

BUSH HOG®

2010/2012 Rotary Cutter Operator's Manual



ASSEMBLY ● OPERATION ● MAINTENANCE

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. Most of our manuals can also be downloaded from our website at www.bushhog.com.

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 ON GOING 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.**

2010/2012 SERIES ROTARY CUTTERS

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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.



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.

MODEL NUMBER _____

SERIAL NUMBER _____

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

DATE OF RETAIL SALE _____

DEALER PREPARATION CHECK LIST

2010 / 2012 SERIES ROTARY CUTTERS

BEFORE DELIVERING MACHINE — The following check list should be completed.
Use the Operator's Manual as a guide.

- 1. Assembly completed.
- 2. Gearbox filled with oil.
- 3. All fittings lubricated.
- 4. All shields in place and in good condition.
- 5. All fasteners torqued to specifications given in Torque Chart.
- 6. Slip clutches have been checked for proper operation.
- 7. All decals in place and readable. (See decal page.)
- 8. Overall condition good (i.e. paint, welds)
- 9. Operators manual has been delivered to owner and he has been instructed on the safe and proper use of the cutter.
- 10. Warranty information registered with Bush Hog.
- 11. Purchaser or dealer elects to delete deflectors. (front chains)

Explanation: _____

WARNING

Deflector kit or chain shielding is standard equipment. Must be used for all non-agricultural uses or in areas where the possibility of thrown objects could be hazardous to persons or property. Use 5/16" double row highway chains for all roadside mowing operations.

Dealer's
Signature _____

Purchaser's
Signature _____

THIS CHECKLIST TO REMAIN IN OWNER'S MANUAL
It is the responsibility of the dealer to complete the procedures listed
above before delivery of this implement to the customer.

Safety Alert Symbol



This Safety Alert Symbol means: “**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**”

This symbol is used to call attention to safety precautions that should be followed by the operator to avoid accidents. When you see this symbol, carefully read the message that follows and heed its advice. Failure to comply with safety precautions could result in death or serious bodily injury.

Safety Signs *Signal Words*

The signal words **DANGER, WARNING, AND CAUTION** are used on the equipment safety signs. These words are intended to alert the viewer to the existence and the degree of hazard seriousness.



White letters on **RED**

This signal word indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.



Black letters on **ORANGE**

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

It may also be used to alert against unsafe practices.



Black letters on **YELLOW**

This signal word indicates a potentially hazardous situation exist which, if not avoided, may result in minor or moderate injury.

It may also be used to alert against unsafe practices.

IMPORTANT SAFETY PRECAUTIONS

This symbol is used to call attention to safety precautions that should be followed by the operator to avoid accidents. When you see this symbol, carefully read the message that follows and heed its advice. Failure to comply with safety precautions could result in serious bodily injury.



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 in the operation, transport, maintenance and storage of equipment. Lack of attention to safety can result in accident, personal injury, reduction of efficiency and worst of all—loss of life. Watch for safety hazards and correct deficiencies promptly. Use the following safety precautions as a general guide to safe operations when using this machine. Additional safety precautions are used throughout this manual for specific operating and maintenance procedures. Read this manual and review the safety precautions often until you know the limitations.

1. Read the Operator's Manual. Failure to read the Operator's Manual is considered a misuse of this equipment.
2. Become familiar with all the machine's controls and all the caution, warning and danger decals affixed to the machine before attempting to start or operate.
3. Before starting or operating the machine, make a walk around inspection and check for obvious defects such as loose mounting bolts and damaged components. Correct any deficiency before starting.
4. Do not allow children to operate the cutter. Do not allow adults to operate it without proper instruction.
5. Do not carry passengers.
6. Keep the area of operation clear of all persons, particularly small children and pets. The operator should cease mowing whenever anyone comes within the operating area.
7. Clear the work area of objects which might be picked up and thrown.
8. Use a piece of cardboard or wood rather than hands to search for hydraulic leaks. Escaping hydraulic oil under pressure can penetrate skin. If fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this form of injury or gangrene may result.
9. Do not operate without all guards and shields in place and in good condition.
10. Lower implement to ground, stop tractor engine, apply parking brake, and allow blades to completely stop before leaving the tractor.
11. Keep hands and feet away from blades.
12. This cutter is not to be operated along highways or in any area where people may be present unless all sides of the unit are enclosed by permanent bands, safety chains or other factory approved safety shields that are in good repair.
13. Wear personal protective equipment such as, but not limited to, protection for eyes, ears, feet, hands and head when operating or repairing the equipment. Do not wear loose clothing or jewelry that may catch on equipment moving parts.
14. When performing adjustments or maintenance on the cutter, first lower it to the ground or block it securely at a workable height.
15. Never stand between tractor and cutter while tractor is being backed to the cutter hitch.
16. Reduce speed when transporting cutter to avoid bouncing and momentary loss of steering.
17. Use tractor flashing warning lights, day or night, when transporting cutter on road or highways unless prohibited by law.
18. In the event that someone other than yourself will operate this equipment we firmly suggest that all SAFETY references be discussed prior to operation.
19. It is recommended that tractor be equipped with Rollover Protective System (ROPS) and seat belt be used in all mowing operations.

IMPORTANT FEDERAL LAWS AND REGULATIONS* CONCERNING EMPLOYERS, EMPLOYEES AND OPERATIONS.

*(This section is intended to explain in broad terms the concept and effect of the following federal laws and regulations. It is not intended as a legal interpretation of the laws and should not be considered as such).

U.S. Public Law 91-596 (The Williams-Steiger Occupational and Health Act of 1970) OSHA

This Act Seeks:

“...to assure so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources...”

DUTIES

Sec. 5 (a) Each employer—

- (1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;
- (2) shall comply with occupational safety and health standards promulgated under this Act.

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations and orders issued pursuant to this Act which are applicable to his own actions and conduct.

OSHA Regulations

Current OSHA regulations state in part: “At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee in the safe operation and servicing of all equipment with which the employee is, or will be involved.” These will include (but are not limited to) instructions to:

Keep all guards in place when the machine is in operation;

Permit no riders on equipment;

Stop engine, disconnect the power source, and wait for all machine movement to stop before servicing, adjusting, cleaning or unclogging the equipment, except where the machine must be running to be properly serviced or maintained, in which case the employer shall instruct employees as to all steps and procedures which are necessary to safely service or maintain the equipment.

Make sure everyone is clear of machinery before starting the engine, engaging power, or operating the machine.

EMPLOYEE TRACTOR OPERATING INSTRUCTIONS:

1. Securely fasten your seat belt if the tractor has a ROPS.
2. Where possible, avoid operating the tractor near ditches, embankments, and holes.
3. Reduce speed when turning, crossing slopes, and on rough, slick, or muddy surfaces.
4. Stay off slopes too steep for safe operation.
5. Watch where you are going, especially at row ends, on roads, and around trees.
6. Do not permit others to ride.
7. Operate the tractor smoothly - no jerky turns, starts, or stops.
8. Hitch only to the drawbar and hitch points recommended by tractor manufacturers.
9. When tractor is stopped, set brakes securely and use park lock if available.

Child Labor Under 16 Years Old

Some regulations specify that no one under the age of 16 may operate power machinery. It is your responsibility to know what these regulations are in your own area or situation. (Refer to U.S. Dept. of Labor, Employment Standard Administration, Wage & Home Division, Child Labor Bulletin #102.)

SECTION I INTRODUCTION AND DESCRIPTION

1-1 INTRODUCTION

We are pleased to have you as a Bush Hog customer. Your Model 2010/2012 Series Rotary Cutter has been carefully designed to give maximum service with minimum down time. This manual is provided to give you the necessary operating and maintenance instructions for keeping your rotary cutter in top operating condition. Please read this manual thoroughly. Understand what each control is for and how to use it. Observe all safety precautions decal on the machine and noted throughout the manual for safe operation of implement. If any assistance or additional information is needed, contact your authorized Bush Hog dealer.

NOTE

All references made to right, left, front, rear, top or bottom is as viewed facing the direction of travel with implement properly attached to tractor.

1-2 DESCRIPTION

The Model 2010/2012 Series Rotary Cutters, Figure 1-1, are medium duty implements designed for cutting stalks, pasture clipping and other large, maintained acreages. Free swinging uplift blades provide

a smooth, even cut and will swing back when a stationary object is hit. A slip clutch on the input drive-line and rubber couplings on the cross shafts also dampen the impact of the blades hitting a stationary object. Shock absorbing rubber cushions are mounted between the axle arm and axle arm mounting bracket to reduce shock loads during operation and transporting. These cutters are available with either pull, semi-mount, or three point hitches.

Table 1-1 Specifications

	2010	2012
Length (Pull)	147 in.	160 in.
Length (Lift)	108 in.	120 in.
Width	123 in.	146 in.
Cutting Width	117 in.	141 in.
Cutting Height	2-12 in.	2-12 in.
Minimum Tractor HP (Pull & Semi) (Lift)	40 60	50 70
Blade Tip Speed @ 540 rpm	15777 ft./min.	15490 ft./min.
@ 1000 rpm	15708 ft./min.	15422 ft./min.
*Approx Weight (Pull)	2165 lbs.	2513 lbs.
*Approx Weight (Semi)	1817 lbs.	2120 lbs.
*Approx Weight (Lift)	1922 lbs	2225 lbs.

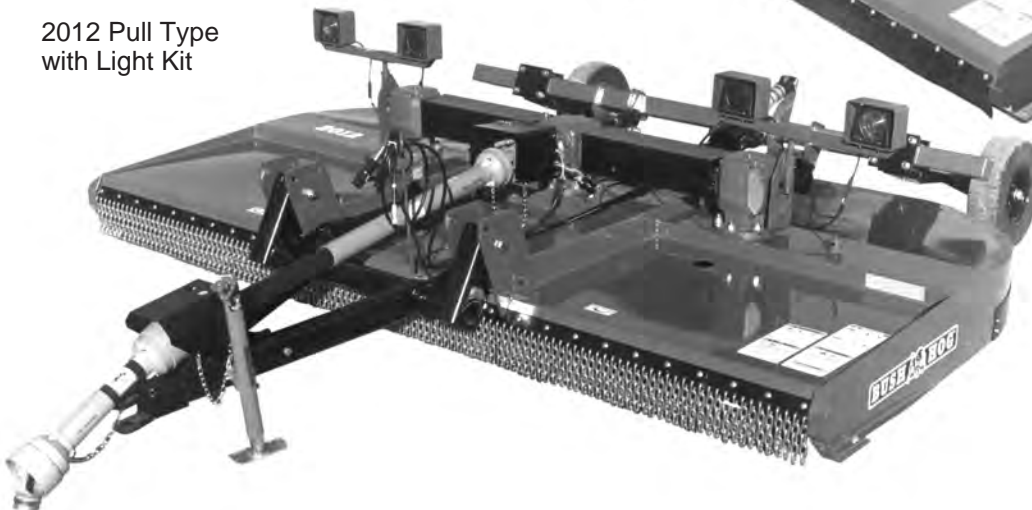
*Unit equipped with front belting and rear bands

Figure 1-1

2012 Lift Type



2012 Pull Type
with Light Kit



SECTION II PREPARATION FOR USE

2-1 ATTACHING TO TRACTOR

Lift & Semi-Mount



WARNING

NEVER STAND BETWEEN TRACTOR AND CUTTER WHILE TRACTOR IS BEING BACKED TO HITCH



WARNING

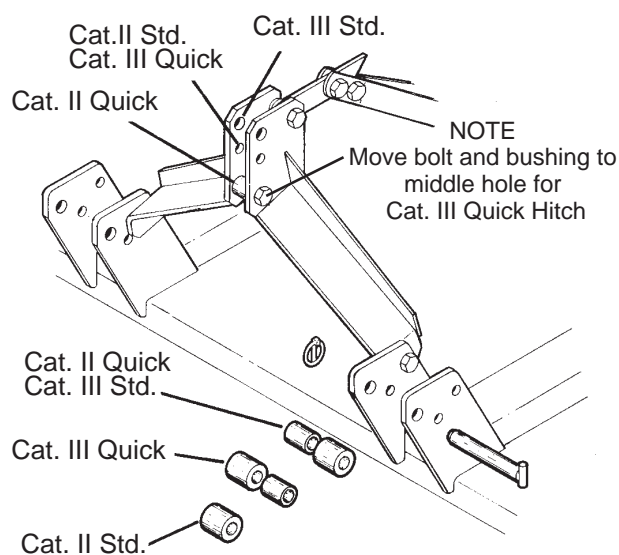
ADDITIONAL TRACTOR FRONT BALLAST MAY BE NEEDED FOR STABLE OPERATION AND TRANSPORT OF CUTTER. SEE TRACTOR OPERATORS MANUAL FOR RECOMMENDED WEIGHTS. USE ROPS (ROLLOVER PROTECTIVE STRUCTURE) AND SEATBELT EQUIPPED TRACTORS FOR MOWING OPERATIONS. BUCKLE UP SEAT BELT TO AVOID ACCIDENTAL FALL AND POSSIBLE INJURY FROM CUTTER.

IMPORTANT

The minimum recommended horsepower for operating a lift model 2010 cutter is 60 and for a semi-mount model is 40. The minimum recommended horsepower for model 2012 lift models is 70 and for a semi-mount is 50.

A. Attach cutter to tractor 3-point hitch as described in tractor operator's manual. Arrange bushings on hitch pins as shown in Figure 2-1 to accommodate different size hitches.

Figure 2-1 Lift Pin Bushing



NOTE

Due to the many variations in tractor/implement hitch points and corresponding differences in distances between tractor PTO shafts and implement input shafts, drivelines may need to be shortened as described in the following steps.

B. Raise and lower cutter to determine position with shortest distance between the tractor PTO shaft and gearbox input shaft. Shut down tractor leaving cutter in position of shortest distance. **SECURELY BLOCK CUTTER IN POSITION.**

C. Pull driveline apart. Attach outer (female) section to tractor PTO shaft. Pull on driveline section to be sure yoke locks into place.

D. Hold driveline sections parallel to each other to determine if too long. Each section should end approximately 3 inches (76mm) short of reaching universal joint shield mark on opposite section. (Figure 2-2) Do this for both sections.

E. Raise and lower cutter to determine position with greatest distance between PTO shaft and gearbox input shaft. Shut down tractor leaving cutter in position of greatest distance. **SECURELY BLOCK CUTTER IN POSITION.**

F. Hold driveline sections parallel to each other and check for minimum 6 inches (152mm) overlap. (Figure 2-3) If driveline has been marked for cutting, overlap will be the distance between two marks. If driveline has less than minimum overlap, **DO NOT USE.** Contact authorized Bush Hog dealer.

NOTE

If driveline is correct length, omit steps "G" through "J" and proceed to step "K".

Figure 2-2 Marking Shield

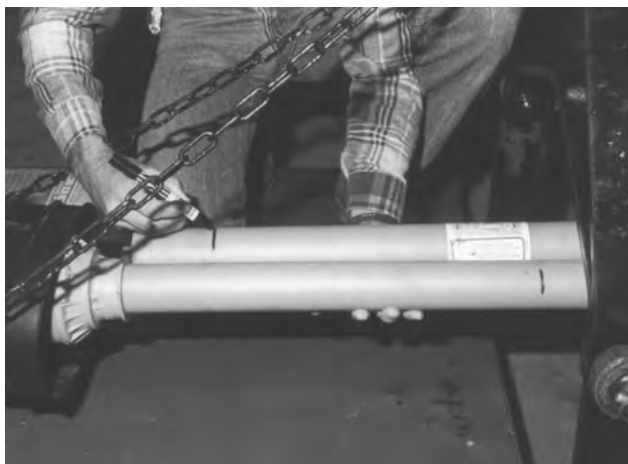


Figure 2-3

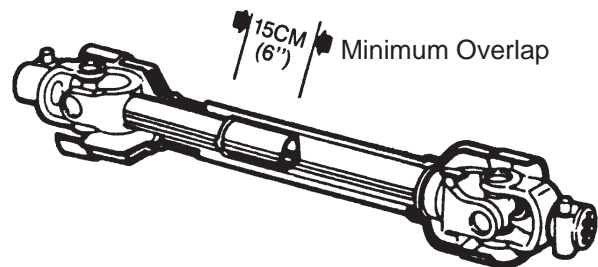


Figure 2-4 Cutting Shield



Figure 2-5 Cutting Shaft



Figure 2-6 Deburring



G. Clamp driveline in a padded vice to prevent damage to shield. Cut off shield where marked. (Figure 2-4)

H. Using cut off section of shield as a guide, cut shaft the same amount. (Figure 2-5)

I. Repeat steps "G" and "H" to other driveline section.

J. Deburr ends of driveline sections and clean away all chips and filings. (Figure 2-6)

K. Apply multi-purpose grease to outside of male driveline section. Assemble driveline and install on tractor and cutter. Pull on each driveline section to be sure yokes lock into place. Make certain driveline shielding is in place and in good condition.

⚠ DANGER

MAKE CERTAIN DRIVELINE YOKES ARE SECURELY FASTENED. FAILURE TO DO SO MAY RESULT IN SERIOUS INJURY.

⚠ CAUTION

DO NOT USE A PTO ADAPTER. USE OF PTO ADAPTER CAN CAUSE EQUIPMENT DAMAGE AND PERSONAL INJURY.

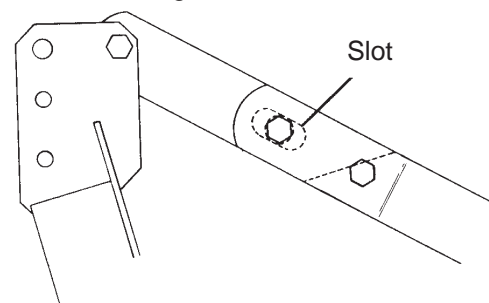
L. Raise cutter off ground and adjust lower lift arms to level cutter right to left. Refer to tractor operator's manual.

M. Connect and/or adjust tractor stabilizer bars, sway blocks, sway chains or equivalent to prevent side sway. Refer to tractor operator's manual.

N. Install tractor front weights as recommended by tractor manufacturer to provide ample stability during operation.

O. (Lift Models) With cutter in work position, adjust tractor top link as necessary to position floating link in center of slot as shown in Figure 2-7.

Figure 2-7 Floating Link

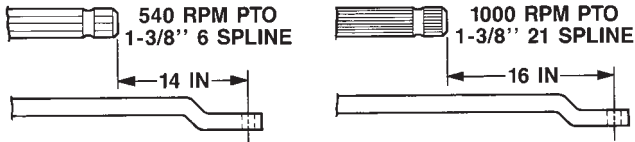


**2-2 ATTACHING TO TRACTOR (Pull)
IMPORTANT**

The minimum recommended horsepower for operating a pull model 2010 cutter is 40. A pull model 2012 requires 50 horsepower.

A. Adjust tractor drawbar length to dimension shown in Figure 2-8. Incorrect drawbar length will change angle of driveline causing possible damage to universal joints. See tractor operator's manual for drawbar adjustment procedures.

Figure 2-8 Tractor Drawbar Adjustment



NOTE

Steps “B” through “D” and “F” should be performed only when the cutter is being attached to a tractor for the first time or if the cutter needs to be leveled from front to rear.

B. Raise rear of cutter approximately 1-2 inches higher off ground than front of cutter. **BLOCK FRONT AND REAR SECURELY IN POSITION.**

C. Attach jackstand to tongue of cutter. Extend jackstand to support weight of tongue.

D. Connect tongue hitch to tractor drawbar using a 1 inch diameter approved pin with lynch pin retainer or equivalent.

E. If equipped with hydraulic cylinder, route hydraulic line through hose holder rod and connect to tractor remote hydraulic quick couplers. Make certain hydraulic line is not kinked or twisted.

CAUTION

USE A PIECE OF CARDBOARD OR WOOD RATHER THAN HANDS AND WEAR EYE PROTECTION WHEN SEARCHING FOR HYDRAULIC LEAKS. ESCAPING HYDRAULIC OIL UNDER PRESSURE CAN PENETRATE SKIN. IF OIL IS INJECTED INTO SKIN, IT MUST BE SURGICALLY REMOVED WITHIN A FEW HOURS BY A DOCTOR OR GANGRENE MAY RESULT.

F. Attach driveline to tractor. Pull on driveline to be sure yoke is locked securely into place. Make certain driveline shielding is in place and in good condition.

! DANGER

• PTO ADAPTERS SHOULD NOT BE USED WITH ANY BUSH HOG EQUIPMENT



- The PTO adapter length will cause an unshielded shaft area between the tractor master shield and the driveline shield.
- Contact with and entanglement in the unshielded rotating PTO adaptor area can cause serious injury or death.
- The use of a PTO adapter can cause equipment overspeed, driveline failures and damage to tractor and implement.

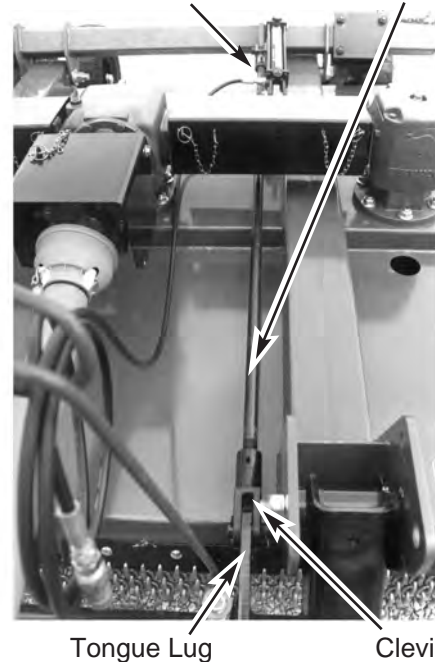
PITCH ADJUSTMENT

The pitch of the cutter (front to rear) is controlled by adjusting the linkage rods (Figure 2-9). The pitch adjustment is primarily for compensating for the different height tractor drawbar.

! IMPORTANT !

Operating cutter with rear lowered excessively will result in an uneven cut and could cause rapid blade, skid and driveline wear.

Figure 2-9 Jam Nut Leveling Rod



! WARNING

TO AVOID SERIOUS INJURY OR DEATH: DO NOT PLACE HANDS, FEET OR OTHER PARTS OF THE BODY UNDER CUTTER WHILE MAKING ADJUSTMENTS. NEVER MAKE ADJUSTMENTS WITH CUTTER OPERATING.

! IMPORTANT !

Never adjust the linkage rods so that the threaded ends of any rod is not fully engaged in the clevises.

Adjust the pitch as follows:

- A. Loosen jam nut on each linkage rod assembly.
- B. Turn the leveling rods to lengthen or shorten the assemblies. Shortening the rods will raise the front of the cutter and lengthening the rods will lower the front of the cutter. While adjusting, alternate from one rod to the other.
- C. **When the desired pitch is attained, make a final adjustment of the rods so that each will be under the same amount of tension. This may be done by tapping the rods and “tuning” them to the same sound.**
- D. Re-tighten jamnuts.

SECTION III OPERATING INSTRUCTIONS

3-1 GENERAL SAFETY

Only qualified people familiar with this operator's manual should operate this machine. Operator should wear hard hat, safety glasses and safety shoes. The operator should read, understand and practice all safety messages shown on the caution, warning and danger decals affixed to the cutter to avoid serious injury or death. Use ROPS (Rollover Protective Structure) and seatbelt equipped tractors for mowing operations. Buckle up seat belt to avoid accidental fall and possible injury from cutter. Before beginning operation, clear work area of any objects that may be picked up and thrown. Check for ditches, stumps, holes or other obstacles that could upset tractor or damage cutter. Always turn off tractor engine, set parking brake, lower cutter to ground and allow blades to come to a complete stop before leaving tractor operator's seat.

3-2 TRANSPORTING

Turn off PTO drive and fully raise cutter before transporting. When implement is transported on road or highway, day or night, use tractor flashing warning lights unless prohibited by law. A slow moving vehicle sign (SMV) must be visible from the rear by approaching vehicles. Do not exceed 15 mph.

3-3 CUTTING HEIGHT ADJUSTMENT

The cutter should be operated at the highest position which will give desired cutting results. This will help prevent blades from striking ground, reducing blade wear and undue strain on the machine. For best results under heavier cutting conditions, always set the front of cutter approximately 2 inches lower than the rear. This tilt decreases horsepower requirements and increases potential ground speed. When fine shredding is desired, adjust cutter deck level or slightly lower in the rear. This will keep the foliage under cutter until thoroughly shredded. More power is required for shredding.

Two methods of height adjustment are available - a hydraulic cylinder or a ratchet. Both methods give a cutting height of 2 - 12 inches. Stop collars are provided with the hydraulic cylinders. These collars may be placed around cylinder rod to stop cylinders at desired cutting height.

When cutting height is adjusted on pull type cutters, the self-leveling linkage will adjust tongue height automatically. The front to rear slope of cutter deck can be changed by adjusting the length of the leveling rod as described in "Pitch Adjustment".

3-4 OPERATION

A. Perform BEFORE EACH USE maintenance listed in paragraph 4-1.

B. Make certain jackstand is stored for work. (Pull units only)

C. Start tractor per tractor operator's manual. Lower cutter to desired cutting height. On lift models, floating link should be positioned as shown in Figure 2-7.

DANGER

STAY CLEAR OF ROTATING DRIVELINES. DO NOT OPERATE WITHOUT DRIVELINE SHIELDS IN PLACE AND IN GOOD CONDITION. FAILURE TO HEED THESE WARNINGS MAY RESULT IN PERSONAL INJURY OR DEATH.

DANGER

STAND CLEAR OF ROTATING CUTTER BLADES UNTIL ALL MOTION HAS STOPPED. TO AVOID ACCIDENTAL FALL AND POSSIBLE INJURY FROM CUTTER, IT IS RECOMMENDED THAT TRACTOR BE EQUIPPED WITH ROLLOVER PRETECTIVE SYSTEM AND THAT A SEAT BELT BE USED FOR ALL OPERATIONS.

D. With tractor at idle speed, engage PTO drive. Advance throttle to correct operating speed (540 or 1000 PTO rpm) for implement.

WARNING

ALL ROTARY CUTTERS HAVE THE ABILITY TO DISCHARGE OBJECTS AT HIGH SPEEDS WHICH COULD RESULT IN SERIOUS INJURY TO BYSTANDERS OR PASSERS-BY.

DO NOT OPERATE CUTTER IN VACINITY OF OTHER PERSONS. CEASE MOWING WHENEVER ANYONE COMES WITHIN THE OPERATING AREA.

KEEP ENCLOSED SIDES, PERMANENT BANDS, BELTING, HIGHWAY CHAINS OR OTHER FACTORY APPROVED DISCHARGE SHIELDS IN PLACE AND IN GOOD CONDITION.

E. Place tractor in low gear and begin cutting. Tractor forward speed should be controlled by gear selection, not engine speed. **For maximum cutting efficiency, forward speed should allow cutter to maintain a constant maximum blade speed. Always cut up and down the face of slopes, never across.**

If tractor engine stalls, do not slip tractor clutch to allow engine to regain speed as this will exert undue strain on the implement drivetrain. When stalling occurs, disengage tractor PTO drive, move to a cut area, set throttle to idle, then re-engage PTO drive. Select lower tractor gear if cutter stalls continuously.

SECTION IV MAINTENANCE

4-1 MAINTENANCE CHECK LIST

Perform scheduled maintenance as outlined below. Lower implement to ground, turn off tractor, and set parking brake before doing maintenance inspections or work. Some checks may require raising machine off ground and supporting with blocks. All bolts should be torqued as indicated in torque chart unless otherwise indicated.

WARNING

THE CUTTER CAN FALL FROM HYDRAULIC SYSTEM RELEASE. TO AVOID SERIOUS INJURY OR DEATH, SECURELY SUPPORT CUTTER BEFORE WORKING UNDERNEATH.

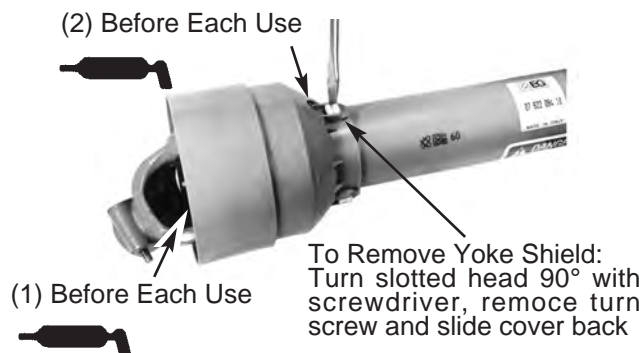
BEFORE EACH USE

1. Perform BEFORE EACH USE lubrication per paragraph 4-2.
2. Check blades and spindles to be sure that no foreign objects such as wire or steel strapping bands are wrapped around them.
3. Inspect blades for wear. Replace if necessary per paragraph 4-3. Always replace both blades with two blades equal in weight. Use only genuine Bush Hog replacement parts.
4. **Check blade bolts for tightness. Tighten to 600 ft./lbs.**
5. Make certain all shields are in place and in good condition. Repair or replace any missing or damaged shields.
6. Inspect wheel(s) for wear, damage or foreign objects. Repair or replace if necessary.
7. Check tractor tire air pressure. Refer to tractor operator's manual.
8. During operation, listen for abnormal sounds which might indicate loose parts, damaged bearings or other damage. Correct any deficiency before continuing operation.

AFTER EACH USE

1. Clean all debris from machine especially underside of deck and affixed safety decals. Replace any missing or illegible decals.

Figure 4-1 a



2. Inspect cutter for worn or damaged components. Repair or replace before next use. Any replacement components installed during repair shall include the components current safety decals specified by the manufacturer to be affixed to the component.
3. Store cutter in a dry place.

4-2 LUBRICATION (Figure 4-1 a, b, c, d)

NOTE

The multi-purpose grease referenced in this section is an NLGI Grade 2 type grease.

BEFORE EACH USE

1. Driveline Universal Joints - Apply multi-purpose grease with grease gun.
2. Driveline Guard - Apply 2-3 shots of multi-purpose grease with grease gun to plastic fitting.
3. Caster Pivot - Apply multi-purpose grease with grease gun.
4. Constant Velocity (CV) Joint - Position CV joint as straight as possible to be sure grease will penetrate to ball joint. Lubricate the central body with a minimum of 30 shots of grease every 8 hours. Lubricate telescoping members with 10 shots every 8 hours and clean telescoping members every 40 hours and completely coat with grease.
5. CV Driveline - Apply 8-10 shots of multi-purpose grease to grease fitting accessible behind U-joint cross, on end of shaft.
6. **Gearboxes - Check gearboxes before first use to make certain they have been filled with oil and the vented fill plugs have been installed. Thereafter, check before each use,**

Figure 4-1 b

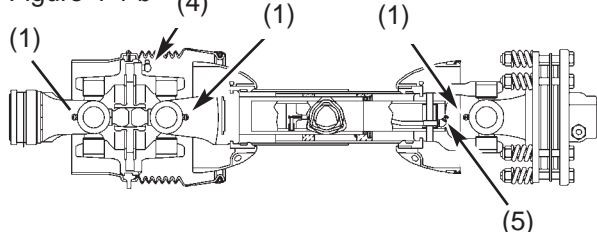


Figure 4-1c

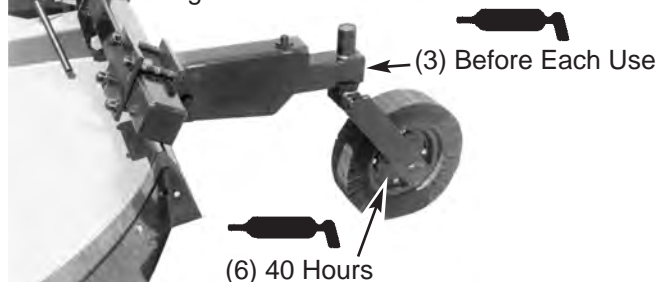
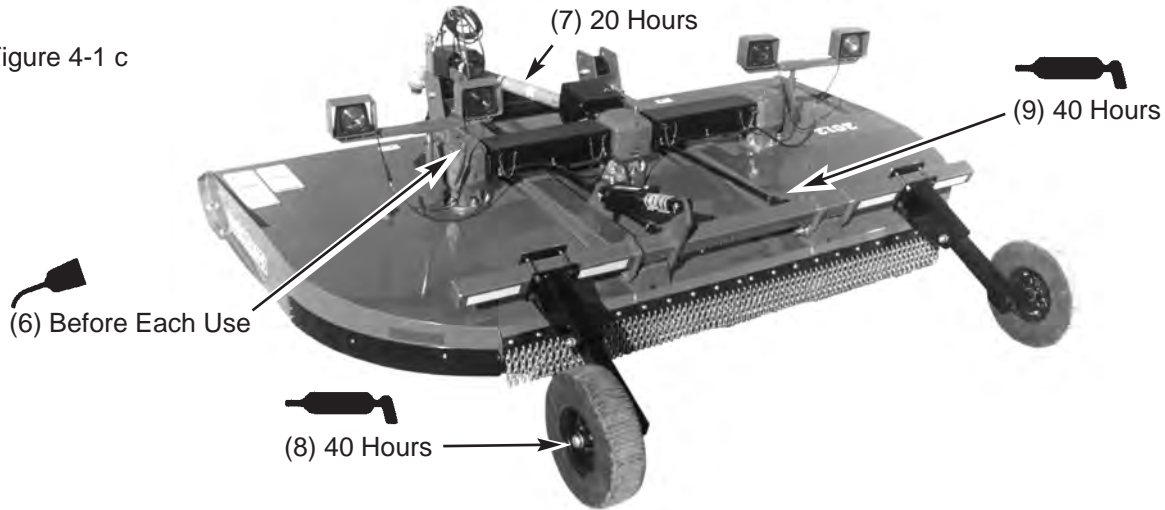


Figure 4-1 c



adding EP80W-90 gear oil, if necessary, to bring oil level to check plug on center and outer gearboxes.

20 HOURS

7. Driveline (Lift & Swing Hitch) - Disconnect driveline, pull the two sections apart, apply thin coat of multi-purpose grease to outside of inner (male) section. Reassemble sections and install. Pull each section to be sure driveline and shields are securely connected. Make certain PTO shielding is in good condition.

NOTE: On jackshaft versions of the pull type the PTO driveline does not telescope. The jackshaft may be lubricated by aligning holes in the shields to reveal the grease fitting.

40 HOURS

8. Wheel Hub Bearings - Apply multi-purpose grease with grease gun.
9. Leveling Rod Clevis - Apply multi-purpose grease with grease gun.

4-3 BLADE REPLACEMENT

It is not necessary to remove the complete blade holder assembly to replace the blades. Blade bolts are accessible through a hole in the top of the cutter deck. **Always replace both blades on a spindle. Always use two blades that are equal in weight. Use only genuine Bush Hog replacement parts.**

- A. Remove nuts and lockwashers from blade bolts. Remove blades and bolts.
- B. Inspect blade bolts for wear. Replace if necessary.
- C. Assemble new blades to blade holder using blade bolts, lockwashers and nuts. **Tighten nuts to 600 ft./lbs. Strike blade bolt head with heavy hammer to seat, then retighten.**
- D. Check to be sure blades swing 360 degrees freely. **If blades will not swing freely, remove, locate problem and repair. Operating cutter when blades will not swing freely will cause excessive vibration, damaging implement.**

4-4 GEARBOX REMOVAL

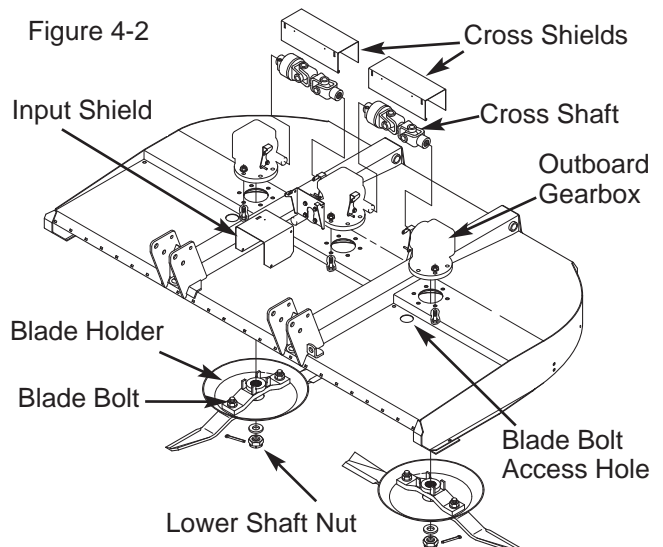


WARNING

THE CUTTER CAN FALL FROM HYDRAULIC SYSTEM RELEASE. TO AVOID SERIOUS INJURY OR DEATH, SECURELY SUPPORT CUTTER BEFORE WORKING UNDERNEATH.

- A. (If applicable) Remove cotter pin and lower shaft nut. Wearing heavy gloves, grasp blade holder assembly and pull off shaft. If stuck, align blade bolt with access hole in top of cutter deck and drive off with hammer and pipe. Care should be taken not to damage threads. (Figure 4-2)
- B. Remove cross shaft shields and input shield.
- C. Remove fasteners retaining center gearbox to deck.
- D. Rotate center gearbox until cross shaft disengages from gearbox shaft. Remove gearbox from cutter deck.
- E. Remove bolts retaining outboard gearbox to deck.
- F. Rotate outboard gearbox until cross shaft disengages from gearbox shaft. Remove gearbox from cutter deck.

Figure 4-2



4-5 GEARBOX INSTALLATION

A. Raise cutter and SECURELY SUPPORT WITH BLOCKS.

B. Slide cross shaft as far as possible onto outboard gearbox shaft.

C. Rotate gearbox slightly to allow cross shaft to be installed. NOTE: Connect cross shaft to gearboxes insuring that blade pans are timed as shown in Figure 4-3. **Incorrect timing will allow blades to hit.** Slide cross shaft onto center gearbox shaft until Q.D. pin snaps into place.

D. Attach gearbox to cutter deck using 5/8" cap screws. On the outboard gearboxes, the cap screws should be inserted from the underside of the deck and up through the gearbox flange. Fasten with 5/8" locknuts.

E. Install blade holder assembly onto gearbox lower shaft. **Tighten retaining nut to 450 ft./lbs. Strike blade bar with sledge hammer at the blade bolt area. Retorque shaft nut to 450 ft./lbs. Install cotter pin to retain nut.**

F. Install input shield and cross shaft shields.

4-6 SLIP CLUTCH OPERATIONAL CHECK

After the implement has been stored for 30 days or more, perform the following operational check:

A. Loosen eight nuts retaining clutch springs 1/3 turn or until spring can be turned with fingers.

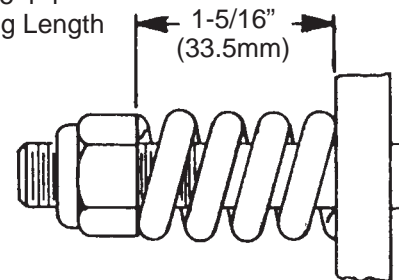
B. With tractor at idle speed, engage tractor PTO drive for 2-3 seconds. Clutch should slip without turning blades. If clutch does slip, contact your authorized Bush Hog dealer.

C. Retighten nuts to within 1/64" of original position. See Figure 4-4 for proper spring length.

4-7 SLIP CLUTCH ADJUSTMENT

The slip clutch is factory preset to the correct torque for protecting implement and tractor. Periodic adjustment is recommended; refer to Section 4-6. Should adjustment be needed, first check to be sure all spring lengths are the same. Initial spring lengths should be 1- 5/16" or 33.5mm. If necessary, adjust nut on any spring that is unequal. Adjust all eight spring retaining nuts 1/3 turn increments or consult your Bush Hog dealer. **Adjust only to provide sufficient torque to prevent slippage under normal conditions.** Occasional slippage is normal for drive-train protection. If satisfactory results cannot be obtained, consult your Bush Hog dealer.

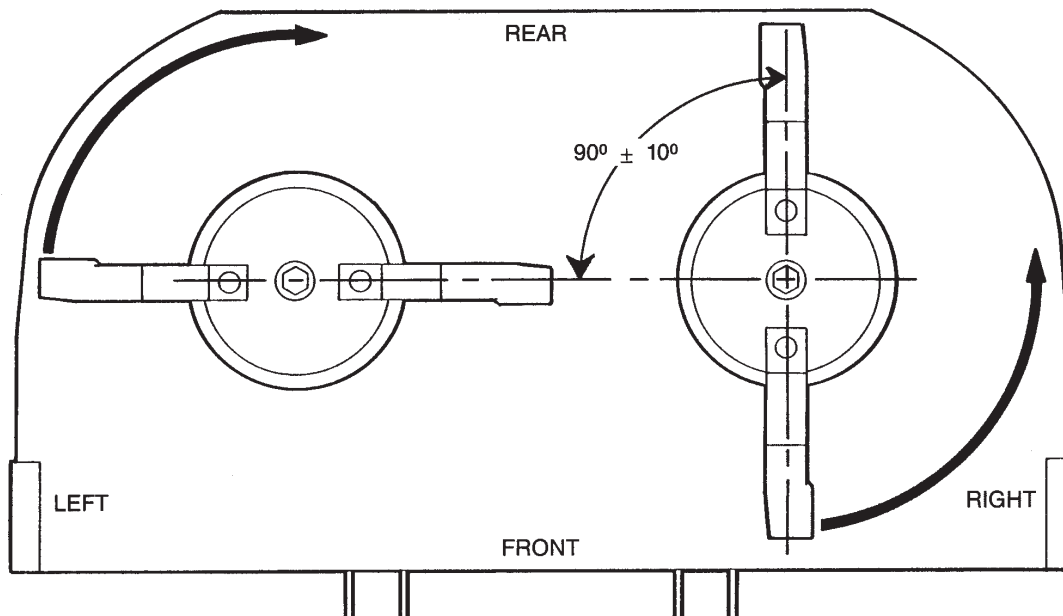
Figure 4-4
Spring Length



⚠ WARNING

OVERTIGHTENING SPRING NUTS MAY CAUSE DAMAGE TO IMPLEMENT AND/OR TRACTOR DUE TO INCORRECT SLIP CLUTCH TORQUE SETTING. ALWAYS FOLLOW THE PROPER ADJUSTMENT PROCEDURE.

Figure 4-3 Blade Pan Timing As Viewed From Bottom Of Cutter



4-8 TROUBLESHOOTING

Troubleshooting procedures are listed in Table 4-2 below. If the problem cannot be solved or replacement parts are necessary, contact your authorized Bush Hog dealer. Please have ready your machine name, model number, serial number, purchase date and exact cause or description of problem.

Table 4-2 Troubleshooting

PROBLEM	PROBABLE CAUSE	REMEDY
Uneven Cut	Cutter not level side to side. Worn or bent blades.	See Section II. Replace blades.
Stripping or Windrowing	Possible build-up of material under cutter. Cutter not level. Worn blades.	Clean cutter. See Section II. Replace blades.
Noisy Cutter	Loose components. Low oil in gearbox. Blades out of time.	Check all bolts for tightness. Check oil per paragraph 4-2. See paragraph 4-5.
Rapid Blade Wear (cutting edge)	Blade contacting ground.	Adjust cutting height to eliminate ground contact.
Rapid Wear of Blade Hole and Blade Bolt Shoulder	Cutter not being operated at rated PTO speed.	Set tractor throttle for proper PTO speed.
Poor Shredding Job	Incorrect deck tilt. Excessive ground speed. Worn blades.	See paragraph 3-2. Use lower gear. Replace blades.

SECTION V DEALER ASSEMBLY

CAUTION

THE FOLLOWING SAFETY PRECAUTIONS SHOULD BE THOROUGHLY UNDERSTOOD BEFORE ATTEMPTING MACHINE ASSEMBLY.

1. Wear personal protective equipment such as, but not limited to, protection for eyes, ears, feet, hands, lungs and head when assembling the equipment. Do not wear loose clothing or jewelry that may catch on equipment moving parts.
2. Do not lift heavy parts or assemblies. Use crane, jack, tackle, fork trucks, or other mechanical devices.
3. Select an area for assembly that is clean and free of any debris which might cause persons working on the assembly to trip.
4. Arrange parts to be assembled neatly in the work area and have tools or other mechanical assisting devices in easy reach.
5. Inspect all parts and assemblies thoroughly and remove any sharp edges, grease, oil, or dirt which might cause pieces to slip when handling.
6. Preview the assembly instructions in your operator's manual before proceeding further.
7. If the assembly instructions call for parts or assemblies to be blocked up, use only blocking material that is in good condition and is capable of handling the weight of the assembly to be blocked. Also insure that the blocking material is on a clean, dry surface.
8. Never put hands or any other part of body under blocked up assemblies if at all possible.
9. Always wear goggles or safety glasses when hammering, grinding or drilling metal parts.
10. If the assembly calls for welding or cutting, be sure that there are no flammable materials close at hand and that bystanders have taken necessary precautions.

AFTER COMPLETING ANY ASSEMBLY STEP, THOROUGHLY READ THE NEXT STEP IN THE ASSEMBLY INSTRUCTIONS BEFORE PROCEEDING WITH THAT STEP.

11. After completing assembly, thoroughly inspect the machine to be sure that all nuts, bolts,

hydraulic fittings or any other fastened assemblies have been thoroughly tightened.

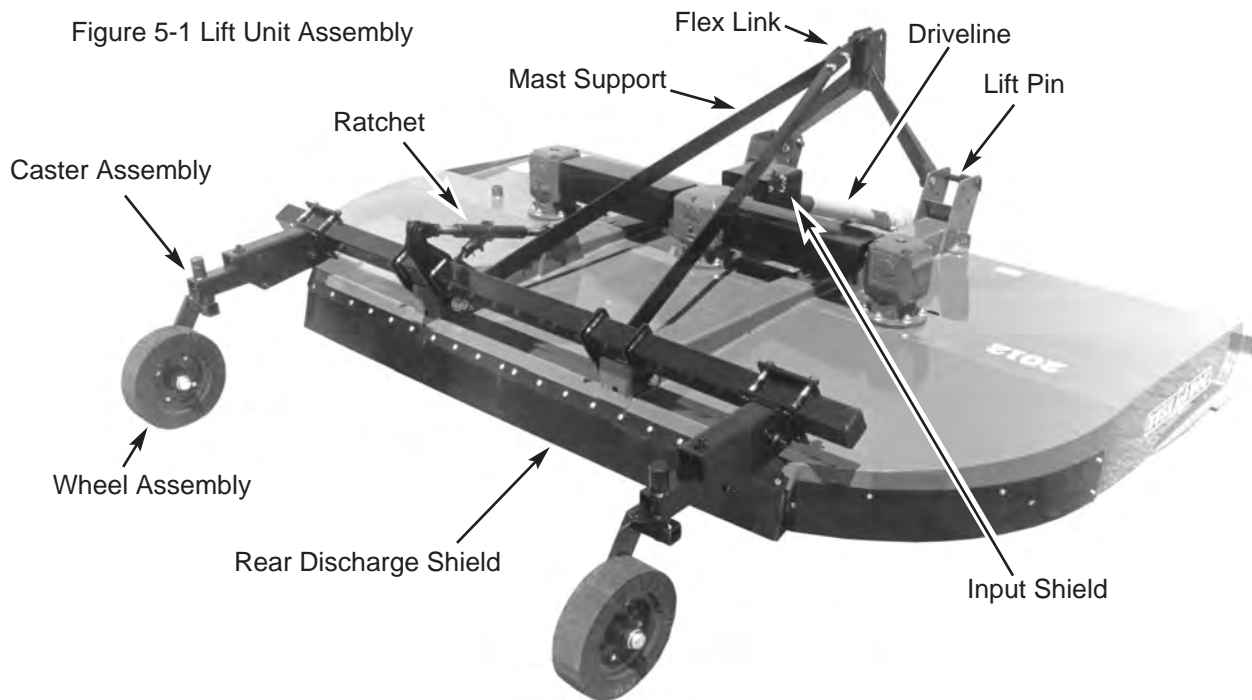
12. After completing assembly, be sure that all safety locking devices or guards are in place.
13. Before operating the machine, thoroughly read the operation section of this manual.
14. Before operating, read the maintenance section of this manual to be sure that any parts requiring lubrication such as gearboxes are full to avoid any possible damage.

BEFORE OPERATING THE EQUIPMENT, IF YOU HAVE ANY QUESTIONS REGARDING THE PROPER ASSEMBLY OR OPERATION, CONTACT YOUR AUTHORIZED BUSH HOG REPRESENTATIVE.

5-1 LIFT MODEL ASSEMBLY

- A. Slide clutch end of driveline onto center gearbox and tighten hex nut provided to 30 ft. lbs.
- B. Attach mast assembly to deck assembly using 3/4 x 2" bolts and flanged locknuts. Thread locknut until it touches mast, but do not tighten, allowing mast to pivot. (Figure 5-1)
- C. Fasten right and left mast supports to deck assembly using axle mounting bolts and 1/2" long bushings.
- D. Secure mast supports to flex link using two 3/4 x 2-1/2" bolts, 11/16" long bushings, lockwashers and nuts.
- E. Fasten caster mount weldments to axle using four 3/4 x 5-1/2" bolts, plates, lockwashers and nuts each.

Figure 5-1 Lift Unit Assembly



F. Install wheel assemblies onto caster hubs. Fasten with collar and roll pin.

G. Pin ratchet or hydraulic cylinder to axle and deck assembly. If hydraulic cylinder is used, plumb as shown in Figure 5-2.

H. Install lift pins and adapter bushings securing lift pins with linch pin retainers.

I. Remove temporary fill plugs and fill gearboxes to oil level check plug with EP80W-90 gear oil. Install vented fill plugs included in Operator's Manual package.

J. Prior to delivery to customer, perform slip clutch operational check as described in paragraph 4-6.

Figure 5-2 Cylinder Plumbing

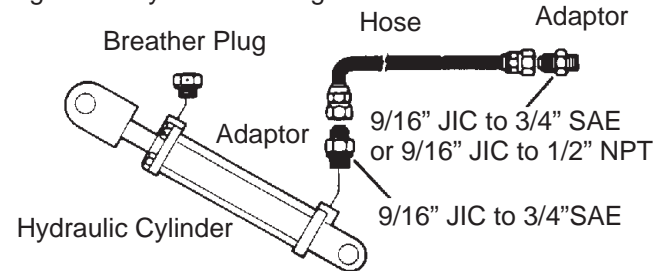
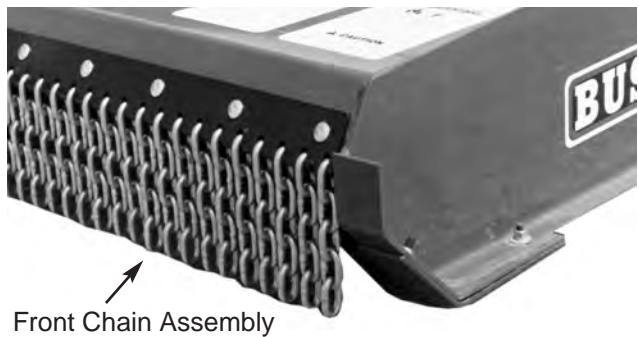


Figure 5-3 Front Discharge Shield



5-2 SEMI-MOUNT MODEL ASSEMBLY

NOTE: The semi-mount models assemble the same as lift models except eliminate steps C., D., and E.

5-3 SAFETY CHAIN INSTALLATION

WARNING

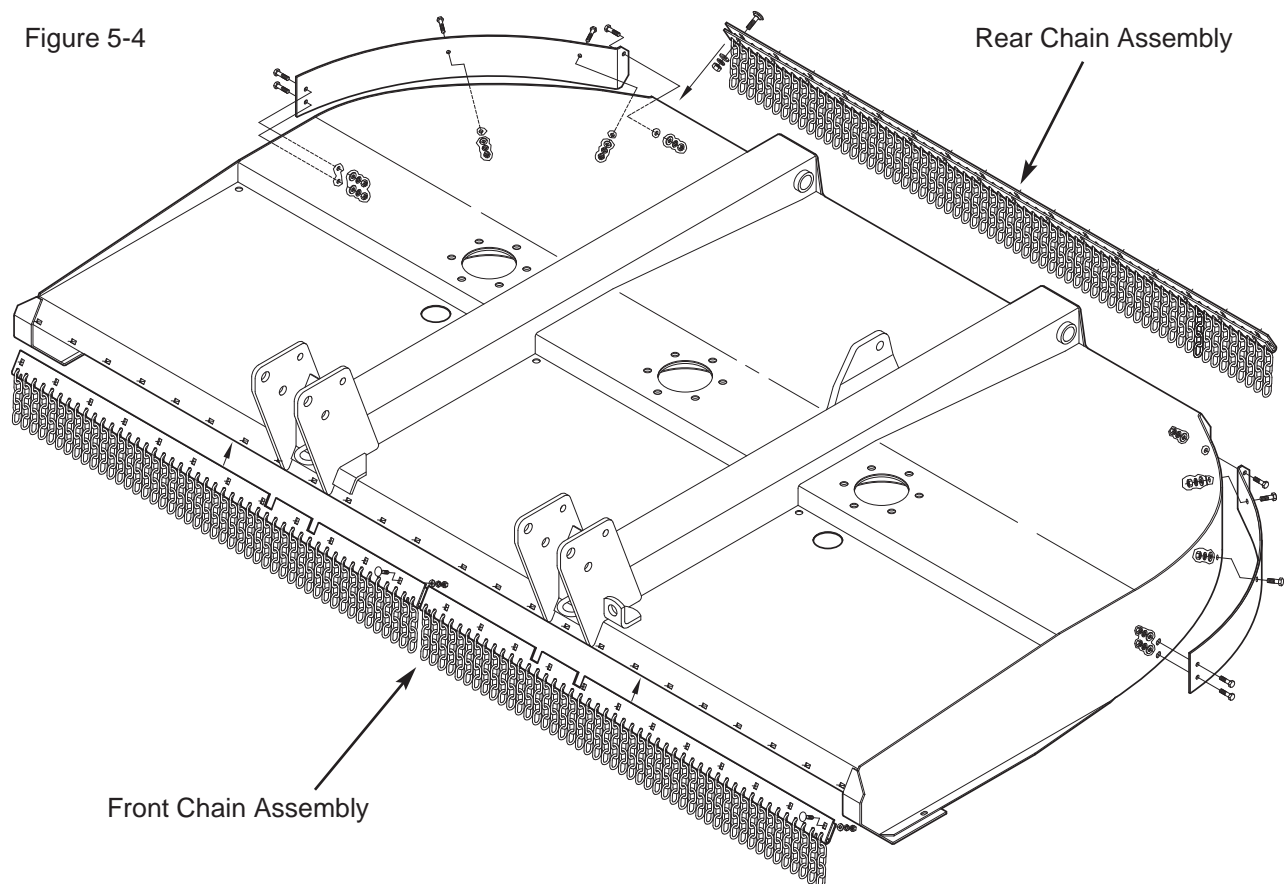
FOR NON-AGRICULTURAL USE, OSHA, ASAE, SAE AND ANSI STANDARDS REQUIRE THE USE OF CHAIN GUARDS OR OTHER PROTECTIVE GUARDS OR OTHER PROTECTIVE GUARDS AT ALL TIMES. BUSH HOG STRONGLY RECOMMENDS THE USE OF SUCH GUARDS FOR AGRICULTURAL USES AS WELL, TO REDUCE THE RISK OF PROPERTY DAMAGE, SERIOUS BODILY INJURY, OR EVEN DEATH FROM OBJECTS THROWN OUT BY, OR FROM CONTACT WITH, THE CUTTING BLADES.

A. Compare each chain assembly to Figure 5-4 to determine location for installation.

B. Align holes in chain assembly with those on cutter. Insert carriage bolts through chain assembly and deck. Secure with lockwashers, flatwashers and nuts.

C. Attach right and left rear discharge shields to deck assembly using hex bolts. Secure with lockwashers, flatwashers and nuts.

Figure 5-4



5-3 REAR BAND INSTALLATION

A. Attach center rear discharge shield to cutter deck and outer shields using hex bolts, lockwashers, flatwashers and nuts.

B. Attach right and left rear discharge shields to deck assembly using hex bolts. Secure with lockwashers, flatwashers and nuts.

C. Tighten all nuts.

5-4 FRONT BELTING

Attach front belting to deck assembly and secure with carriage bolts, flatwashers, lockwashers and nuts.

5-5 SAFETY TOW CHAIN

A. Securely attach tow chain to cutter by looping hook end of chain around one side of tongue and back through large link on opposite end of chain.(Figure 5-7)

B. Before use, attach loose end of chain to towing vehicle attaching point such as drawbar or bumper, etc. Fasten chain back to itself with hook latch.

Figure 5-7
Safety Tow Chain

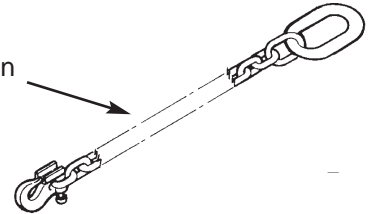


Figure 5-5

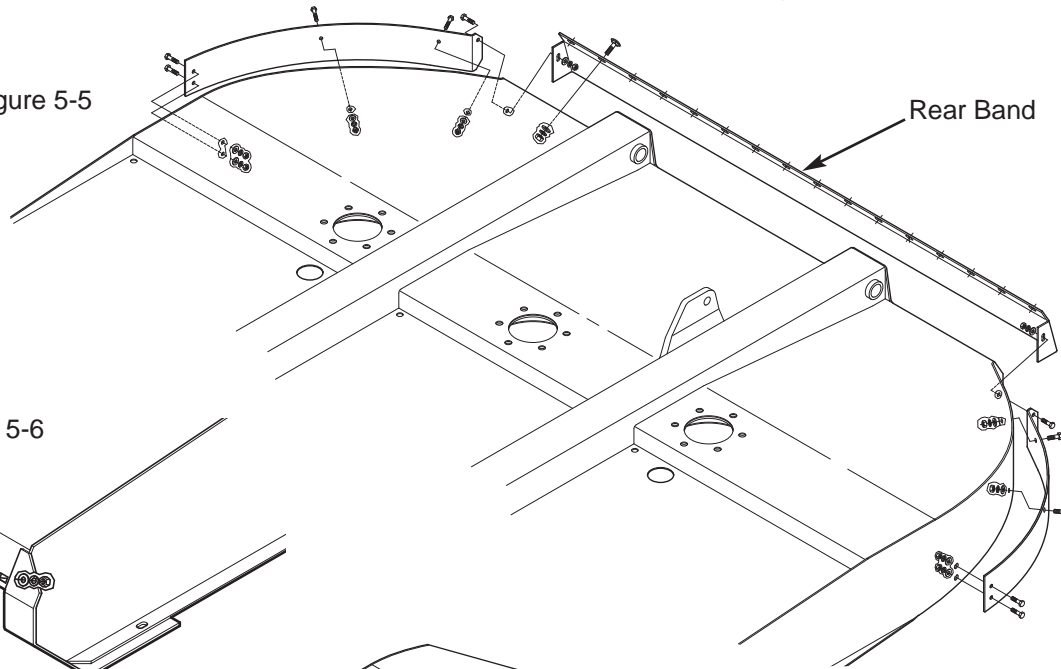
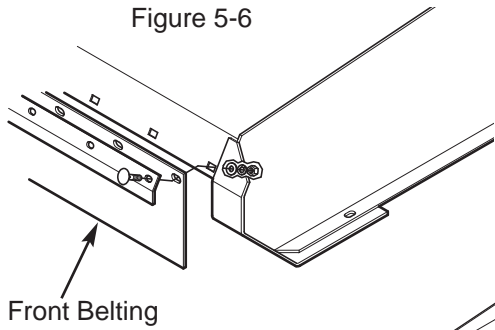


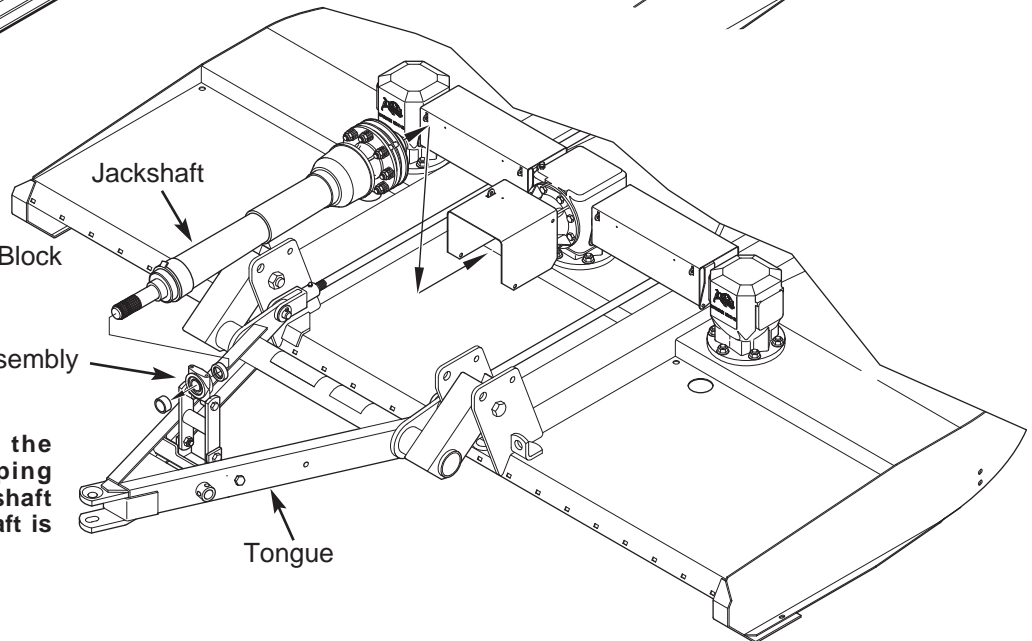
Figure 5-6



Front Belting

Figure 5-8
Pull Model With Pillow Block
And Jackshaft

Pillow Block Assembly



Tongue

NOTE; On this model the jackshaft is a telescoping member and the input shaft from the tractor PTO shaft is a fixed length.

5-6 PULL MODEL ASSEMBLY

A. Attach tongue to deck assembly using two 1" x 8" bolts, bushings and locknuts. (Figure 5-8, 5-9)

PULL MODEL DRIVELINES

On pull model there is a selection of two types of input drivelines. On unit equipped with:

B. 1 Constant Velocity Driveline

Slide clutch end onto center gearbox input shaft and tighten hex nut provided to 30 ft. lbs.

B. 2 Cardan / Jackshaft Driveline (Figure 5-8)

1. Slide pillow block onto jackshaft, with lock collar toward the cutter, until it is against shoulder. Slide lock collar up to bearing and turn in the direction of shaft rotation until it slips over the inner ring extension. Turn collar quickly in the direction of shaft rotation (approx. 1/4 turn) to tighten. (Figure 5-10)

2. **Slide clutch end of driveline onto center gearbox input shaft and tighten hex nut provided to 30 ft. lbs.**

3. Assemble jackshaft mount assembly between tongue halves and secure with hex bolts, flatwashers, lockwashers and nuts.

4. **Before setting lock collar on bearing, assemble the driveline to the jackshaft by first assembling the tubing spacer onto the jackshaft end. Attach driveline to jackshaft insuring the tubing spacer is in place and tighten hex nut provided to 30 ft. lbs.**

5. Place punch in blind hole in collar. Strike punch sharply with hammer in the direction of shaft rotation to lock collar against inner ring extension.

6. **Tighten setscrew to 20 ft. lbs.**

7. Attach bearing shield, beveled end forward, to top of pillow block bearing using 3/8" x 3/4" bolts and lockwashers.

C. Attach hose holder rod to tongue using 1/2 x 2" bolt, flatwasher and nut.

D. Fasten axle arm mount weldments to axle using four 3/4 x 5-1/2" bolts, plates, lockwashers and nuts each.

E. Mount wheels on hubs securing with lug nuts. **When using laminated tires, the flat side of the lug nut should be against the rim. When using automotive rims, the tapered side of the lug nut should be against the rim.**

F. Pin ratchet or hydraulic cylinder to axle and deck assembly. If hydraulic cylinder is used, plumb as shown in Figure 5-2 and route hose through hose holder rod.

G. Pin jackstand to tongue.

H. Pin leveling rods to axle lug and tongue lugs. The clevis with the elongated hole must pin to the tongue lug.

I. **Remove temporary fill plugs and fill gearboxes to oil level check plug with EP89W-90 gear oil. Install vented fill plugs included in Operator's Manual package.**

J. **Prior to delivery to customer, perform slip clutch operational check as described in paragraph 4-6.**

Figure 5-10

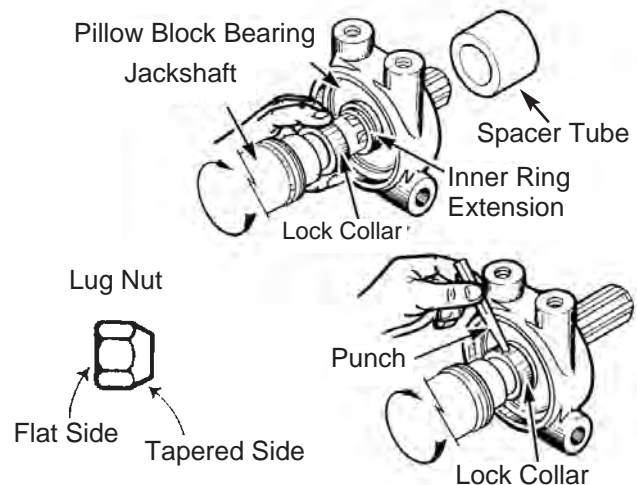
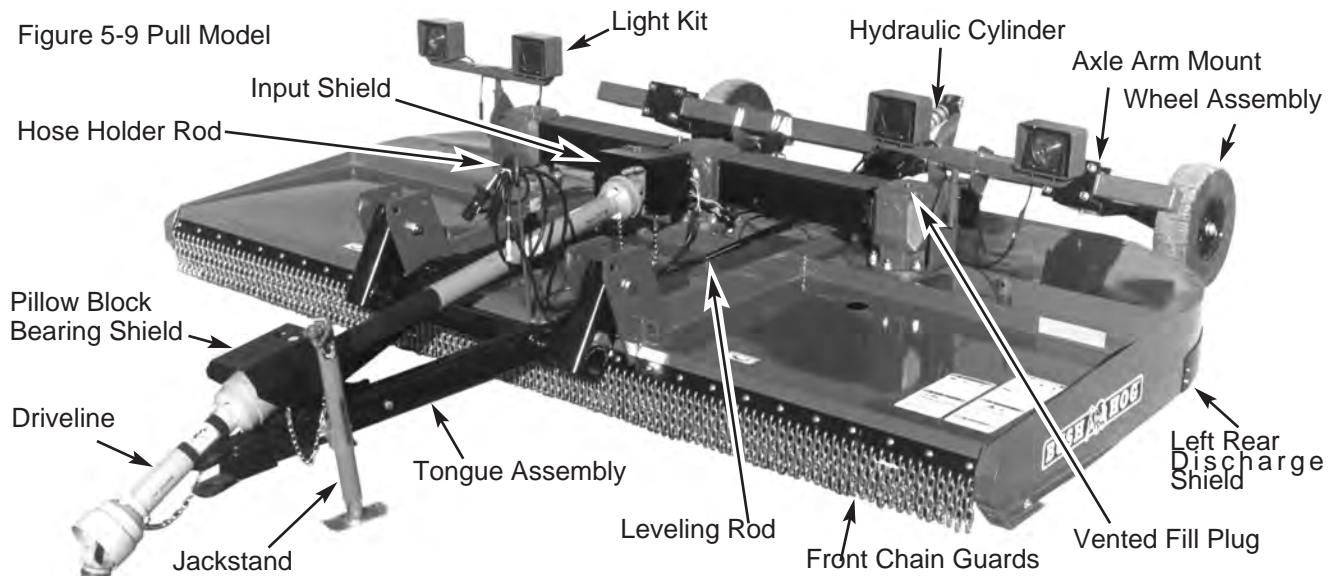


Figure 5-9 Pull Model



SAFETY DECALS

To promote safe operation, Bush Hog supplies safety decals on all products manufactured. Because damage can occur to safety decals either through shipment, use or reconditioning, Bush Hog will, upon request, provide safety decals for any of our products in the field at no charge. Contact your authorized Bush Hog dealer for more information.

⚠ DANGER

KEEP AWAY - ROTATING BLADES

TO AVOID SERIOUS INJURY OR DEATH FROM BLADE CONTACT:

- LOWER IMPLEMENT, STOP ENGINE AND PTO, ALLOW ALL MOVING PARTS TO STOP, AND REMOVE KEY BEFORE DISMOUNTING FROM TRACTOR.
- ALLOW NO RIDERS ON TRACTOR OR MOWER.
- KEEP ALL PERSONS CLEAR OF OPERATING MOWER AND MOWING AREA.
- KEEP CLEAR OF ROTATING BLADES, PARTS, AND DRIVELINES.

PREVENT FALL OFF INTO ROTATING BLADES

TO PREVENT ACCIDENTAL FALL OFF FROM TRACTOR AND SERIOUS INJURY OR DEATH FROM RUN OVER OR ROLLOVER BY TRACTOR OR MOWER:

- USE ROPS (ROLLOVER PROTECTIVE STRUCTURES) AND SEAT BELT EQUIPPED TRACTORS FOR MOWING OPERATIONS.
- BUCKLE UP SEAT BELT.
- KEEP ALERT FOR STUMPS, HOLES, RUTS AND UNEVEN TERRAIN.

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50029417

⚠ WARNING

ROTARY CUTTERS CAN DISCHARGE OBJECTS SEVERAL HUNDREDS OF FEET. TO AVOID SERIOUS INJURY OR DEATH TO BYSTANDERS FROM THROWN OBJECTS:

* CLEAR MOWING AREA OF VISIBLE DEBRIS AND USE EXTRA CAUTION WHERE ROCKS OR DEBRIS MAY BE PRESENT.

* DO NOT OPERATE CUTTER ALONG ROADWAYS OR IN THE VICINITY OF OTHER PERSONS WITHOUT ENCLOSED SIDES, PERMANENT BANDS, BELTING, HIGHWAY CHAINS OR OTHER FACTORY APPROVED DISCHARGE SHIELDS IN PLACE AND IN GOOD WORKING ORDER.

* KEEP ALL PERSONS WELL CLEAR OF MOWER WHEN IN OPERATION.

⚠ CAUTION

THIS IMPLEMENT IS DESIGNED TO OPERATE AT 540 RPM MAXIMUM TRACTOR PTO SPEED.

ALL DRIVE LINE SHIELDS MUST BE KEPT IN PLACE.

⚠ WARNING

TO AVOID SERIOUS INJURY OR DEATH:

- READ OPERATOR'S MANUAL BEFORE OPERATING AND FOLLOW ALL PRECAUTIONS. (CONTACT DEALER FOR MANUAL)
- KEEP SHIELDS AND GUARDS IN PLACE. KEEP CLEAR OF DRIVES AND BELTS.
- LOWER IMPLEMENT, STOP ENGINE AND PTO, ALLOW ALL MOVING PARTS TO STOP, AND REMOVE KEY BEFORE DISMOUNTING FROM TRACTOR.
- KNOW HOW TO STOP TRACTOR AND EQUIPMENT QUICKLY IN AN EMERGENCY.
- ALLOW NO CHILDREN OR UNQUALIFIED PERSONS TO OPERATE EQUIPMENT.
- BE CAREFUL ON UNEVEN TERRAIN. DECREASE SPEED WHEN TURNING.
- DO NOT OPERATE MOWER IN TRANSPORT POSITION.

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⚠ WARNING

IMPLEMENT CAN FALL FROM HYDRAULIC SYSTEM RELEASE. TO AVOID SERIOUS INJURY OR DEATH:

- SHUT OFF TRACTOR ENGINE, REMOVE KEY, SECURE TRACTOR PARKING BRAKE AND BLOCK UP OR SECURELY SUPPORT IMPLEMENT BEFORE WORKING UNDERNEATH.
- PURGE ALL AIR FROM HYDRAULIC SYSTEM BEFORE ATTEMPTING TO RAISE OR LOWER THIS IMPLEMENT.
- STAND CLEAR IF LOWERING OR RAISING IMPLEMENT.
- DO NOT USE HAND OR SKIN TO CHECK FOR HYDRAULIC LEAKS. USE CARDBOARD OR WOOD.
- HIGH PRESSURE OIL LEAKS CAN PENETRATE SKIN CAUSING SERIOUS INJURY AND GANGRENE. CONSULT A PHYSICIAN IMMEDIATELY.
- LOWER THE IMPLEMENT AND RELEASE HYDRAULIC PRESSURE BEFORE LOOSENING FITTINGS.
- REFER TO OWNER'S MANUAL FOR DETAILS.

⚠ DANGER

KEEP AWAY - ROTATING BLADES

TO AVOID SERIOUS INJURY OR DEATH FROM BLADE CONTACT:

- LOWER IMPLEMENT, STOP ENGINE AND PTO, ALLOW ALL MOVING PARTS TO STOP, AND REMOVE KEY BEFORE DISMOUNTING FROM TRACTOR.
- ALLOW NO RIDERS ON TRACTOR OR MOWER.
- KEEP ALL PERSONS CLEAR OF OPERATING MOWER AND MOWING AREA.
- KEEP CLEAR OF ROTATING BLADES, PARTS, AND DRIVELINES.

PREVENT FALL OFF INTO ROTATING BLADES

TO PREVENT ACCIDENTAL FALL OFF FROM TRACTOR AND SERIOUS INJURY OR DEATH FROM RUN OVER OR ROLLOVER BY TRACTOR OR MOWER:

- USE ROPS (ROLLOVER PROTECTIVE STRUCTURES) AND SEAT BELT EQUIPPED TRACTORS FOR MOWING OPERATIONS.
- BUCKLE UP SEAT BELT.
- KEEP ALERT FOR STUMPS, HOLES, RUTS AND UNEVEN TERRAIN.

50029418

⚠ WARNING

ROTARY CUTTERS CAN DISCHARGE OBJECTS SEVERAL HUNDREDS OF FEET. TO AVOID SERIOUS INJURY OR DEATH TO BYSTANDERS FROM THROWN OBJECTS:

* CLEAR MOWING AREA OF VISIBLE DEBRIS AND USE EXTRA CAUTION WHERE ROCKS OR DEBRIS MAY BE PRESENT.

* DO NOT OPERATE CUTTER ALONG ROADWAYS OR IN THE VICINITY OF OTHER PERSONS WITHOUT ENCLOSED SIDES, PERMANENT BANDS, BELTING, HIGHWAY CHAINS OR OTHER FACTORY APPROVED DISCHARGE SHIELDS IN PLACE AND IN GOOD WORKING ORDER.

* KEEP ALL PERSONS WELL CLEAR OF MOWER WHEN IN OPERATION.

⚠ CAUTION

THIS IMPLEMENT IS DESIGNED TO OPERATE AT 1000 RPM MAXIMUM TRACTOR PTO SPEED.

ALL DRIVE LINE SHIELDS MUST BE KEPT IN PLACE.

⚠ DANGER

ROTATING DRIVELINE CONTACT CAN CAUSE DEATH

KEEP AWAY!

DO NOT OPERATE WITHOUT -

- ALL DRIVELINE GUARDS, TRACTOR AND EQUIPMENT SHIELDS IN PLACE
- DRIVELINES SECURELY ATTACHED AT BOTH ENDS
- DRIVELINE GUARDS THAT TURN FREELY ON DRIVELINE

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⚠ DANGER

GUARD MISSING
DO NOT OPERATE

GUARD MISSING
DO NOT OPERATE

⚠ DANGER

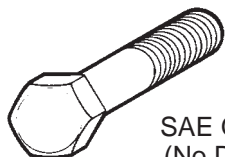
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TORQUE SPECIFICATIONS

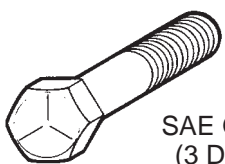
Proper torque for American fasteners used on Bush Hog equipment.
Recommended Torque in Foot Pounds (Newton Meters).*

AMERICAN

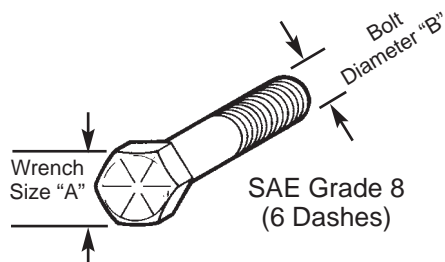
Bolt Head Markings



SAE Grade 2
(No Dashes)



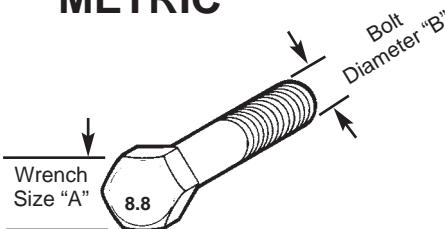
SAE Grade 5
(3 Dashes)



SAE Grade 8
(6 Dashes)

WRENCH SIZE (IN.) "A"	BOLT DIAMETER (IN.) "B" AND THREAD SIZE	SAE GRADE 2	SAE GRADE 5	SAE GRADE 8
7/16	1/4 - 20 UNC	6 (7)	8 (11)	12 (16)
7/16	1/4 - 28 UNF	6 (8)	10 (13)	14 (18)
1/2	5/16 - 18 UNC	11 (15)	17 (23)	25 (33)
1/2	5/16 - 24 UNF	13 (17)	19 (26)	27 (37)
9/16	3/8 - 16 UNC	20 (27)	31 (42)	44 (60)
9/16	3/8 - 24 UNF	23 (31)	35 (47)	49 (66)
5/8	7/16 - 14 UNC	32 (43)	49 (66)	70 (95)
5/8	7/16 - 20 UNF	36 (49)	55 (75)	78 (106)
3/4	1/2 - 13 UNC	49 (66)	76 (103)	106 (144)
3/4	1/2 - 20 UNF	55 (75)	85 (115)	120 (163)
7/8	9/16 - 12 UNC	70 (95)	109 (148)	153 (207)
7/8	9/16 - 18 UNF	79 (107)	122 (165)	172 (233)
15/16	5/8 - 11 UNC	97 (131)	150 (203)	212 (287)
15/16	5/8 - 18 UNF	110 (149)	170 (230)	240 (325)
1-1/8	3/4 - 10 UNC	144 (195)	266 (360)	376 (509)
1-1/8	3/4 - 16 UNF	192 (260)	297 (402)	420 (569)
1-5/16	7/8 - 9 UNC	166 (225)	430 (583)	606 (821)
1-5/16	7/8 - 14 UNF	184 (249)	474 (642)	668 (905)
1-1/2	1 - 8 UNC	250 (339)	644 (873)	909 (1232)
1-1/2	1 - 12 UNF	274 (371)	705 (955)	995 (1348)
1-1/2	1 - 14 UNF	280 (379)	721 (977)	1019 (1381)
1-11/16	1-1/8 - 7 UNC	354 (480)	795 (1077)	1288(1745)
1-11/16	1-1/8 - 12 UNF	397 (538)	890 (1206)	1444 (1957)
1-7/8	1-1/4 - 7 UNC	500 (678)	1120 (1518)	1817 (2462)
1-7/8	1-1/4 - 12 UNF	553 (749)	1241 (1682)	2013 (2728)
2-1/16	1-3/8 - 6 UNC	655 (887)	1470 (1992)	2382 (3228)
2-1/16	1-3/8 - 12 UNF	746 (1011)	1672 (2266)	2712 (3675)
2-1/4	1-1/2 - 6 UNC	870 (1179)	1950 (2642)	3161 (4283)
2-1/4	1-1/2 - 12 UNF	979 (1327)	2194 (2973)	3557 (4820)

METRIC



Numbers appearing on bolt heads indicate ASTM class.

Proper torque for metric fasteners used on Bush Hog equipment.
Recommended torque in foot pounds (newton Meters).*

WRENCH SIZE (mm) "A"	BOLT DIA. (mm) "B"	ASTM 4.6	ASTM 8.8	ASTM 9.8	ASTM 10.9
8	5	1.8 (2.4)		5.1 (6.9)	6.5 (8.8)
10	6	3 (4)		8.7 (12)	11.1 (15)
13	8	7.3 (10)		21.1 (29)	27 (37)
16	10	14.5 (20)		42 (57)	53 (72)
18	12	25 (34)	74 (100)	73 (99)	93 (126)
21	14	40 (54)	118 (160)	116 (157)	148 (201)
24	16	62 (84)	167 (226)	181 (245)	230 (312)
30	20	122 (165)	325 (440)		449 (608)
33	22		443 (600)		611 (828)
36	24	211 (286)	563 (763)		778 (1054)
41	27		821 (1112)		1138 (1542)
46	30	418 (566)	1119 (1516)		1547 (2096)

*Use 75% of the specified torque value for plated fasteners. Use 85% of the specified torque values for lubricated fasteners.



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