



# All Electric **SMART** Electro-Hydraulic Linear Actuators and Servo Power Units

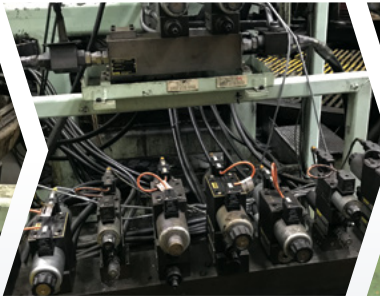


› Do you Experience These **Challenges** with your Actuators?

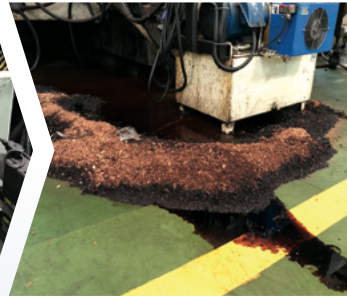
## Hydraulic Cylinders/HPUs



A Mess  
of Hoses



Complex Servo Valves  
High Maintenance



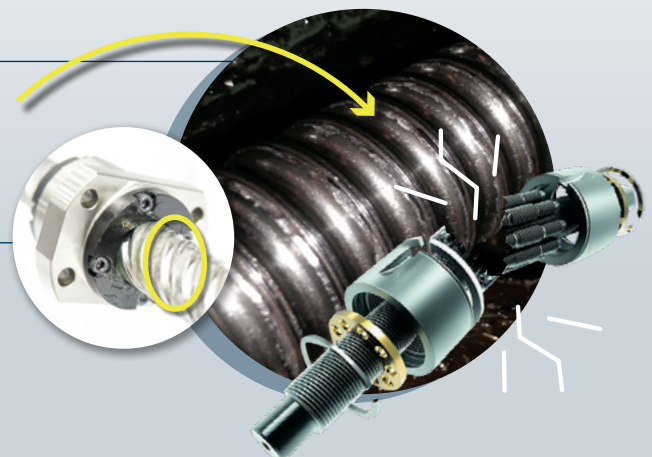
Inevitable Leaks  
Safety Risk



Constantly Running HPU  
Wastes Energy

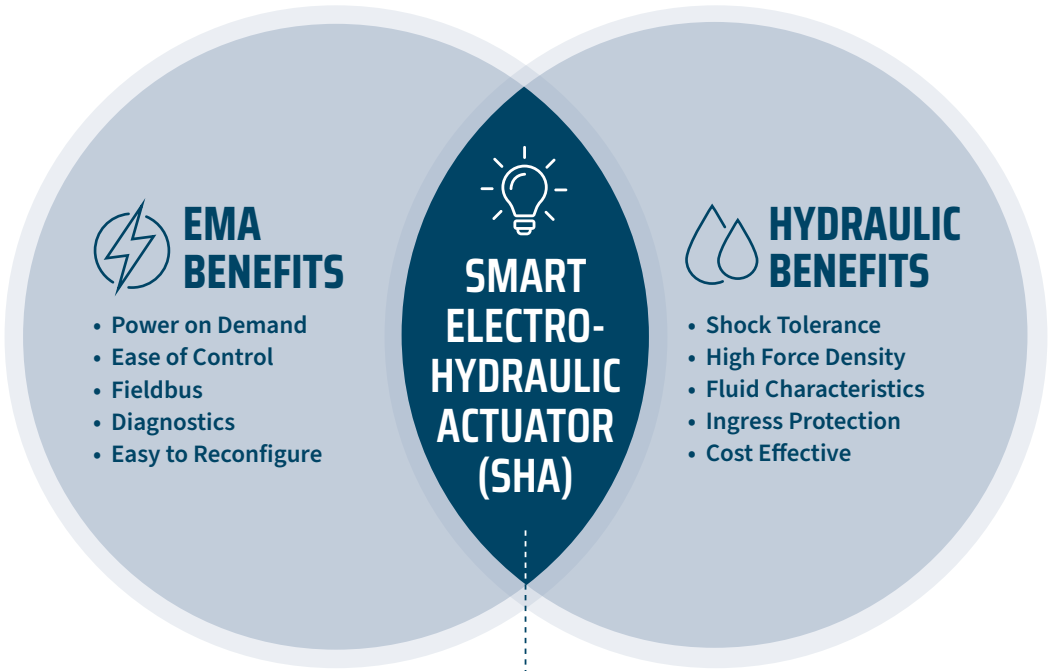
## Screw-Type Electro-Mechanical Actuators

- Damaged screws from Shock Loads
- Pre-mature wear and poor reliability
- High maintenance costs



**The Total Solution** Kyntronics SMART  
Electro-Hydraulic Actuators (SHA) & Servo Power Units

# Kyntronics Actuators Combine the **Best Features** of Screw-Type EMAs and Hydraulic Cylinders and Eliminate Their Shortcomings



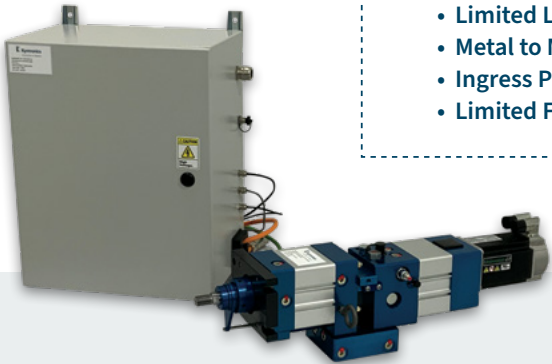
**THE SHA ELIMINATES**

**EMA SHORTCOMINGS**

- Side Loading
- Shock Loading
- Limited Life
- Metal to Metal Wear
- Ingress Protection
- Limited Force & Stroke

**HYDRAULIC SHORTCOMINGS**

- Leaks / High Maintenance
- Network Integration
- High Energy Consumption
- Difficult to Reconfigure
- Control Challenges
- Noisy



Power on Demand  
Saves Energy



Provides Precise  
Control of Position,  
Force & Speed



Minimal  
Maintenance



All-in-One Totally  
Sealed System



Eliminates  
Leaks



Shock Load  
Tolerant



No Metal-to-  
Metal Wear

# Actuators that are **Smarter**, More **Efficient** and More **Precise**

## S-SERIES – ACTUATORS

Electric servo-controlled actuators for new and retrofit applications. Ideal alternative to hydraulic, electro-mechanical or pneumatic actuators.

### S-Series – Total Solution Actuation System



Complete electric servo-controlled actuation system, including actuator, motor, control and cables.

### S-Series – Actuator Only



Electric servo-controlled actuators that connect to the motor and drive of your choice.

#### PRODUCT RANGE



Up to 150,000 lb. (667 kN) of Force



Up to 34.5 in/s (877 mm/s) Speed



Up to 120 in - (3,048mm) Stroke Length



120 - 460 VAC  
24 - 80 VDC

## P-SERIES – SERVO POWER UNITS

Servo Power Units (SPU) replace inefficient, leaky and high-maintenance hydraulic power units in industrial and mobile applications. These compact units connect to hydraulic cylinders or rotary motors with short hoses reducing the risk of leaks and losses.

### P-Series – Total Solution Servo Power Unit System



Servo Power Unit including motor, controls and cables.

### P-Series – Servo Power Unit Only



Servo Power Units that connect to the motor and drive of your choice.

#### PRODUCT RANGE



Up to 3,000 psi (207 Bar)

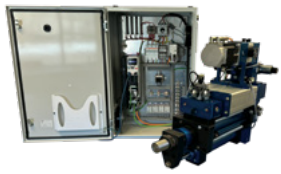


Up to 7 gpm (26.7 lpm)



120 - 460 VAC  
24 - 80 VDC

## H-SERIES – HIGH SPEED / HIGH FORCE - ACTUATION SYSTEM



A complete integrated high-speed actuator and high-force actuator system including actuator, motor, control and cables. Ideal for new or retrofit installations on press applications as an alternative to hydraulic or hydraulic/pneumatic cylinders.

#### PRODUCT RANGE



Up to 84,823 lb. (377 kN) of Force



UP TO 11.7 in/s (298 mm/s) Speed



UP TO 24 in (610mm) Stroke Length



240-460 VAC  
24 - 80 VDC

### Standard Features

- High-Precision Servo Motor
- Precise Displacement, Bi-Directional Pump
- Manifold with Integral Valving
- Minimal Hydraulic Fluid
- Heavy-Duty Rod / Cylinder with Patent-Pending Rod Compensation
- Temperature Sensor
- Servo Drive / Motion Controller
- Fieldbus Interface, IoT Compatible

### Optional Features

- Standard or High-Resolution Position Sensor – External or Internal Mounting
- Pressure Sensor for Force Measurement and Control
- Load Cell Interface
- Food Grade Fluid
- IP67, IP68, IP69k packaging
- Special Coatings
- Explosion Proof: Class 1 Div 1 / Div II
- Supplemental Heating or Cooling
- Manual Operation
- Long Stroke Actuators – up to 120 in (3,048 mm)



# Total Solution Option for S, P and H Series Products

## Total Solution Advantages (What's included)

	Kyntronics Total Solution
Actuator	✓
Control	✓
Software	✓
Motor	✓
Drive	✓
Cables	✓
Programming	✓
Ready to Install	✓
Factory Assistance/ Support	✓

## Total Solution Control Package Options



Single Drive on Panel / Backplate



Single Drive Enclosure



Multi-Axis on Panel / Backplate



Multi-Axis Enclosure

## Selectable Control Options

- Position
- Position with Force Limit
- Force
- Speed
- Multiple Actuator Synchronization

## Total Solution Control Connectivity to most any PLC / Controller

### Ethernet IP Interface

- Implicit Messages
  - Preset continuously scanned blocks
- Explicit Messages
  - Individual Messages



### Fieldbus

- CAN open
- Ethernet IP
- Ethernet TCP/IP
- EtherCAT
- Modbus TCP
- Profinet
- Modbus RTU
- Other



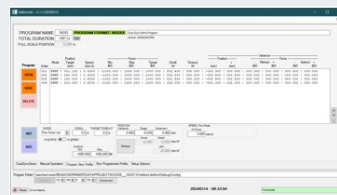
### Position Feedback

- 0-10Vdc or SSI
- ### Force Feedback (PSI)
- 0-10Vdc
- ### Solenoid Locking
- 24Vdc
- ### STO
- Single or Dual



## Total Solution HMI Option

### VBA - PC Based Solution



### 7in Touchscreen



### Standard HMI Software Features

- Diagnostics
- Setup
- Tuning
- Indexing & Sequencing
- Jogging / Start / Stop Operation
- Quality Signature Checks – (pass/fail)
- Data Logging to USB
- Stand-Alone Solution (as desired)
- Press Control

## Rockwell Control Option

- AOI for easy setup & control
- Simple integration w/Kinetix Drives
- Standard AB motor mounting
- Sample programs



**Technology Partner**  
A ROCKWELL AUTOMATION PARTNER

## Other Motor/Control Options Including:

Siemens | Mitsubishi | Omron | Yaskawa | Teknic | Others – Contact Factory



# Improve Sustainability / Reduce Total Cost of Ownership

The SHA Improves Your Environmental Footprint while Providing Significant Operating Cost Reduction Compared with Hydraulic Actuation Systems

Annual Operating Cost Comparison Kyntronics SMART Electro-Hydraulic Actuator (SHA) vs. Traditional Hydraulic System (HPU)			
Operating Cost Component	SHA	HPU	Assumptions / Cost Basis (Feb 2023)
<b>Environmental</b>			200 Gallon HPU Tank with Hydraulic Fluid Index (HFI) = 4.1 SHA is sealed - no fluid replenishment or disposal required
Oil Replenishment	\$0	\$33,600	\$42/gal X 800 gallons (4:1 HFI)
Used Oil Disposal	\$0	\$16,000	\$20/gal X 800 gallons (4:1 HFI)
<b>Energy</b>			SHA Uses Power on Demand 30 HP Hydraulic Power Unit that Runs Continuously SHA is 70% efficient (based on Kyntronics testing) HPU is 22% efficient (based on IFPE paper)
Energy Usage	\$1,642	\$16,429	HPU is 22% efficient (based on IFPE paper) Using \$0.17 per KWh (average US rate - Feb 2023)
<b>Maintenance</b>			SHA @ 1 hr/week @ Labor \$35/hr HPU @ 3 hrs/week @ Labor \$35/hr
Maintenance Time	\$1,750	\$5,250	
<b>Machine Downtime / Product Scrap</b>			SHA is totally sealed, no oil leak risk, minimal downtime risk.
80% of unplanned machine downtime is caused by contaminated lubricants	\$0	\$10,000	\$4k-\$6k average downtime costs per incident.
Product Spoilage	\$0	\$10,000	Assuming two downtime events. 1% scrap from product contamination due to leaky connections
<b>Annual Operating Costs</b>	<b>\$3,392</b>	<b>\$91,279</b>	

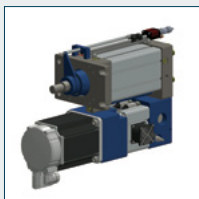
## Additional Sustainability Benefits:

- Safety / Lost Time Accidents – HPUs leak and create safety hazards. The SHA is a totally sealed system
- Ergonomics – The SHA is far quieter than HPU systems

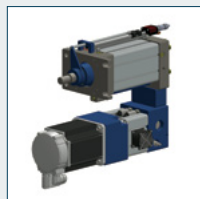
SCAN TO  
LEARN MORE.



## Flexible Configurations to Fit your Machine



Parallel  
Standard



Parallel  
with Spacer Block



90°  
Centered



Parallel  
Inverted



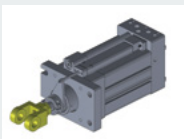
Inline



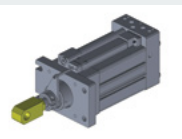
90°  
Behind Power Unit

## SHA Mounting Options

### Rod End



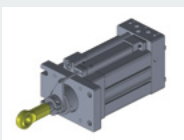
Clevis



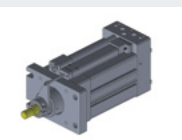
Rod Eye



Parker Style 55



Spherical Ball  
Joint

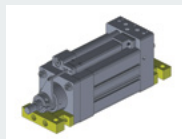


Threaded Male  
Standard  
Threaded Male SI

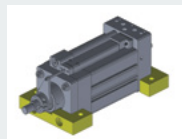


Threaded Female  
Standard  
Threaded Female SI

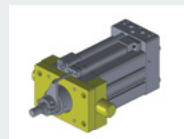
### Actuator Mount



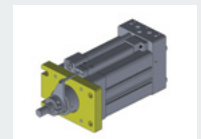
End Feet



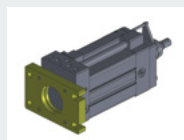
Side Feet



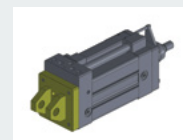
Trunnion



Front Flange Plate



Rear Flange Plate



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



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

# Product Specifications

## S-Series Total Solution or Actuator Only

Cylinder Diameter		Rod Diameter		*Maximum Extend Force @3,000 PSI		*Maximum Retract Force @3,000 PSI		*Maximum Speed - Extend		*Maximum Speed - Retract	
In	mm	In	mm	lbf	kN	lbf	kN	in/S	mm/s	in/S	mm/s
1.00	25.40	0.63	15.88	2,356	10	1,436	6	34.5	876	56.7	1440
1.50	38.10	1.00	25.40	5,301	24	2,945	13	15.4	391	27.6	701
2.00	50.80	1.00	25.40	9,425	42	7,069	31	8.6	218	11.5	292
2.50	63.50	1.38	34.93	14,726	66	10,272	46	5.5	140	7.9	201
3.25	82.55	1.38	34.93	24,887	111	20,433	91	3.3	84	4	102
4.00	101.60	2.00	50.80	37,699	168	28,274	126	2.2	56	2.9	74
5.00	127.00	3.00	76.20	58,905	262	37,699	168	1.4	36	2.2	56
6.00	152.40	3.50	88.90	84,823	377	55,960	249	1	25	1.5	38
8.00	203.20	4.00	101.60	150,796	671	113,097	503	0.5	13	0.7	18

\*Note: Maximum Force and Maximum Speed may not be available in the same model. Consult Kyntronics.com CAD Models and Specifications for more information.

## P-Series Total Solution or Power Unit Only

Pump Size	Gallons Per Minute	Liters Per Minute	Max Working Pressure (psi)	Max Working Pressure (bar)	**Required Torque (Nm)
02	0.171	0.648	3000	207	1.09
05	0.399	1.512	3000	207	2.55
07	0.656	2.484	3000	207	4.19
11	1.056	3.996	3000	207	6.75
13	1.626	6.156	2756	190	10.39
21	1.854	7.020	3000	207	11.85
23	2.225	8.424	3000	207	14.22
27	2.967	11.232	3000	207	18.96
31	4.173	15.795	3000	207	26.66
34	5.378	20.358	3000	207	34.37
36	7.047	26.676	2531	175	38.0

### Notes:

\* Not offered as a Total Solution - customer supplied motor & drive configuration only

\*\* Torque Information for customer-supplied motor & drive instances

- Can be used with most any double-acting cylinder / rod combination
- The factory requires the rod & cylinder diameter and stroke length to properly size
- Cylinders are required to be filled with the factory standard fluid following the factory's procedure
- This is a Representative Sample of the Servo Power Unit Product Range, Consult Factory for Additional Models
- For additional information on the Operational Performance of Servo Power Units, consult <https://www.kyntronics.com/products/servo-power-units/overview> or [sales@kyntronics.com](mailto:sales@kyntronics.com) to speak with an Engineer

### Servo Power Unit Product Specifications - Requires Customer-Supplied Motor & Drive

* 41	2.996	12.600	3000	207	19.14
* 43	4.280	18.000	3000	207	27.35
* 45	5.991	25.200	3000	207	38.29
* 47	7.703	32.400	3000	207	49.23
* 49	10.271	43.200	3000	207	65.63

## H-Series High-Speed/High-Force Actuators, Consult Factory



6565 Davis Industrial Parkway  
Solon, OH 44139  
**PH:** 440.220.5990  
**FX:** 866.854.4578  
**Toll Free (US only):** 855.596.8765  
[kyntronics.com](http://kyntronics.com)

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## About Kyntronics

All Kyntronics actuation products are made in the USA. With vast knowledge in industrial, aerospace and medical industries, our in-house team of mechanical, electronics 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 speak with an Engineer and discuss your application, please contact us at [sales@kyntronics.com](mailto:sales@kyntronics.com) and discover how the SMART Electro-Hydraulic Actuator and Servo Power Unit can improve your machines and processes.

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