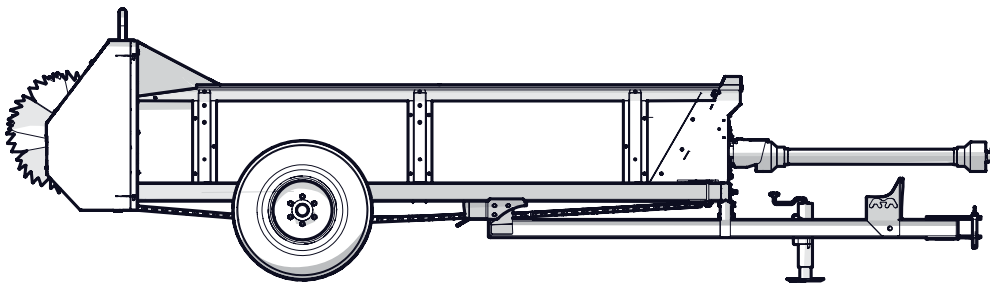


OPERATOR'S MANUAL

BUSH HOG®

MS1300P

MANURE SPREADER



Rev Apr-2021

Document Number: Z97908

Keep this manual with the machine at all times



BUSH HOG®
Performance You Can Count OnSM

CONGRATULATIONS!

You have invested in the best implement of its type on the market today.

The care you give your Bush Hog implement will greatly determine your satisfaction with its performance and its service life. We urge a careful study of this manual to provide you with a thorough understanding of your new implement before operating, as well as suggestions for operation and maintenance.

If your manual should become lost or destroyed, Bush Hog will be glad to provide you with a new copy. Order from Bush Hog, 2501 Griffin Ave., Selma, Alabama 36703.

As an authorized Bush Hog dealer, we stock genuine Bush Hog parts which are manufactured with the same precision and skill as our original equipment. Our trained service personnel are well informed on methods required to service Bush Hog equipment, and are ready and able to help you.

Should you require additional information or assistance, please contact us.

YOUR AUTHORIZED
BUSH HOG DEALER

BECAUSE BUSH HOG MAINTAINS AN ONGOING PROGRAM OF PRODUCT IMPROVEMENT, WE RESERVE THE RIGHT TO MAKE IMPROVEMENTS IN DESIGN OR CHANGES IN SPECIFICATIONS WITHOUT INCURRING ANY OBLIGATION TO INSTALL THEM ON UNITS PREVIOUSLY SOLD.

BECAUSE OF THE POSSIBILITY THAT SOME PHOTOGRAPHS IN THIS MANUAL WERE TAKEN OF PROTOTYPE MODELS, PRODUCTION MODELS MAY VARY IN SOME DETAIL. IN ADDITION, SOME PHOTOGRAPHS MAY SHOW SHIELDS REMOVED FOR PURPOSES OF CLARITY. **NEVER OPERATE** THIS IMPLEMENT WITHOUT ALL SHIELDS IN PLACE.

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1. Warranty



LIMITED WARRANTY



Bush Hog warrants to the original purchaser of any new Bush Hog equipment, purchased from an authorized Bush Hog dealer, that the equipment be free from defects in material and workmanship for a period of one (1) year for non-commercial, state, and municipalities' use and ninety (90) days for commercial use from date of retail sale. The obligation of Bush Hog to the purchaser under this warranty is limited to the repair or replacement of defective parts.

Replacement or repair parts installed in the equipment covered by this limited warranty are warranted for ninety (90) days from the date of purchase of such part or to the expiration of the applicable new equipment warranty period, whichever occurs later. Warranted parts shall be provided at no cost to the user at an authorized Bush Hog dealer during regular working hours. Bush Hog reserves the right to inspect any equipment or parts which are claimed to have been defective in material or workmanship.

DISCLAIMER OF IMPLIED WARRANTIES & CONSEQUENTIAL DAMAGES

Bush Hog's obligation under this limited warranty, to the extent allowed by law, is in lieu of all warranties, implied or expressed, **INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE** and any liability for incidental and consequential damages with respect to the sale or use of the items warranted. Such incidental and consequential damages shall include but not be limited to: transportation charges other than normal freight charges; cost of installation other than cost approved by Bush Hog; duty; taxes; charges for normal service or adjustment; loss of crops or any other loss of income; rental of substitute equipment, expenses due to loss, damage, detention or delay in the delivery of equipment or parts resulting from acts beyond the control of Bush Hog.

THIS LIMITED WARRANTY SHALL NOT APPLY:

1. To vendor items which carry their own warranties, such as engines, tires, and tubes.
2. If the unit has been subjected to misapplication, abuse, misuse, negligence, fire or other accident.
3. If parts not made or supplied by Bush Hog have been used in connection with the unit, if, in the sole judgement of Bush Hog such use affects its performance, stability or reliability.
4. If the unit has been altered or repaired outside of an authorized Bush Hog dealership in a manner which, in the sole judgement of Bush Hog, affects its performance, stability or reliability.
5. To normal maintenance service and normal replacement items such as gearbox lubricant, hydraulic fluid, worn blades, or to normal deterioration of such things as belts and exterior finish due to use or exposure.
6. To expendable or wear items such as teeth, chains, sprockets, belts, springs and any other items that in the company's sole judgement is a wear item.

NO EMPLOYEE OR REPRESENTATIVE OF BUSH HOG IS AUTHORIZED TO CHANGE THIS LIMITED WARRANTY IN ANY WAY OR GRANT ANY OTHER WARRANTY UNLESS SUCH CHANGE IS MADE IN WRITING AND SIGNED BY BUSH HOG'S SERVICE MANAGER, 2501 GRIFFIN AVE., SELMA, ALABAMA 36703



Record the model number, serial number and date purchased. This information will be helpful to your dealer if parts or service are required.

MAKE CERTAIN THE WARRANTY REGISTRATION CARD HAS BEEN FILED WITH BUSH HOG/
SELMA, ALABAMA

MODEL NUMBER _____

SERIAL NUMBER _____

DATE OF RETAIL SALE _____

2. Introduction

RETAIL CUSTOMER'S RESPONSIBILITY UNDER THE BUSH HOG WARRANTY

It is the Retail Customer and/or Operator's responsibility to read the Operator's Manual, to operate, lubricate, maintain, and store the product in accordance with all instructions and safety procedures. Failure of the operator to read the Operator's Manual is a misuse of this equipment.

It is the Retail Customer and/or Operator's responsibility to inspect the product and to have any part(s) repaired or replaced when continued operation would cause damage or excessive wear to other parts or cause a safety hazard.

It is the Retail Customer's responsibility to deliver the product to the authorized Bush Hog dealer from whom he purchased it, for service or replacement of defective parts which are covered by warranty. Repairs to be submitted for warranty consideration must be made within forty-five (45) days of failure.

It is the Retail Customer's responsibility for any cost incurred by the Dealer for traveling to or hauling of the product for the purpose of performing a warranty obligation or inspection.

2.1 Serial Number Location

Always provide the model and serial number of your Bush Hog product when ordering parts, or requesting service or other

information. The product information plate location is shown in the following illustration.

Record the serial number of your equipment in the spaces provided below for future reference.

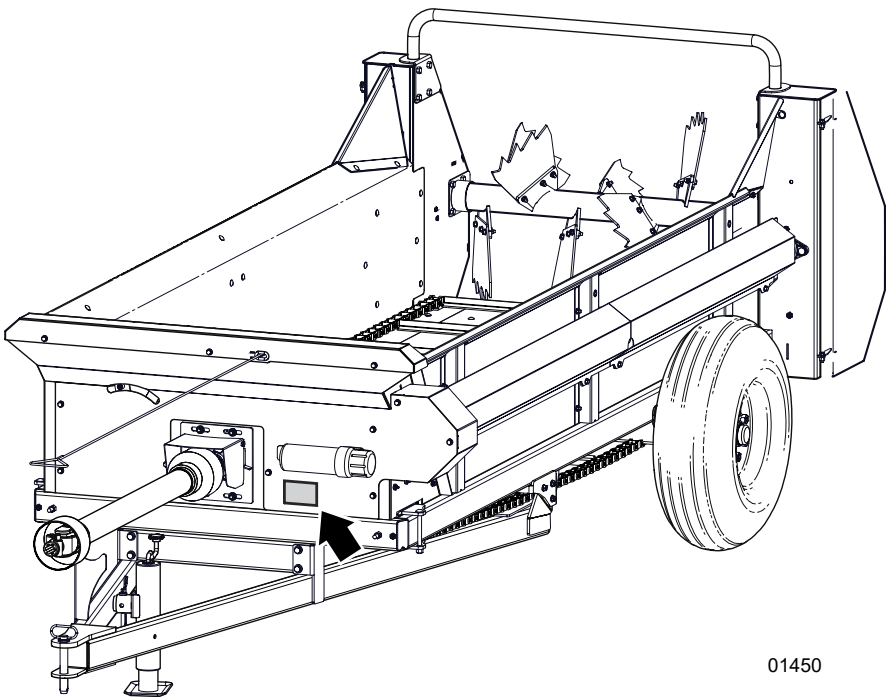


Fig. 1—Serial Number Plate Location (Typical)

Record Product Information Here	
Model:	MS1300P
Serial Number:	

2.2 Delivery Inspection Report

Bush Hog MS1300P Manure Spreader

This form must be filled out by the dealer at the time of delivery, and then signed by the dealer and customer.

I received the product manuals and have been thoroughly instructed about the equipment care, adjustments, safe operation, and applicable warranty policy.

I thoroughly instructed the customer about the equipment care, adjustments, safe operation, and applicable warranty policy, and I reviewed and provided the customer with the product manuals.

Customer
Address
City, State/ ZIP
()
Phone Number
Contact Name
Model
Serial Number
Delivery date

Dealer
Address
City, State/ ZIP
()
Phone Number

Dealer Inspection Checklist

- _____ All belts are aligned and the tension is correct.
- _____ Drive chain tension is correct.
- _____ PTO shaft telescopes and shield turns.
- _____ Clutch is adjusted and functions correctly.
- _____ Gearbox oil level is correct.
- _____ Apron chain moves freely and the tension is correct.
- _____ Beater bar moves freely.
- _____ Speed-control mechanism moves freely.
- _____ All fasteners are tightened to the correct torque.
- _____ All grease points are lubricated.
- _____ Purchased accessories are included, if applicable.

- _____ Operator's Manual is in the storage tube.
- _____ Tire pressure is correct (see the tire sidewall).
- _____ Tires are in good condition.

Safety Checks

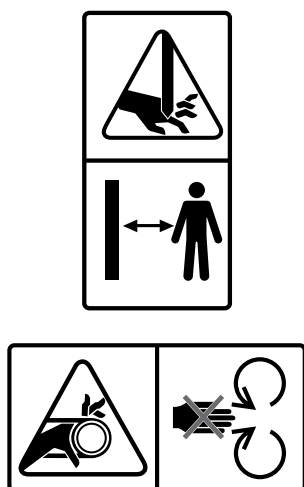
- _____ All safety sign decals are applied and legible.
- _____ Operating and safety instructions were reviewed.
- _____ All guards, shields, and covers are installed and secure.
- _____ A retainer is installed through each hitch point.
- _____ Wheel lug nuts are tightened to the correct torque.

2.3 Types of Decals on the Machine

While you become familiar with your Bush Hog product, notice that there are numerous decals located on the machine. There are different types of decals for safety, information, and product identification. The following section explains what these decals are for and how to read them.

Definitions for each safety sign and safety notice decal are described in the *Safety* section under *Safety Sign Explanations* on page 12.

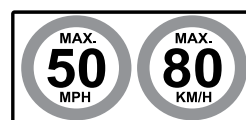
Safety Sign Decals are pictorial with a yellow background and generally two panels. They can be either vertical or horizontal.



Safety Notice Decals are pictorial with a blue background and generally rectangular with single or multiple symbols. The following example decal informs operators what personal protective equipment (PPE) is required for safe operation.



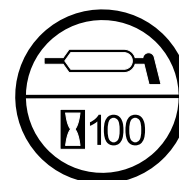
Informative Decals are generally pictorial with a white background and the number of panels varies. The following example decal provides additional information for the operator or explains the operation of a control.



Product Decals provide the machine model and serial number, and other important information.



Maintenance Decals have a green background and the number of panels varies. The following example decal shows the type of maintenance that is required (lubrication) and the frequency interval (100 hours).



3. Safety

3.1 Safety Alert Symbol

This safety alert symbol means:

ATTENTION! BE ALERT!

YOUR SAFETY IS INVOLVED!

The safety alert symbol identifies important safety messages on the Bush Hog Manure Spreader 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.



3.2 Signal Words

The signal words **DANGER**, **WARNING**, and **CAUTION** determine the seriousness level of the warning messages in this manual. The appropriate signal word for each message in this manual has been selected using the following guidelines:

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 shielded.

WARNING –

Indicates a potentially hazardous situation that, if not avoided, **could** result in death or serious injury, and includes hazards that are exposed when shields 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.

IMPORTANT – To avoid confusing equipment protection with personal safety messages, the signal word **IMPORTANT** indicates a situation that if not avoided, could result in damage to the machine.

3.3 Why SAFETY is important

- Accidents disable and kill people.
- Accidents cost money.
- Accidents are preventable.

YOU are responsible for the SAFE operation and maintenance of your Bush Hog product. **YOU** must make sure that anyone who is going to use, maintain, or work around the machine is familiar with the operating and maintenance procedures and related **SAFETY** information contained in this manual. This manual alerts you to good safety practices that should be followed while using your Bush Hog equipment.

YOU are the key to safety. Good safety practices not only protect you, but also the people around you. Make these practices part of your safety program. Make sure that **EVERYONE** using this equipment is familiar with the recommended operating and maintenance procedures, and that they follow all the safety precautions.

Do not risk injury or death by ignoring good safety practices.


3.4 Safety Rules

CAUTION!



Hearing loss hazard. Prolonged exposure to loud noise may cause permanent hearing loss. Use suitable protection while operating the machine.

W016

- Follow ALL safety and operating instructions in this manual. The most important safety device on this equipment is a SAFE operator.
- Operators of this machine must be responsible, physically able people who are familiar with machinery and trained in the operation of this equipment.
- Learn the meaning of all the safety signs (decals) that are on the machine. For definitions, see *Safety Sign Explanations on page 12*.
- Review safety related items annually with all personnel who will be operating the machine or performing maintenance.
- Do not expect a person to operate the manure spreader who has not read all the instructions and safety information in this manual. An untrained operator is not qualified and exposes themselves and bystanders to possible serious injury or death.
- Never consume alcohol or drugs prior to or while using this equipment. Alertness or coordination can be affected. Consult your doctor about using this machine while taking prescription medications.
- Wear appropriate PPE when using or servicing this machine. This includes, but is not limited to:
 - A hard hat
 - Heavy gloves
 - Hearing protection
 - Respirator or filter mask
 - Protective shoes with slip resistant soles
 - Protective glasses, goggles, or face shield
- Wear hearing protection on a full-time basis if the noise in the operator's position exceeds 80 dB. Noise over 85 dB on a long-term basis can cause severe hearing loss. Noise over 90 dB adjacent to the operator over a long-term basis may cause permanent, total hearing loss.

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



- Keep a fire extinguisher available for use, should the need arise, and know how to use it.



- Do not use a tractor unless it is equipped with a roll over protective structure (ROPS). Always wear the seat belt when operating a tractor. Serious injury or even death could result from falling off the tractor in the event of a rollover where the operator could be pinned.
- Do not allow long hair, loose fitting clothing, or jewelry near the equipment.
- Know how to stop the equipment quickly in the event of an emergency. For instructions, see *Stopping in an Emergency on page 23*.
- Only operate the machine in daylight or good artificial light.
- Do not risk injury or death by ignoring good safety practices.
- For more information, see the following sections:
 - *Operating Safety on page 22*.
 - *Maintenance Safety on page 28*.

3.5 Equipment Safety Guidelines

- The manure spreader is not intended for use or transport on public roadways. For more information, see *Transporting on page 26*.
- Never operate the machine with any shield removed. Keep all shields in place. If shield removal is required for service or maintenance, replace the shield prior to using the manure spreader.
- Replace any safety or instruction signs (decals) that are not readable or missing.
- Do not modify the equipment in any way. Unauthorized modification may result in serious injury or death, and may impair the function and life of the equipment. Unapproved modifications void the warranty.
- Make sure that the machine is properly stationed, adjusted, and in good operating condition.
- Never exceed the limits of a piece of machinery. If the machine's ability to do a job or to do it safely is in question – **DO NOT TRY IT.**

3.6 Safe Condition

Placing the machine in a **safe condition** means setting the machine to a state that makes it safe to work on before performing any service, maintenance, or storage preparation.


If the manure spreader cannot be disconnected from the tractor, complete the following to set the equipment to a safe condition:

Safe Condition

1. Turn off the mechanical drive.
2. Set the tractor parking brake
3. Turn off the engine.
4. Remove the ignition key.
5. Make sure that all components have stopped moving.
6. Chock the wheels to prevent movement.

3.7 Safety Training

Safety is a primary concern in the design and manufacture of Bush Hog products. Unfortunately, efforts to provide safe equipment can be wiped out by a single careless act.

- It is the operator's responsibility to read, understand, and follow ALL safety and operating instructions in this manual. 
- Train all new personnel and review instructions frequently with existing personnel. Make sure that only a properly trained and physically able person uses the machine. A person who has not read and understood all instructions is not qualified to use the machine. An untrained operator can cause serious injury or death to themselves or others.
- Learn the controls and how to stop the machine quickly in the event of an emergency. For instructions, see *Stopping in an Emergency on page 23*.
- If the machine is loaned or rented, it is the owner's responsibility to make sure that, prior to using the machine, every operator:
 - Reads and understands this manual.
 - Is instructed in the safe and correct use of the equipment.
 - Understands and knows how to complete the **Safe Condition** procedure.

WARNING

Cancer and Reproductive Harm

www.P65Warnings.ca.gov

D960

The design and manufacture of this product conforms to the applicable provisions in the following standards:

- ASABE S318 Safety for Agricultural Field Equipment
- ISO 3600 Tractors, machinery for agriculture and forestry, powered lawn and garden equipment – Operator's manuals – Content and format

The following sign-off form can be used to document the required training.

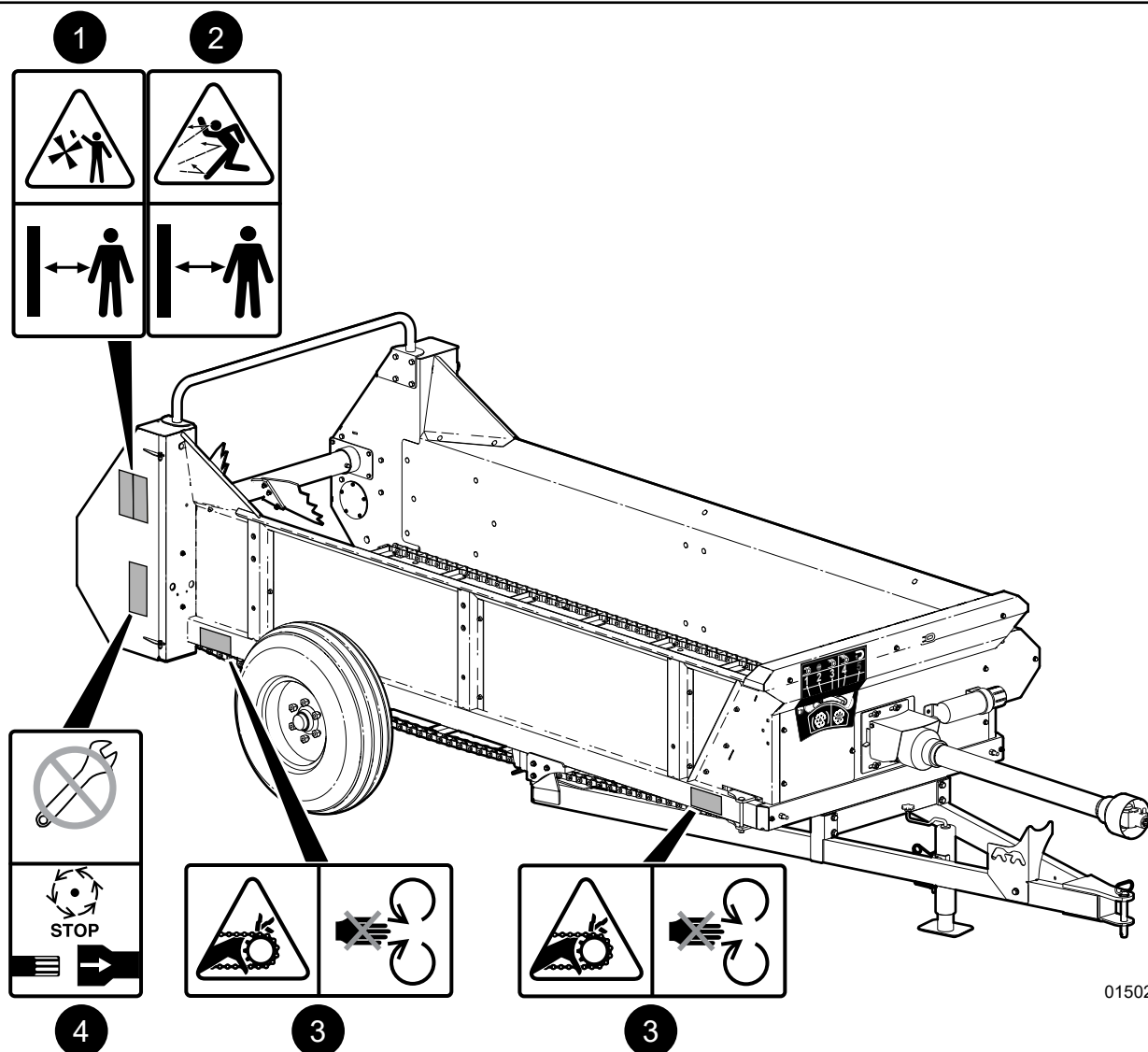
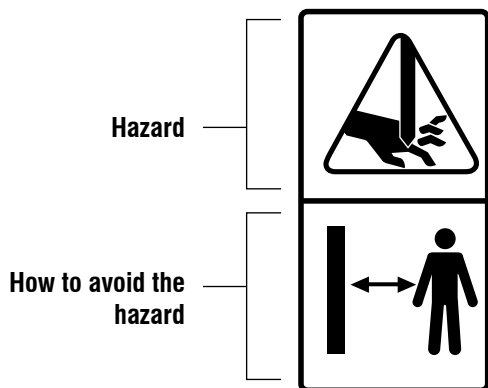
[illegible]

3.9 Safety Sign Explanations

The top panel (or left-hand panel for horizontal signs) shows the safety alert (potential hazard), and the bottom (or right-hand) panel shows the message (how to avoid the hazard).

Practicing good safety means becoming familiar with safety signs (decals) and warnings, and being aware of situations that require alertness.

Think SAFETY! Work SAFELY!



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Fig. 2—Safety-sign Locations (right-hand side view)

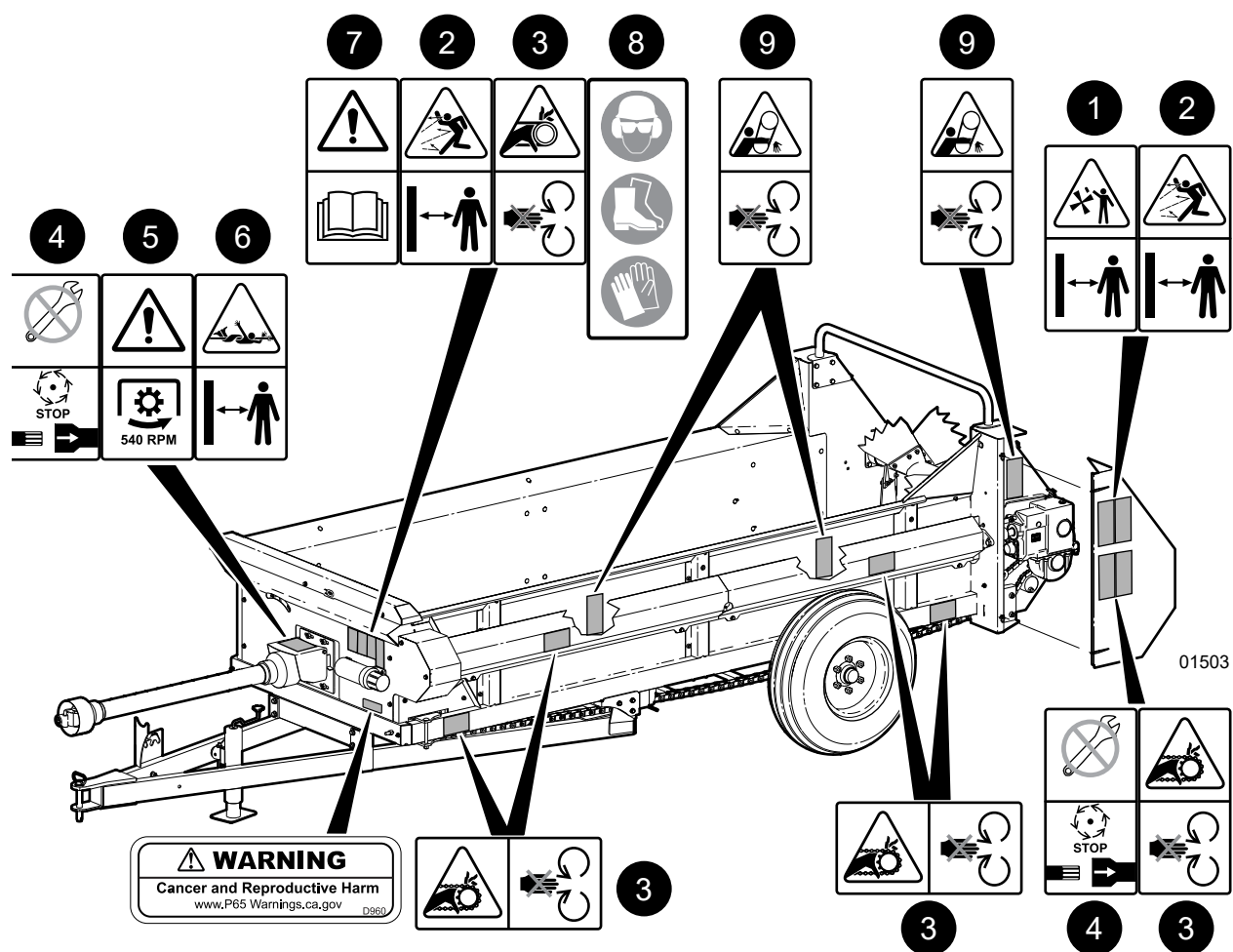
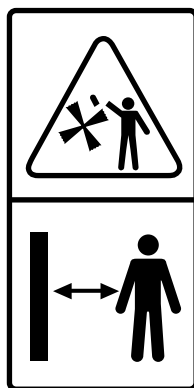


Fig. 3—Safety-sign Locations (left-hand side view)

1. WARNING!

Risk of entanglement in beater-bar paddles.

Keep hands, loose clothing, and long hair away from the beater-bar paddles while they are operating.



2. WARNING!

Risk of injury from flying debris.

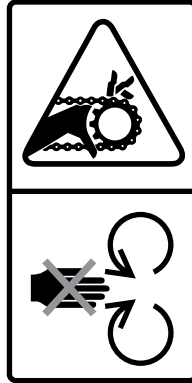
Stay clear of manure discharge. The beater bar can expel manure or other material fast enough to cause injury.



3. WARNING!

Risk of being caught in rotating parts resulting in serious injury.

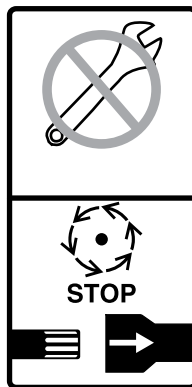
Do not attempt to reach in with the shields removed while the machine is operating. Keep hands, loose clothing, and long hair away.



4. WARNING!

Risk of serious injury or death if the power take-off (PTO) is not stopped and disengaged.

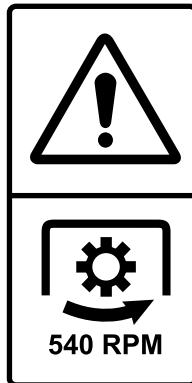
Before performing any maintenance, stop the engine, and then disengage the PTO.



5. WARNING!

Risk of personal injury from component failure.

Excessive PTO speeds, above 540 rpm, or incorrect rotation can result in machine damage.



6. WARNING!

Risk of entanglement in rotating drive line.

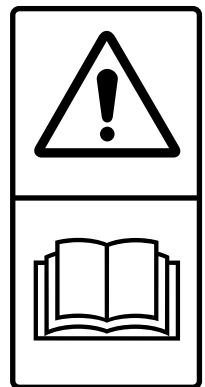
Stay clear of the PTO shaft when the machine is operating. Do not operate the machine with the PTO shaft cover removed. Keep hands, loose clothing, and long hair away from the drive line while it is rotating.



7. CAUTION!

Read the operator's manual.

Read ALL operating instructions in the manual and learn the meaning of ALL safety signs on the machine.



8. CAUTION!

Always wear the appropriate PPE when using this machine.

For example:

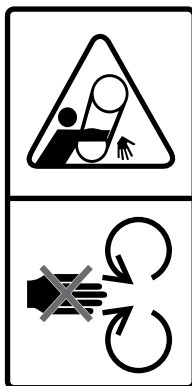
- A hard hat
- Heavy gloves
- Hearing protection
- Protective shoes with slip resistant soles
- Protective glasses, goggles, or a face shield



9. WARNING!

Do not operate machine without shields in place.

Failure to do so may cause serious injury or death.



4. Use an appropriate tool to smooth out the decal, working from one end to the other.

Small air pockets can be pierced with a pin and smoothed out using a piece of the decal backing paper.

3.10 Replacing Damaged Safety Signs


IMPORTANT! If parts are replaced that have safety signs on them, new signs must be applied. Safety signs must always be replaced if they become damaged, are removed, or become illegible.

- Always replace safety signs that are missing or have become illegible. Replacement safety signs are available from your authorized distributor, dealer parts department, or Bush Hog.
- Keep the safety signs clean and legible at all times.
- Parts replaced that had a safety sign (decal) on them must also have the safety sign replaced.

Requirements

- The installation area must be clean and dry.
- The application surface must be clean and free of grease or oil.
- The ambient temperature must be above 50 °F (10 °C).
- A squeegee, plastic bank card, or similar tool is required to smooth out the decal.

Procedure

 **NOTE:** Determine the exact position for the decal before removing the backing paper. If possible, align the decal with an edge on the machine.

1. Peel the decal off the backing paper.
2. Position the decal above the location where it is being applied to the machine.
3. Starting at one edge, carefully press the center of the exposed sticky-backing in place, smoothing it out as you work from one side to the other.

4. Familiarization

The Bush Hog MS1300P Manure Spreader is designed to hold, transport, and spread manure or other similar material. A set of beater-bar paddles at the back of the main box spread the manure.

The MS1300P model uses power from the tractor that is transmitted through a PTO drive shaft. Power is transmitted along the left-hand side of the frame to drive the beater bar and unloading chain systems.

4.1 To the New Operator

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. Following the recommended procedures provides a safe working environment for the operator, bystanders, and the area around the work site. Untrained operators are not qualified to use the machine.

4.2 Operator Orientation

IMPORTANT! The directions for left-hand side, right-hand side, backward, and forward mentioned throughout this manual are determined when sitting in the driver's seat, facing the direction of forward travel.

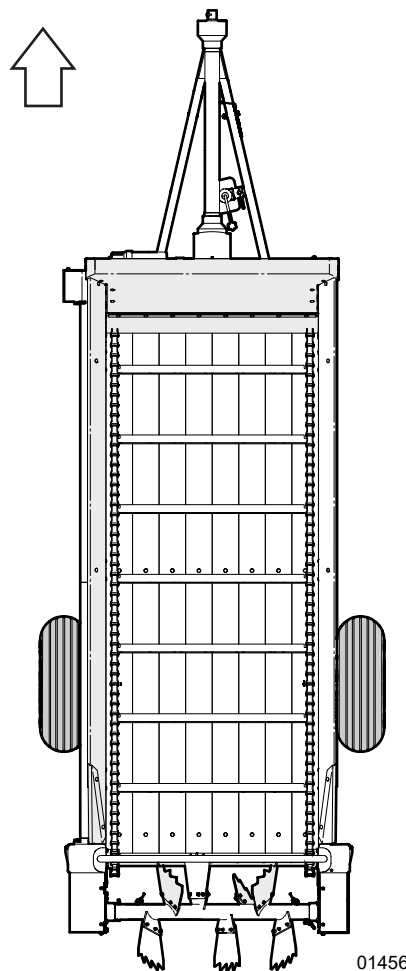
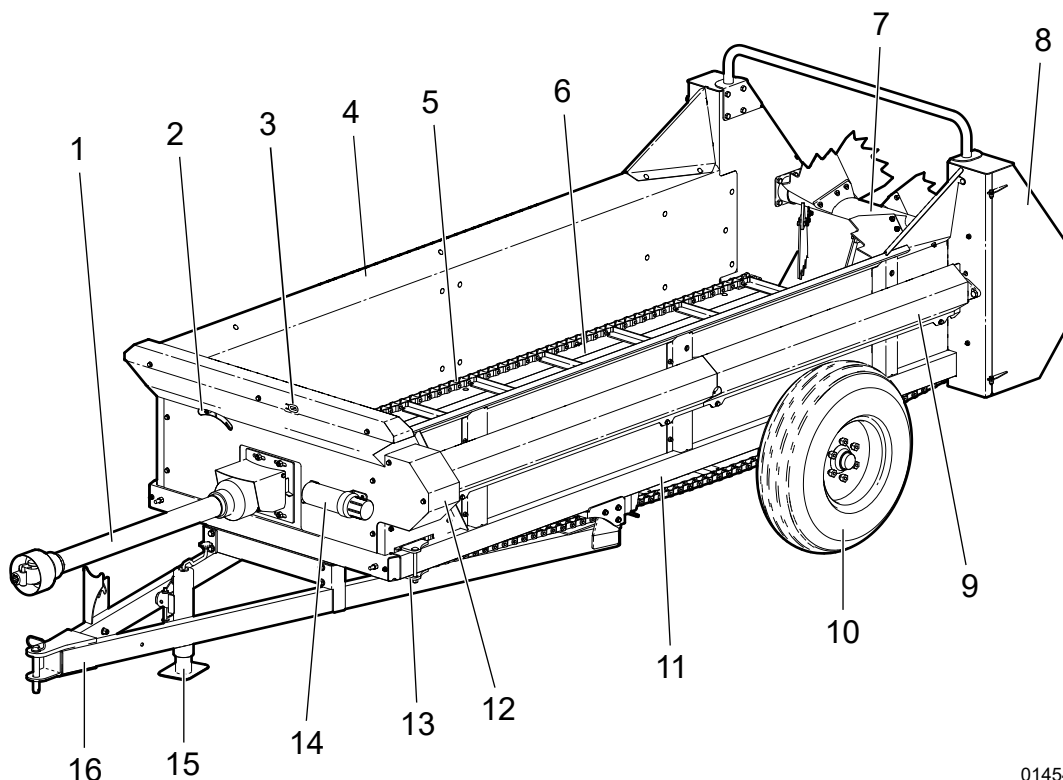


Fig. 4–Orientation

4.3 Machine Components

The Bush Hog MS1300P has a 130 bushel main box with a sliding apron that is powered by a PTO driven multi-speed gear assembly (540 rpm maximum). The apron transfers the manure to paddles that eject the manure from the box to spread it effectively and efficiently.

The apron features heavy-duty 667X pintle-chains, driven by a fully enclosed gearbox with two speeds and a clean-out speed setting. The heavy-duty beater bar includes ten replaceable paddles.



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Fig. 5—Manure Spreader Components

- | | |
|---|---|
| 1. PTO shaft | 9. Side shaft shield |
| 2. Speed-control indicator | 10. 12 ply (12PR) farm specialist tires |
| 3. Speed-control rope guide hole (rope not shown) | 11. Main-box frame |
| 4. Main box (130 bushel capacity) | 12. Beater-bar drive front shield |
| 5. Apron-chain assembly | 13. Apron-chain tensioner (1 of 2) |
| 6. Floorboards (eight) | 14. Operator's Manual container |
| 7. Beater-bar assembly | 15. Trailer jack |
| 8. Beater-bar and apron drive rear shield door (1 of 2) | 16. Tongue assembly |

5. Attaching to a Tractor

WARNING!

Never let anyone stand between the tractor and the implement during hitching. Too fast of an approach or the operator's foot slipping from the clutch can lead to injury or fatality to the person standing nearby.

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When coupling or uncoupling the manure spreader to or from a tractor, the manure spreader should always be parked on a level, dry area that is free of debris and other foreign objects.

1. Keep bystanders clear of the area.
2. Make sure that there is enough space and clearance to safely back up to the tractor.
3. Use the trailer jack to raise the clevis hitch to the height of the tractor draw bar.
4. Slowly back up the tractor until the draw bar and clevis hitch are aligned.
5. Attach the clevis hitch. Place the hitch pin through the clevis and draw bar, and then install the snap-lock pin to secure the hitch pin.
6. Use the crank to raise the trailer-jack leg.
7. Pull out the pin, and then swivel the trailer jack to its stowed position.

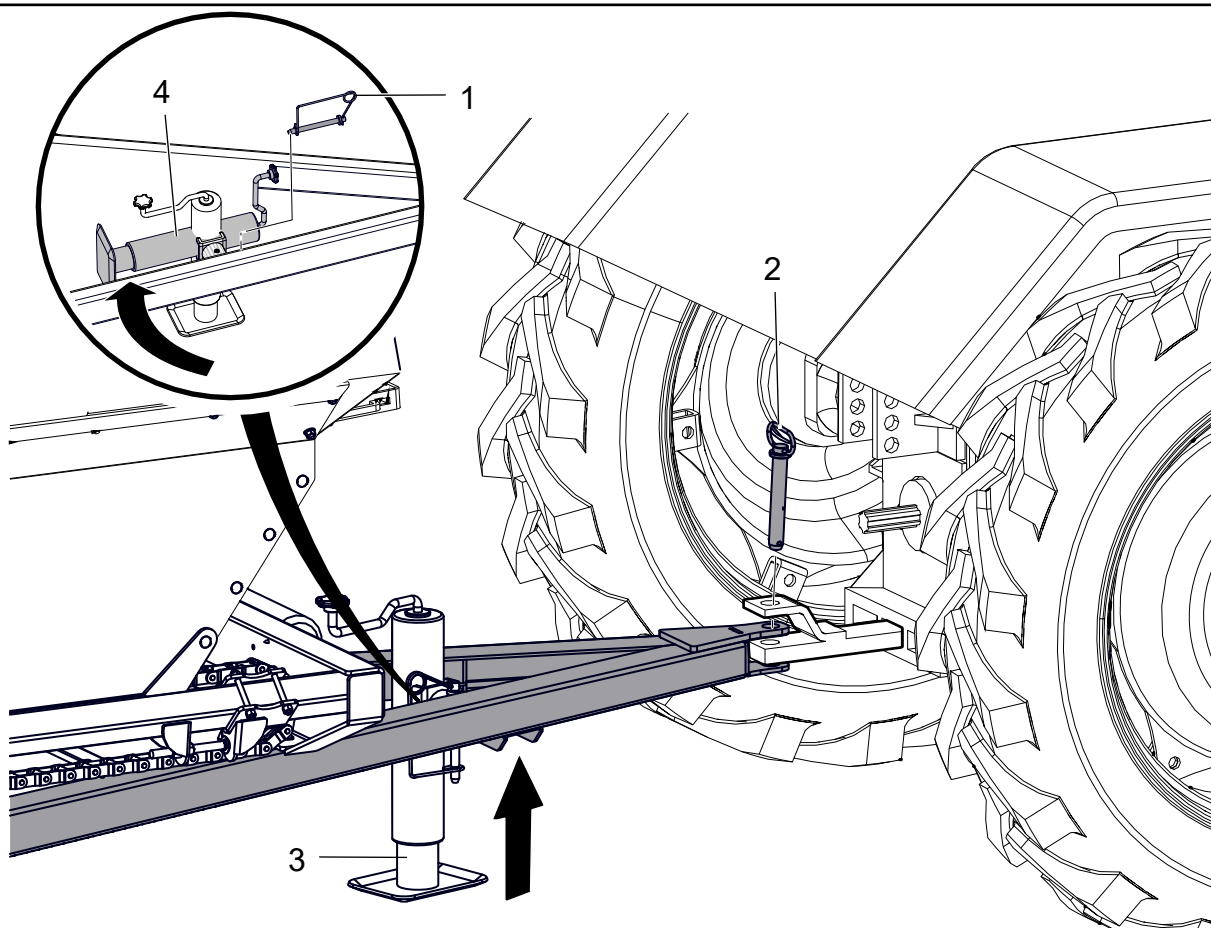


Fig. 6—Attaching to a Tractor

1. Snap-lock pin
2. Hitch pin
3. Trailer-jack leg
4. Trailer jack in the stowed position

6. PTO Shaft

Before installing the PTO shaft, make sure that it is the correct size.

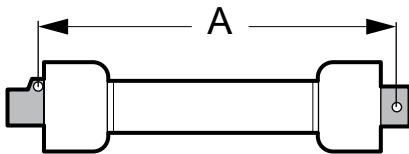
6.1 Sizing a PTO Shaft

IMPORTANT! The PTO shaft that came with your machine may need to be shortened.

CAUTION!

Wear suitable eye protection when cutting steel tubes.

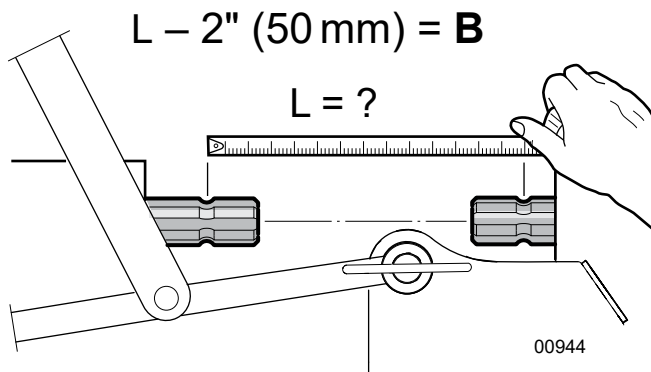
1. Hook up the manure spreader to the tractor.
2. Take the PTO shaft that came with your machine, fully collapse it, and then measure the distance between the locking yokes. Call this measurement **A**.



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Fig. 7—Measurement A

3. Measure the distance between the grooves for the locking collars on each input. Subtract 2 inches (50 mm) from this measurement. Call this measurement **B**.



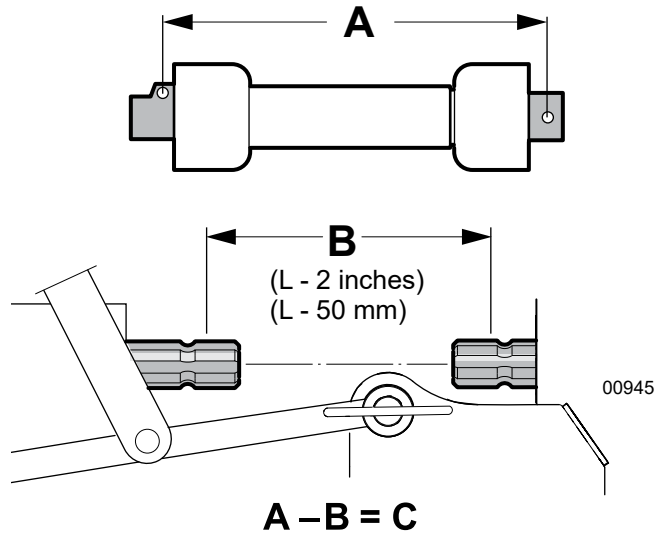
00944

Fig. 8—Measurement B

4. If the collapsed length **A** (from Step 2) is longer than measurement **B** (from Step 3), the PTO shaft must be shortened.

5. Subtract **B** from the uncut PTO shaft measurement **A**. ($A - B$)

The result is the length that **BOTH** halves of the PTO shaft should be shortened. Call this cut length **C** ($A - B = C$).

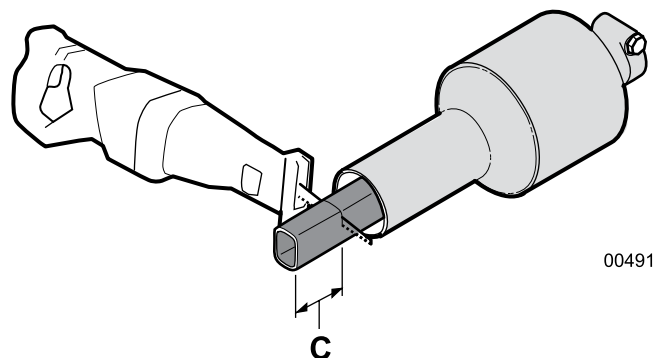


00945

Fig. 9—C = Cut Length

6. Pull the PTO shaft apart, and then measure and cut off length **C** from each of the outer plastic covers and inner metal tubes.

NOTE: Use the cutoff piece of outer shielding to mark the inner tube. Leave the steel center tubes longer than the plastic outer tubes; otherwise, they can be harder to put back together.



00491

Fig. 10—Cut Off Length C from Both PTO Shaft Halves

6.2 Installing a PTO Shaft

Make sure that the equipment is in the following state:

- The tractor is turned off and the parking brake is applied.
- The PTO shaft shielding is in good condition and able to turn freely, independent of the PTO shaft.
- The PTO yoke ends are clean. Adding a small amount of lubricant on the splines can help them to slide on.

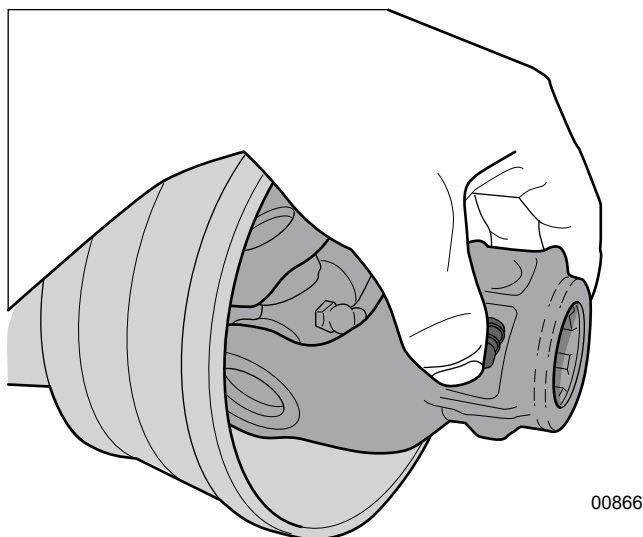


Fig. 11 – Locking-Pin Button

1. Install the PTO shaft on the implement:
 - a. Press the locking-pin button and push the shaft end onto the input PTO.
 - b. Connect the safety chain to the implement, so that the shielding does not turn during operation.
2. Slide out the end of the PTO shaft up to the tractor output PTO, aligning the two shaft splines.
3. Press the locking-pin button and push the shaft end onto the tractor output PTO.
4. Once it is started, slide the shaft all the way on. You might hear a click and the locking-pin button should retract to the original position.
5. Check that the shaft lock is fully seated by taking your hands off the locking-pin button, and then pulling back on the shaft.

7. Controls

WARNING!

Do not operate the machine until you are thoroughly familiar with the position and function of the various controls. Read the operator's manual thoroughly. Your safety is involved!

W065

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

- Set the beater-bar and apron drive speed, as required.
- Engage the tractor's PTO to control the manure spreader.

7.2.1 PTO Controls

For information about operation of the PTO control, see the tractor operator's manual.

7.2.2 Beater-bar and Apron Drive

IMPORTANT! Turn off the PTO before selecting position 5 (return). When you select position 5, the engagement lever moves to position 1 (low). Failure to turn off the PTO before selecting position 5 will cause damage to the drive gearbox.

The beater-bar and apron drive speed are controlled by the tractor driver using the nylon speed-control rope. The driver pulls and releases the speed-control rope to select one of the five speed-control settings.

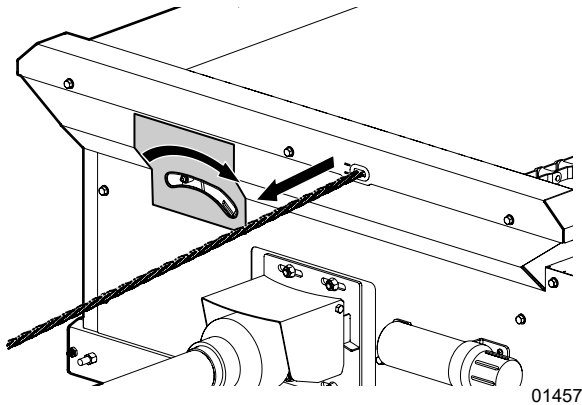


Fig. 12—Beater-bar and Apron Drive Speed Control

The five-position speed-control indicator is located on the front of the main box, near the PTO connection.

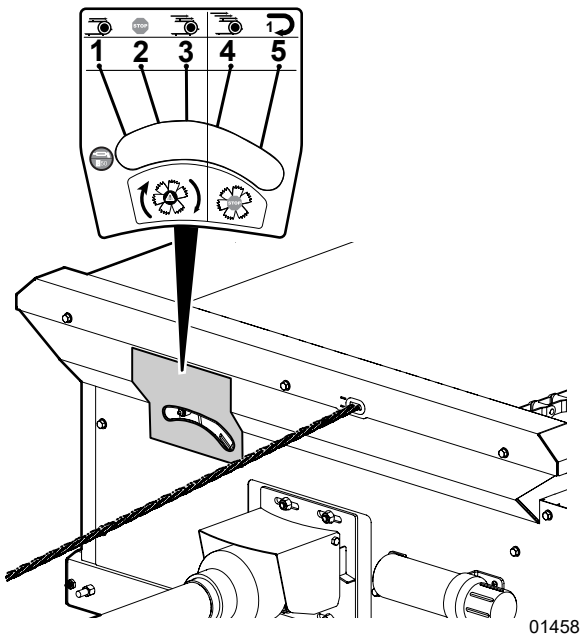









Fig. 13—Five-Position Speed-control Indicator

Indicator	Description
	Caution: the beater-bar assembly is rotating.
	The beater-bar assembly is stopped.
	Low: the apron drive is set to a steady speed, for an even application of manure.
	Stop: the apron drive is stopped.
	High: the apron drive is set to a fast speed, for a heavy application of manure.
	Clean out: the apron drive is set to a rapid speed, to quickly clean out the main box.
	Return: the engagement lever moves to setting 5 (return), and then automatically returns to setting 1 (low).

8. Operating Instructions

The operator is responsible for being familiar with and following all operating and safety procedures.


8.1 Operating Safety

CAUTION!



Hearing loss hazard. Prolonged exposure to loud noise may cause permanent hearing loss. Use suitable protection while operating the machine.

W016

- It is the operator's responsibility to read, understand, and follow ALL safety and operating instructions in this manual. 
- Never use the machine until the operators are adequately trained in the safe operation of the machine and have read and completely understand:
 - The safety and operation sections of this manual.
 - The safety signs (decals) on the machine.
 - The tractor operator's manual.
- Understand and know how to complete the **Safe Condition** procedure (see *Safe Condition* on page 10).
- Wear the appropriate PPE and do not allow long hair, loose fitting clothing, or jewelry near the equipment.
- Inspect the manure spreader for damage or loose parts. Repair or replace parts, as required, before beginning work.
- Make sure that all safety shields are in place, secure, and in good condition. Moving parts on manure spreaders, such as PTO drivelines, side shafts, pulleys and sprockets are hazardous if not shielded.
- Do not start the manure spreader until you know everyone is clear of the machine.
- Do not operate the manure spreader above 540 rpm. Excess speeds can damage the manure spreader and void the warranty.
- Complete the **Pre-operation Checks** before starting work (see *Pre-operation Checks* on page 23).
- Never operate any controls from the ground. Remain seated on the tractor while operating the manure spreader. It is extremely dangerous to attempt adjustments when the manure spreader is operating. Spinning beater-bar paddles and other moving parts can cause injury or death.

- Do not allow anyone within 20 ft (6 m) of the manure spreader during operation. Objects thrown from the rear of the manure spreader could cause injury.
- Always remove loose manure or soil from tires and other parts of the equipment before entering a roadway. Manure or wet soil left on the roadway by your tractor and manure spreader can cause slippery road conditions for other vehicles.
- Use caution when loading the manure spreader. Be aware of objects and bystanders that are around you. Never exit a tractor or skid steer with the bucket raised.
- Do not load the manure spreader unless it is hitched to a tractor. Do not unhitch a loaded manure spreader from the tractor and leave it supported only by the trailer jack.
- Make sure that there is plenty of ventilation in the loading area. Gases produced by decomposing manure in storage can be toxic or poisonous to people or animals. Methane gas is odorless and explosive in nature.
- Be careful when scraping or dumping at a push-off ramp. If the ramp surface is slick or wet, the tractor could slide over the edge of the ramp.
- Do not attempt to scrape or clean the inside of the manure spreader when the PTO is engaged. Falling into the manure spreader's spinning paddles could be fatal.
- Always spread manure up or down a slope. Spreading across a slope creates a risk of rollover.
- Never allow anyone to ride on the manure spreader.
- Stop the engine when leaving the manure spreader unattended.
- In freezing temperatures, make sure that the apron chain is not frozen to the main-box floor or sides. Make sure that there are no lumps of manure frozen to the floor. A frozen load could result in equipment damage.
- Always park the manure spreader on level ground. Place blocks ahead of and behind the wheels before unhooking it. This prevents the manure spreader from unexpectedly rolling when it is separated from the tractor.

8.2 Stopping

1. Slow the tractor engine to low idle.
2. Stop forward movement.
3. Disengage the PTO.
4. Turn off the tractor engine.
5. Remove the ignition key and wait for all moving parts to stop.

8.3 Stopping in an Emergency

If an emergency occurs:

1. Stop forward movement.
2. Disengage the PTO. If available, activate the tractor's emergency PTO shutoff.
3. Turn off the tractor engine.
4. Correct the condition that caused the emergency before starting the equipment.

8.4 Pre-operation Checks

For personal safety and to maintain good mechanical condition of the manure spreader, complete the following pre-operation checks before each use:

Area to Check	✓
Check that the machine is properly hitched. Make sure that the retainers are installed on the mounting pins.	
Check for and remove any manure or other material that is entangled in the manure spreader.	
Check that the manure spreader was lubricated, as specified in the <i>Maintenance Schedule on page 28</i> .	
Check that the beater-bar and drive system move freely.	
Check the tire pressure. If required, inflate the tires to the pressure that is noted on tire sidewall.	
Check that all covers and shields are in place. Make sure that they are secure.	
Check the tightness of all fasteners. Make sure that your equipment is working and in good repair.	
Make sure that the operator is wearing the appropriate PPE, such as a hard hat, safety eyewear, safety footwear, safety vest, hearing protection, and gloves.	
Make sure that the operator is not wearing loose-fitting clothing or jewelry, and that long hair is tied back.	

8.5 Machine Break-In

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

After 1–5 hours of operation:

- Check that the apron chain and drive system move freely.
- Check that the beater-bar and drive system move freely.
- Check all nuts, bolts, and other fasteners for damage and tightness. If required, tighten them to the specified torque. See *Specifications on page 37*.
- Check the oil level in the gearbox. If required, top-up the oil. For instructions, see *Check the Gearbox Oil Level on page 33*.
- Check for entangled material. Remove all entangled material before resuming work.
- Check the tire pressure. If required, inflate the tires to the correct pressure.

After 10 hours of operation:

1. Repeat the *after 1–5 hours of operation* checks.
2. Complete the maintenance tasks that are described in the *Maintenance Schedule on page 28*.

8.6 Loading



The manure spreader load height is 42 inches (107 cm).

- Make sure that the manure spreader is securely attached to the tractor.
- Choose a flat, open, solid area for loading the manure spreader. Do not load the manure spreader when it is at a steep angle to avoid a tipping hazard.
- Load the manure spreader from front to back. This loading method spreads the manure uniformly in the main box.
- Do not overload the manure spreader.
- Break up any large chunks of manure.
- Be cautious of foreign objects in the manure that could jam the beater-bar and paddles, and potentially damage the machine. Smaller objects could be thrown toward the driver.
- If you are loading the manure spreader in freezing weather, be aware of frozen chunks of manure that could damage the machine.

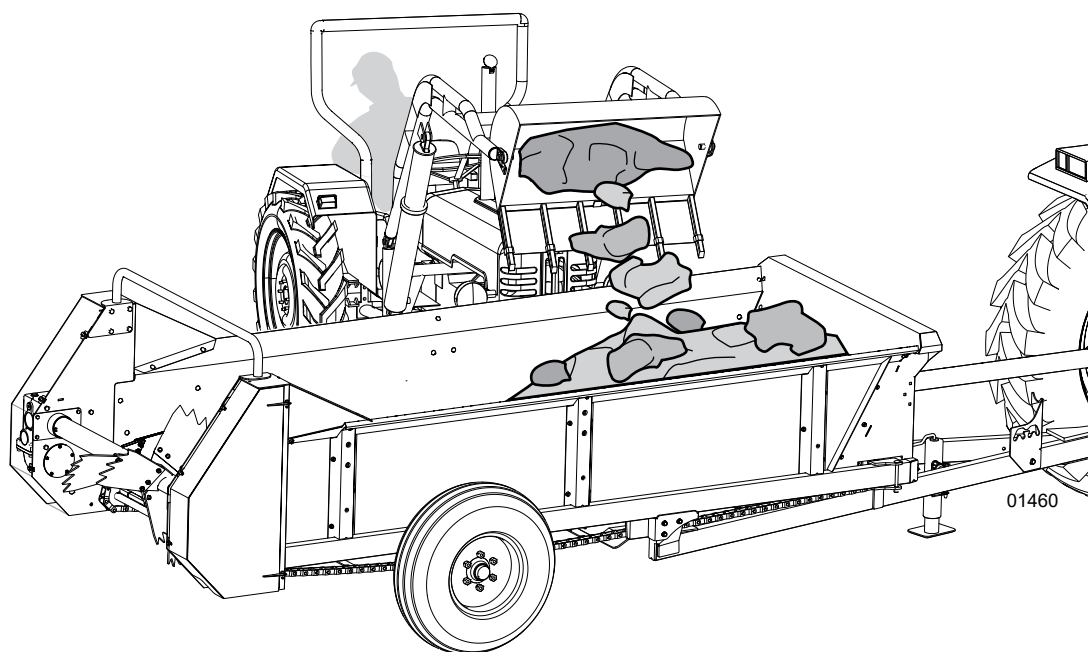


Fig. 14—Load the Manure Spreader

8.7 Spreading

WARNING!



Risk of personal injury from component failure.



Excessive PTO speeds above 540 rpm or incorrect rotation can result in machine damage.

W084

1. With the PTO turned off, move the manure spreader from the loading area to the spreading area.
2. Stop the tractor, and then set the parking brake.
3. Set the beater-bar and apron drive control to the desired speed. For information about speed control, see *Beater-bar and Apron Drive on page 21*.
4. With the engine speed at low idle, slowly engage the PTO to start the beater-bar spinning and the apron chain moving.
5. Release the parking brake and begin to drive ahead, while increasing the PTO speed. Increase the PTO speed, as desired. Do not exceed the maximum speed of 540 rpm.
6. When you are finished spreading, disengage the PTO.
7. Return to the loading area and repeat the loading procedure, as required.

Operational Tips

If possible, to minimize manure splattering on the driver, drive the tractor into the wind when spreading. Reducing the ground speed and PTO speed also reduces splattering.

The manure spreader can be driven between 3–6 mph (4.5–9 km/h) when spreading. Select the ground speed based on the terrain and how fast you want to unload. Slow the ground speed as the machine empties to reduce splattering.

Mid-range PTO speed of 250–350 rpm is recommended. Higher speeds can increase the amount of splatter. Do not exceed 540 rpm.

Some manure is finer or more fluid. In this case, an optional end gate can be installed to prevent the manure from draining out during loading. For more information about accessories for your manure spreader, contact your Bush Hog dealer or go to BushHog.com.

8.8 Cleaning Out

WARNING!



Moving parts are exposed and an entanglement hazard is present.



Make sure that the engine is turned off and the PTO is disengaged when working in or around the manure spreader.

IMPORTANT! Do not use a pressure washer on sealed bearings. Dirt can be forced inside the bearing case and cause the bearing to eventually fail.

1. Stop the tractor, turn off the engine, and set the manure spreader to a safe condition. For instructions, see *Safe Condition on page 10*.
2. Scrape down the inside of the main box. Use extra caution if you go inside the main box.
3. When you are finished scraping, make sure that no one is inside the main box, and then start the tractor in idle.
4. Set the beater-bar and apron drive control to **Clean Out (4)**. For more information, see *Beater-bar and Apron Drive on page 21*.
5. Slowly engage the PTO, and then increase the speed to 540 rpm. Do not exceed the maximum speed of 540 rpm. The beater bar does not spin; however, the apron-drive speed increases to quickly clean out the remaining manure.
6. When the main box is cleaned out, disengage the PTO.
7. Turn off the tractor engine, and then set the manure spreader to a safe condition.
8. Use a pressure washer to remove any remaining manure or other material from the inside and outside of the manure spreader.

8.9 Removing a Jam

Use the following procedure if manure in the manure spreader bridges or jams up. Be aware that if you are spreading in very cold weather, frozen chunks of manure could cause a blockage.

1. Stop the tractor, apply the parking brake, and then turn off the engine.
2. Remove manure from around the beater-bar paddles.
3. Inspect the machine to determine what has caused the jam or blockage, and remove it.
4. Make sure that there are no hard or frozen chunks of manure, or foreign objects in the main box.

5. Start the tractor and leave it at a low idle.
6. Slowly engage the PTO.
7. Do one of the following:
 - If the beater bar turns freely, continue spreading.
 - If the beater bar fails to turn, continue with Step 8.
8. Disengage the PTO, apply the parking brake, and then turn off the tractor.
9. Inspect the following apron chain locations for an obstruction or damage:
 - Inside the main box
 - Main box undercarriage
 - Front and rear sprockets
10. If the apron drive and chain appear to be in working order, repeat Steps 5 and 6, and then continue with Step 11.
11. Do one of the following:
 - If the beater bar and paddles turn freely, continue spreading.
 - If the beater bar and paddles fail to turn, repeat Step 8, and then manually unload the manure spreader to find the blockage.

8.10 Transporting

IMPORTANT! Equipment that is transported on a public roadway must comply with the local laws that govern the safety and transport of machinery.

The manure spreader is not intended for use or transport on public roadways. Therefore, it does not include the required lights, reflectors, and markings.

Before taking the manure spreader on a public roadway, install the required lighting, reflectors, and markings, and make sure that they are in good working condition.

For specific requirements, contact your local transportation authority.

8.10.1 Transport Safety

- Never allow riders on the manure spreader.
- Do not exceed a safe travel speed. Slow down for rough terrain and cornering.
- Make sure that the spreader is securely hitched to the tractor and that a retainer is through the drawbar. Always attach a safety chain between the hitch and the tractor.

8.10.2 Before Transporting the Manure Spreader

Check each of the following:

- PTO is disengaged.
- Trailer jack is raised and locked in position.
- Tire pressure is correct. If required, inflate the tires to the pressure that is specified on the tire sidewall.
- Tires and rims are in good condition. Replace a cut tire or repair damaged rims.
- Lug nuts are tight. Tighten loose lug nuts to the required torque. For torque specifications, see *Wheel Lug Nut Torque* on page 39.
- Axle dust caps are in good condition. Replace axle dust caps that are damaged or leaking.

8.11 Storage

IMPORTANT! During cold weather months, never store manure in the manure spreader between unloading times. A frozen load can cause equipment damage.

After use for one season or when the manure spreader is not going to be used for a period of time, completely inspect all of the major systems. Replace or repair any worn or damaged components to prevent unnecessary down time at the beginning of the next season. Touch up scratches or dents.

Before Storing the Manure Spreader

IMPORTANT! Do not use a pressure washer on sealed bearings. Dirt can be forced inside the bearing case and cause the bearing to eventually fail.

1. Remove all manure or other material from the main box.
2. Remove any entangled material.
3. Use a pressure washer to thoroughly remove all manure and debris from the machine.

Storing the Manure Spreader

IMPORTANT! Do not store the manure spreader with wet manure in it or store it outdoors when it is loaded. Failure to do this can cause the metal parts to corrode.

1. Park the manure spreader in a flat, dry location.
2. Lower the trailer jack, and then lock it in position.
3. Rest the PTO shaft on the PTO holder.
4. Chock the wheels to prevent movement.
5. During freezing temperatures, remove excess moisture from the moving parts (for example the apron chain and beater bar).
6. Inspect all rotating parts and remove all entangled material.
7. Check the condition of the following components:
 - Control rope (replace a control rope that is damaged)
 - Bearings (replace seized or damaged bearings)
 - Apron chain (adjust a chain that has sagged)
 - Sprockets (replace damaged sprockets)
 - Chains (replace a damaged chain)
8. If the manure spreader is in an outdoor storage location, cover it with a waterproof tarp (whenever possible, an indoor storage location is recommended).

Removing from Storage

Complete the *Pre-operation Checks* on page 23.

9. Service and Maintenance

WARNING!

Risk of serious personal injury. Stop engine before performing ANY service or maintenance procedure. Reinstall all covers and shields removed before putting machine back into service.

W033

9.1 Maintenance Safety

- Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
- Read and understand all the information in the Safety section that starts on *page 8*.
- Follow good shop practices that include, but are not limited to the following:
 - Keep the service area clean and dry.
 - Ground electrical outlets and tools correctly.
 - Make sure that there is an adequate amount of light for the current task.
- Never operate the tractor in a closed building. The exhaust fumes may cause asphyxiation.
- Never work underneath equipment unless it is securely supported by blocks.
- Always wear the appropriate PPE.
- When replacement parts are required, only use genuine original equipment manufacturer (OEM) parts. Bush Hog cannot be held responsible for damage or injuries that are caused by use of unapproved parts or accessories.
- Inspect and tighten all bolts, nuts, and screws.
- Reinstall all safety shields and covers after completing service or maintenance.
- Use regular cleaners to clean parts. Do not use gasoline.
- Always use the correct tools for the task, make sure that the tools are in good condition, and understand how to use them.
- Have a qualified tire dealer or repair service complete all required tire maintenance. Do not attempt to mount a tire unless you have the proper equipment and experience for this task. Failure to follow the correct procedures when mounting a tire on a wheel or rim can cause an explosion, which may result in serious injury or death.
- When replacing worn tires, make sure that they meet the original tire specifications. Never undersize a tire.

9.2 Grease Type

Use an SAE multi-purpose high temperature grease with extreme pressure (EP) performance. Alternatively, an SAE multipurpose lithium-based grease is acceptable.

9.3 Maintenance Schedule

Complete maintenance procedures at the specified time or hour interval, whichever comes first.

After Each Use

Clean the manure spreader. For instructions, see *Before Storing the Manure Spreader on page 27*.

Every 8 hours or Daily

Grease the PTO shaft.	See <i>page 29</i>
Check the tire pressure. The specified tire pressure is located on tire sidewall.	Inflate, as required
Check the wheel lug-nut torque.	See <i>page 39</i>
Check the tightness of all fasteners.	See <i>page 37</i>
Check the hinge and pivot point lubrication.	Lubricate, as required
Check the apron-chain lubrication.	See <i>page 31</i>
Check the drive-chain lubrication and tension, and the sprocket condition.	See <i>page 31</i>
Check the speed-control rope operation and condition.	Replace, as required
Complete the pre-operation checks.	See <i>page 23</i>

Every 50 hours or Annually

Check the gearbox oil level. If required, change the oil.	See <i>page 33</i>
Check / adjust the PTO drive belt tension and condition.	See <i>page 34</i>

9.3.1 Grease Points

IMPORTANT! Use a hand-held grease gun for all greasing. Pump one shot of grease per fitting.

- Wipe the grease fitting with a clean cloth before applying the grease to avoid injecting dirt and grit.
- Replace and repair broken fittings immediately.
- If a fitting does not accept grease:
 - Remove and clean it thoroughly.
 - Clean the lubricant passageway.
 - If required, replace the fitting.

Location	Every 8 hours of Operation	Number of Grease Points
1	PTO-shaft universal joints	2
2	PTO-shaft slip joint	1

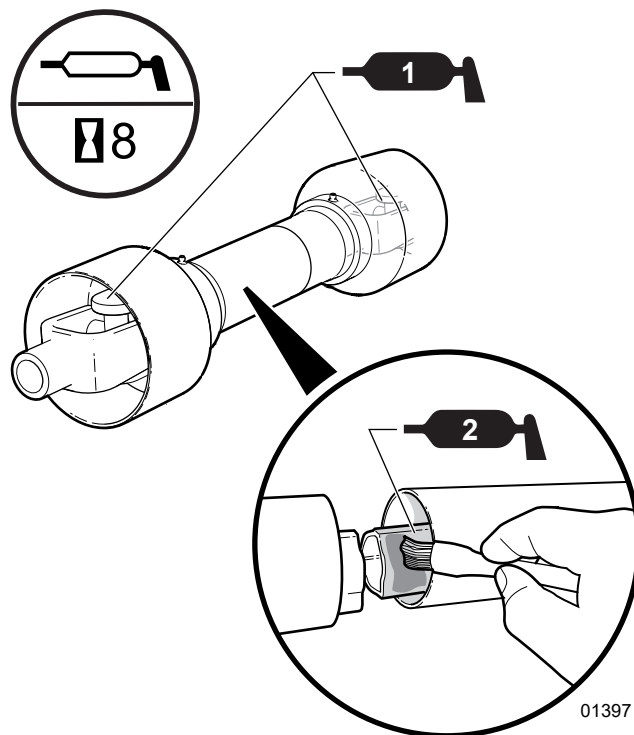
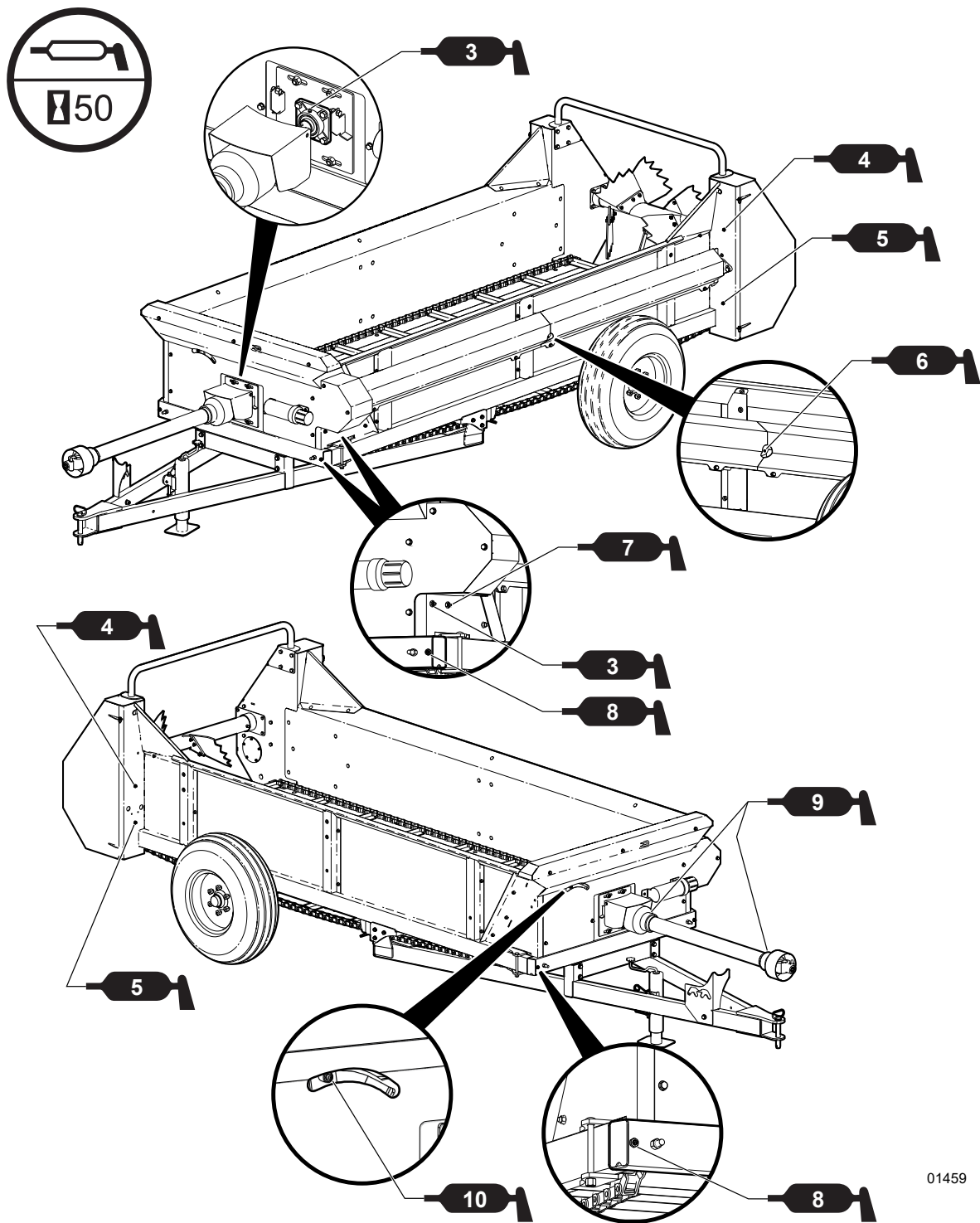


Fig. 15– 8-hour Grease Points

Location	Every 50 hours of Operation or Annually	Number of Grease Points
3	PTO-shaft bearings	2
4	Beater-bar bearings	2
5	Rear apron-drive bearings	2
6	Pillow-block bearing	1
7	Front beater-bar drive bearings	1
8	Front apron-drive chain sprockets	2
9	PTO-shaft shield	2
10	Engagement-ratchet lever	1



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Fig. 16–50-hour Grease Points

9.4 Drive Chain

The drive chain and sprocket provide power to the apron-chain drive shaft. It must be oiled frequently and kept at the correct tension for the chain to reach its maximum expected life.

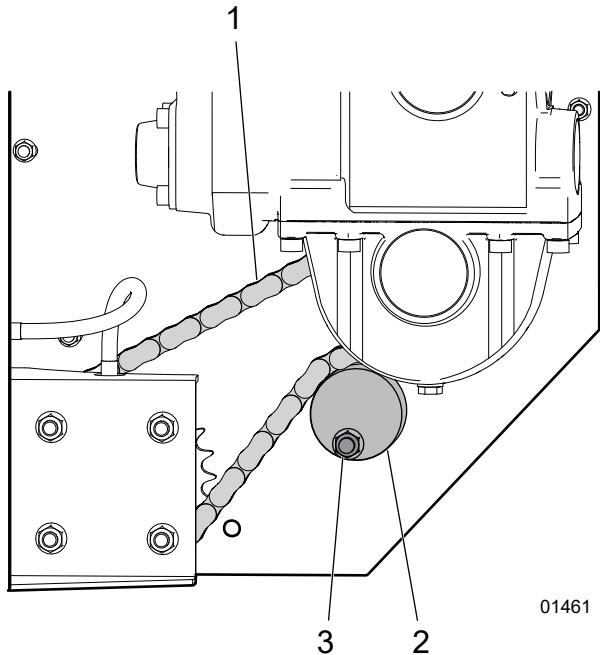


Fig. 17—Drive Chain and Tensioner

9.4.1 Oiling the Drive Chain

Lubricate the drive chain (1) every 50 hours or monthly. Use a good quality chain lubricant for the best performance.

Check the condition of the drive chain and sprocket every 50 hours.

9.4.2 Tensioning the Drive Chain

The drive-chain tension is correct when the chain deflects 1/4–3/8 in (6–10) mm.

1. Set the machine to a safe condition. For instructions, see *Safe Condition* on page 10.
2. Open the left-hand side, rear shield door.
3. Loosen the chain-tension adjustment nut (3).
4. Turn the chain tensioner (2) until the chain deflects 1/4–3/8 in (6–10 mm).
5. Tighten the chain-tension adjustment nut.
6. Close and secure the left-hand side, rear shield door.

9.5 Apron Chain

Lubricate the apron chain every 50 hours or monthly. Use a good quality chain lubricant for the best performance.

The apron chain pushes manure into the beater-bar paddles for spreading. It must be oiled frequently and kept at the correct tension for the chain to reach its maximum expected life.

9.5.1 Oiling the Apron Chain

IMPORTANT! Do not use a pressure washer on sealed bearings. Dirt can be forced inside the bearing case and eventually cause the bearing to fail.

1. Use a pressure washer to clean the manure spreader.
2. Apply a coat of oil to the sections of the apron chain that are inside the main box.
3. Run the manure spreader or move it forward to move the apron chain and bring the sections that are under the manure spreader into the main box (the oiled sections move under the manure spreader).
4. Repeat Step 2 to lubricate the sections of apron chain that were not previously oiled.

9.5.2 Tensioning the Apron Chain

IMPORTANT! Adjust both sides the same amount to keep the loading even.

The apron chain tension is correct when it sags 6–8 in (15–20 cm) below the manure spreader frame.

Use the idler-mount plate adjusting bolts to set the apron chain to the required tension.

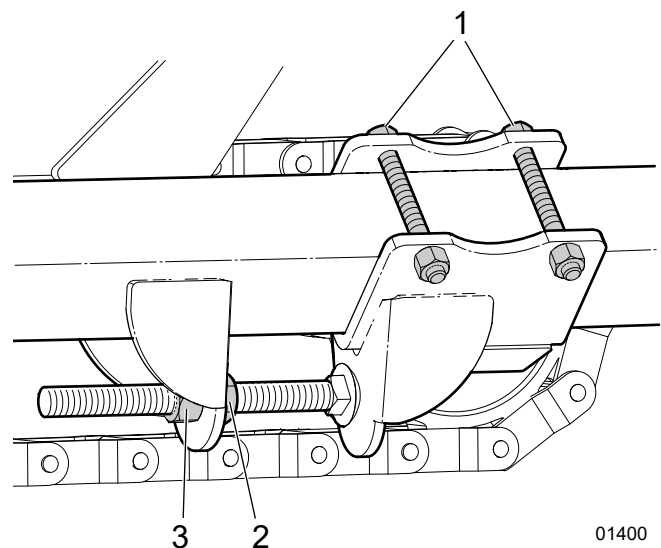


Fig. 18—Apron-chain Adjustment

On each side of the manure spreader:

1. Loosen the two idler-mount bolts (1).
2. Loosen the jam nut (2).
3. Turn the adjustment nut (3) on each side of the manure spreader equally to set the apron-chain tension.
4. Tighten the jam nut.
5. Tighten the idler-mount bolts.

9.5.3 Shortening the Apron Chain

Over time the apron chain can stretch. If it stretches to a point where no further adjustment is possible, links must be removed to set it to the correct tension.

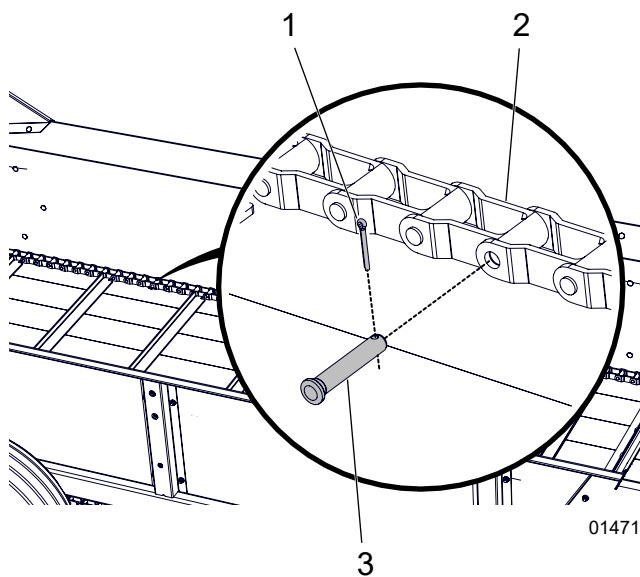


Fig. 19—Apron-chain Link

1. Use the apron-chain tensioner to completely loosen the tension on both sides of the apron chain.
2. Determine how many chain links (2) to remove.
3. On one side of the apron chain:
 - Find the clevis pin (3).
 - Remove the cotter pin (1) from the clevis pin.
 - Remove the clevis pin from the chain links.
 - Separate the chain.
4. Use a chain breaker and carefully remove the chain pin.
5. Remove the required number of chain links.
6. Repeat Steps 3-5 on the other side of the apron chain.
7. On both sides of the apron chain:
 - Insert the clevis pin to reassemble the chain links.
 - Install the cotter pin in the clevis pin to secure it.

9.6 Main Box Sealing Flap

Periodically check the condition of the front main-box sealing flap. Replace the sealing flap if the sides or bottom of the main box are not adequately sealed.

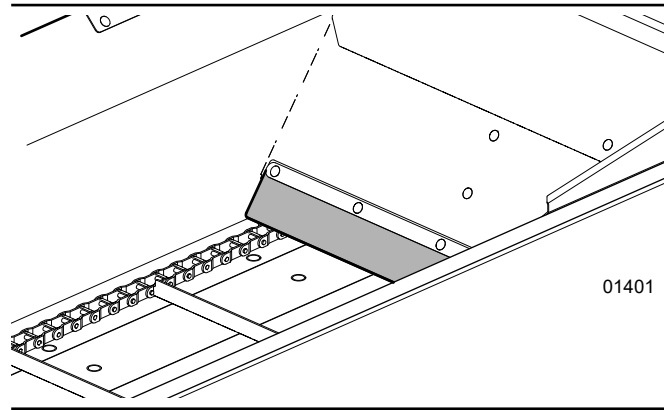


Fig. 20—Sealing Flap

9.7 Gearbox

Use a good quality SAE 90 EP (ISO VG 320) gear oil in the gearbox.

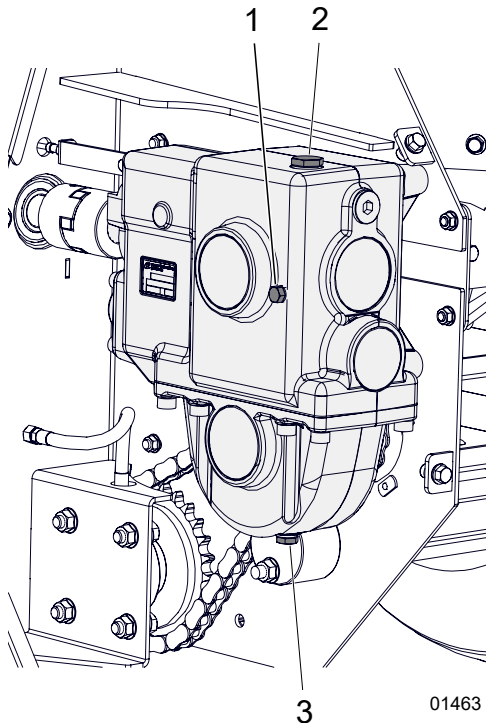


Fig. 21 – Gearbox Oil Reservoir Plugs

9.7.1 Check the Gearbox Oil Level

Check the gearbox oil level every 50 hours.

1. Set the machine to a safe condition. For instructions, see *Safe Condition on page 10*.
2. Open the left-hand side, rear shield door.
3. Remove the level-check plug (1) on the side of the gearbox.
4. Check the oil level:
 - If the oil level is even with the bottom of the check-level plug hole, use a clean, lint-free cloth to clean the check-level plug, install it in the hole, and then continue with Step 8.
 - If the oil level is below the bottom of the check-level hole, continue with Step 5.
5. Remove the fill plug (2).
6. Pour the specified type of oil into the fill-plug hole until the oil level is even with the bottom of the level-check hole.
7. Use a clean, lint-free cloth to clean the check-level and fill plugs, and then replace them.
8. Close and secure the left-hand side, rear shield door.

9.7.2 Change the Gearbox Oil

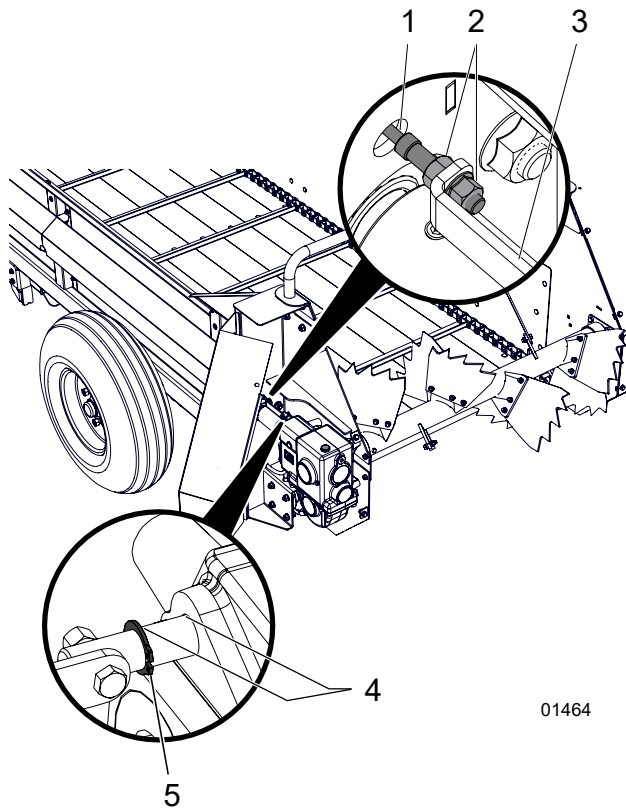
Change the gearbox oil after the first 50 working hours, and then every 500–800 hours or once per year.

To prevent burns, wait for the gearbox and oil to cool; however, it is recommended that you change the oil while it is warm.

1. Set the machine to a safe condition. For instructions, see *Safe Condition on page 10*.
2. Open the left-hand side, rear shield door.
3. Place a liquid-tight container below the drain plug (3).
4. Remove the fill (2) and level-check (1) plugs.
5. Remove the drain plug to drain the oil.
6. Use a clean, lint-free cloth to clean the drain plug, and then replace it.
7. Pour the specified type of oil into the fill-plug hole until the oil level is even with the bottom of the level-check hole.
8. Use a clean, lint-free cloth to clean the check-level and fill plugs, and then replace them.
9. Close and secure the shield door.
10. Dispose of the used oil appropriately. Comply with the local environmental regulations.

9.7.3 Adjust the Shift Cable

If the gearbox is not shifting gears correctly, the shift cable may require adjustment.



01464

Fig. 22—Shift-cable Adjustment

1. Set the machine to a safe condition. For instructions, see *Safe Condition* on page 10.
2. Use the speed-control rope to set the beater and apron drive speed to 1 (low). For more information, see *Controls* on page 21.
3. Open the left-hand side, rear shield door.
4. Locate the shift cable (1) that is attached to the gearbox shift rod (3).
5. Loosen the two lock nuts (2) that are on the end of the shift cable.
6. Adjust the position of the shift cable until the shift rod retaining ring (5) is approximately 1 1/16 in (27 mm) (4) from the gearbox housing.
7. Tighten the two lock nuts to secure the shift cable to the shift rod.

9.8 Drive Belt

WARNING!

Machine shown with shields removed for illustrative purposes only. Never operate machine with shields removed.

W001

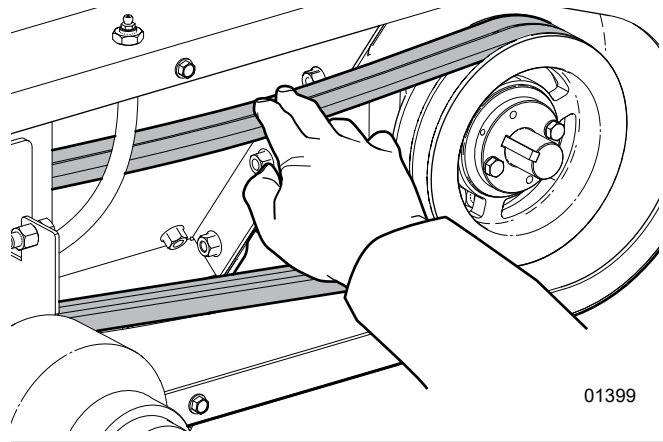
9.8.1 Adjust the Drive Belt Tension

IMPORTANT! Drive belt deflection should not measure more than 3/4–1 in. (20–25 mm).

Drive belts transmit PTO power to the drive shaft. The drive shaft then provides power to the gearbox that drives the beater bar and apron-chain assembly.

When a belt is in disrepair or loose, the ability to efficiently transfer power from the PTO to the drive shaft may be affected. It is important to check the condition and tension of the belts on a regular basis. Replace a frayed, cracked, or worn drive belt.

Remove the belt-drive shield to check the belt tension. Use a drive belt tension gauge for accurate measurement. If a gauge is not available, push on the belts with your fingers to observe their deflection.



01399

Fig. 23—Drive Belt Deflection

9.8.2 Replace the Drive Belts

IMPORTANT! Always replace drive belts as a matched set. Recheck the drive belt tension after 10 hours of use.

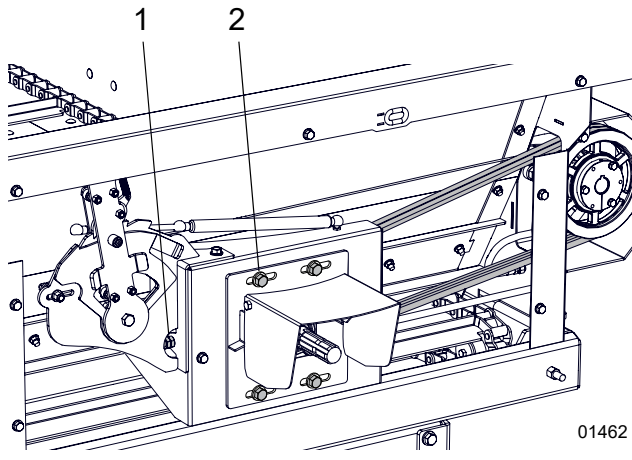


Fig. 24—Tensioning a Drive Belt

1. Remove the belt-drive shield.
2. Loosen (do not remove) the four bearing-mount bolts (2).
3. Turn the drive belt tensioning nut (1) counterclockwise to loosen it.
4. Push down on the drive belts to pull the bearing over until the drive belts are loose enough to remove.
5. Remove the drive belts, and then install a new set of belts.
6. Slide the bearing to snug up the belts.
7. Turn the belt tensioning nut clockwise to apply tension.
8. Check the drive belt tension. For instructions, see *Adjust the Drive Belt Tension on page 34*.
9. Make sure that the pulley alignment is correct, and then tighten the four bearing-mount bolts.
10. Reinstall the belt-drive shield.

9.9 Beater-bar Paddles

For optimal performance, inspect the beater-bar paddles on a regular basis and replace paddles that are worn or damaged. Contact your Bush Hog dealer to purchase replacement paddles.

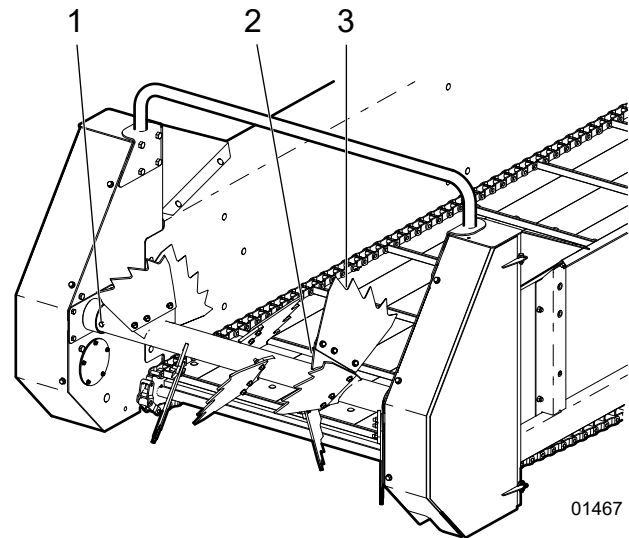


Fig. 25—Paddle Replacement

1. Set the machine to a safe condition. For instructions, see *Safe Condition on page 10*.
2. Remove the gearbox-coupler hex bolt and lock nut (1) to release the beater bar.
3. Rotate the beater bar to access the required paddle (3).
4. Remove the three bolts and serrated nuts that secure the paddle to the paddle holder (2), and then remove the paddle.
5. Align a new paddle with the paddle-holder holes.
6. Install the three bolts and nuts to secure the paddle to the paddle holder (if required, use new fasteners).
7. Tighten the paddle bolts and nuts to the recommended torque. For more information, see *Common Bolt Torque Values on page 38*.
8. Repeat Steps 3–7 for each additional paddle that requires replacement.
9. Align the beater-bar hole with the gearbox-coupler hole, and then install the hex bolt and lock nut to secure the beater bar.
10. Tighten the hex bolt and lock nut to the recommended torque.

10. Troubleshooting

Bush Hog manure spreaders are simple and reliable machines that requires minimal maintenance.

The following table provides possible causes and solutions for some of the common problems you may encounter.

If you encounter a problem that is difficult to solve, even after you read through this troubleshooting section, please call your local dealer, distributor, or Bush Hog. Before you call, have the serial number for your manure spreader handy. For more information, see *Serial Number Location on page 5*.

Problem	Cause	Solution
Beater bar does not turn.	Obstruction.	Clear debris from the beater-bar paddle area.
	PTO is not engaged.	Engage the PTO.
	Drive belt is too loose.	Adjust or replace the drive belts.
Slow spreading or no spreading.	Engine speed is too slow.	Set the tractor throttle to 540 rpm.
	Apron-drive speed is set too slow.	Increase the apron-drive speed.
	Apron chain is frozen to the floor.	Use hot water to free the apron-drive chain. Always make sure that the apron-drive chain is not frozen before starting the PTO.
	Apron chain is broken or is off the sprockets.	Repair the chain and adjust the tension.
	Drive chain is broken or is off the sprocket.	Repair the chain and adjust the tension.
	Drive belt is slipping.	Adjust or replace the drive belts.
Unusual vibration while operating.	A beater-bar paddle is broken or missing.	Replace broken or missing beater-bar paddles.
	PTO driveline is out of phase.	Align the PTO driveline.
	Debris in the beater-bar paddles.	Clean the beater-bar paddles and check for frozen debris.
Beater-bar and apron drive control is not working.	Return spring is weak.	Replace the return spring.
	Speed-control mechanism is dirty.	Clean and lubricate the speed-control mechanism.
	The rope is broken.	Replace the rope.

11. Specifications

11.1 Machine Specifications¹

Model		MS1300P
Recommended Tractor Size		45–75 hp 34–56 kW
Drive Type		PTO
Beater Drive		Belt drive / gearbox
Apron Drive		Chain and sprocket
Capacity (Heaped)	130 bushels	
	162-1/2 ft ³ 4.6 m ³	
Box Dimensions (LxWxH)		130" x 48" x 23" 330 cm x 122 cm x 58 cm
Dimensions (LxWxH)		214" x 79" x 42" 544 cm x 201 cm x 107 cm
Loading Height		42" (107 cm)
Tire size		11L-15SL
Number of Paddles		10
Weight		2180 lb (989 kg)
Tongue Weight		330 lb (150 kg)
Floor		Rustproof tongue and groove poly
Box Construction		Corrosion resistant Cor-Ten weathering steel – powder coated
Apron Chain Type		667X chain
Dealer-installed Options	Fines Pan (M7620)	Optional
	End Gate (M7630)	Optional
	Upper Beater (M7640)	Optional

¹ Specifications are subject to change without notice.


11.2 Common Bolt Torque Values

Checking Bolt Torque

Unless otherwise indicated, tighten all bolts to the torque values that are specified in the following tables. Check the tightness of bolts on a regular basis.

IMPORTANT! Use fasteners of the same grade when replacing hardware.

IMPORTANT! Torque numbers in the following tables are for non-greased or non-oiled threads. Do not grease or oil threads unless indicated otherwise. When using a thread locker, increase the torque value by 5%.

 **NOTE:** Bolt grades are identified by their head markings.

Imperial Bolt Torque Specifications						
Bolt Diameter	Torque Value					
	SAE Gr. 2		SAE Gr. 5		SAE Gr. 8	
	lbf•ft	N•m	lbf•ft	N•m	lbf•ft	N•m
1/4"	6	8	9	12	12	17
5/16"	10	13	19	25	27	36
3/8"	20	27	33	45	45	63
7/16"	30	41	53	72	75	100
1/2"	45	61	80	110	115	155
9/16"	60	95	115	155	165	220
5/8"	95	128	160	215	220	305
3/4"	165	225	290	390	400	540
7/8"	170	230	420	570	650	880
1"	225	345	630	850	970	1320



SAE Gr. 2



SAE Gr. 5



SAE Gr. 8

Metric Bolt Torque Specifications				
Bolt Diameter	Torque Value			
	Gr. 8.8		Gr. 10.9	
	lbf•ft	N•m	lbf•ft	N•m
M3	0.4	0.5	1.3	1.8
M4	2.2	3	3.3	4.5
M6	7	10	11	15
M8	18	25	26	35
M10	37	50	52	70
M12	66	90	92	125
M14	83	112	116	158
M16	166	225	229	310
M20	321	435	450	610
M30	1,103	1 495	1,550	2 100



8.8



10.9

11.3 Wheel Lug Nut Torque

It is extremely important safety procedure to apply and maintain proper wheel mounting torque on your trailer axle. Torque wrenches are the best method to assure the proper amount of torque is being applied to a fastener.

Wheel lugs should be torqued before first road use and after each wheel removal. Check and re torque after the first 10 miles (16 km), 25 miles (40 km), and again at 50 miles (80 km). Check periodically thereafter.



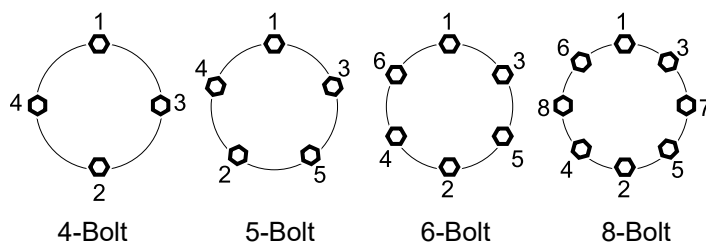
WARNING!

Wheel lug nuts must be installed and kept at the proper torque value to prevent loose wheels, broken studs, or possible separation of wheels from axle.

- Start all lug nuts onto the threads by hand.
- Tighten lug nuts in stages, following the pattern shown in the Wheel Lug Nut Torque table.

Wheel Lug Nut Torque				
Wheel Size	Units	1st Stage	2nd Stage	3rd Stage
8"	lbf•ft N•m	12–20 16–26	30–35 39–45.5	45–55 58.5–71.5
12"	lbf•ft N•m	20–25 26–32.5	35–40 45.5–52	50–60 65–78
13"	lbf•ft N•m	20–25 26–32.5	35–40 45.5–52	50–60 65–78
14"	lbf•ft N•m	20–25 26–32.5	50–60 65–78	90–120 117–156
15"	lbf•ft N•m	20–25 26–32.5	50–60 65–78	90–120 117–156
16"	lbf•ft N•m	20–25 26–32.5	50–60 65–78	90–120 117–156

Wheel Lug Torque Pattern



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