

TIPS FOR TOP PERFORMANCE

TRACKS

The track system of your Crawler is the result of over 25 years of compact crawler experience. The track system is of an "unguided" design, but is extremely stable due to its double track chain design. A few rules are listed below that if followed will give you maximum Track performance.

- 1.** Avoid overloading your track system with the material you are working in. Always work in loose materials by clearing a "driving path" with the attachment (Blade, Bucket, etc.) you are using. This technique will allow a minimum of material to enter the track system.
- 2.** Avoid climbing on a pile of loose material and counter-rotating your tracks. This action will "cork-screw" the Tracks into the pile and force unnecessarily large amounts of material into the Tracks. The track system is designed to absorb a great deal of material, but the less you force it to "digest", the greater will be the Track's stability and overall life.
- 3.** Periodically, following the Track Tensioning instructions in your Operator's/Technical Manual, check your Track tension by checking the length of the #234 Track Tension Spring.

Though this Spring adjustment is not a precise type of adjustment, it must be realized that to over-tension the Spring will cause a higher level of wear in your track bearings, while under-tensioning will cause potential derailing of your Track.

As always, the Struck Corporation through the customer service department, stands ready to help you with any technical or work related questions you may have either now or in the future! Call (262) 377-3300 or Fax (262) 377- 9247.



Operator's / Technical Manual

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C.F. STRUCK CORP.

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Congratulations...

on your purchase of a quality-built, American made compact Crawler. We are confident that the dependability and economical performance of your Struck. Crawler will prove that you made a wise choice.

The purpose of this Manual is to acquaint you with the MD750 Crawler. The Manual explains how to operate and service your Crawler, and how to maintain its high operating efficiency. Instructions are given clearly, with the intention of making these operations as easy as possible.

Keep this Manual in a convenient place for quick and easy reference. Use it as a guide whenever questions arise. You have purchased a dependable, sturdy Crawler, but only by operating and caring for it properly can you expect to receive the service and long life for which it was designed.

If in the future you need new parts to replace those that may be worn, insist on genuine Struck parts. They are exact duplicates of the originals, made from the same patterns and of the same high-quality materials.

When ordering parts, always be sure to give the following information for your Crawler:

Model Number: _____

Serial Number: _____

Engine Model Number: _____

Engine Serial Number: _____

C. F. STRUCK CORPORATION
W51-N545 STRUCK LANE
CEDARBURG, WISCONSIN 53012
Phone: (262) 377-3300
Fax: (262) 377-9247

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TO THE OPERATOR

RECOGNIZE SAFETY INFORMATION



This is the safety-alert symbol. When you see this symbol on your Crawler or in this Manual, be alert to the potential for personal injury.

UNDERSTAND SIGNAL WORDS

A signal word -- DANGER, WARNING, or CAUTION -- is used with the safety-alert symbol. DANGER identifies the most serious hazards.

Safety labels with the signal word DANGER or WARNING are typically near specific hazards.

General precautions are listed on CAUTION safety labels. CAUTION also calls attention to safety messages in this Manual.

FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety messages in this Manual and on your Crawler and Attachment safety labels. Follow recommended precautions and safe operating practices.

Keep safety labels in good condition. Replace missing or damaged safety labels.

To keep your Crawler running efficiently, read the instructions in this Manual.

Left side, right side, front, and rear are viewed by facing in the direction of the Crawler's forward travel.

Record your Crawler serial numbers in the space provided. You need this information when you order parts.

The Warranty of this Crawler appears on the last page of this Manual.

SAFETY RULES



Reports on accidents show that careless use of machinery causes a high percentage of accidents. You can avoid many accidents by following the safety rules on these pages. Study these rules carefully and enforce them on the job.

SAFETY BEFORE STARTING OR OPERATION

The Crawler should be operated only by persons approved to do so.

Clothing worn by the operator should be fairly tight and belted.

Fasten a first aid kit to the Crawler.

Fasten a fire extinguisher to the Crawler. Keep the extinguisher fully charged. Learn to use it correctly.

If the Crawler has an unsafe condition, do not operate. Put a tag on the Track Drive Controls.

Do not start or operate the Crawler unless you are in the operator's seat.

Before you start the Engine, be sure there is plenty of ventilation.

Keep hands, feet, and clothing away from power-driven parts.

Fasten a slow-moving vehicle sign to the rear of the Crawler.

Guards, shields, and other protective devices must be in place and in good condition.

Before you start or operate the Crawler, clear the area of all persons and obstacles.

OPERATION SAFETY

When you operate the Crawler, do not allow anyone to ride on the Crawler or its equipment.

Drive at safe speeds at all times, especially on rough ground and hillsides.

Carry the Bucket or Blade as low as possible at all times, especially when you work on a hillside or back up a steep hill.

Do not drive too close to the edge of a ditch or excavation.

Watch for overhead wires. Do not touch wires with any part of the Crawler or its Attachments.

Do not leave your Crawler unattended with the Engine running.

Keep work areas as level as possible.

When loading logs with the Log Forks, make sure the logs are balanced.

When you drive out of a ditch or excavation, or up a steep hillside, or when Crawler is hitched to a heavy load, **engage Track Drive Controls slowly**. If the front of the Crawler comes off the ground, release Track Controls **immediately**.

Do not use the Crawler as a battering ram.

Do not guide cable onto Winch Drum with your hands.

When you drive the Crawler on a road, use the correct lights to warn operators of other vehicles.

Before you move any equipment, be sure all persons are away from the Crawler.

When the Crawler is operating, **only** the operator should be on it.

If it is necessary to make checks with the Engine running, **always use two people**...the operator at the controls should be able to see the person doing the checking.

KEEP HANDS AWAY FROM MOVING PARTS!

BEFORE YOU DISMOUNT:

Move Track Drive Controls to neutral.

Lock Brake.

Lower all equipment to the ground.

Stop Engine and remove the key.

SERVICE SAFETY

Be sure you understand a service procedure before you work on the Crawler.

Unauthorized modifications to the Crawler may impair the function and/or safety and affect Crawler life.

Do not work under Crawler or raised equipment unless it is correctly supported...contact factory for recommended procedures.

Before you work on the Engine or electrical system, disconnect the battery's "ground" (-) terminal **first!** When work is finished, connect battery's "ground" terminal (-) **last.**

When driving connecting pins (Spring Pins), wear goggles or safety glasses.

Do not run Engine while working on the Crawler.

Be careful when handling any type of fuel. Do not smoke while filling the fuel tank or working on the fuel system.

Check for faulty wiring or loose connections.

Do not lubricate or work on the Crawler while it is moving.

When you work near the Track Springs, **use extreme care.** Do not disassemble parts unless you know the correct procedure and have correct tools.

FIRE PREVENTION MAINTENANCE

Be prepared if an accident or fire should occur. Know where the first aid kit and the fire extinguishers are located...know how to use them. Check fire extinguisher for correct charge.

Do not smoke while refueling or handling highly flammable material.

Shut off the Engine when refueling.

Use care in refueling if the Engine is hot.

Do not use open pans of gasoline or diesel fuel for cleaning parts. Use good commercial, nonflammable solvents.

Provide adequate ventilation when charging battery.

Do not check battery charge by placing metal objects across the posts.

Do not allow sparks or an open flame near battery. Do not smoke near battery.

Never check fuel, battery electrolyte, or coolant levels with an open flame.

Never use an open flame to look for leaks anywhere on the equipment.

Never use an open flame as light anywhere on or around the equipment.

When preparing Engine for storage, remember that inhibitor is volatile and therefore dangerous. Seal and tape openings after adding the inhibitor. Keep container tightly closed when not in use.

Inspect electrical wiring for worn or frayed insulation. Install new wiring if wires are damaged.

Temperature in Engine compartment may go up immediately after you stop the Engine. **Be on guard for fires.**

Before you clean trash from the Engine compartment, wait until the Engine has cooled. Open Hood to cool the Engine faster. While the Engine cools, clean trash from other areas.

Check for leaking fuel lines or fittings with a piece of cardboard or wood. Do not use your hands. Tighten loose fittings. If hoses are kinked, install new parts.

NOISE PROTECTION

Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortably loud noise.

START ENGINE ONLY FROM THE OPERATOR'S SEAT!

Avoid possible injury or death from Crawler runaway.

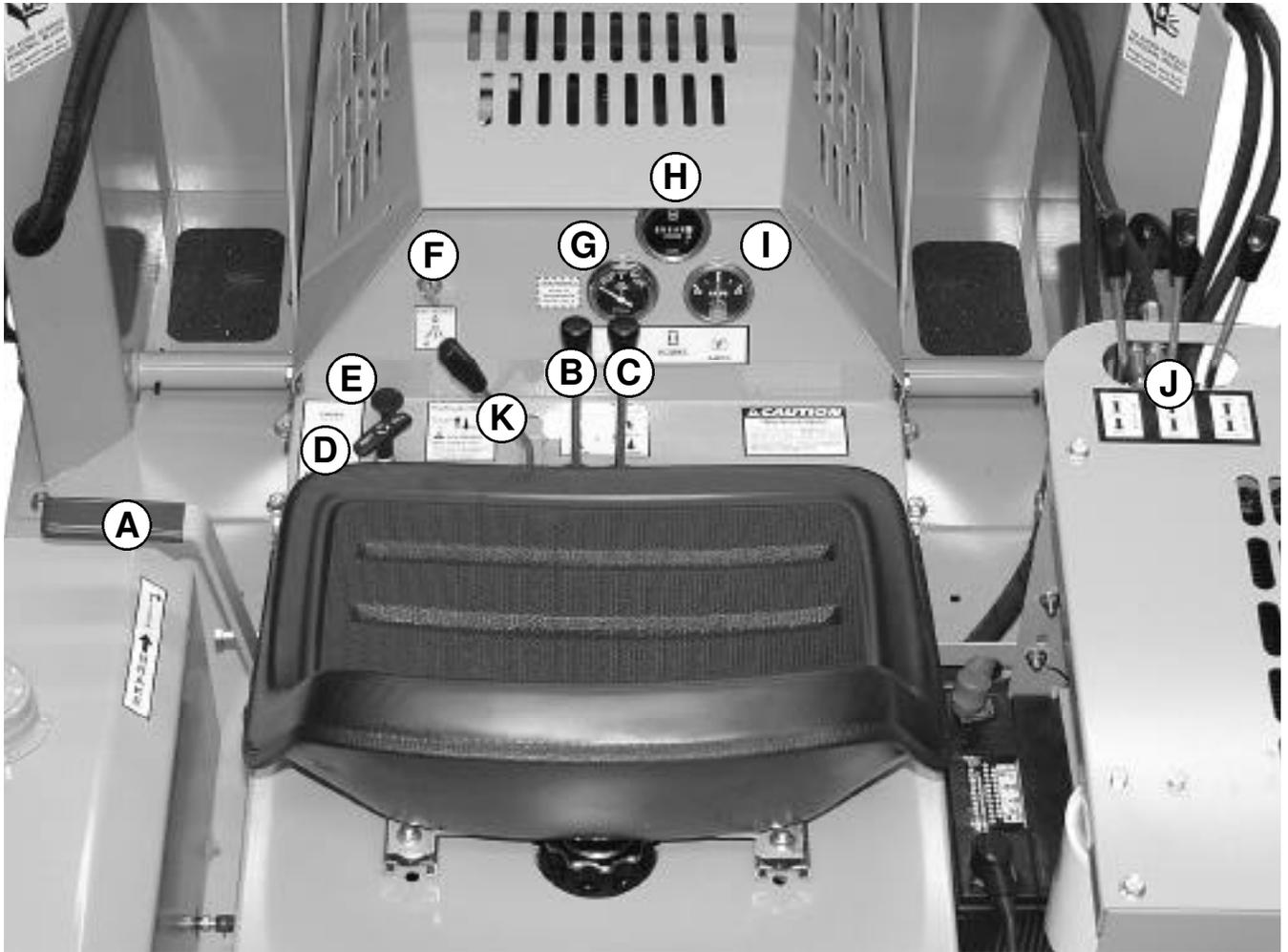
Do not start Engine by shorting across starter solenoid terminals. Crawler may start and move if normal circuitry is bypassed.



CAUTION: Never start Engine while standing on ground. Start Engine only from operator's seat, with Brake engaged.

Inspect your Crawler carefully each day before you start it. See "Pre-Start Inspection".

Clean your Crawler regularly.



CONTROLS & INSTRUMENTS

Learn the location and purpose of all controls, instruments, and warning labels.

A - EMERGENCY / SERVICE BRAKE LEVER

B - LEFT TRACK CONTROL

C - RIGHT TRACK CONTROL

D - THROTTLE CONTROL

E - CHOKE CONTROL

F- IGNITION SWITCH

G - OIL TEMPERATURE METER

H - HOUR METER

I - AMMETER

J - ACCESSORY CONTROL VALVE

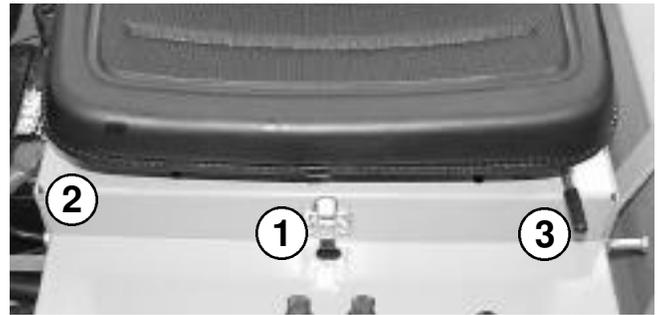
K- HC55 HYDRAULIC CIRCUIT CONTROL



EMERGENCY / SERVICE BRAKE LEVER

By pushing fully forward on Lever (A) the brakes will be engaged.

Brakes will lock if Lever (A) is pushed fully forward and is drawn in toward operator, allowing it to hook behind the extended Carriage Bolt lock tab.

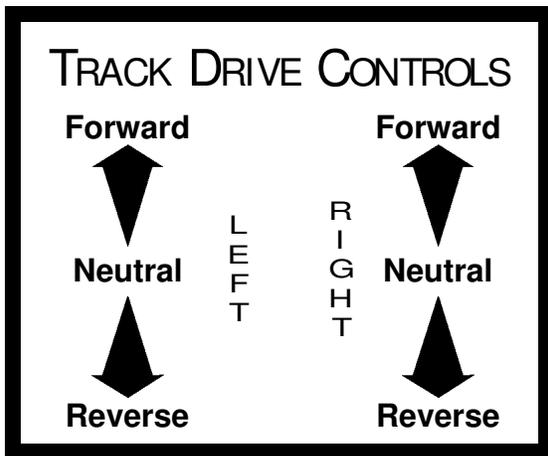


RELEASING SEAT PAN

Release the seat latch on the front center of the the seat pan assembly (1). Rotate the Seat/Cover Assembly (2) all the way to the rear until it hits its stop [back edge of the Cover acts as a stop].

ADJUSTING SEAT POSITION

To slide Seat forward or back, push Seat Adjustment Lever (3) (under the lower left corner of the Seat) outwardly to release Seat. Set Seat's new position, then release Lever to lock in position. Seat Assembly can be installed at three different locations on Cover using alternate hole patterns.



LEFT & RIGHT TRACK CONTROLS

To move straight ahead, simultaneously push both Left and Right Track Controls forward.

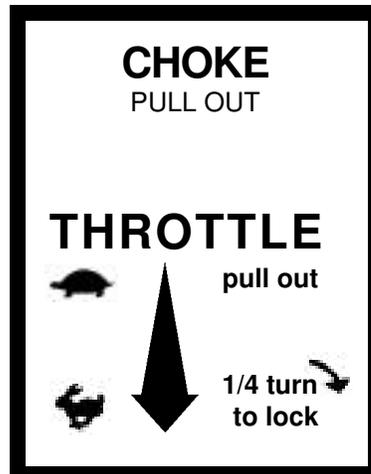
To move straight rearward, simultaneously pull both Left and Right Track Controls rearward.

To turn right sharply, push forward on Left Track Control while leaving Right Track Control in neutral.

To turn left sharply, push forward on Right Track Control while leaving Left Track Control in neutral.

To counter-rotate Tracks (shortest turn possible), push one Track Control forward while simultaneously pulling rearward on the other Track Control.

NOTE: When either Track Control is "slowly" released, it will automatically return to neutral. Never allow Track Controls to "snap" back to neutral. See Operation section of this Manual for further instructions.

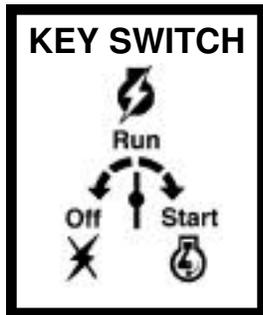


CHOKE CONTROL

Pull Choke Control out (up) toward operator, to increase amount of Engine choking (On position). Push Choke Control in (down) away from operator, to decrease amount of Engine choking (Off position).

THROTTLE CONTROL

Turn Throttle Control 1/4 turn counter clockwise to unlock. Pull Throttle Control out (up) toward operator, to increase Engine speed. Push Throttle Control in (down) away from operator, to decrease Engine speed. Turn handle 1/4 turn clockwise to lock setting (Do not over-tighten!)



KEY SWITCH

Switch is activated by rotating key clockwise. Turning it fully clockwise will engage engine starter...release key and it will return automatically to the Run position. Turn fully counter-clockwise to Off position to stop Engine. Remove key.



HOUR METER

Meter will begin recording time the moment the Ignition Switch is switched to Run.

NOTE: The Engine does not have to be running for the Meter to record time...the Ignition Switch just has to be in the **Run** position. Always turn Ignition Switch **Off** and remove key when leaving Crawler. This will assure you that your Meter is recording only actual running hours!

OIL TEMPERATURE

This gauge records the hydraulic oil temperature just as it enters the hydraulic cooling system. Monitor this temperature so that it **does not exceed 180 degrees** Fahrenheit.

If the oil temperature exceeds 180 degrees, stop operating the Crawler, but allow the Engine to operate at medium speed to circulate the oil through the radiator and lower its temperature.

AMMETER

Measures electrical charge or discharge to battery. If Ammeter shows a discharge increase throttle until unit indicates charging. If at higher throttle level unit fails to indicate charging, shut down electrical system by turning Ignition Switch to **Off** and determine the problem.

FUEL TANK

Optional 4.5 gallon capacity tank shown. Use **UNLEADED GASOLINE ONLY**.



ACCESSORY VALVE

The MD750 is equipped with a 3 spool open-center hydraulic valve to operate the numerous hydraulic attachments available. See attachment instruction for proper operation.

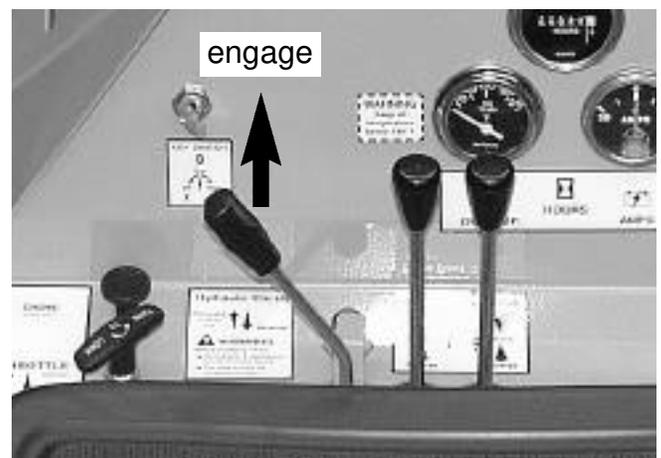


Optional HC55 HYDRAULIC CIRCUIT

An optional hydraulic circuit provides full hydraulic flow and pressure to high flow accessories.

Two hydraulic hoses with quick-connect style fittings are provided on the right fender (shown left) to supply and return hydraulic flow to and from the hydraulic accessory.

To engage the accessory push the control lever (K) forward until locked into position. This action also engages the #1148 interlock switch to create an unsafe starting condition. Should the engine shutoff during HC55 operation the accessory handle must be return to its neutral position before attempting to re-start the tractor.



OPERATION

PRE-STARTING INSPECTION

Before you start your Crawler for the first time each day, perform the following checks:

ENGINE COMPARTMENT

- Check oil level.
- Check air intake system.
- Check fuel filter.
- Remove trash and oil/dirt deposits.

TRACKS, ATTACHMENTS, SHEET METAL

- Check for bent, broken, or missing parts.
- Check Track Springs.

HARDWARE

- Check for loose or missing parts.

ELECTRICAL SYSTEM

- Check for worn or frayed wires or loose connections.

LUBRICATION

Check lubrication points shown in Periodic Service section of this Manual.

GUARDS AND SHIELDS

- Check for tightness and condition.

BATTERY COMPARTMENT

- Remove trash.
- Check cables for tightness and corrosion.

FUEL TANK

- Check fuel level.

OPERATOR'S STATION

- Check control levers for free movement.
- Clean fenders and instrument panel.
- Adjust Seat location to fit operator.



CAUTION - Before you start the engine:

- Clear the work area of people and obstacles.
- Check the condition of the Crawler. (Pre-start inspection).
- Be sure there is enough ventilation.
- Be sure to know the correct starting and stopping procedure.
- Sit in the Operator's Seat.

PREPARE FOR ENGINE STARTING

1. Allow Left and Right Track Controls to assume their natural spring-loaded center **neutral** positions.
2. Make sure Brake Lever is pushed fully forward and drawn in toward the operator until Lever **locks** behind "tab".
3. Check that all Attachments are in the fully lowered position.
4. Make sure you are properly seated so Seat Switch will engage.

STARTING

- 1a. **Cold Engine** - Place the Throttle Control midway between the **Slow** and **Fast** positions. Place the Choke Control into the **On** (fully choked) position.
- 1b. **Warm Engine** (normal operating temperatures) - Place the Throttle Control midway between the **Slow** and **Fast** positions. Place the Choke Control into the **Off** (no choke) position.

NOTE: After starting a "cold" Engine, it may be necessary to leave the Choke partially On for a few minutes before moving it to the Off position.

2. Activate the Key Ignition Switch by rotating the key clockwise until starter engages. Release the key as soon as the Engine starts...Switch will return to the Run position.



CAUTION: Do not crank the Engine

continuously for more than 10 seconds at a time. If the Engine does not start, allow a 60-second cool-down period between starting attempts. Failure to follow these guidelines can burn out the starter motor.



CAUTION: If the Engine develops sufficient speed to disengage the starter but does not keep running (a "false start"), the Engine rotation must be allowed to come to a complete stop before attempting to restart the Engine.

If the starter is engaged while the flywheel is rotating, the starter pinion and flywheel ring gear may clash, resulting in damage to the starter.

If the starter does not turn the Engine over, shut off starter immediately. Do not make further attempts to start the Engine until the condition is corrected.

If the battery charge is not sufficient to turn over the Engine, recharge the battery.

CAUTION: Do not attempt to jump start the Engine with another battery. Starting with batteries larger than those recommended can burn out the starter motor.

WARM-UP PERIOD

Run Engine at half speed for 5 minutes.

Do not run Engine at fast, or slow idle.

Operate Crawler at less-than-normal loads and speeds for the first 15 minutes.



WARNING: Lethal Exhaust Gases

Engine exhaust gases contain poisonous carbon monoxide. Avoid inhaling fumes, and never run the Engine in a closed building or confined area.

NOTE: Assembled Crawlers are "run in" under no load at the factory for 15 minutes to properly break-in their drive train.

TRAVELING

Hold Brake Lever fully forward, then push **outwardly**, to unlock it from behind its "tab" or "bolt". Slowly release pressure on the Lever allowing it to come back to its rearward position! Raise all Attachments to their recommended traveling heights.

To move straight ahead, simultaneously push both Right Track Control and Left Track Control forward.

To move straight to the rear, simultaneously pull both Right and Left Track Controls rearward.

To turn sharply to the right, push Left Track Control fully forward...leave Right Track Control in neutral.

To turn slowly to the right, push Left Track Control fully forward while simultaneously pushing "partially" forward on Right Track Control...the farther you push the Right Track Control forward, the slower you will turn right.

To turn sharply to the left, push Right Track Control fully forward...leave Left Track Control in neutral.

To turn slowly to the left, push Right Track Control fully forward while simultaneously pushing "partially" forward on the Left Track Control...the farther you push the Left Track Control forward, the slower you will turn to the left.

To counter-rotate Tracks, (shortest turn possible), push one Track Control forward while simultaneously pulling rearward on the other Track Control. You may counter-rotate clockwise or counter-clockwise; move in whichever direction satisfies the job at hand.

Stopping the Crawler: The Right and Left Track Controls are of the self-centering (neutral) type. This allows you to simply release pressure on both Track Controls to stop power to the Tracks and come to a complete stop. **Never** "snap" Track Controls back into neutral!

PARKING THE CRAWLER

1. Lower all Attachments to the ground.
2. Allow Right and Left Track Controls to go "slowly" to neutral.
3. Push fully forward on Main Drive Clutch/ Brake Lever and **lock**.
4. Run Engine at half speed 2 minutes without load.
5. Move Throttle Control to slow idle.
6. Turn Ignition Switch to **Off**.

IMPORTANT: If Engine stops under load, remove load. Start Engine immediately. Run 30 seconds at half speed before adding load.

If Engine stops, you must turn key **Off** before you can start the Engine.

In freezing weather, park on a hard surface to avoid freezing the Tracks to the ground. If Tracks are frozen to the ground, be careful to avoid damage to the Tracks and drive train when you try to move the Crawler.



CAUTION: When you park your Crawler on a slope, put blocks against tracks. **Do not** park Crawler with tracks pointed downhill.

FUELS & LUBRICANTS

FUELS

FUEL SPECIFICATIONS

Check enclosed Engine Owner's Manual and closely follow their recommendations.

FILLING FUEL TANK

The Fuel Tank is located to the left of the Operator's Seat.

Fill Fuel Tank at end of each day's operation.

Fuel Tank capacity is one U.S. gallons.
Optional 4.5 gallon tank available

Use unleaded gasoline per Engine Owner's Manual.



CAUTION: Handle fuel carefully. Do not fill fuel tank when the Engine is running. Do not smoke while you fill fuel tank or work on fuel system.

STORING FUELS

Keep fuel in a container in a protected area. Water and sediment must be removed before fuel gets to the Engine. Do not depend on fuel filters to remove water.

If possible, install a water separator at the storage tank outlet.

Store fuel drums on their sides with plugs up.

IMPORTANT: Keep all dirt, scale, water, or other foreign matter out of fuel.

LUBRICANTS

ENGINE OIL

Check enclosed Engine Owner's Manual and closely follow their recommendations.

HYDRAULIC OIL

Use a premium quality hydraulic oil with maximum anti-wear properties, rust and oxidation treatment like Mobil-DTE Series 10 (ISO of 32). An ISO of 32 is good for "oil" temperature conditions of +5F to +170F which are considered standard.

A local hydraulics or equipment supplier can provide suggestions about a good hydraulic fluid for your region of the country.

Fill hydraulic reservoir by first unlatching and raising #2486 Seat Pan. Remove the #2530 Hydraulic Reservoir Cap and pour in oil filling to bottom of filtering screen.

NOTE: DO not attempt to fill hydraulic reservoir without raising #2486 Seat pan. While the #2530 Hydraulic reservoir is exposed at all times through an opening in the #2486 Seat Pan this is for clearance purposes only.

TRACK SPROCKETS AND IDLERS OIL

Use a non-additive, non-detergent variety of oil...SAE 30 in summer; SAE 10 in winter.

GREASE

Use premium quality SAE Multi-Purpose Grease.

STORE LUBRICANTS in clean containers in area protected from dust, moisture, & contamination.

LUBRICATION and PERIODIC SERVICE

LUBRICATION AND SERVICE INTERVALS

Recommended service intervals are for normal conditions. Service more often if Crawler is operated under more difficult conditions such as high temperature, dust, etc. Use only quality lubricants at intervals specified in this manual.

PERIODIC SERVICE CHART

DAILY OR EVERY 10 HOURS

Engine Air Cleaner

Service per instructions in Engine Owner's Manual.

Engine Oil

Service per instructions in Engine Owner's Manual. NOTE: First oil change for a new Engine is at 5 hours.

Hydraulic Oil

Check level; with equipment on the ground (all cylinders should be retracted), level should be slightly above bottom of hydraulic fill screen.

Radiator

With low pressure air, blow clean the "fins" of #470 Radiator (oil cooler).

Grease Zerks

Lubricate all zerks per instructions in manual of each attachment you have mounted to, or are operating with your Crawler. [Clean zerks and area around them before servicing].

Front Idler/Rear Drive

Your Crawler is pre-lubricated at the factory for the first 25 to 50 hours of operation [25 hours for dusty, gritty conditions; 50 hours for normal conditions]. After that period you may use one of the following lubrication procedures:

Normal Conditions: Clean area around each

"zerk" in Front Idler and Rear Drive Assemblies. Remove zerks...try to have them on the "top-side". Using an oil can with SAE 30 motor oil, fill each reservoir through threaded hole...do this at day's end to allow oil to soak into the bearings. Repeat oiling next morning and replace zerks. Repeat process every 25 hours.

Dusty Conditions: Clean area around each "zerk" on Front Idler and Rear Drive Assemblies. Grease each zerk until you see, or feel, grease coming out the bearing ends.

Track Tension

Maintain 4.5" overall length of #234 Spring on each Track.

Check Service section of this Manual for complete explanation and Track Tensioning procedures.

Drive Chain Tension

Maintain proper chain tension in Crawler's final drive. Check Service section of this Manual for complete Drive Chain Tensioning procedures.

Drive Chain Lubrication

Use SAE 30 motor oil in pressure oil can. Lubricate exposed chain from below, rotate and repeat.

Thoroughly lubricate each Drive Chain. Don't forget to do both Drive Chains!

Fittings & Hoses

Check hydraulic fittings and hydraulic hoses for cracks, breaks, and leaks.

General Once-Over

Check for loose nuts and bolts and any signs of premature wear. Correct any problems immediately. Contact factory with any questions or requests for help.

EVERY 50 HOURS

Engine Oil

Drain and refill per recommendations in Engine Owner's Manual.

NOTE: Change Engine oil every 25 hours if you're working under constant heavy loads or extremely dirty conditions.

Battery

Check electrolyte level (if applicable) and fill with distilled water to the bottom of the filler neck.

Filters

Replace Engine Filter with filter recommended in Engine Owner's Manual.

Replace Hydraulic Oil Filter Canister.

Check Fuel Filter for dirt; if showing sediment, replace with new.

Tracks and Track Sprockets

Remove and pressure wash Track. Pressure wash Front Idler and Rear Drive Sprockets.

EVERY 200 HOURS**Hydraulic Fluid**

Completely drain system by removing plug in center rear underside of Crawler's Frame.

NOTE: Drain when fluid is warm; block up the front of Crawler a few inches to get oil to flow completely to drain opening.

Fuel Filter

Replace with new Fuel Filter at this time.

Fuel Tank

Remove and drain tank of any water or sediment.

SERVICE

In the following Service section of this Manual, you will be required to do various assembly and disassembly procedures. Each section will try to remind you of safe procedures, but the best safety device is still the mechanic himself.



CAUTION: Try to do your work in a level, open area away from people and obstacles.

1. Pay attention to what you are doing...the parts you will be handling can be heavy, sharp or could pinch. Always wear heavy gloves when handling the Tracks and similar sharp, pinching components.
2. When you are required to block the Crawler to raise it off the ground, make sure you use strong blocking materials and think out how the Crawler will safely balance on your blocking.

Never be too proud to ask a friend or neighbor for help...especially when blocking up your Crawler or working with the Tracks.

As always, the factory is your best source for competent service advice and explanations of any service procedures that are unclear...always feel comfortable calling for whatever advice you may need!

ENGINE

Your Crawler comes with a complete Engine Service Manual. It provides troubleshooting tips along with complete rebuilding procedures. If further help is needed, contact your local Engine dealer...he's listed in the telephone "Yellow Pages" under "Engines, gasoline".

STARTER

IMPORTANT: Do not hold down starter button longer than 10 seconds at a time. If the Engine does not start within 10 seconds, wait 60 seconds before pushing starter button again. After a false start, do not push starter button until Engine has stopped turning.

If the starter will not operate or operates sluggishly, check for the following:

- Run down battery.
- Dirty, loose, or corroded cables and wires.
- Engine oil viscosity too heavy.

BATTERY

Your Crawler has a 12 volt, negative-grounded system with one Battery-.

BATTERY PRECAUTIONS



CAUTION: Sulfuric acid in batteries is a poison and could cause severe burns. Avoid contact with skin, eyes, and clothes. When you work around batteries, protect eyes and face from battery fluid and explosion.

Antidotes for Sulfuric Acid:

EXTERNAL

1. Flush skin well with water.
2. Flush eyes for 15 minutes.
3. Get medical attention immediately.

INTERNAL

1. Drink a large amount of water or milk.
2. Then drink milk of magnesia, beaten eggs, or vegetable oil.
3. Get medical attention immediately.



CAUTION: Keep flames and sparks away from battery.

Do not use booster cables or adjust battery terminal connections unless you know the correct procedure.

When you charge a battery or use a battery in a closed space, be sure there is enough ventilation.

Keep batteries where children cannot reach them.

Keep vent caps tight and level.

COLD WEATHER BATTERY SERVICE

During cold weather, keep electrolyte in battery at correct level (if applicable). Keep battery fully charged.

BATTERY STORAGE

If Crawler will be stored for more than 30 days, remove battery. Keep it fully charged.

BATTERY MAINTENANCE

1. Remove corrosion from terminals with a stiff, non-metallic brush.



CAUTION: Use care when cleaning terminals so that you do not "short them out" with metallic brushes, scrapers, screwdrivers etc.

2. Clean battery with a baking soda solution (1/4 pound in a quart of water).
3. Flush battery and compartment with clear water.
4. Check electrolyte level (if applicable). Fill each cell to bottom of filler neck with distilled water or clean, soft water (not hard water).
5. Put petroleum jelly on terminals. Maintain protective covers on "positive" (+) and "negative" (-) terminals of battery.

SAFETY INTERLOCK SWITCHES

Two Switches, one in the Seat...and one on the Main Brake Lever, are used in the Crawler's standard electrical system as safety devices. They detect if the operator is properly seated, that the Brakes are engaged and locked before the Crawler can start. A third switch is included when the optional HC55 Hydraulic Circuit is installed.

The plunger in the #441 Interlock Switch (brake) has to be depressed for the Switch to close and activate the electrical circuits (NO or normally open); the plunger has to be released for the switch to open and safely deactivate the circuit.

The plunger of the #1162 Interlock Switch (seat) has to be depressed for the switch to open (NC or normally closed). When the operator gets out of the seat the switch closes the circuit and grounds out the engine thus shutting it off.

The plunger of the #1148 Interlock Switch (optional HC55) has to be depressed for the switch to open (NC). When the HC55 circuit is actuated the closed circuit grounds out the engine thus preventing starting the engine in an unsafe condition.

To check the operation of the above describe switches you must remove the electrical connectors attached to each switch's terminals and connect a continuity tester to terminals in their place (a simple flashlight type continuity tester would be fine).

SEAT & HC55 SWITCH TEST

Disconnect the two electrical leads on the respective switch and replace them with the leads of a continuity tester.

- A. By pushing down on the center of the Seat or pushing the HC55 Actuator Handle forward the Switch should open. A continuity tester, attached to the two terminals of the Switch, should have its light OFF at this time!
- B. With pressure removed from the Seat or the HC55 Lever in its neutral position, the Switch should close...the light should be ON!

If both of the above conditions are not met, the Switch is defective and must be replaced. When

test is completed, remove continuity tester and replace original electrical connectors on both terminals of Seat Switch.

Following recommended safe starting procedures, start the Engine...if it doesn't start, proceed with the Main Drive Clutch/Brake Switch Test (below).

BRAKE SWITCH TEST

For this test, raise the Seat Latch and swing the Seat/Cover Assembly fully to the rear until it hits its stop. Remove the electrical plug from the #441 Brake Switch and connect a continuity tester to its two terminals.

- (1) With "plunger" of Brake Switch not depressed, the light of the continuity tester should be Off. With "plunger" of Brake Switch fully depressed, the light of the continuity tester should be On.
- (2) When the Brake Lever is pushed fully forward and locked by being drawn behind its "tab", the Brake Switch should be closed (the result of contact with the rotated #440 Leaf Spring). The light of the continuity tester should be On!
- (3) Brake Lever unlocked and allowed to travel rearward. The Brake Switch should be open (the #440 Leaf Spring would have rotated down and away). The light of the continuity tester should now be Off!

If both conditions of procedure (1) (above) are not met, replace Main Drive Clutch/Brake Switch. If both conditions of procedure (1) are met, but the conditions of procedure (2) & (3) are not met, you must adjust the "vertical height" of the #441 Switch in its #2013 Bracket.

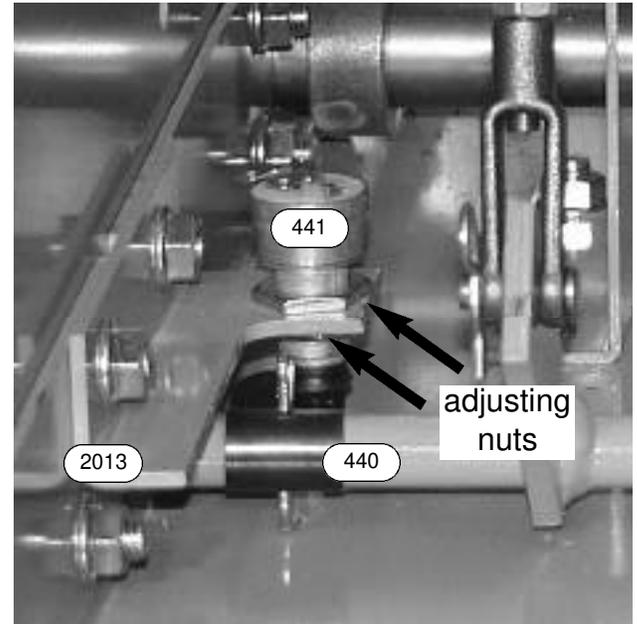
The #441 Brake Switch is secured top and bottom in the #2013 Bracket with hex nuts.

Raise or lower the Switch's height to meet requirements (1), (2) and (3) (above) by relocating its two hex nuts.

When adjustment is completed, tighten Switch's hex nuts...terminals of "tightened" Switch should point at approximately a 45 degree angle to the Right Body Wall. Remove continuity tester and replace electrical plug on terminals of Switch.

Close Seat/Cover Assembly...check that it is positively latched!

At this time, following recommended safe starting procedures, start the Engine and check Main Drive Clutch/Brake Switch's setting...readjust if necessary.

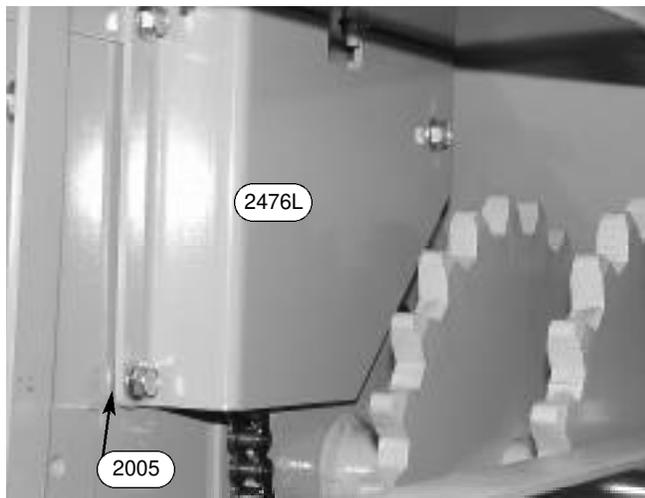


DRIVE CHAIN TENSIONING

The #2082 Drive Chains (#50 Roller Chain) are tightened by increasing the center distance between the movable #2065 Rear Axle and the fixed #2430 Sprocket & Shafts.

Begin your Drive Chain Tensioning procedure by driving Crawler onto a firm, level surface. Shut off Engine and dismount...do not lock Main Drive Clutch/Brake Lever. [Though not absolutely necessary, it's extremely helpful in the following procedure to block your Crawler up and remove its Tracks...see Track Removal section of this Manual for instructions].

Raise Seat Latch and rotate Seat/Cover Assembly fully rearward and hit its stop. Remove the #2476R & #2476L Right & Left Chain Guards from left & right side of Crawler (be careful not to lose the special #2005 Washers).

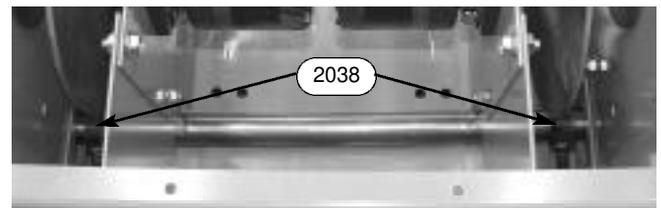
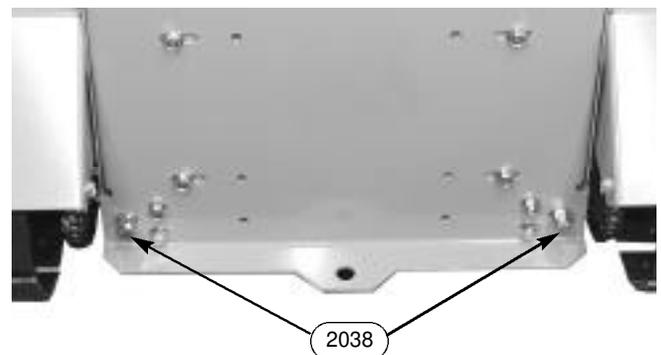


Do a thorough cleaning of the Chains and mating sprockets with a stiff brush. The sprockets and their mating Drive Chains must be clean to give proper chain adjustment. [You may want to remove the Drive Chains and soak in penetrating oil overnight if they seem stiff].

From inside the Crawler's body, loosen (but do not remove) the nuts on the twelve 3/8" x 1" Carriage Bolts (six on each side of Crawler) that secure the #2033 Supports (one on each side of body) which hold the #2065 Rear Axle. [TIP: A socket wrench works best for this step].



To tighten the Drive Chains, start rotating clockwise the Locknut on the end of each #2038 Pull. To draw Rear Axle back evenly, turn one Locknut 1/4 turn, then go to the other side and tighten the other Locknut 1/4 turn...use this back and forth procedure until both Drive Chains are reasonably tight...not "bow-string" tight, but not slack either.



NOTE: While doing the above procedure, make sure you rotate each #2050B Sprocket a full revolution after each 1/4 turn of its respective Locknut. This will determine if there is a slight "high spot" in one of the mating sprockets...if so, use the "high spot" location for your point of tightening.

When satisfied that both Drive Chains are tightened evenly, retighten the twelve 3/8" Carriage Bolts holding the #2033 Supports. Using SAE 30 motor oil, thoroughly lubricate your Drive Chains at this time.

Replace the #2476R & #2476L Right & Left Chain Guards using original Cap Screws, Nuts and #2005 Washers. Close Seat/Cover Assembly and

make sure Seat Latch catches securely.

If you have blocked-up your Crawler and removed its Tracks, replace Tracks and lower Crawler to ground at this time per Track Maintenance section of this Manual.

ADJUSTMENT - BRAKES

The Parking/Emergency Brake provides a force approximately equal to the strength of the Crawler's drive system and is used in a number of ways. One way, is as a Parking Brake. In this capacity, it holds the Crawler in position when the Engine and drive system is shut off.

In addition, it provides a **safe start mode**, as the Brake must be engaged before starting the Engine. If the operator inadvertently touches the Track Drive Controls during Engine starting, the Brake will severely load the drive system and potentially kill the Engine (unless the Track Drive Controls are released immediately).

The Brake's other use is that of an Emergency Brake. If you should ever lose Engine or drive system power, the Brake can be activated instantly to hold the Crawler safely in position.

DISK BRAKE ADJUSTMENT



CAUTION: Read the following Disk Brake and Disk Puck instructions in their entirety before attempting any Disk Brake adjustments!

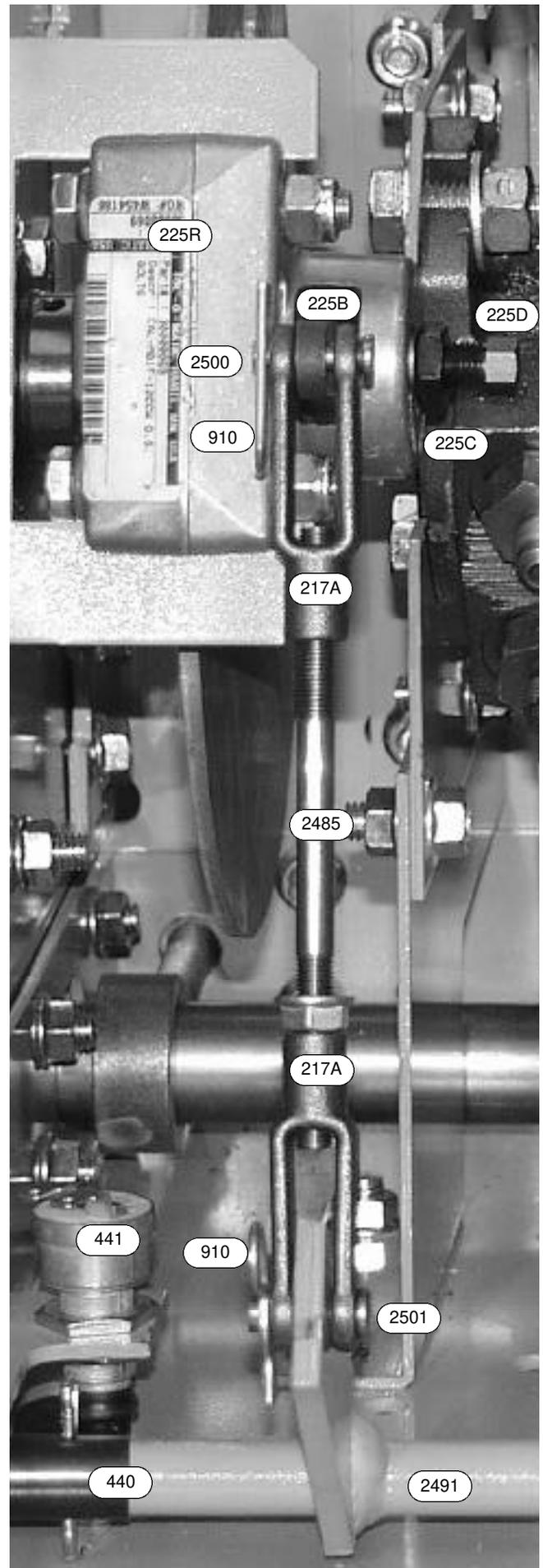
Release Parking Brake. Unscrew a few turns the #225C Jam Nut on #225R & #225L Right & Left Disk Brakes to release each Jam Nut's respective #225D Threaded Adjuster Pin.

Rotate the Adjuster Pin on each Disk Brake **in** (clockwise when viewing **face** of Brake) until it stops...don't overtighten, just tighten to the point where it stops and the **pucks** (brake linings) are tight on the Brake Disk.

Now counter-rotate (counter-clockwise) the Adjuster Pin of each Disk Brake exactly 180°. The pucks should have lost their grip on their respective Disks and both Brake assemblies should be free to move.

Push forward on the Parking Brake and watch as each Disk Brakes' #2485 Pull Rod begins to rotate forward, and tighten the pucks of each Brake on their respective Disk.

If the left & right #2485 Pull Rods do not pull equally on each #225 Brake assembly adjust their length by loosening the jam nut adjacent to the #217A Clevis. Remove the #910 Lynch Pin and #2501 Pin securing the #217A Clevis. Rotate the



#217A5 Clevis appropriately to adjust the length of the linkage. When satisfied with equal adjustment re-install the #2501 pin, secure with #910 Lynch pin, and tighten nut to secure #217A position. Hold each #225D Adjuster with wrench and tighten its respective #225C Jam Nut.



DANGER: The proper adjustment and maintenance of your Disk Brakes can not be overemphasized! Double check your work for safety. Always call our Service Department with any doubts or questions you may have!

With both Brakes in balance, you can now evenly set their working tension. Using a "spring scale", pull forward at top of Brake Lever with a force of approximately 15 lbs.

This force should allow the Brake Lever to pass and lock behind the exposed carriage bolt head..

If it takes less than this pressure, evenly shorten the brake linkage assemblies as describe above until you reach the approximately 15 lb. force level.

If it takes more than the recommended 15 lbs. pressure, evenly loosen the clevis on the end of each Brake tension rod until you reach the 15 lb. force level.

When satisfied with your adjustment, close your Seat/Cover Assembly and latch it securely. Remove blocking from beneath Crawler and safely lower it to the ground.

Release your Parking Brake and check your final adjustment. It is **mandatory** that when the Brake Pedal is released, that each Disk Brake's **puck** is fully released and the Disk Brake assemblies are free to move without any appreciable **drag** on their respective Disks.

DISK PUCK WEAR

As the Brake System is your highest priority safety device, it is **mandatory** that you compensate for any Puck (brake lining) wear by repeating the DISK BRAKE ADJUSTMENT steps detailed above.

Check with factory Service Department with any questions you may have regarding when and how to replace Brake Pucks (brake linings) or

TRACK MAINTENANCE

Before attempting to complete any part of this Track Maintenance section, it is recommended that you read all three parts (Track Removal, Track Replacement and Track Tensioning) to provide background on how the total Track System is adjusted and maintained.

Below are a series of drawing to aid you in parts identification as you read the following procedures. For clarity, only the parts described in the instructions are included in most of the photos. In some cases, certain parts do not appear in all drawings, to lessen confusion.



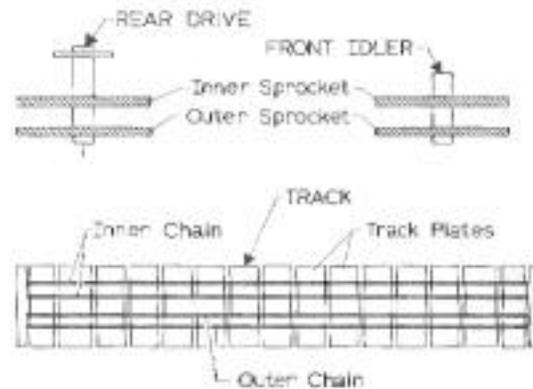
CAUTION: When working with the Tracks, you will be dealing with some significant weights and lifting situations. Though the Crawler can be successfully "blocked up" off the ground and the Tracks removed and replaced by a single person, it's advisable to have an able-bodied "helper" available for both assistance and safety.

Begin any Track Maintenance procedure by checking that your Track System is relatively clean and free of debris...a high-pressure wash job is an excellent idea. In addition, drive your Crawler through a "clean area" to work out debris that may have lodged between Track Sprocket teeth or in the Track's Chain Links. Park your Crawler on a firm level surface, shut off engine, set brake and dismount.

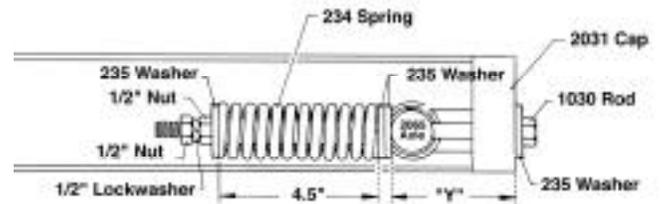
TRACK REMOVAL

From below, support body of Crawler so its Tracks clear the ground by approximately 2" and are free to rotate...release Brake at this time. Use solid blocking and place it under the Crawler's body so that it will give the Crawler the greatest support left to right and front to rear. [When locating your blocking, analyze the total weight and balance of the Crawler as it will change as the Tracks are removed and then replaced!]

NOTE: As you work with the Tracks, realize that the more you can support the "lower strand" of each Track and keep it flat and close to its original operating level, the more slack you will have in the "upper strand" of the Track to work with!



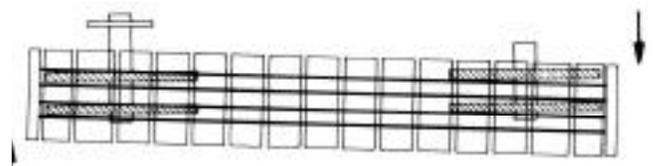
Loosen and remove the first 1/2" Nut and Lock Washer from the threaded end of each #1030 Tension Rod.



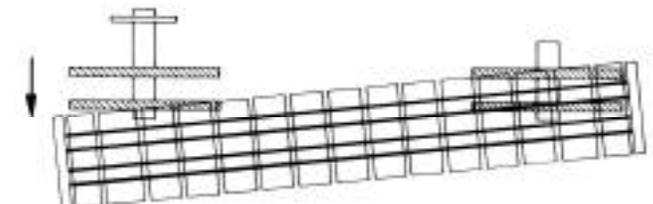
By rotating the "nut end" of each #1030 Tension Rod counter-clockwise, loosen and remove remaining 1/2" Nut, #235 Washer and #234 Spring. Slide #2065 Axle fully rearward.

With gloved hands, begin to rotate the Track forward. [TIP: As you rotate the Track work the Track Clutch Controls back and forth to relieve internal pressure].

As the Track is rotated forward, work the forward end of the Track outward. Stop working the Track outward when the Track's Inner Chain is centered between the Inner & Outer Sprockets of the Front Idler...see below.



In a similar manner, rotate the Track rearward making sure that the Track's Inner Chain remains between the Inner & Outer Sprockets on the Front Idler. This time work the rearward end of the Track over both the Inner & Outer Sprockets of the Rear Drive...see drawing below.

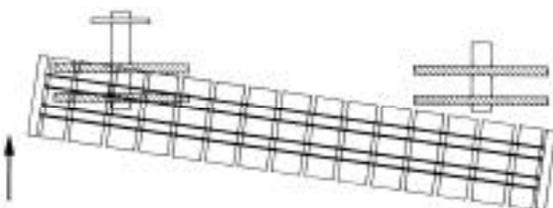


Pulling forward on the Track will allow you to now loop the Track off the remaining Outer Sprocket on the Front Idler allowing complete Track removal.

TRACK REPLACEMENT

Before replacing a Track, it's wise to thoroughly clean it of all debris...a pressure wash job is a good idea.

Slip the rearward end of Track around the Inner & Outer Sprockets of the Rear Drive engaging the Track's Inner Chain between the Inner & Outer Sprockets of the Rear Drive.



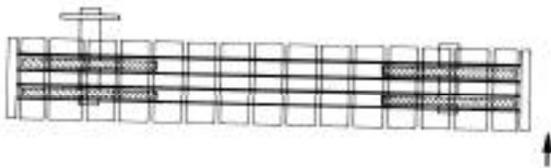
Loop the forward end of the Track around the Inner & Outer Sprockets of Front Idler engaging the Track's Inner Chain between the Inner & Outer Sprockets of the Front Idler. The Track's Inner Chain should now be located between the Inner & Outer Sprockets of the Front Idler and Rear Drive.



Begin rotating the Track rearward. As the Track rotates rearward work the Track inward until the Track's Inner & Outer Chains align and engage the teeth of their mating Inner & Outer Sprockets of the Rear Drive.



Rotate Track forward and work the Track inward until the Track's Inner & Outer Chains align and engage the teeth of their mating Inner & Outer Sprockets on the Front Idler.



NOTE: The preceding procedure is the same for the replacement of either Track.

Replace each #234 Spring (removed above under "track removal") by slipping it over the threaded end of its respective #1030 Tension Rod (on outside of each Track) and over its #262 Tube (which should still be in place on Tension Rod). Secure each Spring with its original #236 Washer and 1/2" Nut (fine thread).

NOTE: "Notched edge" of #235 Washers should still be pointing in, toward crawler's center!

By rotating nut end of each #1030 Tension Rod clockwise, draw the 1/2" Nut and #236 Washer (on each Tension Rod's end) against its respective #234 Spring such that each Spring is compressed to a total length of 4.5".

NOTE: Tighten the pair of #234 Springs 1/4" at a time. Tighten the left side #234 Spring 1/4", then stop and go to the right side #234 Spring and tighten it 1/4". Work back and forth from left side #234 Spring to right side #234 Spring, 1/4" at a time, until both Springs are 4.5" in total length. [Measure Spring length only...do not include the #235 and #236 Washers in your measurement].

At this time, slowly and safely remove all support blocking from underneath your Crawler so that the Crawler rests firmly on only its Tracks. Go on to the next section for instructions on Track Tensioning.

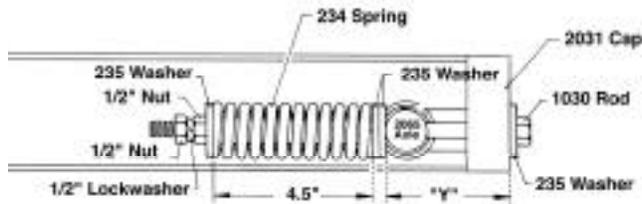
TRACK TENSIONING

Remove the 1/2" Nut and Lock Washer on the threaded end of each #1030 Tension Rod. [Omit this step if you have just completed Track Replacement above].

Begin your tensioning procedure by checking the overall length of the #234 Spring on each side of Crawler. Both Springs should be compressed to an overall length of 4.5". [The length measured is only the Spring; do not include the #235 & #236 Washers in your measurement!]

If your Springs have lost this 4.5" dimension, or you have just replaced a broken #1030 Tension Rod, follow this procedure:

Rotate (clockwise or counter-clockwise) the nut end of each #1030 Tension Rod so that its respective #236 Washer (next to #234 Spring) is drawn forward (or released rearward) thereby setting its respective #234 Spring to a final length of 4.5".



Work from left side to right side of Crawler tightening each Spring 1/4" at a time until you have achieved a 4.5" overall length for both Springs. [Measure Spring length only].

At this time remount and safely restart your Crawler. Drive it approximately 25 feet forward and then go in reverse, back to your starting point. Shut off the engine, set Brake and dismount. Check the overall length of your #234 Springs for any changes in length. Readjust to proper 4.5" overall length if necessary. When satisfied, secure each 1/2" Nut (on threaded end of each #1030 Tension Rod) with a 1/2" Lock Washer and a second 1/2" Nut...tighten.

NOTE: Over time your track assemblies may stretch. This can result in unstable track alignment and "throwing" tracks. To remedy this it may be necessary to compress the #234 Springs to a dimension smaller than 4.5 inches. Care should be taken not compress beyond 4.25 inches as this will not leave adequate room for compression during heavy loading situations. Care must also be taken at all times to assure that both springs are compressed equally.

FOOTREST ADJUSTMENT

Right & Left Footrests (L) are adjustable in three positions front to rear. To adjust, remove the three 3/8" Cap Screws holding each Footrest. Relocate Footrest to its new position by aligning the two 3/8" slots in lower lip of Footrest with a mating set of two 3/8" holes in floor of its respective Fender. Locate the third 3/8" slot (in side lip of each Footrest) with closest mating 3/8" wide vertical slot in Crawler's body wall. From outside, insert 3/8" Cap Screws into the above mating holes and slots; secure inside with 3/8" Locknuts.

SEAT LOCATION

The Seat and its associated "track assembly" can be located in three positions (front to rear) on the Cover assembly. To change Seat location, release Seat Latch and using the Seat as a handle, rotate the Seat/Cover Assembly rearward until it hits its stop.

Inside the Cover, remove the four 5/16" Nuts and Lock Washers holding the Seat's track assembly's threaded studs in place. Let the Seat and its track assembly drop away from the Cover...protect the wires connecting the Seat Switch!

Reinsert the threaded studs of the track assembly into one of the three new "hole patterns" you have selected on outside of Cover. Secure inside Cover with original 5/16" Nuts and Lock Washers. [Make sure Seat Switch wires are back in place and that the Seat can slide forward and back without pinching the wires.]

Close Seat/Cover Assembly and secure Seat Latch.