NOTE

When more than one belt is used to drive a component, always replace all belts driving the component with a matched set, even though only one belt may be unserviceable. After replacing the belts and adjusting the tension, operate the engine for 15 seconds to seat the belts and readjust the tension. Recheck the belt tension after 1/2 hour of operation, and adjust if necessary.

Thereafter, check the tension of the drive belts after every 50 hours of operation and adjust if necessary.

CAUTION

Too tight a drive belt is destructive to the bearings of the driven part, and a belt that is too loose will slip.

## 2-4. BATTERY AND ALTERNATOR

a. Battery. The battery is a perishable item which requires periodic servicing. A properly cared for battery will give long and trouble-free service. Perform the following procedures to maintain the battery in a serviceable condition.

(1) Check the level of the electrolyte weekly. Add water if necessary to bring the electrolyte level to the ring below the filler cap in each cell.

CAUTION

Do not overfill the battery. Overfilling can cause poor performance or early failure.

(2) Keep the top of the battery, terminals, and cable clamps clean. When necessary, wash them with a solution of baking soda and water, and rinse with clean water.

CAUTION

Do not allow the soda solution to enter the cells.

(3) Inspect the cables, clamps, and hold-down bracket regularly. Replace any damaged parts. Clean and re-apply a light coating of grease to the terminals and cable clamps when necessary.

(4) Check the electrical system if the battery becomes discharged repeatedly.

(5) Use the following quick in-the-unit check as an indication of faulty components in the battery charging circuit.

(a) A fully charged battery and low charging rate indicates normal alternator-regulator operation.

(b) A low battery and high charging rate indicates normal alternator-regulator operation.

(c) A fully charged battery and a high charging rate condition usually indicates the voltage regulator is set too high or is not limiting the alternator output.

CAUTION

A high rate on a fully charged battery will damage the battery and other electrical components.

(d) A low battery and low or no charging rate condition could be caused by loose connections, damaged wiring, defective battery, defective alternator, improper regulator setting or defective alternator.

NOTE

If the machine is to inoperative or idle for more than 30 days, remove the battery. The battery should be stored in a cool dry place. Do not store the battery with the bottom of the battery resting directly on a concrete floor. The electrolyte level should be checked regularly and the battery kept fully charged.

b. ALTERNATOR. The alternator can be expected to give long-trouble-free service, however, the diodes and transistors in the alternator circuit are very sensitive and can be easily destroyed. The following precautions should be observed when working on or around the alternator.

Avoid grounding the output wires or the field wires between the alternator and the regulator. Never run an alternator on an open circuit.

Grounding an alternator's output wire or terminals, which are always hot regardless of whether or not the

engine is running, and accidentally reversing of the battery polarity will destroy the diodes. Grounding the field circuit will also result in the destruction of the diodes. Some voltage regulators provide protection against some of these circumstances. However, it is recommended that extreme caution be used. Accidentally reversing the battery connections must be avoided. If a booster battery is to be used, the batteries must be connected positive (+) to positive (+) and negative (-) to negative (-).

Never disconnect the battery while the alternator is in operation. Disconnecting the battery will result in damage to the diodes, caused by the momentary high voltage and current induced by the instantaneous collapse of the magnetic field surrounding the field windings.

c. Drive Belt Tension. Alternator drive belt tension should be such that a firm push with the thumb at a point midway between the two pulleys will deflect the drive belt 1/2 to 3/4 inch.

NOTE: When more than one belt is used to drive a component, always replace all belts with a matched set even though only one belt may be unserviceable. After belt replacement, operate the engine for 15 seconds to seat the belt and readjust the belt tension. Recheck the belt tension after 1/2 hour of engine operation and again after 8 hours of operation. Thereafter, check the belt tension after every 50 hours of operation and adjust if necessary. Whenever the alternator has been loosened for belt installation or tension adjustment, always be sure to retighten the pivot bolt as well as the bolt in the adjusting slot.

CAUTION: A belt that is too tight is destructive to the bearings of the driven component and a belt that is too loose will slip.

2-5. LUBRICATION OF THE DRAWWORKS AND DRIVE ASSEMBLY (Figure 2-2). The oil level in the bevel gear case should be checked periodically. It is recommended that the oil level be checked each week initially. If the oil level is consistently found to be satisfactory, the interval between oil level checks may be lengthened. However, the oil level should be checked at any time there is evidence that leakage might be occurring. The oil should be changed after each 6 months of operation.

a. Checking Oil Level. With the drilling machine level, remove the oil level check plug. The oil level should be even with the oil level check plug hole. If the oil level is low, remove the filler cap and add oil until