

Servo Systems

Since 1915 Yaskawa have been at the forefront of the automation and motion control industry. So influential have the Yaskawa R&D laboratories been that they first coined the very term “Mechatronics”. Yaskawa is the world’s largest manufacturer of AC servo drives with shipments now exceed 4 million units.

Yaskawa are ISO9000 registered and produce systems to UL, CE and TUV standards. IAS is proud to be part of the worldwide sales and distribution network for servo products.

- 13 bit or higher encoder as standard
- Auto-tuning
- SigmaWin+ software setup tool with help database and tuning oscilloscope
- Motor enclosures to IP55 or higher
- ISO9000 manufacture
- UL, cUL, CE and TUV compliance
- A wide range of motor types to suit any inertia load
- Direct drive and linear motor types
- Braked motors available
- Electronic torque overload



Servo Motors

SGMAH super high power rate series

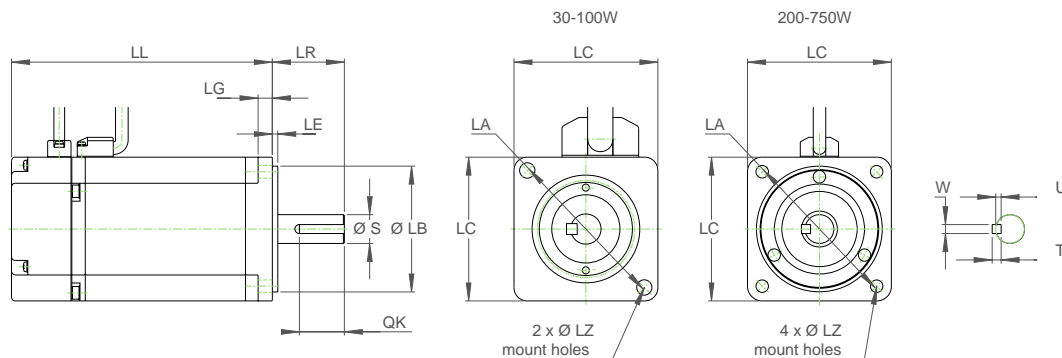
The Yaskawa SGMAH motors have a wide speed range, high inertia ratio and an amazingly high output from such a small physical size. This makes them ideal for demanding, high-speed applications. Typical applications include electrical printed circuit board machines, food processing and packaging machines, general robotics and material handling machines.

Performance

		A3A	A5A	01A	02A	04A	08A
Rated Output	W	30	50	100	200	400	750
Rated Torque	N.m	0.0955	0.159	0.318	0.637	1.27	2.39
Peak Torque	N.m	0.286	0.477	0.955	1.91	3.82	7.16
Rated Speed	min ⁻¹	3000					
Max Speed	min ⁻¹	5000					
Moment of Inertia	kg.m ² x10 ⁻⁴	0.0166	0.022	0.0364	0.106	0.173	0.672
Max inertia ratio		30				20	
Rated power rate	kW/s	5.49	11.5	27.8	38.2	93.7	84.8

Standard types have an IP55 enclosure and 4x2048ppr encoder. Options include 16384ppr and absolute encoders, shaft seals, a variety of keyways, 100VAC, and electromagnetic brake. 100, 400 and 750W systems are normal stock items for IAS.

Dimensions



SGMAH	LL	LC	LR	LA	LZ	LG	LB	LE	S	QK	W	T	U	Mass (kg)
A3	69.5	40	25	46	4.3	5	30 ⁰ -0.021	2.5	6 ⁰ -0.008	14	2	2	1.2	0.3
A5	77								0					
01	94.5								8 ⁰ -0.009					
02	96.5	60	30	70	5.5	6	50 ⁰ -0.025	3	14 ⁰ -0.011	20	5	5	3	1.1
04A	124.5								16 ⁰ -0.011					1.7
08A	145	80	40	90	7	8	70 ⁰ -0.03	3	16 ⁰ -0.011	30	5	5	3	3.4

SGMPH cube type

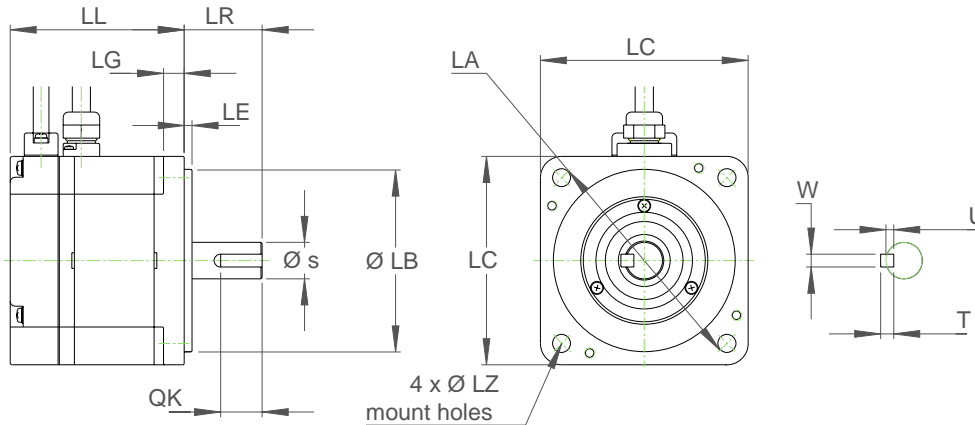
Similar performance to the SGMAH series but in a shorter length physical size. Typical applications include electrical PCB drilling and chip mounting machines, food processing and packaging machines, general robotics and material handling machines.

Performance

		01A	02A	04A	08A	15A
Rated Output	W	100	200	400	750	1500
Rated Torque	N.m	0.318	0.637	1.27	2.39	4.77
Peak Torque	N.m	0.955	1.91	3.82	7.16	14.3
Rated Speed	min ⁻¹	3000				
Max Speed	min ⁻¹	5000				
Moment of Inertia	kg.m ² x10 ⁻⁴	0.0491	0.193	0.331	2.1	4.02
Max inertia ratio		25	15	7	5	
Rated power rate	kW/s	20.6	21	49	27.1	56.7

Enclosure IP67 and encoder 4x2048ppr as standard. Options include 16384ppr and absolute encoder, 100VAC, electromagnetic brakes shaft seals and a variety of keyways.

Dimensions



SGMPH	LL	LC	LR	LA	LZ	LG	LB	LE	S	QK	W	T	U	Mass (kg)
01	62	60	25	70	5.5	6	50 ⁰ -0.025	3	8 ⁰ -0.008	14	3	3	1.8	0.7
02	67	80	30	90	7	8	70 ⁰ -0.03	3	14 ⁰ -0.011	16	5	5	3	1.4
04A	87													2.1
08A	86.5	120	40	145	10	10	110 ⁰ -0.035	3.5	16 ⁰ -0.011	22	5	5	3	4.2
15A	114.5													6.6

SGMGH general purpose series

General-purpose servo motors from 0.45 to 15kW. This series has a standard and high-speed range and is suitable for driving higher inertia loads. Typical applications include transfer machines, food processing and packaging, materials handling and machine tool feeds.

Performance Type A High-speed

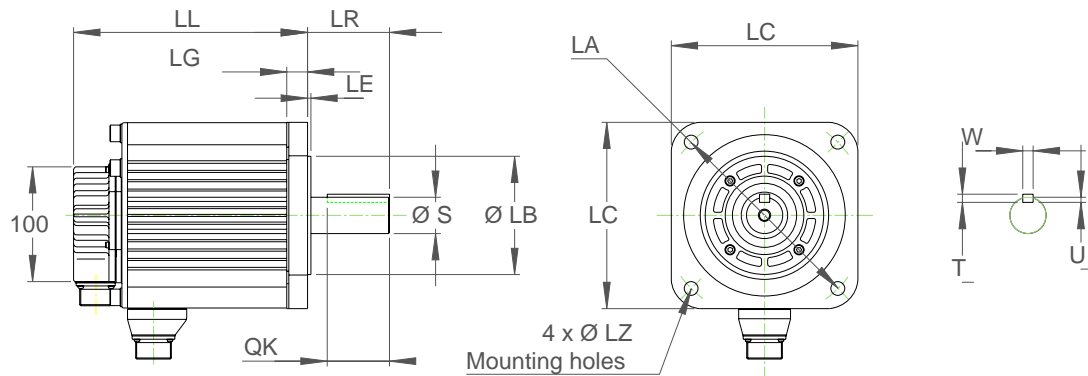
		05A	09A	13A	20A	30A	44A	55A	75A
Rated Output	kW	0.45	0.85	1.3	1.8	2.9	4.4	5.5	7.5
Rated Torque	N.m	2.84	5.39	8.34	11.5	18.6	28.4	35	48
Peak Torque	N.m	8.92	13.8	23.3	28.7	45.1	71.1	87.6	119
Rated Speed	min ⁻¹	1500							
Max Speed	min ⁻¹	3000							
Moment of Inertia	kg.m ² x10 ⁻⁴	7.24	13.9	20.5	31.7	46	67.5	89	125
Max inertia ratio		5							
Rated power rate	kW/s	11.2	20.9	33.8	41.5	75.3	120	137	184

Performance Type B Low-speed type

		03A	06A	09A	12A	20A	30A	40A	55A
Rated Output	kW	0.3	0.6	0.9	1.2	2	3	4	5.5
Rated Torque	N.m	2.84	5.68	8.62	11.5	19.1	28.4	38.2	52.6
Peak Torque	N.m	7.17	14.1	19.3	28	44	63.7	107	136.9
Rated Speed	min ⁻¹	1000							
Max Speed	min ⁻¹	2000							
Moment of Inertia	kg.m ² x10 ⁻⁴	7.24	13.9	20.5	31.7	46	67.5	89	125
Max inertia ratio		5							
Rated power rate	kW/s	11.2	23.2	36.3	41.5	79.4	120	164	221

Both types feature IP67 enclosures and a 32,768ppr encoder. Options include absolute encoder, shaft seals, electromechanical brakes and a variety of keyways.

Dimensions



SGMGH	LL	LC	LR	LA	LZ	LG	LB	LE	S	QK	W	T	U	Mass (kg)
05A A	138								19 ⁰ -0.013	25	5	5	3	5.5
03A B														
09A A	161	130	58	145	9	12	110 ⁰ -0.035	6	22 ⁰ -0.013					7.6
06A B														
13A A	185													9.6
09A B														
20A A	166									25	6	6	3.5	14
12A B														
30A A	192		79						35 ^{0.01} 0					18
20A B														
44A A	226	180		200	14	18	114 ⁰ -0.025	3.2		60	10	8	5	23
30A B														
55A A	260													30
40A B														
75A A	334		113						42 ⁰ -0.016	90	10	8	5	40
55A B														

SGMDH flat series

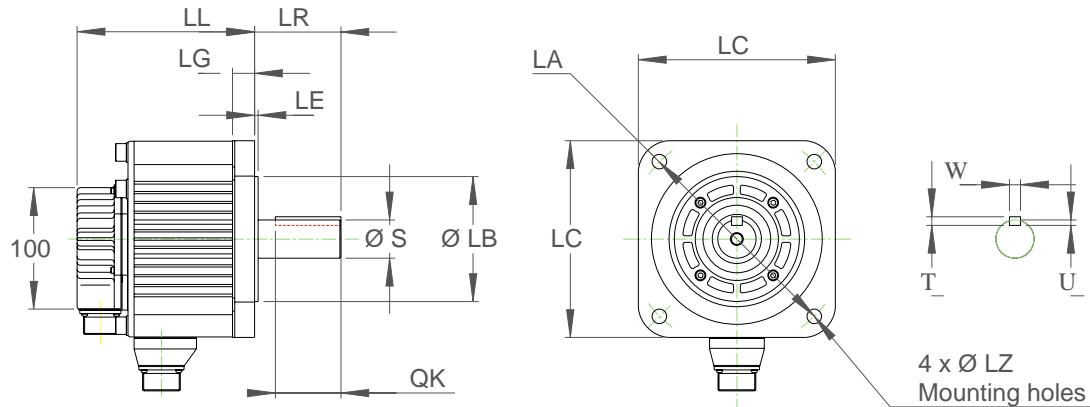
This is a large frame version of the SGMPH series. Frequently used as the prime mover for robotics. This small sized short length motor is also ideal for many materials handling machinery.

Performance

		22A	32A	40A
Rated Output	kW	2.2	3.2	4
Rated Torque	N.m	10.5	15.3	19.1
Peak Torque	N.m	36.7	53.5	66.9
Rated Speed	min ⁻¹	2000		
Max Speed	min ⁻¹	3000		
Moment of Inertia	kg.m ² x10 ⁻⁴	56.6	74.2	91.8
Max inertia ratio		5		
Rated power rate	kW/s	19.5	31.5	39.7

Motors come standard with IP67 enclosures and a 32,768ppr encoder. Options include absolute encoder, shaft seals, electromechanical brake and a variety of keyways.

Dimensions



SGMDH	LL	LC	LR	LA	LZ	LG	LB	LE	S	QK	W	T	U	Mass (kg)
22A	187	220	55	235	2700	18	200 ⁰ -0.046	4	28 ⁰ -0.013	45	8	7	4	15.5
32A	199													
40A	209	65							32 ⁰ -0.016	50	10	8	5	21

Other types

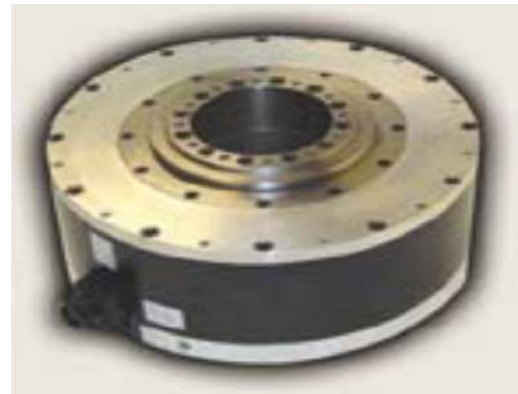
SGMBH – Large capacity

Large capacity servo motors from 22kW to 55kW. Suitable for thermoforming and injection moulding.



SGMCS direct drive series

An extremely high inertia motor of cylindrical form specifically designed to be directly coupled to the drive mechanism without the need for gears. These drives are ideal for rotary tables. Power outputs range from 0.2 to 3kW.



Linear motors

Cutting edge motors that couple directly to the driven carriage. This provides the complete elimination of mechanical drive train and enables massively reduced machine size and inertia loads. Especially developed for machines applications requiring higher speed and more accuracy.



Servo Drivers

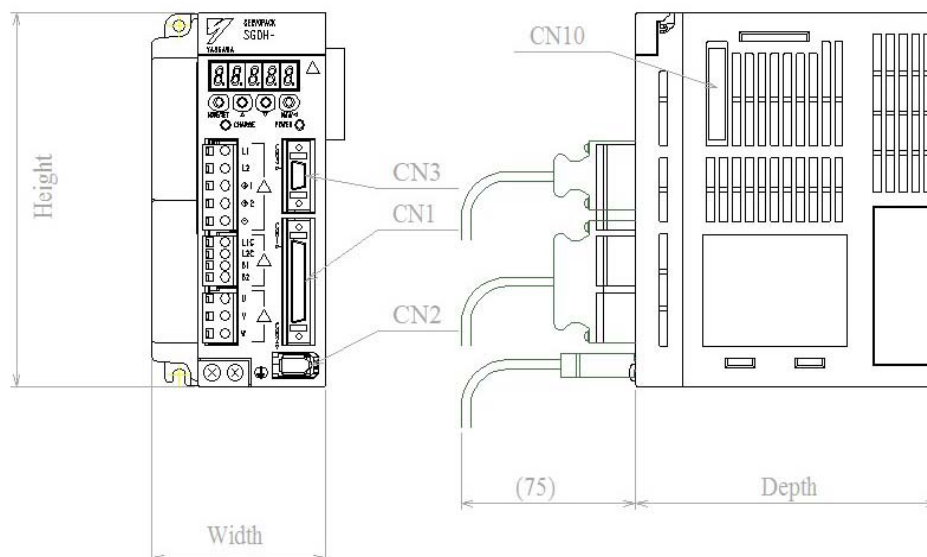
Yaskawa servo drivers have a number of unique features that make them ideal for machine builders and production environments.

- Maximum torque overload to minimise machine damage and overloads
- Pass code security to eliminate tampering
- 230V and 110V options
- Auto tuning
- Win+ software for tuning and setup including performance oscilloscope
- Pulse, Torque and speed control with combined max speed or torque setting
- Control inputs to suit majority of controllers and PLCs.

Single phase

		A3A	A5A	01ADA	02ADA	04ADA
Applicable servomotor	SGMAH	A3A	A5A	01A	02A	04A
	SGMPH			01A	02A	04A
Max motor capacity	kW	0.03	0.05	0.1	0.2	0.4
Continuous output current	A rms	0.44	0.64	0.91	2.1	2.8
Max output current	A rms	1.3	2	2.8	6.5	8.5
Power supply		Single phase 200 to 230V +10 to -15% (50/60Hz)				
Control method		Single phase full-wave / IGBT / PWM / sine wave				
Approx mass	kg	0.8				1.1
Dimensions	Depth	130				
	Cable extension*	75				
	Width	55				75
	Height	160				

- extra space required in front of drive for connectors



Three phase

		05ADA	08ADA	10ADA	15ADA	20ADA	30ADA	50ADA	60ADA	75ADA	
Applicable servomotor	SGMAH		08A								
	SGMPH		08A		15A						
	SGMGH	1500min ⁻¹	05A		09A	13A	20A	30A	44A	55A	75A
	SGMGH	1000min ⁻¹	03A	06A	09A	12A	20A	30A	40A	55A	
	SGMSH				10A	15A	20A	30A	40A 50A		
	SGMDH							22A	32A 40A		
Max motor capacity	kW	0.5	0.75	1	1.5	2	3	5	6	7	
Continuous output current	A rms	3.8	5.7	7.6	11.6	18.5	24.8	32.9	46.9	54.7	
Max output current	A rms	11	13.9	17	28	42	56	84	110	130	
Power supply	Single phase 200 to 230V +10 to -15% (50/60Hz)										
Control method	Single phase full-wave / IGBT / PWM / sine wave										
Approx mass	kg	1.7		2.8		3.8		5.5		15	
Dimensions	Depth	180						230		235	
	Cable extension*	75									
	Width	90			110			135		230	
	Height	160				250				350	

* extra space required in front of drive for connectors

Servo controls

Yaskawa servos can be configured to run on most motion controllers with a pulse output. The easiest way of implementing a motion system however is to use a matching control system from Yaskawa. These systems can completely eliminate the need to install control wiring and time-consuming servo setups. This drastically reduces time and costs to set up a servo system. Alternatively DeviceNet, ProfiBus or MemoBus field networks can be used.

Single axis

Yaskawa XtraDrive integrated positioning drive or Sigma Indexing card can be used to create a standalone single box positioning system. The devices feature PLC functionality with I/O used for conventional servo control becoming I/O for the built in controller.

Multi axis

Mechatrolink is a field network developed by Yaskawa specifically for high-speed motion control. Each servo pack connects with USB style connectors in a daisy chain configuration. Controller wiring is eliminated and the motion controller can access servo settings on the fly. The controller runs ladder logic programming familiar to industrial electricians and no awkward G-code programming is required. This system is perfect for multi-axis interpolation and synchronisation.