SPEED REDUCER
減速機

■ 外形■與規格表
■ OUTLINE & SPECIFICATION
■ 單位/UNIT：mm

減速機之選定 HOW TO SELECT A SPEED REDUCER

■ 與減速機直結後的回轉數及轉矩 ROTATION AND TORQUE GIVEN FROM CONJUNCTION WITH SPEED REDUCER

與減速機直結後的回轉數及轉矩可由以下公式算出
Following is the calculation formula:

回轉速 Rotations : $NG = Nm/i$: $NG = \frac{Nm}{i}$

轉矩 Torque : $TG = TM \bullet i \bullet \eta$

NG：加減速機後之回轉數 Rotations after conjunction with speed reducer (rPm)
NW：馬達本體之回轉數 Rotations of Motor (rpm)
I：減速機減速比 Speed Reducer's reduce ratio
TG：加減速機後之轉矩 Torque after conjunction with speed reducer (kg•m)
TM：馬達本體之轉矩 Torque of Motor (kg•m)
η：減速機之傳動效率 The transmission efficiency of the Speed Reducer

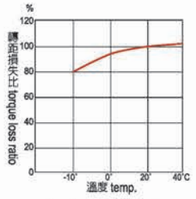
■ 最大容許轉矩 MAXIMUM TORQUE ALLOWED

限於材料或其他條件的限制，減速機能承受的轉矩是有極限的，當減速比變大時，請參考後面各章節。
The maximum torque a speed reducer can tolerate is limited due to materials or other specs. As the reduction ratio is increased, the maximum torque allowed is seen as the chart below on the right.

■ 容許側向負載及容許軸向負載 ALLOWABLE RADIAL LOAD AND AXIAL LOAD

所謂側向負載，就是出力軸在1/2處可以承受的彎曲負載，一般使用於以鏈條連結的機構。若是使用的連結器傳動的方式，可以不考慮。因為側向負載與軸向負載會影響減速機的壽命及強度，請勿超負載使用。
Radial load refers to the bending load and output shaft bears at the half-way point, commonly used in units linked by chains. Radial load can be disregarded if a coupler is used. do not over-work the reducer since Radial load and axial load may affect its service-life and strength.

■ 依溫度調整減速比 ADJUSTED THE SPEED REDUCER RATIO VIA ENVIRONMENT TEMPERATURE



環境溫度對於減速機的傳動效率有明顯的影響。上表的傳動效率是在室溫20°C時的量測值。當機台使用在寒帶地區時，請用右表的轉矩損失比來乘標示的轉矩。例如：若機台使用在-10°C的環境，其轉矩將減少20%。(僅供參考用)
Transmission efficiency of a speed reducer apparently does affected by the environment temperature. Appendence Graphic display tested data of the transmission efficiency at ambient 20°C. As machine is operated under boreal regions, to calculate its actual torque please refers the appendence graphic by using its torque loss ratio multiplied by label torque. Example: If the machine is operate at -10°C environment, its out-put torque will reduce by 20% (for reference only).

■ 馬達有圓軸及齒輪軸兩種，只有齒輪軸才能夠與減速機直結。
MOTOR EQUIP WITH ROUND SHAFT AND GEAR SHAFT, ONLY GEAR SHAFT CAN CONJUNCT WITH SPEED REDUCER.

減速機Speed Reducer
4GN15K
▲△

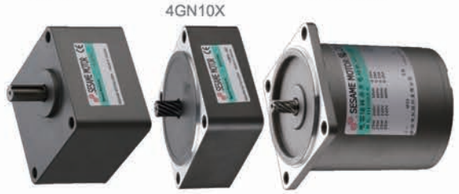
馬達(齒輪軸)Motor (Gear shaft)
4IK25GN-A
▲ △

馬達(圓軸)Motor (Round shaft)
4IK25A-A

減速機
Speed Reducer
4GN15K

中間減速機
Intermediate
Speed Reducer
4GN10X

馬達(齒輪軸)
Motor (Gear shaft)
4IK25GN-A



■ 負載形態與減速機壽命 LOAD PATTERNS VS. LIFESPAN OF SPEED REDUCER

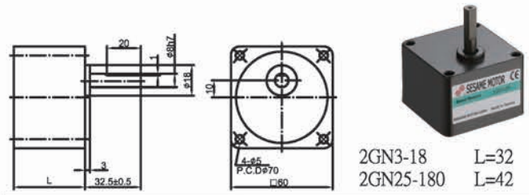
減速機的壽命會因負載方式，每日運轉時間及軸承種類的不同而改變。下表是假設減速機的負載低於最大容許轉矩。（僅供設計人員參考用）
Speed Reducer lifespan will be vary by ways of loading including but not limit to operation time frame, different type of bearing The following table assumes that the load gear is under the maximum permissible torque. (Reference for designers)

單位：小時

	含油軸承 BEARINGS			滾珠軸承 BALL BEARING			
負載形態 LOAD PATTERN	5小時/天	8小時/天	24小時/天	5小時/天	8小時/天	24小時/天	應用說明 Application instructions
固定負載 FIXED LOAD	2000	1500	1000	6250	5000	3400	單一方向運轉，如，輸送機。Operated in one direction, such as conveyors.
輕微衝擊 SLIGHT IMPACT	1500	1250	800	4200	3400	2500	經常起動／停止的機構，凸輪運轉。frequent Start/Stop, cam operation.
強烈衝擊 STRONG IMPACT	800 ~1000	700 ~1000	600 ~700	2000 ~2500	1700 ~2500	1400 ~1700	可逆馬達的瞬間正逆轉，用製車器瞬間剎車。Reversible motors, instant moment reversed, with brake system in an instant brake.

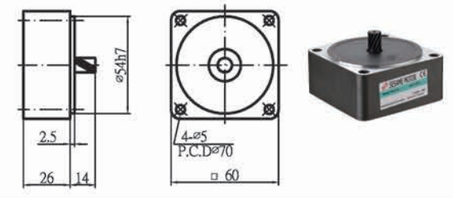
Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty. 產品因人為原因或天災等因素導致不良或損壞，不在保固範圍內。

■2 GN□KE . 2 GN□ 減速機/ SPEED REDUCER

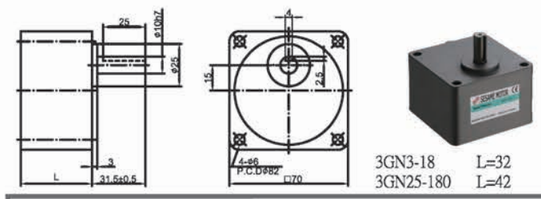


迴轉速/ SPEED(rpm)	500	300	200	180	150	120	100	60	50	30	20	15	10
減速比/ SPEED REDUCTION RATIO 50HZ	3	5	7.5	-	10	12.5	15	25	30	50	75	100	150
減速比/ SPEED REDUCTION RATIO 60HZ	3.6	6	9	10	-	15	18	30	36	60	90	120	180
最大容許轉矩/ (kgf.cm) MAX. TORQUE	1.1	1.8	2.7	3.0	3.9	4.5	5.4	8.1	9.7	15	23	25	25

■2GN10X . 2GN10XK 中間減速機/ INTERMEDIATE SPEED REDUCER

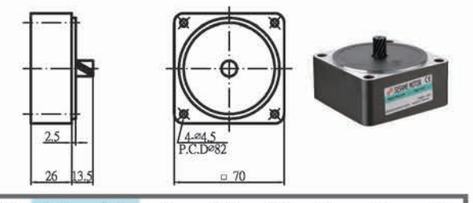


■3 GN□KE . 3 GN□ 減速機/ SPEED REDUCER

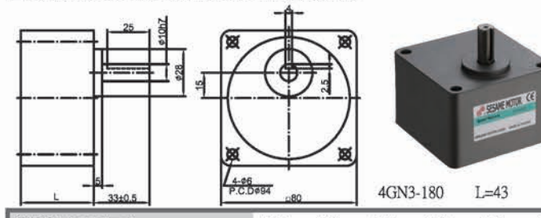


迴轉速/ SPEED(rpm)	500	300	200	180	150	120	100	60	50	45	37.5	30	20	15	10
減速比/ SPEED REDUCTION RATIO 50HZ	3	5	7.5	-	10	12.5	15	25	30	-	40	50	75	100	150
減速比/ SPEED REDUCTION RATIO 60HZ	3.6	6	9	10	-	15	18	30	36	40	-	60	90	120	180
最大容許轉矩/ (kgf.cm) MAX. TORQUE	2.6	4.4	6.6	7.4	9.8	11	13	20	24	24	32	36	50	50	50

■3GN10X . 3GN10XK 中間減速機/ INTERMEDIATE SPEED REDUCER

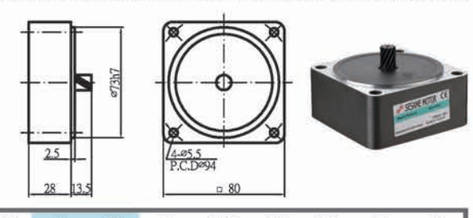


■4 GN□KE . 4 GN□ 減速機/ SPEED REDUCER

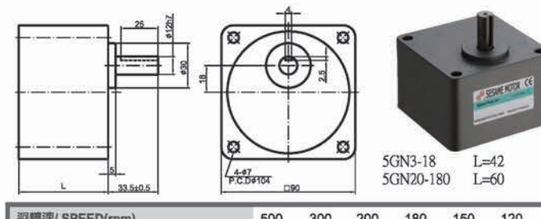


迴轉速/ SPEED(rpm)	500	300	200	180	150	120	100	60	50	45	37.5	30	20	15	10
減速比/ SPEED REDUCTION RATIO 50HZ	3	5	7.5	-	10	12.5	15	25	30	-	40	50	75	100	150
減速比/ SPEED REDUCTION RATIO 60HZ	3.6	6	9	10	-	15	18	30	36	40	-	60	90	120	180
最大容許轉矩/ (kgf.cm) MAX. TORQUE	4.4	7.4	11	12	15	11	22	33	40	40	50	60	80	80	80

■4GN10X . 4GN10XK 中間減速機/ INTERMEDIATE SPEED REDUCER

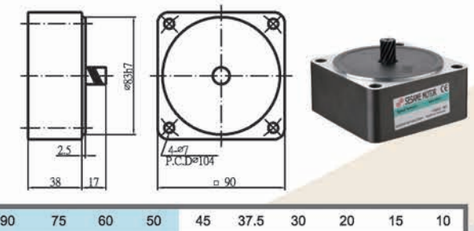


■5 GN□KE . 5 GN□ 減速機/ SPEED REDUCER



迴轉速/ SPEED(rpm)	500	300	200	180	150	120	100	90	75	60	50	45	37.5	30	20	15	10
減速比/ SPEED REDUCTION RATIO 50HZ	3	5	7.5	-	10	12.5	15	-	20	25	30	-	40	50	75	100	150
減速比/ SPEED REDUCTION RATIO 60HZ	3.6	6	9	10	-	15	18	20	-	30	36	40	-	60	90	120	180
最大容許轉矩/ (kgf.cm) MAX. TORQUE	10	17	26	29	36	43	52	52	65	78	93	93	100	100	100	100	100

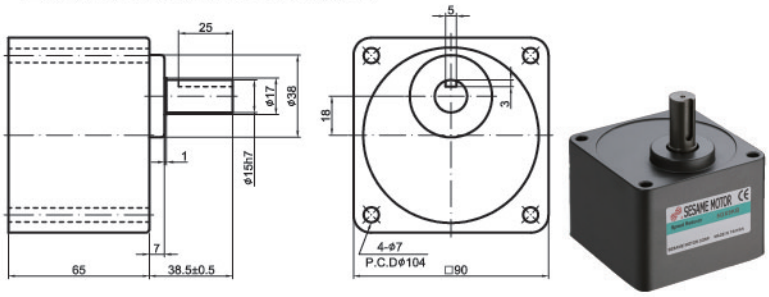
■5GN10X . 5GN10XK 中間減速機/ INTERMEDIATE SPEED REDUCER



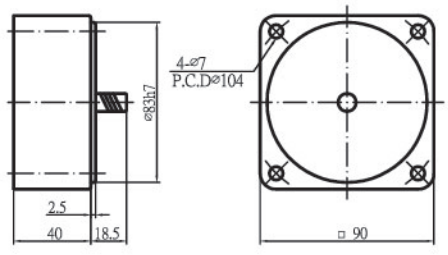
SPEED REDUCER
減速機

■ 外形圖與規格表
■ OUTLINE & SPECIFICATION
■ 單位/UNIT：mm

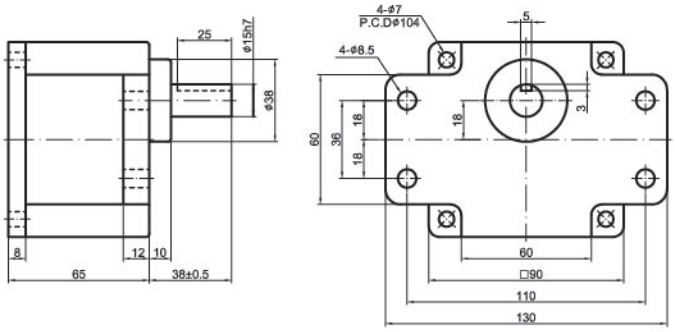
■5 GX□KB 減速機/ SPEED REDUCER



■5GX10XK 中間減速機/ INTERMEDIATE SPEED REDUCER

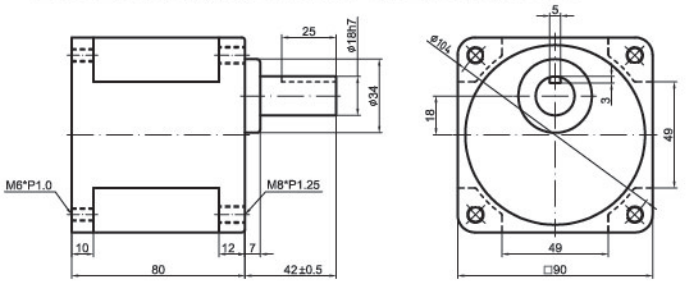


■5 GX□K 減速機/ SPEED REDUCER



迴轉速/ SPEED(rpm)	500	300	200	120	100	90	75	60	50	30	20	15	10	9	7.5
減速比/ SPEED REDUCTION RATIO 50HZ	3	5	7.5	12.5	15	-	20	25	30	50	75	100	150	-	200
減速比/ SPEED REDUCTION RATIO 60HZ	3.6	6	9	15	18	20	-	30	36	60	90	120	180	200	-
最大容許轉矩/ (kgf.cm) MAX. TORQUE	15	26	38	57	69	69	86	103	124	200	200	200	200	200	200

■5 GX□KBH 重力減速機/ GRAVITY FORCE TYPE REDUCER



迴轉速/ SPEED(rpm)	30	20	15	10	9	7.5
減速比/ SPEED REDUCTION RATIO 50HZ	50	75	150	150	-	200
減速比/ SPEED REDUCTION RATIO 60HZ	60	90	180	120	200	-
最大容許轉矩/ (kgf.cm) MAX. TORQUE	350	350	350	350	350	350

說明：

1. 減速機品名中□放入減速比。
2. 迴轉速是以馬達的同步轉速為基準(50 HZ：1500rpm，60HZ：1800rpm)除以減速比；實際迴轉速應依負載之大小減少2%~ 20%。
3. 標示 ■ 的減速機旋轉方向與馬達方向相反，其他則與馬達同方向。
4. 齒箱使用注意事項及說明：減速機中若有金屬或異物仍勉強與馬達組合，將會使齒輪受傷而產生異常音，及減少減速機使用壽命，也可能發生意外，請特別注意。
5. 齒箱與馬達結合一定要核對編碼是否正確，否則無法組裝。

NOTES：

1. Please fill in the required speed reduction ratio in the □ (square) after the speed reducer model no.
2. Rotational speed is calculated by dividing the synchronous speed of the motor (50Hz: 1500rpm; 60Hz: 1800rpm) with the reduction ration. Depending on total load, actual rotational speed is 2%~20~ less.
3. Speed reducers marked in the highlighted areas have opposite rotational direction to the motor. Others unmarked have the same rotational direction as the motor.
4. Notes on Gearbox Usage and Operation: if foreign objects, such as metal filings, exist on the reducer, please take special care that forced assembly with the motor will result damage to the gears and create noise, and/or decrease service-life of the reducer. Accidents may also occur during such process.
5. Please make sure that the shaft size of the motor matches to that of the accompanying reducer model before assembly, otherwise inconformity will occur.