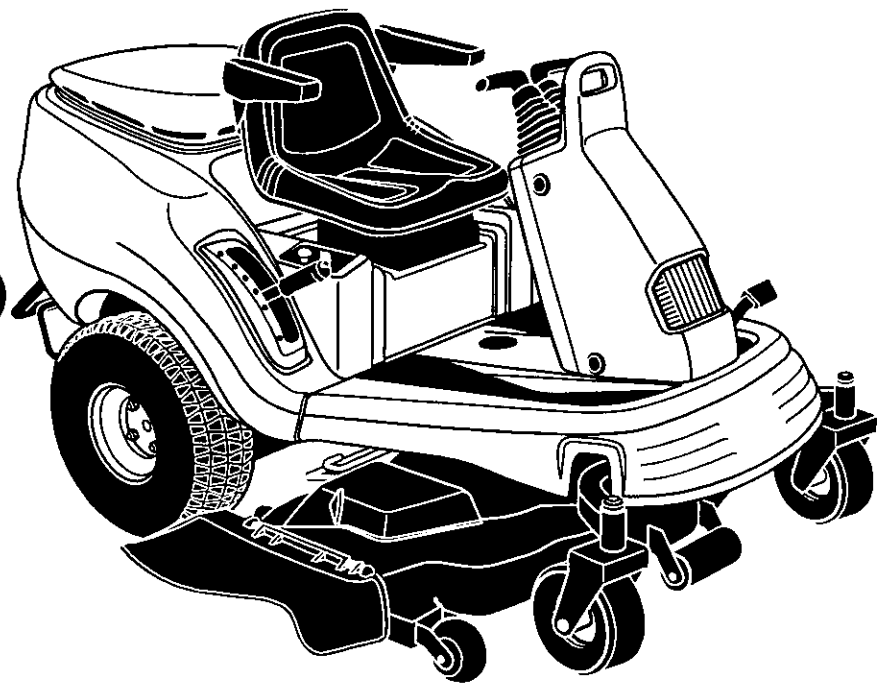
Cub Cadet®

OPERATOR'S MANUAL

Models
Z-48, Z-54
Z-54L



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 44136-9722.

CUB CADET CORP. P.O. BOX 368023 CLEVELAND, OHIO 44136-9722

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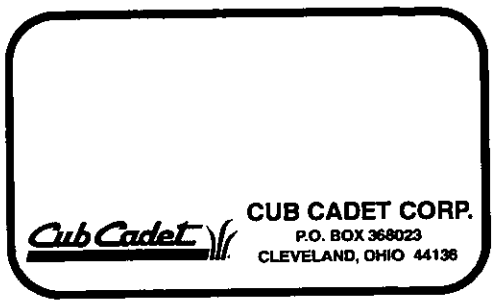
FORM NO. 770-10099
(10/98)

SECTION 1: FINDING YOUR MODEL NUMBER

This Owner's Guide is an important part of your new Z-Series. It will help you prepare, operate and maintain your mower. Please read and understand what it says.

Before you start to prepare your mower for its first use, please locate the model plate and copy the information from it in this Owner's Guide. The information on the model plate is very important if you need help from your dealer. See Figure 1.

- Every mower has a model plate. You can locate it by opening the engine cover and looking down at the battery stand. It is located on the rear face of the battery stand.



Copy the model number here: _____

Copy the serial number here: _____

Figure 1

SECTION 2: CALLING WARRANTY SERVICE

If you are having difficulty assembling this product or if you have any question regarding the controls, operation or maintenance of this unit, please call the Customer Dealer Referral Line. You can reach them by calling:

1-800-528-1009

Before calling your local dealer, make sure that you have your model and serial numbers ready. By having the model and serial numbers ready, you help your local dealer give you faster service. To find your unit's model and serial number, see SECTION 2: FINDING YOUR MODEL NUMBER.

SECTION 3: 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 LAWN MOWER. FAILURE TO COMPLY WITH THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY. WHEN YOU SEE THIS SYMBOL, HEED ITS WARNING.

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 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 mower 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.

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 manufacturer's 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. 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.

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.
- Keep all nuts, bolts and screws tight to be sure the equipment is in safe working condition.
- 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.

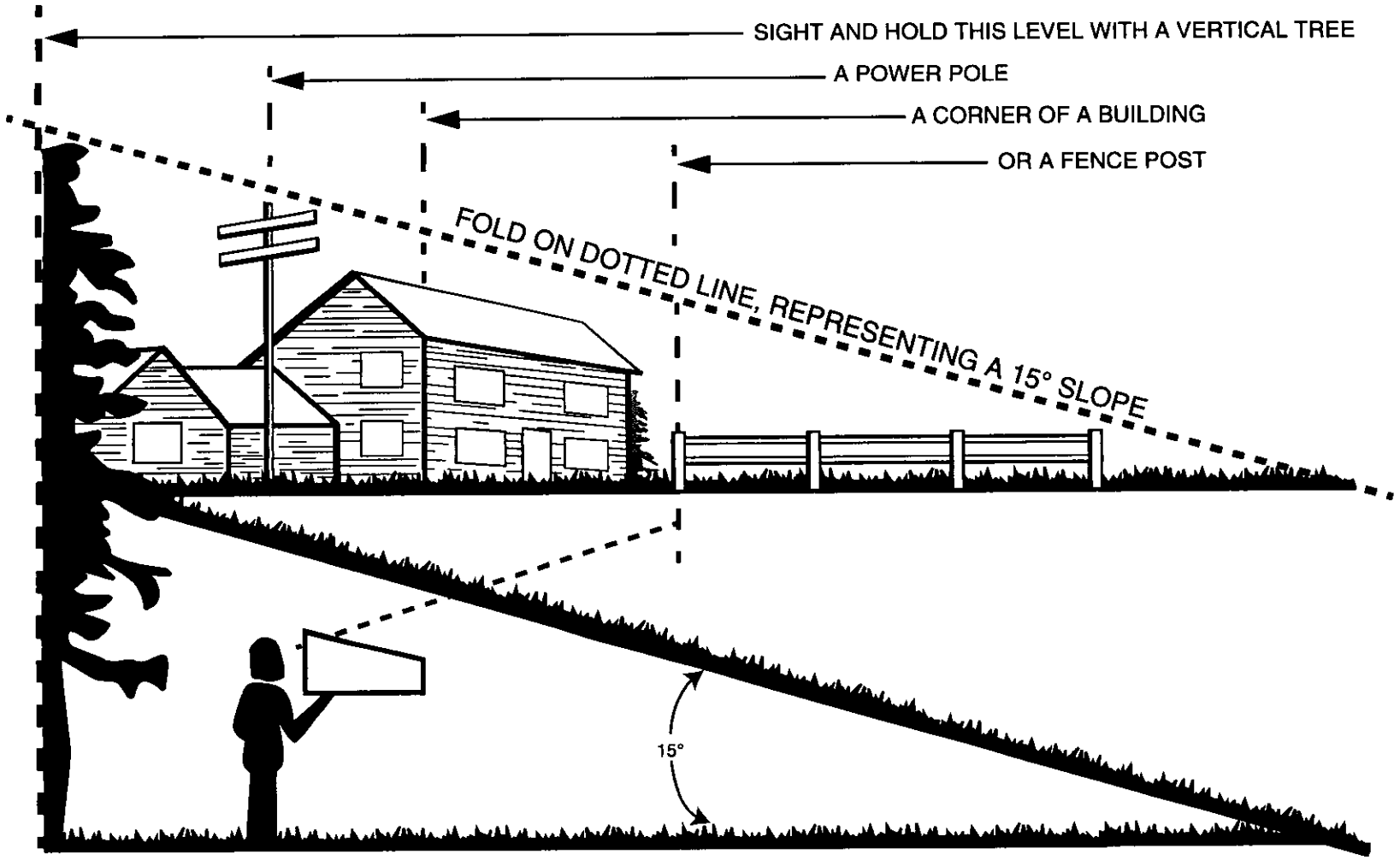


Figure 2 Safety Labels Found On Unit

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

USE THIS PAGE AS A GUIDE TO DETERMINE SLOPES WHERE YOU MAY NOT OPERATE SAFELY.

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.

SECTION 4: CONTROLS

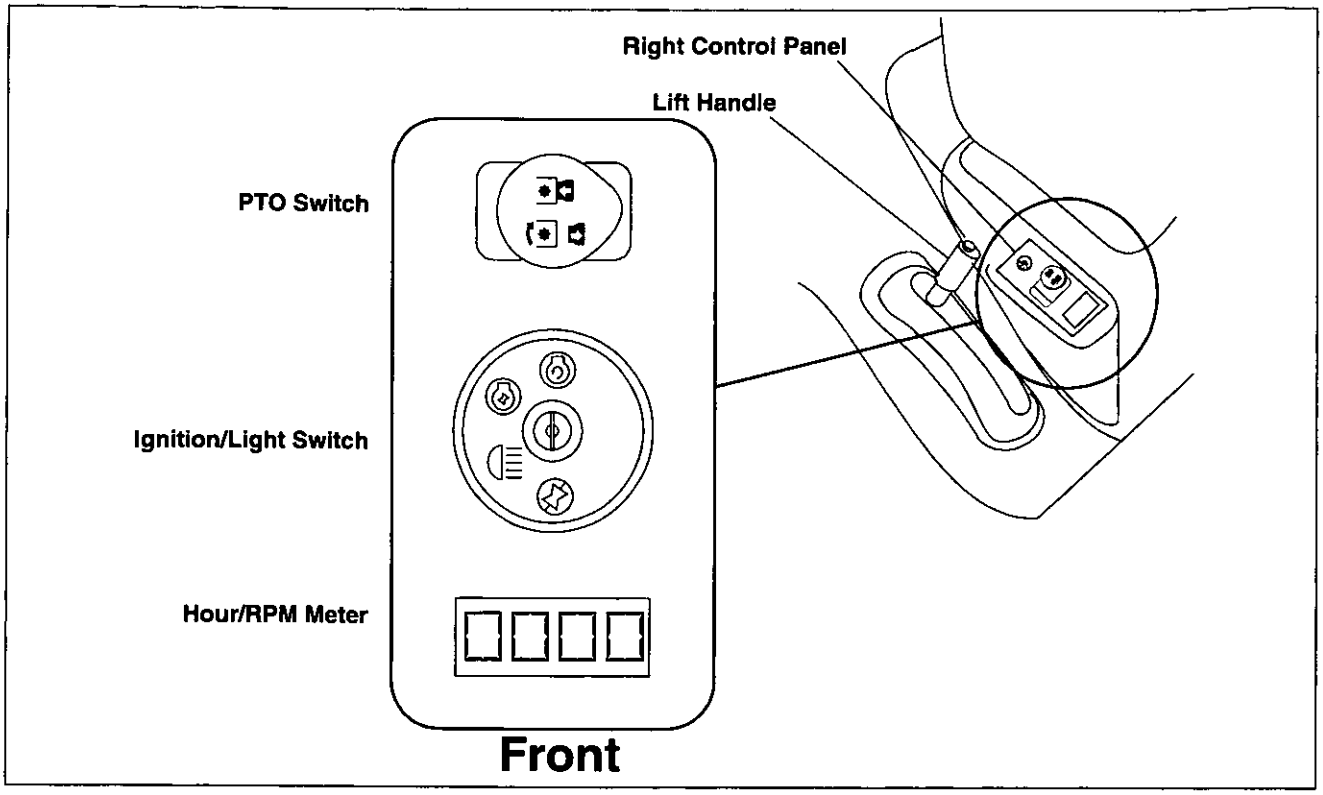


Figure 3

HOUR/RPM METER

The hour/RPM meter is an LCD (liquid crystal display) display that is located on the Right Control Panel. The meter's display stays on continuously. (See Figure 3)

- **HOUR METER**: The meter functions as an hour meter. The hour value is the number of hours of engine operation. Use the hour value to determine when maintenance is required and to cost jobs.
- **RPM METER**: When the engine is on, the meter functions as an engine RPM gauge.

POWER TAKE-OFF (PTO) SWITCH

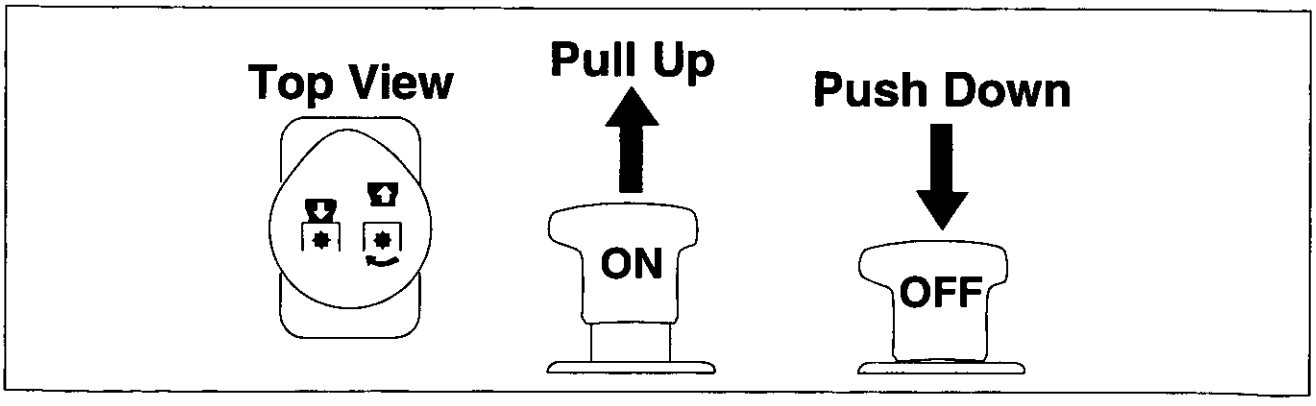


Figure 4

The PTO switch is located on the Right Control Panel. (See Figure 4) It controls the engagement of the cutting blades. When the switch is:

- **UP**: The cutting blades are engaged (blades are turning).
- **DOWN**: The cutting blades are disengaged (not turning).

IGNITION/LIGHT SWITCH

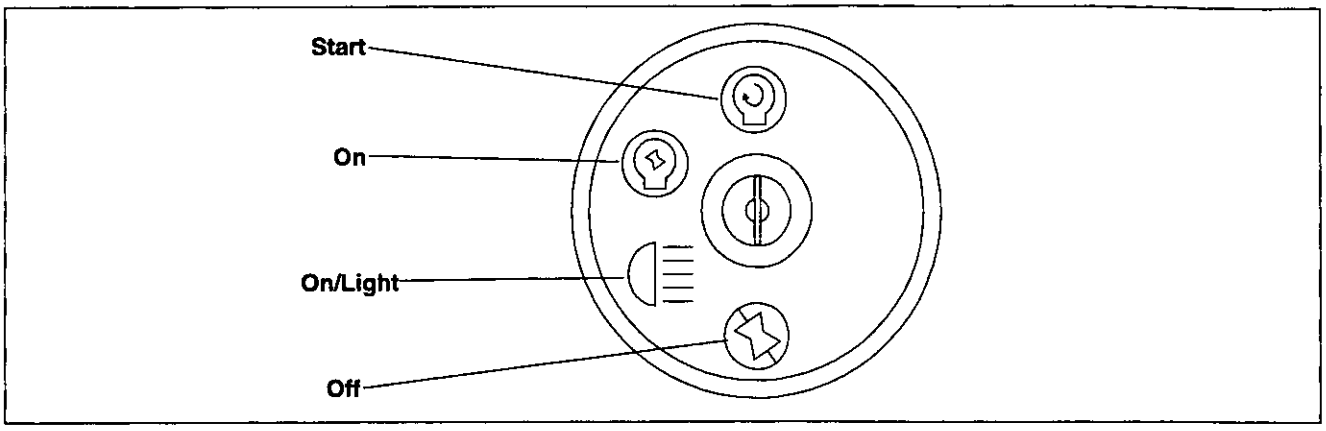


Figure 5

The ignition/light switch is located on the Right Control Panel and is used to start the engine. (See Figure 5) It is a four position switch.

- In the **OFF** position the engine is not running. (See Figure 5)
- In the **ON/LIGHT** position the engine is running and the Head Light is on.
- In the **ON** position the engine is running and the head light is off.
- In the **START** position the starter is engaged to the engine flywheel.

LIFT HANDLE

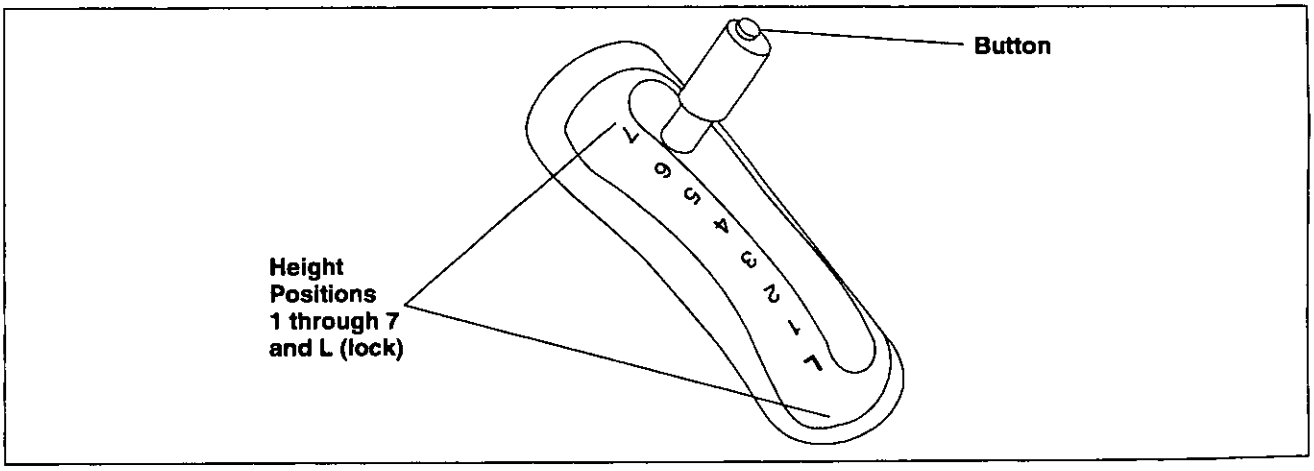


Figure 6

The Lift Handle is located on the right fender. It raises and lowers the cutting height of the mower deck used by the Z-series. (See Figure 3) & (See Figure 6)

- **1** through **7** (1 - lowest height, 7 - highest height)
- **L** is the lock out position. The lock position is used when removing the mower deck.

The Choke Lever is located on the Left Control Panel. See Figure 7. The Choke Lever is operated manually. Having the Choke Lever in the **ON** position helps the engine to start during initial start-up. During normal operation the Choke Lever should be in the **OFF** position.

The Throttle Lever is also located on the Left Control Panel and it is used to regulate the engine speed. To get maximum efficiency from cutting, the throttle should be in the FAST position when operating the mower.
See Figure 7.

THROTTLE LEVER AND CHOKE LEVER

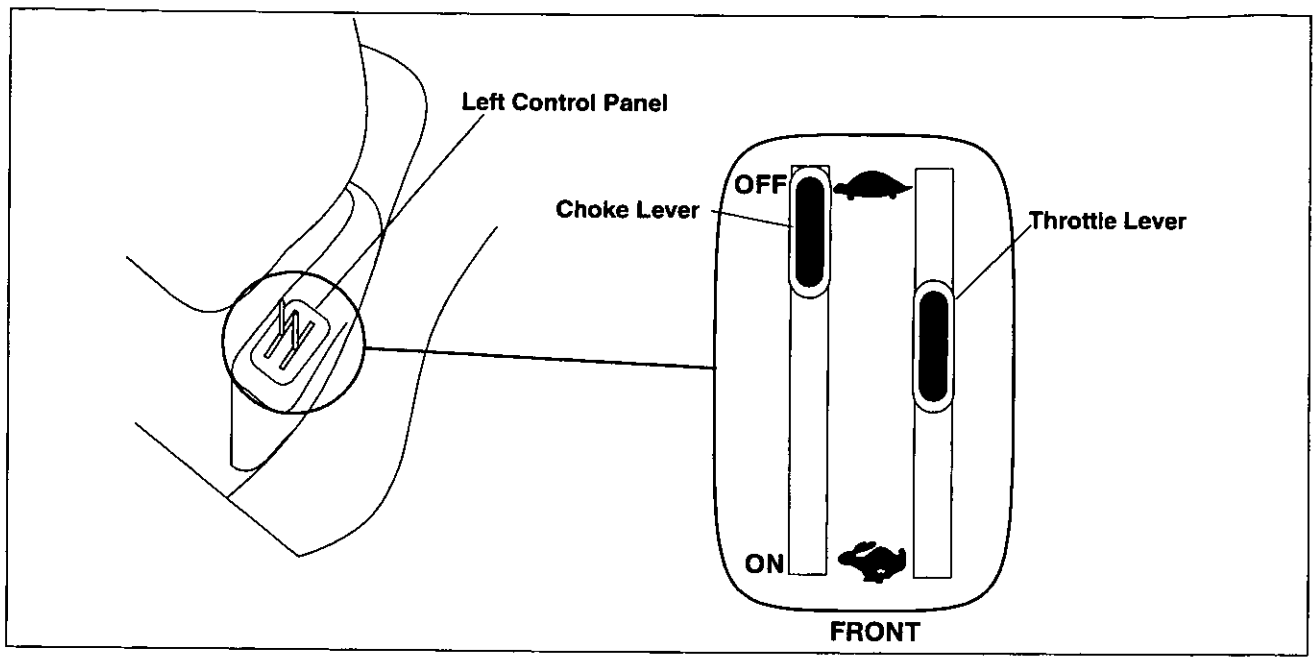


Figure 7

PARKING BRAKE

The Parking Brake Pedal is located on the left running board next to the Control Tower. (See Figure 8) It is used to engage the Parking Brake. Engage the Parking Brake when the unit is not in use.

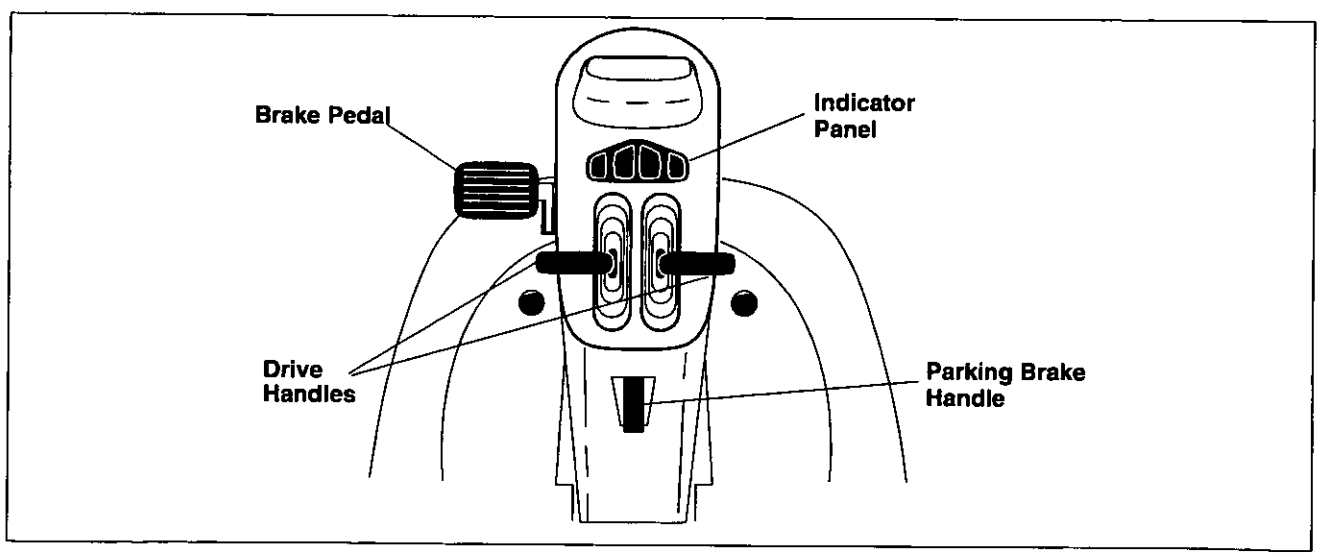


Figure 8

DRIVE HANDLES

The Drive Handles (Left and Right) are located at the top of the Control Tower. (See Figure 8) The drive handles are used to move, (propel) steer and stop the Z-series. The drive handles will return toward the neutral position without driver input. However, the driver should place the Drive Handles in the neutral position. Unless the Drive Handles are placed in the neutral position the Z-Series may creep. When the Drive Handles are in the neutral position the unit does not move.

When the engine is running, the throttle is set and the Drive Handles are moved from the neutral position, the unit moves in accordance with the driver's input (push, pull or both). When the driver releases the handles they immediately return towards the neutral position and the unit will slow and stop moving (while the engine continues to run).

The rear wheels propel and steer the unit. The Left Drive Handle controls the Left rear wheel and the Right Drive handle controls the Right rear wheel. Push a handle forward and the respective wheel turns forward. Pull a handle back and the respective wheel turns in reverse.

Each Drive handle has a range in the forward position (push) and the reverse position (pull). If a Drive Handle is moved to the full position (until it stops) the rear wheel turns as fast as the throttle is set. Positions between neutral and full are proportional across the range based on the throttle setting. The Drive Handles can be moved together in the same direction or independent of each other in any combination (i.e. Left push, Right pull).

NOTE: The Drive Handles will return toward neutral when released, but they should be placed in neutral by the driver. If the Drive Handles are not placed in neutral, the tractor may creep.

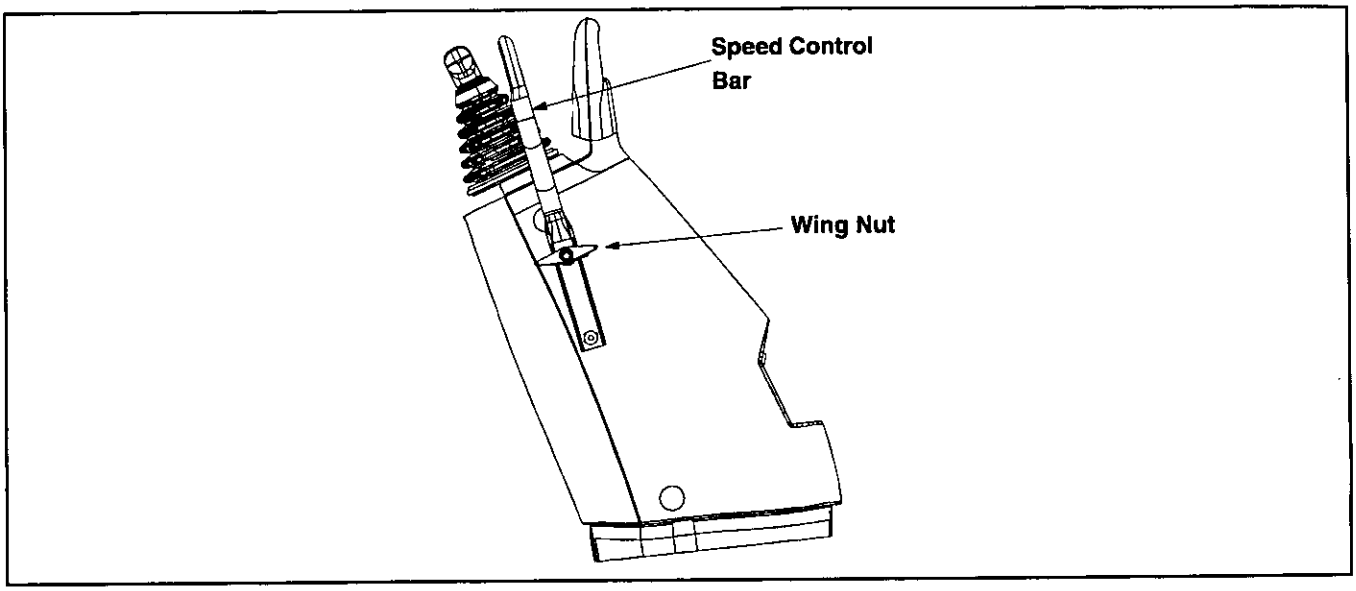


Figure 9

SPEED CONTROL BAR

The Speed Control Bar is connected to the console with two wing nuts. (See Figure 9). It is used as a grab bar for entry or exit from the tractor and allows for pre-set maximum travel speed.

- Loosen the two wing nuts located on either side of the plastic console.
- Rotate speed control bar to desire location.
- Tighten wing nut to secure speed control bar.

NOTE: Limit loosening the wing nuts to 1 1/2 turns. This will insure proper assembly of the screw not visible on the other side of the plastic console. Refer to parts book if screw fell and wing nuts are no longer tightening.

The Speed Control Bar also aids the drive handles in making "perfect U-turns". Grasping both Drive Handles and the Speed Control Bar at the same time to move forward, release the Left Drive Handle to turn left and then regrasp to continue straight ahead or release the Right Drive Handle to turn right. Refer also to the Quick Reference Chart located in the Operation Section.

INDICATOR PANEL

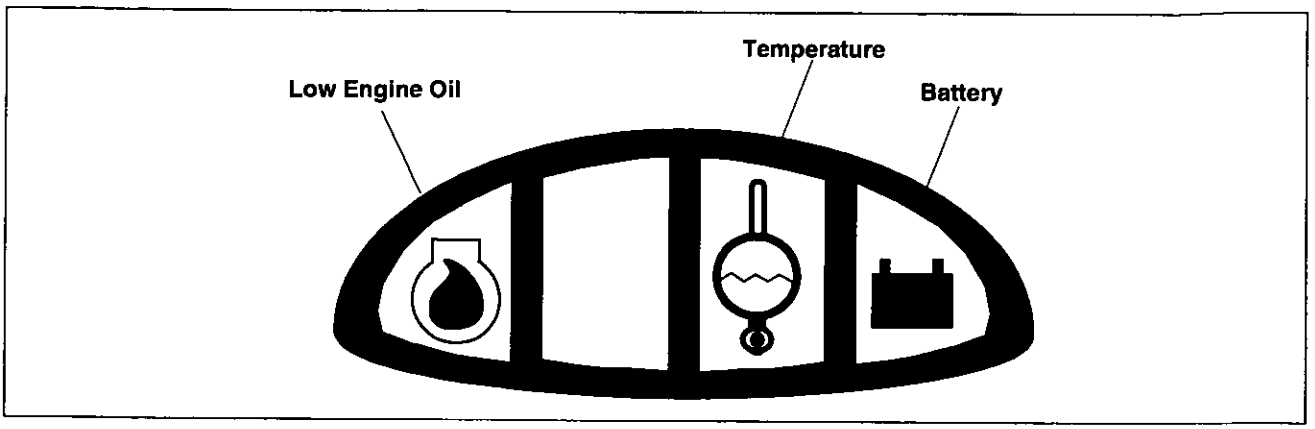


Figure 10

The Indicator panel is located at the top of the Control Tower. (See Figure 10) There are two or three indicator lights on the panel. When the corresponding light is illuminated it indicates:

- **LOW ENGINE OIL**: Stop the tractor immediately and check the engine oil level. Continuing to operate with low engine oil can severely damage the engine.
- **BATTERY**: There is a problem with the charging system or battery. Stop the Z-series and contact your dealer.
- **TEMPERATURE: (Liquid Cooled Models only)** Stop the engine immediately. Check clean air intake and cooling areas.

SEAT ADJUSTMENT LEVER

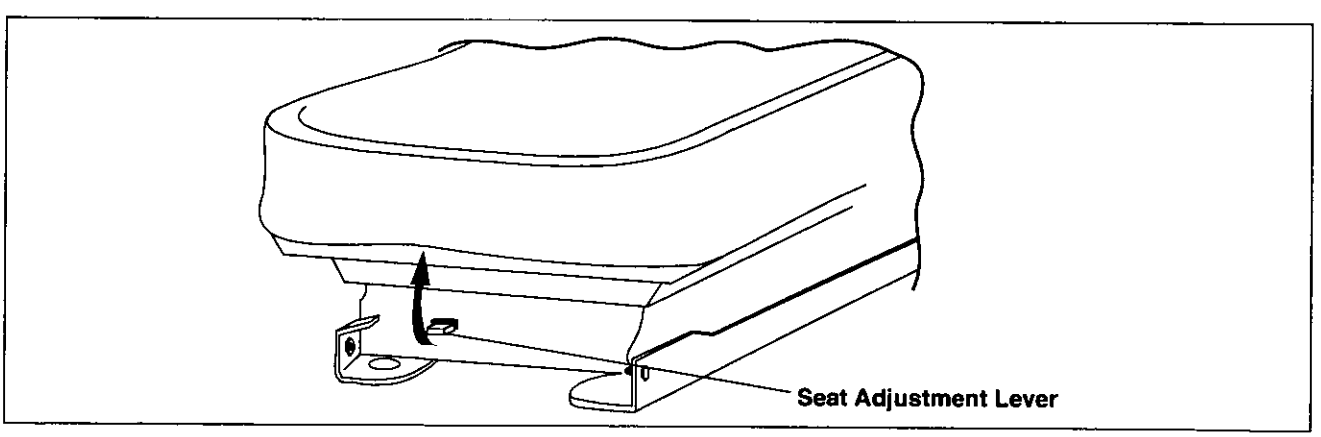


Figure 11

The Seat Adjustment Lever is located beneath the seat. (See Figure 11) The Seat Adjustment Lever is used to move the seat forward and backward.

1. Pull up on the seat adjustment lever and push the seat forward or back to the desired position.
2. Release the seat adjustment lever so that it locks the seat in place.

WARNING: Do not try to adjust the seat position while operating the Z-Series.

SECTION 5: OPERATION

BEFORE OPERATING

1. Study this manual carefully. It has been provided to help you safely operate and maintain this unit.
2. Familiarize yourself with all instruments and controls.
3. Fill the fuel tank according to the engine operator's manual section.
4. Check the engine oil level according to the engine operators manual section.
5. Check the transmission oil level.
6. Clean the air filter according to the engine operators manual section, if necessary.
7. Check the rear tires for proper inflation pressure. See tire side wall for proper inflation.
8. Adjust the seat for maximum operator comfort, visibility and control.
9. Remove grass and debris from the engine cover panel vents, if necessary.

OPERATING GUIDELINES

- Keep all shields in place and keep away from moving parts.
- NO RIDERS! Keep people and pets at least 75 feet from this unit.
- Always look back before backing.
- Don't point the discharge at people.
- Avoid slopes. This unit can roll over. 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.
- Before leaving the seat, disengage the PTO (down), engage the Parking Brake and turn ignition switch to OFF.
- Do not fill gasoline tank when engine is running or while the engine is hot.

STARTING THE ENGINE

The Z-series is equipped with a safety interlock-system with the following features:

- The engine will not crank or start without the Parking Brake fully engaged and the PTO disengaged (down).
- If the operator dismounts the tractor with the PTO in the RUN position, or the Parking Brake disengaged, it automatically shuts the engine off.



WARNING: During operation do not run the engine in confined areas such as storage buildings any longer than necessary. Immediately move the tractor outside into open air.

1. Sit in the seat of the tractor facing forward with your feet straddling the Control Tower.
2. Push the Choke Lever to the full choke position (all the way toward the front of the tractor).
3. Push the Throttle Lever to the fast (Rabbit) position (all the way toward the front of the tractor).

Note: Less choking may be required due to ambient temperature variance and fuel grade. If the engine is warm, choking may not be necessary.

4. Push the power take-off (PTO) switch to OFF.
5. Fully depress the Brake Pedal.
6. Turn the ignition switch to the START position and release it as soon as the engine starts.

Note: Do not engage the starter for more than ten seconds at any one time.

7. Push the Choke Lever to the OFF position (rearward).

Note: In cold weather the starter motor may disengage prematurely. If this happens several times the engine may become flooded.

STARTING A FLOODED ENGINE

If the starter disengages several times prematurely, the engine may become flooded. Use the following steps to start a flooded engine:

1. Position the throttle to the idle position.
2. Put the Choke Lever in the OFF position.
3. Turn the ignition switch to the START position and at the same time, slowly move the Choke Lever to the ON position until the engine starts and continues to run.
4. When the engine becomes warm, gradually put the choke lever in the OFF position.

Note: If the engine falters after putting the unit into motion, push the choke forward until the engine runs smoothly. Then gradually pull the choke back as the engine warms.

STOPPING THE ENGINE

1. Bring the tractor to a stop by pulling the drive handles to the neutral position.
2. Push down on the PTO switch (off) if engaged.
3. Set the throttle to the slow position.
4. Allow the engine to idle for a few seconds.
5. Turn the key to the OFF position.

WARNING: Always remove the key from the ignition switch to avoid accidental starting and battery discharge.

OPERATING THE CHOKE LEVER

- **ON**: Push the lever forward (toward the front of the tractor).
- **OFF**: Pull the lever back (toward the rear of the tractor).

OPERATING THE THROTTLE LEVER

- **FASTER ENGINE SPEED**: Push the throttle lever forward toward the Rabbit symbol.
- **SLOWER ENGINE SPEED**: Pull the throttle lever back toward Turtle symbol.

The Throttle Lever controls the speed of the engine. When set in a given position, it maintains a uniform engine speed. When using power take-off (PTO) equipment (e.g. mower deck) best performance is achieved with the Throttle Lever in the FAST position.

ENGAGING THE PARKING BRAKE

1. Press down on the Brake Pedal and hold.
2. Push down on the Parking Brake Handle in the middle of the Control Tower to lock engagement. (See Figure 8)

Note: The Brake must be engaged when starting the engine.

RELEASING THE PARKING BRAKE

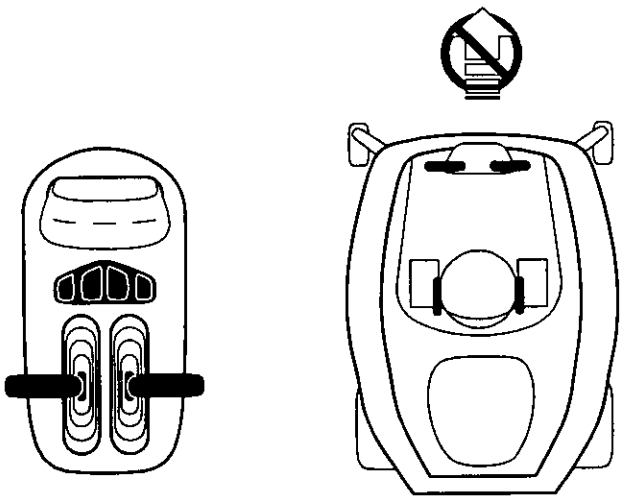
Press down on the Brake Pedal and release.

QUICK REFERENCE CHART

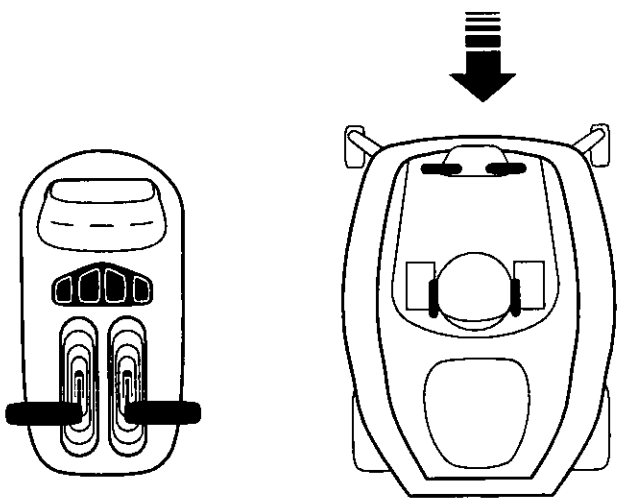
The Z-series can turn with a zero radius. The Z-series uses the rear tires to turn. When turning with a zero radius, the rear tires are used as the pivot point. A conventional tractor can make a circle but it needs a turning radius, usually based on the distance between the front and rear wheels. With a shorter overall length and a zero turn radius, the Z-series has excellent maneuverability.

The Z-series does not have a steering wheel, instead drive handles are used to steer and to propel the unit. When the Drive Handles are in the full positions (pull or push) the wheels turn at full speed based on the throttle setting. Positions between neutral and full are proportional across the range based on the throttle setting. This is a departure from what most of us are accustomed. Please take a few minutes to study the diagrams that follows.

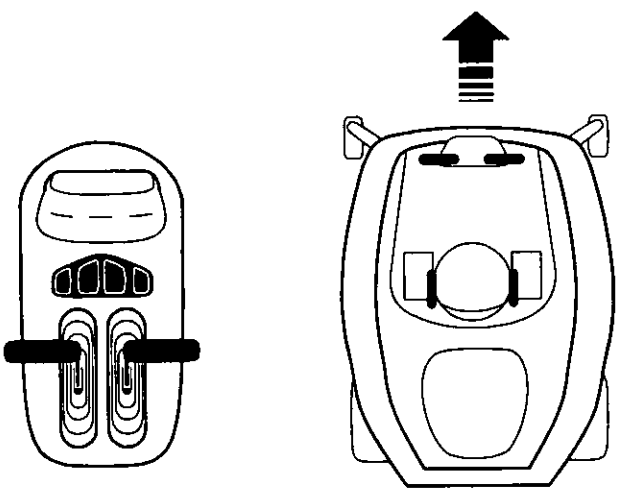
RELEASE HANDLES = NEUTRAL - STOP



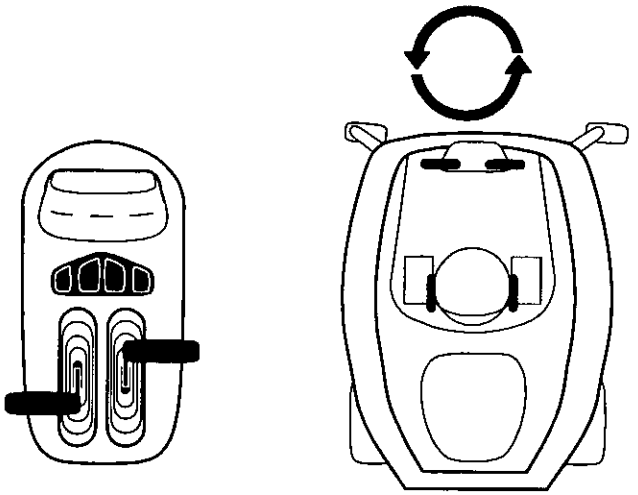
PULL HANDLES EQUAL BACK = STRAIGHT REVERSE



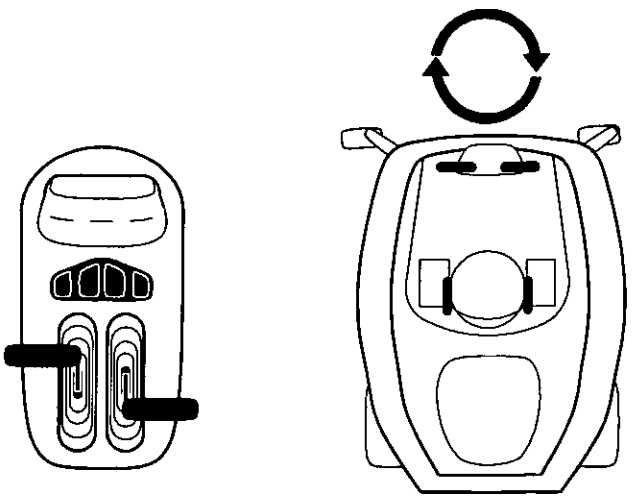
PUSH HANDLES EQUAL FORWARD = STRAIGHT FORWARD



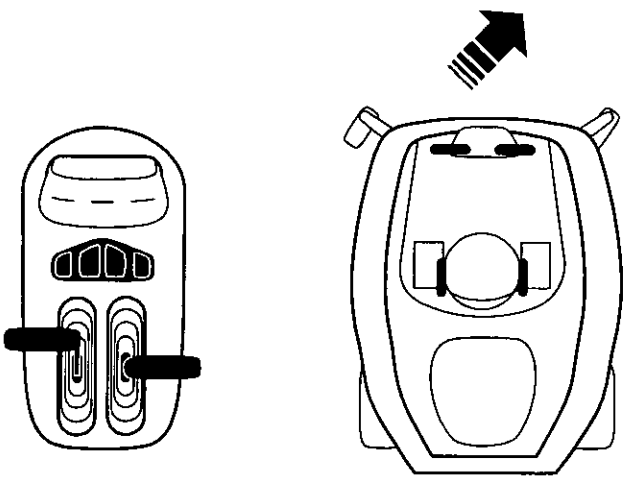
FULL RIGHT FORWARD AND FULL LEFT BACK = ZERO TURN LEFT



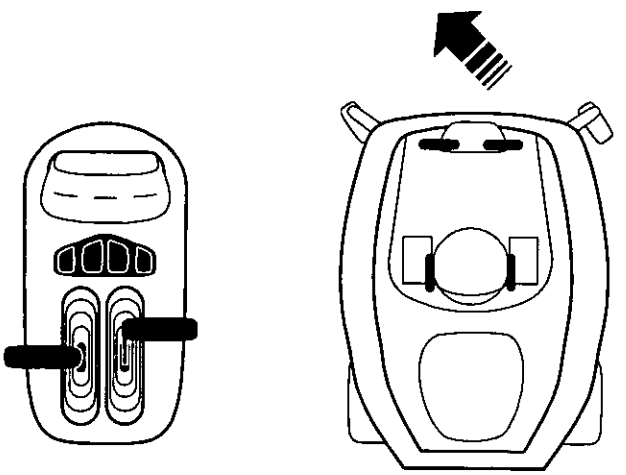
FULL RIGHT BACK AND FULL LEFT FORWARD = ZERO TURN RIGHT



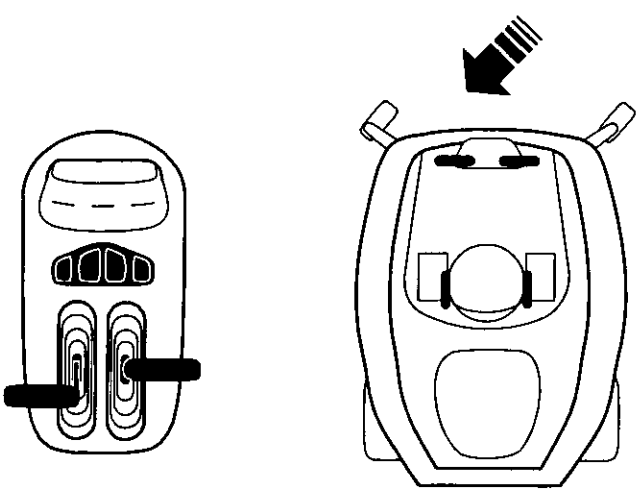
RIGHT NEUTRAL AND LEFT FORWARD = RIGHT TURN



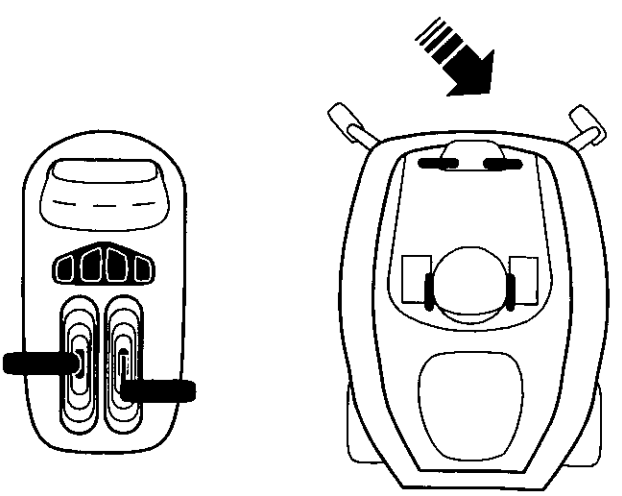
RIGHT FORWARD AND LEFT NEUTRAL = LEFT TURN



RIGHT NEUTRAL AND LEFT BACK = REVERSE LEFT TURN



RIGHT BACK AND LEFT NEUTRAL = REVERSE RIGHT TURN



DRIVING THE Z-SERIES

1. Start the engine and allow it to idle for a moment.
2. Set the throttle to the fastest position (full open).
3. Release the Parking Brake by depressing the Parking Brake Pedal.
4. Gradually provide input by moving the Drive Handles in the desired direction.

Note: The Z-series speed, while driving, is based on the position of the Drive Handles. Push or pull the handles to full for maximum speed and positions in between neutral and full for slower speeds.

DRIVING ON SLOPES

Before operating the Z-series on any slope:

1. Use the Slope Gauge to determine if the slope is safe for operation.
2. If safe for operation, walk the slope and look for hazards such as rocks, mounds, ruts, stumps or other irregularities.
3. After removing debris and identifying irregularities of the slope, back the Z-series up the steepest slope you intend to work. If it cannot negotiate the slope in reverse, the slope is too steep.

Use the following guidelines when operating on a slope:

WARNING: Do not mow on inclines with a slope greater than 15 degrees (a rise of approximately 2-1/2 feet every 10 feet). Slopes greater can cause the Z-series to overturn and cause serious injury.

- Drive **UP** and **DOWN** slopes. Never drive across slopes.
- Avoid turns. If you must turn, turn down the slope. Turning up a slope greatly increases the chance of roll over.
- Avoid stopping when driving on a slope. If you must stop, start slowly and smoothly to reduce the chance of flipping the Z-series over backwards.

STOPPING THE Z-SERIES

1. Release pressure on the Drive Handles (guiding them to neutral).
2. Disengage the PTO (down).
3. Depress the parking brake and hold.
4. Push the parking brake handle down. (See Figure 8)
5. Move the throttle lever to the slowest position (toward turtle).
6. Turn the Ignition to the OFF position.
7. Remove the key.

OPERATING THE PTO (POWER TAKE OFF) CLUTCH

Note: The operator must remain seated at all times. If the operator leaves the seat without turning off the PTO, the engine will automatically shut off.

NOTE: Be sure lift lever is not in the L position when the PTO is engaged.

Note: When the Z-series drives in reverse with the PTO engaged (Up), the PTO is automatically disengaged (Down).

1. Sit in the seat and start the engine.
2. Move the throttle lever to the FAST position (rabbit).
3. Pull up on the PTO to put it in the RUN position. See Figure 4.

PUSHING YOUR UNIT

To push your unit you will have to first relieve the hydrostatic pumps. Follow steps 1 through 6.

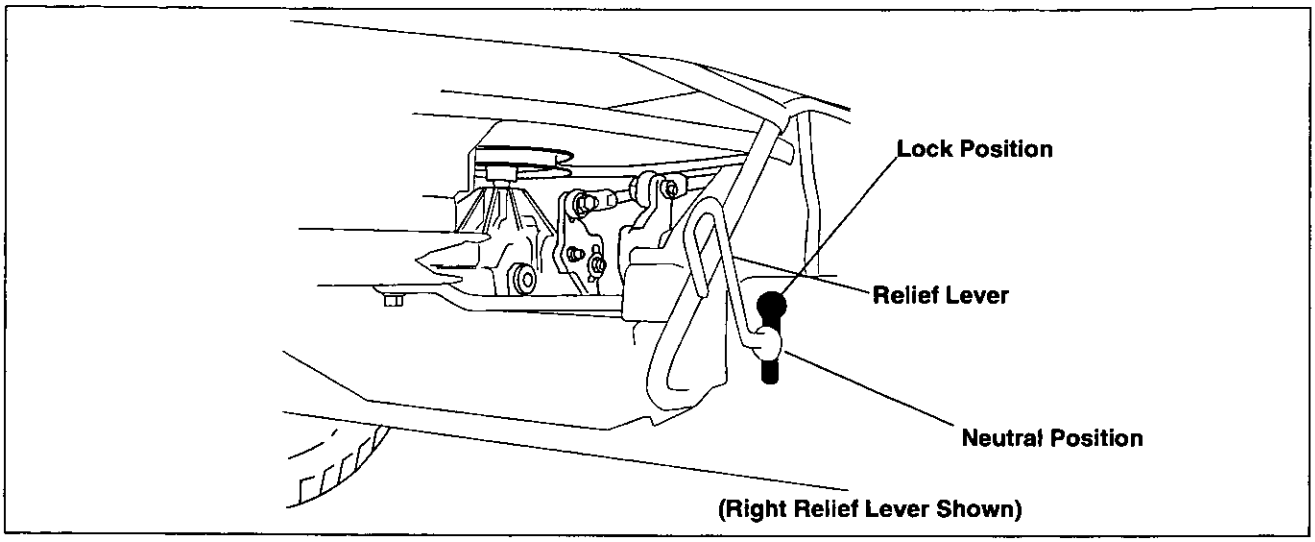


Figure 12

WARNING: The Hydraulic Relief Levers are near to engine parts that can be HOT. To avoid injury, wait until engine parts have cooled before disengaging.

1. Position the Z-series on a flat and level surface.
2. Engage the parking brake.
3. Remove the Hydraulic Relief Levers from the lock position. There is a lever for the right and left hydraulic pump.
4. Slide the levers into the slots to relieve the hydraulic pumps. (See Figure 12)
5. Disengage parking brake.
6. Push unit.

SECTION 6: ADJUSTMENTS

ADJUSTING THE MOWER DECK HEIGHT

1. Push or pull on the Lift Lever and depress and hold the button.
2. Move the handle up/down to the desired position.
3. Release button at the desired position.

ADJUSTING THE SEAT POSITION

1. Lift the Seat Adjustment Lever. (See Figure 11)
2. Slide the seat either forward or back to the desired location.
3. Lock the seat in position by releasing the Seat Adjustment Lever.

CHECKING THE BRAKE ADJUSTMENT

1. Position the Z-series on a level surface.
2. Move the throttle lever to the slowest position (turtle).
3. Stop the engine and remove the key from the ignition.
4. Engage the Parking Brake.
5. Release both Hydraulic Relief Levers.
6. From the rear, push on the frame and try to move the Z-series.

If you:	Then:
Can move it	The brake force must be increased. Go to ADJUSTING BRAKE FORCE.
Can NOT move it	Go to Step 7.

7. Release the Parking Brake. Try again to move the Z-series by pushing.

If you:	Then:
Can NOT move it	The brake force must be decreased. Go to ADJUSTING BRAKE FORCE.
Can move it	You are done (no adjustment necessary).

ADJUSTING BRAKE FORCE

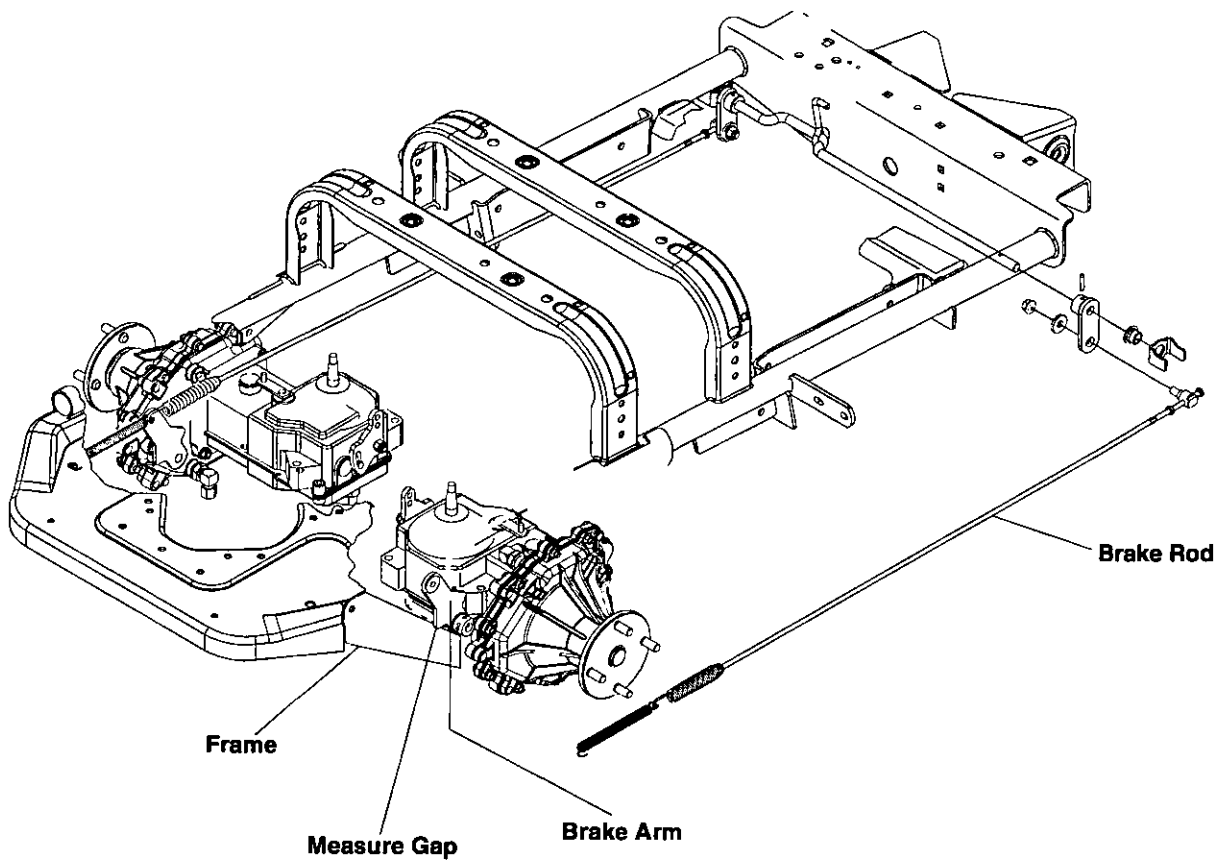


Figure 13

1. Place the Z-series on level surface without the brake engaged and place blocks behind the wheels.
2. Turn the engine OFF and remove the key from the ignition.
3. From underneath the Z-series directly behind the caster wheel pivot bar, locate the brake rods. There are two, one on the right and one on the left. (See Figure 13)

If:	Then:
Increased force is needed	Rotate brake rods clockwise.
Decreased force is needed	Rotate brake rods counterclockwise.

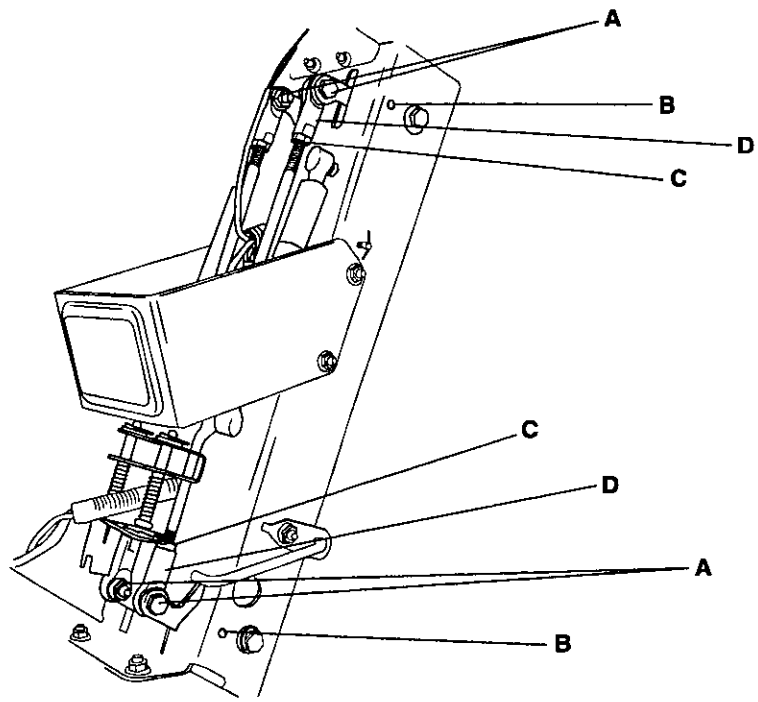
4. The factory sets a 1/16" gap minimum between the brake arm and frame of the Z-Series. More adjustment may be necessary. (See Figure 13)

NOTE: If after adjusting the brake, the proper force has not been obtained more adjustment may be required.

5. Repeat process on the other brake rod.
6. Check the operation of the brakes before operating. If the adjustment does not help, see your dealer.

STEERING ADJUSTMENT

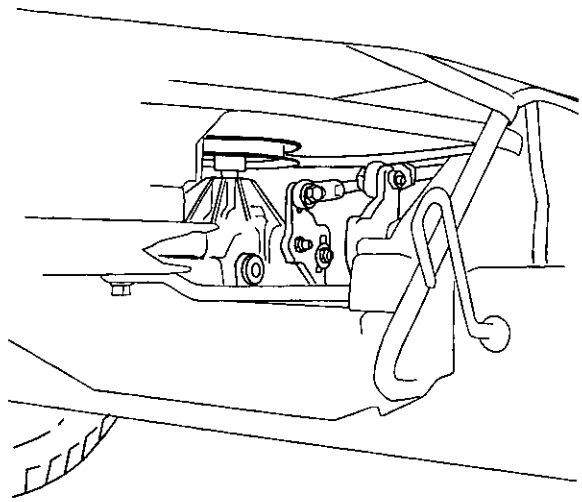
1. Remove the ignition key from ignition switch.
2. Detach the bottom of the rubber boot cover on the drive handles.
3. Slide the boot cover all the way up (toward the drive handles) to access the drive handle bolts.
4. Remove both bolts securing the drive handles.
5. Remove the drive handles and the rubber boot.
6. Remove the four bolts securing the retaining plate to the Control Tower cover.
7. Pull up on the Control Tower cover and slide up and over the Control Tower.
8. Remove both safety switches from their respective holders by squeezing together on the retaining clips while gently pushing upward until the switches clear the brackets.
9. Remove bolts (**A**) that secure linkage to upper control handles and lower control arms. The shock absorbers should remain connected to linkage.
10. Insert quarter inch by seven inch pin or equivalent through the top and bottom alignment holes (**B**) of the control arms to secure arms at positive neutral. (Remove floor for access to lower holes.)
11. With the shock absorber still bolted to linkage, loosen the jam nuts (**C**) at both ends of the linkage so the alignaball adjustment can be made.
12. Adjust the alignaball (**D**) until retaining bolt slips through alignaball, and hole in arm, with little effort.
13. Re-install bolts, washers and nuts in all four ends of linkage. Tighten jam nuts against alignaball ends to keep ends from turning.



14. Lift rear wheels off of ground using floor jack or other suitable lifting device.

Note: Whenever lifting any piece of equipment, using a floor jack or hoist, always secure in place by using jackstands.

15. With quarter inch by seven inch pins still installed in the top and bottom linkage arms loosen the jam nuts at both the front and rear (**A**) ends of linkage that runs from bottom linkage arms to hydrostatic pumps.
16. Remove quarter inch by seven inch pins from top and bottom holes.
17. Set parking brake, and start the engine (set throttle at full speed). Make sure that the PTO is off.
18. Rotate rods (lengthen or shorten) to bring each hydrostat to neutral.



Note: The control linkage going to the hydrostatic pump has left-hand threads at the pump and right-hand threads at the tower.

19. Tighten the jam nuts earlier loosened.
20. Reassemble safety switches.
21. Reassemble body panels.
22. Reassemble drive handle assembly.
23. Make sure that all hardware is tightened.

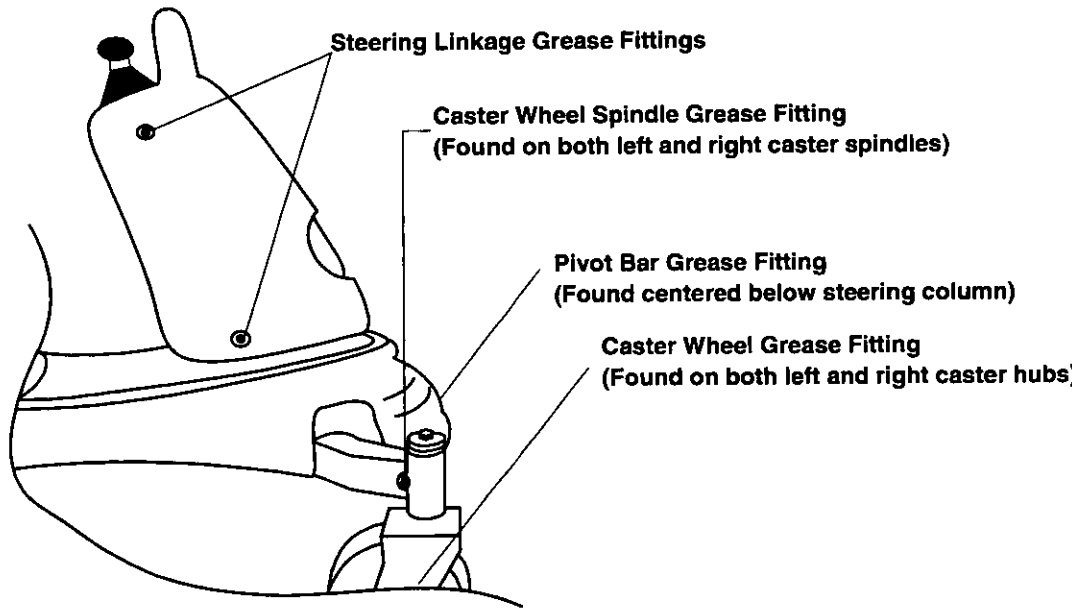
SECTION 7: LUBRICATION

Use the two tables that follow for lubrication details. The first table is for Oil details and the second table is for grease point information.

Oil	Check	Change	Capacity	Type
Engine crankcase	See Engine Operator's Manual Section			
Hydraulic units	50 Hours	500 Hours	9.5 Quarts	Part Number 737-0305 (10W40 motor oil)

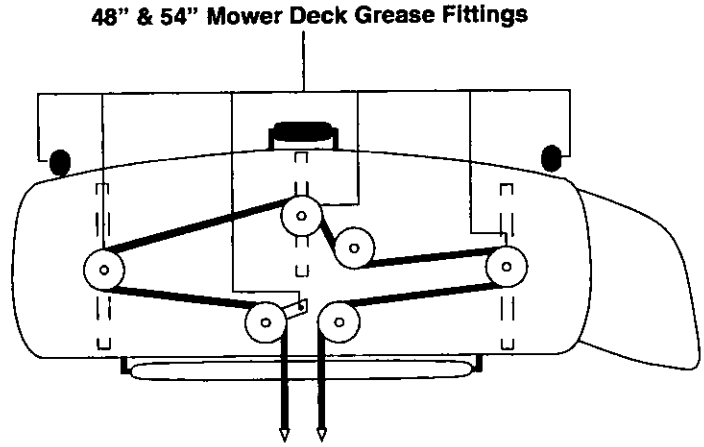
Grease Point	When to Grease	Type of Grease
Caster wheels - 3 fittings (1 on each wheel and one on middle of caster assembly)	50 Hours	Two strokes (minimum) of lubricator using 251 H EP grease or equivalent No. 2 multi-purpose lithium grease (refer to GREASE POINT LOCATIONS on page 23 for locations)
Control Tower - 2 fittings (Right side of tower)	50 Hours	Two strokes (minimum) of lubricator using 251 H EP grease or equivalent No. 2 multi-purpose lithium grease (refer to GREASE POINT LOCATIONS on page 23 for locations)
Lift Arms	50 Hours	Two strokes (minimum) of lubricator using 251 H EP grease or equivalent No. 2 multi-purpose lithium grease (refer to GREASE POINT LOCATIONS on page 23 for locations)
Lift Handle	50 Hours	Two strokes (minimum) of lubricator using 251 H EP grease or equivalent No. 2 multi-purpose lithium grease (refer to GREASE POINT LOCATIONS on page 23 for locations)
Idler arms	50 Hours	Two strokes (minimum) of lubricator using 251 H EP grease or equivalent No. 2 multi-purpose lithium grease (refer to GREASE POINT LOCATIONS on page 23 for locations)
Mower Deck, Spindles, Wheels	50 Hours	Two strokes (minimum) of lubricator using 251 H EP grease or equivalent No. 2 multi-purpose lithium grease (refer to GREASE POINT LOCATIONS on page 23 for locations)

GREASE POINT LOCATIONS

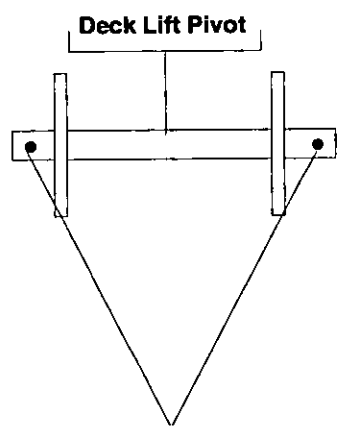


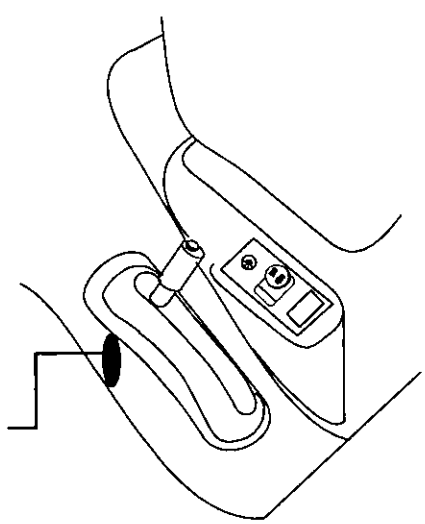
NOTE: Grease fitting not shown. Located under engine on idler arm.

48" & 54" Mower Deck Grease Fittings



Deck Lift Pivot





Lift Handle And Deck Lift Pivot (Right & Left)
(Access by lifting rear body panel)

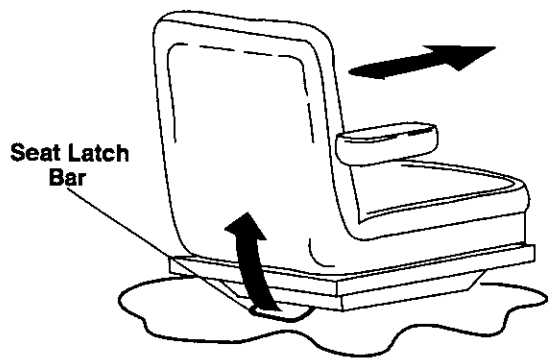
SECTION 8: MAINTENANCE

ENGINE COMPARTMENT

The engine is located behind the operator seat.

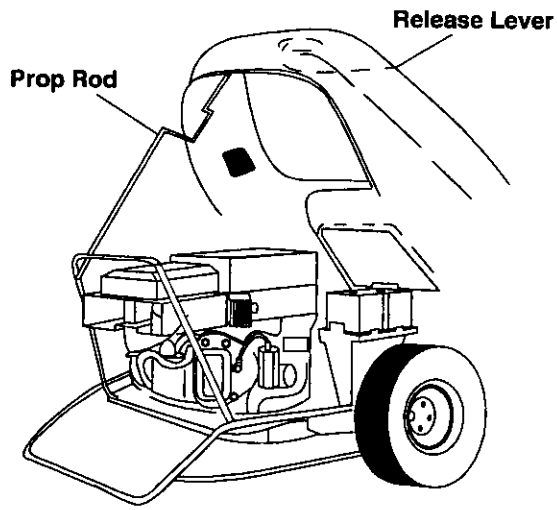
ACCESSING THE ENGINE

1. Slide the seat completely forward.
2. Move the deck lift lever to position 3.
3. Tilt the seat forward.
4. Lift the bar under the rear of the seat and slide the entire seat assembly forward.



5. Grasp and lift the body panel.
6. Use the prop rod to hold the panel open. Place prop rod on left hand side of latch.

.



FUEL TANK

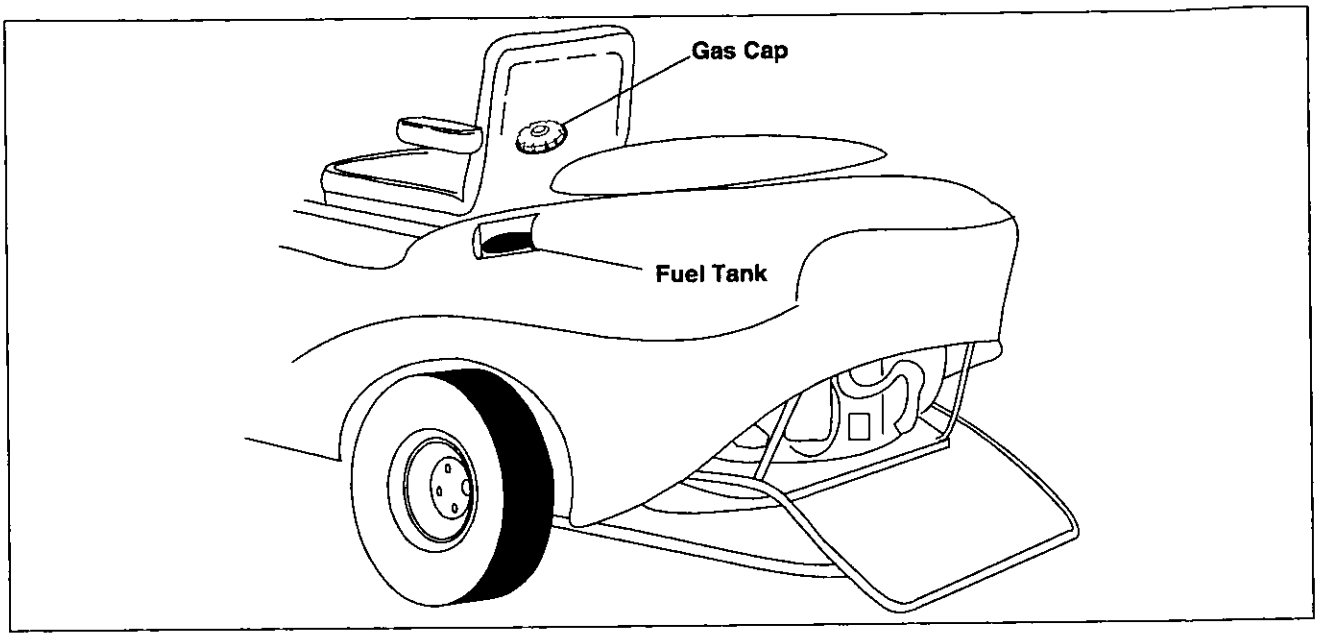


Figure 14

The fuel tank filler cap is located on the left-rear fender panel. (See Figure 14). Take the fuel cap off by unscrewing. Fill the gas tank from this point. The fuel tank has approximately a 5.5 gallon capacity.

CHECKING HYDRAULIC OIL LEVEL

Check the oil level of hydraulic units only when the:

- Engine is **off** (not running).

Practice the following maintenance schedule when checking hydraulic oil:

If:	Check oil:
Initial break-in (first 5 hours of operation)	Before each use and after every hour of operation
Normal operation	50 hours

Note: Close monitoring of the hydraulic oil is always important, but is especially critical during the first 5 hours of operation.

CHECKING THE HYDRAULIC OIL

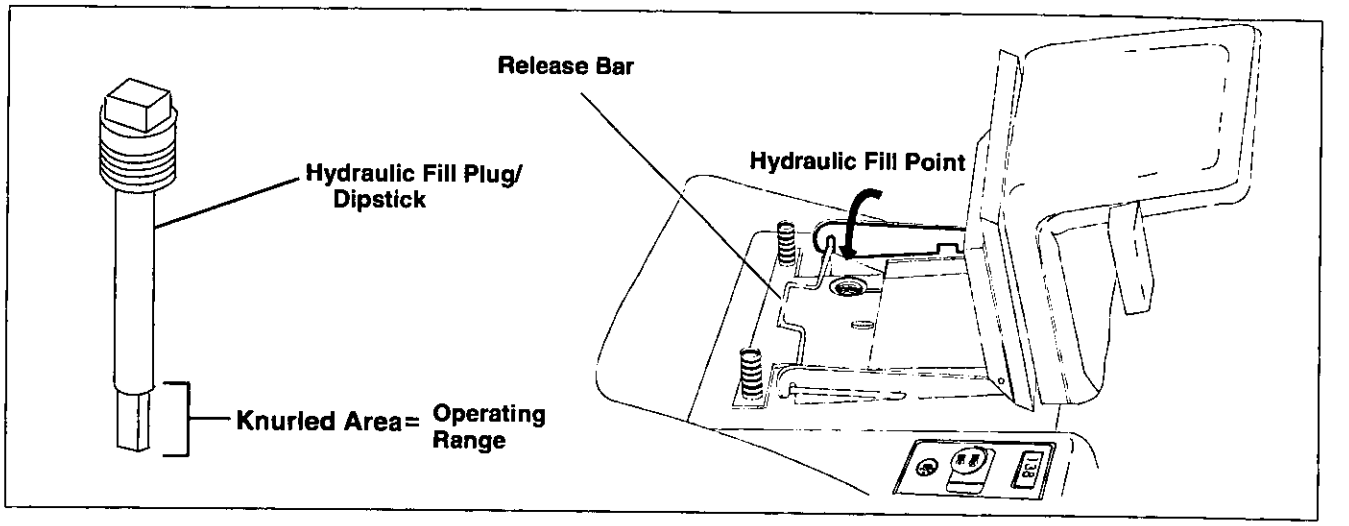


Figure 15

1. Flip seat up. (See Figure 15)
2. Clean the area around the Hydraulic Oil Dipstick to prevent debris from entering the crankcase.
3. Wipe clean and fully insert the fill plug/dipstick (screw in).
4. Remove the hydraulic fill plug/dipstick and read the level:

If hydraulic oil level is:	Then:
Inside operating range	Do nothing.
Below operating range	Add hydraulic oil before operating. Check for leaks.
Above operating range	Drain excess oil before operating.

5. Reinstall the dipstick completely into the fill tube.

WARNING: Never check for hydraulic leaks with your bare hand. Always use a rag.

ADDING HYDRAULIC OIL

WARNING: Never overfill the hydraulic units. Damage can result if the oil level is not within the operating range.

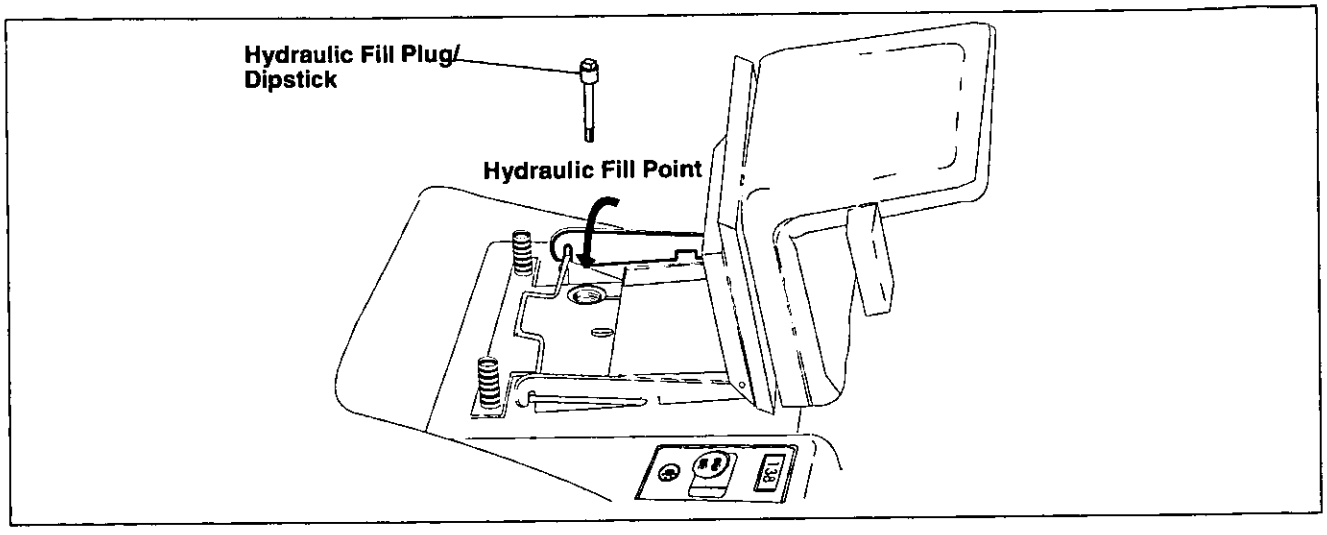


Figure 16

Note: When adding hydraulic oil, do so in small quantities and recheck the oil level before adding more. It is important that you do not over fill the reservoir.

1. Place the Z-series on a level surface and engage the parking brake.
2. Stop the engine and remove the key from the ignition switch.
3. Clean the area around the Hydraulic Oil Dipstick.
4. Remove the hydraulic fill plug and insert a clean funnel into the hydraulic fill point. See Figure 16.
5. Pour proper amount of hydraulic oil into reservoir.
6. Insert the dipstick and check the hydraulic oil level.

DRAINING HYDRAULIC OIL

Used hydraulic oil must be disposed of properly. Do not pour it down a drain or sewer, or dump it on open land, this creates an environmental hazard. Please be aware of the environment when disposing of used oil.

1. Place the Z-series on a level surface and engage the parking brake.
2. Stop the engine and remove the key from the ignition switch.
3. Remove the mower deck. See REMOVING THE MOWER DECK.
4. Move seat forward to expose hydraulic oil fill point.
5. Clean the area around the hydraulic fill plug/dipstick.
6. Remove hydraulic fill plug/dipstick.
7. Place a suitable (at least 2 gallon) container under the hydraulic oil filter.
8. Remove the hydraulic filter to allow hydraulic oil to drain. (See Figure 17)
9. Place a small pan under the skid plate and drain oil from both left and right axles. (See Figure 17)
10. Replace both axle drain plugs and hydraulic oil tank plug.
11. Install new hydraulic oil filter.
12. Add proper amount of hydraulic oil to reservoir.
13. Run and check oil level.

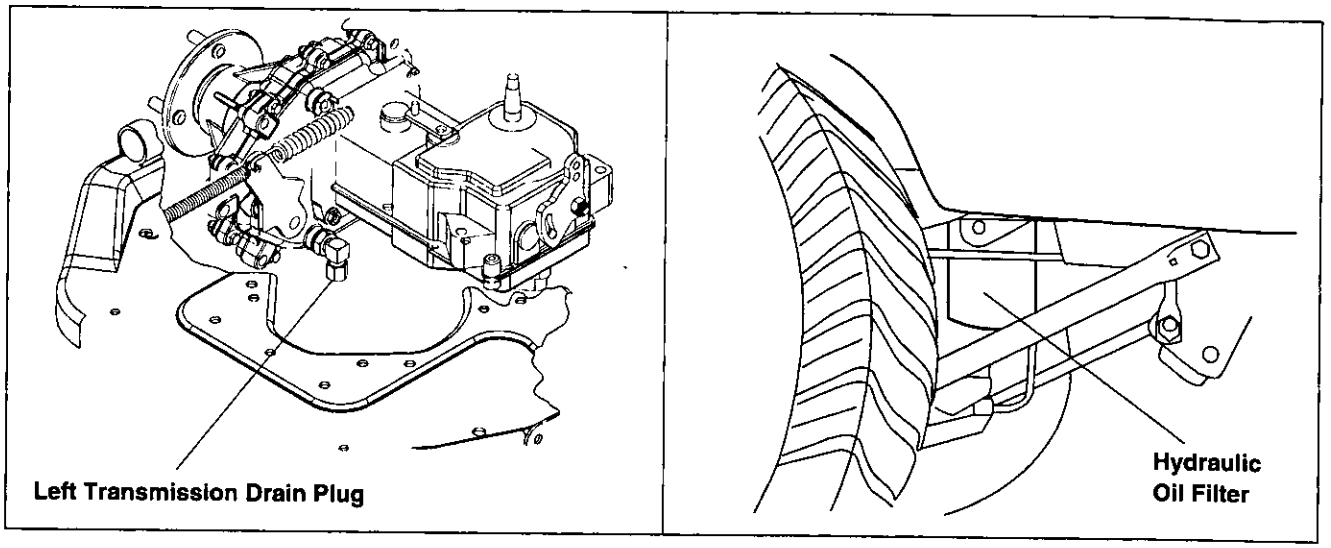


Figure 17

REPLACING THE HEAD LAMP BULB

1. Remove the ignition key from ignition switch.
2. Detach the bottom of the rubber boot cover on the drive handles.
3. Slide the boot cover all the way up (toward the drive handles) to access the drive handle bolts.
4. Remove both bolts securing the drive handles.
5. Remove the drive handles and the rubber boot.
6. Remove the four bolts securing the retaining plate to the Control Tower cover.
7. Pull up on the Control Tower cover and slide up and over the Control Tower.
8. Locate the rear of the light fixture where the wire attaches. (See Figure 18)

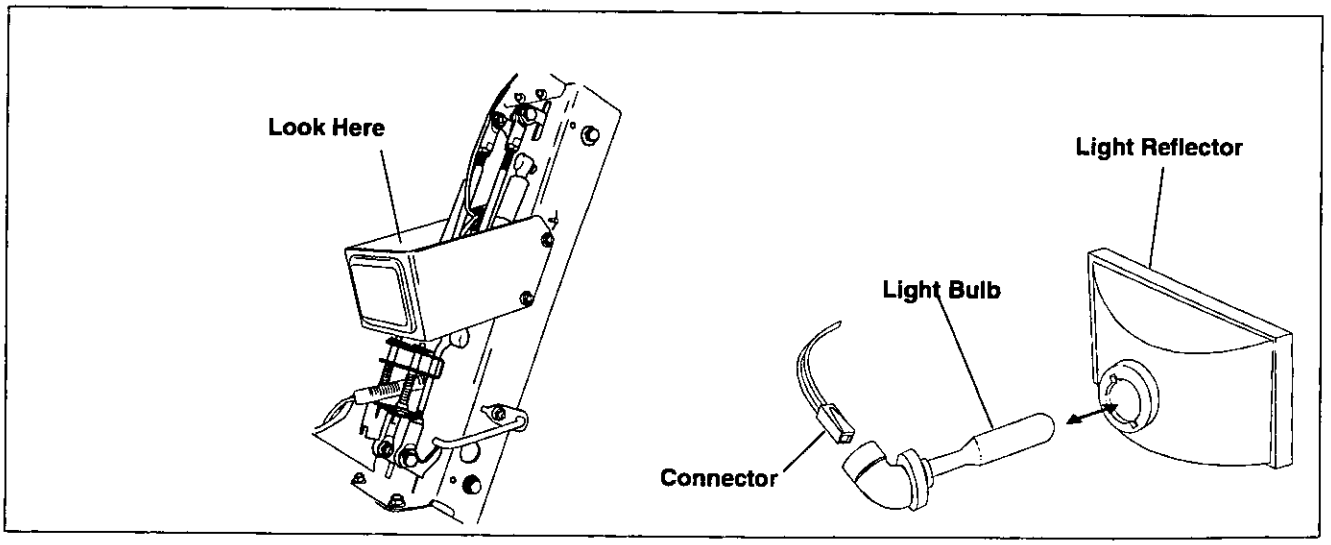


Figure 18

9. Remove the wire from the light bulb assembly. (See Figure 18)
10. Squeeze the tab on the connector that attaches the wire to the light bulb assembly.
11. Pull the wire from the light bulb assembly.
12. Turn the light bulb assembly counterclockwise to release it from the light fixture.
13. Carefully pull the light bulb out of the light fixture.

Caution: Do not touch the light bulb. It contains pressurized gas and may explode due to natural body oils that cause the light bulb to overheat.

14. Insert the replacement light bulb into the light fixture.
15. Turn the light bulb assembly clockwise until it locks into place.
16. Carefully insert the connector into the light bulb assembly.
17. Replace the Control Tower cover and Drive Handle assemblies.

CHANGING THE FUSE

Always use the same rated fuse when replacing.

1. Open the engine compartment.
2. Locate the fuse. It can be found on the wiring harness located in a protective cover between the engine and the battery.
3. Remove the old fuse and replace with the same rated fuse.

BATTERY MAINTENANCE

All batteries are sealed and maintenance free.

CHARGING THE BATTERY

The engine is equipped with an alternator which charges the battery when tractor is operated. Under normal conditions, the battery only needs to be charged, during and after off-season storage.

Warning: When removing the cables from the battery follow order of the steps to avoid a short between the wrench and the frame.

REMOVING THE BATTERY

1. Remove the Negative (black) cable.
2. Remove the Positive (red) cable.
3. Unscrew the two wing nuts from the battery rods.
4. Remove the battery.

INSTALLING THE BATTERY

1. Attach the Positive (red) cable.
2. Attach the Negative (black) cable.
3. Secure the two wing nuts to the battery rods.

JUMP STARTING

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

1. Attach one end of the red jumper cable to the Positive terminal (+) of the good battery.
2. Attach the other end of the red jumper cable to the Positive terminal (+) of the bad battery.
3. Attach one end of the black jumper cable to the Negative terminal of the good battery.
4. Attach the other end of the black jumper cable to the frame of the unit with the bad battery.

CLEAN THE BATTERY

Clean the battery by removing it from the unit and washing with a baking soda and water solution. If necessary, scrape the battery terminals with a wire brush to remove deposits. Coat terminals and exposed wiring with grease or petroleum jelly to prevent corrosion.

BATTERY STORAGE

The battery loses some of its charge each day when the unit is not used. Never store battery without a full charge. Recharge battery before returning to service or every two months, whichever occurs first. When storing unit for extended periods, disconnect battery cables. Removing battery from unit is recommended.

TIRES

The two front wheels are caster wheels that are free to swivel to accommodate the direction of the Z-series. The tires on the caster wheels are made of solid polyurethane that do not require air.
The two rear wheels are used to propel the Z-series in the direction of input from the drive handles. Inflation pressure of the rear tires is important for stability while the Z-series is in operation. If the tire diameter is not equal between the two tires, the Z-series will pull to one side.
Use the following guidelines for maintaining the tires:

- Balance inflation pressure between the rear tires to help maintain straight travel (see tire side wall for proper inflation pressure).
- Keep the valve caps in place and tightened to prevent air pressure loss.

SECTION 9: MOWER DECKS

The mower deck must be level horizontally (side-to-side and front-to-back) for even cutting.

CHECKING THE LEVEL OF THE MOWER DECK - Side to side - Front to Back

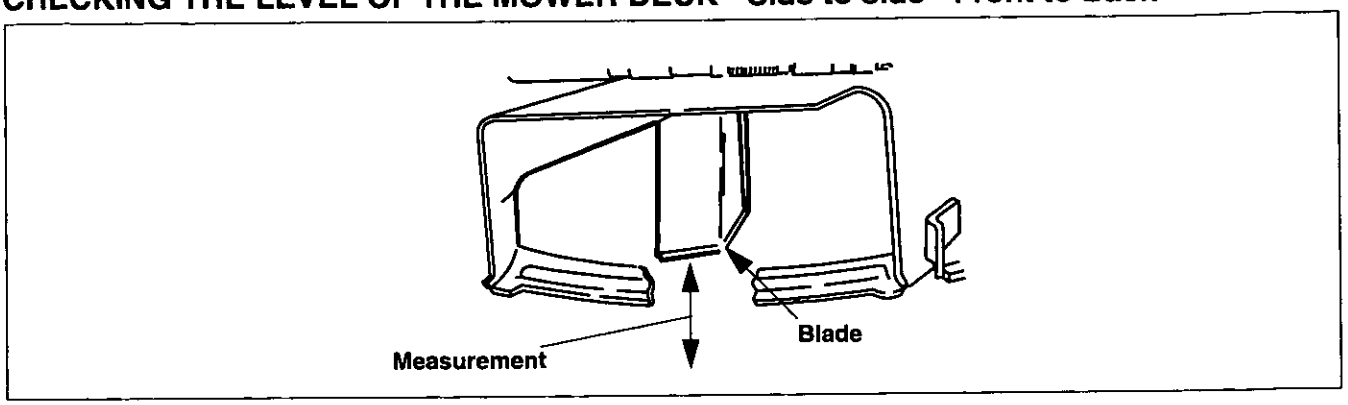


Figure 19

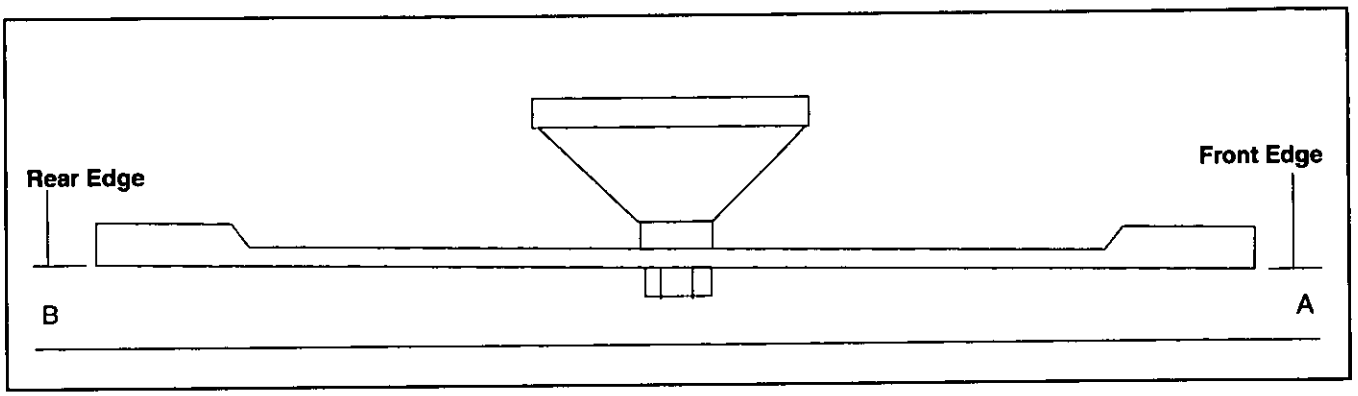


Figure 20

1. Check the rear tires pressure for proper inflation and tracking.
2. Position the Z-series on a hard and level surface.
3. Place the PTO switch in the OFF position.
4. Engage the parking brake.
5. Turn the ignition switch to the OFF position and remove the key.
6. Remove spark plug wire(s) from the spark plug(s). Access spark plug from the engine compartment.
7. Raise the lift handle to the highest setting (7).
8. Position the mower blades so that they run perpendicular to the tractor.
9. Measure and record the distance from the hard, level surface to the outermost edge of the right and left blade. (See Figure 19)
10. Position the mower blades so the ends of each blade point to the front and to the rear of the tractor.
11. Measure and record the distance to the outermost edge of the right and left blade. (See Figure 20)

	Right	Left
Front	4.50"	4.50"
Back	4.688"	4.688"

LEVELING THE MOWER DECK

1. Lower the mower deck to the **L** (lock) position.
2. Pull J-Rod out to release hanger bracket and turn J-Rod until J-Rod is against outside of bracket. (Both Sides) (See Figure 21)
3. Remove the left belt cover by removing the wing nut.
4. Release the belt tension spring by releasing the belt tension bar.
5. Remove the belt from clutch below the engine in the rear of the unit.
6. Push the deck assembly forward to disconnect the retaining arms from the deck.
7. Disconnect each clevis pin at the end of each retaining arms
8. Remove from tractor to check length and adjust if necessary. (See Figure 22)

When Back measurements are 0.250" greater than the front measurement:

- Shorten the distance shown on Figure 22 by turning the 90 degree rod one complete turn in. (Repeat if same result)

When Back measurements are 0.125" less than the front measurements:

- Lengthen the distance shown on Figure 22 by turning the 90 degree rod one complete turn out. (Repeat if same result)

When either side is lower than 4.50"

1. Remove the nut and bolt (A) that holds the hanger link to the hanger bracket on the side that is low. (See Figure 21)
2. Turn the threaded link the appropriate distance up.
   - Every 1/2 turn = 1/32" (.03125")
   - Example: If the front measurement is 4.312" the threaded link should be turned 3 full turns (3/16" or 0.188") up.

When either side is higher than 4.50"

1. Remove the nut and bolt (A) that holds the hanger link to the hanger bracket on the side that is high. (See Figure 21)
2. Turn the threaded link the appropriate distance down.
   - Every 1/2 turn =1/32" (.03125")
   - Example: If the front measurement is 4.625" the threaded link should be turned 2 full turns (1/8" or 0.125") down.
8. Reconnect the hanger links to the hanger brackets and the retaining arms to the tractor.
9. Connect deck to tractor in the above reverse order.

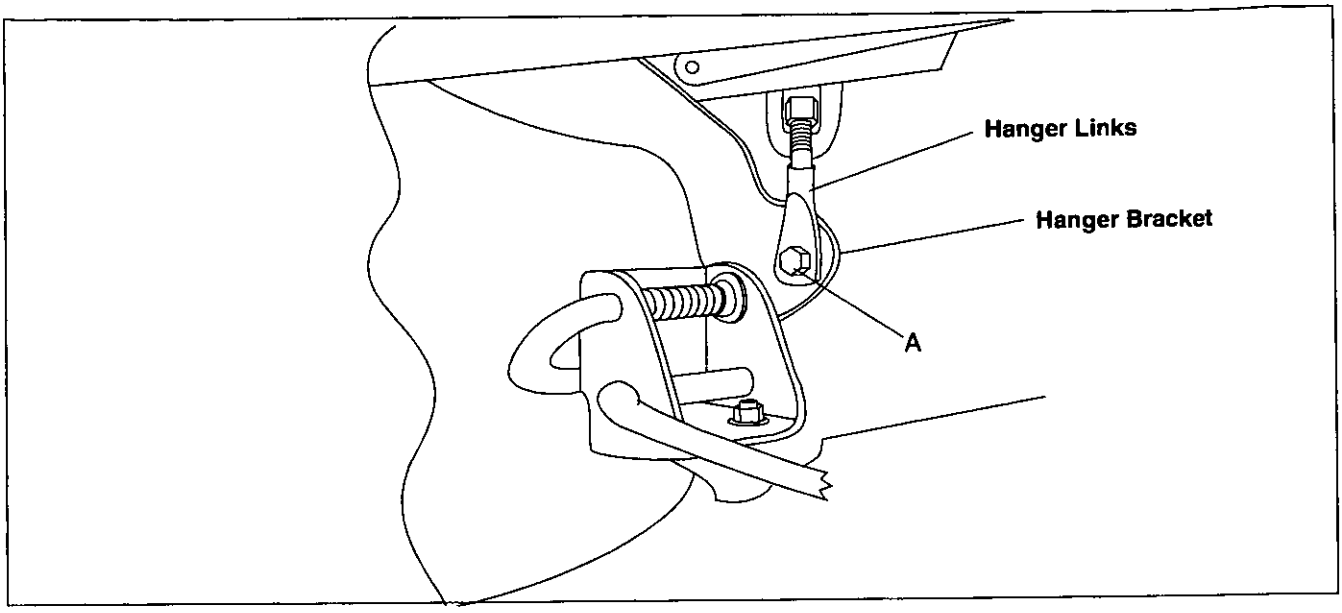


Figure 21

Note: If after a number of attempts to level the mower deck fails to succeed, adjust the retaining arm to their original lengths of 11.125 inches. (See Figure 22)

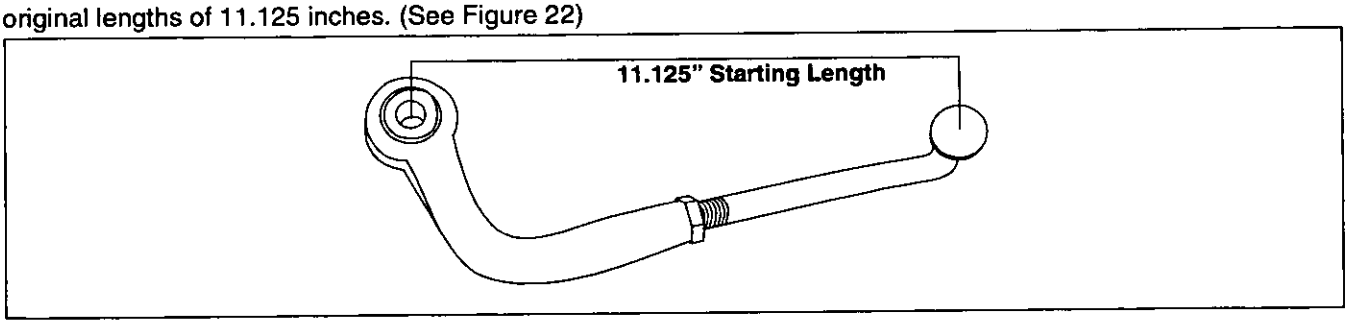


Figure 22

REMOVING THE MOWER DECK

WARNING: The cutting blades of the mower deck are sharp and can cause injury.

1. Position the Z-series on a hard, flat surface.
2. Engage the Parking Brake.
3. Move the lift handle to the **L** position.
4. Remove the wing nuts and then remove the belt covers.

If Mower Deck is:	Then:
48" or 54"	Remove one wing nut for each cover. (See Figure 23)

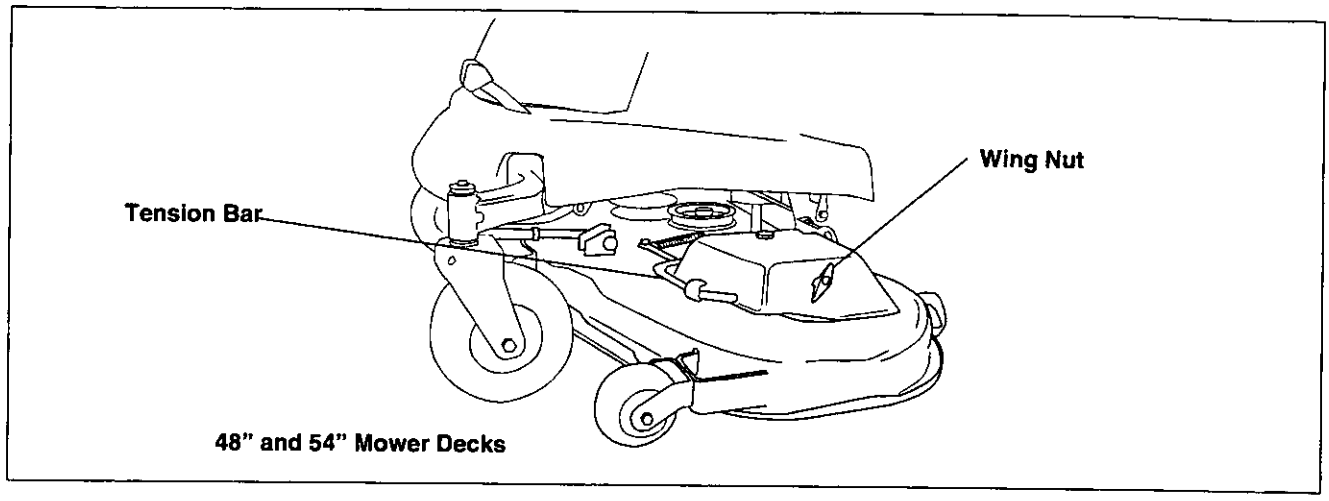


Figure 23

5. Release the Tension Bar.
6. Push the Tension Bar out of the bracket.
7. Lift the bar over the bracket and allow the bar to rest on the mower deck.
8. Pull the J pin out until the end of the pin is past the bracket. (See Figure 24)

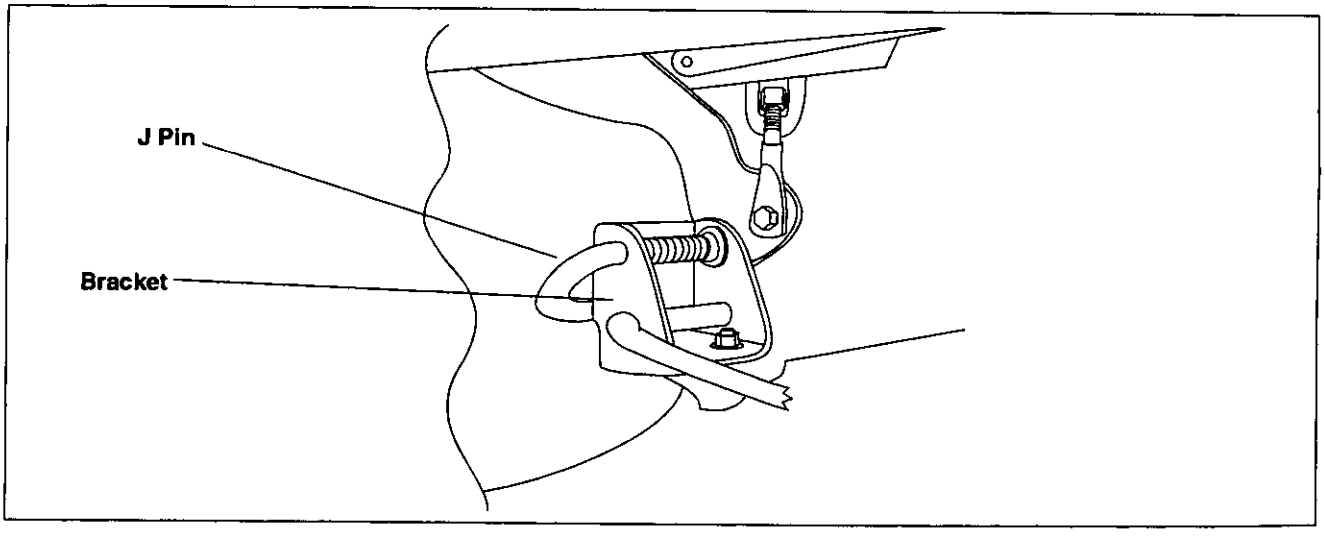


Figure 24

9. Turn the J pin so that the end rests against the bracket, keeping the pin out.
10. Move the Lift handle to position **7** (all the way up).
11. Remove the Belt from the outside pulley of the mower deck by pulling and holding the belt so part of it is outside the pulley.
12. Turn the pulley counterclockwise until the belt is completely off of the pulley.

WARNING: Exhaust and surrounding engine parts are very hot and can cause severe burns when touched.

13. Locate the Clutch Pulley. It is located in the rear of the tractor, below the muffler. (See Figure 25)

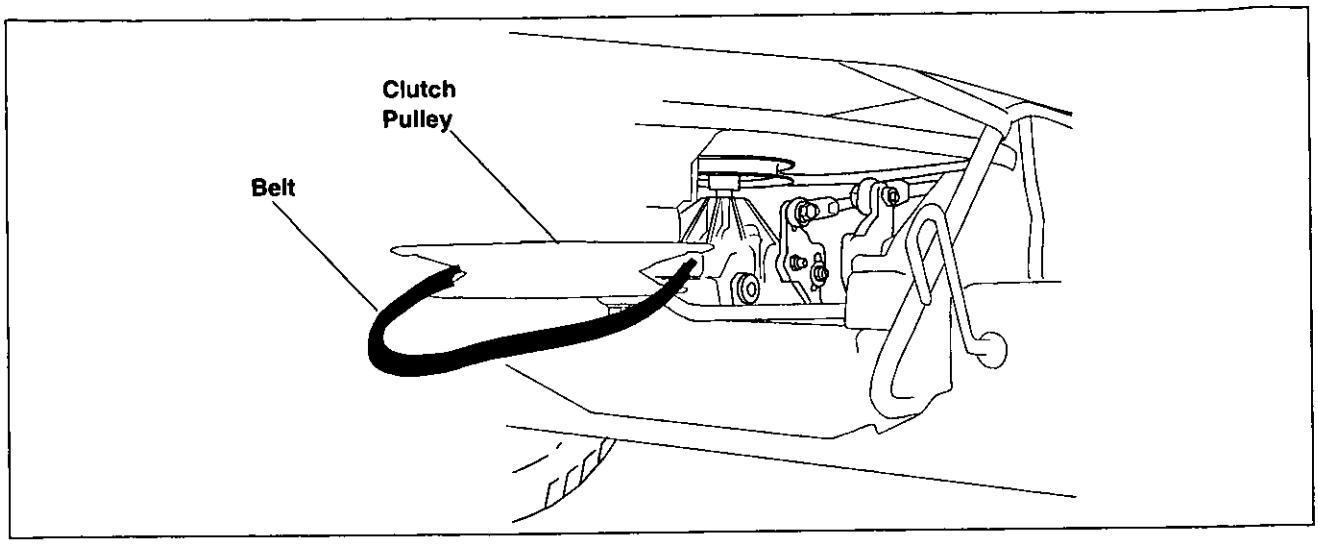


Figure 25

14. Remove the belt from the Clutch pulley.(See Figure 25)
15. From the front of the Z-series, pull the mower deck towards you. This will release the retaining arms from the mower deck. (See Figure 26)

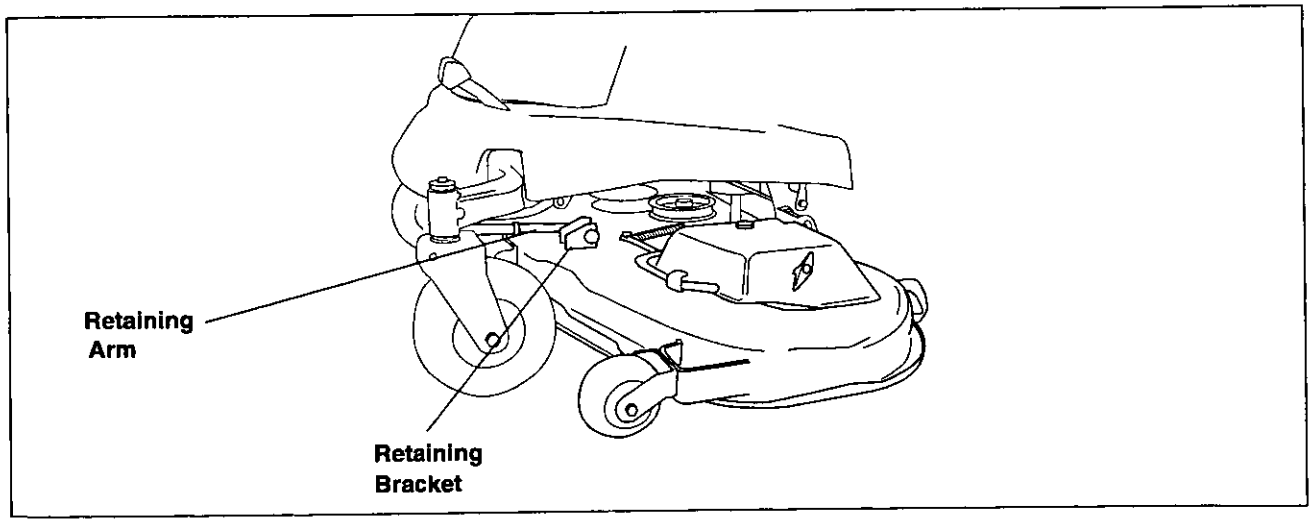


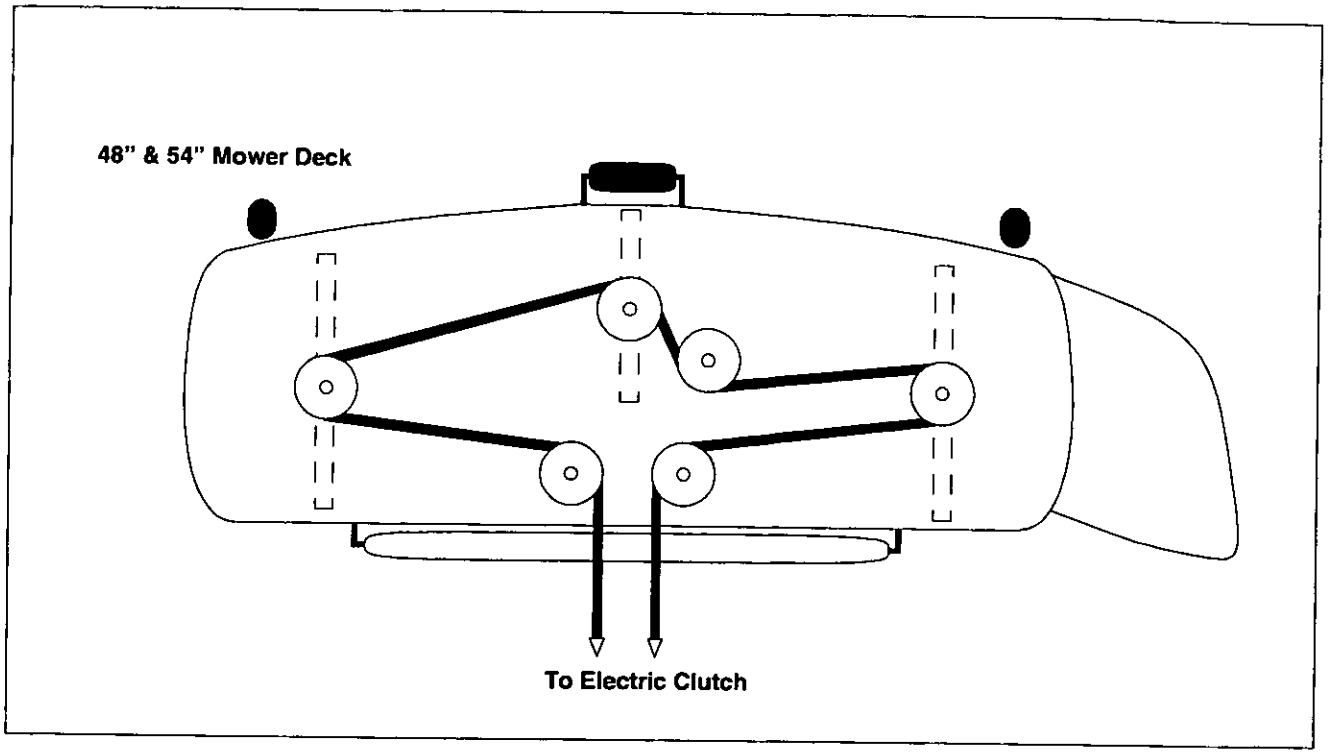
Figure 26

16. Lift and hold the retaining arms up.
17. Move the mower deck toward the rear of the Tractor until the retaining arms clear the mower deck.
18. From the right side, pull the mower deck out from under the Tractor.
19. To service the blades or the under-side of the mower deck, there is a mower deck stand that folds out from the top of the mower deck.

INSTALLING A NEW MOWER DECK BELT

1. Remove the mower deck. See REMOVING THE MOWER DECK for details.
2. Remove the old belt from the mower deck.
3. Install and route the new belt according to the routing diagram shown in MOWER DECK BELT ROUTING.
4. Install the mower deck. Refer to INSTALLING THE MOWER DECK.

MOWER DECK BELT ROUTING



INSTALLING THE MOWER DECK

Before installing the mower deck on the tractor, route the mower deck belt as shown in MOWER DECK BELT ROUTING.

1. Slide the mower deck under the Z-series.

WARNING: Do not touch the muffler cover. The muffler and cover are extremely hot and can cause severe burns if contacted by the skin.

2. Remove belt covers.
3. From the rear, reach under the muffler cover and grasp the belt from the mower deck and bring it between the hydraulic units.
4. Bring the belt between the pulley and the clutch. Do not put the belt into the pulley grove yet.
5. From the front of the Z-series, hold both retaining arms up and slide the mower deck forward until the retaining arms go into the bracket.
6. Slide the mower deck backwards to insert the retaining arms into the brackets. (See Figure 26)
7. Align the mower deck so the Lift Lever Bracket aligns with the bracket on the mower deck. (See Figure 27)
8. Pull the J-pin out to allow the bracket from Z-series to attach to the mower deck.
9. Release the J-pin so that it goes through both holes of the bracket. (See Figure 27)

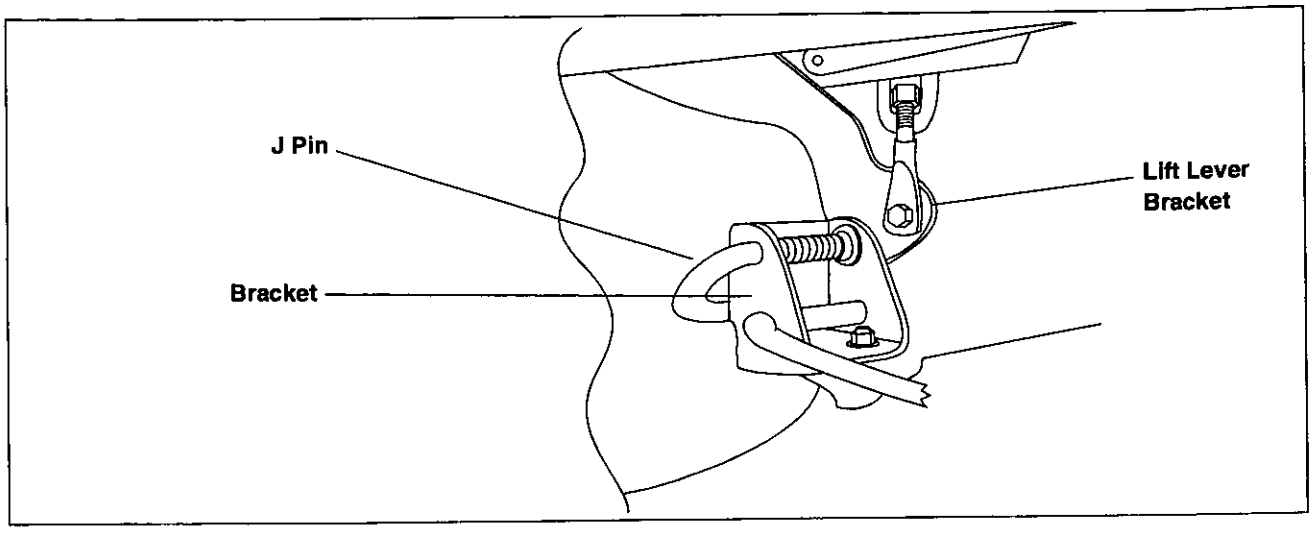


Figure 27

10. Repeat Step 7 and Step 8 for the other side of the mower deck.
11. From the rear, attach the belt around the Clutch Pulley.
12. Engage tension arm by moving it into the bracket to maintain belt tension.
13. Replace Belt Covers.

CUTTING BLADE CARE

WARNING: The cutting blades are sharp and can cause severe injury. Wrap the cutting surface of the blade with a rag to avoid injury.

Keep the cutting blade sharp and free of build up at all times:

- Sharpen ends of the blades evenly by keeping the same cutting angle to maintain balanced cutting blades.
- Remove debris build up from the underside of the mower deck housing using a putty knife.

REMOVING A BLADE

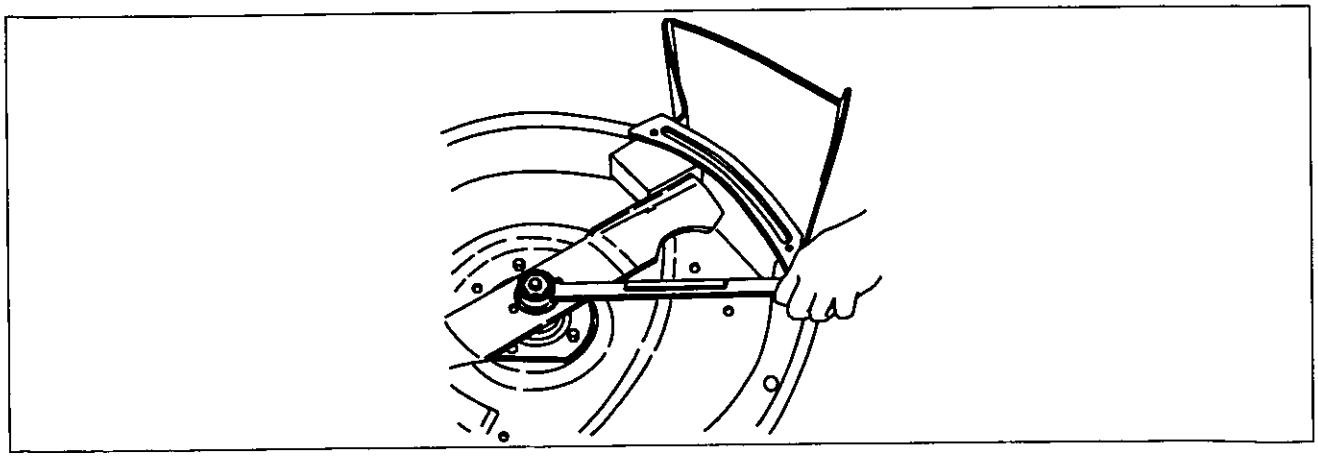


Figure 28

1. Secure the cutting blade by putting a piece of wood between the blade and the housing. (See Figure 28)
2. Use a 1-1/8 inch socket wrench on the pulley side of the spindle to secure.
3. Remove the hex nut using a 1-1/8 inch wrench.

INSTALLING A BLADE

1. Install the blade so the cutting edges face the direction of rotation and the wind wings are facing up.
2. Use a 1-1/8 inch socket wrench on the pulley side of the spindle to secure.
3. Tighten the nut to 100 ft-lbs (136 Nm).

LUBRICATION OF MOWER DECK

Lubricate the mower deck and its parts as required.

- Each spindle has a grease fitting and all pivot points should be lubricated with motor oil.

REMOVING THE DRIVE BELT

Visually inspect the drive belt for wear and cracking. If the drive belt shows signs of glazing, fraying, cracking or excess wear it needs to be replaced. Follow these steps to replace the drive belt.

1. Set the parking brake.
2. Remove the mower deck belt from the engine pulley.
3. Raise the engine cover.
4. Locate the drive belt.
5. Roll the drive belt down off of the left drive pulley. Now, role the drive belt down off of the right drive pulley.
6. Remove the drive belt from the engine pulley.
7. Now that the belt is slack, carefully pull the belt up and over the right hydrostatic cooling fan. Now carefully pull the belt up and over the left hydrostatic cooling fan.
8. Pull the drive belt out of the unit.

INSTALLING A NEW DRIVE BELT

Follow these instructions to reinstall the drive belt if it has been removed for replacement or if it breaks.

1. Set the parking brake.
2. Raise the engine cover.
3. Remove the mower deck belt from the engine pulley.
4. Thread the drive belt up and over the left and right hydrostatic cooling fans. Do not place the belt into the drive pulley groves at this time.
5. Place the drive belt into the top groove of the engine pulley.
6. Route the belt to the inside of the idler pulley.
7. Roll the belt up into the groove of the left drive pulley.
8. Roll the belt up into the groove of the right drive pulley.
9. Make sure that the belt is seated in all pulley grooves.
10. Release the parking brake. The drive belt should be tightened by the idler pulley if the belt was installed correctly.
11. Check the belt for correct routing.
12. Reinstall the mower deck.

SECTION 10: STORAGE

When storing the Z-series for longer than 30 days, use the following steps:



WARNING: Never store the engine with fuel in the tank if it is stored where fuel fumes can reach an open flame, spark or pilot light (e.g., furnace, water heater, or clothes dryer).

1. Remove all gasoline from the fuel tank. Gum deposits can form on engine parts causing the engine to malfunction.
2. Run the engine until it begins to falter.
3. Use the choke to continue operation until all fuel is gone from the carburetor and fuel tank.
4. Drain any remaining fuel from the fuel line at the carburetor or gas tank.



WARNING: Drain fuel into an approved container, in open air, and away from open flames.

Note: Fuel quality deteriorates when fuel is left in engine during warm weather. Poor fuel quality can cause engine starting difficulties.

5. Crank the engine several times to distribute the oil.
6. Clean the engine and the entire Z-series thoroughly.
7. Lubricate all lubrication points.
8. Follow the battery storage guidelines (refer to Battery STORAGE for details).
9. Inflate tires at regular intervals.

SECTION 11: MOWING

For best results, consider the following recommendations:

- Mow the first two laps with the discharge pointing toward the center.
- Mow the next two laps with the discharge pointing outside (away from center) for a balanced cut and improved appearance.
- Do not cut grass too short. The mower tends to "scalp" the grass. Shorter grass invites weeds and will yellow quickly in dry conditions.

During some conditions, the mower may leave streaks of uncut material. Streaking can happen when cutting heavy weeds and tall grass. In these conditions it may be necessary to cut the area a second time for a clean cut.

AVOIDING STREAKING

1. Mow the area often; cutting grass of shorter lengths helps to avoid streaks.
2. Operate the Z-series at full throttle and at a slower forward speed.
3. Maintain sharp blades and replace when worn.
4. Follow the mowing path shown below. (See Figure 29).

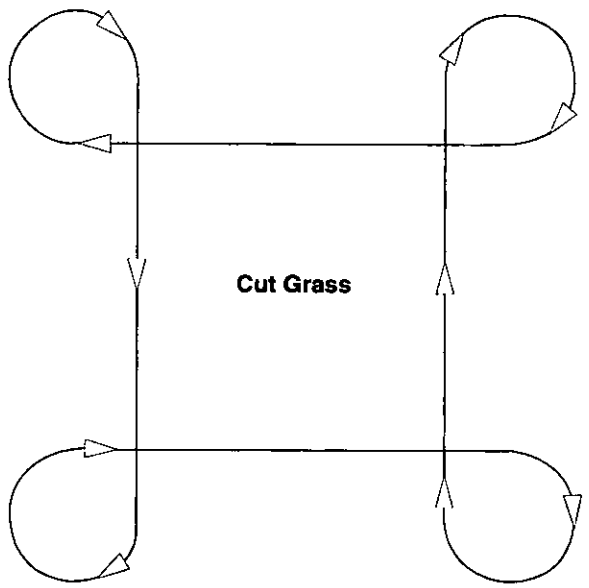


Figure 29

SECTION 12: TROUBLE SHOOTING GUIDE

Trouble	Possible Cause(s)	Corrective Action
Engine fails to start	PTO switch engaged.	Disengage PTO switch.
	Spark plug wire disconnected.	Connect wire to spark plug.
	Throttle control lever not in correct starting position.	Move throttle lever to FAST or START position.
	Fuel tank empty, or stale fuel.	Fill tank with clean, fresh gasoline.
	Blocked fuel line.	Clean fuel line.
	Faulty spark plug.	Clean, adjust gap or replace.
	Engine flooded.	Crank engine with throttle in FAST position.
Engine runs erratic	Unit running in START position.	Move throttle lever to FAST position.
	Spark plug wire loose.	Connect and tighten spark plug wire.
	Blocked fuel line or stale fuel.	Clean fuel line; fill tank with clean, fresh gasoline.
	Vent in gas cap plugged.	Clear vent.
	Water or dirt in fuel system.	Drain fuel tank. Refill with fresh fuel.
	Dirty air cleaner.	Clean air cleaner.
Engine overheats	Engine oil level low.	Fill crankcase with proper oil.
	Air flow restricted.	Remove blower housing and clean.
	*Lack of coolant.	*Add coolant to the correct level.
	*Clogged cooling system.	*See your authorized engine service dealer.
Occasional skip (hesitates) at high speed	Spark plug gap too close.	Adjust gap to .030".
Idles poorly	Spark plug fouled, faulty or gap too wide.	Reset gap to .030" or replace spark plug.
	Dirty air cleaner.	Clean air cleaner.
Excessive vibration	Cutting blade loose or unbalanced.	Tighten blade and adapter. Balance blade.
	Bent cutting blade.	Replace blade.
Mower will not mulch grass	Engine speed too low.	Set throttle between 3/4 and full throttle.
	Wet grass.	Do not mow when grass is wet; wait until later to cut.
	Excessively high grass.	Mow once at a high cutting height, then mow again at desired height or make a narrower cutting swath (1/2 width).
	Dull blade.	Sharpen or replace blade.
Uneven cut	Wheels not positioned correctly.	Place all four wheels in same height position.
	Dull blade.	Sharpen or replace blade.

* Liquid cooled models only.

NOTES

MANUFACTURER'S LIMITED WARRANTY FOR:

Cub Cadet®

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.