



TechDoc

Subject: Service Intervals – Manitex Booms

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Model/Series: All Manitex Booms Trucks and Aerial Cranes

No.: **TD10001**

This document exists to help clarify suggested service intervals for Manitex Booms. Manitex does not have an official position regarding how often a boom assembly should be completely disassembled specifically for inspection purposes. The following are excerpts taken from the maintenance section of a typical Manitex Crane Owner Manual. The majority of these are general crane maintenance task that also apply to the boom and boom components.

CRANE SERVICE INTERVALS (*Boom Related*)

DAILY CHECKS

1. Perform the daily lube services.
2. Clean all debris and dirt from the crane.
3. Check for fluid and air leaks.
4. Verify all guards, covers, and platforms are securely in place.
5. Inspect the crane for signs of damage.
6. Inspect the wire rope for signs of wear and damage.
7. Check the wire rope for proper spooling on the winch drum and reeving through all sheaves. Check that all sheaves turn freely.
8. Make sure the load line is properly fastened to the load block or the overhaul ball.
9. Check the load block or the overhaul ball whichever is being used, for loose or missing nuts, screws, and cotter pins.
10. Check all slings and other loose gear to be used to make lifts are safe for operation.
11. Inspect the hook latch for proper operation.
12. Check for proper operation of each crane function in response to control lever movements.

Note: All crane controls, when set to Off or returned to the Neutral position, must bring the crane function to a complete stop and maintain its position.

WEEKLY

1. Perform the daily and weekly lube services.
2. Perform the daily inspection checks.
3. Check for missing bolts, pins, keeper plates, retaining rings, and cotter pins.
4. Check the winch drum and all sheaves for excessive wear, cracks or other damage.
5. Check the boom angle indicators and readout on the LMI, if equipped, for accuracy over the full range of boom elevation.

MONTHLY

1. Perform the daily, weekly and monthly lube services.
2. Perform the daily and weekly maintenance checks.
3. Check the boom and all structural components of the crane for deformed, cracked or corroded members. Pay close attention to all welds.
4. Clean, prime and paint any rusted surfaces.
5. Thoroughly inspect the wire rope for damage (*loadline*).
6. Check that the hook and hook housing on the load block and the swivel on the overhaul ball rotate freely without excessive play. Faulty operation indicates faulty bearings or inadequate lubrication.
7. Check the load block or the overhaul ball for signs of overloading; spread side plates, elongated holes, bent or elongated tie bolts, and cracks.
8. Check the gap between the shank and the barrel of the swivel on the overhaul ball. The gap must not exceed 1/16-inch.
9. Carefully check the hook on the load block or the overhaul ball for signs of distortion or cracks.
10. Check the hydraulic cylinders for the following.
 - a. Drift caused by internal leakage.
 - b. Rod seal leakage.
 - c. Leaks at welded joints (*where accessible*).
 - d. Scored, nicked or dented cylinder rods (*where accessible*).

- e. Dented case (where accessible).
- f. Loose or deformed rod eyes or connecting joints (*where accessible*).

SEMI-ANNUAL

1. Perform the daily, weekly, monthly and semiannual lube services.
2. Perform the daily, weekly, and monthly maintenance checks.
3. Tighten all fasteners on the crane. Tighten those fasteners that require torquing to the specified value, including slewing ring bolts.
4. Check the adjustment of the crowd rope system in the boom.
5. Check the boom slider pads for wear and proper adjustment.
6. Check relief valve settings for all crane functions, refer to Hydraulic Schematic.

ANNUAL

1. Perform all lube services.
2. Perform the daily, weekly, monthly and semiannual maintenance checks.
3. Check each hook for cracks using a nondestructive test.

INSPECTION INTERVALS

The intervals given are provided as a guide only. Follow these intervals until adequate experience is gained to establish intervals that meet your operating conditions.

Any increase or decrease in the intervals should be preceded by a complete analysis of crane performance. Carefully study previous maintenance and repair records before making any changes in the intervals.

REPAIRS

Any hazardous or abnormal conditions found while making the maintenance checks must be corrected before the crane is placed back into service. All adjustments and repairs must be made by authorized personnel only.

WIRE ROPE MAINTENANCE

LUBRICATION

New wire rope is lubricated during manufacturing, but this lubrication is only adequate for initial storage and the early stages of operation. To prevent the damaging effects of corrosion and to reduce wear, the wire rope must be lubricated at regular intervals.

The lubrication interval and the type of lubricant to be used depend on the type of wire rope, the severity of duty, and the type of corrosive elements the wire rope is subjected to; therefore, contact the nearest wire rope dealer for lubrication recommendations.

The wire rope must be properly protected at all times; therefore, the gaps between the strands and wires must be filled with lubricant to provide a complete seal. Use one of the methods shown in Figure 3-1 (*in the crane operator's manual*) to lubricate the wire rope. For maximum penetration, the lubricant should be applied where the wire rope "opens up" as it travels around a sheave or winds onto the drum.

The wire rope must be clean and dry before applying the lubricant; an air jet, steam, and a wire brush are some cleaning methods.

INSPECTION

How Often

It is impossible to predict when a wire rope will break; however, regular careful inspection will indicate when the potential for breakage exists.

The wire rope shall be visually inspected by a qualified person for obvious signs of gross damage once each work shift.

The entire length of wire rope shall be thoroughly and carefully inspected by a qualified person once each month. This interval also applies to any rope being placed into service which has been idle for one month or longer.

A dated and signed report of the wire rope's condition at each inspection interval shall be kept on file at all times. The data on these reports can then be used to determine when the wire rope needs to be replaced.

When inspecting the wire rope, pay particular attention to the condition of the wire rope in the following areas:

1. **PICK-UP POINTS** - sections of wire rope that are repeatedly stressed during each lift, such as those sections in contact with sheaves.
2. **END ATTACHMENTS** - the point where a fitting is attached to the wire rope, or the point where the wire rope is attached to the drum.

3. ABUSE POINTS - points where the wire rope is subjected to abnormal scuffing and scraping.

Replacement

No precise rules can be given for determining when to replace a wire rope. Wire rope replacement depends upon the good judgment of the qualified person making the inspection and upon comparison of the data recorded on previous inspection reports. Any deterioration resulting in an appreciable loss of wire rope strength, such as listed below, shall be sufficient cause for removing the wire rope from service:

1. Six randomly distributed broken outer wires in one rope lay length or three broken outside wires in one strand of one rope lay length.
2. One broken outside wire at the point the wire contacts the core. The broken wire will have worked its way out of the rope structure and either protrude or loop out from the rope structure. Additional inspection of this area of the wire rope is required to determine if there is core damage.
3. Wear of one-third the original diameter of outside wires.
4. Kinking, crushing, bird-caging, core protrusion or any other damage resulting in distortion of the rope structure.
5. Evidence of heat damage from any cause.
6. Reductions from the nominal diameter of more than:
 - a. 1/64" for rope diameters through 5/16"
 - b. 1/32" for rope diameters 3/8" through 1/2"
 - c. 3/64" for rope diameters 9/16" through 3/4"
 - d. 1/16" for rope diameters 7/8" through 1-1/8"
 - e. 3/32" for rope diameters 1-1/4" through 1-1/2"
7. Core failure. This type of damage is usually indicated by a reduction in the nominal diameter or by an increase in rope lay length. When a reduction in diameter or by an increase in rope lay length.
8. Severe corrosion.

Note: The following text appeared in section 7 of the service manuals that were part of the owner manual package for Manitex cranes prior to 1999. Manual packages after 1999 only cover general lubrication and maintenance in the Operator Manual for the crane and boom assembly. This information is now a discussion topic covered in the Manitex Boom Service training courses.

BOOM INSPECTION

These recommendations are to be performed any time a boom is disassembled for service purposes.

1. Inspect all slider pads for wear or damage. Replace the slider pads if they have worn down to the Replace Thickness given in Table 7-11 (*in the crane operator's manual*).
2. Inspect all bearings for wear. The sheaves must turn true on the shafts without any wobble.
3. Inspect the extend and retract ropes for wear and damage; see Wire Rope Maintenance for wire rope replacement instructions.
4. Inspect the sheaves for wear and damage; see Sheave and Drum Inspection.

SUMMARY

Boom Service Intervals

Manitex does not have an official position regarding how often a boom assembly should be disassembled specifically for inspection purposes.

It is Manitex' position that during the life of a boom assembly, events will take place that will dictate when a boom must be torn down for service. When the boom is disassembled for repair in such instances, Manitex recommends that boom components be inspected thoroughly before re-assembling them onto the boom.

Events that normally warrant boom disassembly:

1. Problems that become evident during daily crane inspection that can be attributed to internal boom components and cannot be addressed without disassembling the boom.
2. Replacement or major repair of telescope cylinder due to failure or leaks (internal or around rod seal).
3. Excessive lateral movement of the middle sections; evident when the boom is telescoped and the fault can be attributed to the rear side slider pads.
4. Failures of internal boom components, such as extend or retract ropes, extend or retract sheaves.

5. Boom section failure.
6. Crane electrocution.

NOTE: When inspecting crowd ropes, refer to instructions regarding wire rope maintenance for guidelines regarding Lubrication, Inspection and Replacement.

NOTE: If no events have taken place for a significant period of time that warrants boom disassembly, Manitex has on occasion recommended a complete boom inspection after the boom's 5th operating anniversary. However, it is the responsibility of the crane owner, operator or service personnel to recommend this level of inspection when such personnel are aware of information that warrants boom disassembly. This should take into account, but not limited to:

- Knowledge of deficiencies not perceived in the routine maintenance and inspection procedures performed by others
- Knowledge of crane abuse or overload
- Knowledge of conditions that could be perceived as a safety hazard
- Acquisition of equipment that has no service records where routine inspection gives cause for concern

On the other side of the spectrum, the crane owner, operator or service personnel may at their discretion, extend the full inspection beyond the 5th anniversary period when knowledge of the condition of the crane is favorable due to its limited use or service history.

For questions or concerns please contact the Manitex Product Support Department by e-mail mtxservice@manitex.com or call 512-942-3031.