S-Series SMART Hydraulic Actuator – Product Specifications

<table>
<thead>
<tr>
<th>Series</th>
<th>Force-Lbf (kN)</th>
<th>Avg-In/s (mm/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S08C10-13</td>
<td>986 (4.3)</td>
<td>8.8 (223.5)</td>
</tr>
<tr>
<td>S13C10-36</td>
<td>748 (3.3)</td>
<td>45.8 (1158)</td>
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Kyntronics SMART Hydraulic Actuators are used successfully in many industries and applications.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Description</th>
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<tbody>
<tr>
<td>Aerospace</td>
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<tr>
<td>Automotive</td>
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<td>Entertainment/Amusement</td>
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<td>Energy</td>
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**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 strive 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!
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

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
- Coarsely to precisely control
- Very noisy
- Requires regular HPU component maintenance and fluid changes

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 premature localized wear. Require regular lubrication
- Require a brake to hold position…additional expense

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”

SHA Product Families

S-Series – General Purpose All-In-One Replacement for Hydraulic Cylinders & Electro-Mechanical Actuators
- Up to 85,000 lbf (377 kN) 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) stroke length
- Up to 10.6 in/s (269 mm/s)
- 12, 24, 48 or 72 VDC

H-Series – High Speed / High Force in an Integrated Package
- Up to 170,000 lbf (775 kN) stroke length
- Up to 45 in/s (1,159 mm/s)
- 115, 230, 460 VAC

SHA Configurations - Flexibility to fit your application

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
  - External or Internal Mount
  - Analog: 0-10Vdc or 0-20mA
  - Digital: SSI, TTL, A Quad B, Profinet, EtherNet/IP, CANopen, IO-Link
  - As low as 4.5µin (0.1 µm) resolution

Networking:
- Modbus RT
- Modbus TCP
- PROFIBUS
- PROFINET
- EtherCAT
- Other - Consult Factory

SHA Mounting Options

Actuator Mount

- Clevis
- Clevis, 0 Degrees
- Clevis, 90 Degrees

- Clevis, 0 Degrees Broached
- Clevis, 90 Degrees

- End Cap
- Rod End
- Rod Eye

- Frozen Flange Plate
- Side Foot
- Parker Style SS