

FHA-E系列

FHA-E SERIES

直結輸出，緊固鎖固，保證精度

DIRECT OUTPUT, TIGHT ENGAGEMENT
AND HIGH PRECISION

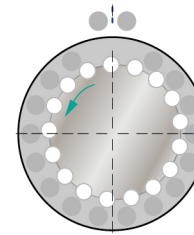


Overview

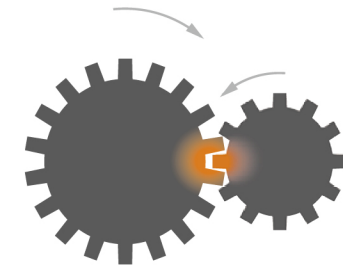
- Type : FHA-5E~FHA-450E
 - Backlash: $\leq 1-5$ Arc.min
 - Ratio : 1/35 ~ 1/140
 - Capacity: 0.1KW ~ 15KW
 - Rotation : Shaft Run or Case Run
 - Rated output torque: 60NM ~ 5100NM
-
- 型 式 : FHA-5E~FHA-450E
 - 背 隙 : $\leq 1-5$ 弧分
 - 減速比 : 1/35 ~ 1/140
 - 容 量 : 0.1KW ~ 15KW
 - 轉動方式 : 軸轉動 or 殼轉動
 - 額定輸出扭矩 : 60NM ~ 5100NM

滾柱減速機特色

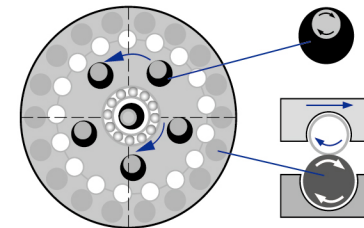
FEATURE OF ROLLER REDUCER



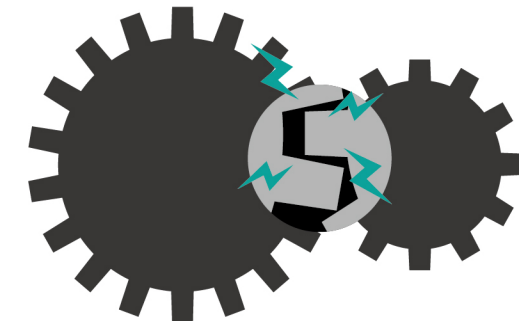
- ▲ 採用多齒嚙合承載的功率分散技術，能大幅提高衝擊負載的能力。
Load-decentralized technology via multi-gear engagement, enhance raise impact capability rapidly.



- ▲ 傳統的正齒輪或螺旋齒輪全部得過負載衝擊，只由一次一個齒分擔。
Conventional spur or helical gear must bear over-load impact due to merely one-tooth engagement in each mesh.



- ▲ 內外輪齒是以滑動中帶完全的滾動來接觸，傳動效率特別高。
Drive of external & internal rollers involved sliding and rotation-self, obtain extremely high efficiency.



- ▲ 傳統的齒輪傳動結構會因磨損或齒輪干涉而造成轉矩傳遞不順暢。
The unsmooth torque transmission caused by the abrasion or interference of gear in conventional mechanism.

傳動新穎、優點獨具 Innovative transmission, significant advantage

具有諧波齒輪傳動的優點而無柔輪，具有少齒差行星傳動大傳動比而無長度過長問題，具有擺線傳動承載力大的優點而無擺線傳動之明顯震動。

The features and benefits: With advantages of Harmonic gear drive without the weakness of flexspline. With high ratio of planetary gear drive without the length concern. With benefit of high loading capacity of cycloid drive without obvious vibration.

滑動微小、效率最高 Low sliding loss, high efficiency

由於嚙合件均係滾柱構成，全系統基本上為滑動中帶滾動，機械損失微乎其微，所以可得極高的齒輪傳動效率，單段減速機最高可達95%左右。

All sliding parts composed of rollers, whose operation involve sliding and rolling at the same time, therefore the mechanism loss is almost neglected and obtained extremely high efficiency. The efficiency up to 95% under one stage reduction.

運轉平穩、噪音較低 Smooth operation, low noise

多齒嚙合，重疊係數大，雙排結構機理平衡，滾動及側間餘隙可避免輪齒干涉，使得機械震動及噪聲限制在最小程度。

Multi-teeth mesh simultaneous, high overlap-coefficient, counterbalanced twin-disc structure offset vibration, roller contact with proper gap could avoid the interference like gear, above characteristics could minimize the noise and vibration effectively.

傳動精確，誤差較小 High precision, low backlash

由於多齒嚙合，輪齒誤差可相互補償，因此傳動誤差值僅為齒輪減速機的25%。

The backlash could be eliminated due to multi-teeth engagement, therefore the transmission deviation is merely 25% of the conventional gear reducer.

激波徑大，出力較高 Long diameter of wave exciter, high torque output

由於激波規律的特性，滾柱波動傳動的激波徑一般均較其他行星傳動機構大，因此容許傳達轉矩也較高。

Due to regular characteristic of rolling wave, the diameter of rolling wave of roller transmission is bigger than other conventional disc or carrier, so the torque is higher accordingly.

傳動比大，結構緊湊 High ratio, compact structure

傳動比為滾柱盤滾柱的個數，所以單段傳動即可獲得很大的傳動比，出入力軸位於同一軸心線上，結構簡潔，和同條件的齒輪減速機及蝸輪減速機相比，體積顯的輕盈。

The number of rollers on the roller disc is equal to ratio, single stage can obtain high ratio. Output and input shaft are on co-axis and mechanisms are robust and space-saving, so the dimension is more compact compared to the worm reducer and gear reducer especially on the high ratio ones.

多齒嚙合，承載力大 Multi-teeth engagement, high loading capability

雙波結構同時嚙合齒數可達50%，一般齒輪傳動僅約1齒，因此承載力比相同條件的齒輪減速機和蝸輪減速機來的大。

Half rollers mesh simultaneously of twin-disc roller mechanism, compared to only one tooth mesh of conventional reducer, whose loads capacity is higher than worm reducer and gear reducer.

滾柱齒型，壽命最長 Roller tooth, long service life

獨創活齒機構，工藝良好，製作技術難，加以所具有的真圓齒型，內聚力強，不易崩齒，不僅保養容易，壽命也較長。

Innovative roller drive design, excellent handcraft, high manufacturing technique and unique roller outline, no broken-teeth phenomenon, make overall robust mechanism, free to maintenance and durable service life.

耗能較省，經濟性佳 Low energy consumption, better economic benefit

由於出力大，效率高，能量損耗小，工作負荷減輕，長期運轉，經濟效益顯著。

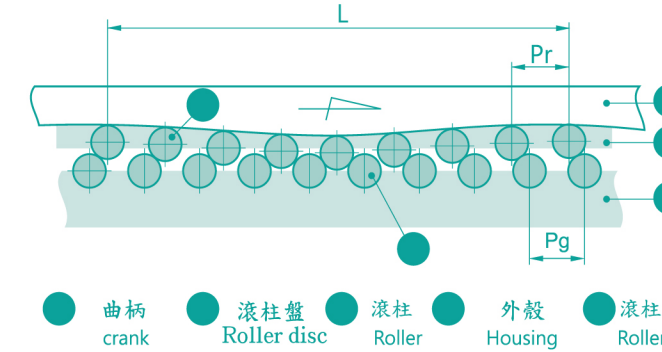
High torque output and high efficiency, low energy consumption, low operation load, better economical benefit.

中空滾柱，輸出簡單 Hollow design, direct output

C TYPE 採用中空軸方式，便於設計，管線可容易排列穿過減速機，連軸器及馬達連接板使得容易與馬達安裝。

C TYPE-hollow shaft type, design-friendly, allows to array the routing hydraulic tubes and electrical cables through the reducer. Coupling and motor flange provide easy motor mounting.

滾柱減速機特色 FEATURE OF ROLLER REDUCER

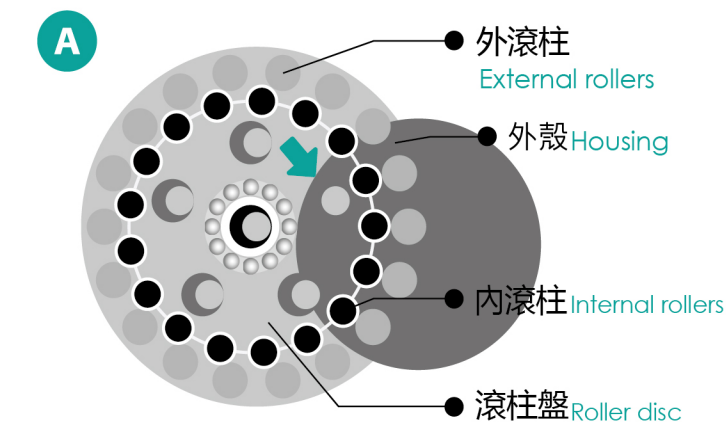


▲展開 Stretch

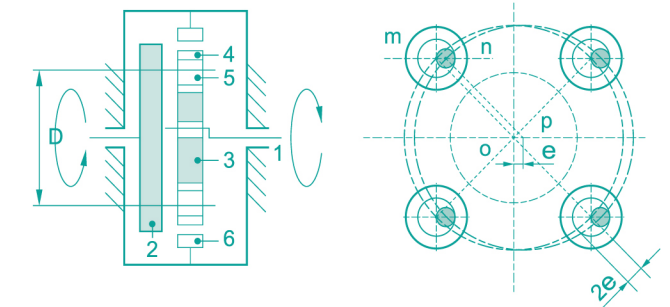
將滾輪波動傳動展開如上圖所示。當曲柄1 單向移動將逐次壓下滾柱盤2 內之滾柱3 和外殼4 之滾柱5 嚙合。滾柱盤2上各滾柱3 反向移動。滾柱3 被侷限於滾柱盤2齒距Pr內。滾輪齒輪被推而連續移動。周而復始。不存在死點。而且滿足 $L = Tg \times Pg = Tr \times Pr$ 之關係。Tr和Tg為滾柱3和滾柱5之個數。

First, stretch the basic roller wave transmission as the figure 1. when crank(1) moved to certain direction, propel roller (3) of roller disc (2) to mesh with roller (5) of housing (4), then rollers (3) of roller disc (2) are moved adversely, rollers (3) also are limited in the pitch (Pr) of roller disc (2). the rollers are propelled continuously, one by one, no dead point and meet below formula: $L = Tg \times Pg = Tr \times Pr$

Tr and Tg represent the number of roller(3) and roller(5) separately.



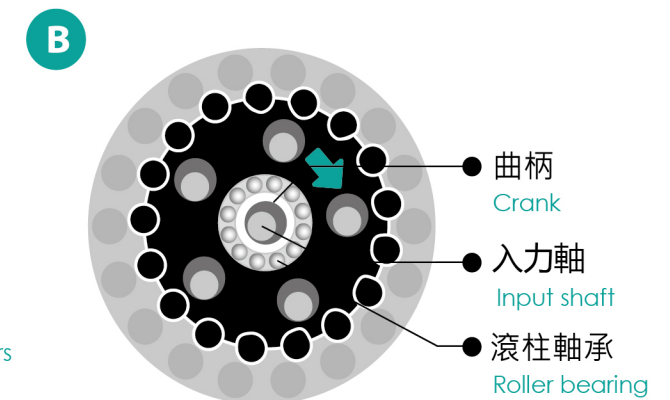
1. 圓柱型的外滾柱裝在強韌的外殼上。
2. 圓柱型的內滾柱裝在精密的滾柱盤上。
3. 當入力軸以順時針方向回轉時，帶動曲柄也做順時針回轉。
4. 透過曲柄，滾柱盤作反時針的偏心運轉。
5. 內滾柱將隨滾柱盤反時針的公轉。



▲輸出 Output

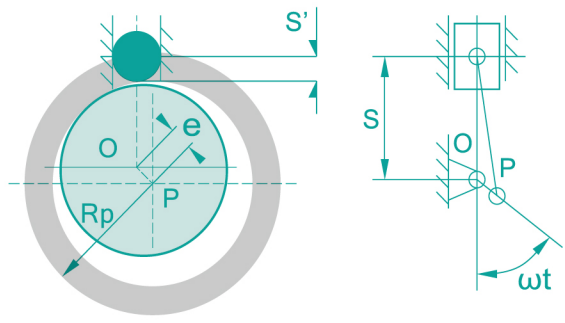
將滾輪(齒輪3)受曲柄1 激動後，一面以高速公轉，一面以低速自轉。自轉減速可經由滾子4 驅動滾子內之軸銷5(直接或間接固定於輸出軸2上)直接輸出。很容易證明m,n,o,p為平行四邊形。因此輸出轉速等於滾柱盤3之低速轉速。(如上圖所示)

The roller disc (3) are propelled by the crank(1). make the high speed revolution and the low speed rotation itself at the same time. Retarding rotation could propel shaft pin (5) via roller (4), (PS.: shaft pin (5) mounted on output shaft (2) directly or indirectly), we can easily prove: the 4 points of m, n, o, p form a parallelogram, therefore output speed is equal to low speed of roller disc (3). Shown as the above figure.



1. Cylindrical external rollers mounted in robust housing.
2. Cylindrical internal rollers mounted in precision roller disc.
3. Input shaft rotate clockwise to synchronously drive crank rotation clockwise.
4. Roller disc turns counter-clockwise eccentrically propelled by the crank.
5. Internal rollers turn counter-clockwise accompanied with roller disc.

滾柱減速機特色 FEATURE OF ROLLER REDUCER



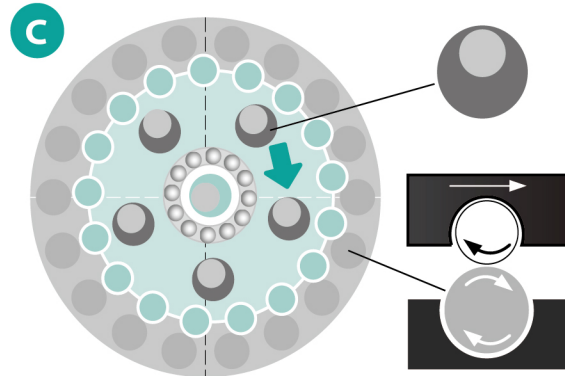
▲激波 Rolling wave

當外殼4的齒廓採用圓形滾柱5和激波器選用標準偏心圓時，其激波規律類似曲柄滑塊運動的規律(如上圖所示)。

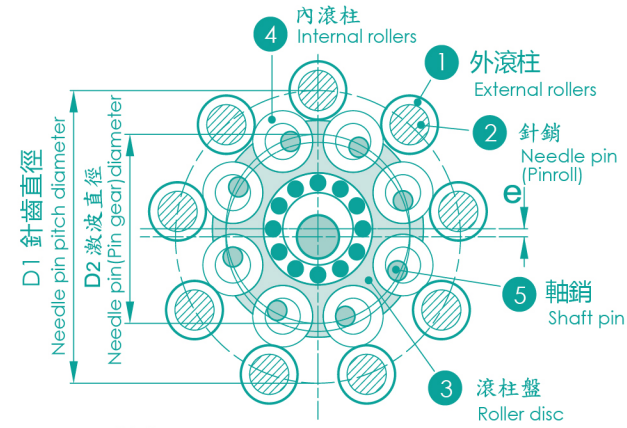
$$S = R_p \cos \beta - e \cos \omega t$$

$$S' = \sqrt{R_p^2 - e^2} \sin^2 \omega t - e \cos \omega t - R_O$$

R_p = 偏心圓理論輪廓半徑 e = 偏心距
 R_o = 激波器基圓半徑 ω = 偏心圓角速度
 β = 連杆和導軌中線間夾角 t = 時間參數
 The housing(4) adopting the profile of roller(5), and the rolling wave adopted standard crank, both interaction frequency is similar to motion of the crank-slide mechanism shown as the above figure.



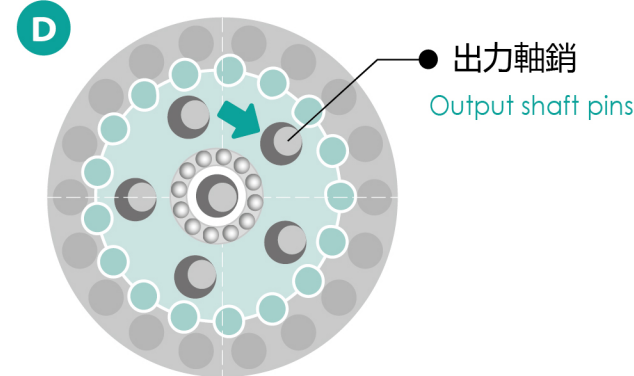
6. 在內滾柱隨滾柱盤反時針公轉的同時，因內外滾柱的嚙合傳遞，將使內外滾柱各繞其中心作順時針的自轉。
7. 由於內外滾柱均可繞其中心自由轉動，所以這種傳動方式我們稱之為完全活齒傳動。
8. 出力軸銷隨著滾柱盤的推移，將以反時針方向作公轉。與出力軸銷連結的出力軸也會做反時針方向的旋轉。
9. 如圖A至圖D所示，當入力軸迴轉一圈時，內滾柱將以反方向旋轉過一個齒。所以內滾柱的齒數也就等於減速比。



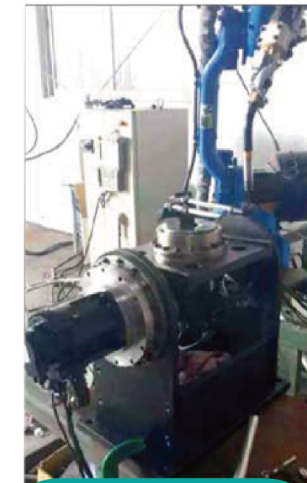
▲組合 Assembly

以上機構精巧組合如上圖所示，當滾柱盤3上之內滾柱4較小時，尤其在傳動比較大狀況下，滾柱內無法安置軸銷5時，通常將其置放於滾柱盤3上，其輸出轉速仍然不變，全系統基本上為純滾動接觸，機械損失非常微小，故可得極高之傳動效率。

The detail shown as the above figure, when internal rollers(4) of roller disc (3) are small so that shaft pin(5) can't be inserted into internal rollers, especially high ratio status, shaft pin(5) is used to being put in roller disc (3) directly, also maintain the same output speed. Basically, this system is rolling contact completely with very low mechanical loss and obtain very high efficiency.



6. While internal rollers turning counter-clockwise accompanied with roller disc, this make rotation of internal rollers and external rollers separately follow individual center axis due to mesh transmission.
7. Because the internal/external rollers can rotate freely around individual center, we called this transmission type "innovative revolution-rotation roller drive mechanism".
8. Output shaft pins propelled with roller disc turn revolution counter-clockwise; output shaft connected with output shaft pins also turns counter-clockwise.
9. As figure A to D, input shaft turns for one cycle, internal rollers turn for one tooth in adverse direction. As a result, the number of teeth of internal rollers is equal to the reduction ratio.



變位機/第7,8 軸應用
Rotary Table/Position Device/
7th/8th Axis application



機器人底部軸
First Axis Of Robot



碼垛機器人
Palletizing Robot



專用自動化設備
Automation Equipment



彎管機
Tube-Bending Machine



自動貼標機
Auto Labeling Machine



主軸頭
Electroheads



沖壓機械手
SCARA



RV-E系列

RV-C系列

RVM系列

RV-E, RV-C, RVM
系列技術參數

FHA系列

FHD系列



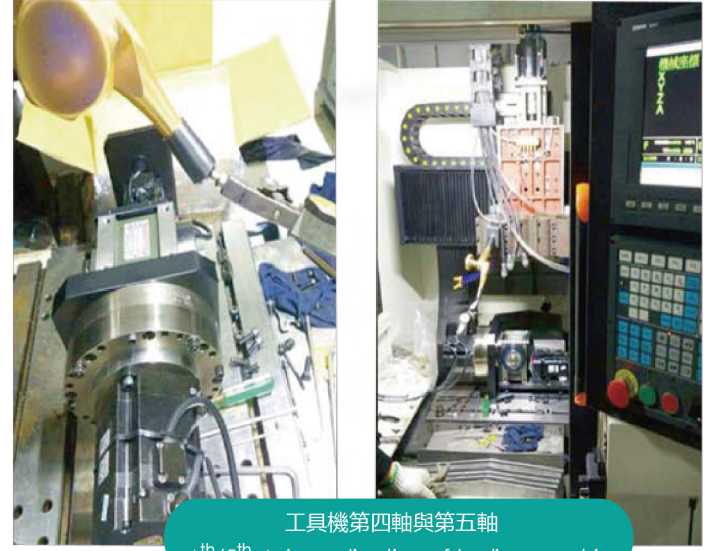
搬運機器人
Transportation Robot



焊接機器人與輔機
Welding Robot and Auxiliary



四軸機器人 (搬運)
Four Axis Robot



工具機第四軸與第五軸
4th/5th Axis application of tooling machine

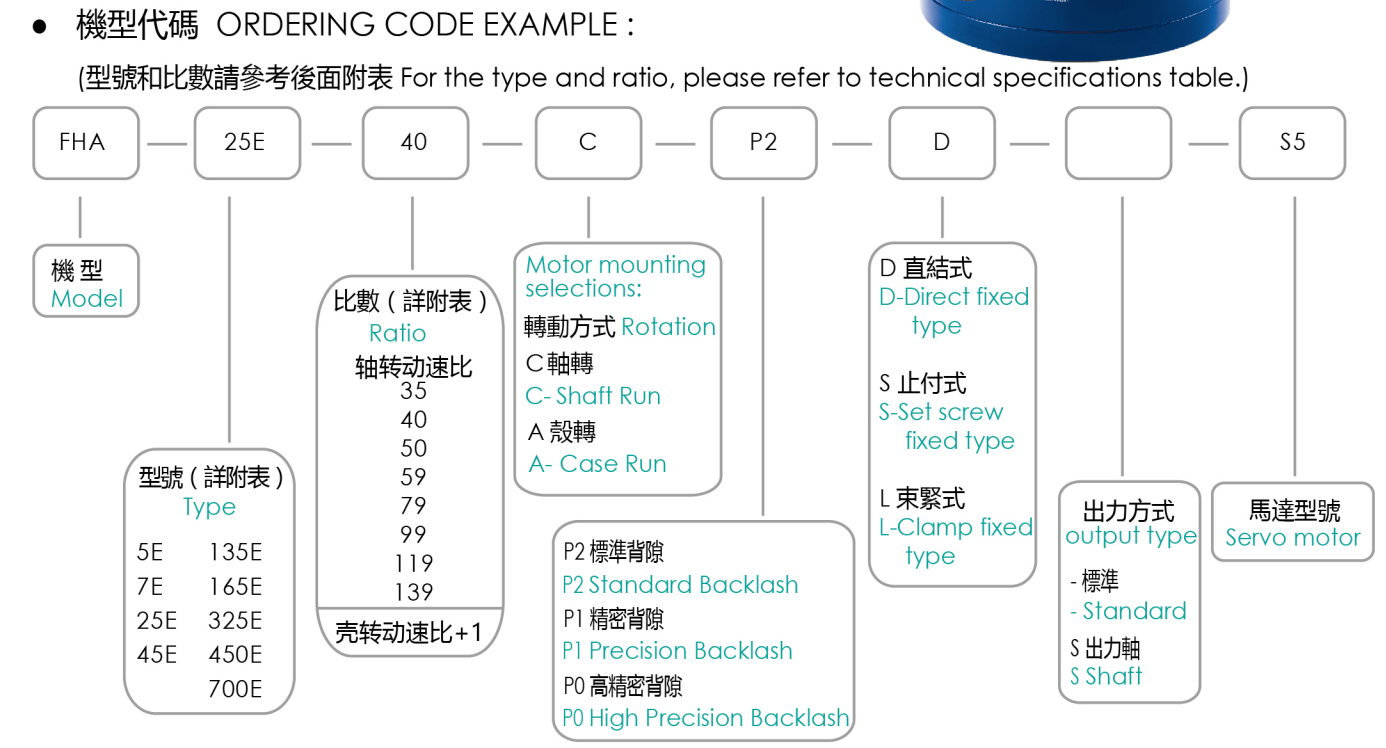
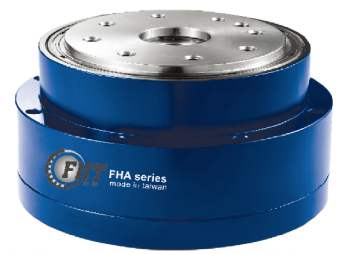


六軸機器人
Six Axis Robot

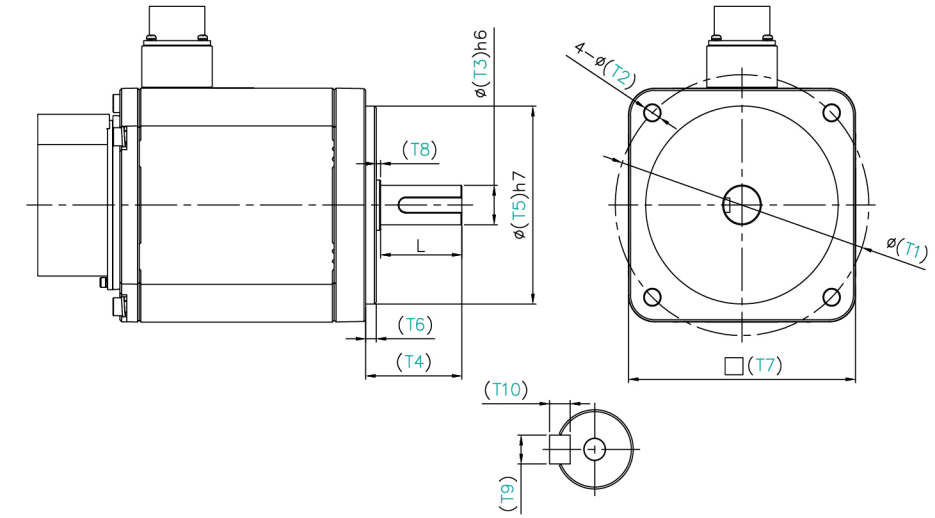


六軸機器人
Six Axis Robot

FHA-E 订购说明 FHA-E ORDERING INSTRUCTIONS



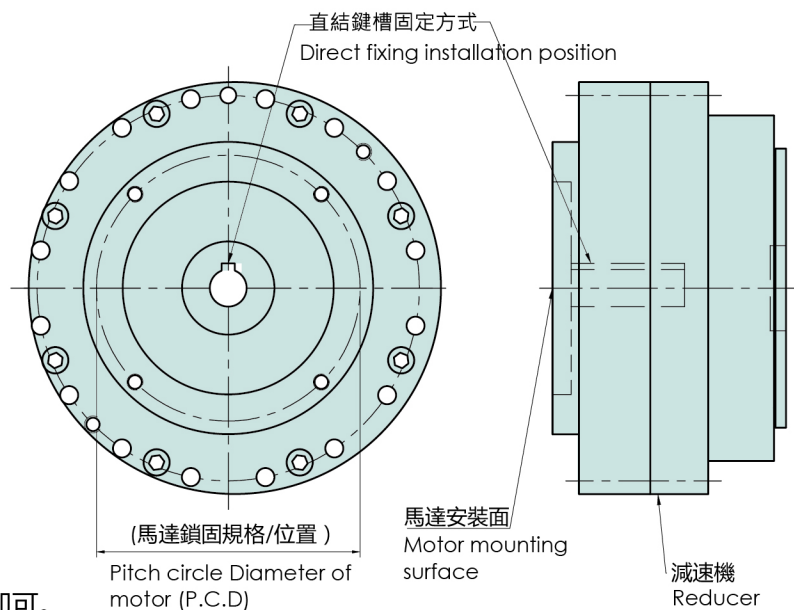
● 订购时请提供电机尺寸 Please provide the motor dimension below when ordering



馬達廠牌 Motor Brand :					
馬達型號 Motor Model :					
	T1	T2	T3	T4	T5
螺絲孔中心距 P.C.D	螺絲孔直徑 Bolt Hole Diameter	馬達軸外徑 Motor Shaft Diameter	馬達軸長度 Motor shaft length	馬達凸緣外徑 Motor Pilot Diameter	馬達緣高度 Motor Pilot Height
	T7	L	T8	T9	T10
馬達面尺寸 Motor Outline Dimension	馬達軸有效長 Motor Shaht Lenght	非安川免填 Diameter required when using YASKAWA made motor		鍵寬 Key Width	鍵高 Key Thickness

安装方式选项: MOTOR MOUNTING SELECTIONS:

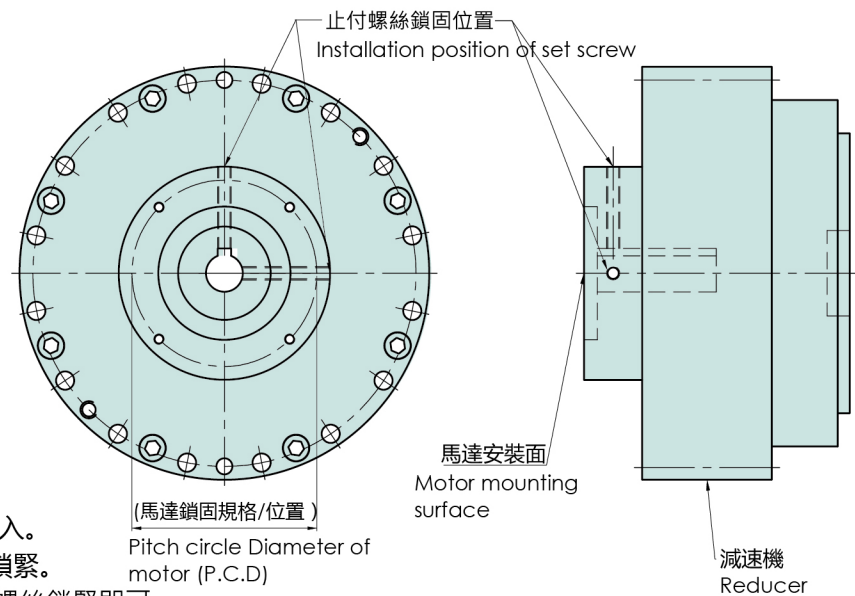
● D-直結式 D-Direct fixed type



1. 馬達軸心鍵與減速機入力軸鍵槽對齊置入。
2. 馬達與減速機結合後將馬達上4根螺絲鎖緊即可。

1. Place motor shaft key and reducer input shaft key way in a straight line, and insert motor shaft into reducer input shaft.
2. After connection of motor and reducer, tighten four screws into hex-socket cap screw holes.

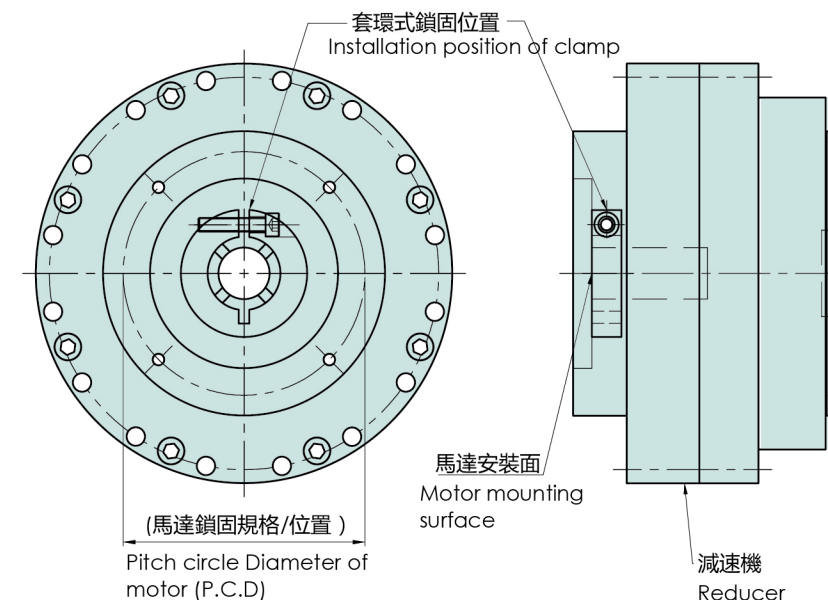
● S-止付式 S-Set screw fixed type



1. 馬達軸心鍵與減速機入力軸鍵槽對齊置入。
2. 馬達與減速機結合後將馬達上4根螺絲鎖緊。
3. 使用T型板手將減速機入力軸內的止付螺絲鎖緊即可。

1. Place motor shaft key and reducer input shaft key way in a straight line, and insert motor shaft into reducer input shaft.
2. After connection of motor and reducer tighten four screws into hex-socket cap screw holes.
3. Fix the set screw on reducer input shaft by T-type spanner.

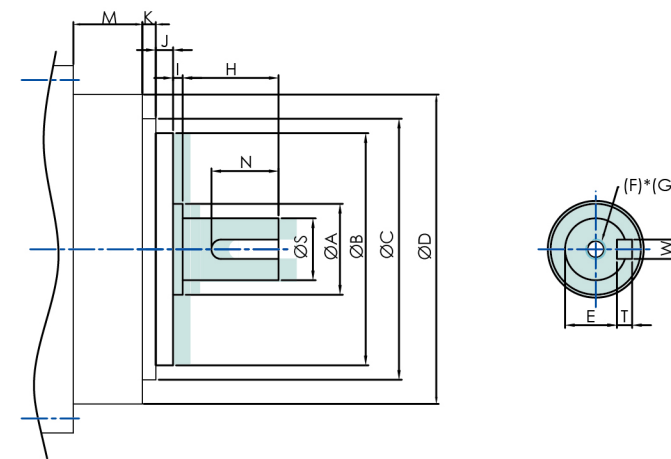
● L-束緊式: L-Clamp fixed type



1. 馬達軸心鍵與減速機入力軸鍵槽對齊置入。
2. 馬達與減速機結合後，將馬達上4根螺絲鎖緊。
3. 使用T型板手將入力軸束緊環鎖緊即可。

1. Place motor shaft key and reducer input shaft key way in a straight line, and insert motor shaft into reducer input shaft.
2. After connection of motor and reducer tighten four screws into hex-socket cap screw holes.
3. Tighten the clamp of reducer input shaft by T-type spanner.

出力方式：S-出力軸 Output type :S-Shaft



Model THA	M	K	J	I	H	N	A	B	C	D	S	W	T	E	F	G
5E	22	3	10	3	30	20	42	47	49	66	19	6	6	15.5	M6	12
7E	21	3	12	3	35	30	40	80	86	106	28	8	7	24	M8	15
25E	25	4.5	12	3	55	49	54	85	105	130	38	10	8	33	M8	15
45E	36	7	15	5	90	80	80	120	135	160	60	18	11	53	M10	18
135E	47.5	7.1	15	5	90	80	80	140	145	228	60	18	11	53	M10	18
165E	51	8	20	5	105	95	90	204	204	240	70	20	12	62.5	M12	24
325E	63.5	8	20	5	130	120	110	230	245	284	90	25	14	81	M16	30
450E	64	8	25	5	165	155	120	275	275	328	100	28	16	90	M20	40

FHA-E 性能表

FHA-E TECHNICAL SPECIFICATION TABLE



Specification 規格		FHA-E Technical Specification Table						FHA-E Technical Specification Table										
Rotation 轉動方式		FHA-5E		FHA-7E		FHA-25E		FHA-45E		FHA-135E		FHA-165E		FHA-325E		FHA-450E		FHA-700E
		Shaft Run 軸轉動	Case Run 殼轉動	Shaft Run 軸轉動	Case Run 殼轉動	Shaft Run 軸轉動	Case Run 殼轉動	Shaft Run 軸轉動	Case Run 殼轉動	Shaft Run 軸轉動	Case Run 殼轉動	Shaft Run 軸轉動	Case Run 殼轉動	Shaft Run 軸轉動	Case Run 殼轉動	Shaft Run 軸轉動	Case Run 殼轉動	-
Ratio 減速比		40	41	40	41	40	41	35	36	50	51	50	51	59	60	59	60	-
		50	51	50	51	50	51	40	41	60	61	60	61	79	80	79	80	-
		-	-	59	60	60	61	50	51	79	80	79	80	99	100	99	100	-
		-	-	-	-	-	-	59	60	99	100	99	100	119	120	119	120	-
		-	-	-	-	-	-	79	80	-	-	-	-	-	-	139	140	-
Rated Output Torque 額定輸出扭矩	Nm kgf-m	60 (6.1)	83 (8.46)	245 (25)	245 (25)	460 (46.8)	460 (46.8)	1400 (136)	1400 (136)	1615 (165)	1615 (165)	3595 (366)	3595 (366)	5100 (520)	5100 (520)	-	-	-
Acceleration & Braking Torque 加速和制動扭矩	Nm kgf-m	97.5 (9.9)	136 (14)	515 (52)	515 (52)	1158 (118)	1158 (118)	2083 (212)	2083 (212)	4043 (412)	4043 (412)	7963 (812)	7963 (812)	11025 (1125)	11025 (1125)	-	-	-
Instantaneous Max. Allowable Torque 瞬時最大容許轉矩	Nm kgf-m	245 (25)	415 (42)	1000 (102)	1000 (102)	2300 (234.4)	2300 (234.4)	4155 (423.5)	4155 (423.5)	8075 (823)	8075 (823)	17975 (1830)	17975 (1830)	25500 (2600)	25500 (2600)	-	-	-
Rated Input Speed 額定輸入轉速	Nr (rpm)	2000	2000	2000	2000	2000	2000	2000	2000	1500	1500	1500	1500	1500	1500	-	-	-
Rated Lifetime 額定壽命	Hr	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	-	-	-
Allowable Max. Input Speed 瞬時容許最高輸入轉速	Nmax (rpm)	3000	3000	3000	3000	3000	3000	2500	2500	2500	2500	2000	2000	2000	2000	-	-	-
Tilting Stiffness 傾斜鋼度	Nm/arc.min kgf-m/arc.min	82 (8.3)	117 (12)	372 (38)	372 (38)	931 (95)	931 (95)	1176 (120)	1176 (120)	2940 (300)	2940 (300)	4900 (500)	4900 (500)	7448 (760)	7448 (760)	-	-	-
Torsional Stiffness 扭轉鋼度	Nm/arc.min kgf-m/arc.min	18 (1.83)	20 (2)	49 (5)	49 (5)	108 (11)	108 (11)	196 (20)	196 (20)	392 (40)	392 (40)	980 (100)	980 (100)	1176 (120)	1176 (120)	-	-	-
Max. Lost Motion 最大無效行程	(arc.min)	<3.0	<3.0	<2.0	<2.0	<2.0	<2.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	-	-	-
Angular Transmission Error 扭轉傳輸中角度偏移量	ATE (arc.sec)	40	80	40	40	40	40	40	40	40	40	40	40	40	40	-	-	-
Backlash 背隙	Standard Backlash 標準背隙	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	-	-	-
	Precision Backlash 精密背隙	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-	-	-
	High Precision Backlash 超精密背隙	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	-
Maximum Tilting Moment 最大傾斜力矩	Nm kgf-m	282 (28.8)	392 (40)	1764 (180)	1764 (180)	3332 (340)	3332 (340)	4312 (440)	4312 (440)	7840 (800)	7840 (800)	14112 (1440)	14112 (1440)	17640 (1800)	17640 (1800)	-	-	-
Rated Radial Force 額定徑向力	Nm	118	196	882	882	1666	1666	2156	2156	3920	3920	7056	7056	8820	8820	-	-	-
Max. Axial Force 最大軸向推力	N	885	1470	3920	3920	5194	5194	7840	7840	14700	14700	19600	19600	24500	24500	-	-	-
(I=GD ² /4)	Input Inertia Kg-m ² 輸入慣量	1.65×10 ⁻⁶	2.60×10 ⁻⁶	1.08×10 ⁻⁵	1.08×10 ⁻⁵	4.50×10 ⁻⁵	4.50×10 ⁻⁵	5.65×10 ⁻⁵	5.65×10 ⁻⁵	1.9×10 ⁻⁴	1.9×10 ⁻⁴	6×10 ⁻⁴	6×10 ⁻⁴	9×10 ⁻⁴	9×10 ⁻⁴	-	-	-
		1.46×10 ⁻⁶	1.85×10 ⁻⁶	0.65×10 ⁻⁵	0.65×10 ⁻⁵	3.75×10 ⁻⁵	3.75×10 ⁻⁵	4.40×10 ⁻⁵	4.40×10 ⁻⁵	1.8×10 ⁻⁴	1.8×10 ⁻⁴	5.4×10 ⁻⁴	5.4×10 ⁻⁴	7.3×10 ⁻⁴	7.3×10 ⁻⁴	-	-	-
		-	1.66×10 ⁻⁶	0.45×10 ⁻⁵	0.45×10 ⁻⁵	2.4×10 ⁻⁵	2.4×10 ⁻⁵	3.53×10 ⁻⁵	3.53×10 ⁻⁵	1.78×10 ⁻⁴	1.78×10 ⁻⁴	4×10 ⁻⁴	4×10 ⁻⁴	6×10 ⁻⁴	6×10 ⁻⁴	-	-	-
		-	-	-	-	1.75×10 ⁻⁵	1.75×10 ⁻⁵	2.63×10 ⁻⁵	2.63×10 ⁻⁵	1.51×10 ⁻⁴	1.51×10 ⁻⁴	2.8×10 ⁻⁴	2.8×10 ⁻⁴	4.8×10 ⁻⁴	4.8×10 ⁻⁴	-	-	-
		-	-	-	-	2.4×10 ⁻⁵	2.4×10 ⁻⁵	-	-	-	-	-	-	4.2×10 ⁻⁴	4.2×10 ⁻⁴	-	-	-
Weight 重量	KG	1.5	4.5	8.5	8.5	12	12	32.5	32.5	37	37	65	65	81	81	-	-	-

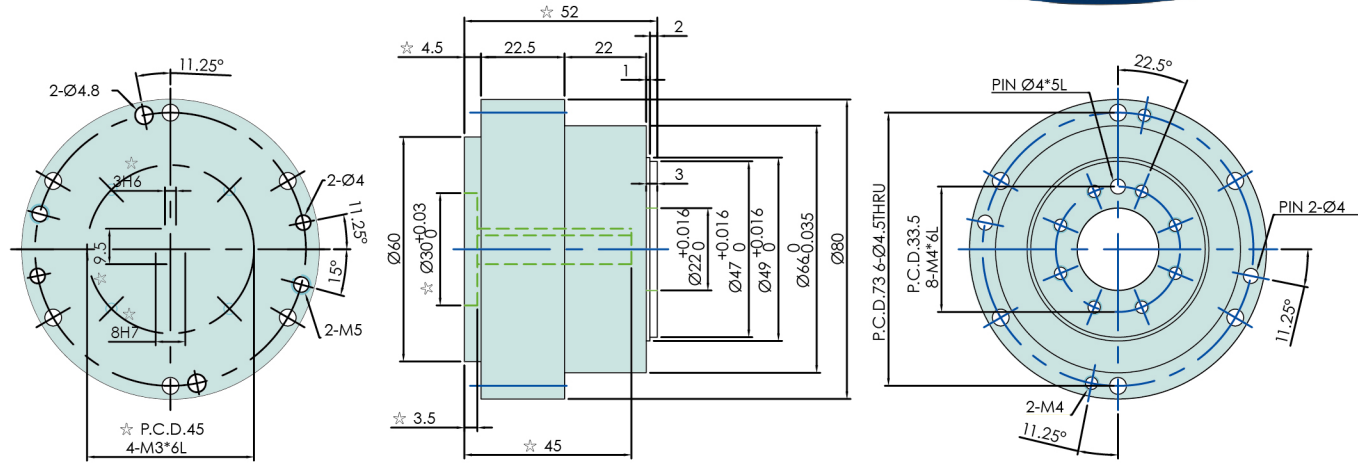
PS:需要上述速比之外的減速比時，請洽詢本公司，電機轉速超出額定輸入轉速時，運轉噪音將會提高，請注意減速機容許負載使用表面溫度需低於70°C。

Please contact us for other ratio selections. Please be noted that the noise will be increased when the input speed (RPM:revolution per minute)of motor is higher than rated input speed; the operating temperature and motor service temperature should be under 70°C.

FHA-E 尺寸圖 DRAWING&DIMENSION



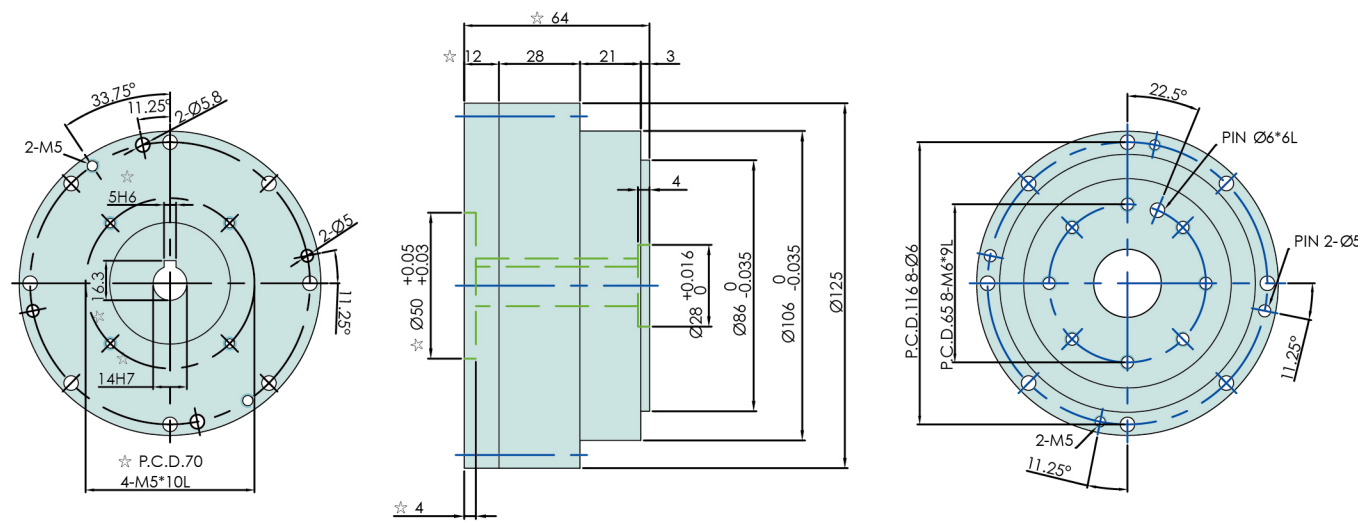
FHA-5E-□-C-□-D



1. ☆ 會隨伺服馬達不同有所變更
2. 本機軸心可從Φ8 ~ Φ11
3. 此圖為軸心轉動，殼轉動圖請洽詢本公司

1. "☆"The dimensions modify with motor specification.
2. Output shaft diameter Φ8 ~ Φ11 mm.
3. This drawing is model of shaft rotation, for case run drawing, please contact us.

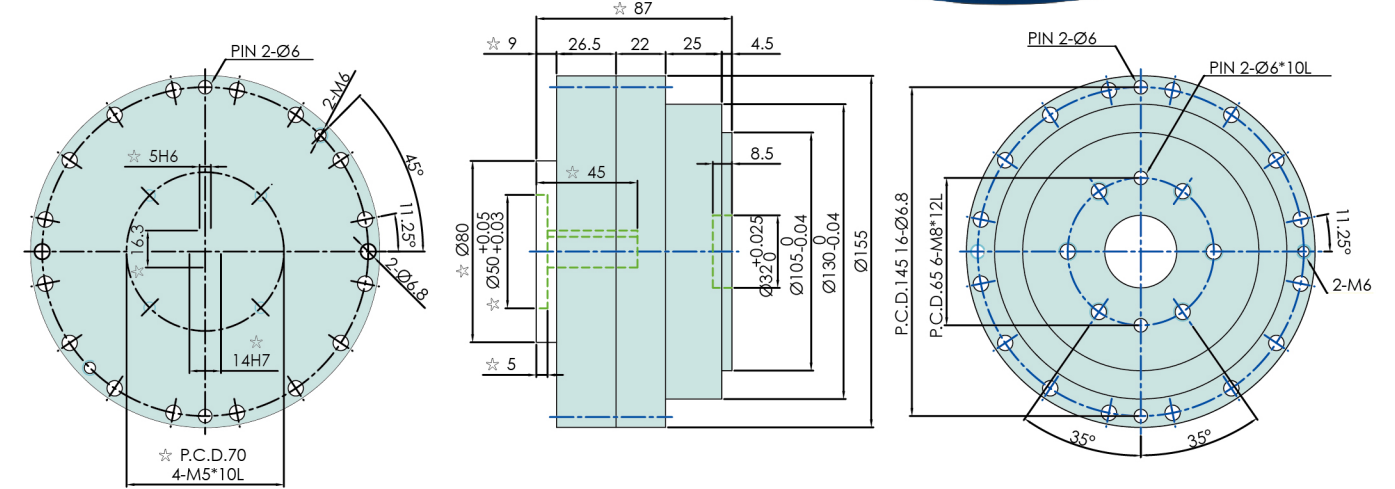
FHA-7E-□-C-□-D



1. ☆ 會隨伺服馬達不同有所變更
2. 本機軸心可從Φ11 ~ Φ19
3. 此圖為軸心轉動，殼轉動圖請洽詢本公司

1. "☆"The dimensions modify with motor specification.
2. Output shaft diameter Φ11 ~ Φ19 mm.
3. This drawing is model of shaft rotation, for case run drawing, please contact us.

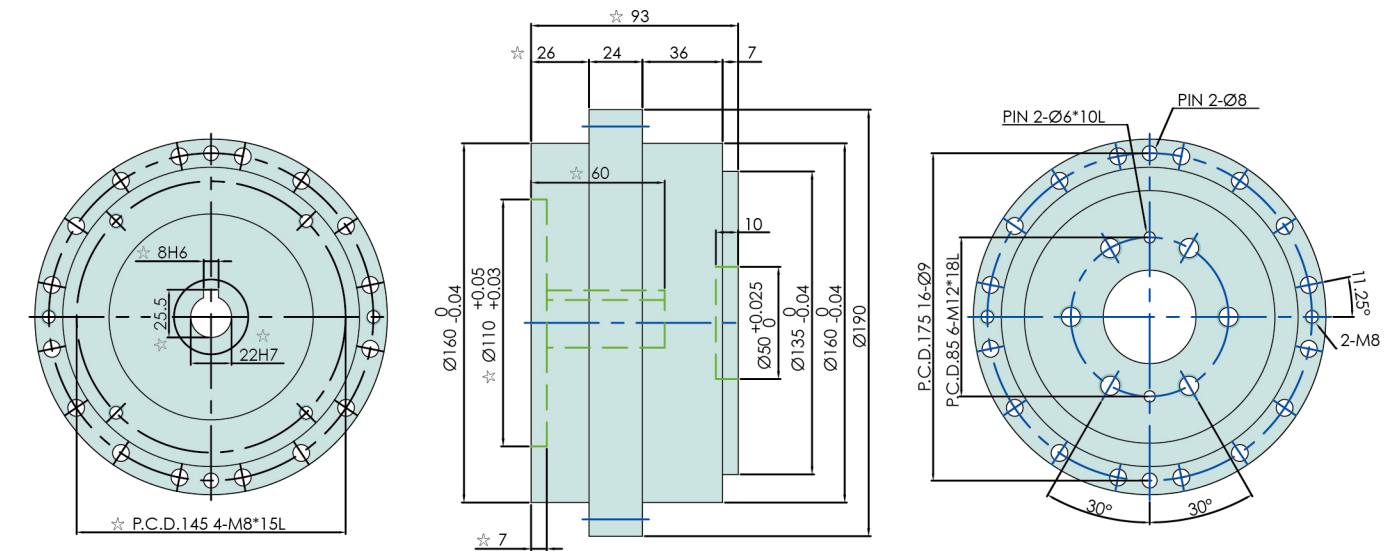
FHA-25E-□-C-□-D



1. ☆ 會隨伺服馬達不同有所變更
2. 本機軸心可從Φ11 ~ Φ24
3. 此圖為軸心轉動，殼轉動圖請洽詢本公司

1. "☆"The dimensions modify with motor specification.
2. Output shaft diameter Φ11 ~ Φ24 mm.
3. This drawing is model of shaft rotation, for case run drawing, please contact us.

FHA-45E-□-C-□-D



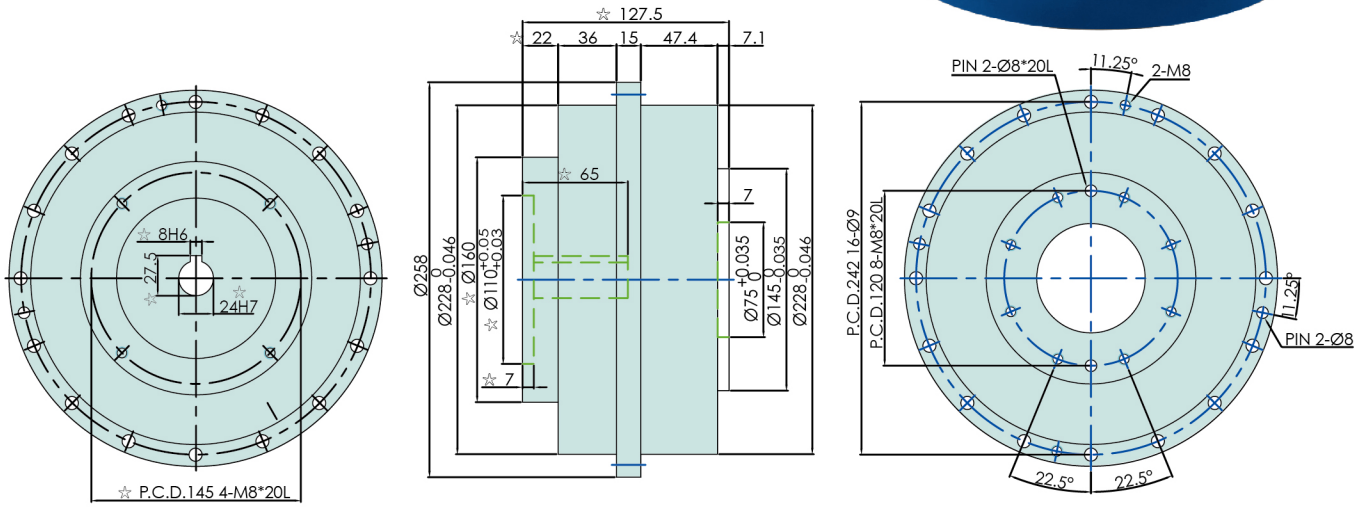
1. ☆ 會隨伺服馬達不同有所變更
2. 本機軸心可從Φ14 ~ Φ28
3. 此圖為軸心轉動，殼轉動圖請洽詢本公司

1. "☆"The dimensions modify with motor specification.
2. Output shaft diameter Φ14 ~ Φ28 mm.
3. This drawing is model of shaft rotation, for case run drawing, please contact us.

FHA-E 尺寸圖 DRAWING&DIMENSION



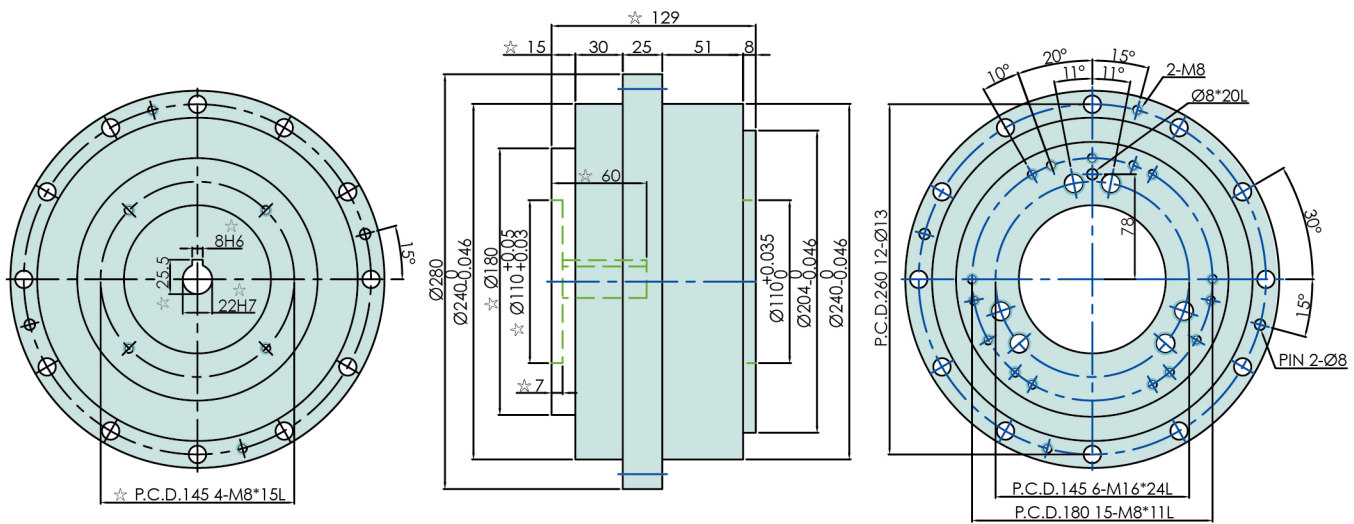
FHA-135E-□-C-□-D



1. ☆ 會隨伺服馬達不同有所變更
2. 本機軸心可從Φ19 ~ Φ35
3. 此圖為軸心轉動，殼轉動圖請洽詢本公司

1. "☆"The dimensions modify with motor specification.
2. Output shaft diameter:Φ19~Φ35 mm.
3. This drawing is model of shaft rotation, for case run drawing, please contact us.

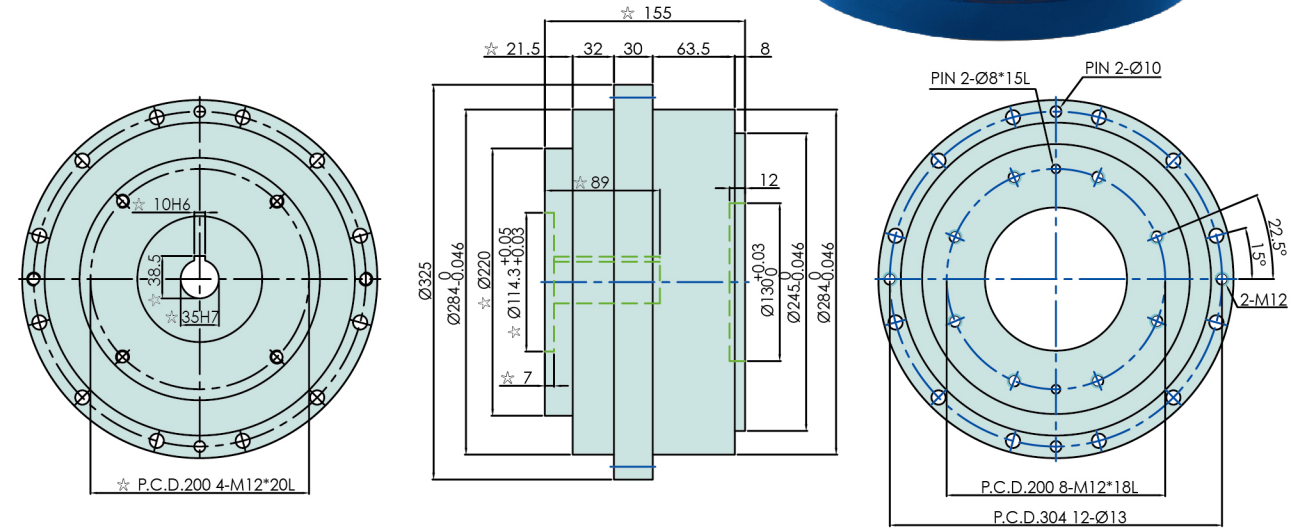
FHA-165E-□-C-□-D



1. ☆ 會隨伺服馬達不同有所變更
2. 本機軸心可從Φ22 ~ Φ42
3. 此圖為軸心轉動，殼轉動圖請洽詢本公司

1. "☆"The dimensions modify with motor specification.
2. Output shaft diameter:Φ22~ Φ42 mm.
3. This drawing is model of shaft rotation, for case run drawing, please contact us.

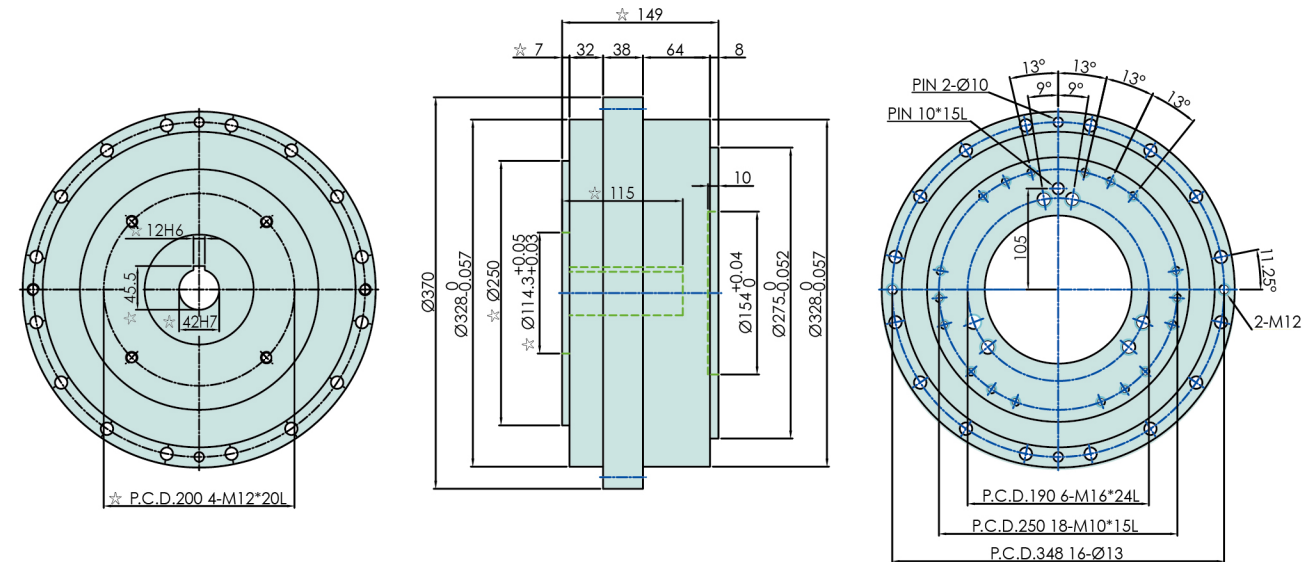
FHA-325E-□-C-□-D



1. ☆ 會隨伺服馬達不同有所變更
2. 本機軸心可從Φ24 ~ Φ42
3. 此圖為軸心轉動，殼轉動圖請洽詢本公司

1. "☆"The dimensions modify with motor specification.
2. Output shaft diameter:Φ24~Φ42 mm.
3. This drawing is model of shaft rotation, for case run drawing, please contact us.

FHA-450E-□-C-□-D



1. ☆ 會隨伺服馬達不同有所變更
2. 本機軸心可從Φ35 ~ Φ60
3. 此圖為軸心轉動，殼轉動圖請洽詢本公司

1. "☆"The dimensions modify with motor specification.
2. Output shaft diameter:Φ35~Φ60 mm.
3. This drawing is model of shaft rotation, for case run drawing, please contact us.