

SPT[®]

FOR
SERVO MOTOR
REDUCER



SPT[®] SONG PIN
松品科技有限公司
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www.spt.tw

AG Design 04-27071169

精 | 密 | 行 | 星 | 減 | 速 | 機
PLANETARY REDUCER

ABOUT SPT[®]

PLANETARY REDUCER



公司簡介 COMPANY PROFILE

SPT行星式減速機以高品質與專業研發、客製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。

The SPT 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.

高精密加工&品質檢測

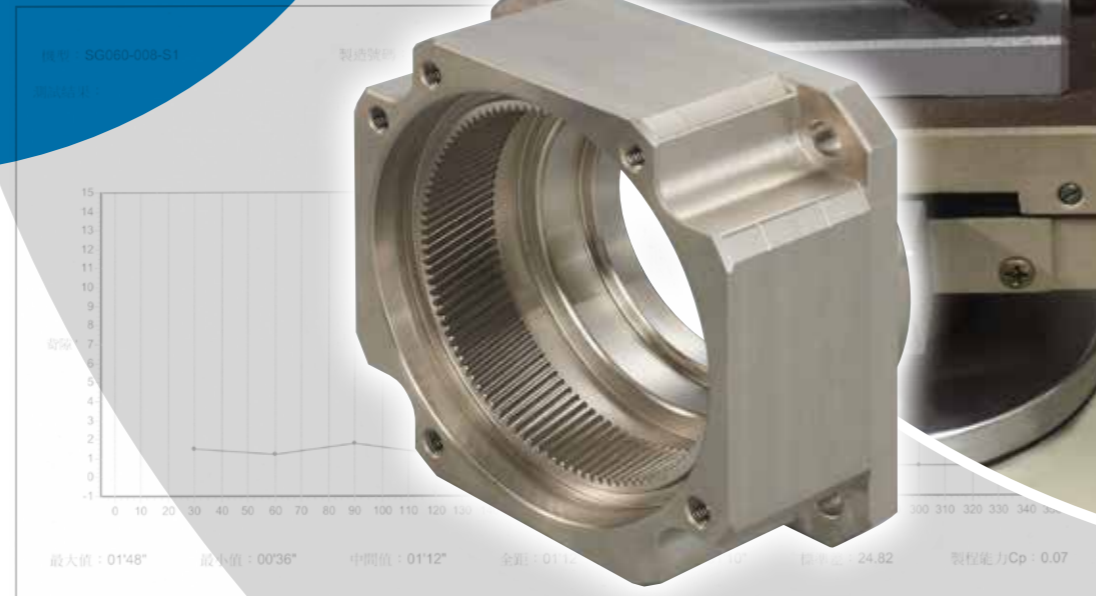
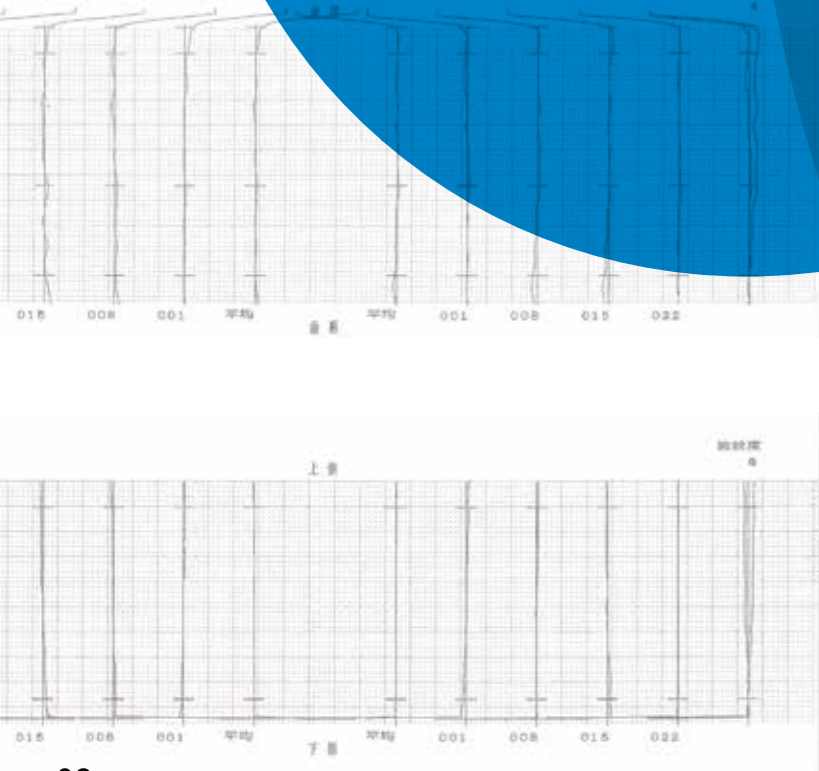
HIGH PRECISION MACHINING & QUALITY INSPECTION

SPT從日本和美國等先進工業國家引進了最新的自動化精密生產設備，用於製造高精度行星減速機。

SPT實施全體品保及貫徹5S、TPM、TPS和TQM品質管理制度，提升零件精度及品質穩定。

SPT introduced the latest automated precision production equipments from advanced industrial countries such as Japan and the USA for manufacturing of high precision.

SPT implements overall quality assurance and 5S, TPM, TPS and TQM quality management systems to achieve the goal of supreme quality and zero defect.



應用產業
INDUSTRIAL APPLICATION

伺服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。

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.

Automated Machinery

Precision Testing

Machine Tools

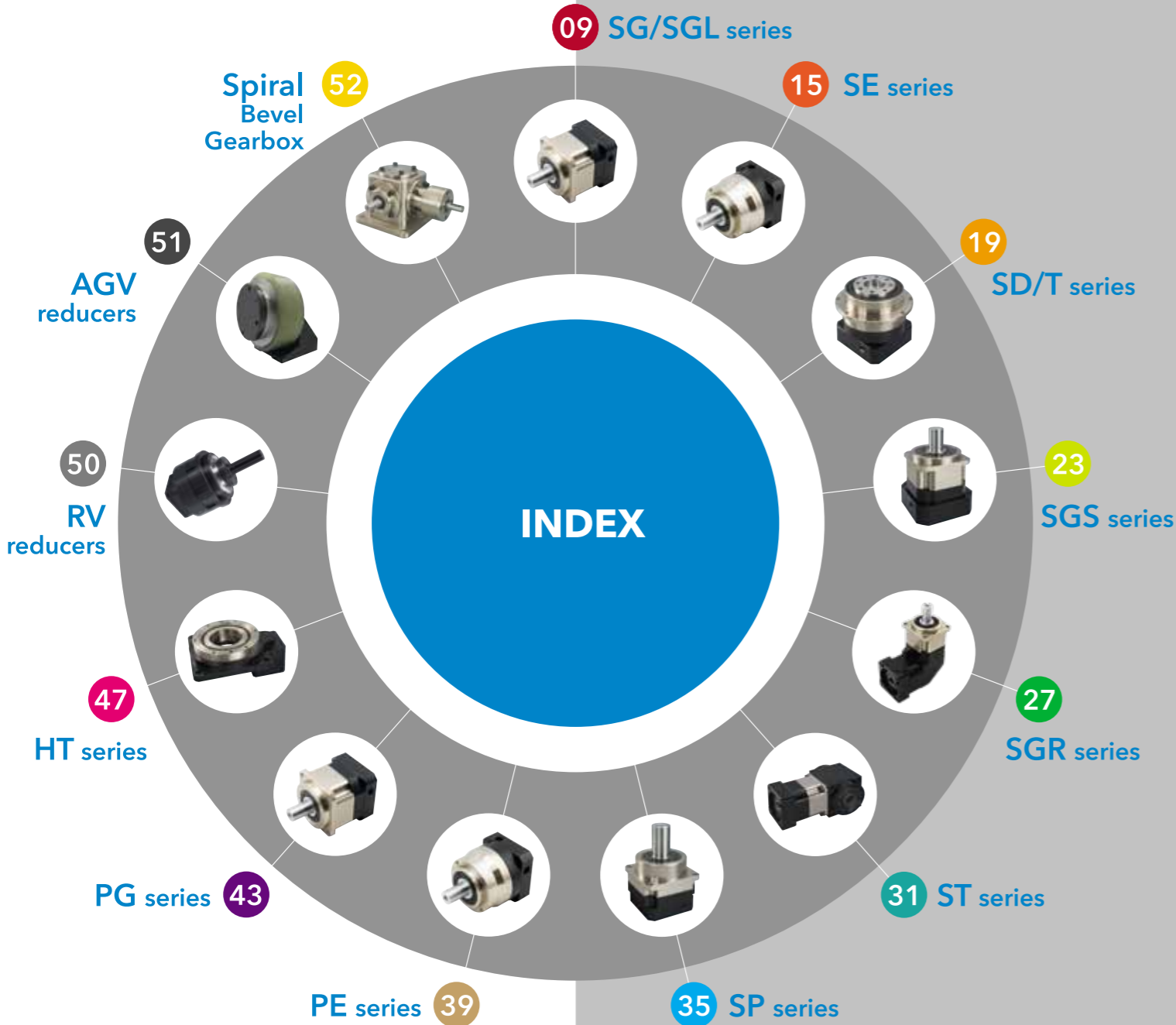
Aerospace

Industrial Robots

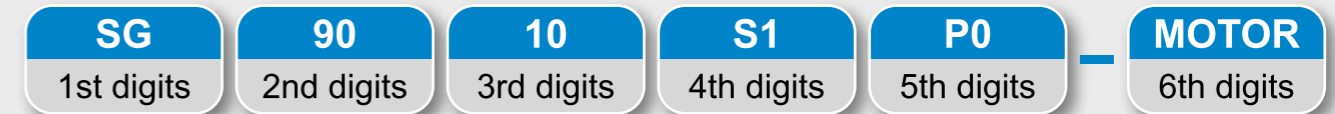
Medical Testing

Semiconductors





機種型號標示 INDICATION OF MODEL NUMBERS



1st+2nd digits 減速機型及型號 / TYPE & Model	3rd digits 減速比 / Ratio
SG 042 / 060 / 090 / 115 / 142 / 180	單段 1-STAGE 3 ~ 10
SGL 042 / 060 / 090 / 115 / 142 / 180	雙段 2-STAGE 15 ~ 100
SE 042 / 060 / 090 / 115 / 142 / 180	
SD/T 047 / 064 / 090 / 110 / 140 / 200	4rd digits 出力軸鍵槽 / Output Shaft keyway
SGS 042 / 060 / 090 / 115 / 142 / 180	S1標準品 (有鍵槽) Standard (Keyway)
SGR 042 / 060 / 090 / 115 / 142 / 180	S2實心軸 (無鍵槽) Solid Output (No keyway)
ST 060 / 090 / 115 / 142	5rd digits 背隙等級 / Backlash Class
SP 060 / 075 / 100 / 115 / 140 / 160 / 180	SGL / SE / PG 標準背隙 Standard Backlash
PE 042 / 060 / 090 / 115 / 142 / 180	SG / SD / SGS PS 超精密背隙 Ultra high Precision Backlash
PG 042 / 060 / 090 / 115 / 142 / 180 / 220	SGR / ST / SP P0 高精密背隙 High Precision Backlash
HT 062 / 085 / 130 / 200	P1 精密背隙 Precision Backlash
	P2 標準背隙 Standard Backlash
	6rd digits 馬達型號 / Motor Type

Motor Brand & Model NO. 型號

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，功率750W，額定輸出扭矩2.39Nm，馬達軸心為Ø19MM。

1. 假設減速比為1/50時：

輸出扭矩 $2.39\text{Nm} \times 50 \times 94\%$ (效率) = 112.3Nm

*可選擇SG-90-50 (額定輸出扭矩165Nm)

S.F. (安全系數) = 1.4

*亦可選擇SG-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 $2.39 \times 100 \times 94\%$ (效率) = 224Nm

可選用SG-115-100 (額定輸出扭矩238Nm) S.F. = 1.0

選用SG-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 750kW, rated output torque 2.39Nm, motor shaft Ø19mm.

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

Output torque is $2.39\text{Nm} \times 50 \times 94\%$ (efficiency) = 112.3Nm

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

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

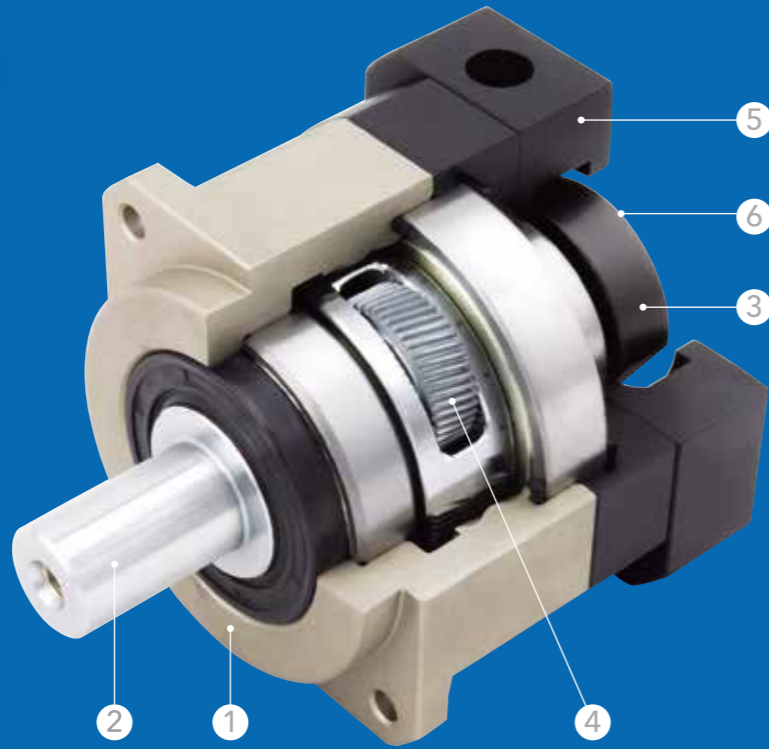
2. Suppose the speed reduction ratio is 1/100:

Output torque is $2.39 \times 100 \times 94\%$ (efficiency) = 224Nm.

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

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

SG series



產品特點 PRODUCT FEATURES

<p>1</p>  <p>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。</p> <p>Gear box and internal ring gear are integrated designed, diameter maximized, high precision and high torque capacity are specialties.</p>	<p>2</p>  <p>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。</p> <p>Integrated design of planet carrier and output shaft ensures the maximum torque stiffness and stability.</p>
<p>3</p>  <p>輸入端與馬達的连接機構，採用筒夾式的鎖緊經動力平衡分析，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。</p> <p>Riple split collet with dynamic balanced set collar clamping system provides backlash free power transmission and eliminates slippage. 100% concentricity allows for smooth rotation and higher input speed capability.</p>	<p>4</p>  <p>齒輪材質選用鉻鉬釩合金鋼，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，以獲得最佳的耐磨耗及耐衝擊韌性。</p> <p>To gain the best abrasion performance and impact resistance, Chromium Molybdenum Vanadium Alloy steel is selected a raw material. Accompany with quenching and tempering heat treatment process, the core hardness is increased to 25HRC. Accompany with plasma nitriding heat treatment process, the surface hardness is increased to 600HV.</p>
<p>5</p>  <p>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。</p> <p>Motor adapter and bushing module are modularized designed, which applied to types of servomotors.</p>	<p>6</p>  <p>減速機結構採螺旋齒輪設計，齒型齒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。</p> <p>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.</p>

減速機性能資料 REDUCER PERFORMANCE INFORMATION

規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142	180
額定輸出力矩 Rated Output Torque	T _{2N}	Nm	L1	3	21	57	160	333	620	1,200
				4	20	52	145	298	552	1,065
				5	23	62	158	338	615	1,215
				6	21	57	155	318	610	1,115
				7	20	52	145	308	580	1,115
				8	18	47	140	288	555	1,060
				9	15	42	143	270	520	980
				10	15	42	138	285	548	1,050
				15	21	57	160	330	620	2,000
				20	20	52	145	298	552	1,800
			25	23	62	156	338	615	1,980	
			30	21	57	155	318	610	1,900	
			35	20	52	145	308	560	1,850	
			40	18	47	140	290	550	1,821	
			50	23	62	165	338	610	1,980	
			60	21	57	155	318	570	1,900	
			70	20	52	145	308	560	1,850	
			80	18	47	141	290	548	1,821	
			90	15	42	144	270	510	1,650	
			100	15	42	138	288	540	1,700	
最大輸入轉速 Max. Input Speed	n _{1B}	rpm	L1 / L2	3~100	10,000	10,000	8,000	8,000	6,000	6,000
額定輸入轉速 Rated Input Speed	n _{1N}	rpm	L1 / L2	3~100	5,000	5,000	4,000	4,000	3,000	3,000
超精密背隙 PS Backlash PS	-	arcmin	L1	3~10	≤1					
			L2	15~100	≤3					
高精密背隙 P0 Backlash P0	-	arcmin	L1	3~10	≤3					
			L2	15~100	≤5					
精密背隙 P1 Backlash P1	-	arcmin	L1	3~10	≤5					
			L2	15~100	≤7					
最大加速扭矩 Max. Acceleration Torque	T _{2B}	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 Max. Output(Emergency Stop) Torque	T _{2NOT}	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 Max. Radial Force	F _{2rB}	N	L1 / L2	3~100	780	1,530	3,250	6,700	9,400	14,500
容許軸向力 Max. Axial Force	F _{2aB}	N	L1 / L2	3~100	390	765	1,625	3,350	4,700	7,750
使用壽命 Service Life	hr	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 Efficiency	η	%	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	30
			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.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142	180
轉動慣量 Moment of Inertia	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
				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	



SGL series High Precision Planetary Reducer

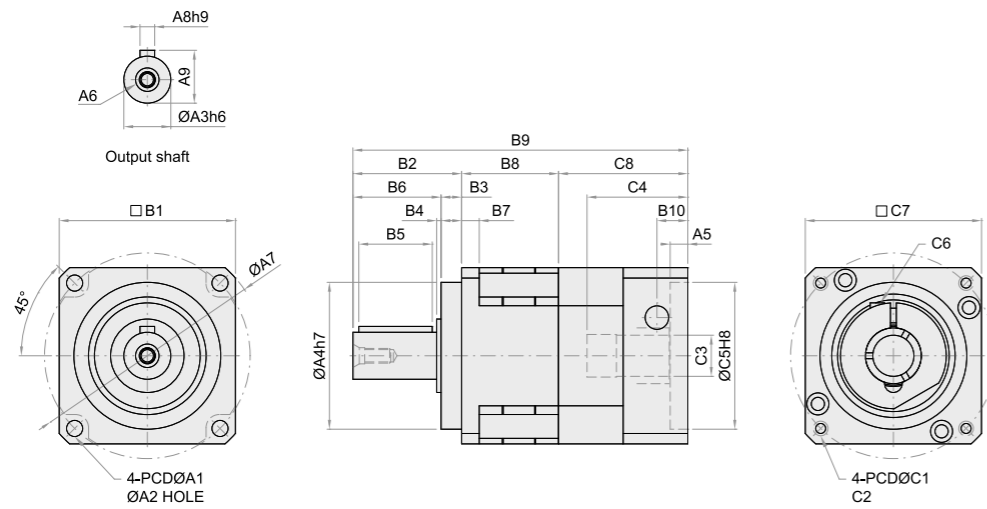
減速機性能資料 REDUCER PERFORMANCE INFORMATION

規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142	180	
額定輸出力矩 Rated Output Torque	T _{2N}	Nm	L1	3	21	57	160	333	620	1,200	
				4	20	52	145	298	552	1,065	
				5	23	62	158	338	615	1,215	
				6	21	57	155	318	610	1,115	
				7	20	52	145	308	580	1,115	
				8	18	47	140	288	555	1,060	
				9	15	42	143	270	520	980	
				10	15	42	138	285	548	1,050	
				L2	15	21	57	160	330	620	2,000
					20	20	52	145	298	552	1,800
			25		23	62	156	338	615	1,980	
			30		21	57	155	318	610	1,900	
			35		20	52	145	308	560	1,850	
			40		18	47	140	290	550	1,821	
			50		23	62	165	338	610	1,980	
			60		21	57	155	318	570	1,900	
			70		20	52	145	308	560	1,850	
			80	18	47	141	290	548	1,821		
			90	15	42	144	270	510	1,650		
100	15	42	138	288	540	1,700					
最大輸入轉速 Max. Input Speed	n _{1B}	rpm	L1 / L2	3~100	10,000	10,000	8,000	8,000	6,000	6,000	
額定輸入轉速 Rated Input Speed	n _{1N}	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 Max. Acceleration Torque	T _{2B}	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 Max. Output(Emergency Stop) Torque	T _{2NOT}	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 Max. Radial Force	F _{2rB}	N	L1 / L2	3~100	780	1,530	3,250	6,700	9,400	14,500	
容許軸向力 Max. Axial Force	F _{2aB}	N	L1 / L2	3~100	390	765	1,625	3,350	4,700	7,750	
使用壽命 Service Life	hr	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 Efficiency	η	%	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	30	
			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

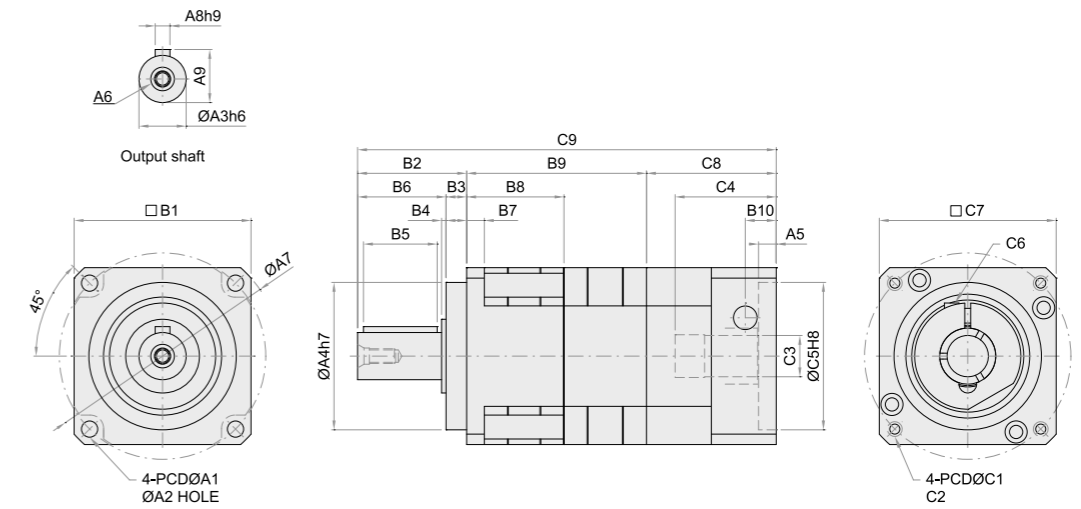
規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142	180	
轉動慣量 Moment of Inertia	J ₁	kg.cm ²	L1	3	0.03	0.16	0.61	3.25	9.21	28.98	
				4	0.03	0.14	0.48	2.74	7.54	23.67	
				5	0.03	0.13	0.47	2.71	7.42	23.29	
				6	0.03	0.13	0.45	2.65	7.25	22.75	
				7	0.03	0.13	0.45	2.62	7.14	22.48	
				8	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		

MODEL: SG / SGL SERIES L1-Stage (Ratio: 3~10)



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	6	7	7	8	10
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	59	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	60	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	391.4
B10		11	10.5	14	30	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 35	35 42	42	55
C4		26.15	34.3	43	68.2	68.1	81.5	116
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

MODEL: SG / SGL SERIES L2-Stage (Ratio: 15~100)



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	6	7	7	8	10
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	59	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	60	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	133	177.5	211.4
B10		11	10.5	14	30	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 35	35 42	42	55
C4		26.15	34.3	43	68.2	68.1	81.5	116
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

SE series High Precision Planetary Reducer



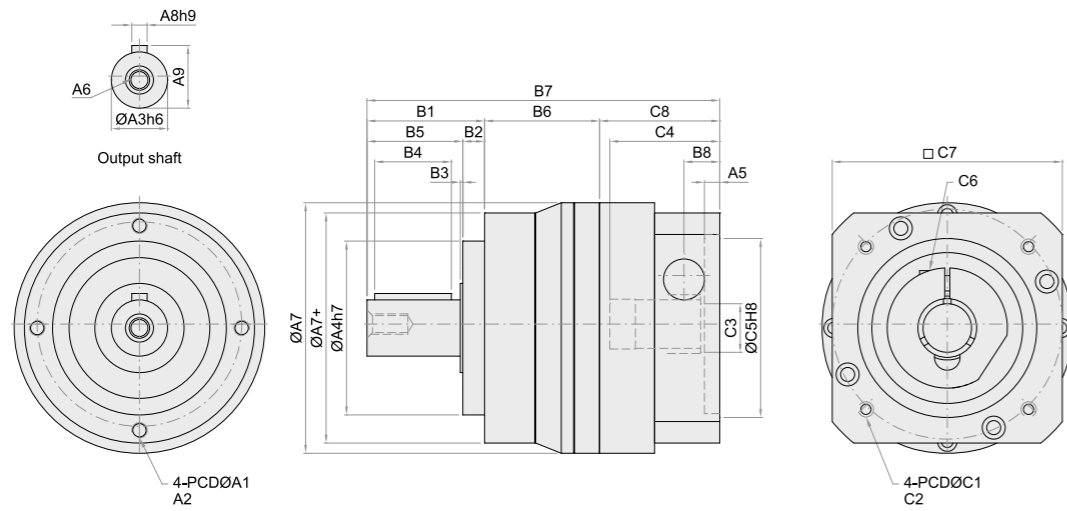
減速機性能資料 REDUCER PERFORMANCE INFORMATION

規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142	180	
額定輸出力矩 Rated Output Torque	T _{2N}	Nm	L1	3	21	57	160	333	620	1,200	
				4	20	52	145	298	552	1,065	
				5	23	62	158	338	615	1,215	
				6	21	57	155	318	610	1,115	
				7	20	52	145	308	580	1,115	
				8	18	47	140	288	555	1,060	
				9	15	42	143	270	520	980	
				10	15	42	138	285	548	1,050	
				L2	15	21	57	160	330	620	2,000
					20	20	52	145	298	552	1,800
			25		23	62	156	338	615	1,980	
			30		21	57	155	318	610	1,900	
			35		20	52	145	308	560	1,850	
			40		18	47	140	290	550	1,821	
			50		23	62	165	338	610	1,980	
			60		21	57	155	318	570	1,900	
			70		20	52	145	308	560	1,850	
			80	18	47	141	290	548	1,821		
			90	15	42	144	270	510	1,650		
100	15	42	138	288	540	1,700					
最大輸入轉速 Max. Input Speed	n _{1B}	rpm	L1 / L2	3~100	10,000	10,000	8,000	8,000	6,000	6,000	
額定輸入轉速 Rated Input Speed	n _{1N}	rpm	L1 / L2	3~100	5,000	5,000	4,000	4,000	3,000	3,000	
超精密背隙 PS Backlash PS	-	arcmin	L1 L2	3~10 15~100	≤1 ≤3						
高精密背隙 P0 Backlash P0	-	arcmin	L1 L2	3~10 15~100	≤3 ≤5						
精密背隙 P1 Backlash P1	-	arcmin	L1 L2	3~10 15~100	≤5 ≤7						
標準背隙 P2 Backlash P2	-	arcmin	L1 L2	3~10 15~100	≤8 ≤12						
最大加速扭矩 Max. Acceleration Torque	T _{2B}	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 Max. Output(Emergency Stop) Torque	T _{2NOT}	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 Max. Radial Force	F _{2rB}	N	L1 / L2	3~100	780	1,530	3,250	6,700	9,400	14,500	
容許軸向力 Max. Axial Force	F _{2aB}	N	L1 / L2	3~100	390	765	1,625	3,350	4,700	7,750	
使用壽命 Service Life	hr	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 Efficiency	η	%	L1 L2	3~100 15~100	≤97 ≤94						
潤滑 Lubrication	-	-	L1 / L2	3~100	合成潤滑油脂 / Synthetic Lubrication Grease						
噪音值 Noise Level	-	dB	L1 L2	3~100 15~100	≤56 ≤56	≤60 ≤60	≤63 ≤63	≤63 ≤63	≤65 ≤65	≤67 ≤67	
防護等級 Protection Class	-	IP	L1 / L2	3~100	IP 65						
安裝方向 Mounting Position	-	-	L1 / L2	15~100	任意方向 / Any Direction						
重量 Weight	-	kg	L1 L2	3~100 15~100	0.6 0.9	1.4 1.6	3.3 4.7	6.9 8.7	13 17	30 35	

減速機轉動慣量 REDUCER MOMENT OF INERTIA

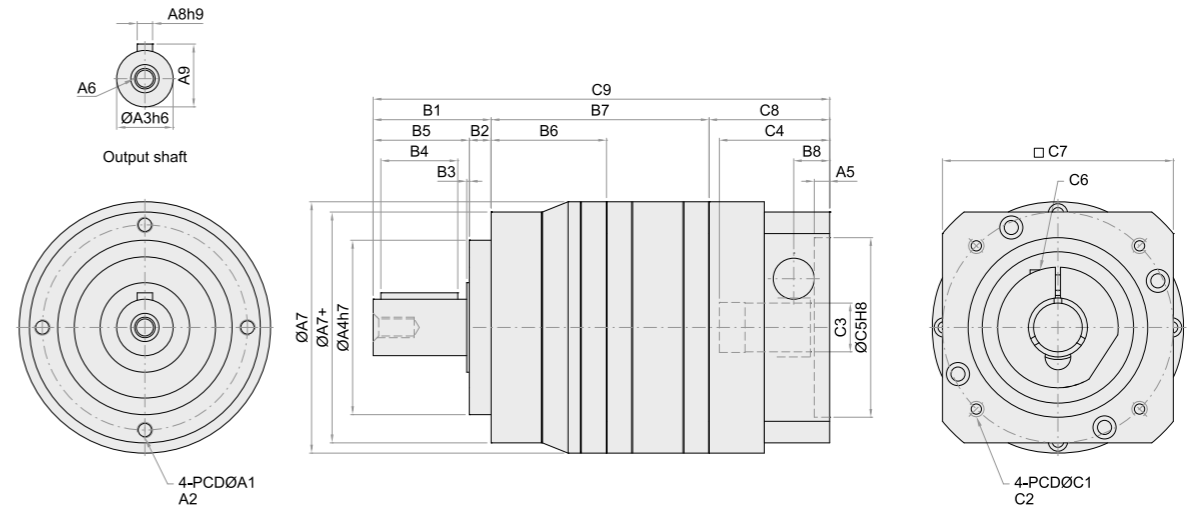
規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142	180	
轉動慣量 Moment of Inertia	J1	kg.cm ²	L1	3	0.03	0.16	0.61	3.25	9.21	28.98	
				4	0.03	0.14	0.48	2.74	7.54	23.67	
				5	0.03	0.13	0.47	2.71	7.42	23.29	
				6	0.03	0.13	0.45	2.65	7.25	22.75	
				7	0.03	0.13	0.45	2.62	7.14	22.48	
				8	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		

MODEL: SE SERIES L1-Stage (Ratio: 3~10)



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	M6 x P1	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	6	7	7	8
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	213
A7+		50	70	90	120	156	213
A8		5	5	6	10	12	16
A9		15	18	24.5	35	43	59
B1		24.5	36.5	46	70	97	104.5
B2		4	6.5	8.5	17	15	20
B3		1.6	1.5	1	2	3	2.5
B4		15	25	30	40	60	70
B5		20.5	30	37.5	53	82	84.5
B6		29.8	33.5	45	49	72	87.5
B7		88.8	114	138	190	251	292
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	M8 x P1.25	M10 x P1.5	M12 x P1.75
C3		8	14 19	19 24	24 35	35 42	42
C4		26.3	34.3	43	68.2	69	81.5
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	100

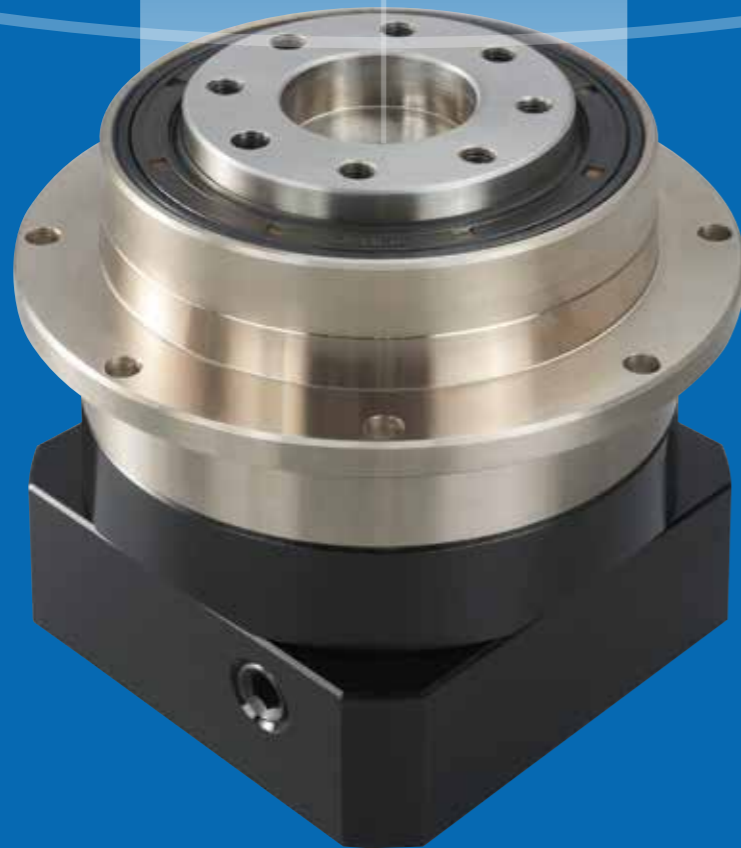
MODEL: SE SERIES L2-Stage (Ratio: 15~100)



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	M6 x P1	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	6	7	7	8
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	213
A7+		50	70	90	120	156	213
A8		5	5	6	10	12	16
A9		15	18	24.5	35	43	59
B1		24.5	36.5	46	70	97	104.5
B2		4	6.5	8.5	17	15	20
B3		1.6	1.5	1	2	3	2.5
B4		15	25	30	40	60	70
B5		20.5	30	37.5	53	82	84.5
B6		29.8	33.5	45	49	72	87.5
B7		55.8	61.5	85	97	148	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	M8 x P1.25	M10 x P1.5	M12 x P1.75
C3		8	14 19	19 24	24 35	35 42	42
C4		26.3	34.3	43	68.2	69	81.5
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	100
C9		114.8	142	178	238	312	382

SD/T series

High Precision Planetary Reducer



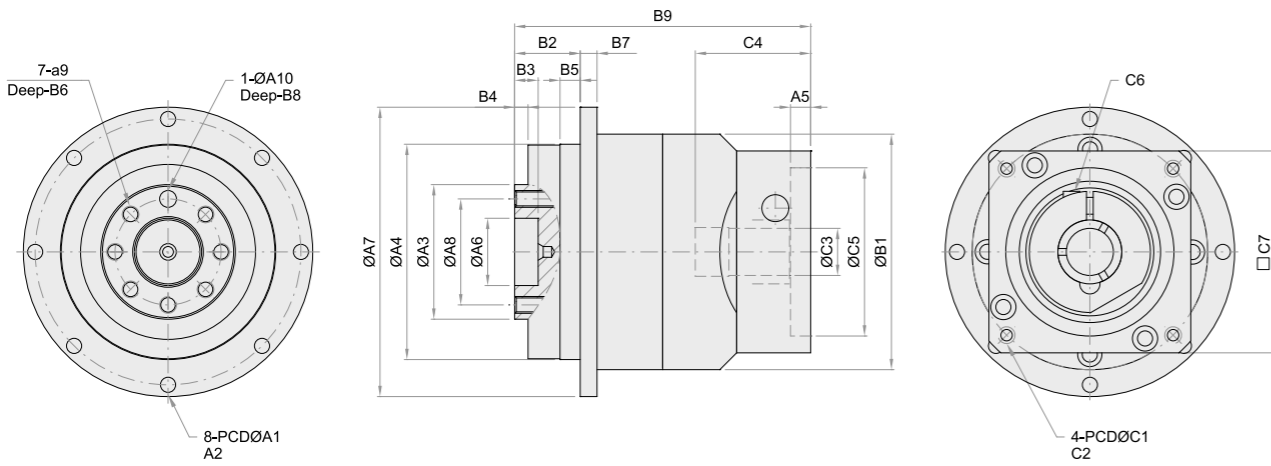
減速機性能資料 REDUCER PERFORMANCE INFORMATION

規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	47	64	90	110	140	200
額定輸出力矩 Rated Output Torque	T _{2N}	Nm	L1	4	20	55	155	330	640	1,950
				5	23	50	150	328	620	1,180
				7	20	45	145	308	560	1,115
				10	15	43	130	290	540	1,050
				20	20	58	157	330	645	1,190
			L2	25	23	55	153	338	615	1,180
				35	20	52	145	308	573	1,115
				40	20	55	158	330	648	1,190
				50	23	48	150	338	615	1,180
				70	20	45	145	308	570	1,115
100	15	42	130	290	540	1,052				
最大輸入轉速 Max. Input Speed	n _{1B}	rpm	L1 / L2	4~100	10,000	10,000	8,000	8,000	6,000	6,000
額定輸入轉速 Rated Input Speed	n _{1N}	rpm	L1 / L2	4~100	5,000	5,000	4,000	4,000	3,000	3,000
超精密背隙 PS Backlash PS	-	arcmin	L1	4~10	≤1					
			L2	20~100	≤3					
精密背隙 P0 Backlash P0	-	arcmin	L1	4~10	≤3					
			L2	20~100	≤5					
精密背隙 P1 Backlash P1	-	arcmin	L1	4~10	≤5					
			L2	20~100	≤7					
最大加速扭矩 Max. Acceleration Torque	T _{2B}	Nm	L1 / L2	4~100	1.8倍額定輸出力矩 / 1.8 Times Of Nominal Output Torque					
最大輸出(急停)扭矩 Max. Output(Emergency Stop) Torque	T _{2NOT}	Nm	L1 / L2	4~100	3倍額定輸出力矩 / 3 Times Of Nominal Output Torque					
扭轉剛性 Torsional Rigidity	-	Nm/arcmin	L1 / L2	4~100	7	13	31	82	151	440
最大彎曲力矩 Max. Bending Moment	M _{2K8}	Nm	L1 / L2	4~100	43	125	235	430	1,300	3,064
容許軸向力 Max. Axial Force	F _{2aB}	N	L1 / L2	4~100	990	1,050	2,850	2,990	10,590	16,660
使用壽命 Service Life	hr	hr	L1 / L2	4~100	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	4~100	-25°C ~ 90°C					
效率 Efficiency	η	%	L1	4~10	≤97					
			L2	20~100	≤94					
潤滑 Lubrication	-	-	L1 / L2	4~100	合成潤滑油脂 / Synthetic Lubrication Grease					
噪音值 Noise Level	-	dB	L1 / L2	4~100	≤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

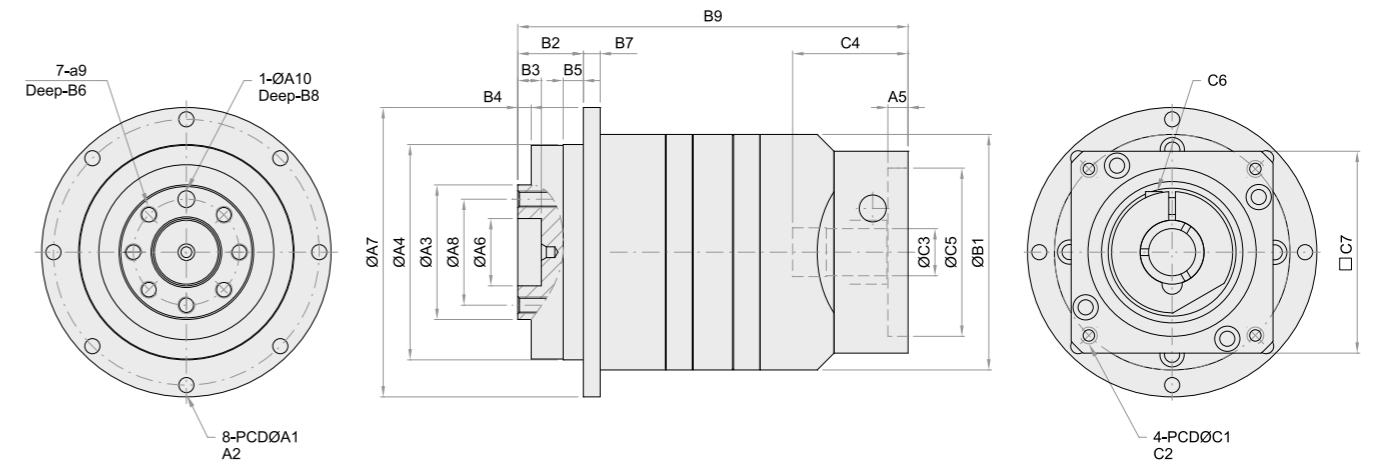
規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	47	64	90	110	140	200
轉動慣量 Moment of Inertia	J ₁	kg.cm ²	L1	4	0.03	0.14	0.51	2.87	7.54	25.03
				5	0.03	0.13	0.47	2.71	7.42	23.29
				7	0.03	0.13	0.45	2.62	7.14	22.48
				10	0.03	0.13	0.44	2.57	7.03	22.51
				20	0.03	0.03	0.13	0.47	2.71	7.42
				25	0.03	0.03	0.13	0.47	2.71	7.42
			L2	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

MODEL: SD / T SERIES L1-Stage (Ratio: 4~10)



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	9
A3		28	40	63	80	100	160
A4		47	64	90	110	140	200
A5		6	6	6	7	7	8
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		18	19.5	30	29	44	50
B3		5	7	12	12	12	16
B4		1.5	4	6	6	6	8
B5		5	6	10	10	15	15
B6		8	13	18	18	24	24
B7		4	5	7	8	10	12
B8		4	7	8	10	10	10
B9		69.8	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		25.8	34.3	43	68.2	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

MODEL: SD / T SERIES L2-Stage (Ratio: 20~100)



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	9
A3		28	40	63	80	100	160
A4		47	64	90	110	140	200
A5		6	6	6	7	7	8
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		18	19.5	30	29	44	50
B3		5	7	12	12	12	16
B4		1.5	4	6	6	6	8
B5		5	6	10	10	15	15
B6		8	13	18	18	24	24
B7		4	5	7	8	10	12
B8		4	7	8	10	10	10
B9		95.8	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		25.8	34.3	43	68.2	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



SGS High Precision Planetary Reducer series

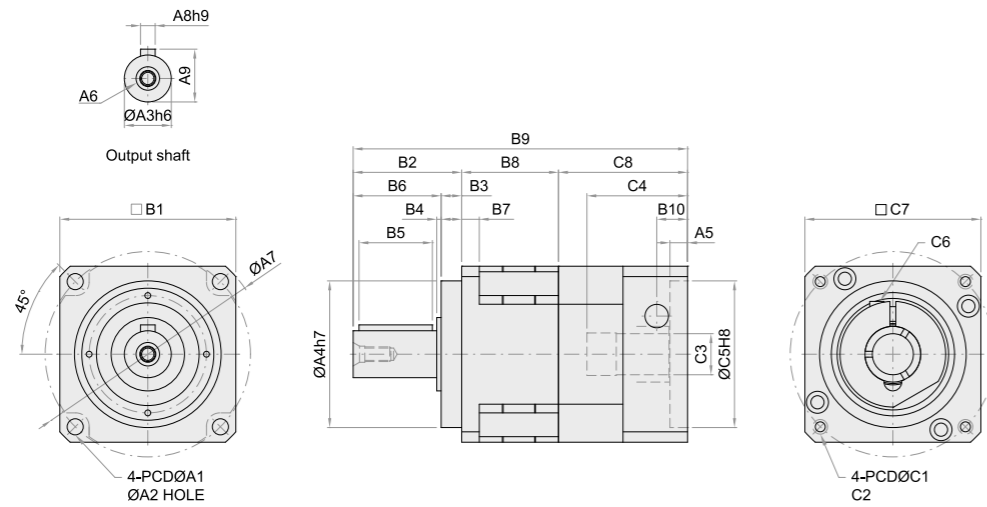
減速機性能資料 REDUCER PERFORMANCE INFORMATION

規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142	180	
額定輸出力矩 Rated Output Torque	T _{2N}	Nm	L1	3	21	57	160	333	620	1,200	
				4	20	52	145	298	552	1,065	
				5	23	62	158	338	615	1,215	
				6	21	57	155	318	610	1,115	
				7	20	52	145	308	580	1,115	
				8	18	47	140	288	555	1,060	
				9	15	42	143	270	520	980	
				10	15	42	138	285	548	1,050	
				L2	15	21	57	160	330	620	2,000
					20	20	52	145	298	552	1,800
			25		23	62	156	338	615	1,980	
			30		21	57	155	318	610	1,900	
			35		20	52	145	308	560	1,850	
			40		18	47	140	290	550	1,821	
			50		23	62	165	338	610	1,980	
			60		21	57	155	318	570	1,900	
			70		20	52	145	308	560	1,850	
			80		18	47	141	290	548	1,821	
			90	15	42	144	270	510	1,650		
			100	15	42	138	288	540	1,700		
最大輸入轉速 Max. Input Speed	n _{1B}	rpm	L1 / L2	3~100	10,000	10,000	8,000	8,000	6,000	6,000	
額定輸入轉速 Rated Input Speed	n _{1N}	rpm	L1 / L2	3~100	5,000	5,000	4,000	4,000	3,000	3,000	
超精密背隙 PS Backlash PS	-	arcmin	L1	3~10	≤1						
			L2	15~100	≤3						
精密背隙 P0 Backlash P0	-	arcmin	L1	3~10	≤3						
			L2	15~100	≤5						
精密背隙 P1 Backlash P1	-	arcmin	L1	3~10	≤5						
			L2	15~100	≤7						
最大加速扭矩 Max. Acceleration Torque	T _{2B}	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 Max. Output(Emergency Stop) Torque	T _{2NOT}	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 Max. Radial Force	F _{2rB}	N	L1 / L2	3~100	610	1,400	4,100	9,200	14,000	18,000	
容許軸向力 Max. Axial Force	F _{2aB}	N	L1 / L2	3~100	320	1,100	3,700	5,820	11,400	19,500	
使用壽命 Service Life	hr	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 Efficiency	η	%	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	30	
			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

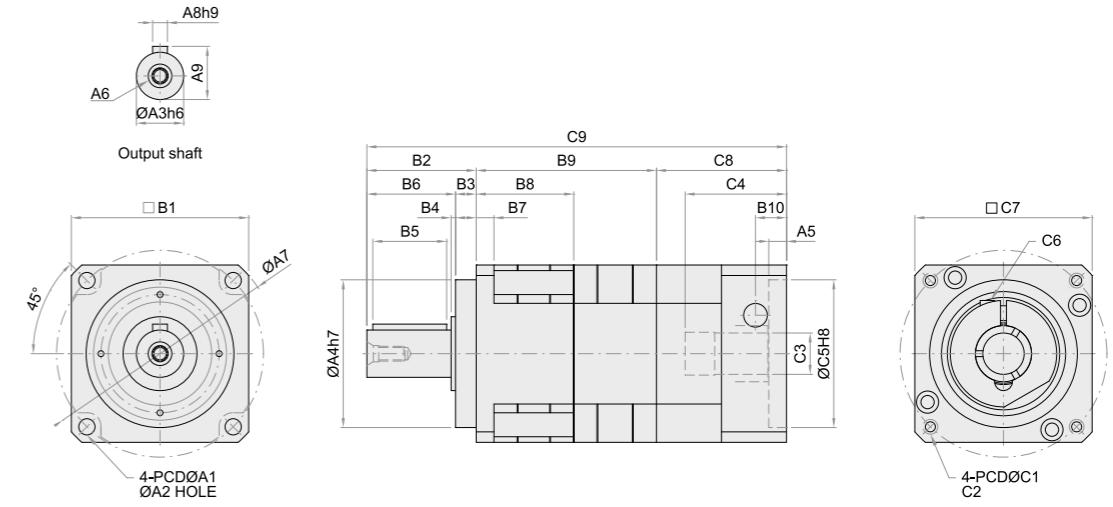
規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142	180	
轉動慣量 Moment of Inertia	J ₁	kg.cm ²	L1	3	0.03	0.16	0.61	3.25	9.21	28.98	
				4	0.03	0.14	0.48	2.74	7.54	23.67	
				5	0.03	0.13	0.47	2.71	7.42	23.29	
				6	0.03	0.13	0.45	2.65	7.25	22.75	
				7	0.03	0.13	0.45	2.62	7.14	22.48	
				8	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		

MODEL: SGS SERIES L1-Stage (Ratio: 3~10)



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	6	7	7	8	10				
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	59	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	60	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	391.4				
B10		11	10.5	14	30	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	35	35	42	42	55
C4		26.15	34.3	43	68.2	68.1	81.5	116				
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				

MODEL: SGS SERIES L2-Stage (Ratio: 15~100)



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	6	7	7	8	10				
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	59	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	60	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	391.4				
B10		11	10.5	14	30	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	35	35	42	42	55
C4		26.15	34.3	43	68.2	68.1	81.5	116				
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				

SGR series High Precision Planetary Reducer



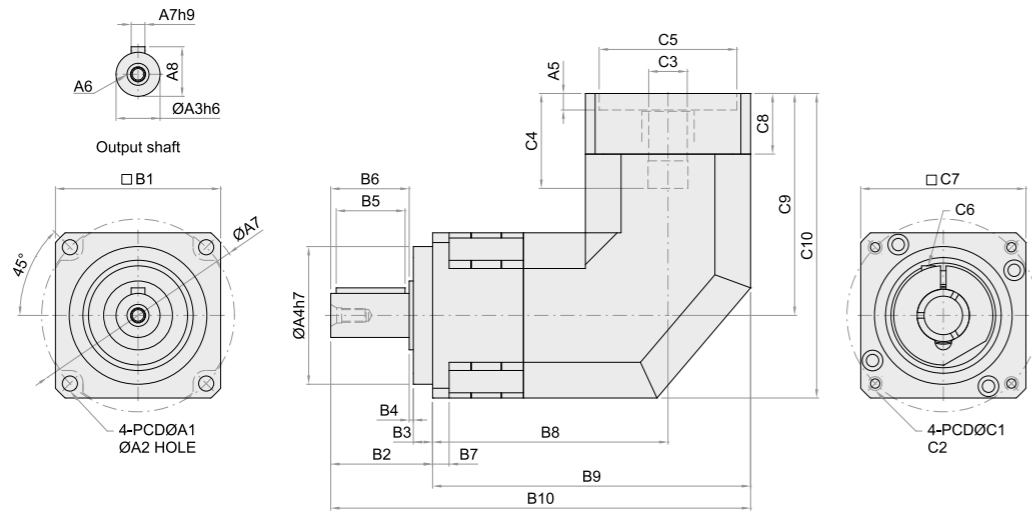
減速機性能資料 REDUCER PERFORMANCE INFORMATION

規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142
額定輸出力矩 Rated Output Torque	T _{2N}	Nm	L1	3	19	55	160	333	620
				4	16	51	143	295	530
				5	16	45	155	333	618
				6	13	43	153	318	583
				7	13	43	145	308	573
				8	12	40	140	290	553
				9	11	42	143	270	515
				10	12	40	138	294	545
				14	13	43	145	311	570
			L2	20	12	40	138	294	540
				25	16	45	155	333	610
				30	15	43	155	318	585
				35	15	43	145	308	568
				40	14	41	140	295	550
				50	16	45	155	333	610
				60	15	43	150	318	585
				70	15	43	148	295	568
				80	14	41	141	294	550
				90	13	42	143	274	510
100	14	41	138	291	540				
最大輸入轉速 Max. Input Speed	η _{1B}	rpm	L1 / L2	3~100	10,000	10,000	8,000	8,000	6,000
額定輸入轉速 Rated Input Speed	η _{1N}	rpm	L1 / L2	3~100	5,000	5,000	4,000	4,000	3,000
超精密背隙 PS Backlash PS	-	arcmin	L1	3~20	≤2				
			L2	25~100	≤4				
精密背隙 P0 Backlash P0	-	arcmin	L1	3~20	≤4				
			L2	25~100	≤7				
精密背隙 P1 Backlash P1	-	arcmin	L1	3~20	≤6				
			L2	25~100	≤9				
最大加速扭矩 Max. Acceleration Torque	T _{2B}	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 Max. Output(Emergency Stop) Torque	T _{2NOT}	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
容許徑向力 Max. Radial Force	F _{2rB}	N	L1 / L2	3~100	780	1,530	3,250	6,700	9,400
容許軸向力 Max. Axial Force	F _{2aB}	N	L1 / L2	3~100	390	765	1,625	3,350	4,700
使用壽命 Service Life	hr	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 Efficiency	η	%	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 / L2	3~100	≤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

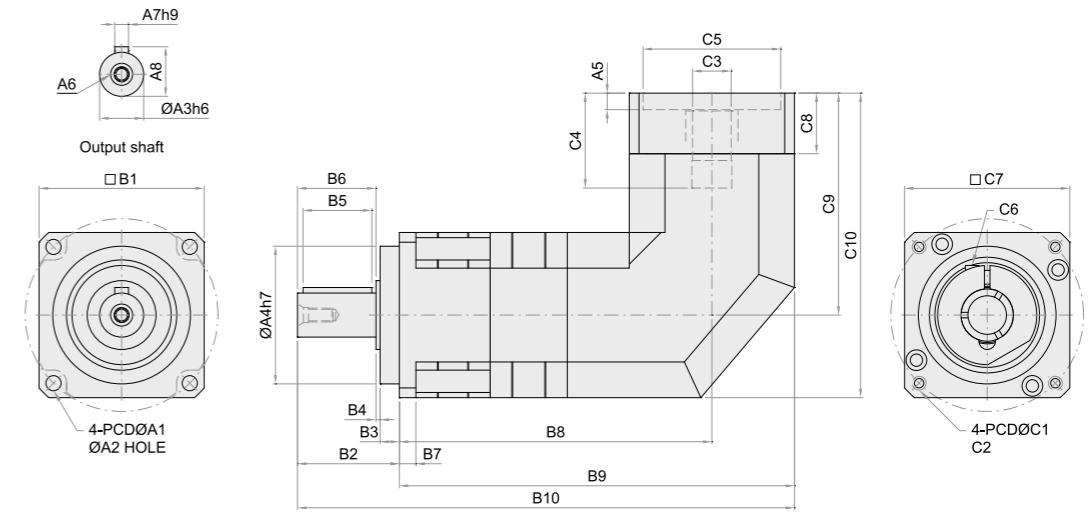
規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142
轉動慣量 Moment of Inertia	J ₁	kg.cm ²	L1	3	0.09	0.35	0.61	2.25	23.4
				4	0.09	0.35	0.48	2.25	23.4
				5	0.09	0.35	0.47	2.25	23.4
				6	0.09	0.35	0.45	2.25	23.4
				7	0.09	0.35	0.45	2.25	23.4
				8	0.09	0.35	0.44	2.25	23.4
				9	0.09	0.35	0.44	2.25	23.4
				10	0.09	0.35	0.44	2.25	23.4
				15	0.09	0.07	0.13	1.87	21.8
				20	0.09	0.07	0.13	1.87	21.8
			L2	25	0.09	0.09	0.13	0.35	6.84
				30	0.09	0.09	0.13	0.35	6.84
				35	0.09	0.09	0.13	0.35	6.84
				40	0.09	0.09	0.13	0.35	6.84
				50	0.09	0.09	0.13	0.35	6.84
				60	0.09	0.09	0.13	0.35	6.84
				70	0.09	0.09	0.13	0.35	6.84
				80	0.09	0.09	0.13	0.35	6.84
				90	0.09	0.09	0.13	0.35	6.84
				100	0.09	0.09	0.13	0.35	6.84

MODEL: SGR SERIES L1-Stage (Ratio: 3~20)



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	6	7	7	8
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		5	5	6	10	12	16
A8		15	18	24.5	35	43	59
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	60	70
B6		18.9	28.5	36.5	51	79	82
B7		4	6	8	10	12	16
B8		76	85.5	122.1	140	178	223.88
B9		97	115.5	167.1	197.5	249	313.88
B10		123	152.5	215.1	262.5	346	418.38
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	24	35	42
C4		26.14	34.44	53	78.1	74.1	81.5
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		20	22	25.5	45	35	55
C9		61	80.57	106.35	144.2	151	195
C10		82	110.57	151.35	201.7	222	285

MODEL: SGR SERIES L2-Stage (Ratio: 25~100)



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	6	7	7	8
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		5	5	6	10	12	16
A8		15	18	24.5	35	43	59
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	60	70
B6		18.9	28.5	36.5	51	79	82
B7		4	6	8	10	12	16
B8		102	113.5	162.1	188	239	313.88
B9		123	143.5	207.1	245.5	325	423.88
B10		149	180.5	255.1	310.5	407	508.38
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	24	35	42
C4		26.14	34.44	53	78.1	74.1	81.5
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		20	22	25.5	45	35	55
C9		61	80.57	106.35	144.2	151	195
C10		82	110.57	151.35	201.7	222	285



ST series High Precision Planetary Reducer

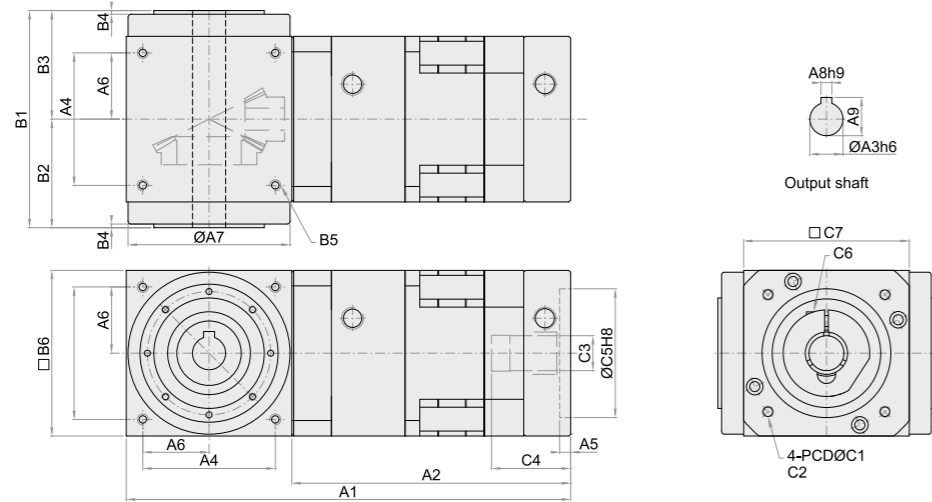
減速機性能資料 REDUCER PERFORMANCE INFORMATION

規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	60	90	110	142
額定輸出力矩 Rated Output Torque	T _{2N}	Nm	L1	3	25	78	150	360
				4	25	78	150	360
				5	25	78	150	360
				10	24	68	150	360
				20	24	68	150	360
			L2	15	25	78	150	360
				25	25	78	150	360
				30	24	68	150	360
				40	24	68	150	360
				50	25	78	150	360
最大輸入轉速 Max. Input Speed	n _{1B}	rpm	L1 / L2	3~50	10,000	10,000	8,000	8,000
額定輸入轉速 Rated Input Speed	n _{1N}	rpm	L1 / L2	3~50	5,000	5,000	4,000	4,000
超精密背隙 P0 Backlash P0	-	arcmin	L1	3~20	≤4			
			L2	15~50	≤6			
精密背隙 P1 Backlash P1	-	arcmin	L1	3~20	≤7			
			L2	15~50	≤9			
精密背隙 P2 Backlash P2	-	arcmin	L1	3~20	≤10			
			L2	15~50	≤12			
最大加速扭矩 Max. Acceleration Torque	T _{2B}	Nm	L1 / L2	3~50	1.5倍額定輸出力矩 / 1.5 Times of nominal output torque			
最大輸出(急停)扭矩 Max. Output(Emergency Stop) Torque	T _{2NOT}	Nm	L1 / L2	3~50	3倍額定輸出力矩 / 3 Times of nominal output torque			
容許徑向力 Max. Radial Force	F _{2rB}	N	L1 / L2	3~50	600	1,000	2,000	3,000
容許軸向力 Max. Axial Force	F _{2aB}	N	L1 / L2	3~50	300	500	1,000	1,500
使用壽命 Service Life	hr	hr	L1 / L2	3~50	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	3~50	-25°C ~ 90°C			
效率 Efficiency	η	%	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

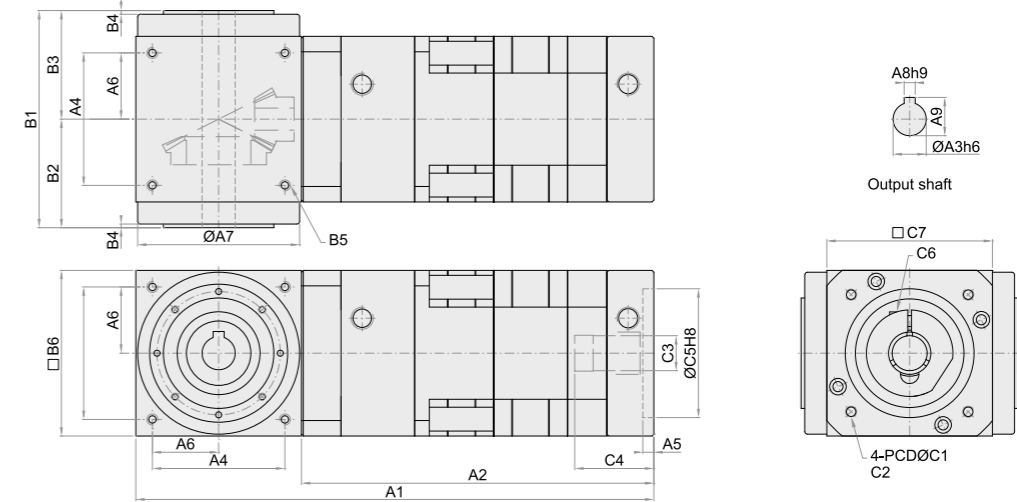
規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	60	90	110	142
轉動慣量 Moment of Inertia	J ₁	kg.cm ²	L1	3	0.05	0.18	0.41	0.56
				4	0.05	0.18	0.41	0.56
				5	0.05	0.18	0.41	0.56
				10	0.05	0.18	0.41	0.56
				20	0.05	0.18	0.41	0.56
			L2	15	0.05	0.18	0.41	0.56
				25	0.05	0.18	0.41	0.56
				30	0.05	0.16	0.38	0.53
				40	0.05	0.16	0.38	0.53
				50	0.05	0.16	0.38	0.53

MODEL: ST SERIES L1-Stage (Ratio: 3~20)



Model \ Code	60	70	90	110	142	200
A1	142	147	241.5	279.5	404	455
A2	77	77	151.5	169.5	262	255
A3	14	16	18	22	40	80
A4	52	42.43	72	88	110	129
A5	6	6	6	7	7	7
A6	26	26.52	36	44	55	64.5
A7	62	60	88	106	135	195
A8	5	-	6	8	-	-
A9	16.3	-	20.8	25.3	-	-
B1	87	122	118	144	188	220.5
B2	43.5	66.9	59	72	91	119.5
B3	43.5	55.1	59	72	97	101
B4	1	3.5	2	2	1 7	20 1.5
B5	M5 x P0.8	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M14 x P2.0
B6	65	70	90	110	142	200
C1	70	70	90	145	165	165
C2	M5 x P0.8	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5
C3	14 19	14 19	19 24	24 35	35 42	35 42
C4	34.3	34.3	43	68.2	68.1	68.1
C5	50	50	70	110	130	130
C6	M5 x P0.8	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5
C7	60	60	90	130	142	142

MODEL: ST SERIES L2-Stage (Ratio: 15~50)



Model \ Code	60	70	90	110	142	200
A1	170	175	281.5	319.5	465	516
A2	105	105	191.5	209.5	323	316
A3	14	16	18	22	40	80
A4	52	42.43	72	88	110	129
A5	6	6	6	7	7	7
A6	26	26.52	36	44	55	84.9
A7	62	60	88	106	135	195
A8	5	-	6	8	-	-
A9	16.3	-	20.8	25.3	-	-
B1	87	122	118	144	188	220.5
B2	43.5	66.9	59	72	91	119.5
B3	43.5	55.1	59	72	97	101
B4	1	3.5	2	2	1 7	20 1.5
B5	M5 x P0.8	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M14 x P2.0
B6	65	70	90	110	142	200
C1	70	70	90	145	165	165
C2	M5 x P0.8	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5
C3	14 19	14 19	19 24	24 35	35 42	35 42
C4	34.3	34.3	43	68.2	68.1	68.7
C5	50	50	70	110	130	130
C6	M5 x P0.8	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5
C7	60	60	90	130	142	142

SP series High Precision Planetary Reducer



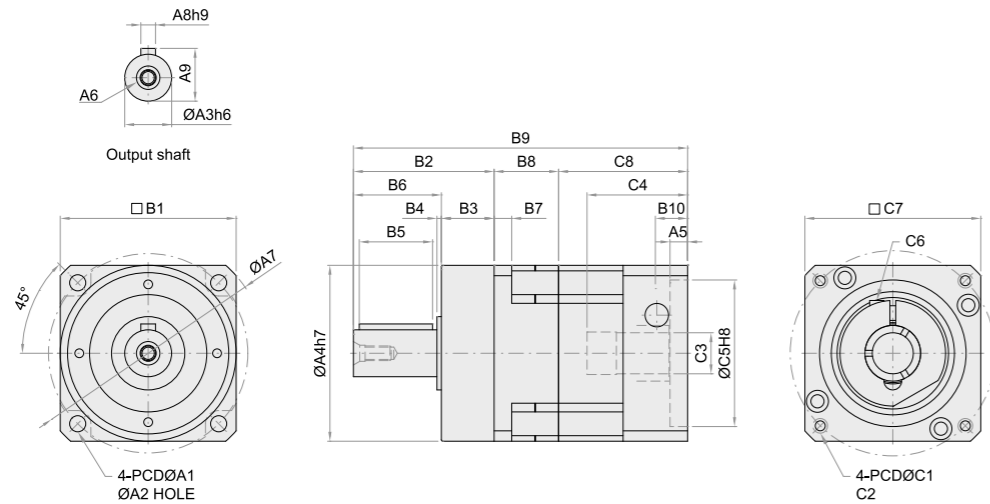
減速機性能資料 REDUCER PERFORMANCE INFORMATION

規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	60	75	100	115	140	160	180	210	240
額定輸出力矩 Rated Output Torque	T _{2N}	Nm	L1	3	57	160	213	439	600	938	1,200	1,950	2,677
				4	48	144	204	411	549	856	1,060	1,700	2,462
				5	45	153	330	513	610	895	1,182	1,892	2,538
				7	43	139	300	500	571	763	1,104	1,799	2,493
			L2	10	41	133	290	484	540	720	1,050	1,653	2,355
				15	57	143	300	431	630	922	1,220	1,980	2,668
				20	47	128	271	405	560	848	1,085	1,695	2,440
				25	48	155	298	508	610	890	1,174	1,880	2,520
				28	44	131	280	495	578	750	1,100	1,776	2,500
				35	44	127	276	492	568	751	1,098	1,800	2,480
				40	40	120	263	520	550	780	1,070	1,600	2,368
				50	45	139	299	510	620	718	1,193	1,948	2,522
				70	44	127	276	479	568	755	1,098	1,792	2,483
				100	40	118	264	492	550	710	1,081	1,650	2,340
最大輸入轉速 Max. Input Speed	n _{1B}	rpm	L1 / L2	3~100	6,000	6,000	4,500	4,000	4,000	3,200	3,500	2,500	2,500
額定輸入轉速 Rated Input Speed	n _{1N}	rpm	L1	3~10	3,300	2,900	2,500	2,300	2,100	1,500	1,500	1,200	1,000
			L2	16~100	4,400	3,500	3,100	3,000	2,900	2,900	2,700	2,500	2,300
超精密背隙 P0 Backlash P0	-	arcmin	L1	3~10	≤3								
			L2	16~100	≤5								
精密背隙 P1 Backlash P1	-	arcmin	L1	3~10	≤5								
			L2	16~100	≤7								
精密背隙 P2 Backlash P2	-	arcmin	L1	3~10	≤7								
			L2	16~100	≤9								
最大加速扭矩 Max. Acceleration Torque	T _{2B}	Nm	L1 / L2	3~100	1.5倍額定輸出力矩 / 1.5 Times of nominal output torque								
最大輸出(急停)扭矩 Max. Output(Emergency Stop) Torque	T _{2NOT}	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	3.5	10	31	25	53	145	175	400	500
容許徑向力 Max. Radial Force	F _{2rB}	N	L1 / L2	3~100	2,800	4,200	6,600	6,700	9,900	14,500	15,400	21,000	30,000
容許軸向力 Max. Axial Force	F _{2aB}	N	L1 / L2	3~100	2,400	3,350	5,650	3,350	9,870	7,250	14,150	30,000	33,000
使用壽命 Service Life	hr	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	-10°C ~ 90°C								
效率 Efficiency	η	%	L1	3~10	≤97								
			L2	16~100	≤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	≤58	≤60	≤64	≤65	≤65	≤67	≤67	≤67	≤67
			L2	16~100	≤58	≤60	≤64	≤65	≤65	≤67	≤67	≤67	≤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	1.9	3.9	7.7	13.1	17.2	26.9	34	56	77
			L2	16~100	2	3.6	7.9	13.3	17	28	36.4	53	76

減速機轉動慣量 REDUCER MOMENT OF INERTIA

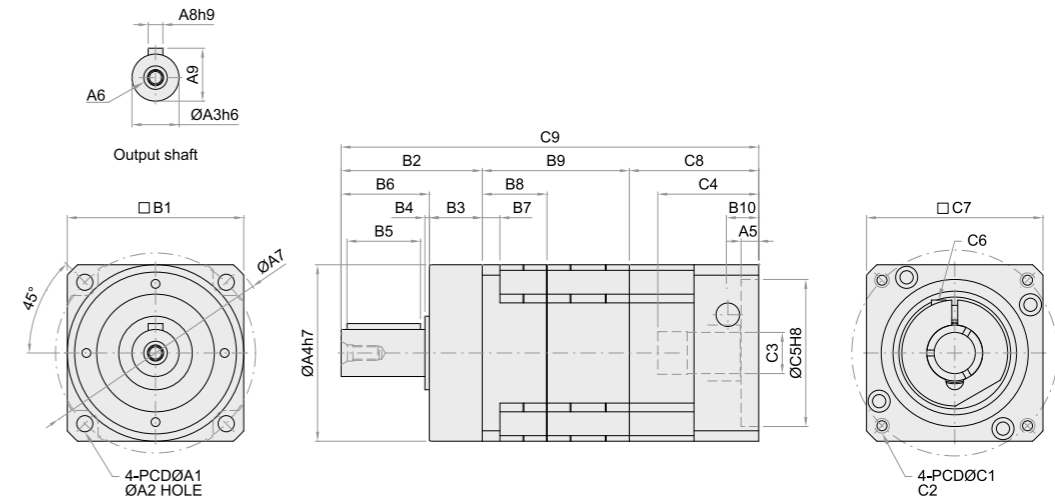
規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	60	75	100	115	140	160	180	210	240
轉動慣量 Moment of Inertia	J ₁	kg.cm ²	L1	3	57	160	213	439	600	938	1200	1950	2677
				4	48	144	204	411	549	856	1060	1700	2462
				5	45	153	330	513	610	895	1182	1892	2538
				7	43	139	300	500	571	763	1104	1799	2493
			L2	10	41	133	290	484	540	720	1050	1653	2355
				15	57	143	300	431	630	922	1220	1980	2668
				20	47	128	271	405	560	848	1085	1695	2440
				25	48	155	298	508	610	890	1174	1880	2520
				28	44	131	280	495	578	750	1100	1776	2500
				35	44	127	276	492	568	751	1098	1800	2480
				40	40	120	263	520	550	780	1070	1600	2368
				50	45	139	299	510	620	718	1193	1948	2522
				70	44	127	276	479	568	755	1098	1792	2483
				100	40	118	264	492	550	710	1081	1650	2340

MODEL: SP SERIES L1-Stage (Ratio: 3~10)



Model	Code	60	75	100	115	140	160	180
A1		68	85	120	130	165	190	215
A2		5.5	6.5	9	8.5	10.5	13	13.5
A3		16	22	32	35	40	50	55
A4		60	70	90	110	130	145	160
A5		6	6	6	7	7	7	8
A6		M5 x P0.8	M8 x P1.25	M12 x P1.75	M12 x P1.75	M16 x P2.0	M16 x P2.0	M20 x P2.5
A7		80	95	135	148	185	215	240
A8		5	6	10	10	12	14	16
A9		18	24.5	35	38	43	53.5	59
B1		60	76	100	115	142	160	180
B2		48	56	88	100	112	112	112
B3		18	18.5	28.5	28	27	27	27.5
B4		1.5	1.5	1.5	2	3	2.75	2.5
B5		25	30	50	60	70	70	70
B6		30	37.5	59.5	72	85	85	84.5
B7		6	7	10	10	12	13.5	15
B8		22	21.5	24.5	38	60	66	80
B9		114	121.5	159.5	209	255	282.5	292
B10		10.5	10.5	14	30	38	48	27.5
C1		70	70	90	145	165	200	200
C2		M5 x P0.8	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M12 x P1.75	M12 x P1.75
C3		14 19	14 19	19 24	24 35	35 42	35 42	42
C4		34.3	34.3	43	68.2	68.1	79.1	81.5
C5		50	50	70	110	130	114.3	114.3
C6		M5 x P0.8	M5 x P0.8	M6 M5	M8 x P1.25	M10 x P1.5	M12 x P1.75	M12 x P1.75
C7		60	60	90	130	142	180	180
C8		44	44	47	71	82	104.5	100
C9		142	149.5	199.5	257	315	353.5	382

MODEL: SP SERIES L2-Stage (Ratio: 16~100)



Model	Code	60	75	100	115	140	160	180
A1		68	85	120	130	165	190	215
A2		5.5	6.5	9	8.5	10.5	13	13.5
A3		16	22	32	35	40	50	55
A4		60	70	90	110	130	145	160
A5		6	6	6	7	7	7	8
A6		M5 x P0.8	M8 x P1.25	M12 x P1.75	M12 x P1.75	M16 x P2.0	M16 x P2.0	M20 x P2.5
A7		80	95	135	148	185	215	240
A8		5	6	10	10	12	14	16
A9		18	24.5	35	38	43	53.5	59
B1		60	76	100	115	142	160	180
B2		48	56	88	100	112	112	112
B3		18	18.5	28.5	28	27	27	27.5
B4		1.5	1.5	1.5	2	3	2.75	2.5
B5		25	30	50	60	70	70	70
B6		30	37.5	59.5	72	85	85	84.5
B7		6	7	10	10	12	13.5	15
B8		22	21.5	24.5	38	60	66	80
B9		50	49.5	64.5	86	121	137	170
B10		10.5	10.5	14	30	38	48	27.5
C1		70	70	90	145	165	200	200
C2		M5 x P0.8	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M12 x P1.75	M12 x P1.75
C3		14 19	14 19	19 24	24 35	35 42	35 42	42
C4		34.3	34.3	43	68.2	68.1	79.1	81.5
C5		50	50	70	110	130	114.3	114.3
C6		M5 x P0.8	M5 x P0.8	M6 M5	M8 x P1.25	M10 x P1.5	M12 x P1.75	M12 x P1.75
C7		60	60	90	130	142	180	180
C8		44	44	47	71	82	104.5	100
C9		142	149.5	199.5	257	315	353.5	382

PE series High Precision Planetary Reducer



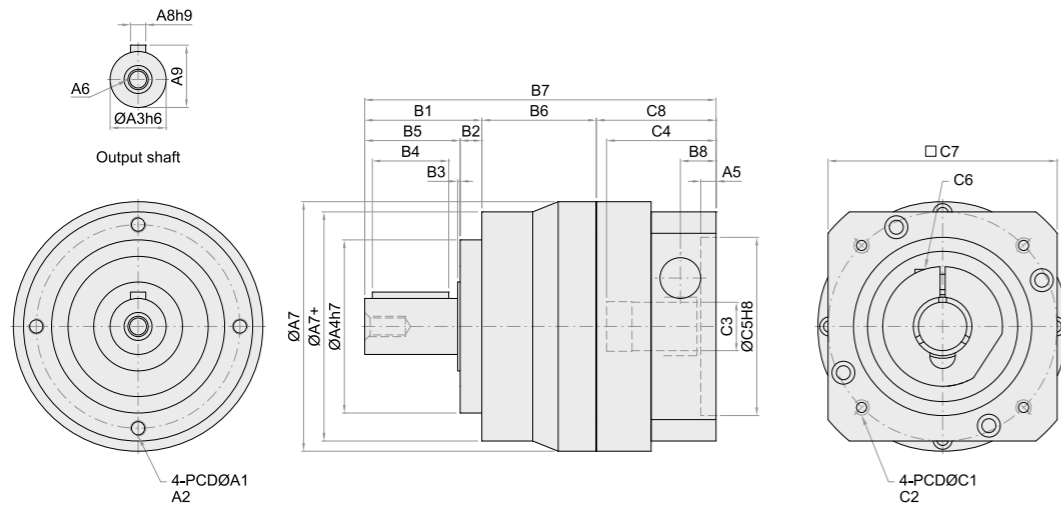
減速機性能資料 REDUCER PERFORMANCE INFORMATION

規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142	180
額定輸出力矩 Rated Output Torque	T _{2N}	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 Max. Input Speed	n _{1B}	rpm	L1 / L2	3~100	8,000	6,000	6,000	4,800	3,600	3,000
額定輸入轉速 Rated Input Speed	n _{1N}	rpm	L1 / L2	3~100	4,500	4,000	3,600	3,600	2,500	2,000
標準背隙 Backlash	-	arcmin	L1	3~10	≤8					
			L2	15~100	≤12					
最大加速扭矩 Max. Acceleration Torque	T _{2B}	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 Max. Output(Emergency Stop) Torque	T _{2NOT}	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	140
容許徑向力 Max. Radial Force	F _{2rB}	N	L1 / L2	3~100	810	1,150	1,530	3,260	4,550	11,150
容許軸向力 Max. Axial Force	F _{2aB}	N	L1 / L2	3~100	405	575	765	1,630	2,275	5,575
使用壽命 Service Life	hr	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 Efficiency	η	%	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

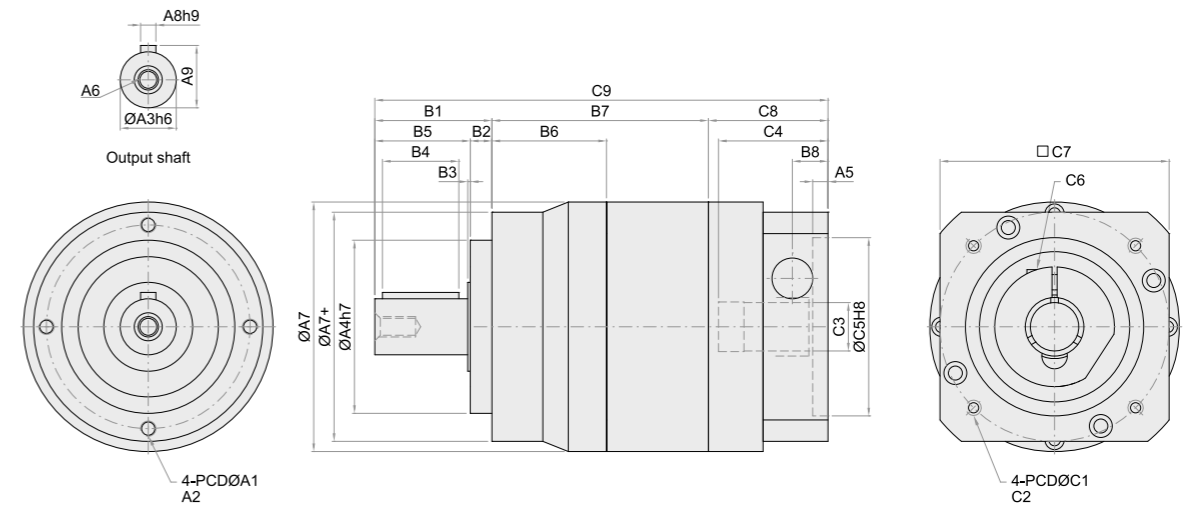
規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142	180
轉動慣量 Moment of Inertia	J ₁	kg.cm ²	L1	3	0.04	0.14	0.61	3.25	8.75	24.63
				4	0.04	0.13	0.48	2.74	7.16	20.12
				5	0.04	0.11	0.47	2.74	6.84	19.80
				7	0.04	0.11	0.44	2.58	6.78	19.21
				10	0.04	0.11	0.44	2.57	6.68	19.13
			L2	15	0.04	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	19.80
				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	19.80
				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

MODEL: PE SERIES L1-Stage (Ratio: 3~10)



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	M6 x P1	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	6	7	7	8
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	213
A7+		50	70	90	120	156	213
A8		5	5	6	10	12	16
A9		15	18	24.5	35	43	59
B1		24.5	36.5	46	70	97	104.5
B2		4	6.5	8.5	17	15	20
B3		1.6	1.5	1	2	3	2.5
B4		15	25	30	40	60	70
B5		20.5	30	37.5	53	82	84.5
B6		29.8	33.5	45	49	72	87.5
B7		88.8	114	138	190	251	292
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	M8 x P1.25	M10 x P1.5	M12 x P1.75
C3		8	14 19	19 24	24 35	35 42	42
C4		26.3	34.3	43	68.2	69	81.5
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	100

MODEL: PE SERIES L2-Stage (Ratio: 15~100)



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	M6 x P1	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	6	7	7	8
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	213
A7+		50	70	90	120	156	213
A8		5	5	6	10	12	16
A9		15	18	24.5	35	43	59
B1		24.5	36.5	46	70	97	104.5
B2		4	6.5	8.5	17	15	20
B3		1.6	1.5	1	2	3	2.5
B4		15	25	30	40	60	70
B5		20.5	30	37.5	53	82	84.5
B6		29.8	33.5	45	49	72	87.5
B7		55.8	61.5	85	97	148	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	M8 x P1.25	M10 x P1.5	M12 x P1.75
C3		8	14 19	19 24	24 35	35 42	42
C4		26.3	34.3	43	68.2	69	81.5
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	100
C9		114.8	142	178	238	312	382



PG series High Precision Planetary Reducer

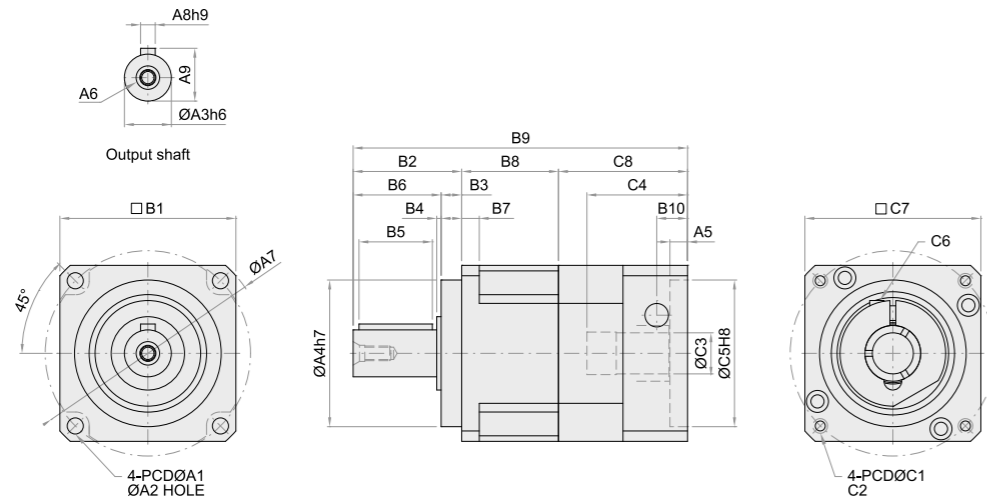
減速機性能資料 REDUCER PERFORMANCE INFORMATION

規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142	180	220
額定輸出力矩 Rated Output Torque	T _{2N}	Nm	L1	3	18	52	130	276	492	955	1,440
				4	16	47	116	246	436	875	1,320
				5	15	44	109	231	411	850	1,290
				7	14	41	103	216	383	805	1,200
			L2	10	13	39	97	206	366	775	1,160
				15	18	52	130	276	492	955	1,440
				20	16	47	116	246	436	875	1,320
				25	15	44	109	231	411	850	1,290
				30	18	52	130	276	492	955	1,440
				35	14	41	103	216	383	805	1,200
				40	16	47	116	246	436	875	1,320
				50	15	44	109	231	411	850	1,290
				70	14	41	103	216	383	805	1,200
				100	13	39	97	206	366	775	1,160
最大輸入轉速 Max. Input Speed	n _{1B}	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 Rated Input Speed	n _{1N}	rpm	L1 / L2	3~100	3,000	3,000	3,000	3,000	3,000	2,000	2,000
標準背隙 Backlash	-	arcmin	L1	≤8							
			L2	≤12							
最大加速扭矩 Max. Acceleration Torque	T _{2B}	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 Max. Output(Emergency Stop) Torque	T _{2NOT}	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	2.3	5	15	45	69	140	220
容許徑向力 Max. Radial Force	F _{2rB}	N	L1 / L2	3~100	750	1,180	3,000	6,500	9,100	11,150	35,000
容許軸向力 Max. Axial Force	F _{2aB}	N	L1 / L2	3~100	325	590	1,500	3,250	4,550	5,575	17,500
使用壽命 Service Life	hr	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 Efficiency	η	%	L1	≤97							
			L2	≤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

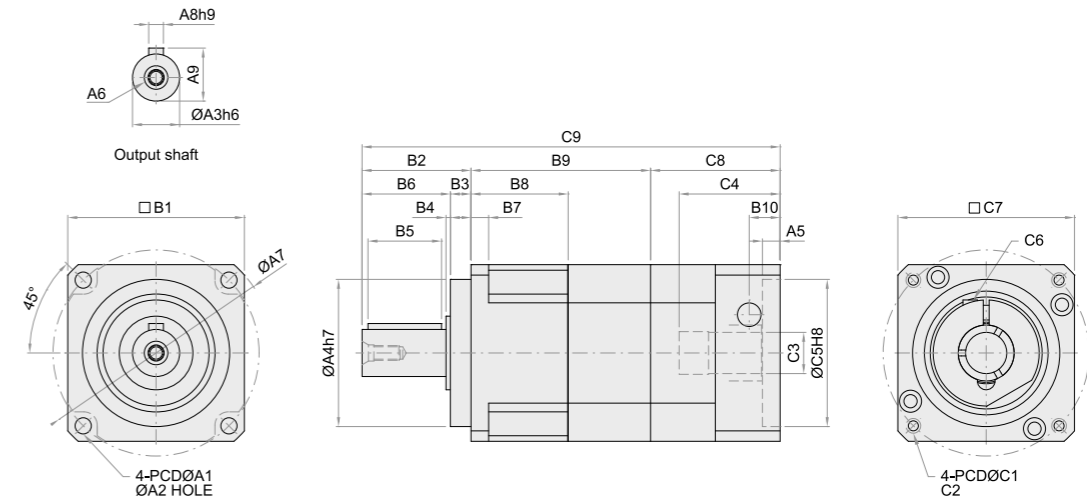
規格 Model NO.	符號 Symbol	單位 Unit	節數 Stage	減速比 Ratio	42	60	90	115	142	180	220
轉動慣量 Moment of Inertia	J ₁	kg.cm ²	L1	3	0.04	0.14	0.61	3.25	8.75	24.63	50.67
				4	0.04	0.13	0.48	2.74	7.16	20.12	46.21
				5	0.04	0.11	0.47	2.74	6.84	19.8	45.28
				7	0.04	0.11	0.44	2.58	6.78	19.21	43.32
			L2	10	0.04	0.11	0.44	2.57	6.68	19.13	42.98
				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

MODEL: PG SERIES L1-Stage (Ratio: 3~10)



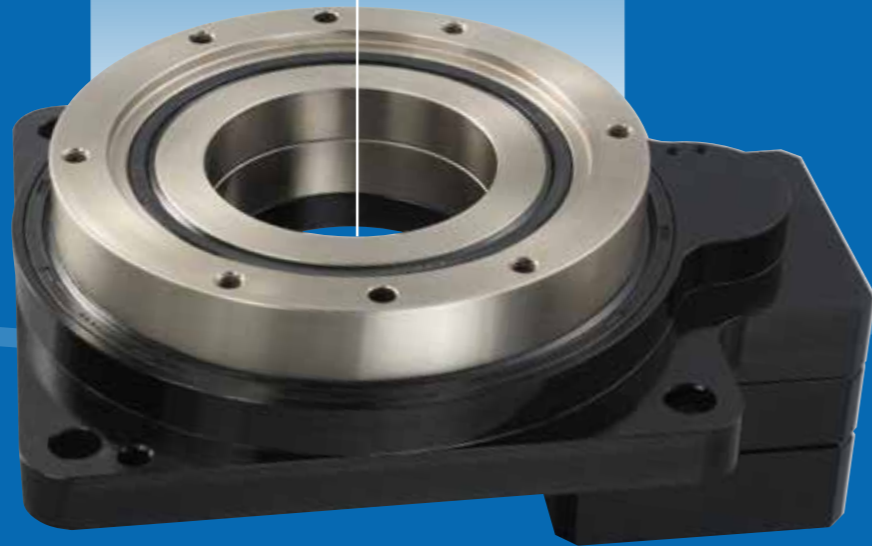
Model	Code	42	60	90	115	142	180	220
A1		50	70	100	130	165	215	250
A2		3.5	5.5	6.5	8.5	10.5	13.5	17
A3		13	16	22	32	40	55	75
A4		35	50	80	110	130	160	180
A5		6	6	6	7	7	8	10
A6		M4 x P0.7	M5 x P0.8	M8 x P1.25	M12 x P1.75	M16 x P2.0	M20 x P2.5	M20 x P2.5
A7		56	80	116	148	185	240	292
A8		5	5	6	10	12	16	20
A9		15	18	24.5	35	43	59	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	60	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	391.4
B10		11	10.5	14	30	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 35	35 42	42	55
C4		26.15	34.3	43	68.2	68.1	81.5	116
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

MODEL: PG SERIES L2-Stage (Ratio: 15~100)



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	6	7	7	8	10
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	59	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	60	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	133	177.5	211.4
B10		11	10.5	14	30	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 35	35 42	42	55
C4		26.15	34.3	43	68.2	68.1	81.5	116
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

HT series



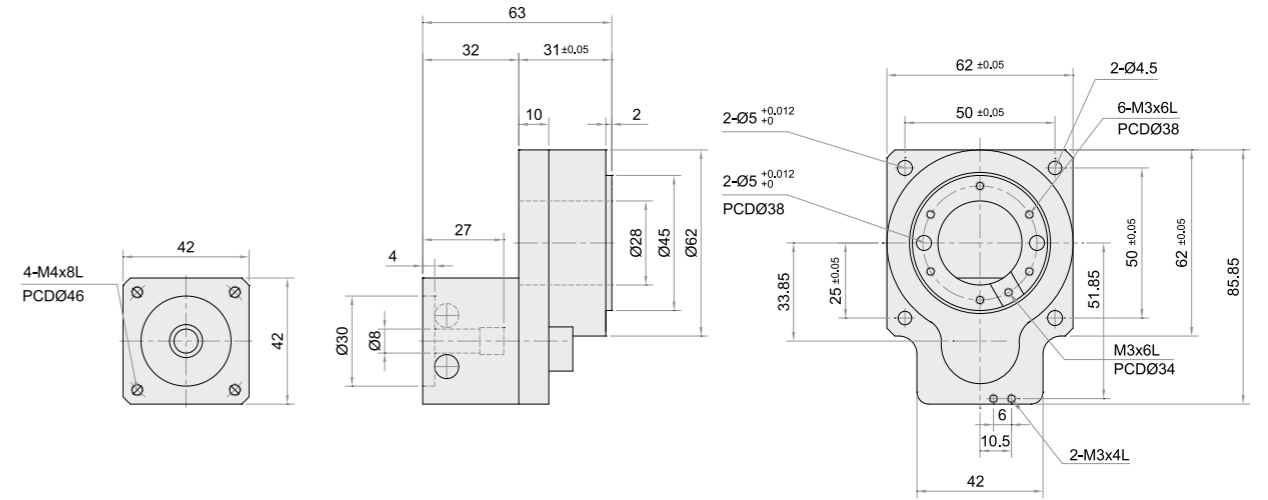
產品特點 PRODUCT FEATURES

中空旋轉平台

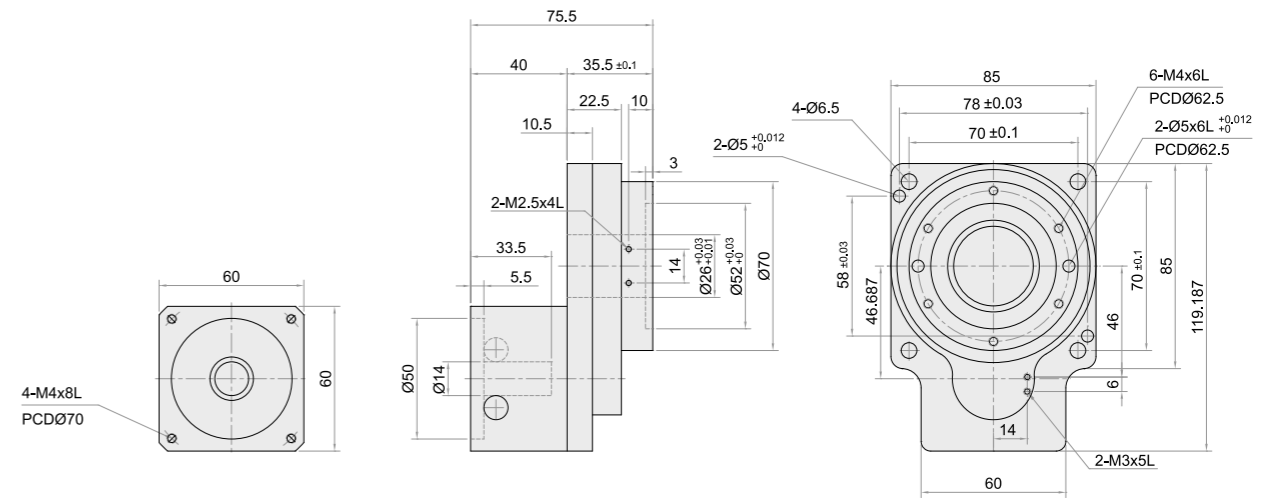
中空旋轉平台可做精密旋轉定位，直接取代凸輪分割器和DD馬達具有低成本高精度的優勢，並可搭配AC伺服馬達或步進馬達做任意角度分割。可滿足分割器無法達到之數位控制、且定位精度可媲美DD馬達。

HOLLOW ROTARY can be the precision positioning, replacing cam indexing units directly and the DD motor has advantages of low cost with high precision. It may also collocate with AC servo motor or stepper motor for arbitrary angle cutting. It can satisfy the digital control that indexing units cannot provide and the accuracy of positioning compares favorably with DD motor.

MODEL: HT SERIES HT062



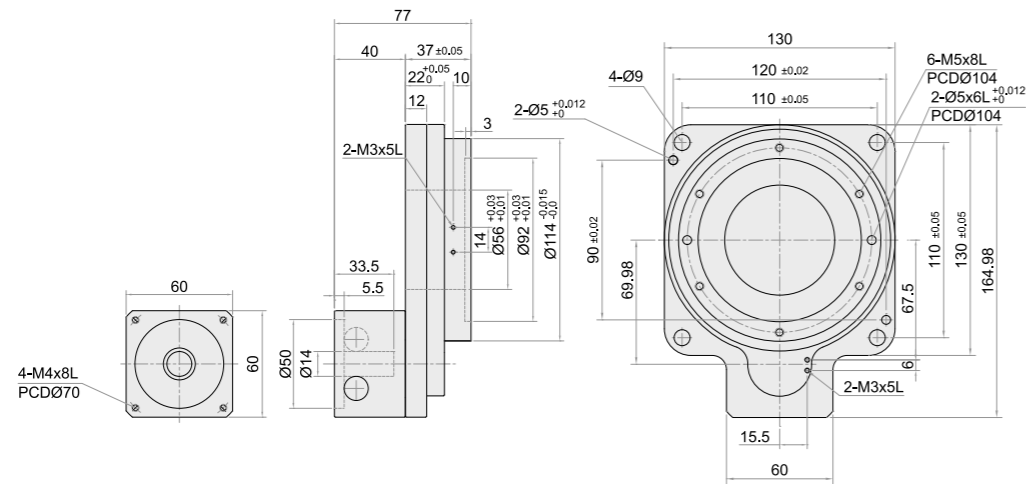
MODEL: HT SERIES HT085



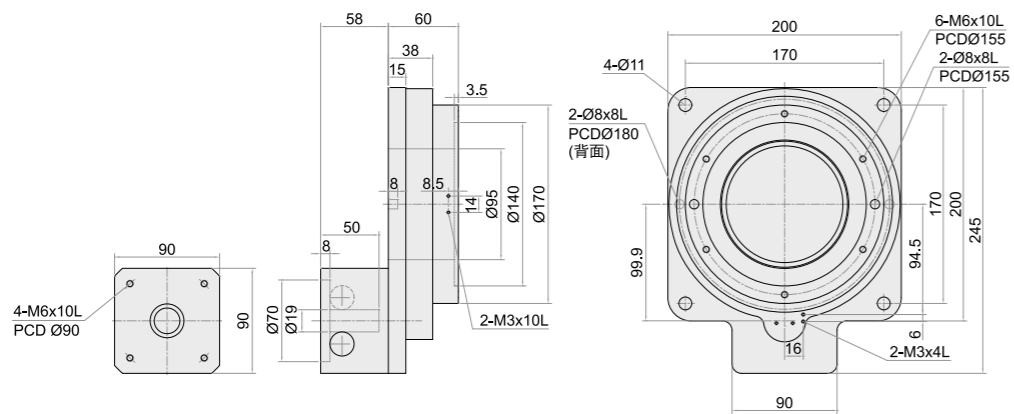
中空旋轉平台性能資料 HOLLOW ROTARY PERFORMANCE INFORMATION

規格 Model NO.	單位 Unit	62	85
伺服馬達 Model for Servo Motor	W	100	200-400
容許轉矩 Remissible Torque	Nu	0.9	2.8
慣性慣量 Inertia Moment	J : kg·m ²	4,324 x 10	2,534 x 10
容許轉速 Permissible Speed	rpm		200
減速比 Ratio		1 : 10	1 : 10
反覆定位精度 Repeatability	sec	±15	±15
容許推力載重 Permissible Thrust Force	N	100	500
容許慣性載重 Permissible Load of Inertia	Nu	2	10
旋轉平台平行度 Parallelism of Rotating Table	µm	0.050	0.050
防護等級 Protection Class	IP	IP 40	IP 40
重量 Weight	Kg	0.7	1.5

MODEL: HT SERIES HT130



MODEL: HT SERIES HT200



中空旋轉平台性能資料 HOLLW ROTARY PERFORMANCE INFORMATION

規格 Model NO.	單位 Unit	130	200
伺服馬達 Model for Servo Motor	W	200-400	750
容許轉矩 Remissible Torque	Nu	12	50
慣性慣量 Inertia Moment	J : kg·m ²	15,874 x 10	108,160 x 10
容許轉速 Permissible Speed	rpm	200	110
減速比 Ratio		1 : 10	1 : 10
反覆定位精度 Repeatability	sec	±15	±15
容許推力載重 Permissible Thrust Force	N	2000	4000
容許慣性載重 Permissible Load of Inertia	Nu	50	100
旋轉平台平行度 Parallelism of Rotating Table	µm	0.050	0.050
防護等級 Protection Class	IP	IP 40	IP 40
重量 Weight	Kg	3	10.5

RV reducers



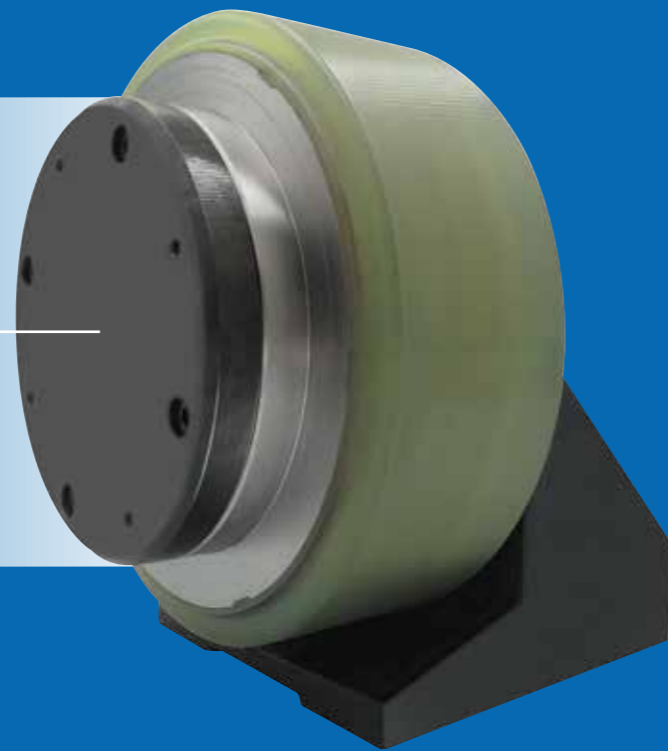
產品特點 PRODUCT FEATURES

RV 減速機

RV減速機傳動比範圍大、嚙合齒數多、承載能力大、高精度、運轉平穩、低噪音、齒側間隙可調整、體積小、傳動效率高可實現高轉速效能。主要應用於各類輕型工業機器人/機械臂、印刷機械、醫療設備、測量儀器、精密包裝機械、半導體設備、數控工具機等對體積有要求的精密傳動系統。

The RV reducer has a wide transmission ratio range, a large number of meshing teeth, a large carrying capacity, high precision, stable operation, low noise, adjustable tooth side clearance, small volume, high transmission efficiency and high speed performance. Harmonic reducers are mainly used in various types of light industrial robots/manipulators, printing machinery, medical equipment, measuring instruments, precision packaging machinery, semiconductor equipment, CNC machine tools and other precision transmission systems that require volume.

AGV reducers



產品特點 PRODUCT FEATURES

AGV 自走車減速機

AGV自走車減速機傳動比範圍大、啮合齒數多、承載能力大、高精度、運轉平穩、低噪音、齒側間隙可調整、體積小、傳動效率高可實現高轉速效能。

The harmonic reducer has a wide transmission ratio range, a large number of meshing teeth, a large carrying capacity, high precision, stable operation, low noise, adjustable tooth side clearance, small volume, high transmission efficiency and high speed performance.



Spiral Bevel Gearboxes

產品特點 PRODUCT FEATURES

螺旋傘齒輪轉向器

運轉平順、扭力大、高效率、高傳動力具多種高性能適用範圍廣泛。

Smooth running, large torque, high efficiency, high transmission force, a variety of high performance, and a wide range of applications.

SPT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.

用六角板手將埋栓螺絲取下，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，如果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.

使用扭力扳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 bolt 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.

8.

最後再將埋栓螺絲裝回。

Tighten back the screw plug.

轉動慣量 MASS MOMENTS OF INERTIA

規格 Specifications	單位 Unit	節數 Stag	減速比 Ratio	42	60	90	115	142	180
轉動慣量 J Moment of Inertia J	kg·m 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	71
			30	0.03	0.03	0.14	0.46	2.43	71
			35	0.03	0.03	0.14	0.44	2.43	71
			40	0.03	0.03	0.14	0.44	2.43	71
			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 (i=Nin/Nout)

2.最大加速力矩 T_{2B} =60% of T_{2NOT}

Max. Acceleration Inqut Speed T_{2B} =60% of T_{2NOT}

3.輸出轉速 100rpm 時,作用於輸出軸中心位置

Apply to the output shaft center at 100 rpm

※連續運轉, 使用壽命為10,000hrs

10,000 hrs service life under consecutive operation

減速機選用參考表

REDUCER SELECTABLE (BY POWER OF SERVO-MOTOR)

SG、SGL、SGS、SE、SP、PG、PE 1-Stage 單段

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

SG、SGL、SGS、SE、SP、PG、PE 2-Stage 雙段

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

※以上表格僅供參考, 選用時仍須以『額定輸出扭矩』為依據。

This Table is for reference, 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

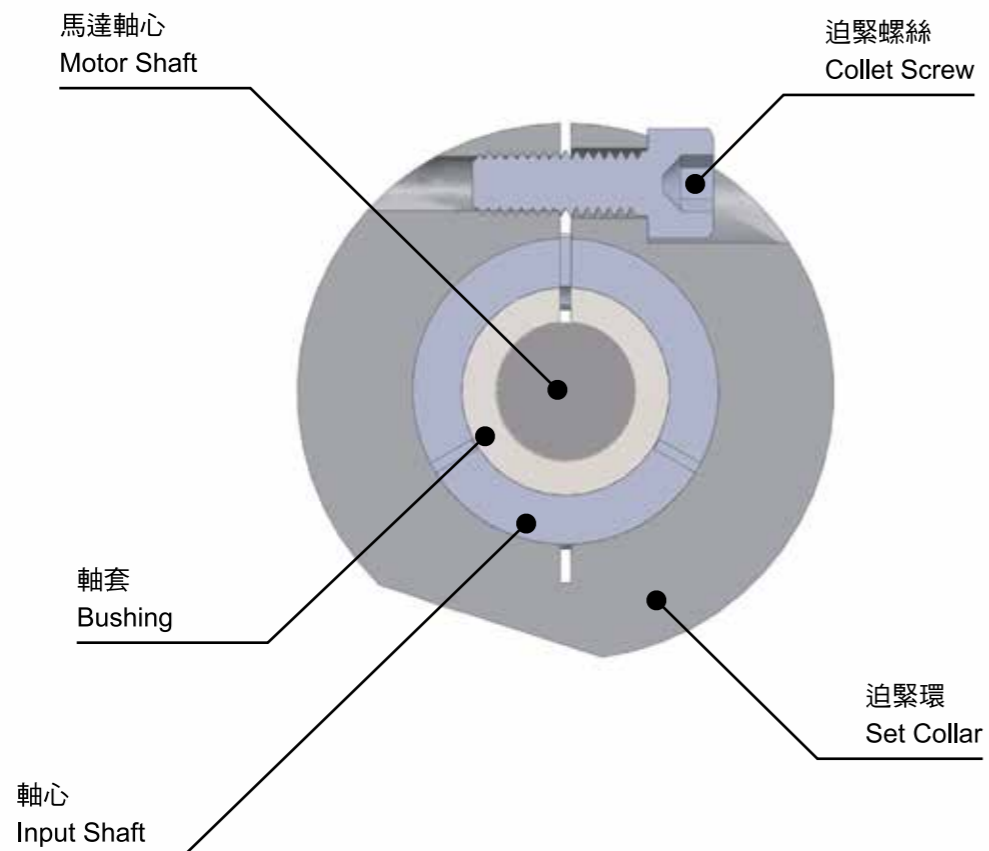
規格 Model PG、SG、SGL、SGS、SP SGR、PE、SE、ST	迫緊螺絲規格 bolt size	螺絲強度 strength of bolt	鎖緊扭力值 tightening torque(Nm)
042、047	M3 x P0.5	12.9	2.1
060、064	M5 x P0.8	12.9	9.8
090、100	M6 x P1.0	12.9	17
110、115	M8 x P1.25	12.9	41
140、142	M10 x P1.5	12.9	80
180	M12 x P1.75	12.9	139
220	M12 x P1.75	12.9	139

※當馬達的扭矩過大時，有造成打滑的可能性；

若有必要請適當的增加上述鎖緊扭力值20%，以防止打滑現象發生。

when the torque of motor was over clench torque, it will be cause slip.

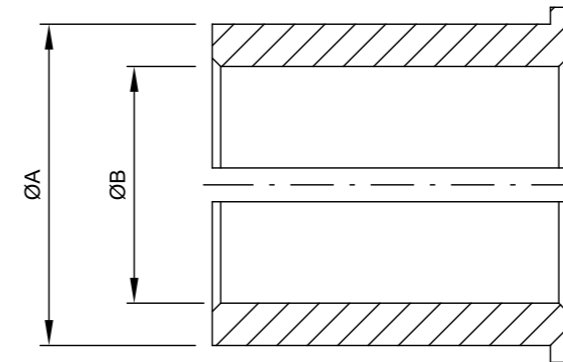
If necessary please increase the tightening torque 20% to prevent the slip.



軸套 BUSHING

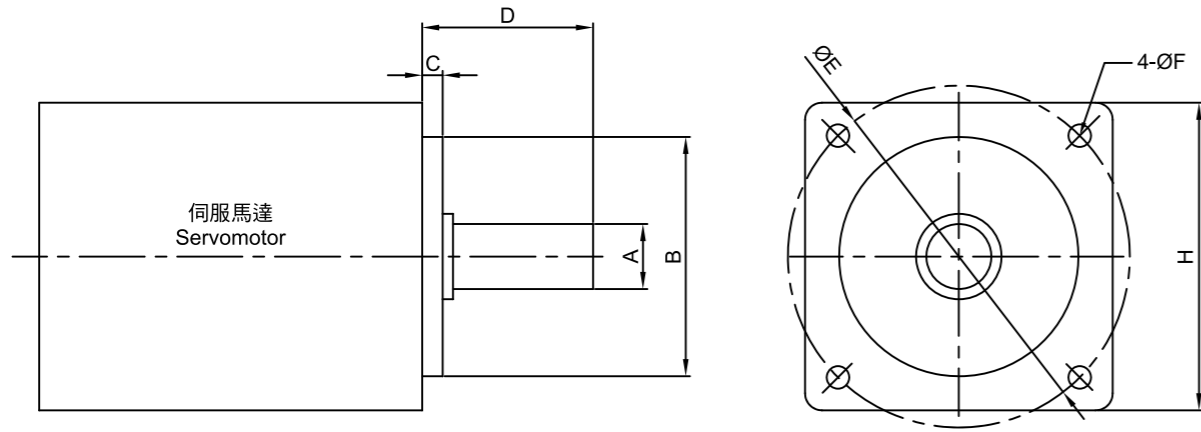
軸套內徑為所使用伺服馬達的輸入軸軸徑

Inner diameter of bushing of motor server input end



軸套孔徑ØB Bushing Bore	輸入軸孔徑ØA Shaft 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													●

客戶詢問資料 INQUIRY INFORMSTION



馬達廠牌 MOTOR LABEL :

馬達型號 MOTOR MODEL :

A	B	C	D	E	F	H

行星減速機訂購型號 PLANETARY REDUCER ORDER MOODEL

減速機型 Type	型號 Model	減速比 Ratio	出力軸鍵槽 Output Shaft Keyway	背隙等級 Backlash Class	馬達型號 Motor No

公司名稱 Company Name		聯絡人 Contact Person	
地址 Address			
電話 Tel	傳真 Fax	電子信箱 E-mail	
備註 Notes			