

**Zero Turn Mower**  
**ZT29 / ZT33**  
**Workshop Service Manual**

---

**MASSEY FERGUSON®**  
**Zero Turn Mower**  
**ZT29 / ZT33**  
**4283357M1**  
**CONTENTS**

INTRODUCTION.....	01
GENERAL INFORMATION .....	02
MAIN COMPONENTS .....	03
ENGINES.....	04
SPECIFICATIONS .....	05
TRANSAXLE.....	06
FRONT AXLE .....	07
HYDRAULIC SYSTEM.....	08
ELECTRICAL SYSTEM.....	09
MOWER DECK .....	10
INDEX .....	11

---

**Massey Ferguson®**

**Zero Turn Mower  
ZT29 / ZT33**

**WORKSHOP SERVICE MANUAL  
4283357M1**

**01 - Introduction**

**Contents**

Introduction .....	01-3
To the Dealers .....	01-3
Replacement Parts .....	01-3
Units of Measurement .....	01-3
Table of Contents .....	01-3
Page Numbers .....	01-3
Safety Precautions .....	01-4
Safety Alert Symbol .....	01-4
Signal Words .....	01-5
Safety Signs .....	01-5
General Safety Rules .....	01-6
Roll-Over Protective Structure (ROPS) .....	01-7
Seat Belt Usage .....	01-7
Protect Yourself .....	01-8
Additional Equipment .....	01-8
General Operational Safety Rules .....	01-9
Operation .....	01-11
Transporting the Machine .....	01-15
Servicing the machine .....	01-15
Hydraulic System .....	01-15
Electrical System .....	01-16
Fuel System .....	01-17
Cooling System .....	01-17
Wheels and Tires .....	01-18
Replacement Parts .....	01-18

---

# INTRODUCTION

## INTRODUCTION

This service manual has been prepared with the latest service information available at the time of publication. Read the service manual carefully before doing any service on the compact tractor. This manual is one of the most important tools available to the service technician.

Right-hand and left-hand, as used in this manual, is determined by facing the direction the machine will travel when in use.

The photos, illustrations, and data used in this manual were current at the time of printing, but due to possible production changes, your machine can vary slightly. The Manufacturer reserves the right to redesign and change the machine as necessary without notification.



**WARNING: Some pictures in this manual show the machine with shields or guards removed to allow for a better view of the subject of the picture. All shields and guards must be in position before operating the machine.**

## TO THE DEALERS

This manual was developed to provide the best possible information, technical support and service to the customer. Review the Table of Contents and basic layout to become familiar with locations of pertinent information such as maintenance table, specifications and etc.

## REPLACEMENT PARTS

To receive efficient service, always remember to give the dealer the following information:

- Correct part description or part number.
- Model number of your machine.
- Serial number of your machine.

## UNITS OF MEASUREMENT

Measurements are given in metric units followed by the equivalent in US units. Hardware sizes are given in millimeters for metric hardware and inches for US hardware.

## TABLE OF CONTENTS

A Table of Contents is in the front of this manual. The Table of Contents shows the divisions. The individual divisions also have a Table of Contents.

## PAGE NUMBERS

All page numbers are made of two numbers separated by a dash, such as 01-25. The number before the dash is the division number. The number following the dash is the page number in that division. Page numbers will be at the lower right or left of each page.



# Introduction

---

## SAFETY PRECAUTIONS

The safety of the operator is one of the main concerns in designing and developing a new machine. Designers build in as many safety features as possible. However, every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment.

It is YOUR responsibility to read and understand the safety section in this manual before operating your machine. You must follow these safety instructions that take you step by step through your working day.

Remember that YOU are the key to safety. Good safety practices not only protect you, but also the people around you. Study the features in this manual and make them a working part of your safety program. Keep in mind that this safety section is written only for this type of machine. Practice all other usual and customary safe working precautions, and above all - REMEMBER - SAFETY IS YOUR RESPONSIBILITY. YOU CAN PREVENT SERIOUS INJURY OR DEATH.

In order to provide a better view, certain photographs or illustrations in this manual may show an assembly with a safety shield removed. However, the equipment should never be operated in this condition. Keep all shields in place. If shield removal becomes necessary for repairs, replace shield prior to further operation.

## SAFETY ALERT SYMBOL

This safety alert symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

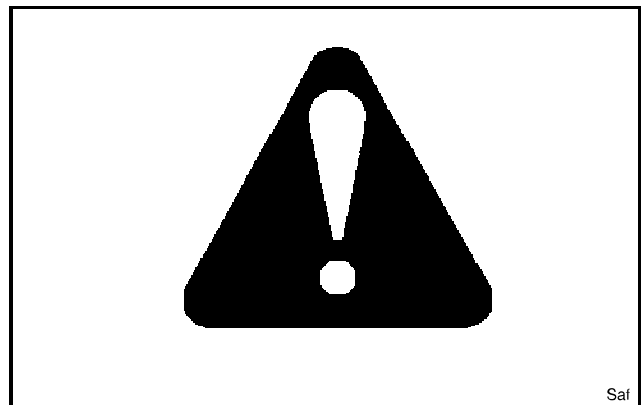
**FIG. 1:** The safety alert symbol identifies important safety messages on machines, safety signs, in manuals, or elsewhere. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

**Why is SAFETY important to you?**

**ACCIDENTS DISABLE and KILL**

**ACCIDENTS are COSTLY**

**ACCIDENTS can be AVOIDED**



**FIG. 1**

## SIGNAL WORDS

The words DANGER, WARNING or CAUTION are used with the safety alert symbol. Learn to recognize these safety alerts, and follow the recommended precautions and safe practices.



**DANGER:** indicates an imminently hazardous situation that, if not avoided, will result in **DEATH OR VERY SERIOUS INJURY**.



**WARNING:** indicates an imminently hazardous situation that, if not avoided, could result in **DEATH OR SERIOUS INJURY**.



**CAUTION:** indicates an imminently hazardous situation that, if not avoided, could result in **MINOR INJURY**.

The following words and instructions are not related to personal safety but are used throughout this book to give you additional tips as you operate or service this equipment.

*IMPORTANT:* indicates a special instruction or procedure that, if not strictly followed, may cause damage to, or destruction of the machine, the process, or the surroundings.

*NOTE:* indicates additional information about a subject or procedure for more efficient or convenient operation or repair.

## Safety Signs



**WARNING:** DO NOT remove or obscure Danger, Warning, Caution or Instruction signs. Replace any Danger, Warning, Caution or Instruction signs that are not readable or are missing. Replacement signs are available from you Dealer in the event of loss or damage. The actual location of these Safety signs is illustrated in this Operator's Instruction Book.

If a used machine has been purchased, refer to the illustrations at the end of this section to ensure that all the safety signs are in the correct position and are readable.

# Introduction

---

## GENERAL SAFETY RULES



**WARNING:** An operator should not use alcohol or drugs which can affect their alertness or coordination. An operator on prescription or 'over the counter' drugs needs medical advice on whether or not he or she can properly operate equipment.

Always keep this Operator Instruction Book with the machine. This book must be made available to the operator of the machine at all times.

**FIG. 2:** Read this book carefully and learn how to use the machine correctly. Become familiar with the operation of the mower, the controls, safety and instructional signs.

Do not let anyone operate this machine without thorough instruction and training.

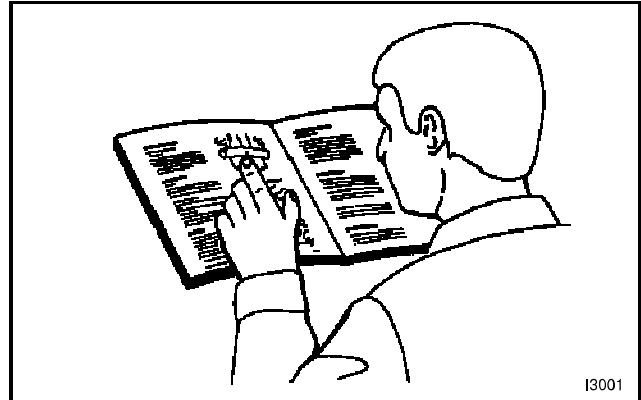
DO NOT operate this machine unless you are trained.

This Operator Instruction Book is compiled to cover correct working practices that are associated with the basic mower operation.

The Operator Instruction Book does not cover operation and safety instructions relevant to all known attachments that may be used at the time of machine delivery or at some future date.

It is essential that operators only use approved implements and attachments, and understand the relevant instruction manuals.

NEVER let children or untrained people operate or service the equipment.



**FIG. 2**

## Roll-Over Protective Structure (ROPS)

ROPS are effective in reducing injuries during overturns. Overturning a mower without ROPS or with the ROPS folded down can result in serious injury or death. Operate with ROPS folded down only when conditions make this necessary. Return ROPS to upright, locked position as soon as conditions permit.

**FIG. 3:** DO NOT weld, drill or alter the ROPS.

If the mower has been rolled over or the ROPS frame has been damaged in any manner, the ROPS must be replaced. Do not attempt to repair a damaged ROPS. If damage does occur, consult your Dealer and replace all damaged parts.

Before using the machine ensure that the ROPS frame is not damaged and that it is securely fastened to the machine.

DO NOT attach chains, ropes or cables to the ROPS for pulling purposes - damage to the ROPS and/or overturn of the machine may result.

Observe all recommendations and instructions regarding the installation of covers or roofs which are to be used as SUNSHIELDS ONLY and do not afford the operator protection from falling objects.

## Seat Belt Usage

Always wear the seat belt, correctly adjusted, during mower operation unless operating with the ROPS folded down. Do not wear the seat belt when ROPS is folded down.

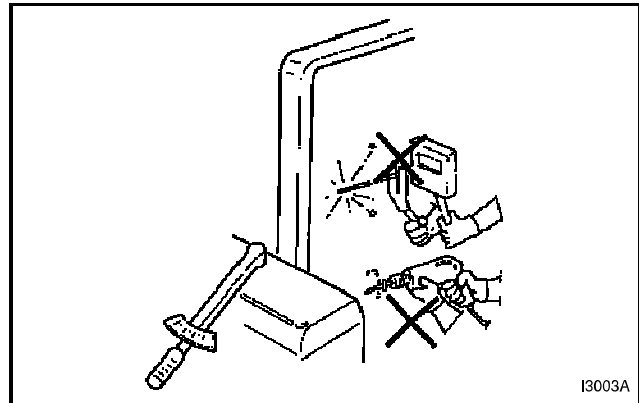
Check the seat belt for damage. A damaged seat belt must be replaced.

### Fastening Seat Belt

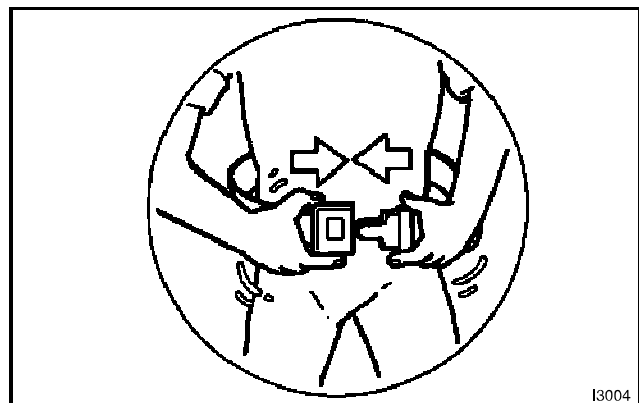
**FIG. 4:** The seat belt for this machine is located beside the seat. Sit in the seat, adjust the seat belt length, and fit the latch into the buckle.

### Releasing Seat Belt

The seat belt can be released by pushing down on the buckle. Properly store the seat belt beside the seat.



**FIG. 3**



**FIG. 4**

## Introduction

### Protect Yourself

**FIG. 5:** Always wear protective clothing and appropriate safety equipment

Wear all the protective clothing and personal protective devices issued to you or called for by job conditions.

You may need:

- A hard hat.
- Safety glasses, goggles, or face shield.
- Hearing protection.
- Respirator or filter mask.
- Inclement weather clothing.
- Reflective clothing.
- Heavy gloves (neoprene for chemicals, leather for rough work).
- Protective footwear.
- Other specialized protective gear.

DO NOT wear loose clothing, jewelry, or long hair as this may catch on moving parts of the machine causing injury.

### Additional Equipment

**FIG. 6:** A fire extinguisher and first aid box should be carried with the machine or be kept readily available at all times. Consult your Dealer.

Note where fire extinguishers and first-aid or emergency equipment are kept and get to know where to get help in a hurry. Make sure you know how to use this equipment.

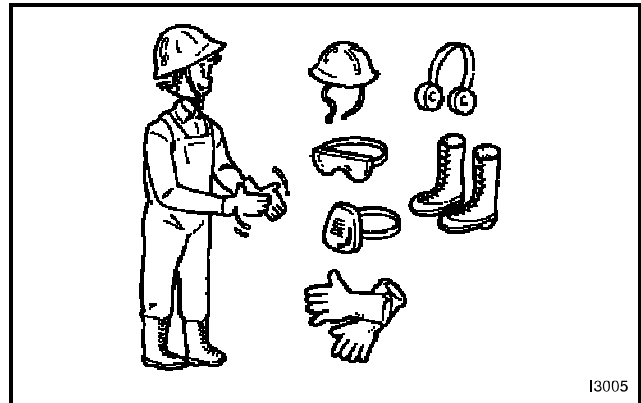


FIG. 5

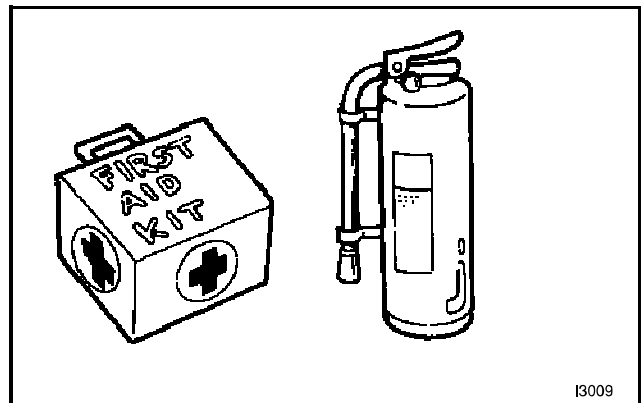


FIG. 6

## General Operational Safety Rules

**FIG. 7:** DO NOT carry passengers.

DO NOT permit others, especially children, to ride on the mower or on any implement or attachment connected to, or installed on mower.

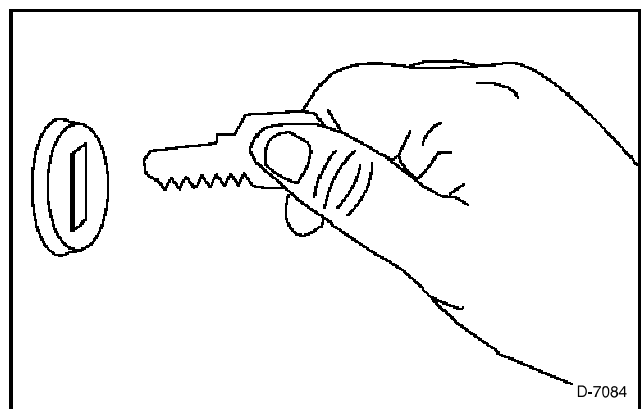


**FIG. 7**

**FIG. 8:** When dismounting and/or leaving the operator's seat FOR ANY REASON, always:

1. Disengage PTO.
2. Shut off engine.
3. Lower the mower deck to the ground.
4. Apply the parking brake.
5. Place the control levers in the outward neutral locked position.
6. Remove the key and take the key with you.

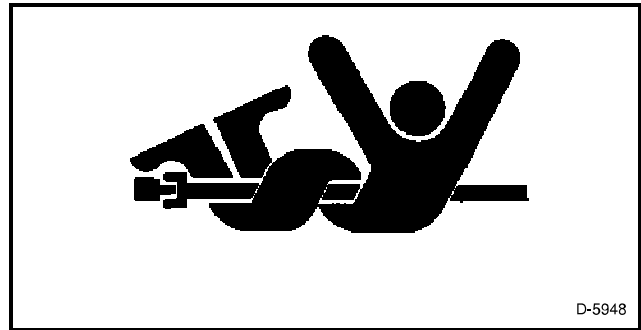
Do not attempt to service machine, clear obstructions or unplug blockages with the engine running. Always shut off engine and allow all motion to cease.



**FIG. 8**

## Introduction

**FIG. 9:** Keep clear of all rotating components. Be especially observant of areas of discharge, intake or other mechanical motion.



**FIG. 9**

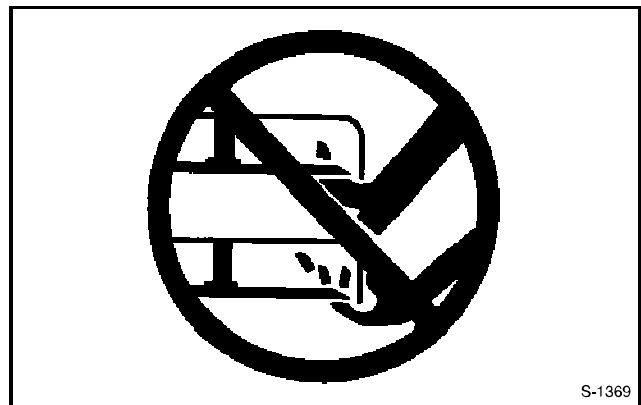
**FIG. 10:** Keep clear of rotating blades.

DO NOT put hands or feet under, or into mower with engine running.

Be aware that rotating one blade can cause other blades to rotate.

Keep all shields and guards in place.

Never raise the mower deck with the blades operating.



**FIG. 10**

**FIG. 11:** Keep clear of mower discharge. This mower has the capability of throwing objects far distances.

Never operate the mower without either the discharge chute or the entire grass collection system in place.

Keep discharge chute lowered and secured, or operate only with an approved grass catcher in place.

DO NOT direct mower discharge toward bystanders, pets and buildings. Keep children and other persons clear of the work area.

Beware of bystanders, particularly children. Always look around to make sure that everyone is away from the area before starting the engine or moving the machine. This is particularly important with higher noise levels as you may not hear people shouting.



**FIG. 11**

### OPERATION

Before operation, make sure you:

Keep emergency telephone numbers for immediate access.

Keep the mower properly maintained. Do not operate a machine with broken or missing parts. Make sure the maintenance procedures in this manual are completed before using the machine.

Clean potentially flammable material away from engine compartment, battery, fuel, fuel tank, and operator's station.

Check all controls regularly and adjust where necessary.

Periodically check all nuts and bolts for tightness, especially wheel hub and rim nuts.

Make sure mower deck is correctly installed, and that attaching pins are locked.

Check mower blades for tightness.

Remove any twine, wire, etc., that may have wrapped on blade spindles.

ALWAYS inspect area to be mowed prior to operation. Watch for holes, rocks, or other hidden obstacles.

Clear area to be mowed of all objects such as toys and wire that can be picked up and thrown or that can damage mower. Mark all curbs, pipes, etc. that cannot be moved.

Be observant of the operating area and terrain.

Make sure that all bystanders, particularly children, are clear of the work area before starting the engine.

Always start the engine from the operator's seat with the control levers in the outward neutral locked position. Make sure the parking brake is applied, the PTO lever is in the OFF position, and the mower deck is on the ground.

Never leave the mower unattended with the key in the key switch, especially when there may be children in the area.

DO NOT attempt to start or operate the machine while standing on the ground.



## Introduction

**FIG. 12:** DO NOT bypass the starting circuit by shorting across the terminals of the starter motor to start the engine. This may cause the mower to move suddenly.

Periodically check starting circuit to make sure all system components operate correctly.

If the starting system does not work, consult your Dealer immediately.

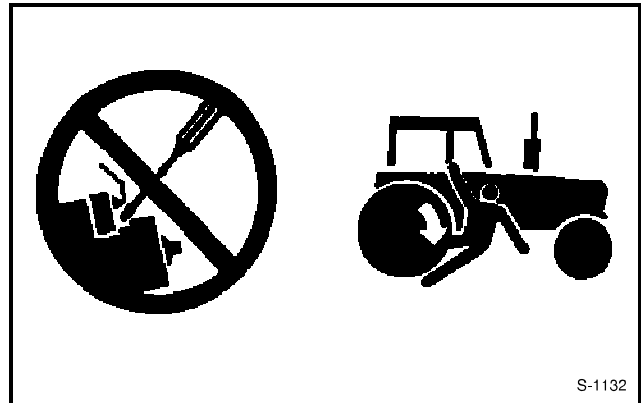


FIG. 12

**FIG. 13:** When a ROPS is installed the seat belt MUST be installed, used, and correctly adjusted during machine operation. Replace a damaged seat belt before operating the machine.

DO NOT use a seat belt if the ROPS is in the lowered position.

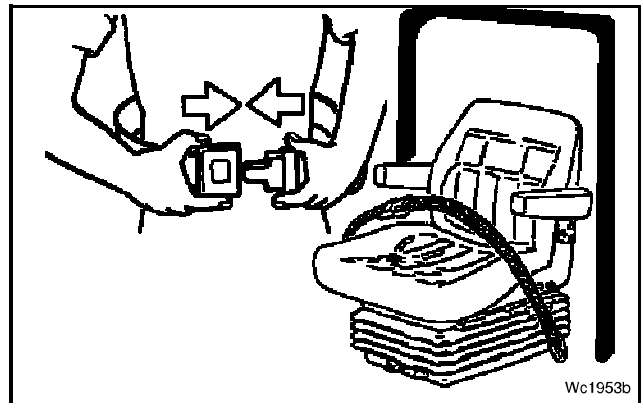


FIG. 13

**FIG. 14:** DO NOT use starting fluid on engine, as the engine is equipped with glow plugs. The use of starting fluid can result in severe engine damage and personal injury.



FIG. 14

**FIG. 15:** If in an enclosed area, vent the exhaust to the outside. Always start and operate engine in a well-ventilated area.

Never operate an engine in an enclosed area.

Do not tamper with or modify the exhaust system with unapproved extensions

During operation, make sure you:

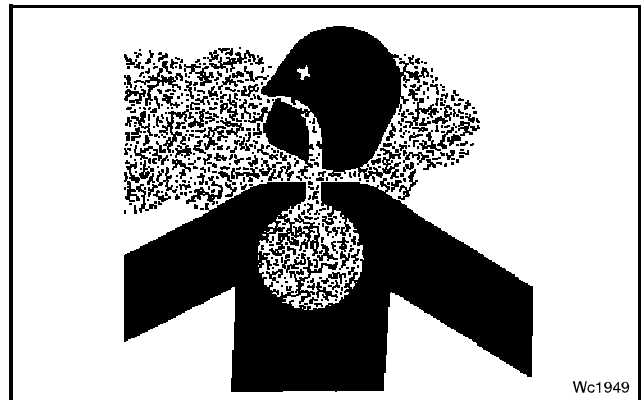


FIG. 15

**FIG. 16:** In the event of an overturn, hold the control levers firmly and keep your seat belt fastened. **DO NOT** attempt to leave the seat until the machine has come to rest.

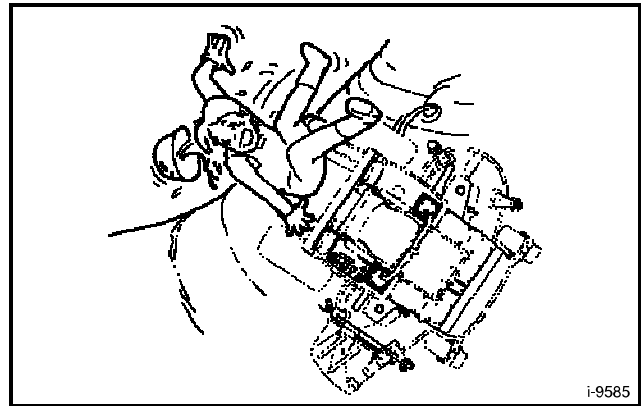
Always drive at a proper speed relative to local conditions and ensure that your speed is low enough for an emergency stop.

Mow up or down slopes - not across.

**DO NOT** operate on steep slopes as the slope and turf conditions can affect the stability and control of the mower.

If necessary to operate on a slope:

- Avoid sudden starting or reversing direction.
- Slow down sufficiently and use caution when turning or changing directions.
- Never mow on wet grass.
- Never park the machine on a slope.
- Operate at low speeds.



**FIG. 16**

## Introduction

---

DO NOT operate near edge of banks. Setback distance from bank should equal, or exceed, the overall height of the bank.

Be aware of what is located at the bottom of the slope. Use caution when there is water, cliffs, roads, or rocks at the bottom.

DO NOT operate machine with a non-approved mower deck. Machine balance and maneuverability performance could be affected.

DO NOT raise the mower deck with the blades operating.

STOP the engine before removing the grass collection system or unclogging the discharge chute. NEVER clear the discharge chute with the engine running. Use a stick to clear a plugged discharge area.

DO NOT back up or mow in reverse. If you have to back up, stop the mower blades, look down and behind mower while backing up, especially for children.

Shut off blades when not mowing.

Turn off the mower before crossing gravel drives, walks or roads.

Be alert to the presence of bystanders, especially children. Turn off the mower if a child enters the work area.

Watch for holes, ruts, bumps, large rocks, or uneven terrain that could overturn the machine. These obstacles may be hidden under the grass.

Stop mower and inspect blades after striking an object or if an abnormal vibration occurs. Make necessary repairs before resuming operation.

Do not touch hot parts of the mower.

**Thank you very much for  
your reading. Please Click  
Here. Then Get COMPLETE  
MANUAL. NO WAITING**



**NOTE:**

**If there is no response to  
click on the link above,  
please download the PDF  
document first and then  
click on it.**

## TRANSPORTING THE MACHINE

The machine has not been designed to be driven on a public road. Check with the local authorities, as it may be illegal for the machine not only to travel on, but also to cross a public road.

When transporting the machine on a public road, load onto a truck or trailer.

Use extreme care when loading or unloading a machine on a truck or trailer.

## SERVICING THE MACHINE

**FIG. 17:** DO NOT service the machine while the engine is running or hot, or if the machine is in motion.

Do not attempt to service machine, clear obstructions or unplug blockages with the engine running. Always shut off engine and allow all motion to cease.

Always block machine securely when working on the machine.

*NOTE: When making major repairs or complicated adjustments, it is recommended that you consult your Dealer and have the work carried out by trained personnel.*

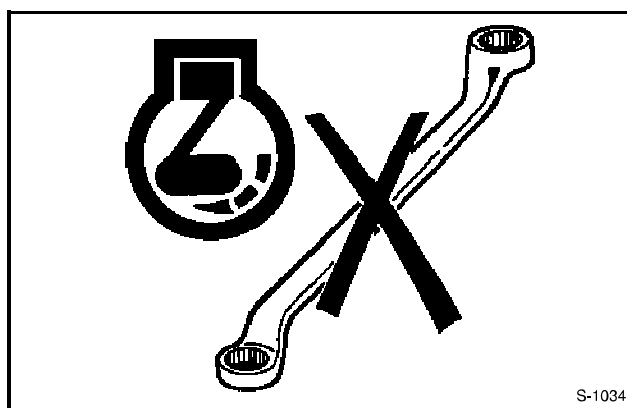


FIG. 17

## Hydraulic System

Ensure that all hydraulic connections are tight.

Relieve all pressures before disconnecting hoses or lines. Escaping oil under pressure can cause serious injury.

All fluids should be handled with care. If you are injured by, or swallow, any fluid seek medical attention immediately and show the label on the product.

Fluids escaping from a very small hole can be almost invisible and they can penetrate the skin causing serious injury. Keep hands and body away from pin holes and nozzles which eject fluids under high pressure.

**FIG. 18:** When checking for leaks always use a piece of cardboard or wood. Never use your hands to find a pressure leak.

If ANY fluid is injected into the skin, it must be attended to by a doctor immediately.

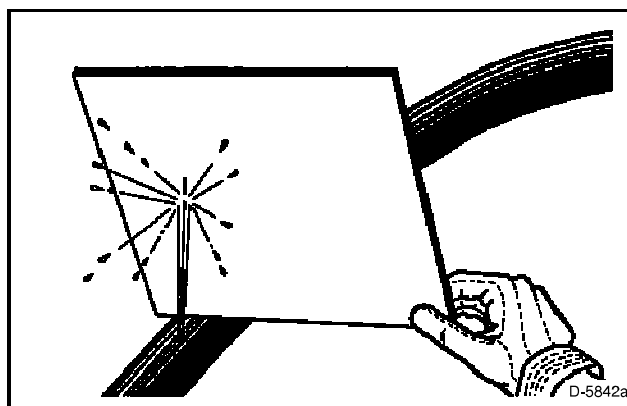


FIG. 18

# Introduction

## Electrical System

**FIG. 19:** To prevent short circuits, disconnect the battery negative (-) cable from battery before making adjustments or servicing the electrical system.

Battery may contain explosive hydrogen gas. Keep sparks, flames and cigarettes away.

Do not attempt to open the sealed battery. Always use a voltmeter to check the state of charge.

Be careful to avoid producing sparks with cable clamps when charging the battery or starting the mower engine with a slave (jumper) battery.

Batteries contain sulfuric acid electrolyte. Always wear protective clothing and eye protection when servicing. In case of electrolyte contact, rinse area with plenty of water and seek medical attention.

Batteries produce explosive hydrogen gas when charged. Charge in area with adequate ventilation. Halt charging if battery temperature exceeds 52 degrees C (125 degrees F).

**FIG. 20:** When connecting the battery, connect the positive (+) cable first.

Wash hands after handling battery.

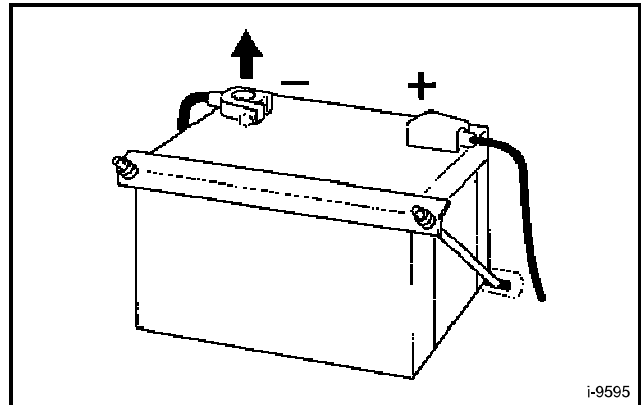


FIG. 19

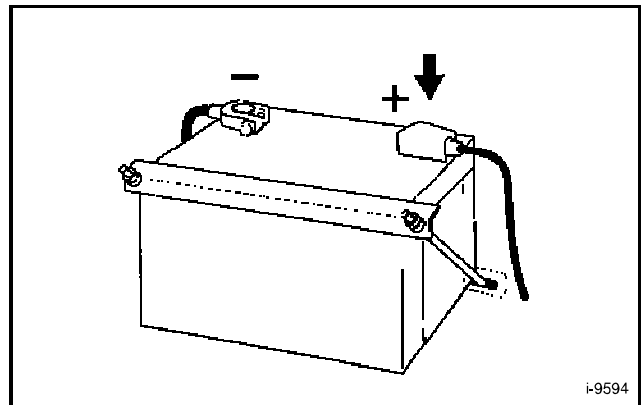


FIG. 20

## Fuel System

**FIGS. 21–22:** Diesel fuel is flammable and must be handled with care.

Never refuel or service the fuel system on the mower indoors, while smoking or when near open flames or sparks.

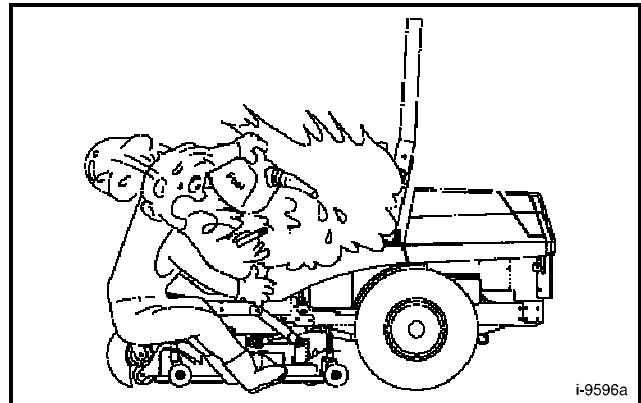
Never remove the fuel cap or refuel the mower while the engine is running.

**DO NOT** use cans unless necessary. If using a can, make sure the can is an approved container.

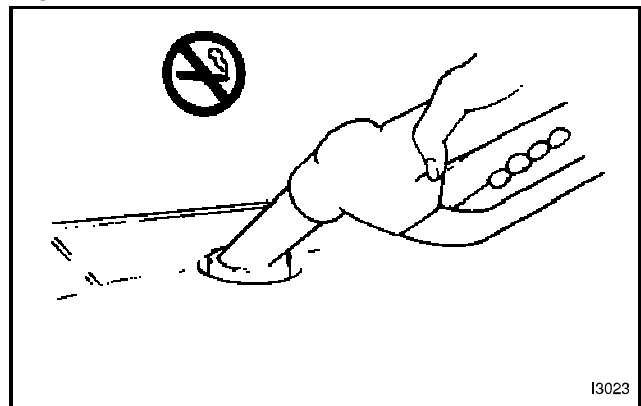
Always clean up any spilled fuel.

Fuel system components rely upon clean fuel for lubrication and optimum performance. Extreme care must be taken to prevent ingress of dirt and moisture to prevent damage.

Fuel injection system servicing must be referred to your Dealer. Unauthorized servicing may void all warranties.



**FIG. 21**



**FIG. 22**

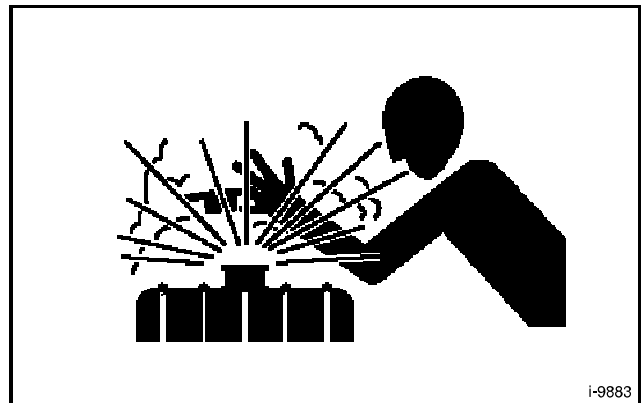
## Cooling System

**FIG. 23:** **DO NOT** remove the radiator cap when the engine is running or hot.

**DO NOT** add coolant to the radiator while the engine is running.

Before removing the radiator cap, turn the cap slowly to relieve the pressure.

When adding coolant, make sure coolant being added is compatible and will mix with existing coolant.



**FIG. 23**