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Reciprocating Compressor Accessories Product Manual

Main Products

Including accessories for TRT turbines, axial flow fans, steam turbines and centrifugal air compressors: air valves, cylinders, piston rods, bearings/bushings, coolers, cylinder heads, crankshafts, connecting rods, crossheads, pistons, piston rings, guide rings, packing seals, impellers, and shaft seal packing supports. The products are reliable in quality and backed by excellent after-sales service.

Main Professional Replacement Parts

1. Axial flow fan accessories for Shaanxi Blower (SDB), Chenfa, TRT, Shenyang Blower (SBC) and other brands.
2. Steam turbine accessories for Hangzhou Steam Turbine (HTC), Nanjing Steam Turbine, Shanghai Steam Turbine, Qingdao Jieneng, Yangtze River Power, Northern Heavy Industry (NHI) and other brands.
3. Three filters, impellers, plain bearings, seals, diffusers, coolers and other accessories for centrifugal compressors of Atlas Copco, Ingersoll Rand, CompAir, FS-Elliott, Elliott, Sullair and other brands.
4. Accessories for air compressors, oxygen compressors, and nitrogen-hydrogen compressors.

Original Drawings

Original Materials

Original Process

1.Frame Components
2.Bearing Rod
3.Lubricating Oil
4.Crosshead Guide
5.Crankshaft
6. Connecting Rod
7. Connecting Rod Nut
8. Crosshead Body
9. Crosshead Pin
10.Crosshead Slider
11.Oil Scraper Ring
12.Sealing Ring
13.Cylinder Block
14.Cylinder Liner
15.Piston Body
16. Piston Ring
17. Support Ring
18. Piston Rod
19. Packing Assembly
20. Suction Valve
21. Discharge Valve
22. Suction Valve Unloader
23. Clearance Chamber
24. Intake Buffer
25. Exhaust Buffer

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Spring Components: High-Precision Elastic Component Solutions

Covers a full range of spring products (including tapered springs, compression springs, extension springs, torsion springs, etc.) with over 100,000 specifications, catering to diverse industrial needs

Fast Adaptation Speed

Quickly adapt to the needs of various industries, shorten product development cycles, and improve supply chain response speed.

Strong Versatility

Boasts high versatility, suitable for different equipment and systems, reducing customers' model selection and replacement costs.

Rich Specification Combinations

Offers over 100,000 standard specifications and material combinations, supports personalized selection, and enhances matching accuracy and usage efficiency.

Complete Product Types

Covers multiple types (tapered springs, circular springs, compression springs, extension springs, etc.), achieving full-series spring coverage to meet diverse application scenario needs.

Wide Application Fields

Widely used in industrial fields such as compressors, pump valves, and automation equipment, demonstrating multi-scenario applicability.

Strong Working Condition Adaptability

Meets the requirements of complex working conditions (high temperature, high pressure, high frequency, etc.), ensuring stable and reliable elastic performance.

Excellent Connection and Buffering

Achieves precise elastic connection and buffering control, improving the stability and safety of equipment operation.

Strong Industrial Support

Provides core spring component support for key industrial equipment, ensuring long-term reliable operation of the system

Packing Seal and Support Ring Assembly: High-efficiency dynamic sealing technology

Suitable for piston rod and rotating shaft sealing in equipment such as compressors, pumps, and reactors, providing reliable dynamic sealing protection

01

Wide Application Range

Applicable to dynamic sealing scenarios of equipment including compressors, pumps, vacuum pumps, mixers, reactors, and valves.

02

Structural Composition

Composed of elements such as packing chambers, throttle rings, locking rings, sealing rings, and springs, forming a multi-chamber floating sealing system.

03

Sealing Principle

Relies on the combined action of gas pressure and tension spring force to ensure the sealing ring adheres closely to the surface of the piston rod for effective sealing.

04

Dynamic Protection

Effectively prevents leakage of high-pressure gas or liquid media along moving components, ensuring safe and continuous operation of the equipment.

Piston Ring (Expansion Ring): Key sealing and heat transfer component

By staggering notch types (straight cut, bevel cut, lap cut) with a minimum stagger angle of ≥120°, gas cross-leakage is prevented

Notch Staggered Arrangement

Adjacent piston ring notches are staggered by no less than 120°, which effectively disperses leakage paths and reduces the possibility of direct gas cross-passage.

Notch Type Selection

3 types (straight cut, bevel cut, lap cut) are matched according to pressure distribution and manufacturing precision to ensure sealing performance and process feasibility.

Staggered Sealing Structure

Multiple sealing barriers are formed through angular staggering, enhancing sealing continuity and improving the reliability of the overall sealing system.

Labyrinth Anti-Cross-Leakage Mechanism

Labyrinth-style flow resistance is built using staggered notches, significantly suppressing high-pressure gas cross-flow along gaps and reducing leakage risks.

Bearing Bushing and Small End Bushing Components: Core technology of plain bearings

2 structures (integral/bushing and split) are available, with reasonable fitting clearances, meeting diverse assembly and maintenance requirements

Clear Structural Classification

Integral/bushing- suitable for light-load compact structures

Split type- widely applied to heavy-load maintainable equipment.

Strong Assembly Adaptability

Split bearing bushes can be replaced without disassembling the shaft, which significantly reduces downtime and improves equipment maintenance efficiency and on-site adaptability.

Scientific Clearance Design

A precise clearance fit is adopted between the bearing bush and the shaft journal to ensure oil film formation, avoiding overheating caused by excessive tightness or vibration and wear caused by excessive looseness.

Crosshead Components: Key hub for connection and guidance

Acting as the connector between the connecting rod and the piston, it bears reciprocating loads, provides precise guidance, and reduces the impact of lateral forces

Main Components

crosshead body
crosshead pin
crosshead lock nut.

Structural Design

Closed or open structures are adopted (the closed structure is the mainstream)

Main Material

Main body -- ductile iron, cast steel, or forged steel, with Babbitt alloy cast on the slide surface.
Crosshead pin-- 38CrMoALA, 42CrMoE, etc.

Connecting Rod Components: Core component for power transmission

Main Components

- Connecting rod body
- Big end bearing bush
- Small end bearing bush
- Connecting rod bolts nuts

Main Materials

- Connecting rod body include 35#, 45#, OT600, 40Cr, or 42CrMoE.
- Big end bearing bush is mainly made of aluminum-magnesium alloy or Babbitt alloy.
- Small end bearing bush is generally made of ZCuSn10Pb1, aluminum-magnesium alloy, or Babbitt alloy.
- Connecting rod bolts are typically made of 40Cr, 35CrMoAlA, or 42CrMoE, processed via forging and quenching-tempering

Piston Components: Executive main body for compression work

As the core of the compression mechanism, it is driven by the connecting rod-crosshead to reciprocate in the cylinder, completing the gas compression process.

Core Function

The piston is the core executive component of the compressor for gas compression. Through reciprocating motion, it changes the cylinder volume and completes the entire process of suction, compression and exhaust.

Main Components

It mainly consists of –
the piston body
piston lock nut
piston rod
piston rings
support rings.

Structural Design

It adopts a disc or cylindrical structure, with a hollow design to reduce weight, and reinforcing ribs to enhance rigidity. It adapts to high-load working conditions and ensures long-term operation stability.











Piston Rod Components: Precision transmission and connection component

The friction section undergoes surface hardening treatment, featuring excellent wear resistance.

Main Structure

One end of the piston rod is a conical body, which is precisely inserted into the piston taper hole to achieve high concentricity and stable force transmission, ensuring smooth reciprocating motion

Main Material

Generally, 38CrMoAlA or 42CrMoE high-strength alloy steel is used for integral forging to ensure material uniformity and structural reliability. The friction part of the rod body undergoes surface hardening treatment, which has good wear resistance.

Surface Spraying with Tungsten Carbide

Surface Nitriding Treatment

Crosshead Pin and Nut Components: High-strength shear load-bearing design

Significantly reduce local stress concentration, extend service life, and improve the reliability and safety of the overall motion mechanism

Structural Optimization Design

The main body is a cylinder with a positioning boss, and concentric small-diameter sections are set at both ends to achieve precise alignment and stable support.

Improved Force-Bearing Mode

The stepped protective sleeve converts the force from bending to shearing, greatly reducing the risk of local stress concentration on the pin body.

Extented Service Life

The protective sleeve fits closely to the crosshead wall, reducing torque and effectively improving fatigue resistance and service durability.

Enhanced System Reliability

The optimized structure ensures the stable operation of the crosshead pin under high-load working conditions and improves the safety level of the entire machine.

Cylinder Components: Foundation for compression volume composition

Double-layer structure design with built-in cooling water jacket, which effectively dissipates heat, keeps the cylinder temperature stable and prevents overheating deformation

Double-layer Structure

High-Efficiency Cooling Capacity

Uniform Temperature Distribution

Deformation Prevention & High Pressure Resistance

缸体部件

机身部件

缸盖部件

缸体部件

缸体部件

缸体部件

缸体部件

缸座部件

Cooler Components: High-efficiency heat exchange system

The main types include shell-and-tube, plate, and air-cooled coolers, which are adapted to different working conditions and spatial layout requirements

Shell-and-Tube Cooler

Composed of multiple tube bundles, it has a robust structure, suitable for high-pressure and high-temperature environments, with stable heat exchange and easy maintenance.

Plate Cooler

Adopting a stainless steel plate stacking design, it has high heat transfer efficiency, a small volume, and is suitable for installation in compact spaces.

Air-cooled Cooler

Uses forced air convection for heat dissipation, no cooling water required, suitable for water-deficient or mobile equipment scenarios.

Gasket Components: Key static sealing solution

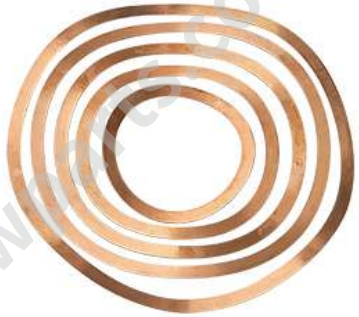
Available in various materials, including metal, non-metal (e.g., asbestos, rubber, PTFE), and semi-metal composite structures

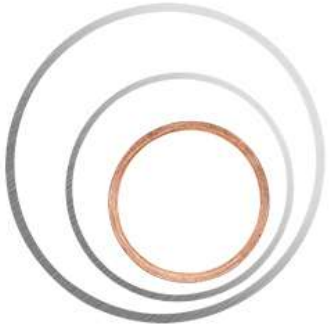
Non-Metal Materials

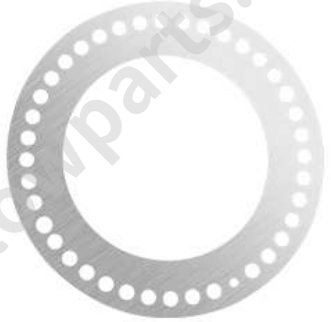
Gaskets made of non-metallic materials such as asbestos, rubber, synthetic resin, and polytetrafluoroethylene (PTFE)

Semi-Metal Composite Materials

Combines the advantages of metal and non-metal (e.g., spiral-wound and jacketed gaskets), achieving a balance between high strength and excellent sealing performance. It is widely used in medium and high-pressure systems.







Metal Materials

Made of metal materials such as copper, aluminum, and stainless steel. It resists high temperatures and pressures, is suitable for harsh working conditions

Filter and Oil Circuit System: Cleanliness and lubrication support system

Main Components

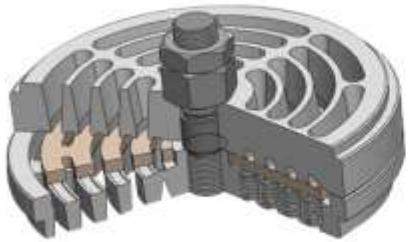
The filter consists of a cylinder body, stainless steel filter screen, blowdown component, transmission device, and electrical control component.

Main Function

Installed at the inlet end of the medium pipeline, the filter removes impurity particles and protects key components such as pressure reducing valves and gas valves.

Compressor Valve Components: Core of intelligent opening and closing control

Mainstream types include ring valves, mesh valves, strip valves, reed valves, etc., and are classified into two categories: suction valves and discharge valves.



Compressor Valve Components: Core of intelligent opening and closing control

1) Special Anti-fouling and Anti-corrosion Valve

Compressor Valve Components: Core of intelligent opening and closing control

2) PEEK Valve Plate Components

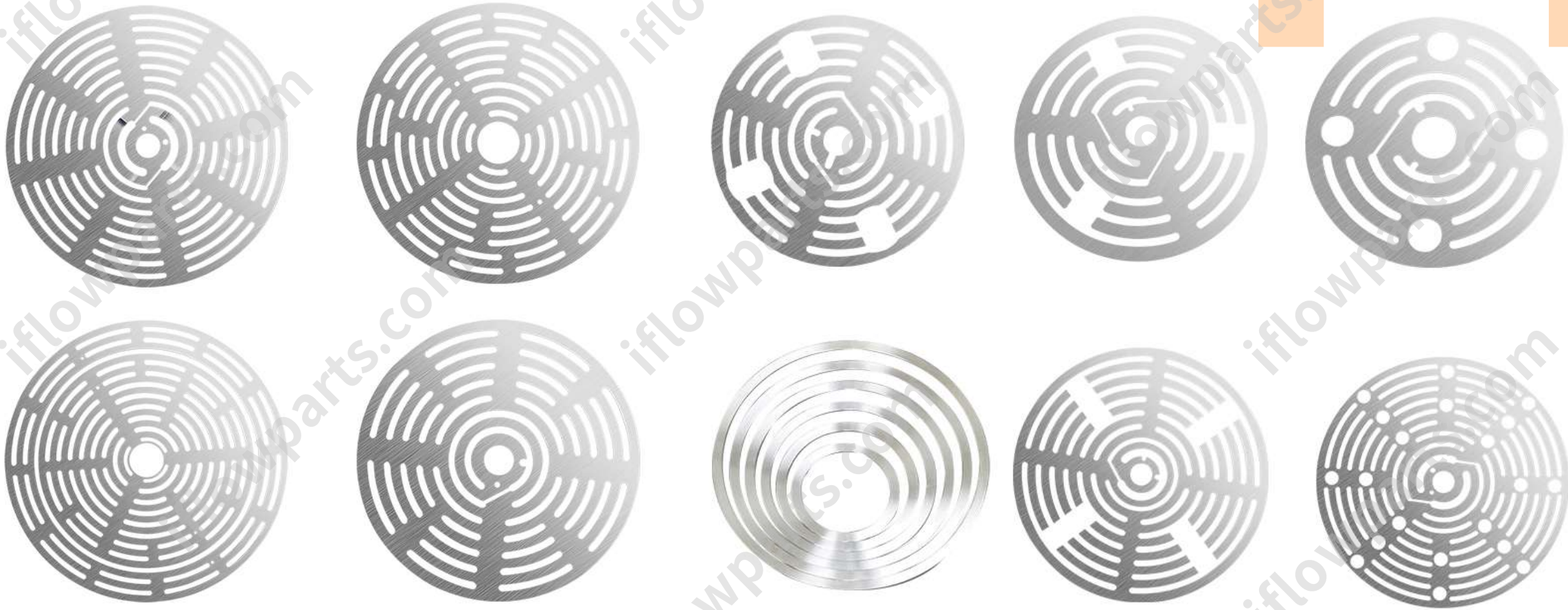






Compressor Valve Components: Core of intelligent opening and closing control

3) Stainless Steel Valve Plates and Buffer Plates for Compressor Air Valves



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