



MODELS: 235 FRONT WHEEL DRIVE TRACTOR 75-70282 25HP KUBOTA DIESEL

235 FRONT WHEEL DRIVE TRACTOR 75-70283 35HP B&S GAS



MAN 4165182 Rev. B 12-2010

www.steinerturf.com

#### CALIFORNIA

#### **Proposition 65 Warning**

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.

#### **Californie Proposition 65 Avertissement**

Les échappements des moteurs diesel et certains de leurs composés sont reconnus par l'Etat de Californie pour être cancérigènes, provoquer des défauts congénitaux et d'autres dangers en matière de reproduction.

# **A** WARNING

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

# **A** 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.

#### California Advertencia de la Proposicion 65

El estado de California hace saber que los gases de escape de los motores diesel y algunos de sus componentes producen cáncer, defectos de nacimiento y otros daños en el proceso de reproducción humana.

# **A** 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.

#### **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 Owner / Operator's Manual and a separate Illustrated Parts 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 "aftermarket" 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 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.

### **A**DANGER

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

### 

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

## 

**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.

Schiller Grounds Care, Inc.	R
Dne Bobcat Lane Johnson Creek, WI 53038 U.S.A Phone: 920-699-2000 Fax: 920-699-3683	AL NUMBE
MODEL NUMBER	SERIAL

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

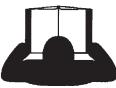
**SERIAL NUMBER:** This number appears only on your mower. It contains the model number followed consecutively by the serial number. Use this number when ordering parts or seeking warranty information.

#### PREPARING FOR SAFE OPERATION

#### Operator preparation and training

#### **Read the Operation & Safety Manual**

 If an operator or mechanic cannot read English or one of the other languages in which this manual is supplied, it is the owner's responsibility to explain this material to them. If any portion of this material is unclear, contact your factory representative for clarification.



 In addition to this manual, read the manual(s) for any attachments to be used, for specific information about the attachment.

- Become familiar with the safe operation of the equipment, operator controls and safety signs. 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 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.
- 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 or alcohol.
- 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 where the equipment is to be used 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.
- Turf conditions can affect the stability of the machine.



All rotary mowers are potentially dangerous. They can amputate hands and feet and throw objects. Failure to follow these safety and operating instructions could result in serious injury or death.

#### **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.
- Verify that machine and attachments, if any, are in good operating condition.

#### **OPERATING SAFELY**

#### In general

- Use extra care when loading or unloading the machine into a trailer or truck.
- Close fuel valve before transporting.
- Operate all controls from the operator's seat.
- 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.
- Before mowing, install mulcher on mulching decks. Lower discharge chute on side discharge decks.
- Keep clear of the discharge opening at all times.
   Never direct the discharge toward a bystander.
   Stop operation if someone approaches.
- Use care when pulling loads or using heavy equipment.
  - Use only approved drawbar hitch points.
  - Limit loads to those you can safely control.
  - Do not turn sharply. Use care when reversing.
  - Use counterweight(s) or wheel weights when suggested in the operator's manual.
- Never leave a machine unattended. Always turn off the PTO, 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 PTO is disengaged;
  - the F-R pedal is in NEUTRAL.
- When starting the engine, make sure hands and feet are clear of attachments.
- Do not start the machine while standing in front of the discharge chute or with the chute directed at someone.
- Do not engage PTO at full throttle. Throttle to idle or lowest possible engine speed.
- Do not change engine governor settings or overspeed the engine. Operating the engine at excessive speed can increase the hazard of personal injury.

#### Interrupting operation

- Before leaving the operator's position:
  - Park on level ground;
  - Lower attachments;
  - Disengage the PTO;
  - Set the parking brake;
  - Shut off the engine and remove the key.
- Disengage the PTO and wait until the mower blades quit rotating or the attachment stops:
  - before raising cutterdeck;
  - when not mowing;
  - for transport;
  - when crossing surfaces other than grass.
  - Stop the engine, disengage the PTO and wait until the blades quit rotating:
  - before refueling;
  - before removing grass catcher;
  - before making height adjustment unless the adjustment can be made from the operator's position.
- Stop the engine, disengage the PTO and disconnect the spark plug wire(s) or remove the key:
  - before clearing blockages or unclogging chute;
  - 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.
- Allow the blades to come to a complete stop when stopping operation to clear blockages, unclog, inspect the machine, do maintenance or repair.
- Follow the procedure for engine shutdown and, if the engine is provided with a shut-off valve, turn the fuel off at the conclusion of operation.

#### MANEUVERING SAFELY

#### In general

- Slow down before turning.
- Always look behind and down for a clear path before and during backing.
- Be aware when approaching blind corners, shrubs, trees, tall grass or other objects that may obscure vision.
- If tires lose traction, disengage the PTO. If on a slope, head down.

#### **Operating on slopes**

- 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.
- The operator must be experienced with the Schiller Grounds Care, Inc. tractor and it's unique operational responses.
- If the operator is uncomfortable or unsure of the machines stability, he should cease operation on the slope immediately.
- Ultimate responsibility for safe operation on slopes rests with the operator.
- With ride-on machines, mow up and down slopes, not across.
- On uneven, loose or wet ground, the angles should be reduced. Only smooth maneuvers (not erratic) should be made to help maintain stability.
- Maintain engine RPM and control ground speed with the Forward-Reverse pedal.
- Do not operate on excessively steep slopes.
- Avoid starting or stopping on a slope. If tires lose traction, disengage the PTO and proceed slowly straight down the slope.
- 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 operation.
- 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.
- Use caution when operating near 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.

# Rollover Protection Structure (ROPS)

- A Rollover Protection Structure (ROPS) for this tractor is available as an optional accessory. Seat belts must be worn whenever a ROPS is installed on the tractor. Always keep seat belt snugly adjusted. **DO NOT** use seat belts on a tractor without a ROPS.
- If a ROPS is installed and the tractor is overturning, hold onto the steering wheel. Do not attempt to jump out or leave the seat.

#### MAINTENANCE SAFELY

#### In general

- Maintain machine according to manufacturer's schedule and instructions for maximum safety and best mowing results.
- Park machine on level ground.
- Never allow untrained personnel to service machine.
- Adjust or repair only after the engine has been
- 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.

#### Blades

- Mower blades are sharp and can cut. Use extra caution when handling. Remove obstructions with care. Wrap the blade(s) or wear gloves.
- Be aware that rotating one blade on multiblade mowers can cause other blades to rotate.
- Only replace blades. Never straighten or weld them.
- Keep other persons away from blades.

#### Fuel

- 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:
  - DO NOT USE E15 Gas (use up to E10)
  - 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.
- 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.

#### Hydraulic system

The machine's hydraulic system operates under high pressure.

- When checking for leaks, do not use your hands to attempt to find a leak. Instead, use cardboard or paper.
- Escaping hydraulic fluid can be under sufficient pressure to penetrate skin and cause serious injury.
- If hydraulic fluid is injected into the skin, it must be promptly removed by a doctor familiar with this form of injury or gangrene may result.
- Check that all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system.



WARNING



#### Battery

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:

- When working with battery acid, use protective equipment such as, but not limited to, goggles, face shield, rubber gloves and apron.
- 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.
- 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.
- When the machine is to be parked, stored or left unattended, close the fuel valve.
- 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.

- 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.
- 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.



# LABELS



00-377 Location: Right frame. FORWARD / REVERSE / NEUTRAL LOCK: Move lever forward to unlock foot pedal Move the lever rearward to lock the foot pedal in the neutral position.

# A WARNING A

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**KEEP HANDS AWAY FROM BELT** WHILE ENGINE IS RUNNING.

> 🗚 DANGER 🕰 AULIC PRESSURE MAY

WITH THE ENGINE STOPPED. THIS UNIT IS EQUIPPED WITH A HYDRAULIC WEIGHT TRANSFER SYSTEM FOR FRONT MOUNTED ATTACHMENTS.

BEFORE ATTEMPTING TO REMOVE FRONT MOUNTED ATTACHMENTS OR SERVICE UNIT: -TURN THE NEEDLE VALVE KNOB COUNTERCLOCKWISE. -PUSH FORWARD ON THE AUXILIARY LEVER UNTIL THE WEIGHT TRANSFER PRESSURE GAGE GOES TO ZERO (0).

FAILURE TO DECREASE WEIGHT TRANSFER VALVE PRESSURE MAY RESULT IN SERIOUS INJURY.

BE PRESEN

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#### 00-025

Location: Front light panel.



00-200 Location: Center console.



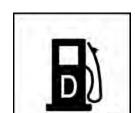
#### 00-072

Location: Dash Panel

PARKING BRAKE: Pull the parking brake cable knob while pressing both brakes to apply parking brakes.

#### **FILL WITH STEINER/TRC TORQUE FLUID ONLY** USE OF OTHER OILS COULD VOID WARRANTY AND MAY DAMAGE SYSTEM.

00-060 Location: Center Console

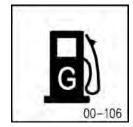


00-076

Center Console.

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Location:



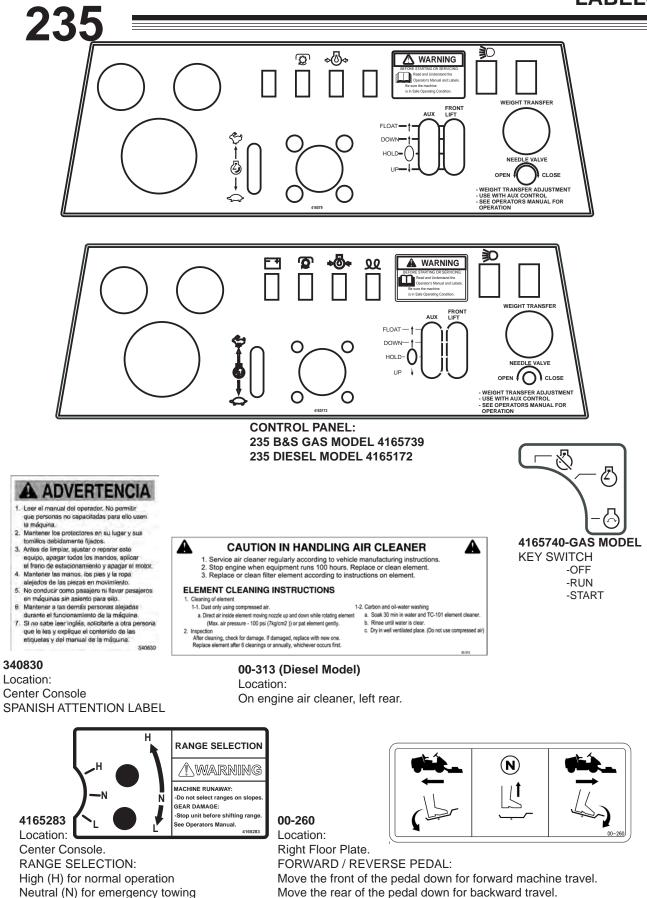
00-076 OR 00-106: Location: Left frame. DIESEL FUEL: Use diesel fuel to fill fuel tank. GASOLINE: Use up to E!) Gasoline to fill fuel tank.

OR



00-089 Location: Dash panel. Ignition: Use the keyswitch to start the engine.





Low (L) for finer low speed control

Move the rear of the pedal down for backward travel. Move the pedal to the neutral position (N) to stop machine travel. The Schiller Grounds Care, Inc. 230 is designed to offer a new measure of operator control and power efficiency. From the low mid-frame seating to the fingertip traction booster control, all blend together to form a sturdy power unit that stands up to tough chores and yet is fun to drive!

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The 230 provides a low center of gravity for a stable, turf-hugging machine. Fully hydrostatic, infinitely variable, transmission lets you choose travel speeds to match the task. Constant traction is maximized through fingertip selection of hydraulic weight transfer, and a differential lock.

Front mounted attachments offer a wide range of working tools. All of them attach to the "Quick Hitch" that is a Schiller Grounds Care, Inc. exclusive. The front hitch is standardized for all models of Schiller Grounds Care, Inc. power units so your present attachments are not obsolete.

You can do many tasks with this one tractor, compared to higher priced single purpose machines, by simply changing attachments in less than 2 minutes. Operator safety and comfort, power, performance and dependability will provide years of enjoyment with your Schiller Grounds Care, Inc. tractor.

ASSEMBLY INSTRUCTIONS	
<ol> <li>Remove unit and all parts from crate.</li> <li>Install the wheels with valve stems facing outward. Tighten wheel nuts to 75 ft. lbs. Adjust tire pressures. Refer to Service Schedule on page 22.</li> <li>Install the seat (if removed) and connect the wiring for the seat switch.</li> </ol>	<ol> <li>Install the steering wheel (if removed) and torque the nut to 40 ft. lbs. Snap the center cover in place.</li> <li>Check all fluid levels. Refer to Service Schedule on page 22.</li> <li>Visually inspect for loose bolts or fittings.</li> <li>Start the unit and test drive to check all functions.</li> </ol>
SPECIFICATIONS Specifications are subject to change without notice.	Tires: Drive24 x 11-12, 350 MAG 6 ply Rear18 x 8.5-8, Ribbed 4 ply
Engine:       75-70282	Dimensions:Overall Width57"Overall Length84"Overall Height47"Wheelbase50"Inside Turning Radius14"Weight (Kubota Diesel)1450 lbs.(Briggs Gas)1300 lbs.Speeds:Forward: Diesel 0-10 MPH (high range) 0-5 MPH (low range)Gas0-11.5 MPH (high range) 0-5.5 MPH (low range)Reverse: Diesel 0-10 MPH (high range) 0-5.5 MPH (low range)Gas0-11.5 MPH (high range) 0-5 MPH (low range)

**1. TACHOMETER AND HOUR METER -** Displays engine rpm and accumulated engine operating hours.

**2. COOLANT TEMPERATURE GAUGE -** Water cooled engines only. Displays engine coolant temperature.

**3. VOLTMETER -** Air cooled engines only. Displays electrical system voltage.

4. FUEL GAUGE - Displays fuel level in fuel tank.

**5. CHARGING SYSTEM INDICATOR LIGHT (DIESEL)**-Indicates a problem with the charging system.

**6. PTO ENGAGED INDICATOR LIGHT -** Indicates the PTO is engaged.

7. ENGINE OIL PRESSURE INDICATOR LIGHT - Indicates low engine oil pressure.

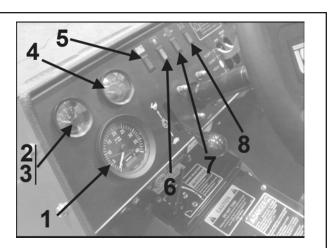
**8. GLOW PLUG INDICATOR LIGHT (DIESEL)** - Diesel engine only. Indicates glow plugs have heated enough for a cold engine to start. Restarting a warm engine does not require glow plug activation.

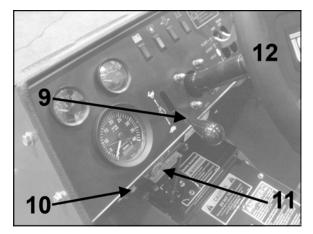
**9. THROTTLE LEVER -** Move the throttle lever forward to increase engine speed until the maximum governed engine rpm is reached. Move the lever rearward to decrease engine speed until the engine reaches its idle speed.

**10. PARKING BRAKE CABLE KNOB** - Pull the parking brake cable knob while pressing both brake pedals to apply the parking brakes. Push the parking brake cable knob while pressing both brake pedals to release the parking brakes.

**11. KEYSWITCH - Diesel Engines:** The key switch has four positions "PREHEAT", "OFF", "RUN", and "START". Insert the key and turn it counterclockwise to move the switch from OFF to PREHEAT until the glow plug indicator lights. Release the key and the switch will return to OFF. Turn the key 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.

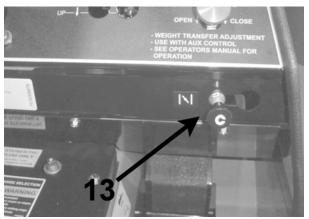
-Gas Engines: The key swtch has three positions: OFF, RUN, and START. Insert key and turn it clockwise fron OFF to RUN. Turn it further to START and hold t engage the starter. Release the key and the switch will return to RUN from START. Turn the key counterclockwise to OFF position to stop the engine.





**12. STEERING WHEEL -** Steers the machine. Turning the steering wheel to the right will cause the machine to turn to the right when moving forward. Turning the steering wheel to the left will cause the machine to turn to the left when moving forward.

**13. CHOKE CABLE (GAS) -** Pull the choke knob out to start a cold engine. Push the knob in when the engine starts.



14. NEEDLE VALVE KNOB-WEIGHT TRANSFER

-Controls the amount of weight transfer from the front mounted attachment to the tractor. To increase the amount of weight transfer to the front tractor drive axle:

- Open the needle valve by turning the knob counter clockwise 1-2 turns.

- Pull back on the AUX valve lever (UP) until the desired pressure is reached on the weight transfer gage. NOTE: If AUX hoses are connected to an attachment, the attachment cylinder will have to be fully extended or retracted before weight transfer pressure will start to increase. BE AWARE OF ATTACHMENT MOVEMENT.

- Close the needle valve by fully turning the needle valve knob clockwise.

To reduce the amount of weight transfer to the front drive axle:

- Open the needle valve by turning the needle valve knob counter-clockwise 1-2 turns.

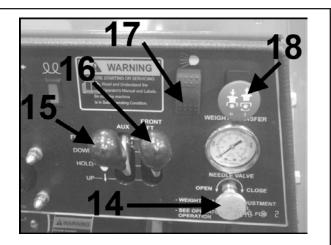
- Push forward on the AUX valve lever (DOWN) until the desired pressure is reached on the weight transfer gage.

- Close the needle valve by fully turning the needle valve knob clockwise.

### **A**DANGER

Before attempting to remove front mounted attachment or service the unit, reduce the weight transfer pressure to zero (0) on the gage.

**15. AUXILIARY HYDRAULIC LEVER** - Controls flow of hydraulic oil to hydraulic device connected to auxiliary hydraulic couplers. This allows extension or retraction of a hydraulic cylinder, or rotation of a hydraulic motor. There are four positions; "HOLD", "RAISE", "LOWER", and "FLOAT". Moving the lever forward from the hold positions lowers the attachment, moving it farther forward locks the lever into the detented FLOAT position that allows a cylinder to float or follow terrain. To raise an attachment move the lever to the rear to the RAISE position. If a function performs the opposite direction of what is intended, reverse the hoses connected to the auxiliary ports.



NOTE: The Auxilliary Hydraulic Lever is also used to change the amount of weight transfer from the front mounted attachment to the tractor. See **13** above.

**16. HYDRAULIC FRONT LIFT LEVER -** Controls the vertical position of the front attachment hitch. There are four lever positions; "HOLD", "LOWER", "FLOAT", and "RAISE". Moving the lever forward from the hold positions lowers the attachment, moving it farther forward locks the lever into the detent FLOAT position. The weight transfer is effective only when the front lift lever is in the FLOAT position. Mower decks should be run in this position as it allows the deck to follow terrain. For attachments where down pressure is desired, do not move the lever into the FLOAT position. To raise an attachment move the lever to the rear to the RAISE position.

**17. LIGHT SWITCH -** Rock the switch forward to turn the lights on. Rock it rearward to turn the lights off.

**18. PTO ELECTRIC CLUTCH SWITCH -** The PTO switch controls the front drive belt (Power Take Off or PTO) that supplies power to attachments. Pull the switch out to engage the PTO and start an attachment. Push the switch in to disengage the PTO and stop the attachment.

- Disengage the PTO whenever you stop or leave the operator's position.
- Shut of the engine with the key before making adjustments or unplugging a clogged attachment.
- Do no engage the PTO until you are ready to start operating the attachment.

# CONTROLS

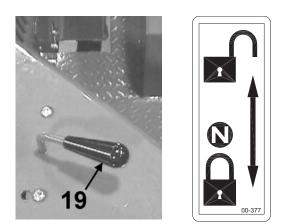
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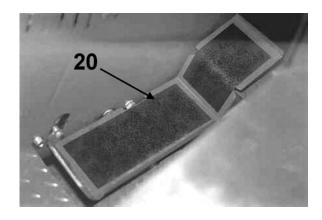
**19. FORWARD-REVERSE NEUTRAL LOCK -** Locks the Forward-Reverse pedal in neutral. Push the lever back to the "LOCK" position. The lever must be in the "LOCK" position to start the engine. Pull the lever forward to the "UNLOCK" position.

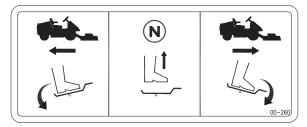
**20. FORWARD-REVERSE PEDAL -** Controls infinitely variable forward and reverse speeds.

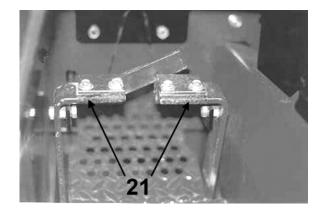
- To move forward, push the upper (toe) part of the pedal forward. The farther the pedal is pushed forward, the faster the machine will travel up to its maximum speed.
- To move in reverse, push the lower (heel) part of the pedal rearward. The farther the pedal is pushed to the rear, the faster the machine will travel in reverse up to its maximum travel speed.
- To slow the machine from either direction, move the pedal toward the neutral position.
- To stop the machine, move the pedal to the neutral position.

**21. WHEEL BRAKE PEDALS** - Controls individual wheel brakes. Use independently to assist in tight turns. Keep brakes locked together except when needed to assist in tight turns. Do not use brakes for stopping the unit, except in emergency. The hydrostatic transmission provides braking action when the Forward-Reverse pedal returns to neutral. Use Parking Brake for parking.









**22. DIFFERENTIAL LOCK PEDAL -** Mechanically locks the differential into full 2-wheel traction. Step on the pedal to engage to lock.

## 

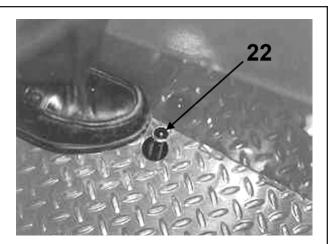
DO NOT engage the differential lock while moving. Return the Forward-Reverse pedal to neutral before engaging the differential lock.

## **A**CAUTION

When the differential lock is engaged, steering becomes more difficult. The unit will not turn properly until the lock is released.

The differential lock will release when the torque between the axles is equalized, and the foot is removed from the differential lock pedal.

To equalize the torque: turn the machine slightly, stop or reverse direction of travel, apply slight pressure on either the left or right brake pedal.



#### FUELING

- GASOLINE: Fill tank with clean, fresh, regular or unleaded fuel. DO NOT USE E15 gasoline. Use only up to E10.
- DIESEL: Fill tank with clean, fresh No. #2 diesel fuel. In extreme cold temperatures No. #1 diesel fuel may be used. Do not use kerosene or damage to engine may result. Refer to engine manual for fuel bleeding instructions.
- Use a funnel to avoid spillage.

#### ENGINE OIL

Refer to the engine manual for oil specifications.

#### TRANSAXLE HYDRAULIC OIL

Fill transaxle to the safe range with approved hydraulic oil. Use only Schiller Grounds Care, Inc. Trans-Hydraulic Oil, Texas Refinery Corp. 6440 Universal Torque Fluid or Amsoil ATH. *Do not use automatic transmission fluid, motor oil, or any other type of hydraulic oil.* 

#### NOTE:

THE USE OF ANY OIL OTHER THAN Schiller Grounds Care, Inc. TRANS-HYDRAULIC OIL, TRC 6440 UNIVERSAL TORQUE FLUID OR AMSOIL ATH IS NOT RECOMMENDED. IF A SUBSTITUTE OIL CAUSES OR SUBSTANTIALLY CONTRIBUTES TO A FAILURE, THAT FAILURE MAY NOT BE COVERED BY WARRANTY.

## 

BE ALERT! STOP RUNNING THE UNIT AT THE FIRST SIGN OF ANY ABNORMAL HYDRAULIC FUNCTION. SERIOUS DAMAGE TO THE HYDRAULIC SYSTEM CAN RESULT!

#### COOLANT

Use only commercial grade antifreeze (for cast iron liquid cooled engines) and deionized water in a 50/50 mix. Mix outside of engine. Don't mix Propylene Glycol and Ethylene Glycol.

#### **BEFORE STARTING THE ENGINE**

#### READ SAFETY DECALS.

- Be familiar with all controls, how each functions and what each operates.
- Check engine and transaxle oil levels and add if necessary.
- Visually check tires.
- Visually check for loose or missing parts or bolts.
- Check coolant level. (Kubota)

#### STARTING THE ENGINE

- 1. To start the engine: Forward-Reverse pedal must be in NEUTRAL, the Forward-Reverse Neutral Lock must be LOCKED, the PTO must be OFF.
- 2a.DIESEL ENGINE: Open throttle approximately one-half of its travel. Turn key counterclockwise to "preheat" until indicator light goes off. No "preheat" is required when the engine is warm.
- 2b.GAS ENGINE: Open throttle one-half of its travel. Pull the choke knob out. Turn the key clockwise to operate the electric starter to start the engine. Release the key when the engine starts. Push in choke knob. Note: If the engine is warm it might not require the choke for starting. In cold weather the choke may need to be gradually pushed in as the engine warms.
- Turn the key clockwise to operate the electric starter to start the engine. Release the key when the engine starts.
- 4. 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.
- 5. Warm up engine at medium speed.
- 6. If the choke is "ON" when the engine starts, gradually back it off until the engine runs with no choke at all.
- In cold weather, allow the hydraulic oil to warm up a few minutes at medium engine speed before using tractor.



# NEVER USE ETHER AS A STARTING AID, SEVERE ENGINE DAMAGE MAY OCCUR.



NEVER FILL FUEL TANK WITH THE ENGINE RUNNING.

#### **OPERATING NOTES**

#### - OBSERVE SAFETY DECALS.

- Practice at slow engine and travel speeds with the PTO off until fully familiar with the controls.
- Do not operate mower with other persons in the area. Irregularities in ground surface can permit foreign material to be propelled from beneath deck to cause serious injury or death.
- Before leaving operator's seat, disengage PTO, set PARKING BRAKE and STOP ENGINE.
- Remove key from ignition if maintenance procedures are to be performed or tractor is to be left unattended.
- Tire pressures are very important! Check tire
   pressures according to Service Chart on page 22.

#### 

Slow down on rough, uneven or steep terrain and for operation of power driven mounted attachments.

#### WHEEL WEIGHTS

Wheel weights (Part Number 75-70465) are available for additional weight, especially when mowing on slopes.

Modified or makeshift weights are not acceptable.

Reel mowers do require some additional weight considerations, wheel weights are recommended for mowing slopes. Careful adjustment of the Traction Booster (accumulator) is necessary to allow full flotation of the reels, allowing them to follow the contour of the ground.

Rear weights may be used with attachments over 120 pounds for stability. See attachment operator's manual for weight requirements.

Always remove rear weights when front mounted attachments are removed, or when using attachments less than 120 pounds, to reduce the possibility of unit tipping over backward while climbing steep slopes or loading ramps.

#### TIRE BALLAST

Liquid, foam, rubber or powder ballast in tires causes excess loads on the drive train. *Failures caused by excess loading may not be covered by warranty.* 

#### **TRACTION BOOST**

This unit is equipped with a weight transfer system. A separate lift cylinder and accumulator maintain a pre-set amount of pressure (lifting force) on the front mounted attachment. The needle valve is opened to allow the pressure to be changed. The Auxilliary Valve (AUX) is then used to reduce or increase this pressure.

- Open the needle valve by turning the knob counter clockwise 1-2 turns.
- Pull back on the AUX valve lever (UP) until the desired pressure is reached on the weight transfer gage. NOTE: If AUX hoses are connected to an attachment, the attachment cylinder will have to be fully extended or retracted before weight transfer pressure will start to increase. BE AWARE OF ATTACHMENT MOVEMENT.
- Close the needle valve by fully turning the needle valve knob clockwise.

To reduce the amount of weight transfer to the front drive axle:

- Open the needle valve by turning the needle valve knob counter-clockwise 1-2 turns.
- Push forward on the AUX valve lever (DOWN) until the desired pressure is reached on the weight transfer gage.
- Close the needle valve by fully turning the needle valve knob clockwise.

NOTE: The weight transfer system is only effective when the lift lever is in the :"FLOAT" position. Some of the heavier attachments, such as the 72" mower deck, require some amount of weight transfer for the Front Lift Lever to lift the attachment up. It is also possible that if the weight transfer is too high, a lighter attachment will not lower.

# 

It is very important to reduce the weight transfer pressure before removing front mounted attachments, or servicing the unit.

## 

Hydraulic pressure may be present with the engine stopped. Before attempting to remove front mounted attachments or service the unit: STOP the engine and decrease the traction boost pressure to zero (0) psi, by turning the needle valve knob counter-clockwise 1-2 turns and pulling back on the AUX valve. The lift lever should be in the "FLOAT" position. Failure to decrease Traction Boost pressure may result in serious injury.

### DRIVING

- 1. Select desired engine speed with the throttle. For power driven attachments, the engine is normally run at maximum RPM.
- 2. Vary vehicle speed with the Forward-Reverse pedal. If the attachment or a steep slope causes excessive drop in engine RPM; reduce ground speed. *Do not lug the engine at reduced RPM*.
- 3. Operate mower and other similar front mounted attachments with front lift lever in "FLOAT" position.
- 4. Set Traction Boost. See page 18.
- 5. Safety seat switch requires operator to be seated when PTO is "ON" or engine will stop. Disengage PTO before attempting to start engine.

- 6. Lock brake pedals together at all times except when needed to assist in tight turns. Do not use brakes to stop vehicle except in an emergency. The hydrostatic transmission provides a braking action when the Forward-Reverse pedal returns to neutral.
- 7. Stop the unit on a level surface. Set parking brake and stop engine before dismounting.
- 8. **DO NOT TOW!** Serious damage to hydraulic system will result. See below for emergency moving instructions.

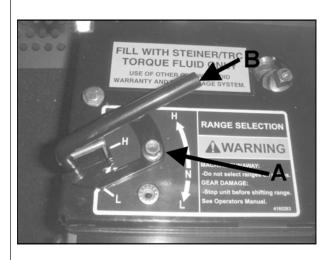
# EMERGENCY TOWING INSTRUCTIONS FOR A STALLED UNIT

- 1. The transaxle must be in neutral before moving a stalled unit. Neutral position is between HIGH and LOW range position.
- 2. Remove bolt A.
- 3. Move shift lever to "N" (neutral).

# A WARNING

Failure to shift transaxles into "Neutral" will cause serious damage to the hydrostatic system.

4. Replace bolt A.



#### **HIGH-LOW RANGE SELECTION**

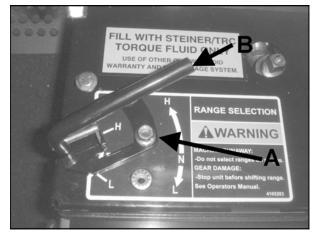
The unit is equipped with a two-speed transaxle. Normal operations will use the "HIGH" range shift position. "LOW" range position will give a finer speed control with the Forward-Reverse pedal for slower operations if desired. A neutral position is also available for emergency towing.

# INSTRUCTIONS FOR TRANSAXLE RANGE SELECTION

### **WARNING**

Do not attempt to select ranges on slopes or when the unit is moving. Select ranges only with the unit stopped on a level surface, with the parking brake engaged and the engine off. It may be necessary to rock the unit slightly to shift.

- 1. Stop the unit on a level surface and set PARKING BRAKE.
- 2. Stop the engine and dismount.
- 3. Remove bolt A.
- 4. Shift lever B to the desired position.
- 5. Replace bolt A.



#### **PTO BELT DRIVE**

A belt drive is provided for power transfer to attachments.



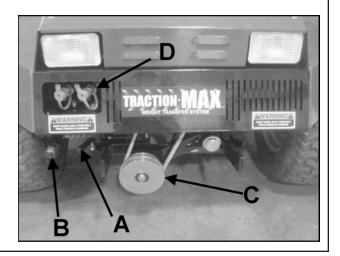
DO NOT ENGAGE THE PTO CLUTCH WITH THE ENGINE AT FULL THROTTLE. STARTING HEAVY LOADS AT FULL THROTTLE WILL SHORTEN CLUTCH AND BELT LIFE. The attachment drive belt is installed around the left hitch arm before the attachment is connected to the front lift Quick Hitch.

To install the drive belt:

- Install the attachment to the front lift. Push down on the hitch control handle A to open latches. Pull up to lock latches.
- 2. Stop the engine and release the belt tension adjustment lever **B** by moving it as far as it will go, toward the center of the unit.
- 3. Install the attachment drive belt on the double idler pulley **C**.
- 4. Move the belt tension adjustment lever B toward the outside of the unit to tighten the attachment drive belt. *Proper tension is very important!* The proper tension setting is obtained by moving the lever one notch after all slack is taken out of the drive belts. If drive belt slips tighten one additional notch.
- 5. The PTO clutch is engaged or disengaged with the push/pull switch located on the dash. Engage the PTO clutch with the engine at approximately 1/2 throttle.

#### NOTE:

The operator must be seated for the PTO clutch to operate. DO NOT attempt to bypass this safety device.





#### **AUXILIARY HYDRAULICS**

The auxiliary valve and quick couplers **D** are standard equipment. Keep dust covers in place when couplers are not in use. Float position is provided for those attachments which require float.

### FRONT LIFT

The front lift control valve is equipped with a detent float position. Always use "FLOAT" position when mowing, sweeping, etc. The Traction Boost is effective only in this position. There is limited down pressure on the front lift, therefore attachments requiring down pressure will be less effective.

The QUICK HITCH allows fast interchange of attachments. Push down on hitch control handle to open latches. Install the attachment. Pull up control handle to close and lock latches. See PTO BELT DRIVE for power driven attachments and drive belt installation.

#### STOPPING THE ENGINE...COOL DOWN PROCEDURE

#### Kubota

 Run at half throttle - No load for two to three minutes, then idle for one to two minutes and shut down.

#### Briggs

 Move the throttle tothe slow position, then turn the key switch to the off position.

#### MAXIMUM ENGINE INCLINATION RECOMMENDATIONS

# When using an engine in an inclined position continuously, the following points must be remembered:

- The effective volume of the fuel tank becomes less, so air suction must be prevented.
- The effective volume of the engine oil sump is reduced, increasing the possibility of improper engine lubrication.

NOTE: You must still operate the machine safely. Se SAFETY section: Operating on Slopes.

POSITION	LESS THAN 10 MINUTES CONTINUOUS OPERATION	CONTINUOUS OPERATION
FRONT UP	30°	25°
FRONT DOWN	30°	25°
LEFT OR RIGHT SIDE DOWN	30°	25°

SERVICE CHART	DAILY	EVERY 25 HOURS	EVERY 50 HOURS	EVERY 100 HOURS	EVERY 250 HOURS	EVERY 400 HOURS
Read safety decals.	х					
Check fuel level.	х					
Check engine oil level.	х					
Check coolant level. (Liquid cooled engines only)	х					
Visual inspection of:						
Bolts and fittings for signs of loosening.	х					
Accumulation of dirt or foreign matter around engine, restricting engine cooling.	х					
Oil leaks or hydraulic hoses, belts, electrical wiring, showing signs of wear.	х					
Tires for low pressure or signs of abnormal wear.	х					
Change engine oil and filter:						
Kubota engine: Initial change at 35 hours.		the engin filter chang				
Check air cleaner:			_			
Clean or replace.Kubota every 50 hours. Briggs every 100 hours			х			
Check battery water level:		•				
If battery is serviceable, fill to cover the plates 1/4".				х		
Transaxles:						
Check transaxle oil level.	х					
Use only Steiner Trans-Hydraulic oil , Texas Refinery Corp. 6440 Universal Torque Fluid or Amsoil ATH. Do not use automatic transmission fluid or motor oil.		_				
Initial hydraulic filter change at 25 hours.		х				
Initial hydraulic oil and filter change at 50 hours.			х			
Replace hydraulic oil and filter every 250 hours, or annually (whichever occurs first) or at the first sign of abnormal hydraulic function.					х	
Fuel system:						
Check or replace filter. Kubnota every 100 hours. Briggs every 400 hours				х		х
Lubrication:						
Grease steering linkage, rear axle, driveline, PTO bearings, front ilder, foot pedal.				х		
Use chain lube, WD-40 or light motor oil on all pivot points, hood hinges, tie rod ends, center link, etc.		х				
Re-pack rear wheel bearings					х	
Check tire pressure:				•		
Front: 14 psi - 16 psi Rear: 14 psi - 16 psi			х			
Storage:						
Drain fuel tank.						
Maintain proper tire pressure.						
Remove battery and maintain charge.						
Grease exposed cylinder shafts.						

CAPAC	ITIES CHART
CAPACITY OF:	QUANTITY
Engine Oil	Refer to engine manufacturer's owner's manual.
Engine Coolant Refer to engine manufacturer's owner's manual.	
Hydraulic Oil (Transaxle) (Approx.) 6 U.S. Quarts (5.7 liters)	
Fuel Tank	6 U.S. Gallons (22.7 liters)

NOTE: Read and understand the operator's manual for all attachments. Follow all recommendations for safe use.

Proper belt tension on the attachment is very important. Check and adjust after initial 5-10 hours use, and as recommended thereafter in the attachment manual.

				STEI	STEINER BELT CHART	SELT C	HART				
MODEL	220	230	230 Diesel	235	410	415	420	430	425	525	UM428
Tractor PTO Belt	81-A034 W/O EI Clutch 81-B033 W/EI Clutch	81-B033	81-B033	4165347	81-B039	81-B039	81-A038 SN: 1001-2999 81-B039 SN:3000-5000	81-B039	81-B042 W/O El Clutch 81-B040 W/El Clutch	81-B042	81-B029
MR, MW, MD, MX. Rotarv mowers	81-A040	81-A040	81-B041	81-B041	81-A040	81-A040	81-A040	81-A040	81-B041	81-B041	81-B040
BM425 Boom Mower	N/A	N/A	N/A	N/A	N/A	N/A	81-A040	81-A040	81-B041	81-B041	N/A
MC444 Tree Farm Mower											
RC466 Rough Cut Mower	81-A042 W/O EI Clutch 81-A040 W/EI Clutch	81-A040	81-B041	81-B041	N/A	N/A	81-A040	81-A040	81-B041	81-B041	81-B040
RM674 & 684 Reel Mowers	81-A045 W/O EI Clutch 81-A043 W/EI Clutch	81-A043	81-B043	81-B043	N/A	N/A	81-A043	81-A043	81-B044 W/O El Clutch 81-B042 W/El Clutch	81-B043	81-B042
CS312 Chipper Shredder	V/N	N/A	N/A	N/A	N/A	N/A	81-B041	81-B041	81-B041	81-B041	81-B040
GN10KW Generator	81-B050	81-B050	81-B050	81-B050	81-B050	81-B050	81-B050	81-B050	81-B050	81-B050	81-B050
LD300 Loader	N/A	N/A	N/A	N/A	A/N	N/A	81-A026	81-A026	N/A	N/A	N/A
PB100 & PB200 Power Blower	81-A042 W/O EI Clutch 81-A040 W/EI Clutch	81-A040	81-B041	81-B041	81-A040	81-A040	81-A040	81-A040	81-B041 W/O EI Clutch	81-B041	81-B040
PR348 Power Box Rake	81-A045 W/O El Clutch 81-A043 W/El Clutch	81-A043	81-B043	81-B043	N/A	N/A	81-A043		81-B044 W/O EI Clutch 81-B042 W/EI Clutch	81-B043	81-B043
RS350 small Rotary Sweeper	81-A042 W/O El Clutch 81-A040 W/El Clutch	81-A040	81-B040	81-B040	81-A040	81-A040	81-A040	81-A040	81-B041 W/O EI Clutch 81-B040 W/EI Clutch	81-B040	81-B040
RS454 large Rotarv Sweeper	81-A048 W/O El Clutch 81-A046 W/El Clutch	81-A046	81-B046	81-B046	81-A046	81-A046	81-A046	81-A046	81-B046	81-B046	81-B044
SB348 Snowblower SN:1001-1713	81-A055 W/O El Clutch 81-A053 W/El Clutch	81-A053	81-B054	81-B054	81-A053	81-A053	81-A053	81-A053	81-B054 W/O El Clutch 81-B053 W/El Clutch	81-B054	81-B053
SB348 Snowblower SN:1714-7570665****	81-A053 W/O El Clutch 81-A051 W/El Clutch	81-A051	81-B051	81-B051	81-A051	81-A051	81-A051	81-A051	81-B053 W/O EI Clutch 81-B051 W/EI Clutch	81-B051	81-B051
SB448 Snowblower		105803	105829	105829	105803	105803	105803	105803			
SB454 Snowblower		105803	105829	105829	105803	105803	105803	105803			
SC101 Stump Cutter	Y/N	N/A	N/A	N/A	81-A043	81-A043	81-A043	81-A043	81-B045 W/O El Clutch 81-B043 W/El Clutch	81-B0424	81-B042
TH300 Trencher	N/A	N/A	N/A	N/A	N/A	N/A	81-B050	81-B050	81-B051	81-B051	81-B050
TL348 Tiller	81-A042 W/O EI Clutch 81-A040 W/EI Clutch	81-A040	81-B041	81-B041	81-A040	81-A040	81-A040	81-A040	81-B041 W/O El Clutch 81-B040 W/El Clutch	81-B041	81-B040
VA242 Vertical Auger	N/A	N/A	N/A	N/A	N/A	N/A	81-A027	81-A027	N/A	N/A	N/A

#### CHECK DAILY

#### **Operator Presence Interlock System - Start Operation**

For the engine to crank, the Forward-Reverse pedal must be in neutral, Forward-Reverse Neutral Lock must be locked and the PTO off. Sit in the seat and check, if the engine will crank with the Forward-Reverse pedal out of neutral, Forward-Reverse Neutral Lock unlocked, or the PTO on.

#### **Operator Presence Interlock System - Run Operation**

The operator must be in the seat for the engine to run with the Forward-Reverse pedal out of neutral, or the PTO on.

To check:

- 1. Start the engine and run at 1/2 throttle with the operator on the machine but raised off the seat.
- 2. One by one: move the Forward-Reverse pedal out of neutral, and turn the PTO on. Each check should kill the engine after 1/2 second. (A 1/2 second delay is built into the system to prevent engine cutout when traversing rough terrain.)

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

#### Hardware

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

#### Hydraulic System

Check fluid level at transaxle dipstick, when fluid is cold. Check for leaks and repair before operating.

#### **Tire pressure**

Tire pressures are important! Check tire pressures according to the Service Chart on page 18.

Battery	
<b>A</b> WARNING	
Battery acid is caustic and fumes are explosive and can cause serious injury or death.	<ol> <li>When removing the battery, always remove the ground, negative ( - ) cable first and the red,</li> </ol>
Use insulated tools, wear protective glasses or	positive ( + ) cable last.
goggles and protective clothing when working with batteries. Read and obey the battery manufacturer's instructions.	<ol> <li>Check the electrolyte level every 100 hours of operation.</li> </ol>
Be certain the ignition switch is "OFF" and the key has been removed before servicing the battery.	<ol> <li>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</li> </ol>
<ol> <li>Verify battery polarity before connecting or disconnecting the battery cables.</li> </ol>	<ul><li>enter into the battery cells.</li><li>6. Tighten cables securely to battery terminals and</li></ul>
2. When installing the battery, always assemble the RED, positive (+) battery cable first and the ground, BLACK, negative (-) cable last.	apply a light coat of silicone dielectric grease to terminals and cable ends to prevent corrosion. Keep terminal covers in place.

### ENGINE

Do not perform engine maintenance without the engine off, spark plug wires (gasoline engines) disconnected and PTO disengaged.

#### ENGINE OIL AND FILTER CHANGE PROCEDURE

- 1. Run engine until engine is warm for complete draining.
- 2. Open drain cock.
- 3. Remove oil filter and wipe filter base clean.

#### NOTE:

Use only O.E.M. brand filters. Some aftermarket filters are not constructed the same.

- Lube filter gasket with oil and install new filter. Tighten 1/2 turn after seal contacts base. Do not overtighten.
- 5. Close drain cock.
- 6. Fill with engine oil. Refer to engine manual for oil specifications.
- 7. Run engine and check filter and drain plug or cock for leaks.
- 8. Stop engine and refill to proper oil level.

#### DAILY

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

#### PERIODIC OIL CHANGES

1. Refer to the engine manual for oil and filter change intervals.

#### **FUEL FILTERS**

- Use only O.E.M. brand filters.
- Buy your fuel from a reputable supplier.
   Recommended gasoline is 87 octane.
   Recommended diesel fuel is No. 2. Store your fuel properly keep moisture out.
- Shelf life of fuel is about 3 months gasoline and diesel.
- Store fuel in proper, clean containers.

#### **AIR FILTERS**

Install filters properly, do not over tighten and deform element.

#### Kubota

- Don't over service, remove end cap only to clean out dust. Don't tap dirt out.
- Don't blow out with compressed air. Don't change filter until the engine starts to smoke.
- Check intake hoses and fittings for damage or leaking.

#### COOLING

- Keep chaff screen clean. Air cooled and liquid cooled.
- Keep engine block clean. Grass, dirt, misc. debris will act as an insulator.
- Do not pressure wash a hot or running engine.
- Keep radiators clean. Do not use high pressure air or washers to clean. Use only low air or water pressure. Blow directly through fins and not on an angle so as not to damage or close fins.
- Use only commercial grade antifreeze (for cast iron liquid cooled engines) and deionized water in a 50/50 mix. Mix outside of engine. Don't mix Propylene Glycol and Ethylene Glycol.
- Do not remove thermostat.

#### NOTE:

THE USE OF ANY AIR FILTER, HYDRAULIC OIL FILTER OR ENGINE OIL FILTER OTHER THAN THOSE SPECIFIED BY THE ENGINE MANUFACTURER IS NOT RECOMMENDED. IF A NON-GENUINE PART CAUSES OR SUBSTANTIALLY CONTRIBUTES TO A FAILURE, THAT FAILURE MAY NOT BE COVERED BY WARRANTY.

#### HYDRAULIC SYSTEM

NOTE:

THE USE OF ANY OIL OTHER THAN Schiller Grounds Care, Inc. TRANS-HYDRAULIC OIL, TRC 6440 UNIVERSAL TORQUE FLUID OR AMSOIL ATH IS NOT RECOMMENDED. IF A SUBSTITUTE OIL CAUSES OR SUBSTANTIALLY CONTRIBUTES TO A FAILURE, THAT FAILURE MAY NOT BE COVERED BY WARRANTY.

### **A**CAUTION

BE ALERT! STOP RUNNING THE UNIT AT THE FIRST SIGN OF ANY ABNORMAL HYDRAULIC FUNCTION. SERIOUS DAMAGE TO THE HYDRAULIC SYSTEM CAN RESULT!

## 

When servicing any part of the hydrostatic system, observe clean shop practices. A small amount of contamination in the high pressure circuit will cause damage to the system. Improper hoses can cause injury. See your Schiller Grounds Care, Inc. dealer for quality service parts and service of the high pressure hydrostatic system.

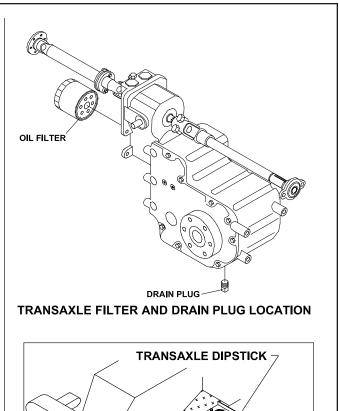
- 1. Keep system filled with proper fluid.
  - Check daily at transaxle dipstick.
  - Check when oil is cold.
  - Use only clean containers. Keep it clean!

- 2. Keep oil and filter changed.
  - Initial filter change 25 hours, then oil and filter change at 50 hours.
  - Change oil and filter every 250 hours thereafter or annually (whichever occurs first).
  - -Change oil when warm (not hot).
  - Use only O.E.M. filter and Schiller Grounds Care, Inc. fluid, TRC 6440 or Amsoil ATH.
  - Check oil level after 30 minutes of operation.
  - Do not over tighten drain plug.
  - -Make sure filter is tight.
  - Change hydraulic oil and filter at the first sign of abnormal hydraulic functions.
- 3. Check for leaks daily (Never operate a unit if a leak is detected).
  - Inspect hoses for leaks or chafing.
  - Inspect fittings and hose ends for seepage.
- 4. Keep tractor/unit clean.
  - Keep auxiliary hoses and couplers clean and plugged.
  - Grass and debris will hold in heat.
  - A clean unit is easier to work on and safer to operate. And it is easier to do regular checks.

### TRANSAXLE OIL CHANGE PROCEDURE

Change oil and filter at any time contamination is suspected. Approximately 6 quarts of approved hydraulic oil are needed to change oil.

- 1. It is best to drain the transaxle after the tractor has been thoroughly warm to assure maximum drain.
- 2. Remove dipstick and drain plug from transaxle.
- 3. Remove hydraulic oil filter and wipe filter base clean.
- 4. Lube the filter gasket of the new O.E.M. hydraulic filter with hydraulic oil.
- Install the new hydraulic oil filter. Tighten 3/4 to 1 turn after gasket makes contact with the filter base. Do not overtighten.
- 6. Install drain plug in transaxle.
- 7. Fill transaxle to full mark on dipstick with approved hydraulic oil.
- 8. Run engine, and turn steering wheel extreme right to extreme left several times to purge all air from the circuit.
- 9. Drive the unit back and forth about 50 feet to purge air from the drive circuit.
- 10. Check oil level to be sure it is in the safe operating range.



## PTO AND BELTS

### A WARNING

STOP ENGINE! DO NOT ATTEMPT TO INSTALL BELTS OR MAKE BELT ADJUSTMENTS WITH THE ENGINE RUNNING.

#### ENGAGING/DISENGAGING

- Never engage at full RPM always reduce engine RPM before engaging PTO.

#### BELT DRIVE

- Schiller Grounds Care, Inc. belts are recommend.
  - (See Belt Chart on page 23 for sizes). Schiller Grounds Care, Inc. specification belts are Aramid fiber reinforced to take back bend and retain a consistent length to keep belt to pulley geometry consistent.

#### FRAME

- 1. Check for loose or missing fasteners after first 10 hours. Every 100 hours thereafter.
  - Torque all standard hardware bolts to standard grade 5 spec.
  - If ROPS equipped, torque bolts to 80 ft. lbs.
     Do not cut, weld, drill or modify roll bar in any way. Replace if roll bar becomes bent or damaged.
- 2. Do not remove guards, shields or locking bolts.
  - Repair or replace any broken parts.
  - Keep frame parts clean, it makes it easier to find loose or broken parts.
  - Wash after each use around fertilizer, manure, etc., to prevent corrosion.

#### 3. Keep parking brake adjusted properly.

- Ensure that brake holds unit from creeping. See parking brake adjustment section.

#### LUBRICATION

- Grease all fittings as recommended on Service Chart on page 22.
- Lubricate all points after washing.

#### WHEELS AND TIRES

- Use only factory recommended wheels and tires.
- Maintain proper air pressure. See Service Chart page 22.
- Do not load tires with ballast. Wheel weights and a rear weight bar are available. Traction Booster (Accumulator) acts as ballast if used properly.
- Tire sealer may be used. Seal beads with Permatex Liquid Sealer. Some sealers use silicone which could cause rim to spin inside the tire.
- DO NOT use tire chains.
- DO NOT use duals.
- Clean, repack and adjust the steering spindle hub bearings annually.
- Check lug nuts for torque.... 75 ft lbs.
- Check wheel hub bolts for torque.... 16 ft lbs. Tighten in three increments.

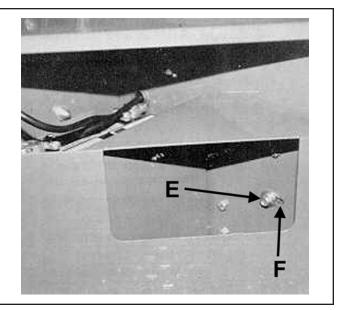
#### ELECTRICAL SYSTEM

- Do not bypass or eliminate safety devices.
- Keep all electrical connections clean and dry.
- Do not add extra electrical equipment.
- If wire replacement is necessary, replace with the same gauge and color code.
- Make certain there is a ground strap between engine and frame.
- Follow recommended jump starting procedures.
- Use only factory recommended size batteries.
- Make a periodic visual inspection of all wiring to ensure it is not damaged.
- Maintain battery by keeping terminals and top of battery clean.

### **NEUTRAL POSITION ADJUSTMENT**

Absolute neutral is when the tractor will not creep with the engine running and the Forward - Reverse pedal in neutral. If the unit creeps it is necessary to adjust the position of the neutral centering assembly. Adjust the neutral centering assembly by loosening the attaching bolt **E** and slide the neutral centering assembly in the slotted mounting hole **F**.

The attaching bolt **E** can be reached through the toolbox and the under seat access hole. Tighten attaching bolt **E** securely after setting is achieved.



### FORWARD-REVERSE PEDAL POSITION ADJUSTMENT

Perform the neutral position adjustment before adjusting pedal position. Pedal position can be changed by adjusting the connecting link length between pedal and hydrostat control arm.

#### **BRAKE ADJUSTMENT**

Raise the unit until the drive wheels rotate freely.

Brake adjustment is done with the location of the brake lever on the spline of the brake cam. Loosen and remove the lever from the brake cam shaft and rotate it to the desired position and reinstall. Check to be sure there is not excessive brake drag and there is adequate pedal travel to completely apply the brake.

#### THROTTLE ADJUSTMENT

Tension adjustment is made by simply tightening the pivot bolt on the throttle lever. High and low idle speeds are obtained by adjusting the linkage at the engine.

ENGINE	LOW IDLE	HIGH IDLE
KUBOTA DIESEL	1550-1600 RPM	3200-3250 RPM
BRIGGS GAS	1450-1650 RPM	3500-3700 RPM

SYMPTOM	POSSIBLE CAUSE	REMEDY
	Forward-Reverse pedal not in neutral.	Check Forward-Reverse pedal linkage.
	PTO engaged.	Disengage PTO.
	Battery dead.	Check battery, charge or replace.
Engine will not turn over.	Defective wiring, broken or loose connections.	Visually check, or check with test light for continuity on the circuits.
	Defective starter or starter solenoid.	Check by using a jumper from the battery terminal to the solenoid terminal.
	Safety switches out of adjustment.	Adjust switches so they are fully depressed.
	Fuel valve partly closed or plugged.	Open fuel valve all the way or remove and clean.
	Fuel filter dirty.	Replace fuel filter.
	Defective ignition system wires, plugs, etc. (Gas engines only)	Check ignition system wires, plugs, etc. (Gas engines only)
	Air cleaner dirty.	Replace air cleaner element.
Engine difficult to start, or runs poorly.	Water or dirt in fuel.	Drain and refill with fresh, clean fuel.
	Engine running too hot.	Clean engine screen and fins (air cooled engines) . Check coolant level and clean radiator screen (liquid cooled engines).
	Choke out of adjustment .(Gas engines only)	Adjust choke to close properly.
	Air in fuel system.	Bleed air out of fuel system.
	Defective fuel pump.	Check fuel pump.
	Oil level too low in transaxle	Check transaxle oil level and refill to proper oil level.
	Hydraulic oil filter dirty or plugged	Replace hydraulic oil filter with O.E.M. filter.
Power steering slow and/or erratic. Will not	Air leak in suction system. Loose fitting on tube.	Check for loose fittings or damaged suction line.
steer.	Engine RPM too low.	Set RPM to specification. (See page 29)
	System overloaded or not up to operating temperature.	Relieve load and warm up unit.
	Low charge pump pressure.	See Steiner dealer for pump service.
	Brakes locked.	Release parking brake lock.
	Oil level tooo low in transaxle	Check transaxle oil level and refill to proper oil level.
Tractor will not move with engine running and Forward-Reverse control pedal in	Hydraulic oil filter dirty or plugged.	Replace hydraulic oil filter with O.E.M. filter.
	Air leak in suction system. Loose fitting on tube.	Check for loose fittings or damaged suction line.
	Drive coupling failure.	Check drive coupling to determine if pump input shaft is turning.
forward or reverse position.	Pump control linkage failure.	Check pump control linkage and repair.
	Transaxle shift lever in neutral.	Check transaxle shift lever. Be sure shift lever is completely engaged.
	Low charge pump pressure or faulty hydrostatic system.	See Steiner dealer for pump service.



SYMPTOM	POSSIBLE CAUSE	REMEDY
	Cylinder lift pin broken or missing.	Check pin.
	Oil level too low in transaxle.	Check transaxle oil level and refill to proper oil level.
	Hydraulic oil filter dirty or plugged.	Replace hydraulic oil filter with O.E.M. filter.
Front lift will not lift	Engine RPM too low.	Set RPM to specification. (See page 29)
attachments.	Trying to lift while steering.	Change procedure.
	Attachment is too heavy.	Lighten attachment or set traction boost. (See page 18)
	Low charge pump pressure.	See Steiner dealer for pump service.
Excessive wheel	Traction boost pressure low.	Set traction boost higher. (See page 18)
slip, loss of traction.	Weight distribution.	Add wheel weights.
	Tire pressure too high.	Adjust tire pressures (See page 22)
Attachment floats or will not go down.	Traction boost pressure too high.	Set traction boost lower. (See page 18)
	Drive belt tension need adjusting.	Adjust PTO drive belt tension (see page 20).
Attachment drive	Wrong size drive belt.	Use correct belt size.
belt slips.	Excessive load on attachment drive system.	Check implement attachment for worn or damaged drive parts, blades, bearings, or excessive foreign material buildup.
	Operator not seated.	With Operator seated, restart PTO.
PTO will not run.	Electrical problem.	See Steiner dealer for electrical service.
	Belt slipping.	Check for broken or wrong size clutch drive belt.

SCHILLER GROUNDS CARE, INC. ONE BOB-CAT LANE P.O. BOX 469 JOHNSON CREEK, WI 53038 920-699-2000 www.schillergc.com



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