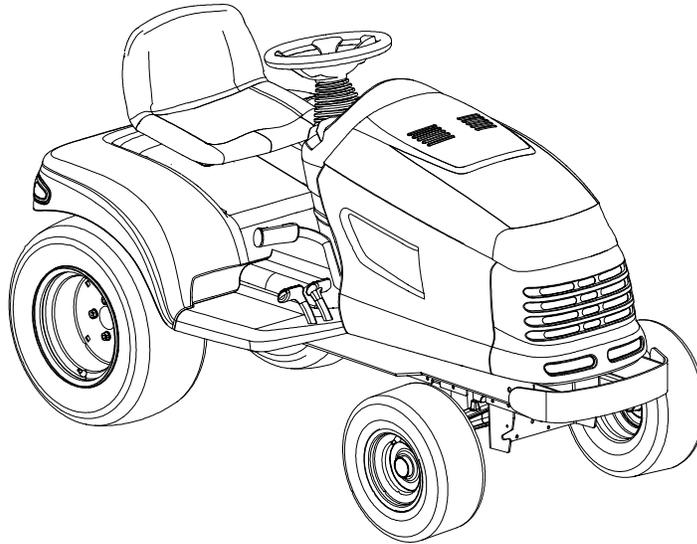


# **Cub Cadet**

## **OPERATOR'S MANUAL**



### *Series* **3000**

## **TRACTOR**

### **Model 3165**

#### **IMPORTANT: READ SAFETY RULES AND INSTRUCTIONS CAREFULLY**

**Warning:** This unit 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 arrester meeting applicable local or state laws (if any). If a spark arrester 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 arrester for the muffler is available through your nearest engine authorized service dealer or contact the service department, P.O. Box 368023 Cleveland, Ohio 44136-9723.

**CUB CADET P.O. BOX 368023 CLEVELAND, OHIO 44136-9723**

FORM NO. 770-0834B  
(9/98)

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## SECTION 2: IMPORTANT SAFE OPERATION PRACTICES



**WARNING:** THIS SYMBOL POINTS OUT IMPORTANT SAFETY INSTRUCTIONS WHICH, IF NOT FOLLOWED, COULD ENDANGER THE PERSONAL SAFETY AND/OR PROPERTY OF YOURSELF AND OTHERS. READ AND FOLLOW ALL INSTRUCTIONS IN THIS MANUAL BEFORE ATTEMPTING TO OPERATE YOUR UNIT. FAILURE TO COMPLY WITH THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY. WHEN YOU SEE THIS SYMBOL, HEED ITS WARNING.



**WARNING:** The Engine Exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.



**DANGER:** Your lawn mower was built to be operated according to the rules for safe operation 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 lawn mower is capable of amputating hands and feet and throwing objects. Failure to observe the following safety instructions could result in serious injury or death.

### 1. GENERAL OPERATION

- Read, understand, and follow all instructions in the operator's manual and on the machine before starting. Keep this manual in a safe place for future and regular reference and for ordering replacement parts.
- Only allow responsible individuals familiar with the instructions to operate the machine. Know controls and how to stop the machine quickly.
- Do not put hands or feet under cutting deck or near rotating parts.

- Clear the area of objects such as rocks, toys, wire, etc., which could be picked up and thrown by the blade. A small object may have been overlooked and could be accidentally thrown by the mower in any direction and cause injury to you or a bystander. To help avoid a thrown objects injury, keep children, bystanders and helpers at least 75 feet from the mower while it is in operation. Always wear safety glasses or safety goggles during operation or while performing an adjustment or repair, to protect eyes from foreign objects. Stop the blade(s) when crossing gravel drives, walks or roads.
- Be sure the area is clear of other people before mowing. Stop machine if anyone enters the area.
- Never carry passengers.
- Disengage blade(s) before shifting into reverse and backing up. Always look down and behind before and while backing.
- Be aware of the mower and attachment discharge direction and do not point it at anyone. Do not operate the mower without either the entire grass catcher or the chute guard in place.
- Slow down before turning. Operate the machine smoothly. Avoid erratic operation and excessive speed.
- Never leave a running machine unattended. Always turn off blade(s), place transmission in neutral, set park brake, stop engine and remove key before dismounting.
- Turn off blade(s) when not mowing.
- Stop engine and wait until blade(s) comes to a complete stop before (a) removing grass catcher or unclogging chute, or (b) making any repairs, adjusting or removing any grass or debris.
- Mow only in daylight or good artificial light.
- Do not operate the machine while under the influence of alcohol or drugs.
- Watch for traffic when operating near or crossing roadways.
- Use extra care when loading or unloading the machine into a trailer or truck. This unit should not be driven up or down a ramp onto a trailer or truck under power, because the unit could tip over, causing serious personal injury. The unit must be pushed manually on a ramp to load or unload properly.
- Never make a cutting height adjustment while engine is running if operator must dismount to do so.
- Wear sturdy, rough-soled work shoes and close-fitting slacks and shirts. Do not wear loose fitting clothes or jewelry. They can be caught in moving parts. Never operate a unit in bare feet, sandals, or sneakers.
- Check overhead clearance carefully before driving under power lines, wires, bridges or low hanging tree branches, before entering or leaving buildings, or in any other situation where the operator may be struck or pulled from the unit, which could result in serious injury.
- Disengage all attachment clutches, thoroughly depress the brake pedal, and shift into neutral before attempting to start engine.
- Your mower is designed to cut normal residential grass of a height no more than 10". Do not attempt to mow through unusually tall, dry grass (e.g., pasture) or piles of dry leaves. Debris may build up on the mower deck or contact the engine exhaust presenting a potential fire hazard.
- Use only accessories approved for this machine by the manufacturer. Read, understand and follow all instructions provided with the approved accessory.

## 2. SLOPE OPERATION

Slopes are a major factor related to loss of control and tip-over accidents which 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. For your safety, use the slope gauge included as part of this manual to measure slopes before operating this unit on a sloped or hilly area. If the slope is greater than 15° as shown on the slope gauge, do not operate this unit on that area or serious injury could result.

### DO:

- Mow up and down slopes, not across.
- Remove obstacles such as rocks, limbs, etc.
- Watch for holes, ruts or bumps. Uneven terrain could overturn the machine. Tall grass can hide obstacles.
- Use slow speed. Choose a low enough gear so that you will not have to stop or shift while on the slope. Always keep machine in gear when going down slopes to take advantage of engine braking action.
- Follow the manufacturers recommendations for wheel weights or counterweights to improve stability.
- Use extra care with grass catchers or other attachments. These can change the stability of the machine.
- Keep all movement on the slopes slow and gradual. Do not make sudden changes in speed or direction. Rapid engagement or braking could cause the front of the machine to lift and rapidly flip over backwards which could cause serious injury.

- Avoid starting or stopping on a slope. If tires lose traction, disengage the blade(s) and proceed slowly straight down the slope.

### DO NOT:

- Do not turn on slopes unless necessary; then, turn slowly and gradually downhill, if possible.
- Do not mow near drop-offs, ditches or embankments. The mower could suddenly turn over if a wheel is over the edge of a cliff or ditch, or if an edge caves in.
- Do not mow on wet grass. Reduced traction could cause sliding.
- Do not try to stabilize the machine by putting your foot on the ground.
- Do not use grass catcher on steep slopes.

## 3. CHILDREN

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. Never assume that children will remain where you last saw them.

- Keep children out of the mowing area and in watchful care of an adult other than the operator.
- Be alert and turn machine off if children enter the area.
- Before and when backing, look behind and down for small children.
- Never carry children, even with the blades off. They may fall off and be seriously injured or interfere with the safe machine operation.
- Never allow children under 14 years old to operate the machine. Children 14 years and over should only operate machine under close parental supervision and proper instruction.
- Use extra care when approaching blind corners, shrubs, trees or other objects that may obscure your vision of a child or other hazard.

- Remove key when machine is unattended to prevent unauthorized operation.
- Keep all nuts, bolts and screws tight to be sure the equipment is in safe working condition.

#### **4. SERVICE**

- Use extreme care in handling gasoline and other fuels. They are extremely flammable and the vapors are explosive.
- Use only an approved container.
- Never remove fuel cap or add fuel with the engine running. Allow engine to cool at least two minutes before refueling.
- Replace fuel cap securely and wipe off any spilled fuel before starting the engine as it may cause a fire or explosion.
- Extinguish all cigarettes, cigars, pipes and other sources of ignition.
- Never refuel the machine indoors because fuel vapors will accumulate in the area.
- Never store the fuel container or machine inside where there is an open flame or spark, such as a gas hot water heater, space heater or furnace.
- Never run a machine inside a closed area.
- To reduce fire hazard, keep the machine free of grass, leaves or other debris build-up. Clean up oil or fuel spillage. Allow machine to cool at least 5 minutes before storing.
- Before cleaning, repairing or inspecting, make certain the blade and all moving parts have stopped. Disconnect the spark plug wire, and keep the wire away from the spark plug to prevent accidental starting.
- Check the blade and engine mounting bolts at frequent intervals for proper tightness. Also, visually inspect blade for damage (e.g., excessive wear, bent, cracked). Replace with blade which meets original equipment specifications.
- Never tamper with safety devices. Check their proper operation regularly. Use all guards as instructed in this manual.
- After striking a foreign object, stop the engine, remove the wire from the spark plug and thoroughly inspect the mower for any damage. Repair the damage before restarting and operating the mower.
- Grass catcher components are subject to wear, damage and deterioration, which could expose moving parts or allow objects to be thrown. For your safety protection, frequently check components and replace with manufacturer's recommended parts when necessary.
- Mower blades are sharp and can cut. Wrap the blade(s) or wear gloves and use extra caution when servicing blade(s).
- Check brake operation frequently. Adjust and service as required.
- Muffler, engine and belt guards become hot during operation and can cause a burn. Allow to cool down before touching.
- Do not change the engine governor settings or overspeed the engine. Excessive engine speeds are dangerous.
- Observe proper disposal laws and regulations. Improper disposal of fluids and materials can harm the environment and the ecology.
- Prior to disposal, determine the proper method to dispose of waste from your local Environmental Protection Agency. Recycling centers are established to properly dispose of materials in an environmentally safe fashion.

- Use proper containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them. Properly dispose of the containers immediately following the draining of fluids.
- DO NOT pour oil or other fluids into the ground, down a drain or into a stream, pond, lake or other body of water. Observe Environmental Protection Agency regulations when disposing of oil, fuel, coolant, brake fluid, filters, batteries, tires and other harmful waste.

**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.

### SECTION 3: CALLING SERVICE INFORMATION

If you have difficulties with the unit, have any question regarding the operation or maintenance of this equipment, or desire additional information not found in this manual, contact your dealer. If you need help locating a dealer in your area, contact the Customer Dealer Referral Line by calling:

**1-800-528-1009**

Before calling your local dealer, make sure that you have your model and serial numbers ready.

### SECTION 4: FINDING YOUR MODEL & SERIAL NUMBER

This Operator's Manual is an important part of your new tractor. It will help you prepare, maintain and safely operate your tractor. Please read and understand what it says.

Before you start to prepare your tractor for its first use, please locate the model plate and copy the information from it into the space provided in this Operator's Manual. The information on the model plate is very important if you need help from your dealer or the Cub Cadet customer support department.

- Every tractor has a model plate. The model plate is located on the right frame rail behind the right front tire. See Figure 1.

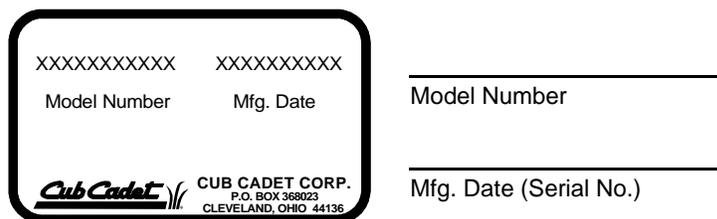


Figure 1

- The engine identification numbers appear on a decal (or decals) affixed to the engine shrouding. Record your engine identification numbers below:

\_\_\_\_\_

MODEL NO.                      TYPE NO.                      CODE NO.

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## SECTION 5: SAFETY LABELS FOUND ON YOUR UNIT

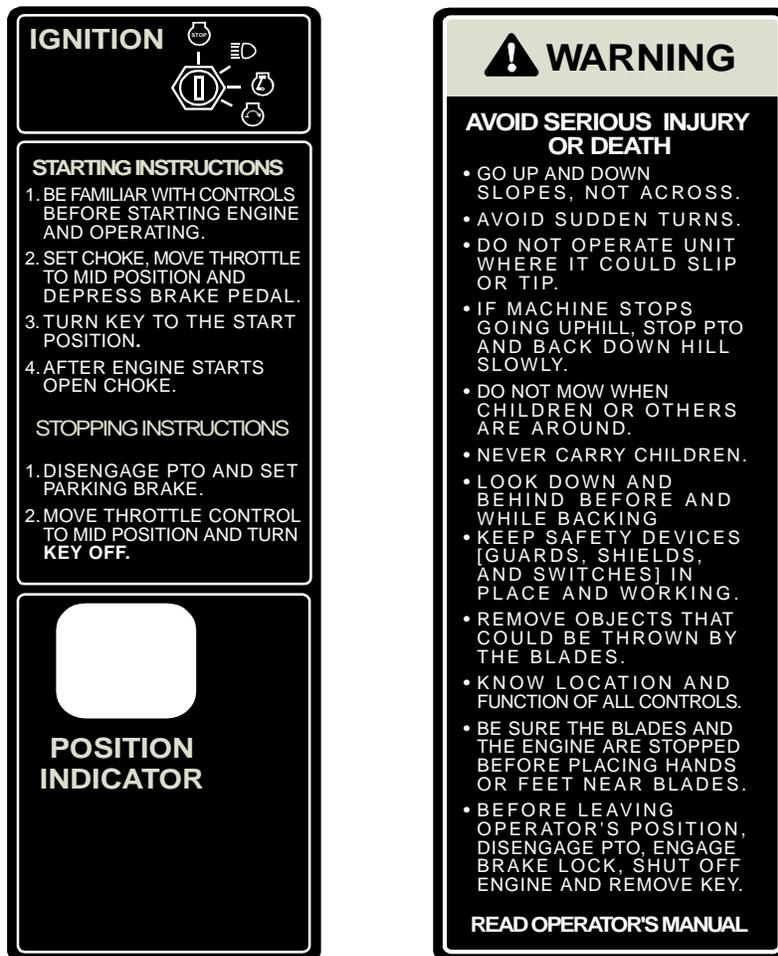


Figure 2

## SECTION 6: CONTROLS

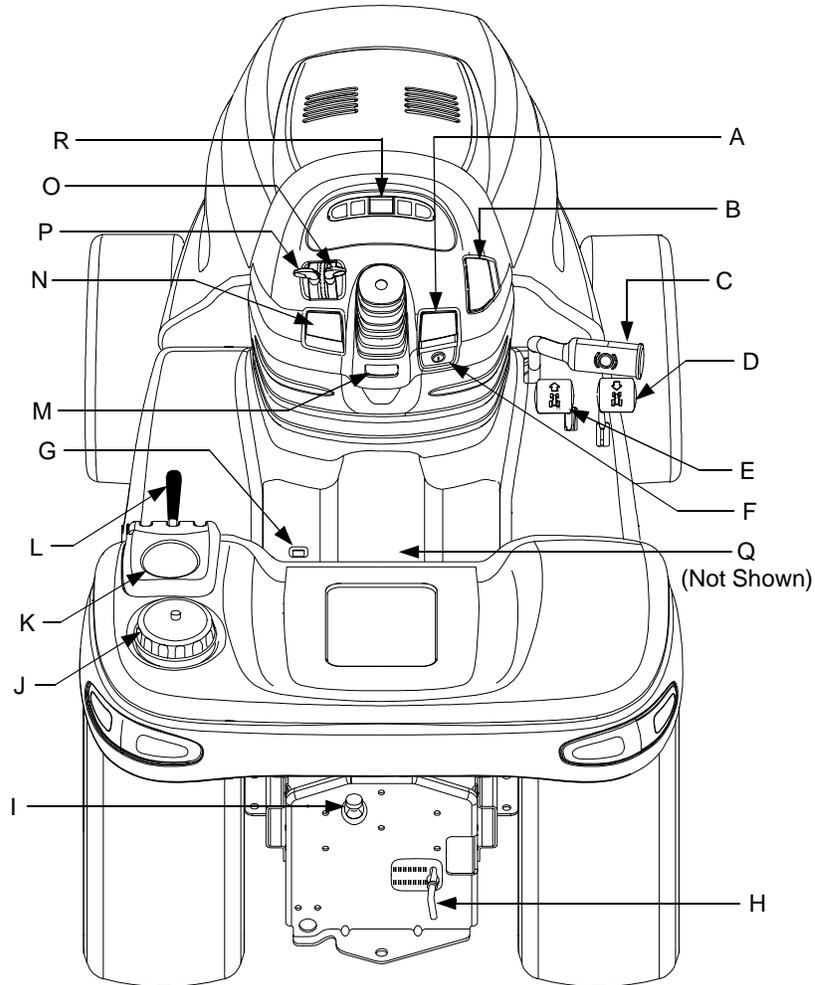


Figure 3

- |   |                                |   |                                   |
|---|--------------------------------|---|-----------------------------------|
| A | Parking Brake Lever            | J | Fuel Fill Cap                     |
| B | PTO Switch                     | K | Cup Holder                        |
| C | Brake Pedal                    | L | Hydraulic Lift Lever              |
| D | Reverse Pedal                  | M | Steering Wheel Tilt Lock          |
| E | Forward Pedal                  | N | Cruise Control Lever              |
| F | Ignition/Light Switch          | O | Choke Lever                       |
| G | Center Lift Height Indicator   | P | Throttle Lever                    |
| H | Transmission Release Rod       | Q | Seat Adjustment Lever (Not Shown) |
| I | Transmission Oil Fill/Dipstick | R | Indicator Light Pod               |

\* Steering Wheel and Seat Removed For Clarity

**NOTE:** References to *LEFT* and *RIGHT* indicate that side of the tractor when facing forward while seated in the drivers seat. Reference to *FRONT* indicates the grille end of the tractor; to *REAR*, the drawbar end.

### Steering Wheel

The steering wheel is centered on the dash panel. It is used to change the direction (left or right) of the tractor while driving.

**NOTE:** This tractor is equipped with power steering. Because of this feature, the steering wheel might not be center aligned.

### Parking Brake Lever



Figure 4

The parking brake lever is located to the right of the steering wheel on the dash panel. With the brake pedal depressed fully, push the parking brake lever and release the brake pedal to lock the parking brake.

### PTO Switch

The PTO switch is located on the right side the dash panel. Pull upward on the right edge of the switch handle to engage the PTO clutch. Push the switch downward to disengage the PTO clutch.

### Brake Pedal



Figure 5

The brake pedal is located at the front of the right running board above the forward and reverse pedals. Press down to stop the tractor and

disengage the cruise control. The brake pedal must be fully depressed to activate the safety interlock switch when starting the tractor.

### Reverse Pedal



Figure 6

**NOTE:** Check behind the tractor to be sure the area is clear of people, pets or obstacles and use a slower speed to maintain control of the tractor when traveling in reverse.

The reverse control pedal is located on the right running board below the brake pedal. Press the pedal down to move in reverse.

### Forward Pedal

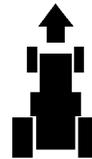


Figure 7

The forward control pedal is located on the right running board below the brake pedal. Slowly press down on the pedal to start moving forward. The forward ground speed of the tractor is directly affected by the distance the pedal is depressed.

### Deck Front Lift Rod Assembly

For shipping purposes, the deck front lift rod assembly has been installed on the tractor. Cut the tie strap holding the lift rod assembly to the tractor; then pull downward on the quick latch rod at the front of the tractor to remove the lift rod assembly.

### Ignition / Light Switch

To prevent accidental starting and/or battery discharge, remove the key from the ignition switch when the tractor is not in use. The combination lights and ignition switch has four positions. See Figure 8 for a description of each position.

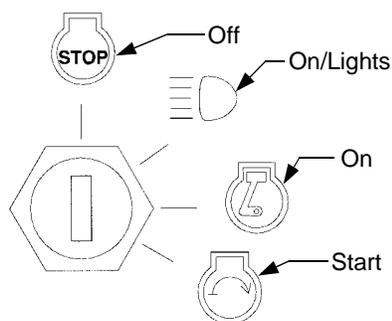


Figure 8

### Center Lift Height Indicator

The center lift height indicator is located in the left running board. This indicator shows the operator the relative height position setting of the hydraulic center lift system. The lower number indicates a lower setting.

### Transmission Release Rod

The transmission release rod is located at the back of the tractor in the draw bar. This rod, when engaged, allows the tractor to be pushed short distances by hand.

To disengage the transmission, pull back on the rod until its locking flange is visible outside the drawbar, then lift the rod up into the slot and release. To reengage the transmission, pull back on the rod, drop out of the slot and release.

### Transmission Oil Fill/Dipstick

The transmission oil fill/dipstick is located at the back of the tractor in the rear draw bar. The handle of the trans-

mission oil dipstick serves as the fill tube plug and should fit snugly in the fill tube.

### Fuel Fill Cap

The fuel fill cap is located on the fender to the left of the seat.

### Cup Holder

The cup holder is located on the fender to the left of the seat.

### Hydraulic Lift Lever

The hydraulic lift lever is located on the fender to the left of the seat. This lever is used to operate the tractor's center lift system.

### Steering Wheel Tilt Lock

The steering wheel tilt lock is located under the steering wheel on the dash panel.

### Cruise Control Lever



Figure 9

The cruise control lever is located to the left of the steering wheel. Push the cruise control lever downward while traveling at the desired forward speed to engage the cruise control.

### Choke Lever

The choke lever is located to the left of the steering wheel in the throttle/choke lever pod. Push the lever forward to close the engine choke plate.

### Throttle Lever



This symbol shows the fast position.



This symbol shows the slow position.

The throttle lever is located to the left of the steering wheel in the throttle/choke lever pod. This lever controls the speed of the engine. Push the lever forward to increase the engine speed. When set in a given position, the throttle will maintain a uniform engine speed.

**IMPORTANT:** When using power take-off operated equipment, best performance is achieved with the throttle lever in the "FAST" position.

### Seat Adjustment Lever

The seat adjustment lever is located below the seat. This lever is used to adjust the seat forward or back. Refer to Figure 12 on page 15.

### Indicator Light Pod

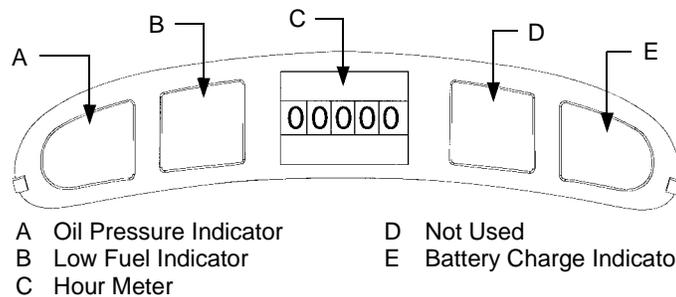


Figure 10

### Hour Meter

The hour meter is part of the indicator light pod in the dash panel. The hour meter operates whenever the ignition switch is in the "ON" or "ON/LIGHTS" position. Record the actual hours of tractor operation to ensure all maintenance procedures are completed according to the schedule in this manual.

### Oil Pressure Indicator



**WARNING: Operating the tractor with low oil level or pressure could result in severe engine damage.**

The oil pressure indicator is part of the indicator light pod on the dash panel. This indicator will illuminate when the engine oil pressure is low. If this indicator illuminates, stop the tractor

immediately and check the engine oil level. If the oil level is within the operating range, and the light remains on, contact your *Cub Cadet* dealer.

### Low Fuel Indicator

The Low Fuel indicator is part of the indicator light pod on the dash panel. This indicator will illuminate when the tractor is low on fuel. If the gas tank is full and the light stays on, contact your *Cub Cadet* dealer.

### Battery Charge Indicator

The battery charge indicator is part of the indicator light pod on the dash panel. This indicator will illuminate when the tractor's voltage sensor reads low battery voltage. If the light stays on, contact your *Cub Cadet* dealer.

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## SECTION 7: OPERATION

### Safety Interlock Switches

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 brake pedal is fully depressed, and the PTO is "OFF".

- The safety interlock system will automatically shut off the engine if the operator leaves the seat before engaging the brake lock.
- The safety interlock system will automatically shut off the engine if the operator leaves the seat with the PTO "ON", regardless of whether the brake lock is engaged. The PTO switch must be "OFF" to restart the engine.
- The safety interlock system will automatically shut off the PTO if the *reverse control pedal* is depressed with the PTO "ON".

### Fueling The Tractor

**NOTE:** *Some fuels, called oxygenated or reformulated gasolines, are gasoline blended with alcohols or ethers. Excessive amounts of these blends can damage the fuel system or cause performance problems. Do not use gasoline which contains Methanol. If any undesirable operating symptoms occur, use gasoline with a lower percentage of alcohol or ether. Do not fill the fuel tank when the engine is running or while the engine is hot. Tighten the fuel cap securely. This engine is certified to operate on unleaded gasoline. Fill the fuel tank with only clean, fresh, unleaded gasoline with a minimum of 85 octane. Do not mix oil with gasoline. Purchase*

*fuel in a quantity that can be used within 30 days to assure fuel freshness. In countries other than the U.S.A., leaded gasoline may be used if it is commercially available and unleaded is not available.*

The fuel fill point is located on the fender to the left of the seat. Unscrew the fuel cap and fill tank from an approved gasoline container.

### Starting The Engine

- Operator must be sitting in the tractor seat.
- Push choke lever to the full choke position. Less choking may be necessary due to variations in temperature, grade of fuel, etc. Little or no choking will be needed when the engine is warm.
- Place the throttle midway between the "SLOW" and "FAST" position.
- Make sure the PTO switch is in the "OFF" position.
- Fully depress the brake pedal.
- Turn the ignition key clockwise to the "START" position and release it as soon as the engine starts; however, do not crank the engine continuously for more than 10 seconds at a time. If the engine does not start within this time, turn the key to "OFF" and wait a minute to allow the engine's starter motor to cool. Try again after waiting.
- After the engine starts, slowly release the brake pedal. As the engine warms up, gradually pull the choke lever all the way back. Do not use the choke to enrich the fuel mixture, except when necessary to start the engine.

### Stopping The Engine

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

- Place the PTO switch in the “OFF” position. Move the throttle control lever to the “MID” position. Then turn the ignition key to the “OFF” position.
- Remove the key from the ignition switch.

### Driving The Tractor



**WARNING:** Avoid sudden starts, excessive speed and sudden stops.



**WARNING:** Do not leave the seat of the tractor without disengaging the PTO, depressing the brake pedal and engaging the parking brake. If leaving the tractor unattended, also turn the ignition key off and remove the key.

- Depress the brake pedal to release the parking brake and let the pedal up. Move the throttle lever to the position where the engine operates best for the load to be handled (normally full throttle).

**NOTE:** Do not use the forward or reverse control pedals to change the direction of travel when the tractor is in motion. Use the brake pedal to bring the tractor to a stop before depressing either the forward or reverse control pedal.

- To move forward, slowly depress the forward control pedal until the desired speed is achieved.
- To move in reverse, check that the area behind is clear then slowly depress the reverse control pedal.

### Setting The Cruise Control

**NOTE:** The cruise control feature can only be operated in the forward direction.

- Slowly depress the forward control pedal until the desired speed is achieved.
- Lightly push the cruise control lever downward.
- While continuing to hold the cruise lever down, lift your foot from the forward control pedal (you should feel the cruise latch engage).
- If properly engaged, the cruise lever and forward control pedal should lock in the down position, and the tractor will maintain the same forward speed.
- Disengage the cruise control using one of the following methods:
  - Depress the brake pedal to disengage the cruise control and stop the tractor.
  - Lightly depress the forward control pedal.
  - Lift the cruise control lever upward.

**NOTE:** Although not recommended, depressing the reverse pedal will also disengage the cruise control.

To change to the reverse direction when operating with cruise control, depress the brake pedal to disengage the cruise control and stop the tractor; then depress the reverse control pedal.

### Driving On Slopes

Refer to the SLOPE GAUGE on page 35 to help determine slopes where you may not operate safely.



**WARNING:** Do not mow on inclines with a slope in excess of 15 degrees (a rise of approximately 2-1/2 feet every 10 feet). The tractor could overturn and cause serious injury.

Operate the tractor up and down slopes, never across slopes. Do not drive so that the tractor may tip over sideways

Before operating the tractor on any slope, walk the slope to look for possible hazards such as rocks, mounds, ruts, stumps or other surface irregularities which could cause the tractor to be upset.

Back the tractor with attachment up the steepest portion of each slope you intend to work. If the tractor cannot negotiate the slope in reverse, the slope is too steep to be worked.

Avoid turns when driving on a slope. If a turn must be made, turn down the slope. Turning up a slope greatly increases the chance of a roll over.

Avoid stopping when driving up a slope. If it is necessary to stop while driving up a slope, start up smoothly and carefully to reduce the possibility of flipping the tractor over backward.

### Stopping The Tractor

Fully depress the brake pedal to bring the tractor to a complete stop, engage the parking brake, disengage the PTO, turn the ignition switch to "OFF" and remove the key from the switch before dismounting.

### Using the Hydraulic Lift System

To raise an attachment using the hydraulic lift system, the engine must be running. Generally, an attachment can be lowered with the engine running or off. Push the hydraulic lift lever forward to lower an attachment or pull the hydraulic lift lever back to raise an attachment.

### Opening Tool Box

A convenient tool box and manual pouch is located under the seat. To access this area, pivot the seat forward.

### Engaging The PTO

- Move the throttle control lever to approximately the mid throttle position.

- Pull the PTO switch to the "RUN" position.
- Advance the throttle lever to the operating speed (full engine speed).
- The operator must remain in the tractor seat at all times. If the operator should leave the seat without turning off the power take-off switch, the tractor's engine will shut off.

**IMPORTANT:** *The PTO clutch cannot be operated when the tractor is driving in the reverse direction. The PTO switch must in the "OFF" position when the reverse control pedal is depressed, or the PTO clutch will automatically disengage. To re-engage the PTO clutch, release the reverse control pedal, move the PTO switch to the "OFF" position, then again pull the switch to the "RUN" position.*

### Using The Drawbar

Drawbar equipment must be hitched to the tractor only at the hitch hole. See Figure 11.

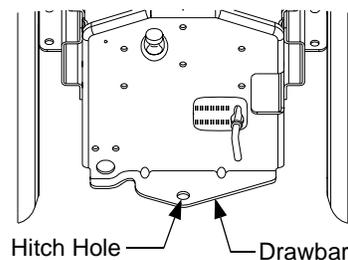


Figure 11

### Mowing

This tractor can be equipped with one of Cub Cadet's high quality mowing decks. The following information will be helpful when using a Cub Cadet mowing deck with your tractor.

**!** **WARNING:** To avoid possible injury, do not allow anyone in the area opposite the discharge chute while mowing. Although the area has been supposedly cleared of foreign objects, small objects may be picked up and discharged by the mower.

**!** **WARNING:** Never direct the discharge of material toward bystanders or allow anyone near the machine while in operation.

For best results it is recommended that the first two laps should be cut with the discharge thrown towards the center. After the first two laps, reverse the direction to throw the discharge to the outside for the balance of cutting. This will give a better appearance to the lawn.

Do not cut the grass too short, as the mower will tend to scalp the grass. Short grass invites weed growth and yellows quickly in dry weather.

Mowing should be done with the engine at full throttle. Do not mow at high ground speed.

During certain times of the year and under some conditions, the mower may leave streaks of uncut grass.

Streaking may occur when attempting to mow heavy weeds and tall grass. Under these conditions it may be necessary to go back over the cut area a second time to get a clean cut. The following practices will help eliminate streaking:

- Mow the area more often so the grass doesn't get too tall and heavy.
- Operate the tractor at full throttle and slower forward speeds.
- Keep the blades sharp and replace the blades when worn.

## SECTION 8: ADJUSTMENTS

### Seat Adjustment

**!** **WARNING:** Do not adjust the seat when the tractor is moving. Adjusting the seat while the tractor is moving could cause the operator to lose control of the tractor.

To allow for the comfort of the operator, an easy to operate adjustable seat is a feature of this tractor. To adjust the seat forward or back, slide the seat adjustment lever to the left and reposition the seat to the desired location. Once you have found a comfortable position, release the seat adjustment lever. See Figure 12.

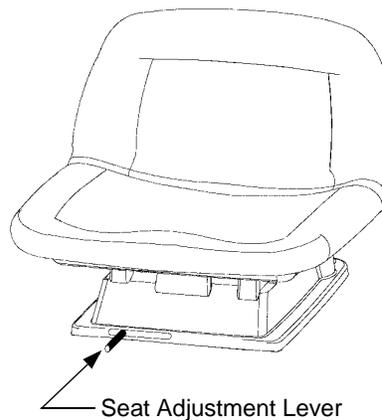


Figure 12

### Steering Wheel Tilt Adjustment

**WARNING:** Do not adjust the steering wheel when the tractor is moving. Adjusting the steering wheel while the tractor is moving could cause the operator to lose control of the tractor.

To allow for the comfort of the operator, an easy to operate adjustable steering wheel is a feature of this tractor. To adjust the steering wheel forward or back, push down on the steering wheel tilt lock lever and either push or pull the steering wheel to the desired position. Once you have found a comfortable position, release the steering wheel tilt lock lever.

### Front Wheel Alignment

**Note:** The left-hand ball joint is left-hand threaded. The right-hand ball joint is right-hand threaded.

The front wheels should toe-in approximately 1/8 inch. Measure distances A and B. A should be approximately 1/8 inch less than B. See Figure 13.

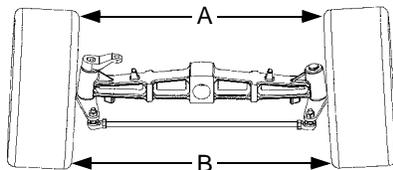


Figure 13

To adjust toe-in loosen left and right ball joint jam nuts. See Figure 14.

Turn the tie rod in or out of ball joints as required. Tighten the jam nuts against the ball joints.

Check for proper adjustment and readjust as necessary.

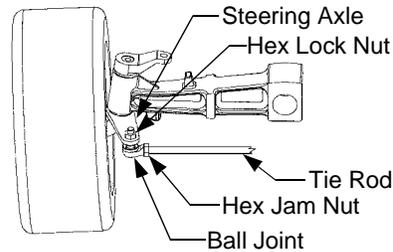


Figure 14

### Brake Inspection and Adjustment

During the normal operation of the tractor, the brakes are subject to wear and will require inspection and adjustment.

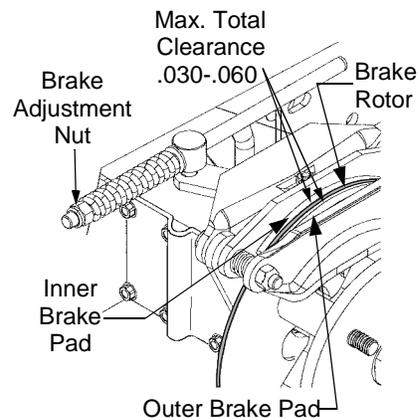


Figure 15

**NOTE:** Figure 15 is shown with the right rear wheel removed for clarity. Although not necessary for adjustment, removal of the wheels will ease the checking procedure.

Using a set of feeler gauges, complete the following procedure to check and adjust the brakes:

**NOTE:** The outer brake pad must be pulled against the rotor when the feeler gauge is inserted between the inner pad and rotor.

- With the brake pedal disengaged, insert an .030" feeler gauge between the inner brake pad and the rotor. If the .030" gauge does not fit, the brakes are overly tightened and should be loosened.
- Attempt to insert an .060" feeler gauge between the inner brake pad and the rotor. The .060" clearance is maximum allowable clearance and insertion of the gauge should not be possible.
- If the .060" gauge can be inserted the brake must be tightened.
- Accessing the brake adjustment nut from the rear of the tractor, beneath the fender, turn the nut clockwise to tighten and counterclockwise to loosen the brake assembly. See Figure 15.
- Turn the adjustment nut as necessary to obtain the .030" to .060" clearance.
- Repeat the above procedure to check and adjust the other brake assembly as necessary.

### Turning Radius Adjustment

This tractor is equipped with power assisted steering which is set at the factory. The turning radius should be equal for both left and right hand turns. If adjustment is necessary please contact your authorized Cub Cadet dealer.

## SECTION 9: MAINTENANCE

### Maintenance Chart

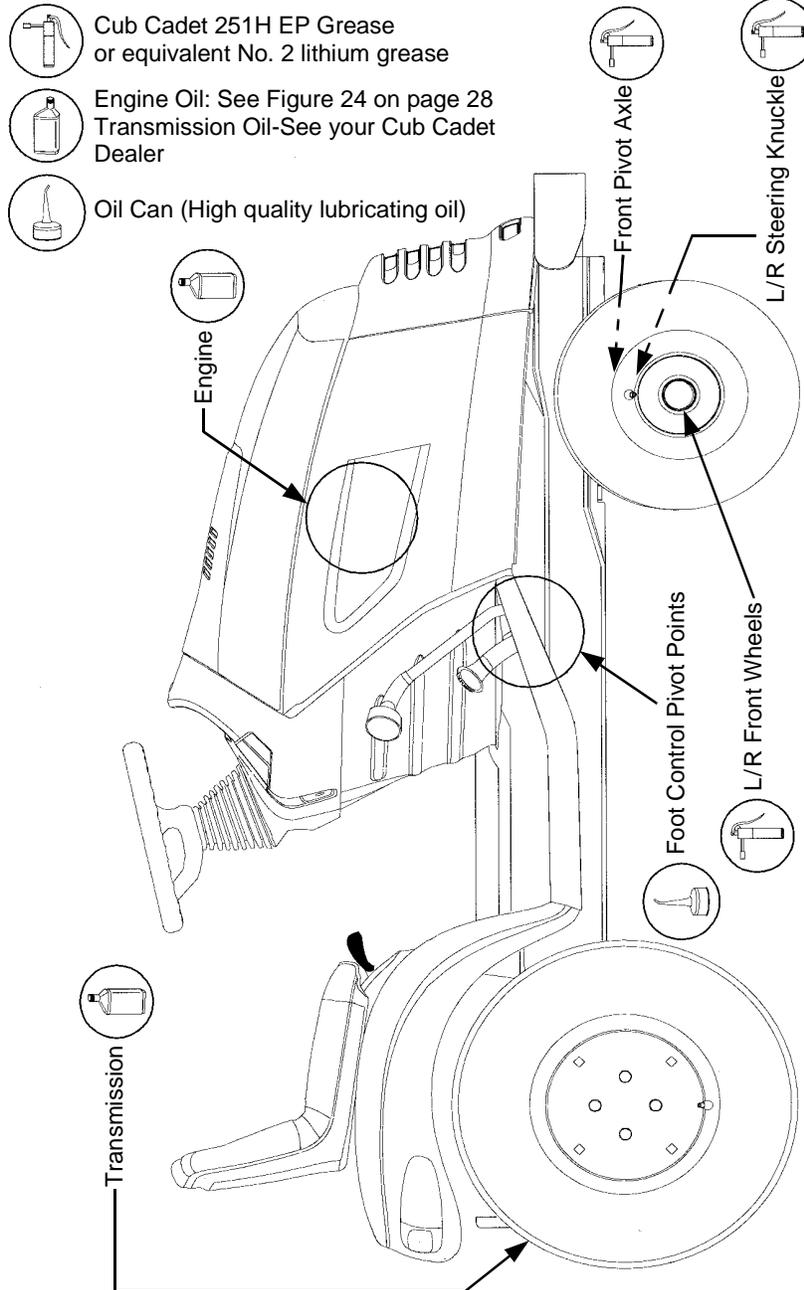
	Each Use	50 Hours	100 Hours	150 Hours	200 Hours	250 Hours	300 Hours
Grease front wheel bearings	•						
Grease L/R steering knuckles	•						
Grease front pivot axle	•						
Check engine oil level	•						
Change engine oil and filter	‡	•	•	•	•	•	•
Check transmission oil level	•						
Change transmission oil filter			•	•	•	•	•
Change transmission oil				•		•	
Check air cleaner & housing	•						
Clean & re-oil foam air pre-cleaner	††						
Change air cleaner paper cartridge			†		†		†

‡ Change oil and filter after first 8 hours

† More often under dusty conditions

†† Clean every 25 hours or more often under dusty or dirty conditions

## SECTION 10: LUBRICATION ILLUSTRATION



### Accessing Engine Compartment

The engine compartment can be accessed by lifting the hood upward from the recessed notches of the side panels and tipping the hood forward. If greater access is required, the tractor is equipped with quick release side

panels. To remove the quick release side panels (see Figure 16):

- Open the hood by pulling up.
- Flip quick release fasteners up and turn to align with slots in side panels.
- Swing the side panel out and away from the tractor

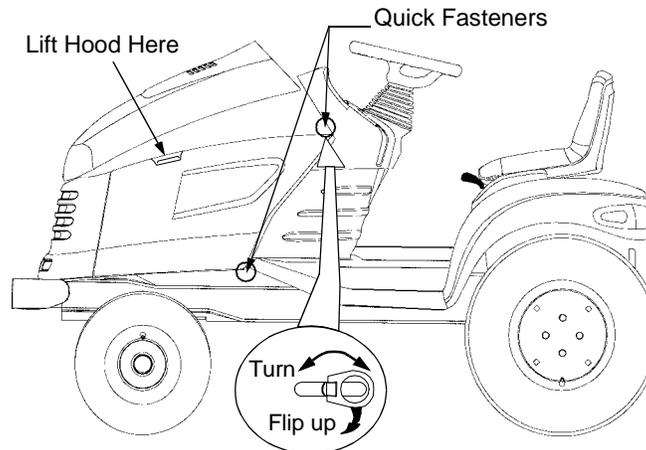


Figure 16

### General Battery Information

#### WARNING

- Battery acid must be handled with great care, as contact with it can burn and blister the skin. It is advisable to wear protective clothing (goggles, rubber gloves and apron) when working with acid.
- 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.
- Since battery acid is corrosive, do not pour it into any sink or drain. Before discarding an empty electrolyte con-

tainer, rinse it thoroughly with a neutralizing solution.

- 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 hydrogen 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.

 **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 Removal

The battery is located under the dash panel in the frame pedestal.

To remove the battery:

- Open the tractor hood by lifting it at the notches in the side panels.
- Remove the upper baffle of the bulkhead from the front of the dash panel by lifting upward on the locking tab on each side of the baffle.
- Pull the upper end of the rubber battery strap rearward to unhook it from the tab on the pedestal.
- Loosen the negative battery cable clamp and disconnect the negative lead from the battery first; then disconnect the positive lead from the battery.
- Carefully lift the battery up and out of the tractor.

Install the battery by repeating the above steps in the reverse order.

**Always connect the positive lead to the battery before connecting the negative lead.**

## 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.
- The battery should be kept clean. Any deposits of acid should be neutralized with baking soda and water. Be careful not to get this solution in the cells.
- Avoid tipping the battery. Even a "sealed" battery will leak electrolyte when tipped.

## Battery Storage

- When storing the tractor for extended periods, disconnect the battery

cables. Removing the battery from the unit is recommended.

- All batteries discharge during storage. Keep the exterior of the battery clean, especially the top. A dirty battery will discharge itself more rapidly.
- The battery must be stored with a full charge. A discharged battery will freeze at a higher temperature.

### Specific Gravity      Freezing Point

1.265	-71°F
1.250	-62°F
1.200	-16°F
1.150	5°F
1.100	16°F

- Recharge the battery before returning to service; or every two months, whichever comes first.

## Headlight Bulb Replacement

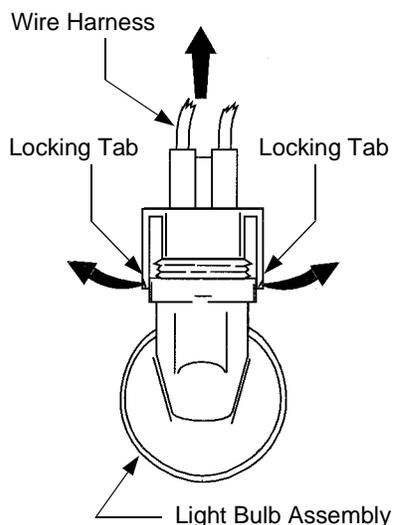


Figure 17

The headlight assembly has two bulbs one for the right and one for the left reflector. To replace one or both headlight bulbs:

- Lift the hood to expose the back side of the headlight assembly.
- Pull both locking tabs away from light bulb and pull wire harness away. See Figure 17.
- Remove the light bulb from the reflector by turning counterclockwise. The light bulb will be free of the reflector when the notches in the reflector and the tabs on the bulb are aligned.
- Replace light bulb with like part.
- Align the tabs on the light bulb and the notches in the reflector and insert light bulb.
- Turn light bulb clockwise to lock in place. Connect wire harness and make sure that the locking tabs are seated on the light bulb.

### Tail Light Bulb Replacement

Each tail light assembly has two lightbulbs. Access the back side of the tail lights from under the rear fender.

**NOTE:** *Because of the close proximity of the fuel tank, extreme caution should be taken when removing the tail light sockets from the reflector housings. The bulbs can be pulled from the sockets and dropped into the reflector housing, which will then require removal of the reflector housing to retrieve the bulb.*

To replace a light bulb:

- Turn the light bulb socket counterclockwise to align the tabs on the socket with the notches in the tail light reflector.
- Once aligned pull light socket out of the tail light reflector.
- Pull the light bulb from the socket.
- Replace light bulbs with like part.
- Align the tabs of the socket with the notches in the reflector and carefully insert the socket.
- Turn socket clockwise to lock in place. Make sure the socket is locked securely in place.

### Tire Inflation

Keep the pneumatic tires properly inflated. Over-inflation will cause operator discomfort. Under-inflation will cause short tire life.

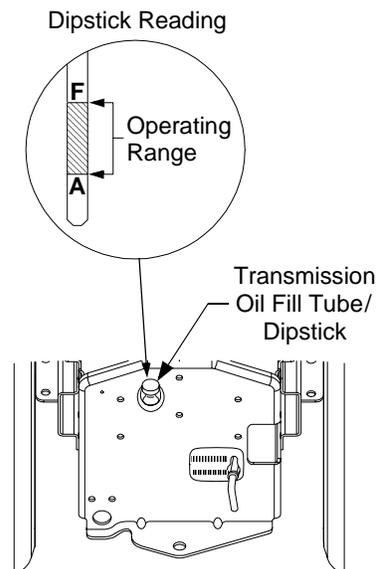
Improperly inflated tires will also affect the level of the mower deck and quality of cut.

See the tire side wall for proper inflation range.

Always ensure that the tire valve caps are in place and tightened securely to prevent loss of air and to protect the valve core and stem.

Do not overload the tractor tires by mounting equipment on the tractor which exceeds the load capacity of the size of the tires on the tractor.

### Checking Transmission Oil Level



**Figure 18**

**NOTE:** *Check the oil level only while the engine is stopped and the tractor is level.*

Check the oil level of the transmission case before each use to see that it is filled to the correct level. Before checking the transmission oil level, clean the area around the Transmission Oil Fill/Dipstick to prevent debris from entering the transmission case. Always keep the oil level between the "FULL" and the "ADD" marks on the dipstick. When checking the oil level, the dipstick must be withdrawn and wiped clean, then reinserted all the way before being withdrawn again for a true reading.

### Adding Transmission Oil



**WARNING: Never overfill the transmission case. Damage may result if the oil level in the transmission case is below the "ADD" mark or over the "FULL" mark of the dipstick.**

For best results, fill to the "FULL" mark on the dipstick as opposed to adding a given quantity of oil. Always check the level on the dipstick before adding more oil. See Figure 18.

Refer to the Lubrication Illustration for information regarding the proper type of oil to add to the transmission case. See the Specifications Chart for the quantity required.

- Place the tractor on a level surface and engage the parking brake. Stop the tractor engine and remove the ignition key.
- Clean the area around the Transmission Oil Fill/Dipstick to prevent debris from entering the transmission case.
- Remove the dipstick from the oil fill tube and SLOWLY pour oil into the oil fill tube. Fill the transmission case until the oil level reaches the "FULL" mark on the dipstick.
- Reinstall the dipstick securely into the oil fill tube.



**WARNING: The oil fill plug/dipstick must be installed securely into the fill tube at all times when the engine is operating.**

### Changing Transmission Oil

Refer to the maintenance chart for information regarding the frequency of service.

Refer to the Lubrication Illustration for information regarding the proper type of oil to add to the transmission case. See the Specifications Chart for the quantity required.

- Place the tractor on a level surface and engage the parking brake. Stop the tractor's engine and remove the ignition key.
- Remove any center mounted attachments.
- Clean the area around the transmission drain plug to prevent debris from entering the transmission case. Remove the drain plug and allow the transmission oil to drain into a clean container having a capacity of more than 3 quarts. Reinstall the drain plug. See Figure 19.

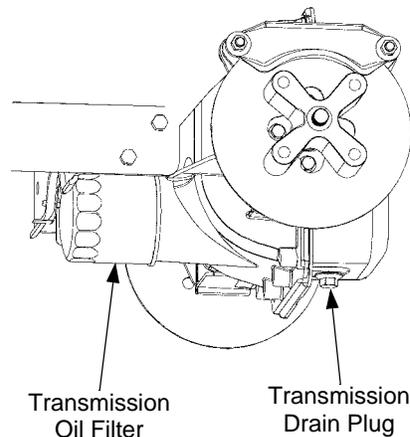


Figure 19

NOTE: Do not reuse the transmission oil. Contaminated transmission oil can damage the hydro transmission.



Please dispose of used oil at appropriate recycling centers.

- Clean around the base of the transmission oil filter and remove the filter by turning it counterclockwise.
- Apply a light coating of clean transmission oil to the gasket of the new filter. Install the filter by turning it clockwise, by hand, until the gasket contacts the filter base on the transmission housing; then tighten the filter an additional 1/2 turn.
- Clean the area around the Transmission Oil Fill/Dipstick to prevent debris from entering the transmission case.
- Remove the dipstick and SLOWLY pour oil into the oil fill tube. Fill the transmission case until the oil level reaches the "FULL" mark on the dipstick.
- Reinstall the dipstick securely into the oil fill tube.
- Start the engine and allow it to run for a few minutes. Shut the engine off, then check for leaks and recheck the oil level in the transmission case.

**Important Information:** The service life and reliability of any machine depends upon the care it is given. Proper lubrication is a very important part of that care. The maintenance schedule reflects the minimal requirements to maintain the equipment. More frequent inspections and maintenance is preferable.

Using the lubrication illustration as a guide, make certain that all lubrication fittings are installed and functioning.

Be sure all fittings are free from dirt and paint so the lubricant is certain to enter the bearing.

Using a pressure lubricating gun, always force the lubricant through the full length of each bearing until it emerges at the end, carrying with it the worn lubricant and any dirt that may have entered the bearing.

Miscellaneous working parts not provided with lubrication fittings should be oiled regularly with a good grade of lubricating oil.

Always lubricate the tractor thoroughly before taking it to a remote location for a prolonged period of time.

Lubricant is cheap. Use plenty of it. Worn parts can be expensive to replace.

Keep your supply of lubricating oil and grease stored in clean containers, and covered to protect from dust and dirt.

Keep the lubricating gun nozzle clean and wipe dirt from the grease fittings before lubricating.

### Electrical Box

The electrical box contains the relay, fuses and the voltage indicator module. See Figure 20 for the electrical box layout. The electrical box is located under the upper bulkhead in front of the dash panel. To access the electrical box:

- Raise the hood of the tractor
- Locate the locking tabs on the left and right side of the upper bulkhead.
- Pull up on the tabs and lift the upper bulkhead from the tractor.
- Lift the locking tab and remove the cover from the electrical box.

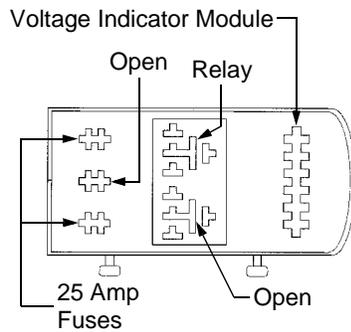


Figure 20

### Fuse

Fuses are installed to protect the tractor's electrical system from damage caused by excessive amperage.

Always use the same capacity fuse for replacement. Refer to the Specifications Chart. If the electrical system does not function, check the fuses.

To replace a fuse, note the position of the fuse and pull the old fuse from the electrical box.

Compare the suspect fuse with Figure 21 to determine if it is good or bad.

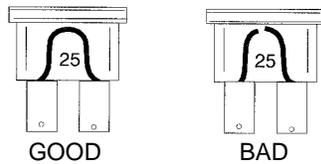


Figure 21

Install the new fuse in the position from which the old fuse was removed.

### Off-Season Storage

If the machine is to be inoperative for a period longer than 30 days, the following procedures are recommended:

**! 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.

**! WARNING:** Fuel left in the fuel tank during warm weather deteriorates and will cause serious starting problems.

To prevent gum deposits from forming inside the engine's carburetor and causing possible malfunction of the engine, remove all gasoline from the fuel tank as follows:

- Towards end of the season, monitor fuel consumption with the goal of running the fuel tank to empty.
- Remove the fuel cap and siphon the bulk of the fuel into an approved container. Then run the engine until it starts to falter and use the choke to keep the engine running until all fuel in the carburetor has been exhausted.
- Remove the spark plugs and pour one (1) ounce of engine oil through the spark plug holes into the cylinders. Crank the engine several times to distribute the oil.
- Replace the spark plugs.
- Clean the engine and the entire tractor thoroughly.
- Lubricate all lubrication points.
- Prepare the battery for storage.
- Protect the tires and seat from sunlight. Regularly check the tires for proper inflation.

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## SECTION 11: ENGINE INFORMATION

### BRIGGS & STRATTON CORP., FEDERAL (U.S. EPA) AND CALIFORNIA EMISSION CONTROL SYSTEMS WARRANTY

#### (Owner's Defect Warranty Rights and Obligations)

In the interest of the environment, Briggs & Stratton engines that meet strict emission requirements are labeled, "This engine conforms to 1995 - 1998 California emission regulations for ULGE engines and U.S. EPA Phase I regulations for small non-road engines." EMISSION CONTROL WARRANTY COVERAGE IS

APPLICABLE TO CERTIFIED ENGINES PURCHASED IN CALIFORNIA IN 1995 AND THEREAFTER, WHICH ARE USED IN CALIFORNIA, AND TO CERTIFIED MODEL YEAR 1997 AND LATER ENGINES WHICH ARE PURCHASED AND USED ELSEWHERE IN THE UNITED STATES

#### CALIFORNIA AND UNITED STATES EMISSION CONTROL DEFECTS WARRANTY STATEMENT

The U.S. Environmental Protection Agency (EPA), the California Air Resources Board (CARB), and Briggs & Stratton are pleased to explain the Emission Control Systems Warranty on your 1996 and later utility or lawn and garden equipment (ULGE) engine. In California, new ULGE engines produced on or after August 1, 1995 must be designed, built and equipped to meet the State's stringent anti-smog standards. Elsewhere in the United States, new non-road, spark-ignition engines certified for model year 1997 and later, must meet similar standards set forth by the U.S. EPA. Briggs & Stratton must warrant the emission control system on your engine for the periods of

time listed below, provided there has been no abuse, neglect or improper maintenance of your ULGE engine.

Your emission control system includes such parts as the carburetor, air cleaner, ignition system, muffler and catalytic converter. Also included may be connectors and other emission related assemblies.

Where a warrantable condition exists, your authorized dealer or a Briggs & Stratton service dealer will repair your ULGE engine at no cost to you, including diagnosis (if the diagnostic work is performed at an authorized dealer), parts and labor.

#### EMISSION CONTROL DEFECTS WARRANTY COVERAGE

The utility or lawn and garden equipment engines are warranted relative to emission control parts defects for a period of two years, subject to provisions set forth below. If any covered part on

your engine is defective, the part will be repaired or replaced by your authorized dealer or a Briggs & Stratton service dealer.

#### OWNER'S WARRANTY RESPONSIBILITIES

As the utility or lawn and garden equipment owner, you are responsible for the performance of the required maintenance listed in the Operator's Manual. The engine manufacturer recommends that you retain all receipts covering maintenance on your ULGE engine, but the engine manufacturer cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the utility or lawn and garden equipment owner, you should however be aware that the engine manufacturer may deny you warranty coverage if your ULGE engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your utility or lawn and garden equipment engine to your authorized dealer or a Briggs & Stratton service dealer as soon as a problem exists. The undisputed warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact your authorized dealer.

The emission warranty is a defects warranty. Defects are judged on normal engine performance. The warranty is not related to an in-use emission test.

#### EMISSION CONTROL DEFECTS WARRANTY PROVISIONS

The following are specific provisions relative to your Emission Control Defects Warranty Coverage. It is in addition to the manufacturer's engine warranty.

1. Warranted Parts — Coverage under this warranty extends only to the parts listed below (the emission control systems parts) to the extent these parts were present on the engine purchased.

- (a) Fuel Metering System
- Cold start enrichment system (soft choke)
  - Carburetor and internal parts

- Fuel pump
- (b) Air Induction System
  - Air cleaner
  - Intake manifold
- (c) Ignition System
  - Spark plug(s)
  - Magneto ignition system
- (d) Catalyst System
  - Catalytic converter
  - Exhaust manifold
  - Air injection system or pulse valve

- (e) Miscellaneous Items Used in Above Systems
  - Vacuum, temperature, position, time sensitive valves and switches
  - Connectors and assemblies
- 2. Length of Coverage — The engine manufacturer warrants to the initial owner and each subsequent purchaser that the Warranted Parts shall be free from defects in materials and workmanship which caused the failure of the Warranted Parts for a period of two years from the date the engine is delivered to a retail purchaser.
- 3. No Charge — Repair or replacement of any Warranted Part will be performed at no charge to the owner, including diagnostic labor which leads to the determination that a Warranted Part is defective, if the diagnostic work is performed at your authorized dealer or an authorized Briggs & Stratton service dealer. For emission warranty service contact your nearest authorized dealer or Briggs & Stratton service dealer as listed in the "Yellow Pages" under "Engines, Gasoline," "Gasoline Engines," "Lawn Mowers," or similar category.
- 4. Claims and Coverage Exclusions — Warranty claims shall be filed in accordance with the provisions of the Engine Warranty Policy. Warranty coverage shall be excluded for failures of Warranted Parts which are not original Briggs & Stratton parts or because of abuse, neglect or improper maintenance as set forth in the Engine Warranty Policy. Briggs & Stratton is not liable to cover failures of Warranted Parts caused by the use of add-on, non-original, or modified parts.
- 5. Maintenance — Any Warranted Part which is not scheduled for replacement as required maintenance or which is scheduled only for regular inspection to the effect of "repair or replace as necessary" shall be warranted as to defects for the warranty period. Any Warranted Part which is scheduled for replacement as required maintenance shall be warranted as to defects only for the period of time up to the first scheduled replacement for that part. Any replacement part that is equivalent in performance and durability may be used in the performance of any maintenance or repairs. The owner is responsible for the performance of all required maintenance, as defined in the Operator's Manual.
- 6. Consequential Coverage — Coverage hereunder shall extend to the failure of any engine components caused by the failure of any Warranted Part still under warranty.

### Cleaning The Engine

This tractor has an air-cooled engine. Air must be able to circulate freely around the engine through the flywheel screen, through the cooling shrouds and over the fins of the cylinder head and cylinder block. Keep these areas free of accumulated dirt and debris or the engine will overheat; possibly causing extensive engine damage. Regularly clean the inside of the side panels, dash intake screen and grille to ensure adequate cooling. If debris has accumulated inside the cooling shrouds, the blower housing and cooling shrouds should be removed and the cooling fins cleaned.



**WARNING: This machine is designed to cool properly with the side panels in place. Operating without the panels could cause premature accumulation of dirt and debris on the engine, resulting in inadequate cooling.**



**WARNING: Keep the muffler area clean. Before running the engine, clean the muffler area to remove all combustible debris. Inspect the muffler area often when mowing during the Fall season**

### Checking Engine Oil Level

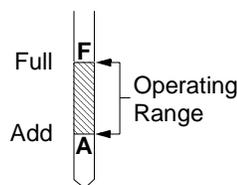


Figure 22

Before each use, the oil level of the engine crankcase should be checked to see that it is filled to the correct level. Close monitoring of the oil level during the first 10 hours of operation of the engine is especially important and the oil level should be checked **EVERY HOUR** during the first five hours of operation.

Before checking the oil level, clean the area around the oil level dipstick to prevent debris from entering the crankcase. See Figure 23. Always keep the oil level between the "FULL" and the "ADD" marks on the dipstick. See Figure 22.

When checking the oil level, the engine must be cold, the dipstick must be withdrawn and wiped clean, then inserted (screw in if necessary) all the way into the tube before being withdrawn for a true reading.

Check the oil level only while the engine is stopped and the tractor is level.

### Adding Engine Oil

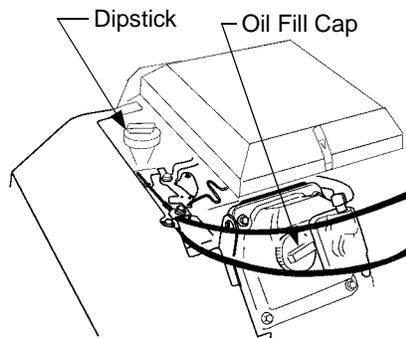


Figure 23



**WARNING:** Never overfill the engine crankcase. The engine may overheat and/or damage may result if the crankcase is below the "ADD" mark or over the "FULL" mark on the dipstick. For best results, fill to the "FULL" mark on the dipstick as opposed to adding a given quantity of oil. Always check the level on the dipstick before adding more oil.

Refer to Figure 24 for information regarding the proper type of oil to add to the crankcase.

- Place the tractor on a level surface and engage the parking brake. Stop the tractor engine and remove the ignition key.
- Clean the area around the oil filler cap to prevent debris from entering the crankcase. See Figure 23.
- Remove the oil filler cap from the left valve cover and SLOWLY pour in oil. Fill the crankcase until the oil level reaches the "FULL" mark on the dipstick. See Figure 22.
- Reinstall the oil filler cap by screwing it securely into the valve cover.



**WARNING:** The oil filler cap must be tightened securely into the valve cover at all times when the engine is operating. Severe engine damage could result from failure to do so.

### Changing Engine Oil



**WARNING:** If the tractor has recently been operated, the engine and surrounding areas may be hot. Use caution not to burn yourself when removing the side panels, draining the oil from the crankcase, and changing the oil filter.

The oil filter should be changed at every oil change interval. The filters can be obtained through your Cub Cadet dealer. See the Quick Reference Chart for the correct part number. Refer to the **MAINTENANCE CHART** on page 17 and the **SPECIFICATIONS TABLE** on page 33 for information regarding the frequency of required oil changes and the quantity of oil needed.

See (Figure 24), VISCOSITY CHART, below for the proper type of oil.

Above +40° F	SAE 30W
0° to 40° F	SAE 5W30 SAE 10W30
Below 0° F	SAE 5W20 SAE 5W30

Figure 24

The oil filter is located behind the left side panel and is mounted on the engine. See Accessing Engine Compartment on page 19 for details on removing the side panels.

Run the engine for a few minutes to allow the oil in the crankcase to warm up. Warm oil will flow more freely and carry away more of the engine sediment which may have settled at the bottom of the crankcase. Use care to avoid burns from hot oil. While the engine oil is warm, proceed as follows:

**Note:** A length of flexible tubing is supplied with the tractor and should be used to drain the engine oil.

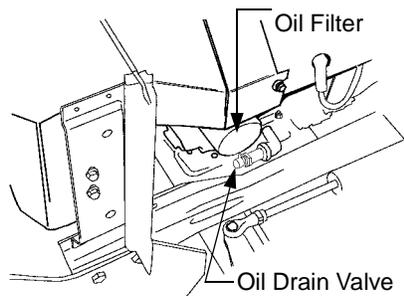


Figure 25

- Place the tractor on a level surface and engage the parking brake. Stop the tractor engine and remove the ignition key.
- Clean around the base of the oil filter, the oil filler cap, and the dipstick tube to prevent debris from entering the crankcase. See Figure 23 and Figure 25.

- Unseat the plastic dust cap from the engine oil drain valve. To prevent loss of the cap, do not remove the cap's retaining ring from the drain valve. Remove the dipstick.
- Attach the flexible tubing to the drain valve. Place an appropriate container below the open end of the tubing to collect the old oil.
- To open the drain valve, push it slightly inward and turn it counterclockwise until it stops, then pull it outward.
- Remove the filter by turning it counterclockwise using an automotive type filter wrench to loosen.
- Allow the old oil to completely drain from the engine crankcase into the container below. To close the drain valve, push it inward, turn clockwise until it stops and then release it.
- Remove the flexible tubing from the drain valve. Clean the tubing and store in a safe place for future use.
- Clean the drain valve and push the plastic dust cap onto the valve.
- Apply a light coating of clean oil on the gasket of the new oil filter. Thread the filter on by hand until the gasket contacts the oil filter adapter, then tighten the oil filter an additional 1/2 to 3/4 turn.
- Refill the crankcase with the appropriate quantity and type of oil.
- Check oil level and make sure that oil filler cap, dipstick and drain valve are in place and closed.

### Sparkplugs



**WARNING:** To avoid possible injury, be sure the engine is off and has cooled before making any adjustments or repairs.

Remove all dirt from around the spark plug before removing.

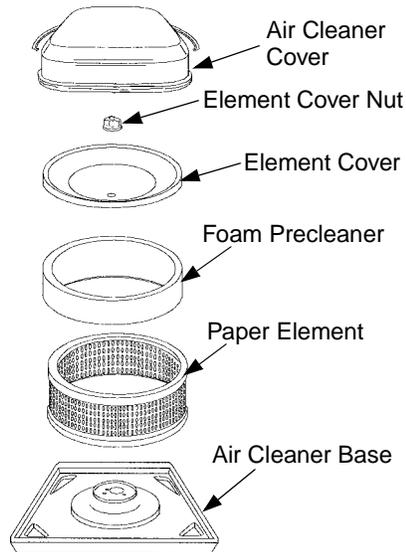
To remove the spark plugs, always use a spark plug wrench. Check the gap after every 100 hours of operation. Replace a defective plug with a new plug. Set the spark plug gap at .030 inch. Tighten the plug to 10-15 ft-lbs. See your authorized dealer for the correct replacement plug.

### Changing Fuel Filter

 **WARNING:** Do not replace the fuel filter when engine is hot.

The engine is equipped with an in-line fuel filter. Visually inspect the filter periodically for a build-up of residue inside the filter body, and for a dirty element which can be indicated by discoloration. Replace the fuel filter when dirty.

### Changing Air Cleaner



**Figure 26**

Check the air cleaner daily or before starting the engine. Check for loose or damaged components and check the condition of the filter element. Remove

any buildup of dirt and debris in the air cleaner housing.

See Figure 26 for assembly of the Aircleaner elements.



**WARNING:** Operating the engine with loose or damaged air cleaner components will allow unfiltered air into the carburetor, causing extensive wear and eventual failure of the engine.

### Servicing The Precleaner

Wash and re-oil the foam precleaner more often under extremely dusty or dirty conditions. See Figure 26.

- Loosen the aircleaner cover clips and remove the cover.
- Remove the foam precleaner by sliding it up off the paper element.
- Wash the precleaner in warm water with detergent. Rinse the precleaner thoroughly until all traces of the detergent are eliminated. Squeeze out (do not wring) excess water in a dry cloth. Allow the precleaner to air dry.
- Saturate the foam precleaner with new engine oil. Squeeze out all excess oil in a dry cloth.
- Reinstall the foam precleaner over the paper element.
- Reinstall the air cleaner cover and reattach the cover clips to both sides of the air cleaner body.

### Servicing The Paper Element

Inspect and replace the paper element as necessary. See Figure 26.

- Loosen the air cleaner cover clips and remove the cover.
- Loosen and remove the element cover nut.
- Remove element cover by lifting straight up.

- Remove the foam precleaner by sliding it up off the paper element.
- Lift out the paper air filter element.
- Do not wash the paper element or use pressurized air, as this will damage the element. Replace a dirty, bent or damaged element. Handle new elements carefully; do not use if the sealing surfaces are bent or damaged.
- When servicing the air cleaner, check the air cleaner body. Make sure it is secured and not bent or damaged. Also check the element cover plate for damage or improper fit. Replace all damaged air cleaner components.
- Reinstall the paper element, foam precleaner, cover plate and element cover nut. Reinstall the air cleaner cover and reattach the cover.

**IMPORTANT:** *Properly cleaned and installed air cleaner elements significantly contribute to prolonging engine life.*

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## SECTION 12: TROUBLE SHOOTING

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Possible Cause	Possible Remedy
<b>Hard To Start</b>	
No fuel in fuel tank or carburetor	Fill the tank with fuel. Check the fuel line, carburetor and fuel filter.
Fuel line or carburetor clogged	Clean the fuel line and carburetor with a commercial carburetor cleaner.
Fuel filter plugged	Replace
Water in fuel	Drain the fuel tank and carburetor. Use new fuel and dry the sparks plugs.
Choked improperly. Flooded engine	Follow the starting instructions.
Defective ignition or loose wiring	Check the wiring, spark plugs or fuse.
Defective battery	Check and service. Refer to <b>"BATTERY:"</b>
Spark plug dirty or improperly gapped	Clean, adjust the gap to .030-inch or replace the plug.

### Engine Operates Irregularly or Knocks

Engine incorrectly timed	See your authorized dealer.
Spark plug dirty; wrong gap or wrong type	Clean, reset the gap or replace
Poor or weak spark	Check the spark plugs and wiring.
Carburetor setting incorrect	Adjust. Refer to <b>"ADJUSTMENTS."</b>
Poor grade fuel or water in fuel	Drain and use a good grade of clean fuel.
Engine overheating	Refer to <b>"MAINTENANCE."</b>
Engine valves at fault	See your authorized dealer.
Engine smokes	See your authorized dealer.
Oil level rises due to fuel in the crankcase	See your authorized dealer.
Air filter becomes oil and fuel soaked	See your authorized dealer.
Engine leaks oil	See your authorized dealer.
Misfiring	See your authorized dealer.
Other engine problems	See your authorized dealer.
Excessive oil in air cleaner	Be sure that oil dipstick is fully seated, oil fill cap is tight, and all excess oil is squeezed out of the pre-cleaner.

### PTO Clutch Will Not Engage

Reverse pedal is partially depressed	Depress brake pedal.
Vacuum actuator not energized	Check PTO switch and connections, check for worn or broken wiring.
Vacuum leak	Check vacuum lines.

### Lack of Power

Air cleaner clogged	Service the air cleaner element. Refer to <b>"MAINTENANCE."</b>
Engine overload	Reduce the load.
Engine overheated	Make sure the air intake screen, shrouding, engine fins, side panels, dash intake screen and grille are free of accumulated dirt and debris. Refer to <b>"MAINTENANCE."</b>

Possible Cause	Possible Remedy
Fuel tank air vent clogged	Remove obstruction from the vent in the fuel tank cap.
Air leakage between carburetor and engine	Remove air cleaner. Tighten the carburetor and manifold mounting hardware. Replace any damaged parts as indicated in " <b>MAINTENANCE.</b> "
Incorrect timing or faulty ignition	See your authorized dealer.
Brake dragging	Adjust the brakes. Refer to " <b>ADJUSTMENTS.</b> "
Insufficient cooling air — dirt or debris clogging the: air intake screen • shrouds • cooling fins • side panels • dash intake screen • or grille	Keep the air intake area, side panels, grille, dash intake screen and cooling fins clean. Refer to " <b>MAINTENANCE.</b> "
Oil level incorrect	Engine oil level must not be over the "FULL" mark or below the "ADD" mark on dipstick. Refer to " <b>MAINTENANCE.</b> "

## SECTION 13: OPTIONAL EQUIPMENT

When you purchased your tractor, you probably had it completely equipped for your particular needs at that time. However, later you may wish to obtain optional equipment or accessories. These items and other allied equipment can be purchased from, and installed by, your authorized Cub Cadet dealer.

This tractor can be used for many different types of work, and because it is called on to operate under many different conditions, a variety of equipment is available to adapt it to the requirements of the user. Refer to the optional equipment chart below for a list of products available at the time of printing.

Description	Model Number
Mechanical Angling Kit <sup>(1)</sup>	190-171-100
Hydraulic Angling Kit <sup>(1)</sup>	190-288-100
48" Mower Deck	190-289-100
54" Mower Deck	190-290-100
Front Hitch System	190-343-100
Grass Collection System	190-345-100
54 Inch Blade <sup>(2)</sup>	190-352-100
Snow Thrower <sup>(1)</sup>	190-353-100
3 Point Hitch	190-365-100

(1) Requires front hitch system 190-343-100.

(2) Requires front hitch system 190-343-100. Can use optional Mechanical Angling Kit 190-171-100 or Hydraulic Angling Kit 190-288-100.

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## SECTION 14: SPECIFICATIONS

### Engine

Manufacturer	Briggs & Stratton
Horsepower	16
Cylinders	2 (VTwin)
Cooling	Air
Fast Idle Speed	3600
Slow Idle Speed	1200
Displacement (cubic inches)	34.7
Compression Ratio	8.5:1
Spark Plug	RC12YC (Champion or equivalent)
Oil Filter	Cartridge
Crank Case Capacity	56 oz.

### Electrical System

Charging System	Flywheel-Alternator
Capacity	16 Amp Regulated
Battery Type	Lead Acid
Battery Cold Cranking Amps at 0° F	435
Ignition	Battery
Fuses (auto type)	25 amp
Battery Voltage	12 Volts

### Fuel System

Fuel Tank Capacity (gallons)	4.5
Type of Fuel	Unleaded
Fuel Filter	In-line

### Drive Train

Transmission	Hydrostatic
Transmission Oil	See your local Cub Cadet Dealer
Transmission Oil Capacity	4.5 Qts.

### Tires

Front (inches)	16 x 7.5 - 8
Rear (inches)	24 x 10.5 - 12

### Dimensions and Weight

Wheelbase	49.5 in.
Overall Length	72.25 in.
Overall Width w/o Attachments	42 in.
Height	43.6 in.
Weight	700 lbs.
Turning Radius	27 in.
Ground Clearance	6 in.

### Brakes

Type	External Disk
Parking	Foot Actuated - Hand Locked

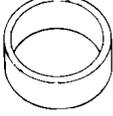
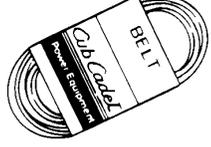
### PTO Clutch

Type	E-Vac System
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### Attachment Lift System

Type	Hydraulic
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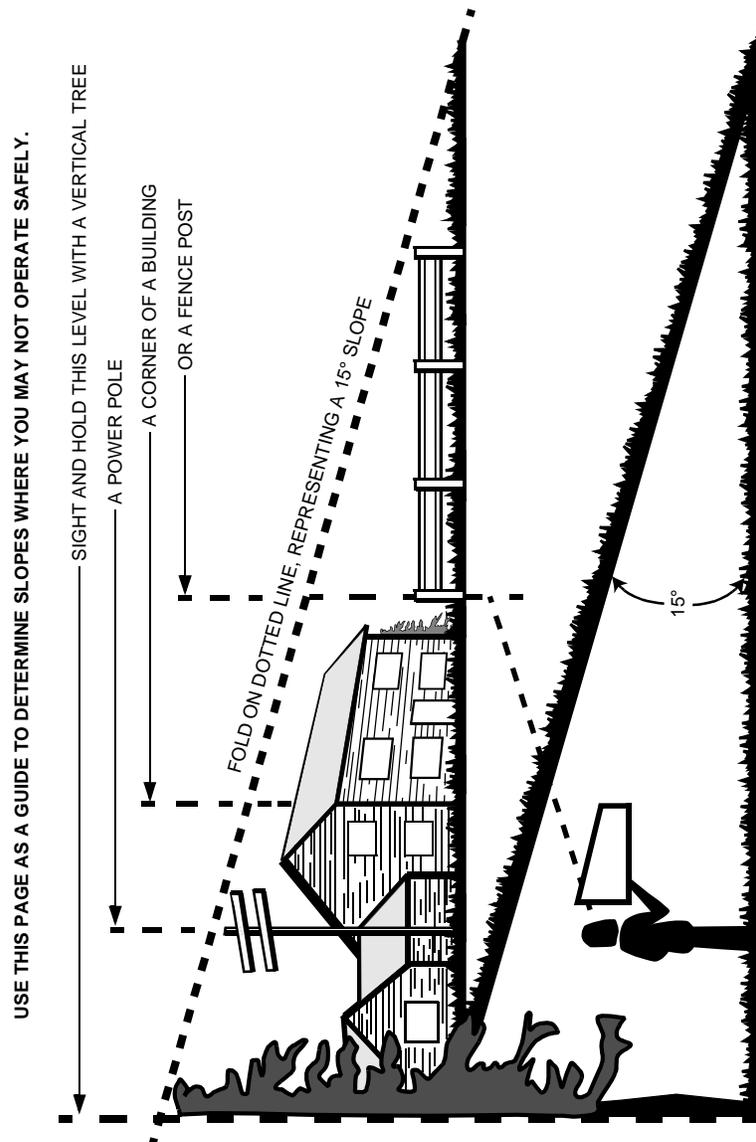
## SECTION 15: QUICK REFERENCE PARTS

Description	Part Number
<b>Engine Oil</b> 	737-3029 (SAE 30) 737-3030A (10W30) 737-3049 (5W30)
<b>Air Filter</b> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <b>CARTRIDGE</b> </div> <div style="text-align: center;">   <b>FOAM PRE-CLEANER</b> </div> </div>	BS-394018   BS-272490
<b>Engine Oil Filter</b> 	BS-492932
<b>Spark Plug</b> 	759-3336
<b>Transmission Oil</b> 	Drive System Plus See your local Cub Cadet dealer
<b>Transmission Oil Filter</b> 	923-3014
<b>Mower Deck Blades</b> 	48" Mower Deck 759-3826 (3) 54" Mower Deck 759-3820 (3)
<b>Mower Deck Belts</b> 	48" Mower Deck 954-3053 (1) 54" Mower Deck 954-0197
<b>PTO Belt (set of 2)</b>	954-3084

## SECTION 16: SLOPE GAUGE

**⚠ WARNING:** Do not mow on inclines with a slope in excess of 15 degrees (a rise of approximately 2-1/2 feet every 10 feet). A riding mower could overturn and cause serious injury. If operating a walk-behind mower on such a slope, it is extremely difficult to maintain your footing and you could slip, resulting in serious injury.

- Operate RIDING mowers up and down slopes, never across the face of slopes.
- Operate WALK-BEHIND mowers across the face of slopes, never up and down slopes.



## LIMITED WARRANTY



### **TWO-YEAR RESIDENTIAL ONE-YEAR COMMERCIAL**

Proper maintenance of your Cub Cadet equipment is the owner's responsibility. Follow the instructions in your operator's manual for correct lubricants and maintenance schedule. Your Cub Cadet dealer carries a complete line of quality lubricants and filters for your equipment's engine, transmission, chassis and attachments.

#### **Riding mowers, lawn tractors, garden tractors, Cub Cadet attachments and home maintenance products**

This limited warranty for residential users, covers any defect in materials or workmanship in your Cub Cadet equipment for two years from the date of purchase for the first user purchaser. We will replace or repair any part or parts without charge through your authorized Cub Cadet dealer.

Batteries have a one-year prorated limited warranty with 100% replacement during the first three months.

V-belts for either the traction drive or any attachments are covered for one year only.

Cub Cadet equipment used commercially is warranted for one year only. (Commercial use is defined as either having hired operators or used for income producing purposes).

#### **Items not covered**

The warranty does not cover routine maintenance items such as lubricants, filters (oil, fuel, air and hydraulic), cleaning, tune-ups, brake and/or clutch inspection, adjustments made as part of normal maintenance, blade sharpening, set-up, abuse, accidents and normal wear. It does not cover incidental costs such as transporting your equipment to and from the dealer, telephone charges or renting a product temporarily to replace a warranted product.

There is no other express warranty.

#### **How to obtain service**

Contact your authorized Cub Cadet servicing dealer who sold you your Cub Cadet equipment. If this dealer is not available, see the Consumer Yellow Pages under "lawn mowers" for the name of a dealer near you.

If you need further assistance in finding an authorized Cub Cadet servicing dealer, contact:

**Cub Cadet Corporation  
Post Office Box 368023  
Cleveland, Ohio 44136**

#### **How does state law apply?**

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