Safe Operation Practices • Set-Up • Operation • Service • Troubleshooting

Cub Cadet®

OPERATOR'S MANUAL

Zero-Turn Rider

Pro Z 100
Lapbar

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⚠ 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.

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. 769-12164A
(March 29, 2017)

Important Safe Operation Practices

2

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!**

CALIFORNIA PROPOSITION 65

WARNING! 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.

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.

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.
This spark ignition system complies with Canadian ICES-002.

DANGER! The engine manufacturer has supplied an engine owner's manual for information regarding US Environmental Protection Agency (EPA) and California Air resources Board (CARB) regulations relating to emission control systems, maintenance, and warranty. Making any unauthorized alterations or modifications to the engine, fuel, or venting systems may violate EPA and/or CARB regulations. Further information may be obtained from the engine manufacturer.

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 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 levers 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 lever are in the neutral position before attempting to start the engine. Only start the engine from the operator's position.
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 60 years and above, are involved in a large percentage of riding 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 is 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, then have it repaired.
37. When operating this machine in the forward direction, do not allow the speed control levers to return to the neutral position on their own. Always operate them smoothly and avoid any sudden movements of the levers 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 15 degrees 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. Do not use a grass catcher on slopes steeper than 15 degrees.
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 degrees. 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 and be seriously injured or interfere with safe machine operation.
    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.

Towing

1. Do not tow heavy tow-behind attachments (e.g. loaded dump cart, lawn roller, etc.) on slopes greater than 5 degrees.
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 Machines

1. This machine is not intended for use on public roads. Machines operated on public roads must comply with state & 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 15 degrees 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 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, see 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) 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

1. 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 closes immediately.
    a. Use only approved containers.
    b. 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.
    c. When practical, remove machines 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.
    d. 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.
    e. Extinguish all cigarettes, cigars, pipes and other sources of ignition.
    f. Never fuel machine indoors or near ignition sources.
    g. Never remove fuel cap or add fuel while the engine is hot or running. Allow engine to cool at least two minutes before refueling.
    h. Never over fill fuel tank. Fill tank to no more than ½ inch below bottom of filler neck to allow space for expansion.
    i. If necessary, use a funnel to avoid spillage.
    j. Replace fuel cap and tighten securely.
    k. If fuel is spilled, wipe off the engine and equipment. Wait 5 minutes before starting the engine.
    l. 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.
    m. 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 remove the key from the ignition to prevent unintended starting.
3. Periodically check to make sure the blades come to complete stop within approximately (7) seven 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.

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 owner's manual is supplied by the engine manufacturer, and provides additional information relating to the emission system, warranty, 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.

Safety Symbols

This page 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
	READ THE OPERATOR'S MANUAL(S) Read, understand, and follow all instructions in the manual(s) before attempting to assemble and operate
	WARNING— ROTATING BLADES Do not put hands or feet near rotating parts or under the cutting deck. Contact with the blade(s) can amputate hands and feet.
	WARNING—THROWN OBJECTS This machine may pick up and throw objects which can cause serious personal injury.
	WARNING—THROWN OBJECTS This machine may pick up and throw objects which can cause serious personal injury.
	BYSTANDERS Keep bystanders, helpers, children and pets at least 75 feet from the machine while it is in operation.
	WARNING— SLOPE OPERATION Do not operate this machine on a slope greater than 15 degrees.
	DANGER — ROTATING BLADES To reduce the risk of injury, keep hands and feet away. Do not operate unless discharge cover or grass catcher is in its proper place. If damaged, replace immediately.
	DANGER — ROTATING BLADES Never carry passengers. Never carry children, even with the blades off.
	DANGER — ROTATING BLADES Always look behind and down for small children. Use slow speed.
	DANGER — ROTATING BLADES To avoid back-over accidents, keep children away from the machine while it is in operation.
	DANGER — SAFETY DEVICES Keep safety devices (guards, shields, switches, etc.) in place and working.



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!

Slope Gauge

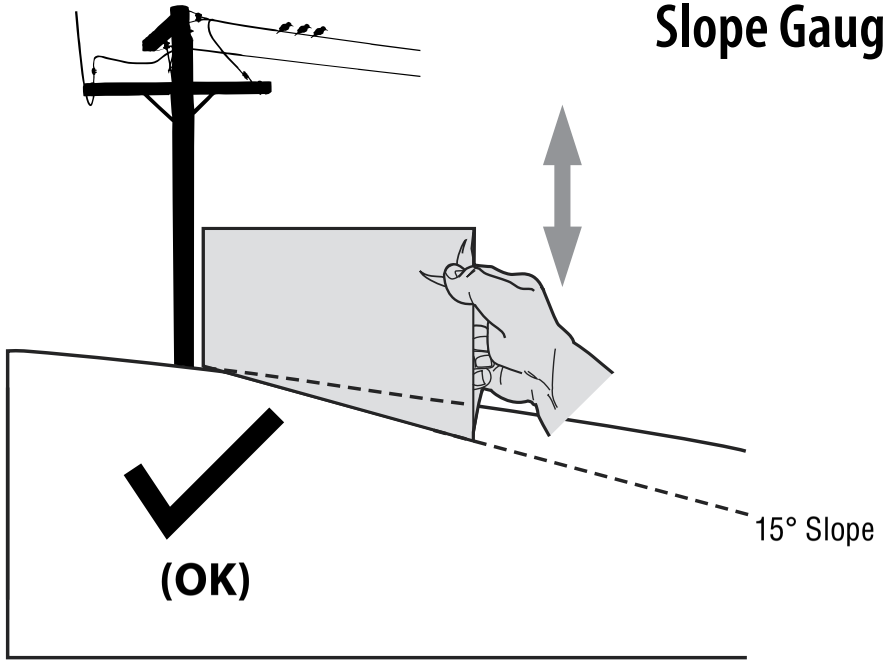


Figure 1

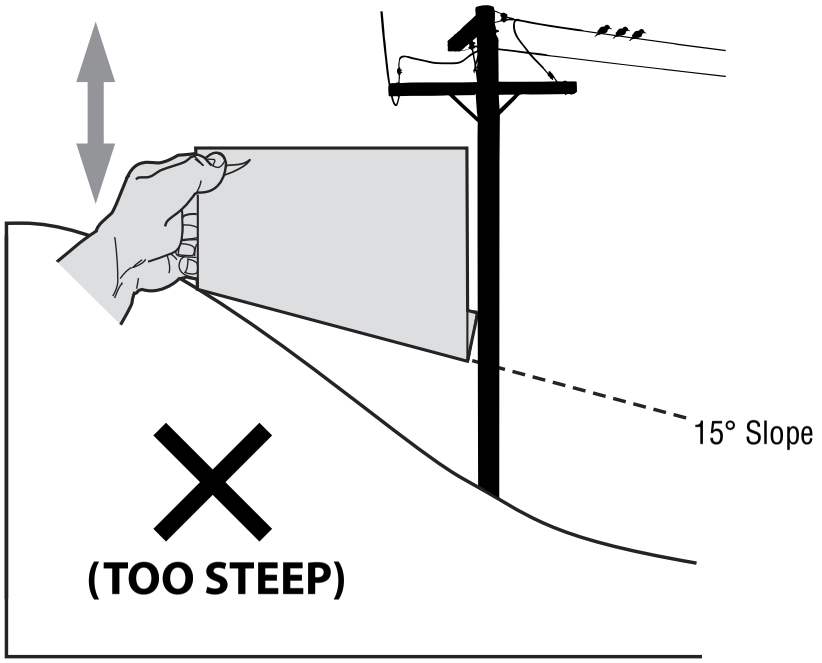


Figure 2

15° dashed line

USE THIS SLOPE GAUGE TO DETERMINE IF A SLOPE IS TOO STEEP FOR SAFE OPERATION!

To check the slope, proceed as follows:

1. Remove this page and fold along the dashed line.
2. Locate a vertical object on or behind the slope (e.g. a pole, building, fence, tree, etc.)
3. Align either side of the slope gauge with the object (See Figure 1 and Figure 2).
4. Adjust gauge up or down until the left corner touches the slope (See Figure 1 and Figure 2).
5. If there is a gap below the gauge, the slope is too steep for safe operation (See Figure 2 above).

WARNING! Slopes are a major factor related to tip-over and roll-over accidents which can result in severe injury or death. Do not operate machine on slopes in excess of 15 degrees. All slopes require extra caution. Always mow across the face of slopes, never up and down slopes.

Thank You

Thank you for purchasing this product. It was carefully engineered to provide excellent performance when properly operated and maintained.

Please read this entire manual prior to operating the equipment. It instructs you how to safely and easily set up, operate and maintain your machine. Please be sure that you, and any other persons who will operate the machine, carefully follow the recommended safety practices at all times. Failure to do so could result in personal injury or property damage.

All information in this manual is relative to the most recent product information available at the time. Review this manual frequently to familiarize yourself with the machine, its features and operation. Please be aware that this Operator's Manual may cover a range of product specifications for various models. Characteristics and features discussed and/or illustrated in this manual may not be applicable to all models. We reserve the right to change product specifications, designs and equipment without notice and without incurring obligation.

If applicable, the power testing information used to establish the power rating of the engine equipped on this machine can be found at www.opei.org or the engine manufacturer's web site.

If you have any problems or questions concerning the machine, phone your local authorized service dealer or contact us directly. We want to ensure your complete satisfaction at all times.

Throughout this manual, all references to *right* and *left* side of the machine are observed from the operating position.

Contents of Carton

- Tractor (1)
- Operator's Manual (1)
- Engine Operator's Manual (1)

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.

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

Tractor Preparation

Lubrication & Grease Points

Before operating the tractor, refer to the Service section of this manual to check the Lubrication & Grease Points. Grease and lubricate if necessary.

Manually Moving the Tractor

1. Engage the transmission bypass rods, one on each side of the tractor, to move the tractor manually without starting it. The transmission bypass rods are located on the rear of the tractor, just inside each rear wheel. Place the lapbars in the neutral (fully inward) position to disengage the parking brake. Engage the bypass rods by pulling each one back (a) and hooking it into the slot (b) to lock it into place. See Figure 2-1.

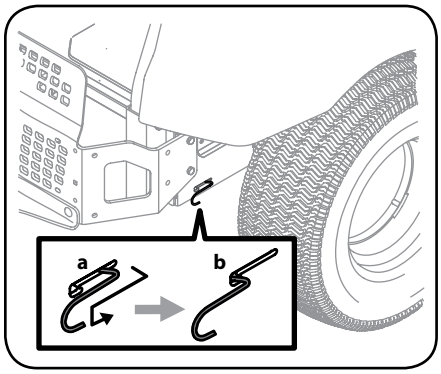


Figure 2-1

2. Disengage the bypass rods by reversing steps a & b after moving the tractor. See Figure 2-1.

Position Drive Control Levers (if necessary)

The drive control levers of the tractor are lowered for shipping purposes. The levers must be repositioned to operate the tractor. To reposition the control levers for operation, proceed as follows:

1. Loosen the control lever knobs on the side of the drive control levers. See Figure 2-2.

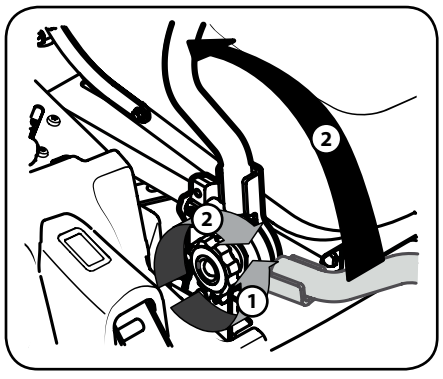


Figure 2-2

2. Lift and swing that control lever upward into the desired position and secure in place by tightening the control lever knob. See Figure 2-2.
3. Note the relative position of the control lever to the pivot bracket, then repeat the previous steps to reposition the other control lever in approximately the same position.
4. Refer to "Adjusting the Drive Control Levers" on page 20 for instructions on the final adjustment of the levers.

Positioning the Roll Over Protective System (ROPS) (If necessary)

The ROPS is shipped folded down for shipping purposes. To place the ROPS into the operation position proceed as follows.

1. Remove the left and right clevis pins and cotter pins securing the ROPS in position and rotate it so that they allow the ROPS to move freely. See Figure 2-3.

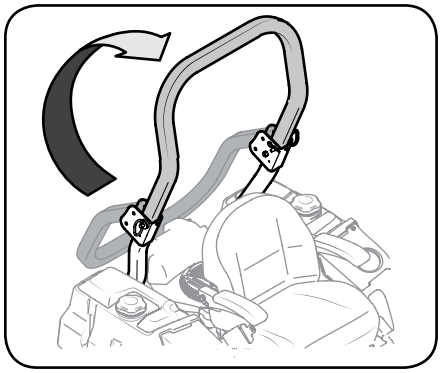


Figure 2-3

2. Rotate to ROPS forward and re-insert the clevis pins and cotter pins to secure the ROPS in the operating position.

Adjusting the Seat

This tractor 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 seat can be adjusted forward and back and the arm rest can be adjusted up and down.

To move the seat forward or back, locate the seat adjustment rod under the seat. Push the rod to the left and slide the seat forward or back into the desired position and release the rod when the seat is in the desired position. See Figure 2-4.

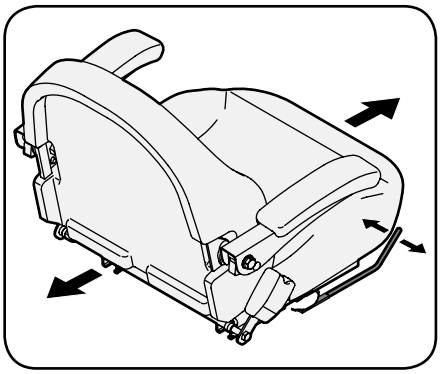


Figure 2-4

To adjust the arm rest, lift the arm rest and rotate the block adjustment into one of the four positions (0-3, 0 being the lowest and 3 being the highest.) and lower the arm rest. See Figure 2-5.

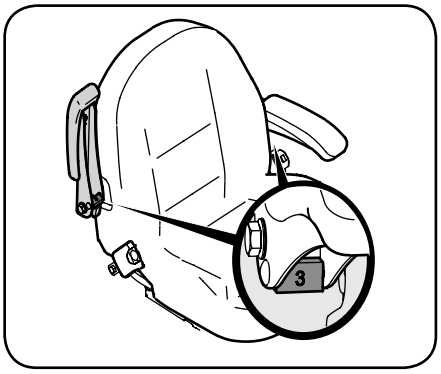


Figure 2-5

The mechanical suspension mechanism (if equipped) 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 counter-clockwise to decrease. See Figure 2-6.

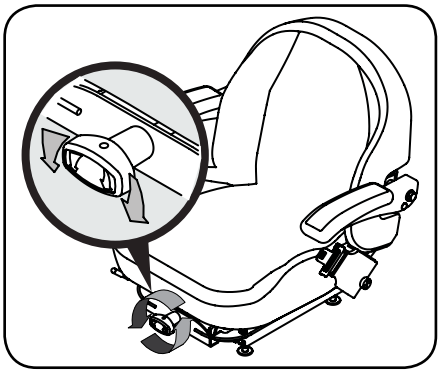


Figure 2-6

NOTE: The seat base must be secured by the latch, otherwise, the seat assembly could tilt forward. The Operator Presence Sensor must be connected to the electrical wiring harness.

Connecting the Battery Cables

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 its terminal first, followed by the NEGATIVE (Black) wire.

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:

NOTE: The positive battery terminal is marked Pos. (+). The negative battery terminal is marked Neg. (–).

> ***NOTE:*** If the positive battery cable is already attached, skip ahead to step 2.

1. Remove the plastic cover, if present, from the positive battery terminal and attach the red cable to the positive battery terminal (+) with the bolt (a) and hex nut (b). See Figure 2-7.

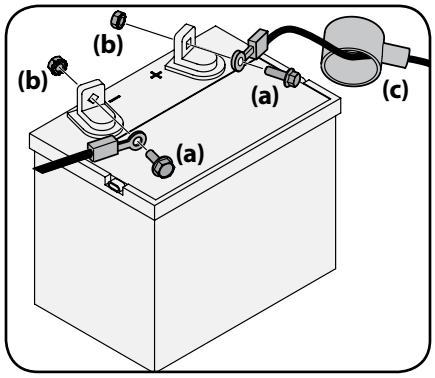


Figure 2-7

2. Remove the plastic cover, if present, from the negative battery terminal and attach the black cable to the negative battery terminal (–) with the bolt (a) and hex nut (b). See Figure 2-7.
3. Position the red rubber boot (c) over the positive battery terminal to help protect it from corrosion.

> ***NOTE:*** If the battery is put into service after the date shown on top/side of battery, charge the battery as instructed in "Charging the Battery" on page 23 prior to operating the tractor.

Transmission Oil Expansion Reservoir

The transmission oil expansion reservoir is connected by hoses to the RH and LH transmission assemblies, and is located behind the seat box. 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 no higher than approximately ¼" (the "Full Cold" mark) above the bottom of the reservoir. See Figure 2-8.

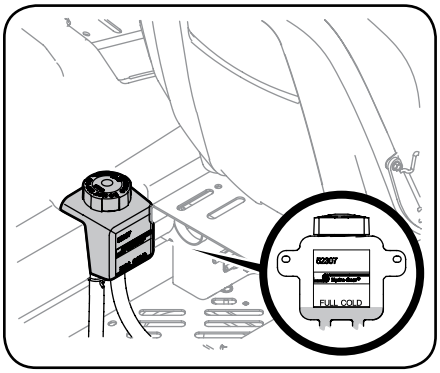


Figure 2-8

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

Install the Rear Hitch Bracket (If necessary)

1. Remove the hex flange screws (a) and flange lock nuts (b) that secure the hitch bracket (c) to the bumper bracket. See Figure 2-9.

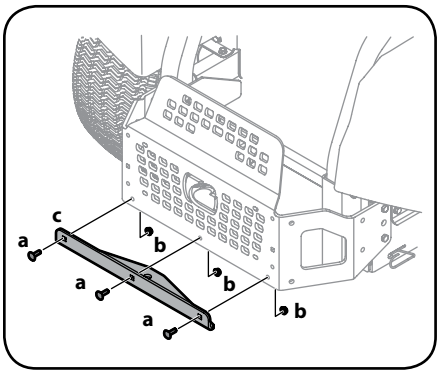


Figure 2-9

2. Install the hitch bracket (c) as shown in Figure 2-10 and secure with the hex flange screws (a) and flange lock nuts (b) removed in step 1.

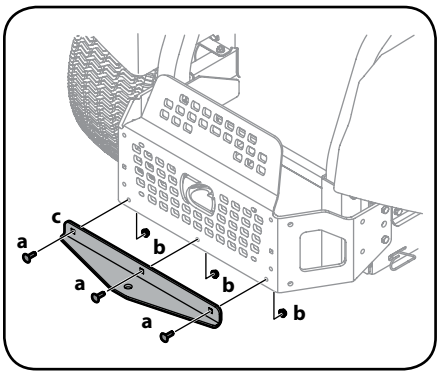
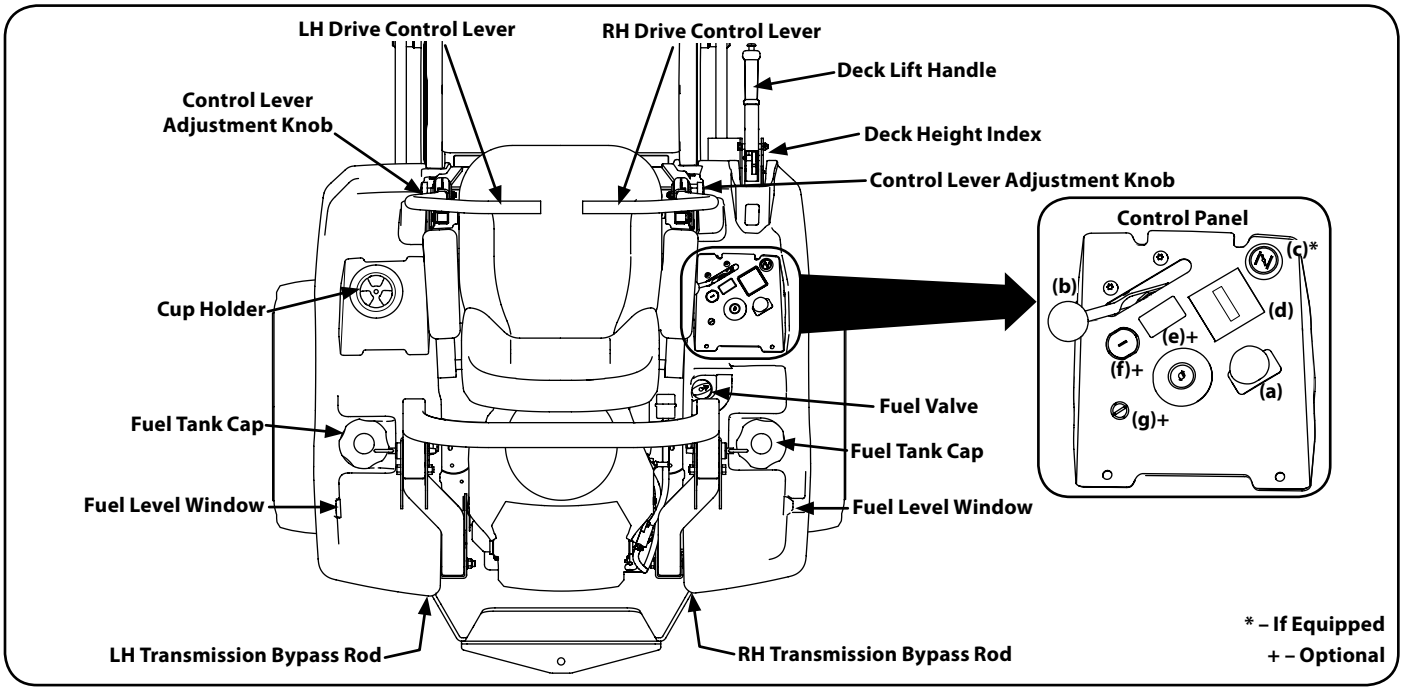


Figure 2-10



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

NOTE: References to LEFT, RIGHT, FRONT, and REAR indicate that position on the tractor when facing forward while seated in the operator's seat.

RH and LH Drive Control Levers

The RH and LH control levers are located on each side of the operator's seat. These hinged levers pivot outward to open space to permit the operator to either sit in the tractor seat, or to dismount the tractor. The levers must be fully opened out and in the neutral position to start the tractor engine. When the levers are fully outward, the parking brake is also engaged.

Each lever controls the respective RH or LH transmission. Consequently, these levers control all of the movements of the tractor. Driving and steering utilizing these control levers is quite different from conventional tractors, and will take some practice to master. Refer to Operation for instructions on using the control levers.

Control Lever Knobs

The control lever knobs are located near the base of RH and LH control levers. The knobs allow the levers to be adjusted forward or rearward. Refer to Maintenance & Adjustments section for instructions on using the control levers knobs.

Ignition Switch



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

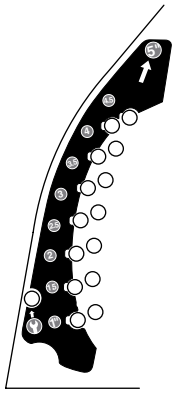
STOP — The engine and electrical system are turned off.

ON — The tractor 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 tractor is not in use.

Deck Height Index



The deck height index consists of several holes located on the front of the RH console. Each hole corresponds to a ¼" change in the deck height position ranging from 1" at the lowest notch to 5" at the highest notch. The highest notch is also the transport position and the lowest position is the deck removal/installation position .

NOTE: Do not cut grass in the deck removal/installation position . Doing so is detrimental to the belt life.

Deck Lift Handle

The deck lift handle is located on the front of the RH console, and is used to raise and lower the mower deck.

Depress the button on the end of the handle and push downward to lower the deck, or pull upward to raise the deck. When the desired height is attained, secure the pin in the desired index hole and release the button on the handle.

NOTE: Make certain the deck is secured and the pin is fully inserted into the deck height index. The pin is keyed to help keep it in place and fits into the slotted holes on the deck height index.

NOTE: The deck lift handle must always be above the pin, never hang the deck lift handle from the pin when mowing.

Transmission Bypass Rods

The transmission bypass rods (one for each the RH and LH transmission) are located on the rear of the tractor, just inside each rear wheel.

When engaged and the lapbars fully inward in the neutral position disengaging the oparking brake, the two rods open a bypass within the hydrostatic transmissions, which allows the tractor to be pushed short distances by hand. Refer to the Assembly & Set-Up section for instructions on using the bypass feature.

CAUTION: Never tow your tractor. Towing the tractor with the rear wheels on the ground may cause severe damage to the transmissions.

Cup Holder

The cup holder is located to the left of the operator's seat on the LH console.

Seat Adjustment Lever (Not Shown)

The seat adjustment lever is located below the front/right of the seat. The lever allows for adjustment forward or backward of the operator's seat. Refer to the Assembly & Set-Up section for instructions on adjusting the seat position.

Fuel Tank Caps

The fuel tank caps are located near the middle of the RH and LH console. Turn the fill cap to remove. The fuel cap is tethered to the tractor to prevent its loss. Do not attempt to remove the cap from the tractor. Fill tank to the bottom of the filler neck, allowing some space in the tank for fuel expansion. Do not overfill the tank.

Turn clockwise until it clicks to tighten. Always re-install the fuel cap tightly onto the fuel tank after removing.

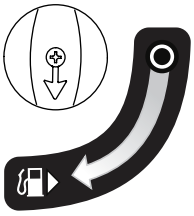
WARNING! Never fill the fuel tank when the engine is running. If the engine is hot from recently running, allow to cool for several minutes before refueling. Highly flammable gasoline could splash onto the engine and cause a fire.

Fuel Level Windows

The fuel level windows are located on the outside of the LH and RH consoles and shows the level of fuel in the gas tank.

Fuel Valve





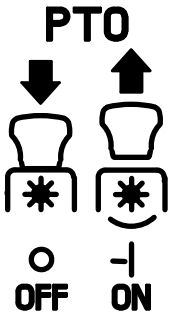
The fuel valve is located on the inner side of the RH console. The valve switches the fuel flow from the right and left tank and also can shut off fuel flow to the engine. Rotate the valve to the rear to open the flow from the right fuel tank. Rotate the valve to the front to open the flow from the left tank. To shut off fuel from both tanks rotate the valve towards the right of the tractor and the OFF O position.

Transmission Oil Expansion Reservoir

The transmission oil expansion reservoir is connected by hoses to the RH and LH transmission assemblies, and is located behind the seat box. The function of the reservoir is to hold the natural expansion of transmission oil that occurs as the transmission warms up during operation. See the Maintenance & Adjustments section for more information on the transmission oil expansion reservoir.

Control Panel

PTO Switch (a)



The PTO (Power Take-Off) switch is located on the RH console to the left of the hour meter/indicator panel.

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

The PTO switch must be in the "disengaged" position when starting the engine.

Throttle Control (b)



The throttle control is located on the RH console. When set in a given position, a uniform engine speed will be maintained.

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

Pull the throttle control handle rearward to decrease the engine speed

Choke Control (If Equipped) (c)



The choke control is located on the RH console. The choke control determines the position of the engine choke. Pull the knob out to choke the engine; push the knob in to open the choke.

LCD Service Minder & Hour Meter (d)

When the ignition key is rotated out of the STOP position but not into the START position, the LCD Service Minder and Hour Meter will briefly display the battery voltage, followed by the tractor's accumulated hours.

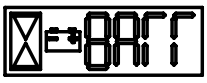
NOTE: Hours of tractor operation are recorded any time the ignition key is rotated out of the STOP position, regardless of whether the engine is started.

The LCD Service Minder will remind the operator of maintenance intervals for changing the engine oil, air filter service, low engine and low battery warnings.

Change Oil

The LCD will display the letters "CHG", followed by the letters "OIL", followed by the letters "SOON", then finally followed by the meter's accumulated time. "CHG/OIL/SOON/TIME" will alternate on the display for 7 minutes after the meter reaches 50 hours. This oil service minder interval will occur every 50 hours. Before the interval expires, change the engine oil as instructed in the Maintenance section of this Operator's Manual.

Low Battery



At startup, the battery voltage is briefly displayed then changes to accumulated hours. The letters "LO" will display followed by the letters "BATT" and then followed by the meter's accumulated time. "LO/BATT/TIME" is displayed on the LCD when the voltage drops below 11.5 volts. When this occurs, the battery is in need of a charge or the engine's charging system is not generating sufficient amperage. Charge the battery as instructed in the Service section of this manual or have the charging system checked by your local service dealer.

Air Filter Service



The letters "CLN" will display, followed by the letters "AIR", followed by "FILT", then followed by the meter's accumulated time. "CLN/AIR/FILT/TIME" will alternate on the display for 7 minutes after the meter reaches 25 hours. This air filter service minder time interval will be every 25 hours. On intervals that are common with oil service, the oil message will be displayed first followed by the air filter message.

Light Switch Receptacle (e)

Optional light switch available. See page 26.

12V Outlet Receptacle (f)

Optional light switch available. See page 26.

Power Assist Bagger Receptacle (g)

Optional light switch available. See page 26.

General Safety

- RECEIVE INSTRUCTION — Entirely read this Operator's Manual. Learn to operate this machine SAFELY. Do not risk INJURY or DEATH. Allow only those who have become competent in its usage to operate this tractor.
- Before starting the engine or beginning operation, be familiar with the controls. The operator should be in the operator's seat. The PTO switch must be in the disengaged position and the RH and LH drive control levers moved to the neutral position engaging the parking brake.
- Keep all shields in place. Keep away from moving parts.
- NO RIDERS! Keep all people and pets a safe distance away. Look behind and down to both sides of the tractor before and while backing up.
- DO NOT direct the mower discharge at people. Never walk or stand on the discharge side of the mower when the engine is running. Turn OFF the PTO if another person approaches while you are operating the mower.

- Avoid slopes where possible. Never operate on slopes greater than 15°. Slopes with a greater incline present dangerous operating conditions. Tractors can be rolled over. Always mow across slopes, never up and down the slope. Avoid turning downhill if possible, start at the bottom and work up to the top. Use extra care and go slowly when turning downhill. Control the speed and direction of the zero turn machine "primarily" with the speed/directional control (lap bar) of the downhill side of the machine, i.e., maintain the uphill side lap bar "essentially" in a fixed position.
- Before leaving the operator's seat: Shut OFF the PTO, move the RH and LH drive control levers fully outward in the neutral/parking brake engaged position, shut OFF the engine and remove the ignition key. Wait for all movement to stop before servicing or cleaning.
- Operate the drive control levers smoothly and avoid any sudden movements of the levers when starting and stopping. Keep a firm grip on the control levers.
- Be careful when operating near gravel paths and roadways. Stop the blades and tractor motion and wait for vehicles to pass before operating along the road.
- Do not operate the tractor with the mower deck removed. Removal of the deck will change the balance of the tractor, and could contribute to a tractor rollover.
- Avoid operation on traction surfaces that are unstable; use extreme caution if the surface is slippery. Always remove debris and other objects from the area to be mowed — debris and loose grass will reduce traction.
- Mow only in daylight or good artificial light.
- Watch for holes, sprinkler heads, and other hidden hazards.
- Avoid driving too close to trees, creeks, ditches, sand traps, and other obstacles.
- Slow down before turning and come to a complete stop before any zero turn maneuver.
- If you hit a solid object while mowing, turn OFF the PTO, place the steering levers fully outward in the neutral/parking brake engaged position opened-out position, move the throttle to slow, shut OFF the engine, and take the key from the ignition switch. Inspect for damage. Repair the damage. Make sure the blades are in good condition and that the blade bolts are tight before restarting the engine.
- Do not stop the tractor or park the tractor over combustible materials such as dry grass, leaves, debris, etc.
- Keep the mower and especially the engine and hydraulic components clean and free of grease, grass, and leaves to reduce the chance of fire and permit proper cooling.
- Do not fill the fuel tank when the engine is running or while the engine is hot. Allow the engine several minutes to cool before refueling. Tighten the fuel cap securely.

Checking the Safety Interlock Circuits

Periodically check the safety interlock circuits to ensure they are working properly. If a safety circuit is not working as designed, contact your Cub Cadet dealer to have the tractor inspected. DO NOT operate the tractor if any safety circuit is not functioning properly. To check the safety circuits, proceed as follows:

1. Pull the PTO switch upward to the engaged position. Momentarily turn the ignition switch to the start position; the engine should not crank.
2. Move both control levers fully inward in the neutral position; then lift upward from the operator's seat. The engine should stop.
3. With both control levers fully outward in the neutral/parking brake engaged position, engage the PTO. Lift upward from the operator's seat; the engine should stop.

Before Operating Your Tractor

1. Before you operate the tractor, 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 tractor efficiently.
2. Fill the fuel tank with only clean, fresh, unleaded gasoline with a pump sticker octane rating of 87 or higher and 10% ethanol maximum. When the fuel reaches one inch from the top of the tank, stop. DO NOT OVERFILL. Space must be left for expansion.
3. Unleaded gasoline is recommended because it leaves less combustion chamber deposits and reduces harmful exhaust emissions. Leaded gasoline is not recommended and must not be used where exhaust emissions are regulated.

   NOTE: Purchase gasoline in small quantities. Do not use gasoline left over from the previous season, to minimize gum deposits in the fuel system.
4. Gasohol (up to 10% ethyl alcohol, 90% unleaded gasoline by volume) is an approved fuel. Other gasoline/alcohol blends are not approved.
5. Methyl Tertiary Butyl Ether (MTBE) and unleaded gas blends (up to a maximum of 15% MTBE by volume) are approved fuels. Other gasoline/ether blends are not approved.
6. Check the engine oil level. Refer to the Engine Operator's Manual for instructions on checking the engine oil level.
7. Clean the air cleaner element if necessary.
8. Check the tire inflation pressures. See the tire side wall for proper inflation pressures.

   NOTE: New tires are overinflated in order to properly seat the bead to the rim.
9. Check that all nuts, bolts and screws are tight.
10. 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.
11. 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 ¼" lower than the rear of deck. If deck needs to be leveled, refer to "Deck Leveling" on page 21.
12. Lubricate all pivot points listed in the "Lubrication" section on page 18.
13. Adjust the seat for operator's maximum comfort, visibility and for maintaining complete control of the tractor.

Safety Interlock System

This tractor is equipped with a safety interlock system for the protection of the operator. If the interlock system should ever malfunction, do not operate the tractor. Contact your authorized Cub Cadet Dealer.

- The safety interlock system prevents the engine from cranking or starting unless the RH and LH drive control levers are moved fully outward in the neutral position — which engages the parking brake — and the PTO is disengaged.
- The safety interlock system will shut off the engine if the operator leaves the seat before the RH and LH drive control levers are fully outward in the neutral position engaging the parking brake.
- The safety interlock system will shut off the engine if the operator leaves the seat with the PTO engaged, regardless of whether the RH and LH drive control levers are fully outward in the neutral position engaging the parking brake.

  NOTE: The PTO switch must be moved to the "OFF" position to restart the engine.

Starting the Engine

WARNING! This tractor is equipped with a safety interlock system designed for the protection of the operator. Do not operate the tractor 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 tractor seat when starting the engine.

1. Open the fuel shut-off valve by selecting the right or left tank.
2. Operator must be sitting in the tractor seat with the RH and LH drive control levers fully outward in the neutral position engaging the parking brake.
3. Make certain the PTO switch is in the DISENGAGED (down) position.
4. Move the throttle control to the FAST position and the choke control (If Equipped) into the CHOKE position.

   NOTE: If the engine is warmed up, it may not be necessary to choke the engine.
5. 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 STOP 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.
6. Once the engine warms up, push the choke knob down into the "OFF" position.

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 instructions above for Starting the Engine on page 14.

Using Jumper Cables To Start Engine

WARNING! Batteries contain sulfuric acid and produce explosive gasses. 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 tractor must be started, the aid of a booster battery will be necessary. Connect the booster battery as follows:

1. Connect the end of one cable to the disabled tractor 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 other cable to the booster battery's negative terminal; then connect the other end of that cable to the frame of the disabled tractor, as far from the battery as possible.
3. Start the disabled tractor following the normal starting instructions; then disconnect the jumper cables in the exact reverse order of their connection.
4. Have the tractor'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 "OFF" (down) position.
2. Move RH and LH drive control levers fully outward in the neutral position engaging the parking brake.
3. Move the throttle control to the FAST position.
4. Turn the ignition key to the STOP position and remove the key from the ignition switch.

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

Practice Operation (Initial Use)

Operating a zero-turn tractor is not like operating a conventional type riding tractor. Although and because a zero turn tractor is more maneuverable, getting used to operating the control levers takes some practice.

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

Carefully move (or have moved) the tractor to the practice area. When performing the practice session, the PTO should not be engaged. While practicing, operate the tractor at approximately ½-¾ throttle and at less than full speed in both forward and reverse.

Use protective equipment for eyes, hands, hearing, feet, legs, head and other areas of the body if needed — safety eye glasses, gloves, earplugs, boots, hats, etc.

WARNING! Hearing Protection is required for all operator exposure exceeding two (2) hours.

Carefully practice maneuvering the tractor using the instructions in the following section "Driving the Tractor" on page 14. Practice until you are confident that you can safely operate the tractor.

Driving the Tractor

WARNING! Avoid sudden starts, excessive speed and sudden stops.

1. Adjust the operator's seat to the most comfortable position that allows you to operate the controls. See "Adjusting the Seat" on page 9.
2. Move the RH and LH drive control levers inward in the neutral position. Refer to Figure 3-1.

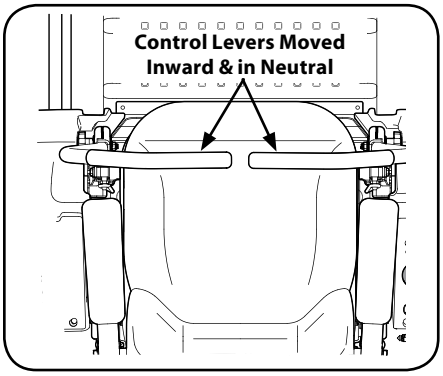


Figure 3-1

NOTE: If the control levers are not even in the neutral position, refer to "Adjusting the RH & LH Drive Control Levers" on page 20 for instructions to adjust the levers so that they are even.

3. Move the throttle control to the FAST position.

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

WARNING! Always maintain a firm grip on the control levers. DO NOT release the control levers to slow or stop the tractor; move levers to neutral position using your hands.

4. To drive the tractor, firmly grasp the respective drive control levers with your right and left hands and continue with Driving the Tractor Forward.

Driving the Tractor Forward

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

1. Slowly and evenly move both drive control levers forward. The tractor will start to move forward. See Figure 3-2.

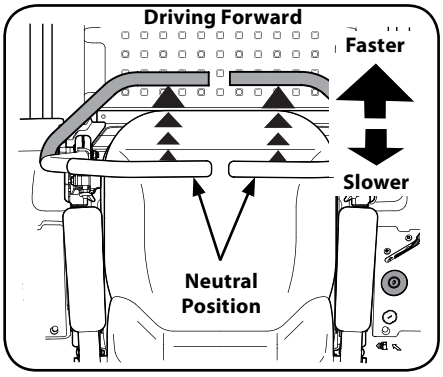


Figure 3-2

2. As the control levers are pushed farther forward the speed of the tractor will increase.
3. To slow the tractor move the controls lever rearward to attain the desired speed, or move the levers to the neutral position to stop the tractor.

WARNING! Always maintain your grasp on the drive control levers. Do not release the levers to slow the tractor or to return to neutral.

Turning the Tractor While Driving Forward

WARNING! When reversing the direction of travel, we recommend performing gradual 'U' turns where possible. Sharper turns increase the possibility of turf defacement, and could affect control of the tractor. ALWAYS slow the tractor before making sharp turns.

To turn the tractor while driving forward, move the control levers as necessary so that one lever is rearward of the other. The tractor will turn in the direction of the rearward control lever.

1. To turn to the left, move the left drive control lever rearward of the right lever. See Figure 3-3.

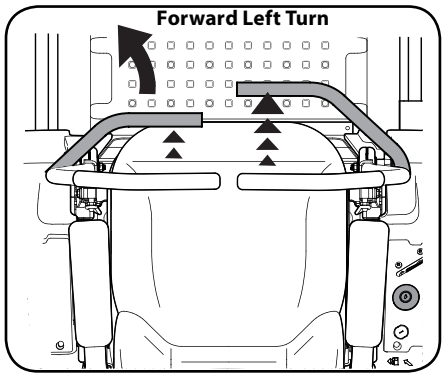


Figure 3-3

2. To turn to the right, move the right drive control lever rearward of the left lever. See Figure 3-4.

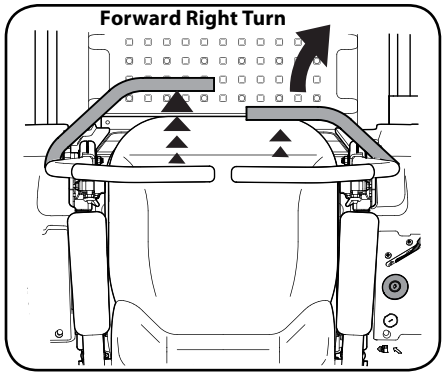


Figure 3-4

3. The greater the fore-to-aft distance between the two levers, the sharper the tractor will turn.
4. To execute a "pivot turn," move the turn side drive control lever to the neutral position, while moving the other control lever forward.

NOTE: Making a "pivot turn" on grass will greatly increase the potential for defacement of the turf.

Driving the Tractor In Reverse

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

1. Slowly and evenly move both drive control levers rearward. The tractor will start to move in the reverse direction. See Figure 3-5.

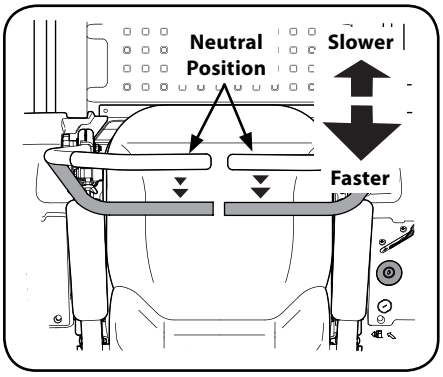


Figure 3-5

2. As the control levers are pushed farther rearward the speed of the tractor will increase.
3. To slow the tractor move the controls lever forward to attain the desired speed, or move the levers to the neutral position to stop the tractor.

Turning While Driving Rearward

To turn the tractor while driving rearward, move the control levers as necessary so that one lever is forward of the other. The tractor will turn in the direction of the forward control lever.

1. To turn to the left while traveling in reverse, move the left drive control lever forward of the right lever. See Figure 3-6.

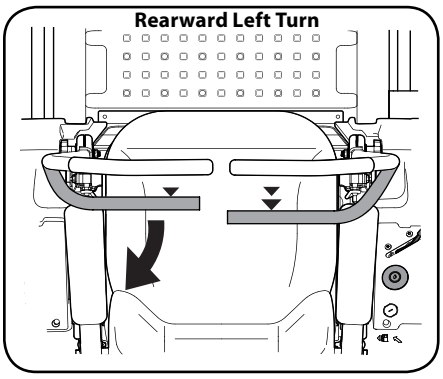


Figure 3-6

2. To turn to the right while traveling in reverse, move the right drive control lever forward of the left lever. See Figure 3-7.

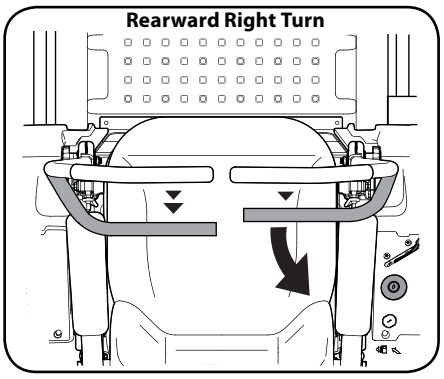


Figure 3-7

3. The greater the fore-to-aft distance between the two levers, the sharper the tractor will turn.
4. To execute a "pivot turn," move the turn side drive control lever to the neutral position, while moving the other control lever rearward.

   NOTE: Making a "pivot turn" on grass will greatly increase the potential for defacement of the turf.

Executing a Zero Turn

WARNING! When executing a zero turn, the tractor MUST BE STOPPED. Executing a zero turn while the tractor is moving can significantly reduce your control of the tractor and will cause severe turf defacement to occur.

1. Stop the forward or reverse motion of the tractor by moving the two drive control levers to neutral.
2. To turn clockwise, move the left control lever forward while simultaneously moving the right control lever rearward. See Figure 3-8.

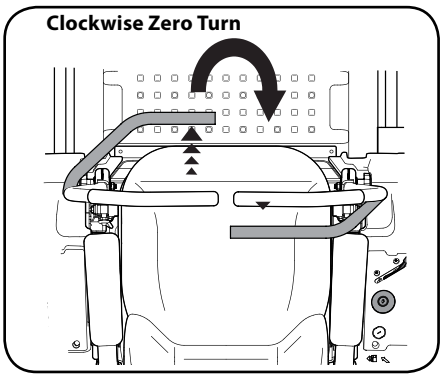


Figure 3-8

3. To turn counter-clockwise, move the right control lever forward while simultaneously moving the left control lever rearward. See Figure 3-9.

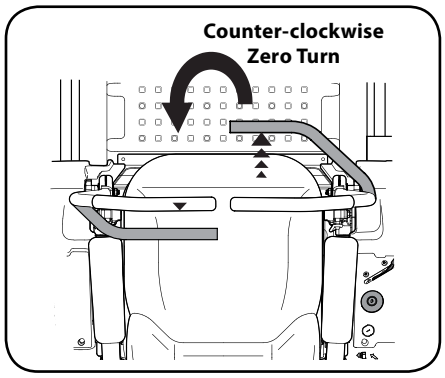


Figure 3-9

Executing a "Y" Manuever

For low traction conditions, follow these procedures for zero turns (the "Y-manuever"):

To turn clockwise (front of machine moves toward RIGHT) when traveling FORWARD:

1. Come to a stop.
2. Slowly move both lap bars rearward (no more than ½ maximum reverse speed) to initiate REVERSE travel,
3. Slowly move the LEFT lap bar forward while maintaining the RIGHT lap bar in the rearward travel position.
4. To stop the turn and re-initiate FORWARD travel, slowly move the RIGHT lap bar from the REVERSE travel position to a FORWARD travel position equal to that of the LEFT lap bar.
5. For counter-clockwise turns, reverse the above procedure.

Stopping the Tractor

1. Move both drive control levers to the neutral position to stop the motion of the tractor.
2. Push the PTO switch downward to the disengaged position.
3. Use the deck lift handle to raise the deck to its highest position by depressing the button at the end of the handle and pulling upwards. Make sure the latch engages on the pin. See Figure 3-10.

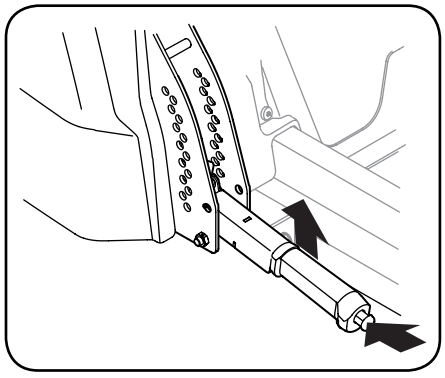


Figure 3-10

4. If dismounting the tractor, move the drive control handles fully outward in the neutral position engaging the parking brake, move the throttle control lever to the FAST position, turn the ignition switch to STOP and remove the ignition key from the switch.

WARNING! Do not leave the seat of the tractor without disengaging the PTO, moving drive control levers fully outward in the neutral position engaging the parking brake. If leaving the tractor unattended, turn the ignition key OFF and remove.

Driving On Slopes

Refer to the slope gauge in the Safe Operation Section on page 6 to help determine slopes where you may operate safely.

WARNING! Do not operate on inclines with a slope in excess of 15 degrees (a rise of approximately 2-½ feet every 10 feet). The tractor could overturn and cause serious injury.

1. Always drive across slopes, never up and down. Control the speed and direction of the tractor using primarily the control lever on the downhill side of the tractor, with the uphill control lever remaining essentially in a fixed position.
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

Operate the PTO clutch as follows:

NOTE: During your units initial break-in period, in order to engage the PTO and avoid engine stall, allow the engine to warm before engaging the PTO. Break-In period varies depending on your engine.

1. Move the throttle control lever to the FAST position.
2. Pull the PTO switch upward to the ENGAGED position.
3. The operator must remain in the tractor seat at all times. If the operator should leave the seat without disengaging the PTO, the tractor'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. Mow across slopes, not up and down. If mowing a slope, start at bottom and work upward to ensure turns are made uphill.
2. On the first pass pick a point on the opposite side of the area to be mowed.
3. Move the throttle control to the FAST position and engage the PTO.
4. Lower the mower deck to the desired height setting using the deck lift handle.
5. Slowly and evenly push the RH and LH drive control levers forward to move the tractor forward, and keep the tractor headed directly toward the alignment point.

   NOTE: The speed of the tractor will affect the quality of the mower cut. Mowing at full speed will adversely affect the cut quality. Control the ground speed with the control levers.
6. 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.
7. Align the mower with an edge of the mowed strip and overlap approximately 3".
8. Direct the tractor on each subsequent strip to align with a previously cut strip.
9. 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 and raise the deck to the highest position before crossing.

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

- Place the control levers in the neutral/parking brake engaged position.
- Shut engine off and remove the ignition key.
- Doing so will minimize the possibility of having your lawn "browned" by hot exhaust from your tractor's running engine.

Deck Lift Lever

To change the height of the deck proceed as follows:

1. Depress the button at the end of the deck lift lever (a), raise it into the transport/highest mowing position, hang the top hook from the upper spacer on the deck height index bracket (b) and then remove the pin (c). See Figure 3-11.

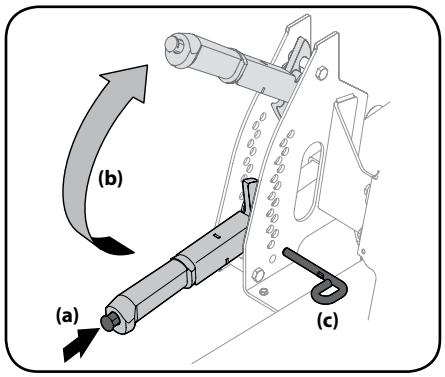


Figure 3-11

2. Insert the pin into the desired deck height best suited for your application (d). Turn the pin to lock it into place (e). See Figure 3-12.

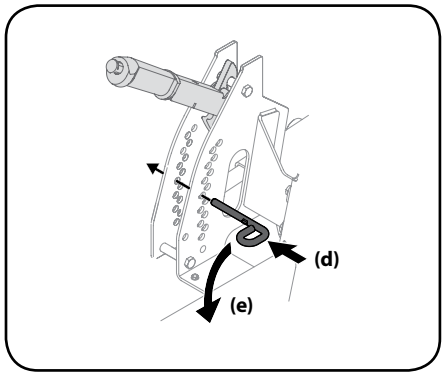


Figure 3-12

3. Depress the button at the end of the handle lift lever (f) and raise it slightly to unhook it from the upper spacer on the deck height index bracket and carefully lower into the desired position (g). See Figure 3-13.

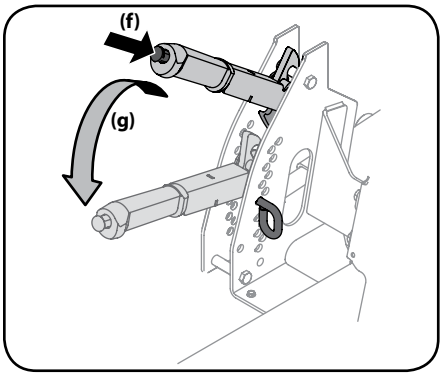


Figure 3-13

NOTE: Make certain the deck is secured and the pin is fully inserted into the deck height index. The pin is keyed to help keep it in place and fits into the slotted holes on the deck height index.

NOTE: The deck lift handle must always be above the pin, never hang the deck lift handle from the pin when mowing.

Maintenance Schedule

	Before Each use	Every 10 Hours	Every 25 Hours	Prior to Storing
Check Engine Intake Screen/Cover	✓			
Clean Transmission Cooling Slots	✓			
Clean Battery Terminals		✓		✓
Clean Engine Cooling Fins			✓	✓
Lube Deck Spindles			✓	✓
Lube Deck Wheels			✓	✓
Lube Front Wheel Bearings			✓	✓
Lube Caster Pivots			✓	✓
Lube Pivot Points & Linkage				✓

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

Maintenance

WARNING! Before performing any maintenance or repairs, disengage the PTO, move the drive control levers fully outward in the neutral position engaging the parking brake, stop the engine and remove the key to prevent unintended starting.

Lubrication

- Using a pressure lubricating gun, lubricate the front caster wheel axles with Cub Cadet 251H EP grease after every 10 hours of service.
- Periodically lubricate all other pivot points with a quality lubricating oil.

Engine

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

Changing the Engine Oil

WARNING ! If the engine has been recently run, the engine, muffler and surrounding metal surfaces will be hot and can cause burns to the skin. 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. See Figure 4-1.

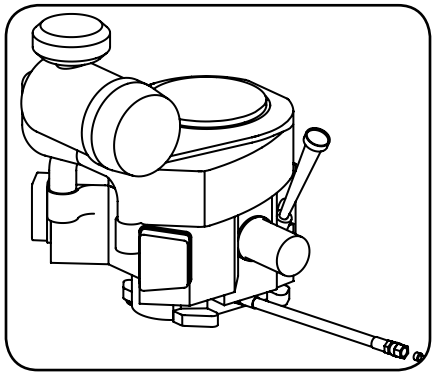


Figure 4-1

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. See Figure 4-1. Drain the engine oil into the collection container.
6. 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.
7. Refill the engine with new oil. Refer to the Engine Operator's Manual for information regarding the volume and weight of engine oil.
8. Place the hose back into the clip securing it to the frame.

Changing the Oil Filter

The oil filter is located on a bracket to the inside of the RH console and next to the engine. To change the oil filter, See Figure 4-2 and proceed as follows:

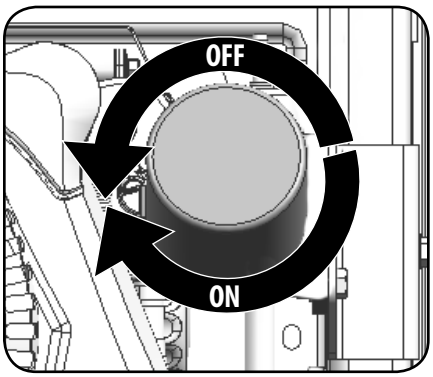


Figure 4-2

Place a cloth under the bracket and rotate the oil filter counterclockwise to remove from the oil filter adapter. To replace the oil filter, using your finger place a thin coating of oil on the O-ring and then place it onto the oil filter adapter and turn clockwise until secure.

Lubrication

WARNING! Before lubricating, repairing, or inspecting, always disengage PTO, set parking brake, stop engine and remove key to prevent unintended starting.

Pivot Points & Linkage

Lubricate all the pivot points on the drive system, parking brake and lift linkage at least once a season with light oil.

Wheels & Caster Pivots

Each of the front wheel axles, rims and caster pivots are equipped with grease fittings (a). Lubricate with a No. 2 multi-purpose grease applied with a grease gun after every 25 hours of tractor operation.

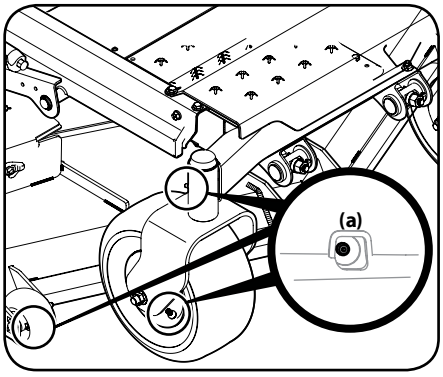


Figure 4-3

Cleaning & Lubricating the Spindle Pulleys

Once a month remove the belt covers to remove any accumulation of grass clippings from around the spindle pulleys and V-belt. Clean more often when mowing tall, dry grass.

Every 25 hours, lubricate the deck spindles. Remove the wing knobs (a) to remove the belt covers (b), locate the spindle lube fitting and using a grease gun, lubricate the spindles. The spindle holds 2.3 ounces of grease. See Figure 4-4.

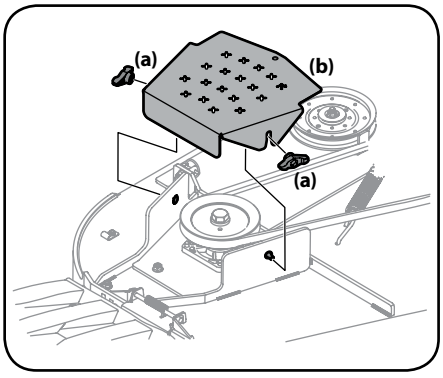


Figure 4-4

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 lifeand 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. If there is any further discomfort, 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.

Battery Maintenance

- The battery is 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.
- Avoid tipping. Even a sealed battery will leak electrolyte when tipped.

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 tractor 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 tractor may start, the engine charging system may not fully recharge the battery.

Removing the Battery

1. Slide the seat all the way forward.
2. Remove the hex washer screw securing the battery hold-down bracket to the frame. Then flip the battery hold-down bracket up to free the battery. See Figure 4-5

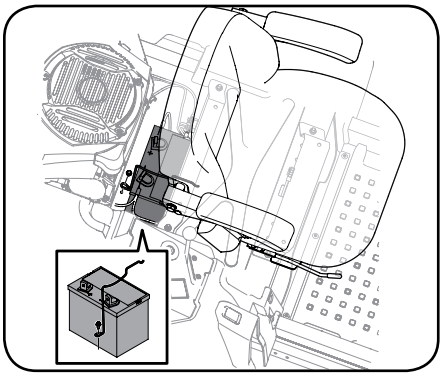


Figure 4-5

3. Remove the hex cap screw and sems nut securing the black negative battery lead to the negative battery post (marked NEG). Move the cable away from the negative battery post.
4. Remove the hex cap screw and sems nut securing the red positive battery lead to the positive battery post (marked POS).
5. Carefully lift the battery out of the tractor.

   NOTE: On some models it may be necessary to slide the battery left or right to remove it.
6. Install the battery by repeating the above steps in the reverse order.

Using the Transmission Bypass Rods

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

WARNING! Do not tow the tractor, even with the bypass rod engaged. Serious transmission damage will result from doing so.

1. From the rear of the tractor, just inside the two rear tires, locate the transmission bypass rods. Refer to Figure 4-6.

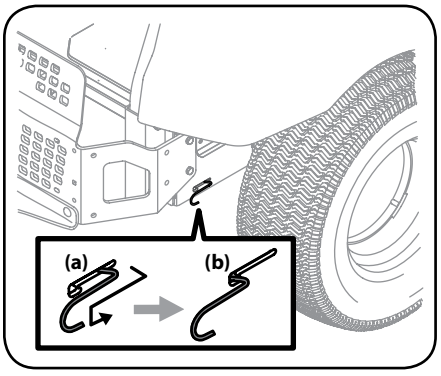


Figure 4-6

2. Engage the transmission bypass rods, one on each side of the tractor, to move the tractor manually without starting it. Engage the bypass rods by pulling each one back (a) and hooking it into the slot (b) to lock it into place. See Figure 4-6.

   NOTE: The tractor will not drive with the bypass rods in the engage position.

3. Disengage the bypass rods by reversing steps (a) and (b) after moving the tractor. See Figure 4-6.

Hydrostatic Transmission

Your zero turn tractor is equipped with dual integrated hydrostatic pumps/transaxles that are sealed and are maintenance-free. However, this model is 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 tractor when the transmission oil is fully cooled.

1. Clean the reservoir cap and the area around the cap to prevent debris from contaminating the transmission oil. See Figure 4-7.

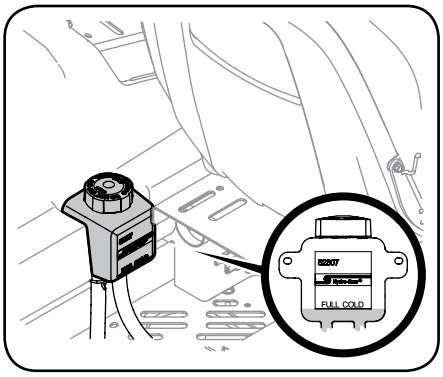


Figure 4-7

2. Turn the reservoir cap counter-clockwise 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. See Figure 4-7. DO NOT FILL THE RESERVOIR.

3. If necessary to add oil because of some type of leakage, use a quality 20W50 motor oil and 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 tractor, the oil level in the reservoir may be slightly higher than the maximum due to air in the oil lines. Operation of the tractor will eventually purge the air from the lines and the oil level will settle to the maximum.

Tractor Storage

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

1. Change the engine oil and filter following the instructions provided in the engine manual packed with this manual.

   WARNING! Never store the tractor 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 tractor 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 (approximately 3 gallons) 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 tractor 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 to keep the engine running until all fuel in the carburetor has been exhausted.
      - Referring to the engine manual, drain the fuel from the carburetor bowl.

3. Clean the engine and the entire tractor 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 tractor. 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 Tractor 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 tractor without a load to make certain all the tractor 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.

Adjusting RH & LH Drive Control Levers

The RH and LH drive control levers can be adjusted up or down and forward or backward for the comfort of the operator. The drive control levers can be placed in either of two height positions, and/or can be moved forward or rearward. Proper drive control lever and seat adjustment will result in the following:

1. In the neutral position with hands on the control levers, the operator's upper arms should be relaxed and approximately vertical and their forearms should be approximately horizontal.
2. In the full forward position, the operator's back should stay in contact with the seat back and the control levers should not contact operator's legs.
3. In the full reverse position, the control levers should not contact the operator's legs or torso.
4. Set the seat to the preferred operating position. The adjustment lever is located under the front edge of the seat. The seat has 5" of front-to-rear adjustment available.
5. Check factory settings of control levers for the conditions listed above.

   NOTE: If control lever adjustments are required, height adjustments should be made prior to angular adjustments.

To adjust the drive control lever height, proceed as follows:

1. Remove the hex screws (a) and flat washers (b) securing the drive control lever (c) to the lower arm assembly (d). Refer to Figure 4-8.

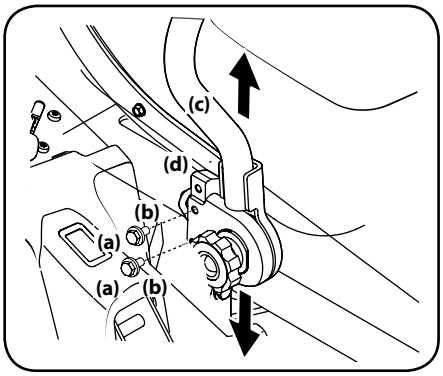


Figure 4-8

2. Reposition the drive control lever (c) to align with the other set of holes in the lower arm assembly (d) and insert the hex screws (a) through the flat washers (b) and then the drive control lever (c) then into the lower arm assembly (d). Tighten the hex screws (a) until snug. Repeat the steps on the other control arm.

To adjust the drive control levers forward/ rearward, proceed as follows:

1. Loosen the control lever knob (a) on the side of the drive control lever (b). See Figure 4-9.

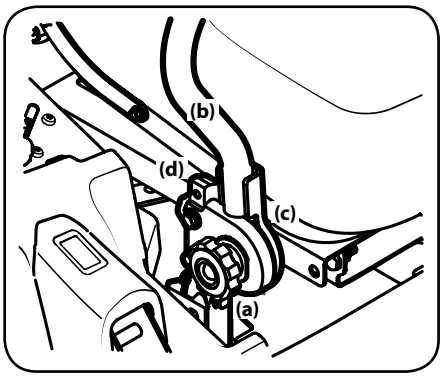


Figure 4-9

2. Place the drive control lever (b) in the desired position.
3. Secure in place by tightening the control lever knob (a). See Figure 4-9.
4. Note the relative position of the drive control lever (b) to the pivot bracketnear the seat, then repeat the previous steps to reposition the other drive control lever in approximately the same position.
5. A fine-tuning adjustment can be made if the drive control levers (b) are not lining up correctly. Be certain that the control lever knob (a) is secure and loosen the two bolts securing the control lever adjuster (c) to the lower arm assembly (d). Pivot the control lever adjuster (c) forward or rearward to align the drive control levers (b). When the drive control levers (b) are aligned, re-tighten the bolts to secure the drive control lever (b).

Deck Leveling

NOTE: Check the tractor's tire pressure before performing any deck leveling adjustments. Refer to Tires for information regarding tire pressure.

Leveling the Deck (Side-to-Side)

NOTE: Check the tractor'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.

If the cutting deck appears to be mowing unevenly, a side-to-side adjustment can be performed. Adjust if necessary as follows:

1. With the tractor parked on a firm, level surface, place the deck lift handle in a middle mowing position and rotate both outside blades so that they are perpendicular with the tractor.
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're not, proceed to the next step.
3. Loosen the lower nut (a) on the adjustable lift link (b) attached to the deck lift arm (c) to lower the deck and tighten the upper nut (d) to secure the deck in place, loosen the upper nut (d) then tighten the lower nut (a) to secure the deck in place. See Figure 4-10.

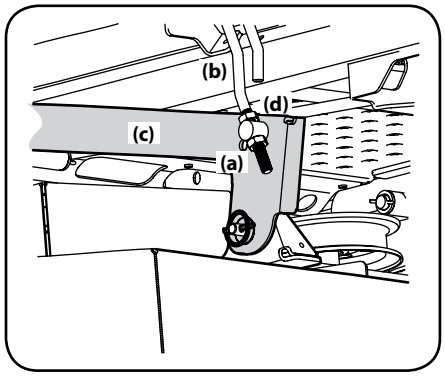


Figure 4-10

4. The deck is properly leveled when both blade tip measurements are equal.

Leveling the Deck (Front-To-Rear)

NOTE: Check the tractor'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.

The front of the deck should be between ¼-⅜" lower than the rear of the deck. Adjust if necessary as follows:

1. Park the tractor on a firm, level surface and place the deck lift handle in a middle position.
2. Rotate the blade nearest the discharge chute so that it is parallel with the tractor.
3. Measure the distance from the front of the blade tip to the ground and the rear of the blade tip to the ground. The first measurement taken should be between ¼" and ⅜" less than the second measurement.
4. Determine the approximate distance necessary for proper adjustment and proceed, if necessary.
5. Using a wrench, raise the front of deck by loosening the lock nuts to the front of the pivot pin (a) and then tighten the jam nuts on the back of the pivot pin (a) to raise the front of the deck and secure in place. See Figure 4-11.

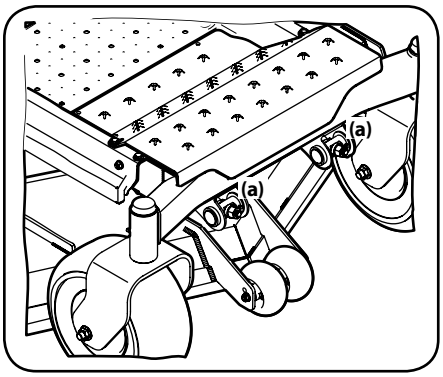


Figure 4-11

6. Using a wrench, lower the front of deck by loosening the jam nuts on the back of the pivot pin (a) and then tighten the lock nut on the front of the pivot pin (a) to lower the front of the deck and secure in place. See Figure 4-11.
7. The deck is properly leveled when the front tip of the blade is ¼" lower than the rear tip. Retighten the hex bolt on the left rear deck hanger links when proper adjustment is achieved.

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 ¼-½" 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 ½" above the ground, they should be lowered.

2. Remove the lock nut (a) securing one of the front gauge wheel (b) to the deck. Remove the front gauge wheel (b), hex screw (c) and spacer (d). See Figure 4-12.

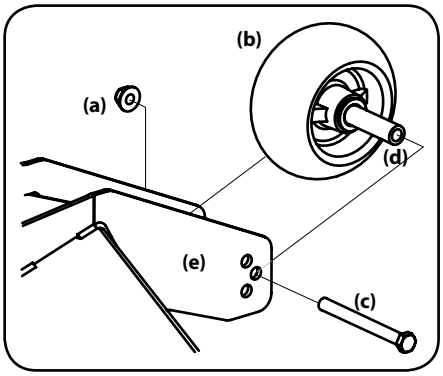


Figure 4-12

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 the one of three index holes in the front gauge wheel bracket (e) that will give the front gauge wheel (b) a ¼-½" clearance with the ground.
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).

Drive Control Lever Stop Adjustment

When the drive control levers are both fully extended forward to the full-speed position and the tractor drifts left or right, the drive control lever stop adjustment can be adjusted to sync the wheel speeds. To perform the adjustment, proceed as follows:

1. Identify the side that the tractor is drifting to and adjust the opposite drive control lever. If the tractor drifts right, adjust the left control lever down (decrease speed) and vice versa.
2. Locate the drive control lever stop adjustment bolts (a) on the front of the seat frame. See Figure 4-13.

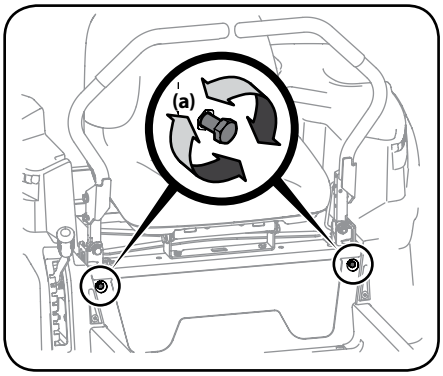


Figure 4-13

3. To decrease the forward speed, turn the drive control lever stop adjustment bolts (a) clockwise. To increase the forward speed, turn the drive control lever stop adjustment bolts (a) counter-clockwise. Turn the bolt in the necessary direction ¼-turn at a time. After turning the drive control lever stop adjustment bolts (a), check the adjustment by driving the tractor.
4. Continue the adjustment until the wheel speeds are in sync and the tractor drives straight with the drive control levers fully extended forward in the full-speed position.

Adjusting the Deck Latch Lever

If the deck latch lever does not stay engaged, adjust as follows:

1. Loosen -- but do not remove -- the two hex screws (a) and flange lock nuts (a) that secure the handle (b) to right lift arm (c). See Figure 4-14. The handle has two slotted holes (d) to allow for the adjustment.

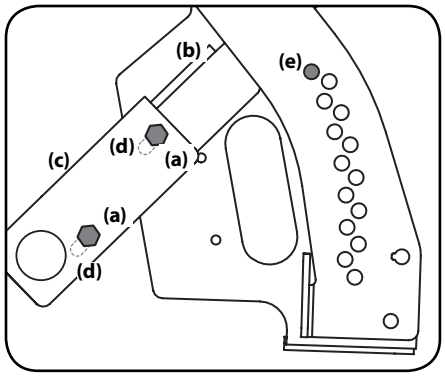


Figure 4-14

2. Lift the deck lift handle into the highest mowing position (e). See the Controls & Operation section.
3. With the deck lift handle in the highest mowing position (e) re-tighten the hex screws and flange lock nuts loosened in Step 1. Torque the hardware to 180 in-lbs.

Off-Season Storage

Riding Mower Storage

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

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

WARNING! Never store the riding 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. Service the engine as instructed in the separate Engine Operator's Manual.
3. Engines stored between 30 and 90 days need to be treated with a gasoline stabilizer and engines stored over 90 days need to be drained of fuel to prevent deterioration and gum from forming in fuel system or on essential carburetor parts. If the gasoline in your engine deteriorates during storage, you may need to have the carburetor, and other fuel system components, serviced or replaced.

WARNING: Drain fuel only into an approved container outdoors, away from an open flame. Allow engine to cool. Extinguish cigarettes, cigars, pipes, and other sources of ignition prior to draining fuel.

3. Remove the spark plugs and pour approximately one ounce of oil into each cylinder. Crank the engine one or two turns to spread the oil evenly on the cylinder walls. Replace the spark plugs.
4. Clean the engine and the entire riding mower thoroughly.

   NOTE: Use of a pressure washer or garden hose is not recommended to clean your riding mower. They may cause damage to electrical components, spindles, pulleys, bearings or the engine. The use of water will result in shortened life and reduce serviceability.
5. Sharpen the blades so that the mower will be ready to use when needed.
6. Protect the metal surfaces. Repair scratches with the appropriate touch-up spray paint. Brush a rust preventive oil on any unpainted surfaces including the pulleys and blades. (Be careful not to get any oil on the drive belts.)
7. Clean and 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.
8. Lubricate all lubrication points.
9. Jack the mower up and store it on blocks to take the weight off of the tires.

Removing the Riding Mower from Storage

1. Check the engine oil.
2. Fully charge the battery, lower riding mower off blocks, and inflate the tires to the recommended pressure.
3. Remove the spark plugs and wipe them off. Using the starter, crank the engine to pump the excess oil out of the spark plug holes. Replace the spark plugs and the ignition leads.
4. If drained before storing, fill the fuel tank with clean, fresh gasoline.
5. Check the level of the engine oil in the crankcase and the hydraulic reservoir tank.

6. Start the engine and allow to idle for a few minutes to ensure engine is operating properly.
7. Drive the riding mower without a load to make certain all the riding mower systems are functioning properly.

Service

Charging the Battery

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

- A voltmeter or load tester should read 12.6 volts (DC) or higher across the battery terminals. See Figure 4-15.

Voltmeter Reading	State of Charge	Charging Time
12.7	100%	Full Charge
12.4	75%	90 Min.
12.2	50%	180 Min.
12.0	25%	280 Min.

Figure 4-15

- Charge the battery with a 12-volt battery charger at a MAXIMUM rate of 10 amps.

Servicing Electrical System

A fuse is installed to protect the tractor's electrical system from damage caused by excessive amperage. Always use the same capacity fuse for replacement. If the electrical system does not function, check for a blown fuse.

If you have a recurring problem with blown fuses, have the tractor's electrical system checked by your Cub Cadet Service Dealer.

Relays and Switches

There are several safety switches in the electrical system. If a function of the safety interlock system described earlier is not functioning properly, have the electrical system checked by your Cub Cadet Service Dealer.

Deck Removal

Remove the mower deck from the tractor as follows:

1. Move the tractor to a level surface, disengage the PTO, stop the engine place the control levers in the neutral/ parking brake engaged position.
2. Move the deck gauge wheels or rollers to their highest setting (lowest deck setting).
3. Remove the 'V' belt from the PTO pulley, located on the bottom of the engine, using one of the following two methods.

WARNING! The muffler at the rear of the tractor 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.

4. Releasing belt tension with the idler pulley:
   a. Using the deck lift handle, raise the deck to the DECK REMOVAL/ INSTALLATION POSITION (a). See Figure 4-16.

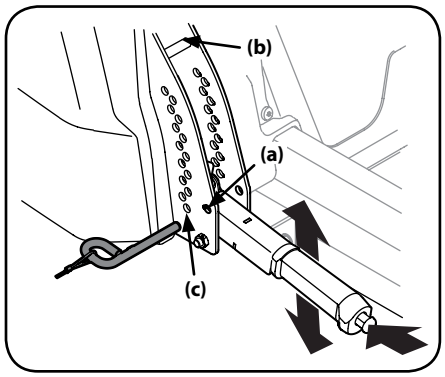


Figure 4-16

   b. Working from the middle of the tractor, pivot the idler bracket and movable idler pulley rearward away from the backside of the 'V" belt (a) just far enough to lift the belt up and over the idler pulley (b). See Figure 4-17.

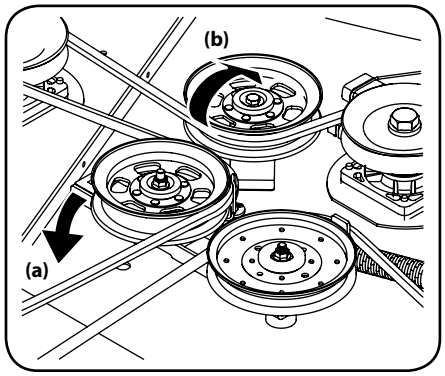


Figure 4-17

   c. From beneath the rear of the tractor, slide the belt off of the PTO pulley on the bottom of the engine.
   d. Lower the deck into the DECK REMOVAL/INSTALLATION POSITION (a) using the deck lift handle. See Figure 4-16.
   e. Skip ahead to step 6.
5. Rolling the belt off the PTO pulley:
   a. Using the deck lift handle, raise the deck to the DECK REMOVAL/ INSTALLATION POSITION (a). See Figure 4-4.
   b. Sitting behind the tractor facing forward, reach beneath the tractor to grasp the belt at the front of the PTO pulley.

WARNING! Use caution to avoid pinching your fingers when rolling the belt off the PTO pulley.

   c. Pull the left side of the belt rearward and downward while manually turning the PTO pulley to the right until the belt rides out onto the edge of the lower sheave of the pulley.

NOTE: If pulling the right side of the belt, turn the pulley left.

   d. While still holding the belt downward, continue turning the PTO pulley until the belt is rolled off the pulley. Refer to Figure 4-18.

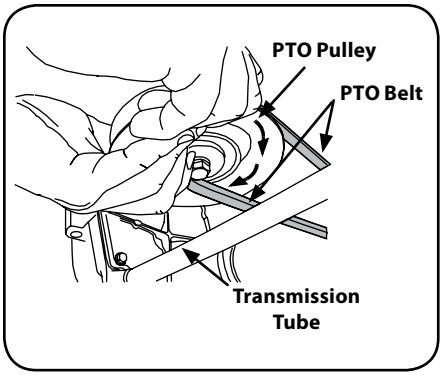


Figure 4-18

   e. Lower the deck into the DECK REMOVAL/INSTALLATION POSITION (a) using the deck lift handle. See Figure 4-16.
   f. Move on to step 6.
6. Locate the LH and RH deck release pins (a) on each side of the deck. Pull the release pins outward and release the deck from the LH and RH deck lift arms. See Figure 4-19.

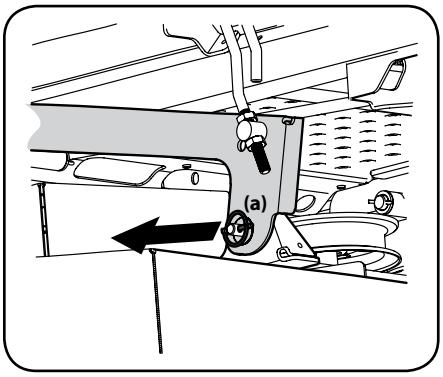


Figure 4-19

7. Slide the front deck lift rod off the hanger brackets on the front of the deck
8. Place the deck lift handle into the highest mowing position and slide the deck out from the right side of the tractor.

Deck Installation

Install the deck on the tractor as follows:

1. Place the deck lift handle in the highest mowing position (b). See Figure 4-16.
2. Slide the deck under the tractor on the right side of the tractor lining up the deck hanger brackets and the deck lift arms.
3. Once the deck is under the tractor, move the deck lift handle to the lowest mowing position.

   NOTE: To line the brackets up properly, it may be necessary to place a small block of wood under each side of the deck.
4. Hook the front deck lift rod onto the hanger brackets on the front of the deck.
5. Pull the deck release pins outward and maneuver the deck as necessary to align the holes in the deck lift arms with the pins. Refer to Figure 4-19.

6. When aligned, push each pin fully inward through the lift arms to secure the arms in the rear hanger bracket slots.
7. Make certain the 'V' belt is in the spindle pulleys on the deck; then route the belt rearward beneath the tractor frame, above the transmission tube(s), to the PTO pulley on the bottom of the engine.
8. Using the deck lift handle, raise the deck to the position that provides the most horizontal run of the belt between the deck idler pulleys and the PTO pulley on the bottom of the engine.
9. Make certain the belt is in the spindle pulleys of the deck, and that the backside of the belt is against both the fixed and movable idler pulleys.
10. Sitting behind the tractor, facing forward, make certain the belt is not twisted; then reach beneath the tractor to grasp the belt and pull it toward the PTO pulley.

WARNING! Use caution to avoid pinching your fingers when rolling the belt onto the PTO pulley.

11. Pull the right side of the belt rearward and place the narrow V side of the belt into the PTO pulley. See Figure 4-18.
12. While holding the belt and pulley together, rotate the pulley to the left (See Figure 4-18). Continue holding and rotating the pulley and belt until the belt is fully rolled into the PTO pulley.

NOTE: Before using the tractor double-check the belt routing to make sure that the belt has been routed properly.

Replacing the Belt

1. Remove the deck from beneath the tractor. Refer to Deck Removal.
2. Remove the wing knobs securing the belt covers to the deck. See Figure 4-20.

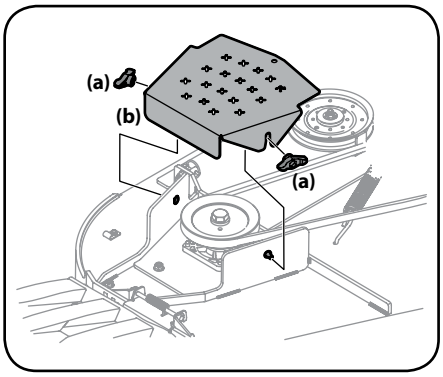


Figure 4-20

3. Remove the two idler pulleys (a) by removing the flange lock nuts (b) and pulley caps (c) that secure them to the deck and the idler arm. See Figure 4-21. Do not lose any of the hardware when removing the flange lock nuts (b).

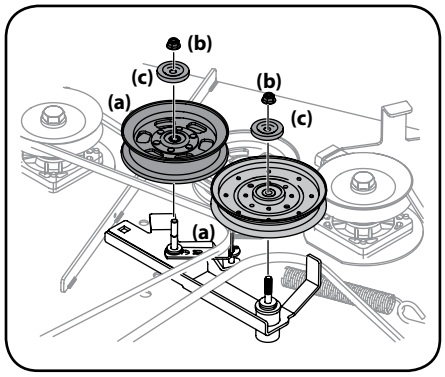


Figure 4-21

NOTE: Take note of the position of the belt guards to ensure they are properly re-installed.

4. Remove the belt from the spindle pulleys.
5. Install the new belt around the spindle pulleys as shown and reinstall the belt covers. See Figure 4-22.

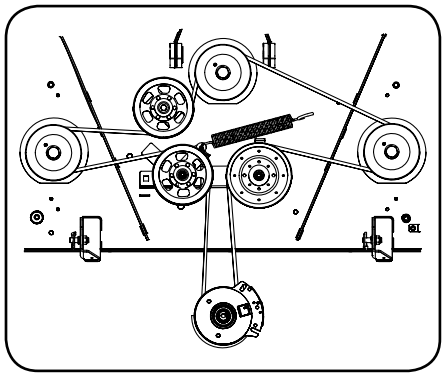


Figure 4-22

6. Place the belt around the idler pulleys removed in step 3 with the "V" side facing in. Once in place, reinstall all the hardware and tighten the flange lock nut to secure the assembly. See Figure 4-20.
7. Route the belt as shown in Figure 4-20 and then reinstall the deck. Refer to "Deck Installation" on page 23.

Mower Blade Care

WARNING! Before performing any maintenance, place the PTO switch in the "OFF" position, engage the parking brake lever, turn the ignition key to the "OFF" position and remove the key from the switch. Protect your hands by using heavy gloves when handling the blades. When servicing the mower deck, be careful not to cut yourself on the sharpened blades.

The cutting blades must be kept sharp at all times. Sharpen the cutting edges of the blades evenly so that the blades remain balanced and the same angle of sharpness is maintained.

If the cutting edge of a blade has already been sharpened many times, or if any metal separation is present, it is recommended that new blades be installed. New blades are available at your authorized dealer.

The blades may be removed as follows.

1. Remove the deck from beneath the tractor, (refer to "Deck Removal" on page 23) then gently flip the deck over to expose its underside.
2. Use a 1-⅛" wrench to hold the hex nut on top of the spindle assembly when loosening the bolt securing the blade. A block of wood may be placed between the deck housing and the cutting edge of the blade to help in breaking loose the hex nut securing the blade. See Figure 4-23.

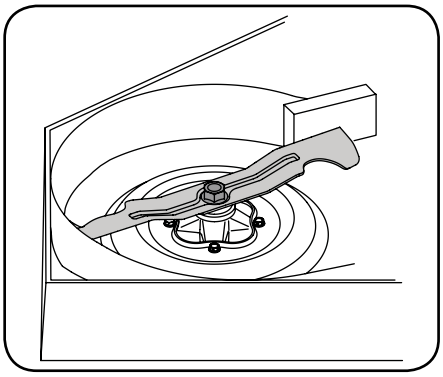


Figure 4-23

3. When reinstalling the blades, be sure they are installed so that the wings are pointing upward toward the top of the deck.
4. Tighten the blade nuts to 70-90 ft. lbs.
5. Reinstall the deck. Refer to "Deck Installation" on page 23.

Changing the Transmission Drive Belt

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

Tractor Creeping

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

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 leveled properly. 2. Dull blade. 3. Uneven tire pressure.	1. Perform side-to-side deck adjustment. 2. Sharpen or replace blade. 3. Check tire pressure in all four tires.
Mower will not mulch grass (If Equipped w/Mulching Kit)	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.

Replacement Parts

6

Part Number	Description
954-05012A 954-05013 954-05015	Deck Belt, 48″ Deck Belt, 54″ Deck Belt, 60″
954-04317A	Drive Belt
942-04417 942-04416 942-04415	Blades, 48″ Deck Blades, 54″ Deck Blades, 60″ Deck
918-06994A 918-06693A 918-06076A	Deck Spindle, 48″ Deck Deck Spindle, 54″ Deck Deck Spindle, 60″ Deck
634-3159	Deck Wheel
925-1707D	Battery
951-12725	Gas Cap
946-05262	Throttle Control Cable
969-04847	Choke Control (If Equipped)
925-3277	Ignition Key
946-05068	Park Brake Cable
631-05176	Chute Assembly
634-05182	Rear Wheel Assembly, 23 x 10.5 x 12
634-04750	Front Wheel Assembly, 13 x 6.50-6

Attachments & Accessories

7

Part Number	Description
59A30045150	FAB Power Assist Bagger
OEM-190-784	Wheel Weights
19A70037100	48″ Mulch kit
19A70038100	54″ Mulch Kit
19A70039100	60″ Mulch Kit
490-241-0026	Tire Chains
19B70032100	Light Kit Receptacle
59A30021150	12V Outlet Receptacle
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

Phone (800) 965-4CUB to order replacement parts or a complete Parts Manual (have your full model number and serial number ready). Parts Manual downloads are also available free of charge at www.cubcadet.com.

Notes

Warranty Conditions — Australia (Not applicable to other Regions)

The benefits given to you under this warranty are in addition to other rights and remedies that you have under Australian law in relation to the goods.

MTD Products Australia Pty Ltd warrants that this machine is free from defects in material and workmanship. This warranty is limited to repairing or replacing any part which appears upon inspection by MTD Products Australia Pty Ltd or its agent to be defective in material or workmanship.

A separate warranty is provided in respect of the engine for this machine. Refer to the engine warranty statement in the Engine Owner's Manual which has been included with this machine.

For domestic use, this warranty will apply for a period of 2 years from date of purchase. Warranty for commercial or industrial use is 90 days from the date of purchase. In the event of dispute, MTD Products Australia Pty Ltd will determine whether the machine was used for domestic, or commercial or industrial use.

All costs associated with claiming under this warranty must be borne by you, including transport costs incurred in the repair or replacement of any defective part.

This warranty excludes fair wear and tear and any damage caused by misuse or abuse. Parts such as Blades, Bump Knobs, Outer Spools, Cutting Line, Inner Reels, Starter Pulley, Starter Ropes, Drive Belts, Saw Blades, Guide Bars, Cultivator Tines, Spark Plugs, Carburettor Adjustments and Filters which can be subjected to use beyond their normal intended working capacity are also excluded.

This warranty is void if alterations are made to the machine without MTD Products Australia Pty Ltd prior written authority.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

IN ORDER TO MAKE A CLAIM UNDER THIS WARRANTY YOU WILL NEED TO TAKE YOUR PRODUCT AND YOUR PROOF OF PURCHASE TO AN AUTHORISED MTD DEALER. YOUR NEAREST MTD DEALER CAN BE FOUND at www. mtd.com.au. All SERVICING AND REPAIRS MUST USE GENUINE SPARE PARTS OR YOUR WARRANTY WILL BE VOID.

For your Record:

Retailers Name: ..... Address: .....

Phone No: ..... Model No: .....

Serial No: ..... Date of Purchase: .....

MTD Products Australia Pty Ltd.

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