

TM. WORM SPEED REDUCER



三山牌蝸輪減速機

**QUIET OPERATIONAL AND HIGH EFFICIENCY
FOR THE INDUSTRIAL WORLD**



功原機械工業股份有限公司

公司·工廠：台北市北投區立德路120巷16弄3號

TEL：(02)2893-3515（代表號）

FAX：(02)2895-1957

GONG YUAN MACHINERY INDUSTRIAL CO., LTD.

NO.3 ALLEY 16, LANE 120, LI TE ROAD.

PEI TOU, TAIPEI, TAIWAN R.O.C.

URL:<http://www.motor.com.tw>

Email:gongyuan@ms12.hinet.net

構造 STRUCTURE

- **蝸桿**：採用S45C以上，經高週波熱處理淬火硬化後再加以精細的研磨，有極高的韌性與耐磨性。
- **蝸輪**：使用特殊合金磷銅以專用滾齒刀用精密滾齒機滾製而成
- **材質**：一體成形鑄成，有極高的剛性，可承受強大的衝擊，外型美觀，有散熱片裝置，良好的潤滑油及適當的表面剛好適合散熱。
- **軸承**：特採 Ball bearing 及 Tapered roller bearing 對平面及側面的荷重，均能充分的適用。

Worm shaft: Made of alloy steel S45C and better, its teeth with hardness up to Rock Well HRC 47~49° achieved by treating with intense heat and tempering, are carefully ground so that they are very tough and durable.

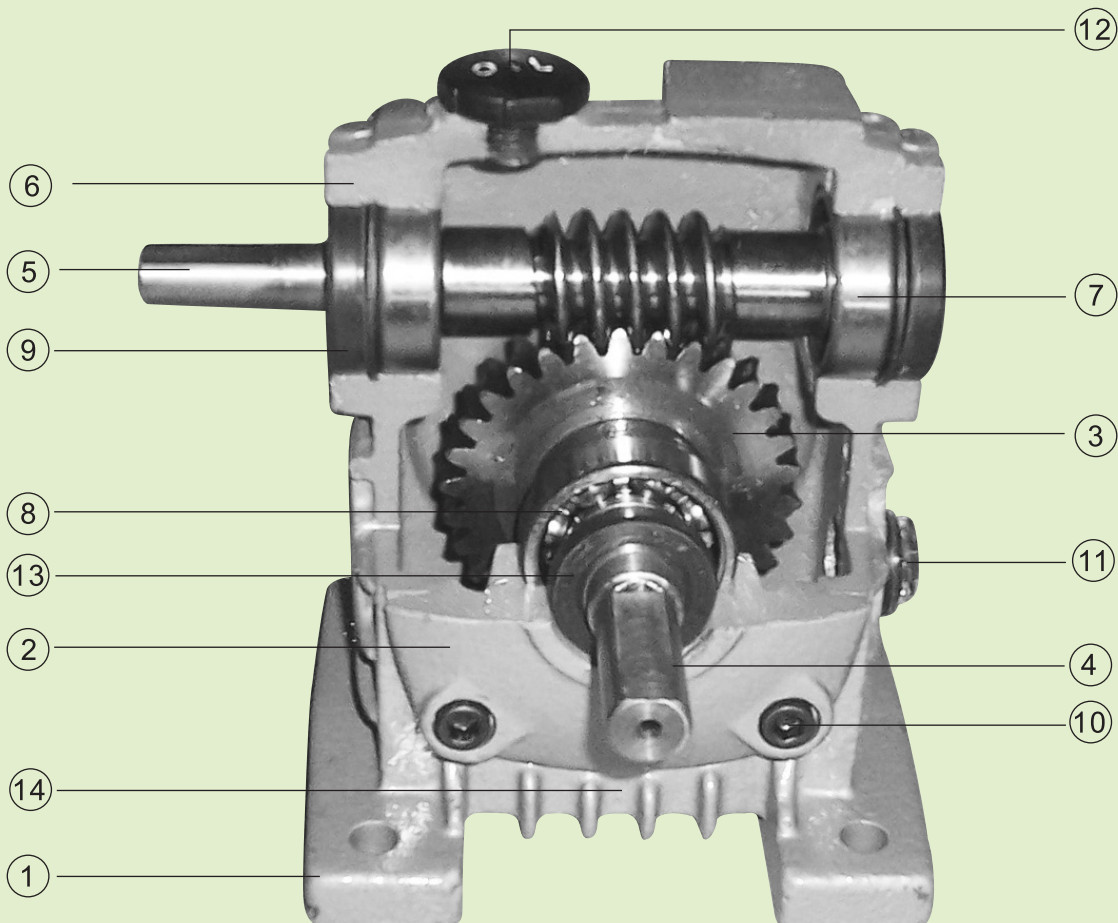
Worm gear: Made of a special analysis phosphorous bronze and gears carefully cut by use of the exclusive hob for all speed reducers.

Housing: Made of cast iron, with high hardness, able to endure great impact, beautiful in appearance. The casting material is FC-25 or better and above

Bearing: With ball bearing and tapered roller bearings, which allow for greater overhung and thrust loading.

- | | |
|---|---|
| ① 本體 Case (Housing) | ⑧ 滾珠軸承 Ball Bearings |
| ② 出力蓋 Out Put Cover | ⑨ 油封 Oil Seal |
| ③ 蝸輪 Worm Gear Wheel | ⑩ 六角孔螺絲 Hexagon Socket Head Bolt |
| ④ 出力軸 Out Put Shaft | ⑪ 油鏡 Oil Gauge (Oil Level) |
| ⑤ 入力軸(蝸桿) Input Shaft (Worm Shaft) | ⑫ 油蓋 Oil Filler Plug |
| ⑥ 入力軸蓋 Input Cover | ⑬ 油封 Oil Seal |
| ⑦ 斜錐滾子軸承 Taper Roller Bearings
(ball bearing for type 50 only) | ⑭ 排油塞(在出力軸後面)
Drain Plug (opposite side to output shaft) |

三山牌蝸輪減速機內部詳圖 INTERNAL MECHANISM



蝸輪減速機為工業界傳動的樞紐，凡是各種機械，在馬達與機器中間，必須有減速的裝置時，均有賴於蝸輪減速機的傳達，因此用途廣泛，有如下之使用：

Worm gear speed reducer is essential to drive systems and it is widely used when speed reducer is needed, such as:

用途

機械工業 化纖工業 印製工業 電機工業 其他工業

Mechanical industry. Conveyer, lift, dryer crane, transport equipment, extending press, filling machine, extruder, can-making machine, foundry and other machinery, etc.

Chemical & textile industry. Chemical machinery, mixer, coating machine, textile machine, drying machine, doubling-frame, bleaching machine, finishing machine, dyeing machine, printing machine, rubber equipment, dehydrating machine, washing machine, etc.

機種選定

如想有效的選擇使用三山牌蝸輪減速機，請參照以下說明選擇：

入力軸回轉數：以聯軸器直結或皮帶等傳動時，最高入力轉數為 2000 r.p.m，而600~1800 r.p.m. 則較適合一般性使用。

出力軸回轉數：確定入力軸轉數及減速比後即可算出。出力軸回轉數=入力軸回轉數×減數比。如特別低速回轉時，效率、扭力均降低，及軸承給油亦較困難，須特別注意選擇型號與潤滑油，並請直接與本廠洽商。

標準型減數比：單段蝸輪減速機（大約減速比）
1/10, 1/15, 1/20, 1/30, 1/40, 1/50, 1/60

計算資料

效率：蝸輪減速機效率須依照齒面角、周節、速度、潤滑種類及周圍溫度來決定。本目錄所示效率須依下列公式來檢討。

$$\text{效率} = \frac{\text{出力馬力}}{\text{入力馬力}} \times 100\%$$

荷重係數：普通蝸輪減速機的傳達容量及強度計算，係依照每日8小時連續運轉與均一負荷之理想條件下設計，而扭力因周期周回轉或連續回轉及衝擊大小，荷重狀況的不同而有所差異，故必須依照適當條件下的荷重係數來選定適當的減速機型號。(如表一2，荷重係數表)。

懸垂荷重(O.H.L.):減速機的軸彎曲與外殼破裂均與懸垂荷重有關，因此要選定減速機時，必須考慮懸垂荷重(如馬力表所示O.H.L.值) (如表一3)。

懸垂荷重 = $\frac{\text{扭力}}{\text{回轉體半徑}} \times \text{懸垂荷重係數}$
減速機外壁最高溫度...80°C，油槽內最高溫度...100°C(但開始運轉20小時後即為93°C)，周圍溫度與油槽內差約為50°C

USAGE

Paper & printing industry. Printing machine, paper machine, packing machine, automatic recording machine, cutting machine, winding machine, etc.

Electric industry. Extending machine, wiring machine, extruding machine, plating machine, paper-covering machine, etc.

Other industry. Mining equipment, crusher, separator, selector, washing machine, coal feeder, tobacco machine, food machinery civil engineering equipment, plywood machinery, film-making machine, ventilator, gas producer, plastic machinery, refrigerator, air compressor, etc.

HOW TO SELECT

To succeed in selecting "T.M.H" worm gear speed reducers, please refer to the following items:

R.P.M. Of input shaft: When driven with shaft coupling or belt, the maximum may be 2000 r.p.m., but 600~1800 r.p.m. is preferable.

R.P.M. of output shaft: It can be calculated with the given r.p.m., of input shaft and speed reduction ration. R.P.M. of output shaft = R.P.M. of input shaft × speed reduction ration. If it rotates in very low speed and both efficiency and torsion are lowed and oil feeding to bearing is getting more difficult, special care must be taken to the selection of model and lubricant oil. Please contact the manufacturer.

Standard speed reduction ratio: Single reduction worm gear: 1/10, 1/15, 1/20, 1/30, 1/40, 1/50, 1/60. (Approx speed reduction ratio)

CALCULATION DATE

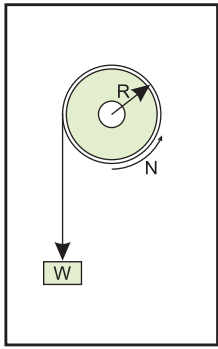
Efficiency: The efficiency of worm gear speed reducer is decided by the lead angle, circular pitch, speed, oil and peripheral temperature. The efficiency listed in this cataloguemy be checked with the following equation:

$$\text{Efficiency} = \frac{\text{HP of the output shaft}}{\text{HP of the input shaft}} \times 100\%$$

Load factor: The calculation of the drive capacity and strength of speed reducers is based on the consecutive rotation of 8 hours per day and the mean load. The torque differs as periodical rotation or consecutive rotation, impact and load do. So it is important to select speed reducer model according to the load factor. (See table 2 Load factor).

Overhung load (O.H.L.): When attaching chain sprockets or V-pulleys to the output shaft, the overhung load must be taken into consideration. Allowable overhung loads are shown in the following table. Formula to determine overhung load: Allowable overhung load.

Allowed temperature limited: The maximum temperature of the speed reducer housing: 80°C, inner oil tank: 100°C(93°C after rotation for 20 hours). The difference between peripheral temperature is 50°C.



效率表 表-1 CHART 1

減速比 REDUCTION RATION	效 率 EFFICIENCY
BELOW 1:40 以下	70%
1 : 30	80%
BELOW 1:20 以上	85%

荷重係數表 表-2
CHART 2 SERVICE FACTORS

荷重種類 LOADING CLASS	每日使用時間 DAILY OPERATION (hr)			
	0.50	3	8-10	10-24
均一荷重 UNIFORM LOADING	0.50	0.80	1.00	1.25
中衝擊 MEDIUM IMPACT	0.80	1.00	1.25	1.50
重衝擊 HEAVY IMPACT	1.00	1.00	1.50	1.75

懸垂荷重係數表 表-3
LOADING CHART 3
OVER-HANG FACTORS

鏈 輪 CHAIN	1.00
齒 輪 GEAR	1.25
三角皮帶 TRIANGLE BELT	1.50
平皮帶 HORIZONTAL BELT	2.50

機種選定計算例 EXAMPLE

如上圖出力軸轉體直徑400mm，以36 r.p.m.速度吊起一200 kg 重物，求其應採何種型號減速機。(24小時運轉，均一負荷，入力軸轉數1800 r.p.m適合TM-A型)。

HP = 馬力 T = 扭力 Kg-m

N = r.p.m (蝸輪每分轉數) = 36 r.p.m.

R = 半徑 (m) = 0.2m W = 荷重 (kg) = 200kg

If an output shaft with a rope supporting a weight of 200kgs: is wound around a cylinder of 0.2 metre radius, at a output shaft speed of 36 r.p.m. (See the fig 1) what a model of speed reducer should be adopted? (In case of 24-hour rotation, uniform and input shaft rotation, 1800 r.p.m. **Model TM-A** is suitable.)

HP = Horse power T = Torque Kg-m

N = r.p.m (Worm gear rotation per minute) = 36 r.p.m.

R = radius (m) = 0.2m W = load (kg) = 200kg.

解： 減速比=36/1800 = 1/50

T=W×R=200×0.2=40kg-m

HP = $\frac{T \times N}{716.2(\text{係數})} = \frac{40 \times 36}{716.2} = 2.0$

查表-1得效率=0.7

查表-2得荷重係數=1.25

減速機容量 = $\frac{HP \times \text{係數}}{\text{效率}} = \frac{2.0 \times 1.25}{0.70} = 3.57HP$

※5HP馬達適用

Speed reduction ratio=36/1800 = 1/50

T=W×R=200×0.2=40kg-m

HP = $\frac{T \times N}{716.2(\text{Co efficient})} = \frac{40 \times 36}{716.2} = 2.0$

From Table 1:effivency=0.7

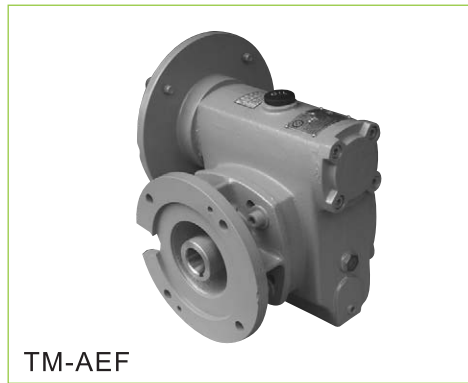
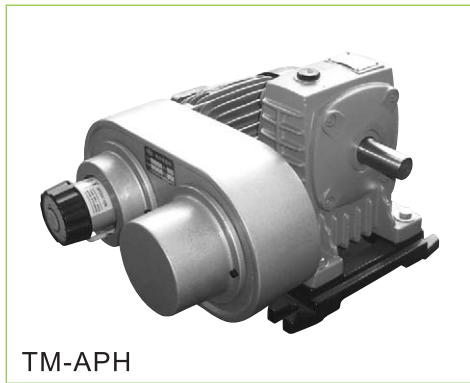
From Table 2:Load Factor=1.25

Speed reduce capacity = $\frac{HP \times \text{Load factor}}{\text{efficiency}}$

= $\frac{2.0 \times 1.25}{0.70} = 3.57HP$

※ 5 HP motor suitable for use

其他系列產品 THE OTHER SERIES PRODUCTS



功原蝸輪減速機型號說明

TM - A - 1/10 - B - M

A
B
EV
AE
AEA
AEM

減速比

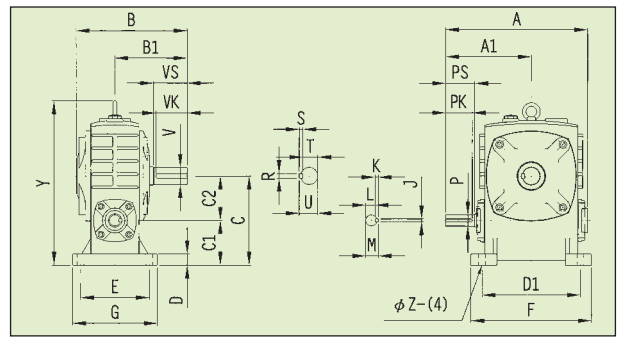
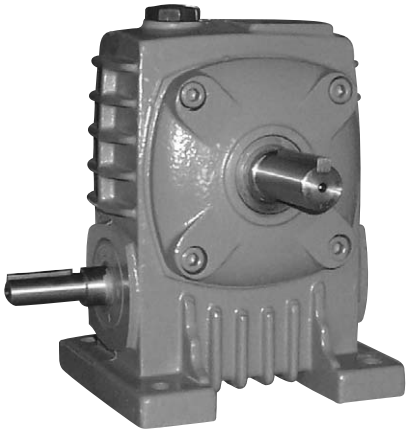
方向

A
B
C
D
E
F

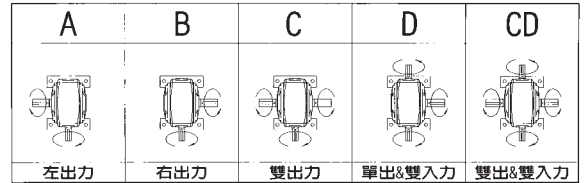
馬力HP

M: 加裝馬達
N: 無馬達

TM A MODEL



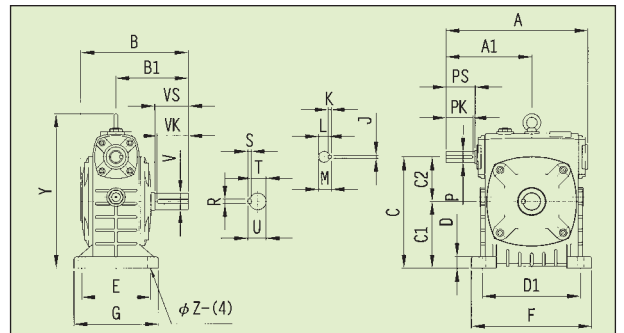
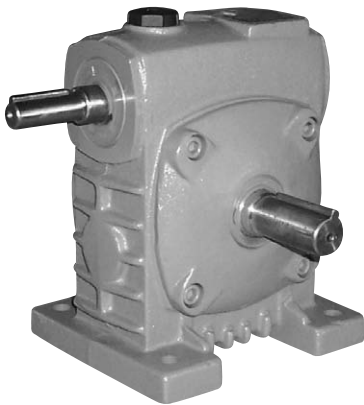
軸配置 · 回轉方向
SHAFT DIRECTION



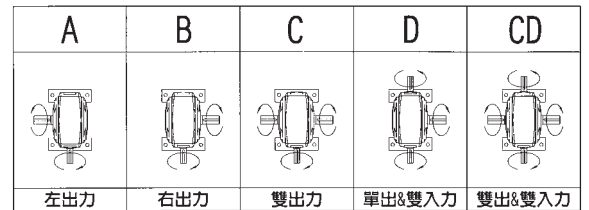
DIMENSION m/m

型號 MODEL	RATIO & HP		腳座 BASE								入力軸 INPUT SHAFT				出力軸 OUTPUT SHAFT															
	1/10	1/40	A	A1	B	B1	C	C1	C2	Y	鍵 KEY				軸 SHAFT															
	1/20	1/50								D	D1	E	F	G	Z	J	K	PK	L	M	P	PS	R	S	VK	T	U	V	VS	
50	1/4HP	1/8HP	168	105	141	95	100	50	50	177	16	110	95	140	120	11	5	5	25	11	16	14	30	5	5	35	14	19	17	40
60	1/2HP	1/4HP	191	123	162	108	120	60	60	205	19	120	105	152	130	11	5	5	35	12	17	15	40	7	7	45	18	25	22	50
70	1HP	1/2HP	224	140	192	126	140	70	70	238	21	150	115	190	150	15	5	5	35	15	20	18	40	7	7	47	24	31	28	52
80	2HP	1HP	266	170	205	137	160	80	80	263	25	180	135	222	172	15	7	7	55	18	25	22	60	10	8	60	27.5	35.5	32	65
100	3HP	2HP	318	192	249	162	200	100	100	368	25	220	155	270	190	15	7	7	60	21	28	25	65	10	8	70	33.5	41.5	38	75
120	5HP	3HP	396	237	285	200	240	120	120	427	29	260	180	324	242	18	7	7	60	26	33	30	65	12	8	80	40.5	48.5	45	85
135	7.5HP	5HP	433	259	339	225	270	135	135	480	32	290	200	354	254	18	10	8	70	30.5	38.5	35	75	15	10	85	50	60	55	90
155	10HP	7.5HP	462	277	359	240	290	135	155	548	38	320	220	400	280	20	10	8	80	35.5	43.5	40	85	15	10	105	55	65	60	110
175	15HP	10HP	531	313	382	251	335	160	175	620	40	350	250	430	320	20	12	8	80	40.5	48.5	45	85	18	12	105	59	71	65	110
200	20HP	15HP	618	368	470	305	375	175	200	620	36	350	280	420	364	22	12	8	90	45.5	53.5	50	95	20	12	120	62.5	74.5	70	125
225	30HP	20HP	657	380	497	320	415	190	225	685	40	360	280	456	356	27	15	10	90	50	60	55	95	20	12	135	72.5	84.5	80	140
250	40HP	30HP	732	420	555	360	450	200	250	745	46	440	370	526	444	27	15	10	105	55	65	60	110	24	16	150	82	98	90	155

TM B MODEL



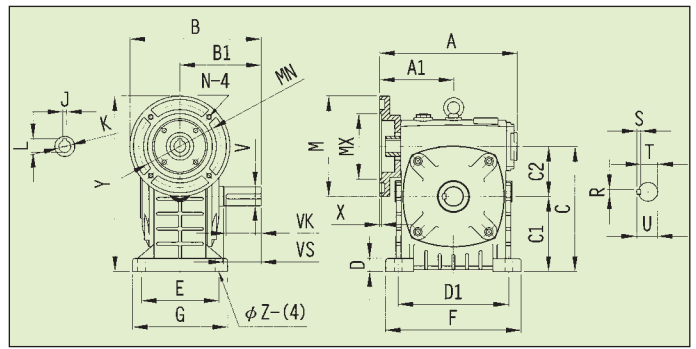
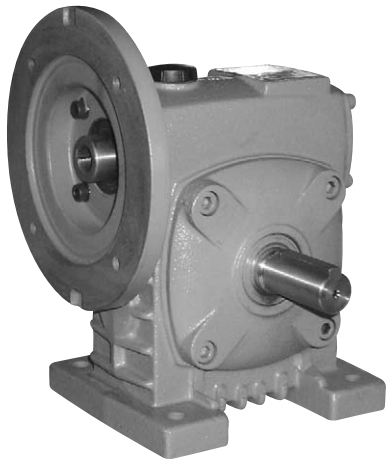
軸配置 · 回轉方向
SHAFT DIRECTION



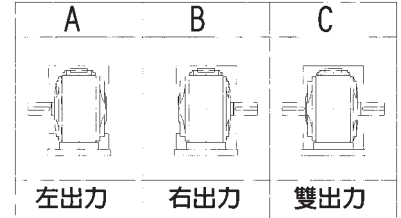
DIMENSION m/m

型號 MODEL	RATIO & HP		腳座 BASE								入力軸 INPUT SHAFT				出力軸 OUTPUT SHAFT															
	1/10	1/40	A	A1	B	B1	C	C1	C2	Y	鍵 KEY				軸 SHAFT															
	1/20	1/50								D	D1	E	F	G	Z	J	K	PK	L	M	P	PS	R	S	VK	T	U	V	VS	
40	1/8HP	1/10HP	137	83	111	73	90	50	40	130	12	95	55	120	80	9	-	-	21	10.2	-	12	25	5	5	25	12	17	15	30
50	1/4HP	1/8HP	168	105	141	95	130	80	50	178	16	110	95	140	120	11	5	5	25	11	16	14	30	5	5	35	14	19	17	40
60	1/2HP	1/4HP	191	123	160	108	150	90	60	198	19	120	105	150	130	11	5	5	35	12	17	15	40	7	7	45	18	25	22	50
70	1HP	1/2HP	237	140	190	126	175	105	70	230	21	150	115	190	150	15	5	5	35	15	20	18	40	7	7	47	24	31	28	52
80	2HP	1HP	272	170	205	137	200	120	80	260	23	180	135	220	172	15	7	7	55	18	25	22	60	10	8	60	27.5	35.5	32	65
100	3HP	2HP	318	192	241	162	250	150	100	347	26	220	155	270	190	15	7	7	60	21	28	25	65	10	8	70	33.5	41.5	38	75
120	5HP	3HP	396	237	286	200	300	180	120	406	29	260	180	324	242	18	7	7	60	26	33	30	65	12	8	80	40.5	48.5	45	85
135	7.5HP	5HP	433	259	335	225	350	215	135	485	35	290	200	355	252	18	10	8	70	30.5	38.5	35	75	15	10	85	50	60	55	90
155	10HP	7.5HP	462	277	362	240	390	235	155	533	38	320	220	400	280	20	10	8	80	35.5	43.5	40	85	15	10	105	55	65	60	110

TM AE MODEL



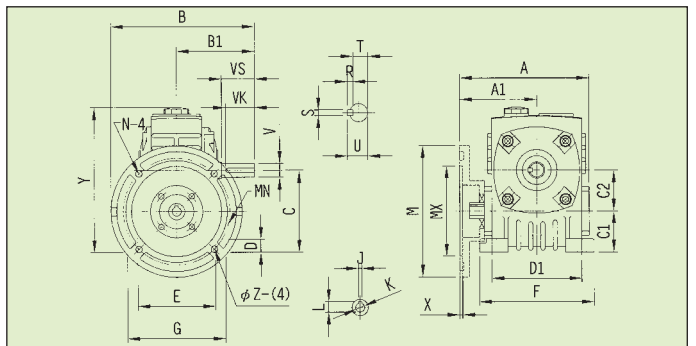
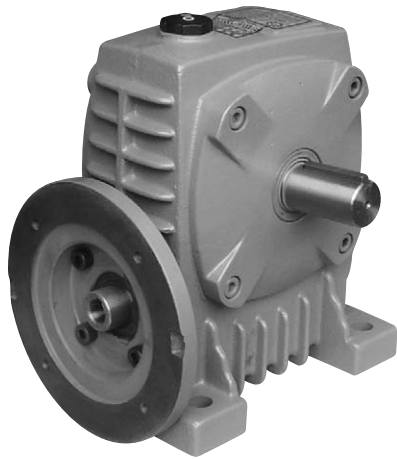
軸配置・回轉方向
SHAFT DIRECTION



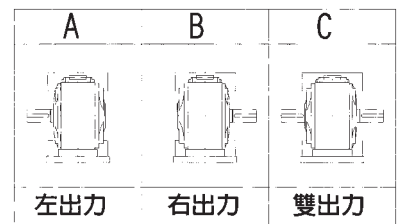
DIMENSION m/m

型號 MODEL	RATIO & HP		腳座 BASE								法 蘭 FLANGE					入力孔 INPUT BORE			出力軸 OUTPUT SHAFT												
	1/5 1/10 1/20 1/30	1/40 1/50 1/60	A	A1	B	B1	C	C1	C2	Y	D	D1	E	F	G	Z	MN	N	MX	X	M	J	K	L	鍵 KEY			軸 SHAFT			
																									R	S	VK	T	U	V	VS
50		1/4HP	157	94	175	95	130	80	50	210	16	110	95	140	120	11	130	M8	110	3.7	160	4	11	12.7	5	5	35	14	19	17	40
60	1/2HP	1/4HP	167	99	188	108	150	90	60	230	19	120	105	150	130	11	130	M8	110	3.7	160	4 5	11 14	12.7 16.2	7	7	45	18	25	22	50
70	1HP	1/2HP	198 196	114 112	206 226	126	175	105	70	255 275	21	150	115	190	150	15	130 165	M8 M10	110 130	3.7	160 200	5 6	14 19	16.2 21.7	7	7	47	24	31	28	52
80	2HP	1HP	224	129	237	137	200	120	80	300	24	180	135	222	172	15	165	M10	130	3.7	200	6 8	19 24	21.7 27.2	10	8	60	27.5	35.5	32	65
100	3HP	2HP	273 270	147 144	262 287	162	250	150	100	350 375	26	220	155	270	190	15	165 215	M10 M12	130 180	3.7 4.7	200 250	8	24 28	27.2 31.1	10	8	70	33.5	41.5	38	75
120	5HP	3HP	336	178	325	200	300	180	120	425	29	260	180	324	242	18	215	M12	180	4.7	250	8	28	31.1	12	8	80	40.5	48.5	45	85
135	7.5HP	5HP	364 365	190 191	350 375	225	350	215	135	485 500	35	290	200	355	252	18	215 265	M12	180 230	4.7	250 300	8 10	28 38	31.1 41.2	15	10	85	50	60	55	90
155	10HP	7.5HP	389	204	390	240	390	235	155	540	38	320	220	400	280	20	265	M12	230	4.7	300	10	38	41.2	15	10	105	55	65	60	110

TM AEA MODEL



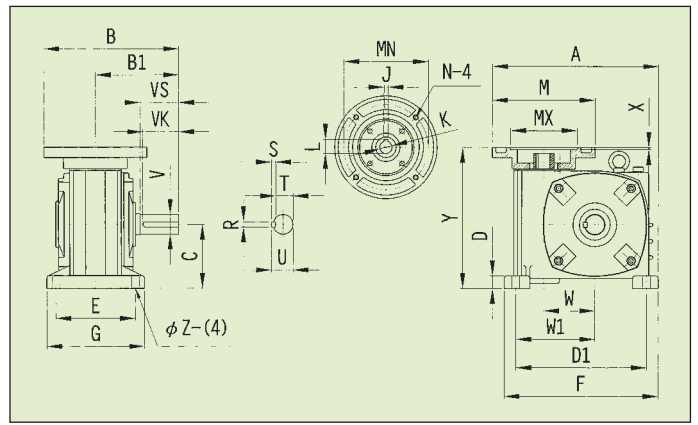
軸配置・回轉方向
SHAFT DIRECTION



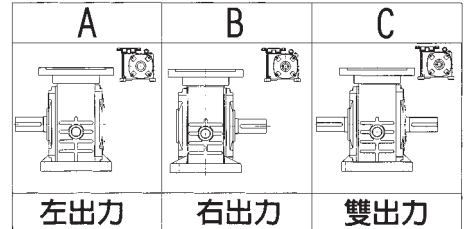
DIMENSION m/m

型號 MODEL	RATIO & HP		腳座 BASE								法 蘭 FLANGE					入力孔 INPUT BORE			出力軸 OUTPUT SHAFT												
	1/5 1/10 1/20 1/30	1/40 1/50 1/60	A	A1	B	B1	C	C1	C2	Y	D	D1	E	F	G	Z	MN	N	MX	X	M	J	K	L	鍵 KEY			軸 SHAFT			
																									R	S	VK	T	U	V	VS
50		1/4HP	157	94	175	95	100	50	50	177	16	110	95	140	120	11	130	M8	110	3.7	160	4	11	12.7	7	7	35	18	25	17	40
60	1/2HP	1/4HP	167	99	188	108	120	60	60	205	19	120	105	152	130	11	130	M8	110	3.7	160	4 5	11 14	12.7 16.2	7	7	45	18	25	22	50
70	1HP	1/2HP	198 196	114 112	192	126	140	70	70	238	21	150	115	190	150	15	130 165	M8 M10	110 130	3.7	160 200	5 6	14 19	16.2 21.7	7	7	47	24	31	28	52
80	2HP	1HP	224	129	205	137	160	80	80	263	25	180	135	222	172	15	165	M10	130	3.7	200	6 8	19 24	21.7 27.2	10	8	60	27.5	35.5	32	65
100	3HP	2HP	273 270	147 144	249	162	200	100	100	368	25	220	155	270	190	15	165 215	M10 M12	130 180	3.7 4.7	200 250	8	24 28	27.2 31.1	10	8	70	33.5	41.5	38	75
120	5HP	3HP	336	178	285	200	240	120	120	427	29	260	180	324	242	18	215	M12	180	4.7	250	8	28	31.1	12	8	80	40.5	48.5	45	85
135	7.5HP	5HP	364 365	190 191	339	225	270	135	135	480	32	290	200	355	254	18	215 265	M12	180 230	4.7	250 300	8 10	28 38	31.1 41.2	15	10	85	50	60	55	90
155	10HP	7.5HP	389	204	240	359	290	135	155	548	38	320	220	400	280	20	265	M12	230	4.7	300	10	38	41.2	15	10	105	55	65	60	110

TM AEM MODEL



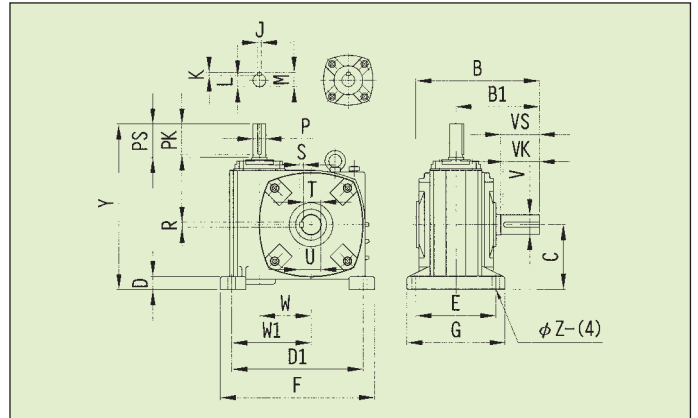
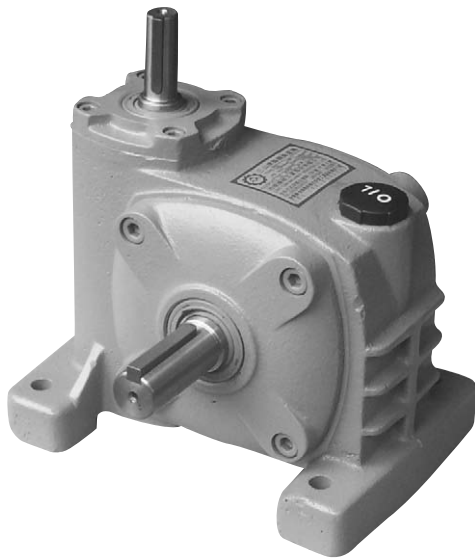
軸配置・回轉方向
SHAFT DIRECTION



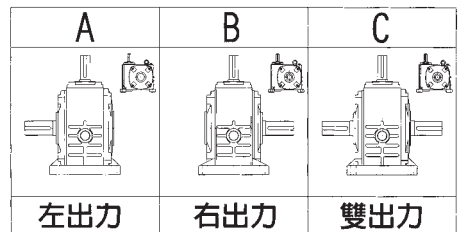
DIMENSION m/m

型號 MODEL	RATIO & HP		A	B	B1	C	W	W1	Y	腳座 BASE					入力孔 INPUT BORE			法蘭 FLANGE					出力軸 OUTPUT SHAFT							
	1/5 1/10 1/20 1/30	1/40 1/50 1/60								D	D1	E	F	G	Z	J	K	L	MN	N	MX	X	M	鍵 KEY			軸 SHAFT			
																							R	S	VK	T	U	V	VS	
60	1/2HP	1/4HP	220	188	108	76.5	60	89	172	23	150	105	188	137	11	4 5	11 14	12.7 16.2	130	M8	110	3.7	160	7	7	45	18	25	22	50
70	1HP	1/2HP	250 270	205 225	125	93	70	115	199 197	25	200	120	230	150	15	5 6	14 19	16.2 21.7	130 165	M8 M10	110 130	3.7	160 200	7	7	47	24	31	28	52
80	2HP	1HP	286	237	137	105	80	130	234	28	216	135	255	170	15	6 8	19 24	21.7 27.2	165	M10	130	3.7	200	10	8	60	27.5	35.5	32	65
100	3HP	2HP	324 349	262 287	162	125	100	154	266 271	25	255	155	300	190	15	8	24 28	27.2 31.1	165 215	M10 M12	130 180	3.7 4.7	200 250	10	8	70	33.5	41.5	38	75
120	5HP	3HP	401	325	200	160	120	174	335	28	300	180	360	230	18	8	28	31.1	215	M12	180	4.7	250	12	8	80	40.5	48.5	45	85

TM M MODEL

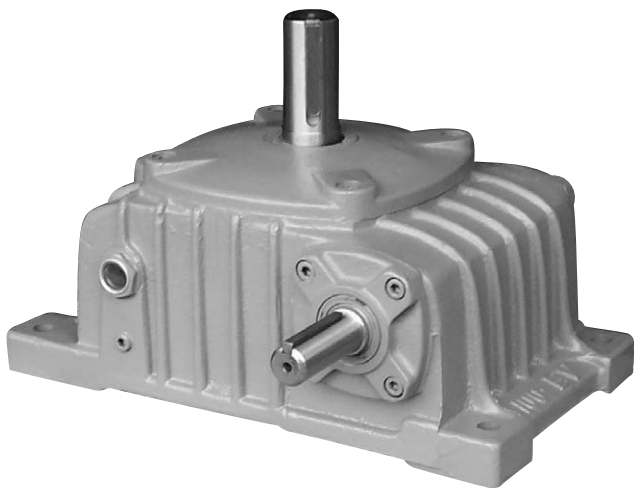


軸配置・回轉方向
SHAFT DIRECTION

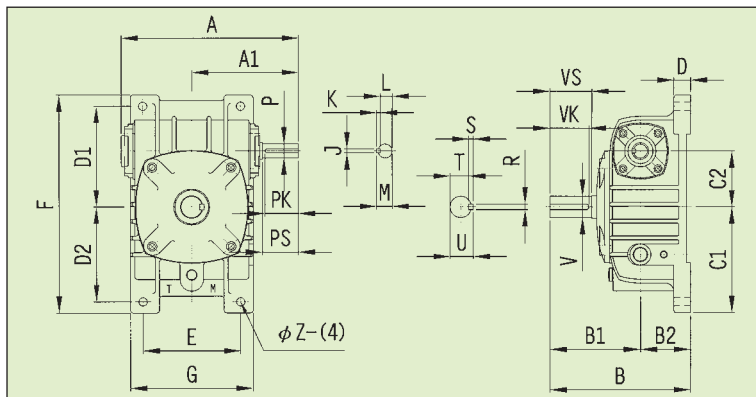


DIMENSION m/m

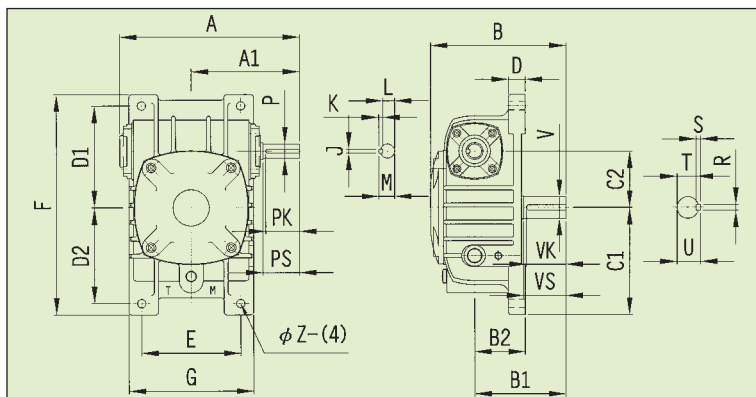
型號 MODEL	RATIO & HP		B	B1	C	W	W1	Y	腳座 BASE					入力軸 INPUT SHAFT				出力軸 OUTPUT SHAFT										
	1/5 1/10 1/20 1/30	1/40 1/50 1/60							D	D1	E	F	G	Z	鍵 KEY			軸 SHAFT	鍵 KEY			軸 SHAFT						
															J	K	PK	L	M	P	PS	R	S	VK	T	U	V	VS
60	1/2HP	1/4HP	160	108	76.5	60	89	200	23	150	105	188	137	11	5	5	35	12	17	15	40	7	7	45	18	25	22	50
70	1HP	1/2HP	188	125	93	70	115	233	25	200	120	230	150	15	5	5	35	15	20	18	40	7	7	47	24	31	28	52
80	2HP	1HP	206	137	105	80	130	275	28	216	135	255	170	15	7	7	55	18	25	22	60	10	8	60	27.5	35.5	32	65
100	3HP	2HP	239	162	125	100	154	317	25	255	155	300	190	15	7	7	60	21	28	25	65	10	8	70	33.5	41.5	38	75
120	5HP	3HP	290	200	160	120	174	397	28	300	180	360	230	18	7	7	60	26	33	30	65	12	8	80	40.5	48.5	45	85



軸上



軸下



軸配置・回轉方向
SHAFT DIRECTION



AL	BL	CL
AR	BR	CR
AD	BD	CD

DIMENSION m/m

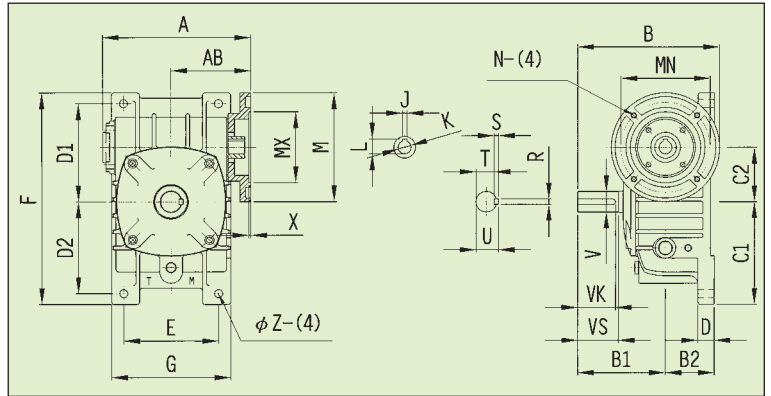
型號 MODEL	RATIO&HP		腳座 BASE										入力軸 INPUT SHAFT				出力軸 OUTPUT SHAFT													
	1/10	1/40	A	A1	B	B1	B2	C1	C2	D	D1	D2	E	F	G	Z	鍵 KEY			軸 SHAFT										
	1/20	1/50															J	K	PK	L	M	P	PS	R	S	VK	T	U	V	VS
50	1/4HP	1/8HP	169	105	145 (146)	95	50	105	50	17	105	95	90	220	110	11	5	5	25	11	16	14	30	5	5	35	14	19	17	40
60	1/2HP	1/4HP	188	123	163 (159)	108	55	124	60	17	120	105	100	262	131	11	5	5	35	12	17	15	40	7	7	45	18	25	22	50
70	1HP	1/2HP	226	140	196 (187)	126	70	140	70	20	132	120	125	290	162	15	5	5	35	15	20	18	40	7	7	47	24	31	28	52
80	2HP	1HP	266	170	207 (205)	137	70	150	80	23	150	130	140	320	180	15	7	7	55	18	25	22	60	10	8	60	27.5	35.5	32	65
100	3HP	2HP	318	192	252 (240)	162	90	190	100	30	180	170	175	390	220	15	7	7	60	21	28	25	65	10	8	70	33.5	41.5	38	75
120	5HP	3HP	396	237	300 (295)	200	100	205	120	31	215	185	220	445	260	18	7	7	60	26	33	30	65	12	8	80	40.5	48.5	45	85
135	7.5HP	5HP	433	259	335 (333)	225	110	235	135	36	235	210	235	500	288	18	10	8	70	30.5	38.5	35	75	15	10	85	50	60	55	90
155	10HP	7.5HP	462	277	380 (387) (265)	140	140	240	155	45	275	215	260	540	316	20	10	8	80	35.5	43.5	40	85	15	10	105	55	65	60	110
175	15HP	10HP	531	313	401 (397) (266)	150	150	200	175	40	285	170	310	520	380	20	12	8	80	40.5	48.5	45	85	18	12	105	59	71	65	110
200	20HP	15HP	577	350	492 (490) (323)	190	190	225	200	34	190	190	380	455	455	22	12	8	90	45.5	53.5	50	95	20	12	120	62.5	74.5	70	125

※當軸下尺寸與軸上不同時，軸下尺寸標示於括弧中。

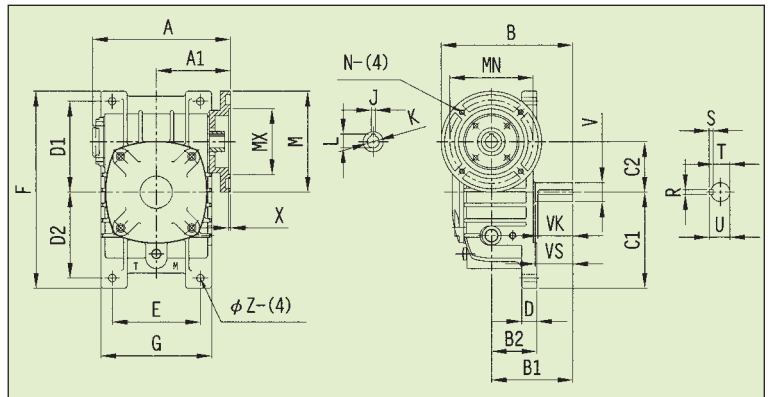
TM AEV MODEL



軸上



軸下



軸配置・回轉方向
SHAFT DIRECTION

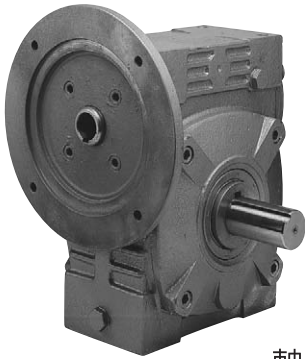
AL	BL	CL
AR	BR	CR
ADL or ADR	BDL or BDR	CDL or CDR

DIMENSION m/m

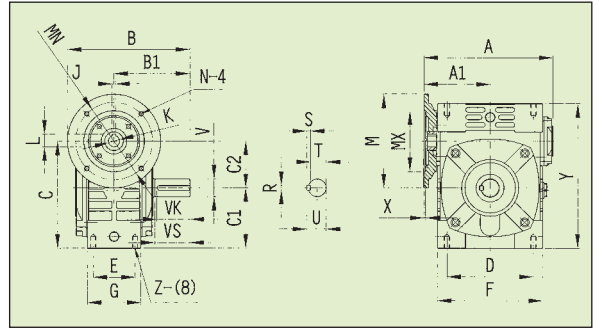
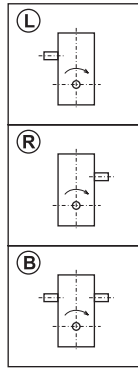
型號 MODEL	RATIO & HP		A	A1	B	B1	B2	C1	C2	腳座 BASE							入力孔 INPUT BORE			法蘭 FLANGE					出力軸 OUTPUT SHAFT						
	1/10	1/40								D	D1	D2	E	F	G	Z	J	K	L	MN	N	MX	X	M	鍵 KEY		軸 SHAFT				
	1/20	1/50																							R	S	VK	T	U	V	VS
50	1/4HP		158	94	175	95	50	105	50	17	105	95	90	220	110	11	4	11	12.7	130	M8	110	3.7	160	5	5	35	14	19	17	40
60	1/2HP	1/4HP	164	99	188	108	55	124	60	17	120	105	100	262	131	11	4	11	12.7	130	M8	110	3.7	160	7	7	45	18	25	22	50
70	1HP	1/2HP	202	116	206	126	70	140	70	20	132	120	125	290	162	15	5	14	16.2	130	M8	110	3.7	160	7	7	47	24	31	28	52
		200	114	226	165												M10	130	200												
80	2HP	1HP	224	129	237	137	70	150	80	23	150	130	140	320	180	15	6	19	21.7	165	M10	130	3.7	200	10	8	60	27.5	35.5	32	65
		8	24	27.2	215												M12	180	250												
100	3HP	2HP	273	147	262	162	90	190	100	30	180	170	175	390	220	15	8	24	27.2	165	M10	130	3.7	200	10	8	70	33.5	41.5	38	75
		270	144	287	215												M12	180	250												
120	5HP	3HP	336	178	325	200	100	205	120	31	215	185	220	445	260	18	8	28	31.1	215	M12	180	4.7	250	12	8	80	40.5	48.5	45	85
		365	191	375	250												M12	230	300												
135	7.5HP	5HP	364	190	350	225	110	235	135	36	235	210	235	500	288	18	8	28	31.1	215	M12	180	4.7	250	15	10	85	50	60	55	90
		365	191	375	250												M12	230	300												
155	10HP	7.5HP	389	204	415	265	140	240	155	45	275	215	260	540	316	20	10	38	41.2	265	M12	230	4.7	300	15	10	105	55	65	60	110
		(390)	(240)	265	265												M12	230	300												

※當軸下尺寸與軸上不同時，軸下尺寸標示於括弧中。

TM EDM MODEL



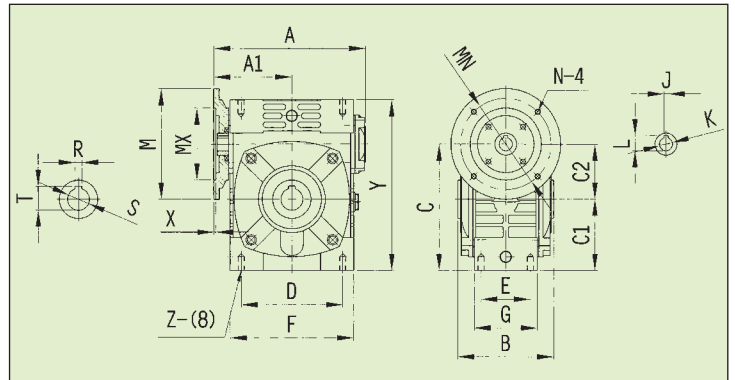
軸配置 · 回轉方向
SHAFT DIRECTION



DIMENSION m/m

型號 MODEL	RATIO&HP		腳座 BASE							馬達法蘭 MOTOR FLANGE					入力孔 INPUT BORE			出力軸 OUTPUT SHAFT												
	1/5 1/10 1/15 1/20 1/25	1/30 1/40 1/50 1/60	A	A1	B	B1	C	C1	C2	D	E	F	G	Y	Z	MN	N	MX	X	M	J	K	L	鍵 KEY			軸 SHAFT			
																								R	S	VK	T	U	V	VS
50	1/4HP		154	81	149	98	65	50	35	90	50	115	70	150	M8x16	130	M8	110	3.7	160	4	11	12.7	5	5	35	14	19	17	40
60	1/2HP	1/4HP	171	101	192	112	135	75	60	100	54	127	78	177	M10x20	130	M8	110	3.7	160	4 5	11 14	12.7 16.2	7	7	45	18	25	22	50
70	1HP	1/2HP	202 200	116 114	206 226	126	155	85	70	125	66	156	86	205	M10x20	130 165	M8 M10	110 130	3.7	160 200	5 6	14 19	16.2 21.7	7	7	47	24	31	28	52
80	2HP	1HP	225	129	237	137	172	92	80	145	75	176	101	232	M10x20	165	M10	130	3.7	200	6 8	19 24	21.7 27.2	10	8	60	27.5	35.5	32	65
100	3&5HP	2HP	276	142	262 287	162	230	130	100	185	90	225	115	310	M12x25	165 215	M10 M12	130 180	3.7 5	200 250	8	24 28	27.2 31.1	10	8	70	33.5	41.5	38	75

TM EDF MODEL

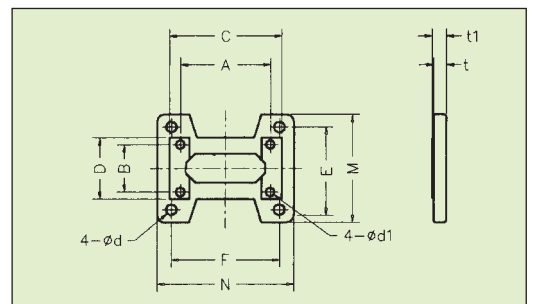


DIMENSION m/m

型號 MODEL	RATIO&HP		腳座 BASE					馬達法蘭 MOTOR FLANGE					入力孔 INPUT BORE			出力孔 OUTPUT BORE									
	1/5 1/10 1/15 1/20 1/25	1/30 1/40 1/50 1/60	A	A1	C	C1	C2	D	E	F	G	Y	Z	MN	N	MX	X	M	J	K	L	R	S	T	B
	50	1/4HP		154	81	65	50	35	90	50	115	70	150	M8x16	130	M8	110	3.7	160	4	11	12.7	6	20	22.8
60	1/2HP	1/4HP	171	101	135	75	60	100	54	127	78	177	M10x20	130	M8	110	3.7	160	4 5	11 14	12.7 16.2	7	25	28.1	117
70	1HP	1/2HP	202 200	116 114	155	85	70	125	66	156	86	205	M10x20	130 165	M8 M10	110 130	3.7	160 200	5 6	14 19	16.2 21.7	7	30	33.1	131
80	2HP	1HP	225	129	172	92	80	145	75	176	101	232	M10x20	165	M10	130	3.7	200	6 8	19 24	21.7 27.2	10	35	38.7	144
100	3&5HP	2HP	276	142	230	130	100	185	90	225	115	310	M12x25	165 215	M10 M12	130 180	3.7 5	200 250	8	24 28	27.2 31.1	12	40	44	175

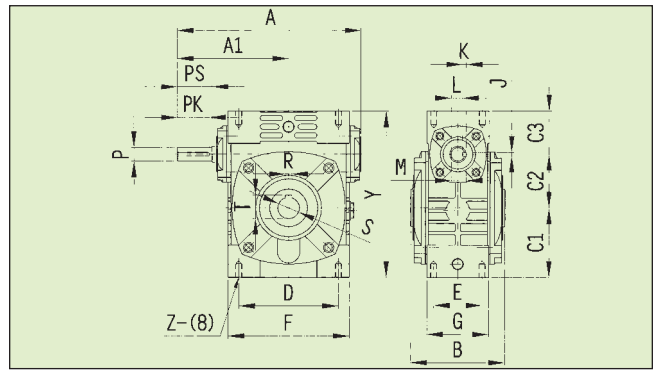
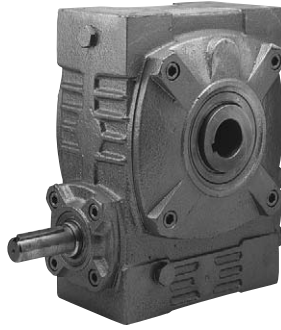
DIMENSION m/m

MODEL	A	B	C	D	E	F	M	N	t	t1	φd	φd1
ED-50	90	50	115	65	95	110	120	140	13	15	11	8
ED-60	100	54	127	78	105	120	130	150	15	18	11	10
ED-70	125	66	156	85	115	150	150	190	18	20	15	10
ED-80	145	75	176	101	135	180	170	220	18	20	15	10
ED-100	185	90	225	115	155	220	190	270	22	25	15	12



尺寸若有變更，恕不另行通知。

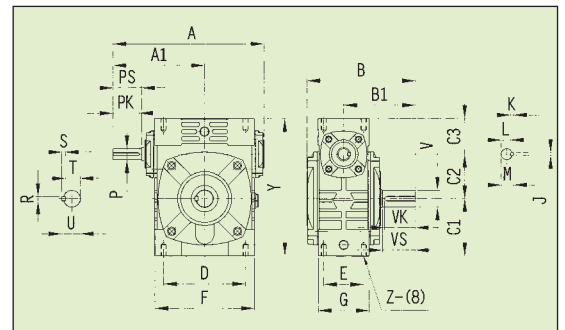
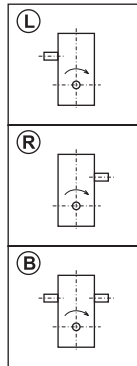
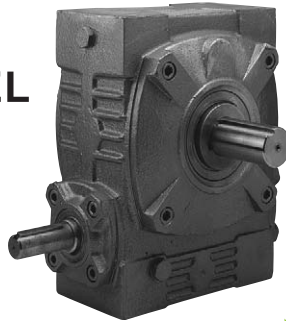
TM EDA MODEL



DIMENSION m/m

型號 MODEL	RATIO & HP		A	A1	C1	C2	C3	腳座 BASE					入力軸 INPUT SHAFT				出力孔 OUTPUT BORE							
	1/5	1/30						D	E	F	G	Y	Z	鍵 KEY			軸 SHAFT				R	S	T	B
	1/10	1/40												J	K	PK	L	M	P	PS				
50	1/4HP		178	105	65	50	35	90	50	115	70	150	M8x16	4	4	25	9.5	13.5	12	30	6	20	22.8	100
60	1/2HP	1/4HP	193	123	75	60	42	100	54	127	78	177	M10x20	5	5	35	12	17	15	40	7	25	28.1	117
70	1HP	1/2HP	226	140	85	70	50	125	66	156	86	205	M10x20	5	5	35	15	20	18	40	7	30	33.1	131
80	2HP	1HP	267	170	92	80	60	145	75	176	101	232	M10x20	7	7	55	18	25	22	60	10	35	38.7	144
100	3&5HP	2HP	341	207	130	100	80	185	90	225	115	310	M12x25	7	7	60	21	28	25	65	12	40	44	175

TM EAB MODEL

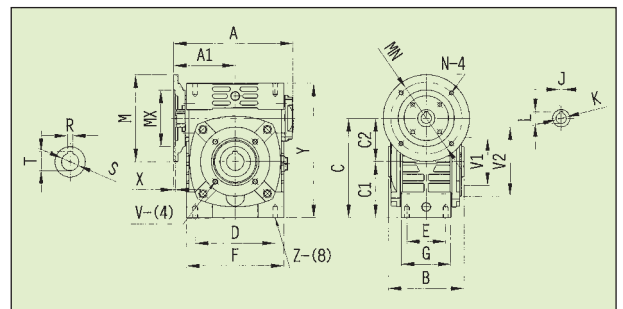
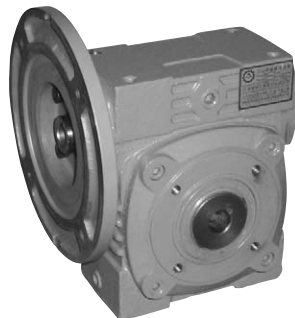


軸配置・回轉方向
SHAFT DIRECTION

DIMENSION m/m

型號 MODEL	RATIO & HP		A	A1	B	B1	C1	C2	C3	腳座 BASE					入力軸 INPUT SHAFT				出力軸 OUTPUT SHAFT										
	1/5	1/30								D	E	F	G	Y	Z	鍵 KEY			軸 SHAFT				R	S	VK	T	U	V	VS
	1/10	1/40														J	K	PK	L	M	P	PS							
50	1/4HP		178	105	149	98	65	50	35	90	50	115	70	150	M8x16	4	4	25	9.5	13.5	12	30	5	5	35	14	19	17	40
60	1/2HP	1/4HP	193	123	169	112	75	60	42	100	54	127	78	177	M10x20	5	5	35	12	17	15	40	7	7	45	18	25	22	50
70	1HP	1/2HP	226	140	186	126	85	70	50	125	66	156	86	205	M10x20	5	5	35	15	20	18	40	7	7	47	24	31	28	52
80	2HP	1HP	267	170	206	137	92	80	60	145	75	176	101	232	M10x20	7	7	55	18	25	22	60	10	8	60	27.5	35.5	32	65
100	3&5HP	2HP	341	207	245	162	130	100	80	185	90	225	115	310	M12x25	7	7	60	21	28	25	65	10	8	70	33.5	41.5	38	75

TM EFF MODEL



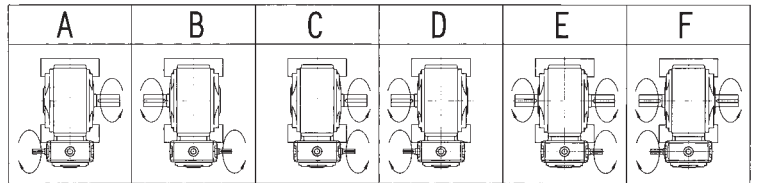
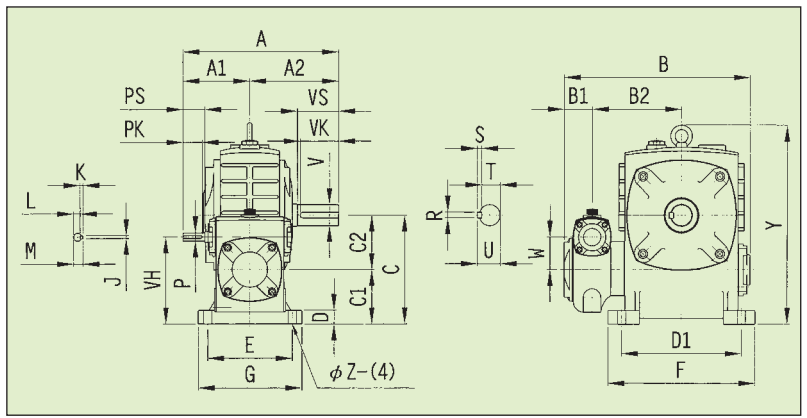
DIMENSION m/m

型號 MODEL	RATIO & HP		A	A1	C	C1	C2	腳座 BASE					馬達法蘭 MOTOR FLANGE					入力孔 INPUT BORE			出力孔 OUTPUT BORE				出力蓋 OUTPUT COVER					
	1/5	1/30						D	E	F	G	Y	Z	MN	N	MX	X	M	J	K	L	R	S	T	B	V1	V2	V		
	1/10	1/40																												
50	1/4HP		154	81	115	65	50	90	50	115	70	150	M8x16	130	M8	110	3.7	160	4	11	12.7	6	20	22.8	100	58	80	φ 70xM8		
60	1/2HP	1/4HP	171	101	135	75	60	100	54	127	78	177	M10x20	130	M8	110	3.7	160	4	5	11	14	12.7	7	25	28.1	117	70	94	φ 82xM8
70	1HP	1/2HP	202	116	155	85	70	125	66	156	86	205	M10x20	130	M8	110	3.7	160	5	6	14	19	16.2	7	30	33.1	131	80	115	φ 100xM8
80	2HP	1HP	225	129	172	92	80	145	75	176	101	232	M10x20	165	M10	130	3.7	200	6	8	19	24	21.7	10	35	38.7	144	95	135	φ 115xM10
100	3&5HP	2HP	276	142	230	130	100	185	90	225	115	310	M12x25	165	M10	130	3.7	200	8	24	27.2	12	40	44	175	110	160	φ 130xM12		

TM AW MODEL



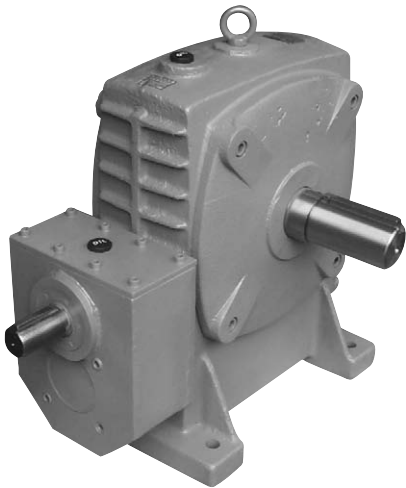
軸配置 · 回轉方向
SHAFT DIRECTION



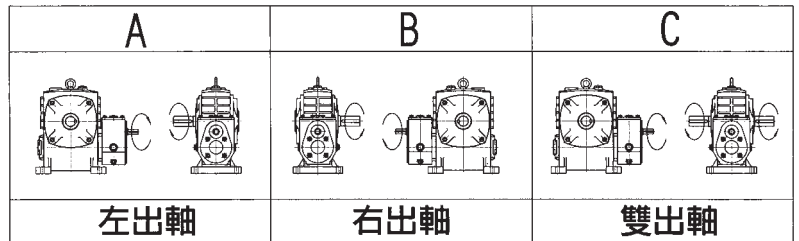
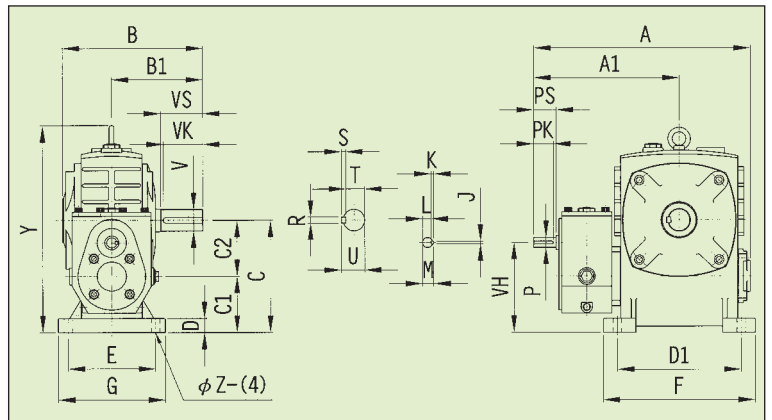
DIMENSION m/m

型號 MODEL	RATIO & HP		腳座 BASE											入力軸 INPUT SHAFT						出力軸 OUTPUT SHAFT													
	1/100 ~ 1/3600		A	A1	A2	B	B1	B2	C	C1	C2	VH	Y																				
			D	D1	E	F	G	Z	鍵 KEY			軸 SHAFT			鍵 KEY			軸 SHAFT															
J	K	PK	L	M	P	PS	R	S	VK	T	U	V	VS																				
70	1/8HP		266	50.5	132	231	105	126	140	70	70	120	238	21	150	115	190	150	15	5	5	25	11	16	14	30	7	7	47	24	31	28	52
80	1/4HP		289	50.5	143	242	105	137	160	80	80	130	263	25	180	135	222	172	15	5	5	25	11	16	14	30	10	8	60	27.5	35.5	32	65
100	1/2HP		341	51	164	285	123	162	200	100	100	160	364	25	220	155	270	190	15	5	5	35	12	17	15	40	10	8	70	33.5	41.5	38	75
120	1HP		418	59	200	339	140	200	240	120	120	190	427	29	260	180	342	242	18	5	5	35	15	20	18	40	12	8	80	40.5	48.5	45	85
135	2HP		457	68	215	395	170	225	270	135	135	215	480	32	290	200	354	254	18	7	7	55	18	25	22	60	15	10	85	50	60	55	90
155	3HP		506	78	243	432	192	240	290	135	155	235	548	38	320	220	400	280	20	7	7	60	21	28	25	65	15	10	105	55	65	60	110

TM GW MODEL



軸配置 · 回轉方向
SHAFT DIRECTION

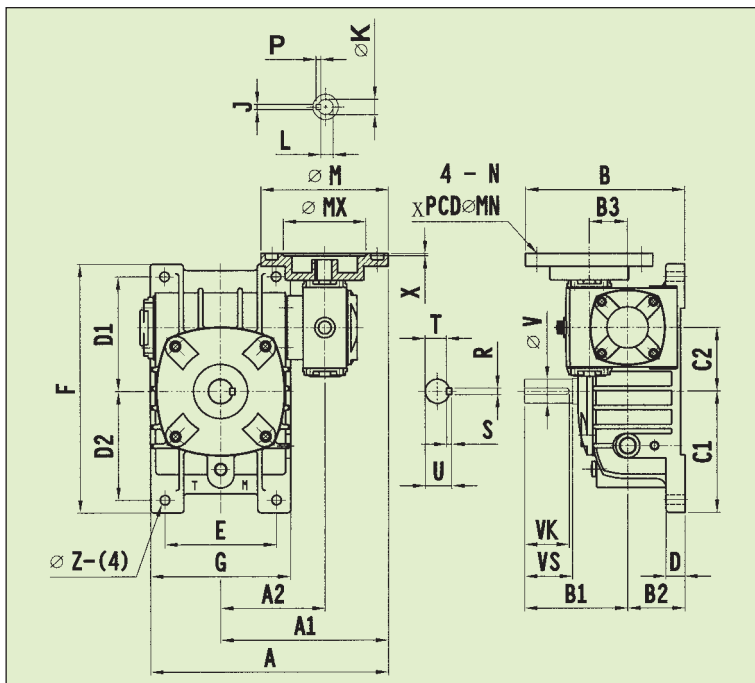
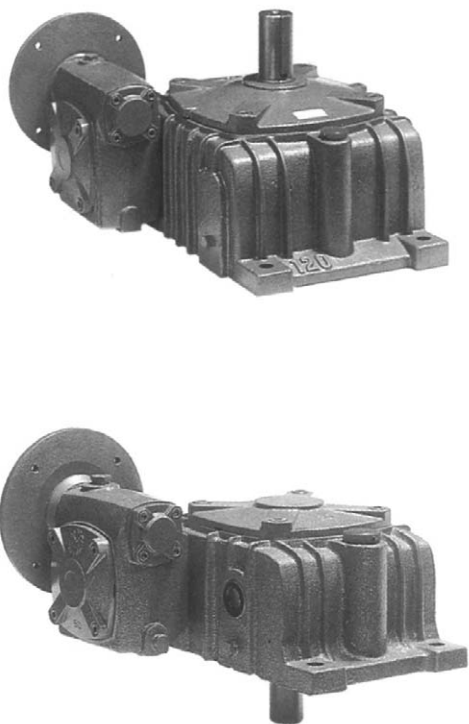


DIMENSION m/m

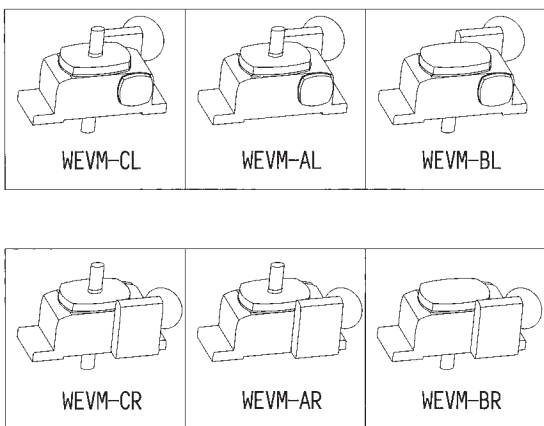
型號 MODEL	RATIO & HP		腳座 BASE											入力軸 INPUT SHAFT						出力軸 OUTPUT SHAFT											
	1/80 1/90 1/100	1/120 1/150 1/180	A	A1	B	B1	C	C1	C2	VH	Y																				
			D	D1	E	F	G	Z	鍵 KEY			軸 SHAFT			鍵 KEY			軸 SHAFT													
J	K	PK	L	M	P	PS	R	S	VK	T	U	V	VS																		
100	1/2HP	1/2HP	385	259	249	162	200	100	100	160	368	25	220	155	270	190	15	5	5	35	15	20	18	40	10	8	70	33.5	41.5	38	75
120	1HP	1HP	441	282	285	200	240	120	120	190	427	29	260	180	324	242	18	5	5	35	17	22	20	40	12	8	80	40.5	48.5	45	85
135	2HP	2HP	506	332	339	225	270	135	135	210	480	32	290	200	354	254	18	7	7	45	21	28	25	50	15	10	85	50	60	55	90
155	3HP	3HP	550	364	359	240	290	135	155	235	548	38	320	220	400	280	20	7	7	55	26	33	30	60	15	10	105	55	65	60	110
175	5HP	5HP	626	407	382	251	335	160	175	260	620	40	350	250	430	320	20	10	8	70	30.5	38.5	35	75	18	12	105	59	71	65	110

TM WEVM MODEL

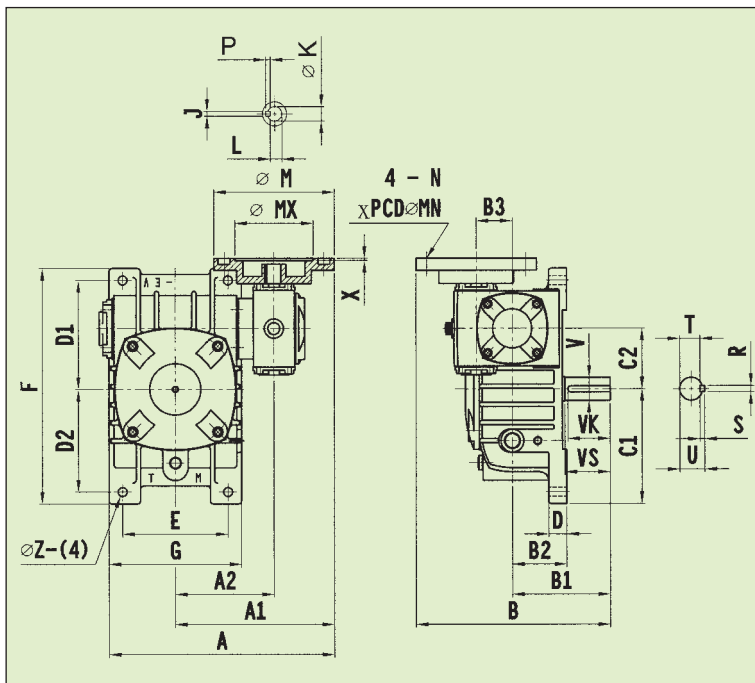
軸上



軸配置・回轉方向 SHAFT DIRECTION



軸下



DIMENSION m/m

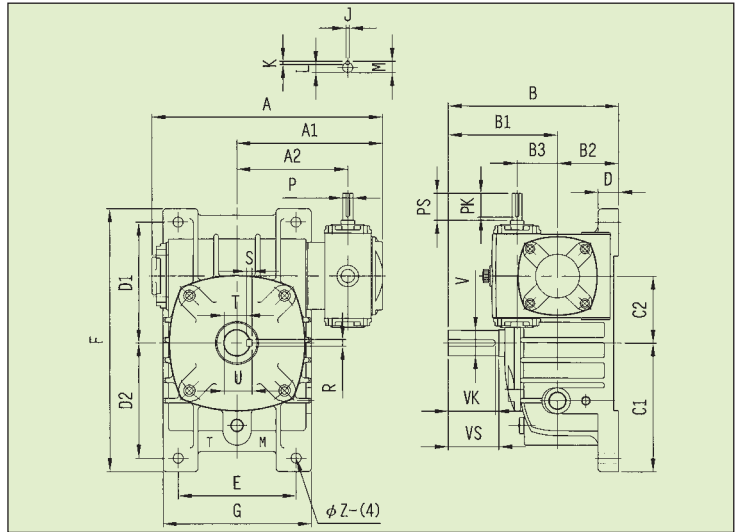
型號 MODEL	RATIO & HP		腳座 BASE										入力孔 INPUT BORE				法蘭 FLANGE				出力軸 OUTPUT SHAFT													
	1/100 1/900	1/1000 1/3600	A	A1	A2	B	B1	B2	B3	C1	C2	D	D1	D2	E	F	G	Z	J	P	K	L	MN	N	MX	X	M	R	S	VK	T	U	V	VS
70	1/4HP	1/4HP	300	214	134	200 (256)	126	70	50	140	70	20	132	120	125	290	162	15	4	4	11	12.7	130	M8	110	3.7	160	7	7	47	24	31	28	52
80	1/4HP	1/4HP	319	223	143	200 (267)	137	70	50	150	80	23	150	130	140	320	180	15	4	4	11	12.7	130	M8	110	3.7	160	10	8	60	27.5	35.5	32	65
100	1/2HP	1/4HP	370	244	164	230 (302)	162	90	60	190	100	30	180	170	175	390	220	15	4	4	11	12.7	130	M8	110	3.7	160	10	8	70	33.5	41.5	38	75
120	1HP	1/2HP	438 458	280 300	200	250/270 (350)/(370)	200	100	70	205	120	31	215	185	220	445	260	18	5	5	14	16.2	130	M8	110	3.7	160	12	8	80	40.5	48.5	45	85
135	2HP	1HP	489	315	215	290 (405)	225	110	80	235	135	36	235	210	235	500	288	18	6	6	19	21.7	165	M10	130	3.7	200	15	10	85	50	60	55	90

※當軸下尺寸與軸上不同時，軸下尺寸標示於括弧中。

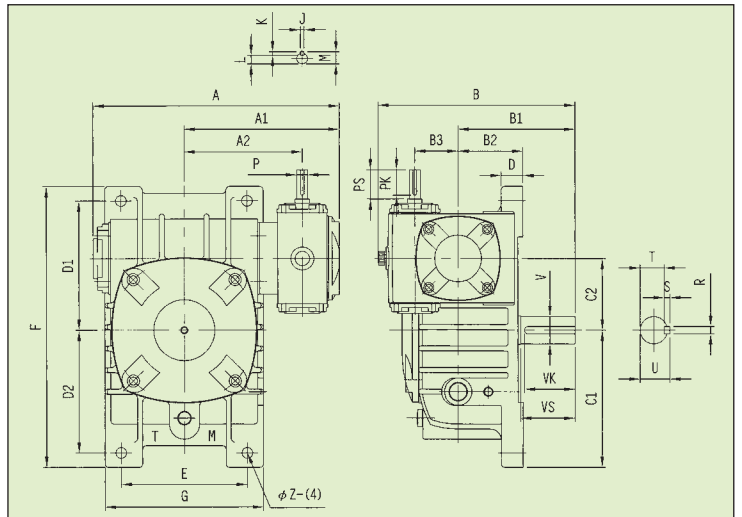
TM WEV MODEL



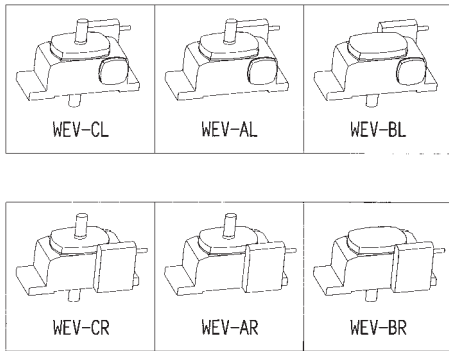
軸上



軸下



軸配置・回轉方向
SHAFT DIRECTION



DIMENSION m/m

型號 MODEL	RATIO & HP		A	A1	A2	B	B1	B2	B3	C1	C2	腳座 BASE							入力軸 INPUT SHAFT					出力軸 OUTPUT SHAFT								
	1/100	1/1000										D	D1	D2	E	F	G	Z	鍵 KEY			軸 SHAFT		鍵 KEY			軸 SHAFT					
	1/900	1/3600																	J	K	PK	L	M	P	PS	R	S	VK	T	U	V	VS
70	1/8HP	1/10HP	270	184	134	196 (226)	126	70	50	140	70	20	132	120	125	290	162	15	5	5	25	11	16	14	30	7	7	47	24	31	28	52
80	1/4HP	1/8HP	289	194	143	207 (237)	137	70	50	150	80	23	150	130	140	320	180	15	5	5	25	11	16	14	30	10	8	60	27.5	35.5	32	65
100	1/2HP	1/4HP	341	215	164	252 (273)	162	90	60	190	100	30	180	170	175	390	220	15	5	5	35	12	17	15	40	10	8	70	33.5	41.5	38	75
120	1HP	1/2HP	417	259	200	300 (331)	200	100	70	205	120	31	215	185	220	445	260	18	5	5	35	15	20	18	40	12	8	80	40.5	48.5	45	85
135	2HP	1HP	457	283	215	335 (366)	225	110	80	235	135	36	235	210	235	500	288	18	7	7	55	18	25	22	60	15	10	85	50	60	55	90

※當軸下尺寸與軸上不同時，軸下尺寸標示於括弧中。

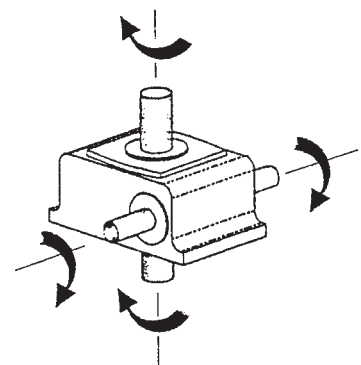
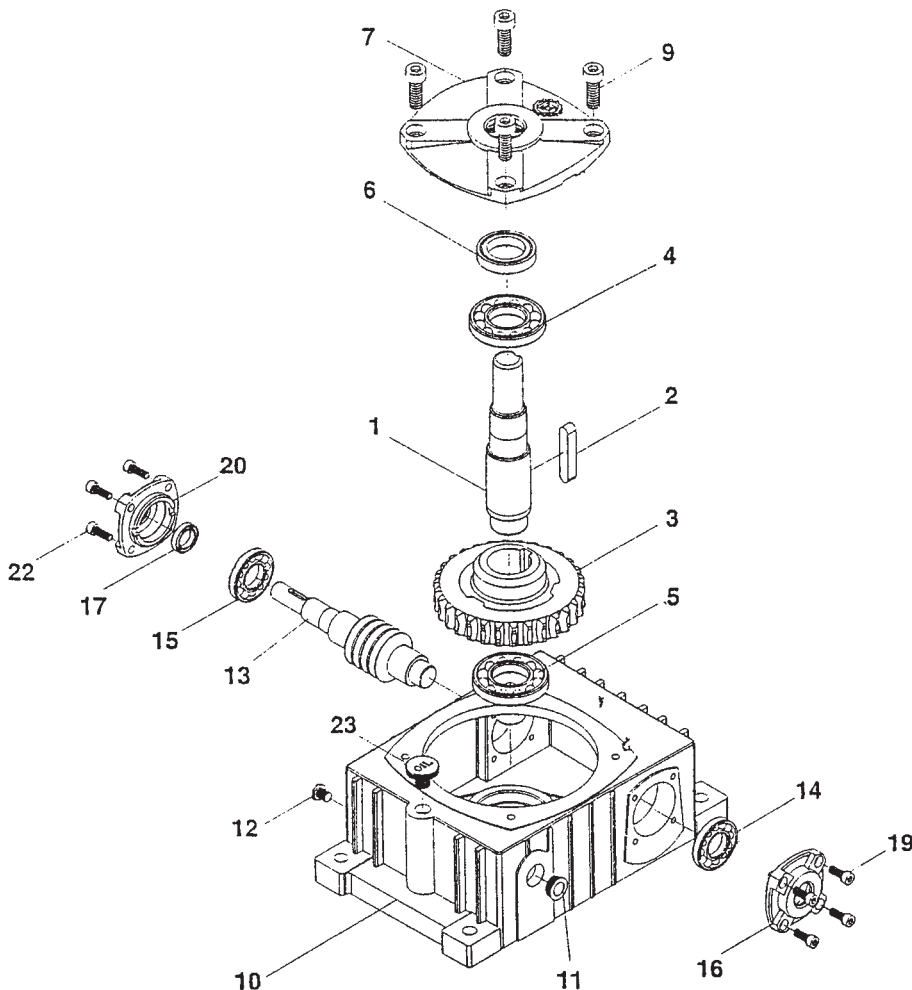
TM-	A	B	EV	AEM	AE
40	-	5	-	-	-
50	7	7	7	-	-
60	10	10	10	11	11
70	16	16	16	19	19
80	22	22	22	26	26
100	36	36	36	40	40
120	55	55	55	61	61
135	80	80	80	-	85
155	108	108	117	-	123
175	170	170	170	-	-
200	235	235	235	-	-
225	300	-	-	-	-
250	450	-	-	-	-

TM-	A	B&AE	(A)EV	AEM
40	-	0.15	-	-
50	0.3	0.4	0.4	-
60	0.4	0.4	0.4	0.4
70	0.6	0.8	1	0.7
80	0.8	1.2	1.2	0.8
100	1.2	2.4	1.7	1.3
120	2	4	5	2.6
135	4	7	7	-
155	4	10	10	-
175	6	-	8.2	-
200	10.5	-	11	-
225	12	-	-	-
250	14	-	-	-



三山牌蝸輪減速機 TM-EV

編號	名稱	NAME OF PARTS	編號	名稱	NAME OF PARTS
1	出力軸	OUTPUT SHAFT	13	蝸桿	WORM SHAFT
2	雙圓鍵	KEY	14	滾錐軸承	TAPER ROLLER BEARING
3	蝸輪	WORM WHEEL	15	滾錐軸承	TAPER ROLLER BEARING
4	滾珠軸承	BALL BEARING	16	入力軸蓋(右)	INPUT SHAFT COVER(R)
5	滾珠軸承	BALL BEARING	17	油封	OIL SEAL
6	油封	OIL SEAL	19	六角承窩頭螺絲	HEX . SCREW
7	出力軸蓋	OUTPUT SHAFT COVER	20	入力軸蓋(左)	INPUT SHAFT COVER(L)
9	六角承窩頭螺絲	HEX . SCREW	22	六角承窩頭螺絲	HEX . SCREW
10	蝸輪箱	OUTER SHEEL	23	注油栓	OIL PLUG
11	油鏡	OIL GAUGE	14	60#以下	BALL BEARING
12	排油栓	DRAIN PLUG	15	滾珠軸承	OF 60# BELOW



旋轉方向
Rotation Directions

潤滑油選定

適當潤滑油的粘度，須使蝸輪與蝸桿摩擦容易，在高負荷及衝擊負荷時，減速機才能充分發揮其機能。下表“三山牌”減速機潤滑油選定：

荷重 (LOAD)	周圍溫度 Ambient Temperature	中國石油 KUO-KUANG BRAND	SHELL OIL	MOBIL OIL	ISO VG
普通荷重 COMMON LOAD	-30°C~5°C	國光牌極壓機油 HD-150	OMALA OIL 150	MOBIL GEAR 629	ISO VG EP 150
	5°C~40°C	國光牌極壓機油 HD-320	OMALA OIL 320	MOBIL GEAR 632	ISO VG EP 320
	40°C~65°C	國光牌極壓機油 HD-460	OMALA OIL 460	MOBIL GEAR 634	ISO VG EP 460
超荷重 HEAVY LOAD	-30°C~5°C	國光牌極壓機油 HD-320	OMALA OIL 320	MOBIL GEAR 632	ISO VG EP 320
	5°C~40°C	國光牌極壓機油 HD-460	OMALA OIL 460	MOBIL GEAR 634	ISO VG EP 460
	40°C~65°C	國光牌極壓機油 HD-680	OMALA OIL 680	MOBIL GEAR 636	ISO VG EP 680

※最初使用300小時後，洗淨內部換上新油，其後每2500小時換油。

(註)：在高速、高溫、低速、重負荷、強制潤滑等特殊情況下使用場合時，請與敝公司洽商。

SELECTION OF LUBRICANT OIL

Lubricant oil must have a viscosity sufficient to reduce friction of the worm and worm gear. So that the speed reducer can operate smoothly under high load and impact.

※ After 300 hrs. of primary operation, drain away the oil and clean the internal of machine, then put in new oil. Do so hereafter every 2500 hrs. of operation.

(NOTE): Please keep in touch with our company, when you are operating the machinery under special condition for example: high speed, high temperature, low speed, heavy load.

訂購時請提供下列事項

※訂購時請提供下列事項：

- 機種、型號及減速比。
- 出力軸，馬力及每分鐘回轉數。
- 回轉方向和出力軸配置(右、左或雙出軸)。
- 荷重狀況。
- 傳動方式(直結、皮帶)。
- 台數及被安裝的機械名。

※ If you want to book speed reducers, please specify the following:

- Classification, Model and Ratio.
- Out put shaft power and revolution per minute.
- Rotation direction and required direction shaft (right, left, or duplex).
- Load.
- Wag of drive (direct, by belt or chain).
- Number of sets and name of the machine to be installed.

經銷商