SMART Hydraulic Actuators (SHA)

Fusing the power of hydraulics with the precision of servo control.

Innovation In Motion | Innovation In Motion | Innovation In Motion | Innovation In Motion
ADVANCED ACTUATION | ADVANCED ACTUATION | ADVANCED ACTUATION | ADVAN

Kyntronics

All-In-One Solution

- Pre-Engineered Servo Motor, Controller, Software and Actuator
- Factory setup & tested, ready to install, saves time

Precision Servo Control

- Accurate control of position, force and speed
- Simple integration with control systems and IoT

Energy Efficient - Small Footprint

- Maximum force density; superior to electro-mechanical and pneumatic actuators
- Saves energy, uses power on demand
- Lower operating costs
- Less heat, Less noise

Eliminates the Hydraulic Infrastructure

- No hoses, no leaks
- Fewer components, significant cost savings

Reliable and Durable

- No metal-to-metal wear points unlike roller or ball screw actuators
- Shock load resistant
- Exceptional long-life

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Innovation in Motion

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Kyntronics SMART Hydraulic Actuator-System Features

- **Modular Design**
- **Precision Servo Control**
- **All-In-One Solution**
- **Servo Controlled Variable Speed Bi-directional Pump**
- **No Hydraulic Infrastructure Required**
- **Reliable and Durable**

Feature Comparison - Actuation Technologies

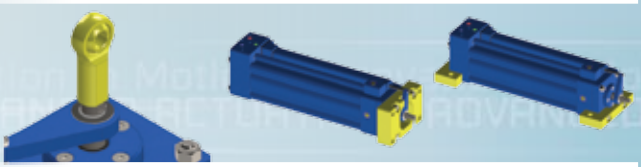
Requirement	Kyntronics SHA	Hydraulic Cylinder Actuators	Electro-Mechanical Ball Screw / Roller Screw (EMA)	Feature / Benefit
High Force Density / Small Footprint	X	X		Hydraulic technology provides the maximum force density compared with Roller Screw and Ball Screw Technology allowing for a smaller space envelope.
Variable Speed Servo Technology - Precise control of speed, force and position	X		X	Both the SHA and EMA actuators incorporate servo technology providing excellent motion control capabilities. Force control with the SHA is less expensive whereas an EMA requires an expensive load cell.
Energy Efficiency	X			The SHA uses power-on-demand technology and it eliminates metal-to-metal contact points reducing friction compared with EMA technology. In addition, EMAs often require “pre-loading” to reduce backlash which consumes energy that is not transferred to moving the load.
All-In-One System	X		X	The SHA combines the motor, pump, manifold, cylinder and electronic controls all into a single system shipped from the factory fully engineered and ready to install.
Ability to sustain “shock loading” conditions	X	X		The hydraulics in the SHA are designed to absorb “shock loads” in contrast with an EMA which can incur significant screw and drive train wear or damage from shock loads.
Cost Effective / Lower Equipment Cost	X			The SHA eliminates the expensive Hydraulic infrastructure used with Hydraulic Cylinders. Ball Screw / Roller Screw EMAs are inherently more expensive than SHAs particularly in higher-force applications.
Reliability / Low Maintenance	X			The SHA is a sealed system and does not require maintenance other than a rod seal change after tens of millions of inches of travel regardless of load. Comparably-sized EMAs will last a fraction of the time and require frequent lubrication. Localized thread wear on EMAs can be significant if the load is uneven over the length of travel.
Simple Fieldbus Control Connectivity, IoT integration	X		X	Both SHA and EMA actuators can be integrated into Field-Bus control architectures and can provide IoT data collection interfaces.
No Back driving	X			The SHA locks in place when power is removed. EMAs on the other hand are capable of being back-driven and require a brake to hold position.

The SHA Includes a Broad Range of Options

Controls and Software

Kyntronics can provide the SHA Controller packaged in a standard enclosure, or subplate mounted for integration into your control panel.

Mounting Options and End Rods



Mounting Options

- Rear Clevis
- Rear Eye Bracket
- Front Flange
- Rear Flange
- End Feet
- Side Feet
- Trunnion

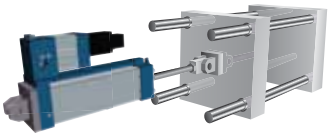
End Rods

- Spherical Ball Joint
- Clevis
- Threaded Male (std)
- Threaded Male (SI)
- Threaded Female (std)
- Threaded Female (SI)
- Rod Eye

SHA Programming is accomplished using Kyntronics user-friendly drive software providing a highly flexible set of standard modules for easy start-up.

Control Inputs/Outputs	Communication Options	Software Functionality
Fieldbus Communications	CANopen	Setup / Jog / Move the Actuator
I/O Control - (with selectable indexes)	Ethernet TCP/IP	Change and Save Index Moves (16) - Programmable Positions, Speeds, Ramps, Dwell etc.
4-20ma and 0-10Vdc Control Inputs	EtherCAT	Inport / Export Saved Index Moves
Pressure Sensor Feedback	Ethernet IP	Diagnostics
Position Sensor Feedback	Modbus TCP	Pre-canned Software Modules - Press Shear / Control - Force Control - Position Control - Lift / Anti-skew Control
Limit Switch Options	Modbus RTU	

The SHA is ideal for many Applications that require high force, precision accuracy, compact packaging, efficiency and cost effectiveness.

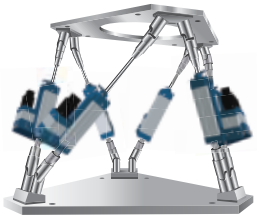


Closing

Bending

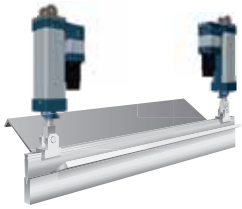
Punching

Pressing

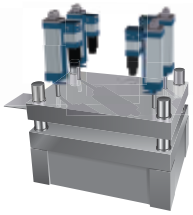


Moving

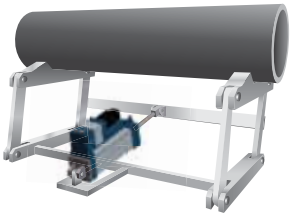
Lifting



Folding

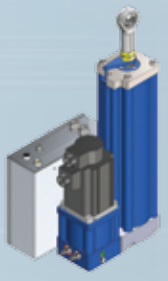


Positioning

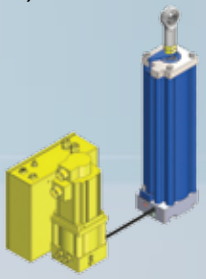


Handling

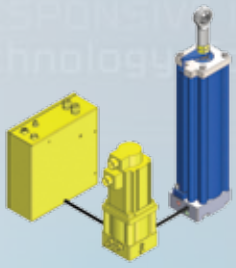
Configuration Options



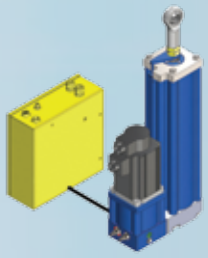
Drive, Power Unit & Cylinder are Attached



Remote Drive and Power Unit Combined



Remote Drive and Power Unit



Remote Drive

Kyntronics SHAs are used in many industries to reduce cost, improve quality and automate processes





Metal Fabrication
- Aerospace
- Animatronics
- Automotive

Industrial Machinery
- Door Hatch Actuation
- Fence Guides
- Flexible Tooling

Military Equipment
- Blade Positioning
- Forestry
- Energy

Material Testing
- Medical Machinery
- Mobile Equipment
- Motion Simulation

Lift-Tables
- Plastics
- Pressing
- Robotic Welding

SMART Hydraulic Actuator - Product Specifications

		Continuous Duty @ 230Vac		Peak @ 230Vac			Continuous Duty @ 230Vac		Peak @ 230Vac	
	*SHA Series	Force-Lbf (N)	Avg-In/s (mm/s)	Force-Lbf (N)	Avg-In/s (mm/s)	Series	Force-Lbf (N)	Avg-In/s (mm/s)	Force-Lbf (N)	Avg-In/s (mm/s)
To Maximize Speed	S08C10-13	966 (4,299)	8.8 (225)	2,356 (10,481)	8.8 (225)	S08C32-13	10,208 (45,406)	0.7 (18)	24,887 (110,704)	0.7 (18)
	S13C10-36	732 (3,258)	45.6 (1,159)	2,197 (9,775)	45.6 (1,159)	S13C32-36	7,737 (34,415)	3.6 (92)	23,210 (103,245)	3.6 (92)
	S19C10-36	2,197 (9,775)	45.6 (1,159)	2,197 (9,775)	45.6 (1,159)	S19C32-36	23,210 (103,245)	3.6 (92)	23,210 (103,245)	3.6 (92)
	S08C15-13	2,174 (9,672)	3.3 (84)	5,301 (23,582)	3.3 (84)	S08C40-13	15,463 (68,781)	0.5 (12)	37,699 (167,694)	0.5 (12)
	S13C15-36	1,648 (7,331)	17.0 (431)	4,944 (21,993)	17.0 (431)	S13C40-36	11,720 (52,131)	2.5 (64)	35,159 (156,394)	2.5 (64)
	S19C15-36	4,944 (21,993)	17.0 (431)	4,944 (21,993)	17.0 (431)	S19C40-36	35,159 (156,394)	2.5 (64)	35,159 (156,394)	2.5 (64)
	S08C15-13	3,866 (17,195)	2.0 (50)	9,425 (41,924)	2.0 (50)	S08C50-13	24,160 (107,470)	0.3 (9)	58,905 (262,022)	0.3 (9)
	S13C15-36	2,930 (13,033)	10.1 (256)	8,790 (39,099)	10.1 (256)	S13C50-36	18,312 (81,455)	1.8 (45)	54,936 (244,366)	1.8 (45)
	S19C15-36	8,790 (39,099)	10.1 (256)	8,790 (39,099)	10.1 (256)	S19C50-36	54,936 (244,366)	1.8 (45)	54,936 (244,366)	1.8 (45)
	S08C25-13	6,040 (26,868)	1.3 (33)	14,726 (65,505)	1.3 (33)	S08C60-13	34,791 (154,757)	0.2 (6)	84,823 (377,312)	0.2 (6)
	S13C25-36	4,578 (20,364)	6.7 (171)	13,734 (61,091)	6.7 (171)	S13C60-36	26,369 (117,296)	1.2 (29)	79,107 (351,887)	1.2 (29)
	S19C25-36	13,734 (61,091)	6.7 (171)	13,734 (61,091)	6.7 (171)	S19C60-36	79,107 (351,887)	1.2 (29)	79,107 (351,887)	1.2 (29)
To Maximize Force	S08C10-05	2,356 (10,481)	2.2 (56)	2,356 (10,481)	2.2 (56)	S08C32-05	24,887 (110,704)	0.2 (4)	24,887 (110,704)	0.2 (4)
	S13C10-21	2,356 (10,481)	12.0 (305)	2,356 (10,481)	12.0 (305)	S13C32-21	24,887 (110,704)	1.0 (24)	24,887 (110,704)	1.0 (24)
	S19C10-34	2,356 (10,481)	36.0 (915)	2,356 (10,481)	36.0 (915)	S19C32-34	24,887 (110,704)	2.9 (73)	24,887 (110,704)	2.9 (73)
	S08C15-05	5,301 (23,582)	0.8 (21)	5,301 (23,582)	0.8 (21)	S08C40-05	37,699 (167,694)	0.1 (3)	37,699 (167,694)	0.1 (3)
	S13C15-21	5,301 (23,582)	4.5 (113)	5,301 (23,582)	4.5 (113)	S13C40-21	37,699 (167,694)	0.7 (17)	37,699 (167,694)	0.7 (17)
	S19C15-34	5,301 (23,582)	13.4 (340)	5,301 (23,582)	13.4 (340)	S19C40-34	37,699 (167,694)	2.0 (51)	37,699 (167,694)	2.0 (51)
	S08C20-05	9,425 (41,924)	0.5 (12)	9,425 (41,924)	0.5 (12)	S08C50-05	58,905 (262,022)	0.1 (2)	58,905 (262,022)	0.1 (2)
	S13C20-21	9,425 (41,924)	2.7 (67)	9,425 (41,924)	2.7 (67)	S13C50-21	58,905 (262,022)	0.5 (12)	58,905 (262,022)	0.5 (12)
	S19C20-34	9,425 (41,924)	8.0 (202)	9,425 (41,924)	8.0 (202)	S19C50-34	58,905 (262,022)	1.4 (36)	58,905 (262,022)	1.4 (36)
	S08C25-05	14,726 (65,505)	0.3 (8)	14,726 (65,505)	0.3 (8)	S08C60-05	84,823 (377,312)	0.1 (1)	84,823 (377,312)	0.1 (1)
	S13C25-21	14,726 (65,505)	1.8 (45)	14,726 (65,505)	1.8 (45)	S13C60-21	84,823 (377,312)	0.3 (8)	84,823 (377,312)	0.3 (8)
	S19C25-34	14,726 (65,505)	5.3 (135)	14,726 (65,505)	5.3 (135)	S19C60-34	84,823 (377,312)	0.9 (23)	84,823 (377,312)	0.9 (23)

* Shown configurations are a sampling of many options that are available. Contact Kyntronics for a specific configuration for your application.

About Kyntronics

An ISO 9001; 2015, AS9100D certified company, all Kyntronics actuation products are made in the USA. With vast experience in industrial, aerospace and medical industries, our in-house team of mechanical, electronics, hydraulic and software engineers combine to provide hundreds of years of engineering acumen. Customer-centric, we thrive on 'solving the unsolvable' application problems in working with customers worldwide.

To discuss your application and see how the SMART Hydraulic Actuator can maximize cost efficiencies, contact Kyntronics today!

Kyntronics

Innovation in Motion

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