REEDRILL™

# Operator and Maintenance Manual 900/900T Auger Drill

**Part No. 0401941**

**Reedrill**
3501 S. FM Highway 1417, Denison, Texas 75020  P.O. Box 998, Sherman, Texas 75091-0998

# Parts Ordering and Product Support

REEDRILL™
*The equipment–and the people–you trust*

Use only genuine Reedrill parts in the maintenance, rebuild, or repair, of Reedrill machines. Reedrill shall have no liability as to any unauthorized modification of machines or parts and shall have no obligation or liability as to any machines or parts which have been improperly handled, or which have not been operated, maintained, or repaired according to Reedrill's furnished manuals, or other written instructions, or which are operated with other than genuine Reedrill parts.

Your cooperation in furnishing as much information as possible will assist us in filling your orders correctly and in the shortest possible time.

## 1. IDENTIFICATION OF THE MACHINE

Always furnish the **Reedrill** Model Number and Serial Number when ordering parts. This information is found on the machine nameplate. Rock Drills have the serial number stamped on the cylinder.

## 2. PART NUMBER AND DESCRIPTION

In addition to the Serial Number, always give the part number and description of each part ordered. If there is any doubt as to the correct part number and description, furnish a dimensioned sketch or return the part to be replaced, transportation charges prepaid.

## 3. SHIPMENT

Unless otherwise instructed, all shipments will be made via motor freight collect or **UPS** prepaid and charged on our invoice. Shipments cannot be made on open account until your credit has been approved by our Accounting Department.


**MAILING ADDRESS**
Reedrill
P. O. Box 998
Sherman, TX. 75091-0998

**SHIPPING ADDRESS**
Reedrill
3501 S. FM Hwy 1417
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**FOR PARTS ORDER ENTRY**
In North America Telephone 1-800-854-9030
or Telefax 1-800-582-6570
Telephone (903) 786-2981
Telefax (903) 786-6407

**FOR PRODUCT SERVICE & WARRANTY**
In North America Telephone 1-800-258-0009
Telephone (903) 786-2981
Telefax (903) 786-6408

# Introduction

# Introduction

You are to be commended for your choice of hole digging equipment. The Texoma Auger Drill was the first to utilize hydraulic controls, and is now backed by more than 50 years of experience.

Proper operation, service and maintenance of the Texoma Auger Drill will enable it to do the job for which is has been designed. It is, therefore, extremely important you thoroughly familiarize yourself with its operation, service, and maintenance as set forth in the Operation and Service Manuals. Remember that without proper operation, service, and maintenance of all equipment, long life and satisfactory service cannot be expected.

We all know that replacement parts are necessary for any piece of equipment, and the Texoma Auger Drill is no exception. We have, however, endeavored to design all parts for maximum service. The replacement parts manual can be ordered in either hard copy or on CD for ease in ordering parts. Please refer to the ordering instructions before ordering replacement parts from your Texoma Auger Drill distributor.

The information and instructions contained in this manual are for *typical machines* and may not include information pertinent to all components. Refer to other publications for information not provided in this manual.

We request that you contact **Reedrill** for all replacement parts and any service problem you may have encountered that is not covered in this manual.

## Machine Records

Fill in the information below, upon receipt of machine. This will provide ready reference when calling the factory for technical support or parts ordering information.

**MODEL:** _____

**SERIAL NO.:** _____

**DATE DELIVERED:** _____

**DEALER:** _____

**CUSTOMER:** _____

**ENGINE AIR FILTER** _____

**ENGINE OIL FILTER** _____

**ENGINE FUEL FILTER** _____

**HYDRAULIC OIL FILTER** _____

# Table of Contents

# Notes

# Section 1

# Safety

In this section and those that follow, the word:

**DANGER** means that severe injury or death will result from failure to follow instruction.
**WARNING** means that severe injury or death can result from failure to follow instruction.
**CAUTION** means that minor injury or property damage can result from failure to follow instructions.

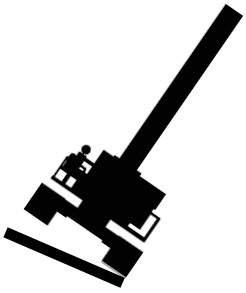
**NOTE** means that special attention should be given to the instruction.

# Overview of Potential Hazards

The **Auger Drill** is a heavy moving machine with a mast capable of extending its reach vertically and horizontally. Like all moving objects and reach extending devices, there are **potential** hazards associated with its use. These hazards will be minimized if the machine is properly inspected and maintained. The operators should read this manual and have been trained to use the machine in an appropriate and safe manner. Should any questions arise concerning the maintenance or operation of the machine contact **Reedrill at 1-800-258-0009**.

In this section and those that follow, the word:

**DANGER means that severe injury or death will result from failure to follow instruction.**
**WARNING means that severe injury or death can result from failure to follow instruction.**
**CAUTION means that minor injury or property damage can result from failure to follow instruction.**
**NOTE means that special attention should be given to the instruction.**

| POTENTIAL HAZARD | EFFECT | PREVENTION |
|---|---|---|
| **Electrical Contact**  | **DANGER:** Will cause Serious Injury or Death. | Maintain minimum clearance from high voltage power lines. Refer to "Minimum Clearance for High Voltage Lines" chart in this section.<br>Do Not dig near underground power lines.<br>Machine is NOT insulated |
| **Contaminated Air**  | **DANGER: WILL** cause Serious Injury or Death. | Do Not run machine in an area without good ventilation. |
| **Unit Overturn**  | **WARNING:** Can Cause Serious Injury or Death. | Do Not travel on steep inclines or crosswise to grades.<br>Do Not travel on soft or unstable ground or close to unsupported excavations.<br>Do Not move machine with mast raised.<br>Always extend jacks and outriggers on truck mounted machines before using auger.<br>Always place auger on ground when lifting a load with the winch. |
| **Moving Load or Parts**  | **WARNING:** Can Cause Serious Injury or Death. | Do Not unstow, move or stow auger until all people are clear of the area.<br>Keep all personnel at least 15 ft. (4.6 m) from the Kelly Bar when it is operating.<br>Do Not lubricate or service while machine is running. |
| **High Pressure Air or Fluid**  | **WARNING:** Can Cause Serious Injury or Death. | Relieve pressure on hydraulic and pneumatic systems before loosening hoses or connections. |

**Before Operation**

- **Do** notify the owner of overhead or underground power lines before digging. Be sure to comply with all local regulations regarding safe operating distances from power lines.
- **Do** study this manual and fully understand the controls.
- **Do** be sure all safety guards are securely in place.
- **Do** be sure all nameplates and decals pertaining to safety, operation, and maintenance are in place and not damaged. Replace any damaged or missing nameplates or decals.
- **Do** wear safety helmet and glasses when operating or working on machine.
- **Do** be sure all personnel are clear of the machine and work area before starting the engine or operating the machine.
- **Do** maintain metal to metal contact between fuel tank and fuel nozzle when filling fuel tank. This will prevent static sparks and the possibility of fire and explosion.
- **Do** keep the area within 15 feet of the Kelly Bar clear of personnel.
- **Do** attach safety chain when using towbar.
- **Do Not** leave tools or other loose objects on the engine compartment or drive mechanisms. They can be thrown with a powerful force.
- **Do Not** operate machine with:
  - A hydraulic leak
  - Damaged hydraulic hoses or fittings
  - Broken or damaged electrical wiring
  - Damaged or missing guards and shields

**Operation**

- **Do maintain minimum clearance from high voltage wires (see chart in this section).** Check with power company and local regulations for specific guidelines and safety information.
- **Do** provide sufficient ventilation when running the engine in an enclosed area. Exhaust gases contain carbon monoxide, a deadly poison, which is colorless and odorless.
- **Do** Keep work area clean and clear of mud, snow, ice, hand tools and other objects.
- **Do** engage brake systems before leaving the machine for any reason.
- **Do** be sure the feed ram (mast) is vertical from side to side with respect to the machine before lowering. Lower slowly to be sure feed ram (mast) will clear other parts of the machine and fit correctly in the feed ram (mast) rest.
- **Do Not** wear loose clothing or jewelry; keep clothing and hands clear of moving parts.
- **Do Not** travel on steep inclines, soft or unstable ground, or close to unsupported excavations.
- **Do Not** move machine if it is in a potentially unstable position.
- **Do Not** move the machine with the Feed Ram (mast) raised. Always lower the Feed Ram and raise the jacks before moving the machine.
- **Do Not** drill near a "bootleg" hole or any hole that may contain explosives.
- **Do Not** attempt to dig unless the jacks are firmly placed and set on a hard surface to eliminate the possibility of turning the truck and digger over.

*continued . . .*

**Operation (con't.)**

- **Do Not** attempt to move the machine with a load suspended from the winch line. Always keep the Feed Ram vertical and the auger on the ground when lifting a load. Do not swing with a suspended load. Failure to heed this warning may cause serious damage and/or personnel injuries.

| Clearances from High Voltage Lines | |
|---|---|
| **Voltage** | **Minimum Clearance** |
| up to 50 kv | 10 ft. (3 m) |
| over 50 to 75 kv | 11 ft. (3.4 m) |
| over 75 to 125 kv | 13 ft. (4 m) |
| over 125 to 175 kv | 15 ft. (4.6 m) |
| over 175 to 250 kv | 17 ft. (5.2 m) |
| over 250 to 370 kv | 21 ft. (6.4 m) |
| over 370 to 550 kv | 27 ft. (8.2 m) |
| over 550 to 1000 kv | 42 ft. (12.8 m) |

Table 1-1 Minimum safe distances from high voltage lines.

**After Operation**

- **Do** be sure machine is on level ground and all controls are in the NEUTRAL or OFF position.
- **Do** let engine idle for 3 - 5 minutes before shutting off engine.
- **Do** be sure the jacks and outriggers (if equipped) are retracted before moving the truck.

**Maintenance**

- **Do** be sure machine and components are well supported before servicing or replacing parts.
- **Do** relieve pressure on hydraulic or pneumatic systems before loosening connections or parts.
- **Do** use only proper tools to make repairs or adjustments.
- **Do Not** service, or perform maintenance while machine is running.
- **Do Not** weld or grind near oil lines.
- **Do Not** smoke or use an open flame near batteries. Batteries can give off hydrogen which is a highly explosive gas.

**Equipment Transfer**

If all or part of the equipment is shipped to a new destination, always include a complete Operator's Manual or copy of the following topics from the Operator's Manual:

- Safety Section
- Pre-Start Checklist, engine start and shutdown procedures.
- Operating controls for auger drill and truck owners manual.

# Section 2

# Start-Up

# Start-Up Checklist

## Daily Checks - Before Drilling Begins

1. Check bolts for tightness, especially the turntable bearing bolts.
2. Check mast cylinder pins.
3. Check drill engine oil level. Dip stick left side of engine.
4. Check coolant / antifreeze in engine.
5. Check oil level in the transmission (drill), after engine and transmission have warmed up.
6. Grease drive lines.
7. Grease rollers on bottom of final drive.
8. Grease all sheaves on mast assembly.
9. Grease turntable bearing - 2 places, one each side of crawler frame.
10. Check drill tools (auger) everyday before production drilling begins (pilot bits, teeth, augers, pins).

**NOTE** **Everyday before drilling, after the drill engine has reached running temperature, place the transmission gear selector in 1st gear letting the kelly bar rotate freely, making sure the drive train does not freeze up between shifts. Always keep extra shear pins with each unit.**

## Weekly Checks

1. Check tension on crowd cable and tighten if necessary.
2. Check inner kelly cable for bad cable. (Loose wires, smashed, frayed spots)
3. Check tension on drive chain. Right angle final drive - tighten set screws in upper and lower sprockets.
4. Check oil level on right angle - plug level.
5. Check oil level on final drive - plug level.
6. Check tension on track assembly - left and right.
7. Hydraulic filters in the hydraulic oil tank to be changed every 200 hours.

# Section 3

# Troubleshooting

# Troubleshooting Chart

| Hydraulic System | | |
|---|---|---|
| **Condition** | **Probable Cause** | **Remedy** |
| Sluggish or no response to hydraulic controls. | A. Suction line plugged. | Check tank for plugged hoses. |
| | B. Low oil level. | If low, refill with proper lubricant to oil level mark in tank. See Lubrication Chart. |
| | C. Dirty strainers mounted in tank. | If flow of oil is obstructed by foreign matter in screen, remove and clean with solvent or kerosene, but **never soak in gas and burn to remove foreign matter.** |
| | D. Hydraulic leak in line. | Replace with recommended hydraulic line and length. |
| | E. Malfunction in power take-off. | Check PTO for engagements, or broken gears |
| | F. Faulty relief valve. | Check relief valve for foreign matter that might possibly be holding relief valve in return to tank position. Clean and reassemble checking pressure for proper setting |
| | G. Hydraulic pump. | If all the above check points prove negative, the probable cause is malfunction of hydraulic pump. Replace with new pump. Determine the cause of pump failure. |
| Malfunction of one operation only | Faulty cylinder | Disassemble cylinder and check the rings and piston assembly. |
| Pressure setting low from the original setting on the machine. | Relief valve spring relaxed, or loss of flow due to pump wear. | The system is equipped with a single bank of valves. Loosen jam nut on inlet section and turn adjustment screw clockwise until the original pressure setting is reached. If unable to raise pressure by adjusting relief valve, the pump is badly worn and should be replaced. Check exploded views for proper machine model and pump number. |
| Noisy pump. | A. Oil supply low | Fill reservoir. See Lubrication Chart. |
| | B. Oil too heavy (viscous) | Change to correct oil. See Lubrication Chart. |
| | C. Oil filter plugged. | Install new filter. |
| | D. Suction line plugged | Clean hose. |
| Oil overheating | A. Oil supply low | Fill reservoir. See Lubrication Chart. |
| | B. Contaminated oil | Drain reservoir and refill with clean filtered oil. |
| | C. Setting of relief valves too high or too low. | Set to correct pressure. |
| | D. Oil in system too light. | Drain reservoir and refill with correct viscosity oil. |
| Shaft seal leakage | A. Worn shaft seal | Replace shaft seal. |
| | B. Broken molded V seal or gasket. Bearing out of position. Excessive | If replacing the shaft does not stop leakage, the pump should be disassembled and checked for worn parts. |

# Troubleshooting Chart

| Hydraulic Cylinders | | |
|---|---|---|
| **Condition** | **Probable Cause** | **Remedy** |
| Leakage around shafts. | Normal packing wear. | Tighten adjusting nut on packing glands equal amount. |
| Hydraulic cylinder will not hold. | Worn piston packing | Disassemble cylinders and repack. |
| **Turntable Base** | | |
| Excessive movement while digging. | Brake slipping. | Change brake pack. |
| Turntable base will not function. | Hydraulic system | Check hydraulic system for operating PSI. Check hydraulic motor for rotation. |
| **Drive Assembly** | | |
| Upper grease seal leaking on main drive | Housing Overfilled | Drain oil to proper oil level. Check for water in oil. |
| Water in final drive housing. | Upper seal. | Upper seal has failed or was improperly installed. Refer to final drive assembly for seal replacement. |
| New seal will not stop leak. | Ring gear carrier | Seal area on the ring gear carrier is excessively worn. Disassemble the final drive and replace carrier. |
| Kelly bar will not rotate. | A. Clutch slipping. | Have transmission checked. |
| | B. Driveline | Check drivelines for damage. If damage is found, remove the driveline and replace with a new driveline. |
| | C. Damage to ring gear and pinion assembly in final drive. | Remove the inspection cover on the final drive housing and inspect the ring gear and pinion for damage. If damage is found in the final drive, disassemble according to procedure. **Always use gear sets furnished by Reedrill.** |
| Kelly bar will not rotate under load. | Torque converter.<br>Shear pin. | Have transmission checked.<br>Replace shear pin. |
| Drive housing running extremely hot. | Bearing failure | Disassemble housing and replace with original equipment replacement bearing. |
| Gear grease leak at pinion carrier assembly rt. angle | Grease seal | Remove driveline and companion flange. Replace seal. |
| Gear grease leaking around main drive. | Grease seal | Drain housing. Remove old seal using a punch to pry out. **CAUTION must be exercised not to damage main drive in removing and replacing the grease seal.** |
| **Mast Pulldown Cable** | | |
| Slack in cable movement. | Cable stretched. | Adjust Cable. See Section 4. |

# Notes

# Section 4

# Maintenance and Torque Specifications

# Lubrication Diagram

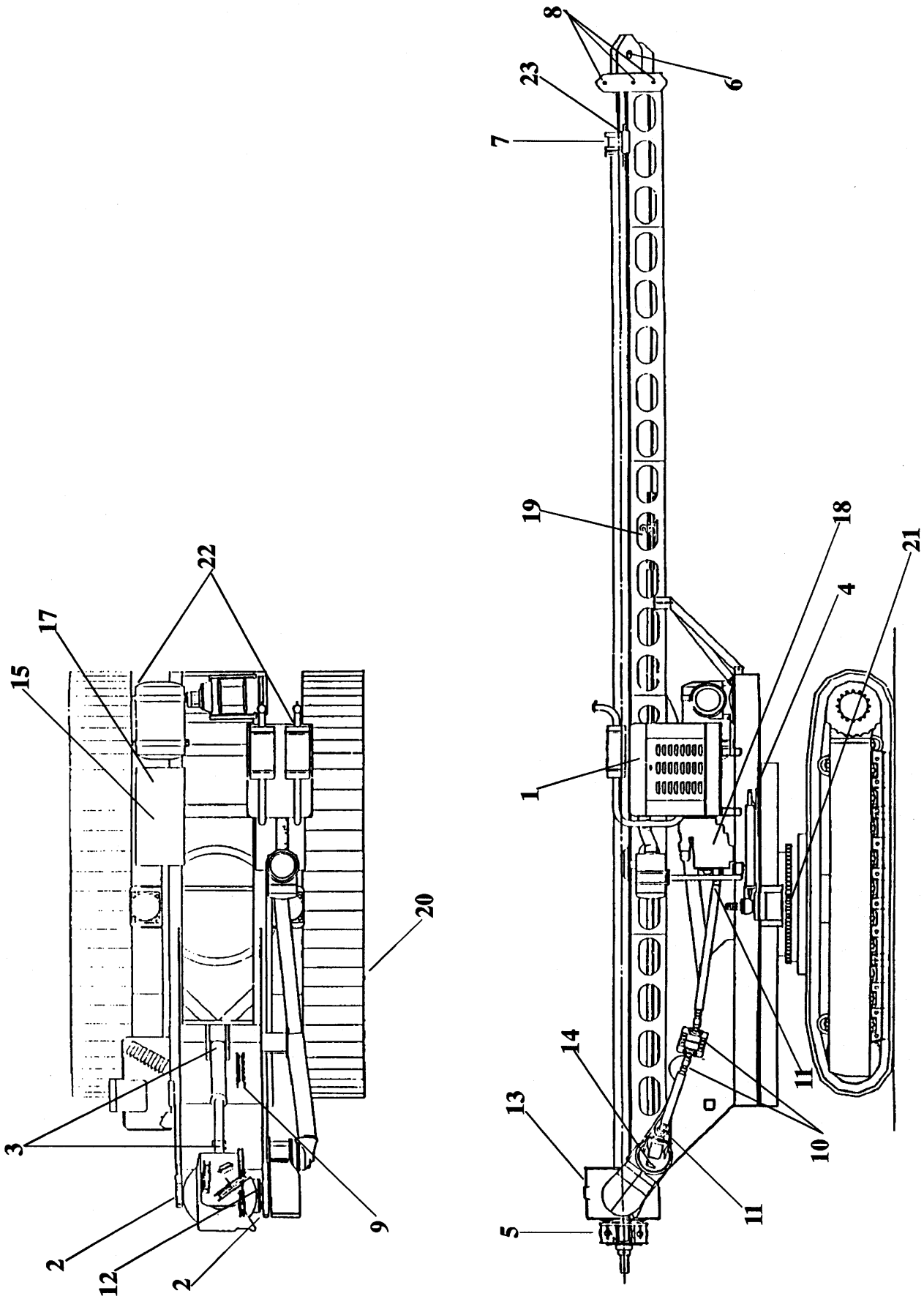



Figure 4-1 Lubrication Diagram

# Lubrication Chart

| Ref. | Equipment & Capacity | Recommended Lubricant | Lubrication Period | Special Instructions |
|---|---|---|---|---|
| 1. | Engine | Refer to Engine Manual. | Check oil level every 6 hrs., add as required. Change every 250 hrs. | Drain Engine Oil with engine at operating temperature. |
| | | | Clean filter case and replace element every 250 hrs. | Use suitable non-combustible solvent or clean diesel fuel to clean case. Make sure filter elements and cover gaskets are properly sealed; run engine and check for leaks. |
| | Engine Coolant | Clean water with rust inhibitor anti-freeze 50-50 mix. | Check every 8 hrs. Maintain level 1" below top of tank. | |
| | Engine Fuel Filter | | Replace each 250 hrs. | |
| 2.* | Trunnion | NLGI 2 Grease | 40 Hrs. | 2 Points |
| 3. | Elevating Cylinder | NLGI 2 Grease | 40 Hrs. | 2 Points each cylinder |
| 4. | Frame Slides | NLGI 2 Grease | Daily | 4 Points each side |
| 5. | Roller Drive | NLGI 2 Grease | Daily | 2 Points |
| 6. | Crown Block | NLGI 2 Grease | Daily | 5 Points each sheave |
| 7. | Outer Kelly Swivel | NLGI 2 Grease | Daily | 3 Points |
| 8. | Service Winch Cable Guide Sheaves | NLGI 2 Grease | 40 Hrs. | 1 Point |
| 9. | Lower Crowd Sprocket | NLGI 2 Grease | Daily | 2 Points |
| 10. | Drive Shafts | NLGI 2 Grease | 40 Hrs. | 2 Points Each |
| 11. | Universal Joints | NLGI 2 Grease | Daily | 2 Points |
| 12. | Rt. Angle & Final Drive Assembly | NLGI 2 Grease | Daily | 3 Points |
| 13. | Final Drive | 90W Gear Oil | Check Daily. Change 1,000 Hrs. | To level plug on cover. Do not overfill. |
| 14. | Rt. Angle Drive | 90W Gear Oil | Check Daily. Change 1,000 Hrs. | To level plug. Do not overfill. |
| 15. | Hyd. Reservoir | 10W Hydraulic Oil | Check Daily. | To full line on sight gauge. |
| 16. | *Hyd. Reservoir Strainer | | Remove and clean. | Use suitable non-combustible solvent. Blow dry with compressed air. Do not damage screen. |
| 17. | Hyd. Reservoir Filter | | Replace every 250 Hrs. | Do not depend on visual inspection; change if gauge indicator light in Red. |
| 18. | Transmission (Clarke) | Dexron III ATF | Check Daily. Change every 1,000 Hrs. | Change oil filter element every 500 Hrs. |
| 19. | Crowd Sheaves | NLGI 2 Grease | Daily | 2 Points |
| 20. | Pierce Crawler Tracks | NLGI 2 Grease | Daily | 8 Points |
| 21. | *Center Bearings | NLGI 2 Grease | 40 Hrs. | 2 Points |
| 22. | Crawler Leveling Cylinder | NLGI 2 Grease | Daily | 8 Points |
| 23. | Inner Kelly Winch Cable Swivel | NLGI 2 Grease | Daily | 1 Point |

NOTE *** These items not shown on diagram.**
**All Winch Assemblies are self lubricating.**

# Bolt Torque Specifications

**Procedure No. 1-87 REVISION A**

Torque Values: Bolts, Screws and Studs (Lubricated or Plated)
Tolerance Values in all cases to +5 % - 0 % of the Value listed below.
Note: K = .15 for plated or lubricated fasteners.

| | Nominal Diameter | SAE Grade 5 ASTM A-449 Tightening Torque Ft. Lbs. (Nm) Newton meter | SAE Grade 8 Tightening Torque Ft. Lbs. (Nm) Newton meter |
|---|---|---|---|
| UNC | 1/4 | 6 (8.2) | 9 (12.2) |
| | 5/16 | 13 (17.7) | 18 (24.5) |
| | 3/8 | 23 (31.3) | 33 (44.9) |
| | 7/16 | 35 (47.6) | 55 (74.8) |
| | 1/2 | 57 (77.5) | 80 (108.8) |
| | 9/16 | 82 (111.5) | 115 (156.4) |
| | 5/8 | 113 (153.7) | 159 (216.2) |
| | 3/4 | 200 (272) | 282 (383.5) |
| | 7/8 | 322 (437.9) | 455 (618.8) |
| | 1 | 483 (656.9) | 681 (926.2) |
| | 1-1/8 | 596 (810.6) | 966 (1313.8) |
| | 1-1/4 | 840 (1142.4) | 1363 (1853.7) |
| | 1-3/8 | 1102 (1498.7) | 1786 (2429) |
| | 1-1/2 | 1462 (1988.3) | 2371 (3224.6) |
| | 1-3/4 | 1714 (2331) | |
| | 2 | 2576 (3503.4) | |
| | 2-1/4 | 3768 (5124.5) | |
| | 2-1/2 | 5155 (7010.8) | |
| | 2-3/4 | 6996 (9514.6) | |
| | 3 | 9231 (12554.2) | |
| UNF | 1/4 | 7 (9.5) | 10 (13.6) |
| | 5/16 | 14 (19) | 20 (27.2) |
| | 3/8 | 26 (35.4) | 37 (50.3) |
| | 7/16 | 40 (54.4) | 60 (81.6) |
| | 1/2 | 64 (87) | 90 (122.4) |
| | 9/16 | 91 (123.8) | 128 (174.1) |
| | 5/8 | 127 (172.7) | 180 (244.8) |
| | 3/4 | 223 (303.3) | 315 (428.4) |
| | 7/8 | 355 (482.8) | 502 (682.7) |
| | 1 | 528 (718.1) | 746 (1014.6) |
| | 1-1/8 | 668 (908.5) | 1083 (1472.9) |
| | 1-1/4 | 930 (1264.8) | 1509 (2052.2) |
| | 1-3/8 | 1254 (1705.4) | 2034 (2766.2) |
| | 1-1/2 | 1645 (2237.2) | 2668 (3628.5) |
| UN | 1-3/4 | 1879 (2555.4) | |
| | 2 | 2857 (3885.5) | |
| | 2-1/4 | 4127 (5612.7) | |
| | 2-1/2 | 5726 (7787.4) | |
| | 2-3/4 | 7693 (10462.5) | |
| | 3 | 10064 (13687) | |

## Bolt Maintenance

**WARNING:**
**BE SURE all bolts are tight and not damaged. Pay particular attention to critical areas, such as; feed ram, right angle drive pivot, final drive mounting, elevating and leveling cylinder pivots, or any areas where loose bolts could cause a component to fall and cause injury.**

Retorque bolts after first 50 hours of machine operation. Retorque any bolts that are less than the specified value as listed in the Bolt Torque Specifications sheet or as specified on the assembly drawing. Pay particular attention to critical mounting areas, such as; feed ram, right angle drive pivot, final drive mounting, elevating and leveling cylinder pivots, or any areas where loose bolts could cause a component to fall and cause injury or machine damage.

Periodically inspect bolts for damage and replace as necessary. Check torque and retorque as required.

## Bolt Grade Identification

Fig. 4-2 shows the common markings on bolt heads used on Reedrill/Texoma auger drills to identify what grade the bolt is. The grades shown are not all inclusive, but show what is commonly used on Reedrill/Texoma augers.

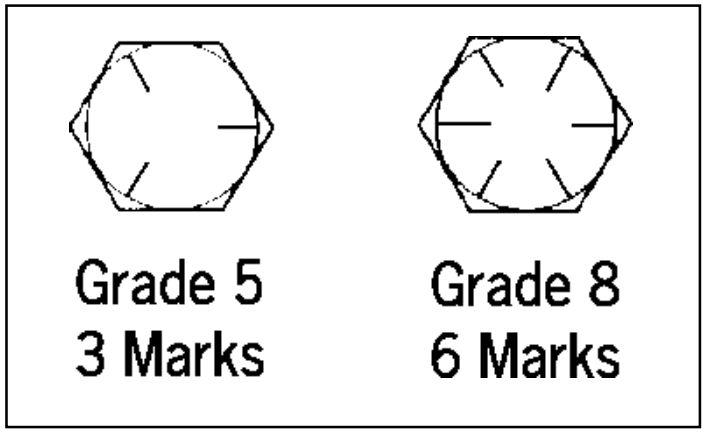



Fig. 4-2 Two commonly used bolt head markings

# Maintenance Record

| DATE | DESCRIPTION OF SERVICE PERFORMED | SERVICE PERFORMED BY: |
|---|---|---|
| | | |

# Maintenance Record

| DATE | DESCRIPTION OF SERVICE PERFORMED | SERVICE PERFORMED BY: |
|---|---|---|
| | | |

# Maintenance Record

| DATE | DESCRIPTION OF SERVICE PERFORMED | SERVICE PERFORMED BY: |
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