

MF-S 系列

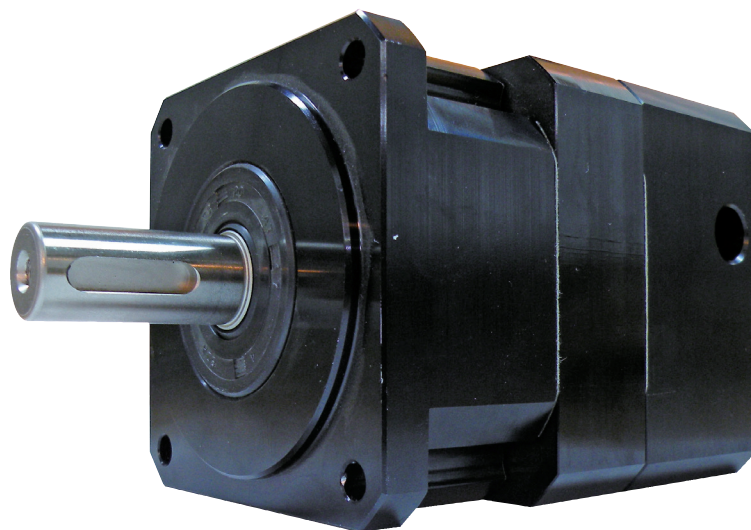
強力型減速機

Compact & Powerful Planetary Gearbox

- 一段背隙：6-14 弧分
- 減數比：3-100
- 一段負載時效率達 96%
- 1 Stage-Minimal backlash: 6-14 arc-min
- Ratio: 3-100
- 1 Stage-High efficiency: 96%

機型代碼

MF-S SERIES ORDERING CODE



MF070S

- L1

- 10

-

Motor

型號
Model

MF070S
MF090S
MF120S
MF150S
MF180S

段數
Stage

L1: (Ratio 3-10)
L2: (Ratio 9-100)
L3: (Ratio 27-1000)

馬達
Motor

馬達廠牌、型號
Motor Brand & Model

減速比
Ratio

請參閱目錄第 26 頁，減速比組成表。
Please refer to page 26 " Ratio Composition Table

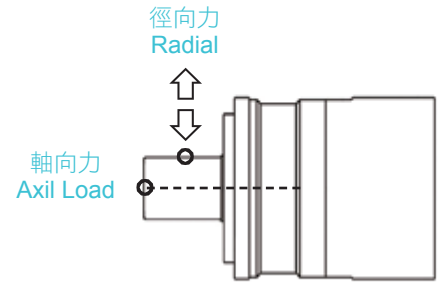
容許徑向力: 垂直於軸心的力量

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。



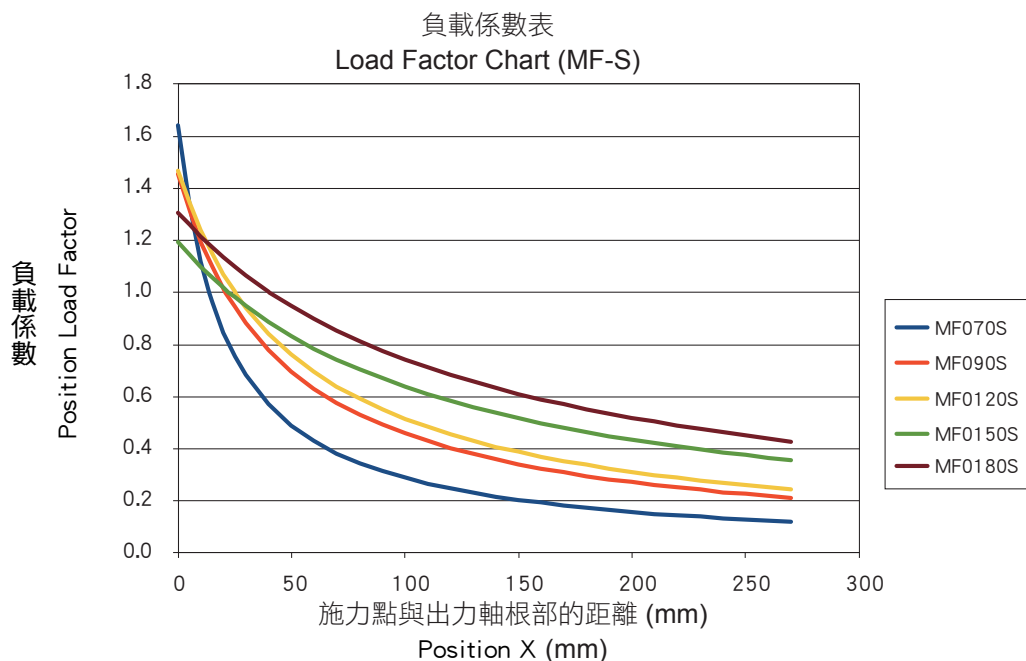
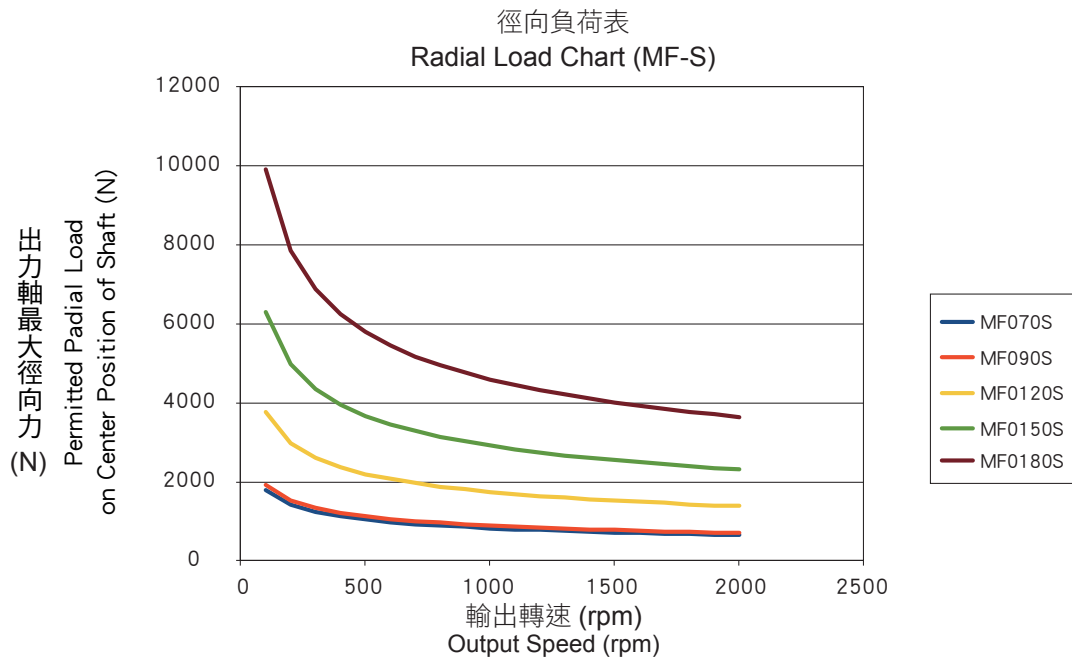
* Permitted Radial Load :The force exerts perpendicular to output shaft

* Permitted Axial 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.



馬達功率、減速比選用

SELECTION REFERENCE TABLE & RATIO SELECTION TABLE

		MF-S系列減速機選用參考表(依據伺服馬達輸出功率選擇) MF-S Series Selection Reference (Based on The Motor Output Torque)																			
		比數 Ratio																			
馬達功率 Motor Output Power	減速機型號 Model	1/3	1/4	1/5	1/7	1/9	1/10	1/12	1/15	1/16	1/20	1/21	1/25	1/28	1/30	1/35	1/40	1/49	1/50	1/70	1/100
400W	MF070S	●	●	●	●	●		●	●	●	●	●	●	●		●					
	MF090S	●	●	●	●	●		●	●	●	●	●	●	●		●		●			
500W	MF090S	●	●	●	●	●		●	●	●	●	●	●	●		●					
	MF120S	●	●	●	●	●		●	●	●	●	●	●	●		●		●			●
750W	MF090S	●	●	●	●	●		●	●	●	●	●	●	●							
	MF120S	●	●	●	●	●		●	●	●	●	●	●	●		●		●			
1KW	MF120S	●	●	●	●	●		●	●	●	●	●	●	●		●		●			
	MF150S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1.5KW	MF120S	●	●	●	●	●		●	●	●	●	●	●	●		●					
	MF150S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2.0KW	MF150S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	MF180S	●		●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●
3.5KW	MF150S	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
	MF180S	●		●	●	●	●	●	●		●	●	●	●	●	●	●	●	●		
5.0KW	MF150S	●	●	●	●	●	●	●	●	●	●	●									
	MF180S	●		●	●	●	●	●	●		●	●	●	●	●	●	●				
7.0KW	MF180S	●		●	●	●	●	●	●		●	●	●	●	●						

備註：

1. 可以依馬達輸出功率選用該比數有 '●' 記號之減速機型號。
2. 當應用於扭矩或慣性矩較大之場合，必須選用較大一級減速機。
3. 上表未列出之比數，如有需要請洽詢業務工程師。

Note：

1. By the motor output power, select the suitable gearbox models with '●' mark in above table.
2. When applied to a bigger torque or torsional rigidity mechanism, we suggest using a larger size gearbox.
3. Please contact us at vgm@vgmgear.com for ratios not being listed in above table.

MF-S 系列比數選擇 MF-S Series Ratio Composition Table			
減速機各段可選擇基本減速比數 Ratio Table of each Stage			
減速機型號 Model	一段式比數 Stage (L1)	二段式比數 Stage (L2)	三段式比數 Stage (L3)
MF070S	3, 4, 5, 7	9, 12, 15, 16, 20, 21, 25, 28, 35, 49	27, 36, 45, 48, 60, 75, 80, 100
MF090S	3, 4, 5, 7	9, 12, 15, 16, 20, 21, 25, 28, 35, 49	27, 36, 45, 48, 60, 75, 80, 100
MF120S	3, 4, 5, 7	9, 12, 15, 16, 20, 21, 25, 28, 35, 49	27, 36, 45, 48, 60, 75, 80, 100
MF150S	3, 4, 5, 7, 10	9, 12, 15, 16, 20, 21, 25, 28, 30, 35, 40, 49, 50, 70	27, 36, 45, 48, 60, 75, 80, 90, 100
MF180S	3, 4, 5, 7, 10	9, 12, 15, 20, 21, 25, 28, 30, 35, 40, 49, 50, 70, 100	27, 36, 45, 48, 60, 75, 80, 90

MF-S 系列轉動慣量表								
	段數	比數	MF070S	MF090S	MF120S	MF150S	MF180S	
轉動慣量表 kg x cm ²	L1	3	0.12	1.05	2.38	10.76	26.48	
		4	0.09	0.94	1.99	8.89	21.51	
		5	0.08	0.91	1.91	8.55	20.6	
		6	—	—	—	—	—	
		7	708	0.89	1.86	8.42	20.26	
		8	—	—	—	—	—	
		9	—	—	—	—	—	
		10	—	—	—	8.38	20.15	
		L2	15	0.08	0.89	1.87	8.51	20.5
			20	0.08	0.89	1.87	8.51	20.5
	25		0.08	0.89	1.87	8.51	20.5	
	30		—	—	—	8.51	20.5	
	35		0.08	0.88	1.84	8.4	20.2	
	40		—	—	—	8.37	20.13	
	45		—	—	—	—	—	
	50		—	—	—	8.37	20.13	
	60		—	—	—	—	—	
	70		—	—	—	8.37	20.13	
	80	—	—	—	—	—		
	90	—	—	—	—	—		
100	—	—	—	8.37	20.13			

MF-S Series Reducer Moment of Inertia Table								
	Stage	Ratio	MF070S	MF090S	MF120S	MF150S	MF180S	
Moment of inertia Table kg x cm ²	L1	3	0.12	1.05	2.38	10.76	26.48	
		4	0.09	0.94	1.99	8.89	21.51	
		5	0.08	0.91	1.91	8.55	20.6	
		6	—	—	—	—	—	
		7	708	0.89	1.86	8.42	20.26	
		8	—	—	—	—	—	
		9	—	—	—	—	—	
		10	—	—	—	8.38	20.15	
		L2	15	0.08	0.89	1.87	8.51	20.5
			20	0.08	0.89	1.87	8.51	20.5
	25		0.08	0.89	1.87	8.51	20.5	
	30		-	—	—	8.51	20.5	
	35		0.08	0.88	1.84	8.4	20.2	
	40		—	—	—	8.37	20.13	
	45		—	—	—	—	—	
	50		—	—	—	8.37	20.13	
	60		—	—	—	—	—	
	70		—	—	—	8.37	20.13	
	80	—	—	—	—	—		
	90	—	—	—	—	—		
100	—	—	—	8.37	20.13			

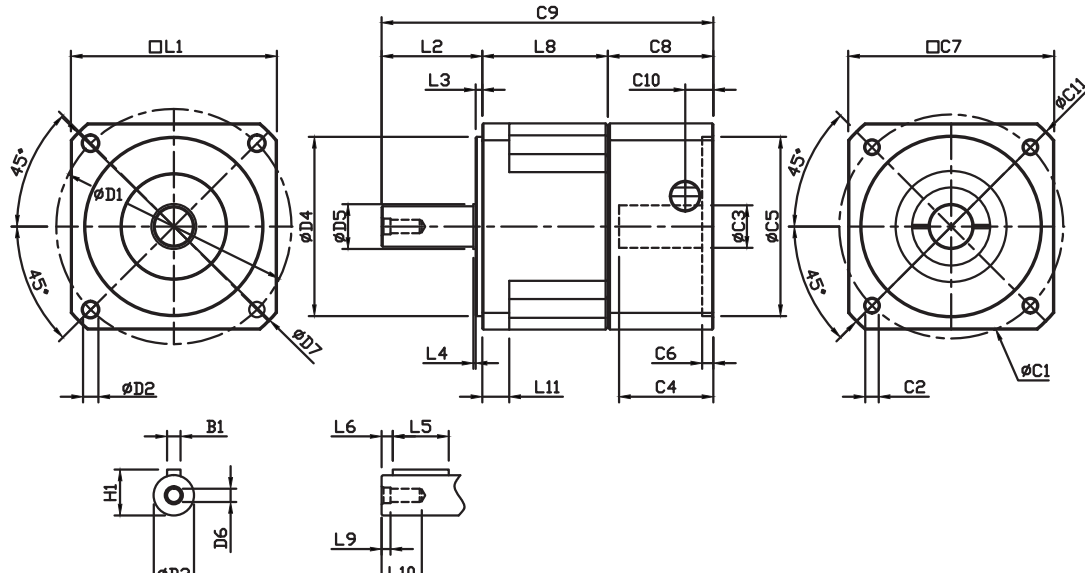
技術規格表

TECHNICAL SPECIFICATIONS TABLE

MF-S 系列技術規格 Technical Specifications								
規格 Specification	單位 Unit	段數 Stage	比數 Ratio	MF070S	MF090S	MF120S	MF150S	MF180S
額定輸出扭矩 T_{2N} Normal Output Torque	Nm	L1	3	25	80	190	450	1,050
			4	34	90	230	520	1,120
			5	30	86	220	500	1,100
			7	25	82	200	480	1,080
			10	—	—	—	450	1,050
		L2	9	25	80	200	480	1,080
			15	25	80	200	480	1,080
			20	34	90	230	520	1,120
			25	30	86	220	500	1,100
			35	30	86	220	500	1,100
			40	—	—	—	450	1,120
		L3	49	25	80	200	480	1,080
			70	—	—	—	450	1,080
			100	—	—	—	—	1,050
			27	34	90	230	520	1,120
			36	25	80	200	480	1,080
			45	25	80	200	480	1,080
			48	25	80	200	480	1,080
60	25	80	200	480	1,080			
75	25	80	200	480	1,080			
80	34	90	230	520	1,120			
100	34	90	230	500	—			
急停扭矩 Emergency Stop Torque	Nm	L1, L2, L3	3-100	2.5倍額定輸出扭矩 2.5 Times of Nominal Output.				
額定輸入轉速 n_{IN} Normal Input Speed	rpm	L1, L2, L3	3-100	3,000	3,000	2,000	2,000	2,000
最大輸入轉速 n_{IB} Max. Input Speed	rpm	L1, L2, L3	3-100	4,500	4,500	3,000	3,000	3,000
標準背隙 Standard Backlash	arcmin	L1	3-10	≤10-15	≤10-15	≤10-15	≤8-12	≤6-10
		L2	9-100	≤13-18	≤13-18	≤13-18	≤10-14	≤10-14
扭轉剛性 Torsional Rigidity	Nm/arcmin	L1, L2, L3	3-100	4	13	35	64	135
容許徑向力 F_{aB} Max. Radial Load	N	L1, L2, L3	3-100	1,790	1,920	3,770	6,290	9,910
容許軸向力 F_{rB} Max. Axial Load	N	L1, L2, L3	3-100	930	1,010	2,075	3,210	5,800
平均使用壽命 Average Life Time	hr	L1, L2, L3	3-100	20,000				
全負載時效率 η Efficiency of Full Load	%	L1	3-10	≥ 96%				
		L2	9-100	≥ 93%				
		L3	27-100	≥ 90%				
淨重 Net Weight	kg	L1	3-10	1.5	3.3	6.0	15.2	37.0
		L2	9-100	1.9	4.2	7.2	16.2	46.4
		L3	27-100	2.2	6.8	8.2	18.5	
使用溫度 Operating Temp	°C	L1, L2, L3	3-100	- 10°C ~ + 90°C				
潤滑 Lubrication		L1, L2, L3	3-100	全合成潤滑油脂 Lithium Complex Synthetic Lubrication				
安裝方向 Mounting Position		L1, L2, L3	3-100	任意方向 All Directions				
噪音值 Running Noise	dBA	L1, L2, L3	3-100	≤70	≤70	≤70	≤74	≤74

- 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。
- 減速比：i = 輸入轉速/輸出轉速。
- 背隙值：為在2%額定輸出扭矩下測試所得之數據。
- 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。
- 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。
- 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。

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



(單位：mm)
(Unit：mm)

尺寸Size	MF070S	MF090S	MF 120S	MF 150S	MF 180S	
D1	75	105	130	165	215	
D2	5.5	6.8	8.7	10.5	13	
D3	14	18	24	38(40)	50	
D4	60	80	110	130	160	
D5	15	20	35	40	60	
D6	M5×0.8P	M6×1P	M8×1.25P	M12×1.75P	M12×1.75P	
D7	90	120	150	190	240	
L1	70	92	115	142	182	
L2	32.5	45	56	75.5	95	
L3	3	3	3.5	4.5	10	
L4	1	1	1	3	2	
L5	20	25	40	45	70	
L6	2	5	5	5	6	
L8	一段 (stage 1)	49.6	56	62.1	103.1	127
	二段 (stage 2)	72	84	90.1	138.6	209
	三段 (stage 3)	93.8	112	118.1	174	291
L9	3	4	4	8	10	
L10	14	18	20	32	34	
L11	10	12	13.6	18.4	26	
C1	70	100	100	165	200	
C2	M5×0.8P(MAX)	M6×1P(MAX)	M8×1.25P(MAX)	M10×1.5P(MAX)	M12×1.75P(MAX)	
C3	6.35~14	14~19	16~24	22~42	35~42	
C4	32.5	42.1	47.4	69.5	82.5	
C5	50	80	80	130	114.3	
C6	4	5	5	15	11	
C7	70	92	115	142	182	
C8	47.5	47.1	52	86.9	110	
C9	一段 (stage 1)	129.6	148.1	170.1	265.5	332
	二段 (stage 2)	152	176.1	198.1	300.5	414
	三段 (stage 3)	173.8	204.1	226.1	336.4	496
C10	12	12.5	14.5	27	30	
C11	90	120	150	190	240	
B1	5	6	8	10(12)	14	
H1	16	20.5	27	41	53.5	

* 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.

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