

HarmonicDrive®

High Precision SHA-CG Actuators

Compact, Hollow Shaft Design

Direct Drive Motor Performance

~ 80-90% less weight

~ 50% more compact

High torque for fast acceleration and positioning

The SHA-CG delivers high precision with improved positioning accuracy and surface runout. Ideal for high precision rotary applications such as indexing tables.



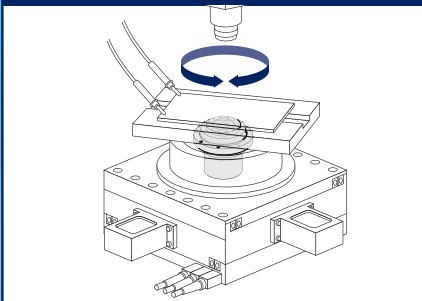
Application Examples

Measurement, Analytical and Test Systems

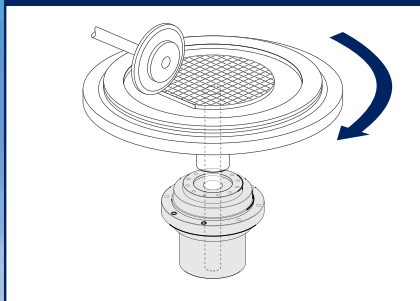
Optical Equipment

Machine Tools

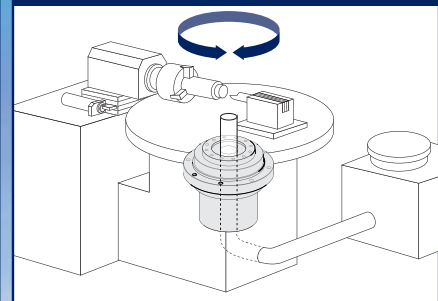
Theta Axis



Wafer Dicing



Precision Machining (Indexing Device)



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Product Features

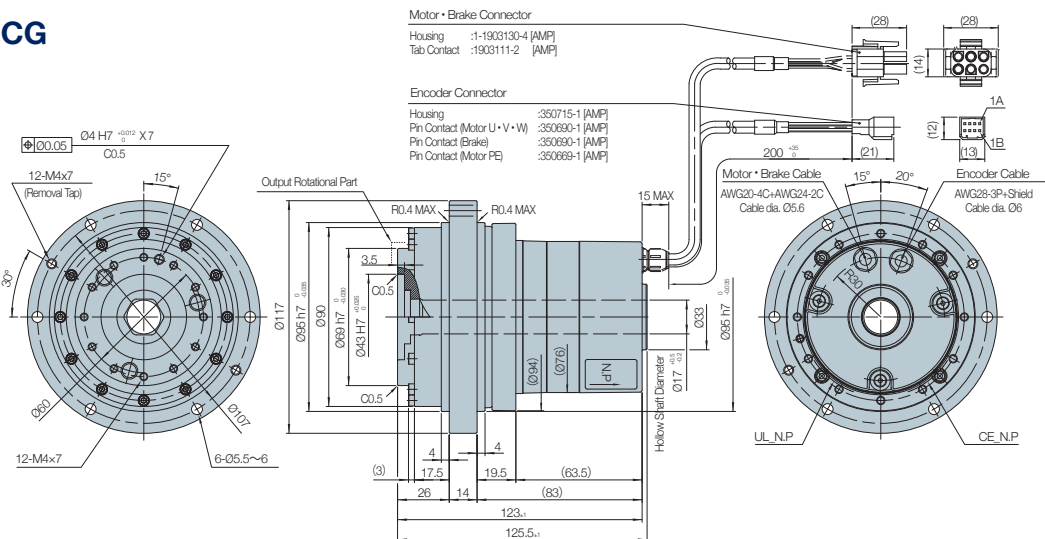
- **Improved output shaft runout accuracy (radial runout & axial runout: less than 0.010mm)**
Improved structure for high precision surface and shaft runout. Ideal for index table application.
- **Output shaft resolution is evenly divisible**
Indexing at 0.01° / 0.001° / 0.0001°
- **A mounting stand is available as an option**

| Size | Gear Ratio | Maximum Torque [Nm] | Maximum Current | Continuous Torque [Nm] | Allowable Continuous Current | Maximum Speed [rpm] | Output Resolution Pulse / Rev | Hollow Shaft Dia. | One-way Positioning Accuracy [arc-sec] | Mass* kg |
|--|------------|---------------------|-----------------|------------------------|------------------------------|---------------------|-------------------------------|-------------------|--|---------------|
| 20A Motor Voltage Rating: 200V | 50:1 | 73 | 6.1 | 21 | 2.1 | 120 | 6,553,600 | 17 | 60 | 2.6 (2.7) |
| | 80:1 | 96 | 5.0 | 35 | 2.1 | 75 | 10,485,760 | 17 | 50 | |
| | 100:1 | 107 | 4.6 | 43 | 2.1 | 60 | 13,107,200 | 17 | 50 | |
| | 120:1 | 113 | 4.1 | 48 | 2.0 | 50 | 15,728,640 | 17 | 50 | |
| | 160:1 | 120 | 3.4 | 48 | 1.7 | 37.5 | 20,971,520 | 17 | 50 | |
| 25A Motor Voltage Rating: 100V | 50:1 | 127 | 15.1 | 34 | 4.7 | 96 | 6,553,600 | 27 | 50 | 3.95 (4.1) |
| | 80:1 | 178 | 13.2 | 57 | 4.7 | 60 | 10,485,760 | 27 | 40 | |
| | 100:1 | 204 | 12.2 | 72 | 4.7 | 48 | 13,107,200 | 27 | 40 | |
| | 120:1 | 217 | 11.0 | 81 | 4.5 | 40 | 15,728,640 | 27 | 40 | |
| | 160:1 | 229 | 9.0 | 81 | 3.7 | 30 | 20,971,520 | 27 | 40 | |
| 25A Motor Voltage Rating: 200V | 50:1 | 127 | 8.7 | 40 | 3.0 | 112 | 6,553,600 | 27 | 50 | 3.95 (4.1) |
| | 80:1 | 178 | 7.6 | 66 | 3.0 | 70 | 10,485,760 | 27 | 40 | |
| | 100:1 | 204 | 7.0 | 81 | 3.0 | 56 | 13,107,200 | 27 | 40 | |
| | 120:1 | 217 | 6.3 | 81 | 2.6 | 46.7 | 15,728,640 | 27 | 40 | |
| | 160:1 | 229 | 5.2 | 81 | 2.1 | 35 | 20,971,520 | 27 | 40 | |
| 32A Motor Voltage Rating: 200V | 50:1 | 281 | 17.7 | 90 | 6.0 | 96 | 6,553,600 | 35 | 40 | 7.7 (8.0) |
| | 80:1 | 395 | 15.4 | 151 | 6.0 | 60 | 10,485,760 | 35 | 30 | |
| | 100:1 | 433 | 13.7 | 178 | 5.7 | 48 | 13,107,200 | 35 | 30 | |
| | 120:1 | 459 | 12.2 | 178 | 5.0 | 40 | 15,728,640 | 35 | 30 | |
| | 160:1 | 484 | 10.0 | 178 | 4.1 | 30 | 20,971,520 | 35 | 30 | |
| 40A (HA-800 -4D/E-200) Motor Voltage Rating: 200V | 50:1 | 333 | 18.0 | 92 | 6.0 | 80 | 6,553,600 | 45 | 40 | 13 (13.80) |
| | 80:1 | 548 | 18.0 | 156 | 6.0 | 50 | 10,485,760 | 45 | 30 | |
| | 100:1 | 686 | 18.0 | 196 | 6.0 | 40 | 13,107,200 | 45 | 30 | |
| | 120:1 | 802 | 17.6 | 235 | 6.0 | 33.3 | 15,728,640 | 45 | 30 | |
| | 160:1 | 841 | 14.3 | 315 | 6.0 | 25 | 20,971,520 | 45 | 30 | |
| 40A (HA-800 -24D/E-200) Motor Voltage Rating: 200V | 50:1 | 523 | 27.2 | 157 | 9.0 | 80 | 6,553,600 | 45 | 40 | 13 (13.80) |
| | 80:1 | 675 | 22.0 | 260 | 9.0 | 50 | 10,485,760 | 45 | 30 | |
| | 100:1 | 738 | 19.6 | 327 | 9.0 | 40 | 13,107,200 | 45 | 30 | |
| | 120:1 | 802 | 18.0 | 382 | 8.8 | 33.3 | 15,728,640 | 45 | 30 | |
| | 160:1 | 841 | 14.7 | 382 | 7.2 | 25 | 20,971,520 | 45 | 30 | |

* Value in parenthesis is with brake.
Output Encoder Resolution = Encoder Resolution x Reduction Ratio.

Outline Dimensions

SHA20A-CG



(Note) The dimension tolerances that are not specified vary depending on the manufacturing method. Please check the confirmation drawing or contact us for dimension tolerances not shown.

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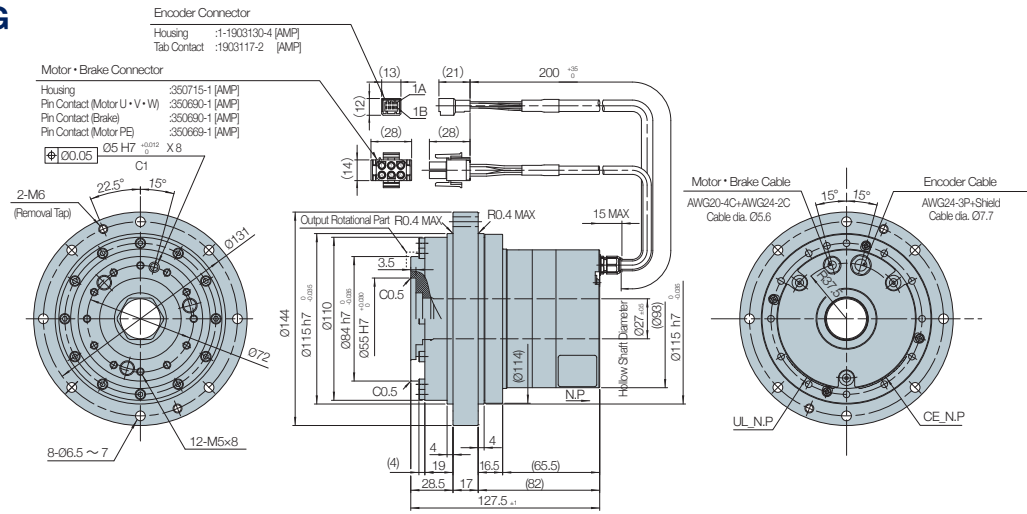
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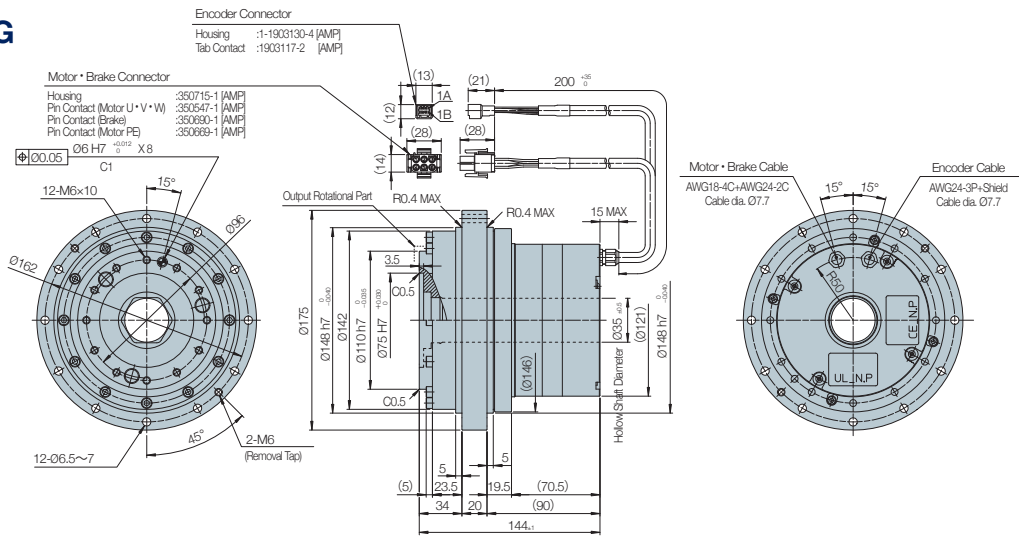
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SHA25A-CG



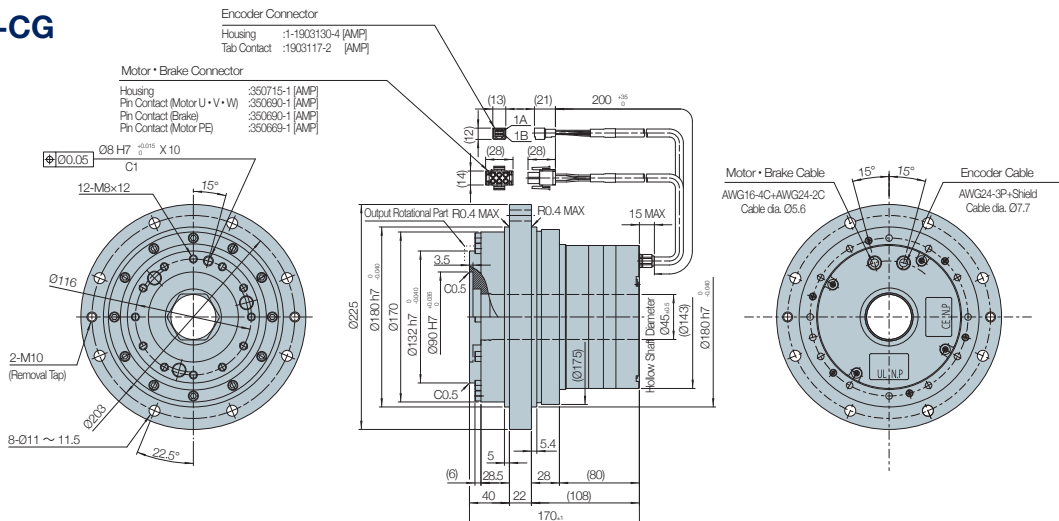
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SHA32A-CG



(Note) The dimension tolerances that are not specified vary depending on the manufacturing method. Please check the confirmation drawing or contact us for dimension tolerances not shown.

SHA40A-CG



(Note) The dimension tolerances that are not specified vary depending on the manufacturing method. Please check the confirmation drawing or contact us for dimension tolerances not shown.

The SHA-CG Series actuators is compact, delivers high torque and features a hollow shaft that allows design versatility in demanding applications.

SHA-CG Series

Model Options

■ Gearhead

| | |
|----------|--|
| Standard | Harmonic Drive® Gear - CSG Series 50:1 ~ 160:1 |
|----------|--|

■ Cable Orientation

| | |
|----------|-----------|
| Standard | Rear exit |
| Option | Side exit |

■ Encoder

| | |
|----------|---|
| Standard | Magnetic Absolute Encoder (17 bit) Multi-Turn (16 bit) (Nikon -A Format) |
| Option | Absolute Encoder: Panasonic format, Mitsubishi format, Rise-C format Incremental Encoder |

■ Brake

| | |
|----------|---|
| Standard | No Brake |
| Option | Motor Brake (Integrated without dimension change) |

■ Servomotor

| | |
|----------|------------------------------|
| Standard | 200V AC 100V AC (size 25) |
| Option | 100V AC 72V DC, 48V DC |

■ Environmental

| | |
|----------|---|
| Standard | IP 54 Temperature Range 0°C - 40°C UL, CE marking, RoHS |
| Option | IP 65 |




■ Output Bearing

| | |
|----------|--|
| Standard | Cross Roller Bearing |
| Option | Larger size bearing for higher load capacities |

■ Option

| |
|---------------------------|
| Origin & End Limit Sensor |
| Mounting Stand |

Driver and Extension Cables

| General Purpose I/O Commands Control Modes (Position / Velocity / Current) | Size 20 | Size 25 | Size 32 | Size 40 |
|---|------------------|--------------------------------------|--------------------------|---|
|   MECHATROLINK-IICommands | REL-230-18 | REL-230-18 REL-230-36 | REL-230-18 REL-230-36 | REL-230-36 REL-230-40 |
|  CC-Link Commands | HA-800B-3D/E-200 | HA-800B-6D/E-100 HA-800B-3D/E-200 | HA-800B-6D/E-200 | HA-800B-6D/E-200 (HA-800B-24D/E-200) |
| | HA-800C-3D/E-200 | HA-800C-6D/E-100 HA-800C-3D/E-200 | HA-800C-6D/E-200 | HA-800C-6D/E-200 (HA-800C-24D/E-200) |

