ATFD BRUSH MOWER SAFETY &

OPERATING INSTRUCTIONS

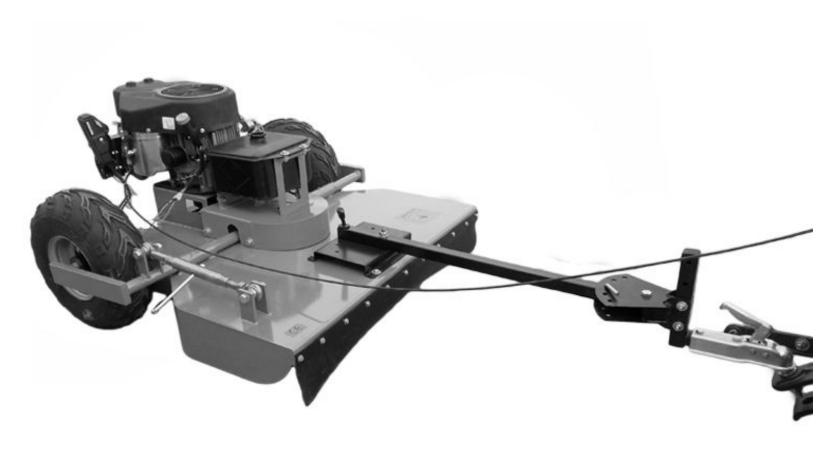


Table of Contents

Chapter 1: General Safety Rules	3
Chapter 2: Setting Up The ATFD BRUSH MOWER	7
Chapter 3: Operating The ATFD BRUSH MOWER	12
Chapter 4: Maintaining The ATFD BRUSH MOWER	17
Chapter 5: Troubleshooting	23
Chapter 6: Parts Lists, Schematic Diagrams And Warranty	. 25

Conventions used in this manual



This indicates a hazardous situation, which, if not avoided, could result in death or serious injury.



This indicates a hazardous situation, which, if not avoided, could result in minor or moderate injury.

NOTICE!

This information is important in the proper use of your machine. Failure to follow this instruction could result in damage to your machine or property.

Serial Number and Order Number

A Serial Number is used to identify your machine and is located on the Serial Number Label on your machine. An Order Number is used to check and maintain your order history and is located on the upper left portion of your packing slip. For your convenience and ready reference, enter the Serial Number and Order Number in the space provided on the front cover of this manual.



Read this safety & operating Instructions manual before you use the ATFD BRUSH MOWER. Become familiar with the operation and service recommendations to ensure the best performance from your machine.

Labels

Your ATDF BRUSH MOWER carries prominent labels as reminders for its proper and safe use. Shown below are copies of all the Safety and Information labels that appear on the equipment. Take a moment to study them and make a note of their location on your Mower as you set up and before you operate the unit. Replace damaged or missing safety and information labels immediately.







Protecting Yourself and Those Around You

• WARNING!

This is a high-powered machine with fast moving parts operating at high speeds. You must operate this machine safely. Unsafe operation can create hazards for you, as well as anyone else in the work area. Use proper clothing and safety gear when operating this machine to prevent or minimize the risk of severe injury. Always take the following precautions when operating the ATFDBRUSH MOWER:

- Always wear protective goggles or safety glasses with side shields while mowing to protect your eyes from possible objects thrown from the machine.
- We recommend wearing safety shoes when using this machine. Wear shoes with non-slip treads to improve footing on slippery surfaces. Do not use the machine wearing open sandals or while barefoot.
- We recommend wearing long pants and gloves while using this machine. Be sure the gloves fit properly and do not have loose cuffs or drawstrings.
- We recommend the use of ear protectors or ear plugs rated for at least 20 dba to protect your hearing.
- Allow only responsible individuals who are familiar with these general safety rules and operating instructions to use your ATFD BRUSH MOWER. Never allow people who are unfamiliar with these rules and instructions to use your machine.
- Have a complete working knowledge of your Tractor and know how to handle it with the ATFD BRUSH MOWER attached.
- Keep your hands and feet away from the blades, belt, blade pulley, and concealed areas while the engine is running. Never reach under the deck or grab hold of any part of the deck when the engine is running.

• WARNING!

- The mower can throw objects far and at great speeds. Keep people and pets at least 100 feet away from your machine at all
 times. Install warnings around the area of operation stating "It is prohibited to enter this area". Disengage the blade and
 stop the engine when a person or pet approaches within 100 feet. Do not restart the machine until people and pets are at
 least 100 feet away from the mower.
- · Clear the area of objects such as rocks, toys, wire, bones, sticks, etc., which could be picked up and thrown by the blades.
- Be sure the blade control knob is down (disengaged) before attempting to start the engine.
- Never get off the Tractor without first stopping the blades and shutting off the Tractor engine and the ATFD BRUSH MOWER engine.
- Never, under any conditions, remove, bend, cut, fit, weld, or otherwise alter standard parts on the ATFD BRUSH MOWER.
 this includes all shields and guards. modifications to your machine could cause personal injuries and
 property damage and will void your warranty.

Safety for Children and Pets

• WARNING!

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

- Keep children and pets at least 100 feet from the working area and ensure they are under the watchful care of a responsible adult.
- Be alert and always turn off your Tractor engine and the ATFD Brush Mower engine if children enter the work area.
- Before, and while moving your Tractor backwards, look behind, and down for small children.
- Never allow children to operate the ATFD BRUSH MOWER.
- Never allow children to ride on the mower, even if the engine is not running.
- · Use extra care when approaching blind corners, shrubs, trees, or other objects that may obscure your vision.

Slope Operation

! WARNING!

Use of machinery on slopes is a major factor related to accidents, which can result in severe personal injury. Use of machinery
on slopes requires caution. If you feel uneasy using the ATFD BRUSH MOWER on a slope, do not
operate it. Always take the following precautions when using this machine on slopes:

ALWAYS:

- Operate the machine up and down the face of slopes and avoid going across. Exercise extreme caution when changing direction on slopes.
- Remove objects such as glass, large sticks, stones, metal objects, wire, rope, and string-like material.
- Watch for holes, ruts, and bumps on the ground.

NEVER:

- Never operate near drop-offs, ditches, or embankments; you could lose control of your Tractor and/or the ATFD BRUSH MOWER.
- Never operate on slopes greater than 20 degrees, or on any excessively steep slope. See the operating parameters section on page 21 for further restrictions relating to your Tractor.
- Never operate on wet, or slippery slopes. Reduced traction could result in tipping over your Tractor and/or the ATFD BRUSH MOWER.
- · Never park the Tractor on a steep grade or slope.

! WARNING!

Gasoline is a highly flammable liquid. Gasoline also gives off flammable vapor that can be easily ignited and cause a fire or explosion. Never overlook the hazards of gasoline. Always follow these precautions:

- Never run the engine in an enclosed area or without proper ventilation as the exhaust from the engine contains carbon
 monoxide, which is an odorless, tasteless, and deadly poisonous gas.
- Store all fuel and oil in containers specifically designed and approved for this purpose and keep away from heat and open flame, and out of the reach of children.
- Replace rubber fuel lines and grommets when worn or damaged and after 5 years of use.
- Fill the gasoline tank outdoors with the engine off and allow the engine to cool completely. Don't handle gasoline if you or anyone nearby is smoking, or if you're near anything that could cause it to ignite or explode. Reinstall the fuel tank Cap and fuel container cap securely.
- If you spill gasoline, do not attempt to start the engine. Move the machine away from the area of the spill and avoid creating any source of ignition until the gas vapors have dissipated. Wipe up any spilled fuel to prevent a fire hazard and properly dispose of the waste.
- Allow the engine to cool completely before storing in any enclosure. Never store a machine that has gas in the tank, or a fuel container, near an open flame or spark such as a water heater, space heater, clothes dryer or furnace.
- Never make adjustments or repairs with the engine running. Shut down the engine, disconnect the spark plug wire, keeping it away from the spark plug to prevent accidental starting, wait 5 minutes before making adjustments or repairs.
- Never check for an ignition spark with the spark plug or spark plug wire(s) removed. Always use an approved spark tester.
- Never tamper with safety devices. Regularly check their proper operation.
- Never change the engine governor settings or modify the engine speed. Modifications will void your warranty.
- To reduce fire hazard, keep the engine and muffler area free of debris build-up such as leaves, grass, oil, grease, or any other combustible material. Clean the engine area after each use.
- Never operate the engine without the muffler. Inspect the muffler periodically and replace if necessary. If the engine is equipped with a muffler deflector, inspect it periodically and replace if necessary.
- Never cover the machine while the muffler is still hot.
- Do not operate the engine with the air cleaner or the carburetor air intake cover removed. Removal of such parts could create a fire hazard. Do not use flammable solutions to clean the air filter.
- The muffler and engine become very hot and can cause a severe burn; do not touch.

• WARNING!

Safe operation of the ATFD BRUSH MOWER is necessary to prevent or minimize the risk of death or serious injury. Unsafe operation can create a number of hazards for you. Always take the following precautions when operating this machine:

- The ATFD BRUSH MOWER is a powerful tool and not a plaything. When using this machine, exercise extreme caution at all times. The design of this machine is to mow grass and brush. Do not use it for any other purpose.
- The operator or user of the ATFD BRUSH MOWER is responsible for accidents or hazards occurring to other people, their property, and themselves.
- Always mount the remote control panel within easy reach of the operator's position.
- Know how to quickly stop the ATFD BRUSH MOWER. See page 15.
- Never allow people or pets to ride on this machine, even with the engine turned off.
- If the machine should make an unusual noise or vibration, shut off the Tractor and the ATFD BRUSH MOWER engines. Vibration is generally a warning of trouble. Wait five (5) minutes for the ATFD BRUSH MOWER engine to cool. Disconnect the spark plug wire(s) and then inspect the machine for clogging, or loose engine mounting bolts. Clear any obstructions and repair and/or replace damaged parts.
- The mower blades are sharp and can cut. Wrap the blades or wear gloves, and use extra caution when servicing.
- Always keep the machine in good safe operating condition. Always make certain nuts and bolts are tight and always use the supplied self-locking hardware. Do not use substitute hardware.
- Always shut off the Tractor engine ATFD BRUSH MOWER engine, wait five (5) minutes to cool, and disconnect the spark plug wire(s) before attempting to remove grass or debris from the underside of the deck.
- Use the ATFD BRUSH MOWER only in daylight and give complete and undivided attention to the job at hand.
- Do not hurry or take things for granted when using the ATFD BRUSH MOWER. When in doubt about the machine or your surroundings, stop the mowing activity and take time to look things over.
- Disengage the blades and exercise extreme caution when on or crossing drives, walks, or roads. Stay alert for hidden hazards or traffic.
- If leaving the machine, shift the Tractor into neutral and set the parking brake; turn off the Tractor engine and remove its key; turn off the ATFD BRUSH MOWER engine and remove its key.

A Note to All Users

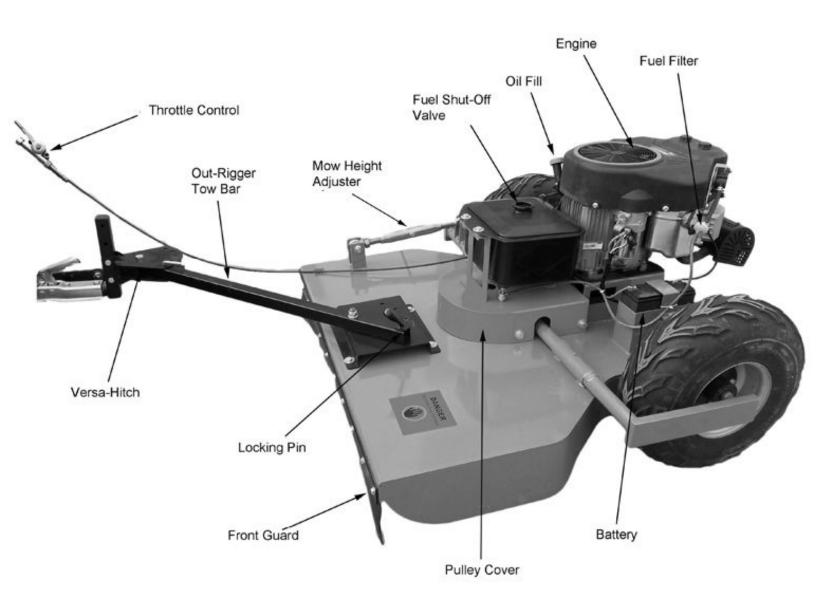
Under California law, and the laws of some other states, you are not permitted to operate an internal combustion engine using hydrocarbon fuels without an engine spark arrester. This also applies to operation on US Forest Lands. All ATFD BRUSH MOWERS shipped to USA, Europe, and Asian are provided with spark arresters. Failure of the owner or operator to maintain this equipment in compliance with state regulations is a misdemeanor under California law and may be in violation of other state and/or federal regulations. Contact your State Park Association or the appropriate state

organization for specific information in your area.

No list of warnings and cautions can be all-inclusive. If situations occur that are not covered by this manual, the operator must apply common sense and operate this ATFD BRUSH MOWER in a safe manner.

It may be helpful to familiarize yourself with the controls and features of your ATFD BRUSH MOWER by reviewing $Figure\ 1$ before beginning these procedures.

ATFD BRUSH MOWER Controls and Features



Model	ATVD-120
Description	25HP Vertical Shaft Double Cylinder Engine(Electric Start) 3600RPM
Oil Capacity	15L
Cutting Speed	10-12KM/H
Maximum Towing Speed	35KM/H
Cutting Height	1" -14" (25-355MM)
With 12V DC Battery	
Cutting Width	46" (1168MM)
Coupler Size	2"
Package Size	111× 129× 72CM
G. W.	528LBS/240KGS
N. W.	473LBS/215KGS

Unpacking and Assembling the Machine

Unpacking and assembling the ATFD BRUSH MOWER is a two-person job as the 13 HP unit weighs 442 pounds and the 17 HP unit weighs 465 pounds. We recommend you have an extra set of hands available before you begin.

Electric Start models have the Key located on the rear of the Battery Strap as shown in Figure 1 on page 7.

Parts Supplied in Crate:

- ATFD BRUSH MOWER
- Safety & Operating Instructions Manual
- Briggs & Stratton or Kawasaki Engine Manual
- Small Parts Bag:
 - Hook and Loop Straps Plastic hose (oil drain) Extra Zip-Tie Wraps

Tools and Supplies Needed:

- Pry Bar
- · Metal Shears
- Hammer
- Gloves and Eye Protection

A CAUTION!

- Stabilize the shipping container on clean flat terrain before attempting to unpack and assemble the machine.
- Always wear eye protection and stand to one side when cutting the banding. The banding is under a lot of tension and can cause injury when you release the tension.
- · Use caution around exposed nails when uncrating the machine.
- 1. Pry off and remove the top cross members of the shipping crate. Be careful of the nails when removing the boards.
- 2. Pry off and remove the crate sides; the two (2) long sides first, and then the two (2) short sides.
- 3. Stand to one side and cut any bands holding the machine to the shipping pallet and the bands holding the Remote Control Panel carton to the Push Bar. Be careful when cutting the banding.

A CAUTION!

Wear gloves and be very careful when handling the deck. The blades are very sharp, and may spin as you maneuver the deck.

- The Out-Rigger™ Tow Bar shipped unassembled; remove it from the pallet.
- 5. Raise the Mower Deck Height to the highest setting (7-1/2") to clear the blocking beneath the back of the machine (see page 24) and then roll the Mower off the shipping pallet.
- 6. Remove the Blade Protector from the Blades. (See CAUTION note above)
- 7. Do not discard your pallet and packaging material until you are fully satisfied with your new ATFD BRUSH MOWER.

About the Battery

The ATFD BRUSH MOWERS come with a 12-Volt, maintenance-free, rechargeable, sealed lead acid Battery. Properly maintained and charged, the Battery provides years of dependable service.

• WARNING!

- Never modify the ATFD BRUSH MOWER'S electrical system. Modifications could ruin the electrical system as well as cause a fire, resulting in serious injury.
- Using electrical components other than those supplied with your machine could cause the electrical system to overheat, explode, or start a fire.
- Using the wrong type of battery or charger could cause a fire or explosion, resulting in serious injury.
- Use the charger only in dry locations. Avoid contact with water.
- Only adults should handle the battery. It contains sulfuric acid (an electrolyte) and the battery is heavy; dropping it could result
 in serious injury.
- Never allow children to charge the battery. THE ELECTRICITY INVOLVED IN CHARGING THE BATTERY COULD CAUSE SEVERE INJURY.
- Examine the charger, its connectors, and the battery for excessive wear or damage each time you charge the battery. Replace any components showing excessive wear or damage.
- Never lift or carry the battery by the cables or terminals. This can damage the battery and possibly start a fire, resulting in serious injury. Lift and carry the battery only by its case.
- Do not short circuit the battery.
- Read the safety instructions on the battery.



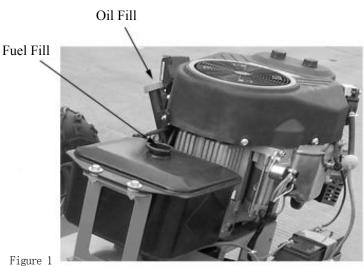
NOTICE!

- You must add oil before starting the engine. This machine is shipped without oil. Traces of oil may be in the reservoir from factory testing, but YOU MUST ADD OIL BEFORE STARTING THE ENGINE. Fill the reservoir slowly, checking the level frequently to avoid overfilling.
- To get an accurate reading when checking the oil level:
 - the machine should be on a level surface.

Tip: To avoid confusion, we recommend leaving the caps ON the Fuel and Oil Fills until you are ready to pour either gasoline or oil into the correct Fill.

NOTE: Use only SAE 30 HD (High Detergent) oil. Other types of oil could cause problems with the operation of your machine. Please refer to your Engine Owner's Manual for detailed oil information.

- 1. Place the machine on a level surface and wait for a minute.
- 2. Check the Dipstick and continue adding a few ounces of oil at a time, rechecking the Dipstick until the oil reaches the fill mark. Be careful not to overfill.
- 3. Fill the gas tank to within 1-1/2 inches below top of fill neck (to allow for fuel expansion) with fresh, unleaded gas. See the Engine Owner's Manual for more information.



25 HP Engine

Connecting the ATFD BRUSH MOWER to your Tractor

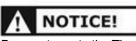
The Versa-Hitch™ on the ATFD BRUSH MOWER Out-Rigger™ Tow Bar has four positions to accommodate different Tractor hitch heights. The Versa-Hitch™ positions are also for leveling the machine according to the Cutting Height setting of the machine. See page 16.

1. Move your Tractor to a reasonably flat area and set the Parking Brake.

Attaching the ATFD BRUSH MOWER



For the machine to work properly, It is important to use the Versa-Hitch™ height setting that positions the Out-Rigger™ Tow Bar level with the ground.



Be sure to route the Throttle Cable and Control Wire Harness between the Hitch and the Remote Control Panel away from the muffler of the Tractor.

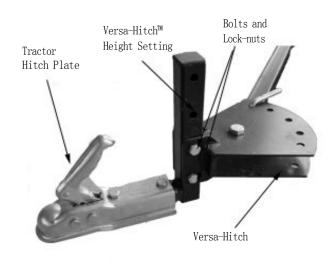


Figure 2

This chapter covers the procedures for starting and stopping your new ATFD BRUSH MOWER and discusses basic operation features. You may find it helpful to review the ATFD BRUSH MOWER Controls and Features on page 7 before reading this chapter.

• WARNING!

- This machine is designed for cutting grass and brush. Never use this machine for any other purpose as it could cause serious injury.
- Contact with internal rotating parts will cause serious personal injury. Never put hands, face, feet, or clothing under the deck or near the discharge area with the engine running.
- Before performing any maintenance procedure or inspection, stop the engine and wait five (5) minutes to allow all parts to stop and cool. Disconnect the spark plug wire(s) keeping it away from the spark plug(s).

Operating Parameters

We recommend a few types of Tractors for the ATFD BRUSH MOWER. The Tractor may be either 2 or 4 wheel drive, but some vehicle types are not suitable for rough hilly terrain or heavy brush conditions. See the Tractor Restrictions section below.

- ATV
- · Lawn/Garden Tractor (17 HP and above and weighing at least 500 pounds)
- Riding Lawn Mower (14 HP and above and weighing at least 400 pounds)
- · Utility Vehicle
- Compact or Sub-Compact Tractor

Tractor Restrictions:

- You must be able to secure the Remote Control Panel of the ATFD BRUSH MOWER within easy reach
 of the driver seated on the Tractor. The front of the Control Panel is 5' from the Versa-Hitch™. A Utility Vehicle with a
 bed longer than 2 ft. will not meet this restriction so you cannot use it as a Tractor.
- Riding Lawn Mowers with Engines under 17 HP and weighing less than 500 pounds are not suitable for use on slopes greater than 5?
- Never operate your ATFD BRUSH MOWER on slopes greater than 20?using any type of Tractor.
- If your Tractor will not travel by itself over the terrain you plan to use it with the ATFD BRUSH MOWER, then it will not be suitable as a Tractor over that terrain.

Tip: Riding Lawn Mowers will work best as a Tractor with their cutting deck removed.

A CAUTION!

- We do not recommend driving over 5 mph on flat terrain and over 4 mph on rough terrain while operating your
 - ATFD BRUSH MOWER.
- Never use a truck (2 or 4wd) or jeep to operate the ATFD BRUSH MOWER. It would be difficult to
 see and you cannot operate the mower controls from these types of Tractors. Using these vehicles will void the ATFD
 BRUSH MOWER warranty.

• WARNING!

Inspect the area where you will be working. The site must be free of potentially hazardous obstacles such as glass, large stones, sticks, wire, rope, and string-like materials. Make sure there are no people or animals in the area around the ATFD BRUSH MOWER.

- Check the oil level every time you use the machine.
- 2. Check the gasoline level.
- 3. Open the Fuel Shut-Off Valve, which is located in the Fuel Line.
- 4. Make sure the Blade Control Knob is pushed down to the disengaged position.

NOTE: The Blade Control Knob must be DOWN, or the Engine will not start.

Starting

- 1. Push the Blade Control Knob down to disengage the Blades.
- 2. When starting a cold Engine, push the Throttle Control Lever up to the CHOKE position. When starting an already warm Engine, push the Throttle Control Lever down to the RUN position.
- 3. Turn the Key Switch to the center position (ON), and then to the START position until the Engine starts, then release. The Key will snap back to the center position (ON) and the Engine will continue to run.
- 4. As the Engine warms up, slowly adjust the Throttle to the Run position. Wait until the Engine runs smoothly before each Throttle adjustment. For maximum performance, operate the Engine with the Throttle in the RUN position.

Stopping the Engine

- 1. Disengage the Blades by pushing the Blade Control Knob down.
- 2. Move the Throttle Control Lever all the way down to the IDLE position and turn the Key to STOP.
- 3. Remove the Key for safety. The Key has a pressure lock that prevents it from vibrating loose during operation. To remove the Key, push it in and then quickly and firmly pull it out. If the Key becomes difficult to remove, apply a non-conductive lubricant into the Keyhole.

NOTE: Close the Fuel Shut-Off Valve when transporting or storing the ATFD BRUSH MOWER.



Never stop the engine by moving the throttle control lever to the choke position. This could cause an engine backfire resulting in engine damage.

Engaging the Blades

1. Engage the Blades by pulling UP on the Blade Control Knob.

Stopping the Blades

1. Push DOWN on the Blade Control Knob.

! WARNING!

- Shut off the engine before adjusting the deck height or serious injury may result. The blades could sever your foot if it sticks under the deck with the engine running.
- Never get off the Tractor without first stopping the blades and shutting off the Tractor engine and the ATFD BRUSH MOWER engine.

NOTE: The ATFD BRUSH MOWER Deck has four (4) cutting heights, 4", 5-1/4", 6-1/2" and 7-3/4".



Keep your foot clear of the mower deck when adjusting the height. You could pinch your foot if it sticks under the deck.



Figure 3

Offset Mowing

The Out-Rigger™ Tow Bar allows you to offset the cutting path of the ATFD BRUSH MOWER up to 100% from the Tractor. The provided locking positions are 0%, 50%, 75%, and 100%. Offset mowing allows you to mow closer to equipment, trees, and fences and to drive in area already cut.

! CAUTION!

When performing offset mowing, always be sure that the Out-Rigger™ Tow Bar angle setting (Figure 7) and the Versa-Hitch™ angle setting match. This allows the ATFD BRUSH MOWER to track parallel to the Tractor.

Offset at the Tow Bar Mount Plate:

- Lift the Handle of the Tow Bar Locking Pin and rotate it to align the Spring Pins with the slot in the Tow Bar. Continue lifting until both Spring Pins are above the Tow Bar.
- 2. Rotate the Handle again until the Bottom Spring Pin is 90?to the Slots in the Tow Bar and lower the Handle until the Bottom Spring Pin rests on the Tow Bar. This is the unlocked position.
- 3. Move the Mower, using the Push Bar, until you have approximately aligned the Tow Bar with the desired Offset angle.
- 4. Lift the Handle and twist it until the Spring Pins align with the Slots in the Tow Bar. Press down to be sure to seat the Pin in the Mounting Plate hole at the desired location.

NOTE: If the Tow Bar alignment is correct and the Locking Pin is properly positioned, the Upper Spring Pin will not be showing. If the Upper Pin is still visible, adjust the Tow Bar angle by moving the Mower until the Locking Pin can be pushed down into place and the Upper Pin is no longer visible.

5. Rotate the Handle to position the Upper Spring Pin out of alignment with the Slot in the Tow Bar.

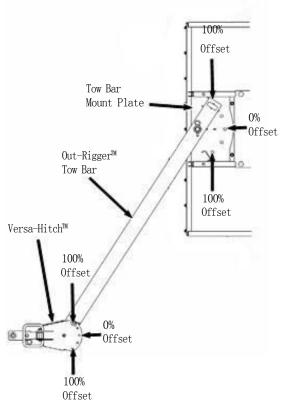


Figure 4

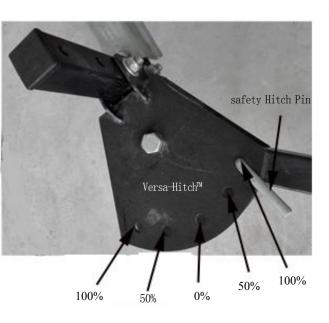


Figure 5

Offset at the Versa-Hitch™:

 Remove the Safety Hitch Pin (Figure 5) from the Versa-Hitch™ and pull the Out-Rigger™ Tow Bar to the position that matches the Tow Bar position on the Deck. Re-attach the Safety Hitch Pin.

NOTE: The Versa-Hitch™ is parallel to the machine when the Offset at the Deck and the Offset at the Hitch are matched correctly.

Slopes and Uneven Terrain

! WARNING!

- Check the owner's manual for your Tractor to determine its recommended towing capabilities on slopes.
- When operating the ATFD BRUSH MOWER over uneven terrain or slopes, use extreme caution not to tip over the machine.
- Never use the ATFD BRUSH MOWER on slopes greater than 20 degrees. Doing so could result in serious injury or damage to your machine.
- If you have to mow on sloping terrain, mow up and down, never across the slope, for better control.

If the machine gets hung up

- 1. Disengage the Blades and STOP the Engine. NEVER try to free the machine from stumps or debris with the Blades engaged.
- 2. Try driving over or backing away from the obstacle.

! WARNING!

- If you need to leave the Tractor to clear debris from the mower deck, set the parking brake and shut off the Tractor
 engine, disengage the mower blades, shut off the ATFD BRUSH MOWER engine and disconnect the
 spark plug wire(s).
- Never touch the exhaust areas when reaching for the spark plugs; they may be very hot.

Cutting Brush and Saplings

- 1. The cutting capacity is 1-1/2" saplings.
- 2. When cutting woody material, small saplings, etc., allow the machine to ride up and over material slowly. Adjust your forward speed to varying conditions.
- 3. After cutting brush, etc., you may want to mow over it again to remove any remaining branches. It works best to mow from the trunk end toward the top as brush lies on the ground.
- 4. If you are using Offset Mowing, keep the Offset at 75% when cutting heavy brush.

Cutting Wet and Heavy Growth

- 1. Avoid steep slopes and other slippery areas.
- 2. Use a lower, slower speed when moving in wet conditions.

Chapter 4: Maintaining The ATFD BRUSH MOWER

This chapter covers regular maintenance procedures that will ensure the best performance and long life of your ATFD BRUSH MOWER. For Engine maintenance, please refer to the Engine Owner's Manual that came with your machine. Service intervals listed in the checklist below supersede those listed in the Engine Owner's Manual.

! WARNING!

- When performing any adjustment or maintenance, you must first shut off the engine, wait five (5) minutes to allow parts to cool and disconnect the spark plug wire(s), keeping it away from the spark plug(s).
- Some of the following procedures require access to the underside of the machine. If you need to tip the machine back or on
 its side, you must first disconnect the spark plug wire(s), and drain the oil and gas.

Regular Maintenance Checklist

NOTE: Consider the service intervals shown as maximum under normal operating conditions. Increase frequencies under extremely dirty or dusty conditions.

Procedure	Before Each Use	Every 20 Hours	Every 100 Hours
Check Engine Oil Level	~		
Check General Condition, e.g. nuts, bolts, welds, etc.	~	100	
Check the Blades Sharpness	77		
Inspect the Debris Guard	~		
Clean Engine Exterior & Cooling Fins	7.		
Check Cable connections		~	
Check Tire Pressure (psi on side of tire)		~	
Change Engine Oil and Filter NOTE: 1st time after 5	200	~	
Replace Air Filter	8 4		~
Replace Spark Plug(s)			~
Replace In-line Gas Filter			~

Removing and Replacing the Engine Oil and Filter

! WARNING!

When performing any adjustment or maintenance, you must first shut off the engine, wait five (5) minutes to allow parts to cool and disconnect the spark plug wire(s), keeping it away from the spark plug(s).

NOTE: Drain the oil when the Engine is warm. Warm oil drains quickly and completely.

Tools and Supplies Needed:

- Oil Filter Wrench (obtainable from a local auto parts or hardware store)
- · Rags and a suitable container for used oil
- SAE 30 High Detergent Oil

1. Attach the Plastic Hose provided to the Quick Release Oil Drain Valve located on the side of the Engines (Figure 6). Turn the Valve counterclockwise and pull out to drain the oil into a suitable oil receptacle.



Figure 6

- 2. The Engine Oil Filter is located on the side of the Engine. Using an Oil Filter Wrench, or grasping the Oil Filter firmly with your hand, unscrew the Oil Filter counterclockwise from the Engine. BE SURE THAT THE OLD FILTER GASKET COMES OFF WITH THE FILTER.
- 3. Wipe the mounting base for the Oil Filter with a clean cloth.
- 4. Apply a thin coat of clean motor oil to the new Oil Filter Gasket. DO NOT USE GREASE.
- 5. Line up the threads carefully to avoid cross threading and screw the new Oil Filter on until the Filter Gasket contacts the base, and then tighten the Oil Filter 3/4 to 1 turn. DO NOT OVER TIGHTEN.
- 6. Replace the oil by following the instructions on page 10.
- 7. Reattach the Spark Plug wire(s).

NOTE: Be sure to use environmentally safe disposal procedures in the disposing of the used oil.

Removing and Replacing the Blades' Drive Belt

• WARNING!

When performing any adjustment or maintenance, you must first shut off the engine, wait five (5) minutes to allow parts to cool and disconnect the spark plug wire(s), keeping it away from the spark plug(s).

NOTICE!

Use only original belts on your machine. They have been thoroughly tested and proven for many hours of use.

Tools and Supplies Needed:

- 7/16" and 1/2" Wrench or Socket
- Flat Screwdriver
- 9/16" Wrench
- · Side Cutters or Scissors
- Hooked End Pulling Tool Optional (we suggest a Tent Peg Puller)

- 1. Turn the Fuel Shut-Off Valve to the OFF position.
- 2. Using a 7/16" Wrench or Socket, remove the four Bolts, Lock Washers, and Flat Washers that retain the Pulley Cover and remove the Cover.
- 3. Remove the Strain Relief (with Wire Harness) from the Fuel Tank Mount by pushing the tabs in with a screwdriver and pushing it out of the cutout.
- Disconnect the Throttle Cable from the Engine and then slide it from behind the Fuel Tank Straps. See page 12 and follow the steps in the reverse order for your Engine.
- 5. Using a 1/2" Wrench or Socket, remove the four Bolts and Lock Washers that retain the Fuel Tank Mount.
- 6. Carefully lift and set the Fuel Tank Mount to the Fuel Line side of the Engine.
- 7. Using the rigger screw adjusting the tightness of the belt.

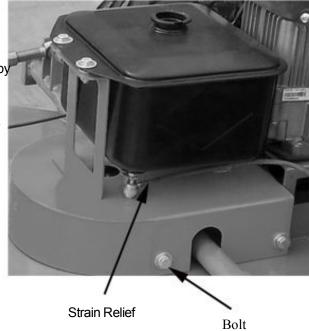


Figure 7

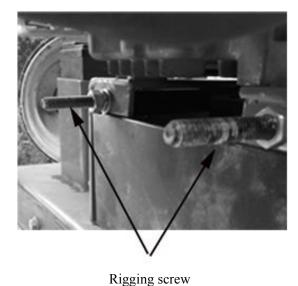


Figure 9

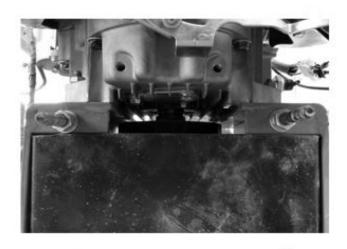


Figure 8

Removing and Replacing the Swinging Blades

NOTE: Replace the Blade(s) when worn or damaged.

! WARNING!

When performing any adjustment or maintenance, you must first shut off the engine, wait five (5) minutes to allow parts to cool and disconnect the spark plug wire(s), keeping it away from the spark plug(s).

Tools and Supplies needed:

- Two 15/16" Wrench
- Gloves
- 1. Using two 15/16" Wrenches, remove the Top Lock Nut (right-hand, regular thread), the Backing Nut, and then the Blade Bolt followed by the Pro-Tek™ Swinging Blade.

• WARNING!

Use caution when pushing or pulling the wrench next to the blade. Wear gloves; if the wrench slips off the bolt, you may be seriously injured.

- Reinstall the sharpened or a new Pro-Tek™ Swinging Blade in the orientation shown.
- 3. Install the Backing Nut until it seats finger tight against the Blade Carrier to allow for the Blade Swinging action.
- 4. Using two 15/16" Wrenches, install and tighten the Lock Nut against the Backing Nut while holding the Backing Nut with one Wrench and tightening the Lock Nut with the other Wrench.
- 5. Repeat steps 1 through 3 for the other Pro-Tek™ Swinging Blade.

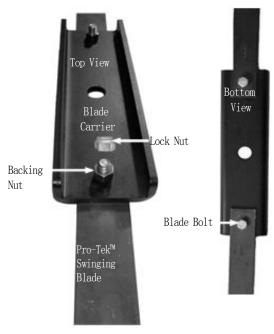


Figure 11

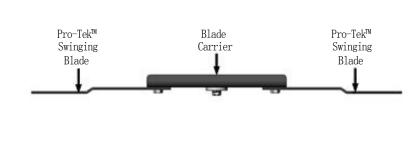


Figure 10

Debris Guard Replacement

The purpose for this section is to be sure the operator of the ATFD BRUSH MOWER is aware of the potential unsafe condition of operating the machine with a damaged Debris Guard.

! WARNING!

- When performing any adjustment or maintenance, you must first shut off the engine, wait five (5) minutes to allow parts to cool and disconnect the spark plug wire(s), keeping it away from the spark plug(s).
- Do not operate your ATFD BRUSH MOWER with a damaged debris guard. Failure to replace the damaged debris guard can result in thrown objects hitting the operator, which can cause severe injury.
- Inspect the Debris Guard before each use and often during use. If you notice damage to the Debris Guard, DO NOT continue to use your machine.
- Consider a Debris Guard (Figure 26) damaged when a flap is missing or torn.
- If your Debris Guard is damaged call us Toll-Free at 1-800-OWNER and we will ship a replacement at no cost to you.
- If you have any questions, please call Toll-Free at 1-800-OWNER. Our Technical Service Support Staff is available between 8:30 am and 5:00 pm Eastern Time, Monday through Saturday.

Battery Care

Proper care can extend the life of a Battery. Follow these recommendations to ensure your Battery's best performance and long life:

- Do not allow the Battery charge to get too low. If the machine is not used, charge the Battery every 4 - 6 weeks. Operate the Engine for at least 45 minutes to maintain proper Battery charge.
- Store an unused Battery in a dry area that does not freeze.



Debris Guard

Figure 12

Most problems are easy to fix. Consult the Troubleshooting Table below for common problems and their solutions.

! WARNING!

When performing any adjustment or maintenance, you must first shut off the engine, wait five (5) minutes to allow parts to cool and disconnect the spark plug wire(s), keeping it away from the spark plug(s).

Troubleshooting Table

SYMPTOM	Possible Cause
The Engine will not start. (Please refer to the Engine Owner's Manual for Engine—specific procedures.)	 Check all the items under the section called "Starting" on page 15. ⇒ Check that the Blade Control Knob is DOWN in the Disengaged position. ⇒ Make sure the Spark Plug wire(s) is attached. ⇒ If the Engine is cold, make sure the Throttle is in the CHOKE position. See "Starting" on page 15. ⇒ The gas must be fresh and clean. If the gas is old, change it. Use a fuel stabilizer if you keep gas longer than one month. ⇒ Check the Throttle adjustment and travel. See page 12. ⇒ The Spark Plug(s) may be dirty or cracked, change it. ⇒ If the Spark Plug(s) is oily, leave it out, hold a rag over the Plug hole(s) and crank the Engine over a couple of times using the Electric Starter to blow out any oil in the Cylinder(s), then wipe off the Plug(s) and reinsert it. ⇒ The Air Filter may be dirty, change it following the procedure in the Engine Owner's Manual. ⇒ There are two Fuses in the Wiring Harness. Check the Fuses and replace if needed. ⇒ Check the wire connections—especially the ground connection, the large green wire coming from the Battery, where it connects to the Engine. ⇒ The Battery may not be charged. Check the voltage yourself or at a service station. If it is low, charge it with a 12-volt, 1 to 2-amp trickle charger. If you do not use your machine for at least 45 minutes at a time, the Battery may need to be periodically charged. See the "Battery Care" section on page 23.
The Engine lacks power or is not running smoothly. (Please refer to the Engine Owner's Manual for Engine- specific procedures.)	 ⇒ Check the Throttle Lever travel and adjustment. Make sure the Throttle Lever is in the Run position. ⇒ The Air Filter may be dirty, change it following the procedure in the Engine Owner's Manual. ⇒ The Spark Plug(s) may be dirty or cracked, change it. ⇒ If the Spark Plug(s) is oily, leave it out, hold a rag over the Plug hole(s) and crank the Engine over a couple of times using the Electric Starter to blow out any oil in the Cylinder(s), then wipe off the Plug(s) and reinsert it. ⇒ The gas must be fresh and clean. If the gas is old, change it. Use a fuel stabilizer if you keep gas longer than one month. ⇒ The Engine may not have the right amount of clean oil. If it is dirty, change it following the procedure on page 19.

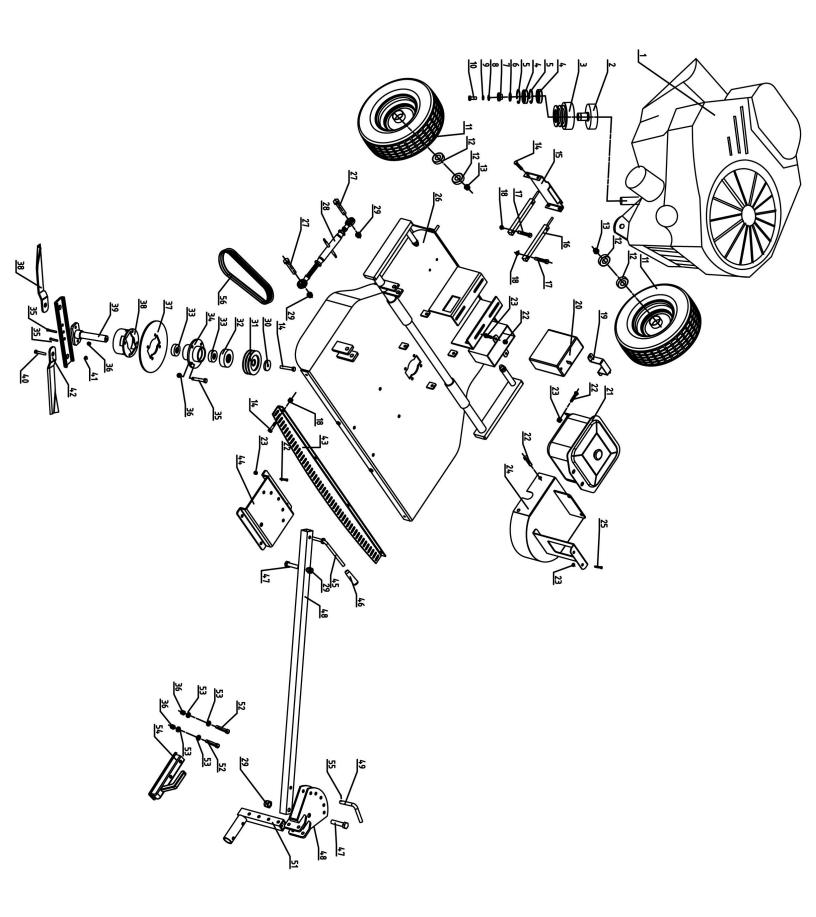
↑ WARNING!

When performing any adjustment or maintenance, you must first shut off the engine, wait five (5) minutes to allow parts to cool and disconnect the spark plug wire(s), keeping it away from the spark plug(s).

Troubleshooting Table (Continued)

SYMPTOM	Possible Cause
Engine smokes.	⇒ Check the oil level and adjust as needed.
	⇒ You may be operating the machine on too great an incline. See "Slopes and Uneven Terrain" on page 18.
	⇒ Check the Air Filter(s) and clean or replace if needed.
	⇒ You may be using the wrong oil—too light for the temperature. Refer to your Engine Owner's Manual for detailed information.
	⇒ Clean the Cooling Fins and the Carburetor housing if they are dirty.
The Belt frays or rolls over the Pulley.	⇒ There may be a nick in a Pulley groove. Check the Belt for wear and hard spots. File off any nicks on the Pulley.
	⇒ The Belt may be stretched; replace it. See page 20.
Blades vibrate when engaged.	⇒ The Blade Carrier Mounting Bolt may not be tight enough. Tighten the Bolt as tight as possible by hand with at least a 1ft long 13/16" Wrench.
	⇒ A Swinging Blade may be too loose on the Blade Carrier. Re-tighten the Swinging Blade mounting hardware. See page 22. Be sure to turn OFF the Engine and remove the Spark Plug wire(s) before performing this operation.
	⇒ Replace a Swinging Blade if it is chipped, bent, or broken.
	⇒ The Spindle Bearings may be damaged or the Spindle Shaft is bent.
The Blades are not cutting or are loose.	⇒ The Blade Carrier Mounting Bolt may not be tight enough. Tighten the Bolt as tight as possible by hand with at least a 1ft long 13/16" Wrench.
	⇒ A Swinging Blade may be too loose on the Blade Carrier. Re-tighten the Swinging Blade mounting hardware. See page 22. Be sure to turn OFF the Engine and remove the Spark Plug wire(s) before performing this operation.
	⇒ Sharpen the Swinging Blades; they may be dull or nicked.
The Blades will not Engage and/or Disengage.	⇒ Faulty Blade Control Switch. Remove and replace the Switch on the Remote Control Panel.
Uneven cut.	⇒ The Step & Mow™ Height Adjuster and Versa-Hitch™ position are out of sync. Adjust the cutting height or Versa-Hitch™ position so that the Out-Rigger™ Tow Bar is level with the ground.
	⇒ Left and Right Step & Mow™ Height Adjusters are not at the same setting.
Clogging at discharge.	⇒ The Step & Mow [™] Height Adjuster and Versa-Hitch [™] position are out of sync. Adjust the cutting height or Versa-Hitch [™] position so that the Out-Rigger [™] Tow Bar is level with the ground.
Excessive Engine stalling.	⇒ The brush or grass is too heavy at the current cutting height or at the current Tow Vehicle speed. Raise the cutting height and drive slower when cutting.

Chapter 6: Parts Lists, Schematic Diagrams And Warranty



Ser. No.	Part No.	Name & Specification	Quantity	Remarks
1		Engine 25HP LC2P82F	1	
2	HZR96. 7	Clutch	1	
3	AT120-109	Driving belt wheel	2	
4	GB278-89	Bearing 6007	2	
5	GB893. 1-86	Circlip 62	1	
6	GB894. 1-85	Circlip 35	1	
7	AT120-110	Sleeve	1	
8	GB97. 1-85	Plain washer 12	1	
9	GB93-87	Spring washer 12	1	
10	GB5783-86	Blot M12X30	1	
11		Tyre	2	
12	GBT278-94	Bearing 6205	4	
13	GB6184-86	Locknut M18	2	
14	GB5783-86	Blot M8X25	9	
15	FMP22-102	rear plate	1	
16	FMP22-125	adjustment bar	2	
17	GB5783-86	Blot M8X60	4	
18	GB6184-86	Locknut M8	8	
19	ATFD120-101	pressing plate	1	
20		storage battery 12v	1	
21	ATFD120-102	tank	1	
22	GB5783-86	Blot MOX25	10	
23	GB6184-86	Locknut M10	9	
24	ATFD120-103	Protecting for transmisson	1	
25	GB5783-86	Blot M10X35	2	
26	ATFD120-201	main frame	1	
27	GB5783-86	Blot M16X85	2	
28	ATFD120-104	adjustment screw	1	
29	GB6184-86	Locknut M16	4	
30	GB96-85	washer M8	1	
31	ATFD120-105	driven belt wheel	1	
32	ATFD120-106	protecting ring	1	
33	GB/T276-94	Bearing 6007	2	
34	ATFD120-107	flange	1	
35	GB5783-86	Blot M12X40	6	
36	GB6184-86	Locknut M12	5	
37	ATFD120-108	stiffening plate	1	
38	ATFD120-109	protecting cover	1	
39	ATFD120-110	shaft	1	

Ser. No.	Part No.	Name & Specification	Quantity	Remarks
40	GB5783-86	Blot M20X70	2	
41	GB6184-86	Locknut M20	2	
42	ATFD120-111	blade	2	
43	ATFD120-112	front protecting plate	1	
44	ATFD120-113	connection plate	1	
45	ATFD120-114	lock pin	1	
46	ATFD120-115	handlebar grip	1	
47	GB5783-86	Blot M16X75	2	
48	ATFD120-116	ban	1	
49	ATFD120-117	pin	1	
50	ATFD120-202	connection base	1	
51	ATFD120-202	connection bar	1	
52	GB5783-86	Blot M12X80	2	
53	GB96-85	washer M12	4	
54	AT120-215	Bracket for traction	1	
55	GB91-86	Split pin 4*25	1	
56		V-belt BX26	2	

Daily Checklist for the ATFD BRUSH MOWER

To help maintain your ATFD BRUSH MOWER for optimum performance, we recommend you follow this checklist each time you use your machine.

↑ WARNING!

When performing any adjustment or maintenance, you must first shut off the engine, wait five (5) minutes to allow parts to cool and disconnect the spark plug wire(s), keeping it away from the spark plug(s).

[Check the engine oil and Gas Tank level.
[]	Check that Engine is clean of debris.
[]	Check the general condition of the Mower, e.g.; nuts, bolts, welds, etc.
[]	Check Tire Pressure and wear.
[]	Check the Frame for wear and damage.
[]	Check the Blades and Spindle for tightness, nicks, cracks, wear or debris that has wrapped around.
[]	Check that the Remote Control Panel is secure.
[]	check the Debris Guard for wear or damage.

End of Season and Storage

! WARNING!

When performing any adjustment or maintenance, you must first shut off the engine, wait five (5) minutes to allow parts to cool and disconnect the spark plug wire(s), keeping it away from the spark plug(s).

NOTE: Please refer to the Engine Owner's Manual for Engine-specific procedures.

- · Change the Engine oil and Oil Filter and replace the Fuel Filter.
- Remove the Spark Plug(s) and pour about 1 ounce of motor oil into the Cylinder hole. Replace the Plug(s) and crank the Engine over a couple of times using the Electric Starter. This will coat the pistons and seat the valves to prevent moisture buildup.
- Clean or replace the Air Filter(s).
- Clean dirt and debris from the Cylinder Head Cooling Fins, Blower Housing, Debris Screen, and Muffler area of the Engine.
- If your ATFD BRUSH MOWER will be idle for more than 30 days, we recommend using a gas stabilizer. This will
 prevent sediment from gumming up the Carburetor. If there is dirt or moisture in the gas or tank, remove it by draining the tank.
 Completely fill the tank with fresh, unleaded gas and add the appropriate amount of stabilizer or gasoline additive. Run the Engine for a short time to allow the additive to circulate.
- Remove any wrapped weeds from the Blades Carrier Housing. Clean grass and debris from the top and underneath the mower Deck with a stiff brush.
- Check the Blades for nicks and wear. Remove the Blades and sharpen them, or have them professionally sharpened if needed.
- Touch-up all rusted or chipped paint surfaces. Sand them lightly before painting.
- · Be sure all nuts, bolts, and screws are securely fastened.
- Inspect moving parts and the Blades' Drive Belt for damage and wear; replace if necessary.
- Store the Battery in a dry area that will not freeze. If you will not use the machine over a long period, charge the Battery every four to six weeks.
- If possible, store your ATFD BRUSH MOWER inside, but not near an open flame or spark such as found in a water heater.
- After the ATFD BRUSH MOWER has cooled, cover the machine with a suitable protective cover that does not retain moisture. Do not use plastic as this material cannot breathe; it also allows condensation to form, which will cause your machine to rust.