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, Factory setup & tested, ready to install

Precision Servo Control

- Accurate control of position, force and speed

Energy Efficient - Small Footprint

- Maximum force density; superior to electro-mechanical and pneumatic actuators
- Saves energy, power on demand
- 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, minimal maintenance

The Smart Alternative to Hydraulic Cylinders and Ball Screw / Roller Screw Actuators

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SMART Hydraulic Actuators – System Features

Why Choose the SMART Hydraulic Actuator?

The SHA combines the best features of hydraulic power with the precision of servo control (used in ball screw & roller screw electro-mechanical actuators), without the inherent disadvantages of those approaches. The result is an actuation solution with up to 170,000 LBs (755kN) of force and superior functionality at a lower price point.

- ***High-Precision Brushless Servo Motor***
- ***Servo-Controlled, Precise Displacement, Bi-Directional Variable Speed Pump***
- ***Manifold with Integral Valve Controls***
- ***Heavy-Duty Rod / Cylinder with Patent-Pending Rod Compensation***
- ***Servo Drive / Motion Controller***
- ***Fieldbus Interface, IoT Compatible***
- ***Pressure Sensor for Force Control Operation***
- ***High-Resolution Position Sensor***

Benefits of Kyntronics SHA *over Hydraulic Actuation and Ball Screw / Roller Screw Actuators*

Kyntronics SHA

- All-In-One, Factory Configured, ready to install
- Closed system, no leaks, minimal maintenance
- Energy efficient, only consumes power when operating
- Precision servo control of position, force, speed
- Quiet operation

VS

Hydraulic Cylinder Actuators

- Require an expensive HPU and many components that must be engineered, assembled and tested
- Many connection points, hoses, prone to leaks
- Runs continuously, significant energy consumption
- Costly to precisely control
- Very noisy
- Requires regular HPU component maintenance and fluid changes

Replace this HPU mess with the SHA

Kyntronics SHA

- Highest force density, small footprint
- Small cost increase as force /load requirements grow
- High efficiency, no metal-to-metal contact points improves reliability
- Tolerant of "*Shock Loads*", high operational reliability
- Cannot be "*back-driven*"

VS

Ball Screw / Roller Screw Actuators

- Larger space requirements
- Expensive for high-force applications
- Gears and mechanical components create friction and losses
- "*Shock loads*" can cause significant damage and pre-mature localized wear. Require regular lubrication
- Require a brake to hold position… additional expense

Innovation in Motion

SHA Product Families

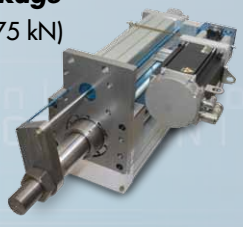
S-Series – General Purpose All-In-One Replacement for Hydraulic Cylinders & Electro-Mechanical Actuators

- Up to 85,000 lbf (377 kN)
- Up to 120" (3,048 mm) stroke length
- Up to 45 in/s (1,159 mm/s)
- 115, 230, 460 VAC

E-Series – High-Performance Upgrade from Pneumatic & Electro-Mechanical Actuators

- Up to 9,500 lbf (42 kN)
- Up to 120" (3,048 mm) stroke length
- Up to 10.6 in/s (269 mm/s)
- 12, 24, 48 or 72 VDC
- IP68 option

H-Series – High Speed / High Force In an Integrated Package



- Up to 170,000 lbf (775 kN)
- Up to 24" (610 mm) stroke length
- Up to 45 in/s (1,159 mm/s)
- 115, 230, 460 VAC

SHA Configurations - *Flexibility to fit your application*

In-Line

Parallel

Right-Angle

SHA Controller Options

An All-In-One Solution…
Engineered and ready to install

System Features:

- Servo Motor, Drive and Cables Designed to Length
- Software - Factory Programmed and Tested
- Ability to integrate customer supplied motors and/or drives
- Temperature Monitoring

Control capabilities:

- Position Control
  - Standard +/-0.010in (+/-0.250mm)
  - Precision +/-0.001in (+/-0.025mm)
- Force Control
- Position & Force Control
- Four Quadrant Motion Control
- Compound Moves / Multi-axis Synchronization

Control Feedback Options:

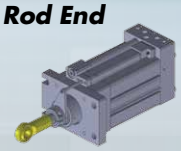
- Force
  - Pressure Transducer(s) and/or Load Cell; 0-10Vdc or 0-20mA
- Position
  - Internal or External Mount
  - Analog: 0-10Vdc or 0-20mA
  - Digital: SSI, TTL A Quad B, Profinet, EtherNet/IP, CANopen, IO-Link
  - As low as 4.0µin (0.1 µm) resolution

Networking:

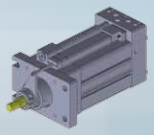
- Modbus RT
- Modbus TCP
- PROFIBUS
- PROFINET
- Ethernet/IP
- EtherCAT
- Other - Consult Factory

SHA Mounting Options

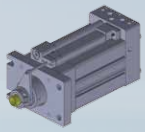
Rod End



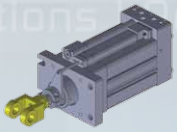
Spherical Ball Joint



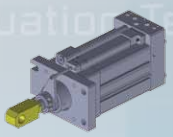
Threaded Male Standard
Threaded Male SI



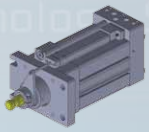
Threaded Female Standard
Threaded Male SI



Clevis

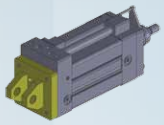


Rod Eye

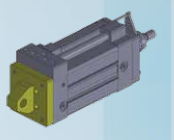


Parker Style 55

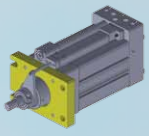
Actuator Mount



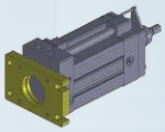
Clevis, 0 Degrees
Clevis, 90 Degrees
(0 Degrees Position Shown)



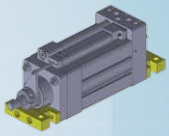
Rod Eye Bracket, 0 Degrees
Rod Eye Bracket, 90 Degrees
(0 Degrees Position Shown)



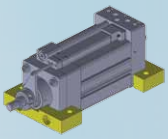
Front Flange Plate



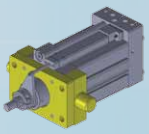
Rear Flange Plate



End Feet



Side Feet

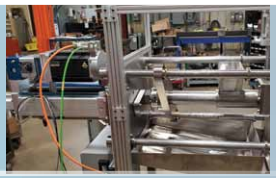


Trunnion

Kyntronics SMART Hydraulic Actuators are used successfully in many industries and applications.







- Aerospace
- Automotive
- Defense/Military
- Entertainment/Animatronics
- Energy
- Forestry/Lumber
- Medical Equipment
- Metals/Metal Fabrication
- Mobile Equipment
- Plastics
- Special Machines/Industrial Machinery
- Bending – Metal Fabrication
- Closing and Clamping
- Door/Hatch Actuation
- Flexible Tooling
- Folding
- Handling
- Lifting
- Moving & Motion Simulation
- Positioning
- Pressing
- Punching
- Testing/Inspection
- Welding

S-Series SMART Hydraulic Actuator – Product Specifications

		Continuous Duty @ 230Vac		Peak @ 230Vac			Continuous Duty @ 230Vac		Peak @ 230Vac	
	*SHA Series	Force-Lbf (kN)	Avg-In/s (mm/s)	Force-Lbf (kN)	Avg-In/s (mm/s)	Series	Force-Lbf (kN)	Avg-In/s (mm/s)	Force-Lbf (kN)	Avg-In/s (mm/s)
To Maximize Speed	S08C10-13	966 (4.3)	8.8 (39.4)	2,356 (10.5)	8.8 (39.4)	S08C32-13	10,208 (45.4)	0.7 (3.1)	24,887 (110.7)	0.7 (3.1)
	S13C10-36	748 (3.3)	45.6 (202.9)	2,239 (10.0)	53.2 (236.7)	S13C32-36	7,903 (35.2)	3.6 (16.1)	23,652 (105.2)	4.2 (18.8)
	S19C10-36	1,789 (8.0)	45.6 (202.9)	2,239 (10.0)	53.2 (236.7)	S19C32-36	18,900 (84.1)	3.6 (16.1)	23,652 (105.2)	4.2 (18.8)
	S08C15-13	2,174 (9.7)	4.2 (18.5)	5,301 (23.6)	4.2 (18.5)	S08C40-13	15,463 (68.8)	0.5 (2.2)	37,699 (167.7)	0.5 (2.2)
	S13C15-36	1,683 (7.5)	21.5 (95.6)	5,038 (22.4)	25.1 (111.5)	S13C40-36	11,971 (53.2)	2.5 (11.2)	35,828 (159.4)	2.9 (13.1)
	S19C15-36	4,026 (17.9)	21.5 (95.6)	5,038 (22.4)	25.1 (111.5)	S19C40-36	28,629 (127.3)	2.5 (11.2)	35,828 (159.4)	2.9 (13.1)
	S08C20-13	3,866 (17.2)	2.0 (8.7)	9,425 (41.9)	2.0 (8.7)	S08C50-13	24,160 (107.5)	0.3 (1.5)	58,905 (262.0)	0.3 (1.5)
	S13C20-36	2,993 (13.3)	10.1 (44.8)	8,957 (39.8)	11.8 (52.3)	S13C50-36	18,704 (83.2)	1.8 (7.9)	55,982 (249.0)	2.1 (9.2)
	S19C20-36	7,157 (31.8)	10.1 (44.8)	8,957 (39.8)	11.8 (52.3)	S19C50-36	44,733 (199.0)	1.8 (7.9)	55,982 (249.0)	2.1 (9.2)
	S08C25-13	6,040 (26.9)	1.3 (5.8)	14,726 (65.5)	1.3 (5.8)	S08C60-13	34,791 (154.8)	0.2 (1.0)	84,823 (377.3)	0.2 (1.0)
	S13C25-36	4,676 (20.8)	6.7 (29.9)	13,995 (62.3)	7.8 (34.9)	S13C60-36	26,934 (119.8)	1.2 (5.4)	80,614 (358.6)	1.4 (6.3)
	S19C25-36	11,183 (49.7)	6.7 (29.9)	13,995 (62.3)	7.8 (34.9)	S19C60-36	64,416 (286.5)	1.2 (5.4)	80,614 (358.6)	1.4 (6.3)
To Maximize Force	S08C10-05	2,356 (10.5)	2.2 (9.8)	2,356 (10.5)	2.2 (9.8)	S08C32-05	24,887 (110.7)	0.2 (0.8)	24,887 (110.7)	0.2 (0.8)
	S13C10-23	2,310 (10.3)	14.8 (65.7)	2,356 (10.5)	17.2 (76.7)	S13C32-23	24,399 (108.5)	1.2 (5.2)	24,887 (110.7)	1.4 (6.1)
	S19C10-34	2,266 (10.1)	36.0 (160.2)	2,356 (10.5)	42.0 (186.9)	S19C32-34	23,940 (106.5)	2.9 (12.7)	24,887 (110.7)	3.3 (14.9)
	S08C15-05	5,301 (23.6)	1.0 (4.6)	5,301 (23.6)	1.0 (4.6)	S08C40-05	37,699 (167.7)	0.1 (0.5)	37,699 (167.7)	0.1 (0.5)
	S13C15-23	5,197 (23.1)	7.0 (31.0)	5,301 (23.6)	8.1 (36.1)	S13C40-23	36,960 (164.4)	0.8 (3.6)	37,699 (167.7)	1.0 (4.2)
	S19C15-34	5,100 (22.7)	17.0 (75.5)	5,301 (23.6)	19.8 (88.1)	S19C40-34	36,264 (161.3)	2.0 (8.8)	37,699 (167.7)	2.3 (10.3)
	S08C20-05	9,425 (41.9)	0.5 (2.2)	9,425 (41.9)	0.5 (2.2)	S08C50-05	58,905 (262.0)	0.1 (0.4)	58,905 (262.0)	0.1 (0.4)
	S13C20-23	9,240 (41.1)	3.3 (14.5)	9,425 (41.9)	3.8 (16.9)	S13C50-23	57,749 (256.9)	0.6 (2.6)	58,905 (262.0)	0.7 (3.0)
	S19C20-34	9,066 (40.3)	8.0 (35.4)	9,425 (41.9)	9.3 (41.3)	S19C50-34	56,662 (252.0)	1.4 (6.2)	58,905 (262.0)	1.6 (7.3)
	S08C25-05	14,726 (65.5)	0.3 (1.4)	14,726 (65.5)	0.3 (1.4)	S08C60-05	84,823 (377.3)	0.1 (0.3)	84,823 (377.3)	0.1 (0.3)
	S13C25-23	14,437 (64.2)	2.2 (9.7)	14,726 (65.5)	2.5 (11.3)	S13C60-23	83,159 (369.9)	0.4 (1.7)	84,823 (377.3)	0.5 (2.0)
	S19C25-34	14,166 (63.0)	5.3 (23.6)	14,726 (65.5)	6.2 (27.6)	S19C60-34	81,593 (362.9)	1.0 (4.2)	84,823 (377.3)	1.1 (4.9)

* Shown configurations are a sampling of many options that are available. Contact Kyntronics for a specific configuration for your application. Refer to Kyntronics.com for E and H-Series Product Specifications.

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 have hundreds of years of engineering experience. Customer-centric, we thrive on 'solving the unsolvable' application problems while working with customers worldwide.

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

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