

# 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.



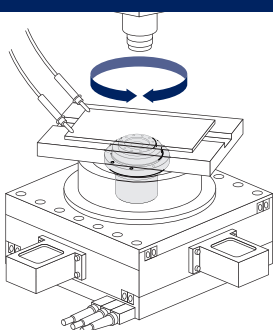
#### Application Examples

Measurement, Analytical and Test Systems

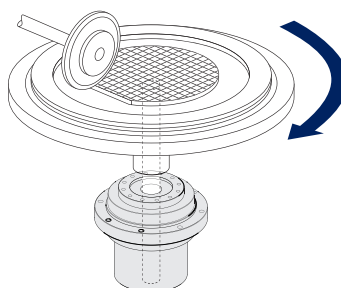
Optical Equipment

Machine Tools

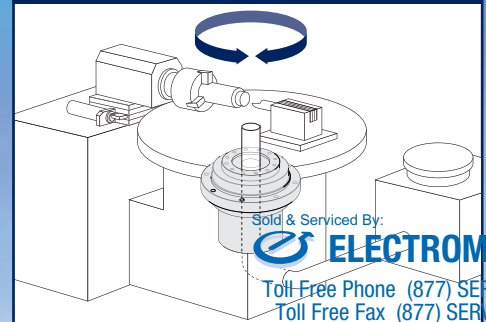
#### Theta Axis



#### Wafer Dicing



#### Precision Machining (Indexing Device)



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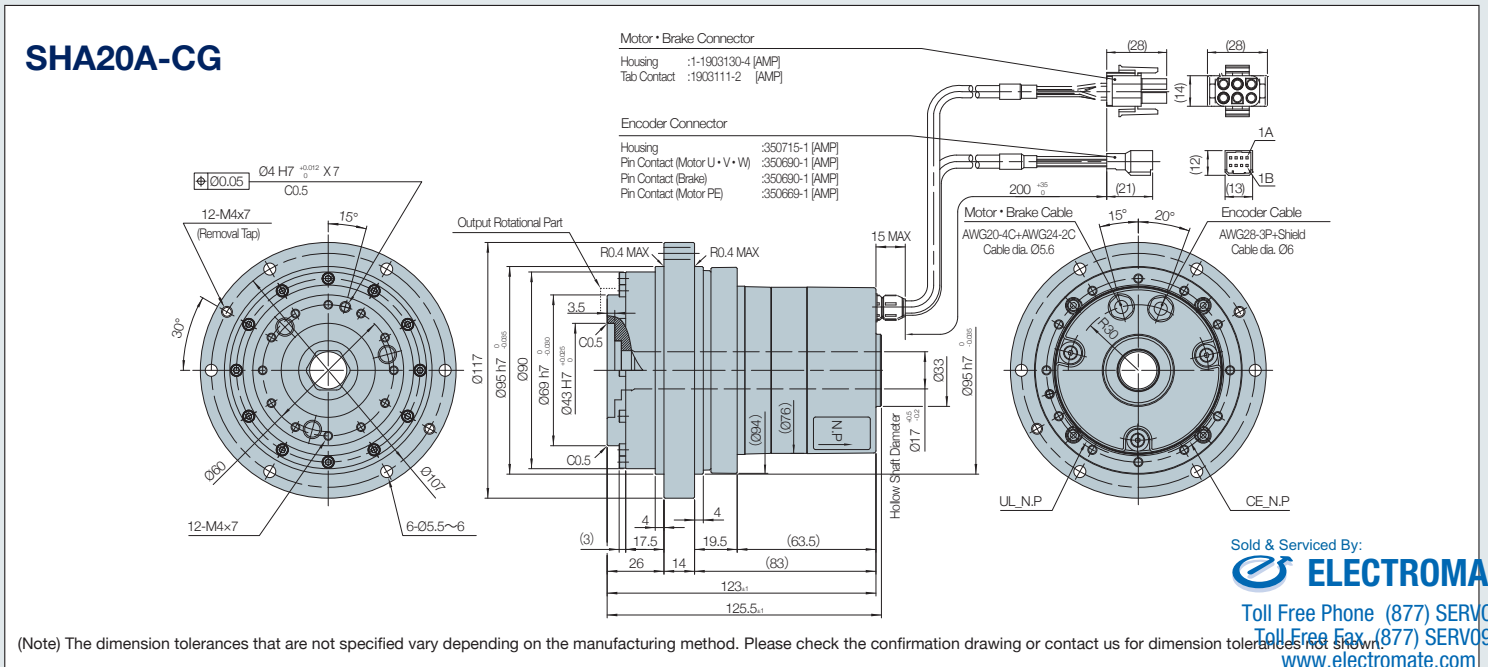
## Product Features

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

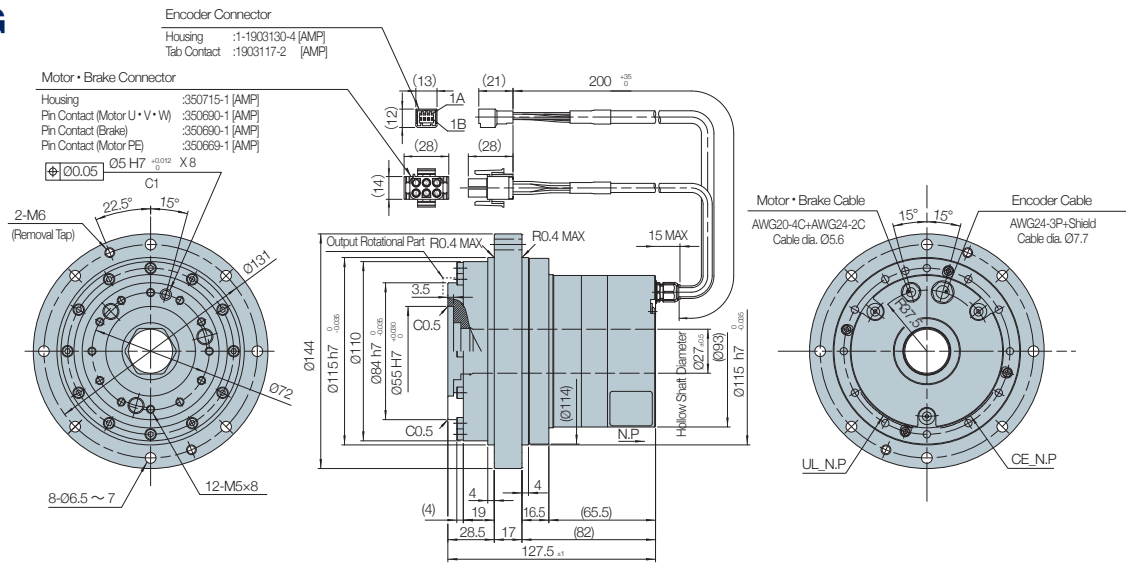
Size	Gear Ratio	Maximum Torque [Nm]	Maximum Current	Continuous Torque [Nm]	Allowable Continuous Current	Maximum Speed [rpm]	Output Resolution Pulse / Rev	Hollow Shaft Dia.	One-way Positioning Accuracy [arc-sec]	Motor Voltage	Mass* kg
20A	50:1	73	6.1	21	2.1	120	6,553,600	17	60	200V	2.6 (2.7)
	80:1	96	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	50:1	127	15.1	34	4.7	96	6,553,600	27	50	100V	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	50:1	127	8.7	40	3.0	112	6,553,600	27	50	200V	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	50:1	281	17.7	90	6.0	96	6,553,600	35	40	200V	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	50:1	523	27.2	157	9.0	80	6,553,600	45	40	200V	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

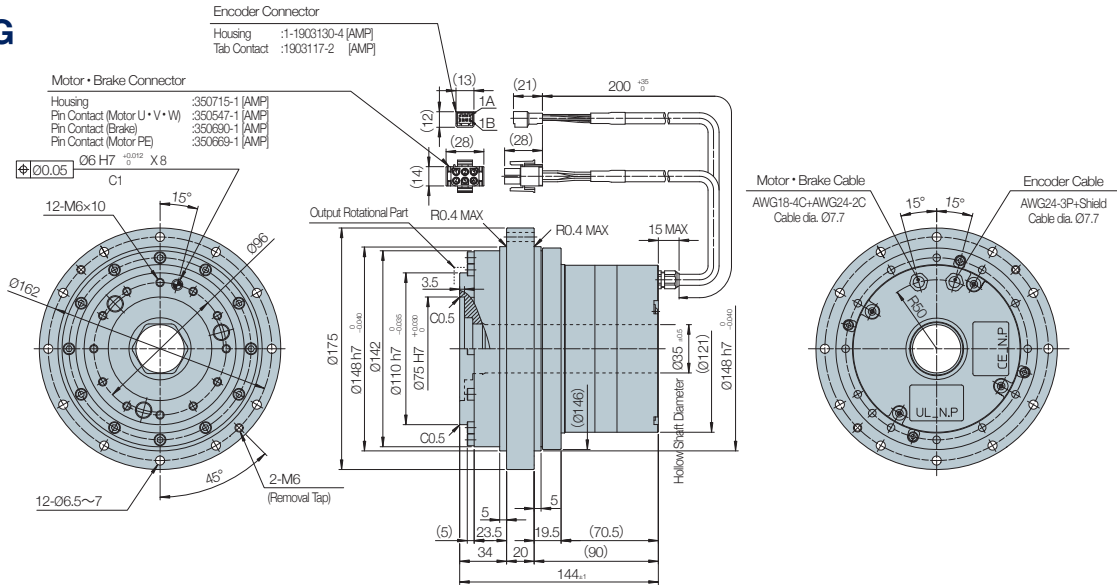


# SHA25A-CG



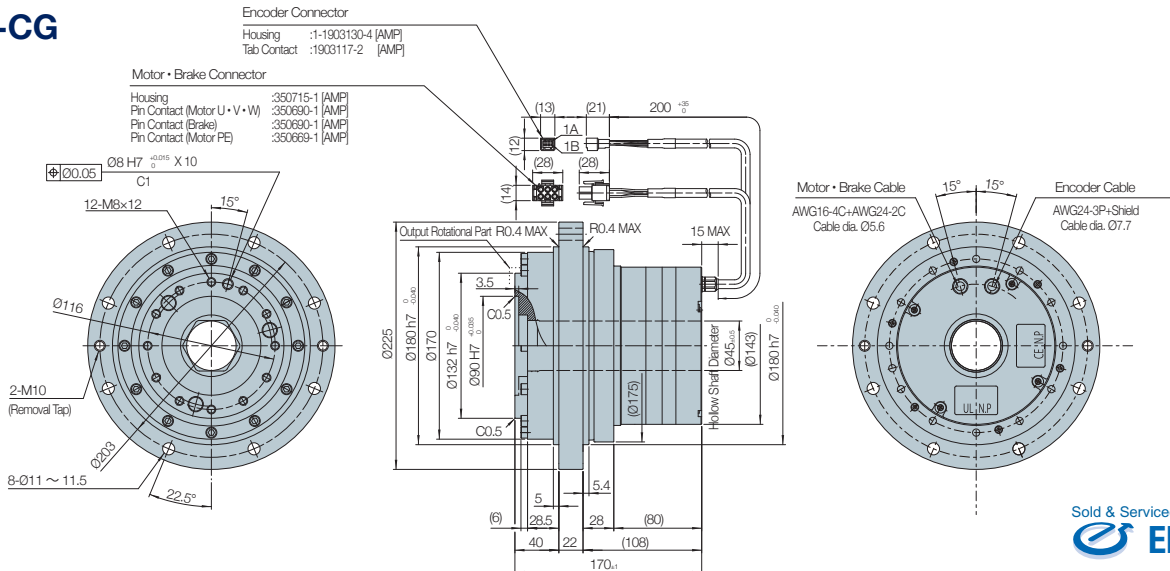
(Note) The dimension tolerances that are not specified vary depending on the manufacturing method. Please check the confirmation drawing or contact us for dimension tolerances not shown.

# 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

<b>Standard</b>	Harmonic Drive® Gear - CSG Series 50:1 ~ 160:1
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#### ■ Cable Orientation

<b>Standard</b>	Rear exit
<b>Option</b>	Side exit

#### ■ Encoder

<b>Standard</b>	Magnetic Absolute Encoder (17 bit) Multi-Turn (16 bit) (Nikon -A Format)
<b>Option</b>	Absolute Encoder: Panasonic format, Mitsubishi format, BiSS C format Incremental Encoder

#### ■ Brake

<b>Standard</b>	No Brake
<b>Option</b>	Motor Brake (Integrated without dimension change)

#### ■ Servomotor

<b>Standard</b>	200V AC
<b>Option</b>	100V AC 72V DC, 48V DC

#### ■ Environmental

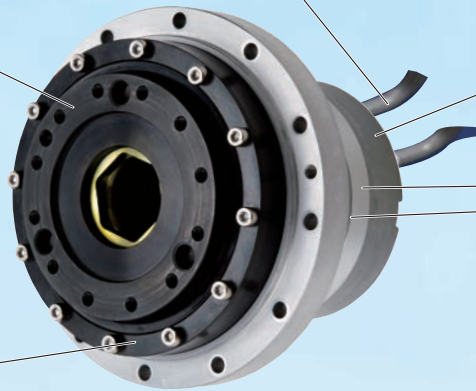
<b>Standard</b>	IP 54 Temperature Range 0°C - 40°C UL, CE marking, RoHS
<b>Option</b>	IP 65

#### ■ Output Bearing

<b>Standard</b>	Cross Roller Bearing
<b>Option</b>	Larger size bearing for higher load capacities

#### ■ Option

Origin & End Limit Sensor
Mounting Stand



### Recommended Drivers

	Size 20	Size 25	Size 32	Size 40
General Purpose I/O Commands Control Modes (Position/Velocity/Current) / <b>EtherCAT</b>	REL-230-18	REL-230-18 REL-230-36	REL-230-18 REL-230-36	REL-230-36 REL-230-40
<b>MECHATROLINK</b> MECHATROLINK-IICommands	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)
<b>CC-Link</b> CC-Link Commands	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)

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