

OWNERS MANUAL • SERIES X



BIG DOG™
MOWERS

GENERAL INFORMATION

This manual applies to the following BigDog™ Mowers:

BigDog™ Mowers X Series

To the new owner

The purpose of this manual is to assist owners and operators in maintaining and operating the BigDog™ Mowers. 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. You are urged to read it before attempting any operation or repair of 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 safety signs.

IMPORTANT: For more detailed maintenance and adjustment information refer to the proper parts manual for your machine. Refer to the "Product Literature" section of this manual for ordering information.

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.

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 owner's manual, or the parts manual, see your BigDog™ Mowers dealer for current information and parts.

Warranty registration

The Delivery and Warranty Registration form must be completed and signed to validate your warranty protection. As the new equipment owner, you are expected to see that the form is completed and forwarded to BigDog™ Mowers at time of delivery.

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.

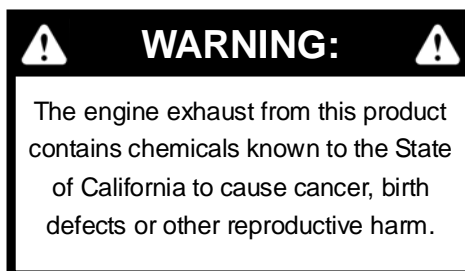
These numbers are required on the Warranty Registration form. They will also assure you of the correct service parts when replacement becomes necessary.

Parts and service

Use original BigDog™ Mowers replacement parts only. These parts are available through your local BigDog™ Mowers 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™ Mowers 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.

BigDog™ MOWERS X SERIES
TWO YEAR (1200 HOURS) LIMITED WARRANTY
OR
FOUR YEAR (500 HOURS) LIMITED WARRANTY
OR

90 DAYS LIMITED WARRANTY IN RENTAL APPLICATIONS

OPTIONAL WARRANTY POLICIES

The purchaser must choose one of the following warranty policies upon purchasing the machine:

- a. Two (2) Year (1200 Hours) Limited Warranty**
- b. Four (4) Year (500 Hours) Limited Warranty**
- c. Rental Units (90 days) Limited Warranty**

WHAT IS COVERED BY THIS WARRANTY

BigDog™ Mowers, makes the following warranty to the original purchaser only:

a. Two (2) Year (1200 Hours) Limited Warranty:

BigDog™ Mowers are warranted for **two (2) years or 1200 hours, whichever comes first from date of delivery**, on all materials and workmanship.

If the Purchaser discovers within this warranty period such a defect:

- He must promptly notify BigDog™ Mowers, or an authorized dealer, in writing of the defect. In no event shall such notification be received by BigDog™ Mowers, or an authorized dealer later than 30 days after expiration of warranty.
- Within a reasonable time after such notification, BigDog™ Mowers, will correct any defect in material or workmanship on the BigDog™ Mowers, by repairing or replacing part(s) with either new or used replacement parts.
- Such repair, including parts and labor shall be at the expense of BigDog™ Mowers, and,

b. Four (4) Year (500 Hours) Limited Warranty:

BigDog™ Mowers are warranted for **four (4) years or 500 hours, whichever comes first from date of delivery**, on all materials and workmanship.

If the Purchaser discovers within this warranty period such a defect:

- He must promptly notify BigDog™ Mowers, or an authorized dealer, in writing of the defect. In no event shall such notification be received by BigDog™ Mowers, or an authorized dealer later than 30 days after expiration of warranty.
- Within a reasonable time after such notification, BigDog™ Mowers, will correct any defect in material or workmanship on the BigDog™ Mowers, by repairing or replacing part(s) with either new or used replacement parts.
- Such repair, including parts and labor shall be at the expense of BigDog™ Mowers, and,

c. Rental Units (90 days) Limited Warranty: Within 90 days of date of delivery BigDog™ Mowers, provides a limited warranty on all materials and workmanship for units used for rental purposes.

If the Purchaser discovers within this warranty period such a defect:

- He must promptly notify BigDog™ Mowers, or an authorized dealer, in writing of the defect. In no event shall such notification be received by BigDog™ Mowers, or an authorized dealer later than 30 days after expiration of warranty.
- Within a reasonable time after such notification, BigDog™ Mowers, will correct any defect in material or workmanship on the BigDog™ Mowers, by repairing or replacing part(s) with either new or used replacement parts.
- Such repair, including parts and labor shall be at the expense of BigDog™ Mowers, and,
- d. The engine warranty** is covered by the engine manufacturer, to the original owner only, and,
- e. The battery** is covered by a one (1) year limited warranty to the original owner only.

WHO MUST PERFORM THE WARRANTY SERVICE

All warranty service will be performed by dealers authorized by BigDog™ Mowers. **Service calls and/or transportation expense** of the product to and from the authorized dealer, for warranty work, will be paid by the owner of the product. For warranty service contact an authorized dealer.

WHAT IS NOT COVERED BY THIS WARRANTY

BigDog™ Mowers, does not warranty:

- Some product components or parts not manufactured by BigDog™ Mowers
- Repairs made by unauthorized persons
- Damage caused by use of the BigDog™ Mowers for purposes other than those for which it was designed
- Damages caused by disasters such as fire, flood, wind, and lightning
- Damages caused by neglect, abuse, abnormal use, improper or unreasonable use, accident, negligence or misuse
- Repairs or replacement resulting from the use of unauthorized parts, accessories or attachments
- Damage caused by foam filled or solid filled tires.
- Repairs or replacement as the result if any alterations or modifications, in the determination of BigDog™ Mowers, which adversely affects the operation, performance or durability of the equipment.
- A BigDog™ mower which has the serial number removed or made illegible
- Depreciation or damage caused by normal wear, lack of reasonable and proper maintenance, failure to follow the product's owner's manual operating, maintenance and adjustment instructions or other operational instructions provided by BigDog™ Mowers.
- Normal maintenance parts and service including, but not limited to, filters, fuel, lubricants, tune-up parts,

belts, blades, blade sharpening, bearings, brake or steering adjustments

- Repairs necessary due to improper fuel, contaminates in the fuel system, or failure to properly prepare the fuel system prior to any period of non-use over three months

DISCLAIMER OF WARRANTY

The foregoing warranties are in lieu of all other warranties, expressed or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. However, if the Big Dog Mower is purchased as a consumer product, any implied warranty of merchantability or fitness for a particular purpose is limited to the duration of this limited warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

LIMITATION OF REMEDIES

In no case shall BigDog™ Mowers, be liable for any special, incidental, or consequential damages based upon breach of warranty, breach of contract, negligence, strict liability in tort, or any other legal theory.

Such damages include, but are not limited to:

- Loss of profits
- Loss of savings or revenue
- Loss of use of a BigDog™ mower or any associated equipment
- Cost of capital
- Cost of any substitute equipment, facilities, services or downtime
- The claims of third parties including customers, and injury to property

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

TIME LIMIT

a. Two (2) (1200 Hours) Year Limited Warranty

Any action for breach of warranty must be commenced within 30 days following delivery of the goods in a non-rental application.

b. Four (4) Year (500 Hours) Limited Warranty

Any action for breach of warranty must be commenced

within 30 days following delivery of the goods in a non-rental application.

c. Rental

Any action for breach of warranty must be commenced within 30 days following delivery of the goods.

NO OTHER WARRANTIES

Unless modified in writing, signed by both parties, and approved by the President of Excel Industries, Inc., this agreement is understood to be the complete and exclusive agreement between the parties, superseding all prior agreements, oral or written, and all other communications between the parties relating to the subject matter of this agreement. No employee of Excel Industries, Inc. or any other party is authorized to make any warranty in addition to those made in this agreement.

ALLOCATION OF RISKS

This agreement allocates the risks of product failure between BigDog™ Mowers, and the purchaser. This allocation is recognized by both parties and is reflected in the price of the goods.

OWNER'S RESPONSIBILITY

You must maintain your BigDog™ Mowers Product following the maintenance procedures described in your owner's manual. Such routine maintenance, whether performed by a dealer or by you, is at your expense.

This machine like any other powered equipment is potentially dangerous unless properly operated. Any operator **must** be cautious and keep safety in mind at all times. Any operator, prior to using the BigDog™ Mowers, should thoroughly familiarize himself with the owner's manual regarding operation and safety of the machine, as well as all safety warnings on the machine itself.

WARRANTY REGISTRATION

1. **Dealers must** register the unit on-line or by filling out the Warranty registration form, provided in the owner's packet. If using the Warranty registration form it **MUST** be completed and signed by the authorized dealer and original purchaser.
2. For validation, the completed Warranty registration form **MUST** be forwarded to BigDog™ Mowers, within ten (10) days following date of purchase.
3. The date of purchase constitutes delivery.

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.

DANGER – denotes immediate hazards which WILL result in severe personal injury or death.

WARNING – denotes a hazard or unsafe practice which COULD result in severe personal injury or death.

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 machine may result in severe injury. Personnel operating and maintaining it should be trained in the proper use and should read the manuals

Safety and Instruction Decals

▲ Specific safety warning decals are located on the equipment near the immediate areas of potential hazards. These decals should not be removed or obliterated. Replace them if they become non-readable.

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



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



Part Number 779306

completely and thoroughly before attempting to set-up, operate, adjust, or service this machine.

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 safety signs.
- 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.

- Do not smoke while refueling.
- Do not remove the fuel tank cap or fill 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.



Part Number 600899

- If you lose steering control while operating the machine, place the steering control levers in the park brake position immediately. Inform the responsible person immediately if you are unable to do so.
- 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.

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.



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 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.



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.



WARNING: Thrown objects!

Part Number 601624

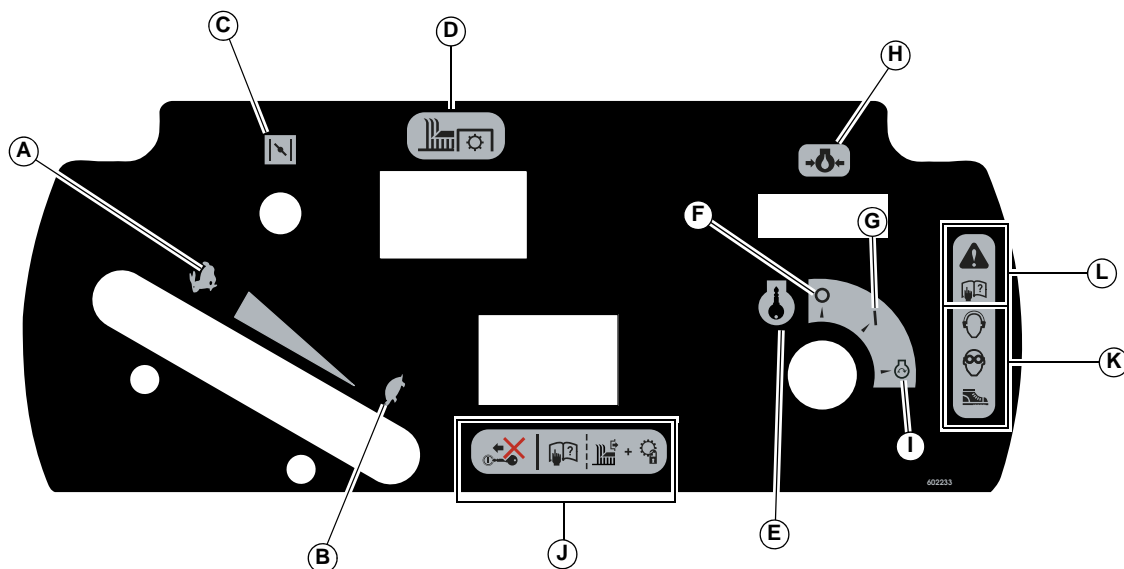
- Never operate the mower deck with side deflector damaged, altered, removed or in raised position, except when the entire grass catcher attachment or mulching system is being used.

Part Number 602041

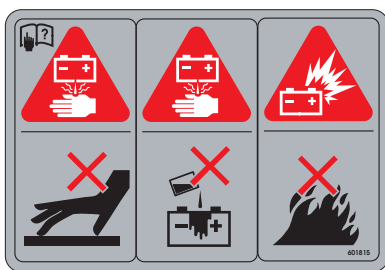


WARNING: Hot surface!

- Keep a safe distance from machine



- 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 Owner'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 Owner's Manual before attempting to operate this machine. Read Owner's Manual before attempting to service this machine.

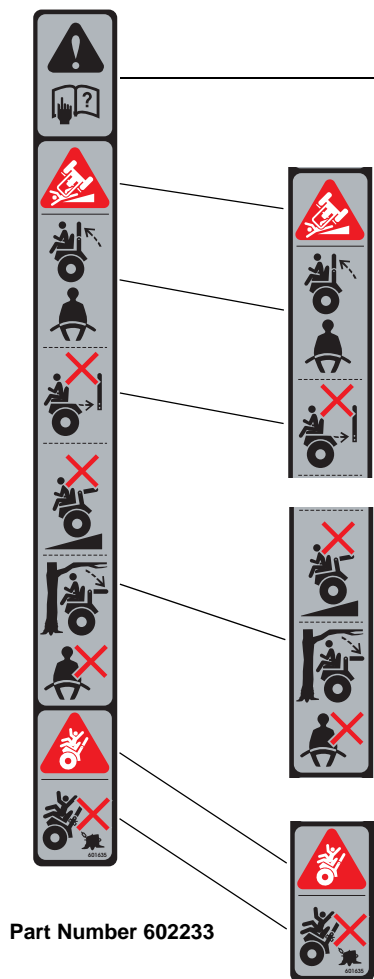


DANGER: Battery Hazards!

- 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 into the battery. 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.



Part Number 602233

Read Owner's Manual and decals before attempting to operate this machine.

WARNING: 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.

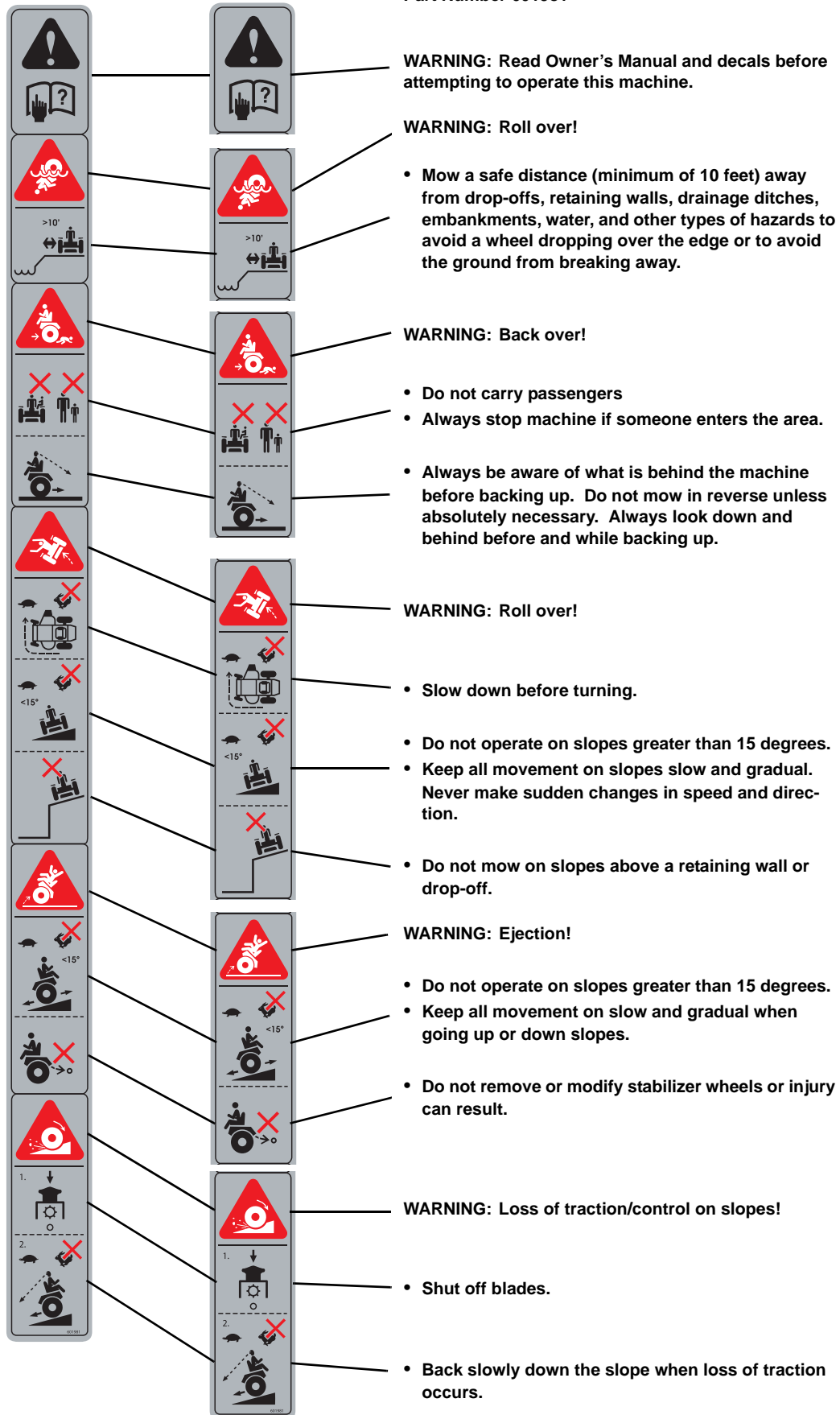
WARNING: Roll over!

- Avoid crushing, use seat belt.
- Do not jump if machine tips.
- To minimize chance of injury or death from rollover; keep ROPS in the raised and locked position and use the seat belt.
- Do not remove ROPS

- 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 slopes operation instructions and warnings.
- Do not wear seat belt when the ROPS is in the lowered position.



































WARNING: Ejection!

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



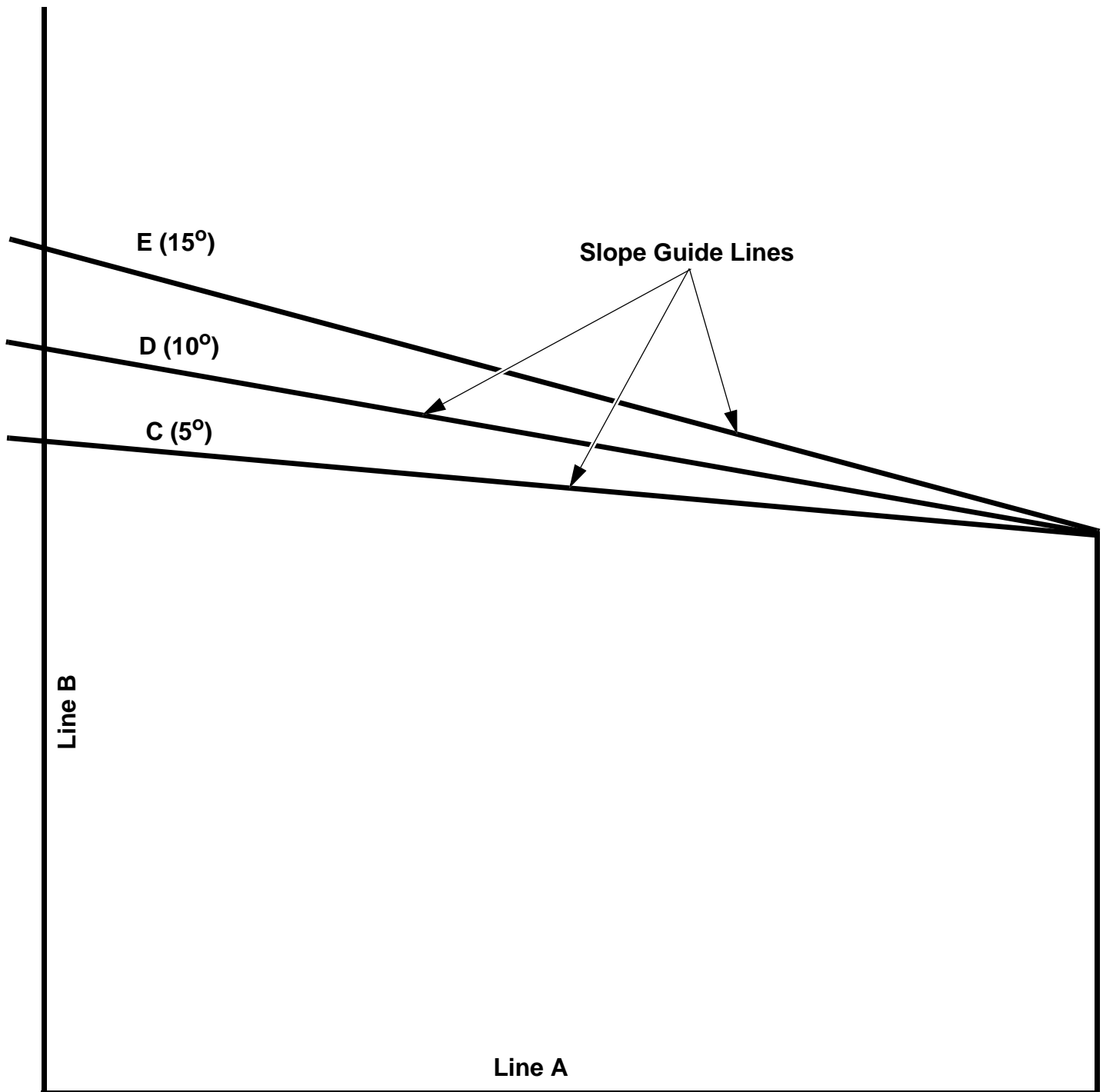
INTERNATIONAL SYMBOLS

As a guide to the operation of your mower, various international symbols have been used on instruments and controls. These symbols are depicted and described below.

	Hours Recorded		Neutral		Battery
	Engine Water Temperature		Diesel Fuel		Power Take-off (ON)
	Air Filter		Glow		Power Take-off (OFF)
	Engine Oil Pressure		Engine Stop		Slow
	Full Time AWD		Engine Oil		Fast
	Auto AWD		Engine Start		Control Lever Hold
	Continuously Variable		Parking Brake		Attachment (Raised)
	Increase		Lock		Attachment (Lowered)
	Decrease		Release Lock		Remote Cylinder (Retracted)
	Fuel Level		Differential Lock		Remote Cylinder (Extended)
	High Range		Volume Empty		Volume Full
	Low Range				

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

Some of the following safety instructions are from ANSI Standard B-71.4-2004 while others are specific to the BigDog™ Mowers.

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 machine unattended. Always stop on level ground, disengage deck clutch, place steering control levers in park brake position, stop engine, and remove ignition key before leaving operator's seat for any reason including emptying the catcher or unclogging the chute.
 - ▲ Do not change the engine governor setting or overspeed the engine. Operating the engine at excessive speed may increase the hazard of personal injury.
 - ▲ Always remain seated while operating machine.
 - ▲ Always keep safety shields and covers in place.
 - ▲ Always maintain a safe distance from people and pets when mowing. Always stop machine if someone enters the area.
 - ▲ Always operate machine 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 machine 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.
 - ▲ 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 machine for damage after striking a foreign object. If damage is found, repair machine immediately. Be sure to stop on level ground, disengage deck clutch, place steering control levers in park brake position, stop engine, and remove ignition key when leaving 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 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 when operating this machine.
- ▲ 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.
 - ▲ Never push forward suddenly on your control levers while the machine is in rearward motion because machine may tip backwards.
 - ▲ Never pull back suddenly on your control levers while the machine is in forward motion.
 - ▲ When moving in reverse, push forward slowly on control levers and avoid sudden movement. Rapid movement of the control levers in either direction could result in a reaction of the machine that can cause serious injury.
 - ▲ Never operate a poorly maintained machine.
 - ▲ Never attempt high speed maneuvering, especially in crowded or congested areas or on slopes.
 - ▲ Never allow persons to operate this machine without proper instruction or allow children to operate machine. Allow only responsible adults who have read and understand these instructions to operate this machine.
 - ▲ Never put hands or feet under any part of the machine 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 blades and wait for them to stop before crossing gravel drives, walks or roads.
 - ▲ Always keep clear of the mower blades and attachments during their operation.
 - ▲ Turn off 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!**
 - ▲ Always keep clear of the mower blades and attachments during operation.
 - ▲ Do not operate the machine if you are fatigued, sick or while under the influence of alcohol or drugs, if you are pregnant or under 18 years old.
 - ▲ Exercise caution when loading or unloading the machine 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 machine that can cause serious injury.

- ▲ **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.**
- ▲ Always secure the ROPS in the raised position and buckle seat belt before starting mower.

Using a ramp

- ▲ Use extreme caution when loading and unloading a unit 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 machine 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 up the slope or if you feel uneasy on it; 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 machine 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 machine 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.
- ▲ Do not remove or modify the stabilizer wheels.
- ▲ Watch for holes, ruts, bumps, rocks or other hidden objects. Uneven terrain could overturn the machine. 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 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 machine 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 machine roll-over 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 machine 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, turn the engine off and get help.
- ▲ Never make sudden starts, stops, turns, or reverse 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 machine that can cause serious injury.
- ▲ Never stop suddenly while backing down slopes. This action may result in a reaction of the machine that can cause serious physical injury.
- ▲ The BigDog™ mower is capable of operating horizontally (traverse) on moderate 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 machine. 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, page 2-9, when determining the degree of slope to be mowed.

It is strongly recommended that the operator drive the machine 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 machine. 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.

Another consideration is to always 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 and always be aware of what is located at the bottom of the slope. This will reduce the risk of the machine suddenly rolling over causing serious injury or death.

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 will 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 will result in serious injury in the event of a roll over.

Children

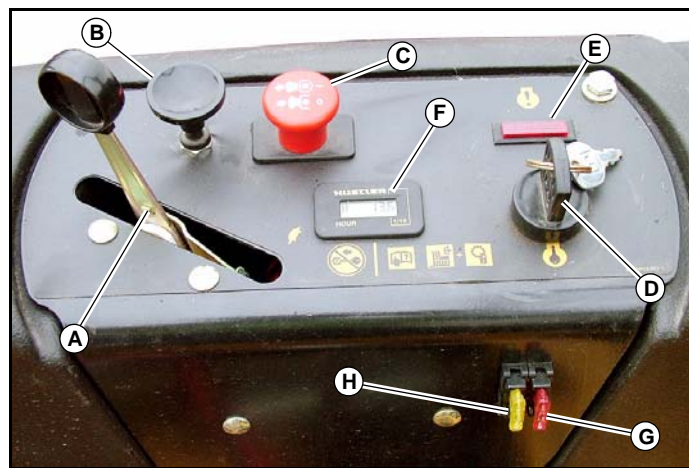
Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the machine and the mowing activity. Never assume that children will remain where you last saw them.

- ▲ Never leave machine unattended with ignition key in switch, especially with children present.
- ▲ Children or bystanders may be injured if they move or attempt to operate the machine while it is unattended. Always disengage deck clutch, place control levers in park brake position, stop engine, and remove 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 machine 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 machine 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 machine.
- ▲ Never allow children to operate the machine.
- ▲ 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

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 (Fig. 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 (Fig. 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



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

Fig. 3-1

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 (Fig. 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 (Fig. 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 (Fig. 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 (Fig. 3-1 & Figure 3-5)** — 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 (Fig. 3-1)** — Ignition - 10 amp, blade-type
- H. **15 amp fuse (Fig. 3-1)** — Clutch - 15 amp, blade-type

Controls

- A. **Control levers (Figure 3-2 & Figure 3-3)** — these levers control the mower's speed, direction, stopping, and park brake. Levers are used to steer, accelerate, decelerate and change direction. When the control levers are in the park brake position (3-3) the mower will not move when the engine is on and drive pumps are operating.



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

- B. Deck lift pedal (Figure 3-4)** — 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.

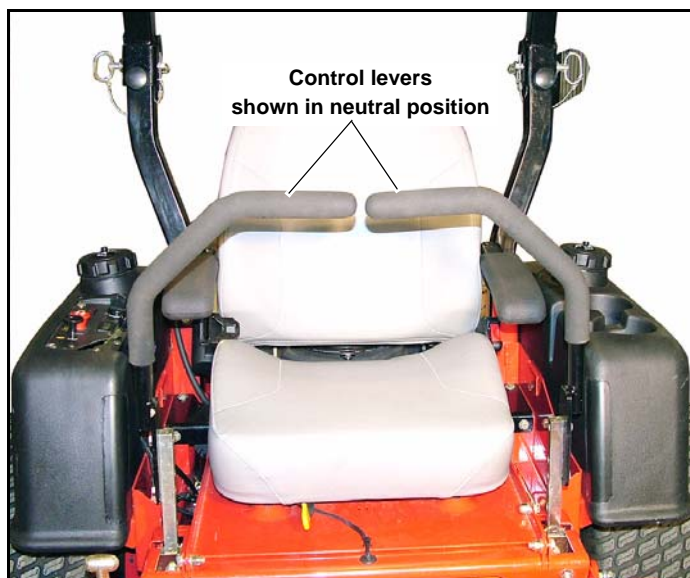


Figure 3-2



Figure 3-3

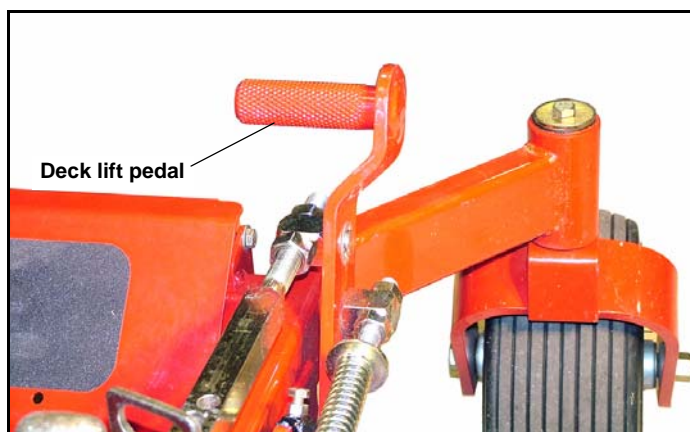


Figure 3-4



Figure 3-5

Safety start interlock system

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

Check mower safety start interlock system daily, prior to operation. This system is an important mower safety feature. It should be repaired immediately if it malfunctions. 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 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 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 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 control levers is up and the operator is off the seat, check the function of the seat 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 can not 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 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:

- A. Control levers are in the park brake position.
- B. 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 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 control levers are in the park brake position and 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 safety start interlock system is operating properly. Refer to *Safety start interlock system* section.
7. As soon as engine begins to run, check to make certain the oil warning light is off. If not, stop 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 control levers in the park brake position
2. Disengage the deck clutch
3. Throttle back to low idle for a couple of minutes
4. Rotate ignition key counter-clockwise to the "OFF" position. Remove the key from switch before leaving the machine.

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.



Figure 3-6

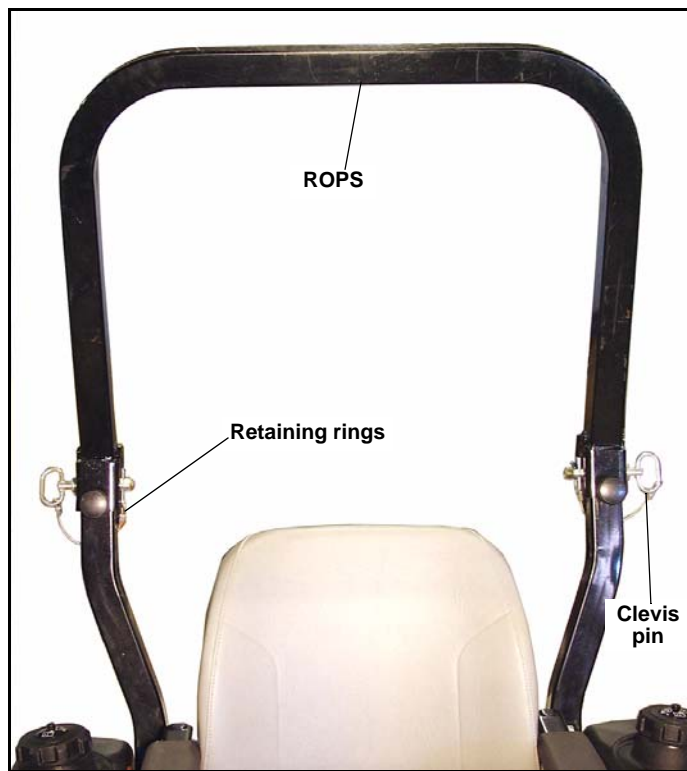


Figure 3-7

ROPS (Roll Over Protective Structure)

A Roll Over Protective Structure (ROPS) and seat belt is

provided with the equipment. Do not remove the ROPS and seat belt. ROPS when used with seat belt is effective in reducing injuries during unit overturn accidents. Overturning the unit without ROPS can result in serious injury or death.

NOTE: 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. Figure 3-7

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.

Torque values are given below:

	Ft.-lbs.	Nm
ROPS mounting bolts	73	99
Seat belt mounting hardware.	48	65

The two-post ROPS can be pivoted down by removing the right and left retaining rings 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 it is absolutely necessary.** Figure 3-7

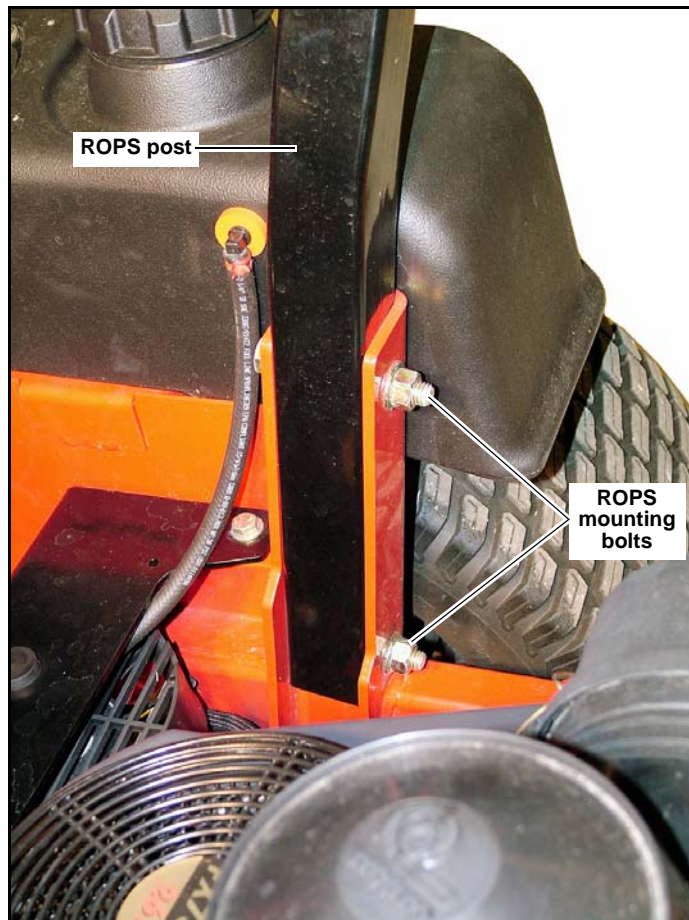


Figure 3-8



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 to be mowed for proper overhead clearance (tree limbs, guy wires, doorways, etc)

Do not contact any overhead object with the ROPS.

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:

1. cuts
2. fraying
3. extreme or unusual wear
4. significant discoloration due to UV exposure
5. dirt or stiffness
6. abrasion to the seat belt webbing
7. damage to the buckle, latch plate or hardware.
8. or any other problem

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

Possible damage to the 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, and the seat belt and seat belt mountings for possible damage. Before operating the machine, replace all damaged parts.

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



WARNING: If the ROPS or cab is removed or replaced, make sure that the proper hardware is used and the recommended torque values are applied to the attaching bolts.



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.

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 machine that can cause serious injury.

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

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

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

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

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

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

To stop or decrease speed, move control levers to neutral. When going forward pull back gently on control levers. When going in reverse push forward gently on 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 control lever farther forward from neutral than the right control lever and start the turn. Next, pull back on the control levers until they are past neutral and the machine starts to go rearward. Pull right control lever farther rearward from neutral than the left control lever until the rear of the machine has pivoted around. Then, push the control levers forward until they are both past neutral and the machine starts to go forward. Push the left control lever farther forward from neutral than the right control

lever and finish the turn. (Figure 3-10)

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

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

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™ Mowers 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 lever slowly, avoid 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 practice maneuvers 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 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

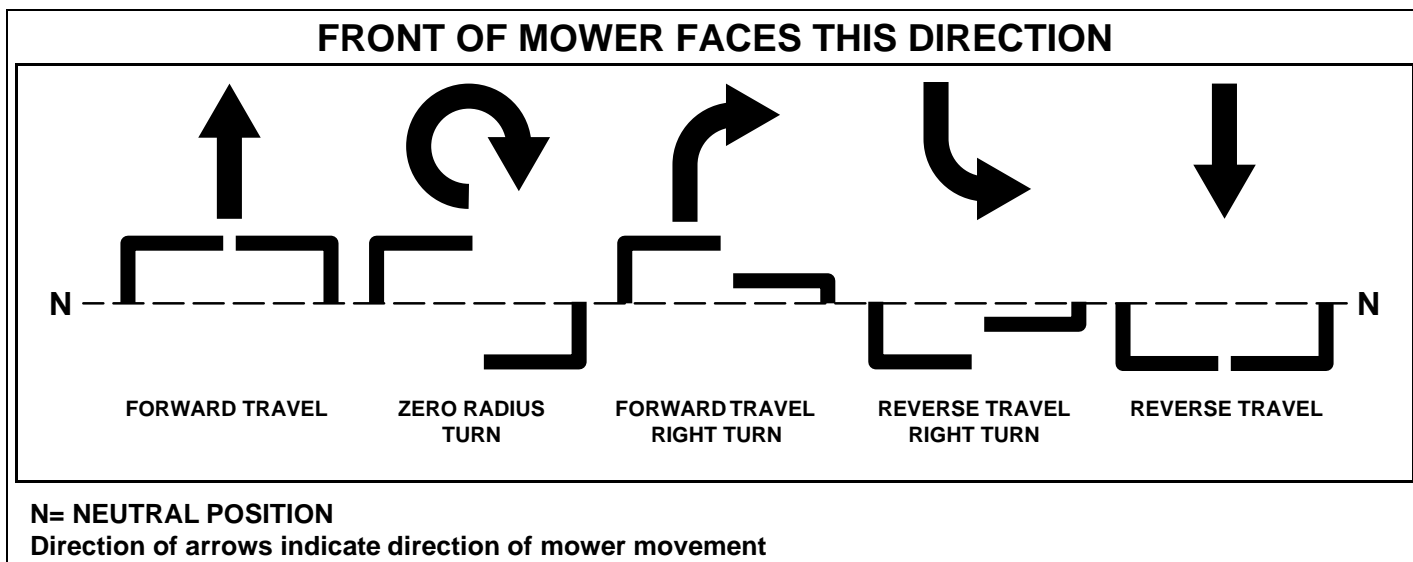


Figure 3-9

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 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, a branch or another 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 best cut.

Direct grass discharge to right, away from unmown area. Select a mowing pattern that directs grass discharge towards the outside, not towards center, of mowing area. Generally, this means using a pattern utilizing **left turns** because side discharge is to **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 better dispersion of the clippings.

Remember, grass grows at different rates at different time of the year. Mow more often in the early spring to maintain the same cutting height. As the growth rate slows in mid summer, 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 discharge of material from mower deck towards bystanders. Do not operate the mower without either the discharge chute or the entire grass collection system in place. Figure 3-11

Mower deck operation



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.

With the engine running, engage the deck clutch switch (Fig. 3-1) and advance engine throttle to full rpm.

NOTE: 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.

Deck cutting height adjustment

Deck height is adjustable from 1" to 5" (2.54 cm - 12.7 cm) in 1/4" (.64 cm) increments. The holes in the height adjusting bar are spaced at 1/2" (1.27 cm) intervals. By turning the height adjusting stop around, 1/4" (.64 cm) increments can be attained due to the 1/4" (.64 cm) plate that is part of the stop. Figure 3-12

Three point turn

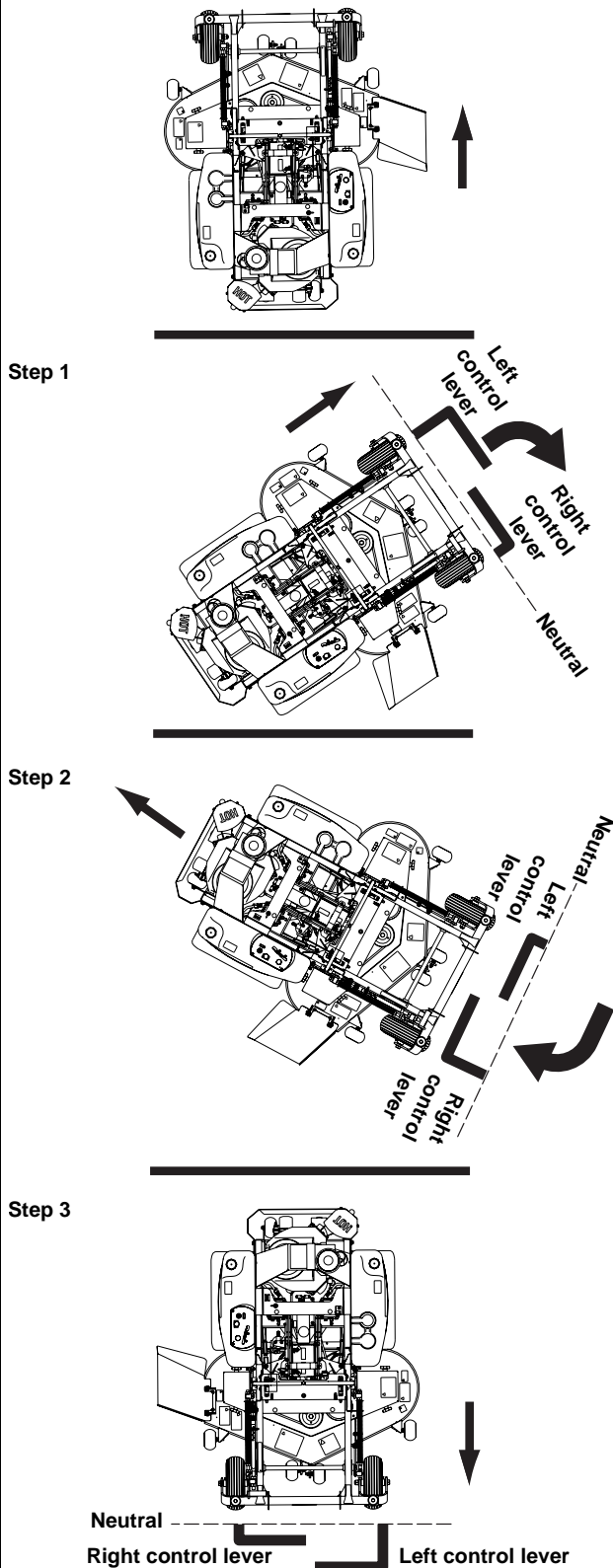


Figure 3-10

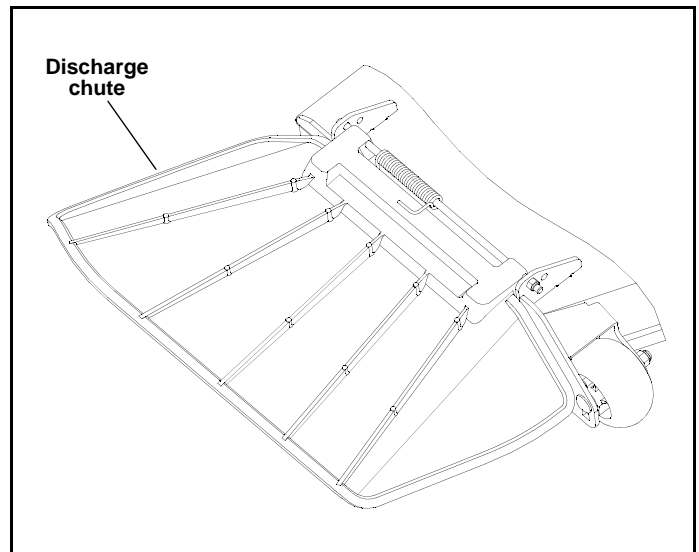


Figure 3-11

EXAMPLE: When the height adjusting stop is placed in the 1" (2.54 cm) hole, **with the 1/4" (.64 cm) plate facing to the front of the unit**, the cutting height is at 1". When the height adjusting stop is placed in the 1" (2.54 cm) hole, **with the 1/4" (.64 cm) plate on the operator's side of the hole**, the cutting height is at 1-1/4" (3.18 cm).

The notch located at the rear of the height adjusting bar is to be used when the deck is placed in the **transport mode**.

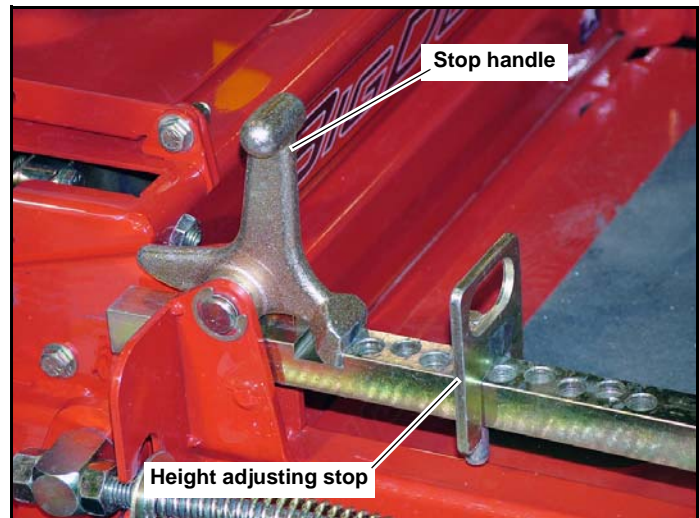


Figure 3-12

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 3-13

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).

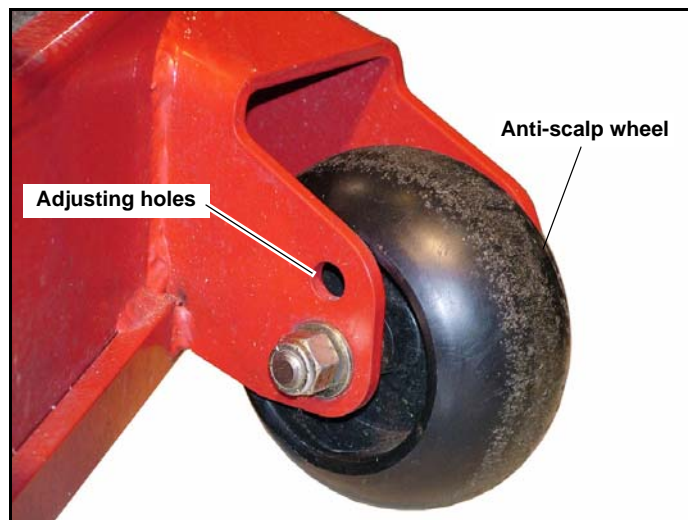


Figure 3-13

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 machine. 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 a checking belt, **always** keep belt covers on mower deck for safety as well as 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 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 engine compartment, top of deck, exhaust area, battery, hydraulic lines, 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 engine when there is a strong odor of gasoline fumes present. Locate and correct cause.
- ▲ Never remove the fuel cap or refuel mower while engine is running; 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 odorless and deadly poison.
- ▲ Never attempt to make any adjustments or repairs to the mower's drive system, mower deck or any attachment

while the 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 to block the unit up. Use in pairs only. Follow the instructions supplied with the vehicle stands.
- ▲ 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. 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. 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 for your unit. Refer to the *Product Literature* section of this manual.

Remain alert for unusual noises, they could be signaling 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.


Daily inspect mower for grass clippings and wire and string tangles. The underside of the mower deck may 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.	Nm
Wheel (lug) nuts	65-75	88.14-101.7
Blade spindle bolt top	65-75	88.14-101.7
Blade spindle bolt bottom	118	160.01
Wheel motor nut	200-210	271.2-284.7

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 pressure are:

- Drive wheels 8-12 psi (55-83 KPa)
- Gauge wheels 8-12 psi (55-83 KPa)

Only pneumatic tires are approved for use on BigDog™ Mowers X Series mowers. Warranty claims will be denied on any mower equipped with 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 greater cranking AMP rating. A maintenance-free battery is recommended. Otherwise, follow battery manufacturer’s maintenance, safety, storing and charging specifications.

The main circuit is controlled by an in-line 25 amp fuse.

 **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 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 connection first and replace it last.

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. 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 components can cause sparks. Sparks can cause a battery gas explosion which may 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).

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. Fig. 4-1

Change hydraulic system filter element after first 50 hours of machine operation, then replace filter and oil in reservoir every 500 hours thereafter. Fig. 4-1

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.

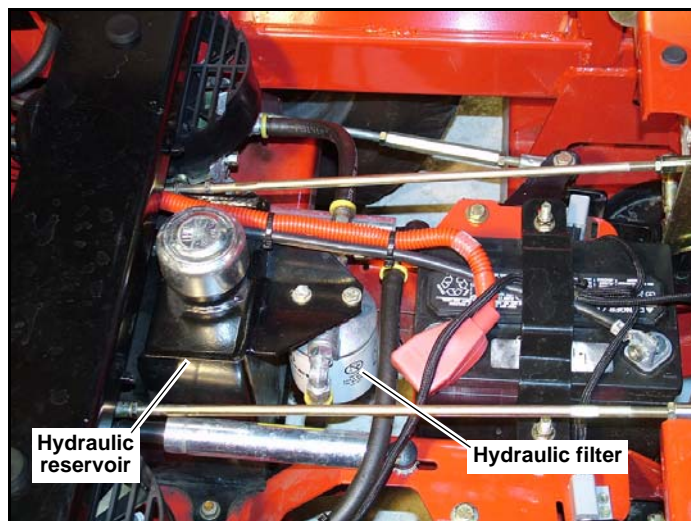


Fig. 4-1

Fuel system



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



DANGER: 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.
- 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. They 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 engine when there is a strong odor of gasoline or diesel fuel fumes present. Locate and correct 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 or diesel fuel 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 and diesel fuel 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.

Use regular unleaded gasoline with an octane rating of 87 or higher. **IMPORTANT:** Never use methanol, gasoline containing methanol, or gasohol containing more than 10% ethanol because the fuel system could be damaged. Do not mix oil with gasoline.

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. Fig. 4-2

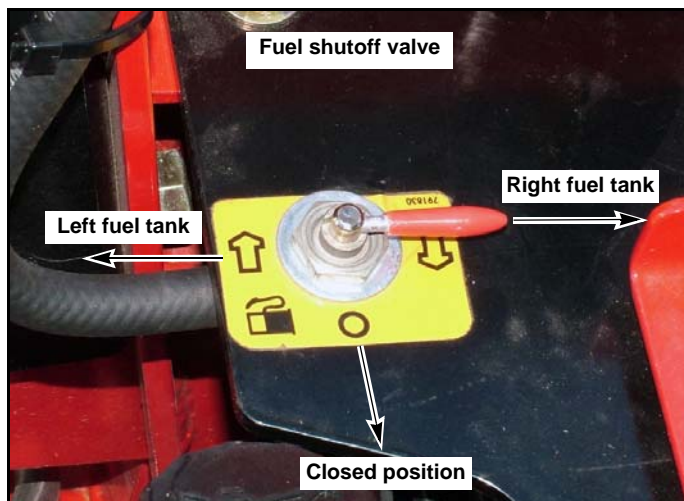


Fig. 4-2

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 setting level 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 mower is being operated in extremely dirty conditions, then it is recommended 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 Fig. 4-3).

1. Locate the oil drain valve on the lower left side of the engine. Fig. 4-3
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. Fig. 4-4
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 Fig. 4-5).

1. Locate the oil drain valve on the engine. Fig. 4-5,
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.

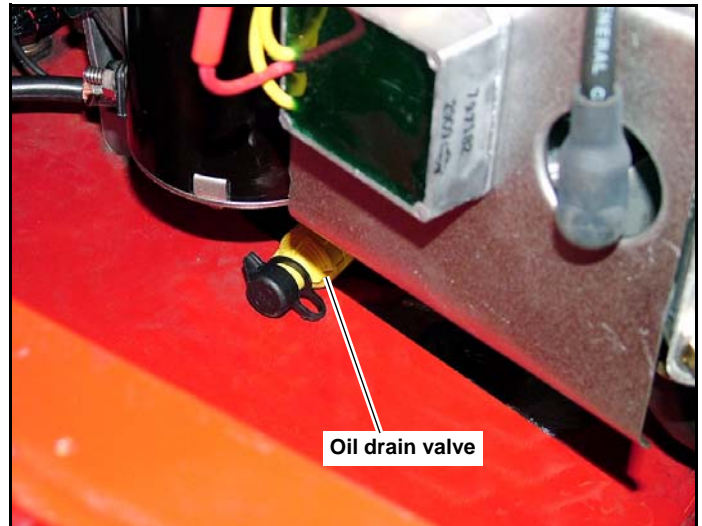


Fig. 4-3

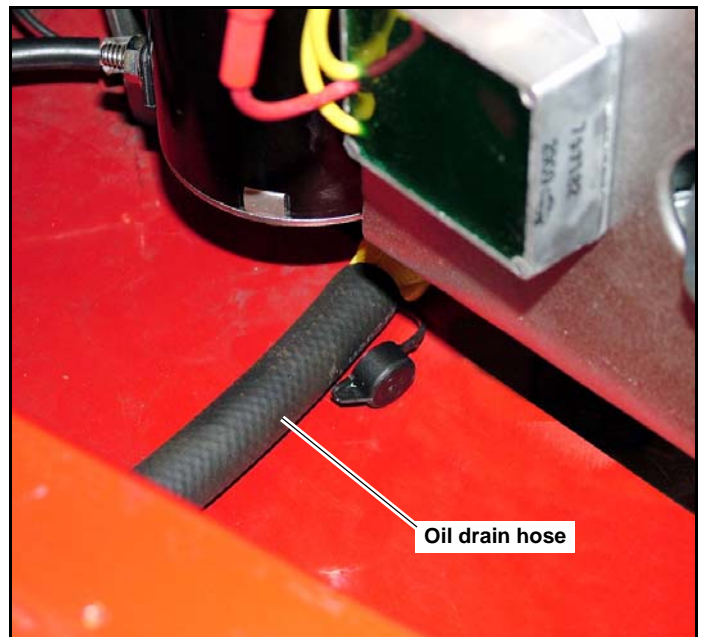


Fig. 4-4

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 Fig. 4-6.

Recommended service procedure

1. Release clamps and remove element. Clean the canister



Fig. 4-5

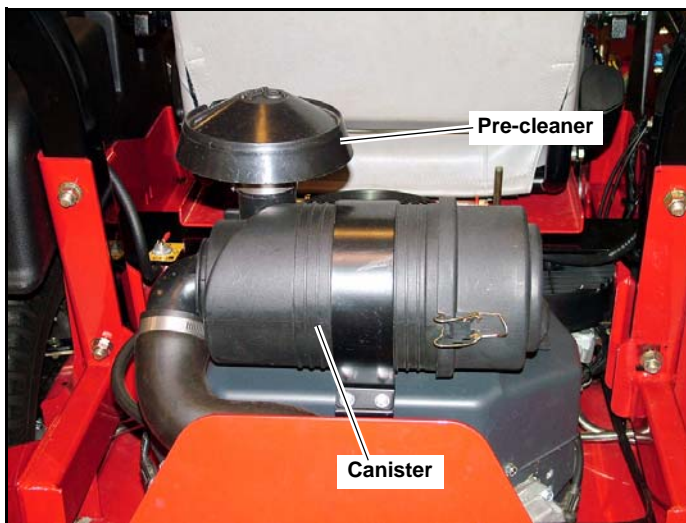


Fig. 4-6

with a damp cloth.

2. Before installing a new element, inspect it by placing a bright light inside and rotate 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.
3. Reinstall the dust cup. Make sure it seals all the way around the air cleaner body, then tighten the clamps.
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 a 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 element, 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 their 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.

Belts

BigDog™ Mowers X Series mowers have two 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 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 them 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.



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 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 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 (Fig. 4-7). 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 1/2" bolt. Blade should not lean or tilt. Spin the blade slowly, blade should not wobble. If blade is out of balance, true it up before reinstalling.

Lay the blade on a flat surface and check for distortion (Fig. 4-8 & Fig. 4-9). 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.

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.



Mower blades are sharp and can cut. Wear gloves and use extra caution when servicing them.

Seat adjustment

The seat can be adjusted forward and rearward by sliding the seat release handle and moving the seat until a comfortable operating position is attained.

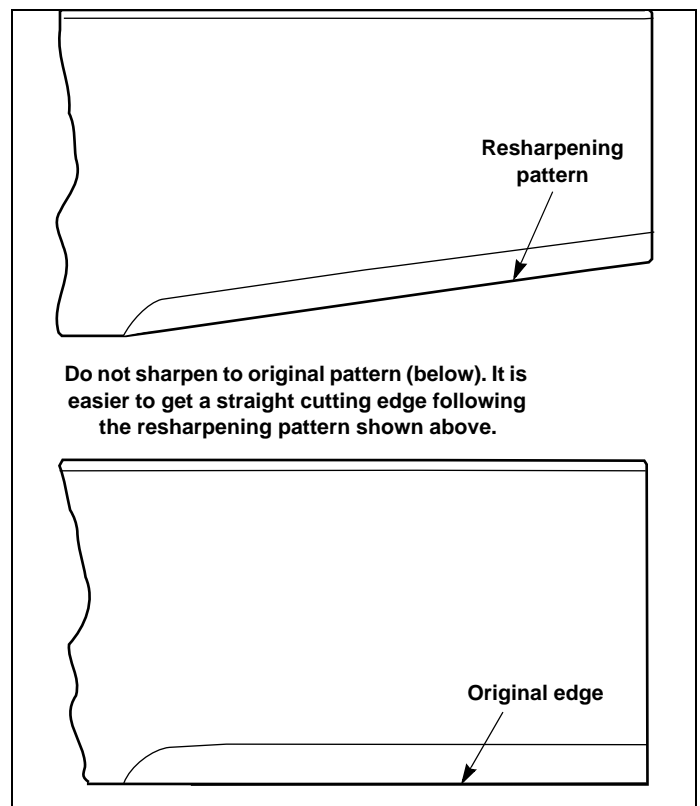


Fig. 4-7

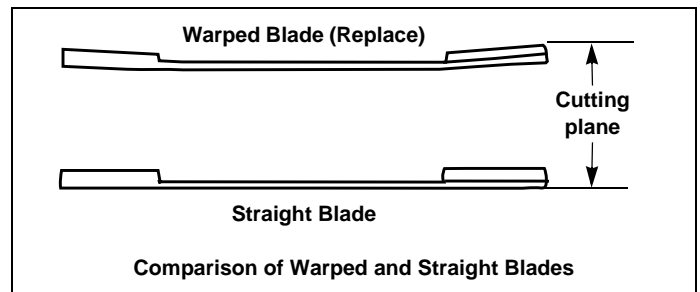


Fig. 4-8

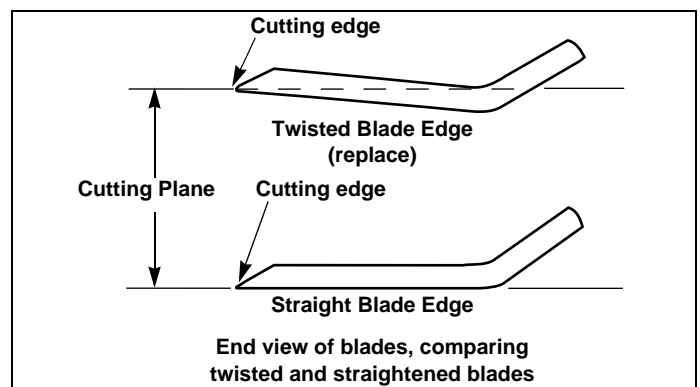


Fig. 4-9

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 (Fig. 4-11), the upper control lever can be pivoted to fit the operator's personal preference.



Fig. 4-10

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

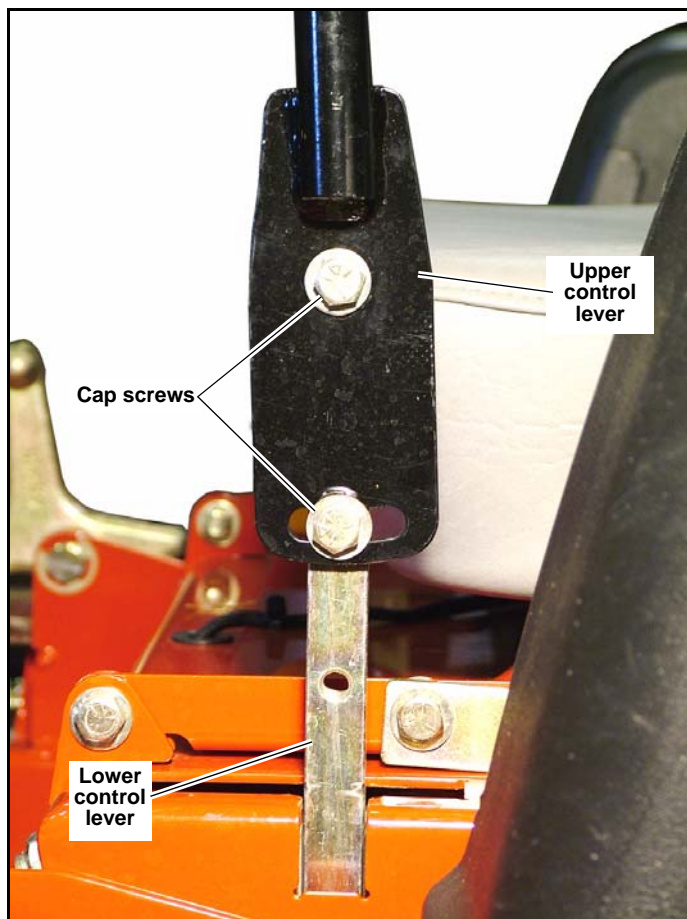


Fig. 4-11

BigDog™ Mowers X Series Maintenance Schedule Refer to Fig. 4-12 & Fig. 4-13			
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 and hydraulic lines (7)		X	
Check fuel valve and grommet (7)		X	
Tighten lug nuts on wheels (2)		X	
Change fuel filter			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

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 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 line hoses, fuel valve and grommet for any cracks or leaks.
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.

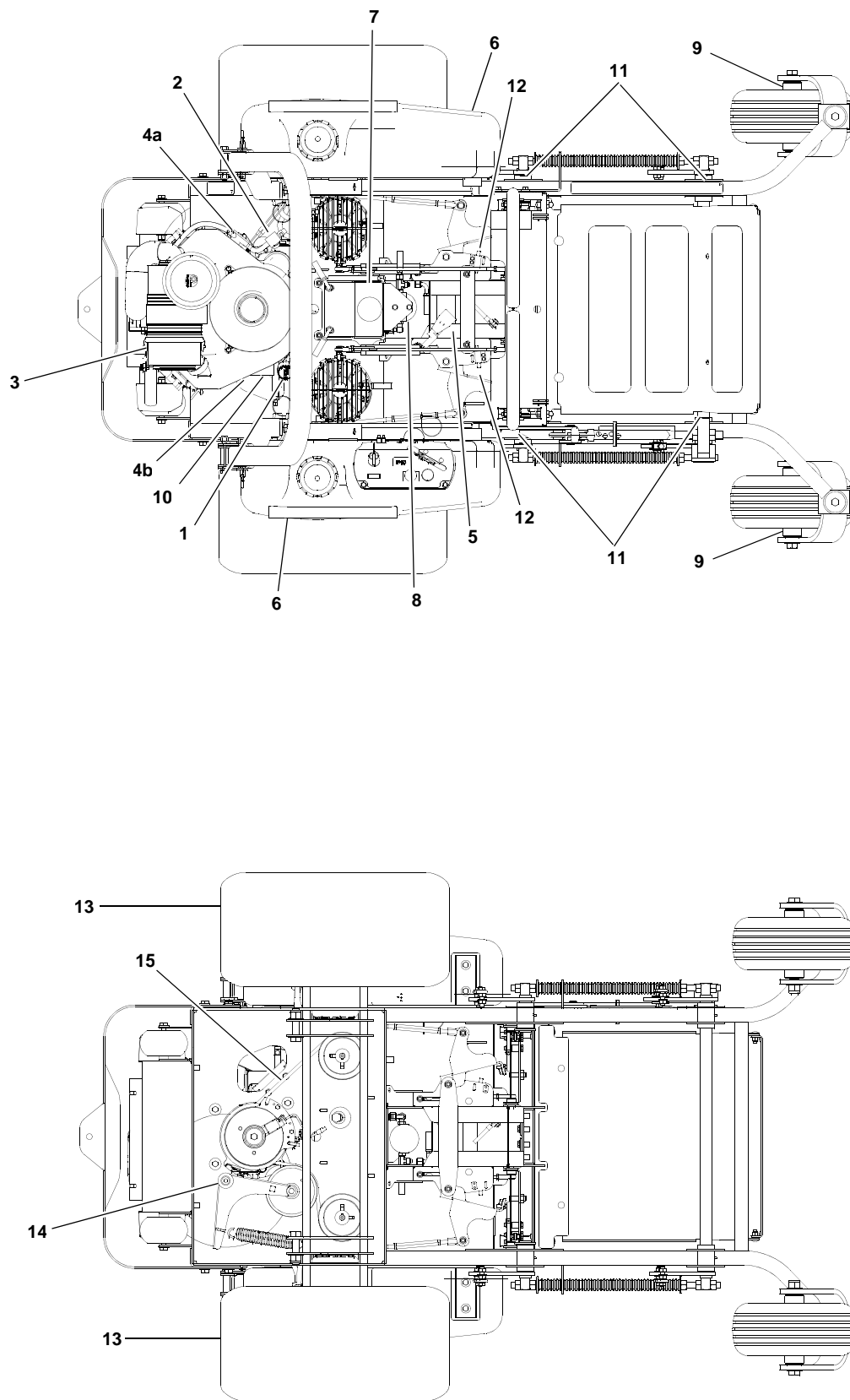
REFERENCES:

- 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.

BigDog™ Mowers X Series Maintenance Locator Chart



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

Fig. 4-12

BigDog™ Mowers X Series Maintenance Locator Chart

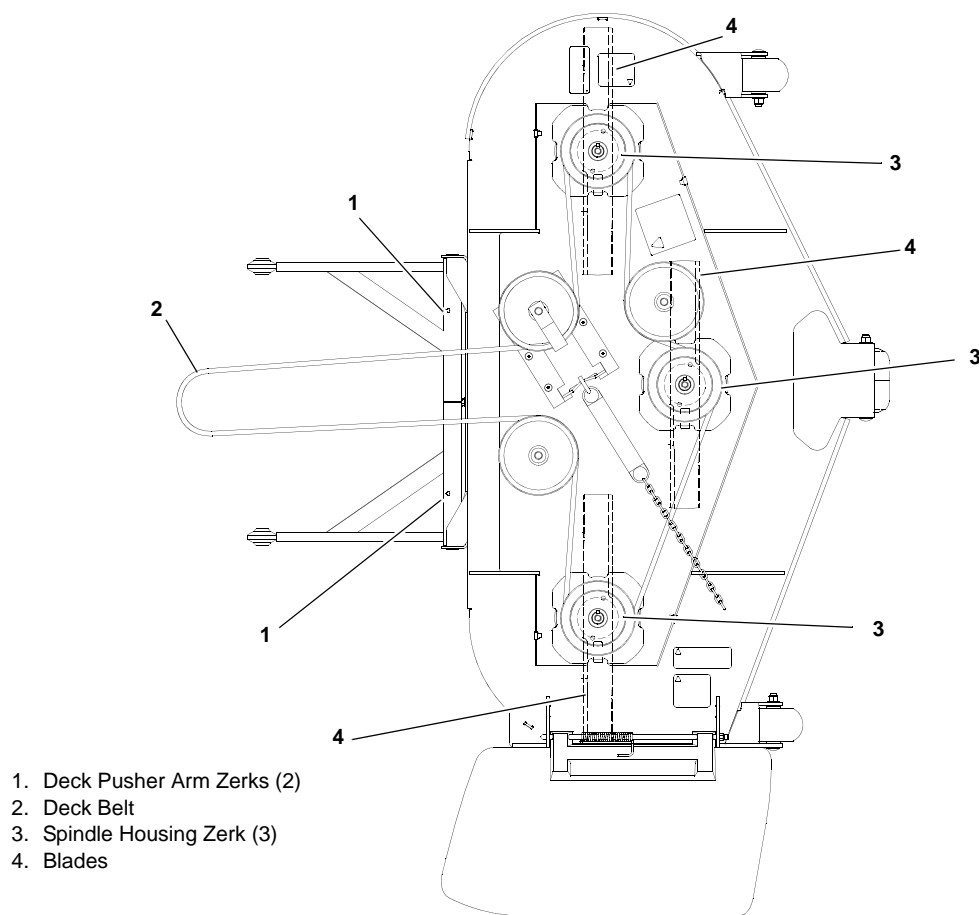


Fig. 4-13

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
Starting motor does not crank	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
The engine will not start, starts hard or fails to keep running	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 BigDog™ Mowers Dealer
	The choke is not on	Move the choke lever to ON
	Numerous	See engine manual
Engine: Runs with continuous misfiring or engine runs unevenly or erratically	Numerous	See engine manual
Loss of power or system will not operate in either direction	Restrictions in air cleaner	Service air cleaner
	Hydraulic line blockage	See your dealer
	Internal interference or leakage in wheel motor	See your dealer
	Insufficient hydraulic oil supply	Check level in reservoir
		Have dealer check hydraulic pump
	Poor compression	See 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
Air cooled engine overheating	Air intake screen or cleaning fins clogged	Clean screen and fin
	For additional causes	See engine manual
Low engine oil pressure	Low oil level	Add oil
	Oil diluted or too light	Change oil and check for source of contamination
	Failed oil pump	See your dealer
High oil consumption	Numerous	See your dealer

SYMPTOMS	PROBABLE CAUSES	SUGGESTED REMEDIES
Mower jerky when starting or operates in one direction only	Steering control linkage needs adjustment	Adjust linkage
	Pump or wheel motors faulty	See your dealer
	Tow valves not closed completely	Close tow valves
Hydraulic system operates hot (oil in reservoir smells rancid)	Low hydraulic oil level	Fill reservoir
	Hydraulic pump faulty	See your dealer
	Hydraulic oil cooler clogged	Clean oil cooler core
Mower creeps when steering control levers are in neutral	Steering linkage needs adjustment	Adjust linkage
Mower circles or veers in one direction	Steering linkage needs adjustment	Adjust linkage
	Wheel motors faulty	See your dealer
	Tires improperly inflated	Adjust air pressure to 8 - 12 psi (55-83 KPa)
	Hydraulic pump faulty	See your dealer
Mower creeps when parking brake engaged	Steering linkage out of adjustment	Adjust steering linkage
	Brakes need adjustment	Adjust parking brakes
There is abnormal vibration	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 BigDog™ Mowers 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 BigDog™ Mowers Dealer
Blades do not rotate	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 BigDog™ Mowers 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 BigDog™ Mowers Dealer

STORAGE

When storing the unit at the end of the mowing season, the following steps should be taken to ensure readiness for the next mowing season.

1. Remove all grass, dirt, and trash from mower. Clean mower and touch up all scrapes with touch-up paint.
IMPORTANT: Wash the machine with a mild detergent and water. Do not pressure wash the machine. Avoid excessive use of water
2. Replace air filter element.
3. Check thoroughly for any worn or damaged parts that need replacing and order them from your dealer.
4. Block machine up so weight is off tires. Check tire pressure and inflate to proper operating pressure.
NOTE: Do not deflate tires.
5. Perform separate engine and battery preparation as listed below.
6. Store machine 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 tanks.
5. Remove and replace fuel filter.

6. Clean exterior surface of engine. Spread a light film of oil over any exposed metal surfaces of engine that are subject to corrosion.
7. Check oil filler cap and fuel tank cap to make certain they are securely in place.

Preparation of battery for storage

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

1. Remove the battery from machine
2. Clean battery, terminals and cable connectors
3. Charge the battery, if necessary
4. Store 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 servicing is required:

1. Clean mower, removing trash and dirt accumulation.
2. Check engine oil, hydraulic oil and coolant 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 batteries and attach the battery cables.

PRODUCT LITERATURE

If you would like to view or print a copy of the BigDog™ Mowers product manuals go online to www.bigdogmowers.com and click on the *MANUALS* button.

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OWNERS MANUAL
SERIES X



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