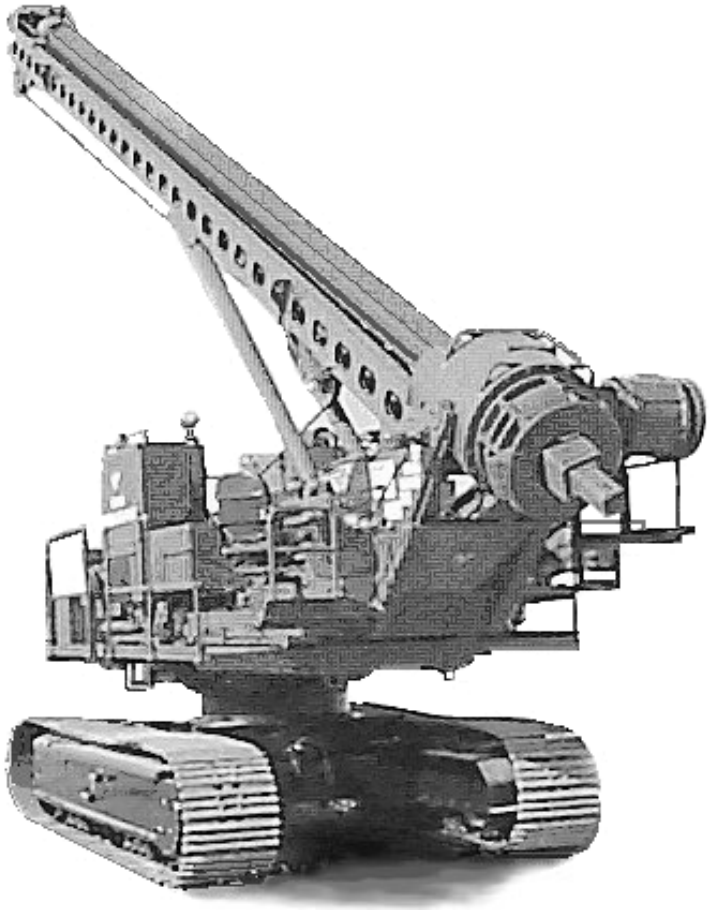
REEDRILL™



OPERATOR MANUAL

Part No. 411829

Magnum
Auger Drill

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

Parts Ordering & 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
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3501 S. FM Hwy 1417
Denison, TX. 75020

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

This safety alert symbol indicates important SAFETY MESSAGES in this manual. When you see this symbol, carefully read the message that follows and be alert to the possibility of personal injury or property damage.

WARNING

Before Starting Engine, Study Operator's Manual

- *** Practice All Safety Precautions**
- *** Make Pre-Operations Check**
- *** Learn Controls Before Operating**

It is your responsibility to understand and follow manufacturer's instructions on machine operation and service, and to observe pertinent safety precautions, laws, and regulations.

Drill Serial No. : _____

Date Drill Delivered : _____

Dealer : _____

Customer : _____

Specifications subject to change without notice.

Table of Contents

Magnum Major Components

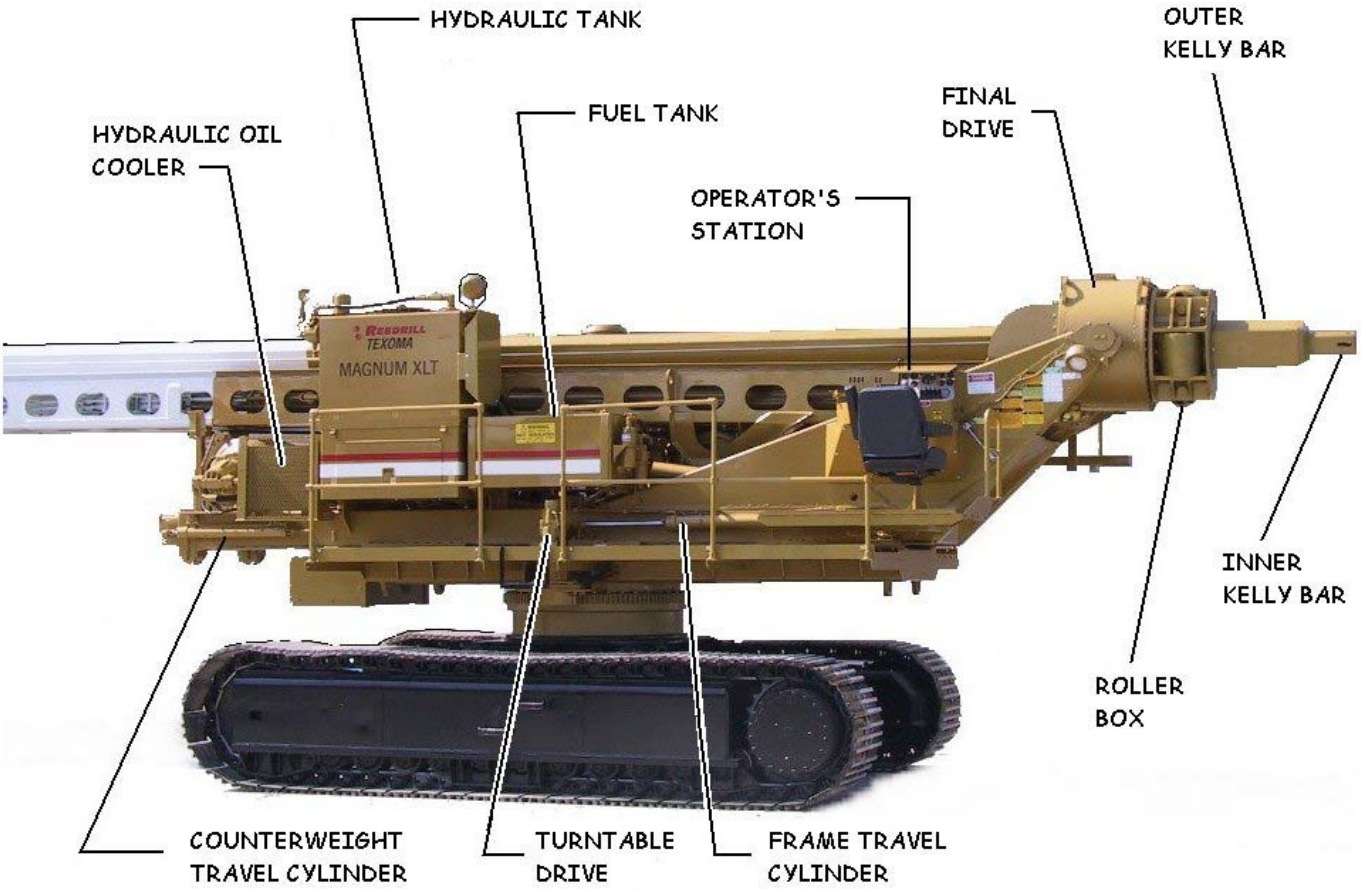


Fig. i-1 Magnum Left Side View

Magnum Major Components

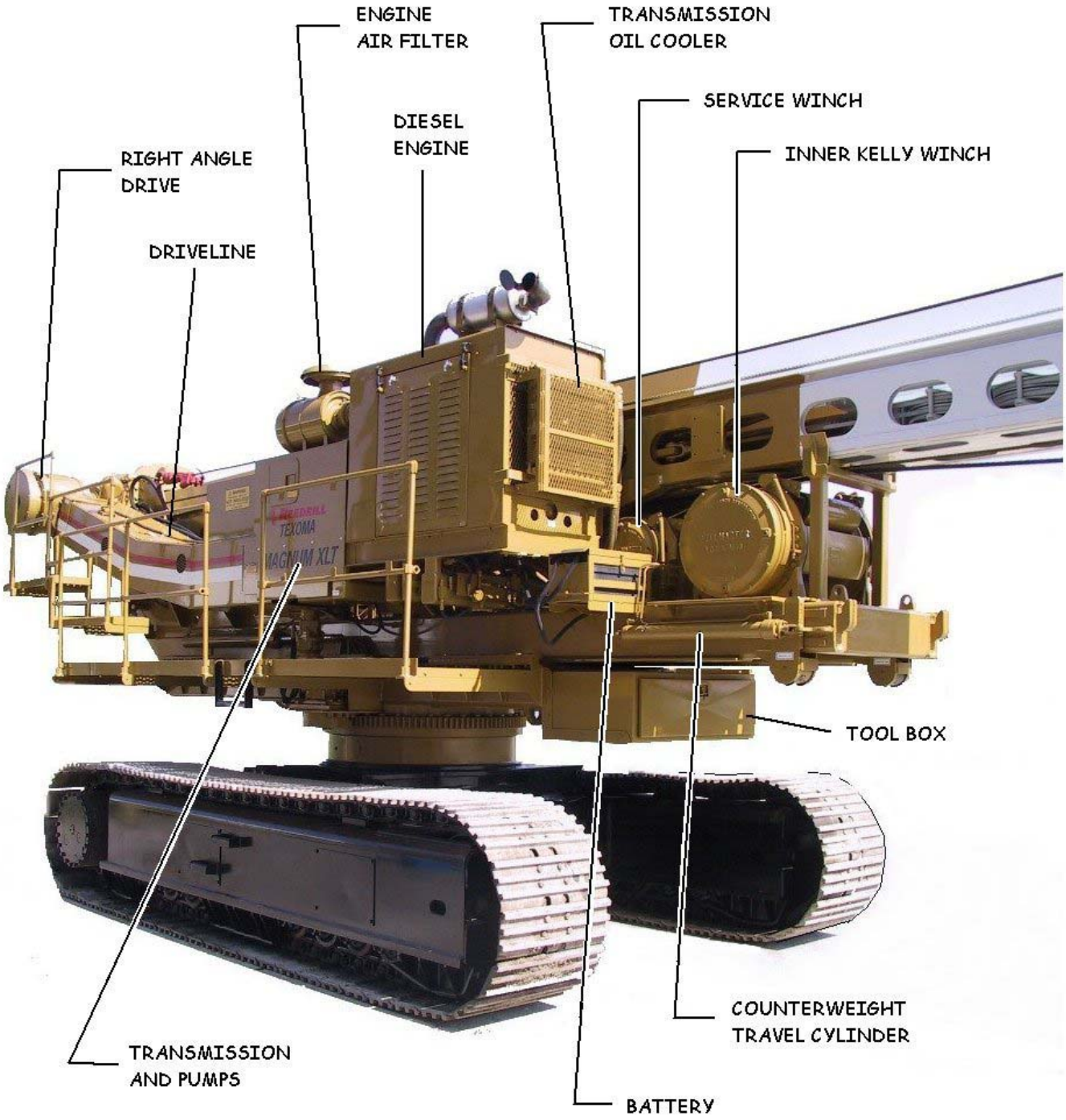


Fig. i-2 Magnum Right Front Corner View

Magnum Major Components

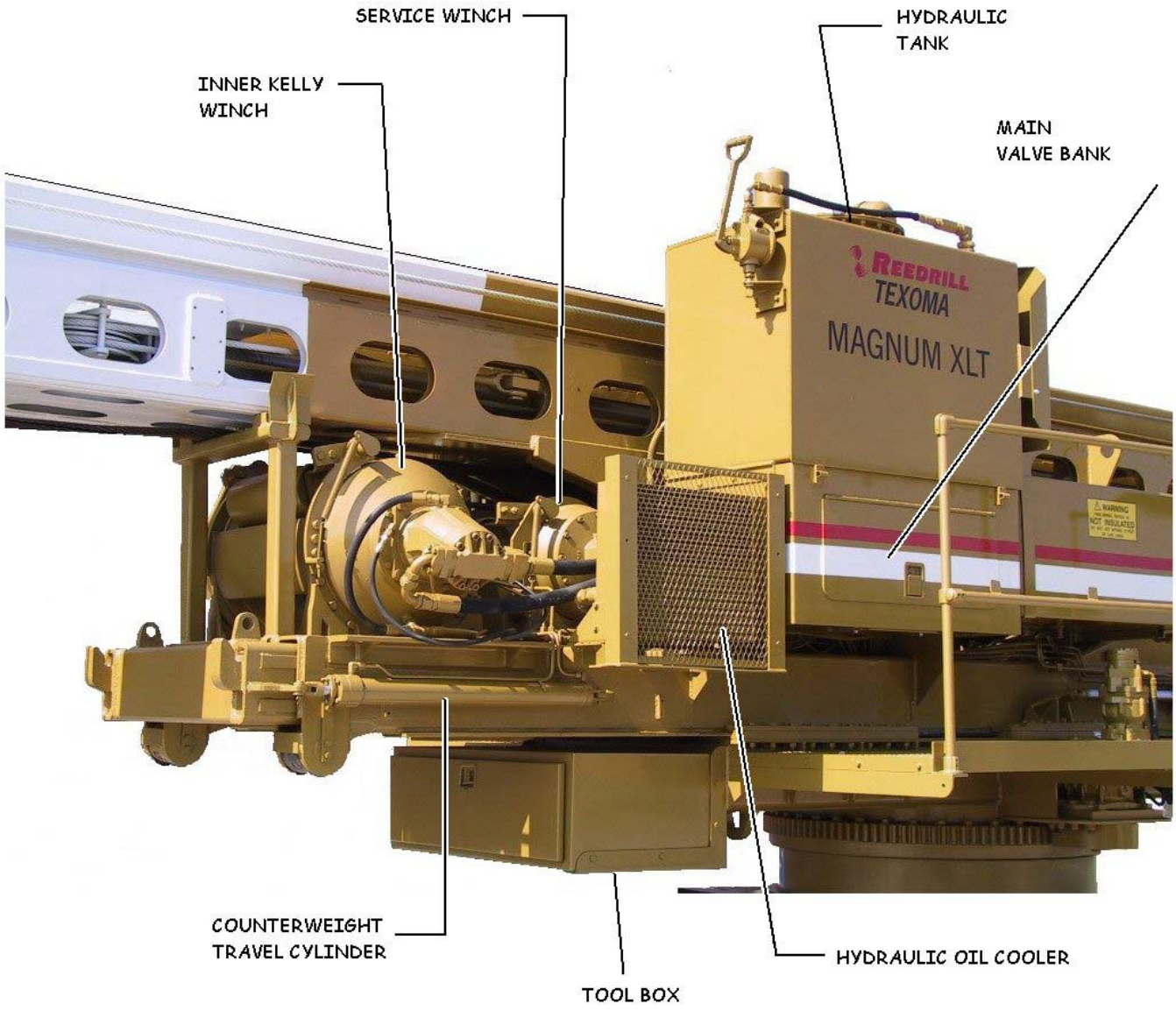


Fig. i-3 Magnum Left Front Corner View

Magnum Major Components

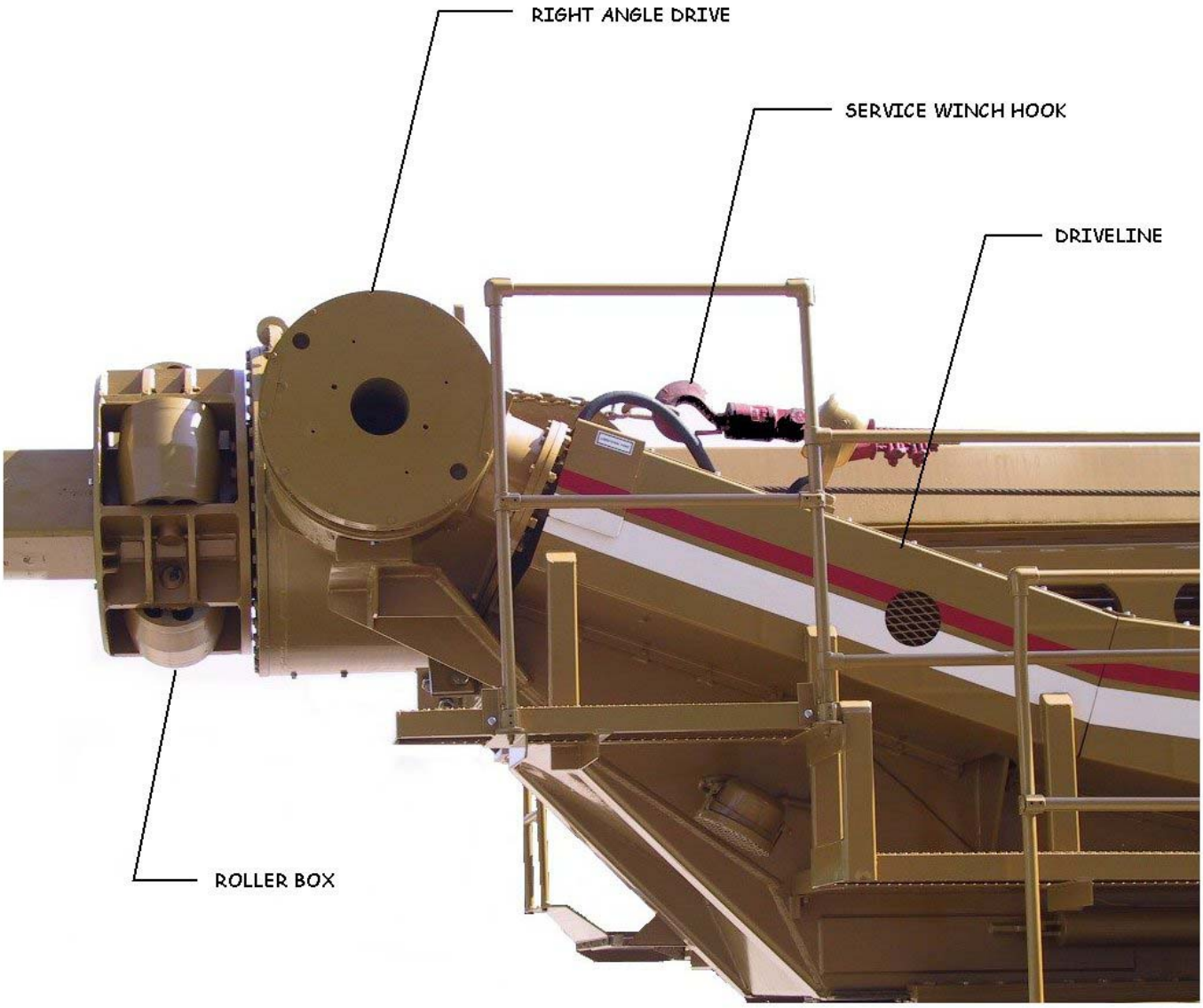


Fig. i-4 Magnum Right Rear Side View

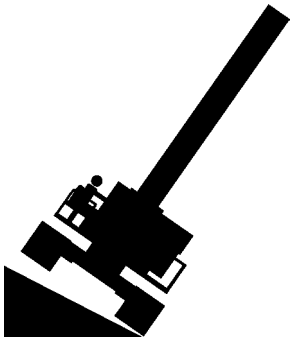
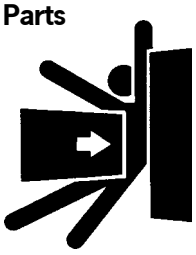
Section 1

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 the operator 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 from High Voltage Lines" in this section. Do Not dig near underground power lines. 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. Do Not travel on soft or unstable ground or close to unsupported excavations. Do Not move machine with mast raised. Always extend jacks and outriggers on truck mounted machines before using auger. Always place auger on ground when lifting a load with service winch.
Moving Load or Parts 	**WARNING:** Can Cause Serious Injury or Death.	Do Not raise or lower mast until all people are clear of the area. Keep all personnel at least 15 ft. (4.6 m) from the Kelly Bar when it is operating. 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** check that the mast is vertical from side to side before lowering. Lower slowly to be sure mast will clear other parts of the machine and fit correctly in the 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.
- **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.

Safety Instructions for 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 (if applicable).

Section 2

Pre-Start

Pre-Start Checklist

Daily Checks - Before Start-Up

(Refer to section 4 lubrication diagram and chart.)

1. Check oil level in the drill engine.
2. Check coolant / anti-freeze level in drill engine radiator.
3. Check oil level in the drill transmission, after engine has been warmed up.
4. Grease drive lines.
5. Grease rollers on bottom of final drive.
6. Grease all sheaves on mast assembly.
7. Grease turntable bearing - 2 each both sides of subframe.
8. Check drill tools (auger) everyday before production drilling begins. (Pilot bits, teeth, augers, pins)

NOTE

Everyday before drilling, after the drill engine has reached normal operating 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

(Refer to section 4 adjustments, lubrication diagram and chart).

1. Check tension on crowd cable and tighten if necessary.
2. Check inner kelly cable for wear and damage (loose wires, smashed, frayed spots).
3. Check oil level on right angle drive - plug level.
4. Check oil level on final drive - plug level.
5. Check tension on track assembly - left and right.
6. Hydraulic filters in the hydraulic oil tank to be changed every 250 hours.

Section 3

Operating Procedures

Start-up / Shutdown Procedures

DANGER

LOOK UP before raising mast.
DO NOT allow mast to come near electrical power lines. See Minimum Clearance Chart for Energized High Voltage lines in Section 1. This machine is not insulated.

WARNING

DO NOT operate machine before you have read and understood all warnings and cautions listed in section 1 of this manual.
CHECK for obstructions before moving machine.
DO NOT attempt lubrication or service while the machine is running.

Start-up Procedure

1. Complete the Pre-start checklist in section 2 BEFORE starting machine.
2. Be sure all controls are in the OFF or NEUTRAL position and parking brake is set on truck mounted machines.
3. Hold SHUT-DOWN OVERRIDE SWITCH in the OVERRIDE position and turn IGNITION SWITCH to START position. When engine starts, release IGNITION SWITCH to ON position, continue to hold override switch in until oil pressure builds up so engine will keep running when override switch is released to NORMAL position.
4. Idle engine 3 to 5 minutes at approximately 1000 RPM **before** operating with a load.

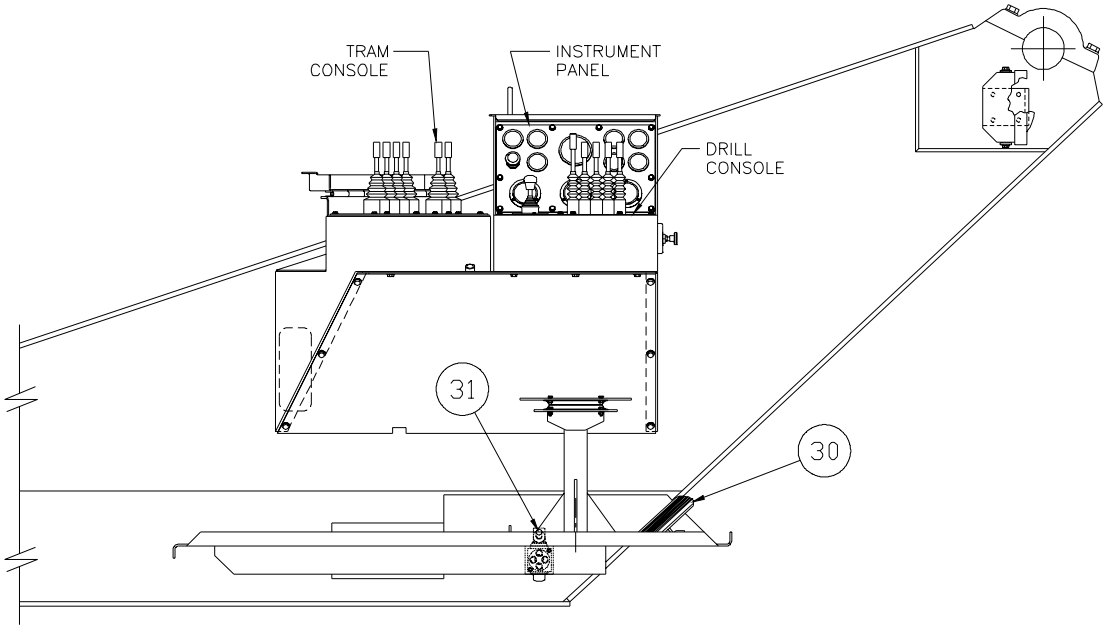


Fig. 3-1 Operator Station
30. Throttle
31. Inner Kelly Float Pedal

CAUTION:

DO NOT engage the starting motor more than 30 seconds. Wait two minutes between each attempt to start, to prevent damage to stating motor.
DO NOT idle the engine for excessively long periods (more than 10 minutes). Damage to engine can occur due to low combustion chamber temperatures, which will cause the fuel to not burn completely. This results in carbon buildup, sticky valves and can cause the oil to wash off the cylinder walls.
When using jumper cables, BE SURE to connect positive (+) to positive (+) and negative (-) to negative (-).

Cold Start Procedure

- Consult engine operator manual for specific instructions regarding cold weather staring procedures and troubleshooting.
- If engine does not start after three attempts, check the fuel supply system. Absence of blue or white exhaust smoke during cranking indicates no fuel is being delivered.
- After engine starts, be sure engine oil pressure is indicated on gauge.
- Use the chart below as a guide for cold weather operation.

Shutdown Procedure

1. Let machine idle for 3-5 minutes.
2. Be sure all controls are in the OFF or NEUTRAL position.
3. Be sure parking brake is set on truck mounted machines.
4. Turn ignition switch to OFF position.

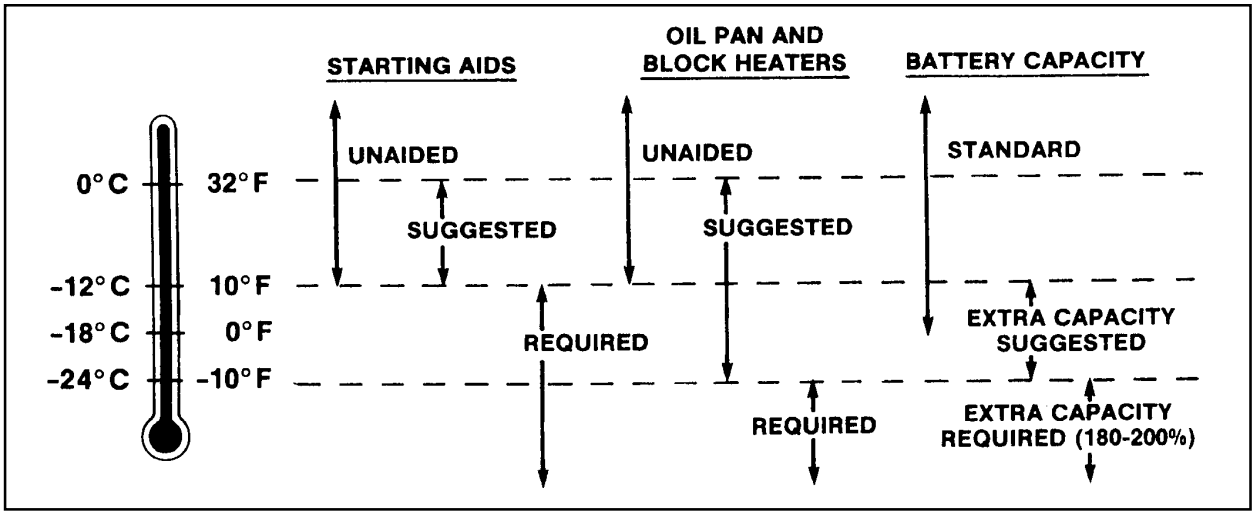


Chart 3-1 Cold Weather Staring Aid Suggestion (ref. Cummins C Series Engines)

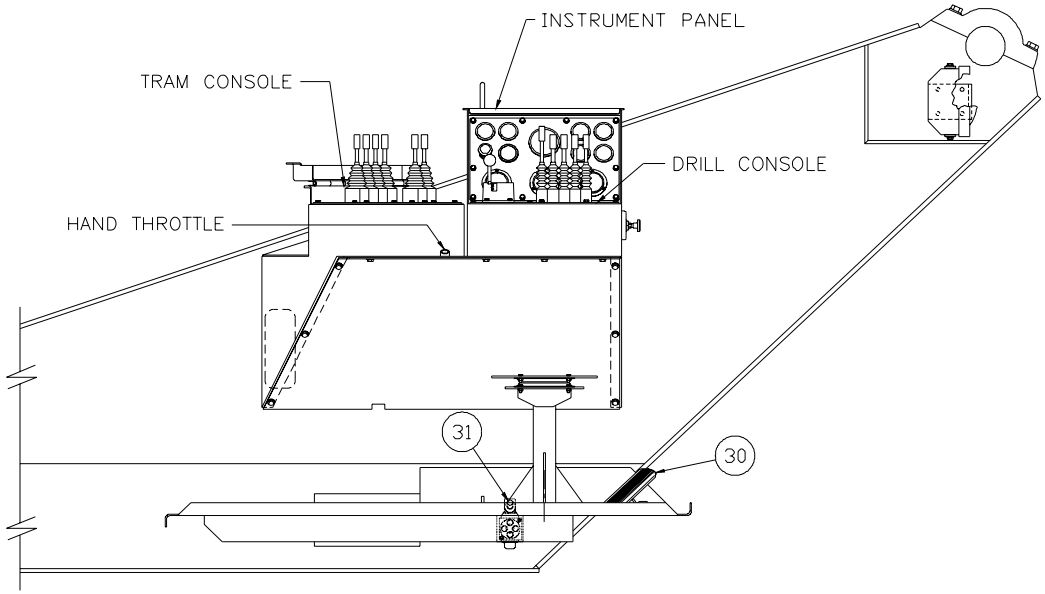


Fig. 3-1 Operator Station (ref. 0409361)
30. Throttle
31. Inner Kelly Float Pedal

NOTE

The left side of the machine is the side where the operator is seated. Front is the engine end. Rear is the auger end.

1. Engine Speed

The ENGINE THROTTLE (30) is located directly by the operator's right foot controls the engine speed and hence the speed of all other functions. Push the pedal toward the floor to increase engine speed. The pedal is spring returned to low engine speed.

2. Auger (Kelly) Bar Rotation

The TRANSMISSION GEAR SELECTOR (23) is directly in front of the operator and selects both the direction and the speed range of the kelly bar rotation. The kelly speed is then controlled with the ENGINE THROTTLE (30).

NOTE

Do not engage the transmission or change speed range selection with the engine at high speed. Only change the selector position with the engine at low idle.

DANGER

LOOK UP before raising mast.
DO NOT allow mast to come near electrical power lines. See Minimum Clearance Chart for Energiized High Voltage lines in Section 1. This machine is not insulated.

3. Mast Raise and Lower

The mast is elevated to a vertical working position from the horizontal transporting position by means of the elevation cylinder. Pulling the MAST RAISE LEVER (22) toward the operator raises the mast and pushing the lever away from the operator lowers the mast. Both operations should be done cautiously as not to jar or bounce the machine. The lever is spring returned to the neutral position.

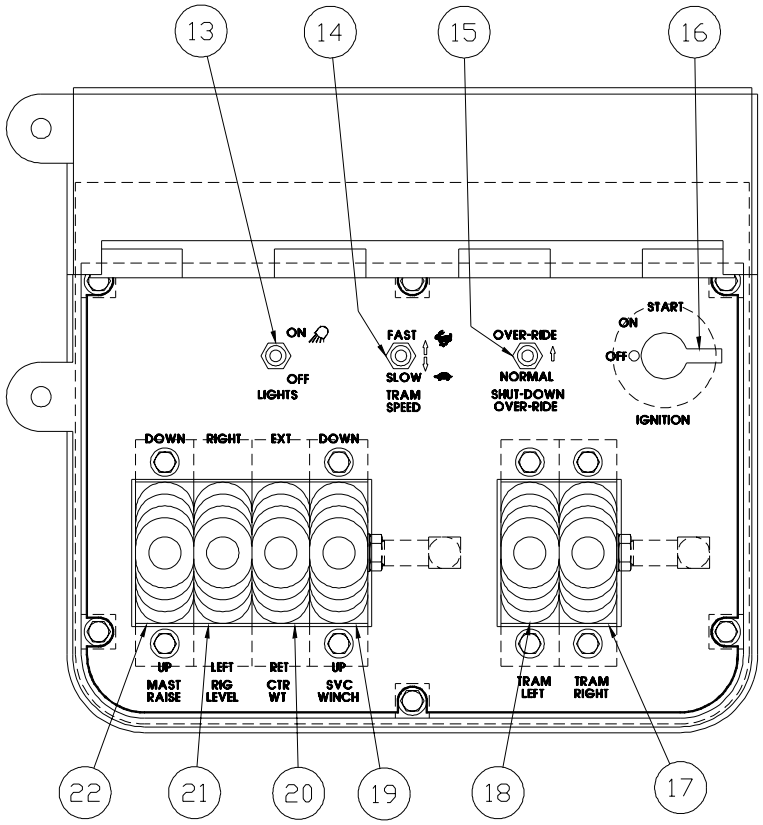


Fig. 3-2 Tram Console (ref. 409361)
13. Light Switch
14. Tram Speed Switch
15. Shut-Down Override Switch
16. Ignition Switch
17. Tram Lever - Right
18. Tram Lever - Left
19. Service Winch Lever
20. Counterweight Lever
21. Rig Level Lever
22. Mast Raise Lever

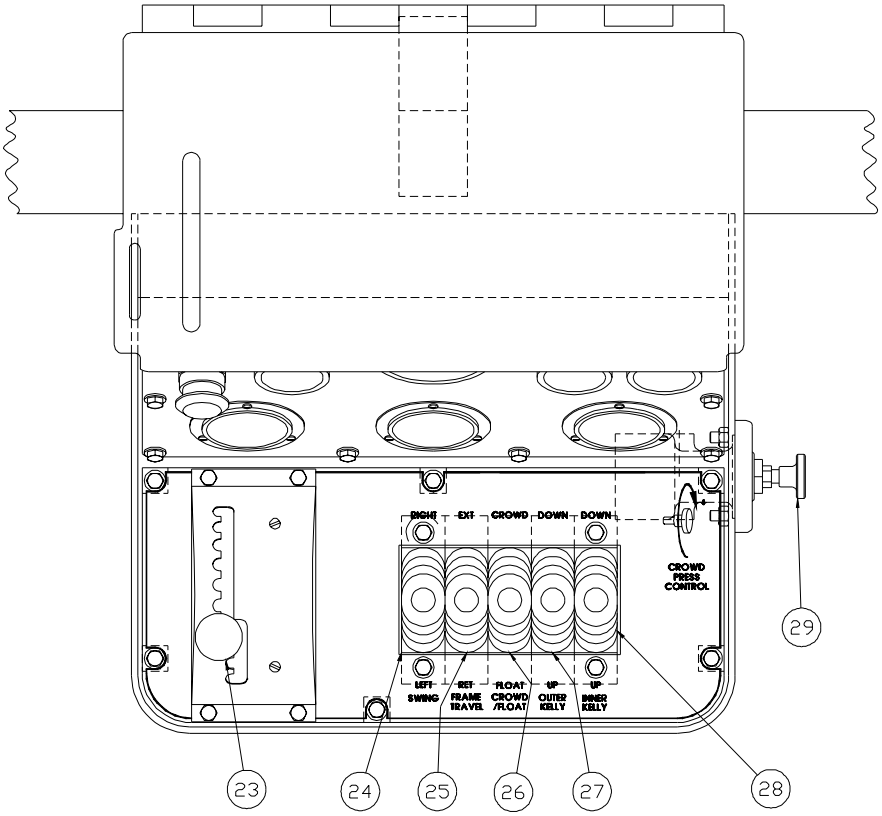
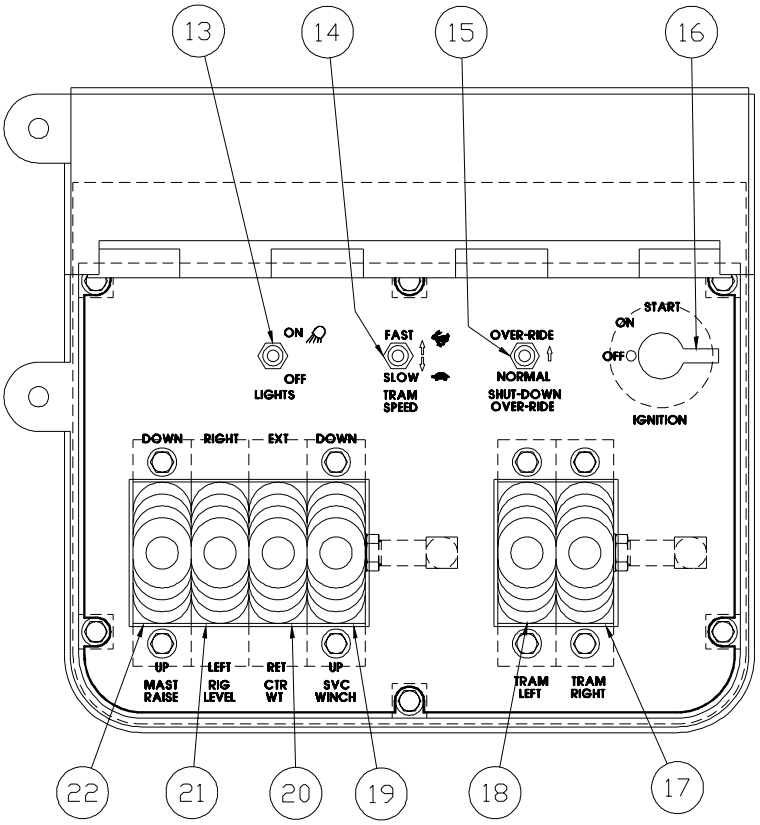


Fig. 3-3 Drill Console (409361)
23. Gear Selector
24. Swing Lever
25. Frame Travel Lever
26. Crowd/Float Lever
27. Outer Kelly Lever
28. Inner Kelly Lever
29. Crowd Pressure Control

Controls - Functions and Limitations



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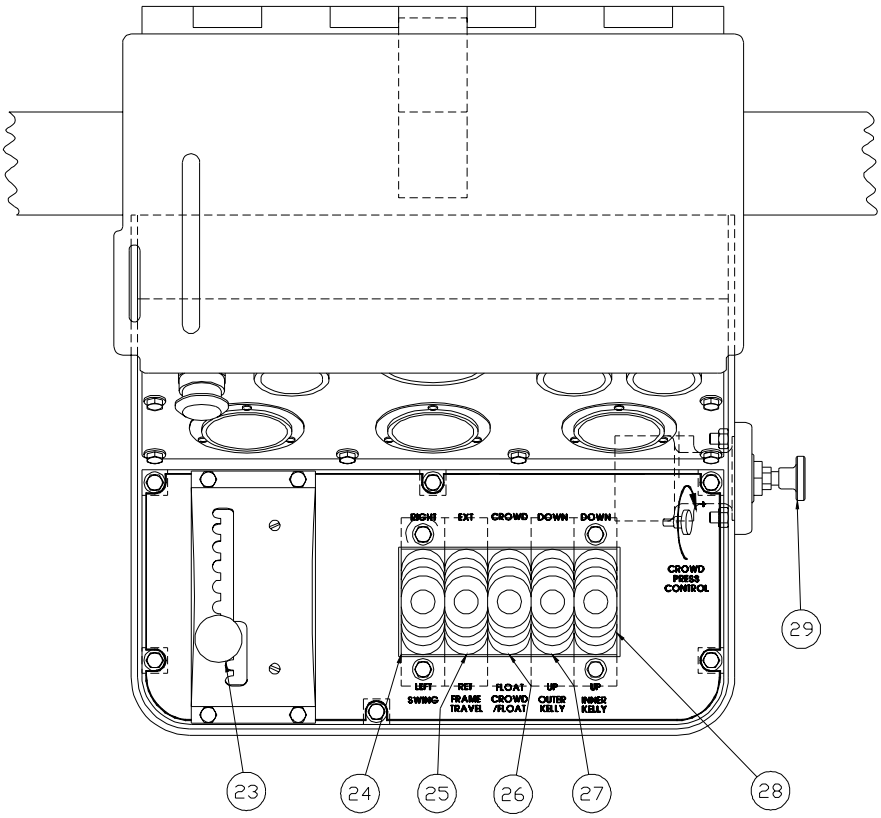


Fig. 3-3 Drill Console (ref. 0409361)
23. Gear Selector
24. Swing Lever
25. Frame Travel Lever
26. Crowd/Float Lever
27. Outer Kelly Lever
28. Inner Kelly Lever
29. Crowd Pressure Control

4. Rig Leveling

The leveling cylinders position the rig vertically from left to right. Pushing the RIG LEVEL LEVER (21) away from the operator moves the top of the mast to the right; pulling toward the operator moves the top of the mast to the left (toward the operator). The lever is spring returned to the neutral position.

WARNING

Unit can become unstable and overturn. Use care when swinging over the side of the base with large, heavy or heavily loaded augers. When on any degree of side incline, do not swing the auger to the downhill side. ALWAYS have the frame fully retracted and auger on the ground BEFORE lifting any loads with the winch.

5. Swing

The digger can be swung to either side of the base with the 360^0 turntable, to allow digging on either side, as well as, at the rear or front of the machine. Pushing the SWING LEVER (24) away from the operator swings the auger to the right and pulling the lever toward the operator swings the auger to the left.

CAUTION:

Hitting the machine base with the auger can cause damage to the machine. BE CAREFUL when swinging over the side of the base making sure the auger is clear of the structures.

6. Frame Travel

Frame travel greatly expedites spotting the auger over the hole site. Pulling the FRAME TRAVEL LEVER (25) toward the operator retracts the frame and pushing the lever away from the operator extends the frame. In addition to spotting the auger, frame travel permits larger augers to be swung around the crawler assemblies. Always have the frame fully retracted before lifting any loads with the winch.

7. Counterweight Control

The counterweight must be fully extended during drilling operation to balance the load on the turntable bearing. Pulling the COUNTERWEIGHT LEVER (20) toward you will retract the counterweight. Pushing the lever away from you will extend the counterweight.

8. Auger (Kelly) Bar

CAUTION:

Be careful when using the OUTER KELLY CONTROL LEVER this causes the outer kelly to raise and lower at a rapid rate.

A. The outer kelly bar is raised and lowered by applying oil to the feed ram (crowd cylinder). The motion of the cylinder is transmitted to the kelly via wire rope and sheaves.
For normal hoisting and lowering into the hole, the outer kelly bar is controlled by the OUTER KELLY CONTROL LEVER (27); by pulling the le ver toward the operator, the kelly bar is raised and by pushing the lever away from the opera tor, the kelly bar is lowered.

CAUTION:

When lowering the outer kelly, also lower the inner kelly to ensure the outer kelly is not setting on top of the auger and putting the inner kelly cable under load.

B. The middle kelly is free floating between the inner and outer kelly bars. When lowering the inner kelly, the middle kelly lowers with the in ner kelly until it bottoms out against the lower stop in the outer kelly. When raising the inner kelly, the middle kelly stays in place until the lower stop on the inner kelly engages the bot tom end of the middle kelly, at which time the middle kelly raises with the inner kelly bar.

C. The inner kelly (auger) bar is suspended on a cable from the inner kelly winch. The winch is controlled by the INNER KELLY CONTROL LE VER (28). By pulling the lever toward the operator, the inner kelly will raise and by pushing the lever away from the operator, the inner kelly will lower. When working in deep holes, lower both the inner and outer kelly bars.

NOTE

If the inner kelly bar is lowered too far without lowering the outer kelly, the inner kelly can become disengaged from the middle kelly. No damage to the equipment should result, but time will be lost re-engaging the bars.

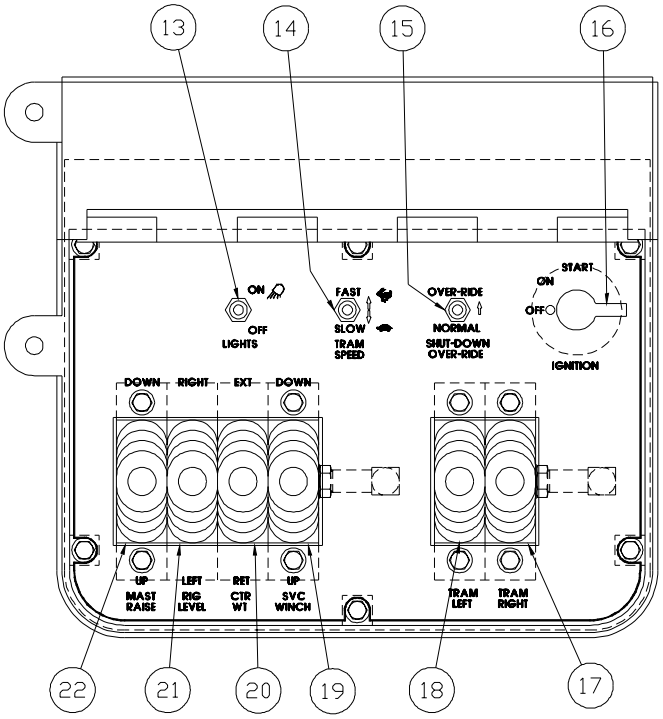


Fig. 3-2 Tram Console (ref. 409361)
13. Light Switch
14. Tram Speed Switch
15. Shut-Down Override Switch
16. Ignition Switch
17. Tram Lever - Right
18. Tram Lever - Left
19. Service Winch Lever
20. Counterweight Lever
21. Rig Level Lever
22. Mast Raise Lever

WARNING

The "Inner Kelly Float Pedal" control is not to be used as a free-fall devise. Operation of this devise as a free-fall function can cause serious personal injury.

D. The inner kelly winch is also equipped with a "Inner Kelly Float" devise which releases the winch brake and allows cable to be pulled from the inner kelly winch during drilling and while raising the mast. This INNER KELLY FLOAT PEDAL (31, fig. 2-1) is operated by the operator's left foot.

WARNING

Never Attempt to move the machine with a load suspended from the winch line. Always keep the mast vertical and the auger on the ground when lifting a load.

9. Service Winch

The hydraulically driven service winch is used for setting poles, casings, etc.

Pushing the WINCH CONTROL LEVER (19, fig. 2-2) away from the operator will reel out (or pay out) cable and pulling the lever toward the operator will reel in (or pull in) cable.

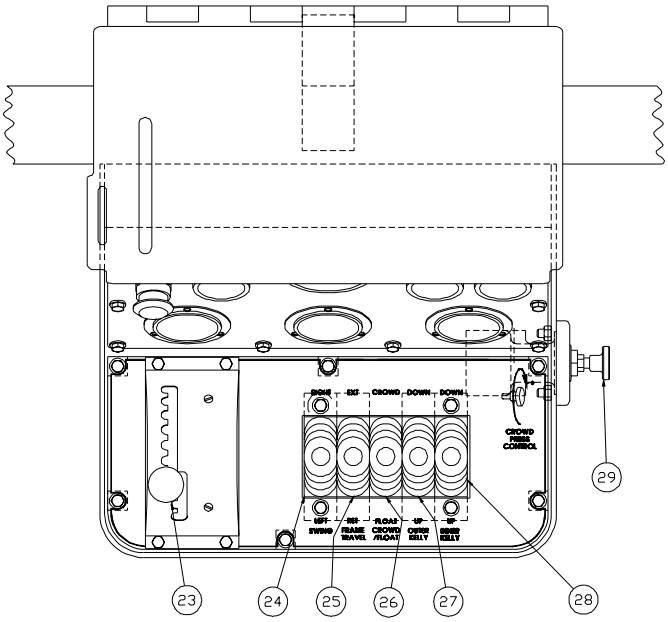
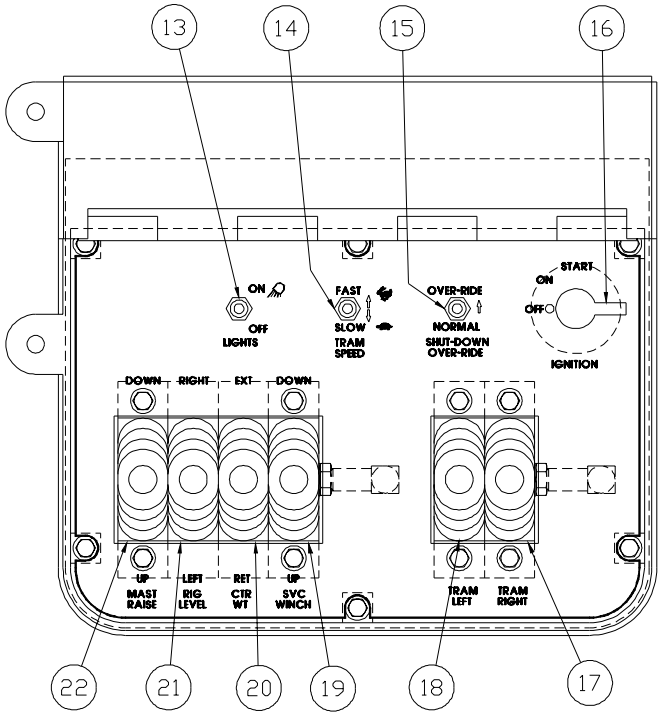


Fig. 3-3 Drill Console (409361)
23. Gear Selector
24. Swing Lever
25. Frame Travel Lever
26. Crowd/Float Lever
27. Outer Kelly Lever
28. Inner Kelly Lever
29. Crowd Pressure Control

Instrument Panel



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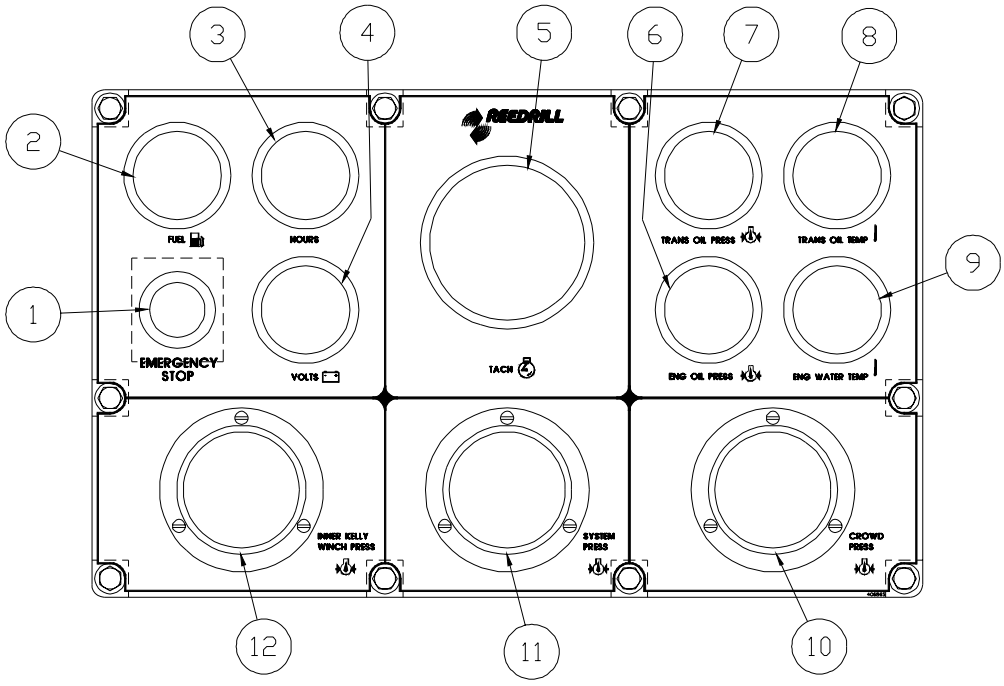

Fig. 3-4 Instrument Panel (ref. 0409361)
1. Emergency Stop Button
7. Transmission Oil Pressure Gauge
2. Fuel Gauge
8. Transmission Oil Temperature Gauge
3. Hourmeter (12V)
9. Water Temperature Gauge

Setting Up For Drilling

WARNING

DO NOT operate machine before you have read and understood all warnings and cautions listed in section 1 of this manual.
CHECK for obstructions before moving machine.
DO NOT attempt lubrication or service while the machine is running.

1. Start engine and allow time for it to warm up to ambient temperature, in extremely cold temperatures, machine should be allowed additional time to warm up (refer to "Cold Start Procedure" at the beginning of this section or consult engine manual).

DANGER

LOOK UP before raising mast.
DO NOT allow mast to come near electrical power lines. See Minimum Clearance Chart of Energized High Voltage Lines in section 1. This machine is not insulated.

CAUTION:

BE SURE to leave slack in the inner kelly winch cable and the service winch cable when raising the mast or damage to the equipment will result.

2. Raise the mast by pulling on the MAST RAISE LEVER (22). As the mast assembly is being raised, make sure you keep your left foot on the INNER KELLY FLOAT PEDAL (31) this releases the inner kelly winch brake to release slack in the cable as you raise the mast. This will allow the cable to feed off the winch drum, so kelly swivel or winch line will not be damaged. Watch the service winch cable to be sure there is enough slack in the cable when raising the mast.
3. After you set the mast assembly up to 90%, you are ready to use your FRAME TRAVEL LEVER (25) to move the frame in or out in order to line up with the drill stake. After you line the auger point up with the drill stake and before you start to drill, check to make sure the unit is level in order to maintain a plumb hole. Check leveling indicators on mast and trunnion, if leveling is needed, use the RIG LEVEL LEVER (21) or the MAST RAISE LEVER (22).

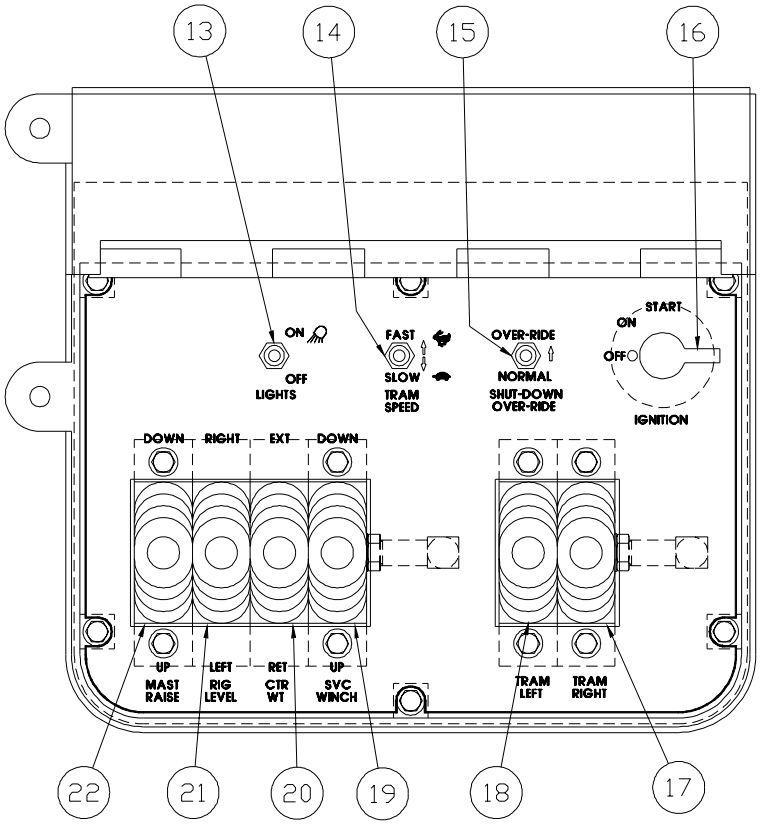

Fig. 3-2 Tram Console (ref. 0409361)
13. Light Switch
14. Tram Speed Switch
15. Shut-Down Override Switch
16. Ignition Switch
17. Tram Lever - Right
18. Tram Lever - Left
19. Service Winch Lever
20. Counterweight Lever
21. Rig Level Lever
22. Mast Raise Lever

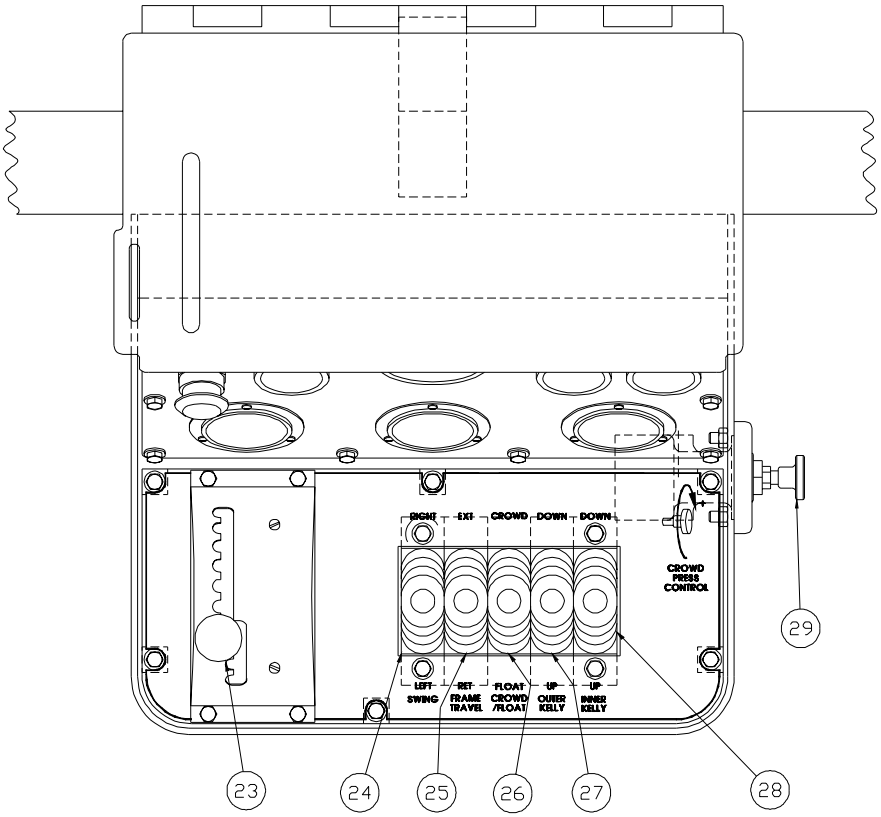

Fig. 3-3 Drill Console (ref. 0409361)
23. Gear Selector
24. Swing Lever
25. Frame Travel Lever
26. Crowd/Float Lever
27. Outer Kelly Lever
28. Inner Kelly Lever
29. Crowd Pressure Control

Drilling

1. Now you are ready to lower the inner kelly down to the ground level and start drilling. Start by:

   A. Pushing the INNER KELLY CONTROL LEVER (28). When the auger reaches the ground, you are ready to drill.

   B. Push down the INNER KELLY FLOAT PEDAL (15) with your left foot while drilling. This releases the inner kelly winch brake.

NOTE

The auger will not drill into the ground if the winch is holding the inner kelly back.

2. Use the TRANSMISSION SHIFT CONTROL (23) to select the proper gear in which to drill. When the unit is placed in gear and the auger is turning, you must crowd the auger into the ground. For drilling in hard rock, push the CROWD/FLOAT LEVER (26) into the CROWD position. Dial in the desired crowd pressure with the CROWD PRESSURE CONTROL KNOB (29). When drilling in dirt, push the OUTER KELLY LEVER (27) into the DOWN position. This places only the weight of the outer kelly on the auger for drilling.

3. After the auger has cut the material and you are ready to remove the cuttings out of the hole:

   A. Place the TRANSMISSION SHIFT CONTROL (23) in neutral.

   B. Take your foot off the INNER KELLY FLOAT PEDAL (31).

   C. Pull the OUTER KELLY CONTROL LEVER (27) to raise the outer bar.

   D. Pull the INNER KELLY CONTROL LEVER (28) to remove the auger out of the hole.

NOTE

If you have over-drilled the auger in the ground, place the TRANSMISSION SHIFT CONTROL 23) in reverse and back out of the load and pull the INNER KELLY CONTROL LEVER (28) at the same time. This will allow you to break away from the bottom of the hole.

4. After the auger has been removed from the hole, use the SWING LEVER (24) to swing the turntable right or left to spin the dirt off the auger. When dirt is cleared from auger, swing back over the hole and lower auger back into hole. Repeat steps 1, 2 and 3 until desired hole depth is reached.

NOTE

When lowering the auger back into the hole, do not pay off cable after the auger makes contact with the bottom of the hole. This will cause a backlash or "bird nest" on the winch drum.

After Drilling

WARNING

DO NOT move machine with mast up.

CAUTION:

Before Lowering the mast, be sure it is vertical from side-to-side with respect to the machine. Lower slowly to be sure mast will clear other parts of the machine and will fit correctly in the headache rack.

1. Be sure the auger is clear of the hole.
2. Lower the mast by pushing the MAST RAISE LEVER (22). As the mast is lowered you must take up the slack in the inner kelly winch cable by pulling the INNER KELLY LEVER (28). At the same time, take up slack in the service winch cable by pulling the SERVICE WINCH LEVER (19). As the mast is lowered the kelly will be moving out the rear of the mast assembly.
3. Lower the mast into the headache rack for storage and then move to the next hole. **Never** move the machine from hole to hole with the mast up.

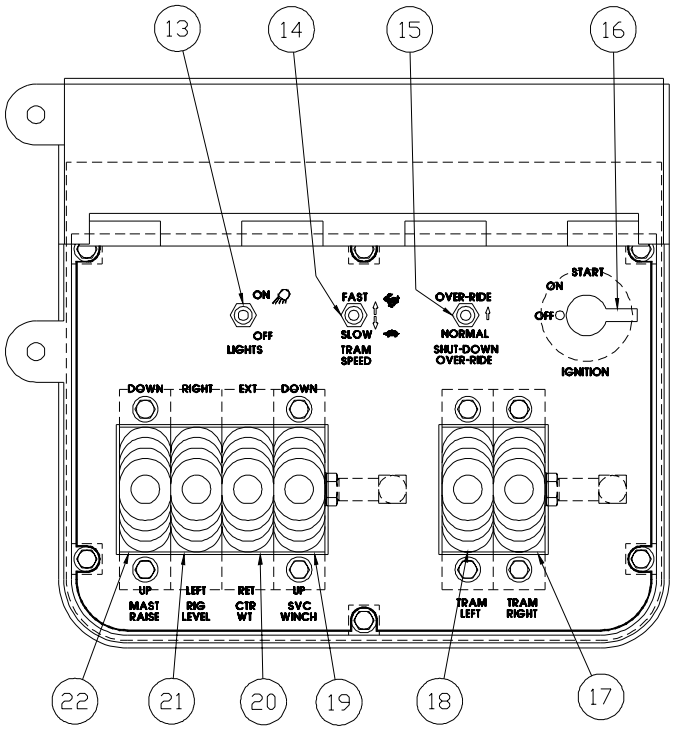

Fig. 3-2 Tram Console (ref. 409361)
13. Light Switch
14. Tram Speed Switch
15. Shut-Down Override Switch
16. Ignition Switch
17. Tram Lever - Right
18. Tram Lever - Left
19. Service Winch Lever
20. Counterweight Lever
21. Rig Level Lever
22. Mast Raise Lever

Adjustments, Lube & Torque Specifications

Section 4

Cable Pulldown Adjustment

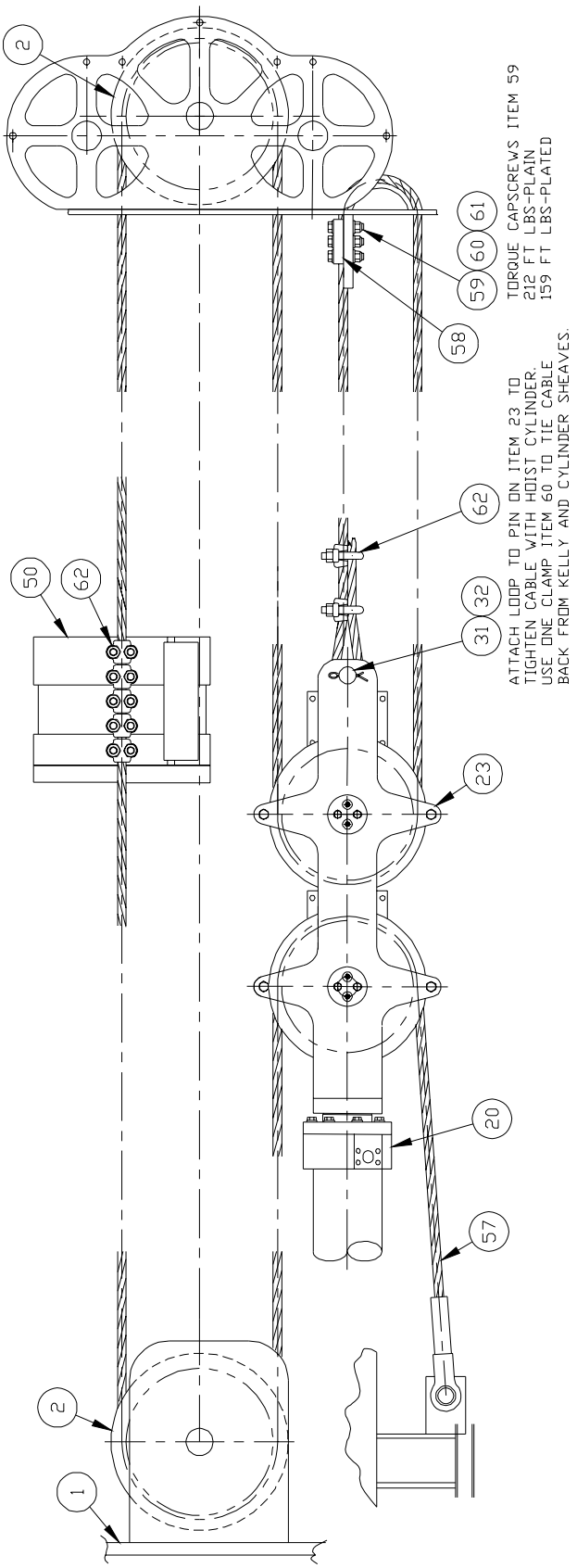

Figure 4-1 Mast Assembly (ref. 0406548) - Cable Pulldown Adjustment
(Item numbers correspond to parts manual drawing)

1. Mast
2. Sheave
20. Hoist Cylinder
23. Sheave Guide Assembly
31. Guide Pin
32. Cotter Pin
50. Swivel Assembly, Outer Kelly
57. Cable
58. Clamp
59. Capscrew
60. Flat Washer
61. Hex Nut
62. Clamp

Cable Pulldown Adjustment

Adjust Pulldown Cable as follows:
(refer to fig. 4-1)

1. Loosen bolts on clamp (item 62).
2. Loosen cable clamp (item 58) using items 59, 60 & 61.
3. Hook pig tail of cable to guide pin (item 31) on sheave guide assembly (item 23).
4. Tighten the cable with the hoist cylinder.
5. Tighten cable clamp (item 58) using items 59, 60 & 61.
6. Retract hoist cylinder.
7. Tighten bolts on clamp (item 62).

Lubrication Diagram

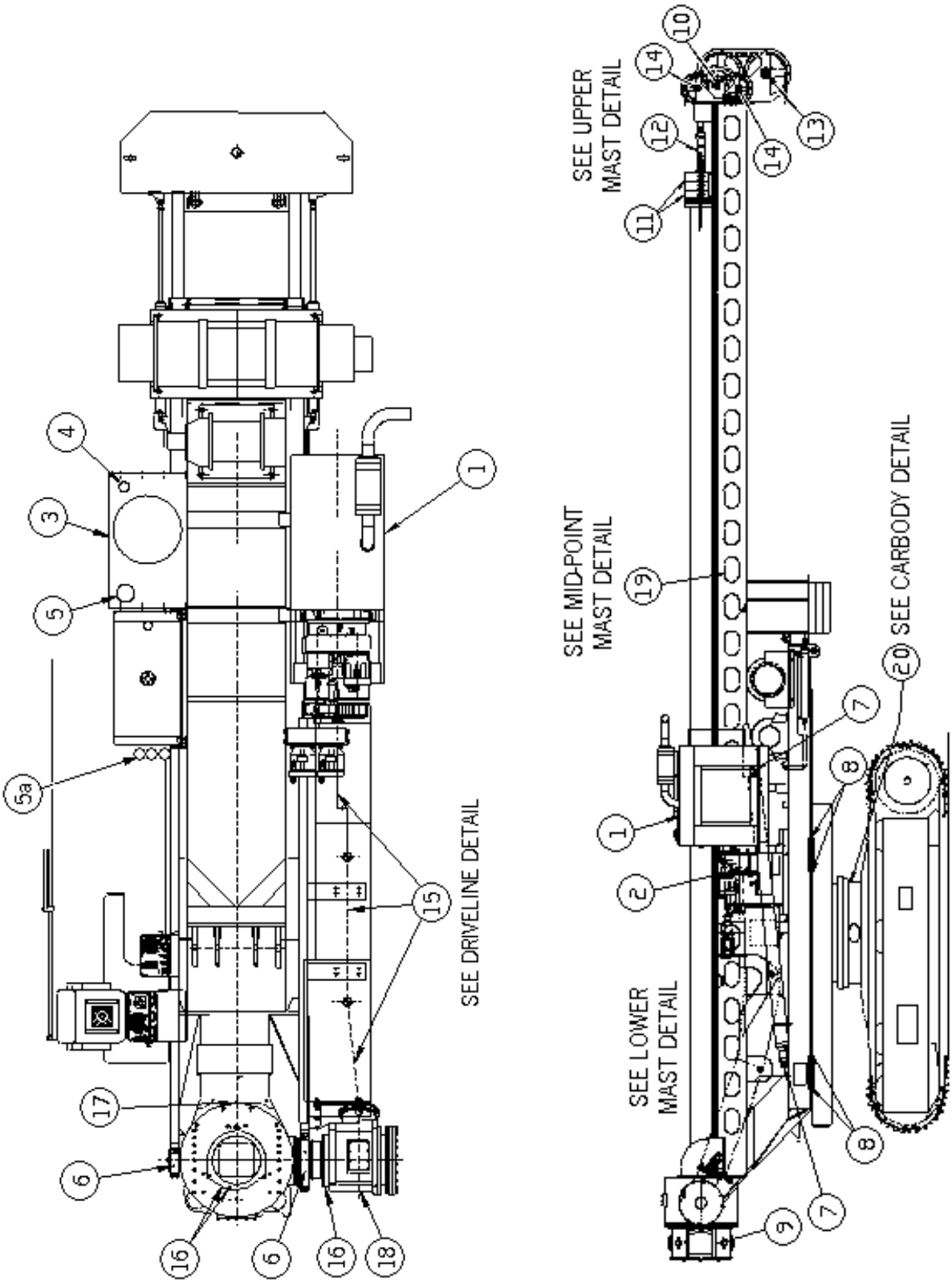

Figure 4-2 Lubrication Diagram

Lubrication Chart

Ref.	Item	Lubricant	Lubrication Period	Special Instructions
1.	Engine Cummins 6CTA8.3	Motor Oil - see Special Instructions or engine manual	Check oil every 8 hours. Add oil as required. Change every 250 hours.	Drain engine oil with engine warm. 18.9 qts. (20 l) use 15W-40 above 10°F (-12°C) use 10W-30 between -15°F and 68°F (-26°C and 20°C) use 5W-30 between -40°F and 68°F (40°C and 20°C)
	Oil Filter		Change at each oil change.	
	Fuel Filter		Replace every 250 hours.	
	Air Filter		Replace every 250 hours.	Clean filter case when replacing filter element.
	Coolant	Clean water and anti-freeze, 50/50 mix.	Check every 8 hours. Change every 6,000 hours or 2 years.	Add rust inhibitor to water in proportion to manufacturer's specifications. Engine Capacity 10.9 qts. (11.5 l)
2.	Transmission	SAE 30W Motor Oil	Check Daily. Change every 1000 hours.	See transmission service manual in section 5.
3.	Hydraulic Tank	10W Hydraulic Oil	Check Daily. Change every 1000 hours.	To full line on sight gauge. Capacity is approx. 120 gal. (454 l)
4.	Hydraulic Tank Breather		Replace every 250 hours.	More frequently in dusty conditions.
5.	Hydraulic Tank Return Filter		Replace every 250 hours.	In-Tank Filter
5a.	Hydraulic Charge Filter (3)		Replace every 500 hours	Or when service indicator indicates filter needs changing.
6.	Trunnion	NLGI 2 Grease	Every 50 hours.	2 Points.
7.	Elevating Cylinders	NLGI 2 Grease	Every 50 hours.	2 Points each cylinder.
8.	Frame Slides	NLGI 2 Grease	Daily	4 Points each side.
9.	Roller Drive	NLGI 2 Grease	Daily	4 Points.
10.	Hoist/Pulldown Sheaves	NLGI 2 Grease	Daily	2 Points. See detail of upper mast.
11.	Outer Kelly Swivel	NLGI 2 Grease	Daily	2 Points. See detail of upper mast.
12.	Inner Kelly Swivel	NLGI 2 Grease	Daily	1 Point. See detail of upper mast.
13.	Inner Kelly Winch Sheaves	NLGI 2 Grease	Daily	4 Points. See detail of upper & lower mast.

Chart continued on page 4-9 > > >

Lubrication Diagram - Mast

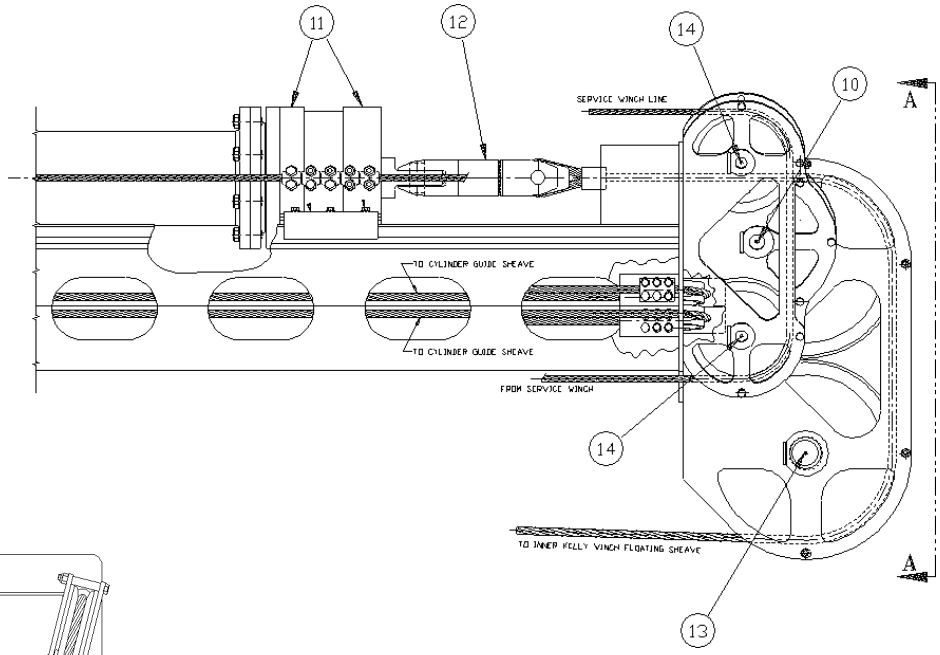

Fig. 4-3 Upper Mast Section (ref. 406548)

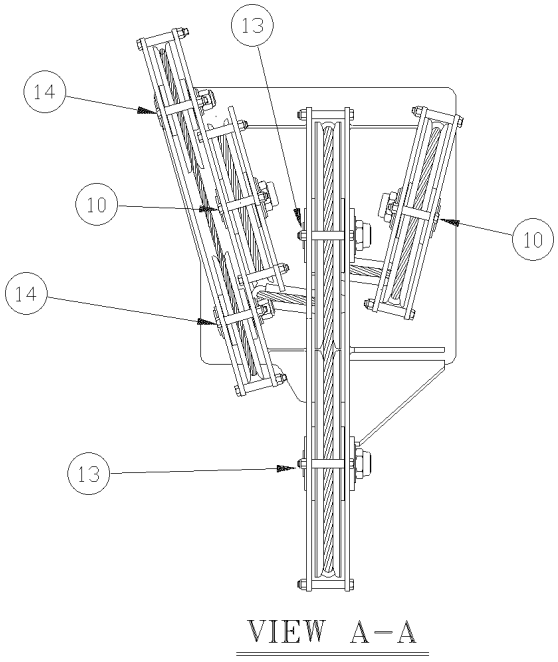

Fig. 4-3a Upper Mast Detail (ref. 406548)

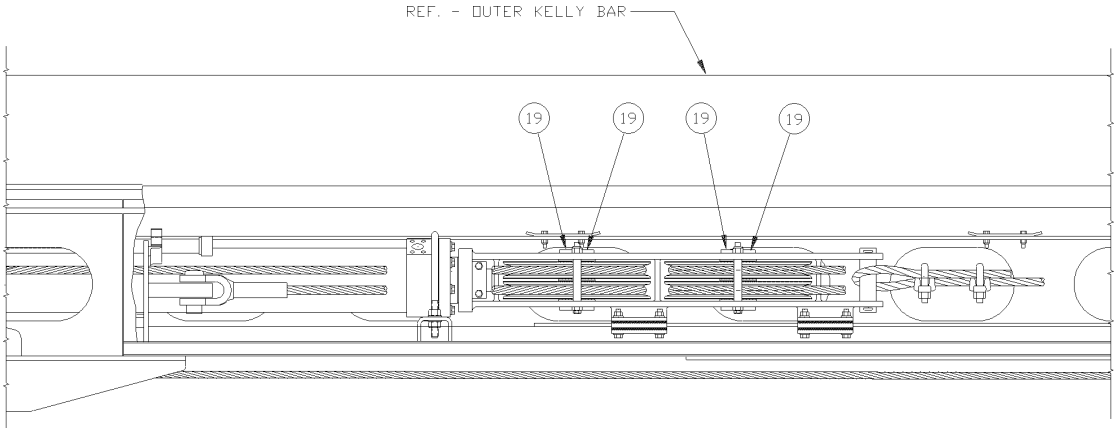

Fig. 4-3b Mid-Point Mast Detail (ref. 406548)

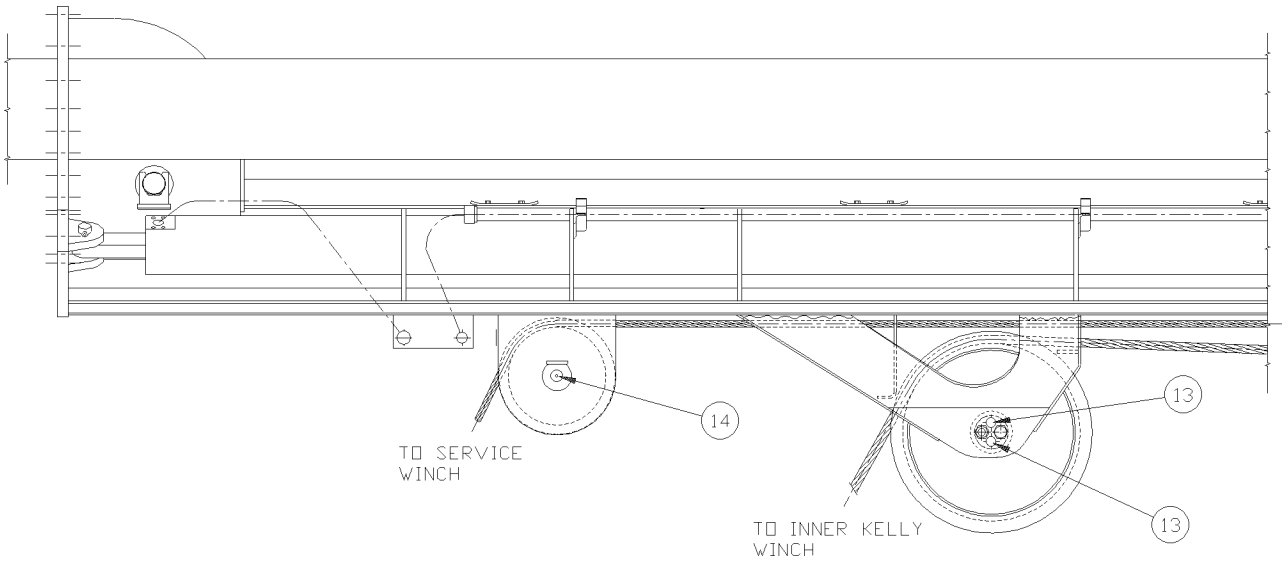

Fig. 4-3c Lower Mast Detail (ref. 406548)

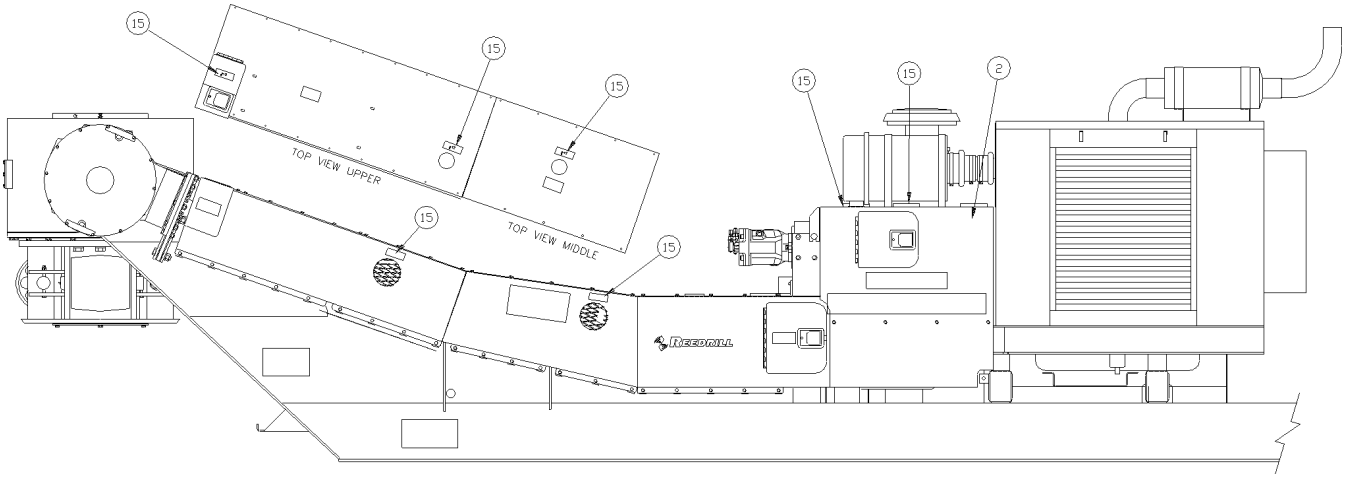

Fig. 4-4 Driveline Detail (ref. 411199)

Lubrication Diagram - Carbody

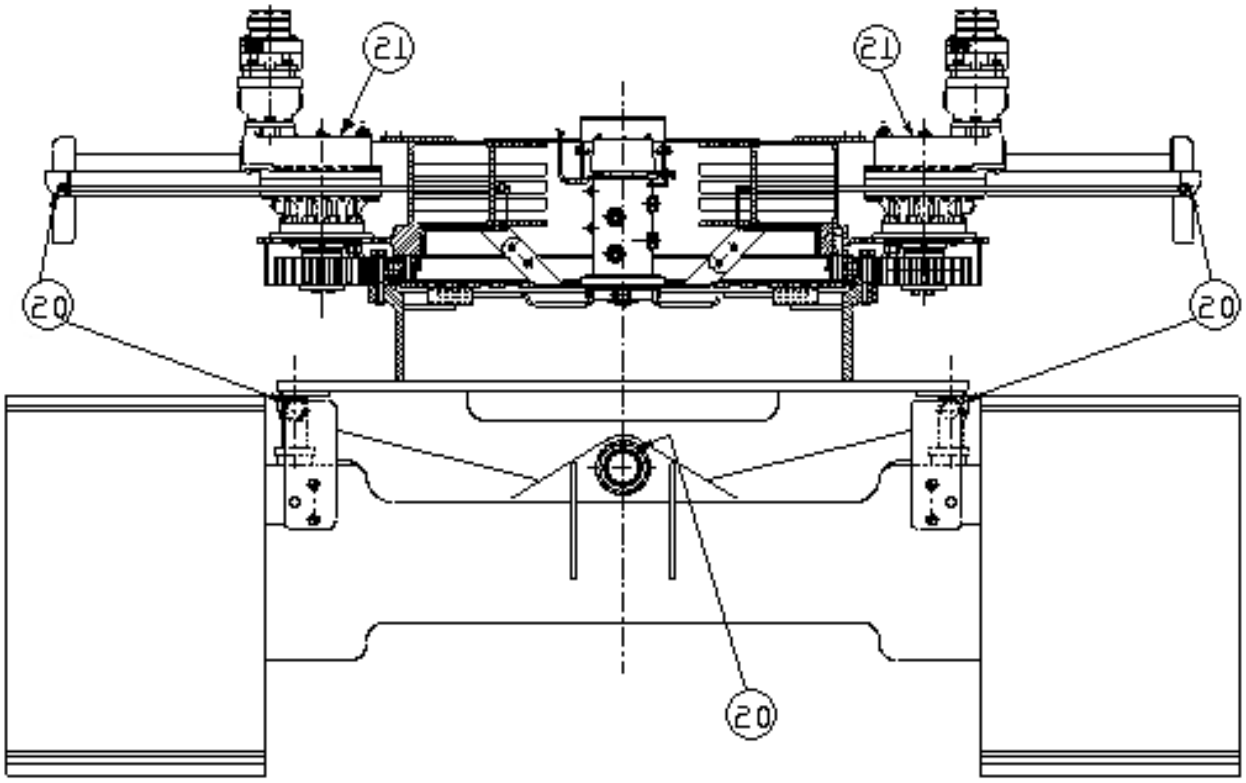

Fig. 4-5 Carbody Detail (ref. 408774)

Ref.	Item	Lubricant	Lubrication Period	Special Instructions
14.	Service Winch Cable Guide Sheaves	NLGI 2 Grease	Every 50 hours.	3 Points. See detail of upper & lower mast.
15.	Driveline	NLGI 2 Grease	Every 50 hours.	7 Points. See driveline detail.
16.	Right Angle & Final Drives	NLGI 2 Grease	Daily	3 Points. Two on final drive, one on right angle drive.
17.	Final Drive	HD 90W Gear Oil Above 32°F (0°C) HD 80W-90 Gear Oil 32°F to 10°F (0°C to –12°C)	Check Daily. Change every 1000 hours	To level plug on case. Do Not overfill.
18.	Right Angle Drive	HD 90W Gear Oil Above 32°F (0°C) HD 80W-90 Gear Oil 32°F to 10°F (0°C to –12°C)	Check Daily. Change every 1000 hours	To level plug on case. Do Not overfill.
19.	Crowd Sheaves	NLGI 2 Grease	Daily.	4 Points. See mid-point mast detail.
20.	Carbody (Pierce Pacific)			See detail view
	Leveling Cylinders (4)	NLGI 2 Grease	Daily	4 Points
	Pivot Points	NLGI 2 Grease	Daily	2 Points
	Center Bearings	NLGI 2 Grease	Every 50 hours	2 Points. Apply grease and then rotate machine a few degrees Do this several times to distribute grease evenly around bearings.
	Final Drives		Check Monthly - normal or Weekly - severe conditions. Change yearly, normal operation. Twice a year or severe operation.	Initial oil change after first 50 hours.
	Torque Hub	SAE EP90 Gear Oil		With machine on level ground, rotate hub so level plug is at 3 or 9 O'clock position. Oil should be at bottom edge of plug at 3 or 9 O"clock position. Rotate hub so magnetic drain plug is above oil level and check for metal chips on plug. Small particles are normal for the first two years of operation.
	Right Angle Drive	SAE EP90 Gear Oil		Remove vent tube and center plug. Fill through vent port until oil is 1/2" below center plug. Check for particles in the oil. If vent/breather leaks oil, check level daily. If level is always overfull, the hydraulic motor seal may be leaking hydraulic oil into the right angle drive unit.

Chart continued on page 4-11 > > >

Lubrication Chart

Ref.	Item	Lubricant	Lubrication Period	Special Instructions
21.	Turntable Drive Gearbox	HD 80W-90 Gear Oil MIL-L-2105C or API GL-5	500 Hours - initial change then every 6 months	Do Not overfill - see section 5 Turntable Gearbox Maintenance Below 10°F (-23°C) use 75W 10°F (-23°C) to 100°F (37.8°C) use 80W-90 Above 100°F (37.8°C) use 85W-140

INTERVAL	SERVICE POINT (REF. NO.)	SERVICE REQUIRED	LUBRICANT REQUIRED
8 Hours or Daily	Engine (1)	Check Oil Level	See Lubrication Chart
	Transmission (2)	Check Oil Level	SAE 30 Motor Oil
	Hydraulic Tank (3)	Check Oil Level	10W Hydraulic Oil
	Final Drive (17)	Check Oil Level	See Lubrication Chart
	Right Angle Drive (18)	Check Oil Level	See Lubrication Chart
	Frame Slides (8)	Grease	NLGI 2 Grease
	Roller Drive (9)	Grease	NLGI 2 Grease
	Hoist/Pulldown Sheaves (10)	Grease	NLGI 2 Grease
	Outer Kelly Swivel (11)	Grease	NLGI 2 Grease
	Inner Kelly Swivel (12)	Grease	NLGI 2 Grease
	Inner Kelly Winch Sheaves (13)	Grease	NLGI 2 Grease
	Right Angle & Final Drives (18)	Grease	NLGI 2 Grease
	Crowd Sheaves (19)	Grease	NLGI 2 Grease
	Leveling Cylinders (20)	Grease	NLGI 2 Grease
	Carbody Pivot Points (20)	Grease	NLGI 2 Grease
50 Hours or Weekly	Trunnion (6)	Grease	NLGI 2 Grease
	Elevating Cylinders (7)	Grease	NLGI 2 Grease
	Service Winch		
	Cable Guide Sheaves (14)	Grease	NLGI 2 Grease
	Driveline (15)	Grease	NLGI 2 Grease
	Carbody Center Bearings (20)	Grease	NLGI 2 Grease
	Track Final Drives (20)	Check Oil Level	SAE EP 90 Gear Oil
		Initial oil Change at 50 hours then yearly for normal service, or every 6 months for severe service.	
250 Hours or 3 Months	Engine (1)	Change Oil & Filter	See Lubriction Chart
	Fuel Filter (1)	Change	
	Air Filter (1)	Change	
	Hydraulic Tank Breather (4)	Change	
	Hydraulic Return Filter (5)	Change	
500 Hours or 6 Months	Hydraulic Charge Filters (5a)	Change	
	Turntable Drive Gearbox (21)	Initial Oil Change, then every 1000 hours.	See Lubrication Chart
1000 Hours or Yearly	Transmission (2)	Change Oil	SAE 30W Motor Oil
	Hydraulic Tank (3)	Change Oil	10W Hydraulic Oil
	Final Drive (17)	Change Oil	See Lubrication Chart
	Right Angle Drive (18)	Change Oil	See Lubrication Chart
	Turntable Drive Gearbox (21)	Change Oil	See Lubrication Chart
	Track Final Drives (20)	Change Oil	SAE EP90 Gear Oil
6000 Hours or 2 Years	Engine (1)	Change Coolant	50/50 Mix Anti-Freeze & Water

General Tightening 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 also UNS	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. 4-6 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.

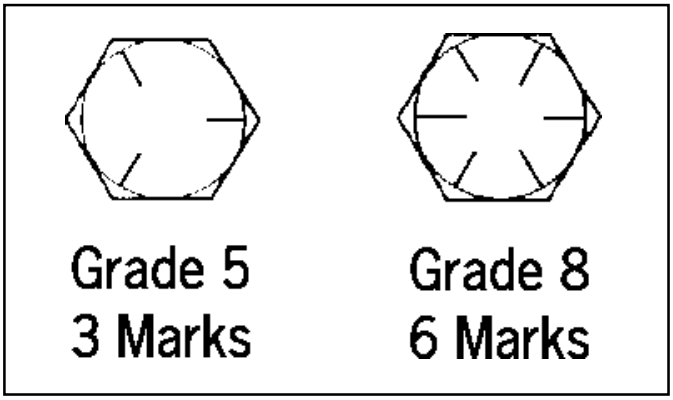

Fig. 4-6 Two commonly used bolt head markings

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:

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:

Maintenance Record

DATE	DESCRIPTION OF SERVICE PERFORMED	SERVICE PERFORMED BY: