

BEYOND

Servo Motor Reducer

BEYOND Precision Co.,LTD Servo Motor Reducer

BX/BXR/BH/BHR/BD/BDR/BE
BT-F/BT-S/BTR



BX



BH



BD



BE



BXR



BHR



BDR



BTR



BTF-T



BTF-L



BTF-R



BTF-H



BTF-C



BTS-T



BTS-L



BTS-R



BTS-H



BTS-C

內 容

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行星齒系列產品線

Planetary gearbox series products line

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型 號 Model	平行軸 Parallel shaft	型 號 Model	T 型 T Type
BX 一般級 Primary model		BTF-T BTS-T	
BH 精密級 Precision model		BTF-L BTS-L	
BD 精密級 Precision model		BTF-R BTS-R	
BE 一般級 Primary model		BTF-H BTS-H	
直角軸 Angle shaft		BTF-C BTS-C	
BXR 一般級 Primary model			
BHR 精密級 Precision model			
BDR 精密級 Precision model			
BT-R			

編碼系統 Code system

型號 - 段數 - 速比 - 出力軸型式 - 背隙代號 - 馬達品牌 / 型號

Model No Stage Gear ratio Output shaft type Backlash Motor Brand / Model

BX
BXR
BH
BHR

L1: 一段
L1: 1 stage
L2: 二段
L2: 2 stage

K: 鍵 Keyway
S: 光軸 Smooth

P0: 超精密級
P0: Hyper Backlash
P1: 精密級
P1: Reduce Backlash
P2: 標準級
P2: Standard Backlash

型號 - 段數 - 速比 - 背隙代號 - 馬達品牌 / 型號

Model No Stage Gear ratio Backlash Motor Brand / Model

BD
BDR

L1: 一段
L1: 1 stage
L2: 二段
L2: 2 stage

P0: 超精密級
P0: Hyper Backlash
P1: 精密級
P1: Reduce Backlash
P2: 標準級
P2: Standard Backlash

型號 - 型式 - 段數 - 速比 - 出力軸型式 - 馬達品牌 / 型號

Model No Type Stage Gear ratio Output shaft type Motor Brand / Model

BT-F
BT-S

T
L
R
H
C

L1: 一段
L1: 1 stage
L2: 二段
L2: 2 stage

K: 鍵 Keyway
S: 光軸 Smooth

型式
TYPE

T: 雙側出力 / L: 左側出力 / R: 右側出力 / H: 中空軸 / C: 中空軸+迫緊環
T: Both side / L: Left side / R: Right side / H: Hollow / C: Hollow+C-Ring

型號 - 段數 - 速比 - 出力軸型式 - 馬達品牌 / 型號

Model No Stage Gear ratio Output shaft type Motor Brand / Model

BT-R

L1: 一段
L1: 1 stage
L2: 二段
L2: 2 stage

K: 鍵 Keyway
S: 光軸 Smooth

伺服馬達填入資訊 Fill in the servo motor data by customer

減速機與伺服馬達連接

Connect the Reducer with Motor



減速機
Planetary Reducer

入力軸
Input shaft

軸套
Bush (if need)

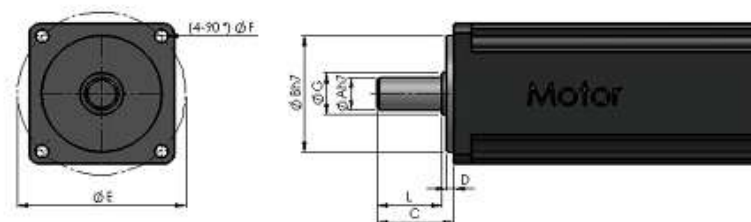
伺服馬達
Servo Motor

1: 請小心連結減速機與伺服馬達, 以保護減速機與伺服馬達的零件。

Please carefully to connect the reducer and servo motor, that protect the reducer and servo motor parts.

2: 在正常的使用情況下, 減速機保固一年或運轉20000小時。

Under normal operation conditions, our products guarantee is 1 year or 20000 hours.

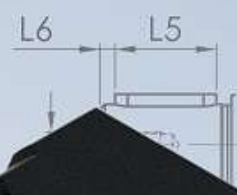
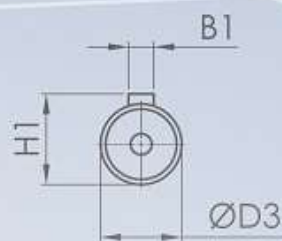
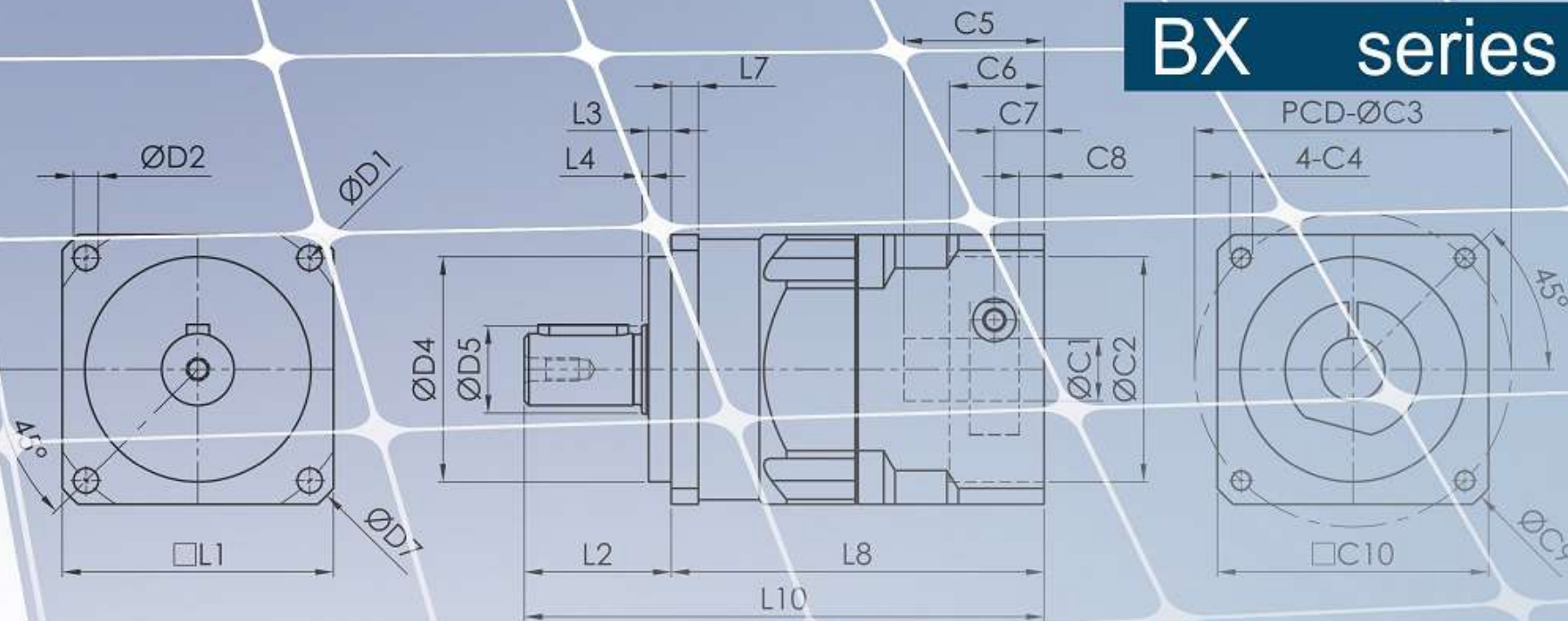


伺服馬達尺寸規格 Servo Motor Specifications :

Unit : mm

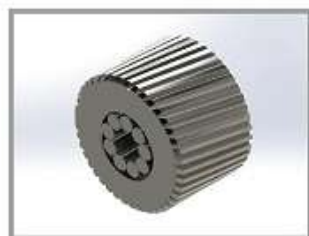
馬達軸徑 Motor shaft Dia.	凸緣直徑 Flange Dia.	入力深 Length of Motor shaft	凸緣高度 Flange Height	螺絲PCD PCD of Bore	螺絲孔徑 Bore Dia.	軸凸緣直徑 Shaft Flange Dia.	軸有效長 Active Shaft Length	
φ Ah7	φ Bh7	C	D	φ E	φ F	φ G	L	

BX series



產品特性

Production Feature



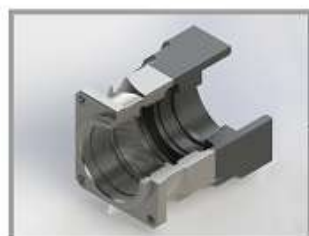
- 行星齒內孔使用滿針滾針軸, 耐磨, 高精度
- Use full arrange needle pin for anti-abrasion and higher precision.



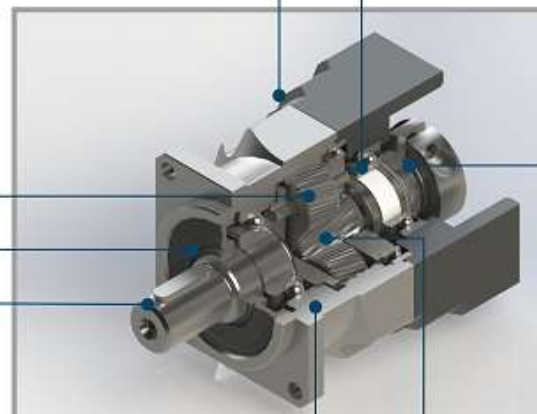
- 輸入法蘭
- 1. AL-6061-T6, 表面鋁陽極氧化, 高質感, 高防蝕能力
- 2. 輸入法蘭一體式設計, 使得伺服馬達軸心與太陽齒有極佳的同心度
- 3. 可與各品牌的伺服馬達與步進馬達搭配組合
- Input Flange
- 1. Material is AL-6061-T6, Surface is Eloxal to improve the antioxidant capacity and high quality.
- 2. Input flange is One-Piece design for sun gear and servomotor shaft get excellent concentricity.
- 3. Use to any brand servomotor or step motor.



- 輸入軸軸承
- 採用高速輕載軸承, 符合伺服馬達高速運轉的需求
- Input shaft Bearing
- Using high speed and low loading type bearing, it is excellent design for high speed input of servomotor.



- 輸入法蘭與內齒環
- 輸入法蘭與內齒環使用高精度軸承為組裝時的引導, 能使輸入到輸出端有最佳的同心度, 降低震動
- Input Flange and Inner Gear Box
- The input flange using high precision bearing to lead assembly, Let the input to output shaft center has excellent concentricity for reduce vibration.



- 太陽齒與輸入軸
- 1: 搭配高精度軸襯, 可適用於不同軸徑的伺服馬達
- 2: 極佳的動平衡設計
- 3: 優化的轉動慣量
- 4: 模組化設計, 能快速回應客戶不同速比的需求
- Sun Gear and Input Shaft
- 1: With high precision bushing is easy to set up with any brand servomotor.
- 2: Excellent dynamic balance
- 3: Optimum mass moment of inertia.
- 4: To modularize assembly design for rapid reaction customers all gear ratio requirement.



- 輸出軸
- 一體式設計, 確保行星齒能精確的傳動, 前後軸承大跨距設計與較大的軸承, 有效的提高軸承壽命與最大的軸/徑向力
- Output Shaft
- Shaft is One-Piece design, to ensure the planetary gears could accurate transmission. Enlarge the front bearing and larger span to rear bearing for largest radial and axial loading.

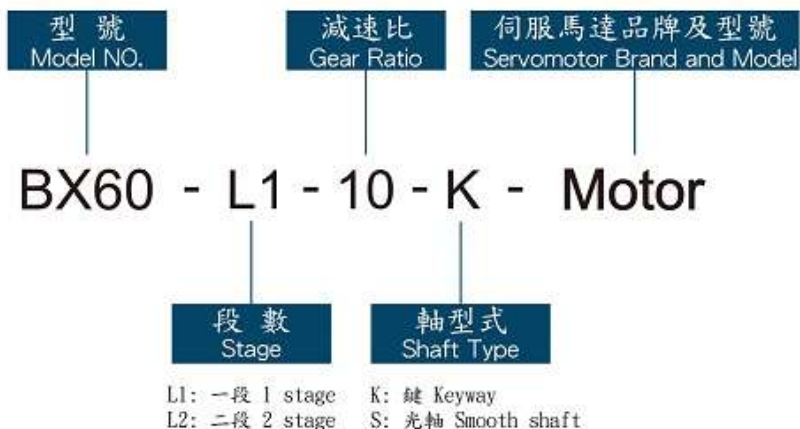


- 內齒環
- 高強度合金鋼, 螺旋齒設計, 高精度, 耐磨耗, 低噪音
- Inner Gear Box
- High strength alloy steel. Gear is Helical gear design for high-precision, high abrasion and lower noise.



- 太陽齒/行星齒
- 1: 高強度合金鋼, 表面高硬度, 耐磨耗, 高韌性
- 2: 螺旋齒型設計, 高傳動能力, 低噪音, 低震動
- Sun/Planetary Gear
- 1: High strength alloy steel, high hardness of surface, anti-abrasion and high impact.
- 2: Gear is Helical gear design, high efficiency, lower noise and lower vibration.

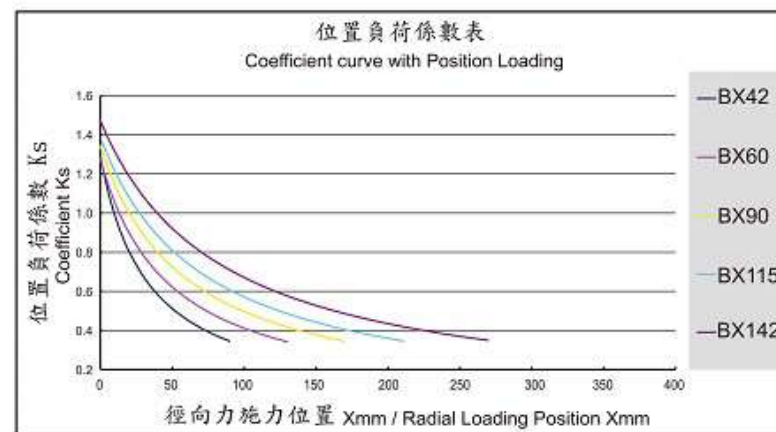
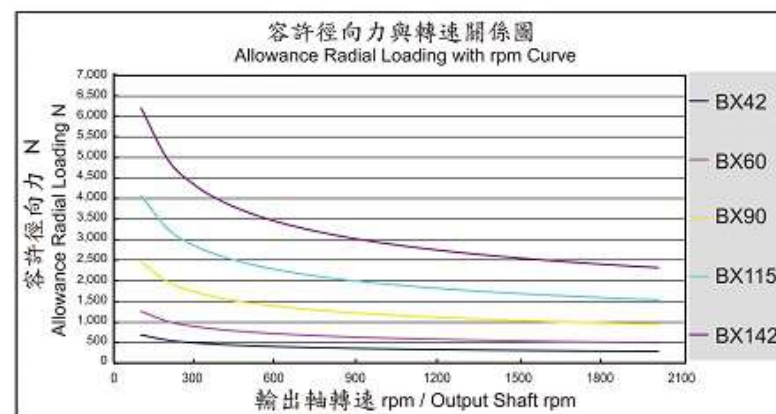
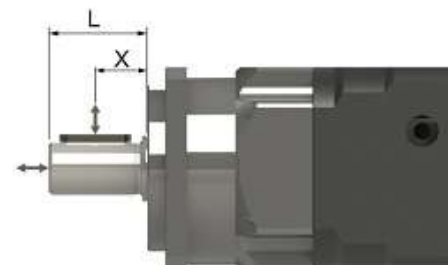
訂單格式 Order Format



伺服馬達用減速機系列/特色 For Servomotor Reducer Series / Feature

- 經濟型 Economic
- 高傳動效能 Higher Efficiency
- 低噪音 Lower Noise
- 低震動 Lower Vibration
- 低背隙 Lower Backlash
- 低溫升 Lower Temperature
- 壽命長 Higher Service Life
- 優化輸入轉動慣量
Optimum Input Mass Moment of Inertia design
for Servomotor easily start.
- 適用於連續運轉 Design for Continuity Operation
- 尺寸極小化, 重量輕量化 Minimalization Dimension and Weight

減速機輸出軸之容許徑向力及軸向力 Allowance Radial and Axial Loading with Reducer output shaft



規格總表

Specifications Data

規格 Specifications	單位 Unit	段數 Stage	減速比 ratio	BX42	BX60	BX90	BX115	BX142
額定輸出力矩 T_{2N} Nominal Output Torque		L1	3	14.1	36	116	238	571
			4	12.0	38	122	250	599
			5	14.0	36	117	240	575
			6	13.2	34	108	229	533
			7	11.9	34	110	225	538
			8	12.9	33	103	212	506
			9	12.0	31	102	208	500
			10	10.8	31	102	208	496
		L2	15	14.1	36	116	238	571
			20	12.0	38	122	250	599
			25	14.0	36	117	240	575
			30	13.2	36	116	238	571
			35	11.9	34	110	225	538
			40	12.9	38	122	250	599
			50	10.8	36	117	250	575
			60	13.2	34	108	229	533
			70	11.9	34	110	225	538
			80	12.9	33	103	212	506
			90	12.0	31	102	208	500
			100	10.8	31	102	208	496
急停力矩 Emergency Stop Torque	Nm	L1,L2	3~100	3倍額定輸出力矩 3times Nominal Output Torque				2.5倍額定輸出力矩 2.5times Nominal Output Torque
額定輸入轉速 n_{IN} Nominal Input Speed	rpm	L1,L2	3~100	3,000	3,000	3,000	3,000	2,500
最大輸入轉速 Max. Input Speed	rpm	L1,L2	3~100	6,000	6,000	6,000	6,000	5,000
標準背隙 BackLash	arcmin	L1	3~10	≤7	≤7	≤7	≤7	≤7
		L2	15~100	≤10	≤10	≤10	≤10	≤10
扭轉剛性 Torsional Rigidity	Nm/arcmin	L1	3~10	2.13	4.3	11	32	65
		L2	15~100	1.28	2.6	6.5	19	39
最大容許徑向力 F_{2R} Max. Radial Load	N	L1,L2	3~100	640	1,200	2,400	4,000	6,100
最大容許軸向力 F_{2A} Max. Axial Load	N	L1,L2	3~100	320	600	1,200	2,000	3,050
使用壽命 Life	hrs	L1,L2	3~100	20,000				
使用溫度 Operating Temperature	℃	L1,L2	3~100	-10℃~+90℃				
潤滑 Lubrication		L1,L2	3~100	合成潤滑油脂 Lithium Complex Synthetic				
安裝方向 Mounting Position		L1,L2	3~100	任意方向 Any Direction				
噪音值 Running Noise	dB(A)	L1,L2	3~100	≤56	≤58	≤60	≤63	≤68
		L1	3~10	≥97%				
效率 η Efficiency	%	L2	15~100	≥94%				
		L1	3~10	0.43	1.21	3.7	7.4	13.2
重量 Weight	kg	L2	15~100	0.70	1.70	4.1/5.2	8.2/10	15.0/19.0
		L1,L2	3~100	IP65				

轉動慣量表

Moment of Inertia Table

BX 轉動慣量總表 Moment of Inertia Table												
單位Unit	kg.cm ²	型號 Model										
節數 Stage	減速比 Ratio	BX42	BX60	BX90		BX115		BX142				
		伺服馬達軸直徑 Servomotor Shaft Diameter										
		≤ ϕ 8	≤ ϕ 8	≤ ϕ 14	≤ ϕ 14	ϕ 19	ϕ 24	≤ ϕ 19	≤ ϕ 24	ϕ 24	ϕ 35	ϕ 42
單節 1-stage	3	0.02		0.08		0.53	0.48		1.63	4.49	8.20	7.82
	4					0.48	0.42		1.43	2.97	6.68	6.30
	5					0.46	0.40		1.36	2.68	6.39	6.00
	6	0.01	0.07		0.44	0.38		1.30	2.55	6.26	5.88	
	7							1.30	2.51	6.22	5.84	
	8							1.28	2.48	6.19	5.81	
	9								2.47	6.18	5.80	
	10								2.46	6.17	5.79	
雙節 2-stages	15	0.01	0.01	0.07	0.07	0.44	0.39	0.44	1.37	1.37	6.25	5.87
	20								1.34	1.34	6.16	5.78
	25											
	30					0.43	0.38	0.43				
	35					0.44	0.39	0.44	1.37	1.37	6.25	5.87
	40					0.43	0.38	0.43	1.34	1.34	6.16	5.78
	50											
	60											
	70											
	80											
	90											
	100											

1: 減速比=伺服馬達輸入轉速(rpm)/減速機輸出軸轉速(rpm) / Ratio=Servomotor Input Speed(rpm) / Reducer Output Speed(rpm)

2: 背隙值為在2%額定扭力的扭力定義下測得 / Backlash values is base on 2% nominal output torque testing.

3: 徑向力/軸向力與壽命, 是在輸出轉速100rpm, 且作用力在輸出軸中心

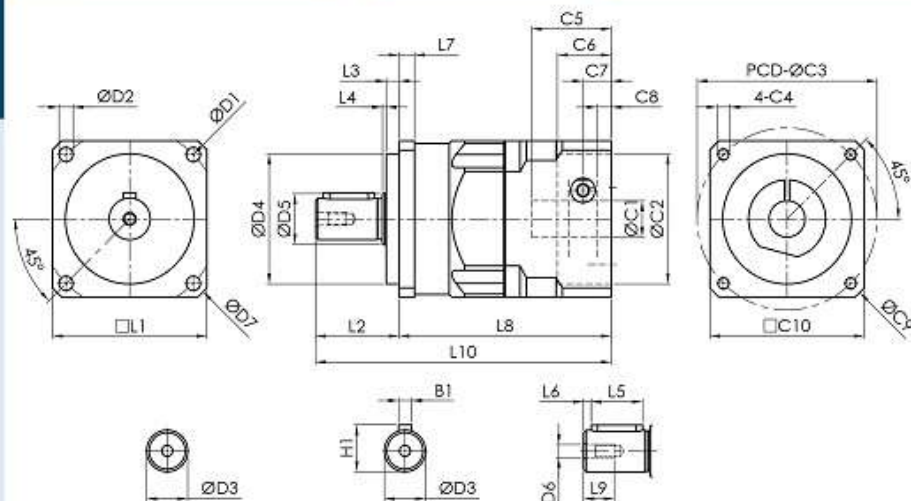
Radial/Axial load and Life are base on Reducer output speed 100rpm and Force at the shaft midpoint.

4: 連續運轉時, 壽命為一半 / Continuity operating, the life will be reduce to 50%.

5: 噪音為伺服馬達輸入轉速3000rpm, 減速機速比10比, 無負載, 距減速機 1M 的情況下所測得

The Noise is base on Servomotor input 3000rpm, gear Ratio 10, unloading and from 1M to reducer testing.

6: 如有特殊規格請洽各區域的代理/經銷商 / If any special specific, Please visit our Agent / Dealer.



光軸 S(Smooth)

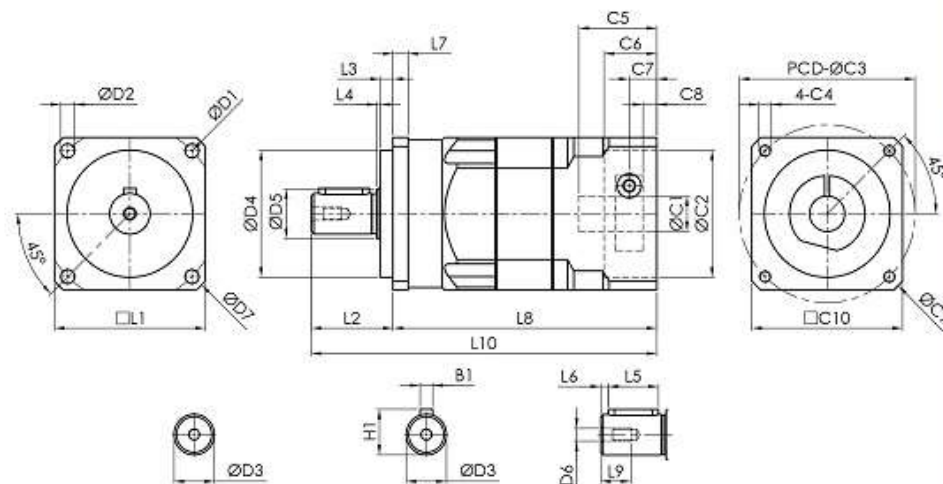
鍵 K(Keyway)

型號 Model	BX42	BX60	BX90	BX115	BX142
D	D1	50	70	100	130
	D2	3.5	5.5	6.8	9
	D3 _{H7}	13	16	22	32
	D4 _{H7}	35	50	80	110
	D5	13.6	19.5	29.2	34.2
	D6	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25
	D7	56	80	116	152
L	L1	42	60	90	115
	L2	25	32.5	46.5	64
	L3	5	5	5	10
	L4	1	1.5	1.5	2
	L5	15	20	30	40
	L6	2	3	3	5
	L7	5	6	8	16
	L8	60	82.5	107	140
	L9	10	12	15	28
	L10	85	115	153.5	204
C	*C1 _{H7}	8	14	19	24
	*C2 _{H7}	30	50	70	110
	*C3	46	70	90	145
	*C4	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25
	*C5	26	31	43.5	67
	*C6	17	21	30	18
	*C7	8.5	11	14	31
	*C8	4	5.5	7	22
	*C9	56	80	116	160
	*C10	42.5	60	90	120
B	B1	5	5	6	10
H	H1	15	18	24.5	35

* C1-C10是依各廠牌的伺服馬達尺寸而定

* C1-C10 depends on servo motor dimension

Beyond 13



光軸 S(Smooth)

鍵 K(Keyway)

型號 Model	BX42	BX60	BX90	BX115	BX142
D	D1	50	70	100	130
	D2	3.5	5.5	6.8	9
	D3 _{H7}	13	16	22	32
	D4 _{H7}	35	50	80	110
	D5	13.6	19.5	29.2	34.2
	D6	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25
	D7	56	80	116	152
L	L1	42	60	90	115
	L2	25	32.5	46.5	64
	L3	5	5	5	10
	L4	1	1.5	1.5	2
	L5	15	20	30	40
	L6	2	3	3	5
	L7	5	6	8	16
	L8	77	105	138.5	176.5
	L9	10	12	15	28
	L10	102	137.5	185	240.5
C	*C1 _{H7}	8	14	19	24
	*C2 _{H7}	30	50	70	110
	*C3	46	70	90	145
	*C4	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25
	*C5	26	31	43.5	67
	*C6	17	21	30	18
	*C7	8.5	11	14	31
	*C8	4	5.5	7	22
	*C9	56	80	116	160
	*C10	42.5	60	90	120
B	B1	5	5	6	10
H	H1	15	18	24.5	35

* C1-C10是依各廠牌的伺服馬達尺寸而定

* C1-C10 depends on servo motor dimension

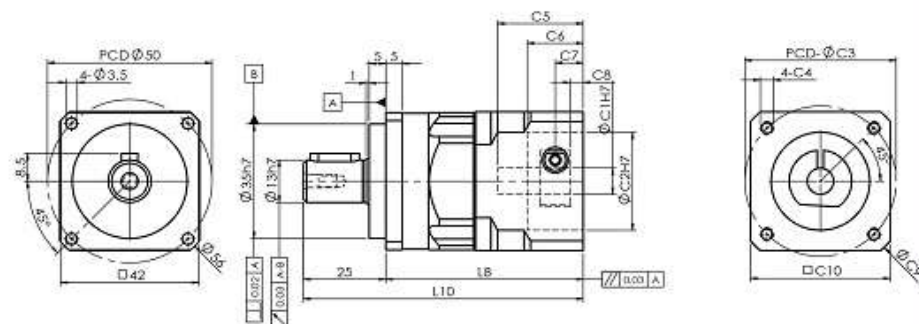
Beyond 14

規格表 / Specifications

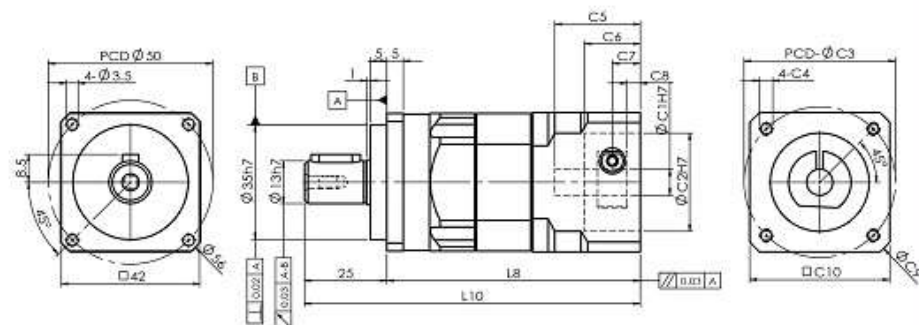
BX42		單節減速比 1-stage ratio												
		3	4	5	6	7	8	9	10					
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	14.1	12.0	14.0	13.2	11.9	12.9	12.0	10.8					
		雙節減速比 2-stages ratio												
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	15	20	25	30	35	40	50	60	70	80	90	100	
		14.1	12.0	14.0	14.1	11.9	12.0	14.0	13.2	11.9	12.9	12.0	10.8	
急停力矩 Emergency Stop Torque	Nm	3倍額定輸出力矩 3times Nominal Output Torque												
最大加速力矩 T_{2a} Max. Accelerate Torque	Nm	L1	25.4	21.6	25.2	23.8	21.4	23.2	21.6	19.4				
		L2	25	22	25	21	22	25	24	21	23	22	19	
標準背隙 Backlash	arcmin	$L1 \leq 7$						$L2 \leq 10$						
扭轉剛性 Torsional Rigidity	Nm/arcmin	$L1=2.13$						$L2=1.28$						
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	3000												
最大輸入轉速 Max. Input Speed	rpm	6000												
最大容許徑向力 F_{2rB} Max. Radial Load	N	640												
最大容許軸向力 F_{2aB} Max. Axial Load	N	320												
使用壽命 Life	hrs	20000												
使用溫度 Operating Temperature	℃	$-10^{\circ}\text{C} \sim +90^{\circ}\text{C}$												
潤滑 Lubrication		合成潤滑油脂 Lithium Complex Synthetic												
安裝方向 Mounting Position		任意方向 Any Direction												
噪音值 Running Noise	dB(A)	≤ 56												
效率 η Efficiency	%	$L1 \geq 97\%$						$L2 \geq 94\%$						
重量 Weight	kg	$L1=0.43$						$L2=0.7$						
防護 Protection Level		IP65												
尺寸位置 dimension Index		$\phi C1$		$\phi C2$	$\phi C3$	C4	C5	C6	C7	C8	$\phi C9$	C10	L8	L10
		Min	Max											
尺寸 dimension mm	L1	5	8	30	45	M3	26	17	8.5	4	56	43	60	85
					46	M4								
	L2				45	M3								
					46	M4								

尺寸圖 / Dimension

BX42-L1



BX42-L2



光軸 S: smooth

鍵 K: keyway

1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter2: $\phi C2$ 及 PCD- $\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異 $\phi C2$ and PCD- $\phi C3$ is Reducer Input Dimension, match to the servomotor Output Flange

3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length

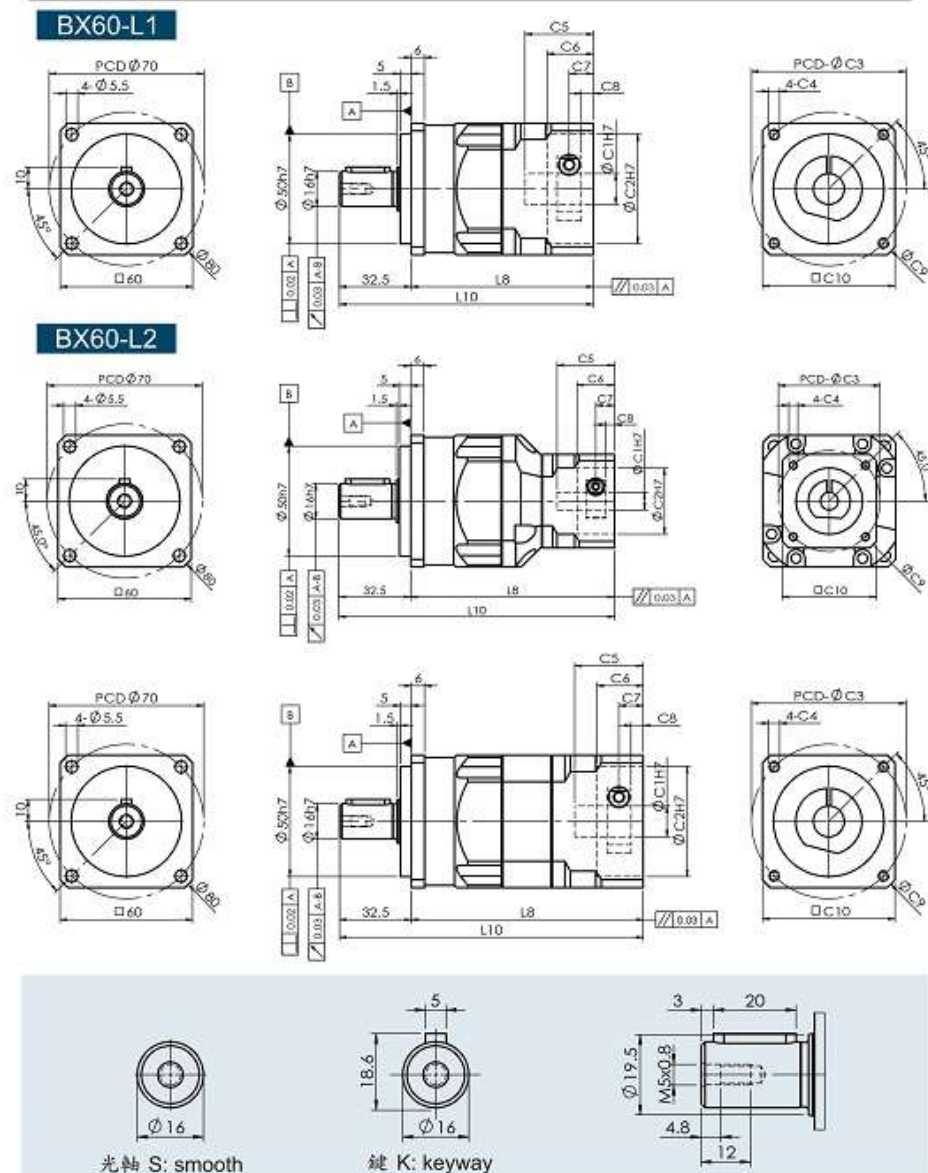
4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

規格表 / Specifications

BX60		單節減速比 1-stage ratio												
		3	4	5	6	7	8	9	10					
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	36	38	36	34	34	33	31	31					
		雙節減速比 2-stages ratio												
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	15	20	25	30	35	40	50	60	70	80	90	100	
		36	38	36	36	34	38	36	34	34	33	31	31	
急停力矩 Emergency Stop Torque	Nm	3倍額定輸出力矩 3times Nominal Output Torque												
最大加速力矩 T_{2B} Max. Accelerate Torque	Nm	L1	65	68	65	61	61	59	58	58				
		L2	65	68	65	65	61	68	65	61	61	59	58	58
標準背隙 Backlash	arcmin	$L1 \leq 7$						$L2 \leq 10$						
扭轉剛性 Torsional Rigidity	Nm/arcmin	$L1=4.3$						$L2=2.6$						
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	3000												
最大輸入轉速 Max. Input Speed	rpm	6000												
最大容許徑向力 F_{2rB} Max. Radial Load	N	1200												
最大容許軸向力 F_{2aB} Max. Axial Load	N	600												
使用壽命 Life	hrs	20000												
使用溫度 Operating Temperature	°C	$-10^{\circ}\text{C} \sim +90^{\circ}\text{C}$												
潤滑 Lubrication		合成潤滑油脂 Lithium Complex Synthetic												
安裝方向 Mounting Position		任意方向 Any Direction												
噪音值 Running Noise	dB(A)	≤ 58												
效率 η Efficiency	%	$L1 \geq 97\%$						$L2 \geq 94\%$						
重量 Weight	kg	$L1=1.21$						$L2=1.7$						
防護 Protection Level		IP65												
尺寸位置 Dimension Index		$\phi C1$		$\phi C2$	$\phi C3$	C4	C5	C6	C7	C8	$\phi C9$	C10	L8	L10
尺寸 Dimension mm	L1	6	14	30	45	M3	31	21	11	5.5	80	60	83	115
				30	46	M4								
				50	70	M4/5								
	L2			30	45	M3	26	17	8.5	4	56	43	92	125
				30	46	M4								
				50	70	M4/5								

Beyond 17

尺寸圖 / Dimension

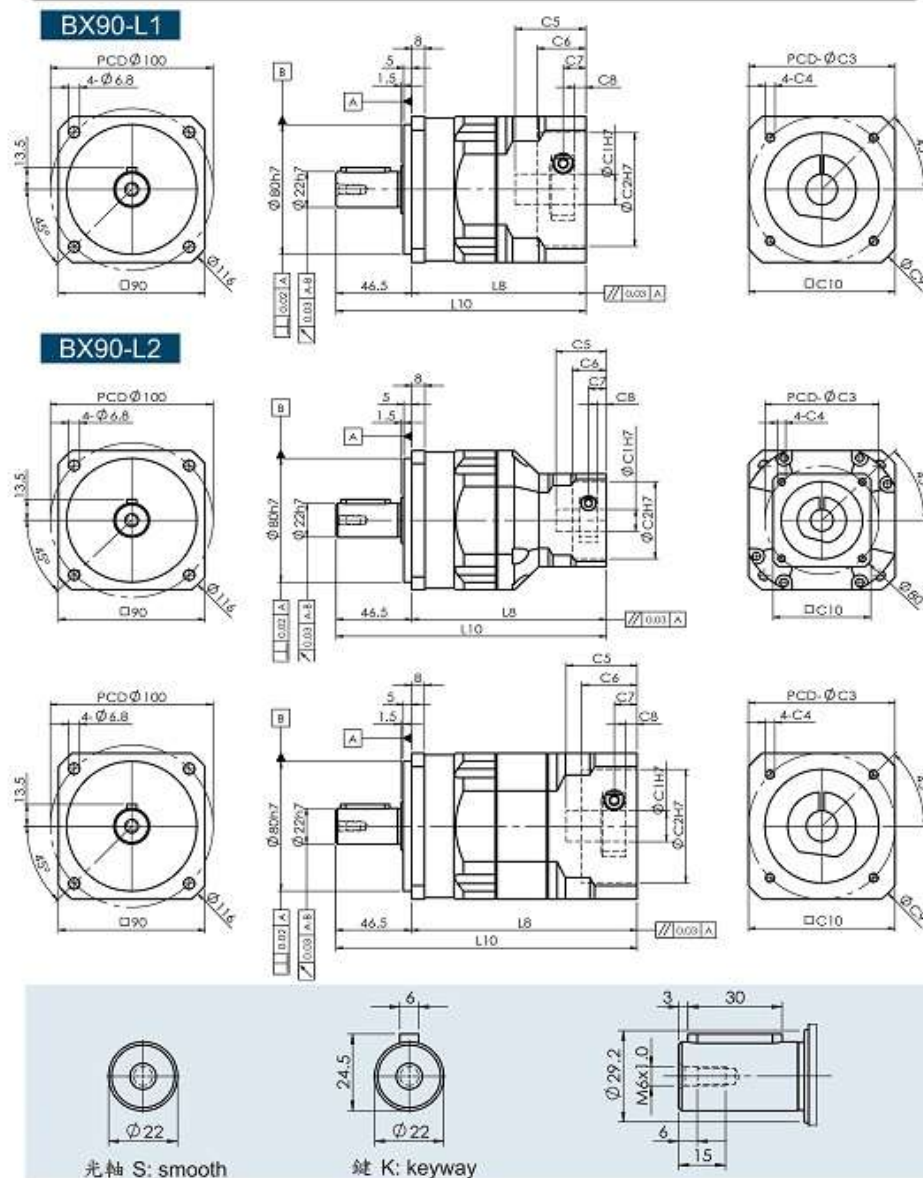
1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter2: $\phi C2$ 及 PCD- $\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異 $\phi C2$ and PCD- $\phi C3$ is Reducer Input Dimension, match to the servomotor Output Flange

3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length

4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

Beyond 18

BX90			單節減速比 1-stage ratio											
			3	4	5	6	7	8	9	10				
額定輸出力矩 T_{2N} Nominal Output Torque	Nm		116	122	117	108	110	103	102	102				
			雙節減速比 2-stages ratio											
額定輸出力矩 T_{2N} Nominal Output Torque	Nm		15	20	25	30	35	40	50	60	70	80	90	100
			116	122	117	116	110	122	117	108	110	103	102	102
急停力矩 Emergency Stop Torque	Nm		3倍額定輸出力矩 3times Nominal Output Torque											
最大加速力矩 T_{2B} Max. Accelerate Torque	Nm	L1	209	220	211	194	198	185	184	184				
		L2	209	220	211	209	198	220	211	194	198	185	184	184
標準背隙 Backlash	arcmin		L1≤7						L2≤10					
扭轉剛性 Torsional Rigidity	Nm/arcmin		L1=11						L2=6.5					
額定輸入轉速 n_{1N} Nominal Input Speed	rpm		3000											
最大輸入轉速 Max. Input Speed	rpm		6000											
最大容許徑向力 F_{2R} Max. Radial Load	N		2400											
最大容許軸向力 F_{2aB} Max. Axial Load	N		1200											
使用壽命 Life	hrs		20000											
使用溫度 Operating Temperature	℃		-10℃~+90℃											
潤滑 Lubrication			合成潤滑油脂 Lithium Complex Synthetic											
安裝方向 Mounting Position			任意方向 Any Direction											
噪音值 Running Noise	dB(A)		≤60											
效率 η Efficiency	%		L1≥97%						L2≥94%					
重量 Weight	kg		L1=3.7						L2=4.1/5.2					
防護 Protection Level			IP65											
尺寸位置 Dimension Index		ϕ C1	ϕ C2	ϕ C3	C4	C5	C6	C7	C8	ϕ C9	C10	L8	L10	
		Mim	Max											
尺寸 Dimension mm	L1	16	24	70	90	M6	43.5	30	14	7	116	90	107	153.5
				110	145	M8	64	6	34	27	170	120	127	173.5
	L2	11	14	50	70	M4/5	31	21	11	5.5	80	60	119.5	166
		16	24	70	90	M6	44	30	14	7	116	90	138.5	185
				110	145	M8	64	6	34	27	170	120	158.5	205

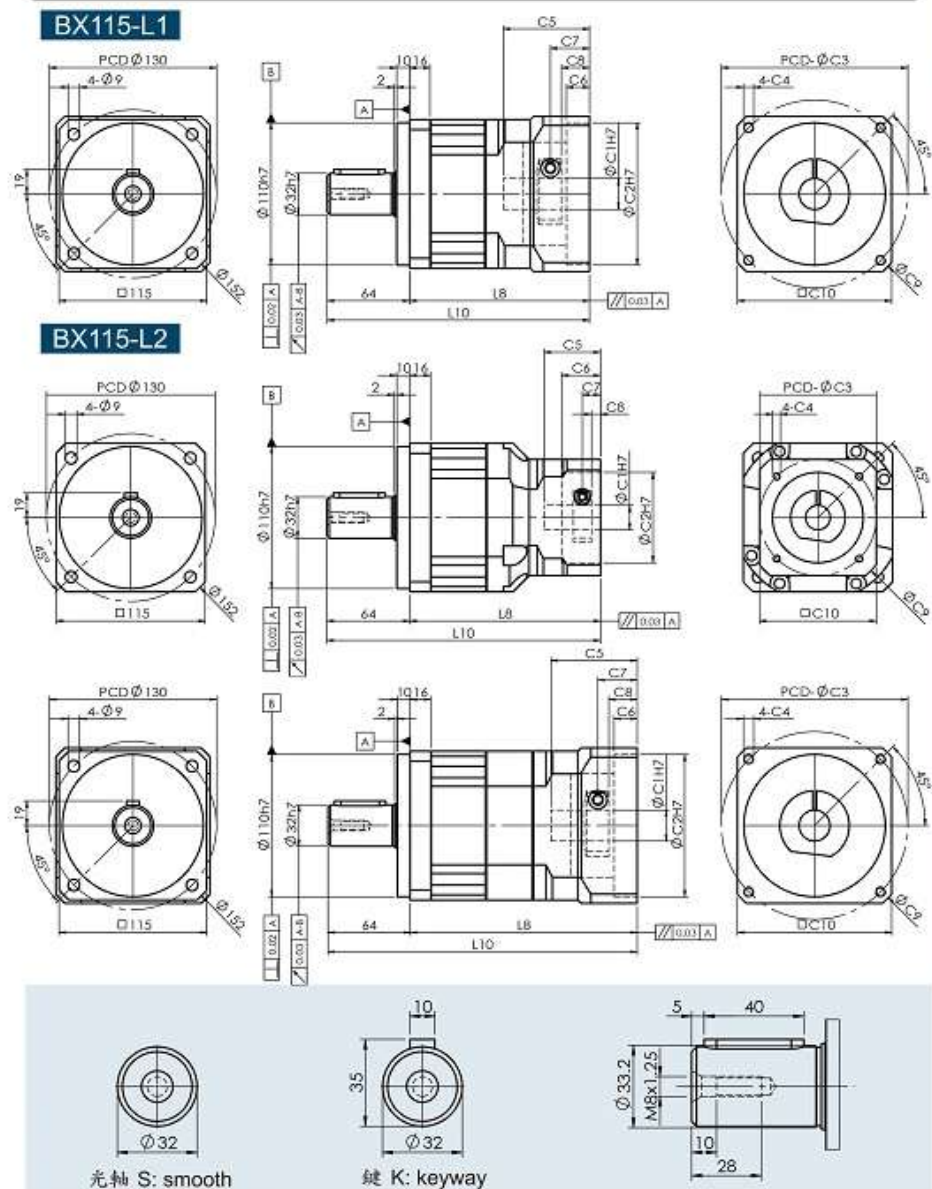


- 1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 PCD- $\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and PCD- $\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

規格表 / Specifications

BX115				單節減速比 1-stage ratio										
				3	4	5	6	7	8	9	10			
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	238	250	240	229	225	212	208	208					
				雙節減速比 2-stages ratio										
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	15	20	25	30	35	40	50	60	70	80	90	100	
急停力矩 Emergency Stop Torque	Nm	238	250	240	238	225	250	240	229	225	212	208	208	
最大加速力矩 T_{2B} Max. Accelerate Torque	Nm	L1	428	450	432	412	405	382	374	374				
標準背隙 Backlash	arcmin	L2	428	450	432	428	405	450	432	412	405	382	374	374
扭轉剛性 Torsional Rigidity	Nm/arcmin	L1=32							L2=19					
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	3000												
最大輸入轉速 Max. Input Speed	rpm	6000												
最大容許徑向力 F_{2R} Max. Radial Load	N	3980												
最大容許軸向力 F_{2aB} Max. Axial Load	N	1990												
使用壽命 Life	hrs	20000												
使用溫度 Operating Temperature	℃	-10℃~+90℃												
潤滑 Lubrication		合成潤滑油脂 Lithium Complex Synthetic												
安裝方向 Mounting Position		任意方向 Any Direction												
噪音值 Running Noise	dB(A)	≤63												
效率 η Efficiency	%	L1 ≥ 97%							L2 ≥ 94%					
重量 Weight	kg	L1=7.4							L2=8.2/10					
防護 Protection Level		IP65												
尺寸位置 Dimension Index		$\phi C1$		$\phi C2$	$\phi C3$	C4	C5	C6	C7	C8	$\phi C9$	C10	L8	L10
尺寸 Dimension mm	L1	Mim	Max	110	130	M8	56	10	19.5	11	152	115	129	193
				110	145	M8	67	18	30.5	22	160	120	140	204
	L2	14	19	70	90	M6	43.5	34	14	7	116	90	147	211
		19	24	110	130	M8	56	10	19.5	11	152	115	165.5	229.5
				110	145	M8	67	18	30.5	22	160	120	176.5	240.5

尺寸圖 / Dimension

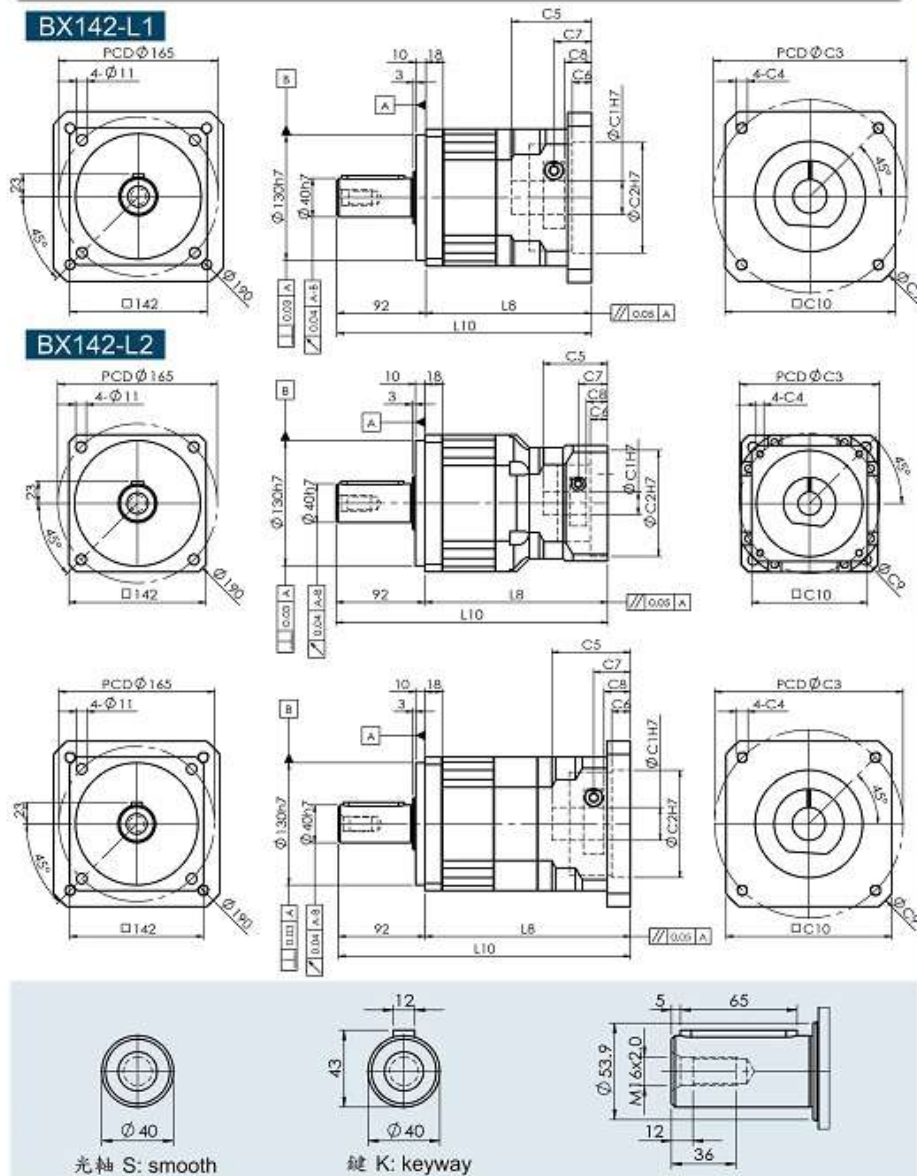


- 1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 PCD- $\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and PCD- $\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

規格表 / Specifications

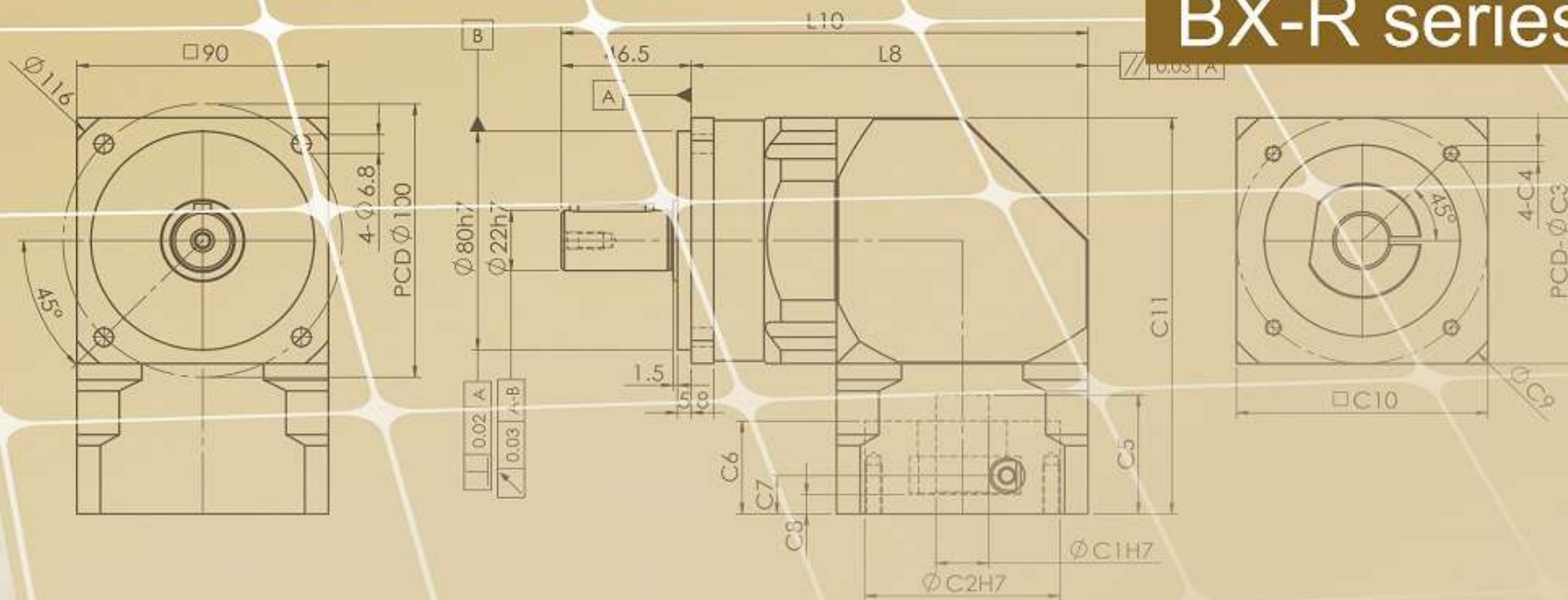
BX142		單節減速比 1-stage ratio												
		3	4	5	6	7	8	9	10					
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	571	599	575	533	538	566	500	496					
		雙節減速比 2-stages ratio												
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	15	20	25	30	35	40	50	60	70	80	90	100	
		571	599	575	571	538	599	575	533	538	566	500	496	
急停力矩 Emergency Stop Torque	Nm	3倍額定輸出力矩 3times Nominal Output Torque												
最大加速力矩 T_{2B} Max. Accelerate Torque	Nm	L1	1028	1078	1035	959	968	1019	900	892				
		L2	1028	1078	1035	1028	968	1078	1035	959	968	1019	900	892
標準背隙 Backlash	arcmin	L1≤7						L2≤10						
扭轉剛性 Torsional Rigidity	Nm/arcmin	L1=65						L2=39						
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	2500												
最大輸入轉速 Max. Input Speed	rpm	5000												
最大容許徑向力 F_{2R} Max. Radial Load	N	6100												
最大容許軸向力 F_{2aB} Max. Axial Load	N	3050												
使用壽命 Life	hrs	20000												
使用溫度 Operating Temperature	℃	-10℃~+90℃												
潤滑 Lubrication		合成潤滑油脂 Lithium Complex Synthetic												
安裝方向 Mounting Position		任意方向 Any Direction												
噪音值 Running Noise	dB(A)	≤65												
效率 η Efficiency	%	L1≥97%						L2≥94%						
重量 Weight	kg	L1=13.2/14.2						L2=15/19						
防護 Protection Level		IP65												
尺寸位置 Dimension Index		$\phi C1$		$\phi C2$	$\phi C3$	C4	C5	C6	C7	C8	$\phi C9$	C10	L8	L10
		Mim	Max											
尺寸 Dimension mm	L1	22	42	110	145	M8	71	40	28.5	20	182	142	159.5	251.5
				114.3	200	M12	83	20	39	28	230	176	171.5	263.5
	L2	19	24	110	145	M8	67	18	30.5	22	160	120	189	281
		35	42	114.3	200	M12	83	20	39	28	230	176	218	310
				180	215	M12	118	10	74	63	250	190	253	345

尺寸圖 / Dimension



- 1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 PCD- $\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and PCD- $\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

BX-R series



產品特性

Production Feature



- 太陽齒/行星齒
 - 1: 高強度合金鋼, 表面高硬度, 耐磨耗, 高韌性
 - 2: 螺旋齒型設計, 高傳動能力, 低噪音, 低震動
- Sun/Planetary Gear
 1. High strength alloy steel, high hardness of surface, anti-abrasion and high impact.
 2. Gear is Helical gear design, high efficiency, lower noise and lower vibration.



- 可調式螺旋傘齒輪背隙結構
- Adjustable Helical Bevel Gear Backlash structure.



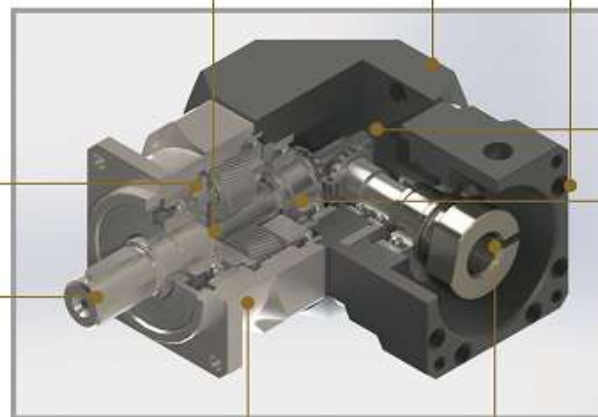
- 輸入法蘭
 1. AL-6061-T6, 表面鉻陽極氧化, 高質感, 高防蝕能力
 2. 輸入法蘭一體式設計, 使得伺服馬達軸心與太陽齒有極佳的同心度
 3. 可與各品牌的伺服馬達與步進馬達搭配組合
- Input Flange
 1. Material is AL-6061-T6, Surface is Eloxal to improve the antioxidant capacity and high quality.
 2. Input flange is One-Piece design for sun gear and servomotor shaft get excellent concentricity.
 3. Use to any brand servomotor or step motor.



- 輸入法蘭與內齒環

輸入法蘭與內齒環使用高精度軸承為組裝時的引導, 能使輸入到輸出端有最佳的同心度, 降低震動
- Input Flange and Inner Gear Box

The input flange using high precision bearing to lead assembly. Let the input to output shaft center has excellent concentricity for reduce vibration.



- 螺旋傘齒輪組
 - 1> Ni-Cr-Mo 合金鋼材質
 - 2> 滲碳製程
 - 3> 齒部強韌, 表面耐磨耗
- Helical Bevel Gear component
 1. Ni-Cr-Mo alloy steel
 2. Carburizing Process
 3. Stiffness and anti-abrasion.



- 無鍵式轉軸, 保有最優的動平衡, 降低振動
- Non-Keyway assembly, have excellent dynamic balance and reduce vibration.



- 輸出軸

一體式設計, 確保行星齒能精確的傳動, 前後軸承大跨距設計與較大的軸承, 有效的提高軸承壽命與最大的軸/徑向力
- Output Shaft

Shaft is One-Piece design, for ensure the planetary gears could accurate transmission. Enlarge the front bearing and larger span to rear bearing for largest radial and axial loading.



- 內齒環

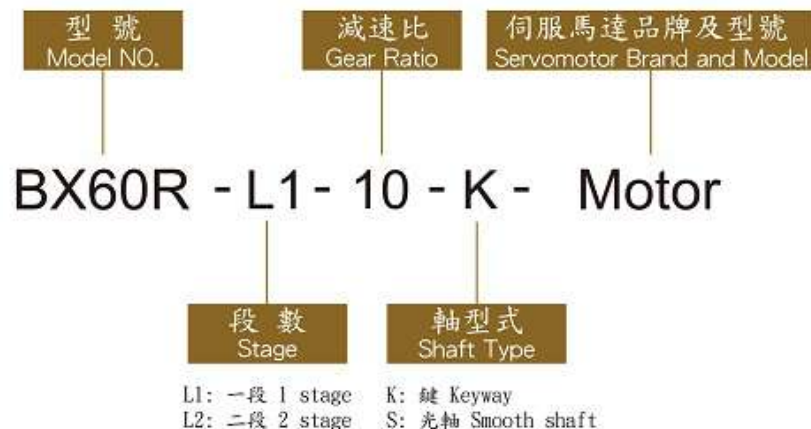
高強度合金鋼, 螺旋齒設計, 高精度, 耐磨耗, 低噪音
- Inner Gear Box

High strength alloy steel. Gear is Helical gear design for high-precision, high abrasion and lower noise.



- 入力螺旋傘齒輪與輸入軸
 - 1> 搭配高精度軸襯, 可適用於不同軸徑的伺服馬達
 - 2> 極佳的動平衡設計
 - 3> 優化的轉動慣量
 - 4> 模組化設計, 能快速回應客戶不同速比的需求
- Input Helical Bevel Gear and Input Shaft
 - 1> With high precision bushing is easy to set up with any brand servomotor.
 - 2> Excellent dynamic balance
 - 3> Optimum mass moment of inertia.
 - 4> To modularize assembly design for rapid reaction customers all gear ratio requirement.

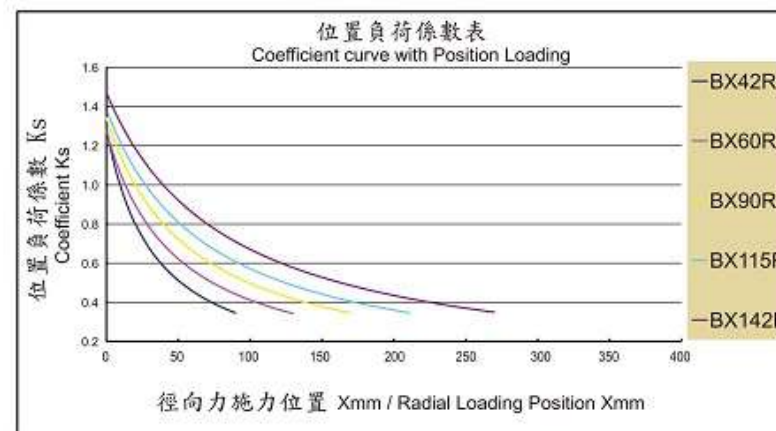
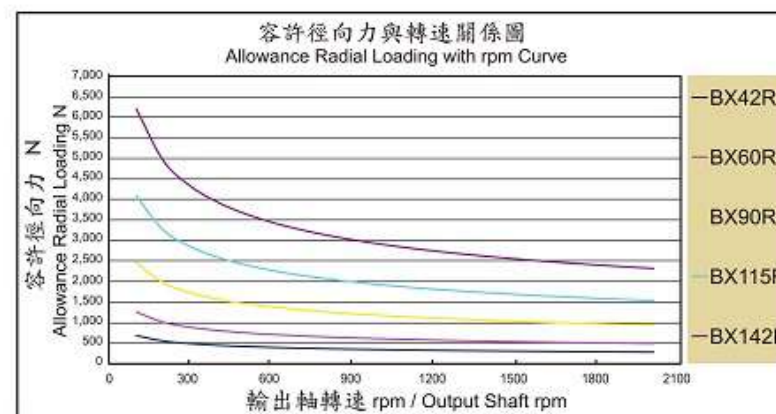
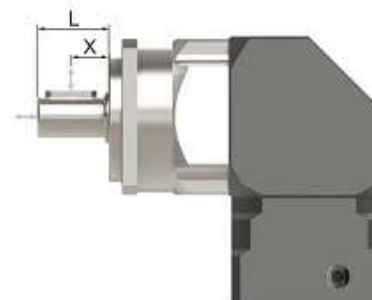
訂單格式 Order Format



伺服馬達用減速機系列/特色 For Servomotor Reducer Series / Feature

- 經濟型 Economic
- 高傳動效能 Higher Efficiency
- 低噪音 Lower Noise
- 低震動 Lower Vibration
- 低背隙 Lower Backlash
- 低溫升 Lower Temperature
- 壽命長 Higher Service Life
- 優化輸入轉動慣量
Optimum Input Mass Moment of Inertia design
for Servomotor easily start.
- 適用於連續運轉 Design for Continuity Operation
- 尺寸極小化, 重量輕量化 Minimalization Dimension and Weight

減速機輸出軸之容許徑向力及軸向力 Allowance Radial and Axial Loading with Reducer output shaft



規格總表 Specifications Data

規格 Specifications	單位 Unit	段數 Stage	減速比 ratio	BX42R	BX60R	BX90R	BX115R	BX142R
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	L1	3	14.1	36	116	238	571
			4	12.0	38	122	250	599
			5	14.0	36	117	240	575
			6	13.2	34	108	229	533
			7	11.9	34	110	225	538
			8	12.9	33	103	212	506
			9	12.0	31	102	208	500
			10	10.8	31	102	208	496
			14	11.9	34	132	225	538
			16	12.9	33	124	212	506
			18	12.0	31	118	208	500
			20	10.8	31	112	208	496
		L2	15	14.1	36	116	238	571
			25	14.0	35	117	240	575
			30	14.1	36	116	238	571
			35	11.9	34	110	225	538
			40	12.9	38	122	250	599
			50	10.8	36	117	240	575
			60	13.2	36	116	238	533
			70	11.9	34	110	225	538
			80	12.9	38	122	250	506
			90	12.0	31	102	208	500
			100	10.8	36	102	240	496
			120	-	34	108	229	533
			140	-	34	110	225	538
			160	-	33	103	212	506
			200	-	31	102	208	496
急停力矩 Emergency Stop Torque	Nm	L1,L2	3~200	3倍額定輸出力矩 3times Nominal Output Torque				2.5倍額定輸出力矩 2.5times Nominal Output Torque
額定輸入轉速 n_{1N} Nominal Input Speed	rpm		3~200	3,000	3,000	3,000	3,000	2500
最大輸入轉速 Max. Input Speed	rpm	L1,L2	3~200	6,000	6,000	6,000	6,000	5000
標準背隙 BackLash	arcmin	L1	3~20	≤12	≤11	≤10	≤10	≤10
		L2	15~200	≤14	≤13	≤12	≤12	≤12
扭轉剛性 Torsional Rigidity	Nm/arcmin	L1	3~20	2.13	4.3	11	32	65
		L2	15~200	1.28	2.6	6.5	19	39
最大容許徑向力 F_{2R} Max. Radial Load	N	L1,L2	3~200	640	1,200	2,400	4,000	6,100
最大容許軸向力 F_{2a} Max. Axial Load	N	L1,L2	3~200	320	600	1,200	2,000	3,050
使用壽命 Life	hrs	L1,L2	3~200	20,000				
使用溫度 Operating Temperature	°C	L1,L2	3~200	-10°C~+90°C				
潤滑 Lubrication		L1,L2	3~200	合成潤滑油脂 Lithium Complex Synthetic				
安裝方向 Mounting Position		L1,L2	3~200	任意方向 Any Direction				
噪音值 Running Noise	dB(A)	L1,L2	3~200	≤62	≤62	≤68	≤72	≤72
		L1	3~20	≥94%				
效率 η Efficiency	%	L2	15~200	≥91%				
		L1	3~20	0.7	1.8	5.9	11.7	20.8/21.8
重量 Weight	kg	L2	15~200	0.9	2.3	4.7/7.3	10.4/14.3	21.2/26.6

Beyond 31

轉動慣量表 Moment of Inertia Table

BX-R 轉動慣量總表 Moment of Inertia Table												
單位Unit	kg.cm ²	型號 Model										
節數 Stage	減速比 Ratio	BX42R	BX60R	BX90R				BX115R		BX142R		
		伺服馬達軸直徑 Servomotor Shaft Diameter										
		≤ ϕ 8	≤ ϕ 8	≤ ϕ 14	≤ ϕ 14	ϕ 19	ϕ 24	≤ ϕ 19	≤ ϕ 24	ϕ 24	ϕ 35	ϕ 42
單節 1-stage	3	0.02				0.53	0.48		1.64	3.50	7.20	6.80
	4											
	5											
	6											
	7											
	8											
	9					0.50	0.45		1.52	3.10	6.80	6.40
	10											
	14											
	16											
	18											
	20											
雙節 2-stages	15	0.02		0.08	0.08	0.53	0.48	0.53	1.64	1.64	7.20	6.80
	25					0.50	0.45	0.50	1.52	1.52	6.80	6.40
	30					0.53	0.48	0.53	1.64	1.64	7.20	6.80
	35					0.50	0.45	0.50	1.52	1.52	6.80	6.40
	40											
	50											
	60											
	70					0.53	0.48	0.53	1.64	1.64	7.20	6.80
	80					0.50	0.45	0.50	1.52	1.52	6.80	6.40
	90					0.53	0.48	0.53	1.64	1.64	7.20	6.80
	100					0.50	0.45	0.50	1.52	1.52	6.80	6.40
	120											
	140											
	160											
	200											

1: 減速比=伺服馬達輸入轉速(rpm)/減速機輸出軸轉速(rpm) / Ratio=Servomotor Input Speed(rpm) / Reducer Output Speed(rpm)

2: 背隙值為在2%額定扭力的扭力定義下測得 / Backlash values is base on 2% nominal output torque testing.

3: 徑向力/軸向力與壽命,是在輸出轉速100rpm,且作用力在輸出軸中心
Radial/Axial load and Life are base on Reducer output speed 100rpm and Force at the shaft midpoint.

4: 連續運轉時,壽命為一半 / Continuity operating, the life will be reduce to 50%.

5: 噪音為伺服馬達輸入轉速3000rpm,減速機速比10比,無負載,距減速機 1M 的情況下所測得

The Noise is base on Servomotor input 3000rpm, gear Ratio 10, unloading and from 1M to reducer testing.

6: 如有特殊規格請洽各區域的代理/經銷商 / If any special specific, Please visit our Agent / Dealer.

Beyond 32



*C1-C11是依各廠牌的伺服馬達尺寸而定

*C1-C11 depends on servo motor dimension



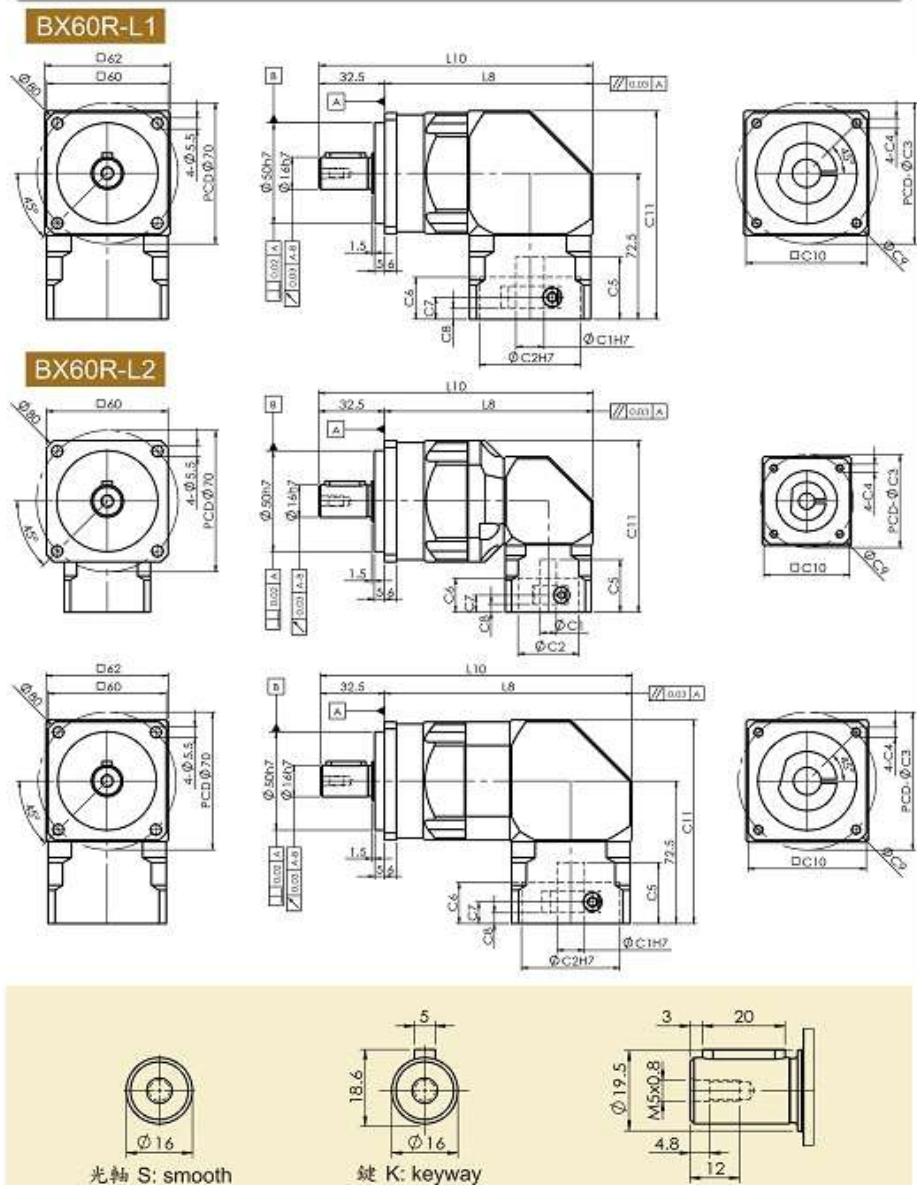
*C1-C11是依各廠牌的伺服馬達尺寸而定

*C1-C11 depends on servo motor dimension

規格表 / Specifications

BX60R		單節減速比 1-stage ratio																
		3	4	5	6	7	8	9	10	14	20							
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	36	38	36	34	34	33	31	31	34	31							
		雙節減速比 2-stages ratio																
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	15	25	30	35	40	50	60	70	80	90	100	120	140	160	200		
		36	36	36	34	38	36	36	34	38	31	36	34	34	33	31		
急停力矩 Emergency Stop Torque	Nm	3倍額定輸出力矩 3times Nominal Output Torque																
最大加速力矩 T_{2B} Max. Accelerate Torque	Nm	L1	65	68	65	61	61	59	56	56	61	56						
		L2	65	65	65	65	61	68	65	65	61	68	56	65	61	61	59	56
標準背隙 Backlash	arcmin	$L1 \leq 11$								$L2 \leq 13$								
扭轉剛性 Torsional Rigidity	Nm/arcmin	$L1=3.7$								$L2=2.2$								
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	3000																
最大輸入轉速 Max. Input Speed	rpm	6000																
最大容許徑向力 F_{2R} Max. Radial Load	N	1200																
最大容許軸向力 F_{2aB} Max. Axial Load	N	600																
使用壽命 Life	hrs	20000																
使用溫度 Operating Temperature	℃	$-10^{\circ}\text{C} \sim +90^{\circ}\text{C}$																
潤滑 Lubrication		合成潤滑油脂 Lithium Complex Synthetic																
安裝方向 Mounting Position		任意方向 Any Direction																
噪音值 Running Noise	dB(A)	≤ 62																
效率 η Efficiency	%	$L1 \geq 94\%$								$L2 \geq 91\%$								
重量 Weight	kg	$L1=1.88$								$L2=2.32$								
防護 Protection Level		IP65																
尺寸位置 Dimension Index		$\phi C1$ Min	$\phi C1$ Max	$\phi C2$	$\phi C3$	C4	C5	C6	C7	C8	$\phi C9$	C10	C11	L8	L10			
尺寸 Dimension mm	L1	6	14	30	45	M3	31	21	11	5.5	80	60	103.5	103	135.5			
				30	46	M4												
	50			70	M4/5	26	17	8.5	4	56	42.5	85	103	135.5				
	30			45	M3													
	L2			30	46	M4	31	21	11	5.5	80	60	103.5	125.5	158			
				50	70	M4/5												

尺寸圖 / Dimension



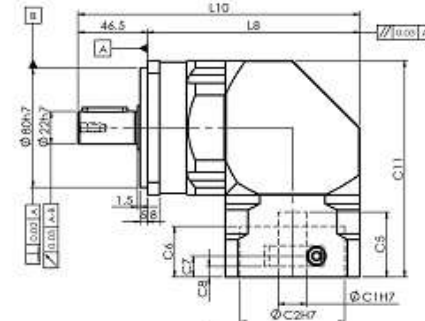
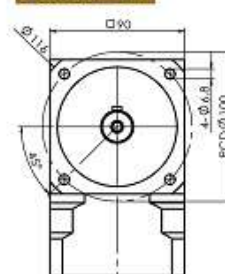
- 1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 $PCD-\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and $PCD-\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

規格表 / Specifications

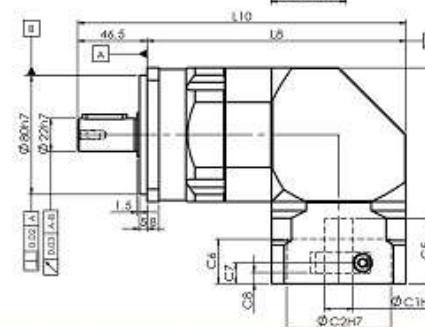
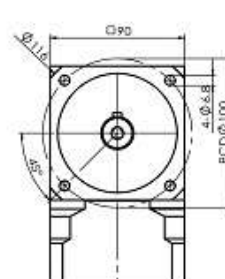
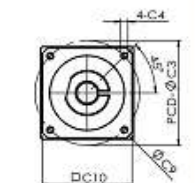
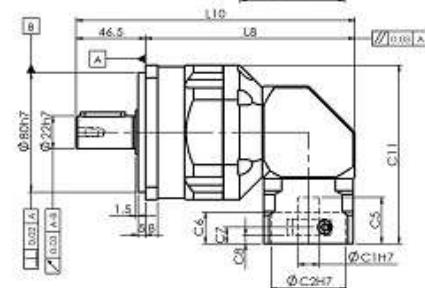
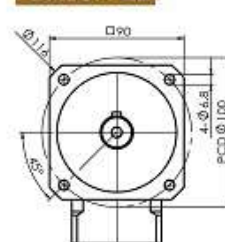
BX90R			單節減速比 1-stage ratio														
			3	4	5	6	7	8	9	10	14	20					
額定輸出力矩 T_{2N} Nominal Output Torque	Nm		116	122	117	108	110	103	102	102	110	102					
			雙節減速比 2-stages ratio														
額定輸出力矩 T_{2N} Nominal Output Torque	Nm		15	25	30	35	40	50	60	70	80	90	100	120	140	160	200
			116	117	116	110	122	117	116	110	122	102	117	108	110	103	102
急停力矩 Emergency Stop Torque	Nm		3倍額定輸出力矩 3times Nominal Output Torque														
最大加速力矩 T_{2B} Max. Accelerate Torque	Nm	L1	209	220	211	194	198	185	184	184	198	184					
		L2	209	211	209	198	220	211	209	198	220	184	211	194	198	185	184
標準背隙 Backlash	arcmin		L1 ≤ 10								L2 ≤ 12						
扭轉剛性 Torsional Rigidity	Nm/arcmin		L1=11								L2=6.5						
額定輸入轉速 n_{1N} Nominal Input Speed	rpm		3000														
最大輸入轉速 Max. Input Speed	rpm		6000														
最大容許徑向力 F_{2rB} Max. Radial Load	N		2400														
最大容許軸向力 F_{2aB} Max. Axial Load	N		1200														
使用壽命 Life	hrs		20000														
使用溫度 Operating Temperature	℃		-10℃~-90℃														
潤滑 Lubrication			合成潤滑油脂 Lithium Complex Synthetic														
安裝方向 Mounting Position			任意方向 Any Direction														
噪音值 Running Noise	dB(A)		≤ 68														
效率 η Efficiency	%		L1 ≥ 94%								L2 ≥ 91%						
重量 Weight	kg		L1=5.9								L2=4.7/7.3						
防護 Protection Level			IP65														
尺寸位置 Dimension Index		ϕ C1 Min Max	ϕ C2	ϕ C3	C4	C5	C6	C7	C8	ϕ C9	C10	C11	L8	L10			
尺寸 Dimension mm	L1	16	24	70	90	M6	43.5	30	14	7	116	90	145	142	188.5		
				110	145	M8	63.5	6	34	27	170	120	165	157	203.5		
	L2	11	14	50	70	M5	31	21	11	5.5	80	60	119.5	140	186.5		
		16	24	70	90	M6	43.5	30	14	7	116	90	145	173.5	220		
				110	145	M8	63.5	6	34	27	170	120	165	188.5	235		

尺寸圖 / Dimension

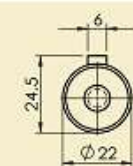
BX90R-L1



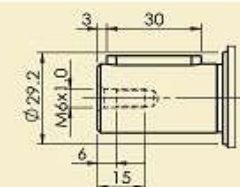
BX90R-L2



光軸 S: smooth



鍵 K: keyway



1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter

2: $\phi C2$ 及 $PCD-\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異

$\phi C2$ and $PCD-\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange

3: $C5$ -Max 馬達軸最長長度 $C5$ -Max Servomotor shaft Length

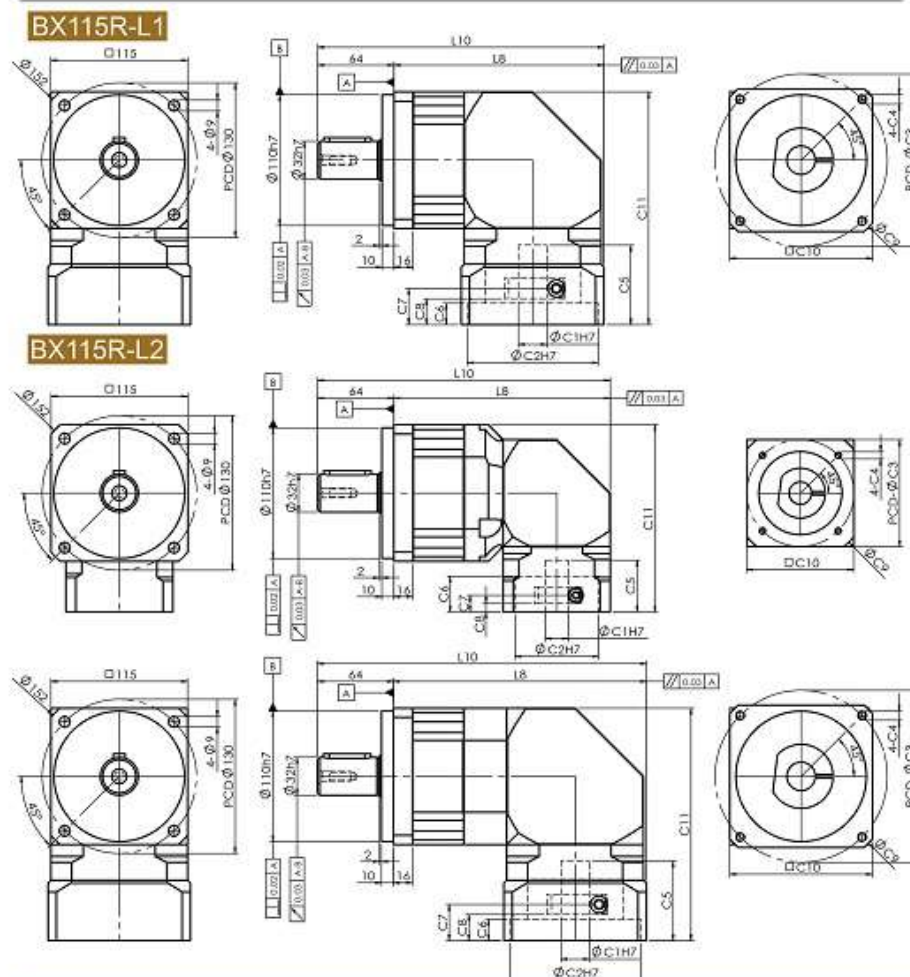
4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

規格表 / Specifications

尺寸圖 / Dimension

BX115R

BX115R			單節減速比 1-stage ratio															
			3	4	5	6	7	8	9	10	14	20						
額定輸出力矩 T_{2N} Nominal Output Torque	Nm		238	250	240	229	225	212	208	208	225	208						
			雙節減速比 2-stages ratio															
額定輸出力矩 T_{2N} Nominal Output Torque	Nm		15	25	30	35	40	50	60	70	80	90	100	120	140	160	200	
			238	240	238	225	250	240	238	225	250	208	240	229	225	212	208	
急停力矩 Emergency Stop Torque	Nm		3倍額定輸出力矩 3times Nominal Output Torque															
最大加速力矩 T_{2B} Max. Accelerate Torque	Nm	L1	428	450	432	412	405	382	374	374	405	374						
		L2	428	432	428	405	450	432	428	405	450	374	432	412	405	382	374	
標準背隙 Backlash	arcmin		$L1 \leq 10$								$L2 \leq 12$							
扭轉剛性 Torsional Rigidity	Nm/arcmin		$L1=32$								$L2=19$							
額定輸入轉速 n_{1N} Nominal Input Speed	rpm		3000															
最大輸入轉速 Max. Input Speed	rpm		6000															
最大容許徑向力 F_{2rB} Max. Radial Load	N		4000															
最大容許軸向力 F_{2aB} Max. Axial Load	N		2000															
使用壽命 Life	hrs		20000															
使用溫度 Operating Temperature	℃		$-10^{\circ}\text{C} \sim +90^{\circ}\text{C}$															
潤滑 Lubrication			合成潤滑油脂 Lithium Complex Synthetic															
安裝方向 Mounting Position			任意方向 Any Direction															
噪音值 Running Noise	dB(A)		≤ 70															
效率 η Efficiency	%		$L1 \geq 94\%$								$L2 \geq 91\%$							
重量 Weight	kg		$L1=11.7$								$L2=10.4/14.3$							
防護 Protection Level			IP65															
尺寸位置 Dimension Index		ϕ C1 Min Max	ϕ C2	ϕ C3	C4	C5	C6	C7	C8	ϕ C9	C10	C11	L8	L10				
尺寸 Dimension mm	L1	16	24	110	130	M8	56	10	19.5	11	152	115	185	174	238			
				110	145	M8	67	18	30.5	22	160	120	196	176.5	240.5			
	L2	14	19	70	90	M6	43.5	30	14	7	116	90	157.5	182	246			
		19	24	110	130	M8	56	10	19.5	11	152	115	185	210.5	274.5			
				110	145	M8	67	18	30.5	22	160	120	196	213	277			



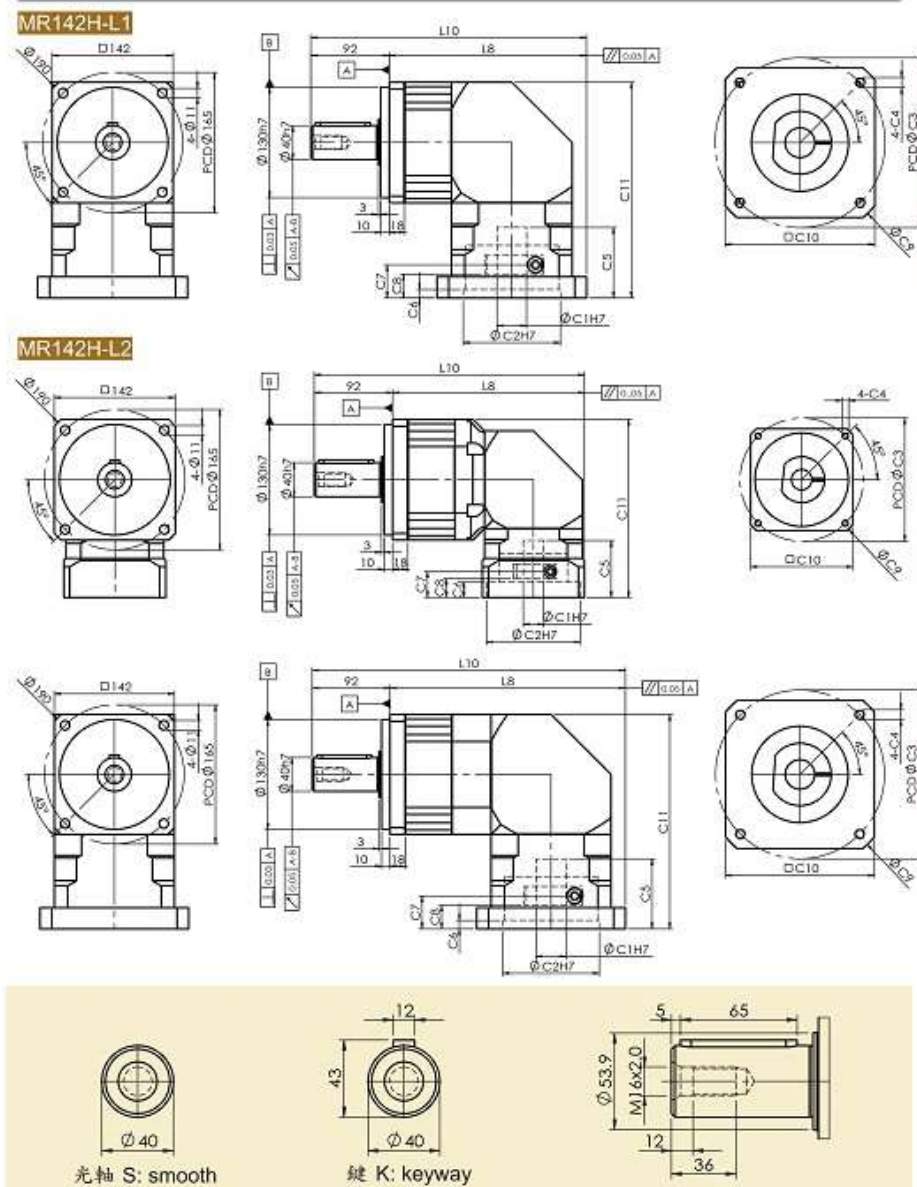
- 1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 $PCD-\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and $PCD-\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: $C5$ -Max 馬達軸最長長度 $C5$ -Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

BX115R

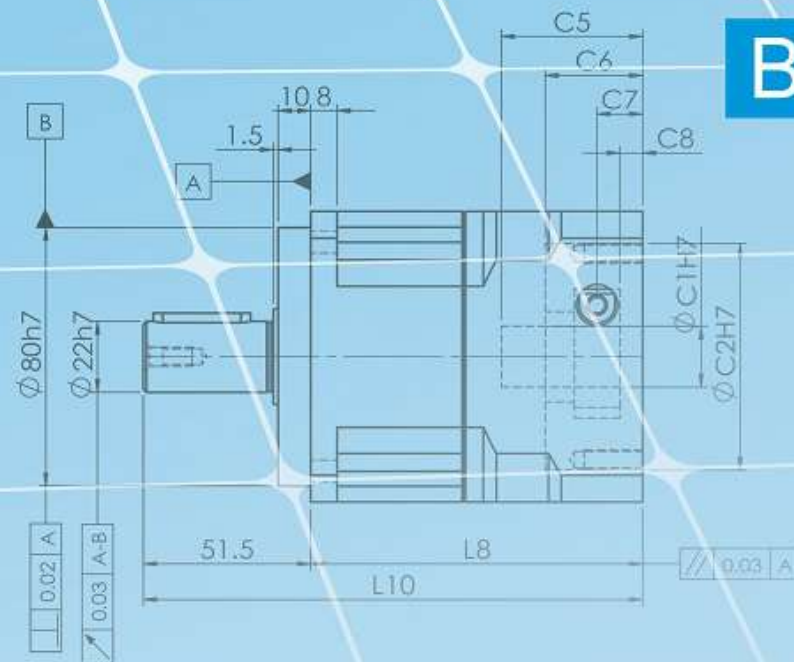
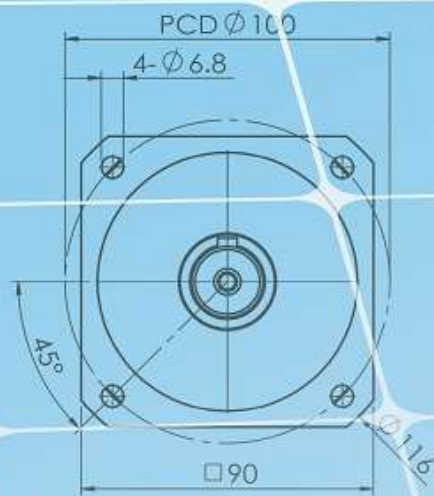
規格表 / Specifications

BX142R				單節減速比 1-stage ratio													
				3	4	5	6	7	8	9	10	14	20				
額定輸出力矩 T _{2N} Nominal Output Torque	Nm	571	599	575	533	538	506	500	496	538	496						
				雙節減速比 2-stages ratio													
額定輸出力矩 T _{2N} Nominal Output Torque	Nm	15 571	25 575	30 571	35 538	40 599	50 575	60 571	70 538	80 599	90 500	100 575	120 533	140 538	160 506	200 496	
急停力矩 Emergency Stop Torque	Nm	3倍額定輸出力矩 3times Nominal Output Torque															
最大加速力矩 T _{2B} Max. Accelerate Torque	Nm	L1 1028	L1 1028	L1 1035	L1 959	L1 968	L1 911	L1 900	L1 893	L1 968	L1 893						
標準背隙 Backlash	arcmin	L1≤10								L2≤12							
扭轉剛性 Torsional Rigidity	Nm/arcmin	L1=65								L2=39							
額定輸入轉速 n _{1N} Nominal Input Speed	rpm	2500															
最大輸入轉速 Max. Input Speed	rpm	5000															
最大容許徑向力 F _{2rB} Max. Radial Load	N	6100															
最大容許軸向力 F _{2aB} Max. Axial Load	N	3050															
使用壽命 Life	hrs	20000															
使用溫度 Operating Temperature	℃	-10℃~+90℃															
潤滑 Lubrication		合成潤滑油脂 Lithium Complex Synthetic															
安裝方向 Mounting Position		任意方向 Any Direction															
噪音值 Running Noise	dB(A)	≤72															
效率 η Efficiency	%	L1≥94%								L2≥91%							
重量 Weight	kg	L1=20.8/21.8								L2=21.2/26.6							
防護 Protection Level		IP65															
尺寸位置 Dimension Index		φ C1 Mim Max		φ C2	φ C3	C4	C5	C6	C7	C8	φ C9	C10	C11	L8	L10		
尺寸 Dimension mm	L1	22	42	110	145	M8	71	40	28.5	20	182	142	228.5	215	307		
				114.3	200	M12	83	20	39	28	230	176	254	232	324		
	L2	22	24	110	145	M8	67	18	30.5	22	160	120	209.5	225.5	317.5		
				114.3	200	M12	83	20	39	28	230	176	254	278.5	370.5		
		35	42	180	215	M12	118	10	74	63	250	190	289	285.5	377.5		

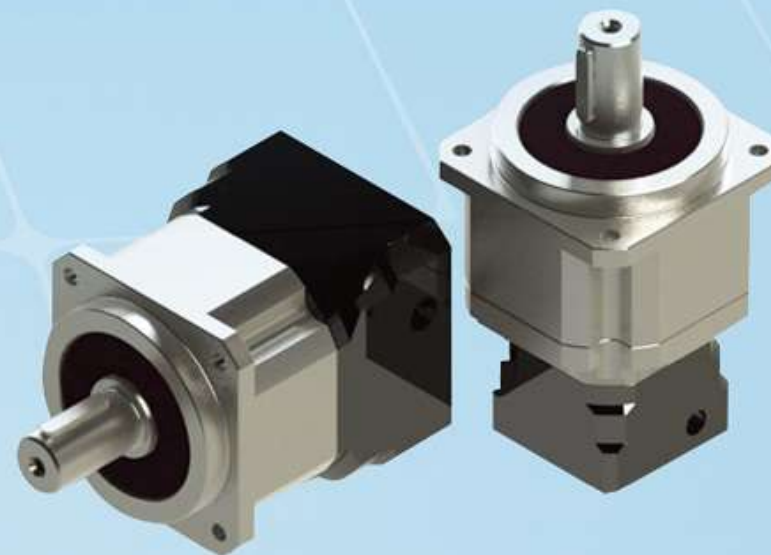
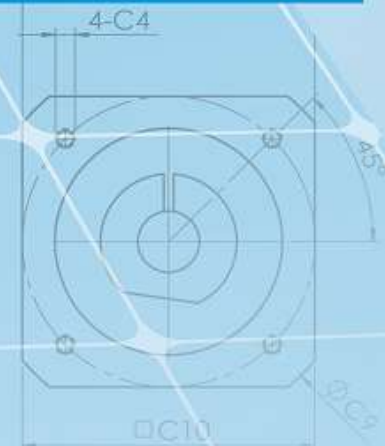
尺寸圖 / Dimension



- 1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 PCD- $\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and PCD- $\phi C3$ is Reducer Input Dimension, match to the servomotor Output Flange
- 3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer



BH series



產品特性 Production Feature

BH series

BH series



- 行星齒內孔使用滿針滾針軸，耐磨，高精度
- Use full arrange needle pin for anti-abrasion and higher precision.



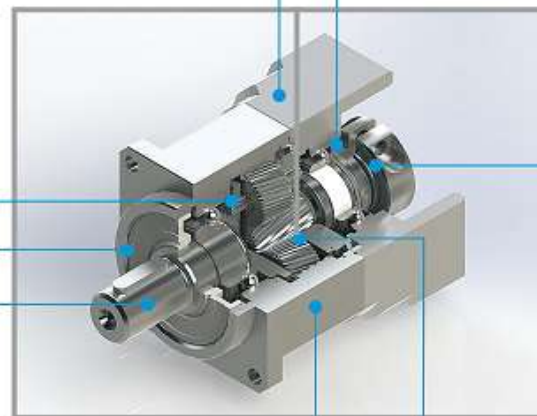
- 輸入法蘭
- 1. AL-6061-T6, 表面鋁陽極氧化，高質感，高防腐能力
- 2. 輸入法蘭一體式設計，使得伺服馬達軸心與太陽齒有極佳的同心度
- 3. 可與各品牌的伺服馬達與步進馬達搭配組合
- Input Flange
- 1. Material is AL-6061-T6, Surface is Eloxal to improve the antioxidant capacity and high quality.
- 2. Input flange is One-Piece design for sun gear and servomotor shaft get excellent concentricity.
- 3. Use to any brand servomotor or step motor.



- 輸入軸軸承
- 採用高速輕載軸承，符合伺服馬達高速運轉的需求
- Input shaft Bearing
- Using high speed and low loading type bearing, it is excellent design for high speed input of servomotor.



- 輸入法蘭與內齒環
- 輸入法蘭與內齒環使用高精度軸承為組裝時的引導，能使輸入到輸出端有最佳的同心度，降低震動
- Input Flange and Inner Gear Box
- The input flange using high precision bearing to lead assembly, Let the input to output shaft center has excellent concentricity for reduce vibration.



- 太陽齒與輸入軸
- 1: 搭配高精度軸承，可適用於不同軸徑的伺服馬達
- 2: 極佳的動平衡設計
- 3: 優化的轉動慣量
- 4: 模組化設計，能快速回應客戶不同速比的需求
- Sun Gear and Input Shaft
- 1: With high precision bushing is easy to set up with any brand servomotor.
- 2: Excellent dynamic balance
- 3: Optimum mass moment of inertia.
- 4: To modularize assembly design for rapid reaction customers all gear ratio requirement.



- 輸出軸
- 一體式設計，確保行星齒能精確的傳動，前後軸承大跨距設計與較大的軸承，有效的提高軸承壽命與最大的軸/徑向力
- Output Shaft
- Shaft is One-Piece design, to ensure the planetary gears could accurate transmission. Enlarge the front bearing and larger span to rear bearing for largest radial and axial loading.



- 內齒環
- 高強度合金鋼，螺旋齒設計，高精度，耐磨耗，低噪音
- Inner Gear Box
- High strength alloy steel, Gear is Helical gear design for high-precision, high abrasion and lower noise.



- 太陽齒/行星齒
- 1: 高強度合金鋼，表面高硬度，耐磨耗，高韌性
- 2: 螺旋齒型設計，高傳動能力，低噪音，低震動
- Sun/Planetary Gear
- 1: High strength alloy steel, high hardness of surface, anti-abrasion and high impact.
- 2: Gear is Helical gear design, high efficiency, lower noise and lower vibration.

訂單格式 Order Format

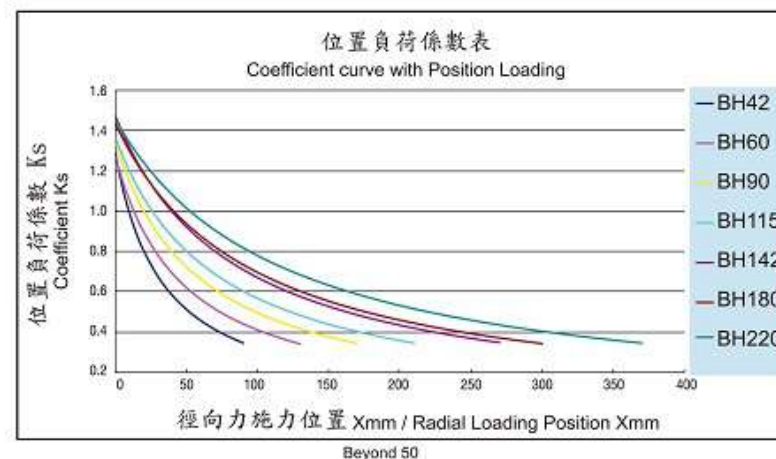
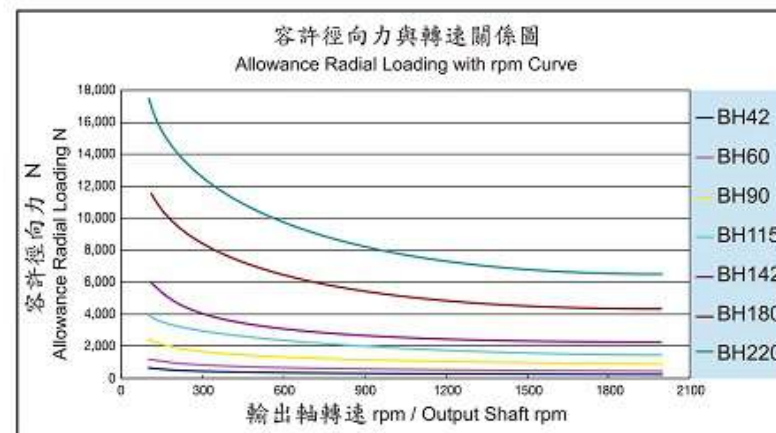
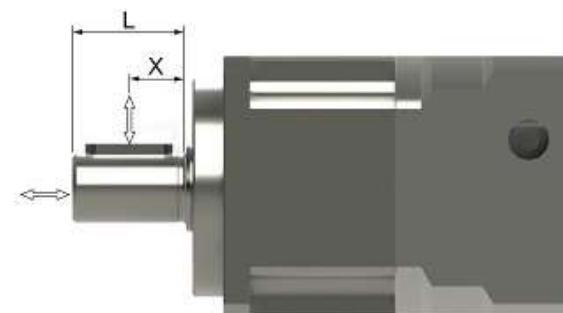
減速機輸出軸之容許徑向力及軸向力 Allowance Radial and Axial Loading with Reducer output shaft

型號 Model NO.	減速比 Gear Ratio	伺服馬達品牌及型號 Servomotor Brand and Model
BH60	L1	10
		K
		P1
		Motor

段數 Stage	軸型式 Shaft Type	背隙 Backlash
L1: 一段 1 stage L2: 二段 2 stage	K: 鍵 Keyway S: 光軸 Smooth shaft	P0: 超精密背隙 Hyper precision P1: 精密背隙 Precision P2: 標準背隙 Standard

伺服馬達用減速機系列/特色 For Servomotor Reducer Series / Feature

- 經濟型 Economic
- 高傳動效能 Higher Efficiency
- 低噪音 Lower Noise
- 低震動 Lower Vibration
- 低背隙 Lower Backlash
- 低溫升 Lower Temperature
- 壽命長 Higher Service Life
- 優化輸入轉動慣量
Optimum Input Mass Moment of Inertia design for Servomotor easily start.
- 適用於連續運轉 Design for Continuity Operation
- 尺寸極小化, 重量輕量化 Minimalization Dimension and Weight



規格總表 Specifications Data

規格 Specifications	單位 Unit	段數 Stage	減速比 Ratio	BH42	BH60	BH90	BH115	BH142	BH180	BH220
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	L1	3	14.1	36	116	238	571	1050	1880
			4	12.0	38	122	250	599	1103	1970
			5	14.0	36	117	240	575	1058	1890
			6	13.2	34	108	229	533	983	1756
			7	11.9	34	110	225	538	992	1770
			8	12.9	33	103	212	506	936	1670
			9	12.0	31	102	208	500	-	-
			10	10.8	31	102	208	496	918	1640
			15	14.1	36	116	238	571	1050	1880
			20	12.0	38	122	250	599	1103	1970
		L2	25	14.0	36	117	240	575	1058	1890
			30	13.2	36	116	238	571	1050	1880
			35	11.9	34	110	225	538	992	1770
			40	12.9	38	122	250	599	1103	1970
			50	10.8	36	117	240	575	1058	1890
			60	13.2	34	108	229	533	983	1756
			70	11.9	34	110	225	538	992	1770
			80	12.9	33	103	212	506	936	1670
			90	12.0	31	102	208	500	-	-
			100	10.8	31	102	208	496	918	1640
急停力矩 Emergency Stop Torque	Nm	L1,L2	3~100	3倍額定輸出力矩 3times Nominal Output Torque				2.5倍額定輸出力矩 2.5times Nominal Output Torque		
額定輸入轉速 n_{IN} Nominal Input Speed	rpm	L1,L2	3~100	3000	3000	3000	3000	2500	2500	2500
最大輸入轉速 Max. Input Speed	rpm	L1,L2	3~100	6000	6000	6000	6000	5000	5000	5000
超精密背隙 P0 BackLash	arcmin	L1	3~10			≤1	≤1	≤1	≤1	≤1
		L2	15~100			≤3	≤3	≤3	≤3	≤3
精密背隙 P1 Backlash		L1	3~10	≤4	≤3	≤3	≤3	≤3	≤3	≤3
		L2	15~100	≤6	≤5	≤5	≤5	≤5	≤5	≤5
標準背隙 P2 Backlash	arcmin	L1	3~10	≤6	≤5	≤5	≤5	≤5	≤5	≤5
		L2	15~100	≤8	≤7	≤7	≤7	≤7	≤7	≤7
扭轉剛性 Torsional Rigidity	Nm/arcmin	L1	3~10	2.13	4.3	11	32	65	145	250
		L2	15~100	1.28	2.6	6.5	19	39	87	150
最大容許徑向力 $F_{2\perp}$ Max. Radial Load	N	L1,L2	3~100	640	1200	2400	4000	6100	11500	18800
最大容許軸向力 $F_{2\parallel}$ Max. Axial Load	N	L1,L2	3~100	320	600	1200	2000	3050	5750	9400
使用壽命 Life	hrs	L1,L2	3~100	20,000						
使用溫度 Operating Temperature	°C	L1,L2	3~100	-10°C~+90°C						
潤滑 Lubrication		L1,L2	3~100	合成潤滑油脂 Lithium Complex Synthetic						
安裝方向 Mounting Position		L1,L2	3~100	任意方向 Any Direction						
噪音值 Running Noise	dB(A)	L1,L2	3~100	≤56	≤58	≤60	≤63	≤68	≤70	≤72
效率 η Efficiency	%	L1	3~10	≥97%						
		L2	15~100	≥94%						
重量 Weight	kg	L1	3~10	0.43	1.21	3.7	7.4	13.2	26	43
		L2	15~100	0.70	1.70	4.1/5.2	8.2/10	15/19	30.6	53.5
防護 Protection Level		L1,L2	3~100	IP65						

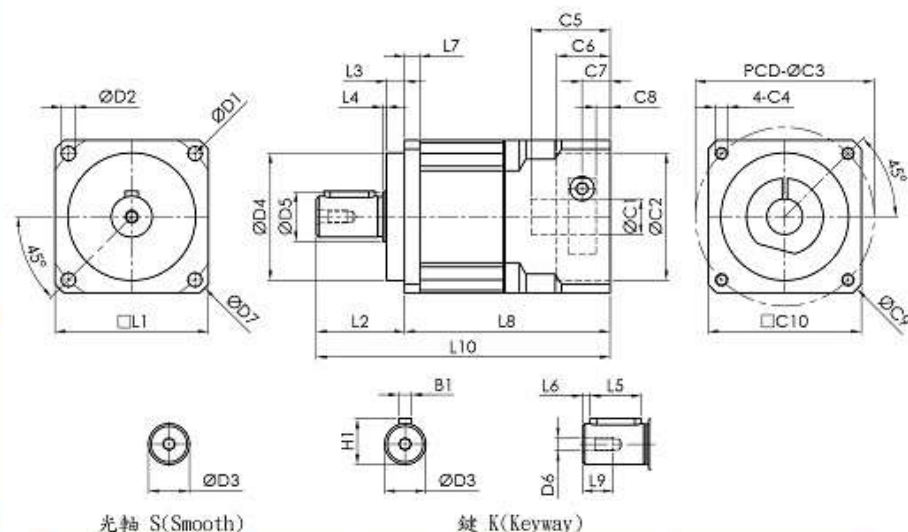
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轉動慣量表 Moment of Inertia Table

BH 轉動慣量總表 Moment of Inertia Table																					
單位Unit	kg.cm ²	型號 Model																			
節 數	減速比	BH42	BH60		BH90		BH115		BH142		BH180		BH220								
		伺服馬達軸直徑 Servomotor Shaft Diameter																			
Stage	Ratio	φ 8	φ 8	φ 14	φ 14	φ 19	φ 24	φ 19	φ 24	φ 24	φ 35	φ 42	φ 35	φ 42	φ 55	φ 35	φ 42	φ 55			
單 節 1-stage	3	0.02		0.08		0.53	0.48		1.63	4.49	8.2	7.82	31.8	31	28.7	49.9	49	49.9			
	4																				
	5	0.01		0.07																	
	6																				
	7																				
	8				0.44	0.38	1.28	2.48	6.19	5.81	24.9	24.1	21.8	-	-	-	-	-			
	9							2.47	6.18	5.8	-	-	-	-	-	-	-	-			
	10							2.46	6.17	5.79	24.9	24.1	21.8	31.2	30.3	31.2					
雙 節 2-stages	15	0.01	0.01	0.07	0.07		0.44	0.39	0.44	1.37	1.37	6.25	5.87	6.25	5.87		25.3	24.5	22.2		
	20																				
	25																				
	30																				
	35																				
	40																				
	50																				
	60																				
	70																				
	80																				
	90																				
	100																				

- 1: 減速比=伺服馬達輸入轉速(rpm)/減速機輸出軸轉速(rpm) / Ratio=Servomotor Input Speed(rpm) / Reducer Output Speed(rpm)
- 2: 實際值為在2%額定扭力的扭下測得 / Backlash values is base on 2% nominal output torque testing.
- 3: 徑向力/軸向力與壽命, 是在輸出轉速100rpm, 且作用力在輸出軸中心
Radial/Axial load and Life are base on Reducer output speed 100rpm and Force at the shaft midpoint.
- 4: 連續運轉時, 壽命為一半 / Continuity operating, the life will be reduce to 50%.
- 5: 噪音為伺服馬達輸入轉速3000rpm, 減速機速比10比, 無負載, 距減速機 1M 的情況下所測得
The Noise is base on Servomotor input 3000rpm, gear Ratio 10, unloading and from 1M to reducer testing.
- 6: 如有特殊規格請洽各區域的代理/經銷商 / If any special specific, Please visit our Agent / Dealer.

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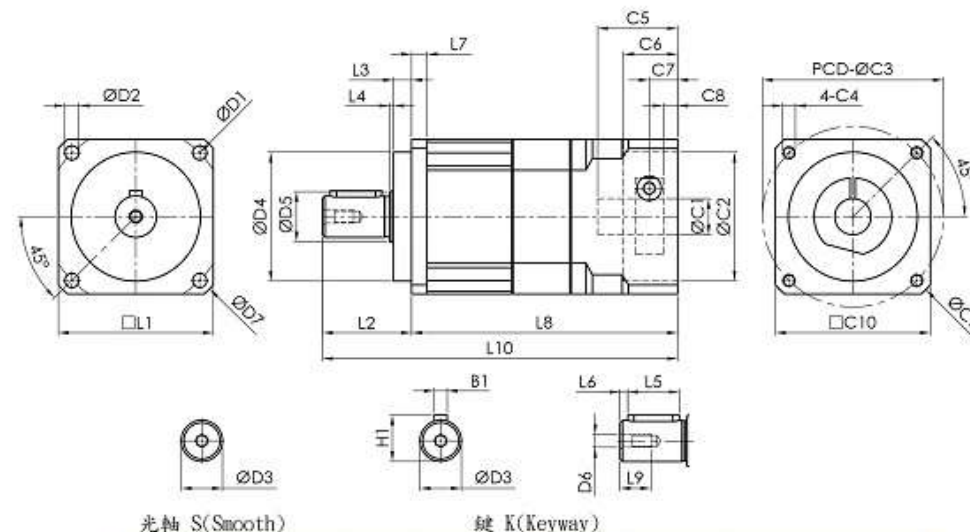


型號 Model	BH42	BH60	BH90	BH115	BH142	BH180	BH220
D	D1	50	70	100	130	165	215
	D2	3.5	5.5	6.8	8.6	11	13
	D3h7	13	16	22	32	40	55
	D4h7	35	50	80	110	130	160
	D5	13.6	19.5	29.2	34.2	53.9	68.9
	D6	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25	M16xP2.0	M20xP2.5
	D7	56	80	116	150	185	240
L	L1	42	60	90	115	142	180
	L2	25.5	34.5	51.5	66	97	105
	L3	5.5	7	10	12	15	20
	L4	1	1.5	1.5	2	3	3
	L5	15	20	30	40	65	70
	L6	2	3	3	5	5	6
	L7	4	6	8	10	12	15
	L8	59.5	80.5	102	138	166.5	190
	L9	10	12	15	28	36	42
	L10	85	117	153.5	204	263.5	295
C	*C1H7	8	14	19	24	35	42
	*C2H7	30	50	70	110	114.3	180
	*C3	46	70	90	145	200	215
	*C4	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25	M12xP1.75	M12xP1.75
	*C5	26	31	43.5	67	83	88
	*C6	17	21	30	18	20	10
	*C7	8.5	11	14	30.5	39	42
	*C8	4	5.5	7	20	27.5	30
	*C9	56	80	116	160	230	250
	*C10	42	60	90	120	176	190
B	B1	5	5	6	10	12	16
H	H1	15	18	24.5	35	43	60

* C1-C10是依各廠牌的伺服馬達尺寸而定

*C1-C10 depends on servo motor dimension

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型號 Model	BH42	BH60	BH90	BH115	BH142	BH180	BH220
D	D1	50	70	100	130	165	215
	D2	3.5	5.5	6.8	8.6	11	13
	D3h7	13	16	22	32	40	55
	D4h7	35	50	80	110	130	160
	D5	13.6	19.5	29.2	34.2	53.9	68.9
	D6	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25	M16xP2.0	M20xP2.5
	D7	56	80	116	150	185	240
L	L1	42	60	90	115	142	180
	L2	25.5	34.5	51.5	66	97	105
	L3	5.5	7	10	12	15	20
	L4	1	1.5	1.5	2	3	3
	L5	15	20	30	40	65	70
	L6	2	3	3	5	5	6
	L7	4	6	8	10	12	15
	L8	76.5	103	133.5	175.4	213	222.5
	L9	10	12	15	28	36	42
	L10	102	137.5	185	204.5	310	327.5
C	*C1H7	8	14	19	24	35	42
	*C2H7	30	50	70	110	114.3	180
	*C3	46	70	90	145	200	215
	*C4	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25	M12xP1.75	M12xP1.75
	*C5	26	31	43.5	67	83	88
	*C6	17	21	30	18	20	10
	*C7	8.5	11	14	30.5	39	42
	*C8	4	5.5	7	20	27.5	30
	*C9	56	80	116	160	230	250
	*C10	42	60	90	120	176	190
B	B1	5	5	6	10	12	16
H	H1	15	18	24.5	35	43	60

* C1-C10是依各廠牌的伺服馬達尺寸而定

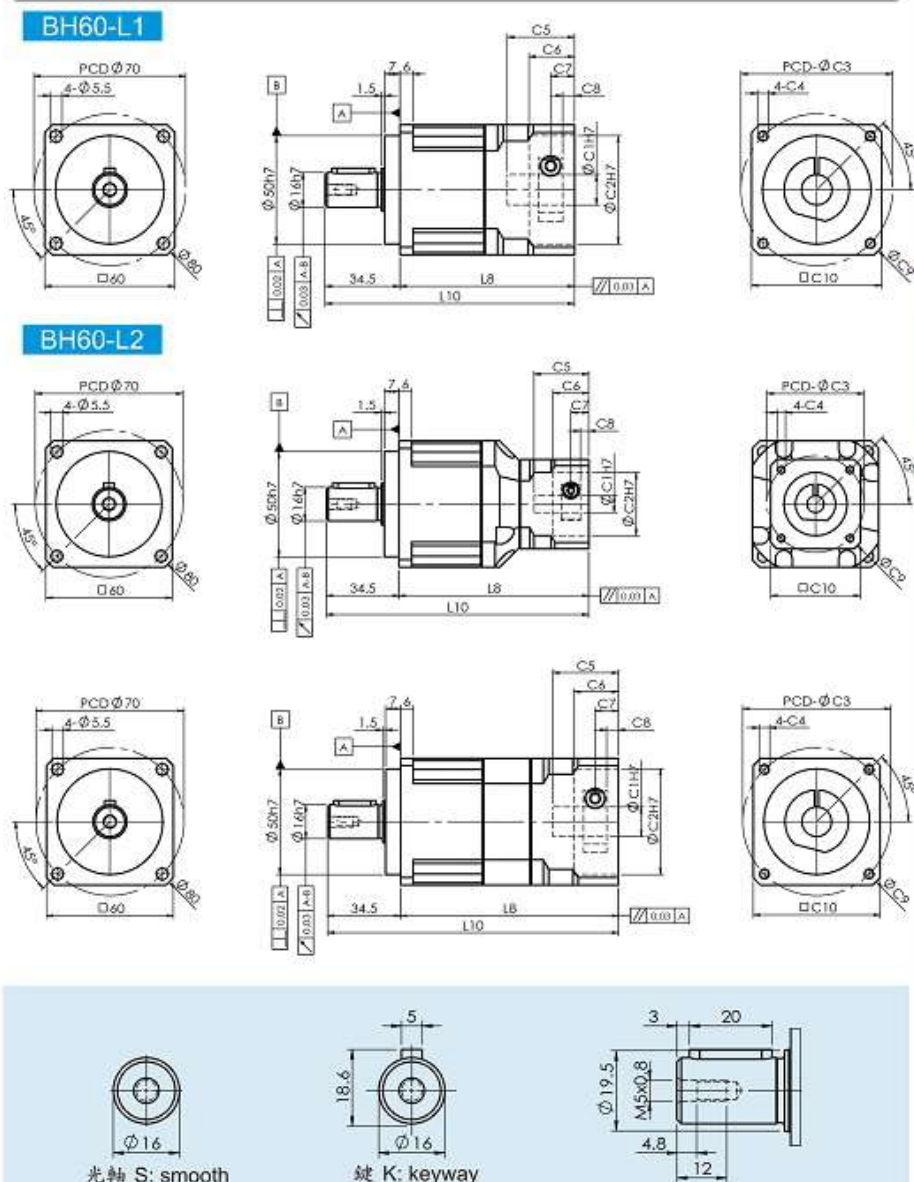
*C1-C10 depends on servo motor dimension

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規格表 / Specifications

BH60			單節減速比 1-stage ratio											
			3	4	5	6	7	8	9	10				
額定輸出力矩 T_{2N} Nominal Output Torque	Nm		36	38	36	34	34	33	31	31				
			雙節減速比 2-stages ratio											
額定輸出力矩 T_{2N} Nominal Output Torque	Nm		15	20	25	30	35	40	50	60	70	80	90	100
			36	38	36	36	34	38	36	34	34	33	31	31
急停力矩 Emergency Stop Torque	Nm		3倍額定輸出力矩 3times Nominal Output Torque											
最大加速力矩 T_{2B} Max. Accelerate Torque	Nm	L1	65	68	65	61	61	59	56	56				
		L2	65	68	65	65	61	68	65	61	61	59	56	56
精密背隙 P1 Backlash	arcmin		$L1 \leq 3$						$L2 \leq 5$					
標準背隙 P2 Backlash			$L1 \leq 5$						$L2 \leq 7$					
扭轉剛性 Torsional Rigidity	Nm/arcmin		$L1=4.3$						$L2=2.6$					
額定輸入轉速 n_{1N} Nominal Input Speed	rpm		3000											
最大輸入轉速 Max. Input Speed	rpm		6000											
最大容許徑向力 F_{2rB} Max. Radial Load	N		1200											
最大容許軸向力 F_{2aB} Max. Axial Load	N		600											
使用壽命 Life	hrs		20000											
使用溫度 Operating Temperature	°C		-10°C~+90°C											
潤滑 Lubrication			合成潤滑油脂 Lithium Complex Synthetic											
安裝方向 Mounting Position			任意方向 Any Direction											
噪音值 Running Noise	dB(A)		≤ 58											
效率 η Efficiency	%		$L1 \geq 97\%$						$L2 \geq 94\%$					
重量 Weight	kg		$L1=1.26$						$L2=1.72$					
防護 Protection Level			IP65											
尺寸位置 Dimension Index		$\phi C1$	$\phi C2$	$\phi C3$	C4	C5	C6	C7	C8	$\phi C9$	C10	L8	L10	
		Mim	Max											
尺寸 Dimension mm	L1	6	14	30	45	M3								
				30	46	M4	31	21	11	5.5	80	60	83	115
				50	70	M4/5								
	30			45	M3	26	17	8.5	4	56	42.5	90	124.5	
	30			46	M4									
	50			70	M4/5	31	21	11	5.5	80	60	103	137.5	

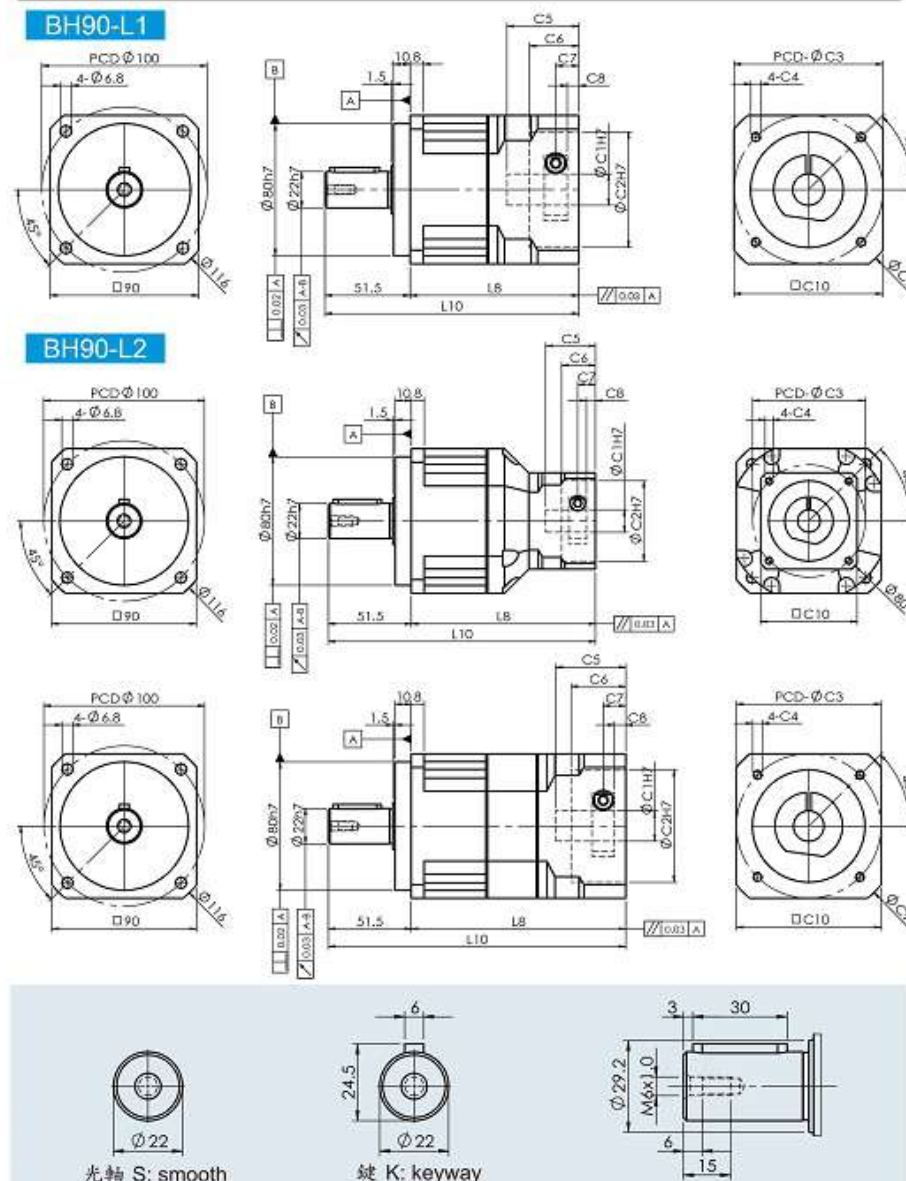
尺寸圖 / Dimension



規格表 / Specifications

BH90			單節減速比 1-stage ratio											
			3	4	5	6	7	8	9	10				
額定輸出力矩 T_{2N} Nominal Output Torque	Nm		116	122	117	108	110	103	102	102				
			雙節減速比 2-stages ratio											
額定輸出力矩 T_{2N} Nominal Output Torque	Nm		15	20	25	30	35	40	50	60	70	80	90	100
			116	122	117	116	110	122	117	108	110	103	102	102
急停力矩 Emergency Stop Torque	Nm		3倍額定輸出力矩 3times Nominal Output Torque											
最大加速力矩 T_{2B} Max. Accelerate Torque	Nm	L1	209	220	211	194	198	185	184	184				
		L2	209	220	211	209	198	220	211	194	198	185	184	184
超精密背隙 P0 Backlash	arcmin		$L1 \leq 1$						$L2 \leq 3$					
精密背隙 P1 Backlash			$L1 \leq 3$						$L2 \leq 5$					
標準背隙 P2 Backlash			$L1 \leq 5$						$L2 \leq 7$					
扭轉剛性 Torsional Rigidity	Nm/arcmin		$L1=11$						$L2=6.5$					
額定輸入轉速 n_{1N} Nominal Input Speed	rpm		3000											
最大輸入轉速 Max. Input Speed	rpm		6000											
最大容許徑向力 F_{2rS} Max. Radial Load	N		2400											
最大容許軸向力 F_{2aS} Max. Axial Load	N		1200											
使用壽命 Life	hrs		20000											
使用溫度 Operating Temperature	°C		$-10^{\circ}\text{C} \sim +90^{\circ}\text{C}$											
潤滑 Lubrication			合成潤滑油脂 Lithium Complex Synthetic											
安裝方向 Mounting Position			任意方向 Any Direction											
噪音值 Running Noise	dB(A)		≤ 60											
效率 η Efficiency	%		$L1 \geq 97\%$						$L2 \geq 94\%$					
重量 Weight	kg		$L1=3.7$						$L2=4.1/5.2$					
防護 Protection Level			IP65											
尺寸位置 Dimension Index		$\phi C1$ Min Max	$\phi C2$	$\phi C3$	C4	C5	C6	C7	C8	$\phi C9$	C10	L8	L10	
尺寸 Dimension mm	L1	16	24	70	90	M6	43.5	30	14	7	116	90	102	153.5
				110	145	M8	64	6	34	27	170	120	122	173.5
	L2	11	14	50	70	M4/5	31	21	11	5.5	80	60	114.5	166
		16	24	70	90	M6	43.5	30	14	7	116	90	133.5	185
				110	145	M8	63.5	6	34	27	170	120	153.5	205

尺寸圖 / Dimension

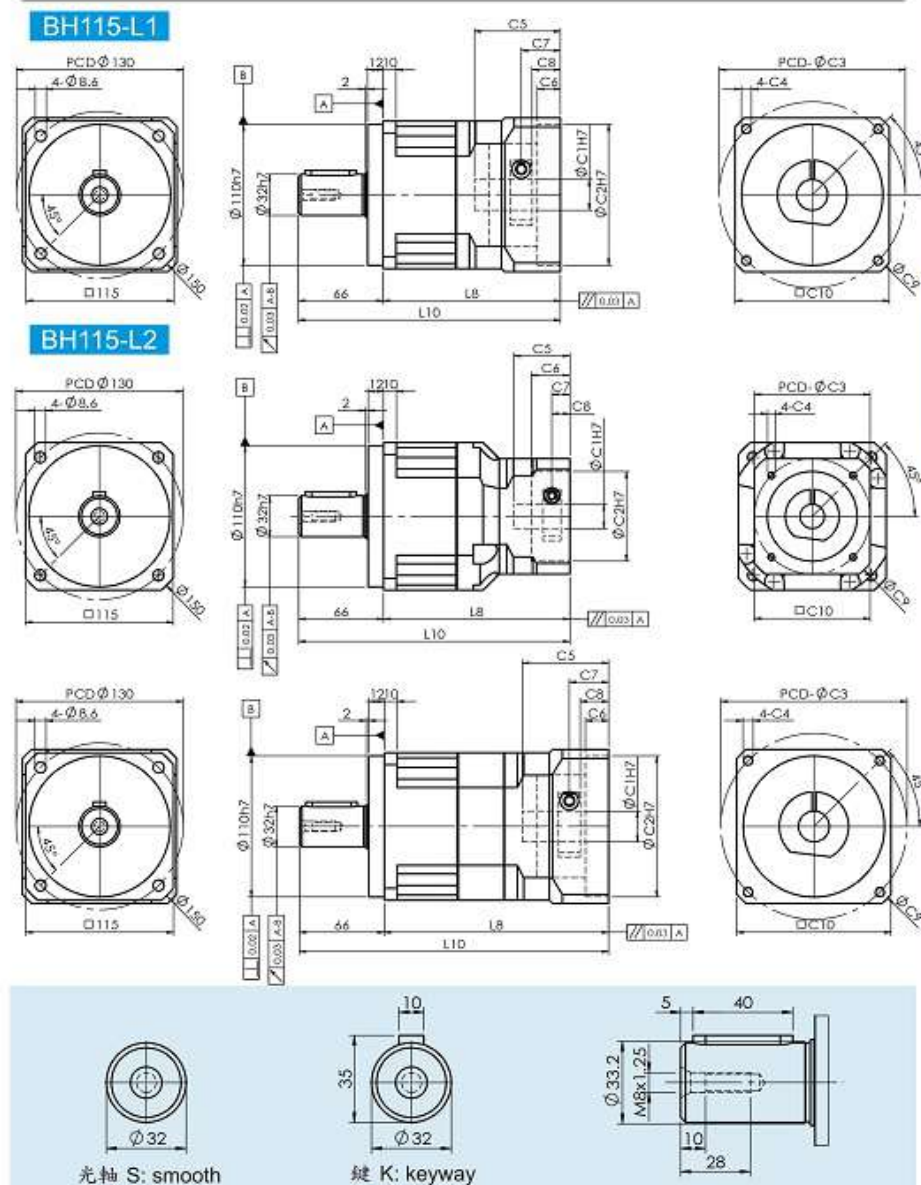


- 1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 PCD- $\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and PCD- $\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

規格表 / Specifications

BH115			單節減速比 1-stage ratio											
			3	4	5	6	7	8	9	10				
額定輸出力矩 T_{2N} Nominal Output Torque	Nm		238	250	240	229	225	212	208	208				
			雙節減速比 2-stages ratio											
額定輸出力矩 T_{2N} Nominal Output Torque	Nm		15	20	25	30	35	40	50	60	70	80	90	100
			238	250	240	238	225	250	240	229	225	212	208	208
急停力矩 Emergency Stop Torque	Nm		3倍額定輸出力矩 3times Nominal Output Torque											
最大加速力矩 T_{2a} Max. Accelerate Torque	Nm	L1	428	450	432	412	405	382	374	374				
		L2	428	450	432	428	405	450	432	412	405	382	374	374
超精密背隙 P0 Backlash	arcmin		$L1 \leq 1$						$L2 \leq 3$					
精密背隙 P1 Backlash			$L1 \leq 3$						$L2 \leq 5$					
標準背隙 P2 Backlash			$L1 \leq 5$						$L2 \leq 7$					
扭轉剛性 Torsional Rigidity	Nm/arcmin		$L1=32$						$L2=19$					
額定輸入轉速 n_{1N} Nominal Input Speed	rpm		3000											
最大輸入轉速 Max. Input Speed	rpm		6000											
最大容許徑向力 F_{2rB} Max. Radial Load	N		4000											
最大容許軸向力 F_{2aB} Max. Axial Load	N		2000											
使用壽命 Life	hrs		20000											
使用溫度 Operating Temperature	°C		-10°C~+90°C											
潤滑 Lubrication			合成潤滑油脂 Lithium Complex Synthetic											
安裝方向 Mounting Position			任意方向 Any Direction											
噪音值 Running Noise	dB(A)		≤ 63											
效率 η Efficiency	%		$L1 \geq 97\%$						$L2 \geq 94\%$					
重量 Weight	kg		$L1=7.4$						$L2=8.2/10$					
防護 Protection Level			IP65											
尺寸位置 Dimension Index		$\phi C1$		$\phi C2$	$\phi C3$	C4	C5	C6	C7	C8	$\phi C9$	C10	L8	L10
		Mim	Max											
尺寸 Dimension mm	L1	16	24	110	130	M8	56	41	19.5	11	152	115	127	193
				110	145	M8	67	18	30.5	22	160	120	138	204
	L2	14	19	70	90	M6	43.5	34	14	7	116	90	145	211
		19	24	110	130	M8	56	10	19.5	11	152	115	163.5	229.5
				110	145	M8	67	18	30.5	22	160	120	174.5	240.5

尺寸圖 / Dimension



- 1: $\phi C1$ 請參照馬達軸尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 PCD- $\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and PCD- $\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

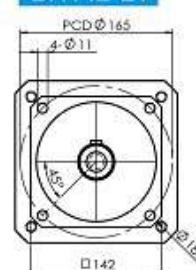
規格表 / Specifications

尺寸圖 / Dimension

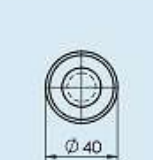
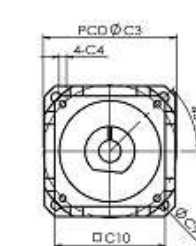
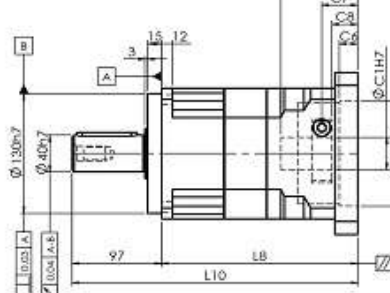
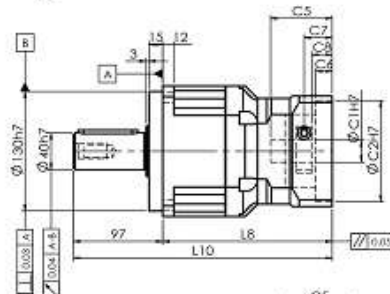
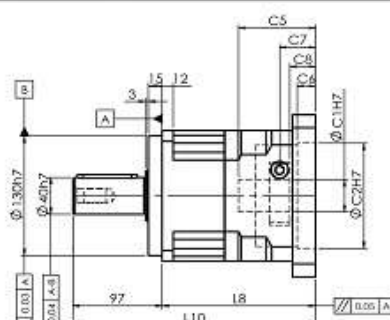
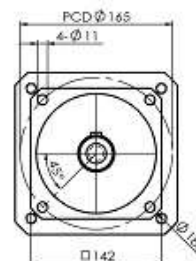
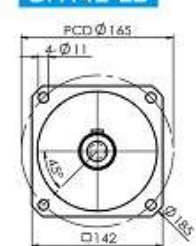
BH142

BH142			單節減速比 1-stage ratio											
			3	4	5	6	7	8	9	10				
額定輸出力矩 T_{2N} Nominal Output Torque	Nm		571	599	575	533	538	566	500	496				
			雙節減速比 2-stages ratio											
額定輸出力矩 T_{2N} Nominal Output Torque	Nm		15	20	25	30	35	40	50	60	70	80	90	100
			571	599	575	571	538	599	575	533	538	566	500	496
急停力矩 Emergency Stop Torque	Nm		3倍額定輸出力矩 3times Nominal Output Torque											
最大加速力矩 T_{2B} Max. Accelerate Torque	Nm	L1	1028	1078	1035	959	968	1019	900	893				
		L2	1028	1078	1035	1028	968	1078	1035	959	968	1019	900	893
超精密背隙 P0 Backlash	arcmin		$L1 \leq 1$						$L2 \leq 3$					
精密背隙 P1 Backlash			$L1 \leq 3$						$L2 \leq 5$					
標準背隙 P2 Backlash			$L1 \leq 5$						$L2 \leq 7$					
扭轉剛性 Torsional Rigidity	Nm/arcmin		$L1=65$						$L2=39$					
額定輸入轉速 n_{1N} Nominal Input Speed	rpm		2500											
最大輸入轉速 Max. Input Speed	rpm		5000											
最大容許徑向力 F_{2rB} Max. Radial Load	N		6100											
最大容許軸向力 F_{2aB} Max. Axial Load	N		3050											
使用壽命 Life	hrs		20000											
使用溫度 Operating Temperature	°C		$-10^{\circ}\text{C} \sim +90^{\circ}\text{C}$											
潤滑 Lubrication			合成潤滑油脂 Lithium Complex Synthetic											
安裝方向 Mounting Position			任意方向 Any Direction											
噪音值 Running Noise	dB(A)		≤ 65											
效率 η Efficiency	%		$L1 \geq 97\%$						$L2 \geq 94\%$					
重量 Weight	kg		$L1=13.2/14.2$						$L2=15/19$					
防護 Protection Level			IP65											
尺寸位置 Dimension Index		$\phi C1$	$\phi C2$	$\phi C3$	C4	C5	C6	C7	C8	$\phi C9$	C10	L8	L10	
		Mim	Max											
尺寸 Dimension mm	L1	22	42	110	145	M8	71	40	28.5	20	182	142	154.5	251.5
				114.3	200	M12	83	20	39	28	230	176	166.5	263.5
	L2	19	24	110	145	M8	67	18	30.5	22	160	120	184	281
		35	42	114.3	200	M12	83	20	39	28	230	176	213	310
				180	215	M12	118	10	74	63	250	190	248	345

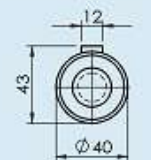
BH142-L1



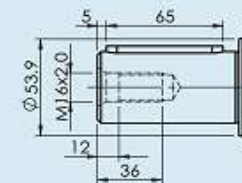
BH142-L2



光軸 S: smooth



鍵 K: keyway



- 1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 $PCD-\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and $PCD-\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

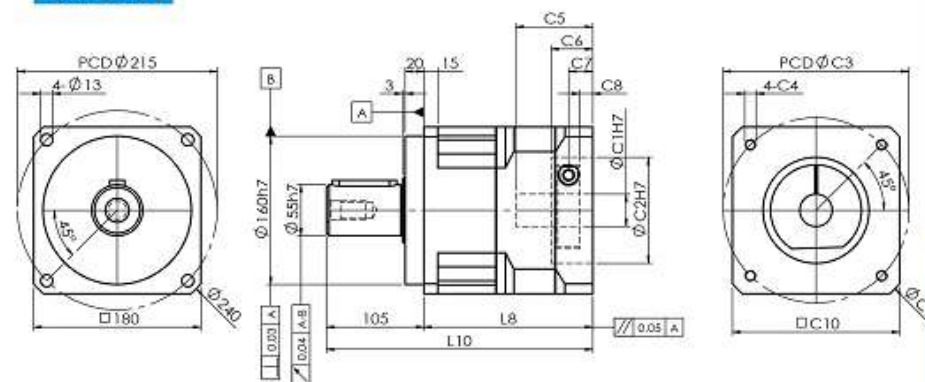
BH142

規格表 / Specifications

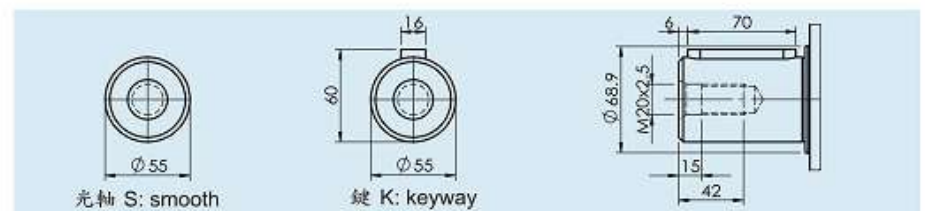
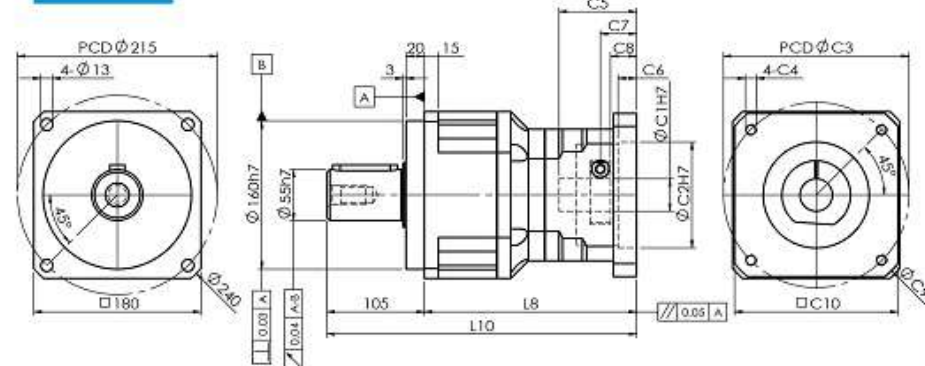
BH180			單節減速比 1-stage ratio											
			3	4	5	6	7	8	9	10				
額定輸出力矩 T _{2N} Nominal Output Torque	Nm		1050	1103	1058	983	992	936	-		918			
			雙節減速比 2-stages ratio											
額定輸出力矩 T _{2N} Nominal Output Torque	Nm		15	20	25	30	35	40	50	60	70	80	90	100
			1050	1103	1058	1050	992	1103	1058	983	992	936	-	918
急停力矩 Emergency Stop Torque	Nm		3倍額定輸出力矩 3times Nominal Output Torque											
最大加速力矩 T _{2B} Max. Accelerate Torque	Nm	L1	1890	1985	1904	1769	1786	1685	-		1652			
		L2	1890	1985	1904	1890	1786	1985	1904	1769	1786	1685	-	1652
超精密背隙 P0 Backlash	arcmin		L1≤1						L2≤3					
精密背隙 P1 Backlash			L1≤3						L2≤5					
標準背隙 P2 Backlash			L1≤5						L2≤7					
扭轉剛性 Torsional Rigidity	Nm/arcmin		L1=145						L2=87					
額定輸入轉速 n _{1N} Nominal Input Speed	rpm		2500											
最大輸入轉速 Max. Input Speed	rpm		5000											
最大容許徑向力 F _{2rB} Max. Radial Load	N		11500											
最大容許軸向力 F _{2aB} Max. Axial Load	N		5750											
使用壽命 Life	hrs		20000											
使用溫度 Operating Temperature	℃		-10℃~+90℃											
潤滑 Lubrication			合成潤滑油脂 Lithium Complex Synthetic											
安裝方向 Mounting Position			任意方向 Any Direction											
噪音值 Running Noise	dB(A)		≤67											
效率 η Efficiency	%		L1≥97%						L2≥94%					
重量 Weight	kg		L1=26						L2=30.6					
防護 Protection Level			IP65											
尺寸位置 Dimension Index		φC1 Min Max	φC2	φC3	C4	C5	C6	C7	C8	φC9	C10	L8	L10	
尺寸 Dimension mm	L1	35 42	114.3	200	M12	83	45	26	14	240	180	182	287	
			180	215	M12	83	8	26	14	230	250	182	287	
	L2	22 24 35 42	110	145	M8	71	40	28.5	20	182	142	216.5	321.5	
			114.3	200	M12	83	20	39	27.5	230	176	228.5	333.5	

尺寸圖 / Dimension

BH180-L1



BH180-L2

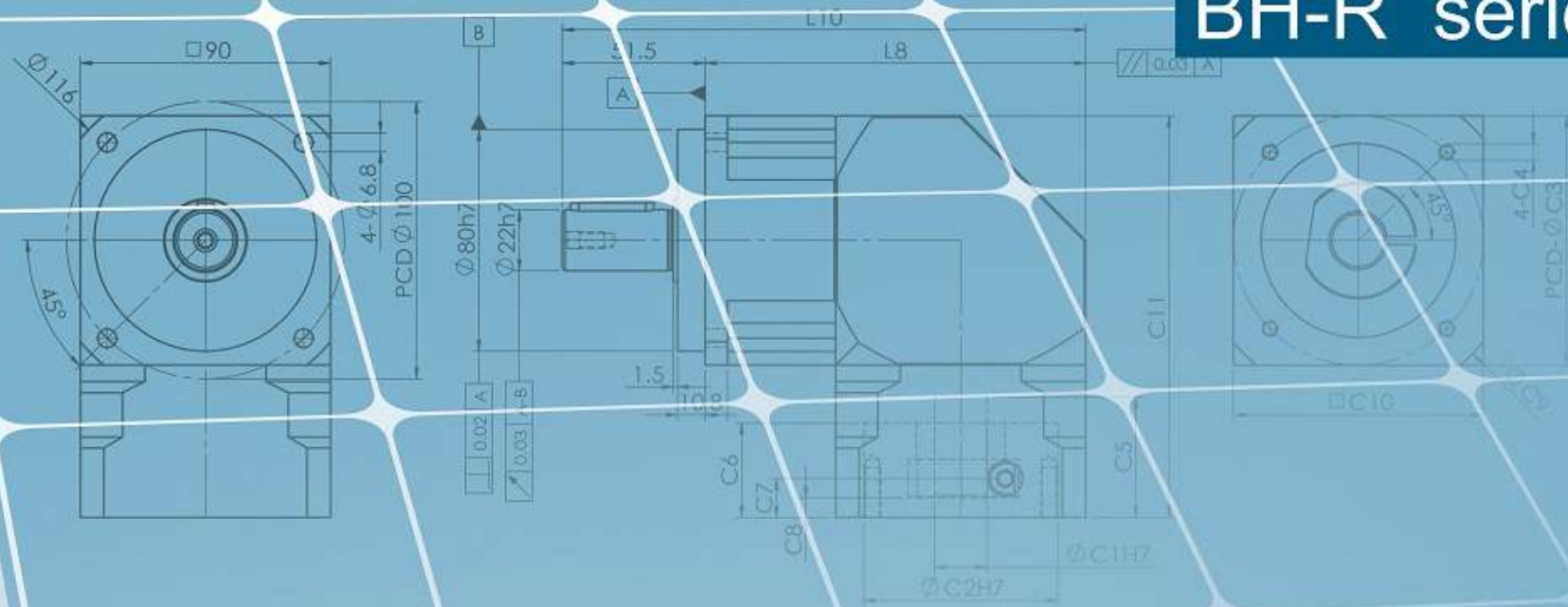


- 1: $\phi C1$ 請參照馬達軸尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 PCD- $\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and PCD- $\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

BH-R series

BH-R series

BH-R series



產品特性 Production Feature



- 太陽齒/行星齒
 - 1: 高強度合金鋼, 表面高硬度, 耐磨耗, 高韌性
 - 2: 螺旋齒型設計, 高傳動能力, 低噪音, 低震動
- Sun/Planetary Gear
 1. High strength alloy steel, high hardness of surface, anti-abrasion and high impact
 2. Gear is Helical gear design, high efficiency, lower noise and lower vibration.



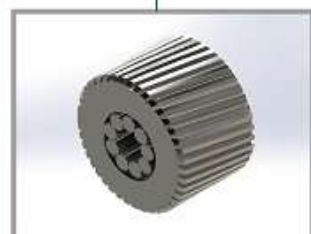
- 可調式螺旋傘齒輪背隙結構
- Adjustable Helical Bevel Gear Backlash structure.



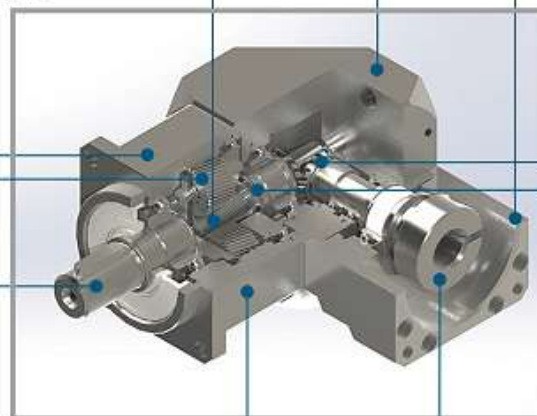
- 輸入法蘭
 1. AL-6061-T6, 表面鉻陽極黑, 高質感, 高防蝕能力
 2. 輸入法蘭一體式設計, 使得伺服馬達軸心與太陽齒有極佳的同心度
 3. 可與各品牌的伺服馬達與步進馬達搭配組合
- Input Flange
 1. Material is AL-6061-T6, Surface is Eloxal to improve the antioxidant capacity and high quality.
 2. Input flange is One-Piece design for sun gear and servomotor shaft get excellent concentricity.
 3. Use to any brand servomotor or step motor.



- 輸入法蘭與內齒環
輸入法蘭與內齒環使用高精密軸承為組裝時的引導, 能使輸入到輸出端有最佳的同心度, 降低震動
- Input Flange and Inner Gear Box
The input flange using high precision bearing to lead assembly, Let the input to output shaft center has excellent concentricity for reduce vibration.



- 行星齒內孔使用滿針滾針軸, 耐磨, 高精度
- Use full arrange needle pin for anti-abrasion and higher precision.



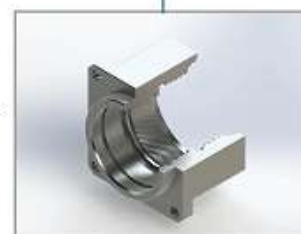
- 螺旋傘齒輪組
 - 1> Ni-Cr-Mo 合金鋼材質
 - 2> 滲碳製程
 - 3> 軸部強韌, 表面耐磨耗
- Helical Bevel Gear component
 1. Ni-Cr-Mo alloy steel
 2. Carburizing Process
 3. Stiffness and anti-abrasion.



- 無鍵式轉軸, 保有最優的動平衡, 降低振動
- Non-Keyway assembly, have excellent dynamic balance and reduce vibration.



- 輸出軸
一體式設計, 確保行星齒能精確的傳動, 前後軸承大跨距設計與較大的軸承, 有效的提高軸承壽命與最大的軸/徑向力
- Output Shaft
Shaft is One-Piece design, for ensure the planetary gears could accurate transmission. Enlarge the front bearing and larger span to rear bearing for largest radial and axial loading.

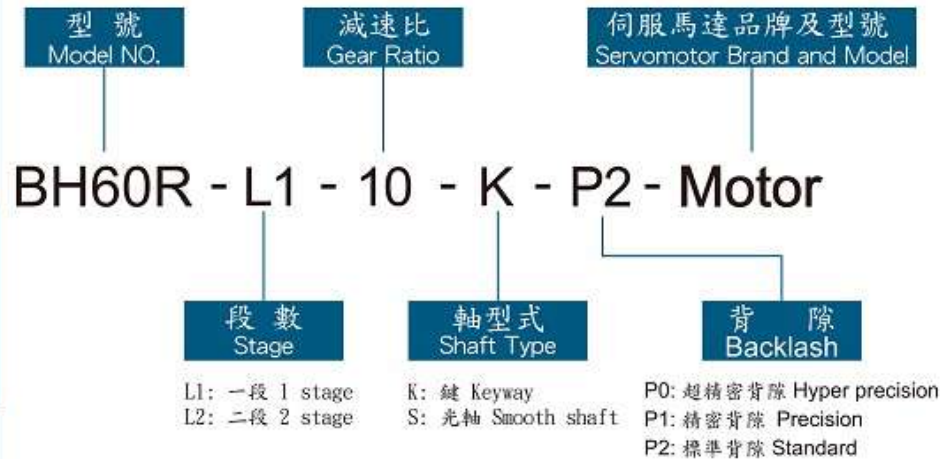


- 內齒環
高強度合金鋼, 螺旋齒設計, 高精度, 耐磨耗, 低噪音
- Inner Gear Box
High strength alloy steel. Gear is Helical gear design for high-precision, high abrasion and lower noise.



- 入力螺旋傘齒輪與輸入軸
 - 1> 搭配高精度軸承, 可適用於不同軸徑的伺服馬達
 - 2> 極佳的動平衡設計
 - 3> 優化的轉動慣量
 - 4> 模組化設計, 能快速回應客戶不同速比的需求
- Input Helical Bevel Gear and Input Shaft
 1. With high precision bushing is easy to set up with any brand servomotor.
 2. Excellent dynamic balance
 3. Optimum mass moment of inertia.
 4. To modularize assembly design for rapid reaction customers all gear ratio requirement.

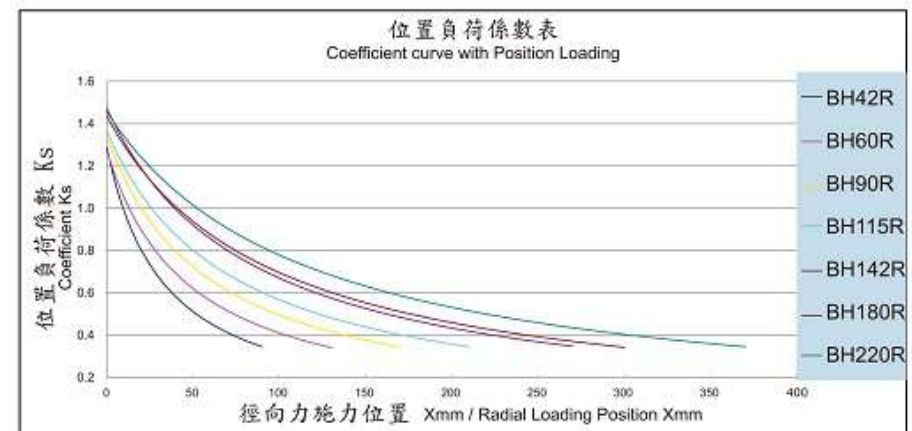
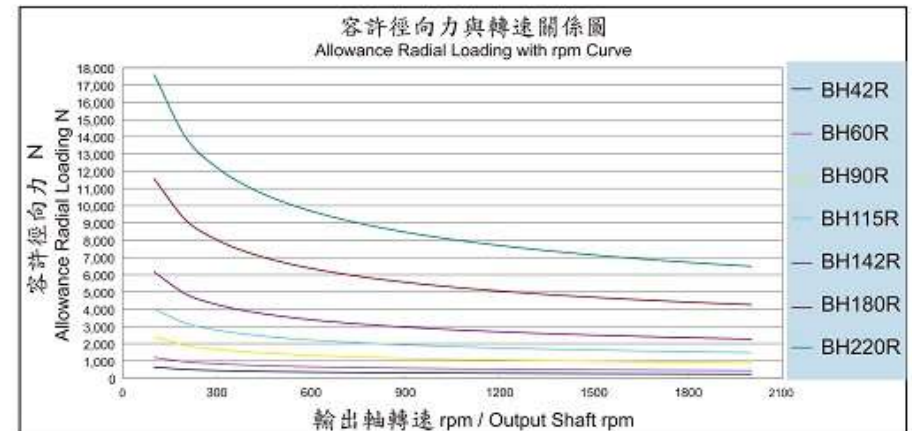
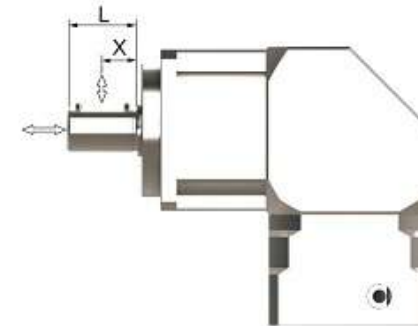
訂單格式 Order Format



伺服馬達用減速機系列/特色 For Servomotor Reducer Series / Feature

- 經濟型 Economic
- 高傳動效能 Higher Efficiency
- 低噪音 Lower Noise
- 低震動 Lower Vibration
- 低背隙 Lower Backlash
- 低溫升 Lower Temperature
- 壽命長 Higher Service Life
- 優化輸入轉動慣量
Optimum Input Mass Moment of Inertia design
for Servomotor easily start.
- 適用於連續運轉 Design for Continuity Operation
- 尺寸極小化, 重量輕量化 Minimalization Dimension and Weight

減速機輸出軸之容許徑向力及軸向力 Allowance Radial and Axial Loading with Reducer output shaft



規格總表 Specifications Data

轉動慣量表 Moment of Inertia Table

BH-R series

規格 Specifications	單位 Unit	段數 Stage	減速比 ratio	BH42R	BH60R	BH90R	BH115R	BH142R	BH180R	BH220R
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	L1	3	14.1	36	116	238	571	1050	1880
			4	12.0	38	122	250	599	1103	1970
			5	14.0	36	117	240	575	1058	1890
			6	13.2	34	108	229	533	983	1756
			7	11.9	34	110	225	538	992	1770
			8	12.9	33	103	212	506	936	1670
			9	12.0	31	102	208	500	-	-
			10	10.8	31	102	208	496	918	1640
			14	11.9	34	110	225	538	992	1770
			16	12.9	33	103	212	506	936	1670
			18	12.0	31	102	208	500	-	-
			20	10.8	31	102	208	496	918	1640
		L2	15	14.1	36	116	238	571	1050	1880
			25	14.0	36	117	240	575	1058	1890
			30	14.1	36	116	238	571	1050	1880
			35	11.9	34	110	225	538	992	1770
			40	12.9	38	122	250	599	1103	1970
			50	10.8	36	117	240	575	1058	1890
			60	13.2	34	108	229	533	983	1756
			70	11.9	34	110	225	538	992	1770
			80	12.9	33	103	212	506	936	1670
			90	12.0	31	102	208	500	-	-
			100	10.8	31	102	208	496	918	1640
120	-	34	108	229	533	983	1756			
140	-	34	110	225	538	992	1770			
160	-	33	103	212	506	936	1670			
200	-	31	102	208	496	918	1640			
急停力矩 Emergency Stop	Nm	L1,L2	3~200	3倍額定輸出力矩 3times Nominal Output Torque				2.5倍額定輸出力矩2.5times Nominal Output Torque		
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	L1,L2	3~200	3,000	3,000	3,000	3,000	2500	2500	2500
最大輸入轉速 Max. Input Speed	rpm	L1,L2	3~200	6,000	6,000	6,000	6,000	5000	5000	5000
超精密背隙 P0 Backlash	arcmin	L1	3~20			≤4	≤4	≤4	≤4	≤4
L2		15~200			≤6	≤6	≤6	≤6	≤6	
精密背隙 P1 Backlash		L1	3~20	≤7	≤6	≤6	≤6	≤6	≤6	≤6
L2		15~200	≤10	≤8	≤8	≤8	≤8	≤8	≤8	
標準背隙 P2 Backlash		L1	3~20	≤10	≤8	≤8	≤8	≤8	≤8	≤8
L2		15~200	≤12	≤10	≤10	≤10	≤10	≤10	≤10	
扭轉剛性 Torsional Rigidity	Nm/arcmin	L1	3~20	2.13	4.3	11	32	65	145	250
L2		15~200	1.28	2.6	6.5	19	39	87	150	
最大容許徑向力 F_{2dr} Max. Radial Load	N	L1,L2	3~200	640	1200	2400	4000	6100	11500	18800
最大容許軸向力 F_{2ds} Max. Axial Load	N	L1,L2	3~200	320	600	1200	2000	3050	5750	9400
使用壽命 Life	hrs	L1,L2	3~200	20,000						
使用溫度 Operating Temperature	℃	L1,L2	3~200	-10℃~+90℃						
潤滑 Lubrication		L1,L2	3~200	合成潤滑油脂 Lithium Complex Synthetic						
安裝方向 Mounting Position		L1,L2	3~200	任意方向 Any Direction						
噪音值 Running Noise	dB(A)	L1,L2	3~200	≤62	≤64	≤66	≤68	≤72	≤74	≤76
效率 η Efficiency	%	L1	3~20	≥94%						
		L2	15~200	≥91%						
重量 Weight	kg	L1	3~20	0.7	1.88	5.9	12.3	22/23	41	70
		L2	15~200	0.9	2.32	4.7/7.3	11/14.8	22/28	38.5	68.5
防護 Protection Level		L1,L2	3~200	IP65						

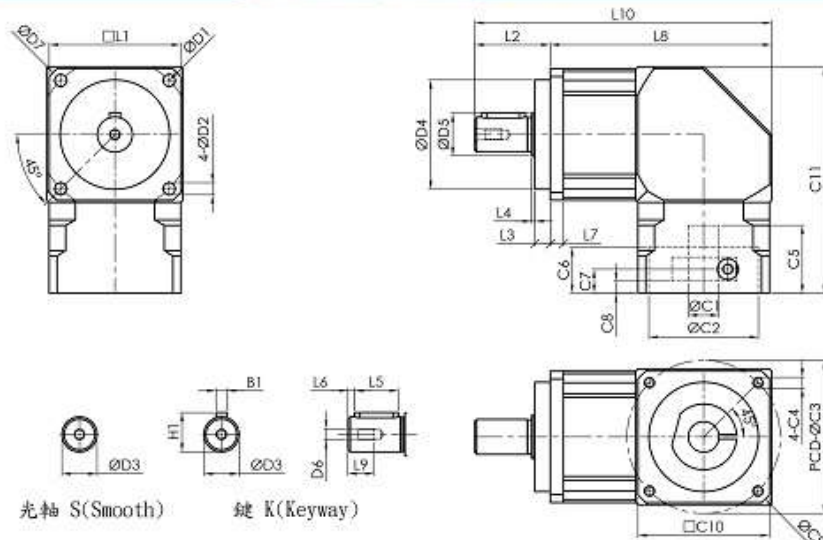
BH-R 轉動慣量總表 Moment of Inertia Table																								
Unit	kg.cm ²	型號 Model																						
節數 Stage	減速比 Ratio	BH42R	BH60R		BH90R			BH115R		BH142R		BH180R		BH220R										
		伺服馬達軸直徑 Servomotor Shaft Diameter																						
		φ 8	φ 8	φ 14	φ 14	φ 19	φ 24	φ 19	φ 24	φ 24	φ 35	φ 42	φ 35	φ 42	φ 55	φ 35	φ 42	φ 55						
單節 1-stage	3	0.02			φ 14		0.5	0.5		1.6	3.5	7.2	6.8	28.8	27.9	25.7	43.1	42.2	43.1					
	4																							
	5																							
	6																							
	7					0.08	0.5	0.5		1.6	3.1	6.8	6.4	26.7	25.8	23.6	37	36.1	37					
	8																							
	9																							
	10																							
	14																							
	16																							
18	0.02			φ 14	0.5	0.5		1.5	3.1	6.8	6.4	26.7	25.8	23.6	37	36.1	37							
20																								
雙節 2-stages	15	0.02			φ 14	0.5	0.5	0.5	1.6	1.6	7.2	6.8	7.2	6.8				28.8	27.9	25.7				
	25																							
	30																							
	35																							
	40					0.08	0.5	0.5	0.5	1.6	1.6	7.2	6.8	7.2	6.8				28.8	27.9	25.7			
	50																							
	60																							
	70																							
	80					0.02			φ 14	0.5	0.5	0.5	1.5	1.5	6.8	6.4	6.8	6.4				26.7	25.8	23.6
	90																							
	100																							
	120																							
	140					0.08	0.5	0.5	0.5	1.6	1.6	7.2	6.8	7.2	6.8							28.8	27.9	25.7
	160																							
200																								

- 1: 減速比=伺服馬達輸入轉速(rpm)/減速機輸出軸轉速(rpm) / Ratio=Servomotor Input Speed(rpm) / Reducer Output Speed(rpm)
- 2: 背隙值為在2%額定扭力的扭力定義下測得 / Backlash values is base on 2% nominal output torque testing.
- 3: 徑向力/軸向力與壽命, 是在輸出轉速100rpm, 且作用力在輸出軸中心
Radial/Axial load and Life are base on Reducer output speed 100rpm and Force at the shaft midpoint.
- 4: 連續運轉時, 壽命為一半 / Continuity operating, the life will be reduce to 50%.
- 5: 噪音為伺服馬達輸入轉速3000rpm, 減速機速比10比, 無負載, 距減速機 1M 的情況下所測得
The Noise is base on Servomotor input 3000rpm, gear Ratio 10, unloading and from 1M to reducer testing.
- 6: 如有特殊規格請洽各區域的代理/經銷商 / If any special specific, Please visit our Agent / Dealer.

BH-R series

BH-R 一段尺寸 1 Stage Dimention

減速比 Gear Ratio 3~20



型號 Model	BH42R	BH60R	BH90R	BH115R	BH142R	BH180R	BH220R
D	D1	50	70	100	130	165	215
	D2	3.5	5.5	6.8	8.6	11	13
	D3h7	13	16	22	32	40	55
	D4h7	35	50	80	110	130	160
	D5	13.6	19.5	29.2	34.2	53.9	68.9
	D6	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25	M16xP2.0	M20xP2.5
	D7	56	80	116	150	185	240
L	L1	42	60	90	115	142	180
	L2	25.5	34.5	51.5	66	97	105
	L3	5.5	7	10	12	15	20
	L4	1	1.5	1.5	2	3	3
	L5	15	20	30	40	65	70
	L6	2	3	3	5	5	6
	L7	4	6	8	10	12	15
	L8	70.5	101	137	174.5	227	257
	L9	10	12	15	28	36	42
	L10	96	135.5	188.5	240.5	324	362
C	*C1H7	8	14	19	24	35	42
	*C2H7	30	50	70	110	144.3	180
	*C3	46	70	90	145	200	215
	*C4	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25	M12xP1.75	M12xP1.75
	*C5	26	31	43.5	67	83	88
	*C6	17	21	30	18	20	10
	*C7	8.5	11	14	30.5	39	42
	*C8	4	5.5	7	20	27.5	30
	*C9	56	80	116	160	230	250
	*C10	42	60	90	120	176	190
	*C11	77	103.5	145	196	254	298
B	B1	5	5	6	10	12	16
H	H1	15	18	24.5	35	43	60

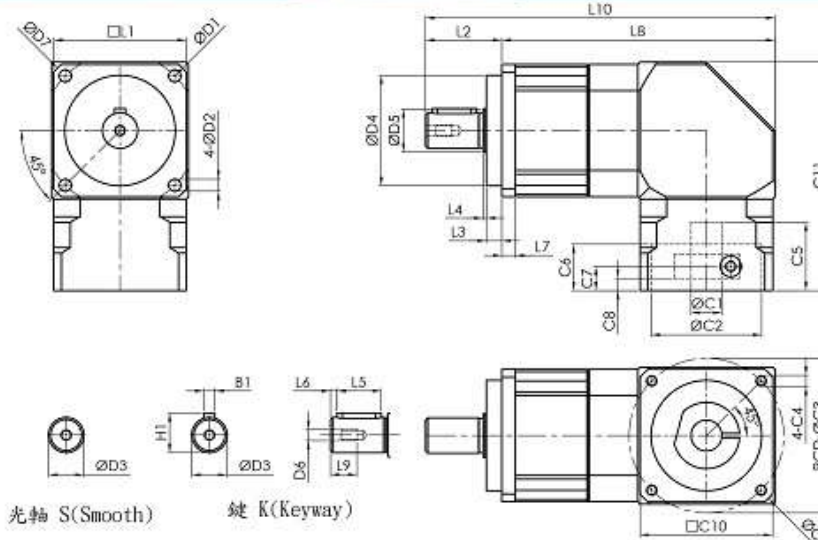
*C1-C11 是依各廠牌的伺服馬達尺寸而定

*C1-C11 depends on servo motor dimension

Beyond 77

BH-R 二段尺寸 2 Stage Dimention

減速比 Gear Ratio 15~200



型號 Model	BH42R	BH60R	BH90R	BH115R	BH142R	BH180R	BH220R
D	D1	50	70	100	130	165	215
	D2	3.5	5.5	6.8	8.6	11	13
	D3h7	13	16	22	32	40	55
	D4h7	35	50	80	110	130	160
	D5	13.6	19.5	29.2	34.2	53.9	68.9
	D6	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25	M16xP2.0	M20xP2.5
	D7	56	80	116	150	185	240
L	L1	42	60	90	115	142	180
	L2	25.5	34.5	51.5	66	97	105
	L3	5.5	7	10	12	15	20
	L4	1	1.5	1.5	2	3	3
	L5	15	20	30	40	65	70
	L6	2	3	3	5	5	6
	L7	4	6	8	10	12	15
	L8	87.5	123.5	168.5	211	273.5	289
	L9	10	12	15	28	36	42
	L10	113	158	220	277	370.5	394
C	*C1H7	8	14	19	24	35	42
	*C2H7	30	50	70	110	144.3	180
	*C3	46	70	90	145	200	215
	*C4	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25	M12xP1.75	M12xP1.75
	*C5	26	31	43.5	67	83	88
	*C6	17	21	30	18	20	10
	*C7	8.5	11	14	30.5	39	42
	*C8	4	5.5	7	20	27.5	30
	*C9	56	80	116	160	230	250
	*C10	42	60	90	120	176	190
	*C11	77	103.5	145	196	254	298
B	B1	5	5	6	10	12	16
H	H1	15	18	24.5	35	43	60

*C1-C11 是依各廠牌的伺服馬達尺寸而定

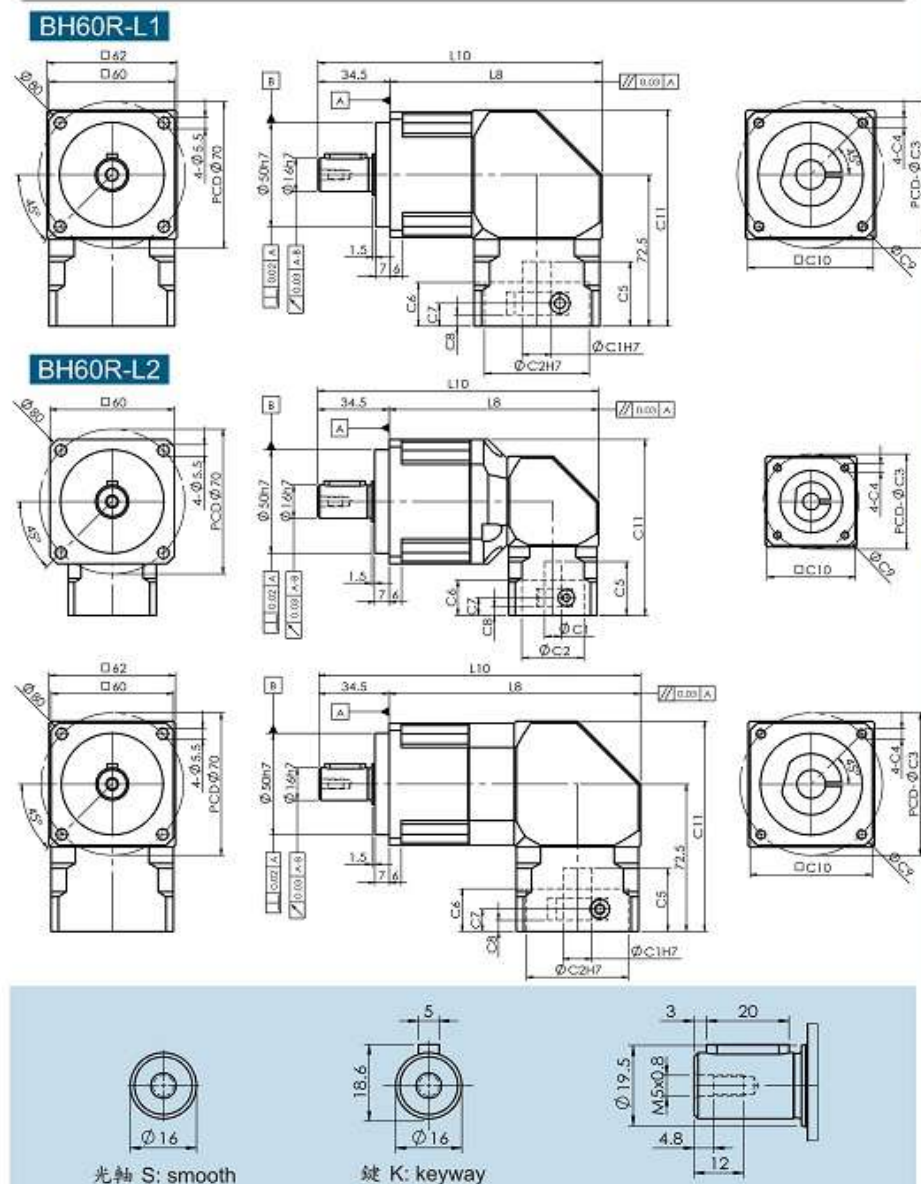
*C1-C11 depends on servo motor dimension

Beyond 78

規格表 / Specifications

BH60R		單節減速比 1-stage ratio															
		3	4	5	6	7	8	9	10	14	20						
額定輸出力矩 T _{2N} Nominal Output Torque	Nm	36	38	36	34	34	33	31	31	34	31						
		雙節減速比 2-stages ratio															
額定輸出力矩 T _{2N} Nominal Output Torque	Nm	15	20	25	30	35	40	50	60	70	80	90	100	120	140	160	200
		36	38	36	36	34	38	36	36	34	38	31	36	34	34	33	31
急停力矩 Emergency Stop Torque	Nm	3倍額定輸出力矩 3times Nominal Output Torque															
最大加速力矩 T _{2B} Max. Accelerate Torque	Nm	L1	65	68	65	61	61	59	56	56	61	56					
	L2	65	68	65	65	61	68	65	65	61	68	56	65	61	61	59	56
精密背隙 P1 Backlash	arcmin	L1 ≤ 6								L2 ≤ 8							
標準背隙 P2 Backlash		L1 ≤ 8								L2 ≤ 10							
扭轉剛性 Torsional Rigidity	Nm/arcmin	L1=3.7								L2=2.2							
額定輸入轉速 n _{1N} Nominal Input Speed	rpm	3000															
最大輸入轉速 Max. Input Speed	rpm	6000															
最大容許徑向力 F _{2B} Max. Radial Load	N	1200															
最大容許軸向力 F _{2aB} Max. Axial Load	N	600															
使用壽命 Life	hrs	20000															
使用溫度 Operating Temperature	℃	-10℃~+90℃															
潤滑 Lubrication		合成潤滑油脂 Lithium Complex Synthetic															
安裝方向 Mounting Position		任意方向 Any Direction															
噪音值 Running Noise	dB(A)	≤64															
效率 η Efficiency	%	L1 ≥ 94%								L2 ≥ 91%							
重量 Weight	kg	L1=1.88								L2=2.32							
防護 Protection Level		IP65															
尺寸位置 Dimension Index		φ C1 Mim Max	φ C2	φ C3	C4	C5	C6	C7	C8	φ C9	C10	C11	L8	L10			
尺寸 Dimension mm	L1	6	14	30	45	M3	31	21	11	5.5	80	60	103.5	101	135.5		
				30	46	M4											
	50			70	M4/5	26	17	8.5	4	56	42.5	85	101	135.5			
	30			46	M4												
	50			70	M4/5	31	21	11	5.5	80	60	103.5	123.5	158			

尺寸圖 / Dimension

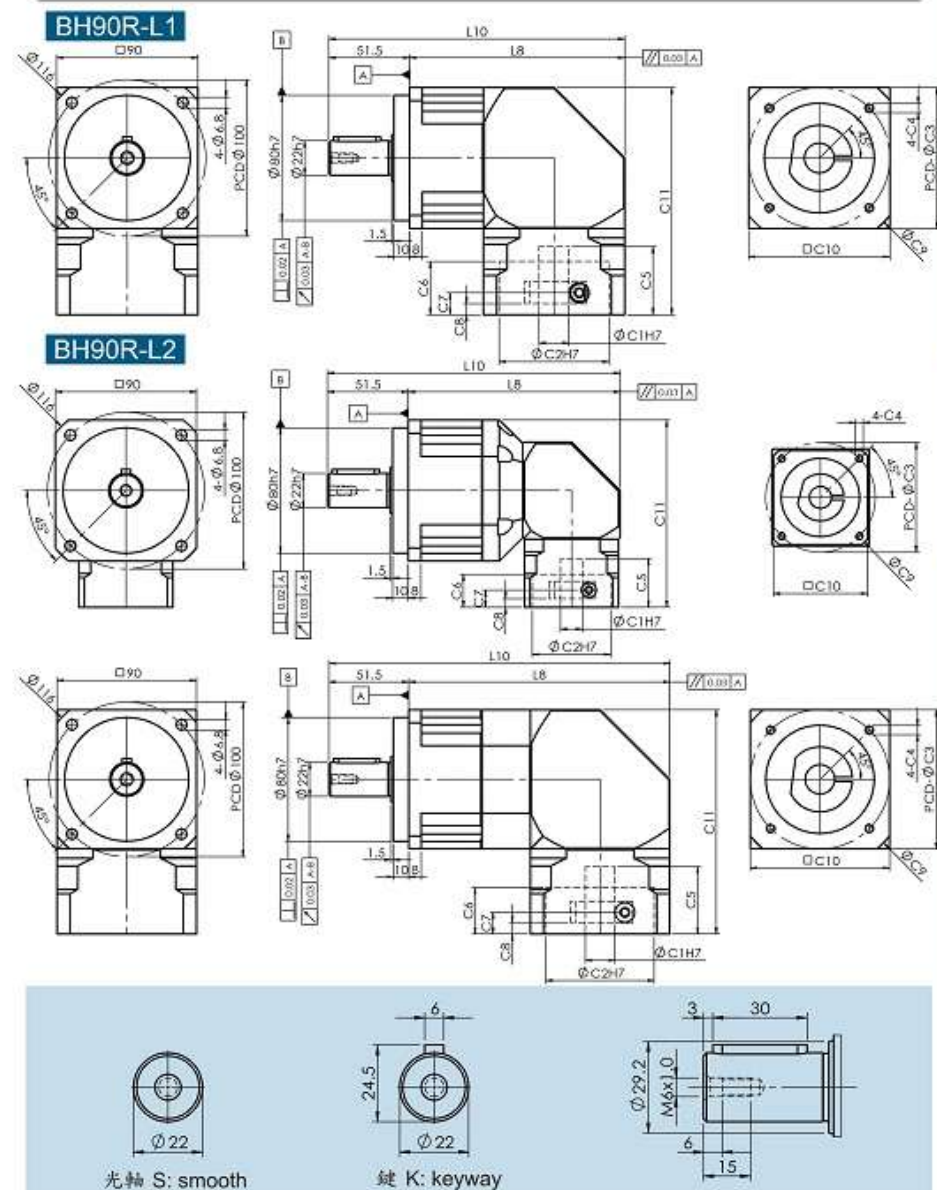


- 1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 $PCD-\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and $PCD-\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

規格表 / Specifications

BH90R		單節減速比 1-stage ratio																
		3	4	5	6	7	8	9	10	14	20							
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	116	122	117	108	110	103	102	102	110	102							
		雙節減速比 2-stages ratio																
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	15	20	25	30	35	40	50	60	70	80	90	100	120	140	160	200	
		116	122	117	116	110	122	117	116	110	122	102	117	108	110	103	102	
急停力矩 Stop Torque	Nm	3倍額定輸出力矩 3times Nominal Output Torque																
最大加速力矩 T_{2a} Max. Accelerate Torque	Nm	L1	209	220	211	194	198	185	184	184	198	184						
		L2	250	263	263	250	238	263	263	250	238	263	212	263	243	238	223	202
超精密背隙 P0 Backlash	arcmin	$L1 \leq 4$								$L2 \leq 6$								
精密背隙 P1 Backlash		$L1 \leq 6$								$L2 \leq 8$								
標準背隙 P2 Backlash		$L1 \leq 8$								$L2 \leq 10$								
扭轉剛性 Torsional Rigidity	Nm/arcmin	$L1=11$								$L2=6.5$								
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	3000																
最大輸入轉速 Max. Input Speed	rpm	6000																
最大容許徑向力 F_{2rB} Max. Radial Load	N	2400																
最大容許軸向力 F_{2aB} Max. Axial Load	N	1200																
使用壽命 Life	hrs	20000																
使用溫度 Operating Temperature	℃	$-10^{\circ}\text{C} \sim +90^{\circ}\text{C}$																
潤滑 Lubrication		合成潤滑油脂 Lithium Complex Synthetic																
安裝方向 Mounting Position		任意方向 Any Direction																
噪音值 Running Noise	dB(A)	≤ 66																
效率 η Efficiency	%	$L1 \geq 94\%$								$L2 \geq 91\%$								
重量 Weight	kg	$L1=5.9$								$L2=4.7/7.3$								
防護 Protection Level		IP65																
尺寸位置 Dimension Index		$\phi C1$	$\phi C2$	$\phi C3$	C4	C5	C6	C7	C8	$\phi C9$	C10	C11	L8	L10				
尺寸 Dimension mm	L1	Mim	Max	70	90	M6	43.5	30	14	7	116	90	145	137	188.5			
				110	145	M8	63.5	6	34	27	170	120	165	157	208.5			
	L2	11	14	50	70	M5	31	21	11	5.5	80	60	119.5	135	186.5			
		16	24	70	90	M6	43.5	30	14	7	116	90	145	168.5	220			
				110	145	M8	63.5	6	34	27	170	120	165	188.5	240			

尺寸圖 / Dimension



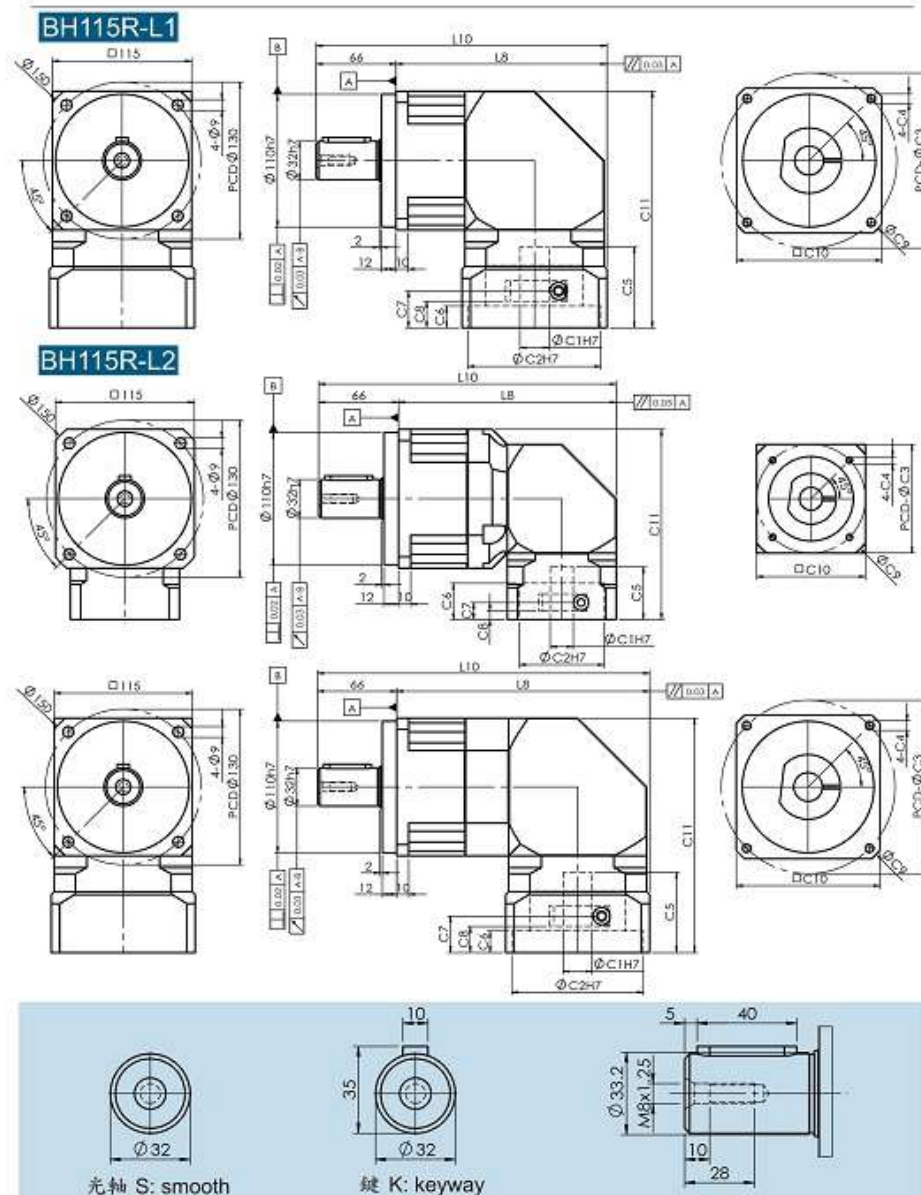
- 1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 PCD- $\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and PCD- $\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

規格表 / Specifications

尺寸圖 / Dimension

BH115R

BH115R			單節減速比 1-stage ratio																
			3	4	5	6	7	8	9	10	14	20							
額定輸出力矩 T_{2N} Nominal Output Torque	Nm		238	250	240	229	225	212	208	208	225	208							
			雙節減速比 2-stages ratio																
額定輸出力矩 T_{2N} Nominal Output Torque	Nm		15	20	25	30	35	40	50	60	70	80	90	100	120	140	160	200	
			238	250	240	238	225	250	240	238	225	250	208	240	229	225	212	208	
急停力矩 Emergency Stop Torque	Nm		3倍額定輸出力矩 3times Nominal Output Torque																
最大加速力矩 T_{2a} Max. Accelerate Torque	Nm	L1	428	450	432	412	405	382	374	374	405	374							
			L2	428	540	540	428	506	540	540	428	506	450	454	432	518	506	457	374
超精密背隙 P0 Backlash	arcmin		L1 ≤ 4								L2 ≤ 6								
精密背隙 P1 Backlash			L1 ≤ 6								L2 ≤ 8								
標準背隙 P2 Backlash			L1 ≤ 8								L2 ≤ 10								
扭轉剛性 Torsional Rigidity	Nm/arcmin		L1=32								L2=19								
額定輸入轉速 n_{1N} Nominal Input Speed	rpm		3000																
最大輸入轉速 Max. Input Speed	rpm		6000																
最大容許徑向力 F_{2rB} Max. Radial Load	N		4000																
最大容許軸向力 F_{2aB} Max. Axial Load	N		2000																
使用壽命 Life	hrs		20000																
使用溫度 Operating Temperature	℃		-10℃~+90℃																
潤滑 Lubrication			合成潤滑油脂 Lithium Complex Synthetic																
安裝方向 Mounting Position			任意方向 Any Direction																
噪音值 Running Noise	dB(A)		≤ 68																
效率 η Efficiency	%		L1 ≥ 94%								L2 ≥ 91%								
重量 Weight	kg		L1=12.3								L2=11/14.8								
防護 Protection Level			IP65																
尺寸位置 Dimension Index		ϕ C1 Mim Max	ϕ C2	ϕ C3	C4	C5	C6	C7	C8	ϕ C9	C10	C11	L8	L10					
尺寸 Dimension mm	L1	16 24	110	130	M8	56	10	19.5	11	152	115	185	172	238					
			110	145	M8	67	18	30.5	22	160	120	196	174.5	240.5					
	L2	14 19 19 24	70	90	M6	43.5	30	14	7	116	90	157.5	180	246					
			110	130	M8	56	10	19.5	11	152	115	185	210.5	274.5					
			110	145	M8	67	18	30.5	22	160	120	196	211	277					



- 1: ϕ C1 請參照馬達軸尺寸 ϕ C1 Servomotor shaft Diameter
- 2: ϕ C2 及 PCD- ϕ C3, 減速機輸入端尺寸, 依馬達法蘭面而異
 ϕ C2 and PCD- ϕ C3, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

BH115R

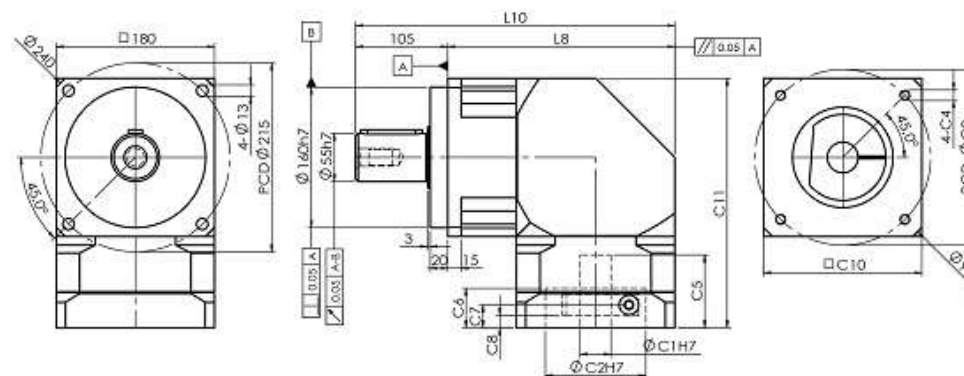
規格表 / Specifications

尺寸圖 / Dimension

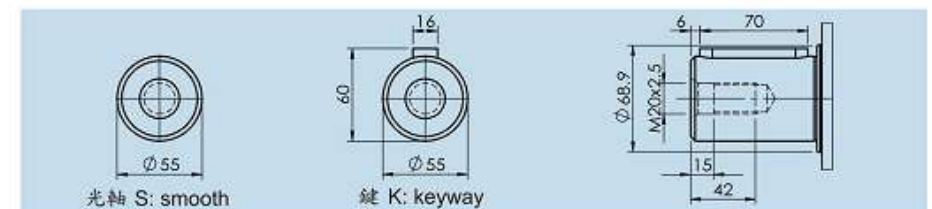
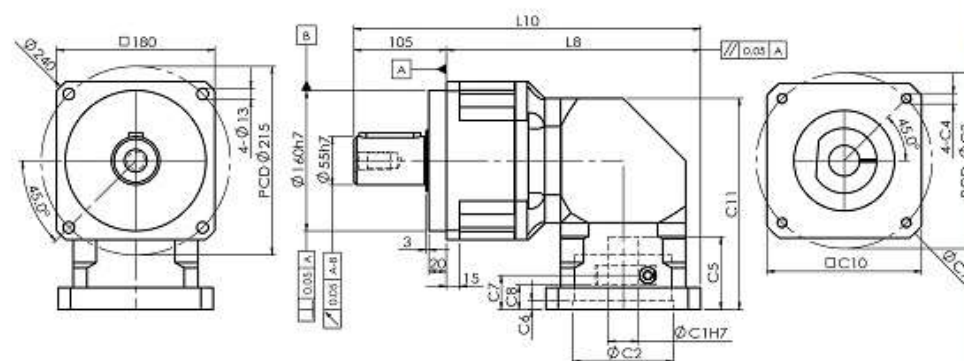
BH180R

BH180R			單節減速比 1-stage ratio															
			3	4	5	6	7	8	9	10	14	20						
額定輸出力矩 T _{2N} Nominal Output Torque	Nm		1050	1103	1058	983	992	936	-	918	992	918						
			雙節減速比 2-stages ratio															
額定輸出力矩 T _{2N} Nominal Output Torque	Nm		15	20	25	30	35	40	50	60	70	80	90	100	120	140	160	200
			1050	1103	1058	1050	992	1103	1058	1050	992	1103	-	1058	983	992	936	918
急停力矩 Emergency Stop Torque	Nm		3倍額定輸出力矩 3times Nominal Output Torque															
最大加速力矩 T _{2a} Max. Accelerate Torque	Nm	L1	1890	1985	1904	1769	1786	1685	-	1652	1786	1652						
		L2	1890	1985	1904	1890	1786	1685	1904	1890	1786	1685	1904	1786	1685	1652		
超精密背隙 P0 Backlash	arcmin		L1 ≤ 4						L2 ≤ 6									
精密背隙 P1 Backlash			L1 ≤ 6						L2 ≤ 8									
標準背隙 P2 Backlash			L1 ≤ 8						L2 ≤ 10									
扭轉剛性 Torsional Rigidity	Nm/arcmin		L1=145						L2=87									
額定輸入轉速 n _{1N} Nominal Input Speed	rpm		2500															
最大輸入轉速 Max. Input Speed	rpm		5000															
最大容許徑向力 F _{2aB} Max. Radial Load	N		11500															
最大容許軸向力 F _{2aB} Max. Axial Load	N		5750															
使用壽命 Life	hrs		20000															
使用溫度 Operating Temperature	℃		-10℃~+90℃															
潤滑 Lubrication			合成潤滑油脂 Lithium Complex Synthetic															
安裝方向 Mounting Position			任意方向 Any Direction															
噪音值 Running Noise	dB(A)		≤74															
效率 η Efficiency	%		L1 ≥ 94%						L2 ≥ 91%									
重量 Weight	kg		L1=41						L2=38.5									
防護 Protection Level			IP65															
尺寸位置 Dimension Index			φ C1	φ	φ							φ C9	C10	C11	L8	L10		
			Min	Max	C2	C3	C4	C5	C6	C7	C8							
尺寸 Dimension mm	L1	35	42	114.3	200	M12	83	45	26	14	240	180	284	258	363			
				180	215	M12	83	8	26	14	250	190	284	263	368			
	L2	22	24	110	145	M8	71	40	28.5	20	182	142	247.5	272	377			
		35	42	114.3	200	M12	83	20	39	28	230	176	259.5	289	394			

BH180R-L1



BH180R-L2



- $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter
- $\phi C2$ 及 $PCD-\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and $PCD-\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- $C5$ -Max 馬達軸最長長度 $C5$ -Max Servomotor shaft Length
- 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

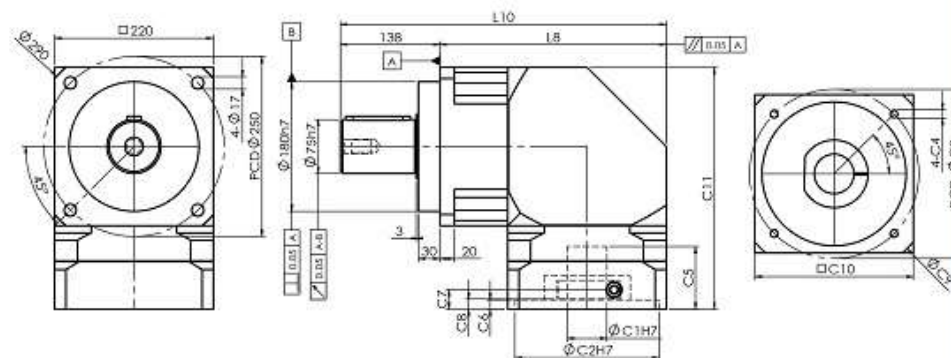
規格表 / Specifications

尺寸圖 / Dimension

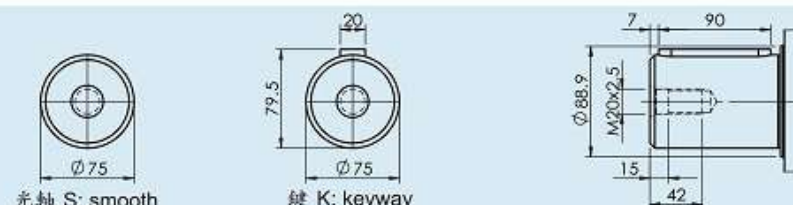
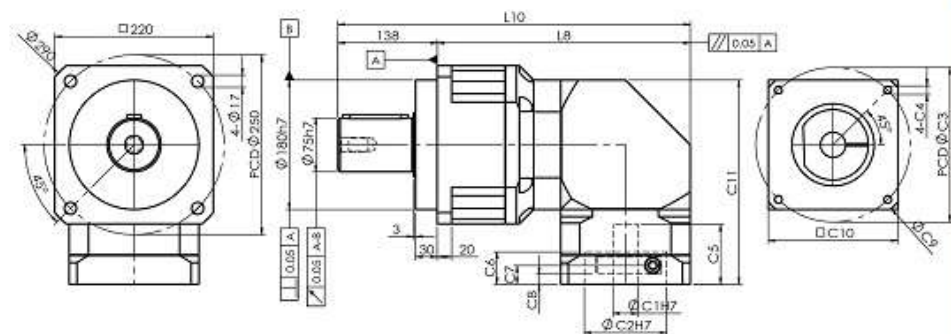
BH220R

BH220R			單節減速比 1-stage ratio															
			3	4	5	6	7	8	9	10	14	20						
額定輸出力矩 T_{2N} Nominal Output Torque	Nm		1880	1970	1890	1880	1770	1970	-	1640	1770	1640						
			雙節減速比 2-stages ratio															
額定輸出力矩 T_{2N} Nominal Output Torque	Nm		15	20	25	30	35	40	50	60	70	80	90	100	120	140	160	200
			1880	1970	1890	1880	1770	1970	1890	1880	1770	1970	-	1890	1880	1770	1970	1640
急停力矩 Emergency Stop Torque	Nm		3倍額定輸出力矩 3times Nominal Output Torque															
最大加速力矩 T_{2a} Max. Accelerate Torque	Nm	L1	3384	3546	3402	3384	3186	3546	-	2952	3186	2952						
			L2	3384	3546	3402	3384	3186	3546	-	3402	3384	3186	3546	2952			
超精密背隙 P0 Backlash	arcmin	$L1 \leq 4$								$L2 \leq 6$								
精密背隙 P1 Backlash		$L1 \leq 6$								$L2 \leq 8$								
標準背隙 P2 Backlash		$L1 \leq 8$								$L2 \leq 10$								
扭轉剛性 Torsional Rigidity	Nm/arcmin	$L1=250$								$L2=150$								
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	2500																
最大輸入轉速 Max. Input Speed	rpm	5000																
最大容許徑向力 F_{2rB} Max. Radial Load	N	18800																
最大容許軸向力 F_{2aB} Max. Axial Load	N	9400																
使用壽命 Life	hrs	20000																
使用溫度 Operating Temperature	℃	$-10^{\circ}\text{C} \sim +90^{\circ}\text{C}$																
潤滑 Lubrication	合成潤滑油脂 Lithium Complex Synthetic																	
安裝方向 Mounting Position	任意方向 Any Direction																	
噪音值 Running Noise	dB(A)	≤ 76																
效率 η Efficiency	%	$L1 \geq 94\%$								$L2 \geq 91\%$								
重量 Weight	kg	$L1=70$								$L2=68.5$								
防護 Protection Level	IP65																	
尺寸位置 Dimension Index		$\phi C1$	$\phi C2$	$\phi C3$	C4	C5	C6	C7	C8	$\phi C9$	C10	C11	L8	L10				
尺寸 Dimension mm	L1	35	55	180	215	M12	87	10	27	14	290	220	336	314	452			
				200	235	M12												
	L2	35	42	114	200	M12	83	45	26	14	240	180	304	351.5	489			
				180	215	M12	83	8	26	14	250	190	304	356.5	494			

BH220R-L1



BH220R-L2



- 1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 PCD- $\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and PCD- $\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

BD series



產品特性 Production Feature



- 行星齒內孔使用滿針滾針軸, 耐磨, 高精度
- Use full arrange needle pin for anti-abrasion and higher precision.



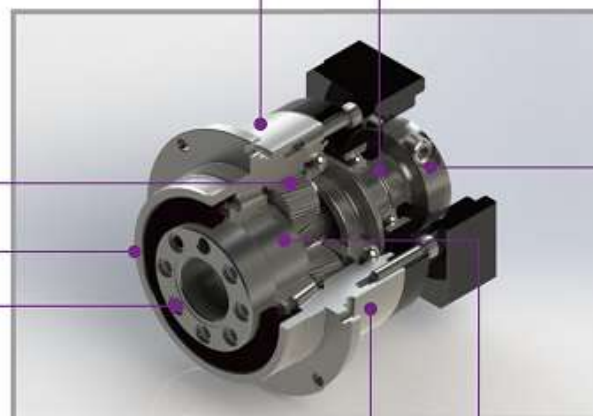
- 軸承背隙與組裝公差調整元件
- 1> 調整前後軸承背隙及組裝時的公差, 將出力法蘭的偏擺降到最低
- 2> 可固定行星齒滾針軸
- Bearings and assembly tolerance adjust part
- 1> Adjust the bearings backlash and assembly tolerance, to reduce the output flange swing.
- 2> Could fix the planetary gear needle shaft



- 輸入軸
- 使用筒夾式鎖緊機構, 並經動平衡校正, 以確保在高速運轉下, 其結合界面的同心度與馬達軸的零背隙傳遞動力
- Input Shaft
- The collet design and dynamic balance, ensure the servomotor and input shaft interface are zero backlash.



- 輸入法蘭與內齒環
- 輸入法蘭與內齒環使用高精度軸承為組裝時的引導, 能使輸入到輸出端有最佳的同心度, 降低震動
- Input Flange and Inner Gear Box
- The input flange using high precision bearing to lead assembly, Let the input to output shaft center has excellent concentricity for reduce vibration.



- 入力處設計一組IP65防護等級油封, 確保潤滑油不洩漏
- With IP65 grade oil seal, to protect the lubricant is not leak.



- 輸出軸
- 一體式設計, 確保行星齒能精確的傳動, 前後軸承大跨距設計與較大的軸承, 有效的提高軸承壽命與最大的軸/徑向力
- Output Shaft
- Shaft is One-Piece design with output flange, for ensure the parts have excellent concentricity. Enlarge the front bearing and largerspan to rear bearing for largest radial and axial loading.



- 內齒環
- 高強度合金鋼, 螺旋齒設計, 高精度, 耐磨耗, 低噪音。
- Inner Gear Box
- High strength alloy steel. Gear is Helical gear design for high-precision, high abrasion and lower noise.



- 太陽齒/行星齒
- 1: 高強度合金鋼, 表面高硬度, 耐磨耗, 高韌性
- 2: 螺旋齒型設計, 高傳動能力, 低噪音, 低震動。
- Sun/Planetary Gear
- 1: High strength alloy steel, high hardness of surface, anti-abrasion and high impact.
- 2: Gear is Helical gear design, high efficiency, lower noise and lower vibration.

規格總表 Specifications Data

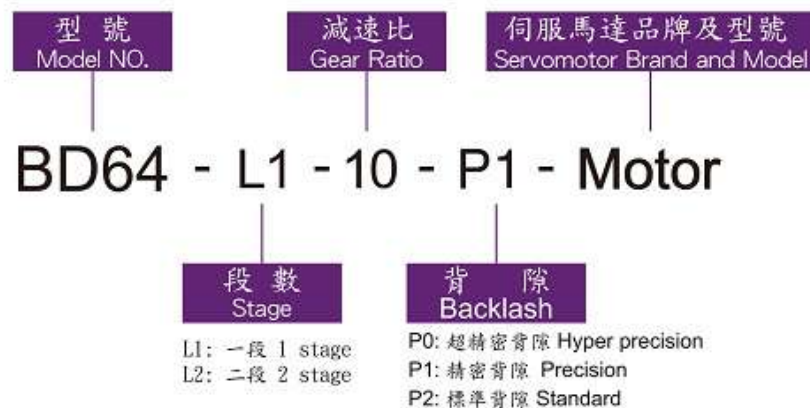
規格 Specifications	單位 Unit	段數 Stage	減速比 ratio	BD47	BD64	BD90	BD110	BD140	BD200
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	L1	4	12.0	38	122	250	571	1050
			5	14.0	36	117	240	599	1103
			7	-	34	110	225	575	1058
			8	12.9	-	-	-	-	-
			10	10.8	31	102	208	496	918
		L2	20	12.0	38	122	250	571	1050
			25	14.0	36	117	240	599	1103
			35	-	34	110	225	575	1058
			40	12.9	38	122	250	571	1050
			50	10.8	36	117	240	599	1103
			70	-	34	110	225	575	1058
			100	-	31	102	208	496	918
急停力矩 Emergency Stop Torque	Nm	L1,L2	4~100	3倍額定輸出力矩 3times Nominal Output Torque				2.5倍額定輸出力矩 2.5times Nominal Output Torque	
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	L1,L2	4~100	3,000	3,000	3,000	3,000	2,500	2,500
最大輸入轉速 Max. Input Speed	rpm	L1,L2	4~100	6,000	6,000	6,000	6,000	5,000	5,000
超精密背隙 P0 BackLash	arcmin	L1	4~10	-	-	≤1	≤1	≤1	≤1
		L2	20~100	-	-	≤3	≤3	≤3	≤3
精密背隙 P1 BackLash		L1	4~10	≤4	≤3	≤3	≤3	≤3	≤3
		L2	20~100	≤6	≤5	≤5	≤5	≤5	≤5
標準背隙 P2 BackLash	arcmin	L1	4~10	≤6	≤5	≤5	≤5	≤5	≤5
		L2	20~100	≤8	≤7	≤7	≤7	≤7	≤7
扭轉剛性 Torsional Rigidity	Nm/varcmin	L1	4~10	6	12	28	74	108	396
		L2	20~100	3.6	7.2	16.8	45	65	238
最大彎曲力矩 M_{2KB} Max. Moment Load	Nm	L1,L2	4~100	38	113	212	385	1,170	2,758
最大容許軸向力 F_{2aB} Max. Axial Load	N	L1,L2	4~100	840	890	2,400	2,540	9,000	14,200
使用壽命 Life	hrs	L1,L2	4~100	20,000					
使用溫度 Operating Temperature	°C	L1,L2	4~100	-10°C~+90°C					
潤滑 Lubrication		L1,L2	4~100	合成潤滑油脂 Lithium Complex Synthetic					
安裝方向 Mounting Position		L1,L2	4~100	任意方向 Any Direction					
噪音值 Running Noise	dB(A)	L1,L2	4~100	≤56	≤58	≤60	≤63	≤68	≤70
效率 η Efficiency	%	L1	4~10	≥97%					
		L2	20~100	≥94%					
重量 Weight	kg	L1	4~10	0.7	1.3	3.8	6.9	15.5	35.5
		L2	20~100	1.1	1.6	4.2	8.0	15.9	41.4
防護 Protection Level		L1,L2	4~100	IP65					

Beyond 97

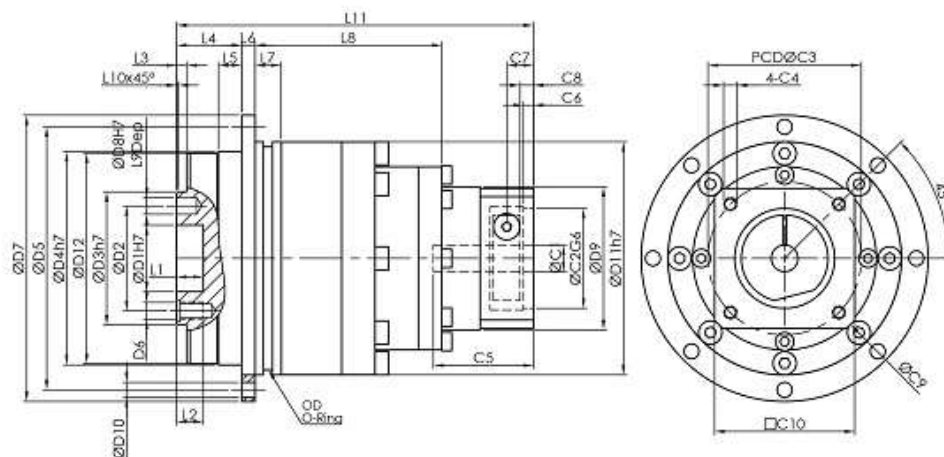
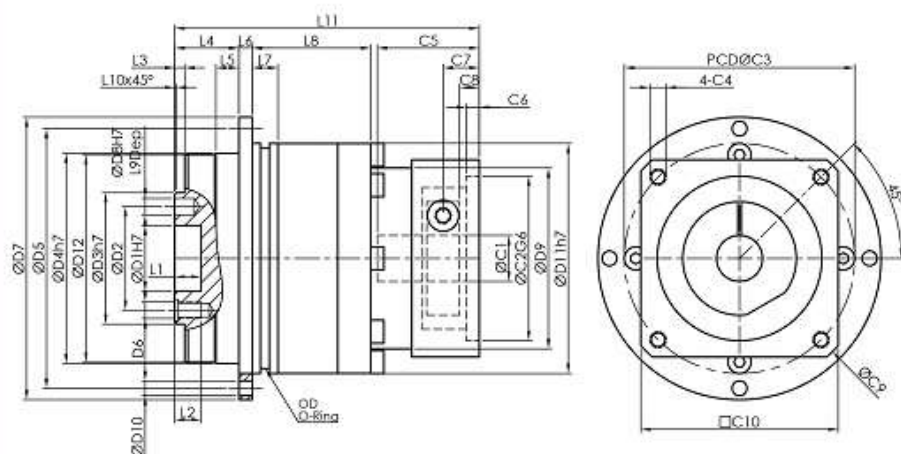
轉動慣量表 Moment of Inertia Table

BD 轉動慣量表 Moment of Inertia Table															
Unit	kg.cm ²	型號 Model													
節數 Stage	減速比 Ratio	伺服馬達軸直徑 Servomotor Shaft Diameter													
		BD 轉動慣量表 Moment of Inertia Table													
		BD47	BD64	BD90		BD110		BD140		BD200					
單節 1-stage	Ratio	φ 8	φ 8	φ 14	φ 14	φ 19	φ 24	φ 19	φ 24	φ 24	φ 35	φ 42	φ 35	φ 42	φ 55
		4	0.01	0.08		0.48	0.42		1.43	2.97	6.68	6.30	26.4	25.6	23.3
		5	0.01	0.07		0.46	0.40		1.36	2.68	6.39	6.00	25.5	24.7	22.4
		7	-	0.07		0.44	0.38		1.30	2.51	6.22	5.84	25.0	24.2	21.9
		8	0.01	-		-	-		-	-	-	-	-	-	-
		10	0.01	0.07		0.44	0.38		1.28	2.46	6.17	5.79	24.9	24.1	21.8
雙節 2-stages	20	0.01	0.01		0.07				0.44	1.37	1.37			6.25	5.87
	25	0.01	0.01		0.07				0.44	1.37	1.37			6.25	5.87
	35	0.01	0.01		0.07				0.44	1.37	1.37			6.25	5.87
	40	0.01	0.01		0.07				0.43	1.34	1.34			6.16	5.78
	50	0.01	0.01		0.07				0.43	1.34	1.34			6.16	5.78
	70	-	0.01		0.07				0.43	1.34	1.34			6.16	5.78
	80	0.01	-		-				-	-	-			-	-
	100	0.01	0.01		0.07				0.43	1.34	1.34			6.16	5.78

- 1: 減速比=伺服馬達輸入轉速(rpm)/減速機輸出軸轉速(rpm) / Ratio=Servomotor Input Speed(rpm) / Reducer Output Speed(rpm)
- 2: 背隙值為在2%額定拉力的拉力定義下測得 / Backlash values is base on 2% nominal output torque testing.
- 3: 徑向力/軸向力與壽命,是在輸出轉速100rpm,且作用力在輸出軸中心
Radial/Axial load and Life are base on Reducer output speed 100rpm and Force at the shaft midpoint.
- 4: 連續運轉時,壽命為一半 / Continuity operating, the life will be reduce to 50%.
- 5: 噪音為伺服馬達輸入轉速3000rpm,減速機速比10比,無負載,距減速機 1M 的情況下所測得
The Noise is base on Servomotor input 3000rpm, gear Ratio 10, unloading and from 1M to reducer testing.
- 6: 如有特殊規格請洽各區域的代理/經銷商 / If any special specific, Please visit our Agent / Dealer.



Beyond 98



型號	Model	BD47	BD64	BD90	BD110	BD140	BD200
D	D1 H7	12	20	31.5	40	50	80
	D2	20	31.5	50	63	80	125
	D3 h7	28	40	63	80	100	160
	D4 h7	47	64	90	110	140	200
	D5	67	79	109	135	168	233
	D6	4xM3xP0.7	7xM5xP0.8	7xM6xP1.0	11xM6xP1.0	11xM8xP1.25	11xM10P1.5
	D7	72	86	118	145	179	247
	D8 H7	3	5	6	6	8	10
	D9	43	55	78	88	125	168
	D10	8x3.4	8x4.5	8x5.5	8x5.5	12x6.6	12x9
	D11h7	60	70	95	120	152	212
	D12	46.2	63.2	89.2	109.2	139.2	199.2
L	L1	4	8	12	12	12	16
	L2	6.5	8	13.5	13.5	17	22.5
	L3	3	3	6	6	6	8
	L4	19.5	19.5	30	29	38	50
	L5	7	7	10	10	14.6	15
	L6	4	4	7	8	6	12
	L7	5	7.9	8	10	12	15
	L8	17	36	37	51.5	80.5	75.5
	L9	4	6	7	7	7	10
	L10	0.5	0.5	1	1	1	1
	L11	68	92.5	116.5	137	186.5	216.5
C	*C1H7	8	14	19	24	35	42
	*C2H7	30	50	70	110	114.3	180
	*C3	46	70	90	145	200	215
	*C4	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25	M12xP1.75	M12xP1.75
	*C5	30	31	45.5	56	83	83
	*C6	3	4	6	10	10	8
	*C7	8	11	14	25	39	26
	*C8	4	6	7	18	28	14
	*C9	56	80	116	160	230	250
	*C10	42	60	88	120	176	190
O	OD	56x2	66x2	90x3	110x3	145x3	200x5

* C1~C10是依各廠牌的伺服馬達尺寸而定 *C1~C10 depends on servo motor dimension

型號 Model		BD47	BD64	BD90	BD110	BD140	BD200
D	D1 H7	12	20	31.5	40	50	80
	D2	20	31.5	50	63	80	125
	D3 h7	28	40	63	80	100	160
	D4 h7	47	64	90	110	140	200
	D5	67	79	109	135	168	233
	D6	4xM3xP0.7	7xM5xP0.8	7xM6xP1.0	11xM6xP1.0	11xM8xP1.25	11xM10P1.5
	D7	72	86	118	145	179	247
	D8 H7	3	5	6	6	8	10
	D9	43	43	55	78	88	125
	D10	8x3.4	8x4.5	8x5.5	8x5.5	12x6.6	12x9
	D11h7	60	70	95	120	152	212
D12	46.2	63.2	89.2	109.2	139.2	199.2	
L	L1	4	8	12	12	12	16
	L2	6.5	8	13.5	13.5	17	22.5
	L3	3	3	6	6	6	8
	L4	19.5	19.5	30	29	38	50
	L5	7	7	10	10	14.6	15
	L6	4	4	7	8	6	12
	L7	5	7.9	8	10	12	15
	L8	38	56	63.5	80.5	148.5	136.5
	L9	4	6	7	7	7	10
	L10	0.5	0.5	1	1	1	1
	L11	89	107	133.5	160	197.5	268.5
C	*C1H7	8	8	14	19	24	35
	*C2H7	30	30	50	70	110	114.3
	*C3	46	46	70	90	145	200
	*C4	M4x0.7P	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25	M12xP1.75
	*C5	30	30	31	45.5	56	83
	*C6	3	3	4	6	10	10
	*C7	8	8	11	14	25	39
	*C8	4	4	6	7	18	28
	*C9	56	56	80	116	160	230
	*C10	42	42	60	88	120	176
Q	OD 56x2	66x2	90x3	110x3	145x3	200x5	

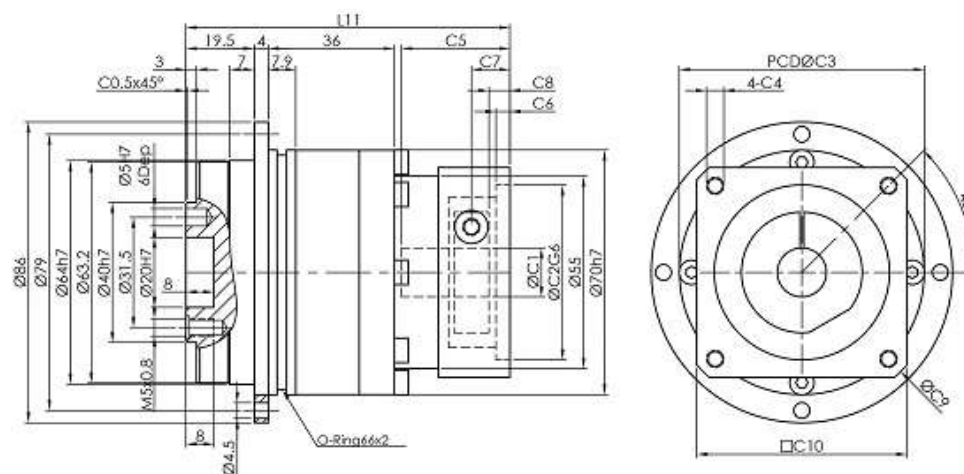
* C1~C10是依各廠牌的伺服馬達尺寸而定 *C1~C10 depends on servo motor dimension

規格表 / Specifications

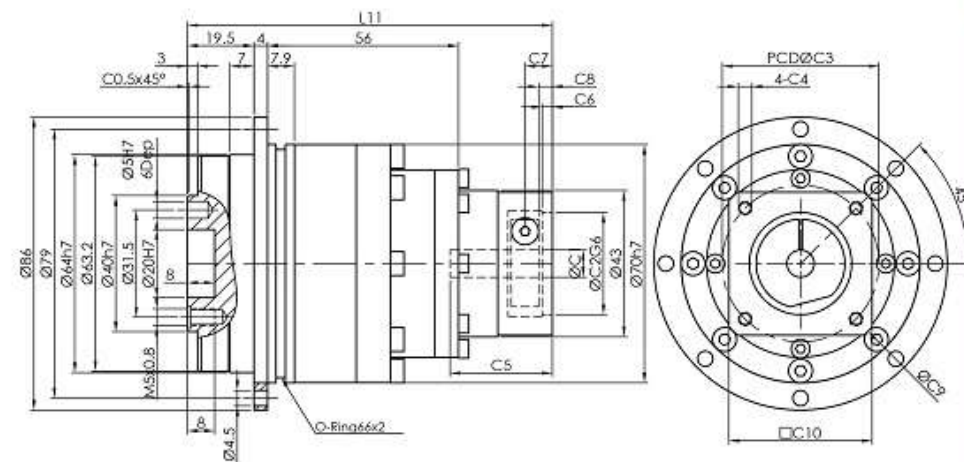
BD64		單節 1-stage				雙節 2-stages								
		減速比 ratio												
		4	5	7	10	20	25	35	40	50	70	100		
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	38	36	34	31	38	36	34	38	36	34	31		
急停力矩 Emergency Stop Torque	Nm	3倍額定輸出力矩 3times Nominal Output Torque												
最大加速力矩 T_{2B} Max. Accelerate Torque	Nm	68	65	61	56	68	65	61	68	65	61	56		
精密背隙 P1 BackLash	arcmin	≤ 3					≤ 5							
標準背隙 P2 BackLash		≤ 5					≤ 7							
扭轉剛性 Torsional Rigidity	Nm/arcmin	12					7.2							
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	3000												
最大輸入轉速 Max. Input Speed	rpm	6000												
最大彎曲力矩 M_{2KB} Max. Moment Load	Nm	113												
最大容許軸向力 F_{2aB} Max. Axial Load	N	890												
使用壽命 Life	hrs	20000												
使用溫度 Operating Temperature	℃	-10℃~+90℃												
潤滑 Lubrication		合成潤滑油脂 Lithium Complex Synthetic												
安裝方向 Mounting Position		任意方向 Any Direction												
噪音值 Running Noise	dB(A)	≤ 58												
效率 η Efficiency	%	$\geq 97\%$					$\geq 94\%$							
重量 Weight	kg	1.3					1.6							
防護 Protection Level		IP65												
尺寸位置 dimension Index		ϕ C1 Min Max	ϕ C2	ϕ C3	C4	C5	C6	C7	C8	ϕ C9	C10	L8	L11	
尺寸 dimension mm	L1	5		30	45	M3	31	4	11	6	80	60	36	92.5
				30	46	M4								
			50	70	M4/5									
	L2	8		30	45	M3	30	3	8	4	56	42	56	107
			30	46	M4									

尺寸圖 / Dimension

BD64-L1



BD64-L2



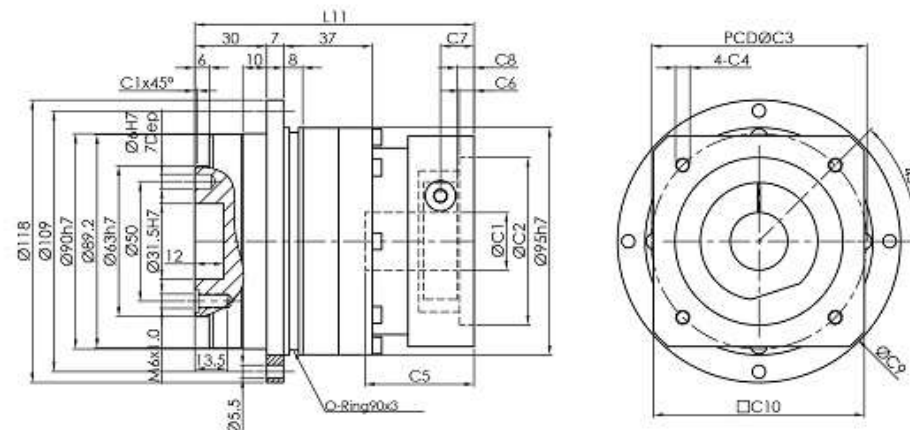
- 1: ϕ C1 請參照馬達軸徑尺寸 ϕ C1 Servomotor shaft Diameter
- 2: ϕ C2 及 PCD- ϕ C3, 減速機輸入端尺寸, 依馬達法蘭面而異
 ϕ C2 and PCD- ϕ C3, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

規格表 / Specifications

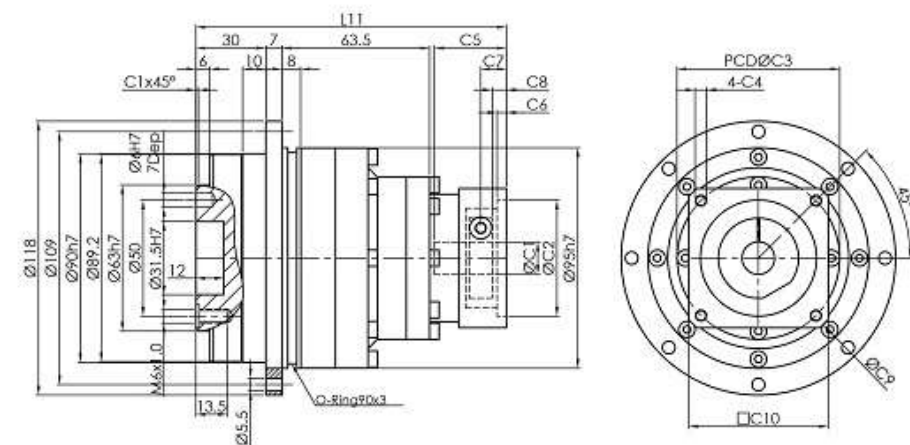
BD90		單節 1-stage				雙節 2-stages								
		減速比 ratio												
		4	5	7	10	20	25	35	40	50	70	100		
額定輸出力矩 T _{2N} Nominal Output Torque	Nm	122	117	110	102	122	117	110	122	117	110	102		
急停力矩 Emergency Stop Torque	Nm	3倍額定輸出力矩 3times Nominal Output Torque												
最大加速力矩 T _{2B} Max. Accelerate Torque	Nm	220	211	198	184	220	211	198	220	211	198	184		
超精密背隙 P0 Backlash	arcmin	≤ 1				≤ 3								
精密背隙 P1 Backlash		≤ 3				≤ 5								
標準背隙 P2 Backlash		≤ 5				≤ 7								
扭轉剛性 Torsional Rigidity	Nm/arcmin	28				16.8								
額定輸入轉速 n _{1N} Nominal Input Speed	rpm	3000												
最大輸入轉速 Max. Input Speed	rpm	6000												
最大彎曲力矩 M _{2KB} Max. Moment Load	Nm	212												
最大容許軸向力 F _{2aB} Max. Axial Load	N	2400												
使用壽命 Life	hrs	20000												
使用溫度 Operating Temperature	℃	-10℃~+90℃												
潤滑 Lubrication		合成潤滑油脂 Lithium Complex Synthetic												
安裝方向 Mounting Position		任意方向 Any Direction												
噪音值 Running Noise	dB(A)	≤ 60												
效率 η Efficiency	%	≥ 97%					≥ 94%							
重量 Weight	kg	3.8					4.2							
防護 Protection Level		IP65												
尺寸位置 dimension Index		φ C1		φ	φ					φ				
		Min	Max	C2	C3	C4	C5	C6	C7	C8	C9	C10	L8	L11
尺寸 dimension mm	L1	14	19	70	90	M5/6	45.5	6	14	7	116	88	37	116.5
				80	100	M6								
				30	45	M3								
				30	46	M4								
	L2	6	14	50	70	M4/5	31	4	11	6	80	60	63.5	133.5

尺寸圖 / Dimension

BD90-L1



BD90-L2



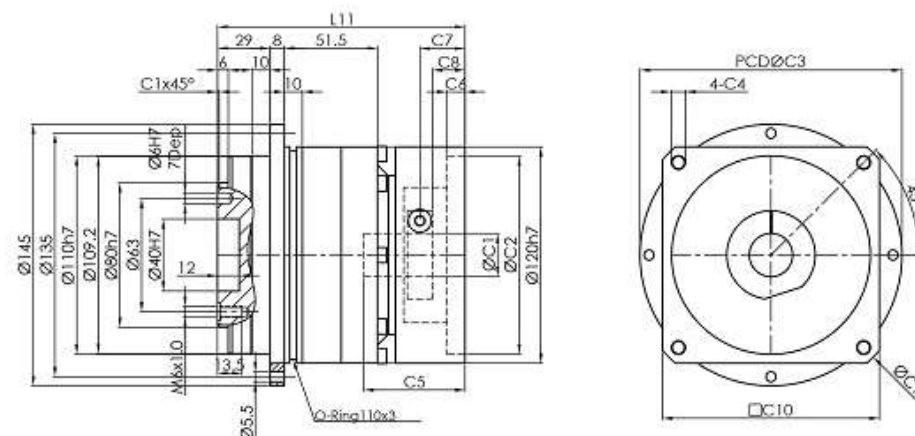
- 1: $\phi C1$ 請參照馬達軸尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 PCD- $\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and PCD- $\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

規格表 / Specifications

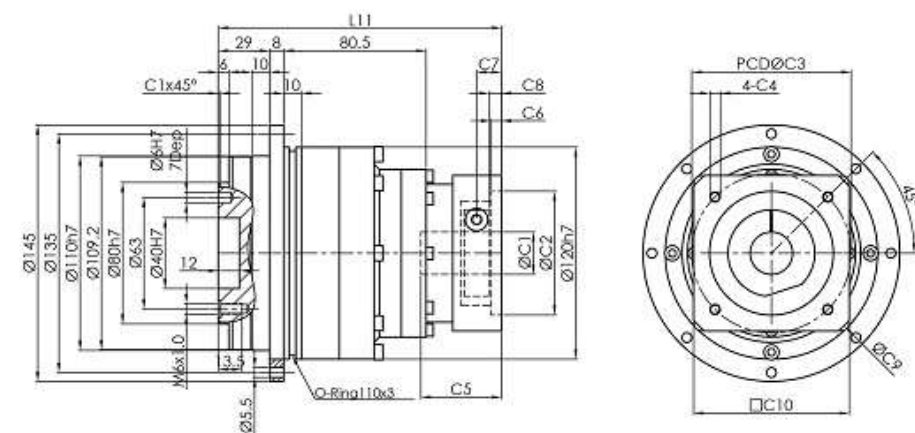
BD110		單節 1-stage				雙節 2-stages							
		減速比 ratio											
		4	5	7	10	20	25	35	40	50	70	100	
額定輸出力矩 T _{2N} Nominal Output Torque	Nm	250	240	225	208	250	240	225	250	240	225	208	
急停力矩 Emergency Stop Torque	Nm	3倍額定輸出力矩 3times Nominal Output Torque											
最大加速力矩 T _{2B} Max. Accelerate Torque	Nm	450	432	506	374	450	432	506	450	432	506	374	
超精密背隙 P0 Backlash	arcmin	≤ 1				≤ 3							
精密背隙 P1 Backlash		≤ 3				≤ 5							
標準背隙 P2 Backlash		≤ 5				≤ 7							
扭轉剛性 Torsional Rigidity	Nm/arcmin	74				45							
額定輸入轉速 n _{1N} Nominal Input Speed	rpm	3000											
最大輸入轉速 Max. Input Speed	rpm	6000											
最大彎曲力矩 M _{2KB} Max. Moment Load	Nm	385											
最大容許軸向力 F _{2aB} Max. Axial Load	N	2540											
使用壽命 Life	hrs	20000											
使用溫度 Operating Temperature	℃	-10℃~+90℃											
潤滑 Lubrication		合成潤滑油脂 Lithium Complex Synthetic											
安裝方向 Mounting Position		任意方向 Any Direction											
噪音值 Running Noise	dB(A)	≤ 63											
效率 η Efficiency	%	≥ 97%					≥ 94%						
重量 Weight	kg	6.9					8.0						
防護 Protection Level		IP65											
尺寸位置 dimension Index		φ C1 Min Max	φ C2	φ C3	C4	C5	C6	C7	C8	φ C9	C10	L8	L11
尺寸 dimension mm	L1	16 24	110 110	130 145	M8 M8	56	10	25	18	160	120	51.5	137
	L2	14 19	70 80	90 100	M5/6 M6	45.5	6	14	7	116	88	80.5	160

尺寸圖 / Dimension

BD110-L1



BD110-L2



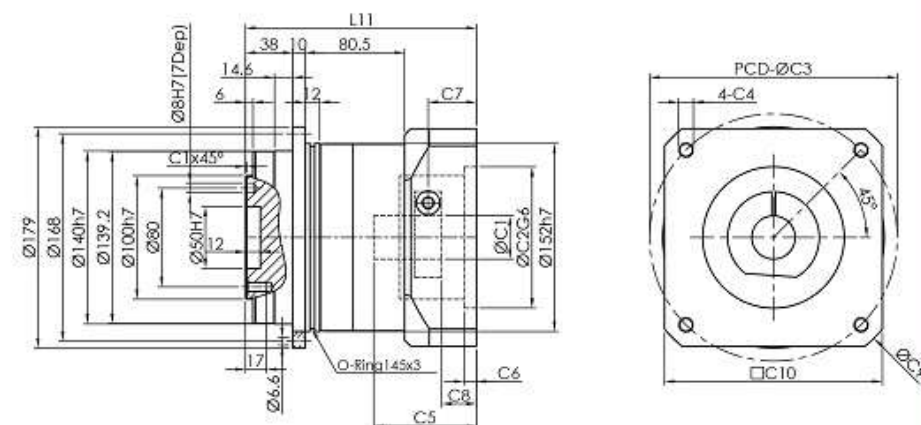
- 1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 $PCD-\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and $PCD-\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: $C5-Max$ 馬達軸最長長度 $C5-Max$ Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

規格表 / Specifications

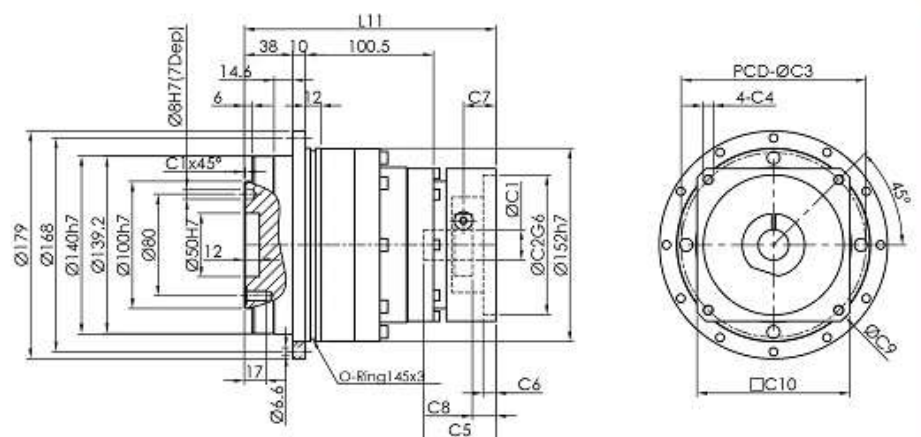
BD140		單節 1-stage				雙節 2-stages							
		減速比 ratio											
		4	5	7	10	20	25	35	40	50	70	100	
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	599	575	538	496	599	575	538	599	575	538	496	
急停力矩 Emergency Stop Torque	Nm	2.5倍額定輸出力矩 2.5times Nominal Output Torque											
最大加速力矩 T_{2B} Max. Accelerate Torque	Nm	1078	1035	968	893	1078	1035	968	1078	1035	968	893	
超精密背隙 P0 Backlash	arcmin	≤ 1				≤ 3							
精密背隙 P1 Backlash		≤ 3				≤ 5							
標準背隙 P2 Backlash		≤ 5				≤ 7							
扭轉剛性 Torsional Rigidity	Nm/arcmin	108				65							
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	2500											
最大輸入轉速 Max. Input Speed	rpm	5000											
最大彎曲力矩 M_{2KB} Max. Moment Load	Nm	1170											
最大容許軸向力 F_{2aB} Max. Axial Load	N	9000											
使用壽命 Life	hrs	20000											
使用溫度 Operating Temperature	℃	-10℃~+90℃											
潤滑 Lubrication		合成潤滑油脂 Lithium Complex Synthetic											
安裝方向 Mounting Position		任意方向 Any Direction											
噪音值 Running Noise	dB(A)	≤ 68											
效率 η Efficiency	%	$\geq 97\%$					$\geq 94\%$						
重量 Weight	kg	15.5					15.9						
防護 Protection Level		IP65											
尺寸位置 dimension Index		ϕ C1 Min Max	ϕ C2	ϕ C3	C4	C5	C6	C7	C8	ϕ C9	C10	L8	L11
尺寸 dimension mm	L1	22 24	110 130 110 145	M8 M8	71	8	29	20	174	130	87	175	
		35 42	114.3 200 180 215	M12 M12									
	L2	19 24	110 130 110 145	M8 M8	57	10	25.5	19	160	120	100.5	197.5	

尺寸圖 / Dimension

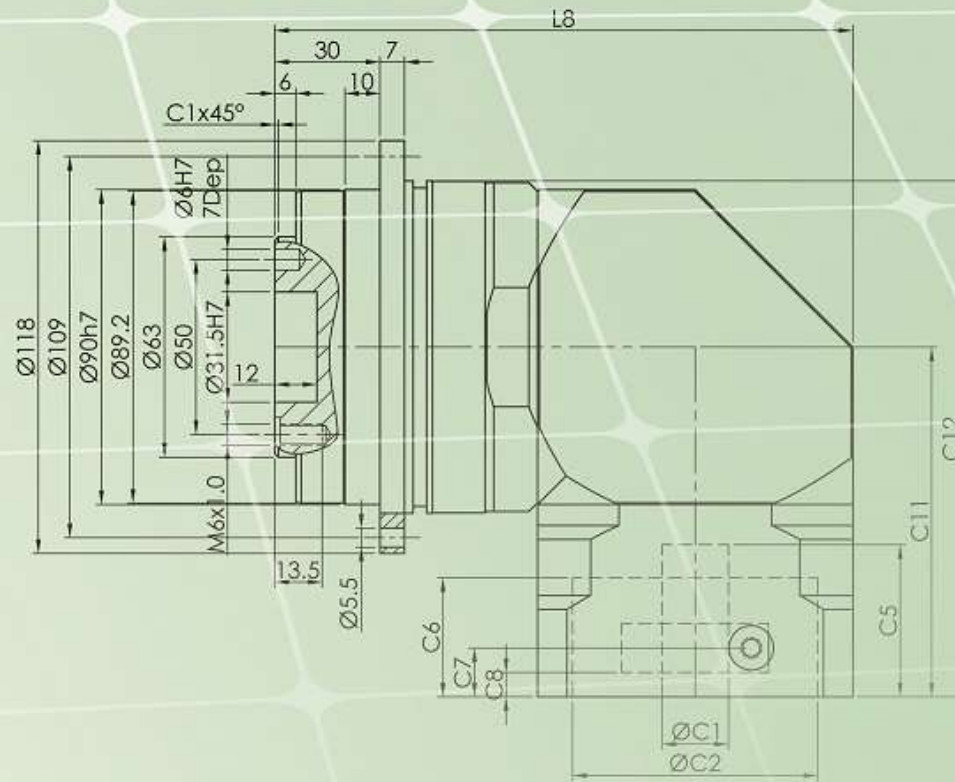
BD140-L1



BD140-L2



- 1: $\phi C1$ 請參照馬達軸尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 $PCD-\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and $PCD-\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: $C5$ -Max 馬達軸最長長度 $C5$ -Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer



BDR series



產品特性 Production Feature



- 行星齒內孔使用滿針滾針軸, 耐磨, 高精度
- Use full arrange needle pin for anti-abrasion and higher precision.



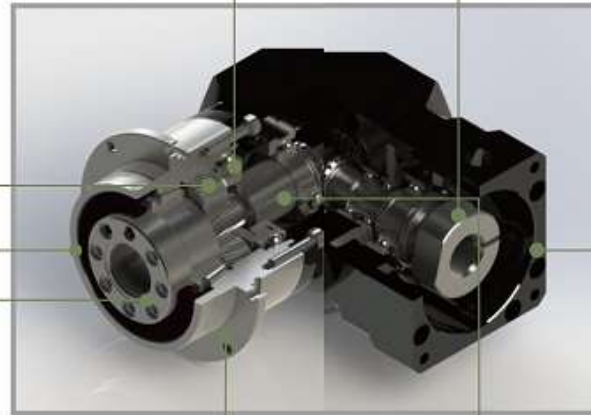
- 軸承背隙與組裝公差調整元件
- 1> 調整前後軸承背隙及組裝時的公差, 將出力法蘭的偏擺降到最低
- 2> 可固定行星齒滾針軸
- Bearings and assembly tolerance adjust part
- 1> Adjustment the bearings backlash and assembly tolerance, to reduce the output flange swing.
- 2> Could fix the planetary gear needle shaft



- 輸入軸
- 使用筒夾式鎖緊機構, 並經動平衡校正, 以確保在高速運轉下, 其結合界面的同心度與馬達軸的零背隙傳遞動力
- Input Shaft The collet design and dynamic balance, ensure the servomotor and input shaft interface are zero backlash.



- 輸入法蘭與內齒環
- 輸入法蘭與內齒環使用高精密軸承為組裝時的引導, 能使輸入到輸出端有最佳的同心度, 降低震動
- Input Flange and Inner Gear Box
- The input flange using high precision bearing to lead assembly, Let the input to output shaft center has excellent concentricity for reduce vibration.



- 入力處設計一組 IP65 防護等級油封, 確保潤滑油不洩漏
- With IP65 grade oil seal, to protect the lubricant is not leak.



- 輸出軸
- 一體式設計, 確保行星齒能精確的傳動, 前後軸承大跨距設計與較大的軸承, 有效的提高軸承壽命與最大的軸/徑向力
- Output Shaft
- Shaft is One-Piece design with output flange, for ensure the parts have excellent concentricity. Enlarge the front bearing and largerspan to rear bearing for largest radial and axial loading.



- 內齒環
- 高強度合金鋼, 螺旋齒設計, 高精度, 耐磨耗, 低噪音.
- Inner Gear Box
- High strength alloy steel. Gear is Helical gear design for high-precision, high abrasion and lower noise.



- 太陽齒/行星齒
- 1: 高強度合金鋼, 表面高硬度, 耐磨耗, 高韌性
- 2: 螺旋齒型設計, 高傳動能力, 低噪音, 低震動
- Sun/Planetary Gear
- 1: High strength alloy steel, high hardness of surface, anti-abrasion and high impact.
- 2: Gear is Helical gear design, high efficiency, lower noise and lower vibration.

規格總表 Specifications Data

規格 Specifications	單位 Unit	段數 Stage	減速比 Ratio	BD47R	BD64R	BD90R	BD110R	BD140R	BD200R
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	L1	4	12.0	38	122	250	599	1103
			5	14.0	36	117	240	575	1058
			7	-	34	110	225	538	992
			8	12.0	38	122	250	599	1103
			10	10.8	31	112	208	496	918
			14	-	34	102	225	538	992
			16	12.0	-	-	-	-	-
			20	10.8	31	112	208	496	918
		L2	25	14.0	36	117	240	575	1058
			35	-	34	110	225	538	992
			40	12.0	38	122	250	599	1103
			50	14.0	36	117	240	575	1058
			70	-	34	110	225	538	992
			80	12.0	38	122	250	599	1103
			100	10.8	36	117	240	575	1058
			140	-	34	110	225	538	992
			200	10.8	31	112	208	496	918
急停力矩 Emergency Stop Torque	Nm	L1,L2	4~200	3倍額定輸出力矩 3times Nominal Output Torque			2.5倍額定輸出力矩 2.5times Nominal Output Torque		
額定輸入轉速 n_{IN} Nominal Input Speed	rpm	L1,L2	4~200	3000	3000	3000	3000	2500	2500
最大輸入轉速 Max. Input Speed	rpm	L1,L2	4~200	6000	6000	6000	6000	5000	5000
超精密背隙 P0 Backlash	arcmin	L1	4~20	-	-	≤4	≤4	≤4	≤4
精密背隙 P1 Backlash		L2	20~200	-	-	≤6	≤6	≤6	≤6
標準背隙 P2 Backlash		L1	4~20	≤6	≤6	≤6	≤6	≤6	≤6
		L2	20~200	≤8	≤8	≤8	≤8	≤8	≤8
扭轉剛性 Torsional Rigidity	Nm/arcmin	L1	4~20	6	12	28	74	108	396
		L2	20~200	3.6	7.2	16.8	45	65	238
最大彎曲力矩 M_{2KB} Max. Moment Load	Nm	L1,L2	4~200	38	113	212	385	1170	2758
最大容許軸向力 F_{2aB} Max. Axial Load	N	L1,L2	4~200	840	890	2400	2540	9000	14200
使用壽命 Life	hrs	L1,L2	4~200	20,000					
使用溫度 Operating Temperature	℃	L1,L2	4~200	-10℃~+90℃					
潤滑 Lubrication		L1,L2	4~200	合成潤滑油脂 Lithium Complex Synthetic					
安裝方向 Mounting Position		L1,L2	4~200	任意方向 Any Direction					
噪音值 Running Noise	dB(A)	L1,L2	4~200	≤62	≤64	≤66	≤68	≤72	≤74
效率 η Efficiency	%	L1	4~20	≥94%					
		L2	20~200	≥91%					
重量 Weight	kg	L1	4~20	0.9	2.2	5.9	11.5	23.9	52.5
		L2	20~200	1.3	2.0	3.9	8.2	22.2	48.7
防護 Protection Level		L1,L2	4~200	IP65					

轉動慣量表 Moment of Inertia Table

BDR 轉動慣量總表 Moment of Inertia Table														
Unit	kg.cm ²	型號 Model												
節數 Stage	減速比 Ratio	BD47R	BD64R	BD90R				BD110R		BD140R			BD200R	
		伺服馬達軸直徑 Servomotor Shaft Diameter												
		≤ ϕ 8	ϕ 8	ϕ 14	ϕ 14	ϕ 19	ϕ 24	ϕ 19	ϕ 24	ϕ 24	ϕ 35	ϕ 42	ϕ 35	ϕ 42
單 節 1- stage	4	0.02		0.08		0.53	0.48		1.64	3.5	7.2	6.8	28.8	27.9
	5	0.02		0.08		0.53	0.48		1.64	3.5	7.2	6.8	28.8	27.9
	7	-		0.08		0.53	0.48		1.64	3.5	7.2	6.8	28.8	27.9
	8	0.02		0.08		0.5	0.45		1.52	3.1	6.8	6.4	26.7	25.8
	10	0.02		0.08		0.5	0.45		1.52	3.1	6.8	6.4	26.7	25.8
	14	-		0.08		0.5	0.45		1.52	3.1	6.8	6.4	26.7	25.8
	16	0.02		-		-	-		-	-	-	-	-	-
	20	0.02		0.08		0.5	0.45		1.52	3.1	6.8	6.4	26.7	25.8
雙 節 2- stages	25	0.02	0.02		0.08	0.53	0.48	0.53	1.64	1.64			7.2	6.8
	35	-	0.02		0.08	0.53	0.48	0.53	1.64	1.64			7.2	6.8
	40	0.02	0.02		0.08	0.5	0.45	0.5	1.52	1.52			6.8	6.4
	50	0.02	0.02		0.08	0.5	0.45	0.5	1.52	1.52			6.8	6.4
	70	-	0.02		0.08	0.5	0.45	0.5	1.52	1.52			6.8	6.4
	80	0.02	0.02		0.08	0.5	0.45	0.5	1.52	1.52			6.8	6.4
	100	0.02	0.02		0.08	0.5	0.45	0.5	1.52	1.52			6.8	6.4
	140	-	0.02		0.08	0.5	0.45	0.5	1.52	1.52			6.8	6.4
	160	0.02	-		-	-	-	-	-	-			-	-
	200	0.02	0.02		0.08	0.5	0.45	0.5	1.52	1.52			6.8	6.4

- 1: 減速比=伺服馬達輸入轉速(rpm)/減速機輸出軸轉速(rpm) / Ratio=Servomotor Input Speed(rpm) / Reducer Output Speed(rpm)
- 2: 背隙值為在2%額定扭力的扭力定義下測得 / Backlash values is base on 2% nominal output torque testing.
- 3: 徑向力/軸向力與壽命,是在輸出轉速100rpm,且作用力在輸出軸中心
Radial/Axial load and Life are base on Reducer output speed 100rpm and Force at the shaft midpoint.
- 4: 連續運轉時,壽命為一半 / Continuity operating, the life will be reduce to 50%.
- 5: 噪音為伺服馬達輸入轉速3000rpm,減速機速比10比,無負載,距減速機 1M 的情況下所測得
The Noise is base on Servomotor input 3000rpm, gear Ratio 10, unloading and from 1M to reducer testing.
- 6: 如有特殊規格請洽各區域的代理/經銷商 / If any special specific, Please visit our Agent / Dealer.

型號
Model NO.

減速比
Gear Ratio

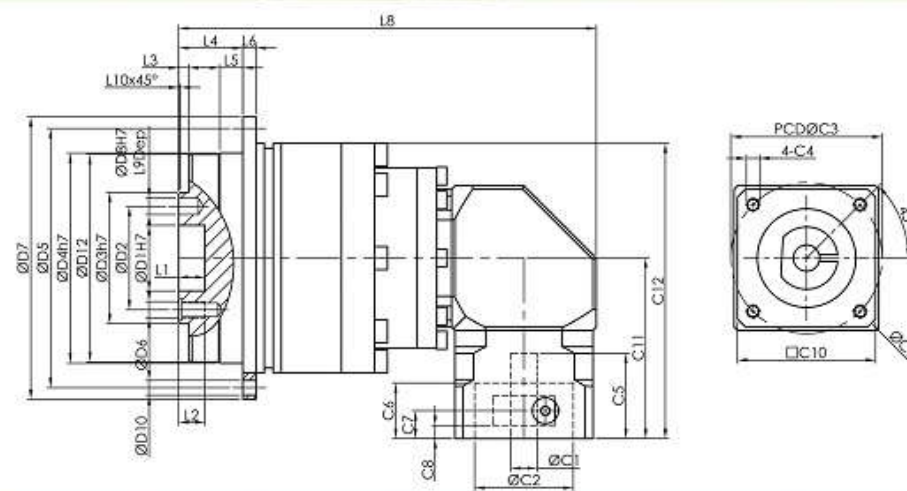
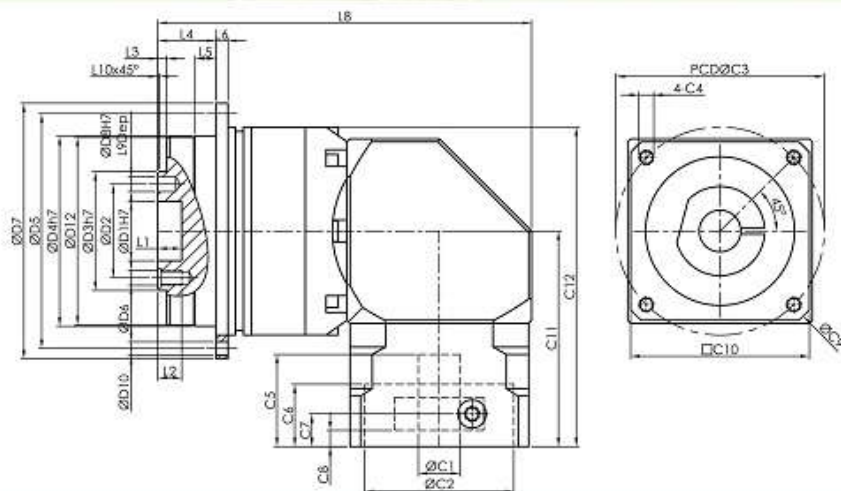
伺服馬達品牌及型號
Servomotor Brand and Model

BD64R - L1 - 10 - P1 - Motor

段數
Stage

背隙
Backlash

L1: 一段 1 stage
L2: 二段 2 stage
 P0: 超精密背隙 Hyper precision
P1: 精密背隙 Precision
P2: 標準背隙 Standard



型號	Model	BD47R	BD64R	BD90R	BD110R	BD140R	BD200R
D	D1 <i>H7</i>	12	20	31.5	40	50	80
	D2	20	31.5	50	63	80	125
	D3 <i>H7</i>	28	40	63	80	100	160
	D4 <i>H7</i>	47	64	90	110	140	200
	D5	67	79	109	135	168	233
	D6	4xM3xP0.7	7xM5xP0.8	7xM6xP1.0	11xM6xP1.0	11xM8xP1.25	11xM10P1.5
	D7	72	86	118	145	179	247
	D8 <i>H7</i>	3	5	6	6	8	10
	D10	8x3.4	8x4.5	8x5.5	8x5.5	12x6.6	12x9
	D11 <i>H7</i>	60	70	95	120	152	212
	D12	46.2	63.2	89.2	109.2	139.2	199.2
L	L1	4	8	12	12	12	16
	L2	6.5	8	13.5	13.5	17	22.5
	L3	3	3	6	6	6	8
	L4	19.5	19.5	30	29	38	50
	L5	7	7	10	10	14.6	15
	L6	4	4	7	8	6	12
	L7	5	7.9	8	10	12	15
	L8	88	125.5	165	203.5	269	329.5
	L9	4	6	7	7	7	10
		L10	0.5	0.5	1	1	1
C	*C1 <i>H7</i>	8	14	19	24	35	42
	*C2 <i>H7</i>	30	50	70	110	114.3	180
	*C3	46	70	90	145	200	215
	*C4	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25	M12xP1.75	M12xP1.75
	*C5	30	31	45.5	56	83	83
	*C6	3	4	6	10	10	8
	*C7	8	11	14	25	39	26
	*C8	4	6	7	18	28	14
	*C9	56	80	116	160	230	250
	*C10	42	60	88	120	176	190
	*C11	55	72.5	100	127.5	169.5	194
		*C12	85	107.5	147	187.5	245
O	OD	56x2	66x2	90x3	110x3	145x3	200x5

* C1-C12 是依各廠牌的伺服馬達尺寸而定 * C1-C12 depends on servo motor dimension

型號 Model	BD47R	BD64R	BD90R	BD110R	BD140R	BD200R	
D	D1 <i>H7</i>	12	20	31.5	40	50	80
	D2	20	31.5	50	63	80	125
	D3 <i>h7</i>	28	40	63	80	100	160
	D4 <i>h7</i>	47	64	90	110	140	200
	D5	67	79	109	135	168	233
	D6	4xM3xP0.7	7xM5xP0.8	7xM6xP1.0	11xM6xP1.0	11xM8xP1.25	11xM10P1.5
	D7	72	86	118	145	179	247
	D8 <i>H7</i>	3	5	6	6	8	10
	D10	8x3.4	8x4.5	8x5.5	8x5.5	12x6.6	12x9
	D11 <i>h7</i>	60	70	95	120	152	212
D12	46.2	63.2	89.2	109.2	139.2	199.2	
L	L1	4	8	12	12	12	16
	L2	6.5	8	13.5	13.5	17	22.5
	L3	3	3	6	6	6	8
	L4	19.5	19.5	30	29	38	50
	L5	7	7	10	10	14.6	15
	L6	4	4	7	8	6	12
	L7	5	7.9	8	10	12	15
	L8	109	127	166.5	208.5	263.5	351
	L9	4	6	7	7	7	10
	L10	0.5	0.5	1	1	1	1
C	*C1 <i>H7</i>	8	8	14	19	24	35
	*C2 <i>H7</i>	30	30	50	70	110	114.3
	*C3	46	46	70	90	145	200
	*C4	M4x0.7P	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25	M12xP1.75
	*C5	30	30	31	45.5	56	83
	*C6	3	3	4	6	10	10
	*C7	8	8	11	14	25	39
	*C8	4	4	6	7	18	28
	*C9	56	56	80	116	160	230
	*C10	42	42	60	88	120	176
	*C11	55	55	72.5	100	127.5	169.5
	*C12	85	90	120	160	203	274.5
O	OD 56x2	66x2	90x3	110x3	145x3	200x5	

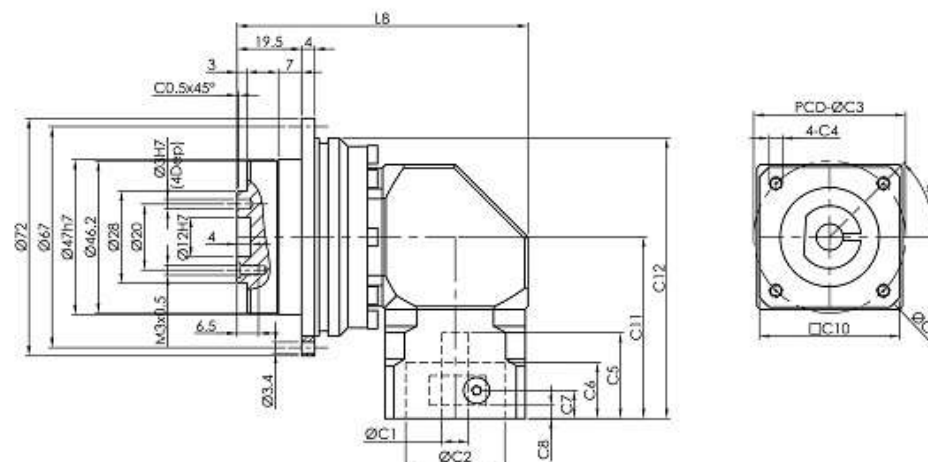
* C1-C12 是依各廠牌的伺服馬達尺寸而定 * C1-C12 depends on servo motor dimension

規格表 / Specifications

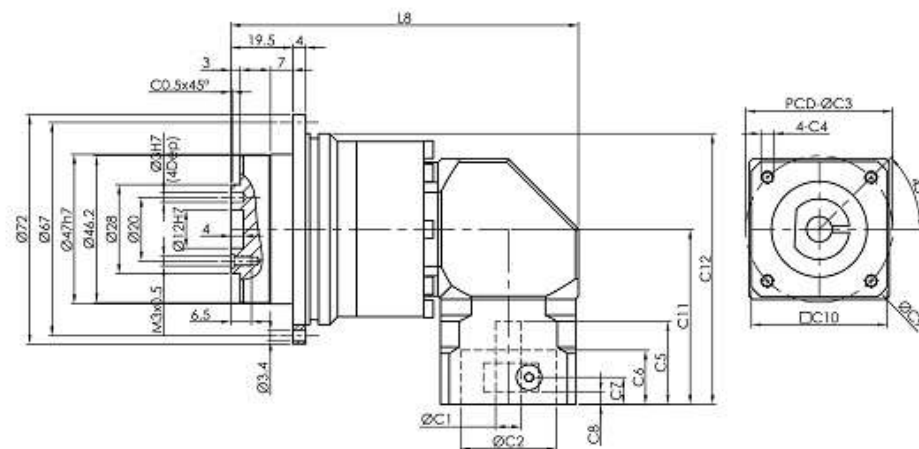
BD47R		單節 1-stage						雙節 2-stages						
		減速比 ratio												
		4	5	8	10	16	20	25	40	50	80	100	160	200
額定輸出力矩 T _{2N} Nominal Output Torque	Nm	12.0	14.0	12.9	10.8	12.9	10.8	14.0	12.0	14.0	12.0	14.0	12.9	10.8
急停力矩 Emergency Stop Torque	Nm	3倍額定輸出力矩 3times Nominal Output Torque												
最大加速力矩 T _{2B} Max. Accelerate Torque	Nm	22	25	23	19	23	19	25	22	25	22	25	23	19
精密背隙 P1 Backlash	arcmin	≤ 6						≤ 8						
標準背隙 P2 Backlash		≤ 8						≤ 10						
扭轉剛性 Torsional Rigidity	Nm/arcmin	6						3.6						
額定輸入轉速 n _{1N} Nominal Input Speed	rpm	3000												
最大輸入轉速 Max. Input Speed	rpm	6000												
最大彎曲力矩 M _{2XB} Max. Moment Load	Nm	38												
最大容許軸向力 F _{2aB} Max. Axial Load	N	840												
使用壽命 Life	hrs	20000												
使用溫度 Operating Temperature	℃	-10℃~-90℃												
潤滑 Lubrication		合成潤滑油脂 Lithium Complex Synthetic												
安裝方向 Mounting Position		任意方向 Any Direction												
噪音值 Running Noise	dB(A)	≤ 62												
效率 η Efficiency	%	≥ 94%						≥ 91%						
重量 Weight	kg	0.9						1.3						
防護 Protection Level		IP65												
尺寸位置 dimension Index		φ C1 Min Max	φ C2	φ C3	C4	C5	C6	C7	C8	φ C9	C10	C11	C12	L8
尺寸 dimension mm	L1	5 8	30	45	M3	26	17	8.5	4	56	42.5	55	85	88
			30	46	M4									
	L2		30	45	M3									
			30	46	M4									

尺寸圖 / Dimension

BD47R-L1



BD47R-L2

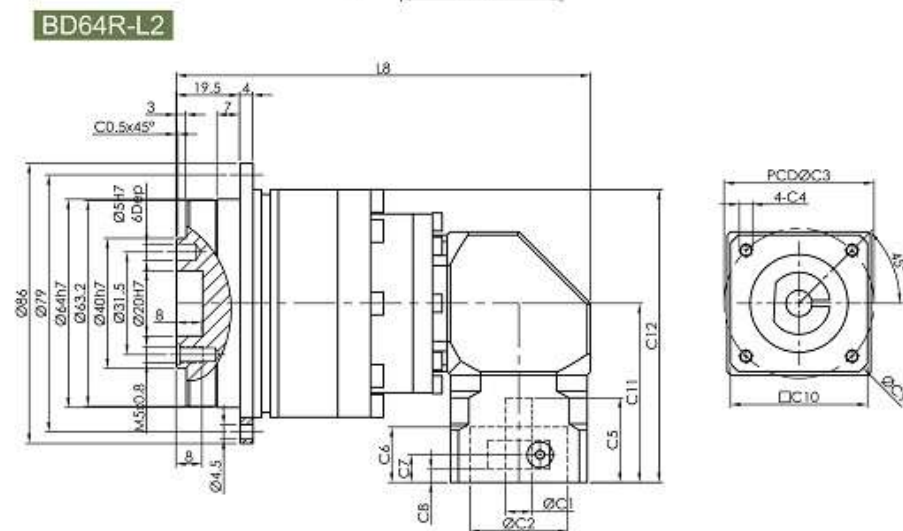
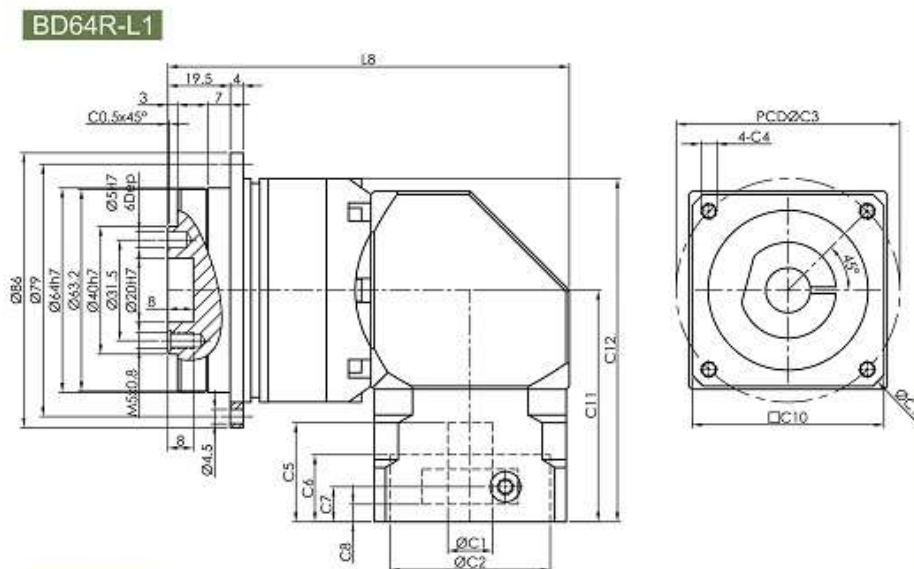


- 1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 PCD- $\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and PCD- $\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

規格表 / Specifications

BD64R		單節 1-stage										雙節 2-stages									
		減速比 ratio																			
		4	5	7	8	10	14	20	25	35	40	50	70	80	100	140	200				
額定輸出力矩 T _{2N} Nominal Output Torque	Nm	38	36	34	38	36	34	31	36	34	38	36	34	38	36	34	31				
急停力矩 Emergency Stop Torque	Nm	3倍額定輸出力矩 3times Nominal Output Torque																			
最大加速力矩 T _{2B} Max. Accelerate Torque	Nm	68	97	61	74	88	61	68	97	61	68	97	61	68	97	61	68				
精密背隙 P1 Backlash	arcmin	≤ 6										≤ 8									
標準背隙 P2 Backlash		≤ 8										≤ 10									
扭轉剛性 Torsional Rigidity	Nm/arcmin	12										7.2									
額定輸入轉速 n _{1N} Nominal Input Speed	rpm	3000																			
最大輸入轉速 Max. Input Speed	rpm	6000																			
最大彎曲力矩 M _{2KB} Max. Moment Load	Nm	113																			
最大容許軸向力 F _{2aB} Max. Axial Load	N	890																			
使用壽命 Life	hrs	20000																			
使用溫度 Operating Temperature	℃	-10℃~+90℃																			
潤滑 Lubrication		合成潤滑油脂 Lithium Complex Synthetic																			
安裝方向 Mounting Position		任意方向 Any Direction																			
噪音值 Running Noise	dB(A)	≤ 64																			
效率 η Efficiency	%	≥ 94%										≥ 91%									
重量 Weight	kg	2.2										2.0									
防護 Protection Level		IP65																			
尺寸位置 dimension Index		φ C1 Min Max	φ C2	φ C3	C4	C5	C6	C7	C8	φ C9	C10	C11	C12	L8							
尺寸 dimension mm	L1	5	14	30	45	M3															
			30	46	M4	31	21	11	5.5	80	60	72.5	107.5	125.5							
	L2	8	50	70	M5																
			30	45	M3	26	17	8.5	4	56	42.5	55	90	127							
			30	46	M4																

尺寸圖 / Dimension



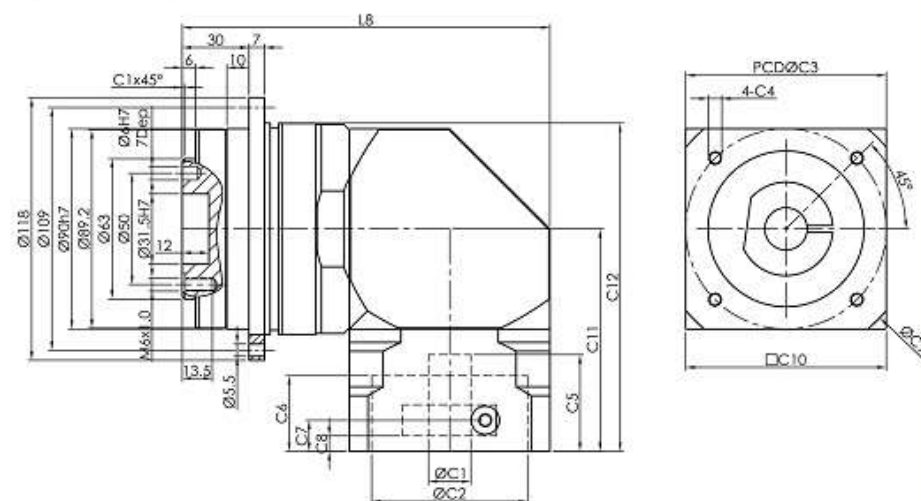
- 1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 $PCD-\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and $PCD-\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: $C5$ -Max 馬達軸最長長度 $C5$ -Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

規格表 / Specifications

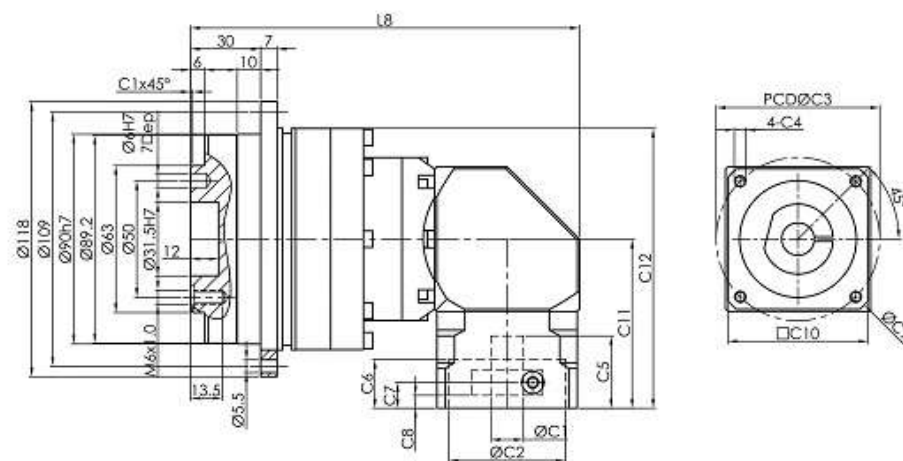
BD90R		單節 1-stage								雙節 2-stages							
		減速比 ratio															
		4	5	7	8	10	14	20	25	35	40	50	70	80	100	140	200
額定輸出力矩 T _{2N} Nominal Output Torque	Nm	122	117	110	122	117	110	102	117	110	122	117	110	122	117	110	102
急停力矩 Emergency Stop Torque	Nm	3倍額定輸出力矩 3times Nominal Output Torque															
最大加速力矩 T _{2B} Max. Accelerate Torque	Nm	220	211	198	220	211	198	184	211	198	220	211	198	220	211	198	184
超精密背隙 P0 Backlash	arcmin	≤ 4								≤ 6							
精密背隙 P1 Backlash		≤ 6								≤ 8							
標準背隙 P2 Backlash		≤ 8								≤ 10							
扭轉剛性 Torsional Rigidity	Nm/arcmin	28								16.8							
額定輸入轉速 n _{1N} Nominal Input Speed	rpm	3000															
最大輸入轉速 Max. Input Speed	rpm	6000															
最大彎曲力矩 M _{2KB} Max. Moment Load	Nm	212															
最大容許軸向力 F _{2aB} Max. Axial Load	N	2400															
使用壽命 Life	hrs	20000															
使用溫度 Operating Temperature	℃	-10℃~+90℃															
潤滑 Lubrication		合成潤滑油脂 Lithium Complex Synthetic															
安裝方向 Mounting Position		任意方向 Any Direction															
噪音值 Running Noise	dB(A)	≤ 66															
效率 η Efficiency	%	≥ 94%								≥ 91%							
重量 Weight	kg	5.9								3.9							
防護 Protection Level		IP65															
尺寸位置 dimension Index		φ C1 Min Max	φ C2	φ C3	C4	C5	C6	C7	C8	φ C9	C10	C11	C12	L8			
尺寸 dimension mm	L1	14 19	70 80	90 100	M5 M6	43.5	30	14	7	116	90	100	150	165			
	L2	5 14	30 50	45 70	M3 M5	31	21	11	5.5	80	60	72.5	120	166.5			
			30 46	M4													

尺寸圖 / Dimension

BD90R-L1



BD90R-L2



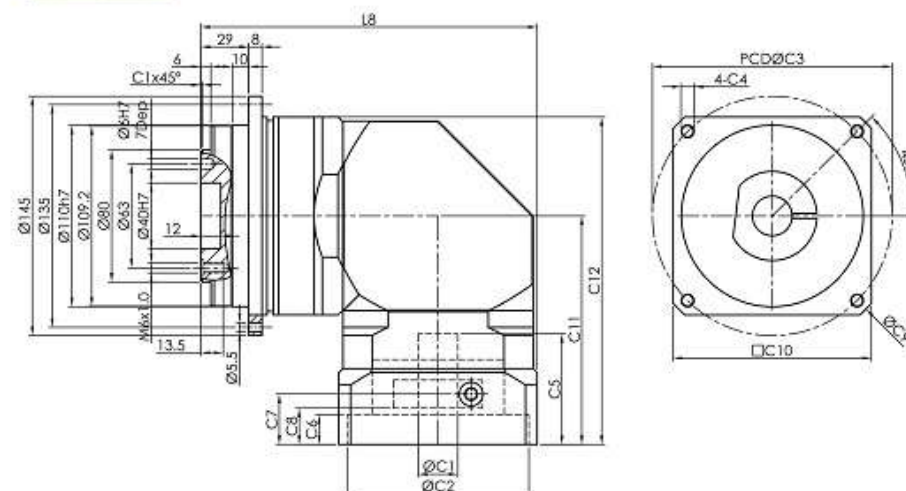
- 1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 PCD- $\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and PCD- $\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

規格表 / Specifications

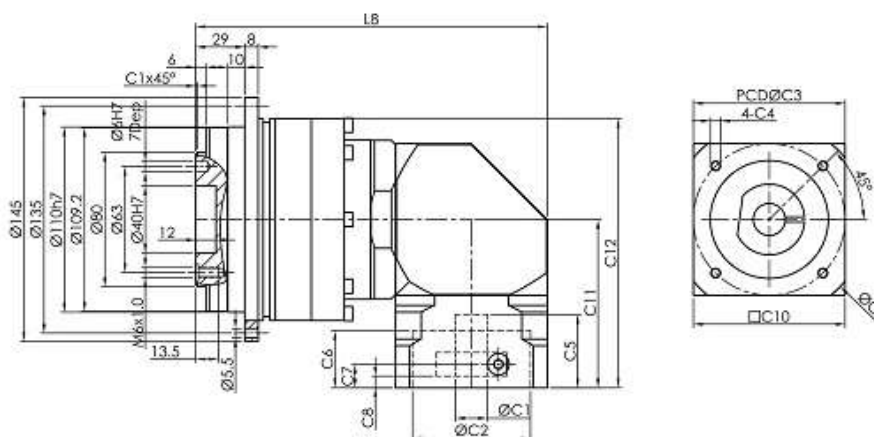
BD110R		單節 1-stage										雙節 2-stages									
		減速比 ratio																			
		4	5	7	8	10	14	20	25	35	40	50	70	80	100	140	200				
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	250	240	225	250	240	225	208	240	225	250	240	225	250	240	225	208				
急停力矩 Emergency Stop Torque	Nm	3倍額定輸出力矩 3times Nominal Output Torque																			
最大加速力矩 T_{2B} Max. Accelerate Torque	Nm	450	432	405	450	432	405	374	432	405	450	432	405	450	432	405	374				
超精密背隙 P0 Backlash	arcmin	≤ 4								≤ 6											
精密背隙 P1 Backlash		≤ 6								≤ 8											
標準背隙 P2 Backlash		≤ 8								≤ 10											
扭轉剛性 Torsional Rigidity	Nm/arcmin	74								45											
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	2500																			
最大輸入轉速 Max. Input Speed	rpm	5000																			
最大彎曲力矩 M_{2KB} Max. Moment Load	Nm	385																			
最大容許軸向力 F_{2aB} Max. Axial Load	N	2540																			
使用壽命 Life	hrs	20000																			
使用溫度 Operating Temperature	℃	-10℃~+90℃																			
潤滑 Lubrication		合成潤滑油脂 Lithium Complex Synthetic																			
安裝方向 Mounting Position		任意方向 Any Direction																			
噪音值 Running Noise	dB(A)	≤ 68																			
效率 η Efficiency	%	$\geq 94\%$								$\geq 91\%$											
重量 Weight	kg	11.5								8.2											
防護 Protection Level		IP65																			
尺寸位置 dimension Index		$\phi C1$ Min Max	$\phi C2$	$\phi C3$	C4	C5	C6	C7	C8	$\phi C9$	C10	C11	C12	L8							
尺寸 dimension mm	L1	22 24	110 130	M8	56	10	20	11	152	115	128	193	201								
			110 145	M8	67	18	30.5	22	160	120	138.5	203.5	203.5								
	L2	14 19	70 90	M6	43.5	30	14	7	116	90	100	160	208.5								

尺寸圖 / Dimension

BD110R-L1



BD110R-L2



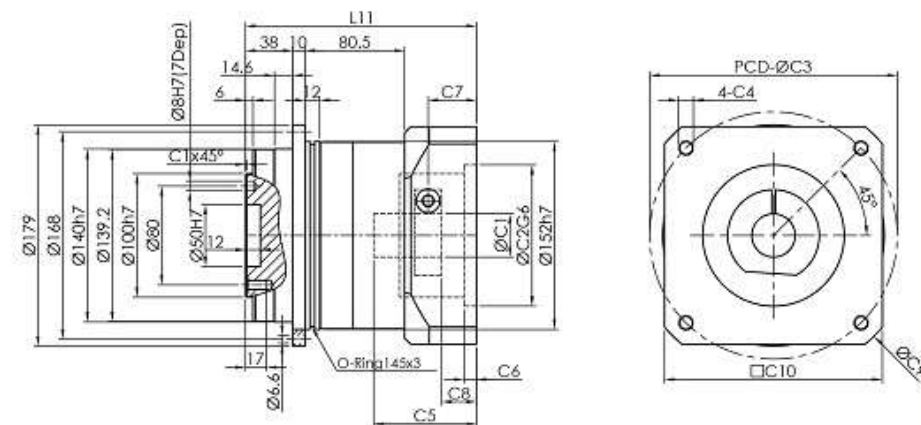
- 1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 PCD- $\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and PCD- $\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: C5-Max 馬達軸最長長度 C5-Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

規格表 / Specifications

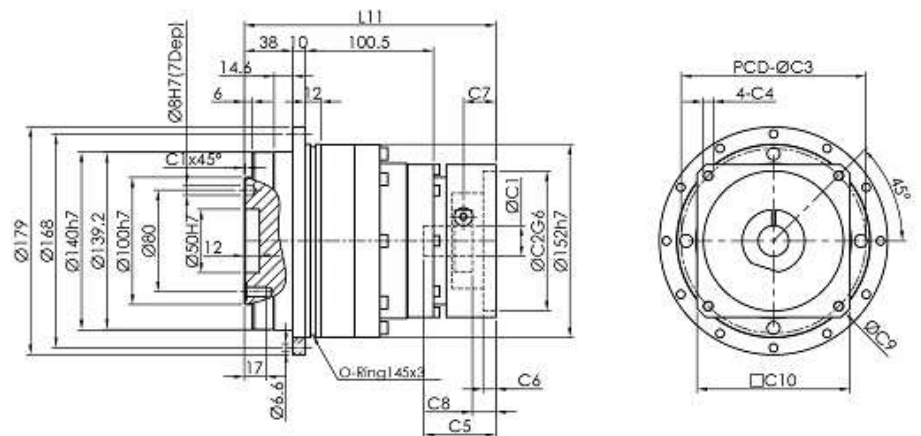
BD140R		單節 1-stage								雙節 2-stages							
		減速比 ratio															
		4	5	7	8	10	14	20	25	35	40	50	70	80	100	140	200
額定輸出力矩 T_{2N} Nominal Output Torque	Nm	599	575	538	599	575	538	496	575	538	599	575	538	599	575	538	575
急停力矩 Emergency Stop Torque	Nm	2.5倍額定輸出力矩 2.5times Nominal Output Torque															
最大加速力矩 T_{2B} Max. Accelerate Torque	Nm	1078	1035	968	1078	1035	968	893	1035	968	1078	1035	968	1078	1035	968	1035
超精密背隙 P0 Backlash	arcmin	≤ 4								≤ 6							
精密背隙 P1 Backlash		≤ 6								≤ 8							
標準背隙 P2 Backlash		≤ 8								≤ 10							
扭轉剛性 Torsional Rigidity	Nm/arcmin	108								65							
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	2500															
最大輸入轉速 Max. Input Speed	rpm	5000															
最大彎曲力矩 M_{2KB} Max. Moment Load	Nm	1170															
最大容許軸向力 F_{2aB} Max. Axial Load	N	9000															
使用壽命 Life	hrs	20000															
使用溫度 Operating Temperature	℃	-10℃~+90℃															
潤滑 Lubrication		合成潤滑油脂 Lithium Complex Synthetic															
安裝方向 Mounting Position		任意方向 Any Direction															
噪音值 Running Noise	dB(A)	≤ 72															
效率 η Efficiency	%	$\geq 94\%$								$\geq 91\%$							
重量 Weight	kg	23.9								22.2							
防護 Protection Level		IP65															
尺寸位置 dimension Index		$\phi C1$ Mm	Max	$\phi C2$	$\phi C3$	C4	C5	C6	C7	C8	$\phi C9$	C10	C11	C12	L8		
尺寸 dimension mm	L1	22	24	110	130	M8	71	40	28.5	20	182	142	157.5	233	252		
				110	145	M8											
	35	42	114.3	200	M12	83	20	39	27.5	230	176	169.5	245	269			
			180	215	M12	118	10	66	54.5	250	190	204.5	280	271			
L2	22	24	110	130	M8	56	10	19.5	11	152	115	127.5	203	261			
			110	145	M8	67	18	30.5	22	160	120	138.5	214	263.5			

尺寸圖 / Dimension

BD140R-L1

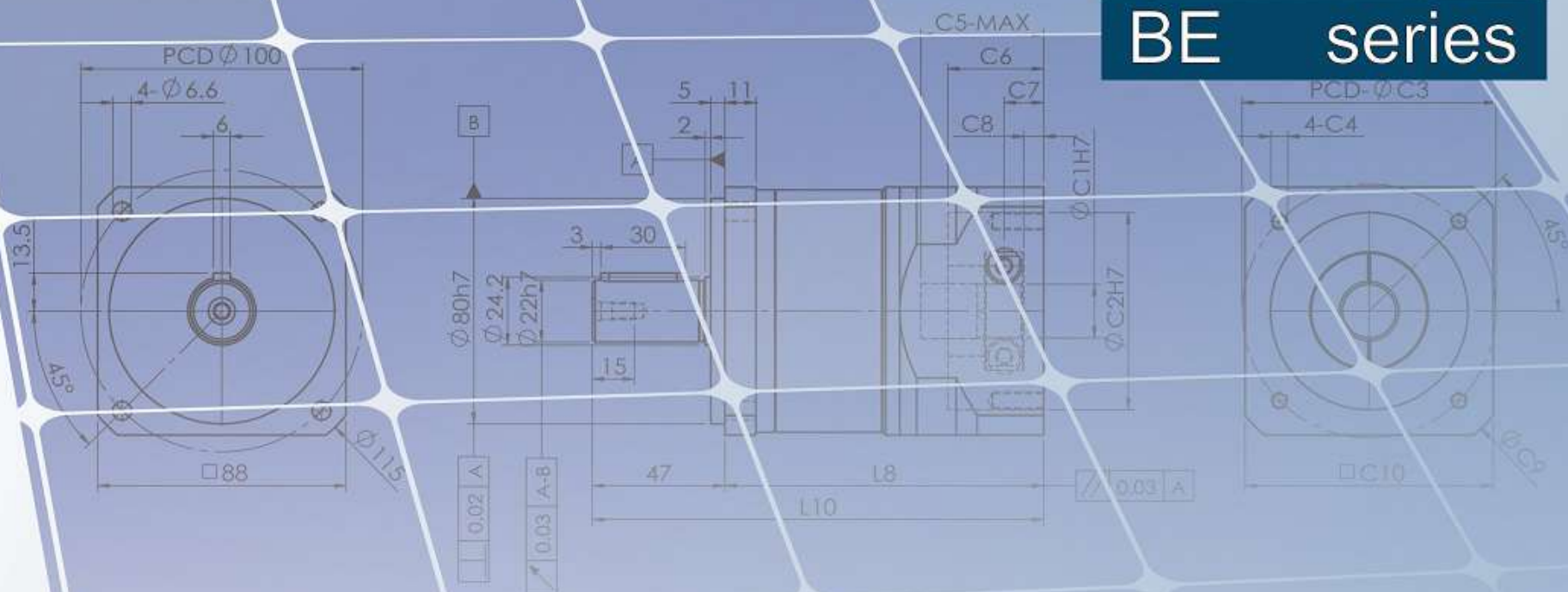


BD140R-L2

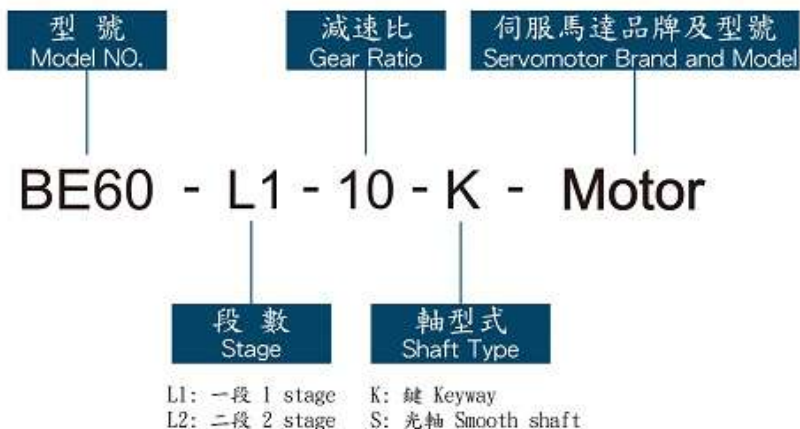


- 1: $\phi C1$ 請參照馬達軸徑尺寸 $\phi C1$ Servomotor shaft Diameter
- 2: $\phi C2$ 及 $PCD-\phi C3$, 減速機輸入端尺寸, 依馬達法蘭面而異
 $\phi C2$ and $PCD-\phi C3$, is Reducer Input Dimension, match to the servomotor Output Flange
- 3: $C5$ -Max 馬達軸最長長度 $C5$ -Max Servomotor shaft Length
- 4: 如無適合尺寸, 請與經銷商連絡 If you have special Dimension, Please contact our Agent/Dealer

BE series



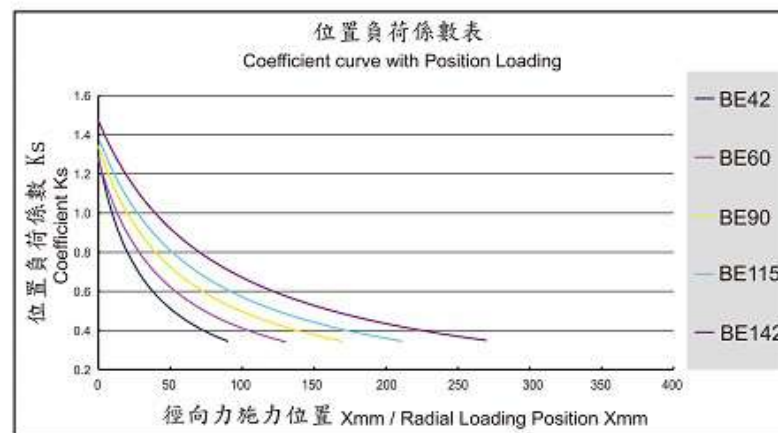
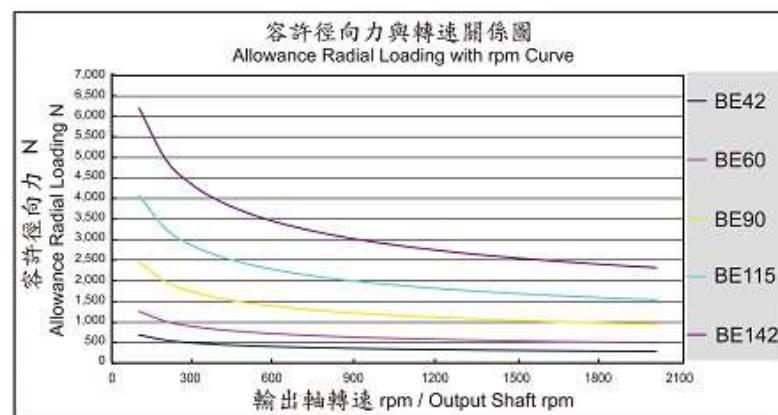
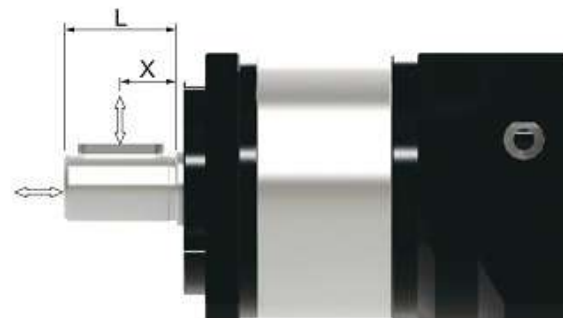
訂單格式 Order Format



伺服馬達用減速機系列/特色 For Servomotor Reducer Series / Feature

- 經濟型 Economic
- 高傳動效能 Higher Efficiency
- 低噪音 Lower Noise
- 低震動 Lower Vibration
- 低背隙 Lower Backlash
- 低溫升 Lower Temperature
- 壽命長 Higher Service Life
- 優化輸入轉動慣量
Optimum Input Mass Moment of Inertia design
for Servomotor easily start.
- 適用於連續運轉 Design for Continuity Operation
- 尺寸極小化, 重量輕量化 Minimalization Dimension and Weight

減速機輸出軸之容許徑向力及軸向力 Allowance Radial and Axial Loading with Reducer output shaft



規格總表

Specifications Data

規格 Specifications	單位 Unit	段數 Stage	減速比 ratio	BE42	BE60	BE90	BE115	BE142
額定輸出力矩 T_{2N} Nominal Output Torque		L1	3	14.1	22.1	103	183	425
			4	12.0	26.5	122	217	507
			5	14.0	25.6	117	209	488
			6	13.2	-	-	-	-
			7	11.9	23.6	110	196	457
			8	12.9	-	-	-	-
			9	-	19.5	102	161	377
			10	10.8	22.0	102	182	424
		L2	15	14.1	22.1	103	183	425
			20	12.0	26.5	122	217	507
			25	14.0	25.6	117	209	488
			30	13.2	22.1	103	183	425
			35	11.9	23.6	110	196	457
			40	12.9	26.5	122	217	507
			50	10.8	25.6	117	209	488
			60	13.2	-	-	-	-
			70	11.9	23.6	110	196	457
			80	12.9	-	-	-	-
			90	-	19.5	102	161	377
			100	10.8	22.2	102	182	424
急停力矩 Emergency Stop Torque	Nm	L1,L2	3~100	3倍額定輸出力矩 3times Nominal Output Torque				2.5倍額定輸出力矩 2.5times Nominal Output Torque
額定輸入轉速 n_N Nominal Input Speed	rpm	L1,L2	3~100	3,000	3,000	3,000	3,000	2,500
最大輸入轉速 Max. Input Speed	rpm	L1,L2	3~100	6,000	6,000	6,000	6,000	5,000
標準背隙 Backlash	arcmin	L1	3~10	≤8	≤8	≤8	≤8	≤8
		L2	15~100	≤12	≤12	≤12	≤12	≤12
扭轉剛性 Torsional Rigidity	Nm/arcmin	L1	3~10	2.10	3.7	10	30	62
		L2	15~100	1.26	2.2	6	18	37
最大容許徑向力 F_{2R} Max. Radial Load	N	L1,L2	3~100	840	1180	1780	3030	5430
最大容許軸向力 F_{2A} Max. Axial Load	N	L1,L2	3~100	420	590	890	1515	2710
使用壽命 Life	hrs	L1,L2	3~100	20,000				
使用溫度 Operating Temperature	℃	L1,L2	3~100	-10℃~+90℃				
潤滑 Lubrication		L1,L2	3~100	合成潤滑油脂 Lithium Complex Synthetic				
安裝方向 Mounting Position		L1,L2	3~100	任意方向 Any Direction				
噪音值 Running Noise	dB(A)	L1,L2	3~100	≤56	≤58	≤60	≤63	≤68
		L1	3~10	≥97%				
效率 η Efficiency	%	L2	15~100	≥94%				
		L1	3~10	0.50	1.12	3.04	6.7	13.2
重量 Weight	kg	L2	15~100	0.70	1.52	2.9/4.0	7.0/8.8	13.1/16.7
		L1,L2	3~100	IP65				

轉動慣量表

Moment of Inertia Table

BE 轉動慣量表 Moment of Inertia Table																
單位Unit	kg.cm ²	型號 Model														
節數 Stage	減速比 Ratio	BE42	BE60		BE90				BE115		BE142					
		伺服馬達軸直徑 Servomotor Shaft Diameter														
		≤ φ 8	≤ φ 8	≤ φ 14	≤ φ 14	φ 19	φ 24	≤ φ 19	≤ φ 24	φ 24	φ 35	φ 42				
單節 1-stage	3	0.02		0.08		0.53	0.48		1.63	4.49	8.20	7.82				
	4	0.48				0.42	1.43		2.97	6.68	6.30					
	5	0.46				0.40	1.36		2.68	6.39	6.00					
	6	0.01	0.07		0.44	0.38	1.30	2.55	6.26	5.88						
	7						1.30	2.51	6.22	5.84						
	8						1.28	2.48	6.19	5.81						
	9							2.47	6.18	5.80						
	10							2.46	6.17	5.79						
雙節 2-stages	15	0.01	0.01	0.07	0.07	0.44	0.39	0.44	1.37	1.37	6.25	5.87				
	20															
	25															
	30															
	35					0.43	0.38	0.43	1.34	1.34	6.16	5.78				
	40					0.44	0.39	0.44	1.37	1.37	6.25	5.87				
	50									0.43	0.38	0.43	1.34	1.34	6.16	5.78
	60															
	70															
	80															
	90															
	100															

1: 減速比=伺服馬達輸入轉速(rpm)/減速機輸出軸轉速(rpm) / Ratio=Servomotor Input Speed(rpm) / Reducer Output Speed(rpm)

2: 背隙值為在2%額定扭力的扭力定義下測得 / Backlash values is base on 2% nominal output torque testing.

3: 徑向力/軸向力與壽命, 是在輸出轉速100rpm, 且作用力在輸出軸中心

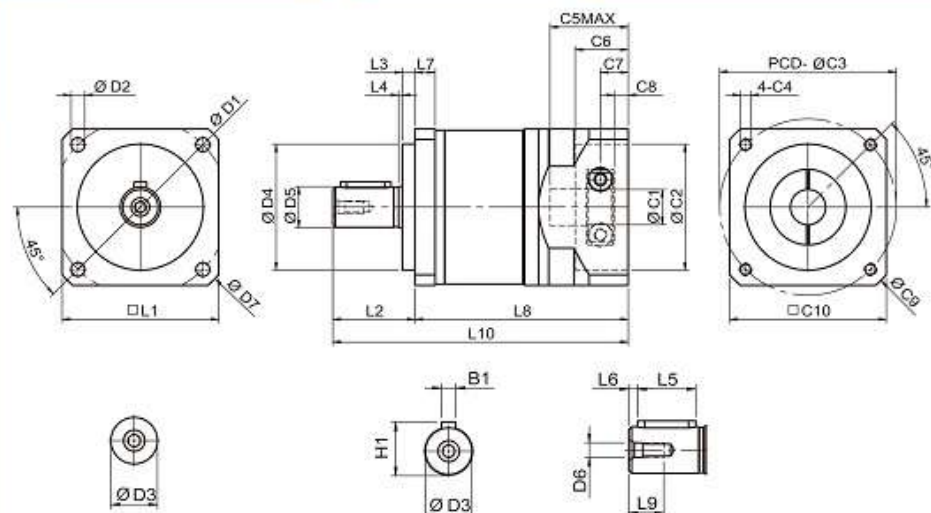
Radial/Axial load and Life are base on Reducer output speed 100rpm and Force at the shaft midpoint.

4: 連續運轉時, 壽命為一半 / Continuity operating, the life will be reduce to 50%.

5: 噪音為伺服馬達輸入轉速3000rpm, 減速機速比10比, 無負載, 距減速機 1M 的情況下所測得

The Noise is base on Servomotor input 3000rpm, gear Ratio 10, unloading and from 1M to reducer testing.

6: 如有特殊規格請洽各區域的代理/經銷商 / If any special specific, Please visit our Agent / Dealer.



光軸 S(Smooth)

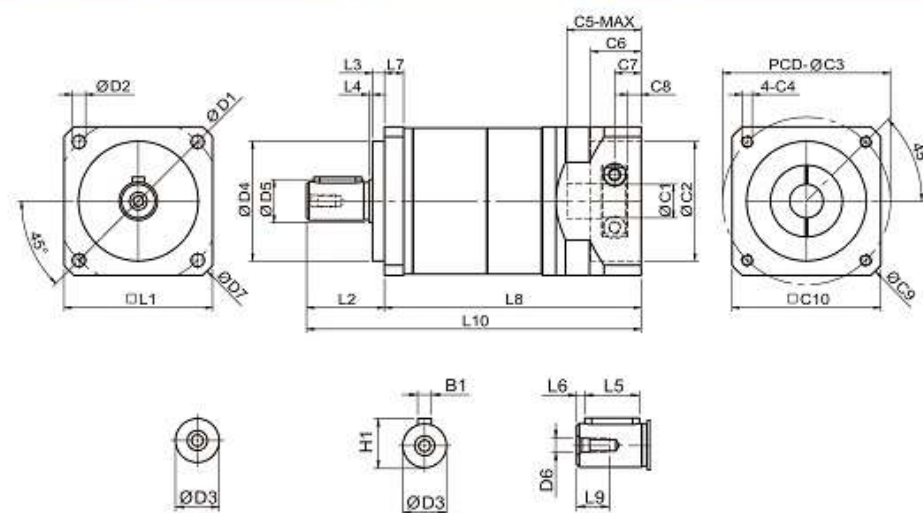
鍵 K(Keyway)

型號 Model	BE42	BE60	BE90	BE115	BE142
D	D1	50	70	100	130
	D2	3.5	5.5	6.8	9
	D3 _{h7}	13	16	22	32
	D4 _{h7}	35	50	80	110
	D5	13.6	16.4	24.2	34.2
	D6	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25
L	D7	60	82	115	156
	L1	46	62	88	116
	L2	25	32.5	47	64
	L3	5	5	5	10
	L4	1	1.5	2	3
	L5	15	20	30	40
	L6	2	3	3	5
	L7	8	8	11	14
	L8	64.5	84.5	113	143
	L9	10	12	15	28
	L10	89.5	117	160	207
C	*C1 _{h7}	8	14	19	24
	*C2 _{h7}	30	50	70	110
	*C3	46	70	90	145
	*C4	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25
	*C5	26	31	41.5	67
	*C6	17	21	34	18
	*C7	8.5	11	14	29.5
	*C8	4	5.5	7	20
	*C9	60	82	115	160
	*C10	46	62	88	120
B	B1	5	5	6	10
H	H1	15	18	24.5	35

* C1~C10是依各廠牌的伺服馬達尺寸而定

* C1~C10 depends on servo motor dimension

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光軸 S(Smooth)

鍵 K(Keyway)

型號 Model	BE42	BE60	BE90	BE115	BE142
D	D1	50	70	100	130
	D2	3.5	5.5	6.8	9
	D3 _{h7}	13	16	22	32
	D4 _{h7}	35	50	80	110
	D5	13.6	16.4	24.2	34.2
	D6	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25
L	D7	60	82	115	156
	L1	46	62	88	116
	L2	25	32.5	47	64
	L3	5	5	5	10
	L4	1	1.5	2	3
	L5	15	20	30	40
	L6	2	3	3	5
	L7	8	8	11	14
	L8	81	107	140.5	175.5
	L9	10	12	15	28
	L10	106	139.5	187.5	239.5
C	*C1 _{h7}	8	14	19	24
	*C2 _{h7}	30	50	70	110
	*C3	46	70	90	145
	*C4	M4x0.7P	M5xP0.8	M6xP1.0	M8xP1.25
	*C5	26	31	41.5	67
	*C6	17	21	34	18
	*C7	8.5	11	14	29.5
	*C8	4	5.5	7	20
	*C9	60	82	115	160
	*C10	46	62	88	120
B	B1	5	5	6	10
H	H1	15	18	24.5	35

* C1~C10是依各廠牌的伺服馬達尺寸而定

* C1~C10 depends on servo motor dimension

Beyond 234

■ 儲存注意事項 Cautions of storage

1. 保存在乾淨與乾燥的地方 Keep in clean and dry place
2. 避免陽光直射 Avoid the sun to shine to the reducer.

■ 操作時注意事項 Cautions for operation

● 收到減速機時的檢查項目

When the reducer is delivered to you, please check these items as below.

1. 檢查型號規格 Check the model NO. and specific.
2. 檢查螺絲, 鍵, 端塞等附件 Check accessories as bolts, keyway, cap etc...
3. 檢查保固卡 Check guarantee card

● 固定與安裝 Fixation and Installation

1. 避免使用在有水或由會噴濺的場所 Avoid the water or oil dropping place
2. 周圍溫度在0~40℃, 濕度低於85%
Surrounding temperature is 0~40℃, Humidity is under 85%
3. 避免使用於可燃性氣體及腐蝕性氣體的環境
Avoid the flammable and corrosion gas surrounding
4. 避免連續性振動或撞擊 Avoid the continuity vibration or impact
5. 使用於通風良好的環境 Surrounding has good ventilate
6. 固定在沒有振動的平台上 Firmly fix on a solid stand without vibration
7. 空間允許的情況下, 安裝在容易維修及保養的地方
Consideration install in easy repair and inspection place
8. 減速機各部零件禁止用任何型式的工具敲擊
Avoid using any tools to hit any parts

● 運轉前注意事項 Cautions of pre-running

1. 確認減速機出力軸的旋轉方向
Confirm the gearbox output shaft rotate direction is correct

2. 固定螺絲及鎖緊螺 All bolts are tightened

● 運轉中注意事項 Cautions of running

1. 避免過負載 Avoid overload
2. 確認輸入軸轉速在減速機的規格範圍內
Confirm the input rpm is under the gearbox rpm specific
3. 避免直接接觸減速機, 其表面的溫度可能很高
Avoid to touch the gearbox surface, it may be have high temperature

4. 遇下列情況, 請緊急停止減速機 Emergency stop as below

- A: 溫度異常快速升溫 The temperature is raise up anomalous
- B: 聲音異常加大, 或運轉中有異音
The noise is raise up or running anomalous
- C: 伺服馬達的解析數值不穩定性加劇
The servo motor revolution number is unstable

5. 上述情況發生時, 可能的原因如下, 並請回報您的供應商

If any case is above be happen, cause of as below, and please report to your supplier

- A: 有過負載的因素? Is it overload?
- B: 零件損壞, 如出力軸, 齒輪, 軸承, 伺服馬達或其它?
Is the axis, gear, bearing, servo motor or other part is damaged?
- C: 不良的機構連結? Is jointing with other part poor?

● 拆解 Disassembly

請勿對減速機進行拆解或改變尺寸

Please don't do disassembly or change dimension with gearbox

● 保固期 Warranty

從收到減速機開始, 保固期為1年.

A warranty period is 1 year after the product is delivered to you

● 潤滑 Lubricant

潤滑油為半固態合成油脂, 無需換油 It is not necessary to exchange grease

● 每日檢查 Daily check

1. 減速機有沒有異常昇溫? Is temperature raise up anomalous?
2. 有沒有產生異音, 如軸承或齒輪等等..
Is there abnormal noise from bearing or gear and so on?
3. 減速機有沒有產生異常振動 Is there abnormal vibration from gearbox?

● 定期檢查 Periodic check

1. 減速機有沒有產生過載或是傳動異常
Is there overload or abnormal transmission from gearbox?
2. 減速機前後端的整組傳動組件, 螺絲有無鬆脫
Is there assembly bolts loose?
3. 電機控制系統有沒有異常情況
Is there the control system anomalous?
4. 若有上述異常狀況, 請停機檢查, 並連絡供應商
If any case is above be happen, please stop the system and contact to your supplier

■ 一般型式 General type

1: 確認馬達與減速機型號規格, 清潔連結面
Confirm the motor and gearbox model and gearbox specification, clean up the connect surface



2: 移除馬達軸鍵
Remove the motor key



3: 如有需要請置入附加的軸套
If necessary, insert bush



4: 直立減速機, 安裝伺服馬達, 以螺絲鎖緊表的5%, 依序預先鎖上1-4的螺絲
Upright the gearbox and installation servo motor, then pre-tighten bolts in 1-4 order with suggestion 5% torque



5: 鎖緊入力軸螺絲
Tighten the input shaft with boltby torque wrench



6: 依序鎖緊伺服馬達螺絲
Tighten bolts in 1-4 order with torque wrench.



螺絲鎖緊扭力表
Bolt tighten torque of table

Tightening Torque Recommended For Motor Mounting Bolt							
Bolt Size	Width Across	Strength 8.8 Tightening Torque		Strength 10.9 Tightening Torque		Strength 12.9 Tightening Torque	
	[mm]	[Nm]	[In-lbs]	[Nm]	[In-lbs]	[Nm]	[In-lbs]
M3x0.5P	2.5	1.3	12	1.8	16	2.1	19
M4x0.7P	3	3	27	4.1	37	4.9	44
M5x0.8P	4	6.1	55	8.2	73	9.8	87
M6x1P	5	11	98	14	124	17	151
M8x1.25P	6	25	222	34	302	41	364

■ 直角型式 Angle type

1: 確認馬達與減速機型號規格, 清潔連結面
Confirm the motor and gearbox model and gearbox specification, clean up the connect surface



2: 移除馬達軸鍵
Remove the motor key



3: 如有需要請置入附加的軸套
If necessary, insert bush



4: 直立減速機, 安裝伺服馬達, 以螺絲鎖緊表的5%, 依序預先鎖上1-4的螺絲
Upright the gearbox and installation servo motor, then pre-tighten bolts in 1-4 order with suggestion 5% torque



5: 鎖緊入力軸螺絲
Tighten the input shaft with boltby torque wrench



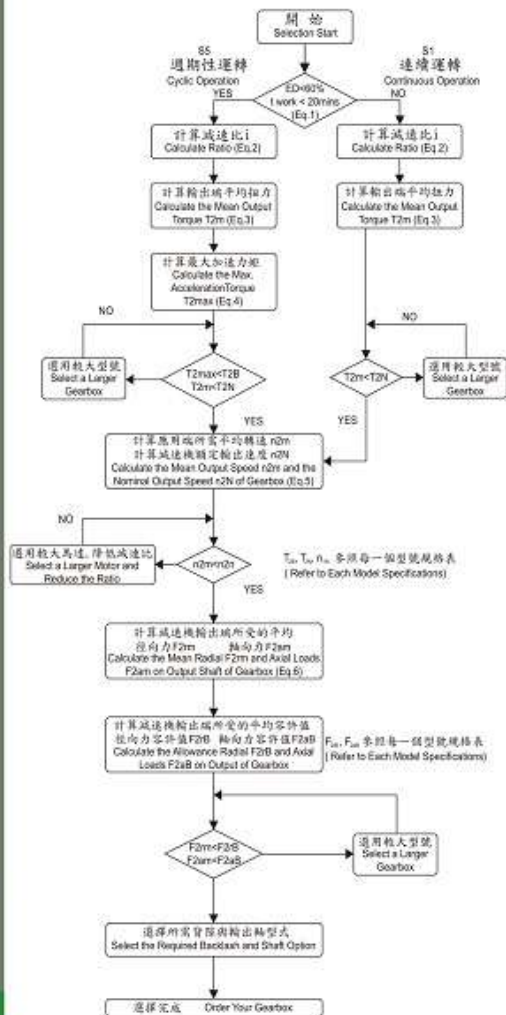
6: 依序鎖緊伺服馬達螺絲
Tighten bolts in 1-4 order with torque wrench.



螺絲鎖緊扭力表
Bolt tighten torque of table

Tightening Torque Recommended For Motor Mounting Bolt							
Bolt Size	Width Across	Strength 8.8 Tightening Torque		Strength 10.9 Tightening Torque		Strength 12.9 Tightening Torque	
	[mm]	[Nm]	[In-lbs]	[Nm]	[In-lbs]	[Nm]	[In-lbs]
M10x1.5P	8	49	434	67	594	80	709
M12x1.75P	10	85	753	116	1028	139	1232
M14x2P	12	137	1214	186	1648	223	1976
M16x2P	14	210	1860	286	2534	343	3038

減速機選用流程 Selection of Optimum Gearbox



S5 週期運轉的建議事項：(Recommended for S5 cycle operation)
一般應用慣量須符合下列公式：(The general design is given for：)

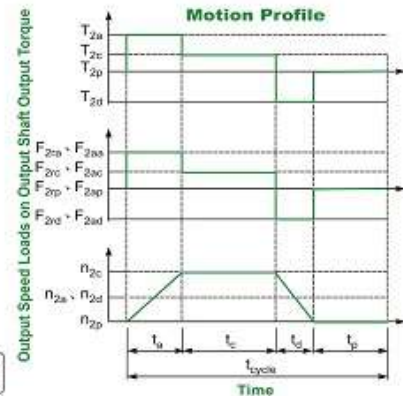
$$\frac{J_L}{i^2} \leq 4 \times J_m$$

最適當的應用慣量需符合下列公式：(The Optimal design is given for：)

$$\frac{J_L}{i^2} \approx J_m$$

J_L 負載慣量 (Load Inertia)

J_m 馬達慣量 (Motor Inertia)



$$1. ED = \frac{t_a + t_c + t_d}{t_{cycle}} \times 100\%, t_{work} = t_a + t_c + t_d$$

Index：a. Acceleration, c. Constant,
d. Deceleration, p. Pause

(Eq.1)

$$2. i \approx \frac{n_m}{n_{work}}$$

n_m Output Speed of the Motor
 n_{work} Working Speed

(Eq.2)

$$3. T_{2m} = \sqrt[3]{\frac{n_{2a} \times t_a \times T_{2a}^3 + n_{2c} \times t_c \times T_{2c}^3 + n_{2d} \times t_d \times T_{2d}^3}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$$

(Eq.3)

$$4. T_{2max} = T_{mB} \times i \times K_s \times \eta$$

where K_s is

K_s	No. of Cycles / hr
1.0	0 ~ 1,000
1.1	1,000 ~ 1,500
1.3	1,500 ~ 2,000
1.6	2,000 ~ 3,000
1.8	3,000 ~ 5,000

T_{mB} Max. Output Torque of the Motor
 η Efficiency of the Gearbox

(Eq.4)

$$5. n_{2a} = n_{2d} = \frac{1}{2} \times n_{2c}$$

$$n_{2m} = \frac{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}{t_a + t_c + t_d}$$

$$n_{2N} = \frac{n_{1N}}{i}$$

(Eq.5)

$$6. F_{2rm} = \sqrt[3]{\frac{n_{2a} \times t_a \times F_{2ra}^3 + n_{2c} \times t_c \times F_{2rc}^3 + n_{2d} \times t_d \times F_{2rd}^3}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$$

$$F_{2tm} = \sqrt[3]{\frac{n_{2a} \times t_a \times F_{2ta}^3 + n_{2c} \times t_c \times F_{2tc}^3 + n_{2d} \times t_d \times F_{2td}^3}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$$

(Eq.6)