

OPERATOR'S MANUAL

This manual has been prepared for and is considered part of -

4409

Crane Model Number

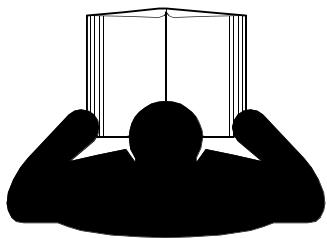
This Manual is divided into the following sections:

SECTION 1	INTRODUCTION
SECTION 2	SAFETY INFORMATION
SECTION 3	OPERATING CONTROLS AND PROCEDURES
SECTION 4	CAPACITY CHART
SECTION 5	ATTACHMENTS
SECTION 6	MAINTENANCE
SECTION 7	ADJUSTMENTS
SECTION 8	SPECIFICATIONS

NOTICE

The crane serial number is the only method your distributor or the factory has of providing you with correct parts and service information.

The crane serial number is identified on the builder's decal attached to the operator's cab. **Always furnish crane serial number** when ordering parts or communicating service problems with your distributor or the factory.



WARNING

To prevent death or serious injury:

- Avoid unsafe operation and maintenance.
- This crane must be operated and maintained by trained and experienced personnel. Manitowoc is not responsible for qualifying these personnel.
- Do not operate or work on this crane without first reading and understanding Operator's Manual and Rating Plate supplied with crane.
- Store Operator's Manual in holder provided on crane.
- Attach laminated Capacity Charts supplied with crane to chain in operator's cab.
- If Operator's Manual or Capacity Charts are missing from cab, contact your distributor for new ones.

- Electrocution Hazard

Never operate this or any equipment in an area in which overhead power lines, overhead or underground cables, or a power source exists without first notifying the appropriate power company or utility company to de-energize the lines.

Never operate this machine, or any part of the load, closer to any electrical power line or power source than the distance specified or required by Federal, State/Provincial, local or other applicable safety codes or regulations. In addition, United States OSHA regulations require a flagman when operating in close proximity to energized power lines.

NEVER operate this machine without first consulting Federal, State/Provincial, local, or other applicable safety codes or regulations.

It is the employer's responsibility to implement the above precautions and to provide the employees with all safety devices, or means that may be necessary or required for any particular use, operations, setup, or service.

CAUTION

ELECTROCUTION HAZARD. It is not necessary to come in contact with a power line for electrical energy to ground through the machine. If electricity does ground through the machine, remain in the cab. **DO NOT ALLOW ANYONE TO TOUCH THE MACHINE STRUCTURE;** injury or death could occur.

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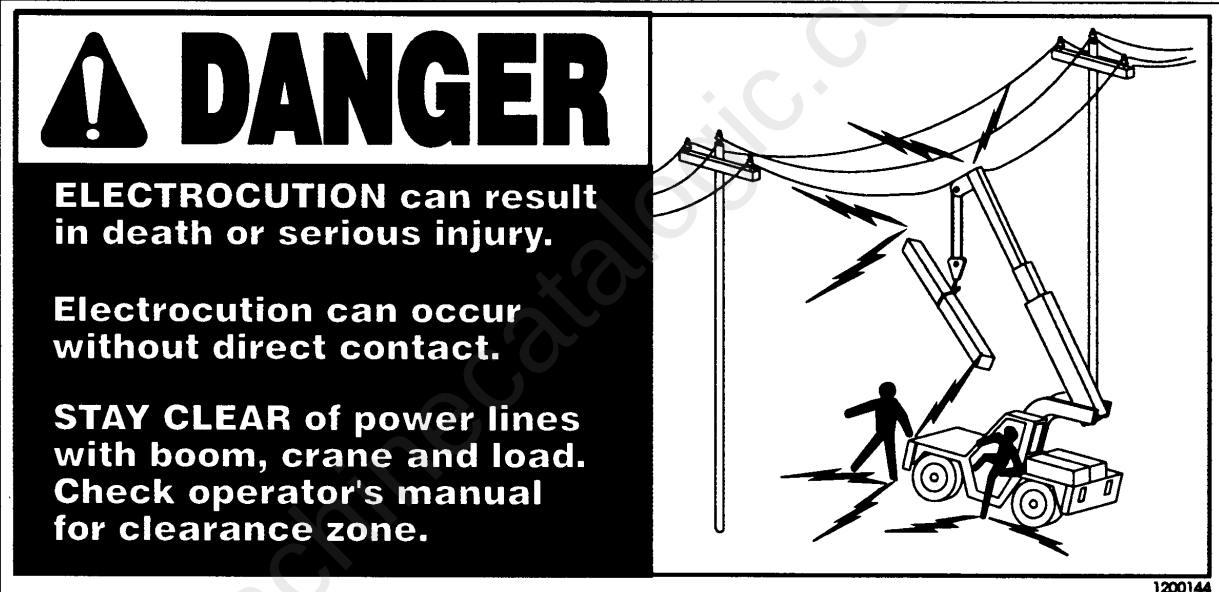


FIGURE 2-15

13. When the engine starts, remove the jumper cables in reverse order (i.e., negative ground cable first, etc.). Install the alternator field connection.

Traveling with the Crane

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CAUTION

If travel sight is restricted, do not attempt to travel with the crane until a signalman gives a signal that the crane is clear of obstacles in the wheel path. Remove any obstacles from the wheel path before moving.

CAUTION

To help inhibit accidents, use a "Slow Moving Vehicle Sign and a flashing strobe light (where legal) for traveling on highways or public roads.

1. Enter the operator's cab, close the door, if equipped, and fasten the seat belt.

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The operator's seat is equipped with a seat belt. Use this belt at all times when operating the machine.

2. Start the engine and disengage the parking brake.

CAUTION

To avoid damage to the parking brake and crane, do not apply the parking brake while traveling.

3. Select either the Forward (F) or Reverse (R) travel position on the travel select lever (see Figure 3-32). Pull the handle back and then move it up or down to select travel direction.

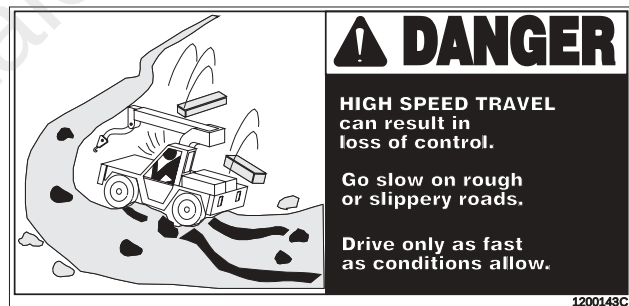
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Travel Select Lever

FIGURE 3-32

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- The crane has no axle suspension. Traveling at high speeds, especially on rough roads, can create a bouncing effect that can result in loss of control. Personal injury, death and property damage could result. Reduce speed if bouncing occurs.
4. Start out traveling from a stopped position in 1st speed. Travel speed may be shifted from 1st to 2nd, 2nd to 3rd, 3rd to 4th when the crane is moving. See "Shifting Gears", below. Avoid operating at too high of speed when moving a heavy load, as this may cause "lugging" on the engine. Use a lower gear when moving a heavy load; higher gear when moving a lighter load. **SELECTING THE CORRECT TRAVEL SPEED WILL PROLONG ENGINE LIFE.**

DETERMINING LIFTING CAPACITY AT THE BOOM EXTENSION

The boom extension increases the length of the boom assembly by 6 feet (1.83 m).

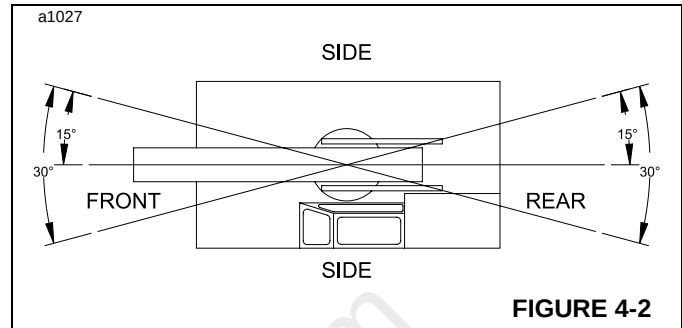
The capacity of the boom extension is determined in two (2) steps. First, as with the main boom, check the main capacity chart after determining the operating radius. These capacities are based on main boom strength and machine stability. Second, check the boom extension (jib boom) structural capacities below the main chart after determining boom angle. These limits are based on the boom extension structural strength. Use the lesser of these two capacities such that neither is exceeded.

CAUTION

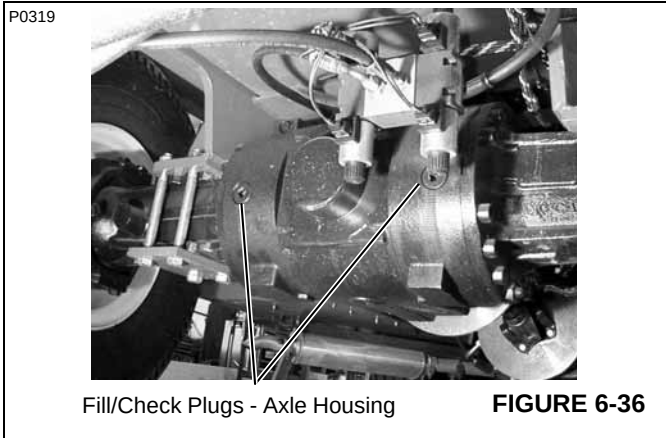
Exceeding the capacity is dangerous and voids the crane's warranty.

PICK AND CARRY RANGES

Figure 4-2 illustrates the range of operation for pick and carry loads. Do not pick and carry outside of the specified ranges. The crane could become unstable and tip over.



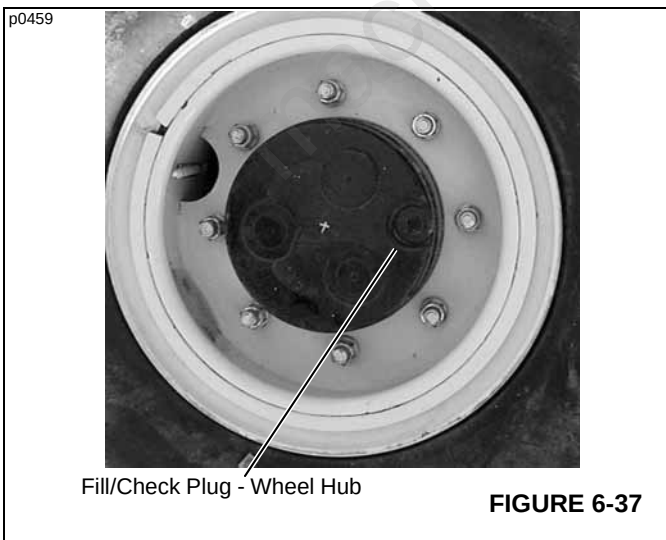
1. Clean around both fill/check plugs (Figure 6-36) in the brake housings and remove the plugs.



2. Check the lubricant level, which should be even with the bottom of each fill/check hole.
3. If necessary, add oil to fill the housings to the recommended level.

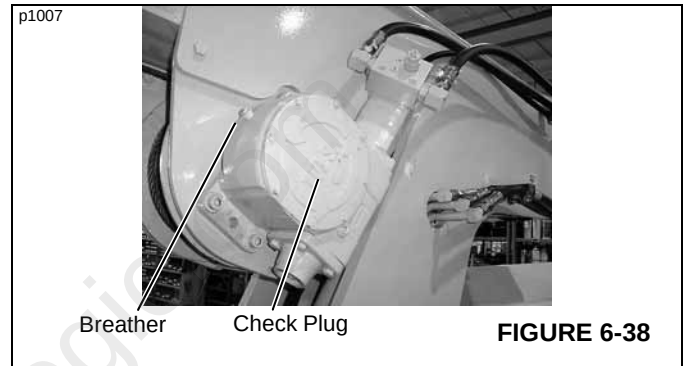
Check the Wheel Hub Lubricant Level

1. Position the wheel so that the fill/check plug and the center of the hub are horizontal with the ground (Figure 6-37).
2. Clean around the plug and then remove it.
3. Check the lubricant level which should be even with the bottom of the hole.
4. If necessary, add oil to fill the hub to the recommended level.
5. Repeat Steps 1 through 4 for the other wheel hub.



Check the Winch Gearbox Lubricant Level

1. Lower the boom to its lowest position.
2. Engage the parking brake and shut off the engine.
3. Clean around the gearbox check plug (Figure 6-38). Remove the check plug.
4. Check the lubricant level, which should be even with the bottom of the check plug hole.
5. If necessary, add SAE 140 EP gear lube through the breather hole to fill to the bottom of the check plug hole.



SCHEDULED MAINTENANCE: 1000 HOURS OF OPERATION (EVERY SIX MONTHS)

NOTE: You must read and understand the warnings and basic safety rules, found in Section 2 of this manual, before performing any operation or maintenance procedures

For additional engine maintenance guidelines, see the engine manual furnished with this crane.

Replace the Transmission Oil and Filter

1. Engage the parking brake and shut off the engine. Remove the ignition key.

CAUTION

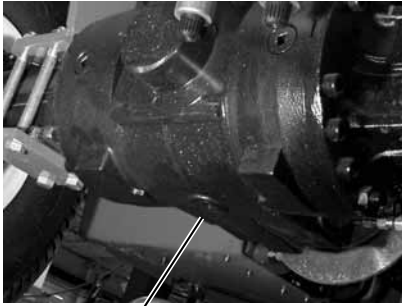
It is necessary to climb under the crane to drain the transmission oil. Be sure engine is shut off, the ignition key is removed, parking brake is engaged and chock blocks are in place before climbing under the crane.

CAUTION

When the strainer is loosened/removed, oil will gush out. Keep to one side when you remove the strainer.

2. Place a suitable container under the strainer (Figure 6-39). Remove the strainer and gasket and drain the oil into the container. Discard the gasket.

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Axle Housing Drain Plug

FIGURE 6-43

3. Remove the axle housing breather (Figure 6-44) and clean them in a suitable solvent. When clean install the breather back into the axle housings.

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Axle Housing Breathers

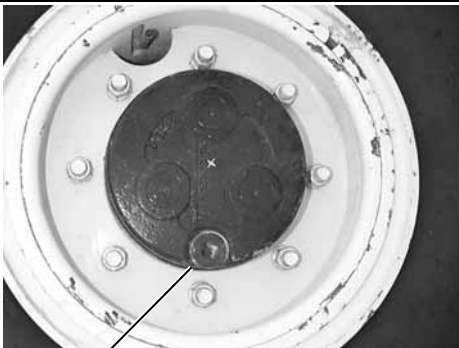
FIGURE 6-44

4. Fill the differential and brake housings with appropriate oil through both check/fill plugs. Fill until the oil reaches the bottom of each fill hole.
5. Install both check/fill plugs.

Replace Axle Wheel Hub Lubricant

1. Drive the crane until one of the front axle wheel hub drain plugs is located at the bottom of the wheel hub (Figure 6-45).

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Drain Plug Location

FIGURE 6-45

2. Clean around the drain plug and then remove it. Drain the wheel hub oil into a suitable container.
3. Drive the crane until the drain hole is horizontal (Figure 6-46).

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Fill Position

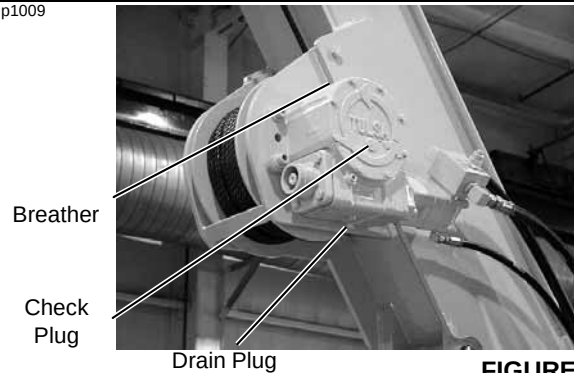
FIGURE 6-46

4. Fill the wheel hub with appropriate oil through the exposed hole until the oil reaches the bottom of the hole.
5. Install the plug.
6. Repeat the above procedure for the other wheel hub.

Replace the Winch Gearbox Lubricant

1. Raise the boom until the drain plug on the gearbox is directly underneath the gearbox (Figure 6-47), engage the parking brake and shut off the engine.

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Breather

Check Plug

Drain Plug

FIGURE 6-47

2. Clean around the gearbox breather and drain plug. Remove the breather and clean it in a suitable solvent.
3. Place a suitable container under the drain plug and remove the drain plug. Completely drain the gearbox and install the drain plug.
4. Completely lower the booms.
5. Remove the check plug.
6. Fill the gearbox through the breather hole with EP140 gear oil until it reaches the bottom of the check plug hole.

Full Version Available

Grove 4409 Rough Terrain Crane Operator Manual

Grove 4409 rough terrain crane operator manual covering controls, safe operation, capacity charts and daily checks. 118-page PDF. Instant PDF download.

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