

BUSH HOG®

280 Series Rotary Cutter Models 285, 286, 287 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 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.

280 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.



BUSH HOG[®]
Performance You Can Count OnSM

MODEL 280 SERIES 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. Model 280 gearboxes are covered by a two (2) year limited warranty period. 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 _____

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

SERIAL NUMBER _____

DATE OF RETAIL SALE _____

DEALER PREPARATION CHECK LIST

280 SERIES ROTARY CUTTERS

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

- 1. Assembled 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. Purchaser or dealer elects to delete deflectors. (front belting, rear bands, front and rear chains)

Explanation: _____

WARNING

For Non-Agricultural use, OSHA, ASAE, SAE and ANSI standards require the use of Chain 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.

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.

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.)

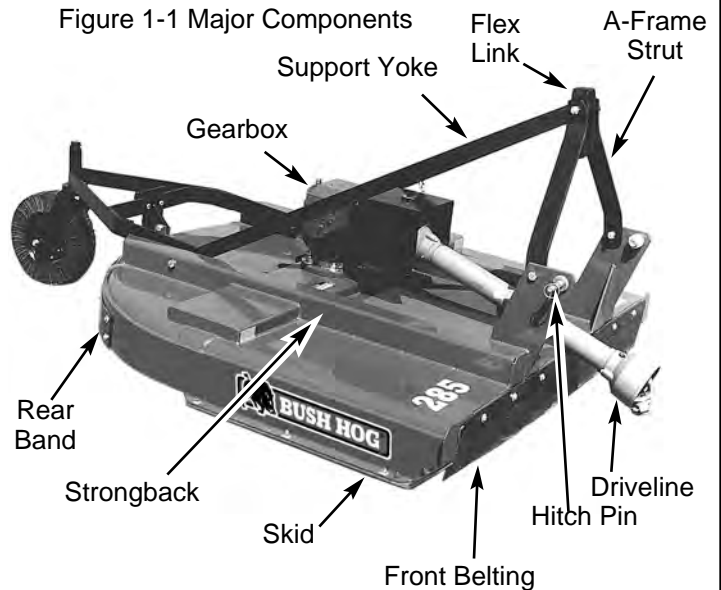
SECTION I INTRODUCTION AND DESCRIPTION

1-1 INTRODUCTION

We are pleased to have you as a Bush Hog customer. Your 280 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 decaed 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.

1-2 DESCRIPTION

The 280 Series rotary cutters (Figure 1-1) are designed for medium duty applications such as grass, corn stalks and light brush. These cutters are single spindle with two free-swinging blades. Free-swinging blades reduce the shock of impact when a stationary object is hit. Additional protection is provided by a slip clutch on the gearbox input shaft. A round blade holder allows the cutter to "ride over" stumps and similar immovable objects. Models 285 and 286 are attached to the tractor using a standard Cat. I or II 3-point hitches. The 287 can use Cat. I and II standard and quick hitch or semi-mount. Standard equipment includes driveline shields, clutch shields and front and rear discharge shields



(deflectors). NOTE: Dealer or purchaser may elect to delete front and rear discharge shields (deflectors) at their option. Refer to "WARNING" in Section 3-3.

NOTE

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

Table 1 Technical Specifications

SERIES	285	286	287
Cutting Width	5'	6'	7'
Transport Width	66"	78"	90"
Length	103"	115"	127"
Hitch	3-Point Category I (Cat. II Plns Optional)	3-Point Category I (Cat. II Plns Optional)	3-Point Category I & 2 (Standard & Quick Hitch)
Cutting Height	1-1/2" - 10-1/2"	1-1/2" - 10-1/2"	1-1/2" - 10-1/2"
Cutting Capacity	2" Diameter	2" Diameter	2" Diameter
Driveshaft	ASAE Category 4	ASAE Category 4	ASAE Category 4
Gearbox	540 RPM (110 HP)	540 RPM (110 HP)	540 RPM (110 HP)
Blades	1/2" x 4" Uplift	1/2" x 4" Uplift	1/2" x 4" Uplift
Blade Tip Speed	15,551 fpm	14, 877 fpm	14,514 fpm
Blade Holder	Round	Round	Round
Top Deck	10 Ga. Steel	10 Ga. Steel	10 Ga. Steel
Side Bands	1/4" x 8"	1/4" x 8"	1/4" x 8"
Minimum Tractor HP	30	40	50
Front & Rear Deflectors	Belting is standard, chain deflectors are optional		
Wheels	Laminated	Laminated	Laminated
Approximate Weight (lbs.)	794 lbs. 1, 2	962 lbs. 1, 2	1247 lbs. 1, 3

1 - Weight includes deflector chains front & rear, 2 - Single tailwheel, 3 - Dual tailwheel

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

SECTION II PREPARATION FOR USE

2-1 ATTACHING TO TRACTOR

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 THE 3-POINT HITCH MOUNTED CUTTER. SEE TRACTOR OPERATOR'S MANUAL FOR RECOMMENDED WEIGHTS.



A. Attach cutter to tractor 3-point hitch per tractor operator's manual. Do not attach driveline at this time.

IMPORTANT

Tractor top link pin securing 3-point hitch top link to cutter must conform to dimension shown in Figure 2-1 to avoid interference with A-frame.

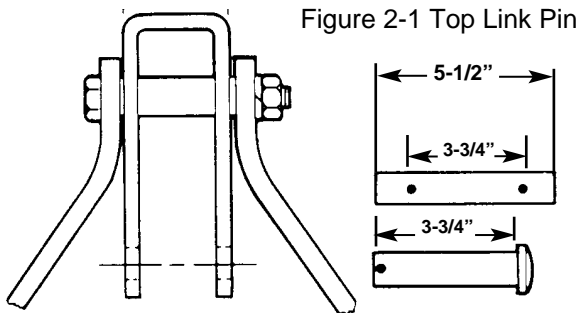


Figure 2-1 Top Link Pin

B. Raise 3-point hitch until front of cutter is approximately 1-2 inches (25-51mm) lower than rear for standard cut or until front of cutter is 1 inch (35mm) higher than rear for extra shredding. Shut down tractor. Securely block cutter in position. For further explanation of cutter adjustment, see paragraph 3-2.

C. Adjust top link of 3-point hitch to position flex link as shown in Figure 2-2.

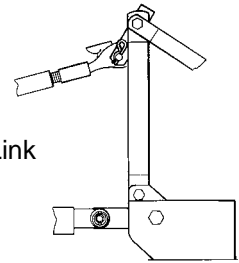
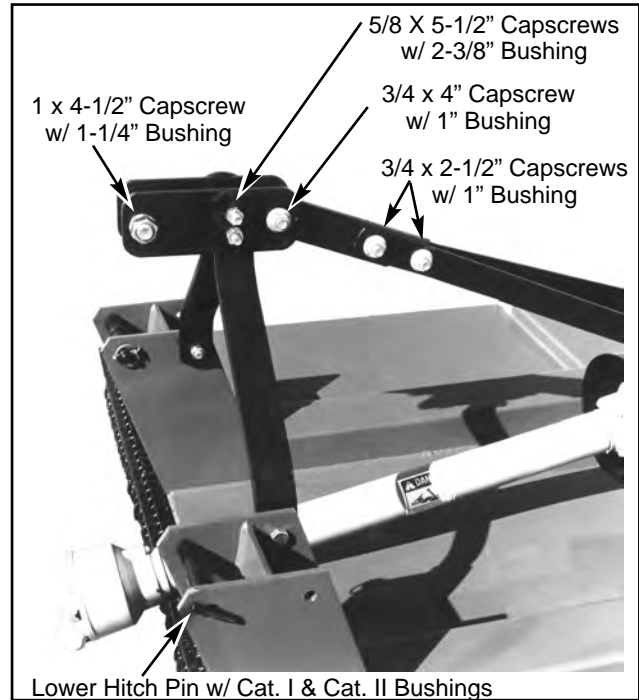


Figure 2-2 Flex-Link

QUICK HITCH ASSEMBLY



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:

D. 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.**

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

F. 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 on opposite section. If too long, measure 3 inches (76mm) back from universal joint shield and mark on opposite section. (Figure 2-3). Do this for both sections.

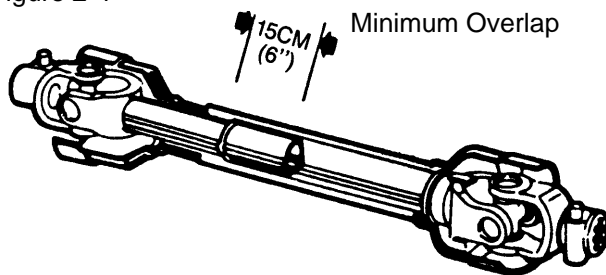
G. Raise and lower cutter to determine position with greatest distance between PTO shaft and gearbox input shaft. Shut down tractor leaving cutter in position of greatest distance. **Securely block cutter in position.**

Figure 2-3



H. Hold driveline sections parallel to each other and check for minimum 6 inches (15cm) overlap. Figure 2-4). 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.

Figure 2-4



NOTE

If driveline is the correct length, omit the following steps "I" through "L" and proceed to step "M".

I. Clamp driveline in a well padded vice to prevent damage to the shield. Cut off shield where marked. (Figure 2-5)

Figure 2-5



J. Using cut off section of shield as a guide, cut shaft the same amount. (Figure 2-6)

Figure 2-6



K. Repeat steps "I" and "J" to other driveline section.

L. Deburr ends of driveline sections and clean away all chips and filings. (Figure 2-7)

Figure 2-7



M. Apply multi-purpose grease to inside of outer (female) 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.

N. Adjust lower lift arm(s) to level cutter right to left. Refer to tractor operator's manual for instructions.

NOTE

After attaching driveline to tractor, attach driveline shield chains from both ends of driveline shielding to stationary locations.

SECTION III OPERATING INSTRUCTIONS

3-1 GENERAL SAFETY

Only qualified people should operate this machine. Operator should wear hard hat, safety glasses and safety shoes. It is recommended that tractor be equipped with Rollover Protective Systems (ROPS) and a seat belt be used. Before beginning operation, clear work area of 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, and allow cutter blades to come to a complete stop before dismounting tractor.

3-2 ADJUSTING FOR WORK

The cutter should be operated at the highest position which will give desired cutting results. This will help prevent the blades from striking the ground, reducing blade wear and undue strain on the machine. For best results under heavier cutting conditions, always tilt the cutter approximately 2 inches (51mm) lower in the front. 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.

3-2.1 CUTTING HEIGHT ADJUSTMENT

WARNING

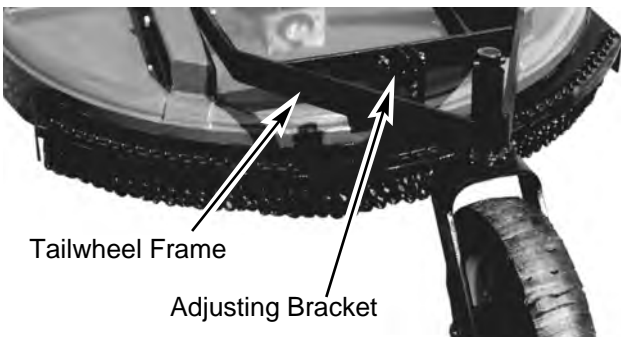
THE CUTTER CAN FALL FROM HYDRAULIC SYSTEM FAILURE. TO AVOID SERIOUS INJURY OR DEATH, SECURELY SUPPORT CUTTER BEFORE WORKING UNDERNEATH.

WARNING

AVOID PLACING HANDS, FEET OR ANY OTHER BODY PARTS BENEATH THE CUTTER WHILE MAKING HEIGHT ADJUSTMENTS.

The cutting height may be adjusted from 1-1/2" to 10-1/2" by selecting the appropriate holes in the adjusting bracket on the single tailwheel bracket

Figure 3-1



(285, 286, 287). Adjustment can be made with a ratchet or cylinder on the 287 dual wheel mount. (Figures 3-1 & 3-2)

- A. Raise cutter using 3-point lift until tailwheel(s) lift off ground. Turn off tractor. Block cutter in position.
- B. Remove adjusting bolts from bracket.
- C. Position tailwheel for desired cutting height.
- D. Replace adjusting bolts and tighten securely.

3-3 OPERATION

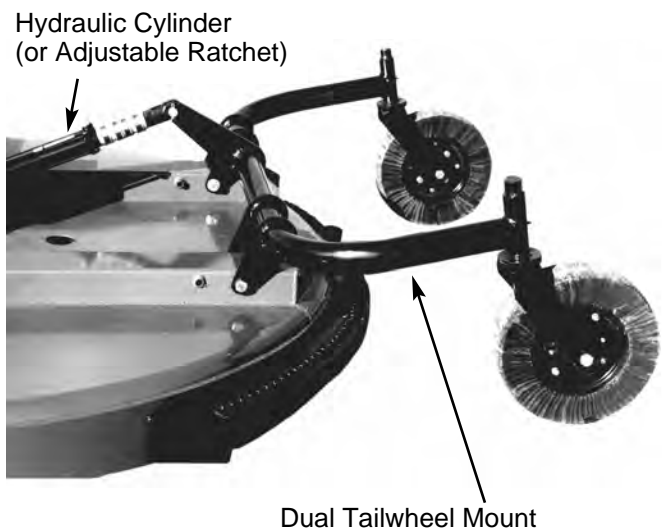
- A. Perform BEFORE EACH USE maintenance listed in paragraph 4-1.
- B. Start tractor.
- C. With tractor at idle speed, engage PTO drive.
- D. Adjust cutter to working position.

DANGER

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

- E. Set tractor throttle for appropriate PTO speed (540 RPM).

Figure 3-2 Model 287 With Dual Tailwheels



 **DANGER**

ROTATING CUTTER BLADES. STAND CLEAR UNTIL ALL MOTION HAS STOPPED. TO AVOID AN ACCIDENTAL FALL FROM THE TRACTOR AND POSSIBLE INJURY BY THE MOWER, IT IS RECOMMENDED THAT THE TRACTOR BE EQUIPPED WITH ROPS (ROLLOVER PROTECTIVE SYSTEM) AND THAT A SEAT BELT BE USED BY THE OPERATOR FOR ALL MOWING OPERATIONS.

F. Place tractor in 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. Do not exceed 5 mph (8kph). If PTO drive is disengaged due to cutter stalling or tractor engine bogging, cutter must be moved to a "cut" area and tractor throttle reduced to idle before re-engaging. Always cut up and down the face of slopes, never across.

 **WARNING**

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

THEREFORE, 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. CEASE MOWING WHENEVER ANYONE COMES WITHIN THE OPERATING AREA.

3-4 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 (SMV) sign must be visible from the rear by approaching vehicles. Do not exceed 15 mph (24kph) when traveling. Fully raise implement before transporting.

SECTION IV MAINTENANCE

4-1 MAINTENANCE CHECK LIST

Perform scheduled maintenance as outlined below. Lower machine 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 recommended in the torque specifications chart unless otherwise indicated.

 **WARNING**

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

BEFORE EACH USE

1. Check tractor tire air pressure. Refer to tractor operator's manual.
2. Check blades and spindle to be sure that no foreign objects such as wire or steel strapping bands are wrapped around them.
3. Check blade bolts for tightness. **Tighten to 450 ft./lbs. (609 Nm).**
4. Inspect blades for wear. Replace if necessary per paragraph 4-4. **Always replace both blades on spindle with two blades equal in weight. Use only genuine Bush Hog replacement parts.**
5. Make certain driveline shields are in place and in good repair to minimize entanglement injuries to persons by rotating drivelines.
6. Make certain deflector shields (chains, bands, etc.) are in good repair to minimize injuries to persons by the discharge of the high speed thrown objects.

7. Inspect wheel(s) for wear, damage, or foreign objects. Repair or replace if necessary.
8. Perform **BEFORE EACH USE** lubrication per paragraph 4-2.
9. During operation, listen for abnormal sounds which might indicate loose parts, damaged bearings or other damage.

AFTER EACH USE

1. Clean all debris from machine especially underside of deck and affixed safety decals. Replace any missing or illegible decals.
2. Inspect cutter for worn or damaged components. Repair/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)

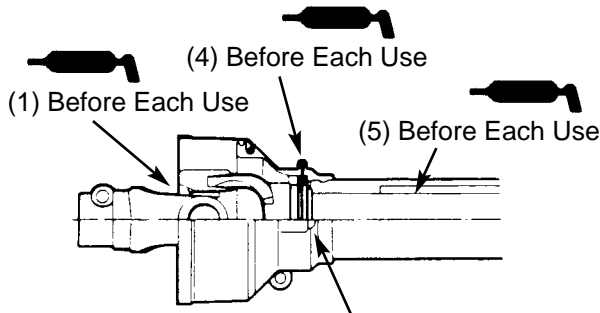
NOTE

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. Wheel Bearings - Apply multi-purpose grease with grease gun.
3. Wheel Pivots - Apply multi-purpose grease with grease gun.
4. Driveline Guard - Apply 2-3 shots of multi-purpose grease with grease gun to plastic fitting.

5. **PTO Driveline** - Disconnect PTO driveline, pull the two sections apart, apply thin coat of multi-purpose grease to inside of outer (female) 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.
6. **Gearbox** - Add EP80W-90 gear oil as necessary to bring oil level to check plug on side of housing.



To remove yoke shield, rotate the two fasteners to allow shield to slide back.

⚠ WARNING

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

4-3 BLADE HOLDER ASSEMBLY, REMOVAL AND INSTALLATION

- A. Remove cotter pin and blade holder assembly retaining nut.
- B. Wearing heavy gloves, grasp blade holder and pull off shaft. If stuck, align bolt with access hole in top of cutter deck. Using hammer and a piece of pipe, strike blade bar. Rotate pan to other blade bolt and strike blade bar. Repeat until blade holder comes off. Care should be taken not to damage blade bolt threads.

TO INSTALL:

- A. Place blade holder assembly, washer and retaining nut on lower shaft. **Torque nut to 450 ft./lbs. (609.7 Nm) using a 1-1/2" socket.**
- B. Using a sledge hammer, strike the blade pan firmly on each end (on or near the head of the blade bolt) several times, alternating ends between blows. Retighten to 450 ft./lbs. (609.7 Nm).
- C. Install cotter pin. **It may be necessary to tighten nut slightly to install cotter pin.**

4-4 BLADE REPLACEMENT (Figure 4-2)

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 using two blades having the same weight. Use only genuine Bush Hog replacement parts.

Figure 4-1 Lubrication

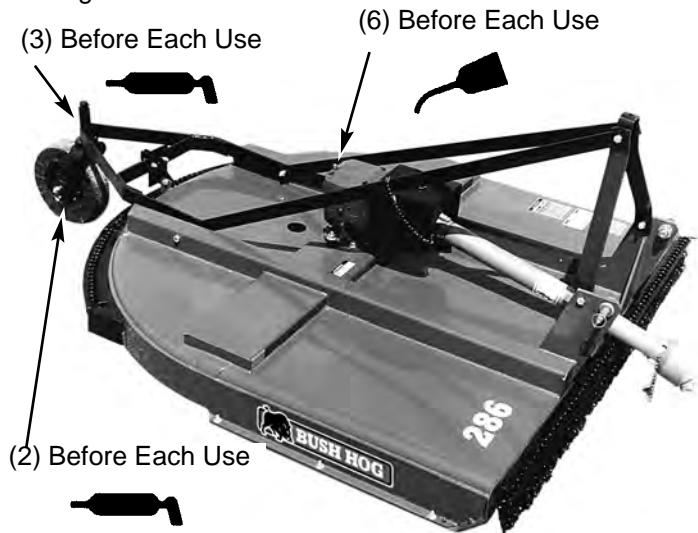
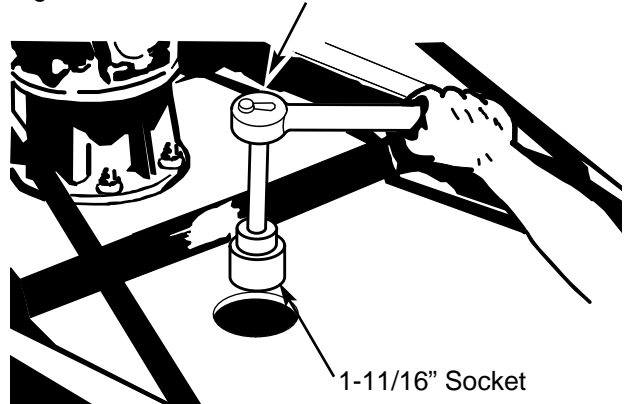


Figure 4-2 Blade Nut Removal



- A. Raise cutter and securely block in position.
- B. Remove nuts from blade bolts using a 1-11/16" socket through the access hole in the deck.
- C. Inspect blade bolt shoulder for wear. Replace if necessary.
- D. Assemble new blades to blade holder using blade bolts, nuts and lockwashers. **Tighten nuts to 450 ft./lbs.** Strike blade bolt head with heavy hammer to seat, then retighten.
- E. **Check to be sure blades swing 360° 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.**

4-5 SLIP CLUTCH OPERATIONAL CHECK

After implement had 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 not slip, contact your authorized Bush Hog dealer.

C. Retighten nuts to within 1/64" of original position. Initial spring length is shown in Figure 4-3.

⚠ 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.

4-6 SLIP CLUTCH ADJUSTMENT

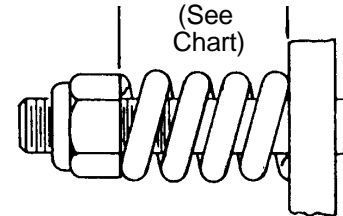
The slip clutch is factory preset to the correct torque for protecting implement and tractor. **Periodic adjustment is recommended**; refer to section 4-5. Should adjustment be needed, first check to be sure all spring lengths are the same. Initial spring length is shown in Figure 4-3. If necessary, adjust nut on any spring that is unequal. Adjust all eight spring retaining nuts 1/3 of a turn (2flats on a nut) and check clutch slippage. If further adjustment is neces-

sary, do so in 1/3 turn increments. **Adjust only to provide sufficient torque to prevent slippage under normal conditions. Occasional slippage is normal for drivetrain protection.** If satisfactory results cannot be obtained, consult your Bush Hog dealer.

IMPORTANT

Do not overtighten nut and cause spring to become solid as this will cause shaft to fail.

Figure 4-3
Spring Length



MODEL	Bondioli & Pavesi or Binacchi	EG/Comer
285 & 286	1.10" (28 mm)	1.26" (32 mm)
287/1287	1.13" (28.6 mm)	1.32" (33.6 mm)

NOTE: REFER TO PAGE 17 FOR IDENTIFYING DIFFERENCES IN THE CLUTCHES.

Table 4-1 General Troubleshooting

PROBLEM	PROBABLE CAUSE	REMEDY
Uneven Cut	Cutter not level side to side.	See SECTION II
	Worn or bent blades.	Replace blades per paragraph 4-4.
Stripping or Windrowing	Possible build-up of material under cutter.	Clean cutter.
	Cutter not level.	Refer to Section II.
	Worn blades.	Replace per paragraph 4-4.
Noisy Cutter	Loose components.	Check all bolts for tightness per paragraph 20.
	Low oil in gearboxes.	Check for proper oil level. Refer to paragraph 4-2.
Rapid Blade Wear (Cutting Edge)	Blade contacting the ground.	Adjust cutter to operate at a height that will eliminate ground contact.
Rapid Blade Wear (Bolt Hole)	Cutter not being operated at rated RPM speed.	Reduce ground speed. Set tractor throttle for proper PTO speed.
	Too much ground speed.	Use lower gear.
Poor Shredding Job	Incorrect deck tilt.	Adjust per paragraph 3-2.
	Excessive ground speed.	Reduce ground speed.
	Worn blades.	Replace blades per paragraph 4-4.
Cutter Vibration	Cutter not being operated at rated RPM speed.	Set tractor throttle for proper PTO speed.
	Possible build up of material on blade pan.	Clean blade pan.
	Broke blade.	Replace blades per paragraph 4-4.
	Blades unequal weight.	Replace blades per paragraph 4-4.

PRE-ASSEMBLY SAFETY PRECAUTIONS



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 have been properly lubricated.

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

SECTION V ASSEMBLY

IMPORTANT

Tighten all fasteners to specifications on Torque Chart unless otherwise indicated.

5-1 3-POINT LIFT MODELS (285 & 286)

A. Attach A-frame struts to mounting brackets using 5/8" x 2" capscrews and locknuts as shown. (Figure 5-1)

B. Place flex link and pivot tube between top of A-frame struts. Place support yokes on outside of A-frame struts. Fasten together using 5/8" x 6" cap-screw and locknut.

C. Position tailwheel bracket on rear of cutter deck as shown. (Figure 5-1) Align holes in tailwheel weldment with holes in support yokes and strongbacks. Fasten with 5/8" x 6" capscrew and locknut on the single tailwheel bracket.

D. Place flatwasher on wheel spindle. Install wheel on tailwheel weldment securing with roll pin.

E. Bolt adjusting bracket to cutter deck using 5/8 x 2" capscrew and locknut.

F. Place tailwheel frame into desired position and fasten with 1/2 x 1-3/4" capscrews, lockwashers and nuts.

G. Install Category I lift pins in front holes in mounting brackets and fasten with 1-1/8" fine thread nut and lockwasher.

H. Attach clutch shield to gearbox as shown in exploded drawing in Figure 5-6.

I. Remove pivot bolt from spline end of clutch. Remove inspection cover from clutch shield.

J. Slide clutch onto gearbox input shaft aligning bolt hole with slot in input shaft. Fasten with pivot bolt, lockwasher and nut. Torque to 30 ft./lbs.

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

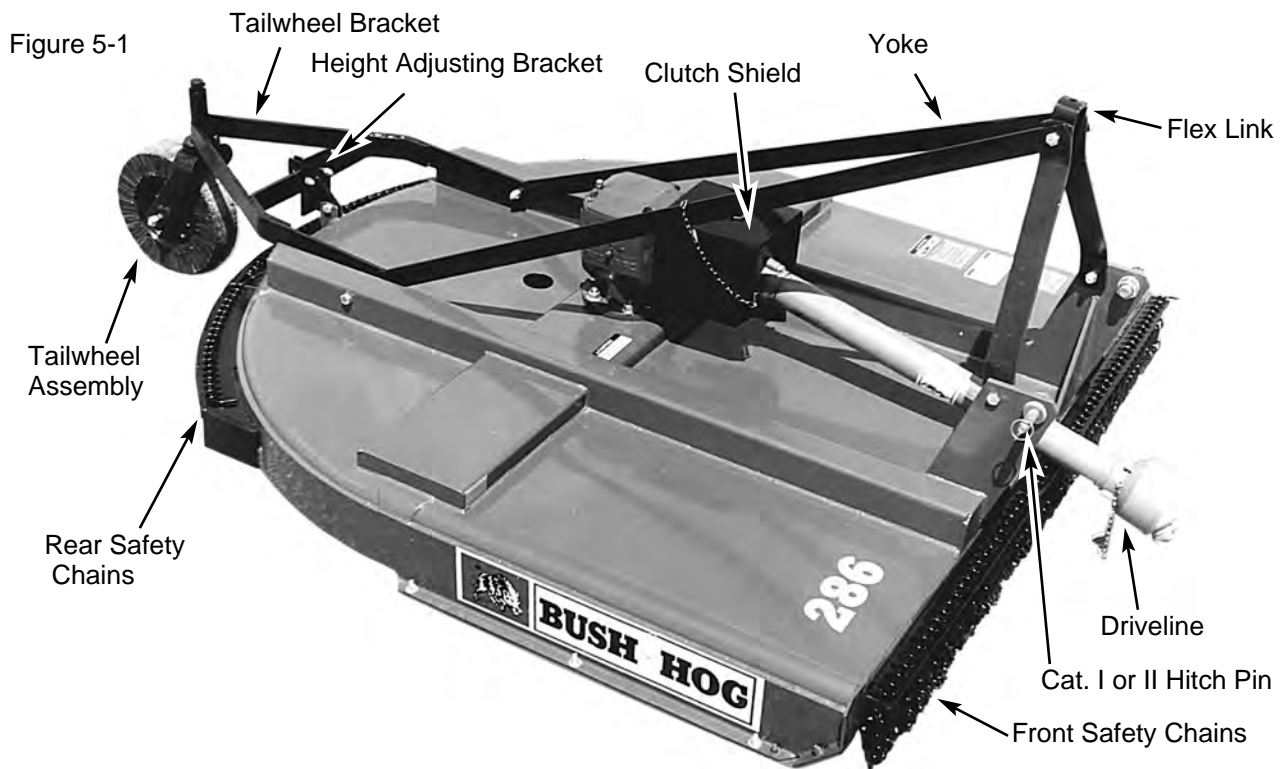
L. **With tractor at idle speed, engage tractor PTO drive 2-3 seconds. Clutch should slip without turning blades.**

M. **Retighten nuts to original position.** If adjustment is necessary, refer to Section 4-6.

WARNING

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

N. **Fill gearbox with EP80W-90 gear oil to check plug on rear of gearbox. Allow time for oil to seep through bearings into lower housing. Replace temporary plug with vent plug supplied in operator's manual package.**



5-2 3-POINT LIFT MODELS (287)

A. Attach A-frame struts to mounting brackets using 5/8" x 2" capscrews and locknuts as shown. (Fig. 5-1)

B. Place flex link and pivot tube between top of A-frame struts. Place support yokes on outside of A-frame struts. Fasten together using a 5/8" x 6" capscrew and locknut. Attach the opposite ends of the support yokes over the welded strongback tubes which are located closest to the gearbox using 5/8" x 8" capscrews, flatwasher and locknut.

C. For single tailwheel mounting, position tailwheel bracket on rear of cutter deck as shown. (Fig. 5-1) Align holes in tailwheel weldment with holes in support yokes and strongback tubes (tubes located closest to the gearbox). Fasten with the 5/8" x 8" capscrews, flatwasher and locknut.

D. Place flatwasher on wheel spindle. Install wheel on tailwheel weldment securing with roll pin.

E. Bolt adjusting bracket to cutter deck using 5/8" x 2" capscrew and locknut.

F. Place tailwheel frame into desired position and fasten with 1/2" x 1-3/4" capscrews, lockwashers and nuts.

G. For mounting dual tailwheels, position tailwheel bracket at the rear tubes located in the strongbacks. (Fig. 5-2) Align holes in tailwheel weldment with holes in strongback. Install pivot bushings and fasten with 3/4" x 8" capscrews and flange locknuts. Pin ratchet or lift cylinder (8" stroke) to axle and deck assembly.

H. Place flatwashers on wheel spindles. Install wheels on tailwheel weldment securing with roll pins.

I. Install lift pins and spacers according to Fig. 5-3. Fasten lift pin with click pin.

J. Attach clutch shield to gearbox as shown in exploded drawing in Figure 5-6.

K. Remove pivot bolt from spline end of clutch. Remove inspection cover from clutch shield.

L. Slide clutch onto gearbox input shaft aligning bolt hole with slot in input shaft. Fasten with pivot bolt, lockwasher and nut. Torque to 30 ft./lbs.

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

N. **With tractor at idle speed, engage tractor PTO drive 2-3 seconds. Clutch should slip without turning blades.**

O. **Retighten nuts to original position.** If adjustment is necessary, refer to Section 4-6.

WARNING

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

P. **Fill gearbox with EP80W-90 gear oil to check plug on rear of gearbox. Allow time for oil to seep through bearings into lower housing. Replace temporary plug with vent plug supplied in operator's manual package.**

Figure 5-2 Model 287

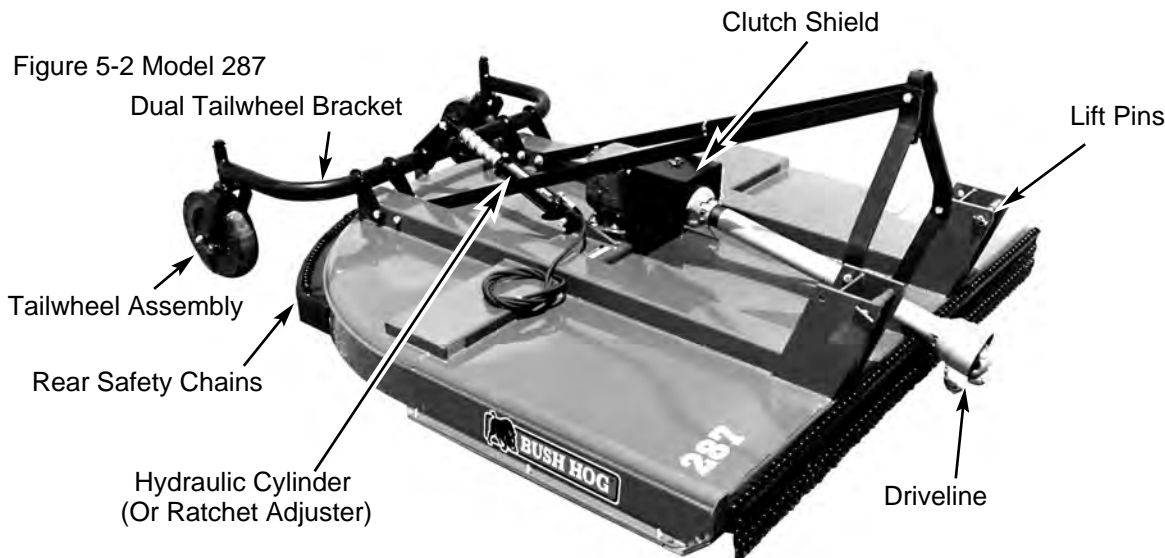


Figure 5-3 Front View of Model 287 Lower Hitch Points

Category I

2-7/8" x 1-1/8" Spacer not used on Cat. I

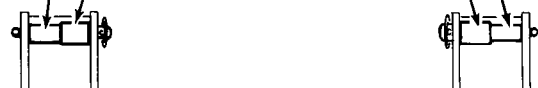
2-3/4" x 1-1/2" Spacer Used



Category II

2-7/8" x 1-1/8" Spacer

2-3/4" x 1-1/2" Spacer



5-3 SEMI-MOUNT MODEL (287)

A. For mounting dual tailwheels, position tailwheel brackets at the rear tubes located in the strongbacks. (Figure 5-2) Align holes in tailwheel weldment with holes in strongback. Install pivot bushings and fasten with 3/4" x 8" capscrews and flange locknuts. Pin ratchet or lift cylinder (8" stroke) to axle and deck assembly.

B. Place flatwashers on wheel spindles. Install wheels on tailwheel weldment securing with roll pins.

C. Refer to Figure 5-3 and arrange lift pin and spacers as shown. Fasten lift pin with klick pin.

D. Attach clutch shield to gearbox as shown in exploded drawing in Figure 5-6.

E. Remove pivot bolt from splined end of clutch. Remove inspection cover from clutch shield.

F. Slide clutch onto gearbox input shaft aligning bolt hole with slot in input shaft. Fasten with pivot bolt, lockwasher and nut. Torque to 30 ft./lbs.

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

H. **With tractor at idle speed, engage tractor PTO drive 2-3 seconds. Clutch should slip without turning blades.**

I. **Retighten nuts to original position.** If adjustment is necessary, refer to Section 4-6.



WARNING

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

J. **Fill gearbox with EP80W-90 gear oil to check plug on rear of gearbox. Allow time for oil to seep through bearings into lower housing. Replace temporary plug with vent plug supplied in operator's manual package.**

5-4 QUICK HITCH MODEL (287)

(Refer to Figure 5-2 and Photo in Section II, Preparation For Use. Also refer to exploded drawing on page 17.)

A. Attach A-frame struts to mounting brackets using 5/8" x 2" capscrews and locknuts.

B. Top plates can be secured to the A-frame struts using two 5/8" x 5-1/2" capscrews and locknuts and spaced by 2-3/8" diameter by 2-1/16" long bushing. Install a 1" x 4-1/2" capscrew and a 1-1/4" diameter by 2-1/16" long bushing and a nut and lockwasher to the front portion of the top plate.

C. Align holes in the pivot arm installing a 1" diameter by 1-1/16" long bushing and securing with a 3/4" x 4" capscrew, lockwasher and nut.

D. Attach support yokes to the outside of the pivot arm using two 1" diameter x 11/16" long bushings, 3/4" x 2-1/2" capscrews, lockwashers and nuts.

E. Attach the opposite ends of the support yokes over the welded strongback tubes which are located closest to the gearbox using 5/8" x 8" capscrews, flatwasher and locknut.

F. For single tailwheel mounting position tailwheel bracket on rear of cutter deck as shown. (Figure 3-1) Align holes in tailwheel weldment with holes in support yokes and strongback tubes (tubes located closest to the gearbox). Fasten with the 5/8" x 8" capscrews, flatwasher and locknut.

G. Place flatwasher on wheel spindle. Install wheel on tailwheel weldment securing with roll pin.

H. Bolt adjusting bracket to cutter deck using 5/8" x 2" capscrew and locknut.

I Place tailwheel frame into desired position and fasten with 1/2" x 1-3/4" capscrews, lockwashers and nuts.

J. For mounting dual tailwheels, position tailwheel brackets at the rear tubes located in the strongbacks. (Figure 3-2) Align holes in tailwheel weldment with holes in strongback. Install pivot bushings and fasten with 3/4 x 8" capscrews and flange locknuts. Pin ratchet or lift cylinder to axle and deck assembly.

K. Install lift pins and spacers according to Figure 5-3. Fasten lift pin with klick pin.

L. Attach clutch shield to gearbox as shown in exploded drawing in Figure 5-6.

M. Remove pivot bolt from splined end of clutch. Remove inspection cover from clutch shield.

N. Slide clutch onto gearbox input shaft aligning bolt hole with slot in input shaft. Fasten with pivot bolt, lockwasher and nut. Torque to 30 ft./lbs.

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

P. **With tractor at idle speed, engage tractor PTO drive 2-3 seconds. Clutch should slip without turning blades.**

Q. **Retighten nuts to original position.** If adjustment is necessary, refer to Section 4-6.



WARNING

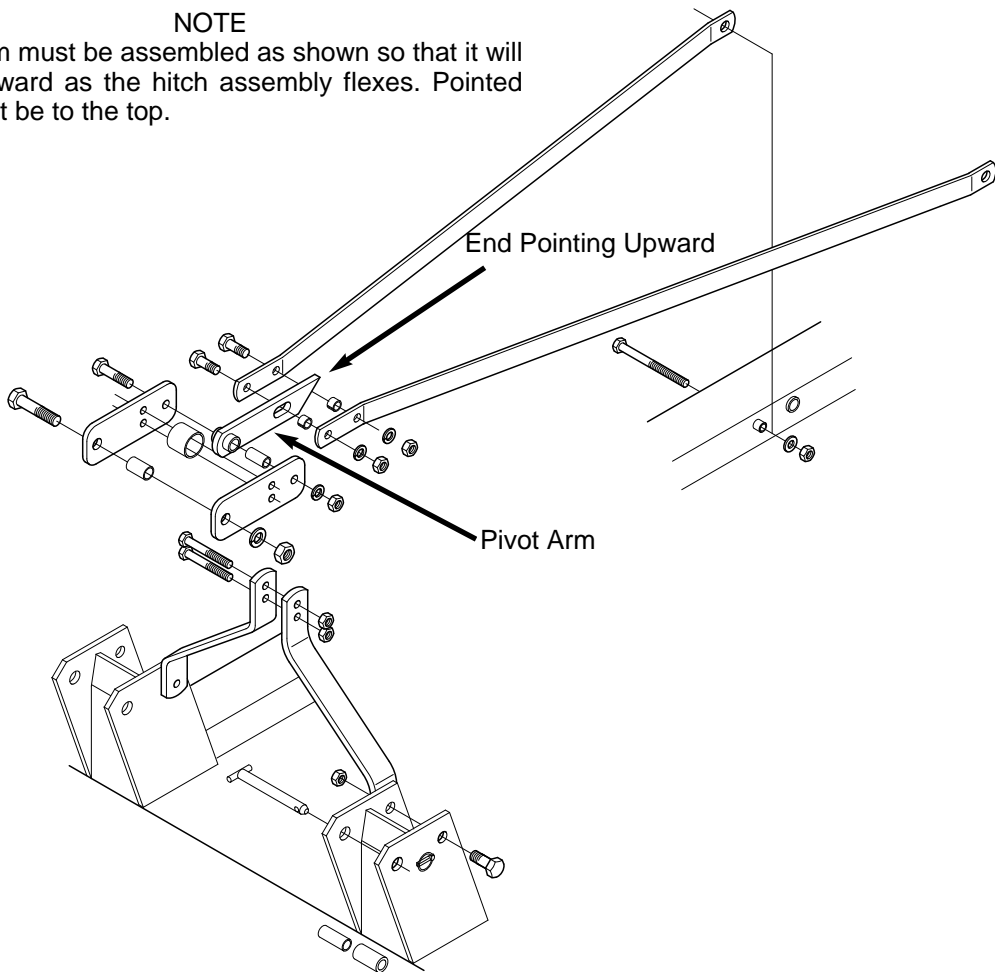
OVER-TIGHTENING SPRING NUTS MAY CAUSE DAMAGE TO IMPLEMENT AND/OR TRACTOR DUE TO INCORRECT SLIP CLUTCH TORQUE SETTING. ALWAYS FOLLOW THE PROPER ADJUSTMENT PROCEDURE.

N. **Fill gearbox with EP80W-90 gear oil to check plug on rear of gearbox. Allow time for oil to seep through bearings into lower housing. Replace temporary plug with vent plug supplied in operator's manual package.**

MODEL 287 QUICK HITCH ASSEMBLY

NOTE

Pivot arm must be assembled as shown so that it will pivot upward as the hitch assembly flexes. Pointed end must be to the top.

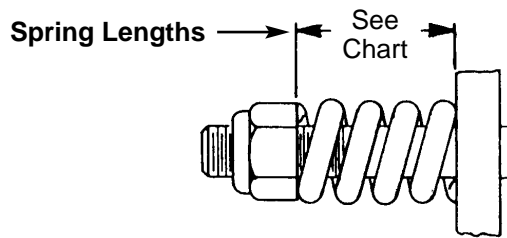
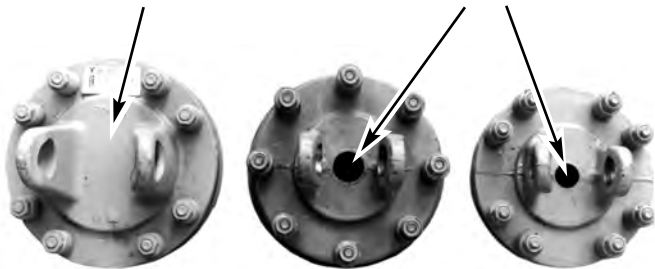


MODEL 280 SERIES SLIP CLUTCHES

Bush Hog 280 Series Rotary Cutters are subject to having either “Bondioli & Pavesi / Binacchi” or “EG / Comer” slip clutches installed. While these clutches are similar, the spring length settings are different. Refer to the photographs below to help identify which brand of clutch you are adjusting. Notice the “Bondioli & Pavesi / Binacchi” clutches have solid castings, whereas the “EG / Comer” castings have centrally located holes through them.

BONDIOLI & PAVESI / BINACCHI
(Solid Casting)

EG / COMER
(Holes Through Centers)



MODEL	Bondioli & Pavesi or Binacchi	EG/Comer
285 & 286	1.10" (28 mm)	1.26" (32 mm)
287/1287	1.13" (28.6 mm)	1.32" (33.6 mm)

5-5 FRONT BELTING INSTALLATION

A. Align belting and clamp with holes in front lip of deck.

B. Fasten with 3/8 x 3-1/2" capscrews, flatwashers, lockwashers and nuts. (Figure 5-4)

5-6 REAR BAND INSTALLATION

A. Align deflector band with holes in rear band of deck.

B. Fasten with 3/8 x 1" capscrews, flatwashers, lockwashers and nuts. (Figure 5-4)

5-7 FRONT CHAIN INSTALLATION

A. Align front chain assembly bracket with holes in front lip of deck.

B. Fasten with 3/8 x 3" capscrews, flatwashers, lockwashers and nuts. (Figure 5-5)

5-8 REAR CHAIN INSTALLATION

A. Align rear chain assembly bracket with holes in rear band of deck.

B. Fasten with 3/8 x 1-1/4" capscrews, flatwashers, lockwashers and nuts. (Figure 5-5)

⚠ CAUTION

USE ONLY FACTORY APPROVED CHAIN GUARDS.

⚠ WARNING

FOR NON-AGRICULTURAL USE, OSHA, ASAE, SAE AND ANSI STANDARDS REQUIRE THE USE OF CHAIN 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 OR FROM CONTACT WITH THE CUTTING BLADES.

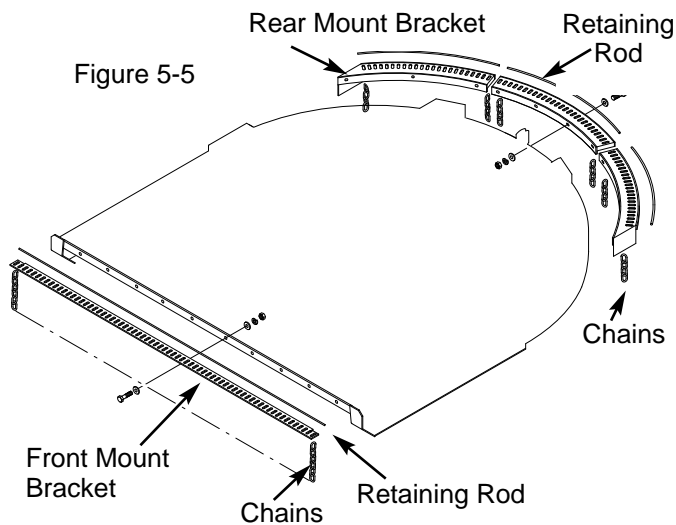
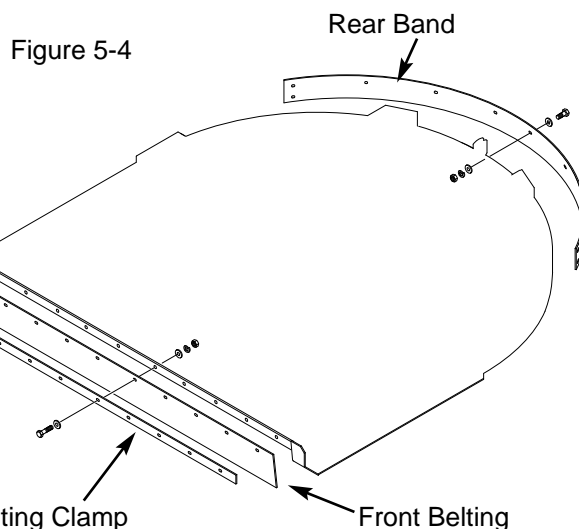
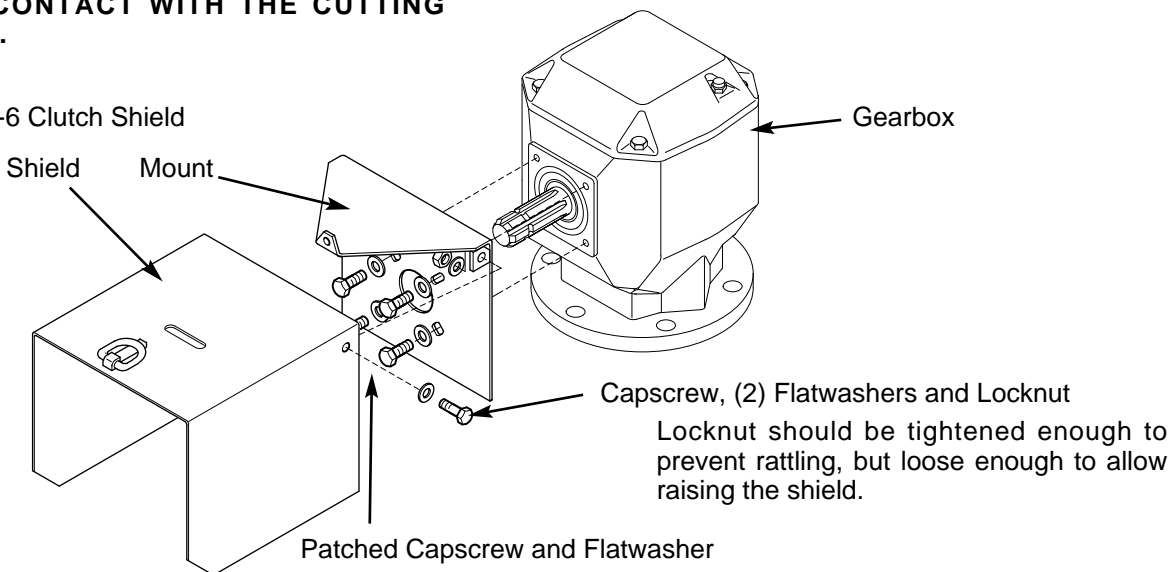


Figure 5-6 Clutch Shield



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.

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.

50029419

⚠ WARNING



IMPLEMENT CAN FALL FROM HYDRAULIC SYSTEM FAILURE, 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



BONDIOLI & PAVESI

78608

⚠ DANGER



GUARD MISSING DO NOT OPERATE

⚠ DANGER



GUARD MISSING DO NOT OPERATE

⚠ DANGER

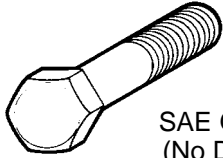
78786

TORQUE SPECIFICATIONS

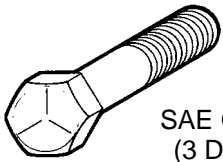
Proper torque for American fasteners used on Bush Hog equipment.
Recommended Torque in Foot Pounds (Newton Meters).*

AMERICAN

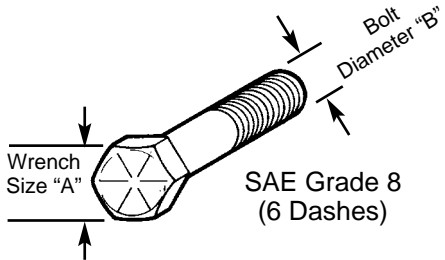
Bolt Head Markings



SAE Grade 2
(No Dashes)



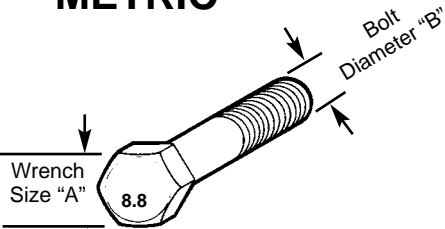
SAE Grade 5
(3 Dashes)



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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