

Applications

This oil cylinder has strong resistance to environmental interference and can adapt to various working conditions. It can be widely used in applications such as excavators, loaders, and aerial work vehicles.



Innovative independent design Independent intellectual property rights obtained

- Apply for three patents:**
- Invention - Telescopic Oil Cylinder - Substantive Examination
 - Utility Model - Oil Cylinder with External Sensor - Authorization
 - Utility Model - Displacement Sensor External Oil Cylinder - Authorization



HENGLI HYDRAULICS

Setting the standard for highly reliable hydraulic power and control solutions for the global market, Hengli Hydraulic is devoted to the continuous innovation of new product development, manufacturing processes, quality control and management systems. We are focused on investments into intelligent manufacturing systems that employing efficiency improvements to reduce and offset energy consumption.

To meet the needs of your business, our team is ready to review your mobile equipment design specifications and market potential. A partnership with Hengli Hydraulic will deliver robust product design with the product supply chain consistency enjoyed by the top names in mobile industry.

What we provide

- Hydraulic Cylind& Electric Cylinderr
- Hydraulic Piston Pump & Motor
- Hydraulic Control Valve for Mobile Machinery
- Industrial Valve
- Hydraulic Pump Unit and System
- Threaded Cartridge Valve
- Ball Screw and Linear Guide Track
- Orbital Motor and Brake
- Control Components
- High-precision Casting
- Pneumatic Components and integrated System
- Cold-drawn Seamless Steel Pipe
- Surface Coating-Thermal Spray Treatment
- Non-standard customized equipment

For more detailed information, please visit our website at www.henglihydraulics.com

We are looking forward to working with you!

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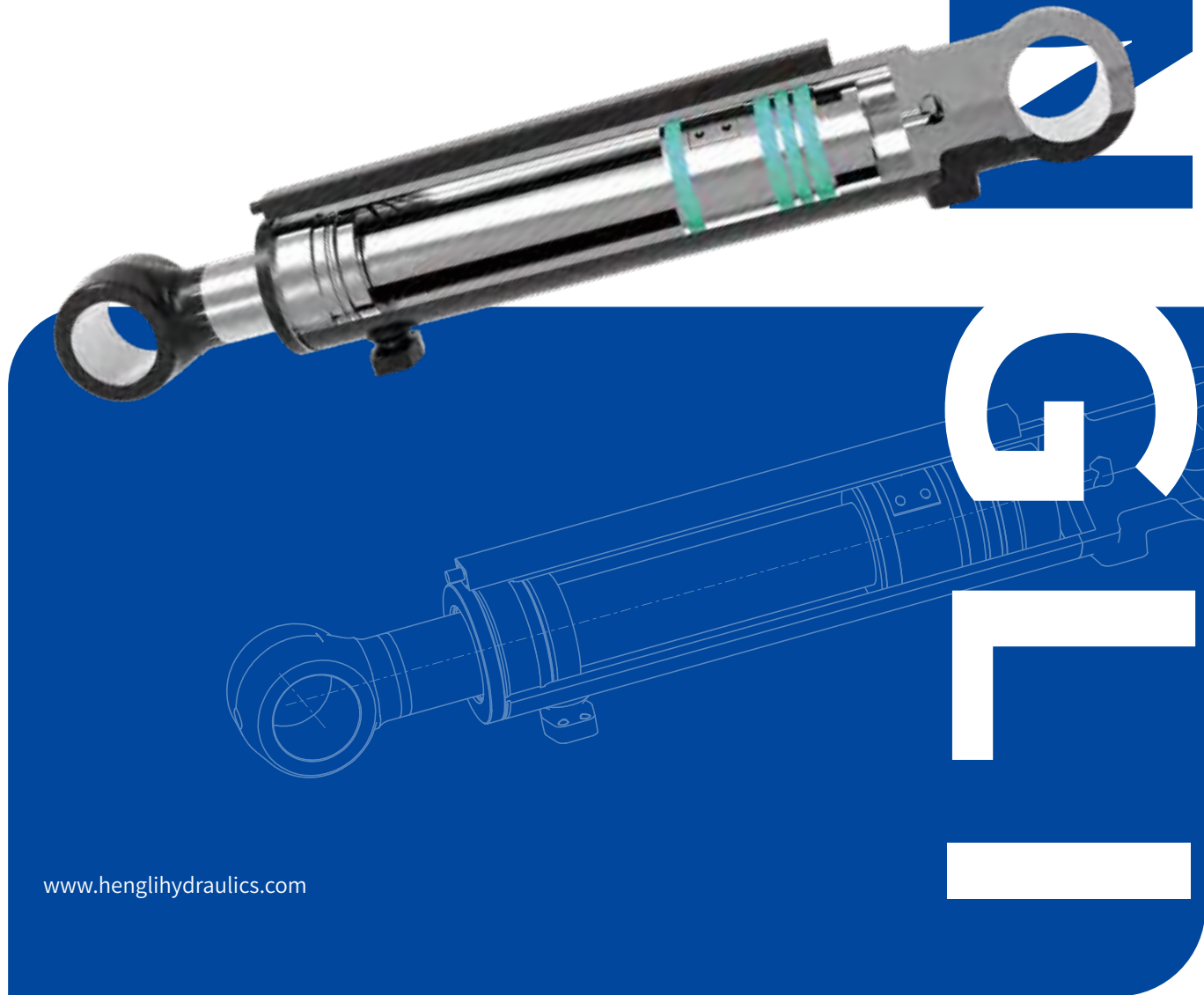
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HENGLI HYDRAULICS

Digital Hydraulic Cylinder

•Rigorous •Professional •Advanced



Innovation-oriented independent design, research and development

We are pursuing the facts based on technology, taking the actual condition of any project into consideration, researching and developing products that take the lead of the hydraulic industry judged by both technology and quality criteria.

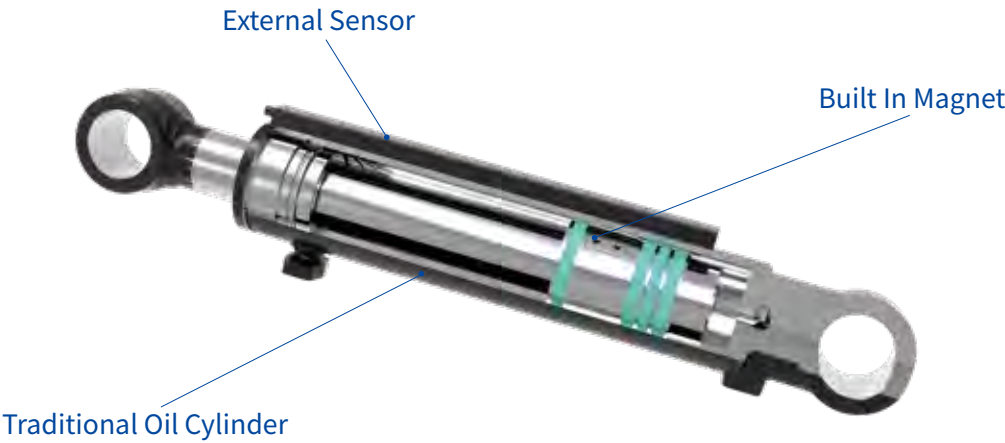
Background Introduction Of Digital Hydraulic Cylinder

In the context of the intelligent transformation of construction machinery, the market's demand for functions such as unmanned driving, remote control, and high-precision control is becoming increasingly urgent. To cope with this trend, Hengli has developed digital hydraulic cylinders, whose core advantages lie in:

- 1. Multi parameter real-time feedback: Synchronize the output of piston absolute position and motion speed data, providing precise input for intelligent control.
- 2. Key functional positioning: As the core component of intelligent solutions, this oil cylinder directly empowers the automation and remote operation of construction machinery through high responsiveness and stability.
- 3. Industry value: By improving control accuracy and system reliability, it promotes the efficient evolution of construction machinery towards intelligence and digitization.

Product Composition

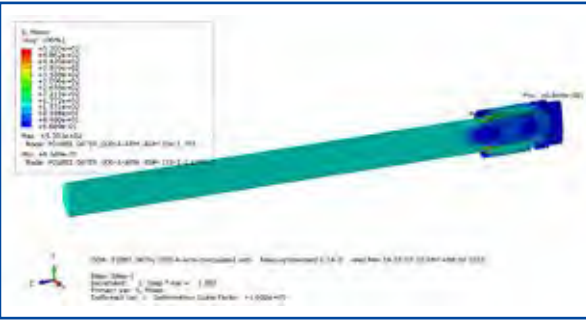
The digital oil cylinder is composed of a traditional oil cylinder, an external sensor, and a magnet. The electronic components are placed on the outer wall of the oil cylinder to sense the magnet embedded in the end of the piston ,and output the position of the piston through the principle of magnetostriction. Compared with traditional built-in sensor oil,the oil cylinder processing is simpler and the structure is more compact.



Simulation And Testing

Structural simulation

The three-dimensional modeling design of digital hydraulic cylinders is carried out using Creo, and the mechanical simulation of the model is performed using Abaqus finite element analysis software to ensure the structural reliability of the product under complex working conditions and extend its service life. The simulation content covers stress distribution, fatigue life prediction, and deformation analysis.



Bench test

Complete pulse durability tests and external force durability tests at Hengli Experimental Center to verify the sealing, durability, and impact resistance of hydraulic cylinders. The experimental data shows that the product performance is stable. Can ensure excellent performance during its use.



Equipped with analysis

Integrating the digital hydraulic cylinder into the excavator mainframe for actual working condition simulation testing, continuous operation without abnormalities and able to output displacement and velocity signals continuously and stably.



Product Advantages

Performance comparison	Hengli digital hydraulic cylinder solution	Traditional built-in magnetostrictive scheme	Traditional external magnetostrictive scheme
Structure type			
Installation convenience	Excellent	Medium	General
Space compactness	Medium	Excellent	General
Structural strength reliability	Medium	General	Excellent
Cost economy	Excellent	General	General
After sales maintenance convenience	Excellent	General	Excellent

Product Parameters

Application And Customization

- Covered models: Suitable for small/medium/large excavators
- Non standard customization: supports customized development of parameters such as cylinder diameter and stroke

Core Parameters

Electrical characteristics	
Power supply range	18-36 VDC
Signal output	CAN bus+analog (dual-mode compatible)
Temperature resistance of electronic components	-40 °C to+85 °C
Hydraulic performance	
Hydraulic oil temperature resistance	-40 °C to+120 °C
Media compatibility	Conventional mineral oil/synthetic hydraulic oil
Maximum output speed	0.8 m/s
Protection grade	IP67/IP69K
Accuracy index	
Displacement resolution	500 μm
Nonlinear error	± 0.04% FS (full scale)
Displacement accuracy	± 0.1mm (measured value)