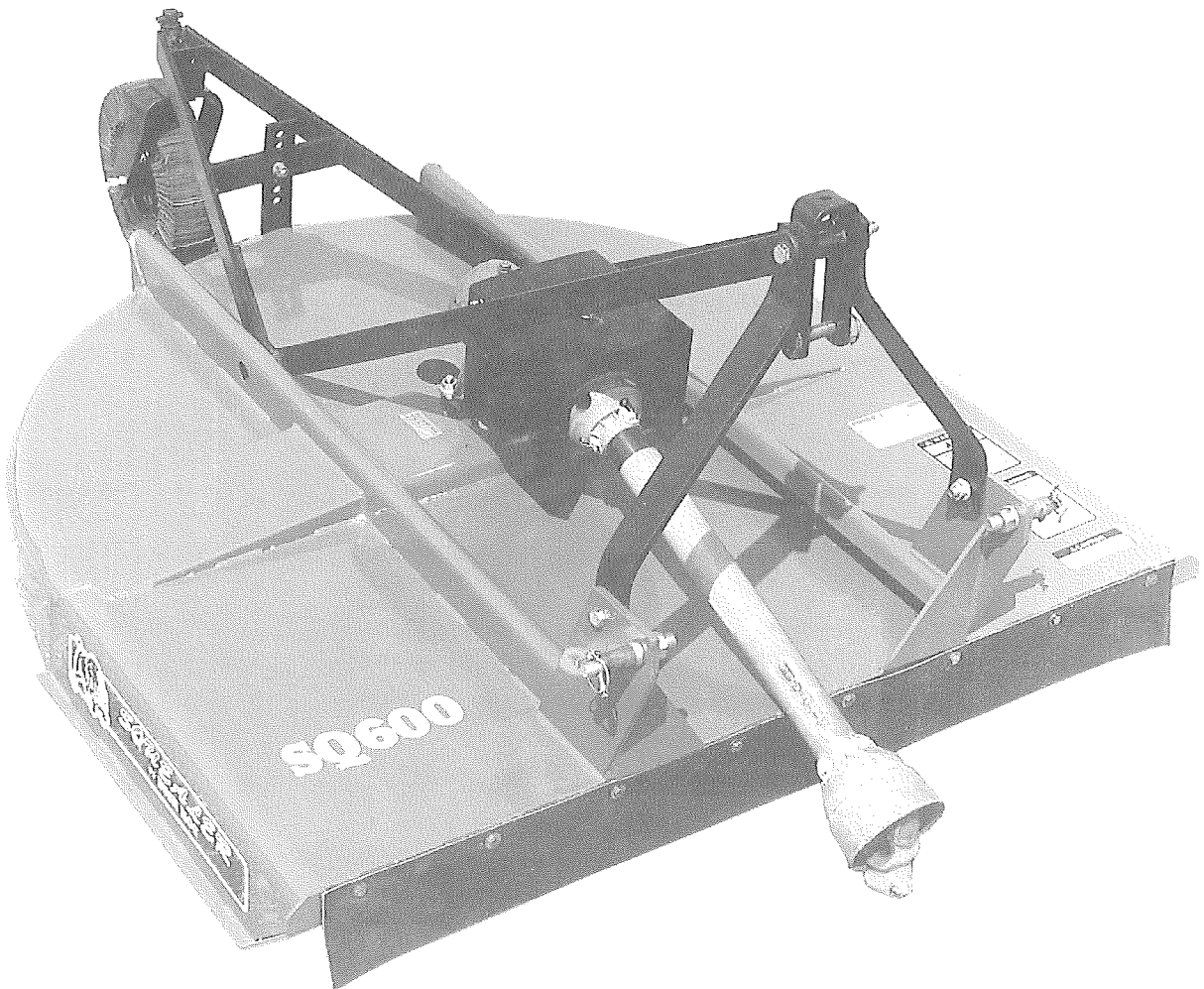


BUSH HOG®

SQUEALER SERIES

ROTARY CUTTERS

SQ420, SQ480, SQ600, SQ720, SQ840, SQ84T



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, P. O. Box 1039, Selma, Alabama 36702-1039.

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



The SEAL OF QUALITY has been awarded to this implement by the Farm Equipment Manufacturers Association. When buying an implement with this seal, you are assured of service after your purchase. To receive this seal an implement must have an approved warranty, service parts must be available for a minimum of 10 years, and a complete owner's manual must be supplied with each machine. This is our way of showing the customer that service is as important to us as it is to you.

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.

SQUEALER 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®

SQUEALER 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. Squealer Model gearboxes (With the exception of Model 84T) 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, POST OFFICE BOX 1039, SELMA, ALABAMA 36702-1039.



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

SQUEALER 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.

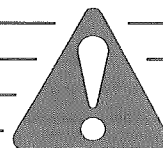
Dealer's
Signature _____

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 Squealer 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 decaled 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.

The squealer Cutters (Figure 1-1) are light duty cutters designed for cutting grass and small brush. Each cutter has free-swinging blades which reduce the shock of impact when a stationary object is hit. A shear bolt through the input shaft (SQ-420, SQ-480) or offset shear bolt (SQ-600, SQ-720) protects the gearbox and driveline from damage on all models except the SQ-840 and SQ-84T) which have slip clutches standard. Slip clutches are optional for Models SQ-600 and SQ-720.

Figure 1-1 Major Components

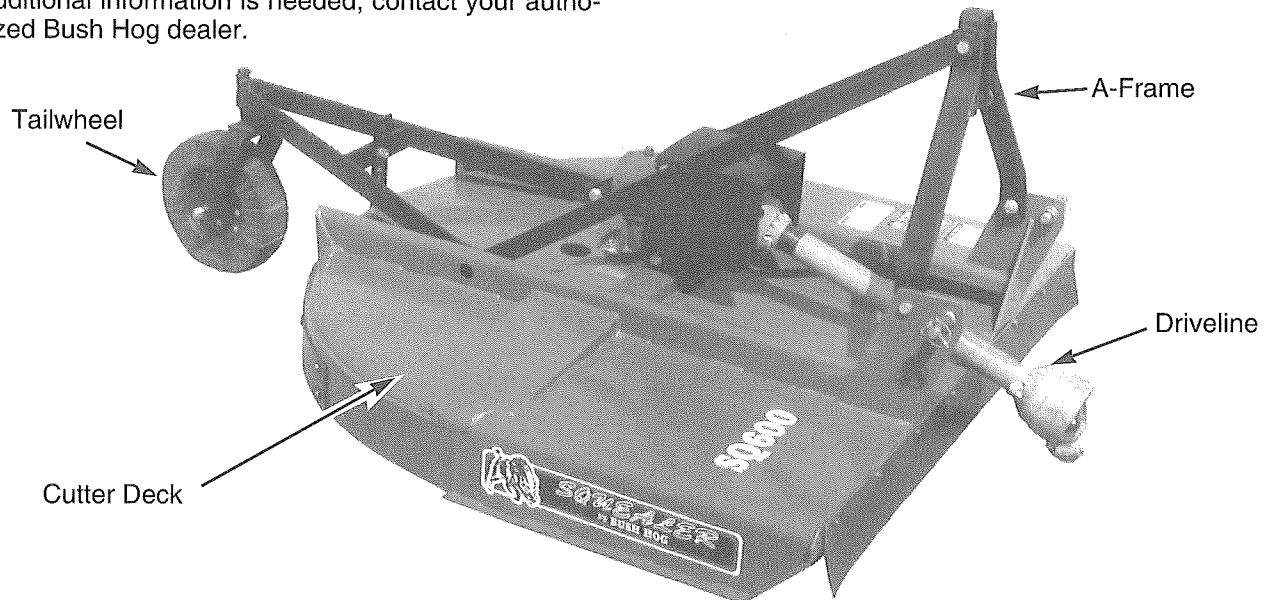


TABLE 1-1 TECHNICAL SPECIFICATIONS

Model No.	SQ420	SQ480	SQ600	SQ720	SQ-84T	SQ-840
Length	74"	83"	96"	108"	75"	120"
Width	46-3/4"	51"	65"	76"	87"	88-1/2"
Cutting Width	42"	48"	60"	72"	84"	84"
Weight (Est.)	344 lbs.	440 lbs.	522 lbs.	650 lbs.	720 lbs.	925 lbs.
Cutting Capacity	1" dia	1" dia.	1" dia.	1" dia.	1" dia.	1" dia.
Cutting Height	1-1/2" - 10"	1-1/2" - 10"	1-1/2" - 12"	1-1/2" - 12"	2" - 12"	1-1/2" - 12"
Type Hitch	Cat. 1	Cat. 1	Cat. 1	Cat. 1	Cat. 1	Cat. 2
Gearbox HP	40	40	55	55	Main 60 Outboard 45	90
Blade Tip Speed	11,400 ft./min.	13,029 ft./min.	12,469 ft./min.	14,963 ft./min.	11,500 ft./min.	14,963 ft./min.
Blades	3/8 x 3"	3/8 x 3"	1/2 x 3"	1/2 x 3"	1/2 x 4"	1/2 x 4"
Shear Bolt Size	1/2 x 3" Gr. 2	1/2 x 3" Gr. 2	8 x 50mm, Gr.8.8 Slip Clutch Optional	8 x 50mm, Gr.8.8 Slip Clutch Optional	Slip Clutch	Slip Clutch
Recommended Tractor HP	10 - 25	15 - 30	25 - 40	30 - 45	25 - 50	50 - 85

SECTION II PREPARATION FOR USE

2-1 ATTACHING TO TRACTOR



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



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.



DO NOT USE PTO SHAFT ADAPTERS TO CHANGE SIZE OF TRACTOR PTO SHAFT. THE CORRECT DRIVELINE MUST BE USED TO MATCH TRACTOR PTO SHAFT.

A. Insure that all bolts and hitch pins on 3-point hitch are tightened. Hitches need no further adjustment.

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

C. 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.

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 2-2). 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 2-1 3-Point Hitch Points

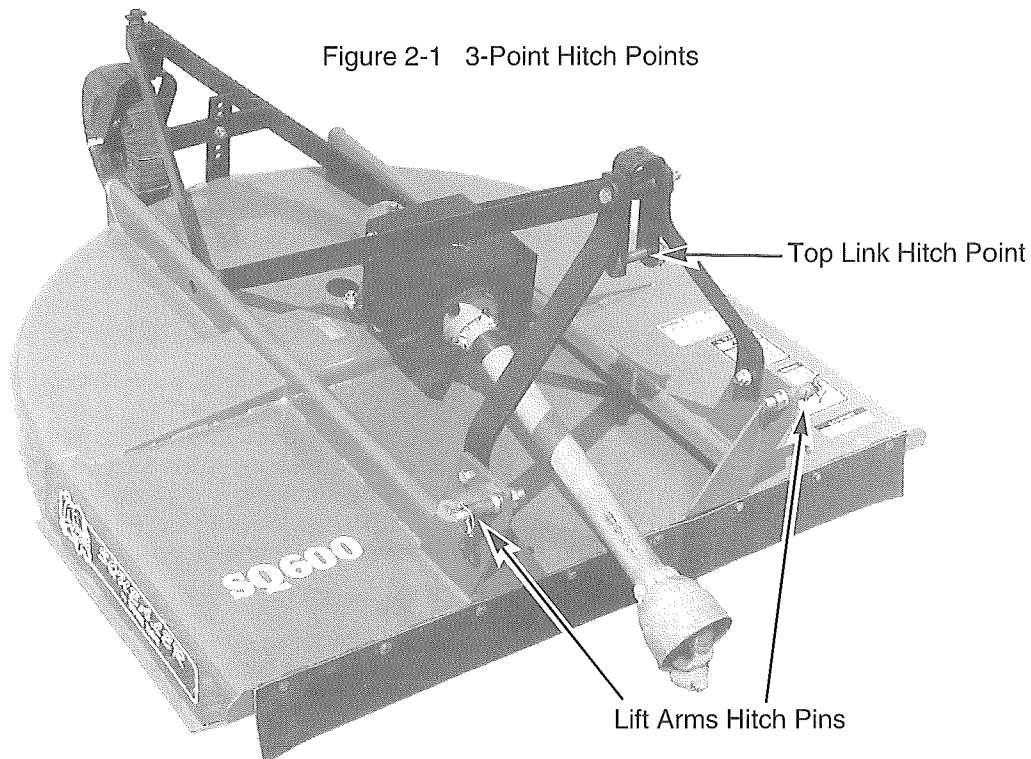
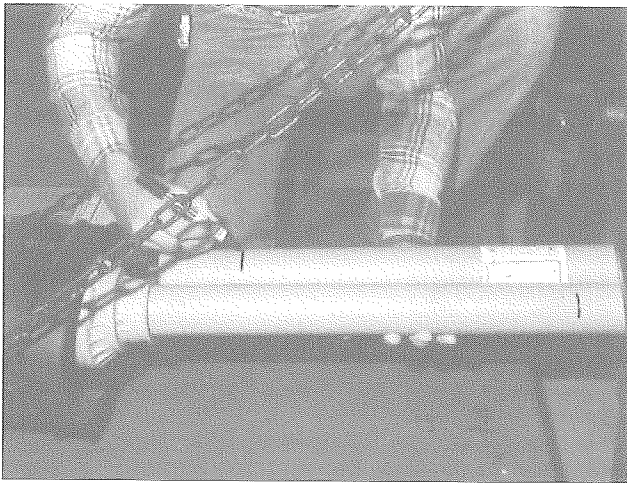
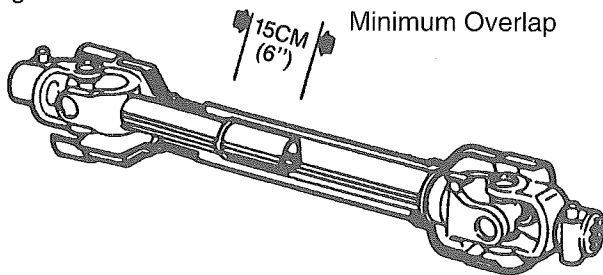


Figure 2-2



H. Hold driveline sections parallel to each other and check for minimum 6 inches (15cm) 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.

Figure 2-3

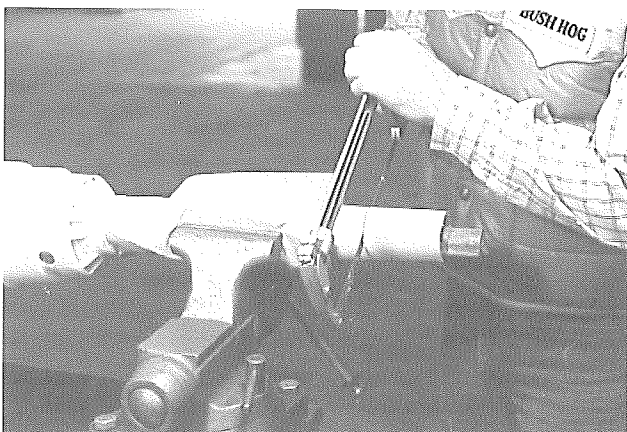


NOTE

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

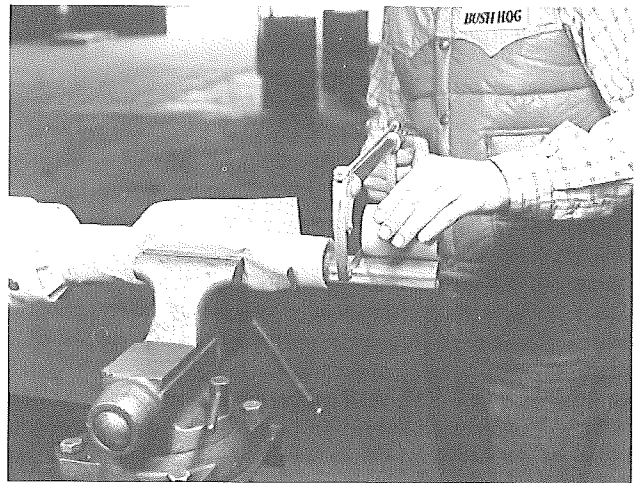
I. Clamp driveline in a well padded vice to prevent damage to the shield. Cut off shield where marked. (Figure 2-4)

Figure 2-4



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

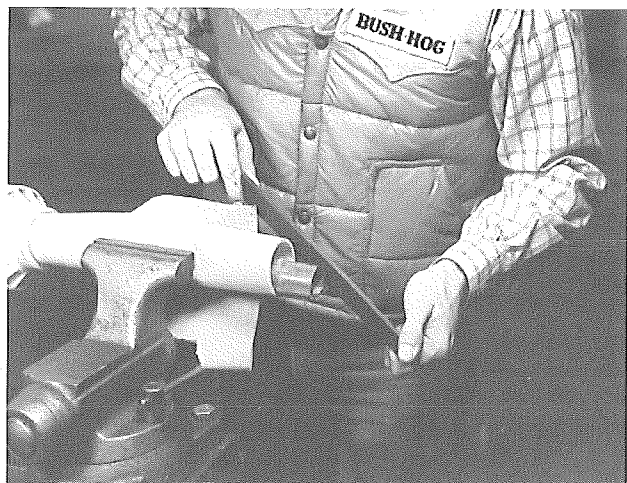
Figure 2-5



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

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

Figure 2-6



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

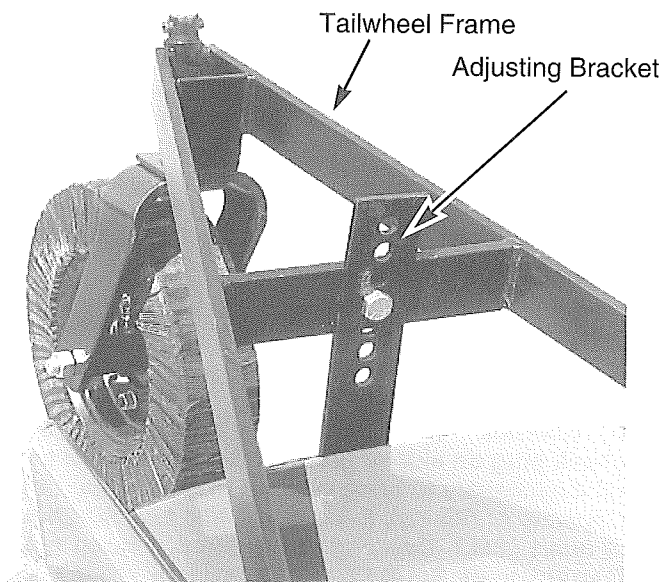
The cutter should be operated at the highest position which will give desired cutting results. This will help prevent the blades from striking the ground, reducing blade wear and undue strain on the machine. For best results under heavier cutting conditions, always tilt the cutter approximately 2 inches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



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

Figure 3-1 Tailwheel Height Adjustment

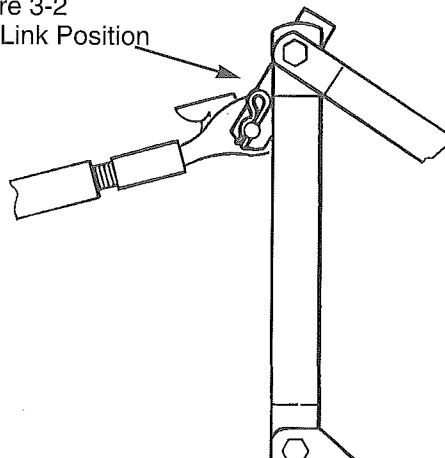


AVOID PLACING HANDS, FEET OR ANY OTHER BODY PARTS BENEATH THE CUTTER WHILE MAKING HEIGHT ADJUSTMENTS.

Each cutter can be adjusted to several cutting heights. The SQ-420 and 480 can be adjusted to approximately 1-1/2", 3", 5", 8" and 10" of cutting height. The SQ-600, 720, and 840 can be adjusted to approximately 1-1/2", 3", 5", 7", 9", 11" and 12" of cutting height. The SQ-84T can be adjusted to approximately 2", 5", 6", 10" and 12" of cutting height. To adjust, raise cutter and block securely in position. Remove bolt from adjusting bracket shown in Figure 3-1. Adjust tailwheel frame up or down and secure in desired position.

Tractor 3-point hitch top link must be adjusted so that cutter top link has a small amount of slack when in the work position. (Figure 3-2)

Figure 3-2
Top Link Position



3-3 OPERATION

- Perform **BEFORE EACH USE** maintenance listed in paragraph 4-1.
- Start tractor per tractor operator's manual.
- Raise/lower 3-point hitch to place cutter in working position.
- Look to be sure no one is near cutter. **WITH TRACTOR AT IDLE SPEED, SLOWLY ENGAGE PTO DRIVE.**



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.

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



DANGER

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

F. Place tractor in gear and proceed forward. Advance tractor throttle to 540 PTO rpm. 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. If cutter stalls or tractor

engine bogs, disengage PTO. Before re-engaging PTO, position cutter in a cut area and reduce tractor throttle to idle. If cutter continuously stalls, select lower gear and/or increase cutting height.



WARNING

ALL ROTARY CUTTERS CAN 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 THAT ARE IN GOOD REPAIR.

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. All bolts should be torqued as recommended in the Torque Specifications unless otherwise indicated.

BEFORE EACH USE

1. Check tractor tire air pressure. Refer to tractor operator's manual.
2. Check blades and spindles 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) on Models SQ-600, SQ-720, SQ-840 and SQ-84T, or 300 ft./lbs. (406 Nm) on Models SQ-420 and SQ-480.
4. Inspect blades for wear. Replace if necessary per paragraph 4-3. Always replace both blades on blade holder with two blades equal in weight. Use only genuine Bush Hog replacement blades.
5. Make sure belting and bands are in good repair.
6. Make certain driveline shields are in place and in good repair.
7. Inspect wheel 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 under side of deck. When cleaning underside of deck, securely block machine into position.

4-2 LUBRICATION (Figure 4-1 & 4-2)

NOTE

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

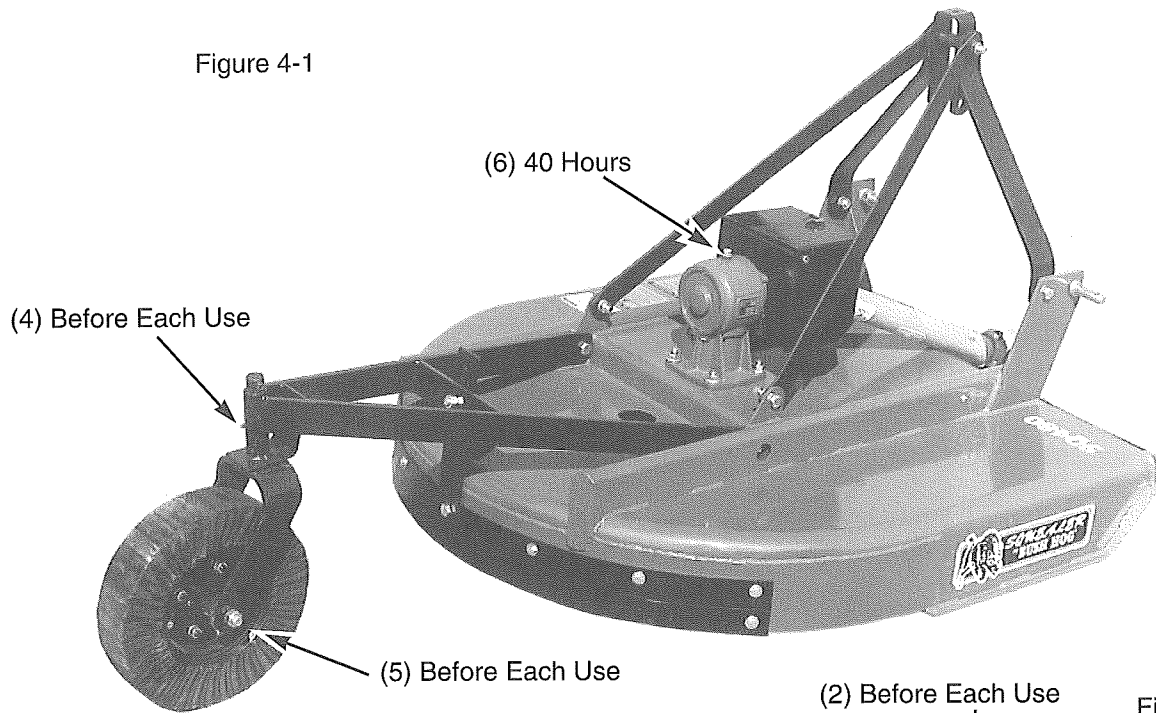
BEFORE EACH USE

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. Driveline - Disconnect PTO driveline, pull two sections apart and apply thin coat of multi-purpose grease to inside of outer female section. Re-assemble sections and install. Pull each section to be sure driveline and shields are securely connected. Make certain PTO shielding is in good condition.
4. Wheel Pivot Tubes - Apply multi-purpose grease with grease gun.
5. Tailwheel - Apply multi-purpose grease with grease gun.

40 HOURS

6. Gearbox - Check oil level by removing oil level check plug on side of gearbox. Add EP80W-90 gear oil if necessary to bring oil level to check plug hole. Capacity of SQ-420, SQ-480, SQ-600 and SQ-840 is .9 quart (.86L). Capacity of SQ-840 is 1 quart (.9L). Capacity of SQ-84T is 2.5 quarts (2.5L) for

Figure 4-1



transfer and 1.5 quarts (1.4L) for outboard gearbox.

7. Yoke - Apply multi-purpose grease fitting on shear pin yokes on the SQ-420 and SQ-480. The SQ-600 and SQ-840 models use offset shear bolt yokes. **It is important that these fittings be greased regularly to prevent yokes from seizing, rendering the shear pin or bolt useless.**

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 blade holder using two blades having the same weight. Use only genuine Bush Hog replacement blades. (Figure 4-3)

- A. Raise cutter and securely block in position.
- B. Remove nuts from blade bolts through the access hole in the cutter deck. (Figure 4-3) **The SQ-420 and SQ-480 require a 1-5/16" socket and the SQ-600, 720, 840 and SQ-84T require a 1-11/16" socket.**
- 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 300 ft./lbs. (406 Nm) on Models SQ-420 and 480 or 450 ft./lbs. (608 Nm) on Models SQ-600, 720, 840 or 84T.

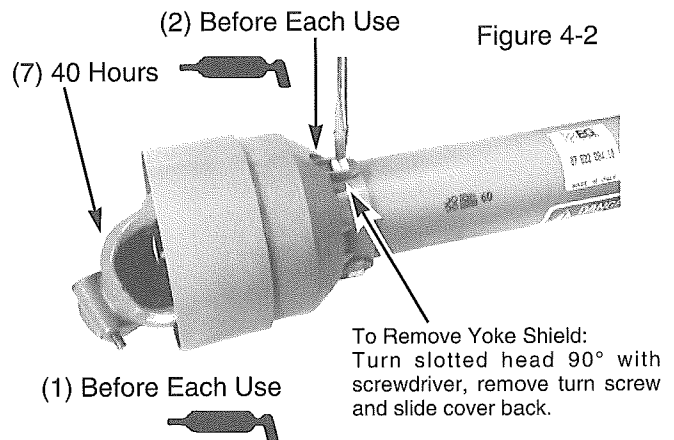
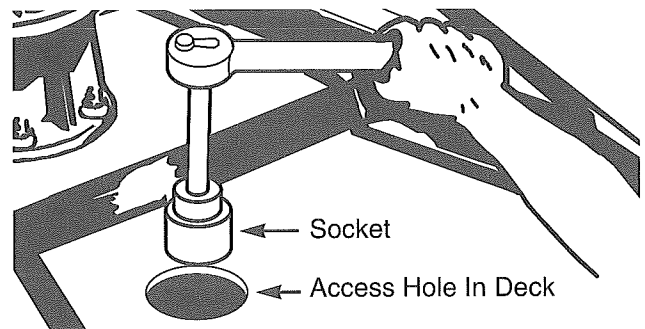


Figure 4-3 Blade Removal



- 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.



DO NOT GET UNDER CUTTER UNLESS IT IS SECURELY BLOCKED IN POSITION. ACCIDENTAL FALL COULD CAUSE SERIOUS INJURY OR DEATH.

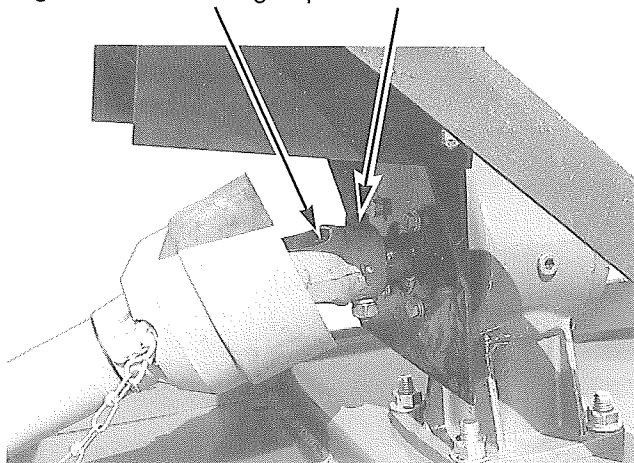
4-4 SHEAR BOLT REPLACEMENT (SQ-420 & 480 - 1/2 x 3", Gr. 2)

- A. Slide yoke shield back. (Figure 4-2)
- B. Realign holes in yoke and shaft and remove sheared bolt with hammer and punch.
- C. Install new shear bolt. Lock yoke shield into place. Use only genuine Bush Hog replacement shear bolts. (Figure 4-4)



WARNING
FAILURE TO INSTALL RETAINING CLIP ON INPUT SHAFT WILL ALLOW DRIVE-LINE TO SWING FREELY IF BOLT IS SHEARED CAUSING POSSIBLE INJURY OR DEATH.

Figure 4-4 Retaining Clip Shear Bolt



4-5 SHEAR BOLT REPLACEMENT (SQ-600, SQ-720 - 8 x 50mm, Gr. 8.8)

- A. Slide yoke shield back. (Figure 4-2)
 - B. Drive out sheared bolt with hammer and punch.
 - C. Align holes and install new shear bolt. (Figure 4-5)
- Use only genuine Bush Hog replacement shear bolts.
- D. Slide yoke shield securely in place.

Figure 4-5 Shear Bolt Yoke Shield



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 not slip, contact your authorized Bush Hog dealer.
- C. Retighten nuts to original position. Initial spring lengths are shown in Figure 4-6.

IMPORTANT

FAILURE TO RETIGHTEN NUTS TO ORIGINAL POSITION MAY CAUSE DAMAGE TO IMPLEMENT AND/OR TRACTOR DUE TO IMPROPER SLIP CLUTCH TORQUE SETTING

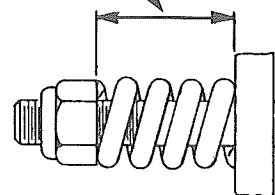
4-7 SLIP CLUTCH ADJUSTMENT

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 adjustments be needed, first check to be sure all spring lengths are the same. Initial spring lengths are shown in Figure 4-6. If necessary, adjust nut on any spring that is unequal. Adjust all eight spring retaining nuts 1/3 of a turn (2 flats on a nut) and check clutch slippage. If further adjustment is necessary, do so in 1/3 turn increments. **Adjust only to provide sufficient torque to prevent slippage under normal conditions. Occasional slippage is normal for driveline protection.** If satisfactory results cannot be obtained, consult your Bush Hog dealer.

Figure 4-6 Spring Lengths

SQ-600, SQ-720, SQ-840
1-1/4" (31.8mm)

SQ-84T
1-17/64" (32.2mm)



IMPORTANT

DO NOT OVER-TIGHTEN NUT AND CAUSE SPRING TO BECOME SOLID AS THIS WILL CAUSE COMPONENT FAILURE.

4-8 BLADE HOLDER AND GEARBOX REMOVAL (All Except SQ-84T)

- A. Raise cutter and securely block into position.
- B. Remove cotter pin and blade holder retaining nut. Wear heavy work gloves to protect hands from sharp edges.
- C. Grasp blade holder assembly and pull off shaft. If necessary, align blade bar with access hole in top of cutter deck and drive off with hammer and pipe. Care should be taken not to damage threads on blade bolt.
- D. Remove driveline from gearbox input shaft.
- E. Remove nuts securing gearbox to deck. Remove gearbox.

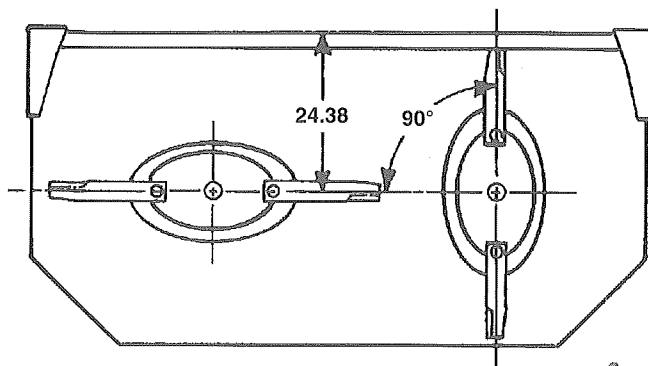
4-9 BLADE HOLDER AND GEARBOX INSTALLATION (All Except SQ-84T)

- A. Raise cutter and securely block into position.
- B. Attach gearbox to cutter deck using flange nuts.
- C. Install blade holder onto gearbox securing with castle nut and flat washer. **Torque nut to 350 ft./lbs. (474 Nm) on all models except SQ-720 and SQ-840. Torque SQ-720 and 840 nuts to 450 ft./lbs. (610 Nm).** Wear heavy work gloves to protect hands from sharp edges.
- D. Install cotter pin to retain nut. It may be necessary to slightly loosen nut to install cotter pin.
- E. (Models SQ-420, SQ-480) Slide driveline yoke onto gearbox input shaft. (Figure 4-4) Install shear pin through yoke and input shaft. Apply multi-purpose grease to fitting on yoke.
- F. (Models SQ-600, SQ-720) Depress quick disconnect pin and install driveline onto gearbox input shaft. Pull to be sure driveline is locked securely in place.
- G. (Models with Slip Clutches) Install slip clutch shield onto gearbox using four bolts and lockwashers. Slide clutch onto gearbox input shaft and secure using previously removed tapered pin. **Torque to 30 ft./lbs.**
- H. Fill gearbox with oil per paragraph 4-2.

4-10 BLADE HOLDER AND GEARBOX REMOVAL (SQ-84T Only)

- A. Raise cutter and block securely in position.
- B. Remove cotter pin and blade holder retaining nut. Wear heavy gloves to protect hands from sharp edges.
- C. Grasp blade holder assembly and pull off shaft.

Figure 4-7 Blade Timing



If necessary, align blade bar with access hole in top of cutter deck and drive off with hammer and pipe. Care should be taken not to damage threads on blade bolt.

- D. Remove bolt securing cross shaft to gearbox. Slide cross shaft off gearbox shaft.
- E. Remove gearbox.

4-11 BLADE HOLDER AND GEARBOX ASSEMBLY (SQ-84T Only)

- A. Raise cutter and block securely in position.
- B. Attach gearbox to cutter deck using flange nuts.
- C. Attach cross shaft to gearbox shaft. Do not secure with bolt.
- D. Wearing heavy gloves, install blade holder onto lower shaft. Blades must be at 90° angle as shown in Figure 4-7. It may be necessary to disconnect cross shaft, advance gearbox one spline, then reconnect shaft to achieve 90° angle. **Tighten blade holder nut to 450 ft./lbs. (610 Nm).**
- E. Install cotter pin to retain blade holder nut. It may be necessary to slightly loosen nut to install pin.
- F. **Secure cross shaft to gearbox using 1/2" x 2-3/4" bolt, nut and lockwasher. Tighten bolt to 85 ft./lbs. (115 Nm).**

4-12 TROUBLESHOOTING

Troubleshooting procedures are listed in Table 4-2. 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.

Figure 4-8 SQ-84T

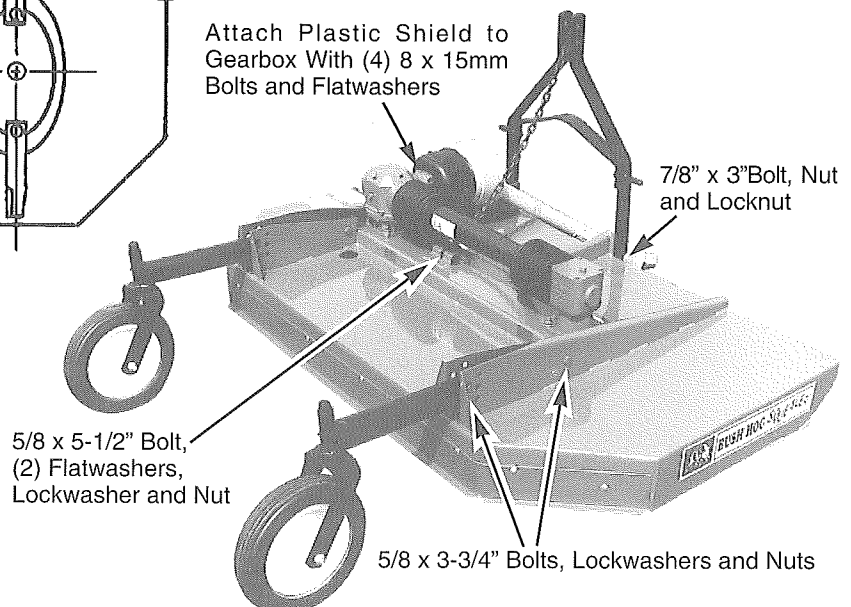
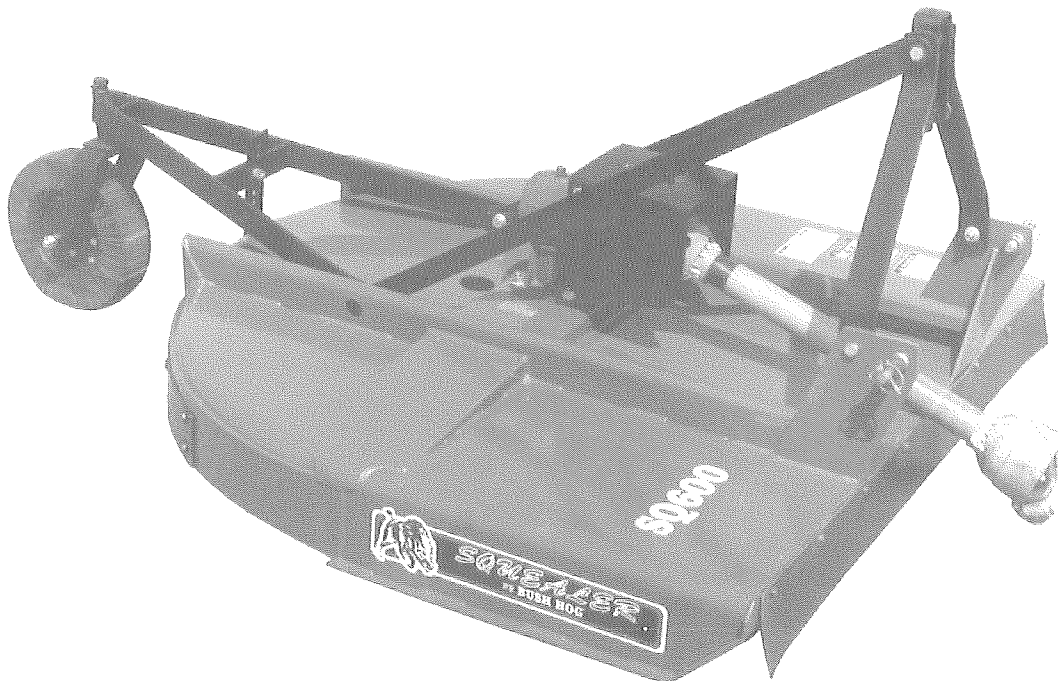


TABLE 4-2 GENERAL TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	REMEDY
Uneven Cut	Cutter not level side to side or front to rear	Refer to SECTION II.
	Worn or bent blades	Replace blades per paragraph 4-3.
Stripping or Windrowing	Possible build up of material under cutter	Clean cutter.
	Cutter not level	Refer to SECTION II.
	Worn blades	Replace per paragraph 4-3.
	Cutter not being operated at rated RPM speed	Set tractor throttle for proper PTO speed during operation.
Noisy Cutter	Loose components	Check all bolts for tightness per Torque Specifications.
	Low oil in gearbox	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	Set tractor for proper PTO speed during operation.
Cutter vibration	Cutter not being operated at rated RPM speed	Set tractor throttle for proper PTO speed during operation.
	Blades have unequal weight	Replace blades with matched set.



SECTION V DEALER ASSEMBLY

5-1 ASSEMBLY

A. Attach tailwheel bracket to cutter deck as shown. (Figure 5-1) The A-frame support yokes will need to be attached at the same time on Models SQ 420, 600, 720 and 840. The support yokes on Model SQ480 attach to lugs on the strongbacks. (Figure 4-1) The SQ84T uses a chain instead of yokes. (Figure 4-8)

B. Remove roll pin from tailwheel. Install tailwheel spindle up through bracket and secure with roll pin.

C. Attach adjusting strap to cutter deck and tailwheel bracket using 5/8 x 2" bolts, lockwashers and nuts at each location. The top bolt location will be determined by desired cutting height.

D. Attach A-frame struts to brackets using 5/8 x 2" capscrews, and locknuts as shown. NOTE: On the Model SQ 84T the A-frame mounts to the strongbacks on the deck. The lift pins are used to attach the cross support member. (Figure 4-8) Install Cat. I or II lift pins and fasten with 1-1/8" fine thread nut and lockwashers.

E. After support yokes are fastened at the rear, swing them up into position outside the A-frame. Align spacer and top link weldment between A-frame and fasten with 5/8 x 5-3/4" bolt and locknut. NOTE: The Model SQ 84T uses a chain between the cutter deck and the A-frame. (Figure 4-8)

F. Fasten clutch shield and mount bracket as shown in drawing. Pivot bolts should be tight enough to prevent rattling, but still permit folding.

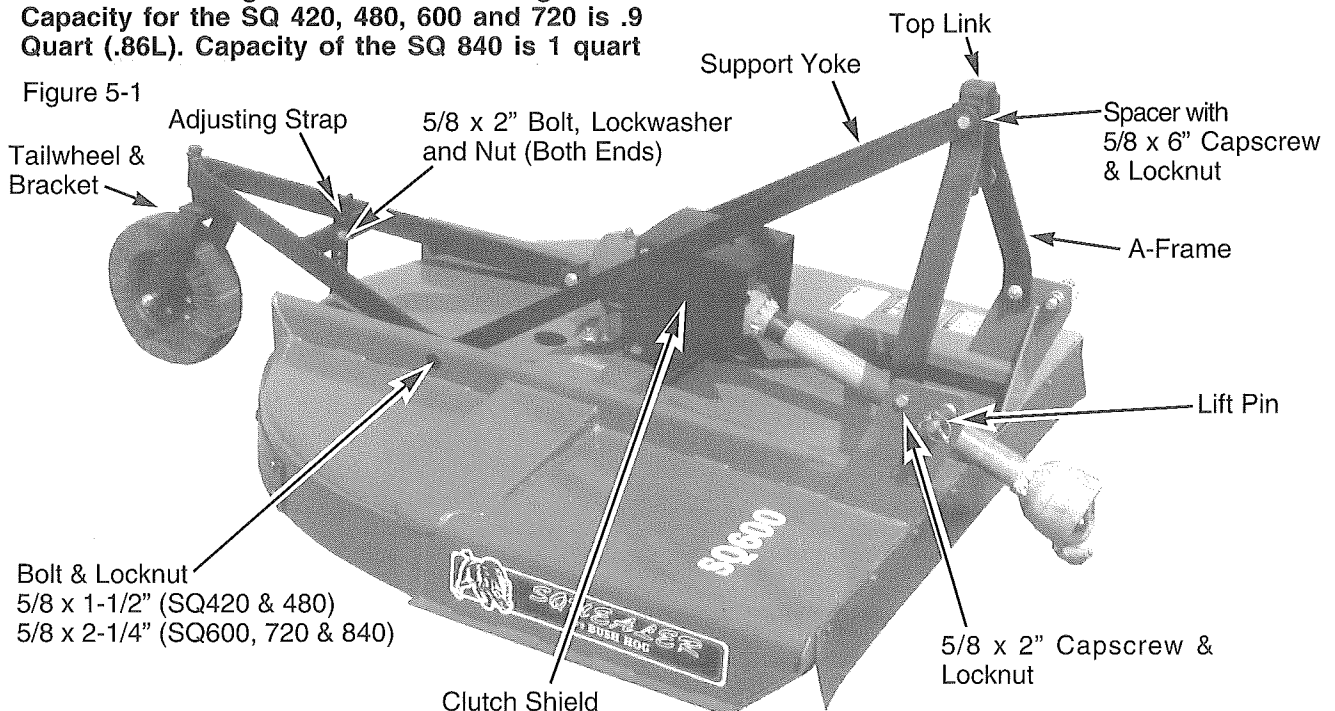
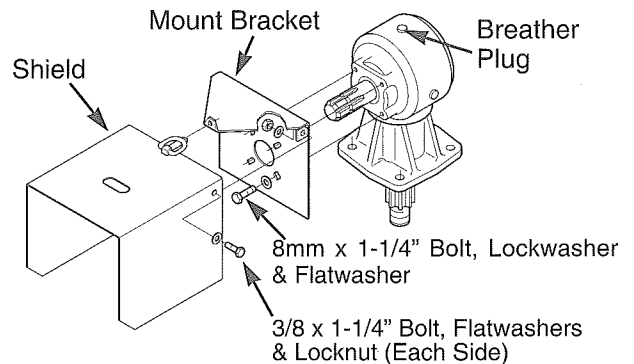
G. Remove temporary fill plug from gearbox and discard. Fill gearbox with EP80-90 gear oil. Capacity for the SQ 420, 480, 600 and 720 is .9 Quart (.86L). Capacity of the SQ 840 is 1 quart

(.9L). Capacity of the SQ 84T is 2.5 quarts (2.3L) for the transfer and 1.5 quarts (1.4L) for the out-board gearbox. Install breather plug supplied in operator's manual package.

H. (Models SQ 420, 480) Slide driveline yoke onto gearbox input shaft. Install retaining clip onto input shaft. (Figure 4-4) Install 1/2 x 3", Gr. 2 shear pin through yoke and input shaft. apply multi-purpose grease to fitting on yoke.

I. (Models SQ 600, 720) Depress quick disconnect pin and install driveline (with 8 x 50mm, Gr. 8.8 shear bolt) onto gearbox input shaft. Pull to be sure driveline is locked securely in place.

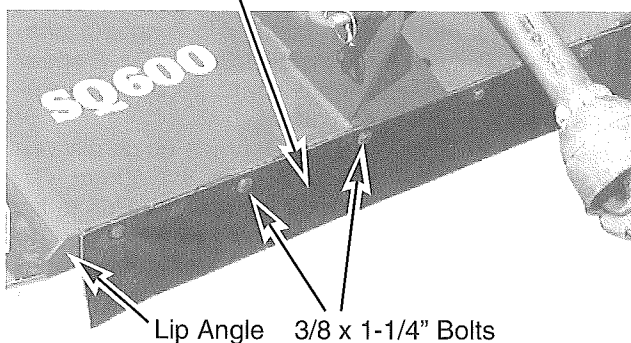
J. (Models with Slip Clutches) Remove tapered pin from splined end of slip clutch. Slide clutch onto gearbox input shaft and secure using previously removed tapered pin. **Torque to 30 ft./lbs. Perform slip clutch operational check as outlined in paragraph 4-6.**



5-2 OPTIONAL FRONT SHIELDING INSTALLATION (SQ 420, 480, 600, 720, 840)

A. Install front belting to deck lip angle securing with 3/8 x 1-1/4" bolts, flatwashers and locknuts. (SQ840 uses 3/8 x 3-1/2" bolts) Bolt heads should be to the outside of the deck. (Figure 5-2)

Figure 5-2 Front Belting

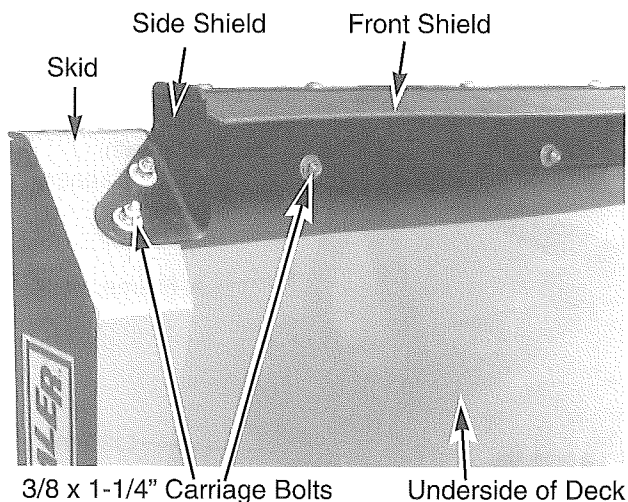


5-3 OPTIONAL FRONT SHIELDING INSTALLATION (SQ84T)

A. Install front shield to deck lip angle securing with six 3/8 x 1-1/4" carriage bolts, flatwashers, lockwashers and nuts. (Figure 5-3) Carriage bolts should be installed from top of lip angle.

B. Install right and left side shield to skid using two 3/8 x 1-1/4" carriage bolts, flatwashers, lockwashers, and nuts.

Figure 5-3 SQ84T Front Shielding



5-4 REAR BAND INSTALLATION (SQ420, 480, 600, 720, 840)



WARNING

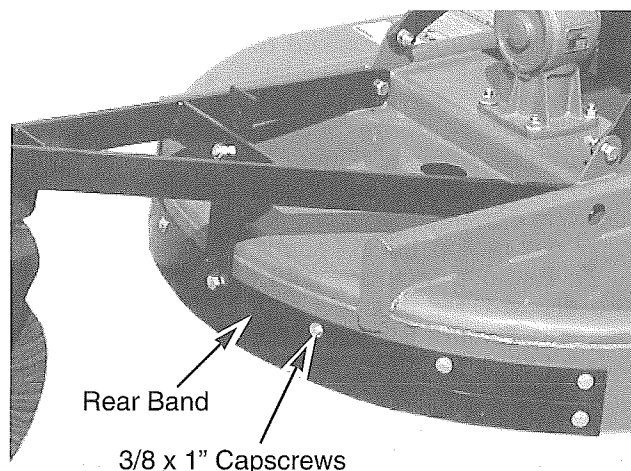
CUTTER MUST BE EQUIPPED WITH FRONT AND REAR BANDS WHEN OPERATING IN THE VICINITY OF HIGHWAYS OR IN ANY AREA WHERE PEOPLE MAY BE PRESENT

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

B. SQ420 & 480 use the same fasteners in all locations around the rear band. Fasten with 3/8 x 1" capscrews, flatwashers, lockwashers and nuts. (Figure 5-4)

SQ600, 720, & 840 require longer bolts at the outer ends of the rear bands. Fasten the ends with 3/8 x 1-1/2" capscrews, flatwashers, lockwashers and nuts. The remaining locations around the band use 3/8 x 1" capscrews, flatwashers, lockwashers and nuts.

Figure 5-4 Rear Band (SQ480 Shown)



5-4 SQ84T REAR BAND INSTALLATION



WARNING

CUTTER MUST BE EQUIPPED WITH FRONT AND REAR BANDS WHEN OPERATING IN THE VICINITY OF HIGHWAYS OR IN ANY AREA WHERE PEOPLE MAY BE PRESENT.

A. Fasten band to rear middle of deck using 3/8 x 1" bolts, flatwashers, lockwashers and nuts in existing holes. Lip angle must be to the bottom and extending away from the deck.

B. Bend the sides of band around the rear of the cutter. (Figure 5-5)

C. Fasten the remaining holes. (Figure 5-6)

Figure 5-5

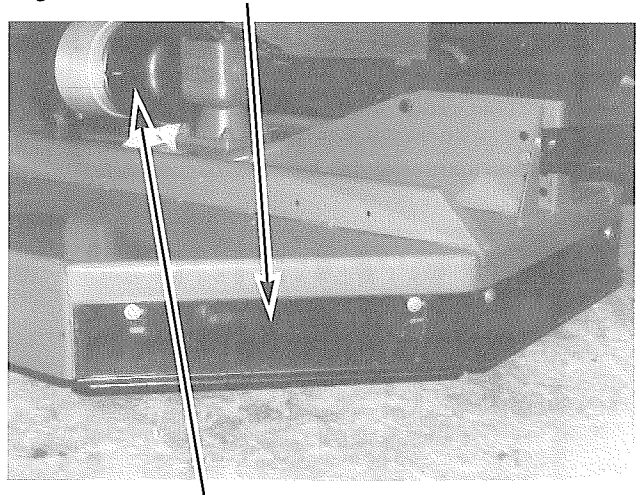


Bend Bands Into Place

Figure 5-6 Tighten All Fasteners



Figure 5-7 Rear Band Installed



Plastic Slip Clutch Shield

5-5 SQ84T GEARBOX INPUT SHIELD

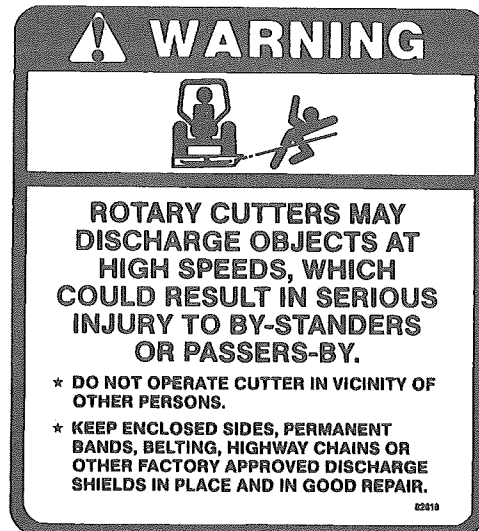
Install slip clutch shield onto gearbox using four bolts and lockwashers included in Operator's Manual package. (Figure 5-7)

SAFETY DECALS

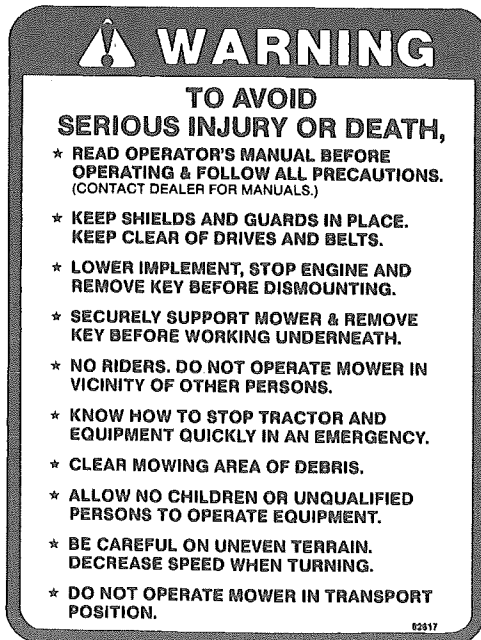
To promote safe operation, Bush Hog supplies safety decals on all products manufactured. Because damage can occur to safety decals either through shipment, use or reconditioning, Bush Hog will, upon request, provide safety decals for any of our products in the field at no charge. Contact your authorized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



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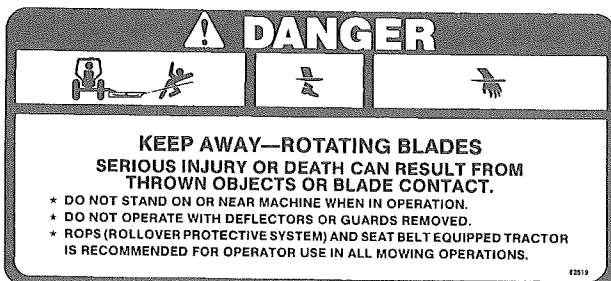
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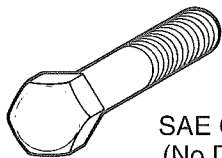


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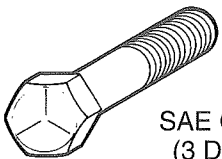
TORQUE SPECIFICATIONS

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

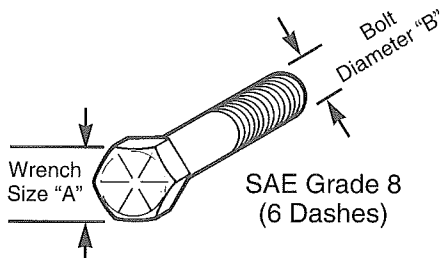
AMERICAN Bolt Head Markings



SAE Grade 2
(No Dashes)



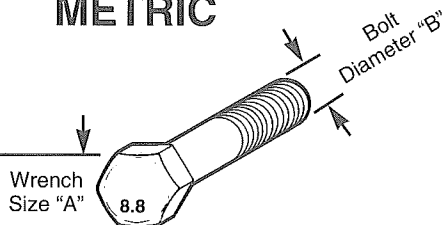
SAE Grade 5
(3 Dashes)



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.



BUSH HOG

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