TBX50
Two Box Trailer

Maintenance Manual

Appendix: Maintenance

A

Introduction

For years of trouble-free service, it is important to properly maintain your equipment. Failure to do so could be costly and may void your Manufacturer's warranty. This appendix will help you to maintain your TBX-Two Box Trailer by providing a regular maintenance checklist, troubleshooting guide, diagrams, and schematics for its maintenance.

The following regular maintenance checklist, troubleshooting guide, diagrams, and schematics are located within this appendix:

The following are the minimum maintenance recommendations:

Each Day	Inspect the cable for: • Broken wires. • Severe twists or kinks. • Crushing of the cables. Inspect the sheave for: • Excessive wear or damage. • Cable to run straight off the sheaves. Inspect the drum to make sure the cable is rolling on evenly with no crossing of the cable. Inspect all hardware on the cable for excessive wear or damage. Inspect the cable on the Electric Hoist Cable Winch for: • Broken wires. • Severe twists or kinks. • Crushing of the cable. Inspect all hardware on the cable for the Electric Hoist Cable Winch for excessive wear or damage. Replace or repair any part that is in need of repair.
Each Week	Lubricate grease points. • Rollers • Sheaves • Rear Hinge • Lift Cylinders
For Stinger	Lubricate the two extra Rear Rollers on the stinger attachment..
For Dead Lifts	Lubricate the Rear Center Sheave and two extra Rear Rollers.
Every Two (2) Months After	Inspect oil for any discoloration: • Milky color indicates water or condensate. • Darkened color indicates oxidation or dirt. Listen carefully for any abnormal pump noise.

Inspect the hydraulic hose assembly every 400-600 hours or every three months depending on the following factors:

- Critical Nature of Equipment
- Operating Temperatures
- Operating Pressures
- Environmental Factors
- Type of Usage (rugged, abusive, shock, vibration, operating time)
- Accessibility of Equipment

Pay closer attention to high heat source areas, tight abrasion areas, and routing. These areas may need their hoses to be replaced more often.

Caution: Before inspecting your hydraulic hose assembly be aware of the following safety precautions.

- **Pressure** - Hydraulic fluid under pressure is dangerous and can cause serious injury. Never touch a pressurized hydraulic hose assembly with any part of your body. Instead use a piece of cardboard to locate a pressurized leak. If by accident hydraulic fluid should puncture the skin seek immediate medical attention or risk losing the injured body part or death.
- **Temperature** - Hot fluid can cause severe burns.
- **Flammability** - When ignited some hydraulic fluids can explode and/or cause fires.
- **Mechanical** - Hydraulic fluid creates movement, which causes parts of your equipment to move or rotate at high speeds.
- **Electricity** - Electricity can create the spark that causes a fire, explosion, or electrocution. Shut it down.

To Inspect Hydraulic Hose Assemblies:

1. Turn off equipment power. We suggest taking the key, placing it in a safe place, and disconnecting the battery.
2. Place equipment and components in a safe or neutral position. Make sure components are not in mid-stroke, mid-cycle, or holding a load.
3. Inspect hose and fittings for damage or leaks. Pay close attention to the following areas:

Hose Cover

Visually inspect the cover for signs of:

- Abrasion.
- Blisters.
- Nicks, cracks, or cuts.

Squeeze with your hands to test for hardness. Be careful, the hose could be hot.

Leakage

The signs of leakage are :

- Puddles of fluid in or around the equipment.
- Low fluid reservoir.
- Greasy\dirty hose.

Routing

Check to make sure the hoses are not:

- Rubbing against each other.
- Located next to a high heat source.
- Twisting or kinking.

4. Repair or replace as needed.
5. Inspect other hydraulic components. Take the time to inspect valves, pumps, cylinders, and other hydraulic components for leaks and damage.
6. Turn on the power.

If any step in this inspection indicates a problem or even a potential problem, have it checked out and repaired immediately. Also keep a detailed record of all inspection and service information. Use this record to identify problem areas and trends.

Be aware of your equipment. You know your equipment better than anyone else. If you feel something is not right, check it out to avoid the unwanted result of a hose assembly rupture.

Because the hydraulic oil is in constant contact with precision-machined surfaces, the oil should be kept as clean as possible to prevent unnecessary wear. Dirt particles in the hydraulic oil could cause pump failure. In such instances, the entire hydraulic system must be drained, flushed clean, the filter changed, and the entire system filled with new oil.

Maintain the hydraulic oil level by observing the sight gauge on the reservoir when all cylinders are in the retracted position. The hydraulic oil must be kept between the high and low mark on the sight gauge.

The recommended hydraulic oil for use in this system will meet the following specifications:

Note: All temperatures are in Fahrenheit.

Gravity	31	Pour Maximum Degrees Fahrenheit	
Flash Point Min	360°	Color Max	35
Viscosity	100° to 210°	SAE	2
Fire Min	415°	Carbon Residue – Max %	10
Viscosity 210°	48	Neutral #	0.05
V.I. Min	95	Sulfur	0.02

Note: Oil operating temperatures should not exceed 180° F.

Caution: Use only oil which contains anti-foam and anti-oxidizing additives. Do not use oils with low viscosity, naptha base, aircraft hydraulic oil, or hydraulic brake fluid. Oil with a low pour-point must be used for low temperature operation.

Important Note

Hydraulic System Pressure…….1900 PSI at 1500 RPM

Operating this system in excess of the Manufacturer's recommendations will void warranty

Use the following table to help you diagnose and resolve problems with the operation of the unit.

Problem	Probable Cause and/or Solution
Unit operates with jerky motion.	• Be sure oil is at the proper level. • Check for possible leaks and repair if necessary. • After any work on the hydraulic system: 1) Fill tank with hydraulic oil. 2) Replace filter cartridge. 3) Operate cylinders to remove air from the system.
Oil is cold	• Use the following procedure to warm the oil: 1) Operate the hoist control to bottom out the cylinder keeping the lever pushed for approximately five (5) minutes to warm up the oil. 2) If the problem reoccurs, check the type of oil being used. It is highly likely that the wrong type of oil is being used.
Air in the System (Oil is a milky color)	• Check for a leak in the suction line.
Unit does not lift loaded container	• Hydraulic pressure is set too low. Reset the pressure to 1900 PSI with engine at 1500 RPM. If pressure cannot reach 1900 PSI, check pump and replace if necessary. • Hydraulic cylinder may have an internal leak. Determine which cylinder is leaking and repack.
Control problems - hesitation noted	• Air is present in the system. Be sure oil is at the proper level. Look for any possible air leaks at hose clamps on the suction hose. • Determine oil type: use only anti-foam hydraulic oil.
Pump is noisy and faltering when lifting load	• Possible damage to pump: check and replace if necessary.
Vibrations, particularly at high speed	• Suction line is clogged.
Oil leaks noticed	• If oil is noticed: 1) Change the seal on the pump shaft. 2) Repack the cylinders. 3) Properly tighten fittings. 4) Check hydraulic oil for foaming.
Reservoir is overflowing from top	• Reservoir is too full. • Hoist is being lowered without engaging the pump. • Air is present in the system.