



**BIG DOG™**  
**MOWERS**



## Table of Contents

General Information . . . . .	1-1
To The New Owner . . . . .	1-1
Using This Manual . . . . .	1-1
Warranty Registration. . . . .	1-1
Model and Serial Number. . . . .	1-1
Parts and Service. . . . .	1-1
Safety Precautions. . . . .	2-1
Safety and Instructions Decals. . . . .	2-1
Slope Guide . . . . .	2-7
Operation. . . . .	3-1
Safe Operating Practices . . . . .	3-1
Operation . . . . .	3-1
Using a Ramp. . . . .	3-2
Slope Operation . . . . .	3-2
Children . . . . .	3-3
Control Panel . . . . .	3-4
Controls . . . . .	3-4
Safety Start Interlock System. . . . .	3-4
Engine Starting. . . . .	3-5
Stopping the Engine. . . . .	3-6
Moving Mower With Stalled Engine . . . . .	3-6
(Roll Over Protective Structure) . . . . .	3-6
Mower Operation . . . . .	3-8
Air Flow Baffles . . . . .	3-11
Deck Cutting Height Adjustment . . . . .	3-12
Anti-scalp wheels . . . . .	3-12
Maintenance & Adjustments . . . . .	4-1
Safe Servicing Practices . . . . .	4-1
Service . . . . .	4-1
Introduction. . . . .	4-1
Torque Values . . . . .	4-2
Tires . . . . .	4-2
Lubrication . . . . .	4-2
Electrical System . . . . .	4-2
Hydraulic System . . . . .	4-3

Fuel and evaporative emissions control system . . . . .	4-3
Engine Oil and Filter . . . . .	4-5
Engine Air Filter . . . . .	4-6
General Engine Maintenance . . . . .	4-7
Fuel Evaporation System Filter . . . . .	4-7
Belts. . . . .	4-7
Mower Blade Maintenance . . . . .	4-7
Mower Blade Removal. . . . .	4-7
Seat Adjustment . . . . .	4-8
Control Lever Adjustment . . . . .	4-8
Maintenance Locator Chart . . . . .	4-11
Troubleshooting . . . . .	5-1
Storage . . . . .	5-3
Product Literature . . . . .	5-3

# GENERAL INFORMATION

This manual applies to the following BigDog® Mowers product line:

## BigDog® Mowers X Series

### To The New Owner

---

The purpose of this manual is to assist owners and operators in maintaining and operating your BigDog® Mower. Please read it carefully; information and instructions furnished can help you achieve years of dependable performance.

A separate Engine Owner's Manual is included with your owner's packet which contains additional engine information that will not be repeated in this manual. It is the owner's responsibility to make certain that the operators and mechanics read and understand the engine owner's manual before attempting to operate or repair the engine.

The decals are designed to give the operator brief information needed in the daily operation and service of the machine. These decals are not intended to be used in place of this manual but instead are to be used as an extension of this manual. These decals should not be removed or obliterated. Replace these decals if they become unreadable.

It is the **owner's responsibility** to make certain that the operators and mechanics read and understand this manual and all decals before operating this machine. It is also the **owner's responsibility** to make certain that the operators and mechanics are qualified and physically able individuals, properly trained in the operation of this equipment. All operators and mechanics must become familiar with the safe operation of the equipment, operator controls and decals.

**IMPORTANT:** The owner/user can prevent and is responsible for accidents or injuries occurring to themselves, other people or property.

Never let children or untrained people operate or service the equipment. Local regulations may restrict the age of the operator.

For more detailed maintenance and adjustment information refer to the proper *General Service Manual* for your machine. Refer to the "*Product Literature*" section of this manual for information on how to attain these manuals.

### Using This Manual

---

General operation, adjustment and maintenance guidance is outlined for both the experienced and novice BigDog® Mowers user. Operating conditions vary considerably and cannot all be addressed individually. Through experience, however, operators should find no difficulty in developing good operating skills suitable to most conditions.

Directions used in this manual, for example RIGHT or LEFT,

refer to directions when in operator position and facing forward, unless otherwise stated.

Photographs and illustrations used were current at the time of printing, but subsequent production changes may cause your machine to vary slightly in detail. BigDog® Mowers reserves the right to redesign and change the machine as deemed necessary, without notification. If a change has been made to your machine which is not reflected in this operator's manual, or the parts manual, see your BigDog® Mowers Dealer for current information and parts.

### Warranty Registration

---

Your BigDog® Mowers Dealer must register the unit on-line within **ten (10) days** following date of purchase to validate your warranty protection. As the new equipment owner, you should confirm that your BigDog® Mowers Dealer has registered your mower with BigDog® Mowers.

Be sure to register the mower plus each attachment that displays a model and serial identification number plate with BigDog® Mowers.

**IMPORTANT:** Any unauthorized modification, alteration, or use of non-approved attachments voids the warranty and releases BigDog® Mowers from any liability arising from subsequent use of this equipment. Do not use or operate any attachment not approved by BigDog® Mowers.

### Model and Serial Number

---

Mower model and serial numbers are found on the serial identification plate, located on the frame directly below and to the left of the operator's platform.

These numbers are required on the Warranty Registration form. They will also assure you of the correct service parts when replacement becomes necessary.

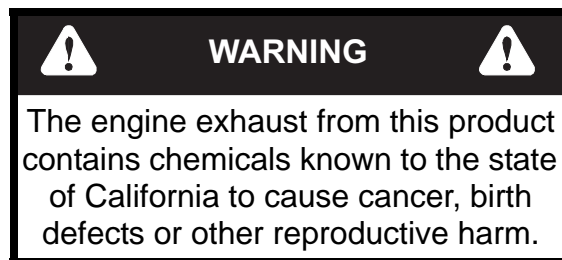
### Parts and Service

---

Use original BigDog® Mower replacement parts only. These parts are available through your local BigDog® Mower Dealer. To obtain prompt, efficient service, always provide the following information when ordering parts:

1. Correct part description.
2. Correct part number.
3. Correct model number.
4. Correct serial number.

All warranty repair and service must be handled through an authorized BigDog® Mower Dealer. Arrangements should be made through your local service center.



#### NOTICE OF REQUIREMENT OF SPARK ARRESTER MUFFLER

This equipment may create sparks that can start fires around dry vegetation. California Public Resources Code Section 4442.6 provides that it is unlawful to use or operate an internal combustion engine on any forest-covered, brush-covered, or grass-covered land unless the engine is equipped with a spark arrester maintained in effective working order. A spark arrester is a device constructed of nonflammable materials specifically for the purpose of removing and retaining carbon and other flammable particles over 0.0232 of an inch in size from the exhaust flow of an internal combustion engine that uses hydrocarbon fuels or which is qualified and rated by the United States Forest Service. Other states or federal areas may have similar laws. The Operator Should Contact Local Fire Agencies For Laws or Regulations Relating to Fire Prevention Requirements. THIS EQUIPMENT DOES NOT HAVE A SPARK ARRESTER AND YOU SHOULD CONTACT YOUR AUTHORIZED DEALER FOR THE PURCHASE OF A SPARK ARRESTER.

Inspect spark arrester daily; replace every 500 hours or as needed.

The Engine Owner's Manual provides information regarding the U.S. Environmental Protection Agency (EPA) and the California Emission Control Regulation of emission systems, maintenance and warranty.

Keep Engine Owner's Manual with your unit. Should the Engine Owner's Manual become damaged or illegible, replace immediately. Replacements may be ordered per the information found in the Product Information section of the owner's manual.

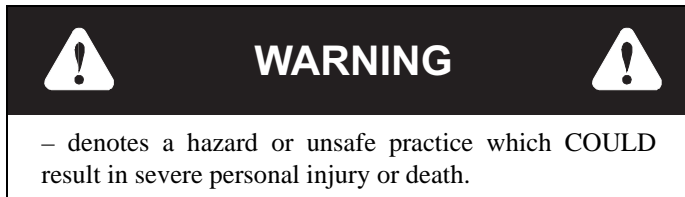
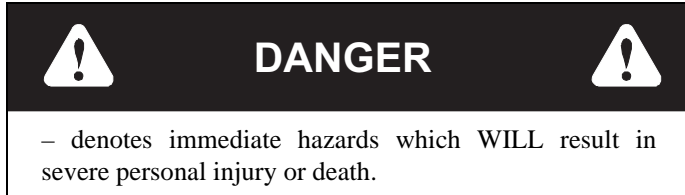
Federal law and California State law prohibit the following acts or the causing thereof:

1. The removal or rendering inoperative by any person other than for purposes of maintenance, repair, replacement, of any device or element of design incorporated into any equipment for the purposes of emissions control prior to or after its sales or delivery to the ultimate purchaser or while it is in use, or
2. The use of the equipment after such device or element of design has been removed or rendered inoperative by any person.

# SAFETY PRECAUTIONS



This safety alert symbol is used to call attention to a message intended to provide a reasonable degree of **PERSONAL SAFETY** for operators and other persons during the normal operation and servicing of this equipment.



This manual uses two other words to highlight information. **IMPORTANT** calls attention to special mechanical information and **NOTE** emphasizes general information worthy of special attention.

All operators and mechanics should read this manual, and be instructed about safe operating and maintenance procedures. If the operators or mechanics cannot read and understand English, it is the owner's responsibility to explain this material to them.

Improper use or maintenance by the operator or owner can result in injury. To reduce the potential for injury, comply with these safety instructions and always pay attention to the safety alert symbol "▲", which means DANGER or WARNING - "personal safety instructions." Failure to comply with the instructions may result in personal injury or death.

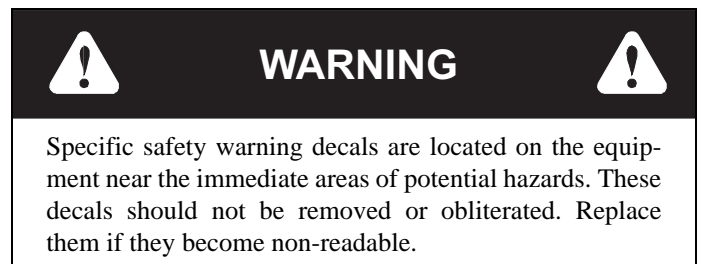
**Incorrect usage of this mower may result in severe injury. Personnel operating and maintaining it should be trained in the proper use and should read the manuals completely and thoroughly before attempting to set-up, operate, adjust, or service this mower.**

## Safety and Instructions Decals

The decals are designed to give the operator brief information needed in the daily operation and service of the mower. These decals are not intended to be used in place of this manual but instead are to be used as an extension of this manual. These decals should not be removed or obliterated. Replace these decals if they become unreadable.

- It is the **owner's responsibility** to make certain that the operators and mechanics read and understand this manual and all decals before operating this mower.

- It is also the **owner's responsibility** to make certain that the operators and mechanics are qualified and physically able individuals, properly trained in the operation of this equipment.
- All operators and mechanics must become familiar with the safe operation of the equipment, operator controls and decals.
- Never let children or untrained people operate or service the equipment. Local regulations may restrict the age of the operator.
- The owner/user can prevent and is responsible for accidents or injuries occurring to themselves, other people or property.
- The owner should also ensure that the operator/mechanic know that they are responsible for their own safety as well as the safety of other persons within the vicinity. **Remember**, the operator is responsible for accidents or hazards occurring to other people or their property.



The following illustrations show the various safety decals that are located on the mower. A brief explanation, for those requiring one, is shown to help the operator understand the meanings of these decals.



- **Read Operator's Manual and Safety Warning Decals before attempting to operate this machine.**



- **Do not smoke while refueling.**
- **Do not remove the fuel tank cap or fill tank with engine running or while the engine is hot.**
- **Allow engine to cool before storing machine inside a building.**
- **Store away from open flame or spark if there is fuel in tank.**
- **Clean up any gasoline spills.**
- **Do not refuel while in enclosed trailer or other enclosed areas.**
- **Maximum of 10% ethanol (E10) in fuel. Fuels with greater than 10% ethanol, (such as E15, E20 and E85) voids warranty. Fuels with greater than 10% ethanol are not approved for use and such illegal use could cause equipment failure and pose a fire hazard.**



Part Number  
601892

**WARNING: Thrown objects!**

- Always maintain a safe distance from people and pets when mowing.
- Always stop machine if someone enters the area.
- Inspect area to be mowed for hazards such as rocks, metal objects and other debris which may be thrown or entangled by mower blades. Remove these objects before mowing.



Part Number 602041

**WARNING:  
Hot surface!**

- Keep a safe distance from the machine.



Part Number 601837

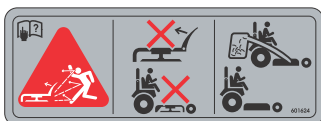
**DANGER:  
Rotating blades, pulleys & belts**

- Keep shields and covers in place while machine is in operation
- Keep hands, feet and clothing away from rotating pulleys and belts.



Part Number 600899

- If you lose steering control while operating the machine, place the steering control levers in the park brake position immediately. Inspect the machine and involve your dealer to resolve the problem before continuing to operate.
- If pump belt fails, steering control will be lost. Refer to owner's manual for inspection and replacement intervals and refer to above paragraph for emergency procedures.



**WARNING:  
Thrown objects!**

Part Number 601624

- Never operate the mower deck with side deflector damaged, altered, removed or in raised position, except when the entire grass catcher attachment or mulching system is being used.



**WARNING: Fire!**

Part Number 601967

- Clean flammable material from machine. Prevent fires by keeping engine compartment, top of deck, exhaust area, battery, fuel line, fuel tank and operator's station clean of accumulated trash, grass clippings, and other debris. Always clean up spilled fuel and oil.

Part Number 779280



**WARNING: Hot surface!**

















- Avoid skin contact with hot surface

Part Number 601968



**WARNING: Fluid  
under pressure!**

- Avoid hydraulic fluid escaping under pressure
- Hydraulic fluid escaping under pressure can penetrate skin.
- Hydraulic fluid escaping under pressure may have sufficient force to penetrate skin and cause serious injury. Foreign fluid injected into the skin must be surgically removed within a few hours by a doctor, familiar with this form of injury, or gangrene may result.
- Before applying pressure to hydraulic system, make sure all connections are tight and all hoses and lines are in good condition.
- Relieve all pressure in the system before disconnecting or working on hydraulic lines.
- To find a leak under pressure, use a piece of cardboard or wood – never use your hands.
- To relieve all pressure in system, lower attachment and turn engine off.

	<p>Part Number 601993</p> <p><b>WARNING:</b> Read Operator's Manual and decals before attempting to operate this machine.</p>
 	<p><b>WARNING:</b> Roll over!</p> <ul style="list-style-type: none"> <li>• Mow a safe distance (minimum of 10 feet) away from drop-offs, retaining walls, drainage ditches, embankments, water, and other types of hazards to avoid a wheel dropping over the edge or to avoid the ground from breaking away.</li> </ul>
  	<p><b>WARNING:</b> Back over!</p> <ul style="list-style-type: none"> <li>• Do not carry passengers.</li> <li>• Always stop machine if someone enters the area.</li> <li>• Always be aware of what is behind the machine before backing up. Do not mow in reverse unless absolutely necessary. Always look down and behind before and while backing up.</li> </ul>
   	<p><b>WARNING:</b> Roll over!</p> <ul style="list-style-type: none"> <li>• Slow down before turning.</li> <li>• Do not operate on slopes greater than 15 degrees.</li> <li>• Keep all movement on slopes slow and gradual. Never make sudden changes in speed and direction.</li> <li>• Do not mow on slopes above a retaining wall or drop-off.</li> </ul>
  	<p><b>WARNING:</b> Ejection!</p> <ul style="list-style-type: none"> <li>• Do not operate on slopes greater than 15 degrees.</li> <li>• Keep all movement slow and gradual when going up or down slopes.</li> <li>• Do not remove or modify stabilizer wheels or injury can result.</li> </ul>
  	<p><b>WARNING:</b> Loss of traction/control on slopes!</p> <ul style="list-style-type: none"> <li>• Shut off blades.</li> <li>• Back slowly down the slope when loss of traction occurs.</li> </ul>

Part Number 601635

	<b>WARNING:</b> Read Operator's Manual and decals before attempting to operate this machine.
	<b>WARNING:</b> This structure's protective capability may be impaired by structural damage, overturn, or alteration. If any of these conditions occur, this structure must be replaced.
	<b>WARNING:</b> Roll over!
	<ul style="list-style-type: none"> <li>• Avoid crushing, use seat belt.</li> <li>• Do not jump if machine tips.</li> <li>• To minimize chance of injury or death from rollover; keep ROPS in the raised and locked position and use the seat belt.</li> </ul>
	<ul style="list-style-type: none"> <li>• Do not remove ROPS</li> </ul>
	<ul style="list-style-type: none"> <li>• Never operate machine on a slope with the ROPS folded down (lowered position).</li> <li>• There is no roll over protection when the ROPS is in the lowered position.</li> <li>• Lower the ROPS only when absolutely necessary. Drive slowly and carefully. Raise the ROPS as soon as clearance permits.</li> <li>• Read and follow slopes operation instructions and warnings.</li> <li>• Do not wear seat belt when the ROPS is in the lowered position.</li> </ul>
	<b>WARNING:</b> Ejection!
	<ul style="list-style-type: none"> <li>• Always pull from the mower hitch.</li> <li>• Do not attach chains or ropes to the ROPS for pulling purposes, as the machine can tip backwards.</li> </ul>

**DANGER: Battery Hazards!**

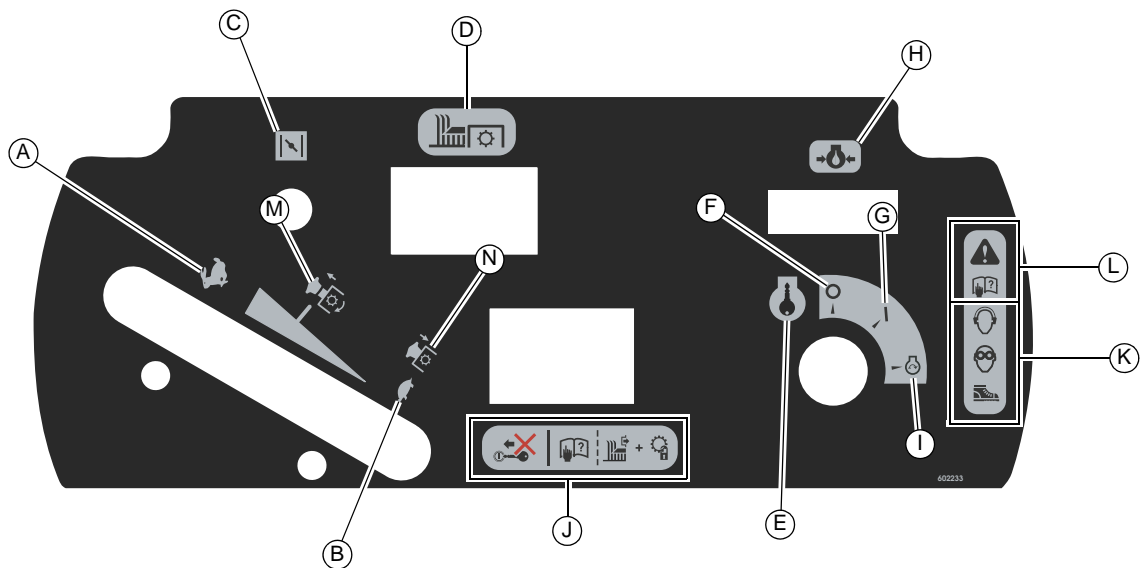
Part Number 601815



- Avoid skin contact with battery acid

- Do not overfill battery.
- Electrolyte may overflow and damage paint, wiring or structure. When cleaning the battery, use soap and water. Be careful not to get soap and water into the battery. Use soda mixed in water to clean corrosion off the terminals.
- Always wear eye protection when checking the battery, acid can cause serious injury to skin and eyes. If contact occurs, flush area with clean water and call physician immediately. Acid will also damage clothing.

- Do not allow open flame near the battery when charging.
- Hydrogen gas forms inside the battery. This gas is both toxic and flammable and may cause an explosion if exposed to flame. Always remove the negative ground first and replace it last.

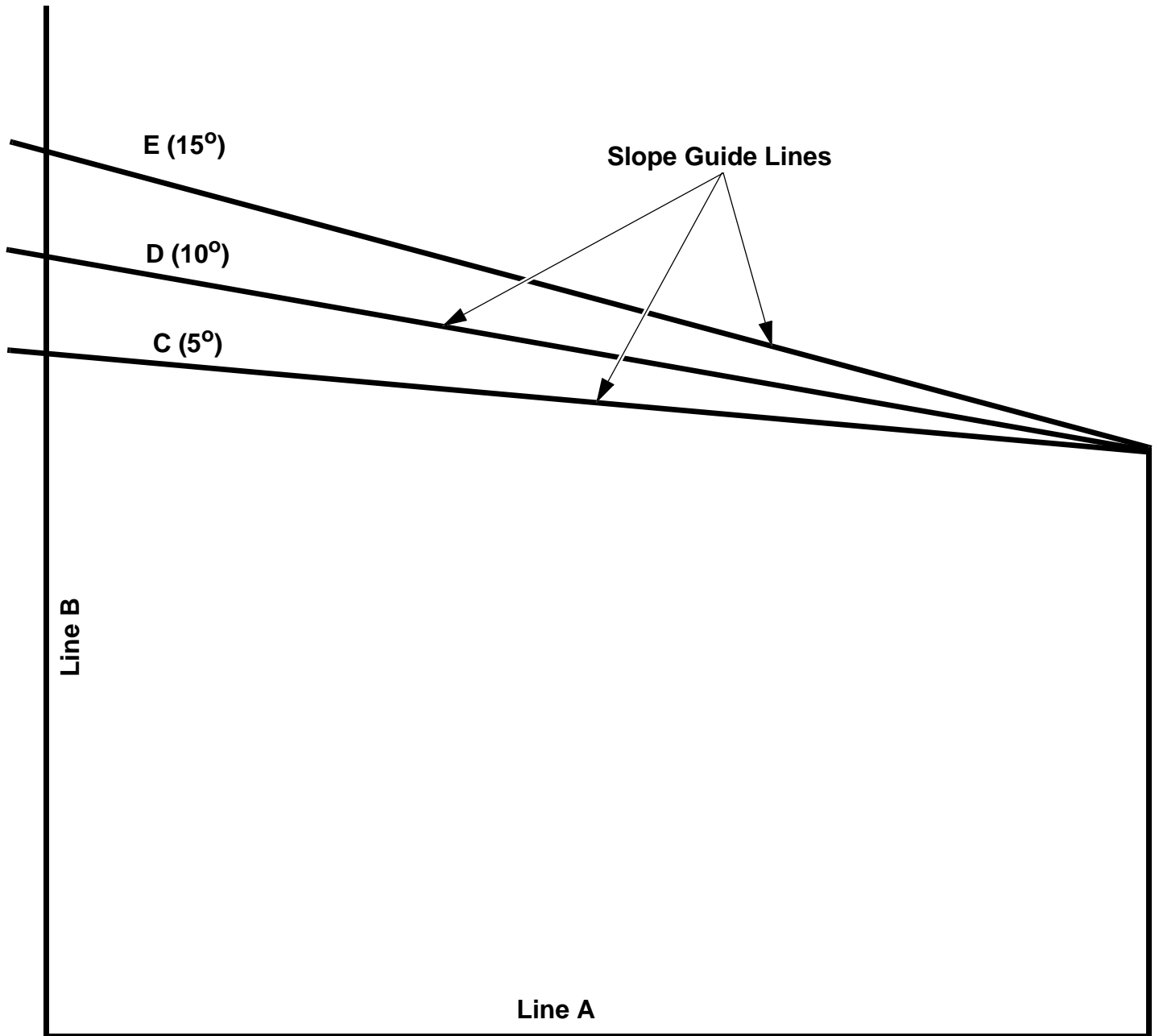


- A. Fast
- B. Slow
- C. Choke
- D. Mower blade engage/disengage switch
- E. Ignition switch - insert key
- F. OFF
- G. ON
- H. If warning light comes on, check engine oil
- I. Engine start position
- J. Before starting the engine:
  - Read Operator's Manual
  - Disengage mower blades
  - Place control levers in park brake position
- K. Wear ear protection, eye protection and safety shoes when operating this equipment.
- L. Read Operator's Manual before attempting to operate this machine.
- M. For maximum electric clutch life engage at 1/2 - 3/4 throttle position.
- N. For maximum electric clutch life disengage at low throttle position.



## SLOPE GUIDE

Use this diagram when determining the degree of slope to be mowed.



1. Hold this sheet of paper in front of you. Make sure that Line A is horizontal.
2. Align Line B with a vertical surface such as pole, tree or building.
3. Fold the paper along the slope guide lines (C, D or E).
4. Align the closest slope guide line with the ground slope. This will give you a close estimation of the ground slope to be mowed.



# OPERATION

## Safe Operating Practices

---

This product is capable of amputating hands and feet and throwing objects. Always follow all safety instructions to avoid serious injury or death.

## Operation

---

- ▲ Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Only use accessories and attachments approved by the manufacturer.
- ▲ Never leave a running mower unattended. Always stop on level ground, disengage the deck clutch, place the steering control levers in the park brake position, stop the engine, and remove the ignition key before leaving the operator's seat for any reason. Wait for the engine and all moving parts to come to a complete stop before leaving the mower for any reason including emptying the catcher or unclogging the chute.
- ▲ Do not change the engine governor setting or over speed the engine. Operating the engine at excessive speed may increase the hazard of personal injury.
- ▲ Always remain seated while operating the mower.
- ▲ Always keep safety shields and covers in place, except for servicing.
- ▲ Always maintain a safe distance from people and pets when mowing. Always stop mower if someone enters the area.
- ▲ Always operate mower in daylight or with adequate working lights.
- ▲ Follow daily and weekly checklists, making sure hoses are tightly secured and bolts are tightened.
- ▲ Always observe traffic laws while driving mower from one location to another. Watch for traffic when operating near or crossing roadways.
- ▲ Always be alert for hazards such as rocks, metal objects and other debris which may be thrown or entangled by mower blades. Watch out for holes or deep depressions.
- ▲ Never operate the mower when there is a risk for lighting.
- ▲ Inspect area to be mowed for hazards such as rocks, metal objects and other debris which may be thrown or entangled by mower blades. Remove these objects before mowing.
- ▲ Always inspect mower for damage after striking a foreign object. If damage is found, repair mower immediately. **Be sure to stop on level ground**, disengage the deck clutch, set the park brake, stop the engine, and remove the ignition switch key when leaving the operator's seat to inspect damage.
- ▲ Always wear adequate ear protection, such as earplugs, when operating this equipment as prolonged exposure to uncomfortable or loud noises can cause impairment or loss of hearing. Do not wear radios or music headphones while operating the machinery. Safe operation requires your full attention.
- ▲ Do not operate the equipment while wearing sandals, tennis shoes, sneakers, shorts or any type of loose fitting clothing. Do not use a towel as a headband or neck wrap and do not hang a towel from the waist. Long hair, loose clothing or jewelry may get tangled in moving parts. Always wear long pants, safety glasses, ear protection and safety shoes with slip-resistant soles when operating this mower.
- ▲ Always be aware of what is behind the mower before backing up. Never mow in reverse. Always look down and behind before and while backing up.
- ▲ Never push forward suddenly on your steering control levers while the mower is in rearward motion because mower may tip backwards.
- ▲ Never pull back suddenly on your steering control levers while the mower is in forward motion.
- ▲ If mowing in reverse is unavoidable, push forward slowly on the steering control levers and avoid sudden movement. Rapid movement of the steering control levers in either direction could result in a reaction of the mower that can cause serious injury.
- ▲ Never operate a poorly maintained mower.
- ▲ Never attempt high speed maneuvering, especially in crowded or congested areas.
- ▲ Never allow persons to operate this mower without proper instruction or allow children to operate the mower. Allow only responsible adults who are familiar with these instructions to operate this mower.
- ▲ Never put hands or feet under any part of the mower while it is running.
- ▲ Never carry passengers.
- ▲ Never direct discharged material toward anyone. Avoid discharging material against a wall or obstruction. Material may ricochet back towards the operator. Always disengage the mower blades and wait for them to stop before crossing gravel drives, walks or roads.
- ▲ Never operate the machine with the floor plate pulley cover removed.
- ▲ Always keep clear of the mower blades and attachments during their operation.
- ▲ Do not use any unauthorized attachment or modify the mower.
- ▲ Turn off the mower blades when not mowing.
- ▲ Slow down before turning.
- ▲ Stop the engine before removing the grass catcher or unclogging the discharge chute. Never clear the discharge chute with the engine running. Turn off the engine and be sure the blades have stopped before cleaning. Use a stick to clear a plugged discharge area. **Never use your hand!**
- ▲ Do not operate the mower if you are fatigued, sick or while under the influence of alcohol or drugs, if you are pregnant or under 18 years old.
- ▲ Poor posture or operating the mower for extended periods of time may lead to fatigue or injury, resulting in loss of mower control. Occasionally, stop the mower and get off the seat to stretch and relax.

- ▲ Exercise extreme caution when loading or unloading the mower onto a trailer or truck.
- ▲ Always wear safety goggles or safety glasses with side shields when operating the mower.
- ▲ Data indicates that operators, age 60 years and above, are involved in a large percentage of riding mower-related injuries. These operators should evaluate their ability to operate the mower safely enough to protect themselves and others from serious injury.
- ▲ Follow the manufacturer's recommendation for wheel weights or counterweights.
- ▲ If any attachment or additional weight is mounted on the rear of the unit, any rapid movement of the control levers in either direction could result in a reaction of the mower that can cause serious injury.
- ▲ **Clean flammable material from mower. Prevent fires by keeping the engine compartment, top of the deck, exhaust area, battery, fuel line, fuel tank and operator's station clean of accumulated trash, grass clippings, and other debris. Always clean up spilled fuel and oil.**
- ▲ **Prevent fires by keeping the engine and exhaust areas clear of grass clippings and other debris. Do not back mower into flammable materials.**
- ▲ Always secure the ROPS in the raised position and buckle the seat belt before starting mower.

## Using a Ramp

- ▲ Use extreme caution when loading and unloading a mower onto a truck or trailer with a ramp.
- ▲ Use only a single, full width ramp; do not use individual ramps for each side of the unit. Having a full width ramp provides a surface for the mower frame to contact if the unit starts to tip backwards. It also reduces the risk of a wheel going off and the mower tipping over.
- ▲ Do not exceed a 15 degree angle between the ramp and the ground or between the ramp and the trailer or truck.
- ▲ When on a ramp avoid sudden acceleration.

## Slope Operation

**Slopes are a major factor in loss-of-control and tip-over accidents, which can result in severe injury or death. All slopes require extra caution. If you cannot back the mower up the slope or if you feel uneasy on the slope; do not mow it. REMINDER: Only operate on slopes of 15 degrees or less.**

- ▲ Use extreme caution when operating on slopes.
  - Be extremely careful changing directions on a slope. Slow down.
  - Do not operate where the mower could slip or tip.
  - Turn slowly.
  - Turn on the most level part of the slope.
  - To maximize traction, it is better to turn the front of the mower uphill, rather than downhill. **If drive tires lose traction, steering control is lost which could cause serious injury or death.**
  - If it becomes necessary to turn downhill, turn slowly and gradually, if possible.
- ▲ Do not remove or modify the stabilizer wheels.

- ▲ Watch for holes, ruts, bumps, rocks or other hidden objects. Uneven terrain could overturn the mower. Tall grass can hide obstacles.
  - ▲ Remove obstacles such as rocks, tree limbs, etc.
  - ▲ Keep all movement on slopes slow and gradual. Do not make sudden changes in speed or direction.
  - ▲ Avoid starting and stopping on a slope. If tires lose traction, disengage the mower blades and proceed slowly straight down the slope.
  - ▲ Mow a safe distance (minimum of 10 feet) away from drop-offs, retaining walls, drainage ditches, embankments, water, and other types of hazards to avoid a wheel dropping over the edge or to avoid the ground from breaking away. This will reduce the risk of the mower suddenly rolling over causing serious injury or death.
  - ▲ Use a walk-behind, push mower or hand-held trimmer on slopes and near drop-offs, retaining walls, drainage ditches, embankments and water to avoid mower rollover and serious injury or death.
  - ▲ Do not mow on wet grass. Slippery conditions reduce traction which could cause sliding and loss of control.
  - ▲ Do not tow on slopes. The weight of the towed equipment may cause loss of traction and loss of control.
  - ▲ Do not try to stabilize the mower by putting your foot on the ground.
  - ▲ If the mower's tires lose traction when operating on slopes, disengage the blades, place the control levers in the park brake position, stop the engine, remove the ignition switch key, and get help.
  - ▲ Never make sudden starts, stops, turns, or reversals of direction, especially when maneuvering on slopes. The steering is designed for sensitive response. Rapid movement of the control levers in either direction could result in a reaction of the mower that can cause serious injury.
  - ▲ Never stop suddenly while backing down slopes. This action may result in a reaction of the mower that can cause serious physical injury.
  - ▲ The BigDog® mower is capable of operating horizontally (traverse) on moderately steep slopes. When operating on slopes up to 15 degrees, be aware of any conditions that may cause the mower drive tires to lose traction resulting in a possible loss of control of the mower. An operator should not operate on a slope until he is thoroughly familiar with the equipment.
- Do not operate on slopes greater than 15 degrees.**
- Refer to the *Slope Guide*, when determining the degree of slope to be mowed.
- It is strongly recommended that the operator drive the mower off of the slope, using extreme caution, if any sign of loss of traction is detected. Wait until the condition that caused the problem is resolved before attempting to operate on the slope again.
- Terrain conditions can affect traction resulting in possible loss of control of the mower. Some of the conditions to be aware of are:
1. Wet terrain
  2. Depressions in the ground; i.e. holes, ruts, washouts
  3. Mounds of dirt
  4. Soil type; i.e. sand, loose dirt, gravel, clay
  5. Grass type, density, and height

6. Extremely dry conditions of grass

7. Tire pressure

The attachments mounted to the mower will also affect the way it handles on a slope. Be aware that each attachment's characteristics vary.

Do not tow on slopes. The weight of the towed equipment may cause loss of traction and loss of steering control.

Another consideration for safe mowing on slopes is to be aware of what is located at the bottom of the slope. Extreme caution should be used when there is a hazard located at the bottom of the slope. Some examples are:

1. Water; i.e. lake, river
2. Cliffs, retaining walls
3. Roads, highways
4. Buildings
5. Rocks

These are just a few examples of situations when caution must be used when operating on a slope. There are many other possibilities too numerous to mention. Just remember to always exercise extreme caution when operating on any slope.

- ▲ The ROPS may minimize chance of injury or death from rollover. Seat belt **must** be fastened while operating a machine equipped with **ROPS in the raised and secured position. Both retaining pins and hair pins must be installed.** Failure to use seat belt with ROPS will result in serious injury in the event of a roll over.

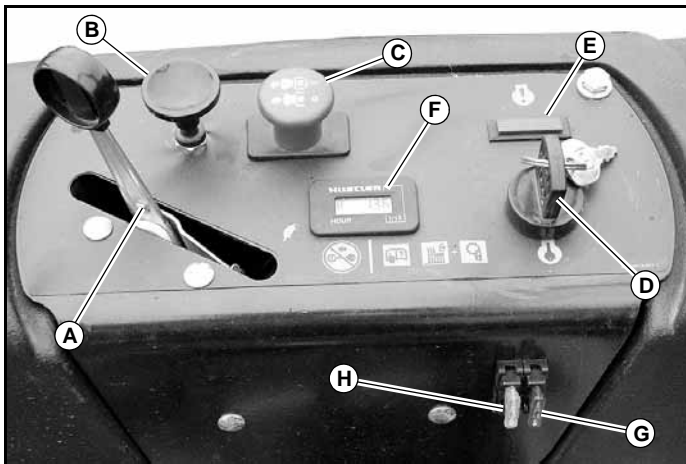
## Children

---

**Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the mower and the mowing activity. Never assume that children will remain where you last saw them.**

- ▲ Never leave the mower unattended with the ignition key in switch, especially with children present.
- ▲ Children or bystanders may be injured if they move or attempt to operate the mower while it is unattended. Always disengage the deck clutch, place the control levers in park brake position, stop the engine, and remove the ignition key when leaving operator's seat.
- ▲ Keep children out of the mowing area and under the watchful care of a responsible adult other than the operator.
- ▲ Be alert and turn the mower off if children enter the area.
- ▲ Before and while backing, look behind and down for small children.
- ▲ Never carry children, even with the blades off. They may fall off and be seriously injured or interfere with safe mower operation. Children who have been given rides in the past may suddenly appear in the mowing area for another ride and be run over or backed over by the mower.
- ▲ Never allow children to operate the mower.
- ▲ Never allow children or others in or on towed equipment.
- ▲ Use care when approaching blind corners, shrubs, trees, the end of a fence or other objects that may obscure vision.

## Control Panel



- |                       |                       |
|-----------------------|-----------------------|
| A. Throttle           | E. Oil pressure light |
| B. Choke              | F. Hour meter         |
| C. Deck clutch switch | G. 10 amp fuse        |
| D. Ignition switch    | H. 15 amp fuse        |

Figure 3-1

**IMPORTANT:** When access is required under the seat platform and the seat is equipped with the optional arm rests, make certain to place the control arms in the park brake position and pivot the arm rests upward before placing the seat platform in the full forward position to prevent arm rest damage.

- A. **Throttle control (Figure 3-1)** — a cable is linked to engine throttle for controlling engine speed. Move lever forward to increase engine rpm, move lever rearward to decrease engine rpm.
- B. **Choke control (Figure 3-1)** — a cable is linked to manually operate the engine choke. When the lever is in the down position, the choke is in the off (run) position. When the lever is pulled up, the choke is in the on (start) position. Do not operate the machine in the on (start) position.
- C. **Deck clutch switch (Figure 3-1)** — this switch engages the deck. Pull the switch up to engage and push switch down to disengage the clutch.  
**IMPORTANT:** Never engage clutch with engine running at high rpm or when the deck is under load. Clutch, belts or deck could be damaged.
- D. **Ignition switch (Figure 3-1)** — a three position switch: “OFF”, “RUN”, and “START”. With key inserted, rotate it clockwise to “START” position; release key when engine starts, and switch will automatically return to the RUN position.
- E. **Oil pressure light and alarm (Figure 3-1)** — this light comes on when the ignition switch is placed in the RUN position and stays lit until the engine is running and a safe oil pressure is developed. If light comes on during operation, shut engine off immediately and locate and correct the problem.
- F. **Electronic hour meter (Figure 3-1 & Figure 3-2)** — registers 1/10 hour increments up to 9,999.9 total hours. Connected to the ignition switch, the meter records the

accumulative time while the ignition key is switched to the RUN position. **NOTE:** The hour meter is found in various locations on different mowers.

- G. **10 amp fuse (Figure 3-1)** — Ignition - 10 amp, blade-type
- H. **15 amp fuse (Figure 3-1)** — Clutch - 15 amp, blade-type

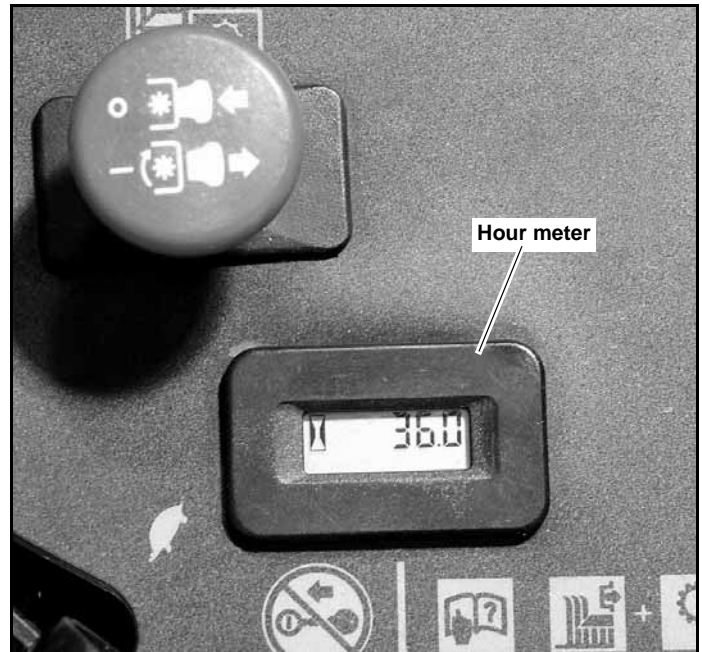




Figure 3-2

## Controls

- A. **Steering control levers (Figure 3-3 & Figure 3-4)** — these levers control the mower’s speed, direction, stopping, and park brake. These levers are used to steer, accelerate, decelerate and change direction. When the steering control levers are in the park brake position the mower will not move when the engine is on and drive pumps are operating.

**WARNING**

The parking brake may not hold the mower if parked on a slope. Block or chock the machine when parked on a slope.

- B. **Deck lift pedal (Figure 3-5)** — the deck lift pedal is used to raise or lower the deck. Push on the pedal to raise the deck and then place the deck height locking pin into the desired cutting height hole.  
Push the deck lift pedal to raise the deck when going over obstructions.

## Safety Start Interlock System

The mower is equipped with a safety start interlock system consisting of the park brake switches, seat switch, and deck clutch switch.

**Check the mower’s safety start interlock system daily, prior to operation.** This system is an important mower safety feature. It should be repaired immediately if it malfunctions.

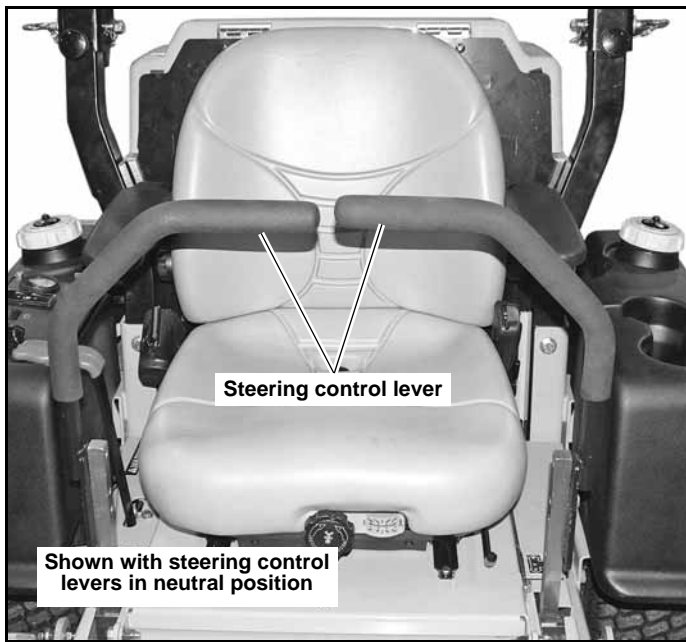


Figure 3-3



Figure 3-4

The machine incorporates a separate seat switch which will stop the engine when the operator is unseated for any reason while the mower is operating. This is a safety feature designed to prevent runaway or accidental entanglement. To inspect the system:

1. The operator must be on the seat when testing the seat switch.
2. Set both steering control levers in the park brake position.
3. Start the engine and allow it to warm up to operating temperature.
4. With the deck clutch switch down and the steering control levers in the park brake position, slowly raise off of the seat. **The engine should continue to run.**
5. With the deck clutch switch up and/or the steering control levers in the neutral position, slowly raise off of the seat. **The engine should stop.**
6. **If the engine fails to stop** when the deck clutch switch is up or one or both of the steering control levers is up and the operator is off the seat, check the function of the seat

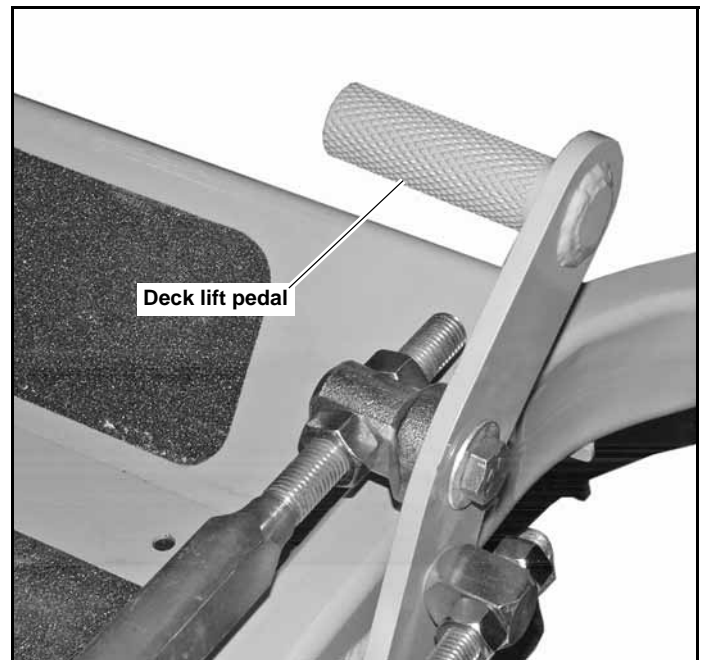


Figure 3-5

switch. If the seat switch is not operating properly (**is not opening or closing**) and if the cause can not be determined, replace the seat switch.

If the problem cannot be located, contact your BigDog® Mowers Dealer.



## WARNING



The safety interlock system should always function per steps 4 and 5. If it does not function properly, it should be corrected immediately. Do not operate machine without a properly functioning seat safety switch.

## Engine Starting

The mower's safety start interlock system is also designed to protect the operator and others from accidental injury due to unintentional engine starting. The engine starting motor will not engage until:

1. Steering control levers are in the park brake position.
2. Deck clutch switch is in the down (OFF) position.



## WARNING



The safety interlock system must not be disconnected or bypassed. Doing so could cause the machine to operate unexpectedly resulting in personal injury.

**NOTE:** The operator's seat is equipped with a separate safety switch. If for any reason the operator should become unseated when the steering control levers are not in the park brake position (park brake switches are disengaged) or the deck clutch switch is engaged the engine will stop.

The following steps are the correct procedures for starting the

engine. If difficulty is encountered, contact the BigDog® Mowers Dealer in your area.

1. Before starting mower each day, perform daily pre-operation checking. (See *Safety Start Interlock System* section.)
2. Make sure the steering control levers are in the park brake position and the deck clutch switch is disengaged. Only start the engine from the operator's position.
3. Use choke when engine is cold, or if warm engine fails to start within 5 seconds of cranking. Avoid flooding and operate engine without choking as soon as possible.
4. Set throttle at approximately 1/2 open position.
5. Insert key in ignition switch and rotate full clockwise to engage starting motor. Release key when engine starts.

**IMPORTANT:** The engine starter should not be operated for periods longer than 30 seconds at a time. An interval of at least two minutes should be allowed between such cranking periods to protect the starter from overheating and burn-out.

6. Perform test to make sure the safety start interlock system is operating properly. Refer to *Safety Start Interlock System* section.
7. As soon as the engine begins to run, check to make certain the oil warning light is off. If not, stop the engine immediately and check for the cause.
8. Allow the engine to idle a few minutes before advancing the throttle and/or engaging the deck clutch.

## Stopping the Engine

Use the following procedure to shut off the engine after operating the equipment.

1. Place the steering control levers in the park brake position.
2. Throttle the engine back to low idle, then disengage the deck clutch. Refer to *Mower deck operation* section for more details.
3. Let the engine run at low idle for a couple of minutes.
4. Rotate the ignition key counter-clockwise to the "OFF" position. Remove the key from switch before leaving the mower.

## Moving Mower With Stalled Engine

If it becomes necessary to move the machine when the engine is inoperative, the hydraulic pumps are equipped with bypass valves. Before moving the unit, turn bypass valves counter clockwise one-half to one revolution. The valve stems on each hydraulic pump are located near the top and are identified as a hex stud. The valve is located per Figure 3-6.

The steering control levers must be placed in the neutral position, to release the park brakes, so that the mower can be moved.

Do not tow the machine. Move it by hand or use a winch to load on a trailer for transporting.

When transporting on another vehicle, the mower should be facing forward and it must be secured.

**IMPORTANT:** Always make certain the two bypass valves are returned to their operating position before running the mower following repairs. ROPS

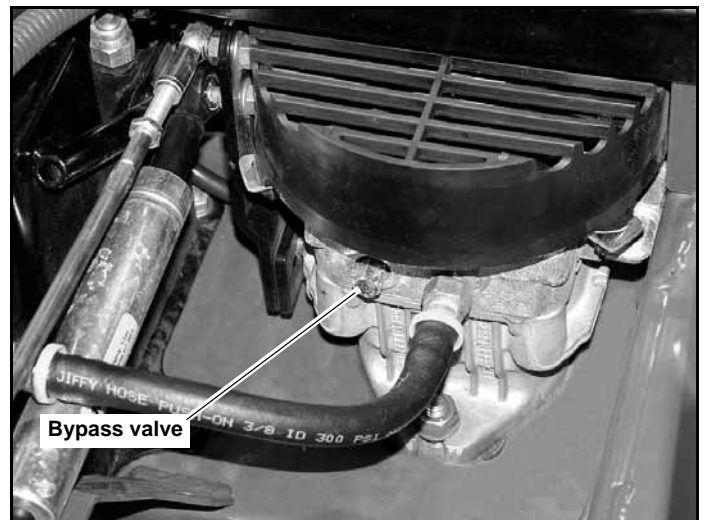


Figure 3-6

## ROPS

### (Roll Over Protective Structure)

A ROPS, when used with seat belt, is effective in reducing injuries during unit overturn accidents. Overturning the unit without a ROPS or without ROPS locked in the raised position can result in serious injury or death. Figure 3-7

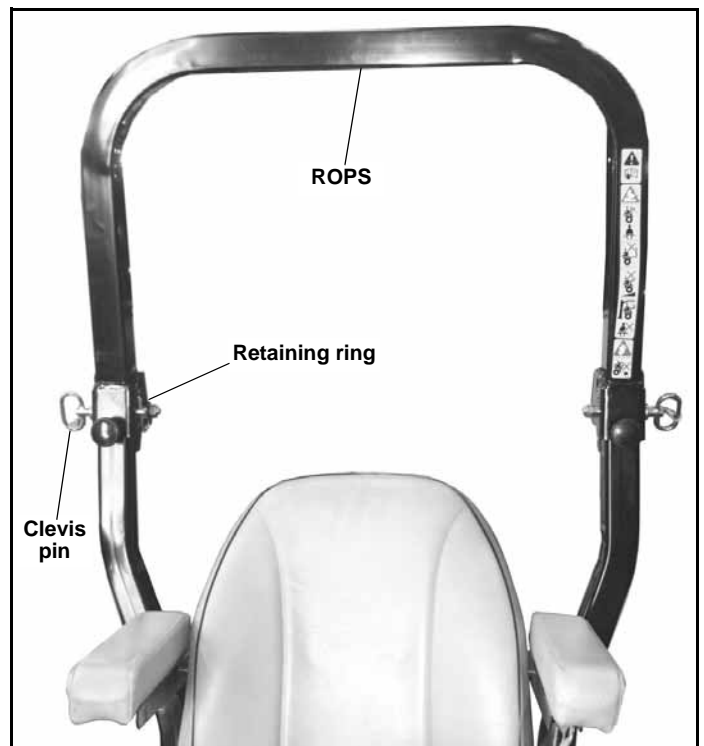






Figure 3-7

The two-post ROPS can be pivoted down by removing the right and left retaining rings (Figure 3-7), and pulling out on the clevis pins so that the machine can operate under low hanging tree limbs or other obstructions. **Do not** wear the seat belt when the ROPS is in the lowered position. **Use the ROPS in the**



**“folded” position only when absolutely necessary.**

**WARNING**

**Do not** operate the mower with the ROPS folded (lowered position) as a standard operating mode. A folded ROPS does not provide rollover protection.



**WARNING**

Always wear your seat belt unless the mower is not equipped with a ROPS or if the ROPS is folded down. In this case, the seat belt should never be worn.

**WARNING**

**To minimize chance of injury or death from rollover:**

- **Keep ROPS in the raised and locked position and use the seat belt.**
- **Never operate machine on a slope with the ROPS folded down (lowered position).**
- **There is no roll over protection when the ROPS is in the lowered position.**
- **Lower the ROPS only when absolutely necessary. Drive slowly and carefully. Raise the ROPS as soon as clearance permits. Read and follow slope operation instructions and warnings.**
- **Do not wear seat belt when the ROPS is in the lowered position.**

**WARNING**

Always pull from the mower hitch. Do not attach chains or ropes to the ROPS for pulling purposes, as the machine can tip backwards.

Always fasten seat belt during operation of the machine (mower equipped with ROPS in “raised/up” position).

Inspect the area prior mowing for proper overhead clearance (tree limbs, guy wires, doorways, etc).

**Do not** contact any overhead object with the ROPS.

#### Seat belt maintenance

Inspect the seat belt system (all seat, seat belt parts, seat pan and seat pan latch) daily prior to mowing for signs of any damage. These parts should be replaced if any parts indicate signs of:

- cuts
- fraying
- extreme or unusual wear
- significant discoloration due to UV exposure
- dirt or stiffness
- abrasion to the seat belt webbing
- damage to the buckle, latch plate or hardware.

- any other problem



If the seat belt is to be cleaned, use soap and water. Do not use carbon tetrachloride, naphtha, or other chemical cleaning agents, as these will weaken the webbing. For the same reason, do not bleach or dye the webbing. Replace the seat belt if worn or damaged.

#### Possible damage to ROPS

If the unit has rolled over or the ROPS has been in some other type of accident (such as hitting an overhead object during transport), the ROPS must be replaced to retain the best protection.

Following an accident, check the ROPS, the operator’s seat, the seat belt, seat belt mountings and seat latch for possible damage. Before operating the machine, replace all damaged parts.

**IMPORTANT:** Do not attempt to weld or straighten the ROPS.



**WARNING**

**The ROPS structure’s protective capability may be impaired by structural damage, overturn or alteration.** Do not remove or alter any of the ROPS parts. Do not attempt to weld or straighten ROPS. Failure to adhere to these instructions could result in severe injury or death. If the ROPS or cab is replaced, make sure that the proper hardware is used and the recommended torque values are applied to the attaching bolts.

#### ROPS Inspection

Inspect the ROPS after the first 20 hours of operation. Following the initial inspection, check the ROPS after every 500 hours of operation or every six months, whichever comes first.

1. Check the torque of the ROPS mounting bolts. Tighten the bolts to the correct torques as shown below if necessary. Figure 3-8
2. Inspect the operator’s seat and the mounting parts for the seat belt. Tighten the bolts to the correct torque as shown below if necessary and replace parts that show wear or damage.
3. Check the seat latch to make sure it is secured and functioning properly. Adjust or repair it as necessary.

**WARNING**

Never operate the mower with the seat latch un-installed or improperly secured. The seat platform must be securely latched to prevent seat from moving/tilting in the event of mower tipping or rollover.

#### Torque values are given below:

	<b>Ft-lbs.</b>	<b>N-m</b>
ROPS mounting bolts . . . . .	73	99
Seat belt mounting hardware . . . . .	48	65



## WARNING



Always pull from the mower hitch. Do not attach chains or ropes to the ROPS for pulling purposes, as the machine can tip backwards.

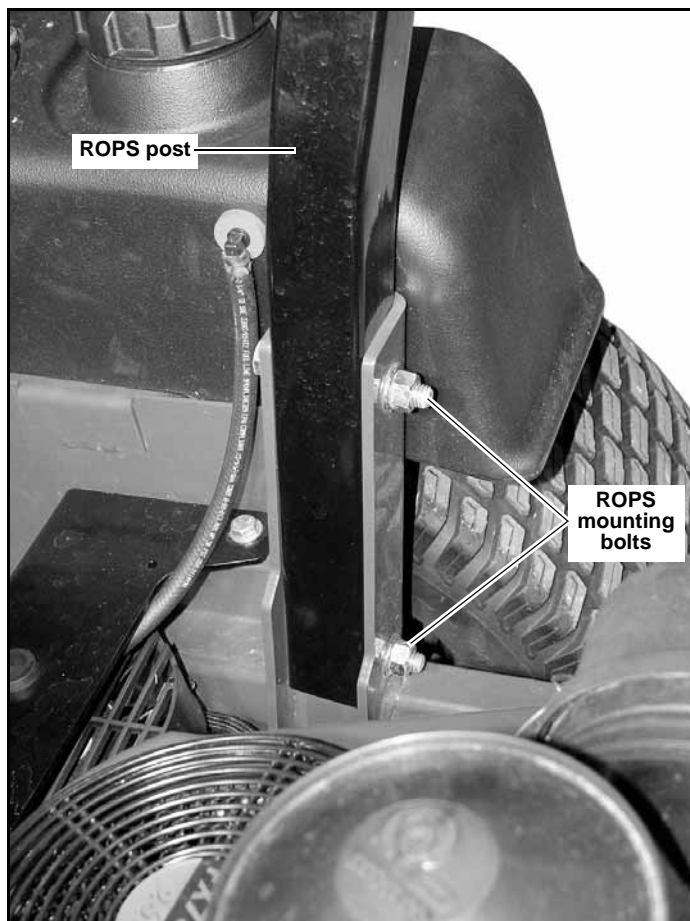


Figure 3-8

## Mower Operation

### Driving the mower



## DANGER



Never make sudden stops or reverse direction, especially when maneuvering on a slope. The steering is designed for sensitive response. Rapid movement of the control levers in either direction could result in a reaction of the mower that can cause serious injury.

After starting engine, engage the steering control levers and steer as follows:

**To go forward**, push steering control levers forward an equal distance (Figure 3-9).

**To go in reverse**, pull steering control levers rearward an equal distance (Figure 3-9).

**To turn left**, move the right steering control lever farther forward from neutral than the left steering control lever.

**To turn right**, move the left steering control lever farther forward from neutral than the right steering control lever. (Figure 3-9)

**Zero radius turn**, move one steering control lever forward and the other steering control lever back of neutral. This will allow the drive wheels to counter-rotate. (Figure 3-9)

**To stop or decrease speed**, move steering control levers to neutral. When going forward pull back gently on steering control levers. When going in reverse push forward gently on steering control levers.

**For emergency stop**, when traveling forward or rearward, place the steering control levers in the park brake position immediately.



## DANGER



When moving in the rearward direction push forward gently on steering control levers and avoid sudden movement. Any sudden movement could cause the front of the mower to come off of the ground resulting in possible loss of control, causing serious injury or death.

**To make a three point turn to the right**, move the left steering control lever farther forward from neutral than the right steering control lever and start the turn. Next, pull back on the steering control levers until they are past neutral and the machine starts to go rearward. Pull the right steering control lever farther rearward from neutral than the left steering control lever until the rear of the machine has pivoted around. Then, push the steering control levers forward until they are both past neutral and the machine starts to go forward. Push the left steering control lever farther forward from neutral than the right steering control lever and finish the turn. (Figure 3-10)



## WARNING

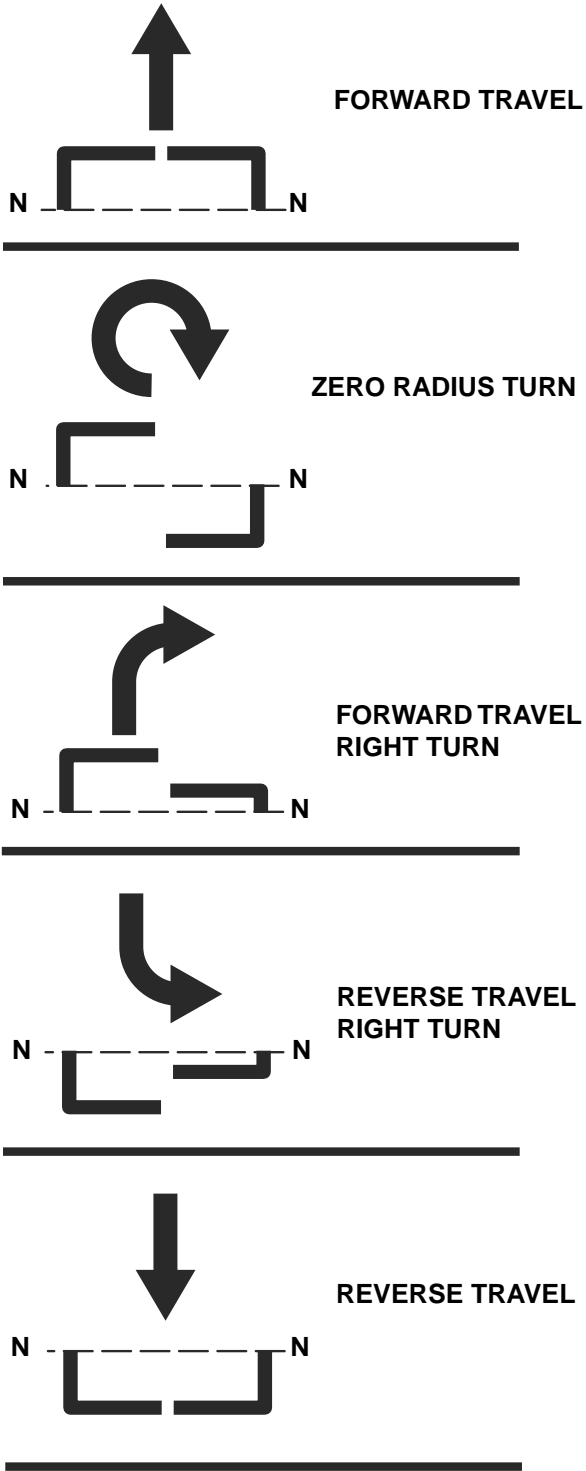


Always be aware of what is behind the machine before backing up. Do not mow in reverse unless absolutely necessary. Always look down and behind before and while backing up.

**IMPORTANT:** Rapid movement of steering control levers is not recommended as damage to the hydraulic system components may occur.

**To increase speed**, increase steering control lever's distance from neutral. The farther forward steering control levers are from neutral, the faster the mower will travel forward. The farther back steering control levers are from neutral, the faster the mower will go in reverse.

FRONT OF MOWER FACES THIS DIRECTION



N = NEUTRAL POSITION

Direction of arrows indicate direction of mower movement

Figure 3-9

### THREE POINT TURN

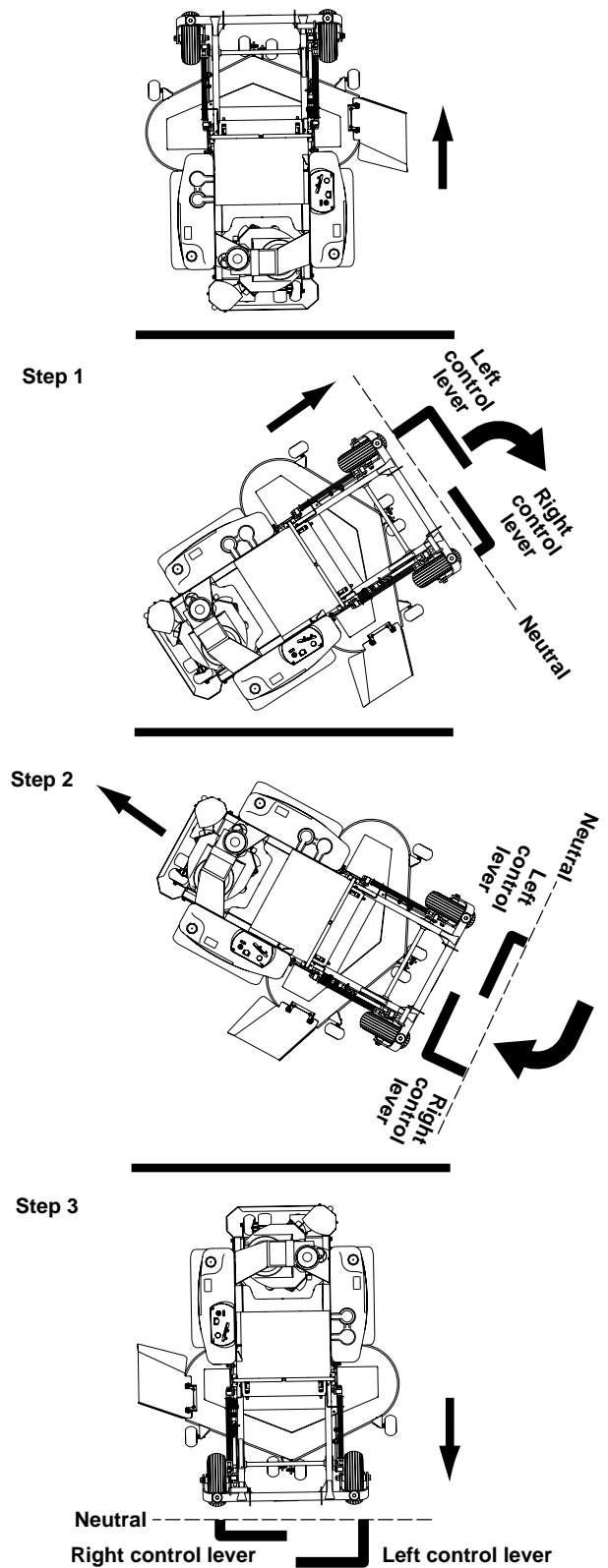


Figure 3-10

## Operating suggestions



### DANGER



Prior to operating the mower the operator should be thoroughly familiar with the proper use and operation of the equipment, should read the manual completely and thoroughly, and should have attempted slow moving maneuvers to become familiar with the operation of the equipment before attempting normal speed operation. An inexperienced operator should not mow on slopes or on uneven terrain.



### WARNING



**If you lose steering control while operating the machine, place the steering control levers in the park brake position immediately. Inspect the machine and involve your BigDog® Mower dealer to resolve the problem before continuing to operate.**



### WARNING



The unit's steering control levers are very responsive: **Easy does it!** For smooth operation, move the levers slowly, avoiding sudden movement. Skill and ease of operation come with practice and experience. The machine can spin very rapidly. Use caution when making turns and slow down before making sharp turns.

Inexperienced operators may have a tendency to oversteer and lose control. Slow-moving (low engine rpm - idle) practice maneuvers on a flat open area are recommended to become familiar with these characteristics before attempting normal speed operation.



### WARNING



Sharp depressions or raised obstacles (such as gutters or curbs) should not be directly approached at high speed in an attempt to "jump" them as the operator could be thrown from the equipment. Approach at a slow speed and angle one drive wheel at the obstruction. Continue at an angle until the wheel clears and then pivot the opposite wheel around.

When turning on soft wet turf, keep both wheels rolling either forward or backward. Pivoting on one stopped wheel can damage turf. This is especially important when mowing.

Mower performance is at maximum when the throttle is set at full rpm. This gives maximum power to the drive wheels and deck when needed. Use the control levers to control ground speed rather than engine rpm.

**Keep blades sharp.** Many professional mowing companies

have additional sets of blades and change blades twice a day: once in the morning and again at noon. **Many problems** with incorrect cutting patterns are **due to dull blades** or blades which have been **sharpened incorrectly**. Information on sharpening blades is listed in this manual's maintenance section. In addition, most communities have individuals or companies which specialize in sharpening mower blades. **Blade sharpness should be checked daily.**



### DANGER



Never work with blades while engine is running or deck clutch switch is engaged (on). Always place deck clutch switch in the disengaged position, place steering control levers in the park brake position and turn engine off and disconnect negative battery cable. Block up mower when you must work under it. Wear gloves when handling blades. Always check for blade damage if the mower strikes a rock, branch or other foreign object during mowing!

**Use high blade speed.** Your mower is designed to operate at full throttle. The throttle setting directly controls blade speed. The highest blade speed generally gives the best cut.

**Direct grass discharge to the right,** away from the unmowed area. Select a mowing pattern that directs grass discharge toward the outside, not toward the center, of the mowing area. Generally, this means using a pattern utilizing **left turns** because side discharge is to the **right**. In any case, avoid throwing grass discharge onto unmowed area because grass is then mowed "twice". Mowing twice puts an unnecessary load on the unit and reduces mowing efficiency.

**When mowing a lawn for the first time** cut grass slightly longer than normal to avoid scalping uneven terrain. When possible, it is best to use the cutting height that was used in the past. When cutting grass taller than six inches, you may want to mow the lawn twice to achieve a better quality of cut.

**During normal mowing cut only about 1/3 of the grass blade.** Cutting more than that is not recommended unless grass is sparse or it is the end of the mowing season.

**Alternate mowing direction** to keep the grass growing straight and for better dispersion of the clippings.

**Remember, grass grows at different rates** at different times of the year. Mow more often in the early spring to maintain the same cutting height. As the growth rate slows in midsummer, mow less frequently. If you cannot mow at a regular interval, mow at a high cutting height; then mow again two days later at a lower cutting height.

**Raise the cutting height of the mower** if the cutting width of the mower is wider than the previous mower. This ensures that uneven turf is not cut too short.

**Raise the cutting height of the mower** if the grass is slightly taller than normal or if it contains a high degree of moisture. Then mow it again with the cutting height set lower.

**If the machine's forward motion** must be stopped while mowing, a clump of grass clippings may drop onto your lawn. To avoid this, move onto a previously cut area with the blades engaged.



## WARNING



Never direct the discharge of material from the mower deck toward bystanders. Do not operate the mower without either the discharge chute or the entire grass collection system in place. Figure 3-11

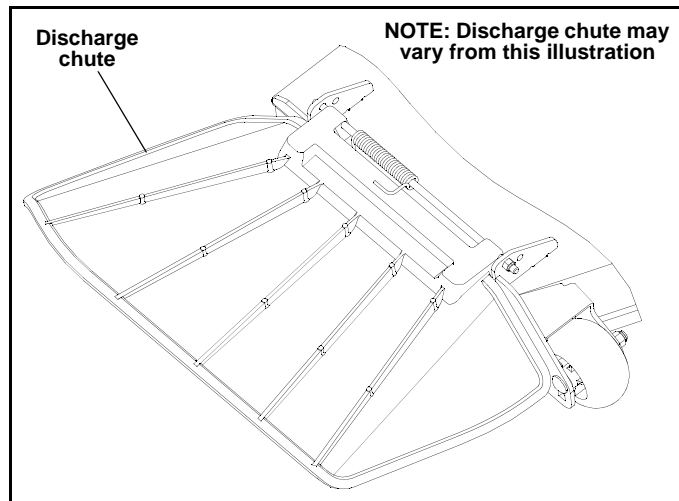


Figure 3-11



## DANGER



Never attempt to make any adjustments to the mower deck while the engine is running or with the deck drive clutch engaged. Mower blades cannot be seen and are located very close to deck housing. Fingers and toes can be cut off instantly.

### Deck clutch operation

Before beginning operation, check to make sure the deck clutch switch is engaging and disengaging the blades properly.



## WARNING



Make sure that the area around and under the deck is clear and that there are no bystanders in the immediate area before proceeding.

### To check the deck clutch switch:

1. Start the engine and engage the deck clutch.
2. With the deck clutch switch up (clutch engaged) and the engine running, listen to confirm that the mower blades are rotating.
3. Now, push the deck clutch switch down (clutch disengaged), and with the engine running, listen to confirm that the blades have stopped rotating.
4. If the mower blades continue to rotate with the deck clutch switch down, discontinue operation immediately and contact your BigDog® Mowers Dealer.

Clutch life will be maximized if these procedures are followed.

1. **Engage the clutch** only when the throttle is set at approximately  $\frac{2}{3}$  throttle and there is **no load** on the blades. After clutch engagement, advance the engine throttle to full rpm.

Engaging the deck clutch at high engine rpm or when under heavy load (in tall grass, for example) can cause belts and/or electric clutch to slip, resulting in premature wear or possible damage.

2. **Disengage the clutch** only when the throttle is set at **less than  $\frac{1}{2}$  throttle**.

Never disengage the clutch with the engine running at high rpm. Setting the throttle to less than  $\frac{1}{2}$  throttle when disengaging the clutch will help extend clutch life.

**Warranty will not be allowed** for deck clutches that fail due to improper engagement and disengagement practices.

### Air Flow Baffles

Some decks are equipped with front adjustable air flow baffles. These baffles can be adjusted up or down, depending upon the mowing conditions, to provide the best quality of cut. Figure 3-12

Setting	Conditions
A Bottom set of holes	Dry, sparse grass. Particularly useful when mowing at a height of cut of 3" (7.62cm) or higher. This setting provides the maximum vacuum and minimal blowout.
B 2 <sup>nd</sup> set of holes	Manicured lawns. Provides the best vacuum for the best cut when removing weekly/bi-weekly growth.
C 3 <sup>rd</sup> set of holes	Tall and stemmy grasses. The higher inner wall allows grasses to snap back up before contacting the blades to produce a cleaner cut.

**NOTE:** The air flow baffles are preset at the factory in the "B" setting.

The 60" decks, that are equipped with these baffles, come with three sets of mounting hardware for each air flow baffle. The middle set of hardware does not need to be removed when changing the baffle setting. This is a slot and the hardware only needs to be loosened enough to allow the baffle to slide. The other hardware on the ends of the baffles will need to be removed. After the baffles have been adjusted, re-install and tighten the outer hardware and tighten the middle hardware.

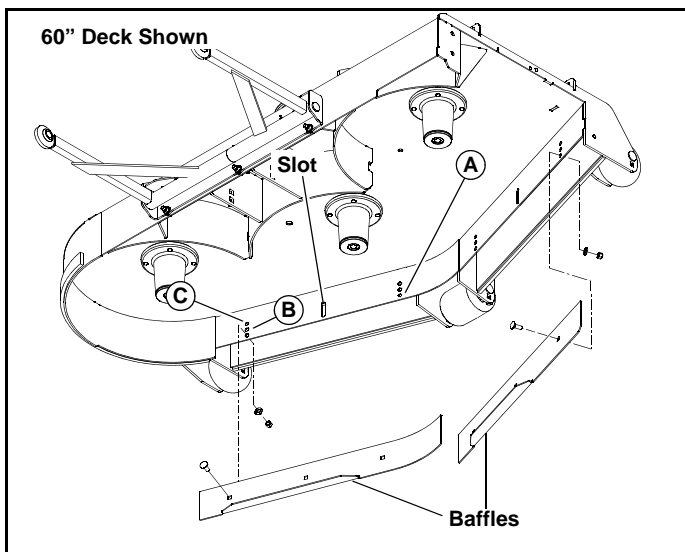


Figure 3-12

## Deck Cutting Height Adjustment

Deck cutting height is adjustable in 1/4" (.64cm) increments. The holes in the height adjusting bar are spaced at 1/2" (1.27cm) intervals. By turning the height adjusting stop around, 1/4" (.64cm) increments can be attained due to the 1/4" (.64cm) plate that is part of the stop. Figure 3-13

**EXAMPLE:** When the height adjusting stop is placed in the 3" (7.62cm) hole, **with the 1/4" (.64cm) plate facing to the front of the unit**, the cutting height is at 3" (7.62cm). When the height adjusting stop is placed in the 3" (7.62cm) hole, **with the 1/4" (.64cm) plate on the operator's side of the hole**, the cutting height is at 3-1/4" (8.26cm).

The notch located at the rear of the height adjusting bar engages the stop handle when the deck lift pedal is fully depressed. This sets the deck in **transport mode**.

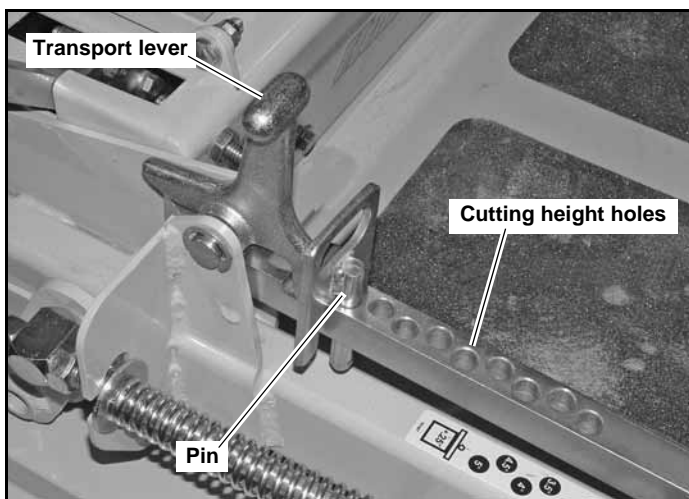


Figure 3-13

## Anti-scalp wheels

Anti-scalp wheel kits are standard on BigDog® Mowers. These anti-scalp wheels are designed to minimize scalping when mowing on rough uneven terrain.

After setting the cutting height, adjust the front anti-scalp wheels so they extend below the deck but **do not contact the ground**. They should always be at least 1/4" to 3/4" (6.35mm to 19.05mm) below the deck. With the unit sitting on a flat level surface, the front wheel position can be adjusted up or down as needed from 3/4" to 1-3/4" (19.05mm to 44.45mm) below the blade surface. Move the front wheels up or down, in 1/2" (12.70mm) increments, using the different axle mount holes in the wheel mount bracket. Figure 3-14

When adjusting the rear anti-scalp wheels, the wheel should be in the lower axle mount hole when the front anti-scalp wheels are in the lower or middle axle mount holes. When the front wheels are in the upper axle mount hole, the rear wheels should be in the upper axle mount hole as well.

**NOTE:** When the anti-scalp wheels are installed, the minimum cutting height is 1" (2.54 cm) with the anti-scalp wheels set at 3/4" (1.91cm).

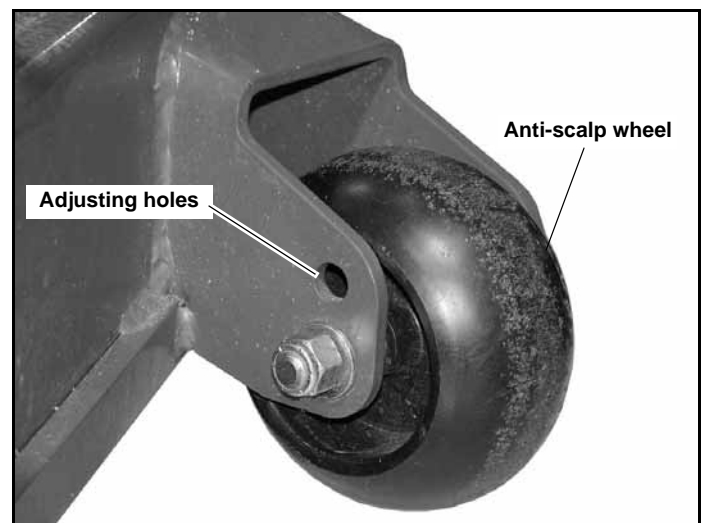


Figure 3-14

# MAINTENANCE & ADJUSTMENTS

## Safe Servicing Practices

---

This product is capable of amputating hands and feet and throwing objects. Always follow all safety instructions to avoid serious injury or death.

## Service

---

- ▲ Unless specifically required, **DO NOT** have engine running when servicing or making adjustments to mower. Park the machine on level ground. Place steering control levers in the park brake position, disengage deck clutch, lower deck, remove ignition switch key and disconnect negative battery cable before doing any maintenance. Wait for all movement to stop before adjusting, cleaning or repairing. Repairs or maintenance requiring engine power should be performed by trained maintenance personnel only. To prevent carbon monoxide poisoning, be sure proper ventilation is available when engine must be operated in an enclosed area. Read and observe safety warnings in front of manual.
- ▲ Before working on or under the deck, make certain engine cannot be accidentally started. Shut engine off, remove ignition switch key and disconnect negative battery cable for maximum safety. Repairs or maintenance requiring engine power should be performed by trained maintenance personnel only.
- ▲ Except when changing or checking the belt, **always** keep belt covers on mower deck for safety as well as for cleanliness.
- ▲ Use a stick or similar instrument to clean under the mower making sure that no part of the body, especially arms and hands are under the mower.
- ▲ Keep your machine clean and remove any deposits of trash and clippings, which can cause engine fires and hydraulic overheating as well as excessive belt wear. Clean up oil or fuel spillage. Allow machine to cool before storing.
- ▲ **Clean flammable material from machine. Prevent fires by keeping the engine compartment, top of the deck, exhaust area, battery, fuel line, fuel tank and operator's station clean of accumulated trash, grass clippings, and other debris. Always clean up spilled fuel and oil.**
- ▲ Always wear adequate eye protection when servicing the hydraulic system and battery, or when grinding mower blades and removing accumulated debris.
- ▲ Use extra caution when handling gasoline and other fuels. They are flammable and vapors are explosive.
- ▲ Never attempt to start the engine when there is a strong odor of gasoline fumes present. Locate and correct the cause.
- ▲ Never remove the fuel cap or refuel the mower while engine is running or while engine is hot; never refuel near an open flame or near devices which can create a spark. Refuel outdoors. Never refuel or drain the fuel from the machine indoors.

- ▲ Never run the engine in an enclosed area unless exhaust is vented to the outside. Exhaust gases contain carbon monoxide which is an odorless and deadly poison.
- ▲ Never attempt to make any adjustments or repairs to the mower drive system, mower deck or any attachment while the mower engine is running or deck clutch is engaged. Repairs or maintenance requiring engine power should be performed by trained maintenance personnel only.
- ▲ Never work under the machine or attachment unless it is safely supported with jack stands. Make certain machine is secure when it is raised and placed on the jack stands. The jack stands should not allow the machine to move when the engine is running and the drive wheels are rotating. **Use only certified jack stands.** Use only appropriate jack stands, with a minimum weight rating of 2000 pounds (907 kg) to block the unit up. Use in pairs only. Follow the instructions supplied with the vehicle stands.
- ▲ Exercise caution when releasing spring tension from any of the belt idlers or when working with any of the deck lift components.
- ▲ Do not touch hot parts of machine.
- ▲ Keep nuts and bolts tight, especially the blade attachment bolts. Keep equipment in good working condition.
- ▲ Never tamper with safety devices. Check their proper operation regularly.
- ▲ Stop the engine before removing the grass catcher or unclogging the discharge chute. Never clear the discharge chute with the engine running. Turn off the engine and be sure the blades have stopped before cleaning. Use a stick to clear a plugged discharge area. **Never use your hand!**
- ▲ Grass collection system components are subject to wear, damage and deterioration, which could expose moving parts or allow objects to be thrown. Frequently check components and replace with manufacturer's recommended parts, when necessary.
- ▲ Exercise caution when working under the deck as the mower blades are extremely sharp. Wrap the blade(s) or wear gloves and use extra caution when servicing them.
- ▲ Use only genuine BigDog® Mowers replacement parts to ensure that original standards are maintained.

## Introduction

---

Regular maintenance is the best prevention for costly downtime or expensive, premature repair. The following pages contain suggested maintenance information and schedules which the operator should follow on a routine basis. For more detailed information order the correct Parts Manual and General Service Manual for your unit. Refer to the *Product Literature* section of this manual.

Remain alert for unusual noises, which could signal a problem. Visually inspect the machine for any abnormal wear or damage. A good time to detect potential problems is while performing scheduled maintenance service. Correcting the problem as quickly as possible is the best insurance.

Clear away heavy build-up of grease, oil and dirt, especially



in the engine and under the seat platform areas; minute dust particle are abrasive to close-tolerance engine and hydraulic assemblies.

**Inspect mower daily** for grass clippings and wire or string tangles. The underside of the mower deck will collect a build-up of grass clippings and dirt, especially when grass is wet or has high moisture content. This build-up will harden, restricting blade and air movement and will probably show a poorer quality of cutting. Therefore it should be removed routinely.

To do this it will be necessary to raise and block the deck using jack stands or blocks, in the full up position and scrape the build-up from underneath.

Some repairs require the assistance of a trained service mechanic and should not be attempted by unskilled personnel. Consult your BigDog® Mowers service center when assistance is needed.

**Torque Values**

**WARNING**

Particular attention must be given to tightening the drive wheel lug nuts and blade spindle bolts. Failure to correctly torque these items may result in the loss of a wheel or blade, which can cause serious damage or personal injury.

Torque values are given below:

	Ft-lbs.	N-m
Wheel (lug) nuts . . . . .	70	95
Blade spindle bolt top . . . . .	70	95
Blade spindle bolt bottom . . . . .	118	160.01
Wheel motor nut . . . . .	205	278

**Lug nuts only** - It is recommended that these be checked after the first 2 hours of operation, initially, every 50 hours and following removal for repair or replacement.

For all other torques refer to the various mower parts manuals for standard torque chart. See *Product Literature* section for ordering information.

For engine torque values, see engine owner’s manual.

**Tires**

It is important for level mowing that the tires have the same amount of air pressure. The recommended pressures are:

Drive wheels . . . . .	8-12 psi (55-83 KPa)
Front wheels . . . . .	8-12 psi (55-83 KPa)



If you wish to use non-pneumatic tires on your BigDog® mower the tires must be an approved tire purchased from BigDog® Mowers. Warranty claims will be denied on any mower equipped with unapproved non-pneumatic tires.

**Lubrication**



Use SAE multi-purpose grease.

**Electrical System**



The electrical system is a 12 volt, negative ground. Recommended battery size is a garden tractor BCI group U1R with 225 or better cranking AMP rating. A maintenance-free battery is recommended. Otherwise, follow battery manufacturer’s maintenance, safety, storing and charging specifications.

**WARNING**

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

**WARNING**

Charge batteries in an open well-ventilated area, away from sparks and flames. Unplug charger before connecting or disconnecting from battery. Wear protective clothing and use insulated tools.

**WARNING**

- Avoid skin and clothing contact with battery acid.
- Always wear eye protection when checking the battery. Acid can cause serious injury to skin and eyes. If contact occurs, flush area with clean water and call a physician immediately. Acid will also damage clothing.
- Do not drink the battery electrolyte.
- Do not allow open flame near the battery when charging.
- Hydrogen gas forms inside the battery. This gas is both toxic and flammable and may cause an explosion if exposed to flame. Always remove the negative ground first and replace it last.
- Do not overfill the battery.
- Electrolyte may overflow and damage paint, wiring or structure. When cleaning the battery, use soap and water. Be careful not to get soap and water into the battery. Clean the battery terminals with a solution of four parts water and one part baking soda when they become corroded.



## WARNING



Shorts caused by battery terminals or metal tools touching metal mower components can cause sparks. Sparks can cause a battery gas explosion which will result in personal injury.

- Prevent the battery terminals from touching any metal mower parts when removing or installing the battery.
- Do not allow metal tools to short between the battery terminals and metal mower parts.



## WARNING



Incorrect battery cable routing could cause damage to the mower and battery cables. This can cause sparks which can cause a battery gas explosion which will result in personal injury.

- Always **disconnect** the negative (black) battery cable(s) before disconnecting the positive (red) cable(s).
- Always **connect** the positive (red) battery cable(s) before connecting the negative (black) cable(s).

### Master in-line fuse

These mowers have a master in-line fuse in the electrical system. This is the main fuse to protect the complete electrical system. It is located at the right front of the engine close to the starter. Figure 4-1

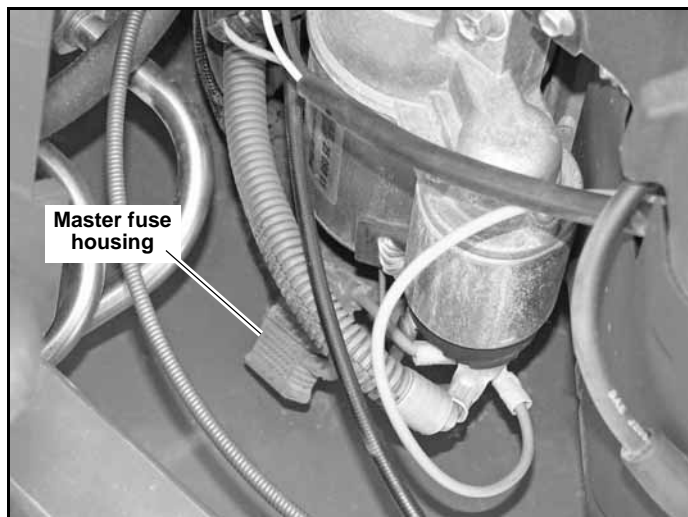


Figure 4-1

## Hydraulic System

**IMPORTANT:** Never use hydraulic or automatic transmission fluid in this system; use only motor oil as specified. Remember, dirt is the primary enemy of any hydraulic system.



## WARNING



Hydraulic fluid escaping under pressure may have sufficient force to penetrate skin and cause serious injury. Foreign fluid injected into the skin must be surgically removed within a few hours by a doctor, familiar with this form of injury, or gangrene may result.

Before applying pressure to hydraulic system, make sure all connections are tight and all hoses and lines are in good condition. To find a leak under pressure, use a piece of cardboard or wood — **never** use your hands. Relieve all pressure in the system before disconnecting or working on hydraulic lines. To relieve pressure, lower all attachments and shut off engine.

Check oil level in hydraulic system after every 50 hours of operation or weekly, whichever occurs first. Check more often if system appears to be leaking or otherwise malfunctioning.

Fluid level should be 1" (2.54cm) from top of reservoir. Use only SAE 20W50 SL/SM service motor oil. Figure 4-2

Change hydraulic system filter element after first 50 hours of machine operation, then replace filter and oil in reservoir every 500 hours thereafter. Figure 4-2

The system filter is located in front of the hydraulic reservoir. A standard oil filter wrench is used to change filter, threads are right handed. **Use a BigDog® Mowers approved filter element only.**

**IMPORTANT:** Prefill the filter element with clean oil before installing, to prevent drawing air into the system pump.

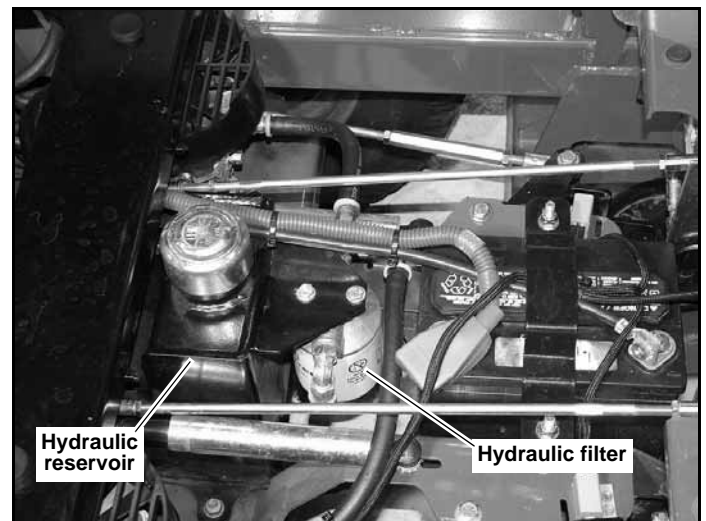


Figure 4-2

## Fuel and evaporative emissions control system



The fuel and evaporative emissions control system for this mower is EPA compliant. Use only BigDog® Mowers approved

replacement parts.



Your evaporative emission control system may include parts such as: fuel tanks, fuel lines, fuel line fittings, fuel caps, carbon canisters, canister mounting brackets, carburetor purge port connection, filters, vapor hoses, clamps, control valves, control solenoids, electronic controls, vacuum control diaphragms, purge valves, liquid/vapor separator and other associated components.

**Modifying or Tampering with the evaporative emissions control system or the fuel system is prohibited.** Federal law and California State law prohibit the following acts or the causing thereof:



1. The removal or rendering inoperative by any person other than for purposes of maintenance, repair, replacement, of any device or element of design incorporated into any equipment for the purposes of emissions control prior to or after its sales or delivery to the ultimate purchaser or while it is in use, or
2. The use of the equipment after such device or element of design has been removed or rendered inoperative by any person.

**WARNING**

Use of replacement parts not equivalent to the original parts may result in system failure and pose a safety hazard.

**DANGER**



**To avoid personal injury or property damage, use extreme care in handling fuel. Fuel is extremely flammable and the vapors are explosive.**

**WARNING**

Observe usual fuel handling precautions

- Do not smoke while refueling. Extinguish all cigarettes, cigars, pipes and other sources of ignition.
- **Do not remove fuel cap or fill tank with engine running or while engine is hot.** Clean up any fuel spills.
- If fuel is spilled, do not attempt to start the engine but move the machine away from the area of spillage and avoid creating any source of ignition until fuel vapors have dissipated.
- Allow engine to cool before storing machine inside a building.
- Keep fuel away from open flame or spark and store machine away from open flame or spark or pilot light such as on a water heater or appliances.

- Use extreme care when handling gasoline and other fuels which are extremely flammable and vapors are explosive. A fire or explosion from fuel can burn you and others and can damage property.
- Refuel outdoors. Never refuel or drain the fuel from the machine indoors.
- Never attempt to start the engine when there is a strong odor of gasoline fumes present. Locate and correct the cause.
- Store fuel in an approved container and keep it out of the reach of children. Never buy more than a 30 day supply of fuel.
- Do not fill fuel containers inside a vehicle or on a truck or trailer bed with interior carpets or plastic truck bed liners. Always place fuel containers on the ground away from your vehicle before filling.
- When practical, remove gas powered equipment from the truck or trailer and refuel the equipment with its wheels on the ground. If this is not possible, then refuel such equipment on the truck or trailer using a portable container and not a fuel dispenser nozzle. If a fuel dispenser nozzle must be used, keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.
- Never use gasoline for cleaning parts.
- Read and observe safety precautions elsewhere in this manual.

**WARNING**


- Gasoline is harmful or fatal if swallowed.
- Long-term exposure to vapors can cause serious injury and illness.
- Avoid prolonged breathing of vapors.
- Keep face away from nozzle and gas tank or fuel container opening.
- Keep gas away from eyes and skin.
- If fuel is spilled on clothing, change clothing immediately.

The fuel tanks are located in the mower's fenders.

Remove the fuel cap slowly.

When threading the fuel cap onto the filler neck, tighten the cap until it begins to click, then, continue to turn it until at least three clicks are heard.

**IMPORTANT:** Do not overfill the fuel tanks. The fuel tanks should be filled **no higher than the bottom of the fill neck**. The fuel system is designed to leave room for the fuel to expand with fuel temperature changes.

**WARNING**

**Overfilling fuel tanks may cause the following:**

- **Engine damage**
- **Fire hazard!**

Use regular unleaded gasoline with an octane rating of 87 or higher. Maximum of 10% ethanol (E10) in fuel. Fuels with greater than 10% ethanol, (such as E15, E20 and E85) voids warranty. Fuels with greater than 10% ethanol are not approved for use and such illegal use could cause equipment failure and pose a fire hazard. Refer to the engine owner's manual for fuel specification requirements.

A **fuel shut-off valve** is located on each mower. The location and operation of the fuel valve will vary depending upon the unit. Close the fuel valve to prevent fuel flow to the engine. The valve's two other positions will allow fuel to be drawn from either one or the other fuel tank.

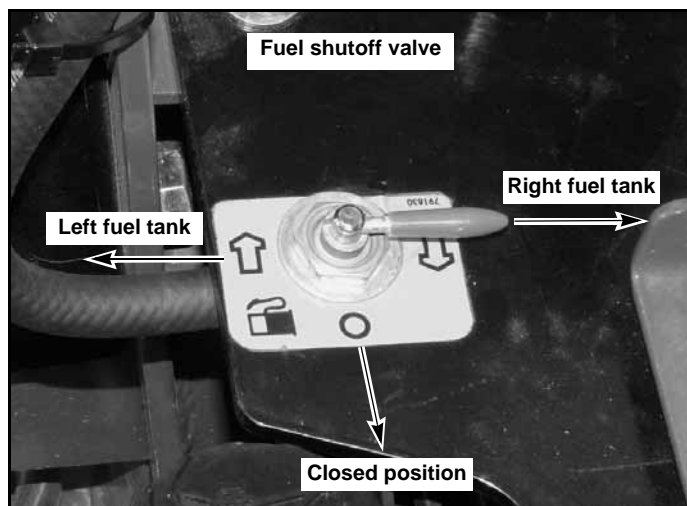


Figure 4-3

## Engine Oil and Filter



### WARNING



If the engine has been running and is up to operating temperature, allow the engine to cool before changing the oil. Engine and engine oil will be very hot, so be very careful when changing oil and wear the appropriate protective gear to avoid being burned or exposed to engine oil.

Check engine oil daily and after every 4 hours of operation. Machine must be sitting on a level surface when checking oil. Refer to engine manual and maintenance schedule for oil recommendation and capacities.

Change the engine oil and filter after the first 5 hours of operation and per the engine manufacturer's recommendations after that. If the mower is being operated in extremely dirty conditions, then it is recommended that the oil be changed more frequently. **IMPORTANT:** When removing the oil filter take precautions to minimize oil spillage on the exhaust system.

#### A. Draining the engine oil (units equipped with oil drain valve as shown in Figure 4-4).

1. Locate the oil drain valve on the lower left side of the engine. Figure 4-4
2. Remove the dust cap.
3. Locate the oil drain hose that was supplied with the machine. Be sure to clean and clear it of debris that might block the flow of the engine oil.

4. Attach one end of the hose onto the oil drain valve nipple. Make sure the hose is pushed all the way onto the valve. Figure 4-5
5. Position the loose end of the hose out to the left side of the mower so that it can drain into a suitable oil drain container.
6. With the hose in position, twist the valve counter-clockwise and pull out to open the valve. Allow 10 minutes for engine oil to adequately drain.
7. After oil is drained, close the valve by pushing in on the valve body and twisting it clockwise.
8. Once the valve is closed, carefully remove the oil drain hose and clean up any spilled oil.

**IMPORTANT:** All oil drips or spills **must** be cleaned off of the exhaust system before operating the machine.

9. Re-install the dust cap on the oil drain valve nipple.

10. Clean the oil drain hose and store it appropriately.

#### B. Draining the engine oil (units equipped with oil drain valve as shown in Figure 4-6).

1. Locate the oil drain valve on the engine. Figure 4-6
2. Locate the oil drain hose that was supplied with the machine. Be sure to clean and clear it of debris that might block the flow of the engine oil.
3. Attach one end of the hose onto the oil drain valve nipple. Make sure the hose is pushed all the way onto the valve.
4. Position the loose end of the hose out thru the slot cut in the engine base plate so that it can drain into a suitable oil drain container.
5. With the hose in position, twist the valve counter-clockwise to open the valve. Allow 10 minutes for engine oil to adequately drain.
6. After oil is drained, close the valve by twisting it clockwise.
7. Once the valve is closed, carefully remove the oil drain hose and clean up any spilled oil.

**IMPORTANT:** All oil drips or spills **must** be cleaned off of the exhaust system before operating the machine.

8. Clean the oil drain hose and store it appropriately.

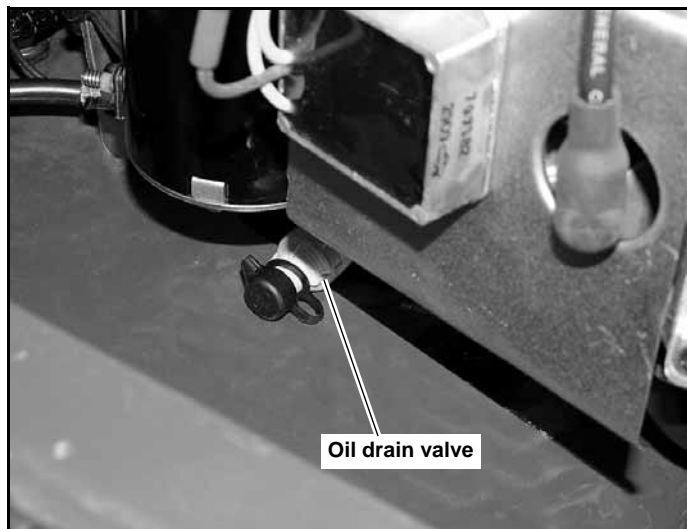


Figure 4-4

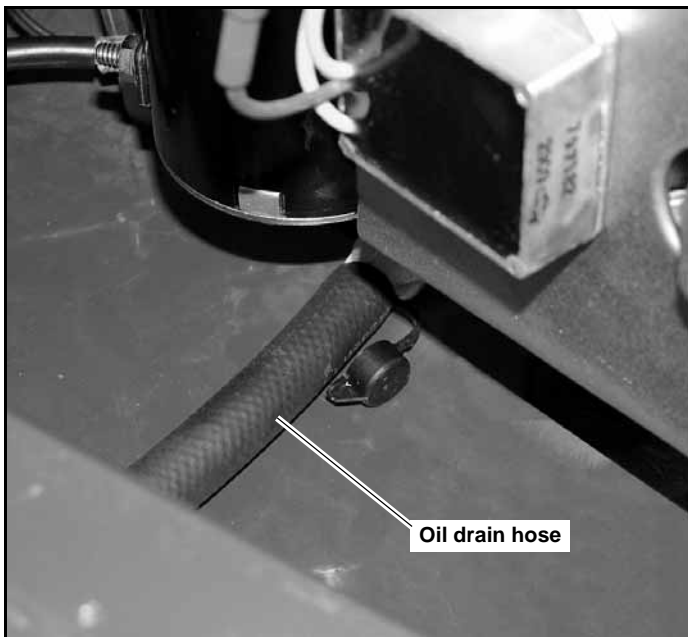


Figure 4-5

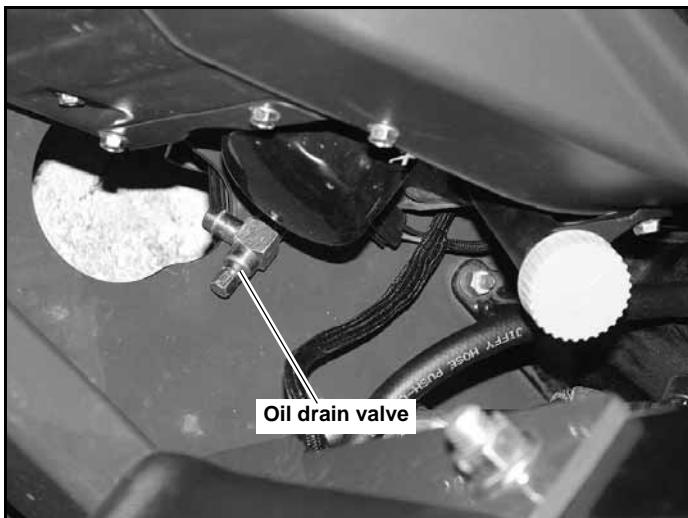


Figure 4-6

## Engine Air Filter

Perform engine air filter maintenance per the Service Interval chart shown elsewhere in this manual.

### Cartridge type filter

A specially designed dry filter is standard equipment on some BigDog® Mowers X Series mowers which supplies clean combustion air to the engine. An example of the air filter are shown in Figure 4-7.

### Recommended service procedure

1. Release clamps and remove element. Clean the canister with a damp cloth.
2. Before installing a new element, inspect it by placing a bright light inside and rotating the element slowly, looking for any holes or tears in the paper. Also check gaskets for cuts or tears. Do not attempt to use a damaged element which will allow abrasive particles to enter the engine.

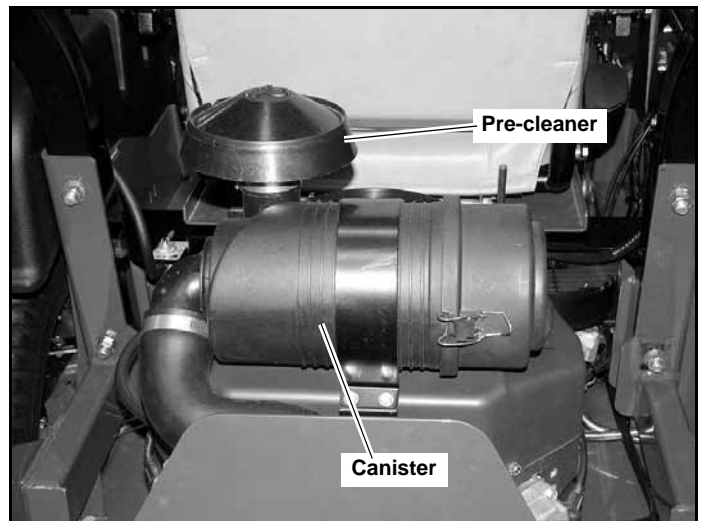


Figure 4-7

3. Reinstall the dust cup. Make sure it seals all the way around the air cleaner body, then tighten the clamps. Figure 4-7
4. Check all fittings and clamps periodically for tightness and inspect hoses for holes or cracks.
5. Periodically check the intake hose for signs of ingested dust. Locate and repair the source of ingested dirt.
6. Never operate the machine without an air filter installed.

### Overservicing

Overservicing occurs when an air filter element is removed for cleaning or replacement before it is necessary. Each time the filter is removed a small amount of dirt and dust could fall in the intake system. This accumulated dirt can cause a dusted engine. It only takes a few grams of ingested dirt over the normal service life of an engine to cause a dusted engine.

**Do not clean the element, but replace with a new element only.** Cleaning used air filter elements, through improper cleaning procedures, can get dust on the inside of the filter causing dirt ingestion and engine failure.

It is important to note that whenever an air filter element is cleaned by **any method**, the person or company performing the cleaning assumes responsibility for the integrity of the filter from then on. **The warranty for air filters expires upon cleaning or servicing in any manner because the condition of the filter after servicing is completely out of the filter's control. Therefore, on a dust ingested engine failure, there will be no warranty consideration if the air filter element has been cleaned or serviced in any manner.**

A partially dirty air filter element works better than a new element. Therefore, a dirty filter element is not bad for the engine unless it is excessively restricting the air flow and engine performance is affected. The reason is simple. The media in the filter must be porous to allow air to pass through it. When dirty air passes through the filter, the dirt plugs some of the holes in the media and actually acts as part of the filter media. When the next round of dirt enters, the first dirt helps filter out even smaller particles making the filter more efficient at stopping dirt from entering the engine. This is referred to as barrier filtration.

Of course, at some point the filter media becomes too clogged to allow air to pass.

The mowing conditions will determine the frequency of air

filter element changing.

## General Engine Maintenance

Detailed instructions and recommendations for break-in and regular maintenance are specified in the *Engine Owner's Manual*. Please refer to this manual for engine servicing, lubricating oil levels with quality and viscosity recommendations, bolt torques, etc. The engine warranty is backed by the manufacturer. Special attention should be paid to applicable data which will not be duplicated here.

## Fuel Evaporation System Filter

Some BigDog® Mowers X Series mowers have a fuel evaporation system filter. This filter must be checked and replaced every 500 hours or annually whichever comes first. Figure 4-8

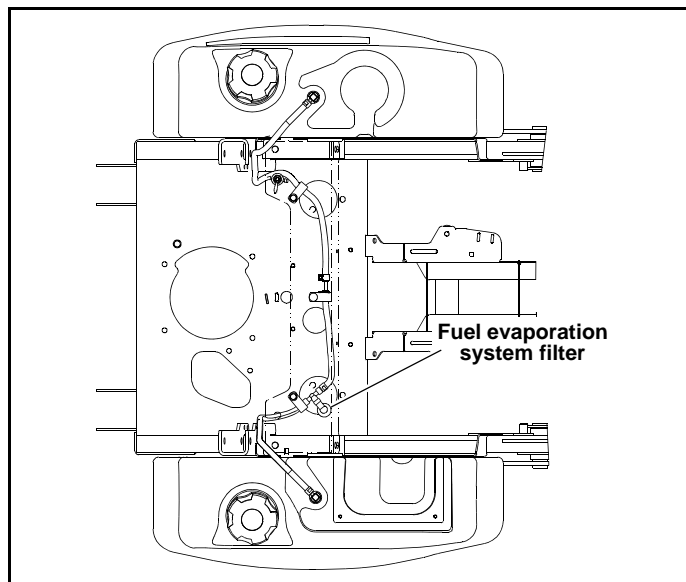




Figure 4-8

## Belts

Inspect belts frequently for wear and serviceability. Replace a belt that shows signs of severe cuts, tears, separation, weather checking and cracking, or burns caused by slipping. Slight raveling of belt covering does not indicate failure, trim ravelings with a sharp knife.

**WARNING**

If the pump belt fails, loss of control will occur especially when operating on a slope. **If you lose steering control while operating the machine, place the steering control levers in the park brake position immediately. Inspect the machine and involve your BigDog® Mowers dealer to resolve the problem before continuing to operate.**

Inspect the belt pulley grooves and flanges for wear. A new belt, or one in good condition, should never run against the bottom of the groove. Replace the pulley when this is the case,

otherwise the belt will lose power and slip excessively.



Never pry a belt to get it on a pulley as this will cut or damage the fibers of the belt covering.

Keep oil and grease away from belts, and never use belt dressings. Any of these will destroy the belt composition in a very short time.



## Mower Blade Maintenance

Check the mower blades daily, they are the key to power efficiency and well groomed turf. Keep the blades sharp. A dull blade will tear rather than cut the grass, leaving a brown ragged top on the grass within a few hours. A dull blade also requires more power from the engine.



Replace any blade which is bent, cracked or broken.

**WARNING**

Never attempt to straighten a bent blade by heating, or weld a cracked or broken blade as the blade may break and cause serious injury. Replace worn or damaged blades.

**WARNING**

Never work with blades while engine is running or deck clutch switch is engaged (on). Always place deck clutch switch in the **disengaged** position, place steering control levers in the park brake position and turn engine off and disconnect negative battery cable. Block up mower when you **must** work under it. Wear gloves when handling blades. **Always check for blade damage** if mower strikes a rock, branch or other foreign object during mowing!

**WARNING**

Always wear adequate eye protection when grinding mower blades.

## Mower Blade Removal

Use a 15/16" wrench to remove the 5/8" cap screw holding the blade to the spindle shaft from underneath. **NOTE:** A blade holding tool (part number 381442) is available from BigDog® Mowers. It is designed to prevent the blades from rotating when they are being removed or installed on the spindle. Contact your BigDog® Mowers dealer for more information.

Sharpen the blades on a grinder following pattern as shown (Figure 4-9). Touch-up sharpening can be done with a file.

Check the blades for balance following grinding. A commercial balancing tool is available through most hardware supply stores, or balancing can be done by placing the blade on an inverted line punch or 5/8" bolt. Blade should not lean or tilt. Spin the blade slowly, blade should not wobble. If a blade is out of balance, true it up before reinstalling.

Lay the blade on a flat surface and check for distortion (Figure 4-10 & Figure 4-11). Replace any distorted blade.

Do not re-use spindle bolts which have stripped, worn or undercut threads. Torque bolts on spindles to 118 foot-pounds (160.0 Nm) when reinstalling blades.

Properly compressed cup washers maintain the correct compression load on the blades. Replace the cup washers if they are cracked or flattened.

**IMPORTANT:** The blade sail (curved part) must be pointing upward toward the inside of the deck to ensure proper cutting.

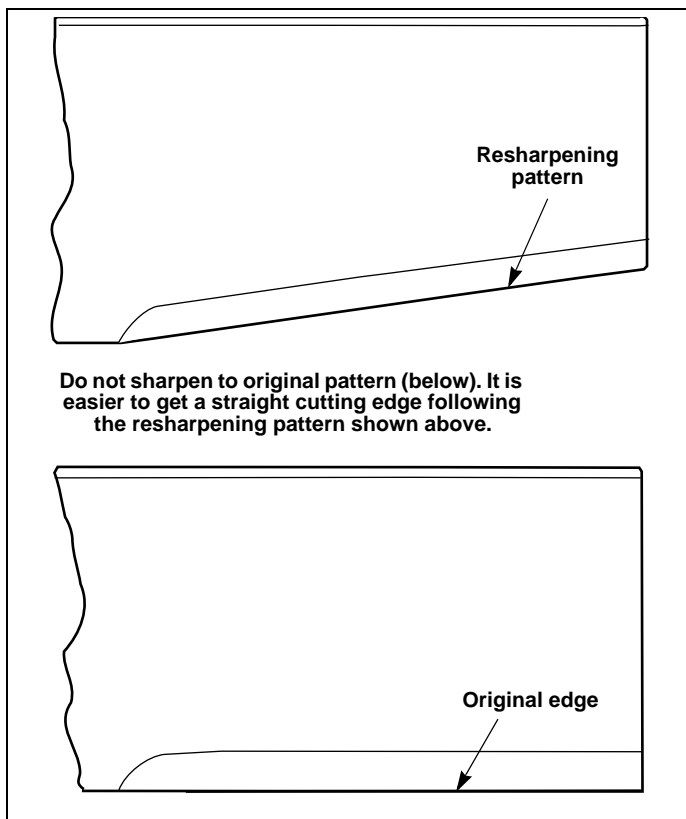
**IMPORTANT:** When mounting blades, rotate them after installation to ensure blade tips do not touch each other or sides of the mower.

! **WARNING** !

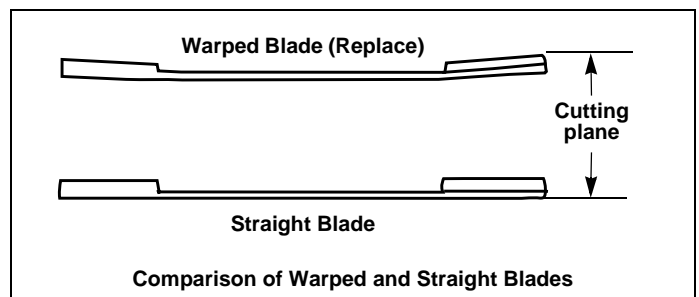
Failure to correctly torque the bolt may result in the loss of the blade which can cause serious injury.

! **WARNING** !

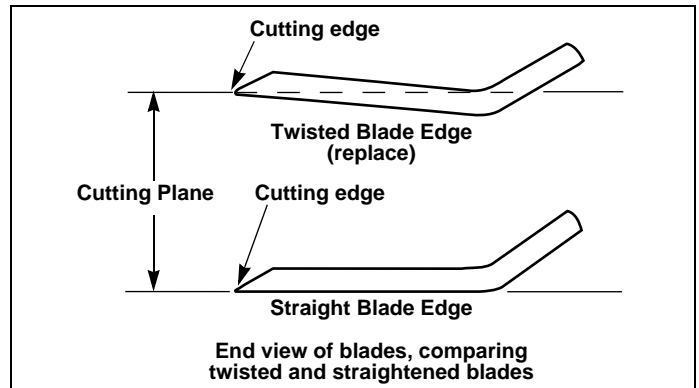
Mower blades are sharp and can cut. Wrap the blade(s) or wear gloves and use extra caution when servicing them.



**Figure 4-9**



**Figure 4-10**



**Figure 4-11**

## Seat Adjustment

The seat on the mower can be adjusted forward and rearward by sliding the seat release handle and moving the seat until a comfortable operating position is attained. Figure 4-12



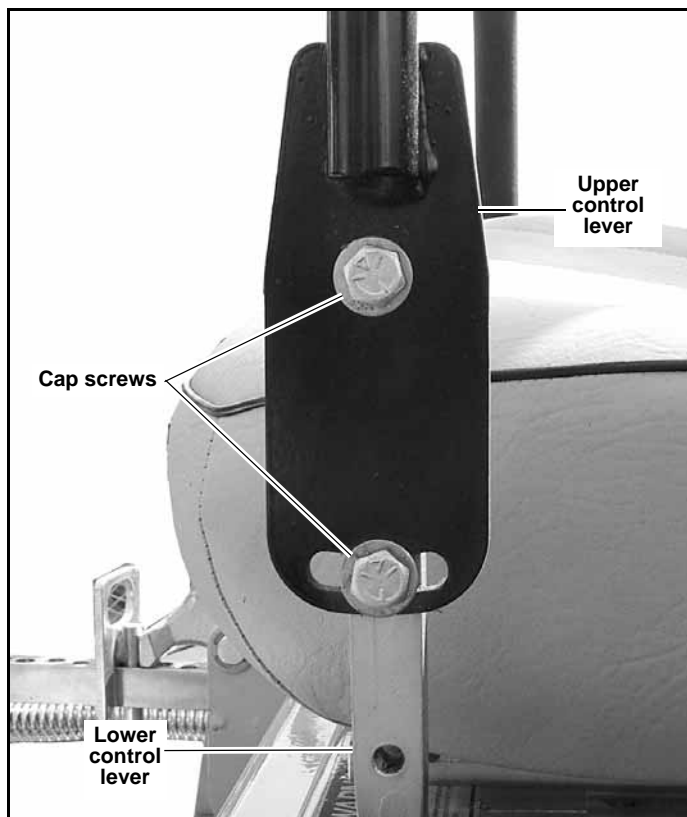
**Figure 4-12**

## Control Lever Adjustment

The steering control levers can be adjusted for operator comfort. By loosening the cap screws that attaches the upper control lever to the lower lever (Figure 4-13), the upper control lever can be pivoted to fit the operator's personal preference.

The steering control levers can also be adjusted up and down. Remove the cap screws and slide the upper control lever up or down and align the holes in it with the holes in the lower lever. Re-install the cap screws and tighten.

The steering control levers should be adjusted so that they align with each other when in the neutral position.



**Figure 4-13**

<b>BigDog® Mowers X Series Maintenance Schedule</b> <b>Refer to Figure 4-14, Figure 4-15 &amp; Figure 4-16</b>			
SERVICE AT INTERVALS INDICATED	WEEKLY OR 40 HOURS	MONTHLY OR 100 HOURS	ANNUALLY OR 500 HOURS
Verify safety start interlock system	Prior to each use		
Visually inspect unit for loose hardware and/or damaged parts	Prior to each use		
Visually inspect tires	Prior to each use		
Check oil level, engine (1)	Prior to each use or every 4 hours		
Clean air intake screen (8)	Prior to each use or every 4 hours		
Check fuel level	Prior to each use		
Blades - sharpen & securely fastened	Prior to each use		
Discharge chute - securely in place & in lowest position	Prior to each use		
Clean engine and pump compartment	Daily		
Grease deck pusher arms	X		
Grease pump idler	X		
Grease deck height pivots	X		
Grease gauge wheel bearings	X		
Check battery connections	X		
Check tire pressure with a gauge	X		
Check hydraulic oil level	X		
Clean engine exterior (a)	X		
Check pump and deck belt tension and condition (6)		X	
Check fuel system (7)		X	
Check hydraulic lines		X	
Check fuel valve and grommet (7)		X	
Tighten lug nuts on wheels (2)		X	
Change fuel filter (7)			X
Clean or replace hydraulic fill cap			X
Change hydraulic filter & oil (3)			X
Grease deck spindle housings			X
Check ROPS mounting hardware (9)			X
Replace fuel evaporation system filter (8)			X

#### NOTES:

1. Initial oil change is after 5 hours of operation. Thereafter, change oil after every 40 hours operation. Change more often under dusty or dirty conditions and during hot weather periods.
2. Torque initially and after first 2 hours of operation.
3. Perform initial hydraulic oil and filter change after 50 hours (one week) of operation.
4. Change engine oil filter per the engine manufacturer's recommendations. Refer to Engine Owner's Manual for recommendations and other maintenance items.
5. Service more often under dusty or dirty conditions. Use caution when servicing to prevent dust contamination in the engine. **Do not** clean filter element. Replace with a new one.
6. **Pump drive belt only - Inspect every 100 hours** and replace if worn or cracking is noticed. Otherwise, **replace every 400 hours or 2 years** whichever comes first.
7. Check fuel system for any crack or leaks including, but not limit to, fuel line hoses, fuel valve, vent line hoses, vent valve, vapor valve, carbon canister, and grommets. Repair as needed.
8. More often under dusty or dirty conditions and during hot weather.
9. Inspect ROPS after the first 20 hours of operation and then after every 500 hours of operation or yearly whichever comes first.

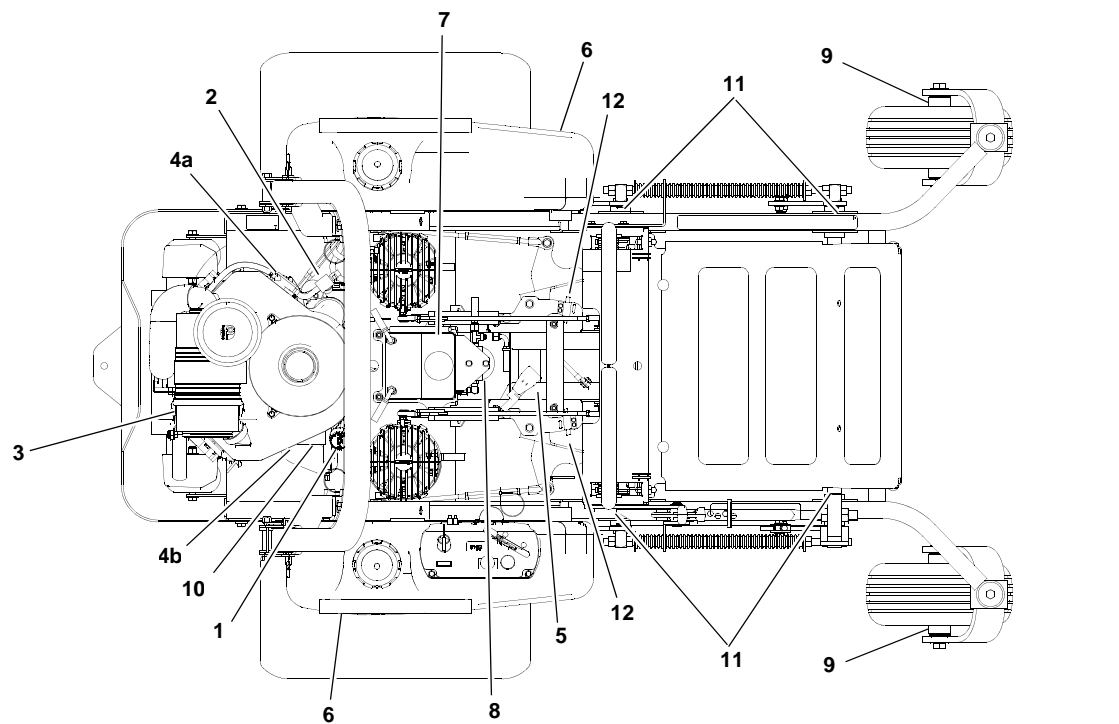
#### REFERENCES:

- A. Refer to Engine Owner's Manual

**NOTE:** Refer to engine owner's manual for engine service information.

**NOTE:** After completing maintenance cycle (500 hours), repeat cycle.

# Maintenance Locator Chart



- |   |                                  |
|---|----------------------------------|
| 1. Engine Oil Fill & Dipstick                     | 7. Hydraulic Oil Reservoir       |
| 2. Fuel Filter                                    | 8. Hydraulic Oil Filter          |
| 3. Engine Air Cleaner                             | 9. Gauge Wheel Bearing Zerks (2) |
| 4a. Engine Oil Drain Valve<br>(Briggs & Stratton) | 10. Engine Oil Filter            |
| 4b. Engine Oil Drain Valve<br>(Kohler & Kawasaki) | 11. Deck Height Pivot Zerks (4)  |
| 5. Battery  | 12. Park Brake Switch            |
| 6. Fuel Tanks                                     | 13. Drive Tire                   |
|   | 14. Pump Idler Zerk (1)          |
|   | 15. Pump Belt                    |

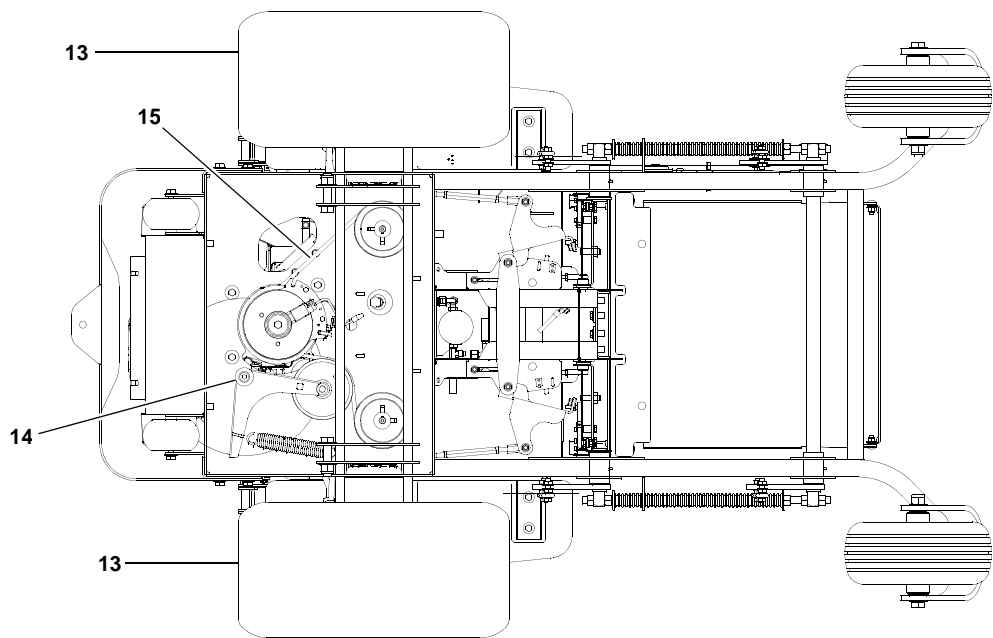
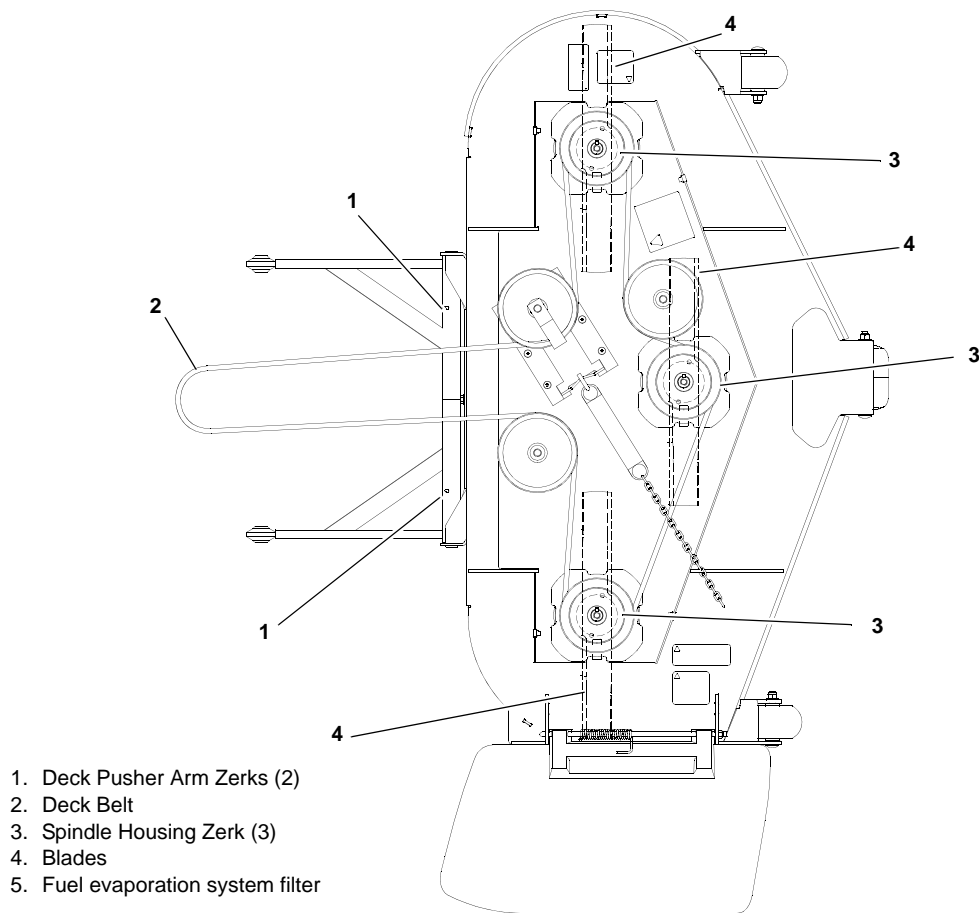
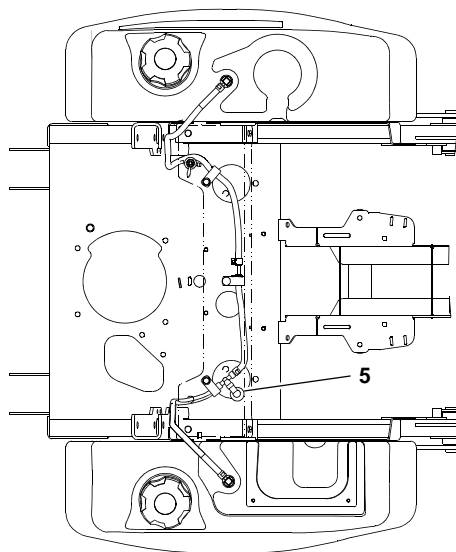


Figure 4-14

## Maintenance Locator Chart



**Figure 4-15**



**Figure 4-16**

# TROUBLESHOOTING

The majority of operating problems that occur with a system can be traced to improper adjustments or delayed service. A consistently applied preventative maintenance program, as outlined in the *Maintenance* section of this manual, will prevent many problems. The following chart is designed to help you locate a problem by suggesting probable causes and the recommended solutions.

SYMPTOMS	PROBABLE CAUSES	SUGGESTED REMEDIES
<b>Starting motor does not crank</b>	Steering control levers not in park brake position or switch not adjusted	Place steering control levers in park brake position or re-adjust switch
	Deck clutch switch engaged	Disengage clutch switch
	Weak or dead battery	Recharge or replace
	Electrical connections are corroded or loose	Check the electrical connections
	For additional causes	See engine manual
<b>The engine will not start, starts hard or fails to keep running</b>	No fuel or line plugged	Fill tank or replace line (See <i>Fuel System</i> section for more details)
	Fuel valve is turned off	Open the fuel valve
	There is incorrect fuel in the fuel system	Drain the tank and replace the fuel with the proper type
	There is dirt in the fuel filter	Replace the fuel filter
	Dirt, water or stale fuel in the fuel system	Contact your Dealer
	The choke is not on	Move the choke lever to ON
	Numerous	See engine manual
<b>Engine: Runs with continuous misfiring or engine runs unevenly or erratically</b>	Numerous	See engine manual
<b>Loss of power or system will not operate in either direction</b>	Restrictions in air cleaner	Service air cleaner
	Hydraulic line blockage	Contact your Dealer
	Internal interference or leakage in wheel motor	Contact your Dealer
	Insufficient hydraulic oil supply	Check level in reservoir
		Have dealer check hydraulic pump
	Poor compression	Contact your Dealer
	Steering linkage needs adjustment	Adjust linkage
	Tow valve open	Close tow valve
	The traction drive belt is worn, loose or broken	Install a new traction drive belt
	Air in system	Check filter and fittings
	For additional causes	See engine manual
<b>Air cooled engine overheating</b>	Air intake screen or cleaning fins clogged	Clean screen and fin
	For additional causes	See engine manual
<b>Low engine oil pressure</b>	Low oil level	Add oil
	Oil diluted or too light	Change oil and check for source of contamination
	Failed oil pump	Contact your Dealer

SYMPTOMS	PROBABLE CAUSES	SUGGESTED REMEDIES
<b>High oil consumption</b>	Numerous	Contact your Dealer
<b>Mower jerky when starting or operates in one direction only</b>	Steering control linkage needs adjustment	Adjust linkage
	Pump or wheel motors faulty	Contact your Dealer
	Tow valves not closed completely	Close tow valves
<b>Hydraulic system operates hot (oil in reservoir smells rancid)</b>	Low hydraulic oil level	Fill reservoir
	Hydraulic pump faulty	Contact your Dealer
	Hydraulic oil cooler clogged	Clean oil cooler core
<b>Mower creeps when steering control levers are in neutral</b>	Steering linkage needs adjustment	Adjust linkage
<b>Mower circles or veers in one direction</b>	Steering linkage needs adjustment	Adjust linkage
	Wheel motors faulty	Contact your Dealer
	Tires improperly inflated	Adjust air pressure to 8 - 12 psi (55-83 KPa)
	Hydraulic pump faulty	Contact your Dealer
<b>Mower creeps when parking brake engaged</b>	Steering linkage out of adjustment	Adjust steering linkage
	Brakes need adjustment	Adjust parking brakes
<b>There is abnormal vibration</b>	The engine mounting bolts are loose	Tighten the engine mounting bolts
	The engine pulley, idler pulley or blade pulley is loose	Tighten the appropriate pulley
	The engine is pulley is damaged	Contact your Dealer
	The cutting blade(s) is/are bent or unbalanced	Install new cutting blade(s)
	A blade mounting bolt is loose	Tighten the blade mounting bolt
	Spindle bearing is worn or loose	Replace or tighten spindle bearing
	A blade spindle is bent	Contact your Dealer
<b>Blades do not rotate</b>	The deck drive belt is worn, loose or broken	Install a new deck drive belt
	The deck drive belt is off the pulley	Install the deck drive belt and check for a reason
	Electric clutch is not engaging	Check and/or replace 15 amp fuse. Contact your Dealer

SYMPTOMS	PROBABLE CAUSES	SUGGESTED REMEDIES
Uneven cutting height	The blade(s) are not sharp	Sharpen the blades
	A cutting blade(s) is/are bent	Install new cutting blade(s)
	The deck is not level	Level the deck per the Deck leveling and height adjustment section of the parts manual
	An anti-scalp wheel is not set correctly	Adjust the height of the anti-scalp wheel
	The underside of the deck is dirty	Clean the underside of the deck
	Tires improperly inflated	Adjust air pressure to 8 - 12 psi (55-83 KPa)
	A blade spindle is bent	Contact your Dealer

## STORAGE

When storing the unit at the end of the mowing season, the mower, engine, and battery should have the following items serviced before storage.

If the mower has been stored for an extended period of time, follow the new season preparation steps before beginning operation.

### General mower preparation for storage

1. Remove all grass, dirt, and trash from mower and cutting units.

**IMPORTANT:** Wash the machine with a mild detergent and water. Do not pressure wash the machine. Avoid excessive use of water, especially near the control panel and engine.

Clean mower and deck and touch up all scrapes with touch-up paint.

2. Replace air filter element.
3. Check thoroughly for any worn or damaged parts that need replacing and order them from your dealer.
4. Thoroughly lubricate machine, according to the *Maintenance* section.
5. Block mower up so weight is off tires. Check tire pressure and inflate to proper operating pressure.

**NOTE:** Do not deflate tires.

6. Perform separate engine and battery preparation as listed below.
7. Store mower in a clean, dry place.

### Preparation of engine for storage

When engine is to be unused for long periods, proceed as follows:

1. Run engine for a minimum of 15 minutes.
2. Drain oil from crankcase while engine is still warm.
3. Refill with fresh oil of proper viscosity.
4. Drain fuel tank and run the engine until it stops from lack of fuel. Gasoline evaporates if left in carburetor for long periods, forming gum and varnish deposits in carburetor. These deposits will cause engine flooding and loss of power.
5. Remove and replace fuel filter if not done in previous 100 hours.
6. Remove spark plugs and pour a tablespoon of engine oil into each spark plug hole. Install plugs, but do not reconnect plug leads.
7. Crank engine with starter at least a dozen revolutions to distribute oil over cylinder walls and valve mechanism.
8. Clean exterior surface of engine. Spread a light film of oil

over any exposed metal surfaces of engine that are subject to corrosion.

9. Clean dirt and chaff from cylinders and fins, blower housing and muffler.
10. Check oil filler cap and fuel tank caps to make certain they are securely in place.
11. Refer to engine manual for more information.

### Preparation of battery for storage

When the machine is to be unused for long periods, it is best to disconnect the battery and remove it from the unit. At this time perform the following battery maintenance:

1. Remove the battery from machine.
2. Clean the battery, terminals, and cable connectors.
3. Charge the battery, if necessary.
4. Store the battery in a cool, dry place (do not expose to freezing temperatures).
5. Always keep the battery fully charged. (Especially important to prevent battery damage when the temperature is below 32°F (0°C).

### New season preparation

Before starting the mower following post season storage, the following service is required:

1. Clean mower, removing trash and dirt accumulation.
2. Check engine oil and hydraulic oil levels.
3. Fill fuel tanks with fresh fuel. Run machine at half speed for 5 minutes, checking operation of steering control lever. Stop engine and check for oil leaks, loose fittings and so forth.



### WARNING



At start of new season always check that fresh oil has been added to machine. If oil is drained at season's end and not replaced, engine damage will result.

4. Tighten any bolts that have loosened and make sure all hair pins, cotter pins and clevis pins are in place.
5. Install all safety shields and review safety precautions listed in this manual.
6. Check and inflate tires to 8-12 psi (55-83 KPa).
7. Install fully charged battery and attach the battery cables.
8. Refer to engine manual for more information.

## PRODUCT LITERATURE

If you would like to view or print a copy of the BigDog® Mowers product manuals (Operator's Manual, General Service Manual, or Parts Manual) go online to [www.bigdogmowers.com](http://www.bigdogmowers.com).

Contact your local BigDog® Mowers dealer if you require another engine owner's manual.



# INDEX

	PAGE		PAGE
Air flow baffles .....	3-11	Mower blade removal .....	4-7
Anti-scalp wheels .....	3-12	Mower Operation .....	3-8
Belts .....	4-7	New season preparation .....	5-3
Children .....	3-3	Operating suggestions .....	3-10
Control lever adjustment .....	4-8	Operation safety .....	3-1
Control Panel .....	3-4	Parts and service .....	1-1
Controls .....	3-4	Preparation of battery for storage .....	5-3
Deck clutch operation .....	3-11	Preparation of engine for storage .....	5-3
Deck cutting height adjustment .....	3-12	ROPS .....	3-6
Driving the mower .....	3-8	Safe Operating Practices .....	3-1
Electrical system .....	4-2	Safe Servicing Practices .....	4-1
Engine air filter .....	4-6	Safety and Instructions Decals .....	2-1
Engine oil and filter .....	4-5	Safety start interlock system .....	3-4
Engine starting .....	3-5	Seat adjustment .....	4-8
Fuel and evaporative emissions control system ...	4-3	Service safety .....	4-1
Fuel evaporation system filter .....	4-7	Slope guide .....	2-7
General engine maintenance .....	4-7	Slope Operation .....	3-2
General mower preparation for storage .....	5-3	Stopping the engine .....	3-6
Lubrication .....	4-2	Tires .....	4-2
Maintenance & adjustment introduction .....	4-1	To the new owner .....	1-1
Maintenance Schedule .....	4-10	Torque values .....	4-2
Model and serial number .....	1-1	Using a ramp .....	3-2
Moving mower with stalled engine .....	3-6	Using this manual .....	1-1
Mower blade maintenance .....	4-7	Warranty registration .....	1-1





OPERATORS MANUAL  
X SERIES



EXCEL INDUSTRIES, INC.

PO Box 7000

Hesston, Kansas 67062

620-327-4911

PN 603414