

MFT系列

多樣性的連接方式
中空軸 / 雙出力軸 / 單邊出力軸

Multiple Connection Options
Hollow Shaft / Double Shaft / Single Shaft

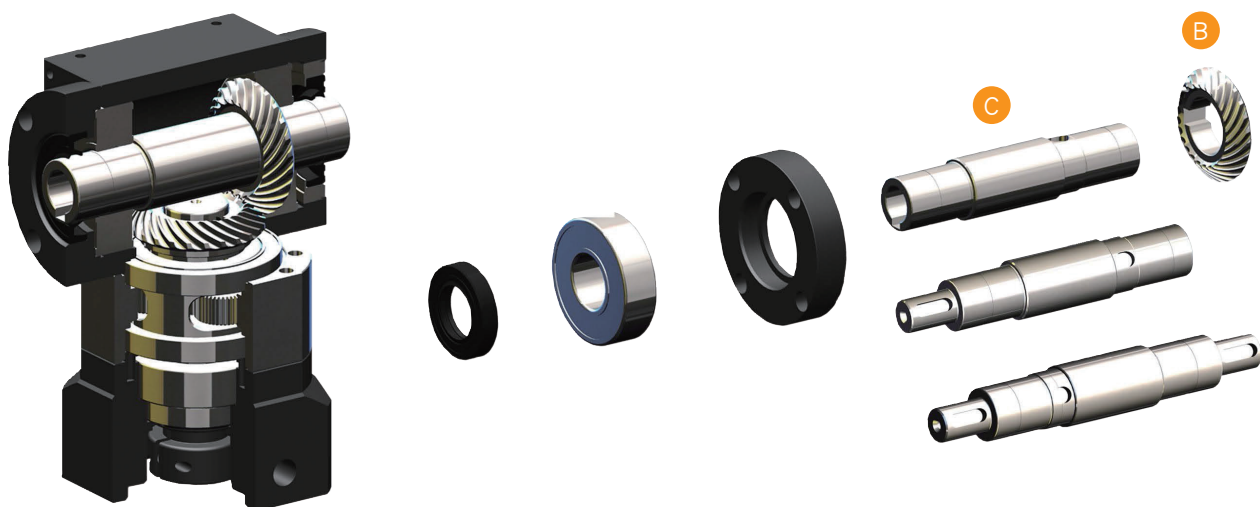
- 零段背隙： ≤ 6 弧分
- 減數比：1-100
- 零段負載時效率達 98%
- 0 Stage-Minimal backlash: ≤ 6 arc-min
- Ratio: 1-100
- 0 Stage-High efficiency: 98%

A—C 後端整體結構

傘型齒背隙調整結構可同時調整軸承及傘型齒的組裝背隙

Patented Structure Design

The structure of helical bevel gear can adjust bearing and bevel gear's backlash at the same time.



A 轉向本體

特殊加工能確保轉軸的同心度與入力軸的垂直度。本體使用鋁合金材質，大幅降低整體結構重量，表面陽極處理提高防鏽等級。

Output Gearbox

Specific processing for the gearbox to ensure the alignment of rotating shaft and perpendicularity of input shaft.
Using Aluminum alloy for the gearbox to slash the weight and sandblasting on surface to improve the antioxidant capacity.

B 螺旋傘齒輪

採用鉻鉬合金鋼，表面滲炭熱處理，具耐磨與高衝擊特性。

Helical Bevel Gear

With Cr-Mo alloy steel and carburizing heat treatment for high abrasion resistance and impact toughness.

C 出力軸

使用鉻鉬合金鋼，採一體成型設計確保大扭力輸出之結構剛性，表面用無電解鍍處理，具備高防鏽蝕的功能。

Output Shaft

Cr-Mo alloy steel shaft with one-piece design and structural rigidity to ensure large torque output. Surface coated with electroless nickel plating for high resistance to corrosion.



1 太陽齒

選用鎳鉻鉬合金鋼齒面經滲碳熱處理，耐磨性高及耐高衝擊。齒型精修處理，能提升齒輪精度及降低噪音。

2 減速軸

採用一體成型設計確保大扭力輸出之結構剛性

3 行星齒

選用鎳鉻鉬合金鋼，齒面經滲碳熱處理，耐磨性高及耐高衝擊，齒型精修處理，能提升齒輪精度及降低噪音，內孔使用滿針滾針軸，具高耐磨與高強度。

4 減速機

採用鉻鉬合金鋼及一體成型設計，精密度高及輸出扭矩大，表面處理採電鍍化學鎳，具有高抗蝕效果。

5 入力軸

採用模組化設計，能搭配各廠牌，伺服馬達出力軸，表面染黑處理。

6 連接法蘭

採用模組化設計，適合各式伺服馬達組裝，表面採用噴砂陽極技術處理，提高防氧化效果。

Sun Gear

Nickel chromium molybdenum alloy steel gear is manufactured with carburizing heat treatment for high abrasion resistance and impact toughness and by honing process to increase gear precision and low noise operation

Reduced Shaft

One-piece construction to ensure large torque output and structural rigidity.

Planetary Gear

Nickel chromium molybdenum alloy steel gear is manufactured with carburizing heat treatment for high abrasion resistance and impact toughness and by honing process to increase gear precision and low noise operation. Internal gear bore uses needle roller to obtain higher abrasion resistance and strength.

Ring Gear

With Cr-Mo alloy steel and one-piece construction for internal gear to deliver high precision and large output torque. Gearbox surface is coated with nickel electroplating for high resistance to corrosion.

Input Shaft

Modularized design can be used for various dimensions of servo motors. Shaft surface is coated with black oxide finishing.

Connecting Flange

Modularized design can be used for various dimensions of servo motors. Sandblasting and Anodizing painting on surface to improve the anti-corrosion capacity.

機型代碼

MFT SERIES ORDERING CODE



MFT60 - S0 - L1 - 10 - K - Motor

型號 Model
MFT60
MFT90
MFT120

出力軸樣式 Output Shaft Type:
S0: 中空軸 Hollow Shaft
S1: 單邊出力軸 Single Shaft
S2: 雙邊出力軸 Double Shaft

段數 Stage
L0: (Ratio 1)
L1: (Ratio 3-10)
L2: (Ratio 15-100)

減速比 Ratio
請參閱目錄第 54 頁，減速比組成表。 Please refer to page 54 "Ratio Composition Table".

馬達 Motor
馬達廠牌、型號 Motor Brand & Model

出力軸 Output shaft	
K:	軸帶鍵 With Key
S:	光軸 Without Key

輸出軸之容許徑向力

PERMITTED RADIAL & AXIAL LOADS ON OUTPUT SHAFT OF THE GEARBOX

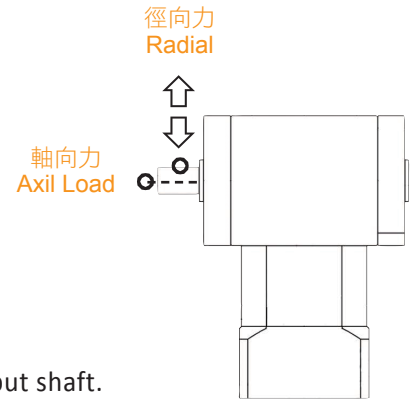
容許徑向力：垂直於軸心的力量

容許軸向力：平行於軸心的力量

容許徑和容許軸向力與減速機的出力軸轉速及施力點的距離相關。

轉速越快，容許徑向力會降低。

負載的距離越遠，容許的徑向力也隨之降低。



* Permitted Radial Load :The force exerts perpendicular to output shaft

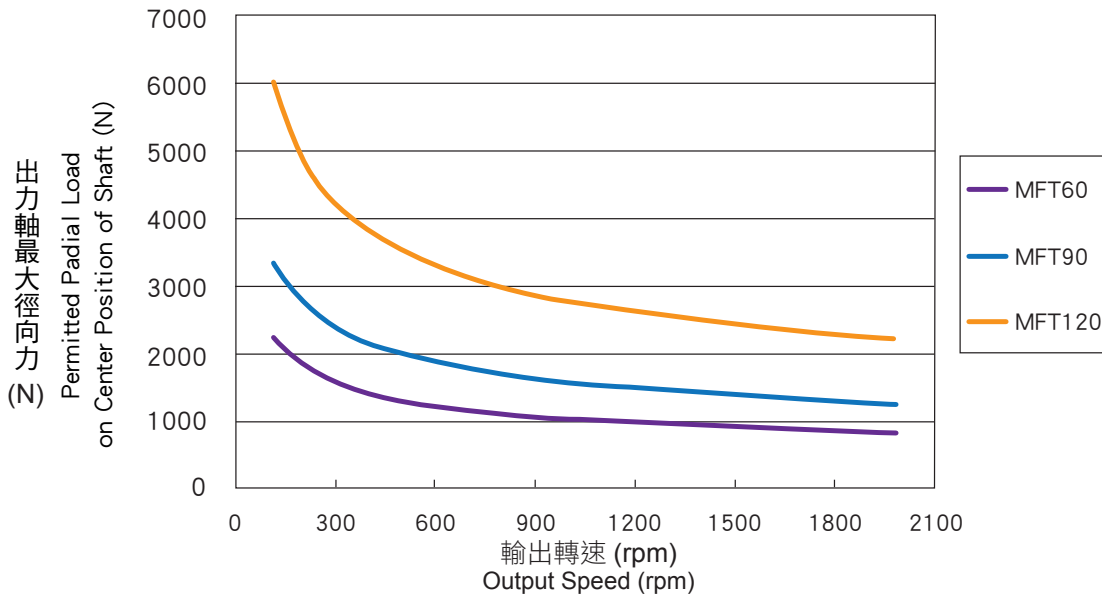
* Permitted Axil Load :The force exerts parallel to output shaft

The radial & axial loads are related to the speed and application point on output shaft.

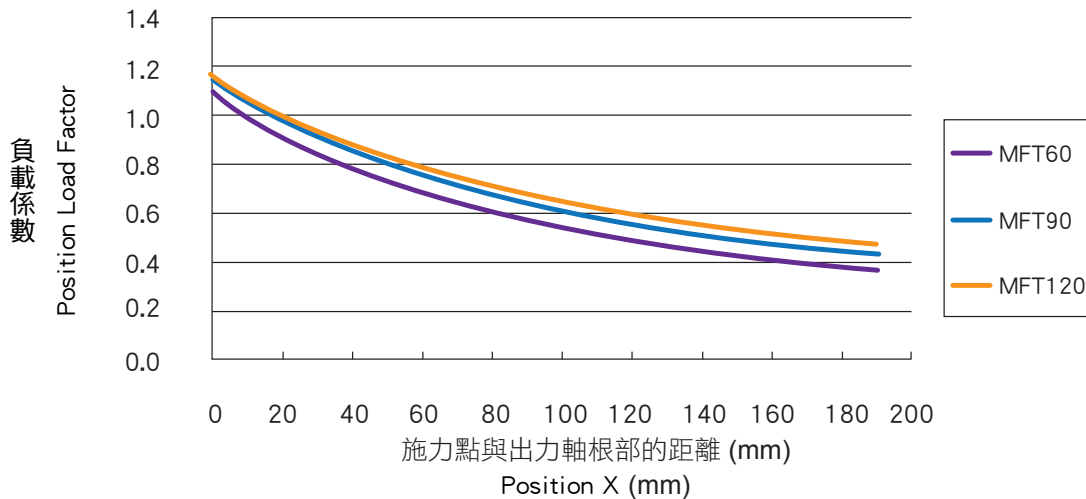
The radial & axial loads are decreased when the output shaft runs faster.

The radial & axial loads are decreased when the application points away from root segment of shaft.

徑向負荷表
Radial Load Chart (MFT)



負載係數表
Load Factor Chart (MFT)



減速比選用 . 轉動慣量表

RATIO SELECTION TABLE & MOMENT OF INERTIA TABLE

MFT系列比數組成 MFT Series Ratio Composition Table			
減速機型號 Model	減速機各段可選擇基本減速比數 Ratio Table of Each Stage		
	零段式減速比 Stage (L0)	一段式減速比 Stage (L1)	二段式減速比 Stage (L2)
MFT60	1	3, 4, 5, 7, 10	15, 20, 25, 30, 35, 40, 50, 70, 100
MFT90	1	3, 4, 5, 7, 10	15, 20, 25, 30, 35, 40, 50, 70, 100
MFT120	1	3, 4, 5, 7, 10	15, 20, 25, 30, 35, 40, 50, 70, 100

MFT系列減速機轉動慣量總表 MFT Series Moment of inertial Table						
	段數 Stage	減速比 Ratio	MFT60	MFT90	MFT120	
	轉動慣量 Moment of inertial J1 (kg*cm ²)	L0	1	0.274	2.14	6.05
L1		3	0.14	1.25	3.28	
		4	0.11	1.14	2.89	
		5	0.10	1.11	2.81	
		6	—	—	—	
		7	0.10	1.10	2.76	
		8	—	—	—	
		9	—	—	—	
		10	0.10	1.10	2.74	
L2		15	0.10	1.10	1.11	2.81
		20			1.11	2.81
		25			1.11	2.81
		30			1.10	2.74
		35			1.10	2.76
		40			1.10	2.74
		50			1.10	2.74
		70			1.10	2.74
		100			1.10	2.74

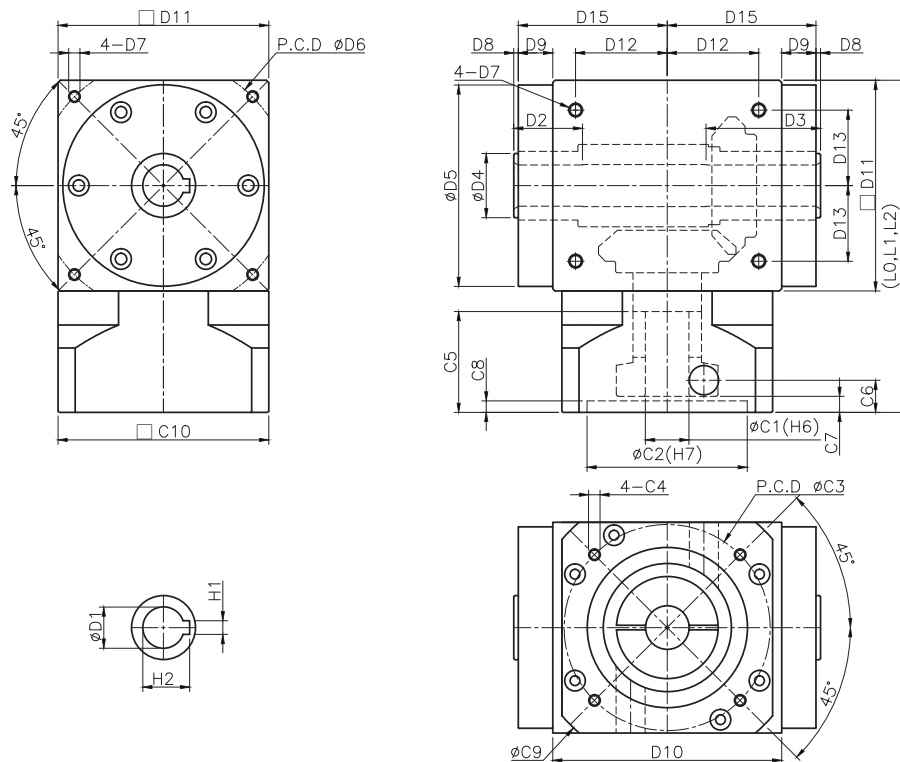
MFT系列技術規格表 Technical Specifications						
規格 Specification	單位 Unit	段數 Stage	比數 Ratio	MFT60	MFT90	MFT120
額定輸出扭矩 T_{2N} Normal Output Torque	Nm	L0	1	15	58	114
	Nm	L1	3~10			
	Nm	L2	15~100			
急停扭矩 Emergency Stop Torque	Nm	L0, L1, L2	1~100	1.5 倍額定輸出扭矩 1.5 Times of Nominal Output Torque		
額定輸入轉速 n_{1N} Normal Input Speed	rpm	L0, L1, L2	1~100	3,000	3,000	3,000
最大輸入轉速 n_{1B} Max. Input Speed	rpm	L0, L1, L2	1~100	6,000	6,000	6,000
標準背隙 Standard Backlash	arcmin	L0	1	≤ 6	≤ 6	≤ 6
		L1	3~10	≤ 8	≤ 8	≤ 8
		L2	15~100	≤ 10	≤ 10	≤ 10
容許徑向力 F_{rB} Max. Radial Load	N	L0	1	810	1,220	2,080
	N	L1, L2	3~100	1,108	1,688	2,900
容許軸向力 F_{aB} Max. Axial Load	N	L0	1	381	610	1,040
	N	L1, L2	3~100	584	844	1,450
保固期 Warranty period	Y	L0, L1, L2	1~100	1 年 / 1 year		
全負載時效率 η Efficiency of Full Load	%	L0	1	≥ 98%		
		L1	3~10	≥ 95%		
		L2	15~100	≥ 92%		
淨重 Net Weight	kg	L0	中空軸 S0 S0 (Hollow)	1.85	4.29	9.05
			單邊軸 S1 S1 (Single-side shaft)	1.98	4.65	9.66
			雙邊軸 S2 S2 (Both-side shaft)	2	4.71	9.77
		L1	中空軸 S0 S0 (Hollow)	2.05	6.47	13.8
			單邊軸 S1 S1 (Single-side shaft)	2.18	6.83	14.41
			雙邊軸 S2 S2 (Both-side shaft)	2.2	6.89	14.52
		L2	中空軸 S0 S0 (Hollow)	2.35	7.6	16.4
			單邊軸 S1 S1 (Single-side shaft)	2.48	7.95	17.01
			雙邊軸 S2 S2 (Both-side shaft)	2.5	8.01	17.12
使用溫度 Operating Temp	°C	L0, L1, L2	1~100	-10°C ~+90°C		
潤滑 Lubrication		L0, L1, L2	1~100	鋰基複合全合成潤滑油脂 Lithium Complex Synthetic Lubrication		
安裝方向 Mounting Position		L0, L1, L2	1~100	任意方向 All Directions		
防護等級 Degree of Protection		L0, L1, L2	1~100	IP65		
噪音值 Running Noise (轉速 = 1500 rpm)	dBA	L0	1	≤ 73	≤ 76	≤ 79
	dBA	L1, L2	3~100	≤ 65	≤ 65	≤ 65

1. 上述單段減速機(未指定比數)相關規格，主要為使用各型號5比減速機所測得之數據。
2. 減速比：i = 輸入轉速/輸出轉速。
3. 背隙值：為在2%額定輸出扭矩下測試所得之數據。
4. 最大徑向力及最大軸向力：施力於出力軸中心位置，週期負載時間50%，轉速100rpm，條件下所測得之數據。
5. 運轉負載週期<60%狀況下，平均使用壽命如列表數據值；負載週期≥60%之連續運轉狀況下，平均使用壽命可能會降低至正常值的50%以下。
6. 噪音值：距離1公尺，空載運轉，額定輸入轉速，條件下所測得之數據。

1. Above relative specifications of each model most are measured on 5 : 1 gear ratio
2. Ratios : i = Nin / Nout
3. Backlash : Measured on 2% of nominal output torque
4. Max. Radial and Axial Load : Applied to the output shaft center, and 50% of duty time and at 100 rpm
5. Duty Cycle < 60%, Average Lifetime = List Value; Duty Cycle ≥ 60%, Average Lifetime < 50% List value
6. Noise Level : Numeric measured on idle running in 1m distance, and at nominal input speed

尺寸圖

DRAWING & DEMENSION



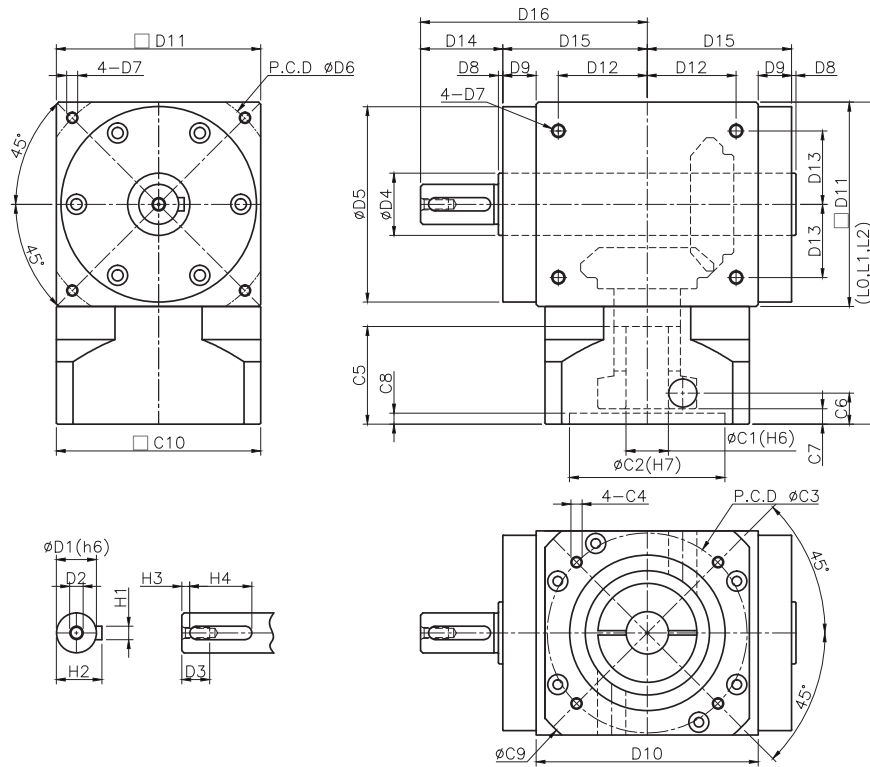
(單位 : mm)
(Unit : mm)

尺寸 Size	MFT60-S0	MFT90-S0	MFT 120-S0
ØD1	13	18	22
D2	30	30	35
D3	30	50	55
ØD4	20	28	35
ØD5	62	88	108
ØD6	76	110	145
D7	M4x0.7P	M6x1.0P	M8x1.25P
D8	2	2	2
D9	13	15	15
D10	70	100	126
D11	62	92	120
D12	25	40	50
D13	25	33	42
D15	48	65	78
H1	5	6	6
H2	15.3	20.8	24.8
L0 零段 (stage 0)	101.5	141	198
L1 一段 (stage 1)	130	185.5	254
L2 二段 (stage 2)	146	213	287.2
ØC1	6-14	14-19	16-24
ØC2	50	70	110
ØC3	70	90	145
C4	M5x0.8P(MAX)	M6x1.0P(MAX)	M8x1.25P(MAX)
C5	33	39	65
C6	13	15	28.5
C7	7	7	20
C8	4	5	7
ØC9	80	120	161
C10	60	92	120

* 註 : C1-C6 為標準品最大尺寸，為公制標準馬達連接板尺寸，尺寸依搭配的馬達而改變。如超出尺寸屬特殊規格請與我司聯絡。

* Note : C1-C6 are metric standard specific dimensions of motor. Please contact us at vgm@vgmgear.com for other specification or customize product..

尺寸圖 DRAWING & DEMENSION



(單位：mm)
(Unit：mm)

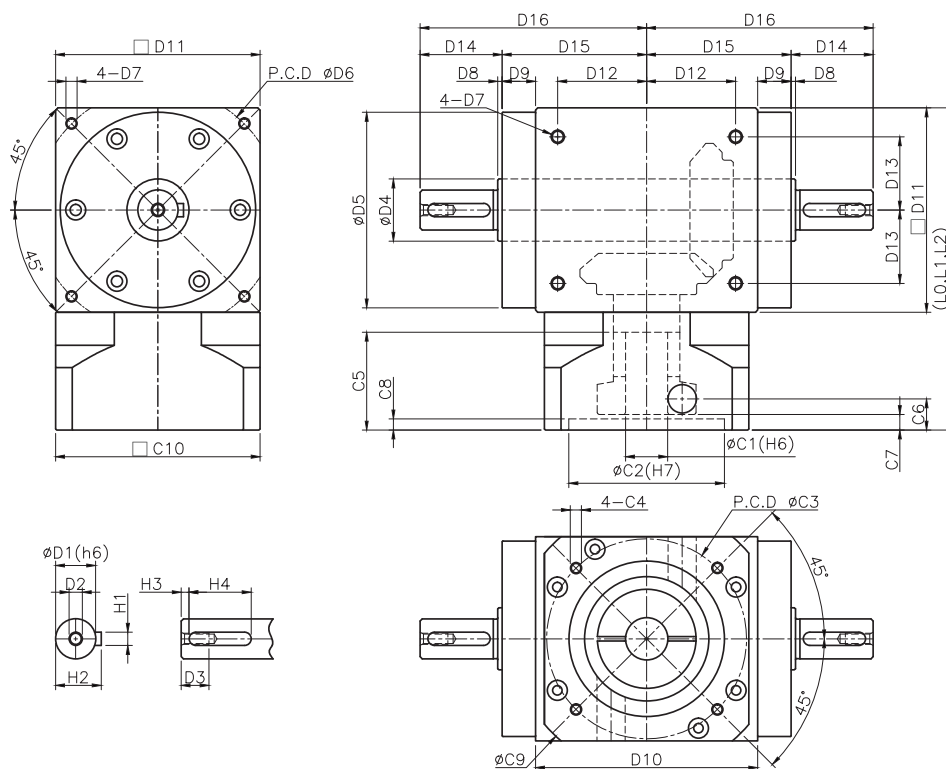
尺寸 Size	MFT60 -S1	MFT90-S1	MFT120-S1
ØD1	13	18	22
D2	M4x0.7P	M5x0.8P	M8x1.25P
D3	12	14.5	22
ØD4	20	28	35
ØD5	62	88	108
ØD6	76	110	145
D7	M4x0.7P	M6x1.0P	M8x1.25P
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D14	22	37	42
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H1	5	6	6
H2	15	20.5	24.5
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尺寸圖

DRAWING & DEMENSION



(單位：mm)
(Unit：mm)

尺寸 Size	MFT60-S2	MFT90-S2	MFT120-S2
ØD1	13	18	22
D2	M4x0.7P	M5x0.8P	M8x1.25P
D3	12	14.5	22
ØD4	20	28	35
ØD5	62	88	108
ØD6	76	110	145
D7	M4x0.7P	M6x1.0P	M8x1.25P
D8	2	2	2
D9	13	15	15
D10	70	100	126
D11	62	92	120
D12	25	40	50
D13	25	33	42
D14	22	37	42
D15	48	65	78
D16	70	102	120
H1	5	6	6
H2	15	20.5	24.5
H3	2	3.5	5
H4	16	25	25
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C5	33	39	65
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VIGOR GEAR MACHINERY CO, Ltd

聚盛工業股份有限公司

24872 新北市五股區中興路一段1巷12弄25號

Address: No.25, Alley. 12, Lane. 1, Sec. 1, Zhongxing Rd., Wugu
Dist., New Taipei City 24872, Taiwan (R.O.C.)

TEL: +886-2- 8982-0709

FAX: +886-2- 8988-2565

Email: vgm@vgmgear.com

Website: [http://: www.vgmgear.com/](http://www.vgmgear.com/)

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