

The role and selection of common tractor hydraulic cylinder seals

One of the core components of a hydraulic system is the hydraulic cylinder, and seals are essential to ensure its proper functioning. This article will introduce the types of hydraulic cylinder seals and their functions to help readers better understand their importance.

As a key actuating element in a hydraulic system, a hydraulic cylinder consists of several parts, including the cylinder barrel, piston, piston rod, cylinder head, and seals. The main function of seals is to prevent leakage of hydraulic oil, as well as to stop outside dust and impurities from entering the interior of the system. Leakage not only leads to waste of working medium, but also may cause environmental pollution and equipment failure. [hydraulic cylinders for tractors](#) commonly used seals include:

1、Dustproof ring

Installed on the outside of the hydraulic cylinder end cap, the main role is to remove the dust and moisture attached to the piston rod to prevent it from entering the internal system. It is characterized by good abrasion resistance, extrusion resistance, impact resistance, small compression deformation and easy installation.

2、Piston rod sealing ring

Installed on the inside of the end cap, mainly responsible for preventing the leakage of hydraulic oil, is the key component of the system to withstand pressure. Requirements for the static state of good pressure holding performance, high pressure in motion, sealing performance should be good, small friction factor, strong resistance to extrusion.

Piston rod sealing ring made of polyurethane or nitrile rubber, in some occasions, need to be used together with the support ring, the support ring is used to prevent the sealing ring under pressure extrusion deformation.

The piston sealing rod needs to act evenly on the sealing area, good wear resistance, good media compatibility, low coefficient of friction, resistance to high and low temperatures, compact structure, easy to install.

3.Piston sealing ring

Used to isolate the two chambers inside the hydraulic cylinder, is the main internal sealing element.

Usually a two-piece type, the outer ring made of PTFE or nylon, the inner ring made of nitrile rubber. Variations are also available, including the use of PTFE-coated bronze, among others. On single-acting cylinders, polyurethane U-cups are also used.

Selecting the right hydraulic cylinder seal requires consideration of several factors, including the conditions of use, operating pressure, speed, environment, and sealing performance requirements. In addition, it is also necessary to select the appropriate material according to the type of working medium and the use of temperature. In environments with high levels of dust and contaminants, the choice of dust rings also needs to be considered.

[hydraulic cylinders for tractors](#) Seals play a vital role in the system. The correct selection and use of seals not only improves the efficiency of the system, but also extends the service life of the equipment and guarantees operational safety.

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