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ENGINEERING SPECIFICATION

Specifications of the flat and hollow shaft servo actuator

Low voltage type

SHA25 SHA32 (CG type)

APPD	CHKD	BY
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		CLASS	SPEC No.
			B2T1284
REV	DESCRIPTION	SHEET No.	1 OF 6



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1. Application

This specification applies to the following flat and hollow shaft servo actuator designed for low voltage power supply, DC20V to 90V.

SHA25A***CG-B09*LV-10S17bA-*

SHA32A***CG-B12*LV-10S17bA-*

2. Main Specifications

The main specifications for SHA25A are shown in Table 1 and SHA32 are shown in Table 2.

Table 1 Specifications of SHA25

Item	Model	SHA25A				
		50	80	100	120	160
Max. torque <small>Note 3</small>	Nm	98	161	201	217	229
Allowable continuous torque <small>Note 2,3</small>	Nm	27	45	57	68	81
Max. rotational speed <small>Note 4</small>	r/min	77	48	38	32	24
Torque constant	Nm/A	5.2	8.4	10.5	12.6	16.8
Max. current <small>Note 3</small>	Arms	25.5			23.2	19.0
Allowable continuous current <small>Note 2,3</small>	Arms	8.5				7.9
EMF constant	V/(r/min)	0.59	0.94	1.17	1.41	1.88
Phase resistance (at 20°C)	Ω	0.095				
Phase inductance	mH	0.23				
Moment of Inertia (without brake)	kgm ²	0.5	1.3	2.0	2.9	5.1
Moment of Inertia (with brake)	kgm ²	0.62	1.6	2.5	3.6	6.3
Reduction ratio	—	1:50	1:80	1:100	1:120	1:160
Permissible moment load	Nm	258				
Moment stiffness	Nm/rad	39.2×10 ⁴				
Uni-directional positional accuracy	sec	50	40	40	40	40
Repeatability	sec	±5				
Revease positional accuracy	sec	60	25	25	25	25
Encoder type	—	Magnetic absolute encoder				
Single motor revolution Encoder resolution	—	2 ¹⁷ (131072)				
Motor multi revolution counter	—	2 ¹⁶ (65536)				
Output resolution	Pulse/rev	6553600	10485760	13107200	15728640	20971520
Mass (without brake)	kg	4.1				
Mass (with brake)	kg	4.3				
Motor insulation	—	Insulation resistance : 100MΩ MIN (DC 500V) Dielectric strength : 1200V/1 min. Insulation class : E				

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- Note1) The table shows typical output values of actuator.
- Note2) Value after temperature rise and saturation when the 350x350x18 [mm] aluminum radiation plate is installed.
- Note3) When combined with a DEP-090-36 (by Copley).
- Note4) When DC48V is supplied into servo-driver.

Table 2 Specifications of SHA32

Item	Model	SHA32A				
		50	80	100	120	160
Max. torque <small>Note 3</small>	Nm	143	235	295	354	473
Allowable continuous torque <small>Note 2,3</small>	Nm	35	60	76	92	124
Max. rotational speed <small>Note 4</small>	r/min	51	32	25	21	16
Torque constant	Nm/A	7.8	12.6	15.8	19.0	25.3
Max. current <small>Note 3</small>	Arms	25.5				
Allowable continuous current <small>Note 2,3</small>	Arms	8.5				
EMF constant	V/(r/min)	0.88	1.42	1.77	2.1	2.8
Phase resistance (at 20°C)	Ω	0.056				
Phase inductance	mH	0.2				
Moment of Inertia (without brake)	kgm ²	1.7	4.3	6.7	9.7	17
Moment of Inertia (with brake)	kgm ²	2.0	5.1	7.9	11	20
Reduction ratio	—	1:50	1:80	1:100	1:120	1:160
Permissible moment load	Nm	580				
Moment stiffness	Nm/rad	100×10 ⁴				
Uni-directional positional accuracy	sec	40	30	30	30	30
Repeatability	sec	±4				
Revease positional accuracy	sec	60	25	25	25	25
Encoder type	—	Magnetic absolute encoder				
Single motor revolution Encoder resolution	—	2 ¹⁷ (131072)				
Motor multi revolution counter	—	2 ¹⁶ (65536)				
Output resolution	Pulse/rev	6553600	10485760	13107200	15728640	20971520
Mass (without brake)	kg	7.7				
Mass (with brake)	kg	8.0				
Motor insulation	—	Insulation resistance : 100MΩ MIN (DC 500V) Dielectric strength : 1200V/1min, Insulation class : E				

- Note1) The table shows typical output values of actuator.
- Note2) Value after temperature rise and saturation when the 400x400x20 [mm] aluminum radiation plate is installed.
- Note3) When combined with a DEP-090-36 (by Copley).
- Note4) When DC48V is supplied into servo-driver.

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3. Operable Range

Please refer operable range of each figures for different gear ratio at the under the following conditions. Figure1 show SHA25A and Figure2 show SHA32A for each gear ratio. For definitions please refer to the SHA technical documentation.

Conditions: DEP-090-36 Copley driver with DC48V input voltage.

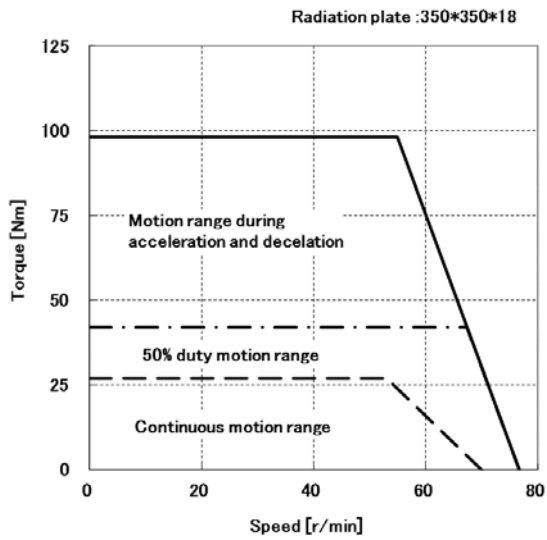


Fig.1-1 SHA25A50

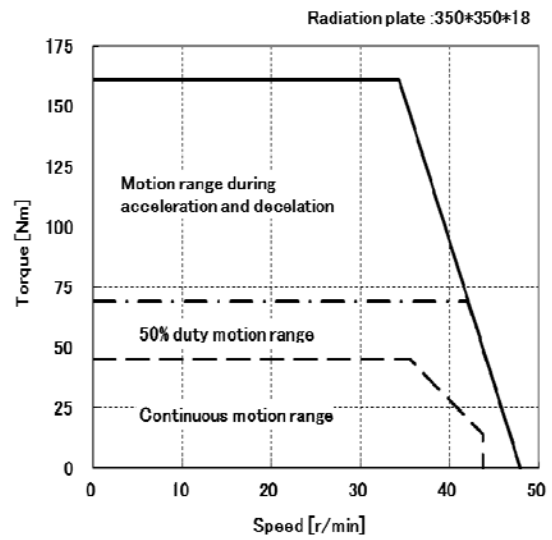


Fig.1-2 SHA25A80

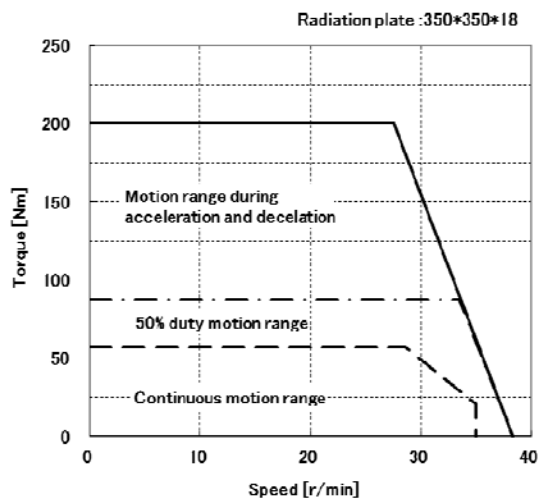


Fig.1-3 SHA25A100

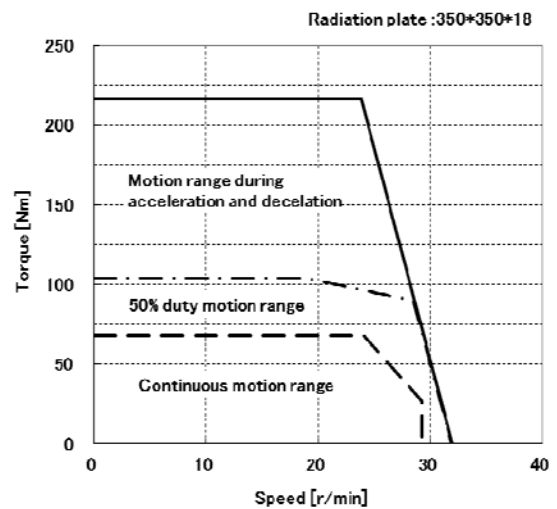
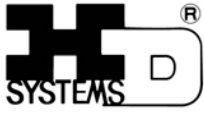


Fig.1-4 SHA25A120

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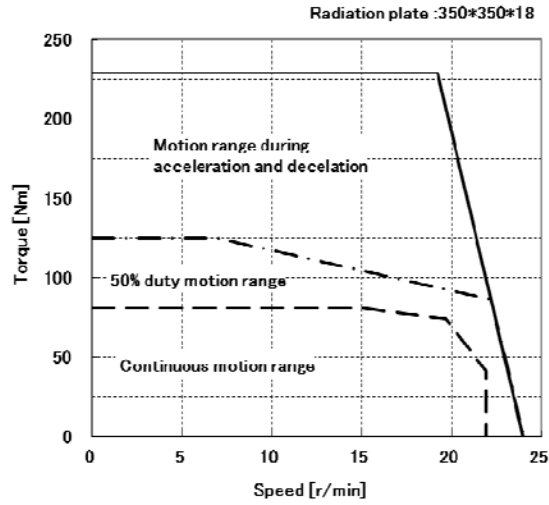


Fig.1-5 SHA25A160

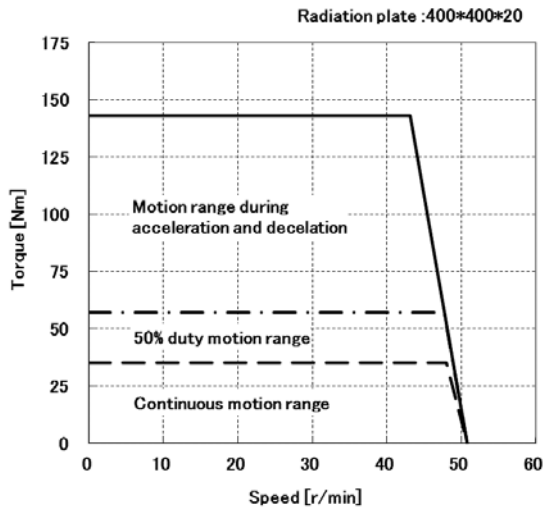


Fig.2-1 SHA32A50

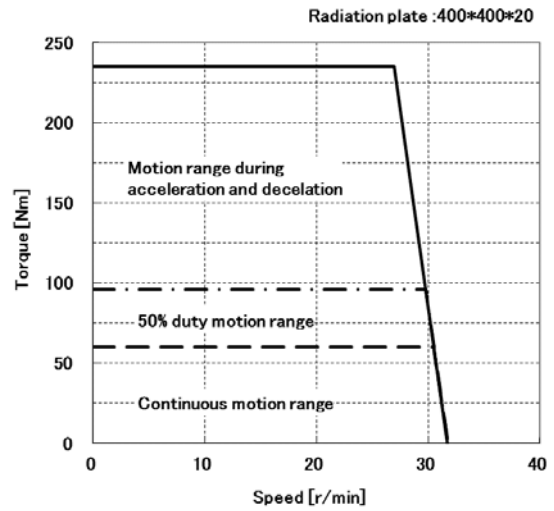
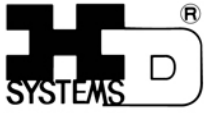


Fig.2-2 SHA32A80

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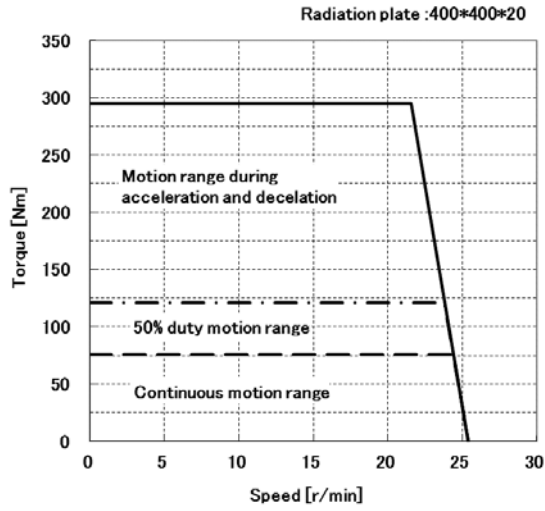


Fig.2-3 SHA32A100

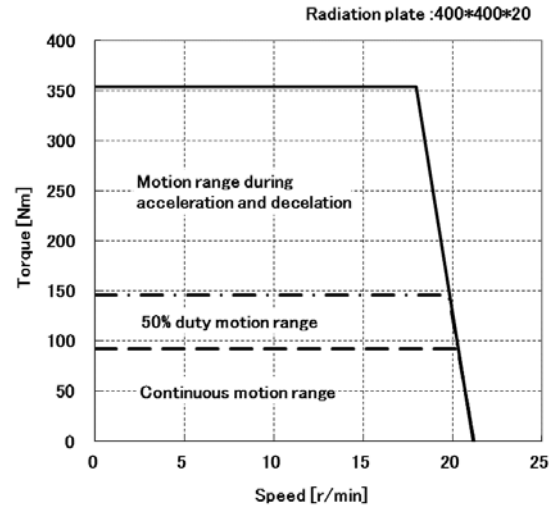


Fig.2-4 SHA32A120

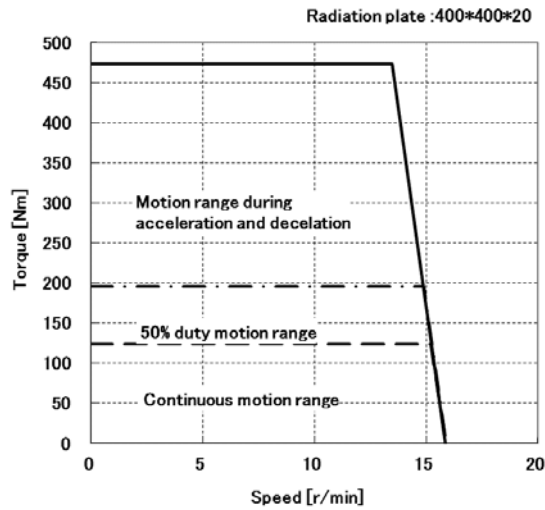


Fig.2-5 SHA32A160

4. Others

Please refer to the SHA technical documentation for further information.

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Appendix

1. Comparison of SHA25_CG type Operable range – Low voltage winding type VS. 100V and 200V winding –

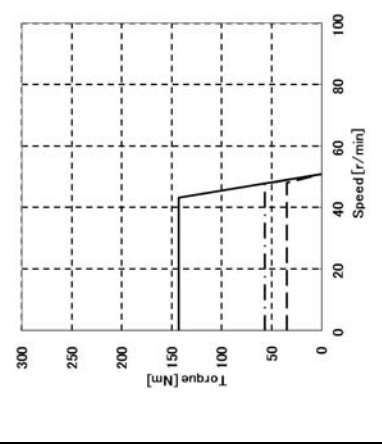
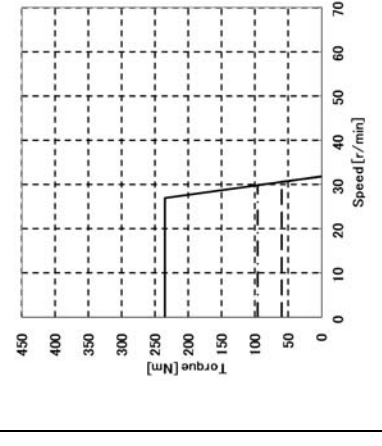
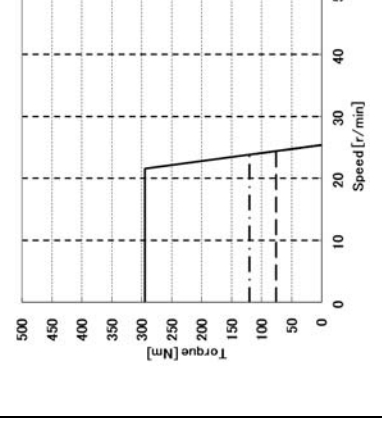
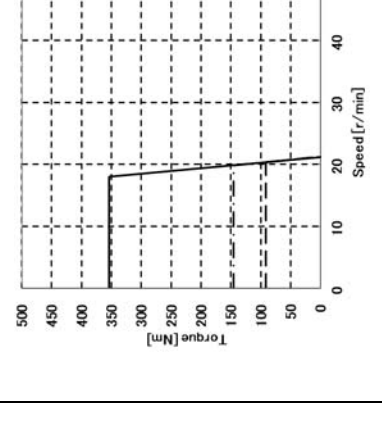
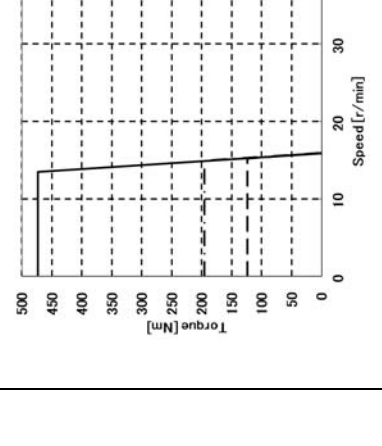
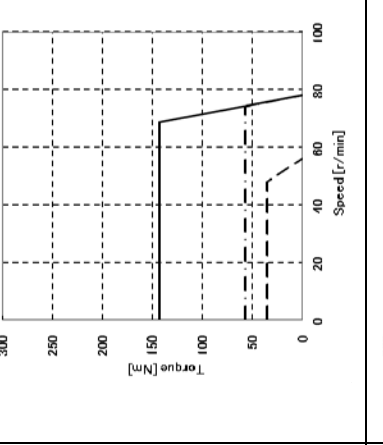
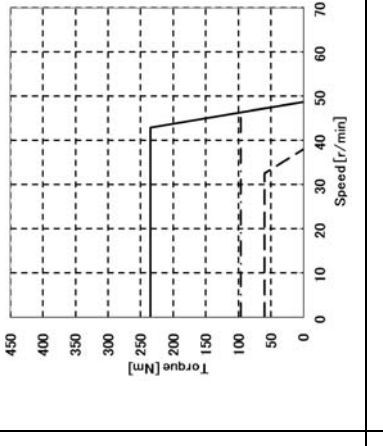
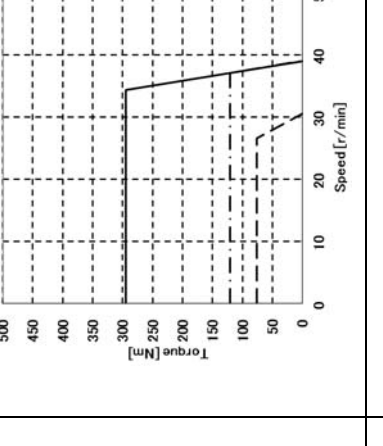
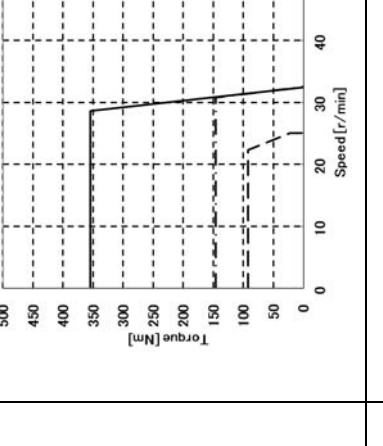
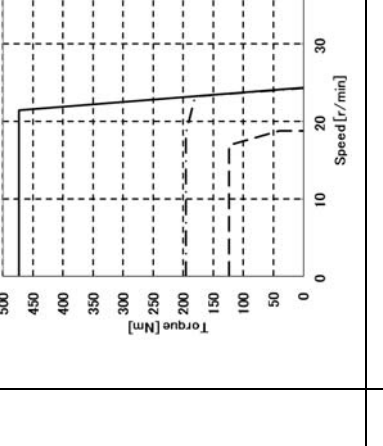
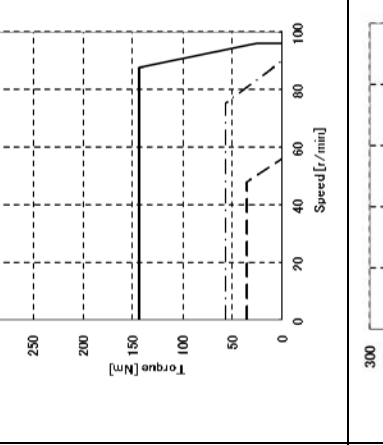
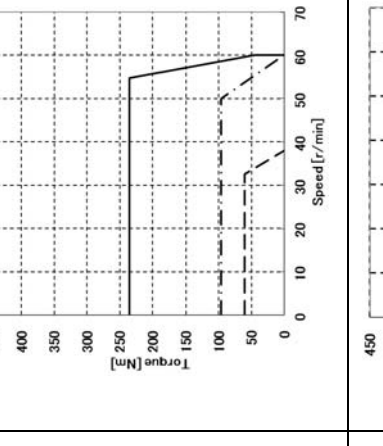
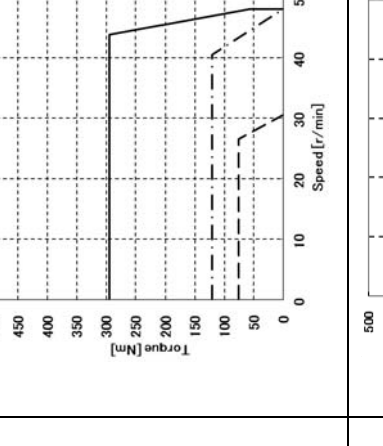
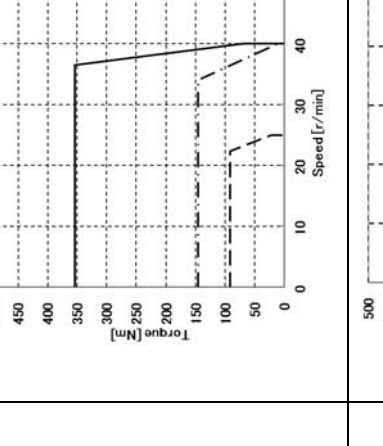
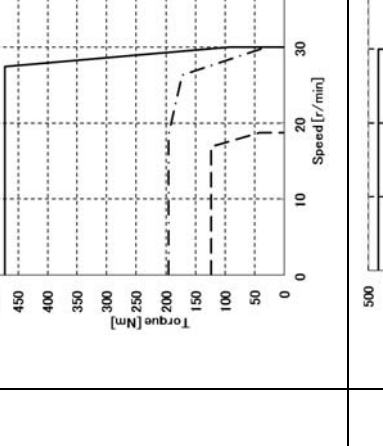
— : Motion range during acceleration and deceleration - - - : 50% duty motion range . . . : Continuous motion range Radiation plate: 350*350*18

Winding	Input (V)	Gear ratio				
		1/50	1/80	1/100	1/120	1/160
Low Voltage	DC48					
	DC72					
AC100	DC90					
	AC100					
AC200	DC200					
	AC200					

Appendix

2. Comparison of SHA32_CG type Operable range – Low voltage winding type V.S. 200V winding –

— : Motion range during acceleration and deceleration - - - : 50% duty motion range - - - - : Continuous motion range Radiation plate: 400*400*20

Winding	Input (V)	Gear ratio				
		1/50	1/80	1/100	1/120	1/160
Low Voltage	DC48					
	DC72					
	DC90					
AC200		