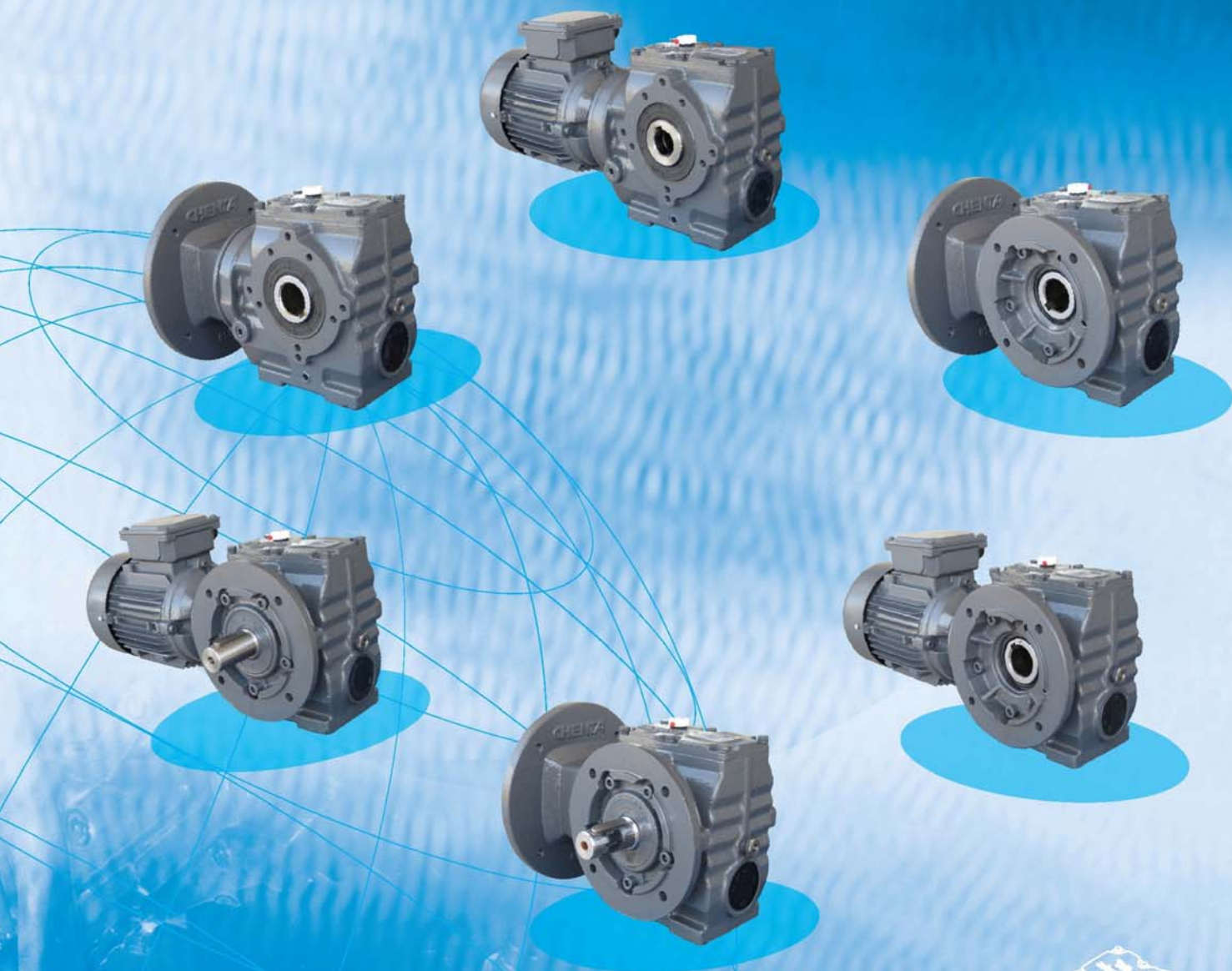




CHENTA HELICAL+WORM GEAR REDUCERS

成大斜齒+蝸齒輪減速機



外型安裝尺寸與德國領導品牌相容

INSTALLATION DIMENSION ARE CONSISTENT WITH GERMAN MODEL



# 公司介紹 COMPANY PROFILE

1. 1960年本公司董事長陳茂正先生創設"成大機器廠"於高雄市自強二路，工廠取名"成大"乃本於其對母校成功大學機械系在機械專業知識教育養成之感恩及飲水思源之情。
2. 成大機器廠成立後，專門從事汽車船舶引擎曲軸之研磨再生，汽缸搪缸及柴油引擎校正等機械加工工程，當時為南台灣之翹楚，由於技術精良服務親切，開業後旋即聞名遐邇，生意蓬勃。
3. 1971年本於公司發展應有自主性產品，才能永續經營遂與日本減速機製造廠技術合作，開始生產製造自有品牌之成大齒輪減速機，發展至今，公司員工近90名，產品以自有之CHENTA品牌行銷全球。主要市場為台灣、亞洲、美洲及中東，至今已執台灣業界之牛耳。並在海外設立美國分公司及中國上海分公司。
4. 建廠以來，本公司即本著"結合一流人才，研發製造高品質的產品"為信念。產品政策以"品質保證" "交貨準確" "價格競爭" "生產合理"及"行銷國際"為追求目標。
5. 累積40多年之機械製造經驗及誠信經營精神，本公司已自然形成一種優良的公司文化，此精神文化乃是公司最寶貴之資源，表諸文字即是"新" "實" "勤" "效"，乃創新、信實、勤快、效益，之意也。
6. 全體員工受此公司文化之薰陶，工作勤奮盡忠職守。在良好工作環境下，協力合作積極創新。使公司持續穩定發展，營造共同效益。
7. 本公司將在現有資源文化基礎上，繼續秉持敬業精神，以客戶至上的服務態度，精益求精，生產高品質具競爭價位之齒輪減速機回饋國內外客戶，與客戶攜手成長，以臻永續經營之目標。

## 公司概要

公司名稱：成大精機工業股份有限公司  
CHENTA PRECISION MACHINERY IND. INC.  
成立：民國60年（1971年）  
職工人數：90名  
廠房面積：仁武廠7000m<sup>2</sup>  
上海廠6800m<sup>2</sup>





# COMPANY PROFILE

1. IN 1960, Mr. Mao Cheng Chen, president of the company, and two other colleagues in the department of Mechanical Engineering of the Tainan Engineering College (predecessor of Cheng Kung University) established a company called "Chen Ta Machinery Works". It was named "Chen Ta" in remembrance of, and also giving acknowledgement to, their alma mater, Cheng Kung University (called Chen Ta in short) from where Mr. Chen and his colleagues had received their specialized mechanical education.
2. Chen Ta Machinery Works specialized in machining jobs such as grinding/re-building of the crankshafts of automobile and vessel engines, cylinder overhaul, and diesel engine adjustment. Back then, she was the best of her field in southern Taiwan. Due to the excellent technique and the cordial service, the company name was soon well known and the business became prosperous.
3. In 1971, to support a long-term operation, the company needed her own products, so the technique cooperation between CHENTA and Japan reducer manufacturer began. From then on, CHENTA started manufacturing her own brand, "CHENTA GEAR RDUCCERS". Now the company has about 90 employees, and her products have been marketing to the world under the name of "CHENTA". The major markets are in Taiwan, Asia, and America. In Taiwan, she remains at the top of the field and also established branch offices in America and in Shanghai (in China).
4. Since the beginning of the company, our conviction is to "Gather excellent human resource, and research and manufacture high quality products". Our product policy is targeting at "Guaranteed Quality", "On Time Delivery", "Competitive Prices", "Rational Production", and "International Marketing".
5. With more than 40 years of experience in mechanical manufacturing and honest operation, a fine culture has naturally grown inside the cooperation. This spirit is the most precious resource of our company. The motto of our company is based on "INNOVATION", "HONESTY", "DILIGENCE", and "EFFICIENCY".
6. Influenced gradually under such fine culture, all employees in CHENTA work hard and take responsibility. They cooperate with each other and innovate actively. With their efforts, CHENTA keep developing and growing up to fight for the mutual benefit.
7. To reach our long term operation goal, based on the company's existing cultural resources, we will: have high expertise in the field; serve our customers with respect; constantly improve ourselves; manufacture high quality and affordable speed reducers for customers throughout the world, all so that we can grow together with our customers.

## COMPANY PROFILE

Company Name : CHENTA PRECISION MACHINERY IND.INC.

Established : 1971

Employee: 90 persons

Plant Sizes: Jen Wu Plant 7000m<sup>2</sup>

Shanghai Plant 6800m<sup>2</sup>

# ISO 9001 品質保證系統認證





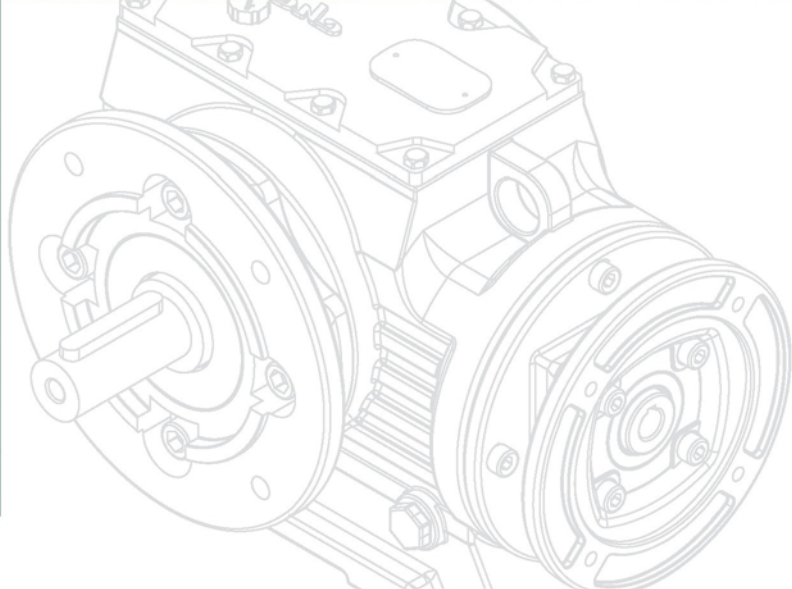
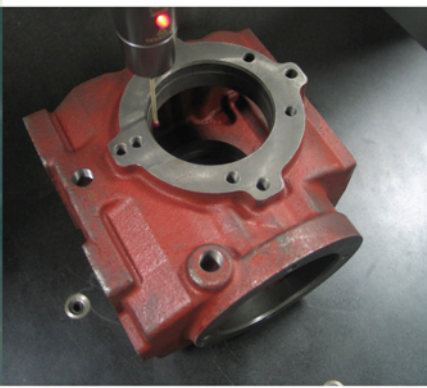
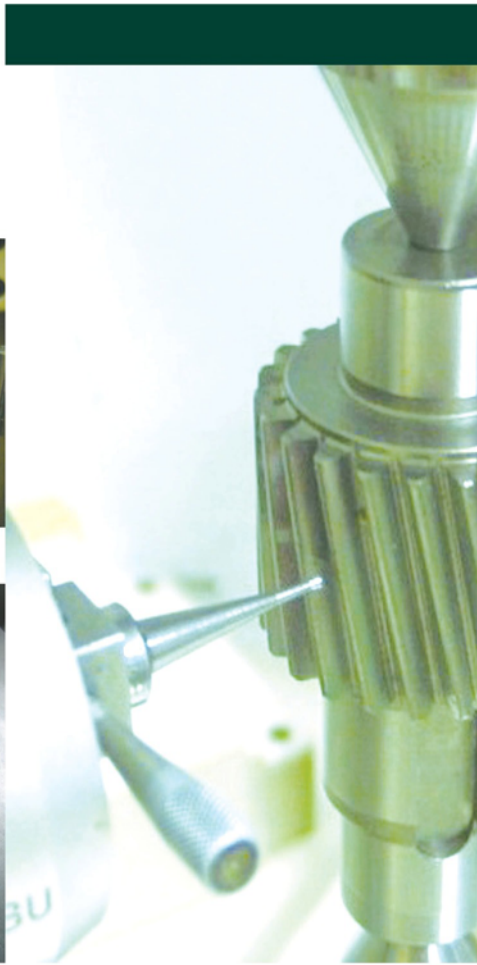
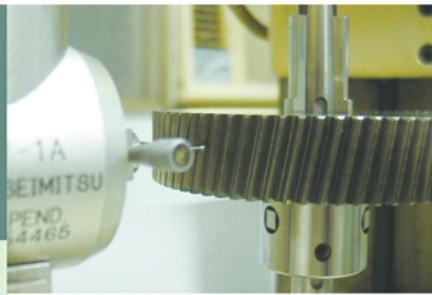
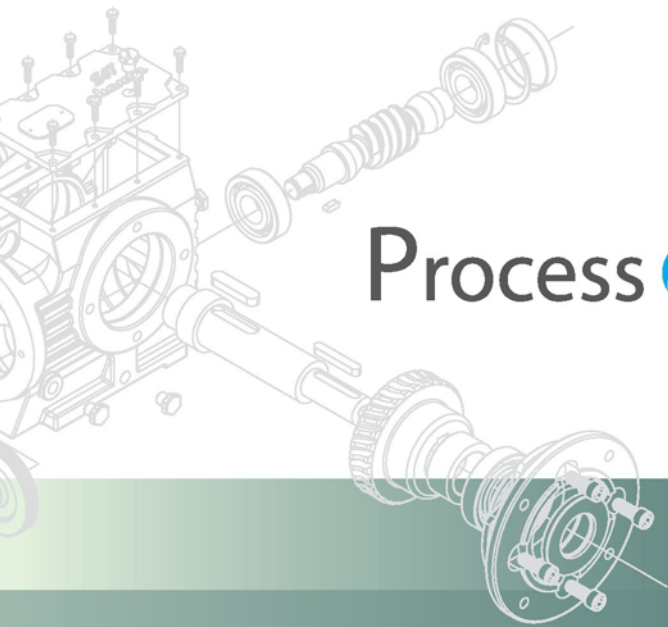
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# Process & Measure

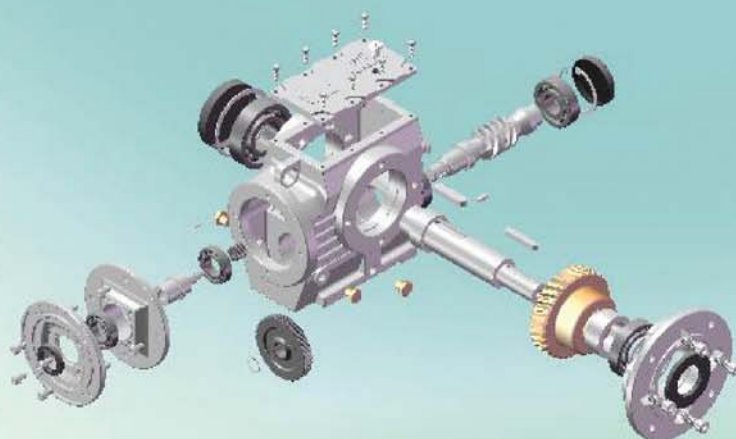
加工及量測





本公司除了原有的標準2D繪圖軟體進行設計工作，也導入了3D 機械設計軟體。完整的3D能表現接近實際的外型，使客戶能了解產品的整體架構，進行更深入的討論修改時，能與客戶在溝通上更無障礙。在交期上，更能大大縮短設計、工程圖、設計修改的時間，以最短時間供應，協助客戶提升市場競爭力。另外，許多客戶也已經採用3D軟體進行機械設備的設計，使得市面上對3D的需求性日益提高。未來，3D運用會更加廣泛。

Besides standard 2D CAD drawing software, we also lead in 3D Mechanical design software to design our products. Complete 3D drawing simulates to the real-world condition to make customers get the whole structure of the product. For further discussion and amendment, it makes communicate more easily. As for delivery, it shortens the time for design, CAD drawing and amending. It helps get products to market fast; in the mean while, promote the competition on market. Furthermore, many customers also use 3D software for mechanical design and it makes the need for 3D become more and more. In the future, the use for 3D is becoming general.



# 斜齒+蝸齒輪減速機 產品特點說明

## Features



- 1> 設計理念：標準化設計與模組化設計相結合，達到與國際領導品牌具有互換性，且兼備結構緊湊，體積小等特點。
- 2> 低噪音：高效斜齒輪組結合蝸齒輪組傳動與純斜齒輪相比較具有傳動更平穩，噪音更小的特點。
- 3> 大速比：速比可以從1:8-1:210之間任意選擇，彌補了純蝸輪減速機速比較小範圍的缺點。
- 4> 負載範圍：負載可根據不同需求從1/4HP-30HP任意選擇，可滿足不同之需求。
- 5> 承載能力更大：齒輪及蝸桿採用20CrMo合金鋼滲碳，蝸輪採用高承載能力的鋁青銅，傳動具有更高的承載力。
- 6> 自鎖性：在特定的條件下，傳動具有自鎖性（不可逆性），傳動更安全。
- 7> 安裝靈活性：每個規格皆可在M1到M6任意方向位置上安裝，安裝更靈活，更方便。
- 8> 結構外型美觀，堅固。

### Features/

- 1> **Design conception: combination of standardization and modularization to be compatible with international leading brands. With characteristic of rigid structure and compact body.**
- 2> **Low noise: gathering the advantage of helical gear high efficiency and worm gear smooth transmission, the transmission is more stable and less noise compare with standard helical gear speed reducer.**
- 3> **More ratios choice: the ratio range is between 8:1 ~ 210:1 which overcome the small ratio range issue of worm gear speed reducer.**
- 4> **Loading range: it can be freely chose between 1/4 HP ~ 30 HP according to different requirements and application.**
- 5> **Better strength: pinion, gear and worm shaft are 20CrMo material with carbonized treatment and aluminum bronze worm wheel which offers better strength and endurance.**
- 6> **Self-lock: in certain condition, it's not reversible from output shaft (self-lock) makes transmission movement be safer.**
- 7> **Convenient for mounting: every models are suitable for any mounting position (M1 ~ M6) as per different application. It's easier and also more convenient.**
- 8> **Nice appearance with strong structure.**



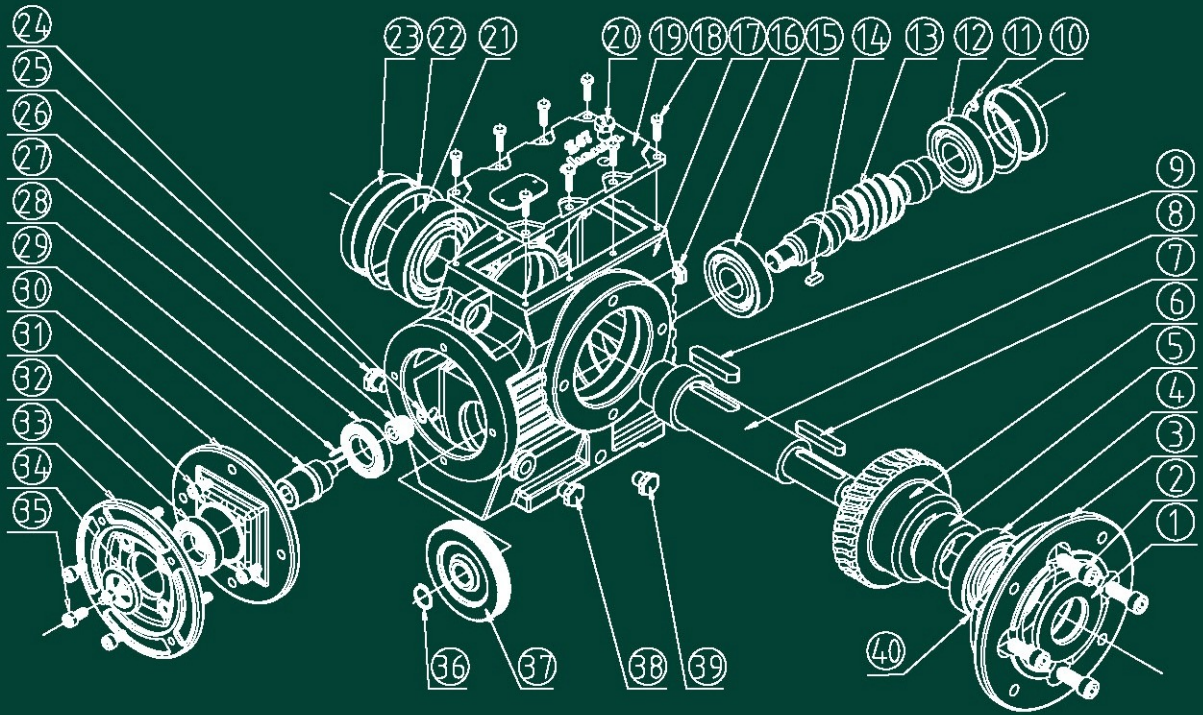






# 零件分解圖 Basic Structure

MODEL:GNF



編碼 ITEM	零件名稱 PART NAME	數量 QTY	編碼 ITEM	零件名稱 PART NAME	數量 QTY	編碼 ITEM	零件名稱 PART NAME	數量 QTY	編碼 ITEM	零件名稱 PART NAME	數量 QTY
1	油封(oil seal)	1	11	扣環 (snap ring)	1	21	軸承 (bearing)	1	31	螺栓 (bolt)	4
2	螺栓(bolt)	4	12	軸承 (bearing)	1	22	扣環 (snap ring)	1	32	軸承 (bearing)	1
3	出力法蘭 (output flange)	1	13	蝸桿 (worm shaft)	1	23	油封 (oil seal)	1	33	入力法蘭(input flange)	1
4	軸承(bearing)	1	14	雙圓鍵(key)	1	24	扣環 (snap ring)	1	34	油封 (oil seal)	1
5	隔環(spacer)	1	15	軸承 (bearing)	1	25	塞頭 (breather cap)	1	35	螺栓 (bolt)	4
6	蝸輪 (worm gear)	1	16	油鏡 (oil gauge)	1	26	齒輪 (gear)	1	36	扣環 (snap ring)	1
7	雙圓鍵(key)	1	17	本體 (housing)	1	27	軸承 (bearing)	1	37	齒輪 (gear)	1
8	出力軸(output shaft)	1	18	螺栓 (bolt)	6	28	雙圓鍵(key)	1	38	塞頭 (breather cap)	1
9	雙圓鍵(key)	1	19	天窗蓋 (top cover)	1	29	入力軸 (input shaft)	1	39	塞頭 (breather cap)	2
10	油封 (oil seal)	1	20	塞頭 (breather cap)	1	30	入力蓋 (input cover)	1	40	扣環 (snap ring)	1

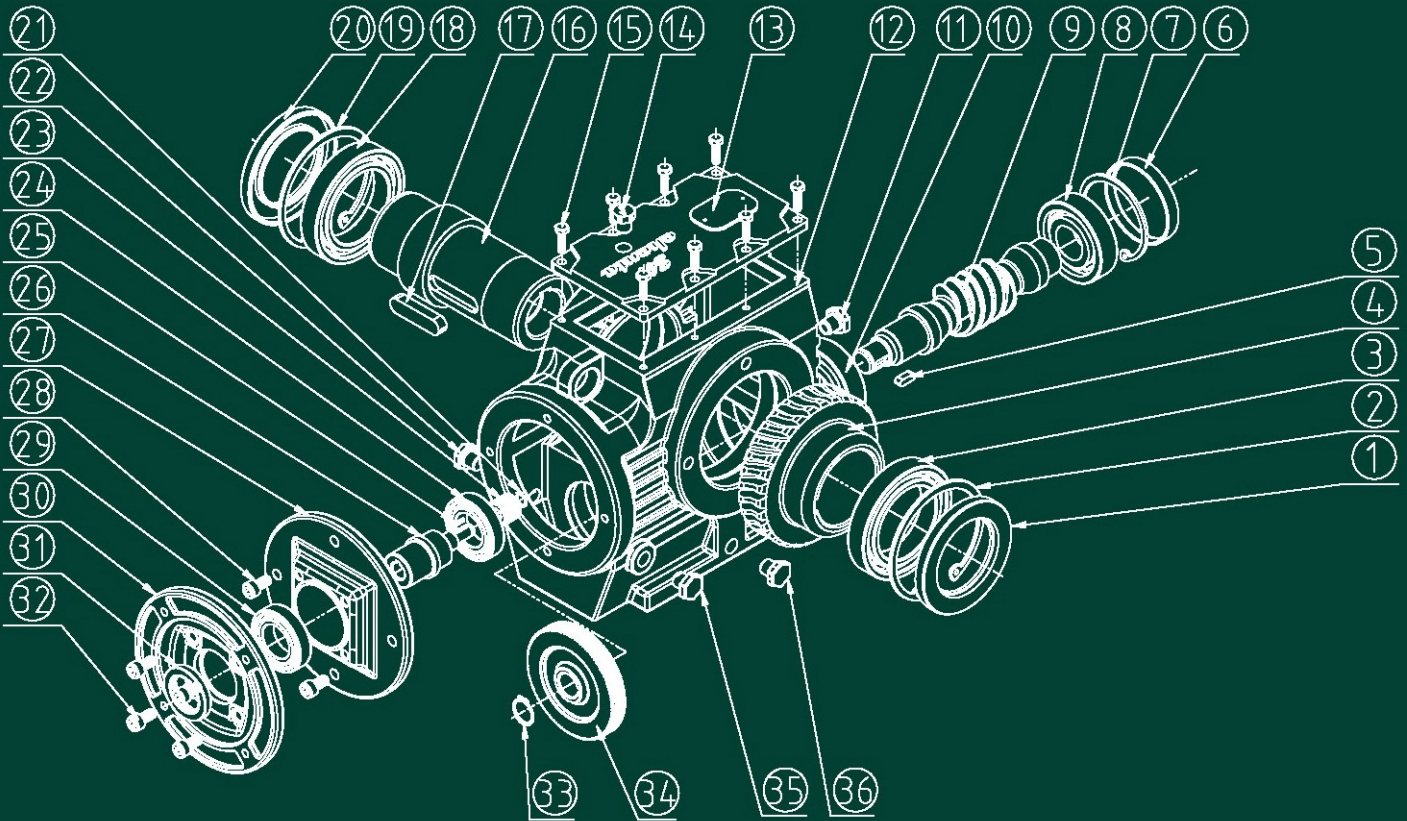
### 材料說明 ( MATERIAL GLANCE )

- 1.本體(housing)、蓋類 ( cover)、法蘭(flange)/灰口鑄鐵FC20;
- 2.入力軸(input shaft)、出力軸(output shaft)/鉻鉍合金鋼SCM440;
- 3.齒輪 ( gear)、蝸桿 ( worm shaft)/鉻鉍合金鋼SCM415;
- 4.蝸輪(worm gear)/球墨鑄鐵FCD45包鑄鉛青銅ALBC3。



# 零件分解圖 Basic Structure

MODEL:GHF



編碼 ITEM	零件名稱 PART NAME	數量 QTY	編碼 ITEM	零件名稱 PART NAME	數量 QTY	編碼 ITEM	零件名稱 PART NAME	數量 QTY	編碼 ITEM	零件名稱 PART NAME	數量 QTY
1	油封(oil seal)	1	11	油鏡(oil gauge)	1	21	扣環(snap ring)	1	31	油封(oil seal)	1
2	扣環(snap ring)	1	12	本體(housing)	1	22	塞頭(breather cap)	1	32	螺栓(bolt)	4
3	軸承(bearing)	1	13	天窗蓋(top cover)	1	23	齒輪(gear)	1	33	扣環(snap ring)	1
4	蝸輪(worm gear)	1	14	塞頭(breather cap)	1	24	軸承(bearing)	1	34	齒輪(gear)	1
5	雙圓鍵(key)	1	15	螺栓(bolt)	6	25	雙圓鍵(key)	1	35	塞頭(breather cap)	1
6	油封(oil seal)	1	16	出力軸(output shaft)	1	26	入力軸(input shaft)	1	36	塞頭(breather cap)	2
7	扣環(snap ring)	1	17	雙圓鍵(key)	1	27	入力蓋(input cover)	1	37		
8	軸承(bearing)	1	18	軸承(bearing)	1	28	螺栓(bolt)	1	38		
9	蝸桿(worm shaft)	1	19	扣環(snap ring)	1	29	軸承(bearing)	1	39		
10	軸承(bearing)	1	20	油封(oil seal)	1	30	入力法蘭(input flange)	1	40		

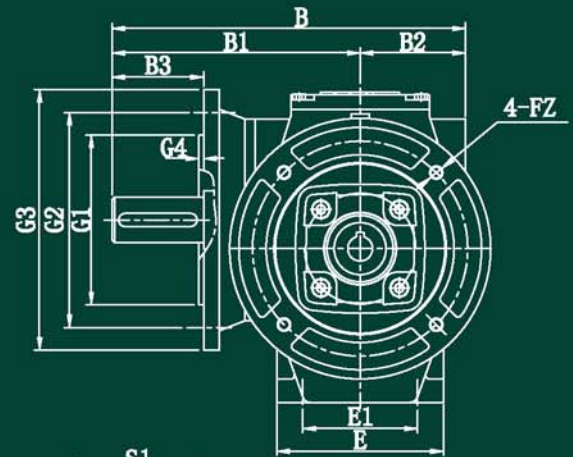
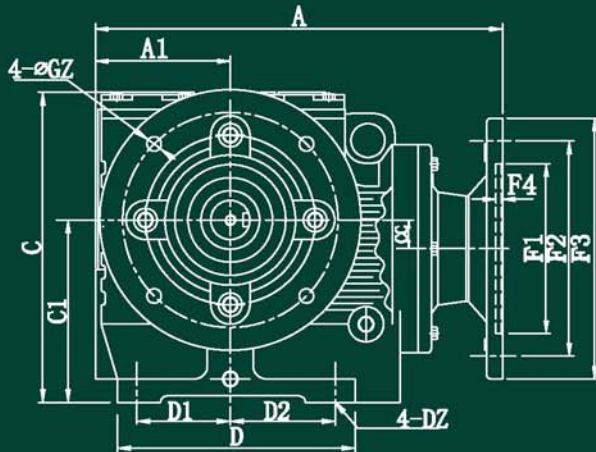
### 材料說明 ( MATERIAL GLANCE )

- 1.本體(housing)、蓋類 ( cover)、法蘭(flange)/灰口鑄鐵FC20;
- 2.入力軸(input shaft)、出力軸(output shaft)/鎢鉻合金鋼SCM440;
- 3.齒輪 ( gear )、蝸桿 ( worm shaft )/鎢鉻合金鋼SCM440;
- 4.蝸輪(worm gear)/球墨鑄鐵FCD45包鎢鉛青銅ALBC3。

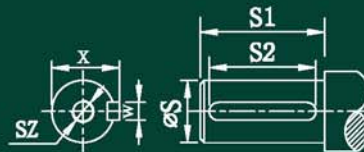
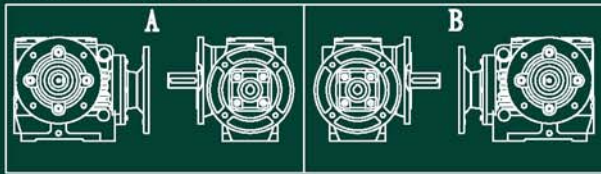




# 型式 MODEL/GNF 外型尺寸



Shaft Direction



出力軸

OUTPUT-SHAFT VIEW

GNF	A1	B	B1	B2	B3	C	C1	CC	D	D1	D2	E	E1	DZ	GZ	OIL(L)
37	63	172	115	57	40	143	82	0	113	46	41	85	55	M8*15L	6.6/9	0.27
47	71	191	133.5	57.5	50	178.5	100	10	128	35	52	95	60	M10*20L	9	0.38
57	80	232	160	72	60	187	112	23.7	146	58.5	58.5	100	60	M10*20L	11	0.55
67	103	270.5	190	80.5	70	238	140	22	182	71.5	80.5	128	88	M12*25L	11	1.1
77	118.5	341	240	101	90	301	180	33	200	85	85	154	102	M16*32L	14	2.0
87	150	410	290	140	120	367	225	47	265	115	110	194	118	M16*32L	18	3.5
97	180	505	340	165	140	460	280	53	301	135	113	236	160	M20*32L	8-17.5	7.1

GNF	出力法蘭 OUTPUT FLANGE				出力軸 OUTPUT SHAFT					
	G1	G2	G3	G4	øS	S1	S2	X	W	SZ
37	80	100	120	3	20m6	40	32	22.5	6	M6*15L
	110	130	160							
47	110	130	160	3.5	25m6	50	40	28	8	M10*20L
57	130	165	200	3.5	30m6	60	50	33	8	M10*20L
67	130	165	200	3.5	35m6	70	60	38	10	M12*25L
77	180	215	250	4	45m6	90	80	48.5	14	M16*40L
87	250	300	350	5	60m6	120	110	64	18	M20*70L
97	350	400	450	5	70m6	140	125	74.5	20	M20*70L



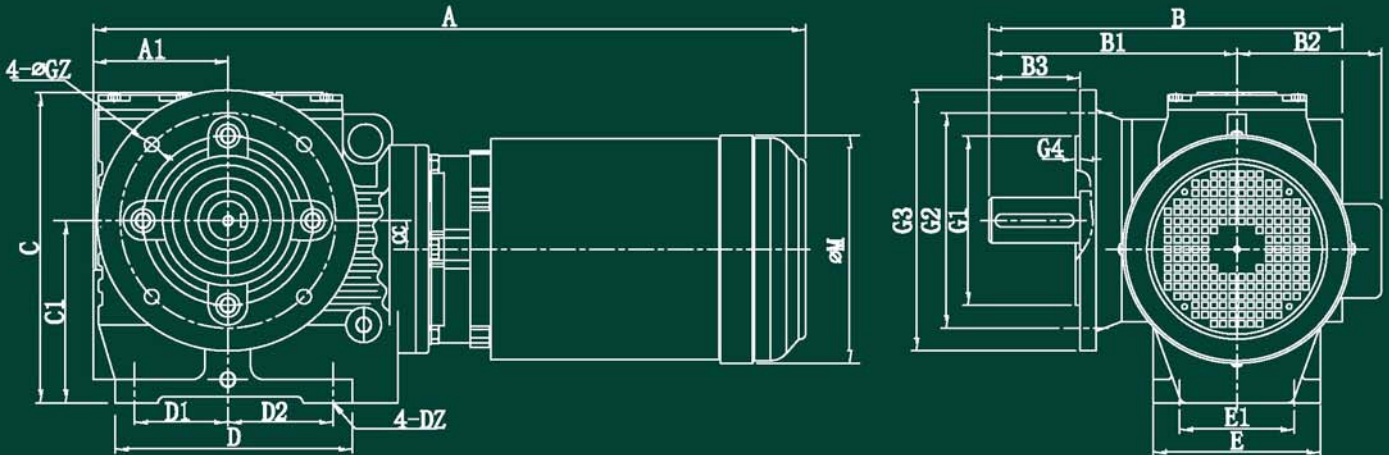
入力孔  
INPUT-BORE VIEW

GNF	入力法蘭 INPUT FLANGE								
	HP	1/4	1/2	1	2				
37	A	196		216					
	HP	1/4	1/2	1	2				
47	A	226		244					
	HP	1/4	1/2	1	2				
57	A	245		263					
	HP	1/2	1	2	3	5			
67	A	295.5		311.5		330			
	HP	1	2	3	5	7.5	10		
77	A	341		362.5		411			
	HP	2	3	5	7.5	10	15		
87	A	401.5		418		466.5		502.5	
	HP	3	5	7.5	10	15	20	25	30
97	A	482		526.5		562.5		571.5	
	HP	3	5	7.5	10	15	20	25	30

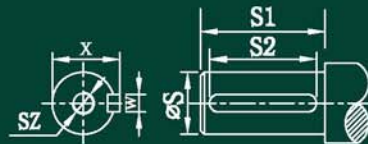
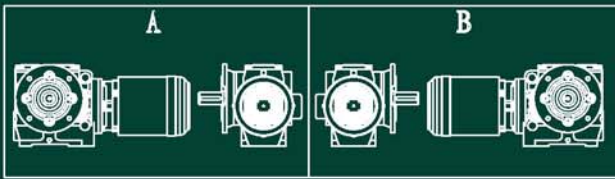
HP	INPUT BORE 入力孔-入力法蘭				INPUT FLANGE				
	øU	V	T	F1	F2	F3	F4	FZ	
1/4	11	12.8	4	110	130	160	4	M8	
1/2	14	16.3	5				4	M8	
1	19	21.8	6	130	165	200	5	M10	
2	24	27.3	8				5	M10	
3/5	28	31.3	8	180	215	250	5	M12	
7.5/10	38	41.3	10	230	265	300	6	M12	
15/20	42	45.3	12	250	300	350	6	M16	
25/30	48	51.8	14	300	350	400	6	M16	
40	55	59.3	16				6	M16	



# 型式 MODEL/GNM 外型尺寸



Shaft Direction



出力軸  
OUTPUT-SHAFT VIEW

GNM	A1	B	B1	B3	C	C1	CC	D	D1	D2	E	E1	DZ	GZ	OIL(L)
37	63	172	115	40	143	82	0	113	46	41	85	55	M8*15L	6.6/9	0.27
47	71	191	133.5	50	178.5	100	10	128	35	52	95	60	M10*20L	9	0.38
57	80	232	160	60	187	112	23.7	146	58.5	58.5	100	60	M10*20L	11	0.55
67	103	270.5	190	70	238	140	22	182	71.5	80.5	128	88	M12*25L	11	1.1
77	118.5	341	240	90	301	180	33	200	85	85	154	102	M16*32L	14	2.0
87	150	410	290	140	367	225	47	265	115	110	194	118	M16*32L	18	3.5
97	180	505	340	165	460	280	53	301	135	113	236	160	M20*32L	8-17.5	7.1

GNM	出力法蘭 OUTPUT FLANGE				出力軸 OUTPUT SHAFT					
	G1	G2	G3	G4	∅S	S1	S2	X	W	SZ
37	80	100	120	3	20m6	40	32	22.5	6	M6*15L
	110	130	160							
47	110	130	160	3.5	25m6	50	40	28	8	M10*20L
57	130	165	200	3.5	30m6	60	50	33	8	M10*20L
67	130	165	200	3.5	35m6	70	60	38	10	M12*25L
77	180	215	250	4	45m6	90	80	48.5	14	M16*40L
87	250	300	350	5	60m6	120	110	64	18	M20*70L
97	350	400	450	5	70m6	140	125	74.5	20	M20*70L

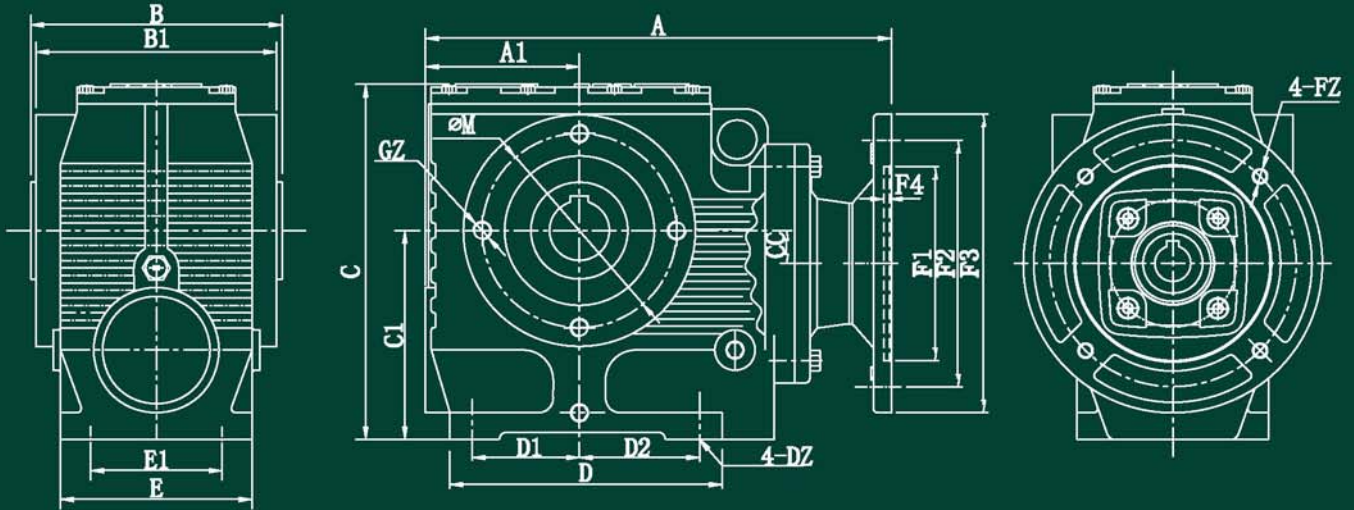
GNM	入力馬達 INPUT MOTOR				
	HP	1/4	1/2	1	2
37	A	356	382	405	448
	HP	1/4	1/2	1	2
47	A	383.5	410	433.5	476
	HP	1/4	1/2	1	2
57	A	402.5	428.5	452.5	495
	HP	1/2	1	2	3
67	A	479	503	545.5	585
	HP	1	2	3	5
77	A	535.5	578	617.5	667
	HP	3	5	7.5	10
87	A	673	722.5	767	804.5
	HP	3	5	7.5	10
97	A	737	786	827	865
	HP	3	5	7.5	10

馬達尺寸 MOTOR DIMENSION		
HP	∅M	B2
1/4	112	116
1/2	132	106
1	156	132
2	175	142
3	192	160
5	219	173
7.5	268	222
10	268	222
15	334	248
20	334	248
25	382	286
30	382	286

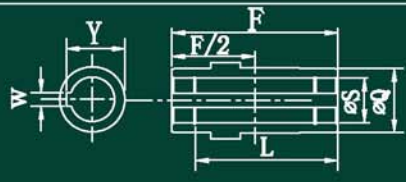




# 型式 MODEL/GHF 外型尺寸



OUTPUT-SHAFT VIEW  
出力軸



GHF	A1	B	B1	C	C1	CC	D	D1	D2	E	E1	F	ØM	DZ	GZ	OIL(L)
37	63	120	114	143	82	0	113	46	41	85	55	120	75	M8*15L	4-M6*12L	0.25
47	71	120	115	178.5	100	10	128	35	52	95	60	120	115	M10*20L	4-M8*15L	0.4
57	80	150	144	187	112	23.7	146	58.5	58.5	100	60	150	100	M10*20L	8-M8*15L	0.55
67	103	168	161	238	140	22	182	71.5	80.5	128	88	168	130	M12*25L	4-M12*20L	1.1
77	118.5	210	202	301	180	33	200	85	85	154	102	210	155	M16*32L	8-M12*20L	2.0
87	150	250	240	367	225	47	265	115	110	194	118	250	180	M16*32L	8-M16*32L	4.0
97	180	290	280	460	280	53	301	135	113	236	160	290	220	M20*32L	8-M16*32L	7.3

GHF	出力軸 OUTPUT SHAFT				
	ØS	ØQ	L	Y	W
37	20	35	104	22.8	6
47	25	45	105	28.3	8
	30			33.3	
57	30	50	132	33.3	8
	35			38.3	
67	40	65	144	43.3	12
	45			48.8	
77	50	80	180	53.8	14
	60			64.4	
87	60	95	220	64.4	18
	70			74.9	
97	70	120	260	74.9	20
	90			95.4	

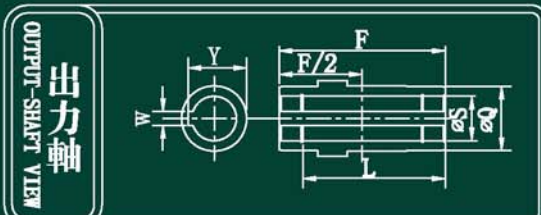
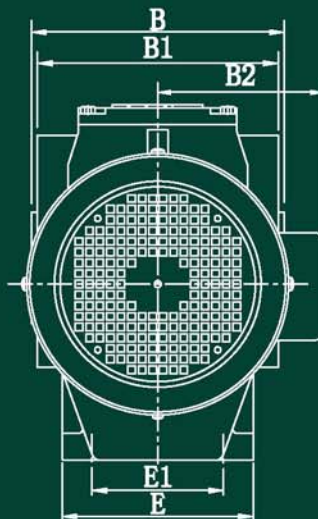
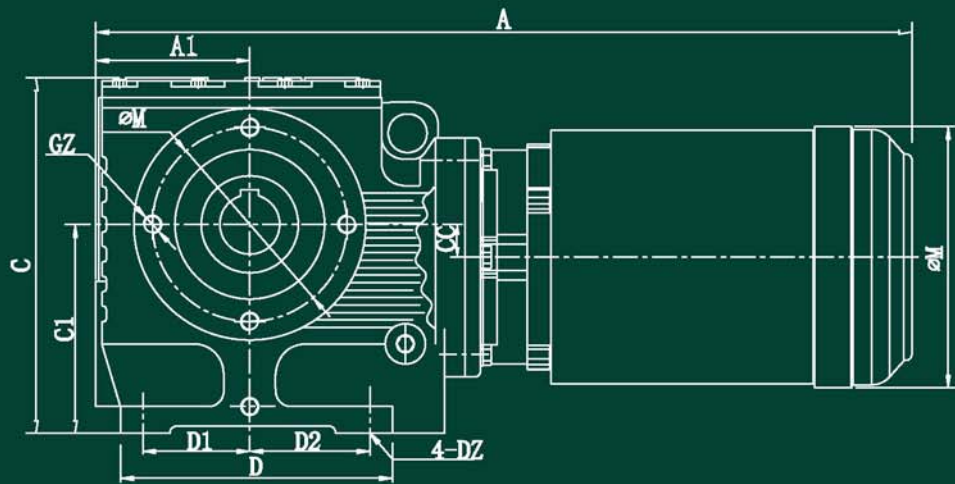


GHF	入力法蘭 INPUT FLANGE						
	HP	1/4	1/2	1	2	3	5
37	HP	1/4	1/2	1	2		
	A		196		216		
47	HP	1/4	1/2	1	2		
	A		226		244		
57	HP	1/4	1/2	1	2		
	A		245		263		
67	HP	1/2	1	2	3	5	
	A	295.5	311.5		330		
77	HP	1	2	3	5	7.5	10
	A		341		362.5		411
87	HP	2	3	5	7.5	10	15
	A	401.5	418		466.5		502.5
97	HP	3	5	7.5	10	15	20
	A		482		526.5		562.5
							571.5

INPUT BORE		入力孔-入力法蘭				INPUT FLANGE			
HP	ØU	V	T	F1	F2	F3	F4	FZ	
1/4	11	12.8	4	110	130	160	4	M8	
1/2	14	16.3	5				4	M8	
1	19	21.8	6	130	165	200	5	M10	
2	24	27.3	8				5	M10	
3/5	28	31.3	8	180	215	250	5	M12	
7.5/10	38	41.3	10	230	265	300	6	M12	
15/20	42	45.3	12	250	300	350	6	M16	
25/30	48	51.8	14	300	350	400	6	M16	
40	55	59.3	16				6	M16	



# 型式 MODEL/GHM 外型尺寸



GHM	A1	B	B1	C	C1	CC	D	D1	D2	E	E1	F	ØM	DZ	GZ	OIL(L)
37	63	120	114	143	82	0	113	46	41	85	55	120	75	M8*15L	4-M6*12L	0.30
47	71	120	115	178.5	100	10	128	35	52	95	60	120	115	M10*20L	4-M8*15L	0.4
57	80	150	144	187	112	23.7	146	58.5	58.5	100	60	150	100	M10*20L	8-M8*15L	0.55
67	103	168	161	238	140	22	182	71.5	80.5	128	88	168	130	M12*25L	4-M12*20L	1.1
77	118.5	210	202	301	180	33	200	85	85	154	102	210	155	M16*32L	8-M12*20L	2.0
87	150	250	240	367	225	47	265	115	110	194	118	250	180	M16*32L	8-M16*32L	4.0
97	180	290	280	460	280	53	301	135	113	236	160	290	220	M20*32L	8-M16*32L	7.3

GHM	出力軸 OUTPUT SHAFT				
	ØS	ØQ	L	Y	W
37	20	35	104	22.8	6
47	25	45	105	28.3	8
	30			33.3	
57	30	50	132	33.3	8
	35			36.3	
67	40	65	144	43.3	12
	45			48.8	
77	50	80	180	53.8	14
	60			64.4	
87	60	95	220	64.4	18
	70			74.9	
97	70	120	260	74.9	20
	90			95.4	

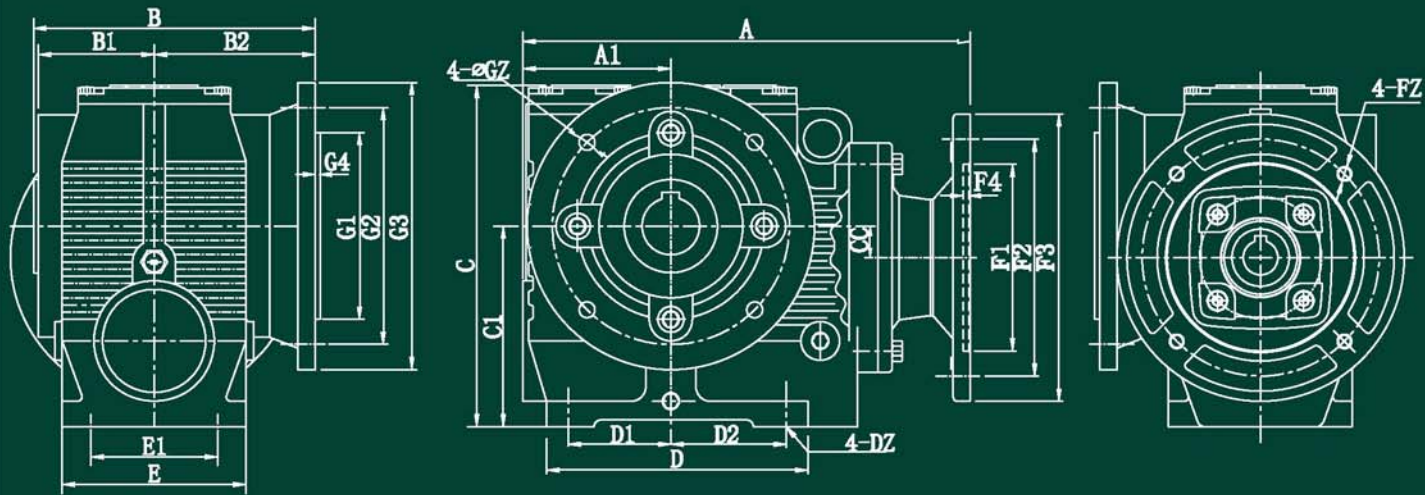
GHM	入力馬達 INPUT MOTOR						
	HP	1/4	1/2	1	2		
37	A	356	382	405	448		
	HP	1/4	1/2	1	2		
47	A	383.5	410	433.5	476		
	HP	1/4	1/2	1	2		
57	A	402.5	428.5	452.5	495		
	HP	1/4	1/2	1	2		
67	A	479	503	545.5	585	634	
	HP	1/2	1	2	3	5	
77	A	535.5	578	617.5	667	711	
	HP	1	2	3	5	7.5	
87	A	673	722.5	767	804.5	873.5	
	HP	3	5	7.5	10	15	
97	A	737	786	827	865	934	978
	HP	3	5	7.5	10	15	20
							25/30
							1003

馬達尺寸 MOTOR DIMENSION		
HP	ØM	B2
1/4	112	116
1/2	132	106
1	156	132
2	175	142
3	192	160
5	219	173
7.5	268	222
10	268	222
15	334	248
20	334	248
25	382	286
30	382	286

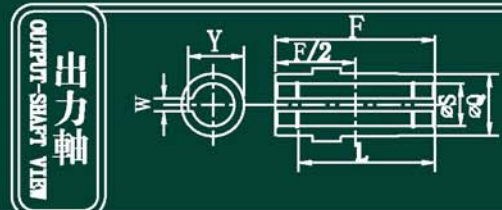
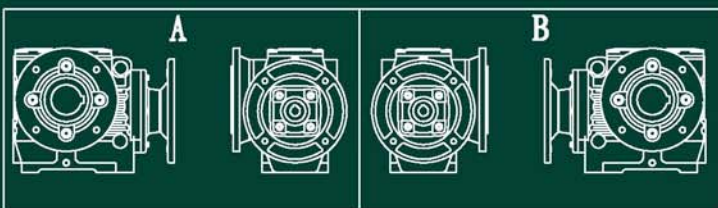




# 型式 MODEL/GMF 外型尺寸



Shaft Direction



GMF	A1	B	B1	B2	C	C1	CC	D	D1	D2	E	E1	F	DZ	GZ	OIL(L)
37	63	135	57	75	143	82	0	113	46	41	85	55	120	M8*15L	6.6/9	0.27
47	71	141.5	57.5	84	178.5	100	10	128	35	52	95	60	120	M10*20L	9	0.38
57	80	175	72	100	187	112	23.7	146	58.5	58.5	100	60	150	M10*20L	11	0.55
67	103	196	80.5	112	238	140	22	182	71.5	80.5	128	88	168	M12*25L	11	1.1
77	118.5	255	101	150.5	301	180	33	200	85	85	154	102	210	M16*32L	14	2.0
87	150	302.5	120	177.5	367	225	47	265	115	110	194	118	250	M16*32L	18	3.5
97	180	350	140	205	460	280	53	301	135	113	236	160	290	M20*32L	8-17.5	7.1

GMF	出力軸 OUTPUT SHAFT					出力法蘭 OUTPUT FLANGE			
	øS	øQ	L	Y	W	G1	G2	G3	G4
37	20	35	104	22.8	6	80 110	100 130	120 160	3
47	25 30	45	105	28.3 33.3	8	110	130	160	3.5
57	30 35	50	132	33.3 38.3	8 10	130	165	200	3.5
67	40 45	65	144	43.3 48.8	12 14	130	165	200	3.5
77	50 60	80	180	53.8 64.4	14 18	180	215	250	4
87	60 70	95	220	64.4 74.9	18 20	250	300	350	5
97	70 90	120	260	74.9 95.4	20 25	350	400	450	5

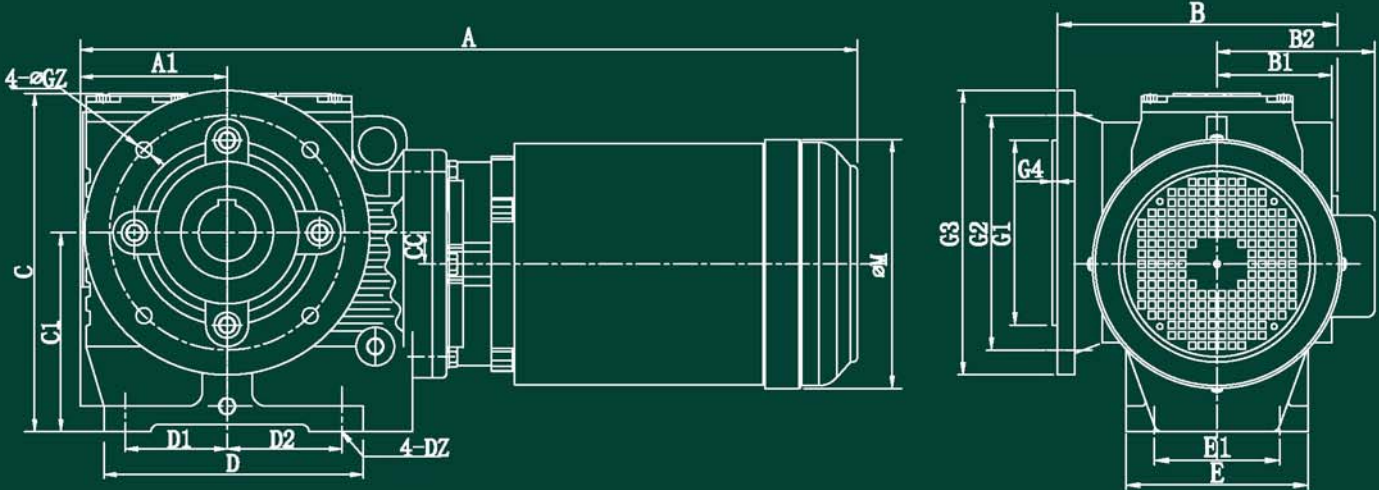


HP	INPUT BORE 入力孔-入力法蘭				INPUT FLANGE			
	øU	V	T	F1	F2	F3	F4	FZ
1/4	11	12.8	4	110	130	160	4	M8
1/2	14	16.3	5					
1	19	21.8	6	130	165	200	5	M10
2	24	27.3	8					
3/5	28	31.3	8	180	215	250	5	M12
7.5/10	38	41.3	10	230	265	300	6	M12
15/20	42	45.3	12	250	300	350	6	M16
25/30	48	51.8	14	300	350	400	6	M16
40	55	59.3	16					

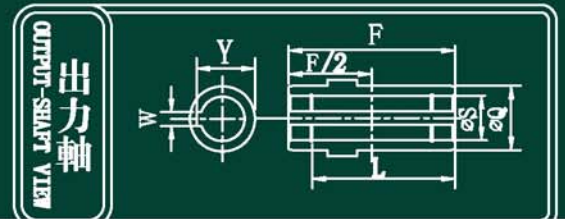
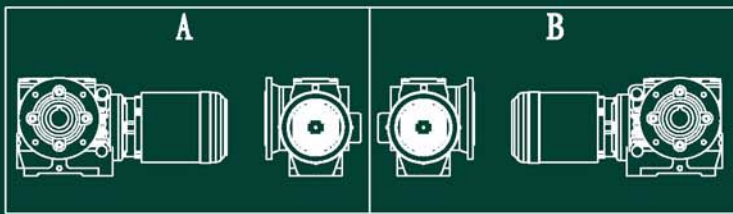
GMF	入力法蘭 INPUT FLANGE							
	HP	1/4	1/2	1	2	3	5	10
37	A	196	216					
47	A	226	244					
57	A	245	263					
67	A	295.5	311.5	330				
77	A	341	362.5	411				
87	A	401.5	418	466.5	502.5			
97	A	482	526.5	562.5	571.5			



# 型式 MODEL/GMM 外型尺寸



## Shaft Direction



GMM	A1	B	B1	C	C1	CC	D	D1	D2	E	E1	F	DZ	GZ	OIL(L)
37	63	135	57	143	82	0	113	46	41	85	55	120	M8*15L	6.6/9	0.27
47	71	144	57.5	178.5	100	10	128	35	52	95	60	120	M10*20L	9	0.38
57	80	175	72	187	112	23.7	146	58.5	58.5	100	60	150	M10*20L	11	0.55
67	103	196	80.5	238	140	22	182	71.5	80.5	128	88	168	M12*25L	11	1.1
77	118.5	255	101	301	180	33	200	85	85	154	102	210	M16*32L	14	2.0
87	150	302.5	120	367	225	47	265	115	110	194	118	250	M16*32L	18	3.5
97	180	350	140	460	280	53	301	135	113	236	160	290	M20*32L	8-17.5	7.1

GMM	出力軸 OUTPUT SHAFT					出力法蘭 OUTPUT FLANGE			
	øS	øQ	L	Y	W	G1	G2	G3	G4
37	20	35	104	22.8	6	80	100	120	3
47	25	45	105	28.3	8	110	130	160	3.5
	30								
57	30	50	132	33.3	8	130	165	200	3.5
				35					
67	40	65	144	43.3	12	130	165	200	3.5
				45					
77	50	80	180	53.8	14	180	215	250	4
				60					
87	60	95	220	64.4	18	250	300	350	5
				70					
97	70	120	260	74.9	20	350	400	450	5
				90					

GMM	入力馬達 INPUT MOTOR					
	HP	1/4	1/2	1	2	
37	A	356	382	405	448	
	HP	1/4	1/2	1	2	
47	A	383.5	410	433.5	476	
	HP	1/4	1/2	1	2	
57	A	402.5	428.5	452.5	495	
	HP	1/2	1	2	3	5
67	A	479	503	545.5	585	634
	HP	1	2	3	5	7.5
77	A	535.5	578	617.5	667	711
	HP	3	5	7.5	10	15
87	A	673	722.5	767	804.5	873.5
	HP	3	5	7.5	10	15
97	A	737	786	827	865	934
	HP	3	5	7.5	10	15

馬達尺寸 MOTOR DIMENSION	HP	øM	B2
1/4	112	116	
1/2	132	106	
1	156	132	
2	175	142	
3	192	160	
5	219	173	
7.5	268	222	
10	268	222	
15	334	248	
20	334	248	
25	382	286	
30	382	286	

# 公差尺寸表&潤滑油選定

## Tolerance & Lubricant Selection



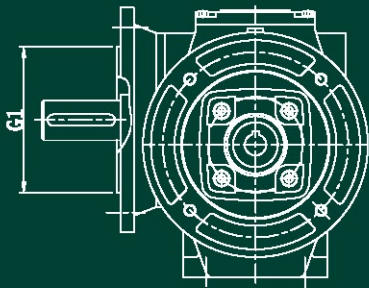
入力孔  
INPUT-BORE VIEW



出力軸  
OUTPUT-SHAFT VIEW

單位unit: mm

出、入力軸/軸徑尺寸公差 OUTPUT & INPUT SHAFT		
DIAMETER	k6	m6
> $\phi$ 14~18	+0.012	+0.018
	+0.001	+0.007
> $\phi$ 18~30	+0.015	+0.021
	+0.002	+0.008
> $\phi$ 30~50	+0.018	+0.025
	+0.002	+0.009
> $\phi$ 50~80	+0.021	+0.030
	+0.002	+0.011
> $\phi$ 80~120	+0.025	+0.035
	+0.003	+0.013



單位unit: mm

出、入力軸/軸徑尺寸公差 OUTPUT & INPUT SHAFT	
DIAMETER G1	h7
> $\phi$ 80~120	0
	-0.035
> $\phi$ 120~180	0
	-0.04
> $\phi$ 180~250	0
	-0.046
> $\phi$ 250~315	0
	-0.052
> $\phi$ 315~400	0
	-0.057
> $\phi$ 400~500	0
	-0.063

出力轉速 > 100R.P.M.使用中國光牌HD220極壓機油或同級品  
output RPM > 100R.P.M. please use CPC HD-220 E.P.lubricant or equivalent  
出力轉速 < 100R.P.M.使用中國光牌HD320極壓機油或同級品  
output RPM < 100R.P.M. please use CPC HD-320 E.P.lubricant or equivalent

潤滑油選定參數表 Selection Table of Lubricant  
標準負荷，入力轉速600PRM或以上 Standard Load, Input 600 RPM or more.

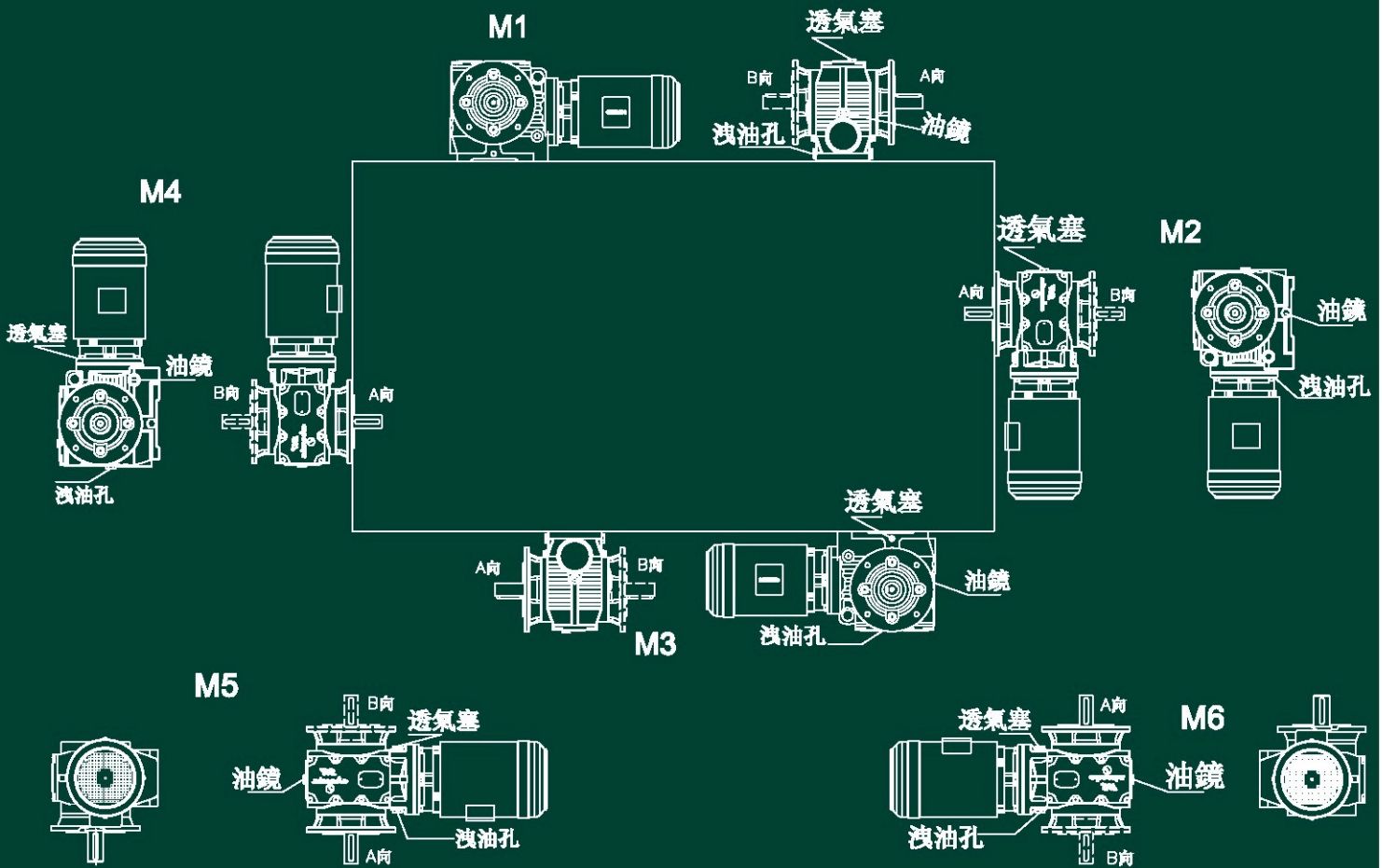
環境溫度 Temperature (C°)	中國石油 CPC	ISO VG	Mobil	Shell
-30~-15	HD 100	VG 100	Mobilgear 627	Omala 100
-15~-3	HD 150	VG 150	Mobilgear 629	Omala 150
-3~23	HD 220	VG 220	Mobilgear 630	Omala 220
23~40	HD 320	VG 320	Mobilgear 632	Omala 320
40~80	HD 460	VG 460	Mobilgear 634	Omala 460

超重負荷，入力轉速600RPM以上 Heavy Load, Input 600 RPM or more.

環境溫度 Temperature (C°)	中國石油 CPC	ISO VG	Mobil	Shell
-30~-15	HD 150	VG 150	Mobilgear 629	Omala 150
-15~-3	HD 220	VG 220	Mobilgear 630	Omala 220
-3~23	HD 320	VG 320	Mobilgear 632	Omala 320
23~40	HD 460	VG 460	Mobilgear 634	Omala 460
40~80	HD 680	VG 680	Mobilgear 636	Omala 680

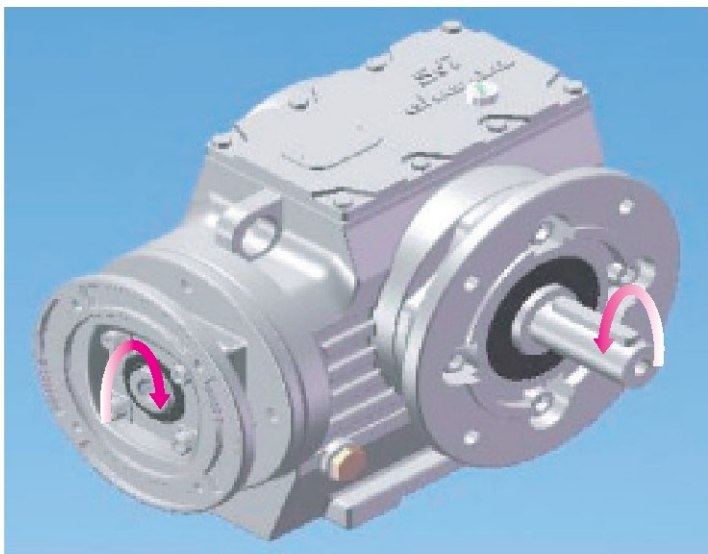


# 安裝位置 Mounting Position



請注意：安裝位置軸承需要特殊的潤滑方式。請詢問本公司的服務人員。

NOTE: Please specify if position is required. (Special Lubrication design on bearings.)



斜齒+蝸齒輪減速

旋轉方向：出力軸與入力  
軸旋轉方向不同方向（如圖）  
output shaft and input shaft in  
opposite directions.  
(refer to picture)





# 斜齒+蝸齒輪減速機 ※ 許可輸入功率及輸出扭矩表

每日8-10小時連續運轉並在均勻載荷情況下 Service Factor (K=1.2)  
 Applies for continuous service free form recurrent shock loading and does not exceed 10 hours per day.

SIZE: 37型						
公稱速比 Nominal ratio	實際速比 Actual ratio	入力1750 input rpm		入力1450 input rpm		入力功率 input kw
		出力轉速 Output rpm	出力扭矩 Output Torque kgm	出力轉速 Output rpm	出力扭矩 Output Torque kgm	
157	157.4	11.11	7.43	9.21	8.97	0.16
144	144.4	12.11	7.37	10.04	8.90	0.17
123	122.9	14.23	7.52	11.79	9.08	0.20
99	98.80	17.71	7.08	14.67	8.55	0.23
86	86.36	20.26	6.85	16.79	8.27	0.25
81	80.95	21.61	7.05	17.91	8.52	0.27
71	71.44	24.49	6.80	20.29	8.21	0.29
63	63.33	27.63	6.76	22.89	8.17	0.32
56	55.92	31.29	6.59	25.92	7.95	0.29
51	51.30	34.11	6.55	28.26	7.90	0.31
44	43.68	40.06	6.56	33.19	7.85	0.36
35	35.10	49.85	6.38	41.31	7.71	0.43
31	30.68	57.03	6.10	47.25	7.36	0.47
29	28.76	60.84	6.10	50.41	7.44	0.50
25	25.38	68.95	5.98	57.13	7.22	0.55
23	22.50	77.77	5.95	64.44	7.19	0.61
20	19.89	88.00	4.27	72.91	5.16	0.46
18	18.24	95.94	4.26	79.49	5.15	0.50
16	15.53	112.6	4.11	93.37	4.97	0.56
13	12.48	140.2	3.94	116.2	4.76	0.66
11	10.91	160.4	3.91	132.9	4.73	0.75
10	10.23	171.1	3.81	141.7	4.61	0.78
9	9.02	193.9	3.71	160.6	4.48	0.86
8	8.0	218.7	3.63	181.2	4.39	0.95

標示※最大輸入功率為1.1kw Max:1.1kw

SIZE: 47型						
公稱速比 Nominal ratio	實際速比 Actual ratio	入力1750 input rpm		入力1450 input rpm		入力功率 input kw
		出力轉速 Output rpm	出力扭矩 Output Torque kgm	出力轉速 Output rpm	出力扭矩 Output Torque kgm	
202	201.47	8.68	13.41	7.20	16.18	0.23
175	175.4	9.97	12.18	8.26	14.7	0.24
158	158	11.08	11.89	9.18	14.34	0.26
143	142.8	12.25	11.57	10.15	13.96	0.28
113	112.7	15.52	11.42	12.86	13.77	0.35
94	93.55	18.7	11.37	15.5	13.72	0.42
84	84	20.83	11.18	17.26	13.49	0.46
72	71.75	24.39	11.21	20.21	13.53	0.54
61	60.83	28.77	11.09	23.83	13.38	0.63
60	60.56	28.9	11.07	23.94	13.36	0.45
55	54.55	32	10.86	26.58	13.10	0.49
49	49.3	35.5	10.82	29.41	13.05	0.54
39	38.92	44.96	10.75	37.25	12.97	0.68
32	32.3	54.18	10.63	44.89	12.82	0.81
29	29	60.34	10.6	50	12.79	0.90
25	24.77	70.65	10.06	58.53	12.14	1.00
21	21	83.33	9.385	69.04	11.32	1.10
20	20.69	84.58	9.286	70.8	11.20	0.96
19	18.7	93.58	8.743	77.54	10.55	1.00
15	14.76	118.56	8.281	98.23	10.0	1.20
12	12.25	142.86	8.018	118.3	9.67	1.40
11	11	159.09	8.228	131.8	9.93	1.6*
9	9.39	186.37	7.902	154.4	9.53	1.8*
8	7.97	219.57	7.825	181.9	9.44	2.1*

標示※最大輸入功率為1.5kw Max:1.5kw

SIZE: 57型						
公稱速比 Nominal ratio	實際速比 Actual ratio	入力1750 input rpm		入力1450 input rpm		入力功率 input kw
		出力轉速 Output rpm	出力扭矩 Output Torque kgm	出力轉速 Output rpm	出力扭矩 Output Torque kgm	
202	201.47	8.68	22.6	7.20	27.28	0.32
175	175.4	9.97	22.14	8.26	26.72	0.36
158	158	11.08	21.6	9.18	26.07	0.39
143	142.8	12.25	21.53	10.15	25.98	0.43
113	112.7	15.52	21.33	12.86	25.75	0.54
94	93.55	18.7	20.99	15.5	25.33	0.64
84	84	20.83	20.91	17.26	25.23	0.74
72	71.75	24.39	20.88	20.21	25.02	0.83
61	60.83	28.77	20.47	23.83	24.71	0.96
60	60.56	28.9	19.46	23.94	23.49	0.77
55	54.55	32	18.9	26.58	22.81	0.83
49	49.3	35.5	18.5	29.41	22.35	0.90
39	38.92	44.96	17.87	37.25	21.58	1.1
32	32.3	54.18	17.52	44.89	21.15	1.3
29	29	60.34	16.94	50	20.45	1.4
25	24.77	70.65	15.0	58.53	18.09	1.45
21	21	83.33	14.46	69.04	17.45	1.65
20	20.69	84.58	12.57	70.8	15.17	1.3
19	18.7	93.58	12.67	77.54	15.3	1.45
15	14.76	118.56	12.07	98.23	14.57	1.75
12	12.25	142.86	11.45	118.3	13.82	2
11	11	159.09	11.31	131.8	13.65	2.2*
9	9.39	186.37	10.97	154.4	13.24	2.5*
8	7.97	219.57	10.06	181.9	12.14	2.7*

標示※最大輸入功率為2.2kw Max:2.2kw

SIZE: 67型						
公稱速比 Nominal ratio	實際速比 Actual ratio	入力1750 input rpm		入力1450 input rpm		入力功率 input kw
		出力轉速 Output rpm	出力扭矩 Output Torque kgm	出力轉速 Output rpm	出力扭矩 Output Torque kgm	
208	207.9	8.42	40	6.97	48.3	0.55
190	190.1	9.2	40	7.62	48.3	0.6
168	168	10.41	39.47	8.63	47.63	0.67
148	148	11.82	39.44	9.79	47.6	0.76
121	121.3	14.42	39.13	11.96	47.2	0.92
114	114.3	15.31	38.88	12.68	46.91	0.97
99	98.7	17.73	38.07	14.69	45.94	1.1
78	78	22.43	36.92	18.58	44.56	1.35
68	67.85	25.79	35.69	21.37	43.07	1.5
66	65.63	26.67	34.7	22.1	41.88	1.25
58	58	30.17	34.35	25	41.45	1.4
51	51.1	34.24	34.15	28.37	41.21	1.58
40	39.47	44.33	33.39	36.73	40.3	2
34	34.08	51.35	33.16	42.54	40.01	2.3
27	26.93	64.98	31.9	53.84	38.49	2.8
23	23.42	74.72	30.71	61.91	37.06	3.1
20	20.3	86.20	30	71.42	36.27	3.5
22	22	79.54	23.94	65.9	28.89	2.3
16	15.89	110.13	23.3	91.25	28.12	3.1
15	14.97	116.9	23.37	96.86	28.2	3.3
13	12.93	135.34	23.24	112.14	28.05	3.8*
10	10.21	171.4	23.18	142.02	27.98	4.8*
9	8.88	196.96	22.28	163.2	26.88	5.3*
8	7.7	222.27	21.13	188.3	25.50	5.8*

標示※最大輸入功率為3.7kw Max:3.7kw



每日8-10小時連續運轉並在均勻載荷情況下 Service Factor (K=1.2)  
 Applies for continuous service free from recurrent shock loading and does not exceed 10 hours per day.

SIZE: 77型						
公稱速比 Nominal ratio	實際速比 Actual ratio	入力1750 Input rpm		入力1450 Input rpm		入力功率 Input kw
		出力轉速 Output rpm	出力扭矩 Output Torque kgm	出力轉速 Output rpm	出力扭矩 Output Torque kgm	
190	189.5	9.23	90.4	7.65	109.2	1.3
182	182	9.61	90.3	7.96	108.9	1.4
168	167.6	10.44	90.0	8.65	108.4	1.5
130	130	13.46	86.0	11.15	103.7	1.8
107	106.7	16.4	78.39	13.59	94.60	2.0
95	95	18.42	76.77	15.26	92.65	2.2
85	85.22	20.53	75.13	17.01	90.67	2.4
79	78.46	22.30	74.93	18.48	90.43	2.6
67	66.67	26.25	73.47	21.74	88.67	3.0
56	55.87	31.32	72.27	25.95	87.21	2.8
43	43.33	40.38	72.0	33.46	86.96	3.6
36	35.56	49.21	73.92	40.77	89.21	4.5
32	31.67	55.25	73.15	45.78	88.28	5.0
28	28.41	61.6	72.18	51.03	87.11	5.5
26	26.15	66.92	71.27	55.45	86.01	5.9
22	22.22	78.76	70.82	65.25	85.48	6.9
24	23.47	74.56	62.91	61.78	75.92	5.6
18	18.2	96.15	60.10	79.67	72.54	6.9
15	14.93	117.21	57.88	97.12	69.86	8.1*
13	13.3	131.58	54.74	131.58	66.07	8.6*
12	11.93	146.69	54.24	146.69	65.47	9.5*
11	10.98	159.38	53.08	159.38	64.06	10.1*
9	9.33	187.5	51.37	155.35	62	11.5*

標示※最大輸入功率為7.5kw Max:7.5kw

SIZE: 87型						
公稱速比 Nominal ratio	實際速比 Actual ratio	入力1750 Input rpm		入力1450 Input rpm		入力功率 Input kw
		出力轉速 Output rpm	出力扭矩 Output Torque kgm	出力轉速 Output rpm	出力扭矩 Output Torque kgm	
175	174.5	10.03	167.1	8.309	201.66	2.53
152	151.7	11.53	160.8	9.55	194.02	2.8
117	116.9	14.97	159.3	12.4	192.23	3.6
99	99.26	17.63	146.5	14.6	176.82	3.9
87	86.67	20.19	164.5	16.73	162.31	4.1
82	81.6	21.44	132.8	17.76	160.27	4.3
64	64	27.34	123.5	22.65	149.09	5.1
55	55.27	31.66	113.7	26.23	137.22	4.8
48	48.03	36.43	111.2	30.19	134.15	5.4
37	37.03	47.25	111.1	39.15	134.07	7.0
31	31.43	55.67	110.5	46.13	133.3	8.2
27	27.44	63.77	109.4	52.84	131	9.3
26	25.84	67.72	108.5	56.11	131	9.8
20	20.07	86.33	107.7	71.53	130	12.4
21	21.23	82.43	87.38	68.29	105.46	8.7
16	16.37	106.9	86.74	88.57	104.68	11.2
14	13.9	125.9	86.14	104.31	103.97	13.1
12	12.13	144.27	83.21	119.53	100.42	14.5
11	11.42	153.24	81.04	126.97	97.8	15
9	8.96	195.31	72.06	161.83	86.96	17

標示※最大輸入功率為15kw Max:15kw

SIZE: 97型						
公稱速比 Nominal ratio	實際速比 Actual ratio	入力1750 Input rpm		入力1450 Input rpm		入力功率 Input kw
		出力轉速 Output rpm	出力扭矩 Output Torque kgm	出力轉速 Output rpm	出力扭矩 Output Torque kgm	
220	231.67	7.55	324.6	6.25	386	3.4
194	196.52	8.90	315.2	7.37	380.5	4.0
181	180.92	9.67	308.8	8.01	372.7	4.2
162	161.7	10.82	299.8	8.96	361.8	4.5
142	145.6	12.02	293.8	9.95	354.9	4.9
132	131.85	13.27	280.7	10.99	338.8	5.1
113	116.92	14.96	263.7	12.40	318.1	5.4
106	105.7	16.55	260.4	13.71	314.2	5.9
90	89.6	19.53	256.1	16.18	309.1	6.7
78	78.26	22.36	241.7	18.52	291.7	7.3
67	65.45	26.73	234.3	22.15	282.8	8.2
56	55.79	31.36	259.4	25.98	313.8	9.6
50	49.87	35.09	258.4	29.07	311.3	10.7
44	40.65	43.05	257.8	35.67	311	13.1
41	36.05	48.54	257.8	40.22	311	14.5
35	32.60	53.68	256.5	44.47	309.6	15.2
33	27.63	63.33	242.2	52.47	292.3	17.5
28	26.39	66.31	204.5	54.94	246.8	15.3
24	23.59	72.52	203.1	60.09	245.1	16.8
26	21.23	66.69	198.5	55.26	239.5	18.7
19	19.23	91.00	191.7	75.40	231.4	19.8
15	15.42	113.48	186.3	94.03	224.9	24*
11	11.41	153.37	173.9	127.08	209.8	29.6*
10	9.55	183.24	160.1	151.83	193.2	32*

標示※最大輸入功率為22kw Max:22kw





# 斜齒+蝸齒輪減速機

## 操作需知

- 此操作需知是為了幫助您正確安裝及使用本減速機，為了防止問題產生，適當的安裝與操作是很重要的，而這個需知也包含了重要的保養建議。
- 在出貨前每一台成大減速機都經過檢驗及測試後才妥善包裝，不過當您收到貨品時請立刻檢查是否有短少或運輸損壞情形，若有，請記錄損壞或短少情形以便日後與運輸廠家求償，同時也請您通知成大公司貨品受損情形。

### 一、潤滑

1. 除非客人有特殊指定，否則成大公司會在每一台減速機出廠前根據安裝方式填加適當及適量之潤滑油，若客人欲自行填加潤滑油也請根據潤滑油建議表適當填加。

### 二、長期儲存

1. 如果減速機沒有立即安裝使用，請將它保存在乾燥安全處所，而減速機經過長時間儲放後再使用，請您再連絡成大公司，我們技術人員會告訴您應該使用前注意事項。

### 三、安裝附件於減速機軸心上

1. 注意！不可重擊軸心！重擊軸心可能造成軸承傷害導致軸承壽命縮短，我們建議用加熱方式安裝，附件只要加熱到80°C就可滑入軸心，如此可以減少軸承損傷的可能性。軸心尺寸公差請參照產品型錄。
2. 安裝軸心聯軸器時應該正確的對心及校正以避免震動及聯軸器異常磨耗等情形發生，並且讓軸心上的軸承免於提早損壞。
3. 為避免出力軸上之軸承受極度的負載，請參照型錄上的可承受懸吊荷重表，請不可超出限制，如果必須超出建議荷重或是合併有額外軸向及徑向負載，請聯絡我們的工程師，因此時正確的使用應該同時考慮速度、旋轉方向、安裝位置、較大外來的軸向和徑向荷重等合併之因素。

### 四、安裝與操作

1. 減速機安裝應考慮以下幾項因素：
  - \* 環境溫度應低於40°C。
  - \* 通暢的通風環境。
  - \* 適當位置的油位旋塞、透氣注油旋塞與洩油旋塞。
  - \* 保留適當的空間以便做設備上的檢修或更換。
2. 減速機應該安置在平坦防震且堅固的構造上，準確的對心是非常重要的，安裝在不平坦的平面上會造成減速機機殼的拉扯甚至破損。
3. 基座平坦度公差請勿超出以下建議：
  - \* 77型或更小----0.1mm
  - \* 87型或更大----0.2mm
4. 運輸過程中為防止減速機內潤滑油從透氣旋塞滲漏出來，出廠前我們會將透氣孔以紅色插梢堵住，請記得當您安裝好減速機運轉之前，一定要把透氣旋塞上的紅色插梢拔掉。
5. 安裝前請再次檢視其輸入馬力、減速比與銘牌相符，並檢查減速機輸出軸之旋轉方向與需求一致。

### 五、保養

- 警告！在電源移除之前不可拆卸或更換設備。
1. 潤滑油油位與品質應為平時保養重點，且根據使用頻率與環境狀況，潤滑油也必須依據建議表做換新動作。
  2. 檢查聯軸器的同心度，鏈條或皮帶的鬆緊度，機座固定螺絲之緊度等是否均適當，並請保持設備的清潔。



# HELICAL+WORM GEAR REDUCERS

## OPERATION MANUAL

- This operation manual is trying to help you install and use speed reducer correctly. To prevent problem occurred, proper installation and operation is very crucial. Certainly, this operation manual will also suggest you how to maintain in order to extend the life of speed reducer.
- Every CHENTA speed reducer is passed strict inspection and testing and well packaged before shipping. However when you receive speed reducer, please check immediately if there is any shortage or damage of the parts via transportation. This will be much helpful as evidence when you offer claim to the transportation carrier, meanwhile please also notice us for improving our transportation service with a qualified and responsible carrier. Also, we are eager to help to fix the problem for you and to reduce your inconvenience to the minimum.

### I. Lubrication

1. Unless it's a special request from customer, every CHENTA speed reducer will be supplied with proper quantity lubricant according to different installation position before shipping. If customer prefers to fill in the lubricant oil by himself, please follow the instruction of operation manual in latter pages in this catalog.

### II. Storage

1. If you won't install the speed reducer soon, please keep it out from humid place. And, please contact our service people if you want to install speed reducer for operation after storage. Our service people will inform you what should be noticed and checked in advance before operation.

### III. Attachments the parts on reducer's shaft

1. Notice : Don't hit on shafts heavily. It will cause bearings damaged and shorten the life of bearings. We prefer to suggest use heating method, to heat the parts up to 80°C, it could easily slip in on the shafts and reduce the possibility of bearings damaged. As to the tolerance of shaft's diameter, please refer to the specification in catalog.
2. While install the coupling, make sure to check the alignment of coupling and shaft of speed reducer properly to eliminate the damage on bearings and reduce to vibration frequency and abnormal wear.
3. To avoid over load on the bearings of output shaft, please refer to the OHL (over hung loading) in catalog and don't exceed. If exceed or extra axial or radial loading, please contact our service engineer for consultation.
4. The actual application of following factors such as input and output speed, direction of rotation, installation site and over axial and radial loading should be careful to watch.

### IV. Installation & Operation

1. The under lying factors should be taken into consideration:
  - \* Ambient temperature below 40°C
  - \* Location with good air ventilation
  - \* Proper locations for oil plug, breather plug and drain plug
  - \* Sufficient space for periodical inspection or maintenance of replacement
2. To install necessarily on a flat, stable and solid base for accurate alignment to prevent from the breakage of reducer's housing.
3. The suggested tolerance of flatness on base:
  - For size 77 or smaller, < 0.1 mm/m
  - For size 87 or bigger, < 0.2 mm/m
4. To avoid the lubricant splash out during the transportation, breather plug with red pin inserted into air breathing hole. Please remove the red pin before start-up.
5. Before installation, double check the input horsepower and ratio is the same as the punched name plate of reducer.

### V. Maintenance

Be aware! The power should be off before removal or replacement of reducer.

1. Oil level and quality lubricant is key point of daily maintenance. Please refer to our suggestion to change the lubricant periodically according to the operation frequency site situation.
2. Check the alignment of coupling, the tightness of chain, and nuts and keep clean of reducer.



# 斜齒+蝸齒輪減速機

## 使用說明書

感謝您選用本公司的產品。在使用之前，請詳細參閱以下說明，以確保正確使用。

### 一、安裝

1. 減速機入力軸直接與馬達聯結時，應採彈性聯軸器；出力軸直接與設備聯結時，宜採用齒輪聯軸器。
2. 減速機應安裝在穩固的基礎座，且須注意空氣流通及換油時，注油及洩油之方便性。
3. 減速機入力軸及馬達出力軸之中心線必須對準確，誤差不得大於所用聯軸器之允許值。
4. 減速機安裝後，用手轉動需靈活，不可有卡死現象。
5. 減速機安裝好，使用前應先進行空負荷運轉，確定機器各部分都無異狀後，方可正式使用，如有故障應先排除。

### 二、潤滑

1. 新減速機使用時，於運轉500小時後，需更換新油，其後每使用2500小時需換油；但在使用過程中仍應定期檢查油的質、量，若油有雜質、老化、變質情況，必須隨時更換。
2. 減速機應使用固定品牌、規格之齒輪油，不應將不同品牌，規格或不同類型的油相混合使用。
3. 在換油過程中，應先將減速機內部清除乾淨，再注入新油。
4. 在使用期間，當發現油溫過高（超過80°C以上）時，以及有不正常的噪音等現象，應立即停止使用、檢查原因，等排除故障或更換潤滑油後，才可繼續使用。
5. 推薦用油：中國石油HD-320之極壓機油，或中國石油#90多效齒輪油。

### 三、維護

1. 減速機應定期檢修，發現異狀或有顯著磨損，必須立即採取有效措施制止，備用零件之材質、精度亦須照標準製造。更新零件後，應先進行空負荷運轉，確定正常後再正式使用。
2. 使用單位應建立合理的維護制度，對減速機的使用狀況及檢修中發現的問題，做仔細紀錄。



# HELICAL+WORM GEAR REDUCERS

## I. INSTALLATION

1. Input shaft connects to motor directly, a flexible coupling prefer to apply according; output shaft connects to machine, it is better to use a gear coupling.
2. Install on a stable foundation and good air ventilation and the convenience of oil filling / draining should be considered.
3. The input shaft of the reducer and the motor shaft should be in alignment and the tolerance should fit the allowance.
4. After installation, please check input shaft by hand first to check whether running smoothly of nut.
5. Before start-up, no-load running test should be proceeded and any abnormal status occurred should be corrected immediately.

## II. LUBRICATION

1. A new reducer needs replace oil in the beginning of 500 hrs operation; and then, each 2,500 hrs change again. Moreover, a regular oil checking is required and change necessarily.
2. Please change by equivalent specification of oil and don't mix with other brand of specification of oil.
3. Before changing oil, the inside of reducer should be flushed and drain out, then fill in new oil.
4. During operation, if the heat is over 80°C or any abnormal noise occurred, please shut down the reducer for checking immediately and start running only after the cause is resolved.
5. Lubricant recommendation: MOBIL gear 632, SHELL omala 320 or MOBIL mobilube HD80W-90, SHELL spirax E.P. 90.

## III. MAINTENANCE

1. A regular maintenance is required and if found any worn out, corrective action should be taken. The accuracy of spare parts replaced should be exactly the same as the original standard and no-load running test in advance is required.
2. Build maintenance system and data collection of failure carefully for all problems been met.

# 斜齒+蝸齒輪減速機 可能發生之異常狀況及改善方法

以下所列為一般性故障，如有特殊異常情形發生時，請與本公司聯絡，我們將提供正確之服務。

異常情況	原因	改善方法
一. 機體發熱	<ol style="list-style-type: none"> <li>1. 超過標準負荷運轉</li> <li>2. 潤滑油加入過多或過少</li> <li>3. 加入潤滑油不適當或不良</li> <li>4. 油封唇部潤滑不足</li> </ol>	<ol style="list-style-type: none"> <li>1. 調整至正常負荷</li> <li>2. 潤滑油應加至油位指示處</li> <li>3. 更換適當之齒輪潤滑油</li> <li>4. 塗抹少許油脂於油封唇處</li> </ol>
二. 運轉時噪音	<ol style="list-style-type: none"> <li>1. 有規律噪音 { 齒面接觸不良                   { 軸承損壞</li> <li>2. 尖銳的金屬聲音 { 軸承間隙太小                           { 潤滑油不足</li> <li>3. 不規律噪音 { 異物掉入                    { 軸承受損</li> </ol>	<ol style="list-style-type: none"> <li>1. { 修整齒接觸面       { 更換軸承</li> <li>2. { 更換軸承       { 補足潤滑油</li> <li>3. { 除去異物，更新潤滑油       { 更換軸承</li> </ol>
三. 運轉時振動	<ol style="list-style-type: none"> <li>1. 齒輪磨損</li> <li>2. 異物掉入</li> <li>3. 軸承磨耗或受損</li> <li>4. 螺絲鬆動</li> </ol>	<ol style="list-style-type: none"> <li>1. 更換齒輪</li> <li>2. 除去異物，更新潤滑油</li> <li>3. 更換軸承</li> <li>4. 鎖緊螺絲</li> </ol>
四. 漏油	<ol style="list-style-type: none"> <li>1. 油封損傷</li> <li>2. 墊片破損</li> <li>3. 排油栓未鎖牢</li> <li>4. 蓋類或法蘭螺絲鬆脫</li> </ol>	<ol style="list-style-type: none"> <li>1. 更換油封</li> <li>2. 更換墊片</li> <li>3. 鎖緊排油栓塞</li> <li>4. 鎖緊螺絲</li> </ol>
五. 入力軸及出力軸無法轉動	<ol style="list-style-type: none"> <li>1. 齒輪嚙合面因高熱而粘合</li> <li>2. 軸承已損壞</li> <li>3. 有固形物(硬物)嚙入齒輪接合面</li> </ol>	<ol style="list-style-type: none"> <li>1. 依程度而判斷可調整或更換齒輪</li> <li>2. 更換軸承</li> <li>3. 除去硬物，清洗內部後更新潤滑油</li> </ol>
六. 入力軸空轉，而無法帶動出力軸轉動	<ol style="list-style-type: none"> <li>1. 齒輪已磨耗</li> <li>2. 齒輪與出力軸之配合鍵破損</li> <li>3. 入力軸折斷</li> <li>4. 出力軸折斷</li> </ol>	<ol style="list-style-type: none"> <li>1. 更換齒輪</li> <li>2. 更換鍵</li> <li>3. 更換入力軸</li> <li>4. 更換出力軸</li> </ol>
七. 齒輪磨耗較大	<ol style="list-style-type: none"> <li>1. 超過正常負荷</li> <li>2. 潤滑油不良或不適當</li> <li>3. 潤滑油不足</li> <li>4. 運轉環境溫度過高</li> </ol>	<ol style="list-style-type: none"> <li>1. 調整適當負荷</li> <li>2. 更換適當之潤滑油</li> <li>3. 補充潤滑油</li> <li>4. 改善通風環境</li> </ol>



# Cause & Trouble shooting for the general problem and Improvement

The following lists are general problem situations. In case other problem happen, please contact directly with us to get more information.

CAUSE	REASON	IMPROVEMENT
1. Overheat	<ol style="list-style-type: none"> <li>1. overload</li> <li>2. lubricant oil overfill or shortage</li> <li>3. improper lubricant oil</li> <li>4. over friction on oil seal (lack of lubricant)</li> </ol>	<ol style="list-style-type: none"> <li>1. adjust to proper loading</li> <li>2. Add lucricant to the level of oil gauge</li> <li>3. change proper lubricant oil</li> <li>4. Lip lubricant at oil seal</li> </ol>
2. Noise	<ol style="list-style-type: none"> <li>1. consistant noise { improper gears contact ; bearing damaged</li> <li>2. screaming noise { bearing gap too small ; lubricant oil shortage</li> <li>3. consistant noise { some object insert ; bearing damaged</li> </ol>	<ol style="list-style-type: none"> <li>1. { repair gears ; replace bearing</li> <li>2. { replace bearing ; fill in lubricant oil</li> <li>3. { remove debris &amp; replace lubricant oil ; replace bearing</li> </ol>
3. Vibration	<ol style="list-style-type: none"> <li>1. gear over-fricative</li> <li>2. Debris inside</li> <li>3. bearing worn-out or damaged</li> <li>4. bolt loose</li> </ol>	<ol style="list-style-type: none"> <li>1. replace gear</li> <li>2. remove debris &amp; replace lubricant oil</li> <li>3. replace bearing</li> <li>4. tighten bolt</li> </ol>
4. Oil Leakage	<ol style="list-style-type: none"> <li>1. oil seal damaged</li> <li>2. gasket damaged</li> <li>3. drain plug loose</li> <li>4. covers or flange loose</li> </ol>	<ol style="list-style-type: none"> <li>1. replace oil seal</li> <li>2. replace gasket</li> <li>3. tighten drain plug</li> <li>4. tighten the bolts</li> </ol>
5. Input and Output Shaft Fail	<ol style="list-style-type: none"> <li>1. overheat cause gear-bound.</li> <li>2. bearing damaged</li> <li>3. some debris between gears</li> </ol>	<ol style="list-style-type: none"> <li>1. adjust or replace gears</li> <li>2. replace bearing</li> <li>3. remove debris; clean inside then replace lubricant oil</li> </ol>
6. Input shaft fail to drive output shaft	<ol style="list-style-type: none"> <li>1. gear worn-out</li> <li>2. the key connecting gear and output shaft damaged</li> <li>3. input shaft broken</li> <li>4. output shaft broken</li> </ol>	<ol style="list-style-type: none"> <li>1. replace gears</li> <li>2. replace key</li> <li>3. replace input shaft</li> <li>4. replace output shaft</li> </ol>
7. Gear Worn-out	<ol style="list-style-type: none"> <li>1. overload</li> <li>2. improper lubricant oil</li> <li>3. lubricant oil shortage</li> <li>4. ambient temperature too high</li> </ol>	<ol style="list-style-type: none"> <li>1. adjust to proper loading</li> <li>2. change proper lubricant oil</li> <li>3. refill lubricant oil</li> <li>4. ventilation improvement</li> </ol>