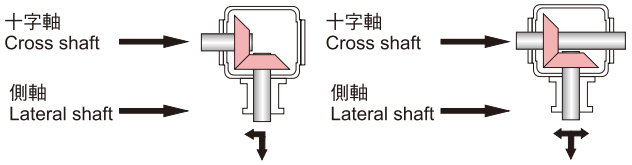
## ■結構•特性•應用　Structure•Character•Application

機殼：高剛性FC-20鑄鐵鑄造。(另有特殊材質鑄鋼)
齒輪：鉻鉬鋼螺線傘齒輪、表面經硬化處理及研磨。
主軸：碳鋼經高精度研磨處理、高懸重負荷能力。
軸承：配備重負荷能力的滾錐軸承。
油封：雙封唇片的油封、兼具防塵及防漏油的能力。

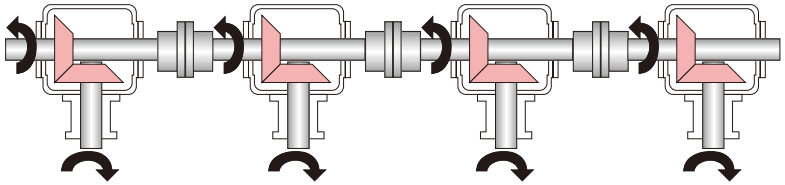
Housing　:High tensile strength cast iron (FC-20).(Special material cast steel)
Gear　:Cr-Mo-Steel Spiral Bevel Gear, surface hardened and polished.
Main shaft :Carbon alloy steel with precision grinding, high capacity of overhung and thrust loading.
Bearing　:Taper roller bearings for high load capacity.
Sealer　:Double lip oil sealer, prevent both dust and leakage.

轉向機基本傳動方式
Basic type of transmission of Miter Gear box:



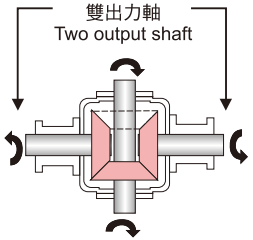

| 減速 Reduced | 增速 Speed-up |
|---|---|
| 1/2 | 2/1 |
| Output / Input | Input / Output |

轉向機應用例
Examples of Applications for Miter Gear box:

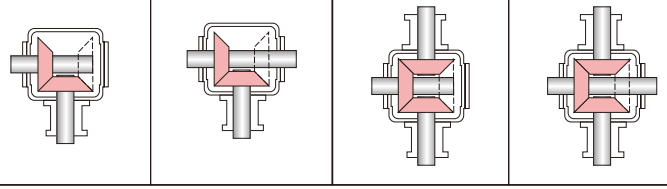


特殊品
Special Design:

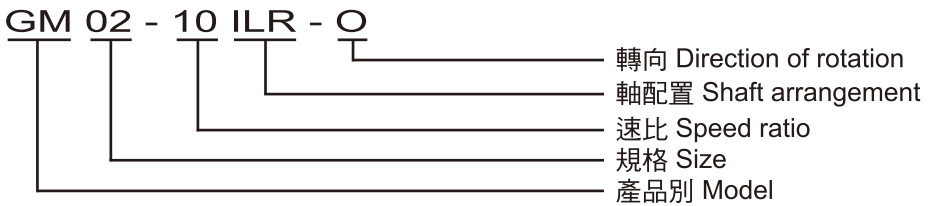
兩側旋向相反
sides rotate in opposite directions




| 單入力軸 One input shaft | | 雙入力軸 Two input shaft | |
|---|---|---|---|
| 2 Shaft Type | 3 Shaft Type | 3 Shaft Type | 4 Shaft Type |



## ■型號說明　Model explantion




| ILR | IR | IL | ILR-O | IR-O | IL-O |
|---|---|---|---|---|---|
| IUD | IU | ID | IUD-O | IU-O | ID-O |
| ULR | UR | UL | ULR-O | UR-O | UL-O |
| DLR | DR | DL | DLR-O | DR-O | DL-O |

| 特殊機種 III<br>Special model III | |
|---|---|

## ■轉向機機型選用

步驟1：決定補正係數<表一>。
步驟2：選擇適當轉向機需滿足扭力或kw值需求在<表二>指示速比及出力軸轉速。

## ■To select correct model for miter gear box

Step1:Determine the service factor (table 1)
Step2:Select the proper gear box which satisfies both torque or kw requirement at the specified speed ratio and shaft rpm (table 2,3)

### 表(一) Table(1)

| 馬達 motor / 負荷性質 load conditions | 使用時間 operation time 0.5 | 2 | 10 | 24 |
|---|---|---|---|---|
| 均一負荷 uniform load | 0.8 | 0.9 | 1.00 | 1.25 |
| | (0.9) | (1.00) | (1.25) | (1.50) |
| 中負荷 moderate load | 0.9 | 1.00 | 1.25 | 1.50 |
| | (1.00) | (1.25) | (1.50) | (1.75) |
| 重負荷 heavy load | 1.00 | 1.25 | 1.50 | 1.75 |
| | (1.25) | (1.50) | (1.75) | (2.00) |

扭力需求 ≥ 使用扭力 X 補正係數
kw值需求 ≥ 使用kw值 X 補正係數
Torque requirement ≥ Applied torque X Service factor
kw Requirement ≥ Applied kw X Service factor

註一：均一負荷及連續運轉期補正係為1.0
註二：每小時起動停止10回合以上採用( )內數值
note 1: the service factor for uniform load and continuous operation is 1.0
note 2: use the number in ( ) for start and stop over 10 cycles per hour.

### 表(二) Table(2)

| 速比 RATIO | 型號 Size / 轉速 R.P.M | | 3600 | 2750 | 1900 | 1750 | 1460 | 1150 | 870 | 580 | 400 | 300 | 200 | 150 | 100 | 50 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:1 | GM02 | kw | 3.493 | 2.641 | 1.92 | 1.757 | 1.447 | 1.211 | 0.905 | 0.596 | 0.532 | 0.399 | 0.266 | 0.199 | 0.133 | 0.066 | 0.013 |
| | | kgf-m | 0.945 | 0.935 | 0.984 | 0.978 | 0.965 | 1.026 | 1.013 | 1.001 | 1.295 | 1.295 | 1.295 | 1.295 | 1.295 | 1.295 | 1.295 |
| | GM04 | kw | 6.015 | 5.15 | 3.75 | 3.44 | 2.843 | 2.202 | 1.767 | 1.159 | 0.791 | 0.771 | 0.514 | 0.385 | 0.257 | 0.128 | 0.025 |
| | | kgf-m | 1.627 | 1.824 | 1.922 | 1.914 | 1.896 | 1.865 | 1.978 | 1.947 | 1.928 | 2.504 | 2.504 | 2.504 | 2.504 | 2.504 | 2.504 |
| | GM06 | kw | - | 19.87 | 15.338 | 14.082 | 11.677 | 9.731 | 7.248 | 5.075 | 3.445 | 2.561 | 2.208 | 1.656 | 1.104 | 0.552 | 0.11 |
| | | kgf-m | - | 7.037 | 7.863 | 7.838 | 7.79 | 8.242 | 8.115 | 8.523 | 8.39 | 8.317 | 10.754 | 10.754 | 10.754 | 10.754 | 10.754 |
| | GM08 | kw | - | - | 32.092 | 29.559 | 24.66 | 22.014 | 16.419 | 11.459 | 8.324 | 6.166 | 4.059 | 3.942 | 2.628 | 1.314 | 0.262 |
| | | kgf-m | - | - | 16.451 | 16.451 | 16.451 | 18.645 | 18.381 | 19.244 | 20.27 | 20.019 | 19.771 | 25.597 | 25.597 | 25.597 | 25.597 |
| | GM10 | kw | - | - | - | 46.957 | 39.176 | 34.972 | 26.457 | 18.898 | 14.035 | 10.447 | 6.867 | 5.114 | 4.431 | 2.215 | 0.443 |
| | | kgf-m | - | - | - | 26.135 | 26.135 | 29.62 | 29.62 | 31.735 | 34.177 | 33.919 | 33.444 | 33.207 | 43.158 | 43.158 | 43.158 |
| | GM12 | kw | - | - | - | - | 63.248 | 49.818 | 42.714 | 30.51 | 21.041 | 16.995 | 11.33 | 8.497 | 7.364 | 3.682 | 0.736 |
| | | kgf-m | - | - | - | - | 42.194 | 42.194 | 47.82 | 51.236 | 51.236 | 55.177 | 55.177 | 55.177 | 71.73 | 71.73 | 71.73 |
| 1:2 | GM04 | kw | 3.058 | 2.468 | 1.667 | 1.645 | 1.358 | 1.058 | 0.792 | 0.68 | 0.469 | 0.351 | 0.234 | 0.175 | 0.117 | 0.058 | 0.011 |
| | | kgf-m | 0.827 | 0.874 | 0.854 | 0.915 | 0.906 | 0.896 | 0.887 | 1.142 | 1.142 | 1.142 | 1.142 | 1.142 | 1.142 | 1.142 | 1.142 |
| | GM06 | kw | 7.809 | 6.692 | 4.866 | 4.466 | 3.68 | 3.074 | 2.294 | 1.507 | 1.34 | 1.005 | 0.67 | 0.502 | 0.335 | 0.167 | 0.033 |
| | | kgf-m | 2.112 | 2.37 | 2.494 | 2.485 | 2.455 | 2.604 | 2.568 | 2.531 | 3.264 | 3.264 | 3.264 | 3.264 | 3.264 | 3.264 | 3.264 |
| | GM08 | kw | 16.194 | 12.243 | 9.457 | 8.669 | 7.678 | 5.964 | 4.772 | 3.121 | 2.127 | 2.063 | 1.375 | 1.031 | 0.687 | 0.343 | 0.068 |
| | | kgf-m | 4.381 | 4.336 | 4.848 | 4.825 | 5.122 | 5.051 | 5.342 | 5.242 | 5.18 | 6.698 | 6.698 | 6.698 | 6.698 | 6.698 | 6.698 |
| | GM10 | kw | - | 21.691 | 16.728 | 15.366 | 12.701 | 10.599 | 7.864 | 5.526 | 3.76 | 2.799 | 2.422 | 1.817 | 1.211 | 0.605 | 0.121 |
| | | kgf-m | - | 7.682 | 8.575 | 8.552 | 8.473 | 8.977 | 8.804 | 9.281 | 9.157 | 9.089 | 11.799 | 11.799 | 11.799 | 11.799 | 11.799 |
| | GM12 | kw | - | 33.378 | 22.738 | 23.659 | 19.616 | 16.352 | 12.185 | 8.528 | 5.788 | 4.303 | 3.707 | 2.78 | 1.853 | 0.926 | 0.185 |
| | | kgf-m | - | 11.822 | 11.656 | 13.168 | 13.086 | 13.85 | 13.641 | 14.322 | 14.095 | 13.97 | 18.055 | 18.055 | 18.055 | 18.055 | 18.055 |
| 1:3 | GM06 | kw | 4.125 | 3.33 | 2.419 | 2.217 | 1.832 | 1.428 | 1.071 | 0.921 | 0.635 | 0.476 | 0.317 | 0.238 | 0.158 | 0.08 | 0.016 |
| | | kgf-m | 1.116 | 1.179 | 1.24 | 1.234 | 1.222 | 1.21 | 1.19 | 1.546 | 1.546 | 1.546 | 1.546 | 1.546 | 1.546 | 1.546 | 1.546 |
| | GM08 | kw | 8.991 | 6.795 | 4.936 | 4.518 | 4.01 | 3.117 | 2.33 | 1.534 | 1.37 | 1.028 | 0.685 | 0.514 | 0.342 | 0.171 | 0.034 |
| | | kgf-m | 2.432 | 2.406 | 2.53 | 2.514 | 2.675 | 2.64 | 2.609 | 2.577 | 3.337 | 3.337 | 3.337 | 3.337 | 3.337 | 3.337 | 3.337 |
| | GM10 | kw | 11.358 | 9.737 | 7.078 | 6.496 | 5.348 | 4.47 | 3.337 | 2.193 | 1.953 | 1.464 | 0.976 | 0.732 | 0.488 | 0.244 | 0.048 |
| | | kgf-m | 3.073 | 3.448 | 3.628 | 3.615 | 3.568 | 3.786 | 3.735 | 3.684 | 4.755 | 4.755 | 4.755 | 4.755 | 4.755 | 4.755 | 4.755 |
| | GM12 | kw | 23.072 | 19.749 | 13.442 | 12.327 | 10.925 | 8.468 | 6.785 | 4.445 | 3.032 | 2.946 | 1.964 | 1.473 | 0.982 | 0.491 | 0.098 |
| | | kgf-m | 6.242 | 6.995 | 6.891 | 6.861 | 7.288 | 7.172 | 7.596 | 7.464 | 7.383 | 9.567 | 9.567 | 9.567 | 9.567 | 9.567 | 9.567 |

## ■潤滑

適當的潤滑油使用，可以發揮轉向機的效率，並提高其運轉的壽命。

・初期使用二週或100-200小時，為初摩耗期，這之間可能有少許金屬摩耗粉粒，請務必清潔內部，並換新潤滑油。

・長期使用時，每半年-一年或者1000-2000小時，更換一次潤滑油。

## ■潤滑油種類

本產品潤滑油採用中國石油全效齒輪油90#-120#，低轉速、輕負荷條件，建議採用全效齒輪油90#，重負荷、高溫的條件，建議採用全效齒輪油120#。

*如有特殊使用條件，請示先與本公司洽商。

## ■Lubrication

Proper application of lubricating oil will raise the efficiency and prolong the life of the Miter Gears.

・The first two weeks or first 100 to 200 hours are break-in period.There might be some tiny metal powders during this time. Please clean interior and replace with new lubricating oil after break-in.
・For normal operation, replace lubricating oil every six months to one year or 1000 to 2000 hours whichever comes sooner.

## ■The choices of lubricating oil

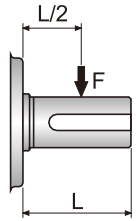
The product use Universal Gear Oil 90# to 120# by China Petroleum Corp. Use Universal Gear Oil 90# for low speed and light load. Use Universal Gear Oil 120# for heavy load and high temperature.

Note: For special operation. please contact the manufacturer or our dealer.

## ■懸吊荷重 Suspension loading

單位:Unit:(kg)

| 速比 RATIO | 型號 Size / 轉速 R.P.M | | 1900 | 1750 | 1460 | 1150 | 870 | 580 | 300 | 100 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:1 | GM02 | 入力軸 | 14.4 | 17.6 | 21.6 | 26.4 | 32.8 | 44.8 | 56.8 | 80 | 80 |
| | | 出力軸 | 13.6 | 16 | 17.6 | 19.2 | 20.8 | 25.6 | 32 | 48 | 48 |
| | GM04 | 入力軸 | 57.7 | 64 | 68 | 72 | 78.4 | 88 | 124 | 156 | 156 |
| | | 出力軸 | 66.8 | 73.6 | 77.6 | 84 | 92 | 108 | 160 | 160 | 160 |
| | GM06 | 入力軸 | 133 | 148 | 156 | 168 | 180 | 204 | 280 | 280 | 280 |
| | | 出力軸 | 167.2 | 188 | 200 | 212 | 232 | 260 | 288 | 288 | 288 |
| | GM08 | 入力軸 | 228 | 252 | 264 | 284 | 308 | 348 | 428 | 688 | 688 |
| | | 出力軸 | 235.6 | 264 | 276 | 296 | 324 | 364 | 568 | 720 | 720 |
| | GM10 | 入力軸 | - | 324 | 340 | 364 | 396 | 448 | 548 | 816 | 816 |
| | | 出力軸 | - | 348 | 368 | 396 | 432 | 480 | 652 | 960 | 960 |
| | GM12 | 入力軸 | - | - | 416 | 448 | 480 | 548 | 672 | 928 | 968 |
| | | 出力軸 | - | - | 456 | 496 | 536 | 596 | 740 | 1028 | 1184 |
| 1:2 | GM04 | 入力軸 | 64.6 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 |
| | | 出力軸 | 136.8 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 |
| 1:2 1:3 | GM06 | 入力軸 | 140.6 | 180 | 208 | 248 | 280 | 280 | 280 | 280 | 280 |
| | | 出力軸 | 193.8 | 224 | 232 | 252 | 272 | 288 | 288 | 288 | 288 |
| | GM08 | 入力軸 | 266 | 312 | 356 | 416 | 496 | 624 | 688 | 688 | 688 |
| | | 出力軸 | 532 | 592 | 652 | 720 | 720 | 720 | 720 | 720 | 720 |
| | GM10 | 入力軸 | 323 | 364 | 424 | 504 | 608 | 780 | 816 | 816 | 816 |
| | | 出力軸 | 608 | 672 | 752 | 856 | 960 | 960 | 960 | 960 | 960 |
| | GM12 | 入力軸 | - | 416 | 488 | 592 | 724 | 936 | 968 | 968 | 968 |
| | | 出力軸 | - | 752 | 856 | 992 | 1184 | 1184 | 1184 | 1184 | 1184 |



## ■滾珠螺桿外徑
## Ballscrews outer diameter

單位:Unit:(mm)

| 型 式Size | 外徑 Outer diameter |
|---|---|
| GE02 | Ø20 |
| GE04 | Ø32 |
| GE06 | Ø40 |

## ■種類外觀 Type outward appearance

| 單軸 One shaft | 雙軸 Two shaft | 三軸 Three shaft | 附加剎車 Additional brake |
|---|---|---|---|
|  |  |  |  |

## ■昇降機機型選用

步驟1：決定補正係數<表一>。
步驟2：選擇適當轉向機需滿足扭力或kw值需求在<表二>指示速比及出力軸轉速。

## ■To select correct model for miter gear box which linear movement

Step1:Determine the service factor (table 1)
Step2:Select the proper gear box which satisfies both torque or kw requirement at the specified speed ratio and shaft rpm (table 2,3)

### 表(一) Table(1)

| 馬 達 motor / 負荷性質 load conditions | 使用時間 operation time | | | |
|---|---|---|---|---|
| | 0.5 | 2 | 10 | 24 |
| 均一負荷 uniform load | 0.8 | 0.9 | 1.00 | 1.25 |
| | (0.9) | (1.00) | (1.25) | (1.50) |
| 中負荷 moderate load | 0.9 | 1.00 | 1.25 | 1.50 |
| | (1.00) | (1.25) | (1.50) | (1.75) |
| 重負荷 heavy load | 1.00 | 1.25 | 1.50 | 1.75 |
| | (1.25) | (1.50) | (1.75) | (2.00) |

扭力需求 ≥ 使用扭力 X 補正係數
kW值需求 ≥ 使用kW值 X 補正係數
Torque requirement ≥ Applied torque X Service factor
kw Requirement ≥ Applied kw X Service factor

註一：均一負荷及連續運轉期補正係為1.0
註二：每小時起動停止10回合以上採用( )內數值
note 1: the service factor for uniform load and continuous operation is 1.0
note 2: use the number in ( ) for start and stop over 10 cycles per hour.

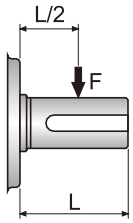
### 表(二) Table(2)

| 速比 RATIO | 型號 Size / 轉速 R.P.M | | 3600 | 2750 | 1900 | 1750 | 1460 | 1150 | 870 | 580 | 400 | 300 | 200 | 150 | 100 | 50 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:2 | GE02 | kw | 2.134 | 1.725 | 1.251 | 1.147 | 0.948 | 0.74 | 0.555 | 0.478 | 0.33 | 0.247 | 0.165 | 0.123 | 0.082 | 0.041 | 0.008 |
| | | kgf-m | 0.577 | 0.611 | 0.641 | 0.638 | 0.633 | 0.627 | 0.621 | 0.803 | 0.803 | 0.803 | 0.803 | 0.803 | 0.803 | 0.803 | 0.803 |
| 1:2.5 | GE04 | kw | 5.543 | 4.181 | 3.03 | 2.775 | 2.466 | 1.919 | 1.437 | 0.947 | 0.848 | 0.636 | 0.424 | 0.318 | 0.212 | 0.106 | 0.021 |
| | | kgf-m | 1.5 | 1.48 | 1.553 | 1.544 | 1.645 | 1.626 | 1.608 | 1.59 | 2.065 | 2.065 | 2.065 | 2.065 | 2.065 | 2.065 | 2.065 |
| 1:3 | GE06 | kw | 5.654 | 4.566 | 3.086 | 2.827 | 2.513 | 1.957 | 1.465 | 0.966 | 0.866 | 0.649 | 0.433 | 0.324 | 0.216 | 0.108 | 0.021 |
| | | kgf-m | 1.53 | 1.617 | 1.582 | 1.573 | 1.677 | 1.658 | 1.641 | 1.623 | 2.11 | 2.11 | 2.11 | 2.11 | 2.11 | 2.11 | 2.11 |

## ■懸吊荷重 Suspension loading

單位:Unit:(kg)

| 速比 RATIO | 型號 Size / 轉速 R.P.M | | 1900 | 1750 | 1460 | 1150 | 870 | 580 | 300 | 100 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:2 | GE02 | 入力軸 | 16.1 | 24.2 | 28.1 | 34.3 | 35.2 | 35.2 | 35.2 | 35.2 | 35.2 |
| | | 出力軸 | 27.8 | 31.8 | 35.2 | 38.4 | 45.7 | 45.7 | 45.7 | 45.7 | 45.7 |
| 1:2.5 | GE04 | 入力軸 | 64.6 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 |
| | | 出力軸 | 136.8 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 |
| 1:3 | GE06 | 入力軸 | 140.6 | 180 | 208 | 248 | 280 | 280 | 280 | 280 | 280 |
| | | 出力軸 | 193.8 | 224 | 232 | 252 | 272 | 288 | 288 | 288 | 288 |




## ■潤滑油種類

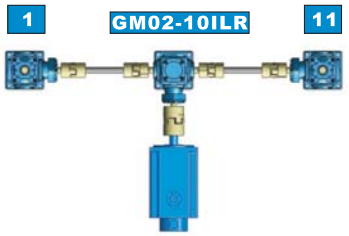
潤滑油脂 DUPLEX EPS SPECIAL

## ■The choices of lubricating oil

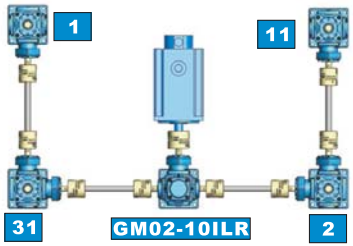
Lubricating oil DUPLEX EPS SPECIAL.

## ■應用範例 Application example

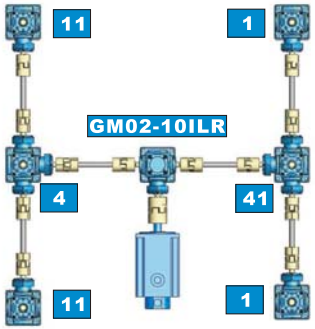
二點同步昇降



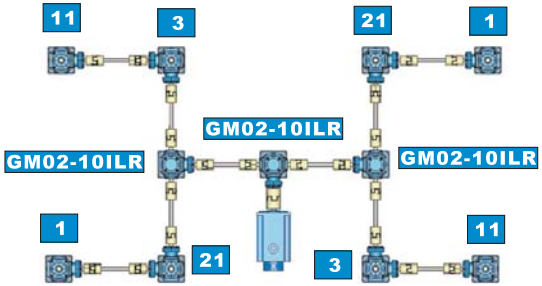

四點同步昇降




六點同步昇降

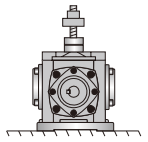
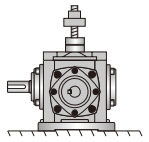
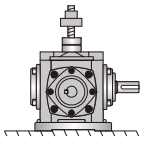


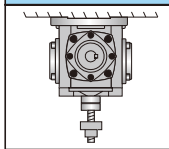
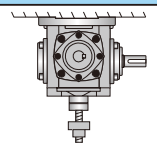
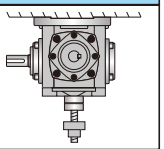

八點同步昇降



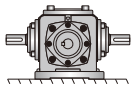
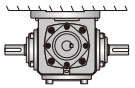
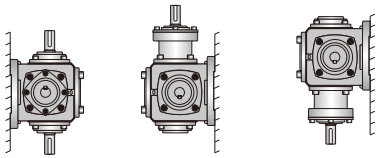
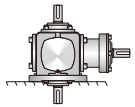
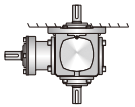
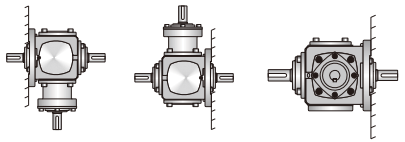
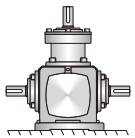
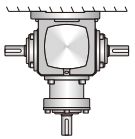
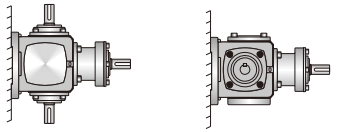
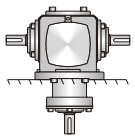
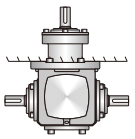
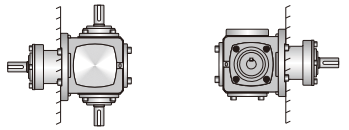

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | GE02-BUGCI-□ | 2 | GE02-BUGCIL-□ | 3 | GE02-BUGCIR-□ | 4 | GE02-BUGCIII-□ |
| 11 | GE02-BUGRI-□ | 21 | GE02-BUGRIL-□ | 31 | GE02-BUGRIR-□ | 41 | GE02-BUGRIII-□ |
| |  | |  | |  | |  |
| 5 | GE02-BDGCI-□ | 6 | GE02-BDGCIL-□ | 7 | GE02-BDGCIR-□ | 8 | GE02-BDGCIII-□ |
| 51 | GE02-BDGRI-□ | 61 | GE02-BDGRIL-□ | 71 | GE02-BDGRIR-□ | 81 | GE02-BDGRIII-□ |
| |  | |  | |  | |  |

## ■十字轉向昇降機安裝 Miter gear box which linear movement mounting

| 臥式 Horizontal | | |
|---|---|---|
| GE□□-BUGCI<br>GE□□-BUGRI | GE□□-BUGCIL<br>GE□□-BUGRIL | GE□□-BUGCIR<br>GE□□-BUGRIR |
|  |  |  |

| 吊掛式 Over hung | | |
|---|---|---|
| GE□□-BUGCI<br>GE□□-BUGRI | GE□□-BUGCIL<br>GE□□-BUGRIL | GE□□-BUGCIR<br>GE□□-BUGRIR |
|  |  |  |

## ■十字轉向機安裝 Miter gear box mounting

| 軸配置<br>Shaft arrangement | 臥式 Horizontal | 吊掛式 Over hung | 側壁式 Side wall |
|---|---|---|---|
| ILR ILR-O<br>IR IR-O<br>IL IL-O |  |  |  |
| IUD IUD-O<br>IU IU-O<br>ID ID-O |  |  |  |
| ULR ULR-O<br>UR UR-O<br>UL UL-O |  |  |  |
| DLR DLR-O<br>DR DR-O<br>DL DL-O |  |  |  |

## ■計算實例 Calculated example

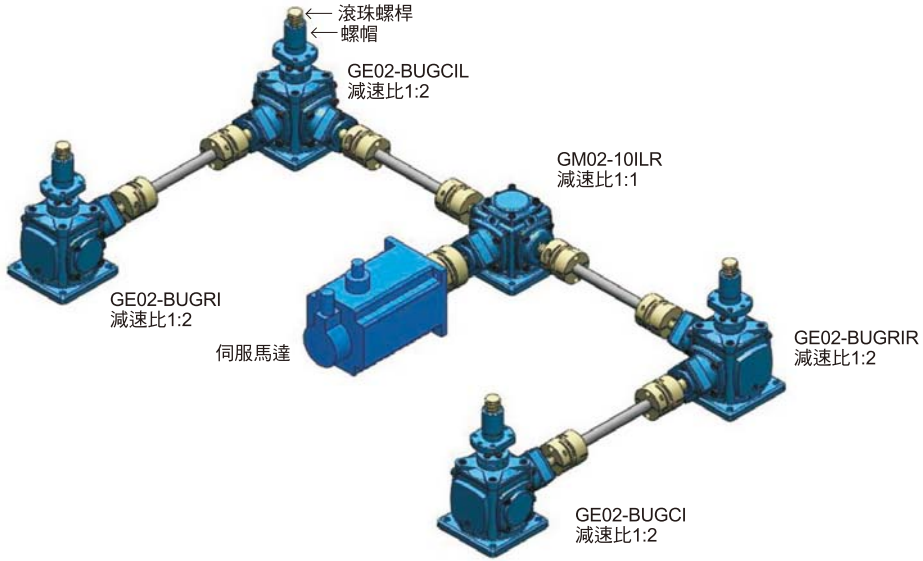
昇降設備選用計算說明:

假設有一GE02的4點組合昇降設備(參考左圖),其載重為300kg,
昇降速度為100mm/s,搭配伺服馬達轉速設為1500rpm,則伺服馬達應選用多少kw?
螺桿導程為多少?

公式:1.$F=F_A+m(\sin a+u\cos a)$
2.$F_0=F/3$
3.$N_1=N/i$
4.$Pitch=V/N_1$
5.$T=[F*Pitch/(2\pi\eta)+u*F_0*Pitch/(2\pi)]/1000$
6.$Tm=T/(\eta_1*\eta_2*i)$
7.$P=Tm*N/973.5$

相關計算如下:
V=100(mm/s)
=6000(mm/min)
滾珠螺桿的負載:
$F=F_A+m(\sin a+u\cos a)$
$=0+300(\sin 90^\circ+0.05*\cos 90^\circ)$
=300(kg)
滾珠螺桿的預壓負載:
$F_0=F/3$
=300/3=100(kg)
滾珠螺桿轉速:
$N_1=N/i$
=1500/2=750(rpm)
滾珠螺桿導程:
$Pitch=V/N_1$
=6000/750
=8(mm) 因為沒有導程8mm,故選用導程10mm
昇降機負載轉矩$T=[F*Pitch/(2\pi\eta)+u*F_0*Pitch/(2\pi)]/1000$
$=[300*10/(2\pi*0.9)+0.05*100*10/(2\pi)]/1000$
$=(530.78+7.96)/1000$
=0.538(kgfm)
伺服馬達扭矩$Tm=T/(\eta_1*\eta_2*i)$
$=0.538/(0.9*0.9*2)$
=0.33(kgfm)
伺服馬達輸出功率$P=Tm*N/973.5$
$=0.33*1500/973.5$
=0.5(kw)
設安全因數為2倍,0.5*2=1(kw),故選用1(kw)的伺服馬達
**如果要把十字轉向機換成中空渦輪減速機,減速比1:5的話,
將會使螺桿的外徑及導程變大,導致成本增加許多,故不建議

F:軸方向載重(kg)
$F_A$:外力(kg)
m:載重(kg)
A:傾斜角度(90°)
u:滑動面的摩擦係數(0.05)
$F_0$:預壓載重約軸方向載重的1/3(kg)
$N_1$:滾珠螺桿轉速(rpm)
N:伺服馬達轉速(rpm)
i:昇降機減速比
Pitch:螺桿導程(mm)
V:昇降速度(mm/s)
T:昇降機負載轉矩(kgfm)
π:圓周率(3.14)
η:滾珠螺桿效率(0.9)
Tm:伺服馬達扭矩(kgfm)
$\eta_1$:轉向機效率(0.9)
$\eta_2$:昇降機效率(0.9)
P:伺服馬達功率(kw)




## ■應用實例 Application example

昇降系統

轉向系統