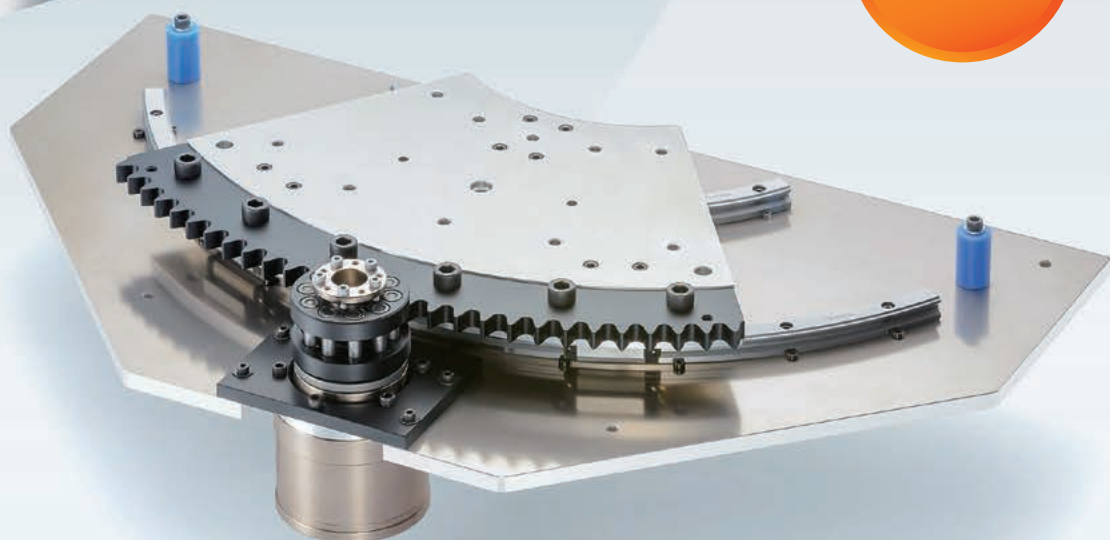


TCGカムリングユニット

kamo

RGU Series



NEW

高精度・高剛性・大口径中空を実現した、ノンバックラッシ減速ユニット
A non-backlash reduction unit featured by the realization of high precision, high rigidity and large-caliber hollow hole

KAMO SEIKO CORP.

特 徴 Features

■ ユニット化 Unitization

TCGカムリングとボール減速機をユニット化。煩わしい設計・組付工数が削減できます。

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

■ ノンバックラッシ・高精度 Non-backlash and high precision

ノンバックラッシで高精度な位置決めが可能です。

Non-backlash has realized high-precision positioning.

■ 大口径中空穴 Large-caliber hollow hole

大口径貫通中空穴に配線、配管を通せるため、装置全体がスッキリ簡略化できます。

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

■ 低騒音・低振動 Low noise and low vibration

駆動部の接触はすべて転がり接触です。

そのため、歯打ち音がなく振動も少ないです。

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

■ 高荷重・高剛性 High load and high rigidity

旋回軸の軸受にクロスローラベアリングを採用。テーブルに作用する外力を存分に受けることができます。

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

■ モータ簡単取付 Easy-to-mount motor

各社標準サーボモータ対応のアタッチメントをご用意しました。モータ取付も簡単です。

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

用途例 Use Examples

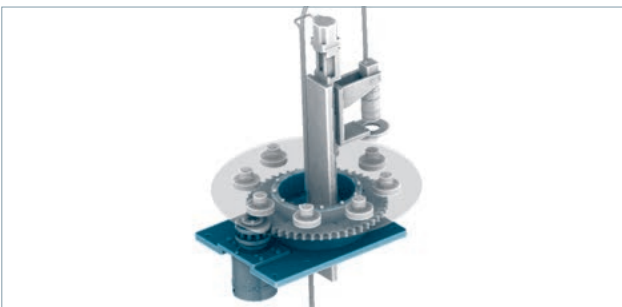
● 大型基板反転装置 Large-sized board turnover unit



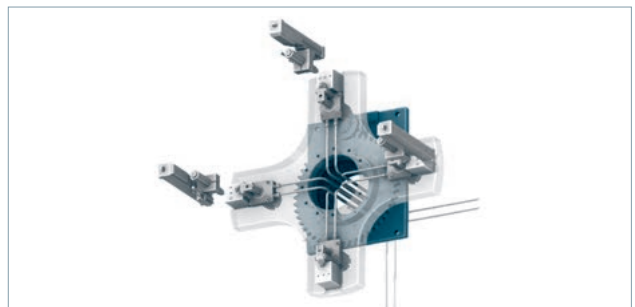
● ロボット周辺装置 Peripheral units for robot



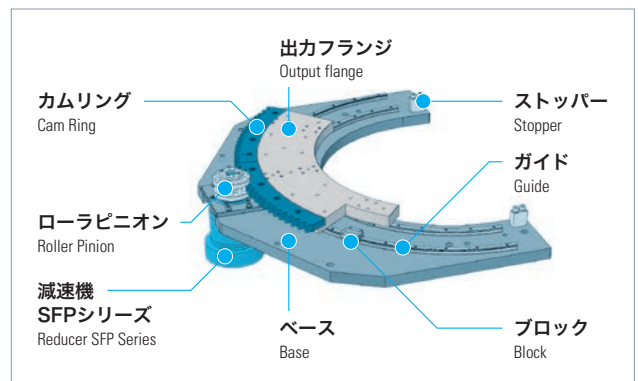
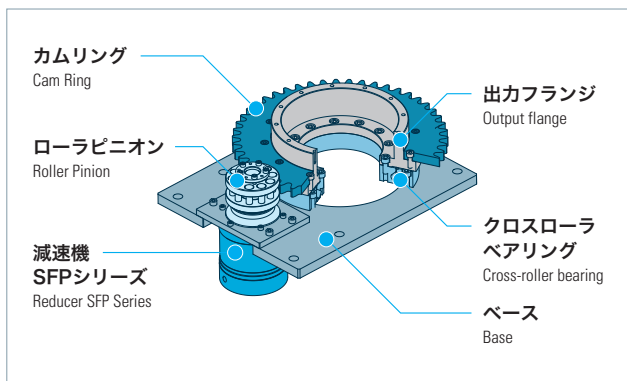
● 検査装置 Inspection unit



● 加工テーブルのインデックス Indexing of processing table



構造図 Structural Drawing

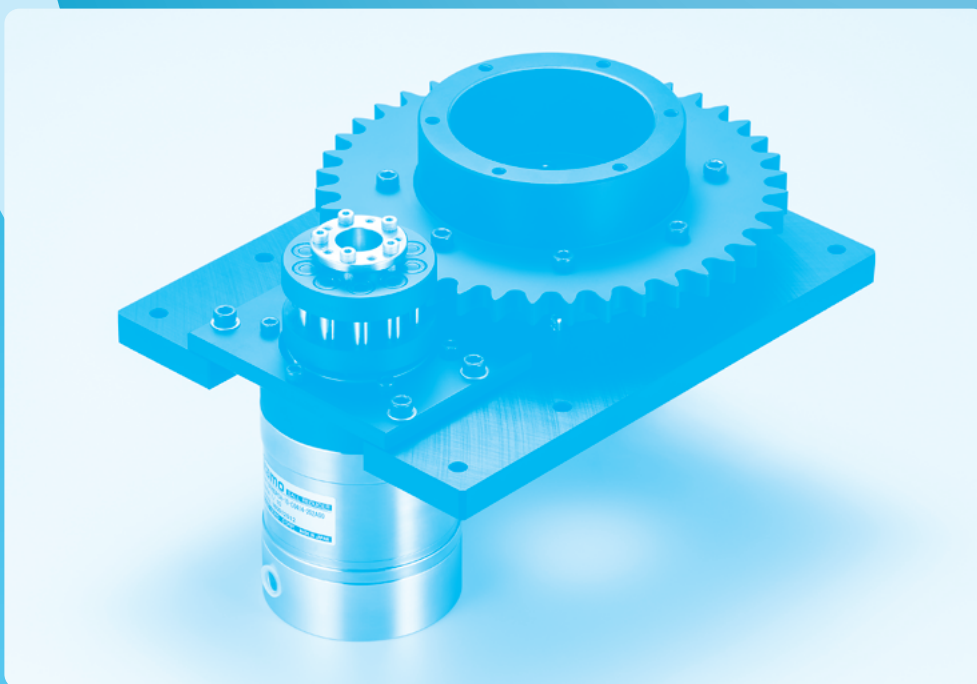


仕様・寸法表

Specification Dimensional Table

TCGカムリングユニット

TCG Cam Ring Unit



仕様・型式・外形図 Specifications, Models, Outline Drawings

仕様表 Specification Table

| 型式 Model | 総減速比 Total reduction ratio | 基本動定格 トルク | 最大使用 トルク | 許容静定格 トルク | 駆動部 慣性モーメント | 許容平均 入力回転数 | 最高入力 回転数 | 許容平均 出力回転数 | 最高出力 回転数 | 入力軸換算 慣性モーメント | 推奨モータ 容量 | 入力軸 穴径 | 質量 Mass | | | | | | | | | |
|----------------|-------------------------------|--------------|-------------|--------------|-------------------------------------|---------------|-------------|---------------|-------------|-------------------------------------|-------------|-------------------------|------------|------|-------------------------|-------|------|--|--|--|--|-----|
| | | N・m | N・m | N・m | ×10 ⁻⁴ kg・m ² | rpm | rpm | rpm | rpm | ×10 ⁻⁴ kg・m ² | W | mm | | 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 | | | 3000 | 4500 | 50.0 | 75.0 | | 0.881 | 400 | 14 ・ 11 ・ 8 | 30 | | | | | | |
| | 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 | | | | | 3000 | 4500 | | 37.5 | 56.3 | | 1.208 | 400 | 14 ・ 11 ・ 8 | 54 | | | |
| | 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 | | | | | | | | 3000 | 4500 | | 30.0 | 45.0 | | 1.763 | 400 | 14 ・ 11 ・ 8 | 83 |
| | 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 | 24 ・ 22 ・ 19 ・ 16 ・ 14 | | 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 | | | 2000 | 4000 | | | 40.0 | | | 80.0 | 6.19 | 1500 | | 24 ・ 22 ・ 19 ・ 16 ・ 14 | | | 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 | | | | | 2000 | 4000 | 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 | | | | | | | 2000 | 4000 | 28.6 | 57.1 | 8.52 | 1500 | | | | 24 ・ 22 ・ 19 ・ 16 ・ 14 | 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 | 2000 | 4000 | | | | | | | 16.0 | 32.0 | 19.96 | 1500 | | | 24 ・ 22 ・ 19 ・ 16 ・ 14 | | 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 | | | | | |

基本動定格トルク : 一定連続運転時、定格寿命を満たす基本トルクです。
 Basic dynamic rated torque : Basic torque required for satisfying the rated lifetime during a constant-speed, continuous operation.
 最大使用トルク : 通常運転で使用できるトルク(加減速時ピークを含む)の最大値です。
 Maximum working torque : Maximum value of torque for normal operation (including the peak torque during acceleration/ deceleration).
 許容静定格トルク : 非常停止や外部からの衝撃等、通常使用外トルクの最大値です。
 Allowable static rated torque : Maximum value of torque for non-normal use, such as emergency stop and external shock.
 駆動部慣性モーメント : 出力側回転部の慣性モーメントです。負荷トルクを算出する際は負荷慣性モーメントと合計して算出してください。
 Inertia moment of drive unit : Inertia moment of the output side rotation unit. To calculate load torque, add the load inertia moment.
 入力軸換算慣性モーメント : リングユニット全体の換算値です。
 Inertia moment converted to input shaft : Converted value of the entirety of Ring Unit.

型式表示 Model Indication

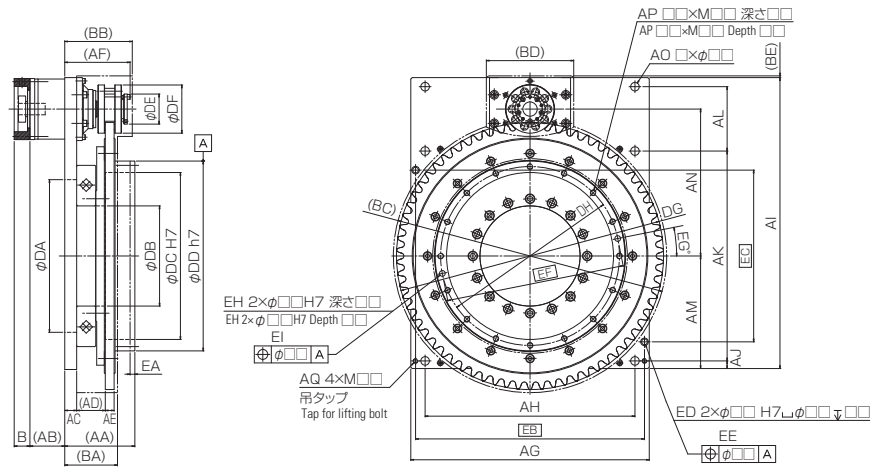
RGU A - C - - -

| 枠番 Bracket No. | リング歯数 Number of ring teeth | 総減速比 ^{※1} Total reduction ratio | モータ取付記号 ^{※2, ※3} Motor mounting code | オプション Option |
|-------------------|-------------------------------|---|--|---|
| 1610 | 40 | | | A : カバー付 ^{※4} With cover (標準の場合、無記号) |
| | 60 | | | |
| | 80 | | | |
| | 100 | | | |
| 2510 | 40 | | | |
| | 50 | | | |
| | 60 | | | |
| | 70 | | | |
| | 125 | | | |

※1 : 仕様表参照
Refer to Specification Table.
 ※2 : モータアタッチメントなしの場合は000□□の5桁の数字を入力
 ● 入力軸穴径 Input shaft hole diameter
 For models with no motor attachment, enter 5-digit figure of "000□□."
 ※3 : モータ対応表P.12~15を参照
Refer to Motor Corresponding Table on pp. 12 - 15.
 ※4 : カバーは安全カバーです。防塵対策用ではありません。カバー付の外形寸法図はP.5~6を参照ください。
 The cover is a safety cover, not a dustproof cover. For the outline dimensions of models with cover, refer to Outline Dimensional Drawings on pp. 5 - 6.

外形寸法図 Outline dimensional drawings

●RGU□□□□A-C□□□□-□□□□-□□□□□□



寸法表 Dimension table

| 型式 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 深さ12 6×M6 Depth 12 | 無し None |
| RGU1610A-C60 | 101 | 62 | 15 | 37 | 11.5 | 91 | 300 | 250 | 355 | 14 | 250 | 75 | 139 | 170 | 6×φ12 | 12×M8 深さ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 深さ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 深さ24 16×M12 Depth 24 | M10 |
| RGU2510A-C40 | 122 | 97 | 15 | 45 | 18.5 | 112 | 320 | 270 | 405 | 11 | 270 | 110 | 146 | 193 | 6×φ12 | 12×M8 深さ16 12×M8 Depth 16 | M8 |
| RGU2510A-C50 | 141 | 78 | 20 | 59 | 18.5 | 131 | 400 | 330 | 480 | 19 | 330 | 110 | 184 | 230 | 6×φ18 | 12×M10 深さ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 深さ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 深さ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 深さ32 16×M16 Depth 32 | M16 |

| 型式 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 |

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

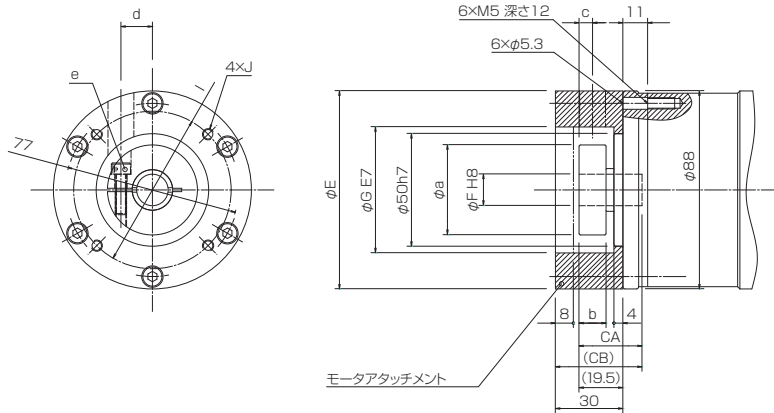
B□寸法は、オプションA(カバー)選択時の寸法になります。 B□ dimensions enable when choose option A (With cover)

仕様・型式・外形図 Specifications, Models and Outline Drawings

外形寸法図 Outline dimensional drawings

● モータ取付部詳細図 (RGU1610A型)

Detailed drawing of motor mounted portion (Model RGU1610A)

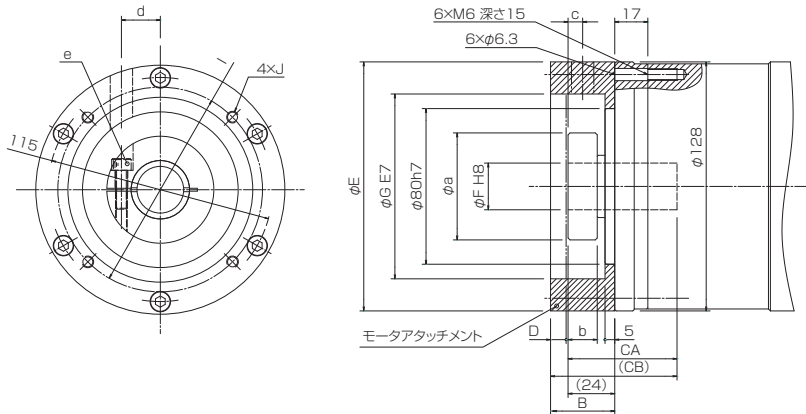


寸法表 【モータ取付部詳細図 (RGU1610A型)】 Dimension table [Detailed drawing of motor mounted portion (Model RGU1610A)]

| 型式 Model | CA | CB | E | F | G | I | J | a | b | c | d | e |
|-------------|----|------|----|-------|----|-------|-------|----|----|----|----|----|
| C01 | 23 | 33.5 | 88 | 8 | 30 | 45 | M3×6 | 30 | 10 | 5 | 10 | M4 |
| C02 | | | | | | | | | | | | |
| C03 | 28 | 38.5 | | 11・14 | 50 | 70 | M4×8 | 40 | 12 | 6 | 14 | M5 |
| C04 | | | | | | | | | | | | |
| D01 | 23 | 33.5 | 14 | 70 | 90 | M5×10 | 30 | 10 | 5 | 10 | M4 | |
| D02 | | | | | | | | | | | | |
| D01 | 28 | 38.5 | 98 | 11・14 | 70 | 90 | M6×12 | 40 | 12 | 6 | 14 | M5 |
| D02 | | | | | | | | | | | | |

● モータ取付部詳細図 (RGU2510A型)

Detailed drawing of motor mounted portion (Model RGU2510A)



寸法表 【モータ取付部詳細図 (RGU2510A型)】 Dimension table [Detailed drawing of motor mounted portion (Model RGU2510A)]

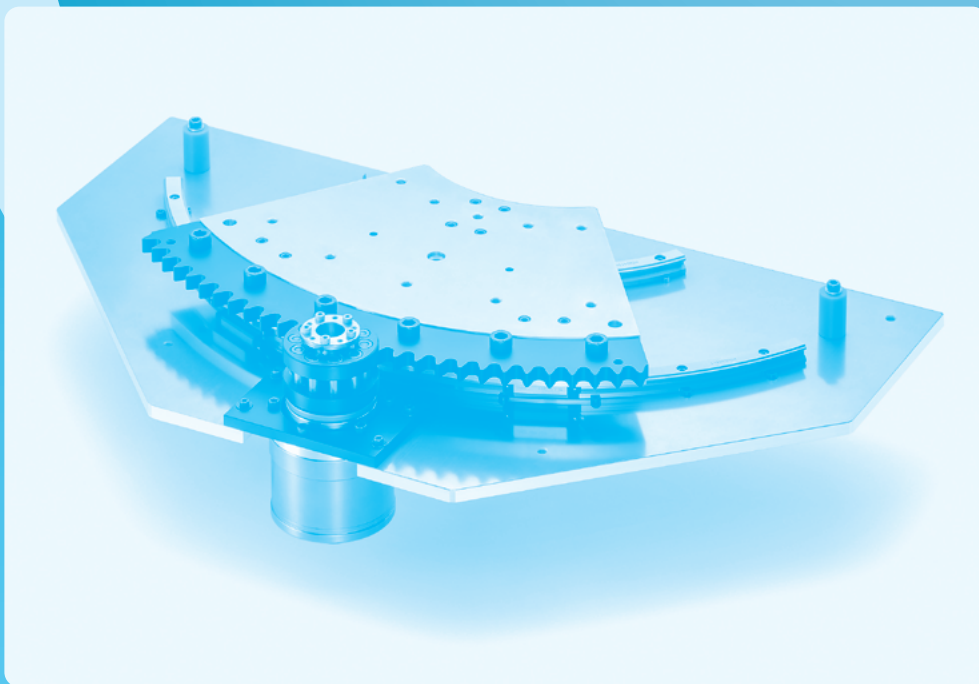
| 型式 Model | B | CA | CB | D | E | F | G | I | J | a | b | c | d | e |
|-------------|----|----|----|-------|-----|-------|-----|-------|-------|----|-----|-----|----|----|
| F01 | 33 | 38 | 47 | 5 | 128 | 14 | 50 | 70 | M4×10 | 40 | 12 | 6 | 14 | M5 |
| F02 | | | | | | | | | | | | | | |
| F03 | | | | | | 19 | 70 | 90 | M5×10 | 50 | 15 | 7.5 | 18 | M6 |
| F04 | | | | | | | | | | | | | | |
| F05 | | | | 14 | | 80 | 100 | M6×12 | 40 | 12 | 6 | 14 | M5 | |
| F06 | | | | | | | | | | | | | | |
| F07 | | | | 16・19 | | 80 | 100 | M6×12 | 50 | 15 | 7.5 | 18 | M6 | |
| F08 | | | | | | | | | | | | | | |
| G01 | 44 | 56 | 65 | 8 | 158 | 24 | 95 | 115 | M8×16 | 55 | 15 | 7.5 | 20 | M6 |
| G02 | | | | | | | | | | | | | | |
| G01 | 44 | 56 | 76 | 10 | 158 | 16・19 | 110 | 145 | M8×16 | 50 | 15 | 7.5 | 18 | M6 |
| G02 | | | | | | | | | | | | | | |
| G02 | 44 | 56 | 76 | 10 | 158 | 22・24 | 110 | 145 | M8×16 | 55 | 15 | 7.5 | 20 | M6 |

仕様・寸法表

Specification Dimensional Table

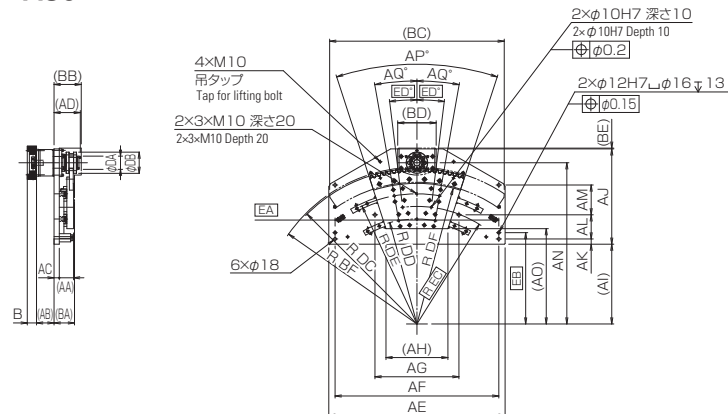
TCG分割型カムリングユニット

TCG Circular Arc Cam Ring Unit



外形寸法図 Outline dimensional drawings

●RGU□□□□A-C□□□□-A30-□□□□-□□□□□□



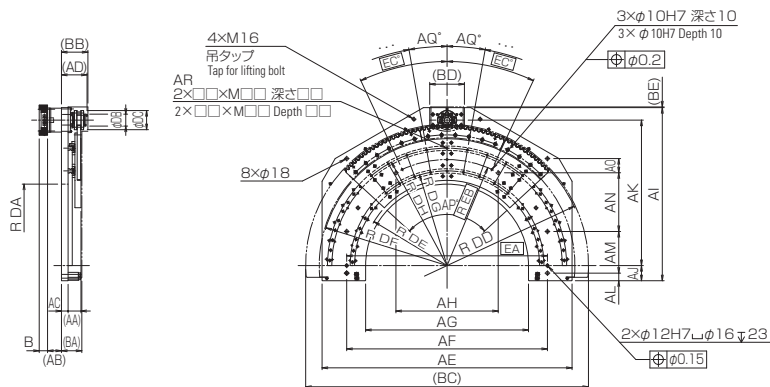
寸法表 Dimension table

| 型式 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 |

| 型式 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□寸法は、オプションA(カバー)選択時の寸法になります。 B□ dimensions enable when choose option A (With cover)

●RGU□□□□A-C□□□□-A90-□□□□-□□□□□□



寸法表 Dimension table

| 型式 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 深さ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 深さ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 深さ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 深さ20 2x9xM10 Depth 20 |

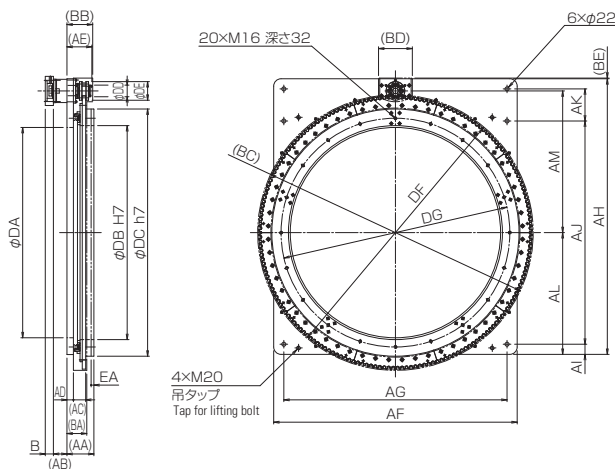
| 型式 Model | BA | BB | BC | BD | BE | DA | DB | DC | DD | DE | DF | DG | DH | EA | EB | EC |
|---------------|-------|-------|--------|-------|-----|-----|----|-----|-----|-----|-----|-----|-----|------|-----|----|
| RGU1610A-C240 | 98.5 | 114.6 | 1189.2 | 133.2 | 3.6 | 350 | 42 | 67 | 588 | 365 | 525 | 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□寸法は、オプションA(カバー)選択時の寸法になります。 B□ dimensions enable when choose option A (With cover)

仕様・型式・外形図 Specifications, Models, Outline Drawings

外形寸法図 Outline dimensional drawings

●RGU□□□□A-C□□□-□□□-□□□□□



寸法表 Dimension table

| 型式 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 |

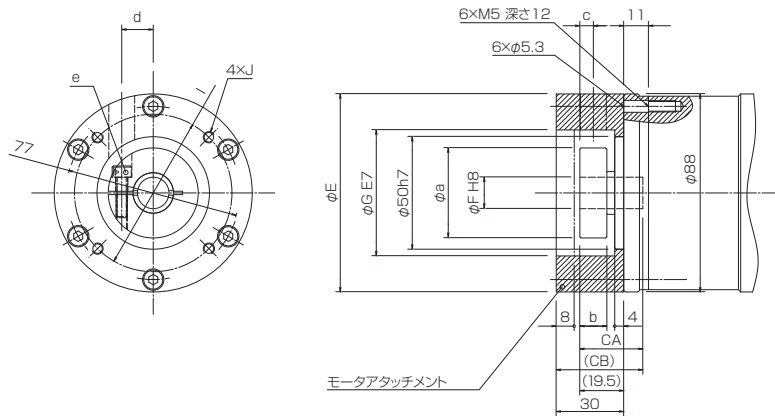
| 型式 Model | BA | BB | BC | BD | BE | DA | DB | DC | DD | DE | DF | DG | EA |
|---------------|-------|-------|--------|-------|-----|------|------|------|----|-----|------|------|----|
| RGU1610A-C240 | 93.5 | 109.6 | 1189.2 | 133.2 | 3.6 | 920 | 940 | 1050 | 42 | 67 | 1176 | 1000 | 15 |
| RGU1610A-C300 | 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□寸法は、オプションA(カバー)選択時の寸法になります。 B□ dimensions enable when choose option A (With cover)

外形寸法図 Outline dimensional drawings

● モータ取付部詳細図(RGU1610A型)

Detailed drawing of motor mounted portion (Model RGU1610A)

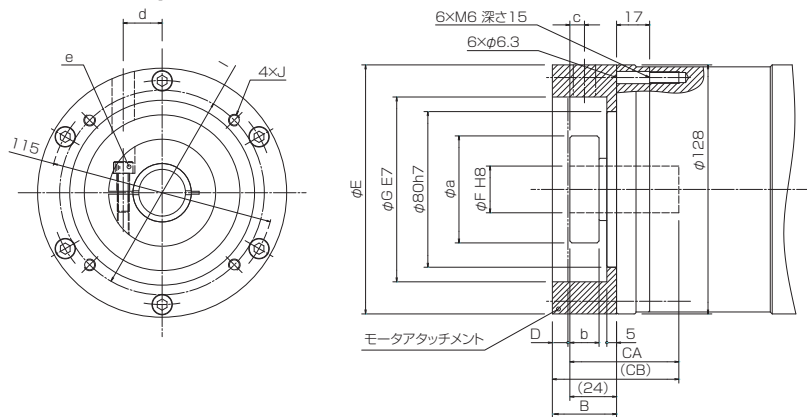


寸法表 [モータ取付部詳細図(RGU1610A型)] Dimension table [Detailed drawing of motor mounted portion (Model RGU1610A)]

| 型式 Model | CA | CB | E | F | G | I | J | a | b | c | d | e |
|-------------|----|------|----|-------|----|----|-------|----|----|---|----|----|
| C01 | 23 | 33.5 | 88 | 8 | 30 | 45 | M3×6 | 30 | 10 | 5 | 10 | M4 |
| C02 | | | | | | | M4×8 | | | | | |
| C03 | 28 | 38.5 | | 11・14 | 50 | 70 | M5×10 | 40 | 12 | 6 | 14 | M5 |
| C04 | | | | | | | | 30 | 10 | 5 | 10 | M4 |
| D01 | 28 | 38.5 | 98 | 11・14 | 70 | 90 | M6×12 | 40 | 12 | 6 | 14 | M5 |
| D02 | | | | | | | | | | | | |

● モータ取付部詳細図(RGU2510A型)

Detailed drawing of motor mounted portion (Model RGU2510A)



寸法表 [モータ取付部詳細図(RGU2510A型)] Dimension table [Detailed drawing of motor mounted portion (Model RGU2510A)]

| 型式 Model | B | CA | CB | D | E | F | G | I | J | a | b | c | d | e |
|-------------|----|----|----|----|-----|-------|-----|-------|-------|----|-----|-----|----|----|
| F01 | 33 | 38 | 47 | 5 | 128 | 14 | 50 | 70 | M4×10 | 40 | 12 | 6 | 14 | M5 |
| F02 | | | | | | | | | M5×10 | | | | | |
| F03 | | | | | | 19 | 70 | 90 | M6×12 | 50 | 15 | 7.5 | 18 | M6 |
| F04 | | | | | | | | | | 40 | 12 | 6 | 14 | M5 |
| F05 | | | | 14 | | 80 | 100 | M6×12 | 50 | 15 | 7.5 | 18 | M6 | |
| F06 | | | | | | | | | 40 | 12 | 6 | 14 | M5 | |
| F07 | | | | 24 | | 95 | 115 | M8×16 | 50 | 15 | 7.5 | 18 | M6 | |
| F08 | | | | | | | | | 55 | | | 20 | | |
| G01 | 44 | 56 | 76 | 10 | 158 | 16・19 | 110 | 145 | M8×16 | 50 | 15 | 7.5 | 18 | M6 |
| G02 | | | | | | | | | | 55 | | | 20 | |

モータ対応表 Motor Corresponding Table

モータ対応表は簡易表です。必ず型式選定計算を行ってください。モータの瞬時最大トルク×減速比の値がリングユニットの最大使用トルクを超えないよう制限してご使用ください。掲載されていないモータ型式につきましては弊社にお問い合わせください。

Motor Corresponding Table is an abridged table. Be sure to make a model selecting calculation. In using the motor, ensure that the product of “(Instantaneous maximum torque) × (Reduction ratio)” of the motor is not more than the maximum working torque of Ring Unit. For models not listed in the table, contact us for inquiry.

三菱電機 Mitsubishi Electric

RGU1610型 RGU2510型

| 型式 Model | モータ容量 Motor capacity | 定格トルク Rated torque | モータ定格回転数 Rated rotational speed of motor | リングユニット型式 Model of Ring Unit | | | | | | | | | |
|-------------|-------------------------|-----------------------|---|---------------------------------|--|---|--|--|--|-------|-------|--|--|
| | | | | RGU1610A- | C40-40 C60-60 C80-80 C100-100 C240-240 C300-300 | C40-80 C60-120 C80-160 C100-200 C240-480 C300-600 | C40-120 C60-180 C80-240 C100-300 C240-720 C300-900 | C40-160 C60-240 C80-320 C100-400 C240-960 C300-1200 | | | | | |
| | W | N・m | rpm | RGU2510A- | C40-40 C50-50 C60-60 C70-70 C125-125 C150-150 C190-190 | C40-80 C50-100 C60-120 C70-140 C125-250 C150-300 C190-380 | C40-120 C50-150 C60-180 C70-210 C125-375 C150-450 C190-570 | C40-160 C50-200 C60-240 C70-280 C125-500 C150-600 C190-760 | C40-200 C50-250 C60-300 C70-350 C125-625 C150-750 C190-950 | | | | |
| J4 | HG-KR | 13 | 100 | 0.32 | モータ取付記号 Installation symbol of motor | | | | C0208 | | | | |
| | | 23 | 200 | 0.64 | | | | C0414 | | | | | |
| | | 43 | 400 | 1.3 | | C0414 | | | | | F0214 | | |
| | | 73 | 750 | 2.4 | | | | F0419 | | | | | |
| | HG-MR | 13 | 100 | 0.32 | | | | | | C0208 | | | |
| | | 23 | 200 | 0.64 | | | | C0414 | | | | | |
| | | 43 | 400 | 1.3 | | C0414 | | | | | F0214 | | |
| | | 73 | 750 | 2.4 | | | | F0419 | | | | | |
| | HG-SR | 51 | 500 | 4.8 | | | | | | | | | |
| | | 52 | 500 | 2.4 | | | | | | | | | |
| | | 102 | 1000 | 4.8 | | | | G0224 | | | | | |
| | J3 | HF-KP | 13 | 100 | | 0.32 | | | | | C0208 | | |
| 23 | | | 200 | 0.64 | | | C0414 | | | | | | |
| 43 | | | 400 | 1.3 | C0414 | | | | | F0214 | | | |
| 73 | | | 750 | 2.4 | | | F0419 | | | | | | |
| HF-MP | | 13 | 100 | 0.32 | | | | | | C0208 | | | |
| | | 23 | 200 | 0.64 | | | C0414 | | | | | | |
| | | 43 | 400 | 1.3 | C0414 | | | | | F0214 | | | |
| | | 73 | 750 | 2.4 | | | F0419 | | | | | | |
| HF-SP | | 51 | 500 | 4.77 | | | | | | | | | |
| | | 52 | 500 | 2.39 | | | | | | | | | |
| | | 102 | 1000 | 4.77 | | | G0224 | | | | | | |
| HC-LP | | 52 | 500 | 2.39 | | | | | | | | | |
| | 102 | 1000 | 4.78 | | | G0224 | | | | | | | |
| HC-RP | 103 | 1000 | 3.18 | | | | | | | | | | |
| | 153 | 1500 | 4.78 | | | | | | F0724 | | | | |

| 型式 Model | | モータ 容量 Motor capacity | 定格 トルク Rated torque | モータ 定格回転数 Rated rotational speed of motor | リングユニット型式 Model of Ring Unit | | | | | | | |
|-------------|-------|--------------------------------|------------------------------|--|---------------------------------|--|---|--|--|--|--|--|
| | | | | | RGU1610A- | C40-40 C60-60 C80-80 C100-100 C240-240 C300-300 | C40-80 C60-120 C80-160 C100-200 C240-480 C300-600 | C40-120 C60-180 C80-240 C100-300 C240-720 C300-900 | C40-160 C60-240 C80-320 C100-400 C240-960 C300-1200 | | | |
| | | | | | RGU2510A- | C40-40 C50-50 C60-60 C70-70 C125-125 C150-150 C190-190 | C40-80 C50-100 C60-120 C70-140 C125-250 C150-300 C190-380 | C40-120 C50-150 C60-180 C70-210 C125-375 C150-450 C190-570 | C40-160 C50-200 C60-240 C70-280 C125-500 C150-600 C190-760 | C40-200 C50-250 C60-300 C70-350 C125-625 C150-750 C190-950 | | |
| Σ7 | SGM7J | 01A | 100 | 0.318 | 3000 | | | | | | | |
| | | C2A | 150 | 0.477 | | | | | | | | |
| | | 02A | 200 | 0.637 | | | | | | | | |
| | | 04A | 400 | 1.27 | | | | | | | | |
| | | 06A | 600 | 1.91 | | | | | | | | |
| | | 08A | 750 | 2.39 | | | | | | | | |
| | SGM7A | 01A | 100 | 0.318 | 3000 | | | | | | | |
| | | C2A | 150 | 0.477 | | | | | | | | |
| | | 02A | 200 | 0.637 | | | | | | | | |
| | | 04A | 400 | 1.27 | | | | | | | | |
| | | 06A | 550 | 1.75 | | | | | | | | |
| | | 08A | 750 | 2.39 | | | | | | | | |
| | SGM7P | 01A | 100 | 0.318 | 3000 | | | | | | | |
| | | 02A | 200 | 0.637 | | | | | | | | |
| | | 04A | 400 | 1.27 | | | | | | | | |
| | | 08A | 750 | 2.39 | | | | | | | | |
| | | 15A | 1500 | 4.77 | | | | | | | | |
| | SGM7G | 03A | 300 | 1.96 | 1500 | | | | | | | |
| | | 05A | 450 | 2.86 | | | | | | | | |
| | | 09A | 850 | 5.39 | | | | | | | | |
| | ΣV | SGMJV | 01A | 100 | 0.318 | 3000 | | | | | | |
| C2A | | | 150 | 0.477 | | | | | | | | |
| 02A | | | 200 | 0.637 | | | | | | | | |
| 04A | | | 400 | 1.27 | | | | | | | | |
| 06A | | | 600 | 1.91 | | | | | | | | |
| 08A | | | 750 | 2.39 | | | | | | | | |
| SGMAV | | 01A | 100 | 0.318 | 3000 | | | | | | | |
| | | C2A | 150 | 0.477 | | | | | | | | |
| | | 02A | 200 | 0.637 | | | | | | | | |
| | | 04A | 400 | 1.27 | | | | | | | | |
| | | 06A | 550 | 1.75 | | | | | | | | |
| | | 08A | 750 | 2.39 | | | | | | | | |
| SGMGV | | 03A | 300 | 1.96 | 1500 | | | | | | | |
| | | 05A | 450 | 2.86 | | | | | | | | |
| SGMSV | | 10A | 1000 | 3.18 | 3000 | | | | | | | |
| | | 15A | 1500 | 4.9 | | | | | | | | |

モータ取付記号
Installation symbol of motor

モータ対応表 Motor Corresponding Table

Panasonic

RGU1610型 RGU2510型

| 型式 Model | | モータ 容量 Motor capacity | 定格 トルク Rated torque | モータ 定格回転数 Rated rotational speed of motor | リングユニット型式 Model of Ring Unit | | | | | | |
|-------------|------|--------------------------------|------------------------------|--|---------------------------------|--|---|--|--|--|--|
| | | | | | RGU1610A- | C40-40 C60-60 C80-80 C100-100 C240-240 C300-300 | C40-80 C60-120 C80-160 C100-200 C240-480 C300-600 | C40-120 C60-180 C80-240 C100-300 C240-720 C300-900 | C40-160 C60-240 C80-320 C100-400 C240-960 C300-1200 | | |
| | | W | N·m | rpm | RGU2510A- | C40-40 C50-50 C60-60 C70-70 C125-125 C150-150 C190-190 | C40-80 C50-100 C60-120 C70-140 C125-250 C150-300 C190-380 | C40-120 C50-150 C60-180 C70-210 C125-375 C150-450 C190-570 | C40-160 C50-200 C60-240 C70-280 C125-500 C150-600 C190-760 | C40-200 C50-250 C60-300 C70-350 C125-625 C150-750 C190-950 | |
| A6 | MSMF | 01 | 100 | 0.32 | 3000 | | | | C0108 | | |
| | | 02 | 200 | 0.64 | | | | C0311 | | | |
| | | 04 | 400 | 1.27 | | C0314 | | | | F0114 | |
| | | 08 | 750 | 2.39 | | | | F0319 | | | |
| | | 09 | 1000 | 3.18 | | | | | | | |
| | MQMF | 01 | 100 | 0.32 | 3000 | | | | C0308 | | |
| | | 02 | 200 | 0.64 | | | | D0111 | | | |
| | | 04 | 400 | 1.27 | | D0114 | | | | F0314 | |
| | MHMF | 01 | 100 | 0.32 | 3000 | | | | C0208 | | |
| | | 02 | 200 | 0.64 | | | | C0311 | | | |
| | | 04 | 400 | 1.27 | | C0314 | | | | F0114 | |
| | | 08 | 750 | 2.39 | | | | F0319 | | | |
| | | 09 | 1000 | 3.18 | | | | | | | |
| | 10 | 1000 | 4.77 | | | G0222 | | | | | |
| | MDMF | 10 | 1000 | 4.77 | 2000 | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| A5 | MSME | 01 | 100 | 0.32 | 3000 | | | | C0108 | | |
| | | 02 | 200 | 0.64 | | | | C0311 | | | |
| | | 04 | 400 | 1.3 | | C0314 | | | | F0114 | |
| | | 08 | 750 | 2.4 | | | | F0319 | | | |
| | MDME | 10 | 1000 | 4.77 | 2000 | | | | | | |
| MHME | 10 | 1000 | 4.77 | 2000 | | | | | | | |
| A4 | MAMA | 02 | 200 | 0.38 | 5000 | | | C0311 | | | |
| | | 04 | 400 | 0.76 | | | | C0314 | | | |
| | | 08 | 750 | 1.43 | | | | | | F0319 | |
| | MSMD | 01 | 100 | 0.32 | 3000 | | | | C0108 | | |
| | | 02 | 200 | 0.64 | | | | C0311 | | | |
| | | 04 | 400 | 1.3 | | C0314 | | | | F0114 | |
| | | 08 | 750 | 2.4 | | | | F0319 | | | |
| | MQMA | 01 | 100 | 0.32 | 3000 | | | | C0308 | | |
| | | 02 | 200 | 0.64 | | | | D0111 | | | |
| | | 04 | 400 | 1.3 | | D0114 | | | | F0314 | |
| | MDMA | 10 | 1000 | 4.8 | 2000 | | | | | | |
| | MFMA | 04 | 400 | 1.9 | 2000 | | | G0119 | | | |
| | MHMA | 05 | 500 | 2.38 | 2000 | | | | | | |
| 10 | | 1000 | 4.8 | | | | G0222 | | | | |

モータ取付記号
Installation symbol of motor

| 型式 Model | モータ 容量 Motor capacity W | 定格 トルク Rated torque N・m | モータ 定格回転数 Rated rotational speed of motor rpm | リングユニット型式 Model of Ring Unit | | | | | | | | |
|-------------|---|---|---|---------------------------------|--|---|--|--|--|-------|-------|--|
| | | | | RGU1610A- | C40-40 C60-60 C80-80 C100-100 C240-240 C300-300 | C40-80 C60-120 C80-160 C100-200 C240-480 C300-600 | C40-120 C60-180 C80-240 C100-300 C240-720 C300-900 | C40-160 C60-240 C80-320 C100-400 C240-960 C300-1200 | | | | |
| | | | | RGU2510A- | C40-40 C50-50 C60-60 C70-70 C125-125 C150-150 C190-190 | C40-80 C50-100 C60-120 C70-140 C125-250 C150-300 C190-380 | C40-120 C50-150 C60-180 C70-210 C125-375 C150-450 C190-570 | C40-160 C50-200 C60-240 C70-280 C125-500 C150-600 C190-760 | C40-200 C50-250 C60-300 C70-350 C125-625 C150-750 C190-950 | | | |
| GYS | 101 | 100 | 0.318 | 3000 | モータ取付記号 Installation symbol of motor | | | | | C0208 | | |
| | 201 | 200 | 0.637 | | | | | C0414 | | | | |
| | 401 | 400 | 1.27 | | | C0414 | | | | | F0214 | |
| | 751 | 750 | 2.39 | | | | | F0416 | | | | |
| | 102 | 1000 | 3.18 | | | F0724 | | | | | | |
| | 152 | 1500 | 4.78 | | | | | | | | | |
| GYC | 101 | 100 | 0.318 | 3000 | | | | | | C0408 | | |
| | 201 | 200 | 0.637 | | | | | | | | | |
| | 401 | 400 | 1.27 | | | | | D0214 | | | F0414 | |
| | 751 | 750 | 2.39 | | | | | F0816 | | | | |
| | 102 | 1000 | 3.18 | | | G0224 | | | | | | |
| | 152 | 1500 | 4.78 | | | | | | | | | |
| GYG | 501 | 500 | 2.39 | 2000 | | | | | | | | |
| | 751 | 750 | 3.58 | | | | G0119 | | | | | |
| | 102 | 1000 | 4.77 | | G0222 | | | | | | | |

型式選定フローチャート Model No. Selection Flow Chart

使用条件から型式を選定します。

Select the model according to the operating conditions.

運転負荷条件 Operating load conditions

負荷慣性モーメント Load inertia moment $I =$ $\text{kg} \cdot \text{m}^2$

最高出力回転数 Maximum revolution $\text{NR} =$ rpm

加速時間 Acceleration time $t_1 =$ sec

外力トルク Outer force torque $T_c =$ $\text{N} \cdot \text{m}$

駆動部慣性モーメント Inertia moment of drive unit $I_c =$ $\text{kg} \cdot \text{m}^2$ P.3参照 Refer to P.3

荷重係数 Coefficient of weight $f_w =$ 右表参照 Refer to the right table.

荷重係数 Load coefficient

| 運転条件 Operating conditions | f_w |
|---|---------|
| 衝撃のない円滑運転のとき In smooth operation with no impacts | 1.0~1.2 |
| 普通の運転のとき In normal operation | 1.2~1.5 |
| 衝撃・振動を伴う運転のとき In operation with impacts and vibrations | 1.5~3.0 |

YES

回転数判定 Determination of number of revolutions

RGU最高出力回転数(P.3参照) Maximum number of output revolutions of RGU (Refer to p. 3.)

$\text{NR} <$

NO

減速比、回転数の見直し
Review of reduction ratio and number of revolutions

YES

負荷トルク計算 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

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

最大負荷トルク Maximum load torque $T_{\text{max}} = f_w \times (T_a + T_c) =$ $\text{N} \cdot \text{m}$

RGU最大使用トルク(P.3参照) Maximum working torque of RGU (Refer to p. 3.)

$T_{\text{max}} <$

NO

型番アップ又は荷荷の見直し
Review of model upgrade or load

平均負荷トルク、平均出力回転数の算出 Calculation of average load torque and average number of output revolutions

運転条件(参考) Operating conditions(Reference)

〈速度パターン〉
Velocity pattern

〈負荷パターン〉
Load pattern

平均負荷トルク Average load torque

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

平均出力回転数 Average number of output revolutions

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

| 項目 Item | 起動時 Starting | 定常時 Steady operation | 停止時 Stoppage |
|---|--------------------------|-------------------------|--------------------------|
| 負荷トルク Load torque $\text{N} \cdot \text{m}$ | T_1 | T_2 | T_3 |
| 出力回転数 Number of output revolutions rpm | n_1 ($= 0.5 n_2$) | n_2 | n_3 ($= 0.5 n_2$) |
| 時間 Time sec | t_1 | t_2 | t_3 |

寿命計算
To life Calculation

寿命計算 Life Calculation

平均負荷トルク Average Load Torque $T_m = \text{[]} \text{ N} \cdot \text{m}$

平均出力回転数 Average output revolutions $N_m = \text{[]} \text{ rpm}$

平均入力回転数 Average Input revolutions $N_1 = N_m \times R_u = \text{[]} \text{ rpm}$

寿命時間 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} : 定格寿命時間
Rated life length
右表参照
Refer to right table.

N_0 : 許容平均入力回転数
Allowable average number of input revolutions
右表参照
Refer to right table.

T_0 : 基本動定格トルク
Basic dynamic rated torque
右表参照
Refer to right table.

T_m : 平均負荷トルク
Average Load Torque

N_1 : 平均入力回転数
Average Input revolutions

R_u : RGU総減速比
Total reduction ratio of RGU

f_w : 荷重係数
Coefficient of weight

定格寿命 Rated lifetime

| 型 式 Model | 総減速比 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 | | |
| | 200 | 16000 | | |
| RGU2510A-C50 | 50 | 8300 | 360 | |
| | 100 | 16000 | | |
| | 150 | 16000 | | |
| | 200 | 16000 | | |
| | 250 | 16000 | | |
| RGU2510A-C60 | 60 | 8500 | 430 | |
| | 120 | 16000 | | |
| | 180 | 16000 | | |
| | 240 | 16000 | | |
| | 300 | 16000 | | |
| RGU2510A-C70 | 70 | 8000 | 510 | |
| | 140 | 15000 | | |
| | 210 | 15000 | | |
| | 280 | 15000 | | |
| | 350 | 15000 | | |
| RGU2510A-C125 | 125 | 8000 | 910 | |
| | 250 | 15000 | | |
| | 375 | 15000 | | |
| | 500 | 15000 | | |
| | 625 | 15000 | | |

| 型 式 Model | 総減速比 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 | 190 | 8200 | 1375 | | |
| | 380 | 16000 | | | |
| | 570 | 16000 | | | |
| | 760 | 16000 | | | |
| | 950 | 16000 | | | |

クロスローラベアリングの計算 Calculation of Cross-Roller Bearing

最大負荷モーメント荷重の計算(Mmax) Calculation of maximum load moment load (Mmax)

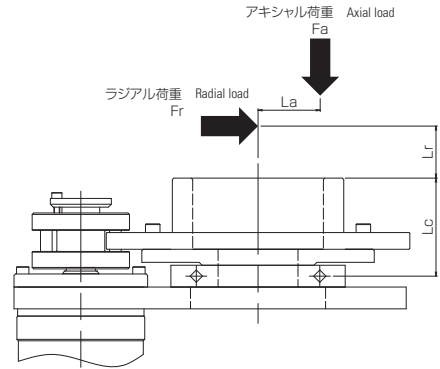
$$M_{max} = Fr_{max} (L_r + L_c / 1000) + Fa_{max} \cdot L_a$$

- Fr max : 最大ラジアル荷重 Maximum radial load (N)
- Fa max : 最大アキシャル荷重 Maximum axial load (N)
- Lr : ラジアル荷重位置 Radial load position (m)
- La : アキシャル荷重位置 Axial load position (m)

最大負荷モーメント荷重が許容モーメント荷重以下であることを確認します。
 Check whether the maximum load moment load is equal to or less than the allowable moment load.

$$M_{max} \leq Mc$$

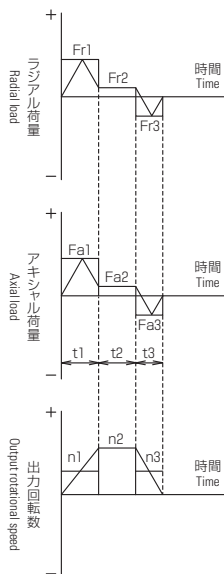
(許容モーメント荷重は以下の表を参照のこと)
 (For the allowable moment load, refer to the following table.)



| 型式 Model | | 許容モーメント荷重 Allowable moment load Mc (N・m) | 許容ラジアル荷重(参考値) Allowable radial load (N) | 許容アキシャル荷重(参考値) Allowable axial load (N) | Lc (mm) |
|----------------|-----|--|---|---|------------|
| RGU1610A-C40- | 40 | 140 | 3300 | 4900 | 68.5 |
| | 80 | 140 | 3400 | 5000 | |
| | 120 | 140 | 3400 | 5000 | |
| | 160 | 150 | 3700 | 5500 | |
| RGU1610A-C60- | 60 | 610 | 8200 | 12200 | 73.5 |
| | 120 | 620 | 8400 | 12500 | |
| | 180 | 610 | 8300 | 12300 | |
| | 240 | 660 | 9000 | 13400 | |
| RGU1610A-C80- | 80 | 1950 | 17100 | 25500 | 78.5 |
| | 160 | 1980 | 17400 | 25900 | |
| | 240 | 1960 | 17300 | 25800 | |
| | 320 | 2140 | 18800 | 28000 | |
| RGU1610A-C100- | 100 | 3870 | 26000 | 38800 | 85 |
| | 200 | 3890 | 26200 | 39100 | |
| | 300 | 3930 | 26400 | 39400 | |
| | 400 | 4200 | 28300 | 42200 | |
| RGU2510A-C40- | 40 | 610 | 8300 | 12300 | 94.5 |
| | 80 | 610 | 8300 | 12300 | |
| | 120 | 690 | 9400 | 14000 | |
| | 160 | 750 | 10200 | 15200 | |
| | 200 | 800 | 10900 | 16200 | |
| RGU2510A-C50- | 50 | 1980 | 17400 | 25900 | 103.5 |
| | 100 | 2000 | 17600 | 26200 | |
| | 150 | 2260 | 19900 | 29700 | |
| | 200 | 2460 | 21700 | 32300 | |
| | 250 | 2630 | 23200 | 34600 | |
| RGU2510A-C60- | 60 | 3860 | 25900 | 38600 | 102 |
| | 120 | 3930 | 26400 | 39400 | |
| | 180 | 4430 | 29800 | 44400 | |
| | 240 | 4830 | 32500 | 48500 | |
| | 300 | 5170 | 34800 | 51900 | |
| RGU2510A-C70- | 70 | 3930 | 26400 | 39400 | 102 |
| | 140 | 4000 | 26900 | 40100 | |
| | 210 | 4520 | 30400 | 45300 | |
| | 280 | 4930 | 33100 | 49400 | |
| | 350 | 5270 | 35400 | 52800 | |
| RGU2510A-C125- | 125 | 14390 | 38900 | 58000 | 56 |
| | 250 | 14670 | 39700 | 59200 | |
| | 375 | 16570 | 44800 | 66800 | |
| | 500 | 18060 | 48900 | 72900 | |
| | 625 | 19310 | 52300 | 78000 | |

許容ラジアル荷重、許容アキシャル荷重はクロスローラベアリングに純粋なラジアル又はアキシャル荷重のみ
 どちらかがかかる場合にリングユニット寿命時間を満たす値です (ラジアル荷重 : Lr + Lc = 0 アキシャル荷重 : 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).

平均荷重の計算式 Calculation formulas of average load



平均ラジアル荷重 Fra (N)

Average radial load

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

平均アキシャル荷重 Faa (N)

Average axial load

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

平均出力回転数 Nm (rpm)

Average output revolutions

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

平均モーメント荷重 Ma (N・m)

Average moment load

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

ラジアル係数(X)・アキシャル係数(Y)の計算式 Calculation formulas of radial coefficient and axial coefficient

| 区分 Classification | ラジアル係数(X) Radial coefficient | アキシャル係数(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 |

| 型式 Model | 基本動定格荷重 Basic dynamic rated load C (N) | ローラのピッチ円直径 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 |

荷重係数 Load coefficient (fw)

| 荷重状態 Load state | fw |
|---|---------|
| 衝撃のない円滑運転のとき In smooth operation with no impacts | 1.0~1.2 |
| 普通の運転のとき In normal operation | 1.2~1.5 |
| 衝撃・振動を伴う運転のとき In operation with impacts and vibrations | 1.5~3.0 |

寿命計算 Life Calculation (Lh)

クロスローラベアリングの寿命は次式により求めます。
For the cross roller bearing, calculate the life hours by using the following formula

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

動等価ラジアル荷重 Kinetic Equivalent Radial Load (Pc)

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

ガイドブロックの計算 Calculation of Guide Blocks

動作角度30deg、90deg Deg for 30deg, 90deg

運転条件 Operating conditions

- 負荷質量 Total load mass : m (kg)
- 出力フランジ回転数 RPM of output flange : NR (rpm)
- 重力加速度 Gravitational acceleration : g (m/sec²)
- 荷重係数 Load factor : fw、fs

● 負荷荷重の計算 Calculation of applied load

ブロック速度 Block speed (m/sec)

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

加速度 Acceleration (m/sec²)

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

加速時負荷 Load in acceleration (N)

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

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

等速時負荷 Load in constant speed (N)

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

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

減速時負荷 Load in deceleration (N)

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

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

負荷合成 Load synthesis (N)

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

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

最大荷重 Maximum load (N)

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

静的安全係数 Static safety factor (N)

$$\frac{C_0}{Pr} \geq fs$$

荷重係数 Load factor fs

| 荷重条件 Load conditions | fs |
|---------------------------------------|---------|
| 振動・衝撃の無い場合 No vibration, shock | 1.0~3.5 |
| 振動・衝撃の作用する場合 Applied vibration, shock | 2.0~5.0 |

● 定格寿命の計算 Calculation of rated life time

平均負荷荷重 Average load (N)

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

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

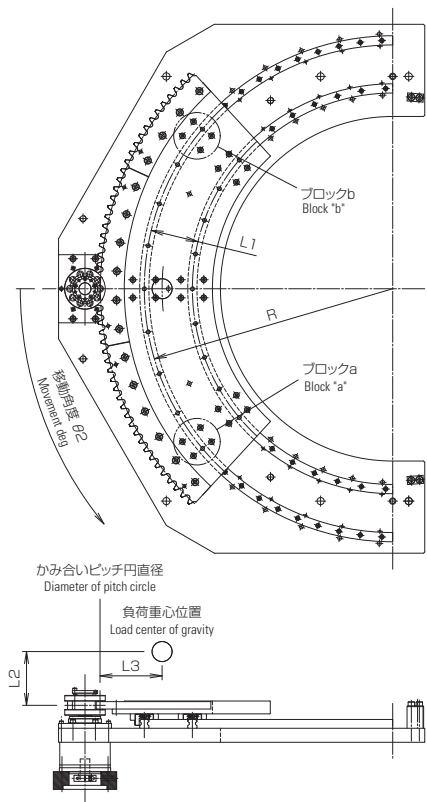
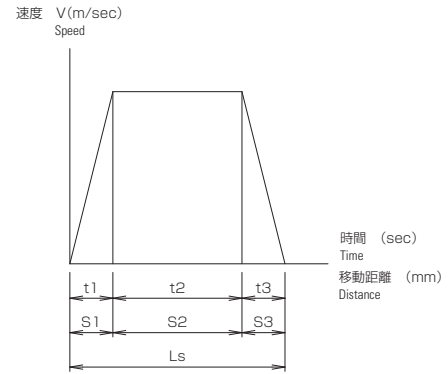
定格寿命 Rated life time (km)

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

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

荷重係数 Load factor fw

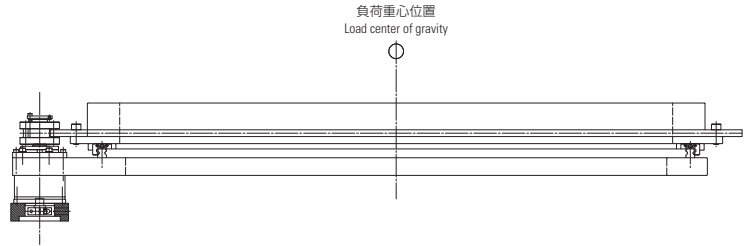
| 振動・衝撃 Vibration, shock | 速度V(m/sec) (参考) speed V(m/sec) (reference) | fw |
|---------------------------|---|---------|
| 微 Minute | V ≤ 0.25 | 1.0~1.2 |
| 小 Small | 0.25 < V ≤ 1.0 | 1.2~1.5 |
| 中 Medium | 1.0 < V ≤ 2.0 | 1.5~2.0 |
| 大 Large | 2.0 < V | 2.0~3.5 |



動作角度360deg Deg for 360deg

運転条件 Operating conditions

負荷質量 Total load mass : m (kg)
 出力フランジ回転数 RPM of output flange : NR (rpm)
 重力加速度 Gravitational acceleration : g (m/sec²)
 荷重係数 Load factor : fw、fs



● 負荷荷重の計算 Calculation of applied load

ブロック速度 Block speed (m/sec)

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

加速度 Acceleration (m/sec²)

$$an = \frac{V}{tn}$$

加速時負荷、等速時負荷、減速時負荷 (N)

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

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

最大荷重 Maximum load (N)

$$Pr = P1$$

静的安全係数 Static safety factor (N)

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

● 定格寿命の計算 Calculation of rated life time

平均負荷荷重 Average load (N)

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

定格寿命 Rated life time (km)

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

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

● 検討上の注意 Notes on consideration

積載物の重心位置にご注意ください。動作角度30deg・90degは、内側ガイドと外側ガイドの間に設定し、動作角度360degは、回転中心に設定してください。上記範囲を超えてご使用される場合は、弊社までお問い合わせください。

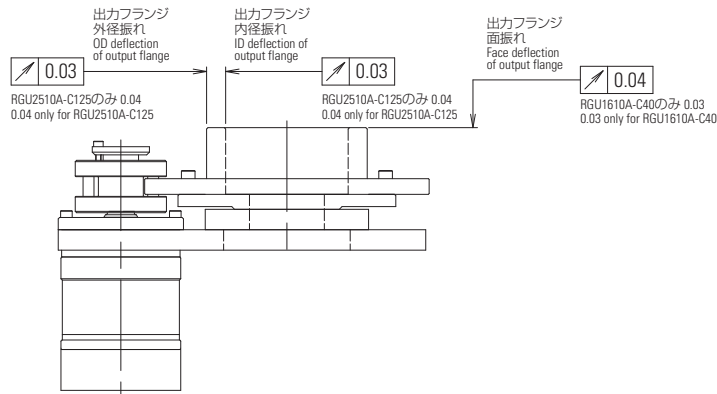
Pay attention to load center of gravity. It set Deg for 30deg and 90deg between the inner guide and the outer guide, and set Deg for 360deg to the center of rotation. If you use beyond the above range, please contact to us.

| 型式 Model | 動作角度 Deg | 総減速比 Total reduction ratio | 基本動定格 荷重 | 基本静定格 荷重 | ブロック数 Number of Blocks | ブロック スパン Block interval | ガイド 半径 Guide radius | ガイド スパン Guide interval | かみ合い ピッチ円 直径 Diameter of pitch circle |
|---------------|-------------|-------------------------------|-------------|-------------|---------------------------|-------------------------------|---------------------------|------------------------------|--|
| | | | C (N) | Co (N) | | | | | |
| | deg | | | | n (個 pieces) | L0 (mm) | R (mm) | L1 (mm) | Dp (mm) |
| RGU1610A-C240 | 30 | 240 | 7300 | 11593 | 4 | 174.5 | 500 | 100 | 1163.52 |
| | | 480 | | | | | | | |
| | | 720 | | | | | | | |
| | | 960 | | | | | | | |
| | 90 | 240 | 7284 | 11577 | 6 | 698.1 | | | |
| | | 480 | | | | | | | |
| | | 720 | | | | | | | |
| | | 960 | | | | | | | |
| | 360 | 240 | 7092 | 11385 | 5 | - | | | |
| 480 | | | | | | | | | |
| 720 | | | | | | | | | |
| 960 | | | | | | | | | |
| RGU1610A-C300 | 30 | 300 | 18853 | 32462 | 4 | 173.1 | 620 | 120 | 1455.48 |
| | | 600 | | | | | | | |
| | | 900 | | | | | | | |
| | | 1200 | | | | | | | |
| | 90 | 300 | 18826 | 32435 | 6 | 822.4 | | | |
| | | 600 | | | | | | | |
| | | 900 | | | | | | | |
| | | 1200 | | | | | | | |
| | 360 | 300 | 18490 | 32099 | 5 | - | | | |
| 600 | | | | | | | | | |
| 900 | | | | | | | | | |
| 1200 | | | | | | | | | |
| RGU2510A-C150 | 30 | 150 | 6090 | 9859 | 4 | 174.5 | 500 | 100 | 1153.13 |
| | | 300 | | | | | | | |
| | | 450 | | | | | | | |
| | | 600 | | | | | | | |
| | 90 | 150 | 6069 | 9838 | 6 | 698.1 | | | |
| | | 300 | | | | | | | |
| | | 450 | | | | | | | |
| | | 600 | | | | | | | |
| | 360 | 150 | 5876 | 9645 | 5 | - | | | |
| 300 | | | | | | | | | |
| 450 | | | | | | | | | |
| 600 | | | | | | | | | |
| RGU2510A-C190 | 30 | 190 | 18838 | 30718 | 4 | 173.1 | 620 | 120 | 1459.2 |
| | | 380 | | | | | | | |
| | | 570 | | | | | | | |
| | | 760 | | | | | | | |
| | 90 | 190 | 18803 | 30683 | 6 | 822.4 | | | |
| | | 380 | | | | | | | |
| | | 570 | | | | | | | |
| | | 760 | | | | | | | |
| | 360 | 190 | 18388 | 30268 | 5 | - | | | |
| 380 | | | | | | | | | |
| 570 | | | | | | | | | |
| 760 | | | | | | | | | |

精度規格 Precision Standard

| 型 式 Model | 角度伝達精度 Angular transmission accuracy arcmin | 二方向繰返し 位置決め精度 Bidirectional repetitive positioning accuracy arcsec | 出力フランジ 面振れ Face deflection of output flange mm | 出力フランジ 内外径振れ 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 | 0.04 | 0.03 |
| RGU2510A-C40 | 3 | 75 | | |
| RGU2510A-C50 | 3 | 60 | | |
| RGU2510A-C60 | 2 | 50 | | |
| RGU2510A-C70 | 2 | 45 | | |
| RGU2510A-C125 | 2 | 25 | | 0.04 |

| 型 式 Model | 動作角度 Deg | 角度伝達精度 Angular transmission accuracy arcmin | 二方向繰返し 位置決め精度 Bidirectional repetitive positioning accuracy arcsec | 出力フランジ 面振れ Face deflection of output flange mm | 出力フランジ 内外径振れ 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 | |

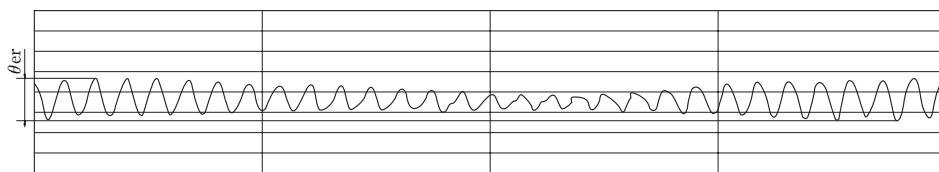


● 角度伝達精度 Angular transmission accuracy

角度伝達精度は、入力軸側に、任意の回転角 (θ 1) を与えた時の出力軸の理論上回転する回転角度 (θ 2) と実際に回転した角度 (θ '2) との差をいい、出力軸 1 回転で生じる最大差を角度伝達精度 (θ er) と表します。

The angular transmission accuracy generally refers to the difference between the angle of theoretical rotation (θ 2) of the output shaft when any angle of rotation (θ 1) 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).

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



● 二方向繰返し位置決め精度 Bidirectional repetitive positioning accuracy

目標位置へ正の向きで位置決めしたときの停止位置と、負の向きで位置決めしたときの停止位置との最大差をいいます。

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.

使用上の注意 Precautions for Use

潤滑について Lubrication

歯面には最初にグリースを塗布して下さい。塗布しない場合、摩擦等の原因になります。
First of all, apply grease to the tooth surface. Otherwise, friction and other troubles could be caused.

防塵対策 Dust preventive measures

歯面、歯底部等にゴミや異物が付着すると作動不良の原因になります。
If dust, dirt and foreign matter contaminate the tooth surface, the tooth bottom, etc., malfunction could be caused.

モータ取付要領 Motor mounting procedure

モータ取付の際は下記手順にて行ってください。
Mount the motor by using the following procedure:

1. 減速機入力軸内径とモータ軸のゴミ・油などをきれいに取り除いてください。
Completely remove dust, dirt, oil, etc. from the inside diameter of the input shaft of the reducer and the motor shaft.
2. 減速機入力軸のセットカラーのボルトをモータアタッチメントの作業穴の位置に合わせてください。
Match the set-collar clamp bolt of the input shaft of the reducer to the work hole of the motor attachment.
3. 減速機とモータが傾かないように注意して静かに奥まで挿入しモータをボルトで固定してください。
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. セットカラーのクランプボルトを所定の締め付けトルクにて固定してください。
Tighten the set-collar clamp bolt with the specified tightening torque.

| クランプボルト Clamp bolt | 締め付けトルク Tightening torque N · m |
|-----------------------|---------------------------------------|
| M5 | 9.0 |
| M6 | 15.3 |

必ず上記締め付けトルクにて締結してください。
締め付けトルクが満たない場合、滑り等の原因になります。
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.

減速機は、入力軸にスリットが入っておりセットカラーボルトを締め付けることで、入力軸を変形させシャフトをクランプする構造となっております。

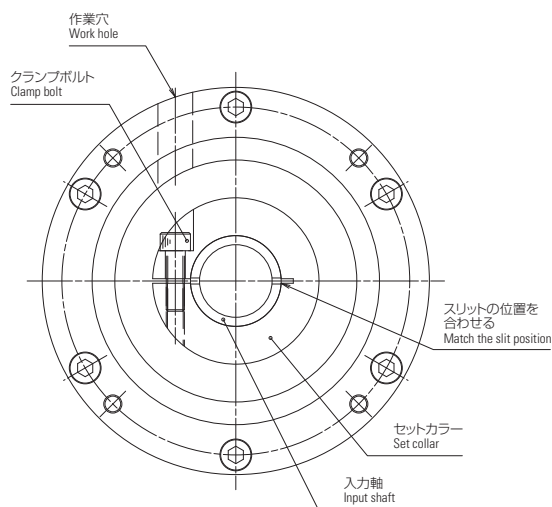
セットカラー締め付けの際は、入力軸及びセットカラーのスリット位置を右図の様に合わせて締め付けてください。

セットカラーと入力軸のスリットがずれた状態でクランプすると入力軸の破損及び、クランプ力低下の恐れがあります。

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.



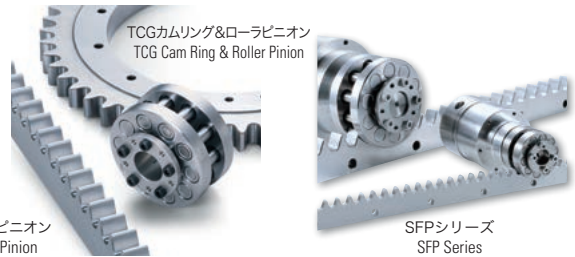
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