

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 Japan’s largest robot manufacturer and the world’s largest manufacturer of AC drives. Some key features of the Yaskawa SigmaV servo include;

- 1million ppr encoder as standard for higher resolution
- Auto-tuning for simplified setups
- FREE SigmaWin+ software setup tool with help database and tuning oscilloscope
- Rugged motor enclosures to IP55 or higher
- Quality ISO9000 manufacture
- Compliance to UL, cUL, CE and TUV standards
- A wide range of motor types to suit any inertia load
- Braked motors available for power out holding
- Electronic torque overload to minimise collision damage



Servo controls

Yaskawa servos can be interfaced to run with a wide range of controllers.

Single axis

A Yaskawa servo drive with Indexing card can be used to create a standalone single box positioning system. The device has simple I/O that can be used to call preprogrammed moves or sequence of moves from either push button or called from a host controller.

As an alternative standard servo drives will accept analogue speed, analogue torque, pre-set speed or pulse train signals. PLCs with pulse train output are common and a popular way of controlling smaller systems. We have a range of quality PLCs suitable for a range of applications. These drives can also be used as a high performance upgrade for stepper based systems.

Multi axis

Mechatrolink is a field network developed by Yaskawa specifically for high-speed motion control. Each servo pack connects with USB or Ethernet style connectors in a daisy chain configuration. Controller wiring is eliminated and the motion controller can access servo settings on the fly. Simple controllers are available for 1 to 4 axes. High end controllers can run up to 16 or more servo or inverter axis and they can connect to other field networks to integrate into a factory system. These controllers 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.

CNC control

Full CNC controllers require the use of G-code programming and are widely used in machining applications. A CNC controller comes in to its own in applications that are subject to change or short run where constant changes to PLC code is impractical. In most cases CAD is used to design a model of the finished part and the G-code is generated with CAM software. We have been involved in a number a CNC project using stepper, servo, PC and controller based systems.



Servo Motors

SGMJV medium inertia series

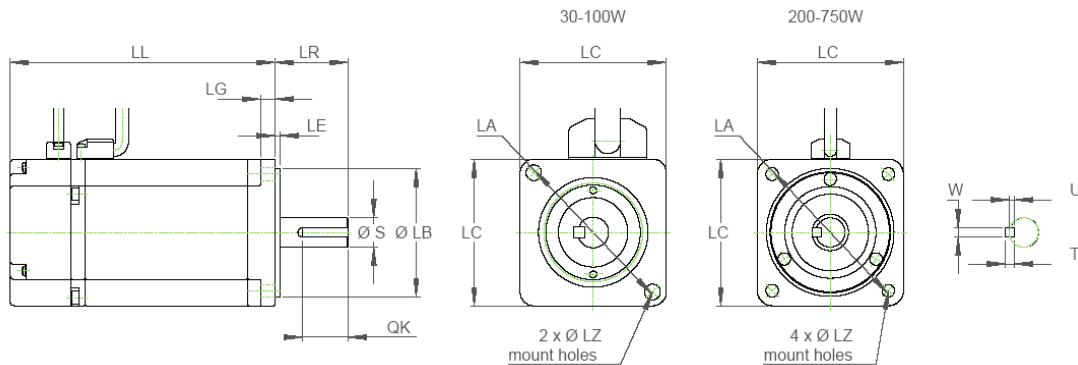
The SGMJV motors have a wide speed range, high inertia ratio and an amazingly high output from such a small physical size. This makes them ideal for demanding, high-speed applications. Typical applications include electrical printed circuit board machines, food processing and packaging machines, general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

Performance

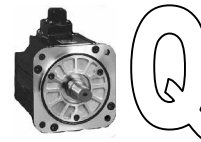
		A5A	01A	02A	04A	08A
Rated Output	W	50	100	200	400	750
Rated Torque	N.m	0.159	0.318	0.637	1.27	2.39
Peak Torque	N.m	0.557	1.11	2.23	4.46	8.36
Rated Speed	min ⁻¹	3000				
Max Speed	min ⁻¹	6000				
Moment of Inertia	kg.m ² x10 ⁻⁴	0.0414	0.0665	0.259	0.442	1.57
Max inertia ratio		20		15	10	

Standard types have an IP55 enclosure and 20bit (1million ppr) encoder. Options include shaft seals, a variety of keyways, and electromagnetic brake. 100, 400 and 750W systems are normal stock items.

Dimensions



SGMJV	LL	LC	LR Shaft Length	LA PCD	LZ Hole Ø	LG	LB Spigot	LE	S Shaft Ø	QK	W Key	T	U	Mass (kg)
01	94	40	25	46	4.3	5	30 0 -0.021	2.5	8 0 -0.008	14	3	3	1.8	0.4
04A	128.5	60	30	70	5.5	6	50 0 -0.025	3	14 0 -0.011	14	5	5	3	1.3
08A	155	80	40	90	7	8	70 0 -0.03	3	19 0 -0.013	22	6	6	3.5	2.7



SGMGV general purpose series

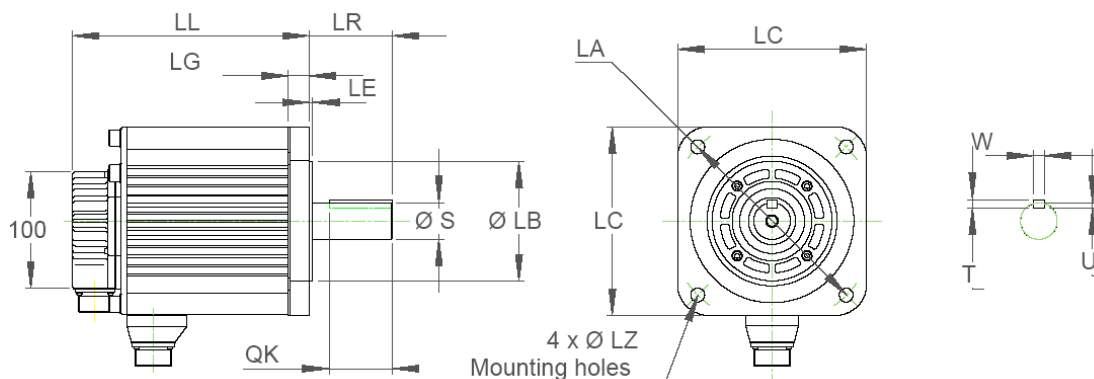
General-purpose servo motors from 0.3 to 15kW. This series has a standard and high-speed range and are suitable for driving higher inertia loads. Typical applications include transfer machines, food processing and packaging, materials handling and machine tool feeds.

Performance

		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	2.86	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	3.33	13.9	19.9	26	46	67.5	89	125
Max inertia ratio		5							

Standard types have IP67 enclosures and a 20bit (1million ppr) encoder. Options include absolute encoder, shaft seals, electromechanical brakes and a variety of keyways. 1.3kW and 4.4kW are normally available from stock.

Dimensions



SGMGV	LL	LC	LR Shaft Length	LA PCD	LZ Hole Ø	LG	LB Spigot	LE	S Shaft Ø	QK	W	T	U	Mass (kg)
05A	179	90	40	100	6.6	10	80 0 -0.03	5	16 0 -0.011	20	5	5	3	3.2
09A	195	130	58	145	9	12	110 0 -0.035	6	19 0 -0.013	25	6	6	3.5	7.1
13A	211								22 0 -0.013					
20A	229	180	79	200	13.5	18	114.3 0 -0.025	3.2	24 0 -0.013	60	10	8	5	8.6
30A	239								35 0.01 0					
44A	263								42 0 -0.016					
55A	334	113	113	200	13.5	18	114.3 0 -0.025	3.2	35 0.01 0	90	12	8	5	21.5
75A	380								42 0 -0.016					29.5



Servo Drivers

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

- Maximum torque limits to minimise machine damage and overloads
- 400V, 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.
- Mechatrolink, Ethercat and other field network options available

Basic specification of stock drives

	R90A	2R8A	5R5A	120A	170D
Capacity kW	0.1	0.4	0.75	1.5	5
Voltage	200	200	200	200	400
Phase	1 or 3	1 or 3	1 or 3	1	3
Mass kg	0.9	1	1.5	2.8	5.6
Depth mm	140	170	180	180	230
Width mm	40	40	70	100	135
Height mm	160	160	160	180	250
Extension mm	75				

- Extension is extra space required in front of drive for connectors

