OPERATOR'S MANUAL

554930A
LAWNAIRE ZTS FS541V KAW
(S/N 0600 and higher)

554930ACA
LAWNAIRE ZTS FS541V KAW
(S/N 0200 and higher)

SCHILLER GROUNDS CARE

MAN 4174367
Rev. A 01-2017

⚠ WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

⚠ AVERTISSEMENT

L'émission du moteur de ce matériel contient des produits chimiques que l'Etat de Californie considère être cancérigènes, provoquer des défauts congénitaux et d'autres dangers en matière de reproduction.

⚠ ADVERTENCIA

El estado de California hace saber que los gases de escape de este producto contienen productos quÍmicos que producen cáncer, defectos de nacimiento y otros daños en el proceso de reproducción humana.

CALIFORNIA

Proposition 65 Warning

Battery posts, terminals, wiring insulation, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. **WASH HANDS AFTER HANDLING.**

LAWNAIRE ZTS

IMPORTANT MESSAGE

Thank you for purchasing this Schiller Grounds Care, Inc. product. You have purchased a world class product, one of the best designed and built anywhere.

This machine comes with an Operation and Safety Manual and a separate Setup, Parts and Maintenance Manual. The useful life and good service you receive from this machine depends to a large extent on how well you read and understand these manuals. Treat your machine properly, lubricate and adjust it as instructed, and it will give you many years of reliable service.

Your safe use of this Schiller Grounds Care, Inc. product is one of our prime design objectives. Many safety features are built in, but we also rely on your good sense and care to achieve accident-free operation. For best protection, study the manuals thoroughly. Learn the proper operation of all controls. Observe all safety precautions. Follow all instructions and warnings completely. Do not remove or defeat any safety features. Make sure those who operate this machine are as well informed and careful in its use as you are.

See a Schiller Grounds Care, Inc. dealer for any service or parts needed. Schiller Grounds Care, Inc. service ensures that you continue to receive the best results possible from Schiller Grounds Care, Inc. products. You can trust Schiller Grounds Care, Inc. replacement parts because they are manufactured with the same high precision and quality as the original parts.

Schiller Grounds Care, Inc. designs and builds its equipment to serve many years in a safe and productive manner. For longest life, use this machine only as directed in the manuals, keep it in good repair and follow safety warnings and instructions. You'll always be glad you did.

Schiller Grounds Care, Inc.
One Bob Cat Lane
Johnson Creek, WI 53038-0469

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NOTICE !!!

Unauthorized modifications may present **extreme** safety hazards to operators and bystanders and could also result in product damage.

Schiller Grounds Care, Inc. strongly warns against, rejects and disclaims any modifications, add-on accessories or product alterations that are not designed, developed, tested and approved by Schiller Grounds Care, Inc. Engineering Department. Any Schiller Grounds Care, Inc. product that is altered, modified or changed in any manner not specifically authorized after original manufacture–including the addition of "after-market" accessories or component parts not specifically approved by Schiller Grounds Care, Inc.–will result in the Schiller Grounds Care, Inc. Warranty being voided.

Any and all liability for personal injury and/or property damage caused by any unauthorized modifications, add-on accessories or products not approved by Schiller Grounds Care, Inc. will be considered the responsibility of the individual(s) or company designing and/or making such changes. Schiller Grounds Care, Inc. will vigorously pursue full indemnification and costs from any party responsible for such unauthorized post-manufacture modifications and/or accessories should personal injury and/or property damage result.

This Operator's Manual should be regarded as part of the machine. Suppliers of both new and second-hand machines must make sure that this manual is provided with the machine.

¡LEA EL INSTRUCTIVO!

Si no lee Ingles, pida ayuda a alguien que si lo lea para que le traduzca las medidas de seguridad.

This symbol means:
ATTENTION!
BECOME ALERT!

Your safety and the safety of others is involved.

Signal word definitions:

The signal words below are used to identify levels of hazard seriousness. These words appear in this manual and on the safety labels attached to Schiller Grounds Care, Inc. machines. For your safety and the safety of others, read and follow the information given with these signal words and/or the symbol shown above.

⚠DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.

⚠WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.

⚠CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury. It may also be used to alert against unsafe practices or property damage.

CAUTION

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, **MAY** result in property damage

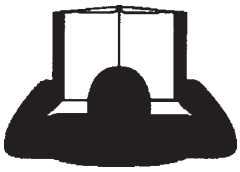
MODEL NUMBER: This number appears on sales literature, technical manuals and price lists.

SERIAL NUMBER: This number appears only on your unit. It contains the model number followed consecutively by the serial number. Use this number when ordering parts or seeking warranty information. Located behind rider pad on frame of unit.

PREPARING FOR SAFE OPERATION

Operator preparation and training

Read the Operation & Safety Manual



- If an operator or mechanic cannot read English, it is the owner's responsibility to explain this material to them. If any portion of this material is unclear, contact your dealer representative for clarification.
- Become familiar with the safe operation of the equipment, operator controls and safety signs. Be prepared to stop the engine and attachments quickly in an emergency. Do not operate or allow another person to operate this machine if there are any questions about safety.
- All operators and mechanics should be trained. The owner is responsible for training the users.
- Wear appropriate clothing, including long trousers and safety goggles or safety glasses with side shields when operating the machine. Do not operate barefoot or wearing open sandals. Long hair, loose clothing or jewelry may get tangled in moving parts.
- Wear hearing protection.
- Never allow underage children, unskilled or improperly trained people to operate this equipment. Local regulations can restrict the age of the operator.
- Data indicates that those operators age 60 years and above are involved in a large percentage of riding power related injuries. Those operators should evaluate their ability to operate the riding machine safely enough to protect themselves and others from injury.
- Do not carry passengers, especially small children. They may fall off and be seriously injured.
- Keep warning labels and this operator's manual legible and intact. Replacement labels and manuals are available from the factory.
- Do not operate machine while under the influence of drugs, alcohol, or any other condition of impairment.
- The owner/user can prevent and is responsible for accidents or injuries occurring to themselves, other people or property.

Site preparation and circumstances

- Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Only use accessories and attachments approved by the manufacturer.
- Clear the area to be aerated of objects such as rocks, toys, wire or other debris that may be picked up or thrown by the machine.
- Be sure the area is clear of pets and people, especially young children. Never assume they will remain where you last saw them. Stop the machine if any enter the area.
- Operate only in daylight or in good artificial light.
- Do not operate on wet grass as tires may lose traction.

MACHINE PREPARATION

– Check operator present interlock system and brake operation. Adjust or repair any problems before using.

– Do not tamper with or defeat safety devices. Keep guards, shields and interlock safety devices in place and in proper working condition. They are for your protection.

– Keep all fasteners such as nuts, bolts and pins well secured.

– Visually inspect tines, tine bolts and the aerating assembly for wear or damage. Replace worn or damaged tines and bolts.

– Verify that machine and attachments, if any, are in good operating condition.

– Do not lower tines until ready to aerate.

OPERATING SAFELY

IN GENERAL

– Use extra care when loading or unloading the machine onto a trailer or truck. Do not use split ramps. Use full width ramps to load or unload unit.

– Watch out for traffic when near or crossing roadways.

– Do not run the engine in an enclosed area where dangerous carbon monoxide fumes can collect.

– Do not place your foot on the ground while operating the machine with the platform down.

– Do not pull any loads or equipment.

– Never leave a machine unattended. Always set parking brake, stop engine and remove keys before dismounting.

STARTING

– Start only according to instructions in this manual or on the machine.

– Before attempting to start the engine, make sure:

  - the parking brake is on;

  - the traction drive is in NEUTRAL.

– When starting the engine, make sure hands and feet are clear of the tines.

– Do not change engine governor settings or overspeed the engine. Operating the engine at excessive speed can increase the hazard of personal injury.

MANEUVERING SAFELY

IN GENERAL

– Slow down before turning.

– Do not aerate in reverse unless absolutely necessary. Always look behind and down for small children and pets before and during backing.

– Be aware when approaching blind corners, shrubs, trees, tall grass or other objects that may obscure vision.

WALK-BEHIND USE

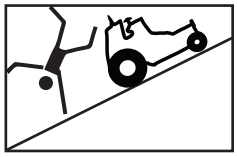
– The aerator may be operated as a walk behind unit by raising the footplate and latching it in the stowed position. Walk behind mode is useful when terrain or circumstances make operation as a ride-on uncomfortable or even dangerous. For example operation near a bank, above a drop-off or retaining wall would be places where walk-behind mode should be used. When operating as a walk-behind, operate across slopes, not up and down.

INTERRUPTING OPERATION

– Before leaving the operator's position:
  - Park on level ground;
  - Set the parking brake;
  - Shut off the engine and remove the key.
– Stop the engine:
  - before refueling;
  - before making adjustment unless the adjustment can be made from the operator's position.
– Stop the engine and disconnect the spark plug wire(s) or remove the key:
  - before clearing blockages;
  - before checking, cleaning or working on the machine;
  - after striking a foreign object. Inspect the machine for damage and make repairs before restarting.
  - if the machine begins to vibrate abnormally: Inspect and make repairs as needed before restarting;
  - except for repairs or adjustments as specifically noted, such as for carburetor adjustment, where the engine must be running. Keep hands and feet clear of moving parts in these circumstances.
– Reduce the throttle setting during engine shut-down and, if the engine is provided with a shut-off valve, turn the fuel off at the conclusion of aeration.

AERATING SLOPES

WARNING



Slopes are a major factor in loss-of-control and tip over accidents that sometimes lead to severe injury or death. All slopes require extra caution.

– Before operating on slopes evaluate the risks involved.
– Do not operate on slopes if uneasy or uncertain. Ultimate responsibility for safe operation on slopes rests with the operator.
– Do not aerate steep slopes:

  Slope is too steep if:
  - the machine must be crabbed (turned partially sideways uphill) to drive across the slope.
  - The machine turns downhill going across the slope.

  -You are uneasy about being on the slop.
– With ride-on machines, including articulated steering machines, operate up and down slopes, not across, except for zero turn machines. Zero turn machines should operate across slopes.
– With walk-behind machines, always operate across slopes, not up and down.
– Avoid starting or stopping on a slope. If tires lose traction, disengage the tines and proceed slowly straight down the slope.
– With a zero turn machine, if tires lose traction going down a slope, steering control may be regained by speeding up.
– Zero turn machines have much greater traction pointed up slope than down slope. Be aware that traction may be lost going down a slope. Do not operate a zero turn machine on slopes it cannot back up.
– Keep all movement on the slopes slow and gradual. Do not make sudden changes in speed or direction.
– Do not turn on slopes unless necessary, and then turn slowly and downhill when possible.
– Stay away from slopes if the ground is loose or if caught in the rain during aeration.
– Use lower speeds on a slope to avoid stopping or shifting.
– Use extra care with attachments. These can change the stability of the machine.
– Avoid driving over ruts, holes, rocks and roots whenever possible. Be alert to dips and rises. Uneven terrain can overturn a machine or cause it to slide.
– Do not aerate dropoffs, ditches or embankments. The machine could suddenly turn over if a wheel runs over the edge or an edge caves in.
– Follow the manufacturer's recommendations for wheel weights or counterweights to improve stability.

MAINTENANCE SAFETY

IN GENERAL

– Maintain machine according to manufacturer's schedule and instructions for maximum safety and best results.

– Park machine on level ground.

– Never allow untrained personnel to service machine.

– Adjust or repair only after the engine has been stopped and the tines have stopped rotating.

– Guards should only be removed by a qualified technician for maintenance or service. Replace when work is complete.

– Replace parts if worn, damaged or faulty. For best results, always replace with parts recommended by the manufacturer.

– Disconnect battery or remove spark plug wire(s) before making any repairs. Disconnect the negative terminal first and the positive last. Reconnect positive first and negative last.

– Do not dismantle the machine without releasing or restraining forces which may cause parts to move suddenly.

– Provide adequate support for lifted machine or parts if working beneath.

– Do not put hands or feet near or under rotating parts.

– Clean up oil or fuel spillage thoroughly.

– Replace faulty mufflers.

– To reduce fire hazards, keep the engine, muffler, battery compartment and fuel storage area free of grass, leaves, debris buildup or grease.

Tines

WARNING

– Tines are sharp and can cut. Use extra caution when handling. Wear appropriate personal protective equipment.

FUEL

WARNING

– Gasoline and diesel fuels are flammable; gasoline vapors are explosive. Use extra care when handling.

– Store only in containers specifically designed for fuel.

– When refueling or checking fuel level:
  - Stop the engine and allow to cool;
  - Do not smoke;
  - Refuel outdoors only;
  - Use a funnel;
  - Do not overfill;
  - If fuel is spilled, do not attempt to start the engine until the spill is cleaned up and vapors have cleared.

Sparks from static electricity can start fires or cause explosions. Flowing fuel can generate static electricity. To prevent static electricity sparks:

- Keep fuel containers electrically grounded.

– Do not fill containers in a vehicle or on a truck or trailer bed with a plastic liner. Fill containers on the ground away from the vehicle.

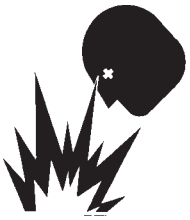
– When practical, remove gas powered equipment from the truck or trailer and refuel it on the ground. If equipment must be refueled on the truck or trailer, refuel from a portable container rather than a dispenser nozzle.

– Keep the dispenser nozzle in contact with the rim of the fuel tank or container opening until fueling is complete. Do not use a nozzle lock-open device

– Replace caps on fuel cans and tanks securely.

BATTERY

WARNING



Battery acid is caustic and fumes are explosive and can cause serious injury or death.

To reduce the risk of personal injury when working near a battery:

– Use protective equipment such as, but not limited to, goggles, face shield, rubber gloves and apron when working with battery acid.

– Avoid leaning over a battery.

– Do not expose a battery to open flames or sparks.

– Be sure batteries with filler caps are properly filled with fluid.

– Do not allow battery acid to contact eyes or skin. Flush any contacted area with water immediately and get medical help.

– Charge batteries in an open, well ventilated area, away from sparks and flames. Unplug charger before connecting or disconnecting from battery.

– Your unit is factory equipped with an AGM type battery . An AGM type battery charger should be used on these when charging.

STORAGE SAFETY

– Stop the engine and allow to cool before storing.

– Drain the fuel tank outdoors only.

– Store fuel in an approved container in a cool, dry place.

– Keep the machine and fuel containers in a locked storage place to prevent tampering and to keep children from playing with them.

– Do not store the machine or fuel container near heating appliances with an open flame such as a water heater or an appliance with a pilot light.

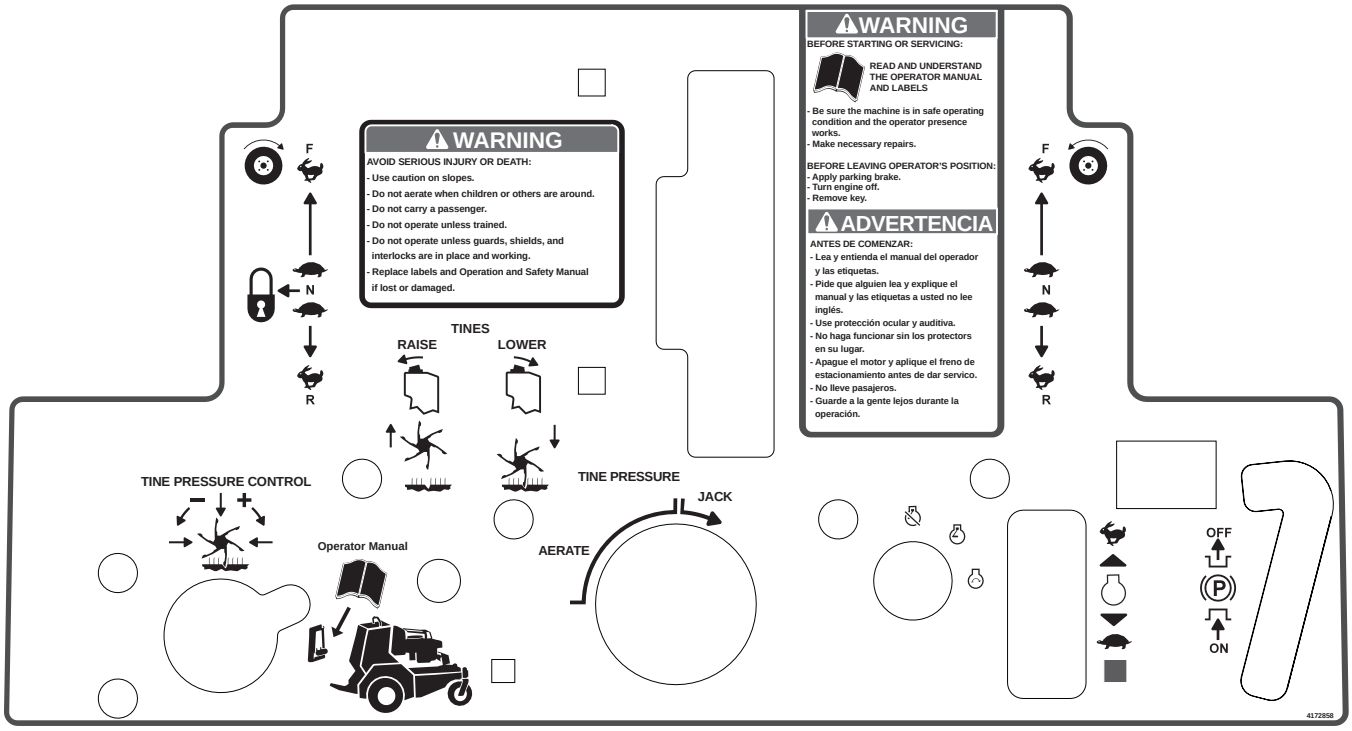
– Keep gasoline storage area free of grass, leaves and excessive grease to reduce fire hazard.

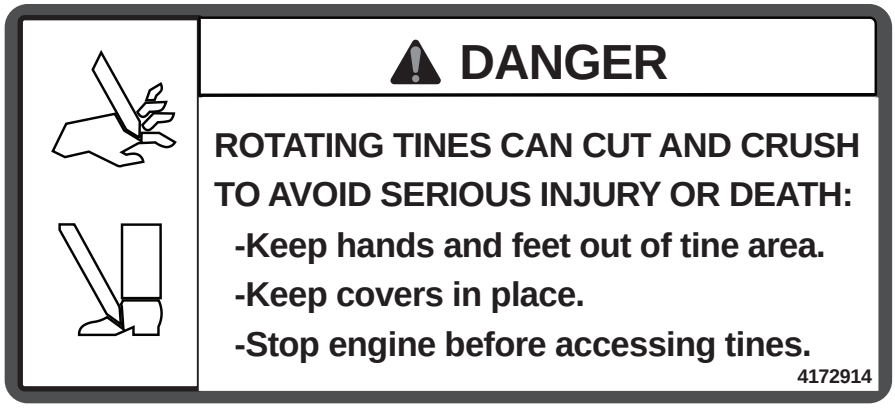
– Clean grass and debris from aerating units, drives, mufflers and engine to help prevent fires.

JUMP STARTING

1. Be sure the jumper cables are in good condition. Turn off the ignition and all electrical accessories on both machines.
2. Position the machine with a good (charged) battery next to but not touching the machine with the dead battery so jumper cables will reach.
3. When making cable connections:
   - make sure the clamps do not touch anywhere except to intended metal parts,
   - Never connect a positive ("+" or red) terminal to a negative ("–" or black) terminal.
   - Make sure the cables won't get caught in any parts after the engines are started.
4. Connect one end of the first jumper cable to the **positive** terminal on one battery. Connect the other end to the **positive** terminal on the other battery.
5. Connect one end of the other cable to the **negative** terminal of the machine with a good (charged) battery. Make the final connection on the engine of the machine to be started, away from the battery.
6. Start the vehicle with the good battery, then the machine with the discharged battery.
7. Remove the cables in the exact reverse order of installation. When removing each clamp, take care it does not touch any other metal parts while the other end remains attached.

LAWNAIRE ZTS





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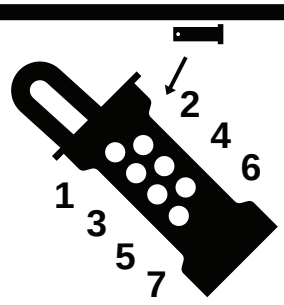
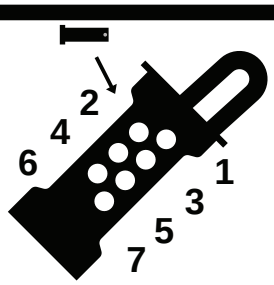


PIN	MAX DEPTH
1	2”
2	2-1/2”
3	3”
4	3-1/2”
5	4”
6	4-1/2”
7	5”

USE SAME HOLE ON BOTH SIDES 4172886



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7	5”

USE SAME HOLE ON BOTH SIDES 4172887

Service Guide

Read and understand the Operator Manual before servicing.

Every 50 hours or weekly
- Check hydraulic level
- Check tire pressure
  - 15 psi rear
  - 25 psi front
- Check chain tension
- Lubricate chain

Yearly
Grease:
- Caster pivots
- Transaxle pivot
- Hydraulic cylinder pivot

HYDRAULIC OIL

Fill with 20w50 motor oil to level indicated

FULL COLD

⚠ WARNING

STORED ENERGY
- TINES MAY DROP SUDDENLY.
- SUPPORT LOWER TINES BEFORE SERVICING HYDRAULIC SYSTEM.
- SEE OPERATOR MANUAL FOR SERVICE PROCEDURE.

⚠ WARNING

HIGH PRESSURE FLUID
Leaks can penetrate skin.
- Seek immediate medical attention for oil penetration injury.
- See Operator Manual for proper methods to service hydraulic system and locate leaks.

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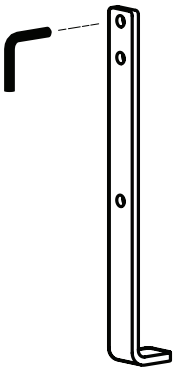
JACK STANDS



TO RAISE MACHINE:
With engine running
- Pull depth stop pins.
- Lower tines.
- Increase tine pressure to raise machine.
- Pin jack stands in raised position.
- Raise tines to set machine on stands.

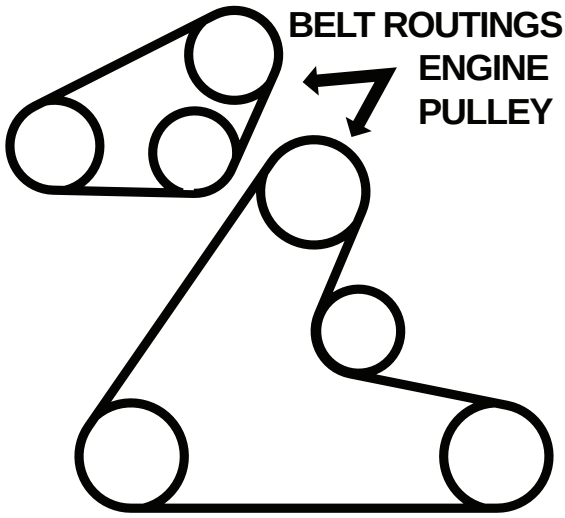
TO LOWER MACHINE:
With engine running
- Lower tines.
- Increase tine pressure to raise machine.
- Pin jack stands in operating position.
- Raise tines to set machine on wheels.
- Reinstall depth stop pins.

- When jack stand has been positioned, run or stop engine as appropriate for the work being performed.
- Do not work under machine with engine running.
- Tine may drop suddenly.

4172915

BELT ROUTINGS

ENGINE PULLEY



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⚠ WARNING

-Wet grass or steep slopes can cause sliding and loss of control.
-Wheels dropping over edges can cause rollovers.
-Going up or backing down steep slopes or ramps can result in backward rollovers.

To reduce potential for possible loss of control and rollover resulting in serious injury or death:
-Stay off slopes machine cannot back up with tines raised.
-Do not operate near drop offs or water.
-Do not operate without tires on ground.
-Do not use split ramps; use full width ramps to load unit.
-Reduce speed and use extreme caution on slopes and ramps.
-Avoid sudden turns and rapid speed changes.

CALIFORNIA SPARK ARRESTOR WARNING

Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrestor may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

4172911

RYAN®

LAWNAIRE ZTS

ASSEMBLY / SET UP INSTRUCTIONS

1. READ THE OPERATOR'S MANUAL BEFORE ASSEMBLY.
2. Remove the brackets securing the machine to the pallet. Reinstall and tighten caster axle nut.
3. Lower the operator platform.
4. Open the rear panel and connect the ground wire to the battery.
5. Check the oil level in both the engine and the hydraulic tank, top off if necessary.
   Use 10w30 oil for the engine.
   Use 15w50 or 20w50 motor oil for the hydraulic tank.
6. Fill the fuel tank with fresh clean regular grade gasoline. Open the fuel valve.
7. Start the machine and drive it off the pallet.

KEYSWITCH (A) - The keyswitch has three positions: OFF, RUN, and START. Insert the key and turn it clockwise to move the switch from OFF to RUN. Turn it further to START and hold to engage the starter. Release the key and the switch will return to RUN from START. Turn the key counterclockwise to OFF to stop the engine.

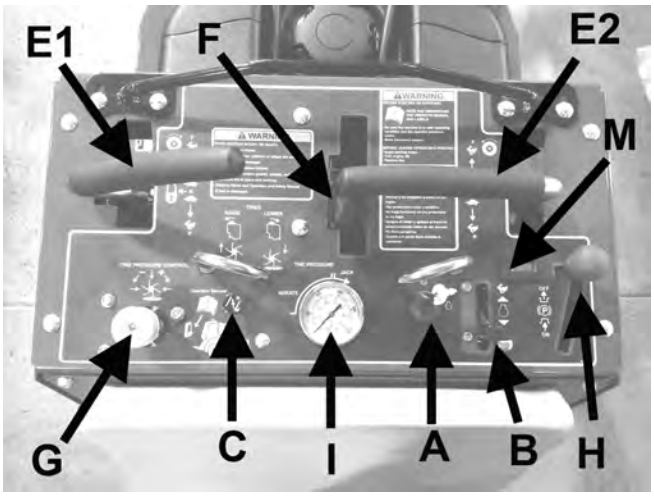
THROTTLE (B) - Move the throttle lever forward to increase engine speed until the maximum governed engine RPM is reached. Move the lever rearward to decrease engine speed until the engine reaches its idle speed.

CHOKE (C) - Pull the choke control out to set the choke ON. Push it in to set the choke OFF.

PARKING BRAKE (H) - Move the parking brake lever forward to latch it in the OFF position. Move it sideways and to the rear to engage the parking brake. The parking brake must be engaged to start the machine.

CONTROL LEVERS (E1 & E2) - Each of the two control levers controls the drive wheel located on its side. They control the forward and reverse movement of the machine, provide steering and also provide dynamic braking.

The operator presence must be released when the parking brake is engaged. The operator presence must be released to start the engine.



RAISE-LOWER SWITCH (F) - The raise-lower switch operates the hydraulics to raise and lower the tines. Rock the switch forward to lower the tines, rock it rearward to raise the tines.

PRESSURE CONTROL AND GAUGE (G & I) - The pressure control adjusts the down force on the tines. Turning the knob **(G)** clockwise increases the down pressure, counter clockwise decreases it. The down pressure may be read on the Pressure Gauge **(I)**. Down pressure should be adjusted to the lowest setting which keeps the tines at the depth set without excessive bouncing.

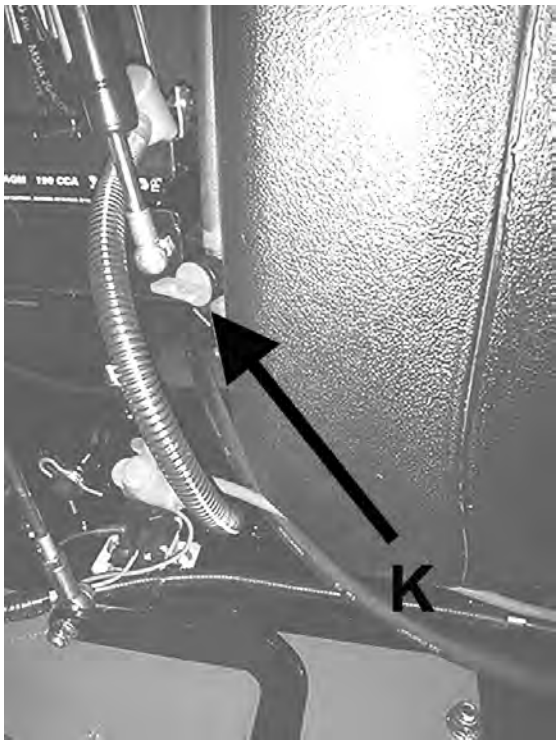
HOUR METER (M) - Records accumulated time the engine is running.

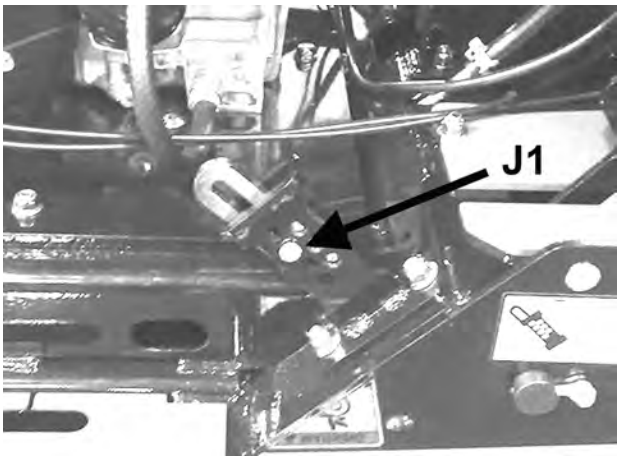
DEPTH SET (J1 & J2) - The depth setting is located below and to the rear of the engine on each side. Place the pin in the hole on each side for the depth you wish to aerate. NOTE: Actual depth may vary depending on soil conditions, tire pressure and tine wear.

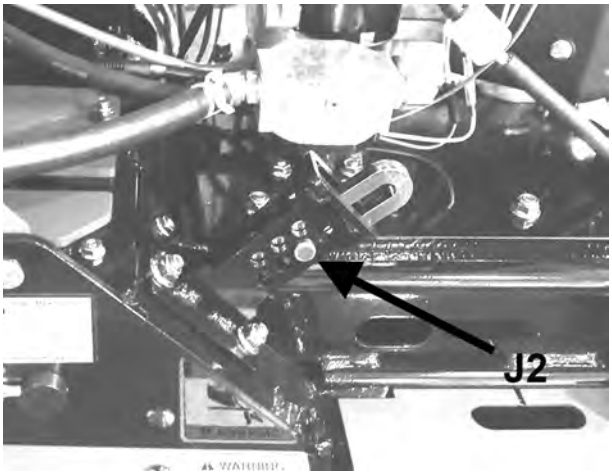
FUEL VALVE (K) - The fuel valve is located behind the fuel tank on the right side of the machine. the fuel valve is open when the knob is in-line with the fuel line hose. Close the valve by turning the knob a quarter turn to be perpendicular to the fuel line hose.

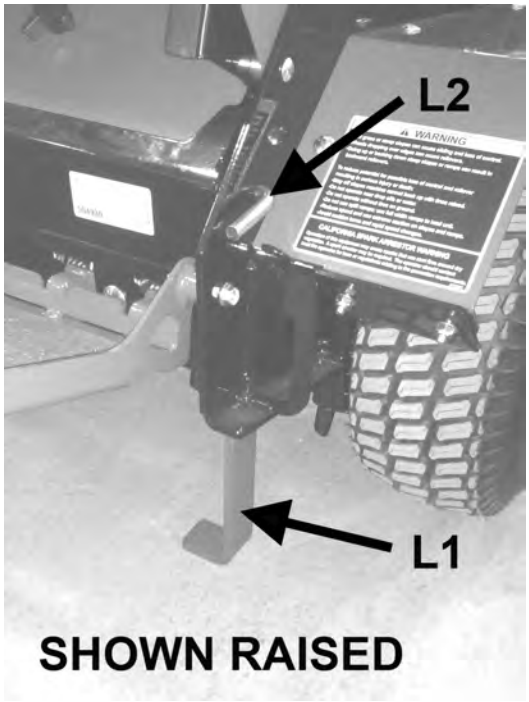
JACK STANDS (L1 & L2) - Built-in jack stands allow servicing the chains and the tine assembly without moving the machine. To put the machine "UP" on the jacks, lower the tines on a hard surface to raise the machine. Pull the pin **(L2)** on each jack **(L1)** and drop it. Put the pin back in the upper hole of the jack to secure it. Raise the tines to set the machine on the jacks.

To lower UNIT, lower tines, pull pin from upper hole, raise up jack, and re-insert pin to secure jacks. Raise tines to place unit on ground.









PAD (M) - The pad **(M)** may be removed for access to the inside of the control tower and to access the document tube **(N)** containing the operator's manual. It may be un-clipped and used as a kneeling pad. To remove, lift up and pull out at the bottom of the pad.

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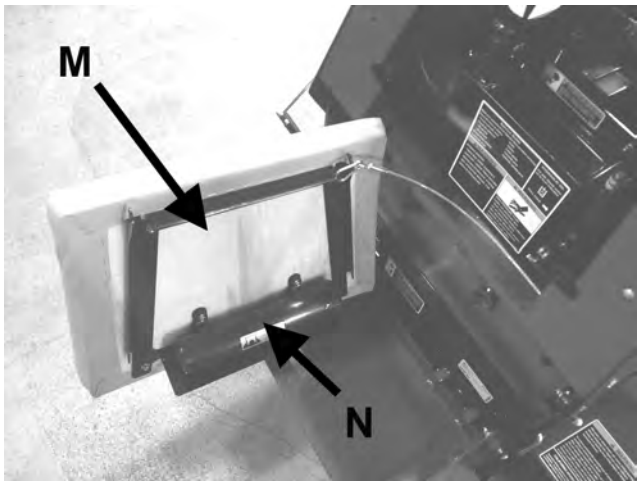
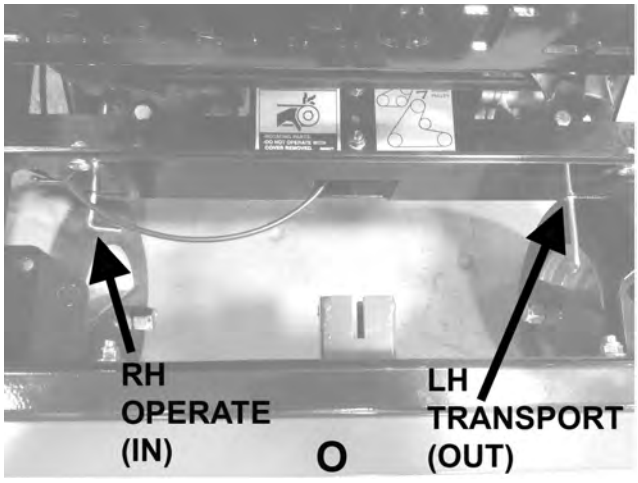


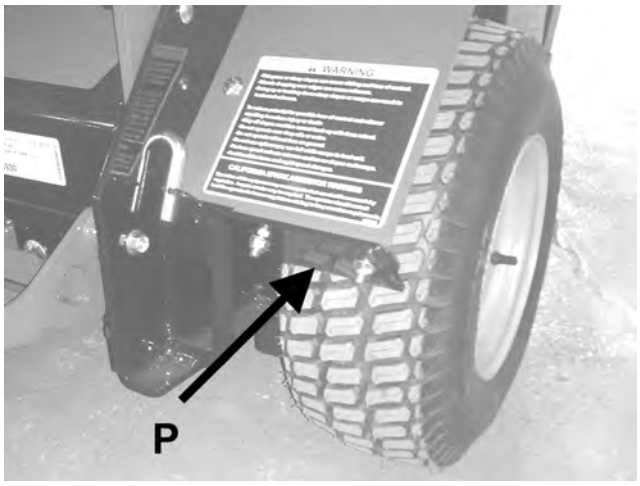
BYPASS VALVES (O) - Bypass valves allow the machine to be pushed or towed with the engine off and the parking brake disengaged.

A bypass valve for each transaxle is located under the weights at the front of the machine. With the machine off and the parking brake disengaged, pull the enlarged area of each valve rod through the guide hole in the frame and latch it to open the bypass valve. Move the rod so the enlarged portion pops back through the frame hole to close the valve for operation.

Front cover and weights removed for clarity. LH valve is shown open in "tow" position. RH is shown closed in operating position.
(FRONT VIEW EXAMPLE)



MUD SCRAPERS(P) - Mud scrapers for the drive wheels are provided. In ideal aeration conditions, soil should be moist but not so wet that it sticks to the tires.

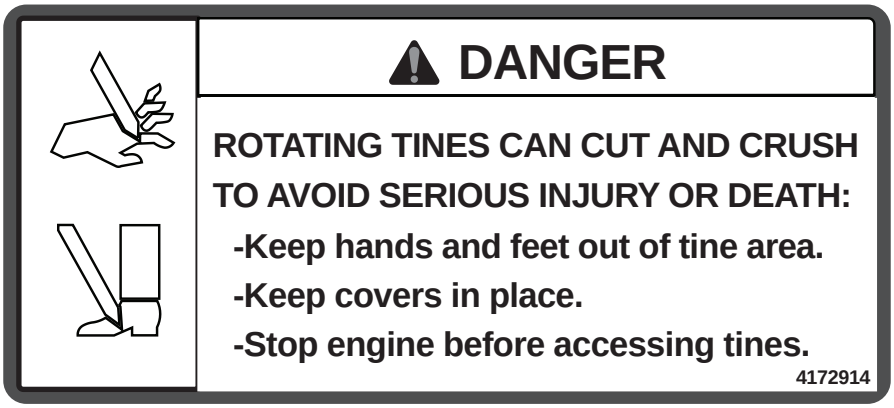


OPERATOR PLATFORM

The operator platform may be raised to shorten the machine for transport or to allow use as a walk behind unit. Flip the operator platform up and secure with the latch. Operate the machine normally. To lower the operator platform, lift the latch, and lower the operator platform to the riding position.

WALK-BEHIND USE

The aerator may be operated as a walk behind unit by raising the footplate and latching it in the stowed position. **Walk behind mode is useful when terrain or circumstances make operation as a ride-on uncomfortable or even dangerous. For example operation near a bank, above a drop-off or retaining wall would be places where walk-behind mode should be used. When operating as a walk-behind, operate across slopes, not up and down.**



PRE-OPERATION CHECK LIST
(OWNER'S RESPONSIBILITY)

___ Review and follow all safety rules and safety decal instructions.
___ Check that all safety decals are installed and in good condition. Replace if damaged.
___ Check to make sure all shields and guards are properly installed and in good condition.
___ Check that all hardware is properly installed. and secured.
___ Check that equipment is properly and securely attached to power unit.
___ Check to be sure engine is free of dirt and debris. Pay particular attention to the cooling fins, governor parts and muffler. Clean air intake screen. Check air cleaner; service if necessary.
___ Never allow riders.
___ Inspect area and remove stones, branches or other hard objects that might affect aeration, cause injury or damage.
___ Clean area around oil fill dipstick. Remove dipstick and check to be sure oil is in operating range (between marks on dipstick). Add oil if necessary but **Do Not Overfill**. Install dipstick assembly firmly until cap bottoms out on tube. Dipstick assembly must always be secured into fill tube when engine is running.
___ Check all lubrication points and grease as instructed in manual.
___ Check hydrostatic fluid level. Check to be sure cooling fins on hydrostat are clean.
___ Perform a functional check of the safety interlock system each time you operate the unit.

⚠CAUTION

Use caution when making turns. Slow down before making sharp turns to help maintain control and to prevent torn turf from skidding or spinning tires. To help prevent turf damage, keep both drive tires moving whenever a turn is made.

TIP: The best way to make a sharp "zero" turn is to come to a stop, get the machine moving in reverse with both drive wheels and then powering the machine around with the outside wheel. This technique keeps the drive tires turning and results in less turf damage.

⚠WARNING

SERIOUS INJURY OR DEATH MAY RESULT FROM MACHINE ROLLOVER

- DO NOT OPERATE MACHINE ON STEEP SLOPES OR NEAR DROPOFFS
- AVOID SHARP AND/OR QUICK TURNS

⚠WARNING

ROLLOVER MAY CAUSE PERMANENT INJURY OR DEATH.

- SUDDEN STARTS OR TURNS ON RAMPS OR SLOPES CAN CAUSE OVERTURN.
- USE GREATER CARE ON RAMPS AND AS THE SLOPE INCREASES.

FUELING

– Fill fuel tank(s) with good quality, clean, unleaded gasoline. Do not use hi-test fuel. Do not use fuel with more than 10% ethanol (E10).
– Use a funnel to avoid spillage.

WARNING

TO CHECK OR ADD FUEL:
– Do it outdoors
– Do not smoke
– Stop engine; allow to cool
– Fill to one inch below bottom of filler neck
– Do not overfill
– Clean up spilled fuel

BEFORE STARTING THE ENGINE

– Be familiar with all controls, how each functions and what each operates.
– Check the engine oil level and add if necessary. Turn fuel valve to ON.
– **Choke:** For cold starts, set the throttle lever to the half-open position and pull the choke out to the ON position. For warm starts set the throttle to the half-open position and the choke to the OFF position.

OPERATOR PRESENCE INTERLOCK SYSTEM

To start the engine:

– The left hand operator presence control lever must be in the neutral position.
– The parking brake must be **ON**.

To operate the machine:

1. The operator must release the parking brake before holding the operator presence control lever down or the engine will kill.

STARTING THE ENGINE

1. Lower the operator platform and stand on it.
2. Turn the key to operate the electric starter to start the engine. Release the key when the engine starts.
3. If the engine does not start immediately, do not crank for more than 10 seconds at a time. Allow 60 seconds for the starter motor to cool down between starting attempts to prevent the starter motor from burning out.
4. If the choke is ON when the engine starts, gradually back it off until the engine runs with no choke at all.

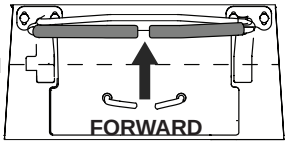
DRIVING

1. Move the parking brake to OFF position.
2. Move traction control lever out of neutral.
3. Push both traction levers forward evenly to drive forward in a straight line. Pull both traction levers back evenly to drive backward in a straight line.

OPERATING NOTES

– Practice at slow engine and travel speeds with the tines up until fully familiar with the controls.
– For normal aeration, the throttle should be set at the full open position. By using the traction levers to speed up or slow down the machine during use, maximum control and aeration efficiency can be maintained.
– Using the machine at less than full throttle in heavy conditions will cause the engine and hydrostats to labor and result in excessive wear to the engine and hydraulic system.
– The aerator may be operated as a walk behind unit by raising the footplate and latching it in the stowed position. **Walk behind mode is useful when terrain or circumstances make operation as a ride-on uncomfortable or even dangerous. For example operation near a bank, above a drop-off or retaining wall would be places where walk-behind mode should be used. When operating as a walk-behind, operate across slopes, not up and down.**

STEERING



Forward movement - To move the machine straight ahead, push both control levers forward equally from their neutral position. **Increase speed:** as the levers are moved farther forward from the neutral position. **Decrease speed:** when traveling forward, pulling the traction levers rearward slows the machine. **Stopping:** The machine will stop when the levers reach the neutral position.

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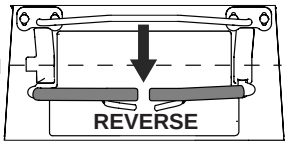


Reverse movement - To move the machine straight back, pull both traction levers back equally from their neutral position. Reverse speed increases as the levers are moved back farther. Maximum reverse speed is reached when the levers stop. When moving in reverse, pushing the levers forward slows the machine, and the machine stops when the neutral position is reached.

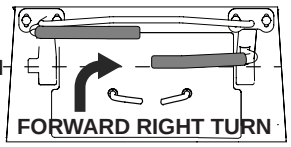
NOTE: The control levers are spring loaded to return to neutral in both forward and reverse. This spring resistance may be felt when moving the traction levers. When control levers are released, spring tension will quickly return them to the neutral position.

To turn, move one lever forward and one back.

Turns during forward movement:

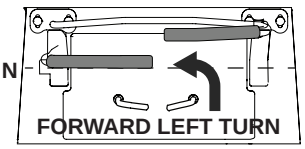
– **Forward Right turn**

- move the right traction lever back toward neutral to slow the right drive wheel.



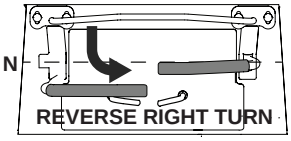
– **Forward Left turn**

- move the left traction lever back toward neutral to slow the left drive wheel.

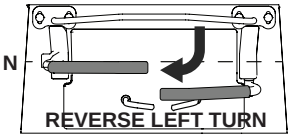


Turns during reverse movement:

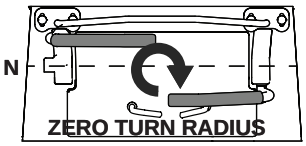
– **Reverse right turn** - move the right traction lever forward toward neutral to slow the right drive wheel.

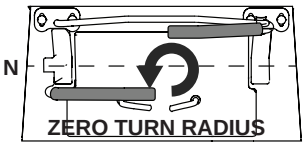


– **Reverse left turn** - move the left traction lever forward toward neutral to slow the left drive wheel.



Slow, sweeping turns are made with both traction levers on the same side of neutral and slightly apart. True zero radius turns about the center of the machine are made by having one lever in reverse while the other is in forward. By varying the relative positions of the two levers, the rate of turn is varied to suit the situation.





Slow down before making sharp turns. The machine is capable of turning very rapidly when the levers are moved further apart from each other. Loss of control and/or turf damage may result.

STOPPING

1. Raise tines.
2. Release control traction levers or move to neutral.
3. Engage the parking brake.
4. Turn key to OFF (counterclockwise).

AERATING

NOTE: For best performance, the lawn to be aerated should be thoroughly watered the day before.

1. Drive machine to the site to be aerated.
2. Set the tine depth stops to the desired aeration depth.
3. Lower the tines by rocking the raise-lower switch forward.
4. Drive the machine forward to aerate. When aerating, drive with the front tire next to the line of cores from the previous pass to avoid overlap and get even aeration.
5. Raise the tines when crossing hard surfaces, such as driveways or sidewalks or going over things like sprinkler heads
6. To obtain maximum benefit, a second pass may be made at right hand angles to the first or by lapping by 1/2.

Aerating TIPS

– Typical aeration core depth is 2 1/2" to 3" (60-75mm). This gets below the surface compaction and is easily performed. The machine is capable of going deeper in the right soil conditions, but noticeably more power is required. This increases wear and tear on the entire drive train with minimal additional benefit from the increased depth.

– The machine may be turned with the tines in the ground within limits. Too tight a turn will lead to the tines tearing turf. A good rule of thumb is to limit turns to about a 4' (1.2m) inside radius. Raise the tines when making tighter turns.

– When aerating a lawn, operate across the lawn. Raise the tines at the end of the pass, turn around, then lower the tines to continue on the next pass. To finish, aerate the perimeter.

Use of the Depth Stops (J1 & J2)

– The depth stops enable consistent core depth in varying soil conditions by setting the maximum core depth. A consistent core depth keeps the machine from bogging down when going from harder to softer soil for more consistent operation and better performance.

– Both depth stops need to be set to the same depth to avoid twisting the aeration frame. The depth stops set the maximum depth the tines penetrate to. Actual depth may vary due to soil conditions, tires, tire pressure and tine condition and wear.

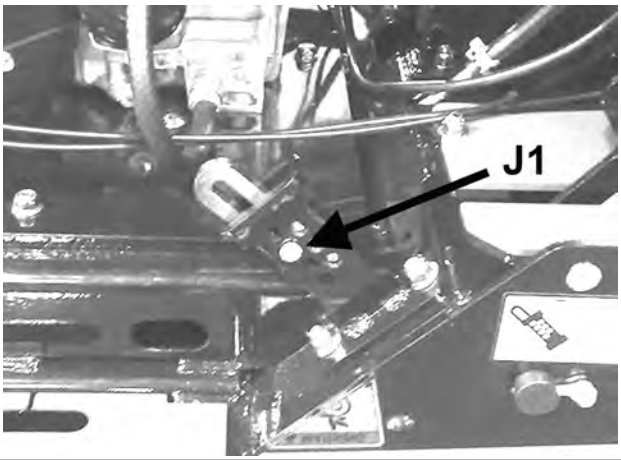
– To get a consistent core depth, watch the depth stops and depth arms. The depth arms should stay tight against the depth stops pins when the tines are in the ground. Occasional movement up is acceptable and helps protect the tine assembly if it rides over a rock or other buried object. Adjust the down pressure with the pressure control to keep the depth arms tight against this pins in normal operation. Actual pressure is indicated by the pressure gauge on the control panel,. In normal aerating conditions, 200-400 psi should give 2 1/2" to 3" core depths.

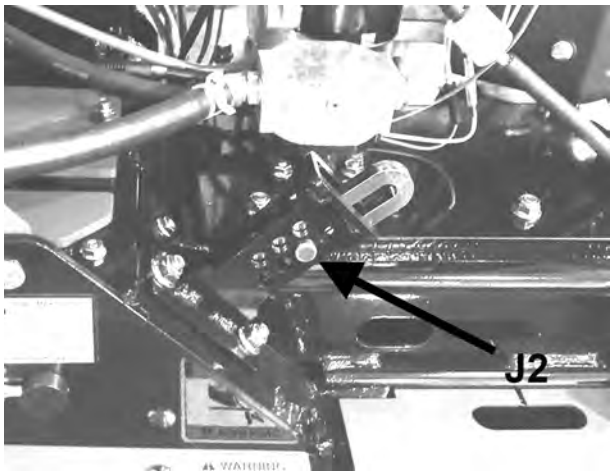
Excess pressure:

– Wastes fuel. Pressure is generated by the hydraulic lift pump. More pressure takes more power

– Creates excess heat. More pressure generates more heat which must be removed via the oil cooler and reservoir.

– Creates greater loads on the components in the lift system.





TRANSPORTATION

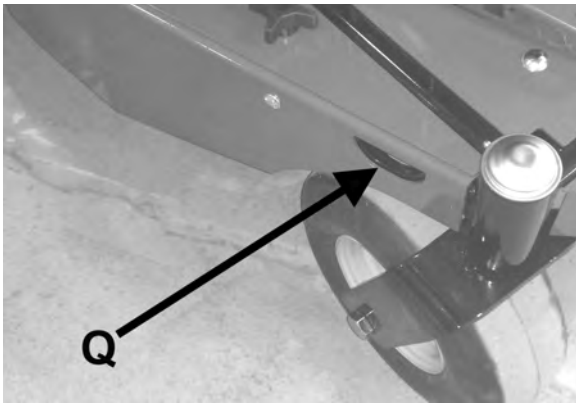
OPERATOR PLATFORM

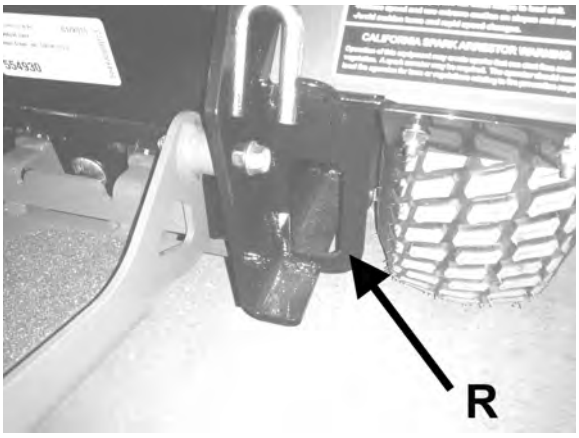
To reduce the space required, the operator platform may be folded up. A latch is provided to hold it in the "UP" position. the latch automatically engages when the platform is raised. to lower the operator platform, raise the latch to disengage it and lower the platform. See Controls Section Pg. 13

LOADING THE MACHINE

DO NOT use split ramps when loading or unloading the machine on a truck or trailer. Use full width ramps rated for at least the machine weight (Approximately 1200 lbs (545 kg)) plus operator weight. Full width ramps reduce the possibility of falling off the ramp. Reduce engine speed and drive slowly when loading or unloading the machine.

Secure the machine before transporting. Front **Q** and rear **R** tie down locations are provided to secure the machine.





STORAGE

⚠WARNING

To prevent possible explosion or ignition of vaporized fuel, do not store equipment with fuel in tank or carburetor in an enclosure with an open flame (for example, a furnace or water heater pilot light).

Before the equipment is put into storage for any period exceeding 30 days, the following steps should be taken.

1. Drain all fuel from the fuel tank and fuel lines.
2. Start the engine and run until all the fuel is used from the carburetor float bowl.
3. While the engine is still warm, drain the crankcase oil and refill with the proper weight oil corresponding to the season the equipment will next be used.
4. Remove the spark plug and squirt a small amount of engine oil into the cylinder. Turn the engine over a few times to distribute the oil.
5. Lubricate the chains.

To put the equipment into service after an extended period of storage:

1. Check for loose parts and tighten if necessary.
2. Check for cracked or broken tines and replace as necessary.
3. Fill the fuel tank with clean, fresh fuel.
4. Check the engine and gear reduction case oil levels with the engine in a level position.
5. Start the engine.
6. Check for fuel leaks.
7. Check operator present operation.

JACK STANDS

Your machine is equipped with built in jackstands. The jack stands are useful to raise the drive wheels off the ground for maintenance and changing chains and belts.

– When jack stands have been positioned, run or stop engine as appropriate for the work being performed.
– Do not work under machine with engine running.
– Tines may drop suddenly. Support tines if you will be working under them.

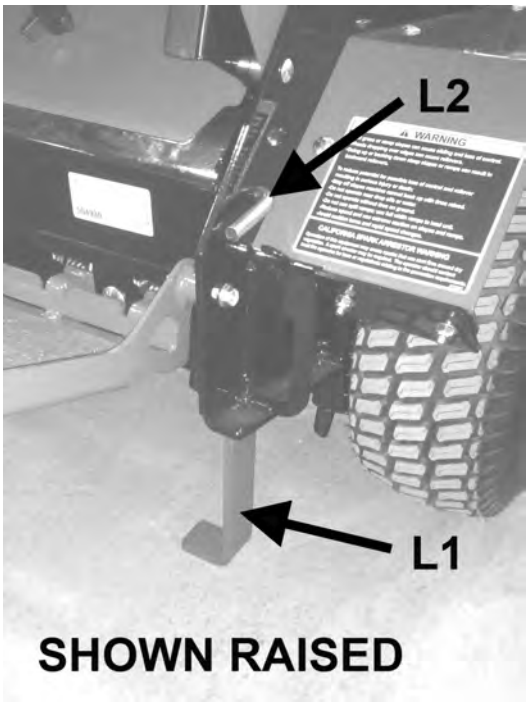
Raise machine:

1. Start the engine.
2. Pull depth stop pins.
3. Lower the tines on a hard surface
4. Increase tine pressure to raise the machine.
5. Pull jack stand pins and pin in raised position.
6. Raise tines to set machine on stands.

NOTE: Machine may be dropped gently onto the jack stands by reducing the tine down force until the machine lowers. Then raise tines to the transport position.

Lower machine:

1. Start the engine.
2. Increase tine pressure to raise the machine.
3. Pin jack stands in operating position.
4. Raise tines to lower machine onto wheels.
5. Raise the tines to the transport position.
6. Stop the engine.
7. Reinstall depth pins.



CHECK DAILY

Operator Presence Interlock System - Start Operation
For the engine to crank, the parking brake must be ON, and the operator present control lever must be released in the neutral position. Stand on the operator platform and check, one by one, if the engine will crank with the parking brake OFF or the operator control lever held down.

Operator Presence Interlock System - Run Operation
In order for the engine to run, the operator must either be standing on the platform, or walking behind the unit with the platform up, the parking brake in the OFF position and the LH control handle held down out of the neutral position.
The engine may also run if the parking brake is in the ON position, the LH control handle is rotated up into the NEUTRAL position.
To check:
1. Start the engine and run at 1/2 throttle.
2. With the LH control handle in the NEUTRAL position rotated up, move the parking brake lever to ON move the LH control lever down. The engine should kill.

Repair machine before using if the Operator Presence Interlock System does not operate correctly in start or run. Contact your authorized dealer.

Hardware
Tighten any nuts and bolts found loose. Replace any broken or missing cotter pins. Repair any other problems before operating.

Tire pressure
Rear Tires should be kept inflated at 15 p.s.i (1.05kg/cm^2). Improper tire inflation can cause rapid tire wear and poor traction. Uneven inflation can cause uneven aerating. Front tires should be 25 p.s.i.(1.75 kg/cm^2).

Engine Maintenance
-Air Filter: Maintain the air filter according to the manufacturer's engine owners manual.
-Engine Oil: Check engine oil level daily. Top off if necessary. See engine owners manual.

BATTERY-AGM TYPE BATTERY SUPPLIED

⚠WARNING Battery acid is caustic and fumes are explosive and can cause serious injury or death. Use insulated tools, wear protective glasses or goggles and protective clothing when working with batteries. Read and obey the battery manufacturer's instructions.

Be certain the ignition switch is OFF and the key has been removed before servicing the battery.

1. Verify battery polarity before connecting or disconnecting the battery cables.
2. When installing the battery, always assemble the RED, positive (+) cable first. and the ground, BLACK, negative (-) cable last.
3. When removing the battery, always remove the ground, BLACK, negative (-) cable first and the RED, positive (+) cable last.
4. AGM type battery. Use AGM charger when **charging. P/N 4171973**
5. Clean the cable ends and battery posts with steel wool. Use a solution of baking soda and water to clean the battery. Do not allow the solution to enter into the battery cells.
6. Tighten cables securely to battery terminals and apply a light coat of silicone dielectric grease to the terminals and cable ends to prevent corrosion. Keep terminal covers in place.

LUBRICATION

PIVOTS

Every 500 hours or yearly (whichever comes first):
Caster pivots (2 per)
Transaxle idler pivots (1 per)
Hydraulic cylinder pivots (1 per)

WARNING

CHAINS-LUBRICATION AND TENSION

Check chain tension after the first 4 hours of operation as detailed below. See adjustment section for any adjustments that are needed.Lubricate chains weekly or every 50 hours whichever comes first. A dry type chain lube such as DuPont Chain Saver is recommended. The advantage of a dry lube is that it won't pick up dirt thus prolonging chain life. A spray can with a straw makes application easier.

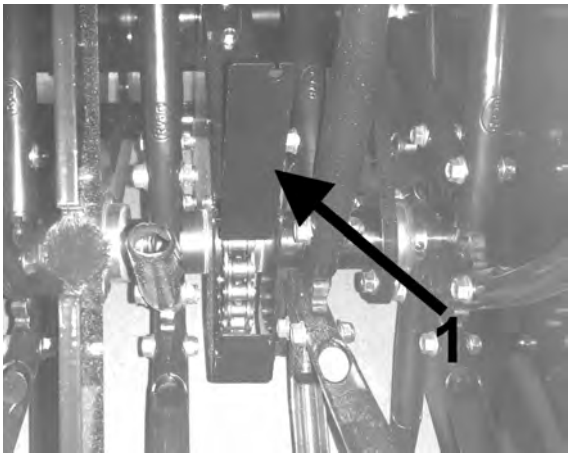
Tine Chains

Tines can be sharp. Wear gloves when working around tines.

1. Start the engine and raise the machine onto the jack stands. See jackstands section pg. 19
2. Remove the rear cover.
3. Flip up the chain cover door **1** on one of the tine chains.
4. Slowly run the corresponding drive and apply lubricant to each side of the chain until the entire chain is lubricated. Take care not to get caught in tines.
5. Repeat for the other tine chain.
6. Check tension for adjustment. Some slack is normal. See adjustment section if adjustment is needed.
7. Flip the chain cover doors down. Reinstall the rear cover.
9. Lower the machine. Stop the engine and pin the jack stands in the operating position.

Main and Wheel Chains

1. Start the engine and raise the machine onto the jack stands. See jackstands section pg. 19.
2. Remove the side chain covers. (2 pieces each side).
3. Slowly run the drive for one side. Apply lubricant to each side of both chains until both are completely lubricated.
4. Reinstall the side chain covers.
5. Check tension for adjustment. Some slack is normal in wheel chain. The main chain only requires adjustment if the automatic tensioner is out of movement to the rear. See adjustment section if adjustment is needed.
5. Lower the machine. Stop the engine and pin the jack stands in the operating position.



TRANSAXLE & HYDRAULIC OIL

Do not perform engine maintenance without the engine off and spark plug wires disconnected.

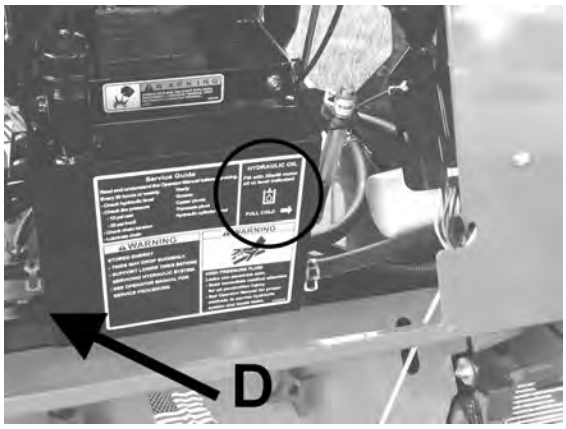
CAUTION

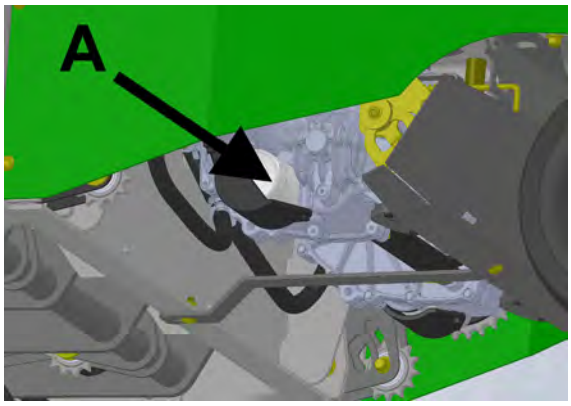
- Check cold.
- Add 20w50 oil if necessary to the indicated level.
- Do not overfill. When the oil warms up it expands. If overfilled cold, the oil may overflow at operating temperature.

Change the transaxle / hydraulic lift circuit oil after the first 75-100 hours, then every 500 hours or yearly.

It is essential that the exterior of the transaxle be free of debris, prior to fluid maintenance.

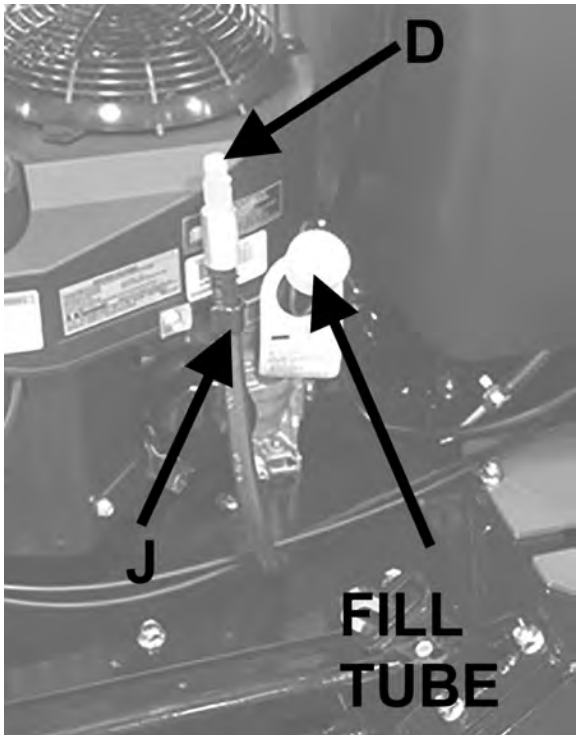
1. Raise the machine on the built in jack stands. Remove the protective filter cover over the hydraulic oil filter on each transaxle. Put an oil drain pan under the transaxle hydraulic oil filters. Remove the filters **A**. This will drain the oil from the transaxles. With another drain pan, drain the oil from the reservoir through the drain **D** on the lower left side if the reservoir. Remove the lift circuit filter. Dispose of the used oil and filters properly.
2. Apply pipe compound to the reservoir drain plug and reinstall in the reservoir. Oil the gaskets of the new transaxle hydraulic oil filters and install on the transaxles. Tighten 3/4 to 1 turn past the point where the gasket contacts the mounting surface. Reinstall the filter covers. Oil the gasket on ta new lift circuit filter and install on the filter head. Tighten 3/4 to 1 turn past the point where the gasket contacts the filter head. NOTE: The transaxle filters are smaller then the lift circuit filter.
3. Fill the reservoir with 20w50 (15w50 is acceptable) motor oil to the top. (Approximately 4 qts.).
4. Have more oil ready. Open the transaxle bypass valves. Keep the machine transaxle controls in neutral. Crack the lift pump outlet fitting, start the machine. Place some rags under the fitting. When oil appears, tighten the fitting. The lift circuit pump will fill the transaxles. Add oil as the level drops below the "FULL COLD" mark. Run the machine and keep adding oil until the oil level stabilizes. If the controls were not moved out of neutral, purging should not be required. Drive the machine and check oiil level. Top off as necessary.
5. If the transaxles are noisy or jerky, purge the transaxles, following the purging procedures. **See Purging Transaxles Page 24**.





ENGINE OIL

Do not perform engine maintenance without the engine off and spark plug wires disconnected.



AFTER FIRST FIVE (5) HOURS

While the engine is warm:

1. Release the oil drain hose assembly from the engine clip **J**. Lay hose assembly over the frame edge.
2. Remove the rubber cap **D** from the tip of the hose assembly and turn the drain valve to allow oil to drain from the engine. Dispose of used oil in accordance with local requirements.
3. Clean drain valve and tighten the plastic portion of the drain valve back into the metal portion of the valve. Replace rubber cap over the tip of the valve. Replace hose assembly back into engine clip.
4. Change oil filter.
5. Fill the crankcase with fresh oil to the full mark. Do not overfill. See engine manual for oil specifications.

DAILY

1. Check oil level with the dipstick.
2. If oil is needed, add fresh oil of proper viscosity and grade. See engine manual for oil specifications. Do not overfill.
3. Replace dipstick before starting engine.

PERIODIC OIL CHANGES

1. See engine manual for oil and filter change intervals after the break-in period.
2. Follow instructions for first oil change, above.

SPARK PLUGS

Remove each plug and check condition.

– Good operating conditions are indicated if the plug has a light coating of grey or tan deposit.

– A white blistered coating indicates overheating. A black coating indicates an “over rich” fuel mixture. Both may be caused by a clogged air cleaner or improper carburetor adjustment.

– Do not sandblast, wire brush or otherwise attempt to repair a plug in poor condition. Best results are obtained with a new plug.

– Set plug gap as specified in engine manual.

FUEL FILTER

An in line fuel filter is located in the fuel supply line. Inspect at every oil change to make sure it is clean and unobstructed. Replace if dirty.

PURGING TRANSAXLES

Due to the effects air has on efficiency in hydrostatic drive applications, it is critical that it be purged from the system.

These purge procedures should be implemented any time a hydrostatic system has been opened to facilitate maintenance or any additional fluid has been added to the system.

Purging may be required if the unit shows any of the following symptoms:

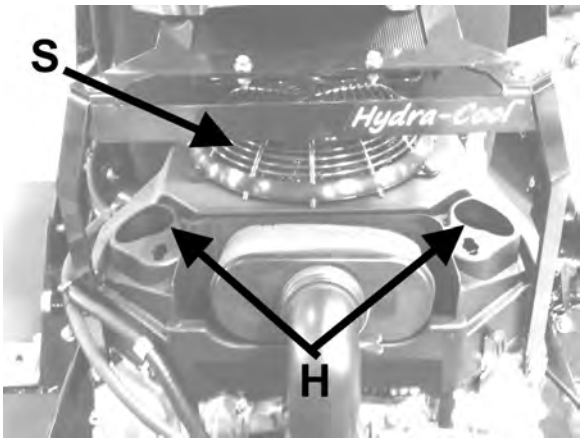
- Noisy operation.
- Lack of power or drive after short term use.
- High operation temperature, excessive oil expansion.

1. Check the transaxle fluid, fill to proper level, if required.
2. Raise the drive wheels off the ground. Support unit with jack stands or other suitable means.
3. With the bypass valve open, and the engine running, slowly move the control levers in both forward and reverse directions 5 to 6 times. As air is purged from the unit, the oil level will drop.
4. With the bypass valve closed, and the engine running, slowly move the control levers in both forward and reverse directions 5 to 6 times.
5. Stop engine. Check the transaxle fluid level, add fluid as required.
6. It may be necessary to repeat steps 3-5 until all the air is completely purged from the system. When the transaxle moves forward and reverse at normal speed, purging is complete.
7 Lower the machine from the jack stands, Stop the engine and pin the jackstands in the operating position.

ENGINE COOLING

Continued operation with a clogged cooling system will cause severe overheating and can result in engine damage.

- **Daily**: Clean air intake screen **S** on air cooled engines.
- **Every 100 hours**: Clean cooling fins beneath blower housing **H** with reference to information in the engine manufacturer's manual.



TINES

Tines can be sharp. Wear gloves when working around tines to help prevent inadvertent injuries.

Tines:

– Replace damaged or broken tines.
– Do not weld or straighten tines.
– Clean tines after use, inside and out.
– Apply a light coat of oil to tines to prevent rusting.

WARNING

SPECIFIC TORQUES

Tine BOLTS	**15-20 FT-LBS (20-27 Nm)**
WHEEL LUG NUTS	**75-100 FT-LBS (102-135.5 Nm)**
ENGINE PULLEY MOUNTING BOLT	**50-60 FT-LBS (68 Nm-81Nm)**
WHEEL HUB NUT	**120-140 FT-LBS (162.5-190 Nm)**

CLEANING MACHINE

Clean the machine after use. Compressed air is recommended. Do not use a pressure washer. The machine will run cooler and last longer if kept free of clippings and other debris. A clean machine also reduces the risk of fire due to accumulation of combustible debris and chaff.

Brush or blow clippings and debris off the machine. DO NOT use a pressure washer.

WASHING MACHINE

CAUTION: Improperly washing a machine can cause water to enter bearings and other components. This can greatly reduce component life.

- DO NOT use a pressure washer. Do not direct water at bearings or seals. High pressure water can blow past seals and enter sealed bearings.
- Allow the machine to cool down before washing. Water on a warm machine can be sucked into sealed bearings as they cool.
- Avoid getting electrical connections wet. Water can cause electrical faults and corrosion of electrical components.

MAXIMUM AERATION DEPTH

Depth stops set the maximum aeration depth. Maximum aeration depth may be adjusted by changing the hole the depth stop pin is in. Typical aeration depth is 2 1/2 - 3" (60-75 mm). Pins **J1** on both sides of the machine need to be in the same hole so the tine frame is not twisted during operation. **Figure 1**

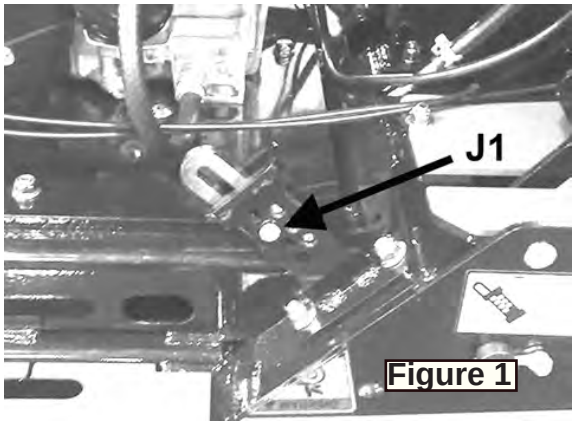


Figure 1

PARKING BRAKE CABLE

The parking brake cable is adjusted on the transaxle end of the cable. **Figure 2**

1. Move the parking brake lever to the "ON" position.
2. Install the bracket loosely to the frame. Pull the cable conduit until the barrel fitting just touches the bracket on the brake lever. Tighten the mounting bolt.

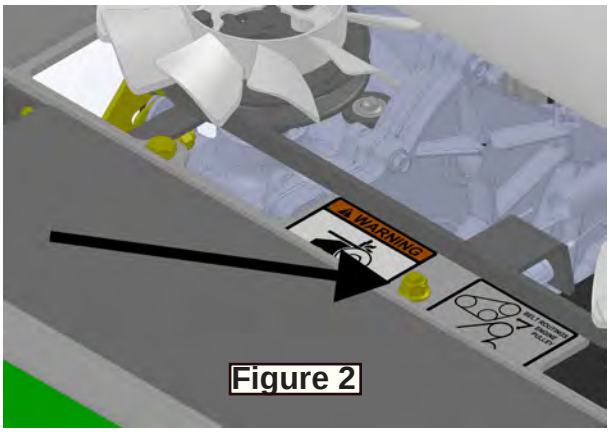


Figure 2

PARKING BRAKE SWITCH

The parking brake switch needs to be adjusted so the plunger is depressed when the parking brake is "OFF". **Figure 3**

1. Move the parking brake to the "OFF" position.
2. Loosen the parking brake switch mounting screws and move the switch until the plunger is depressed almost even with the body. Tighten the screws

FRONT CONTROL REFERENCE BAR

The front control reference bar is mounted to the control panel with slots. Moving the bar forward in the slots allows greater forward speed may be obtained. Moving it back reduces the maximum forward speed. **Figure 4**

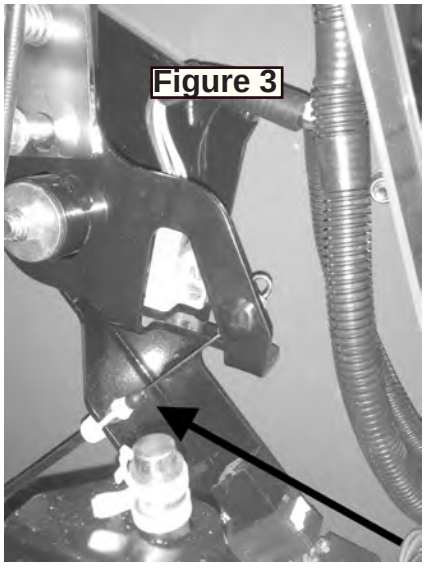


Figure 3

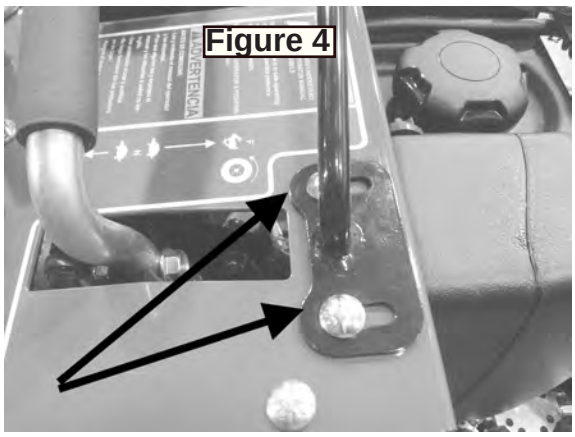


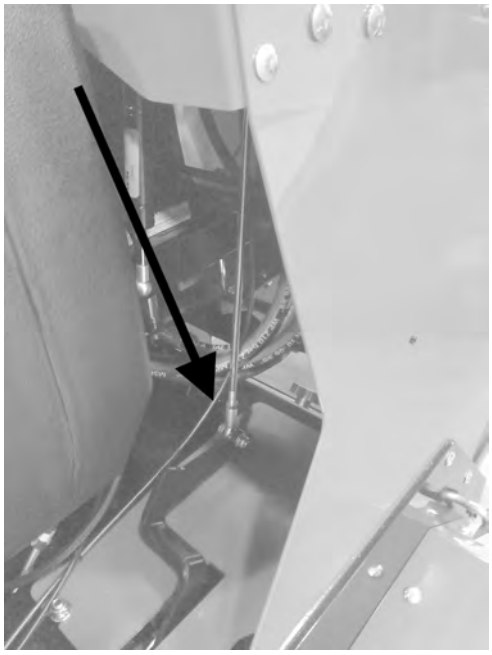
Figure 4

TRACTION CONTROL LINKAGE

The transaxles on this machine are spring loaded to the neutral position. The traction control levers need to be adjusted so the LH lever is in the neutral slot when the tractions are released. The right hand lever is adjusted to line up with the left hand lever.

To Adjust:

1. Loosen the jam nuts on either end of the control rod. Note: the end nearest the flats on the rod has left hand threads. Adjust the left rod by turning it to locate the left hand traction lever as desired.
2. Tighten the jam nuts against the rod ends to lock the adjustment.
3. Complete the adjustment by turning the right rod to line up the right traction lever with the left one.



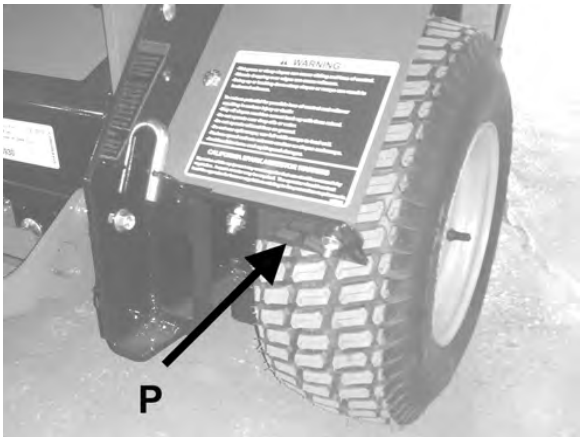
Moving the location of the traction lever in the slot by way of adjustment can be used to affect top forward speed and reverse speed of the unit within the limits of the transaxles control stroke. Adjusting the LH control to the rear of the neutral slot will increase forward speed by reducing the available stroke for reverse and lowering maximum reverse speed. Do not adjust beyond the point where the end of the hydrostat stroke is reached before the control lever hits the front reference bar with the reference bar moved all the way forward.

TIRE SCRAPERS

Rear tire scrapers **P** are provided to prevent mud build up on the drive tires during operation in muddy conditions. Ensure proper tire inflation is at 15 p.s.i. The tire scrapers should be positioned so there is about 1/8" (3mm) clearance between the wheel and the scraper.

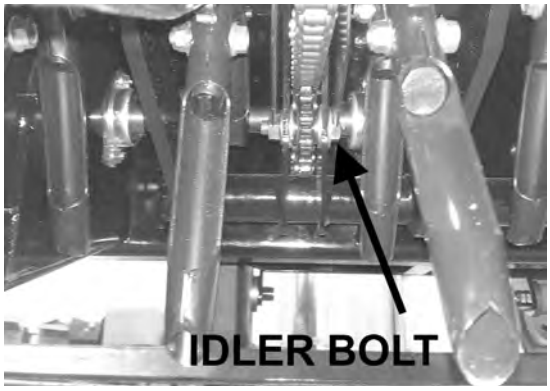
To Adjust:

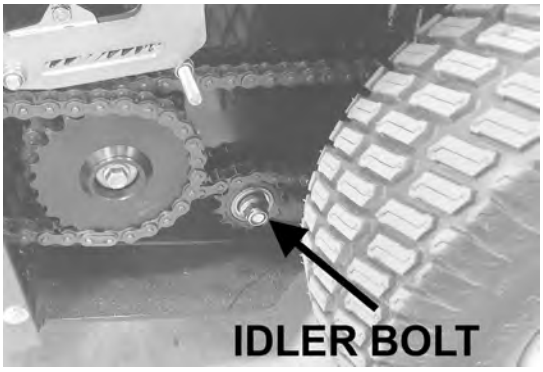
1. Loosen the bolts securing the tire scrapers.
2. Position the tire scraper 1/8" (3mm) from the nearest tire surface.
3. Tighten bolts.



CHAINS

Tines may drop suddenly. Support the tines when working underneath them. NOTE: It is normal for there to be some play in the chain.





WHEEL AND TINE DRIVE CHAIN ADJUSTMENTS

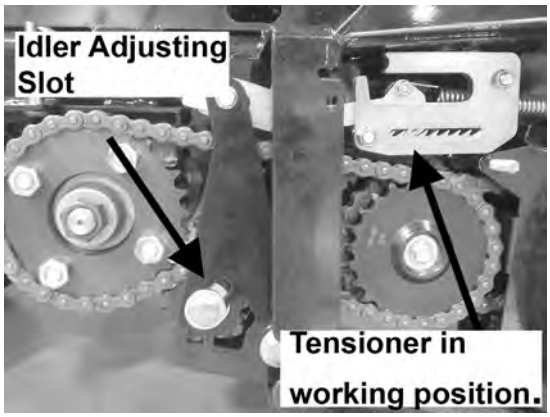
1. Raise the machine and support it on the built in jack stands. See jack stands section page 19. Turn off the engine. This will allow one of the sprockets to turn freely so the idler can take up the slack.
2. Remove the side chain covers.
3. Tension by loosening the idler bolts and sliding the idler in the adjusting slot to remove slack from the drive. Tighten the idler bolts. Replace chain covers.

NOTE: If there is no more adjustment, the chain needs to be replaced. See Belt / Chain Replacement Section

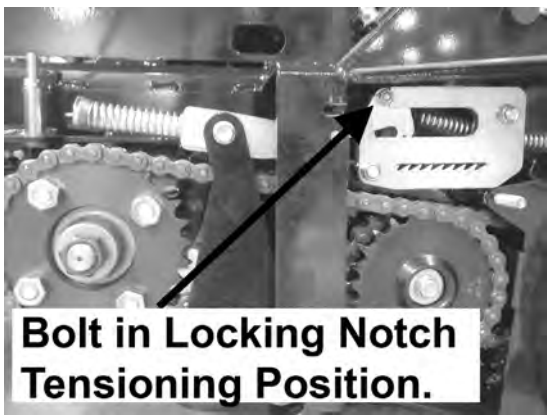
4. Start the engine and lower the machine. Stop the engine and pin the jack stands in the operating position.

MAIN DRIVE CHAIN ADJUSTMENT

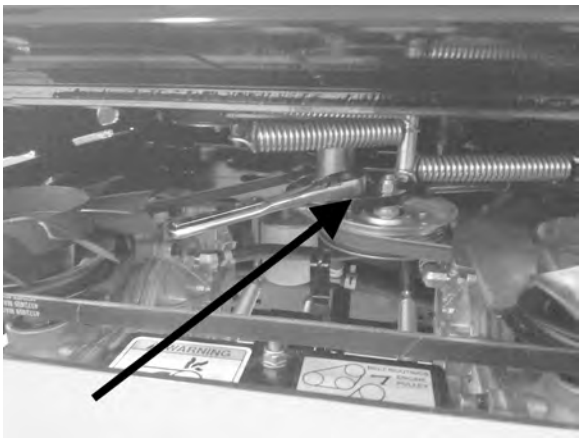
The main drive chain has an automatic tensioning system that normally does not require adjustment. As the chain wears, the tensioner advances and locks the idler in the new position. If the automatic tension has advanced all the way, it may be reset.



1. Raise the machine and support it on the built in jack stands. Turn off the engine.
2. Remove the front and side chain covers. Push down on the spring end of the tensioner to disengage the locking teeth. Pull the tensioner forward and lock it in place by setting the bolt in the locking notch.
3. Rotate the tire to get all the slack out of the top span of the chain.
4. Loosen the idler bolts and move the idler in the adjusting slot to remove the slack in the chain. Tighten the idler bolts.
5. Move the tensioner off the locking notch to engage the locking teeth.
6. Reinstall the chain covers. Start the engine and lower the machine. Stop the engine and pin the jack stands in the operating position.



NOTE: Use replacement belts from Schiller Grounds care, Inc. not general purpose belts. Schiller Grounds Care, Inc. belts are specifically designed for the loads of this machine and will normally provide longer service life.



ENGINE-TRANSAXLE BELT

1. Remove the front cover. (The two knobs which secure it are located on the underside of the machine.)
2. Rotate the engine-transaxle idler arm in a counter-clockwise direction with a 3/8" ratchet handle to allow removal of the belt. Remove the belt from the idler pulley and then from the remaining pulleys.
3. Loop a new belt around the transaxle and engine pulleys. Rotate the idler arm in a counter-clockwise direction to enable the new belt to be installed in the idler pulley.
4. Reinstall the engine-transaxle belt.
5. Reinstall the front cover.

ENGINE-HYDRAULIC PUMP BELT

1. Remove the front cover. (The two knobs which secure it are located on the underside of the machine.)
2. Remove the engine-transaxle belt.
3. Rotate the engine -hydraulic pump idler in a clockwise direction to allow removal of the belt.
4. Loop a new belt around the pump and engine pulleys. Rotate the engine-hydraulic pump idler in a clockwise direction to enable the new belt to be installed in the idler pulley.
5. Reinstall the engine-transaxle belt.
6. Reinstall the front cover.

NOTE: It is recommended replacement chains from Schiller Grounds care, Inc. be used. Schiller Grounds Care, Inc. supplies a premium quality chain cut to the correct length. Replace all chains together for best results under normal circumstances.

Tension on new chains will need to be adjusted after the first several hours of operation after the chains run in. See Chain Adjustment Section.

MAIN DRIVE CHAIN

1. Start the engine and raise the machine on the jack stands. See jack stands section page 19. Stop the engine. Open the transaxle by pass valves so you can rotate the tines and axles manually.
2. Remove the front, side and tine chain covers.
3. Push down on the spring end of the tensioner to disengage the locking teeth. Pull the tensioner forward and lock it in place by setting the bolt in the locking notch.

NOTE: If replacing all chains, leave main chain broken and lying in place while the wheel and tine chains are replaced. It is easier to replace those chains with the main chain broken because the wheel and tine sprockets turn freely with the main chain disconnected.

4. Break the chain by removing the connector link. Inspect the sprockets. If any sprockets are worn, remove the chain and replace sprockets before installing the new chain. If the sprockets are still in good condition, connect the new chain to the old chain and use the old chain to pull the new chain around the sprockets. Remove the old chain and connect the ends of the new chain with a new connector link. NOTE: Install all connector links so the closed end is in the direction of forward travel.
5. Push the idler up to take all the slack out of the new chain and tighten the idler bolt. Make sure the slack is out of the top span of the chain. Move the tensioner off the locking notch to engage the locking teeth.
6. Reinstall the chain covers. Start the engine and lower the machine. Stop the engine and pin the jack stands in the operating position.

TINE CHAIN

Tines may drop suddenly. Support tines when working underneath them.

1. Start the engine and raise the machine on the jack stands. Stop the engine. Open the transaxle by pass valves so you can rotate the tines and axles manually.
2. Remove the front, side and tine chain covers.
3. Break the main chain and leave it lying on the machine. **Figure 1**
4. Loosen the idler mounting bolt and back off the idler.
5. Break the chain by removing the connector link. Inspect the sprockets. If any sprockets are worn, remove the chain and replace sprockets. If the sprockets are still in good condition, connect the new chain to the old chain and use the old chain to pull the new chain around the sprockets. Remove the old chain and connect the ends of the new chain with a new connector link. NOTE: Install all connector links so the closed end is in the direction of forward travel.
6. Take the slack out of the chain by moving the idler in the adjusting slots. Tighten the idler mounting bolt. Reinstall main chain.
7. Reinstall the chain covers. Start the engine and lower the machine. Stop the engine and pin the jack stands in the operating position.

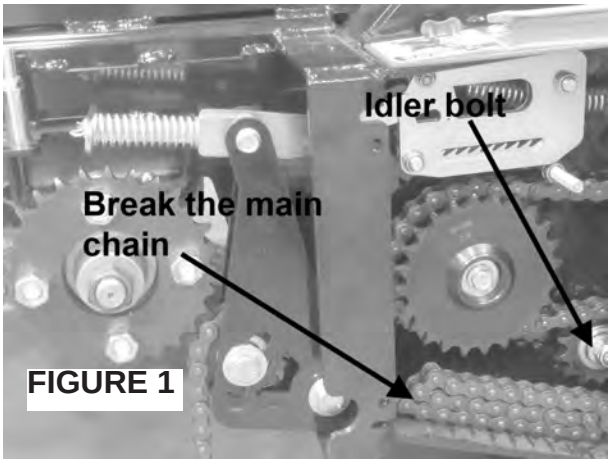


FIGURE 1

WHEEL CHAIN

1. Start the engine and raise the machine ion the jack stands. See jack stands section page 19. Stop the engine. Open the transaxle by pass valves so you can rotate the tines and axles manually.
2. Remove the front, side and tine chain covers.
3. Break the main chain and leave it lying on the machine. **Figure 1** Loosen the idler bolt and back the idler off.
4. Remove the wheel.
5. Remove the axle assembly from the machine. take the wheel chain off the axle sprocket. **Figure 2**
6. Break the chain by removing the connector link. Inspect the sprockets. If any sprockets are worn, remove the chain and replace sprockets. If the sprockets are still in good condition, connect the new chain to the old chain and use the old chain to pull the new chain around the sprockets. Remove the old chain and connect the ends of the new chain with a new connector link. NOTE: Install all connector links so the closed end is in the direction of forward travel.
7. Set the axle sprocket inside the chain loop and reinstall the axle assembly to the frame. Install the wheel assembly.
8. Take the slack out of the chain by moving the idler in the adjusting slots. Tighten the idler mounting bolt. Reinstall main chain.
6. Reinstall the chain covers. Start the engine and lower the machine. Stop the engine and pin the jack stands in the operating position.

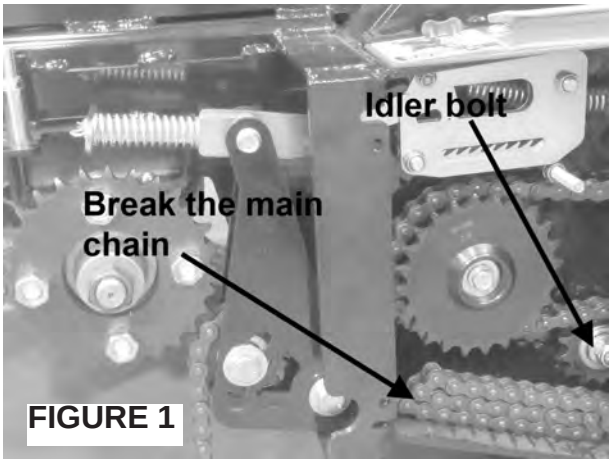


FIGURE 1


FIGURE 2

RYAN®

LAWNAIRE ZTS

SPECIFICATIONS

ENGINES:
Construction: Aluminum block with cast-in cast iron sleeves. Aluminum head.
Configuration: 4-stroke, vertical shaft, V-twin cylinder, overhead valve, air-cooled.

DRIVE SYSTEM:
Transaxles: Dual HydroGear ZT3200 Commercial Duty Hydrostatic transaxles (10cc Pumps)
Turn Radius: True Zero

CONTROLS:
Throttle, choke, PTO switch, key switch, operator present, traction levers (1 per wheel), parking brake, tine raise/lower, tine down pressure.

GROUND SPEED:
Forward 0-7.4 mph (0-11.9 kph)
Reverse 0-3.5 mph (0-5.6 kph)

BRAKES:
Hydrostat provides dynamic braking
Parking brake: Mechanical paul type in transaxle

TRANSMISSION DRIVE SYSTEM:
Belt from engine to hydrostat input shafts, hydrostatic drive to wheels and tines via #50 chain.

TURNING RADIUS:
True zero tines up.
Approximately 48" radius tines down.

HYDRAULIC RESERVOIR CAPACITY:
Reservoir 2.75 quarts
Transaxles 2 quarts
Total Capacity 6.75 quarts

POWER STEERING:
Independently controlled drive wheels.

WEIGHT:
554930.... Dry : Approximately 1210 lbs.
Wet: Approximately 1245 lbs.

DRIVE TIRES:
18 X 6.50-8
Pressure: 15 p.s.i. (1.05 kg/cm²)

CASTERS:
13 X 5.00-6
Pressure: 25 p.s.i. (1.75 kg/cm²)

AERATION:
TINES:
3/4" (19mm) formed from .08 in hardened chrome molybdenum alloy steel. 48 per unit.

PENETRATION DEPTH:
2-5" (50-250 mm) maximum
Adjustable depth set for consistent depth.

AERATION WIDTH:
30" (762mm)

HOLE PATTERN:
3-3/4" X 7" (95mm X 178mm) on center

PRODUCTION:
Up to 92,400 sq. ft./hour

ENGINE	
MODEL NUMBER	554930
MANUFACTURER	KAWASAKI
MODEL	FS541V
CYLINDERS	2
COOLING	Air
FUEL	Gasoline
BORE/STROKE	2.9" x 2.8" (73 x 72 mm)
DISPLACEMENT	36.8 ci (603 cc)
COMPRESSION	8.1:1
OUTPUT POWER	Refer to engine manufacturer's specifications and website
OUTPUT TORQUE	31.0 ft-lb (42.1 Nm) @2200 rpm
OIL CAPACITY	1.8 qt (1.7L)
LUBRICATION	Full Pressure
CYLINDER BLOCK	Aluminum with cast iron sleeve
CYLINDER HEAD	Aluminum
GOVERNOR	Mechanincal
AIR CLEANER	Dual Element
IGNITION SYSTEM	Electronic
CHARGING SYSTEM	12V-15AMP
BATTERY	12V
FUEL CAPACITY	5.0 GAL (18.9 L)
FUEL TANK	Polyethylene
FUEL CONSUMPTION @ MAX LOAD/ SPEED	1.35 gal/hr (5.11 L/hr)

SCHILLER GROUNDS CARE, INC.
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