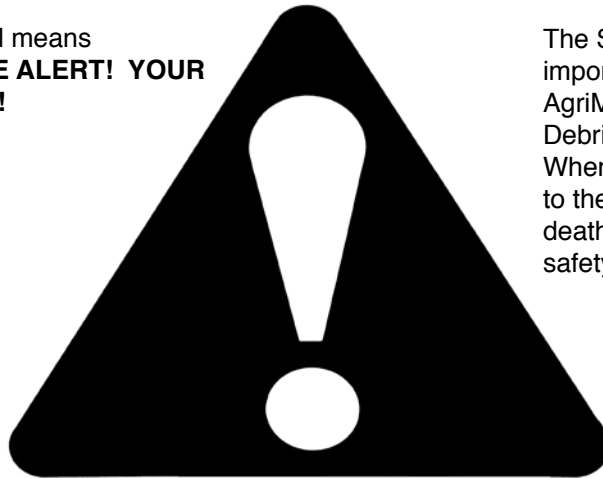


## 2 SAFETY

### 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 3 Point Hitch Leaf and Debris Blowers 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.

# 1 INTRODUCTION

Congratulations on your choice of an AgriMetal 3 Point Hitch Leaf and Debris Blowers 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 Leaf and Debris Blowers 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 Models BW 2500, 3500 and 4500 3 Point Hitch Leaf and Debris Blower. Use the Table of Contents or Index as a guide to locate required information.

The blow vibration is below the level specified in the Whole Body Vibration Standard. The sound level is 91 dba for the BW 3500.

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 behind the tractor driver's seat and facing in the direction of travel.

## SAFETY

**YOU** are responsible for the SAFE operation and maintenance of your AgriMetal 3 Point Hitch Leaf and Debris Blowers. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the Leaf and Debris Blowers 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 Leaf and Debris Blowers.

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.

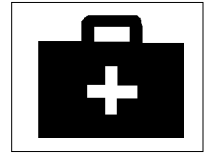
- Leaf and Debris Blowers owners must give operating instructions to operators or employees before allowing them to operate the machine, and at least annually thereafter.
- The most important safety device on this equipment is a SAFE operator. It is the operator's responsibility to read and understand 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

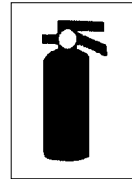
1. Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting or unplugging the Leaf and Debris Blowers.



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.

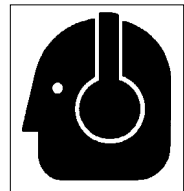
5. Wear appropriate protective gear. This list includes but is not limited to:

- 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.

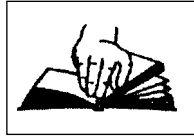
10. Review safety related items annually with all personnel who will be operating or maintaining the Leaf and Debris Blowers.

## 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. Use a tractor equipped with a Roll Over Protective Structure (ROPS).
8. 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.**
9. 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.
10. 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 power unit, engine and machine Manuals. Pay close attention to the Safety Signs affixed to the power unit and 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 power unit, 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 power unit, engine, and machine quickly in an emergency. Read this manual and the one provided with your power unit.
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.

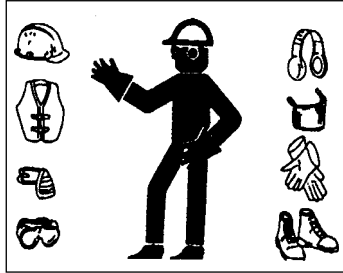
### How to Install Safety Signs:

- 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 PREPARATION

1. Never operate the power unit and machine until you have read and completely understand this manual, the Power Unit Operator's Manual, and each of the Safety Messages found on the safety signs on the power unit and machine.

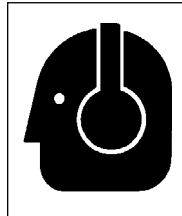
2. Personal protection equipment including hard hat, safety glasses, safety shoes, and gloves are recommended during as-



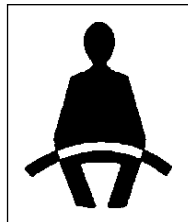
sembly, installation, operation, adjustment, maintaining, repairing, removal, or moving the implement. Do not allow long hair, loose fitting clothing or jewellery to be around equipment.

3. **PROLONGED EXPOSURE TO LOUD NOISE MAY CAUSE PERMANENT HEARING LOSS!**

Power Units with or without equipment attached can often be noisy enough to cause permanent, partial hearing loss. We recommend that you wear hearing protection on a full-time basis if the noise in the Operator's position exceeds 80db. Noise over 85db on a long-term basis can cause severe hearing loss. Noise over 90db adjacent to the Operator over a long-term basis may cause permanent, total hearing loss. **NOTE:** Hearing loss from loud noise (from tractors, chain saws, radios, and other such sources close to the ear) is cumulative over a lifetime without hope of natural recovery.



4. Operate the machine only with a tractor equipped with an approved Roll-Over-Protective Structure (ROPS). Always wear your seat belt. Serious injury or even death could result from falling off the tractor --- particularly during a turnover when the operator could be pinned under the ROPS or the tractor.



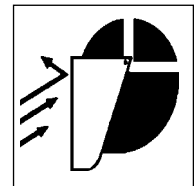
5. Clear working area of stones, branches or hidden obstacles that might be hooked or snagged, causing injury or damage.
6. Operate only in daylight or good artificial light.
7. Be sure machine is properly mounted, adjusted and in good operating condition.
8. Ensure that all safety shielding and safety signs are properly installed and in good condition.

## 2.6 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.
4. Cover with a weather-proof tarpaulin and tie down securely.

## 2.7 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 Leaf and Debris 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 use two people to handle heavy, unwieldy components during assembly, installation, removal or moving.
7. Never place any part of your body where it would be in danger if movement should occur during assembly, installation, operation, maintaining, repairing, removal or moving.
8. Never place yourself between the power unit and machine while machine is in operation.
9. 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.
10. A heavy load can cause instability of the power unit. Use extreme care during travel. Slow down on turns and watch out for bumps. The power unit may need front counterweights to counterbalance the weight of the machine.
11. 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.
12. Do not allow riders on the machine or power unit at any time. There is no safe place for any riders.
13. 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.
14. Do not allow anyone who is not familiar with the safety rules and operation instructions to use this machine.
15. Never allow children to operate or be around this machine.
16. Do not reach into blower openings when the engine is running. Keep others away also.
17. Clear the work area of objects which might be picked up and snagged or entangled in the machine.
18. Keep hands, feet, hair, jewelry, and clothing away from all moving and/or rotating parts.
19. Do not direct the air stream toward people, animals or buildings to prevent injury or damage.
20. Do not place hands, feet or other body parts into air stream.
21. Always wear eye protection when working next to Blower.

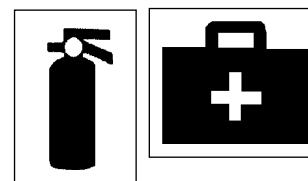


## 2.8 TRANSPORT SAFETY

1. Comply with state and local laws governing highway safety and movement of machinery on public roads.
2. The use of flashing amber lights is acceptable in most localities. However, some localities prohibit their use. Local laws should be checked for all highway lighting and marking requirements.
3. At all times when driving the power unit and equipment on the road or highway under 20 mph (32 kph), use flashing amber warning lights and a slow moving vehicle (SMV) identification emblem. Do not exceed 20 mph (32 kph). Reduce speed on rough roads and surfaces.
4. Plan your route to avoid heavy traffic.
5. Use mounting pins with provisions for a retainer. Install the retainer.
6. Do not drink and drive.
7. Be a safe and courteous driver. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc. Watch for traffic when operating near or crossing roadways.
8. 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 power unit's weight is on the front wheels to maintain safe steerage. Slow down on rough or uneven surfaces.
9. Never allow riders on either tractor or machine.
10. Install lighting bar before transporting.

## 2.9 MAINTENANCE SAFETY

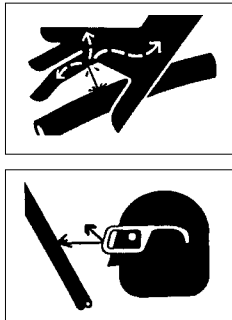
1. Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
2. Follow good shop practices.
  - Keep service area clean and dry.
  - Be sure electrical outlets and tools are properly grounded.
  - Use adequate light for the job at hand.
3. Make sure there is plenty of ventilation. 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 brakes, and remove the ignition keys.
5. Never work under equipment unless it is blocked securely.
6. Always use personal protection devices such as eye, hand and hearing protectors, when performing any service or maintenance work.
7. 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.
8. A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment.
9. Periodically tighten all bolts, nuts and screws and check that all cotter pins are properly installed to ensure unit is in a safe condition.
10. When completing a maintenance or service function, make sure all safety shields and devices are installed before placing unit in service.





## 2.10 HYDRAULIC SAFETY

1. Make sure that all the components in the hydraulic system are kept in good condition and are clean.
  2. Replace any worn, cut, abraded, flattened or crimped hoses and metal lines.
  3. Stop engine or motor, disconnect spark plug wire or unplug power cord, and wait for all moving parts to stop before servicing, adjusting, repairing or cleaning.
  4. Do not attempt any makeshift repairs to the hydraulic lines, fittings or hoses by using tapes, 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.
  7. Before applying pressure to the system, make sure all components are tight and that lines, hoses and couplings are not damaged.
- Think SAFETY! Work SAFELY!



## 2.11 ASSEMBLY SAFETY

1. Assemble in an area with sufficient space to handle the largest component and access to all sides of machine.
2. Use only lifts, cranes, jacks, and tools with sufficient capacity for the load.
3. Use two people to handle the large, bulky components.
4. Do not allow spectators in the working area.

## 2.12 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 3 Point Hitch Leaf and Debris Blowers 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.

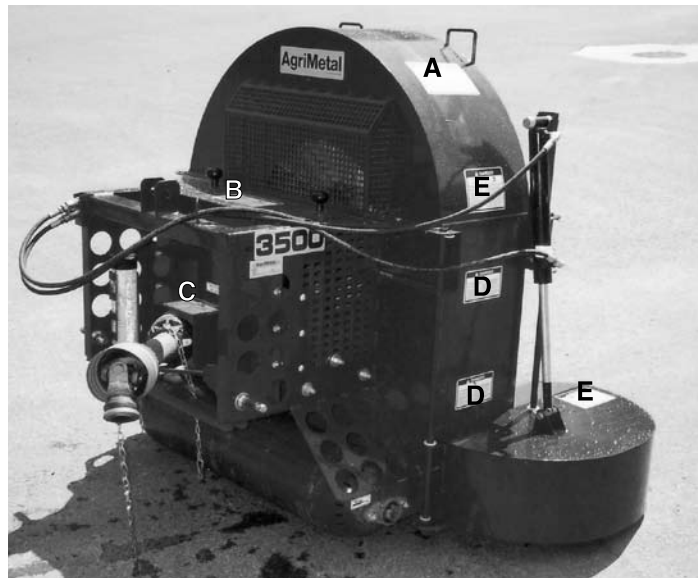
## SIGN-OFF FORM

[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

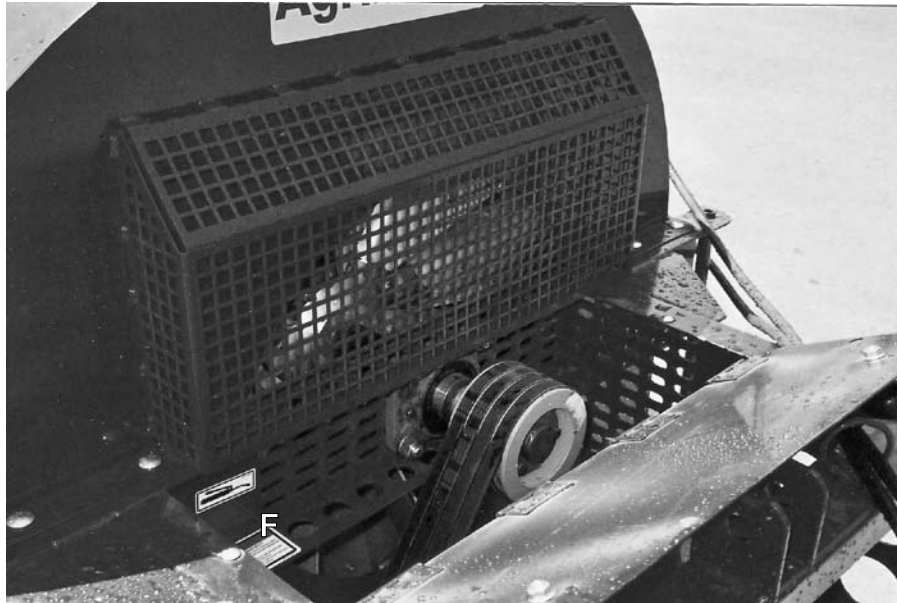
 <b>CAUTION</b>	 <b>ATTENTION</b>
<ol style="list-style-type: none"> <li>1. Read Operator's Manual before starting.</li> <li>2. Keep guards and shields in place and access doors closed.</li> <li>3. Keep hands, feet, hair and clothing away from moving parts.</li> <li>4. Stop engine, place all controls in neutral, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging the machine.</li> <li>5. Do not climb on the machine or place hands in any opening when the engine is running.</li> <li>6. Keep people and pets a safe distance from the machine.</li> <li>7. Keep hydraulic lines and fitting tight, in good condition and free of leaks.</li> <li>8. Block up machine securely before working under it.</li> <li>9. 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.</li> <li>10. Review safety instructions annually.</li> </ol>	<ol style="list-style-type: none"> <li>1. Lire attentivement le manuel d'opération avant la mise en marche.</li> <li>2. Garder tous les écrans protecteurs in place.</li> <li>3. Garder les mains, pieds, cheveux et vêtements éloignés des éléments mobiles.</li> <li>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 débloquer la machine.</li> <li>5. Ne pas grimper sur la machine et ne jamais se placer les mains dans toute ouverture lorsque celle-ci est en marche.</li> <li>6. Garder les gens et les animaux à une distance sécuritaire de la machine.</li> <li>7. Garder tout boyau et fixation hydraulique en bonne condition et sans fissure.</li> <li>8. Immobiliser la machine de façon sécuritaire avant de travailler sous celle-ci.</li> <li>9. 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.</li> <li>10. Réviser annuellement le manuel d'opération.</li> </ol>

NC13-33-0156





**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**



 <b>WARNING</b>  <b>AVERTISSEMENT</b>	
	
<p align="center"><b>ROTATING PART HAZARD KEEP AWAY</b></p> <p><b>To prevent serious injury or death from rotating parts:</b></p> <ol style="list-style-type: none"> <li>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.</li> <li>2. Install and secure all guards before operating.</li> <li>3. Do not operate with rotating parts exposed.</li> </ol>	<p align="center"><b>PIÈCES EN MOUVEMENT RESTER ÉLOIGNÉ</b></p> <p><b>À défaut de suivre ces instructions, cela pourrait entraîner de sérieuses blessures ou même la mort.</b></p> <ol style="list-style-type: none"> <li>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.</li> <li>2. Installer tous les écrans protecteurs avant de mettre la machine en fonction.</li> <li>3. Ne jamais opérer la machine sans écran protecteur.</li> </ol> <p align="right">01-60-0115</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

 <h1>WARNING</h1>	
	
<p><b>ROTATING DRIVELINE HAZARD KEEP AWAY</b></p> <p><b>To prevent serious injury or death from rotating driveline:</b></p> <ol style="list-style-type: none"> <li>1. Keep all guards in place when operating.</li> <li>2. Operate at 540 RPM.</li> <li>3. Keep hands, feet, hair and clothing away from moving parts.</li> <li>4. Keep U joint angles equal and small as possible.</li> <li>5. Do not exceed driveline manufacturer's recommended operating length.</li> </ol>	<p><b>PRISE DE FORCE IN ROTATION RESTER ÉLOIGNÉ</b></p> <p><b>À défaut de suivre ces instructions, cela pourrait entraîner de sérieuses blessures ou même la mort.</b></p> <ol style="list-style-type: none"> <li>1. Garder tous les écrans protecteurs en place.</li> <li>2. Operer à 540 Tours/minute.</li> <li>3. Garder les mains, pieds, cheveux et vêtements éloignés des éléments mobiles.</li> <li>4. Garder les angles de joint en U égales et le plus petit possible.</li> <li>5. Ne pas excéder la longueur d'opération de la prise de force recommandé par le manufacturier.</li> </ol> <p style="text-align: right;">01-60-0125</p>

D


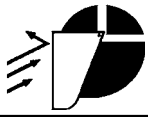

 <h1>DANGER</h1>	
	
<p><b>BLOWER BLADE HAZARD</b></p> <p><b>To prevent serious injury or death from blower blade hazard:</b></p> <ol style="list-style-type: none"> <li>1. Do not put hands or feet into blower opening when the engine is running.</li> <li>2. Do not place hands or feet into blower openings when engine is running. Keep others away.</li> <li>3. 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.</li> <li>4. Do not operate with blower opening exposed.</li> </ol>	<p><b>PROPULSEUR EN ROTATION RISQUE DE BLESSURE GRAVE</b></p> <p><b>À défaut de suivre ces instructions, cela pourrait entraîner de sérieuses blessures ou même la mort.</b></p> <ol style="list-style-type: none"> <li>1. Ne jamais mettre les mains ou les pieds dans l'ouverture du souffleur lorsqu'il est en fonction.</li> <li>2. Ne jamais placer les mains ou les pieds dans l'ouverture du souffleur lorsque le moteur est en fonction. Garder les gens éloignés.</li> <li>3. 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.</li> <li>4. Ne jamais souffler en direction des gens.</li> </ol> <p style="text-align: right;">NC13-33-0112</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!

E

 <b>DANGER</b>	
	
<b>THROWN OBJECT HAZARD</b> <b>To prevent serious injury or death from a thrown object:</b> <ol style="list-style-type: none"> <li>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.</li> <li>2. Do not direct discharge duct toward people, animals or property. Always wear appropriate safety gear. Keep hands and feet out of discharge openings.</li> <li>3. Keep others away.</li> </ol>	<b>RISQUE D'OBJETS PROJÉTÉS</b> <b>À défaut de suivre ces instructions, cela pourrait entraîner de sérieuses blessures ou même la mort.</b> <ol style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>3. Garder les gens éloignés de la machine.</li> </ol>
	NC-13-33-0110

F

 <b>WARNING</b>  <b>AVERTISSEMENT</b>	
<b>MISSING SHIELD HAZARD</b> <b>To prevent serious injury or death from exposed hazard:</b> <ol style="list-style-type: none"> <li>1. Install and secure shields before operating.</li> <li>2. Keep hands, feet, hair and clothing away from moving parts.</li> </ol>	<b>GARDE ABSENT</b> <b>À défaut de suivre ces instructions, cela pourrait entraîner de sérieuses blessures ou même la mort.</b> <ol style="list-style-type: none"> <li>1. Installer les gardes de façon sécuritaire avant la mise en marche de la machine.</li> <li>2. Garder les mains, pieds, cheveux et vêtements éloignés des éléments mobiles.</li> </ol>
	NC13-33-0113

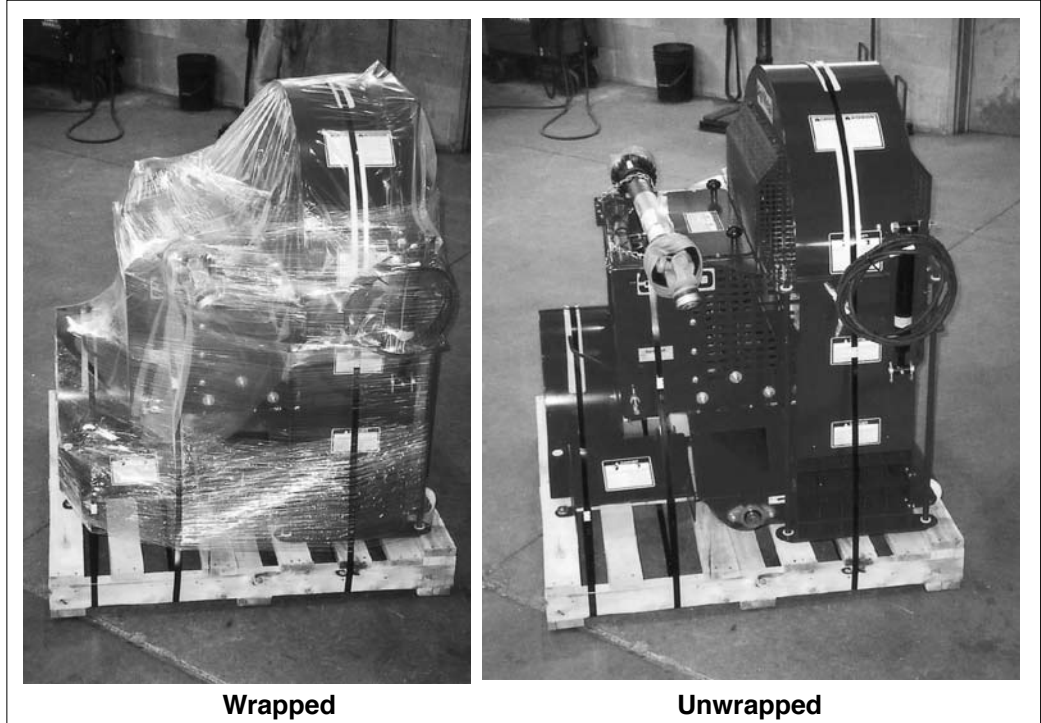
**REMEMBER** - If safety signs have been damaged, removed, become illegible or parts replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.

## 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:



**Fig. 1 SHIPPING CONFIGURATION**

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.
5. Remove machine, and deflector tie-downs and lay-out.
6. Take off of pallet.

#### **IMPORTANT**

Attach a chain or strap between the top link and lifting brackets to keep the unit in balance.



**Fig. 2 REMOVING FROM PALLET**

7. Remove the ducts and driveline from the pallet and lay out.



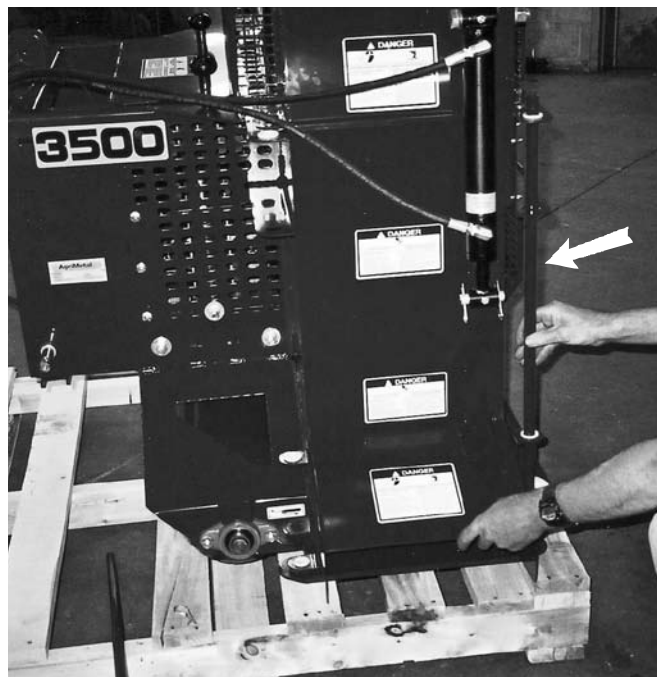
**Ducts**



**Driveline**

**Fig. 3 DUCT / DRIVELINE**

8. Remove the ducts rods from their stowed position.



**Fig. 4 CABLE**



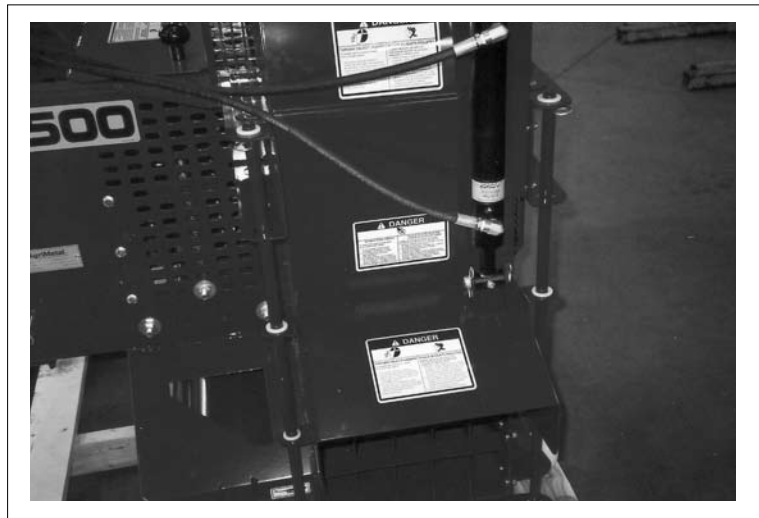
9. To install taper duct (straight):

- a. Install guide rods through duct assembly. Be sure to install retainers.



**Fig. 5 RODS**

- b. Install the lower end of the positioning cylinder. Be sure to install the retainer.



**Fig. 6 POSITIONING CYLINDER**

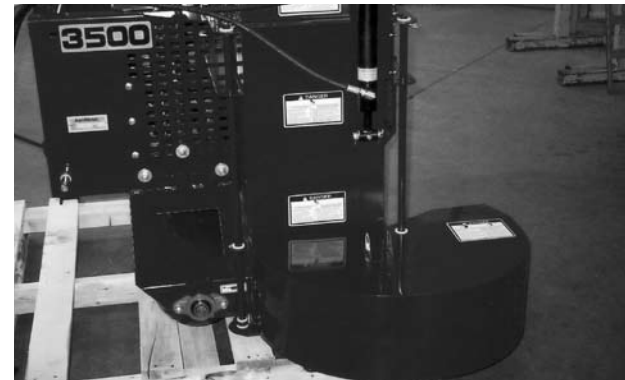
10. To install directional duct (reversing):

a. Remove the duct mounting rods.

b. Install guide rods through duct assembly. Be sure to install guide retainers.



**Rear Rod**



**Front Rod**

**Fig. 7 MOUNTING RODS**

c. Install the lower end of the positioning cylinder. Be sure to install the retainers.



**Positioned**

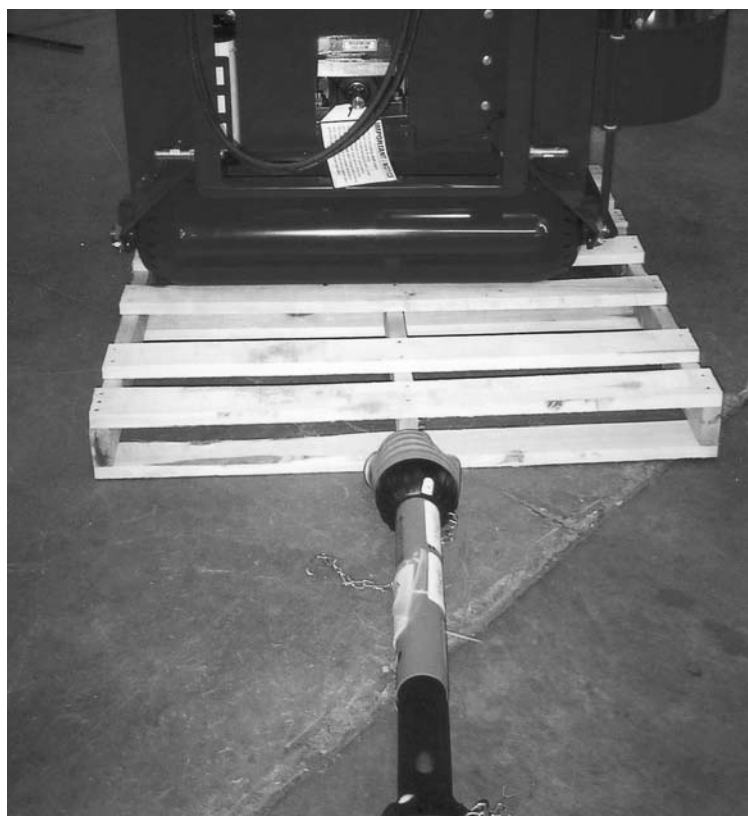


**Attached**

**Fig. 8 CYLINDER**

**11. Attach the PTO Driveline:**

- a. Check that the driveline telescopes easily and that the shield rotates freely.

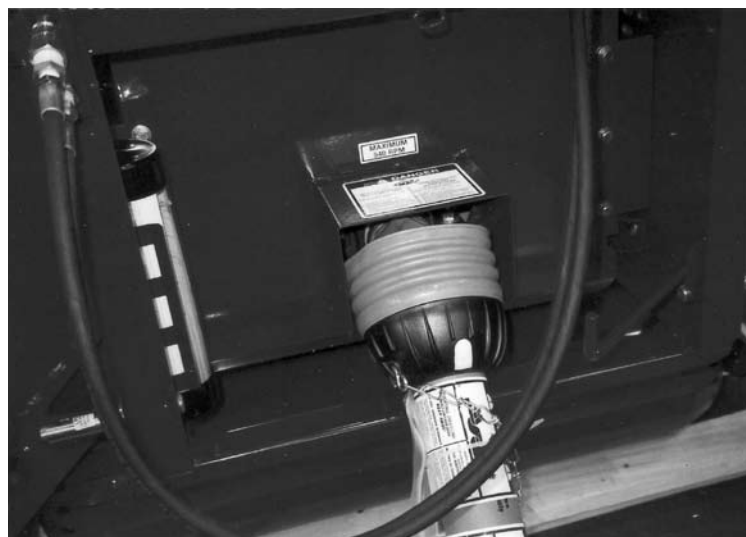


**Layout**

- b. Attach the driveline to the tractor by retracting the locking pin, slide the yoke over the shaft and push on the yoke until the lock pin clicks into position. Pull on the yoke to be sure it is locked in position.

**IMPORTANT**

Check the drawing on the shield and be sure to attach the non-tractor yoke to the blower.



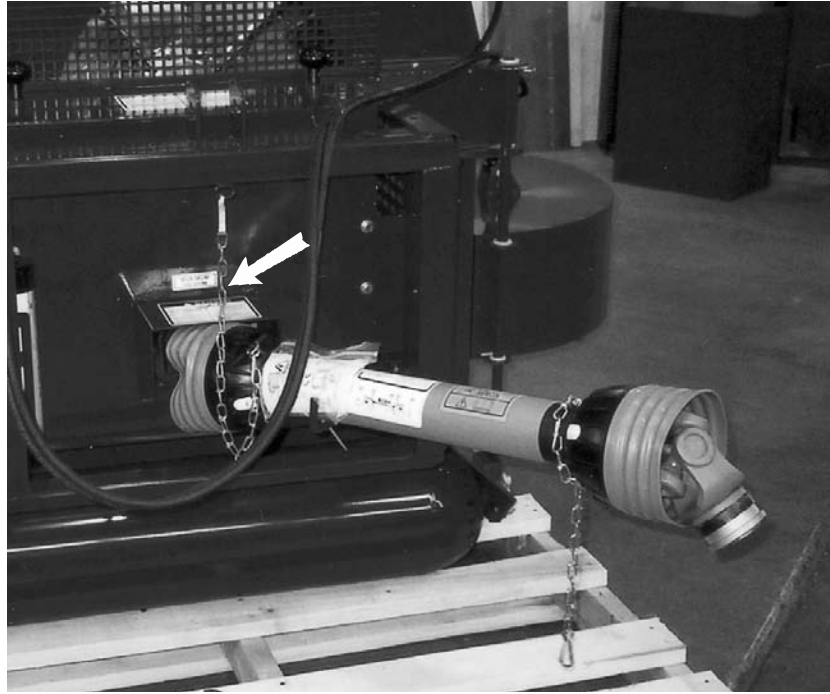
**Yoke**

**Fig. 9 DRIVELINE**

**NOTE**

Measure and cut the driveline to the appropriate length for your tractor. Follow instructions on page 25 to cut driveline shaft.

12. Remove the driveline instruction booklet from the shield.
13. Attach rear driveline guard anchor chain to the frame.
14. Lay driveline on front support bracket to hold up off the ground.



**Fig. 10 ANCHOR CHAIN**

## 5 OPERATION



### OPERATING SAFETY

- Always wear eye protection when working next to Blower.
- 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.
- 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 or power unit 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.
- Do not reach into blower openings when the engine is running. Clear the work area of objects which might be picked up and snagged or entangled in the 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, jewellery, 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.

### 5.1 TO THE NEW OPERATOR OR OWNER

AgriMetal 3 Point Hitch Leaf and Debris 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.

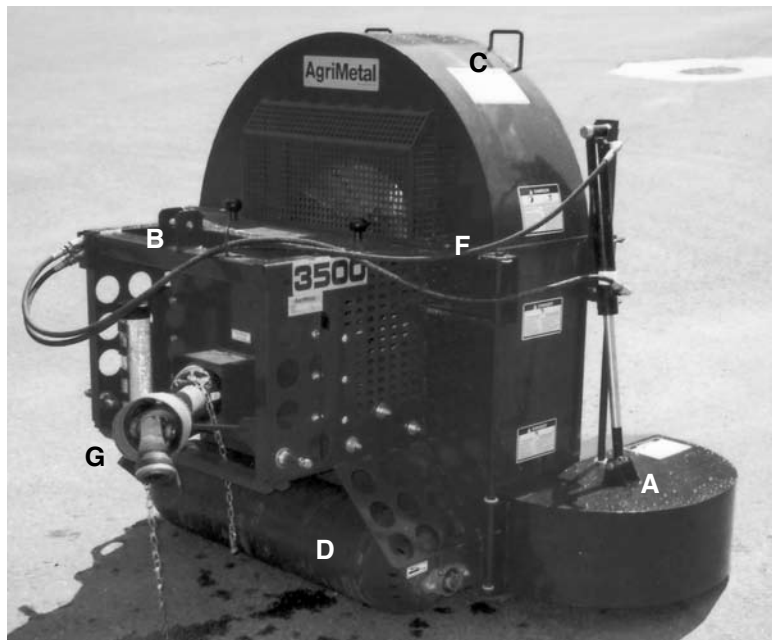
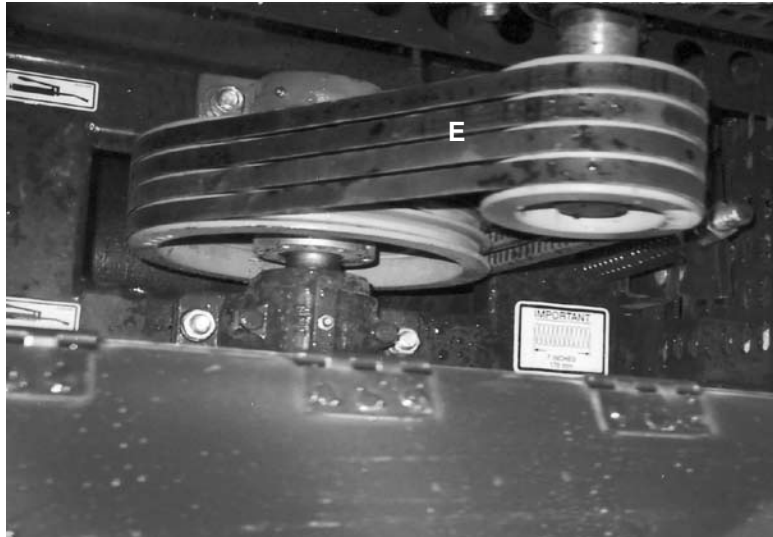
**In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment. It is the responsibility of the owner or 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 3 Point Hitch Leaf and Debris Blowers will provide many years of trouble-free service.

## 5.2 MACHINE COMPONENTS

The AgriMetal 3 Point Hitch Leaf and Debris Blowers is a large blower mounted on a 3 point hitch mount for moving debris on a stream of air. The air stream can be directed to the right or left depending on the discharge duct position. A hydraulic cylinder positions the duct. Power to the machine is provided by a PTO driveline through a V belt to the blower. Rollers on the front and back of the frame allow the machine to follow the contour of the ground.



- A Discharge Duct**
- B 3 Point Hitch**
- C Blower**
- D Roller**
- E V Belt Drive**
- F Duct Position Cylinder**
- G Driveline**

**Fig. 11 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 hour:

1. Check alignment of pulleys. Align as required.
2. Check belt tension and alignment. Adjust as required.
3. Torque all fasteners and hardware.
4. Check condition of blower bearings.

### B. After operating for 10 hours:

1. Repeat steps 1 through 4 listed above. (Section A).
2. 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 3 Point Hitch Leaf and Debris Blowers 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. Use only with a tractor with the appropriate power level for the machine.
3. Be sure that the machine is properly attached to the tractor with retainers in each mounting pin.
4. Be sure the PTO driveline is securely attached on both ends and can telescope easily.
5. Be sure the PTO driveline shield rotates freely and is securely anchored to an adjacent frame member on each end.
6. Check the tension and alignment of all belts and pulleys. Adjust tension and align as required.
7. Check that all bearings turn freely. Replace any that are rough or seized.
8. Make sure that all guards and shields are in place, secured and functioning as designed.
9. Clean the slotted guards over the blower intake guards.

## 5.5 EQUIPMENT MATCHING

To insure the safe and reliable operation of the Blower, it is necessary to use a tractor with the correct specifications. Use the following list as a guide in selecting a tractor to use on the machine.

1. **Horsepower:**

The Blowers are designed to be used on tractors with 25 to 60 horsepower at PTO.

2. **3 Point Hitch:**

The Blowers are equipped with a Category 1 - 3 point hitch. Be sure the tractor 3 point hitch is in the proper configuration.

Install the lift arm blocks or shorten the stop chains to place the arms into the non-sway configuration. Refer to the tractor manual for details.

3. **PTO Shaft:**

The tractor must have a 1 3/8 inch 6 spline 540 RPM PTO shaft to fit the driveline shaft supplied with the machine. Do not use shaft adapters or operate at any other speed.

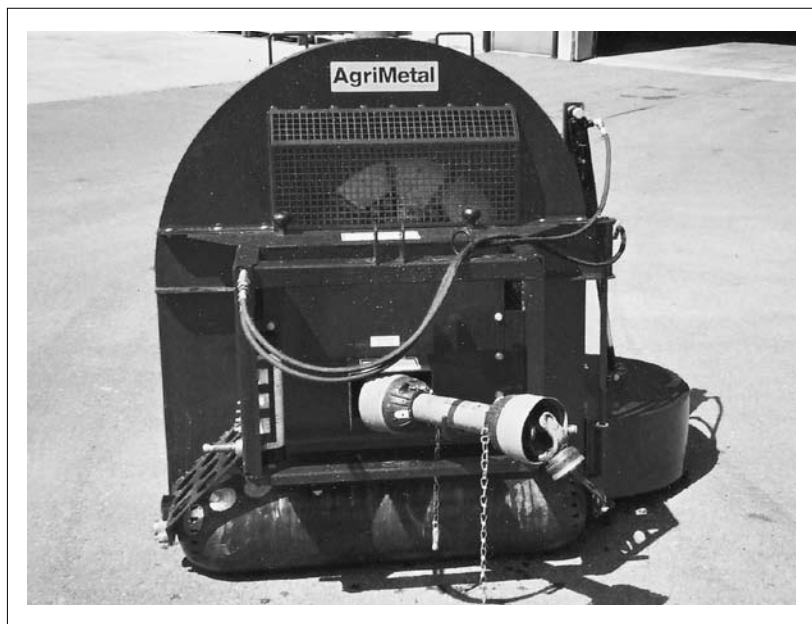
It is not recommended that a tractor with variable speed PTO's be used on the blowers. Operating at speeds faster than 540 RPM will overload the drivetrain and lead to early failures.

### IMPORTANT

Do not exceed the recommended horsepower level. The use of excessive horsepower will void the warranty.

**Table 1: Model versus Horsepower at PTO**

Model	Horsepower
2500	25 - 30
3500	30 - 45
4500	45 - 60



**Fig. 12 3 POINT HITCH AND PTO**

### IMPORTANT

Use an accurate hand held tachometer to verify the PTO speed of the tractor. Do not run the machine faster than 540 RPM. Overspeeding can affect the mechanical integrity of the blower and lead to failures.

### IMPORTANT

Never run the tractor at maximum RPM. Most tractors can run 15% or more faster at wide open throttle than when set at rated PTO speed. Always set the throttle to give the rated PTO speed.



## 5.6 DRIVELINE DIMENSION

A PTO driveline is supplied with the machine. To accommodate the variety of 3 point hitch geometry available today, the driveline can be too long for some machines or too short for others. It is very important that the driveline be free to telescope but not bottom out when going through its working range. If the driveline bottoms out, the bearings on both the machine and tractor PTO shaft will be overloaded and fail in a short time.

1. **To determine the proper length of the driveline, follow this procedure:**
  - a. Clear the area of bystanders, especially small children.
  - b. Attach the Blower to the tractor (see Section 5.8) but do not attach the driveline.
  - c. Raise the machine until the input shaft is level with the tractor PTO shaft.
  - d. Measure the dimension between the locking groove on the tractor PTO shaft and the attaching bolt on the Blower.
  - e. Measure the same dimensions on the compressed driveline.
  - f. If the compressed driveline dimension exceeds the machine dimension, the driveline will have to be cut.
2. **When cutting the driveline, follow this procedure:**
  - a. Subtract the Machine Dimension (A) from the Uncut Driveline Dimension (B) or  $(B-A)$ . This dimension determines how much too long the driveline is.
  - b. Add another inch (25 mm) to the dimension to be sure it doesn't bottom out to determine C the cut off dimension.
  - c. Use a hacksaw to cut dimension C from both ends. Cut both the plastic tubes and the metal cores.
  - d. Use a file to remove the burrs from the edges that were cut.
  - e. Assemble the two ends of the shaft.
  - f. Make sure that the shaft can telescope freely. If it does not, separate the two parts and inspect for burrs or cuttings on the shaft ends. Be sure it telescopes freely before installing.

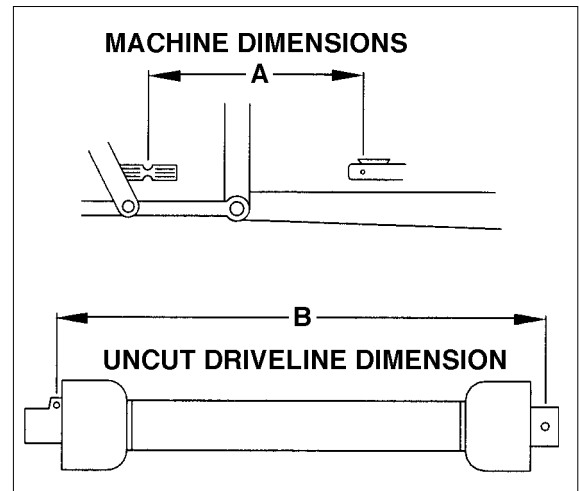


Fig. 13 DRIVELINE DIMENSIONS

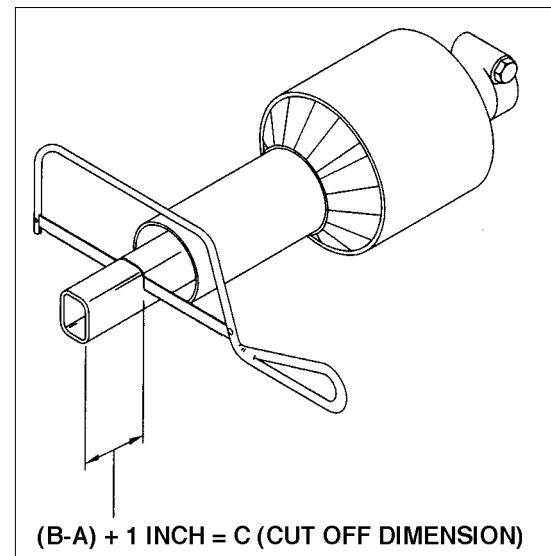


Fig. 14 CUT OFF DIMENSION

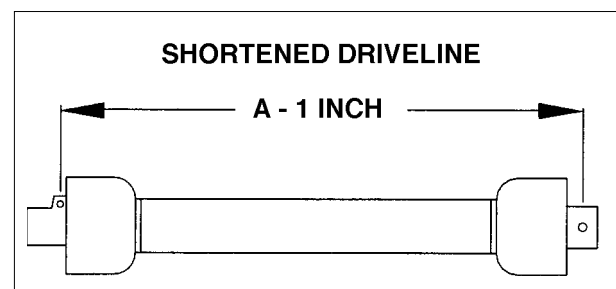


Fig. 15 SHORTENING

- g. Make sure the plastic covering shield is free to rotate on the shaft before installing on the machine.
- h. Lubricate male end of shaft.

## 5.7 MOUNTING AND UNHOOKING TRACTOR

When attaching Blower to a tractor, follow this procedure:

1. Clear the area of bystanders especially small children before starting.
2. Make sure there is enough room and clearance from obstacles to safely back up to the Blower.
3. Back slowly up and align the lower link arms to the pins on the Blower.
4. **Mounting without a Quick Hitch:**

- a. Align the left lower link arm with the left Blower arm.
- b. Insert the left pin through the ball and install the retainer.

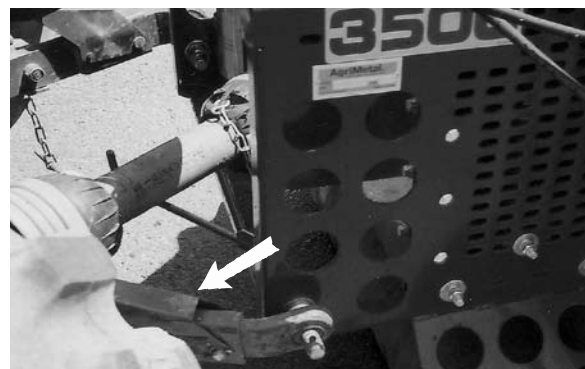
### NOTE

It may be necessary to add weight to the lower lift arms to bring them to the required height.

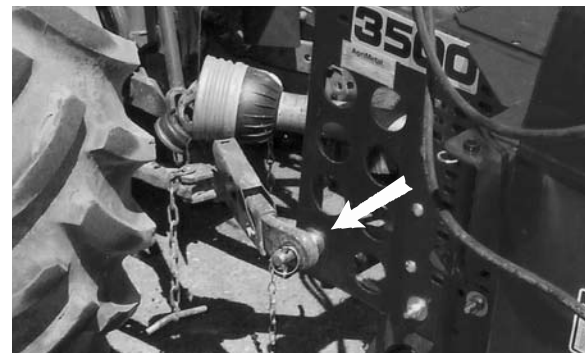
- c. Align the right arm to the pin by turning the jack screw on the arm.
  - d. Insert the right pin through the ball and install the retainer. Return the jack screw to its starting position.
  - e. Remove the top pin and install the top link. Use the turnbuckle to align the top link. Insert the pins and install the retainers. Return the turnbuckle to its original length and lock. Adjust frame at level position. Back roller should be 3" above ground.
5. **Mounting with a Quick Hitch:**
    - a. Align the claws on the Quick Hitch slightly below the mounting pins on the Blower.
    - b. Back up until the pins are above the claws.
    - c. Use the turnbuckle on the top link to adjust the position of the top claw.
    - d. Raise the 3 point hitch until the pins seat in the claws.
    - e. Be sure the retainers are released to hold the pins in the claws.
  6. Set the 3 point hitch in the non-sway position (see tractor manual for details).



Fig. 16 MACHINE



Arms



Retainer

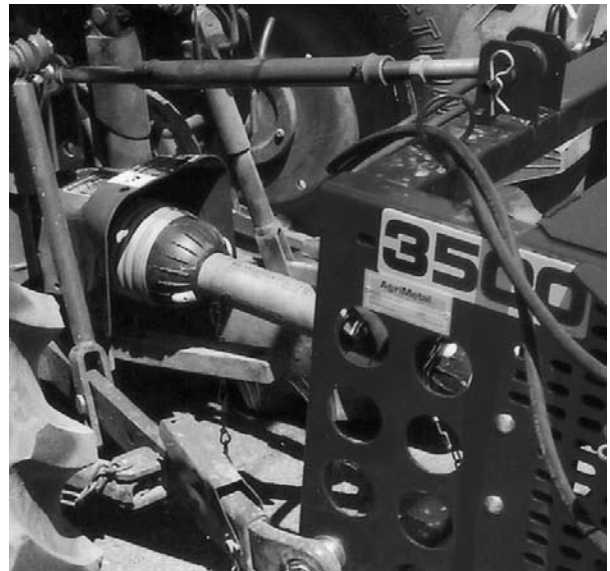


Top Link

Fig. 17 MOUNTING

7. **Attach the PTO Driveline:**

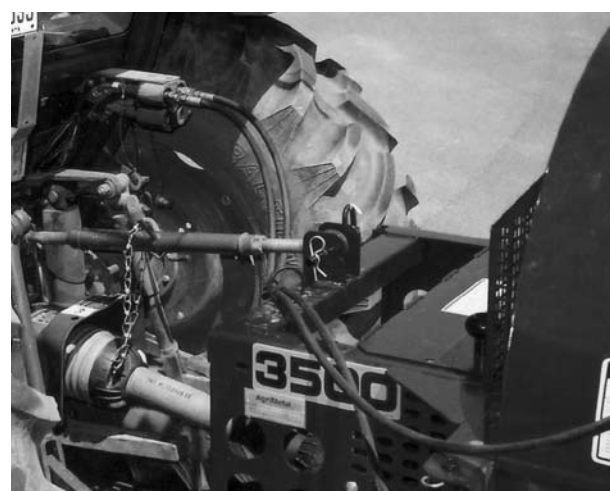
- a. Check that the driveline telescopes easily and that the shield rotates freely.
  - b. Attach the driveline to the tractor by retracting the locking pin, slide the yoke over the shaft and push on the yoke until the lock pin clicks into position. Pull on the yoke to be sure it is locked in position.
8. Attach the driveline shield anchor chain to an adjacent component to hold it in position.



**Fig. 18 DRIVELINE**

9. **Connect the hydraulics:**

- a. Use a clean rag or paper towel to clean the dirt from couplers on the hose ends and the tractor.
- b. Connect the hoses to the tractor couplers. Be sure the couplers are securely seated.
- c. Route and secure the hoses along the hitch with clips, tape or plastic ties to prevent binding and pinching.



**Fig. 19 HYDRAULIC**

10. Slowly raise the machine through its working range to make sure the telescoping portion doesn't bottom out.
11. Level the machine for and aft, and side to side using the jack screw on the right arm, the turnbuckle on the top link.
12. Use the turnbuckles to set the 3 point hitch frame vertical when the machine is at its working height.
13. To unhook from the tractor, reverse the above procedure. Always park the machine in a dry, level area. If it is necessary to remove part of the PTO shaft to prevent vandalism, cover the remaining end for protection against dirt and the elements.



**Fig. 20 3 POINT FRAME**

## 5.8 FIELD OPERATION



### OPERATING SAFETY

- Always wear eye protection when working next to Blower.
- 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.
- 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 or power unit 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.
- Do not reach into blower openings when the engine is running. Clear the work area of objects which might be picked up and snagged or entangled in the 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, jewelery, 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.

Blowers can be used for a wide variety of applications to move or windrow leaves and debris as far as the air stream will carry it. Removing grass clippings or other debris from paved surfaces or greens is limited only by how far it is to be moved. By directing the air stream over a wet area, it can be dried quickly. When operating 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. Attach the machine to the power unit (see Section 5.8). Be sure the frame is level.
4. Transport to the working area (refer to Section 5.10).
5. Start and operate the Blower only while seated on the tractor seat.
6. Place all controls in neutral before starting the tractor.
7. The hitch control on the tractor should always be set in the float position to allow the machine to follow the ground contour.
8. The machine should always ride on its front roller to follow the ground contour.

### 9. Starting Blower:

- a. Engage the tractor PTO control only at low idle engine speed.
- b. Feather the control when engaging the PTO clutch to minimize the dynamic loads on the belts and drivetrain.

### 10. Stopping Blower:

- a. Gradually slow the tractor RPM down to low idle using the throttle.
- b. Slowly disengage PTO clutch and allow the propeller speed to slow. Gradually place the PTO control into its off position.

### IMPORTANT

Newer tractors are designed with a PTO brake that will stop the shaft rotation within 1 revolution. Abrupt application of this brake can overload the rotor, belts and driveline. Always stop blower gradually.

### 11. Operating RPM:

- a. Run the blower at a fast enough speed to get the job done. Change ground speed by shifting gears on the tractor. Running at a higher speed uses extra fuel for no good reason.
- b. Moving light material, such as dry leaves, requires much less wind than wet or heavier material.
- c. Do not exceed rated PTO speed of 540 RPM. Higher speeds can lead to machine vibration or affect the mechanical integrity of the propeller.

### 12. Travel Speed:

Set the travel 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.



Fig. 21 STARTING / STOPPING



Taper Duct



Directional Duct

Fig. 22 WORKING

### 13. Air Flow Direction:

- a. Air is directed to the right when the duct is down.
- b. Air is directed to the left when the duct is raised.
- c. Air is always directed to the left when using the taper duct.



**Directional - Right**



**Directional - Left**



**Tapering**

**Fig. 23 AIR FLOW DIRECTION**

14. **Protective Gear:**

Anyone working around the machine should always wear a face shield to prevent dirt, grit or trash from striking the face or eyes.

15. Clean the slotted metal intake guards as required to insure ample flow of air to the fan.

16. 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.

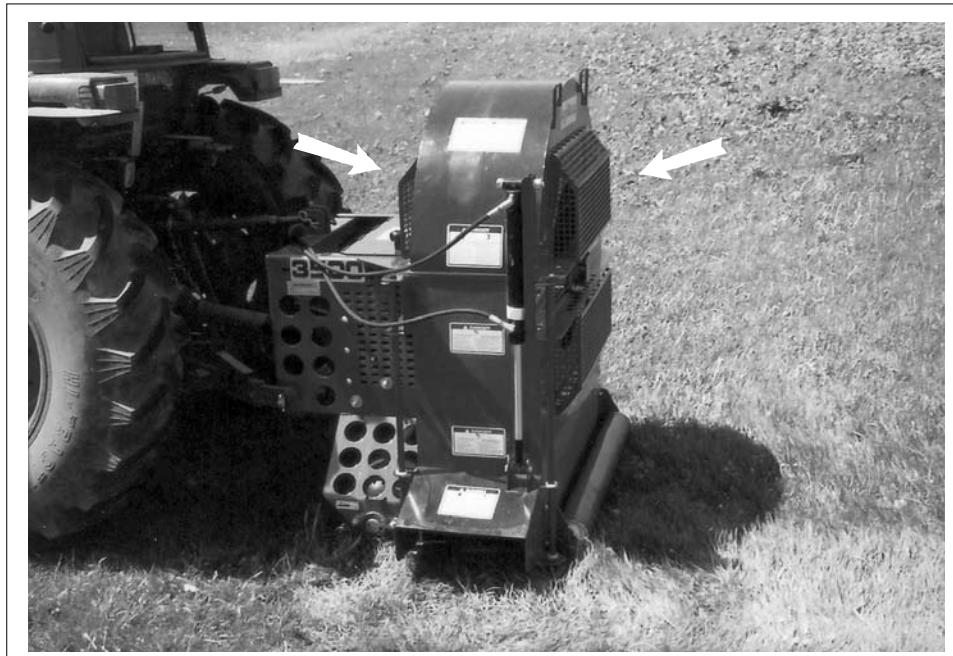
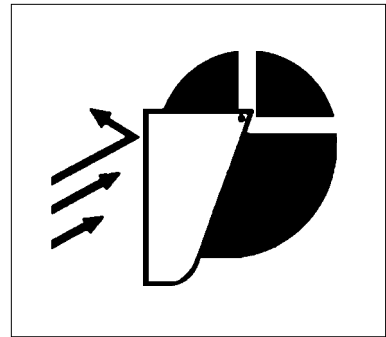

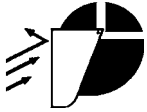



Fig. 24 INTAKE GUARDS (TYPICAL)

17. Never direct air stream toward people, animals or buildings.

 <b>DANGER</b>	
	
<b>THROWN OBJECT HAZARD</b> To prevent serious injury or death from a thrown object: <ol style="list-style-type: none"><li>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.</li><li>2. Do not direct discharge duct toward people, animals or property. Always wear appropriate safety gear. Keep hands and feet out of discharge openings.</li><li>3. Keep others away.</li></ol>	<b>RISQUE D'OBJETS PROJÉTÉS</b> À défaut de suivre ces instructions, cela pourrait entraîner de sérieuses blessures ou même la mort. <ol style="list-style-type: none"><li>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.</li><li>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.</li><li>3. Garder les gens éloignés de la machine.</li></ol>

NC-13-33-0110

18. Two types of ducts are available for use with the blower. A directional and taper unit.

a. **Directional:**

The directional duct directs the air flow to the right when it is down and allows the air to go to the left when raised. Use this duct to move loose or fluffy material or anything that is not compacted and stuck to the ground.



**Directional**

b. **Taper Duct:**

The taper duct is used to direct the air flow down at the ground and is used to remove or move compacted or any material that is stuck to the ground. When the duct is raised, the air flow comes straight out of the blower housing and functions normally.



**Taper Ducts**

**Fig. 25 AIR DUCTS**



## 19. Application Hints:

- a. Cleaning greens, 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 deflector 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.
- 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 250 kph (150 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.



Fig. 26 FIELD

**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 PROJÉTÉS**  
**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.

## 5.9 TRANSPORTING



### TRANSPORT SAFETY

- Comply with state and local laws governing highway safety and movement of machinery on public roads.
- The use of flashing amber lights is acceptable in most localities. However, some localities prohibit their use. Local laws should be checked for all highway lighting and marking requirements.
- At all times when driving the power unit and equipment on the road or highway under 32 kph (20 mph), use flashing amber warning lights and a slow moving vehicle (SMV) identification emblem. Do not exceed 32 kph (20 mph). Reduce speed on rough roads and surfaces.
- Plan your route to avoid heavy traffic.
- Use a drawbar pin with provisions for a retainer. Install the retainer.
- Do not drink and drive.
- Be a safe and courteous driver. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc. Watch for traffic when operating near or crossing roadways.
- 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 power unit's weight is on the front wheels to maintain safe steerage. Slow down on rough or uneven surfaces.
- Never allow riders on either tractor or machine.
- Install lighting bar before transporting.

When transporting the machine, review and follow these instructions:

1. Clear the area of bystanders, especially small children.
2. Be sure that the power unit has sufficient size and mass to control the Leaf and Debris Blowers during transport.
3. Insure that the machine is securely attached to the power unit with a mechanical retainer through the mounting pins.
4. Make sure the SMV (Slow Moving Vehicle) emblem and all the lights and reflectors that are required by the local highway authorities are in place, are clean and can be seen clearly by all overtaking and oncoming traffic. Install the optional lighting bar before transporting on a public road.
5. Always use hazard flashers on the power unit when transporting unless prohibited by law.
6. Do not allow riders.
7. Never exceed a safe travel speed. Never travel faster than 32 kph (20 mph). The ratio of the power unit weight to the machine weight plays an important role in defining acceptable travel speed. The following table summarized the weight ratio to travel speed.

**Table 2 Travel Speed vs. Weight Ratio**

Road Speed	Weight of fully equipped or loaded implement(s) relative to weight of Towing machine
Up to 32 km/h (20 mph)	1 to 1, or less
Up to 16 km/h (10 mph)	2 to 1, or less
Do not tow	More than 2 to 1

8. Always shift to a lower gear when going down hill to use the engine as a restraining force.
9. Never disengage power unit drivetrain and coast down hills. Always keep power unit in gear.

## 5.10 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. Inspect for worn or failed components. Order the replacement parts now and repair when time allows to eliminate unnecessary down time at the start of next season.
5. Remove any material that has become entangled around any moving part.
6. Run the machine for a couple of minutes at low RPM to dry the inside of the blower. Direct the intake air to flow through the deflector to dry it also.
7. Touch up all paint nicks and scratches to prevent rusting.
8. Move the machine to its storage area.
9. Store in a dry, level spot.
10. Store in an enclosed building if possible. If space is not available, cover with a waterproof tarpaulin and tie down securely.
11. Unhook from the power unit (see Section 5.8).
12. Place planks under the roller and frame for added support if required.
13. Store in an area away from human activity.
14. Do not allow children to play around the stored unit.



**Fig. 27 STORED**

## 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 brakes, and remove the ignition keys.
- 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. **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.

### IMPORTANT

Over-greasing may damage bearing seals. If seals are damaged, replace bearings immediately.

### 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 guard slots on both sides.
2. Grease PTO driveline.

#### 20 Hours or Weekly

1. Grease PTO driveline.

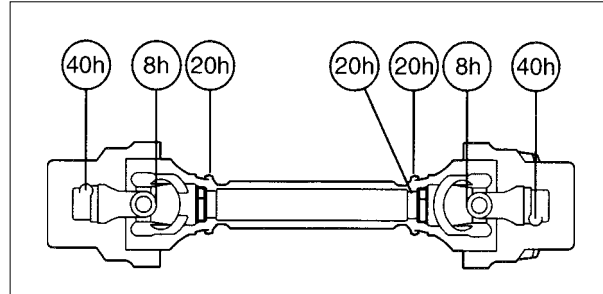


Fig. 28 PTO DRIVELINE

#### 40 Hours or Monthly

1. Grease PTO driveline.
2. Grease roller bearings

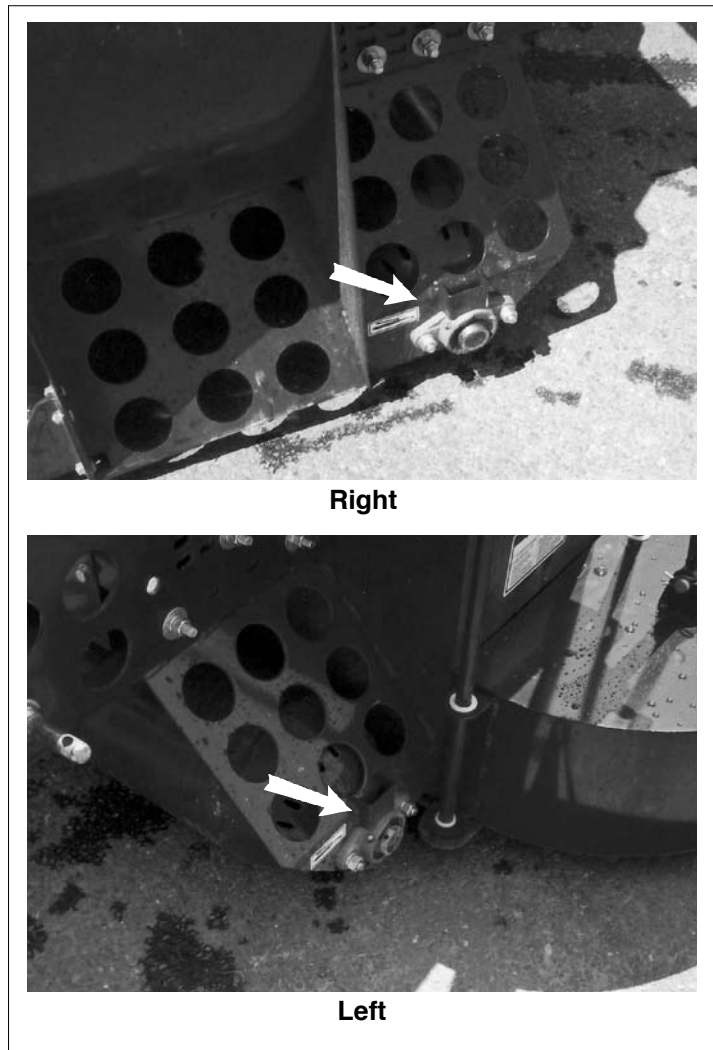
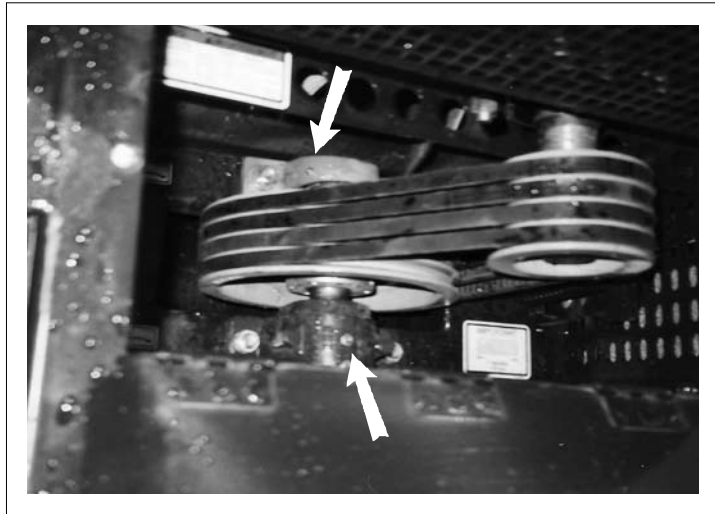


Fig. 29 ROLLER BEARINGS

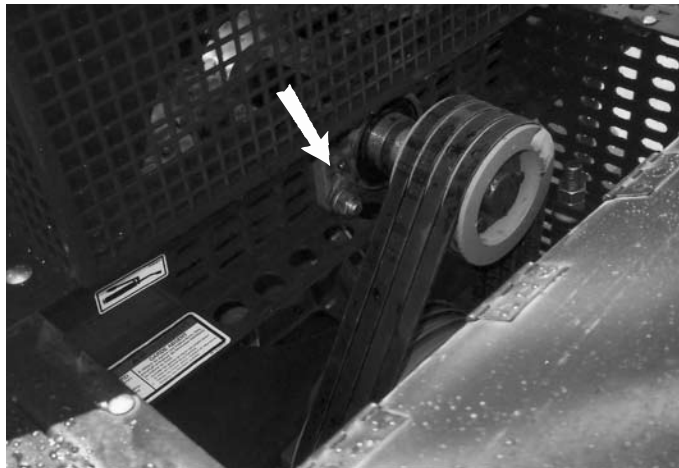
**40 Hours or Monthly**

3. Grease input shaft bearings.

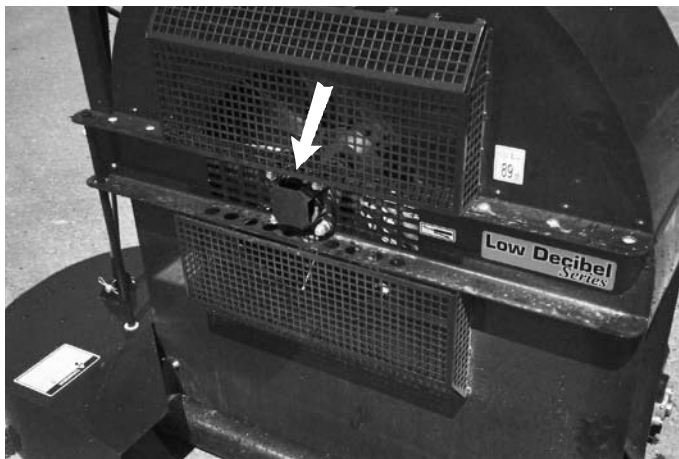


**Fig. 30 INPUT SHAFT**

4. Grease blower shaft bearings.



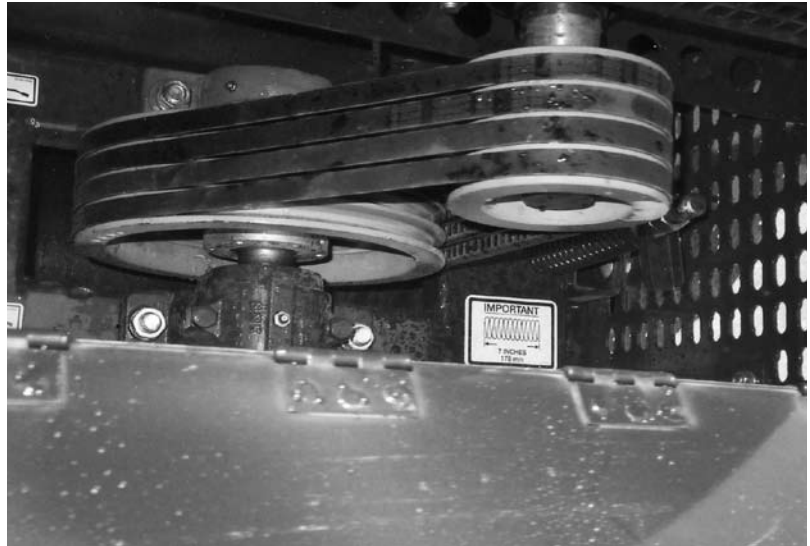
**Front**



**Rear**

**Fig. 31 BLOWER SHAFT BEARINGS**

5. Check blower drive belt tension. Be sure spring length is 7 inches (178 mm) for BW 2500 and 6.75 inches (172 mm) for BW 3500 and 4500.



**Fig. 32 DRIVE BELTS**

**WARNING**

Machine is shown with guard opened for illustrative purposes only. Do not operate machine with guard opened.

### **Annually**

1. Clean machine.



**Fig. 33 CLEAN MACHINE (TYPICAL)**

#### 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]





## OPERATING SAFETY

- Always wear eye protection when working next to Blower.
- 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.
- 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 or power unit 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.
- Do not reach into blower openings when the engine is running. Clear the work area of objects which might be picked up and snagged or entangled in the 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, jewellery, 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.

## 6.2 MAINTENANCE

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

### 6.2.1 BLOWER DRIVE BELT TENSION AND ALIGNMENT

A set of V belts transmits rotational power to the blower. They must be kept properly tensioned and the pulleys aligned to obtain the expected performance and life.

To check the tension and alignment, follow this procedure:

1. Clear the area of bystanders, especially small children.
2. Place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before dismounting.
3. Measure the length of the compression spring. It should be adjusted as indicated (Model 2500 = 7", Models 3500 and 4500 = 6.75").



**Fig. 34 DRIVE BELTS**

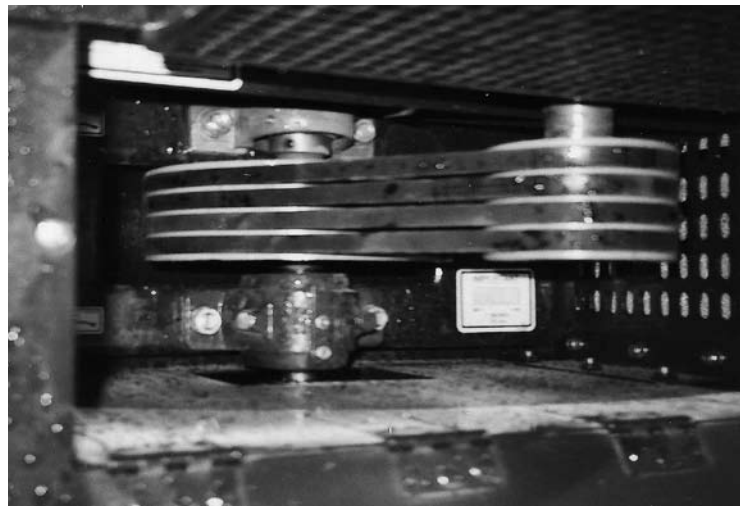
### 6.2.1 BLOWER DRIVE BELT TENSION AND ALIGNMENT (cont...)

4. Open guard over belt, release tensioner and replace belt when required.
5. **To replace belt:**
  - a. Loosen tension spring to its loosest position.
  - b. Remove belts from the top pulley.
  - c. Loosen and remove bolts from the input shaft bearing housings. Only raise the first bearing and slide belt underneath it.
  - d. Raise shaft and remove belt.
  - e. Install new belt.
  - f. Tighten input shaft bearing housing bolts.
  - g. Mount over the top pulley.
  - h. Install tension spring and set dimension.
6. Lay a straight edge across the pulley faces to check the alignment. Use the input shaft mount plate to adjust alignment if pulley faces vary more than 7 mm (1/32 inch).
  - a. Loosen plate anchor bolts.
  - b. Move mounting plate to align pulleys.
  - c. Tighten anchor bolts to their specified torque.
7. Close and secure guard.

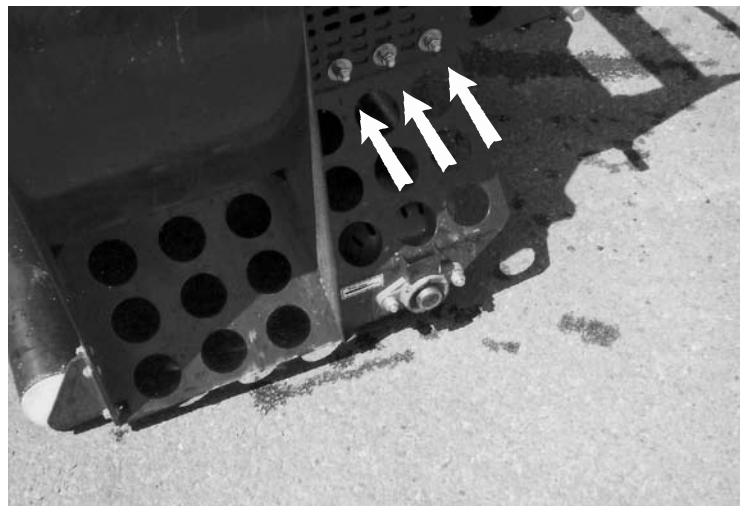


#### WARNING

Machine is shown with guard opened for illustrative purposes only. Do not operate machine with guard opened.



Alignment



Anchor Bolts

Fig. 35 BELT ALIGNMENT (TYPICAL)



Fig. 36 INPUT SHAFT BEARINGS

## 7 TROUBLE SHOOTING

The AgriMetal Leaf and Debris Blowers are large 3 Point Hitch blowers 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
Fan doesn't turn.	Belts slipping.	Adjust belt tension.
	Belts broken.	Replace belts.
<hr/>		
No air flow.	Fan doesn't turn.	See solutions listed above.
		Failed PTO clutch. Have tractor checked by your local dealer.
	Fan turns.	Air intake restricted. Clean expanded metal mesh.
<hr/>		
Machine vibrates.	Out-of-balance.	Have your dealer check fan. Repair or replace as required.
	Driveline angle too large.	Level machine to minimize driveline joint angle.
	Driveline out-of-phase.	Detach driveline from tractor. Take apart. Rotate ends 90° and reassemble. Repeat procedure until vibration gone.
	Drive belt not tight.	Tighten drive belts.

## 8 SPECIFICATIONS

### 8.1 MECHANICAL

Description	BW 2500	BW 3500	BW 4500
Type	3 Point Hitch	3 Point Hitch	3 Point Hitch
No. of Blades	7	8	8
Impeller Size	28"x11" (71 cm x 28 cm)	34"x13" (86 cm x 33 cm)	34"x13" (86 cm x 33 cm)
Impeller RPM	1520 TR/MN	1140 TR/MN	1400 TR/MN
Flow Rate	6500 CFM	10,600 CFM	12,500 CFM
Air Flow Speed	140 mph (225 KM)	150 mph (242 KM)	180 mph (290 KM)
Decibels	90	89	91
Outlet size	7.5"x12" (19 cm x 30 cm)	9"x14" (23 cm x 36 cm)	9"x14" (23 cm x 36 cm)
Chute Rotation	180°	180°	180°
Drive System	3-5/8 V Belt	4-5/8 V Belt	5-5/8 V Belt
PTO Shaft	Included	Included	Included
Min. HP recommended	25 HP @ PTO	35 HP @ PTO	45 HP @ PTO
Length	44" (111 cm)	41" (104 cm)	41" (104 cm)
Width	36" (91 cm)	61.5" (156 cm)	61.5" (156 cm)
Height	50" (127 cm)	54" (137 cm)	54" (137 cm)
Machine Weight	495 lbs (225 KG)	715 lbs (325 KG)	725 lbs (330 KG)

**SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE**

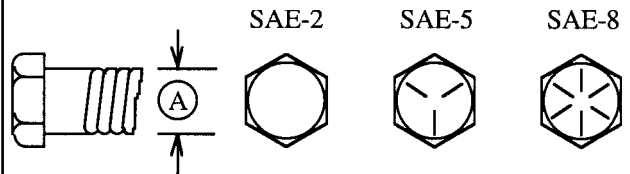
## 8.2 BOLT TORQUE

### 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.

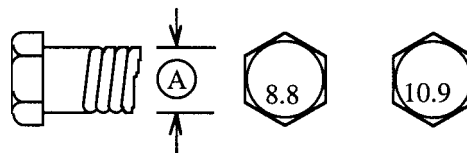
### ENGLISH TORQUE SPECIFICATIONS

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.

## 8.3 HYDRAULIC FITTING TORQUE

### Tightening Flare Type Tube Fittings \*

1. Check flare and flare seat for defects that might cause leakage.
2. Align tube with fitting before tightening.
3. Lubricate connection and hand tighten swivel nut until snug.
4. To prevent twisting the tube(s), use two wrenches. Place one wrench on the connector body and with the second tighten the swivel nut to the torque shown.

- The torque values shown are based on lubricated connections as in reassembly.

Tube Size OD	Nut Size Across Flats	Torque Value•		Recommended Turns To Tighten (After Finger Tightening)	
		(N.m)	(lb-ft)	(Flats)	(Turn)
3/16	7/16	8	6	1	1/6
1/4	9/16	12	9	1	1/6
5/16	5/8	16	12	1	1/6
<b>3/8</b>	<b>11/16</b>	<b>24</b>	<b>18</b>	<b>1</b>	<b>1/6</b>
1/2	7/8	46	34	1	1/6
5/8	1	62	46	1	1/6
3/4	1-1/4	102	75	3/4	1/8
7/8	1-3/8	122	90	3/4	1/8

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