Operator's Manual

Pro Z Series
500/700/900 Steering Wheel

Record Product Information

Before setting up and operating your new equipment, please locate the model plate and record the information in the area provided to the right. The model plate contains the unit's model and serial numbers. This information will be necessary, should you seek technical support via our web site, Customer Support Department, or with a local authorized service dealer.

Model Number

Serial Number

⚠ WARNING

Read and follow all safety rules and instructions in this manual before attempting to operate this machine.

Failure to comply with these instructions may result in personal injury - SAVE THESE INSTRUCTIONS.

⚠ WARNING

CALIFORNIA PROPOSITION 65

Engine Exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling. www.p65warnings.ca.gov

NOTE: This Operator's Manual covers several models. Features may vary by model. Not all features in this manual are applicable to all models and the model depicted may differ from yours.

Form No. 769-26866
(October 9, 2023)

SAFE OPERATION PRACTICES

⚠ WARNING

This symbol points out important safety instructions which, if not followed, could endanger the personal safety and/or property of yourself and others. Read and follow all instructions in this manual before attempting to operate this machine. Failure to comply with these instructions may result in personal injury. When you see this symbol, HEED ITS WARNING!

⚠ DANGER

This machine was built to be operated according to the safe operation practices in this manual. As with any type of power equipment, carelessness, or error on the part of the operator can result in serious injury. This machine is capable of amputating hands and feet and throwing objects. Failure to observe the following safety instructions could result in serious injury or death.

TRAINING

1. Read the Operator's Manual and other training material. If the operator(s) or mechanic(s) cannot read English it is the owner's responsibility to explain this material to them.
2. Become familiar with the safe operation of the machine, operator controls, and safety signs.
3. All operators and mechanics should be trained to operate or service the equipment. The owner is responsible for training them.
4. Never let children under the age of 16 or untrained people operate or service the equipment. Local regulations may further restrict the age of the operator.
5. The owner/operator can prevent and is responsible for accidents or injuries occurring to them, other people, or property.

GENERAL OPERATION

1. Read, understand, and follow all instructions on the machine and in the manual(s) before attempting to assemble and operate. Keep this manual in a safe place for future and regular reference by each operator and for ordering replacement parts.
2. Be familiar with all controls and their proper operation. Know how to stop the machine and disengage the controls quickly.
3. Do not allow anyone to operate or maintain this machine who has not read the manual. Never permit children under the age of 16 to operate this machine.
4. Do not remove any shields, guards, labels, or safety devices. If a shield, guard, label, or safety device is damaged or does not function, repair or replace it before operating the machine.
5. To help avoid blade contact or a thrown object injury, keep bystanders, helpers, children, and pets at least 75 feet (23 meters) from the machine while it is in operation. Stop machine if anyone enters the area.
6. Thoroughly inspect the area where the equipment is to be used. Remove all stones, sticks, wire, bones, toys, and other foreign objects that could be picked up and thrown by the blade(s). Thrown objects can cause serious personal injury.
7. 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 machine manufacturer.
8. Plan your mowing pattern to avoid discharge of material toward roads, sidewalks, bystanders, and the like. Also, avoid discharging material against a wall or obstruction which may cause discharged material to ricochet back toward the operator.
9. Always wear appropriate clothing and personal protective equipment (e.g. safety glasses, long pants, gloves, hearing protection, safety shoes, hard hat) when operating or maintaining this machine. Long hair, loose fitting clothing, or jewelry may get entangled in moving parts. Follow all federal, state, and local guidelines regarding the use of personal protective equipment.
10. For extended use of this product, hearing protection is recommended.
11. Be aware of the mower and attachment discharge direction and do not point it at anyone. Do not operate the mower without the discharge cover or entire grass catcher in its proper place.
12. Do not put hands or feet near rotating parts or under the cutting deck. Contact with the blade(s) can amputate hands and feet.
13. A missing or damaged discharge cover can cause blade contact or thrown object injuries.
14. Stop the blade(s) when crossing gravel drives, walks, or roads and while not cutting grass.
15. Watch for traffic when operating near or crossing roadways. This machine is not intended for use on any public roadway.
16. Do not operate the machine while under the influence of alcohol or drugs.
17. Mow only in daylight or good artificial light.
18. Never carry passengers.
19. Back up slowly. Always look down and behind before and while backing to avoid a back-over accident.
20. Slow down before turning. Operate the machine smoothly. Avoid erratic operation and excessive speed. Be aware of your direction of travel to avoid accidents.
21. Disengage blade(s), set parking brake, stop engine, and wait until the blade(s) come to a complete stop before removing grass catcher, emptying grass, unclogging chute, removing any grass or debris, or making any adjustments.
22. Never leave a running machine unattended. Always stop on level ground, turn off blade(s), place drive speed control pedals in neutral, set parking brake, stop engine, and remove key before leaving the operator position.
23. Use extra care when loading or unloading the machine on a trailer or truck. The machine should not be driven on unstable, unsecured, or inadequate ramps because the machine could tip over causing serious personal injury.
24. Check overhead clearances carefully before driving under low hanging tree branches, wires, door openings, etc., where the operator and/or ROPS may be struck which could result in serious injury and/or machine tip over.
25. Muffler and engine become hot and can cause a burn. Do not touch.
26. Disengage the blades, set the parking brake to the 'on' position and make sure the speed control pedals are in the neutral position before attempting to start the engine. Only start the engine from the operator's position.

SAFE OPERATION PRACTICES

27. Do not attempt to mow unusually tall, dry grass (e.g., pasture) or piles of dry leaves. Dry grass or leaves may contact the engine exhaust and/or build up on the mower deck presenting a potential fire hazard.
28. Do not stop or park the machine over dry leaves, grass, debris, or other combustible material.
29. Never attempt to operate the machine without the mowing deck attached; the machine could tip over.
30. Keep the machine and especially the engine exhaust system and hydraulic components clean and free of grease, grass, and leaves to reduce the potential for overheating and fire.
31. Allow the machine to cool at least 5 minutes before storing.
32. Use only accessories and attachments approved for this machine by the machine manufacturer. Read, understand, and follow all instructions provided with the approved accessory or attachment.
33. Data indicates that operators, age 65 years and above, are involved in a large percentage of mower-related injuries. Operators should evaluate their ability to operate this machine safely enough to protect themselves and others from serious injury.
34. Do not operate or start machine if there are fuel or oil leaks; repair immediately.
35. When looking for oil leaks, never run your hand over hydraulic hoses, lines, or fittings. Never tighten or adjust hydraulic hoses, lines, or fittings while the system is under pressure. If high-pressure oil penetrates the skin seek immediate medical attention or gangrene and permanent damage may result. Do not check for hydraulic leaks with your hands, use paper or cardboard instead. Wear gloves and safety glasses when checking for leaks.
36. Do not operate machines that have been damaged or have not been properly maintained. If the machine has been damaged, have it repaired.
37. When operating this machine in the forward direction, do not allow the speed control pedals to return to the neutral position on their own. Always operate them smoothly and avoid any sudden movements of the pedals when starting or stopping.
38. If situations occur which are not covered in this manual use care and good judgement. Contact your customer service representative for assistance.

SLOPE OPERATION

Slopes are a major factor related to loss of control and tip-over accidents that can result in severe injury or death. All slopes require extra caution. If you cannot back up the slope or if you feel uneasy on it, do not mow it or drive on the slope.

For your safety, use the slope gauge included as part of this manual to measure slopes before operating this machine on a sloped or hilly area. If the slope is greater than 20° (35%) as shown on the slope gauge, do not operate this machine on that area or serious injury could result.

Do:

1. Mow across slopes, not up and down. Exercise extreme caution when changing direction on slopes.
2. Watch for holes, ruts, bumps, rocks, or other hidden objects. Uneven terrain could overturn the machine. Tall grass can hide obstacles.
3. Use slow speed. Choose a low enough speed so that you will not have to stop while on the slope. Avoid starting or stopping on a slope. If the tires are unable to maintain traction, disengage the blades and proceed slowly and carefully straight down the slope.
4. Keep all movements on the slopes slow and gradual. Do not make sudden changes in speed or direction. Rapid acceleration could cause the front of the machine to lift and rapidly flip over backwards, which could cause serious injury or death.
5. Follow the manufacturer's recommendations for wheel weights or counterweights to improve stability.
6. Use extra care with grass catchers or other attachments. These can change the stability of the machine.

Do Not:

1. Do not turn on slopes unless necessary; then turn slowly uphill and use extra care while turning.
2. Do not mow near drop-offs, ditches, or embankments. The machine could suddenly turn over if a wheel is over the edge of a cliff, ditch, or if an edge caves in.
3. Do not operate on slopes or near the edge of water such as a lake, pond, river, or stream where the machine could slip, tip, or roll-over into the water.
4. Do not try to stabilize the machine by putting your foot on the ground.
5. Use extra care while operating mower with grass catcher or other attachment(s). They can affect the stability of the mower. Do not use grass catcher on slopes greater than 10° (17%).
6. Do not mow on wet grass. Reduced traction could cause sliding and/or loss of control.
7. Do not tow heavy pull behind attachments (e.g. loaded dump cart, lawn roller, etc.) on slopes greater than 5° (9%). When going downhill, the extra weight tends to push the machine and may cause loss of traction and loss of control (e.g. machine may speed up, braking and steering ability are reduced, attachment may jack-knife and cause machine to overturn).

CHILDREN

1. Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the machine and the mowing activity. They do not understand the dangers. Never assume that children will remain where you last saw them.
   a. Keep children out of the mowing area and in watchful care of a responsible adult other than the operator.
   b. Be alert and turn machine off if a child enters the area.
   c. Always look behind and down for small children. Use slow speed.
   d. Never carry children, even with the blade(s) shut off. They may fall off or interfere with safe mower operation, causing serious injury or death.
   e. Use extreme care when approaching blind corners, doorways, shrubs, trees, or other objects that may block your vision of a child who may run into the path of the machine.
   f. To avoid back-over accidents, always disengage blades before traveling in reverse.
   g. Keep children away from hot or running engines. They can suffer burns from a hot muffler.
   h. Remove key when machine is unattended to prevent unauthorized operation.
2. Never allow children under 16 years of age to operate this machine. Children 16 and over should read and understand the instructions and safe operation practices in this manual and on the machine and should be trained and supervised by an adult.

SAFE OPERATION PRACTICES

TOWING

1. Do not tow heavy tow-behind attachments (e.g. loaded dump cart, lawn roller, etc.) on slopes greater than 5° (9%).
2. Tow only with a machine that has a hitch designed for towing. Do not attach towed equipment except at the hitch point.
3. Follow the manufacturer's recommendation for weight limits for towed equipment and towing on slopes.
4. Never allow children or others in or on towed equipment.
5. On slopes, the weight of the towed equipment may cause loss of traction and loss of control.
6. Travel slowly and allow extra distance to stop.
7. Make wide turns to avoid jack knifing.

TRANSPORTING

1. This machine is not intended for use on public roads. Machines operated on public roads must comply with state and local ordinances, SAE J137, and ANSI/ASABE S279 (lighting and marking requirements).
2. Use care when loading or unloading machines onto trailers and trucks.
3. If ramps are used, they must be full width, stable, have an adequate capacity rating, and be secured to the trailer or truck. Ramp angle should not exceed 20° (35%) and trailer or truck should be parked on level terrain.
4. Machines must be secured onto trailers and trucks with straps, chains, cables, ropes, or other means deemed adequate for that purpose. The front and rear of the machines must be secured to the trailer or truck in both the lateral and vertical directions.

OPERATOR PROTECTIVE SYSTEM (OPS)

1. This machine is equipped with an Operator Protective System (OPS), which includes:
   a. A Roll Over Protective Structure (ROPS) of the fixed or folding configuration.
   b. Seat belt assembly with retractable function.
2. ROPS are structures designed to provide a crush-resistant space for the operator when properly seat-belted within the designated seating area of the machine in the event of a machine tip-over or roll-over. Folding ROPS shall be used in their fully upright and locked configurations except in those circumstances whereby they need to be momentarily folded-down to avoid contact with items such as tree limbs, clothes lines, guy wires, utility poles, buildings, etc. At other times and conditions, ROPS shall be in their fully upright and locked configurations.

⚠ DANGER

Damaged ROPS must be replaced prior to operator use.

3. Seat belts shall be used and shall be properly fastened about the operator's waist at all times, except when the ROPS are:
   a. Not properly installed and/or not properly secured onto the machine.
   b. Damaged in such manner that their structural integrity has been compromised.
   c. Not in their fully upright and locked position.
4. Seat belts are attached to the movable portion of the seat when suspension seats are utilized, and therefore the seat-mounting base must be secured to its pivot means and the pivot means latched to the frame of the machine. Seat belts are attached to the seat or the frame of the machine when non-suspension (standard) seats are provided, however, if a suspension kit is added to a seat, the seat belt must be attached to the movable portion of the seat or suspension mechanism, the seat-mounting base must be secured to its pivot means, and the pivot means be latched to the frame of the machine.

⚠ DANGER

If ROPS are folded down or missing, seat belts shall not be fastened. Worn or damaged seat belt assemblies must be replaced prior to operator use.

5. A brush guard or canopy may deflect tree limbs, clothes lines, and other obstacles that otherwise could come in contact with the ROPS. Contact of ROPS, brush guard, and/or canopies by items such as tree limbs, clothes lines, guy wires, and buildings, could create hazardous conditions whereby the machine could experience a tip-over or roll-over. A canopy may provide protection for the operator from some environmental exposure (sunlight, rain, etc.).
6. The ROPS and seat belt are integral parts of this machine and should not be tampered with, modified in any manner, or removed.
7. Inspect the ROPS and seat belt assemblies on a regular basis for damage and improper operation. Replace all components that are damaged or are not functioning properly with authorized replacement parts.
8. The ROPS extends above and behind the operator position, and therefore the operator must be aware of potential contact of the ROPS with items such as trees, buildings, doorways, clothes lines, utility wires, etc., that could cause the machine to tip-over or rollover. Use caution in (or avoid) areas where the ROPS could come in contact with any structures, trees, etc.
9. Inspect the ROPS and seat belt assemblies on a regular basis for damage and improper operation. Replace all components that are damaged or are not functioning properly with authorized replacement parts.
10. Failure to use the seat belt properly could result in serious injury or death if an accidental overturn occurs. In order for the ROPS to be effective, the seat belt must be securely fastened around the operator at all times when the operator is on the machine. Contact with the ROPS during an overturn could cause serious injury or death.
11. The ROPS will not prevent machine from tip-overs or roll-overs.
12. Do not assume ROPS will protect you in a tip-over or roll-over. Injuries may still occur.

HYDRAULIC DEVICES AND SYSTEMS

Hydraulic fluid escaping under pressure may have sufficient force to penetrate skin and cause serious injury. If foreign fluid is injected into the skin or eyes, seek immediate medical attention or gangrene and permanent damage may result.

⚠ WARNING

Keep body and hands away from pinholes or nozzles that could inject hydraulic fluid under high pressure. Use paper or cardboard, not your hands, to search for leaks! Wear gloves and safety glasses.

Safely relieve all pressure in the system before performing any work on the system, and make sure that:

- The ignition switch is OFF.
- The key is removed.

- The engine spark plug wire(s) is removed.
- All connections to the negative terminal of the battery are removed.
- The park brake is set.
- All by-pass valves, if so equipped, are open.
- Hydraulic controls are actuated to release pressure on pumps, cylinders, etc. If "float" positions are available, they should be used.

After the above operations are completed, it should be safe to begin disconnecting the lines or components. It is still a good idea to cover the connection with a cloth shield and then gently loosen connections.

⚠ WARNING

Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system.

SERVICE

Safe Handling of Fuel

To avoid personal injury or property damage use extreme care in handling fuel. Fuel is extremely flammable and the vapors are explosive. Serious personal injury can occur when fuel is spilled on yourself or your clothes which can ignite. Wash your skin and change your clothes immediately.

- Use only approved containers.
- Never fill containers inside a vehicle or a truck or trailer bed with a carpeted or plastic liner. Always place containers on the ground away from your vehicle before fueling.
- When practical, remove machine from the truck or trailer and refuel it on the ground. If this is not possible, then refuel equipment on a trailer with a portable container rather than from a fuel dispenser nozzle.
- Keep nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.
- Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
- Never fuel machine indoors or near ignition sources.
- Never remove fuel cap or add fuel while the engine is hot or running. Allow engine to cool at least 5 minutes before refueling.
- Never over fill fuel tank. Fill tank to no more than 1/2" below bottom of filler neck to allow space for expansion.
- If necessary, use a funnel to avoid spillage.
- Replace fuel cap and tighten securely.
- If fuel is spilled, wipe off the engine and equipment. Wait 5 minutes before starting the engine.
- To reduce fire hazards, keep machine free of grass, leaves, or other debris build-up. Clean up oil and fuel spillage and remove any fuel soaked debris.
- Never store the machine or fuel container inside where there is an open flame, spark, or pilot light as on a water heater, space heater, furnace, clothes dryer, or other gas appliance.

GENERAL SERVICE

1. Never run an engine indoors or in a poorly ventilated area. Engine exhaust contains carbon monoxide, an odorless and deadly gas.
2. Before cleaning, repairing, or inspecting, make certain the blade(s) and all moving parts have stopped. Disconnect the spark plug wires and negative battery cable grouping and remove the key from the ignition to prevent unintended starting.
3. Periodically check to make sure the blades come to a complete stop within approximately 7 seconds after operating the blade disengagement control. If the blades do not stop within this time frame, your machine should be serviced.
4. Never tamper with the safety interlock system or other safety devices.
5. Regularly check the safety interlock system for proper function, as described later in this manual. If the safety interlock system does not function properly, have your machine serviced.
6. Check brake operation frequently as it is subjected to wear during normal operation. Adjust and service as required.
7. Check the blade(s) and engine mounting bolts at frequent intervals for proper tightness. Also, visually inspect blade(s) for damage (e.g., excessive wear, bent, cracked). Replace the blade(s) with the original equipment manufacturer's (O.E.M.) blade(s) only, listed in this manual. Use of parts which do not meet the original equipment specifications may lead to improper performance and compromise safety!
8. Mower blades are sharp. Wrap the blade or wear gloves, and use extra caution when servicing them.
9. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
10. After striking a foreign object (or if abnormal vibration occurs), stop the blades and engine and thoroughly inspect the machine for any damage. Make necessary repairs before resuming operation.
11. Never attempt to make adjustments or repairs to the machine while the engine is running.
12. Grass catcher components and the discharge cover are subject to wear and damage which could expose moving parts or allow objects to be thrown. For safety protection, frequently check components and replace immediately with original equipment manufacturer's (O.E.M.) parts only, listed in this manual. Use of parts which do not meet the original equipment specifications may lead to improper performance and compromise safety!
13. Do not change the engine governor settings or over-speed the engine. The governor controls the maximum safe operating speed of the engine.
14. Maintain or replace safety and instruction labels, as necessary.
15. Observe proper disposal laws and regulations for gas, oil, etc. to protect the environment.

DO NOT MODIFY ENGINE

To avoid serious injury or death, do not modify engine in any way. Tampering with the governor setting can lead to a runaway engine and cause it to operate at unsafe speeds. Never tamper with factory setting of engine governor.

SAFE OPERATION PRACTICES

NOTICE REGARDING EMISSIONS

This machine is equipped with an engine that is certified to federal EPA emission standards for non-road engines and equipment, and where applicable to California Air Resources Board (CARB) emission standards. The Engine Operator's Manual is supplied by the engine manufacturer, and provides additional information relating to the emission system, warranty, and maintenance of the engine in accordance with EPA and/or CARB regulations. Making any unauthorized alterations or modifications to the engine, fuel, or venting systems may violate EPA and CARB regulations.

When required, models are equipped with low permeation fuel lines and fuel tanks for evaporative emission control. California models may also include a carbon canister. Please contact Customer Support for information regarding the evaporative emission control configuration for your model.

This machine is designed to run on regular, unleaded gasoline, 87 octane or higher. Never use gasoline containing methanol or gasoline containing more than 10% ethanol (i.e., E15 or E85 fuels) because the fuel system may be damaged.

SPARK ARRESTOR

⚠ WARNING

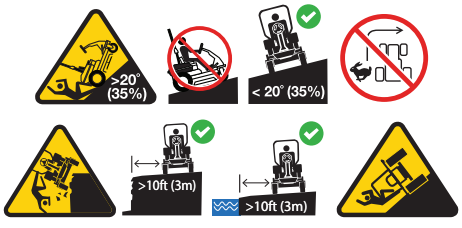
This machine is equipped with an internal combustion engine and should not be used on or near any unimproved forest-covered, brush-covered, or grass-covered land unless the engine's exhaust system is equipped with a spark arrestor meeting applicable local or state laws (if any).

If a spark arrestor is used, it should be maintained in effective working order by the operator. In the State of California the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal lands.

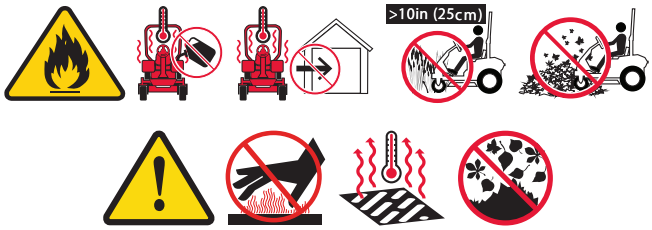
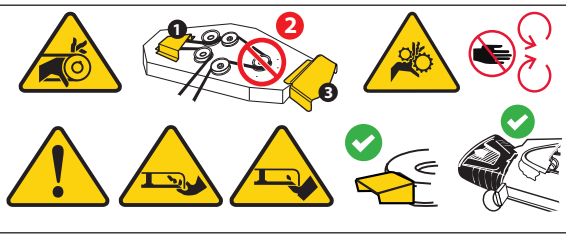
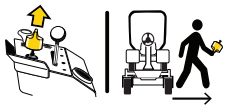
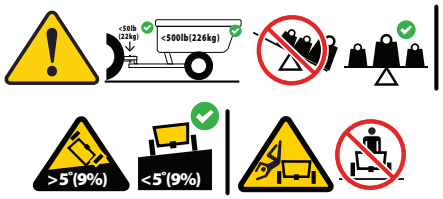
A spark arrestor for the muffler is available through your nearest engine authorized service dealer or contact the service department, P.O. Box 361131, Cleveland, Ohio 44136-0019.

SAFETY SYMBOLS

This table depicts and describes safety symbols that may appear on this product. Read, understand, and follow all instructions on the machine before attempting to assemble and operate.

Symbol	Description
	**WARNING - READ OPERATOR'S MANUAL** - Read, understand, and follow all the safety rules and instructions in the manual(s) and on the mower before attempting to operate this mower. Failure to comply with this information may result in personal injury or death. Keep this manual in a safe location for future and regular reference. Using a Smart Phone, scan the QR code symbol to learn more information concerning the warnings contained on this mower. You can also go to www.OPESymbol.com for more information.
	**WARNING - TRAINING** - Read the Operator's Manual and other training material. It is the owner's responsibility to provide training to operate or service the equipment.
	**WARNING - AVOID THROWN OBJECTS INJURY** - Keep helpers at least 75 feet (23 meters) from machine during operation. Remove all stones, sticks, wire, bones, toys, and other foreign objects which could be picked up and thrown by the blade(s). Do not operate the mower without the discharge cover or entire grass catcher in its proper place.
	**WARNING - AVOID CHILD BACKOVER/RUNOVER/BLADE INJURY** - To avoid back-over accidents, always look behind and down for small children. Never carry children, even with the blade(s) shut off. Keep bystanders, children, and pets inside during operation under the watchful care of a responsible adult other than the operator. Stop mower if anyone enters the area.
	**WARNING - AVOID TIP-OVER/ROLL-OVER INJURY** - Do not operate machine on a slope greater than 20° (35%). Do not mow up or down slopes, only mow across slopes that are less than 20° (35%). Use low speeds and avoid sudden turns on slopes. Stay at least 10 feet (3 meters) from drop-offs, ditches, embankments, or the edge of water.

SAFE OPERATION PRACTICES

Symbol	Description
	**WARNING - AVOID FIRES** - Your mower is designed to cut normal residential grass of a height no more than 10" (25 cm). Do not attempt to mow through unusually tall, dry grass (e.g., pasture), or piles of dry leaves. Allow mower to cool at least 5 minutes before fueling or storing inside an enclosed garage or storage shed.
	**WARNING - AVOID AMPUTATION INJURY** - Do not put hands or feet near rotating parts or under the cutting deck. Contact with the blade(s) can amputate hands and feet. Ensure that all safety devices (guards, shields, switches, etc.) are in place and working. Belt and/or blade spindle contact can crush or injure body parts.
	**WARNING - AVOID CRUSH/PINCH POINT INJURY -** Read, understand, and follow all the safety rules and instructions in the manual(s) and on the mower before attempting to service this mower. The deck lift system is spring-assisted and under tension. Always capture the deck lift pedal by placing the clevis pin behind the lowest position before attempting to remove the mower deck.
	**WARNING - REMOVE KEY** - Always turn off blade(s), place the speed control pedals in neutral, engage parking brake, stop engine, and remove key before dismounting. If you are leaving the mower unattended, always remove the key to prevent unauthorized use by children or others.
	**WARNING - AVOID TOWING RELATED INJURY** - Do not tow a load that exceeds 500 lbs (226 kg) rolling weight and never exceed 50 lbs (22 kg) tongue weight. Never allow children or others in or on towed equipment. Do not tow on slopes greater than 5° (9%). On slopes, the weight of the towed equipment may cause loss of traction, loss of control, and/or loss of the ability to stop. Travel slowly and allow extra distance to stop.
	**WARNING - AVOID SERIOUS INJURY OR DEATH FROM ROLL OVER** - Keep roll bar in the raised upright position with your seat belt fastened. Lower roll bar and do not fasten seat belt In low clearance situations. Raise roll bar and fasten seat belt as soon as clearance permits.

⚠ WARNING

Your Responsibility—Restrict the use of this power machine to persons who read, understand, and follow the warnings and instructions in this manual and on the machine - SAVE THESE INSTRUCTIONS!

SET-UP

CONTENTS OF CARTON

- Zero-Turn Mower (1)
- Steering Wheel (1)
- Battery Installation Hardware (1)
- Seat Mounting Hardware (1)
- Seat Tilt Knob Assembly & Hardware Pack (1)
- Mower Operator's Manual (1)
- Engine Operator's Manual (1)

NOTE: This Operator's Manual covers several models. Mower features may vary by model. Not all features in this manual are applicable to all mower models and the mower depicted may differ from yours.

NOTE: All references in this manual to the left or right side and front or back of the machine are from the operating position only. Exceptions, if any, will be specified.

PREPARATION

TOOLS NEEDED: Safety glasses, leather gloves, wire cutters

1. Remove the upper crating material from the shipping pallet, and cut any bands or tie straps securing the mower to the pallet.
2. Use the deck lift pedal (a) to raise the deck to its highest position and secure in place with the clevis pin (b) attached to the mower (Figure 1).

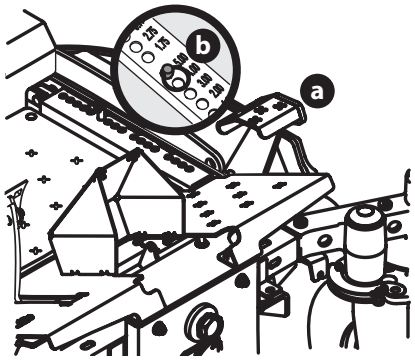


Figure 1

Manually Moving the Mower

PARKER TRANSMISSION (IF EQUIPPED)

1. The two hydrostatic transmissions are equipped with a bypass valve that will allow you to manually move the mower short distances.
2. Engage the transmission bypass valves by pulling the bypass lever (a) outward then upward and all the way back (Figure 2).

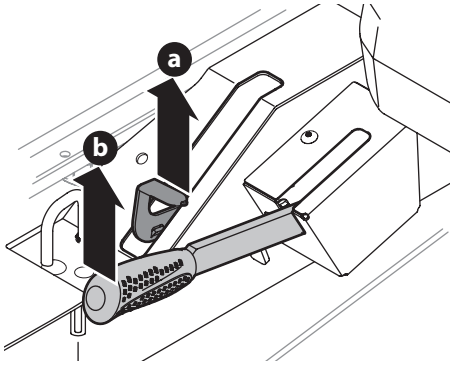


Figure 2

⚠ WARNING

Do not tow the mower, even with the bypass valves engaged. Serious transmission damage will result from doing so.

3. Carefully roll the mower off the shipping pallet.
4. To release the bypass lever (a), push the lever forward (Figure 2).
5. To engage the parking brake, pull back completely on the parking brake lever (b) (Figure 2).
6. Cut any wire ties holding the chute deflector up and discard any packing material.

HYDRO-GEAR TRANSMISSION (IF EQUIPPED)

1. To engage the transmission bypass rods, pull the rod (a) up into the larger opening of the key slot, then pull back until the collar on the rod passes through the frame (Figure 3).
2. Lower the rod back into the smaller opening of the key slot, making sure the collar is secured on the outside of the frame (b). Repeat on opposite side (Figure 3).

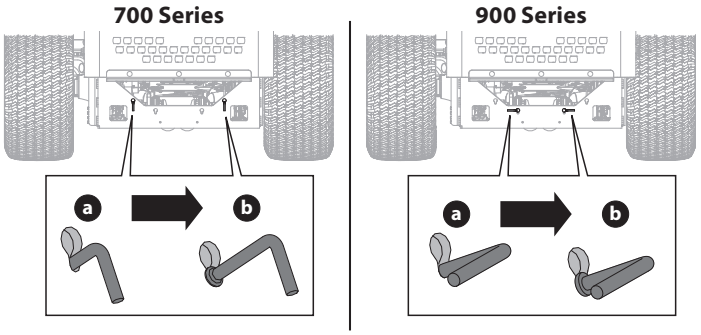


Figure 3

⚠ WARNING

Do not tow the mower, even with the bypass valves engaged. Serious transmission damage will result from doing so.

3. Carefully roll the mower off the shipping pallet.
4. After moving mower, reverse Steps 1 and 2 to disengage the bypass rods.
5. To engage the parking brake, pull back completely on the parking brake lever (b) (Figure 2).
6. Cut any wire ties holding the chute deflector up and discard any packing material.

ROLL OVER PROTECTIVE STRUCTURE

1. Pull slightly up on the upper ROPS to relieve any tension on the locking pin (a) and rotate the locking pin (a) from the LOCKED (b) position into the ADJUSTMENT (c) position (Figure 4). Repeat the procedure for the locking pin on the opposite side.

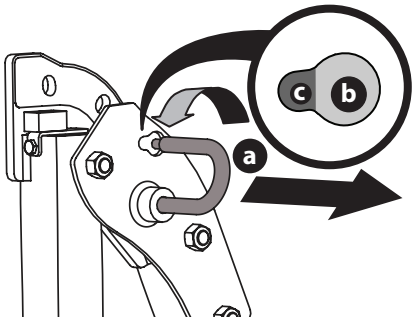


Figure 4

2. When both locking pins are secured in the ADJUSTMENT position, slowly lift and rotate the upper ROPS from the TRANSPORT (a) position, past the TRANSPORT WITH BAGGER (b) position and into the OPERATION (c) position (Figure 5).

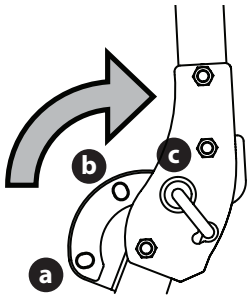


Figure 5

3. Rotate both locking pins into the LOCKED position. Move the upper ROPS slightly until the locking pins are fully engaged in the LOCKED position.

STEERING WHEEL

IMPORTANT! Do not use impact tools to install or remove the steering wheel. Doing so may cause damage to critical power steering components.

1. Remove the hardware for attaching the steering wheel from beneath the steering wheel cap (a). Carefully pry off the steering wheel cap (a) to remove the hardware (Figure 6).

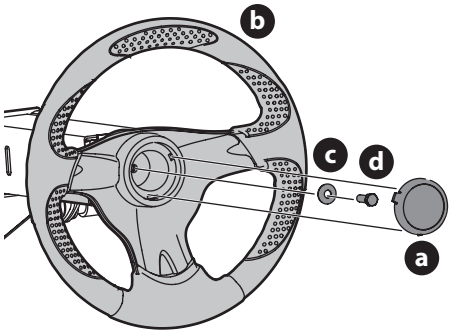


Figure 6

2. With the wheels of the machine pointing straight forward, place the steering wheel (b) over the steering shaft (Figure 6).
3. Place the Belleville washer (c) over the steering wheel (b) and secure with the hex lock screw (d) (Figure 6).
4. Place the steering wheel cover over the center of the steering wheel and push downward until it "clicks" into place.

STEERING WHEEL COLUMN

The steering wheel column is tilted all the way down for shipping purposes. To adjust the column pull up on the steering column adjustment lever (a) and move the steering column up into the desired position. Release the steering column adjustment lever (a) to secure the steering column in the desired position (Figure 7).

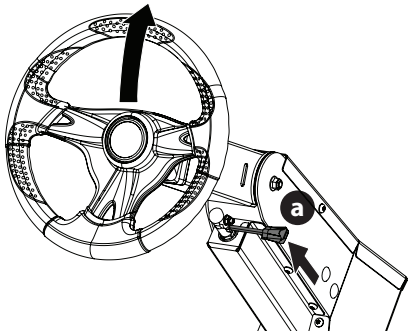


Figure 7

OPERATOR'S SEAT

1. Remove the two flange lock nuts (b) and shoulder bolts (a) from the manual bag (Figure 8).

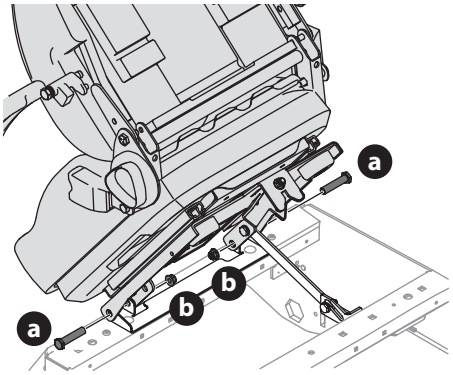


Figure 8

2. Place the seat into position and secure the seat into place with the hardware (Figure 8).
3. Remove the shoulder screw (a) and flange lock nut (b) from manual bag and install the seat lockout bracket (c) (Figure 9).

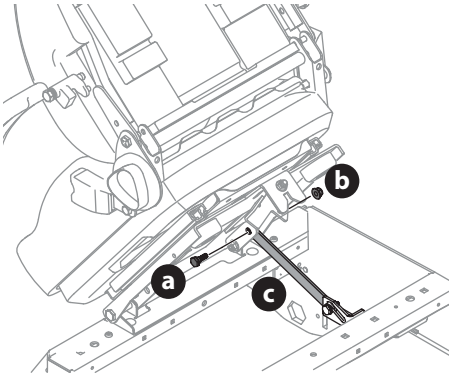


Figure 9

4. Insert the wiring harness (a) into the bottom of the seat (Figure 10).

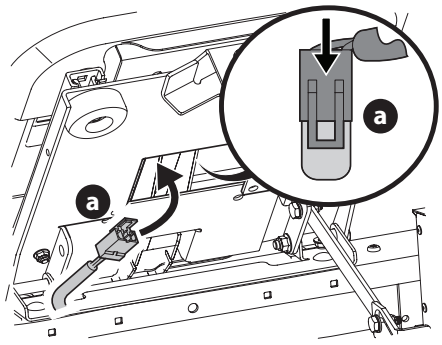


Figure 10

NOTE: When the wiring harness (a) is connected, be sure to push the excess wire from the wire harness (a) into the seat box hole before continuing (Figure 10).

5. Remove the screw (a) securing the recliner plate in the seat back position (Figure 11).

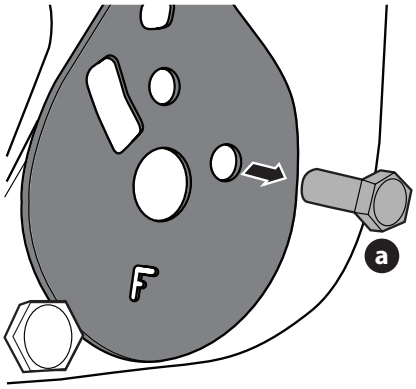


Figure 11

6. Tilt the seat forward into the full forward position. Replace the recliner plate with the clinch-stud (a) and the recliner pin (b) passing through the recliner plate in the locations shown in Figure 12.

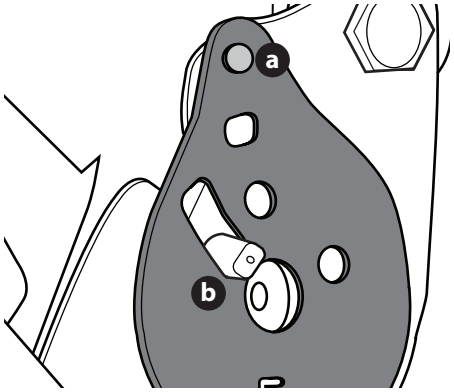


Figure 12

7. Remove the seat tilt knob assembly from the bag and install (Figure 13).

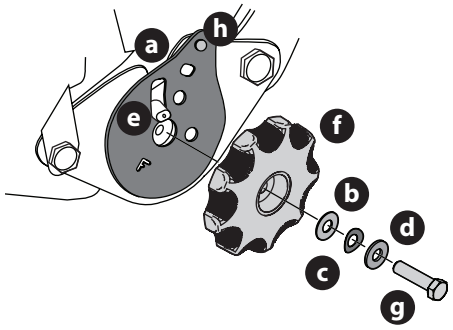


Figure 13

NOTE: Be sure to orient the recliner plate (a) and install the plastic washer (b), spring washer (c) and metal washer (d) (Figure 13). The plastic washer is on the inside.

8. Slide the recliner bearing plate (a) onto the recliner pin (e) (Figure 13).
9. Then align the spiral (a) on the inside of the recliner knob with the recliner pin. Make sure the hub on the back of the recliner sits properly into the large holes of the side plate (Figure 14).

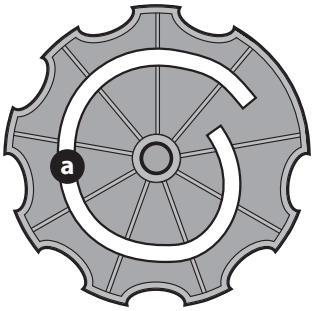


Figure 14

10. Use a wrench to hand tighten the hex screw (g) until the recliner knob (f) is difficult to turn (Figure 13).

    NOTE: Do not use power tools to install.

11. Gradually loosen the hex screw (g) until the recliner knob moves freely. Do not loosen the hex screw (g) more than one full turn (Figure 13).
12. Securely install the 1/4" nut onto the clinch-stud (h) and rotate the recliner knob to check the operation of the seat (Figure 13).

SEAT ADJUSTMENT

Proper steering column and seat adjustment will result in the following (to adjust the seat see below):

In the neutral position with hands on the steering wheel,

- Operator's upper arms should be relaxed and approximately vertical.
- Operator's forearms should be approximately horizontal.
- Operator's back should stay in contact with the seat back.
- Steering column should not contact operator's legs.

Check the results of any adjustments to the conditions described above. Repeat any adjustment procedures as required until all conditions are met.

This machine is equipped with an adjustable seat, which includes a retractable seat belt assembly and an Operator Presence Sensor (OPS). The OPS, in the form of a switch, is integrated into the seat bottom and is connected to the machine electrical system. The OPS must be connected to the electrical wiring harness.

The seat can be adjusted forward and backward, the armrests can be adjusted up and down (700 and 900 series), the mechanical suspension mechanism weight/ride adjustment controls can be adjusted for weights between 125- and 275-pounds (500 and 700 series) or air ride adjustment (900 series), a lumbar support can be adjusted and the seat can tilt forward and backward.

NOTE: The seat base must be secured by the latch, otherwise the seat assembly could tilt forward.

Seat Position

To move the seat forward or back, locate the seat adjustment rod under the seat. Push the rod (a) to the left, slide the seat forward or back into the desired position and release the rod (a) when the seat is in the desired position (Figure 15).

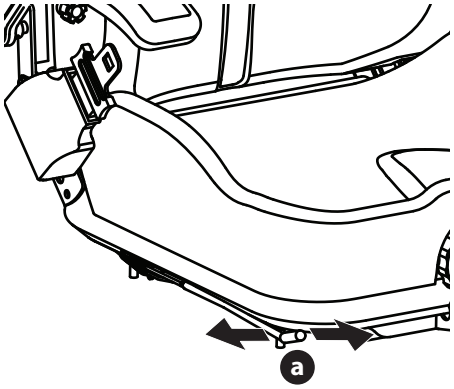


Figure 15

Seat Tilt

The seat tilt is controlled by the knob on the left of the seat. Turn the knob rearward to tilt the seat back, turn the knob forward to tilt the seat forward (Figure 16).

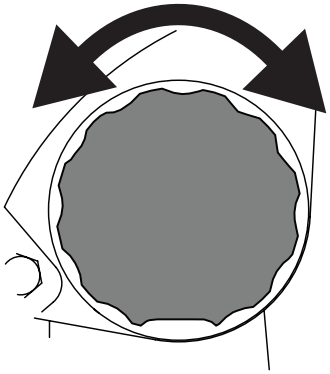


Figure 16

Seat Suspension

The mechanical suspension mechanism (500 and 700 series) incorporates weight/ride adjustment controls for operators in the 125 to 275 lb weight range. Turn the knob on the front of the seat clockwise to increase the weight capacity and counterclockwise to decrease (Figure 17).

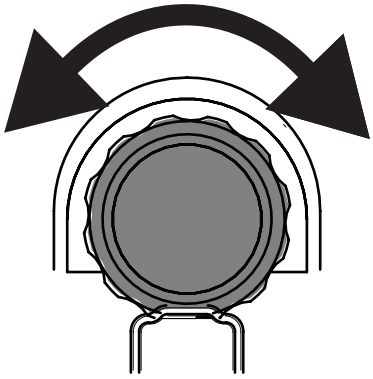


Figure 17

Seat Lumbar

To vary the lumbar support (700 and 900 series) move the lever on the right of the seat up and down (Figure 18).

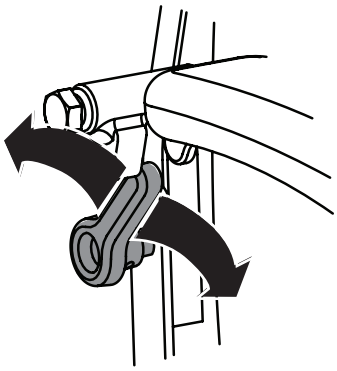


Figure 18

Seat Arm Rest

To adjust the height of the arm rests (700 and 900 series), lift the arm rest and rotate the knob under the arm rest right or left to increase or decrease the height (Figure 19).

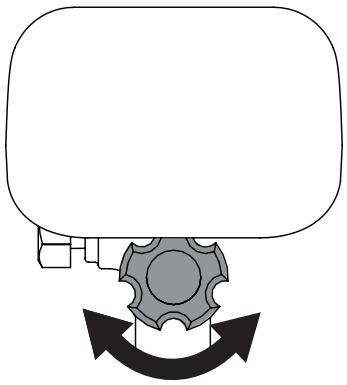


Figure 19

Seat Air Ride

The air ride (900 series) can be adjusted up or down using the height adjustment lever (a) on the front of the seat. Press the lever to the left (+) to raise the height of the seat and to the right (-) to lower the height of the seat (Figure 20).

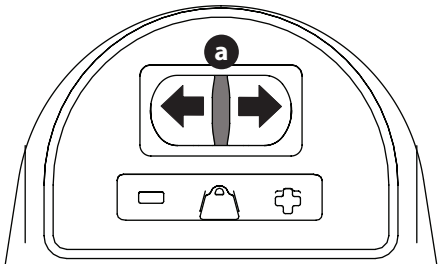


Figure 20

CHECKING TIRE PRESSURE

⚠ WARNING

Maximum tire pressure under any circumstances is 12 psi on rear tires and 25 psi on front tires. Equal tire pressure should be maintained at all times.

Inflation Pressure

Rear Tires — 10-12 psi max

Front Tires — 20-25 psi max

The tires on your mower may be over-inflated for shipping purposes. Reduce the tire pressure before operating the mower. Recommended operating tire pressure is 10-12 psi on rear tires and 20-25 psi on front tires.

LUBRICATION & GREASE POINTS

Before operating the mower, refer to the Product Care section of this manual to check the lubrication and grease points. Grease and lubricate if necessary.

CONNECTING THE BATTERY CABLES

⚠ WARNING

CALIFORNIA PROPOSITION 65 WARNING: Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

⚠ CAUTION

When attaching battery cables, always connect the POSITIVE (Red) wire to the terminal first, followed by the NEGATIVE (Black) wire.

NOTE: Wiring harness should lay on top of battery hold down strap, otherwise damage to the wiring harness may result (Figure 33 on page 25).

For shipping reasons, both battery cables on your equipment may have been left disconnected from the terminals at the factory. To connect the battery cables, proceed as follows:

1. Using the lever on the back of the seat frame, lift up on the lever and tilt the seat forward locking it in place with the seat prop. Remove the bolts and nuts from the manual bag.

NOTE: The positive battery terminal is marked POS. (+) (a). The negative battery terminal is marked NEG. (–) (b) (Figure 21).

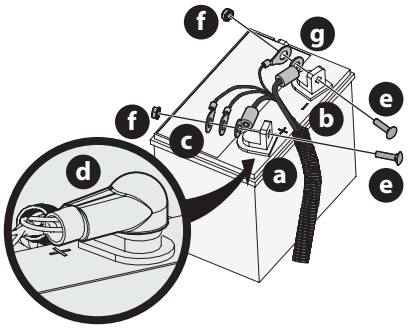


Figure 21

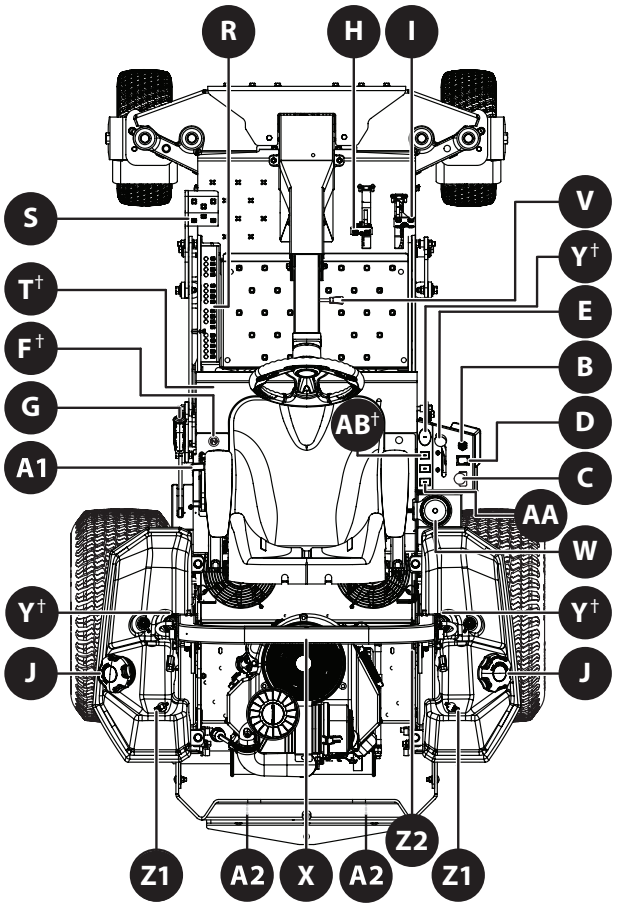
NOTE: If the positive cable grouping (c) is already attached, skip ahead to Step 6 (Figure 21).

2. Locate the cables routed through the conduit along the inward facing side of the battery and separate the positive and negative groupings (each group will be zip-tied together).
3. Slide the red boot (d), if present, back along the positive cable grouping (Figure 21).
4. Attach the positive cable grouping (c) and positive cable for the 12V outlet (if equipped) to the positive battery terminal (a) with the bolt (e) and nut (f) (Figure 21).

   NOTE: Place the thickest cable closest to the battery terminal.
5. Position the red boot (d) over the positive battery terminal (a) to insulate it and help protect it from corrosion (Figure 21).
6. Attach the negative cable grouping (g) and negative cable for the 12V outlet (if equipped) to the negative battery terminal (b) with the bolt (e) and nut (f) (Figure 21).

   NOTE: Place the thickest cable closest to the battery terminal.

   NOTE: If the battery is put into service after the date shown on top/side of battery, charge the battery prior to operating the machine.



† if equipped

Figure 22

NOTE: This Operator's Manual covers several models. Mower features may vary by model. Not all features in this manual are applicable to all mower models and the mower depicted may differ from yours.

NOTE: All references in this manual to the left or right side and front or back of the machine are from the operating position only. Exceptions, if any, will be specified.

A. TRANSMISSION BYPASS LEVER/RODS

⚠ WARNING

Do not tow the mower, even with the bypass valves engaged. Serious transmission damage will result from doing so.

1. **Parker Transmission (if equipped)** - The transmission bypass lever is located next to the LH console to the left of the operator's seat. When engaged the valves open a bypass within the hydrostatic transmissions. Refer to the Set-up section for instructions on using the bypass feature.

2. **Hydro-Gear Transmission (if equipped) -** The transmission bypass rods (one for each RH and LH transmission) are located on the rear of the mower, below the engine. When engaged, the two rods open a bypass within the hydrostatic transmissions, which allows the mower to be pushed short distances by hand. Refer to the Set-up section for additional instructions.

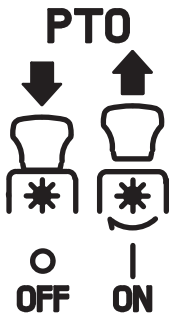
B. IGNITION SWITCH

The ignition switch is located on the RH console to the rear of the throttle control. The ignition switch has three positions as follows:

- OFF/STOP — The engine and electrical system are turned off.
- ON — The mower electrical system is energized.
- START — The starter motor will turn over the engine. Release the key immediately when the engine starts.

NOTE: To prevent accidental starting and/or battery discharge, remove the key from the ignition switch when the mower is not in use.

C. POWER TAKE-OFF (PTO) KNOB



The PTO knob is located on the RH console to the right of the operator's seat.

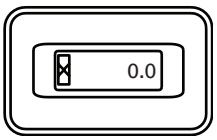
The PTO knob operates the electric PTO clutch mounted on the bottom of the engine crankshaft. Pull the knob upward to engage the PTO clutch, or push the knob downward to disengage the clutch.

The PTO knob must be in the OFF position when starting the engine.

D. HOUR METER & SERVICE MINDER (IF EQUIPPED)

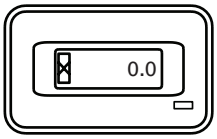
The hour meter and service minder is located on the RH console to the right of the operator's seat. It records the hours that the mower has been operated and engine speed (RPM) in the digital display.

Hour Meter (if equipped)



The hour meter is activated whenever the ignition switch is turned to the ON position. Keep a record of the actual hours of operation to assure all maintenance procedures are completed according to the instructions in this Operator's Manual and the Engine Operator's Manual.

Hour Meter & Service Minder with MODE Button (if equipped)



The hour meter and service minder is activated whenever the ignition switch is turned to the ON position. Keep a record of the actual hours of operation to assure all maintenance procedures are completed according to the instructions in this Operator's Manual and the Engine Operator's Manual. The hour meter and service minder is equipped with a MODE button that can toggle between available functions and can be used to reset service alerts. Press and hold the MODE button for 3 seconds while in service alert mode or when in a service alarm mode to reset.

NOTE: When the ignition key is out of the STOP position the hourglass symbol is illuminated/blinks to indicate it is recording the hours of mower operation, regardless of whether the engine is started.

E. THROTTLE

Manual Throttle (if equipped)

The throttle control is located on the RH console to the right of the operator's seat. When set in a given position, a uniform engine speed will be maintained. The throttle control moves between the FAST and SLOW positions.

Push the throttle control handle forward to increase the engine speed. The mower is designed to operate with the throttle control in the FAST (full throttle) position when the mower is being driven and the mower deck is engaged.

Pull the throttle control handle rearward to decrease the engine speed.

Electronic Throttle (E-Governor) Lever (if equipped)

The electronic throttle (E-governor) lever is used to control engine speed and RPM's. It also helps control fuel efficiency. The electronic throttle lever moves between the FAST and SLOW positions. The SLOW position is used for basic transportation of the mower with the PTO disengaged and uses the least fuel. The FAST position should be used when the PTO is engaged and uses the most fuel. The mower should be started in the START position, but should always be in the FAST position when the PTO/deck is being used.

F. CHOKE KNOB (IF EQUIPPED)/MIL (IF EQUIPPED)

Choke Knob (if equipped) - The choke knob is located on the left side of the mower next to the operator's seat. Pull the knob out to choke the engine; push the knob in/down to open the choke. Having the choke in the ON position helps the engine to start during initial start-up. During normal operation the choke should be OFF.

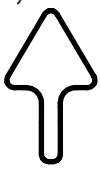
MIL (if equipped) - The Multifunction Indicator Light (MIL) provides diagnostic information for the engine. If the MIL lights up and/or flashes see the service manual or contact your service center.

G. PARKING BRAKE LEVER

The parking brake lever is located to the left of the operator's seat. When pulled up it engages the parking brake and when pushed down it releases the brake.

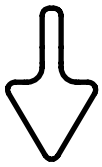
NOTE: If the forward or reverse drive pedal is engaged when engaging the parking brake, the engine will stop. The parking brake must be placed in the engaged position when starting the engine.

H. FORWARD DRIVE PEDAL



The forward drive pedal is located on the right side of the machine, directly to the right of the steering column. Press the forward drive pedal forward to cause the mower to travel forward. Ground speed is also controlled with the forward drive pedal. The further forward the pedal is pivoted, the faster the mower will travel. The pedal will return to its original/neutral position when it is not pressed.

I. REVERSE DRIVE PEDAL



The reverse drive pedal is located on the right side of the mower, to the right of the forward drive pedal, along the running board. Ground speed is also controlled with the reverse drive pedal. The further downward the pedal is pivoted, the faster the mower will travel. The pedal will return to its original/neutral position when it is not pressed.

J. FUEL TANK CAPS

The fuel tank caps are located on the top of the fuel tank on the left and right side of the seat. Turn the fill cap counterclockwise to remove and clockwise until it clicks three times to tighten. Always re-install the fuel cap tightly onto the fuel tank after removing.

⚠ WARNING

Never fill the fuel tank when the engine is running. If the engine is hot from recently running, allow to cool for several minutes before refueling. Highly flammable gasoline could splash onto the engine and cause a fire.

K. SEAT ADJUSTMENT ROD (NOT SHOWN)

The seat adjustment rod is located below the front/right of the seat. The rod allows for adjustment forward or rearward of the operator's seat. Refer to the Set-up section for instructions on adjusting the seat position.

L. SEAT TILT KNOB (NOT SHOWN)

The seat tilt knob is located on the left side of the seat. Refer to the Set-up section for instructions on adjusting the seat tilt.

M. ARM REST HEIGHT KNOBS (NOT SHOWN, IF EQUIPPED)

The arm rest height knobs are located under the seat arms and can be used to adjust the height of the arm rests. Refer to the Set-up section for instructions on adjusting the arm rest position.

N. MECHANICAL SUSPENSION MECHANISM/AIR RIDE (NOT SHOWN, IF EQUIPPED)

The mechanical suspension mechanism is located on the front of the seat and can adjust the weight/ride adjustment for operators in the 125- to 275-pound weight range. Refer to the Set-up section for instructions on adjusting the mechanical suspension mechanism.

O. LUMBAR SUPPORT LEVER (NOT SHOWN, IF EQUIPPED)

The lumbar support lever is located on the right side of the seat on the seat back. Refer to the Set-up section for instructions on adjusting the lumbar support.

P. SEAT PROP (NOT SHOWN)

The seat prop is located on the left, rear side of the operator's seat. It is used to prop the seat forward.

Q. SEAT LATCH (NOT SHOWN)

The seat latch is located below the rear, center of the operator's seat. The latch is used to secure the seat into the operating position. Lift the latch and tilt the seat forward to access the area under the seat.

OPERATION

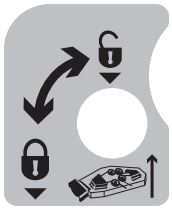
R. DECK HEIGHT INDEX

The deck height index consists of several holes located on the left of the foot platform. Each hole corresponds to a 1/4" change in the deck height position ranging from 1" at the lowest notch to 5" at the highest notch.

S. DECK LIFT PEDAL

The deck lift pedal is located on the left front corner of the foot platform, and is used to raise and lower the mowing deck. To raise the mowing deck to the transport position, push the pedal all the way forward until the deck transportation lock snaps into position. To remove the deck from the transport position push forward on the deck lift pedal and pull up on the deck lock rod. To position the deck push the pedal all the way forward, remove the clevis pin, reinsert it in the desired cutting height and slowly release pressure on the pedal until you reach the clevis pin.

T. TRANSPORT LOCK (IF EQUIPPED)



The transport lock is located on the left side of the operator's seat and is used to lock the deck in the transport position. Press down on the deck lift pedal, lift the transport lock rod up off the pressure plate and rotate counterclockwise until the free end drops into the open hole to lock the deck. To release the deck, reverse the process.

U. TRANSMISSION OIL EXPANSION RESERVOIR (NOT SHOWN, IF EQUIPPED)

1. **Parker Transmission (if equipped)** - The 500 series is equipped with an integrated transmission oil expansion reservoir on both the LH and RH transmission assemblies. The 700 and 900 series are equipped with a transmission oil expansion reservoir located under the seat, connected by hoses to the RH and LH transmission assemblies. The function of the reservoir is to hold the natural expansion of transmission oil that occurs as the transmission warms up during operation. DO NOT FILL THE RESERVOIR. Under normal operating conditions, no oil should be added to the reservoir. The COLD oil level should be approximately 1/4" above the bottom of the reservoir on 700 and 900 models and 1/8" up the dipstick on 500 models. See the Product Care section of this manual for more information on the transmission oil expansion reservoirs.
2. **Hydro-Gear Transmission (if equipped) -** The transmission oil expansion reservoirs are connected by hoses to the RH and LH transmission assemblies and are located behind the operator's seat, to the right and left of the engine. The function of the reservoirs are to hold the natural expansion of transmission oil that occurs as the transmission warms up during operation. DO NOT FILL THE RESERVOIR. Under normal operating conditions, no oil should be added to the reservoir. The COLD oil level should be at the "FULL COLD" line.

NOTE: Prior to the initial operation of the mower, the oil level in the reservoir(s) may be slightly higher than the maximum due to air in the oil lines. Operation of the mower will eventually purge the air from the lines and the oil level will settle to the maximum.

V. STEERING COLUMN ADJUSTMENT LEVER

The steering column adjustment lever is located on the right side of the steering column. To adjust the column pull up on the steering column adjustment lever and move the steering column up into the desired position. Release the steering column adjustment lever to secure the steering column in the desired position.

W. CUP HOLDER

The cup holder is located between the fuel tank and the control panel to the right of the seat.

X. ROLL OVER PROTECTIVE STRUCTURE (ROPS)

ROPS Position

Refer to Figure 23 and the following descriptions and uses for the three (3) positions for the ROPS.

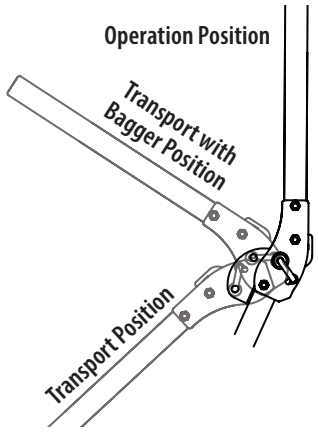


Figure 23

- **TRANSPORT:** Only to be used when transporting the mower or when they need to be momentarily folded-down to avoid contact with items such as tree limbs, clothes lines, guy wires, utility poles, buildings, etc.
- **TRANSPORT WITH BAGGER:** Allows for the ROPS to be lowered for situations outlined for the TRANSPORT position when the mower is equipped with a bagger.
- **OPERATION:** The ROPS should always be in this position when operating unless the situations outlined in the TRANSPORT and TRANSPORT WITH BAGGER descriptions arise.

1. To change the position of the ROPS, pull slightly up/push forward on the upper ROPS to relieve any tension on the locking pin (a) and rotate the locking pin (a) from the LOCKED (b) position into the ADJUSTMENT (c) position. Repeat the procedure for the locking pin on the opposite side (Figure 24).

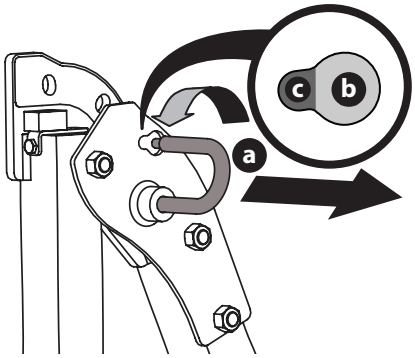
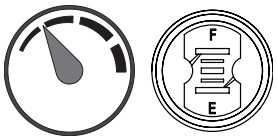


Figure 24

2. Move the ROPS into the desired position. The three positions are TRANSPORT position, TRANSPORT WITH BAGGER position and OPERATION position (Figure 23 on page 15).
3. Rotate both locking pins into the LOCKED position. Move the upper ROPS slightly until the locking pins are fully engaged in the LOCKED position.

Y. FUEL GAUGE(S) (IF EQUIPPED)

There is a fuel gauge on top of each of the two fuel tanks or a single gauge to the right of the operator's seat on the RH console. The gauges measure the fuel level in each tank.



Z. FUEL VALVES

1. **Dual Valve Models (if equipped)** - The fuel valves are located near the rear of each fuel tank. The valves control the fuel flow from the right and left tank and also can shut off fuel flow to the engine. Rotate the valve counterclockwise to open the flow from the tank(s). Rotate the valve clockwise to stop the flow from the tank(s). The fuel tanks can be operated together, independently or shut the fuel flow off completely.

NOTE: If both tanks are on, and one is empty, the engine will not start. Be certain to make sure both tanks have fuel or that the empty tank's fuel valve is closed.

2. **Single Valve Models (if equipped)** - The fuel valve is located on the right side of the mower, between the right fuel tank and engine. The valve controls the fuel flow from the right and left tank and can also shut off fuel flow to the engine. Rotate the valve clockwise to open the flow from the right tank (valve pointing at right tank). Rotate the valve counterclockwise to open the flow from the left tank (valve pointing at left tank). Rotate the valve halfway (valve pointing at operator's seat) to shut fuel flow off completely.

NOTE: If fuel flow is shut off, the engine will not start.

AA. ACCESSORY SWITCH RECEPTACLES

The two receptacles for optional accessories are on the RH console. See the Replacement Parts and Accessories section for information.

AB. 12V OUTLET (IF EQUIPPED)

The 12V outlet is located to the right of the operator's seat on the lower panel of the RH console and is used for the convenience of plugging in accessories that require a power source with a maximum load of 5A at 12V.

BEFORE OPERATING YOUR MOWER

1. Before you operate the mower, study this manual carefully to familiarize yourself with the operation of all the instruments and controls. It has been prepared to help you operate and maintain your machine efficiently.
2. Fill the fuel tank with only clean, fresh, unleaded gasoline with a pump sticker octane rating of 87 or higher. When the fuel reaches 1/2" below the bottom of the fill neck, stop. DO NOT OVERFILL. Space must be left for expansion.
3. Never use gasoline containing more than 10% ethanol or methanol.
4. Check the engine oil level as instructed in the Engine Operator's Manual.
5. Check the transmission oil level.
   a. **Parker Transmission (if equipped)** - The transmission oil expansion reservoir is located beneath the operator's seat. Always wipe off the area around the reservoir fill neck before checking the oil level to prevent dirt from contaminating the oil. Remove the cap and make sure the oil level is 1/4" above the bottom of the reservoir. If the oil level is low, fill with Castrol™ (Syntec®) Edge™.
   b. **Hydro-Gear Transmission (if equipped)** - The transmission oil expansion reservoirs are located behind the operator's seat, to the right and left of the engine. Always wipe off the area around the reservoir fill neck before checking the oil level to prevent dirt from contaminating the oil. Remove the cap and make sure the oil level is at the "FULL COLD" line. If the oil level is low, fill with 20W50 oil.
6. Check the tire inflation pressures. 10-12 psi for the rear tires, 20-25 psi for the front tires.

   NOTE: New tires are over-inflated in order to properly seat the bead to the rim.
7. Check that all nuts, bolts and screws are tight.
8. Check the tension of the deck drive belts.
   a. Remove the deck cover.
   b. The tension of the deck drive belts are maintained by a spring mechanism that adjusts for wear and stretch.
   c. Examine the belts for cuts, fraying and excessive wear. Replace if any of these are detected.
   d. Replace the deck cover.
9. Check if deck is level. When correctly adjusted the mower deck should be level side to side, and the front of the deck should be approximately 1/4" lower than the rear of the deck. If deck needs to be leveled, refer to the Product Care section.
10. Lubricate all pivot points listed in the Product Care section.
11. Adjust the seat for operator's maximum comfort, visibility and for maintaining complete control of the machine. Refer to the Set-up section for instructions on adjusting the seat.

SAFETY INTERLOCK SYSTEM

This machine is equipped with a safety interlock system for the protection of the operator. If the interlock system should ever malfunction, do not operate the machine. Contact your authorized service dealer.

- The safety interlock system prevents the engine from cranking or starting unless the speed control pedals are in the neutral position, the parking brake is engaged and the PTO knob is disengaged.
- To avoid sudden movement when disengaging the parking brake, the safety interlock system will shut off the engine if the speed control pedals are moved to a position other than the neutral position when the parking brake is engaged.
- The safety interlock system will shut off the engine if the operator leaves the seat before engaging the parking brake.
- The safety interlock system will shut off the engine if the operator leaves the seat with the PTO knob engaged, regardless of whether the parking brake is engaged.

  NOTE: The PTO knob must be in the disengaged position to restart the engine.

OPERATION

STARTING THE ENGINE

For throttle/choke or throttle/automatic EFI engines proceed below, for electronic throttle/EFI engines, skip ahead to the Electronic Throttle/EFI (Electronic Fuel Injection) Engines section.

Manual Throttle/Choke or Throttle/Automatic EFI (Electronic Fuel Injection) Engines

⚠ WARNING

This machine is equipped with a safety interlock system designed for protection of the operator. Do not operate the machine if any part of the interlock system is malfunctioning. Periodically check the functions of the interlock system for proper operation.

⚠ WARNING

For personal safety, the operator must be sitting in the mower seat when starting the engine.

1. Open the fuel valve(s).

   NOTE: For dual valve models (if equipped), if both tanks are on, and one is empty, the engine will not start. Be certain to make sure both tanks have fuel or that the empty tank's fuel valve is closed. For single valve models (if equipped), if fuel flow is shut off, the engine will not start.

2. Operator must be sitting in the mower seat with both drive control pedals in the neutral/start position.
3. Engage the parking brake.
4. Make certain the PTO is in the disengaged (down) position.
5. Lift the choke knob (if equipped) into the ON position.

   NOTE: If the engine is warmed up, it may not be necessary to choke the engine.

   NOTE: Some mowers are equipped with EFI (Electronic Fuel Injection) engines and are not equipped with a choke.

6. Move the throttle control to midway between the SLOW and FAST positions.
7. Turn the ignition key clockwise to the START position and release it as soon as the engine starts; however, do not crank the engine continuously for more than 10 seconds at a time. If the engine does not start within this time, turn the key to OFF and wait at least 30 seconds to allow the engine's starter motor to cool. Try again after waiting. If after a few attempts the engine fails to start, do not keep trying to start it with the choke closed as this will cause flooding and make starting more difficult.
8. Once the engine starts, push the choke (if equipped) halfway down and as the engine warms, push the choke (if equipped) all the way down.

Electronic Throttle (E-Governor)/EFI (Electronic Fuel Injection) Engines

1. Open the fuel valve(s).

   NOTE: For dual valve models (if equipped), if both tanks are on, and one is empty, the engine will not start. Be certain to make sure both tanks have fuel or that the empty tank's fuel valve is closed. For single valve models (if equipped), if fuel flow is shut off, the engine will not start.

   NOTE: To prime a dry fuel system, turn the ignition switch to the ON position for one minute. Allow the fuel pump to cycle and prime the system. Turn the ignition switch to the OFF position.

2. Operator must be sitting in the mower seat with both drive control pedals in the neutral/start position.
3. Engage the parking brake.
4. Make certain the PTO is in the disengaged (down) position.
5. Place the Electronic Throttle lever in the START position.
6. Turn the ignition key clockwise to the START position and release it as soon as the engine starts; however, do not crank the engine continuously for more than 10 seconds at a time. If the engine does not start within this time, turn the key to OFF and wait at least 60 seconds to allow the engine's starter motor to cool. Try again after waiting.

   NOTE: Failure to follow these guidelines can burn out the starter motor.

   NOTE: Upon start-up, a metallic ticking may occur. Run engine for 5 minutes. If the noise continues, run the engine at the starting position for 20 minutes. If the noise persists, take the mower to your authorized service dealer.

Cold Weather Starting

When starting the engine at temperatures near or below freezing, ensure the correct viscosity motor oil is used in the engine and the battery is fully charged. Start the engine as follows:

1. Be sure the battery is in good condition. A warm battery has much more starting capacity than a cold battery.
2. Use fresh winter grade fuel. Winter grade gasoline has higher volatility to improve starting. Do not use gasoline left over from summer.
3. Follow the previous instruction for Starting the Engine.

Using Jumper Cables to Start Engine

⚠ WARNING

Batteries contain sulfuric acid and produce explosive gases. Make certain the area is well-ventilated, wear gloves and eye protection, and avoid sparks or flames near the battery.

If the battery charge is not sufficient to crank the engine, recharge the battery. If a battery charger is unavailable and the mower must be started, the aid of a booster battery will be necessary. Connect the booster battery as follows:

1. Connect one end of the red cable to the disabled mower battery's positive terminal; then connect the other end of that cable to the booster battery's positive terminal.
2. Connect one end of the black cable to the booster battery's negative terminal; then connect the other end of that cable to the frame of the disabled mower, as far from the battery as possible.
3. Start the disabled mower following the normal starting instructions previously provided; then disconnect the jumper cables in the exact reverse order of their connection.
4. Have the mower's electrical system checked and repaired as soon as possible to eliminate the need for jump starting.

Stopping the Engine

1. Place the PTO switch in the disengaged position.
2. Engage the parking brake.
3. Move the throttle to the SLOW position and allow the engine to idle for about one minute.

4. Turn the ignition key to the OFF position and remove the key from the ignition switch.

   NOTE: Always remove the key from the ignition switch to prevent accidental starting or battery discharge if the equipment is left unattended.

5. Close the fuel shut-off valve(s).

Practice Operation (initial use)

Operating a zero-turn mower is not like operating a conventional type riding mower. Although and because a zero-turn mower is more maneuverable, getting used to operating the speed control pedals and the steering wheel takes some practice.

It is strongly recommended that you locate a reasonably large, level and open "practice area" where there are no obstructions, pedestrians or animals. You should practice operating the mower for a minimum of 30 minutes.

Carefully move (or have moved) the mower to the practice area. When performing the practice session, the PTO knob should not be engaged. While practicing, operate the mower at approximately 1/2-3/4 throttle and at less than full speed in both forward and reverse.

Always wear appropriate clothing and personal protective equipment (e.g. safety glasses, long pants, gloves, hearing protection, safety shoes, hard hat) when operating or maintaining this machine. Follow all federal, state and local guidelines regarding the use of personal protective equipment.

⚠ WARNING

Hearing protection is required for all operator exposure exceeding two (2) hours.

Carefully practice maneuvering the machine using the instructions in the Driving the Mower section. Practice until you are confident that you can safely operate the mower.

DRIVING THE MOWER

⚠ WARNING

Avoid sudden starts, excessive speed, and sudden stops.

1. Ensure that the area is free of animals and bystanders, especially children.
2. Survey the area where the equipment is to be used to make sure it is free of debris, sticks, stones, wires, bones and other foreign objects which could cause injury to bystanders, damage to the machine or damage to nearby facilities.
3. Adjust the operator's seat to the most comfortable position that allows you to operate the controls. Refer to the Set-up section for instructions on adjusting the seat.
4. Adjust the steering wheel tilt with the steering column adjustment lever.
5. Release the parking brake.
6. Move the throttle control lever (if equipped) forward to the FAST position.

   NOTE: The mower's engine is designed to run at full throttle, but when performing a practice session the mower must be operated at less than full throttle. This only applies to practice.

⚠ WARNING

Always maintain a firm grip on the steering wheel.

7. To drive the mower, firmly grasp the steering wheel with your right and left hands and continue with Driving the Mower Forward.

Driving the Mower Forward

⚠ WARNING

Keep all movement of the drive pedals slow and smooth. Abrupt movement of the pedals can affect the stability of the mower and could cause the mower to flip over, which may result in serious injury or death to the operator.

1. Slowly push the forward drive pedal forward. The mower will start to move forward (Figure 25).

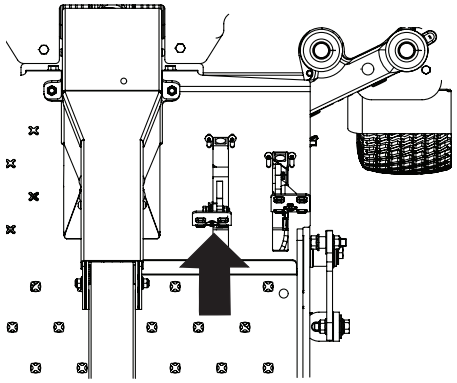


Figure 25

2. As the forward drive pedal is pushed farther forward the speed of the mower will increase.
3. To slow the mower, slowly release the forward drive pedal to attain the desired speed, or allow the pedal to return to the neutral position to stop the mower.

Turning the Mower While Driving Forward

⚠ WARNING

When reversing the direction of travel, performing gradual "U" turns where possible is recommended. Sharper turns increase the possibility of turf defacement, and could affect control of the mower. ALWAYS slow the mower before making sharp turns.

To turn the mower while driving forward, use the steering wheel to turn in the direction you wish to travel.

1. To turn to the left, turn the steering wheel counterclockwise (to the operator's left).
2. To turn to the right, turn the steering wheel clockwise (to the operator's right).
3. The greater the distance the steering wheel is turned, the sharper the mower will turn.
4. To execute a "pivot turn," move the steering wheel so that the inside wheel is angled at approximately 88° and the turn side tire will not rotate.

   NOTE: Making a "pivot turn" on grass will greatly increase the potential for defacement of the turf as well as potential damages to the traction surface and the tire.

OPERATION

Driving the Mower in Reverse

⚠ WARNING

Always look behind and down on both sides of the mower before backing up. Always look behind while traveling in the reverse direction.

1. Slowly push the reverse drive pedal forward. The mower will start to move in the reverse direction (Figure 26).

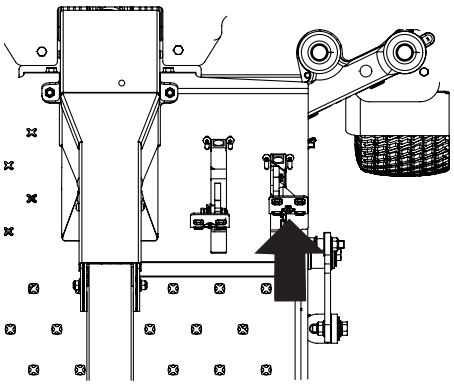


Figure 26

2. As the reverse drive pedal is pushed farther forward the speed of the mower will increase.
3. To slow the mower release the reverse drive pedal to attain the desired speed, or allow the pedal to return to the neutral position to stop the mower.

Turning While Driving Rearward

To turn the mower while driving rearward, use the steering wheel to turn in the direction you wish to travel.

1. To turn to the left while traveling in reverse, turn the steering wheel clockwise (to the operator's right).
2. To turn to the right while traveling in reverse, turn the steering wheel counterclockwise (to the operator's left).
3. The greater the distance the steering wheel is turned, the sharper the mower will turn.
4. To execute a "pivot turn," move the steering wheel so that the inside wheel is angled at approximately 88° and the turn side tire will not rotate.

   NOTE: Making a "pivot turn" on grass will greatly increase the potential for defacement of the turf as well as potential damages to the traction surface and the tire.

Executing a Zero Turn

1. A zero turn maneuver can be executed while the machine is moving in the forward or reverse directions if the steering wheel is turned completely in the one direction.
2. To turn clockwise when going forward, turn the steering wheel clockwise and depress the forward drive pedal. Release the pedal and the machine should stop turning. If the reverse drive pedal is depressed, the turn will be counterclockwise.
3. To turn counterclockwise when going forward turn the steering wheel counterclockwise and depress the forward drive pedal. Release the pedal and the machine should stop turning. If the reverse drive pedal is depressed, the turn will be clockwise.

Stopping the Mower

1. Allow the forward and reverse drive pedals to return to the neutral position to stop the motion of the mower.
2. Push the PTO knob downward to the disengaged position.
3. Use the deck lift pedal to raise the deck to its highest position.
4. If dismounting the machine, allow the drive pedals to return to the neutral position, engage the parking brake, turn the ignition switch to OFF and remove the key from the switch.

⚠ WARNING

Do not leave the seat of the mower without disengaging the PTO, moving drive pedals to the neutral position and engaging the parking brake. If leaving the mower unattended, turn the ignition key OFF and remove.

Driving on Slopes

Refer to the Slope Gauge to help determine slopes where you may operate safely.

⚠ WARNING

Do not operate on inclines with a slope in excess of 20° (35%). The machine could overturn and cause serious injury.

1. Always drive across slopes, never up and down.
2. Avoid turning downhill if possible. Start at the bottom of a slope and work upward. Always slow down before turning.
3. Use extra care and go slowly when turning downhill.

Operating the PTO Knob

Operate the PTO knob as follows:

1. Move the throttle control lever (if equipped) to approximately the mid-throttle position.
2. Pull the PTO knob switch upward to the ENGAGED position.
3. Advance the throttle control lever to the operating speed (full engine speed).

The operator must remain in the mower seat at all times. If the operator should leave the seat without turning off the power take-off switch, the mower's engine will shut off.

Using the Mower Deck

⚠ WARNING

Make certain the area to be mowed is free of debris, sticks, stones, wire, or other objects that can be thrown by the rotating blades.

NOTE: Do not engage the mower deck when lowered in grass. Premature wear and possible failure of the "V" belt and PTO clutch will result. Fully raise the deck or move to a non-grassy area before engaging the mower deck.

1. Use the deck lift pedal (a) or push down on the back of the electric deck lift switch (b) (if equipped) to raise the deck to its highest position, place the clevis pin (c) attached to the mower into the desired index hole on the deck height index, then slowly release the deck lift pedal (a) or slowly lower the deck by pressing down on the front of the electric deck lift switch (b) (Figure 27).

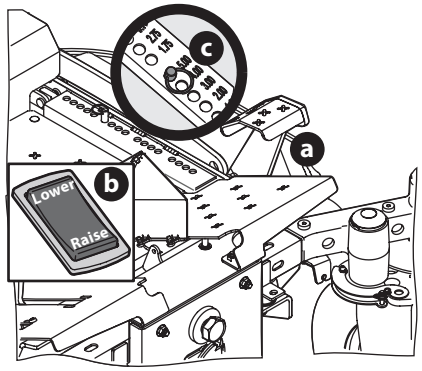


Figure 27

2. Mow across slopes, not up and down. If mowing a slope, start at bottom and work upward to ensure turns are made uphill.
3. On the first pass pick a point on the opposite side of the area to be mowed.
4. Engage the PTO knob and move the throttle control to the FAST position.
5. Remove the clevis pin, raise the deck to the highest (transport) position, place the clevis pin in the desired position and secure with the clevis pin. Lower the mower deck to the desired height setting.
6. Slowly push the forward drive pedal forward to move the mower forward, and keep the mower headed directly toward the alignment point.

   NOTE: The speed of the mower will affect cut quality of the lawn. Mowing at full speed will adversely affect a high quality cut lawn. Control the ground speed with the drive pedals.
7. When approaching the other end of the strip, slow down or stop before turning. A U-turn is recommended unless a pivot or zero turn is required.
8. Align the mower with an edge of the mowed strip and overlap approximately 3".
9. Direct the mower on each subsequent strip to align with a previously cut strip.
10. To prevent rutting or grooving of the turf, if possible, change the direction that the strips are mowed by approximately 45° for the next and each subsequent mowing.

⚠ WARNING

Be careful when crossing gravel paths or driveways. Disengage the PTO knob and raise the deck to the highest/transport position before crossing.

NOTE: When stopping the mower for any reason while on a grass surface, always:

- Make sure the drive pedals are in neutral.
- Engage the parking brake.
- Shut engine off and remove the key.
- Doing so will minimize the possibility of having your lawn "browned" by hot exhaust from your mower's running engine.

Mower Cutting Blades

The blades normally factory installed on a mower afford the best grass cutting performance on the majority of grasses and mowing conditions; however, there will be occasions where the grass type, stage of grass growth, soil conditions and weather conditions will require different cutting blade types. Since the mower decks are designed so that over-lap of the cutting blades generally exceeds 1.5", there is no need for orientation of one cutting blade to an adjacent blade (i.e., the blades do not need to be "timed" nor synchronized).

Hi-lift — These are generally the best cutting blades for most grasses and mowing conditions. The Hi-Lift blades are the factory installed blades on these mowers. These blades will provide extra "lift" for the thinner leaf grasses, will handle lush grasses, and will provide maximum grass and debris discharge. These blades are generally required for material collection systems. More horsepower is required for these blades when compared to others, and they generally produce the highest noise levels.

Medium-lift — These blades require less horsepower than the hi-lift, and they generally work well in wider leaf grasses and some mulch applications.

Low-lift — These blades require less horsepower than hi-lift and medium-lift blades, and they generally work best with wide leaf grasses, sparse grass growth, and sandy soil conditions. They produce the lowest noise levels. Low-lift blades are configured without offset, and with a maximum amount of sharpened cutting edge.

Mulch — These blades are generally designed for use in cutting decks equipped with mulch baffles. The shape of the blade generally produces higher turbulence in order that the grass can be repeatedly cut and re-cut into smaller pieces. These blades generally require more horsepower than other blades. Mulch blades work best when the grasses are cut at the highest levels, minimal lengths of grasses are removed and grass conditions are generally dry.

NOTE: Refer to the Replacement Parts and Accessories section for a list of part numbers.

RECONFIGURABLE MOWER

	Inner Baffle	Discharge Baffle	Cutting Blades	Gauge Wheels	Front Roller	Rear Rollers
Standard set-up	Installed	Installed	Hi-lift	Low = 3 to 5″	Low = 3 to 5″	Low = 3 to 5″
Stems (Dandelion, Bahia, Buckhorn, etc.)	Removed	Installed	Hi-lift	High = 1 to 2-1/2″ Low = 3 to 5″	High = 1 to 2-1/2″ Low = 3 to 5″	High = 1 to 2-1/2″ Low = 3 to 5″
Very lush &/or tall grass	Removed	Installed	Hi-lift	High = 1 to 2-1/2″ Low = 3 to 5″	High = 1 to 2-1/2″ Low = 3 to 5″	High = 1 to 2-1/2″ Low = 3 to 5″
Low cut height (1 to 2″)	Installed	Installed	Low-lift	High = 1 to 2-1/2″	High = 1 to 2-1/2″	High = 1 to 2-1/2″
Mulch	Installed	Removed	Hi-lift/Mulch	High = 1 to 2-1/2″ Low = 3 to 5″	High = 1 to 2-1/2″ Low = 3 to 5″	High = 1 to 2-1/2″ Low = 3 to 5″
Material collection	Installed	Installed	Hi-lift	High = 1 to 2-1/2″ Low = 3 to 5″	High = 1 to 2-1/2″ Low = 3 to 5″	High = 1 to 2-1/2″ Low = 3 to 5″
Abrasive (sandy), dry	Removed	Installed	Low-lift	High = 1 to 2-1/2″ Low = 3 to 5″	High = 1 to 2-1/2″ Low = 3 to 5″	High = 1 to 2-1/2″ Low = 3 to 5″
Wet	Installed	Installed	Hi-lift	High = 1 to 2-1/2″ Low = 3 to 5″	High = 1 to 2-1/2″ Low = 3 to 5″	High = 1 to 2-1/2″ Low = 3 to 5″

Table Notes: This table is a general outline of suggested settings, mowing conditions may vary.

Inner Baffle: The inner baffle regulates grass discharge. Remove the inner baffle for high-volume grass and install the inner baffle for precision cutting.

Discharge Baffle: The discharge baffle enhances the grass discharge pattern. The discharge baffle reduces clumping and should be removed for mulching.

Cutting Blades: The cutting blades cut grass, create grass lift and discharge grass through the discharge chute.

Gauge Wheels: The gauge wheels reduce scalping, help with precision cutting and reduce turf defacement during turns.

Front Roller (if equipped): The front roller reduces scalping, helps with precision cutting and reduces turf defacement during turns.

Rear Rollers: The rear rollers reduce scalping and gives grass a striped appearance.

NOTE: To avoid damaging grass, no more than 1/3 of the grass height should be removed during a single cutting (i.e. if the grass is 6″ tall, cut it to 4″).

PRODUCT CARE

MAINTENANCE SCHEDULE

⚠ WARNING

Before cleaning, repairing, or inspecting, make certain the blade(s) and all moving parts have stopped. Turn off the engine, remove the key, disconnect the spark plug wire(s) and the negative battery cable to prevent unintended starting. Always wear safety glasses or safety goggles during operation and while performing an adjustment or repair to protect your eyes.

Follow the Maintenance Schedule given below. This chart describes service guidelines only.

Refer to the Engine Operator's Manual for engine maintenance items listed in the table below.

	Before Each Use	Every 25 Hours	Every 50 Hours	Every 100 Hours	Every 400 Hours^	Every 500 Hours	After Mowing
Check Gasoline Level	✓						
Check Hydraulic Hoses for Leaks	✓						
Check Tires & Tire Pressure	✓						
Check Deck, Mower & Hydro Drive Belts	✓						
Check Blades & Blade Bolt Tightness	✓						
Check Safety Switches for Proper Operation	✓						
Check Fluid Level in Transmission Oil Expansion Reservoir	✓						
Check/Clean Engine Intake Screens & Cooling Fans *	✓						✓
Check/Clean Exhaust Manifold, Muffler Pipe & Muffler Shields *	✓						✓
Check/Clean Top & Underside of Deck, Under & Around Spindle Covers & Belt Area *	✓						✓
Check/Clean Around Fuses, Wiring & Wiring Harnesses *	✓						✓
Check/Clean Around Transmission, Axle & Fans *	✓						✓
Blow Out/Clean Pump Control Area Under Floor Pan							✓
Blow Out/Clean Pedal Control Area Under Foot Rest							✓
Lubricate Wear Points (see chart)			✓				✓
Clean Engine Cooling Fins & External Surfaces *			✓				
Change Hydrostatic Fluid & Filter in Transaxles (Parker Transmissions) †						✓	
Change Hydrostatic Fluid & Filter in Transaxles (Hydro-Gear Transmissions)				✓	✓		

† — After first 300 hours, change hydrostatic fluid and filter in transaxles.

^ — Or yearly, whichever comes first.

***** — Perform more frequently under dusty conditions.

PRODUCT CARE

OIL CHART

Apply a few drops of SAE engine oil, grease or use a spray lubricant. Apply the oil to both sides of pivot points. Wipe off any excess. Start engine and operate mower briefly to ensure that oil spreads evenly.

ENGINE OIL

- Shell Rotella® T Triple Protection™ 15W40
- Shell Rimula® 15W40
- Reference your Engine Operator's Manual for other approved options

HYDROSTATIC FLUID

- Drive System Fluid Plus (Shell TT-SB)
- Castrol™ (Syntec®) Edge™ 5W50 (Parker Transmissions)
- 20W50 Oil (Hydro-Gear Transmissions)

General Purpose Lubrication: Use any NLGI Grade 2 multi-purpose grease. Shell Albida EP2 is recommended. Shell Albida EP 2 is a red-colored multi-purpose grease designed for heavy-duty bearing applications. It has high base oil viscosity for mechanical stability, has been formulated for high load, low-speed applications and has excellent lubrication and corrosion protection.

Number of Oil Points	Description
DAILY	
4	Deck Suspension Pivots
4	Height Adjustment Turnbuckle Clevis Pin
2	Height Adjustment Handle Pivots
2	Height Adjustment Stop Pivots
2	Deck Lift Linkage Pivots
2	Transport Handle Pivots
1	Transport Handle Pin
2	Deck Frame Up-and-Down Pivots
WEEKLY	
1	Seat Hinge
2	Speed Control Linkage Rod End Bearings
2	Pump Control Lever Pivots
1	Brake Lever Pivot Clevis Pin
1	Brake Lever Control Rod Pivot
1	Brake Control Rod Swivel Joint
4	Brake Rod Clevis Pins
2	Brake Shaft Assembly Pivots
2	Grass Collection System Lid Hinges (if equipped)

NOTE: This Operator's Manual covers several models. Mower features may vary by model. Not all features in this manual are applicable to all mower models and the mower depicted may differ from yours.

POST-OPERATION MOWER CARE

After each operation of the mower, the following procedures should be implemented to extend the life of your mower and ensure safe operating conditions.

⚠ DANGER

Failure to follow these recommendations may result in serious injury to yourself or others and may cause damage to the mower.

Cleaning the Underside of the Deck

Rinse grass clippings from the deck's underside and prevent the buildup of corrosive chemicals.

⚠ WARNING

Make certain the mower's discharge chute is directed AWAY from people, your house, garage, parked cars, etc.

1. Disengage the PTO, set the parking brake and stop the engine.
2. Use a hose to spray the underside of the deck.

   NOTE: Make sure that the hose is not routed under the deck and is clear of all moving parts.
3. After cleaning your deck, return to the operator's position and engage the PTO. Keep the deck running for a minimum of two minutes, allowing the underside of the deck to thoroughly dry.

Cleaning the Mower

⚠ WARNING

If the mower has been recently run, the engine, muffler, and surrounding metal surfaces will be hot and can cause burns to the skin. Let the engine cool for at least 5 minutes. Exercise caution to avoid burns.

Your mower should be cleaned after each use and under certain conditions, i.e. dry conditions and/or mulching situations, additional cleaning may be necessary.

One of the best ways to keep your mower running efficiently and to reduce fire risk is to regularly remove debris buildup from the mower. Follow the recommendations below and contact your authorized dealer with any questions.

- Allow the machine to cool in an open area before cleaning.
- Do not use water on any part of the mower except the underside of the cutting deck. Doing so can cause damage to the mower's spindle bearings, electrical system and engine, leading to premature failures. The use of compressed air and/or leaf blower will help keep the mower clean.

- Clean around the exhaust manifold, fuses, all wiring and harnesses, muffler pipe, muffler shield, engine intake screens and cooling fins, etc (Figure 28).

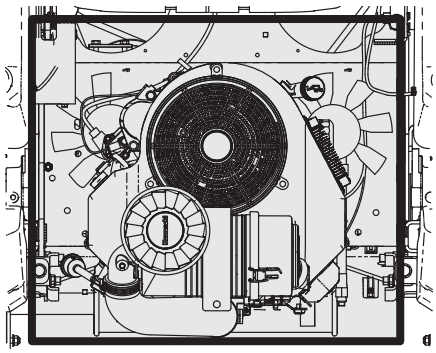


Figure 28

- Clean the top of the mower deck, under the spindle covers and belt area (Figure 29).

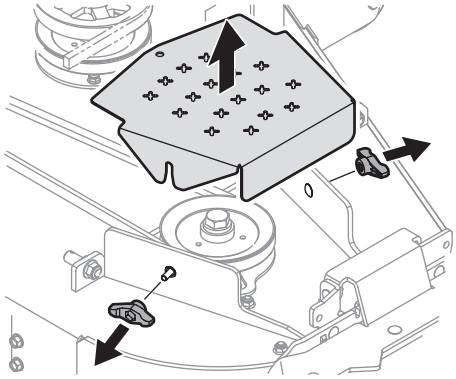


Figure 29

- Clean around and near the transmission, axle and the fan area (Figure 30 for Parker transmissions and Figure 31 for Hydro-Gear transmissions).

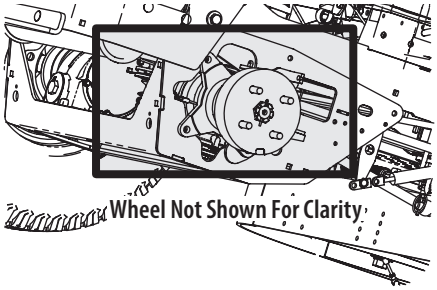


Figure 30

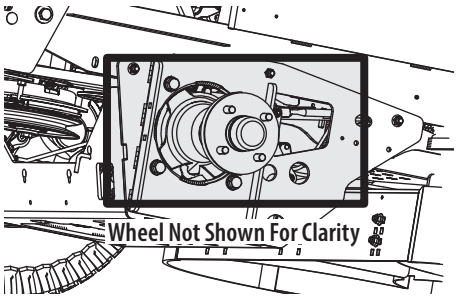


Figure 31

- Debris can accumulate anywhere on the mower, especially on horizontal surfaces. Additional cleaning may be necessary when mowing in dry conditions or when mulching.
- Fuel leaks/spills, oil leaks/spills and excess lubrication can also become collection sites for debris. Immediate repair and cleaning up oil or fuel spills can help reduce fire hazards.
- In addition to cleaning the mower before operating and storing, do not attempt to mow unusually tall grass (10" or higher), dry grass (e.g., pasture) or piles of dry leaves. Dry grass or leaves may contact the engine exhaust and/or build up on the mower deck presenting a potential fire hazard.

Storing the Mower

- Allow the machine to cool in an open area before storing.
- Do not park the mower near any flammable materials (wood, cloth or chemicals) or any open flames or other potential source of ignition (furnace, water heater or any other type of heater).
- Remove all combustible materials from the mower before storing. Empty cargo boxes, grass catchers or containers.
- Always shut off fuel flow when storing or transporting if mower is equipped with a fuel shutoff.
- Check the fuel system (lines, tank, cap and fittings) frequently for cracks or leaks. Repair and clean as necessary.

Engine

Refer to the Engine Operator's Manual for all engine maintenance intervals, procedures, specifications and instructions.

CHANGING THE ENGINE OIL

⚠ WARNING

If the mower has been recently run, the engine, muffler, and surrounding metal surfaces will be hot and can cause burns to the skin. Let the engine cool for at least 5 minutes. Exercise caution to avoid burns.

Maintain oil level as instructed in Engine Operator's Manual. Be careful not to spill oil on any of the belts.

To complete an oil change, proceed as follows:

1. Run the engine for a short time to warm the engine oil. The oil will flow more freely and carry away more impurities. Use care to avoid burns from hot oil.
2. Locate the oil drain hose on the engine (Figure 32).

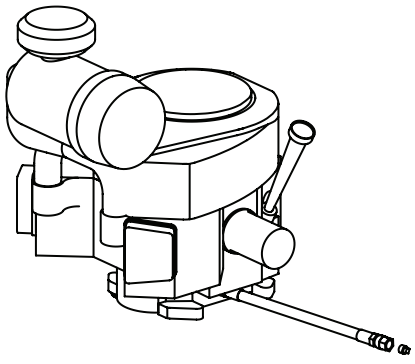


Figure 32

3. Remove the hose from the clip securing it to the frame.

4. Route the free end of the oil drain hose toward an appropriate oil collection container with at least a 2.5 quart capacity, to collect the used oil.

   NOTE: Avoid getting oil on the muffler when draining.

5. While holding the free end of the oil drain hose over the oil collection container, unscrew the square-head hose plug from the end of the hose (Figure 32 on page 24). Drain the engine oil into the collection container.
6. Remove the oil filter to make sure all the oil is drained.
7. After draining the oil, wipe any residual oil from the oil drain hose. Thread the square head plug into the drain hose fitting and fully tighten the plug.
8. Replace the oil filter and refill the engine with new oil as instructed in the Engine Operator's Manual. Refer to the Engine Operator's Manual for information regarding the volume and weight of engine oil.
9. Place the hose back into the clip securing it to the frame.

Lubrication

Periodically lubricate all pivot points with a quality lubricating oil.

Tires

Check the tire air pressure after every 50 hours of operation or weekly. Keep the tires inflated to the recommended pressures. Improper inflation will shorten the tire service life and produce an uneven cut. See the tire side wall for proper inflation pressures. Observe the following guidelines:

- Do not inflate a tire above the maximum pressure shown on the sidewall of the tire.
- Do not reinflate a tire that has been run flat or seriously under-inflated. Have it inspected and serviced by a qualified tire mechanic.

Battery Information

⚠ WARNING

Should battery acid accidentally splatter into the eyes or onto the skin, rinse the affected area immediately with clean cold water. Seek prompt medical attention.

If acid spills on clothing, first dilute it with clean water, then neutralize with a solution of ammonia/water or baking soda/water.

NEVER connect (or disconnect) battery charger clips to the battery while the charger is turned on, as it can cause sparks.

Keep all sources of ignition (cigarettes, matches, lighters) away from the battery. The gas generated during charging can be combustible.

As a further precaution, only charge the battery in a well ventilated area.

Always shield eyes and protect skin and clothing when working near batteries.

Batteries contain sulfuric acid and may emit explosive gases. Use extreme caution when handling batteries. Keep batteries out of the reach of children.

The battery may present a risk of fire or chemical burn if misused. Do not open, disassemble, overheat, or incinerate the battery.

BATTERY MAINTENANCE

- Some batteries are filled with battery acid and then sealed at the factory. However, even a "maintenance free" battery requires some maintenance to ensure its proper life cycle.
- Spray the terminals and exposed wire with a battery terminal sealer, or coat the terminals with a thin coat of grease or petroleum jelly, to protect against corrosion.
- Always keep the battery cables and terminals clean and free of corrosion.
- Some models are equipped with a battery containing a liquid electrolyte. Handle the battery with care and avoid tipping to prevent leakage.

⚠ WARNING

Batteries contain sulfuric acid and may emit explosive gases. Use extreme caution when handling batteries. Keep batteries out of the reach of children.

BATTERY STORAGE

1. When storing the mower for extended periods, disconnect the negative battery cable. It is not necessary to remove the battery.
2. All batteries discharge during storage. Keep the exterior of the battery clean, especially the top. A dirty battery will discharge more rapidly.
3. The battery must be stored with a full charge. A discharged battery can freeze sooner than a charged battery. A fully charged battery will store longer in cold temperatures than hot.
4. Recharge the battery before returning to service. Although the mower may start, the engine charging system may not fully recharge the battery.

REMOVING THE BATTERY

1. Flip the seat all the way forward.
2. Remove the bolt and nut securing the negative cable grouping (b) to the negative battery post (marked NEG (-)). Move the cable grouping away from the negative battery post (Figure 33).

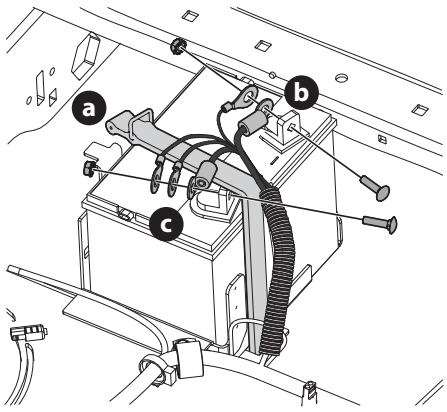


Figure 33

3. Remove the bolt and nut securing the positive cable grouping (c) to the positive battery post (marked POS (+)) (Figure 33).
4. Unhook the strap (a) holding the battery in place (Figure 33).
5. Carefully lift the battery out of the mower.
6. Install the battery by repeating the above steps in the reverse order.

   NOTE: Place the thickest cable closest to the battery terminal.

   NOTE: Wiring harness should lay on top of battery hold down strap, otherwise damage to the wiring harness may result (Figure 33).

Using the Transmission Bypass Rods

⚠ WARNING

Do not tow the mower, even with the bypass valves engaged. Serious transmission damage will result from doing so.

PARKER TRANSMISSION (IF EQUIPPED)

If for any reason the mower will not drive or you wish to move the mower, the two hydrostatic transmissions are equipped with a bypass that will allow you to manually move the mower short distances.

1. Engage the transmission bypass valves by pulling the bypass lever (a) upward and all the way back (Figure 34).

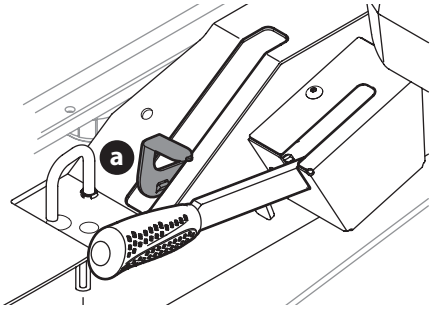


Figure 34

2. To release the bypass lever (a), push the lever forward (Figure 34).

HYDRO-GEAR TRANSMISSION (IF EQUIPPED)

1. To engage the transmission bypass rods, pull the rod (a) up into the larger opening of the key slot, then pull back until the collar on the rod passes through the frame (Figure 35).
2. Lower the rod back into the smaller opening of the key slot, making sure the collar is secured on the outside of the frame (b). Repeat on opposite side (Figure 35).

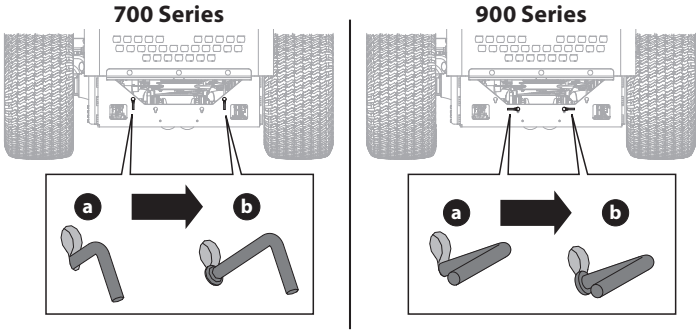


Figure 35

3. After moving mower, reverse Steps 1 and 2 to disengage the bypass rods.

Hydrostatic Transmission (500 Series)

PARKER TRANSMISSION (IF EQUIPPED)

The 500 series with Parker hydrostatic transmission is equipped with a filter and dipstick.

To check the transmission oil, locate the dipstick (a) on both the LH and RH transmission assemblies (Figure 36).

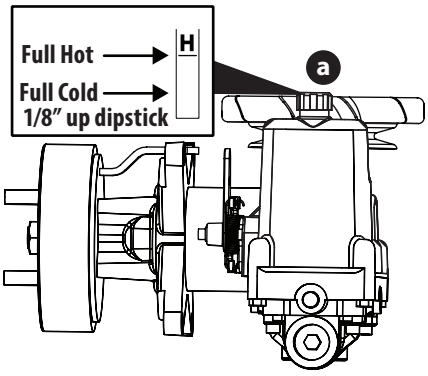


Figure 36

Remove the dipstick and check the oil level. When cold, the level should be no higher than 1/8" up on the dipstick. When hot the level should not exceed the "H" mark on the dipstick. Exceeding these levels could cause the oil to overflow when hot (Figure 36).

To change the transmission oil:

1. Remove the dipstick.
2. Place a suitable container under the drain plug (a) on the transmission. Remove the drain plug (a) and allow the transmission oil to drain (Figure 37).

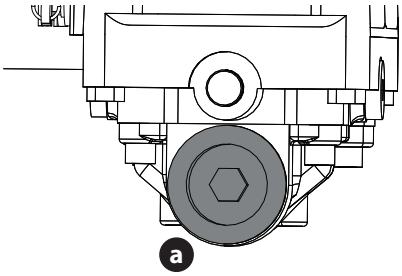


Figure 37

3. Using a pair of needle-nose pliers or a magnet remove the filter.
4. Replace the filter and drain plug (torque to 115-135 in-lbs) and fill the transmission assembly to 1/8" up on the dipstick.
5. Replace the dipstick.

   NOTE: Make sure the dipstick is fully tightened. If the dipstick is not fully tightened, transmission oil could leak and cause damage to the transmission due to insufficient oil.
6. Drain old oil filter prior to disposal. Place used oil in appropriate containers and deliver to an approved recycling collection facility.

HYDRO-GEAR TRANSMISSION (IF EQUIPPED)

The 500 series with Hydro-Gear hydrostatic transmission is equipped with dual integrated hydrostatic pumps/transaxles that are equipped with a transmission oil expansion reservoir. Under normal operating conditions, the oil level in the expansion reservoir does not need to be checked and no additional oil is needed. If checking the reservoir oil level, proceed as follows:

⚠ WARNING

Check the oil level ONLY before starting the mower when the transmission oil is fully cooled.

1. Pivot the operator's seat forward and clean the reservoir cap and the area around the cap to prevent debris from contaminating the transmission oil.
2. Turn the reservoir cap counterclockwise to remove, then check the oil level in the reservoir. Oil should be visible at the bottom of the cup, but the oil level must NOT be above the "FULL COLD" line (Figure 38). DO NOT FILL THE RESERVOIR.

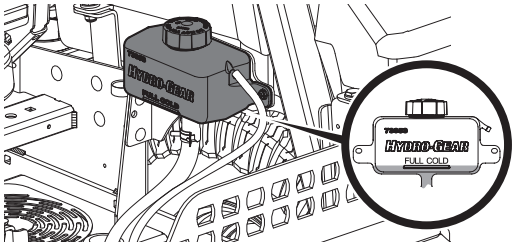


Figure 38

3. If necessary to add oil because of some type of leakage, add only enough oil to bring the level to the "FULL COLD" line. Reinstall the cap and fully tighten.

   NOTE: Prior to the initial operation of the mower, the oil level in the reservoir may be slightly higher than the maximum due to air in the oil lines. Operation of the mower will eventually purge the air from the lines and the oil level will settle to the maximum.

To change the transmission oil:

1. Remove the cap from the transmission oil expansion reservoir.
2. Place a suitable container under the oil filter cover (a) on the transmission. Remove the oil filter cover from the transmission to drain the oil (Figure 39). Remove and discard the O-ring.

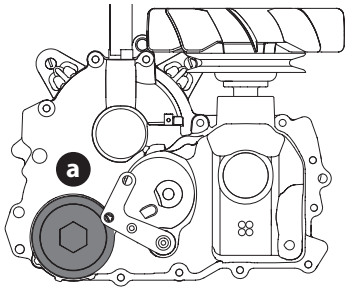


Figure 39

3. Once oil has drained, use a pair of needle-nose pliers or a magnet to remove oil filter.
4. Replace new filter and fit new O-ring onto filter cover (a) (Figure 39).
5. Reinstall filter cover (torque to 200-300 in-lbs).
6. Fill the transmission through the expansion reservoir slowly until the "FULL COLD" line. Allow the transmission oil to move through the system and top off as necessary.
7. Replace the cap and fully tighten.

Hydrostatic Transmission (700 and 900 Series)

PARKER TRANSMISSION (IF EQUIPPED)

The Parker hydrostatic transmission on the 700 and 900 series are equipped with dual integrated hydrostatic pumps/transaxles that are equipped with a transmission oil expansion reservoir. Under normal operating conditions, the oil level in the expansion reservoir does not need to be checked and no additional oil is needed. If checking the reservoir oil level, proceed as follows:

⚠ WARNING

Check the oil level ONLY before starting the mower when the transmission oil is fully cooled.

1. Pivot the operator's seat forward and clean the reservoir cap and the area around the cap to prevent debris from contaminating the transmission oil (Figure 40).

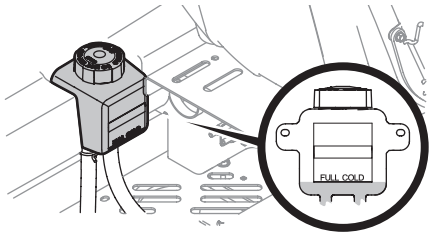


Figure 40

2. Turn the reservoir cap counterclockwise to remove, then check the oil level in the reservoir. Oil should be visible at the bottom of the cup, but the oil level must NOT be above the "FULL COLD" line (Figure 40). DO NOT FILL THE RESERVOIR.
3. If necessary to add oil because of some type of leakage, add only enough oil to bring the level to the "FULL COLD" line. Reinstall the cap and fully tighten.

   NOTE: Prior to the initial operation of the mower, the oil level in the reservoir may be slightly higher than the maximum due to air in the oil lines. Operation of the mower will eventually purge the air from the lines and the oil level will settle to the maximum.

To change the transmission oil:

1. Remove the cap from the transmission oil expansion reservoir.
2. Place a suitable container under the drain plug (a) on the transmission. Remove the drain plug (a) and allow the transmission oil to drain (Figure 41).

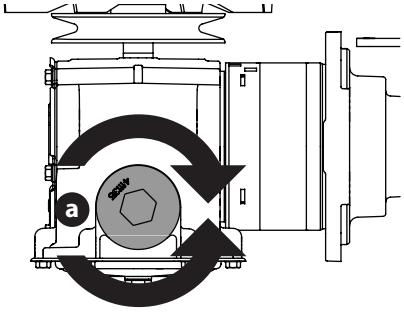


Figure 41

3. Using a pair of needle-nose pliers or a magnet remove the filter.
4. Replace the filter and drain plug (torque to 115-135 in-lbs) and fill through the expansion reservoir slowly until the "FULL COLD" line. Allow the transmission oil to move through the system and top off as necessary.
5. Replace the cap and fully tighten.

HYDRO-GEAR TRANSMISSION (IF EQUIPPED)

The 700 and 900 series with Hydro-Gear hydrostatic transmission are equipped with dual integrated hydrostatic pumps/transaxles that are equipped with a transmission oil expansion reservoir. Under normal operating conditions, the oil level in the expansion reservoir does not need to be checked and no additional oil is needed. If checking the reservoir oil level, proceed as follows:

1. Pivot the operator's seat forward and clean the reservoir cap and the area around the cap to prevent debris from contaminating the transmission oil.

2. Turn the reservoir cap counterclockwise to remove, then check the oil level in the reservoir. Oil should be visible at the bottom of the cup, but the oil level must NOT be above the "FULL COLD" line (Figure 42). DO NOT FILL THE RESERVOIR.

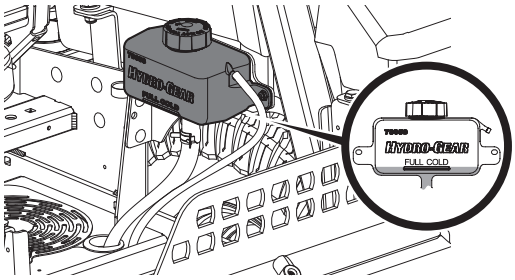


Figure 42

3. If necessary to add oil because of some type of leakage, add only enough oil to bring the level to the "FULL COLD" line. Reinstall the cap and fully tighten.

   NOTE: Prior to the initial operation of the mower, the oil level in the reservoir may be slightly higher than the maximum due to air in the oil lines. Operation of the mower will eventually purge the air from the lines and the oil level will settle to the maximum.

To change the transmission oil:

1. Remove the cap from the transmission oil expansion reservoir.
2. Place a suitable container under the oil filter cover (a) on the transmission. Remove the oil filter cover from the transmission to drain the oil (Figure 43 for 700 series, Figure 44 for 900 series). Remove and discard the O-ring.

700 Series

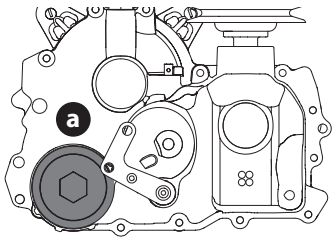


Figure 43

900 Series

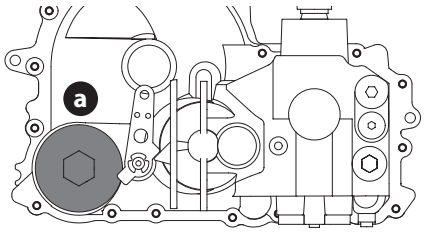


Figure 44

3. Once oil has drained, use a pair of needle-nose pliers or a magnet to remove oil filter.
4. Replace new filter and fit new O-ring onto filter cover (a) (Figure 43 for 700 series, Figure 44 for 900 series).
5. Reinstall filter cover (700 series torque to 200-300 in-lbs, 900 series torque to 480-580 in-lbs).
6. Fill the transmission through the expansion reservoir slowly until the "FULL COLD" line. Allow the transmission oil to move through the system and top off as necessary.
7. Replace the cap and fully tighten.

Mower Storage

If your mower is not going to be operated for an extended period of time (30 days to approximately six months), the mower should be prepared for storage. Store the mower in a dry and protected location. If stored outside, cover the mower (including the tires) to protect it from the elements. The procedures outlined below should be performed whenever the mower is placed in storage.

1. Change the engine oil and filter following the instructions provided in the Engine Operator's Manual packed with this manual.

⚠ WARNING

Never store the mower with fuel in the tank indoors or in poorly ventilated enclosures, where fuel fumes may reach an open flame, spark, or pilot light as on a furnace, water heater, clothes dryer, etc.

2. If storing the mower for 30 days or more:
   a. To prevent gum deposits from forming inside the engine's carburetor and causing possible malfunction of the engine, the fuel system must be either completely emptied, or the gasoline must be treated with a stabilizer to prevent deterioration.

⚠ WARNING

Fuel left in the fuel tank deteriorates and will cause serious starting problems.

   b. Use a fuel stabilizer for storage between 30 and 90 days:
      - Read the product manufacturer's instructions and recommendations.
      - Add to clean, fresh gasoline the correct amount of stabilizer for the capacity of the fuel system.
      - Fill the fuel tank with treated fuel and run the engine for 2-3 minutes to get stabilized fuel into the carburetor.
   c. Emptying the fuel system for storage of more than 90 days:
      - Prior to putting the mower in storage, monitor fuel consumption with the goal of running the fuel tank empty.
      - Run the engine until it begins to stall. Use the choke (if equipped) to keep the engine running until all fuel in the carburetor has been exhausted.
      - Referring to the Engine Operator's Manual, drain the fuel from the carburetor bowl.
3. Clean the engine and the entire mower thoroughly.
4. Fully charge the battery, then disconnect the negative cable at the battery to prevent possible discharge. Recharge the battery periodically when in storage.

   NOTE: Remove the battery if exposed to prolonged periods of sub-freezing temperatures. Store in a cool, dry location where temperatures are above freezing.
5. Lubricate all lubrication points.

   NOTE: Using a pressure washer or garden hose is not recommended for cleaning your mower. It may cause damage to electrical components, spindles, pulleys, bearings or the engine. The use of water will result in shortened life and reduce serviceability.

Removing the Mower from Storage

1. Check the engine oil.
2. Fully charge the battery and inflate the tires to the recommended pressure.
3. Fill the fuel tank with clean, fresh gasoline.
4. Start the engine and allow to idle for a few minutes to ensure engine is operating properly.
5. Drive the mower without a load to make certain all the mower systems are functioning properly.

ADJUSTMENTS

⚠ WARNING

Shut the engine off, remove the ignition key, and engage the parking brake before making adjustments. Protect your hands by using heavy gloves when handling the blades.

Deck Leveling

NOTE: Check the mower's tire pressure before performing any deck leveling adjustments. Refer to Tires for information regarding tire pressure. Always level the deck side-to-side before front-to-rear.

SIDE-TO-SIDE LEVELING

1. Park the mower on a flat paved surface, engage the parking brake, shut off the engine, remove the key from the ignition switch and disconnect the spark plug wires. Using the deck lift pedal position the mowing deck into the 4" height of cut position (The 4" height of cut position is recommended in order for one to see and obtain a measurement. Any height of cut position is acceptable as long as a proper measurement can be taken.) and rotate both outside blades so that they are perpendicular with the mower.
2. Measure the distance from the outside of the left blade tip to the ground and the distance from the outside of the right blade tip to the ground. Both measurements taken should be equal. If they are not, proceed to the next step.
3. Adjust the eyebolt (a) at the left front of the deck so that the blade-to-ground height at the right outside blade tip matches that of the left outside blade tip. This is done by loosening the jam nuts (b) on the eyebolt (a) and tightening the upper jam nut (b) to raise the deck and loosening the jam nut (b) to lower the deck. The right outer blade tip height is fixed by the right, front eyebolt (a) so you must adjust the left outer tip to match it (Figure 45).

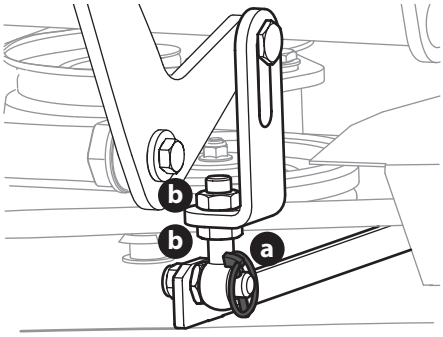


Figure 45

4. Once the proper adjustment is made, re-tighten the jam nuts (b) (Figure 45).

FRONT-TO-BACK LEVELING

1. Park the mower on a flat paved surface, engage the parking brake, shut off the engine, remove the key from the ignition switch and disconnect the spark plug wires. Using the deck lift pedal position the mowing deck into the 4" height of cut position (The 4" height of cut position is recommended in order for one to see and obtain a measurement. Any height of cut position is acceptable as long as a proper measurement can be taken.) and rotate both outside blades so that they are parallel with the mower.
2. Measure the blade-to-ground height at the right rear blade tip. Again be sure to measure the blade tip at the rear of the right blade when aligned along the mower centerline. The blade-to-ground height at the rear of the blade tip should be 1/8" to 1/4" higher than the front tip. This is referred to as blade pitch. The same height difference should be true for the left blade, measured front and back. The pitch should not exceed 1/16" if cut height is below 1-1/2".
3. Loosen the jam nuts (b) at the rear left and right of the deck eyebolts (a) (Figure 45).
4. Start at the rear right to raise the rear of the deck, tighten the upper jam nut (b) to raise the deck or loosen the upper jam nut (b) to lower the rear of the deck (Figure 45).
5. Adjust the jam nut (b) at the rear left to take the "slack" out of the threaded rod (Figure 45).
6. Tighten both lower jam nuts (b) to secure the deck adjustment (Figure 45).
7. The final adjustment would be to take the "slack" out of the left rear linkage if the rear of the deck was raised by adjusting the jam nuts (b) on the eyebolt (a). Loosen the jam nuts (b) and tighten the upper jam nut (b) to remove "slack" (Figure 45).
8. In many cases it will be necessary to adjust deck height using both eyebolt (a) adjustments and pitch adjustment to achieve the correct blade-to-ground heights. If you remember that the front right blade tip adjustment is fixed and you level to that height, adjusting the decks will be simplified (Figure 45).

Adjusting the Front Gauge Wheels

⚠ WARNING

Keep hands and feet away from the discharge opening of the cutting deck.

The front gauge wheels on the mower deck are an anti-scalp feature, and should not ride on the ground. The front gauge wheels should be approximately 1/4-1/2" above the ground when the deck is set in the desired height setting.

Using the deck lift handle, set the deck in the desired height setting, then check the gauge wheel distance from the ground below. If necessary adjust the front gauge wheels as follows:

1. Visually check the distance between the front gauge wheels and the ground. If the gauge wheels are near or touching the ground, they should be raised. If more than 1/2" above the ground, they should be lowered.

2. Remove the lock nut (a) securing one of the front gauge wheels (b) to the deck. Remove the front gauge wheel (b), hex screw (c) and spacer (d) (Figure 46).

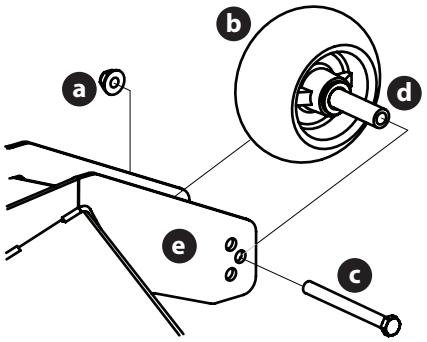


Figure 46

NOTE: There are a pair of front gauge wheels on the nose of the 54" and 60" decks.

3. Insert the hex screw (c) into one of the three index holes in the front gauge wheel bracket (e) that will give the front gauge wheel (b) a 1/4-1/2" clearance with the ground (Figure 46).
4. Note the index hole of the just-adjusted front gauge wheel (b), and adjust the other front gauge wheel (b) into the respective index hole of the other front gauge wheel bracket (e) (Figure 46).

SERVICE

Charging the Battery

Test and, if necessary, recharge the battery after the mower has been stored for a period of time.

MODELS WITH LEAD-ACID BATTERY

- A lead-acid battery charger should be used. Recommended charge rate is 5.5A/14.7V.
- If your battery charger is automatic, charge the battery until the charger indicates that charging is complete. If the charger is not automatic, charge for no fewer than eight (8) hours.

MODELS WITH AGM BATTERY

- An AGM battery charger should be used. Recommended charge rate is 1.1A/14.8V.

  IMPORTANT! Do NOT use an automotive charger.
- If your battery charger is automatic, charge the battery until the charger indicates that charging is complete. If the charger is not automatic, charge for no fewer than eight (8) hours.

Jump Starting

⚠ WARNING

Failure to use this starting procedure can cause sparking, and the gases in the battery to explode.

1. Connect one end of the red cable to the disabled mower battery's positive terminal; then connect the other end of that cable to the booster battery's positive terminal.
2. Connect one end of the black cable to the booster battery's negative terminal; then connect the other end of that cable to the frame of the disabled mower, as far from the battery as possible.
3. Start the disabled mower following the normal starting instructions previously provided; then disconnect the jumper cables in the exact reverse order of their connection.
4. Have the mower's electrical system checked and repaired as soon as possible to eliminate the need for jump starting.

Servicing Electrical System

FUSE

Always use the same capacity fuse for replacement. If you have a recurring problem with blown fuses, have the mower's electrical system checked by your authorized service dealer.

Safety Interlock System and Switch Operation Checks

The following operational checks should be made daily:

PTO SWITCH

1. Sit in the operator's seat. With the drive pedals in the neutral position and the parking brake engaged, engage the PTO switch by pulling up on the knob and try to start the engine. The engine should not start. If it does, the PTO switch must be replaced. See your authorized service dealer.
2. If the engine does not start, disengage the PTO by pressing the knob down and start the engine. Now engage the PTO and the blades should rotate.
3. If the blades do not turn, the PTO switch must be replaced, the seat switch must be replaced or the electric PTO clutch must be repaired. See your authorized service dealer.

PARKING BRAKE SWITCH

1. Sit in the operator's seat. With the drive pedals in the neutral position and the PTO disengaged, release the parking brake and try to start the engine. The engine should not start.
2. If it does, the parking brake switch must be repositioned or replaced. See your authorized service dealer. If the engine does not start, engage the parking brake and start the engine.

SEAT SWITCH

1. With the drive pedals in the neutral position, the parking brake engaged and the PTO disengaged, start the engine. Now release the parking brake and raise up off the seat. Release the operator's seat and the engine should stop. If the engine does not stop, the seat switch must be replaced. See your authorized service dealer.
2. With the drive pedals in the neutral position, the parking brake engaged and the PTO disengaged, sit in the operator's seat and start the engine. Engage the PTO and the blades should start to rotate. Raise up slightly off the operator's seat and the blades should stop. If the blades do not stop when you dismount from the operator's seat, the seat switch must be replaced. See your authorized service dealer.

ELECTRIC PTO CLUTCH

1. This clutch operates when the engine is running, the operator is in the operator's seat and the PTO is engaged. This electric clutch is a normally trouble free device. If a problem develops and the blades do not turn, first check the 25 amp fuse, then investigate the wiring harness and the connections to the seat switch, the PTO switch and the electric blade clutch. Then check the seat switch, the PTO switch and finally the electric blade clutch. If the PTO clutch is still not working properly, see an authorized service dealer.

Rear Tire Removal/Replacement

1. Remove the four lug nuts (a) to remove the tire (Figure 47).

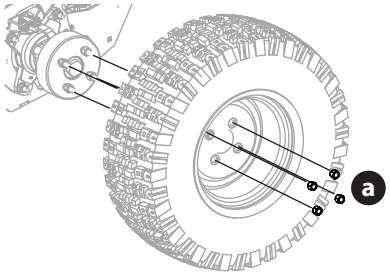


Figure 47

2. Reinstall the tire using the four lug nuts (Figure 47). Torque the lug nuts (a) to 65-70 ft-lbs (88-95 N-m).

Front Tire Removal/Replacement

1. Remove the hex screw (a) and flange lock nut (b) that secures the front wheel (c) to the yoke assembly (d) (Figure 48).

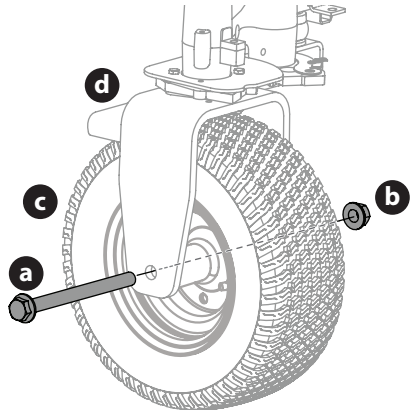


Figure 48

2. To re-install or replace the front tire, reverse Step 1. Tighten the hardware to 75-90 ft-lbs (101-122 N-m) (Figure 48).

Deck Removal

⚠ WARNING

The muffler and any surrounding parts at the rear of the mower may be extremely hot, and could cause serious burns. Use extreme caution when near the muffler. Allow the muffler to fully cool before removing the belt from the PTO pulley.

Remove the mower deck from the mower as follows:

1. Lower the deck to the ground. Capture the deck lift by placing the clevis pin behind the lowest position.
2. Apply the parking brake. Remove ignition key and the spark plug cap.
3. Using a 1/2" drive in the idler pulley bracket (a), turn the wrench towards the right of the mower and slide the PTO belt (b) off the PTO pulley (c) (Figure 49).

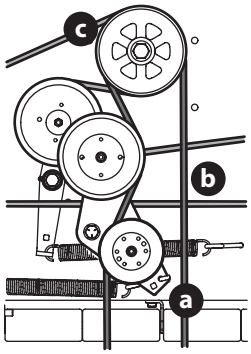


Figure 49

4. Remove the four lynch pins (a) that secure the deck to the deck lift assembly (Figure 50).

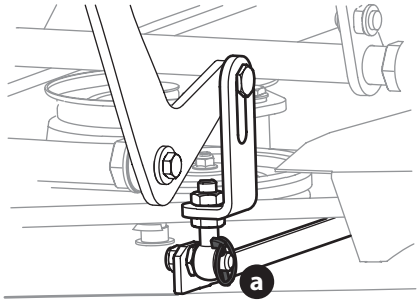


Figure 50

⚠ CAUTION

The spring is under tension due to the weight of the deck. When removing the lift linkage from the deck the tension of the springs will go from the deck to the deck lift pedal. Not capturing the deck lift pedal by placing the clevis pin behind the lowest position while removing the lift linkage from the deck will cause it to snap back.

5. Remove the hex screws (a) and flange lock nuts (b) securing the front deck control rods (c) to the deck (Figure 51).

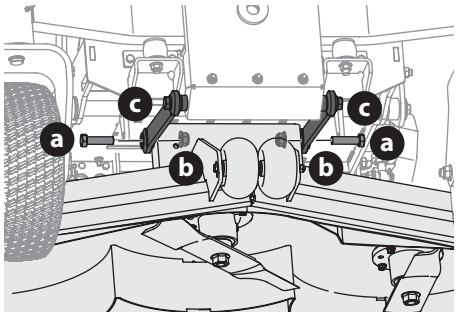


Figure 51

6. Turn front wheels as if to make a pivot turn.
7. Shift the deck toward the right side of the mower and remove.
8. To install reverse the process.

Replacing the PTO Belt

1. Remove the PTO belt (a) from the deck as instructed in the Deck Removal section then remove it from around the PTO clutch (Figure 52).

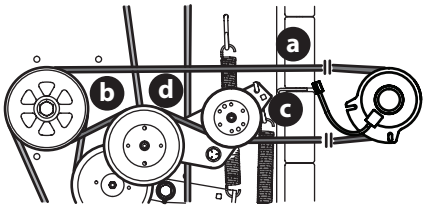


Figure 52

2. Route the PTO belt (a) (Figure 52).
3. After routing the belt around the PTO pulley (b), use a 1/2" drive in the idler pulley bracket (c) and turn towards the right of the mower to finish routing the belt around the idler pulley (d) (Figure 52).
4. Reinstall the deck by reversing the previous steps.

Replacing the Deck Belt

1. Set the parking brake. Remove ignition key and both spark plug caps.
2. Remove the PTO belt (refer to Deck Removal).
3. To remove the belt covers (a), remove the wing knobs (b) from the carriage screws (c) securing it to the deck (Figure 53).

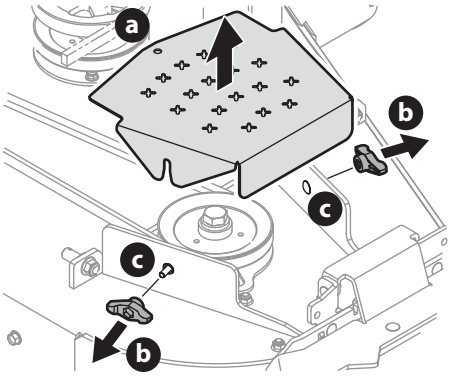


Figure 53

4. The speed nut should hold the carriage screw (c) and tab bolt in place, if not re-install (Figure 53).
5. Using a 1/2" drive insert the end into the 1/2" square opening in the deck idler assembly (a) and rotate the deck idler assembly (a) clockwise (Figure 54). While holding the deck idler assembly (a), loosen the deck belt from the pulley and slide the belt away from the pulley.

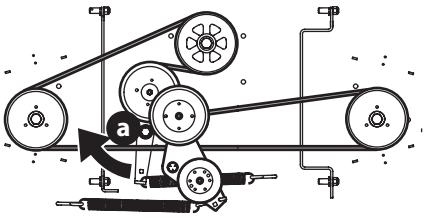


Figure 54

⚠ CAUTION

Avoid pinching injuries. Never place your fingers on the idler spring or between the belt and a pulley while removing the belt.

6. Route the new belt (Figure 54). Then reinstall the deck and PTO belt.

Replacing the Blades

⚠ WARNING

Before cleaning, repairing, or inspecting, make certain the blade(s) and all moving parts have stopped. Turn off the engine, remove the key, disconnect the spark plug wire(s) and the negative battery cable to prevent unintended starting. Always wear safety glasses or safety goggles during operation and while performing an adjustment or repair to protect your eyes.

1. Remove the deck as instructed in the Deck Removal section.
2. For easier access, flip the deck over, then jack up the front of the deck about one foot and block it in that position.

To remove the blade:

1. Secure the blade from turning counterclockwise during service by placing a block of wood between the blade and the deck housing (Figure 55), or wrap a rag around one end of the blade and wear heavy gloves to grasp the blade firmly.

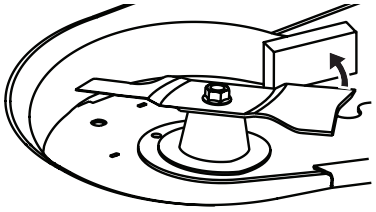


Figure 55

2. Remove the flange lock nut (a) and flat washer (b) from the spindle shaft and remove the blade (c) (Figure 56).

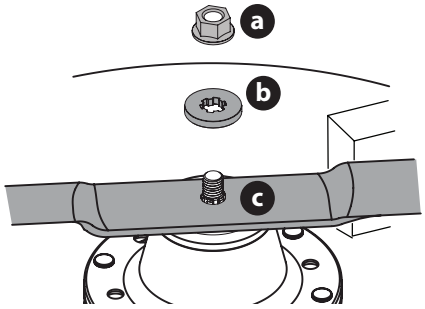


Figure 56

To replace or reinstall the blade:

1. Put the blade in place on the spindle shaft. Be sure to install the blade with the side marked "Bottom" or "Grass Side" (or with a part number stamped in it) facing the ground when the deck is reinstalled on the mower and in the operating position.
2. Carefully place the flat washer on the spindle shaft. Be sure that the splines at the base of the spindle shaft threads line up with the washer splines (Figure 57).

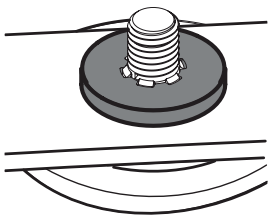


Figure 57

3. Secure the blade from turning clockwise when reinstalling the flange lock nut (the opposite direction of blade removal).
4. Install the flange lock nut onto the spindle shaft over the blade and flat washer. Torque to 100-130 ft-lbs (136-176 N-m).

⚠ WARNING

Never mow with dull blades. Blades that are bent should be replaced. The cutting blades are sharp and can cause severe injury. Wrap the cutting surface of the blade with a rag and wear heavy gloves to avoid injury.

Sharpening the Blades

1. Set the parking brake.
2. Clean any debris from the blades. Keep blades sharp and free of build up at all times.
3. To properly sharpen the cutting blades, remove equal amounts of metal from both ends of the blades along the cutting edges, parallel to the trailing edge, at a 25°-30° angle. Always grind each cutting blade edge equally to maintain proper blade balance (Figure 58).

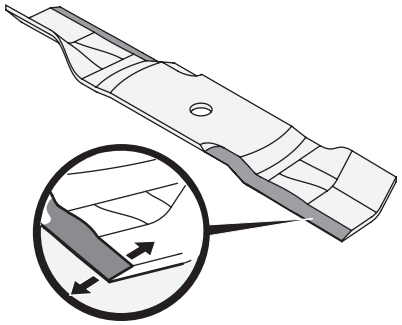


Figure 58

⚠ WARNING

If a blade is bent or otherwise damaged, replace the blade with a new one. Use only original equipment blades.

⚠ WARNING

A poorly balanced blade will cause excessive vibration, may damage the machine, and/or result in personal injury.

4. Test the blade's balance using a blade balancer. Grind metal from the heavy side until it balances evenly.

   NOTE: When replacing the blade, be sure to install the blade with the side marked ''Bottom'' or "Grass Side" (or with a part number stamped in it) facing the ground when the mower is in the operating position.

⚠ WARNING

Use a torque wrench to tighten the blade spindle hex flange nut to between 100 ft-lbs (136 N-m) and 120 ft-lbs (163 N-m).

Changing the Spindle Assembly

1. Remove the deck as instructed in the Deck Removal section.
2. Jack up the front of the mowing deck about one foot and block it in that position.
3. Remove the deck cover.
4. Remove the drive belts. See Replacing the Deck Belt section.
5. Remove the blade. See Replacing the Blades section.
6. Remove the hex flange bolts (a) and flat washers (b) securing the left and right spindle pulleys (c) to the spindle assembly (d) (Figure 59).

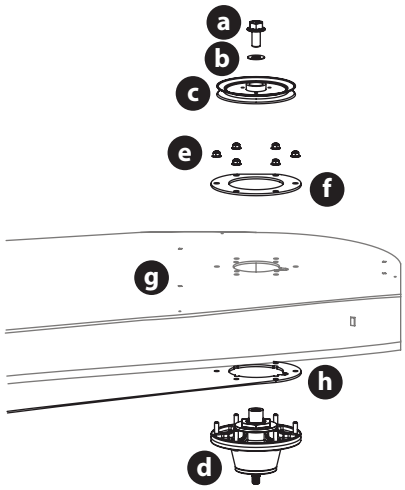


Figure 59

7. Remove the 6 flange lock nuts (e) securing the left and right spindle assemblies (d) and the support plates (f) to the deck shell (g) (Figure 59).

   NOTE: The deck support plate (h) does not need to be removed unless all three spindles are being replaced (Figure 59).

8. Remove the hex flange bolt (a) and flat washer (b) securing the drive pulley (c) and center spindle pulley (d) to the spindle assembly (e) (Figure 60).

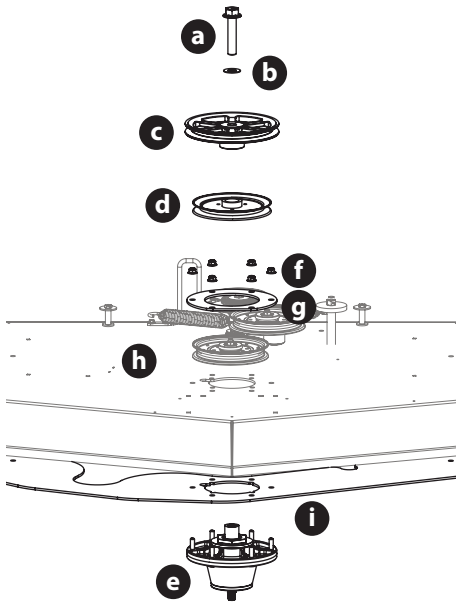


Figure 60

9. Remove the 6 flange lock nuts (f) securing the center spindle pulley (d), spindle assembly (e) and the support plates (g) to the deck shell (h) (Figure 60).

   NOTE: The deck support plate (i) does not need to be removed unless all three spindles are being replaced (Figure 60).

10. Reverse the process to install the spindle assembly. When installing the new spindle assembly be sure to install the hardware exactly (Figure 59 and Figure 60). Torque the hex flange bolts to 250 ft-lbs (339 N-m) and the flange lock nuts to 21-32 ft-lbs (28-43 N-m).

PRODUCT CARE

Changing the Transmission Drive Belt

Several components must be removed and special tools used in order to change the mower's transmission drive belt. See your authorized service dealer to have the transmission drive belt replaced.

Mower Creeping

Creeping is the slight forward or backward movement of the mower when the throttle is on and the speed control pedals are in the neutral position. If your mower creeps, see your authorized service dealer.

TROUBLESHOOTING

⚠ WARNING

Before cleaning, repairing, or inspecting, make certain the blade(s) and all moving parts have stopped. Turn off the engine, remove the key, disconnect the spark plug wire(s) and the negative battery cable to prevent unintended starting. Always wear safety glasses or safety goggles during operation and while performing an adjustment or repair to protect your eyes.

This section addresses minor service issues.

Problem	Cause	Remedy
Excessive vibration	1. Cutting blade loose or unbalanced. 2. Damaged or bent cutting blade.	1. Tighten blade and spindle. 2. Replace blade.
Uneven cut	1. Deck not properly leveled. 2. Cutting blade dull or damaged. 3. Uneven tire pressure.	1. Perform side-to-side deck adjustment. 2. Sharpen or replace cutting blade. 3. Check and correct tire pressure in all four tires.
Mower will not mulch grass	1. Engine speed too low. 2. Wet grass. 3. Excessively high grass. 4. Dull blade.	1. Place throttle in FAST (rabbit) position. 2. Do not mulch when grass is wet. 3. Mow once at a high cutting height, then mow again at desired height or make a narrower cutting swath. 4. Sharpen or replace blade.
Engine fails to start	1. PTO/blade engaged. 2. Blown fuse. 3. Parking brake not engaged. 4. Pedal sensor engaged (Hydro-Gear S transmission models only).	1. Place blade engage lever in disengaged (OFF) position. 2. Replace fuse(s). 3. Engage parking brake. 4. See authorized dealer. See Engine Operator's Manual.

REPLACEMENT PARTS AND ACCESSORIES

REPLACEMENT PARTS

Part Number	Description
954-04327 954-04319	Deck Belt (54″ Deck) Deck Belt (60/72″ Decks)
954-05127 954-05128 954-05129	PTO Belt (54″ Deck) PTO Belt (60″ Deck) PTO Belt (72″ Deck)
954-05037A 954-07148 954-07149	Drive Belt (Parker Transmissions) Drive Belt (Hydro-Gear Transmissions) (700 Series) Drive Belt (Hydro-Gear Transmissions) (900 Series)
942-04416 942-04415 942-05179	Hi-Lift Blade, 19.0 (54″ Deck) Hi-Lift Blade, 21.0 (60″ Deck) Hi-Lift Blade, 25.0 (72″ Deck)
918-08473	Deck Spindle
634-05451	Deck Wheel
731-11926	Deck Skid Guard
725P17130	AGM Battery
951-15243	Gas Cap
946-05260 925-07443	Throttle Control Cable (500/700 Series, if equipped) Throttle Control Cable (900 Series, if equipped)
946-05341B	Choke Control (if equipped)
925-06908	Ignition Key
946-05103A 746P06998	Park Brake Cable (Parker Transmissions) Park Brake Cable (Hydro-Gear Transmissions)
931-05396C 931-05419	Chute Assembly (54/60″ Decks) Chute Assembly (72″ Deck)
634-05228 634-05193 634-05192	Rear Wheel Assembly, 24 x 12-12 (554/754) Rear Wheel Assembly, 24 x 12-12 (560/760) Rear Wheel Assembly, 26 x 12-12 (960/972)
934-05427A 634P05428B	Front Wheel Assembly, 13 x 6.5-6 (554/560/754/760) Front Wheel Assembly, 15 x 6-6 (960/972)
741P07127	Front Wheel Bearing
02003749	Front Axle Wear Plates, 1.125 x 5.0
741-0941A	Front Axle Ball Bearings, 1.0 x 52 x 15

ATTACHMENTS AND ACCESSORIES

Part Number	Description
59A30060150	Triple Bagger
59A30061150	54″ Blower Kit
59A30062150	60″ Blower Kit
59A30063150	54/60″ Bagger Fan
59B30037150	Front Weight Kit
19B70038100	54″ Mulch Kit
19B70039100	60″ Mulch Kit
59A30053150	72″ Mulch Kit
490-241-0036	Rear Tire Chain Kit
59B30021150	12V Outlet Receptacle
59B30011150	Work Light Kit
59A30057150	Ultra Traction Tire, 26 x 12-12
59A30058150	Ultra Traction Tire, 24 x 12-12
59C30052150	Heavy Duty Striping Roller †
490-850-0008	Oil Siphon
490-850-0005	Blade Removal Tool
490-325-0020	Tire Sealant
490-900-0045	Oil Filter Wrench
490-900-0062	Armortek Non-Stick Spray
490-000-0028	Carburetor & Choke Cleaner

† - 500 Series only. Feature comes standard on 700, 900 models.

NOTES

NOTES

CUB CADET LLC -- LIMITED WARRANTY

The limited warranty set forth herein is given by Cub Cadet LLC with respect to a new Cub Cadet® product (hereinafter "Product") purchased and used in the United States and/or Canada to the Initial Purchaser (as defined herein). This limited warranty does not cover Emission Control Systems and is not a Federal Emission Control Warranty Statement, as defined by U.S. federal law. Please refer to the Federal Emission Control Warranty Statement in the operator's manual for warranties covering Emission Control Systems.

Scope of the Limited Warranty

Cub Cadet LLC warrants that the Product (except with regard to the components and circumstances defined below as "Exclusions") will be free from defects in materials and workmanship during the Warranty Period, as defined below. For purposes of this limited warranty, the "Initial Purchaser" is the first person/company to purchase this new Product from an authorized Cub Cadet dealer, distributor, and/or retailer of such products, including a party for whom said Product was purchased as a gift. This limited warranty is non-transferrable. During the Warranty Period, Cub Cadet LLC will, at its option, either repair or replace any original part that is covered by this limited warranty and is determined to be defective in workmanship or material. "Commercial Use" shall be defined as any commercial, professional, agricultural, institutional, or income-producing use of the Product. See notes below as to Commercial Use Warranty.

Cub Cadet® Warranty Information	
Handheld Product*	**Warranty Period**
Chainsaws, Cultivators, Blowers, Brushcutters, Trimmers	3 Year
Wheeled Chore and Snow Product*	
Chipper-Shredders, Chipper-Shredder Vacuums, Blowers, Log Splitters, Snow Blowers	3 Year
Tillers, String Trimmers, Lawn Edgers, Pressure Washers CC3224, CC3425 & CC4033	3 Year†
Pressure Washers	2 Year†
Wheeled Battery Powered Product	
CC30E, XT1 LT42E, ZT1 42E	3 Year†
CC30E, XT1 LT42E, ZT1 42E Batteries	4 Year†
Wheeled Gas Powered Product	
Ultima ZTX Series	4 Year/800 Hour (whichever comes first)
Walk-Behinds, Wide-Area Walk-Behinds, CC30 Riders, XT1 & XT2 Enduro Series, RZT S/SX, Ultima ZT Series, Z-Force S	3 Year†
23" Walk-Behinds	4 Year†
Rotary Spreader	1 Year
PRO X-636	2 Year/NHL (No Hour Limit)
PRO Z 700/900, PRO X-648/654/660	3 Year/NHL (No Hour Limit) and/or 5 Year/1200 Hour (whichever comes first)
Utility Vehicle*	
Challenger Series, Volunteer Series	1 Year

Additional Warranty Notes
Lead-Acid Batteries: Are covered by a one (1) year prorated limited warranty against defects in material and workmanship, with 100% replacement during the first three (3) months, from the date of original purchase of the Product or on the date of delivery of the Product, whichever is later, by the Initial Purchaser. After three (3) months, the battery replacement credit is based on the months remaining in the twelve (12) month period, dating back to the date of original purchase of the Product or on the date of delivery of the Product, whichever is later, by the Initial Purchaser. Any replacement battery will be warranted only for the remainder of the original warranty period.
Frames: The frame, chassis, and front axle on all XT1, XT2 and XT3 products are covered for "Residential Use" by a five (5) year limited warranty. The frame on all Ultima ZT and ZTX series products are covered for "Residential Use" by a seven (7) year Limited Lifetime Warranty.
Mowing Decks: 1) Cub Cadet LLC warrants the mowing decks under the warranty of the product it came with unless otherwise stated. 2) When applicable for residential products, the optional fabricated cutting deck shell (excluding wear parts, etc. thereon) shall be warranted against defects in material and workmanship for the lifetime of the product, namely for as long as it is owned by its Initial Purchaser or the party for whom it was originally purchased as a gift, or seven (7) years from the date of its initial sale, or on the date of delivery of the Product, to an Initial Purchaser, whichever comes first.
Snow Blowers: Three-Stage and Two-Stage (excluding 2X 24 models) - Auger gear boxes have a five (5) year limited warranty.
L and S Series: RZT L/LX, Z-Force L/LX/SZ, and Z-Force Commercial (LZ/SZ): Please refer to warranty included with Operator's Manual.
Attachments/Accessories: Please refer to warranty with Operator's Manual.
***Limited Commercial Use Warranty:** Handheld products – 90 days; Chipper-Shredder Vacuums, Blowers, Log Splitters, Snow Blowers – 1 year; Utility Vehicle – 6 month.
† No Commercial Use Warranty: Tillers, String Trimmers, Lawn Edgers, Pressure Washers, Battery Powered Product, Walk Behind Mowers, CC30 Riders, Enduro Series, RZT S/SX, Ultima ZT Series, and Z-Force.

The limited warranty is non-transferrable

How to Get Service Under This Limited Warranty

In order to qualify for the limited warranty, as set forth herein, the repairs made under this warranty must be performed by an authorized Cub Cadet service provider. To locate a Cub Cadet service provider, contact your authorized Cub Cadet dealer, distributor, or retailer, or contact Cub Cadet LLC at P.O. Box 368023, Cleveland, Ohio 44136-0019, or call 1-877-282-8684, or log on to our Website at www.cubcadet.com. For Canada, contact MTD Products Limited, 97 Kent Ave, Kitchener, ON N2G 3R2, or call 1-800-668-1238, or log on to our Website at www.cubcadet.ca. This limited product warranty is provided by Cub Cadet LLC and is the only product warranty provided by Cub Cadet LLC for the Product. A COPY OF YOUR SALES RECEIPT IS REQUIRED FOR WARRANTY SERVICE.

What This Limited Warranty Does Not Cover

This limited warranty does not cover the following (the "Exclusions"):

1. Product purchased outside of the United States or Canada.
2. Engine/Emission Control Systems. These items are subject to separate warranties by the engine manufacturer and under applicable Federal Emission Control Warranty laws. Please refer to the applicable engine manufacturer's warranty for terms and conditions.
3. Damage due to lack of maintenance and/or improper maintenance, as described in the operator's manual.
4. Normal wear and tear resulting from use of the Product.
5. Normal Wear Parts (as defined herein) are warranted to be free from defects in material and workmanship for a period of thirty (30) days from the date of original purchase of the Product or on the date of delivery of the Product, whichever is later, by the Initial Purchaser for residential use, and for 30 days or 100 hours (whichever occurs first) for Product used commercially. Depending on Product, Normal Wear Parts include, but are not limited to items such as: belts, blades, blade adapters, grass bags, rider deck wheels, seats, shave plates, skid shoes, tines, filters, nozzles, hoses, O-rings, spray guns, wands, tires, spark plugs, fuses, bump knobs, outer spools, cutting line, inner belts, starter pulley, starter rope, drive belts, saw chains, guide bars, and other consumable items.
6. Log splitter pumps, valves, and cylinders are covered for a period of one (1) year.
7. Use of the product that is not consistent with the intended use thereof, as described in the operating instructions, including, but not limited to, abuse, misuse and/or neglect of the Product, or any use inconsistent with and/or non-compliant with instructions contained in the Operator's Manual. This includes operation in sandy and/or corrosive environments.
8. Any Product that has been altered or modified in a manner not consistent with the original design of the Product or in a manner not approved by Cub Cadet LLC.
9. Paint repairs or replacements for defective paint (including materials and application) are covered for a period of three (3) months.
10. Wheel rims (when so equipped) are covered for a period of three (3) months for manufacturing defects.

This warranty does not cover, and Cub Cadet LLC disclaims any responsibility for, matters including, but not limited to, the following:

1. Loss of time or loss of use of the Product.
2. Transportation costs and other expenses incurred in connection with the transport of the Product to and from the authorized Cub Cadet service provider.
3. Any loss or damage to other equipment or personal items.
4. Damages caused by improper maintenance or the use of other than the specified fuel, oil, or lubricants, as approved in the operator's manual.
5. Damage resulting from the installation or use of any accessory or part not approved by Cub Cadet LLC for use with the Product.

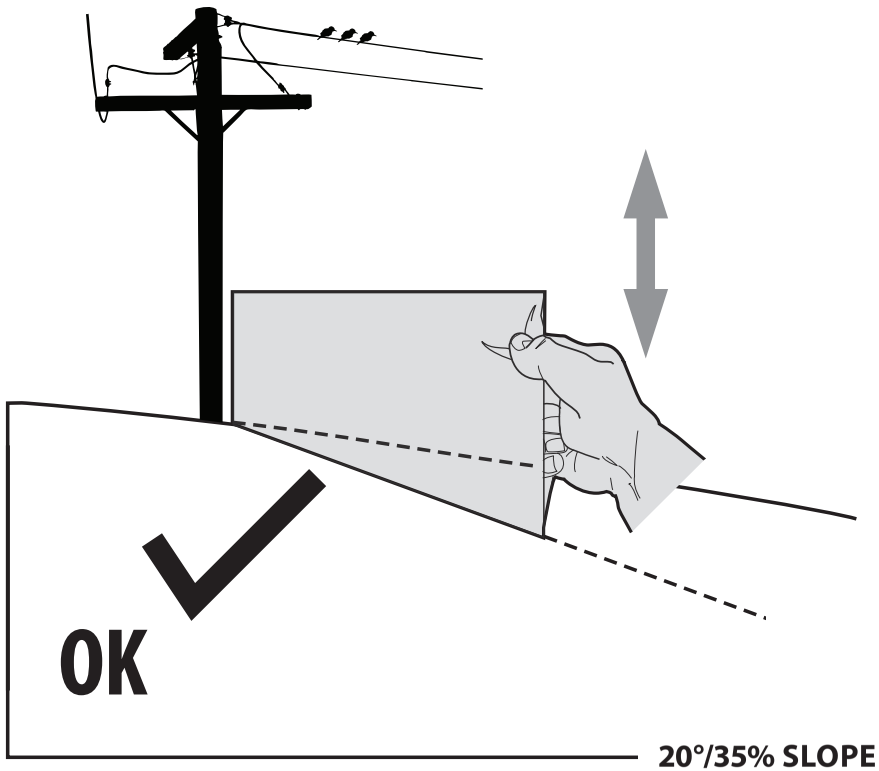
Limitations

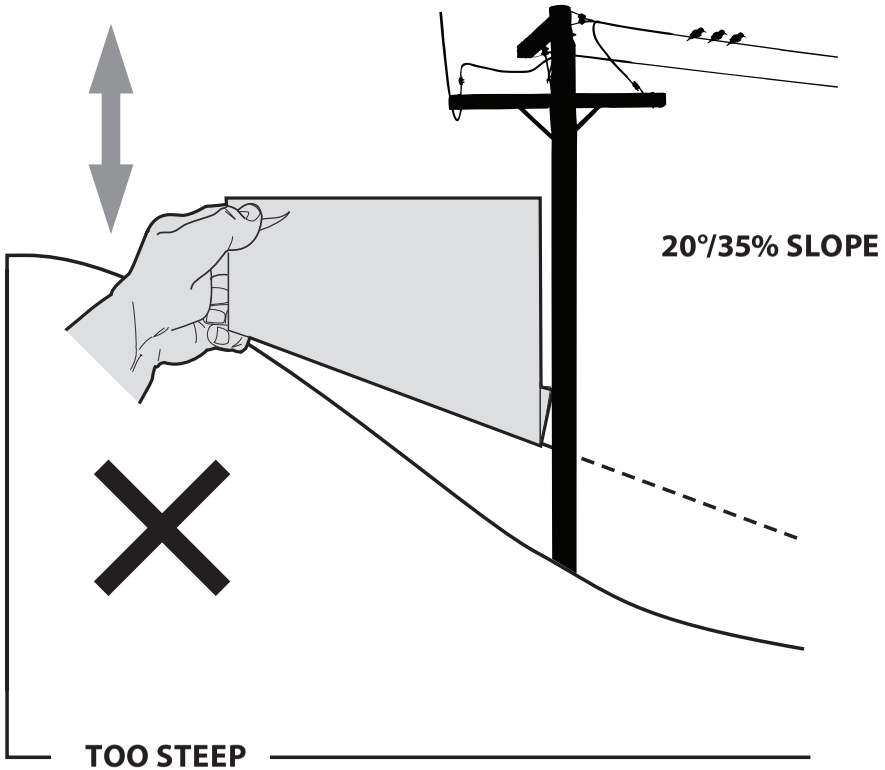
1. THERE ARE NO IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NO WARRANTY SHALL APPLY AFTER THE APPLICABLE WARRANTY PERIOD, AS SET FORTH ABOVE, AS TO THE PARTS AS IDENTIFIED. NO OTHER EXPRESS WARRANTY OR GUARANTY, WHETHER WRITTEN OR ORAL, EXCEPT AS MENTIONED ABOVE, GIVEN BY ANY PERSON OR ENTITY, INCLUDING A DEALER OR RETAILER, WITH RESPECT TO ANY PRODUCT SHALL BIND CUB CADET LLC. DURING THE WARRANTY PERIOD, THE EXCLUSIVE REMEDY IS REPAIR OR REPLACEMENT OF THE DEFECTIVE PART, AS SET FORTH ABOVE. (SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.)
2. THE PROVISIONS, AS SET FORTH HEREIN, PROVIDE THE SOLE AND EXCLUSIVE REMEDY ARISING FROM THE SALE. CUB CADET LLC SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL LOSS OR DAMAGES INCLUDING, WITHOUT LIMITATION, FOR TRANSPORTATION OR FOR RELATED EXPENSES, OR FOR RENTAL EXPENSES TO TEMPORARILY REPLACE A WARRANTED PRODUCT. (SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU.)
3. IN NO EVENT SHALL RECOVERY OF ANY KIND BE GREATER THAN THE AMOUNT OF THE PURCHASE PRICE OF THE PRODUCT SOLD. ALTERATION OF THE SAFETY FEATURES OF THE PRODUCT SHALL VOID THIS LIMITED WARRANTY. YOU ASSUME THE RISK AND LIABILITY FOR LOSS, DAMAGE, OR INJURY TO YOU AND YOUR PROPERTY, AND/OR TO OTHERS AND THEIR PROPERTY, ARISING OUT OF THE USE OR MISUSE OR INABILITY TO USE THE PRODUCT.
4. This limited warranty extends to the Initial Purchaser only and, except as otherwise stated herein, the applicable Warranty Period will begin on the original date of purchase of the Product or on the date of delivery of the Product, whichever is later. In the event that the original date of purchase of the Product is indeterminable, then the Warranty Period shall be established as beginning on the Product's date of manufacture, as determined by Cub Cadet LLC, and ending six (6) months after the applicable Product Warranty Period, as defined above. In no event shall a Product's warranty extend beyond the applicable Warranty Period.

How State Law Relates to This Warranty

This limited warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

SLOPE GAUGE





20°/35% DASHED LINE