

The
**Competitive
Advantage**
of
HyperCyl®



By Aries Engineering Company, Inc.



Aries Engineering Company®

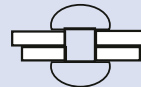
Servo Actuators, Hydra-Pneumatic Cylinders, Presses and Joining Systems

Aries Engineering Co., Inc. is a diversified manufacturer of “hydra-pneumatic” cylinders, presses and electro-mechanical actuators designed for use in a wide range of assembly and forming applications. After pioneering new technology in air/oil intensification in 1994, AEC has grown to offer a complete range of assembly and forming solutions for customers in the industrial automation, manufacturing, commercial, and defense industries.

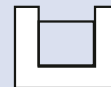
AEC's success stems directly from its commitment to its customers and distribution network. AEC has long offered technically unique products backed with a solid pledge of customer service. AEC has listened to what its customers have requested in terms of quality, problem-solving solutions and emerging product needs, and applied them to our products. As a result, we enjoy a large diverse customer base within the automotive, medical, electronic/electrical, appliance, and aerospace industries.

HyperCyl has a place in virtually every segment of industrial production. From cleanroom medical and electronic component manufacturing to heavy industrial piercing and forming. HyperCyl has a proven track record in thousands of applications as a clean, quiet, reliable, self-contained power source and actuator.

Assembly & Forming Applications



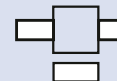
Riveting
Staking
Clinching
Welding



Part Insertion
Part Sizing



Pressing
Clamping



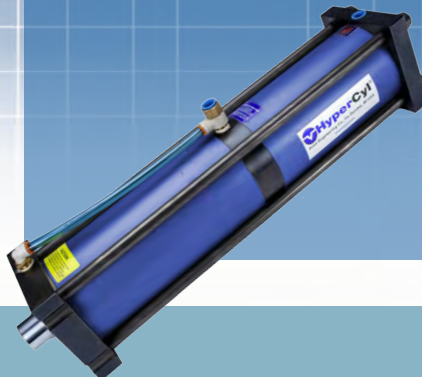
Piercing
Punching
Notching
Stamping



Bending
Folding
Hemming



Marking
Coining



Packaged Power

Heavy wall, precision honed and hard chromed steel tubes are used on all 1-200 ton HyperCyl drive units.

Reservoir Piston: Total air/oil separation between hydraulic and pneumatic seals allows high speed operation in any position and separates the plant air supply from the primary hydraulic seals and reservoir oil. Dual wear bands insure concentricity and extended service life.

Work Piston: Total air/oil separation between hydraulic and pneumatic seals, single wear band for greater resistance to side loading.

NFPA rectangular head mounting style is standard on all HyperCyl drive units.

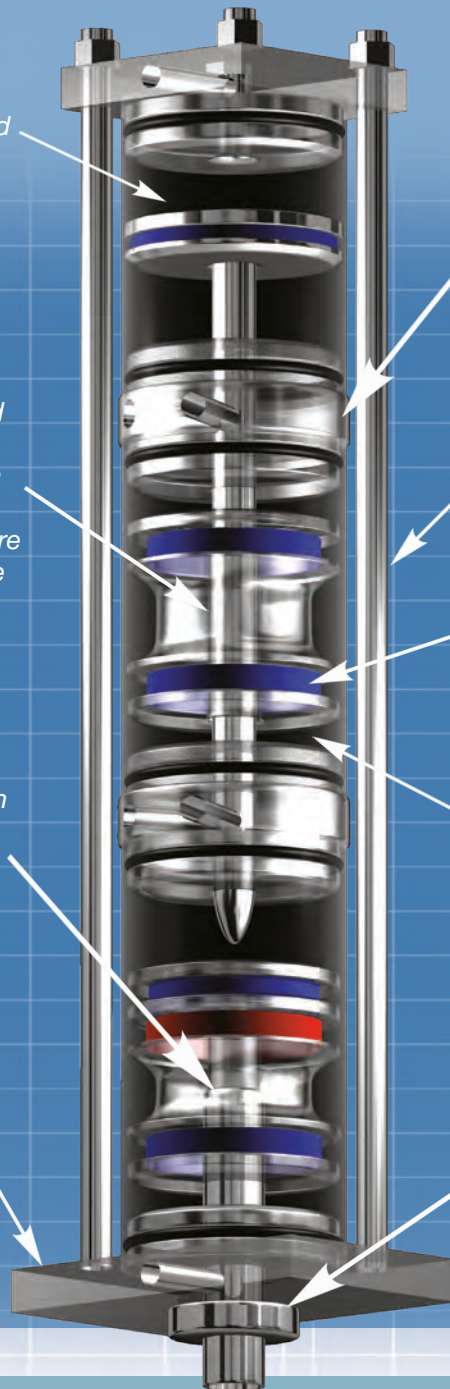
All drive unit components are precision machined on state-of-the-art CNC machines.

100,000 PSI tensile strength tie rods insure a minimum 4:1 safety factor.

Specially designed pre-loaded urethane seals are longwearing and require no air line lubrication.

Internal reservoir provides up to 5 million cycles before refilling is required. Refilling is a simple 3-step process.

Field replaceable rod bearing provides a minimum of 1 1/2 times the rod diameter of support.



HPI, HPS, HZ, HZS, HPT and HPX Series Standard Features

HyperCyl Hydra-Pneumatic Cylinders are totally self-contained drive units, available in a multitude of sizes, incorporating standard features, including:

- Total air/oil separation
- Linear force output
- Three moving components
- Simple control circuits
- 100,000 PSI tensile strength tie rods
- NFPA medium duty mounting styles
- Operation in any position or attitude
- 4.7 million MTBF, 20 million service life
- Field serviceable-seal kits
- Repair manual
- Heavy-duty construction designed for years of trouble free use
- Numerous options, such as gage kits, sensors, press frames and bases.

HPI Inline Cylinders



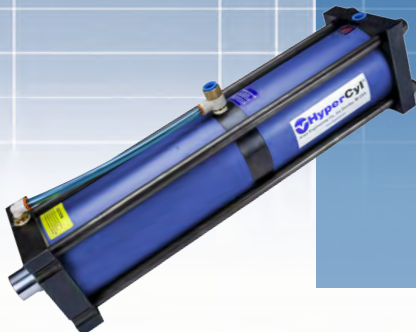
- HPI series cylinders provide the greatest force per dollar invested
- Available in 1 to 200 ton sizes, with total stroke lengths up to 16.00" and up to 2.00" power stroke lengths
- Fill couplings and high pressure gage couplings
- Variety of mounting styles
- Limited Lifetime Warranty

HPS Satellite Cylinders



- HPS series cylinders permit the working cylinder to be located up to 10' from the booster/reservoir section, providing a flexible design alternative where space may be restricted
- Available in 1 to 200 ton sizes
- Hydraulic hose assembly (1' – 10') with disconnects
- Multiple working cylinders can be operated with a single booster unit
- Available with total stroke lengths up to 24.00" and 4.00" power stroke
- Fill couplings and high pressure gage couplings
- Variety of mounting styles
- Limited Lifetime Warranty

HZ and HZS Cylinders



- Hydra-Pneumatic Power Stroke Only Operation
- High Cycle Rates—up to 300 CPM
- Available in 1 to 50 Ton Size Range
- Total Air/Oil Separation
- Long Service Life
- Compact
- Simple Single Air Valve Control
- Force/Distance Sensor and Monitoring Options
- Limited Lifetime Warranty



HPT Tandem Cylinders

- HPT series cylinders provide a compact package where space is limited
- Available in 1 to 30 ton sizes
- Available with total stroke lengths up to 10.00" and 2.00" power stroke
- Fill couplings and high pressure gage couplings
- Limited Lifetime Warranty

HPX Compact, Long Stroke Satellite Cylinders

- HPX Series Cylinders provide longer Total and Power Strokes in a smaller footprint than traditional HPS units
- Available from 1 Ton up to 30 Ton output forces using 100 PSI shop air
- Total Strokes up to 28.00" and Power Strokes up to 6.00"
- Satellite can fit within tight spots, perfect for retrofitting existing hydraulic or pneumatic applications
- Hydraulic hose assembly (1ft-10ft) with dry-break style disconnects
- Multiple satellites to 1 booster possible
- Variety of mounting styles
- Lighter weight for end of arm robot
- Limited Lifetime Warranty

IntelliCyl®

Fast, Intelligent, Quality Authentication

The IntelliCyl is the successful combination of the HyperCyl hydra-pneumatic drive unit and state of the art electronic technology. IntelliCyl was designed for applications where continuous monitoring of materials and processes is critical to the successful assembly of components. IntelliCyl consists of two options: an internally mounted Linear Variable Displacement Transformer (LT or LTI) and a fully integrated Load Cell (LC) installed on the end of the drive unit rod. Both devices provide for an analog feedback signal through an analog card to a PLC. The feedback signals indicate distance (cylinder travel) to $\pm .001"$ and force (lbs) applied to the tooling. The ability to monitor drive unit and tooling travel and force during the assembly process allows IntelliCyl to:

- Measure anywhere within the total stroke.
- Confirm parts prior to assembly.
- Monitor tool wear.
- Monitor, confirm, and store each part data
- Programmable distance and force.
- 100% in process QC.

IntelliCyl as a stand-alone drive unit can be integrated into a larger assembly processes, or be incorporated into a HyperCyl IntelliPress system.



Pressing Performance

HyperCyl Presses are designed for the full line of 1 ton through 200 ton HyperCyl drive units. A modular approach allows the machine designer to choose from “C” or “H” frames, include unguided, two-column or four-column guided upper bolsters, and select table top, pedestal or machine base configurations. Custom frames and bases can be designed and built to your specifications.

HyperCyl Presses are ideal for a wide variety of production applications, including part insertion and assembly, piercing metal/plastics/composites, clinching, and staking. Robust design and construction ensure continuous use in even the toughest industrial applications. Drive unit and frame packages are all available without controls and safety devices for integration into larger assembly processes.

HyperCyl Presses are available as “turnkey” packages; complete with all controls required to operate the drive unit. Various pneumatic/electrical control packages Permit Press with multiple press functionalities. Options can include ram position/force monitoring control, in-process quality verification, pressure transducers, stroke limiters, touch-screen HMI press controls, safety light curtains and guarding, rod locks, and more.

All HyperCyl products feature the latest in safety compliance, hydra-pneumatic technology and mechanical design.

Why choose HyperCyl Presses?

- Cost effectiveness when compared to hydraulic presses
- Energy efficiency
- Versatility in design or customization
- Clean, quiet, reliable operation
- Virtually maintenance free



HyperView-Press®

You Get What You Measure

Today's manufacturing environment demands product and process accountability, and HyperView-Press allows you to monitor and prove the integrity of your product. The HyperView-Press Signature Analysis Controller, coupled with our innovative IntelliCyl hydra-pneumatic drive unit, provides a complete monitoring system by producing a signal waveform of assembly applications. 100% part validation is assured through simple user programmable event windows; nonconforming products will produce a different signal waveform and fail the assembly process.

Available in basic and high-end units, panel or bench-mounted enclosures, HyperView-Press:

- Provides true Force vs. Distance measurements and Force vs. Time
- Direct PLC interface
- View and print live data real-time
- Archive test results for root cause analysis 100% in-process validation of every part.
- Part dimensions out of spec.
- Tolerance stack-up out of spec.
- Damaged parts
- Missing parts
- Not fully bottomed out or seated parts
- Monitor machine and tooling – tooling wear, debris, improper force, lubrication



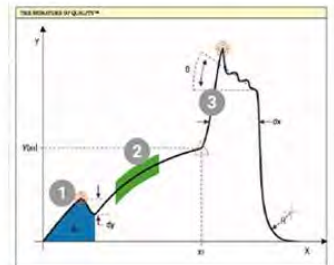
1 ALIGNMENT



2 PRESS OPERATION

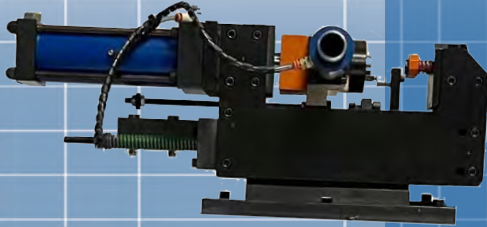


3 BOTTOM OUT





Piercing Technology



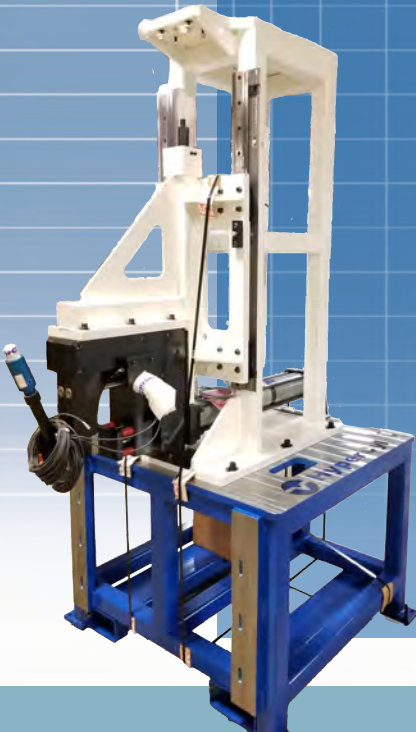
HyperCyl Pierce Units are available in the full range of 1 to 50 ton sizes, and are the solution for a wide variety of piercing, flanging, extruding and forming applications. These self-contained units include a HyperCyl hydra-pneumatic drive unit and frame, and can be manufactured in standard equalizing or non-equalizing configurations, or even custom built to customer specification.

The HyperPierce equalizing design provides for infinite adjustment of the anvil to the part prior to piercing, while the non-equalizing design requires part placement against a die button prior to piercing – perfect for robotic or stationery fixture applications. Available options include tool open/tool closed proximity sensors and IntelliCyl force/distance monitoring sensors.



Standard features include:

- Robust design and construction to ensure continuous use in even the toughest industrial applications
- Total air/oil separation
- Linear force output
- Three moving components
- Simple control circuits
- 100,000 PSI tensile strength tie rods
- NFPA medium duty mounting styles
- Operation in any position or attitude
- 4.7 million MTBF, 20 million service life
- Field serviceable-seal kits
- Easily obtainable and replaceable die buttons and punches
- Fill units/repair manual available





Electro-Mechanical Actuators

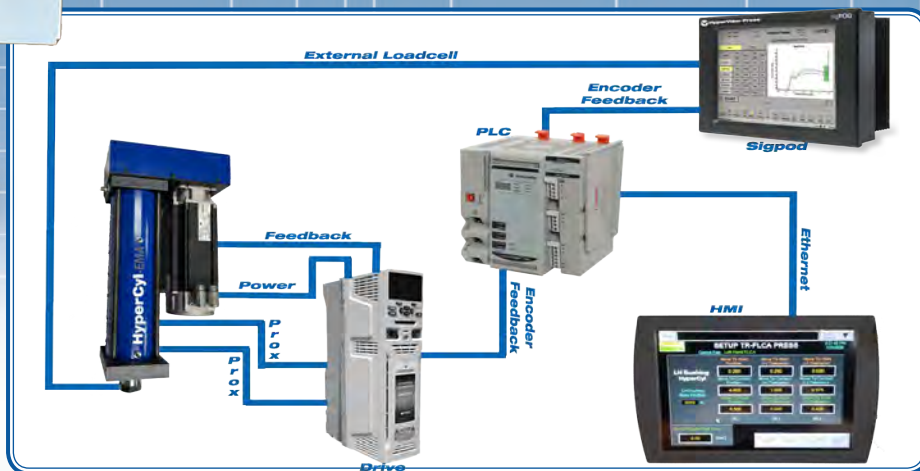
HyperCyl-EMA (electro-mechanical actuator) is a robust, servo driven actuator designed for precision assembly applications or applications not suited for standard HyperCyl or IntelliCyl products.

Available in both roller screw and ball screw configurations in load ratings from 5 kN to 230 kN (1 - 25 tons), HyperCyl-EMA provides a new level of price/performance in the automotive, aerospace, DOD, appliance, medical, electronics and transportation industries in a wide range of applications.

HyperCyl-EMA provides the performance and flexibility required in both current and future manufacturing environments and, it's built in the USA

When mated with the optional HyperView-Press signature analysis controller, precise force/distance monitoring, trending, data logging, Cpk and data analysis capability improves finished product quality and substantially reduces manufacturing costs. HyperCyl-EMA is available as an actuator only, an actuator with drive, and an actuator with drive and HyperView Press package.

- Speeds reaching 416mm/sec
- Repeatability of +/- 0.005mm
- Output forces from 0 – 230 kN



The Aries Engineering Company, Inc. Family of Products



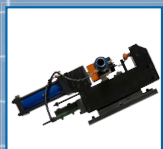
 **HyperCyl-EMA®**



 **HyperPress®**



 **HyperCyl®**



 **HyperPierce®**



 **HyperView-Press®**



Aries Engineering Company

Servo Actuators, Hydra-Pneumatic Cylinders, Presses and Joining Systems

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