



SAN YA Planetary Variator

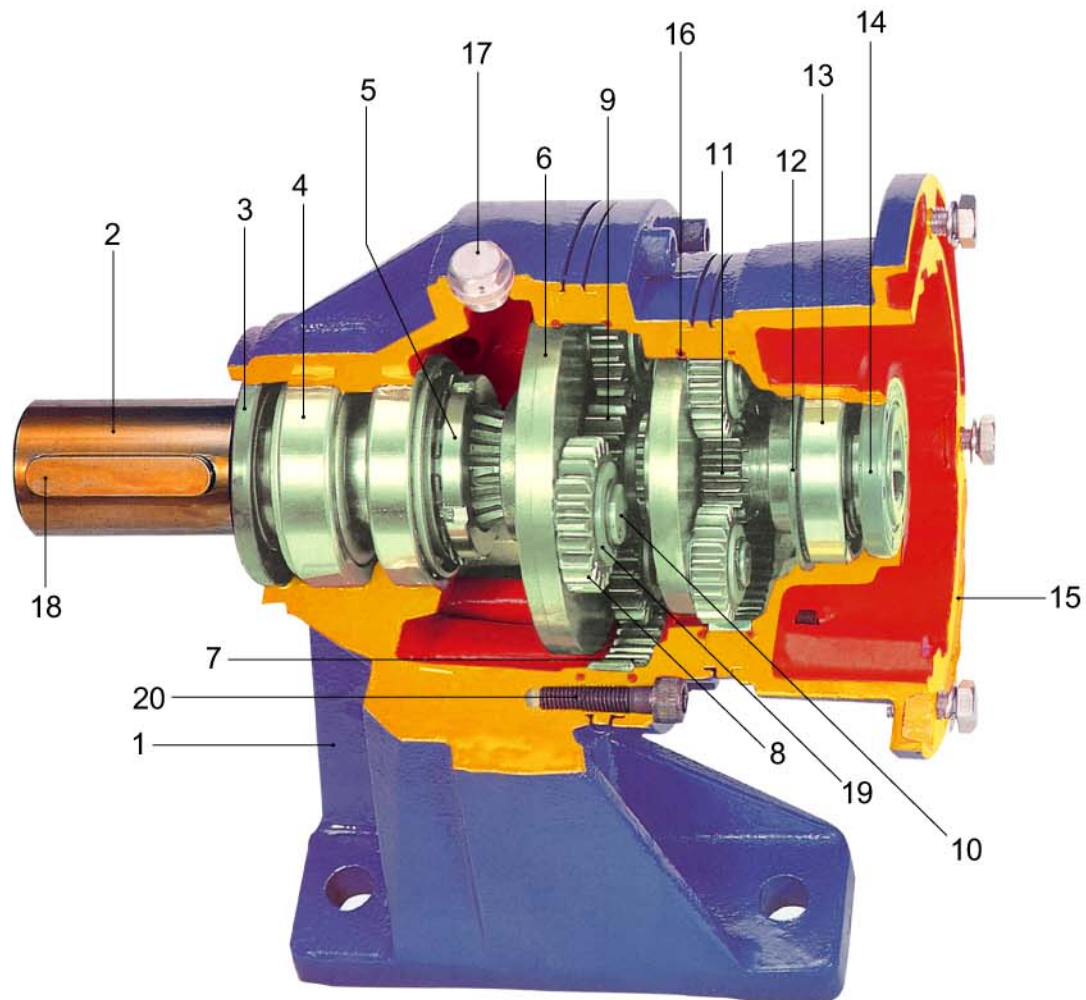
三亞牌 遊星式減速機



結構 Structure

高效率 低背隙 高扭力 耐衝擊 體積小 重量輕

High Efficiency Low Clearance High Torque Force. Impact Resistant Small Size. Light Weight



零件 Parts List



1. 本體	Housing	11. 太陽齒輪	Sun Gear Input Shaft
2. 出力軸	Output Shaft	12. C型扣環	Snap Ring
3. 出力軸油封	Oil Seal-Output Shaft	13. 入力軸承	Bearing-Input Shaft
4. 出力軸承	Bearing-Output Shaft	14. 入力軸油封	Oil Seal-Input Shaft
5. 太陽螺帽	Sun Nut	15. 入力法蘭	Input Flange
6. 游星架	Planetary Carrier	16. O型環	O-Ring
7. 內齒環	Internal Gear Ring	17. 透氣塞	Breather Plug
8. 游星齒輪	Planetary Gear	18. 鍵	Key-Output Shaft
9. 階段齒輪	Using Connected Section's Gear	19. 墊圈	Washer
10. 滾針軸	Needle Roller Pin	20. 六角承窩螺絲	Hex Socket Cap Screw

Products Selection 訂貨記號說明



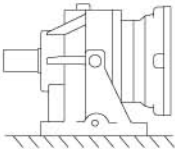
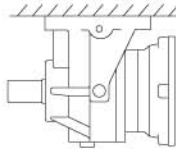
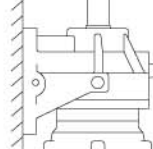
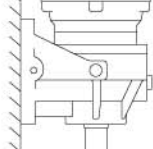
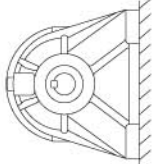
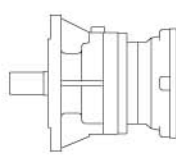
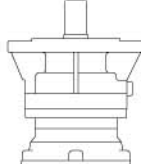
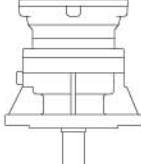
範例 / EX

HF - 200 - 5.78 - 1/4 - H1

形式 Type	機型 Size	減速比 Ratio	馬力 Motor	安裝 Installation
	200	3.57	1/4HP	H1
	280	4.94	1/2HP	H2
	300	5.78	1HP	.
	301	7.09	2HP	.
	303	9.37	3HP	V1
.


安裝方式 / Installation

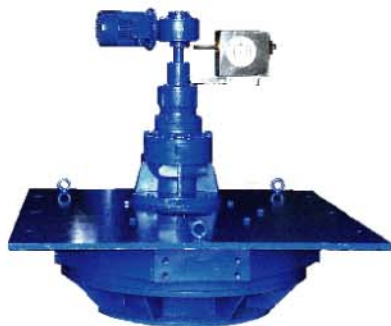


H1	H2	H3	H4
			
H5	V1	V2	V3
			

如需與其他系列產品組合,請與本公司確認結合法蘭與軸心尺寸.

Please confirm with Company the correct flange and shaft size , if there is necessary to combine with other serial products.

攪拌機應用 Mixer Application



變速機組合
Match Variator



渦輪減速機組合
Match Worm Gear

結構 Structure

行星減速機之結構

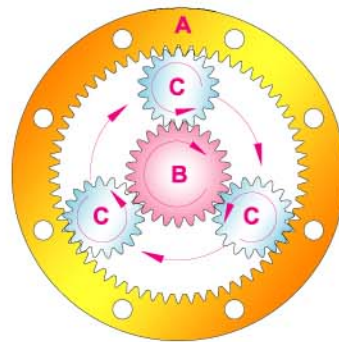
由一個內齒環(A)緊密結合於齒箱殼體上，環齒中心有一個自外部動力所驅動之太陽齒輪(B)，介於兩者之間有一組由三顆齒輪等分組合於托盤上之行星齒輪組(C)，該組行星齒輪依靠著出力軸、內齒環及太陽齒支撐浮遊於期間；當入力側動力驅動太陽齒時，可帶動行星齒輪自轉，並依循著內齒環之軌跡沿著中心公轉，遊星之旋轉帶動連結於托盤之出力軸輸出動力。

零件結構圖
Parts Structure



Planetary Variator's Structure

From one internal gear ring(A) closely combined with gear housing there is an outside power from sun gear inner of gear ring(B). Between two sides, there is a set with three gears combined at the above of plant of planetary gearboxes(C). This set of planetary gear depends on output shaft inside gearing and sun gear's support to swim in between. When inside power comes in to push sun gear it can connect planetary variator self-movement and followed the inside gear's guide to follow center's movement and planetary gear's movement will be connected to the plant's output shaft to output power.



行星減速機之特性

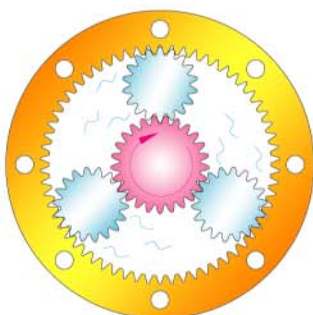
行星減速機之傳動方式異同於一般傳統齒輪之運動方式，傳統齒輪僅靠大小齒輪間接觸面驅動，所有負荷集中於該接觸點，較容易產生齒輪之磨擦與斷裂，在高減速比中更需要有更多段齒輪相互連結，除佔用大量空間外，同時產生更多之磨擦損耗，其每一段減速齒輪之間隙成倍數累計，故其效率相形變低。

行星式齒輪減速機於驅動時，太陽齒、行星齒及內環齒間共有六個接觸面均勻承受負載，並依附著內環齒軌跡呈360度均佈衝擊負荷，可降低齒輪之磨擦更使齒輪無斷裂之虞。行星齒採浮遊式運動，期間隙相當密合，每段減速間只需藉由階段齒連結，故其體積相對減少，最高效率可達百分之97%。

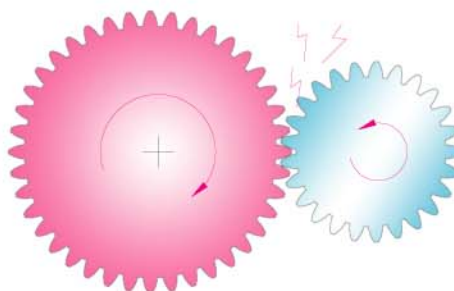
Planetary variators specialities

Planetary variators movement is different than the average traditional gear's movement. Traditional gear only depends on the movement between big and small gears. It's easilies to have gear damaged and broken if all the burden concentrate that touch point. In high variators it is necessary to have sections gear connected each other, except for use a big amount space and create more surface contacted and damaged. It's become low efficiency when each section's planetary variators between becomes multiple times.

When planetary gear movement. There are totally 6 touch faces average surface the burdens from sun gear, planetary gear, and inside gear and follow the inside gear's guide to average spread burden in 360 degree. This can no longer to worry about the broken of contact between gears. Planetary gear use .surface swim's movement and each gear very closely. The highest efficiency can reach 97 percent when it's size becomes small by each section's variator connection.



行星齒咬合圖
Planetary gear
conjunction drawing



齒輪咬合圖
Gear conjunction drawing

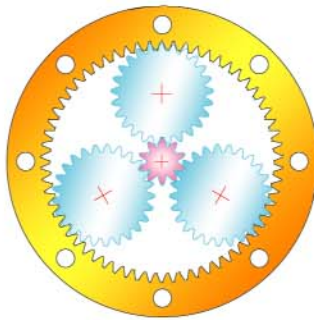
行星齒輪減速原理

行星齒之運轉是由太陽齒之驅動而來，當太陽齒運轉一定轉速；被帶動之行星齒繞行內齒環一圈(360度)回到原點時，太陽齒所轉動之轉速即是該段之減速比。故減速比之高低是由兩者之改變所產生。因此太陽齒數越少；行星齒數就越多，產生較高之減速比(圖A)。太陽齒數越多；行星齒數就越少，產生較低之減速比(圖B)。

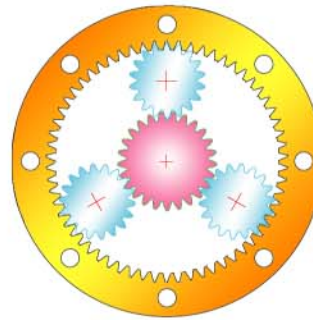
Reduction speed theory

Planetary gear's movement is from sun gear's movement. When sun gear movement to certain speed, the connected planetary gear surround the inside gear a circle (360 degree) back to original point. Sun gear's movement speed is this section's reduction ratio. So, the reduction speed high or low is because the creation of two side for reduction-ratio's high or low. So, if the less sun gears, the more planetary gears which creates higher reduction ratio. (picture A). The more sun gears, the less planetary gears which creates lower reduction ratio (picture B).

(A) 高速比 High Ratio



(B) 低速比 Low Ratio



行星齒輪減速比計算

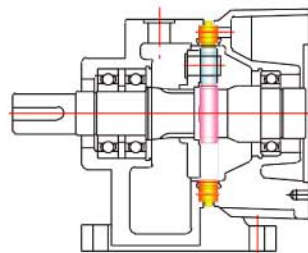
減速機往往需要較高速比之選擇，行星減速機亦可做更方便之組合，可藉由轉接之階段齒輪應用，做兩段或多段之組裝，產生倍數累計之更高減速比組裝。

Calculated Ratio

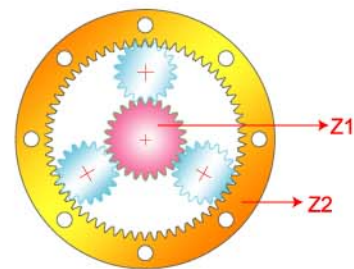
Planetary variator always need higher reduction ratio's choice. So planetary variator can provide even more convenience combination. It can create multiple times higher reduction ratio's assembly by using connected section's gear movement to make double or multiple section's combination.

單段減速比(i)之計算方法 Single Stage Internal

$$i = \frac{Z2}{Z1} + 1$$

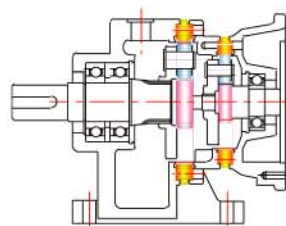


一段減速比結構
Single Stage Structure



多段減速比(i)之計算方法 Multiple Stages Internal

$$i = \left(\frac{Z2}{Z1} + 1\right) \times \left(\frac{Z2}{Z1} + 1\right) \times \dots$$



兩段減速比結構
Double Stages Structure

- i = 減速比 Ratio
- Z1 : 太陽齒輪齒數 Sun Gear Teeth
- Z2 : 內齒環齒數 Internal Gear Ring Teeth

計算-單位轉換-係數表 *Technical*

公式及範例 Technical formula

$$HP = \frac{T \times N}{716.2}$$

HP = 馬力 Horse power (HP)
 T = 扭矩 Torque (kg-m)
 N = 迴轉數 rpm

範例：
 入力轉動馬力1HP
 減速比1/20
 設定傳動效率100%
 求其輸出扭矩To?

For example :
 Input Motor HP = 1HP
 Ratio = 1/20
 Efficiency = 100%
 The Torque To = ?

$$HP = \frac{T \times N}{716.2} \quad T = \frac{716.2}{1800} = 0.3979\text{kg-m}$$

$$To = 0.3979 \times 20 \times 100\% = 7.958\text{kg-m}$$

範例：
 已知出力軸迴轉數90 rpm，
 入力軸迴轉數1800 rpm，求其減速比？
 求其減速比？

For example :
 Ooutput Shaft rpm = 90rpm
 Input Shaft rpm = 1800rpm
 The Ratio = ?

$$R = \frac{1800}{90} = 20 \quad \text{減速比} = 20$$

$$\text{Ratio} = 20$$

單位換算

Meter(m) = inches(in) x 0.0254
Meter(m) = feet(ft) x 0.3048
Kilograms(kg) = tons(t) x 1016.047
Kilograms(kg) = pounds(lb) x 0.45359
Newton(N) = pound-force(lbf) x 4.448222
Newton metro(Nm) = pound foot(lb ft) x 1.355818
Newton metro(Nm) = Kilograms meter(Kgm) x 9.81
DaNm = Nm/ 10

懸垂荷重係數表 O.H.L Factor Table

鏈輪	Sprocket	1.00
齒輪	Gear	1.25
三角皮帶	V-Belt	1.50
平皮帶	Flat-Belt	2.50

荷重係數表 Load Factor Table

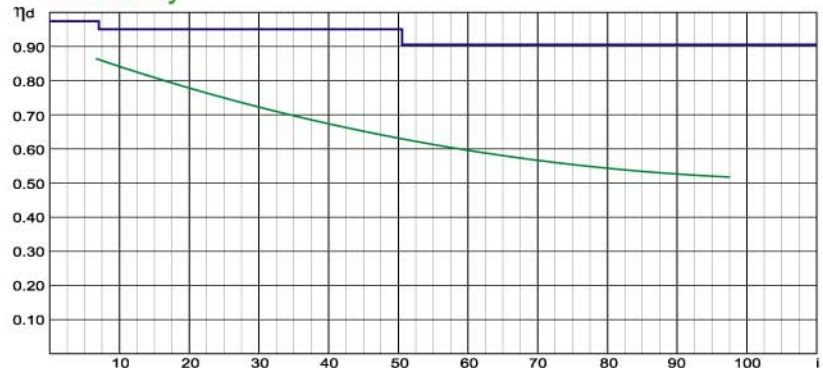
原動機 Prime Machine	傳動機荷重等級 Driven Machine Load Classification	每日使用時間 Duration Of Service Per Day			
		Occasional 0.5hr.	Intermittent 2hr.	8-10hrs	10-24hrs
電動機 Electric Motor	均一負荷 Uniform	0.80	0.90	1.00	1.25
	中衝擊 Medium Shock	0.90	1.00	1.25	1.5
	重衝擊 Heavy Shock	1.00	1.25	1.50	1.75

Efficiency and Oil 效率與潤滑油脂

行星齒輪減速機的效率表

段數 Stage	減速比 Reduction Ratio	效率值 Efficiency
L1	3.48 ~ 7.2	97%
L2	12.1 ~ 51.8	95%
L3	63 ~ 373	92%
L4	403 ~ 2687	90%

Efficiency



η_d : 表示傳輸效率

Transmission efficiency

i : 表示減速比數

Reduction ratio

— : 表示行星式齒輪減速機效率值

Efficiency of planetary gear

— : 表示傳統式齒輪減速機效率值

Efficiency of helical gear

潤滑油選定

適當潤滑油的黏度，可使齒輪滑動摩擦圓滑，於高負荷及衝擊負荷時，減速機才能充分發揮應有之效率。

Gear lubrication

Suitable gear lubrication oil will increase gear surface contact running and extension gears, bearings & other parts life. Please reference following table of lubrication gear oil for your reducers.

下表即減速機潤滑的選定 Gear lubrication

荷重 LOAD	周圍溫度 AMBIENT	SHELL OIL	MOBIL OIL	中國石油
普通荷重 Normal Load	-30°C ~ 5°C	Omala oil 68	Mobil Comp 629	國光牌極壓機油 HD-68
	5°C ~ 40°C	Omala oil R220	Mobil Comp 632 600W Cylinder oil	國光牌極壓機油 HD-220
	40°C ~ 65°C	Omala oil R320	Mobil Comp 634 600W Cylinder oil	國光牌極壓機油 HD-320
重級荷重 Heavy Load	-30°C ~ 5°C	Omala oil 150	Mobil Comp 632	國光牌極壓機油 HD-150
	5°C ~ 40°C	Omala oil R320	Mobil Comp 634	國光牌極壓機油 HD-320
	40°C ~ 65°C	Omala oil R68	Mobil Comp 636	國光牌極壓機油 HD-680

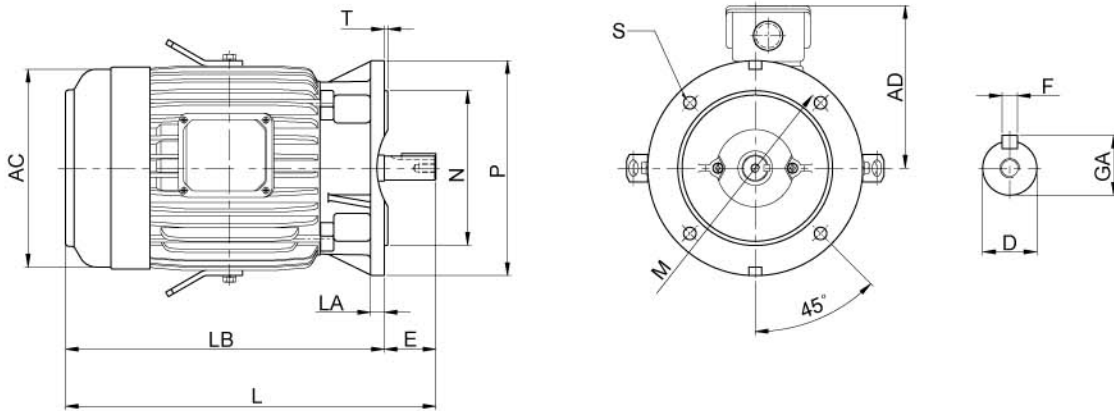
注意事項

1. 減速機表面容許最高溫度80°C
2. 最初使用300小時後，換上新油其後每2500小時換油。
3. 特殊操作環境選用，請洽本公司。

Remark

1. Max surface temperature allowed to reach 80°C.
2. Please change lub-oil for first 300 running hours and after another 2500 running
3. Please contact for special application.

馬達尺寸圖 *Motor Dimension*



馬達尺寸圖 (參考尺寸) **Motor Dimension**

單位:(mm)

輸出馬力 (HP)			框號	AC	AD	L	LA	LB	E	M	N	P	D	S	T	F	GA
2P	4P	6P															
0.25	0.25	—	63	144	123	248.0	12	225.0	23	130	110	160	11	10.0	3.5	4	12.5
0.5	0.5	—	71	162	133	277.5	12	247.5	30	130	110	160	14	10.0	3.5	5	16.0
1	1	0.5	80	177	144	282.0	12	242.0	40	165	130	200	19	12.0	3.5	6	21.5
2, 3	2	1	90L	200	157	371.5	12	321.5	50	165	130	200	24	12.0	3.5	8	27.0
—	3	2	100L	219	180	374.5	16	314.5	60	215	180	250	28	14.5	4.0	8	31.0
5	5	3	112M	235	189	431.0	16	371.0	60	215	180	250	28	14.5	4.0	8	31.0
7.5, 10	7.5	5	132S	273	224	454.0	20	374.0	80	265	230	300	38	14.5	4.0	10	41.0
—	10	7.5	132M			492.0		412.0									
15, 20	15	10	160M	334	263	608	20	498	110	300	250	350	42	18.5	5.0	12	45.0
25	20	15	160L			652		542									
30	—	—	180MA	382	305	672	20	562	110	350	300	400	48	18.5	5.0	14	51.5
—	25, 30	20	180MC			672		562									
40	—	—	180LA	382	305	710	20	600	110	350	300	400	55	18.5	5.0	16	59.0
—	40	25, 30	180LC			710		600									
50, 60	—	—	200LA	458	362	774.5	20	664.5	110	400	350	450	55	18.5	5.0	16	59.0
—	50, 60	40,50	200LC			804.5		140	18							64.0	
75	—	—	225SA	510	411	786.0	22	676.0	110	500	450	550	60	18.5	5.0	16	59.0
—	75	60	225SC			816.0		140	18							69.0	
100	—	—	250SA	545	499	882.5	22	742.5	110	500	450	550	55	18.5	5.0	16	59.0
—	100	75	250SC			882.5		140	20							79.5	
125	—	—	250MA	545	499	890.5	22	780.5	110	500	450	550	65	18.5	5.0	16	59.0
—	125	100	250MC			920.5		140	20							79.5	

Type Selection Table

機型選用

入力轉速 1750/1420 (60Hz/50Hz)

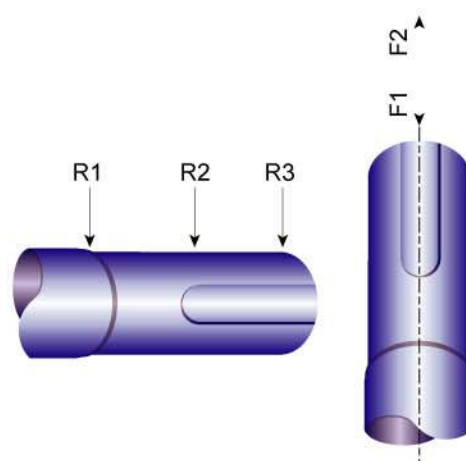
輸入馬力 INPUT HP	減速比範圍 RANGE OF RATIO	型號 SIZE
1/4HP	1/3.57~1/2936.8	200-L1, L2, L3
1/2HP	1/3.57~1/73.7	200-L1, L2
	1/87.1~1/221	280-L2, L3
	1/239~1/494	280-L3, L4
	1/503~1/1041	301-L4
1HP	1/3.48~1/116	280-L1,L2, L3
	1/131~1/221	300-L3
	1/239~1/616	301-L3, L4
	1/618~1/756	303-L4
	1/801~1/869	305-L4
2HP	1/906~1/2422	307-L4
	1/3.48~1/41.5	280-L1, L2
	1/51.8~1/177	300-L2, L3
	1/192~1/221	301-L3
3HP	1/230~1/456	305-L3, L4
	1/492~1/591	307-L4
	1/3.48~1/7.2	280-L1
	1/12.1~1/85	300-L2, L3
5HP	1/87.2~1/221	301-L3
	1/230~1/276	305-L3
	1/278~1/1022	307-L3, L4

輸入馬力 INPUT HP	減速比範圍 RANGE OF RATIO	型號 SIZE
5HP	1/3.48~1/7.2	300-L1
	1/12.1~1/85	301-L2,L3
	1/90~1/134	303-L3
	1/136~1/184	305-L3
	1/188~1/546	307-L3, L4
	1/603~1/1022	309-L4
7.5HP	1/3.48~1/7.2	300-L1
	1/12.1~1/51.8	301-L2
	1/53~1/96.7	303-L3
	1/104~1/141	305-L3
	1/146~1/455	307-L3, L4
	1/492~1/546	309-L4
10HP	1/586~1/1814	313-L4
	1/3.48~1/7.2	301-L1
	1/12.5~1/54	303-L2
	1/63~1/107	305-L3
	1/113~1/234	307-L3
	1/270~1/455	309-L3, L4
15HP	1/501~1/1814	313-L4
	1/3.48~1/7.2	301-L1
	1/12.5~1/30.7	303-L2
	1/35.8~1/54	305-L2
	1/60~1/191	307-L3
	1/199~1/234	309-L3
20HP	1/252~1/990	313-L3, L4
	1/3.6~1/7.5	303-L1
	1/12.5~1/43	305-L2

輸入馬力 INPUT HP	減速比範圍 RANGE OF RATIO	型號 SIZE
20HP	1/46~1/125	307-L2, L3
	1/139~1/192	309-L3
	1/193~1/649	313-L3, L4
	1/3.6~1/7.5	305-L1
	1/12.3~1/46	307-L2
25HP	1/51~1/303	313-L3
	1/3.6~1/7.5	305-L1
30HP	1/12.3~1/46	307-L2
	1/51~1/303	313-L3
	1/3.43~1/6.23	307-L1
40HP	1/12.3~1/46	309-L2
	1/51~1/176	313-L3
	1/3.43~1/6.23	307-L1
50HP	1/12.3~1/46	309-L2
	1/51~1/176	313-L3
	1/3.43~1/6.23	309-L1
75HP	1/14.2~1/40.5	313-L2
	1/3.43~1/6.23	309-L1
100HP	1/14.2~1/40.5	313-L2
	1/4.14~1/6.5	313-L1

徑向負荷與推力最大容許值 (kg) Max. Load Of Radial And Axis (Kg)

型號 SIZE	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





入力轉數為 1750 rpm (INPUT WITH 1750 RPM)

型號 Size	L1		L2				L3				L4				最大承受扭力 MAX OUTPUT TORQUE (kg-m)					
	一段減速比	最大輸入馬力	二段減速比	最大輸入馬力	二段減速比	最大輸入馬力	三段減速比	最大輸入馬力	三段減速比	最大輸入馬力	三段減速比	最大輸入馬力	四段減速比	最大輸入馬力		四段減速比	最大輸入馬力			
	1 STAGE	(A)	2 STAGE	(A)	2 STAGE	(A)	3 STAGE	(A)	3 STAGE	(A)	3 STAGE	(A)	4 STAGE	(A)	4 STAGE	(A)	4 STAGE	(A)		
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	854.7	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 0.25	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 0.25	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 0.25	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 3	12.1	C 2			52	A 2	131	A 0.5			403	B 0.25	669	B 0.25	1299	C 0.25	A	60
	4.26	A 3	14.8	A 2			63	A 2	141	A 0.5			446	A 0.25	754	A 0.25	1383	B 0.25		
	5.77	B 3	18.1	A 2			69	B 1	144	A 0.5			454	A 0.25	818	A 0.25	1590	A 0.25		
	7.2	C 3	20	B 2			77	A 1	177	A 0.5			494	B 0.25	834	B 0.25	1726	B 0.25	B	45
			24.6	A 2			85	A 1	192	B 0.5			503	B 0.25	940	A 0.25	2154	B 0.25		
			30.7	A 2			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 5	51.8	C 3	52	A 5	116	A 2	299	B 0.5	403	B 0.5	631	C 0.25	1110	B 0.25	A	120
	4.26	A 7.5	14.8	A 5			63	A 5	131	A 2	373	C 0.25	430	A 0.5	669	B 0.25	1276	A 0.25		
	5.77	B 7.5	18.1	A 5			69	B 5	141	A 2			466	A 0.5	755	A 0.25	1328	C 0.25		
	7.2	C 7.5	20	B 5			77	A 5	144	A 2			494	B 0.5	817	A 0.25	1385	B 0.25	B	90
			24.6	A 5			85	A 5	177	A 2			503	B 0.25	835	B 0.25	1566	A 0.25		
			30.7	A 5			87.2	C 2	192	B 1			548	A 0.25	949	A 0.25	1728	B 0.25		
			33.3	B 5			104	A 2	221	A 1			605	A 0.25	1022	A 0.25	2157	B 0.25	C	70
		41.5	B 5			106	A 2	239	B 0.5			616	B 0.25	1042	B 0.25	2803	C 0.25			
301 301H	3.48	C 15	12.1	C 7.5	51.8	C 7.5	52	A 5	116	A 3	299	B 1	403	B 1	631	C 0.5	1110	B 0.25	A	240
	4.26	A 15	14.8	A 7.5			63	A 5	131	A 3	373	C 1	430	A 1	669	B 0.5	1276	A 0.25		
	5.77	B 15	18.1	A 7.5			69	B 5	141	A 3			466	A 1	755	A 0.5	1328	C 0.25		
	7.2	C 15	20	B 7.5			77	A 5	144	A 3			494	B 1	817	A 0.5	1385	B 0.25	B	185
			24.6	A 7.5			85	A 5	177	A 3			503	B 1	835	B 0.5	1566	A 0.25		
			30.7	A 7.5			87.2	C 3	192	B 2			548	A 1	949	A 0.5	1728	B 0.25		
		33.3	B 7.5			104	A 3	221	A 3			605	A 1	1022	A 0.5	2157	B 0.25	C	155	
		41.5	B 7.5			106	A 3	239	B 1			616	B 1	1042	B 0.5	2803	C 0.25			
303	3.6	C 20	12.5	C 15	43	B 10	53	A 7.5	112	C 5	190	C 2	412	B 1	962	B 0.5	1989	B 0.25	A	320
	4.25	A 20	15.3	A 15	44.6	C 10	63	A 7.5	124	C 5	221	B 2	456	B 1	1024	B 0.5	2244	D 0.25		
	5.33	B 20	18.1	A 15	54	D 10	72	A 7.5	131	B 5	230	C 2	524	D 1	1084	D 0.25	2799	D 0.25		
	6.2	C 20	20.8	A 15			77	A 7.5	134	B 5	258	C 1	558	B 1	1177	B 0.25			B	280
	7.5	D 20	22.7	B 15			79	B 7.5	136	C 3	276	B 1	618	B 1	1278	B 0.25				
			24.5	A 15			85	A 7.5	141	A 3	311	C 1	654	D 1	1327	D 0.25				
			26.4	D 15			90	B 7.5	150	C 3	321	C 1	696	B 1	1440	D 0.25			C	245
			30.7	B 15			96.7	B 7.5	163	B 3	388	D 1	756	B 1	1594	B 0.25				
			35.8	C 10			104	A 5	177	B 3			801	D 0.5	1656	D 0.25			D	210
			38.4	B 10			107	B 5	184	C 3			869	D 0.5	1798	D 0.25				



入力轉數為 1750 rpm (INPUT WITH 1750 RPM)

型號 Size	L1		L2				L3						L4						最大承受扭力 MAX. OUTPUT TORQUE (kg-m)										
	一段減速比	最大輸入馬力	二段減速比	最大輸入馬力	二段減速比	最大輸入馬力	三段減速比	最大輸入馬力	三段減速比	最大輸入馬力	三段減速比	最大輸入馬力	四段減速比	最大輸入馬力	四段減速比	最大輸入馬力	四段減速比	最大輸入馬力											
	1 STAGE	(A)	2 STAGE	(A)	2 STAGE	(A)	3 STAGE	(A)	3 STAGE	(A)	3 STAGE	(A)	4 STAGE	(A)	4 STAGE	(A)	4 STAGE	(A)											
305	3.6	C	30	12.5	C	20	43	B	20	53	A	10	112	C	7.5	190	C	3	412	B	2	962	B	0.5	1989	B	0.5	A	630
	4.25	A	30	15.3	A	20	44.6	C	15	63	A	10	124	C	7.5	221	B	3	456	B	2	1024	B	0.5	2244	D	0.5		
	5.33	B	30	18.1	A	20	54	D	15	72	A	10	131	B	7.5	230	C	3	524	D	1	1084	D	0.5	2799	D	0.5	B	550
	6.2	C	30	20.8	A	20				77	A	10	134	B	7.5	258	C	3	558	B	1	1177	B	0.5					
	7.5	D	30	22.7	B	20				79	B	10	136	C	5	276	B	3	618	B	1	1278	B	0.5				C	470
				24.5	A	20				85	A	10	141	A	7.5	311	C	2	654	D	1	1327	D	0.5					
				26.4	D	20				90	B	10	150	C	5	321	C	2	696	B	1	1440	D	0.5					
				30.7	B	20				96.7	B	10	163	B	5	388	D	2	756	B	1	1594	B	0.5					
			35.8	C	20				104	A	10	177	B	5				801	D	1	1656	D	0.5				D	410	
			38.4	B	20				107	B	10	184	C	5				869	D	1	1798	D	0.5						
307	3.43	C	50	12.3	C	30	46	C	30	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	30				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	30				60	A	20	146	C	15	227	B	10	492	C	5	941	A	3	2002	C	1	B	1245
	6.23	C	50	18.9	B	30				63	A	20	152	B	15	234	B	10	546	A	5	1022	A	3	2422	C	1		
				21.8	B	30				77	B	20	157	A	15	270	C	7.5	603	C	3	1106	C	2					
				25.4	C	30				80	B	20	163	C	15	278	C	7.5	669	A	3	1130	A	2					
				27.9	B	30				89	A	20	177	B	15	284	C	7.5	693	C	3	1149	C	2					
				30.7	C	30				93	A	20	188	B	15	336	C	7.5	755	A	3	1275	A	2				C	1075
			32.5	C	30				100	A	20	192	B	15				769	A	3	1433	C	2						
			38	C	30				113	C	20	199	C	10				816	C	3	1591	A	2						
309	3.43	C	100	12.3	C	50	46	C	50	43	A	20	125	B	20	202	B	15	396	A	10	848	C	5	1721	C	2	A	2250
	4.09	A	100	14.7	A	50				50	A	20	139	C	20	221	A	15	455	A	10	906	A	5	1941	C	2		
	5.25	B	100	17.4	A	50				60	A	20	146	C	20	227	B	15	492	C	7.5	941	A	5	2002	C	2	B	1800
	6.23	C	100	18.9	B	50				63	A	20	152	B	20	234	B	15	546	A	7.5	1022	A	5	2422	C	2		
				21.8	B	50				77	B	20	157	A	20	270	C	10	603	C	5	1106	C	3					
				25.4	C	50				80	B	20	163	C	20	278	C	10	669	A	5	1130	A	3					
				27.9	B	50				89	A	20	177	B	20	284	C	10	693	C	5	1149	C	3					
				30.7	C	50				93	A	20	188	B	20	336	C	10	755	A	5	1275	A	3					
			32.5	C	50				100	A	20	192	B	20				769	A	5	1433	C	3				C	1600	
			38	C	50				113	C	15	199	C	15				816	C	5	1591	A	3						
313	4.14	A	150	14.2	A	100	28.3	B	100	51	A	50	110	A	50	181	C	30	335	A	20	706	B	15	1035	B	10	A	6500
	5.4	B	150	16.9	A	100	33.6	B	100	61	A	50	120	B	50	193	A	30	381	A	20	793	A	15	1192	B	10		
	6.5	C	150	18.5	B	100	34.1	C	100	71	A	50	135	B	50	208	B	30	501	B	20	847	B	15	1393	A	10	B	5000
				21.7	B	100	40.5	B	100	78	A	50	143	B	50	252	B	30	541	A	20	914	A	15	1817	B	10		
				25.8	B	100				92	A	50	151	B	50	303	C	30	586	A	20	956	B	15	2186	B	10		
				26.6	C	100				105	A	50	176	B	50				649	A	20	990	A	15					

* 依您需要的減速比及轉矩來對照每一段減速比上的ABC最大受力值，及最大輸入馬力。

Please determine your ratio and output torque to match each code of gear stages A, B & C. and find different maximum torque & input capacity.

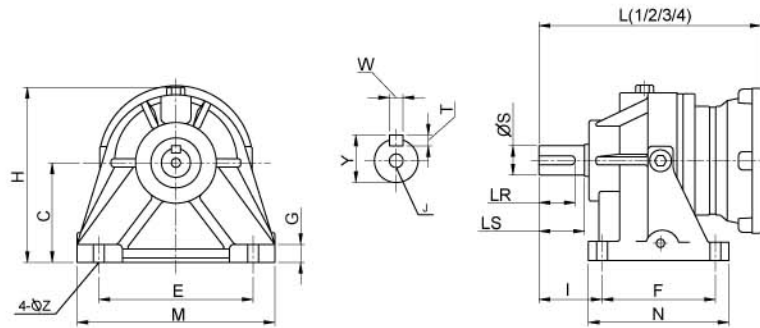
例：
型號 280#，一段齒5.77比(B)在對照右側最大受力表，其(B)最大受力為45kg/m，最大可輸入馬力3HP。

Example : Type 280#, Ratio 1/5.77
Gear Stage Code : (B)
Max Torque : 45 Kg-M
Max Input Hp : 3Hp

TYPE: **HF**



臥式直結型 Horizontal Flange Type



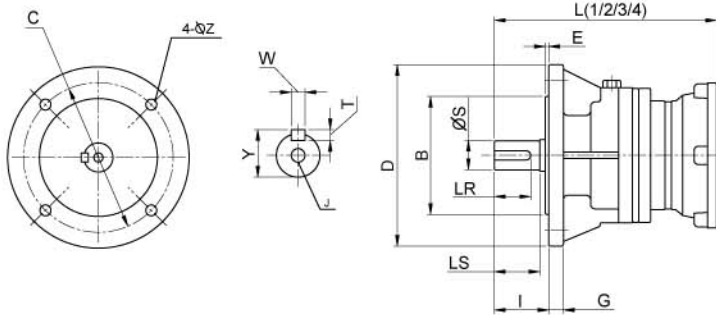
尺寸規格表 DIM.TABLE (mm)

Size	法蘭 Flange									出力軸 Output Shaft			鍵 Key				馬達框號 IEC規格 MOTOR FRAME
	C	E	F	G	H	I	M	N	Z	LR	LS	S	J	T	W	Y	
200	90	140	90	13	150	53	156	120	4-12	30	35	24	M8	7	8	27	63A-71B
280	110	170	125	20	185	72	210	155	4-12	40	50	32	M10	8	10	35	71B-90L
300	140	200	160	25	233	78	260	200	4-18	50	58	38	M12	8	10	41	71B-112M
300H	190	200	160	25	283	78	260	200	4-18	50	58	38	M12	8	10	41	132L
301	140	200	160	25	233	104	260	200	4-18	70	82	50	M16	9	14	53.5	90L-160L
301H	190	200	160	25	283	104	260	200	4-18	70	82	50	M16	9	14	53.5	132L-160M
303	210	300	250	35	332	128	370	305	4-22	80	95	55	M16	10	16	59	90L-160L
305	210	300	250	35	332	138	370	305	4-22	90	105	60	M20	11	18	64	90L-180L
307	250	365	356	45	425	175	445	436	4-28	110	130	80	PCD-55 3-M12	14	22	85	100LA-200L
309	250	365	356	45	425	215	445	436	4-28	150	170	90	PCD-55 3-M12	14	25	95	100LA-225S
313	280	457	470	40	503	291	560	590	4-28	180	200	120	PCD-70 3-M16	18	32	127	200LA-280S

L長度表 LENGTH TABLE (millimeter)

一段式 Stage 1												
型號 馬力	Size HP	200	280	300	300(H)	301	301(H)	303	305	307	309	313
1/4, 1/2	L1	176	236	*	*	*	*	*	*	*	*	*
1, 2		*	236	277	277	316	316	*	*	*	*	*
3, 5		*	246	280	280	318	318	*	*	*	*	*
7.5, 10		*	*	295	295	333	333	428	438	*	*	*
15, 20		*	*	*	331	370	370	465	475	*	*	*
25, 30		*	*	*	*	*	*	465	475	*	*	*

二段式 Stage 2													
型號 馬力	Size HP	200	280	300	300(H)	301	301(H)	303	305	307	309	313	
1/4, 1/2	L2	206	270	308	308	*	*	*	*	*	*	*	
1, 2		*	270	308	308	358	358	438	448	*	*	*	
3, 5		*	280	318	318	360	360	440	450	*	*	*	
7.5, 10		*	*	*	*	*	375	375	455	465	655	695	*
15, 20		*	*	*	*	*	425	425	490	500	691	731	982
25, 30		*	*	*	*	*	*	*	*	*	691	731	982



尺寸規格表 DIM.TABLE (mm)

Size	法蘭 Flange							出力軸 Output Shaft			鍵 Key				馬達框號 IEC規格 MOTOR FRAME
	B	C	D	E	G	I	Z	LR	LS	S	J	T	W	Y	
200	110	130	160	4	12	44	4-10	30	35	24	M8	7	8	27	63A-71B
280	130	165	200	4	16	60	4-12	40	50	32	M10	8	10	35	71B-90L
300	180	215	250	4	20	68	4-16	50	58	38	M12	8	10	41	71B-112M
300H	230	265	300	4	20	68	4-16	50	58	38	M12	8	10	41	132L
301	180	215	250	4	20	94	4-16	70	82	50	M16	9	14	53.5	90L-160M
301H	230	265	300	4	20	94	4-16	70	82	50	M16	9	14	53.5	132L-160M
303	250	300	350	4	20	104	4-19	80	95	55	M16	10	16	59	90L-160L
305	250	300	350	4	20	114	4-19	90	105	60	M20	11	18	64	90L-180L
307	350	400	450	5	27	140	4-22	110	130	80	PCD-55 3-M12	14	22	85	100LA-200L
309	350	400	450	5	27	180	4-22	150	170	90	PCD-55 3-M12	14	25	95	100LA-225S
313	450	500	550	5	32	215	4-28	180	200	120	PCD-70 3-M16	18	32	127	200LA-280S

L長度表 LENGTH TABLE (millimeter)

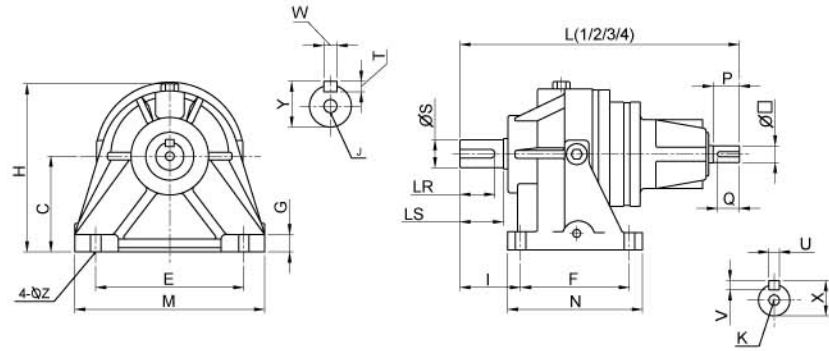
三段式 Stage 3												
型號 馬力	Size HP	200	280	300	300(H)	301	301(H)	303	305	307	309	313
1/4, 1/2	L3	236	304	342	342	388	388	*	*	*	*	*
1, 2		*	304	342	342	388	388	480	490	664	704	*
3, 5		*	314	352	352	398	398	482	492	666	706	*
7.5, 10		*	*	*	*	*	*	498	508	681	721	1046
15, 20		*	*	*	*	*	*	*	555	717	757	1082
25, 30		*	*	*	*	*	*	*	*	*	*	1082

四段式 Stage 4												
型號 馬力	Size HP	200	280	300	300(H)	301	301(H)	303	305	307	309	313
1/4, 1/2	L4	266	338	376	376	422	422	510	520	*	*	*
1, 2		*	338	376	376	422	422	510	520	706	746	1056
3, 5		*	348	386	386	432	432	520	530	708	748	1058
7.5, 10		*	*	*	*	*	*	*	*	723	763	1073
15, 20		*	*	*	*	*	*	*	*	771	811	1110
25, 30		*	*	*	*	*	*	*	*	*	*	*

TYPE: **HS**



臥式雙軸型 Horizontal Two Shaft Type



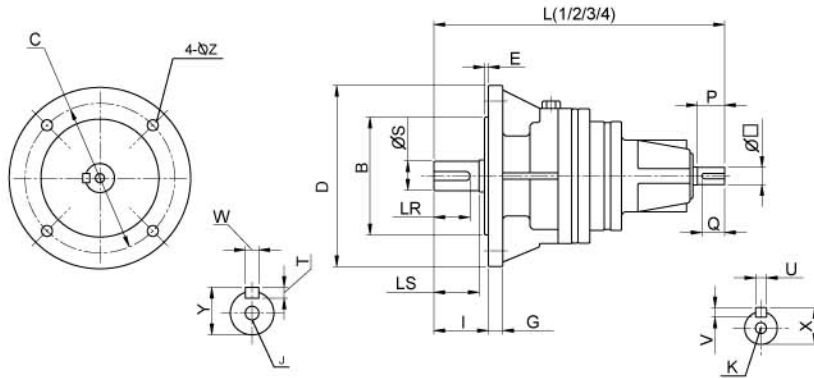
尺寸規格表 DIM.TABLE (mm)

Size	法蘭 Flange									出力軸 Output Shaft			鍵 Key			
	C	E	F	G	H	I	M	N	Z	LR	LS	S	J	T	W	Y
200	90	140	90	13	150	53	156	120	4-12	30	35	24	M 8	7	8	27
280	110	170	125	20	185	72	210	155	4-12	40	50	32	M 10	8	10	35
300	140	200	160	25	233	78	260	200	4-18	50	58	38	M 12	8	10	41
300.H	190	200	160	25	283	78	260	200	4-18	50	58	38	M 12	8	10	41
301	140	200	160	25	233	104	260	200	4-18	70	82	50	M 16	9	14	53.5
301.H	190	200	160	25	283	104	260	200	4-18	70	82	50	M 16	9	14	53.5
303	210	300	250	35	332	128	370	305	4-22	80	95	55	M 16	10	16	59
305	210	300	250	35	332	138	370	305	4-22	90	105	60	M 20	11	18	64
307	250	365	356	45	425	175	445	436	4-28	110	130	80	PCD-55 3-M12	14	22	85
309	250	365	356	45	425	215	445	436	4-28	150	170	90	PCD-55 3-M12	14	25	95
313	280	457	470	40	507	291	560	590	4-28	180	200	120	PCD-70 3-M16	18	32	127

L長度表 LENGTH TABLE (millimeter)

一段式 Stage 1								
Size	L1	入力軸 Input Shaft			鍵 Key			
		O	P	Q	K	V	U	X
200	252	19	30	20	M 6	6	6	21.5
280	297	24	40	35	M 8	7	8	27
300.H	362	38	58	45	M 10	8	10	41
301.H	400	38	58	45	M 10	8	10	41
303	502	50	82	70	M 12	9	14	53.5
305	512	50	82	70	M 12	9	14	53.5
307	725	60	105	90	M 14	11	18	64
309	745	60	105	90	M 14	11	18	64
313	1059	80	130	110	PCD-55 3-M12	14	22	85

二段式 Stage 2								
Size	L2	入力軸 Input Shaft			鍵 Key			
		O	P	Q	K	V	U	X
200	282	19	30	20	M 6	6	6	22
280	331	24	40	35	M 8	7	8	27
300.H	370	24	40	35	M 8	7	8	27
301.H	442	38	58	45	M 10	8	10	41
303	521	38	58	45	M 10	8	10	41
305	531	38	58	45	M 10	8	10	41
307	729	50	82	70	M 12	9	14	54
309	769	50	82	70	M 12	9	14	54
313	1103	60	105	90	M 14	11	18	64



尺寸規格表 DIM.TABLE (mm)

Size	法蘭 Flange							出力軸 Output Shaft			鍵 Key			
	B	C	D	E	G	I	Z	LR	LS	S	J	T	W	Y
200	110	130	160	4	12	44	4-10	30	35	24	M8	7	8	27
280	130	165	200	4	16	60	4-12	40	50	32	M10	8	10	35
300	180	215	250	4	20	68	4-16	50	58	38	M12	8	10	41
300.H	230	265	300	4	20	68	4-16	50	58	38	M12	8	10	41
301	180	215	250	4	20	94	4-16	70	82	50	M16	9	14	53.5
301.H	230	265	300	4	20	94	4-16	70	82	50	M16	9	14	53.5
303	250	300	350	4	20	104	4-19	80	95	55	M16	10	16	59
305	250	300	350	4	20	114	4-19	90	105	60	M20	11	18	64
307	350	400	450	5	27	140	4-22	110	130	80	PCD-55 3-M12	14	22	85
309	350	400	450	5	27	180	4-22	150	170	90	PCD-55 3-M12	14	25	95
313	450	500	550	5	32	215	4-28	180	200	120	PCD-70 3-M16	18	32	127

L長度表 LENGTH TABLE (millimeter)

三段式 Stage 3								
Size	L3	入力軸 Input Shaft			鍵 Key			
		O	P	Q	K	V	U	X
200	312	19	30	20	M6	6	6	21.5
280	366	24	40	35	M8	7	8	27
300.H	406	24	40	35	M8	7	8	27
301.H	450	24	40	35	M8	7	8	27
303	563	38	58	45	M10	8	10	41
305	573	38	58	45	M10	8	10	41
307	748	38	58	45	M10	8	10	41
309	788	38	58	45	M10	8	10	41
313	1126	50	82	70	M12	9	14	53.5

四段式 Stage 4								
Size	L4	入力軸 Input Shaft			鍵 Key			
		O	P	Q	K	V	U	X
200	342	19	30	20	M6	6	6	21.5
280	400	24	40	35	M8	7	8	27
300.H	439	24	40	35	M8	7	8	27
301.H	484	24	40	35	M8	7	8	27
303	571	24	40	35	M8	7	8	27
305	581	24	40	35	M8	7	8	27
307	790	38	58	45	M10	8	10	41
309	830	38	58	45	M10	8	10	41
313	1145	38	58	45	M10	8	10	41



四段變速機
Four sections variable
speed machine

渦輪升降機
Worm gear jacks

佳衛股份有限公司
JIA WEY COMPANY LTD.

台灣省台北縣新莊市化成路492巷4號
No.4, Lane492, Hua Chen Rd. Hsin Chuang, Taiwan
Tel : 886-2-2998-8483~5
Fax : 886-2-2998-8481
<http://www.sanya.com.tw>
E-mail : sanya99@ms33.hinet.net

經銷商
Distributor