

HarmonicDrive® Flattened-Shape Hollow-Structured AC Servo Actuator **SHA SERIES, SG TYPE**



Size 45 newly added to our line-up of the SHA series, SG type

Size 45 has been newly added to the SHA series of type SG, one of the line-ups of the AC servo actuators that feature compact, flattened hollow structure, offering a wider variety of options to a compact.

The model has performance and shape that supplement the gap between the existing Models 40 and 58 to allow selection of a more suitable maximum torque and moment stiffness.

Ordering Code

SHA 45 A 101 SG - D 16 A 200 - 10 S17b A - C □ - □

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮

①	Model name	AC servo actuator SHA series
②	Size	45
③	Version symbol	A
④	Reduction ratio	51 : 1/51 81 : 1/81 101 : 1/101 121 : 1/121 161 : 1/161
⑤	Reduction ratio type	HarmonicDrive® SHG series
⑥	Motor version symbol	D: Size 45
⑦	Motor size	16: Size 45
⑧	Brake	A: Without brake B: With brake

⑨	Applied servo driver input voltage	200: 200V
⑩	Encoder format	10: Compatible with A format Transmission rate: 2.5 Mbps, one-to-one connection
⑪	Encoder type and resolution	S17b:17-bit absolute encoder 131072 pulse/revolution
⑫	Encoder phase angle	A: 0 degrees
⑬	Connector specifications	C: Standard connectors included N: No connectors included
⑭	Options	L: Near origin & end limit sensors attached Y: Cables can be escaped from the side
⑮	Special specifications	No entry: Standard product SP: Special-specification product

Actuator Specifications

Item		Type	SHA45A				
			51	81	101	121	161
Combined driver			HA-800□-24D/E-200				
Limit for peak torque ^{*1}	N·m		650	918	982	1070	1147
	kgf·m		66.3	93.6	100	109	117
Allowable continuous torque ^{*1,2}	N·m		174	290	363	437	523
	kgf·m		17.7	29.6	37.0	44.6	53.3
Max. rotational speed ^{*1}	r/min		74.5	46.9	37.6	31.4	23.6
Torque constant ^{*1}	N·m/A		25	41	51	61	81
	kgf·m/A		2.6	4.1	5.2	6.2	8.2
Limit for peak current ^{*1}	A		36.5	29.9	25.9	24.5	19.3
Allowable continuous current ^{*1,2}	A		10	10	10	10	9.2
Inductive voltage constant ^{*3}	V/(r/min)		2.9	4.6	5.7	6.8	9.1
Phase resistance (20°C)	Ω		0.19				
Phase inductance	mH		1.2				
Moment of Inertia (without brake)	GD ² /4	kg·m ²	6.8	17	27	38	68
	J	kgf·cm·s ²	69	175	272	390	690
Moment of Inertia (with brake)	GD ² /4	kg·m ²	7.9	20	31	45	79
	J	kgf·cm·s ²	81	204	316	454	804
Reduction ratio			1:51	1:81	1:101	1:121	1:161
Allowable moment load	N·m		1127				
	kgf·m		115				
Moment stiffness	N·m/rad		257×10 ⁴				
	kgf·m/arc-min		76.3				
One-way positioning accuracy	Sec.		50	40	40	40	40
Encoder type			Absolute encoder				
Encoder resolution	Single revolution detector		2 ¹⁷ (131072)				
	Multi revolution detector		2 ¹⁶ (65536)				
Output shaft resolution	Pulses per revolution		6684672	10616832	13238272	15859712	21102592
Mass (without brake)	kg		12.4				
Mass (with brake)	kg		13.2				
Ambient environment specification			Operating temperature: 0 to 40°C, storage temperature: -20 to 60°C Operating/storage humidity: 20 to 80% RH (non-condensing) Vibration resistance: 25 m/s ² (frequency: 10 to 400 Hz), impact resistance: 300 m/s ² ^{*5} No dust, metal powder, corrosive gases, flammable gases, oil mist, or other similar materials. For indoor use. Exposure to direct sunlight must be avoided. Altitude: 1000 m or less				
Motor insulation			Insulation resistance: 100 MΩ or higher (500 VDC) Dielectric strength voltage: 1500 VAC/min Insulation class: A				
Mounting direction			Can be installed in any direction.				
Protective structure			Totally enclosed self-cooling type (IP54)				

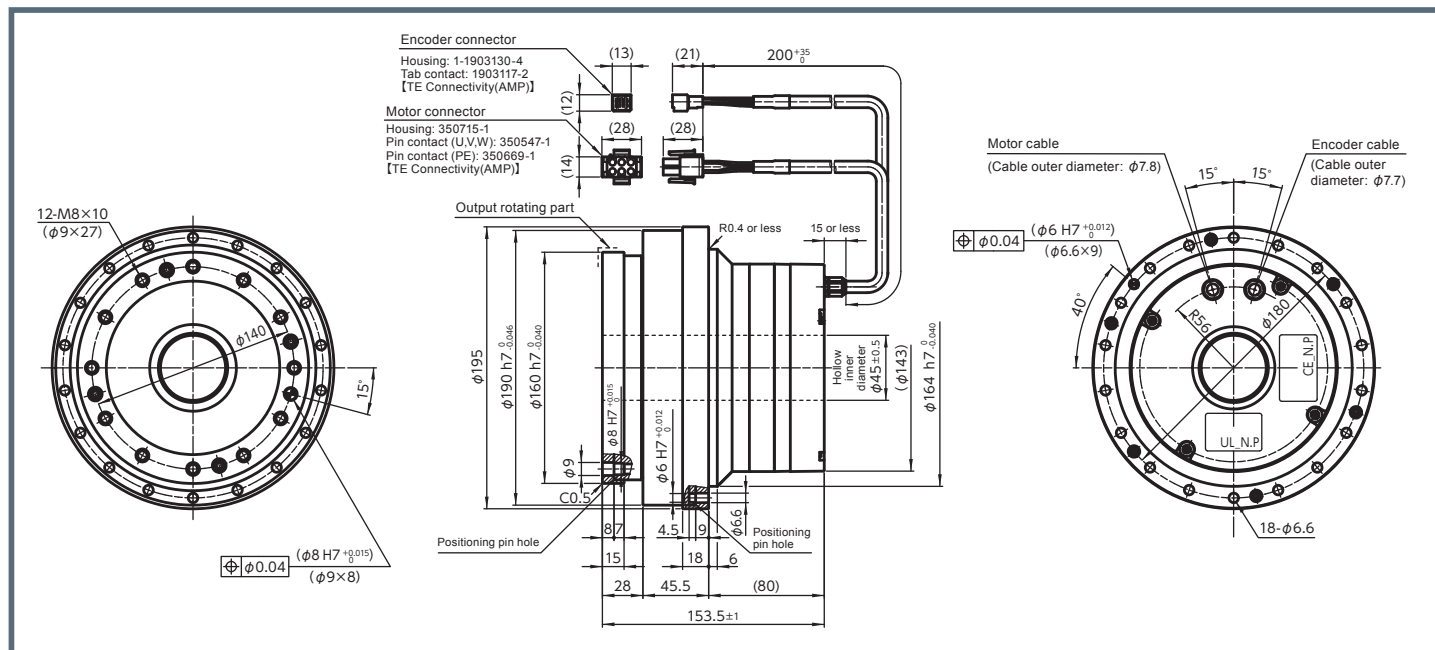
The values in the table above show typical values at the output shaft.

*1 Typical characteristics when used with our recommended sinusoidal driver. *2 This is the value at a saturated temperature when installed on the aluminum heatsink of 500x500x25 [mm].

*3 This is the value of the phase EMF constant multiplied by 3. *4 The detection range of the multi revolution detector is from -32768 to 32767.

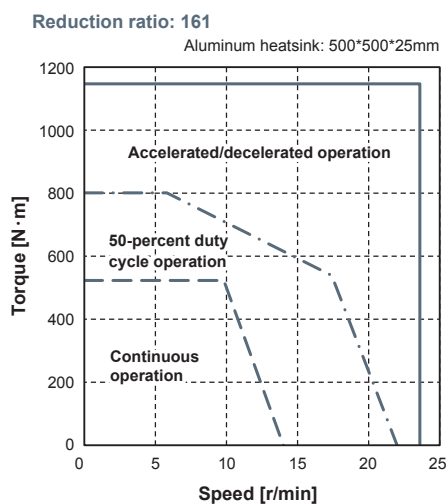
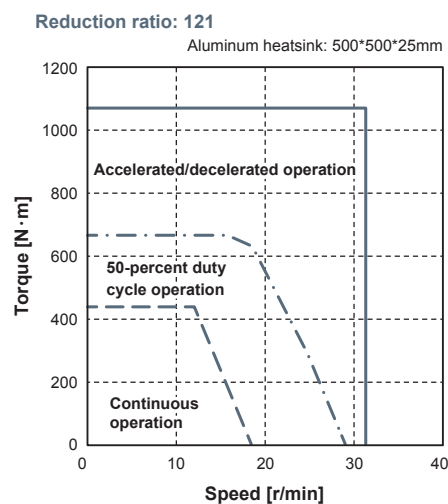
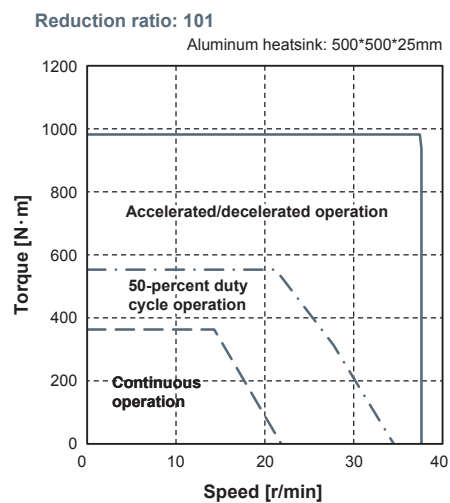
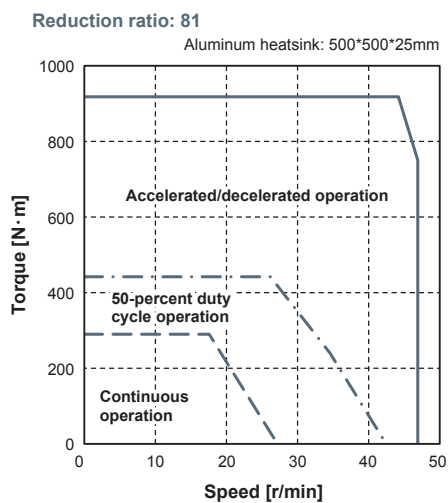
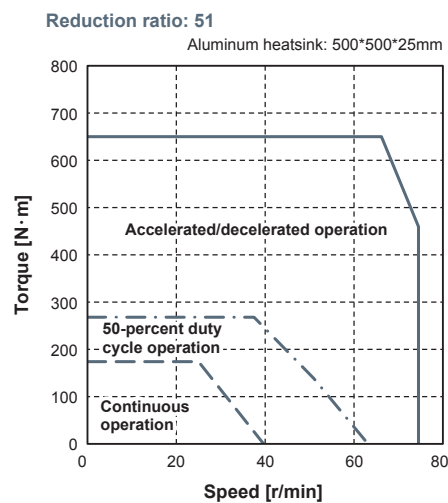
*5 This value is not ensured if vibrations or shocks are applied continuously for hours.

External Dimensions



Operable range

SHA45A-SG



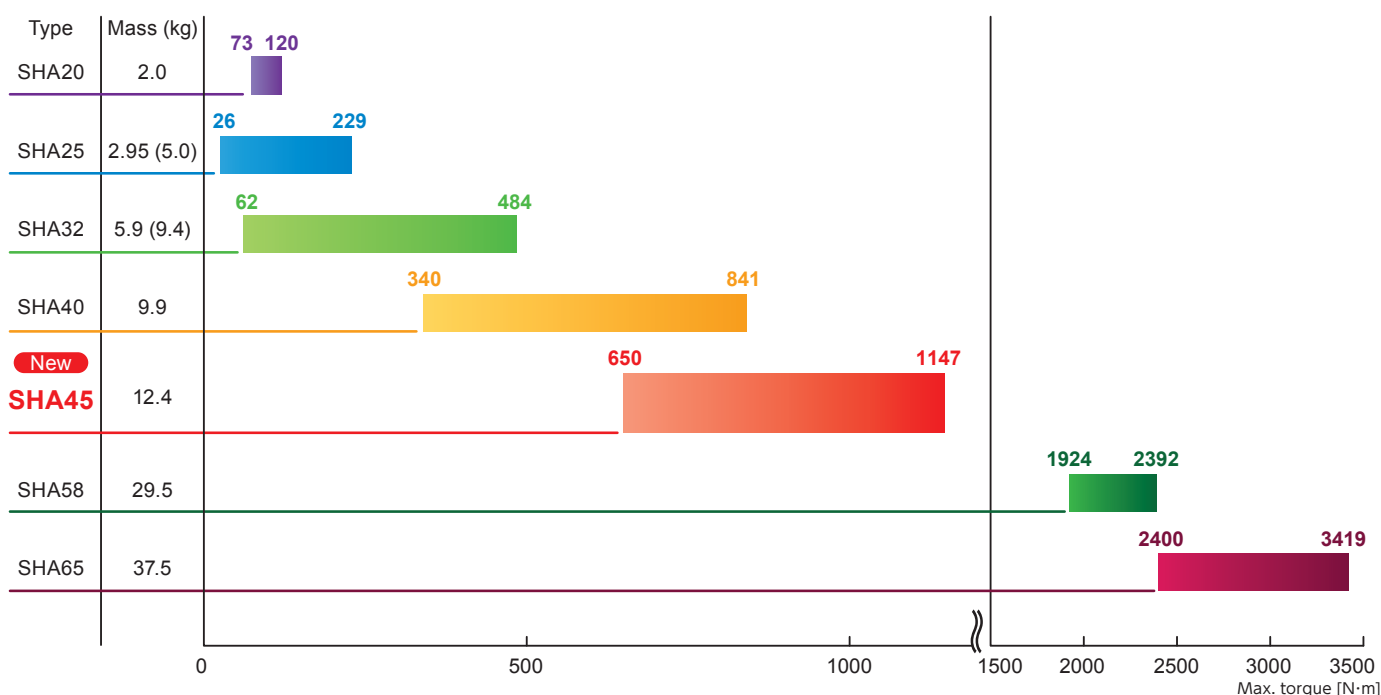
Drivers and Intermediate Cables

Drivers used for SHA45A	
General I/O command type Control modes (for position, speed, and current*) supported *A control mode which controls motor currents	HA - 800A - 24D/E - 200
 MECHATROLINK MECHATROLINK-II supported	HA - 800B - 24D/E - 200
 CC-Link CC-Link supported	HA - 800C - 24D/E - 200

Intermediate cables used for SHA45A	
Motor wire	EWD - MB ** - A06 - TMC
Encoder wire	EWD - S ** - A08 - 3M14

The cable length is indicated by the character "**" in the intermediate-cable product codes. Three length types are offered: 0.3-, 0.5-, and 10-meter (the codes are "03", "05", "10", respectively).

Maximum Torque of the SHA Series



*The figures shown in parentheses indicate the masses when SHAs are combined with the planetary reduction drive HPF series.

Please contact our sales department with any questions.

Head Office

Ichigo Omori Building, 6-25-3 Minami-Oi,
Shinagawa-ku, Tokyo 140-0013 JAPAN
Phone: +81-3-5471-7800 / FAX: +81-3-5471-7811

Tokyo Office

Ichigo Omori Building, 6-25-3 Minami-Oi,
Shinagawa-ku, Tokyo 140-0013 JAPAN
Phone: +81-3-5471-7830 / FAX: +81-3-5471-7836

Tokyo Office, Kitakanto Team

Ichigo Omori Building, 6-25-3 Minami-Oi,
Shinagawa-ku, Tokyo 140-0013 JAPAN
Phone: +81-3-6410-8485 / FAX: +81-3-6410-8486

Koshin Office

5103-1 Hotakaariake, Azumino-shi, Nagano
399-8301 JAPAN
Phone: +81-263-81-5940 / FAX: +81-263-50-5010

Chubu Office

TM21-2F, 21 Terugaoka, Meito-ku, Nagoya-shi,
Aichi 465-0042 JAPAN
Phone: +81-52-773-7451 / FAX: +81-52-773-7462

Kansai Office

Shin-Osaka Ueno Toyo Building 3F, 7-4-17 Nishi-nakajima,
Yodogawa-ku, Osaka-shi, Osaka 532-0011 JAPAN
Phone: +81-6-6885-5720 / FAX: +81-6-6885-5725

Kyushu Office

NMF Hakata-ekimae Building 7F, 1-15-20 Hakata-ekimae,
Hakata-ku, Fukuoka-shi, Fukuoka 812-0011 JAPAN
Phone: +81-92-451-7208 / FAX: +81-92-481-2493

Overseas Division

5103-1 Hotakaariake, Azumino-shi, Nagano
399-8301 JAPAN
Phone: +81-263-81-5950 / FAX: +81-263-50-5010

Hataka Plant

1856-1 Hotakamaki, Azumino-shi, Nagano
399-8305 JAPAN
Phone: +81-263-83-6935 / FAX: +81-263-83-6901



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