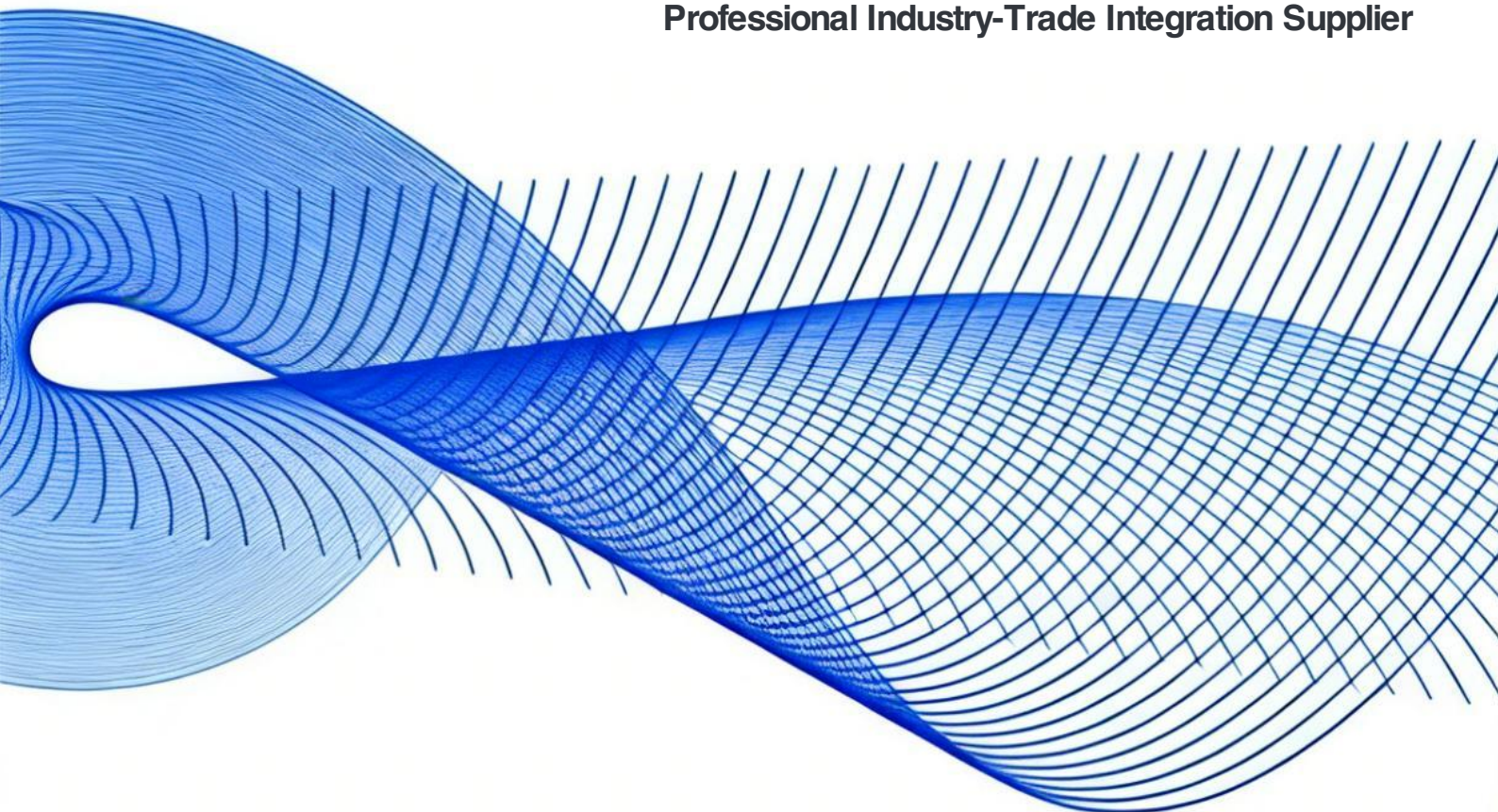


Hangzhou GT Rail Traffic Equipment Co., Ltd

Professional Industry-Trade Integration Supplier



Planetary Gearbox Catalogue

About Us

IVH DRIVE was officially established on 15th June 2011 in Hangzhou. Currently, we mainly sell reducers, motors, blowers, and gear pumps in the international market, and even providing customers with a complete set of equipment transmission solutions. We are always focused on quality control, process, materials, design, and other aspects. We are steadily advancing in the fiercely competitive market, striving to provide customers with high-quality products and thoughtful services.



2011

SINCE

25+

EXPORT COUNTRIES

40+

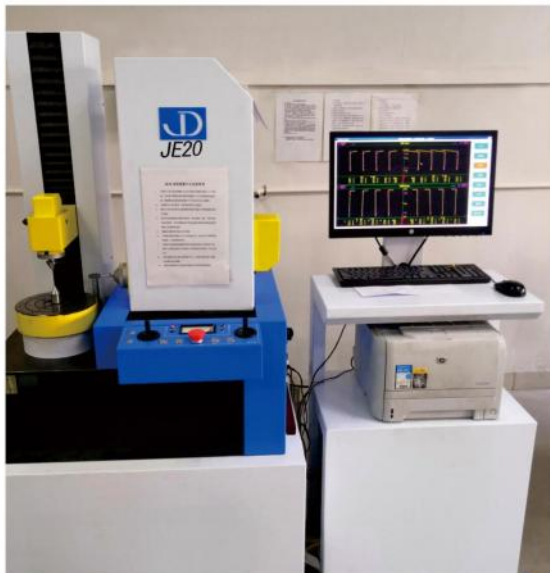
PRODUCT COVERAGE

8

FACTORIES DISTRIBUTION



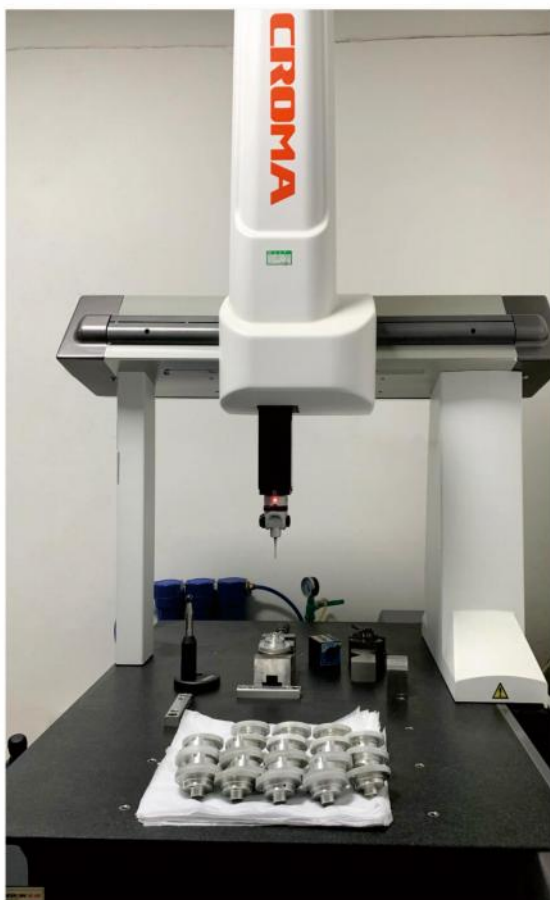
Testing Equipment 检测设备



Gear Testing Center



Gearbox Arc Tester



Coordinate Measuring Machine (CMM)



TTI Universal Gear Tester



Gearbox Load Testing Machine

Production Equipment 生产设备



Precision Gear Grinding Machine



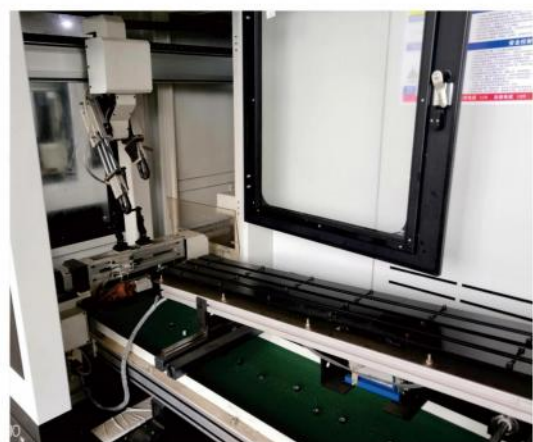
Precision Gear Hobbing Machine



Precision Gear Pulling Machine

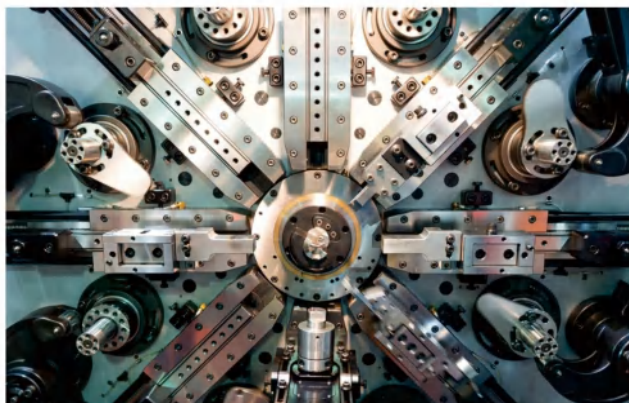


Variable Guide Precision Spiral Lathe



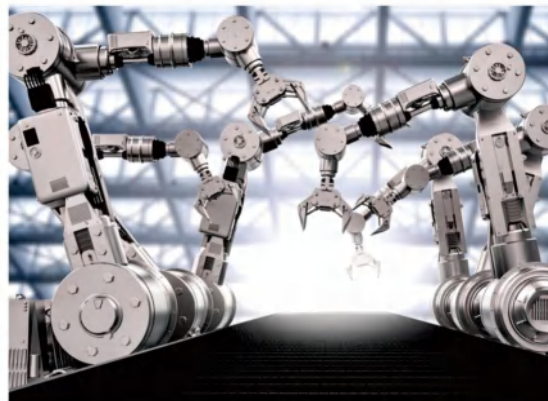
Automatic Gear Hobbing Production Line

Application Industry 应用行业



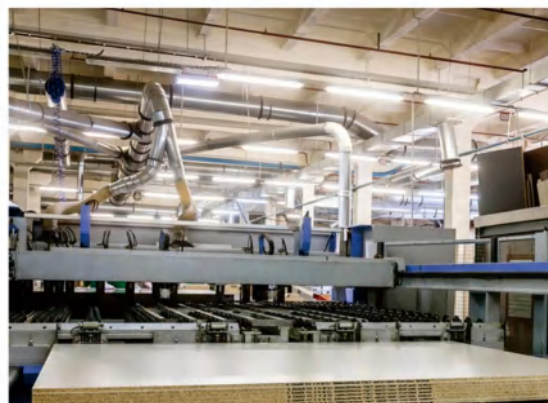
弹簧机械领域
Spring Machinery Field

机械手领域
Mechanical Arm Field



纺织机械领域
Textile Machinery Field

机床制造领域
Machine Tool Manufacturing Field





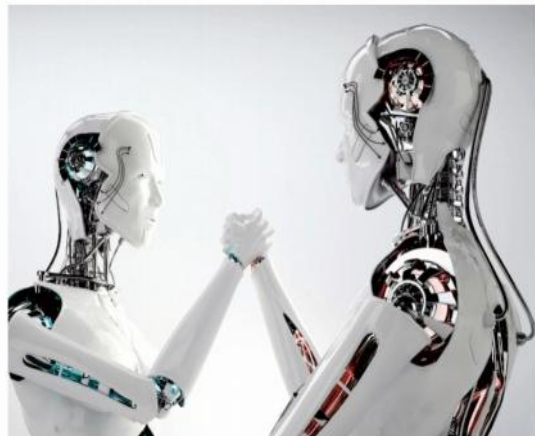
激光设备领域
Laser Equipment Field

自动化领域
Automation Field



印刷设备领域
Printing Equipment Field

机器人领域
Robotics Field



Product Content

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PRODUCTS OVERVIEW

產品概述

Products features / 產品特點

Precision planetary gear is a new-generation of product developed by our company, with a compromise of advanced technology both at home and abroad, its main features are as follows:

- 1.Low Noise: Under 65db.
- 2.Low Backlash: Backlash is under 3 arcmin. Backlash for 2-stage speed reduction is within 5 arcmin.
- 3.High Efficiency: Efficiency for 1-stage model exceeds 95%, For 2-stage model exceeds 92%.
- 4.High Input Speed: Input speed allows for up to 8000 RPM.
- 5.High Torque: Higher torque output than that of conventional planetary gear reducers.
- 6.High Stability: Employs high tensile strength alloy steel. Gear hardening is made for the entire gear instead of only surface hardening, which extends gear service life and maintain high accuracy as new after a long period of operation.
- 7.High Speed Reduction Ratio: The gear reducer is a modular design. The planetary gear box can be connected. Speed reduction ratio is over 1/1000.

精密行星齒輪減速機是我公司自主研發的新一代實用性產品，融合了國內外先進的技術，具有以下一些主要特點：

- 1.低噪音：低於65db。
- 2.低背隙：單級可達1弧分內，雙級可達3弧分內。
- 3.高效率：單段式在95%以上，雙段式在92%以上。
- 4.高輸入轉速：可達8000RPM。
- 5.高扭矩：比一般標準行星減速機扭矩高。
- 6.高穩定性：採用高強度合金鋼材，整顆齒輪經硬化處理，非祇有表面硬化，確保使用壽命及長期使用仍保持最初的精密度。
- 7.高減速比：採用模組化設計，行星齒箱可相互連結，速比可達1/1000以上。

Precision usage / 產品用途

Precision planetary gear reducer is widely used in the following domain:

- 1.Aerospace, military industry.
- 2.Medical health, electronic information industry.
- 3.Industrial robots, Production automation, CNC machine tool manufacturing industry.
- 4.Motor, textile, printing, food, metallurgical, environmental protection engineering, warehouse logistics industry.

精密行星齒輪減速機被廣泛應用於以下領域：

- 1.航空航天、軍事產業。
- 2.醫療衛生、電子信息技術產業。
- 3.工業機器人、生產自動化、數控機床製造產業。
- 4.汽車製造、紡織、印刷、食品、冶金、環保工程、倉儲物流等產業。

GEAR UNIT SELECTION & ANNOUNCEMENTS

減速機的選用及注意事項

Base concepts of precision planetary gear boxes / 與選型有關的基本概念

Ratio減速比

Input speed/Output speed 輸入轉速比輸出轉速

n₁[rpm]
額定輸入轉速減速機的驅動速度，若減速機與電機直接相連，則轉速值與電機轉速相同。本書中的額定輸入轉速是在環境溫度為20℃的條件下測得的。環境溫度較高時請降低轉速n₁n₂[rpm]
輸出轉速輸出轉速按照下列公式通過輸入轉速n₁和傳動比 i 計算出來： $n_2 = n_1 / i$ Poles
段/級數

The number of set of planetary gear. Owing to one set planetary gear can't satisfy bigger transmission ratio, two or three sets can meet users' requirements of bigger transmission ratio. Since increasing the gear quantity, the length of two or three poles motor will increase accordingly, of course, the efficiency will reduce accordingly.

行星齒輪的套數。由於一套行星齒輪無法滿足較大的傳動比，有時需要兩套或三套來滿足用戶對較大傳動比的要求，也就是說，減速比越大段/級數越多。由於增加了行星齒輪的數量，所以二級或三級減速機的長度會有所增加，效率會有所下降。

Efficiency
傳動效率

It refers to the gearing efficiency of the gearboxes in the case of the largest load. 指在額定負載情況下，減速機的傳動效率。減速比越大，級數越多，效率越低。

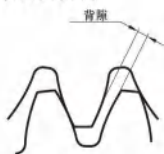
Average lifetime
平均壽命

Refers to the continuous working time of the gearboxes of the highest input rev. 指減速機在額定負載下，額定輸入轉速是減速機的連續工作時間。

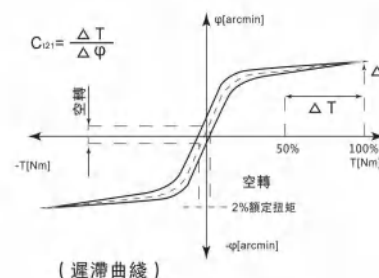
Precise positioning
定位精度

In high-speed reciprocating mechanical movement achieve precise positioning is the key to minimizing the movement through the angular deviation, positioning accuracy depends on the two values, with a load of the deflection angle, involving a return to space with torsion stiffness, and the other is control of the movement and rotation angle, involving partial synchronization the problem worse.

在高速機械往復運動中做到精確定位的關鍵在於盡量減小通過運動產生的角偏差。定位精度取決於兩個值，一個是與加載有關的偏轉角，涉及到回程間隙和扭轉剛度；另一個是與運動控制有關的偏轉角，涉及到同步偏差問題。

Backlash
回程間隙/背隙減速機輸出軸與輸入軸的最大偏差角，測量時先將齒輪輸入軸固定住，然後在輸出軸用力矩儀加載一定力矩(2%T_{2N})，以克服減速機內的摩擦力。

遲滯曲線

遲滯曲線是為了得出減速機的扭轉剛度，通過檢測得到遲滯曲線。檢測時，先將減速機輸入端固定住，然後在輸出端的兩個旋轉方向分別持續地加載到T_{2B}最大輸出力矩，繼而逐步卸載，用儀器記錄下力矩的偏差角，得到的曲線是一條閉合曲線，從中可以計算出減速機回程間隙(jt)和扭轉剛度(Ct21)。Inertia
轉動慣性

Moment of the rotary inertia in this description refers to that at the input terminal. Said an object strive to maintain their rotational state (or a stationary of rotating) characteristics of a value. 本說明書中的該值均指輸入端。表示一個物體盡力保持自己轉動狀態（或靜止或轉動）特徵的一個值。

The proportion of inertia
慣量比Refer to the ration of load inertia and inertia drive system (motor with gearbox). This ratio determines the controllable of the λ value, the greater is the moment of inertia greater margin, high-dynamic action on the more difficult process of precision control. The values can be control in 5, gearboxes can be used to reduce load 1/i².是指負載慣量與傳動系統慣量（電機加上減速機）之間的比值。這個比值決定了系統的可控性。λ值越大，也就是各轉動慣量差值越大，高動態的動作過程就越難精確控制，建議盡可能將λ值控制在<5。齒輪箱可以將負載慣量降低1/i²。Noise
噪音

The unit is decibel (dB). The value is measured when the input rev is 3000r/m without load and at the distance of one meter from the gearboxes.

單位是分貝(dB)。此數值是在輸入轉速為3000轉/分時，不帶負載，距離減速機一米距離時測量的。

Operating conditions
工作條件

Operating temp/工作溫度℃	-10℃~+90℃
Degree of protection/防護等級	IP54/IP65
Lubrication/潤滑	Life time lubrication/長效潤滑，整個試用期內無需添加潤滑劑
Mounting position/安裝方式	Any/任意

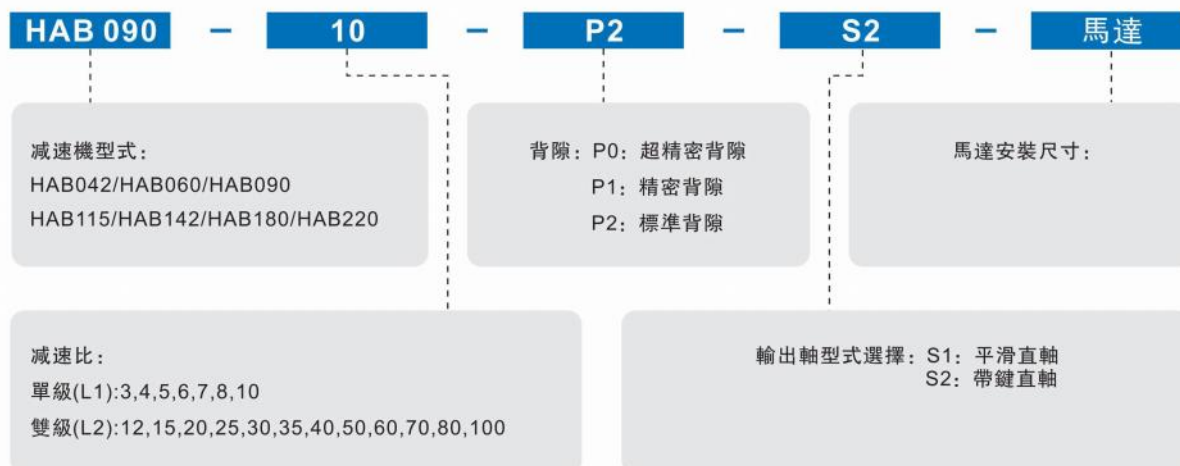
HAB/HABS

SERIES



MODEL ILLUMINATE

型號說明



選用範例：HAB090-10-P2-S2-19-70-90-M6-42

REDUCER PERFORMANCE DATA

減速機性能資料

規格		級數	減速比 ^①	HAB042	HAB060 HABS060	HAB090 HABS090	HAB115	HAB142	HAB180	HAB220
額定輸出力矩T _{2N}	N.m	1	3	20	55	130	208	342	588	1140
			4	19	50	140	290	542	1050	1700
			5	22	60	160	330	650	1200	2000
			6	20	55	150	310	600	1100	1900
			7	19	50	140	300	550	1100	1800
			8	17	45	120	260	500	1000	1600
			10	14	40	100	230	450	520	1220
		2	12	20	55	130	208	342	588	1140
			15	20	55	130	208	342	588	1140
			20	19	50	140	290	542	1050	1700
			25	22	60	160	330	650	1200	2000
			30	22	55	130	208	342	1200	2000
			35	22	60	160	330	650	1200	2000
			40	22	50	140	290	542	1200	2000
			50	22	60	160	330	650	1200	2000
			60	20	55	150	310	600	1100	1900
			70	19	50	140	300	550	1000	1800
			80	17	45	120	260	500	1000	1600
			100	14	40	100	230	450	520	1220
最大輸出力矩T _{2B}	N.m	1,2	3~100	3倍額定輸出力矩						
額定輸入轉速n ₁	rpm	1,2	3~100	5000	5000	4000	4000	3000	3000	2000
最大輸入轉速n _{1B}	rpm	1,2	3~100	10000	10000	8000	8000	6000	6000	4000
超精密背隙 P0	arcmin	1	3~10	—	—	≤1	≤1	≤1	≤1	≤1
		2	3~100	—	—	≤3	≤3	≤3	≤3	≤3
精密背隙 P1	arcmin	1	3~10	≤3	≤3	≤3	≤3	≤3	≤3	≤3
		2	12~100	≤5	≤5	≤5	≤5	≤5	≤5	≤5
標準背隙 P2	arcmin	1	3~10	≤5	≤5	≤5	≤5	≤5	≤5	≤5
		2	12~100	≤7	≤7	≤7	≤7	≤7	≤7	≤7
扭轉剛性	Nm/arcmin	1,2	3~100	3	7	14	25	50	145	225
容許徑向力F _{2rB} ^②	N	1,2	3~100	780	1530	3250	6700	9400	14500	50000
容許軸向力F _{2aB} ^②	N	1,2	3~100	390	765	1625	3350	4700	7250	25000
使用壽命	hr	1,2	3~100	20000*						
效率 η	%	1	3~10	≥97%						
		2	12~100	≥94%						
重量	kg	1	3~10	0.5	1.3	3.7	7.8	14.5	29	48
		2	12~100	0.8	1.9	4.1	9	17.5	33	60
使用溫度	℃	1,2	3~100	-10℃~+90℃						
潤滑		1,2	3~100	合成潤滑油脂						
防護等級		1,2	3~100	IP65						
安裝方向		1,2	3~100	任意方向						
噪音值(n ₁ =3000rpm)	dB	1,2	3~100	≤56	≤58	≤60	≤63	≤65	≤67	≤70

減速機轉動慣量

規格		級數	減速比 ^①	HAB042	HAB060 HABS060	HAB090 HABS090	HAB115	HAB142	HAB180	HAB220
轉動慣量J ₁	kg · cm ²	1	3	0.03	0.16	0.61	3.25	9.21	28.98	69.61
			4	0.03	0.14	0.48	2.74	7.54	23.67	54.37
			5	0.03	0.13	0.47	2.71	7.42	23.29	53.27
			6	0.03	0.13	0.45	2.65	7.25	22.75	51.72
			7	0.03	0.13	0.45	2.62	7.14	22.48	50.97
			8	0.03	0.13	0.44	2.58	7.07	22.59	50.84
			10	0.03	0.13	0.44	2.57	7.03	22.51	50.56
		2	12	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			15	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			20	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			25	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			30	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			35	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			40	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			50	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			60	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			70	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			80	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			100	0.03	0.03	0.13	0.44	2.57	7.03	22.51

1.減速比($i=N_{in}/N_{out}$)

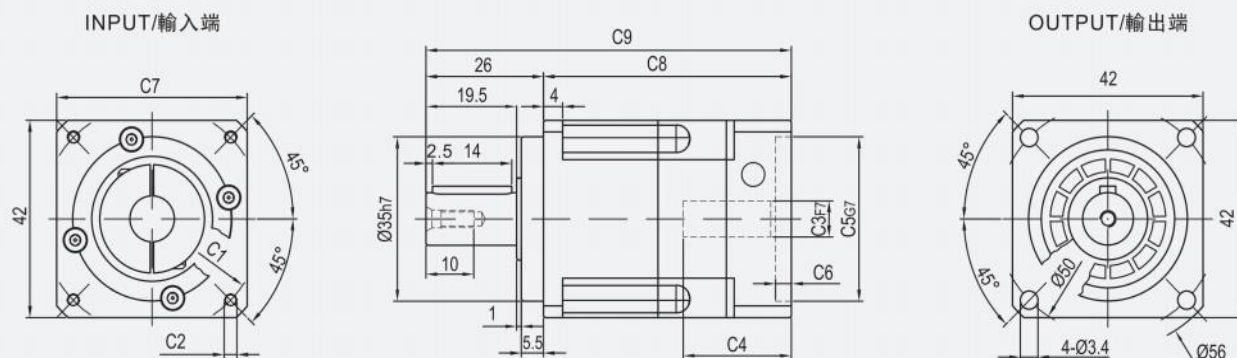
*連續運轉降低使用壽命二分之一。

2.輸出轉速100rpm時，作用于輸出軸中心位置。

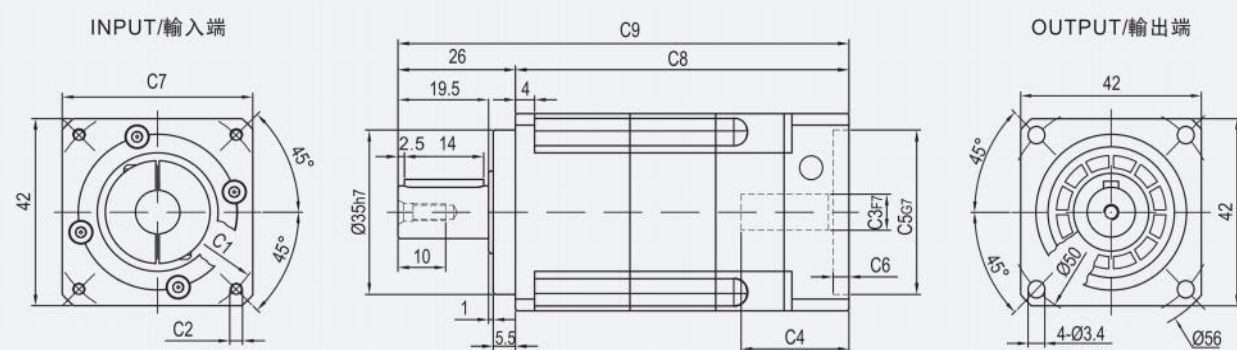
OUTLINE DIMENSION SHEET

外形尺寸圖表

HAB-042-L1

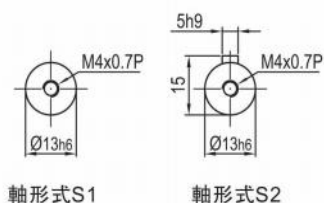


HAB-042-L2



Output Diameter

輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
HAB-042D-L1	Ø46	4-M4x10	Ø8	26	Ø30	4	42	60	86
	Ø45	4-M3x8							
HAB-042D-L2	Ø46	4-M4x10	Ø8	26	Ø30	4	42	84.5	110.5
	Ø45	4-M3x8							

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

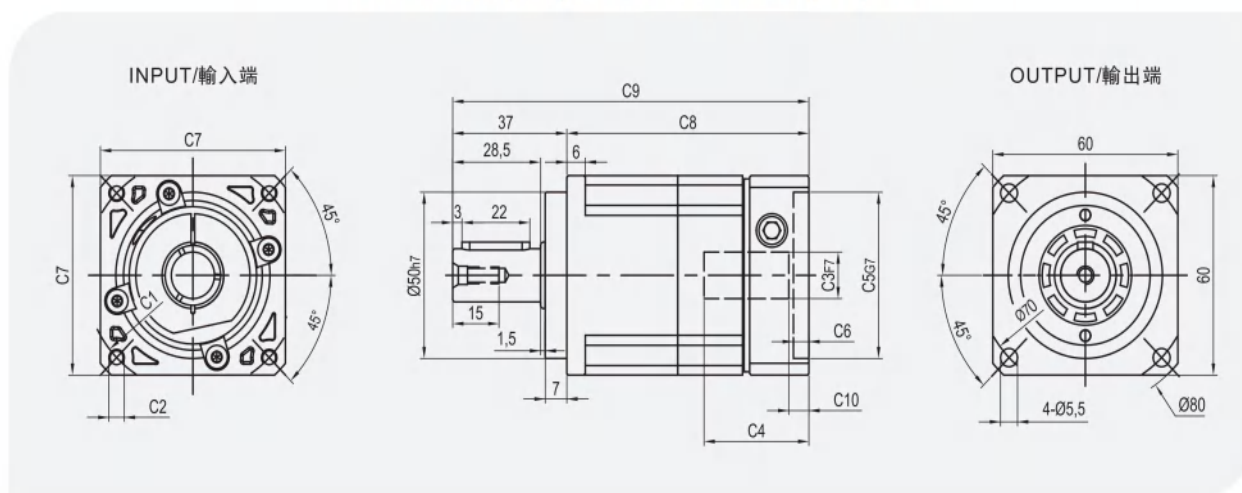
*D:Conventional Hole, M1:Limit Hole

*D:常規孔, M1:極限孔

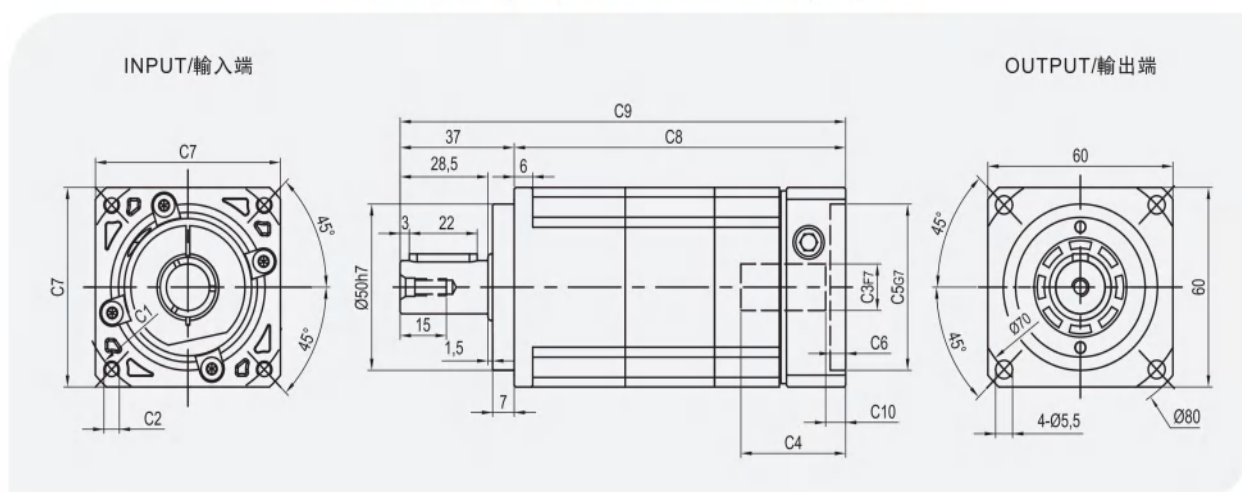
OUTLINE DIMENSION SHEET

外形尺寸圖表

HAB-060D(M1)-L1/HABS-060D(M1)-L1

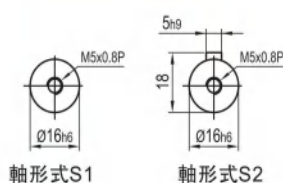


HAB-060D(M1)-L2/HABS-060D(M1)-L2



Output Diameter

輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HAB-060D-L1	Ø66.7	4-M4x10	Ø8	34	Ø38.1	5	60	78.5	115.5	5.5
HABS-060D-L1								107.5	144.5	5.5
HAB-060D-L2								107.5	144.5	5.5
HAB-060D-L1	Ø70	4-M4x10,4-M5x12	Ø11,Ø14	34	Ø50	5	60	78.5	115.5	5.5
HABS-060D-L1								107.5	144.5	5.5
HAB-060D-L2								107.5	144.5	5.5
HAB-060M1-L1	Ø90	4-M5x12,4-M6x14	Ø19	42	Ø70	6.5	80	85	122	12
HABS-060M1-L1								114	151	12
HAB-060M1-L2								114	151	12

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D:Conventional Hole, M1:Limit Hole

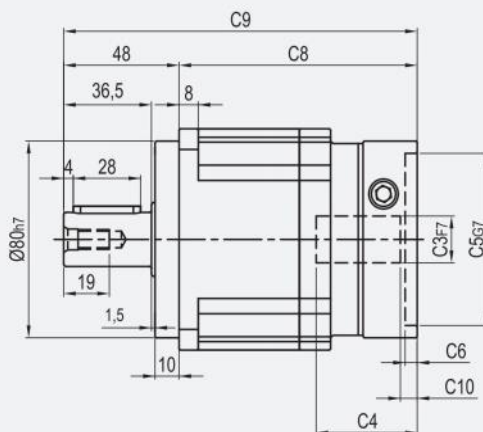
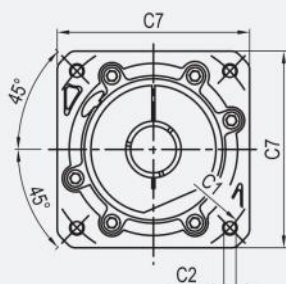
*D:常規孔, M1:極限孔

OUTLINE DIMENSION SHEET

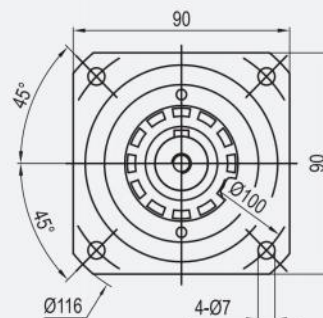
外形尺寸圖表

HAB-090D(M1)-L1/HABS-090D(M1)-L1

INPUT/輸入端

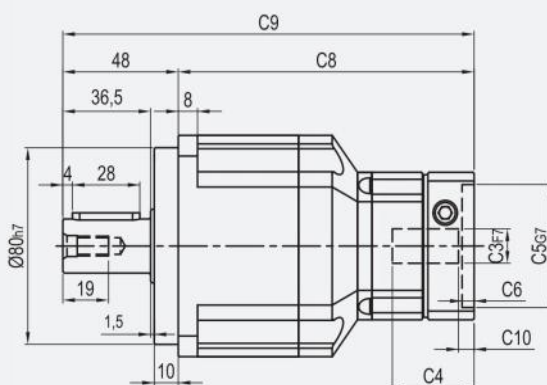
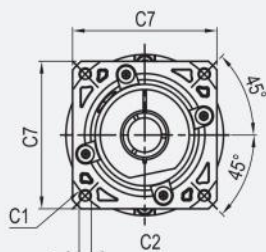


OUTPUT/輸出端

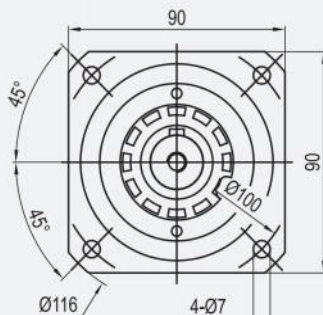


HAB-090D(M1)-L2/HABS-090D(M1)-L2

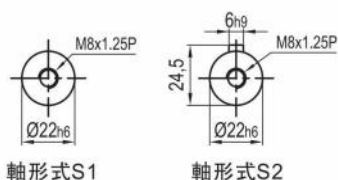
INPUT/輸入端



OUTPUT/輸出端



Output Diameter 輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HAB-090D-L1	Ø90	4-M5x12,4-M6x14	Ø19	42	Ø70	6.5	80	99	147	7
HABS-090D-L1	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	99	147	6
HAB-090M1-L1	Ø115	4-M8x20	Ø19, Ø22	56.5	Ø95	8	100	114.5	162.5	16.5
HABS-090M1-L1	Ø145	4-M8x20	Ø19, Ø22, Ø24	59	Ø110	11	130	117	165	19
HAB-090D-L2	Ø66.7	4-M4x10	Ø8	34	Ø38.1	5	60	123	171	5.5
HABS-090D-L2	Ø70	4-M4x10,4-M5x12	Ø11, Ø14	34	Ø50	5	60	124.5	172.5	5.5
HAB-090M1-L2	Ø90	4-M5x12,4-M6x14	Ø19	42	Ø70	6.5	80	129.5	177.5	12
HABS-090M1-L2	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	129.5	177.5	11

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

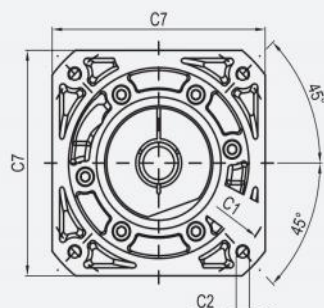
*D: 常規孔，M1: 極限孔

OUTLINE DIMENSION SHEET

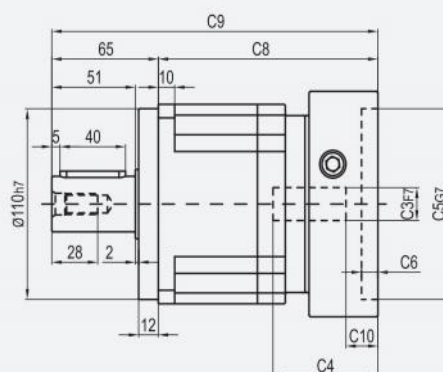
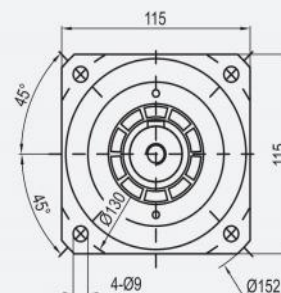
外形尺寸圖表

HAB-115D(M1)-L1

INPUT/輸入端

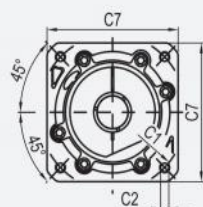


OUTPUT/輸出端

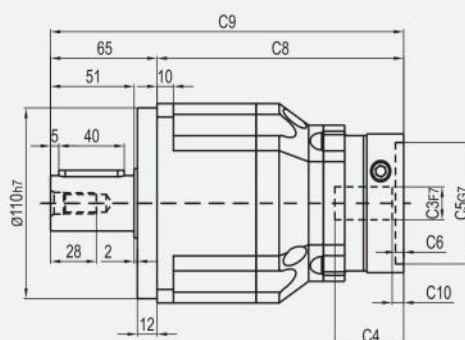
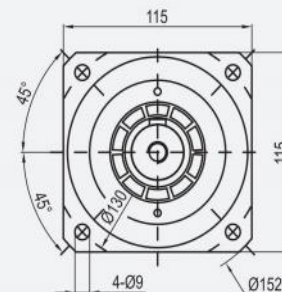


HAB-115D(M1)-L2

INPUT/輸入端

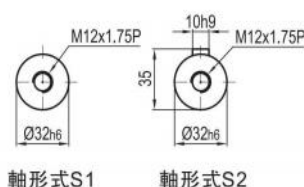


OUTPUT/輸出端



Output Diameter

輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HAB-115D-L1	Ø145	4-M8x20	Ø19, Ø22, Ø24	64	Ø110	10	130	134	199	19.5
HAB-115M1-L1	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	151.5	216.5	28
HAB-115D-L2	Ø90	4-M5x12, 4-M6x14	Ø19	42	Ø70	6.5	80	150.5	215.5	7
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	150.5	215.5	6
HAB-115M1-L2	Ø115	4-M8x20	Ø19, Ø22	56.5	Ø95	8	100	166	231	16.5
	Ø145	4-M8x20	Ø19, Ø22, Ø24	59	Ø110	11	130	168.5	233.5	19

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

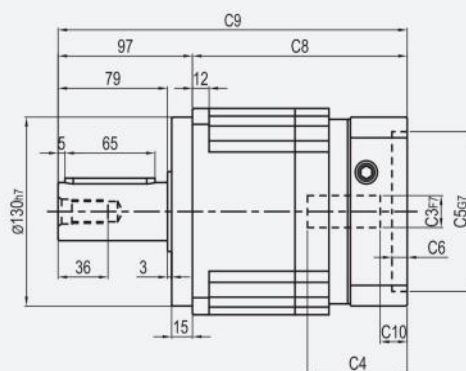
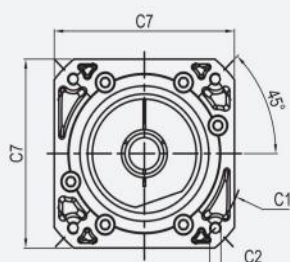
*D: 常規孔, M1: 極限孔

OUTLINE DIMENSION SHEET

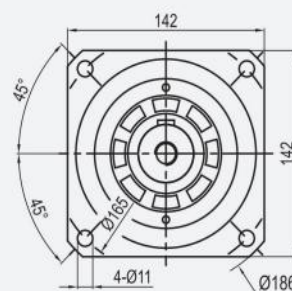
外形尺寸圖表

HAB-142D(M1)-L1

INPUT/輸入端

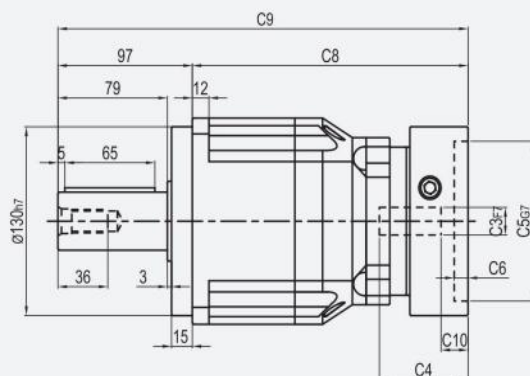
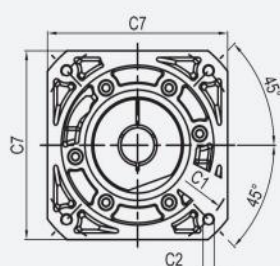


OUTPUT/輸出端

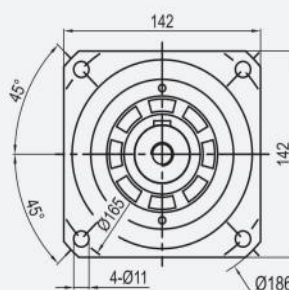


HAB-142D(M1)-L2

INPUT/輸入端

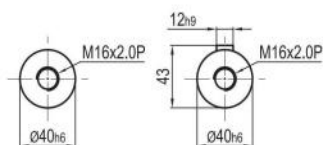


OUTPUT/輸出端



Output Diameter

輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HAB-142D-L1	Ø145	4-M8x20	Ø22, Ø24	72	Ø110	11	130	155	252	19.5
	Ø200	4-M12x28	Ø35	81.5	Ø114.3	8	180	165	262	25
HAB-142D-L2	Ø145	4-M8x20	Ø19, Ø22, Ø24	64	Ø110	10	130	199	296	19.5
HAB-142M1-L2	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	216.5	313.5	28

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

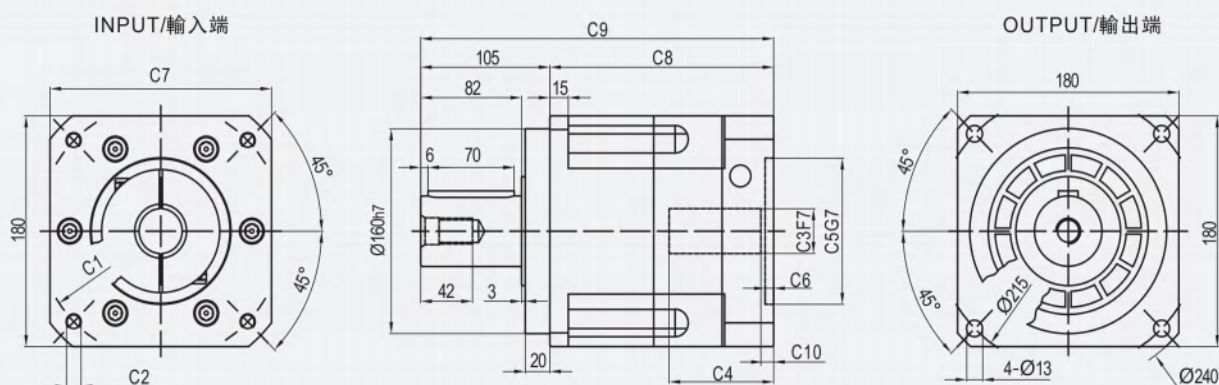
*D:Conventional Hole, M1:Limit Hole

*D:常規孔, M1:極限孔

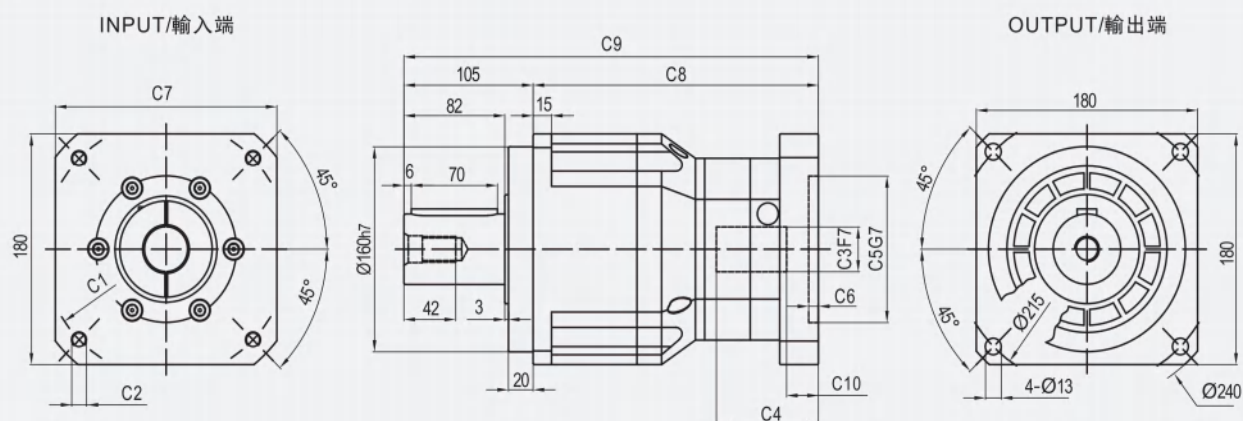
OUTLINE DIMENSION SHEET

外形尺寸圖表

HAB-180-L1

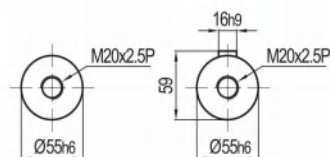


HAB-180-L2



Output Diameter

輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HAB-180D-L1	Ø200	4-M12x28	Ø35	82	Ø114.3	8	180	178	283	8.5
	Ø200	4-M12x28	Ø42	117.5	Ø114.3	8	180	213.5	318.5	45.5
	Ø215	4-M12x28	Ø38	87	Ø180	8	192	183	288	13.5
	Ø235	4-M12x28	Ø42	117.5	Ø200	10	220	213.5	318.5	45.5
HAB-180D-L2	Ø145	4-M8x20	Ø22/Ø24	72	Ø110	11	130	231	336	19.5
	Ø200	4-M12x28	Ø35	81.5	Ø114.3	8	180	241	346	25

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

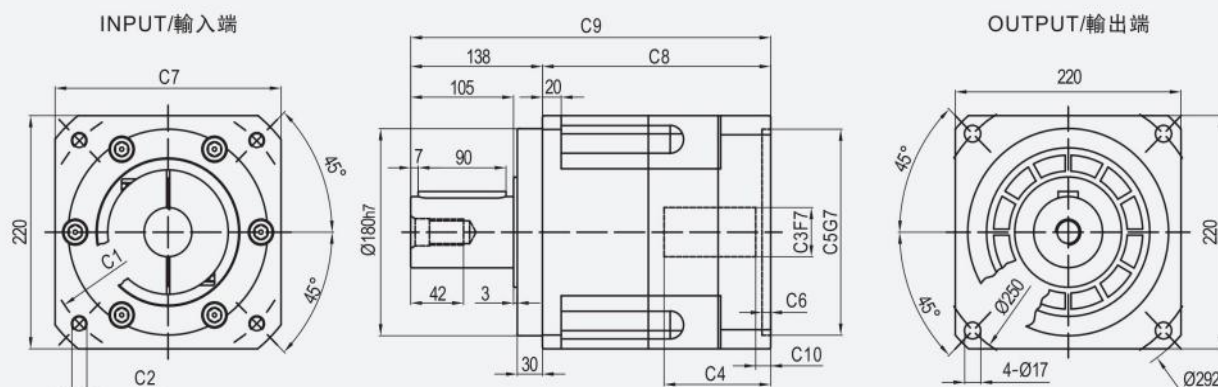
*D:Conventional Hole, M1:Limit Hole

*D:常規孔，M1:極限孔

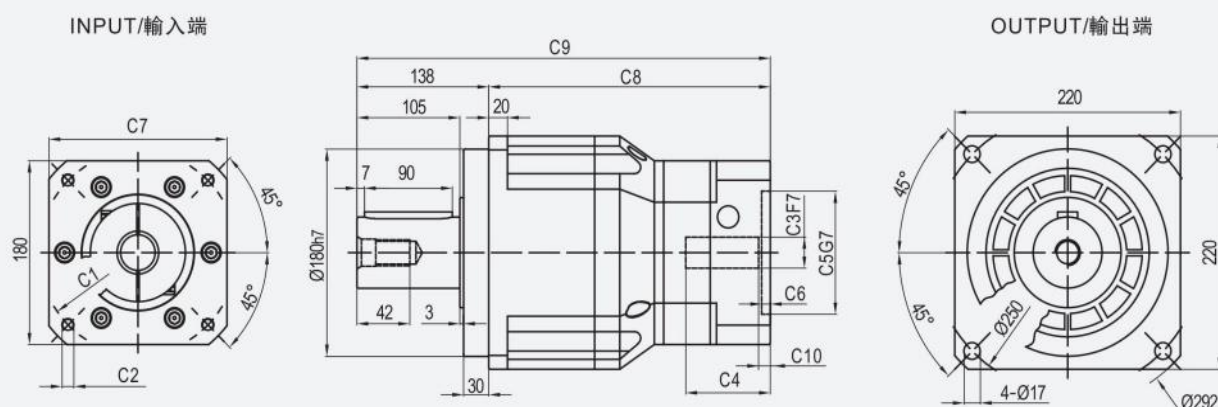
OUTLINE DIMENSION SHEET

外形尺寸圖表

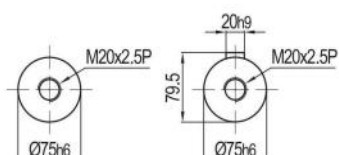
HAB-220-L1



HAB-220-L2



Output Diameter 輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HAB-220D-L1	Ø200	4-M12x28	Ø35/Ø42	118	Ø114.3	15	200	230	368	24
	Ø215	4-M12x30	Ø38	108	Ø180	8	200	220	358	11.5
	Ø235	4-M12x30	Ø42/Ø55	118	Ø200	10	220	230	368	24
HAB-220D-L2	Ø200	4-M12x28	Ø35	82	Ø114.3	8	180	271.5	409.5	8.5
	Ø200	4-M12x28	Ø42	117.5	Ø114.3	8	180	307	445	45.5
	Ø215	4-M12x28	Ø38	87	Ø180	8	192	276.5	414.5	13.5
	Ø235	4-M12x28	Ø42	117.5	Ø200	10	220	307	445	45.5

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

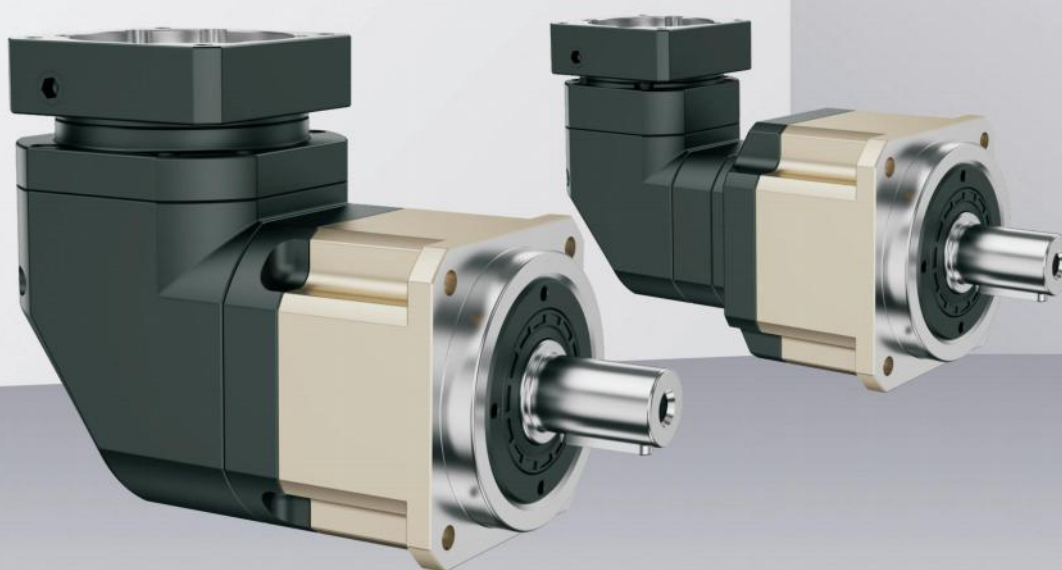
*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D:Conventional Hole, M1:Limit Hole

*D:常規孔, M1:極限孔

HABR

SERIES



MODEL ILLUMINATE

型號說明

HABR 090 — **10** — **P2** — **S2** — **馬達**

減速機型式：

HABR042/HABR060/HABR090
HABR115/HABR142/HABR180/
HABR220

背隙：P0：超精密背隙

P1：精密背隙

P2：標準背隙

馬達安裝尺寸：

減速比：

單級(L1):3,4,5,6,7,8,10,14,20

雙級(L2):12,15,20,25,30,35,40,50,60,70,80,100,
120,140,160,200

輸出軸型式選擇：S1：平滑直軸
S2：帶鍵直軸

選用範例：HABR090-10-P2-S2-19-70-90-M6-45

REDUCER PERFORMANCE DATA

減速機性能資料

規格	級數	減速比 ^①	HABR042	HABR060	HABR090	HABR115	HABR142	HABR180	HABR220
額定輸出力矩 T_{2N}	1	3	20	55	130	208	342	588	1140
		4	19	50	140	290	542	1050	1700
		5	22	60	160	330	650	1200	2000
		6	20	55	150	310	600	1100	1900
		7	19	50	140	300	550	1100	1800
		8	17	50	140	290	542	1000	1600
		10	14	60	160	330	650	520	1220
		14	-	50	140	300	550	1100	1800
		20	-	40	100	230	450	520	1220
	2	12	-	55	130	208	342	588	1140
		15	20	55	130	208	342	588	1140
		20	19	50	140	290	542	1050	1700
		25	22	60	160	330	650	1200	2000
		30	22	55	130	208	342	1200	2000
		35	22	60	160	330	650	1200	2000
		40	22	50	140	290	542	1200	2000
		50	22	60	160	330	650	1200	2000
		60	22	55	150	310	600	1200	2000
		70	22	60	160	330	650	1200	2000
		80	22	50	140	290	542	1200	2000
		100	22	60	160	330	650	1200	2000
		120	-	-	150	310	600	1100	1900
		140	-	-	140	300	550	1100	1800
		160	-	-	120	260	500	1000	1600
		200	-	-	100	230	450	520	1220
最大輸出力矩 T_{2B}	N.m	1,2	3~200	3倍額定輸出力矩					
額定輸入轉速 n_1	rpm	1,2	3~200	5000	5000	4000	4000	3000	2000
最大輸入轉速 n_{1B}	rpm	1,2	3~200	10000	10000	8000	8000	6000	4000
超精密背隙 P0	arcmin	1	3~20	-	-	≤2	≤2	≤2	≤2
		2	12~200	-	-	≤4	≤4	≤4	≤4
精密背隙 P1	arcmin	1	3~20	≤4	≤4	≤4	≤4	≤4	≤4
		2	12~200	≤7	≤7	≤7	≤7	≤7	≤7
標準背隙 P2	arcmin	1	3~20	≤6	≤6	≤6	≤6	≤6	≤4
		2	12~200	≤9	≤9	≤9	≤9	≤9	≤7
扭轉剛性	Nm/arcmin	1,2	3~200	3	7	14	25	50	145
容許徑向力 F_{2rB} ^②	N	1,2	3~200	780	1530	3250	6700	9400	14500
容許軸向力 F_{2a2B} ^②	N	1,2	3~200	390	765	1625	3350	4700	7250
使用壽命	hr	1,2	3~200	20000*					
效率 η	%	1	3~20	≥95%					
		2	12~200	≥92%					
重量	kg	1	3~20	0.9	2.1	6.4	13	24.5	51
		2	12~200	1.2	2.5	7.8	14.2	27.5	54
使用溫度	°C	1,2	3~200	-10°C~+90°C					
潤滑		1,2	3~200	合成潤滑油脂					
防護等級		1,2	3~200	IP65					
安裝方向		1,2	3~200	任意方向					
噪音值($n_1=3000\text{rpm}$)	dB	1,2	3~200	≤61	≤63	≤65	≤68	≤70	≤72
								≤74	

減速機轉動慣量

規格	級數	減速比 ^①	HABR042	HABR060	HABR090	HABR115	HABR142	HABR180	HABR220
轉動慣量 J_1	1	3~7	0.09	0.35	2.25	6.84	23.4	68.9	135.4
		8~10	0.09	0.07	1.87	6.25	21.8	65.6	119.8
		14~20	-	0.07	1.87	6.25	21.8	65.6	119.8
	2	12~40	0.09	0.09	0.35	2.25	6.84	23.4	68.9
		50	0.09	0.09	0.31	1.87	6.25	21.8	65.6
		60	0.09	0.09	0.35	2.25	6.84	23.4	68.9
		70~100	0.09	0.09	0.31	1.87	6.25	21.8	65.6
		120~200	-	-	0.31	1.87	6.25	21.8	65.6

1.減速比($i=N_{in}/N_{out}$)

*連續運轉降低使用壽命二分之一。

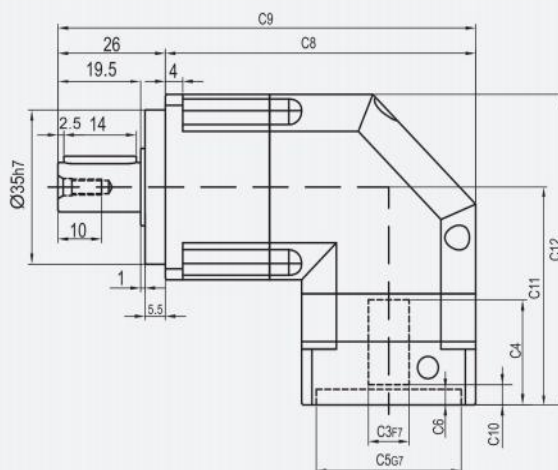
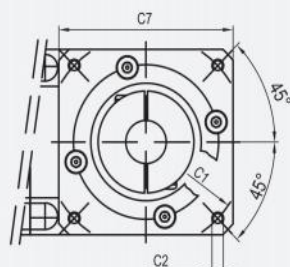
2.輸出轉速100rpm時，作用于輸出軸中心位置。

OUTLINE DIMENSION SHEET

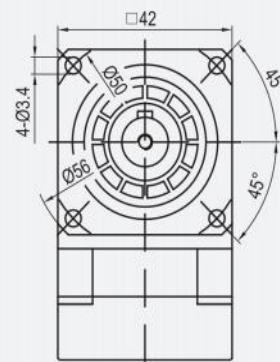
外形尺寸圖表

HABR-042-L1

INPUT/輸入端

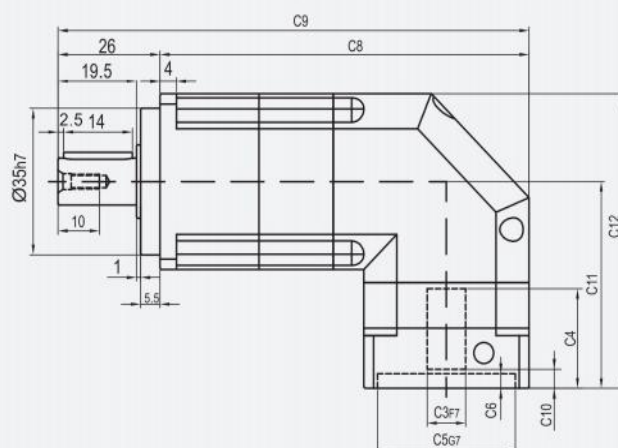
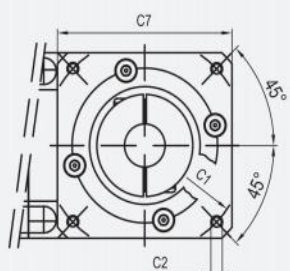


OUTPUT/輸出端

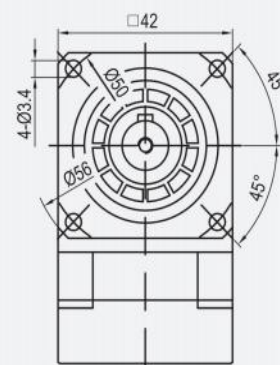


HABR-042-L2

INPUT/輸入端

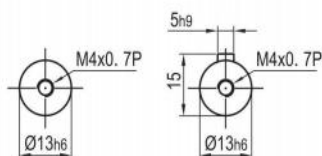


OUTPUT/輸出端



Output Diameter

輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
HABR-042D-L1	Ø46	4-M4x10	Ø8	26	Ø30	4	42	65.5	112.5	60	81
	Ø45	4-M3x8									
HABR-042D-L2	Ø46	4-M4x10	Ø8	26	Ø30	4	42	90	137	60	81
	Ø45	4-M3x8									

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

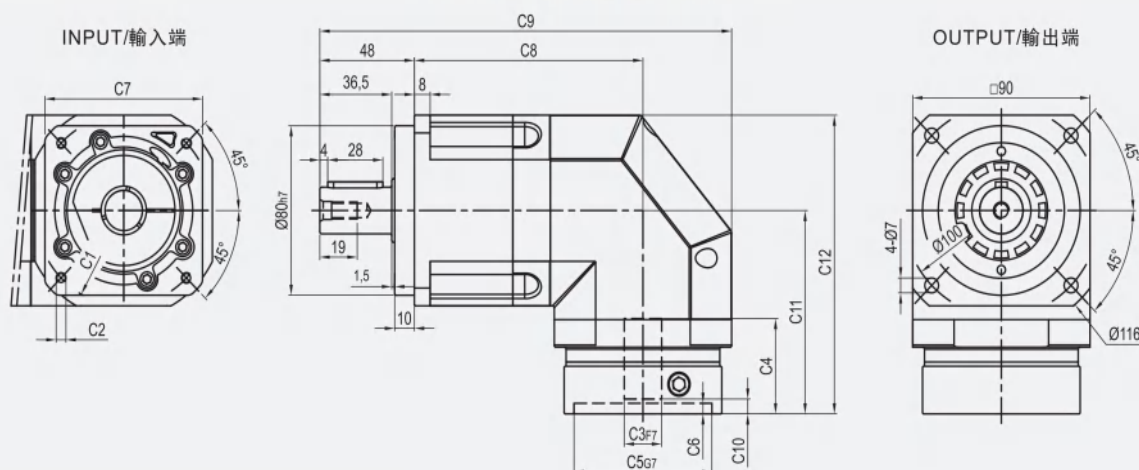
*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

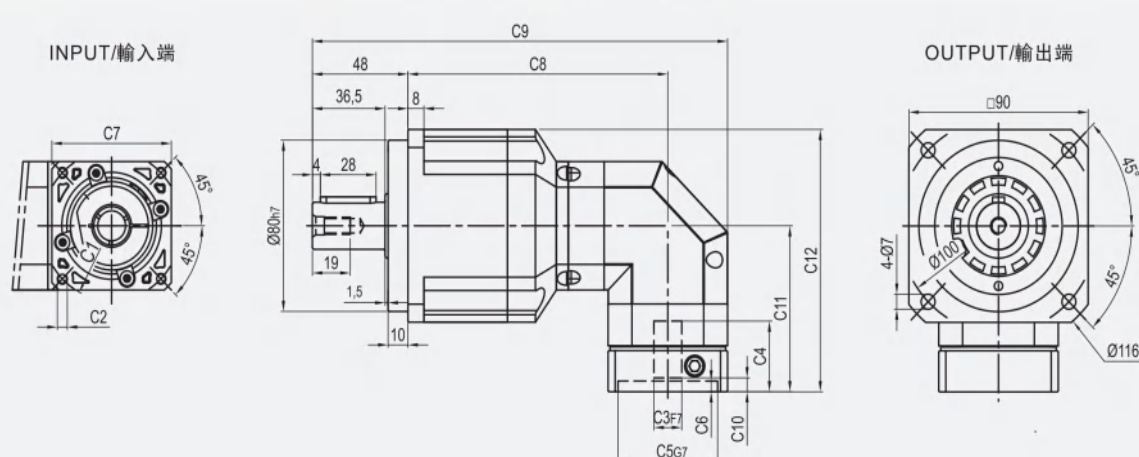
OUTLINE DIMENSION SHEET

外形尺寸圖表

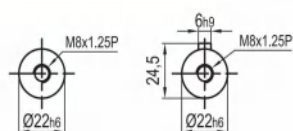
HABR-090D(M1)-L1



HABR-090D(M1)-L2



Output Diameter 輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HABR-090D-L1	Ø90	4-M5x12,4-M6x14	Ø19	45	Ø70	6.5	80	116	209	7	96	141
	Ø100	4-M6x14	Ø16	45	Ø80	6.5	86	116	209	6	96	141
HABR-090M1-L1	Ø115	4-M8x20	Ø19,Ø22	56.5	Ø95	8	100	116	214	16.5	117.5	162.5
	Ø145	4-M8x20	Ø19,Ø22,Ø24	59	Ø110	11	130	116	229	19	120	165
HABR-090D-L2	Ø66.7	4-M4x10	Ø8	33	Ø38.1	5	60	130.5	208.5	5.5	77.5	122.5
	Ø70	4-M4x10,4-M5x12	Ø11,Ø14	33	Ø50	5	60	130.5	208.5	5.5	77.5	122.5
HABR-090M1-L2	Ø90	4-M5x12,4-M6x14	Ø19	42.5	Ø70	6.5	80	130.5	218.5	12	87	132
	Ø100	4-M6x14	Ø16	42.5	Ø80	6.5	86	130.5	221.5	11	87	132

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

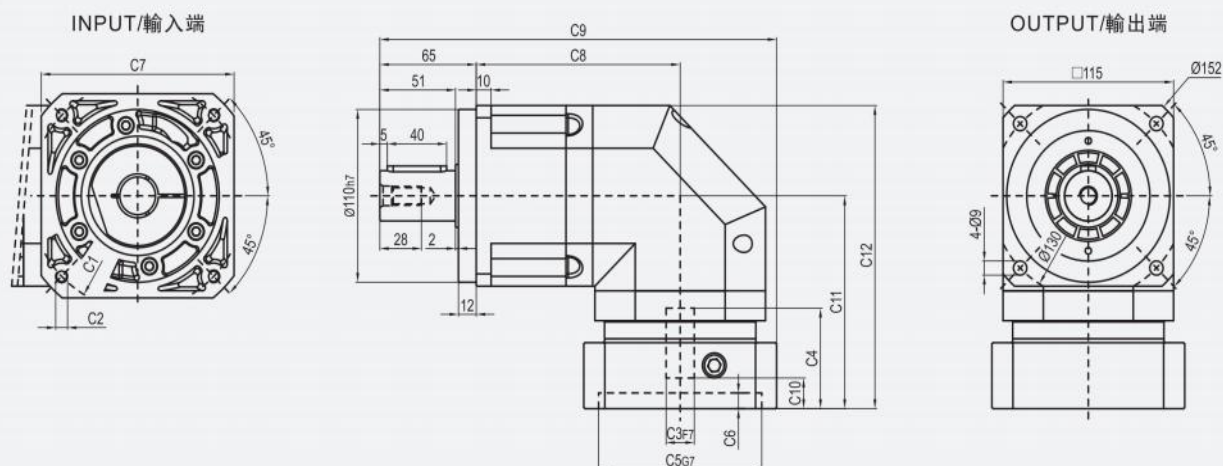
*D:Conventional Hole, M1:Limit Hole

*D:常規孔，M1:極限孔

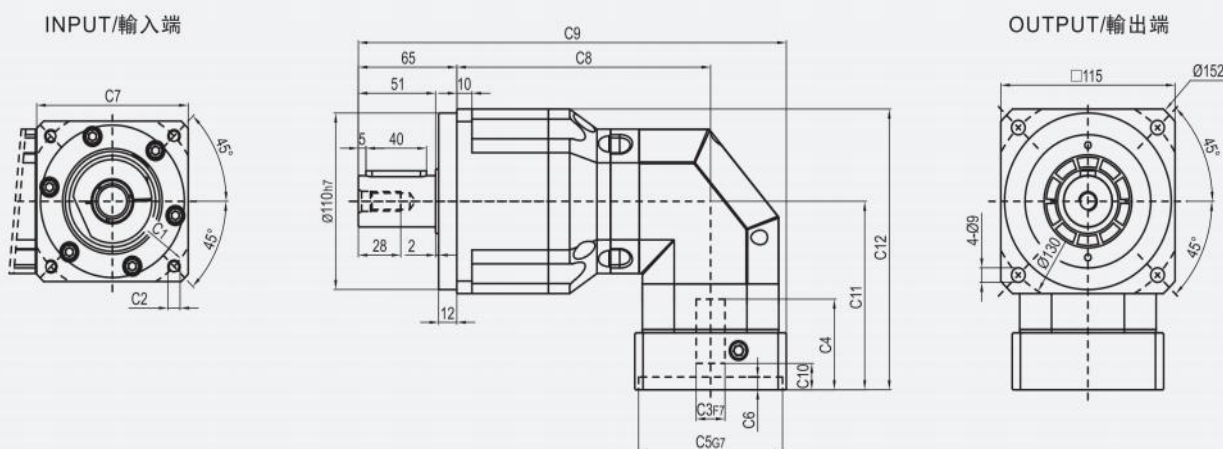
OUTLINE DIMENSION SHEET

外形尺寸圖表

HABR-115D(M1)-L1

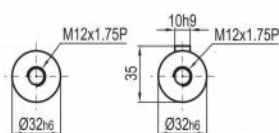


HABR-115D(M1)-L2



Output Diameter

輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HABR-115D-L1	Ø145	4-M8x20	Ø19, Ø22, Ø24	64	Ø110	10	130	137.5	267.5	19.5	135.5	193
HABR-115M1-L1	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	137.5	292.5	28	152.5	210
HABR-115D-L2	Ø90	4-M5x12, 4-M6x14	Ø19	45	Ø70	6.5	80	167.5	277.5	7	96	153.5
	Ø100	4-M6x14	Ø16	45	Ø80	6.5	86	167.5	277.5	6	96	153.5
HABR-115M1-L2	Ø115	4-M8x20	Ø19, Ø22	56.5	Ø95	8	100	167.5	282.5	16.5	117.5	175
	Ø145	4-M8x20	Ø19, Ø22, Ø24	59	Ø110	11	130	167.5	297.5	19	120	177.5

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

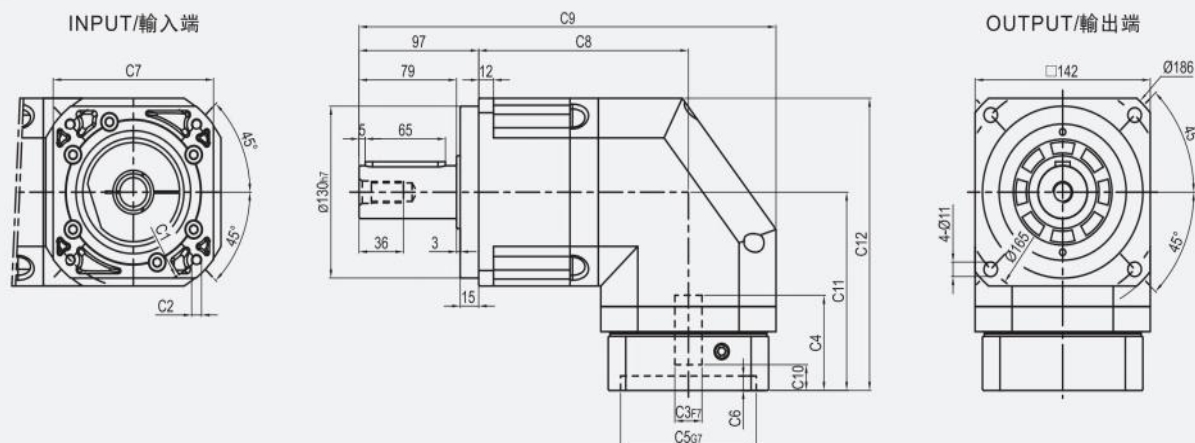
*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

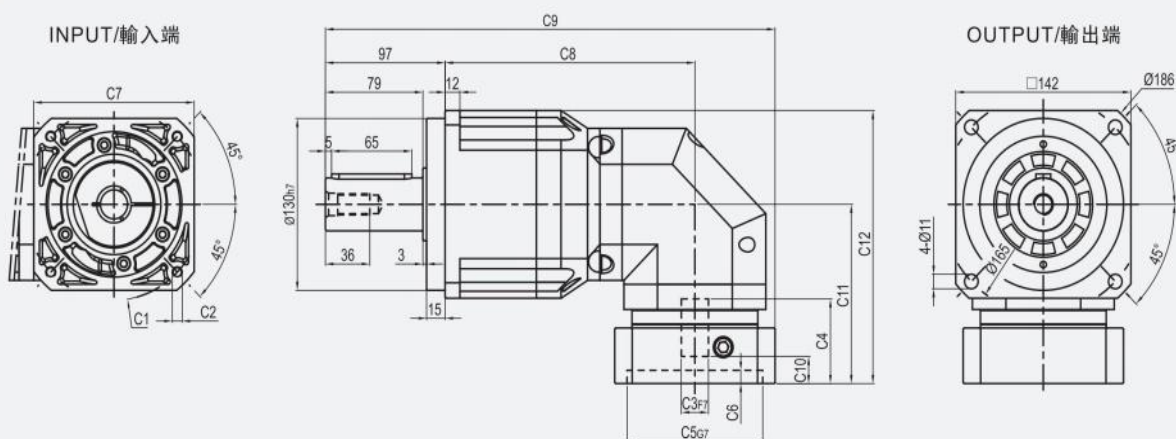
*D:常規孔, M1:極限孔

OUTLINE DIMENSION SHEET 外形尺寸圖表

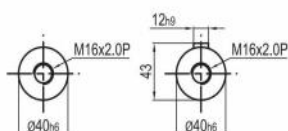
HABR-142D(M1)-L1



HABR-142D(M1)-L2



Output Diameter 輸出軸徑



軸形式S1 軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HABR-142D-L1	$\varnothing 145$	4-M8x20	$\varnothing 22, \varnothing 24$	72	$\varnothing 110$	11	130	170	338	19.5	150	221
	$\varnothing 200$	4-M12x28	$\varnothing 35$	82	$\varnothing 114.3$	8	180	170	357	25	160	231
HABR-142D-L2	$\varnothing 145$	4-M8x20	$\varnothing 19, \varnothing 22, \varnothing 24$	64	$\varnothing 110$	10	130	202.5	364.5	19.5	135.5	206.5
HABR-142M1-L2	$\varnothing 200$	4-M12x28	$\varnothing 35$	81	$\varnothing 114.3$	10	180	202.5	389.5	28	152.5	223.5

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

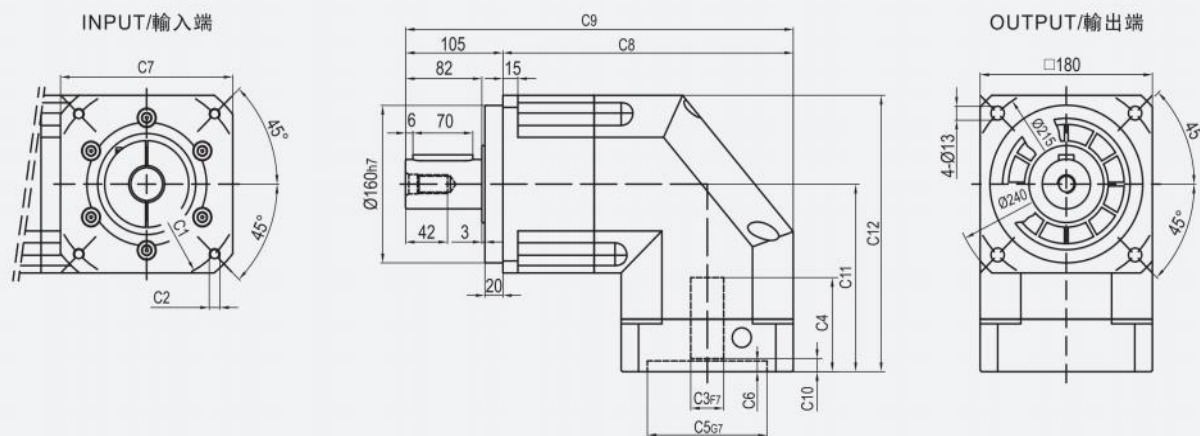
*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

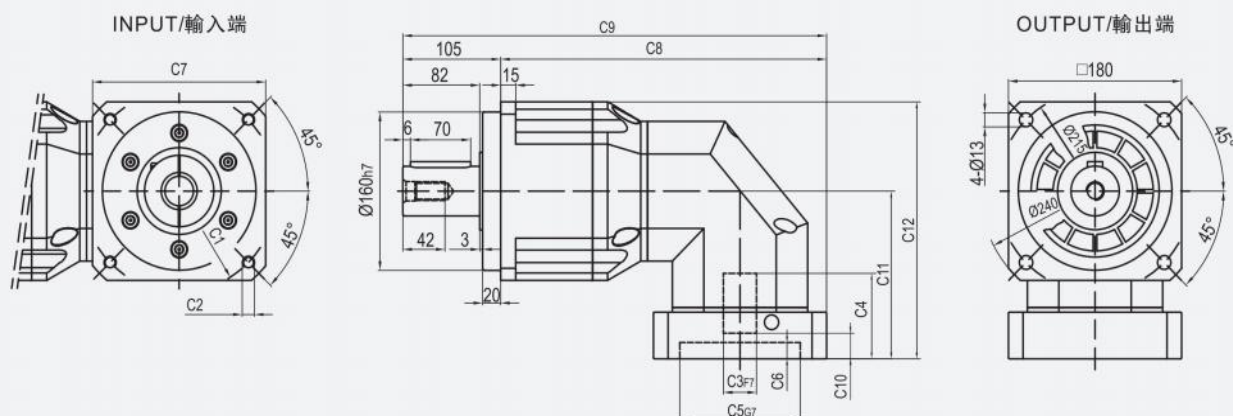
OUTLINE DIMENSION SHEET

外形尺寸圖表

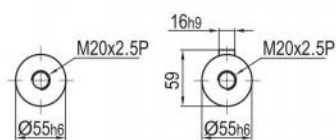
HABR-180-L1



HABR-180-L2



Output Diameter 輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HABR-180D-L1	Ø200	4-M12x28	Ø35	82	Ø114.3	8	180	210.5	405.5	8.5	214	304
	Ø200	4-M12x28	Ø42	117.5	Ø114.3	8	180	210.5	405.5	45.5	249.5	339.5
	Ø215	4-M12x28	Ø38	87	Ø180	8	192	210.5	411.5	13.5	219	309
	Ø235	4-M12x28	Ø42	117.5	Ø200	10	220	213.5	318.5	45.5	249.5	339.5
HABR-180D-L2	Ø145	4-M8x20	Ø22, Ø24	72	Ø110	11	130	246	422	19.5	150	240
	Ø200	4-M12x28	Ø35	81.5	Ø114.3	8	180	246	441	25	160	250

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

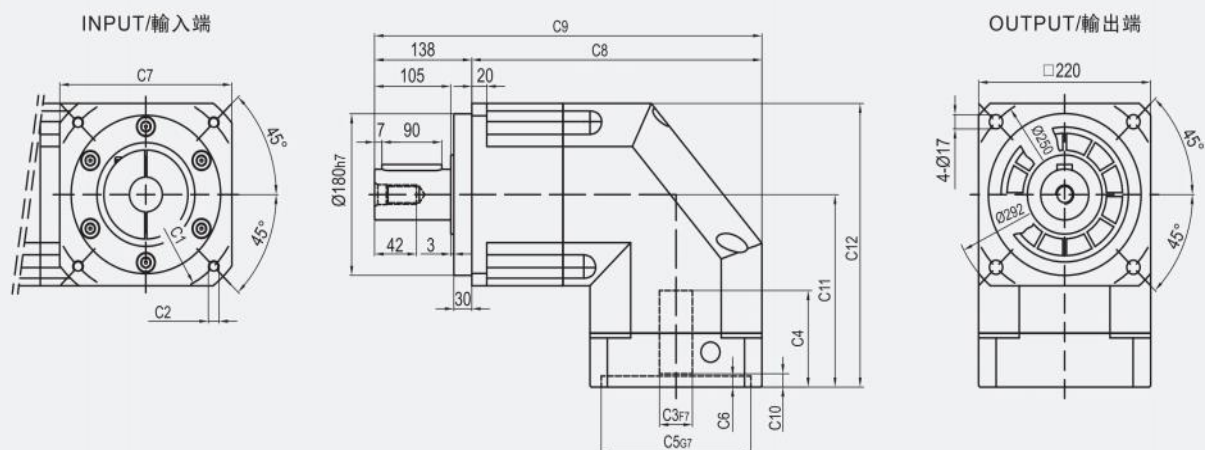
*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

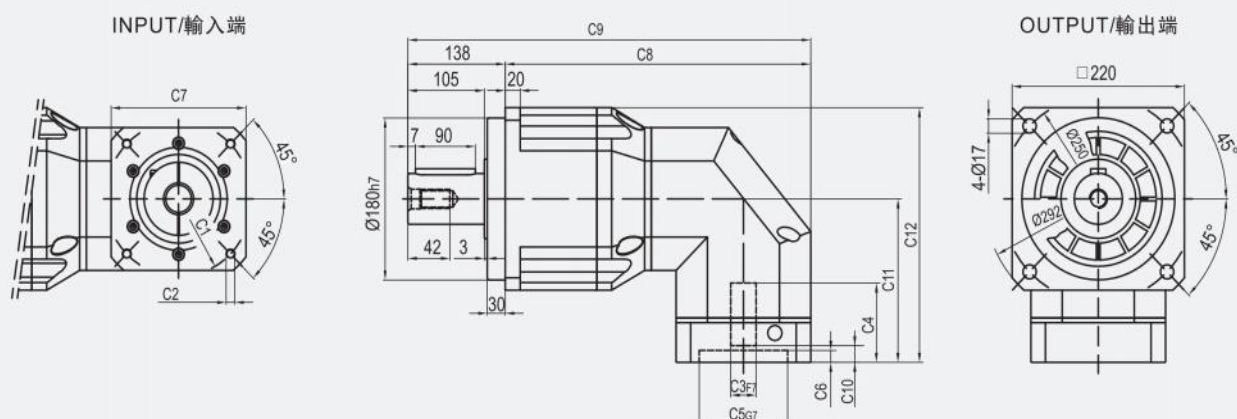
OUTLINE DIMENSION SHEET

外形尺寸圖表

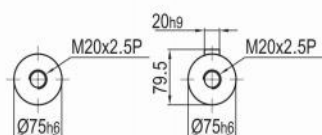
HABR-220-L1



HABR-220-L2



Output Diameter 輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HABR-220D-L1	Ø200	4-M12x28	Ø35, Ø42	120	Ø114.3	15	200	346.5	484.5	24	230	340
	Ø215	4-M12x30	Ø38	110	Ø180	8	200	346.5	484.5	11.5	220	330
	Ø235	4-M12x30	Ø42, Ø55	120	Ø200	10	220	346.5	494.5	24	230	340
HABR-220D-L2	Ø200	4-M12x28	Ø35	82	Ø114.3	8	180	304	532	8.5	214	324
	Ø200	4-M12x28	Ø42	117.5	Ø114.3	8	180	304	532	45.5	249.5	359.5
	Ø215	4-M12x28	Ø38	87	Ø180	8	192	304	538	13.5	219	329
	Ø235	4-M12x28	Ø42	117.5	Ø200	10	220	304	552	45.5	249.5	359.5

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*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

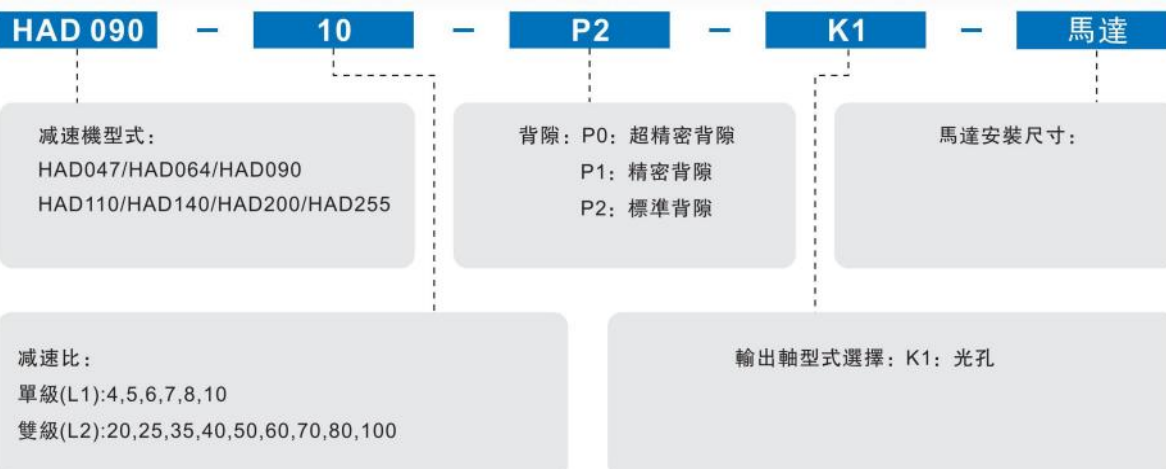
HAD

SERIES



MODEL ILLUMINATE

型號說明



選用範例：HAD090-10-P2-S2-19-70-90-M6-42

REDUCER PERFORMANCE DATA

減速機性能資料

規格		級數	減速比 ^①	HAD047	HAD064	HAD090	HAD110	HAD140	HAD200	HAD255
額定輸出力矩 T_{2N}	N.m	1	4	19	48	130	270	560	1100	1700
			5	22	60	160	330	650	1200	2000
			6	-	55	150	310	600	-	-
			7	19	50	140	300	550	1100	1800
			8	17	45	120	260	500	1000	1600
			10	14	40	100	230	450	520	1220
		2	20	19	48	130	270	560	1100	1700
			25	22	60	160	330	650	1200	2000
			35	22	60	160	330	650	1200	2000
			40	22	48	130	270	560	1200	2000
			50	22	60	160	330	650	1200	2000
			60	-	55	150	310	600	-	-
			70	19	50	140	300	550	1100	1800
			80	-	45	120	260	500	-	-
			100	14	40	100	230	450	520	1220
最大輸出力矩 T_{2B}	N.m	1,2	4~100	3倍額定輸出力矩						
額定輸入轉速 n_1	rpm	1,2	4~100	5000	5000	4000	4000	3000	3000	2000
最大輸入轉速 n_{1B}	rpm	1,2	4~100	10000	10000	8000	8000	6000	6000	4000
超精密背隙 P0	arcmin	1	4~100	-	-	≤1	≤1	≤1	≤1	≤1
		2	4~10	-	-	-	≤3	≤3	≤3	≤3
精密背隙 P1	arcmin	1	20~100	≤3	≤3	≤3	≤3	≤3	≤3	≤3
		2	4~10	≤5	≤5	≤5	≤5	≤5	≤5	≤5
標準背隙 P2	arcmin	1	20~100	≤5	≤5	≤5	≤5	≤5	≤5	≤5
		2	4~10	≤7	≤7	≤7	≤7	≤7	≤7	≤7
扭轉剛性	Nm/arcmin	1,2	20~100	7	13	31	82	151	440	1006
最大彎曲力矩 M_{2KB} ②	N.m	1,2	4~100	42.5	125	235	430	1300	3064	5900
容許徑向力 F_{2B} ②	N	1,2	4~100	1080	2110	2310	4800	6200	5450	10600
使用壽命	hr	1,2	4~100	20000*						
效率 η	%	1	4~10	≥97%						
		2	20~100	≥94%						
重量	kg	1	4~10	0.7	1.2	3.0	5.6	11.9	31.6	56.1
		2	20~100	1.0	1.6	3.7	7.3	15.9	36.9	70.4
使用溫度	°C	1,2	4~100	-10°C~+90°C						
潤滑		1,2	4~100	合成潤滑油脂						
防護等級		1,2	4~100	IP65						
安裝方向		1,2	4~100	任意方向						
噪音值($n_1=3000\text{rpm}$)	dB	1,2	4~100	≤56	≤58	≤60	≤63	≤65	≤67	≤70

減速機轉動慣量

規格		級數	減速比 ^①	HAD047	HAD064	HAD090	HAD110	HAD140	HAD200	HAD255
轉動慣量 J_1	kg · cm ²	1	4	0.03	0.14	0.51	2.87	7.54	25.03	58.31
			5	0.03	0.13	0.47	2.71	7.42	23.29	53.27
			6	-	0.13	0.45	2.65	7.25	-	-
			7	0.03	0.13	0.45	2.62	7.14	22.48	50.97
			8	0.03	0.13	0.45	2.58	7.07	22.48	50.97
			10	0.03	0.13	0.44	2.57	7.03	22.51	50.56
		2	20	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			25	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			35	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			40	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			50	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			60	-	0.03	0.13	0.44	2.57	-	-
			70	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			80	-	0.03	0.13	0.44	2.57	-	-
			100	0.03	0.03	0.13	0.44	2.57	7.03	22.51

1.減速比($i=N_{in}/N_{out}$)

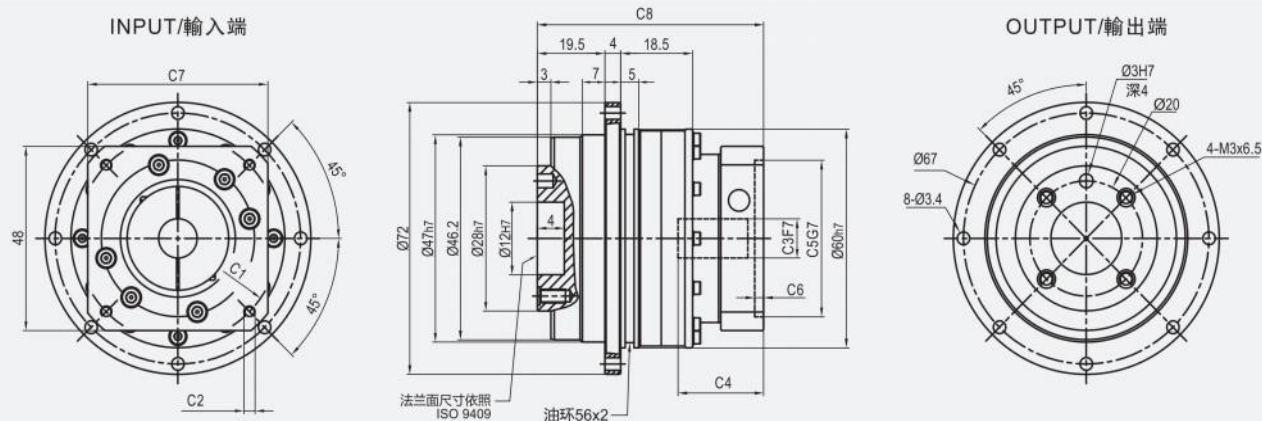
*連續運轉降低使用壽命二分之一。

2.輸出轉速100rpm時，作用于輸出軸中心位置。

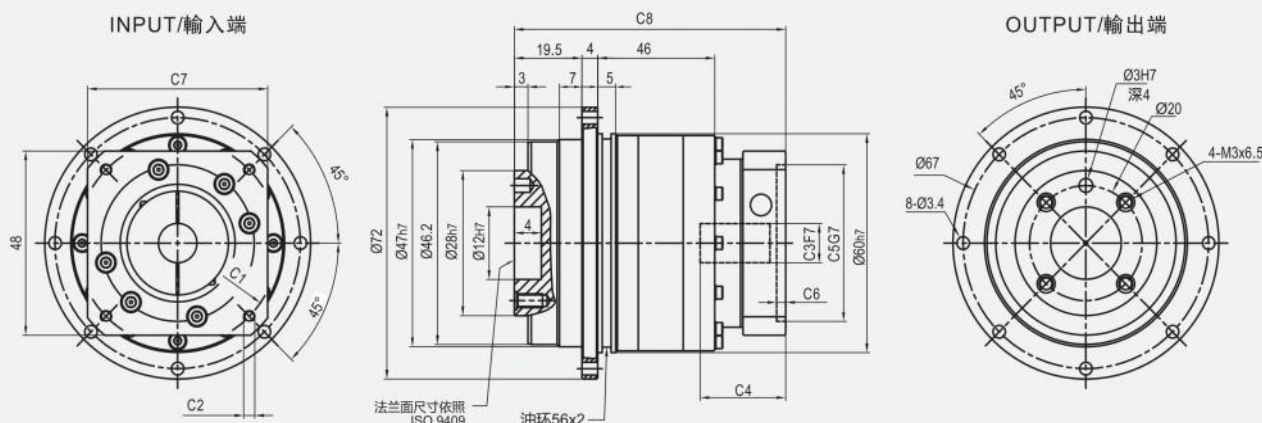
OUTLINE DIMENSION SHEET

外形尺寸圖表

HAD-047-L1



HAD-047-L2



尺寸	C1	C2	C3	C4	C5	C6	C7	C8
HAD-047D-L1	Ø46	4-M4x10	Ø8	26	Ø30	4	42	67.5
	Ø45	4-M3x8						
HAD-047D-L2	Ø46	4-M4x10	Ø8	26	Ø30	4	42	92
	Ø45	4-M3x8						

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

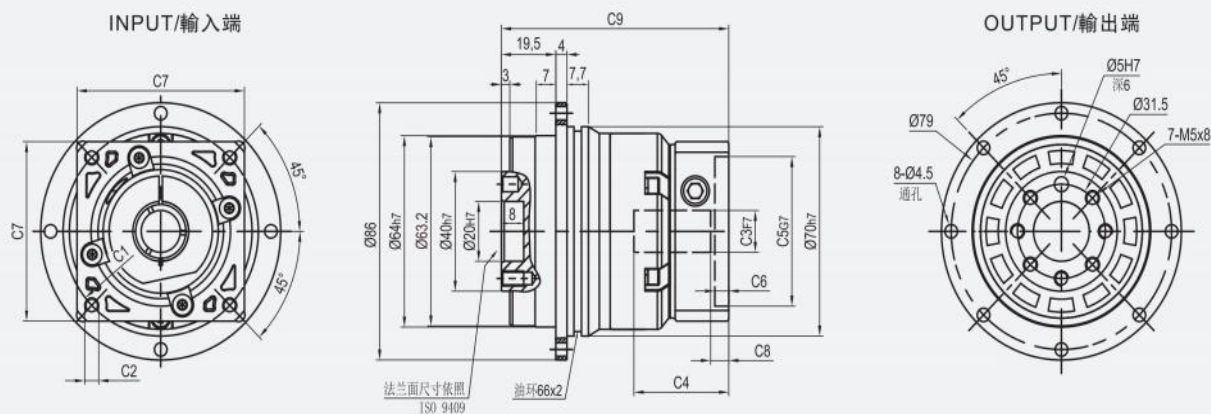
*D:Conventional Hole, M1:Limit Hole

*D:常規孔，M1:極限孔

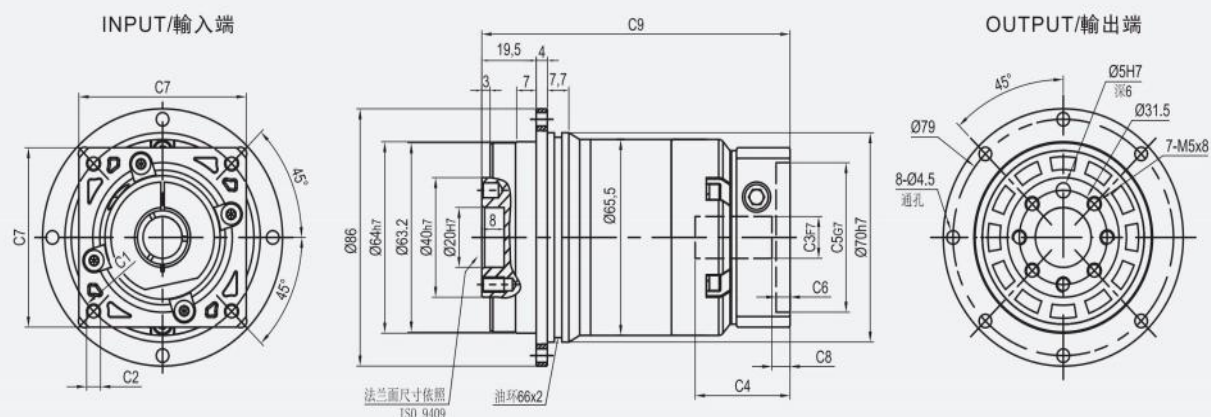
OUTLINE DIMENSION SHEET

外形尺寸圖表

HAD-064D(M1)-L1



HAD-064D(M1)-L2



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
HAD-064D-L1	Ø66.7	4-M4x10	Ø8	34	Ø38.1	5	60	5.5	81.5
HAD-064D-L2									110.5
HAD-064D-L1	Ø70	4-M4x10, 4-M5x12	Ø11, Ø14	34	Ø50	5	60	5.5	81.5
HAD-064D-L2									110.5
HAD-064M1-L1	Ø90	4-M5x12, 4-M6x14	Ø19	42	Ø70	6.5	80	12	88
HAD-064M1-L2									117

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

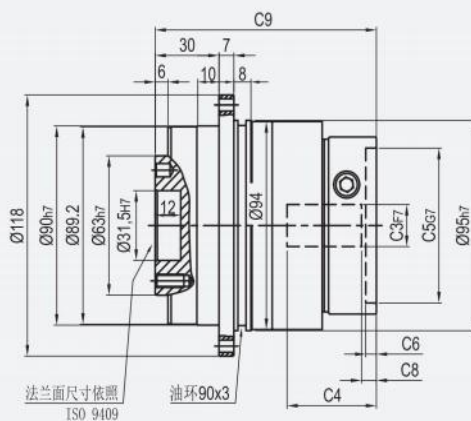
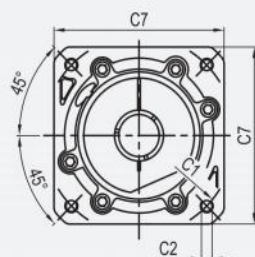
*D: 常規孔, M1: 極限孔

OUTLINE DIMENSION SHEET

外形尺寸圖表

HAD-090D(M1)-L1

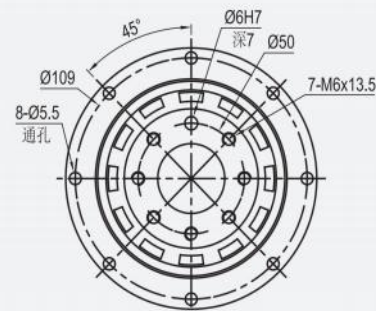
INPUT/輸入端



法兰面尺寸依照
ISO 9409

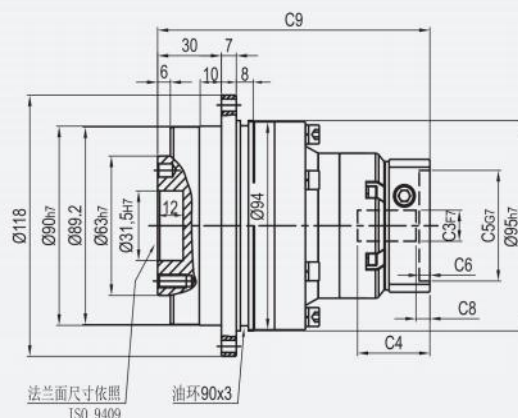
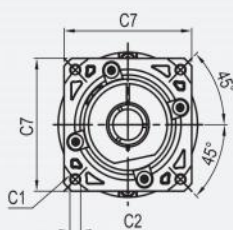
油环90x3

OUTPUT/輸出端



HAD-090D(M1)-L2

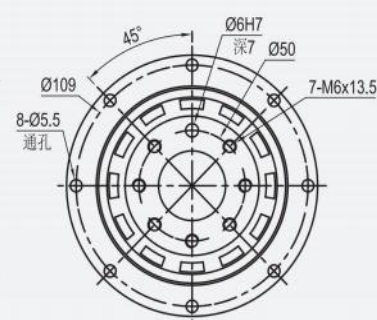
INPUT/輸入端



法兰面尺寸依照
ISO 9409

油环90x3

OUTPUT/輸出端



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
HAD-090D-L1	Ø90	4-M5x12, 4-M6x14	Ø19	42	Ø70	6.5	80	7	104
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	6	104
HAD-090M1-L1	Ø115	4-M8x20	Ø19, Ø22	56.5	Ø95	8	100	16.5	119.5
	Ø145	4-M8x20	Ø19, Ø22, Ø24	59	Ø110	11	130	19	122
HAD-090D-L2	Ø66.7	4-M4x10	Ø8	34	Ø38.1	5	60	5.5	128
	Ø70	4-M4x10, 4-M5x12	Ø11, Ø14	34	Ø50	5	60	5.5	128
HAD-090M1-L2	Ø90	4-M5x12, 4-M6x14	Ø19	42	Ø70	6.5	80	12	134.5
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	11	134.5

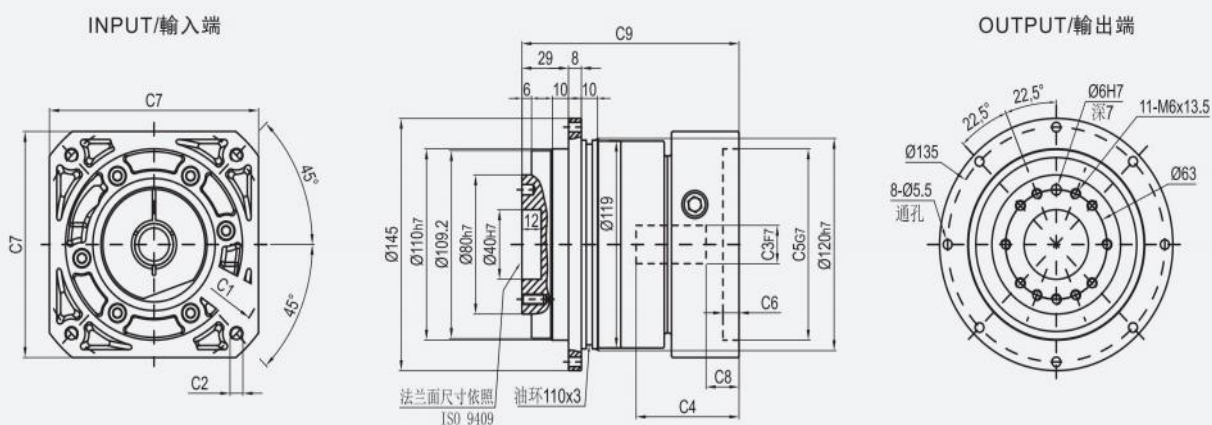
*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

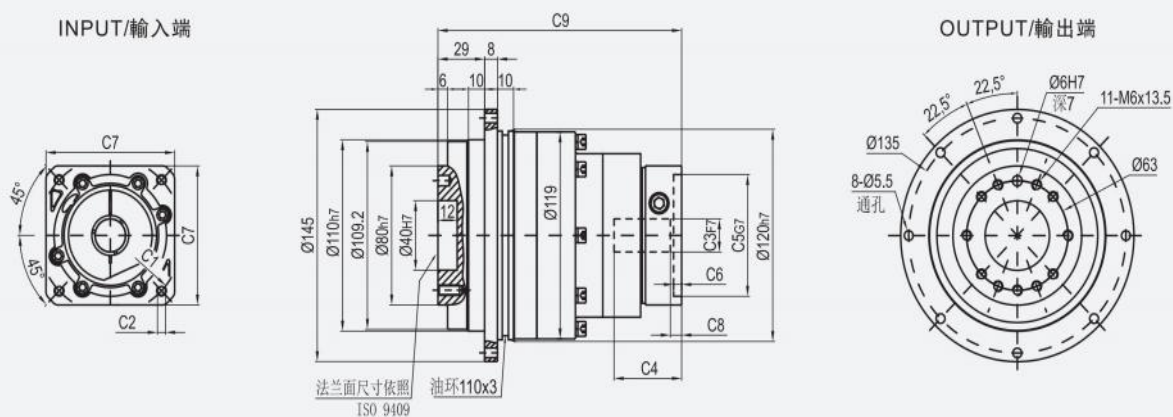
*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

HAD-110D(M1)-L1



HAD-110D(M1)-L2



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
HAD-110D-L1	Ø145	4-M8x20	Ø19,Ø22,Ø24	64	Ø110	10	130	19.5	135
HAD-110M1-L1	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	28	152.5
HAD-110D-L2	Ø90	4-M5x12, 4-M6x14	Ø19	42	Ø70	6.5	80	7	151.5
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	6	151.5
HAD-110M1-L2	Ø115	4-M8x20	Ø19,Ø22	56.5	Ø95	8	100	16.5	167
	Ø145	4-M8x20	Ø19,Ø22,Ø24	59	Ø110	11	130	19	169.5

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D:Conventional Hole, M1:Limit Hole

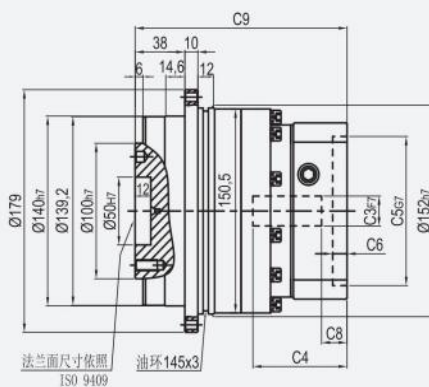
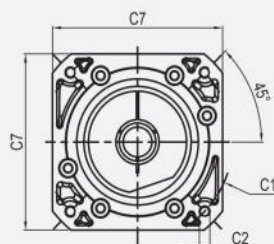
*D:常規孔, M1:極限孔

OUTLINE DIMENSION SHEET

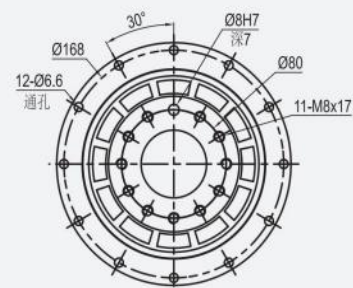
外形尺寸圖表

HAD-140D(M1)-L1

INPUT/輸入端

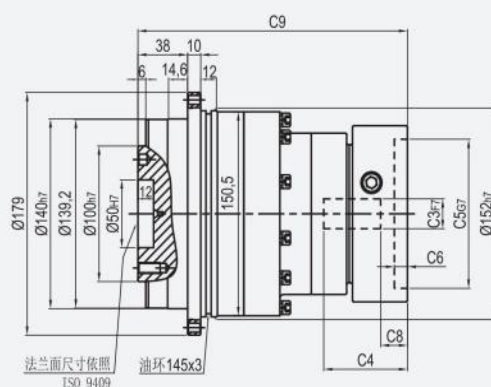
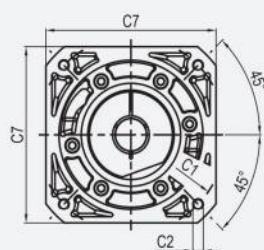


OUTPUT/輸出端

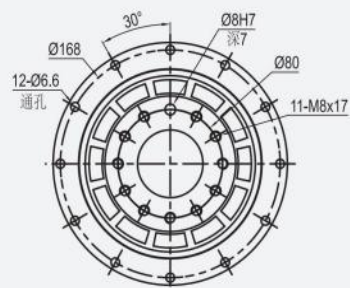


HAD-140D(M1)-L2

INPUT/輸入端



OUTPUT/輸出端



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
HAD-140D-L1	Ø145	4-M8x20	Ø22, Ø24	72	Ø110	11	130	19.5	162
	Ø200	4-M12x28	Ø35	81.5	Ø114.3	8	180	25	172
HAD-140D-L2	Ø145	4-M8x20	Ø19, Ø22, Ø24	64	Ø110	10	130	19.5	206
HAD-140M1-L2	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	28	223.5

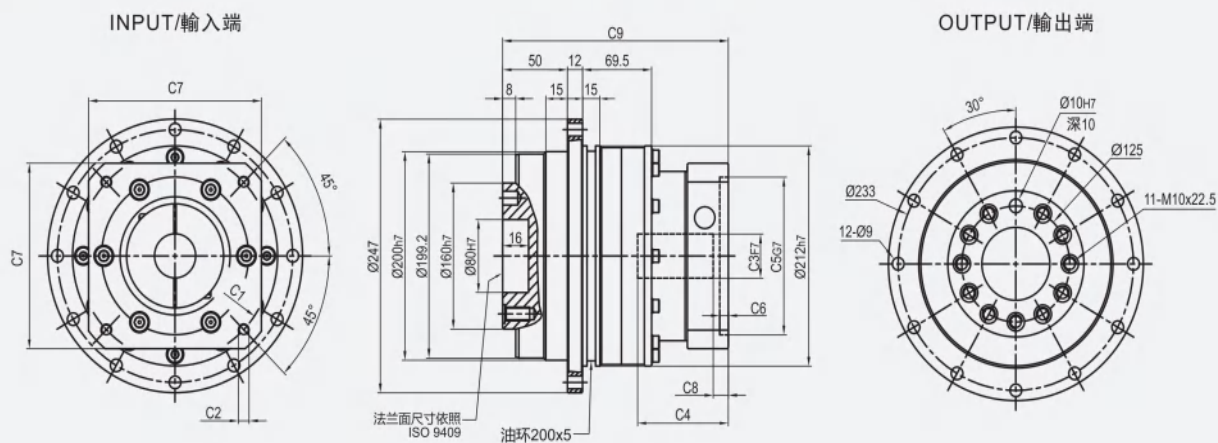
*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

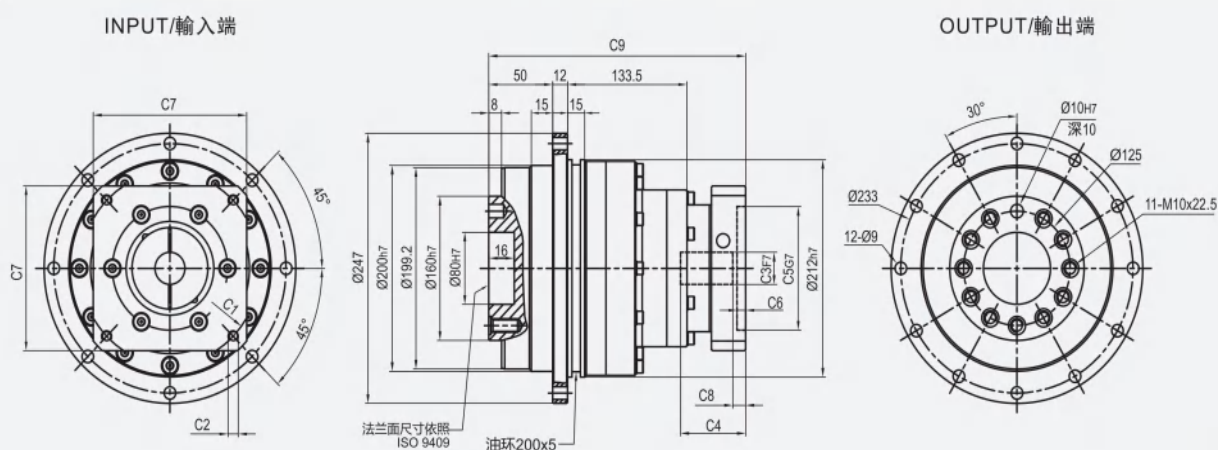
*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

HAD-200-L1



HAD-200-L2



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
HAD-200D-L1	Ø200	4-M12x28	Ø35	82	Ø114.3	8	180	8.5	197.5
	Ø200	4-M12x28	Ø42	117.5	Ø114.3	8	180	45.5	233
	Ø215	4-M12x28	Ø38	87	Ø180	8	192	13.5	202.5
	Ø235	4-M12x28	Ø42	117.5	Ø200	10	220	45.5	233
HAD-200D-L2	Ø145	4-M8x20	Ø22,Ø24	72	Ø110	11	130	19.5	250.5
	Ø200	4-M12x28	Ø35	81.5	Ø114.3	8	180	25	260.5

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

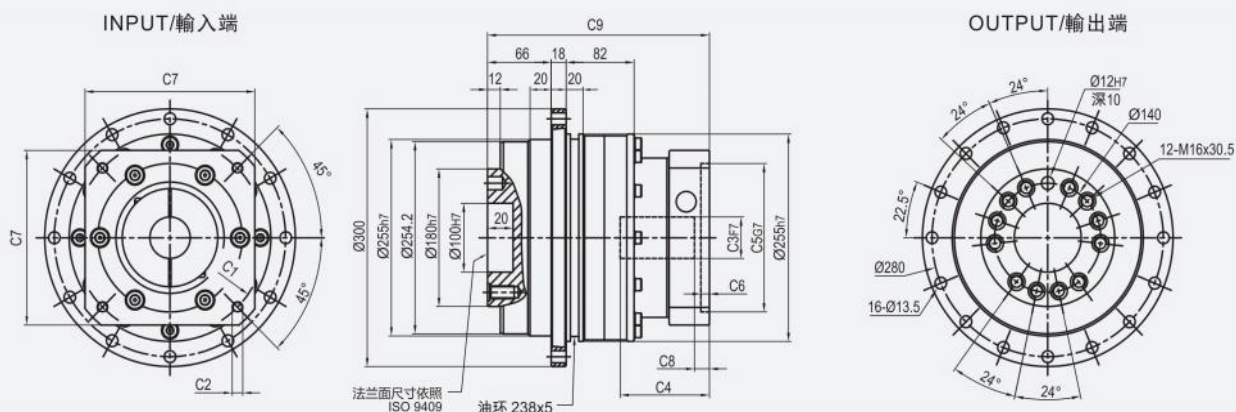
*D:Conventional Hole, M1:Limit Hole

*D:常規孔, M1:極限孔

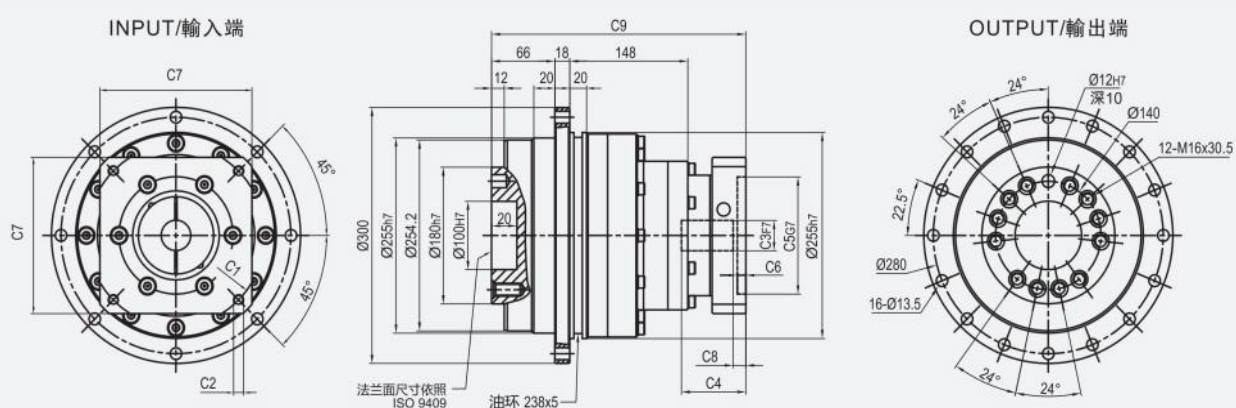
OUTLINE DIMENSION SHEET

外形尺寸圖表

HAD-255-L1



HAD-255-L2



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
HAD-255D-L1	Ø200	4-M12x28	Ø35, Ø42	118	Ø114.3	15	200	24	262.5
	Ø215	4-M12x30	Ø38	108	Ø180	8	200	11.5	252.5
	Ø235	4-M12x30	Ø42, Ø55	118	Ø200	10	220	24	262.5
HAD-255D-L2	Ø200	4-M12x28	Ø35	82	Ø114.3	8	180	8.5	304
	Ø200	4-M12x28	Ø42	117.5	Ø114.3	8	180	45.5	339.5
	Ø215	4-M12x28	Ø38	87	Ø180	8	192	13.5	309
	Ø235	4-M12x28	Ø42	117.5	Ø200	10	220	45.5	339.5

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

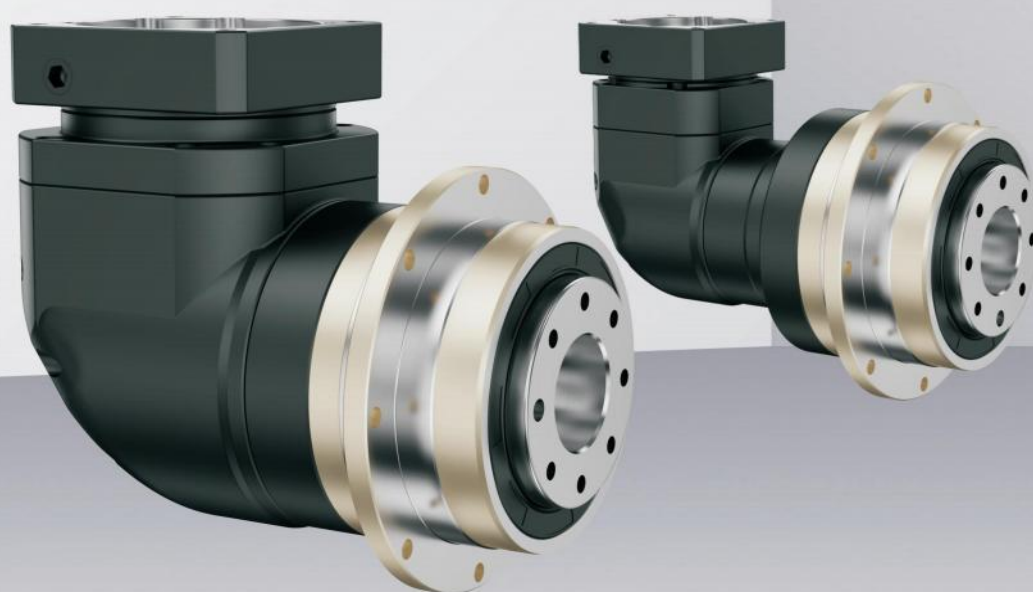
*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

HADR

SERIES



MODEL ILLUMINATE

型號說明

HADR 090 - **10** - **P2** - **K1** - **馬達**

減速機型式：

HADR047/HADR064/HADR090/
HADR110/HADR140/HADR200/
HADR255

背隙：P0：超精密背隙

P1：精密背隙

P2：標準背隙

馬達安裝尺寸：

減速比：

單級(L1):4,5,6,7,8,10,14,20

雙級(L2):20,25,35,40,50,60,70,80,100,
120,140,160,200

輸出軸型式選擇：K1：光孔

選用範例：HADR090-10-P2-K1-19-70-90-M6-45

REDUCER PERFORMANCE DATA

減速機能性能資料

規格	級數	減速比 ^①	HADR047	HADR064	HADR090	HADR110	HADR140	HADR200	HADR255
額定輸出力矩 T_{2N}	1	4	19	48	130	270	560	1100	1700
		5	22	60	160	330	650	1200	2000
		6	-	55	150	310	600	-	-
		7	19	50	140	300	550	1100	1800
		8	17	48	130	270	560	1000	1600
		10	14	60	160	330	650	520	1220
		14	-	50	140	300	550	1100	1800
		20	-	40	100	230	450	520	1220
	2	20	19	48	130	270	560	1100	1700
		25	22	60	160	330	650	1200	2000
		35	22	60	160	330	650	1200	2000
		40	22	48	130	270	560	1200	2000
		50	22	60	160	330	650	1200	2000
		60	-	55	150	310	600	-	-
		70	22	60	160	330	650	1200	2000
		80	-	48	130	270	560	-	-
		100	22	60	160	330	650	1200	2000
		120	-	-	150	310	600	-	-
		140	-	-	140	300	550	1100	1800
		160	-	-	120	260	500	-	-
		200	-	-	100	230	450	520	1220
最大輸出力矩 T_{2B}	N.m	1,2	4~200	3倍額定輸出力矩					
額定輸入轉速 n_1	rpm	1,2	4~200	5000	5000	4000	4000	3000	2000
最大輸入轉速 n_{1B}	rpm	1,2	4~200	10000	10000	8000	8000	6000	4000
超精密背隙 P0	arcmin	1	4~20	-	-	≤2	≤2	≤2	≤2
		2	20~200	-	-	≤4	≤4	≤4	≤4
精密背隙 P1	arcmin	1	4~20	≤4	≤4	≤4	≤4	≤4	≤4
		2	20~200	≤7	≤7	≤7	≤7	≤7	≤7
標準背隙 P2	arcmin	1	4~20	≤6	≤6	≤6	≤6	≤6	≤6
		2	20~200	≤9	≤9	≤9	≤9	≤9	≤9
扭轉剛性		1,2	4~200	7	13	31	82	151	440
最大彎曲力矩 M_{2KB} ②	N.m	1,2	4~200	42.5	125	235	430	1300	3064
容許徑向力 F_{2B} ②	N	1,2	4~200	1080	2110	2310	4800	6200	10600
使用壽命	hr	1,2	4~200	20000*					
效率 η	%	1	4~20	≥95%					
		2	20~200	≥92%					
重量	kg	1	4~20	1.1	2.1	5.9	10.5	21.9	85.4
		2	20~200	1.4	1.9	4.5	9.8	20.1	85.9
使用溫度	°C	1,2	4~200	-10°C~+90°C					
潤滑		1,2	4~200	合成潤滑油脂					
防護等級		1,2	4~200	IP65					
安裝方向		1,2	4~200	任意方向					
噪音值($n_1=3000\text{rpm}$)	dB	1,2	4~200	≤61	≤63	≤65	≤68	≤70	≤74

減速機轉動慣量

規格	級數	減速比 ^①	HADR047	HADR064	HADR090	HADR110	HADR140	HADR200	HADR255
轉動慣量 J_1	1	4~7	0.09	0.35	2.25	6.84	23.4	68.9	135.4
		8~10	0.09	0.07	1.87	6.25	21.8	65.6	119.8
		14~20	-	0.07	1.87	6.25	21.8	65.6	119.8
	2	20~40	0.09	0.09	0.35	2.25	6.84	23.4	68.9
		50	-	0.09	0.31	1.87	6.25	21.8	65.6
		60	-	0.09	0.35	2.25	6.84	-	-
		70~100	-	0.09	0.31	1.87	6.25	21.8	65.6
		120~200	-	-	0.31	1.87	6.25	21.8	65.6

1.減速比($i=N_{in}/N_{out}$)

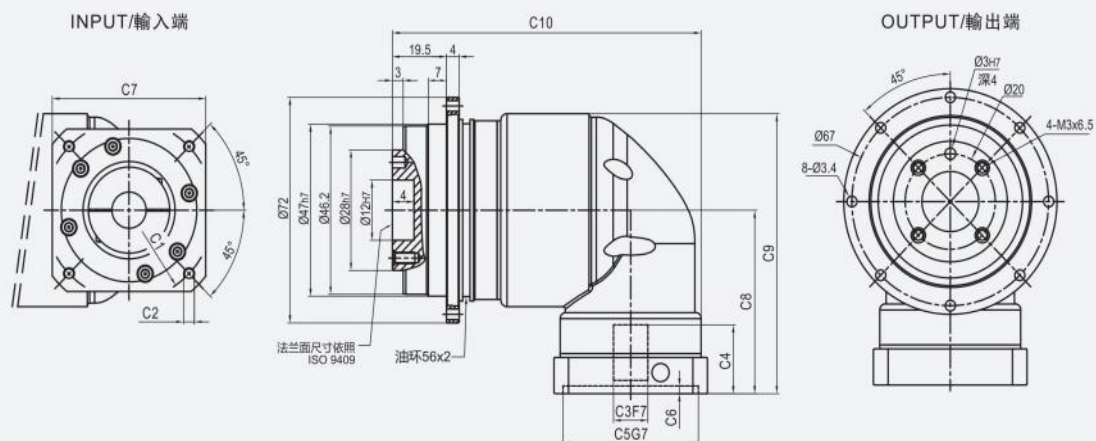
*連續運轉降低使用壽命二分之一。

2.輸出轉速100rpm時，作用于輸出軸中心位置。

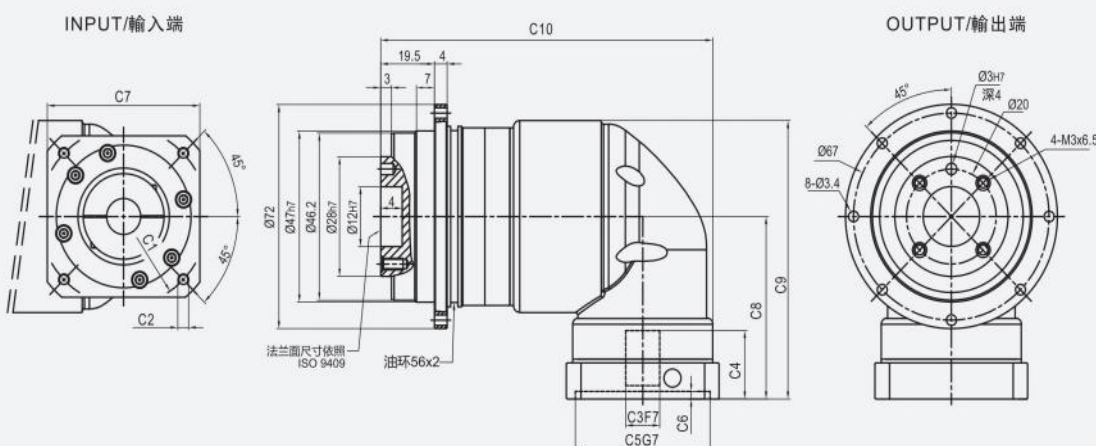
OUTLINE DIMENSION SHEET

外形尺寸圖表

HADR-047-L1



HADR-047-L2



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HADR-047D-L1	Ø46	4-M4x10	Ø8	26	Ø30	4	42	60	96	94
	Ø45	4-M3x8								
HADR-047D-L2	Ø46	4-M4x10	Ø8	26	Ø30	4	42	60	96	118.5
	Ø45	4-M3x8								

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D:Conventional Hole, M1:Limit Hole

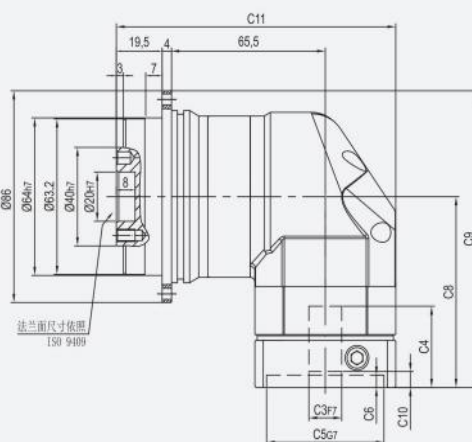
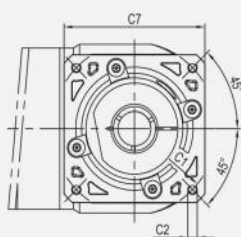
*D:常規孔, M1:極限孔

OUTLINE DIMENSION SHEET

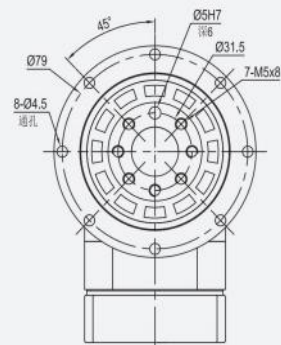
外形尺寸圖表

HADR-064D(M1)-L1

INPUT/輸入端

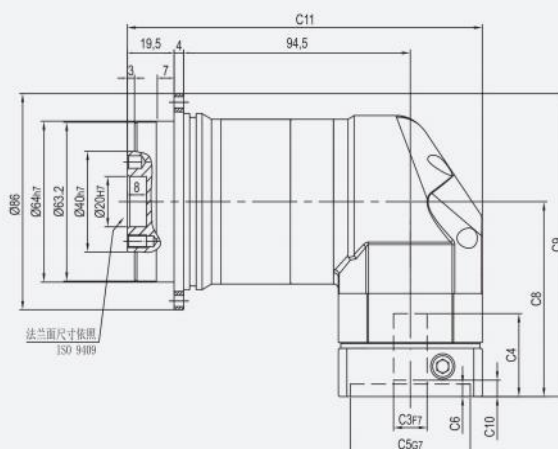
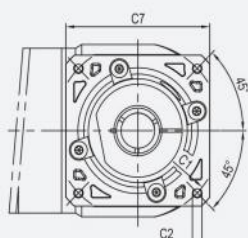


OUTPUT/輸出端

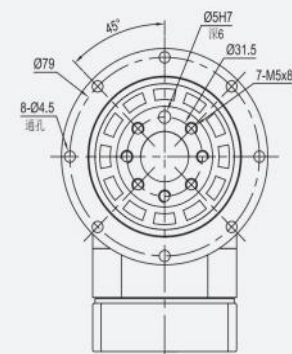


HADR-064D(M1)-L2

INPUT/輸入端



OUTPUT/輸出端



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
HADR-064D-L1	Ø66.7	4-M4x10	Ø8	33	Ø38.1	5	60	77.5	120.5	5.5	119
HADR-064D-L2											148
HADR-064D-L1	Ø70	4-M4x10, 4-M5x12	Ø11, Ø14	33	Ø50	5	60	77.5	120.5	5.5	119
HADR-064D-L2											148
HADR-064M1-L1	Ø90	4-M5x12, 4-M6x14	Ø19	42.5	Ø70	6.5	80	87	130	12	129
HADR-064M1-L2											158

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

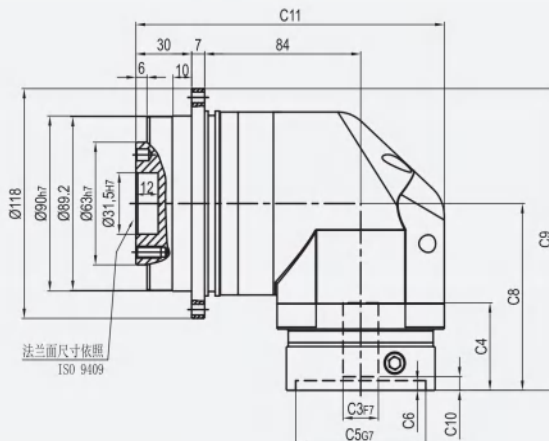
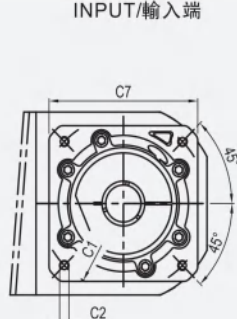
*D: 常規孔, M1: 極限孔

OUTLINE DIMENSION SHEET

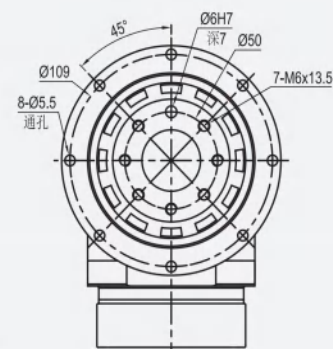
外形尺寸圖表

HADR-090D(M1)-L1

INPUT/輸入端

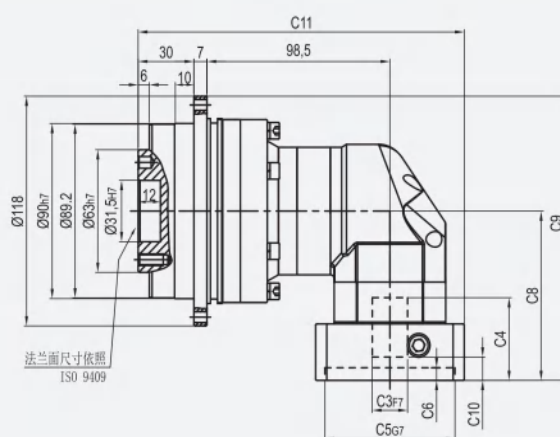
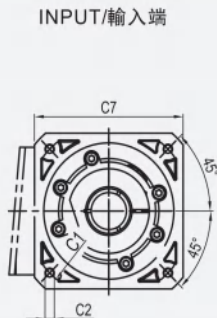


OUTPUT/輸出端

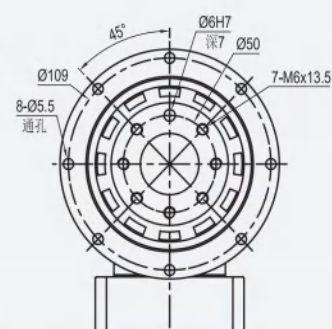


HADR-090D(M1)-L2

INPUT/輸入端



OUTPUT/輸出端



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
HADR-090D-L1	Ø90	4-M5x12,4-M6x14	Ø19	45	Ø70	6.5	80	96	155	7	166
	Ø100	4-M6x14	Ø16	45	Ø80	6.5	86	96	155	6	166
HADR-090M1-L1	Ø115	4-M8x20	Ø19,Ø22	56.5	Ø95	8	100	117.5	176.5	16.5	171
	Ø145	4-M8x20	Ø19,Ø22,Ø24	59	Ø110	11	130	120	179	19	186
HADR-090D-L2	Ø66.7	4-M4x10	Ø8	33	Ø38.1	5	60	77.5	136.5	5.5	165.5
	Ø70	4-M4x10,4-M5x12	Ø11,Ø14	33	Ø50	5	60	77.5	136.5	5.5	165.5
HADR-090M1-L2	Ø90	4-M5x12,4-M6x14	Ø19	42.5	Ø70	6.5	80	87	146	12	175.5
	Ø100	4-M6x14	Ø16	42.5	Ø80	6.5	86	87	146	11	175.5

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

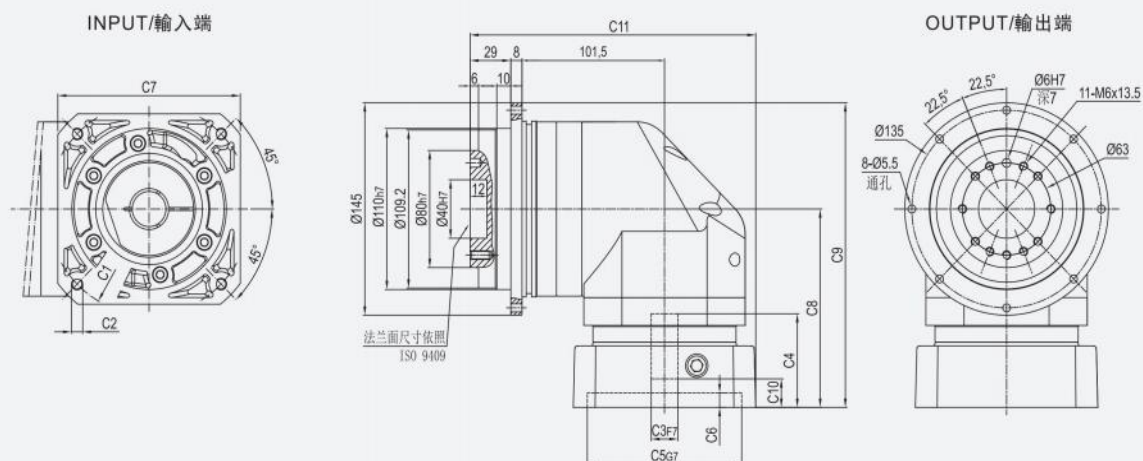
*D:Conventional Hole, M1:Limit Hole

*D:常規孔，M1:極限孔

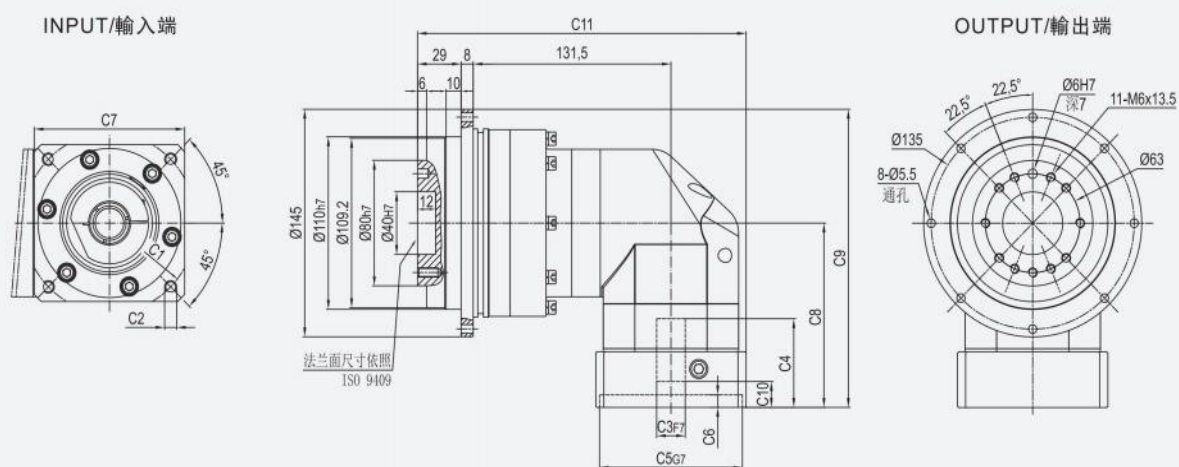
OUTLINE DIMENSION SHEET

外形尺寸圖表

HADR-110D(M1)-L1



HADR-110D(M1)-L2



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
HADR-110D-L1	Ø145	4-M8x20	Ø19, Ø22, Ø24	64	Ø110	10	130	135.5	208	19.5	203.5
HADR-110M1-L1	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	152.5	225	28	228.5
HADR-110D-L2	Ø90	4-M5x12, 4-M6x14	Ø19	45	Ø70	6.5	80	96	168.5	7	213.5
	Ø100	4-M6x14	Ø16	45	Ø80	6.5	86	96	168.5	6	213.5
HADR-110M1-L2	Ø115	4-M8x20	Ø19, Ø22	56.5	Ø95	8	100	117.5	190	16.5	218.5
	Ø145	4-M8x20	Ø19, Ø22, Ø24	59	Ø110	11	130	120	192.5	19	233.5

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

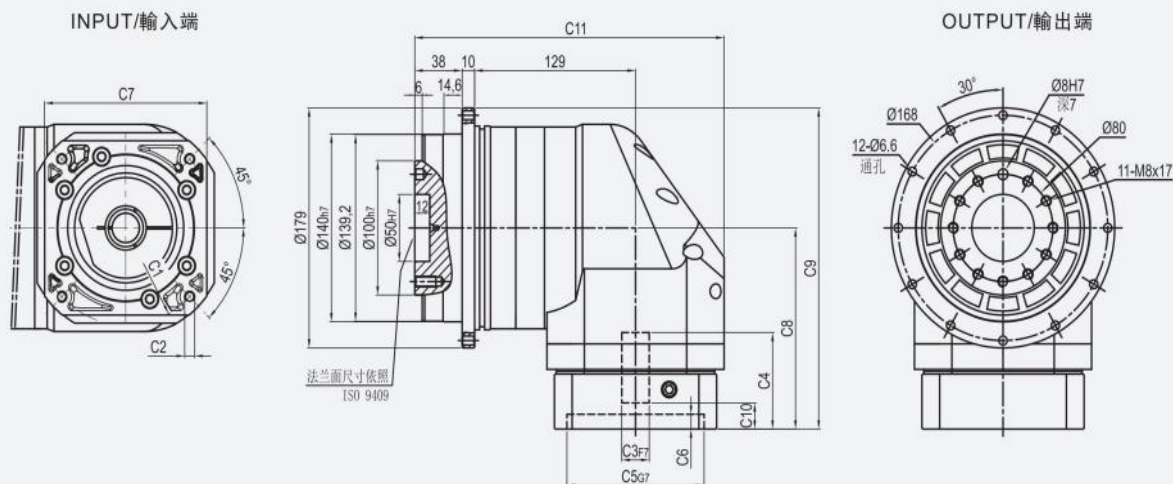
*D:Conventional Hole, M1:Limit Hole

*D:常規孔, M1:極限孔

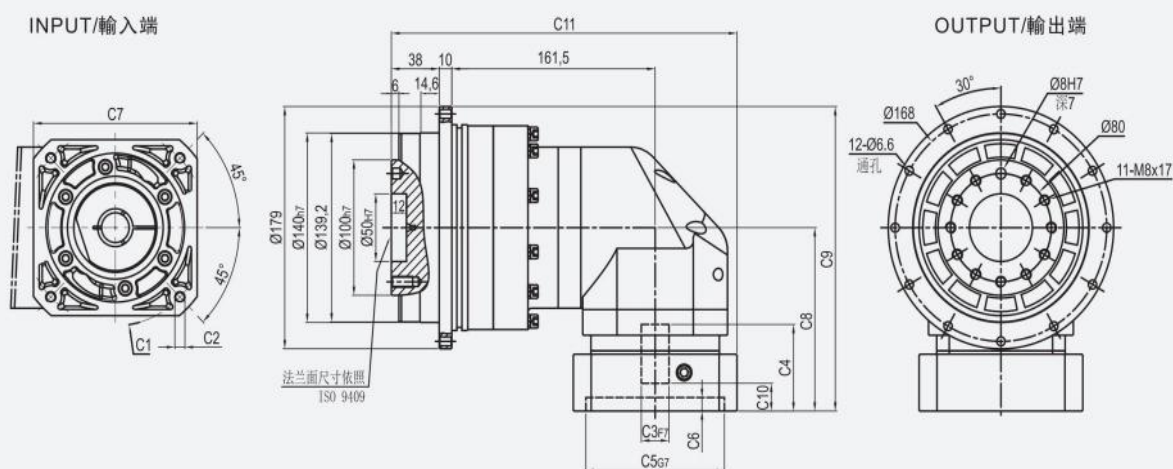
OUTLINE DIMENSION SHEET

外形尺寸圖表

HADR-140D(M1)-L1



HADR-140D(M1)-L2



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
HADR-140D-L1	Ø145	4-M8x20	Ø22, Ø24	72	Ø110	11	130	150	239.5	19.5	248
	Ø200	4-M12x28	Ø35	82	Ø114.3	8	180	160	249.5	25	267
HADR-140D-L2	Ø145	4-M8x20	Ø19, Ø22, Ø24	64	Ø110	10	130	135.5	225	19.5	274.5
HADR-140M1-L2	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	152.5	242	28	299.5

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

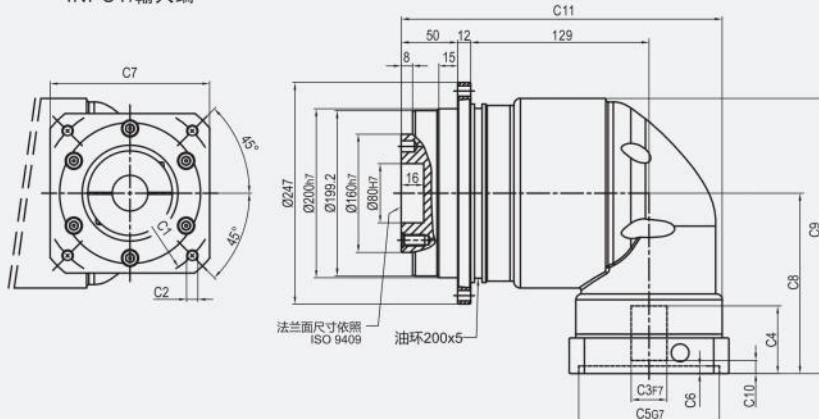
*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

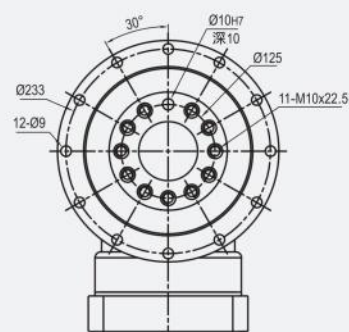
*D: 常規孔, M1: 極限孔

外形尺寸圖表

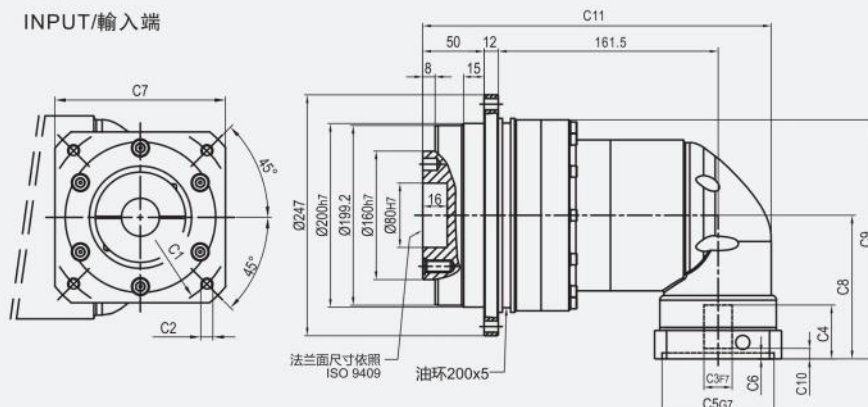
INPUT/輸入端



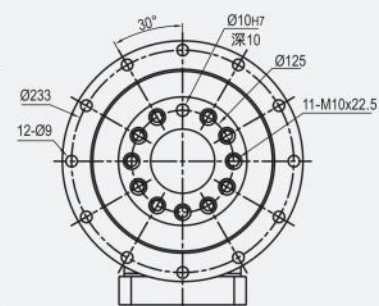
OUTPUT/輸出端



INPUT/輸入端



OUTPUT/輸出端



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
HADR-200D-L1	Ø200	4-M12x28	Ø35	82	Ø114.3	8	180	214	337.5	8.5	320
	Ø200	4-M12x28	Ø42	117.5	Ø114.3	8	180	249.5	373	45.5	320
	Ø215	4-M12x28	Ø38	87	Ø180	8	192	219	342.5	13.5	326
	Ø235	4-M12x28	Ø42	117.5	Ø200	10	220	249.5	373	45.5	320
HADR-200D-L2	Ø145	4-M8x20	Ø22,Ø24	72	Ø110	11	130	150	247.5	19.5	336.5
	Ø200	4-M12x28	Ø35	82	Ø114.3	8	180	160	283.5	25	355.5

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

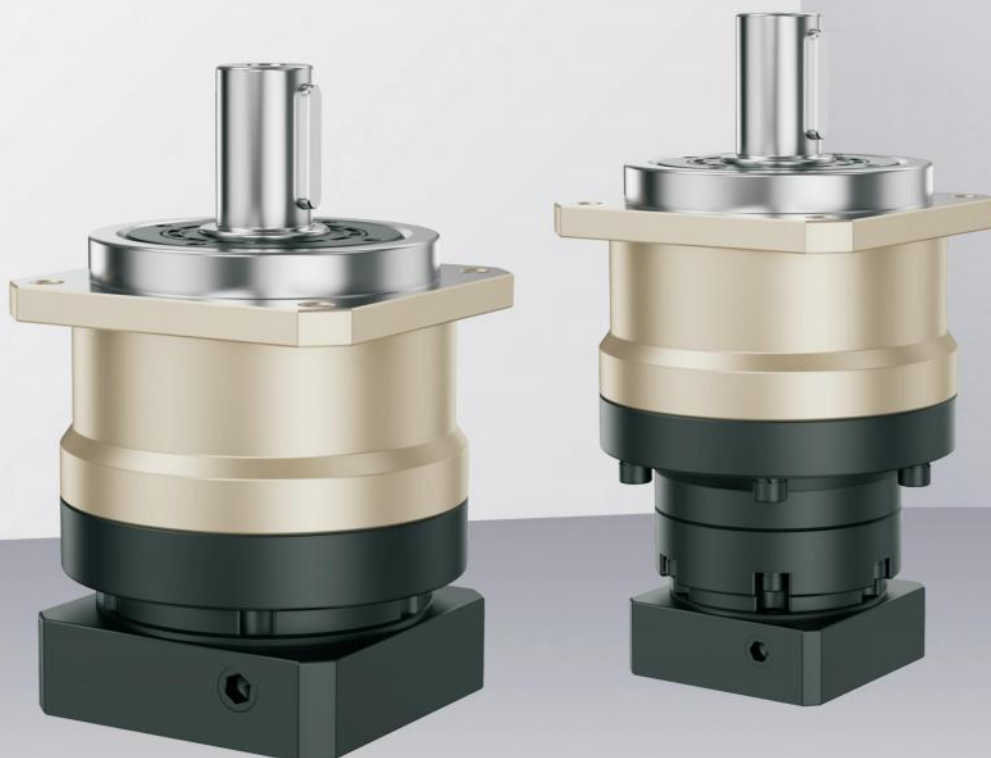
*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D:Conventional Hole, M1:Limit Hole

*D:常規孔, M1:極限孔

HAF/HAFS

SERIES



MODEL ILLUMINATE

型號說明

HAF 090

—

10

P2

S2

馬達

減速機型式：

HAF042/HAF060/HAF090/HAF115/
HAF142/HAF180/HAF220

背隙：P1：精密背隙
P2：標準背隙

馬達安裝尺寸：

減速比：

單級(L1):3,4,5,6,7,8,10

雙級(L2):12,15,20,25,30,35,40,50,60,70,80,100

輸出軸型式選擇：S1：平滑直軸
S2：帶鍵直軸

選用範例：HAF090-10-P2-S2-19-70-90-M6-42

REDUCER PERFORMANCE DATA

減速機性能資料

規格	級數	減速比 ^①	HAF042	HAF060 HAFS060	HAF090 HAFS090	HAF115	HAF142	HAF180	HAF220
額定輸出力矩 T_{2N}	1	3	20	55	130	208	342	588	1140
		4	19	50	140	290	542	1050	1700
		5	22	60	160	330	650	1200	2000
		6	20	55	150	310	600	-	-
		7	19	50	140	300	550	1100	1800
		8	17	45	120	260	500	1000	1600
		10	14	40	100	230	450	520	1220
	2	12	20	55	130	208	342	-	-
		15	20	55	130	208	342	588	1140
		20	19	50	140	290	542	1050	1700
		25	22	60	160	330	650	1200	2000
		30	22	50	130	208	342	1200	2000
		35	22	60	160	330	650	1200	2000
		40	22	50	140	290	542	1200	2000
		50	22	60	160	330	650	1200	2000
		60	20	55	150	310	600	-	-
		70	19	50	140	300	550	1100	1800
		80	17	45	120	260	500	1000	1600
		100	14	40	100	230	450	520	1220
最大輸出力矩 T_{2B}	N.m	1,2	3~100	3倍額定輸出力矩					
額定輸入轉速 n_1	rpm	1,2	3~100	5000	5000	4000	4000	3000	2000
最大輸入轉速 n_{1B}	rpm	1,2	3~100	10000	10000	8000	8000	6000	4000
背隙	arcmin	1	3~10	≤5	≤5	≤5	≤5	≤5	≤5
		2	12~100	≤7	≤7	≤7	≤7	≤7	≤7
扭轉剛性	Nm/arcmin	1,2	3~100	3	7	14	25	50	145
容許徑向力 F_{2rB} ^②	N	1,2	3~100	780	1530	3250	6700	9400	14500
容許軸向力 F_{2aB} ^②	N	1,2	3~100	390	765	1625	3350	4700	7250
使用壽命	hr	1,2	3~100	20000*					
效率 η	%	1	3~10	≥97%					
		2	12~100	≥94%					
重量	kg	1	3~10	0.5	1.3	3.7	7.8	14.5	29
		2	12~100	0.8	1.9	4.1	9	17.5	33
使用溫度	°C	1,2	3~100	-10°C~+90°C					
潤滑		1,2	3~100	合成潤滑油脂					
防護等級		1,2	3~100	IP65					
安裝方向		1,2	3~100	任意方向					
噪音值($n_1=3000$ rpm)	dB	1,2	3~100	≤56	≤58	≤60	≤63	≤65	≤67
								≤70	

減速機轉動慣量

規格	級數	減速比 ^①	HAF042	HAF060 HAFS060	HAF090 HAFS090	HAF115	HAF142	HAF180	HAF220
轉動慣量 J_1	1	3	0.03	0.16	0.61	3.25	9.21	28.98	69.61
		4	0.03	0.14	0.48	2.74	7.54	23.67	54.37
		5	0.03	0.13	0.47	2.71	7.42	23.29	53.27
		6	0.03	0.13	0.45	2.65	7.25	22.75	51.72
		7	0.03	0.13	0.45	2.62	7.14	22.48	50.97
		8	0.03	0.13	0.44	2.58	7.07	22.59	50.84
		10	0.03	0.13	0.44	2.57	7.03	22.51	50.56
	2	12	0.03	0.03	0.13	0.47	2.71	7.42	23.29
		15	0.03	0.03	0.13	0.47	2.71	7.42	23.29
		20	0.03	0.03	0.13	0.47	2.71	7.42	23.29
		25	0.03	0.03	0.13	0.47	2.71	7.42	23.29
		30	0.03	0.03	0.13	0.47	2.71	7.42	23.29
		35	0.03	0.03	0.13	0.47	2.71	7.42	23.29
		40	0.03	0.03	0.13	0.47	2.71	7.42	23.29
		50	0.03	0.03	0.13	0.44	2.57	7.03	22.51
		60	0.03	0.03	0.13	0.44	2.57	7.03	22.51
		70	0.03	0.03	0.13	0.44	2.57	7.03	22.51
		80	0.03	0.03	0.13	0.44	2.57	7.03	22.51
		100	0.03	0.03	0.13	0.44	2.57	7.03	22.51

1.減速比($i=N_{in}/N_{out}$)

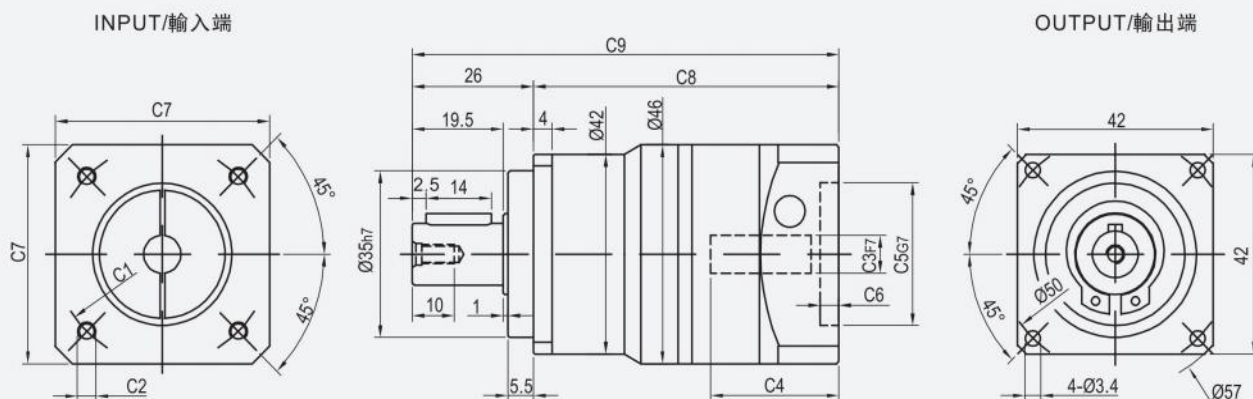
*連續運轉降低使用壽命二分之一。

2.輸出轉速100rpm時，作用于輸出軸中心位置。

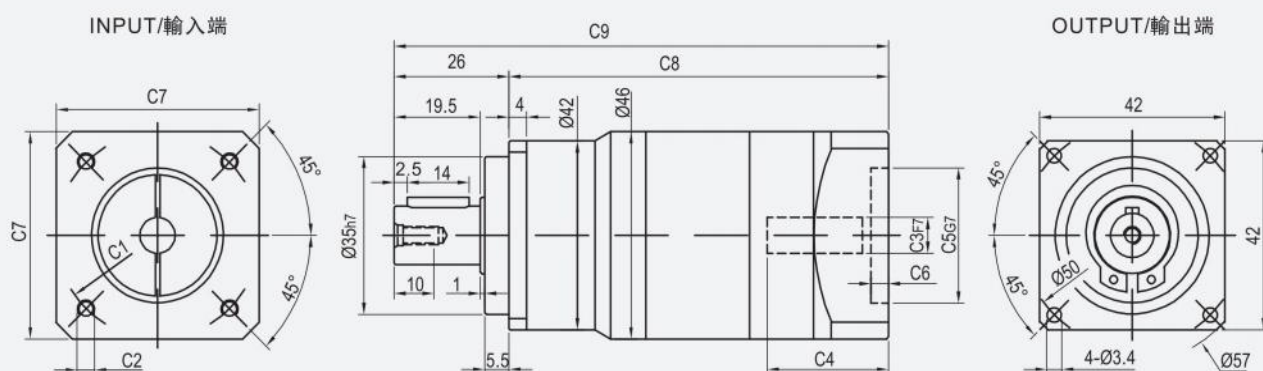
OUTLINE DIMENSION SHEET

外形尺寸圖表

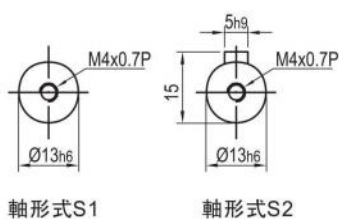
HAF-042-L1



HAF-042-L2



Output Diameter 輸出軸徑



軸形式S1

軸形式S2

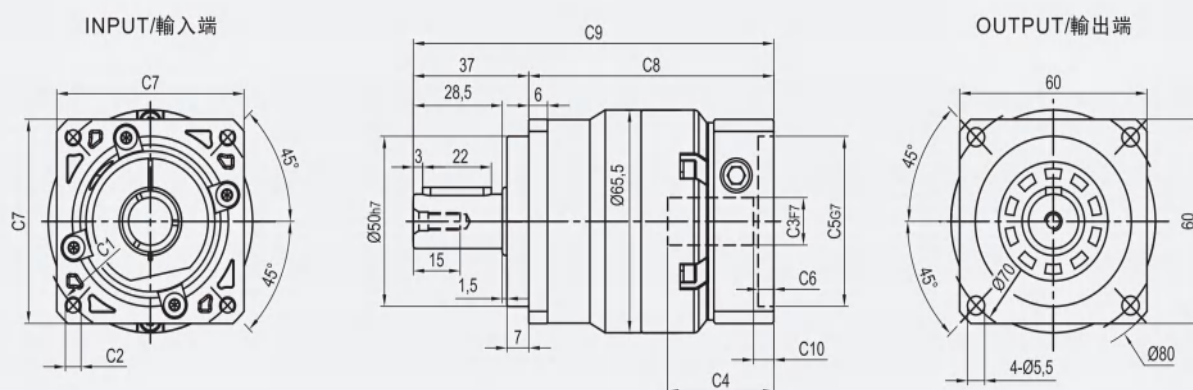
尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
HAF-042-L1	Ø45	4-M3x8	Ø8	27.5	Ø30	5	46	65.5	91.5
	Ø46	4-M4x10	Ø8	27.5	Ø30	5	46	65.5	91.5
	Ø66.67	4-M4x10	Ø6.35, Ø8	27.5	Ø38.1	5	57	65.5	91.5
	Ø70	4-M4x10, 4-M5x12	Ø11	32	Ø50	5	60	70	96
HAF-042-L2	Ø45	4-M3x8	Ø8	27.5	Ø30	5	46	86	112
	Ø46	4-M4x10	Ø8	27.5	Ø30	5	46	86	112
	Ø66.67	4-M4x10	Ø6.35, Ø8	27.5	Ø38.1	5	57	86	112

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.
*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

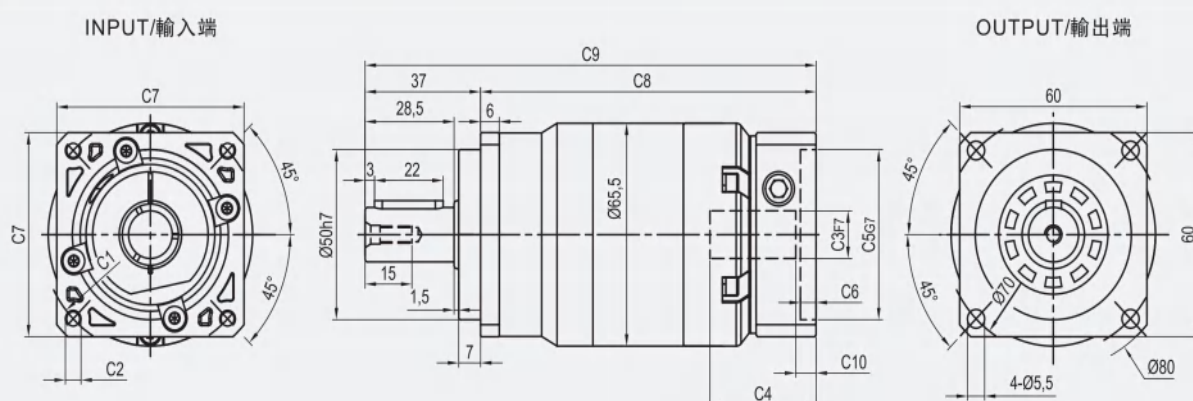
OUTLINE DIMENSION SHEET

外形尺寸圖表

HAF-060D(M1)-L1/HAFS-060D(M1)-L1

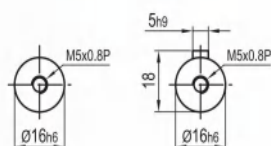


HAF-060D(M1)-L2/HAFS-060D(M1)-L2



Output Diameter

輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HAF-060D-L1										
HAFS-060D-L1	Ø66.7	4-M4x10	Ø8	34	Ø38.1	5	60	78.5	115.5	5.5
HAF-060D-L2										
HAFS-060D-L2	Ø70	4-M4x10, 4-M5x12	Ø11, Ø14	34	Ø50	5	60	107.5	144.5	5.5
HAF-060M1-L1										
HAFS-060M1-L1	Ø90	4-M5x12, 4-M6x14	Ø19	42	Ø70	6.5	80	85	122	12
HAF-060M1-L2										
HAFS-060M1-L2								114	151	12

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

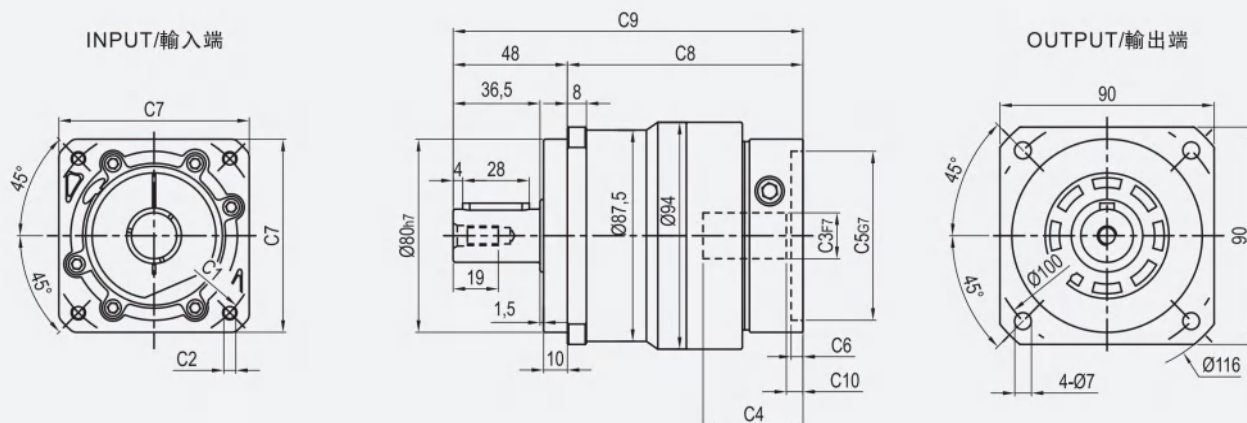
*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

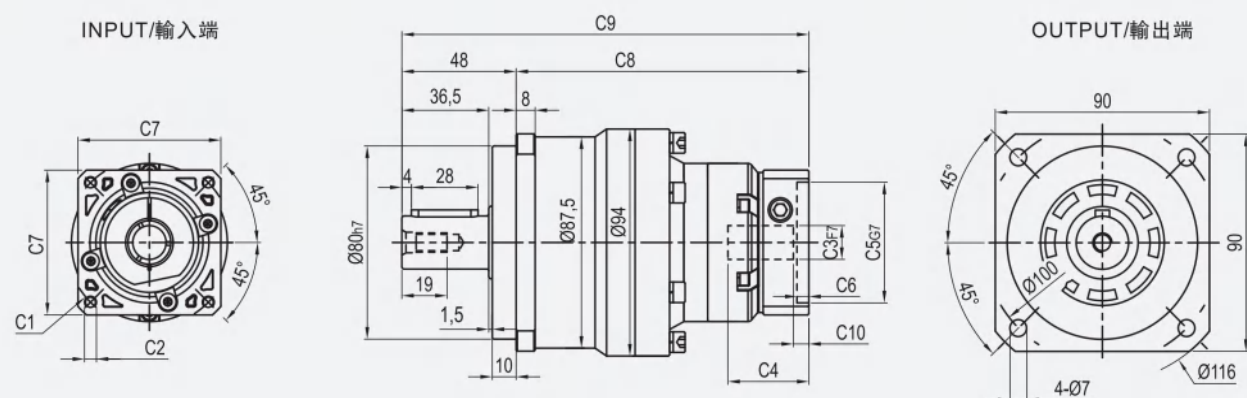
OUTLINE DIMENSION SHEET

外形尺寸圖表

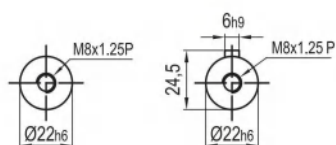
HAF-090D(M1)-L1/HAFS-090D(M1)-L1



HAF-090D(M1)-L2/HAFS-090D(M1)-L2



Output Diameter 輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HAF-090D-L1	Ø90	4-M5x12,4-M6x14	Ø19	42	Ø70	6.5	80	99	147	7
HAFS-090D-L1	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	99	147	6
HAF-090M1-L1	Ø115	4-M8x20	Ø19,Ø22	56.5	Ø95	8	100	114.5	162.5	16.5
HAFS-090M1-L1	Ø145	4-M8x20	Ø19,Ø22,Ø24	59	Ø110	11	130	117	165	19
HAF-090D-L2	Ø66.7	4-M4x10	Ø8	34	Ø38.1	5	60	123	171	5.5
HAFS-090D-L2	Ø70	4-M4x10,4-M5x12	Ø11,Ø14	34	Ø50	5	60	123	171	5.5
HAF-090M1-L2	Ø90	4-M5x12,4-M6x14	Ø19	42	Ø70	6.5	80	129.5	177.5	12
HAFS-090M1-L2	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	129.5	177.5	11

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

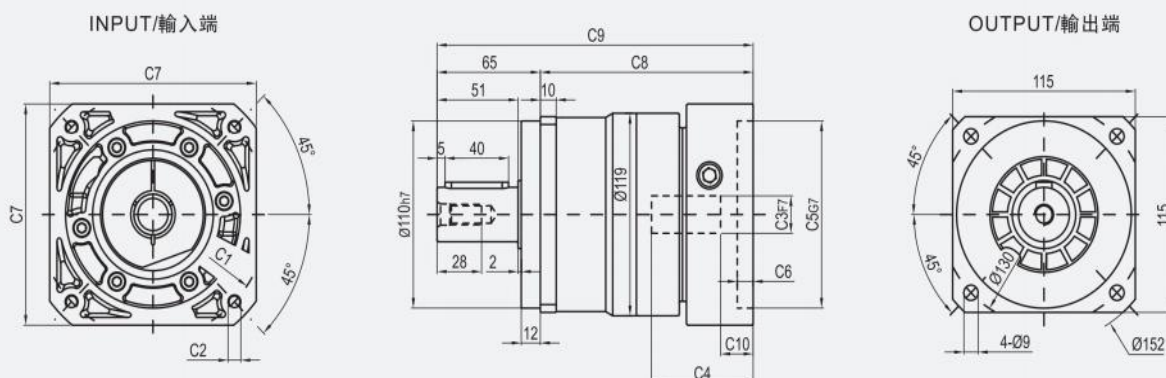
*D:Conventional Hole, M1:Limit Hole

*D:常規孔，M1:極限孔

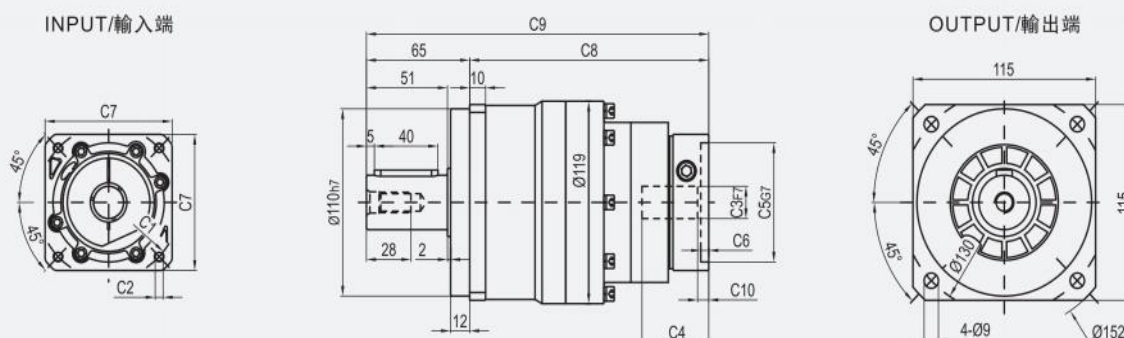
OUTLINE DIMENSION SHEET

外形尺寸圖表

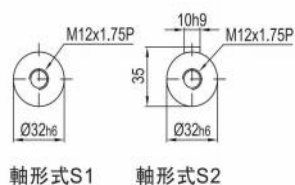
HAF-115D(M1)-L1



HAF-115D(M1)-L2



Output Diameter 輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HAF-115D-L1	Ø145	4-M8x20	Ø19,Ø22,Ø24	64	Ø110	10	130	134	199	19.5
HAF-115M1-L1	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	151.5	216.5	28
HAF-115D-L2	Ø90	4-M5x12, 4-M6x14	Ø19	42	Ø70	6.5	80	150.5	215.5	7
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	150.5	215.5	6
HAF-115M1-L2	Ø115	4-M8x20	Ø19,Ø22	56.5	Ø95	8	100	166	231	16.5
	Ø145	4-M8x20	Ø19,Ø22,Ø24	59	Ø110	11	130	168.5	233.5	19

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

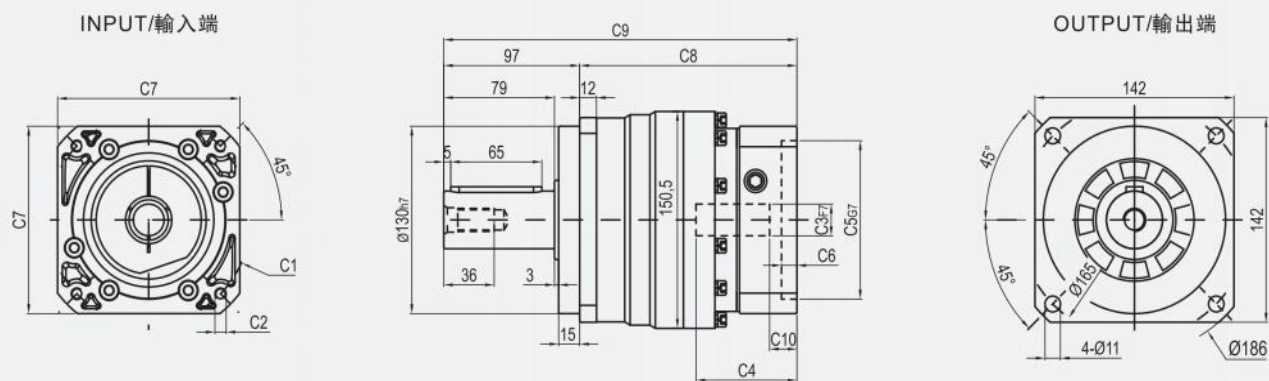
*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D:Conventional Hole, M1:Limit Hole

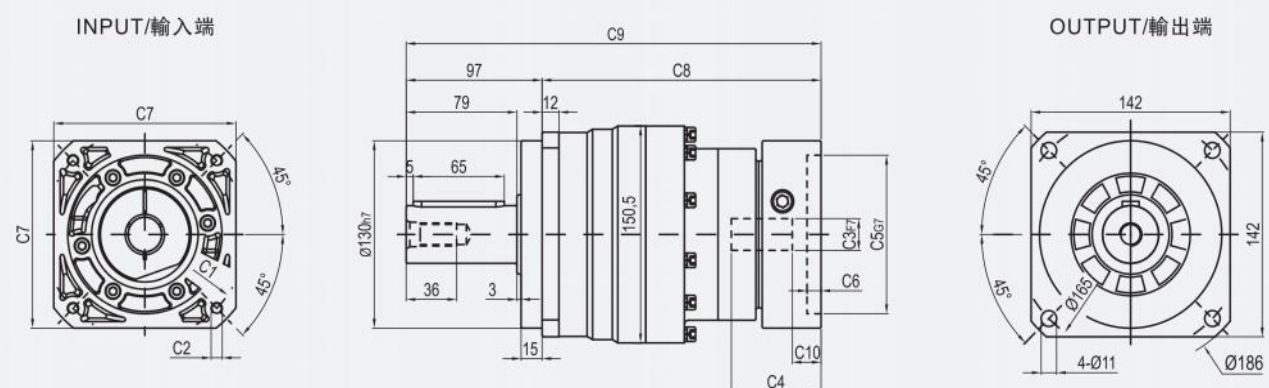
*D:常規孔, M1:極限孔

OUTLINE DIMENSION SHEET 外形尺寸圖表

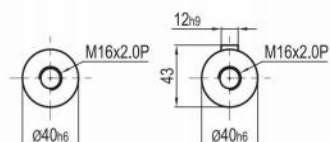
HAF-142D(M1)-L1



HAF-142D(M1)-L2



Output Diameter 輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HAF-142D-L1	Ø145	4-M8x20	Ø22, Ø24	72	Ø110	11	130	155	252	19.5
	Ø200	4-M12x28	Ø35	81.5	Ø114.3	8	180	165	262	25
HAF-142D-L2	Ø145	4-M8x20	Ø19, Ø22, Ø24	64	Ø110	10	130	199	296	19.5
HAF-142M1-L2	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	216.5	313.5	28

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

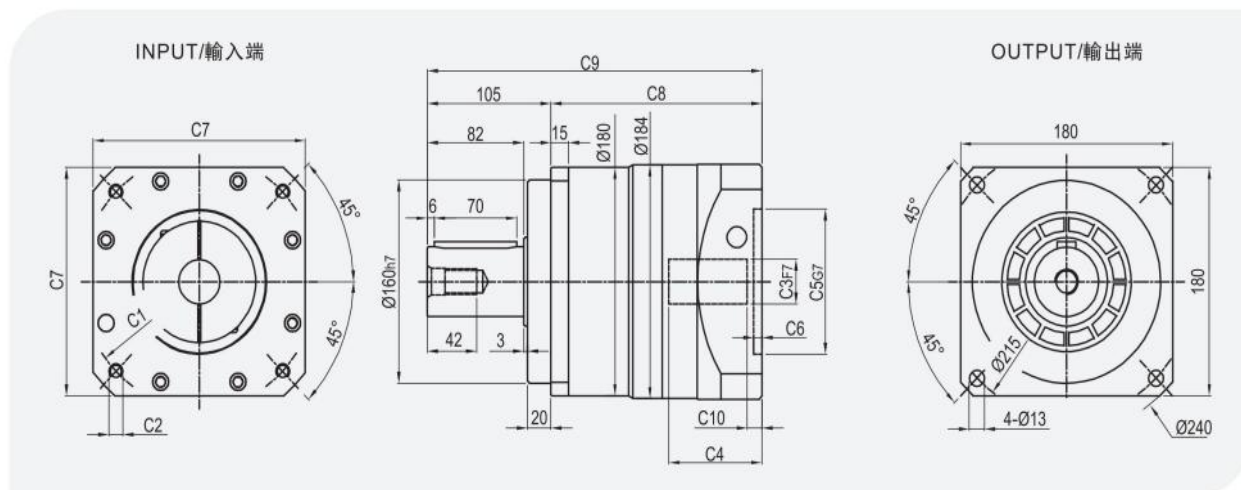
*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

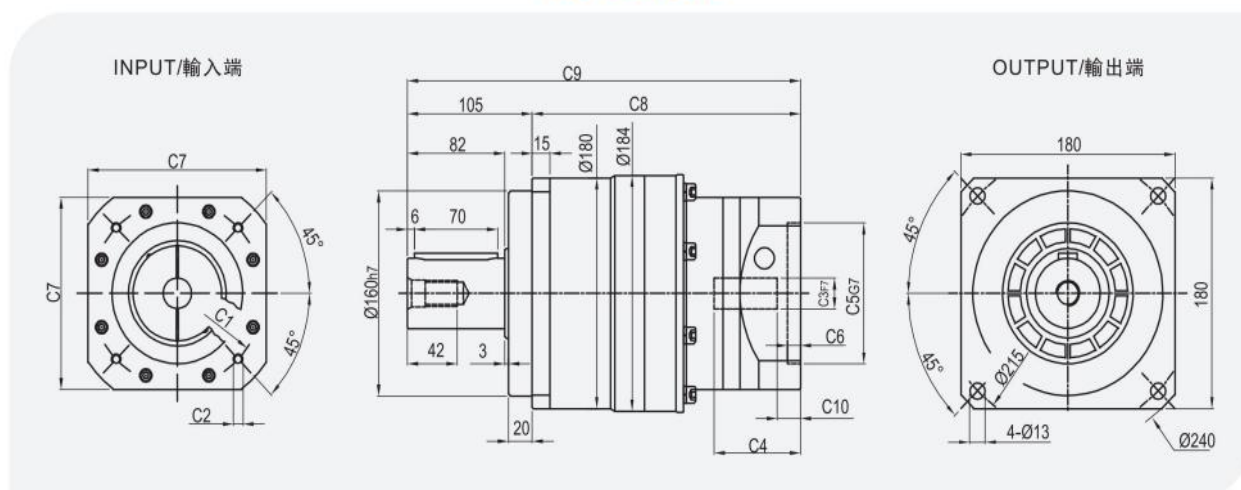
OUTLINE DIMENSION SHEET

外形尺寸圖表

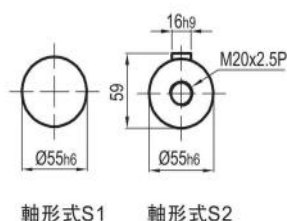
HAF-180-L1



HAF-180-L2



Output Diameter 輸出軸徑



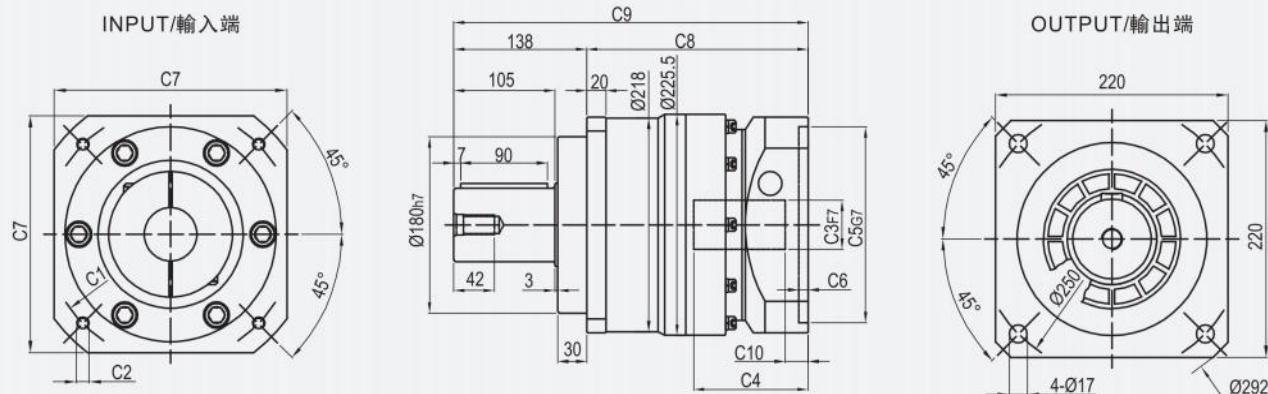
尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HAF-180-L1	Ø200	4-M12x28	Ø35	82	Ø114.3	8	180	178	283	8.5
	Ø200	4-M12x30	Ø42	117.5	Ø114.3	8	180	213.5	318.5	45.5
	Ø215	4-M12x30	Ø42	87	Ø180	8	192	183	288	13.5
	Ø235	4-M12x30	Ø42	117.5	Ø200	10	220	213.5	318.5	45.5
HAF-180-L2	Ø145	4-M8x25	Ø22, Ø24	72	Ø110	11	130	231	336	19.5
	Ø200	4-M12x30	Ø35	81.5	Ø114.3	8	180	241	346	25

*The input motor specific dimensions could be customised.

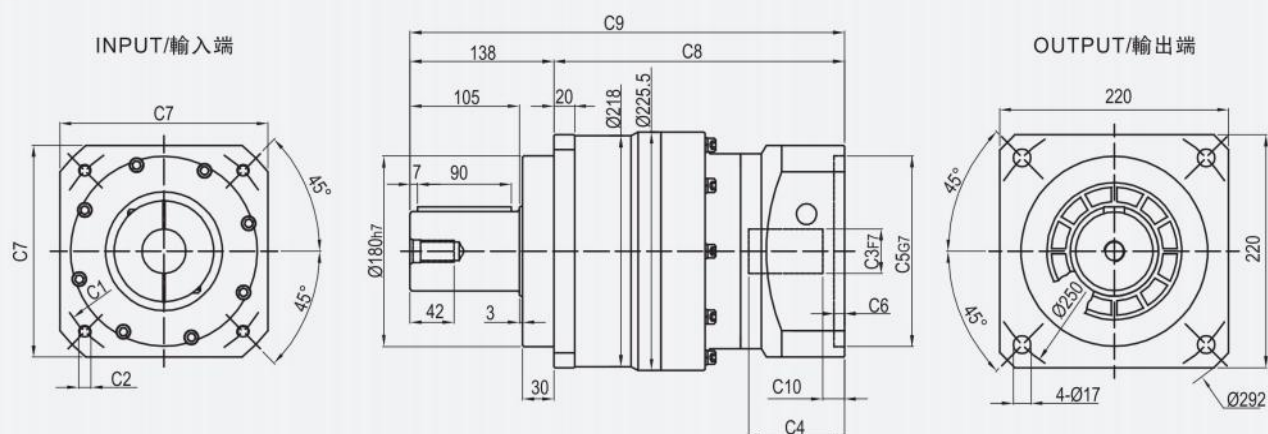
*輸入馬達連接板之尺寸，可根據客戶要求單獨定做。

OUTLINE DIMENSION SHEET 外形尺寸圖表

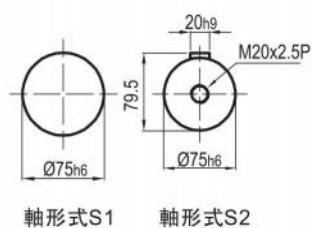
HAF-220-L1



HAF-220-L2



Output Diameter 輸出軸徑

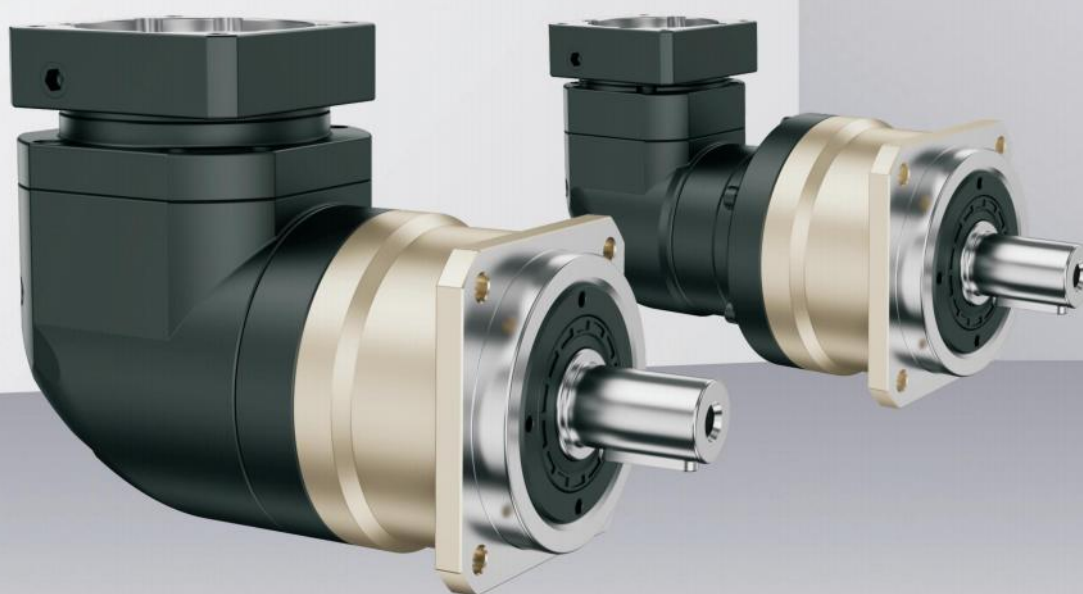


尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HAF-220-L1	Ø200	4-M12x28	Ø35, Ø42	118	Ø114.3	15	200	230	368	24
	Ø215	4-M12x30	Ø38	108	Ø180	8	200	220	358	11.5
	Ø235	4-M12x30	Ø42, Ø55	118	Ø200	10	220	230	368	24
HAF-220-L2	Ø200	4-M12x30	Ø35	82	Ø114.3	8	180	271.5	409.5	8.5
	Ø200	4-M12x30	Ø42	117.5	Ø114.3	8	180	307	445	45.5
	Ø215	4-M12x30	Ø38	87	Ø180	8	192	276.5	414.5	13.5
	Ø235	4-M12x30	Ø42	117.5	Ø200	10	220	307	445	45.5

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.
 *C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

HAFR

SERIES



MODEL ILLUMINATE

型號說明

HAFR 090 - 10 - P2 - S2 - 馬達

減速機型式：

HAFR060
HAFR090
HAFR115
HAFR142

背隙：P1：精密背隙
P2：標準背隙

馬達安裝尺寸：

減速比：

單級(L1): 3, 4, 5, 6, 7, 8, 10, 14, 20

雙級(L2): 12, 15, 20, 25, 30, 35, 40, 50, 60,
70, 80, 100, 120, 140, 160, 200

輸出軸型式選擇：S1：平滑直軸
S2：帶鍵直軸

選用範例：HAFR090-10-P2-S2-19-70-90-M6-45

REDUCER PERFORMANCE DATA

減速機性能資料

規格	級數	減速比 ^①	HAFR060	HAFR090	HAFR115	HAFR142
額定輸出力矩 T_{2N}	1	3	55	130	208	342
		4	50	140	290	542
		5	60	160	330	650
		6	55	150	310	600
		7	50	140	300	550
		8	50	140	290	542
		10	60	160	330	650
		14	50	140	300	550
	2	20	40	100	230	450
		12	55	130	208	342
		15	55	130	208	342
		20	50	140	290	542
		25	60	160	330	650
		30	55	130	208	342
		35	60	160	330	650
		40	50	140	290	542
		50	60	160	330	650
		60	55	150	310	600
		70	60	160	330	650
		80	50	140	290	542
最大輸出力矩 T_{2B}	1,2	3~200	5000	4000	4000	3000
		3~200	10000	8000	8000	6000
		3~20	≤10	≤10	≤10	≤10
		12~200	≤12	≤12	≤12	≤12
		3~200	7	14	25	50
		3~200	1530	3250	6700	9400
		3~200	765	1625	3350	4700
		3~200		20000*		
	1,2	3~20		≥95%		
		12~200		≥92%		
		3~20	2.1	6.4	13	24.5
		12~200	2.5	7.8	14.2	27.5
		3~200		-10°C~+90°C		
		3~200		合成潤滑油脂		
		3~200		IP65		
		3~200		任意方向		
		3~200	≤63	≤65	≤68	≤70
		3~200				
		3~200				
		3~200				

減速機轉動慣量

規格	級數	減速比 ^①	HAFR060	HAFR090	HAFR115	HAFR142
轉動慣量 J_1	1	3~7	0.35	2.25	6.84	23.4
		8~10	0.07	1.87	6.25	21.8
		14~20	0.07	1.87	6.25	21.8
	2	12~40	0.09	0.35	2.25	6.84
		50	0.09	0.31	1.87	6.25
		60	0.09	0.35	2.25	6.84
		70~100	0.09	0.31	1.87	6.25
		120~200	-	0.31	1.87	6.25

1.減速比($i=N_{in}/N_{out}$)

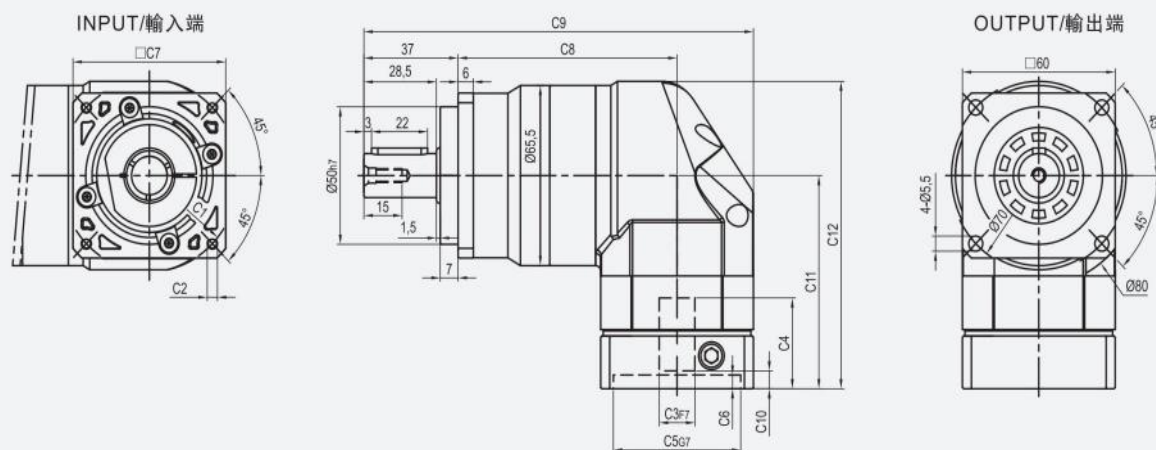
*連續運轉降低使用壽命二分之一。

2.輸出轉速100rpm時，作用于輸出軸中心位置。

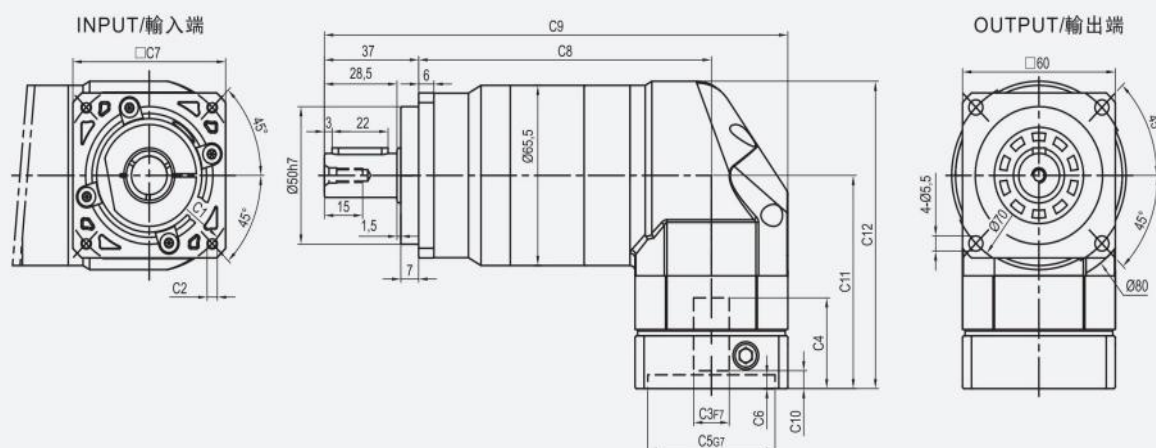
OUTLINE DIMENSION SHEET

外形尺寸圖表

HAFR-060D(M1)-L1

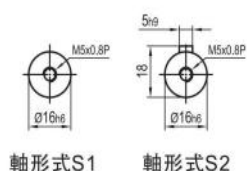


HAFA-060D(M1)-L2



Output Diameter

輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HAFA-060D-L1	Ø66.7	4-M4x10	Ø8	33	Ø38.1	5	60	86	153	5.5	77.5	111.75
HAFA-060D-L2								115	182			
HAFA-060D-L1	Ø70	4-M4x10, 4-M5x12	Ø11, Ø14	33	Ø50	5	60	86	153	5.5	77.5	111.75
HAFA-060D-L2								115	182			
HAFA-060M1-L1	Ø90	4-M5x12, 4-M6x14	Ø19	42.5	Ø70	6.5	80	86	163	12	87	121.25
HAFA-060M1-L2								115	192			

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

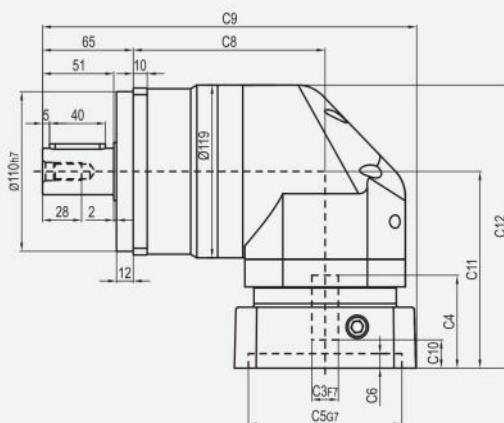
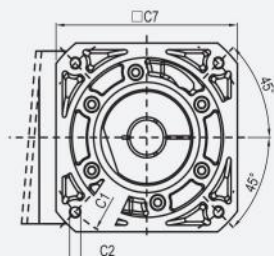
*D: 常規孔, M1: 極限孔

OUTLINE DIMENSION SHEET

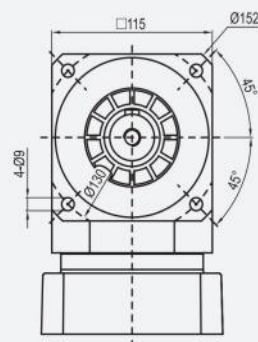
外形尺寸圖表

HAFR-115D(M1)-L1

INPUT/輸入端

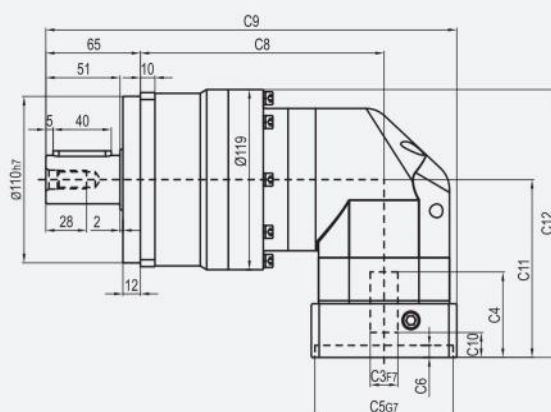
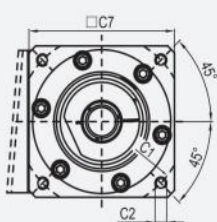


OUTPUT/輸出端

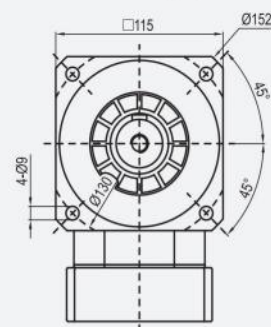


HAFA-115D(M1)-L2

INPUT/輸入端

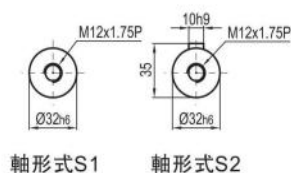


OUTPUT/輸出端



Output Diameter

輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HAFA-115D-L1	Ø145	4-M8x20	Ø19,Ø22,Ø24	64	Ø110	10	130	137.5	267.5	19.5	135.5	195
HAFA-115M1-L1	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	137.5	292.5	28	152.5	212
HAFA-115D-L2	Ø90	4-M5x12, 4-M6x14	Ø19	45	Ø70	6.5	80	167.5	277.5	7	96	155.5
	Ø100	4-M6x14	Ø16	45	Ø80	6.5	86	167.5	277.5	6	96	155.5
HAFA-115M1-L2	Ø115	4-M8x20	Ø19,Ø22	56.5	Ø95	8	100	167.5	282.5	16.5	117.5	177
	Ø145	4-M8x20	Ø19,Ø22,Ø24	59	Ø110	11	130	167.5	297.5	19	120	179.5

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D:Conventional Hole, M1:Limit Hole

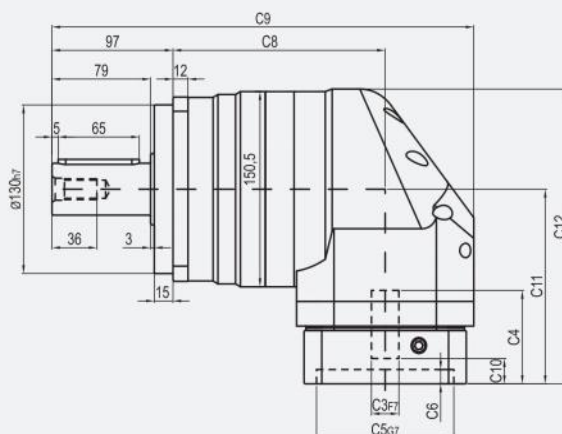
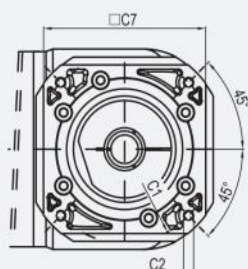
*D:常規孔, M1:極限孔

OUTLINE DIMENSION SHEET

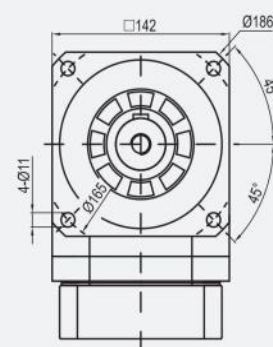
外形尺寸圖表

HAFR-142D(M1)-L1

INPUT/輸入端

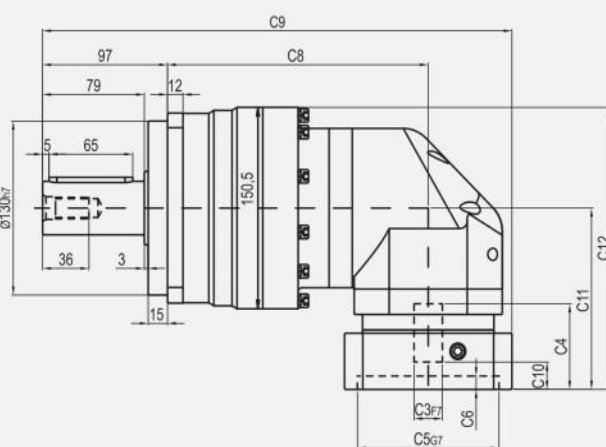
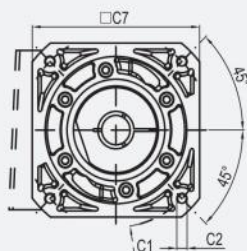


OUTPUT/輸出端

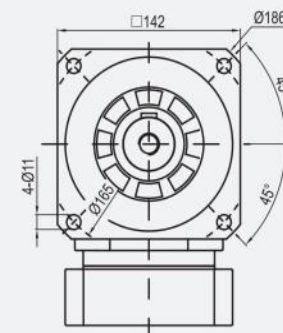


HAFR-142D(M1)-L1

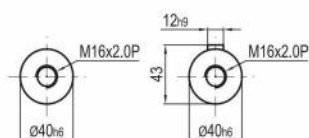
INPUT/輸入端



OUTPUT/輸出端



Output Diameter 輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HAFR-142D-L1	Ø145	4-M8x20	Ø22, Ø24	72	Ø110	11	130	170	338	19.5	150	227.25
	Ø200	4-M12x28	Ø35	82	Ø114.3	8	180	170	357	25	160	237.25
HAFR-142D-L2	Ø145	4-M8x20	Ø19, Ø22, Ø24	64	Ø110	10	130	202.5	364.5	19.5	135.5	210.75
HAFR-142M1-L2	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	202.5	389.5	28	152.5	227.75

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

HAE

SERIES



MODEL ILLUMINATE

型號說明

HAE 090 — **10** — **P2** — **S2** — **馬達**

減速機型式：

HAE070/HAE090/HAE120/HAE155/
HAE205/HAE235

背隙：P1：精密背隙
P2：標準背隙

馬達安裝尺寸：

減速比：

單級(L1):3,4,5,6,7,8,10

雙級(L2):12,15,20,25,30,35,40,50,60,70,80,100

輸出軸型式選擇：S1：平滑直軸
S2：帶鍵直軸

選用範例：HAE090-10-P2-S2-19-70-90-M6-42

REDUCER PERFORMANCE DATA

減速機性能資料

規格	級數	減速比 ^①	HAE070	HAE090	HAE120	HAE155	HAE205	HAE235
額定輸出力矩 T_{2N}	1	3	55	130	208	342	588	1140
		4	50	140	290	542	1050	1700
		5	60	160	330	650	1200	2000
		6	55	150	310	600	-	-
		7	50	140	300	550	1100	1800
		8	45	120	260	500	1000	1600
		10	40	100	230	450	520	1220
	2	12	55	130	208	342	-	-
		15	55	130	208	342	588	1140
		20	50	140	290	542	1050	1700
		25	60	160	330	650	1200	2000
		30	50	130	208	342	1200	2000
		35	60	160	330	650	1200	2000
		40	50	140	290	542	1200	2000
		50	60	160	330	650	1200	2000
		60	55	150	310	600	-	-
		70	50	140	300	550	1100	1800
		80	45	120	260	500	1000	1600
		100	40	100	230	450	520	1220
最大輸出力矩 T_{2B}	N.m	1,2	3~100		3倍額定輸出力矩			
額定輸入轉速 n_1	rpm	1,2	3~100	5000	4000	4000	3000	3000
最大輸入轉速 n_{1B}	rpm	1,2	3~100	10000	8000	8000	6000	6000
背隙	arcmin	1	3~10	≤5	≤5	≤5	≤5	≤5
		2	12~100	≤7	≤7	≤7	≤7	≤7
扭轉剛性	Nm/arcmin	1,2	3~100	7	14	25	50	145
容許徑向力 F_{2rB} ^②	N	1,2	3~100	1530	3250	6700	9400	14500
容許軸向力 F_{2aB} ^②	N	1,2	3~100	765	1625	3350	4700	7250
使用壽命	hr	1,2	3~100			20000*		
效率 η	%	1	3~10			≥97%		
		2	12~100			≥94%		
重量	kg	1	3~10	1.3	3.7	7.8	14.5	29
		2	12~100	1.9	4.1	9	17.5	33
使用溫度	°C	1,2	3~100			-10°C~+90°C		
潤滑		1,2	3~100			合成潤滑油脂		
防護等級		1,2	3~100			IP65		
安裝方向		1,2	3~100			任意方向		
噪音值($n_1=3000\text{rpm}$)	dB	1,2	3~100	≤58	≤60	≤63	≤65	≤67

減速機轉動慣量

規格	級數	減速比 ^①	HAE070	HAE090	HAE120	HAE155	HAE205	HAE235
轉動慣量 J_1	1	3	0.16	0.61	3.25	9.21	28.98	69.61
		4	0.14	0.48	2.74	7.54	23.67	54.37
		5	0.13	0.47	2.71	7.42	23.29	53.27
		6	0.13	0.45	2.65	7.25	22.75	51.72
		7	0.13	0.45	2.62	7.14	22.48	50.97
		8	0.13	0.44	2.58	7.07	22.59	50.84
		10	0.13	0.44	2.57	7.03	22.51	50.56
	2	12	0.03	0.13	0.47	2.71	7.42	23.29
		15	0.03	0.13	0.47	2.71	7.42	23.29
		20	0.03	0.13	0.47	2.71	7.42	23.29
		25	0.03	0.13	0.47	2.71	7.42	23.29
		30	0.03	0.13	0.47	2.71	7.42	23.29
		35	0.03	0.13	0.47	2.71	7.42	23.29
		40	0.03	0.13	0.47	2.71	7.42	23.29
		50	0.03	0.13	0.44	2.57	7.03	22.51
		60	0.03	0.13	0.44	2.57	7.03	22.51
		70	0.03	0.13	0.44	2.57	7.03	22.51
		80	0.03	0.13	0.44	2.57	7.03	22.51
		100	0.03	0.13	0.44	2.57	7.03	22.51

1.減速比($i=N_{in}/N_{out}$)

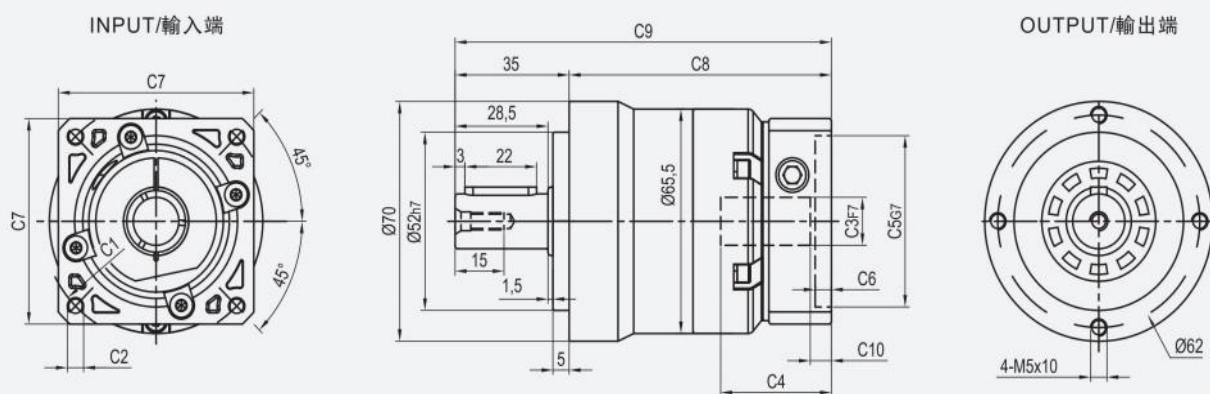
*連續運轉降低使用壽命二分之一。

2.輸出轉速100rpm時，作用于輸出軸中心位置。

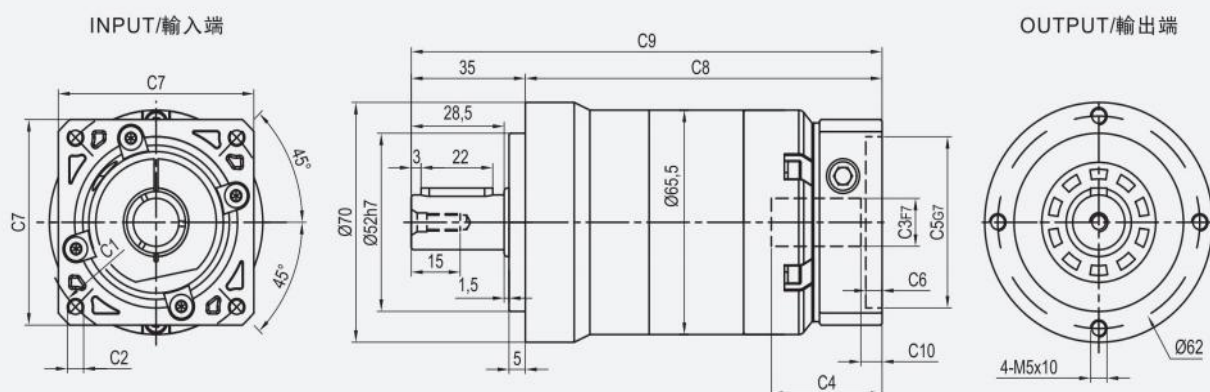
OUTLINE DIMENSION SHEET

外形尺寸圖表

HAE-070D(M1)-L1

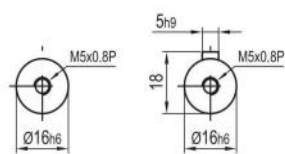


HAE-070D(M1)-L2



Output Diameter

輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HAE-070D-L1	Ø66.7	4-M4x10	Ø8	34	Ø38.1	5	60	80.5	115.5	5.5
HAE-070D-L2								109.5	144.5	5.5
HAE-070D-L1	Ø70	4-M4x10, 4-M5x12	Ø11-Ø14	34	Ø50	5	60	80.5	115.5	5.5
HAE-070D-L2								109.5	144.5	5.5
HAE-070M1-L1	Ø90	4-M5x12, 4-M6x14	Ø19	42	Ø70	6.5	80	87	122	12
HAE-070M1-L2								116	151	12

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

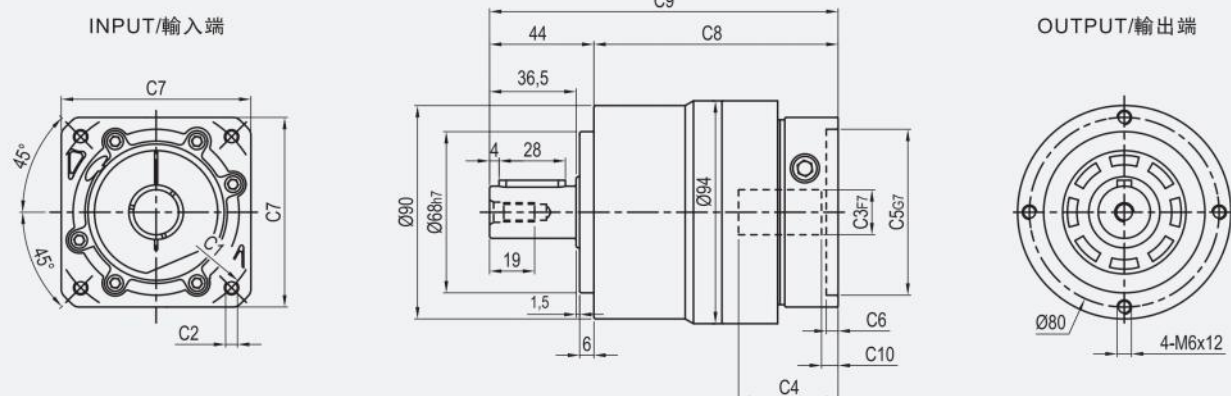
*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

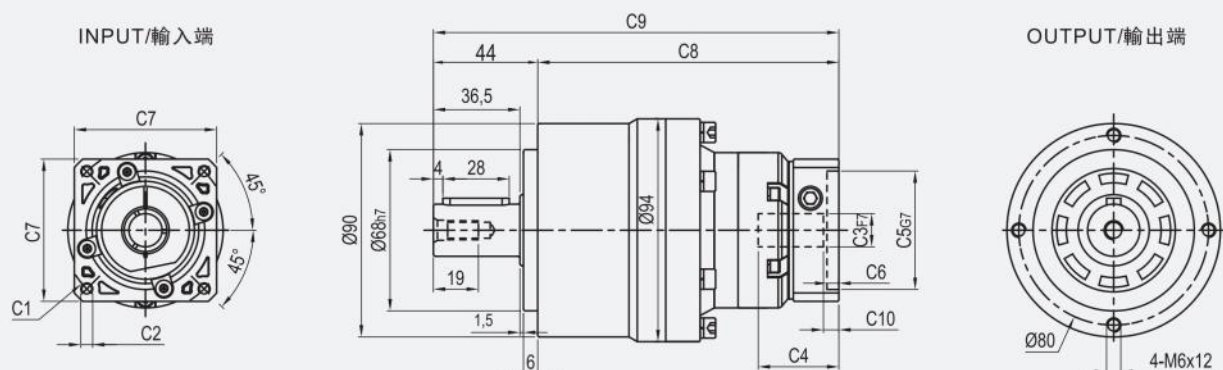
OUTLINE DIMENSION SHEET

外形尺寸圖表

HAE-090D(M1)-L1



HAE-090D(M1)-L2



Output Diameter

輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HAE-090D-L1	Ø90	4-M5x12,4-M6x14	Ø19	42	Ø70	6.5	80	103	147	7
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	103	147	6
HAE-090M1-L1	Ø115	4-M8x20	Ø19,Ø22	56.5	Ø95	8	100	118.5	162.5	16.5
	Ø145	4-M8x20	Ø19,Ø22,Ø24	59	Ø110	11	130	121	165	19
HAE-090D-L2	Ø66.7	4-M4x10	Ø8	34	Ø38.1	5	60	127	171	5.5
	Ø70	4-M4x10,4-M5x12	Ø11,Ø14	34	Ø50	5	60	127	171	5.5
HAE-090M1-L2	Ø90	4-M5x12,4-M6x14	Ø19	42	Ø70	6.5	80	133.5	177.5	12
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	133.5	177.5	11

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

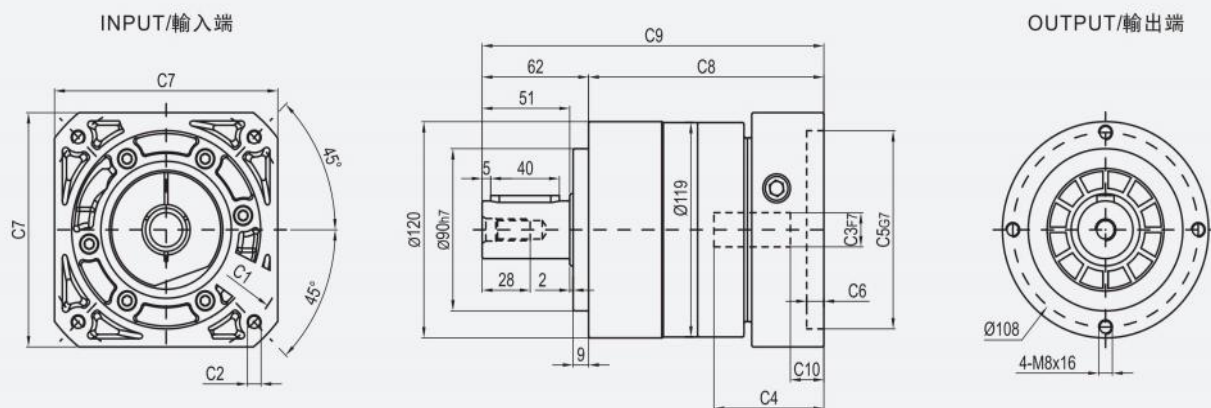
*D:Conventional Hole, M1:Limit Hole

*D:常規孔，M1:極限孔

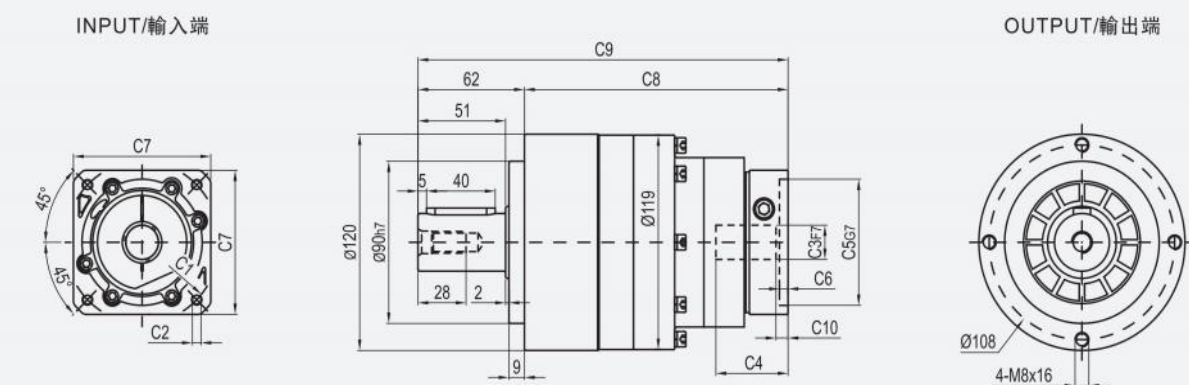
OUTLINE DIMENSION SHEET

外形尺寸圖表

HAE-120D(M1)-L1

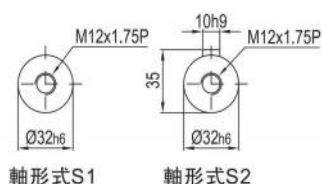


HAE-120D(M1)-L2



Output Diameter

輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HAE-120D-L1	Ø145	4-M8x20	Ø19, Ø22, Ø24	64	Ø110	10	130	137	199	19.5
HAE-120M1-L1	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	154.5	216.5	28
HAE-120D-L2	Ø90	4-M5x12, 4-M6x14	Ø19	42	Ø70	6.5	80	153.5	215.5	7
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	153.5	215.5	6
HAE-120M1-L2	Ø115	4-M8x20	Ø19, Ø22	56.5	Ø95	8	100	169	231	16.5
	Ø145	4-M8x20	Ø19, Ø22, Ø24	59	Ø110	11	130	171.5	233.5	19

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

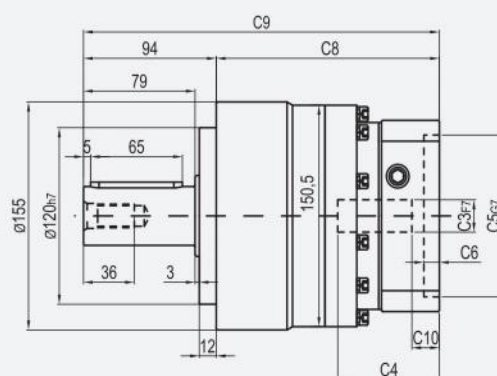
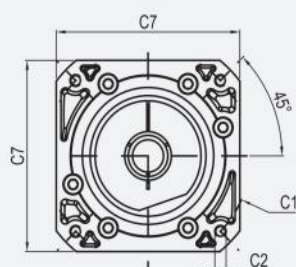
*D: 常規孔, M1: 極限孔

OUTLINE DIMENSION SHEET

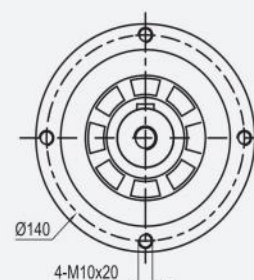
外形尺寸圖表

HAE-155D(M1)-L1

INPUT/輸入端

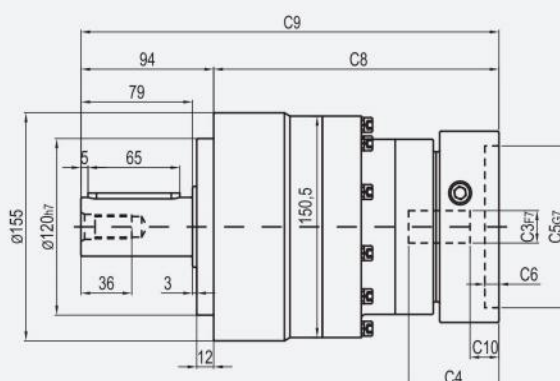
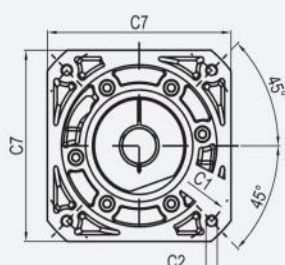


OUTPUT/輸出端

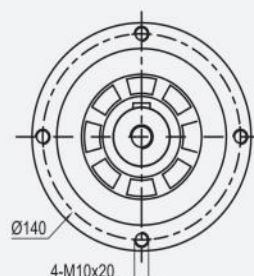


HAE-155D(M1)-L2

INPUT/輸入端

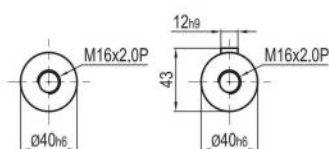


OUTPUT/輸出端



Output Diameter

輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HAE-155D-L1	Ø145	4-M8x20	Ø22, Ø24	72	Ø110	11	130	158	252	19.5
	Ø200	4-M12x28	Ø35	81.5	Ø114.3	8	180	168	262	25
HAE-155D-L2	Ø145	4-M8x20	Ø19, Ø22, Ø24	64	Ø110	10	130	202	296	19.5
HAE-155M1-L2	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	219.5	313.5	28

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

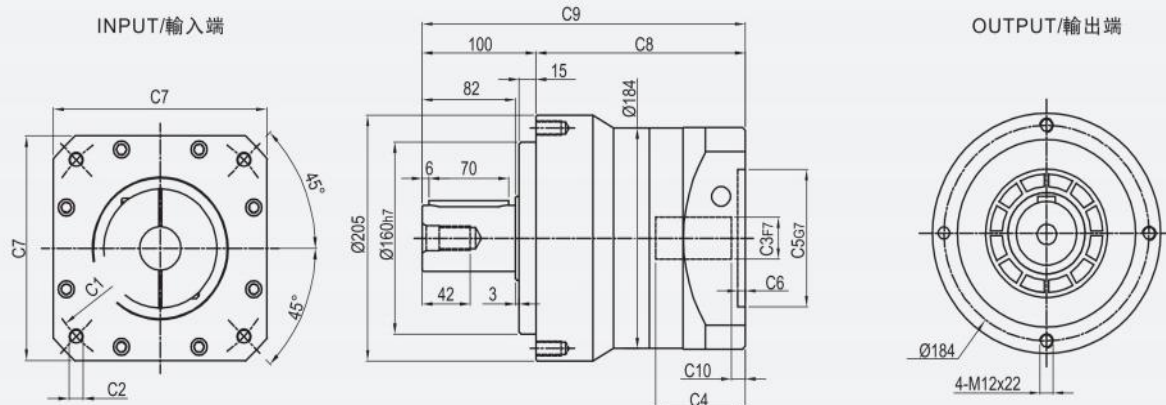
*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

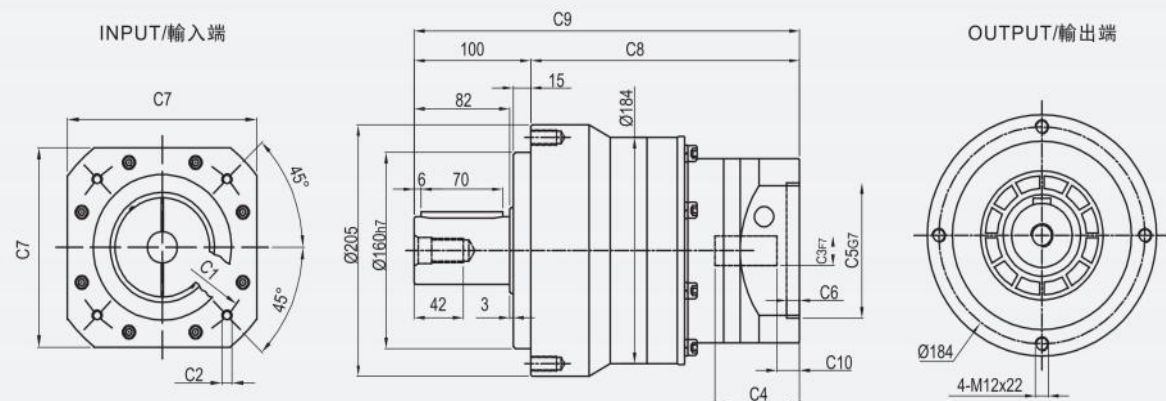
OUTLINE DIMENSION SHEET

外形尺寸圖表

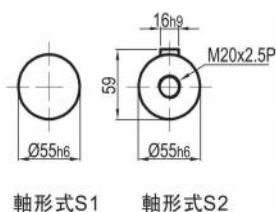
HAE-205-L1



HAE-205-L2



Output Diameter 輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HAE-205-L1	Ø200	4-M12x28	Ø35	82	Ø114.3	8	180	183	283	8.5
	Ø200	4-M12x30	Ø42	117.5	Ø114.3	8	180	218.5	318.5	45.5
	Ø215	4-M12x30	Ø38	87	Ø180	8	192	188	288	13.5
	Ø235	4-M12x30	Ø42	117.5	Ø200	10	220	218.5	318.5	45.5
HAE-205-L2	Ø145	4-M8x25	Ø22, Ø24	72	Ø110	11	130	236	336	19.5
	Ø200	4-M12x30	Ø35	81.5	Ø114.3	8	180	246	346	25

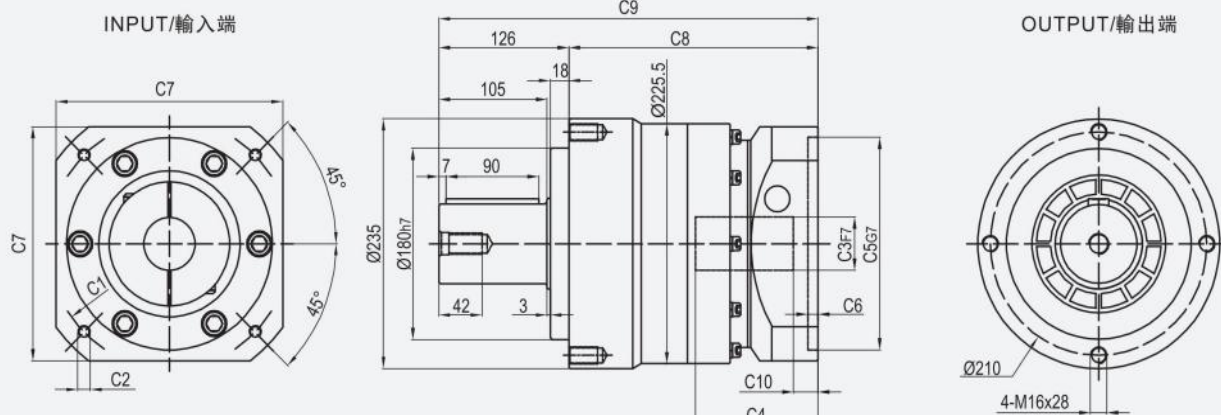
*The input motor specific dimensions could be customised.

*輸入馬達連接板之尺寸，可根據客戶要求單獨定做。

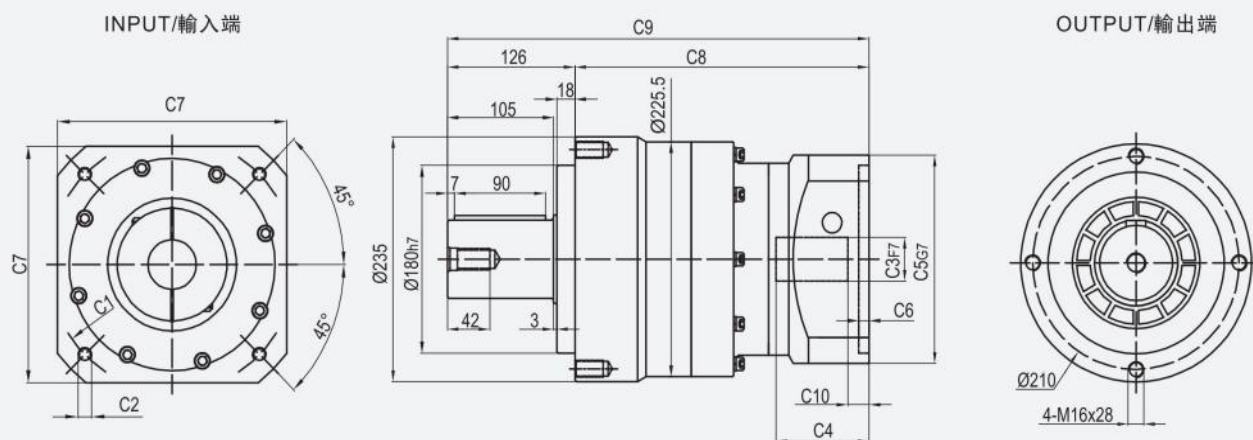
OUTLINE DIMENSION SHEET

外形尺寸圖表

HAE-235-L1

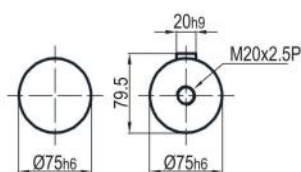


HAE-235-L2



Output Diameter

輸出軸徑



軸形式S1

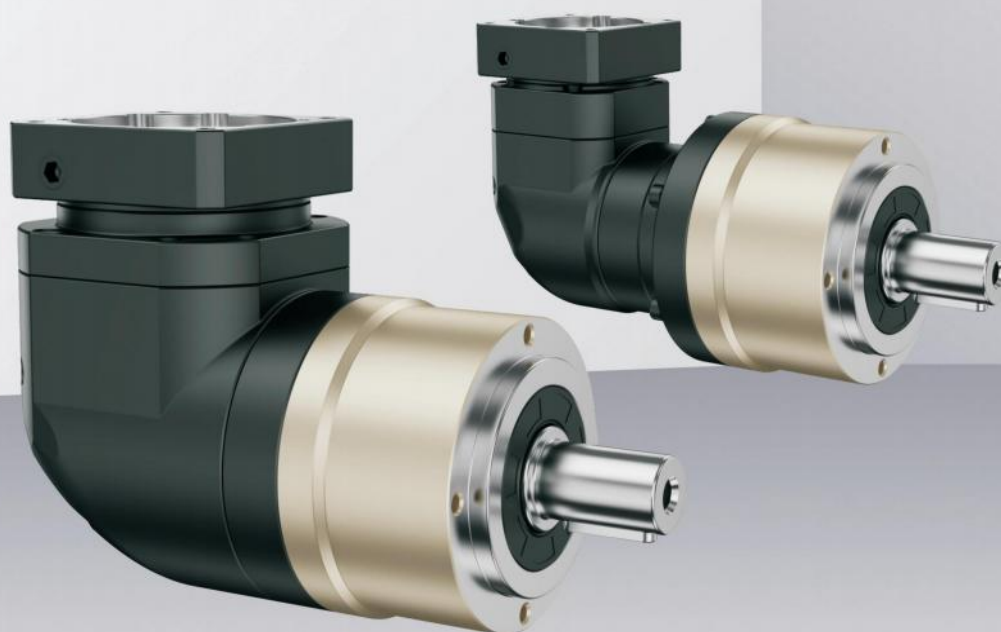
軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HAE-235-L1	Ø200	4-M12x30	Ø35, Ø42	118	Ø114.3	15	200	242	368	24
	Ø215	4-M12x30	Ø38	108	Ø180	8	200	230	358	11.5
	Ø235	4-M12x30	Ø42, Ø55	118	Ø200	10	220	242	368	24
HAE-235-L2	Ø200	4-M12x30	Ø35	82	Ø114.3	8	180	283.5	409.5	8.5
	Ø200	4-M12x30	Ø42	117.5	Ø114.3	8	180	319	445	45.5
	Ø215	4-M12x30	Ø38	87	Ø180	8	192	288.5	414.5	13.5
	Ø235	4-M12x30	Ø42	117.5	Ø200	10	220	319	445	45.5

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.
*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

HAER

SERIES



MODEL ILLUMINATE

型號說明



選用範例: HAER090-10-P2-S2-19-70-90-M6-45

REDUCER PERFORMANCE DATA

減速機性能資料

規格	級數	減速比 ^①	HAER070	HAER090	HAER120	HAER155
額定輸出力矩 T_{2N}	1	3	55	130	208	342
		4	50	140	290	542
		5	60	160	330	650
		6	55	150	310	600
		7	50	140	300	550
		8	50	140	290	542
		10	60	160	330	650
		14	50	140	300	550
		20	40	100	230	450
	2	12	55	130	208	342
		15	55	130	208	342
		20	50	140	290	542
		25	60	160	330	650
		30	55	130	208	342
		35	60	160	330	650
		40	50	140	290	542
		50	60	160	330	650
		60	55	150	310	600
		70	60	160	330	650
		80	50	140	290	542
		100	60	160	330	650
		120	-	150	310	600
		140	-	140	300	550
		160	-	120	260	500
		200	-	100	230	450
最大輸出力矩 T_{2B}	N.m	1,2	3~200	3倍額定輸出力矩		
額定輸入轉速 n_1	rpm	1,2	3~200	5000	4000	3000
最大輸入轉速 n_{1B}	rpm	1,2	3~200	10000	8000	6000
背隙	arcmin	1	3~20	≤10	≤10	≤10
		2	12~200	≤12	≤12	≤12
扭轉剛性	Nm/arcmin	1,2	3~200	7	14	25
容許徑向力 F_{2rB} ^②	N	1,2	3~200	1530	3250	6700
容許軸向力 F_{2aB} ^②	N	1,2	3~200	765	1625	3350
使用壽命	hr	1,2	3~200	20,000*		
效率 η	%	1	3~20	≥95%		
		2	12~200	≥92%		
重量	kg	1	3~20	2.1	6.4	13
		2	12~200	2.5	7.8	14.2
使用溫度	°C	1,2	3~200	-10°C~+90°C		
潤滑		1,2	3~200	合成潤滑油脂		
防護等級		1,2	3~200	IP65		
安裝方向		1,2	3~200	任意方向		
噪音值($n_1=3000\text{rpm}$)	dB	1,2	3~200	≤63	≤65	≤68

減速機轉動慣量

規格	級數	減速比 ^①	HAER070	HAER090	HAER120	HAER155
轉動慣量 J_1	1	3~7	0.35	2.25	6.84	23.4
		8~10	0.07	1.87	6.25	21.8
		14~20	0.07	1.87	6.25	21.8
	2	12~40	0.09	0.35	2.25	6.84
		50	0.09	0.31	1.87	6.25
		60	0.09	0.35	2.25	6.84
		70~100	0.09	0.31	1.87	6.25
		120~200	-	0.31	1.87	6.25

1.減速比($i=N_{in}/N_{out}$)

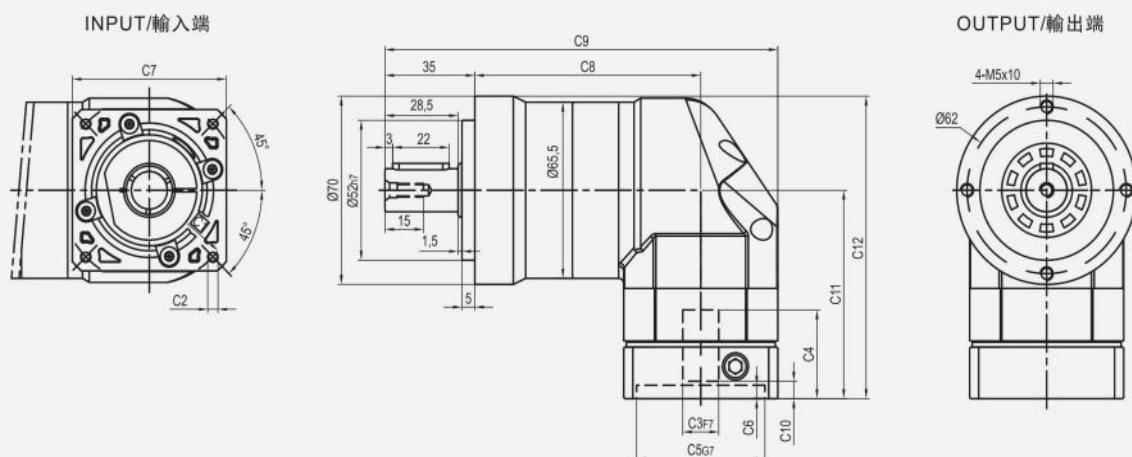
*連續運轉降低使用壽命二分之一。

2.輸出轉速100rpm時，作用于輸出軸中心位置。

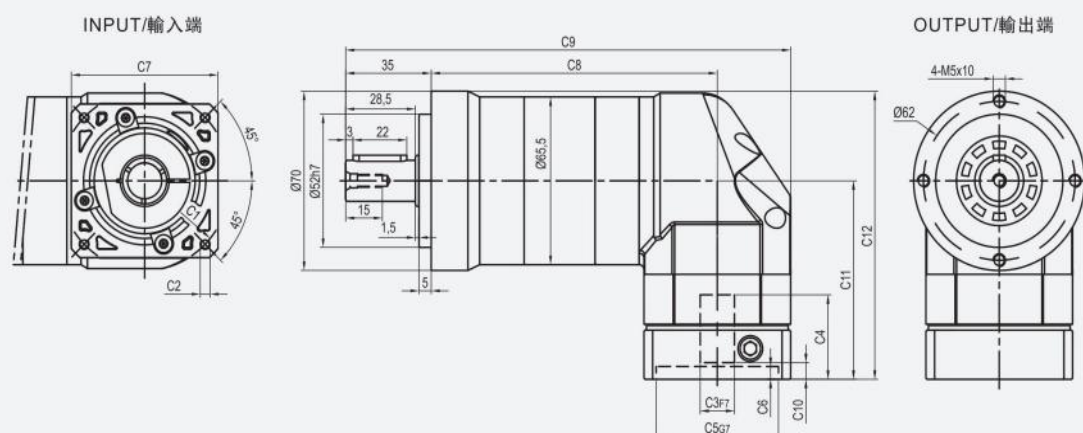
OUTLINE DIMENSION SHEET

外形尺寸圖表

HAER-070D(M1)-L1

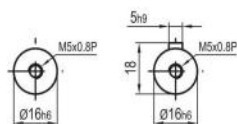


HAER-070D(M1)-L2



Output Diameter

輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HAER-070D-L1	Ø66.7	4-M4x10	Ø8	33	Ø38.1	5	60	88	153	5.5	77.5	112.5
HAER-070D-L2								117	182			
HAER-070D-L1	Ø70	4-M4x10, 4-M5x12	Ø11, Ø14	33	Ø50	5	60	88	153	5.5	77.5	112.5
HAER-070D-L2								117	182			
HAER-070M1-L1	Ø90	4-M5x12, 4-M6x14	Ø19	42.5	Ø70	6.5	80	88	163	12	87	122
HAER-070M1-L2								117	192			

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

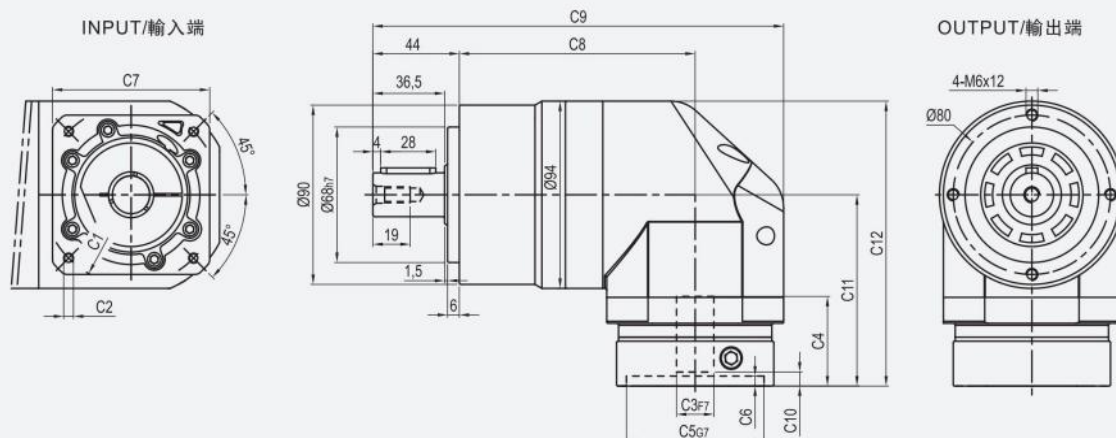
*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

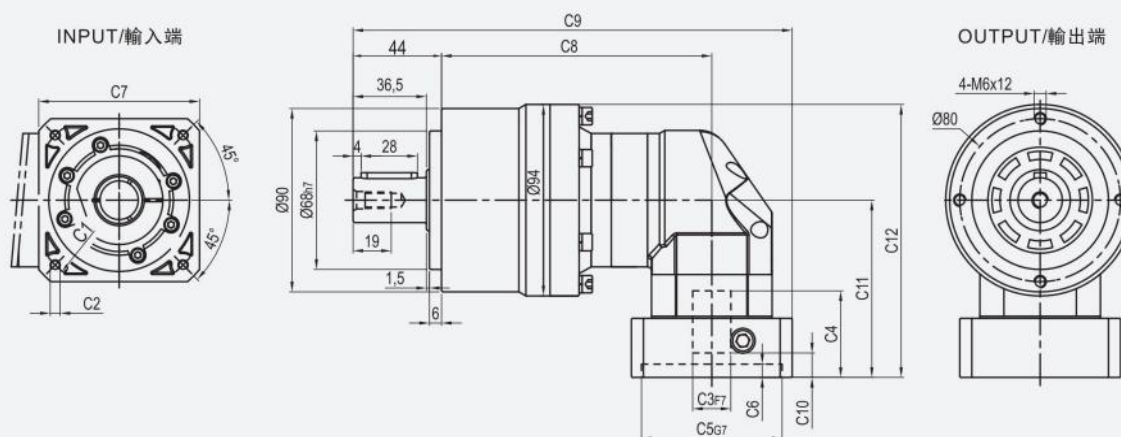
OUTLINE DIMENSION SHEET

外形尺寸圖表

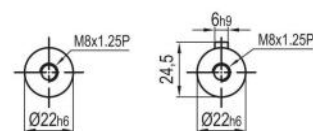
HAER-090D(M1)-L1



HAER-090D(M1)-L2



Output Diameter 輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HAER-090D-L1	Ø90	4-M5x12, 4-M6x14	Ø19	45	Ø70	6.5	80	120	209	7	96	143
	Ø100	4-M6x14	Ø16	45	Ø80	6.5	86	120	209	6	96	143
HAER-090M1-L1	Ø115	4-M8x20	Ø19, Ø22	56.5	Ø95	8	100	120	214	16.5	117.5	164.5
	Ø145	4-M8x20	Ø19, Ø22, Ø24	59	Ø110	11	130	120	229	19	120	167
HAER-090D-L2	Ø66.7	4-M4x10	Ø8	33	Ø38.1	5	60	134.5	208.5	5.5	77.5	124.5
	Ø70	4-M4x10, 4-M5x12	Ø11, Ø14	33	Ø50	5	60	134.5	208.5	5.5	77.5	124.5
HAER-090M1-L2	Ø90	4-M5x12, 4-M6x14	Ø19	42.5	Ø70	6.5	80	134.5	218.5	12	87	134
	Ø100	4-M6x14	Ø16	42.5	Ø80	6.5	86	134.5	221.5	11	87	134

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

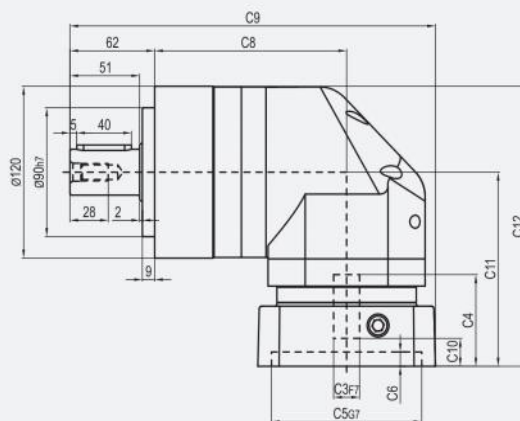
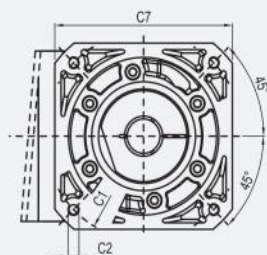
*D: 常規孔, M1: 極限孔

OUTLINE DIMENSION SHEET

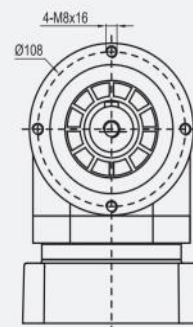
外形尺寸圖表

HAER-120D(M1)-L1

INPUT/輸入端

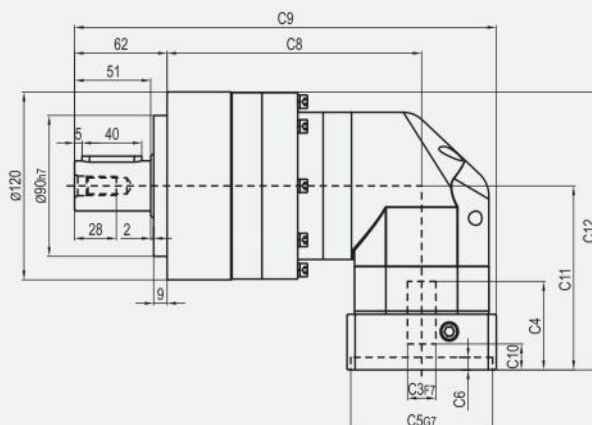
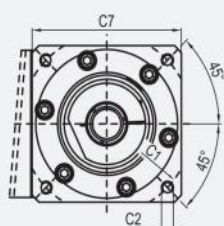


OUTPUT/輸出端

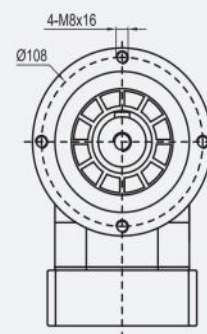


HAER-120D(M1)-L2

INPUT/輸入端

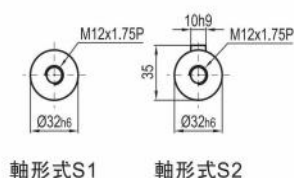


OUTPUT/輸出端



Output Diameter

輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HAER-120D-L1	Ø145	4-M8x20	Ø19,Ø22,Ø24	64	Ø110	10	130	140.5	267.5	19.5	135.5	195.5
HAER-120M1-L1	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	140.5	292.5	28	152.5	212.5
HAER-120D-L2	Ø90	4-M5x12, 4-M6x14	Ø19	45	Ø70	6.5	80	170.5	277.5	7	96	156
	Ø100	4-M6x14	Ø16	45	Ø80	6.5	86	170.5	277.5	6	96	156
HAER-120M1-L2	Ø115	4-M8x20	Ø19,Ø22	56.5	Ø95	8	100	170.5	282.5	16.5	117.5	177.5
	Ø145	4-M8x20	Ø19,Ø22,Ø24	59	Ø110	11	130	170.5	297.5	19	120	180

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

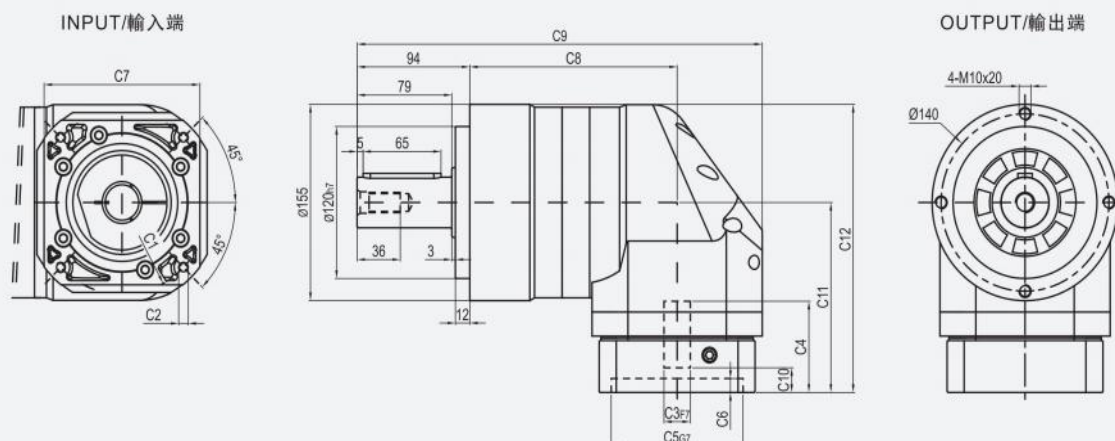
*D:Conventional Hole, M1:Limit Hole

*D:常規孔，M1:極限孔

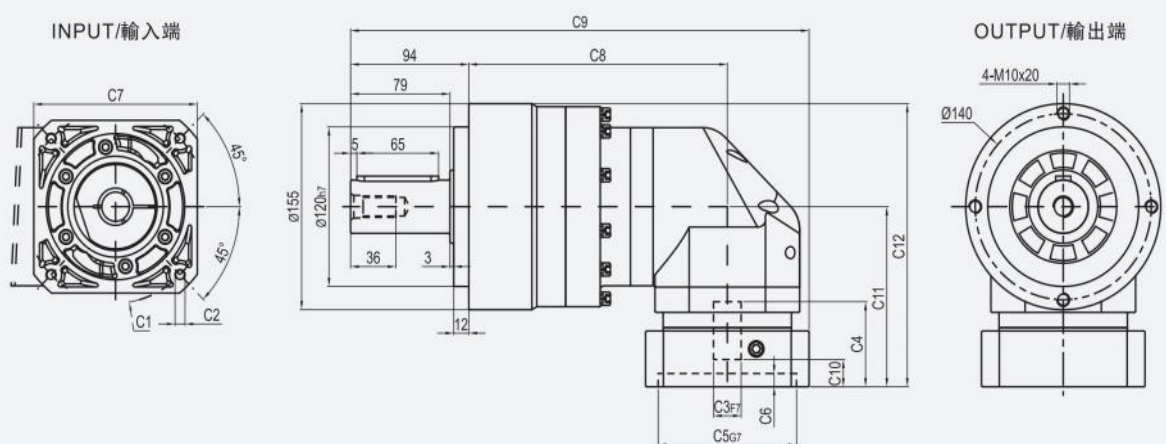
OUTLINE DIMENSION SHEET

外形尺寸圖表

HAER-155D(M1)-L1

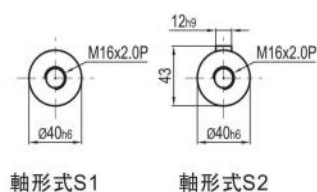


HAER-155D(M1)-L2



Output Diameter

輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HAER-155D-L1	Ø145	4-M8x20	Ø22, Ø24	72	Ø110	11	130	173	338	19.5	150	227.5
	Ø200	4-M12x28	Ø35	82	Ø114.3	8	180	173	357	25	160	237.5
HAER-155D-L2	Ø145	4-M8x20	Ø19, Ø22, Ø24	64	Ø110	10	130	205.5	364.5	19.5	135.5	213
	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	205.5	389.5	28	152.5	230

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

HLFS

SERIES



MODEL ILLUMINATE

型號說明

HLFS 080 — **10** — **P2** — **S2** — **馬達**

減速機型式：

HLFS040/HLFS060/
HLFS080/HLFS120/
HLFS160

背隙：P1：精密背隙
P2：標準背隙

馬達安裝尺寸：

減速比：

單級(L1): 3, 4, 5, 6, 7, 8, 10

雙級(L2): 12, 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 100

輸出軸型式選擇：S1：平滑直軸
S2：帶鍵直軸

選用範例：HLFS080-10-P2-S2-19-70-90-M6-42

REDUCER PERFORMANCE DATA

減速機性能資料

規格		級數	減速比 ^①	HLFS040	HLFS060	HLFS080	HLFS120	HLFS160
額定輸出力矩T _{2N}	N.m	1	3	20	55	130	208	342
			4	19	50	140	290	542
			5	22	60	160	330	650
			6	20	55	150	310	600
			7	19	50	140	300	550
			8	17	45	120	260	500
			10	14	40	100	230	450
		2	12	20	55	130	208	342
			15	20	55	130	208	342
			20	19	50	140	290	542
			25	22	60	160	330	650
			30	22	55	130	208	342
			35	22	60	160	330	650
			40	22	50	140	290	542
			50	22	60	160	330	650
			60	20	55	150	310	600
			70	19	50	140	300	550
			80	17	45	120	260	500
			100	14	40	100	230	450
最大輸出力矩T _{2B}	N.m	1,2	3倍額定輸出力矩					
額定輸入轉速n ₁	rpm	1,2	3~100	5000	5000	4000	4000	3000
最大輸入轉速n _{1B}	rpm	1,2	3~100	10000	10000	8000	8000	6000
背隙	arcmin	1	3~10	≤8	≤8	≤8	≤8	≤8
		2	12~100	≤10	≤10	≤10	≤10	≤10
扭轉剛性	Nm/arcmin	1,2	3~100	3	7	14	25	50
容許徑向力F _{2rB} ^②	N	1,2	3~100	780	1530	3250	6700	9400
容許軸向力F _{2aB} ^②	N	1,2	3~100	390	765	1625	3350	4700
使用壽命	hr	1,2	3~100	20000*				
效率η	%	1	3~10	≥97%				
		2	12~100	≥94%				
重量	kg	1	3~10	0.5	1.3	3.7	7.8	14.5
		2	12~100	0.8	1.9	4.1	9	17.5
使用溫度	℃	1,2	3~100	-10℃~+90℃				
潤滑		1,2	3~100	合成潤滑油脂				
防護等級		1,2	3~100	IP65				
安裝方向		1,2	3~100	任意方向				
噪音值(n ₁ =3000rpm)	dB	1,2	3~100	≤56	≤58	≤60	≤63	≤65

減速機轉動慣量

規格	級數	減速比 ^①	HLFS040	HLFS060	HLFS080	HLFS120	HLFS160
轉動慣量J ₁	1	3	0.03	0.16	0.61	3.25	9.21
		4	0.03	0.14	0.48	2.74	7.54
		5	0.03	0.13	0.47	2.71	7.42
		6	0.03	0.13	0.45	2.65	7.25
		7	0.03	0.13	0.45	2.62	7.14
		8	0.03	0.13	0.44	2.58	7.07
		10	0.03	0.13	0.44	2.57	7.03
	2	12	0.03	0.03	0.13	0.47	2.71
		15	0.03	0.03	0.13	0.47	2.71
		20	0.03	0.03	0.13	0.47	2.71
		25	0.03	0.03	0.13	0.47	2.71
		30	0.03	0.03	0.13	0.47	2.71
		35	0.03	0.03	0.13	0.47	2.71
		40	0.03	0.03	0.13	0.47	2.71
		50	0.03	0.03	0.13	0.44	2.57
		60	0.03	0.03	0.13	0.44	2.57
		70	0.03	0.03	0.13	0.44	2.57
		80	0.03	0.03	0.13	0.44	2.57
		100	0.03	0.03	0.13	0.44	2.57

1.減速比($i=N_{in}/N_{out}$)

*連續運轉降低使用壽命二分之一。

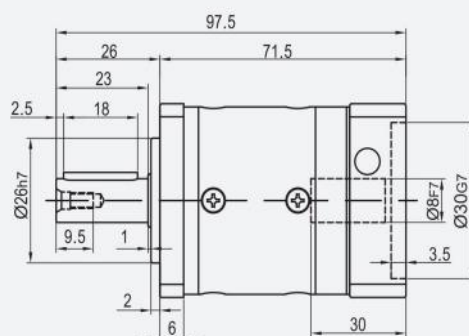
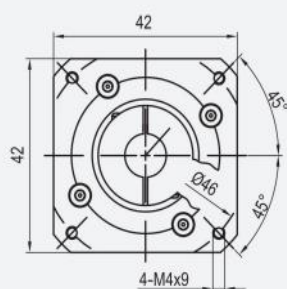
2.輸出轉速100rpm時，作用於輸出軸中心位置。

OUTLINE DIMENSION SHEET

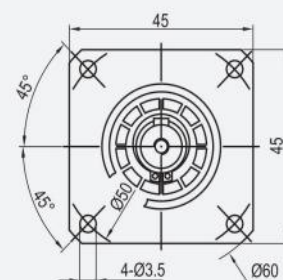
外形尺寸圖表

HLFS-040-L1

INPUT/輸入端

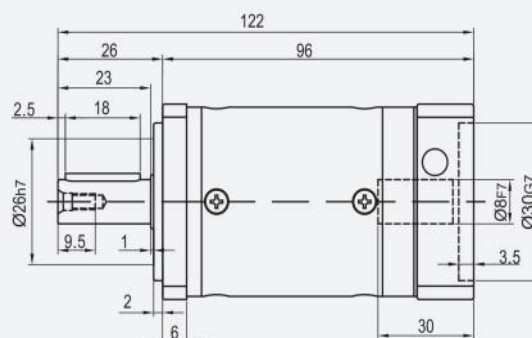
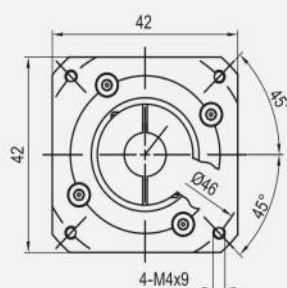


OUTPUT/輸出端

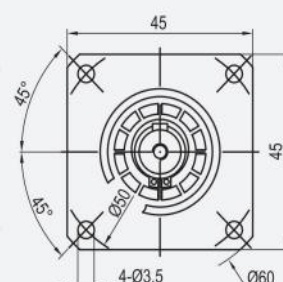


HLFS-040-L2

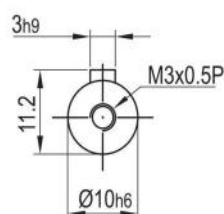
輸入端/ INPUT



輸出端/OUTPUT



Output Diameter 輸出軸徑



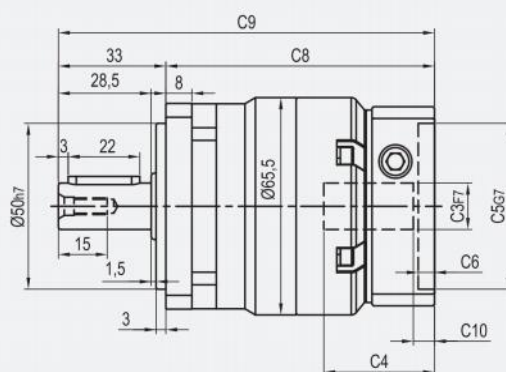
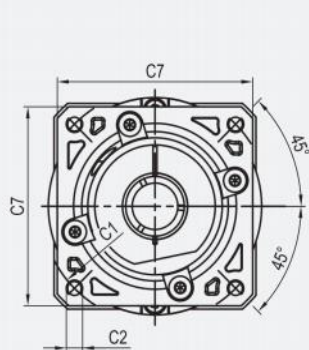
*The input motor specific dimensions could be customised.
*輸入馬達連接板之尺寸，可根據客戶要求單獨定做。

OUTLINE DIMENSION SHEET

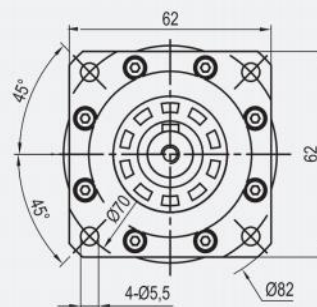
外形尺寸圖表

HLFS-060D(M1)-L1

INPUT/輸入端

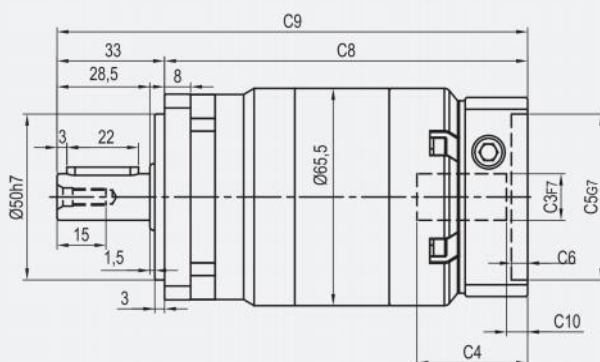
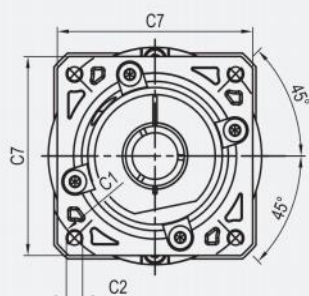


OUTPUT/輸出端

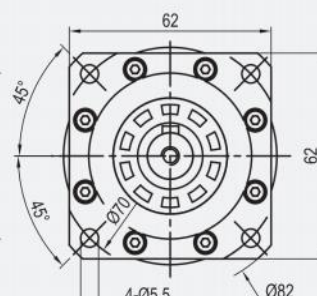


HLFS-060D(M1)-L2

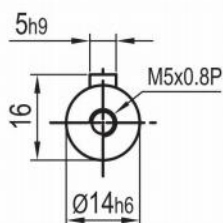
INPUT/輸入端



OUTPUT/輸出端



Output Diameter 輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HLFS-060D-L1										
HLFS-060D-L2	Ø66.7	4-M4x10	Ø8	34	Ø38.1	5	60	82.5	115.5	5.5
HLFS-060D-L1										
HLFS-060D-L2	Ø70	4-M4x10,4-M5x12	Ø11,Ø14	34	Ø50	5	60	111.5	144.5	5.5
HLFS-060M1-L1										
HLFS-060M1-L2	Ø90	4-M5x12,4-M6x14	Ø19	42	Ø70	6.5	80	89	122	12
								118	151	12

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

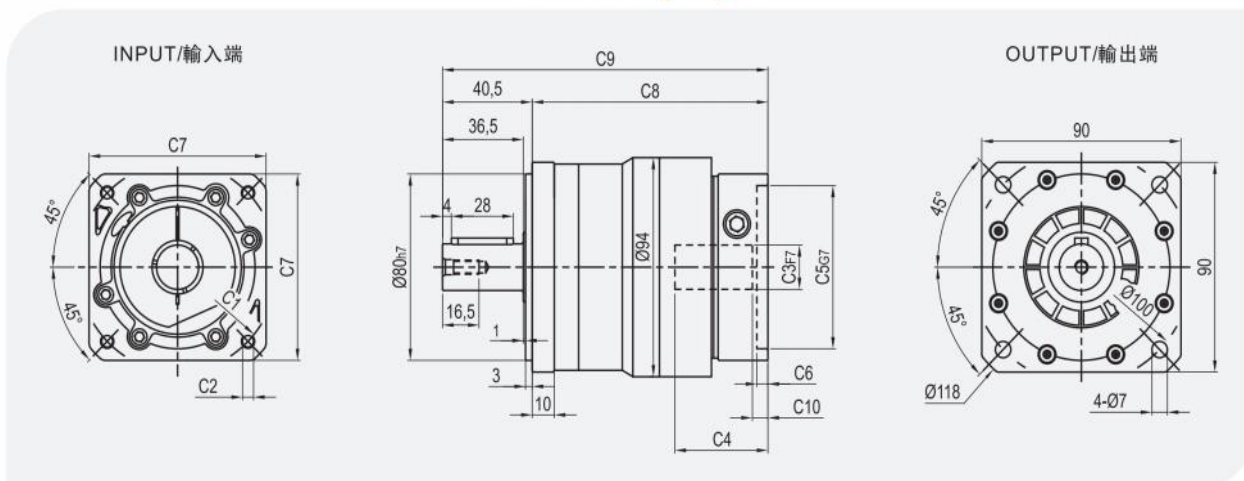
*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D:Conventional Hole, M1:Limit Hole

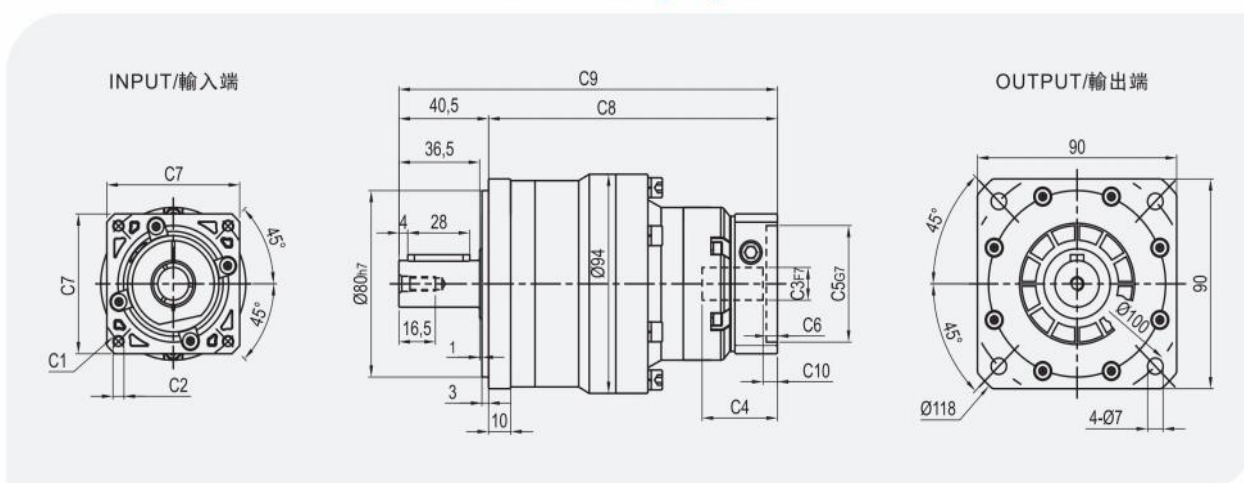
*D:常規孔, M1:極限孔

OUTLINE DIMENSION SHEET 外形尺寸圖表

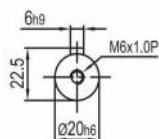
HLFS-080D(M1)-L1



HLFS-080D(M1)-L2



Output Diameter 輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HLFS-080D-L1	Ø90	4-M5x12,4-M6x14	Ø19	42	Ø70	6.5	80	106.5	147	7
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	106.5	147	6
HLFS-080M1-L1	Ø115	4-M8x20	Ø19,Ø22	56.5	Ø95	8	100	122	162.5	16.5
	Ø145	4-M8x20	Ø19,Ø22,Ø24	59	Ø110	11	130	124.5	165	19
HLFS-080D-L2	Ø66.7	4-M4x10	Ø8	34	Ø38.1	5	60	130.5	171	5.5
	Ø70	4-M4x10,4-M5x12	Ø11,Ø14	34	Ø50	5	60	130.5	171	5.5
HLFS-080M1-L2	Ø90	4-M5x12,4-M6x14	Ø19	42	Ø70	6.5	80	137	177.5	12
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	137	177.5	11

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D:Conventional Hole, M1:Limit Hole

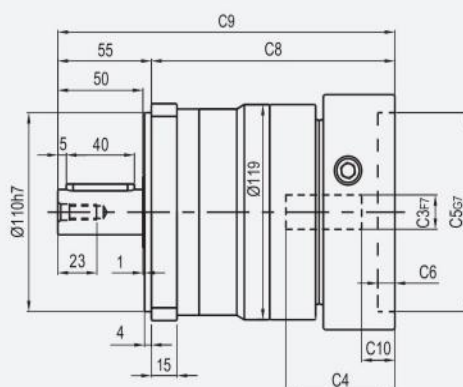
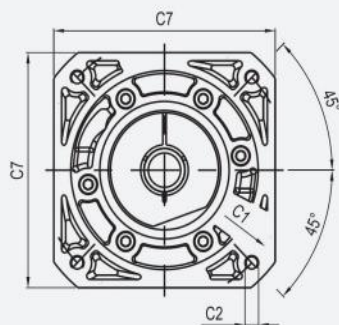
*D:常規孔，M1:極限孔

OUTLINE DIMENSION SHEET

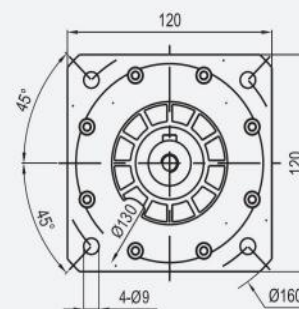
外形尺寸圖表

HLFS-120D(M1)-L1

INPUT/輸入端

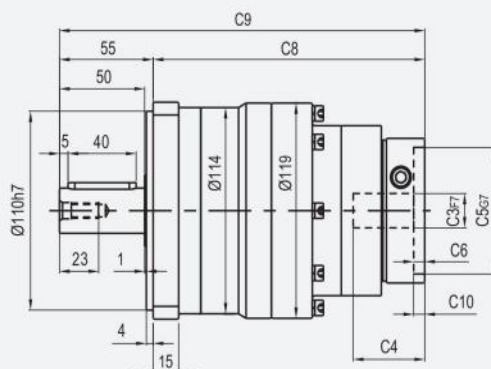
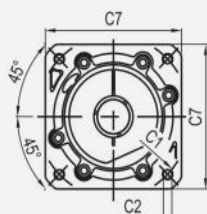


OUTPUT/輸出端

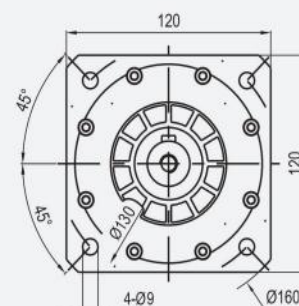


HLFS-120D(M1)-L2

INPUT/輸入端

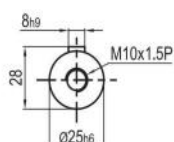


OUTPUT/輸出端



Output Diameter

輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HLFS-120D-L1	Ø145	4-M8x20	Ø19,Ø22,Ø24	64	Ø110	10	130	143	198	19.5
HLFS-120M1-L1	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	160.5	215.5	28
HLFS-120D-L2	Ø90	4-M5x12,4-M6x14	Ø19	42	Ø70	6.5	80	159.5	214.5	7
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	159.5	214.5	6
HLFS-120M1-L2	Ø115	4-M8x20	Ø19,Ø22	56.5	Ø95	8	100	175	230	16.5
	Ø145	4-M8x20	Ø19,Ø22,Ø24	59	Ø110	11	130	177.5	232.5	19

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

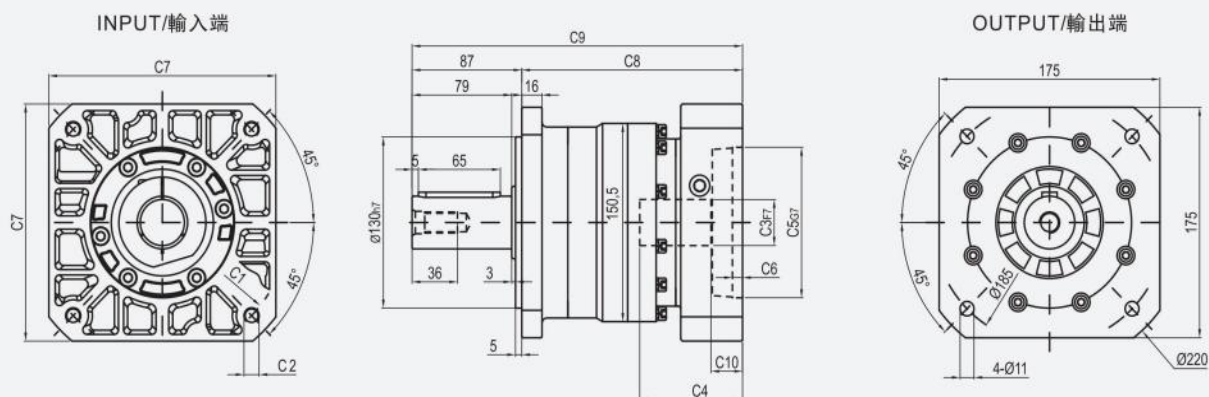
*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D:Conventional Hole, M1:Limit Hole

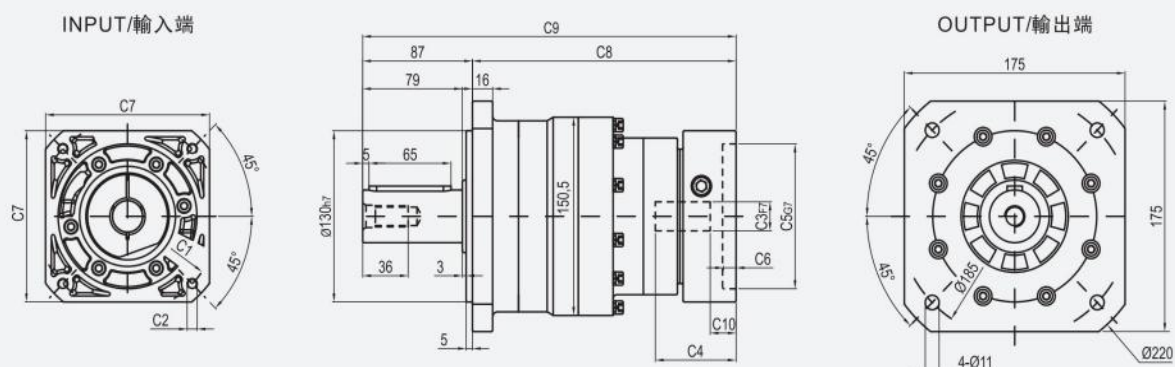
*D:常規孔，M1:極限孔

OUTLINE DIMENSION SHEET 外形尺寸圖表

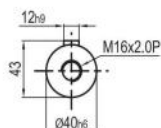
HLFS-160D(M1)-L1



HLFS-160D(M1)-L2



Output Diameter 輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HLFS-160D-L1	Ø145	4-M8x20	Ø22, Ø24	72	Ø110	11	130	165	252	19.5
	Ø200	4-M12x28	Ø35	81.5	Ø114.3	8	180	175	262	25
HLFS-160D-L2	Ø145	4-M8x20	Ø19, Ø22, Ø24	64	Ø110	10	130	209	296	19.5
HLFS-160M1-L2	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	226.5	313.5	28

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

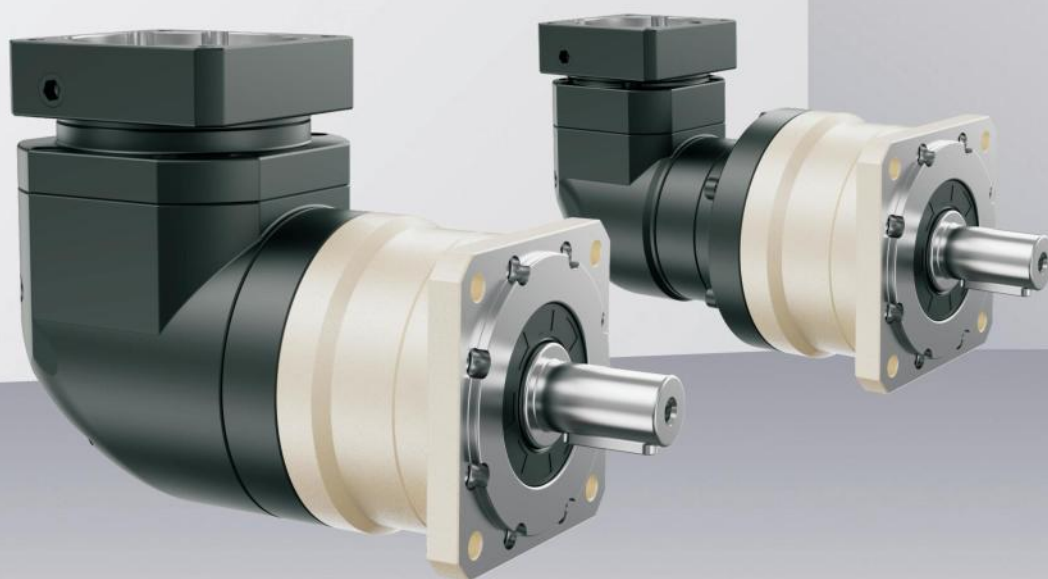
*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

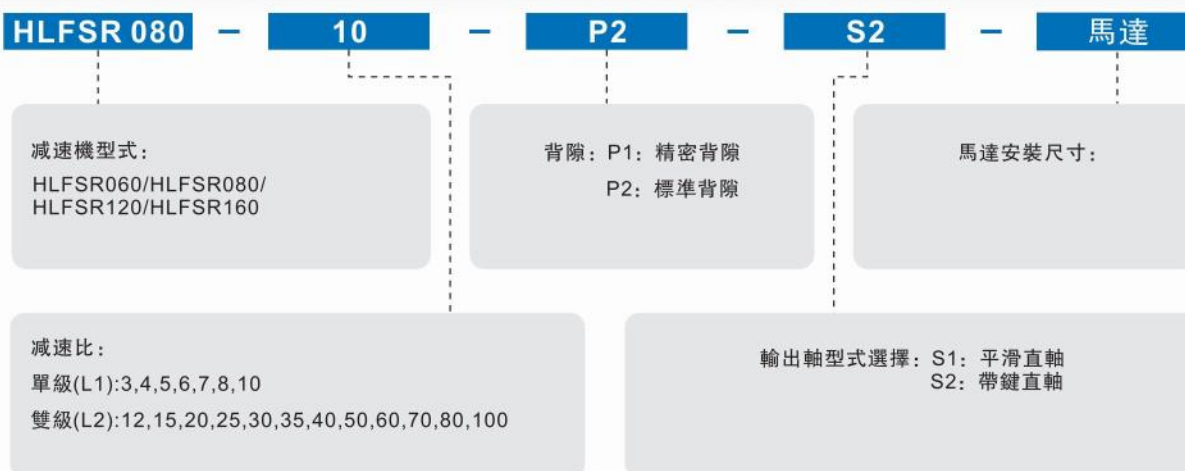
HLFSR

SERIES



MODEL ILLUMINATE

型號說明



選用範例：HLFSR080-10-P2-S2-19-70-90-M6-42

REDUCER PERFORMANCE DATA

減速機性能資料

規格		級數	減速比 ^①	HLFSR060	HLFSR080	HLFSR120	HLFSR160
額定輸出力矩 T_{2N}	N.m	1	3	55	130	208	342
			4	50	140	290	542
			5	60	160	330	650
			6	55	150	310	600
			7	50	140	300	550
			8	50	140	290	542
			10	60	160	330	650
			14	50	140	300	550
			20	40	100	230	450
		2	12	55	130	208	342
			15	55	130	208	342
			20	50	140	290	542
			25	60	160	330	650
			30	55	130	208	342
			35	60	160	330	650
			40	50	140	290	542
			50	60	160	330	650
			60	55	150	310	600
			70	60	160	330	650
			80	50	140	290	542
			100	60	160	330	650
			120	—	150	310	600
			140	—	140	300	550
			160	—	120	260	500
			200	—	100	230	450
最大輸出力矩 T_{2B}	N.m	1,2	3~200			3倍額定輸出力矩	
額定輸入轉速 n_1	rpm	1,2	3~200	5000	4000	4000	3000
最大輸入轉速 n_{1B}	rpm	1,2	3~200	10000	8000	8000	6000
背隙	arcmin	1	3~20	≤13	≤13	≤13	≤13
		2	12~200	≤15	≤15	≤15	≤15
扭轉剛性	Nm/arcmin	1,2	3~200	7	14	25	50
容許徑向力 F_{2rB} ^②	N	1,2	3~200	1530	3250	6700	9400
容許軸向力 F_{2aB} ^②	N	1,2	3~200	765	1625	3350	4700
使用壽命	hr	1,2	3~200			20000*	
效率 η	%	1	3~20			≥95%	
		2	12~200			≥92%	
重量	kg	1	3~20	2.1	6.4	13	24.5
		2	12~200	2.5	7.8	14.2	27.5
使用溫度	°C	1,2	3~200			-10°C~+90°C	
潤滑		1,2	3~200			合成潤滑油脂	
防護等級		1,2	3~200			IP65	
安裝方向		1,2	3~200			任意方向	
噪音值($n_1=3000$ rpm)	dB	1,2	3~200	≤63	≤65	≤68	≤70

減速機轉動慣量

規格		級數	減速比 ^①	HLFSR060	HLFSR080	HLFSR120	HLFSR160
轉動慣量 J_1	kg · cm ²	1	3~7	0.35	2.25	6.84	23.4
			8~10	0.07	1.87	6.25	21.8
			14~20	0.07	1.87	6.25	21.8
		2	12~40	0.09	0.35	2.25	6.84
			50	0.09	0.31	1.87	6.25
			60	0.09	0.35	2.25	6.84
			70~100	0.09	0.31	1.87	6.25
			120~200	—	0.31	1.87	6.25

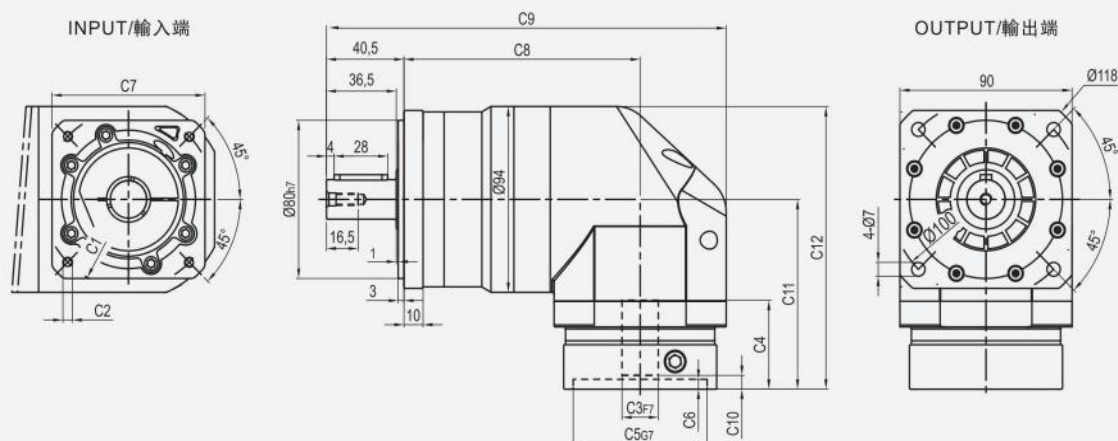
1.減速比($i=N_{in}/N_{out}$)

*連續運轉降低使用壽命二分之一。

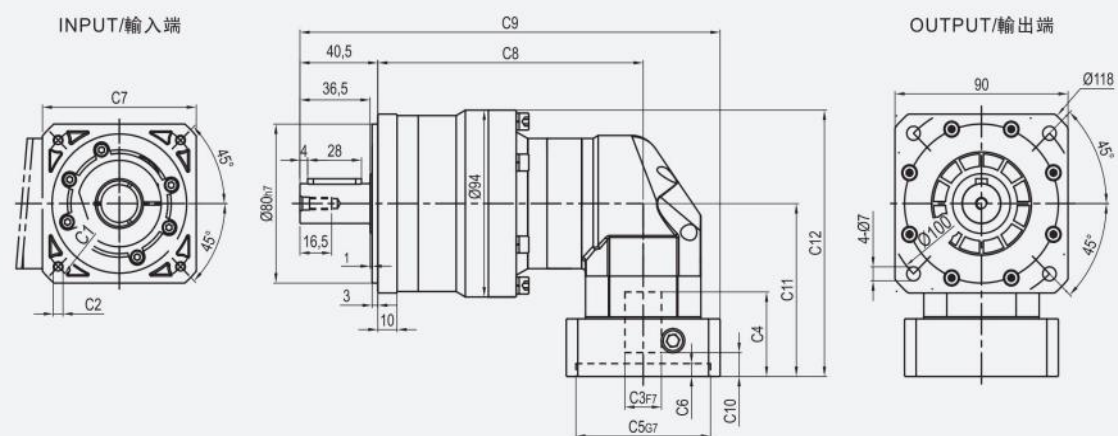
2.輸出轉速100rpm時，作用于輸出軸中心位置。

OUTLINE DIMENSION SHEET 外形尺寸圖表

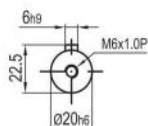
HLFSR-080D(M1)-L1



HLFSR-080D(M1)-L2



Output Diameter 輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HLFSR-080D-L1	Ø90	4-M5x12,4-M6x14	Ø19	45	Ø70	6.5	80	123.5	209	7	96	143
	Ø100	4-M6x14	Ø16	45	Ø80	6.5	86	123.5	209	6	96	143
HLFSR-080M1-L1	Ø115	4-M8x20	Ø19,Ø22	56.5	Ø95	8	100	123.5	214	16.5	117.5	164.5
	Ø145	4-M8x20	Ø19,Ø22,Ø24	59	Ø110	11	130	123.5	229	19	120	167
HLFSR-080D-L2	Ø66.7	4-M4x10	Ø8	33	Ø38.1	5	60	138	208.5	5.5	77.5	124.5
	Ø70	4-M4x10,4-M5x12	Ø11,Ø14	33	Ø50	5	60	138	208.5	5.5	77.5	124.5
HLFSR-080M1-L2	Ø90	4-M5x12,4-M6x14	Ø19	42.5	Ø70	6.5	80	138	218.5	12	87	134
	Ø100	4-M6x14	Ø16	42.5	Ø80	6.5	86	138	221.5	11	87	134

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

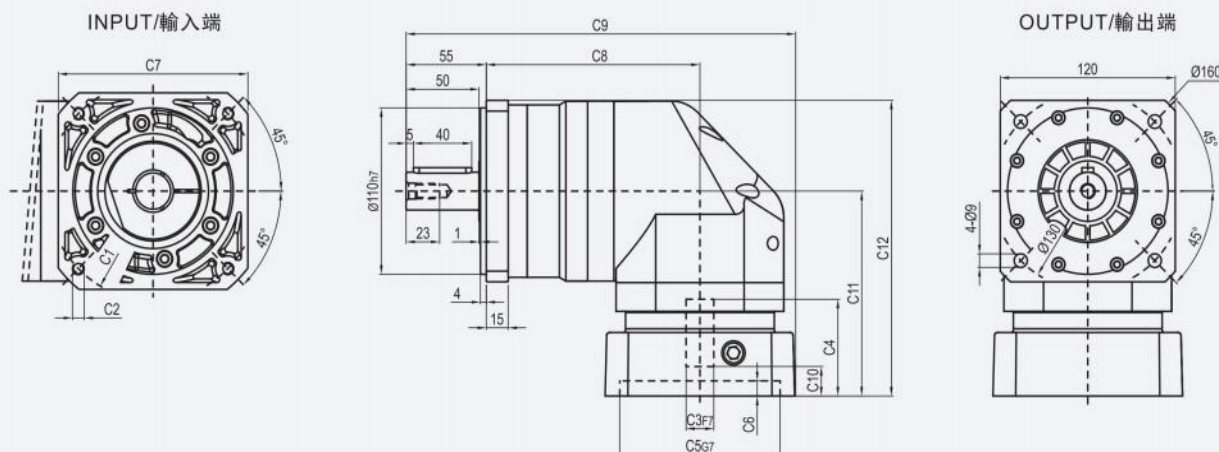
*D:Conventional Hole, M1:Limit Hole

*D:常規孔, M1:極限孔

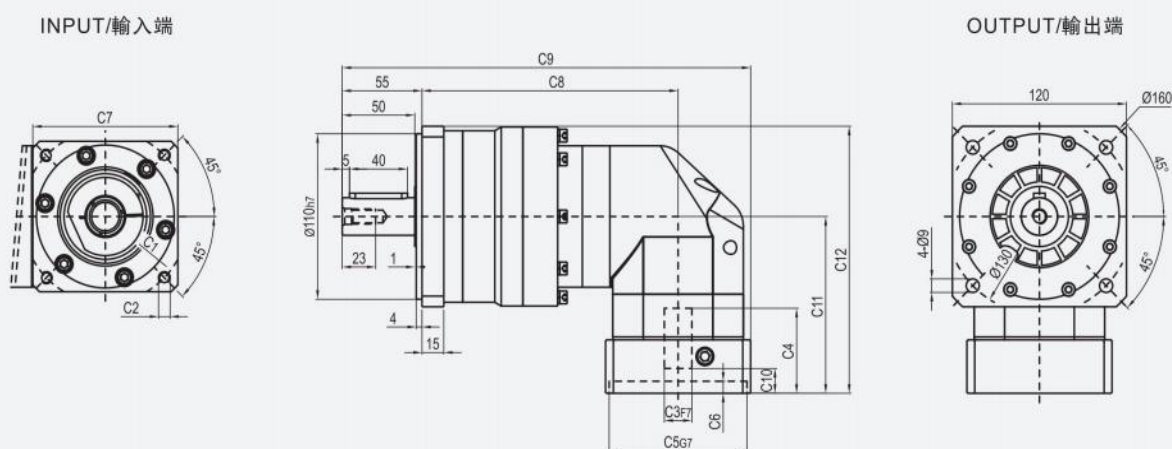
OUTLINE DIMENSION SHEET

外形尺寸圖表

HLFSR-120D(M1)-L1

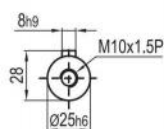


HLFSR-120D(M1)-L2



Output Diameter

輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HLFSR-120D-L1	Ø145	4-M8x20	Ø19, Ø22, Ø24	64	Ø110	10	130	146.5	266.5	19.5	135.5	195.5
HLFSR-120DM1-L1	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	146.5	291.5	28	152.5	212.5
HLFSR-120D-L2	Ø90	4-M5x12, 4-M6x14	Ø19	45	Ø70	6.5	80	176.5	276.5	7	96	156
	Ø100	4-M6x14	Ø16	45	Ø80	6.5	86	176.5	276.5	6	96	156
HLFSR-120DM1-L2	Ø115	4-M8x20	Ø19, Ø22	56.5	Ø95	8	100	176.5	281.5	16.5	117.5	177.5
	Ø145	4-M8x20	Ø19, Ø22, Ø24	59	Ø110	11	130	176.5	296.5	19	120	180

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

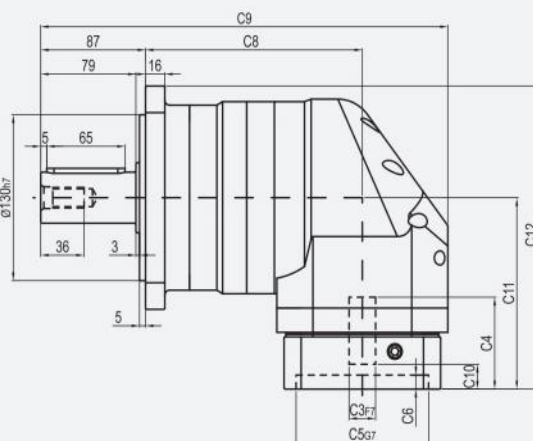
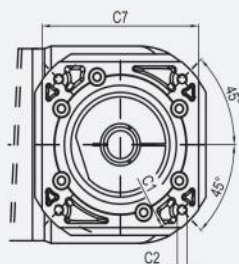
*D: 常規孔, M1: 極限孔

OUTLINE DIMENSION SHEET

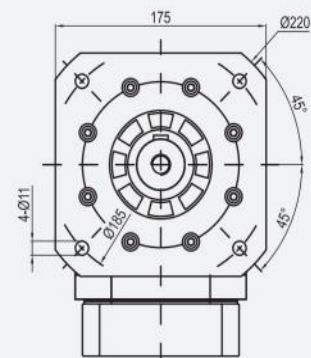
外形尺寸圖表

HLFSR-160D(M1)-L1

INPUT/輸入端

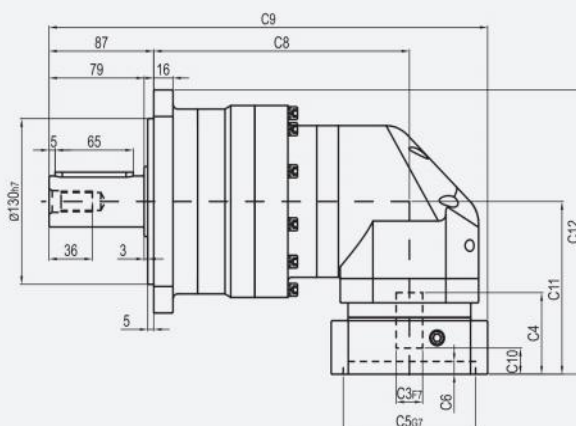
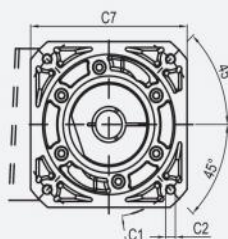


OUTPUT/輸出端

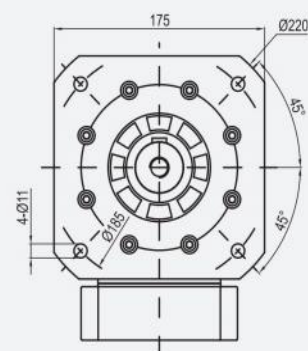


HLFSR-160D(M1)-L2

INPUT/輸入端

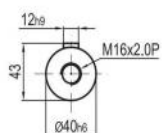


OUTPUT/輸出端



Output Diameter

輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HLFSR-160D-L1	Ø145	4-M8x20	Ø22, Ø24	72	Ø110	11	130	180	338	19.5	150	237.5
	Ø200	4-M12x28	Ø35	82	Ø114.3	8	180	180	357	25	160	247.5
HLFSR-160D-L2	Ø145	4-M8x20	Ø19, Ø22, Ø24	64	Ø110	10	130	212.5	364.5	19.5	135.5	223
HLFSR-160M1-L2	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	212.5	389.5	28	152.5	240

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

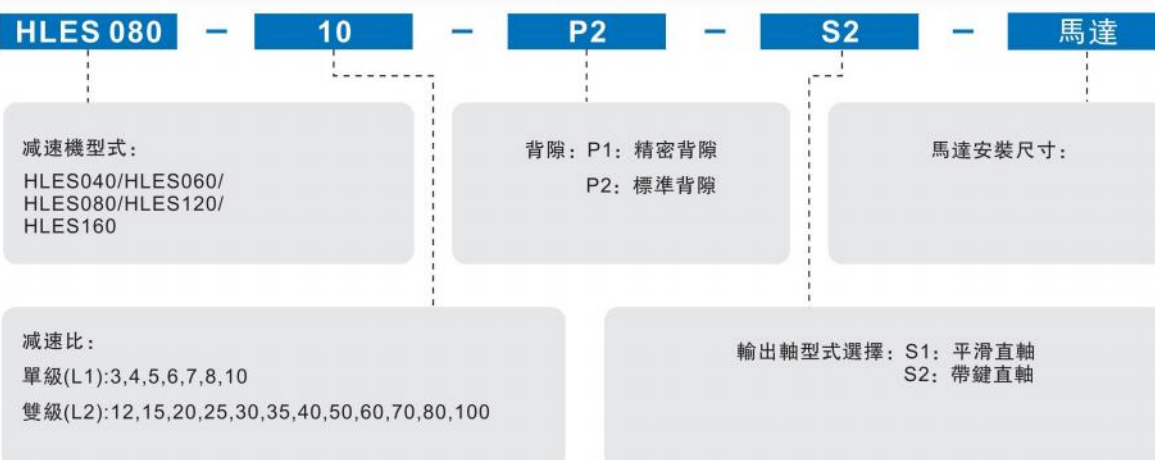
HLES

SERIES



MODEL ILLUMINATE

型號說明



選用範例：HLES080-10-P2-S2-19-70-90-M6-42

REDUCER PERFORMANCE DATA

減速機性能資料

規格		級數	減速比 ^①	HLES040	HLES060	HLES080	HLES120	HLES160
額定輸出力矩T _{2N}	N.m	1	3	20	55	130	208	342
			4	19	50	140	290	542
			5	22	60	160	330	650
			6	20	55	150	310	600
			7	19	50	140	300	550
			8	17	45	120	260	500
		2	10	14	40	100	230	450
			12	20	55	130	208	342
			15	20	55	130	208	342
			20	19	50	140	290	542
			25	22	60	160	330	650
			30	22	55	130	208	342
			35	22	60	160	330	650
			40	22	50	140	290	542
			50	22	60	160	330	650
			60	20	55	150	310	600
			70	19	50	140	300	550
80	17	45	120	260	500			
100	14	40	100	230	450			
最大輸出力矩T _{2B}	N.m	1,2	3~100	3倍額定輸出力矩				
額定輸入轉速n ₁	rpm	1,2	3~100	5000	5000	4000	4000	3000
最大輸入轉速n _{1B}	rpm	1,2	3~100	10000	10000	8000	8000	6000
背隙	arcmin	1	3~10	≤8	≤8	≤8	≤8	≤8
		2	12~100	≤10	≤10	≤10	≤10	≤10
扭轉剛性	Nm/arcmin	1,2	3~100	3	7	14	25	50
容許徑向力F _{2rB} ^②	N	1,2	3~100	780	1530	3250	6700	9400
容許軸向力F _{2aB} ^②	N	1,2	3~100	390	765	1625	3350	4700
使用壽命	hr	1,2	3~100	20000*				
效率 η	%	1	3~10	≥97%				
		2	12~100	≥94%				
重量	kg	1	3~10	0.5	1.3	3.7	7.8	14.5
		2	12~100	0.8	1.9	4.1	9	17.5
使用溫度	℃	1,2	3~100	-10℃~+90℃				
潤滑		1,2	3~100	合成潤滑油脂				
防護等級		1,2	3~100	IP65				
安裝方向		1,2	3~100	任意方向				
噪音值(n ₁ =3000rpm)	dB	1,2	3~100	≤56	≤58	≤60	≤63	≤65

減速機轉動慣量

規 格	級 數	減 速 比 ^①	HLES040	HLES060	HLES080	HLES120	HLES160
轉動慣量J ₁	1	3	0.03	0.16	0.61	3.25	9.21
		4	0.03	0.14	0.48	2.74	7.54
		5	0.03	0.13	0.47	2.71	7.42
		6	0.03	0.13	0.45	2.65	7.25
		7	0.03	0.13	0.45	2.62	7.14
		8	0.03	0.13	0.44	2.58	7.07
		10	0.03	0.13	0.44	2.57	7.03
	2	12	0.03	0.03	0.13	0.47	2.71
		15	0.03	0.03	0.13	0.47	2.71
		20	0.03	0.03	0.13	0.47	2.71
		25	0.03	0.03	0.13	0.47	2.71
		30	0.03	0.03	0.13	0.47	2.71
		35	0.03	0.03	0.13	0.47	2.71
		40	0.03	0.03	0.13	0.47	2.71
		50	0.03	0.03	0.13	0.44	2.57
		60	0.03	0.03	0.13	0.44	2.57
		70	0.03	0.03	0.13	0.44	2.57
		80	0.03	0.03	0.13	0.44	2.57
		100	0.03	0.03	0.13	0.44	2.57

1.減速比($i=N_{in}/N_{out}$)

*連續運轉降低使用壽命二分之一。

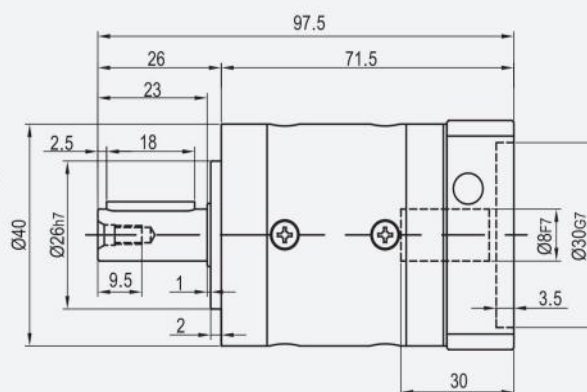
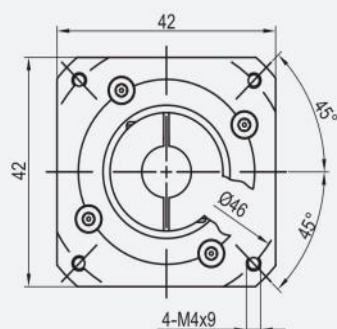
2.輸出轉速100rpm時，作用于輸出軸中心位置。

OUTLINE DIMENSION SHEET

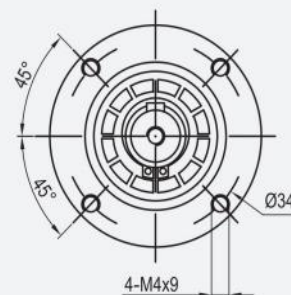
外形尺寸圖表

HLES-040-L1

INPUT/輸入端

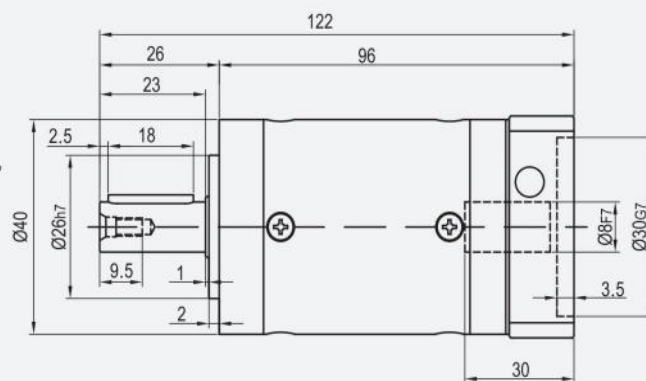
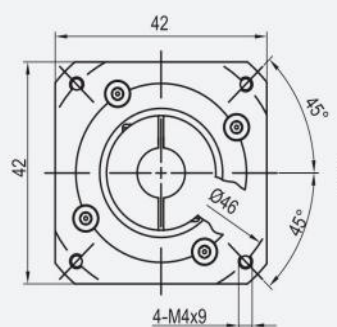


OUTPUT/輸出端

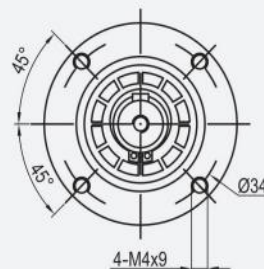


HLES-040-L2

INPUT/輸入端

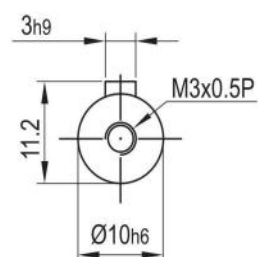


OUTPUT/輸出端



Output Diameter

輸出軸徑



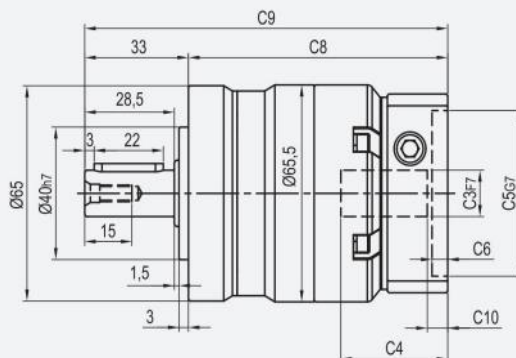
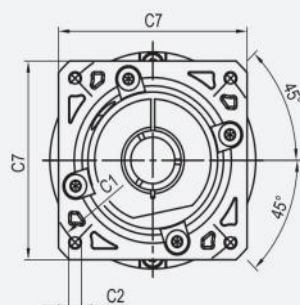
*The input motor specific dimensions could be customised.
*輸入馬達連接板之尺寸，可根據客戶要求單獨定做。

OUTLINE DIMENSION SHEET

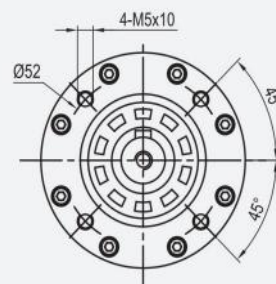
外形尺寸圖表

HLES-060D(M1)-L1

INPUT/輸入端

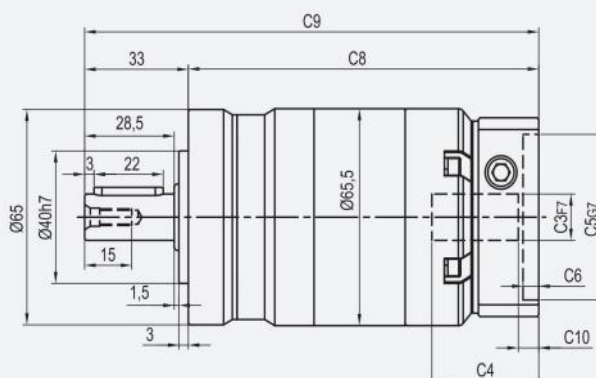
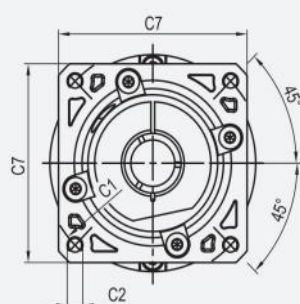


OUTPUT/輸出端

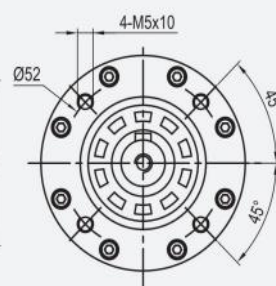


HLES-060D(M1)-L2

INPUT/輸入端

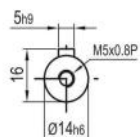


OUTPUT/輸出端



Output Diameter

輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HLES-060D-L1	Ø66.7	4-M4x10	Ø8	34	Ø38.1	5	60	82.5	115.5	5.5
HLES-060D-L2		4-M4x10						111.5	144.5	5.5
HLES-060D-L1	Ø70	4-M4x10,4-M5x12	Ø11,Ø14	34	Ø50	5	60	82.5	115.5	5.5
HLES-060D-L2		4-M4x10,4-M5x12						111.5	144.5	5.5
HLES-060M1-L1	Ø90	4-M5x12,4-M6x14	Ø19	42	Ø70	6.5	80	89	122	12
HLES-060M1-L2		4-M5x12,4-M6x14						118	151	12

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

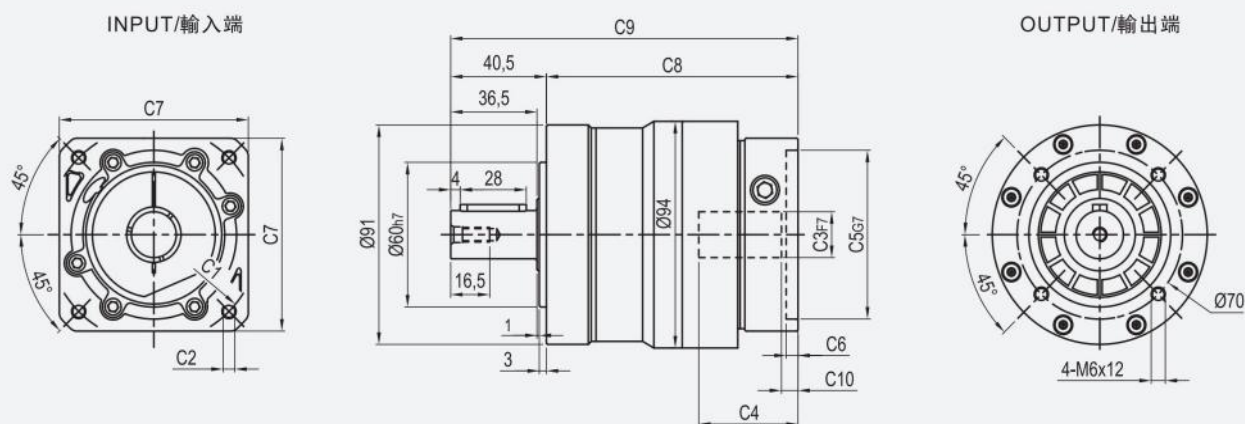
*D:Conventional Hole, M1:Limit Hole

*D:常規孔，M1:極限孔

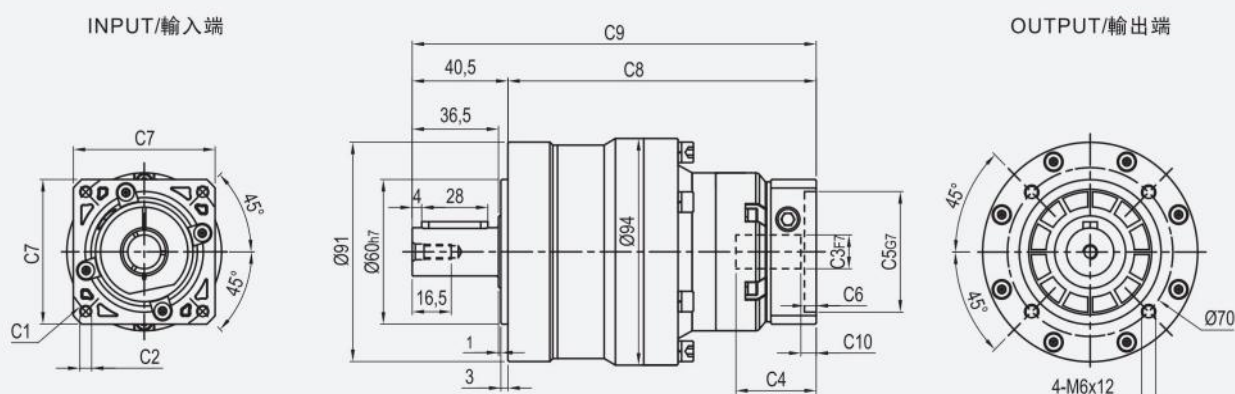
OUTLINE DIMENSION SHEET

外形尺寸圖表

HLES-080D(M1)-L1

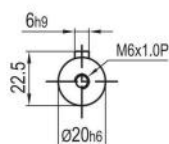


HLES-080D(M1)-L2



Output Diameter

輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HLES-080D-L1	Ø90	4-M5x12,4-M6x14	Ø19	42	Ø70	6.5	80	106.5	147	7
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	106.5	147	6
HLES-080M1-L1	Ø115	4-M8x20	Ø19,Ø22	56.5	Ø95	8	100	122	162.5	16.5
	Ø145	4-M8x20	Ø19,Ø22,Ø24	59	Ø110	11	130	124.5	165	19
HLES-080D-L2	Ø66.7	4-M4x10	Ø8	34	Ø38.1	5	60	130.5	171	5.5
	Ø70	4-M4x10,4-M5x12	Ø11,Ø14	34	Ø50	5	60	130.5	171	5.5
HLES-080M1-L2	Ø90	4-M5x12,4-M6x14	Ø19	42	Ø70	6.5	80	137	177.5	12
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	137	177.5	11

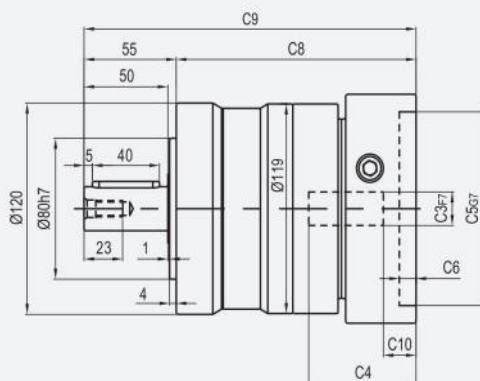
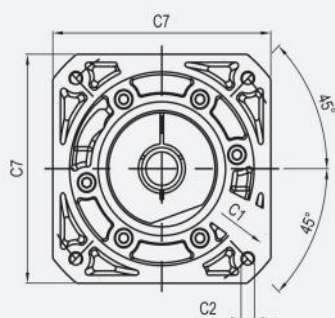
*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

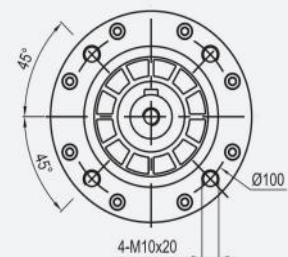
*D:Conventional Hole, M1:Limit Hole

*D:常規孔，M1:極限孔

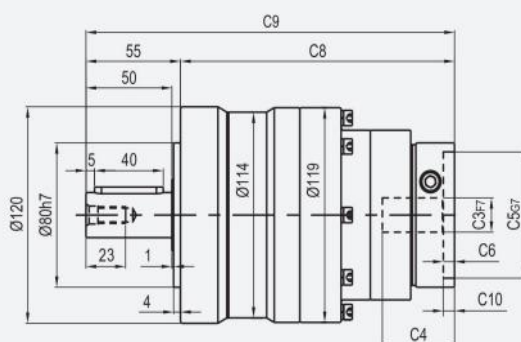
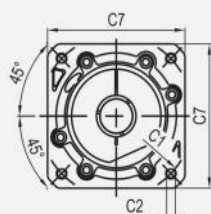
INPUT/輸入端



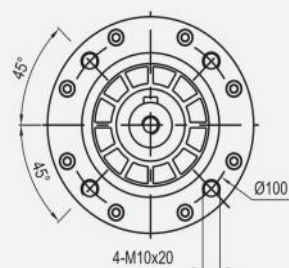
OUTPUT/輸出端



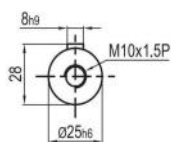
INPUT/輸入端



OUTPUT/输出端



Output Diameter 輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HLES-120D-L1	Ø145	4-M8x20	Ø19,Ø22,Ø24	64	Ø110	10	130	143	198	19.5
HLES-120M1-L1	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	160.5	215.5	28
HLES-120D-L2	Ø90	4-M5x12,4-M6x14	Ø19	42	Ø70	6.5	80	159.5	214.5	7
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	159.5	214.5	6
HLES-120M1-L2	Ø115	4-M8x20	Ø19,Ø22	56.5	Ø95	8	100	175	230	16.5
	Ø145	4-M8x20	Ø19,Ø22,Ø24	59	Ø110	11	130	177.5	232.5	19

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

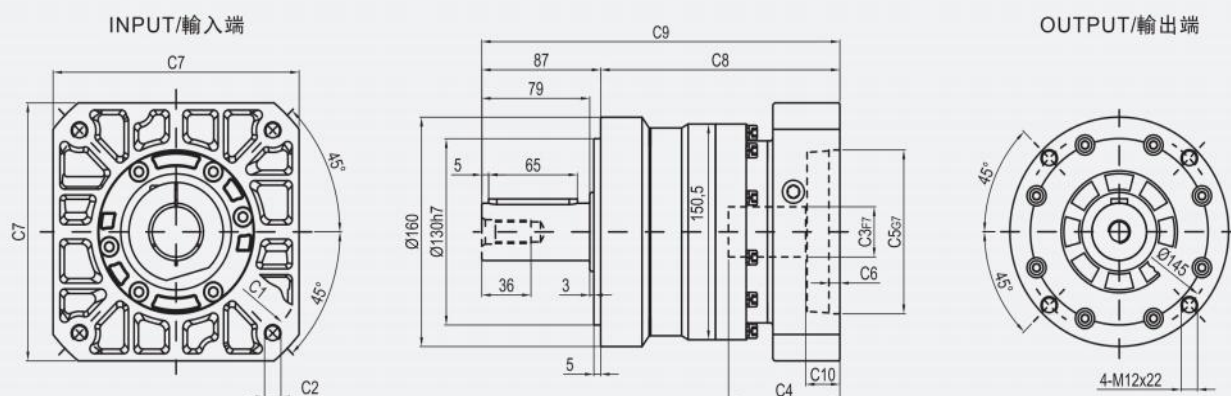
*D:Conventional Hole, M1:Limit Hole

*D:常規孔, M1:極限孔

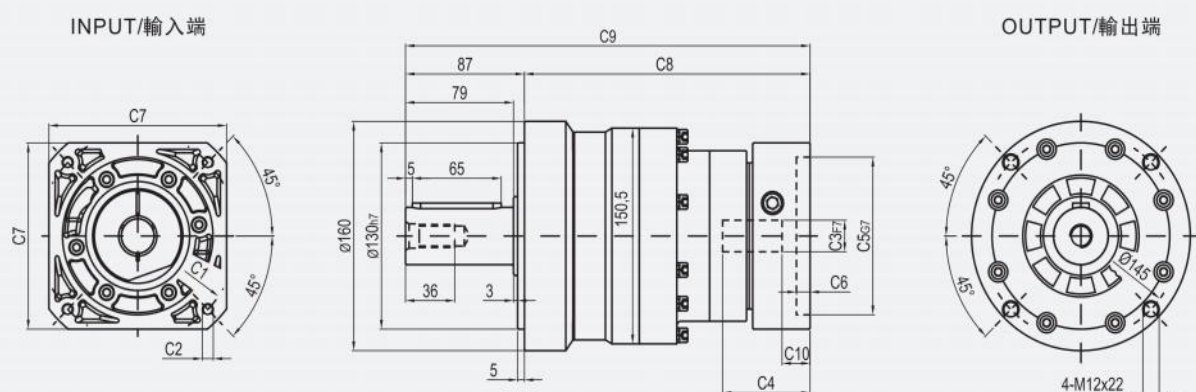
OUTLINE DIMENSION SHEET

外形尺寸圖表

HLES-160D(M1)-L1

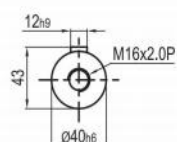


HLES-160D(M1)-L2



Output Diameter

輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
HLES-160D-L1	Ø145	4-M8x20	Ø22, Ø24	72	Ø110	11	130	165	252	19.5
	Ø200	4-M12x28	Ø35	81.5	Ø114.3	8	180	175	262	25
HLES-160D-L2	Ø145	4-M8x20	Ø19, Ø22, Ø24	64	Ø110	10	130	209	296	19.5
HLES-160M1-L2	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	226.5	313.5	28

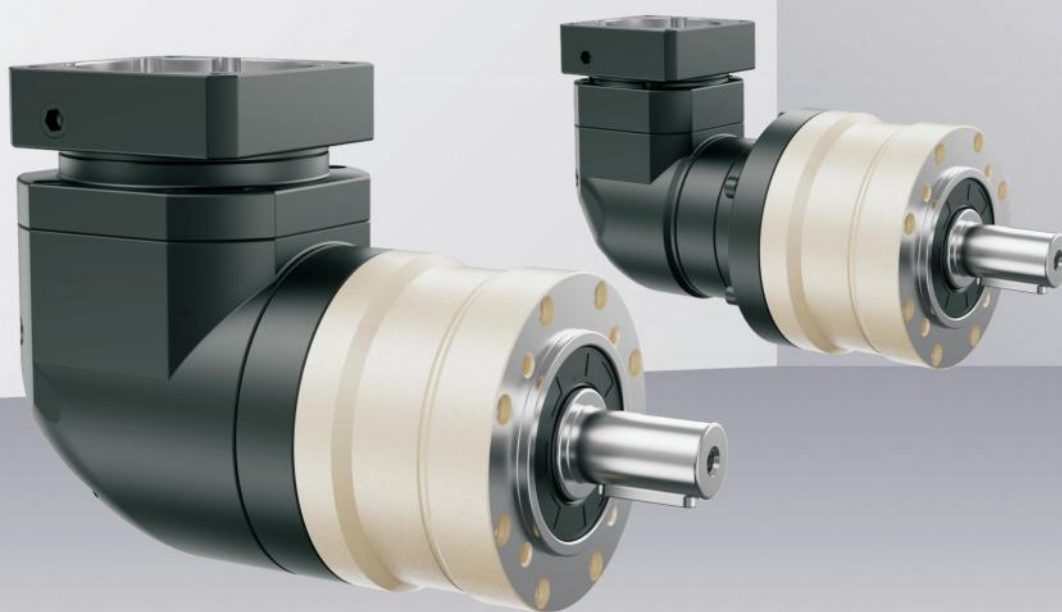
*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

HLESR SERIES



MODEL ILLUMINATE

型號說明

HLESR 080 - **10** - **P2** - **S2** - **馬達**

減速機型式：

HLESR060/HLESR080/
HLESR120/HLESR160

背隙：P1：精密背隙

P2：標準背隙

馬達安裝尺寸：

減速比：

單級(L1): 3, 4, 5, 6, 7, 8, 10, 14, 20

雙級(L2): 12, 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 100,
120, 140, 160, 200

輸出軸型式選擇：S1：平滑直軸

S2：帶鍵直軸

選用範例：HLESR080-10-P2-S2-19-70-90-M6-45

REDUCER PERFORMANCE DATA

減速機性能資料

規格	級數	減速比 ^①	HLESR060	HLESR080	HLESR120	HLESR160
額定輸出力矩 T_{2N}	1	3	55	130	208	342
		4	50	140	290	542
		5	60	160	330	650
		6	55	150	310	600
		7	50	140	300	550
		8	50	140	290	542
		10	60	160	330	650
		14	50	140	300	550
	2	20	40	100	230	450
		12	55	130	208	342
		15	55	130	208	342
		20	50	140	290	542
		25	60	160	330	650
		30	55	130	208	342
		35	60	160	330	650
		40	50	140	290	542
		50	60	160	330	650
		60	55	150	310	600
		70	60	160	330	650
		80	50	140	290	542
		100	60	160	330	650
		120	—	150	310	600
		140	—	140	300	550
		160	—	120	260	500
		200	—	100	230	450
最大輸出力矩 T_{2B}	N.m	1,2	3~200	3倍額定輸出力矩		
額定輸入轉速 n_1	rpm	1,2	3~200	5000	4000	4000
最大輸入轉速 n_{1B}	rpm	1,2	3~200	10000	8000	8000
背隙	arcmin	1	3~20	≤13	≤13	≤13
		2	12~200	≤15	≤15	≤15
扭轉剛性	Nm/arcmin	1,2	3~200	7	14	25
容許徑向力 F_{2rB} ^②	N	1,2	3~200	1530	3250	6700
容許軸向力 F_{2aB} ^②	N	1,2	3~200	765	1625	3350
使用壽命	hr	1,2	3~200	20000*		
效率 η	%	1	3~20	≥95%		
		2	12~200	≥92%		
重量	kg	1	3~20	2.1	6.4	13
		2	12~200	2.5	7.8	14.2
使用溫度	°C	1,2	3~200	-10°C~+90°C		
潤滑		1,2	3~200	合成潤滑油脂		
防護等級		1,2	3~200	IP65		
安裝方向		1,2	3~200	任意方向		
噪音值($n_1=3000\text{rpm}$)	dB	1,2	3~200	≤63	≤65	≤68

減速機轉動慣量

規格	級數	減速比 ^①	HLESR060	HLESR080	HLESR120	HLESR160
轉動慣量 J_1	1	3~7	0.35	2.25	6.84	23.4
		8~10	0.07	1.87	6.25	21.8
		14~20	0.07	1.87	6.25	21.8
	2	12~40	0.09	0.35	2.25	6.84
		50	0.09	0.31	1.87	6.25
		60	0.09	0.35	2.25	6.84
		70~100	0.09	0.31	1.87	6.25
		120~200	—	0.31	1.87	6.25

1.減速比($i=N_{in}/N_{out}$)

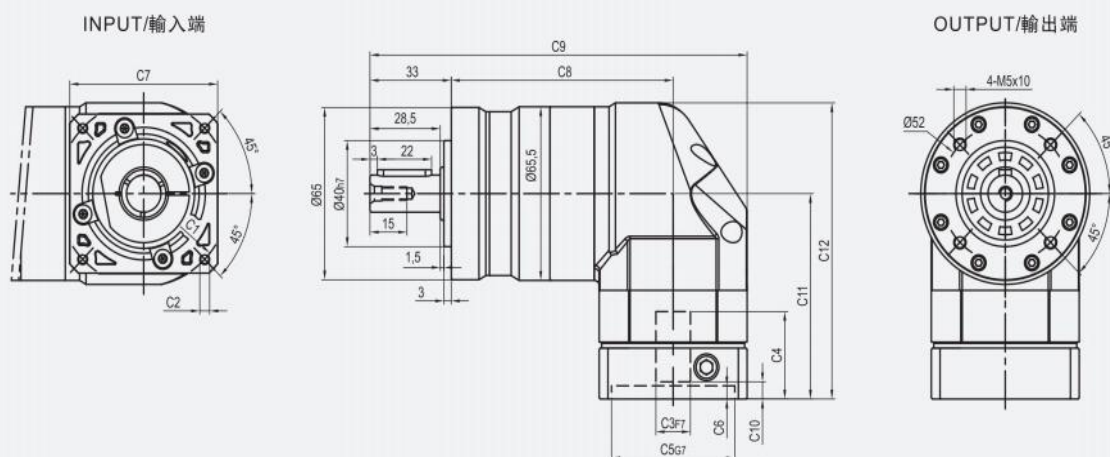
*連續運轉降低使用壽命二分之一。

2.輸出轉速100rpm時，作用於輸出軸中心位置。

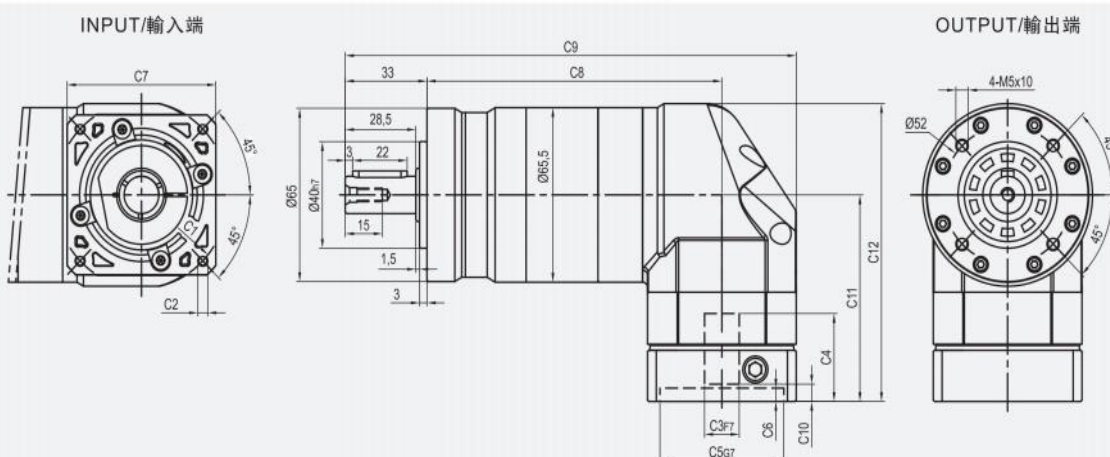
OUTLINE DIMENSION SHEET

外形尺寸圖表

HLESR-060D(M1)-L1

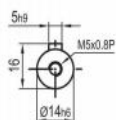


HLESR-060D(M1)-L2



Output Diameter

輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HLESR-060D-L1	Ø66.7	4-M4x10	Ø8	33	Ø38.1	5	60	90	153	5.5	77.5	111.75
HLESR-060D-L2								119	182			
HLESR-060D-L1	Ø70	4-M4x10, 4-M5x12	Ø11, Ø14	33	Ø50	5	60	90	153	5.5	77.5	111.75
HLESR-060D-L2								119	182			
HLESR-060M1-L1	Ø90	4-M5x12, 4-M6x14	Ø19	42.5	Ø70	6.5	80	90	163	12	87	121.25
HLESR-060M1-L2								119	192			

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

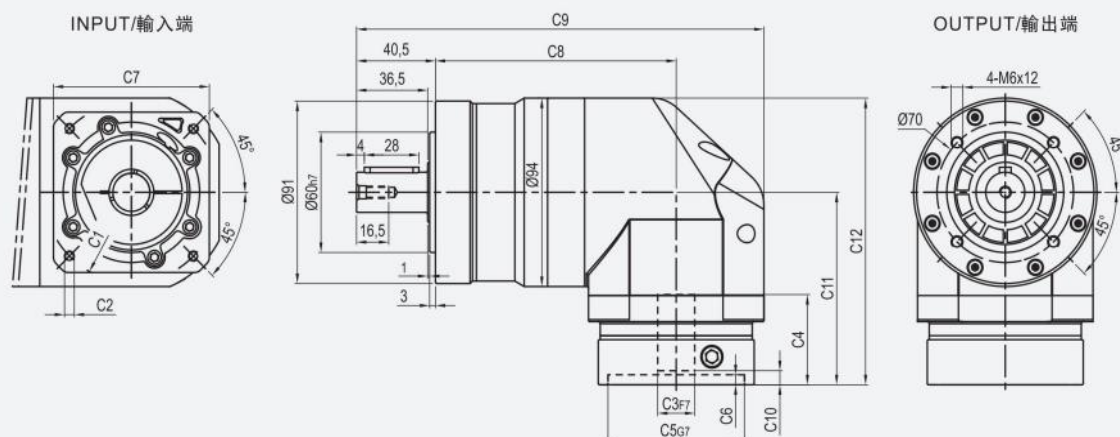
*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

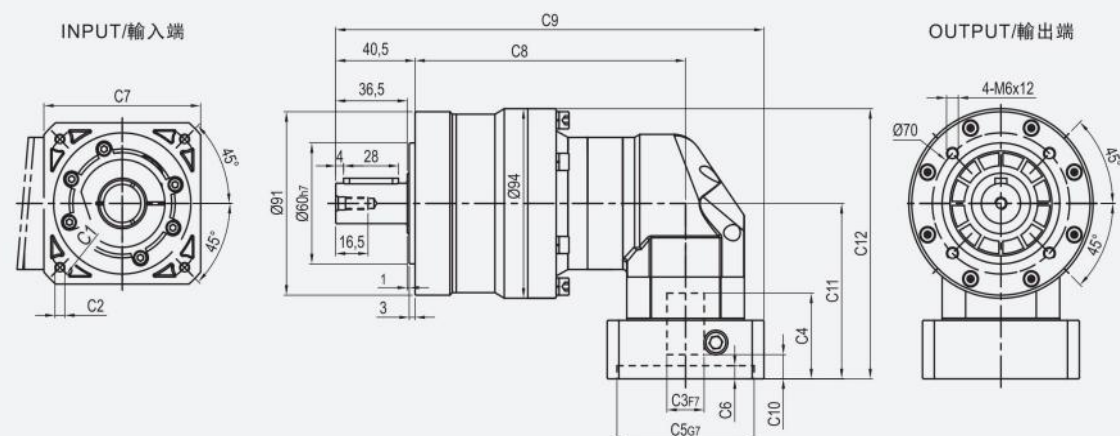
OUTLINE DIMENSION SHEET

外形尺寸圖表

HLESR-080D(M1)-L1

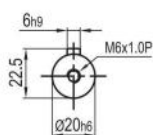


HLESR-080D(M1)-L2



Output Diameter

輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HLESR-080D-L1	Ø90	4-M5x12, 4-M6x14	Ø19	45	Ø70	6.5	80	123.5	209	7	96	143
	Ø100	4-M6x14	Ø16	45	Ø80	6.5	86	123.5	209	6	96	143
HLESR-080M1-L1	Ø115	4-M8x20	Ø19, Ø22	56.5	Ø95	8	100	123.5	214	16.5	117.5	164.5
	Ø145	4-M8x20	Ø19, Ø22, Ø24	59	Ø110	11	130	123.5	229	19	120	167
HLESR-080D-L2	Ø66.7	4-M4x10	Ø8	33	Ø38.1	5	60	138	208.5	5.5	77.5	124.5
	Ø70	4-M4x10, 4-M5x12	Ø11, Ø14	33	Ø50	5	60	138	208.5	5.5	77.5	124.5
HLESR-080M1-L2	Ø90	4-M5x12, 4-M6x14	Ø19	42.5	Ø70	6.5	80	138	218.5	12	87	134
	Ø100	4-M6x14	Ø16	42.5	Ø80	6.5	86	138	221.5	11	87	134

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

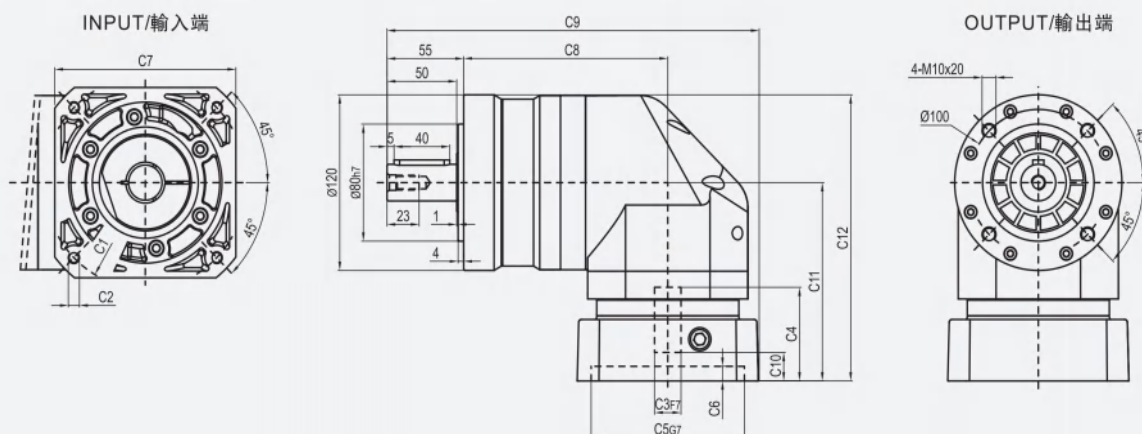
*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

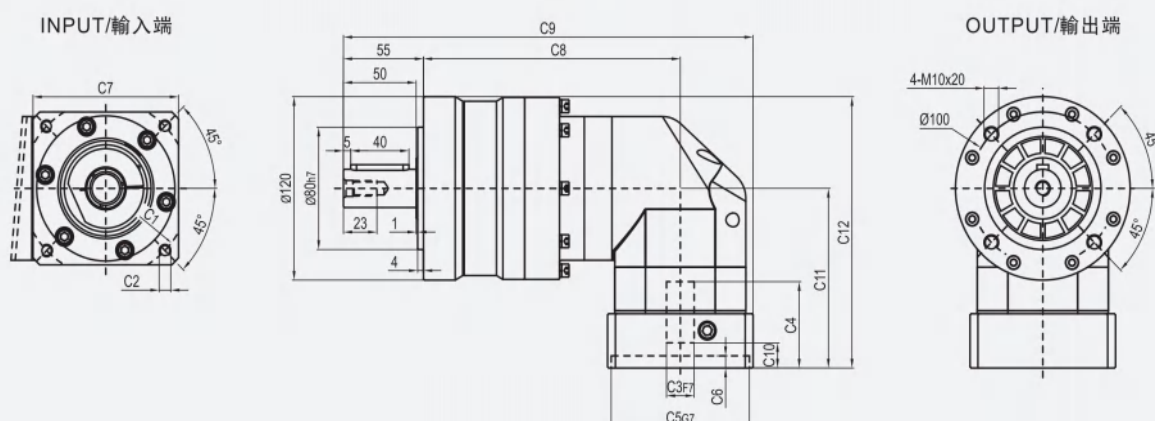
*D: 常規孔, M1: 極限孔

OUTLINE DIMENSION SHEET 外形尺寸圖表

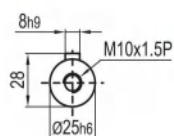
HLESR-120D(M1)-L1



HLESR-120D(M1)-L2



Output Diameter 輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HLESR-120D-L1	Ø145	4-M8x20	Ø19,Ø22,Ø24	64	Ø110	10	130	146.5	266.5	19.5	135.5	195.5
HLESR-120DM1-L1	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	146.5	291.5	28	152.5	212.5
HLESR-120D-L2	Ø90	4-M5x12,4-M6x14	Ø19	45	Ø70	6.5	80	176.5	276.5	7	96	156
	Ø100	4-M6x14	Ø16	45	Ø80	6.5	86	176.5	276.5	6	96	156
HLESR-120DM1-L2	Ø115	4-M8x20	Ø19,Ø22	56.5	Ø95	8	100	176.5	281.5	16.5	117.5	177.5
	Ø145	4-M8x20	Ø19,Ø22,Ø24	59	Ø110	11	130	176.5	296.5	19	120	180

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

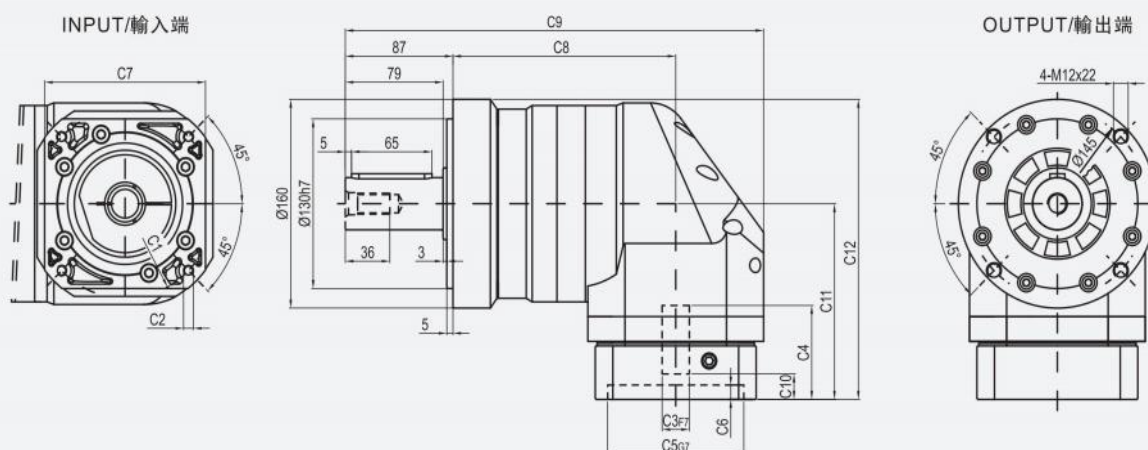
*D:Conventional Hole, M1:Limit Hole

*D:常規孔，M1:極限孔

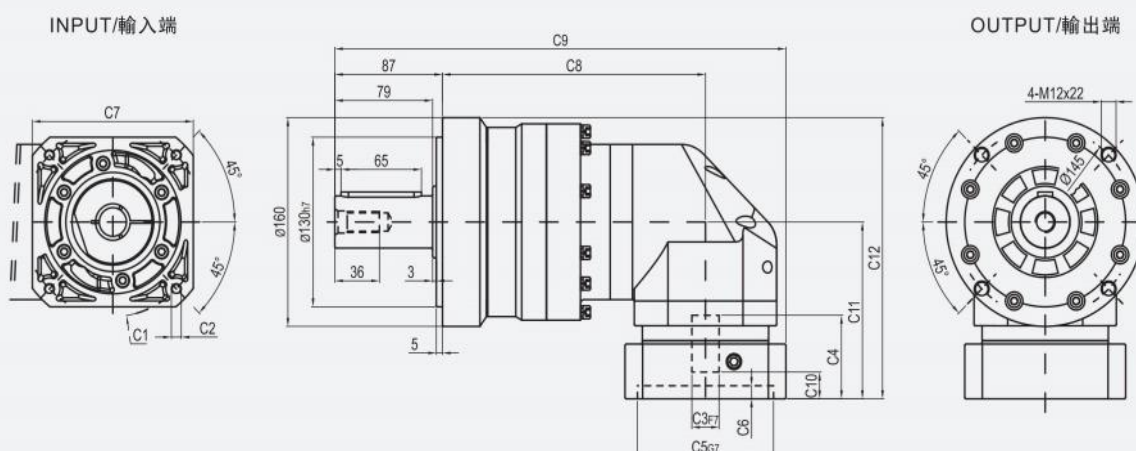
OUTLINE DIMENSION SHEET

外形尺寸圖表

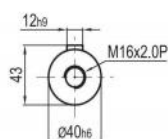
HLESR-160D(M1)-L1



HLESR-160D(M1)-L2



Output Diameter 輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
HLESR-160D-L1	Ø145	4-M8x20	Ø22, Ø24	72	Ø110	11	130	180	338	19.5	150	230
	Ø200	4-M12x28	Ø35	82	Ø114.3	8	180	180	357	25	160	240
HLESR-160D-L2	Ø145	4-M8x20	Ø19, Ø22, Ø24	64	Ø110	10	130	212.5	364.5	19.5	135.5	215.5
HLESR-160M1-L2	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	212.5	389.5	28	152.5	232.5

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

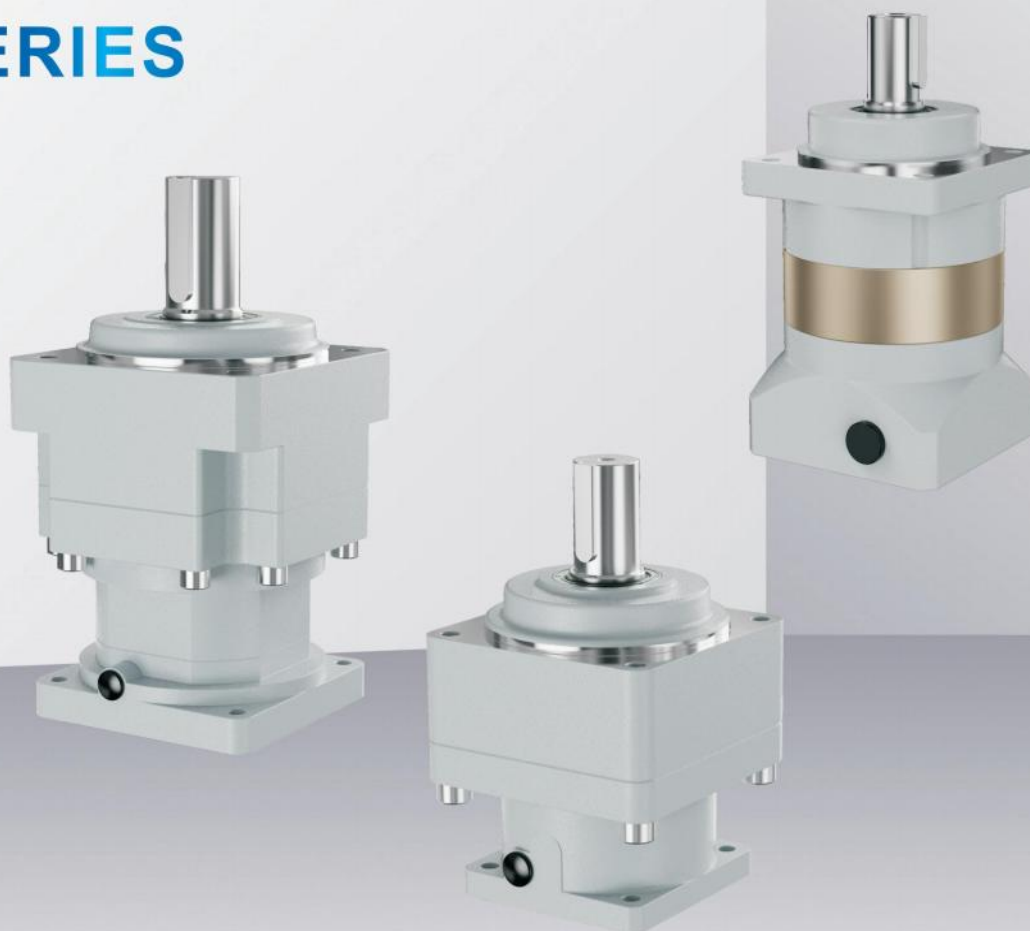
*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

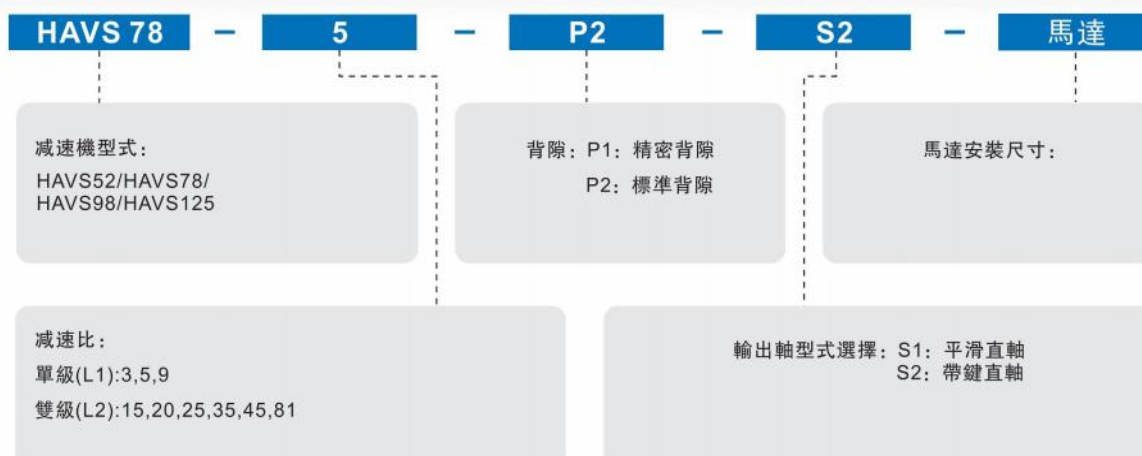
HAVS/HPVS

SERIES



MODEL ILLUMINATE

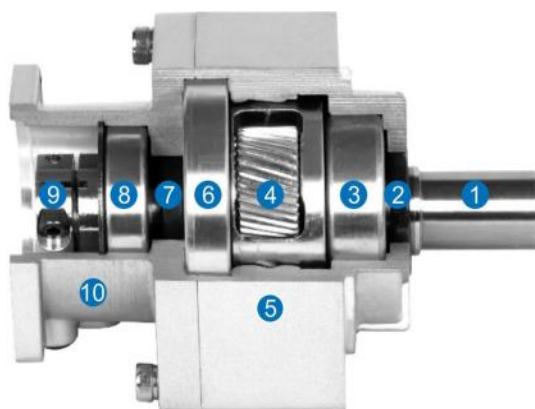
型號說明



選用範例：HAVS78-5-P2-S2-19-70-90-M6-40

SECTIONAL DRAWING

剖視圖



- ① Output shaft 輸出軸
- ② Seal for the output shaft 油封
- ③ Bearing for the output shaft 輸出軸前軸承
- ④ Planetary gear 行星輪
- ⑤ Front cover 前蓋
- ⑥ Bearing for the output shaft 輸出軸後軸承
- ⑦ Seal for the output shaft 油封
- ⑧ Bearing for the input shaft 輸入軸軸承
- ⑨ Precision clamping system 精密裝夾系統
- ⑩ Rear cover 後蓋

WHEN INPUT SPEED IS 3000RPM

輸入轉速為 3000rpm 時

馬達功率 Motor Power(W)	Reduction Ratio 減速比	單級減速 1 Stage Reduction			兩級減速 2 Stage Reduction					
		1/3	1/5	1/9	1/15	1/20	1/25	1/35	1/45	1/81
50W		52	52	52	52	52	52	52	78	78
100W		52	52	52	52	52	52	78	78	98
200W		52	52	78	78	78	78	78	98	125
400W		52	78	78	78	78	78	98	125	
750W		78	78	98	98	98	98	125	125	
1000W		98	98	125	125	125	125			
1500W		98	98	125	125					
2000W		98	125	125	125					
2500W		125	125	125						
3000W		125	125	125						
3500W		125	125							
4000W		125	125							
4500W		125								
5000W		125								

Note1) All corresponding to helical gear 注1) 全部為斜齒輪適用範圍

※以下為限扭矩機種:

52: 1/5 減速(100W)

78: 1/81 減速(50W)

98: 1/3 減速(1500W)、1/45減速(200W)

1/81 減速(100W)

125:1/3 減速(3500W)、1/25減速(750W)

※Torque is limited to the following types:

52: 1/5 reduction(100W)

78: 1/81 reduction(50W)

98: 1/3 reduction(1500W), 1/45 reduction(200W)

1/81 reduction(100W)

125:1/3 reduction(3500W), 1/25 reduction(250W)

ABOUT LUBRICANT

關於潤滑油

潤滑: 潤滑脂

· 更換: 不可

· Lubrication: Grease

· Replacement: Not available

PERFORMANCE TABLE (WHEN INPUT SPEED IS 3000RPM)

性能表 (輸入轉速為 3000rpm 時)

Performance Table 性能表

Reduction Ratio 減速比	Model 序列號				Output Shaft Speed 輸出軸轉速	Standard Output Torque 額定輸出扭矩	Instantaneous max. Output Torque 瞬間最大輸出扭矩	Permissible Radial Load 容許徑向負荷	Permissible Axial Load 容許軸向負荷	Internal Moment Of Inertia Of Input Shaft conversion 輸入軸換算內部慣性力矩	Permissible Output Torque 容許輸出扭矩	Instantaneous Max. Permissible Output Torque 瞬間最大容許輸出扭矩
	Type No 機座號	Model 序列號	Reduction Ratio 減速比	Motor 馬達功率								
					(rpm)	(N.m)	(N.m)	(N)	(N)	(x10 ⁻⁴ kg.m ²)	(N.m)	(N.m)
1/3	52	HAVS	3	-50	1000	0.255	0.784	392	196	0.0575	3.43	10.3
	52	HAVS	3	-100	1000	0.715	2.06	392	196	0.0575	3.43	10.3
	52	HAVS	3	-200	1000	1.47	4.51	392	196	0.135	3.43	10.3
	52	HAVS	3	-400	1000	3.43	10.3	392	196	0.145	3.43	10.3
	78	HAVS	3	-750	1000	6.37	19.3	784	392	0.913	6.86	20.6
	98	HAVS	3	-1000	1000	7.55	22.8	882	441	2.43	18.3	54.9
	98	HAVS	3	-1500	1000	12.3	37.1	882	441	2.43	18.3	54.9
	98	HAVS	3	-2000	1000	17.2	51.5	882	441	2.43	18.3	54.9
	125	HAVS	3	-2500	1000	19.0	57.2	1370	686	5.55	44.1	132
	125	HAVS	3	-3000	1000	23.7	71.2	1370	686	5.50	44.1	132
	125	HAVS	3	-3500	1000	28.3	85.2	1370	686	5.50	44.1	132
	125	HAVS	3	-4000	1000	33.1	99.0	1370	686	5.78	44.1	132
	125	HAVS	3	-4500	1000	37.7	113	1370	686	5.78	44.1	132
	125	HAVS	3	-5000	1000	42.9	128	1370	686	5.78	44.1	132
1/5	52	HAVS	5	-50	600	0.510	1.47	490	245	0.04	1.57	4.70
	52	HAVS	5	-100	600	1.18	3.72	490	245	0.04	1.57	4.70
	52	HAVS	5	-200	600	2.65	8.04	490	245	0.118	2.84	8.53
	78	HAVS	5	-400	600	5.39	16.2	980	490	0.363	6.57	19.7
	78	HAVS	5	-750	600	10.7	32.1	980	490	0.713	11.5	34.3
	98	HAVS	5	-1000	600	13.4	40.5	1080	539	1.85	23.5	70.6
	98	HAVS	5	-1500	600	21.5	64.4	1080	539	1.85	23.5	70.6
	125	HAVS	5	-2000	600	23.8	71.5	1670	833	3.50	56.8	171
	125	HAVS	5	-2500	600	31.8	95.5	1670	833	3.50	56.8	171
	125	HAVS	5	-3000	600	39.6	119	1670	833	3.48	56.8	171
	125	HAVS	5	-3500	600	47.2	141	1670	833	3.48	56.8	171
	125	HAVS	5	-4000	600	55.3	166	1670	833	3.75	56.8	171
1/9	52	HAVS	9	-50	333	0.921	2.74	588	294	0.035	2.35	7.25
	52	HAVS	9	-100	333	2.25	6.86	588	294	0.035	2.35	7.25
	78	HAVS	9	-200	333	3.72	11.3	1180	588	0.275	9.70	29.2
	78	HAVS	9	-400	333	9.51	28.5	1180	588	0.275	9.70	29.2
	98	HAVS	9	-750	333	18.2	54.7	1470	735	0.650	18.2	54.7
	125	HAVS	9	-1000	333	20.0	60.1	1960	980	2.81	73.5	221
	125	HAVS	9	-1500	333	34.3	103	1960	980	2.81	73.5	221
	125	HAVS	9	-2000	333	48.6	146	1960	980	2.81	73.5	221
	125	HAVS	9	-2500	333	60.8	182	1960	980	2.81	73.5	221
	125	HAVS	9	-3000	333	73.0	219	1960	980	2.77	73.5	221

Note1) The moment of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.

Note2) The max input speed is 5000rpm. Usually set to 3000rpm or less.

Note3) The permissible radial load is indicated on the center of the output shaft.

Note4) All values are within the range corresponding to helical gear.

注1) 輸入軸換算慣性力矩僅為減速機的數值，不包括馬達的慣性力矩。

注2) 最高輸入轉速為5000rpm，正常情況下請將轉速控制在3000rpm以下。

注3) 容許徑向負荷為輸出軸中央部的數值。

注4) 全部為斜齒輪適用範圍。

PERFORMANCE TABLE (WHEN INPUT SPEED IS 3000RPM)

性能表 (輸入轉速為 3000rpm 時)

Performance Table 性能表

Reduction Ratio 減速比	Model 序列號				Output Shaft Speed 輸出軸轉速 (rpm)	Standard Output Torque 額定輸出扭矩 (N.m)	Instantaneous max. Output Torque 瞬間最大輸出扭矩 (N.m)	Permissible Radial Load 容許徑向負荷 (N)	Permissible Axial Load 容許軸向負荷 (N)	Internal Moment Of Inertia Of Input Shaft conversion 輸入軸換算內部慣性力矩 (x10 ⁻⁴ kg.m ²)	Permissible Output Torque 容許輸出扭矩 (N.m)	Instantaneous Max. Permissible Output Torque 瞬間最大容許輸出扭矩 (N.m)
	Type No 機座號	Model 序列號	Reduction Ratio 減速比	Motor 馬達功率								
1/15	52	HAVS	15	-50	200	1.67	5.00	784	392	0.035	4.02	12.2
	52	HAVS	15	-100	200	3.72	11.4	784	392	0.035	4.02	12.2
	78	HAVS	15	-200	200	6.27	18.8	1470	735	0.300	16.2	48.6
	78	HAVS	15	-400	200	15.8	47.5	1470	735	0.300	16.2	48.6
	98	HAVS	15	-750	200	30.4	91.2	1760	882	0.700	30.4	91.2
	125	HAVS	15	-1000	200	33.3	100	2350	1180	1.95	91.4	274
	125	HAVS	15	-1500	200	57.2	172	2350	1180	2.80	91.4	274
	125	HAVS	15	-2000	200	81.0	243	2350	1180	2.80	91.4	274
1/20	52	HAVS	20	-50	150	2.21	6.63	804	402	0.034	5.00	15.0
	52	HAVS	20	-100	150	5.00	15.0	804	402	0.034	5.00	15.0
	78	HAVS	20	-200	150	8.69	26.1	1570	785	0.294	21.1	63.3
	78	HAVS	20	-400	150	21.1	63.3	1570	785	0.294	21.1	63.3
	98	HAVS	20	-750	150	40.6	122	1910	955	0.690	40.6	122
	125	HAVS	20	-1000	150	44.6	134	2546	1273	0.920	54.1	162
1/25	52	HAVS	25	-50	120	2.74	8.33	882	441	0.0325	4.02	12.2
	52	HAVS	25	-100	120	6.27	19.0	882	441	0.0325	6.27	19.0
	78	HAVS	25	-200	120	11.1	33.3	1670	833	0.288	21.7	64.9
	78	HAVS	25	-400	120	26.4	79.2	1670	833	0.288	26.4	79.2
	98	HAVS	25	-750	120	50.7	152	2060	1030	0.680	50.7	152
	125	HAVS	25	-1000	120	55.7	167	2650	1320	1.880	65.4	196
1/35	52	HAVS	35	-50	85	3.84	11.5	882	441	0.030	3.84	11.5
	78	HAVS	35	-100	85	7.24	21.7	1670	833	0.065	13.9	41.7
	78	HAVS	35	-200	85	15.5	46.6	1670	833	0.262	15.5	46.6
	98	HAVS	35	-400	85	37.0	111	2060	1030	0.269	37.0	111
	125	HAVS	35	-750	85	71.0	213	3430	1715	0.473	71.0	213
1/45	78	HAVS	45	-50	66	3.86	11.6	1670	833	0.0285	9.50	28.6
	78	HAVS	45	-100	66	9.31	28.0	1670	833	0.0285	9.50	28.6
	98	HAVS	45	-200	66	21.1	63.5	2060	1030	0.0256	28.3	85.2
	125	HAVS	45	-400	66	47.5	142.5	3520	1760	0.245	57.0	171
	125	HAVS	45	-750	66	91.3	274	3520	1760	1.770	91.3	274
1/81	78	HAVS	81	-50	37	7.02	20.8	1670	833	0.027	9.70	29.2
	98	HAVS	81	-100	37	14.0	42.0	2060	1030	0.030	17.8	53.5
	125	HAVS	81	-200	37	36.1	108.3	3530	1765	0.240	43.3	129.9

Note1) The moment of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.

Note2) The max input speed is 5000rpm. Usually set to 3000rpm or less.

Note3) The permissible radial load is indicated on the center of the output shaft.

Note4) All values are within the range corresponding to helical gear.

注1) 輸入軸換算慣性力矩僅為減速機的數值，不包括馬達的慣性力矩。

注2) 最高輸入轉速為5000rpm，正常情況下請將轉速控制在3000rpm以下。

注3) 容許徑向負荷為輸出軸中央部的數值。

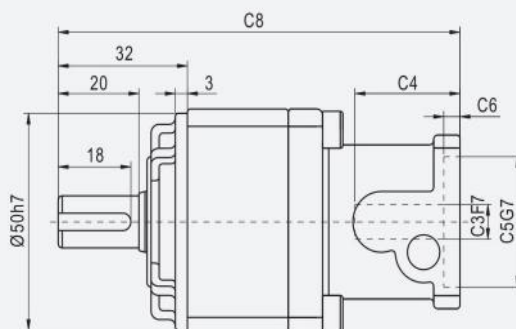
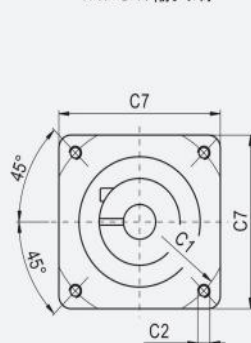
注4) 全部為斜齒輪適用範圍。

OUTLINE DIMENSION SHEET

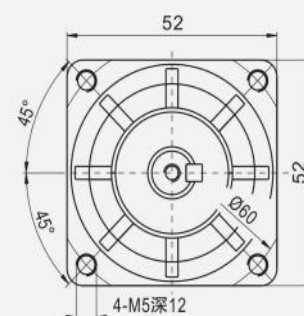
外形尺寸圖表

HAVS-52-L1

INPUT/輸入端

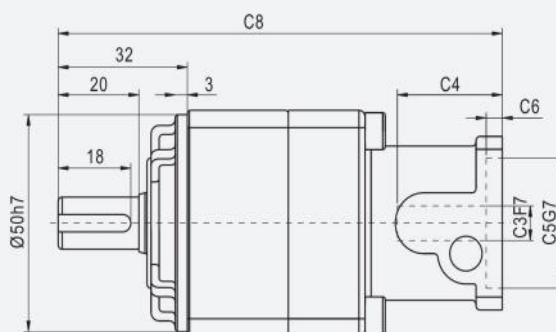
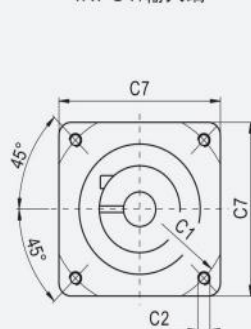


OUTPUT/輸出端

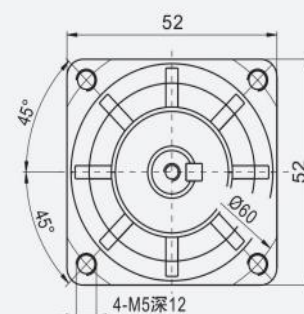


HAVS-52-L2

INPUT/輸入端

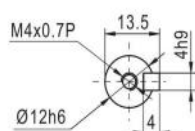


OUTPUT/輸出端



Output Diameter

輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8
HA VS-52-L1	Ø46	4-M3x6.5	Ø8	26	Ø30	4	40	99.5
HA VS-52-L2	Ø70	4-M4x10, 4-M5x10	Ø11, Ø14	30	Ø50	4	60	104.5

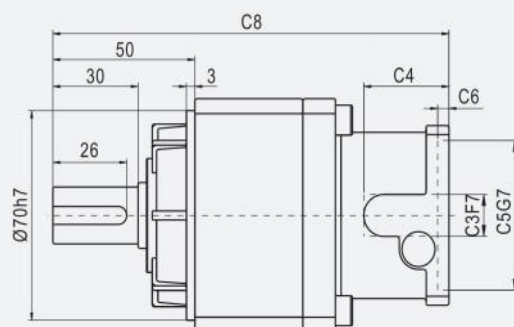
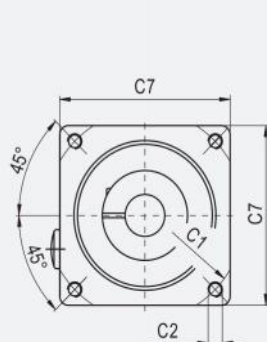
*C1~C7 are motor (metric standard) specific dimensions, which could be customised.
*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

OUTLINE DIMENSION SHEET

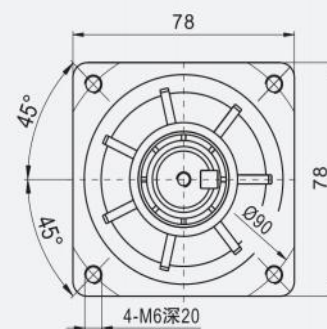
外形尺寸圖表

HAVS-78-L1

INPUT/輸入端

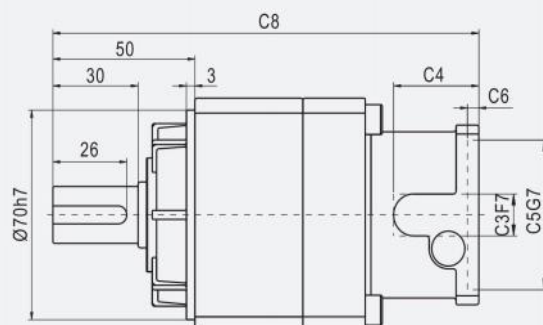
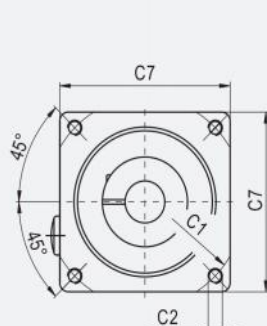


OUTPUT/輸出端

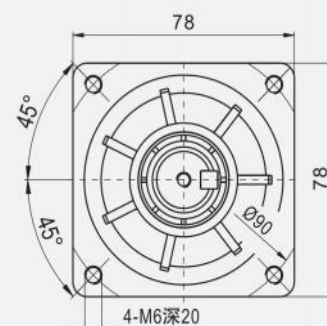


HAVS-78-L2

INPUT/輸入端

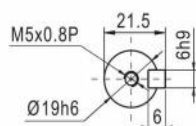


OUTPUT/輸出端



Output Diameter

輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8
HA VS-78-L2	Ø46	4-M3x6.5	Ø8	26	Ø30	4	40	142
HA VS-78-L1	Ø70	4-M4x10, 4-M5x10	Ø11, Ø14	30	Ø50	4	60	139.5
HA VS-78-L2								151
HA VS-78-L1	Ø90	4-M5x10	Ø19	40	Ø70	4	80	145
HA VS-78-L1	Ø130	4-M8x15	Ø19	58	Ø95	6	110	153.5

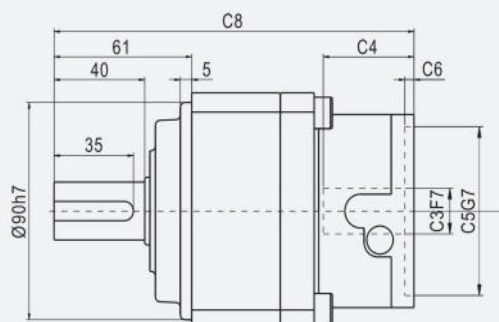
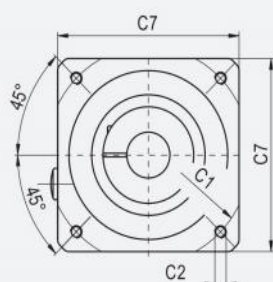
*C1~C7 are motor (metric standard) specific dimensions, which could be customised.
*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

OUTLINE DIMENSION SHEET

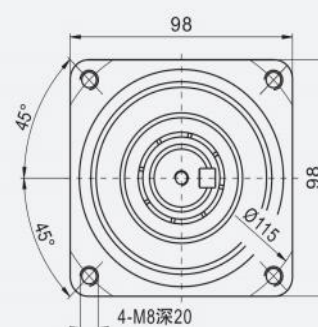
外形尺寸圖表

HAVS-98-L1

INPUT/輸入端

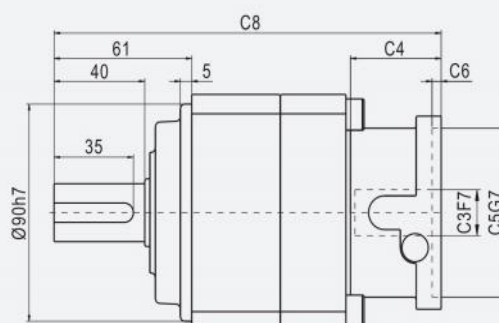
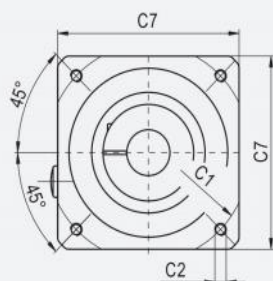


OUTPUT/輸出端

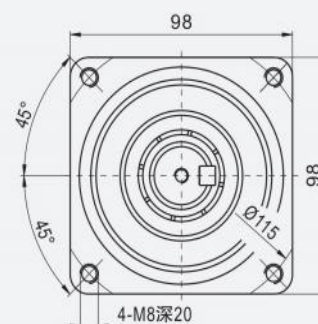


HAVS-98-L2

INPUT/輸入端

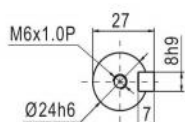


OUTPUT/輸出端



Output Diameter

輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8
HA VS-98-L2	Ø46	4-M3x6.5	Ø8	26	Ø30	4	40	158
HA VS-98-L2	Ø70	4-M4x10, 4-M5x10	Ø11, Ø14	30	Ø50	4	60	165
HA VS-98-L1	Ø90	4-M5x10	Ø19	40	Ø70	4	80	158.5
HA VS-98-L2								172.5
HA VS-98-L1	Ø130	4-M8x15	Ø19	58	Ø95	6	110	176
HA VS-98-L1	Ø145	4-M8x20	Ø22, Ø24	60	Ø95	6	130	178

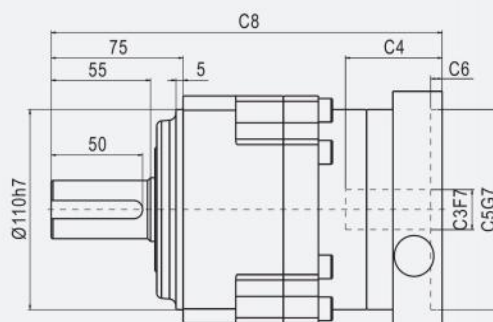
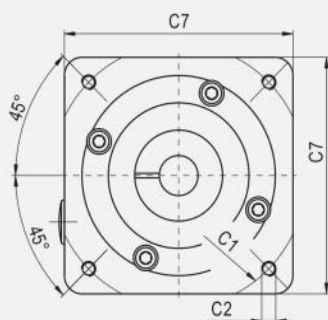
*C1~C7 are motor (metric standard) specific dimensions, which could be customised.
 *C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

OUTLINE DIMENSION SHEET

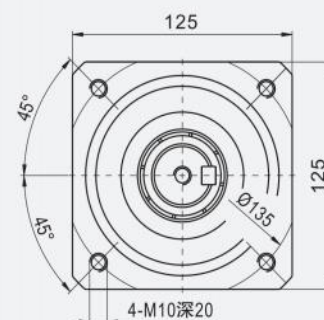
外形尺寸圖表

HAVS-125-L1

INPUT/輸入端

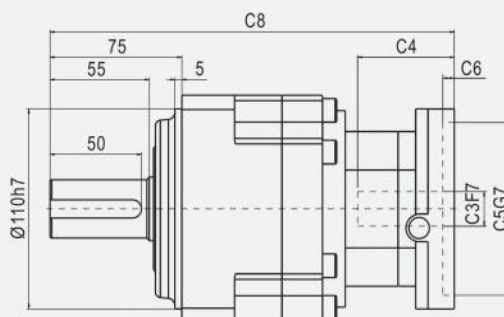
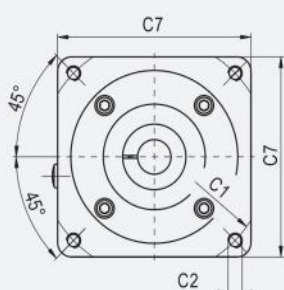


OUTPUT/輸出端

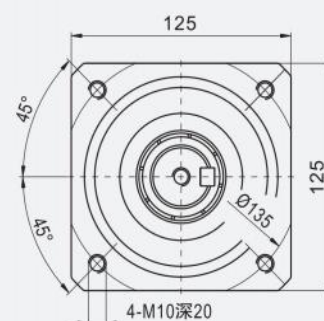


HAVS-125-L2

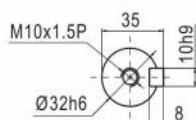
INPUT/輸入端



OUTPUT/輸出端



Output Diameter 輸出軸徑



尺寸	C1	C2	C3	C4	C5	C6	C7	C8
HA VS-125-L2	Ø70	4-M4x10, 4-M5x10	Ø11, Ø14	30	Ø50	4	60	210
HA VS-125-L2	Ø90	4-M5x10	Ø19	40	Ø70	4	80	235
HA VS-125-L1	Ø130	4-M8x15	Ø19	58	Ø95	6	110	215
HA VS-125-L2								235
HA VS-125-L1	Ø145	4-M8x20	Ø22, Ø24	60	Ø110	6	130	245
HA VS-125-L1	Ø200	4-M12x28	Ø35	68	Ø114.3	5	180	260

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

LAF/LAB SERIES



MODEL ILLUMINATE

型號說明

LAF 090

—

5

P2

—

S2

—

馬達

減速機型式：

LAF042/LAF060/LAF080/LAF090/
LAF120/LAF160

背隙：P1：精密背隙

P2：標準背隙

馬達安裝尺寸：

減速比：

單級(L1):3,4,5,7,8,10

雙級(L2):12,15,16,20,25,28,30,35,40,50,70,100

輸出軸型式選擇：S1：平滑直軸
S2：帶鍵直軸

選用範例：LAF090-5-P2-S2-19-70-90-M6-42

REDUCER PERFORMANCE DATA

減速機性能資料

規格		級數	減速比 ^①	LAB042 LAF042	LAF060	LAF080	LAF090	LAF120	LAF160
額定輸出力矩T _{2N}	N.m	1	3	16	27	50	96	161	364
			4	16	40	90	122	210	423
			5	15	40	90	122	210	423
			7	12	34	48	95	120	358
			8	—	—	35	—	—	—
			10	10	16	22	56	86	210
		2	12	16	27	50	96	161	364
			15	16	27	50	96	161	364
			16	16	40	90	122	210	423
			20	16	40	90	122	210	423
			25	15	40	90	122	210	423
			28	16	40	90	122	210	423
			30	16	27	50	96	161	364
			35	12	40	90	122	210	423
			40	16	40	90	122	210	423
			50	15	40	90	122	210	423
			70	12	34	48	95	170	358
			100	10	16	22	56	86	210
最大輸出力矩T _{2B}	N.m	1,2	3~100	3倍額定輸出力矩					
額定輸入轉速n ₁	rpm	1,2	3~100	4,000	4,000	4,000	3,000	3,000	
最大輸入轉速n _{1B}	rpm	1,2	3~100	6,000	6,000	6,000	6,000	6,000	
背隙	arcmin	1	3~10	≤8	≤8	≤8	≤8	≤8	≤8
		2	12~100	≤10	≤10	≤10	≤10	≤10	≤10
扭轉剛性	Nm/arcmin	1,2	3~100	0.7	1.8	4.7	4.85	11	35
容許徑向力F _{2rB} ^②	N	1,2	3~100	185	240	400	450	1240	2250
容許軸向力F _{2aB} ^②	N	1,2	3~100	150	220	420	430	1000	1500
使用壽命	hr	1,2	3~100	20,000*					
效率η	%	1	3~10	≥95%					
		2	12~100	≥92%					
重量	kg	1	3~10	0.43	0.98	2.3	3.2	6.8	15
		2	12~100	0.65	1.26	3.0	3.8	9.2	20
使用溫度	℃	1,2	3~100	-10℃~+90℃					
潤滑		1,2	3~100	合成潤滑油脂					
防護等級		1,2	3~100	IP65					
安裝方向		1,2	3~100	任意方向					
噪音值(n ₁ =3000rpm)	dB	1,2	3~100	≤70	≤70	≤70	≤70	≤70	≤70

減速機轉動慣量

規格	級數	減速比 ^①	LAB042 LAF042	LAF060	LAF080	LAF090	LAF120	LAF160
轉動慣量 J_1 kg · cm ²	1	3	0.10	0.46	0.77	1.73	12.78	36.72
		4	0.10	0.46	0.77	1.73	12.78	36.72
		5	0.10	0.46	0.77	1.73	12.78	36.72
		7	0.06	0.41	0.65	1.42	11.38	34.02
		8	-	-	0.65	-	-	-
		10	0.06	0.41	0.65	1.42	11.38	34.02
	2	12	0.08	0.44	0.72	1.49	12.18	34.24
		15	0.08	0.44	0.72	1.49	12.18	34.24
		16	0.08	0.44	0.72	1.49	12.18	34.24
		20	0.08	0.44	0.72	1.49	12.18	34.24
		25	0.08	0.44	0.72	1.49	12.18	34.24
		28	0.08	0.44	0.72	1.49	12.18	34.24
		30	0.08	0.44	0.72	1.49	12.18	34.24
		35	0.08	0.44	0.72	1.49	12.18	34.24
		40	0.08	0.44	0.72	1.49	12.18	34.24
		50	0.05	0.34	0.58	1.25	11.48	34.02
		70	0.05	0.34	0.58	1.25	11.48	34.02
		100	0.05	0.34	0.58	1.25	11.48	34.02

1.減速比($i=N_{in}/N_{out}$)

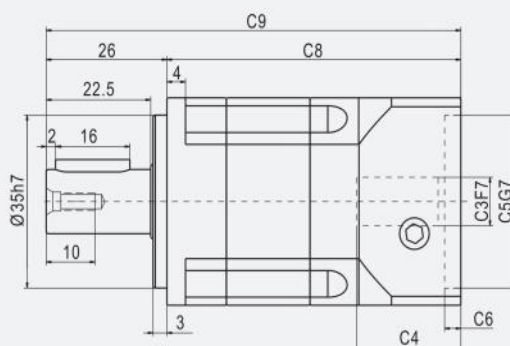
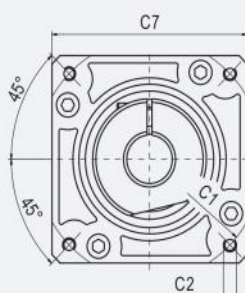
*連續運轉降低使用壽命二分之一。

2.輸出轉速100rpm時，作用於輸出軸中心位置。

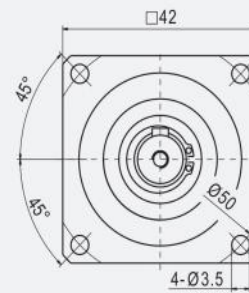
OUTLINE DIMENSION SHEET 外形尺寸圖表

LAB-042-L1

INPUT/輸入端

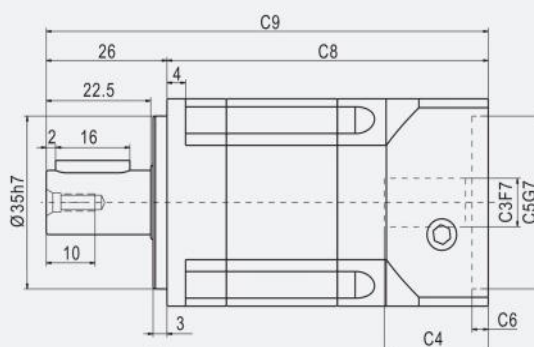
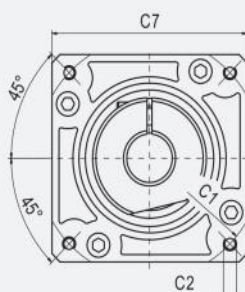


OUTPUT/輸出端

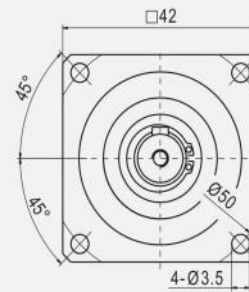


LAB-042-L2

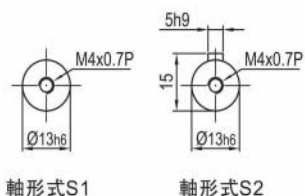
INPUT/輸入端



OUTPUT/輸出端



Output Diameter 輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
LAB-042D-L1	Ø46	4-M4x10	Ø8	26.5	Ø30	4	42	63	89
	Ø45	4-M3x8							
LAB-042D-L2	Ø46	4-M4x10	Ø8	26.5	Ø30	4	42	76	102
	Ø45	4-M3x8							

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D:Conventional Hole, M1:Limit Hole

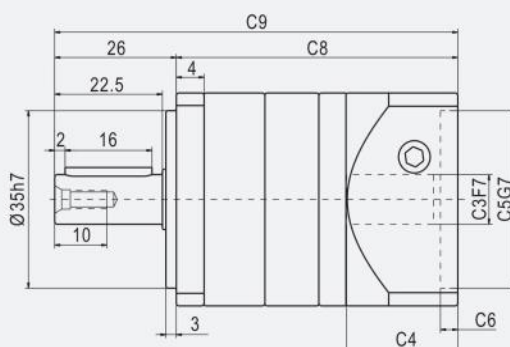
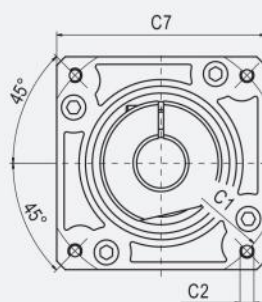
*D:常規孔，M1:極限孔

OUTLINE DIMENSION SHEET

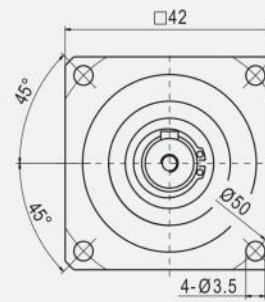
外形尺寸圖表

LAF-042-L1

INPUT/輸入端

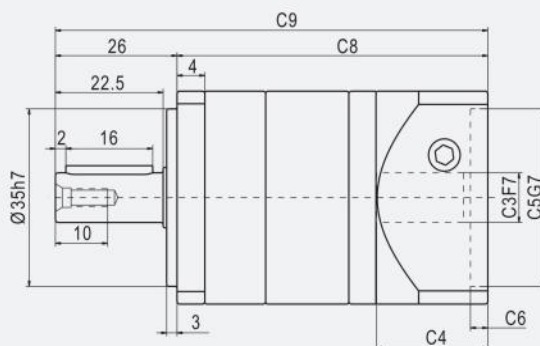
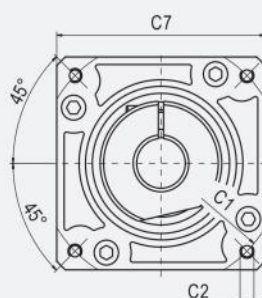


OUTPUT/輸出端

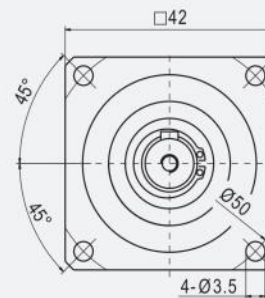


LAF-042-L2

INPUT/輸入端

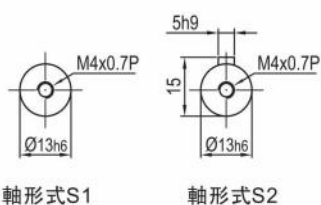


OUTPUT/輸出端



Output Diameter

輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
LAF-042D-L1	Ø46	4-M4x10	Ø8	26.5	Ø30	4	42	61	87
	Ø45	4-M3x8							
LAF-042D-L2	Ø46	4-M4x10	Ø8	26.5	Ø30	4	42	74	100
	Ø45	4-M3x8							

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

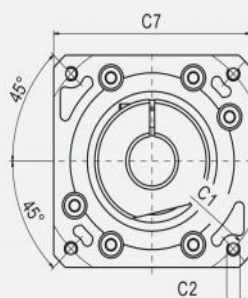
*D: 常規孔, M1: 極限孔

OUTLINE DIMENSION SHEET

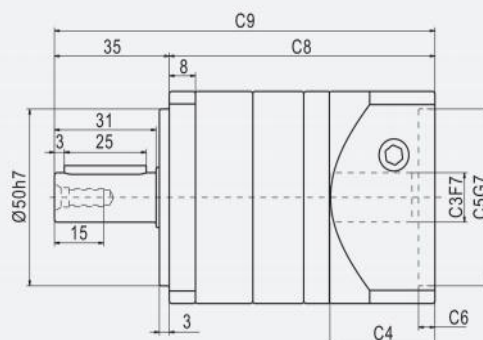
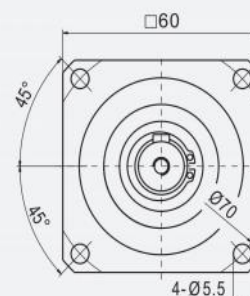
外形尺寸圖表

LAF-060-L1

INPUT/輸入端

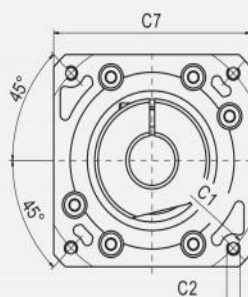


OUTPUT/輸出端

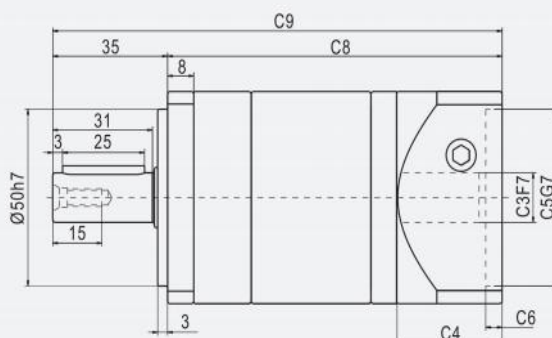
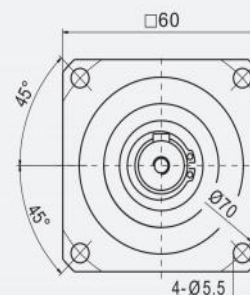


LAF-060-L2

INPUT/輸入端

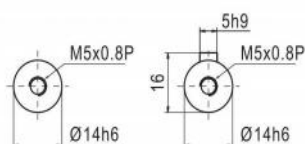


OUTPUT/輸出端



Output Diameter

輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
LAF-060D-L1	□47.14	4-M4x10	Ø8	32	Ø38.1	5	60	81	116
	Ø45	4-M4x10	Ø8	32	Ø30	5	60	81	116
	Ø46	4-M3x8	Ø8	32	Ø30	5	60	81	116
	Ø70	4-M4x10/4-M5x12	Ø14	32	Ø50	5	60	81	116
LAF-060D-L2	□47.14	4-M4x10	Ø8	32	Ø38.1	5	60	102	137
	Ø45	4-M4x10	Ø8	32	Ø30	5	60	102	137
	Ø46	4-M3x8	Ø8	32	Ø30	5	60	102	137
	Ø70	4-M4x10/4-M5x12	Ø14	32	Ø50	5	60	102	137

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

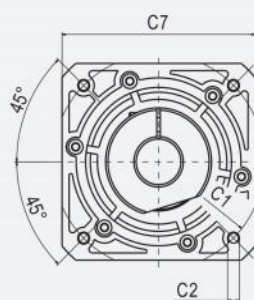
*D: 常規孔, M1: 極限孔

OUTLINE DIMENSION SHEET

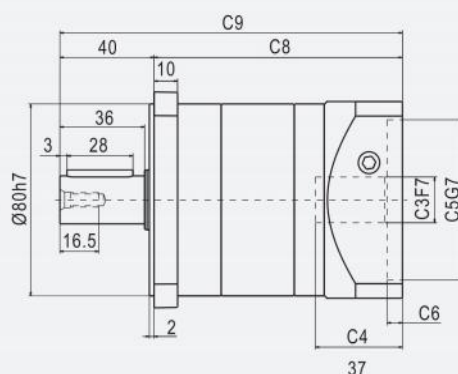
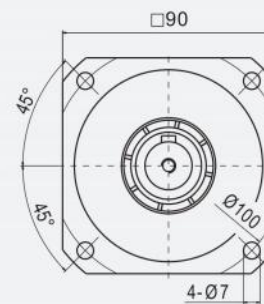
外形尺寸圖表

LAF-080-L1

INPUT/輸入端

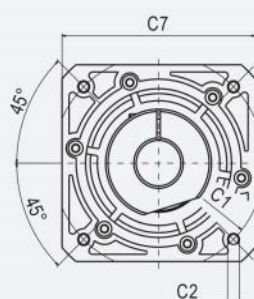


OUTPUT/輸出端

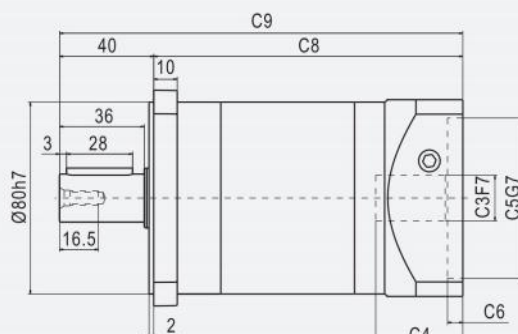
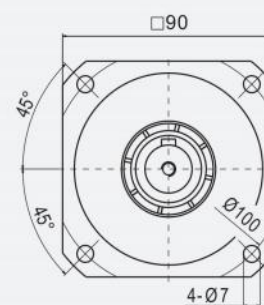


LAF-080-L2

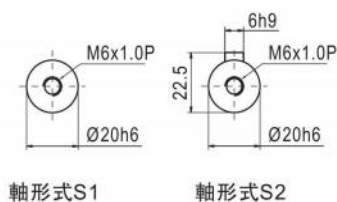
INPUT/輸入端



OUTPUT/輸出端



Output Diameter 輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
LAF-080D-L1	Ø70	4-M4x10/4-M5x12	Ø14	42	Ø50	5	82	105.5	145.5
	□69.6	4-M6x12	Ø14	42	Ø73	5	82	105.5	145.5
	Ø90	4-M5x12/4-M6x12	Ø19	42	Ø70	5	82	105.5	145.5
LAF-080D-L2	Ø70	4-M4x10/4-M5x12	Ø14	42	Ø50	5	82	131.5	171.5
	□69.6	4-M6x12	Ø14	42	Ø73	5	82	131.5	171.5
	Ø90	4-M5x12/4-M6x12	Ø19	42	Ø70	5	82	131.5	171.5

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D:Conventional Hole, M1:Limit Hole

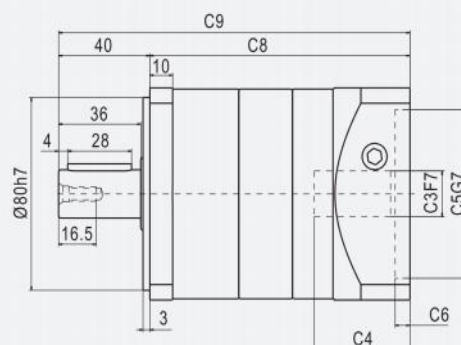
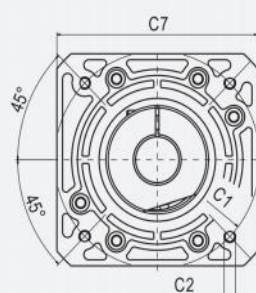
*D:常規孔，M1:極限孔

OUTLINE DIMENSION SHEET

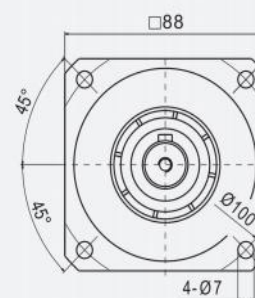
外形尺寸圖表

LAF-090-L1

INPUT/輸入端

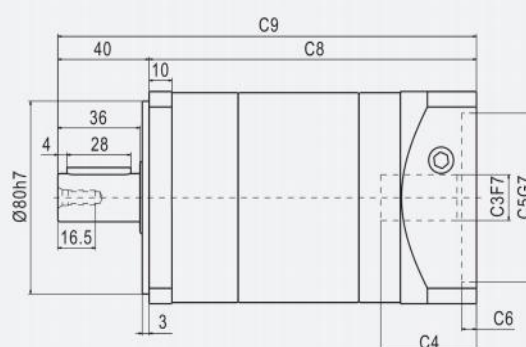
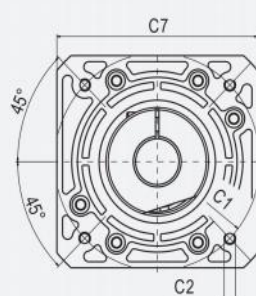


OUTPUT/輸出端

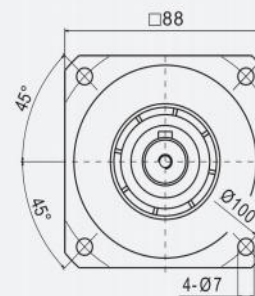


LAF-090-L2

INPUT/輸入端

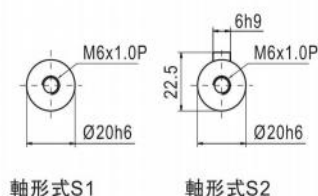


OUTPUT/輸出端



Output Diameter

輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
LAF-090D-L1	Ø70	4-M4x10/4-M5x12	Ø14	42	Ø50	8	88	114	154
	□69.6	4-M6x12	Ø14	42	Ø73	8	88	114	154
	Ø90	4-M5x12/4-M6x12	Ø19	42	Ø70	8	88	114	154
LAF-090D-L2	Ø70	4-M4x10/4-M5x12	Ø14	42	Ø50	8	88	143.5	183.5
	□69.6	4-M6x12	Ø14	42	Ø73	8	88	143.5	183.5
	Ø90	4-M5x12/4-M6x12	Ø19	42	Ø70	8	88	143.5	183.5

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D:Conventional Hole, M1:Limit Hole

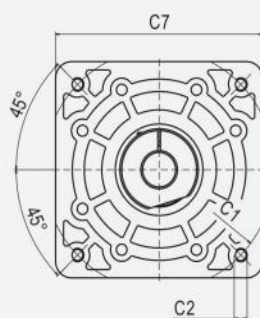
*D:常規孔，M1:極限孔

OUTLINE DIMENSION SHEET

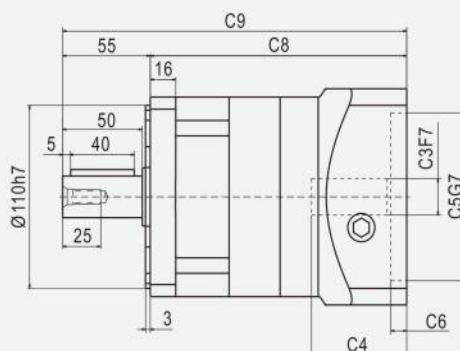
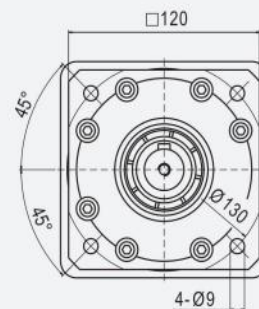
外形尺寸圖表

LAF-120-L1

INPUT/輸入端

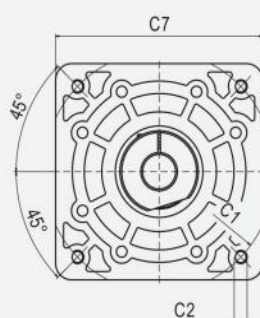


OUTPUT/輸出端

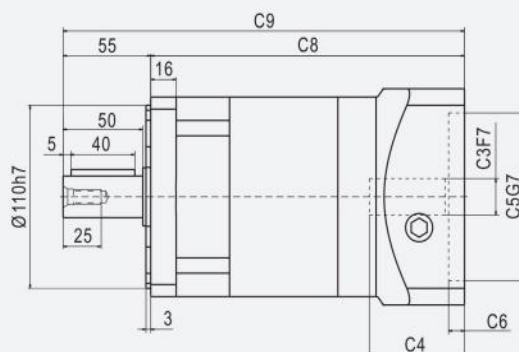
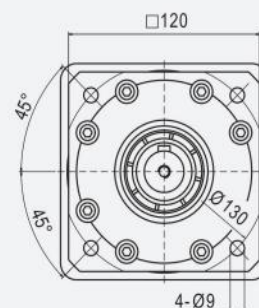


LAF-120-L2

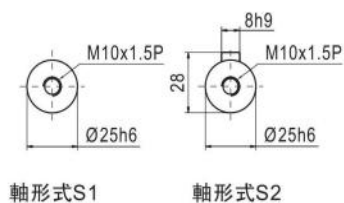
INPUT/輸入端



OUTPUT/輸出端



Output Diameter 輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
LAF-120D-L1	Ø90	4-M5x12/4-M6x12	Ø19	47	Ø70	8	90	161	216
	Ø115	4-M8x20	Ø19/Ø22	60	Ø95	8	105	161	216
	Ø130	4-M8x20	Ø19/Ø22	60	Ø95	8	110	161	216
	Ø145	4-M8x20	Ø22/Ø24	60	Ø110	8	130	161	216
LAF-120D-L2	Ø90	4-M5x12/4-M6x12	Ø19	47	Ø70	8	90	197	252
	Ø115	4-M8x20	Ø19/Ø22	60	Ø95	8	105	197	252
	Ø130	4-M8x20	Ø19/Ø22	60	Ø95	8	110	197	252
	Ø145	4-M8x20	Ø22/Ø24	60	Ø110	8	130	197	252

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

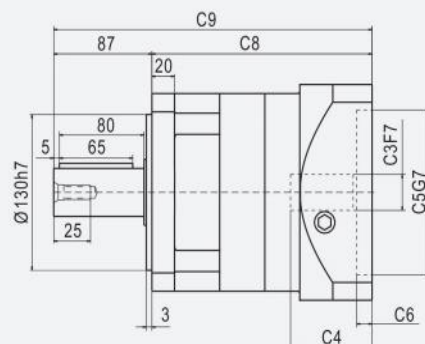
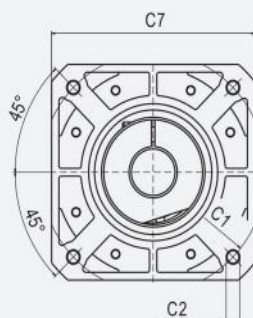
*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

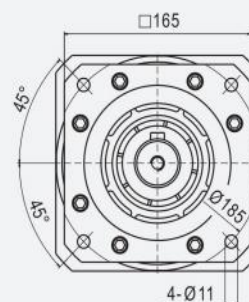
OUTLINE DIMENSION SHEET 外形尺寸圖表

LAF-160-L1

INPUT/輸入端

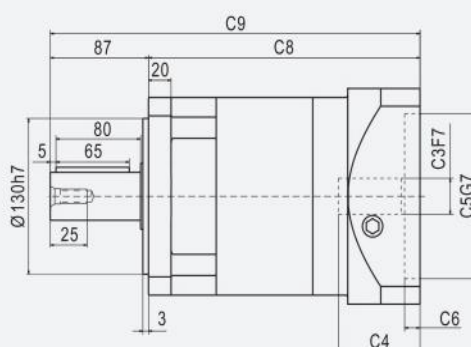
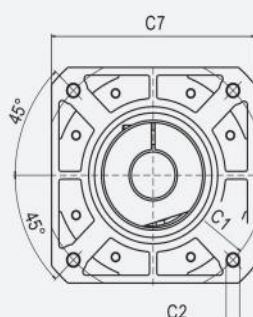


OUTPUT/輸出端

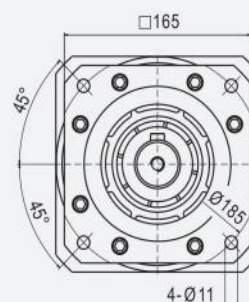


LAF-160-L2

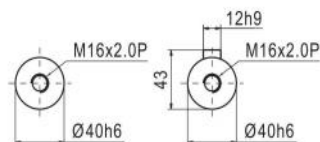
INPUT/輸入端



OUTPUT/輸出端



Output Diameter 輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
LAF-160D-L1	Ø145	4-M8x20	Ø22/Ø24	62	Ø110	7	130	195	282
	Ø165	4-M10x25	Ø32	62	Ø130	7	150	195	282
	Ø200	4-M12x28	Ø35	86	Ø114.3	7	180	195	282
LAF-160D-L2	Ø145	4-M8x20	Ø22/Ø24	62	Ø110	7	130	240.5	327.5
	Ø165	4-M10x25	Ø32	62	Ø130	7	150	240.5	327.5
	Ø200	4-M12x28	Ø35	86	Ø114.3	7	180	240.5	327.5

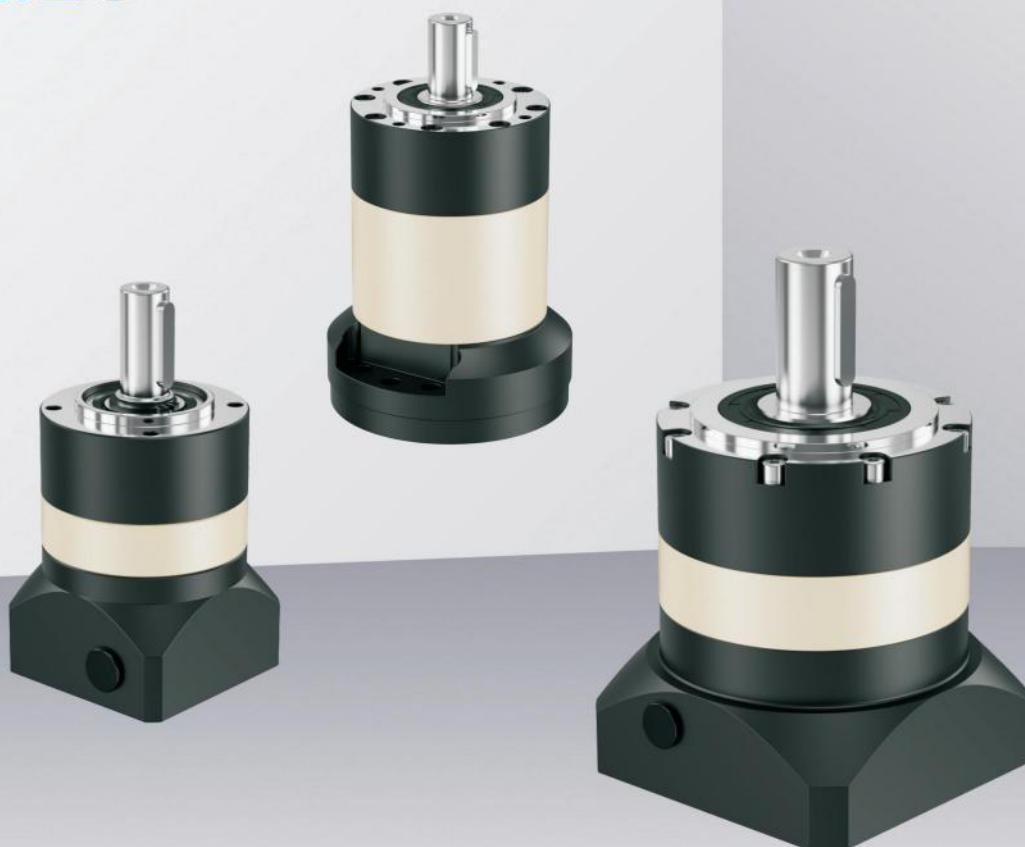
*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D:Conventional Hole, M1:Limit Hole

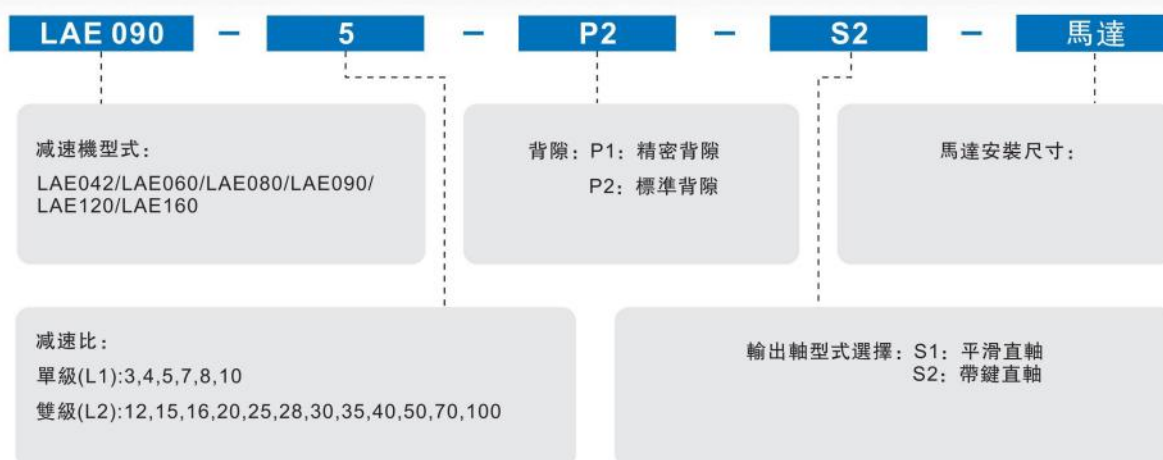
*D:常規孔，M1:極限孔

LAE SERIES



MODEL ILLUMINATE

型號說明



選用範例: LAE090-5-P2-S2-19-70-90-M6-42

REDUCER PERFORMANCE DATA

減速機性能資料

規格		級數	減速比 ^①	LAE042	LAE060	LAE080	LAE090	LAE120	LAE160
額定輸出力矩T _{2N}	N.m	1	3	16	27	50	96	161	364
			4	16	40	90	122	210	423
			5	15	40	90	122	210	423
			7	12	34	48	95	120	358
			8	—	—	35	—	—	—
			10	10	16	22	56	86	210
		2	12	16	27	50	96	161	364
			15	16	27	50	96	161	364
			16	16	40	90	122	210	423
			20	16	40	90	122	210	423
			25	15	40	90	122	210	423
			28	16	40	90	122	210	423
			30	16	27	50	96	161	364
			35	12	40	90	122	210	423
			40	16	40	90	122	210	423
			50	15	40	90	122	210	423
			70	12	34	48	95	170	358
			100	10	16	22	56	86	210
最大輸出力矩T _{2B}	N.m	1,2	3~100		3倍額定輸出力矩				
額定輸入轉速n ₁	rpm	1,2	3~100	4,000	4,000	4,000	3,000	3,000	3,000
最大輸入轉速n _{1B}	rpm	1,2	3~100	6,000	6,000	6,000	6,000	6,000	6,000
背隙	arcmin	1	3~10	≤8	≤8	≤8	≤8	≤8	≤8
		2	12~100	≤10	≤10	≤10	≤10	≤10	≤10
扭轉剛性	Nm/arcmin	1,2	3~100	0.7	1.8	4.7	4.85	11	35
容許徑向力F _{2rB} ^②	N	1,2	3~100	185	240	400	450	1240	2250
容許軸向力F _{2aB} ^②	N	1,2	3~100	150	220	420	430	1000	1500
使用壽命	hr	1,2	3~100			20,000*			
效率 η	%	1	3~10			≥95%			
		2	12~100			≥92%			
重量	kg	1	3~10	0.43	0.98	2.3	3.2	6.8	15
		2	12~100	0.65	1.26	3.0	3.8	9.2	20
使用溫度	℃	1,2	3~100			-10℃~+90℃			
潤滑		1,2	3~100			合成潤滑油脂			
防護等級		1,2	3~100			IP65			
安裝方向		1,2	3~100			任意方向			
噪音值(n ₁ =3000rpm)	dB	1,2	3~100	≤70	≤70	≤70	≤70	≤70	≤70

減速機轉動慣量

規格	級數	減速比 ^①	LAE042	LAE060	LAE080	LAE090	LAE120	LAE160
轉動慣量 J_1 kg·cm ²	1	3	0.10	0.46	0.77	1.73	12.78	36.72
		4	0.10	0.46	0.77	1.73	12.78	36.72
		5	0.10	0.46	0.77	1.73	12.78	36.72
		7	0.06	0.41	0.65	1.42	11.38	34.02
		8	-	-	0.65	-	-	-
		10	0.06	0.41	0.65	1.42	11.38	34.02
	2	12	0.08	0.44	0.72	1.49	12.18	34.24
		15	0.08	0.44	0.72	1.49	12.18	34.24
		16	0.08	0.44	0.72	1.49	12.18	34.24
		20	0.08	0.44	0.72	1.49	12.18	34.24
		25	0.08	0.44	0.72	1.49	12.18	34.24
		28	0.08	0.44	0.72	1.49	12.18	34.24
		30	0.08	0.44	0.72	1.49	12.18	34.24
		35	0.08	0.44	0.72	1.49	12.18	34.24
		40	0.08	0.44	0.72	1.49	12.18	34.24
		50	0.05	0.34	0.58	1.25	11.48	34.02
		70	0.05	0.34	0.58	1.25	11.48	34.02
		100	0.05	0.34	0.58	1.25	11.48	34.02

1.減速比($i=N_{in}/N_{out}$)

*連續運轉降低使用壽命二分之一。

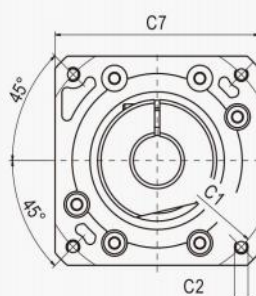
2.輸出轉速100rpm時，作用于輸出軸中心位置。

OUTLINE DIMENSION SHEET

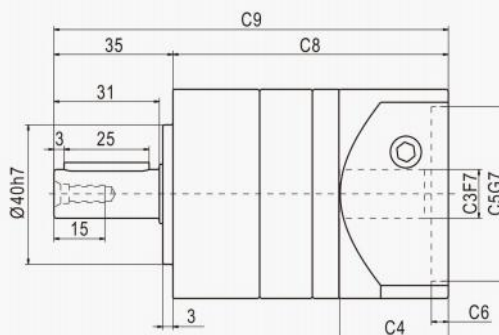
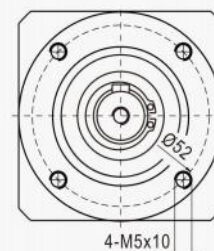
外形尺寸圖表

LAE-060-L1

INPUT/輸入端

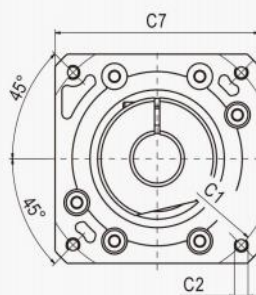


OUTPUT/輸出端

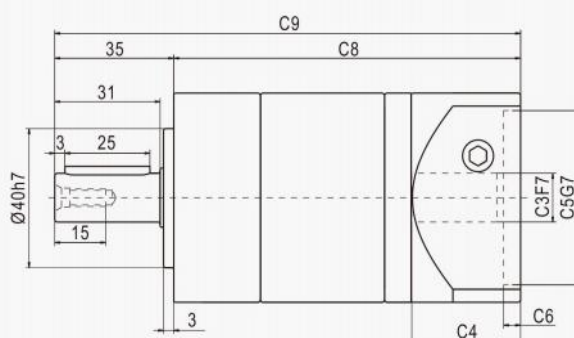
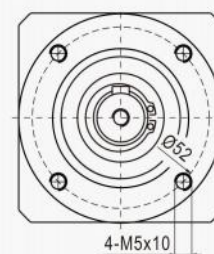


LAE-060-L2

INPUT/輸入端

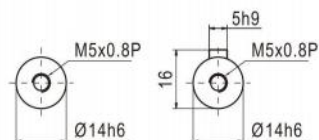


OUTPUT/輸出端



Output Diameter

輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
LAE-060D-L1	□47.14	4-M4x10	Ø8	32	Ø38.1	5	60	81	116
	Ø45	4-M4x10	Ø8	32	Ø30	5	60	81	116
	Ø46	4-M3x8	Ø8	32	Ø30	5	60	81	116
	Ø70	4-M4x10/4-M5x12	Ø14	32	Ø50	5	60	81	116
LAE-060D-L2	□47.14	4-M4x10	Ø8	32	Ø38.1	5	60	102	137
	Ø45	4-M4x10	Ø8	32	Ø30	5	60	102	137
	Ø46	4-M3x8	Ø8	32	Ø30	5	60	102	137
	Ø70	4-M4x10/4-M5x12	Ø14	32	Ø50	5	60	102	137

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D: Conventional Hole, M1: Limit Hole

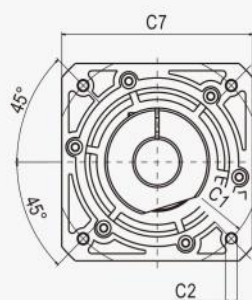
*D: 常規孔，M1: 極限孔

OUTLINE DIMENSION SHEET

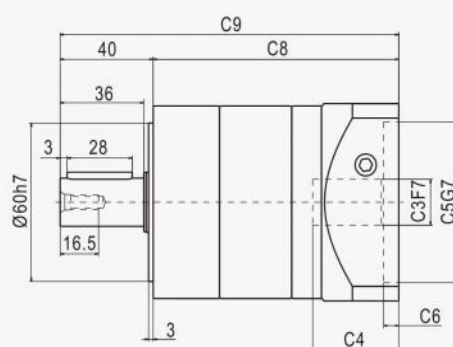
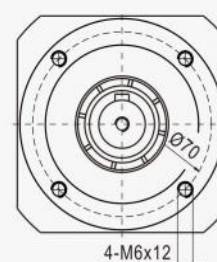
外形尺寸圖表

LAE-080-L1

INPUT/輸入端

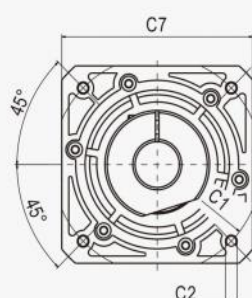


OUTPUT/輸出端

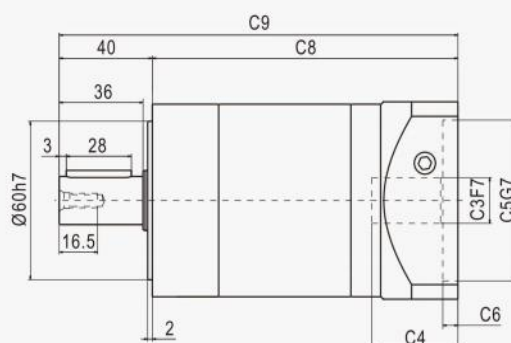
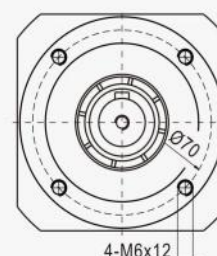


LAE-080-L2

INPUT/輸入端

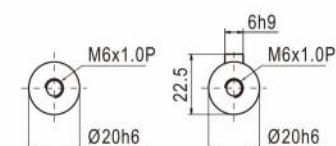


OUTPUT/輸出端



Output Diameter

輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
LAE-080D-L1	Ø70	4-M4x10/4-M5x12	Ø14	42	Ø50	5	82	105.5	145.5
	□69.6	4-M6x12	Ø14	42	Ø73	5	82	105.5	145.5
	Ø90	4-M5x12/4-M6x12	Ø19	42	Ø70	5	82	105.5	145.5
LAE-080D-L2	Ø70	4-M4x10/4-M5x12	Ø14	42	Ø50	5	82	131.5	171.5
	□69.6	4-M6x12	Ø14	42	Ø73	5	82	131.5	171.5
	Ø90	4-M5x12/4-M6x12	Ø19	42	Ø70	5	82	131.5	171.5

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D:Conventional Hole, M1:Limit Hole

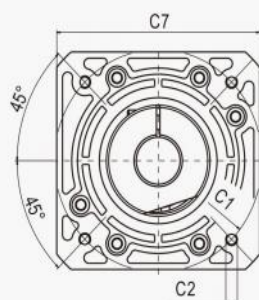
*D:常規孔, M1:極限孔

OUTLINE DIMENSION SHEET

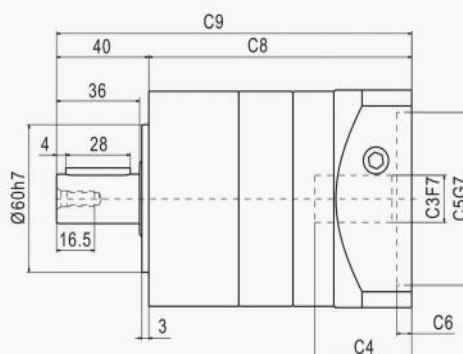
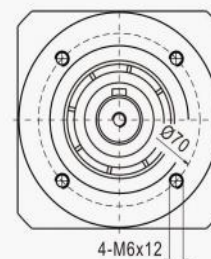
外形尺寸圖表

LAE-090-L1

INPUT/輸入端

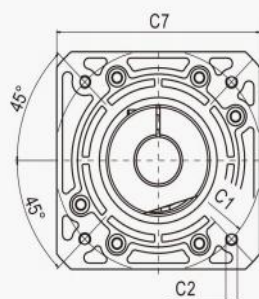


OUTPUT/輸出端

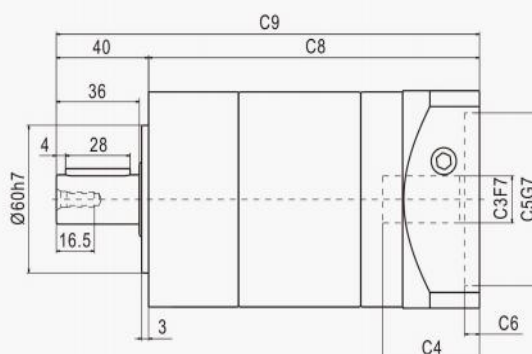
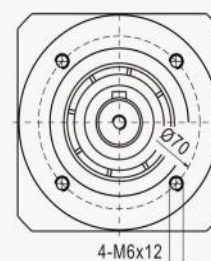


LAE-090-L2

INPUT/輸入端

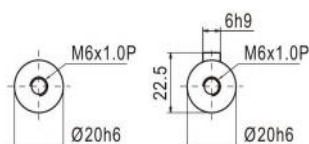


OUTPUT/輸出端



Output Diameter

輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
LAE-090D-L1	Ø70	4-M4x10/4-M5x12	Ø14	42	Ø50	8	88	114	154
	□69.6	4-M6x12	Ø14	42	Ø73	8	88	114	154
	Ø90	4-M5x12/4-M6x12	Ø19	42	Ø70	8	88	114	154
LAE-090D-L2	Ø70	4-M4x10/4-M5x12	Ø14	42	Ø50	8	88	143.5	183.5
	□69.6	4-M6x12	Ø14	42	Ø73	8	88	143.5	183.5
	Ø90	4-M5x12/4-M6x12	Ø19	42	Ø70	8	88	143.5	183.5

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D:Conventional Hole, M1:Limit Hole

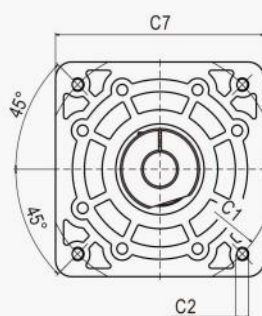
*D:常規孔, M1:極限孔

OUTLINE DIMENSION SHEET

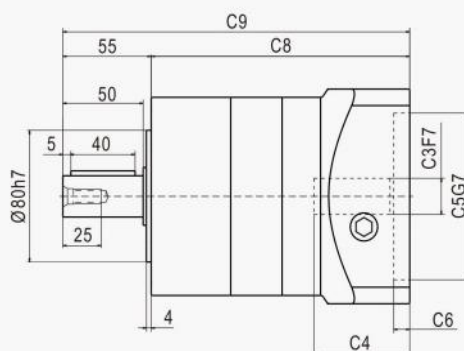
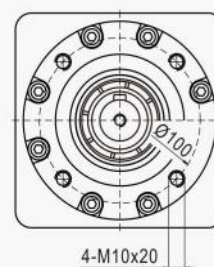
外形尺寸圖表

LAE-120-L1

INPUT/輸入端

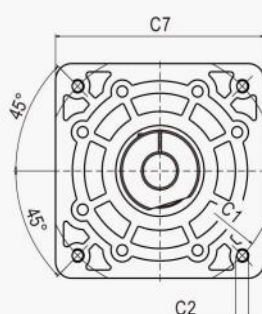


OUTPUT/輸出端

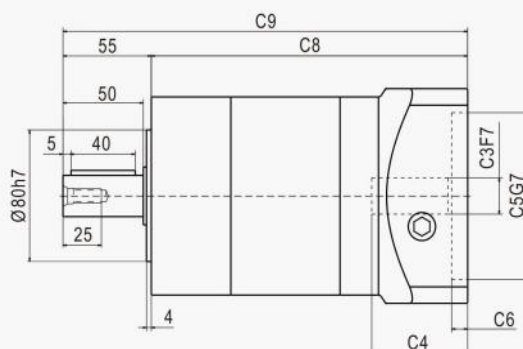
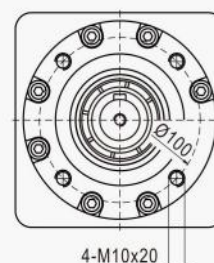


LAE-120-L2

INPUT/輸入端

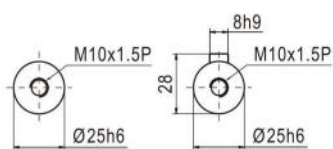


OUTPUT/輸出端



Output Diameter

輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
LAE-120D-L1	Ø90	4-M5x12/4-M6x12	Ø19	47	Ø70	8	90	161	216
	Ø115	4-M8x20	Ø19/Ø22	60	Ø95	8	105	161	216
	Ø130	4-M8x20	Ø19/Ø22	60	Ø95	8	110	161	216
	Ø145	4-M8x20	Ø22/Ø24	60	Ø110	8	130	161	216
LAE-120D-L2	Ø90	4-M5x12/4-M6x12	Ø19	47	Ø70	8	90	197	252
	Ø115	4-M8x20	Ø19/Ø22	60	Ø95	8	105	197	252
	Ø130	4-M8x20	Ø19/Ø22	60	Ø95	8	110	197	252
	Ø145	4-M8x20	Ø22/Ø24	60	Ø110	8	130	197	252

*C1~C7 are motor (metric standard) specific dimensions, which could be customised.

*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

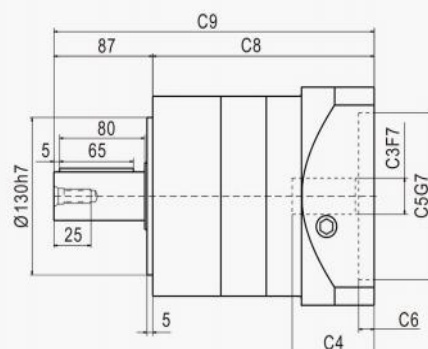
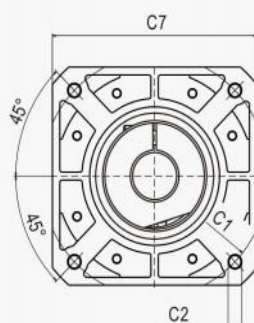
*D: Conventional Hole, M1: Limit Hole

*D: 常規孔, M1: 極限孔

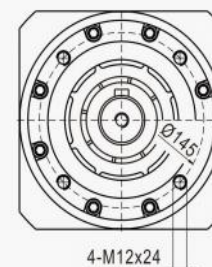
OUTLINE DIMENSION SHEET 外形尺寸圖表

LAE-160-L1

INPUT/輸入端

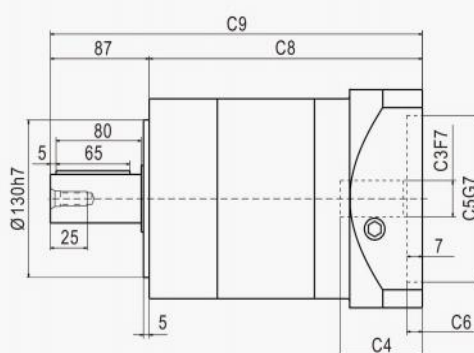
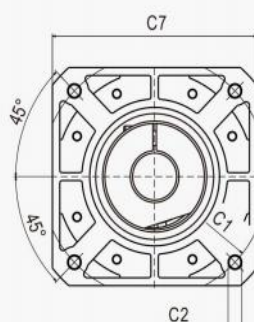


OUTPUT/輸出端

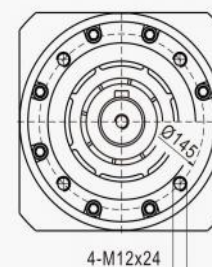


LAE-160-L2

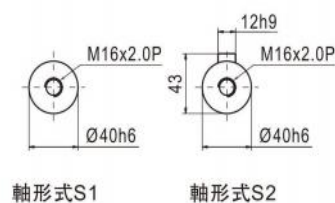
INPUT/輸入端



OUTPUT/輸出端



Output Diameter 輸出軸徑



軸形式S1

軸形式S2

尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9
LAE-160D-L1	Ø145	4-M8x20	Ø22/Ø24	62	Ø110	7	130	195	282
	Ø165	4-M10x25	Ø32	62	Ø130	7	150	195	282
	Ø200	4-M12x28	Ø35	86	Ø114.3	7	180	195	282
LAE-160D-L2	Ø145	4-M8x20	Ø22/Ø24	62	Ø110	7	130	240.5	327.5
	Ø165	4-M10x25	Ø32	62	Ø130	7	150	240.5	327.5
	Ø200	4-M12x28	Ø35	86	Ø114.3	7	180	240.5	327.5

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*C1~C7是公制標準馬達連接板之尺寸，可根據客戶要求單獨定做。

*D:Conventional Hole, M1:Limit Hole

*D:常規孔, M1:極限孔



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