

Planetary Gear Reducer

遊星式減速機

Characteristics of Planetary Speed Reducer

High torque and impact resistance: The method of motion of a planetary gear structure is different from traditional parallel gears. Traditional gears rely on a small number of contact points between two gears to squeeze as the driving force, where all the loadings are concentrated on a few contacting surfaces, making the gears easy to wear and crack. While the planetary speed reducer has six gear contacting surfaces with a larger area that can distribute the loading evenly over 360 degrees. Multiple gear surfaces share the instantaneous impact loading evenly which make them more resistant to the impact from higher torque. The housing and bearing parts will not be damaged.



遊星齒輪減速機之特性

高扭力、耐衝擊：行星齒輪之結構異同於傳統平行齒輪之運動方式。傳統齒輪僅依靠兩個齒輪間極少數點接觸面擠壓驅動，所有負荷集中於相接觸之少數齒輪面，容易產生齒輪之磨擦與斷裂。而行星減速機具有六個更大面積齒輪接觸面360度均布負荷，多個齒輪面共同均勻承受瞬間衝擊負荷，使其更能承受較高扭力之衝擊，本體及各軸承零件亦不因高負荷而損壞破裂。如需更大扭力與壽命請選用賽驅樂減速機。賽驅樂減速機的擺線齒嚙合實現了多齒嚙合高達67%，避免斷齒的可能性及超過500%的抗過載能力。

Transmission Principle of Planetary Speed Reducer 傳動原理

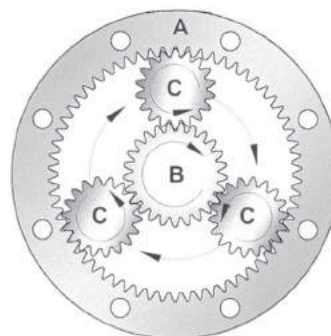
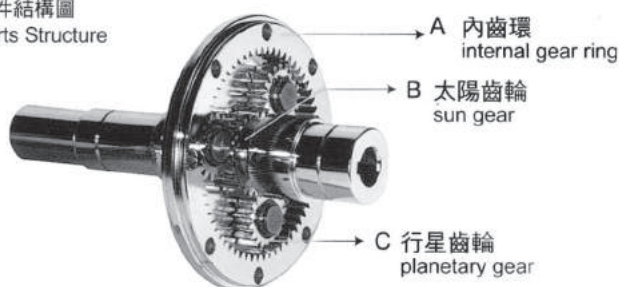
The transmission structure of the planetary speed reducer has the highest geared speed reducer efficiency among all the combinations. Its basic transmission structure includes: (A) Internal Gear Ring (B) Sun Gear (C) Planetary Gear, Staging Gear, Planetary Carrier, Output Shaft. The driving power through direct connection or link initiates the sun gear. The sun gear then drives the planetary gears assembled with the external gear ring to operate. The whole set of planetary gear system revolves on its own axis and along the external gear ring where the output shaft connected to the planetary carrier achieves the goal of speed reduction. A higher reduction ratio can be achieved by doubling the multiple staged gears and planetary gears.

遊星式減速機之傳動結構為目前齒輪減速機效率最高之組合，其基本傳動結構為：

(A) 內齒輪環 (B) 太陽齒輪 (C) 行星齒輪(組合於行星架)

驅動源以直結或連接方式啟動太陽齒輪，太陽齒輪將組合於行星架上之行星齒輪帶動運轉，行星架連結出力軸輸出達到減速目的。更高減速比則藉由多組階段齒輪與行星齒輪倍增累計而成。

零件結構圖
Parts Structure



Planetary Gear Reducer Series 遊星式減速機系列

■ Principle of planetary gear speed reduction and calculation of gear ratio

Simple calculation method for the gear ratio of a planetary speed reducer, when step gear or sun gear (B) rotates at a certain speed. Planet gear (C) travel along the internal gear ring (A) in a full round and return to the origin, where the rotation speed is the reduction ratio of that single interval. Because the internal gear ring is common to the same model number, the value of the speed reduction ratio is determined by the tooth number of the sun gear. The lower the tooth number of the sun gear, the higher the speed reduction ratio (Figure 1). On the contrary, the higher the tooth number of the sun gear, the lower the speed reduction ratio (Figure 2). The actual calculation method is to divide the tooth number of the internal gear ring by the tooth number of the sun gear. The number derived added to the fixed coefficient 1 is then the speed reduction ratio. Multiply the ratios of each single step to obtain the total reduction ratio of that machine.

■ 遊星式齒輪減速原理與比速計算

遊星式減速機比數之簡易計算方法：當階段齒輪或太陽齒輪 (B) 轉動一定轉速，行星齒輪 (C) 繞行內齒輪環 (A) 一圈回到原點，其轉速即為該單段減速比。由於同型號之內齒輪環皆為共用，故減速比之高低係由太陽齒輪齒數決定，太陽齒輪數越少減速比越高 (圖一)，反之太陽齒輪數越多，則減速比越小 (圖二)。其實際計算方式為內齒環齒數除以太陽齒輪齒數；所得數字加固定係數1，該值即為減速比。各單段比數相成即為該機總比數。

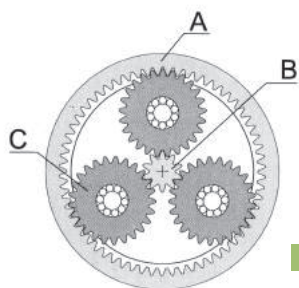


Figure 1. 圖一

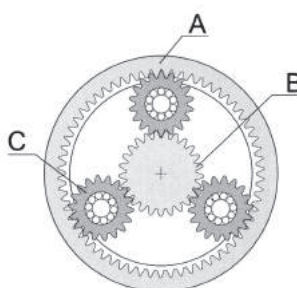


Figure 2. 圖二

■ Dismantling of the planetary speed reducer and collocation of transmission components

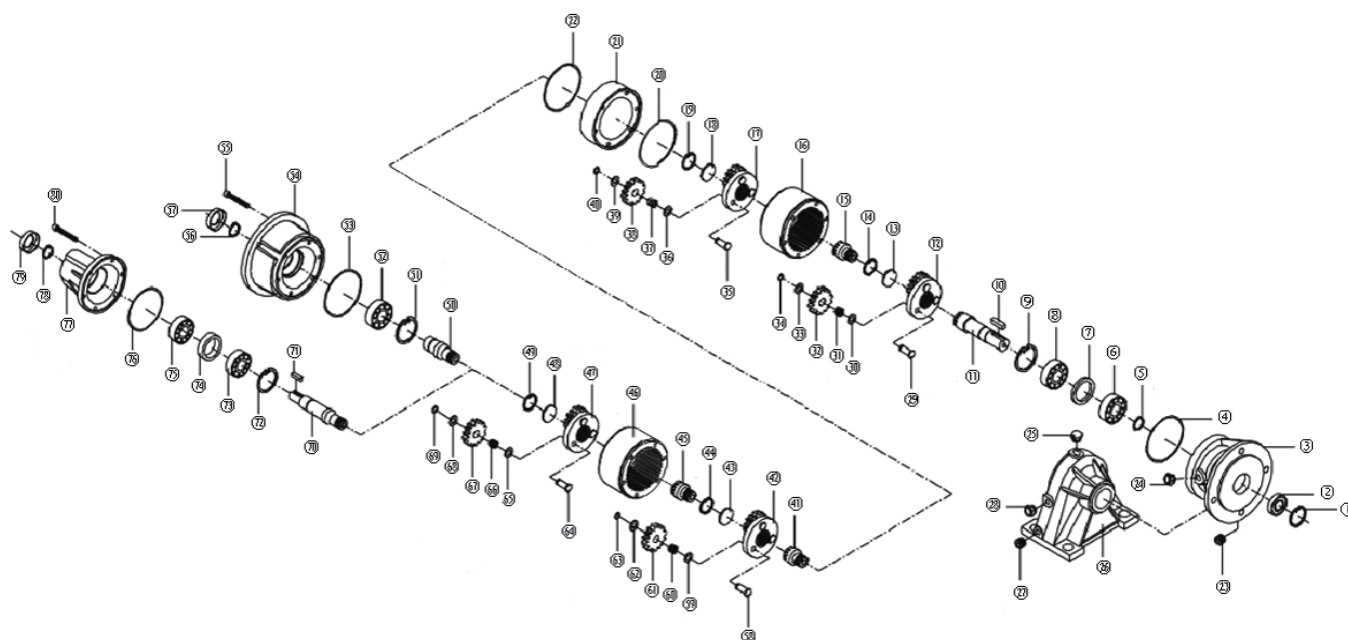
The planetary rack of the planetary speed reducer is floating and embedded inside the speed reducer. Only partial removal of some of the parts is required, when disassembling parts and changing ratios for the replacement. There is no need to disassemble the major portion which could cause damage to the parts. The installing flange is a direct connection which is applied to international standard specifications IEC. Customers can select different brands by themselves or install the motor of specific requirements for protective grades. Our company also provides specific sizes including servo motor, DC, hydraulic, pneumatic turbine speed variator etc.

■ 行星減速機之拆解與傳動元件之搭配

行星減速機之行星架採用浮動式內置於減速機中，拆解零件及更換比數時只需局部取出部份零件更換，無須大部拆解造成零件受損。安裝法蘭採用國際標準規格直接式連結，客戶可自行選用不同廠牌或特殊防護等級需求之馬達安裝。本公司亦提供各種特殊連結法蘭，如伺服、直流、油壓、氣動、蝸輪、變速機等。



Construction Drawing 構造圖



Item 項次	Component 零組件		Item 項次	Component 零組件		Item 項次	Component 零組件		Item 項次	Component 零組件	
1	Shaft-Circlip	C 型 扣 環	21	Relay cover	中 繼 蓋	41	Sun gear	太 陽 齒	61	Planetary gear	遊 星 齒
2	Oil seal	油 封	22	O-ring	O 型 環	42	Planetary plate	遊 星 盤	62	Washer	墊 片
3	VF/VS Housing	立 式 本 體	23	Drain plug	排 油 栓	43	Stopping Plate	止 推 銅 片	63	Shaft-Circlip	C 型 扣 環
4	O-ring	O 型 環	24	Oil Gauge	油 鏡	44	Shaft-Circlip	C 型 扣 環	64	Planetary shaft	遊 星 軸
5	Shaft-Circlip	C 型 扣 環	25	Oil Plug	油 塞	45	Sun gear	太 陽 齒	65	Washer	墊 片
6	Bearing	軸 承	26	HF/HS Housing	臥 式 本 體	46	Two section inner tooth ring	雙段內齒盤	66	Needle bearing	針狀軸承
7	Collar	套 環	27	Drain plug	排 油 栓	47	Planetary plate	遊 星 盤	67	Planetary gear	遊 星 齒
8	Bearing	軸 承	28	Oil lens	油 鏡	48	Stopping Plate	止 推 銅 片	68	Washer	墊 片
9	Shaft-Circlip	C 型 扣 環	29	Output Shaft	遊 星 軸	49	Shaft-Circlip	C 型 扣 環	69	Shaft-Circlip	C 型 扣 環
10	key	平 鍵	30	Washer	墊 片	50	Bore input shaft	直結入立軸	70	Input shaft	入 力 軸
11	Output Shaft	出 力 軸	31	Needle bearing	針 狀 軸 承	51	Shaft-Circlip	C 型 扣 環	71	Input key	入 力 鍵
12	Planetary plate	遊 星 盤	32	Planetary gear	遊 星 齒	52	Bearing	軸 承	72	Shaft-Circlip	C 型 扣 環
13	Stopping Plate	止 推 銅 片	33	Washer	墊 片	53	O-ring	O 型 環	73	Input bearing	入 力 軸 承
14	Shaft-Circlip	C 型 扣 環	34	Shaft-Circlip	C 型 扣 環	54	Input flange	入 力 法 蘭	74	Bearing washer	軸 承 墊 圈
15	Sun gear	太 陽 齒	35	Planetary Shaft	遊 星 軸	55	Input bolt	入 力 螺 栓	75	Input bearing	入 力 軸 承
16	Two section inner tooth ring	雙段內齒環	36	Washer	墊 片	56	Shaft-Circlip	C 型 扣 環	76	O-ring	O 型 環
17	Planetary plate	遊 星 盤	37	Needle bearing	針 狀 軸 承	57	Input oil seal	入 力 油 封	77	Input cover	入 力 蓋
18	Stopping Plate	止 推 銅 片	38	Planetary gear	遊 星 齒	58	Output shaft	遊 星 軸	78	Shaft-Circlip	C 型 扣 環
19	Shaft-Circlip	C 型 扣 環	39	Washer	墊 片	59	Washer	墊 片	79	Input oil seal	入 力 油 封
20	O-ring	O 型 環	40	Shaft-Circlip	C 型 扣 環	60	Needle bearing	針 狀 軸 承	80	Input bolt	入 力 螺 栓

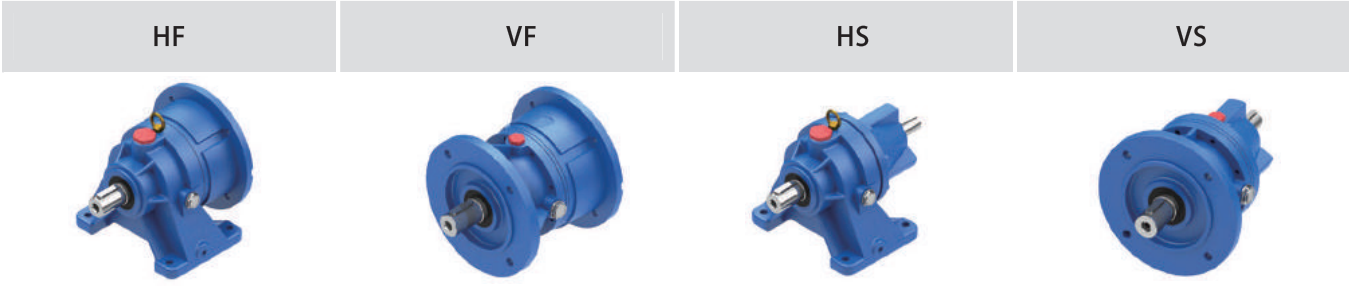
How to order 選型

HF 280 – L1 – 3.48 – 3 – H1 – TL

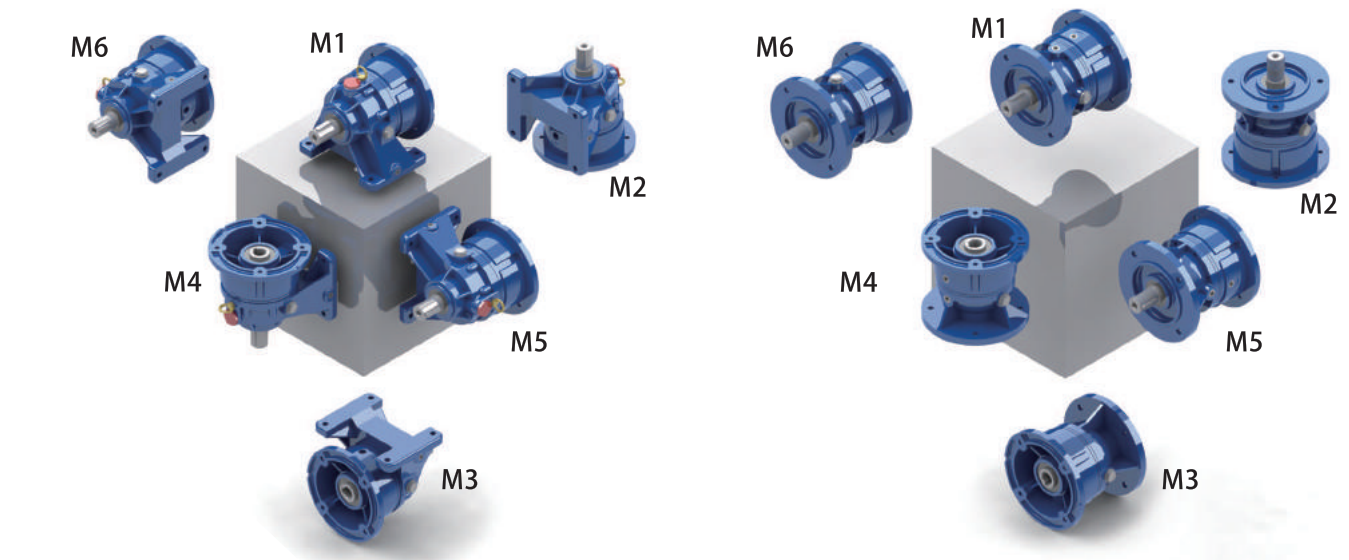
①	②	③	④	⑤	⑥	⑦ Option 選配
①	Model 型式	HF: Foot Mount Reducer with IEC Adaptor VF: Flange Mount Reducer with IEC Adaptor HS: Foot Mount Reducer with Input Shaft VS: Flange Mount Reducer with Input Shaft		腳座型附入力法蘭 法蘭型附入力法蘭 腳座型附入力軸 法蘭型附入力軸		
②	Frame Size 型號	200,280,300,300H,301,301H,303,305,307,309,313,315,319 Refer to page 118~120. 參考第 118~120 頁				
③	Stage 段數	L1, L2, L3, L4, L5				
④	Ratio 減速比	3.48,4.26,5.77,7.20,⋯ Refer to page 118~120. 參考第 118~120 頁				
⑤	Horse Power 馬力	02,05,1,2,3,5,8,10⋯ Refer to page 118. 參考第 118 頁				
	Servo Motor 伺服	Refer to page 125. 參考第 125 頁				
⑥	Operation Direction 使用方向	M1,M2,M3,⋯Refer to page 117. 參考第 117 頁				
⑦	Suffix 特殊 (Option 選配)	TL: Torque Limiter 扭力限制器 DC: DC motor 直流馬達 SM: Smart monitoring 智能監控		WG: Worm Gear 蝸輪減速機 BG: Bevel Gear 轉向機		

※ Dimensions and specifications in the catalog are subject to change without notice. 尺寸及規格若有變動，將不另行通知。

Model 型式 ①



Operation Direction 使用方向 ⑥



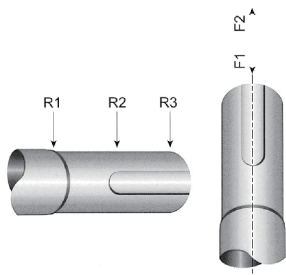
Model Selection Table 機型選用表

Input RPM 入力轉速 1750/1420 (60Hz/50Hz)

Input HP 輸入馬力 (kW)	Ratio Range 減速比範圍 ④	Frame Size 型號 ②③	Input HP 輸入馬力 (kW)	Ratio Range 減速比範圍 ④	Frame Size 型號 ②③	Input HP 輸入馬力 (kW)	Ratio Range 減速比範圍 ④	Frame Size 型號 ②③
1/4 (0.2)	1/3.57~1/2937	200-L1,L2,L3,L4	7 1/2 (5.5)	1/3.48~1/30.7	300-L1,L2	30 (22)	1/3.6~1/38.4	305-L1,L2
1/2 (0.37)	1/3.57~1/102	200-L1,L2,L3		1/33.3~1/63	301-L2,L3		1/46	307-L2
	1/104~1/217	280-L3		1/72~1/96.7	303-L3		1/50~1/146	309-L3
	1/220~1/494	300-L3,L4		1/104~1/177	305-L3		1/151~1/381	313-L3,L4
	1/493~1/949	301-L4		1/188~1/492	307-L3,L4		1/397~1/667	315-L4
	1/651~1/1325	303-L4		1/546	309-L4	40 (30)	1/677~1/1100	317-L4
1 (0.75)	1/1327~1/2243	305-L4	10 (7.5)	1/586~1/2186	313-L4		1/3.43~1/46	307-L1,L2
	1/3.48~1/116	280-L1,L2,L3		1/3.48~1/41.5	301-L1,L2		1/50~1/100	309-L3
	1/131~1/239	300-L3		1/43~1/63	303-L2,L3		1/105~1/252	313-L3
	1/299~1/616	301-L3,L4		1/72~1/141	305-L3		1/268~1/603	315-L4
	1/618~1/756	303-L4		1/146~1/234	307-L3		1/606~1/927	317-L4
	1/801~1/1278	305-L4	15 (11)	1/270~1/546	309-L3,L4	50 (37)	1/3.43~1/46	307-L1,L2
2 (1.5)	1/1433~1/2422	307-L4		1/586~1/2186	313-L4		1/50~1/80	309-L3
	1/3.48~1/63	280-L1,L2,L3		1/3.48~1/7.2	301-L1		1/92~1/208	313-L3
	1/52~1/177	300-L3		1/7.5~1/38.4	303-L1,L2		1/209~1/397	315-L3,L4
	1/192~1/239	301-L3		1/43~1/79	305-L2,L3		1/398~1/711	317-L4
	1/258~1/276	303-L3		1/80~1/192	307-L3	75 (55)	1/3.43~1/63	309-L1,L2,L3
3 (2.2)	1/311~1/618	305-L3,L4	20 (15)	1/199~1/234	309-L3		1/71~1/151	313-L3
	1/669~1/1591	307-L4		1/252~1/990	313-L3,L4		1/165~1/268	315-L3,L4
	1/1721~1/2422	309-L4		1/1015~1/1892	315-L4		1/283~1/511	317-L4
	1/3.48~1/30.7	280-L1,L2		1/3.6~1/30.7	303-L1,L2	100 (75)	1/3.43~1/6.23	309-L1
	1/33.3~1/85	300-L2,L3		1/35.8~1/63	305-L2,L3		1/6.5~1/92	313-L1,L2,L3
	1/87.2~1/177	301-L3		1/77~1/125	307-L3		1/97.2~1/179	315-L3
5 (3.7)	1/221	303-L3	25 (18.5)	1/139~1/221	309-L3	150 (110)	1/210~1/364	317-L3,L4
	1/230~1/321	305-L3		1/252~1/649	313-L3,L4		1/4.14~1/61	313-L1,L2,L3
	1/336~1/1022	307-L3,L4		1/667~1/1110	315-L4		1/69.3~1/148	315-L3
	1/1106~1/1591	309-L4		1/1306~1/1572	317-L4		1/149~1/213	317-L3
	1/1817~1/2186	313-L4		1/3.6~1/38.4	305-L1,L2	200 (150)	1/4.09~1/97.2	315-L1,L2,L3
	1/3.48~1/18.1	280-L1,L2		1/46	307-L2		1/105~1/177	317-L3
7.5 (5.5)	1/20~1/52	300-L2,L3	30 (22)	1/50~1/177	309-L3	250 (180)	1/4.09~1/149	317-L1,L2,L3
	1/63~1/85	301-L3		1/181~1/381	313-L3,L4			
	1/90~1/141	303-L3		1/397~1/751	315-L4			
	1/150~1/221	305-L3		1/781~1/1324	317-L4			
	1/227~1/546	307-L3,L4						
	1/603~1/1022	309-L4						
10 (7.5)	1/1035~1/2186	313-L4						

Maximum Load of Radial and Axis (kg)

徑向負荷與推力最大容許值(kg)



Frame Size 型號	R1	R2	R3	F1	F2
200	1000	600	420	950	600
280	1360	800	560	1100	800
300	1900	1100	750	2000	1500
300H	1900	1100	750	2000	1500
301	1900	1100	750	2000	1500
301H	1900	1100	750	2000	1500
303	6000	3800	2800	5500	4400
305	6000	3800	2800	5500	4400
307	9500	4500	3500	9000	5000
309	17000	11000	8000	10000	6000
313	32000	21000	16000	20000	15000

Performances Table 性能表

Input RPM 入力轉速 1750rpm

Frame Size 型號 ②	L1 ③		L2 ③				L3 ③						L4 ③						MAX. Output Torque 最大 承受 扭力 (kg.m)	
	1 Stage Ratio 一段 減速比 ④	(A) Max. HP	2 Stage Ratio 二段 減速比 ④	(A) Max. HP	2 Stage Ratio 二段 減速比 ④	(A) Max. HP	3 Stage Ratio 三段 減速比 ④	(A) Max. HP	3 Stage Ratio 三段 減速比 ④	(A) Max. HP	3 Stage Ratio 三段 減速比 ④	(A) Max. HP	4 Stage Ratio 四段 減速比 ④	(A) Max. HP	4 Stage Ratio 四段 減速比 ④	(A) Max. HP	4 Stage Ratio 四段 減速比 ④	(A) Max. HP		
200	3.57 C	0.5	12.75 C	0.5	50.3 C	0.5	45.5 C	0.5	165 A	0.25	313 B	0.25	311 B	0.25	855 A	0.25	1809 C	0.25	A	28
	4.94 A	0.5	17.6 A	0.5	54.16 C	0.5	63 C	0.5	173 A	0.25	356.4 C	0.25	364 B	0.25	954 B	0.25	1897 C	0.25		
	5.78 B	0.5	20.6 B	0.5	66.4 C	0.5	73.7 C	0.5	179.5 C	0.25	383.9 C	0.25	426 B	0.25	1000 A	0.25	2060 C	0.25		
	7.09 C	0.5	24.4 A	0.5	87.8 C	0.5	87.1 A	0.5	193.1 B	0.25	433.7 B	0.25	504 A	0.25	1116 B	0.25	2143 B	0.25	B	20
	9.37 C	0.5	25.3 C	0.5	-	-	90.4 C	0.5	202.4 A	0.25	471 C	0.25	522 C	0.25	1227 A	0.25	2219 C	0.25		
	-	-	28.5 A	0.5	-	-	101.9 A	0.5	228.7 A	0.25	507.5 C	0.25	596 A	0.25	1322 A	0.25	2326 C	0.25		
	-	-	33.4 C	0.5	-	-	120.5 A	0.25	236.9 B	0.25	622.5 C	0.25	641 C	0.25	1435 C	0.25	2527 C	0.25	C	17
	-	-	35 A	0.5	-	-	125 B	0.25	248.3 B	0.25	822.6 C	0.25	697 B	0.25	1546 C	0.25	2937 C	0.25		
	-	-	41 B	0.5	-	-	141 A	0.25	267.5 A	0.25	-	-	723 B	0.25	1679 C	0.25	4754 B	0.25		
	-	-	46.3 B	0.5	-	-	146.3 B	0.25	290.5 C	0.25	-	-	815 B	0.25	1760 C	0.25	7708 C	0.25		
280	3.48 C	5	12.1 C	5	-	-	52 A	2	131 A	0.5	-	-	403 B	0.25	669 B	0.25	1299 C	0.25	A	60
	4.26 A	5	14.8 A	5	-	-	63 A	2	141 A	0.5	-	-	446 A	0.25	754 A	0.25	1383 B	0.25		
	5.77 B	5	18.1 A	5	-	-	69 B	1	144 A	0.5	-	-	454 A	0.25	818 A	0.25	1590 A	0.25		
	7.20 C	5	20 B	3	-	-	77 A	1	177 A	0.5	-	-	494 B	0.25	834 B	0.25	1726 B	0.25	B	45
	-	-	24.6 A	3	-	-	85 A	1	192 B	0.5	-	-	503 B	0.25	940 A	0.25	2154 B	0.25		
	-	-	30.7 A	3	-	-	87.2 C	1	221 A	0.5	-	-	557 A	0.25	1021 A	0.25	2687 C	0.25		
	-	-	33.3 B	2	-	-	104 A	1	239 B	0.25	-	-	604 A	0.25	1041 B	0.25	-	-	C	35
	-	-	41.5 B	2	-	-	106 A	1	299 B	0.25	-	-	616 B	0.25	1108 B	0.25	-	-		
	-	-	51.8 C	1	-	-	116 A	1	373 C	0.25	-	-	628 C	0.25	1274 A	0.25	-	-		
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
300 300H	3.48 C	7.5	12.1 C	7.5	51.8 C	3	52 A	5	116 A	2	299 B	0.5	403 B	0.5	628 C	0.25	1108 B	0.25	A	120
	4.26 A	7.5	14.8 A	7.5	-	-	63 A	3	131 A	2	373 C	0.5	446 A	0.5	669 B	0.25	1274 A	0.25		
	5.77 B	7.5	18.1 A	7.5	-	-	69 B	3	141 A	2	-	-	454 A	0.5	754 A	0.25	1299 C	0.25		
	7.20 C	7.5	20 B	7.5	-	-	77 A	3	144 A	2	-	-	494 B	0.5	818 A	0.25	1383 B	0.25	B	90
	-	-	24.6 A	7.5	-	-	85 A	3	177 A	2	-	-	503 B	0.25	834 B	0.25	1590 A	0.25		
	-	-	30.7 A	7.5	-	-	87.2 C	2	192 B	1	-	-	557 A	0.25	940 A	0.25	1726 B	0.25		
	-	-	33.3 B	5	-	-	104 A	2	221 A	1	-	-	604 A	0.25	1021 A	0.25	2154 B	0.25	C	70
	-	-	41.5 B	5	-	-	106 A	2	239 B	1	-	-	616 B	0.25	1041 B	0.25	2687 C	0.25		
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
301 301H	3.48 C	15	12.1 C	10	51.8 C	7.5	52 A	7.5	116 A	3	299 B	1	403 B	1	628 C	0.5	1108 B	0.25	A	240
	4.26 A	15	14.8 A	10	-	-	63 A	7.5	131 A	3	373 C	1	446 A	1	669 B	0.5	1274 A	0.25		
	5.77 B	15	18.1 A	10	-	-	69 B	5	141 A	3	-	-	454 A	1	754 A	0.5	1299 C	0.25		
	7.20 C	15	20 B	10	-	-	77 A	5	144 A	3	-	-	494 B	1	818 A	0.5	1383 B	0.25	B	185
	-	-	24.6 A	10	-	-	85 A	5	177 A	3	-	-	503 B	1	834 B	0.5	1590 A	0.25		
	-	-	30.7 A	10	-	-	87.2 C	3	192 B	2	-	-	557 A	1	940 A	0.5	1726 B	0.25		
	-	-	33.3 B	10	-	-	104 A	3	221 A	3	-	-	604 A	1	1021 A	0.5	2154 B	0.25	C	155
	-	-	41.5 B	10	-	-	106 A	3	239 B	2	-	-	616 B	1	1041 B	0.5	2687 C	0.25		
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
303	3.60 C	20	12.5 C	20	43 B	10	53 A	10	112 C	5	190 C	3	412 B	1	962 B	0.5	1989 B	0.25	A	320
	4.25 A	20	15.3 A	20	44.6 C	10	63 A	10	124 C	5	221 B	3	456 B	1	1024 B	0.5	2244 D	0.25		
	5.33 B	20	18.1 A	20	54 D	10	72 A	7.5	131 B	5	230 C	2	524 D	1	1084 D	0.5	2799 D	0.25		
	6.20 C	20	20.8 A	20	-	-	77 A	7.5	134 B	5	258 C	2	558 B	1	1177 B	0.5	-	-	B	280
	7.50 D	20	22.7 B	20	-	-	79 B	7.5	136 C	5	276 B	2	618 B	1	1278 B	0.5	-	-		
	-	-	24.5 A	20	-	-	85 A	7.5	141 A	5	311 C	1	654 D	1	1327 D	0.5	-	-		
	-	-	26.4 D	20	-	-	90 B	7.5	150 C	3	321 C	1	696 B	1	1440 D	0.25	-	-	C	245
	-	-	30.7 B	20	-	-	96.7 B	7.5	163 B	3	388 D	1	756 B	1	1594 B	0.25	-	-		
	-	-	35.8 C	15	-	-	104 A	5	177 B	3	-	-	801 D	0.5	1656 D	0.25	-	-		
	-	-	38.4 B	15	-	-	107 B	5	184 C	3	-	-	869 D	0.5	1798 D	0.25	-	-	D	210

※ (A) Stands for maximum input Horse Power (HP). (A)表示為最大輸入馬力。

※ Please determine your ratio and output torque to match each code of gear stages A,B and C and find different maximum torque and input capacity.
依您需要的減速比及轉矩來對照每一段減速比的 A,B,C 最大受力值，及最大輸入馬力。

Performances Table 性能表

Input RPM 入力轉速 1750rpm

Frame Size 型號 ②	L1 ③			L2 ③				L3 ③						L4 ③						MAX. Output Torque 最大 承受 扭力 (kg.m)	
	1 Stage Ratio 一段 減速比 ④	(A) Max. HP	2 Stage Ratio 二段 減速比 ④	(A) Max. HP	2 Stage Ratio 二段 減速比 ④	(A) Max. HP	3 Stage Ratio 三段 減速比 ④	(A) Max. HP	3 Stage Ratio 三段 減速比 ④	(A) Max. HP	3 Stage Ratio 三段 減速比 ④	(A) Max. HP	4 Stage Ratio 四段 減速比 ④	(A) Max. HP	4 Stage Ratio 四段 減速比 ④	(A) Max. HP	4 Stage Ratio 四段 減速比 ④	(A) Max. HP			
305	3.60 C	30	12.5 C	30	43 B	20	53 A	20	112 C	10	190 C	5	412 B	3	962 B	1	1989 B	0.5	A	630	
	4.25 A	30	15.3 A	30	44.6 C	20	63 A	20	124 C	10	221 B	5	456 B	2	1024 B	1	2244 D	0.5			
	5.33 B	30	18.1 A	30	54 D	15	72 A	15	131 B	10	230 C	3	524 D	2	1084 D	1	2799 D	0.5	B	550	
	6.20 C	30	20.8 A	30	-	-	77 A	15	134 B	10	258 C	3	558 B	2	1177 B	1	-	-			-
	7.50 D	30	22.7 B	30	-	-	79 B	15	136 C	10	276 B	3	618 B	2	1278 B	1	-	-	-	C	470
	-	-	24.5 A	30	-	-	85 A	10	141 A	10	311 C	3	654 D	1	1327 D	0.5	-	-	-		
	-	-	26.4 D	30	-	-	90 B	10	150 C	5	321 C	3	696 B	1	1440 D	0.5	-	-	-	D	410
	-	-	30.7 B	30	-	-	96.7 B	10	163 B	7.5	388 D	2	756 B	1	1594 B	0.5	-	-	-		
	-	-	35.8 C	30	-	-	104 A	10	177 B	7.5	-	-	801 D	1	1656 D	0.5	-	-	-		
-	-	38.4 B	30	-	-	107 B	10	184 C	5	-	-	869 D	1	1798 D	0.5	-	-	-			
307	3.43 C	50	12.3 C	50	46 C	50	43 A	20	125 B	20	202 B	10	396 A	7.5	848 C	3	1721 C	1	A	1525	
	4.09 A	50	14.7 A	50	-	-	50 A	20	139 C	15	221 A	10	455 A	7.5	906 A	3	1941 C	1			
	5.25 B	50	17.4 A	50	-	-	60 A	20	146 C	15	227 B	10	492 C	7.5	941 A	3	2002 C	1	B	1245	
	6.23 C	50	18.9 B	50	-	-	63 A	20	152 B	15	234 B	10	546 A	5	1022 A	3	2422 C	1			
	-	-	21.8 B	50	-	-	77 B	20	157 A	15	270 C	7.5	603 C	3	1106 C	2	-	-	-	C	1075
	-	-	25.4 C	50	-	-	80 B	20	163 C	15	278 C	7.5	669 A	3	1130 A	2	-	-	-		
	-	-	27.9 B	50	-	-	89 A	20	177 B	15	284 C	7.5	693 C	3	1149 C	2	-	-	-		
	-	-	30.7 C	50	-	-	93 A	20	188 B	15	336 C	7.5	755 A	3	1275 A	2	-	-	-		
	-	-	32.5 C	50	-	-	100 A	20	192 B	15	-	-	769 A	3	1433 C	2	-	-	-		
-	-	38 C	50	-	-	113 C	20	199 C	10	-	-	816 C	3	1591 A	2	-	-	-			
309	3.43 C	100	12.3 C	75	46 C	75	43 A	75	125 B	30	202 B	20	396 A	10	848 C	5	1721 C	2	A	2250	
	4.09 A	100	14.7 A	75	-	-	50 A	75	139 C	30	221 A	20	455 A	10	906 A	5	1941 C	2			
	5.25 B	100	17.4 A	75	-	-	60 A	75	146 C	30	227 B	15	492 C	10	941 A	5	2002 C	2	B	1800	
	6.23 C	100	18.9 B	75	-	-	63 A	75	152 B	25	234 B	15	546 A	10	1022 A	5	2422 C	2			
	-	-	21.8 B	75	-	-	77 B	50	157 A	25	270 C	10	603 C	5	1106 C	3	-	-	-	C	1600
	-	-	25.4 C	75	-	-	80 B	50	163 C	25	278 C	10	669 A	5	1130 A	3	-	-	-		
	-	-	27.9 B	75	-	-	89 A	40	177 B	25	284 C	10	693 C	5	1149 C	3	-	-	-		
	-	-	30.7 C	75	-	-	93 A	40	188 B	20	336 C	10	755 A	5	1275 A	3	-	-	-		
	-	-	32.5 C	75	-	-	100 A	40	192 B	20	-	-	769 A	5	1433 C	3	-	-	-		
-	-	38 C	75	-	-	113 C	30	199 C	20	-	-	816 C	5	1591 A	3	-	-	-			
313	4.14 A	150	14.2 A	150	28.3 B	150	51 A	150	110 A	75	181 C	50	335 A	30	706 B	15	1035 B	10	A	6500	
	5.40 B	150	16.9 A	150	33.6 B	150	61 A	150	120 B	75	193 A	50	381 A	30	793 A	15	1192 B	10			
	6.50 C	150	18.5 B	150	34.1 C	150	71 A	100	135 B	75	208 B	50	501 B	20	847 B	15	1393 A	10	B	5000	
	-	-	21.7 B	150	40.5 B	150	78 A	100	143 B	75	252 B	40	541 A	20	914 A	15	1817 B	10			
	-	-	25.8 B	150	-	-	92 A	100	151 B	75	303 C	30	586 A	20	956 B	15	2186 B	10	C	4100	
-	-	26.6 C	150	-	-	105 A	75	176 B	60	-	-	649 A	20	990 A	15	-	-	-			
315	4.09 A	200	16.9 A	200	40.5 C	200	58.1 A	200	148 B	150	-	-	268 B	75	667 B	30	1110 B	20	A	13149	
	5.25 B	200	21.7 B	200	-	-	69.3 A	200	165 A	100	-	-	309 A	50	704 C	25	1205 C	15			
	6.23 C	200	22.1 A	200	-	-	74.6 B	200	179 B	100	-	-	350 B	50	751 B	25	1318 B	15	B	10907	
	-	-	25.8 C	200	-	-	88.9 B	200	209 C	75	-	-	397 B	50	791 B	20	1564 C	15			
	-	-	26.6 A	200	-	-	97.2 B	200	212 B	75	-	-	448 A	40	856 B	20	1892 C	15	C	8053	
	-	-	28.3 B	200	-	-	105 A	150	252 C	75	-	-	498 B	40	904 B	20	-	-			-
	-	-	33.6 C	200	-	-	114 B	150	-	-	-	-	551 B	40	955 B	20	-	-	-		
-	-	34.1 B	200	-	-	135 B	150	-	-	-	-	603 B	40	1015 B	20	-	-	-			
317	4.09 A	250	16.7 A	250	-	-	69.3 A	250	210 C	150	-	-	283 A	100	711 B	50	-	-	A	19367	
	5.25 B	250	21.4 A	250	-	-	88.9 B	250	213 B	150	-	-	305 B	100	781 B	40	-	-			-
	6.23 C	250	25.4 A	250	-	-	90.3 A	250	252 C	100	-	-	364 B	100	870 B	40	-	-	-	B	16106
	-	-	27.5 B	250	-	-	105 A	250	-	-	-	-	398 B	75	927 B	40	-	-	-		
	-	-	32.7 C	250	-	-	114 B	250	-	-	-	-	464 B	75	1001 C	30	-	-	-	C	13761
	-	-	38.8 C	250	-	-	135 B	250	-	-	-	-	511 B	75	1100 B	30	-	-	-		
	-	-	-	-	-	-	149 B	250	-	-	-	-	554 B	50	1306 C	25	-	-	-		
-	-	-	-	-	-	166 A	200	-	-	-	-	606 B	50	1324 B	25	-	-	-			
							177 B	200					677 A	50	1572 C	20					

※ (A) Stands for maximum input Horse Power (HP). (A)表示為最大輸入馬力。

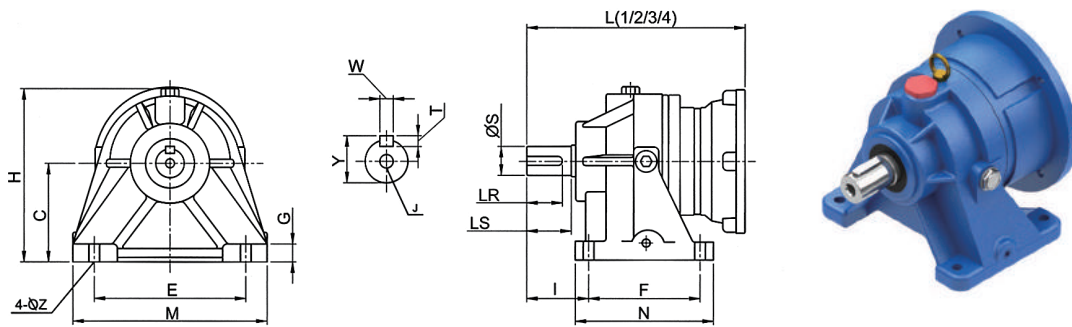
※ Please determine your ratio and output torque to match each code of gear stages A,B and C and find different maximum torque and input capacity.
依您需要的減速比及轉矩來對照每一段減速比的 ABC 最大受力值，及最大輸入馬力。

※ Example 例：型號 280，一段齒 5.77 速比 (B) 在對照右側最大受力表，其 (B) 最大受力為 45kg/m，最大可輸入馬力 3HP。

Frame Size: 280, Ratio 1/5.77, Gear Stage Code: (B), Maximum Torque: 45kg.m, Maximum Input HP: 3HP

HF Foot Mount Reducer with IEC Adaptor 腳座型附入力法蘭

Dimensions 外型尺寸表



Frame Size 型號	Foot Stock 腳座									Output Shaft 出力軸							Motor Frame 馬達型號 IEC
	C	E	F	G	H	I	M	N	Z	LR	LS	S	J	T	W	Y	
HF200	90	140	90	13	150	53	156	120	4-12	30	35	24	M8	7	8	27	63A-71B
HF280	110	170	125	20	185	69.5	210	155	4-12	40	50	32	M10	8	10	35	71B-90L
HF300	140	200	160	25	233	78	260	200	4-18	50	58	38	M12	8	10	41	71B-112M
HF300H	190	200	160	25	283	78	260	200	4-18	50	58	38	M12	8	10	41	132L
HF301	140	200	160	25	233	104	260	200	4-18	70	82	50	M16	9	14	53.5	90L-160L
HF301H	190	200	160	25	283	104	260	200	4-18	70	82	50	M16	9	14	53.5	132L-160M
HF303	210	300	250	35	332	128	370	305	4-22	80	95	55	M16	10	16	59	90L-160L
HF305	210	300	250	35	332	138	370	305	4-22	90	105	60	M20	11	18	64	90L-180L
HF307	250	365	356	45	425	175	445	436	4-28	110	130	80	PCD55x3xM12	14	22	85	100L-200L
HF309	250	365	356	45	425	215	445	436	4-28	150	170	90	PCD55x3xM12	14	25	95	100L-225S
HF313	280	457	470	40	503	291	560	590	4-28	180	200	120	PCD70x3xM16	18	32	127	180M-250S
HF315	315	508	412	40	586	425	620	556	4-33	200	250	150	PCD70x3xM16	20	36	158	180M-250S
HF317	415	700	450	40	763	567	850	650	4-33	250	260	200	PCD140x6xM16	25	45	210	180M-250S

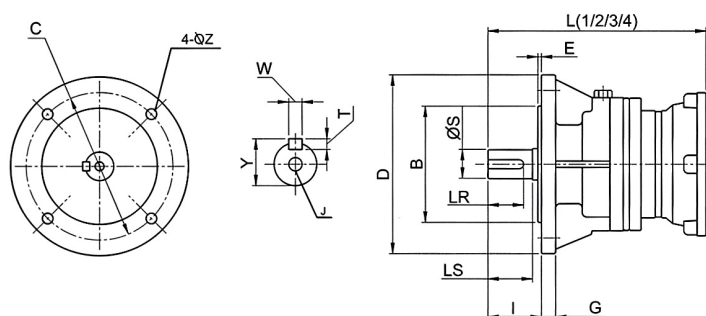
L Length Table 長度表 (mm)

1 Stage 一段式												
HP 馬力	HF200	HF280	HF300	HF300H	HF301	HF301H	HF303	HF305	HF307	HF309	HF313	
L1	1/4, 1/2	176	236	-	-	-	-	-	-	-	-	-
	1, 2	-	236	278	278	316	316	-	-	-	-	-
	3, 5	-	246	280	280	318	318	412.5	422.5	-	-	-
	7 1/2, 10	-	-	295	295	333	333	427.5	437.5	-	-	-
	15, 20	-	-	-	-	369	369	463.5	473.5	-	-	-
	25, 30	-	-	-	-	-	-	463.5	473.5	-	-	-
2 Stage 二段式												
HP 馬力	HF200	HF280	HF300	HF300H	HF301	HF301H	HF303	HF305	HF307	HF309	HF313	
L2	1/4, 1/2	206	270	308	308	-	-	-	-	-	-	-
	1, 2	-	270	308	308	358	358	437	447	-	-	-
	3, 5	-	280	318	318	360	360	439	449	639.5	679.5	-
	7 1/2, 10	-	-	-	-	375	375	454	464	654.5	694.5	-
	15, 20	-	-	-	-	423	423	490	500	690.5	730.5	-
	25, 30	-	-	-	-	-	-	-	-	690.5	730.5	-

※ L3,L4 refer to page 122. L3,L4 請參考第 122 頁。

VF Flange Mount Reducer with IEC Adaptor 法蘭型附入力法蘭

Dimensions 外型尺寸表



Frame Size 型號	Flange 法蘭面							Output Shaft 出力軸							Motor Frame 馬達型號 IEC
	B	C	D	E	G	I	Z	LR	LS	S	J	T	W	Y	
VF200	110	130	160	4	12	44	4-10	30	35	24	M8	7	8	27	63A-71B
VF280	130	165	200	4	16	60	4-12	40	50	32	M10	8	10	35	71B-90L
VF300	180	215	250	4	20	68	4-16	50	58	38	M12	8	10	41	71B-112M
VF300H	230	265	300	4	20	68	4-16	50	58	38	M12	8	10	41	132L
VF301	180	215	250	4	20	94	4-16	70	82	50	M16	9	14	53.5	90L-160M
VF301H	230	265	300	4	20	94	4-16	70	82	50	M16	9	14	53.5	132L-160M
VF303	250	300	350	4	20	104	4-19	80	95	55	M16	10	16	59	90L-160L
VF305	250	300	350	4	20	114	4-19	90	105	60	M20	11	18	64	90L-180L
VF307	350	400	450	5	27	140	4-22	110	130	80	PCD55x3xM12	14	22	85	100L-200L
VF309	350	400	450	5	27	180	4-22	150	170	90	PCD55x3xM12	14	25	95	100L-225S
VF313	450	500	550	5	32	214.5	8-28	180	200	120	PCD70x3xM16	18	32	127	180M-250S
VF315	460	600	640	13	30	499	24-22	200	250	150	PCD70x3xM16	20	36	158	180M-250S
VF317	700	800	900	10	50	642	24-32	250	260	200	PCD140x6xM16	25	45	210	180M-250S

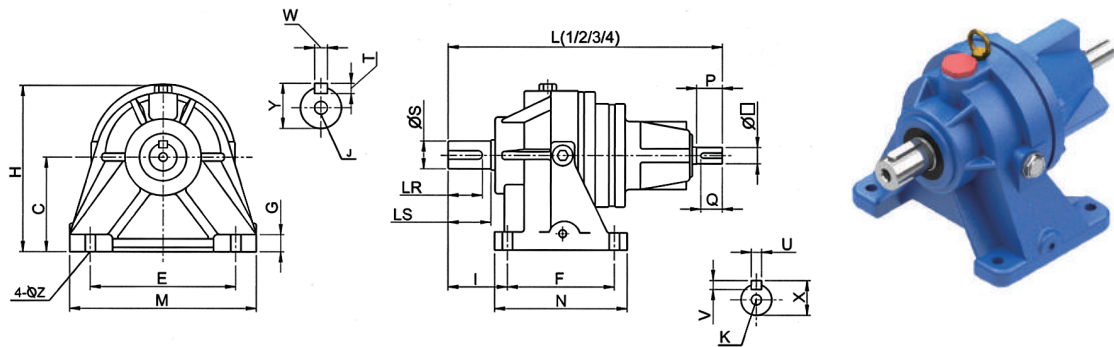
L Length Table 長度表 (mm)

3 Stage 三段式												
HP 馬力	VF200	VF280	VF300	VF300H	VF301	VF301H	VF303	VF305	VF307	VF309	VF313	
L3	1/4, 1/2	236	304	342	342	388	388	-	-	-	-	-
	1, 2	-	304	342	342	388	388	479	489	664	704	-
	3, 5	-	314	352	352	398	398	481	491	666	706	-
	7 1/2, 10	-	-	-	-	-	-	496	506	681	721	1051.5
	15, 20	-	-	-	-	-	-	544	554	717	757	1087.5
	25, 30	-	-	-	-	-	-	-	-	-	-	1087.5
4 Stage 四段式												
HP 馬力	VF200	VF280	VF300	VF300H	VF301	VF301H	VF303	VF305	VF307	VF309	VF313	
L4	1/4, 1/2	266	338	376	376	422	422	510	520	-	-	-
	1, 2	-	338	376	376	422	422	510	520	706	746	1061
	3, 5	-	348	386	386	432	432	520	530	708	748	1063
	7 1/2, 10	-	-	-	-	-	-	-	-	723	763	1078
	15, 20	-	-	-	-	-	-	-	-	771	811	1114
	25, 30	-	-	-	-	-	-	-	-	-	-	-

※ L1,L2 refer to page 121. L1,L2 請參考第 121 頁。

HS Foot Mount Reducer with Input Shaft 腳座型附入力軸

Dimensions 外型尺寸表



Frame Size 型號	Foot Stock 腳座									Output Shaft 出力軸						
	C	E	F	G	H	I	M	N	Z	LR	LS	S	J	T	W	Y
HS200	90	140	90	13	150	53	156	120	4-12	30	35	24	M8	7	8	27
HS280	110	170	125	20	185	69.5	210	155	4-12	40	50	32	M10	8	10	35
HS300	140	200	160	25	233	78	260	200	4-18	50	58	38	M12	8	10	41
HS300H	190	200	160	25	283	78	260	200	4-18	50	58	38	M12	8	10	41
HS301	140	200	160	25	233	104	260	200	4-18	70	82	50	M16	9	14	53.5
HS301H	190	200	160	25	283	104	260	200	4-18	70	82	50	M16	9	14	53.5
HS303	210	300	250	35	332	128	370	305	4-22	80	95	55	M16	10	16	59
HS305	210	300	250	35	332	138	370	305	4-22	90	105	60	M20	11	18	64
HS307	250	365	356	45	425	175	445	436	4-28	110	130	80	PCD55x3xM12	14	22	85
HS309	250	365	356	45	425	215	445	436	4-28	150	170	90	PCD55x3xM12	14	25	95
HS313	280	457	470	40	503	291	560	626.5	4-28	180	200	120	PCD70x3xM16	18	32	127
HS315	315	508	412	40	586	425	620	556	4*33	200	250	150	PCD70x3xM16	20	36	158
HS317	415	700	450	40	763	567	850	650	4*33	250	260	200	PCD140x6xM16	25	45	210

L Length Table 長度表 (mm)

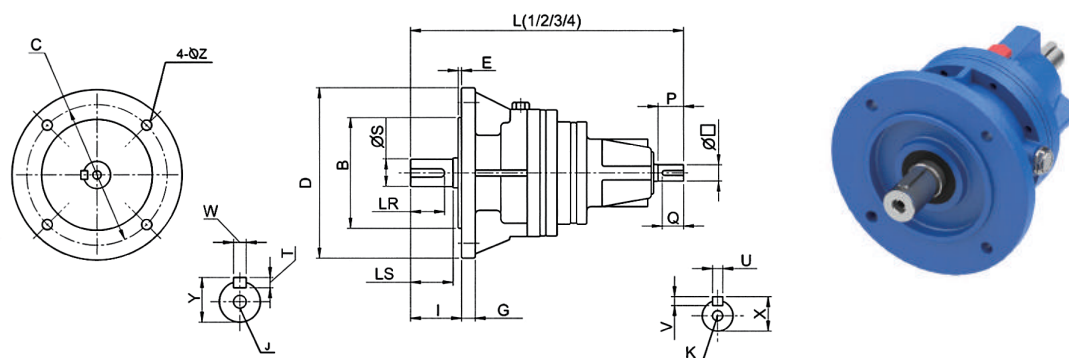
1 Stage 一段式								
Frame Size 型號	L1	Input Shaft 入力軸						
		O	P	Q	K	V	U	X
HS/VS200	252	19	30	20	M6	6	6	21.5
HS/VS280	297	24	40	35	M8	7	8	27
HS/VS300(H)	362	38	58	45	M10	8	10	41
HS/VS301(H)	400	38	58	45	M10	8	10	41
HS/VS303	502.5	50	82	70	M12	9	14	53.5
HS/VS305	512.5	50	82	70	M12	9	14	53.5
HS/VS307	705	60	105	90	M14	11	18	64
HS/VS309	745	60	105	90	M14	11	18	64
HS/VS313	1059	80	130	110	PCDx553xM12	14	22	85

2 Stage 二段式								
Frame Size 型號	L2	Input Shaft 入力軸						
		O	P	Q	K	V	U	X
HS/VS200	282	19	30	20	M6	6	6	22
HS/VS280	331	24	40	35	M8	7	8	27
HS/VS300(H)	370	24	40	35	M8	7	8	27
HS/VS301(H)	442	38	58	45	M10	8	10	41
HS/VS303	521	38	58	45	M10	8	10	41
HS/VS305	531	38	58	45	M10	8	10	41
HS/VS307	729	50	82	70	M12	9	14	54
HS/VS309	769	50	82	70	M12	9	14	54
HS/VS313	1103	60	105	90	M14	11	18	64
HS/VS315	1353	80	130	110	PCD55x3xM12	14	22	85

※ L3, L4 refer to page 124. L3、L4 請參考第 124 頁。

VS Flange Mount Reducer with Input Shaft 法蘭型附入力軸

Dimensions 外型尺寸表



Frame Size 型號	Flange 法蘭面							Output Shaft 出力軸						
	B	C	D	E	G	I	Z	LR	LS	S	J	T	W	Y
VS200	110	130	160	4	12	44	4-10	30	35	24	M8	7	8	27
VS280	130	165	200	4	16	60	4-12	40	50	32	M10	8	10	35
VS300	180	215	250	4	20	68	4-16	50	58	38	M12	8	10	41
VS300H	230	265	300	4	20	68	4-16	50	58	38	M12	8	10	41
VS301	180	215	250	4	20	94	4-16	70	82	50	M16	9	14	53.5
VS301H	230	265	300	4	20	94	4-16	70	82	50	M16	9	14	53.5
VS303	250	300	350	4	20	104	4-19	80	95	55	M16	10	16	59
VS305	250	300	350	4	20	114	4-19	90	105	60	M20	11	18	64
VS307	350	400	450	5	27	140	4-22	110	130	80	PCD55x3xM12	14	22	85
VS309	350	400	450	5	27	180	4-22	150	170	90	PCD55x3xM12	14	25	95
VS313	450	500	550	5	32	214.5	8-28	180	200	120	PCD70x3xM16	18	32	127
VS315	460	600	640	13	30	499	24-22	200	250	150	PCD70x3xM16	20	36	158
VS317	700	800	900	10	50	642	24-32	250	260	200	PCD140x6xM16	25	45	210

L Length Table 長度表 (mm)

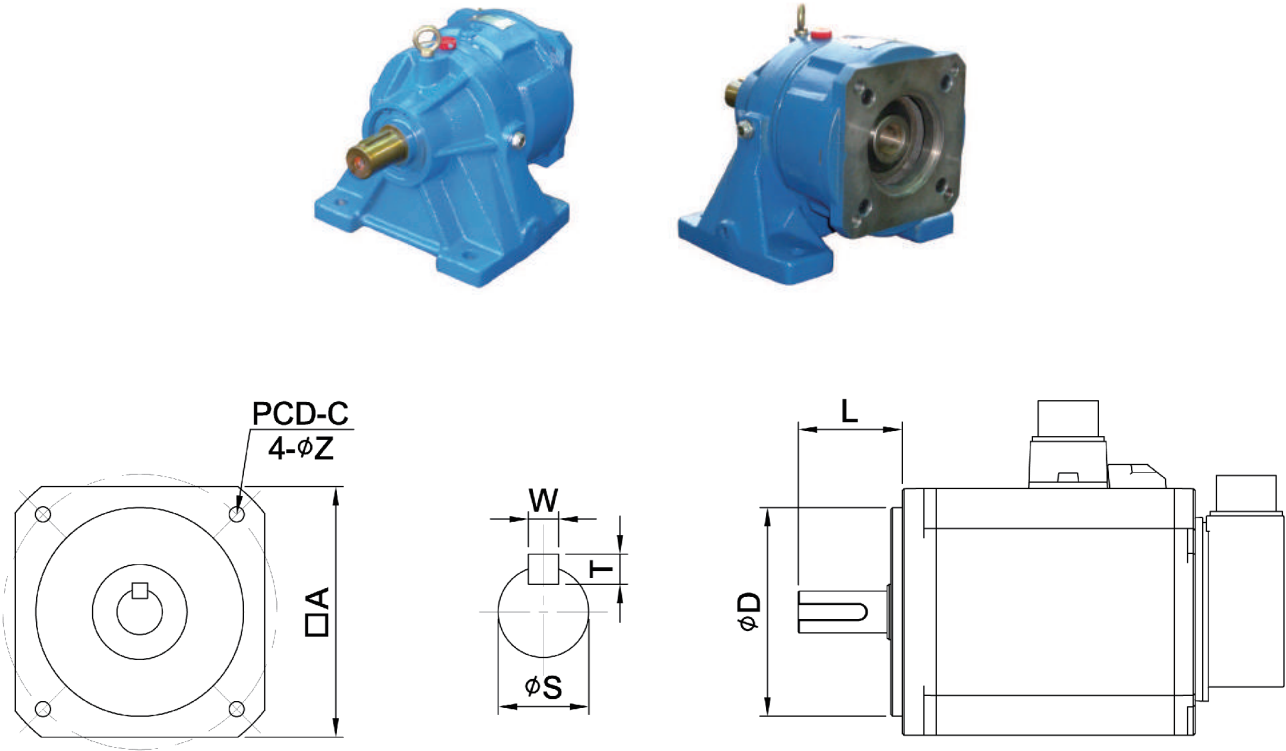
3 Stage 三段式								
Frame Size 型號	L3	Input Shaft 入力軸						
		O	P	Q	K	V	U	X
HS/VS200	312	19	30	20	M6	6	6	21.5
HS/VS280	365	24	40	35	M8	7	8	27
HS/VS300(H)	403	24	40	35	M8	7	8	27
HS/VS301(H)	449	24	40	35	M8	7	8	27
HS/VS303	563	38	58	45	M10	8	10	41
HS/VS305	573	38	58	45	M10	8	10	41
HS/VS307	748	38	58	45	M10	8	10	41
HS/VS309	788	38	58	45	M10	8	10	41
HS/VS313	1126.5	50	82	70	M12	9	14	53.5
HS/VS315	1396	60	105	90	M14	11	18	64
HS/VS317	1779	80	130	110	PCD55x3xM12	14	22	85

4 Stage 四段式								
Frame Size 型號	L4	Input Shaft 入力軸						
		O	P	Q	K	V	U	X
HS/VS200	342	19	30	20	M6	6	6	21.5
HS/VS280	400	24	40	35	M8	7	8	27
HS/VS300(H)	439	24	40	35	M8	7	8	27
HS/VS301(H)	484	24	40	35	M8	7	8	27
HS/VS303	571	24	40	35	M8	7	8	27
HS/VS305	581	24	40	35	M8	7	8	27
HS/VS307	790	38	58	45	M10	8	10	41
HS/VS309	830	38	58	45	M10	8	10	41
HS/VS313	1145	38	58	45	M10	8	10	41
HS/VS315	1461	50	82	70	M12	9	14	53.5
HS/VS317	1822	60	105	90	M14	11	18	64

※ L1, L2 refer to page 123. L1、L2 請參考第 123 頁。

Servo Motor Dimension 伺服馬達

Dimensions 外型尺寸表



Applicable Frame Size 適用型號	Code 代號	Dimension 尺寸 (mm)							
		A	C	D	L	SS	W	T	Z
200	24A-14	60	70	50	30	14	5	5	5.5
	24B-16	60	70	50	35	16	5	5	5.5
280	32A-14	60	70	50	30	14	5	5	5.5
	32A-16	60	70	50	35	16	5	5	5.5
	32B-14	80	90	70	30	14	5	5	5.5
	32B-16	80	90	70	35	16	5	5	5.5
	32B-19	80	90	70	40	19	5	5	9
	32C-16	112	100	80	35	16	5	5	6.5
	32D-19	132	145	110	58	19	5	5	9
	32D-22	132	145	110	58	22	6	6	9
300	38A-35	178	200	114.3	79	35	10	8	13.5
300H	38A-42	178	200	114.3	113	42	12	8	13.5
301	50A-35	178	200	114.3	79	35	10	8	13.5
301H	50A-42	178	200	114.3	113	42	12	8	13.5

※ The applicable Frame Size is for L1 (stage 1) or input stage. For L2 or L3 dimensions, contact Varitron®.