

AMS

Automatic Motion System

TCG 齿圈组件

RGU Series



速器可以由客户提供，并且照片和
减速器可能不同。



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减速器可能不同。

高精度 · 高刚性 · 同时实现中空大口径，零背隙减速组件

A non-backlash reduction unit featured by the realization of high precision, high rigidity and large-caliber hollow hole

特性 Features

■ 组件化 Unitization

TCG齿圈和球减速机组件化。省去烦琐的设计和装配，提高客户效率。

Unitization of TCG Cam Ring and Ball Reducer has reduced the man-hours required for designing and assembling.

■ 零背隙·高精度 Non-backlash and high precision

零背隙，可以实现高精度。

Non-backlash has realized high-precision positioning.

■ 中空大口径 Large-caliber hollow hole

中空大口径贯通结构，方便配线，配管，转台组件整体上结构紧凑。

The large-caliber through, hollow hole can pass wiring and piping through there to make the entire unit neat and ordered.

■ 低噪音·低振动 Low noise and low vibration

驱动部分全部为滚动接触，因此没有敲齿音，振动也很小。

All contacts of the drive unit by means of rolling has eliminated gear rattle and reduced vibration.

■ 高负载·高刚性 High load and high rigidity

旋转轴的轴承采用交叉滚子轴承。

可以强有力地支撑作用在转台上的外力。

Cross-roller bearing employed for the slewing shaft can adequately receive external force acting on the table.

■ 电机安装简单 Easy-to-mount motor

配有各公司标准的伺服电机安装对应表，便于电机安装。

Motor mounting is easy with the availability of various attachments applicable to standard servo motors of various manufacturers.

用途例 Use Examples

● 大型基板反转装置 Large-sized board turnover unit



● 机器人周边装置 Peripheral units for robot



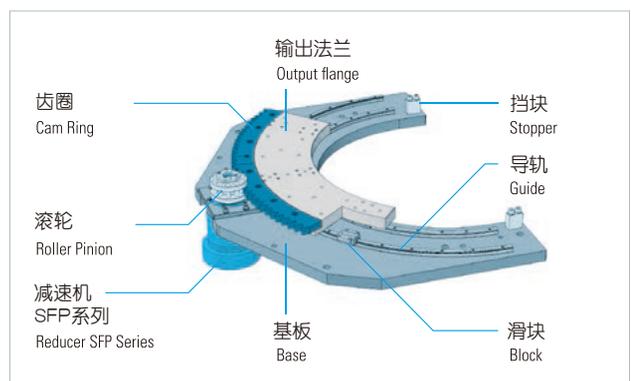
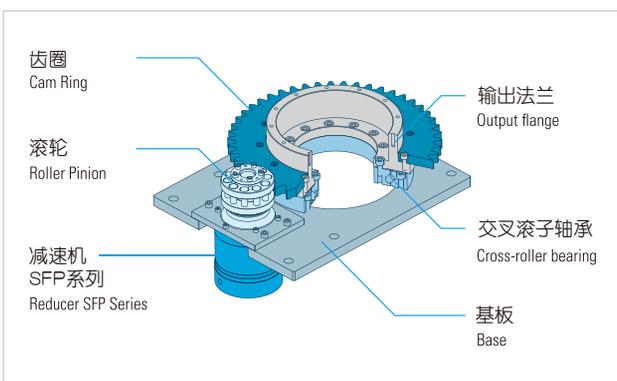
● 检查装置 Inspection unit



● 加工工作台的分度装置 Indexing of processing table



构造图 Structural Drawing



选定产品后相关技术参数请再次咨询亚姆斯（AMS）确认，更多新产品请查阅亚姆斯（AMS）官方网站

想要了解产品技术信息请登录网站下载

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规格 · 尺寸表

Specification Dimensional Table

TCG齿圈组件

TCG Cam Ring Unit



速器可以由客户提供，并且照片和
减速器可能不同。

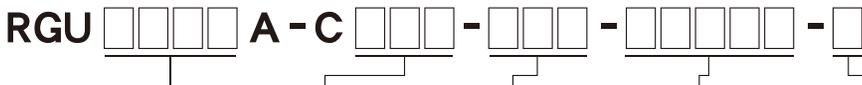
规格 · 型号 · 外形图 Specifications, Models, Outline Drawings

规格表 Specification Table

| 型号 Model | 总减速比 Total reduction ratio | 基本动额定 扭矩 | 最大使用 扭矩 | 允许静额定 扭矩 | 驱动部分 转动惯量 | 允许平均输入 回转数 | 最高输入 回转数 | 允许平均输入 回转数 | 最高输出 回转数 | 输入轴 转动惯量 | 推荐电机 容量 | 输入轴 孔径 | 质量 |
|----------------|-------------------------------|--------------------------------------|----------------------------------|---|---|--|---|---|--|---|--------------------------------------|--|------------|
| | | Basic dynamic rated torque N·m | Maximum working torque N·m | Allowable static rated torque N·m | Inertia moment of drive unit x10 ⁻⁴ ·kg·m ² | Allowable average number of input revolutions rpm | Maximum number of input revolutions rpm | Allowable average number of output revolutions rpm | Maximum number of output revolutions rpm | Inertia moment converted to input shaft x10 ⁻⁴ ·kg·m ² | Recommendable motor capacity W | Input shaft hole diameter mm | Mass kg |
| RGU1610A-C40- | 40 | 83 | 143 | 143 | 212 | 3000 | 4500 | 75.0 | 112.5 | 0.695 | 400 | 14 · 11 · 8 | 16 |
| | 80 | | | | | | | 37.5 | 56.3 | 0.484 | 200 | | |
| | 120 | | | | | | | 25.0 | 37.5 | 0.437 | 200 | | |
| | 160 | | | | | | | 18.8 | 28.1 | 0.419 | 100 | | |
| RGU1610A-C60- | 60 | 125 | 237 | 290 | 1149 | | | 50.0 | 75.0 | 0.881 | 400 | | |
| | 120 | | | | | | | 25.0 | 37.5 | 0.531 | 200 | | |
| | 180 | | | | | | | 16.7 | 25.0 | 0.458 | 200 | | |
| | 240 | | | | | | | 12.5 | 18.8 | 0.430 | 100 | | |
| RGU1610A-C80- | 80 | 165 | 316 | 390 | 4135 | | | 37.5 | 56.3 | 1.208 | 400 | | |
| | 160 | | | | | | | 18.8 | 28.1 | 0.612 | 200 | | |
| | 240 | | | | | | | 12.5 | 18.8 | 0.494 | 200 | | |
| | 320 | | | | | | | 9.4 | 14.1 | 0.451 | 100 | | |
| RGU1610A-C100- | 100 | 205 | 395 | 480 | 12007 | | | 30.0 | 45.0 | 1.763 | 400 | | |
| | 200 | | | | | | | 15.0 | 22.5 | 0.751 | 200 | | |
| | 300 | | | | | | | 10.0 | 15.0 | 0.556 | 200 | | |
| | 400 | | | | | | | 7.5 | 11.3 | 0.486 | 100 | | |
| RGU2510A-C40- | 40 | 290 | 479 | 670 | 2017 | 2000 | 4000 | 50.0 | 100.0 | 5.28 | 1500 | 48 | |
| | 80 | | | | | | | 25.0 | 50.0 | 3.45 | 750 | | |
| | 120 | | | | | | | 16.7 | 33.3 | 3.07 | 750 | | |
| | 160 | | | | | | | 12.5 | 25.0 | 2.91 | 400 | | |
| | 200 | | | | | | | 10.0 | 20.0 | 2.85 | 400 | | |
| RGU2510A-C50- | 50 | 360 | 598 | 840 | 5443 | | | 40.0 | 80.0 | 6.19 | 1500 | 72 | |
| | 100 | | | | | | | 20.0 | 40.0 | 3.68 | 750 | | |
| | 150 | | | | | | | 13.3 | 26.7 | 3.17 | 750 | | |
| | 200 | | | | | | | 10.0 | 20.0 | 2.97 | 400 | | |
| | 250 | | | | | | | 8.0 | 16.0 | 2.89 | 400 | | |
| RGU2510A-C60- | 60 | 430 | 718 | 1010 | 12074 | | | 33.3 | 66.7 | 7.37 | 1500 | 24 · 22 · 19 · 16 · 14 | 94 |
| | 120 | | | | | | | 16.7 | 33.3 | 3.97 | 750 | | |
| | 180 | | | | | | | 11.1 | 22.2 | 3.30 | 750 | | |
| | 240 | | | | | | | 8.3 | 16.7 | 3.05 | 400 | | |
| | 300 | | | | | | | 6.7 | 13.3 | 2.93 | 400 | | |
| RGU2510A-C70- | 70 | 510 | 838 | 1180 | 22095 | | | 28.6 | 57.1 | 8.52 | 1500 | 126 | |
| | 140 | | | | | | | 14.3 | 28.6 | 4.26 | 750 | | |
| | 210 | | | | | | | 9.5 | 19.0 | 3.43 | 750 | | |
| | 280 | | | | | | | 7.1 | 14.3 | 3.12 | 400 | | |
| | 350 | | | | | | | 5.7 | 11.4 | 2.98 | 400 | | |
| RGU2510A-C125- | 125 | 910 | 1496 | 2100 | 249165 | 16.0 | 32.0 | 19.96 | 1500 | 342 | | | |
| | 250 | | | | | 8.0 | 16.0 | 7.12 | 750 | | | | |
| | 375 | | | | | 5.3 | 10.7 | 4.70 | 750 | | | | |
| | 500 | | | | | 4.0 | 8.0 | 3.83 | 400 | | | | |
| | 625 | | | | | 3.2 | 6.4 | 3.44 | 400 | | | | |

基本动额定扭矩 : 在一定速度运转时, 满足额定寿命的基本扭矩。
 Basic dynamic rated torque : Basic torque required for satisfying the rated lifetime during a constant-speed, continuous operation.
 最大使用扭矩 : 正常运转可以使用的扭矩 (包含加减速的峰值) 的最大值。
 Maximum working torque : Maximum value of torque for normal operation (including the peak torque during acceleration/ deceleration).
 允许静额定扭矩 : 非常条件下停止或者外部冲击等, 情况下的最大扭矩。
 Allowable static rated torque : Maximum value of torque for non-normal use, such as emergency stop and external shock.
 驱动部分转动惯量 : 输出侧回转部分的转动惯量, 计算负载扭矩时, 负载转动惯量需要一并算出。
 Inertia moment of drive unit : Inertia moment of the output side rotation unit. To calculate load torque, add the load inertia moment.
 输入轴换算转动惯量 : 齿圈组件整体的换算值。
 Inertia moment converted to input shaft : Converted value of the entirety of Ring Unit.

型号表示 Model Indication

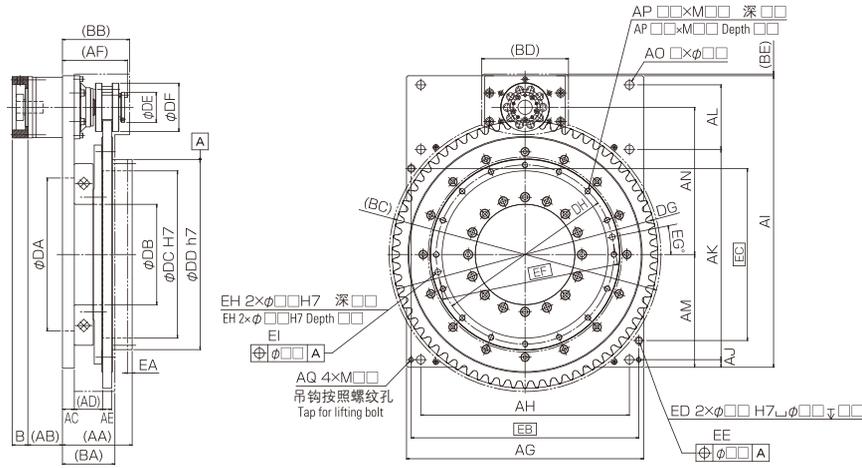


| 型号 Bracket No. | 齿圈齿数 Number of ring teeth | 总减速比 ^{※1} Total reduction ratio | 电机安装记号 ^{※2、※3} Motor mounting code | 可选项 Option |
|-------------------|------------------------------|---|--|---|
| 1610 | 40 | | | A : 带盖板 ^{※4} With cover (标准品时, 不用填写) |
| | 60 | | | |
| | 80 | | | |
| | 100 | | | |
| 2510 | 40 | | | |
| | 50 | | | |
| | 60 | | | |
| | 70 | | | |
| | 125 | | | |

- ※1 : 规格表参照
Refer to Specification Table.
- ※2 : 没有选择电机安装法兰的情况下
000□□ 内填写输入轴轴径
● 输入轴轴径 Input shaft hole diameter
For models with no motor attachment, enter
5-digit figure of "000□□."
- ※3 : 电机对应参照表P96-99页。
Refer to Motor Corresponding Table on P.96-99
- ※4 : 盖板是为了安全, 并不是用来防尘的,
盖板的尺寸图参照P89-90页。
The cover is a safety cover, not a dustproof cover.
For the outline dimensions of models with cover,
refer to Outline Dimensional Drawings on P.89-90

外形尺寸图 Outline dimensional drawings

●RGU□□□□A-C□□□□-□□□□□□



尺寸图 Dimension table

| 型号 Model | AA | AB | AC | AD | AE | AF | AG | AH | AI | AJ | AK | AL | AM | AN | AO | AP | AQ |
|---------------|-----|----|----|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-------|-------------------------------|-----------|
| RGU1610A-C40 | 90 | 73 | 15 | 26 | 11.5 | 80 | 210 | 180 | 270 | 12 | 190 | 55 | 102 | 122 | 6×φ12 | 6×M6 深12 6×M6 Depth 12 | 无 None |
| RGU1610A-C60 | 101 | 62 | 15 | 37 | 11.5 | 91 | 300 | 250 | 355 | 14 | 250 | 75 | 139 | 170 | 6×φ12 | 12×M8 深16 12×M8 Depth 16 | M8 |
| RGU1610A-C80 | 116 | 48 | 20 | 47 | 11.5 | 106 | 400 | 330 | 450 | 19 | 330 | 80 | 184 | 220 | 6×φ18 | 12×M10 深20 12×M10 Depth 20 | M10 |
| RGU1610A-C100 | 125 | 38 | 20 | 56 | 11.5 | 115 | 460 | 400 | 530 | 16 | 400 | 95 | 216 | 268 | 6×φ18 | 16×M12 深24 16×M12 Depth 24 | M10 |
| RGU2510A-C40 | 122 | 97 | 15 | 45 | 18.5 | 112 | 320 | 270 | 405 | 11 | 270 | 110 | 146 | 193 | 6×φ18 | 12×M8 深16 12×M8 Depth 16 | M8 |
| RGU2510A-C50 | 141 | 78 | 20 | 59 | 18.5 | 131 | 400 | 330 | 480 | 19 | 330 | 110 | 184 | 230 | 6×φ12 | 12×M10 深20 12×M10 Depth 20 | M10 |
| RGU2510A-C60 | 142 | 78 | 20 | 60 | 18.5 | 132 | 440 | 380 | 540 | 16 | 380 | 125 | 206 | 268 | 6×φ18 | 16×M12 深24 16×M12 Depth 24 | M10 |
| RGU2510A-C70 | 147 | 73 | 25 | 60 | 18.5 | 137 | 500 | 440 | 610 | 16 | 440 | 135 | 236 | 308 | 6×φ18 | 16×M12 深24 16×M12 Depth 24 | M10 |
| RGU2510A-C125 | 125 | 97 | 30 | 30 | 18.5 | 112 | 820 | 750 | 990 | 31 | 750 | 175 | 406 | 518 | 6×φ22 | 16×M16 深32 16×M16 Depth 32 | M16 |

| 型号 Model | BA | BB | BC | BD | BE | DA | DB | DC | DD | DE | DF | DG | DH |
|---------------|-------|-------|-----|-------|-----|-----|-----|-----|-----|----|-----|-----|-----|
| RGU1610A-C40 | 63.6 | 84.6 | 222 | 133.2 | 3.6 | 94 | 55 | 90 | 118 | 42 | 67 | 209 | 105 |
| RGU1610A-C60 | 76.6 | 95.6 | 318 | 133.2 | 3.6 | 168 | 90 | 150 | 188 | 42 | 67 | 305 | 170 |
| RGU1610A-C80 | 91.6 | 110.6 | 418 | 133.2 | 3.6 | 246 | 160 | 240 | 278 | 42 | 67 | 405 | 260 |
| RGU1610A-C100 | 102.6 | 119.6 | 514 | 133.2 | 3.6 | 320 | 210 | 310 | 358 | 42 | 67 | 501 | 335 |
| RGU2510A-C40 | 83.6 | 116.6 | 344 | 183.2 | 3.6 | 168 | 90 | 150 | 188 | 63 | 101 | 331 | 170 |
| RGU2510A-C50 | 102.6 | 135.6 | 417 | 183.2 | 3.6 | 246 | 160 | 220 | 258 | 63 | 101 | 404 | 240 |
| RGU2510A-C60 | 103.6 | 136.6 | 493 | 183.2 | 3.6 | 320 | 210 | 280 | 328 | 63 | 101 | 480 | 305 |
| RGU2510A-C70 | 110.6 | 141.6 | 573 | 183.2 | 3.6 | 320 | 210 | 350 | 398 | 63 | 101 | 560 | 375 |
| RGU2510A-C125 | 83.6 | 116.6 | 993 | 183.2 | 3.6 | 560 | 600 | 740 | 860 | 63 | 101 | 980 | 820 |

| 型号 Model | EA | EB | EC | ED | EE | EF | EG | EH | EI |
|---------------|----|-----|-----|---|-------|-----|-------|---------------------------------|-------|
| RGU1610A-C40 | 10 | 192 | 144 | 2×φ8H7 铰孔 φ12 深7 2×φ8H7 φ12 Counter bore Depth 7 | φ0.05 | 105 | 0 | 2×φ6H7 深6 2×φ6H7 Depth 6 | φ0.03 |
| RGU1610A-C60 | 10 | 280 | 210 | 2×φ10H7 铰孔 φ14 深5 2×φ10H7 φ14 Counter bore Depth 5 | φ0.07 | 170 | 15 | 2×φ8H7 深8 2×φ8H7 Depth 8 | φ0.03 |
| RGU1610A-C80 | 10 | 368 | 276 | 2×φ12H7 铰孔 φ16 深8 2×φ12H7 φ16 Counter bore Depth 8 | φ0.07 | 260 | 15 | 2×φ10H7 深10 2×φ10H7 Depth 10 | φ0.03 |
| RGU1610A-C100 | 10 | 440 | 330 | 2×φ12H7 铰孔 φ16 深8 2×φ12H7 φ16 Counter bore Depth 8 | φ0.07 | 335 | 11.25 | 2×φ12H7 深12 2×φ12H7 Depth 12 | φ0.05 |
| RGU2510A-C40 | 10 | 296 | 222 | 2×φ10H7 铰孔 φ14 深5 2×φ10H7 φ14 Counter bore Depth 5 | φ0.07 | 170 | 15 | 2×φ8H7 深8 2×φ8H7 Depth 8 | φ0.03 |
| RGU2510A-C50 | 10 | 368 | 276 | 2×φ12H7 铰孔 φ16 深8 2×φ12H7 φ16 Counter bore Depth 8 | φ0.07 | 240 | 15 | 2×φ10H7 深10 2×φ10H7 Depth 10 | φ0.03 |
| RGU2510A-C60 | 10 | 416 | 312 | 2×φ12H7 铰孔 φ16 深8 2×φ12H7 φ16 Counter bore Depth 8 | φ0.07 | 305 | 11.25 | 2×φ12H7 深12 2×φ12H7 Depth 12 | φ0.05 |
| RGU2510A-C70 | 10 | 480 | 360 | 2×φ12H7 铰孔 φ16 深13 2×φ12H7 φ16 Counter bore Depth 13 | φ0.07 | 375 | 11.25 | 2×φ12H7 深12 2×φ12H7 Depth 12 | φ0.05 |
| RGU2510A-C125 | 20 | 800 | 660 | 2×φ12H7 铰孔 φ16 深18 2×φ12H7 φ16 Counter bore Depth 18 | φ0.1 | 820 | 11.25 | 2×φ16H8 深16 2×φ16H8 Depth 16 | φ0.06 |

B□为可选项A(带盖板)选择时的尺寸表示。

B□ dimensions enable when choose option A (With cover)

规格·尺寸表

Specification Dimensional Table

TCG分割型齿圈组件

TCG Circular Arc Cam Ring Unit



规格·型号·外形图 Specifications, Models, Outline Drawings

规格图 Specification Table

| 型号 Model | 动作角度 Deg deg | 总减速比 Total reduction ratio | 基本动额定 扭矩 Basic dynamic rated torque N·m | 最大使用 扭矩 Maximum working torque N·m | 允许静额定 扭矩 Allowable static rated torque N·m | 驱动部分 转动惯量 Inertia moment of drive unit ×10 ⁻⁴ kg·m ² | 允许平均输入 回转数 Allowable average number of input revolutions rpm | 最高输入 回转数 Maximum number of input revolutions rpm | 允许平均输出 回转数 Allowable average number of output revolutions rpm | 允许最高输出 回转数 Maximum number of output revolutions rpm | 输入轴 转动惯量 Inertia moment converted to input shaft ×10 ⁻⁴ kg·m ² | 推荐电机 容量 Recommendable motor capacity W | 输入轴 孔径 Input shaft hole diameter mm | 质量 Mass kg |
|---------------|--------------------|----------------------------------|---|--|--|--|---|--|--|---|---|--|---|------------------|
| RGU1610A-C240 | 30 | 240 | 500 | 945 | 1160 | 26998 | 3000 | 4500 | 12.5 | 18.8 | 0.992 | 400 | 14 · 11 · 8 | 60 |
| | | 480 | | | | | | | 6.3 | 9.4 | 0.559 | 200 | | |
| | | 720 | | | | | | | 4.2 | 6.3 | 0.471 | 200 | | |
| | | 960 | | | | | | | 3.1 | 4.7 | 0.438 | 100 | | |
| | 90 | 240 | | | | | | | 12.5 | 18.8 | 1.760 | 400 | | |
| | | 480 | | | | | | | 6.3 | 9.4 | 0.751 | 200 | | |
| | | 720 | | | | | | | 4.2 | 6.3 | 0.556 | 200 | | |
| | | 960 | | | | | | | 3.1 | 4.7 | 0.486 | 100 | | |
| | 360 | 240 | | | | | | | 12.5 | 18.8 | 5.964 | 400 | | |
| | | 480 | | | | | | | 6.3 | 9.4 | 1.802 | 200 | | |
| | | 720 | | | | | | | 4.2 | 6.3 | 1.023 | 200 | | |
| | | 960 | | | | | | | 3.1 | 4.7 | 0.749 | 100 | | |
| RGU1610A-C300 | 30 | 300 | 620 | 1180 | 1450 | 70633 | 3000 | 4500 | 10.0 | 15.0 | 1.308 | 400 | 24 · 22 · 19 · 16 · 14 | 88 |
| | | 600 | | | | | | | 5.0 | 7.5 | 0.638 | 200 | | |
| | | 900 | | | | | | | 3.3 | 5.0 | 0.506 | 200 | | |
| | | 1200 | | | | | | | 2.5 | 3.8 | 0.458 | 100 | | |
| | 90 | 300 | | | | | | | 10.0 | 15.0 | 2.524 | 400 | | |
| | | 600 | | | | | | | 5.0 | 7.5 | 0.942 | 200 | | |
| | | 900 | | | | | | | 3.3 | 5.0 | 0.641 | 200 | | |
| | | 1200 | | | | | | | 2.5 | 3.8 | 0.534 | 100 | | |
| | 360 | 300 | | | | | | | 10.0 | 15.0 | 9.967 | 400 | | |
| | | 600 | | | | | | | 5.0 | 7.5 | 2.802 | 200 | | |
| | | 900 | | | | | | | 3.3 | 5.0 | 1.468 | 200 | | |
| | | 1200 | | | | | | | 2.5 | 3.8 | 0.999 | 100 | | |
| RGU2510A-C150 | 30 | 150 | 1090 | 1795 | 2520 | 35368 | 2000 | 4000 | 13.3 | 26.7 | 5.332 | 1500 | 24 · 22 · 19 · 16 · 14 | 75 |
| | | 300 | | | | | | | 6.7 | 13.3 | 3.463 | 750 | | |
| | | 450 | | | | | | | 4.4 | 8.9 | 3.075 | 750 | | |
| | | 600 | | | | | | | 3.3 | 6.7 | 2.919 | 400 | | |
| | 90 | 150 | | | | | | | 13.3 | 26.7 | 7.955 | 1500 | | |
| | | 300 | | | | | | | 6.7 | 13.3 | 4.119 | 750 | | |
| | | 450 | | | | | | | 4.4 | 8.9 | 3.367 | 750 | | |
| | | 600 | | | | | | | 3.3 | 6.7 | 3.083 | 400 | | |
| | 360 | 150 | | | | | | | 13.3 | 26.7 | 18.633 | 1500 | | |
| | | 300 | | | | | | | 6.7 | 13.3 | 6.789 | 750 | | |
| | | 450 | | | | | | | 4.4 | 8.9 | 4.553 | 750 | | |
| | | 600 | | | | | | | 3.3 | 6.7 | 3.750 | 400 | | |
| RGU2510A-C190 | 30 | 190 | 1375 | 2270 | 3200 | 93783 | 2000 | 4000 | 2.7 | 5.3 | 3.385 | 400 | 24 · 22 · 19 · 16 · 14 | 105 |
| | | 380 | | | | | | | 10.5 | 21.1 | 6.358 | 1500 | | |
| | | 570 | | | | | | | 5.3 | 10.5 | 3.720 | 750 | | |
| | | 760 | | | | | | | 3.5 | 7.0 | 3.189 | 750 | | |
| | 90 | 190 | | | | | | | 10.5 | 21.1 | 2.983 | 400 | | |
| | | 380 | | | | | | | 2.1 | 4.2 | 2.894 | 400 | | |
| | | 570 | | | | | | | 10.5 | 21.1 | 10.438 | 1500 | | |
| | | 760 | | | | | | | 5.3 | 10.5 | 4.740 | 750 | | |
| | 360 | 190 | | | | | | | 3.5 | 7.0 | 3.642 | 750 | | |
| | | 380 | | | | | | | 2.6 | 5.3 | 3.238 | 400 | | |
| | | 570 | | | | | | | 2.1 | 4.2 | 3.058 | 400 | | |
| | | 760 | | | | | | | 10.5 | 21.1 | 33.250 | 1500 | | |
| 360 | 190 | 5.3 | 10.5 | 10.443 | 750 | | | | | | | | | |
| | 380 | 3.5 | 7.0 | 6.177 | 750 | | | | | | | | | |
| | 570 | 2.6 | 5.3 | 4.664 | 400 | | | | | | | | | |
| | 760 | 2.1 | 4.2 | 3.970 | 400 | | | | | | | | | |

基本动额定扭矩 : 在一定速度运转时, 满足额定寿命的基本扭矩。
Basic dynamic rated torque : Basic torque required for satisfying the rated lifetime during a constant-speed, continuous operation.

最大使用扭矩 : 正常运转可以使用的扭矩 (包含加速减值的峰值) 的最大值。
Maximum working torque : Maximum value of torque for normal operation (including the peak torque during acceleration/ deceleration).

允许静额定扭矩 : 非常条件下停止或者外部冲击等, 情况下的最大扭矩。
Allowable static rated torque : Maximum value of torque for non-normal use, such as emergency stop and external shock.

驱动部分转动惯量 : 输出侧回转部分的转动惯量, 计算负载扭矩时, 负载转动惯量需要一并算出。
Inertia moment of drive unit : Inertia moment of the output side rotation unit. To calculate load torque, add the load inertia moment.

输入轴换算转动惯量 : 齿圈组件整体的换算值。
Inertia moment converted to input shaft : Converted value of the entirety of Ring Unit.

型号表示 Model Indication

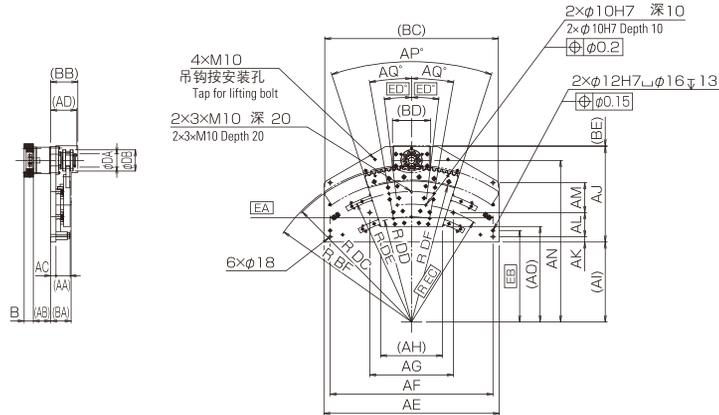
RGU A-C -A - - -

| 型号 Bracket No. | 齿圈齿数 Number of ring teeth | 动作角度*1 Deg | 总减速比*2 Total reduction ratio | 电机安装记号*3,*4 Motor mounting code | 可选项 Option |
|-------------------|---------------------------------|--|------------------------------------|------------------------------------|---------------------------------------|
| 1610 | 240 | 30 : 30° 90 : 90° 空白 : 360° Blank | | | A : 带盖板*5 With cover (标准情况下无记号) |
| | 300 | | | | |
| 2510 | 150 | | | | |
| | 190 | | | | |

- *1 : 仅非整圆的时候需要填写, -A□□
整圆型则为空白。
Only Circular arc model do state "-A□□",
Round model do state Blank.
- *2 : 规格表参照 Refer to Specification Table.
- *3 : 没有选择电机安装法兰的情况下
000□□内填写输入轴轴径
输入轴轴径 Input shaft hole diameter
For models with no motor attachment, enter
5-digit figure of "000□□".
- *4 : 电机对应参照表P96-99页
Refer to Motor Corresponding Table on P.96-99
- *5 : 盖板为安全盖板, 并不是用来防尘的,
盖板的尺寸图参照P93-95页
The cover is a safety cover, not a dustproof cover.
For the outline dimensions of models with cover,
refer to Outline Dimensional Drawings on P.93-95

外形尺寸图 Outline dimensional drawings

●RGU□□□□A-C□□□□-A30-□□□□-□□□□□



尺寸表 Dimension table

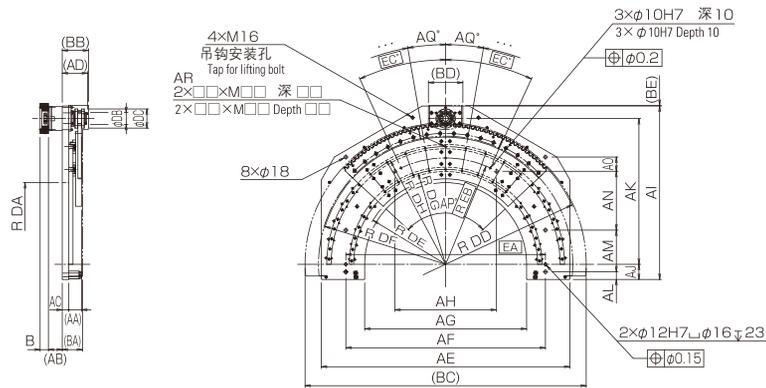
| 型号 Model | AA | AB | AC | AD | AE | AF | AG | AH | AI | AJ | AK | AL | AM | AN | AO | AP | AQ |
|---------------|----|------|----|-----|-----|-----|-----|-------|-----|-----|----|-----|-----|-----|-----|----|----|
| RGU1610A-C240 | 48 | 52.5 | 25 | 100 | 660 | 610 | 400 | 233.9 | 301 | 351 | 25 | 79 | 136 | 606 | 360 | 36 | 10 |
| RGU1610A-C300 | 60 | 40.5 | 25 | 112 | 840 | 780 | 400 | 295 | 380 | 418 | 25 | 115 | 140 | 752 | 454 | 36 | 10 |
| RGU2510A-C150 | 56 | 95.5 | 25 | 113 | 660 | 610 | 400 | 233.9 | 301 | 380 | 25 | 77 | 138 | 615 | 360 | 36 | 10 |
| RGU2510A-C190 | 68 | 83.5 | 25 | 125 | 840 | 780 | 400 | 295 | 380 | 454 | 25 | 115 | 142 | 768 | 454 | 36 | 10 |

| 型号 Model | BA | BB | BC | BD | BE | BF | DA | DB | DC | DD | DE | DF | EA | EB | EC | ED |
|---------------|-------|-------|-------|-------|-----|-------|----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| RGU1610A-C240 | 88.5 | 104.6 | 657.9 | 133.2 | 3.6 | 594.6 | 42 | 67 | 588 | 400 | 500 | 525 | 610 | 356 | 450 | 8 |
| RGU1610A-C300 | 100.5 | 116.6 | 830.8 | 133.2 | 3.6 | 740.6 | 42 | 67 | 734 | 500 | 620 | 670 | 780 | 435 | 560 | 8 |
| RGU2510A-C150 | 85.5 | 117.6 | 653.4 | 183.2 | 3.6 | 593.6 | 63 | 101 | 587 | 400 | 500 | 525 | 610 | 356 | 450 | 8 |
| RGU2510A-C190 | 97.5 | 129.6 | 831.8 | 183.2 | 3.6 | 746.6 | 63 | 101 | 740 | 500 | 620 | 670 | 780 | 435 | 560 | 8 |

B□是可选项A(带盖板)选择时的尺寸表示。

B□ dimensions enable when choose option A (With cover)

●RGU□□□□A-C□□□□-A90-□□□□-□□□□□



尺寸表 Dimension table

| 型号 Model | AA | AB | AC | AD | AE | AF | AG | AH | AI | AJ | AK | AL | AM | AN | AO | AP | AQ | AR |
|---------------|----|------|----|-----|------|------|-----|-----|-----|----|-----|----|-----|-----|----|------|----|----------------------------------|
| RGU1610A-C240 | 48 | 42.5 | 35 | 110 | 1057 | 850 | 700 | 420 | 737 | 85 | 606 | 30 | 210 | 245 | 75 | 97.5 | 15 | 2x7xM10 深 20 2x7xM10 Depth 20 |
| RGU1610A-C300 | 60 | 30.5 | 35 | 122 | 1320 | 1060 | 860 | 540 | 878 | 80 | 752 | 40 | 220 | 310 | 75 | 94.8 | 10 | 2x9xM10 深 20 2x9xM10 Depth 20 |
| RGU2510A-C150 | 56 | 85.5 | 35 | 123 | 1057 | 850 | 700 | 420 | 766 | 85 | 615 | 30 | 210 | 245 | 75 | 98.4 | 15 | 2x7xM10 深 20 2x7xM10 Depth 20 |
| RGU2510A-C190 | 68 | 73.5 | 35 | 135 | 1320 | 1060 | 860 | 540 | 914 | 80 | 768 | 40 | 220 | 310 | 75 | 94.7 | 10 | 2x9xM10 深 20 2x9xM10 Depth 20 |

| 型号 Model | BA | BB | BC | BD | BE | DA | DB | DC | DD | DE | DF | DG | DH | EA | EB | EC |
|---------------|-------|-------|--------|-------|-----|-----|----|-----|-----|-----|-----|-----|-----|------|-----|----|
| RGU1610A-C240 | 98.5 | 114.6 | 1189.2 | 133.2 | 3.6 | 350 | 42 | 67 | 588 | 365 | 525 | 400 | 500 | 850 | 450 | 20 |
| RGU1610A-C300 | 110.5 | 126.6 | 1481.2 | 133.2 | 3.6 | 430 | 42 | 67 | 734 | 450 | 670 | 500 | 620 | 1060 | 560 | 25 |
| RGU2510A-C150 | 95.5 | 127.6 | 1187.2 | 183.2 | 3.6 | 350 | 63 | 101 | 587 | 365 | 525 | 400 | 500 | 850 | 450 | 20 |
| RGU2510A-C190 | 107.5 | 139.6 | 1493.2 | 183.2 | 3.6 | 430 | 63 | 101 | 740 | 450 | 670 | 500 | 620 | 1060 | 560 | 25 |

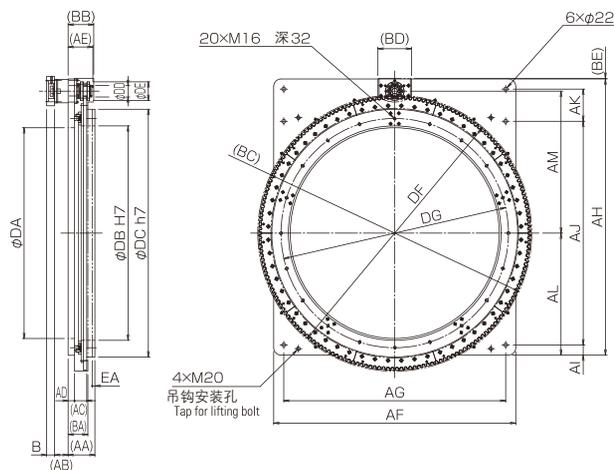
B□是可选项A(带盖板)选择时的尺寸表示。

B□ dimensions enable when choose option A (With cover)

规格 · 型号 · 外形图 Specifications, Models, Outline Drawings

外形尺寸图 Outline dimensional drawings

● RGU□□□□A-C□□□-A360-□□□-□□□□□□



尺寸表 Dimension table

| 型号 Model | AA | AB | AC | AD | AE | AF | AG | AH | AI | AJ | AK | AL | AM |
|---------------|-----|------|------|----|-----|------|------|------|----|------|-----|-----|-----|
| RGU1610A-C240 | 123 | 47.5 | 47.5 | 30 | 105 | 1057 | 940 | 1181 | 59 | 940 | 123 | 529 | 606 |
| RGU1610A-C300 | 133 | 30.5 | 59.5 | 35 | 122 | 1320 | 1210 | 1458 | 55 | 1210 | 138 | 660 | 752 |
| RGU2510A-C150 | 127 | 90.5 | 54.5 | 30 | 118 | 1057 | 940 | 1210 | 59 | 940 | 152 | 529 | 615 |
| RGU2510A-C190 | 146 | 73.5 | 66.5 | 35 | 135 | 1320 | 1210 | 1494 | 55 | 1210 | 174 | 660 | 768 |

| 型号 Model | BA | BB | BC | BD | BE | DA | DB | DC | DD | DE | DF | DG | EA |
|---------------|-------|-------|--------|-------|-----|------|------|------|----|-----|------|------|----|
| RGU1610A-C240 | 93.5 | 109.6 | 1189.2 | 133.2 | 3.6 | 920 | 940 | 1050 | 42 | 67 | 1176 | 1000 | 15 |
| RGU1610A-C300 | 110.5 | 126.6 | 1481.2 | 133.2 | 3.6 | 1140 | 1160 | 1340 | 42 | 67 | 1468 | 1240 | 15 |
| RGU2510A-C150 | 90.5 | 122.6 | 1187.2 | 183.2 | 3.6 | 920 | 940 | 1050 | 63 | 101 | 1174 | 1000 | 15 |
| RGU2510A-C190 | 107.5 | 139.6 | 1493.2 | 183.2 | 3.6 | 1140 | 1160 | 1340 | 63 | 101 | 1480 | 1240 | 15 |

B□是可选项A(带盖板)选择时的尺寸表示。

B□ dimensions enable when choose option A (With cover)

从使用条件来进行选型

Select the model according to the operating conditions.

运转负载条件 Operating load conditions

负载惯量 Load inertia moment $I =$ $\text{kg} \cdot \text{m}^2$

最高输出转速 Maximum revolution $\text{NR} =$ rpm

加速时间 Acceleration time $t_1 =$ sec

外力扭矩 Outer force torque $T_c =$ $\text{N} \cdot \text{m}$

驱动部惯量 Inertia moment of drive unit $I_c =$ $\text{kg} \cdot \text{m}^2$ 参照P.3 Refer to P.3

负载系数 Coefficient of weight $f_w =$ 参照右表 Refer to the right table.

负载系数 Load coefficient

| 运转条件 Operating conditions | f_w |
|--|---------|
| 没有冲击的圆滑运转时 In smooth operation with no impacts | 1.0~1.2 |
| 普通运转时 In normal operation | 1.2~1.5 |
| 伴随冲击和振动运转时 In operation with impacts and vibrations | 1.5~3.0 |

回转数判定 Determination of number of revolutions

RGU最高输出回转数(参照P.3) Maximum number of output revolutions of RGU (Refer to p.3)

$\text{NR} <$

YES

NO

减速比, 回转数重新修改
Review of reduction ratio and number of revolutions

负载扭矩计算 Calculation of load torque

角速度 Angular velocity $\omega = \text{NR} \times 2\pi / 60 =$ rad/sec

角加速度 Angular acceleration $\alpha = \omega / t_1 =$ rad/sec^2

加速扭矩 Accelerative torque $T_a = (I + I_c) \times \alpha =$ $\text{N} \cdot \text{m}$

最大负载扭矩 Maximum load torque $T_{\text{max}} = f_w \times (T_a + T_c) =$ $\text{N} \cdot \text{m}$

RGU最大使用扭矩 (参照P.3) Maximum working torque of RGU (Refer to p.3)

$T_{\text{max}} <$

YES

NO

型号提升或者负载降低
Review of model upgrade or load

平均负载扭矩, 平均输出回转数计算 Calculation of average load torque and average number of output revolutions

运转条件 (参考) Operating conditions (Reference)

<速度曲线> Velocity pattern

<负载曲线> Load pattern

平均负载扭矩 Average load torque

$$T_m = \sqrt[10/3]{\frac{n_1 t_1 T_1^{10/3} + n_2 t_2 T_2^{10/3} + n_3 t_3 T_3^{10/3}}{n_1 t_1 + n_2 t_2 + n_3 t_3}}$$

平均输出回转数 Average number of output revolutions

$$Nm = \frac{t_1 n_1 + t_2 n_2 + t_3 n_3}{t_1 + t_2 + t_3}$$

| 项目 Item | 起动时 Starting | 稳定时 Steady operation | 停止时 Stoppage |
|--|--------------------------|-------------------------|--------------------------|
| 负载扭矩 Load torque $\text{N} \cdot \text{m}$ | T_1 | T_2 | T_3 |
| 输出回转数 Number of output revolutions rpm | n_1 ($= 0.5 n_2$) | n_2 | n_3 ($= 0.5 n_2$) |
| 时间 Time sec | t_1 | t_2 | t_3 |

寿命计算
To life Calculation

寿命计算 Life Calculation

平均负载扭矩 Average Load Torque $T_m = \text{[]} \text{ N} \cdot \text{m}$

平均输出回转速数 Average output revolutions $N_m = \text{[]} \text{ rpm}$

平均输入回转速数 Average Input revolutions $N_1 = N_m \times R_u = \text{[]} \text{ rpm}$

寿命时间 Life Length L_h

$$L_h = L_{h_0} \times \frac{N_0}{N_1} \times \left(\frac{T_0}{f_w \times T_m} \right)^{10.3} \quad (\text{H})$$

| | |
|---|-------------------------------|
| L_{h_0} : 额定寿命时间 Rated life length | 参照右表 Refer to right table. |
| N_0 : 允许平均输入回转速数 Allowable average number of input revolutions | 参照右表 Refer to right table. |
| T_0 : 基本动额定扭矩 Basic dynamic rated torque | 参照右表 Refer to right table. |
| T_m : 平均负载扭矩 Average Load Torque | |
| N_1 : 平均输入回转速 Average Input revolutions | |
| R_u : RGU总速比 Total reduction ratio of RGU | |
| f_w : 负载系数 Coefficient of weight | |

定格寿命 Rated lifetime

| 型号 Model | 总减速比 Total reduction ratio R_u | L_{h_0} H | T_0 N · m | N_0 rpm |
|---------------|--|----------------|----------------|--------------|
| RGU1610A-C40 | 40 | 5600 | 83 | 3000 |
| | 80 | 11000 | | |
| | 120 | 16000 | | |
| | 160 | 16000 | | |
| RGU1610A-C60 | 60 | 5400 | 125 | |
| | 120 | 10000 | | |
| | 180 | 16000 | | |
| | 240 | 16000 | | |
| RGU1610A-C80 | 80 | 5800 | 165 | |
| | 160 | 11000 | | |
| | 240 | 17000 | | |
| | 320 | 17000 | | |
| RGU1610A-C100 | 100 | 5600 | 205 | |
| | 200 | 11000 | | |
| | 300 | 16000 | | |
| | 400 | 17000 | | |
| RGU2510A-C40 | 40 | 8000 | 290 | 2000 |
| | 80 | 16000 | | |
| | 120 | 16000 | | |
| | 160 | 16000 | | |
| RGU2510A-C50 | 50 | 8300 | 360 | |
| | 100 | 16000 | | |
| | 150 | 16000 | | |
| | 200 | 16000 | | |
| RGU2510A-C60 | 60 | 8500 | 430 | |
| | 120 | 16000 | | |
| | 180 | 16000 | | |
| | 240 | 16000 | | |
| RGU2510A-C70 | 70 | 8000 | 510 | |
| | 140 | 15000 | | |
| | 210 | 15000 | | |
| | 280 | 15000 | | |
| RGU2510A-C125 | 125 | 8000 | 910 | |
| | 250 | 15000 | | |
| | 375 | 15000 | | |
| | 500 | 15000 | | |
| RGU1610A-C240 | 240 | 5400 | 500 | 3000 |
| | 480 | 10000 | | |
| | 720 | 11000 | | |
| | 960 | 11000 | | |
| RGU1610A-C300 | 300 | 5600 | 620 | |
| | 600 | 11000 | | |
| | 900 | 11000 | | |
| | 1200 | 11000 | | |
| RGU2510A-C150 | 150 | 8100 | 1090 | 2000 |
| | 300 | 15000 | | |
| | 450 | 15000 | | |
| | 600 | 15000 | | |
| RGU2510A-C190 | 750 | 15000 | 1375 | |
| | 190 | 8200 | | |
| | 380 | 16000 | | |
| | 570 | 16000 | | |
| RGU2510A-C190 | 760 | 16000 | 1375 | |
| | 950 | 16000 | | |

| 型号 Model | 总减速比 Total reduction ratio R_u | L_{h_0} H | T_0 N · m | N_0 rpm |
|---------------|--|----------------|----------------|--------------|
| RGU1610A-C240 | 240 | 5400 | 500 | 3000 |
| | 480 | 10000 | | |
| | 720 | 11000 | | |
| | 960 | 11000 | | |
| RGU1610A-C300 | 300 | 5600 | 620 | |
| | 600 | 11000 | | |
| | 900 | 11000 | | |
| | 1200 | 11000 | | |
| RGU2510A-C150 | 150 | 8100 | 1090 | 2000 |
| | 300 | 15000 | | |
| | 450 | 15000 | | |
| | 600 | 15000 | | |
| RGU2510A-C190 | 750 | 15000 | 1375 | |
| | 190 | 8200 | | |
| | 380 | 16000 | | |
| | 570 | 16000 | | |
| RGU2510A-C190 | 760 | 16000 | 1375 | |
| | 950 | 16000 | | |

最大负载力矩载荷的计算 (Mmax)

Calculation of maximum load moment load (Mmax)

$$M_{max} = Fr_{max} (L_r + L_c / 1000) + Fa_{max} \cdot L_a$$

Fr max : 最大径向负载 Maximum radial load (N)

Fa max : 最大轴向负载 Maximum axial load (N)

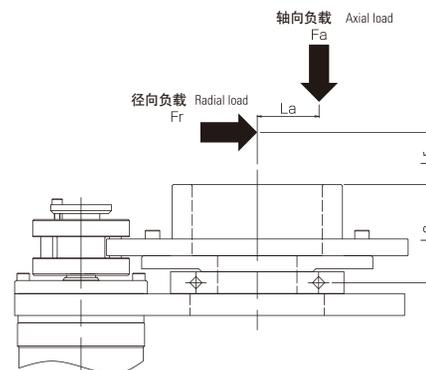
Lr : 径向负载位置 Radial load position (m)

La : 轴向负载位置 Axial load position (m)

确认最大使用负载惯量是否在以下允许惯量负载范围内

Check whether the maximum load moment load is equal to or less than the allowable moment load.

$M_{max} \leq M_c$ (允许的负载请参照下表)
(For the allowable moment load, refer to the following table.)

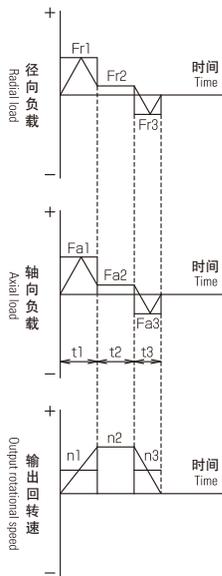


| 型号 Model | 允许力矩负载 Allowable moment load Mc (N · m) | 允许径向负载 Allowable radial load (N) | 允许轴向负载 Allowable axial load (N) | Lc (mm) |
|----------------|---|--|---------------------------------------|------------|
| RGU1610A-C40- | 40 | 140 | 3300 | 68.5 |
| | 80 | 140 | 3400 | |
| | 120 | 140 | 3400 | |
| | 160 | 150 | 3700 | |
| RGU1610A-C60- | 60 | 610 | 8200 | 73.5 |
| | 120 | 620 | 8400 | |
| | 180 | 610 | 8300 | |
| | 240 | 660 | 9000 | |
| RGU1610A-C80- | 80 | 1950 | 17100 | 78.5 |
| | 160 | 1980 | 17400 | |
| | 240 | 1960 | 17300 | |
| | 320 | 2140 | 18800 | |
| RGU1610A-C100- | 100 | 3870 | 26000 | 85 |
| | 200 | 3890 | 26200 | |
| | 300 | 3930 | 26400 | |
| | 400 | 4200 | 28300 | |
| RGU2510A-C40- | 40 | 610 | 8300 | 94.5 |
| | 80 | 610 | 8300 | |
| | 120 | 690 | 9400 | |
| | 160 | 750 | 10200 | |
| RGU2510A-C50- | 50 | 1980 | 17400 | 103.5 |
| | 100 | 2000 | 17600 | |
| | 150 | 2260 | 19900 | |
| | 200 | 2460 | 21700 | |
| | 250 | 2630 | 23200 | |
| RGU2510A-C60- | 60 | 3860 | 25900 | 102 |
| | 120 | 3930 | 26400 | |
| | 180 | 4430 | 29800 | |
| | 240 | 4830 | 32500 | |
| | 300 | 5170 | 34800 | |
| RGU2510A-C70- | 70 | 3930 | 26400 | 102 |
| | 140 | 4000 | 26900 | |
| | 210 | 4520 | 30400 | |
| | 280 | 4930 | 33100 | |
| | 350 | 5270 | 35400 | |
| RGU2510A-C125- | 125 | 14390 | 38900 | 56 |
| | 250 | 14670 | 39700 | |
| | 375 | 16570 | 44800 | |
| | 500 | 18060 | 48900 | |
| | 625 | 19310 | 52300 | |

允许径向负载，允许轴向负载对于交叉滚子轴承来说只是单纯的径向负载或者轴向负载。是负担在任何一个负载的情况下，而满足齿圈组件的寿命的值。(径向负载：Lr + Lc = 0 轴向负载：La = 0)

The allowable radial load and the allowable axial load are the values that satisfy the lifetime of Ring Unit when either the net radial load or the net axial load is imposed on Cross-Roller Bearing. (Radial load: Lr + Lc = 0, Axial load: La = 0).

平均负载的计算公式 Calculation formulas of average load



平均径向负载 Fra (N)

Average radial load

$$Fra = \sqrt[10/3]{\frac{n1t1(|Fr1|)^{10/3} + n2t2(|Fr2|)^{10/3} + \dots + nntn(|Frn|)^{10/3}}{n1t1 + n2t2 + \dots + nntn}}$$

平均轴向负载 Faa (N)

Average axial load

$$Faa = \sqrt[10/3]{\frac{n1t1(|Fa1|)^{10/3} + n2t2(|Fa2|)^{10/3} + \dots + nntn(|Fan|)^{10/3}}{n1t1 + n2t2 + \dots + nntn}}$$

平均输出回转转速 Nm (rpm)

Average output revolutions

$$Nm = \frac{n1t1 + n2t2 + \dots + nntn}{t1 + t2 + \dots + tn}$$

平均力矩负载 Ma (N·m)

Average moment load

$$Ma = Fra(Lr + Lc) + Faa \cdot La$$

径向系数 (X) 轴向系数 (Y) 的计算公式

Calculation formulas of radial coefficient and axial coefficient

| 区分 Classification | 径向系数 (X) Radial coefficient | 轴向系数 (Y) Axial coefficient |
|-----------------------------------|--------------------------------|-------------------------------|
| $\frac{Fa}{Fr + 2M/Dpw} \leq 1.5$ | 1 | 0.45 |
| $\frac{Fa}{Fr + 2M/Dpw} > 1.5$ | 0.67 | 0.67 |

| 型号 Model | 基本动额定负载 Basic dynamic rated load C (N) | 滚销的节圆直径 Roller pitch circle diameter Dpw (m) |
|---------------|--|--|
| RGU1610A-C40 | 20300 | 0.085 |
| RGU1610A-C60 | 49100 | 0.1475 |
| RGU2510A-C40 | | |
| RGU1610A-C80 | 104000 | 0.2275 |
| RGU2510A-C50 | | |
| RGU1610A-C100 | 156000 | 0.2973 |
| RGU2510A-C60 | | |
| RGU2510A-C70 | | |
| RGU2510A-C125 | 230000 | 0.73823 |

负载系数 Load coefficient (fw)

| 负载状态 Load state | fw |
|---|---------|
| 没有冲击的圆滑运转时 In smooth operation with no impacts | 1.0~1.2 |
| 正常运转 In normal operation | 1.2~1.5 |
| 伴随冲击·振动的运转时 In operation with impacts and vibrations | 1.5~3.0 |

寿命计算 Life Calculation (Lh)

对于交叉滚子轴承，使用以下公式计算寿命

For the cross roller bearing, calculate the life hours by using the following formula

$$Lh = \left(\frac{10^6}{60 \cdot Nm}\right) \cdot \left(\frac{C}{fw \cdot Pc}\right)^{10/3} \quad (H)$$

动等价径向负载 Kinetic Equivalent Radial Load (Pc)

$$Pc = X \cdot \left(Fra + \frac{2Ma}{Dpw}\right) + Y \cdot Fa \quad (N)$$

滑块的计算 Calculation of Guide Blocks

动作角度 30度 90度 Deg for 30deg, 90deg

运转条件 Operating conditions

负载质量 Total load mass : m (kg)
 输出法兰回转数 RPM of output flange : NR (rpm)
 重力加速度 Gravitational acceleration : g (m/sec²)
 负载系数 Load factor : fw、fs

● 负载力的计算 Calculation of applied load

滑块速度 Block speed (m/sec)

$$V = \frac{R \times NR \times \pi}{30000}$$

加速度 Acceleration (m/sec²)

$$a_n = \frac{V}{t_n}$$

加速时负载 Load in acceleration (N)

$$Pa1 = \frac{mg}{n} - \frac{m \times a1 \times L2}{2 \times L0}$$

$$Pb1 = \frac{mg}{n} + \frac{m \times a1 \times L2}{2 \times L0}$$

匀速时负载 Load in constant speed (N)

$$Pa2 = \frac{mg}{n}$$

$$Pb2 = \frac{mg}{n}$$

减速时负载 Load in deceleration (N)

$$Pa3 = \frac{mg}{n} + \frac{m \times a1 \times L2}{2 \times L0}$$

$$Pb3 = \frac{mg}{n} - \frac{m \times a1 \times L2}{2 \times L0}$$

负载合成 Load synthesis (N)

$$Pae1 = | Pa1 | + | Pat1 |$$

$$Pbe1 = | Pb1 | + | Pbt1 |$$

Maximum load (N)

$$Pr = \text{MAX}(Pae1, Pbe1, Pa2, Pb2, Pae3, Pbe3)$$

静安全系数 Static safety factor (N)

$$\frac{Co}{Pr} \geq fs$$

负载系数 Load factor fs

| 负载条件 Load conditions | fs |
|--|---------|
| 无冲击振动的运转时 No vibration, shock | 1.0~3.5 |
| 伴随冲击振动的运转时 Applied vibration, shock | 2.0~5.0 |

● 额定寿命的计算 Calculation of rated life time

平均负载力 Average load (N)

$$Pam = \sqrt[3]{\frac{Pae1^3 \times S1 + Pa2^3 \times S2 + Pae3^3 \times S3}{LS}}$$

$$Pbm = \sqrt[3]{\frac{Pbe1^3 \times S1 + Pb2^3 \times S2 + Pbe3^3 \times S3}{LS}}$$

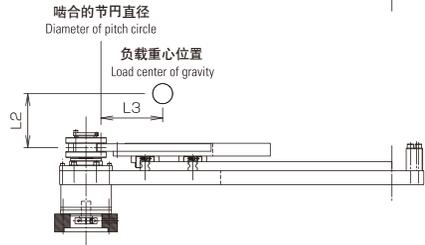
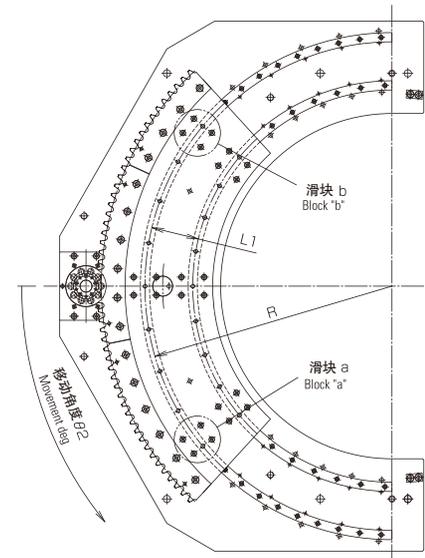
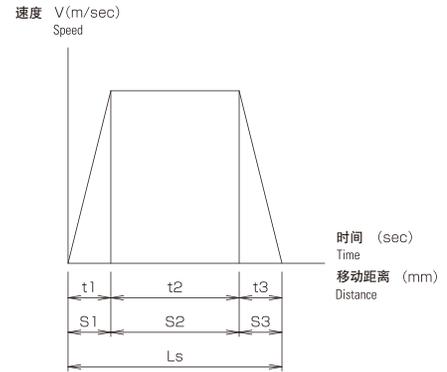
额定寿命 Rated life time (km)

$$Lkm = \left(\frac{C}{fw \times Pc} \right)^3 \times 50$$

$$Pc = \text{MAX}(Pam, Pbm)$$

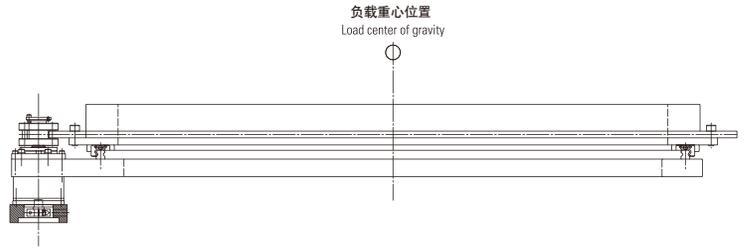
负载系数 Load factor fw

| 振动, 冲击 Vibration, shock | 速度V(m/sec) (参考) speed V(m/sec) (reference) | fw |
|----------------------------|---|---------|
| 微 Minute | V ≤ 0.25 | 1.0~1.2 |
| 小 Small | 0.25 < V ≤ 1.0 | 1.2~1.5 |
| 中 Medium | 1.0 < V ≤ 2.0 | 1.5~2.0 |
| 大 Large | 2.0 < V | 2.0~3.5 |



运转条件 Operating conditions

负载质量 Total load mass : m (kg)
 输出法兰回转数 RPM of output flange : NR (rpm)
 重力加速度 Gravitational acceleration : g (m/sec²)
 负载系数 Load factor : fw、fs



● 负载力的计算 Calculation of applied load

滑块速度 Block speed (m/sec)

$$V = \frac{R \times NR \times \pi}{30000}$$

加速度 Acceleration (m/sec²)

$$a_n = \frac{V}{t_n}$$

加速时负载 匀速时负载 减速时负载 (N)

Load in acceleration, Load in constant speed, Load in deceleration

$$P1 = P2 = P3 = \frac{mg}{n}$$

最大载重 Maximum load (N)

$$Pr = P1$$

静载安全系数 Static safety factor (N)

$$\frac{Co}{Pr} \geq fs$$

● 额定寿命计算 Calculation of rated life time

平均负载力 Average load (N)

$$Pm = \sqrt[3]{\frac{P1^3 \times S1 + P2^3 \times S2 + P3^3 \times S3}{LS}}$$

额定寿命 Rated life time (km)

$$Lkm = \left(\frac{C}{fw \times Pc}\right)^3 \times 50$$

$$Pc = \text{MAX}(Pam, Pbm)$$

● 设计上的注意 Notes on consideration

请注意承重台的重心位置，
 动作角度30度·90度需要在内外侧导轨间设定。
 动作角度360度需要在回转中心设定。
 超过上述的使用范围请与我们联系。

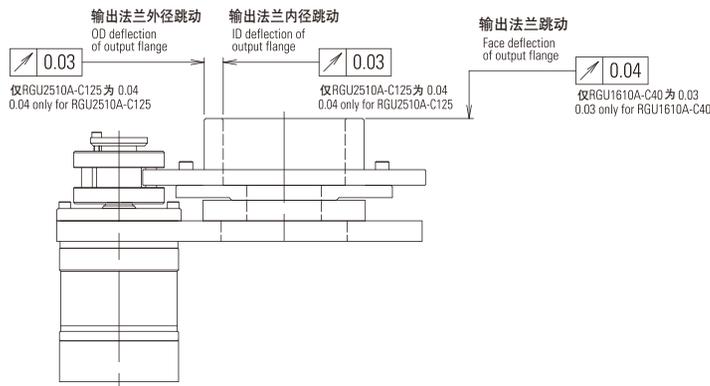
Pay attention to load center of gravity. It set Deg for 30deg and 90deg between the inner guide and the outer guide, and set Deg for 360deg to the center of rotation. If you use beyond the above range, please contact to us.

| 型号 Model | 动作角度 Deg | 总减速比 Total reduction ratio | 基本动 额定负载 Basic dynamic rated load | 基本静 额定负载 Basic static rated load | 滑块数 Number of Blocks | 滑轨 间隔 Block interval | 滑轨 半径 Guide radius | 滑轨 长 Guide interval | 啮合圆 直径 Diameter of pitch circle |
|---------------|-------------|-------------------------------|---|--|-------------------------|----------------------------|--------------------------|---------------------------|---------------------------------------|
| | deg | | C (N) | Co (N) | n (个pieces) | L0 (mm) | R (mm) | L1 (mm) | Dp (mm) |
| RGU1610A-C240 | 30 | 240 | 7300 | 11593 | 4 | 174.5 | | | |
| | | 480 | | | | | | | |
| | | 720 | | | | | | | |
| | | 960 | | | | | | | |
| | 90 | 240 | 7284 | 11577 | 6 | 698.1 | 500 | 100 | 1163.52 |
| | | 480 | | | | | | | |
| | | 720 | | | | | | | |
| | | 960 | | | | | | | |
| | 360 | 240 | 7092 | 11385 | 5 | - | | | |
| 480 | | | | | | | | | |
| 720 | | | | | | | | | |
| 960 | | | | | | | | | |
| RGU1610A-C300 | 30 | 300 | 18853 | 32462 | 4 | 173.1 | | | |
| | | 600 | | | | | | | |
| | | 900 | | | | | | | |
| | | 1200 | | | | | | | |
| | 90 | 300 | 18826 | 32435 | 6 | 822.4 | 620 | 120 | 1455.48 |
| | | 600 | | | | | | | |
| | | 900 | | | | | | | |
| | | 1200 | | | | | | | |
| | 360 | 300 | 18490 | 32099 | 5 | - | | | |
| 600 | | | | | | | | | |
| 900 | | | | | | | | | |
| 1200 | | | | | | | | | |
| RGU2510A-C150 | 30 | 150 | 6090 | 9859 | 4 | 174.5 | | | |
| | | 300 | | | | | | | |
| | | 450 | | | | | | | |
| | | 600 | | | | | | | |
| | | 750 | | | | | | | |
| | 90 | 150 | 6069 | 9838 | 6 | 698.1 | 500 | 100 | 1153.13 |
| | | 300 | | | | | | | |
| | | 450 | | | | | | | |
| | | 600 | | | | | | | |
| 360 | 150 | 5876 | 9645 | 5 | - | | | | |
| | 300 | | | | | | | | |
| | 450 | | | | | | | | |
| | 600 | | | | | | | | |
| RGU2510A-C190 | 30 | 190 | 18838 | 30718 | 4 | 173.1 | | | |
| | | 380 | | | | | | | |
| | | 570 | | | | | | | |
| | | 760 | | | | | | | |
| | | 950 | | | | | | | |
| | 90 | 190 | 18803 | 30683 | 6 | 822.4 | 620 | 120 | 1459.2 |
| | | 380 | | | | | | | |
| | | 570 | | | | | | | |
| | | 760 | | | | | | | |
| 360 | 190 | 18388 | 30268 | 5 | - | | | | |
| | 380 | | | | | | | | |
| | 570 | | | | | | | | |
| | 760 | | | | | | | | |

精度规格 Precision Standard

| 型号 Model | 角度传动精度 Angular transmission accuracy arcmin | 双向重复定位精度 Bidirectional repetitive positioning accuracy arcsec | 输出法兰面跳动 Face deflection of output flange mm | 输出法兰内外径跳动 ID-OD deflection of output flange mm |
|---------------|---|---|---|--|
| RGU1610A-C40 | 5 | 90 | 0.03 | 0.03 |
| RGU1610A-C60 | 3 | 60 | 0.04 | |
| RGU1610A-C80 | 3 | 45 | | |
| RGU1610A-C100 | 2 | 35 | | |
| RGU2510A-C40 | 3 | 75 | 0.04 | 0.03 |
| RGU2510A-C50 | 3 | 60 | | |
| RGU2510A-C60 | 2 | 50 | | |
| RGU2510A-C70 | 2 | 45 | | |
| RGU2510A-C125 | 2 | 25 | | |

| 型号 Model | 动作角度 Deg | 角度传递精度 Angular transmission accuracy arcmin | 双向重复定位精度 Bidirectional repetitive positioning accuracy arcsec | 输出法兰面跳动 Face deflection of output flange mm | 输出法兰内外径跳动 ID-OD deflection of output flange mm |
|---------------|-------------|---|---|---|--|
| | deg | | | | |
| RGU1610A-C240 | 30 | 0.8 | 25 | 0.04 | - |
| | 90 | 0.9 | | 0.08 | |
| | 360 | 1.5 | | 0.12 | |
| RGU1610A-C300 | 30 | 0.6 | 12 | 0.04 | - |
| | 90 | 0.8 | | 0.08 | |
| | 360 | 1.6 | | 0.12 | |
| RGU2510A-C150 | 30 | 0.8 | 20 | 0.04 | - |
| | 90 | 1 | | 0.08 | |
| | 360 | 1.6 | | 0.12 | |
| RGU2510A-C190 | 30 | 0.7 | 16 | 0.04 | - |
| | 90 | 0.9 | | 0.08 | |
| | 360 | 1.6 | | 0.12 | |

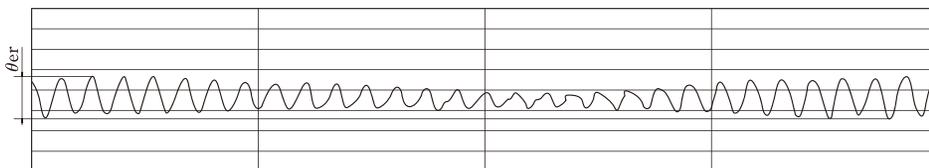


● 角度传动精度 Angular transmission accuracy

角传动精度为给输入轴任意的回转角 (θ₁) 时, 输出轴的理论回转角 (θ₂) 和实际回转角 (θ',₂) 之间的差, 输出轴1回转产生的最大差 (θ_{er}) 称之为角度传动精度。

The angular transmission accuracy generally refers to the difference between the angle of theoretical rotation (θ₂) of the output shaft when any angle of rotation (θ₁) is applied to the input shaft side and the angle of the actual rotation (θ'₂), and particularly refers to the maximum difference caused when the output shaft makes a 360-degree roll (θ_{er}).

$$\theta_{er} = \theta'_2 - \theta_2 = \theta'_2 - \theta_1 / R \quad (R : \text{减速比 Reduction ratio})$$



● 双向重复定位精度 Bidirectional repetitive positioning accuracy

朝着目标位置正方向定位停止时的位置, 和反方向定位停止时的位置的最大差。

This precision refers to the maximum difference between the stop position when positioning is made in a positive direction toward the target position and the stop position when positioning is made in a negative direction toward the target position.

使用注意 Precautions for Use

关于润滑 Lubrication

第一次使用时，请在齿面涂润滑脂。漏涂可能会造成磨损等状况出现。
First of all, apply grease to the tooth surface. Otherwise, friction and other troubles could be caused.

防尘对策 Dust preventive measures

齿面和齿底等部位如有灰尘或者异物附着可能会造成运转不良。
If dust, dirt and foreign matter contaminate the tooth surface, the tooth bottom, etc., malfunction could be caused.

电机安装要点 Motor mounting procedure

电机安装时，请按照以下的顺序：
Mount the motor by using the following procedure:

1. 将减速机输入孔和电机输出轴上附着的脏物，油渍等清理干净。
Completely remove dust, dirt, oil, etc. from the inside diameter of the input shaft of the reducer and the motor shaft.
2. 将衬套的夹紧螺栓对准中间法兰盘作业孔位置。
Match the set-collar clamp bolt of the input shaft of the reducer to the work hole of the motor attachment.
3. 保持减速机和电机不发生倾斜，将电机轴缓慢插入减速机孔底部，然后拧紧螺栓固定电机。
Carefully insert the clamp bolt into the working hole all the way seated in such a manner that the reducer and the motor do not tilt, and fix the motor by tightening the bolt.
4. 将螺栓用规定的扭矩拧紧。
Tighten the set-collar clamp bolt with the specified tightening torque.

| 夹紧螺栓 Clamp bolt | 拧紧扭矩 Tightening torque N · m |
|--------------------|------------------------------------|
| M5 | 9.0 |
| M6 | 15.3 |

请务必按照以上拧紧扭矩进行拧紧。
如果没有满足拧紧扭矩，可能会导致滑动等情况出现。
Be sure to tighten the clamp bolt with the above-specified tightening torque.
If the tightening torque is deficient, slip or other trouble could be caused.

减速机的输入孔上有切口，外面套有环形夹紧衬套，衬套上的螺栓拧紧后，会使输入孔产生变形，从而把电机轴抱紧。衬套拧紧的时候，输入孔以及衬套上的切口请按照右图指示相互对准，然后再拧紧螺栓。
衬套和输入孔的切口没有对齐就抱紧的情况下，可能会引起输入轴的破损以及抱紧力的下降。

The input shaft of the reducer is slit up. Because of this, when the set-collar clamp bolt is tightened, the input shaft is deformed to clamp the input shaft.
When the set collar is fastened, match the slit of the input shaft to the slit of the set collar as shown on the right figure, and tighten the clamp bolt.
If the shaft is clamped with the slit of the set collar and the slit of the input shaft in the mismatched condition, the input shaft could be broken or the clamp force could be lowered.

