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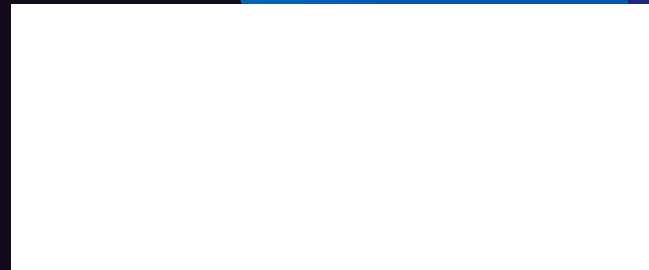
VARITRON® 驅動科技系列產品 Gear Transmission Technologies

VARITRON®
Take Control In Speed

驅動科技系列產品
Power Transmission Technologies

台灣 中國變速工程股份有限公司
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Precision Planetary Gearbox

精密行星減速機

Quiet Operation 靜音

Feature design to reduce vibration and noise to under 65dB.

採用防振動、低噪音的行星設計構造，低於65dB。

High Precision Low Backlash 高精度 低背隙

High precision machined allows up to 3 Arcmin (0.05°) can be chosen.

(DA Series)

精密加研磨，背隙最高3弧分(0.05°)可選擇。(DA系列)

High Efficiency 高效率

Exceeds 95% for single stage and 92% for Double Stage.

一段效率高達95%和二段92%。

High Torque and Stability 高扭矩與穩定性

High tensile strength alloy steel and improved gear hardening technics employed to maintain high accuracy and long service life.

齒輪選用高級鉻鉬合金鋼，切削加工後，經滲碳熱處理，在進行兩次加工skiving或研磨加工確保齒輪高精度與壽命。

High Precision Gear

The planetary gear and sun gear are manufactured from high quality Ni-Cr-Mo alloy steel. Precision machined and carburized, then for precision tooth grinding or skiving assures gears high precision.

Single-piece Gearbox & Advanced Surface Treatment

The gearbox and internal gear ring are single price design and constructed, which is manufactured from Cr-Mo alloy steel, and tempered for high torque output. Gearbox surface is anti-corrosive treated for upgrading environmental resistant and corrosion resistant capability.

Modular Design of Motor Connection Flange

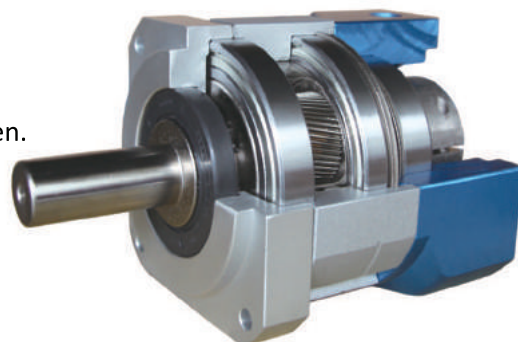
The special modular design of motor connection flange is suitable for any brand and any type of servo motor. Manufactured from aluminum alloy, its surface is anodized treated for upgrading environmental-resistant and corrosion-resistant capability.

Integrated Planetary Arm Bracket

The planetary arm bracket and the output shaft are single piece design constructed to increase torsional rigidity and accuracy. The entire structure is one-time machined for controlling accuracy in the specified tolerance. (except for DH and DL series below 90)

Modular Input Shaft

Modular input shaft design and motor shaft are coupled through a dynamic balanced collar clamping mechanism to ensure connection concentricity and zero slip power transmission at high speed.



高精度齒輪

行星齒輪及太陽齒輪選用高級鉻鉬合金鋼，切削加工後經滲碳熱處理，在進行兩次加工skiving或研磨加工確保齒輪高精度。

一體式齒輪箱本體

齒輪箱和內齒輪採一體式的設計，採用鉻鉬合金鋼經調質後加工，輸出扭矩大，精密度高。表面防銹處理，提高環境的耐受性和抗腐蝕能力。

模組化馬達連接法蘭設計

獨特的馬達連接板模組化設計，適用於任何廠牌和型式的伺服馬達，材質採用鋁合金，表面抗氧化陽極處理，提高環境的耐受性和抗腐蝕能力。

一體式的行星臂架及雙軸承加大誇距設計

行星臂架與輸出軸採一體式的結構設計，以確保提高扭轉剛性及精確度。並採用滾珠軸承大誇距配置設計，增加輸出軸之徑向負荷。(除DH及DL90以下系列)

入力軸模組化

模組化輸入軸與馬達入力軸連結方式採用栓緊式機構，確保高轉速下，結合界面的同心度及零滑差動力傳遞。

Catalog 目錄



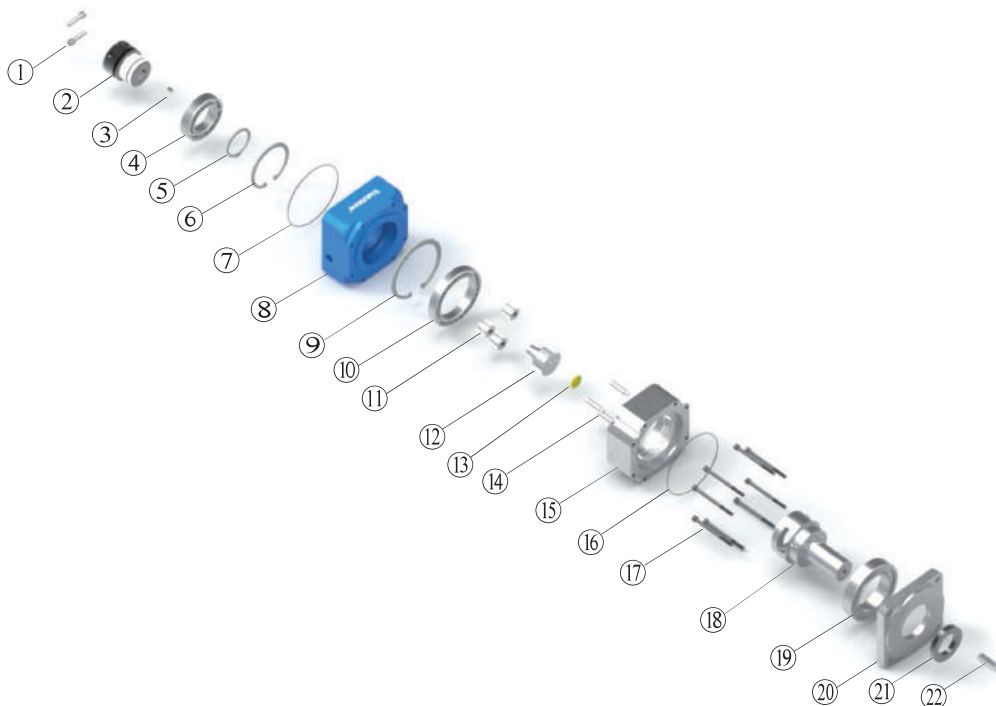
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Manual 保養手冊



gear.fyi/ppm

Construction Drawing 構造圖



Item 項次	Component 零組件		Item 項次	Component 零組件		Item 項次	Component 零組件	
1	Screw	螺絲	10	Bearing	軸承	19	Bearing	軸承
2	Input Shaft	入力軸	11	Planetary gear	行星齒	20	Slow Speed End Cap	出力蓋
3	Key	鍵	12	Sun gear	太陽齒	21	Oil Seal	油封
4	Bearing	軸承	13	Stopping plate	止推銅	22	Key	鍵
5	Snap Ring	扣環	14	Needle roller	滾針 (滿針)			
6	Snap Ring	扣環	15	Inner tooth ring	內齒			
7	O-ring	O型環	16	O-ring	O型環			
8	Input cover	入力蓋	17	Screw	螺絲			
9	Snap Ring	扣環	18	Output Shaft	出力軸			

Series Specifications 系列規格表

Model 型式	DA	DM	RAM-S	RAM-SS	RAM-H	RAM-D	RAM-F	DF	DH	RAH-S	RAH-SS	RAH-H	RAH-D	RAH-F	DL	DN
Inline 直線型	●	●						●	●						●	●
Right Angle 直角型			●	●	●	●	●			●	●	●	●	●		
Backlash 背隙 1 Stage 單段	1~5	≤5	≤8	≤8	≤8	≤8	≤8	≤5	≤10	≤16	≤16	≤16	≤16	≤16	≤10	≤10
Backlash 背隙 2 Stage 雙段	3~7	≤8	≤11	≤11	≤11	≤11	≤11	≤8	≤12	≤20	≤20	≤20	≤20	≤20	≤12	≤12
Double Arm Bracket 雙懸臂	●	●	●	●	●	●	●	●	⊙	⊙	⊙	⊙	⊙	⊙	⊙	●
Radial Load 徑向力	GOOD	GREAT	GOOD	GOOD	GREAT	GREAT	GREAT	GREAT	GREAT	GOOD	GOOD	GREAT	GREAT	GREAT	GREAT	BEST
Axial Load 軸向力	GOOD	BEST	GOOD	GOOD	GOOD	GOOD	GOOD	BEST	GREAT	GOOD	GOOD	GOOD	GOOD	GOOD	GREAT	GREAT
Output shaft 出力軸	●	●	●	●					●	●	●				●	●
Output flange 出力法蘭							●	●						●		
Output Bore 出力中空軸					●	●						●	●			

※ Contact Varitron® for lower backlash and custom design. 更低背隙或其他規格可定制。*BEST: 最佳, GREAT: 佳, GOOD: 好。



I How to order 選型

DM 090 – L1 – 3 – S – B – P – M – A – R

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

①	Model 型式	<p>DA: Helical Gear High Precision Planetary Gearbox 斜齒輪高精密型</p> <p>DM: Precision Planetary Gearbox 精密型</p> <p>DF: Precision Flange Type Planetary Gearbox 法蘭式精密型</p> <p>DH: Standard Precision Planetary Gearbox 標準型</p> <p>DL: Standard Precision Planetary Gearbox 標準型</p> <p>DN: High R-A Load Standard Precision Planetary Gearbox 高徑軸向負荷標準型</p> <p>RAM-S: Precision Shaft Output Spiral Bevel Gearbox 精密單出力軸直角型</p> <p>RAM-SS: Precision Double Shaft Spiral Bevel Gearbox 精密雙出力軸直角型</p> <p>RAM-H: Precision Hollow Shaft Spiral Bevel Gearbox 精密中空軸直角型</p> <p>RAM-D: Precision Clamping Shaft Spiral Bevel Gearbox 精密束軸直角型</p> <p>RAM-F: Precision Flange Spiral Bevel Gearbox 精密法蘭直角型</p> <p>RAH-S: Standard Precision Shaft Output Spiral Bevel Gearbox 標準單出力軸直角型</p> <p>RAH-SS: Standard Precision Double Shaft Spiral Bevel Gearbox 標準雙出力軸直角型</p> <p>RAH-H: Standard Precision Hollow Shaft Spiral Bevel Gearbox 標準中空軸直角型</p> <p>RAH-D: Standard Precision Clamping Shaft Spiral Bevel Gearbox 標準束軸直角型</p> <p>RAH-F: Standard Precision Flange Spiral Bevel Gearbox 標準法蘭直角型</p>
②	Frame Size 型號	042,060,070,080,090,120,150,180,220 ... Refer to Gearbox Quick Selection Table Page 89. 請參考快速選擇表第 89 頁
③	Stage 段數	L1, L2, L3
④	Ratio 減速比	L1: 3 / 4 / 5 / 7 / 10 L2: 9 / 12 / 15 / 16 / 20 / 21 / 25 / 28 / 30 / 40 / 49 / 50 / 70 L3: 36 / 45 / 60 / 75 / 80 / 150 / 200 / 300 / 400 / 500 / 700 / 1000
⑤	Motor Shaft Diameter 馬達軸心直徑(S)	Customized according to customer requirement. 依客戶需求訂製
⑥	Motor Pilot Diameter 馬達引導外徑(B)	Customized according to customer requirement. 依客戶需求訂製
⑦	Motor Guide Depth 馬達引導深度(P)	Customized according to customer requirement. 依客戶需求訂製
⑧	Installing Screw P.C.D 安裝螺絲孔直徑(M)	Customized according to customer requirement. 依客戶需求訂製
⑨	Installing Screw Size 安裝螺絲孔內徑(A)	Customized according to customer requirement. 依客戶需求訂製
⑩	Motor Shaft Length 馬達出力軸長度(R)	Customized according to customer requirement. 依客戶需求訂製

※ Dimensions and specifications in the catalog are subject to change without notice. 尺寸及規格若有變動，將不另行通知。

Model 型式 ①

High Precision 高精密型

DA

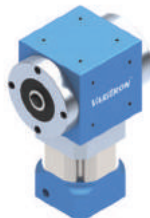


Precision 精密型

DM	DF	RAM-S	RAM-SS
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RAM-H	RAM-D	RAM-F
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Standard 標準型

DH	DL	DN	RAH-S
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RAH-SS	RAH-H	RAH-D	RAH-F
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Gearbox Quick Selection Table 減速機型號快速選擇表 ②

Servo Capacity 伺服馬力	Frame Size 型號	Reduction Ratio 減速比																				
		3	4	5	7	9	10	12	15	16	20	21	25	28	30	35	40	49	50	70	100	
100W	DM/DH 042		●	●	●		●				●					●		●	●	●	●	●
	DA/DM/DF/DH/DL 060	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	RAM/RAH 060	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
200W	DA/DM/DF/DH/DL 060	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	RAM/RAH 060	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	DA/DM/DF/DH/DL 090	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
400W	RAM/RAH 090	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DM/DH/DL 080	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DA/DF/RAM/RAH 060	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
500W	DA/DM/DF/DH/DL 090	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	RAM/RAH 090	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	DA/DM/DF/DH/DL 120	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	RAM/RAH 120	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
750W	DA/DM/DF/DH/DL 090	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	RAM/RAH 090	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	DM/DF/DH/DL 120	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1.0kW	RAM/RAH 120	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	DA/DM/DF/DH/DL 120	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	DM/DF/DH/DL 150	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1.5kW	RAM/RAH 150	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DA/DM/DF/DH/DL 120	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	DM/DF/DH/DL 150	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	RAM/RAH 150	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2.0kW	DM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DA/DM/DF/DH/DL 120	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	RAM/RAH 150	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
3.5kW	DM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DA/DM/DF/DH/DL 150	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	RAM/RAH 150	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
5.0kW	DM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DA/DM/DF/DH/DL 150	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	RAM/RAH 150	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
7.0kW	DM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	DA/DM/DF/DH/DL 150	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
11.0kW	DM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	

※ For more accurate selection, refer to Specifications Table for each model. 詳細型號選擇請參考各型規格表選用。
 ※ Use larger model when large moment of inertia is needed. 慣性距較大時,選用大一級減速機型號。
 ※ For 3 Stage selection, contact Varitron® or your sales personal. 如需三段選擇表請聯絡本公司。

DA Helical Gear High Precision Planetary Gearbox 斜齒輪高精密型

Series Specifications 規格表

Specification 規格	Ratio 減速比 (Stage 段數)	DA060	DA090	DA120			
Instantaneous Max. Output Torque 瞬間最大輸出扭矩 T_{2B} (Nm)	3/9/10/12/21/30	111	345	624			
	4/15/16/20/25/40	141	480	804			
	7/28/35/49/70/100	135	450	780			
Defined Output Torque 額定輸出扭矩 T_{2N} (Nm)	3/9/10/12/21/30	37	115	208			
	4/15/16/20/25/40	47	160	268			
	7/28/35/49/70/100(3 stage 三段)	45	150	260			
	5/50	47	150	260			
Reduction Ratio 減速比	L1: 1 Stage 單段	3 / 4 / 5 / 7 / 10					
	L2: 2 Stage 雙段	9 / 12 / 15 / 16 / 20 / 21 / 25 / 28 / 30 / 35 / 40 / 49 / 50 / 70					
	L3: 3 Stage 三段	100 / 200 / 250					
Defined Input Rotational Speed 額定輸入轉速 n_{1N} (rpm)	3/4/5 (L1)	3300	3300	3200			
	7/10 (L1)	3600	3600	3500			
	12~40 (L2)	4000	3900	3800			
	50 (L2)	4400	4300	4200			
Backlash 精密背隙 (arcmin)	3~10 (L1)	$P_0 \leq 1 / P_1 \leq 3 / P_2 \leq 5$					
	12~100 (L2)	$P_0 \leq 3 / P_1 \leq 5 / P_2 \leq 7$					
Torsional Rigidity 扭轉剛性 (Nm/arcmin)	3~100 (L1,L2)	7	14	25			
Allowable Radial Force 容許徑向力 F_{2rB^2} (N)	3~100 (L1,L2)	1500	3500	6000			
Allowable Axial Force 容許軸向力 F_{2aB^2} (N)	3~100 (L1,L2)	750	2800	4800			
Full Load Efficiency 滿載時使用效率 %	3~10 (L1)	≥ 97					
	12~100 (L2)	≥ 94					
Service Life 使用壽命 L_{h2} (hrs)	3~100 (L1,L2)	20000					
Weight 重量 (kgs)	3~10 (L1)	1.3	3.5	6			
	12~100 (L2)	1.6	4.5	7.2			
Noise 噪音值 (db)		65	64	64			
Temperature 使用溫度範圍 °C		(-15°C ~ +90°C)					
Protection Rank 防護等級		IP64 / IP65 (IP66 by request 訂購製作)					
Lubricating Oil 潤滑油		Synthetic Lubricant 合成潤滑油 ISO VG220					
Moment Of Inertia 轉動慣量 J_1 (kg.cm)	Stage 段數	Ratio 減速比					
			L1	3	0.26	1.3	5.6
				4	0.22	1.0	4.3
				5	0.20	0.95	3.9
				7	0.19	0.9	3.5
	10	0.18		0.8	3.4		
	L2	9	0.2	0.89	3.5		
		12	0.19	0.8	3.2		
		16	0.18	0.8	3.2		
		20	0.17	0.8	3.2		
		25	0.17	0.75	3.1		
		28	0.17	0.75	3.1		
		35	0.17	0.75	3.1		
		40	0.17	0.75	3.1		
		50	0.17	0.7	3.0		
70		0.17	0.7	3.0			
100	0.17	0.7	3.0				

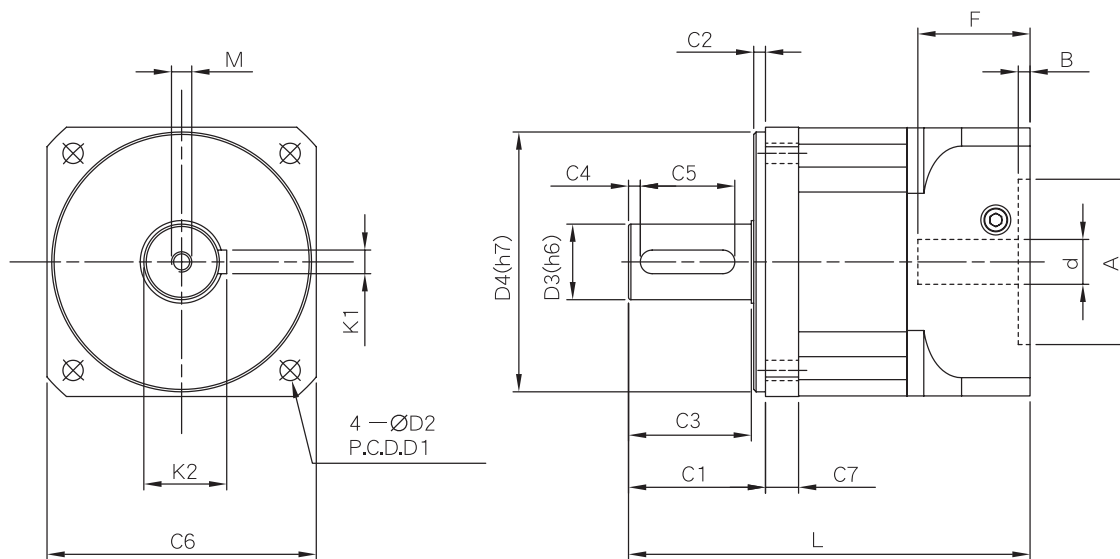
※ For 3 stage technical data, contact Varitron® or your sales personal. 如需三段技術資料請洽中國變速。

※ Use larger model when large moment of inertia is needed. 慣性距較大時,選用大一級減速機型號。

※ Continuous operating will reduce service life. 連續運轉將會減少減速機的使用壽命。

DA Helical Gear High Precision Planetary Gearbox 斜齒輪高精密度

Dimensions 外型尺寸表



Dimensions 尺寸	DA060	DA090	DA120
D1	70	105	130
D2	5.5	6.8	8.6
D3	16(12~16)	20(18~22)	32(24~35)
D4	50	80	110
C1	35	56	58
C2	7	6	5
C3	27	49	52
C4	3	5	5
C5	20	25	40
C6	60	94	114
C7	15	17	14
L1 (1Stage 單段)	125.7	167	170.3
L2 (2Stage 雙段)	147.7	195.3	198.6
M	M4xP0.7x15	M6xP1.0x20	M8xP1.25x27
K1	5	6	10
K2	18	22.5	35.1
d	≤ 14	≤ 24	≤ 28
A	30~50	50~80	50~110
B	6	8	5
F	≤ 35	≤ 47.5	≤ 47.5

※ For 3 stage dimension, contact Varitron® or your sales personal. 如需三段尺寸請洽中國變速。

※ Output shaft can be custom size upon ordering. 減速機出力軸可依需求訂製。

※ For 'A' & 'F' dimension, may array according to different servo motor. 「A」 & 「F」 會因不同伺服馬達而有所變動。

DM Precision Planetary Gearbox 精密型

Series Specifications 規格表

Specification 規格	Ratio 減速比 (Stage 段數)	DM042	DM060	DM070	DM090	DM120	DM150	DM180	DM220	
Instantaneous Max. Output Torque 瞬間最大輸出扭矩 T _{2B} (Nm)	3/9/10/21/30	66	132	144	504	780	1428	2961	4680	
	4/15/16/20/25/40	105	162	180	564	918	1680	3840	6600	
	7/28/35/70/100	90	138	156	528	855	1560	3555	5640	
Defined Output Torque 額定輸出扭矩 T _{2N} (Nm)	5/50	102	144	168	540	876	1608	3744	7080	
	3/9/10/30	22	44	48	168	260	476	987	1560	
	4/15/16/20/25/40	35	54	60	188	306	560	1280	2200	
Reduction Ratio 減速比	7/21/28/35/70/100	30	46	52	176	285	520	1185	1880	
	5/50	34	48	56	180	292	536	1248	2360	
	L1: 1 Stage 單段	3 / 4 / 5 / 7 / 10								
Defined Input Rotational Speed 額定輸入轉速 n _{1N} (rpm)	L2: 2 Stage 雙段	9 / 12 / 15 / 16 / 20 / 21 / 25 / 28 / 30 / 35 / 40 / 49 / 50 / 70								
	L3: 3 Stage 三段	100 / 200 / 250								
	3/4/5 (L1)	3300	3300	3300	2600	2300	2200	1500	1500	
Radial Load Force 徑向負荷力 FrMax. (N)	7/10 (L1)	4000	4000	4000	2900	2700	2700	2400	2000	
	12~40 (L2)	4400	4400	4400	3200	3000	3000	2800	2400	
	50 (L2)	4800	4800	4800	3600	3300	3200	3000	2500	
	70~100 (L2)	5500	5500	5500	4200	3900	3500	3200	2000	
Axial Load Force 軸向負荷力 FrMax. (N)	3~100 (L1,L2)	1700	2300	2300	5400	6700	9000	14000	42000	
	Backlash 精密背隙 (arcmin)	3~10 (L1)	≤5	≤5	≤5	≤5	≤5	≤5	≤5	≤5
12~100 (L2)		≤8	≤8	≤8	≤8	≤8	≤8	≤8	≤8	
Torsional Rigidity 扭轉剛性 (Nm/arcmin)	3~100 (L1,L2)	3	6.5	7	14	27	48	115	218	
	Allowable Radial Force 容許徑向力 F _{2rB} ² (N)	3~100 (L1,L2)	700	1400	1400	6200	7500	14000	22000	28800
Allowable Axial Force 容許軸向力 F _{2aB} ² (N)		3~100 (L1,L2)	350	800	800	5200	3225	12000	20000	26000
	Full Load Efficiency 滿載時使用效率 %	3~10 (L1)	≥97							
12~100 (L2)		≥94								
Service Life 使用壽命 L _{h2} (hrs)	3~100 (L1,L2)	20000								
Weight 重量 (kgs)	3~10 (L1)	0.4	1.28	1.4	4.4	6.3	18	38	49	
	12~100 (L2)	0.5	1.6	1.8	5.2	7.8	25	50	61	
Noise 噪音值 (db)		65	65	65	64	64	64	64	64	
Temperature 使用溫度範圍 °C		(-15°C ~ +90°C)								
Protection Rank 防護等級		IP64 / IP65 (IP66 by request 訂購製作)								
Lubricating Oil 潤滑油		Synthetic Lubricant 合成潤滑油 ISO VG220								
Moment Of Inertia 轉動慣量 J ₁ (kg.cm)	L1	Stage 段數	Ratio 減速比							
		3	0.04	0.042	0.042	0.78	2.38	19.8	48.7	66.5
		4	0.04	0.03	0.03	0.6	2	17	45	63.2
		5	0.04	0.029	0.029	0.59	2	17	46.5	65
		7	0.04	0.028	0.028	0.73	2	16.8	45.5	65.8
	L2	10	0.04	0.035	0.035	0.75	2.3	19	48	66.8
		9	0.03	0.042	0.042	0.78	2.38	19.8	19.8	24.5
		12	0.03	0.03	0.03	0.73	2.1	17	19	24
		16	0.03	0.03	0.03	0.6	2.1	17	17	22
		20	0.03	0.03	0.03	0.6	2.1	16.8	17	22
		25	0.03	0.029	0.029	0.75	2.1	17	17	21.5
		28	0.03	0.03	0.03	0.75	2.1	19	17	21.5
		35	0.03	0.03	0.03	0.73	2.38	19	19	21
		40	0.03	0.035	0.035	0.78	2.38	19	19	21
		50	0.03	0.035	0.035	0.78	2.38	19	19	21
		70	0.03	0.035	0.035	0.78	2.38	19	19	21
100	0.03	0.035	0.035	0.78	2.38	19.8	19.8	20.6		

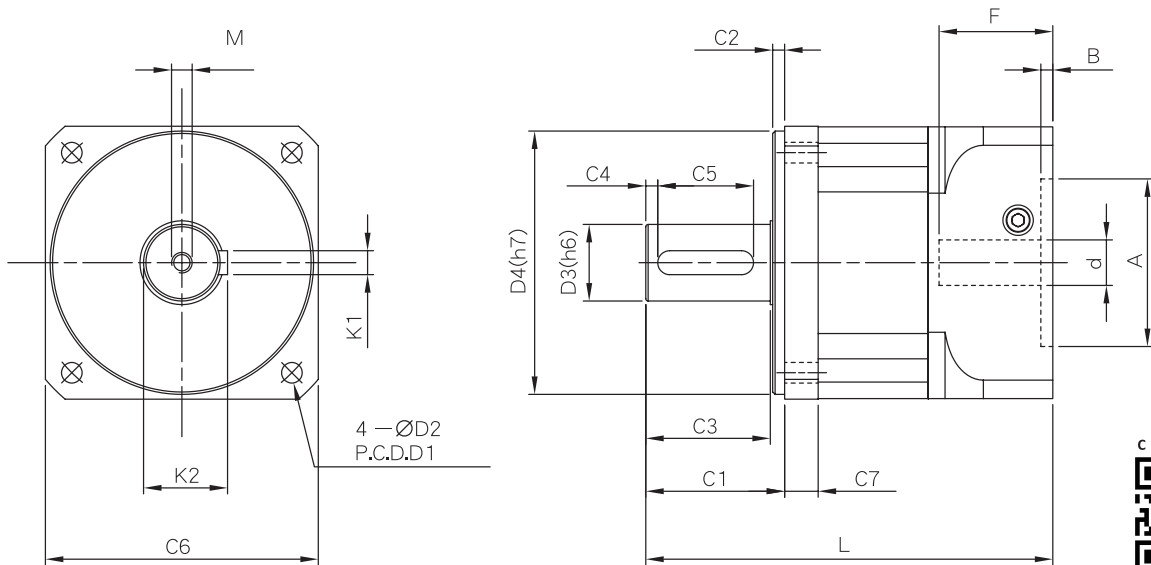
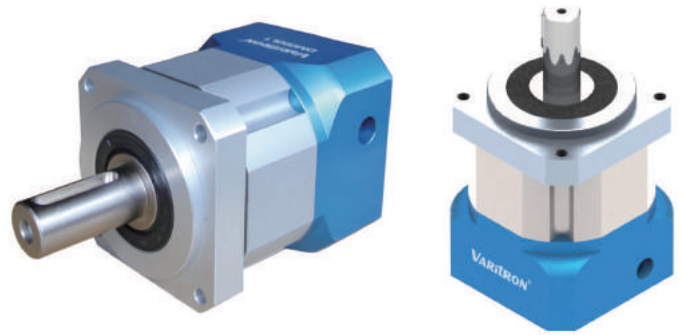
※ For 3 stage technical data, contact Varitron® or your sales personal. 如需三段技術資料請洽中國變速。

※ Use larger model when large moment of inertia is needed. 慣性距較大時,選用大一級減速機型號。

※ Continuous operating will reduce service life. 連續運轉將會減少減速機的使用壽命。

DM Precision Planetary Gearbox 精密型

Dimensions 外型尺寸表



Dimensions 尺寸	DM042	DM060	DM070	DM090	DM120	DM150	DM180	DM220
D1	50	70	75	105	130	165	215	250
D2	4.2	5.5	5.5	6.8	8.6	10.5	13	17
D3	12	16(12~16)	16(12~16)	20(16~22)	32(24~35)	42(38~45)	55(50~60)	75(50~75)
D4	35	50	60	80	110	130	160	180
C1	25	35	33	56	58	74	107	124
C2	4	7	5	6	5	4	10	15
C3	20	27	27	49	52	67	96	106
C4	3	3	3	5	5	5	6	7
C5	12	20	20	25	40	45	70	90
C6	42	60	68	94	114	142	180	220
C7	8	15	17	17	14	18	20	30
L1 (1Stage 單段)	96.9	125.7	125.7	167	170.3	262	334	356
L2 (2Stage 雙段)	111.4	147.7	147.7	195.3	198.6	313.8	416	462.5
M	M4xP0.7x15	M4xP0.7x15	M4xP0.7x15	M6xP1.0x20	M8xP1.25x27	M12xP1.75x32	M12xP1.75x40	M14xP2.0x40
K1	4	5	5	6	10	12	14	20
K2	13.5	18	18	22.5	35.1	45	58.5	79.5
d	≤8	≤14	≤14	≤24	≤28	≤42	≤55	≤69.7
A	22~30	30~50	30~60	50~80	55~110	95~130	95~155	180~250
B	5	4.5	6	6	5	10	11	12
F	≤25	≤33.5	≤33.5	≤47.5	≤47.5	≤66.5	≤82.5	≤88.5

※ For 3 stage dimension, contact Varitron® or your sales personal. 如需三段尺寸請洽中國變速。

※ Output shaft can be custom size upon ordering 減速機出力軸可依需求訂製。

※ For 'A' & 'F' dimension, may array according to different servo motor. 「A」 & 「F」會因不同伺服馬達而有所變動。

DF Precision Flange Type Planetary Gearbox 法蘭式精密型

Series Specifications 規格表

Specification 規格	Ratio 減速比 (Stage 段數)	DF060	DF090	DF120	DF150		
Instantaneous Max. Output Torque 瞬間最大輸出扭矩 T _{2B} (Nm)	3/9/10/30/100	132	504	780	1428		
	4/12/16/20/28/40	162	564	918	1680		
	5/15/25/35/50	138	528	855	1560		
	7/21/49/70	144	540	879	1608		
Defined Output Torque 額定輸出扭矩 T _{2N} (Nm)	3/9/10/21/30/100	44	168	260	476		
	4/15/16/20/25/28/40	54	188	306	560		
	5/15/25/35/50	46	176	285	520		
	7/21/49/70	48	180	292	536		
Reduction Ratio 減速比	L1: 1 Stage 單段	3 / 4 / 5 / 7 / 10					
	L2: 2 Stage 雙段	9 / 12 / 15 / 16 / 20 / 21 / 25 / 28 / 30 / 35 / 40 / 49 / 50 / 70					
	L3: 3 Stage 三段	100 / 200 / 250					
Defined Input Rotational Speed 額定輸入轉速 n _{1N} (rpm)	3/4/5 (L1)	3300	2600	2300	2200		
	7/10 (L1)	4000	2900	2700	2700		
	12 ~ 40 (L2)	4400	3200	3000	3000		
	50 (L2)	4800	3600	3300	3200		
	70 ~ 100 (L2)	5500	4200	3900	3500		
Backlash 精密背隙 (arcmin)	3~10 (L1)	≤5	≤5	≤5	≤5		
	12~100 (L2)	≤8	≤8	≤8	≤8		
Torsional Rigidity 扭轉剛性 (Nm/arcmin)	3~100 (L1,L2)	6.5	14	27	48		
Max. Bending Moment 最大彎曲力矩 (N)	3~100 (L1,L2)	50	98	125	200		
Allowable Axial Force 容許軸向力 F _{2aB} (N)	3~100 L1, L2	2300	5400	6700	9000		
Full Load Efficiency 滿載時使用效率 %	3~10 (L1)	≥97					
	12~100 (L2)	≥94					
Service Life 使用壽命 Lh ₂ (hrs)	3~100 (L1,L2)	20000					
Weight 重量 (kgs)	3~10 (L1)	2.3	4.7	7.4	22		
	12~100 (L2)	2.8	5.8	8.9	29		
Noise 噪音值 (db)		65	65	64	64		
Temperature 使用溫度範圍 °C		(-15°C ~ +90°C)					
Protection Rank 防護等級		IP64 / IP65 (IP66 by request 訂購製作)					
Lubricating Oil 潤滑油		Synthetic Lubricant 合成潤滑油 ISO VG220					
Moment Of Inertia 轉動慣量 J ₁ (kg.cm)	Stage 段數	Ratio 減速比	3	0.04	0.78	2.38	19.8
			4	0.03	0.6	2	17
			5	0.03	0.59	2	17
			7	0.03	0.73	2	16.8
			10	0.04	0.75	2.3	19
	L1	L2	9	0.04	0.78	2.38	19.8
			12	0.03	0.73	2.1	17
			16	0.03	0.6	2.1	17
			20	0.03	0.6	2.1	16.8
			25	0.03	0.75	2.1	17
			28	0.03	0.75	2.1	19
			35	0.03	0.73	2.38	19
			40	0.04	0.78	2.38	19
			50	0.04	0.78	2.38	19
			70	0.04	0.78	2.38	19
			100	0.04	0.78	2.38	19.8

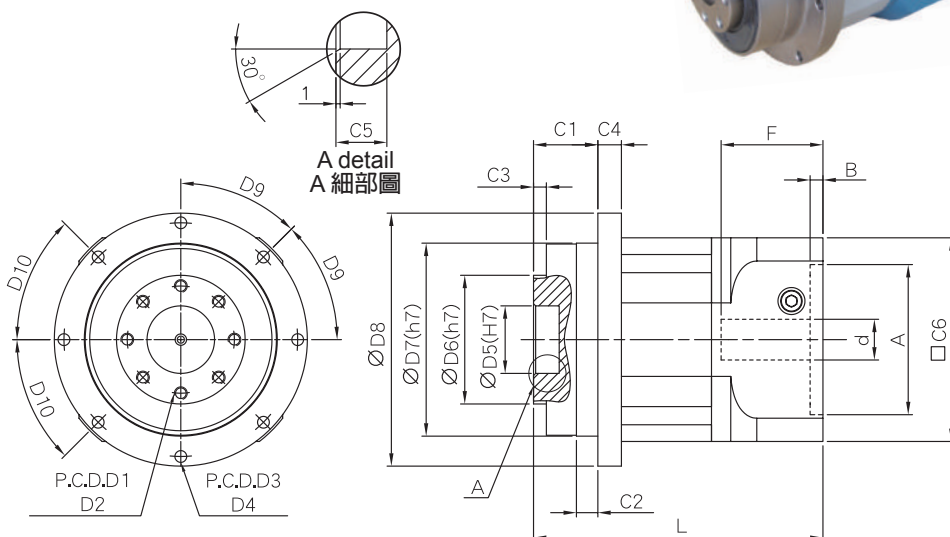
※ For 3 stage technical data, contact Varitron® or your sales personal. 如需三段技術資料請洽中國變速。

※ Use larger model when large moment of inertia is needed. 慣性距較大時,選用大一級減速機型號。

※ Continuous operating will reduce service life. 連續運轉將會減少減速機的使用壽命。

DF Precision Flange Type Planetary Gearbox 法蘭式精密型

Dimensions 外型尺寸表



Dimensions 尺寸	DF060	DF090	DF120	DF150
D1	31.5	50	63	80
D2	8xM5xP0.8	8xM6xP1.0	12xM6xP1.0	12xM8xP1.25
D3	79	109	135	168
D4	8x4.5	8x5.5	8x5.5	12x6.6
D5	20	31.5	40	50
D6	40	60	80	95
D7	64	90	110	140
D8	86	118	145	179
D9	45°	45°	45°	30°
D10	45°	45°	30°	30°
C1	20.5	30	29	38
C2	16.5	10	10	15
C3	4	6	6	6
C4	15.5	11	13	25
C5	8	12	12	12
C6	60	94	114	142
d	≤14	≤24	≤28	≤42
A	30~50	50~80	55~100	95~130
B	6	6	5	10
F	≤35	≤47.5	≤47.5	≤66.5
L1 (1Stage 單段)	111.7	135	140.3	233
L2 (2Stage 雙段)	134	163.3	168.6	284.8

※ For 3 stage dimension, contact Varitron® or your sales personal. 如需三段尺寸請洽中國變速。

※ DF180, DF220 modle available, contact Varitron® or your sales personal. 如需 DF180、DF220 型號，請洽中國變速。

※ Output shaft can be custom size upon ordering 減速機出力軸可依需求訂製。

※ For 'A' & 'F' dimension, may array according to different servo motor. 「A」 & 「F」 會因不同伺服馬達而有所變動。

DH Standard Precision Planetary Gearbox 標準型

Series Specifications 規格表

Specification 規格	Ratio 減速比 (Stage 段數)	DH042	DH060	DH080	DH090	DH120	DH150	
Instantaneous Max. Output Torque 瞬間最大輸出扭矩 T _{2B} (Nm)	3/9/10/12/21/30	90	120	345	420	780	1428	
	4/15/16/20/25/40	123	153	405	504	918	1680	
	7/28/35/49/70/100	110	132	396	498	855	1560	
Defined Output Torque 額定輸出扭矩 T _{2N} (Nm)	5/50	120	141	378	465	876	1608	
	3/9/10/12/21/30	30	40	115	140	260	476	
	4/15/16/20/25/40	48	60	135	168	306	560	
	7/28/35/49/70/100(3 stage 三段)	40	50	132	166	285	520	
Reduction Ratio 減速比	5/50	45	55	126	155	292	536	
	L1: 1 Stage 單段	3 / 4 / 5 / 7 / 10						
	L2: 2 Stage 雙段	9 / 12 / 15 / 16 / 20 / 21 / 25 / 28 / 30 / 35 / 40 / 49 / 50 / 70						
Defined Input Rotational Speed 額定輸入轉速 n _{1N} (rpm)	L3: 3 Stage 三段	100 / 200 / 250						
	3/4/5 (L1)	3300	3300	3000	2600	2300	2200	
	7/10 (L1)	4000	4000	3300	2900	2700	2700	
	12~40 (L2)	4400	4400	3500	3200	3000	3000	
	50 (L2)	4800	4800	4000	3600	3300	3200	
Backlash 精密背隙 (arcmin)	70~100 (L2)	5500	5500	4700	4200	3900	3500	
	3~10 (L1,L2)	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	
Torsional Rigidity 扭轉 剛性(Nm/arcmin)	12~100 (L2)	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	
	3~100 (L1,L2)	5	7	8	11	27	48	
Allowable Radial Force 容許徑向力 F _{2rB} ² (N)	3~100 (L1, L2)	365	840	1600	6000	7500	14000	
Allowable Axial Force 容許軸向力 F _{2aB} ² (N)	3~100 (L1, L2)	305	605	1400	5000	6450	12000	
Full Load Efficiency 滿載時使用效率 %	3~10 (L1, L2)	≥ 97						
	12~100 (L2)	≥ 94						
Service Life 使用壽命 Lh ₂ (hrs)	3~100 (L1, L2)	20000						
Weight 重量 (kgs)	3~10 (L1, L2)	0.4	1.3	2.3	3.5	6	16	
	12~100 (L2)	0.5	1.6	3.3	4.5	7.2	20	
Noise 噪音值 (db)		65	65	64	64	64	64	
Temperature 使用溫度範圍 °C		(-15°C ~ +90°C)						
Protection Rank 防護等級		IP64 / IP65 (IP66 by request 訂購製作)						
Lubricating Oil 潤滑油		Synthetic Lubricant 合成潤滑油 ISO VG220						
Moment Of Inertia 轉動 慣量 J ₁ (kg.cm)	Stage 段數 L1	Ratio 減速比						
		3	0.31	0.31	0.35	0.4	5.9	10.5
		4	0.3	0.3	0.33	0.6	5.09	9.1
		5	0.29	0.29	0.33	0.59	4.93	8.85
		7	0.28	0.28	0.31	0.58	4.83	8.85
	Stage 段數 L2	10	0.27	0.27	0.31	0.57	4.81	8.46
		9	0.29	0.29	0.3	0.56	4.91	9.02
		12	0.3	0.3	0.3	0.58	5.1	9.01
		16	0.3	0.3	0.3	0.6	5.09	9.01
		20	0.3	0.3	0.3	0.6	5.07	9.02
		25	0.29	0.29	0.3	0.59	4.91	8.83
		28	0.3	0.3	0.3	0.59	5.07	9.01
		35	0.3	0.3	0.3	0.58	4.91	8.82
		40	0.27	0.27	0.3	0.56	4.8	8.45
		50	0.27	0.27	0.3	0.56	4.8	8.45
		70	0.27	0.27	0.3	0.56	4.8	8.45
		100	0.27	0.27	0.3	0.56	4.8	8.45

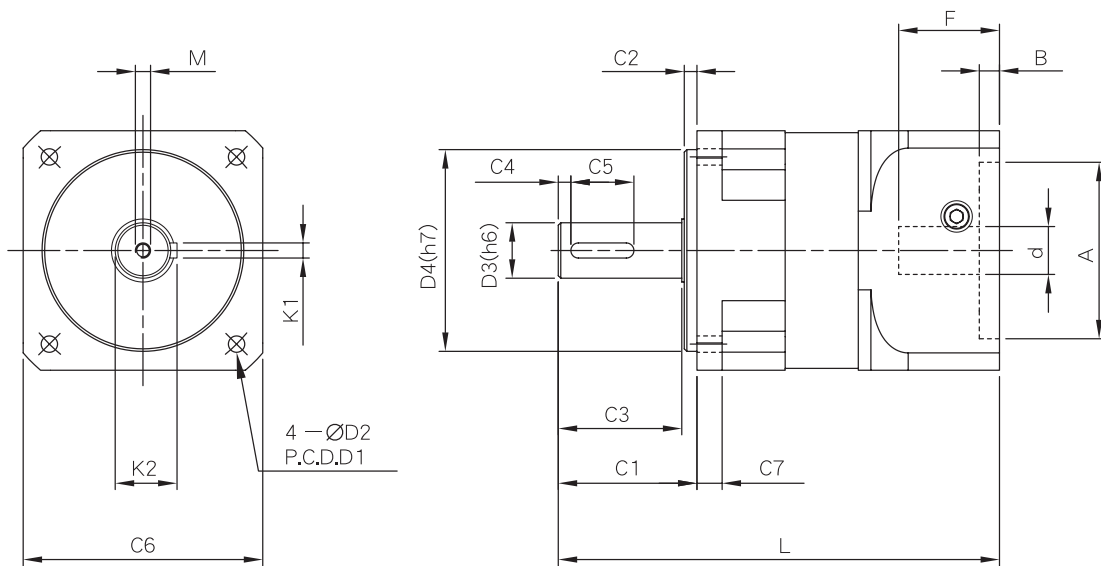
※ For 3 stage technical data, contact Varitron® or your sales personal. 如需三段技術資料請洽中國變速。

※ Use larger model when large moment of inertia is needed. 慣性距較大時,選用大一級減速機型號。

※ Continuous operating will reduce service life. 連續運轉將會減少減速機的使用壽命。

DH Standard Precision Planetary Gearbox 標準型

Dimensions 外型尺寸表



Dimensions 尺寸	DH042	DH060	DH080	DH090	DH120	DH150
D1	50	70	90	105	130	165
D2	4.2	5.2	6.5	6.5	8.5	10.5
D3	12	16(12~16)	20	20(18~22)	32(24~35)	42(38~45)
D4	35	50	70	80	110	130
C1	24	35	56	55	58	74
C2	4	7	6	5	5	4
C3	20	27	49	49	52	67
C4	3	3	5	5	5	5
C5	12	20	25	25	40	45
C6	42	62	79	95	115	145
C7	8	9.6	16	10	19	23.5
L1 (1Stage 單段)	95	118	169	172.5	170.3	262
L2 (2Stage 雙段)	109	137	194.5	198.5	198.6	314
M	M4xP0.7x8	M4xP0.7x15	M6xP1.0x20	M6xP1.0x20	M8xP1.25x27	M12xP1.75x32
K1	4	5	6	6	10	12
K2	13.5	18	22.5	22.5	35.1	45
d	≤ 8	≤ 14	≤ 24	≤ 24	≤ 28	≤ 42
A	22~30	30~50	50~80	50~80	50~110	95~130
B	4	4	6	8	5	10
F	≤ 25	≤ 32	≤ 35	≤ 40	≤ 47.5	≤ 66.5

※ For 3 stage dimension, contact Varitron® or your sales personal. 如需三段尺寸請洽中國變速。
 ※ Output shaft can be custom size upon ordering. 減速機出力軸可依需求訂製。
 ※ For 'A' & 'F' dimension, may array according to different servo motor. 「A」 & 「F」會因不同伺服馬達而有所變動。

DL Standard Precision Planetary Gearbox 標準型

Series Specifications 規格表

Specification 規格	Ratio 減速比 (Stage 段數)	DL060	DL090	DL120	DL150		
Instantaneous Max. Output Torque 瞬間最大輸出扭矩 T_{2B} (Nm)	3/9/10/12/21/30	120	420	780	1428		
	4/15/16/20/25/40	153	504	918	1680		
	7/28/35/49/70/100	132	498	855	1560		
	5/50	141	465	876	1608		
Defined Output Torque 額定輸出扭矩 T_{2N} (Nm)	3/9/10/12/21/30	40	140	260	476		
	4/15/16/20/25/40	51	168	306	560		
	7/28/35/49/70/100(3 stage 三段)	44	166	285	520		
	5/50	47	155	292	536		
Reduction Ratio 減速比	L1: 1 Stage 單段	3 / 4 / 5 / 7 / 10					
	L2: 2 Stage 雙段	9 / 12 / 15 / 16 / 20 / 21 / 25 / 28 / 30 / 35 / 40 / 49 / 50 / 70					
	L3: 3 Stage 三段	100 / 200 / 250					
Defined Input Rotational Speed 額定輸入轉速 n_{1N} (rpm)	3/4/5 (L1)	3300	2600	2300	2200		
	7/10 (L1)	4000	2900	2700	2700		
	12~40 (L2)	4400	3200	3000	3000		
	50 (L2)	4800	3600	3300	3200		
	70~100 (L2)	5500	4200	3900	3500		
Backlash 精密背隙 (arcmin)	3~10 (L1)	≤ 10	≤ 10	≤ 10	≤ 10		
	12~100 (L2)	≤ 12	≤ 12	≤ 12	≤ 12		
Torsional Rigidity 扭轉剛性 (Nm/arcmin)	3~100 (L1,L2)	7	11	27	48		
Allowable Radial Force 容許徑向力 F_{2rB^2} (N)	3~100 (L1, L2)	750	5400	7500	14000		
Allowable Axial Force 容許軸向力 F_{2aB^2} (N)	3~100 (L1, L2)	545	4500	6450	12000		
Full Load Efficiency 滿載時使用效率 %	3~10 (L1)	≥ 97					
	12~100 (L2)	≥ 94					
Service Life 使用壽命 L_{h2} (hrs)	3~100 (L1, L2)	20000					
Weight 重量 (kgs)	3~10 (L1)	1.1	3.5	6	16		
	12~100 (L2)	1.6	4.5	7.2	20		
Noise 噪音值 (db)		65	64	64	64		
Temperature 使用溫度範圍 °C		(-15°C ~ +90°C)					
Protection Rank 防護等級		IP64 / IP65 (IP66 by request 訂購製作)					
Lubricating Oil 潤滑油		Synthetic Lubricant 合成潤滑油 ISO VG220					
Moment Of Inertia 轉動慣量 J_1 (kg.cm)	Stage 段數	Ratio 減速比	3	0.31	0.4	5.9	10.5
			4	0.3	0.6	5.09	9.1
			5	0.29	0.59	4.93	8.85
			7	0.28	0.58	4.83	8.85
			10	0.27	0.57	4.81	8.46
	L1	L2	9	0.29	0.56	4.91	9.02
			12	0.3	0.58	5.1	9.01
			16	0.3	0.6	5.09	9.01
			20	0.3	0.6	5.07	9.02
			25	0.29	0.59	4.91	8.83
			28	0.3	0.59	5.07	9.01
			35	0.3	0.58	4.91	8.82
			40	0.27	0.56	4.8	8.45
			50	0.27	0.56	4.8	8.45
			70	0.27	0.56	4.8	8.45
100	0.27	0.56	4.8	8.45			

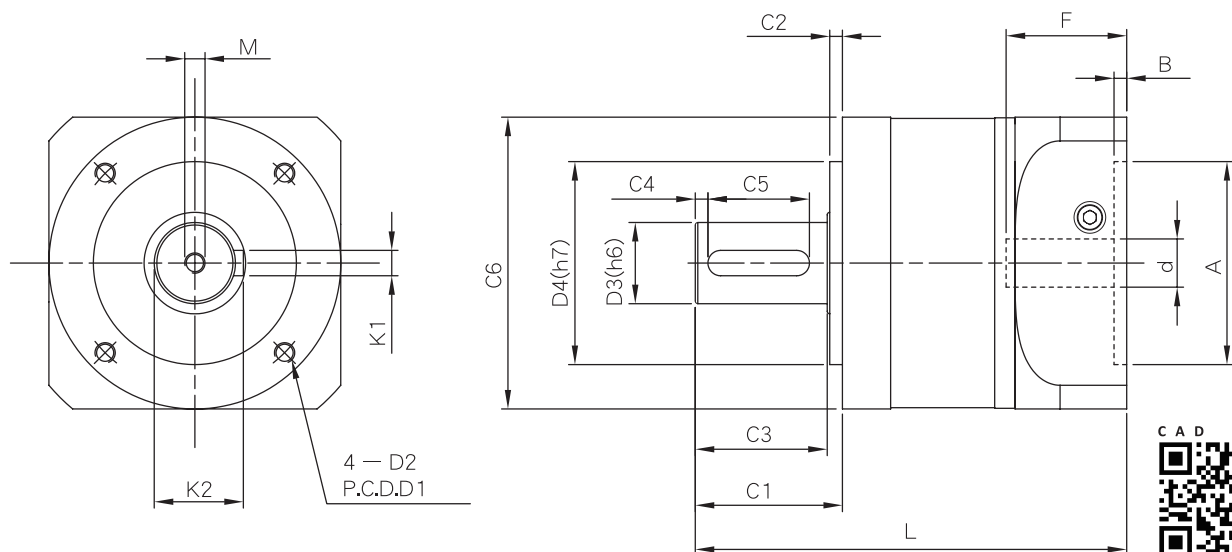
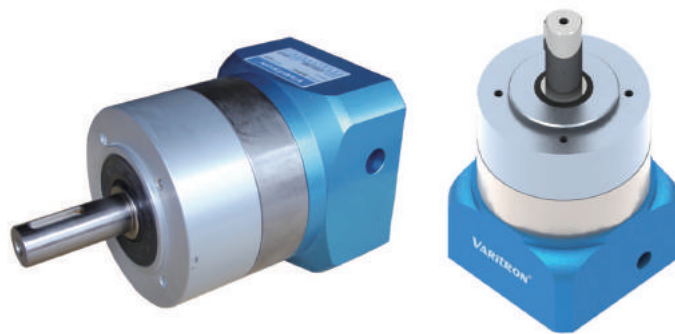
※ For 3 stage technical data, contact Varitron® or your sales personal. 如需三段技術資料請洽中國變速。

※ Use larger model when large moment of inertia is needed. 慣性距較大時,選用大一級減速機型號。

※ Continuous operating will reduce service life. 連續運轉將會減少減速機的使用壽命。

DL Standard Precision Planetary Gearbox 標準型

Dimensions 外型尺寸表



Dimensions 尺寸	DL060	DL090	DL120	DL150
D1	50	70	100	145
D2	M5	M6	M8	M12
D3	16(12~16)	20(18~22)	32(24~32)	42(38~42)
D4	40	60	80	130
C1	31	55	58	74
C2	3	5	5	4
C3	27	49	52	67
C4	3	5	5	5
C5	20	25	40	45
C6	60	93	115	160
L1 (1Stage 單段)	118	172.5	170.3	262
L2 (2Stage 雙段)	137	198.5	198.6	314
M	M4xP0.7x15	M6xP1.0x20	M8xP1.25x27	M12xP1.75x32
K1	5	6	10	12
K2	18	22.5	35.1	45
d	≤14	≤24	≤28	≤42
A	30~50	50~80	50~110	95~130
B	6	8	5	10
F	≤32	≤40	≤47.5	≤66.5

※ For 3 stage dimension, contact Varitron® or your sales personal. 如需三段尺寸請洽中國變速。

※ Output shaft can be custom size upon ordering. 減速機出力軸可依需求訂製。

※ For 'A' & 'F' dimension, may array according to different servo motor. 「A」&「F」會因不同伺服馬達而有所變動。

DN High R-A Load Standard Precision Planetary Gearbox 高徑軸向負荷標準型

Series Specifications 規格表

Specification 規格	Ratio 減速比 (Stage 段數)	DN060	DN080	DN100	
Instantaneous Max. Output Torque 瞬間最大輸出扭矩 T_{2B} (Nm)	10/100	120	345	780	
	16/4/20/28/36/40	153	405	918	
	81/49/7/9/63/70/90	132	396	855	
	5/45/50/35/25	141	378	876	
Defined Output Torque 額定輸出扭矩 T_{2N} (Nm)	10/100	40	115	260	
	4/16/20/28/36/40	60	135	306	
	7/9/49/63/70/81/90	50	132	285	
	5/25/35/45/50	55	126	292	
Reduction Ratio 減速比	L1: 1 Stage 單段	4 / 5 / 7 / 9 / 10			
	L2: 2 Stage 雙段	16 / 20 / 25 / 28 / 35 / 36 / 40 / 45 / 49 / 50 / 63 / 70 / 81 / 90			
	L3: 3 Stage 三段	100 / 200 / 250			
Defined Input Rotational Speed 額定輸入轉速 n_{1N} (rpm)	4/5 (L1)	3300	3000	2300	
	7~10 (L1)	4000	3300	2700	
	16~40 (L2)	4400	3500	3000	
	50 (L2)	4800	4000	3300	
	70~100 (L2)	5500	4700	3900	
Backlash 精密背隙 (arcmin)	4~10 (L1)	≤ 10	≤ 10	≤ 10	
	16~100 (L2)	≤ 12	≤ 12	≤ 12	
Torsional Rigidity 扭轉剛性 (Nm/arcmin)	4~100 (L1,L2)	7	8	27	
Allowable Radial Force 容許徑向力 F_{2rB^2} (N)	4~100 (L1,L2)	2800	7200	8000	
Allowable Axial Force 容許軸向力 F_{2aB^2} (N)	4~100 (L1,L2)	2200	5000	5600	
Full Load Efficiency 滿載時使用效率 %	4~10 (L1)	≥ 97			
	16~100 (L2)	≥ 94			
Service Life 使用壽命 L_{h2} (hrs)	4~100 (L1,L2)	20000			
Weight 重量 (kgs)	4~10 (L1)	1.3	2.3	6	
	16~100 (L2)	1.6	3.3	7.2	
Noise 噪音值 (db)		65	64	64	
Temperature 使用溫度範圍 °C		(-15°C ~ +90°C)			
Protection Rank 防護等級		IP64 / IP65 (IP66 by request 訂購製作)			
Lubricating Oil 潤滑油		Synthetic Lubricant 合成潤滑油 ISO VG220			
Moment Of Inertia 轉動慣量 J_1 (kg.cm)	Stage 段數	Ratio 減速比			
	L1	3	0.31	0.35	5.9
		4	0.3	0.33	5.09
		5	0.29	0.33	4.93
		7	0.28	0.31	4.83
		9	0.28	0.31	4.83
	L2	10	0.28	0.31	4.83
		16	0.3	0.3	5.09
		20	0.3	0.3	5.07
		25	0.29	0.3	4.91
		28	0.3	0.3	5.07
		35	0.3	0.3	4.91
		40	0.27	0.3	4.8
		50	0.27	0.3	4.8
		70	0.27	0.3	4.8
		100	0.27	0.3	4.8

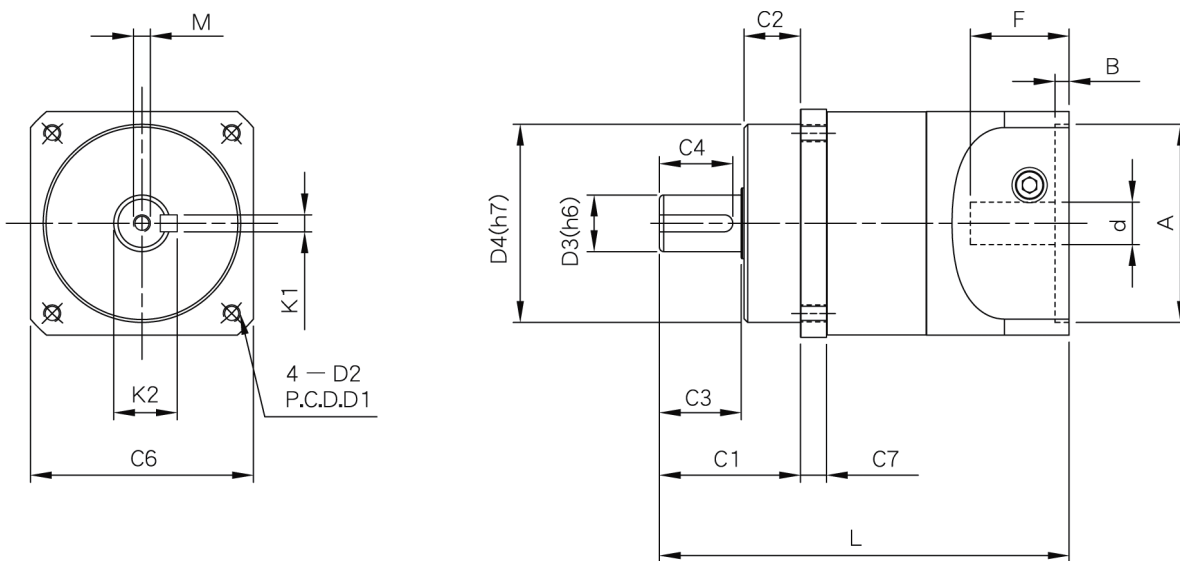
※ For 3 stage technical data, contact Varitron® or your sales personal. 如需三段技術資料請洽中國變速。

※ Use larger model when large moment of inertia is needed. 慣性距較大時,選用大一級減速機型號。

※ Continuous operating will reduce service life. 連續運轉將會減少減速機的使用壽命。

DN High R-A Load Standard Precision Planetary Gearbox 高徑軸向負荷標準型

Dimensions 外型尺寸表



Dimensions 尺寸	DN060	DN080	DN100
D1	70	90	115
D2	M5	M6	M8
D3	16(12~16)	19(18~22)	24(22~30)
D4	50	70	90
C1	32	50	55
C2	11	20	14
C3	20	29	40
C4	18	26	34
C6	62	79	98
C7	13.5	9	15.4
L1 (1Stage 單段)	116	145	168
L2 (2Stage 雙段)	136	176	200
M	M4xP0.7x15	M6xP1.0x20	M6xP1.0x20
K1	5	6	8
K2	18	21.5	27
d	≤14	≤24	≤28
A	30~50	50~80	50~80
B	6	6	8
F	≤32	≤35	≤47

※ For 3 stage dimension, contact Varitron® or your sales personal. 如需三段尺寸請洽中國變速。

※ Output shaft can be custom size upon ordering. 減速機出力軸可依需求訂製。

※ For 'A' & 'F' dimension, may array according to different servo motor. 「A」 & 「F」 會因不同伺服馬達而有所變動。

RAM Precision Series 精密型

Series Specifications 規格表

Specification 規格	Ratio 減速比 (Stage 段數)	RAM060	RAM090	RAM120	RAM150
Instantaneous Max. Output Torque 瞬間最大輸出扭矩 T _{2B} (Nm)	3/9/10/30/100	132	498	750	1428
	4/12/16/20/28/40	162	498	750	1500
	5/15/25/35/50	138	498	750	1500
	7/21/49/70	144	498	750	1500
Defined Output Torque 額定輸出扭矩 T _{2N} (Nm)	3/9/10/21/30	44	166	250	476
	4/15/16/20/25/28/40	54	166	250	500
	5/15/25/35/50	46	166	250	500
	7/21/49/70	48	166	250	500
Reduction Ratio 減速比	L1: 1 Stage 單段	3 / 4 / 5 / 7 / 10			
	L2: 2 Stage 雙段	9 / 12 / 15 / 16 / 20 / 21 / 25 / 28 / 30 / 35 / 40 / 49 / 50 / 70 / 100			
	L3: 3 Stage 三段	100/200/250			
Defined Input Rotational Speed 額定輸入轉速 n _{1N} (rpm)	3/4/5 (L1)	3300	2600	2300	2200
	7/10 (L2)	4000	2900	2700	2700
	12 ~ 40 (L2)	4400	3200	3000	3000
	50 (L2)	4800	3600	3300	3200
	70 ~ 100 (L2)	5500	4200	3900	3500
Backlash 精密背隙 (arcmin)	3~10 (L1)	≤8	≤8	≤8	≤8
	12~100 (L2)	≤11	≤11	≤11	≤11
Full Load Efficiency 滿載時使用效率 %	3~10 (L1)	≥91			
	12~100 (L2)	≥88			
Service Life 使用壽命 Lh ₂ (hrs)	3~100 (L1,L2)	20000			
Weight 重量 (kgs)	3~10 (L1)	Vary according to shaft type 依產品輸出軸類型有所不同			
	12~100 (L2)				
Noise 噪音值 (db)		65	65	65	65
Temperature 使用溫度範圍 °C		(-15°C ~ +90°C)			
Protection Rank 防護等級		IP64 / IP65 (IP66 by request 訂購製作)			
Lubricating Oil 潤滑油		Synthetic Lubricant 合成潤滑油 ISO VG220			

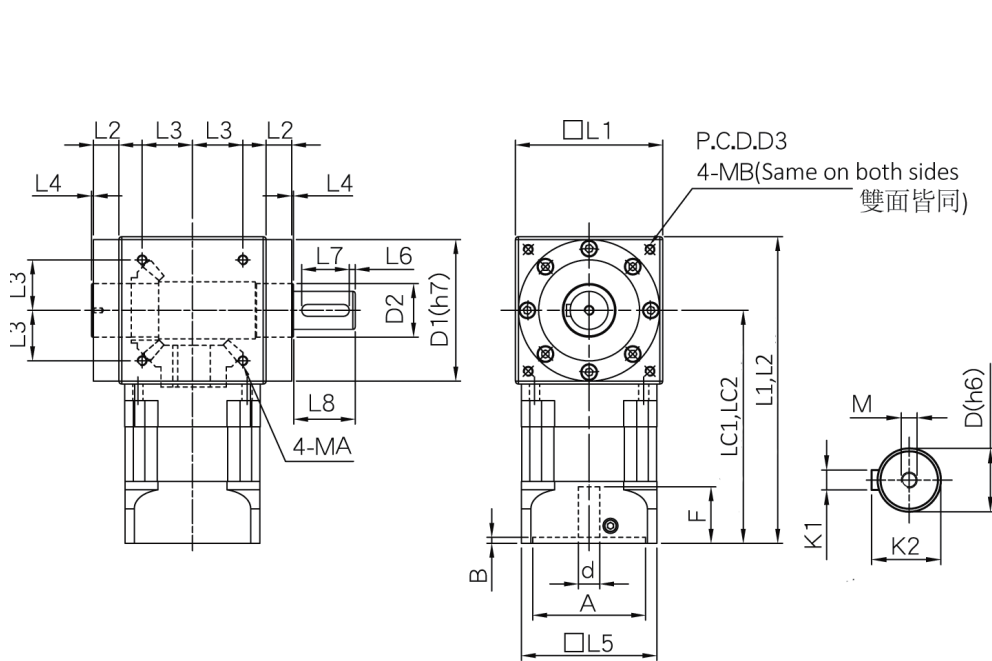
※ For 3 stage technical data, contact Varitron® or your sales personal. 如需三段技術資料請洽中國變速。

※ Use larger model when large moment of inertia is needed. 慣性距較大時,選用大一級減速機型號。

※ Continuous operating will reduce service life. 連續運轉將會減少減速機的使用壽命。

RAM-S Precision Shaft Output Spiral Bevel Gearbox 精密單出力軸直角型

Dimensions 外型尺寸表



Dimensions 尺寸	RAM060S	RAM090S	RAM120S	RAM150S
L1	83	114	124	154
L2	17	21.5	21.5	21
L3	28.284	33.587	38.89	45.962
MA	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
L4	1.5	1.5	1.5	1.5
L5	60	94	114	142
L6	3	5	5	5
L7	20	25	40	45
L8	27	49	52	67
L1 (1Stage 單段)	146	187	196	282
L2 (2Stage 雙段)	168	215.3	224.3	333.8
LC1 (1Stage 單段)	187.5	244	258	359
LC2 (2Stage 雙段)	209.5	272.3	286.3	410.8
D	16	20	32	42
D1	79	109	119	149
D2	25	30	45	55
D3	100	130	145	190
MB	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
M	M4xP0.7x15	M6xP1.0x20	M8xP1.25x27	M12xP1.75x32
K1	5	6	10	12
K2	18	22.5	35	45
d	≤ 14	≤ 24	≤ 28	≤ 42
A	30-50	50-80	55-110	95-130
B	6	6	5	10
F	≤ 35	≤ 47.5	≤ 47.5	≤ 66.5

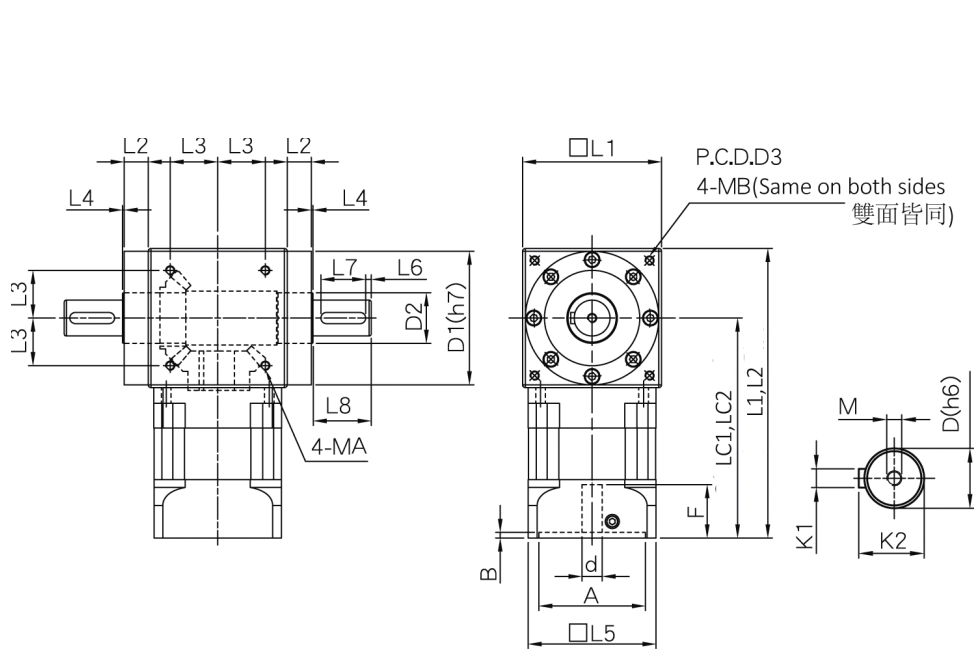
※ For 3 stage dimension, contact Varitron® or your sales personal. 如需三段尺寸請洽中國變速。

※ Output shaft can be custom size upon ordering. 減速機出力軸可依需求訂製。

※ For 'A' & 'F' dimension, may array according to different servo motor. 「A」 & 「F」會因不同伺服馬達而有所變動。

RAM-SS Precision Double Shaft Spiral Bevel Gearbox 精密雙出力軸直角型

Dimensions 外型尺寸表



Dimensions 尺寸	RAM060SS	RAM090SS	RAM120SS	RAM150SS
L1	83	114	124	154
L2	17	21.5	21.5	21
L3	28.284	33.587	38.89	45.962
MA	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
L4	1.5	1.5	1.5	1.5
L5	60	94	114	142
L6	3	5	5	5
L7	20	25	40	45
L8	27	49	52	67
L1 (1Stage 單段)	146	187	196	282
L2 (2Stage 雙段)	168	215.3	224.3	333.8
LC1 (1Stage 單段)	187.5	244	258	359
LC2 (2Stage 雙段)	209.5	272.3	286.3	410.8
D	16	20	32	42
D1	79	109	119	149
D2	25	30	45	55
D3	100	130	145	190
MB	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
M	M4xP0.7x15	M6xP1.0x20	M8xP1.25x27	M12xP1.75x32
K1	5	6	10	12
K2	18	22.5	35	45
d	≤14	≤24	≤28	≤42
A	30-50	50-80	55-110	95-130
B	6	6	5	10
F	≤35	≤47.5	≤47.5	≤66.5

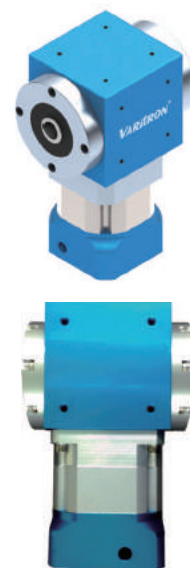
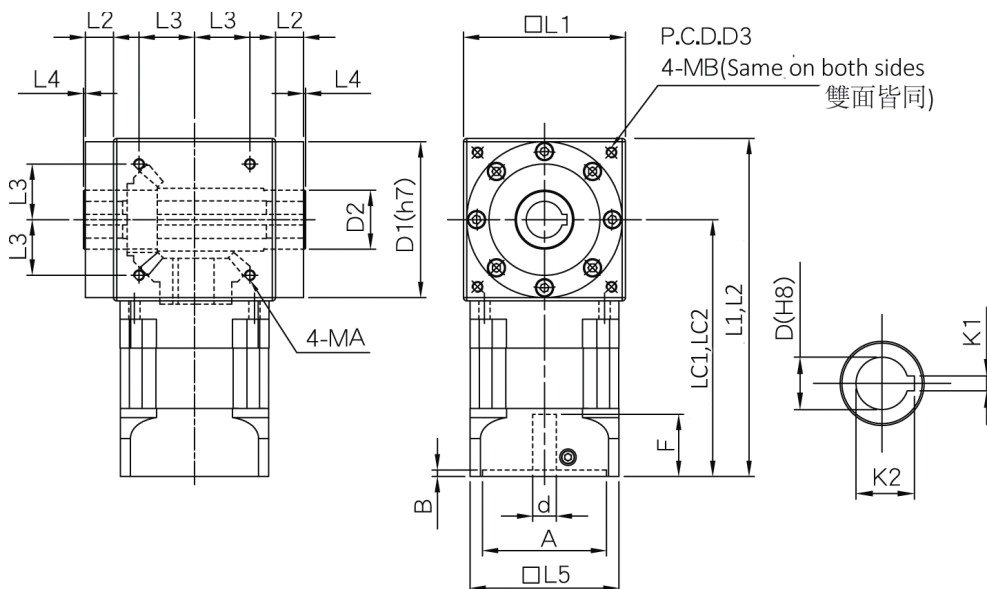
※ For 3 stage dimension, contact Varitron® or your sales personal. 如需三段尺寸請洽中國變速。

※ Output shaft can be custom size upon ordering. 減速機出力軸可依需求訂製。

※ For 'A' & 'F' dimension, may array according to different servo motor. 「A」&「F」會因不同伺服馬達而有所變動。

RAM-H Precision Hollow Shaft Spiral Bevel Gearbox 精密中空軸直角型

Dimensions 外型尺寸表

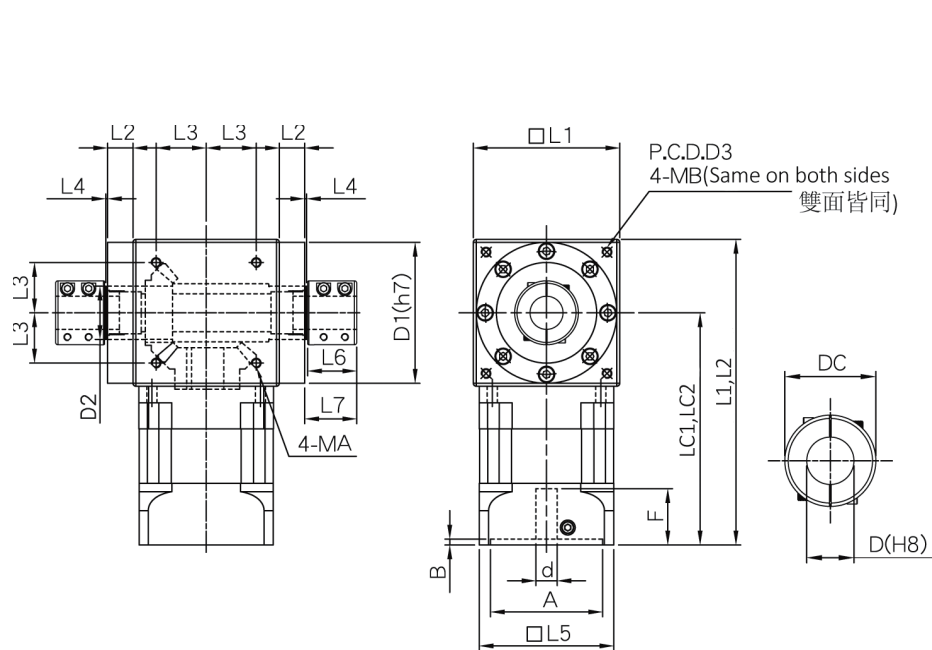


Dimensions 尺寸	RAM060H	RAM090H	RAM120H	RAM150H
L1	83	114	124	154
L2	17	21.5	21.5	21
L3	28.284	33.587	38.89	45.962
MA	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
L4	1.5	1.5	1.5	1.5
L5	60	94	114	142
L1 (1Stage 單段)	146	187	196	282
L2 (2Stage 雙段)	168	215.3	224.3	333.8
LC1 (1Stage 單段)	187.5	244	258	359
LC2 (2Stage 雙段)	209.5	272.3	286.3	410.8
D	16	20	28	40
D1	79	109	119	149
D2	25	30	45	55
D3	100	130	145	190
MB	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
K1	5	6	8	12
K2	18.3	22.8	31.3	43.3
d	≤ 14	≤ 24	≤ 28	≤ 42
A	30-50	50-80	55-110	95-130
B	6	6	5	10
F	≤ 35	≤ 47.5	≤ 47.5	≤ 66.5

※ For 3 stage dimension, contact Varitron® or your sales personal. 如需三段尺寸請洽中國變速。
 ※ Output shaft can be custom size upon ordering. 減速機出力軸可依需求訂製。
 ※ For 'A' & 'F' dimension, may array according to different servo motor. 「A」 & 「F」會因不同伺服馬達而有所變動。

RAM-D Precision Clamping Shaft Spiral Bevel Gearbox 精密束軸直角型

Dimensions 外型尺寸表



Dimensions 尺寸	RAM060D	RAM090D	RAM120D	RAM150D
L1	83	114	124	154
L2	17	21.5	21.5	21
L3	28.284	33.587	38.89	45.962
MA	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
L4	1.5	1.5	1.5	1.5
L5	60	94	114	142
L6	33.5	33.5	42.5	42.5
L7	35	35	44	44
L1 (1Stage 單段)	146	187	196	282
L2 (2Stage 雙段)	168	215.3	224.3	333.8
LC1 (1Stage 單段)	187.5	244	258	359
LC2 (2Stage 雙段)	209.5	272.3	286.3	410.8
DC	30	36	54	66
D	16	20	28	40
D1	79	109	119	149
D2	25	30	45	55
D3	100	130	145	190
MB	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
d	≤ 14	≤ 24	≤ 28	≤ 42
A	30-50	50-80	55-110	95-130
B	6	6	5	10
F	≤ 35	≤ 47.5	≤ 47.5	≤ 66.5

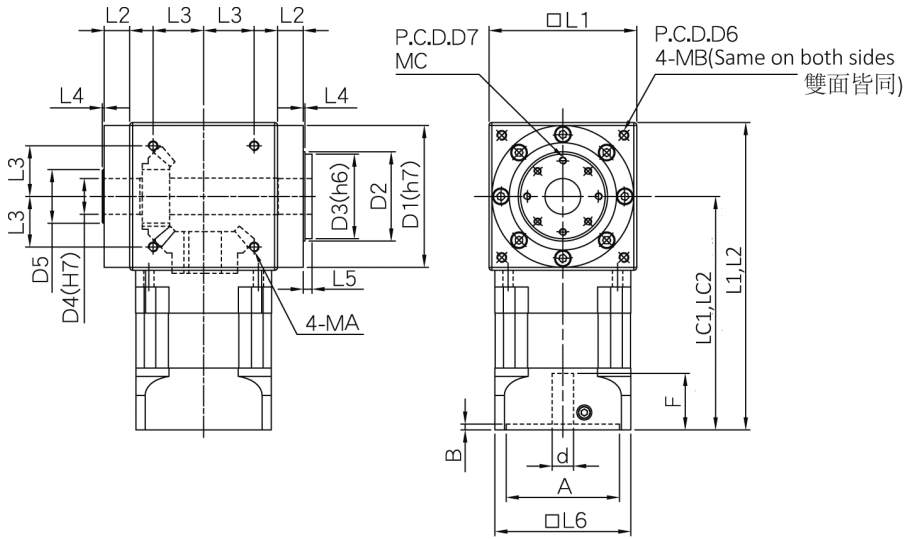
※ For 3 stage dimension, contact Varitron® or your sales personal. 如需三段尺寸請洽中國變速。

※ Output shaft can be custom size upon ordering. 減速機出力軸可依需求訂製。

※ For 'A' & 'F' dimension, may array according to different servo motor. 「A」&「F」會因不同伺服馬達而有所變動。

RAM-F Precision Flange Spiral Bevel Gearbox 精密法蘭直角型

Dimensions 外型尺寸表



Dimensions 尺寸	RAM060F	RAM090F	RAM120F	RAM150F
L1	83	114	124	154
L2	17	21.5	21.5	21
L3	28.284	33.587	38.89	45.962
MA	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
L4	1.5	1.5	1.5	1.5
L5	7.5	7.5	7.5	7.5
L6	60	95	114	142
L1 (1Stage 單段)	146	187	196	282
L2 (2Stage 雙段)	168	215.3	224.3	333.8
LC1 (1Stage 單段)	187.5	244	258	359
LC2 (2Stage 雙段)	209.5	272.3	286.3	410.8
D1	79	109	119	139
D2	45	60	75	80
D3	44	59	71	79
D4	15	20	30	35
D5	25	30	45	55
D6	100	130	145	190
MB	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
D7	35	50	60	68
MC	8xM5xP0.8x12	8xM5xP0.8x15	8xM6xP1.0x15	12xM6xP1.0x15
d	≤14	≤24	≤28	≤42
A	30-50	50-80	55-110	95-130
B	6	6	5	10
F	≤35	≤47.5	≤47.5	≤66.5

※ For 3 stage dimension, contact Varitron® or your sales personal. 如需三段尺寸請洽中國變速。

※ Output shaft can be custom size upon ordering. 減速機出力軸可依需求訂製。

※ For 'A' & 'F' dimension, may array according to different servo motor. 「A」&「F」會因不同伺服馬達而有所變動。

RAH Standard Precision Series 標準型

Series Specifications 規格表

Specification 規格	Ratio 減速比 (Stage 段數)	RAH060	RAH090	RAH120	RAH150
Instantaneous Max. Output Torque 瞬間最大輸出扭矩 T _{2B} (Nm)	3/9/10/30/100	132	498	750	1428
	4/12/16/20/28/40	162	498	750	1500
	5/15/25/35/50	138	498	750	1500
	7/21/49/70	144	498	750	1500
Defined Output Torque 額定輸出扭矩 T _{2N} (Nm)	3/9/10/21/30	44	166	250	476
	4/15/16/20/25/28/40	54	166	250	500
	5/15/25/35/50	46	166	250	500
	7/21/49/70	48	166	250	500
Reduction Ratio 減速比	L1: 1 Stage 單段	3 / 4 / 5 / 7 / 10			
	L2: 2 Stage 雙段	9 / 12 / 15 / 16 / 20 / 21 / 25 / 28 / 30 / 35 / 40 / 49 / 50 / 70 / 100			
	L3: 3 Stage 三段	100 / 200 / 250			
Defined Input Rotational Speed 額定輸入轉速 n _{1N} (rpm)	3/4/5 (L1)	3300	2600	2300	2200
	7/10 (L1)	4000	2900	2700	2700
	12 ~ 40 (L2)	4400	3200	3000	3000
	50 (L2)	4800	3600	3300	3200
	70 ~ 100 (L2)	5500	4200	3900	3500
Backlash 精密背隙 (arcmin)	3~10 (L1)	≤ 16	≤ 16	≤ 16	≤ 16
	12~100 (L2)	≤ 20	≤ 20	≤ 20	≤ 20
Full Load Efficiency 滿載時使用效率 %	3~10 (L1)	≥ 91			
	12~100 (L2)	≥ 88			
Service Life 使用壽命 Lh ₂ (hrs)	3~100 (L1,L2)	20000			
Weight 重量 (kgs)	3~10 (L1)	Vary according to shaft type 依產品輸出軸類型有所不同			
	12~100 (L2)				
Noise 噪音值 (db)		65	65	65	65
Temperature 使用溫度範圍 °C		(-15°C ~ +90°C)			
Protection Rank 防護等級		IP64 / IP65 (IP66 by request 訂購製作)			
Lubricating Oil 潤滑油		Synthetic Lubricant 合成潤滑油 ISO VG220			

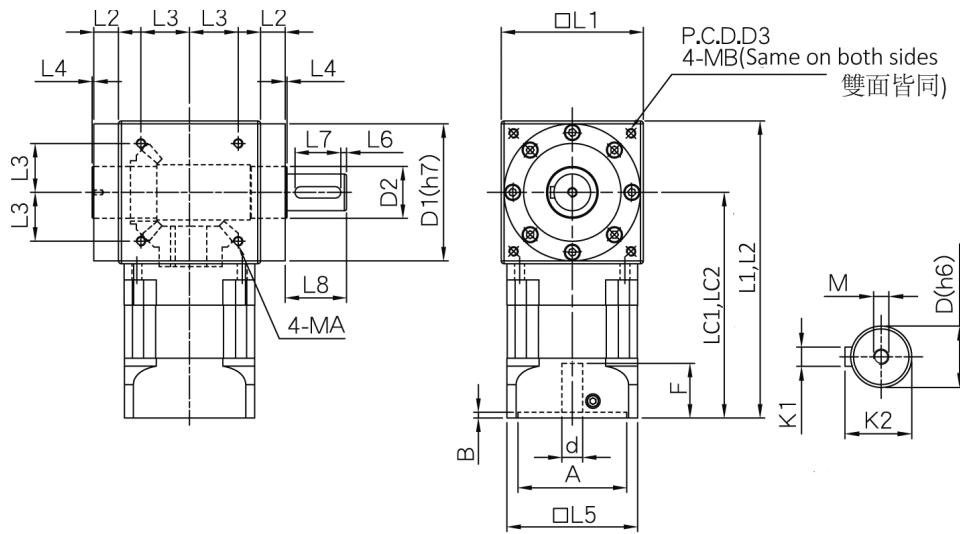
※ For 3 stage technical data, contact Varitron® or your sales personal. 如需三段技術資料請洽中國變速。

※ Use larger model when large moment of inertia is needed. 慣性距較大時,選用大一級減速機型號。

※ Continuous operating will reduce service life. 連續運轉將會減少減速機的使用壽命。

RAH-S Standard Precision Shaft Output Spiral Bevel Gearbox 標準單出力軸直角型

Dimensions 外型尺寸表

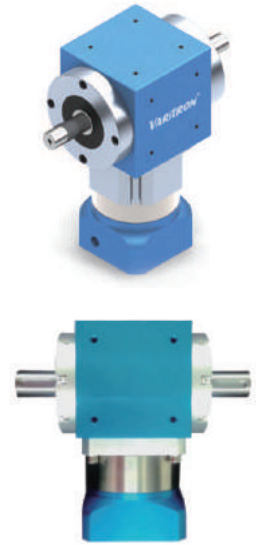
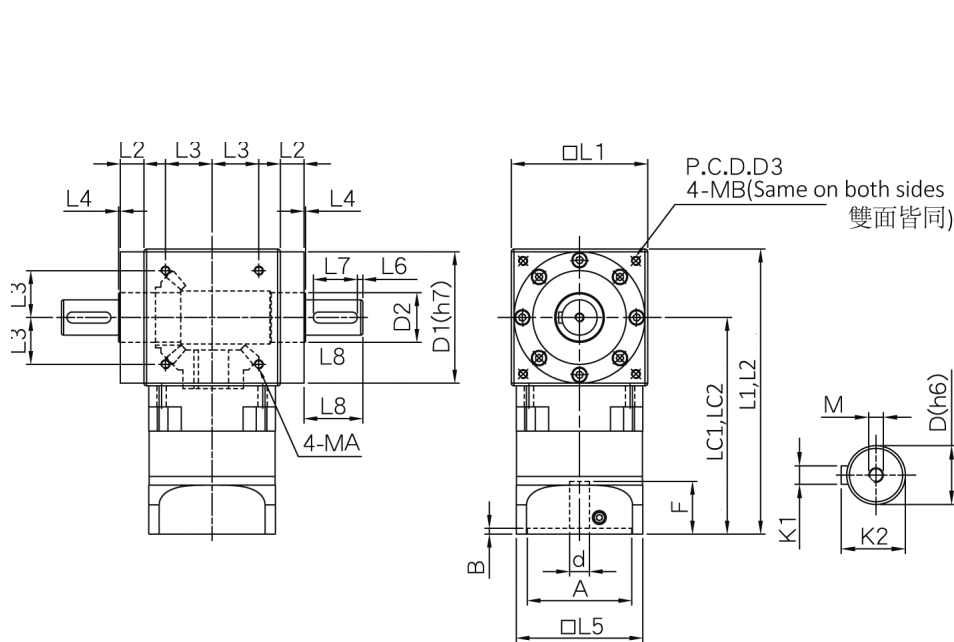


Dimensions 尺寸	RAH060S	RAH090S	RAH120S	RAH150S
L1	83	114	124	154
L2	17	21.5	21.5	21
L3	28.284	33.587	38.89	45.962
MA	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
L4	1.5	1.5	1.5	1.5
L5	60	95	114	142
L6	3	5	5	5
L7	20	25	40	45
L8	27	49	52	67
L1 (1Stage 單段)	135.7	184.8	196.3	282.5
L2 (2Stage 雙段)	153.2	210.8	224.6	334.5
LC1 (1Stage 單段)	177.2	241.8	258.3	359.5
LC2 (2Stage 雙段)	194.7	267.8	286.6	411.5
D	16	20	32	42
D1	79	109	119	149
D2	25	30	45	55
D3	100	130	145	190
MB	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
M	M4xP0.7x15	M6xP1.0x20	M8xP1.25x27	M12xP1.75x32
K1	5	6	10	12
K2	18	22.5	35	45
d	≤ 14	≤ 24	≤ 28	≤ 42
A	30-50	50-80	55-110	95-130
B	6	6	5	10
F	≤ 35	≤ 47.5	≤ 47.5	≤ 66.5

※ For 3 stage dimension, contact Varitron® or your sales personal. 如需三段尺寸請洽中國變速。
 ※ Output shaft can be custom size upon ordering. 減速機出力軸可依需求訂製。
 ※ For 'A' & 'F' dimension, may array according to different servo motor. 「A」 & 「F」會因不同伺服馬達而有所變動。

RAH-SS Standard Precision Double Shaft Spiral Bevel Gearbox 標準雙出力軸直角型

Dimensions 外型尺寸表



Dimensions 尺寸	RAH060SS	RAH090SS	RAH120SS	RAH150SS
L1	83	114	124	154
L2	17	21.5	21.5	21
L3	28.284	33.587	38.89	45.962
MA	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
L4	1.5	1.5	1.5	1.5
L5	60	94	114	142
L6	3	5	5	5
L7	20	25	40	45
L8	27	49	52	67
L1 (1Stage 單段)	135.7	184.8	196.3	282.5
L2 (2Stage 雙段)	153.2	210.8	224.6	334.5
LC1 (1Stage 單段)	177.2	241.8	258.3	359.5
LC2 (2Stage 雙段)	194.7	267.8	286.6	411.5
D	16	20	32	42
D1	79	109	119	149
D2	25	30	45	55
D3	100	130	145	190
MB	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
M	M4xP0.7x15	M6xP1.0x20	M8xP1.25x27	M12xP1.75x32
K1	5	6	10	12
K2	18	22.5	35	45
d	≤14	≤24	≤28	≤42
A	30-50	50-80	55-110	95-130
B	6	8	5	10
F	≤35	≤47.5	≤47.5	≤66.5

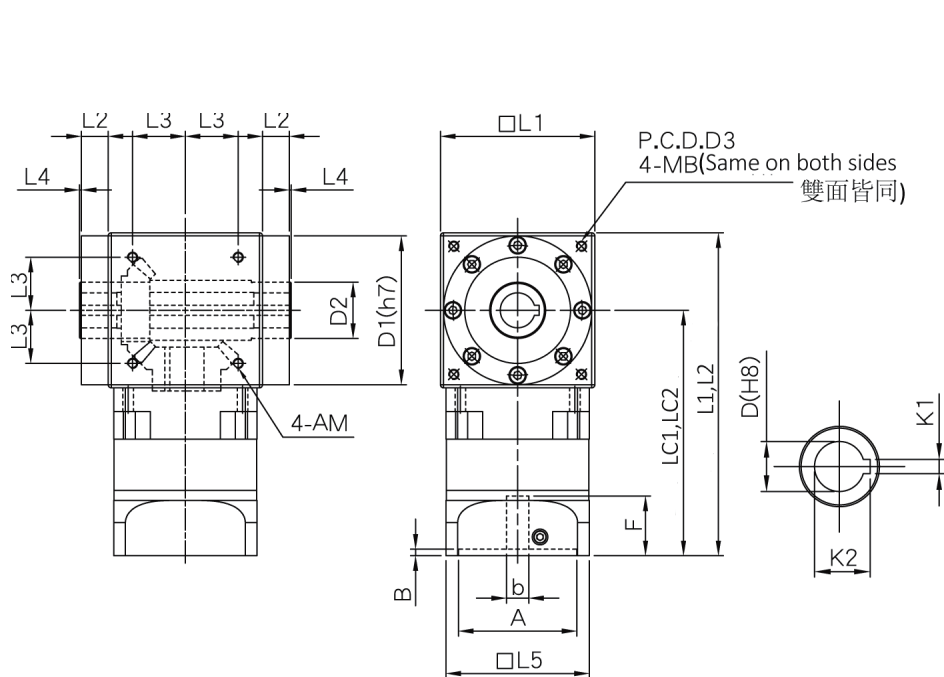
※ For 3 stage dimension, contact Varitron® or your sales personal. 如需三段尺寸請洽中國變速。

※ Output shaft can be custom size upon ordering. 減速機出力軸可依需求訂製。

※ For 'A' & 'F' dimension, may array according to different servo motor. 「A」 & 「F」會因不同伺服馬達而有所變動。

RAH-H Standard Precision Hollow Shaft Spiral Bevel Gearbox 標準中空軸直角型

Dimensions 外型尺寸表

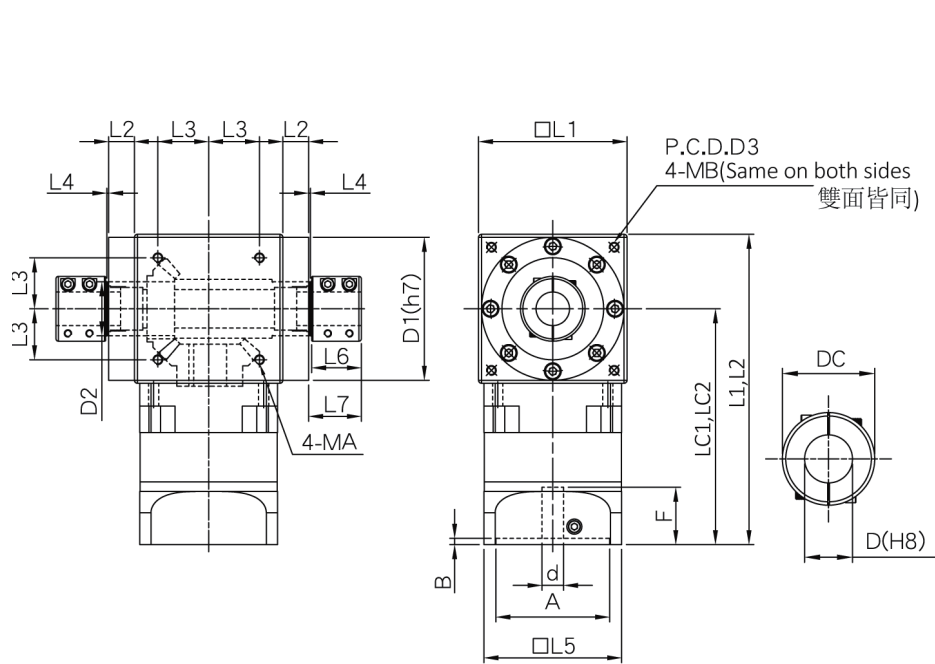


Dimensions 尺寸	RAH060H	RAH090H	RAH120H	RAH150H
L1	83	114	124	154
L2	17	21.5	21.5	21
L3	28.284	33.587	38.89	45.962
MA	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
L4	1.5	1.5	1.5	1.5
L5	60	95	114	142
L1 (1Stage 單段)	135.7	184.8	196.3	282.5
L2 (2Stage 雙段)	153.2	210.8	224.6	334.5
LC1 (1Stage 單段)	177.2	241.8	258.3	359.5
LC2 (2Stage 雙段)	194.7	267.8	286.6	411.5
D	16	20	28	40
D1	79	109	119	149
D2	25	30	45	55
D3	100	130	145	190
MB	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
K1	5	6	8	12
K2	18.3	22.8	31.3	43.3
d	≤14	≤24	≤28	≤42
A	30-50	50-80	55-110	95-130
B	6	8	5	10
F	≤35	≤47.5	≤47.5	≤66.5

※ For 3 stage dimension, contact Varitron® or your sales personal. 如需三段尺寸請洽中國變速。
 ※ Output shaft can be custom size upon ordering. 減速機出力軸可依需求訂製。
 ※ For 'A' & 'F' dimension, may array according to different servo motor. 「A」&「F」會因不同伺服馬達而有所變動。

RAH-D Standard Precision Clamping Shaft Spiral Bevel Gearbox 標準束軸直角型

Dimensions 外型尺寸表



Dimensions 尺寸	RAH060D	RAH090D	RAH120D	RAH150D
L1	83	114	124	154
L2	17	21.5	21.5	21
L3	28.284	33.587	38.89	45.962
MA	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
L4	1.5	1.5	1.5	1.5
L5	60	95	114	142
L6	33.5	33.5	42.5	42.5
L7	35	35	44	44
L1 (1Stage 單段)	135.7	184.8	196.3	282.5
L2 (2Stage 雙段)	153.2	210.8	224.6	334.5
LC1 (1Stage 單段)	177.2	241.8	258.3	359.5
LC2 (2Stage 雙段)	194.7	267.8	286.6	411.5
DC	30	36	54	66
D	16	20	28	40
D1	79	109	119	149
D2	25	30	45	55
D3	100	130	145	190
MB	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
d	≤14	≤24	≤28	≤42
A	30-50	50-80	55-110	95-130
B	6	8	5	10
F	≤35	≤47.5	≤47.5	≤66.5

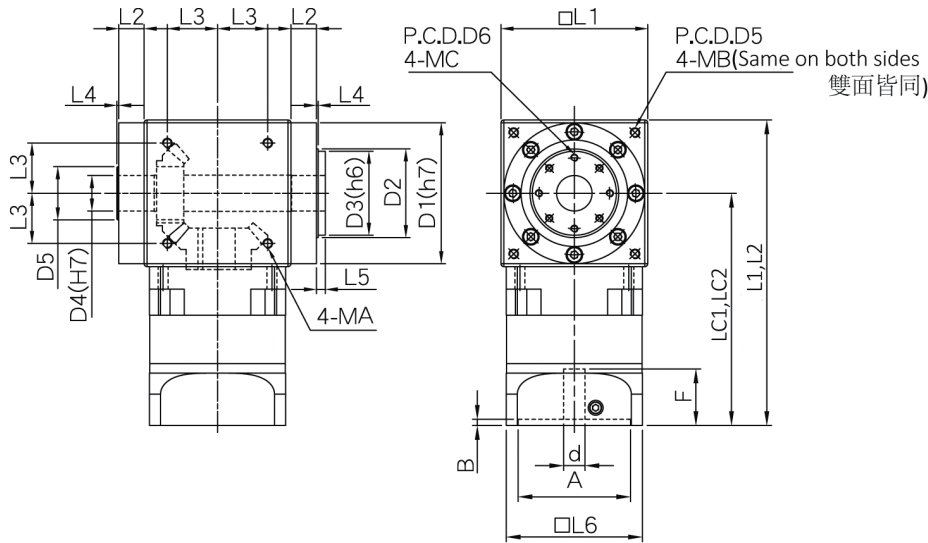
※ For 3 stage dimension, contact Varitron® or your sales personal. 如需三段尺寸請洽中國變速。

※ Output shaft can be custom size upon ordering. 減速機出力軸可依需求訂製。

※ For 'A' & 'F' dimension, may array according to different servo motor. 「A」 & 「F」會因不同伺服馬達而有所變動。

RAH-F Standard Precision Flange Spiral Bevel Gearbox 標準法蘭直角型

Dimensions 外型尺寸表



Dimensions 尺寸	RAH060F	RAH090F	RAHF120F	RAH150F
L1	83	114	124	154
L2	17	21.5	21.5	21
L3	28.284	33.587	38.89	45.962
MA	M5xP0.8x10	M6xP1.0x12	M8xP1.2x14	M10xP1.5x22
L4	1.5	1.5	1.5	1.5
L5	7.5	7.5	7.5	7.5
L6	60	95	114	142
L1 (1Stage 單段)	135.7	184.8	196.3	282.5
L2 (2Stage 雙段)	153.2	210.8	224.6	334.5
LC1 (1Stage 單段)	177.2	241.8	258.3	359.5
LC2 (2Stage 雙段)	194.7	267.8	286.6	411.5
D1	79	109	119	149
D2	45	60	75	80
D3	44	59	71	79
D4	15	20	30	35
D5	25	30	45	55
D6	100	130	145	190
MB	M5xP0.8x10	M6xP1.0x12	M8xP1.25x14	M10xP1.5x22
D7	35	50	60	68
MC	8xM5xP0.8x12	8xM5xP0.8x15	8xM6xP1.0x15	12xM6xP1.0x15
d	≤ 14	≤ 24	≤ 28	≤ 42
A	30-50	50-80	55-110	95-130
B	6	8	5	10
F	≤ 35	≤ 47.5	≤ 47.5	≤ 66.5

※ For 3 stage dimension, contact Varitron® or your sales personal. 如需三段尺寸請洽中國變速。

※ Output shaft can be custom size upon ordering. 減速機出力軸可依需求訂製。

※ For 'A' & 'F' dimension, may array according to different servo motor. 「A」 & 「F」會因不同伺服馬達而有所變動。

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VARITRON®
Take Control In Speed

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Cycloidal Drive Reducer

賽驅樂減速機

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高精密擺線減速機

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精密行星減速機

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TMW



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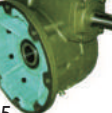
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