Maintenance Tips for Plow Hydraulic Cylinders

Plow hydraulic cylinders directly drive the lifting, tilting, and deep plowing of plow implements. Their condition directly impacts the efficiency and cost of the entire farming season. Ensuring long-term stable operation of hydraulic cylinders hinges on proper maintenance, which requires maintaining clean hydraulic fluid and appropriate operating temperatures.

1. Severe Consequences of Neglecting Hydraulic Oil Cleanliness and Temperature

Neglecting hydraulic oil cleanliness and temperature management exposes plow hydraulic cylinders to direct and severe damage:

(1) Accelerated Seal System Failure: Solid particles like fine dust and metal shavings in the oil act like abrasives, continuously scraping the cylinder walls and piston rod seals during circulation. This leads to wear and scoring of seal lips, ultimately causing external or internal oil leakage. Symptoms include reduced cylinder force, sluggish operation, or self-sinking during lifting, directly impacting plowing depth and efficiency.

(2) Accelerated Wear of Core Components: Contaminants intensify wear on cylinder bore walls and piston rod surfaces, creating scratches that disrupt smooth surfaces. This not only further compromises seals but may also increase friction, cause operational sticking, or even trigger “crawling” phenomena.

(3) Vicious Cycle of Oil Degradation and High Temperatures: Prolonged excessive oil temperatures (typically sustained above 70°C) accelerate hydraulic oil oxidation and degradation, producing sludge and acidic substances. Degraded oil loses lubricating properties, accelerating system wear. Concurrently, viscosity changes reduce operational efficiency, generating more heat and creating a vicious cycle: increased wear → rising temperature → accelerated oil degradation. This ultimately causes seals to age, harden, crack, and fail completely due to high temperatures.

2. Ensuring Clean Hydraulic Oil and Proper Oil Temperature During Daily Operations

Integrating scientific maintenance into routine operations can effectively prevent issues before they arise:

(1) Strictly Prevent Contaminant Ingress and Infiltration

Always filter during refilling: When adding or replacing hydraulic oil, use clean containers and refilling equipment with filtration devices to strictly prevent external dust or moisture from directly entering the tank.

Maintain tank and surrounding cleanliness: Regularly clean the tank breather cap. During maintenance, ensure cylinder ports and surrounding areas are clean to prevent introducing contaminants during disassembly.

Inspect and replace filters promptly: Strictly adhere to maintenance schedules or follow filter clogging indicators to clean or replace suction and return filters promptly. This is the most critical defense against contaminants.

(2) Establish Fluid Monitoring and Replacement Procedures

Conduct regular sampling inspections: Periodically extract oil samples from the tank to observe color, clarity, and check for particulate matter or emulsified water. Where feasible, perform professional oil contamination testing.

Replace oil based on quality or schedule: Follow equipment manufacturer recommendations, combining operating hours with oil test results to decisively replace the entire tank of hydraulic fluid. In dusty or harsh operating environments, shorten oil change intervals appropriately.

(3) Actively Control Hydraulic System Temperature

Ensure Effective Cooling: Regularly clear weeds, dust, and debris from the hydraulic oil cooler to maintain optimal ventilation and heat dissipation. Verify proper fan operation.

Avoid sustained overload operation: During cultivation, monitor the oil temperature gauge. If abnormal temperature rises occur, promptly pause operations to allow the system to cool at idle speed. Investigate potential overloads or malfunctions.

Select oil with appropriate viscosity: Strictly choose hydraulic oil with the recommended viscosity grade based on the climate and temperature of the agricultural machinery's operating region and season. This ensures good fluidity and lubrication at working temperatures.

Hebei Runhe Hydraulic Machinery Co., Ltd. manufactures plow hydraulic cylinders using precision manufacturing techniques. Featuring high-quality seal assemblies and wear-resistant guide materials, these cylinders offer superior tolerance to hydraulic fluid contamination, enhancing reliability from the design stage. We also provide factory-standard seal repair kits and professional technical support to ensure your maintenance and repair tasks are performed accurately and efficiently.

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