expansion and contraction cylinder for coiler


主轴涨缩缸
250/80-150

Coiler Expansion Hydraulic Cylinder

Product Overview

The coiler expansion cylinder consists of a **double-acting hydraulic cylinder** combined with a **rotary joint**. Its main function is to expand and contract the drum diameter of coilers or uncoilers by extending and retracting the cylinder during rotation. For precise stroke control, a **displacement sensor** can be installed, with an optional **pressure sensor** for accurate monitoring and control of push-pull actions. Two exhaust/pressure test ports are located on the top of the rotary joint, while each side has four inlet/outlet ports—two in use and the others sealed. The leakage port at the bottom must be connected to the return line to ensure smooth oil return and prevent external leakage caused by back pressure exceeding 0.5 bar.

A **torque arm hole** is provided beneath the rotary joint to fix an anti-rotation bar (floating positioning to avoid axial load). The flange surface must be perpendicular to the rotation axis, ensuring radial run-out ≤1 mm. Oil and leakage pipelines should be firmly fixed to avoid radial or axial forces on the rotary joint. For high-temperature hot-rolling coilers requiring cooling water, expansion cylinders with an **integrated water rotary joint** are available.

Key Features

- High-quality reciprocating and rotary seals; rotary joint with precision bearings
- Reliable operation, long service life, easy maintenance
- Over **1,000 units** delivered worldwide in the past two decades
- Customizable bore size **100–900 mm**, max. working pressure **25 MPa**
- Unique **clearance seal structure** prevents heat generation, removes speed limits, and greatly extends rotary joint lifespan
- The mandrel expansion cylinder of the coiler can undergo dynamic balancing testing and adjustment according to customer requirements, in order to meet the specified balancing speed range (balancing cycle), balancing quality grade, and ensure that the residual unbalance complies with the customer-permitted eccentricity (residual centrifugal rate) standard. A dynamic balance test report will be issued accordingly.

Applications

Widely used in:

- Cold-rolling and hot-rolling strip coilers and uncoilers
- Construction machinery and injection molding machines
- Chemical processing equipment

In high-speed operations, traditional rotary joints typically adopt **contact seals**. The relative motion generates excessive heat at the sealing interface, causing premature wear, aging, and leakage, which significantly shortens service life.

Uranus has developed a proprietary **clearance-sealed rotary joint**, which relies on a precision gap between the rotor shaft and sleeve to achieve sealing. With no direct metal-to-metal or seal-to-metal contact during operation, it effectively avoids heat

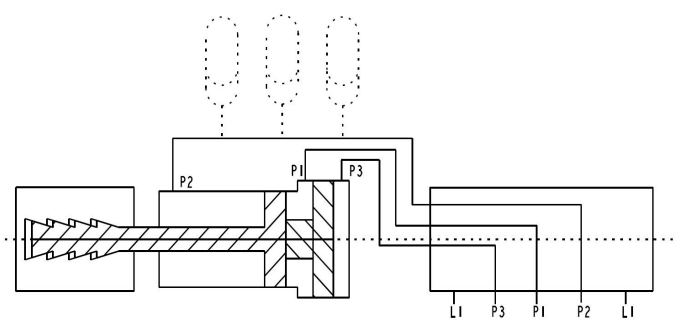
generation, removes speed limitations on sealing performance, and greatly extends service life.

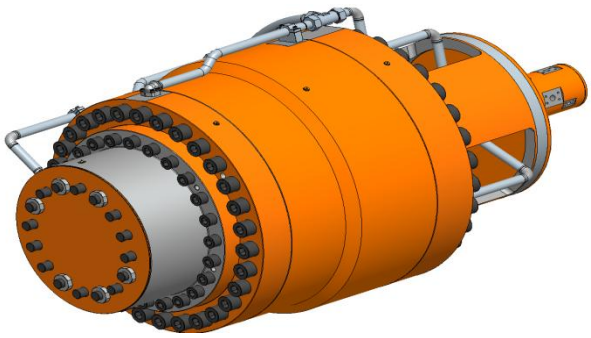
The rotary joint is equipped with **precision bearings**, ensuring reliable performance. Over the past 20 years, Uranus has delivered **over 1,000 expansion cylinders** worldwide, applied extensively in cold- and hot-rolling coilers, uncoilers, sheet and strip processing lines, as well as construction machinery, injection molding, and chemical equipment.

Example Specifications

1.Expansion Cylinder

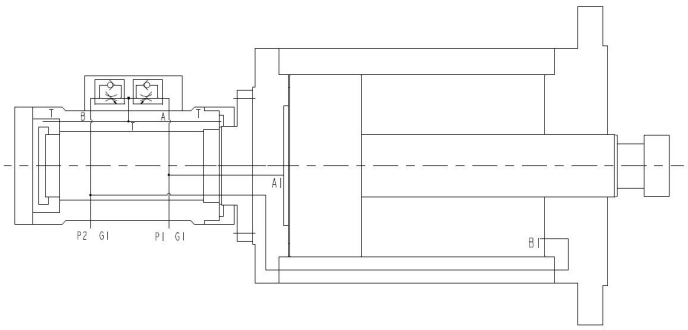
- Twin-cylinder tandem design
- Large cylinder: Ø900 / Ø360 / Stroke 17
- Small cylinder: Ø850 / Ø360 / Stroke 77
- Built-in displacement sensor
- Working pressure: 10 MPa; Test pressure: 15 MPa
- Rated speed: 450 r/min

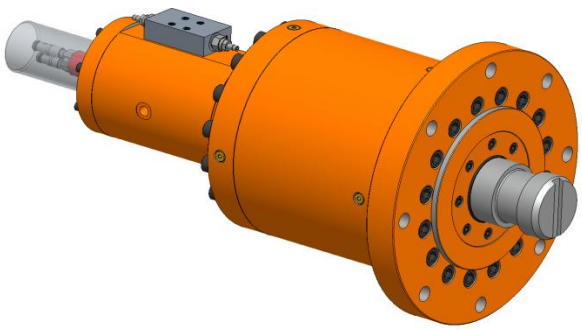




2. Coiler & Press Roller Drum Expansion Cylinder

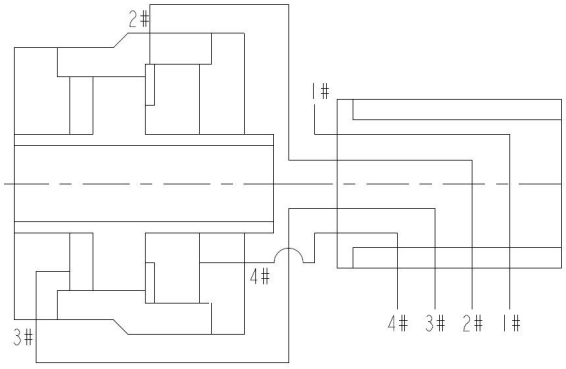
- Bore Ø250; Rod Ø110; Stroke 113.5; Cushion 30
- Built-in displacement sensor
- Working pressure: 14 MPa; Test pressure: 21 MPa
- Rated speed: 650 r/min

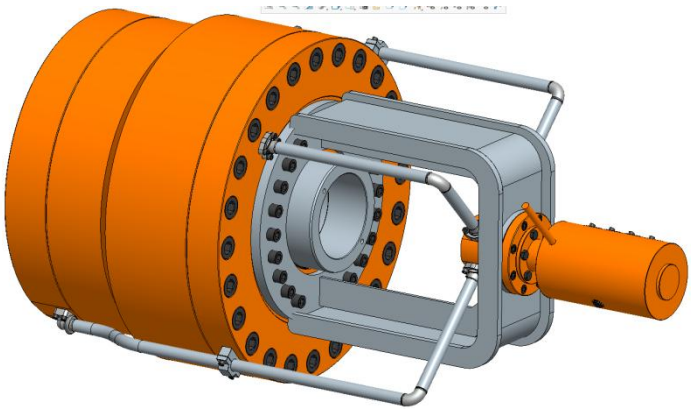




3. Expansion Cylinder

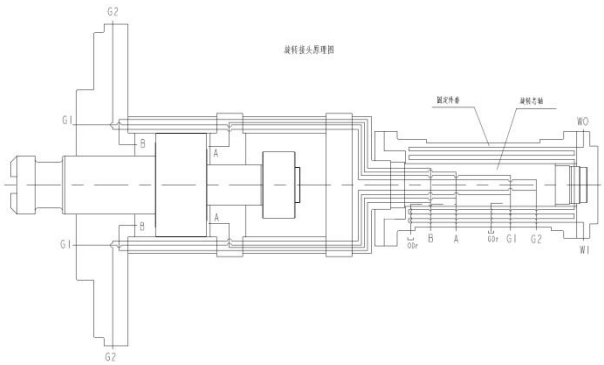
- Twin-cylinder tandem design
- Large cylinder: Ø760 / Ø315 / Stroke 20
- Small cylinder: Ø680 / Ø315 / Stroke 75
- Built-in displacement sensor
- Working pressure: 12 MPa; Test pressure: 21 MPa
- Rated speed: 450 r/min

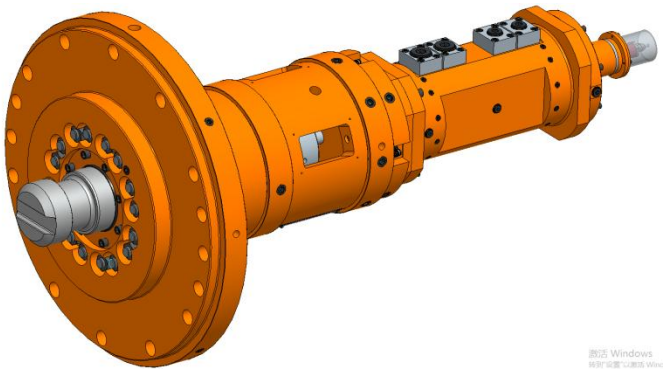




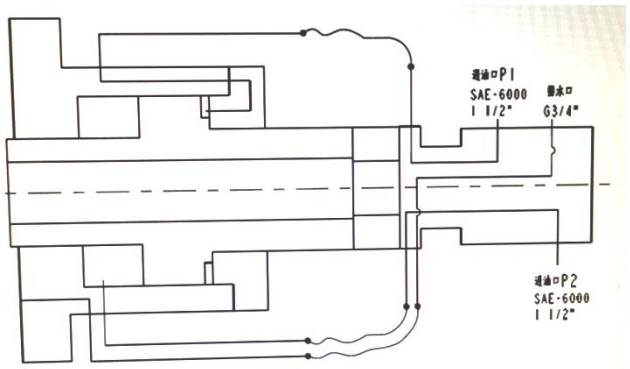
4. Rotary Telescopic Cylinder

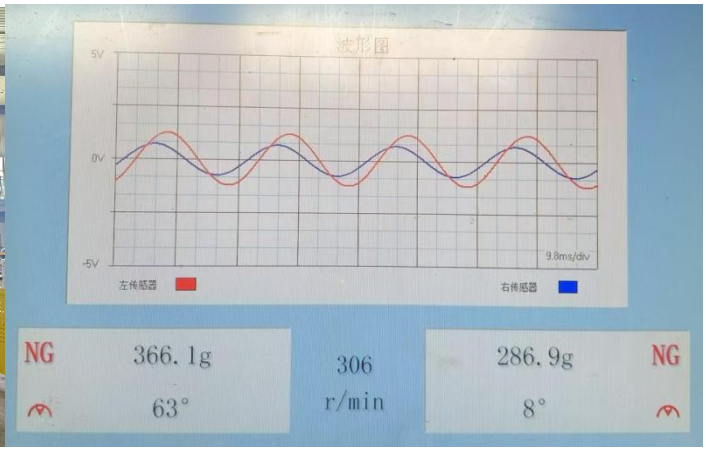
- Bore Ø320; Rod Ø180; Stroke 74
- Built-in displacement sensor
- Rotary joint with cooling water jacket
- Working pressure: 21 MPa; Test pressure: 25 MPa
- Rated speed: 3800 r/min





- 5. Bore Ø560; Rod Ø360/310; Stroke 91.7
- Working pressure: 14 MPa; Test pressure: 30 MPa





Dynamic Balance Test

Dynamic Balancing Waveform