

Rotating telescopic hydraulic cylinder photo



Rotary Telescopic Hydraulic Cylinders

Uranus Hydraulic offers two types of rotary hydraulic cylinders:

- Helical Telescopic Hydraulic Cylinder
- Rotary Telescopic Composite Hydraulic Cylinder

Both types are designed to provide efficient and reliable power solutions for metallurgy, heavy machinery, and automated production under complex working conditions.

1. Helical Telescopic Hydraulic Cylinder

The helical telescopic hydraulic cylinder achieves a fixed ratio of linear - rotary compound motion through a mechanical helical pair. It features a compact structure, high output torque, excellent rigidity, and strong reliability, solving complex power transmission and motion control problems in metallurgy and heavy-duty handling environments.

The piston rod surface is machined with helical grooves of a specific lead, and a fixed guide pin is installed on the end cap. When pressurized oil drives the piston rod axially, the interaction between the guide pin and the helical groove forces the axial displacement of the piston rod to convert into rotational motion around its axis, enabling controlled helical extension and retraction.

Key Features:

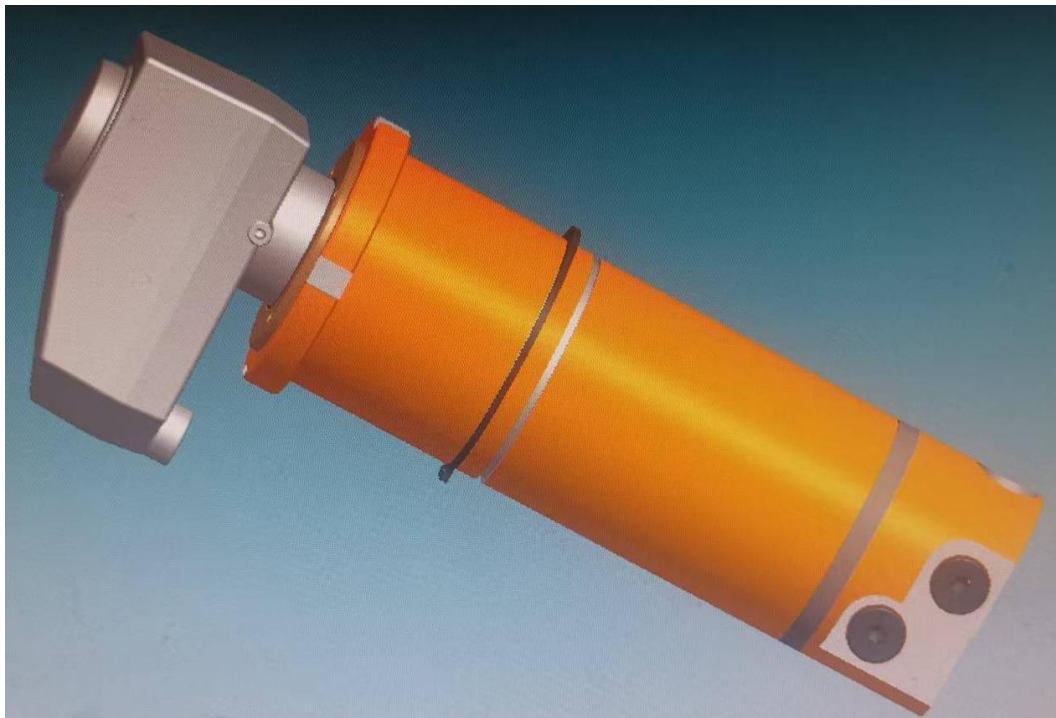
- **Deterministic Motion:** Telescopic stroke and rotation angle are strictly proportional.
- **High Torque Output:** Delivers strong torque without an additional rotary motor.
- **Compact Structure:** Integrates two degrees of freedom into one unit, ensuring high rigidity.
- **High Reliability:** Operates stably under high temperature, high pressure, and dusty environments.
- **Cost Advantage:** Simpler and more economical compared to a “telescopic cylinder + rotary motor” combination.

Application Examples:

① Locking and Rotating Cylinder for Furnace Table of Hood-Type Furnace

Bore: 70 mm, Rod: 45 mm, Stroke: 65 mm, Rotation Angle: $90^\circ \pm 0.5^\circ$

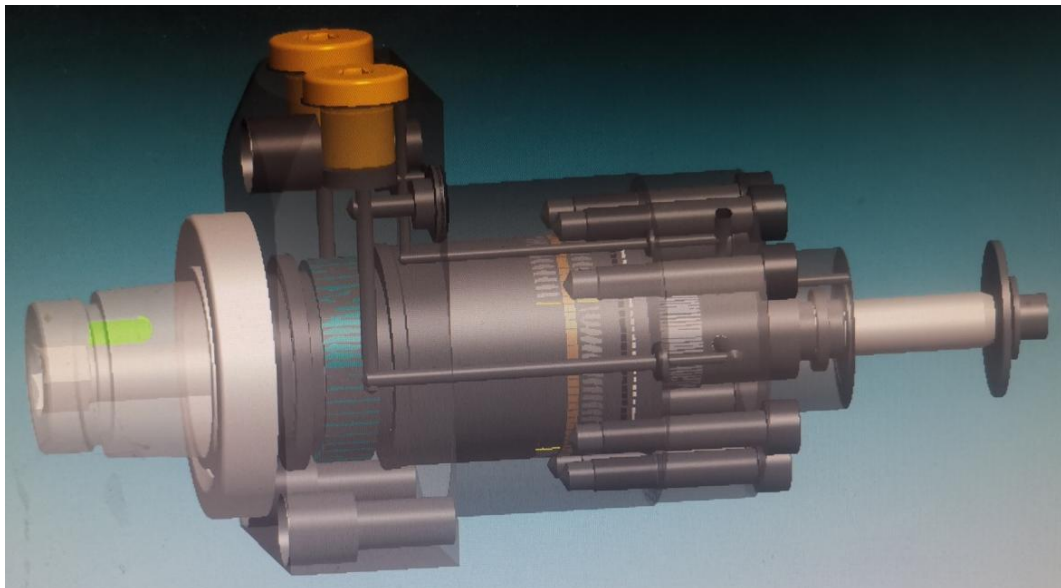
Working Pressure: 15 MPa, Test Pressure: 22.5 MPa



② Rotary Locking Cylinder for Clamping Devices

Bore: 40 mm, Rod: 32/10 mm, Stroke: 27 mm, Rotation Angle: 90°

Working Pressure: 50 MPa, Test Pressure: 50 MPa



2. Rotary Telescopic Composite Hydraulic Cylinder

The rotary telescopic composite hydraulic cylinder integrates **telescopic (linear reciprocating)** and **rotary (torsional motion)** functions. It is composed of a double-acting hydraulic cylinder and a helical pair, capable of independent telescopic action, independent rotation, or combined movements, greatly enhancing operational efficiency and flexibility.

Core Functions:

1. **Independent Telescoping:** Drives the piston rod axially to deliver pushing/pulling force.
2. **Independent Rotation:** Provides precise angular displacement and torque output via the helical mechanism.
3. **Compound Motion:** Synchronizes telescoping and rotation to achieve helical lifting, curved paths, and other complex trajectories.

Technical Advantages:

- **Integrated Design:** Combines telescopic and rotary functions, saving installation space.
- **High Efficiency & Energy Saving:** Simplified transmission with equal forward/reverse torque for higher efficiency.
- **Precise Control:** Compatible with servo or proportional valves for closed-loop control.
- **Excellent Sealing:** Dual sealing for both linear and rotary motion ensures reliable performance.
- **Powerful Performance:** High load-bearing capacity, delivering large torque and wide swing angles.

Typical Parameters:

- Rated Pressure: 21 MPa
- Maximum Output Torque: 50,000 Nm
- Lifting Force: > 2000 KN
- Swing Angle: $\geq 360^\circ$
- Stroke: ≥ 2 m

Application Examples:

①UR/UF Vertical Roll Balancing Cylinder

Bore: 90 mm, Rod: 70 mm, Stroke: 240 mm, Rotation Angle: 90°

Working Pressure: 30 MPa, Test Pressure: 37.5 Mpa



②Rotary Telescopic Hydraulic Cylinder (Sample Parameters)

Bore: 125 mm, Rod: 70 mm, Stroke: 265 mm, Rotation Angle: 90°

Working Pressure: 14 MPa, Test Pressure: 18 MPa
Rotary Cylinder Pressure: 25 MPa, Torque: 660 Nm

