Version 9.01.20

MAGNATRAC®

RS1000

Operator / Technical Manual

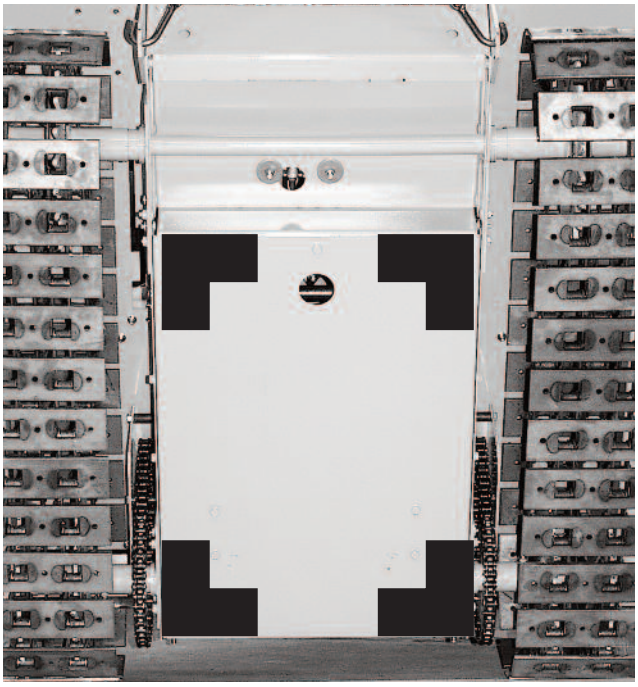
Struck Corp. - Cedarburg, WI 53012

Very Important Facts & Tips for Top Performance

The following are random facts that will be expanded on within this Manual. They are brought to you "first" to impress upon you their primary importance in preventing damage to your RS1000 and also to protect your safety and prevent costly and unnecessary maintenance expenses.

SAFE BLOCKING AREA

When "blocking" your Crawler off the ground for service, be aware that you should **only apply a hydraulic jack, in the black shaded area marked below.**



ENGINE TORQUE

The greatest amount of power (drawbar torque) your RS1000 can deliver is near the Engine's mid-speed range. This is marked on your dash area. To go faster, your Engine's "drawbar torque" will be diminished by having to go faster.

Doing all your heavy work at mid-speed does three things:

1. It keeps the Engine cooler working at a slower speed.

2. It gives you maximum drawbar torque.

3. It provides time to make "attachment adjustments" on the go!

You're encouraged to completely read this Manual to get a firm over-view of: how your RS100 operates, significant safety points, and also maintenance tips on how to increase your MAGNATRAC'S life.

PARKING BRAKE

NEVER FORGET to take off your Parking Brake... **BEFORE** you drive away. If you fail to disengage the Parking Brake, it will wear very rapidly and be of no value in an emergency!

LUBRICATION OF POWER SHAFT ENDS

Read and understand the "Special Note" in the "Belt Installation" section of this manual. By following it 's simple lubrication instructions your can save yourself a lot of work, and potential expense in the future and make Belt changing much easier.

CLUTCH BELTS

The use of rugged, though uncomplicated Belt Clutches, gives the RS1000 amazing performance while at the same time keeps its initial purchase price and later maintenance costs within the homeowner's budget.

The life expectancy of these Clutch Belts is the direct result of the type of work being done and the operator's driving technique. It is strongly recommended at this time that you thoroughly read the Track Clutch Belt Removal & Installation chapter in the Service Section of this Manual to give you an over-view of the mechanics of your drive system.

In factory tests of different driving techniques, it has been found that Belt life will range from **50 to 200 hours**. This testing proved that the operator is the greatest variable in determining Belt life. From these tests, the following driving rules have evolved. If followed, they will give you the best Belt life consistent with the severity of work you are doing.

1. Do not “ride” your clutch controls...rather operate them smoothly and engade them fully. If your Crawler can not push a particular load you have two options: immediately reduce the load (raise the Bucket or Blade) or backup and take a new angle at the load...**never hold your track controls** in a fixed position (forward or rearward) **against an immovable object for a long period of time,** you will unnecessarily wear the Belts.

2. Your RS1000 has outstanding pushing ability, but its up to you, the operator, to use its ability in the most efficient and economical manner.

3. When you want to go slowly for a sustained period, reduce your engine speed and engage the belts fully! Your Belt Clutches are no different than the disk clutch found in a large truck...if you constantly slip/ride the Clutch under heavy loads you will burn the clutch faces and decrease clutch life. It’s no different with your Belt Clutches.

4. Reserve horsepower has been designed into your Crawler. This means you can reach the maximum torque necessary to fully drive your RS1000 with your engine operating at only about half-speed.

TRACKS

The track system of your Magnatrac is the result of over 50 years of experience.

It is not uncommon in the inital operating hours for the **steel track system to make popping noises as the intial “wear in” occurs.**

The steel 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 amount of material to enter the track system.

2. Avoid climbing on a pile of loose material and counter-rotating your tracks. This action will “corkscrew” the Tracks into the pile and force unnecessarily large amounts of material into the Tracks. The steel or rubber 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 Steel or Rubber Track Tensioning instructions in your Operator’s/Technical Manual, check your Track tension by checking the length of the #1806 Spring.

4. Though this Spring adjustment is not a precise type of adjustment, it must be realized that to overtension 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.

LIMITED WARRANTY
NEW STRUCK CRAWLERS and/or ATTACHMENTS

(Effective with shipments made after August 1st, 2017)

A. GENERAL PROVISIONS

C.F. Struck Corp. will repair or replace, at its option, for the original purchaser of a new Struck Crawler and/or Attachment, any covered part or parts found upon examination at our factory in Cedarburg, Wisconsin, to be defective in material or workmanship or both; this is the exclusive remedy. Warranty service must be performed by the C. F. Struck Corp. at their factory in Cedarburg, Wisconsin 53012. Warranty service will be performed without charge for parts or labor. The purchaser will be responsible, however, for transportation charges to and from the factory.

B. WHAT IS WARRANTED

All parts of any new Struck Crawler and/or Attachment are warranted for two (2) years, with the following exceptions: Belts, which are warranted for 90 days (excludes normal wear and tear); Engines, which are warranted by their manufacturer; and Batteries, which are provided on a complimentary basis and carry no warranty whatsoever. C. F. Struck Corp. reserves the right to make product design and specification changes without notice and without obligation on their part to present product owners. The Warranty term begins on the date the product is shipped to the purchaser.

C. WHAT IS NOT WARRANTED

(1) Used Products; (2) Any product that has been altered or modified in ways not approved by C. F. Struck Corp.; (3) Depreciation or damage caused by normal wear, lack of reasonable and proper maintenance, failure to follow the product's Operator's/Technical Manual instructions, failure to upgrade crawler with parts furnished at no charge, misuse, lack of proper protection during storage, or accident (4) Normal maintenance parts and service; (5) Use of Struck Crawler and/or Attachments in certain industrial-type applications may affect Warranty coverage.

D. RETURNS AND REFUNDS

In the event of defective materials or workmanship the purchaser agrees to allow C.F. Struck Corp the opportunity to correct the defect in a timely manner at the expense of C.F. Struck Corp. It is at the discretion of C.F. Struck Corp to either correct the defect or refund the purchaser.

To return a Struck Crawler and/or attachment for reasons other than defect the purchaser will be financially responsible for an 8% restocking fee, and for shipping the Struck Crawler and/or Attachment to the C.F Struck Corp. factory in Cedarburg, Wisconsin 53012. No Returns after 90 days.

E. SECURING WARRANTY SERVICE

To secure Warranty service, the purchaser must:
(1) Report the product defect to the factory in Cedarburg, Wisconsin 1-262-377-3300 or 1-877-828-8323.
(2) Make the part available to the factory in a reasonable period of time.

F. LIMITATION OF IMPLIED WARRANTIES AND OTHER REMEDIES

To the extent permitted by law, neither C. F. Struck Corp. nor any company affiliated with it makes any Warranties, representations or promises as to the quality, performance or freedom from defect of the products covered by this Warranty. IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, TO THE EXTENT APPLICABLE, SHALL BE LIMITED IN DURATION TO THE APPLICABLE PERIOD OF WARRANTY SET FORTH ON THIS PAGE. THE PURCHASER'S ONLY REMEDIES IN CONNECTION WITH BREACH OR PERFORMANCE OF ANY WARRANTY ON C. F. STRUCK CORP. PRODUCTS ARE THOSE SET FORTH ON THIS PAGE. IN NO EVENT WILL C. F. STRUCK CORP. OR ANY COMPANY AFFILIATED WITH IT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

(Note: Some states do not allow limitations on how long an implied Warranty lasts or the exclusion or limitation of incidental or consequential damages so the above limitations and exclusions may not apply to you.) This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

G. ASSEMBLY RESPONSIBILITY

Though the MAGNATRAC RS1000, MH4900 and MH8500 are offered completely assembled, it's still the customer's responsibility to provide competent service ability! The servicing can be provided either by the mechanically customer, or by a local mechanic. All Attachments and accessories are shipped in easy-to-assemble "semi-kit" form for lowest cost shipping. We provide Manuals and Illustrations for complete service and repair so that anyone with reasonable mechanical skill can preform all required service work. Check the MAGNATRAC Specifications & Ratings (in Spec Book or Buyer's Guide) for a list of all standard features.

I hereby accept the terms and conditions of Warranty described above:

_____
print name

_____ _____
signature *date*

TABLE OF CONTENTS

IMPORTANT: *Though the MAGNATRAC is offered completely assembled, it's still the customer's responsibility to provide competent service ability! The servicing can be provided either by the mechanically-inclined customer, or by a local mechanic. We provide manuals & drawings for complete service and repair so that anyone with reasonable mechanical skill can perform all required service work.*

Congratulations…

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

The purpose of this Manual is to acquaint you with the RS1000 Magnatrac Crawler. This 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:

MAGNATRAC Records

MAGNATRAC Model: _____

MAGNATRAC Serial # _____

Engine Model: _____

Engine Serial # _____

Ship Date: _____

Mail: **STRUCK CORPORATION**
W51N545 STRUCK LANE
CEDARBURG, WI 53012

Phone*: (262) 377-3300 local
(877) 828-8323 toll-free

Fax: (262) 377-9247

email: **techsupport@struckcorp.com**

Web: www.struckcorp.com

**For immediate service always call the factory and ask for a technician.*

1- 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.

SERVICE & MAINTENANCE RECORDS

Proper service and maintenance work is critical to trouble free operation of your equipment. It is also critical to diagnosing problems should they arise. Use the space provided on the following - page to record maintenance and service work performed.

Date	Service Work

Date	Service Work

2- 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 GET OFF THE UNIT:

Move Track Drive Controls to neutral.
Engage Parking Brake Lever.
Lower all equipment to the ground.
Move throttle to idle for 1 minute.
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 extinguisher 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!

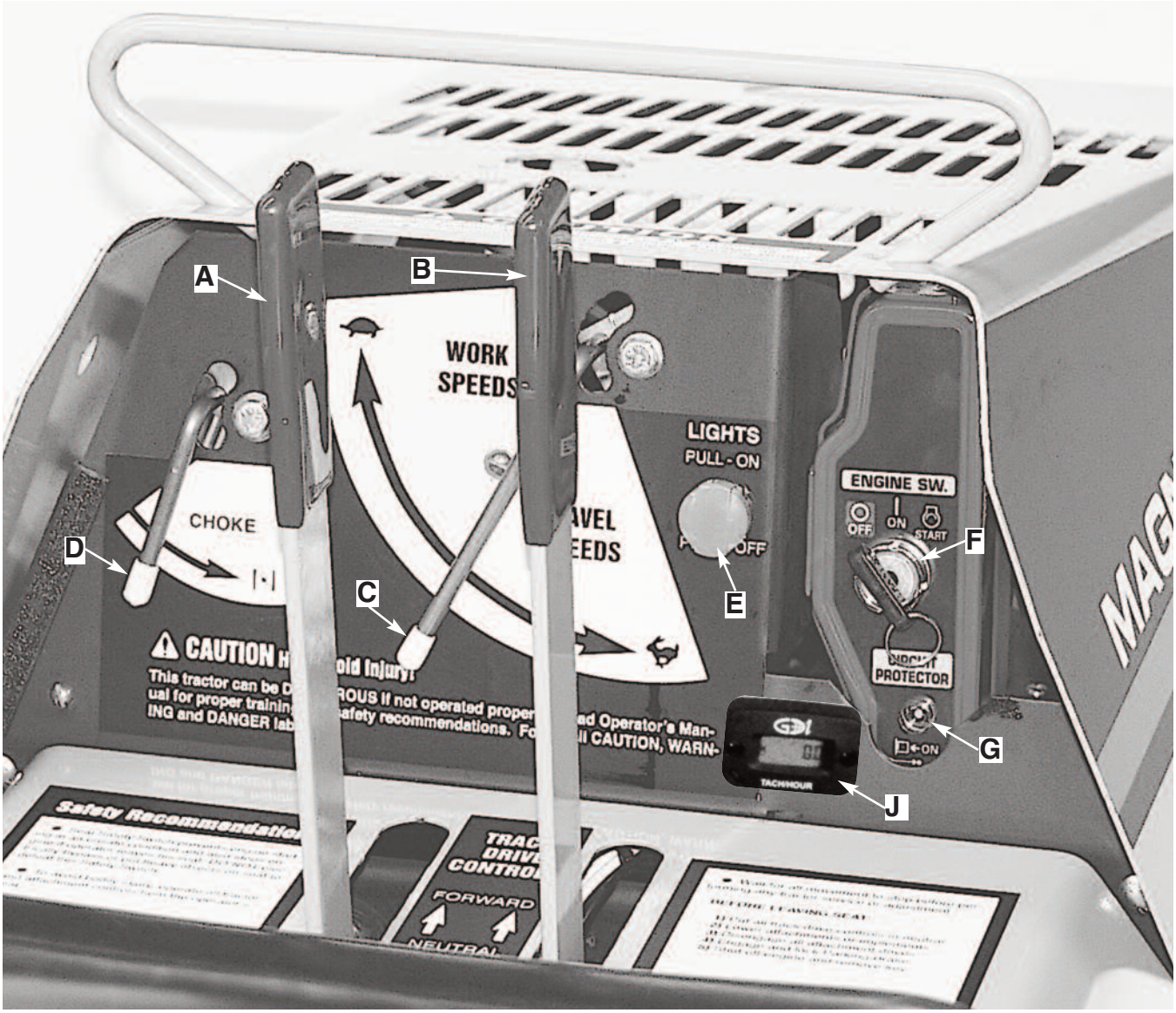
Avoid possible injury or death from Crawler runaway.

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.



3- CONTROLS & INSTRUMENTS

Learn the location and purpose of all Controls, Instruments and Warning labels. Thoroughly study the Operator's Manual furnished by the engine manufacture and included with your Crawler instructions.

A - LEFT TRACK CLUTCH CONTROL

B - RIGHT TRACK CLUTCH CONTROL

C - THROTTLE CONTROL

D - CHOKE CONTROL

E - HEADLIGHT SWITCH

F - KEY IGNITION SWITCH

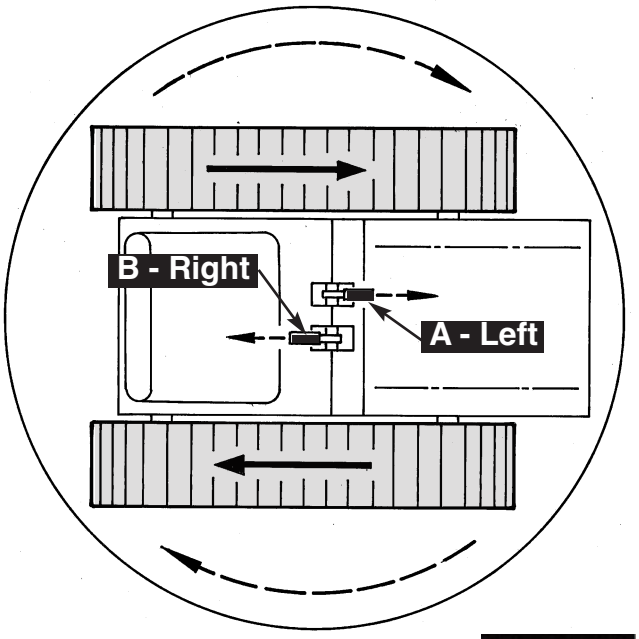
G - CIRCUIT PROTECTOR

H - FUEL VALVE

I - PARKING BRAKE (not shown)

J - HOUR METER/TACH (if equipped)

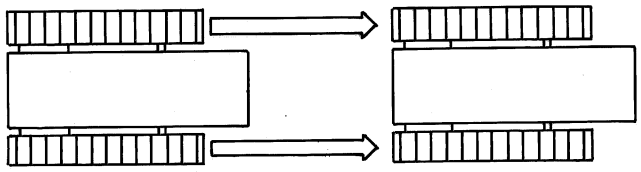
A & B - LEFT & RIGHT TRACK CLUTCH CONTROLS



INTRODUCTION: The turn demonstrated (above) is the key to your Crawler's superior maneuverability. It is accomplished with only two controls, the **A** & **B** Left & Right Track Controls. The illustrations (below) show how to maneuver your crawler in other turns.

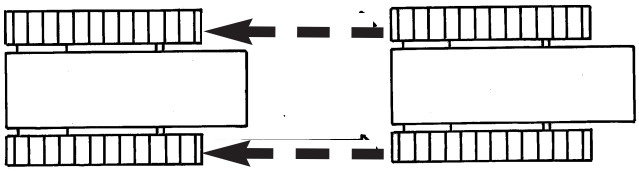
MOVING FORWARD:

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

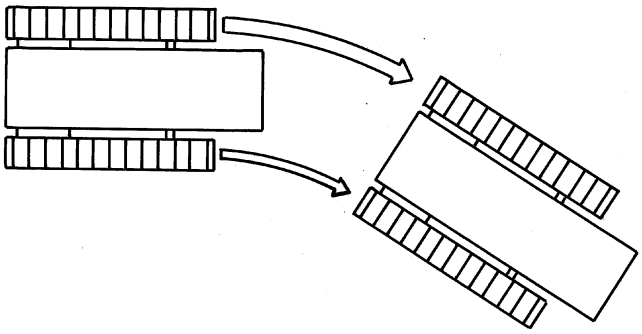


MOVING REARWARD:

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

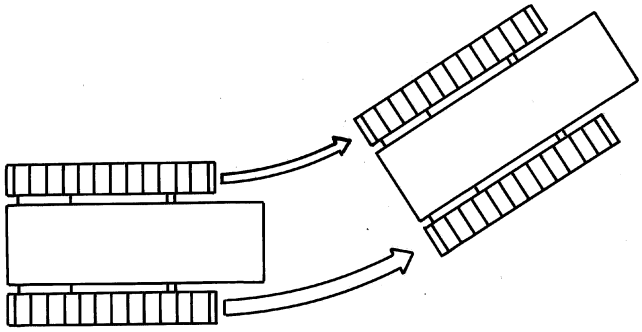


TURNING RIGHT:

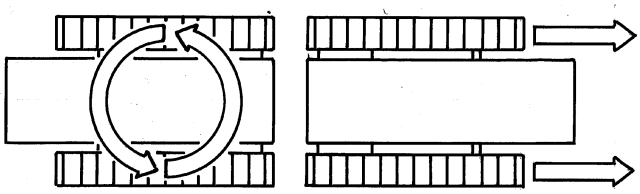


To turn sharply right, push forward on Left Track Control while holding Right Track Control in neutral.

TURNING LEFT:



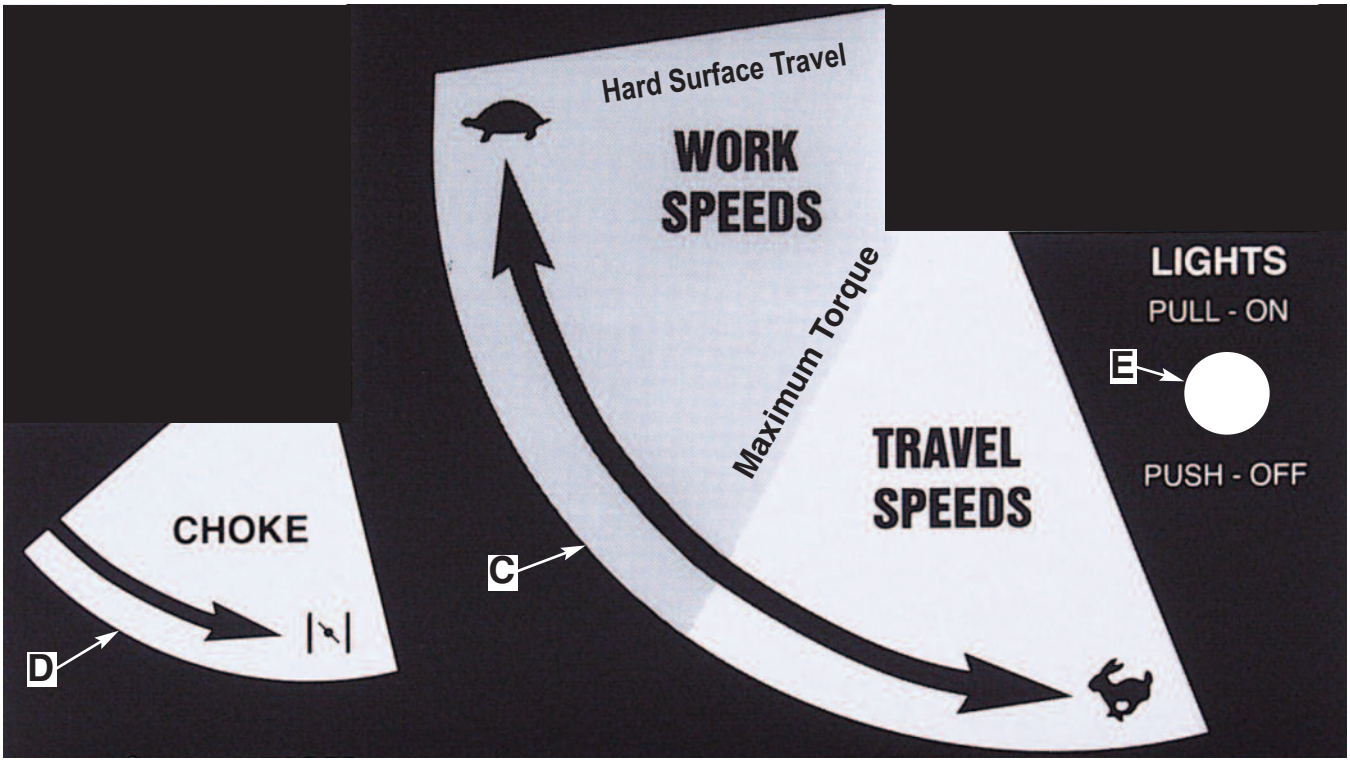
To turn sharply left, push forward on Right Track Control while holding Left Track Control in neutral.



COUNTER-ROTATING TRACKS

To counter-rotate Tracks (tightest 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.



DASHBOARD CONTROLS

C - THROTTLE CONTROL

The Throttle is lever operated, rotating in a wide arc. This arc is divided into two speed ranges; the slower Work Speeds and the faster Travel Speeds. Your Crawler has maximum "pushing force" (maximum torque, according to the engine manufacturer) at the mid-range speed but with a declining level of torque as you increase your travel speed. We advise using only as much throttle as needed for a particular application. If the engine bogs down, please feel free to use more throttle when you feel it is needed.

Though all crawlers by their design are somewhat "rough riding", you can minimize the "roughness" by traveling at the lowest speeds when going over hard surfaces.

D - CHOKE

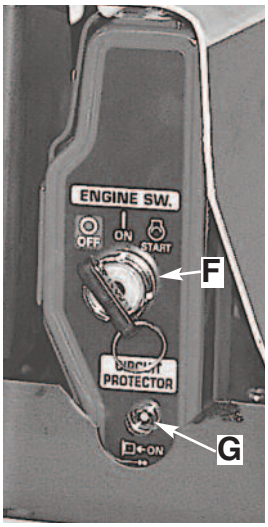
The Choke Control is lever operated. Rotate the lever counter-clockwise to increase engine choking; rotate clockwise to decrease engine choking. (Consult engine manual for more information).

E - HEADLIGHT SWITCH

The Headlight Switch is a basic "Pull ON", "Push OFF" switch. Behind the Switch is a replaceable Safety Fuse. When replacing, use a new fuse of the same amps as the one being replaced.

F - KEY IGNITION SWITCH

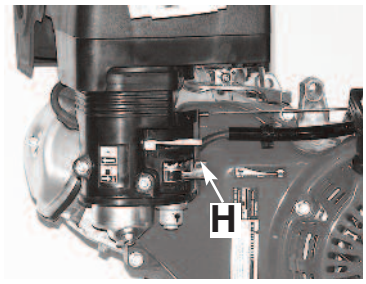
Switch is activated by rotating key clockwise. Turning it fully clockwise will engage engine starter ...release key and it will return automatically to the RUN "ON" position. Turn fully counter-clockwise to OFF position to stop engine. Remove key.



G - CIRCUIT PROTECTOR

The Circuit Protector protects the battery charging circuit. (Consult engine manual for more information).

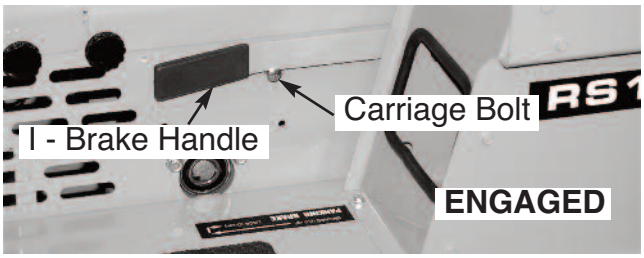
H - FUEL SHUT OFF VALVE



The Fuel Shut Off Valve Lever controls the fuel to the carburetor. **Turn it OFF for transport** or when cleaning carburetor. (Consult Engine Manual for more information).

I - PARKING BRAKE

The Parking Brake acts both as a parking brake



and as an emergency brake.

To "engage" Parking Brake, pull Brake Handle up firmly and loop it "up and over" the Carriage Bolt provided...make sure handle edge is on top of Bolt

and behind "inside face" of Carriage Bolt.

To "disengage" Parking Brake, reverse the above procedure and allow Brake Handle to rest on Fender.

As the Parking Brake is also your emergency brake, it's extremely important to maintain its performance with daily inspection. See Service section of this manual for proper procedures.

EXTREMELY IMPORTANT:

As it's mandatory to engage the Parking Brake **before** starting your crawler, always remember to disengage it **before** driving away.

If you fail to disengage the Parking Brake it will wear very rapidly and be of no value in an emergency!!

J - HOUR METER /TACH (If equipped)

The Hour Meter/Tach displays the hours run and the RPM of the engine. Keeping up with your maintenance of your MAGNATRAC keeps it running in top condition!

HOUR METER / TACH FLASH ALERT:

Flashes **"CHG OIL"** at **100 hour** service intervals and **"LUBE"** at **25 hour** service intervals, the service interval is based on actual run hours.

OPERATION:

Alerts begin flashing a warning 4 hours before service is due, and clear automatically 1 hour afterward. Meter displays RPM while enigne is running, hours while eningeis off.

FLASH SERVICE RESET:

Service alarms will automatically reset 1 hour after service interval.

4- 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.
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. (Prestart inspection).

Be sure there is enough ventilation.

Be sure to know the correct starting and stop ping procedure.

Sit in the Operator's Seat.

PREPARE FOR ENGINE STARTING

1. Allow Left (**A**) and Right (**B**) Track Controls to assume their natural "spring-loaded" center neutral positions.

2. Engage Parking Brake (**I**). (Make sure Brake lever is pulled "up and over" round head of Carriage Bolt provided...make sure handle "edge" is on top of this Bolt and behind its inside face).

3. Check that all Attachments are in the fully lowered position.

4. Make sure you are properly seated so Seat Safety Switch will engage

STARTING THE ENGINE

1a. **Cold Engine** - Place the Throttle Control (**C**) midway between the Slow and Fast positions. Place the Choke Control (**D**) 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.

2. Activate the Key Ignition Switch (**F**) by rotating the key clockwise until starter engages. Release the key as soon as the Engine starts ...Switch will return to the Run "On" 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

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 starter motor.

WARM-UP PERIOD

Run Engine at half speed for 5 minutes.

Do not run Engine at fast, or slow idle.

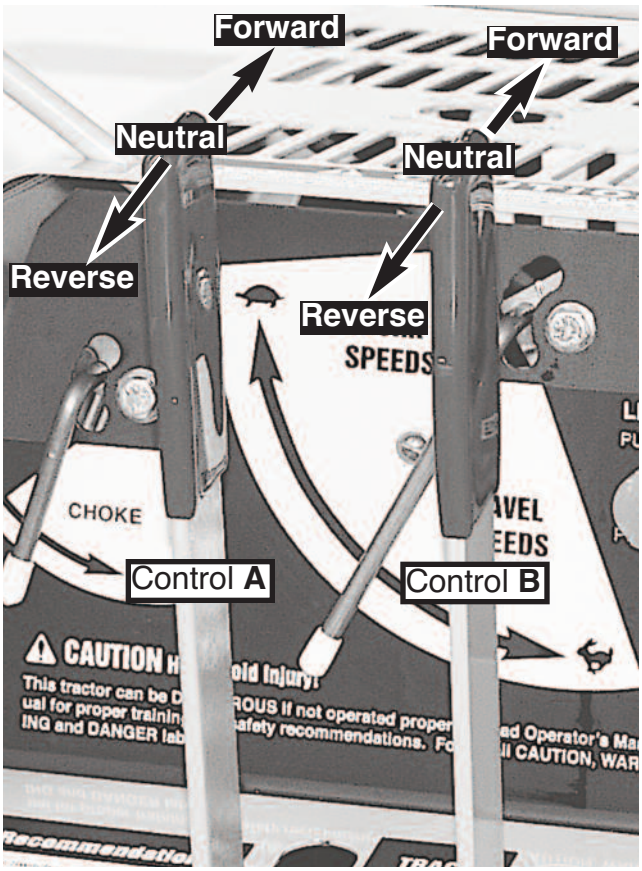
Operate Crawler at less-than-normal loads and speeds for the first 15 minutes.

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 to properly break-in their drive train.

TRAVELING

Disengage Parking Brake (**I**); Fully raise all Attachments to recommended traveling heights.

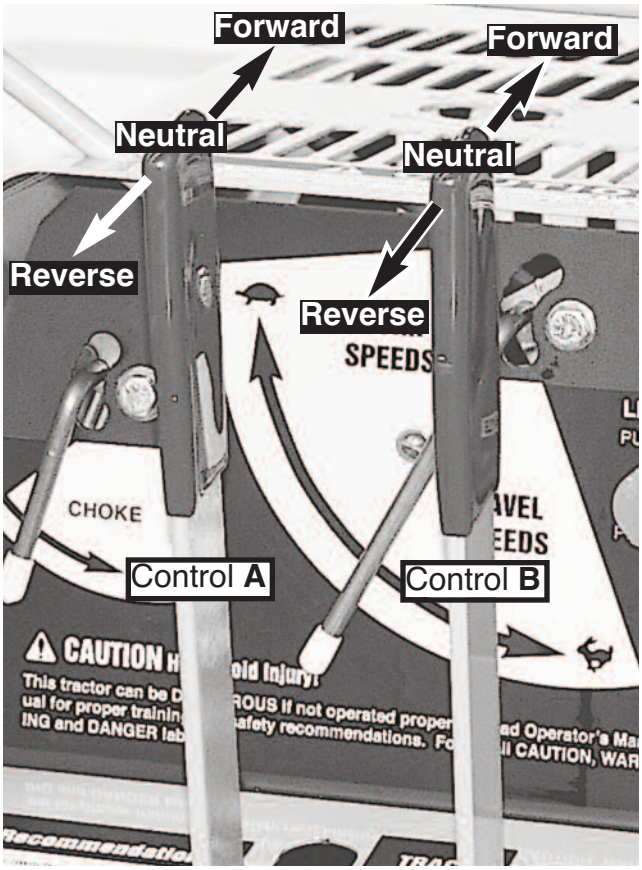


To move *straight* ahead, simultaneously push both Left Track Control (**A**) and Right Track Control (**B**) forward.

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 which ever 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 disconnect (declutch) active 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. Engage Parking Brake.
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.

CAUTION: When you park your Crawler on a slope, put blocks against tracks. **Do not** park Crawler with tracks pointed downhill, always park "cross-ways" to the hill!

STORAGE

Always store your MAGNATRAC in a garage, shed or barn. If the only option is to park outside, make sure to securely tarp the unit and park on a flat surface with the parking brake engaged.

During freezing weather, park on a hard surface to avoid freezing the Steel Tracks (if equipped) to the ground. We recomend parking on rubber track mats or using some inexpensive plywood. This will keep moisture away from the steel tracks and extend the life of them. 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.

We advise to turn off the fuel shut off valve and run until the unit stops if going to store for a long period of time. This is to ensure easy starting during the next season. Remember to turn ON the fuel when ready for work the next time!

5- FUELS & LUBRICANTS

FUELS

FUEL SPECIFICATIONS

Add fuel to fuel tank per engine manual specs. **Unleaded 86 octane or higher** is reccommended per HONDA. Verify fuel shut-off valve is in the open position.

FILLING FUEL TANK

The Fuel Tank is located underneath the hood, on the eninge.

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

Fuel Tank capacity is 6.4 U.S. qts. or 1.6 gallons.

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 (If equipped)

Use a premium quality hydraulic oil with maximum anti-wear properties, rust and oxidation treatment. We use an **AW46 Hydraulic Oil**. (ISO 46). An **ISO of 46 is good in standard temperatures. If operated at exteme hot or cold temperatures, please consult a local oil shop for an oil viscosity best suited for your conditions.**

Fill Hydraulic Oil Tank through #616 breather, on the top of the hydraulic tank, behind the operator seat. Check level by "eye check", it should be a few inches from the top...remove breather with a crescent wrench at the black nut and hand tighten once full!

Approx. 2 gallons of hydraulic fluid fills the hydraulic reservoir to the proper level (when empty & no hydraulic cylinders are attached).

GREASE

Use premium quality SAE Multi-Purpose Grease in a grease gun with a flexible "nose" to lubricate grease zerks throughout the MAGNATRACS pivot points.

STEEL TRACK CHAIN & REAR DRIVE CHAIN LUBRICATION

At a minimum, use **SAE 30 weight oil (non-detergent)** on steel track chain or drive chains. A more expensive, but cleaner option is to use a spray lubricant, such as: **non detergent aerosol Chain & Wire Rope Lubricant. We use CRC® brand, Grainger® Item #2F139.** Both of these methods are acceptable lubrication options.

STORING LUBRICANTS

Store lubricants in clean containers in an area protected from dust, moisture, etc.

6- LUBRICATION & 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

Air Cleaner(s) - Service per instructions in Engine Owner's Manual.

Engine Oil - Service per instructions in Engine Owner's Manual

Battery - Change as needed. Approximately every 3 years.

1ST USAGE

Hydraulic Oil - Attach any additional attachments first (Grapple, backhoe, rear hitch, etc.) Check level on a flat & level surface; with equipment on the ground (retract all possible cylinders), level should be approx. 5" away from the top of the tank. Add additional fluid if needed.

Engine Oil - Check enigne oil level before use to make sure oil level is at acceptable level on the dipstick. Add additonal if needed. **NOTE:** First oil change for a new Engine is at 5 hours

Fuel - Add fuel to fuel tank per engine manual specs. **Unleaded 86 octane or higher** is reccommended per HONDA. Verify fuel shut-off valve is in the open position.

EVERY TEN HOURS

Grease Fittings - Lubricate all grease fittings per location instructions in manual of each attachment you have mounted on your MAGNATRAC. Recommended grease: **Multipurpose NLGI 2 Grade Lithium Complex, ISO VG 220**.[Clean grase fittings and area around them before servicing].

Clean area around each grease fitting on Front Idler and Rear Drive Assemblies. Grease each grease fitting until you feel back pressure building. A small breakdown of how many grease fittings are on the RS1000 and various Attachments is as follows:

RS1000 with Steel Tracks:	**6**
RS1000 with Rubber Tracks:	**10**

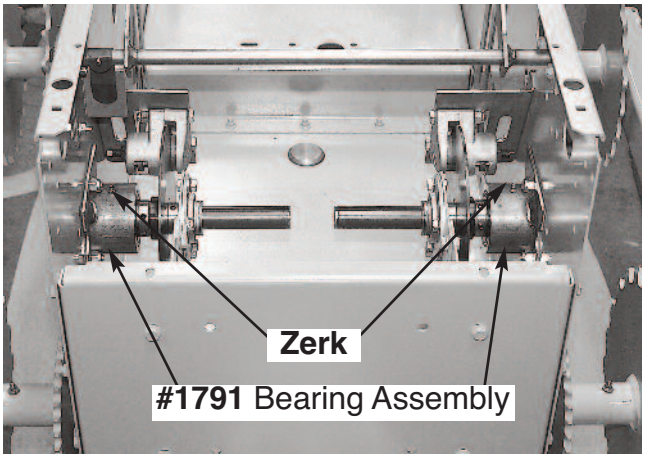
Note: 4 are located on the front idlers & rear drives and 2 are on the #1791 Rear Bearings. (shown on the next page)

For all others, please see each individual attachment for the quantity of grease fittings.

As a standard guide, there will be a grease fitting for each Axle/Pin that you see on a particular attachment. (See below).

HFH15 Front Hitch:	**2**
D1060 Backhoe:	**14**
D1060UG Backhoe:	**18**
HRH35 Rear Hitch:	**2**
Rubber Track Idlers:	**4**
#1791 Bearing Assemblies:	**2**

Lubricate the "grease fitting" in each #1791 Bearing Assembly. **NOTE:** The #1791 Bearings are the hardest working Bearings in your RS1000, never spare proper lubri cation and maintenance! See picture on the next page.



EVERY FIFTY 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.

Filters

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

Tracks and Track Sprockets

Pressure wash track system, including: Front Idler and Rear Drive Sprockets.

Track Tension

Maintain 1-3/8" overall length of #1806 Spring on each Track.
Check Service section of this Manual for complete explanation and Track Tensioning procedures.

Rear Drive Chain Tension

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

Rear Drive Chain & Steel Track Chain Lubrication

Oil the steel track chains and rear drive chains with **SAE 30 weight oil** by brushing it on evenly with a paint brush, or by spraying on a non detergent aersol lubricant, such as **Chain & Wire Rope Lubricant. We use CRC® brand, Grainger® Item #2F139. DO NOT USE GREASE!** [TIP: Drive Crawler forward approx. six feet stopping to oil the Chain every foot]. Don't forget to do both sides! Tip: wipe the chain down after oiling to keep oil spatter to a minimum.

Engine Drive Chain Tension (If equipped)

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

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 200 HOURS

Fuel Tank

Remove and drain tank of any water or sediment. Clean or replace the **in-tank** fuel filter.

Fuel Filter - Replace with new Fuel Filter at this time: Filters can be purchased through the Struck Corporation or through local engine dealers.

Engine Spark Plugs - Replace Engine Spark Plugs with spark plugs recommended in Engine Owner's Manual.

EVERY 500 HOURS

Hydraulic Oil (If equipped) - Run the RS1000 for approx. 5 minutes at idle, shut off. Drain system by angling the 90 degree fitting on the bottom right of the hydraulic oil tank. **NOTE**: Drain when fluid is warm. Block up the right front corner of Crawler a few inches to get oil to flow completely to drain opening. Refill with approx. 2 gallons of hydraulic fluid. Fill the hydraulic reservoir to the proper level. **(See PP35 Power Pack section of the attachment manual)**

7- 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 parts.

2. When you are required to block your crawler to raise it off the ground, make sure you use strong blocking materials and think out how the Crawler will safely balance on blocking. **To protect yourself and your Crawler from damage, check "Safe Blocking Diagram" on front page of this Manual!**

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 Owner's Manual. It provides complete operation and maintenance instructions for your engine. If further help is needed, contact your local engine dealer...he's listed in the telephone "Yellow Pages" under "Engines, gasoline".

STARTER

IMPORTANT: Don't operate starter switch longer than 10 seconds at a time. If engine does not start within 10 seconds, wait 60 seconds before trying to start again. After a false start, do not turn 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 not included on basic recoil start models).

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 or INTERNAL

1. 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 with 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)...best done with battery removed from crawler.

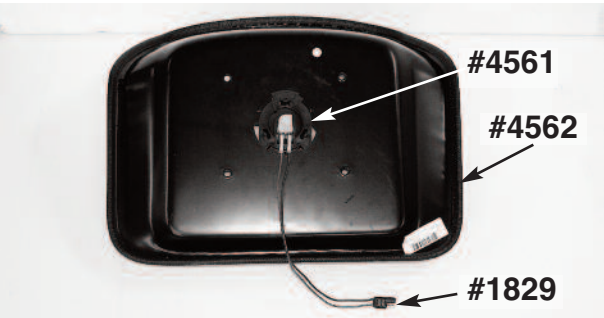
3. Flush battery and compartment with clear water.

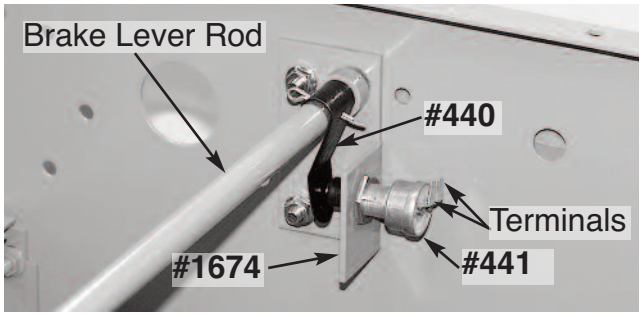
4. Check electrolyte level (if applicable). Fill each cell to bottom of filler neck with distilled water or clean, soft water (not hard water).

5. Put petroleum jelly on terminals. Maintain protective cover on "positive" (+) terminal of battery.

SAFETY INTERLOCK SWITCHES

Two Switches, one on underside of the #4562 Seat and the other one on the Brake Lever Rod inside Crawler.





These switches are used in the Crawler's electrical system as safety devices. They detect if the operator is properly seated, and that the Parking Brake is engaged before the Crawler can start.

To check either the #4561 Seat Switch or the #441 Parking Brake Switch, you must remove the electrical connectors attached to each switch's terminals and connect a continuity tester to its terminals (a simple flashlight type continuity tester would be fine).

SEAT SWITCH TEST

Remove #4562 Seat from its #1674 Seat Mounting Bracket. Then remove the electrical connectors attached to each of the #4561 Seat Switch's two terminals.

1. By pushing down on the center of the seat the Seat Switch should "close". A continuity tester, attached to the two terminals of the Switch, should have its light **ON** at his time!

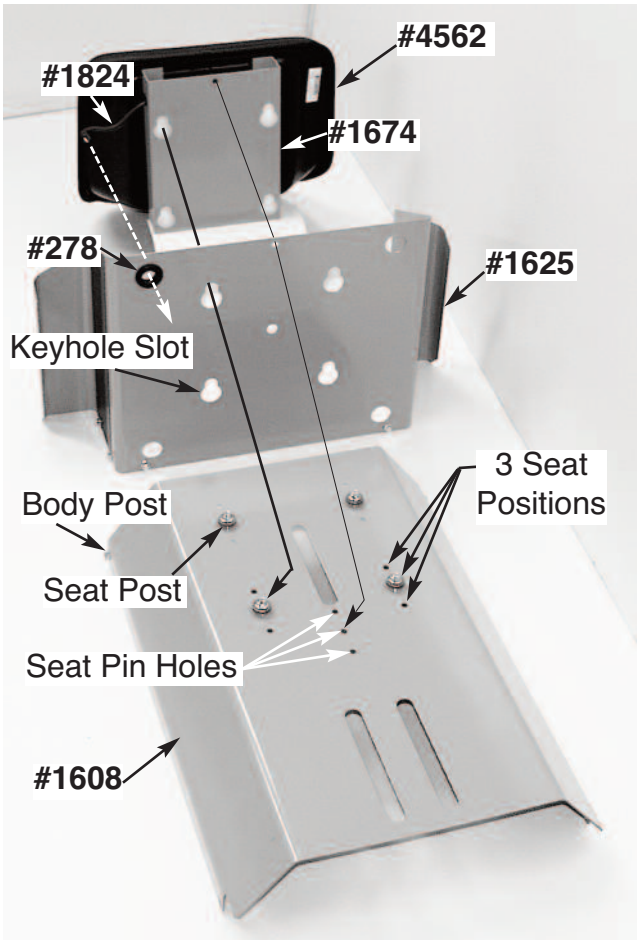
2. With pressure removed from the seat, the Switch should "open"...the light should be **OFF!**

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. Remount seat to its Mounting Bracket.

Reassemble the Seat Assembly to your Crawler and reconnect it's Plug.

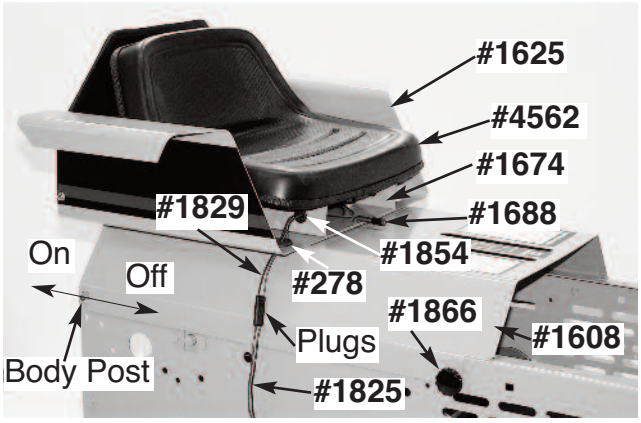
At this time following recommended safe starting procedures, start the Engine and check Seat Switch response...readjust if necessary.

SEAT & REAR COVER ASSEMBLY



Your Seat & Rear Cover Assembly is made up of 3 main components: The #1674 Mounting Bracket (with attached #4562 Seat) and #1625 Arm Rests mounted to #1608 Rear Cover. They are held together with three “keyhole” slots” over four “posts”. The “posts” can be located in three different positions to satisfy the operator’s seating comfort.

When all components are nested together, they will share a common “seat pin hole” that will lock the assembly together with a #1688 Seat Pin.



There are **two methods** to remove the Seat Assembly. One is by removing the Assembly as a complete unit (It weighs about 45 lbs.). The second method takes longer but allows you to disassemble the unit into three components that weigh about 15 lbs. each. Both methods are explained below...the choice is yours.

METHOD 1 - Seat Removal

Fully open the Hood by loosening a few turns of the two #1866 “threaded” Knobs (located at lower rear of Hood) and then rotating fully forward. Disconnect the #1824 & 1825 Wires at their mating Plug. Remove the two #1866 “threaded” Knobs at lower front edge of #1608 Rear Cover. Slide the complete Seat Assembly rearward and remove.

Seat Assembly:

To replace your Seat Assembly “reverse” the steps above.

1) Upon completion of reassembly, **make sure** that #1824 Wire & Plug pass through #1854 & #278 Grommets and connects to mating #1825 Wire & Plug.

2) Make sure “front top edge” of #1608 Cover rests on top of “lip” that protrudes rearward out of lower section of #1618 Dash.

3) Close Hood and secure it and Cover Assembly with #1866 Knobs.

METHOD 2 - Seat Removal

Fully open the Hood by loosening a few turns the two #1866 “threaded” Knobs (located at lower rear of Hood). Rotate Hood fully forward until Chain holds it. Disconnect the #1824 & 1825 Wires at mating Plug. Draw #1824 Wire & Plug out of #278 Grommet. Remove #1688 Seat Pin and slide “forward” the #1674 Mounting Bracket with #4562 Seat and lift up to remove. Take #1625 Arm Rests, slide forward and lift up to remove. Remove the two #1866 “threaded” Knobs on front lower edges of #1608 Cover. Slide the Cover rearward and remove.

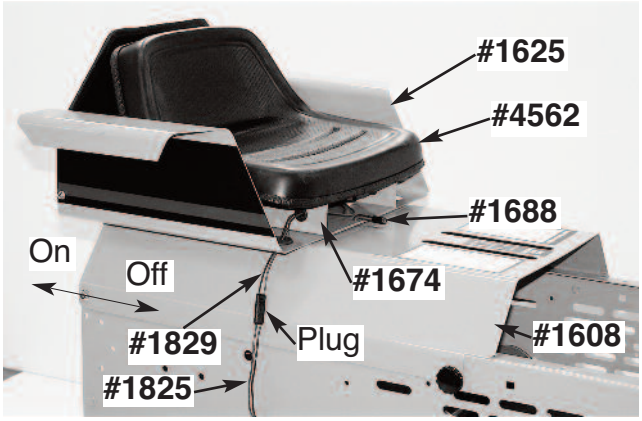
Seat Assembly:

To replace your Seat Assembly “reverse” the steps above.

1) Upon completion of reassembly, **make sure** that #1824 Wire & Plug pass through #1854 & #278 Grommets and connect to mating #1825 Wire & Plug.

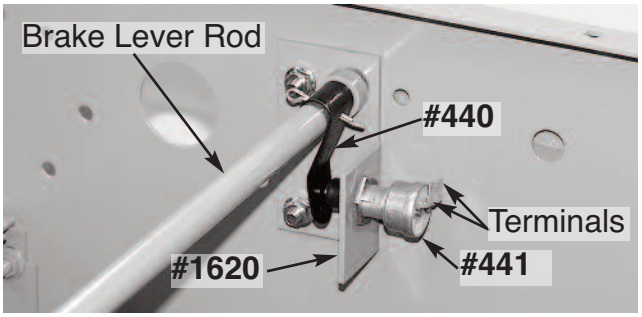
2) Make sure “front top edge” of #1608 Cover rests on top of “lip” that protrudes rearward out of lower section of #1618 Dash.

3) Close Hood and secure it and Cover Assembly with #1866 Knobs.



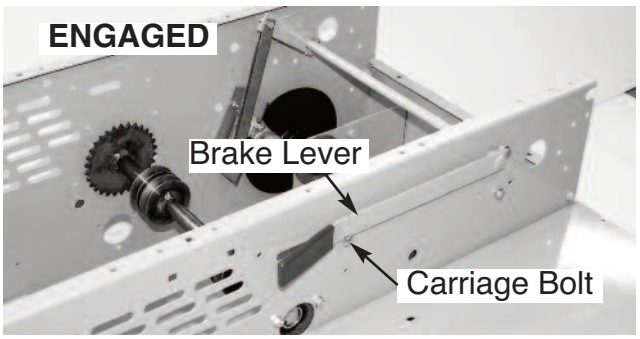
PARKING BRAKE SWITCH TEST

Begin your procedure by parking your Crawler on an open, firm, level surface. Shut off engine and engage Parking Brake. Open Hood and swing fully forward. Remove #1688 Seat Pin. Remove #4562 Seat & #1674 Mounting Bracket, #1625 Arm Rests, and #1608 Rear Cover. **NOTE:** Be sure to disconnect the "mating" #1829 and #1825 Seat Wires at their common Plug.

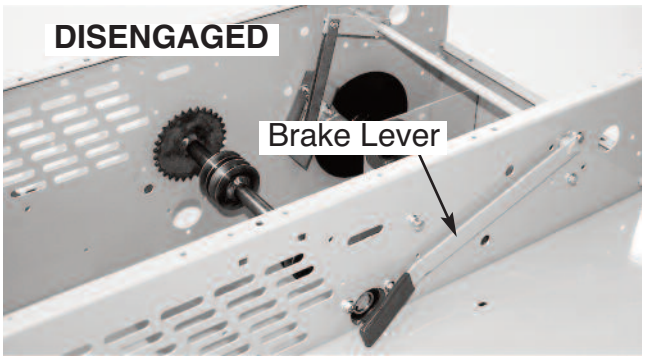


Disengage Parking Brake. Remove the two electrical wire plugs from their #441 Parking Brake Switch and connect a continuity tester to its two terminals.

(1) With "plunger" of #441 Parking Brake Switch not depressed, the light of the continuity tester should be **OFF**. With "plunger" of Parking Brake Switch fully depressed, the light of the continuity tester should be **ON.**



(2) When the Parking Brake Lever is pulled "upward" and looped "up and over" the Carriage Bolt provided into an "engaged" position, Parking 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) When the Parking Brake Lever is released and put into it's "disengaged" mode (Lever should be free to touch Left Fender) the Parking Switch should be "open" (the Leaf Spring would have rotated back and away). Continuity light should now be **OFF!**

If both conditions of procedure (1) (above) are not met, replace Parking Brake Switch. If both conditions of procedure (1) are met, but the conditions of procedure (2) & (3) are not met, you must adjust the "horizontal location" of the #441 Switch in its #1620 Bracket.

The #441 Parking Brake Switch is secured "front to rear" in it's #1620 Bracket with hex nuts.

Adjust Switch's location "front to rear" to meet requirements (1), (2) and (3) (above) by relocating its two hex nuts.

When adjustment is completed, tighten Switch's hex nuts...terminals on Switch should point straight up. Remove continuity tester and replace electrical plug on terminals of Switch. Replace Seat & Mounting Bracket, Arm Rest and Rear Cover Assembly...check that it is positively latched with #1688 Seat Pin! Close Hood and secure it and Rear Cover with #1866 threaded Knobs.

NOTE: Be sure to reconnect "mating" #1829 & 1825 Seat Wires at their common Plug.

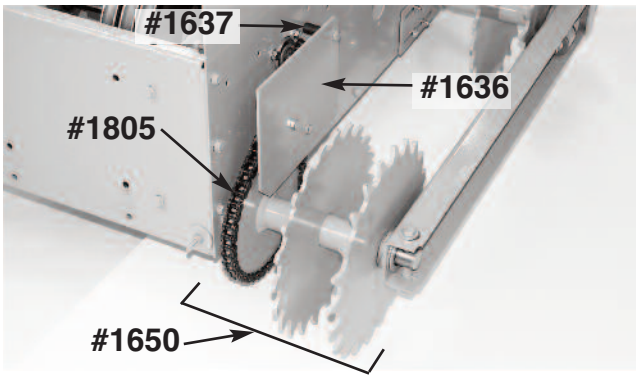
At this time, following recommended safe starting procedures, start the Engine and check Parking Brake's Switch setting...readjust if necessary.

REAR DRIVE CHAIN TENSIONING

The #1805 Rear Drive Chains (#50 Roller Chain) are tightened by increasing the center distance between the **movable** #2065 Rear Axle and the **fixed** #1991 Sprocket & Shafts.

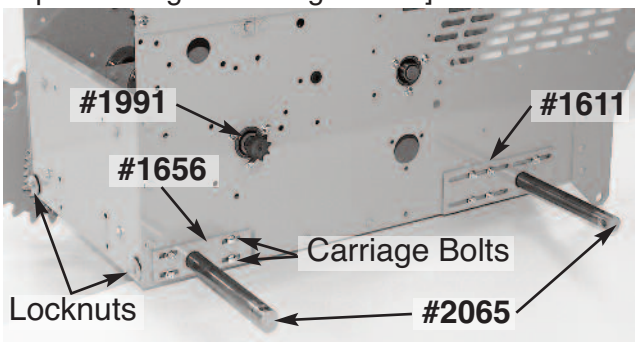
NOTE: If you have the Rubber Track System design, the sprockets will look differrent from the ones shown in the next few pages, but the rear drive tensioning procedure will still be the same.

Begin your Drive Chain Tensioning procedure by driving Crawler onto a firm, level surface. Shut off Engine and dismount...do not "engage" Parking 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].

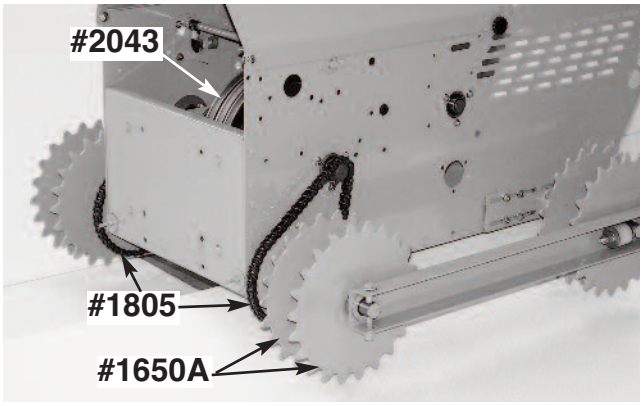


Open Hood and swing fully forward; remove #1688 Seat Pin. Remove Seat & Bracket, Arm Rests and Rear Cover. Remove the #1636 Right & Left Chain Guards from left and right sides of Crawler.

Do a thorough washing and cleaning of the #1805 Chains and mating Sprockets with a powerwasher or a stiff brush. The Sprockets and their mating Drive Chains must be clean to give proper chain adjustment. [Remove the Drive Chains and soak in penetrating oil overnight if stiff].



From "outside" the Crawler's body, loosen (but do not remove) the five nuts on each (Left & Right) #1611 Front Axle Plate. Similarly loosen, but do

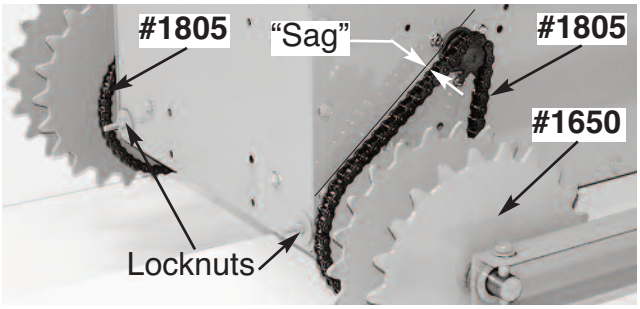


not remove the four nuts on each (Left & Right) #1656 Rear Axle Plate. **NOTE:** loosen the Carriage Bolt "nuts" from inside of body, all others from outside.

On each side, from inside body, rotate each #2043 Pulley Assembly. Check that each #1850 Drive Chain is moving smoothly and that it is free of debris.

[TIP: It will ease rotating the Pulley Assemblies (above) if you follow the procedure for "Removal - Steering Clutch Belts" in Service section of this Manual. Replace Belts per "Installation - Steering Clutch Belts" in Service section of this Manual after you have completed your chain tensioning].

To tighten the Drive Chains, start rotating **clockwise** the Locknut located on left and right lower rear of Body. To draw Rear Axle back evenly, turn

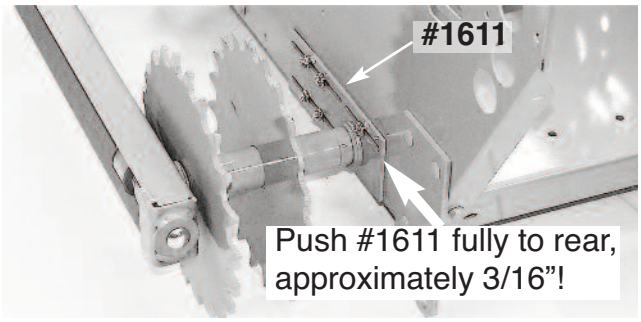


one Locknut 1/4 turn, then go to the other side and tighten the other Locknut 1/4 turn...use this back and forth procedure until both #1805 Drive Chains are reasonably tight...not "bow-string" tight, but about a 1/4" of "sag" in the slack strand when the balance of the chain is taught.

NOTE: While doing the above procedure, make sure you rotate each #1650 Rear Track Sprocket

Assembly (left side & right of body) 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 (#1805 Chain) 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 four Bolts holding the #1656 Rear Plates on left & right side of Body. Thoroughly lubricate your Drive Chains at this time.

Replace the #1636 Right & Left Chain Guards using original Cap Screws, #1637 Spacers, and Nuts . Replace Seat Assembly, Arm Rests and Rear Cover and close Hood...secure all with #1866 “threaded” Knobs.

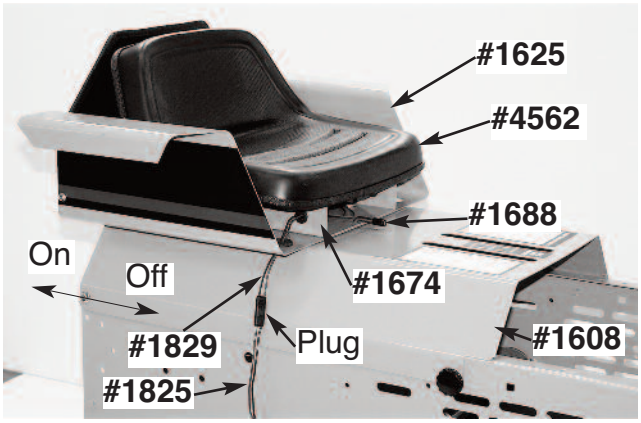


Using a “flat-nosed” punch and hammer, push the #1611 Front Axle Plate (located on both sides of Body) rearward till it hits a solid stop. **NOTE:** in the work done in steps above, this Plate may have already worked its way rearward. To check, push Plate forward from the rear, then push it back the required 3/16” distance.

NOTE: Though this is a simple adjustment, it’s proper execution now will result in extremely stable Track performance in the future!

If you have removed your Tracks, reassemble them on your crawler at this time using the “Track Replacement” instructions in Service section of this manual...make sure to properly tension them.

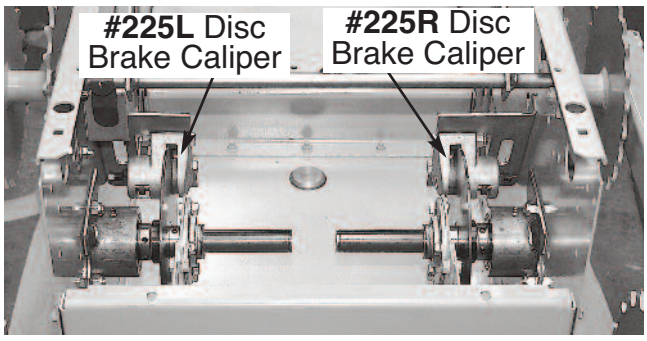
PARKING BRAKE ADJUSTMENT

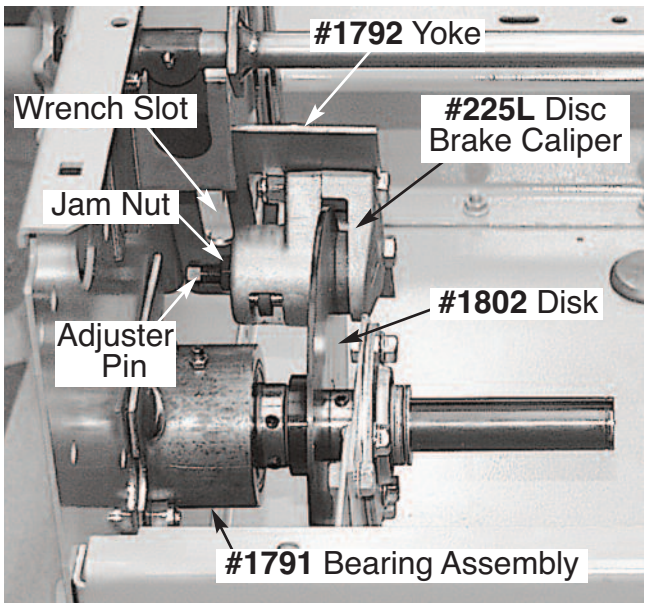


Begin your procedure by parking your Crawler on an open, firm, level surface. Shut off Engine, engage your Parking Brake Lever and dismount. Raise Hood and rotate it fully forward, then remove the #1688 Seat Pin. Remove the #4562 Seat & #1674 Mounting Bracket, #1625 Arm Rests, and #1608 Rear Cover. **NOTE:** Disconnect the “mating” #1829 and #1825 Seat Wires at their common Plug.

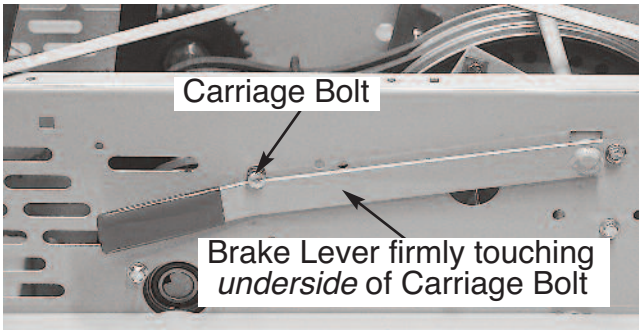
Put the Parking Brake Lever in the disengaged position...end of Lever should be free to touch top of Left Fender.

Loosen Jam Nut on the #225L Left & #225R Right Disc Brake Calipers a few turns to free their Adjuster Pins for rotation (see two Photos below).



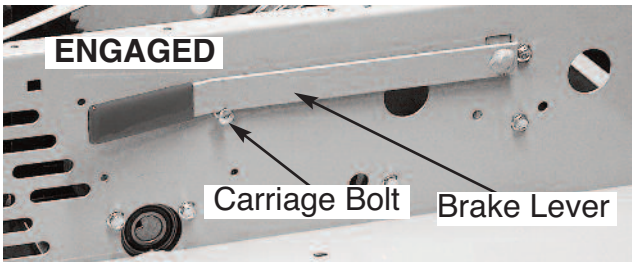


With Brake Lever firmly touching *underside* of Carriage Bolt, set *each* Brake’s tension by rotating it’s Adjuster Pin *clockwise* until the the Pulleys on each side are not able to be *easily* rotated by hand.



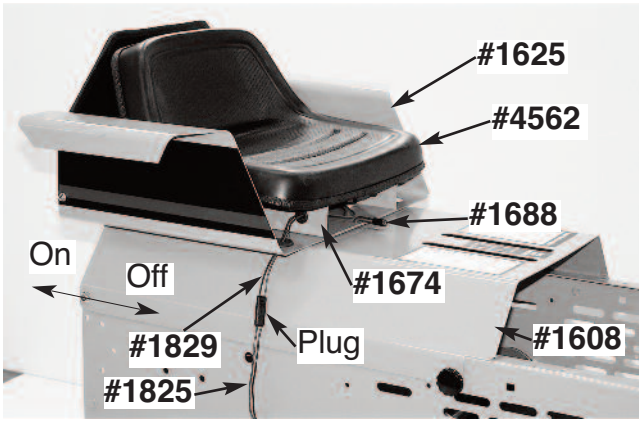
Tighten each of these Brake Assemblies by holding their Adjuster Pin "motionless" with one wrench while tightening their respective Jam Nut securely... a Wrench Slot is provided in each #1792 Yoke (see Photo previous page, lower right).

Engage Parking Brake by pulling up on Brake Lever and draw it up, over, and behind the head of the Carriage Bolt stop.



NOTE: In the process of making Brake adjustments, try to keep *both* Brakes synchronized with each other for even braking! CHECK WITH FACTORY IF YOU HAVE ANY QUESTIONS REGARDING YOUR BRAKE ADJUSTMENTS!

Close Hood, then Replace Seat Assembly, Arm Rests and Rear Cover...secure all with #1866 "threaded" Knobs. **Reconnect** mating #1829 & 1825 Plugs.



TRACK CLUTCH BELTS

The following segment is divided into three sections:

1) **Belt Removal.**
2) **Belt Installation.**
3) **Belt Adjustment.**

It's suggested that you read all three sections that follow to gain an overview before you begin any work. You can then return to the sections that apply to the job you're doing.

NOTE: In the following photos many are "cutaways" of an actual crawler which were created to best illustrate the points covered in the following instructions. Though the components are actual crawler parts, many associated parts are missing.

SPECIAL NOTE: Though all six Track Clutch Belts are identical and carry the same part number (#2078), for simplicity they are designated in the following drawings and descriptions as Belts #1 through #6. In a similar manner, the Pulleys have their own part numbers (#2043 - 14" dia. and #2041B - 3" dia.), but in the following instructions they will be designated as Pulleys AA through LL

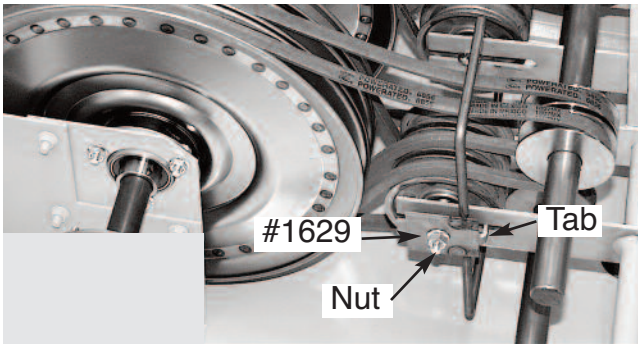
Begin your procedure by parking your Crawler on an open, firm, level surface. Shut off Engine, engage your Parking Brake Lever and dismount.

Raise Hood and rotate it fully forward; remove the #1688 Seat Pin. Remove the #933A Seat & #1674 Mounting Bracket, #1625 Arm Rests, and #1608 Rear Cover. **NOTE:** Be sure to disconnect the "mating" #1824 and #1825 Seat Wires at their common Plug. (see Photo at left)

Pull the #910 Hitch Pins and remove both #1638 Spring Rod assemblies...leave Springs, and Collars in place on each Rod.

Remove the 3/8" nut securing each #1629 Belt Release. Remove both Belt Releases.

CLUTCH BELT REMOVAL



Remove Belts #3 and #4 from their mating CC & JJ and DD & II Pulleys by slipping them first off their larger II & JJ Pulleys (14" diameter) and then off their smaller CC & DD Pulleys (3" diameter). [Belts should be moved inwardly toward each other and remain at center of Crawler].

HINT #1: In the removal of Belts #3 & #4 (above) you will gain extra "slack" in each Belt by pushing forward on the Control Handles as you slide the Belts off their respective Pulleys.

HINT #2: In the removal of Belts #2, #5, #1 and #6 (below), you will gain extra "slack" in the Belts by pulling rearward on the Control Handles as you slide the Belts off their respective Pulleys!

In a similar manner as above, move Belts #2 and #5 from their mating BB & KK and EE & HH Pulleys and locate them in center of Crawler.

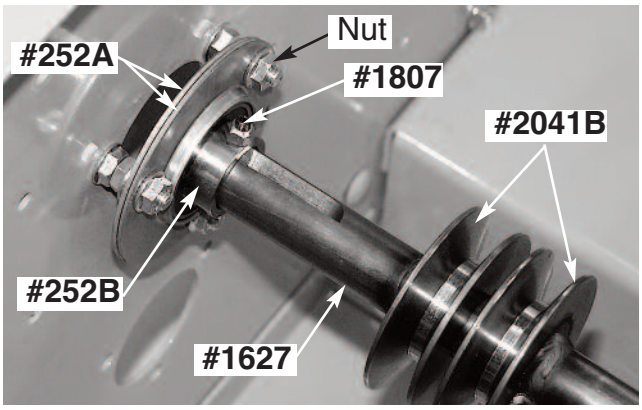
[**Tip:** Slip Belt #2 off its BB Pulley first and then work it off its KK Pulley and then the JJ Pulley. Similarly, slip Belt #5 off its EE Pulley first and then work it off its HH Pulley and then the II Pulley].

Lastly, move Belts #1 and #6 from their mating AA & LL and FF & GG Pulleys and locate them in center of Crawler. [**TIP:** Slip Belt #1 off AA Pulley and around BB Pulley. Slip Belt #1 off LL Pulley and around KK Pulley. Slip Belt #1 off BB Pulley. Now work #1 Belt off KK Pulley and then over and off JJ Pulley.

In a similar procedure, slip Belt #6 off FF Pulley and around EE Pulley. Slip Belt #6 off GG Pulley and around HH Pulley. Slip Belt #6 off EE Pulley. Now work #6 Belt off HH Pulley and then over and off II Pulley].

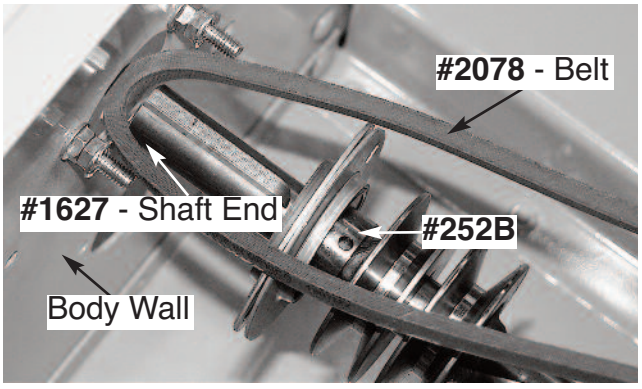
CREATING BELT SLOT

The following steps cover the moving of the #252B Bearing (located on the top center inside Wall of Crawler) "inwardly" on the #1627 Upper Power Shaft to create a "slot" for the belts to move through, to be removed or new ones installed. **NOTE:** Though not shown, these instructions also apply to the likewise moving of the #252B Bearing "inwardly" on the #1643 Lower Power Shaft.



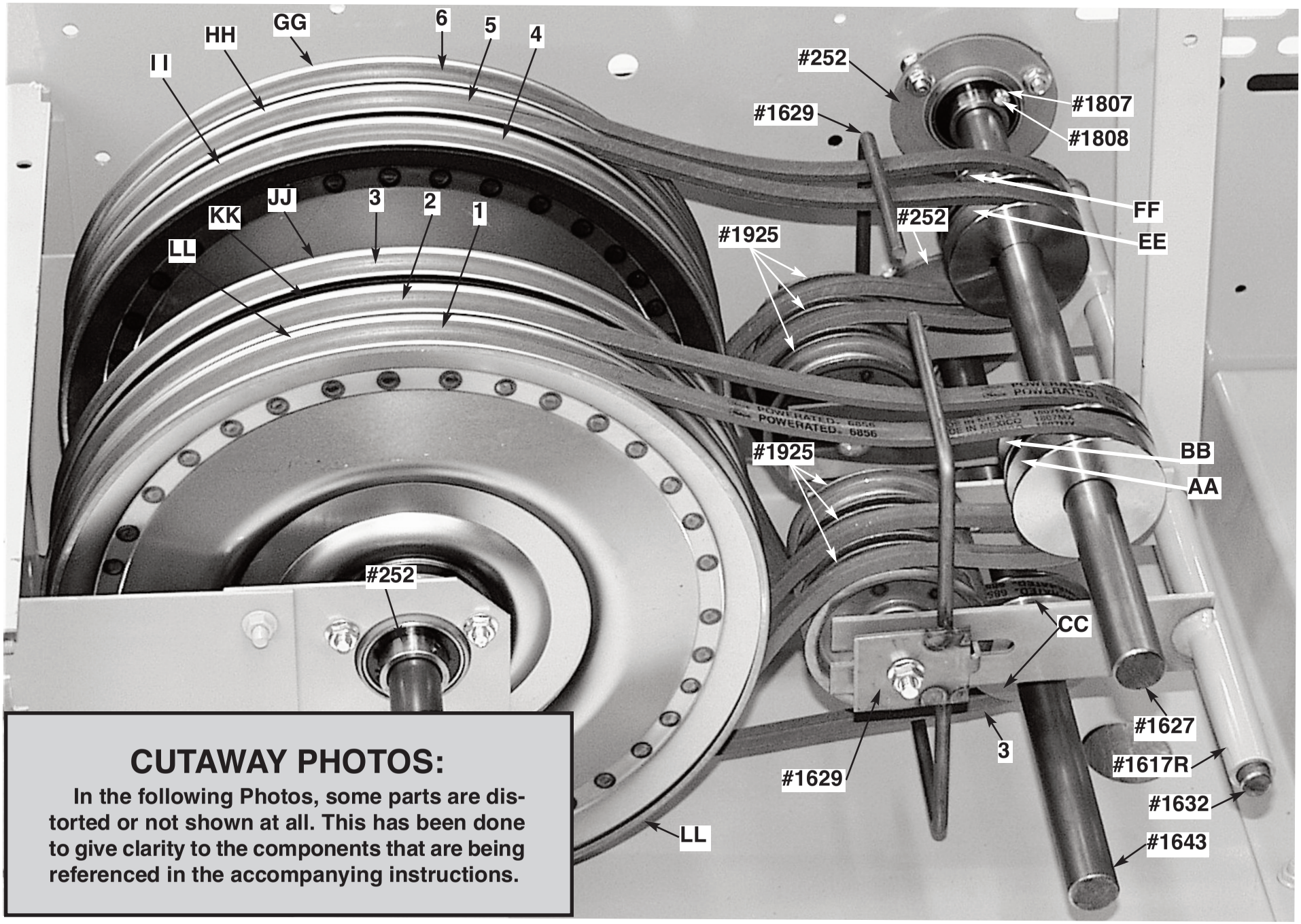
Using the proper sized "Allen Wrench" to hold the #1807 Set Screw, use the Allen Wrench to completely remove this "set screw & nut" assembly...save for reinstallation.

Remove the three nuts securing the pair of #252A Shells holding the #252B Bearing. Slide this Bearing & Shells assembly "inwardly" to reveal a slot between the "end" of the #1627 Shaft and the Body Wall (Photo below).
CAUTION: Do Not put strong forces on the now "unsupported" left ends of the #1627 Upper &



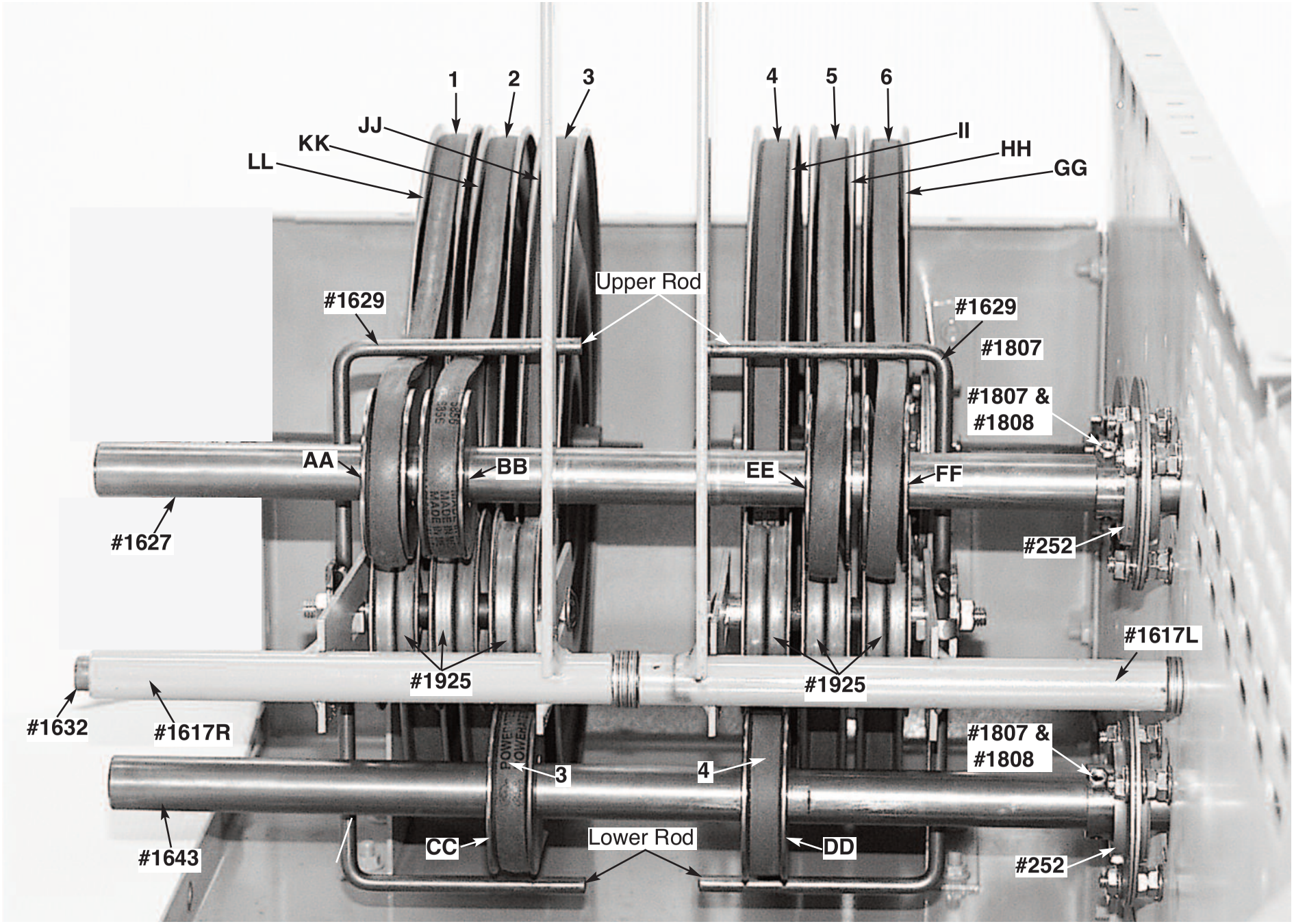
Lower Power Shafts! Shafts were factory aligned when the Crawler was manufactured to allow easy remounting of the Bearings that you have temporarily removed to create a "slot" on each Shaft end.

At this time you can move to your left, the Belts you wish to remove from the system. Slip them through their respective "slot" exposed when you



CUTAWAY PHOTOS:

In the following Photos, some parts are distorted or not shown at all. This has been done to give clarity to the components that are being referenced in the accompanying instructions.


1
2
3
4
5
6
JJ
KK
LL
II
HH
GG
Upper Rod
#1629
#1629
#1807
#1807 &
#1808
AA
BB
EE
FF
#1627
#252
#1617L
#1925
#1925
#1632
#1617R
#1807 &
#1808
3
4
#1643
CC
Lower Rod
DD
#252

moved “inwardly” the #252B Bearing Assemblies on the #1627 Upper & #1643 Lower Power Shafts.

CLUTCH BELT INSTALLATION

EXPLANATION: The clutch belts used in your RS1000 are special. They are the **green power-rated belts** that can be found at most local auto stores or you can purchase them directly from us. Do not confuse them with inexpensive, fractional horsepower consumer Belts.

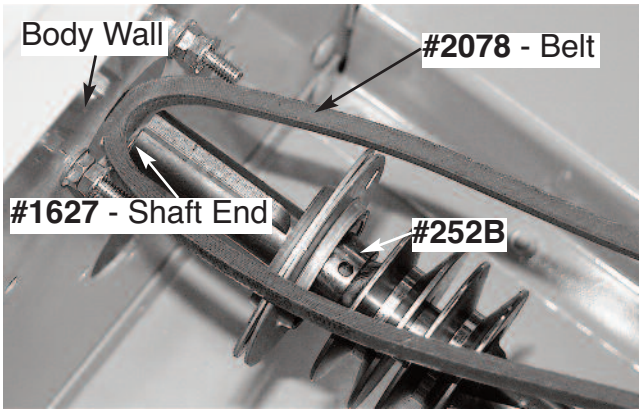
Your Crawler Belts are made for difficult, high horsepower, shock load, industrial applications. Formulated with industrial grade rubber compounds, they feature a Kevlar (bulletproof plastic) cabled core. Molded around each Belt is a special fabric jacket that forms the Belt’s “clutch face”.

In an hour or so of operation this fabric jacket gains a smooth “glaze” and forms the clutch face necessary for smooth Track Clutch engagement.

CAUTION: NEVER, NEVER, use fractional horsepower Belts in your Crawler. They are made with light weight, “sticky compounds” that will not form a proper glaze. This means you will not have the SAFE clutch action mandatory for SAFE Crawler control! In addition, fractional horsepower Belts will break during shock loads and will leave your clutch system out of control!

NOTE: During the first hour or so of “breaking-in” a new set of Belts, you potentially may hear a squealing sound when turning or they may be “jumpy.” Do not be alarmed. This is characteristic of a new set of Belts until they have become permanently “glazed” and gain proper smooth clutch action.

Slip the Track Clutch Belts you are installing

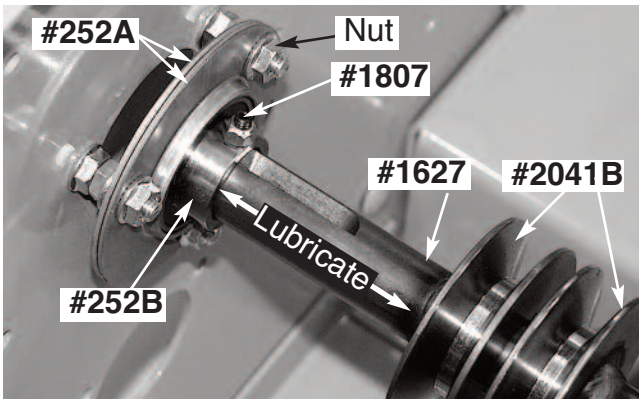


through the “slot” you created on the “end” of the appropriate #1627 Upper and #1643 Lower Power Shaft. [Belts #1, #2, #5 & #6 on the Upper Power Shaft; Belts #3 & #4 on the Lower Power Shaft]. Slide them to the center of your Crawler.

SPECIAL NOTE: It’s mandatory that you keep “left ends” of the Upper & Lower Power Shafts properly lubricated. A film of grease or anti-sieze must totally cover the Shaft ends from the #2041B Pulley to the “left end” of each Shaft! As you grease the Shaft, work the #252B Bearing back and forth to make sure it’s completely coated! To ignore this procedure may make it impossible to slide the Bearing to change Belts in the future, which would require serious drive train rebuilding to correct the problem (see Photo below).

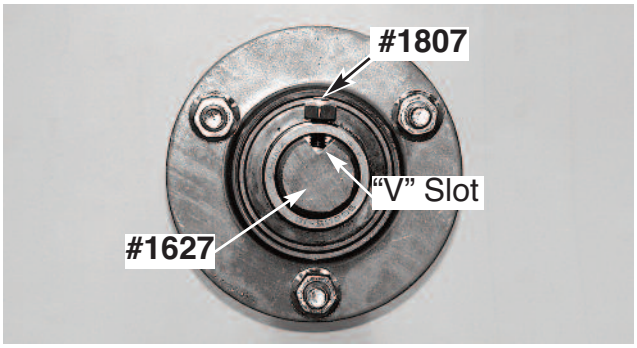
With the (above) lubrication completed, slide the Bearing & Shells assembly on left end of each Upper & Lower Power Shaft back into position on the “threaded studs” protruding from crawler wall. Replace original nuts over Bearing threaded studs and tighten.

Take original #1807 Set Screw and thread it into



its original threaded hole of bearing...rotate the #1627 (or #1643) Shaft within the bearing to align the end of the #1807 Set Screw with its mating “V” slot in shaft’s end.

Use your Allen Wrench to tighten the Set Screw



...make sure it’s end hits the “V” slot “dead center”. (Use this procedure for **both** the Upper &

Lower Power Shafts). When you are done the bearing end of shaft should look like photo (previous page).

Arrange the Belts and note that the two Belts on the Lower Power Shaft will be Belts #3 & #4 and will remain in the center (to be installed last). Locate Belts #1 & #2 (on Upper Power Shaft) just to the right of the #3 Belt. Locate the remaining Belts #5 & #6 (on Upper Power Shaft) just to the left of the #4 Belt.

> **NOTE:** No single Belt can ever be around both the Upper and Lower Power Shafts at any one time!

Slip rearward end of Belt #1 first over JJ Pulley and then around KK Pulley. Now slip forward end of Belt #1 over BB Pulley and then around AA Pulley. Lastly, slip rearward end of Belt #1 around LL Pulley. [**TIP:** Pulling back on Track Clutch Control Handles during this and following procedures will give Belts more slack and ease installation].

> In a method similar to step above, slip rearward end of Belt #6 first over II Pulley and then around HH Pulley. Now slip for ward end of Belt #6 over EE Pulley and then around FF Pulley. Lastly, slip rear ward end of Belt #6 around GG Pulley.

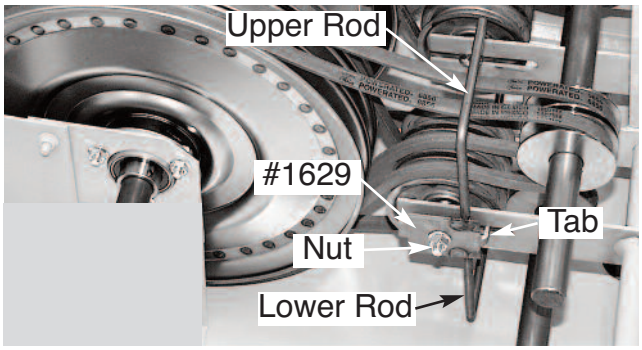
Slip rearward end of Belt #2 first over JJ Pulley and then around KK Pulley. Now slip forward end of Belt #2 around BB Pulley.

> In a method similar to step above, slip rearward end of Belt #5 first over II Pulley and then around HH Pulley. Now slip for ward end of Belt #5 around EE Pulley.

Slip forward end of Belt #3 around CC Pulley and then slip rearward end of Belt #3 around JJ Pulley. [TIP: Pushing forward on Track Clutch Control Handles during this step and the next, will give Belts more slack and ease installation].

> In a method similar to step above, first slip forward end of Belt #4 around DD Pulley and then slip rearward end of Belt #4 around II Pulley.

At this point, each Belt should be in place and around its respective "pair" of Pulleys. Belts #1, #2, #5, and #6 should be resting on "top" of their respective #1925 Flat Idler Pulleys. Belts #3 and #4 should rest "below" their respective #1925 Flat Idler Pulleys. Check photos and make sure each Belt follows its proper path from Pulley to Pulley and that it rests against (and between the raised



"flanges") of its respective #1925 Idler Pulley.

Replace both #1629 Belt Releases using original nuts to secure. **NOTE:** "TAB" goes forward on both sides.

Make sure Belt Release's Lower and Upper Rods are always on the "outside" of the Belts ...**NEVER** inside!

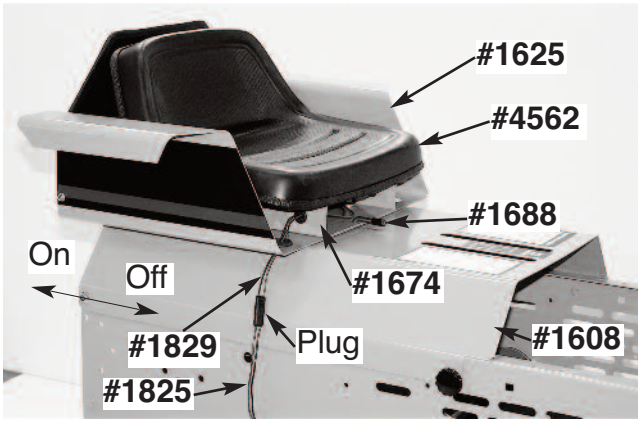
Belt Release's Upper Rods should be on **top** and **over** the outside face of its pair of Belts (#1 & #2 on the right; #5 & #6 on the left).

Belt Release's Lower Rods should be **below** and **under** the outside face of it's Belts (#3 on the right; #4 on the left).

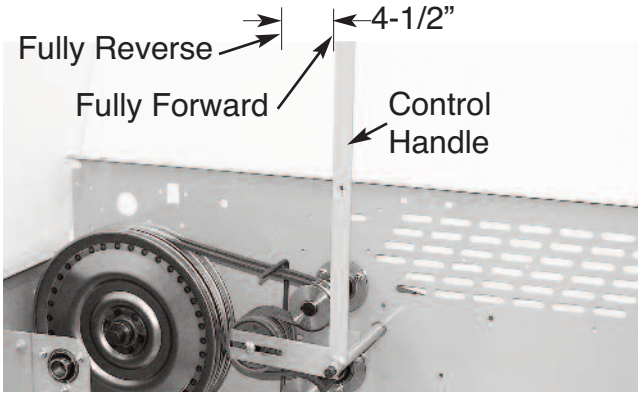
Replace #1638 Spring Rods to the #1617 & #1632 Left & Right Clutch Handle Assemblies. Secure in place with #910 Hitch Pins.

CLUTCH BELT ADJUSTMENT

Your Track Clutch Belts are adjusted as two "matched sets" of three belts each. One matched set (Belts #1, #2 and #3) for the Right Track and the other matched set (Belts #6, #5 and #4) for the Left Track.

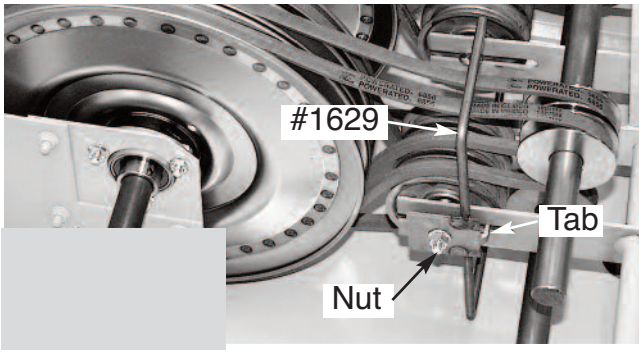


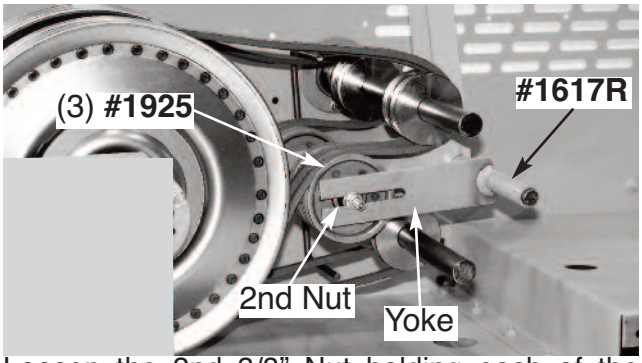
Begin your procedure by parking your Crawler on an open, firm, level surface. Shut off Engine, engage your Parking Brake Lever and dismount. Raise Hood, fully rotate it forward, remove #1688 Seat Pin. Then remove the #4562 Seat & #1674 Mounting Bracket, #1625 Arm Rests, and #1608 Rear Cover. **NOTE:** Be sure to disconnect the "mating" #1829 and #1825 Seat Wires at their common Plug.



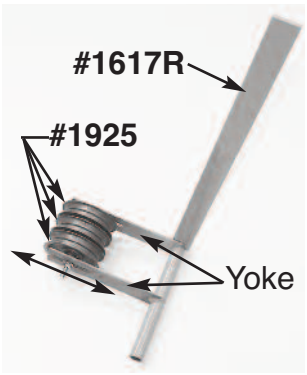
Determine if your Belts are in proper adjustment by measuring the distance of travel (forward to reverse) of each Control Handle. They should travel approximately 4-1/2" when measured at the "furthest end" of their Control Handles. If it is OK, close up your Crawler; **Don't forget** to reconnect #1824 & 1825 Wires & Plugs!

If not, follow the procedure below:
Remove the 3/8" Nut securing each #1629 Belt Release...remove both Belt Releases.

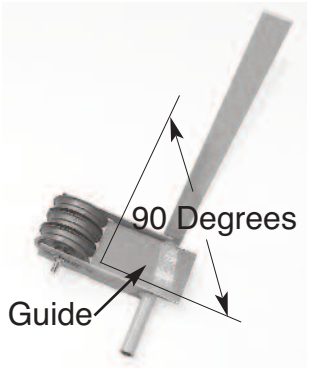




Loosen the 2nd 3/8" Nut holding each of the #1925 three Idler Pulley assemblies in place on their respective #1617R & 1617L Right & Left Control Handle Assemblies. Loosen, so each Pulley Assembly (containing three #1925 Idler Pulleys each) can slide forward and rearward in its respective Yoke.

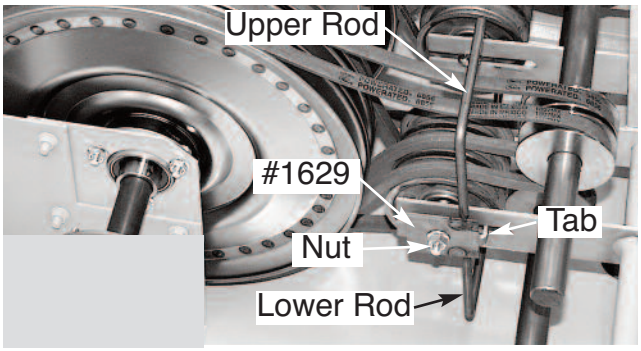


Position each Pulley Assembly (forward or rearward) such that it's respective Control Handle can "rotate" a total distance of 4-1/2" (when measured at the "furthest end" of Control Handle). Complete this adjustment for both Right and Left Pulley Assemblies. When satisfied with adjustment of both Pulley Assemblies, tighten the Locknut you loosened above.



NOTE: as you tighten the (above) Locknuts you must keep the Pulley Assemblies at a 90 degree angle to the Yokes in each Control Handle assembly. Using a "homemade" sheet of metal, wood, etc. (approximately 3-1/4" x 6") as a "guide" is a big help in holding this angle!

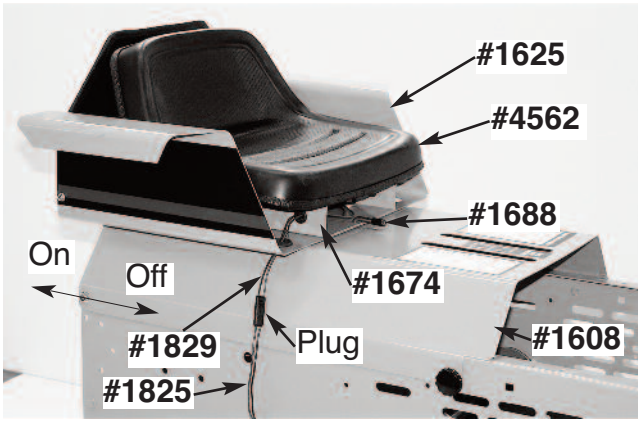
Replace both #1629 Belt Releases and secure each with original Locknuts. **NOTE:** Assemble such that “Tab” on both Belt Releases is “forward” of their Locknuts!.



Make sure Belt Release’s Lower and Upper Rods are always on the “outside” of the Belts ...**NEVER** inside! Belt Release’s Upper Rods should be on **top** and **over** the outside face of its pair of Belts (#1 & #2 on the right; #5 & #6 on the left).
Belt Release’s Lower Rods should be **below** and **under** the outside face of it’s Belts (#3 on the right; #4 on the left).

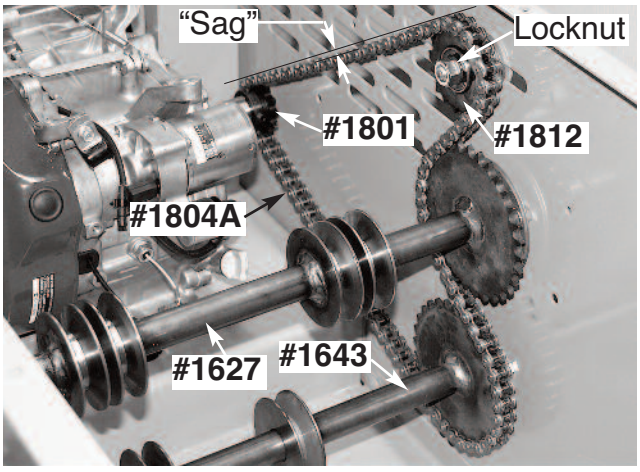
At this time “close-up” your Crawler following instructions for Seat & Rear Cover Assembly section (below). **Don’t forget** to reconnect #1829 & 1825 Plugs!

ENGINE DRIVE CHAIN (if equipped)



Begin your procedure by parking your Crawler on an open, firm, level surface. Shut off Engine, engage your Parking Brake Lever and dismount.

Raise Hood and rotate it fully forward, remove the #1688 Seat Pin. Then remove the #4562 Seat & #1674 Mounting Bracket, #1625 Arm Rests, and #1608 Rear Cover. **NOTE:** Be sure to disconnect the "mating" #1829 and #1825 Seat Wires at their common Plug.

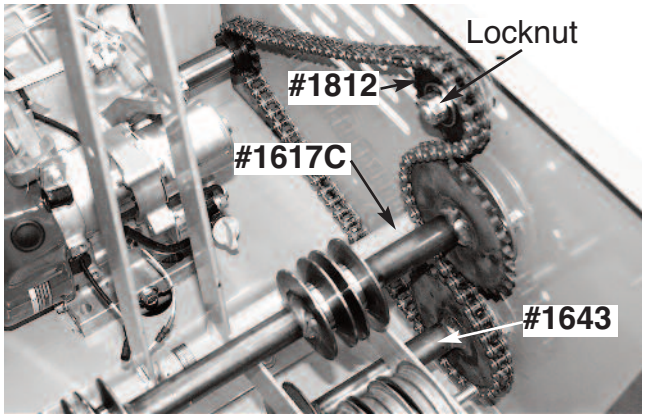


Check your #1804A Engine Drive Chain. Pull up on the recoil starter rope to "tension" the Chain and create slack (sag) in the Chain portion going from #1801 Engine Sprocket to #1812 Idler Sprocket.

This "sag" should be approximately 1/4" to 1/2". Though quieter operation results from a looser Chain, it does present the rare chance for the Chain to jump off it's sprockets.

CHAIN ADJUSTMENT

To **loosen** or **tighten** the Chain, loosen the Locknut securing the #1812 Idler Sprocket and slide the Idler Sprocket assembly **forward** for Chain loosening, and **rearward** for tightening.
NOTE: When tightening the Idler in position, hold the Locknut with one wrench, but "tighten" it with a second wrench on the bolt's head outside the Crawler's Body...this technique helps to keep the Idler Assembly from "creeping out of position" as you "securely" tighten it's bolt.



CHAIN REPLACEMENT

Loosen the Locknut securing the #1812 Idler Sprocket and slide this assembly forward. "Work" the now loose Chain around so the Connector Link is convenient to work on. Remove the Chain Connector Clip and remove the Connector from the Chain. Remove the Chain.

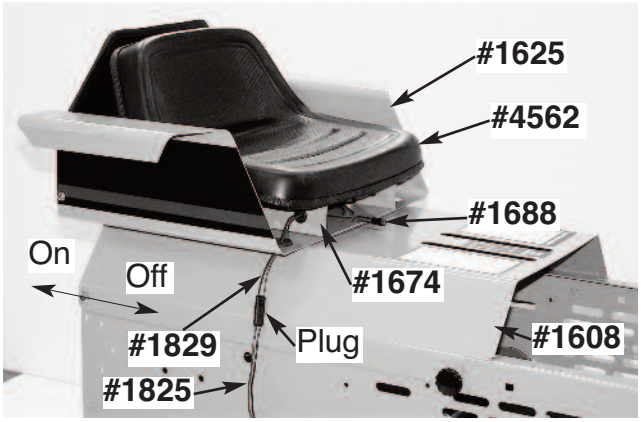
The new Chain may be shipped from the factory assembled...the Connector is already attached and the Chain is a continuous loop. You have two ways to install it: (Note: In some designs, you may have to move the engine!)

1) You may install it much the same way abelt is installed...through the "slot" in left end of #1643 Lowwer Power Shaft. You also need to passit around the right end of #1617C tube of the #1617R Right Control Handle Assembly.

2) Alternatively, you can disassemble the chain's connector link and open the chain and loop it around the various sprockets. Then join the chain's ends with it's connector link and secure with connector clip.

The easiest is step (2) above. It's a little tricky becasue you have to compress "O-rings" while you pull on its "flat spring" connector clip. Practice with the chain you took off, it will give you a chance to practice & build confidence.

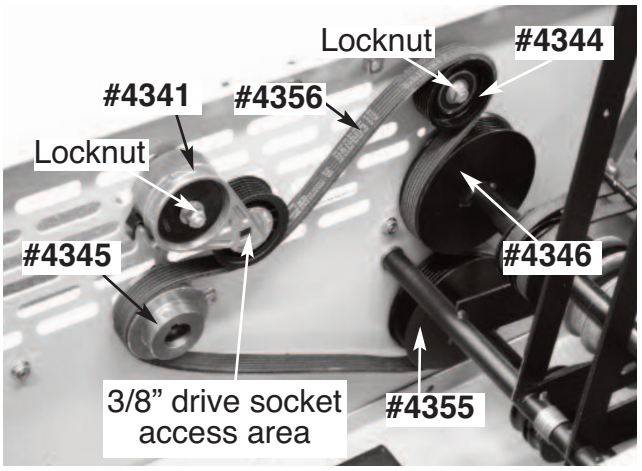
ENGINE DRIVE
MICRO-V BELT (if equipped)



To access the #4356 Micro-V Engine Drive Belt, begin your procedure by parking your Crawler on an open, firm, level surface. Shut off Engine, engage your Parking Brake Lever and dismount.

Turn the 2 black handles (not shown) slightly counter-clockwise to loosen hood. Raise and rotate hood fully forward. Remove the #1688 Seat Pin. Then remove the #4562 Seat & #1674 Mounting Bracket, #1625 Arm Rests, and #1608 Rear Cover. Remove any additonal cross braces that will aloow easy access to this area. **NOTE:** Be sure to disconnect the "mating" #1829 and #1825 Seat Wires at their common Plug. **See picture above.**

Check the condition of your #4356 Micro-V Engine Drive Belt per section 6-LUBRICATION & PERIODIC SERVICE.



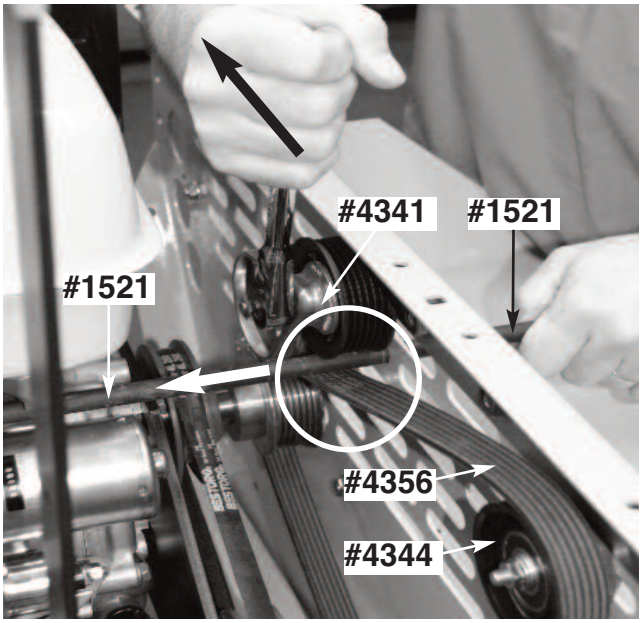
MICRO-V BELT ADJUSTMENT

If your RS1000, is equipped with a #4356 Micro-V Engine Drive Belt, you have an auto belt tensioner system. The #4341 auto tensioner puts the correct amount of tension on your drive belt at all times. No need to make any drive belt adjustments!

MICRO-V BELT REMOVAL & REPLACEMENT

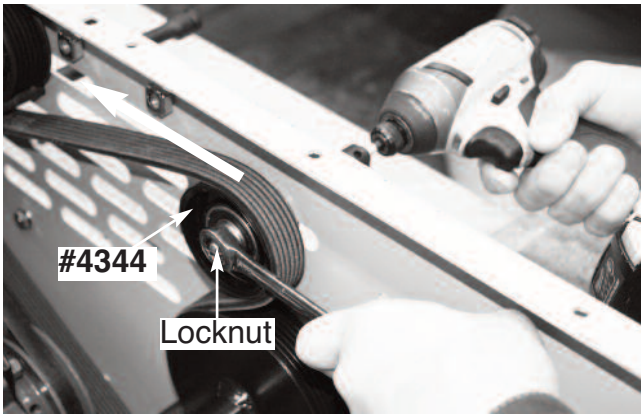
If your #4356 Micro-V Drive Belt is broken, you should just be able to pull it out easily from the engine area. If it is frayed or just badly worn, please follow these steps for removal and installation of new #4356 Micro-V Drive Belt.

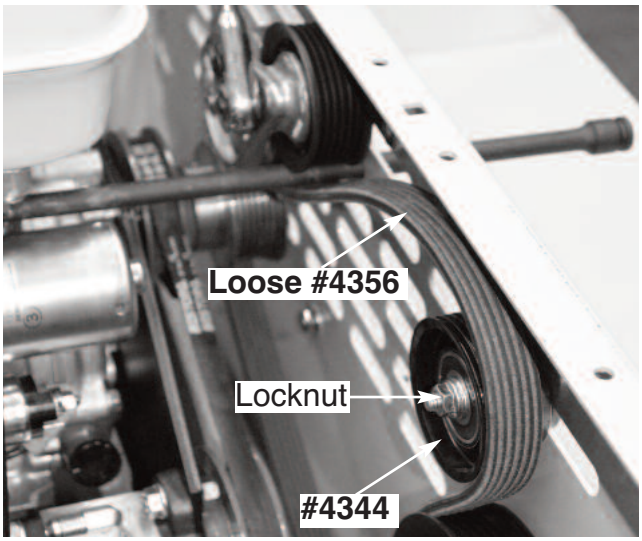
1. Remove tension from the #4356 Micro-V belt by inserting a 3/8" drive socket ratchet in the square hole in the #4341 auto tensioner. **(See picture in opposite column for access area).** While pulling towards the front of the tractor, insert a #1521 Tension Bar **through** the oval slot in the body, **under** the #4341 auto tensioner, **on top** of the #4356 Micro-V Belt and **onto** the engine. This allows you to keep the #4341 auto tensioner



from putting tension on the #4356 Micro-V Belt. At this time, your hands should be free and the #4341 auto tensioner should not be putting tension on the #4356 Micro-V Belt, just the #1521 Tension Bar.

2. From inside of machine: hold the idler locknut with wrench. From outside of machine: use a wrench, a socket ratchet or cordless socket ratchet to loosen the coresponding bolt. (Do not remove!) Idler assembly should slide forward in the body wall slot. Tension should fully be removed from the #4356 Micro-V-Belt at this time. **See pictures on the next page.**



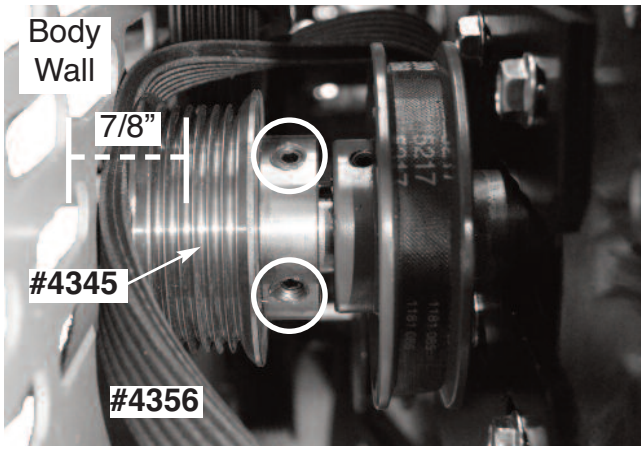


3. For the quickest removal of the #4356 Micro-V Belt: cut it in half with a side cutters or scissors. **Note: Be careful to not knick or scratch other surrounding components. Especially engine wires!**

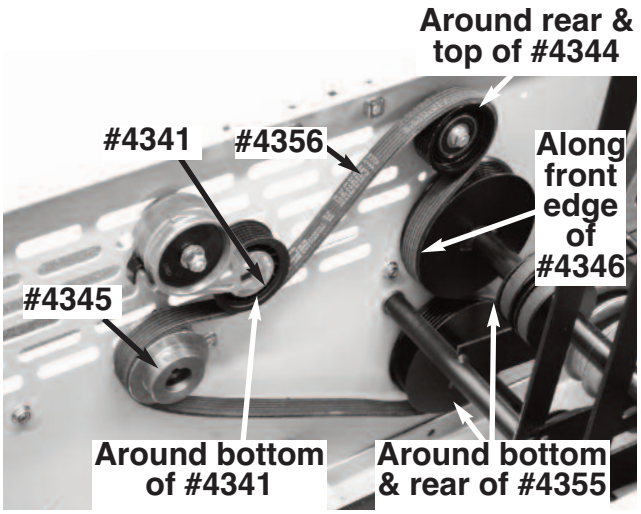
4. Installation of new #4356 Micro-V Drive Belt. You may install it much the same way a rear #2078 Clutch Belt is installed...through the "slot" in left end of #1643/#4355 Lower Power Shaft. You also need to pass it around the right end of #1617C tube of the #1617R Right Control Handle Assembly. For this part of the install, **(Please reference pages 28-32 in Section 7). Speak with a Struck tech for additional help. There may be other ways to do this procedure.**

5. Once you've looped the new #4356 Micro-V Belt around the #1643/#4355 Lower Power Shaft, you can loop it between the #4345 Micro-V Engine Pulley and body wall as shown in the picture at the top of the next column. **Note: It is possible to loosen the #4345 Micro-V Engine Pulley and push it towards the engine, but you should not need to do this in most applications.**

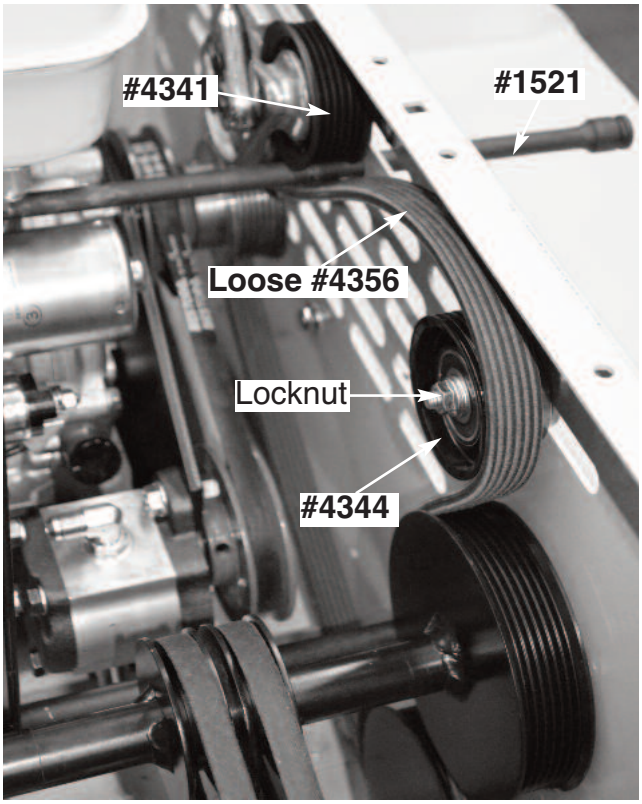
6. (Optional) If you decided to loosen the engine pulley and push it toward the engine, you'll need to loosen the (2) set screws on the engine pulley first, then slide the #4356 Micro-V Belt throgh, then re-align the #4345 Micro-V Engine Pulley. As shown in the picture below, from the body wall to the 3rd V groove center should measure 7/8". Make sure to re-apply red loc-tite back to both set screws **(just on the threads)** and tighten fully with allen wrench.



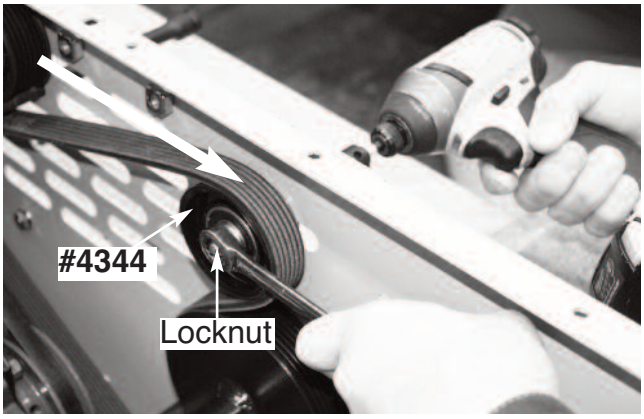
7. Using the picture below as a reference, route the #4356 Micro-V Belt along the pulleys. Making sure the Micro-V Belt is seated properly in the idler pulley grooves. **Note: The #4356 Micro-V Belt should already be looped around the #1643/4355 Lower Power Shaft from step 4.**



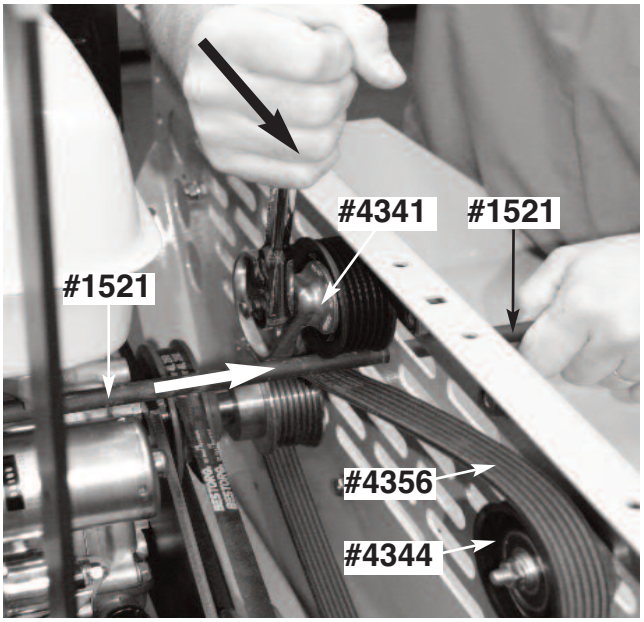
Your #4356 Micro-V Belt should now be properly routed and seated and look like the picture on the top left of the next page. The #4356 Micro-V Belt should be loose, with the #1521 Tension Bar still holding the tension away from the #4356 Micro-V Belt, by holding the #4341 Auto Tensioner away from the Micro-V Belt.



8. To **tighten** the Micro-V Belt, hold the locknut with one wrench and pull rearward at the same time. **(Pull as hard as possible).** From the outside of the machine: use a wrench or socket ratchet to tighten the coresponding bolt. The Idler assembly should not slide forward in the body wall slot. **See picture below.**

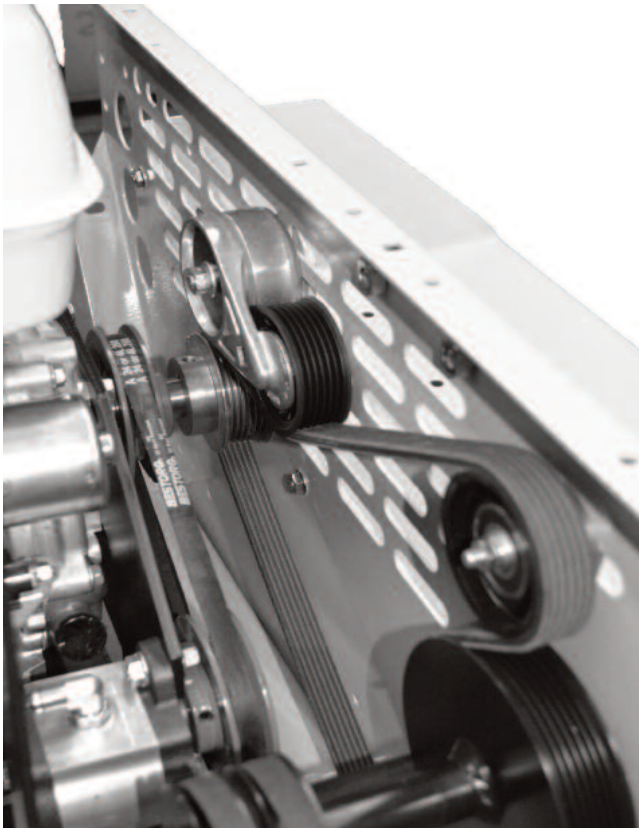


9. Add proper tension to the #4356 Micro-V belt by inserting a 3/8" drive socket ratchet in the square hole in the #4341 auto tensioner. While pushing towards the rear of the tractor, carefully slide the #1521 Tension Bar out of the body of the RS1000, being careful of engine wires, etc. **(See picture at the top of the next column).**



10. At this time double check your work. Take a look at the #4356 Micro-V belt to make sure it is aligned and seated properly, and also that any loosend set screws have had red-loctite added to them and fully tightened. Your Micro-V Belt assembly should look like the picture below.

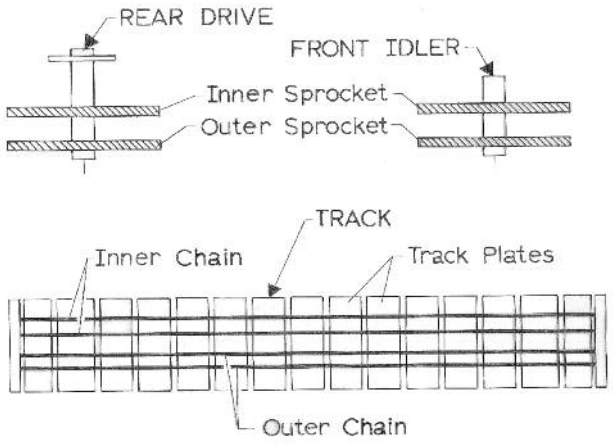
11. Run your machine to test that it is working properly. Contact Tech Support with any questions on this Micro-V removal or replacement.



STEEL TRACK MAINTENANCE (if equipped)

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

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



CAUTION: When working with the Tracks, you will be dealing with some significant weight 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 Parking Brake and dismount.

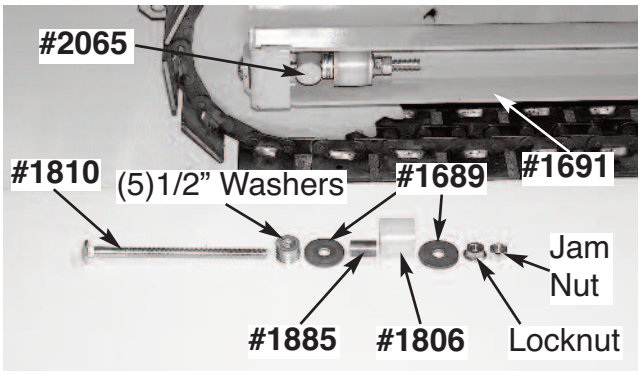
STEEL TRACK REMOVAL

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.

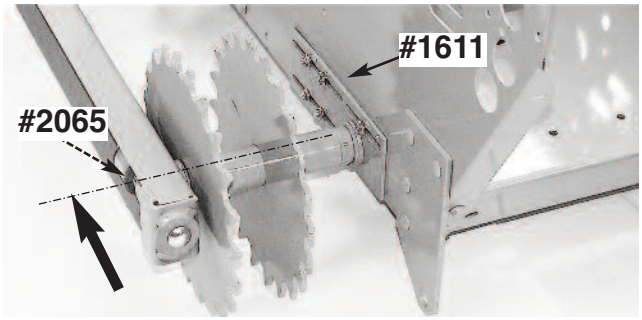
Use solid blocking, place it under the Crawler's Body per **"Safe Blocking Diagram"** on front page of this Manual. It will give the Crawler the greatest support left to right and front to rear. [When locating your blocking, analyze the total weight and balance of the Crawler as it will change as the 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!

1. Loosen and remove the 1/2" **Jam Nut** from the threaded end of each #1810 Tension Bolt. Then loosen the **Locknut** until it is "flush" with the end of the #1810 carriage bolt. **Do this to both sides.**

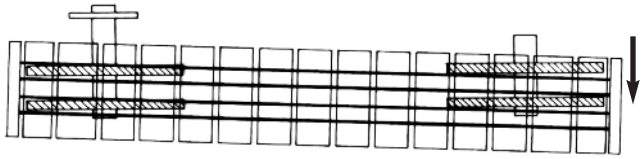


2. From "outside" the Crawler's body, fully loosen (but do not remove) the five nuts on each (Left & Right) #1611 Front Axle Plate. Slide #2065 Axle fully rearward.

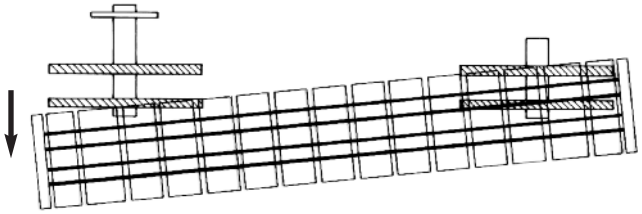


3. With gloved hands, begin to rotate the Track forward. [TIP: As you rotate the Track, you may want to move the Track Clutch Controls back and forth to relieve any "drag" from the Track Clutch Belts].

4. 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 drawing below.



5. 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.

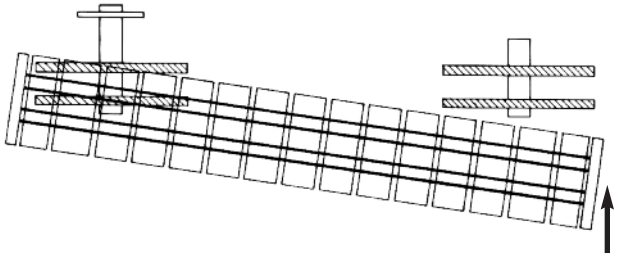


6. Pulling forward on the Track will allow you to now loop the Track off the remaining Outer Sprocket on the Front Idler allowing complete Track removal.

STEEL TRACK REPLACEMENT

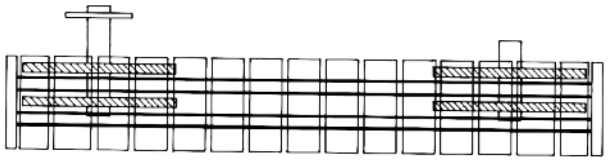
Before replacing a Track, it's wise to thoroughly clean it of all debris...a pressure wash job is a good idea.

1. 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.

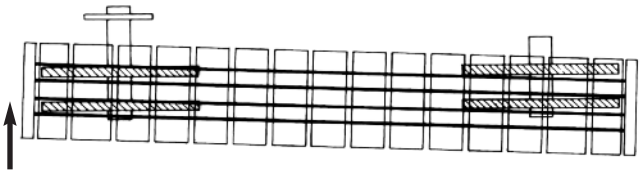


2. Loop the forward end of the Track around the Inner & Outer Sprockets of Front Idler engaging the Track's Inner Chain between the Inner & Outer Sprockets of the Front Idler.

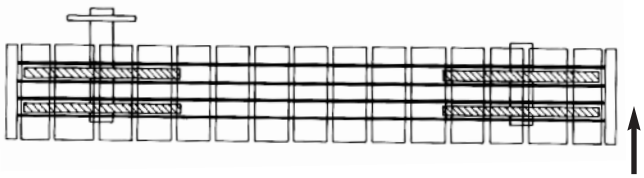
3. The Track's Inner Chain should now be located between the Inner & Outer Sprockets of the Front Idler and Rear Drive.



4. 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.

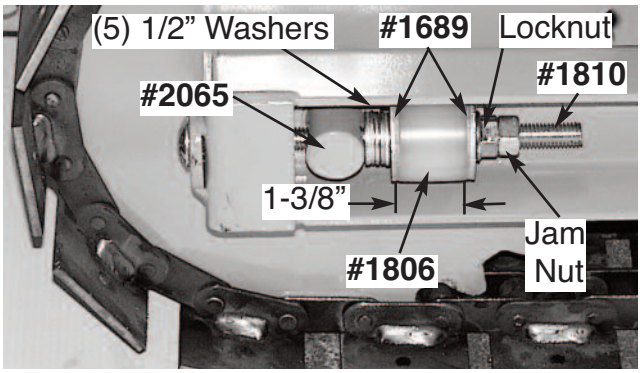


5. Rotate Track forward and work the Track inward until the Track's Inner & Outer Chains align and engage the teeth of their mating Inner & Outer Sprockets on the Front Idler.



STEEL TRACK TENSIONING

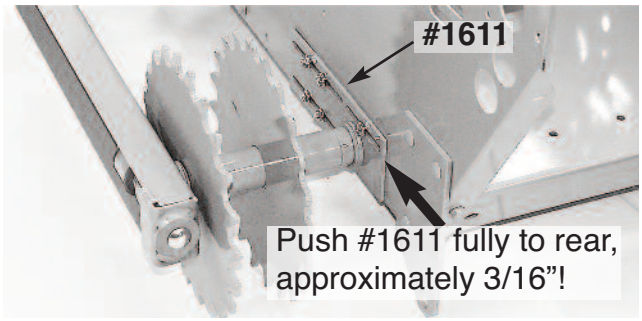
1. Over protruding "threaded end" of each #1810 Tension Bolt (on each side of Crawler body) slip on, in the following order: five 1/2" Washers, #1689 Washer, #1885 Tube, #1806 Spring, and one #1689 Washer. Secure with Locknut.



2. By rotating clockwise the Locknut you mounted to end of each #1810 Tension Bolt, draw the Locknut and associated #1689 Washer (on each Tension Bolt's end) against its respective #1806 Spring such that each Spring is compressed to a total length of 1-3/8" (measured from inside Washer to Washer).

NOTE: Tighten the pair of #1806 Springs 1/4" at a time. Tighten the left Spring 1/4", then stop and go to the right Spring and tighten it 1/4". Work back and forth from left side #1806 Spring to right side #1806 Spring, 1/4" at a time, until each Spring is 1-3/8" in total length. [Measure Spring length only...**do not** include the # 1689 Washers in your measurement].

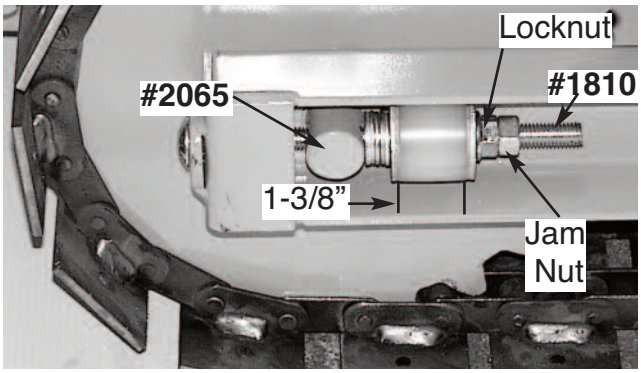
3. Using a "blunt-nose punch" and hammer, push the #1611 Front Axle Plate (located on both sides of Crawler Body) rearward till it hits a solid stop (approximately 3/16"). **NOTE**: In the work accomplished in steps above, this Plate may have already moved rearward. To check, push Plate forward from the rear, then push it back the required 3/16" distance.



NOTE: This is a simple adjustment, but it's proper execution results in extremely stable Track performance in the future!

4. At this time, slowly and safely remove all support blocking from underneath your Crawler so that it rests firmly on only its Tracks.

5. 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 Parking Brake and dismount. Check the overall length of your #1806 Springs for any changes in length. Readjust to proper 1-3/8" overall length if necessary.

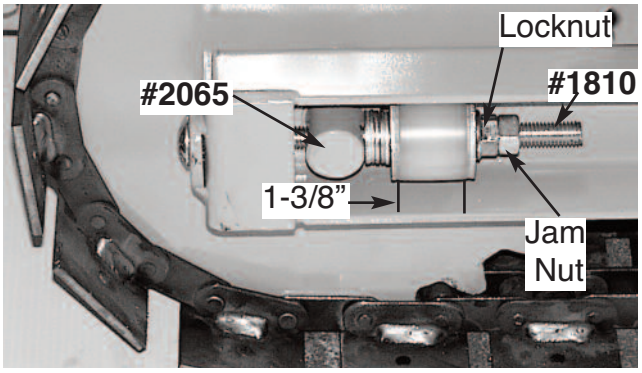


6. When satisfied, mount a Jam Nut to remaining ends of each #1810 Tension Bolt. Hold each Locknut with a "thin profile" 3/4" open end wrench, and tighten each Jam Nut with a 3/4" box wrench ...tighten securely!

7. Tighten the five nuts securing Left & Right #1611 Front Axle Plates... check Photo at lower left.

MAINTENANCE STEEL TRACK TENSIONING

Begin by checking the overall length of the #1806 Spring on each side of Crawler. Both Springs should be compressed to an overall length of 1-3/8". [The length measured is only the Spring; **do not** include the #1689 Washers in your measurement!]



If your Springs have lost this 1-3/8" dimension, or you have just replaced a #1806 Spring or broken #1810 Tension Bolt, follow this procedure:

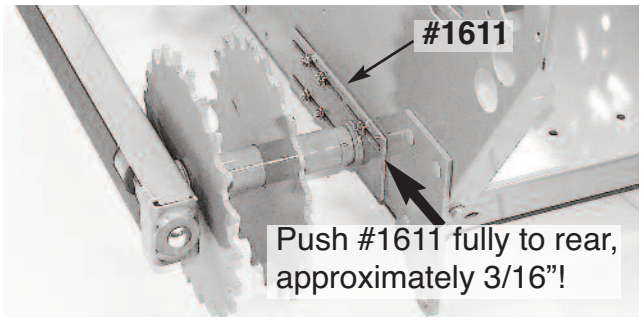
1. From "outside" the Crawler's Body, fully loosen (but do not remove) the five nuts on each (Left & Right) #1611 Front Axle Plate.

2. Remove the Jam Nut on the threaded end of each #1810 Tension Bolt. Rotate (clockwise or counter-clockwise) the Locknut on each #1810 Tension Bolt so that its respective #1689 Washer (next to #1806 Spring) is pushed forward (or released rearward) thereby setting its respective #1806 Spring to a final length of 1-3/8".

3. [Work back and forth, from left side to right side of Crawler, tightening each Spring 1/4" at a time until you have achieved a 1-3/8" overall length for both Springs. [Measure Spring length only].

4. Using a "blunt-nose punch" and hammer, push the #1611 Front Axle Plate (located on both sides of Crawler Body) rearward till it hits a solid stop (approximately 3/16"). **NOTE**: in the work done in steps above, this Plate may have already moved rearward. To check, push Plate forward from the rear, then push it back the required 3/16" distance. Tighten the five nuts securing left & right #1611 Front Axle Plates.

NOTE: This is a simple adjustment, but it's proper execution results in extremely stable



Track performance in the future!

5. 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 Parking Brake and dismount. Check the overall length of your #1806 Springs for any changes in length. Readjust to proper 1-3/8" overall length if necessary.

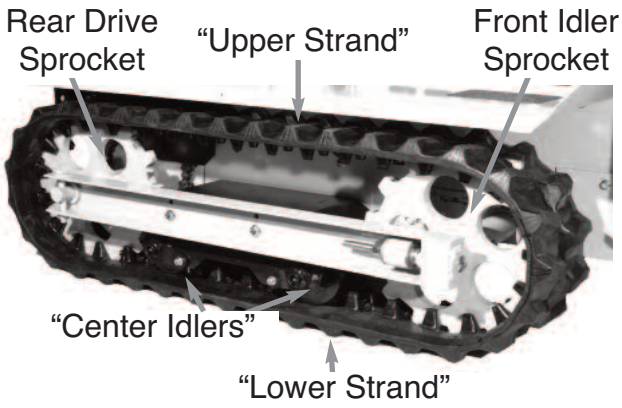
6. When satisfied, mount a Jam Nut to remaining ends of each #1810 Tension Bolt. Hold each Locknut with a "thin profile" 3/4" open end wrench, and tighten each Jam Nut with a 3/4" box wrench

7. Tighten the five nuts securing Left & Right #1611 Front Axle Plates.

RUBBER TRACK MAINTENANCE (if equipped)

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

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



CAUTION: When working with the Rubber Tracks, you will be dealing with some significant weight and lifting situations. Though the Crawler can be successfully "blocked up" off the ground and the Rubber 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 Rubber Track Maintenance procedure by checking that your Rubber 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. Park your Crawler on a firm level surface, shut off engine, set Parking Brake and dismount.

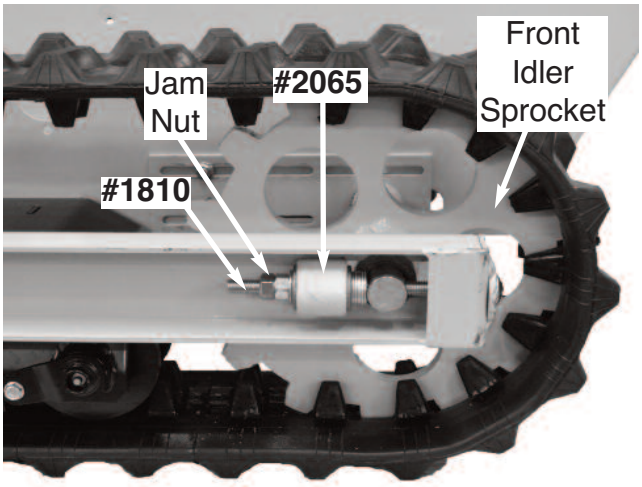
RUBBER TRACK REMOVAL

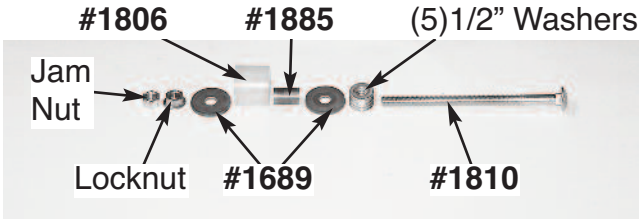
From below, support body of Crawler so the Tracks clear the ground by approximately 2" and are free to rotate...release Brake at this time.

Use solid blocking, place it under the Crawler's Body per **"Safe Blocking Diagram"** in front section of this Manual. 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!

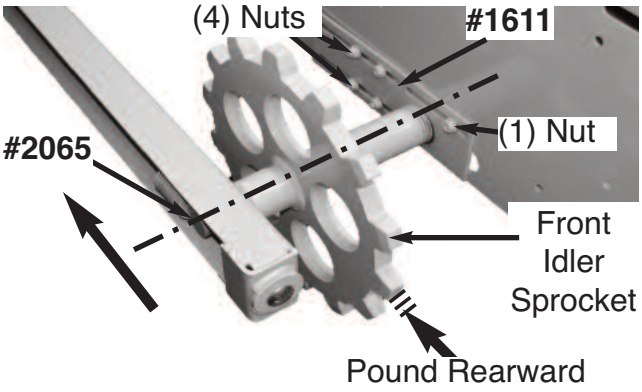
NOTE: Realize that the more you can support the "lower strand" of each Track, the more slack you will have in the "upper strand" of the Track to work with! TIP: Lay & stack 2x4s on the ground to support the "lower strand".

1. Loosen and remove the 1/2" **Jam Nut** from the threaded end of each #1810 Tension Bolt. Then loosen the **Locknut** until it is "flush" with the end of the #1810 carriage bolt. **Do this to both sides of the crawler, left & right.**

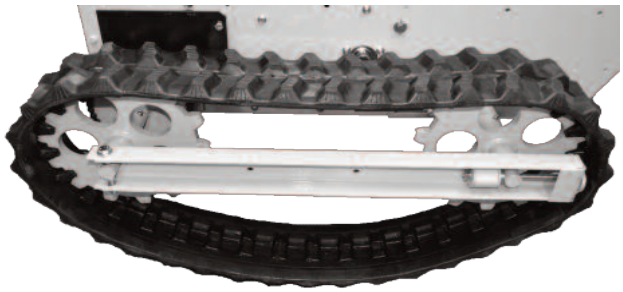




2. From "outside" of the Crawler's body, fully loosen (but do not remove) the five nuts on each (Left & Right) #1611 Front Axle Plate. Slide #2065 Axle fully rearward. **See picture on next page.**

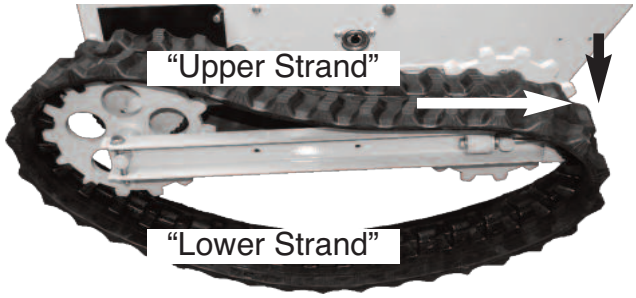


HINT: With a mallet, gently pound rearward on the front idler sprocket tooth. Do the same to the other side as well. Work back and forth until both left and right front idler sprockets are all the way rearward. Once fully loosened, your tracks should look similar to the picture shown below. **Center idlers not shown.**

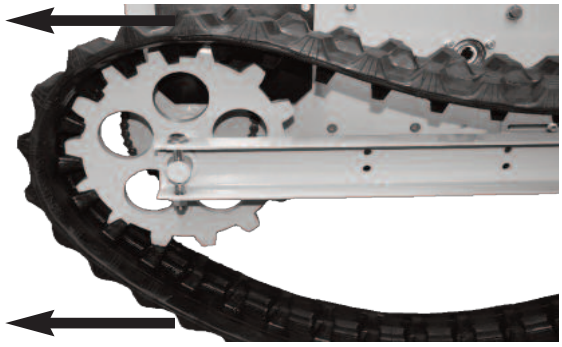


3. With gloved hands, begin to rotate the Track forward. [TIP: As you rotate the Track, you may want to move the Track Clutch Controls back and forth to relieve any "drag" from the Track Clutch Belts].

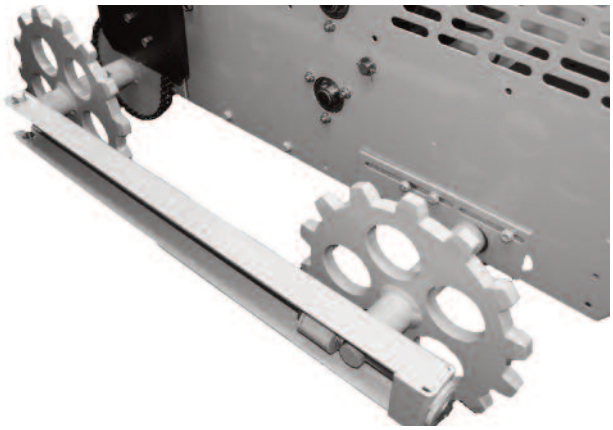
NOTE: As you work with the Tracks, realize that the more you can support the **"lower strand"** of each Track and keep it flat and close to its original operating level, the more slack you will have in the **"upper strand"** of the Track to work with!



4. Pulling rearward on the Track will allow you to now loop the Track off the Rear Drive Sprocket allowing complete Track removal. **See picture on the top of next column.**

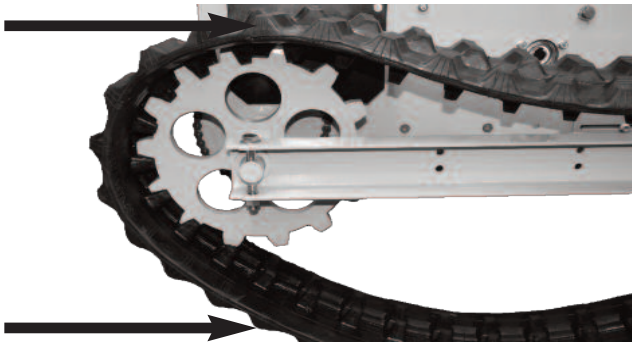


Once the track is removed, your crawler track system should now look like the following picture. **Note: Center idlers not shown for clarity.**

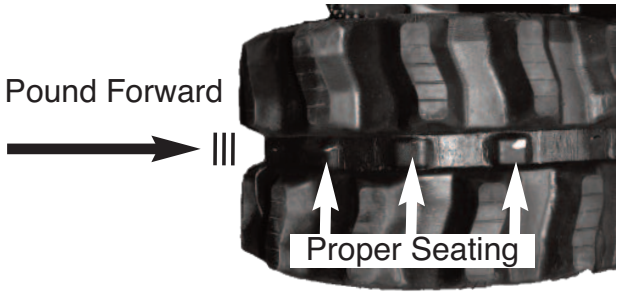


RUBBER TRACK REPLACEMENT

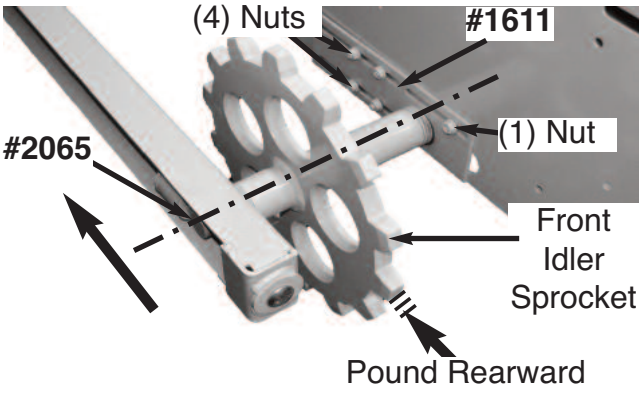
Before replacing a Track, it's wise to thoroughly clean it of all debris...a pressure wash job is a good idea. **Note: You can start with the front idler instead of the rear drive. We started with the rear drive in the steps that follow.**



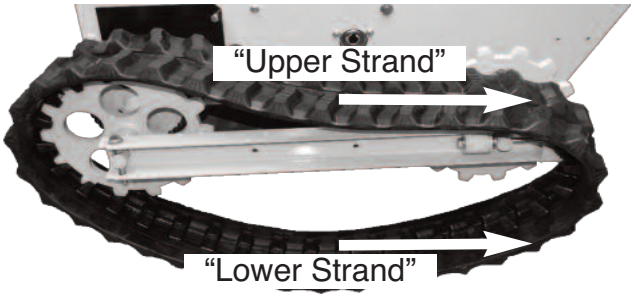
1. Slip the rearward end of Track around the Sprocket of the Rear Drive. Rotate the rubber track slightly to mate up the rear drive sprocket teeth with the mating sprocket holes in the track. Once lined up, gently pound forward on the sprocket tooth. The sprocket teeth should be "seated" in the track. **See picture on next page.**



2. Once happy with the proper "seating", **make sure the front idler sprocket is all the way rearward before attempting to attach track onto front idler sprocket.** See Rubber Track Removal Section for additional details.

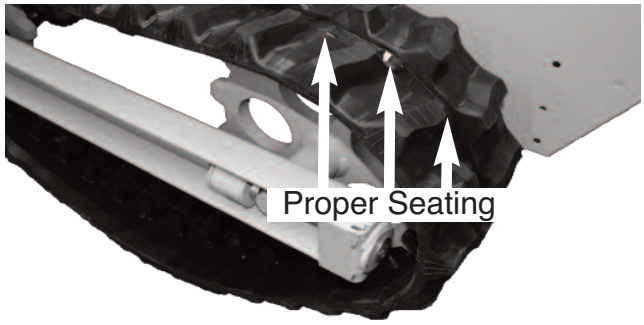


3. Once happy with the proper "seating" of the rear drive track sprocket, and that your front idler is all the way rearward, loop the forward end of the Track around the Front Idler Sprocket.



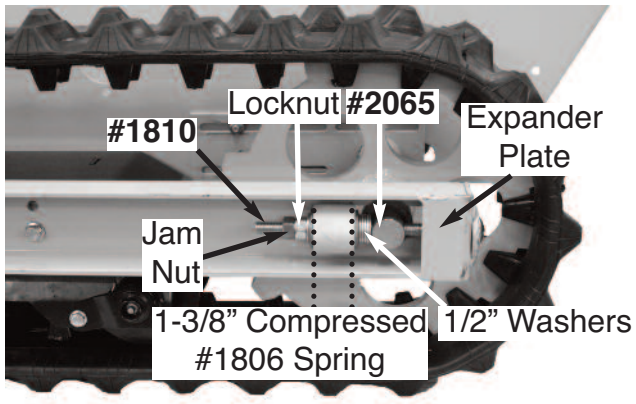
NOTE: Realize that the more you can support the "lower strand" of each Track, the more slack you will have in the "upper strand" of the Track to work with! TIP: Lay & stack 2x4s on the ground to support the "lower strand".

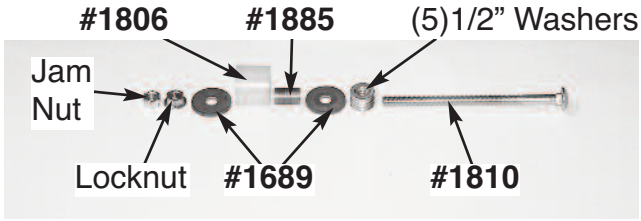
4. The front idler and/or tracks may have to be rotated to "seat" the front idler sprocket teeth correctly into the track openings. Your front idler and rear drive sprockets should be properly "seated" into the track openings. If you have questions please call the factory and ask to speak with a struck technician regarding any additional questions or concerns that you may have. Once happy with the track "seating", please repeat these steps for the other side of the crawler. **Tracks properly "seated", but still loose, shown below.**



RUBBER TRACK TENSIONING

1. Loosen and remove the 1/2" **Jam Nut** from the threaded end of each #1810 Tension Bolt. **Do this to both sides of the crawler, left & right.**

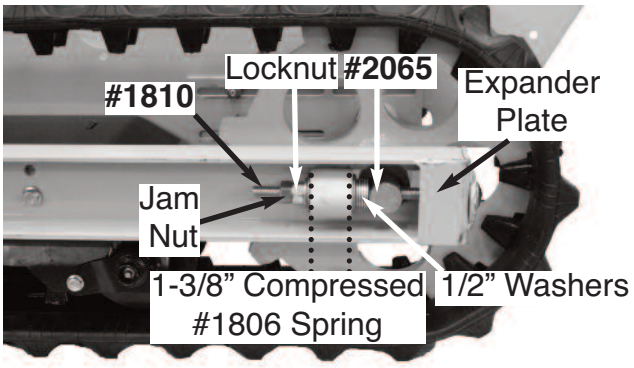




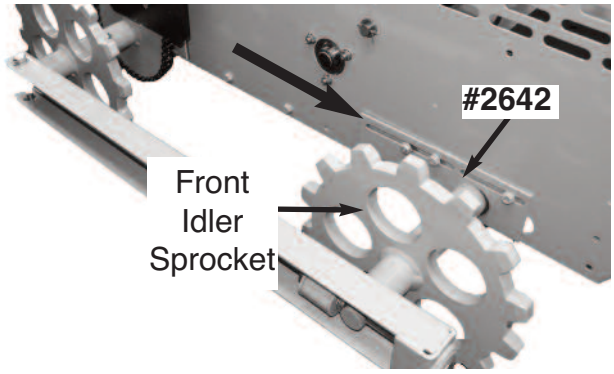
2. Tighten the Locknut on end of each #1810 Tension Bolt, until **both #1806 Springs are compressed to a measurement of 1-3/8". See picture above.**

NOTE: Tighten the left side 1/4" at a time, then stop and go to the right side and tighten it 1/4".

3. Work back and forth from left side to right side, 1/4" at a time, until **both #1806 Springs are compressed to a measurement of 1-3/8".**



4. Using a "blunt-nose punch" and hammer, push the #2642 Front Axle Plate (located on both sides of Crawler Body) forward untill it hits a solid stop. **NOTE**: In the work accomplished in steps above, these plates may have already moved forward. To check, push plates forward from the rear.

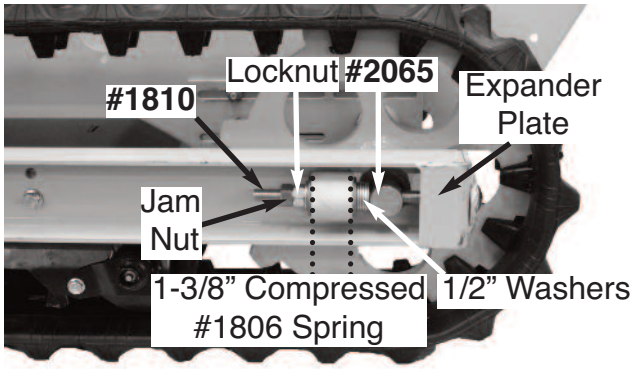


NOTE: This is a simple adjustment, but the proper execution, along with the center idler system, results in stable Track performance in the future!

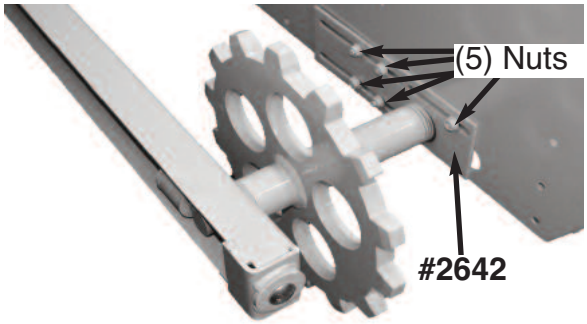
5. At this time, slowly and safely remove all support blocking from underneath your Crawler so that it rests firmly on only its Tracks.

6. Remount and safely restart your Crawler. Drive it approximately 10 feet forward and then go in reverse, back to your starting point. Shut off the engine, set Parking Brake and dismount. Check that **both #1806 Springs are compressed to a measurement of 1-3/8".** Re-adjust if necessary.

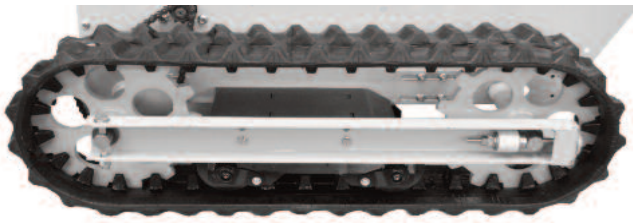
7. When satisfied, mount a Jam Nut to remaining ends of each #1810 Tension Bolts. Hold each Locknut with a "thin profile" 3/4" open end wrench, and tighten each Jam Nut with a 3/4" box wrench ...tighten securely!



8. Tighten the five nuts securing Left & Right #2642 Front Axle Plates... see photo below.

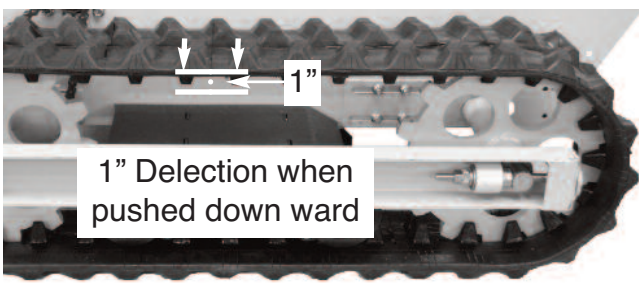


Your track system should look like the photo below.



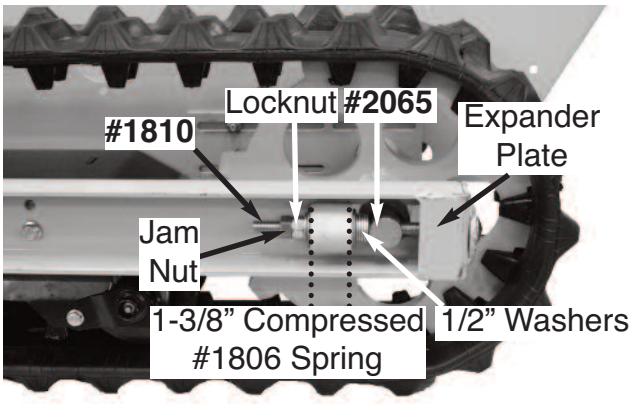
RUBBER TRACK WEAR IN PERIOD

After 5 hours of operation, check the tightness of your tracks. The top strand of the rubber tracks has approx. **1" of deflection**, when using 2 fingers to push down on them. If it has more than 1" of deflection, please follow the steps in the **RUBBER TRACK TENSIONING** section to properly tension your tracks.



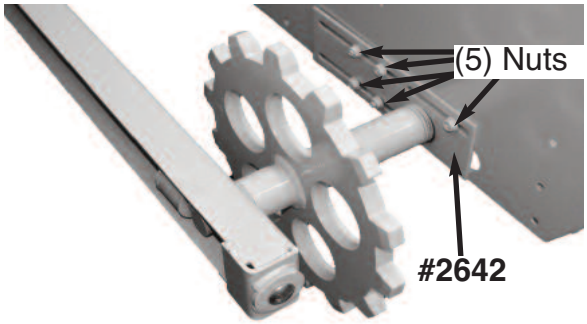
MAINTENANCE RUBBER TRACK TENSIONING

Begin by checking that **both #1806 Springs are compressed to a measurement of 1-3/8".**

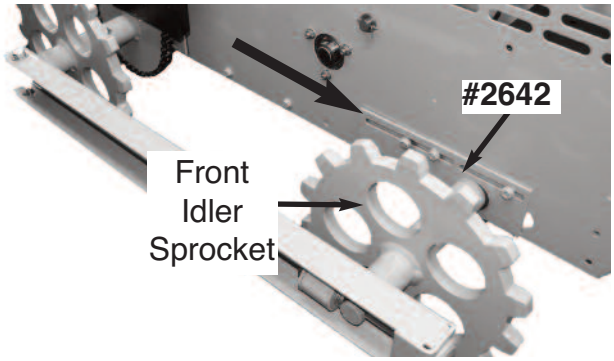


If your tracks have become de-railed, or your #2065 axles have lost this dimension, or you have just replaced a #1806 Spring or broken #1810 Tension Bolt, follow this procedure:

1. From "outside" the Crawler's Body, fully loosen (but do not remove) the five nuts on each (Left & Right) #2642 Front Axle Plate.



2. Remove the Jam Nut on the threaded end of each #1810 Tension Bolt. **See photo below.** Rotate (clockwise or counter-clockwise) the Locknut on each #1810 Tension Bolt so that its respective #1689 Washer (next to #1806 Spring) is pushed forward (or released rearward).



3. Work back and forth from left side to right side, 1/4" at a time, until **both #1806 Springs are compressed to a measurement of 1-3/8".**

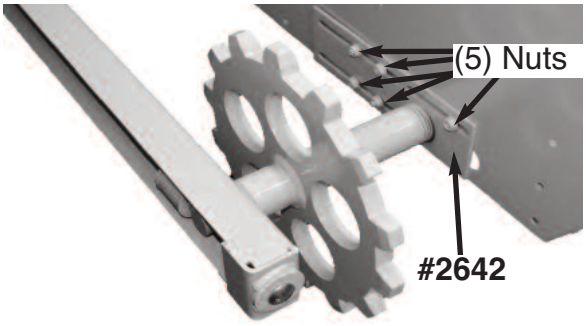
4. Using a "blunt-nose punch" and hammer, push the #2642 Front Axle Plate (located on both sides of Crawler Body) forward untill it hits a solid stop. **NOTE**: In the work accomplished in steps above, these plates may have already moved forward. To check, push plates forward from the rear.

> **NOTE: This is a simple adjustment, but it's proper execution results in ex tremely stable Track performance in the future!**

5. Remount and safely restart your Crawler. Drive it approximately 10 feet forward and then go in reverse, back to your starting point. Shut off the engine, set Parking Brake and dismount. Check your tension. **Tension until both #1806 Springs are compressed to a measurement of 1-3/8".** Re-adjust if necessary.

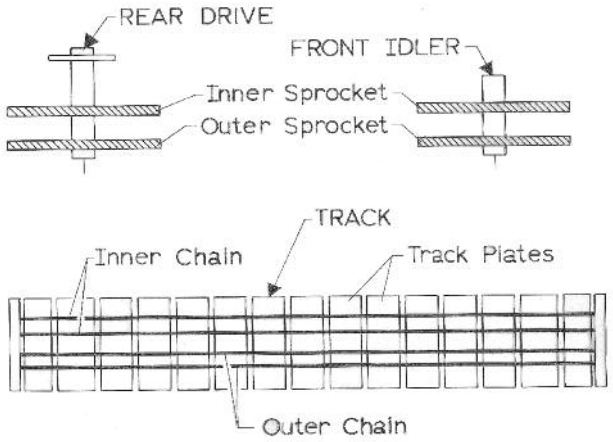
6. When satisfied, mount a Jam Nut to remaining ends of each #1810 Tension Bolt. Hold each Locknut with a "thin profile" 3/4" open end wrench, and tighten each Jam Nut with a 3/4" box wrench

7. Tighten the five nuts securing Left & Right #2642 Front Axle Plates.



SWITCHING OUT STEEL TRACK SYSTEM TO RUBBER TRACK SYSTEM

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



CAUTION: When working with the Tracks, you will be dealing with some significant weight 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 Removal 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 Parking Brake and dismount.

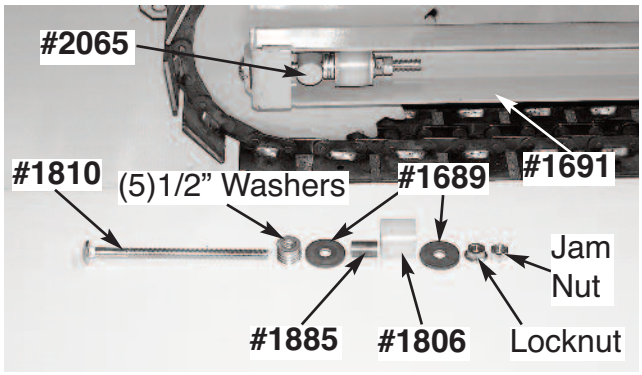
STEEL TRACK REMOVAL

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.

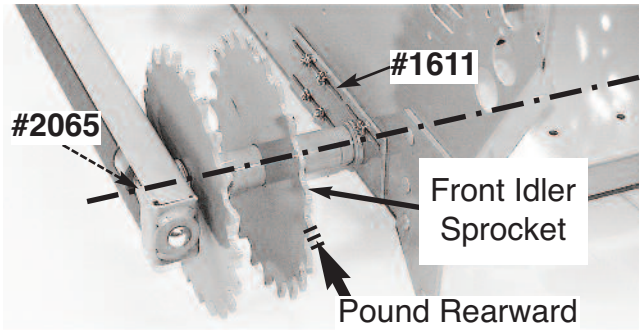
Use solid blocking, place it under the Crawler's Body per **"Safe Blocking Diagram"** on front page of this Manual. It will give the Crawler the greatest support left to right and front to rear. [When locating your blocking, analyze the total weight and balance of the Crawler as it will change as the 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!

1. Loosen and remove the 1/2" **Jam Nut** from the threaded end of each #1810 Tension Bolt. Then loosen the **Locknut** until it is "flush" with the end of the #1810 carriage bolt. **Do this to both sides.**



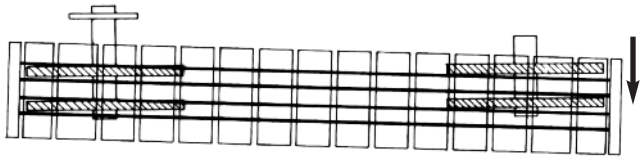
2. From "outside" the Crawler's body, fully loosen (but do not remove) the five nuts on each (Left & Right) #1611 Front Axle Plate.



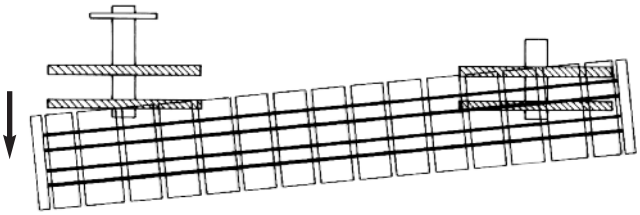
3. Slide #2065 Axle fully rearward. **HINT:** With a mallet, gently pound rearward on the front idler sprocket teeth. Do the same to the other side as well. Work back and forth until both left and right front idler sprockets are all the way rearward. The #1611 Front Axle Plate should have moved to its' most rearward position.

4. With gloved hands, begin to rotate the Track forward. **[TIP: As you rotate the Track, you may want to move the Track Clutch Controls back and forth to relieve any "drag" from the Track Clutch Belts].**

5. 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 drawing below.



6. 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.

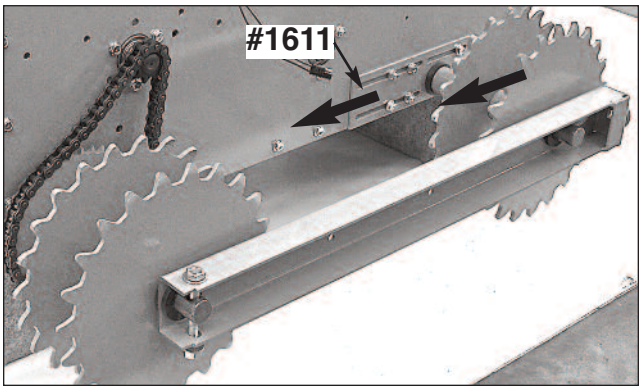


7. Pulling forward on the Track will allow you to now loop the Track off the remaining Outer Sprocket on the Front Idler allowing complete Track removal.

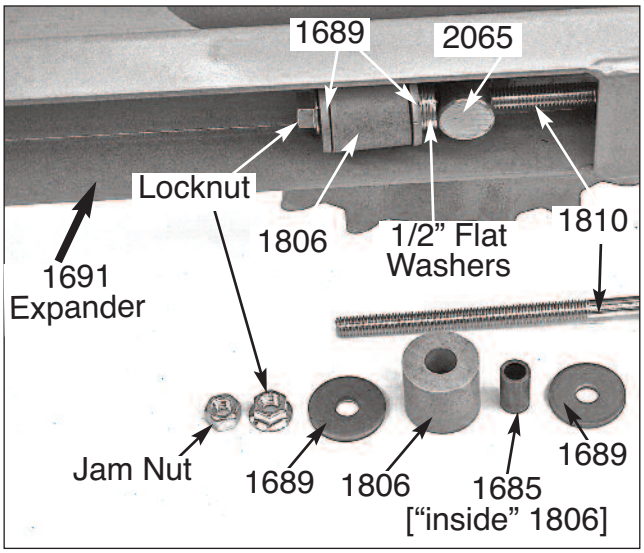
STEEL TRACK SPROCKET REMOVAL

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

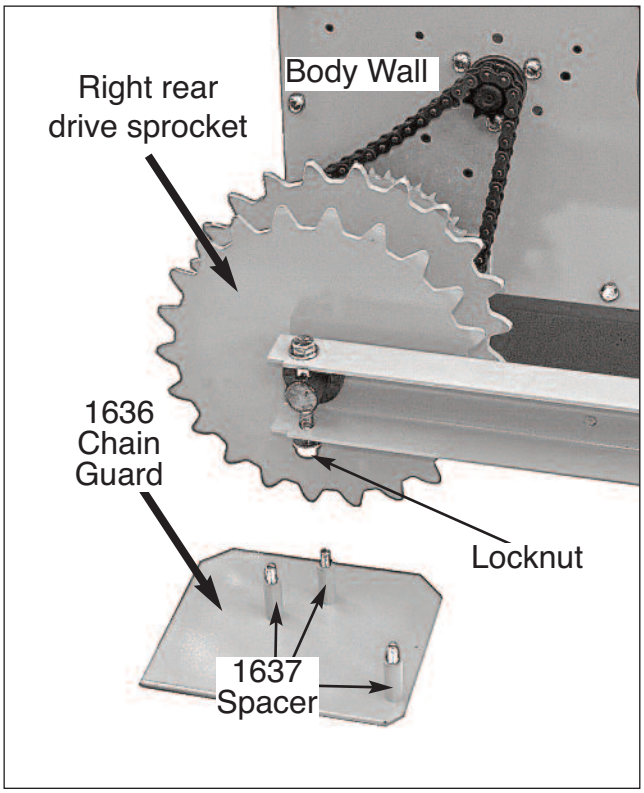
Your steel tracks should be fully removed and the #1611 Front Axle Plates along with the front idlers should be in their most rearward postions as shown in the picture below. **(Both sides)**

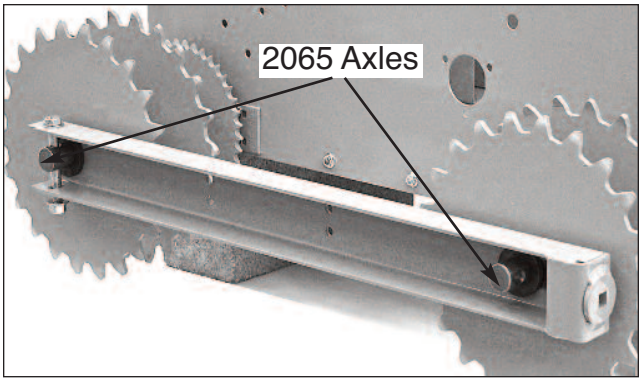


1. Remove the remaining locknuts from the left and right tension bolts. Your front tension bolt assembly should be loose. At this time, remove all remaing bolt assembly parts and pull out #1810 Tension Bolt. Put items aside, in order, for later reassembly. **Do to both sides of tractor.**

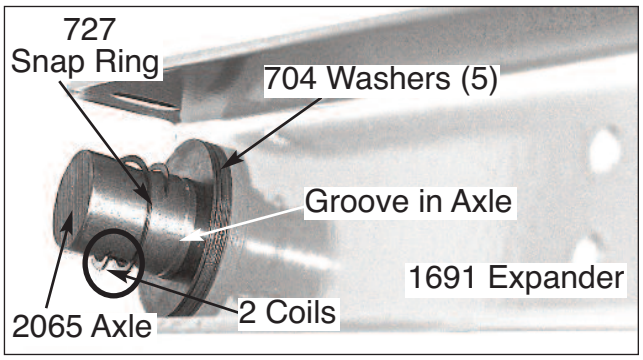


2. Remove #1636 Chain Guard from both sides of the tractor, by loosening and removing (3) sets of Nut and bolt assemblies for the #1637 Spacer. **Do to both sides of the tractor. Hint: You may need to loosen the corresponding lock nut from the inside of the body wall.** The photo below shows the #1636 Chain Guards fully removed.

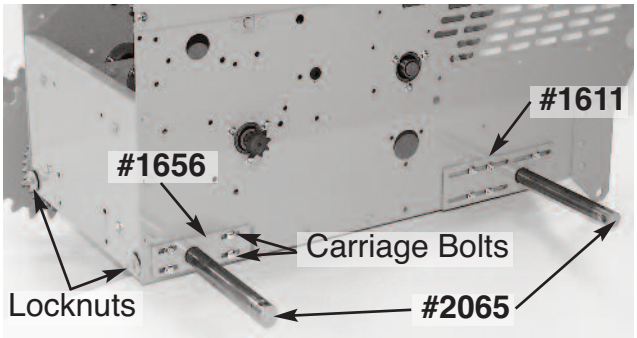




3. Remove both front and rear snap rings on the (2) #2065 Axles, by inserting a small flat head screwdriver between the 2 overlapping coils of the #727 Snap Ring. Once coils are separated, peel back the #727 Snap Ring and remove it from the #2065 Axle. Discard #727 Snap RIng. **Repeat steps for both front and rear, and both sides of the tractor.**

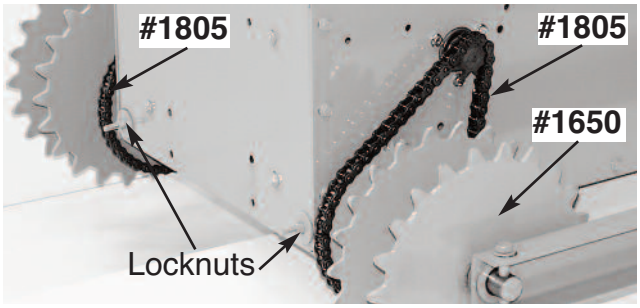


4. Loosen, but do not remove the four nuts on each **(Left & Right)** #1656 Rear Axle Plate. **NOTE:** loosen the Carriage Bolt "nuts" from inside of body, all others from outside.



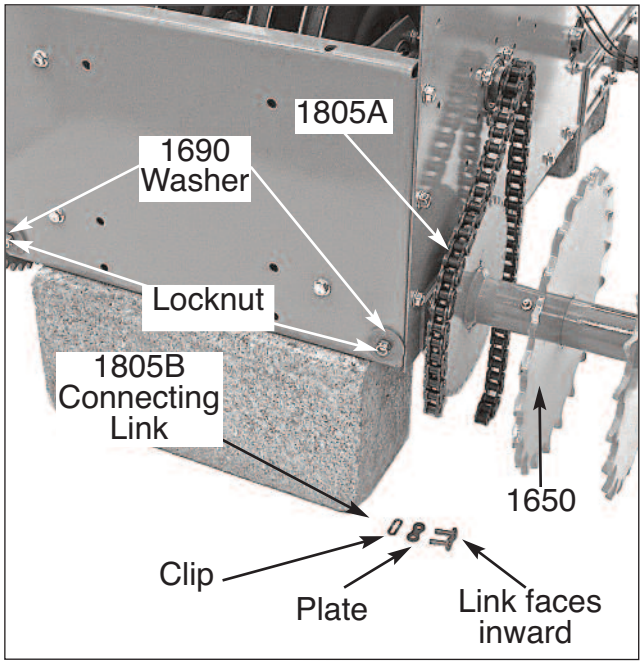
5. Loosen the #1805 Rear Drive Chains, start rotating the rear Locknuts **(counter clockwise),** located on left and right lower rear of Body.

Note: Some parts not shown in the photo above. Use the photo above and the one at the top of the next column as a reference.

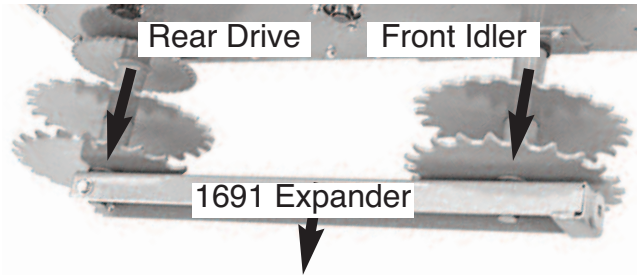


6. Push Rear Axle forward evenly, turn one Locknut 1/4 turn, then go to the other side and loosen the other Locknut 1/4 turn...use this back and forth procedure until both #1805 Rear Drive Chains have as much slack as possible.

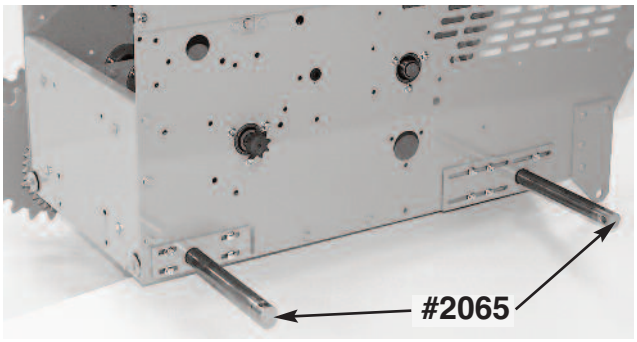
7. Using a flathead screwdriver, push the clip forward, releasing it from the rest of the #1805B Connectiong Link. Pull the link outward, releasing it from the rest of the chain. Your chain should now be open, like the photo below. **Do the same to the other side.**



8. Remove the #1805 Rear Drive Chains, the #1691 Track Expanders, the Front Idler and Rear Drive Sprockets, but make sure to organize all loose parts that are needed for later re-assembly.



At this time, your #2065 axles should be potruding from the outside of the machine as shown in the picture below.

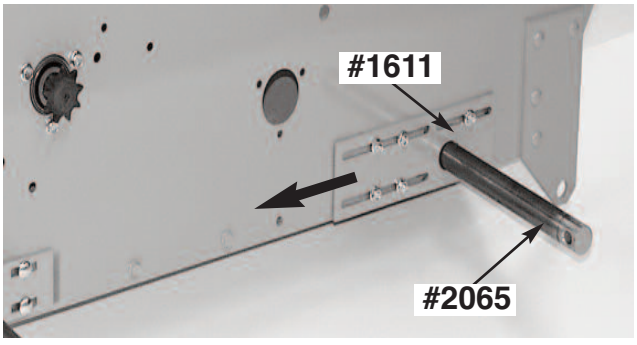


FRONT AXLE BRACKET SWITCH & BODYWALL CUT OUT

Rubber tracks require new front axle brackets and larger adjustment slots in your left and right bodywall. In the steps that follow are the instructions to make these changes. If you purchased the Rubber Track Kit as an aftermarket item, the new front axle brackets should have come with your kit.

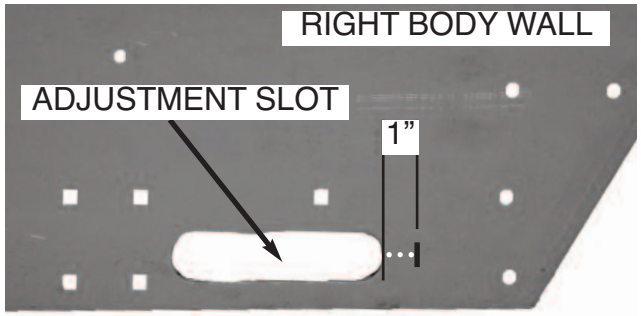
From Step 3 in the Steel Track Removal process, your #1611 Front Axle Brackets (Left & RIght), should be all the way rearward. If not, make sure they are at this time.

1. Remove all (5) 5/16" Bolts and Nuts holding your #1611 Front Axle Bracket, do the same to the opposite side of the tractor. Keep bolts & nuts organized for later re-assembly.



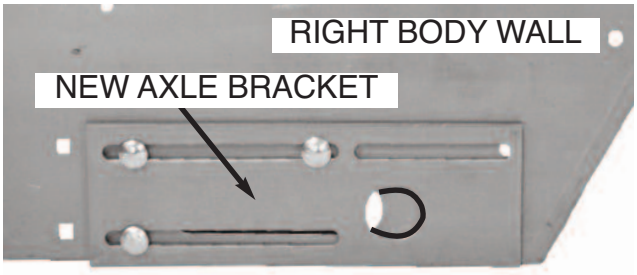
2. Slide each #1611 Front Axle Bracket off of the #2065 Front Axle and then pull out the #2065 Front Axle for better access to the slot in the body.

3. Skip to step 5 is your RS1000 serial # is 100736 or higher. From the right edge of the adjustment slot, measure 1" forward, mark



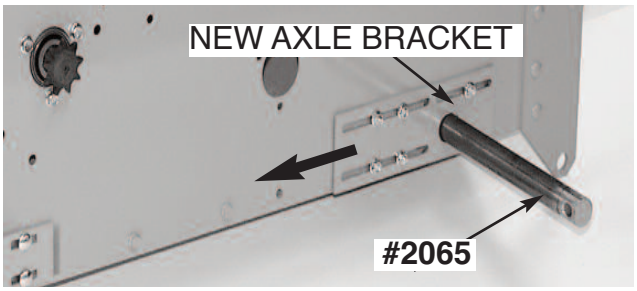
with permanent marker. Do the same to both sides.

4. Using your new Front Axle Bracket as a template, insert (3) of your 5/16" Carriage Bolts through the new axle bracket and the body wall. Line up your axle bracket with the vertical line you drew in Step 3. Mark with permanent marker as shown below. Remove bracket. Repeat process for the other side.



4. Using your marks as a "guideline", take a reciprocating saw (sawzall) or step drill bit and carefully cut-out or drill out the space marked. Once happy with your cuts, file any sharp edges as needed. Do the same to the other side.

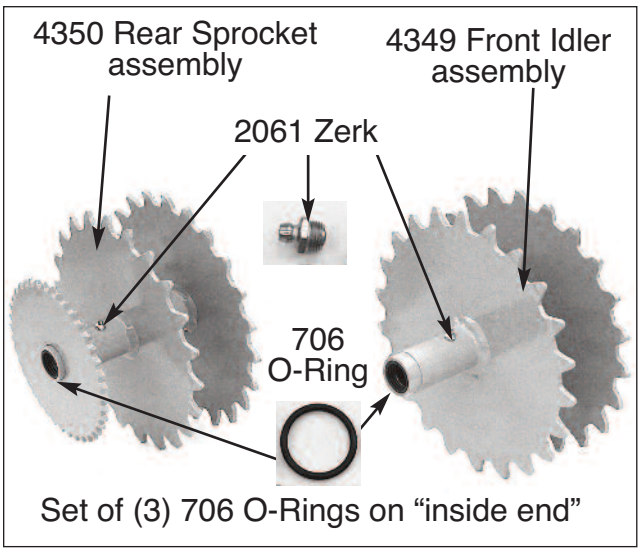
5. Re-insert your #2065 Front Axle, slide your new front axle brackets onto both sides of the front axle. Make sure your brackets are all the way rearward, fasten loosely with the 5/16" carriage bolts & nuts you removed previously. (Nuts should be on the outside of the body wall). Your machine should look like the picture below. Refer to page 52 for the next steps.



RUBBER TRACK SPROCKET ASSEMBLY

NOTE: In the photos that follow, the #4349 Rubber Track front idlers and #4350 Rubber Track rear drive sprockets will look different from what is shown, but the assembly process will be the same. Please gather your parts you set aside from your earlier track removal. Ex. O-rings, Nuts, Bolt, Washers. They will be needed for the re-assembly process.

1. Insert a #2061 grease zerk into the threaded hole provided in the Tube of each of the two (2) #4350 Rear Sprockets Assemblies and the two (2) #4349 Front Idler Assemblies. Tighten all four (4) Grease Zerks... See Photo below.

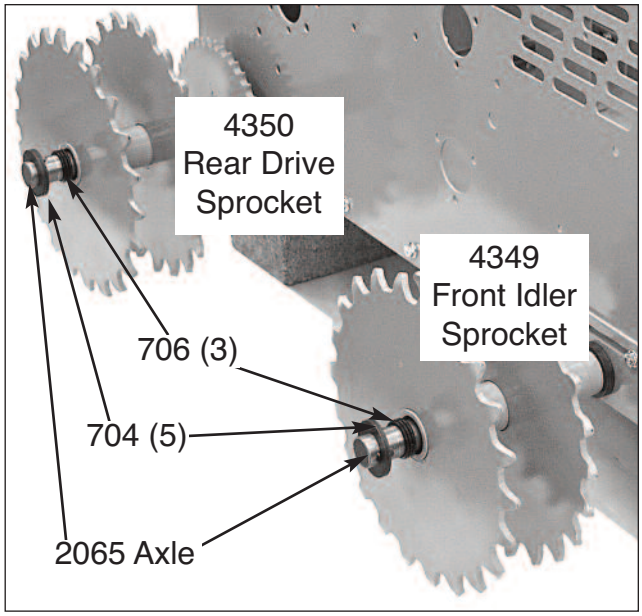


Set of (3) 706 O-Rings on "inside end"

2. Insert a *set* of three (3) #706 O-Rings into the ***"inside end"*** of each Tube of #4349 and #4350 Sprocket assemblies...as shown in the Photo below. Do not do to the *"outside end"* at this time.

3. Take the two (2) #4349 Front Idler assemblies and slip them onto *opposite ends* of the #2065 Front Axle... push "assemblies" tightly against (5) #704 Washers... see photo at the top of the next column.

NOTE: Rotating each Sprocket & Idler assembly, as you push it on it's Axle, is very helpful in moving it "inward".



Use the photo above as a reference for steps 4-7 below.

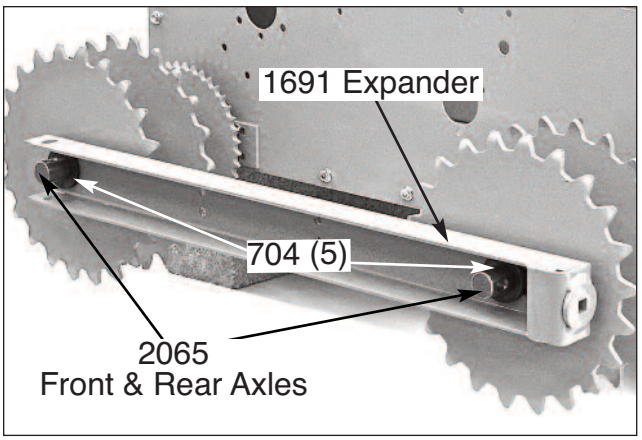
4. Take the two (2) #4350 Rear Sprocket assemblies and slip them onto opposite ends of the #2065 Rear Axle...push "assemblies" tightly against (5) #704 Washers.

5. Slip the remaining sets of three (3) #706 O-Rings over *right ends* of #2065 Front & Rear Axles...push them into their respective Tubes of Front & Rear Sprocket assemblies.

6. Check that O-Rings are properly seated in their respective Tubes and not getting pinched or cut. At this point approximately 2" of Axle is exposed on each end of each Axle.

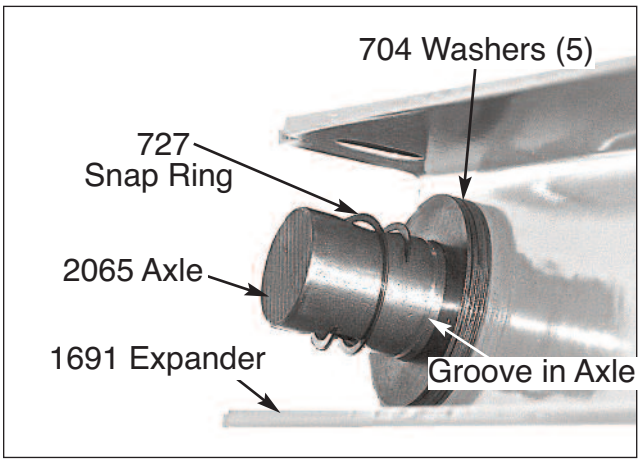
7. Slip five (5) #704 Washers over *both ends* of #2065 Front & Rear Axles and push them tightly against their respective Tubes... check that O-Rings are properly seated inside their respective tubes.

8. On left and right side, slip a #1691 Track Expander followed by five (5) #704 Washers over both ends of #2065 Front & Rear Axles. **See photo at the top left of the next page.**



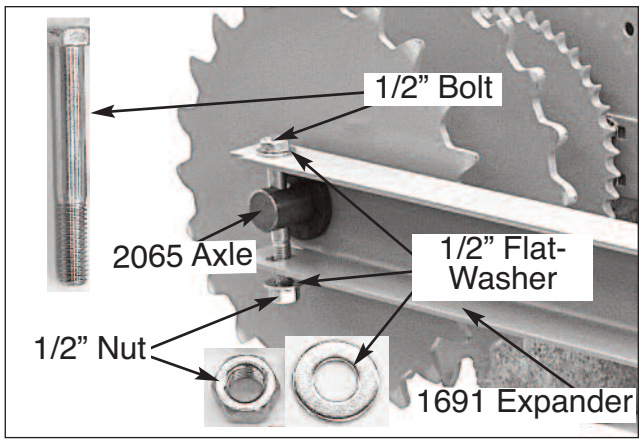
9. Secure Axles by sliping a #727 Snap Ring over each Axle end and engage it into the groove provided in each Axle.

TIP: You may need to use a new #727 Snap Ring, as once removed, they are difficult to reuse. Photo below shows proper method of applying #727 Snap Ring. Ring is pulled apart "accordion style" to allow you to work the Ring around the axle. Keep working the Ring toward the "groove" until it falls in... **make sure both ends of Ring are in the groove, or the Ring may potentially slide off during operation of tractor.**



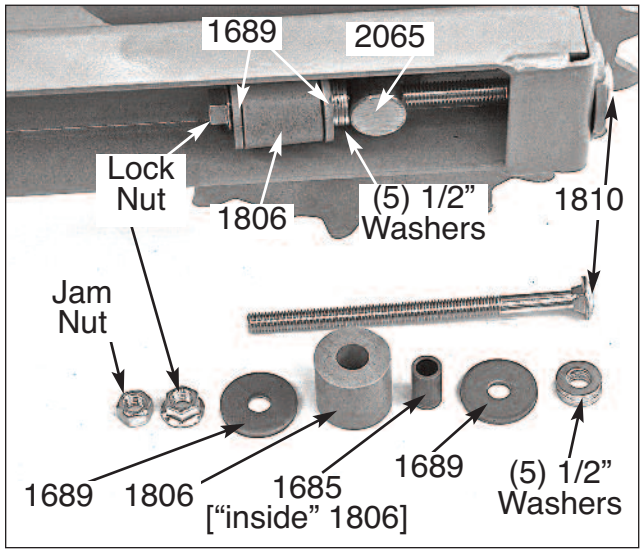
10. On *right rear* of Magnatrac, take your 1/2" Bolt and insert it in the following order: 1/2" Flat Washer, oval slot in top rear of #1691 Expander [right side], hole in #2056 Axle, oval slot in bottom rear of Expander, 1/2" Flat Washer and secure with 1/2" Nut... tighten, but don't crush Expander.

11. Repeat this STEP now using Expander on ***left side*** of Magnatrac.



12. Insert #1810 Track Tension Bolt into square hole in end of #1691 Expander assembly and pass through 1/2" hole in end of #2065 Axle.

13. Over threaded end of #1810 Bolt slip on in order: Five (5) 1/2" Washers, #1689 Washer, #1806 Spring [with #1685 Tube inside], #1689 Washer and finally a few turns of Lock Nut... you may have to move the Axle ahead slightly,



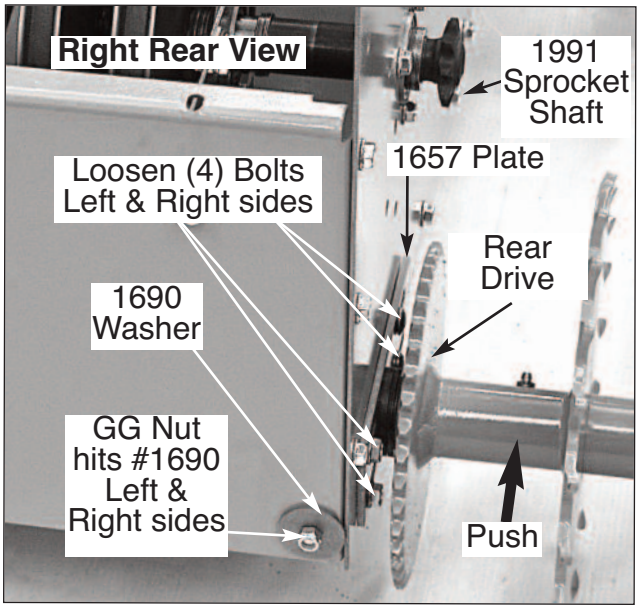
to get Nut on.

NOTE: Photo above shows only the *right side* of the Front Axle...this assembly is intended for both sides of the #2065 Front Axle.

For the next steps in the rubber track assembly process, please see the next page.

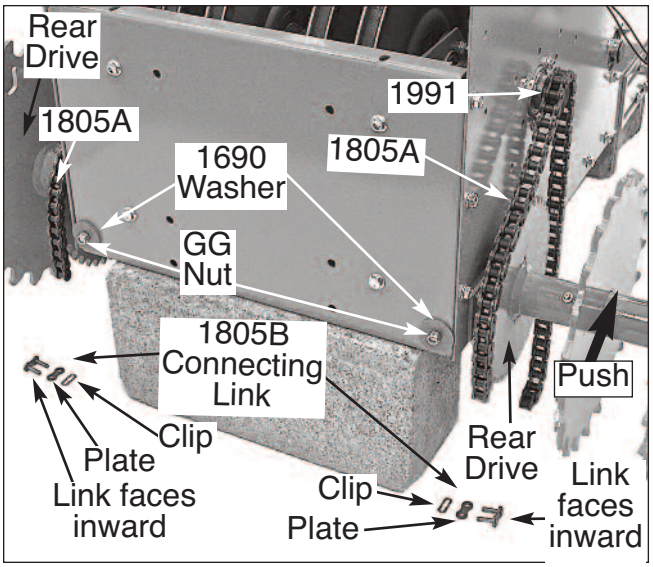
REAR DRIVE CHAIN AND CHAIN GUARD ASSEMBLY

The following bolded text should have been completed in your steel track disassembly process, if not, please do so at this time. **Make sure both ends of Rear Axle are forward so that the #GG Nut hits its respective #1690 Washer on *left and right side at rear* of Body... see Photo below.**



1. Loop a #1805A Chain around each set of Rear Drive Sprockets and #1991 Sprocket Shaft on left & right sides of Body.

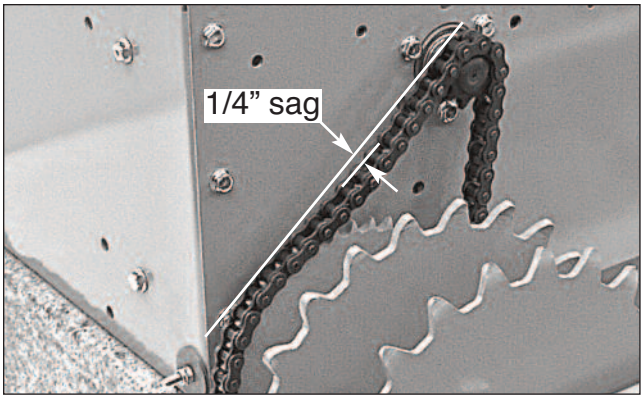
2. Join ends of each #1805A Chain with the *pins* of each #1805B Connecting Link. Secure each Link with Plate and lock with Clip.



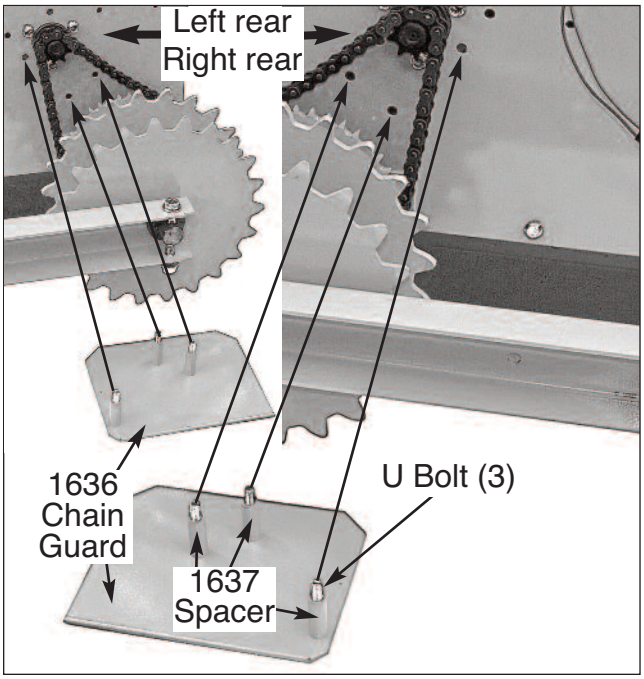
NOTE: When installed, the *pins* of each Link should point to the center of your Magnatrac... see Photo at the bottom of previous column.

3. To tighten the Drive Chains start rotating clockwise the #GG Nut located on *left & right lower rear* of Body. To draw Rear Axle back evenly, turn one Nut 1/4 turn, then go to the other side and tighten the other #GG Nut 1/4 turn.

4. Tighten both Chains until reasonably tight... not "bow-string" tight, but have about 1/4" of "sag" in the *slack strand* when the balance of the Chain is taught... See Photo below.



NOTE: When tightening Chains, rotate left & right Rear Sprocket assemblies one full rotation after each 1/4 turn of tensioning. If you detect a "high spot", use that point to determine your 1/4" of Chain sag.



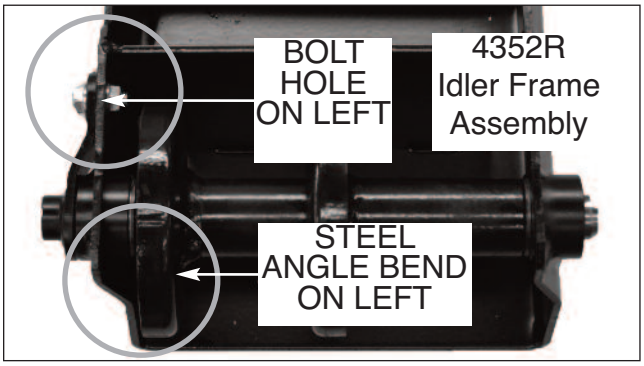
5. Closely following the Photo at the bottom right of the previous page, insert three (3) #U Bolts into *outside face* of each #1636 Chain Guard. Slip a #1637 Spacer over each Bolt.

6. Install a Chain Guard assembly into 3/8" holes in *left and right rear* Body Walls. Secure *inside* Body Wall with #JJ Nuts... fully tighten Nuts... see Photo at bottom right of previous page.

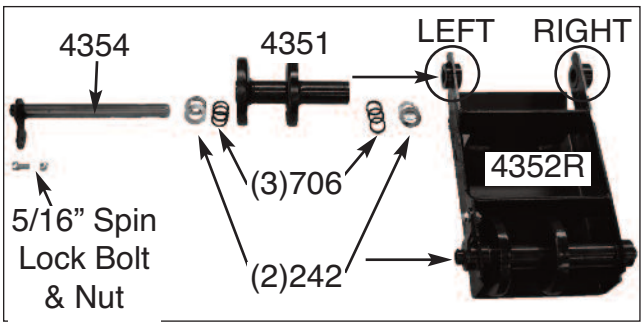
7. Check your assembly: make sure the four (4) Bolts securing the #1657 Plate [on "rear" *left and right side* of Body] are firmly tightened.

RUBBER TRACK CENTER IDLER SYSTEM ASSEMBLY

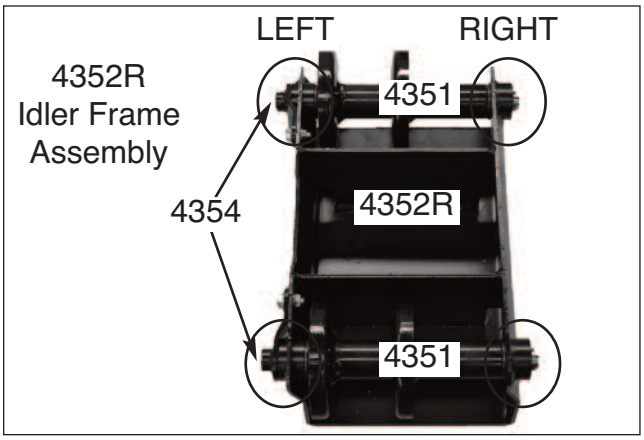
Prior to installing your center idler system, onto each side of your tractor. **You'll need to pre-assemble your #4352 L&R Idler Frame and Idlers.** Although, this creates more weight to lift later in the assembly, this does make the process easier.



1. Identify the #4352R and #4352L Idler Frames by placing them upside down as shown in the picture above. The *bolt hole* and the *steel angle bend* should be on the LEFT side for the #4352R Idler Frame and on the RIGHT side for the #4352L Idler Frame.

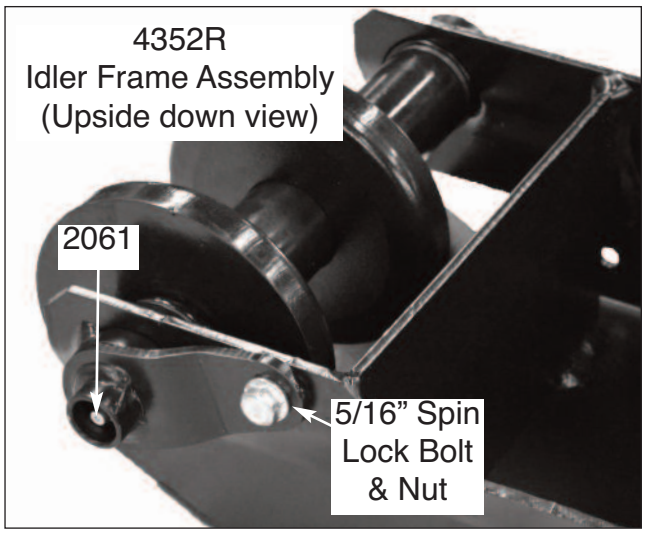


2. Install (3) #706 O-rings into each side of the #4351 Idler. The O-rings should rest against the inside brass bushing. (See picture at the bottom of opposite column). **Note: Lubricating these O-rings with a light coating of motor oil or another lubrication will help in the assembly process.** Do the same to the other #4351 idlers. (You should be using 6 O-rings per each idler. 3 for each side.)



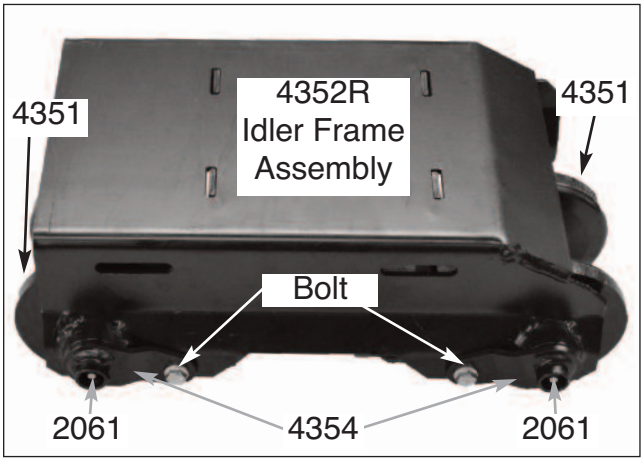
3. Take a #4354 Center Axle and slide it through the LEFT collar as shown above. Next, add (2) #242 Shim Washers, then slide your axle through the #4351 Idler, then add 2 more #242 Shim washers on the other side of the Idler. Double check that your #706 O-rings are still in place.

4. Slide the remaining end of the #4354 Center Axle through the RIGHT collar. Push through fully. Do the same process to the other 3 sets of #4354 Center Axles and #4351 Idlers.

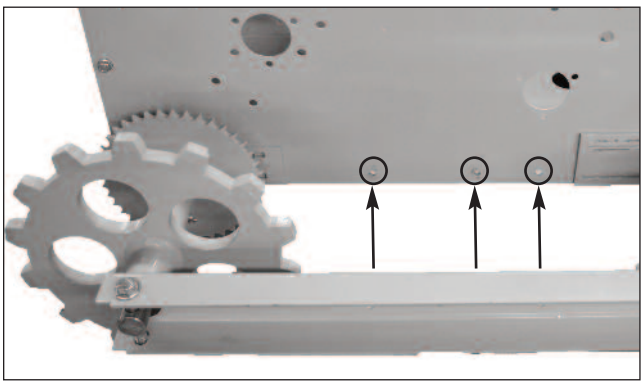


5. Secure #4354 Center Axles with (1) 5/16"-18 x 1 1/4" Spin Lock Bolt and (1) 5/16"-18 Spin Lock Nut...tighten. Insert a #2061 Grease Fitting into end of each #4354 Center Axle...tighten. **Do the same process to the other 3 sets of #4354 Center Axles & #4351 Idlers.** See picture at the bottom right of previous page.

Once assembly is complete, flip over your #4352 L & R Idler Frame Assemblies. They should look like the below picture. **Note: The #4352R Idler Frame Assembly is shown below.**



6. Remove the (3) bolts *from each side* of the body, for later re-assembly. **See below.**



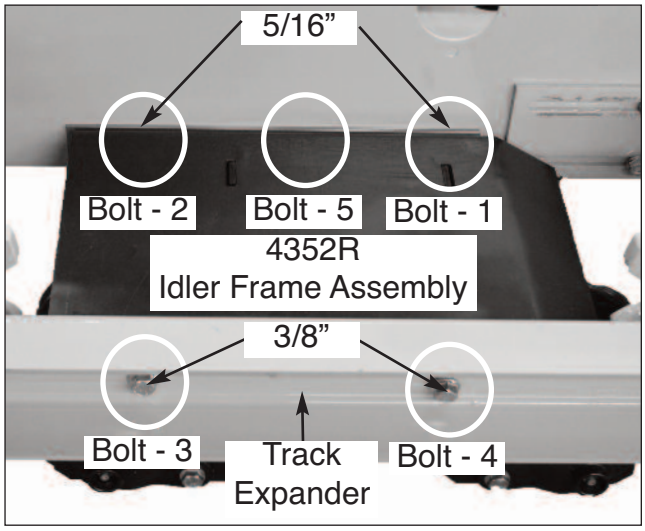
For the next steps, **Bolts 1, 2 and 5** are the **5/16" Bolts** and nuts that you removed from your body wall above. **Bolts 3 and 4** are new **3/8" Bolts** and Nuts. Having a helper available in this process to hold the assembly up and spin on the nuts will make the process much easier.

7. Loosely, attach **Bolt - 1** through the #4352R Idler Frame Assembly, then through the body wall. Attach a **5/16" Nut** to the inside of the body wall. See picture below.

8. Loosely, attach **Bolt - 2** through the #4352R Idler Frame Assembly, then through the bodywall. Attach a **5/16" Nut** to the inside of the body wall. See picture below.

9. Loosely, attach **Bolt - 3 & Bolt 4** through the **LOWER HOLES** on the Track Expander, then through the #4352R Idler Frame Assembly. Attach a **3/8" Nut** to the inside of the #4352R Idler Frame Assembly. See below.

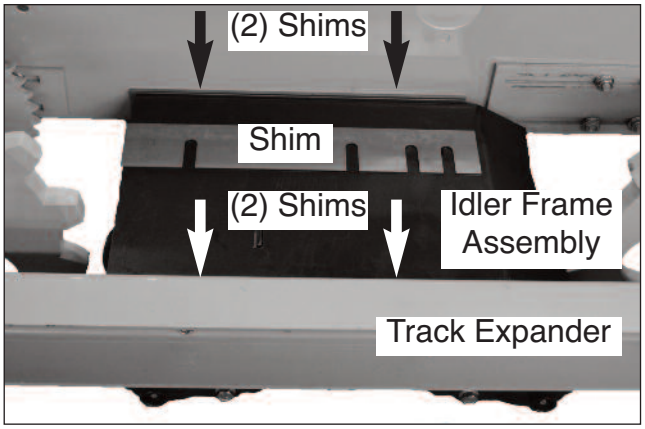
10. Loosely, attach **Bolt - 5** through the #4352R Idler Frame Assembly, then through the bodywall. Attach a 5/16" Nut to the inside of the body wall. See below.



All bolts should be loose at this time. **Repeat Steps 6-10** to the other side of the tractor, using the #4352L Idler Frame Assembly.

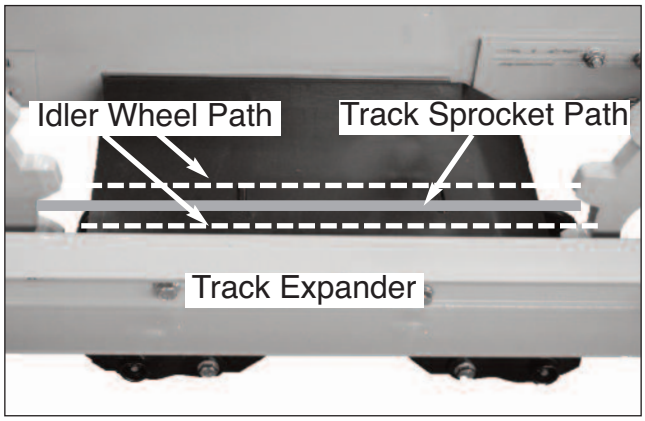
11. Drop in from above, (2) #4353 Shims **between the #4352R Idler Frame Assembly and the right body wall.** Making sure the openings are towards the bottom of the shims when dropping them in. Shims are slotted, to allow for bolt clearance. See picture on next page.

12. Drop in from above, (2) #4353 Shims **between the Track Expander and the #4352R Idler Frame Assembly.** Making sure the openings are towards the bottom of the shims



when dropping them in. See picture above.

13. Drop in from above, additional #4353 Shims **on both sides, to allow approx. equal spacing between track sprocket path an idler wheel path.** Tap shims gently with hammer to allow them to “be seated”. Don’t force excessive amount of shims.



14. Once happy with the spacing, make sure to tighten all 5/16” and 3/8” Bolts and Nuts. **Repeat Steps 11-14 for the opposite side of the tractor.**

You are now ready to install your rubber tracks, please refer to:

RUBBER TRACK
REPLACEMENT & TENSIONING

Located on pages 44-46 of this manual.

8- TROUBLESHOOTING

Below are tips and guidelines for troubleshooting some problems or concerns, which may occur during the life of your equipment. Should these guidelines not solve a problem please contact the factory for further instruction.

Engine won't crank.

- There are **2 electrical safety switches** on every crawler **(seat safety switch & brake safety switch).** If the safety switches are not in contact; the switches will prevent the engine from cranking. Make sure you are sitting on the seat and that the parking brake is engaged.
- With a continuity tester verify that the Brake safety switch is operating properly.
- Check to see if the solenoid is working. When you turn the key from run to off position you should hear a clicking sound. Have another person listen while an operator tries to start the unit.
- Verify that the wiring is in good condition.
- Check fuse in Honda Igntion Box & Circuit Breaker on front of Honda Ignition.

Engine cranks but won't start or starts and stops running right away.

- Verify there is adequate fuel & that the fuel filter is in good condition. Take off the fuel filter and fuel line by the tank. Check to make sure the fuel line and/or tank is not clogged with any debris. Check hoses leading to the fuel pump and to the carburetor. Also, check that the fuel shutoff is in the open position.
- Verify seat safety switch is being engaged and operating properly. The connection may be loose.
- Replace with new fuel.
- Carburetor may be clogged.

Engine dies when not in the seat.

- This is a normal operating characteristic to safeguard against accidental engagement of the tractor and/or attachments while not properly located in the operator's seat.
- If the engine dies continuously, check the wire connections and verify wires are not frayed or damaged.

Do Not Bypass this safety feature by completing the wire circuit.

Hydraulic Attachments (If equipped) behave erratically.

- Verify hydraulic fluid level is within the required operating range. Low fluid levels can result in air intake to the hydraulic system, which can result erratic operating characteristics.
- Verify the suction lines are properly secured. Loose suction lines can result in air intake and erratic operation.
- Check hydraulic pump belt. See PP35 Power Pack Instructions.

Track tensioning adjustment has reached its limit, but tracks are still loose.

- It is possible to remove links from the "steel track" chain to shorten the track loop. See the Service section of this manual. Contact factory for details.
- Tension springs or tracks need to be re placed.

One cylinder function of an attachment is not responding.

- A non-functioning cylinder can result from either a problem with the cylinder or the valve section operating the cylinder. To test, take the two hoses of the non-functioning cylinder and switch their connection at the operating valve with those of the adjacent valve section.
  - If the non-functioning cylinder continues to not operate the cylinder is faulty.
  - Should the cylinder now work, but the cylinder of the control that was switched stops working problem lies in the valve section.

MAGNATRAC has little power.

- Verify engine throttle is adequate; check the throttle connections.
- Verify there are not external loads draining engine power.
- Check the condition of the rear clutch belts, they may need to be tensioned or replaced if broken. (See the Service section of this manual).

Tracks are making a popping sound.

- It is not uncommon in the initial operating hours for the steel track system to make popping noises as the initial wear in occurs.
- Debris (rocks, branches, etc...) drawn into the track system will most likely be crushed, broken, or shattered resulting in popping noises. Check for stuck items in the track like rocks or other debris.
- Verify the track tension on the front idler sprockets is evenly adjusted on the left and right of the track. Unequal tensioning can result in the front idler sprocket running at an angle not parallel to the track line. (See the Service section of this manual). This results in tracks riding up the teeth of the sprocket and snapping back down to produce a popping noise.
- Check track sprockets for heavily worn teeth that would allow the sprocket to jump inside the tracks.
- Verify that the tracks are tensioned. Excessively loose tracks can result in the drive sprocket jumping inside the tracks.

MAGNATRAC does not drive perfectly straight.

- Due to normal inefficiencies in adjust handles, each track must be individually controlled to achieve a straight travel path. Operating both drive handles equal distance will naturally result in a “slightly” curved travel path. If this condition is extreme, contact the factory for possible problems

Tracks came off.

- Do NOT proceed operating the MAGNA TRAC. Lower all attachments and apply the parking brake. Inspect the area for causes. See the Service section of this manual for possible problems and fixes. Call the factory with questions.

MAGNATRAC is stuck.

- Use the hydraulic down pressure (if equipped) of the attachments to loosen the tracks. Call the factory with any questions.
- To tow the MAGNATRAC: Lower all attachments so that they are **just above the ground**. WE NEVER ADVISE TO PUSH! See additional instructions below.

  1. Make sure the parking brake is disengaged.
  2. Remove seat and rear cover assembly.
  3. Remove any cross braces that prohibit access to the belt area.
  4. Loop rear clutch belts off of pulleys. This can be done in a variety of ways. **(See belt removal section in this man ual).**

No power to your attachments.

- Check the condition of the attachment pump belt, (if equipped) located by the eng ine. Tension or replace. See PP35 Power Pack Instructions for detailed infomration.

Hydraulic Oil is overflowing from the hydraulic oil breather.

- Check the level of the oil in hydraulic tank (if equipped), level when full should be approx. 5” from the top of the tank.
- Check the rating of your 3rd party attachment that may be connected to the at tachment valve. Call the factory with ques tions.

9- SAFETY & WORK PROCEDURES for MAGNATRACS

The following material is designed to familiarize you with the basic characteristics of a MAGNATRAC (tracked Vehicle). Its purpose is to teach you how a MAGNATRAC responds in comparison to the more familiar wheeled tractors. In addition, it outlines safe and efficient work procedures for a compact crawler tractor equipped with optional attachments (loaders, backhoes, blades, etc.)

Each MAGNATRAC operator encounters dramatically different working conditions than another. For this reason the following drawings and descriptions are general in nature. They illustrate general points rather than details which may apply to only one operator's working conditions. You are encouraged to contact the factory at anytime for help or advice for any job you have in mind.

A tracked Vehicle, by its very nature, requires the use of operating techniques and procedures that are unfamiliar to most people used to driving wheeled vehicles.

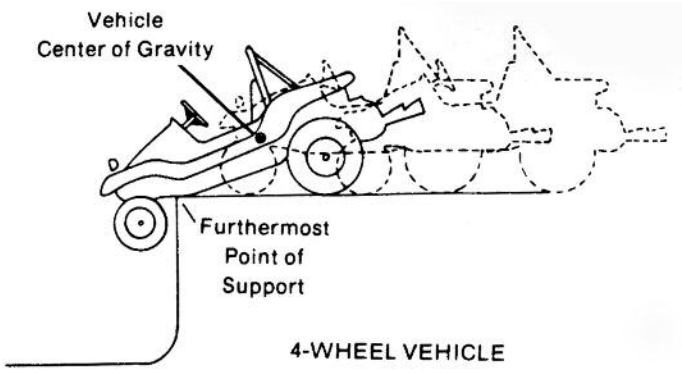
This means that a person intending to operate a Tracked Vehicle must allow himself ample opportunity to familiarize himself with the controls and characteristics of the machine.

It is the purpose of this booklet to inform and instruct prospective Track Vehicle operators in an effort to help them use it safely.

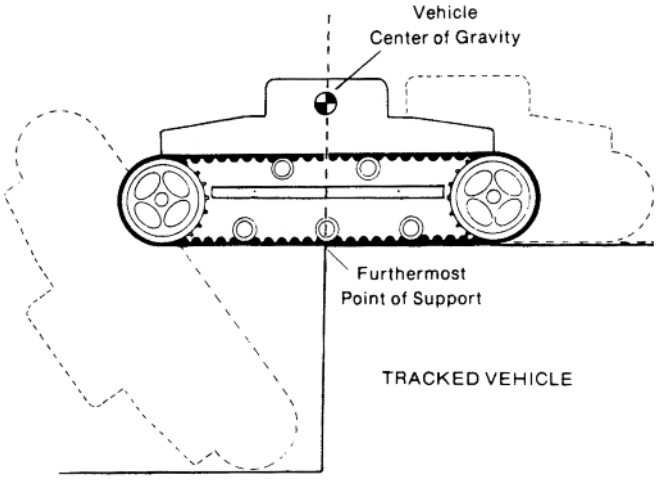
SAFETY WARNING: NO PERSON SHOULD ATTEMPT TO OPERATE A TRACKED VEHICLE BEFORE READING THIS BOOKLET THOROUGHLY. IF ANY PORTION OF THIS BOOKLET IS NOT CLEARLY UNDERSTOOD, WRITE TO US AT THE ADDRESS ON THE FRONT COVER.

TRACKED VEHICLE CHARACTERISTICS

Tracked vehicles possess certain inherent features not found on standard four-wheel vehicles. For instance, a standard vehicle will hit bottom when the wheels on either end are driven over a drop-off. In most cases this will stop vehicle motion and give immediate warning.

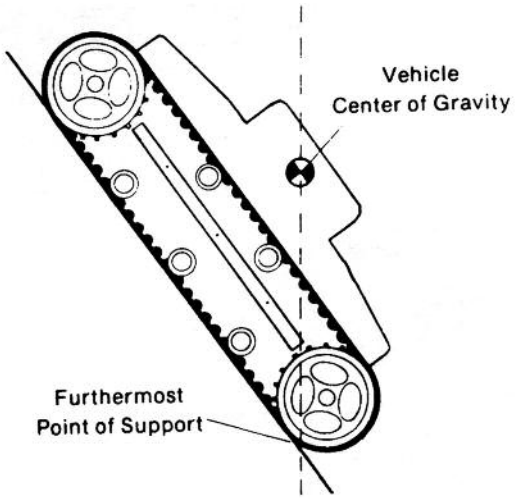


A tracked Vehicle, however will continue on without any warning until its center of gravity passes across an imaginary line drawn straight up from the furthermost point of support with ground. It will drop SUDDENLY. (See illustration upper right). THIS WILL HAPPEN EVEN AT THE VERY SLOWEST SPEEDS.



SAFETY WARNING: ANYTIME A PORTION OF THE TRACK IS NOT IN CONTACT WITH THE GROUND, STABILITY IS REDUCED. NEVER ATTEMPT TO 'JUMP' A TRACKED VEHICLE OVER DROP-OFFS, HILL CRESTS, OR OTHER OBSTACLES. THIS CAN BE EXTREMELY HAZARDOUS.

A Tracked Vehicle can climb or descend steep slopes, so



steep in fact that the vehicle can tip over forward or backward, before it loses traction.

Tipover occurs when the Vehicle's center of gravity passes across an imaginary line drawn straight up from the furthermost point of support with ground.

When the vehicle's center of gravity passes this point, the vehicle will tip over SUDDENLY.

TRACKED VEHICLE OPERATION

A Tracked Vehicle, by its very nature, is a vehicle requiring a great degree of care and judgment during operation. It should be kept in mind that while your Tracked Vehicle is designed to operate in rough terrain, this same fact allows for the possibility of a hazardous condition developing at any time. Safe operation of your Tracked Vehicle must be based on the understanding of the vehicle's limitations, thorough knowledge of the controls and their functions, and the operator's good judgment and experience.

SAFETY WARNING: WHERE THE OPERATOR IS NOT CERTAIN OF THE VEHICLE'S ABILITY TO TRAVERSE AN OBSTACLE OR TERRAIN SITUATION, OR, IS NOT CERTAIN OF HIS OWN ABILITY TO SAFELY OPERATE THE VEHICLE, AN ALTERNATE ROUTE MUST BE TAKEN.

OPERATION ON SLOPES

Tracked Vehicle operation on slopes presents an obvious opportunity for the vehicle to tip over. This type of operation demands constant attention to changes in terrain and the ability to anticipate and avoid possible hazards.

This ability can only be developed through careful study of the points noted in this section and a slow, planned effort on the operator's part to become proficient.

The most effective guard against hazards while operating on slopes, especially during downhill operation is to keep vehicle speed very slow.

SAFETY WARNING: WHEN OPERATING ON SLOPES VEHICLE SPEED SHOULD BE KEPT VERY SLOW AND THE OPERATOR SHOULD BE EXTREMELY ALERT FOR CHANGES IN TERRAIN.

Vehicle stability on a hill, for example, is determined not only by the general slope of the hill but also by terrain conditions (rocks, ditches,, logs, drop-offs, etc.) and by the nature of the hill surface (gravel, sand, grass, snow, rock, etc.), the payload which the vehicle is carrying, the manner in which the payload is distributed within the vehicle, attachments and accessories which have been added to the vehicle, and so forth.

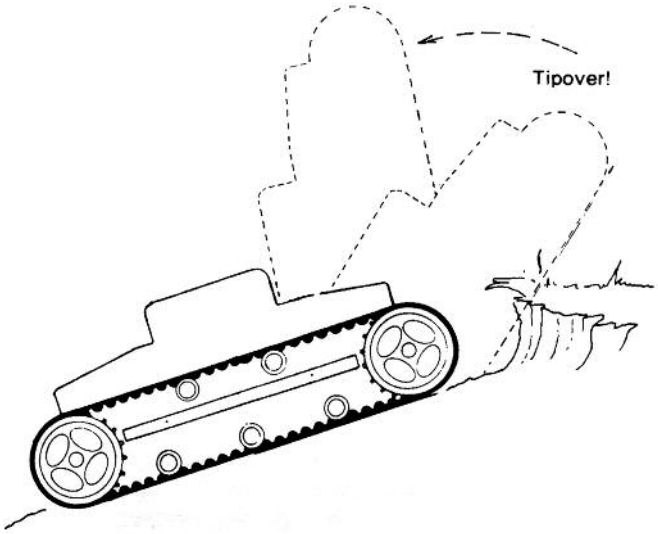
Similarly, driving technique and its effect on vehicle stability enters into any determination of what constitutes a safe slope. Excessive speed, sudden braking, choice of path - all can be critical.

UPHILL OPERATION

The following illustrations depict some situations in which a Tracked Vehicle can be expected to tip over. Variations in speed, loading, terrain and vehicle condition must all be analyzed to determine whether or not a specific obstacle can be traversed. If in doubt, do not attempt.

SAFETY WARNING: ON STEEPER SLOPES SMALLER OBSTACLES WILL CAUSE A TRACKED VEHICLE TO TIP OVER.

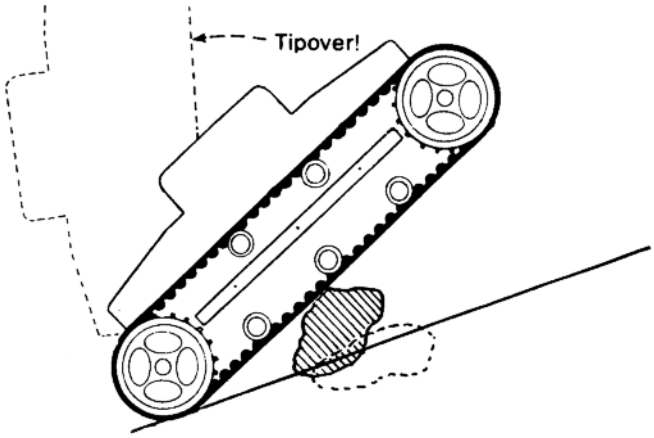
It is common to see a situation where a natural erosion has caused the very top of a bank or hill to rise



sharply. Always check for this condition before attempting to climb any such type of terrain. A Tracked Vehicle could climb up to a point at which it falls over backward.

It is also very important to check for this terrain condition before going down over the edge of a bank or dropoff.

The same situation can occur where an embedded object is pulled from the ground. The vehicle track may 'grab' a rock or log. As the object emerges from the



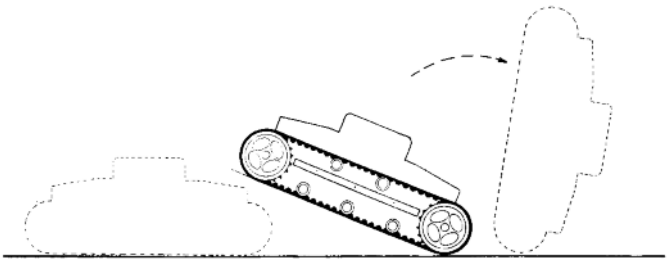
ground, rolling under the track, the vehicle could climb to the point at which it falls over backward.

DOWNHILL OPERATION

SUDDEN STOPS

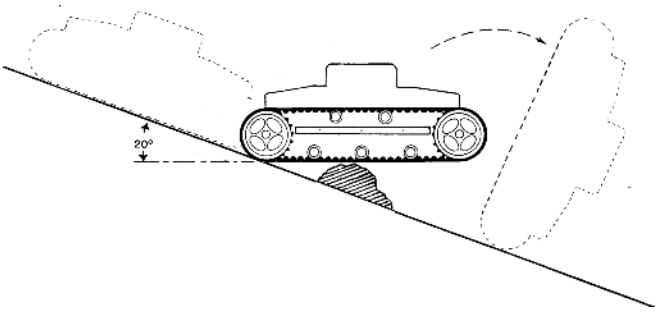
If a Tracked Vehicle is driven down a slope and the tracks are stopped suddenly, the vehicle's exceptional traction may cause it to tip over forward.

SAFETY WARNING: IF VEHICLE MOTION IS ABRUPTLY DECREASED OR STOPPED, A TRACKED VEHICLE CAN TIP OVER FORWARD. THIS POSSIBILITY BECOMES GREATER AS THE VEHICLE SPEED AND/OR DOWN SLOPE INCREASES.



CROSSING OVER AN OBJECT

This illustration is drawn to depict an obstacle situation in which a Tracked Vehicle can be expected to tip over. Variations likely to occur in natural terrain, the approach to the obstacle, operator skill and loading of a Tracked Vehicle may reduce the size of obstacle or steepness of the slop required, which could cause tipover.



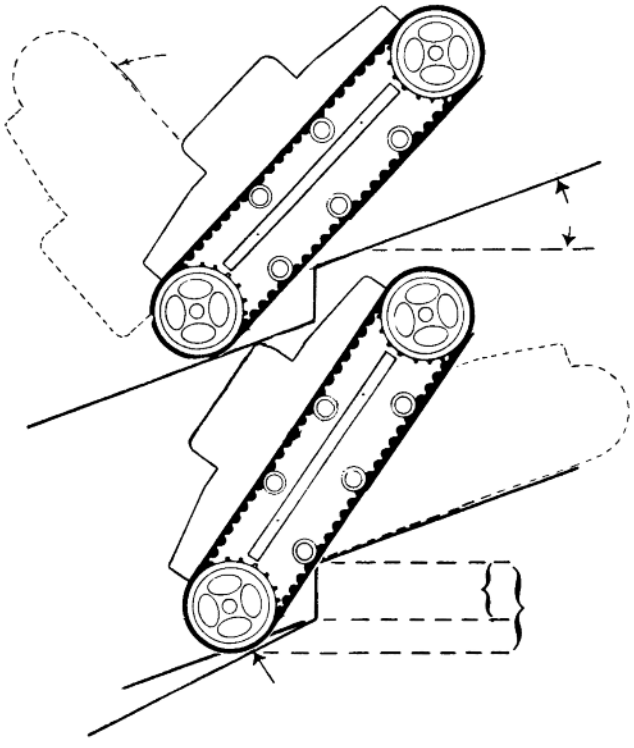
SAFETY WARNING: IF THE VEHICLE'S CENTER OF GRAVITY PASSES THE POINT OF SUPPORT, A TRACKED VEHICLE WILL BEGIN TO TIP. UNLESS THE TERRAIN ON THE DOWNSIDE OF THE OBJECT PROVIDES A NEW POINT OF SUPPORT, FAR ENOUGH AHEAD OF THE VEHICLE CENTER OF GRAVITY TO NEGATE THE EFFECT OF INERTIA, A TRACKED VEHICLE WILL TIP OVER FORWARD.

SAFETY WARNING: ON STEEPER SLOPES, SMALLER OBSTACLES WILL CAUSE A TRACKED VEHICLE TO TIP OVER.

SAFETY WANING: OBSTACLES, SOME OF WHICH MIGHT BE DRIVEN OVER SAFELY WHILE ON LEVEL TERRAIN, CAN CAUSE A HAZARD WHILE OPERATING ON SLOPES.

DROPOFFS

This illustration is drawn to depict a dropoff situation in which a Tracked Vehicle can be expected to flip. Variations occurring in natural terrain, the approach to the obstacle, operator skill, and loading of a Tracked Vehicle may reduce the size of the dropoff or the steepness of the slope, which could cause tipover.



SAFETY WARNING: A TRACKED VEHICLE MUST BE OPERATED WITH GREAT CARE AT ALL TIMES AND ON ANY SLOPE. SLOPES STEEPER THAN 20° SHOULD BE REGARDED AS ULTRA-HAZARDOUS AND APPROACHED WITH EXTREME CAUTION. EVEN ON SLOPES OF LESS THAN 20°, A TRACKED VEHICLE CAN BE TIPPED OVER BY A SUDDEN STOP, EXCESSIVE SPEED, UNEVEN TERRAIN, OR OTHER SPECIAL CONDITIONS OR COMBINATIONS OF SUCH CONDITIONS.

An important variable in determining if a give obstacle will cause a Tracked Vehicle to tip over is the vertical distance between the last point of contact and the new point of support. Note that the new point of support can be on level ground, a downhill slope, or a steeper downhill slope. The apparent size of the obstacle or dropoff is not the same as the drop it causes. Among the many other vari-

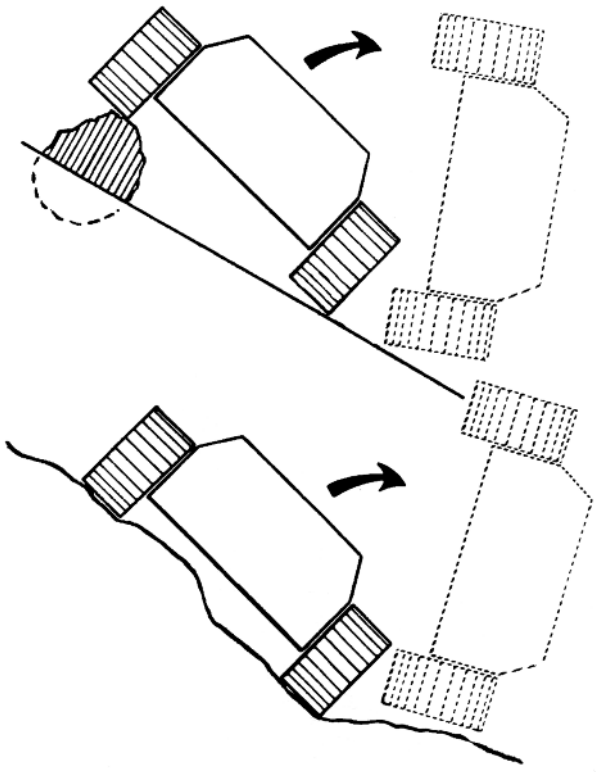
variables are the steepness of the slopes, size of the obstacle causing the drop, the shape of the last point of support, the load on the Tracked Vehicle, initial speed, tightness of the track, traction, symmetry of the obstacle to the Tracked Vehicle and operator skill and judgment.

SIDEHILL OPERATION

The illustrations show how driving over an obstacle withe the uphill track or into a hole with the downhill track will cause the vehicle to tip over sideways.

A slippery surface, like snow, ice, frozen sand, and loose gravel can also be dangerous. It is possible to slide into a tree or rock or to slide off the edge of a cliff.

SAFETY WARNING: REGARD ALL OPERATIONS ON SLOPING TERRAIN AS HAZARDOUS.



PARKING THE VEHICLE

When a Tracked Vehicle is parked on a sufficient slope, failure to engage the parking brake, or failure of the parking brake to function properly-can result in the vehicle rolling down the slope, out of control.

OPERATING SAFETY PRECAUTIONS

1. Keep hands and feet inside vehicle.
2. Never attempt to operate the vehicle from anywhere other than the driver's seat.
3. Avoid unnecessary quick stops.
4. Avoid quick turns.
5. Shut off engine and engage parking brake when leaving vehicle.
6. Park sideways on slopes.

LOADER OPERATION

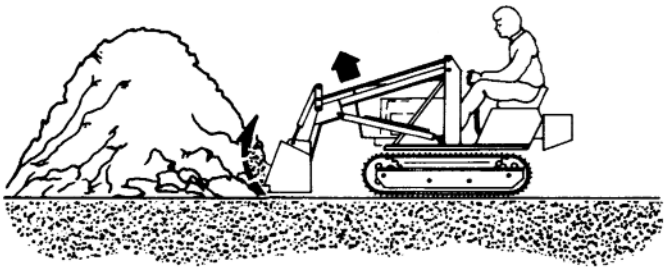
Suggested operating techniques for loader operation are outlined in this section. Practice the lever movements as you operate the loader through the various jobs described.

Filling the Bucket

Set the bucket to the level position. Approach, then enter the pile.

Ease the control levers to lift and roll back the bucket.

Lift and roll back of the bucket will increase efficiency because a level bucket throughout the lifting cycle resists bucket lift and increases breakaway effort.



NOTE: Do not be concerned if the bucket is not completely filled during each pass. Maximum productivity is determined by the amount of material loaded in a given period of time. Time is lost if two or more attempts are made to fill the bucket on each pass.

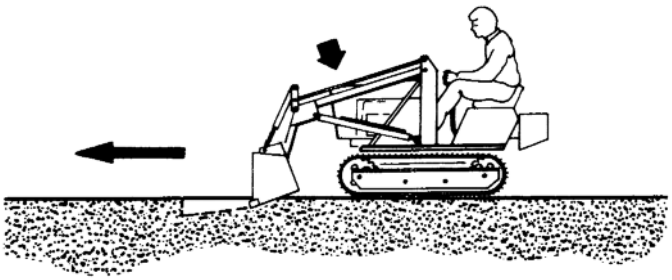
LIFTING THE LOAD

To lift and carry the load, without spillage, fully roll the bucket back after filling and before moving the unit.

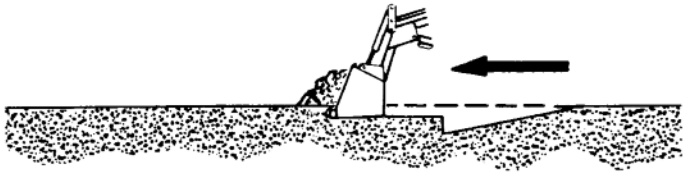
NOTE: Do not attempt to lift bucket loads in excess of loader capacity.

PEELING AND SCRAPING

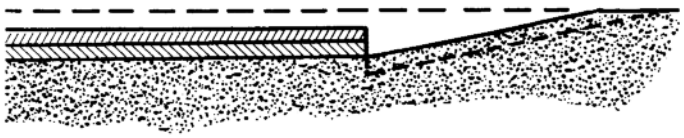
USe down pressure and a slight bucket angle to start long cuts. Make a short angle cut and break out cleanly.



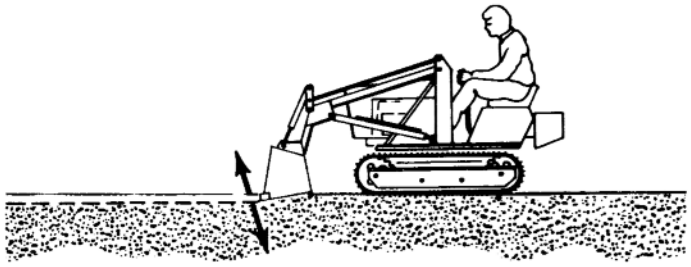
With the bucket level, start a cut at the notch approximately 2 inches (50.8 mm) deep. Hold the depth by feathering the bucket to adjust the cutting lip up or down. When the front of the tracks enter the notch, adjust the lift arms to maintain the proper depth.



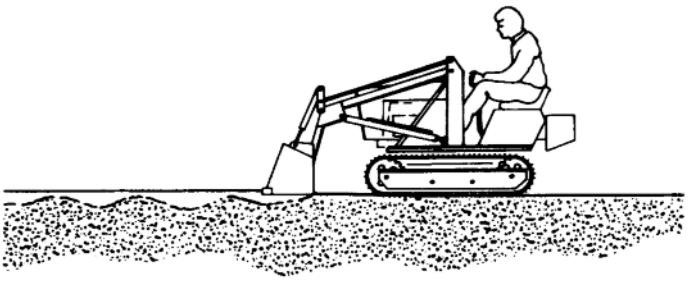
Make additional cuts until the desired depth is reached.



After reaching the desired depth, actuate the loader control lever to compensate for bucket lip action only; do not move the lever for lift cylinder action. Doing this allows you to concentrate on maintaining a precise cut.



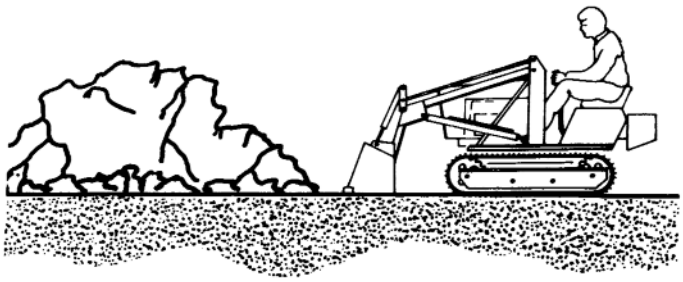
If the lever is moved for lift cylinder action without controlling the bucket angle, the bucket may gouge and leave a series of ruts in the surface.



OPERATING WITH FLOAT CONTROL (if equipped)

During hard surface operation, place the control lever in “float” (held by the detent), and keep the bucket level. This will permit the bucket to “Float” on the contour of the working surface. If hydraulic down pressure is exerted, the bucket will wear faster than normal.

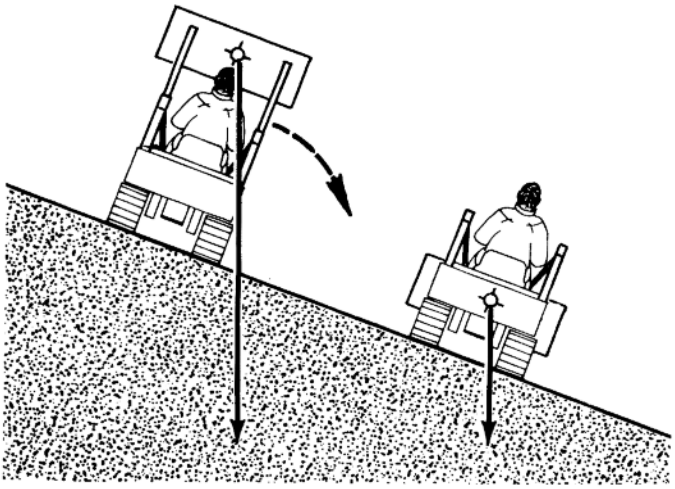
The ‘float” position will prevent the mixing of surface material with stockpile material. It will also reduce the chance of surface gouging when removing snow or other material.



CARRYING THE LOAD

Position the bucket in the full roll back position and the lift arms as low as possible for maximum stability and visibility whether the bucket is loaded or empty.

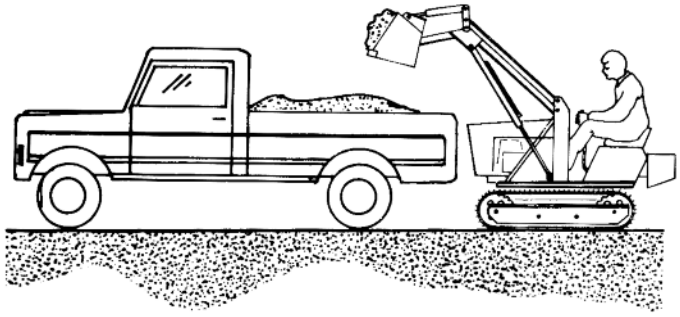
CAUTION: When operating on a hill or slope, keep the bucket as low as possible. This keeps the bucket center of gravity (C/G) as low as possible, giving maximum stability.



When transporting the load, keep the bucket as low as possible to resist tipping, in case a track drops in a rut.

DUMPING THE BUCKET

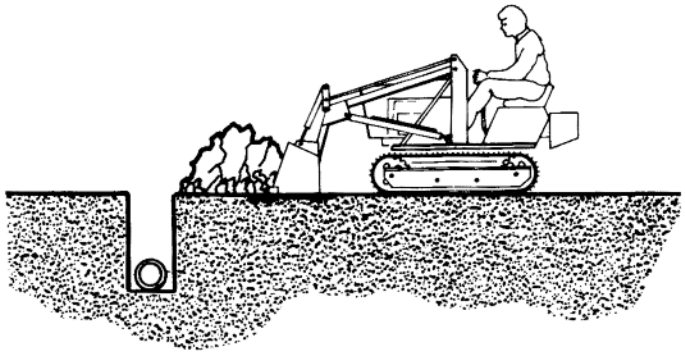
Lift the bucket high enough to clear the side of the vehicle. Move unit in as close to the side of the vehicle as possible, then dump the bucket.



After the bucket is dumped, back away from the vehicle while lowering and leveling the bucket.

BACKFILLING

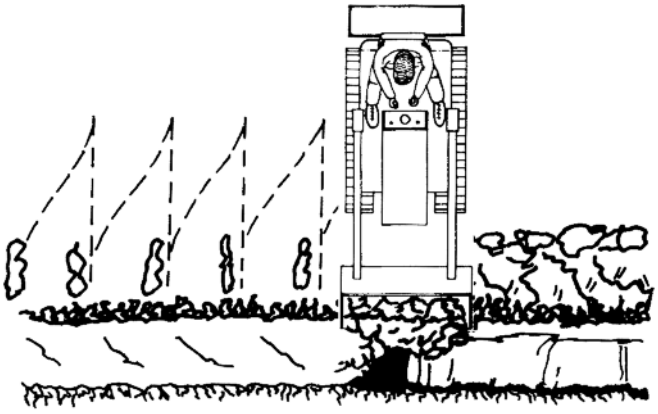
Efficient backfilling occurs by pushing maximum amounts of soil without losing speed or “stalling.” If a “stall” occurs, downshift or reduce the depth. If the unit is not working at capacity in the gear selected, increase the depth of the cut.



Approach the pile with a level bucket. When adjusting the depth of cut to a load that can be handled without going into a “stall,” actuate the control lever for lift and bucket action simultaneously, or separately as required, to maintain a level bucket.

Leave the soil in the bucket, as dumping on each pass is time consuming. Lift and level the bucket for the next pass while backing from the excavation.

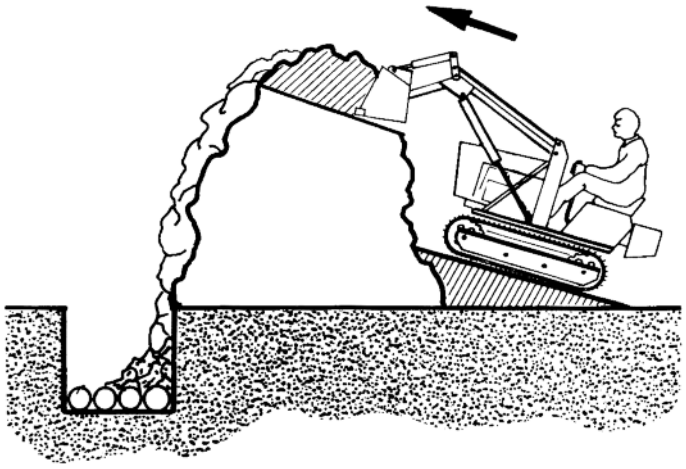
Operate at right angles to the ditch.



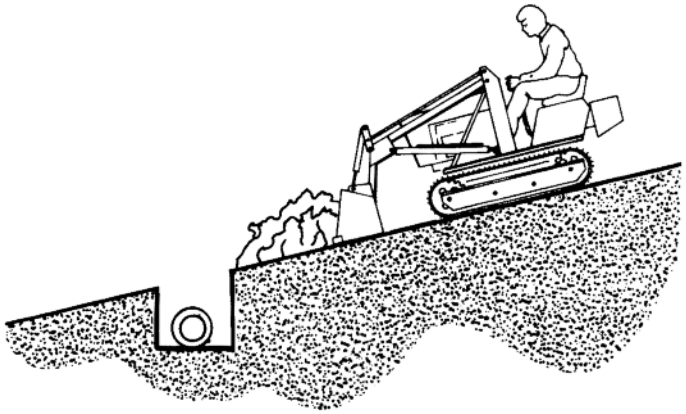
Leave soil that drifts over the side of the bucket for final cleanup.

One lengthwise cleanup pass will usually leave the backfill at an acceptable grade.

When backfilling from a large pile, shovel off the top of the pile, pushing toward the excavation. Drag some soil rearward to form a work ramp of convenient grade.

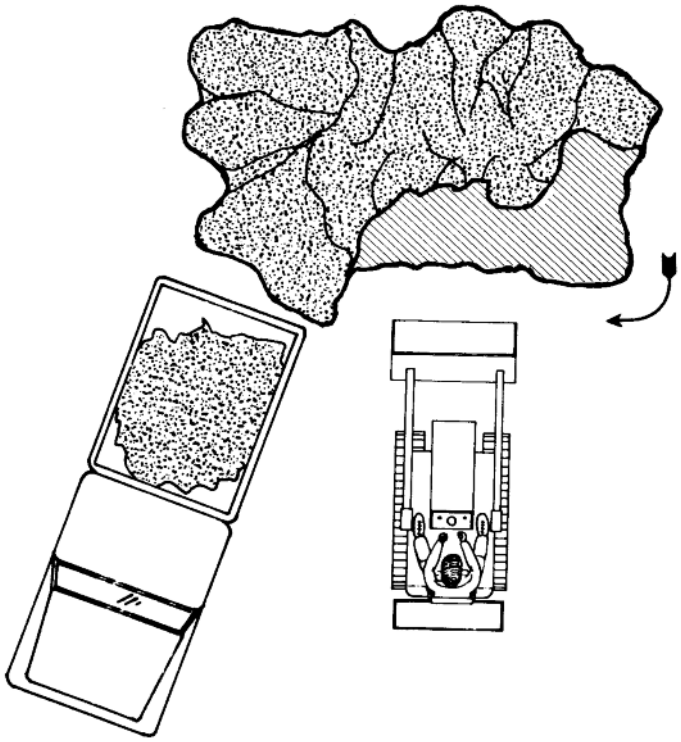


When backfilling on a slope, have the soil piled on the high side for easier backfilling.



LOADING FROM A STOCKPILE

Initially approach the stockpile with the bucket approximately 2 feet (609.6 mm) off of the ground. Lower the bucket to ground level when the stockpile height has been reduced so the bucket will break out easily.

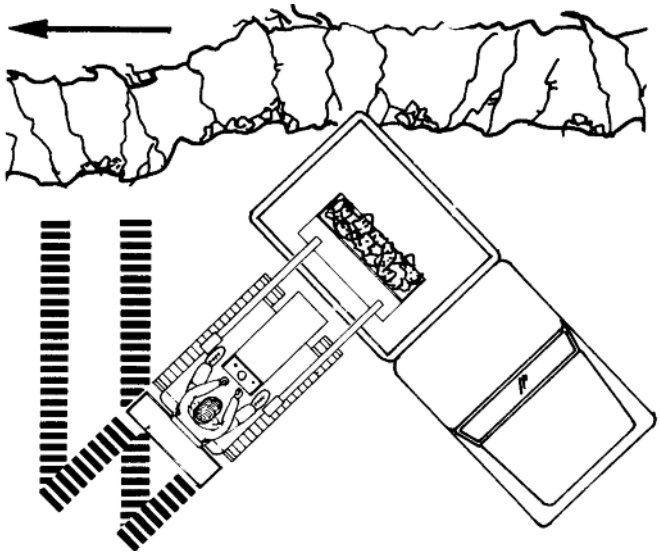


Keep an area clean so the truck or trailer can back in close to the work area. This will minimize travel distance from the pile to the truck. Keep the truck in close and work around the pile.

LOADING FROM A BANK

Select the highest forward gear that provides the most efficient loading operations without going into a “stall.”

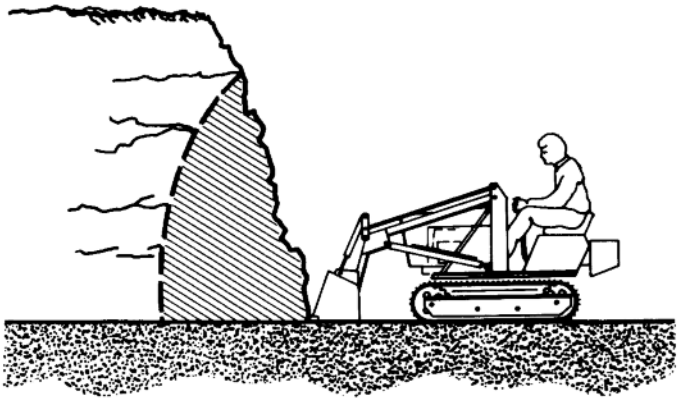
For faster loading, maintain a 45° turn angle, and work as close to the truck as possible.



Always keep the truck close to the operation and keep cutting depth half the length of the truck bed.

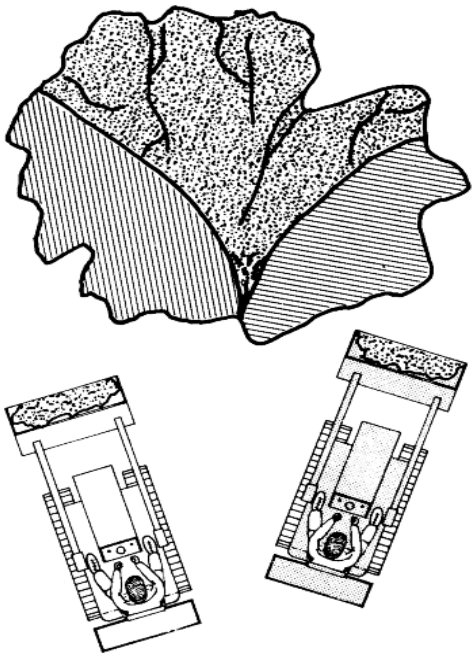
Backgrade with the bucket occasionally, and approach the bank with the bucket flat. Slight down pressure with the bucket level helps keep the working area smooth. Use the heel or low rear edge of the bucket for back-grading ruts, etc.

CAUTION: Exercise care when undercutting high banks. Soil slides can be dangerous. Load from the banks as low as possible for maximum efficiency. Remember that loader lift and break-away capacities diminish rapidly as loading height is increased.

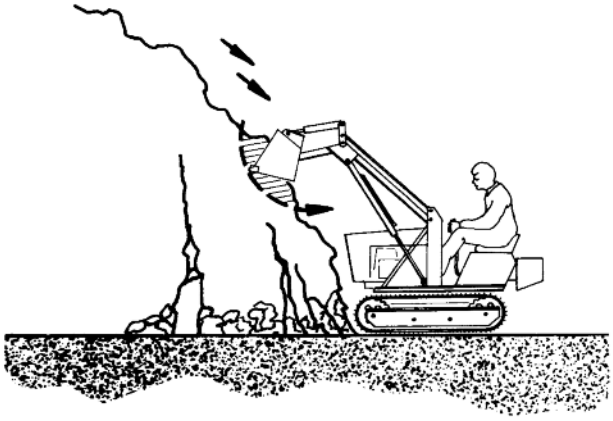


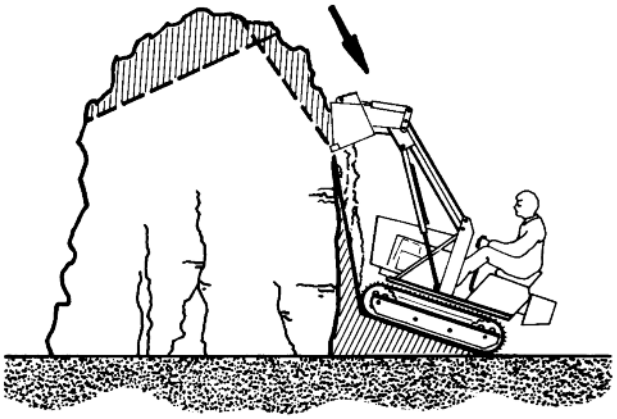
BREAKING AND SPREADING LARGE PILES.

Side-cutting is a good technique for cutting down a large stockpile.



If the pile sides are too high and are likely to cave in, use the loader to break them down.

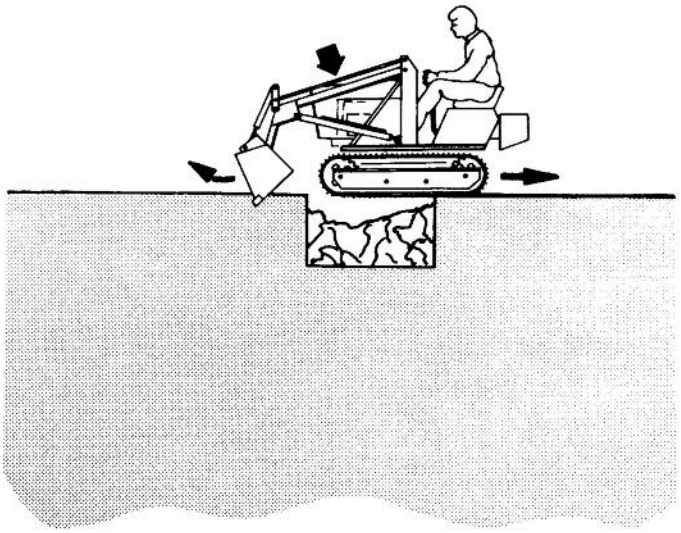




Then, build a ramp by shovel-loading material from the top until a work area is cut through the pile.

If stuck in a ditch...

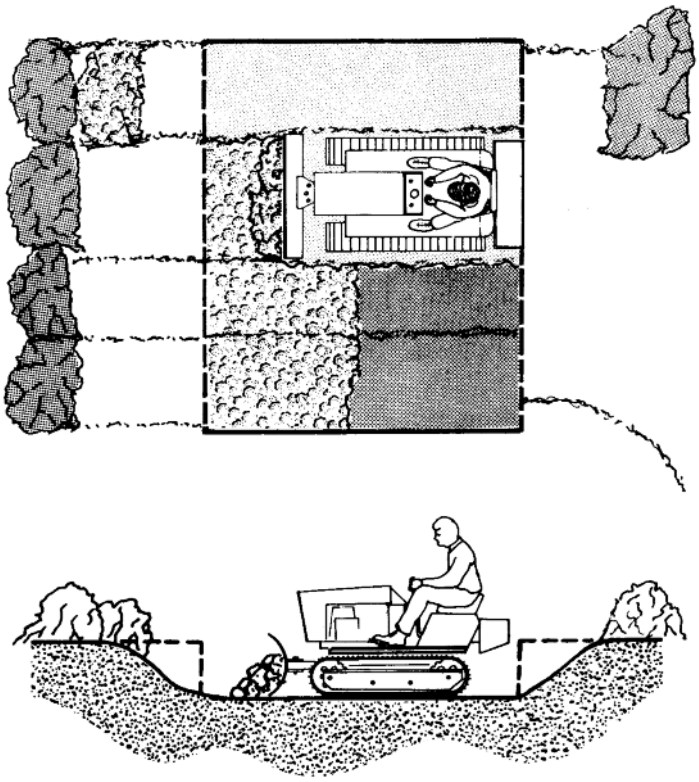
...dump the bucket and apply down pressure to lift the front of the tracks from the ditch. Actuate the bucket as engine power is applied to move the unit backward.



BULLDOZING

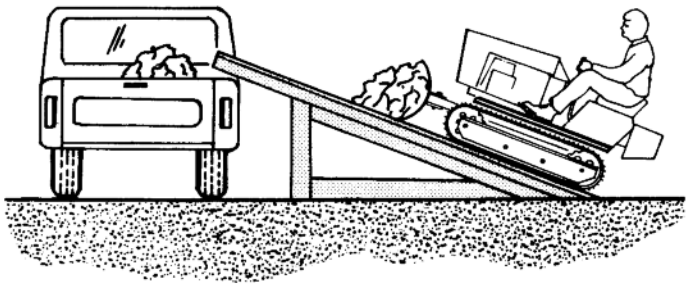
DOZER EXCAVATION

When dozing out a pit with a blade or bucket, make cross cuts working from South to North in overlapping swaths. When the bucket or blade fills, lift and push contents over the undug ground which will later be dozed to the opposite side and then out.



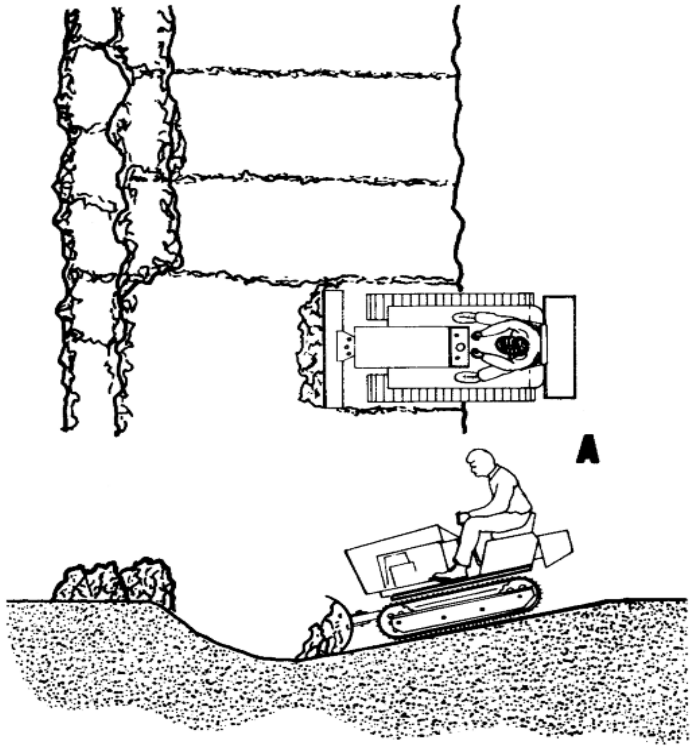
You have to work down from ramps on either side of opening until the desired depth and area are achieved. You should leave one ramp intact so that trucks can deliver foundation materials where they will be used. If soil is excessively hard, loosen it with a ripper or plow. The remaining ramp can be cut out with either a backhoe or by hand.

When regular loading tools are not available it is possible to utilize bulldozers for filling tracks and trailer. Inclined ramps, built of earth, steel or wood, are a means to assist loading economically when level terrain predominates.

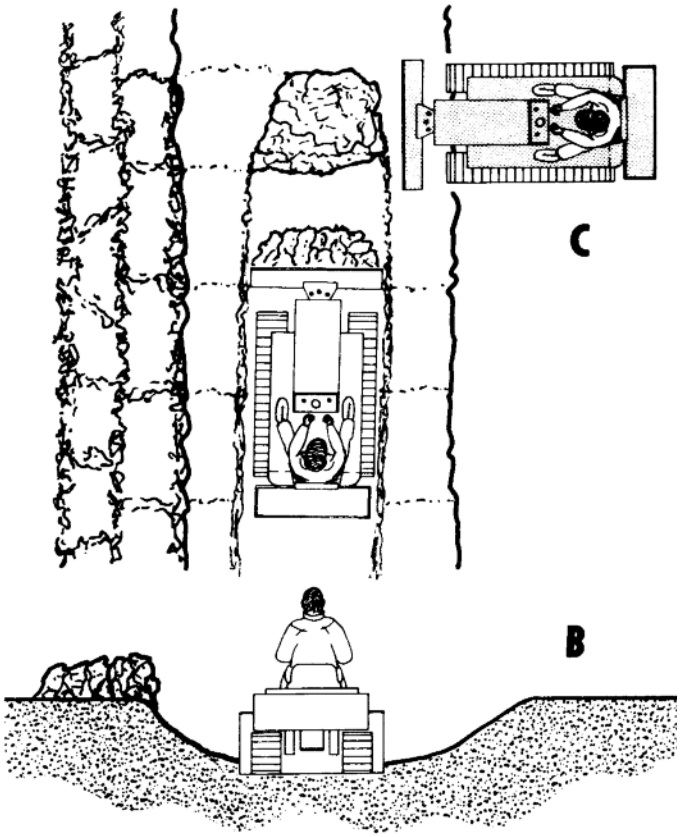


DOZER DITCHING

A dozer and blade can dig wide, shallow ditches effectively as shown in the following illustrations. When the limits for side excavation are reached (A)...



...the unit can work in the trench pushing the material forward into mounds (B), that can then be pushed to the side (C).

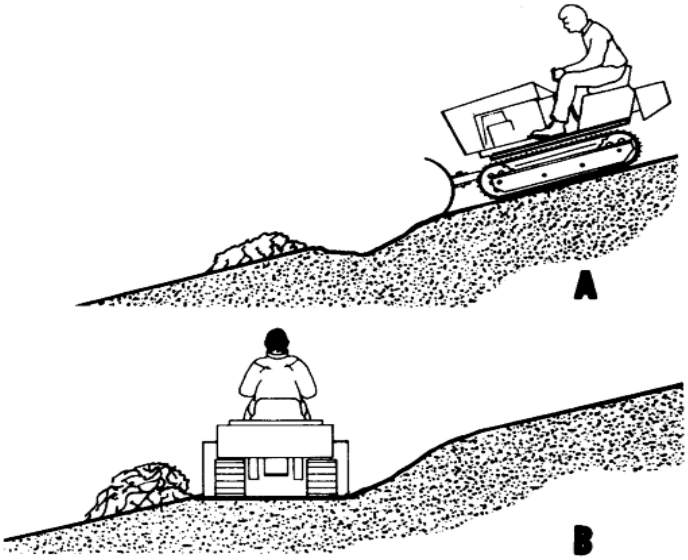


SIDE HILL CUTS

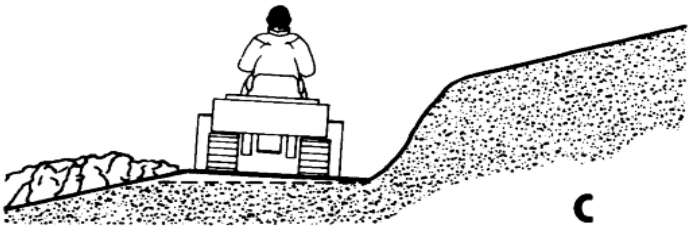
Always start or pioneer all side hill cuts from the top of hills and then work your way down with the cut. It may be necessary to reach the starting point by climbing up a more gradual slope on the opposite side of the hill. Working downhill gives you the advantage of gravity.

1. Working from above

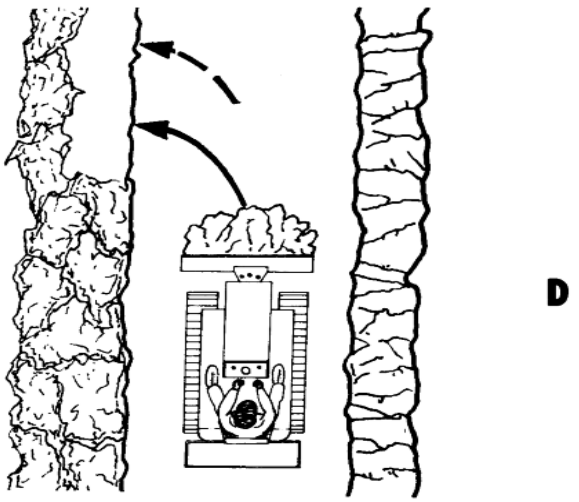
On average terrain start cuts working straight down the hill making short passes to bench out an area (A) large enough so that the tractor can eventually turn and work parallel to the road (B).



Keep pioneering cuts sloping into the uphill side (C) for maximum earthmoving efficiency.



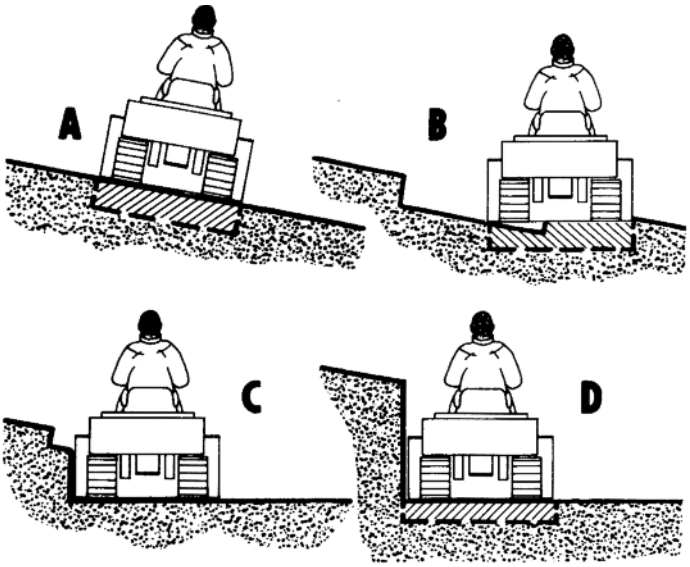
Make short swinging passes as you work downhill to drift material over the side of the cut 9(D).



2. Working from Side (only)

A short, wide shelf may also be cut in a hillside, working from the side only as illustrated below.

The first cut (A) is made parallel to the hillside, followed by a second cut (B) in which the tractor's inside track rides in the trough formed by the previous cut. This tilts the tractor to a more level position (depending on depth of trough) and allows succeeding cuts C, & D to be made parallel to the desired finish level.

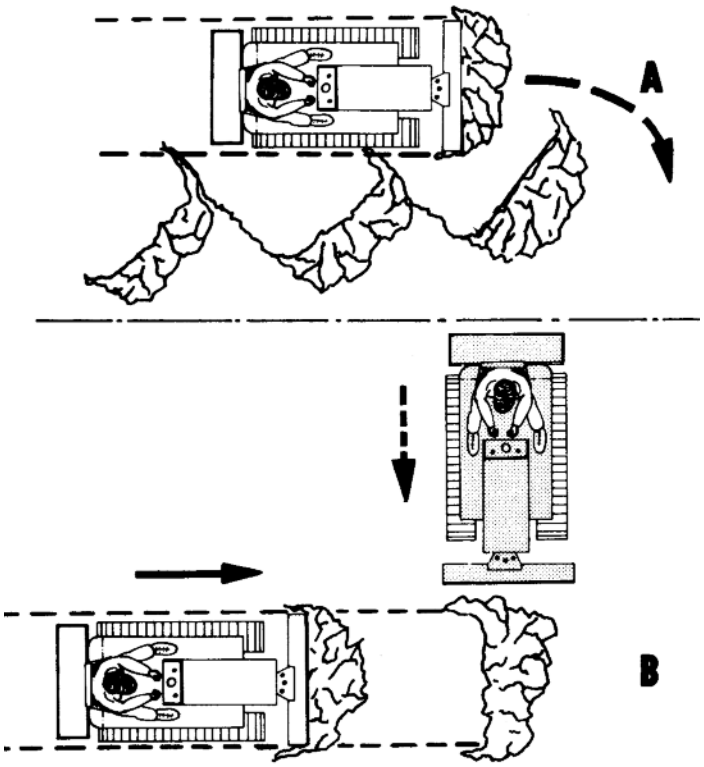


Always keep the fill end high, as the tractor will mire less if it can back up going down grade.

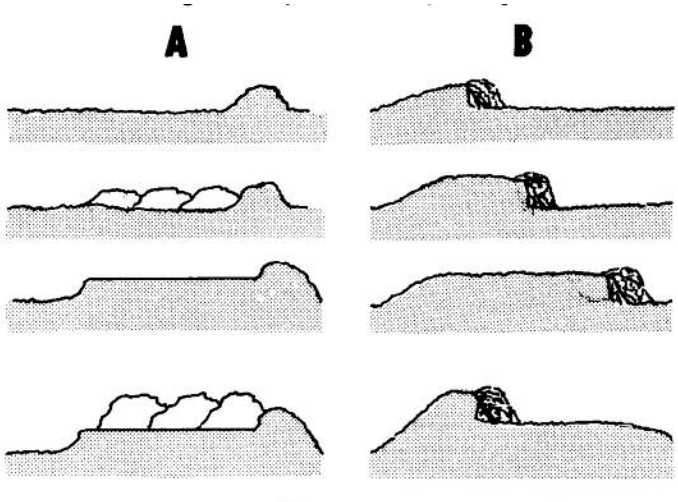
Do not push material further than absolutely necessary in order to stay on firm footing. When backing up, do not raise blade. Raising the blade puts extra weight on the front idlers causing greater track penetration. Let blade float as you back away from the edge of soft fills.

EARTH MOVING

When stripping soil from a road or driveway, either push it forward and angle it to the side (A) or push it forward, then perpendicularly push it to the side (B).



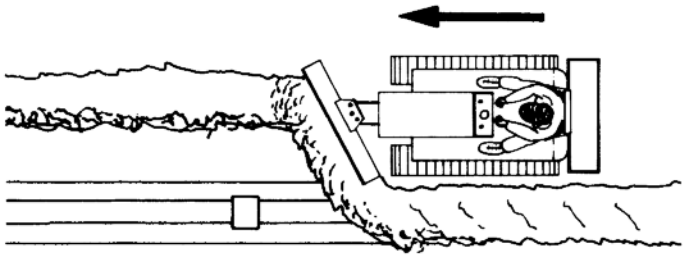
Dirt can be piled by dropping successive loads together, then leveling this material and repeating the process at a higher plane (A). In the alternative, loads can be dumped in the opposite direction, creating the new plateau while pushing loads forward (B).



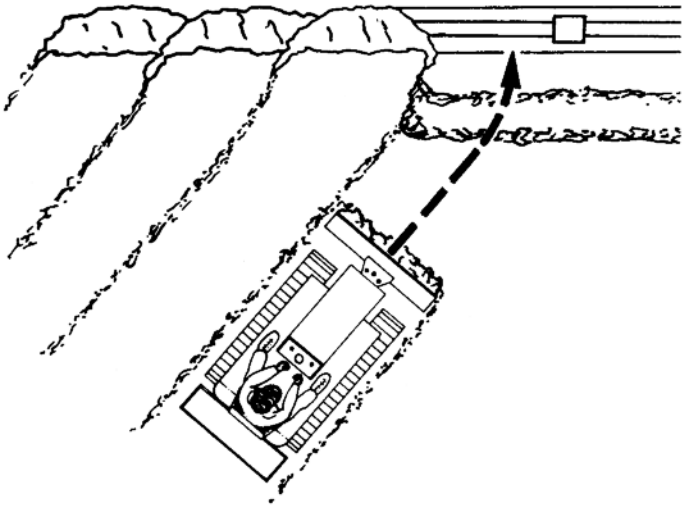
Both methods will work. When working in heavy growth or particularly hard soils, plow or rip the area prior to dozing.

BACKFILLING

Angling blade bulldozers are excellent for backfilling ditches as they can drift material into the trench while maintaining forward motion.

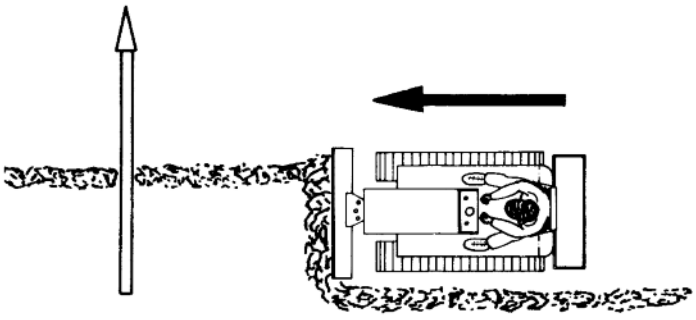


With straight blade dozers, approach at an angle and end up each pass by swinging into the structure or culvert for smooth, fast results.



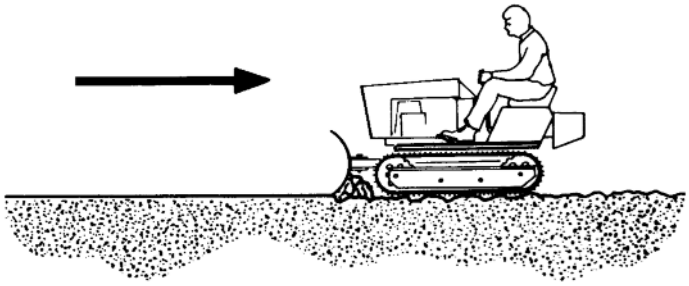
FINISH DOZING

Side slopes can be finished with a dozer by starting at the top and traveling parallel to the right-of-way. Earth from each pass will fall to the lower side of the blade and form a windrow. This material is then picked up on succeeding passes filling up irregularities in terrain. Don't allow blade corner to dig as the slope will steepen beyond job specifications.



Another method commonly used: Start at the bottom and travel diagonally up the slope. In this way a windrow will be continually drifted to one side and will tend to fill low spots or irregularities.

When finishing in non-solid materials, such as earth, drag the blade backwards for a smooth job. Rock, of course, may damage the blade base, so such practice is not to be recommended where abrasive material is common.



CRAWLER TIPS

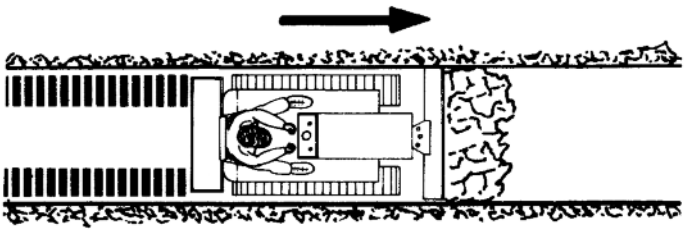
For Safety & Dozing Success

Don't back up further than necessary and don't push earth for greater distances than required. These are common faults of inexperienced operators. Always have a plan of operation!

When dropping down a steep hill or over the side of a fill, use blade for a brake.

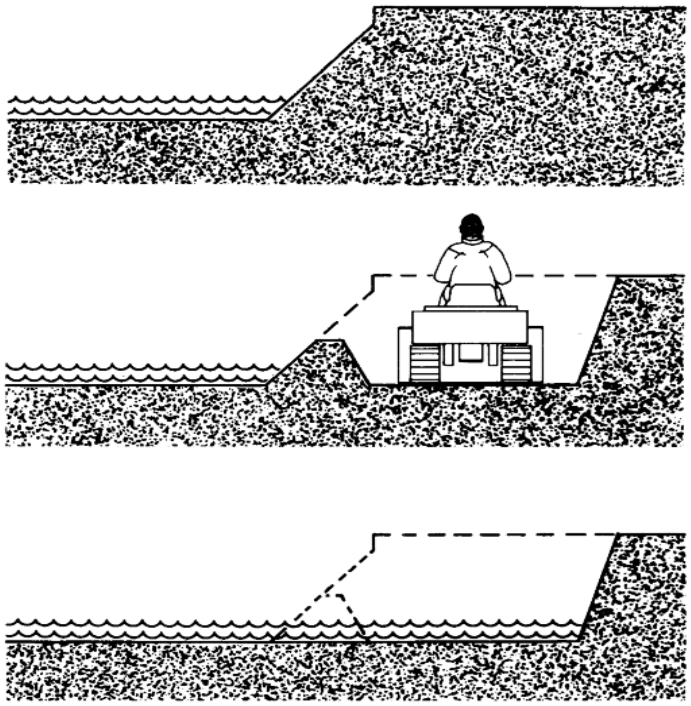
When traveling, carry the blade low. This practice helps protect drivetrain and other vital parts of the tractor.

If possible "slot doze" to keep load from spilling around the sides of the blade.



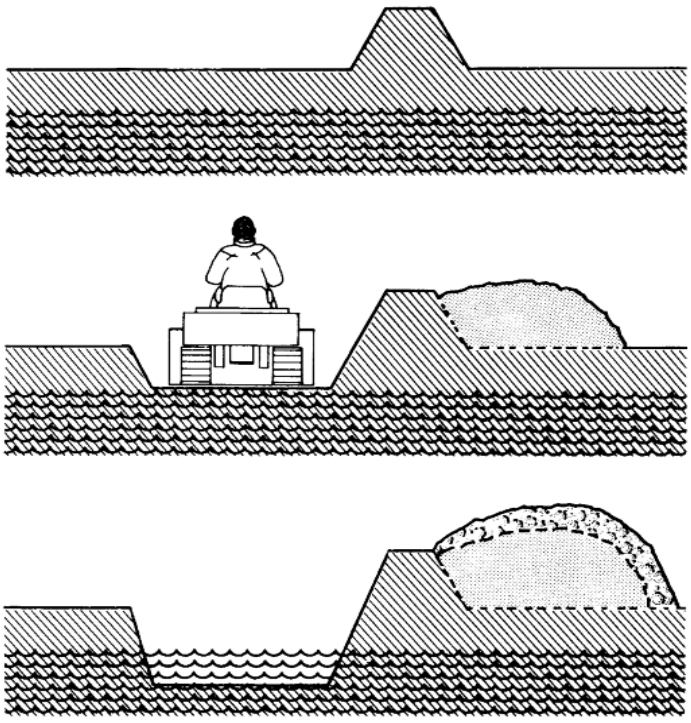
TECHNIQUES FOR COMPLETING VARIOUS PROPERTY IMPROVEMENTS

When enlarging ponds or streams, leave a ridge between the water and the excavation. When a desired depth is reached, dig out the ridge.



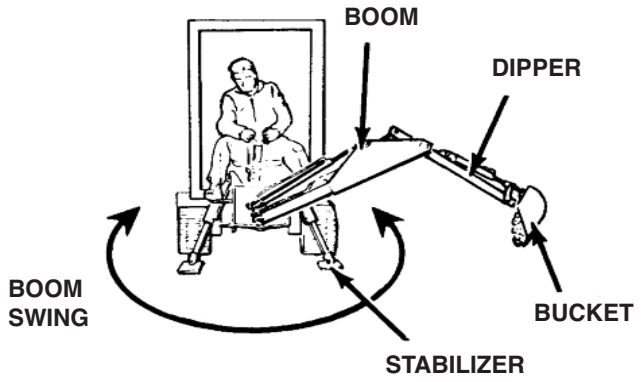
When excavating ponds or streams, leave a ridge between the water and the excavation. When a desired depth is reached, dig out the ridge.

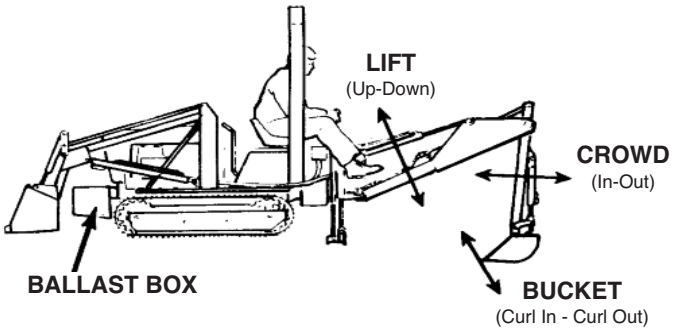
When excavating wet soupy material construct a dry soil dike and place watery mud behind this structure to keep it from running back in the work area.



BACKHOE OPERATION

TERMINOLOGY





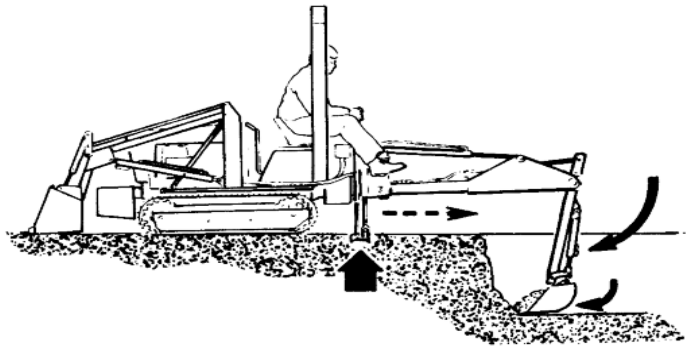
STABILITY

Stability is the key to backhoe performance. The following information and illustrations pertaining to stability should be carefully studied prior to operating the backhoe.

To increase stability for a digging operation, position the loader bucket flat on the ground. Apply sufficient down pressure on the bucket to transfer weight from the front of the tractor to the loader bucket.

IMPORTANT: The loader bucket must be flat on the ground. ROlling the bucket forward so the cylinders are extended may cause bucket cylinder or rod damage.

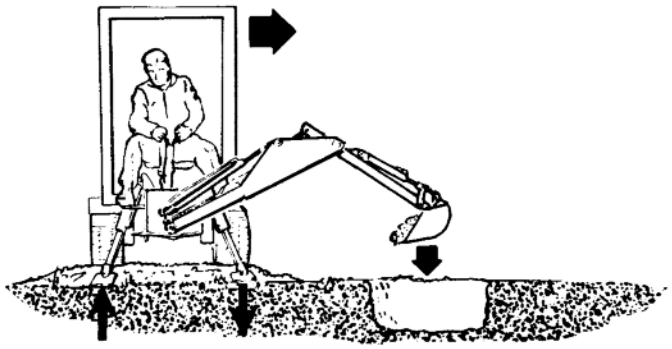
During normal digging, as the bucket penetrates the ground and is filled, there is a tendency for the rear of the Tractor to raise off the ground and move toward the bucket. Properly set, the stabilizers anchor the Tractor and prevent it from moving toward the bucket. The ability of the stabilizers to hold depends on the amount of weight acting on them.



When lifting a full bucket, there is a tendency for the front of the tractor to rise. COunterweight in the form of a ballast box is required to overcome this tendency. The backhoe should not exert more lift force than the effective counterweight can balance. Effective counterweight is the weight of the tractor from the stabilizer pads to the loader.

Set the stabilizers to remove weight from the rear track wheels. The tracks are to remain touching the ground as this provides for the widest stabilizer stance and the lowest center of gravity. Raising the tracks off the ground will not only reduce stability and digging depth, but will impair performance and impose unnecessary stress on the unit.

Stability is particularly important when operating the backhoe at the extreme swing positions, because the tendency is to lift one stabilizer and transfer the total weight of the unit to the other stabilizer.

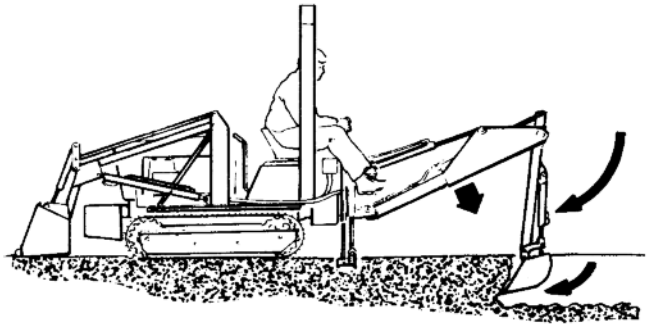


FILLING THE BUCKET

Operate two or more levers at the same time throughout the filling cycle for smooth action and maximum performance.

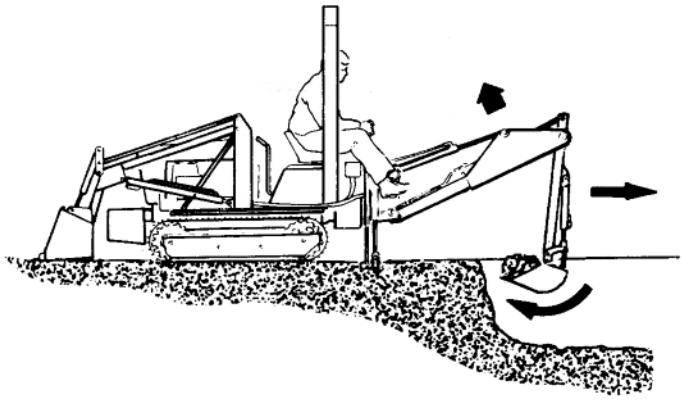
Control the bucket attitude throughout the digging cycle to keep the teeth at the proper angle for best penetration. This will minimize dragging and scraping the bucket through the ground.

When digging in hard-packed soil, bucket penetration can be increased by applying down pressure with the boom while crowding in and curling the bucket. If the crowd action “stalls,” it may be necessary to apply lift occasionally during the digging cycle to correct the bucket depth.



during the digging cycle to correct the bucket depth.

To obtain a cleaner trench and avoid the buildup of material directly in front of the backhoe, crowd out and completely curl the bucket while starting to lift it from the excavation. In this way, excess material will fall back into

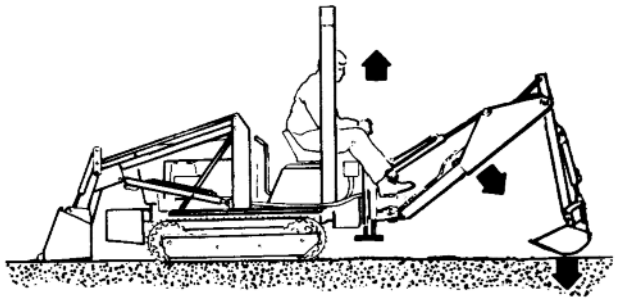


the excavation.

MOVING THE TRACTOR TO THE SIDE

Lift stabilizers clear of the ground, curl the bucket approximately halfway and crowd in so the dipstick is nearly vertical.

NOTE: The dipstick pivot, bucket pivot, and the point where the bucket contacts the ground should be aligned to reduce stress on the bucket and crowd cylinders.



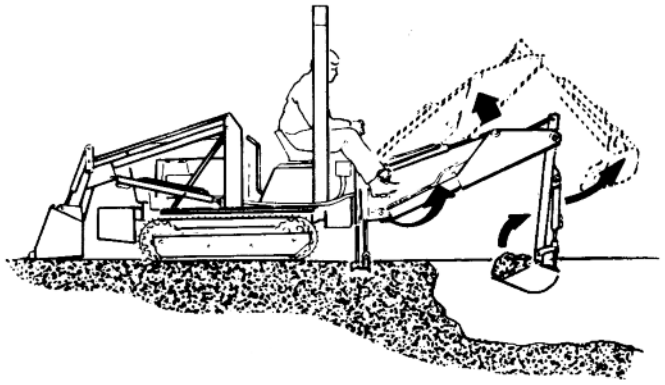
(Bucket forward of the boom-to-dipstick pivot).

Apply sufficient down pressure with the boom to raise the rear of the tracks off the ground. Slowly actuate the swing control lever to move to the right or left as required. Reset stabilizers and continue digging.

DUMPING THE BUCKET

To dump the bucket at the end of the digging cycle, lift the bucket clear of the trench while crowding it out and swinging it to the spoil pile.

As the pile is approached, dump the bucket. When the bucket is empty, the dipstick and bucket are in position to resume digging upon return to the trench.

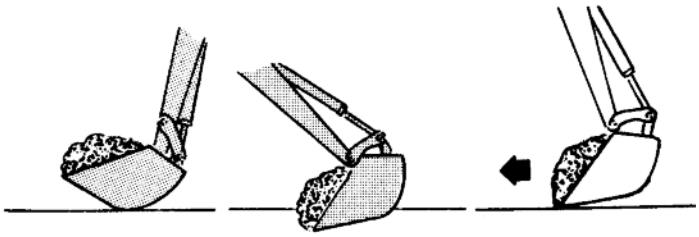


IMPORTANT: Avoid constant jarring or hammering type contact between the spoil pile and the loaded bucket as this may cause premature wear to the backhoe pins and bushings.

TRENCHING

Trenching is the most basic backhoe digging operation. Other digging operations are merely variations of this basic function (i.e. filling the bucket, dumping the bucket, and moving the unit forward).

While trenching, it is generally important to maintain a level trench bottom. This is accomplished by setting the bucket at the proper angle of approach. As the bucket is crowding in, continuously push on the bucket lever to maintain the correct cutting angle. At the same time, pull on the lift lever to relieve down pressure and keep the bucket in the same plane.



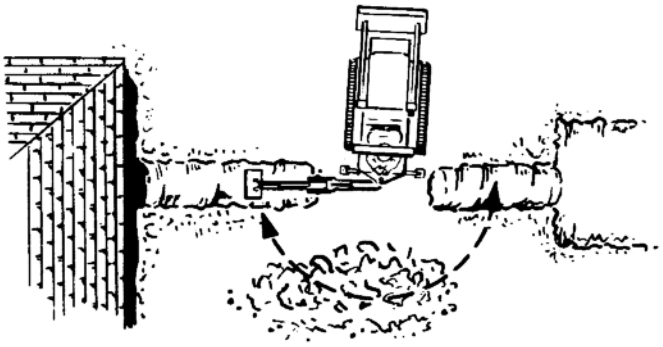
TRENCHING BETWEEN A BUILDING AND OPEN EXCAVATIONS.

Start the trench at the building. Trench out halfway to the excavation. Then, start trenching from excavation to the first trench. Dig toward the first trench until there is just enough room to move the unit out from between the two trenches.

Position the unit so the backhoe swing post is over the centerline of the trench connection. Dig with the backhoe at extreme swing position, and in close to the stabilizers

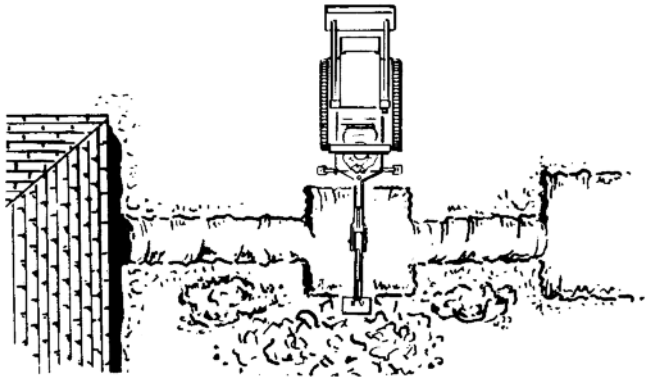
stabilizers as possible. Pile the spoil on the opposite side of the trenches.

Continue the trench by moving the Tractor forward.



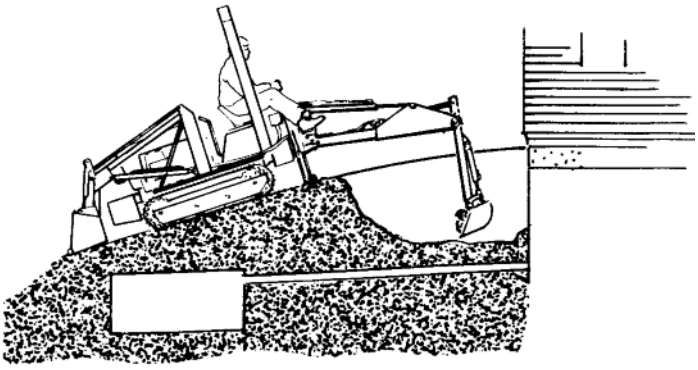
Moving too far will require excessive down pressure for digging, plus hand clean-up of the trench bottom. It is better to move a lesser amount than to move too far.

Position the unit forward so the two trenches can be connected. Pile the spoil on the opposite side of the trench.

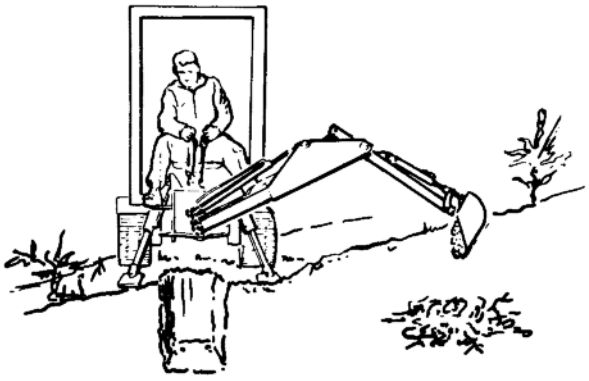


SIDE SLOPE EXCAVATING OR TRENCHING

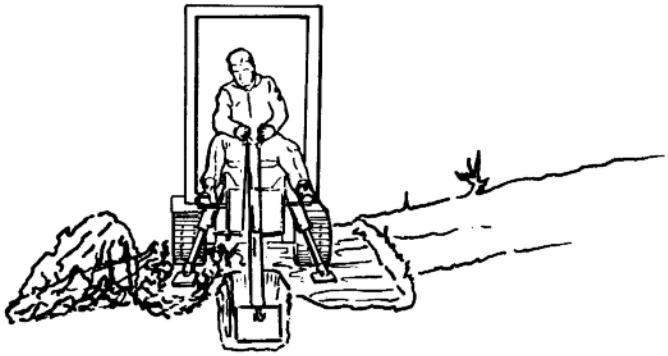
Dig with the backhoe uphill whenever possible.



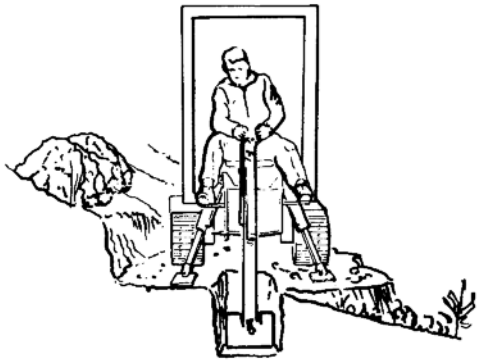
Level the backhoe on slopes with the stabilizers to dig plumb trenches, or...



...use the backhoe or loader to cut a level slot for the uphill track and stabilizer. Pile ten spoil from the slot on the low side.

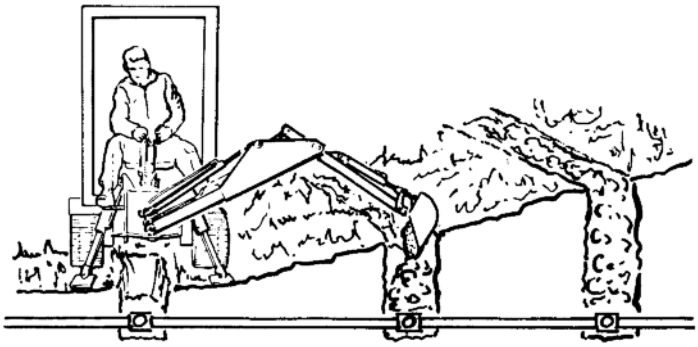


When on the side of a steep slope, cut a level surface along the uphill side of the trench with the loader. Pile the spoil of the cut downhill. When digging, pile the spoil of



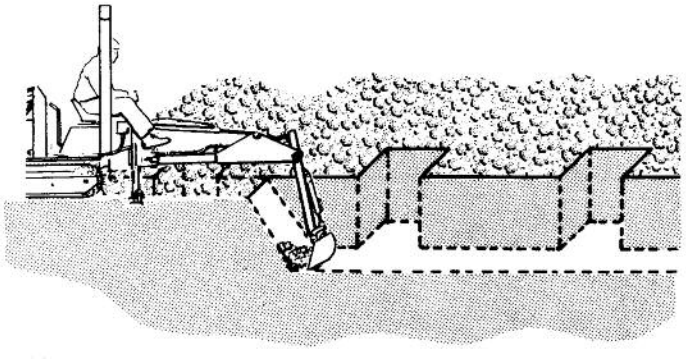
the trench uphill.

Dig field tile trenches progressively. As soon as one trench is completed, have the workmen lay the tile. Start the next trench, using the spoil to fill the previous trench.

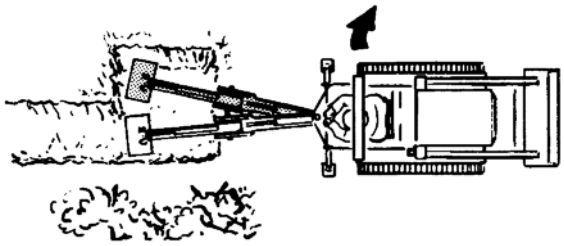


CONTINUOUS TRENCHING WITH SPACED BELL-HOLES

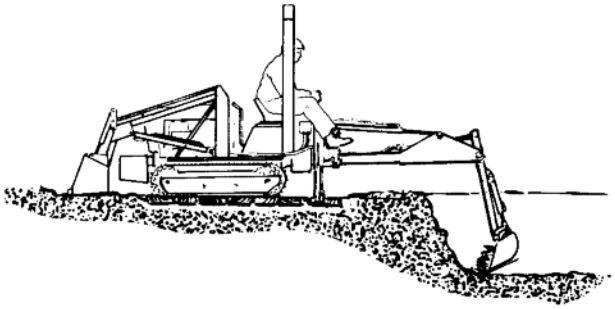
Begin by digging the trench to the desired grade. Progress along the trench to the bellhole locations and dig as much of the bellhole as possible without moving the backhoe from the trench line setting.



Move to the side as previously described and complete the bellhole. Realign the backhoe with the trench, and proceed trenching to the next bellhole.

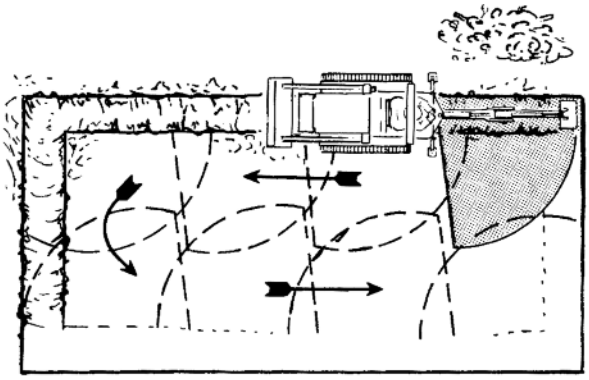


When finishing straight walls or bellholes in sandy soil, use a platform under the rear of tracks and the stabilizers. The platform distributes the load over a larger area and lessens the possibility of a cave-in. The platform also tends to keep the unit from creeping rearward if hard digging is encountered.



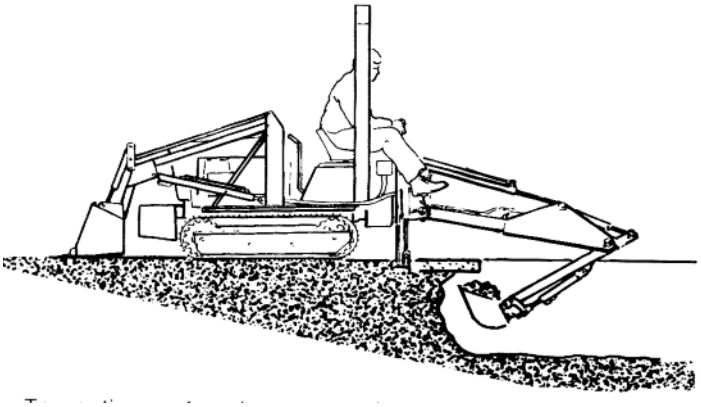
DIGGING STRAIGHT WALL SHALLOW BASEMENTS

Begin at one corner, removing a much material as possible to grade level. Then, reset the unit forward and continue digging to grade. Progress around the edge of the basement, finishing each corner as you come to it.



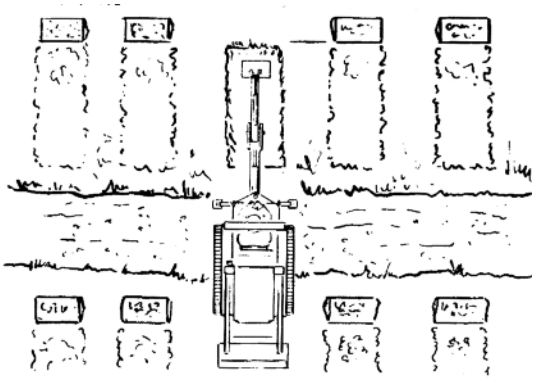
DIGGING UNDER A SIDEWALK OR CURB

To continue a trench or excavation under a sidewalk or curb, position the backhoe as shown.

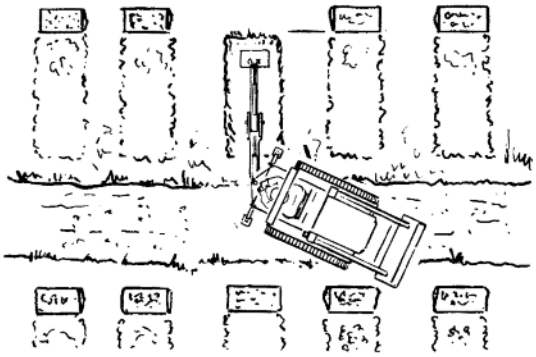


GRAVE DIGGING

For the best grave digging position, back the tractor straight in toward the grave site.



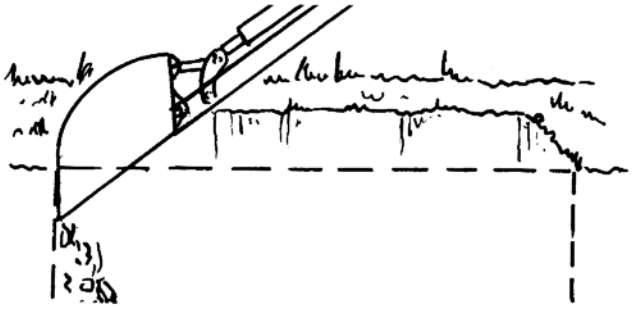
When grave markers prevent a straight-in position back the tractor in at a 45° or 90° angle to the grave site.



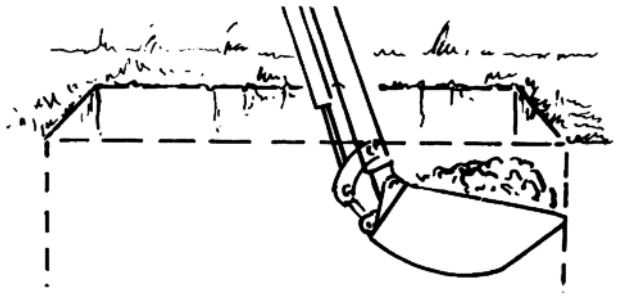
Position the tractor close enough to the grave to dig a full depth straight wall at the far end of the grave.

Start digging in the middle of the grave. At first, take shallow bites around the edges to avoid damage to the surrounding sod. After a on-foot (304.8 mm) depth is reached, full buckets can be removed, wherever possible.

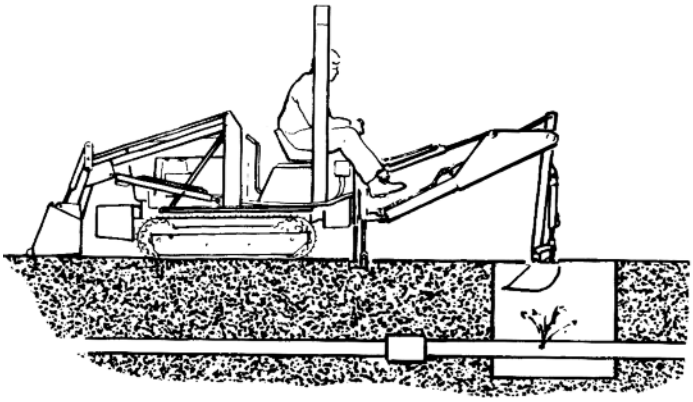
When the desired depth is reached, finish the end walls. Finish the far wall by crowding out and forcing down.



Lift up and crowd in to finish the close end wall.



PIPELINE LEAK REPAIR



Locate the pipeline with a bellhole about six feet (182 cm) wide and tenn feet (304 cm) long. Then dig length-wise along the pipeline to locate the leak.

When the leak is located, position the unit to dig at grade level on both sides of the pipeline.

If a length of pipe must be replaced, strip the soil form both ends of the bellhole. Dig the bellhole or trench large enough to allow the workmen adequate space in the leak area.

BACKFILLING

Backfill by lifting the bucket over the spoil pile and then crowding in. Pull both the crowd and lift levers for smooth, even backfilling.

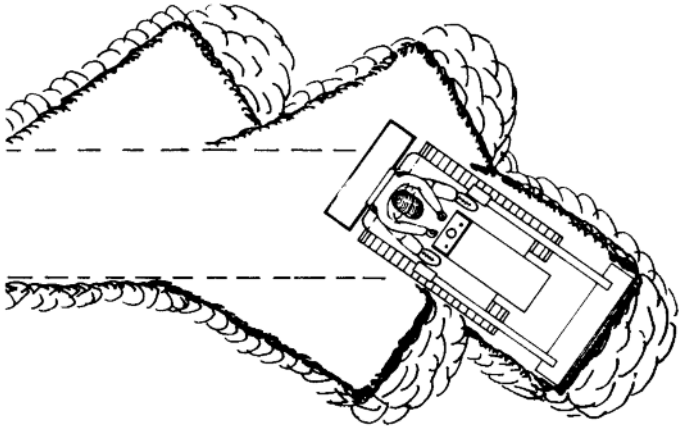
IMPORTANT: Do not backfill by using the swing circuit and dragging the bucket sideways. Doing so can cause damage to the dipstick, boom, swing cylinders, or main-frame.

MISCELLANEOUS

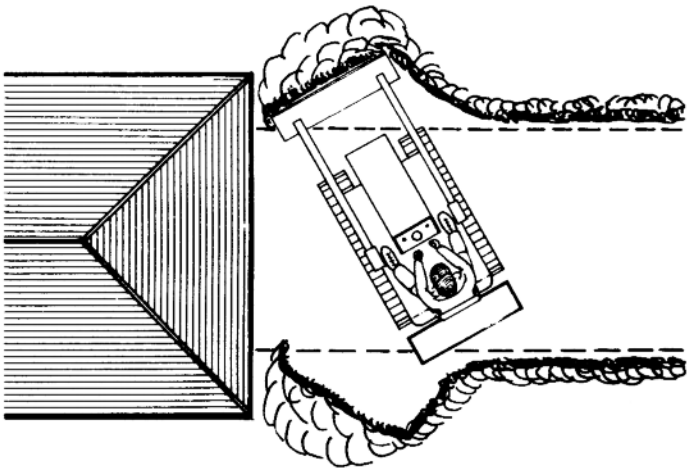
SNOW PLOWING

Snow is bulkier than dirt and its slippery consistency diminishes traction. When clearing snow, it is important to push the load to the back of the piling area because it cannot be reached again.

When snow is particularly heavy, paths can be cut with a straight blade in a herring bone pattern. Passes can be curving to the sides or straight and are stopped as soon as the load gets too heavy to push.

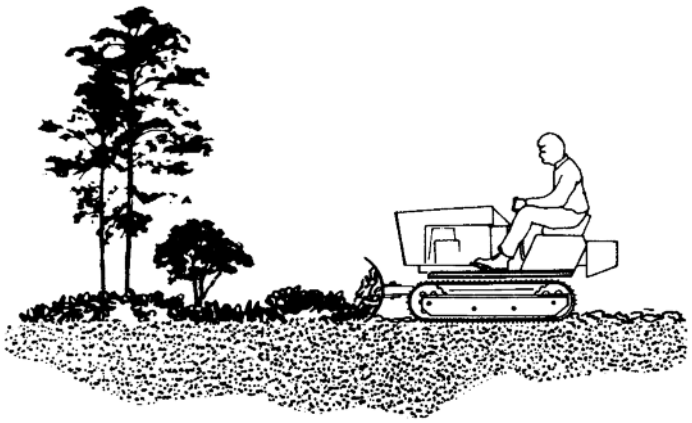


When plowing a garage drive, make consecutive passes to the side of the garage entrance, the obvious objective being to avoid piling snow against the door.



TREE REMOVAL

Light trees and brush are removed by lowering the blade a few inches into the ground just enough to strike and cut roots...usually done in first or second gear. An occasional backing up may be necessary to clear the blade so it can always cut cleanly. Otherwise the blade will slide over root and accomplish little.



Heavier trees and brush require more car and time to uproot. First contact tree with blade high and centered for maximum leverage. Make contact gently...push a few times at half throttle while watching the top carefully. Look for dead limbs - they're widow makers! If tree seems in good condition open the throttle and try again.

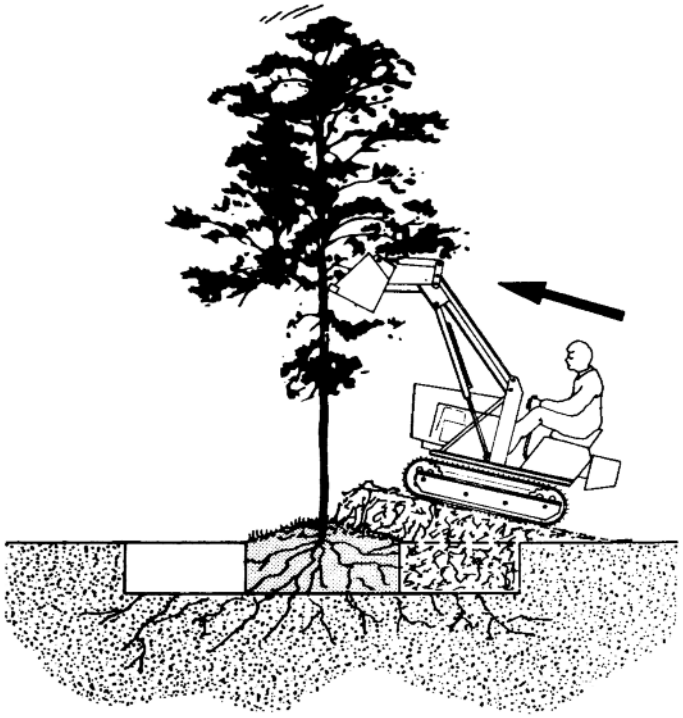
Lower blade into the ground and doze exposed roots and tree completely clear of the ground.

To remove the larger trees follow a 3 step procedure: First, determine the direction of fall...usually in the direction of lean...and then make a few passes on the opposite side to a depth of say, 2 feet, or enough to cut some of the larger roots.

Second, cut roots on both adjacent sides in a similar manner.

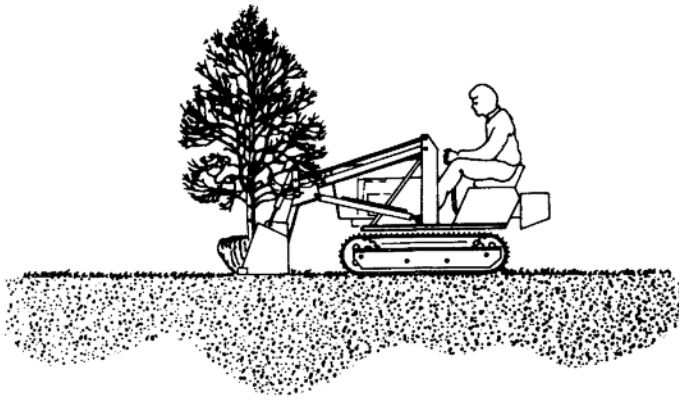
Build an earth ramp up to the starting side of the tree to get still more leverage and then push. As the tree starts

to fall over, reverse tractor quickly, for the roots pulling out of the ground may damage the machine. Next fill stump hole and then lift entire root section clear of the ground.



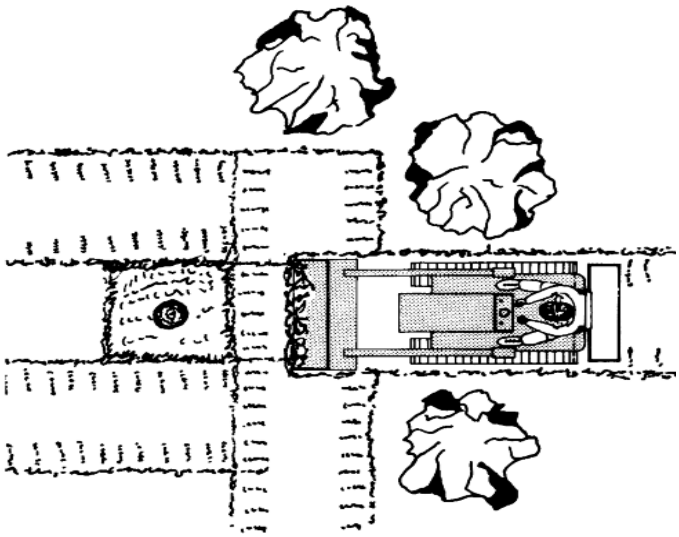
DON'T charge into big trees at full throttle. And don't push too long at a time. Track spinning is wasted effort.

TRANSPLANTING



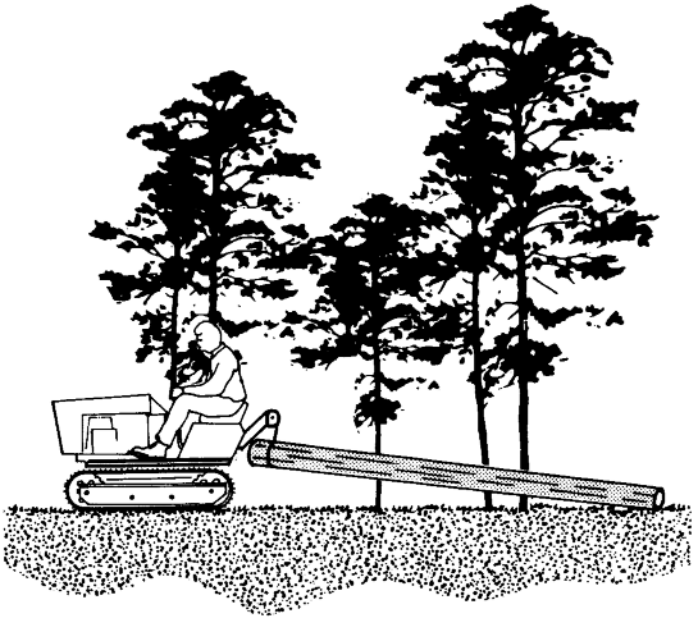
When transplanting trees of suitable size, place bucket under the dirt ball and lift it to a new site - securing the trunk to the bucket.

When the tree is too large to lift in a bucket, dig around the tree (as previously described) and then push it over the ground to its new destination. (Note below)



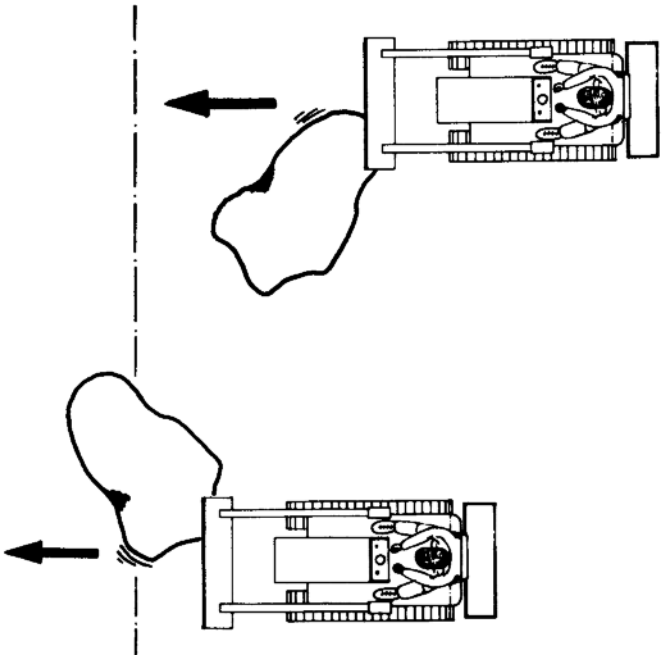
LOGGING

When pulling timber or poles, the front end should be lifted to maintain traction and reduce drag.



MOVING BOULDERS AND STONE

Dozers can move large rocks on firm ground perhaps several times its own weight. If the stone is too large for direct pushing, it can be pushed first on one side and then on the other.



ROCKS

When a large rock is imbedded in a group of smaller ones, loosen and remove the smaller ones before attacking the big one. Operators should remember that if a rock doesn't move, something is holding it. Before proceeding, find cause and remedy it to prevent machine damage.

Many rocks such as shale and sandstone are found in tipped position. Always dig under the outcrop, lift, and break it out rather than try to penetrate from the opposite side. Sometimes driving a tractor on top will crush such rocks making removal easy.

STUMPS

Small dozers can tackle big stumps if you dig first. Make consecutive cuts around the stump until it is loose enough to pull out by a chain or blade.

Notch the stump and leverage it out using a log or railroad tie, or dig out with a backhoe.

10- PARTS LIST

Item #	Description	Qty
000069	Coated Clip 1 000228 Key, 1/4" x 1/4" x 1" Machine Key	4
000277	Grommet, 3/4"	3
000278	Grommet, 1"	1
000279	Grommet, Rubber 1 1/2"	1
000413	Battery Strap 1 000433 Clip, Coated	1
000440	Leaf Spring	1
000441	Switch, Sensing (interlock switch)	1
000442	Battery, 12 Volt, 350CCA	1
000447	Headlight / Fan Switch	1
000716	Washer, Steel, 1" ID x 1-1/2" OD	22
000729	Snap Ring, 1" ID	6
000904	Foot Pad, Non-skid	5
000910	Hitch Pin	2
001354	Clip	3
001442	#OCS-78B-14MW Compression Spring	2
001605	Right Fender	1
001606	Left Fender	1
001608	Seat Pan	1
001609	Spanner (With large hole)	1
001612	Battery Box, assembled, painted	1
001621	Parking Brake Handle	1
001624	Bridge	1
001630	Vent Tube, painted	1
001644	Flange	1
001645	Brace	1
001653	Strap Cross Brace	2
001659	RS1000 Tool Box Assembly, painted	1
001662	Throttle Lever	1
001663	Choke Lever	1
001689	Washer (painted)	1
001781	Dash, painted	1
001782	Grill	1
001786	Choke Bracket	1
001791	Heavy Duty Greasable Bearing Assembly	2

Item #	Description	Qty
001792	Brake Yoke, painted	2
001802	Brake disc, 1 in. bore w/keyway	2
001804	40LL X-RIng Riveted Chain (100 pitches), (If Equipped)	1
001806	Track tensioner, plastic, 1 1/2in long x 3/4 in ID x 1 3/4 in OD.	2
001810	Track Tension Bolt, 1/2 x 13 x 8 in. Carriage Bolt - Carriage Bolt, Zinc G5	2
001820	Collar, 1/4 ID x 1/2 OD MCMC-025	2
001840	Cage clip, (90680A146)	4
001854	Grommet, (9600K47)	2
001861	Push mount cable tie, white, 21282	15
001864	Clamp, jiffy clip, A 250 B 375, 302M	2
001865	GH33-B1 Cupholder	1
001866	Black screw in handle, #6479K37	4
001867	Vinyl cap, 5/16 x 3/8, #9753K18	1
001869	Red reflector, #41042-3	2
001870	Rivet, 3/16, (.126-.250) (.192-.196), AD64ABS200	4
001873	Wrench, 11mm and 10mm (Thank you Gift)	1
001874	Red Allen wrench, 5/32 hex, 9 in blade, cushion grip	1
001899	Vinyl cap, 1/4 - 5/16	2
001906	Cotter pin, 1/8 x 1 1/4	3
001919	1/8" x 9" Allen Wrench	1
001925	3.75 Idler Pulley - 3.75 x 1.04 x 0.38	6
001949	Brace, Engine Stand	1
001999	1" "E" Snap Ring	2
002043	Pulley, "V", 14" OD x 1" bore, 1/4" keyway, sprocket/shaft	6
002060	Grip, Handle, Red	3
002071	Protective cap, red, battery	1
002078	Belt, Track Clutch, 1/2 X 56IN., 12.5/13mmx1420mm	6
002583	Thin shim washer - 5/8 x 1" 18GA	26
003196	1/4 x 1/4 x 3/4" Machine Key - PLAIN	2
004116	Hood	1
004341	Belt Tensioner for the Micro-V Belt, (If Equipped)	1
004342	Washer (painted)	2
004344	Plastic Micro-V Pulley, (If Equipped)	1
004347	18W LED Headlight	2
004348	RS Series Rubber Track - (1 side), (If Equipped)	2
004351	Center Idler for Rubber Tracks, painted, bushings, (If Equipped)	4

Item #	Description	Qty
004352	Idler frame, painted, (If Equipped)	2
004354	Center idler axle, painted, (If Equipped)	4
004356	Micro-V Belt, (If Equipped)	1
000225L	Brake Caliper Assembly-Left	1
000225R	Brake Caliper Assembly-Right	1
000252A	Shell (single pc), 3 3/4" OD	12
000252B	Bearing with Collar & Set screws, 1" ID x 2" OD	6
000819A	Paint, "2013 STRUCK Yellow" - 16 oz. aerosol spray can	1
001010C	Washer/spacer, 1" OD X 5/16" ID X 1/8" Thick, painted	2
001600XX	Painted Chassis Sub-Assembly, (If Equipped)	1
001600YY	Painted Chassis Sub-Assembly (Rubber Track Sprockets), (If Equipped)	1
001615AL	Battery Box Cover, (painted)	1
001615AR	Valve Box Cover, no handle, (painted)	1
001625XX	Arm Rests Housing with Back Structural Plate (Assembly)	1
001629-up	Belt Guide, unpainted	2
001632-up	Clutch Rod, unpainted	1
001638-up	Rod, unpainted	2
001646L	Brace - Left	1
001646R	Brace - Right	1
001658-up	Brake Pull, unpainted	4
001672-up	Washer, 11/16" OD x 3/8"ID x 1/8", unpainted	4
001673-up	Washer, 1" OD x 5/16" ID x 3/16, unpainted	4
001674XX	Seat Assembly	1
001685-up	Tube, unpainted	2
001688-up	Pin, unpainted	1
001689-up	Washer, 1 3/4" OD X 1/2" ID X 5/16", unpainted	6
001696-up	Tube, unpainted	2
001699L-up	1 section of tracks, long, unpainted, (If Equipped)	2
001699S-up	1 Section Tracks - Short, unpainted, (If Equipped)	2
001756XX	Honda GX390 Engine Assembly	1
001759-up	Tube, unpainted	2
001805A	#50H Chain, 53 pitches, 33 1/2 in length (PRIMARY DRIVE)	2
001805B	#50H connector Link (PRIMARY DRIVE)	2
001822XX	Choke Cable Assembly	1
001823XX	Throttle Cable Assembly	1
001827XX	#6 black x 13 lng w/ 1 000297 and 1 000298	1

Item #	Description	Qty
001828XX	#14 blue x 19 in. lng w/ 1 000293, 1 000299, 1 000284	1
001830XX	Brown 20 in w/ 1 000296 and red 38 1/2 w 1 001853	1
001831XX	#14 white x 16 lng w/ 1 0001853 and 1 001855	1
001835XX	#14 gray, 27 in lng w/ 1 00295 and 1 001856	1
001836XX	#14 gray, 40IN lng w/ 1 00295 and 1 001853	1
001837XX	#14 black, 8 1/2 lng, w 1 001855 and 1 001853	1
001838XX	2 wire cord 43 in	2
001887XX	Chain, for hood, 10 3/4 long	1
001991-up	Hardened Sprocket Shaft, 10 3/8in. Long	2
001992-up	Sprocket Power Shaft, unpainted, (Upper, Forward), (If Equipped)	1
001993-up	Sprocket Power Shaft, unpainted, (Lower, Reverse), (If Equipped)	1
001994L	Left Clutch Handle	1
001994R	Right Clutch Handle	1
004343-up	Belt tensioner spacer, unpainted, (If Equipped)	1
004345-up	Micro-V Engine Pulley, (If Equipped)	1
004346-up	Micro-V Power Shaft, unpainted, (Upper, Forward), (If Equipped)	1
004353-up	Shim, unpainted, (If Equipped)	6
004355-up	Micro-V Power Shaft, unpainted, (Lower, Reverse), (If Equipped)	1
BOLT-1/2-34	1/2 - 13 X 2 G5 BOLT	1
BOLT-1/4-118	1/4-20X 1/2 HX SPIN LOCK BLT	15
BOLT-1/4-119	1/4-20X 3/4 HX SPIN LOCK BLT	7
BOLT-1/4-120	1/4-20X 1 3/4 HX SPIN LOCK BLT	2
BOLT-1/4-2	1/4-20X 3/4 G5 BOLT	2
BOLT-1/4-3	1/4-20X 1 G5 BOLT	4
BOLT-1/4-79	1/4-20X 1/2 G5 CARR BLT ZC	2
BOLT-1/4-80	1/4-20 X 1-3/4 G5 CARR BLT ZC	1
BOLT-10-24-188	10-24X 1/2 HX HD MACHINE SCREW	2
BOLT-10-24-189	10-24X 3/4 HX HD MACHINE SCREW	3
BOLT-3/8-103	3/8-16 x 6" FULL THREAD Carriage Bolt Zinc, G5	2
BOLT-3/8-127	3/8-16X3/4 SPIN LOCK BLT	10
BOLT-3/8-131	3/8-16X1 3/4 SPIN LOCK BLT	4
BOLT-3/8-25	3/8 - 16 X 2 1/2 G5 BOLT	6
BOLT-5/16-121	5/16-18X 3/4 SPIN LOCK BLT	45
BOLT-5/16-123	5/16-18X 1 HX SPIN LOCK BLT	13
BOLT-5/16-124	5/16-18X 1 1/4 HX SPIN LOCK BLT	6
BOLT-5/16-127	5/16-18 x 1/2 Spinlock Bolt	2

Item #	Description	Qty
BOLT-5/16-16	5/16 - 18 X 5 G5 BOLT	2
BOLT-5/16-201	5/16 x 3/4" HH Capscrew G5 Zinc	2
BOLT-5/16-83	5/16-18X3/4 G5 CARR BLT ZC	2
BOLT-5/16-9	5/16-18 X 1 3/4 G5 BOLT	2
BOLT-8-18-190	8-18X 1/2 HX SELF TAPPER	2
BOLT-8-32-195	8-32 X 3/4 HX MACHINE SCREW	2
DEC-RS1000 SHT 1	Decals - RS1000 - Sheet 1	1
DEC-RS1000 SHT 2	Decals - RS1000 - Sheet 2	1
MAT-000274	Black Edging with steel insert/per foot	3 ft
NUT-1/2-208	1/2-13 HX NUT ZC	2
NUT-1/2-234	1/2-13 SPIN LOCK NUT	2
NUT-1/2-244	1/2-13 DOT LOCK NUT	1
NUT-1/4-220	1/4-20 NYLON LOCK NUT	6
NUT-1/4-230	1/4-20 SPIN LOCK NUT	24
NUT-10-24-219	10-24 NYLON LOCK NUT	4
NUT-3/8-222	3/8-16 Nylon Lock Nut	6
NUT-3/8-232	3/8-16 SPIN LOCK NUT	12
NUT-5/16-221	5/16-18 NYLON LOCK NUT	6
NUT-5/16-231	5/16-18 SPIN LOCK NUT	88
NUT-8-32-218	8-32 NYLON LOCK NUT	2
SETSCW-1/4-180	1/4-28 X 5/8" Knurled Point Socket Set Screw	2
SETSCW-5/16-172	5/16-18X1/4 SET SCREW	8
WASH-1/2-264	1/2 FLAT WASHER	14
WASH-1/4-260	1/4 FLAT WASHER	20
WASH-3/8-262	3/8 FLAT WASHER	23
WASH-5/16-261	5/16 FLAT WASHER	21

Photo RS-1

Magnatrac RS1000

Overview - Left View

This section of your Magnatrac RS1000 *Operator/Technical Manual* is designed to help you quickly locate parts and assemblies you will need to identify to properly maintain and service your Magnatrac. The photos are used to familiarize yourself with the MAGNATRAC.

Areas and Views of the RS1000

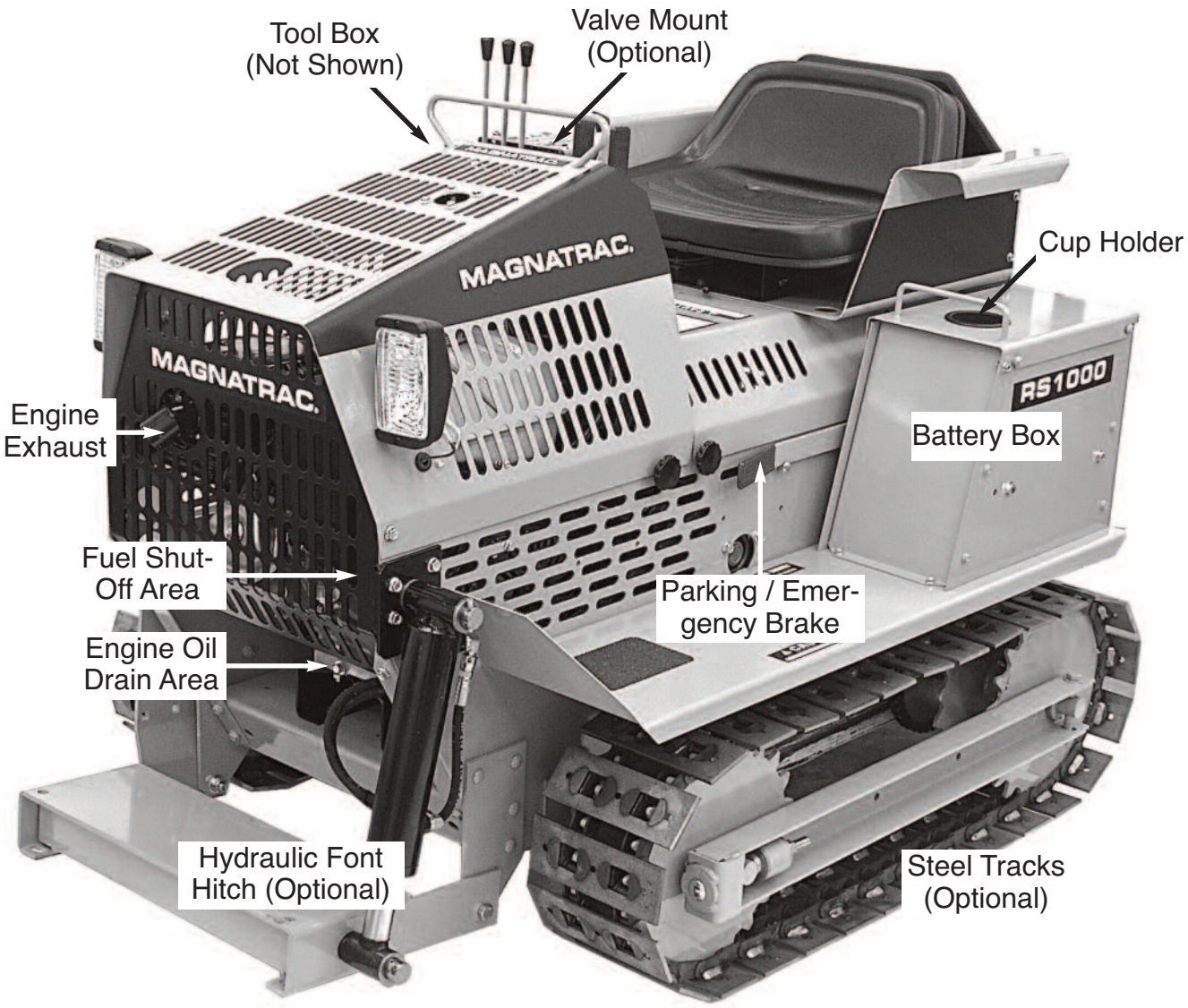
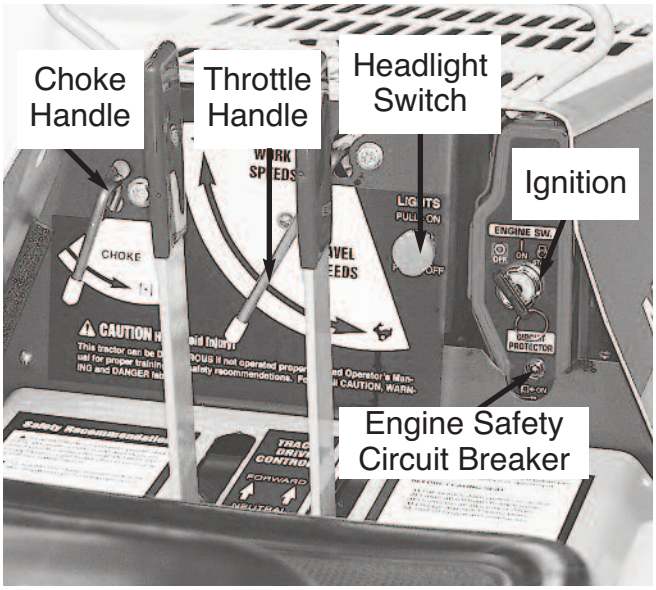
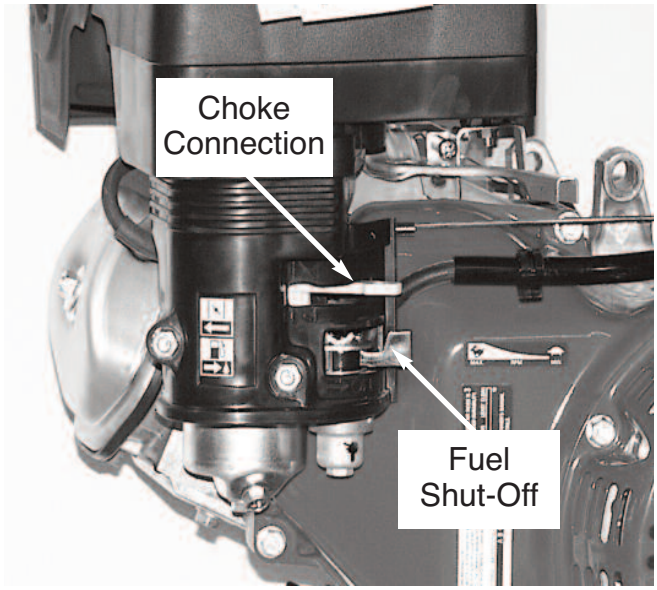


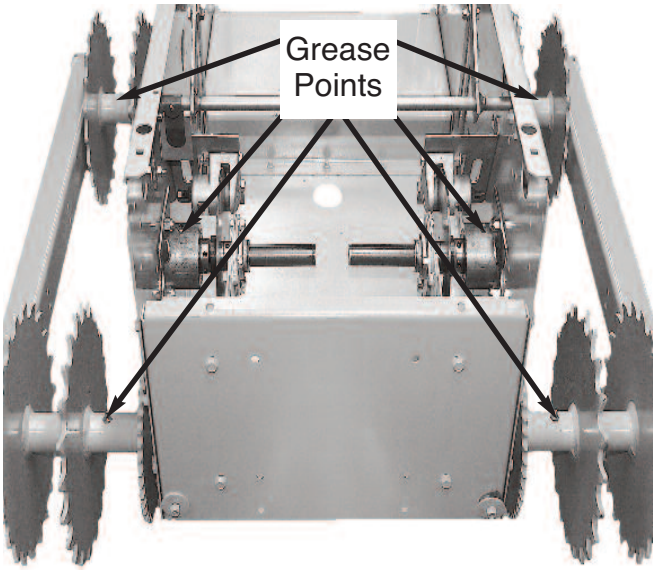
Photo RS-2

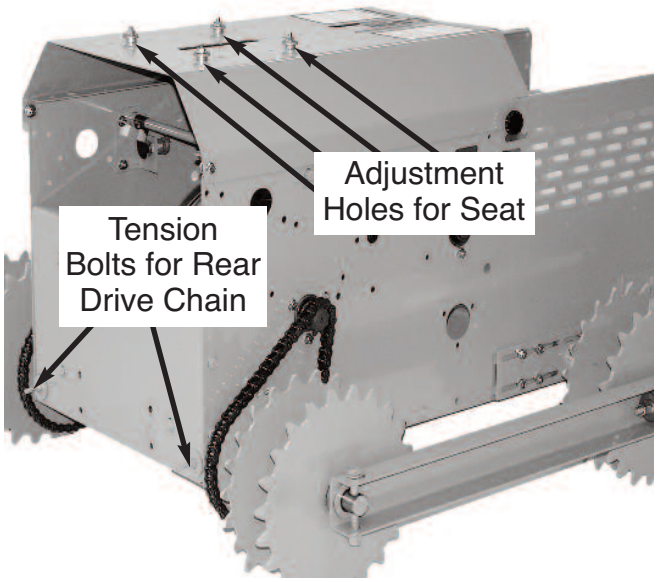
Magnatrac RS1000

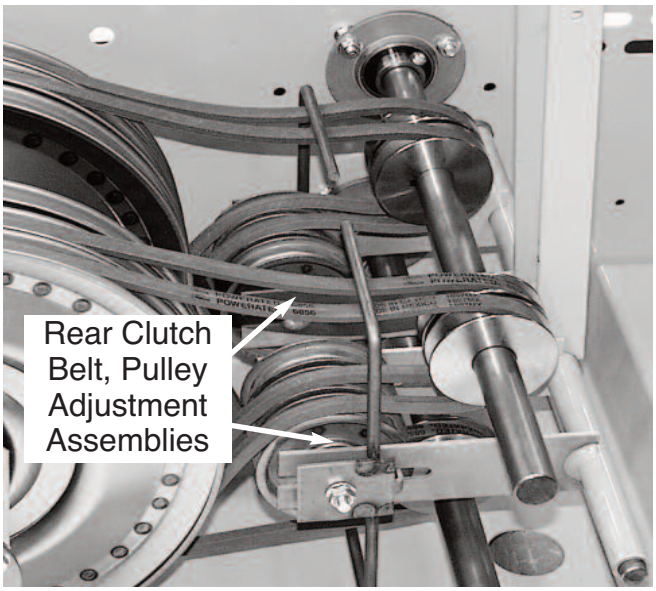
Overview - Close Up Views

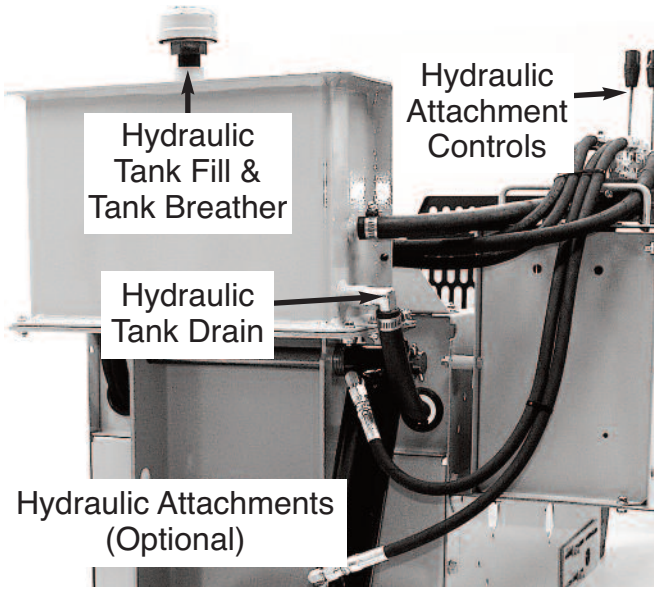












WIRING DIAGRAM GX390 HONDA Engine
with HONDA *ELECTRIC* Start - 2020