Hydraulic cylinders for harvesters

First, main types of hydraulic cylinders for harvesters.

1. Single-acting piston cylinder

Working principle: only through the hydraulic oil to push the piston unidirectional movement, the return depends on the external gravity (such as cutting deck cylinder, paddle wheel cylinder).

Characteristics: simple structure, suitable for the scene that requires one-way thrust, such as cutting platform lifting or paddle wheel adjustment.

2. Double-acting piston cylinder

Working principle: both sides of the piston can be acted by hydraulic oil to realize two-way movement (thrust and tension). There are two oil pipe connections on the outer wall to control the push rod expansion and contraction through hydraulic pressure.

Characteristics: Flexible function, suitable for two-way control scenarios, such as grain bin turning, stepless speed, etc..

Second, working principle

Hydraulic cylinder transmits force through hydraulic oil to drive the mechanical parts to move:

1. Hydraulic pump sucks the hydraulic oil from the storage tank and sends it to the hydraulic cylinder through the pressure oil pipe.

2. hydraulic oil into the cylinder, push the piston or plunger movement, drive the connecting parts (such as blades, paddle wheel) to complete the harvesting action.

3. The control valve regulates the flow and direction of hydraulic oil to realize precise control.

Third, Application Scenario

1. cutting platform lifting and lowering: single-acting plunger type cylinder controls the height of cutting platform, adapting to different crop heights.

2. Harvesting Wheel Adjustment: Single-acting cylinder adjusts the position of harvesting wheel to ensure that the crop enters the harvesting opening smoothly.

3. Grain bin tilting: double-acting piston cylinder drives the grain bin to tilt, realizing quick unloading of grain.

4. stepless speed change: double-acting oil cylinder controls the transmission system, realizing stepless adjustment of the harvester's walking speed.

5. Clutch manipulation: hydraulic cylinder controls the clutch combination and separation, simplifying the operation process.

Fourth, Technical Advantages

1. Stable Power Transmission

The incompressibility of hydraulic oil ensures the power transmission without loss, and the smooth movement of blades or pivoting wheels reduces the harvesting loss.

2. Flexible control

By adjusting the flow and direction of hydraulic oil through the control valve, the cutting speed of the blade and the rotation speed of the pivoting wheel can be precisely controlled, so as to adapt to the characteristics of different crops (e.g. rice, wheat).

3. High load capacity

The hydraulic pump and hydraulic cylinder are designed to withstand high loads, adapting to

the harvesting needs of intensive crops or wet and soft fields.

4. Compact and low inertia

The hydraulic system is much smaller than the electric motor, which makes it easy to optimize the layout of the harvester, and at the same time reduces the mechanical shock during start-up, prolonging the life of the equipment.

5. Overload protection

The hydraulic system has a built-in safety valve, which automatically relieves pressure when the load exceeds the set value, preventing damage to components.

6. Convenient Maintenance

The hydraulic cylinder structure is simple, and it is easy to replace the seals and other wear parts, which reduces the maintenance cost.

Fifth, Troubleshooting

Common faults: Damaged seals lead to cascading of high and low pressure oil chambers, resulting in internal leakage and failure to work.

Solution: Replace the sealing ring or directly replace the cylinder.

Hydraulic cylinders for grain harvester
Hydraulic cylinders for combine harvesters