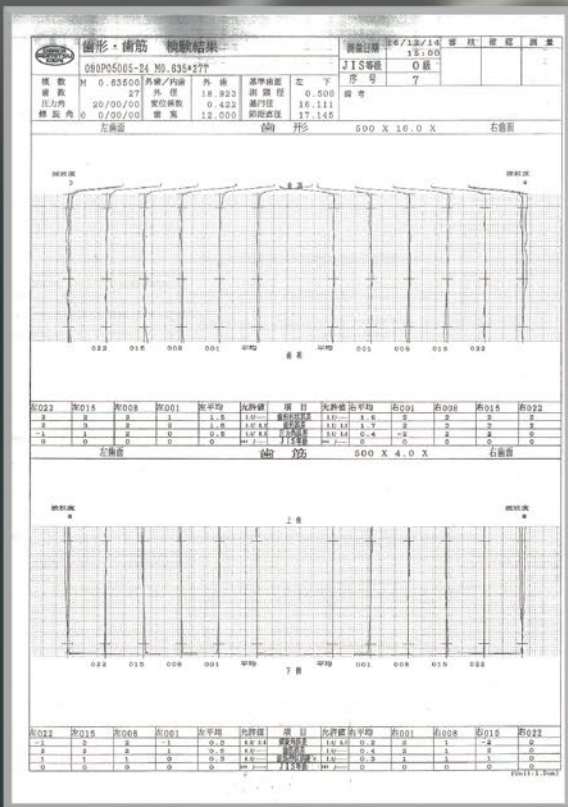
7. 參考迫緊螺絲扭力建議表，鎖緊迫緊環的固定螺絲。
Tighten the set collar bolt with torque wrench to specified torque. (see recommend table)



8. 最後再將埋栓螺絲裝回。
Tighten back the screw plug.

品質檢驗設備 High Precision QC Inspection Equipment

背隙檢驗設備 Backlash Inspection Equipment



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