

1 INTRODUCTION

Congratulations on your choice of an AgriMetal Self-Propelled Blower to complement your operation. This equipment has been designed and manufactured to meet the needs of a discerning turf care industry.

Safe, efficient and trouble free operation of your AgriMetal Self-Propelled Blower requires that you and anyone else who will be operating or maintaining the machine, read and understand the Safety, Operation, Maintenance and Trouble Shooting information contained within the Operator's Manual.



This manual covers the Model Self-Propelled Blower. Use the Table of Contents or Index as a guide to locate required information.

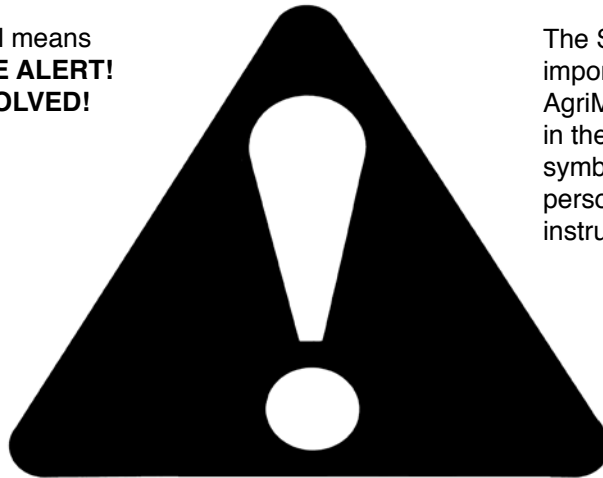
Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your AgriMetal Dealer or Distributor if you need assistance, information or additional copies of the manuals.

OPERATOR ORIENTATION - The directions left, right, front and rear, as mentioned throughout this manual, are as seen from sitting on the driver's seat and facing in the direction of travel.

2 SAFETY

SAFETY ALERT SYMBOL

This Safety Alert symbol means
ATTENTION! BECOME ALERT!
YOUR SAFETY IS INVOLVED!



The Safety Alert symbol identifies important safety messages on the AgriMetal Self-Propelled Blower and in the manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is SAFETY important to you?

3 Big Reasons

Accidents Disable and Kill
Accidents Cost
Accidents Can Be Avoided

SIGNAL WORDS:

Note the use of the signal words **DANGER**, **WARNING** and **CAUTION** with the safety messages. The appropriate signal word for each message has been selected using the following guide-lines:

**SI NO LEE INGLES, PIDA AYUDA
A AIGUIEN QUE SI LO LEA PARA
QUE LE TRADUZCA LAS
MIDIDAS DE SEGURIDAD.**

DANGER - Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.

WARNING - Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

CAUTION - Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

If you have any questions not answered in this manual or require additional copies or the manual is damaged, please contact your dealer or AgriMetal Inc., 1006 Rue Principale, Wickham, Quebec, Canada, J0C 1S0. Phone (819) 398-6883 or fax (819) 398-5311.

SAFETY

YOU are responsible for the SAFE operation and maintenance of your AgriMetal Self-Propelled Blower. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the Blower be familiar with the operating and maintenance procedures and related **SAFETY** information contained in this manual. This manual will take you step-by-step through your working day and alerts you to all good safety practices that should be adhered to while operating the Blower.

Remember, **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** operating this equipment is familiar with the recommended operating and maintenance procedures and follows all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

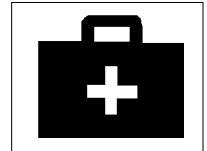
- Blower owners must give operating instructions to operators or employees before allowing them to operate the machine, and at least annually thereafter per OSHA (Occupational Safety and Health Administration) regulation 1928.57.
- The most important safety device on this equipment is a SAFE operator. It is the operator's responsibility to read and understand ALL Safety and Operating instructions in the manual and to follow these. Most accidents can be avoided.
- A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death.
- Do not modify the equipment in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment.
- Think SAFETY! Work SAFELY!

2.1 GENERAL SAFETY

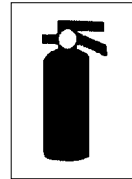
1. Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting or unplugging the Blower.



2. Have a first-aid kit available for use should the need arise and know how to use it.



3. Have a fire extinguisher available for use should the need arise and know how to use it.



4. Do not allow riders.

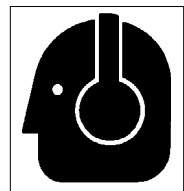
5. Wear appropriate protective gear. This list includes but is not limited to:

- A hard hat
- Protective shoes with slip resistant soles
- Protective glasses or goggles
- Heavy gloves
- Wet weather gear
- Hearing protection
- Respirator or filter mask



6. Install and secure all guards before starting.

7. Wear suitable ear protection for prolonged exposure to excessive noise.



8. Place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
9. Clear the area of people, especially small children, before starting the unit.
10. Review safety related items annually with all personnel who will operating or maintaining the Blower.

2.2 EQUIPMENT SAFETY GUIDELINES

1. Safety of the operator and bystanders is one of the main concerns in designing and developing a machine. However, every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment. You, the operator, can avoid many accidents by observing the following precautions in this section. To avoid personal injury or death, study the following precautions and insist those working with you, or for you, follow them.
2. In order to provide a better view, certain photographs or illustrations in this manual may show an assembly with a safety shield removed. However, equipment should never be operated in this condition. Keep all shields in place. If shield removal becomes necessary for repairs, replace the shield prior to use.
3. Replace any safety sign or instruction sign that is not readable or is missing. Location of such safety signs is indicated in this manual.
4. Never use alcoholic beverages or drugs which can hinder alertness or coordination while operating this equipment. Consult your doctor about operating this machine while taking prescription medications.
5. **Under no circumstances should young children be allowed to work with this equipment. Do not allow persons to operate or assemble this unit until they have read this manual and have developed a thorough understanding of the safety precautions and of how it works.** Review the safety instructions with all users annually.
6. This equipment is dangerous to children and persons unfamiliar with its operation. The operator should be a responsible, properly trained and physically able person familiar with machinery and trained in this equipment's operations. If the elderly are assisting with work, their physical limitations need to be recognized and accommodated.
7. Never exceed the limits of a piece of machinery. If its ability to do a job, or to do so safely, is in question - **DON'T TRY IT.**
8. Do not modify the equipment in any way. Unauthorized modification result in serious injury or death and may impair the function and life of the equipment.
9. In addition to the design and configuration of this implement, including Safety Signs and Safety Equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of the machine. Refer also to Safety Messages and operation instruction in each of the appropriate sections of the engine and machine Manuals. Pay close attention to the Safety Signs affixed to the machine.

2.3 SAFETY TRAINING

1. Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator or bystander.
2. In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of this equipment.
3. It has been said, "The best safety feature is an informed, careful operator." We ask you to be that kind of an operator. It is the operator's responsibility to read and understand ALL Safety and Operating instructions in the manual and to follow these. Accidents can be avoided.
4. Working with unfamiliar equipment can lead to careless injuries. Read this manual, and the manual for your tow vehicle, before assembly or operating, to acquaint yourself with the machines. If this machine is used by any person other than yourself, or is loaned or rented, it is the machine owner's responsibility to make certain that the operator, prior to operating:
 - a. Reads and understands the operator's manuals.
 - b. Is instructed in safe and proper use.
5. Know your controls and how to stop engine and machine quickly in an emergency. Read this manual and the one provided with your engine.
6. Train all new personnel and review instructions frequently with existing workers. Be certain only a properly trained and physically able person will operate the machinery. A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death. If the elderly are assisting with work, their physical limitations need to be recognized and accommodated.



2.4 SAFETY SIGNS

1. Keep safety signs clean and legible at all times.
2. Replace safety signs that are missing or have become illegible.
3. Replaced parts that displayed a safety sign should also display the current sign.
4. Safety signs are available from your authorized Distributor or Dealer Parts Department or the factory.

How to Install Safety Signs:

- Be sure that the installation area is clean and dry.
- Be sure temperature is above 50°F (10°C).
- Determine exact position before you remove the backing paper.
- Remove the smallest portion of the split backing paper.
- Align the sign over the specified area and carefully press the small portion with the exposed sticky backing in place.
- Slowly peel back the remaining paper and carefully smooth the remaining portion of the sign in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of sign backing paper.

2.5 OPERATING SAFETY

1. Please remember it is important that you read and heed the safety signs on the Blower. Clean or replace all safety signs if they cannot be clearly read and understood. They are there for your safety, as well as the safety of others. The safe use of this machine is strictly up to you, the operator.
2. All things with moving parts are potentially hazardous. There is no substitute for a cautious, safe-minded operator who recognizes potential hazards and follows reasonable safety practices. The manufacturer has designed this Blower to be used with all its safety equipment properly attached, to minimize the chance of accidents. Study this manual to make sure you have all safety equipment attached.
3. If a safety shield or guard is removed for any reason, it must be replaced before the machine is again operated.
4. When the use of hand tools is required to perform any part of assembly, installation, adjustment, maintaining, repairing, removal, or moving, be sure the tools used are designed and recommended by the tool manufacturer for that specific task.
5. Personal protection equipment including hearing protection, hard hat, safety glasses, safety shoes, and gloves are recommended during assembly, installation, operation, adjustment, maintaining, repairing, removal, or moving. Do not allow long hair, loose fitting clothing, or jewelry to be around moving parts.
6. **Always engage the park brake when stopping engine to prevent machine movement when restarting engine.**
7. Place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
8. Use extreme care when moving. Slow down on turns and watch out for bumps.
9. Never use alcoholic beverages or drugs which can hinder alertness or coordination while operating this equipment. Consult your doctor about operating this machine while taking prescription medications.
10. Do not allow riders on the machine at any time. There is no safe place for any riders.
11. Before you operate the machine, check over all pins, bolts, and connections to be sure all are securely in place. Replace any damaged or worn parts immediately.
12. Do not allow anyone who is not familiar with the safety rules and operation instructions to use this machine.
13. Do not smoke when refueling.
14. Never allow children to operate or be around this machine.
15. Do not reach into blower openings when the engine is running. Keep others away also.
16. Clear the work area of objects which might be picked up and snagged or entangled in the machine.
17. Keep hands, feet, hair, jewelry, and clothing away from all moving and/or rotating parts.
18. Do not direct the air stream toward people, animals or buildings to prevent injury or damage. Do not place hands, feet or other body parts into air stream.
19. Do not run engine in an enclosed area. Exhaust fumes contain carbon monoxide, an odorless and deadly poison.

2.6 TRANSPORT SAFETY

1. The machine is not designed or equipped to travel on public roads. Do not drive or transport on public roads.
2. Use a trailer when moving from place to place.
3. Do not exceed 8 kph (5 mph) when moving.
4. Plan your route to avoid rough terrain.
5. Do not drink and drive.
6. Turn into curves or go up or down hills only at a low speed and at a gradual steering angle. Make certain that at least 20% of the machine's weight is on the rear wheels to maintain safe steering. Slow down on rough or uneven surfaces.
7. Never allow riders on machine.

2.7 STORAGE SAFETY

1. Store the unit in an area away from human activity.
2. Do not permit children to play on or around the stored machine.
3. Store the unit in a dry, level area. Support the frame with planks if required.

2.8 REFUELLING SAFETY

1. Handle fuel with care. It is highly flammable.
2. Allow engine to cool for 5 minutes before refuelling. Clean up spilled fuel before restarting engine.
3. Do not refuel the machine while smoking or when near open flame or sparks.
4. Fill fuel tank outdoors.
5. Prevent fires by keeping machine clean of accumulated trash, grease and debris.



2.9 TIRE SAFETY

1. Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death.
2. Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.
3. Have a qualified tire dealer or repair service perform required tire maintenance.
4. When replacing worn tires, make sure they meet the original tire specifications. Never undersize.

2.10 MAINTENANCE SAFETY

1. Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.

2. Follow good shop practices.

- Keep service area clean and dry.
- Be sure electrical outlets and tools are properly grounded.
- Use adequate light for the job at hand.



3. Make sure there is plenty of ventilation. Never operate an engine in a closed building. The exhaust fumes may cause asphyxiation.

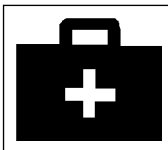
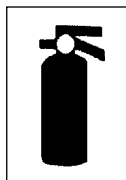
4. Before working on this machine, shut off the engine, set the park brake and remove the ignition key.

6. Never work under equipment unless it is blocked securely.

7. Always use personal protection devices such as eye, hand and hearing protectors, when performing any service or maintenance work.

8. Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not be responsible for injuries or damages caused by use of unapproved parts and/or accessories.

9. A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment.



10. Periodically tighten all bolts, nuts and screws and check that all cotter pins are properly installed to ensure unit is in a safe condition.

11. When completing a maintenance or service function, make sure all safety shields and devices are installed before placing unit in service.

2.11 BATTERY SAFETY

1. Keep all sparks and flames away from batteries, as gas given off by electrolyte is explosive.

2. Avoid contact with battery electrolyte: wash off any spilled electrolyte immediately.

3. Wear safety glasses when working near batteries.

4. Do not tip batteries more than 45 degrees, to avoid electrolyte loss.

5. To avoid injury from spark or short circuit, disconnect battery ground cable before servicing any part of electrical system.

2.12 HYDRAULIC SAFETY

1. Always place all tractor hydraulic controls in neutral before disconnecting from tractor or working on hydraulic system.

2. Make sure that all components in the hydraulic system are kept in good condition and are clean.

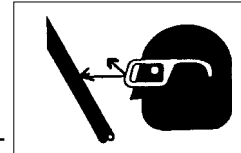
3. Replace any worn, cut, abraded, flattened or crimped hoses.

4. Do not attempt any makeshift repairs to the hydraulic fittings or hoses by using tape, clamps or cements. The hydraulic system operates under extremely high-pressure. Such repairs will fail suddenly and create a hazardous and unsafe condition.

5. Wear proper hand and eye protection when searching for a high-pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to isolate and identify a leak.



6. If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface.



2.13 GAS MOTOR SAFETY

BEFORE STARTING ENGINE, READ AND UNDERSTAND THE OPERATING AND MAINTENANCE INSTRUCTIONS THAT CAME WITH YOUR ENGINE.

WARNING: DO NOT

1. DO NOT run engine in an enclosed area. Exhaust gases contain carbon monoxide, an odorless and deadly poison.
2. DO NOT place hands or feet near moving or rotating parts.
3. DO NOT store, spill, or use gasoline near an open flame, or devices such as a stove, furnace, or water heater which use a pilot light or devices which can create a spark.
4. DO NOT refuel indoors where area is not well ventilated. Outdoor refuelling is preferred.
5. DO NOT fill fuel tank while engine is running. Allow engine to cool for 5 minutes before refuelling. Store fuel in approved safety containers.
6. DO NOT remove fuel tank cap while engine is running.
7. DO NOT operate engine if gasoline is spilled. Move machine away from the spill and avoid creating any ignition until the gasoline has evaporated.
8. DO NOT smoke when filling fuel tank.
9. DO NOT choke carburetor to stop engine. Whenever possible, gradually reduce engine speed before stopping.
10. DO NOT run engine above rated speeds. This may result in injury.
11. DO NOT tamper with governor springs, governor links or other parts which may increase the governed engine speed.
12. DO NOT tamper with the engine speed selected by the original equipment manufacturer.
13. DO NOT check for spark with spark plug or spark plug wire removed. Use an approved tester.
14. DO NOT crank engine with spark plug removed. If engine is flooded, place throttle in "FAST" position and crank until engine starts.
15. DO NOT strike flywheel with a hard object or metal tool as this may cause flywheel to shatter in operation. Use proper tools to service engine.
16. DO NOT operate engine without a muffler. Inspect periodically and replace, if necessary. If engine is equipped with muffler deflector, inspect periodically and replace, if necessary with correct deflector.
17. DO NOT operate engine with an accumulation of grass, leaves, dirt or other combustible materials in the muffler area.
18. DO NOT use this engine on any forest covered, brush covered, or grass covered unimproved land unless a spark arrester is installed on the muffler. The arrester must be maintained in effective working order by the operator. In the State of California the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal lands.
19. DO NOT touch hot muffler, cylinder or fins because contact may cause burns.
20. DO NOT run engine with air cleaner or air cleaner cover removed.

WARNING: DO

1. ALWAYS DO remove the wire from the spark plug when servicing the engine or equipment TO PREVENT ACCIDENTAL STARTING or disconnect the negative wire from the battery terminal.
2. DO keep cylinder fins and governor parts free of grass and other debris which can affect engine speed.
3. DO examine muffler periodically to be sure it is functioning effectively. A worn or leaking muffler should be repaired or replaced as necessary.
4. DO use fresh gasoline. Stale fuel can gum carburetor and cause leakage.
5. DO check fuel lines and fittings frequently for cracks or leaks. Replace if necessary.

2.14 SIGN-OFF FORM

AgriMetal follows the general Safety Standards specified by the American Society of Agricultural Engineers (ASAE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or maintaining the Self-Propelled Blower must read and clearly understand ALL Safety, Operating and Maintenance information presented in this manual.

Do not operate or allow anyone else to operate this equipment until such information has been reviewed. Annually review this information before the season start-up.

Make these periodic reviews of SAFETY and OPERATION a standard practice for all of your equipment. We feel that an untrained operator is unqualified to operate this machine.

A sign-off sheet is provided for your record keeping to show that all personnel who will be working with the equipment have read and understand the information in the Operator's Manual and have been instructed in the operation of the equipment.

SIGN-OFF FORM

[illegible]

3 SAFETY SIGN LOCATIONS

The types of safety signs and locations on the equipment are shown in the illustrations that follow. Good safety requires that you familiarize yourself with the various safety signs, the type of warning and the area, or particular function related to that area, that requires your SAFETY AWARENESS.

- Think SAFETY! Work SAFELY!



A



CAUTION

1. Read Operator's Manual before starting.
2. Keep guards and shields in place and access doors closed.
3. Keep hands, feet, hair and clothing away from moving parts.
4. Stop engine, place all controls in neutral, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging the machine.
5. **Engage park brake whenever engine is stopped or shut down.**
6. Do not climb on the machine or place hands in any opening when the engine is running.
7. Keep people and pets a safe distance from the machine.
8. Do not smoke when refuelling.
9. Block up machine securely before working under it.
10. Keep all electrical wires and connections dry and in good repair.
11. Do not direct discharge duct or hose toward people, animals or property to prevent being hit by fast moving objects. Always wear appropriate safety gear during operation.
12. Review safety instructions annually.



ATTENTION

1. Lire attentivement le manuel d'opération avant la mise en marche.
2. Garder tous les écrans protecteurs in place.
3. Garder les mains, pieds, cheveux et vêtements éloignés des éléments mobiles.
4. Arrêter le moteur, placer tous les contrôles à la position "neutre", enlever la clé du contact et attendre que toutes les places soient au point mort avant de faire tout ajustement, réparation ou de débloquent la machine.
5. **Toujours actionner le frein de stationnement, avant de débarquer de la machine.**
6. Ne pas grimper sur la machine et ne jamais se placer les mains dans toute ouverture lorsque celle-ci est en marche.
7. Garder les gens et les animaux à une distance sécuritaire de la machine.
8. Ne jamais fumer lors du plein d'essence.
9. Immobiliser la machine de façon sécuritaire avant de travailler sous celle-ci.
10. Garder toute connection et fil électrique au sec et en bonne condition.
11. Afin d'éviter tout risque d'accident grave, ne jamais souffler en direction des gens, animaux ou vers les propriétés. Le port des équipements de sécurité est obligatoire lorsque vous opérez la machine.
12. Réviser annuellement le manuel d'opération.

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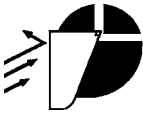

REMEMBER - If safety signs have been damaged, removed, become illegible or parts replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.

The types of safety signs and locations on the equipment are shown in the illustrations that follow. Good safety requires that you familiarize yourself with the various safety signs, the type of warning and the area, or particular function related to that area, that requires your SAFETY AWARENESS.

- Think SAFETY! Work SAFELY!



B

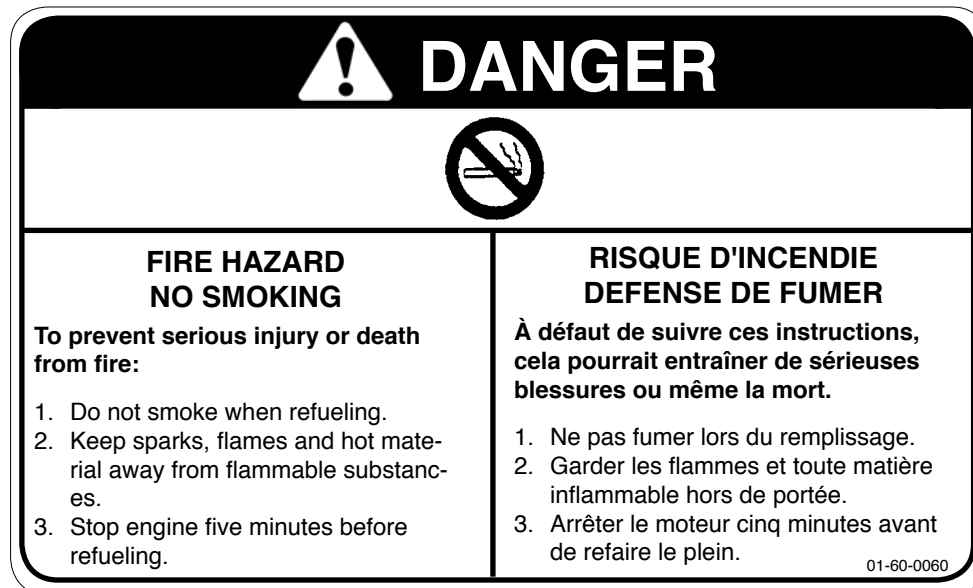
 DANGER	
 <p>THROWN OBJECT HAZARD To prevent serious injury or death from a thrown object:</p> <ol style="list-style-type: none"> 1. Stop engine, place all controls in neutral, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging machine. 2. Do not direct discharge duct toward people, animals or property. Always wear appropriate safety gear. Keep hands and feet out of discharge openings. 3. Keep others away. 	 <p>RISQUE D'OBJETS PROJÉTÉS À défaut de suivre ces instructions, cela pourrait entraîner de sérieuses blessures ou même la mort.</p> <ol style="list-style-type: none"> 1. Arrêter le moteur, placer tous les contrôles à la position "neutre", enlever la clé du contact et attendre que toutes les places soient au point mort avant de faire tout ajustement, réparation ou de débloquer la machine. 2. Afin d'éviter tout risque d'accident grave, ne jamais souffler en direction des gens, des animaux ou vers les propriétés. Le port des équipements de sécurité est obligatoire lorsque vous opérez la machine. 3. Garder les gens éloignés de la machine. <p style="text-align: right;">NC13-33-0110</p>

REMEMBER - If safety signs have been damaged, removed, become illegible or parts replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.

The types of safety signs and locations on the equipment are shown in the illustrations that follow. Good safety requires that you familiarize yourself with the various safety signs, the type of warning and the area, or particular function related to that area, that requires your SAFETY AWARENESS.

- Think SAFETY! Work SAFELY!

C



D



REMEMBER - If safety signs have been damaged, removed, become illegible or parts replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.

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- Think SAFETY! Work SAFELY!



E

WARNING AVERTISSEMENT	
<p align="center">ROTATING PART HAZARD KEEP AWAY</p> <p>To prevent serious injury or death from rotating parts:</p> <ol style="list-style-type: none"> 1. Place all controls in neutral or off, stop engine or motor, set park brake, remove ignition key or disable power source and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging. 2. Install and secure all guards before operating. 3. Do not operate with rotating parts exposed. 	<p align="center">PIÈCES EN MOUVEMENT RESTER ÉLOIGNÉS</p> <p>À défaut de suivre ces instructions, cela pourrait entraîner de sérieuses blessures ou même la mort.</p> <ol style="list-style-type: none"> 1. Arrêter le moteur, placer tous les contrôles à la position "neutre" enlever la clé du contact et attendre que toutes les pièces soient au point mort avant de faire tout ajustement, réparation ou de débloquer la machine. 2. Installer tous les écrans protecteurs avant de mettre la machine en fonction. 3. Ne jamais opérer la machine sans écran protecteur. <p align="right">01-60-0110</p>

REMEMBER - If safety signs have been damaged, removed, become illegible or parts replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.

4 ASSEMBLING

4.1 MACHINE ASSEMBLY

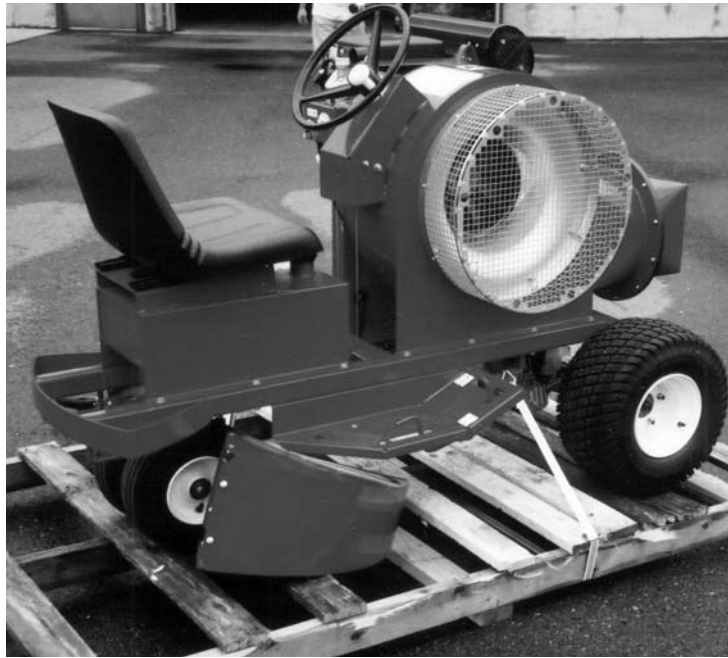
The machine is shipped from the factory in a partially disassembled configuration and attached to a pallet that provides for easy moving and handling. Always use tools, equipment and forklifts of appropriate size and capacity for the job. Always use 2 men when lifting, moving and assembling the machine.

When the machine is shipped, follow this procedure when preparing for the customer:

1. Clear the area of bystanders especially small children before starting.
2. Remove the pallet tie-downs.
3. Use a forklift to lift the pallet/machine from the truck. Carry the load close to the ground as it is moved to the assembly area and positioned.
4. Remove plastic wrap.



Wrapped



Unwrapped

Fig. 1 SHIPPING CONFIGURATION

5. Cut strapping and remove screws holding components to pallet.



Fig. 2 LOOSENING

6. Lay out components.



Fig. 3 LAYOUT

7. Mount the deflector to the discharge outlet. Be sure to align arrows when mounting.
8. Tighten fasteners to their specified torque.



Arrows



Fasteners

Fig. 4 DEFLECTOR

9. Connect the battery cables and tighten fasteners to their specified torque.

NOTE

Connect red wire to positive post and black to ground or negative post.

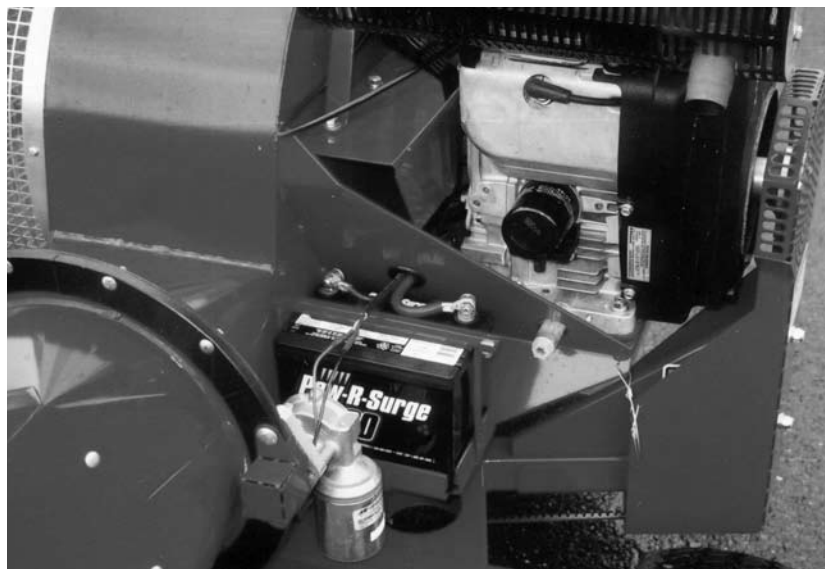


Fig. 5 BATTERY CABLE

5 OPERATION



OPERATING SAFETY

- Please remember it is important that you read and heed the safety signs on the Blower. Clean or replace all safety signs if they cannot be clearly read and understood.
- If a safety shield or guard is removed for any reason, it must be replaced before the machine is again operated.
- Always use two people to handle heavy, unwieldy components during assembly, installation, removal or moving.
- **Always engage the park brake when stopping engine to prevent machine movement when restarting engine.**
- Place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
- Do not allow riders on the machine at any time. There is no safe place for any riders.
- Do not allow anyone who is not familiar with the safety rules and operation instructions to use this machine.
- Never allow children to operate or be around this machine.
- Clear the work area of objects which might be picked up and snagged or entangled in the machine.
- Do not reach into blower openings when the engine is running. Keep others away also.
- Keep hands, feet, hair, jewelry, and clothing away from all moving and/or rotating parts.
- Do not direct the air stream toward people, animals or buildings to prevent injury or damage. Do not place hands, feet or other body parts into air stream.
- Do not run engine in an enclosed area. Exhaust fumes contain carbon monoxide, an odorless and deadly poison.

5.1 TO THE NEW OPERATOR OR OWNER

AgriMetal Self-Propelled Blowers are designed to quickly and efficiently, blow away leaves, cuttings and other debris. The material is conveyed on a stream of high velocity air to remove it from the area of concern. When the material is removed, it gives a neat, professional look to the working area.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment. It is the responsibility of the owner or operator to read this manual and to train all other operators before they start working with the machine.

Follow all safety instructions exactly. Safety is everyone's business. By following recommended procedures, a safe working environment is provided for the operator, bystanders and the area around the worksite. Untrained operators are not qualified to operate the machine.

Many features incorporated into this machine are the result of suggestions made by customers like you. Read this manual carefully to learn how to operate the machine safely and how to set it to provide maximum field efficiency. By following the operating instructions in conjunction with a good maintenance program, your Self-Propelled Blower will provide many years of trouble-free service.

5.2 MACHINE COMPONENTS

The AgriMetal Self-Propelled Blower is a large blower mounted on a powered frame for moving debris on a stream of air. The air stream can be directed to the right, left, up or down depending on the duct position. A gas engine on the front of the frame powers the blower and the hydrostatic drive. The throttle, ignition switch and duct position controls are located on the dash. An electric solenoid moves the duct to the desired position.

The hydrostatic pump is driven by a belt from the engine with the foot controls on the right side of the frame.

- A Discharge Duct**
- B Duct Position Control**
- C Blower**
- D Gas Engine**
- E Throttle Control**
- F Duct Position Drive**
- G Foot Pedals**
- H Blower Air Intake**
- J Park Brake**
- K Steering Axle**
- L Drive Wheels**
- M Hydrostatic Pump**

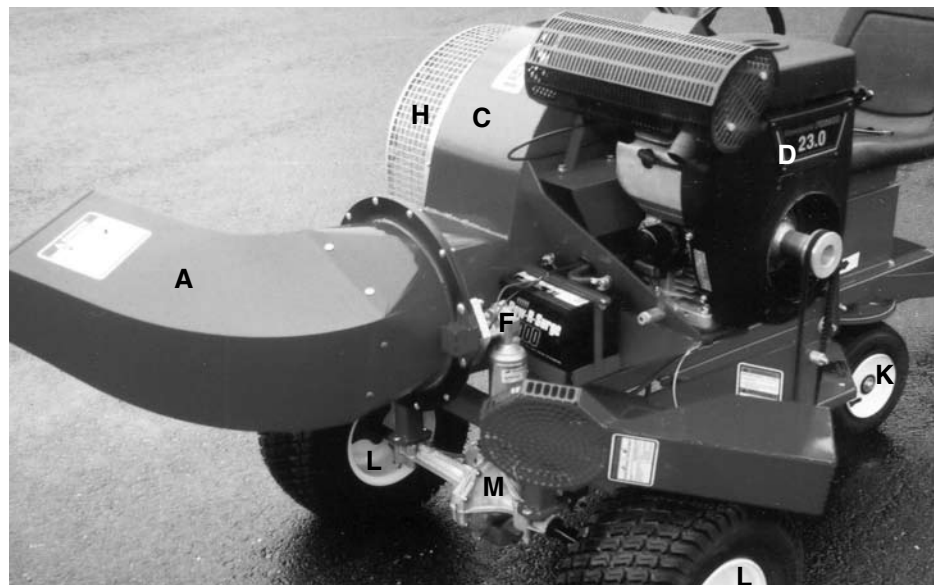


Fig. 6 PRINCIPLE COMPONENTS

5.3 BREAK-IN

Although there are no operational restrictions on the Blower when it is used for the first time, it is recommended that the following mechanical items be checked:

A. After operating for 1 and 5 hours:

1. Torque all fasteners and hardware.
2. Check tire pressure. Inflate to 25 psi if required.
3. Check engine fluid levels. Top up as required.

B. After operating for 10 hours:

1. Repeat steps 1 through 4 listed above. (Section A).
2. Change engine oil.
3. Go to the normal servicing and maintenance schedule as defined in the Maintenance Section.

5.4 PRE-OPERATION CHECKLIST

Efficient and safe operation of the AgriMetal Self-Propelled Blower requires that each operator reads and understands the operating procedures and all related safety precautions outlined in this section. A pre-operation checklist is provided for the operator. It is important for both personal safety and for maintaining the machine in good mechanical condition that this checklist be followed.

Before operating the Blower and each time thereafter, the following areas should be checked off:

1. Lubricate the machine per the schedule outline in the Maintenance Section.
2. Check that all bearings turn freely. Replace any that are rough or seized.
3. Make sure that all guards and shields are in place, secured and functioning as designed.
4. Clean the screen over the blower intake.
5. Check engine oil and fuel level. Top up as required.

5.5 CONTROLS

Before starting to work, all operators should familiarize themselves with the location and function of the controls.

1. **Engine:**

Read the engine manufacturer's operator's manual before starting for more detailed instructions.

a. **Ignition Switch:**

This key operated switch controls the electric power to the engine.

OFF - Turn the key fully counter-clockwise to stop the fuel flow and turn the engine off.

RUN - Turn clockwise on detent to the run position. This is the position where the engine will continue to run.

START - Turn fully clockwise to the last spring-loaded detent position to engage the starter solenoid and start the engine. Release the key when the engine starts and it will return to the RUN position.

b. **Throttle:**

This lever controls the throttle position on the gas engine through a push-pull cable. Move the lever toward the cable to increase engine RPM and rearward to decrease.

c. **Choke:**

This wire loop controls the position of the choke. Push the loop in to close the choke for starting when the engine is cold. Pull the loop out to open the choke as the engine warms. Always pull the loop fully out when operating the machine.

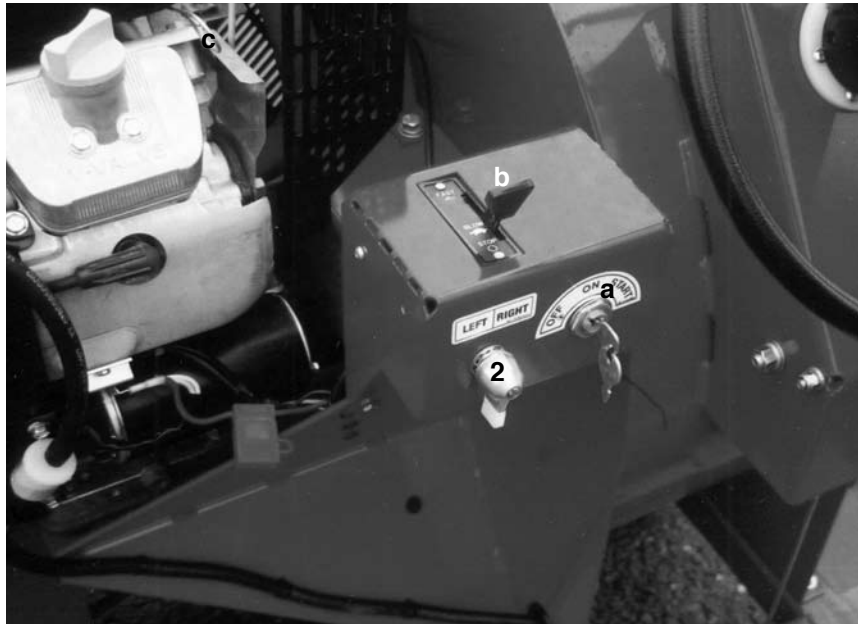


Fig. 7 ENGINE

2. **Rotary Switch:**

This rotary switch controls the power to the duct position drive motor. Turn the switch to the right and hold to move the duct to the right. Turn and hold to the left to move the center duct to the left. Release the switch and the center duct will stop moving.

NOTE

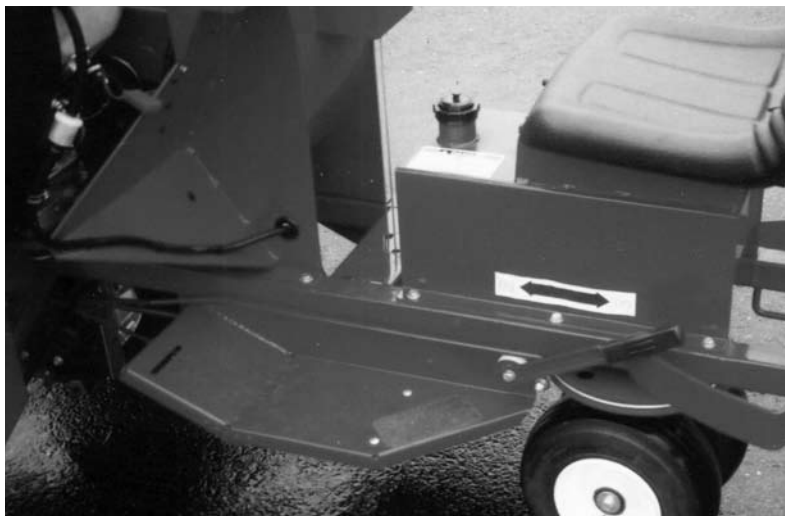
Watch the position of the duct to determine its position.

3. **Park Brake:**

This lever controls the Blower park brake. Move the lever rearward to engage the park brake and forward to release. **Always engage the park brake whenever the engine is stopped.**



Disengaged



Engaged

Fig. 8 PARK BRAKE

4. **Tractive Controls:**

These foot pedals control the hydrostatic tractive drive system. Depress the forward pedal and hold for the Blower to move forward. Depress the pedal further to increase the forward speed.

Depress the rear pedal and hold to go in the reverse direction. Depress the pedal further to increase the rearward speed.

- a. Forward.
- b. Rearward.



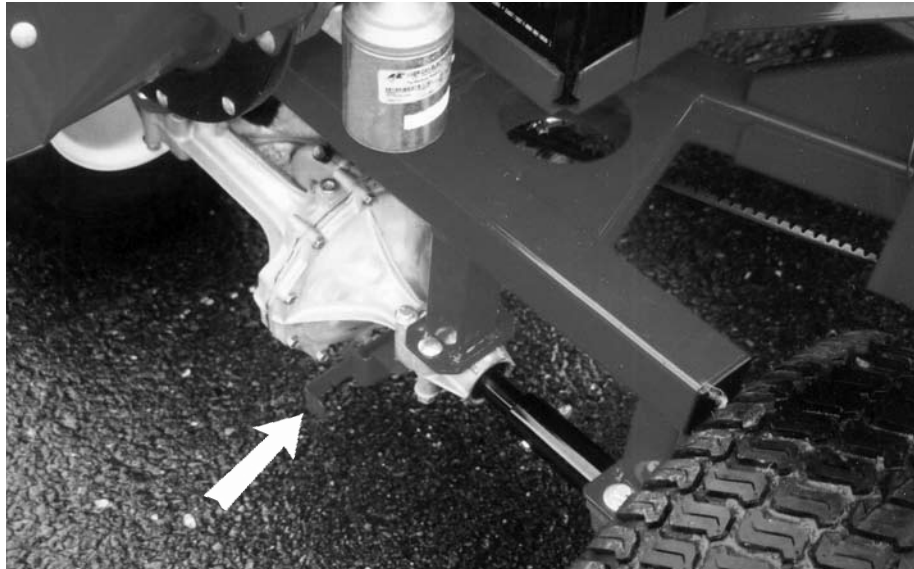
Fig. 9 TRACTIVE CONTROLS

5. **Hydrostatic Engage/Disengage:**

This push/pull lever sets the swash plate angle of the hydrostatic piston pump. Pull the lever out to disengage the hydrostatic system and push in to engage it. The lever must be pulled out before the unit can be towed.

IMPORTANT

The pump must be disengaged with this lever prior to towing.



Disengaged



Engaged

Fig. 10 HYDROSTATIC CONTROL

5.6 FIELD OPERATION



OPERATING SAFETY

- Please remember it is important that you read and heed the safety signs on the Blower. Clean or replace all safety signs if they cannot be clearly read and understood.
- If a safety shield or guard is removed for any reason, it must be replaced before the machine is again operated.
- Always use two people to handle heavy, unwieldy components during assembly, installation, removal or moving.
- **Always engage the park brake when stopping engine to prevent machine movement when restarting engine.**
- Place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
- Do not allow riders on the machine at any time. There is no safe place for any riders.
- Do not allow anyone who is not familiar with the safety rules and operation instructions to use this machine.
- Never allow children to operate or be around this machine.
- Clear the work area of objects which might be picked up and snagged or entangled in the machine.
- Do not reach into blower openings when the engine is running. Keep others away also.
- Keep hands, feet, hair, jewelry, and clothing away from all moving and/or rotating parts.
- Do not direct the air stream toward people, animals or buildings to prevent injury or damage. Do not place hands, feet or other body parts into air stream.
- Do not run engine in an enclosed area. Exhaust fumes contain carbon monoxide, an odorless and deadly poison.

Although the Self-Propelled Blower is easy to use, each operator should review this section to familiarize himself with the detailed safety and operating procedures. When using the machine, follow this procedure:

1. Clear the area of bystanders, especially small children.
2. Review and follow the Pre-Operation Checklist (see Section 5.4).
3. Transport to the working area (refer to Section 5.7).



Fig. 11 TRANSPORTING

5. **Starting Machine:**

- a. Engage park brake.
- c. Close the choke if the engine is cold.
- d. Move the throttle to its 1/4 throttle position.
- e. Use the ignition switch on the front frame to start the engine.
- f. Run the engine for a few minutes to allow it to warm.
- g. Gradually open the choke.

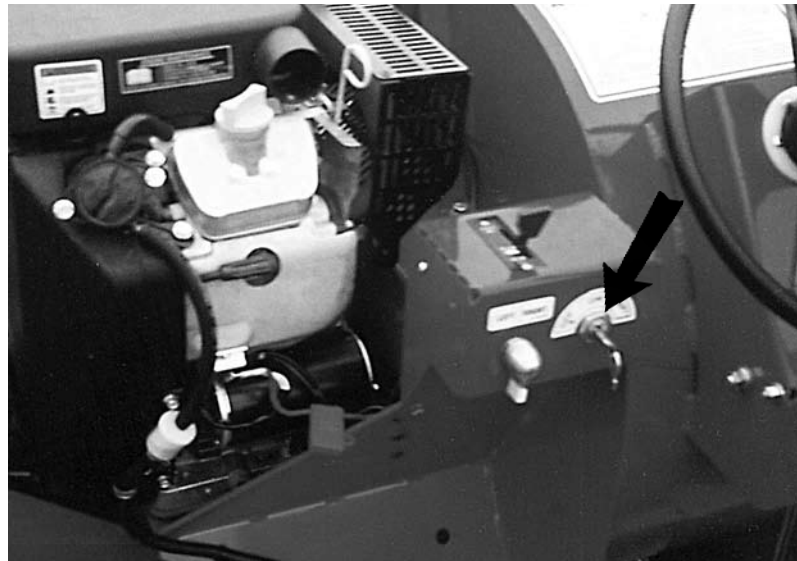


Fig. 12 IGNITION SWITCH

- h. Increase throttle setting to maximum speed for operation.
- i. Start push vehicle engine to start working.

6. Use the rotary switch to set the position of the center duct.

7. **Stopping:**

- a. Stop forward movement.
- b. Slow engine RPM.
- c. Stop engine.
- d. Set park brake.
- e. Remove ignition key before dismounting.

8. **Emergency Stopping**

Turn engine off to stop machine if an emergency arises. Correct emergency condition before resuming work. **Always engage park brake before restarting engine.**



Fig. 13 STARTING/STOPPING

9. Drive to the working area.

10. **Travel Speed:**

Set the travel speed appropriate for the job being done. Travel faster if all the debris is being blown away. Slow down if some debris is not being removed.



To Left



To Right

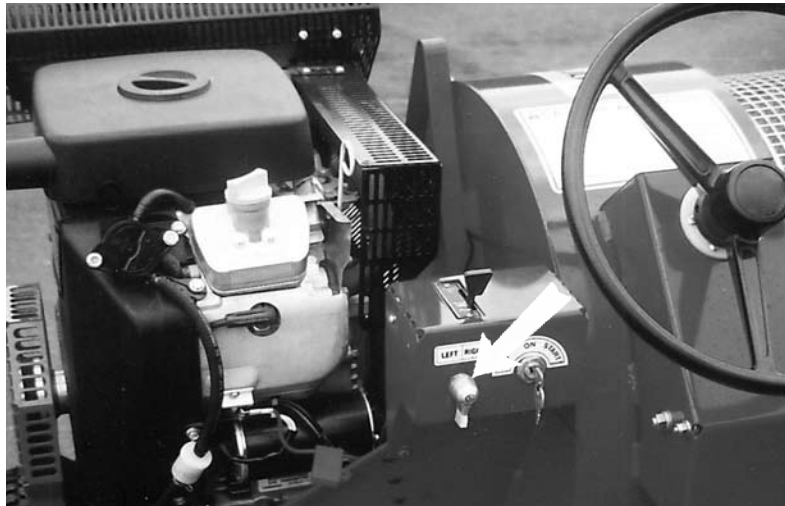
Fig. 14 WORKING

11. Center Duct:

The Blower is designed with a moveable duct that can be used to direct the air to the left, right, up or down. Use the spring-loaded rotary switch on the control module to change the duct position.

NOTE

The machine ignition switch must be in the run position when moving the duct.



Control



Left



Right

Fig. 15 DUCT POSITION

12. **Blower Engine Operating RPM:**

Run the blower engine at a fast enough speed to get the job done and provide sufficient power for the hydrostatic drive.

13. Clean the intake screen as required to insure ample flow of air to the fan.

14. Always try to blow with the wind. Blowing against the wind can result in lifting the material into the wind and having it blown over a wider area.

15. **Optional 90° Duct:**

The Blower is equipped with a 60° duct from the factory to handle most applications. An optional 90° duct is available if it is required for special applications.

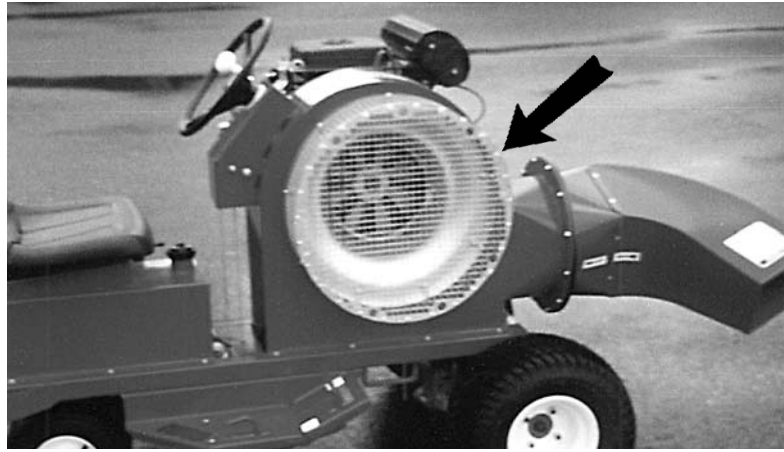


Fig. 16 SCREEN



Fig. 17 DUCTS

16. Lifting:

Always attach to the center strap on the frame when it is necessary to lift the machine. Be sure the lifting device has sufficient lifting capacity and stability for the job.



Fig. 18 LIFTING

17. Poultry Operations:

The Blower can be used to blow out poultry barns between cycles. Use the 60° duct and direct it upward to remove dust and debris.

Always wear appropriate breathing and eye personal protective gear whenever using the Blower inside a closed building to protect against dust and flying debris.



Fig. 19 POULTRY OPERATION

18. Application Hints:

- a. Cleaning fairways or large open areas:
 - i. When moving the material to one side, start at the opposite side and blow toward the receiving side. Use the center duct to change the air flow direction when coming back.
 - ii. When moving the material to all sides, start in the middle and move outward toward the edges while going around.

**DANGER**



THROWN OBJECT HAZARD
To prevent serious injury or death from a thrown object:

1. Stop engine, place all controls in neutral, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging machine.
2. Do not direct discharge duct toward people, animals or property. Always wear appropriate safety gear. Keep hands and feet out of discharge openings.
3. Keep others away.

RISQUE D'OBJETS PROJETÉS
À défaut de suivre ces instructions, cela pourrait entraîner de sérieuses blessures ou même la mort.

1. Arrêter le moteur, placer tous les contrôles à la position "neutre", enlever la clé du contact et attendre que toutes les places soient au point mort avant de faire tout ajustement, réparation ou de débloquer la machine.
2. Afin d'éviter tout risque d'accident grave, ne jamais souffler en direction des gens, des animaux ou vers les propriétés. Le port des équipements de sécurité est obligatoire lorsque vous opérez la machine.
3. Garder les gens éloignés de la machine.



Left



Right

Fig. 20 LEAVES

b. Cleaning parking lots or other paved surfaces:

- i. Blow only the area that needs cleaning.
- ii. Run only at a speed necessary to move the debris.
- iii. Direct the air stream with care. The blower can produce an air flow speed in excess of 292 kph (175 mph). At this speed, it can pick up small solid objects and move them over 30 m (100 feet). People, pets, animals, building, vehicle or other objects can be hit by these objects. Dust or sand can be blown in peoples eyes.
- iv. It is best to stop for a short time to allow people to pass before running machine again.

c. Drying wet areas:

- i. Determine the area to be dried.
- ii. Drive slowly past the area that is wet.
- iii. Repeat the drive-by until the moisture is gone.



Left



Right

Fig. 21 PAVED SURFACES

5.7 TRANSPORTING



TRANSPORT SAFETY

- The machine is not designed or equipped to travel on public roads. Do not drive or transport on public roads.
- Use a trailer when moving from place to place.
- Do not exceed 8 kph (5 mph) when moving.
- Plan your route to avoid rough terrain.
- Do not drink and drive.
- Turn into curves or go up or down hills only at a low speed and at a gradual steering angle. Make certain that at least 20% of the machine's weight is on the rear wheels to maintain safe steering. Slow down on rough or uneven surfaces.
- Never allow riders on machine.

When transporting the machine, review and follow these instructions:

1. Clear the area of bystanders, especially small children.
2. Insure that the machine is securely secured to the trailer when transporting from work site to work site.
3. Do not allow riders on machine.
4. Never exceed a safe travel speed. Never travel faster than 8 kph (5 mph).
5. Do not drink and drive.
6. Plan your route to avoid rough terrain.



Fig. 22 MOVING



Fig. 23 TRANSPORTING

5.8 STORAGE



STORAGE SAFETY

- Store the unit in an area away from human activity.
- Do not permit children to play on or around the stored machine.
- Store the unit in a dry, level area. Support the frame with planks if required.

At the end of the season, the machine should be thoroughly inspected and prepared for storage. Repair or replace any worn or damaged components to prevent any unnecessary down time at the beginning of the next season. Follow this procedure:

1. Thoroughly wash the machine with a pressure washer or water hose to remove all dirt, mud, debris or residue.
2. Make sure all the water drains out of the blower and duct compartments.
3. Lubricate all grease points to remove any water residue from washing.
4. Remove any material that has become entangled around any moving part.



Fig. 24 STORED

5. Run the machine for a couple of minutes at low RPM to dry the inside of the blower and duct.
6. Touch up all paint nicks and scratches to prevent rusting.
7. Move the machine to its storage area.
8. Store in a dry, level spot.
9. Store in an enclosed building if possible. If space is not available, cover with a waterproof tarpaulin and tie down securely.
10. Place planks under the tires for added support if required.
11. Store in an area away from human activity.
12. Do not allow children to play around the stored unit.

6 SERVICE AND MAINTENANCE



MAINTENANCE SAFETY

- Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
- Follow good shop practices.
 - Keep service area clean and dry.
 - Be sure electrical outlets and tools are properly grounded.
 - Use adequate light for the job at hand.
- Make sure there is plenty of ventilation. Never operate an engine in a closed building. The exhaust fumes may cause asphyxiation.
- Before working on this machine, shut off the engine, set the park brake and remove the ignition key.
- Never work under equipment unless it is blocked securely.
- Always use personal protection devices such as eye, hand and hearing protectors, when performing any service or maintenance work.
- Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not be responsible for injuries or damages caused by use of unapproved parts and/or accessories.
- A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment.
- Periodically tighten all bolts, nuts and screws and check that all cotter pins are properly installed to ensure unit is in a safe condition.
- When completing a maintenance or service function, make sure all safety shields and devices are installed before placing unit in service.

6.1 SERVICE

6.1.1 FLUIDS AND LUBRICANTS

1. **Grease:**

Use an SAE multipurpose high temperature grease with extreme pressure (EP) performance. Also acceptable is an SAE multipurpose lithium base grease.

2. **Gasoline:**

Use a standard super unleaded gasoline for all operating conditions. Do not use gasoline with an ethanol blend.

Capacity: 15 litres (4.0 gal).

3. **Engine Oil:**

Use an SAE 30W viscosity oil meeting the American Petroleum Institute (API) classification of SF or SG for normal operating temperatures. Consult the engine manual for unusual operating conditions. Do not mix oil types or viscosities.

Crankcase Capacity:

1.8 liters (2.0 US qt).

4. **Storing Lubricants:**

Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

6.1.2 GREASING

Use the Maintenance Checklist provided to keep a record of all scheduled maintenance.

1. Use a hand-held grease gun for all greasing.
2. Wipe grease fitting with a clean cloth before greasing, to avoid injecting dirt and grit.
3. Replace and repair broken fittings immediately.
4. If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

6.1.3 SERVICING INTERVALS

The period recommended is based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication or oil changes.

8 Hours or Daily

1. Clean blower air intake screen.

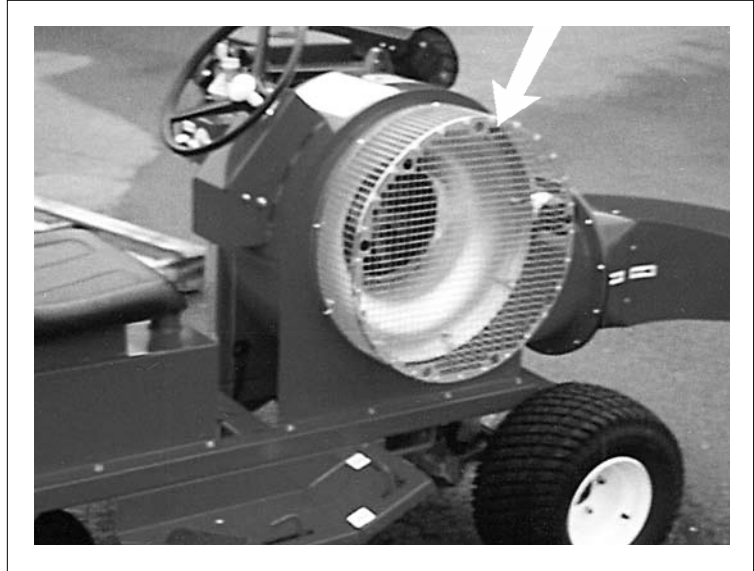


Fig. 25 AIR INTAKE SCREEN

2. Check engine oil level.

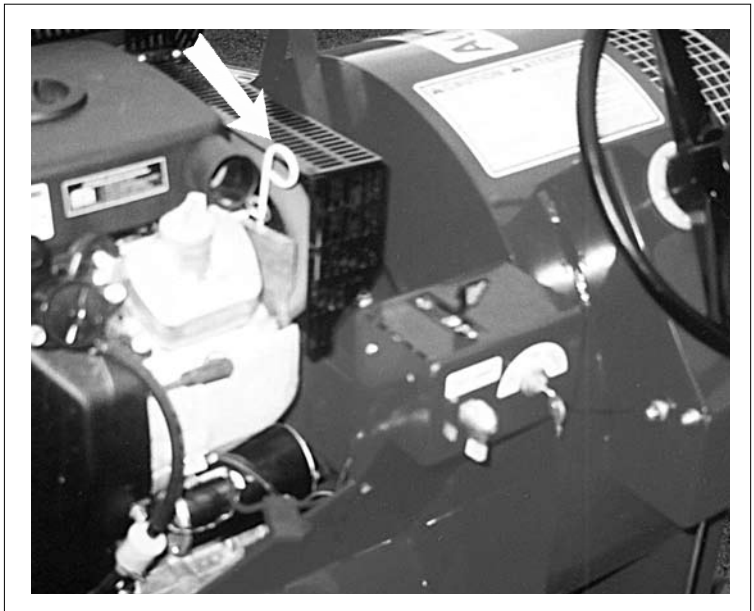


Fig. 26 DIPSTICK

3. Check fuel level.



Fig. 27 GAS TANK

4. Clean air cleaner.



Fig. 28 AIR CLEANER

50 Hours

1. Change engine oil.
2. Check tire pressure. Pressurize to (25 psi) maximum.



Fig. 29 ENGINE DRAIN PLUG

3. Check hydrostatic drive belt tension and pulley alignment.

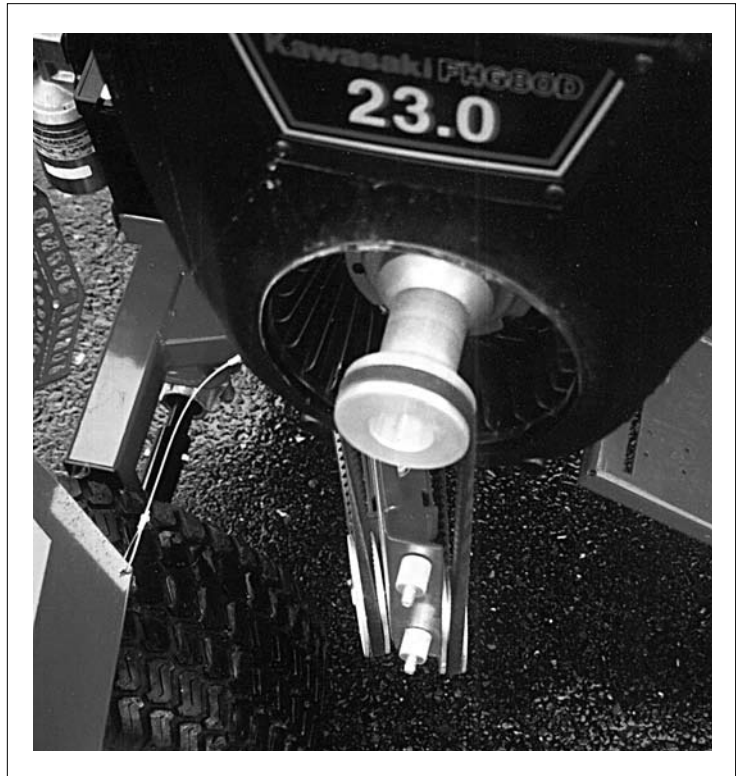


Fig. 30 BELT TENSION AND ALIGNMENT

100 Hours

1. Change engine oil filter.

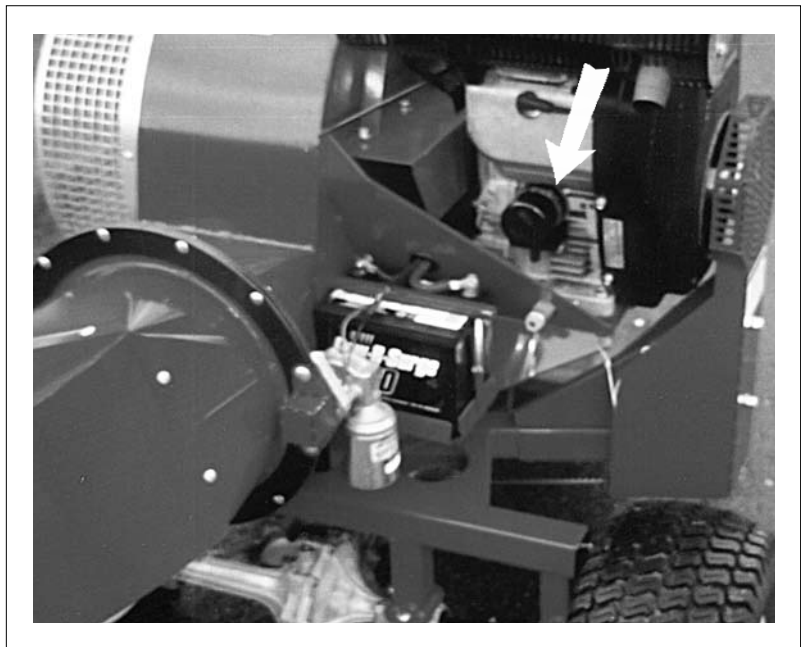


Fig. 31 OIL FILTER

Annually

1. Change in line fuel filter.

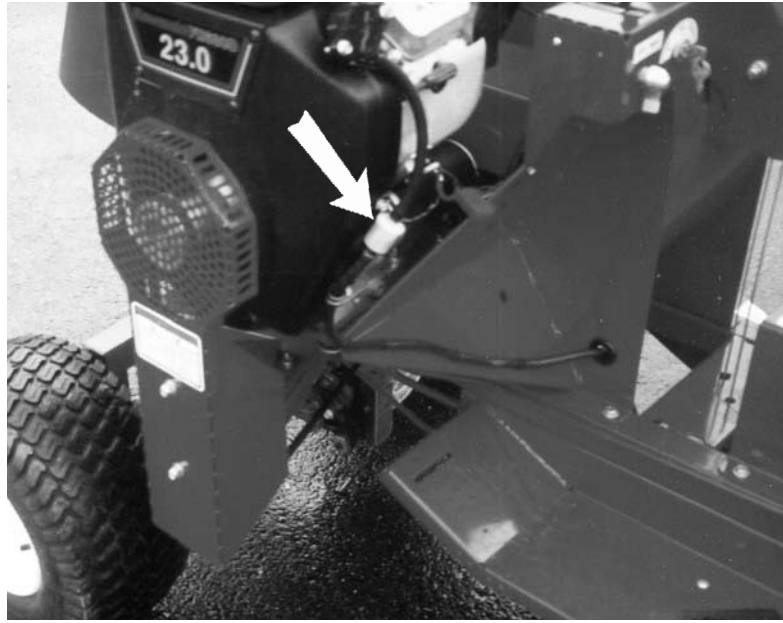


Fig. 32 IN LINE FUEL FILTER

2. Clean machine.

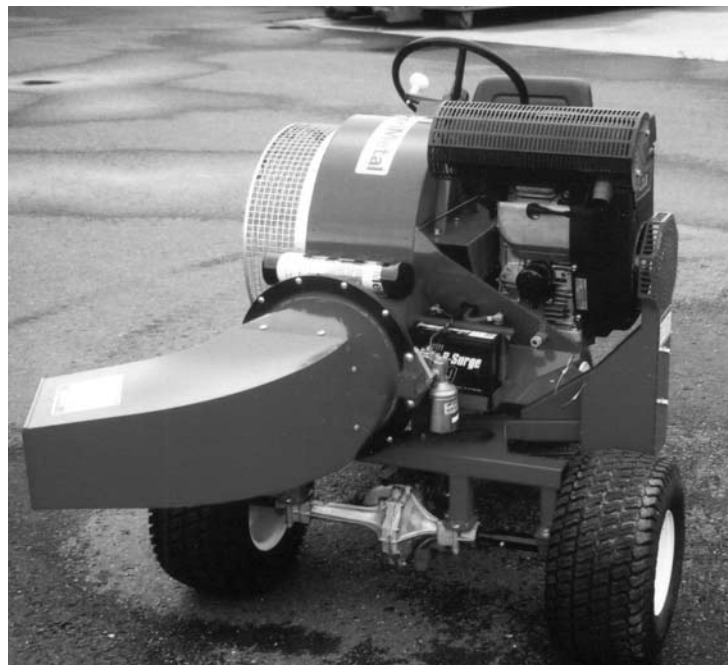


Fig. 33 MACHINE

6.1.4 SERVICE RECORD

See Lubrication and Maintenance sections for details of service. Copy this page to continue record.

ACTION CODE:	CK	CHECK	CL	CLEAN
	G	GREASE	CH	CHANGE

[illegible]

6.2 MAINTENANCE

By following a careful service and maintenance program for your machine, you will enjoy many years of trouble-free operation.

6.2.1 CLEANING AIR CLEANER

1. Review the Operator's Manual for the engine.
2. Place all controls in neutral, stop engine and remove ignition key before maintaining.
3. Remove the cover over the air cleaner.
4. Remove the foam from the engine.
5. Use an air hose to blow the dust and debris out of the foam.
6. Install foam.
7. Install and secure the cover.

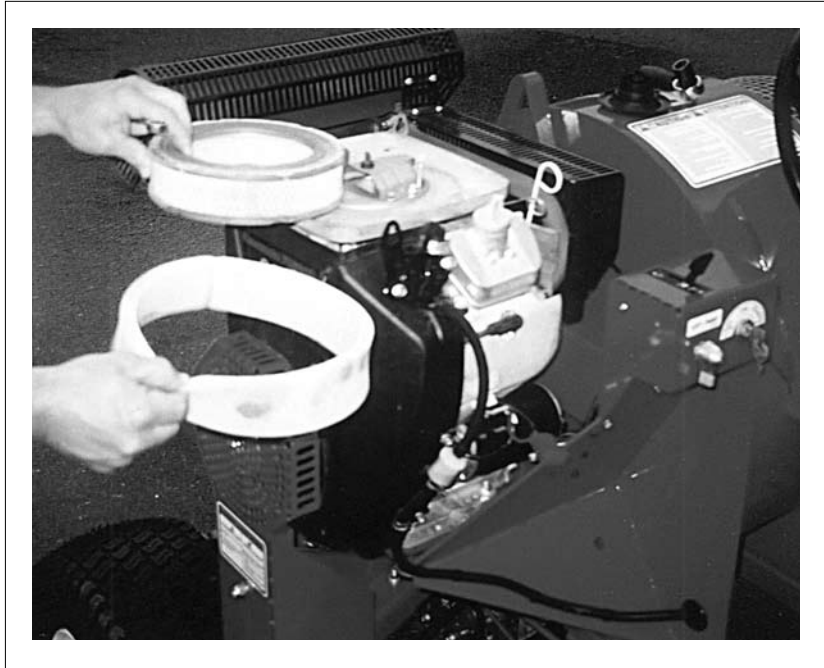


Fig. 34 AIR CLEANER

6.2.2 CHANGING ENGINE OIL AND FILTER

1. Review the Operator's Manual for the engine.
2. Place all controls in neutral, stop engine and remove ignition key before maintaining.
3. Allow the engine to cool before changing the oil. Hot oil can cause burns if it contacts exposed skin. It is best to change oil while the engine is warm to keep the contaminants in suspension.
4. Place a pan under the drain plug.

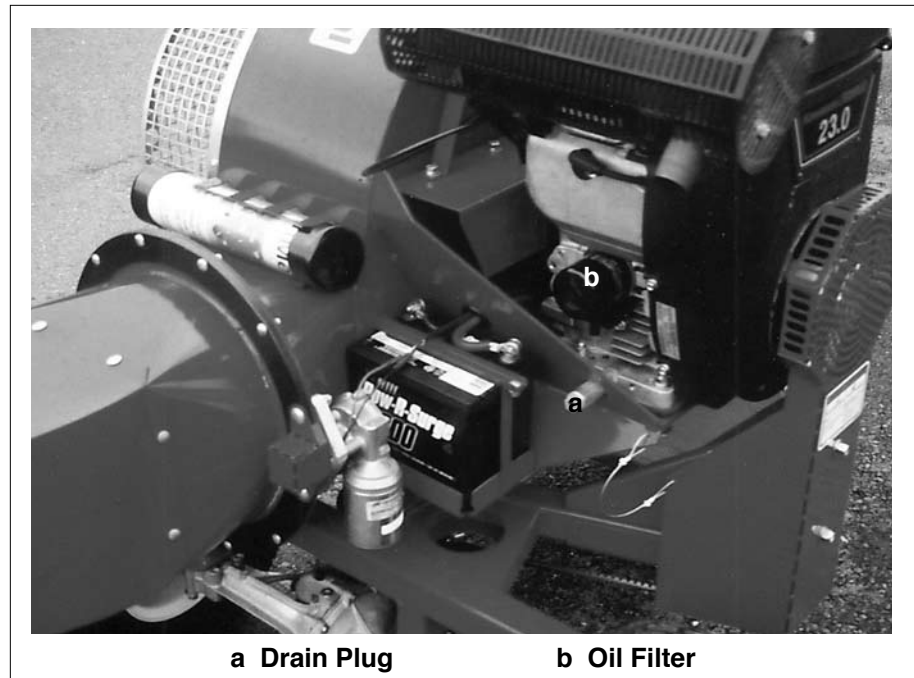


Fig. 35 ENGINE (FRONT)

5. Remove the drain and allow the oil to drain for 10 minutes.
6. Install and tighten the drain plug.
7. Dispose of the used oil in an approved container.
8. Remove engine oil filter.
9. Apply a light coat of oil to the O ring and install the replacement filter. Snug up by hand and then tighten another 1/2 turn.
10. Fill the crankcase with specified oil.
11. Run the engine for 1-2 minutes and check for oil leaks.

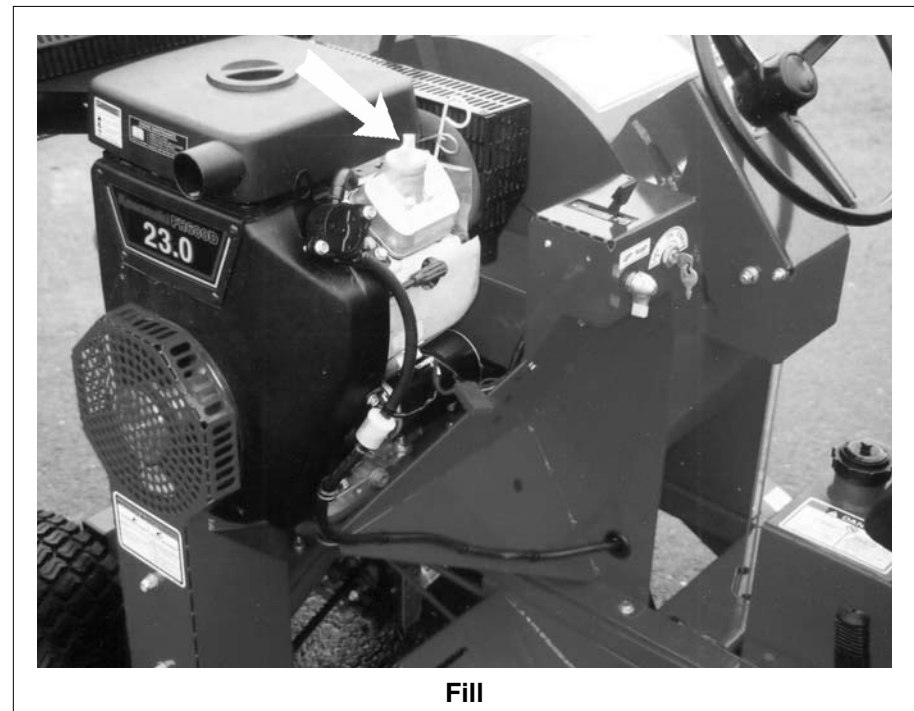


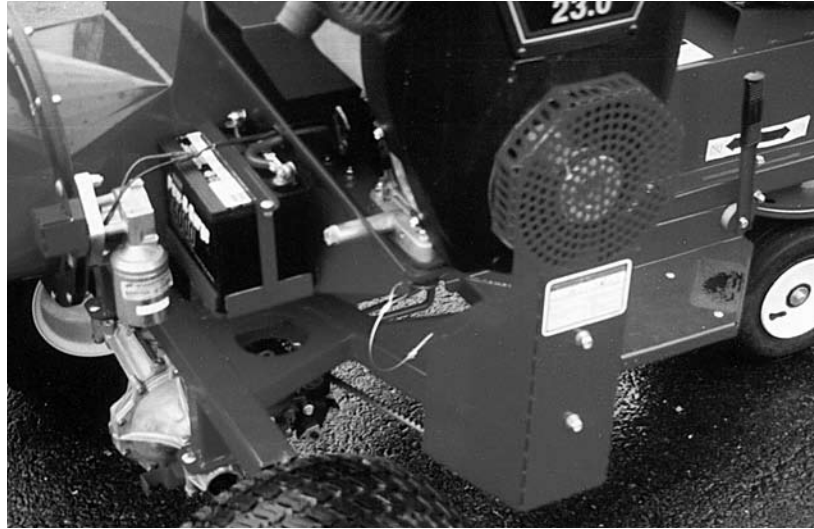
Fig. 36 ENGINE (REAR)

12. If leaks are found around the drain plug or filter, tighten slightly. Repeat step 9.
13. Check engine oil level. Top up as required.

6.2.3 DRIVE BELT

A V belt transmits rotational power between the engine and the hydrostatic pump under the front of the frame. It must be maintained in good condition to transmit power to the pump. To maintain belt, follow this procedure:

1. Stop engine, engage park brake and remove ignition key before dismounting.
2. Remove belt drive guard mounting bolts and lay guard to the side.
3. Check the belt tension. The belt should deflect 1/4 inch (6 mm) when loaded with a 10 lb. force in the center of its vertical span.
4. Loosen the lower tensioning pulley anchor bolts.
5. Slide or tap pulley to the required position.
6. Tighten pulley anchor bolts to their specified torque.
7. Move pulleys to their loosest position when replacing the drive belt.
8. Install guard over belt drive.
9. Tighten mounting bolts to their specified torque.



Drive System



Tension Pulleys

Fig. 37 BELT DRIVE



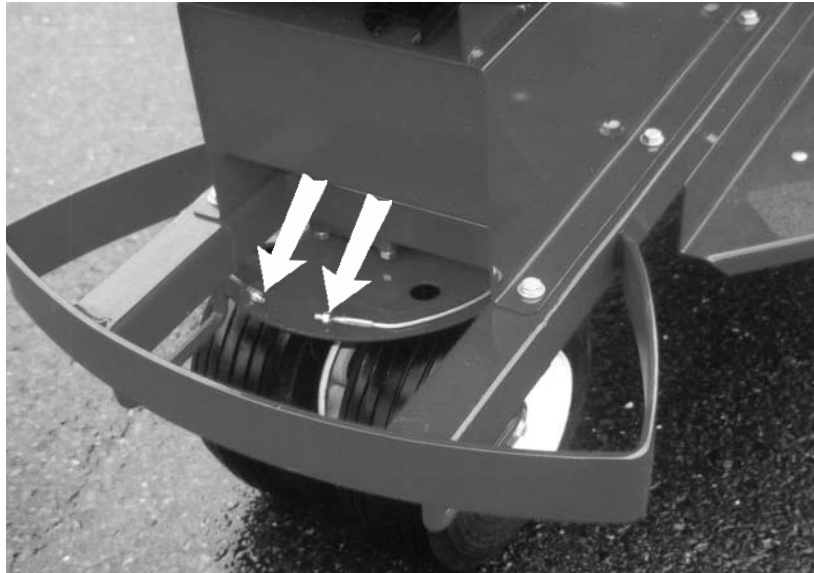
6.2.4 STEERING CABLES

The machine is turned by the rear set of wheels. A set of cables between the steering wheel and the rear axle assembly control the position of the wheel angle. To maintain the steering cables, follow this procedure:

1. Stop engine, engage park brake and remove ignition key before dismounting.
2. Check the play in the steering system by turning the steering gently from side-to-side up to the resistance point.
3. The wheel should not be able to turn without moving the rear axle assembly.
4. Tighten the steering cables to snug up the system and remove any looseness. Do not over-tighten.



Steering Wheel



Cables

Fig. 38 STEERING SYSTEM

7 TROUBLE SHOOTING

The AgriMetal Self-Propelled Blower is a large self-propelled blower that can be used to blow leaves, grass clippings, trash and debris. It is a simple system that requires minimal maintenance.

In the following Trouble Shooting section, we have listed many of the problems, causes and solutions that can help you to solve the problems that you might encounter.

If you encounter a problem that is difficult to solve, even after having read through this trouble shooting section, please call your local distributor or dealer. Before you call, please have this Operator's Manual and the serial number of your machine at hand.

PROBLEM	CAUSE	SOLUTION
Engine won't start	No fuel.	Check fuel level, add as required.
	Plugged in-line fuel filter.	Replace in-line fuel filter.
	No power from battery.	Loose cable. Tighten cable.
		Battery low. Recharge battery.
<hr/>		
Doesn't move debris/leaves.	No air flow.	Clean blower air intake screen.
	Wrong angle for air stream.	Change duct angle as required.
<hr/>		
Machine won't move.	Loose drive belt.	Tighten drive belt.
		Replace belt if worn out.

8 SPECIFICATIONS

8.1 MECHANICAL

SELF-PROPELLED BLOWER	
BWSP-180	
IMPELLER SIZE	18" X 3 1/2" (46 CM X 9 CM)
NO. OF BLADES	8
OUTLET SIZE	6" X 10" (15 CM X 25 CM)
CHUTE ROTATION	360 DEGREES
BLOWER DRIVE	DIRECT
MACHINE DRIVE	HYDROSTATIC
DRIVE SPEED	4.6 M.P.H (7.4 K.M.H)
ENGINE	23 HP KAWASAKI
LENGTH	69" (175 CM)
WIDTH	46" (117 CM)
HEIGHT	50" (127 CM)
WEIGHT BWSP-180	750 LBS (340 KG)
SHIPPING WEIGHT BWSP-180	800 LBS (362 KG)
SHIPPING DIMENSIONS	71" X 48" X 56" HEIGHT (180 CM X 122 CM X 142 CM HEIGHT)

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

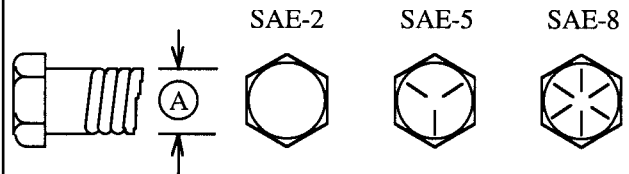
8.2 BOLT TORQUE

CHECKING BOLT TORQUE

The tables shown below give correct torque values for various bolts and capscrews. Tighten all bolts to the torques specified in chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same strength bolt.

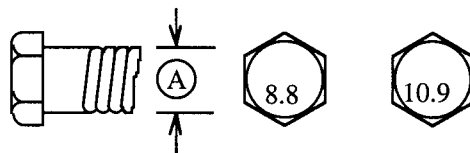
ENGLISH TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque *					
	SAE 2		SAE 5		SAE 8	
	N.m	(lb-ft)	N.m	(lb-ft)	N.m	(lb-ft)
1/4"	8	(6)	12	(9)	17	(12)
5/16"	13	(10)	25	(19)	36	(27)
3/8"	27	(20)	45	(33)	63	(45)
7/16"	41	(30)	72	(53)	100	(75)
1/2"	61	(45)	110	(80)	155	(115)
9/16"	95	(70)	155	(115)	220	(165)
5/8"	128	(95)	215	(160)	305	(220)
3/4"	225	(165)	390	(290)	540	(400)
7/8"	230	(170)	570	(420)	880	(650)
1"	345	(225)	850	(630)	1320	(970)



METRIC TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque*			
	8.8		10.9	
	(N.m)	(lb-ft)	(N.m)	(lb-ft)
M3	.5	.4	1.8	1.3
M4	3	2.2	4.5	3.3
M5	6	4	9	7
M6	10	7	15	11
M8	25	18	35	26
M10	50	37	70	52
M12	90	66	125	92
M14	140	103	200	148
M16	225	166	310	229
M20	435	321	610	450
M24	750	553	1050	774
M30	1495	1103	2100	1550
M36	2600	1917	3675	2710



Torque figures indicated above are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or capscrews unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

* Torque value for bolts and capscrews are identified by their head markings.

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