

BUSH HOG®

SERIES 91

REAR MOUNTED BLADE

Operator's Manual



BUSH HOG®
Performance You Can Count On™

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.

BUSH HOG®

SERIES 91 REAR MOUNTED BLADES Operator's Manual

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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

LIMITED WARRANTY



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

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

DISCLAIMER OF IMPLIED WARRANTIES & CONSEQUENTIAL DAMAGES

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

THIS LIMITED WARRANTY SHALL NOT APPLY:

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

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



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

MODEL NUMBER _____

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

SERIAL NUMBER _____

DATE OF RETAIL SALE _____

DEALER PREPARATION CHECK LIST

91 SERIES BLADES

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

- 1. Assembled completed.
- 2. All fittings lubricated.
- 3. All fasteners torqued to specifications given in Torque Chart
- 4. All decals in place and readable. (See decal page.)
- 5. Overall condition good (i.e. paint, welds)
- 6. Operators manual has been delivered to owner and he has been instructed on the safe and proper use of the blade.

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 implement. 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 operation whenever anyone comes within the operating area.
7. 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.
8. Lower implement to ground, stop tractor engine, apply parking brake, and allow blades to completely stop before leaving the tractor.
9. Keep hands and feet away from blades.
10. 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.
11. When performing adjustments or maintenance on the blade, first lower it to the ground or block it securely at a workable height.
12. Never stand between tractor and implement while tractor is being backed to the hitch.
13. Reduce speed when transporting implement to avoid bouncing and momentary loss of steering.
14. Use tractor flashing warning lights, day or night, when transporting cutter on road or highways unless prohibited by law.
15. It is recommended that tractor be equipped with Rollover Protective System (ROPS) and seat belt be used in all implement 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 1

91 SERIES OPERATION

SPECIFICATIONS

Series 91 Rear Mounted Blade

Moldboard Width _____	7' & 8'
Moldboard Height & Thickness _____	19" x 5/16"
Moldboard Cutting Edge _____	1/2" x 6"
Hitch _____	3-Point
	Cat. I & II or Quick Coupler
Approximate Weight _____	
	807 lbs. (7')
	827 lbs. (8')
Maximum Tractor HP _____	
	90 (2wd)
	70 (4wd)
King Pin Diameter _____	
	3"
Tilt _____	
	15° up or down (manual or hydraulic)
Offset Adjustment _____	
	20" left or right (manual or hydraulic)
Angle Adjustment _____	
	45° left or right (manual or hydraulic)
Skid Shoes _____	
	Optional
Parking Jack _____	
	Standard

WARNING

DURING BLADE ADJUSTMENT:

- KEEP BODY, HANDS AND FEET CLEAR OF BLADE.
- KEEP FINGERS CLEAR OF HOLES.

The lift hitch is designed to fit Category I & II 3-point hitches and quick couplers. (Figure 1-1) A bolt and bushing is supplied for the upper quick coupler hook. Use the pin provided with the tractor in the top hole for the upper link for Category I & II 3-point hitches.

The lower lift pin is machined to allow fitting either Cat. I or II type hitches.

On Category I, 3-point hitch, the smaller diameter section of pin is used.

On Category II, 3-point hitches and Category II quick couplers, the larger diameter section of the pin is used.

The pin is inserted through the lower hitch lugs with the shorter small diameter section installed through the inside hitch lug.

A parking stand is provided on the blade to allow easy hook-up to the tractor. Raise the parking stand up and pin it in the storage position after hooking the blade up to the tractor.

CAUTION

WHEN DETACHING THE BLADE, SUPPORT THE MAST END OF THE BOOM TO PREVENT IT FROM FALLING. KEEP BODY, HANDS AND FEET CLEAR OF IMPLEMENT.

The operating angles of the blade are controlled either by means of adjustable pin jacks (Figure 1-2) or hydraulically (Figure 1-3).

All 3 pin jacks have 5-holes to obtain the correct position. Pull the pin and telescope the jack to the desired position. Reinstall the pin, and secure with the hair pin (Figure 1-2).

The blade can be offset to the left or right either hydraulically or with the 5-position 16" stroke pin jack.

The angle of the blade is controlled by the 5-position 16" stroke pin jack or 16" stroke hydraulic cylinder.

The tilt angle of the blade can be controlled either hydraulically or with an 8" stroke pin jack assembly.

For back blading, disconnect the pin jack or hydraulic cylinder from the pivot arm. Swing the blade to the rear. Reconnect the cylinder or pin jack.

Figure 1-1 Hitch

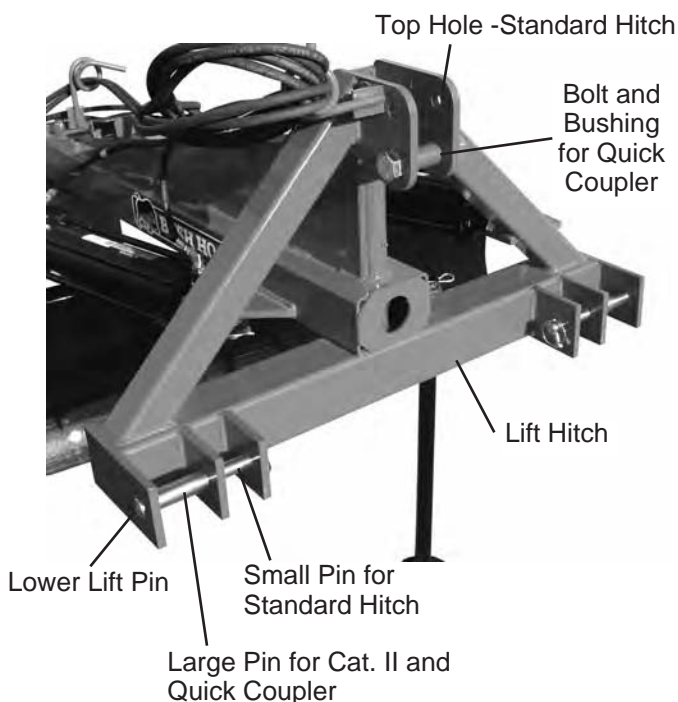


Figure 1-2 Model 91-08 with Pin Jacks

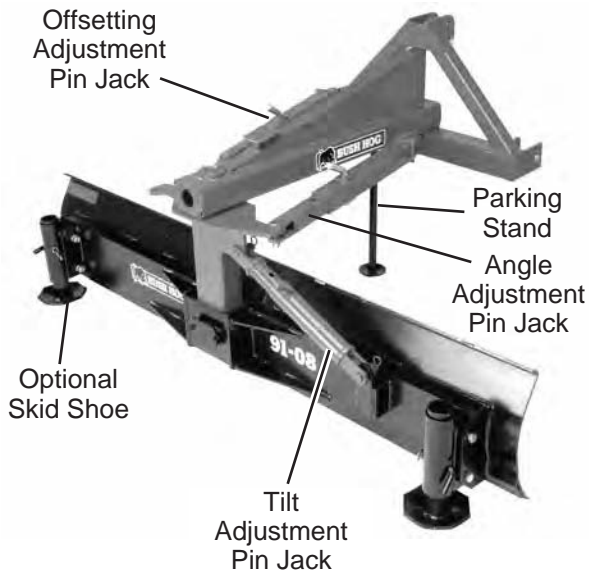
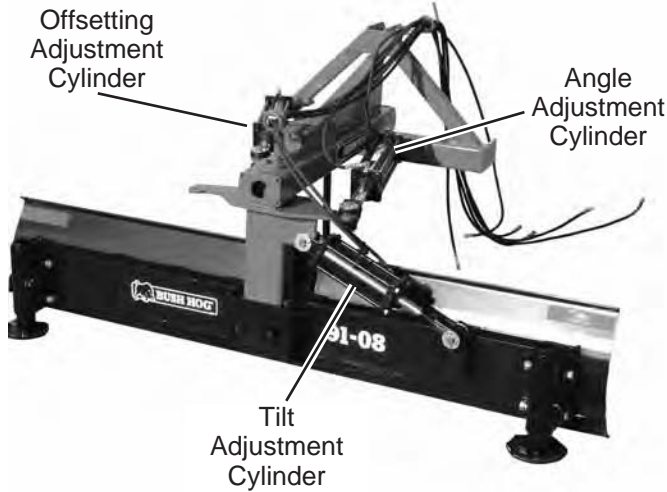


Figure 1-3 Model 91-08 with Hydraulics



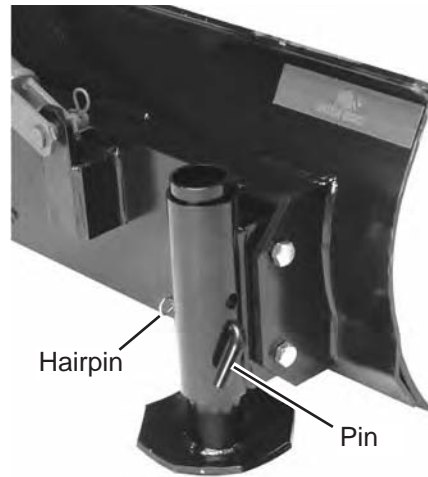
NOTE

Before initial operation, cycle hydraulic cylinders several times to purge air from system. This will prevent erratic, jerky operation.

Skid shoes are used to control the depth of the cut. (Figure 1-4)

Skid shoes on the Model 91 Series are optional and may be purchased through your local Bush Hog dealer. The skid shoes are provided with two series of holes to obtain the desired height. Secure the shoes in the desired position with skid shoe pin and hairpin (Figure 1-4). When the skid shoe use is not desired, install the skid shoe with the pad up and retain using the pin and hair pin.

Figure 1-4



OPERATION

Care should be exercised during use of the blade to prevent hanging the ends on immovable objects or otherwise use the implement under conditions beyond its designed capacity. Back fills may be made by reversing the moldboard and pushing instead of pulling.

CAUTION

WHEN EQUIPMENT IS TRANSPORTED, USE NECESSARY DEVICES REQUIRED BY LOCAL REGULATIONS FOR ADEQUATE WARNING TO OPERATORS OF OTHER VEHICLES.

CAUTION

ADDITIONAL TRACTOR FRONT BALLASTS MAY BE NEEDED FOR STABLE OPERATION AND TRANSPORT OF IMPLEMENT. SEE TRACTOR OPERATOR'S MANUAL FOR RECOMMENDED WEIGHTS. IT IS RECOMMENDED THAT TRACTOR BE EQUIPPED WITH ROLLOVER PROTECTIVE SYSTEM (ROPS).

NOTE

Tractor must be equipped with enough hydraulic outlets to accommodate all cylinder hoses. Example: Two hydraulic cylinders require two sets (4 outlets) of hydraulic outlets.

SECTION II MAINTENANCE

Keep all nuts and bolts tight. Refer to Torque Chart for correct torque.

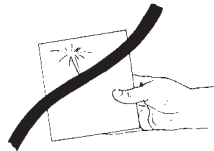
Store the blade out of the weather when it is not in use. This prevents rusting of the moldboard and other components.

Inspect your blade periodically and replace any worn or broken parts in order to have your implement ready for use when needed.

Inspect hydraulic lines and fittings for wear or leaks. Repair or replace if needed.

WARNING

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

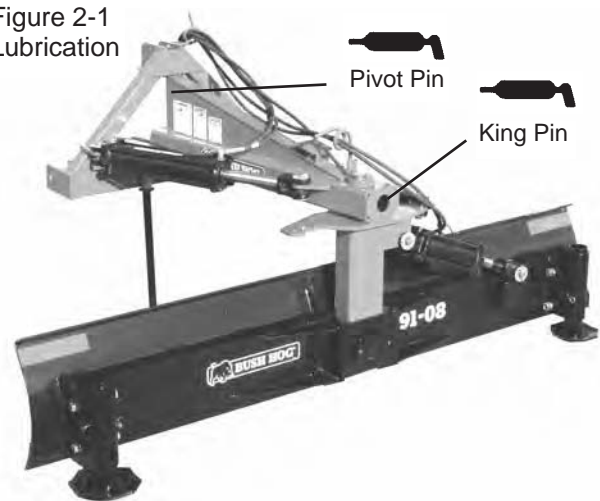


LUBRICATION - Lubricate the king pin grease fitting, accessible through the hole in the rear of the boom, before operating and every 50 hours thereafter with a multipurpose grease. (Figure 2-1)

Lubricate the pivot pin at the front of the boom through its exposed grease fitting at the same intervals.

Remove and apply a liberal coat of multipurpose grease to all other pins before operating and every 150 hours thereafter.

Figure 2-1
Lubrication



SECTION III ASSEMBLY

Prepare for assembly by (Figure 3-1) first removing the pivot pin from the front of the boom. A cotter pin at the bottom end must be removed and retained for re-installation.

Slide the boom frame into alignment with the lift hitch and reinsert the pivot pin. Replace the cotter pin.

The hitch and frame assembly may then be connected to a tractor 3-point hitch and raised to allow further assembly.

Remove the three bolts, washers and cap from the top of the swivel assembly.

Insert the swivel assembly up through the frame and replace the cap, washers and bolts that were previously removed. The lug on the swivel assembly used to mount the pin jack or hydraulic which controls blade tilt should extend to the right side.

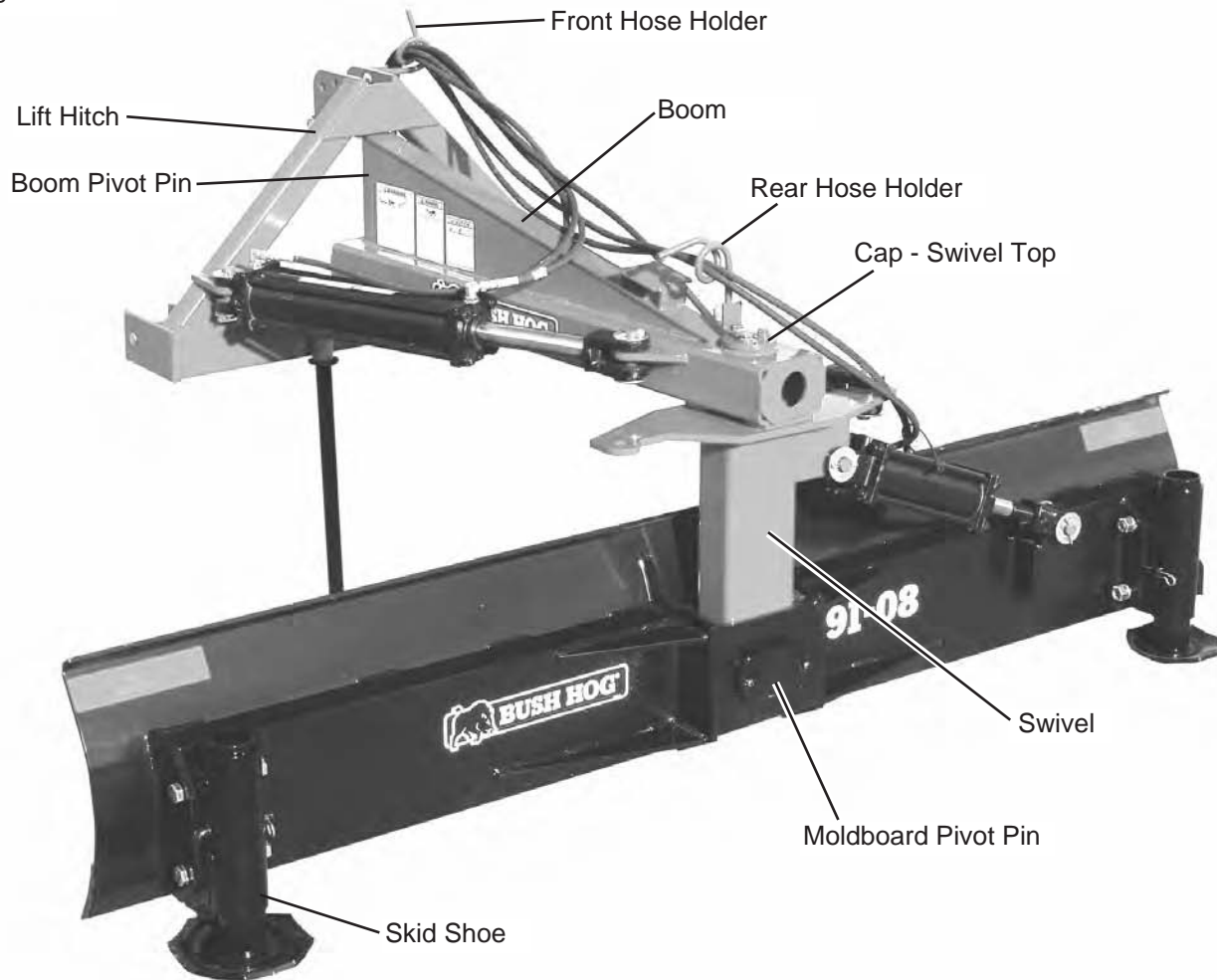
Remove the two bolts, and locknuts holding the moldboard pivot pin in place and remove the pin. (Figure 3-2)

Raise the frame until the moldboard can be positioned under the swivel tube. (Figure 3-2)

CAUTION

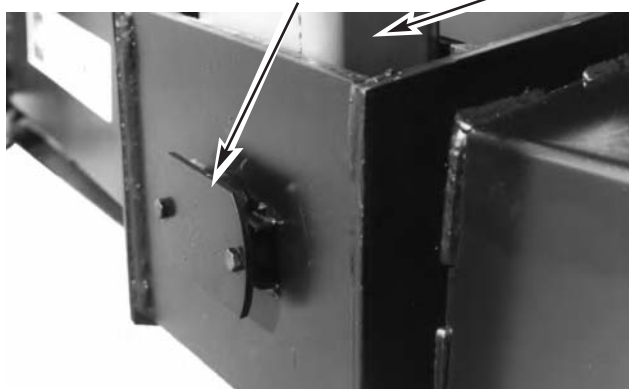
INSURE THAT MOLDBOARD IS SECURELY SUPPORTED DURING ASSEMBLY TO PREVENT IT FROM FALLING ONTO FEET, HANDS OR BODY.

Figure 3-1



Lower the frame guiding the swivel tube into position until the pivot pin can be installed. Secure the pivot pin to the moldboard using the bolts previously removed. (Figure 3-2)

Figure 3-2 Moldboard Pivot Pin Swivel Tube



Install the 8" stroke pin jack or hydraulic cylinder that controls "tilt" at this time. Pin jack outer housing to be pinned to the lug on the mold board. (Figure 1-2 and Figure 1-3)

A 16" stroke pin jack or cylinder may be used to control the "offset" of the blade. The pin jack hous-

ing should be pinned to the lift hitch and the inner link, or rod end, pinned to the boom. (Figure 1-2 and Figure 1-3)

A 16" stroke pin jack, or cylinder, may be used to control the angle of the blade. The pin jack outside housing should be pinned to the boom and the inner link or rod end, pinned to the swivel assembly. (Figure 1-2 and Figure 1-3)

SKID SHOE - (Optional) Insert shoe support bracket between the lugs provided on the moldboard and secure with the bolts, lockwashers and nuts provided. Insert skid shoe into bracket to desired position and secure with "L" pin and hair pin. (Figure 1-4)

HYDRAULIC CYLINDERS

Fasten front hose holder to right side of the lift hitch as shown, using carriage bolt, lockwasher and hex nut. The rear hose holder attaches to the swivel assembly cap using one of the existing bolts. (Figure 3-1)

The offsetting cylinder should be mounted with the head end connected to the lift hitch and the rod end to the boom frame. The ports should be located upward. (Figure 1-3)

The angling cylinder should be mounted as shown. (Refer to Figures 1-3)

The tilt cylinder should be mounted with the head end connected to the swivel assembly and the rod end to the moldboard lug. (Refer to Figure 1-3)

Refer to plumbing diagrams for locations of adaptors, swivels, hoses, etc. (Figure 3-4)

CUSHION VALVE - A cushion valve is available for use with the 16" stroke hydraulic cylinders to absorb sudden shock loads, and to help protect from overloading the blade. (Figure 3-3)

One cushion valve can be installed to protect either the offset or the angling cylinder as desired. Two cushion valves can be installed to protect both cylinders at the same time.

SINGLE VALVE INSTALLATION - To install the single valve unit, bolt the cushion valve to the top mounting plate. Then, install the 1/2" Pipe to 9/16" JIC fittings in the valve.

DOUBLE VALVE INSTALLATION - To install the unit, bolt both cushion valves to the top mounting plate. Then install the 1/2" Pipe to 9/16" JIC fittings in the valves.

Install the offset cylinder hoses to the rear bottom cushion valve ports. Install the tractor line hoses to the front bottom cushion valve ports.

Install angling cylinder hoses to the rear top cushion valve ports. Install the tractor line hoses to the front top cushion valve ports as shown.

Refer to plumbing diagrams for locations of fittings, hose lengths, etc. (Figure 3-4)

⚠ WARNING

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

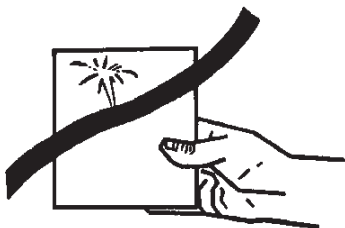


Figure 3-3 Double Cushion Valve Arrangement

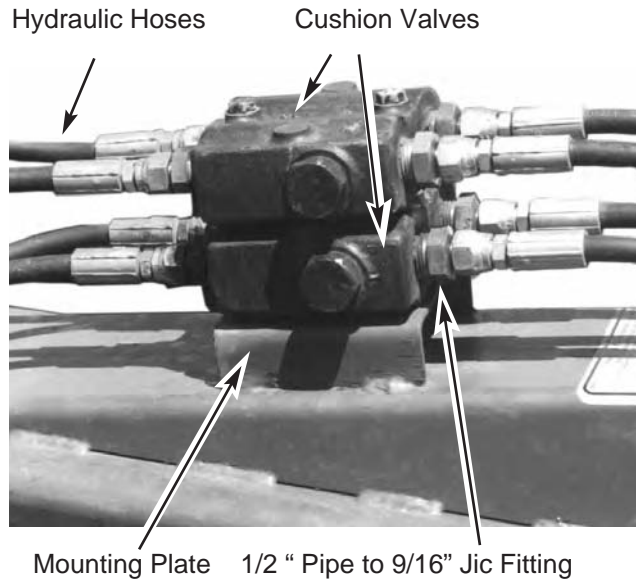
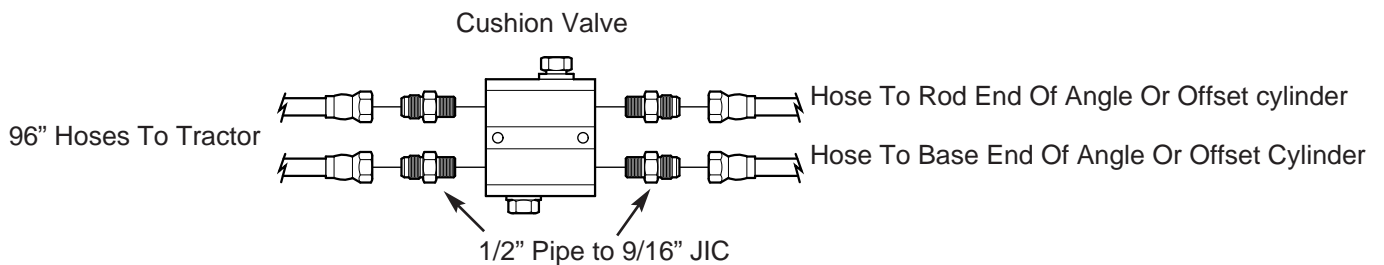
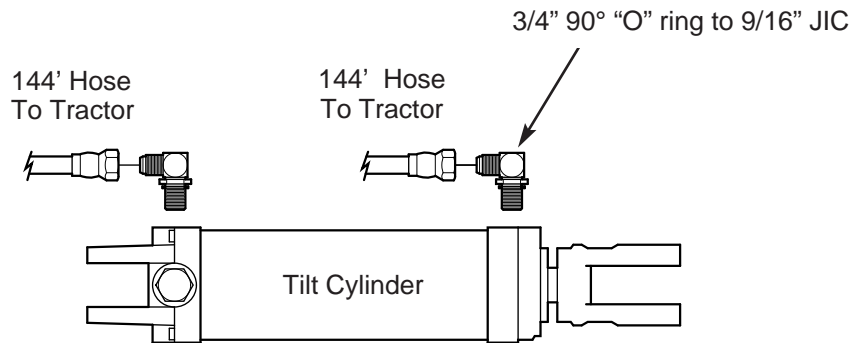
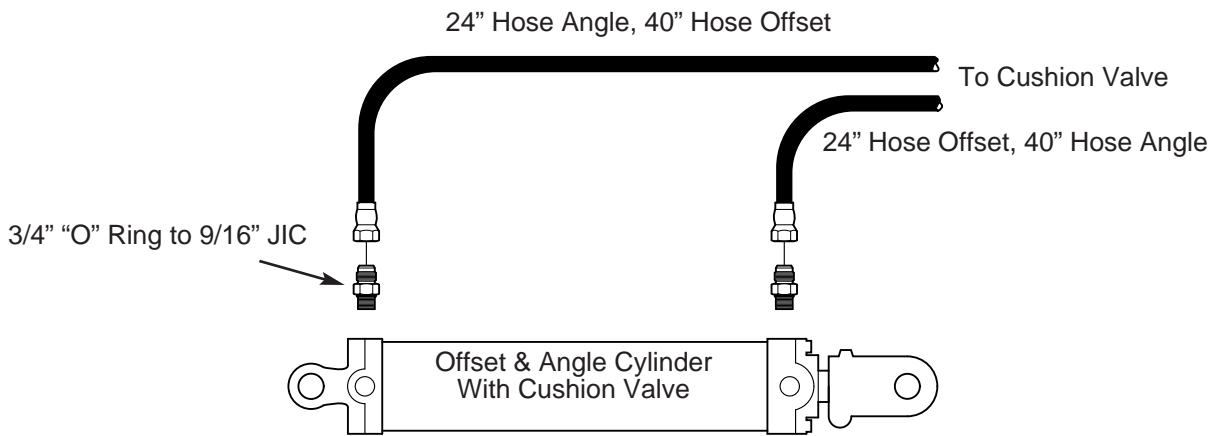
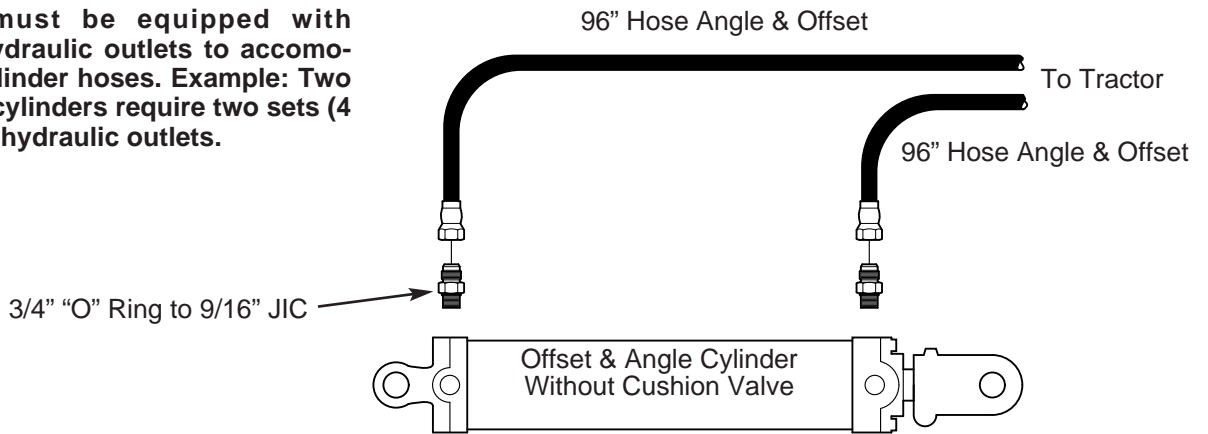


Figure 3-4 HYDRAULIC PLUMBING DIAGRAM

NOTE

Tractor must be equipped with enough hydraulic outlets to accommodate all cylinder hoses. Example: Two hydraulic cylinders require two sets (4 outlets) of hydraulic outlets.



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.

⚠ WARNING



TO AVOID SERIOUS INJURY OR DEATH:

1. DURING BLADE ADJUSTMENTS:
 - KEEP FINGERS AWAY FROM ADJUSTING HOLES.
 - KEEP BODY, HANDS AND FEET CLEAR FROM ELEVATED BLADE.
2. DURING BLADE OPERATION:
 - AVOID HIGH SPEED OVER ROUGH TERRAIN OR SLOPES.
 - DO NOT HIT IMMOVABLE OBJECTS WITH BLADE OR SCARIFIER POINTS.
 - DO NOT HIT MOUNDS, RIDGES OR AREAS WITH HIDDEN OBSTRUCTIONS DURING SNOW, ICE REMOVAL OR SIMILAR HIGH SPEED OPERATIONS.

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⚠ CAUTION





TO AVOID SERIOUS INJURY OR DEATH:

- READ OPERATORS MANUAL BEFORE OPERATING AND FOLLOW ALL PRECAUTIONS (CONTACT DEALER FOR MANUAL).
- IT IS RECOMMENDED OPERATOR USE ROLLOVER PROTECTIVE SYSTEM AND SEAT BELT EQUIPED TRACTOR FOR ALL IMPLEMENT OPERATIONS.
- ADD TRACTOR FRONT END WEIGHTS REQUIRED FOR TRACTOR STABILITY.
- LOWER IMPLEMENT TO GROUND, STOP ENGINE, PLACE TRANSMISSION IN NEUTRAL OR PARK, SET PARKING BRAKE AND REMOVE KEY BEFORE DISMOUNTING TRACTOR OR ADJUSTING IMPLEMENT.
- ALLOW NO RIDERS.
- TRANSPORT BLADE IN FULL RAISED POSITION WITH TILT AND OFFSET ANGLES AT "ZERO" POSITION.

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⚠ WARNING




IMPLEMENT CAN FALL FROM HYDRAULIC SYSTEM FAILURE. TO AVOID SERIOUS INJURY OR DEATH,

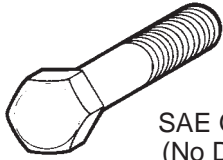
- ★ BLOCK UP OR SECURELY SUPPORT IMPLEMENT BEFORE WORKING UNDERNEATH.
- ★ PURGE ALL AIR FROM HYDRAULIC SYSTEM BEFORE ATTEMPTING TO RAISE OR LOWER THIS IMPLEMENT.
- ★ STAND CLEAR IF LOWERING OR RAISING IMPLEMENT.
- ★ DO NOT USE HAND OR SKIN TO CHECK FOR HYDRAULIC LEAKS. USE CARDBOARD OR WOOD.
- ★ HIGH PRESSURE OIL LEAKS CAN PENETRATE SKIN CAUSING SERIOUS INJURY AND GANGRENE. CONSULT A PHYSICIAN IMMEDIATELY.
- ★ LOWER THE IMPLEMENT AND RELEASE HYDR PRESSURE BEFORE LOOSENING FITTINGS.
- ★ REFER TO OWNERS MANUAL FOR DETAILS.

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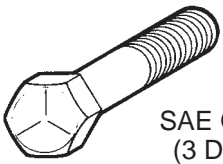
TORQUE SPECIFICATIONS

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

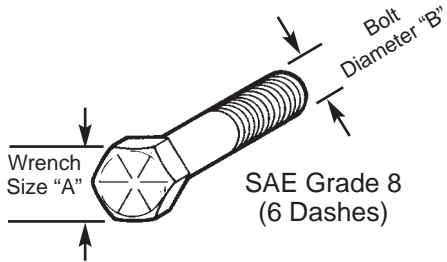
AMERICAN Bolt Head Markings



SAE Grade 2
(No Dashes)



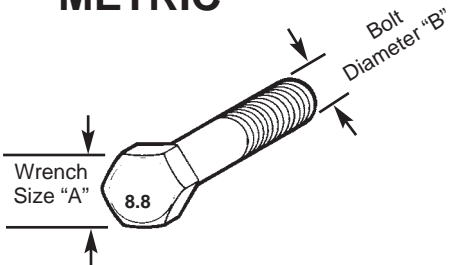
SAE Grade 5
(3 Dashes)



SAE Grade 8
(6 Dashes)

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

METRIC

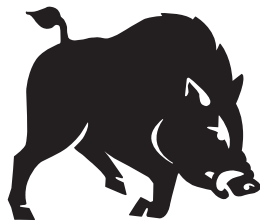


Numbers appearing on bolt heads indicate ASTM class.

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

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

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



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2501 Griffin Ave. • Selma, AL 36703
Telephone (334) 874-2700 • www.bushhog.com