

ShanDong Lyure Machinery Co.,ltd

Screw Press Operation and Maintenance Manual



www.lyuremech.com

I. Preface

1. Upon receipt, inspect the equipment and accessories against the packing list. Contact our company if discrepancies are found.
2. Before installation, operation, adjustment, or maintenance, contact our company and thoroughly review the user manual. In case of quality issues under normal installation, use, and maintenance, promptly contact our after-sales service.
3. After delivery, contact our company for guided installation and commissioning. Due to the high precision requirements of this machine, installation and commissioning must be performed by our professional technicians. Our company is not liable for issues arising from installation or modification by non-professionals.

II. Operating Principle

The machine's rotor, featuring an unequally spaced spiral, pushes material toward the discharge port while compressing it. The rotor's guide rollers, with progressively overlapping pitches, compress the material in stages, increasing pressure as the material moves. The rotor consists of a roller shaft and welded blades, which gradually compress the material along the spiral path from the feed to the discharge end. The material is subjected to continuous radial and axial pressure, enabling liquid separation through the dewatering system for solid-liquid separation.

Discharge Port: Dewatered dry material is expelled between the sieve drum's end outlet and the backpressure plate resistance device, controlled by a cylinder that adjusts the pressure to regulate the material's dryness level.

III. Main Components and Maintenance

1. Rotor

This machine is a continuous dewatering solid-liquid separation press, known for stable long-term operation, low failure rates, and high juice extraction and dewatering efficiency. Its effectiveness relies on the precise coordination between the rotor and the filter screen to achieve efficient pressing and separation. The core mechanism involves a specialized device interacting with the rotor to dry the material. To maintain consistent material dryness, the precision between the rotor and filter screen must meet specified standards. Failure to follow maintenance protocols can directly impact discharge quality and may lead to equipment damage. If the material contains hard substances (e.g., glass, sand, or metal), replace components based on wear levels. Inspect the rotor blade edges for significant wear every two months under normal use, and refurbish the spiral rotor every 8–12 months. Maintain a spare rotor to avoid production downtime during repairs, as blade wear affects dewatering efficiency.

2. Filter Drum Screen Device

The filter drum features a straight, split-type steel frame structure, secured to the machine body with bolts to withstand pressing forces. The frame, combined with a stainless steel screen, should be inspected weekly and have bolts tightened monthly. Hard objects (e.g., metal) entering the system can damage the screen, causing cracks,

reducing dewatering efficiency, and increasing liquid concentration. The drum frame is designed to split open for easy disassembly, with the screen welded to the frame. Keep a spare screen set to ensure uninterrupted production if damage occurs. Clean the screen weekly during continuous operation. If the machine is stopped for more than three days, remove the outer cover and thoroughly clean the screen to prevent clogging upon restart.

3. **Discharge Backpressure Device System**

Dewatered dry material is discharged between the outlet port and the cylinder-driven backpressure plate. The outlet's pressure plate is designed to automatically control material dryness. Once a specific pressure (e.g., 0.3 MPa) is set, the device maintains consistent force. Check daily to ensure both cylinders extend and retract synchronously, and align them at least monthly. Both cylinders must operate in sync, and bolts connecting the cylinders to the pressure plate must be regularly tightened. Failure to maintain synchronization can severely damage the cylinders and other components.

IV. Safety Regulations

1. During operation, do not approach or touch moving parts, and do not remove any safety guards. Before inspection or maintenance, ensure the equipment is powered off, stopped, and the power key is secured. Additionally, verify that gas, electricity, water, and pneumatic components are turned off and depressurized to avoid hazards.
2. After inspection or maintenance, ensure all safety devices are reinstalled and secured before restarting.
3. Do not start the equipment under load to prevent performance degradation.

V. Startup and Shutdown Procedures

1. **Startup:** Before starting, check that all lubrication points are adequately greased and the gearbox is filled with lubricant. Inspect the feed inlet for debris or metal objects. Verify that the tail cylinder's maximum pressure of 0.8 MPa is achievable, and adjust the operating pressure to 0.3 MPa (3 kg). After confirming all conditions are met, use the soft starter (variable frequency drive) to jog the motor and check the main shaft rotation direction (correct rotation is counterclockwise when viewed from the discharge end, as indicated by the arrow). If reversed, adjust the power phase sequence to correct the rotation. Follow the startup sequence.
2. After the equipment starts rotating, keep the discharge cylinder pressure plate open. Once material enters the feed box and is discharged normally, close the pressure plate (adjust the slag outlet gap based on material conditions). Set the pressure regulator valve to 3 kg to control the material's dryness level as required.
3. **Shutdown:** Stop feeding material, switch the press cylinder's directional valve to open the pressure plate, and clear residual material from the cavity. Shut off the motor once no material is discharged. If the machine will be stopped for more than three days, remove the outer cover and use a high-pressure water jet to clean the interior and filter screen to ensure the screen remains unclogged for the next startup.

VI. Cylinder Pressure Regulator Operation

1. Ensure hands and tools are clean. Operators must fully understand these instructions before operating the equipment, and all directives must be followed.
2. Verify that the cylinder pressure reaches the working pressure of 0.8 MPa (adjust to 0.3 MPa for normal operation).
3. Ensure the cylinder valve connection is clean and undamaged. Do not connect the pressure regulator if it is not.
4. Before connecting the pressure regulator, briefly open and close the cylinder valve to release water or debris from the valve/regulator seat.
5. Connect the pressure regulator to the cylinder valve using the inlet nut on the valve stem.
6. Attach a hose to the pressure regulator outlet, securing it with appropriate hose clamps for safety.
7. To shut down the pressure regulator, close the cylinder valve, loosen the pressure adjustment knob counterclockwise, and close downstream valves.
8. Protect the pressure regulator from damage. Regularly inspect for signs of wear or damage.
9. Do not alter the preset adjustment of the safety valve.
10. Ensure all gaskets, O-rings, and mating surfaces are in good condition.
11. If the pressure regulator malfunctions or leaks are detected, immediately close the cylinder valve and stop operation.