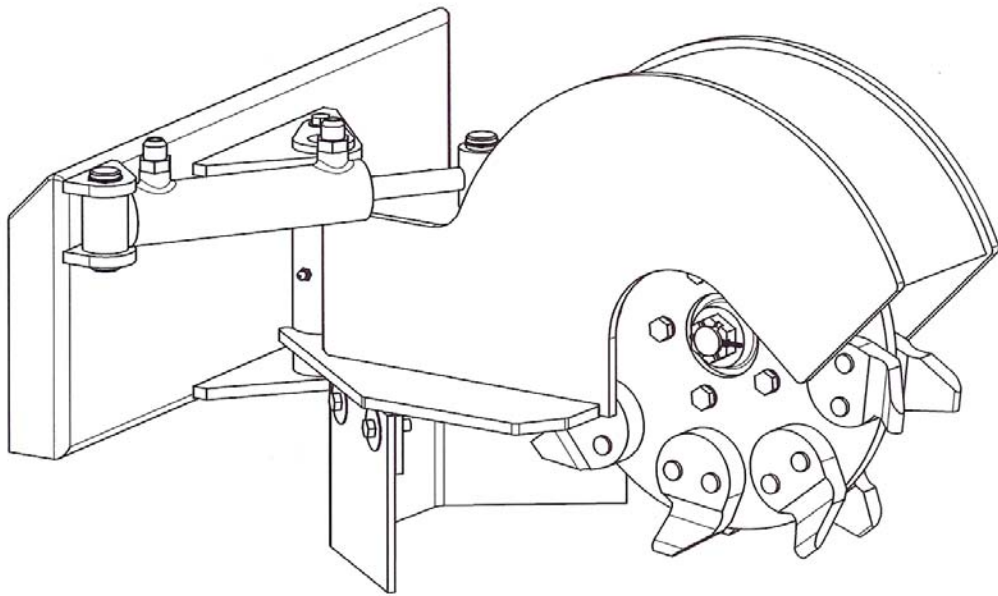


***TERRA* POWER ATTACHMENTS**
SG13 STUMP GRINDER ATTACHMENT



OPERATOR'S AND PARTS/SERVICE MANUAL

REV A 2/15/2004

SG13 MANUAL

INTRODUCTION

TO THE DEALER:

Assembly and proper installation of this product is your responsibility. Read manual instructions and safety rules. Make sure all items on the Dealers Pre-Delivery Check Lists in the Operator's manual are completed before releasing equipment to the owner.

The dealer must complete the Warranty Registration included in this manual. Both dealer and customer must sign the registrations which certifies that all Dealer Check List items have been completed. The dealer is to return the portion to Terra Power Attachments, Inc., give one copy to the customer, and retain one copy. Note: Warranty credit is subject to this form being completed and returned.

TO THE OWNER:

Read this manual before operating your equipment. The information presented will prepare you to do a better and safer job. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all the adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained by calling 1-866-340-3772. The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricated the unit as specified. Observe all safety information in this manual and safety decals on the equipment.

Use only genuine Terra Power Attachments replacement parts. Substitute parts will void the warranty and may not meet the standards required for safe and satisfactory operation. Record the model number and serial number of your equipment in the spaces provided:

Throughout this manual, the term **IMPORTANT** is used to indicate that failure to observe can cause damage to equipment. The terms **CAUTION**, **WARNING** and **DANGER** are used in conjunction with the Safety-Alert Symbol, (a triangle with an exclamation mark), to indicate the degree of hazard for items of personal safety.



This Safety-Alert Symbol indicates a hazard and means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



DANGER

Indicates an imminently hazardous situation that, if not avoided will result in death or serious injury.



WARNING

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



CAUTION

Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.

IMPORTANT

Indicates that failure to observe can cause damage to equipment.

NOTE

Indicates helpful information.

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GENERAL INFORMATION

The purpose of this manual is to assist you in operating and maintaining your stump grinder. Read it carefully. It furnishes information and instructions that will help you achieve years of dependable performance. These instructions have been compiled from extensive field experience and engineering data. Some information may be general in nature due to unknown and varying operating conditions. However, through experience and these instructions, you should be able to develop procedures suitable to your particular situation. The illustrations and data used

in this manual were current at the time of printing, but due to possible inline production changes, your unit may vary slightly in detail. We reserve the right to redesign and change our equipment as may be necessary without notification.

Throughout this manual, references are made to right and left direction. These directions are relative to the machine OPERATOR'S point of view looking forward from behind the host vehicle (skid steer loader).

SPECIFICATIONS

MAXIMUM FLOW	13 GPM
MAXIMUM PRESSURE	3000 PSI
WHEEL SPEED @ MAX FLOW (THEO)	981 RPM
WEIGHT	185 LBS
NO. OF CUTTING TEETH	16
CUTTING ARC	60 DEG
MAXIMUM STUMP HEIGHT	24 IN
MAXIMUM CUTTING DEPTH	12 IN

GENERAL INFORMATION

PRE-DELIVERY CHECK LIST:

(DEALER'S RESPONSIBILITY)

Inspect stump grinder thoroughly to ensure it is set up properly before delivering it to the customer. The following check list is a reminder of points to inspect. Check off each item as it is found to be satisfactory or after corrections are made.

- Shields and guards are properly installed and in good condition. Replace if damaged.
- Check all bolts to be sure they are properly torqued.
- Check that all cotter pins and safety pins are properly installed. Replace if damaged.
- Check and grease all lubrication points as identified in this manual.

DELIVERY CHECK LIST

(DEALER'S RESPONSIBILITY)

- Point out the safety decals. Explain their meaning and the need to keep them in place and in good condition. Emphasize the increased safety hazards when instructions are not followed.
- Present the Operator's Manual and request that the customer and all operators read it before operating the attachment. Point out safety rules, explain their meaning and emphasize the increased safety hazards that exist when safety rules are not followed.
- Show the customer how to make adjustments and properly mount the stump grinder to the skid steer loader.
- Instruct the customer on how to properly lubricate the attachment.
- Point out the correct mounting and routing of hydraulic hoses. Explain that during operations, mounting, dismounting and storage, care must be taken to prevent hoses from pulling, twisting, and kinking.



SAFETY RULES

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



INSTALLATION

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be erased by an operator's single careless act.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, judgment, and proper training of personnel involved in the operation, transport, maintenance and storage of equipment. **Before performing any task, first consider the safety of you and those around you.**

- Hydraulics must be connected as instructed in this manual. Do not substitute parts, modify, or connect in any other way.
- After connecting hoses, check that all control lever positions function as instructed in the Operator's Manual. Do not put into service until control lever and equipment movements are correct.

TRAINING

- Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals are available from dealer). Failure to follow instructions or safety rules can result in serious injury or death.
- If you do not understand any part of this manual and need assistance, see your dealer.
- Know your controls and how to stop engine and attachment quickly in an emergency.
- Operators must be instructed in and be capable of the safe operation of the equipment, its attachments, and all controls. Do not allow anyone to operate this equipment without proper instructions.
- Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under

pressure can easily penetrate skin and will cause serious injury or death.

- Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. **CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**
- Never allow children or untrained persons to operate equipment.

PREPARATION

- Check that all hardware is properly installed. Always tighten to torque chart specifications unless instructed otherwise in this manual.
- Air in hydraulic systems can cause erratic operation and allows loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.
- After connecting hoses, check that all control lever positions function as instructed in the Operator's Manual. Do not put into service until control lever and equipment movements are correct.
- Make sure all hydraulic hoses, fittings, and valves are in good condition and not leaking before starting power unit or using equipment. Check and route hoses carefully to prevent damage.
- Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate moveable components through full operational range to check clearances. Replace any damaged hoses immediately.
- Your dealer can supply original equipment hydraulic accessories and repair parts. Substitute parts may not meet original equipment specifications and may be dangerous.



SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

- Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.
- Be sure attachment is properly secured, adjusted, and in good operating condition. Coupler lock pins must be fully extended and properly engaged into attachment retaining slots.
- Always remain behind the loader when operating the attachment.
- Make sure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)
- Make sure shields and guards are properly installed and in good condition. Replace if damaged.
- Inspect and clear area of stones, branches, or other hard objects that might be thrown, causing injury or damage.
- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- Contact with high voltage, overhead power lines, underground cables, gas lines, and other hazards can cause serious injury or death from electrocution, explosion, or fire.
- Keep bystanders away from equipment.
- Never direct discharge toward people, animals, or property.
- Do not operate equipment while under the influence of alcohol or drugs.
- Operate only in daylight or good artificial light.
- Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.
- Always comply with all state and local lighting and marking requirements.
- Do not allow riders. Do not lift or carry anybody on the power unit or attachments.
- Look down and to the rear and make sure area is clear before operating in reverse.
- Use extreme care when working close to fences, ditches, other obstructions, or on hillsides.
- Do not operate on steep slopes.
- Do not stop, start, or change directions suddenly on slopes.
- Use extreme care and reduce ground speed on slopes and rough terrain.
- Watch for hidden hazards on the terrain during operation.
- Stop power unit and implement immediately upon striking an obstruction. Dismount power unit, using proper procedure. Inspect and repair any damage before resuming operation.
- NEVER GO UNDERNEATH EQUIPMENT. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement

OPERATION

- Put on safety goggles or full face shield before operating the stump grinder attachment.
- Improper operation can cause the machine to tip or roll over and cause injury or death.
- Keep power unit lift arms and attachment as low as possible.
- Do not travel or turn with power unit lift arms and attachment raised.
- Turn only on level ground.
- Go up and down slopes, not across them.
- Keep the heavy end of the machine uphill.
- Do not overload the machine.
- Never use attachment to carry loads that exceed the rated operating capacity or other specifications of the power unit. Check your power unit manual or see your dealer for rated operating capacity. Exceeding this capacity can cause machine to tip, roll over, or present other hazards that can cause injury or death.



SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.

- Service work does not require going underneath.
- Read Operator's Manual for service instructions or have service performed by a qualified dealer.
- Leak down or failure of mechanical or hydraulic system can cause equipment to drop.
- Before making any adjustments on attachment, stop engine and engage parking brake. Never adjust or work on attachment while the power unit or attachment is running.
- Before leaving operator's platform, follow power unit manual instructions. Lower lift arms and put attachment on the ground. Stop engine, remove key, and engage brake (if equipped).
- Contact One-Call (888-258-0808) and any utilities that do not subscribe to One-Call. Have all underground pipes and cables located and marked before operating equipment. If you damage a utility, notify utility company immediately.

MAINTENANCE

- **NEVER GO UNDERNEATH EQUIPMENT.** Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.
- Service work does not require going underneath.
- Read Operator's Manual for service instructions or have service performed by a qualified dealer.
- Do not modify or alter or permit anyone else to modify or alter the equipment or any of its components in any way.
- Your dealer can supply original equipment hydraulic accessories and repair parts. Substitute parts may not meet original equipment specifications and may be dangerous.

cations and may be dangerous.

- Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.
- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- Be sure attachment is properly secured, adjusted, and in good operating condition. Coupler lock pins must be fully extended and properly engaged into attachment retaining slots.
- Never perform service or maintenance with engine running.
- Keep all persons away from operator control area while performing adjustments, service, or maintenance.
- Make certain all movement of equipment components has stopped before approaching for service.
- Tighten all bolts, nuts and screws to manual specifications. Check that all cotter pins are installed securely to ensure equipment is in a safe condition before putting unit into service.
- Make sure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)
- Make sure shields and guards are properly installed and in good condition. Replace if damaged.
- Do not disconnect hydraulic lines until all system pressure is relieved. Lower unit to ground, stop engine, and operate all hydraulic control levers.
- Leak down or failure of mechanical or hydraulic system can cause equipment to drop.

STORAGE

- Block equipment securely for storage.
- Follow manual instructions for storage.
- Keep children and bystanders away from storage area.



SAFETY AND INSTRUCTIONAL DECALS
ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!
REPLACE IMMEDIATELY IF DAMAGED!



 WARNING	
	
<p>FLYING OBJECTS AND ROTATING GRINDING WHEEL CAN CAUSE INJURY OR DEATH.</p> <ul style="list-style-type: none">• STAY AT LEAST 4M(12 FT) AWAY FROM OPERATING EQUIPMENT.• STOP ENGINE BEFORE CLEANING OR SERVICING.	

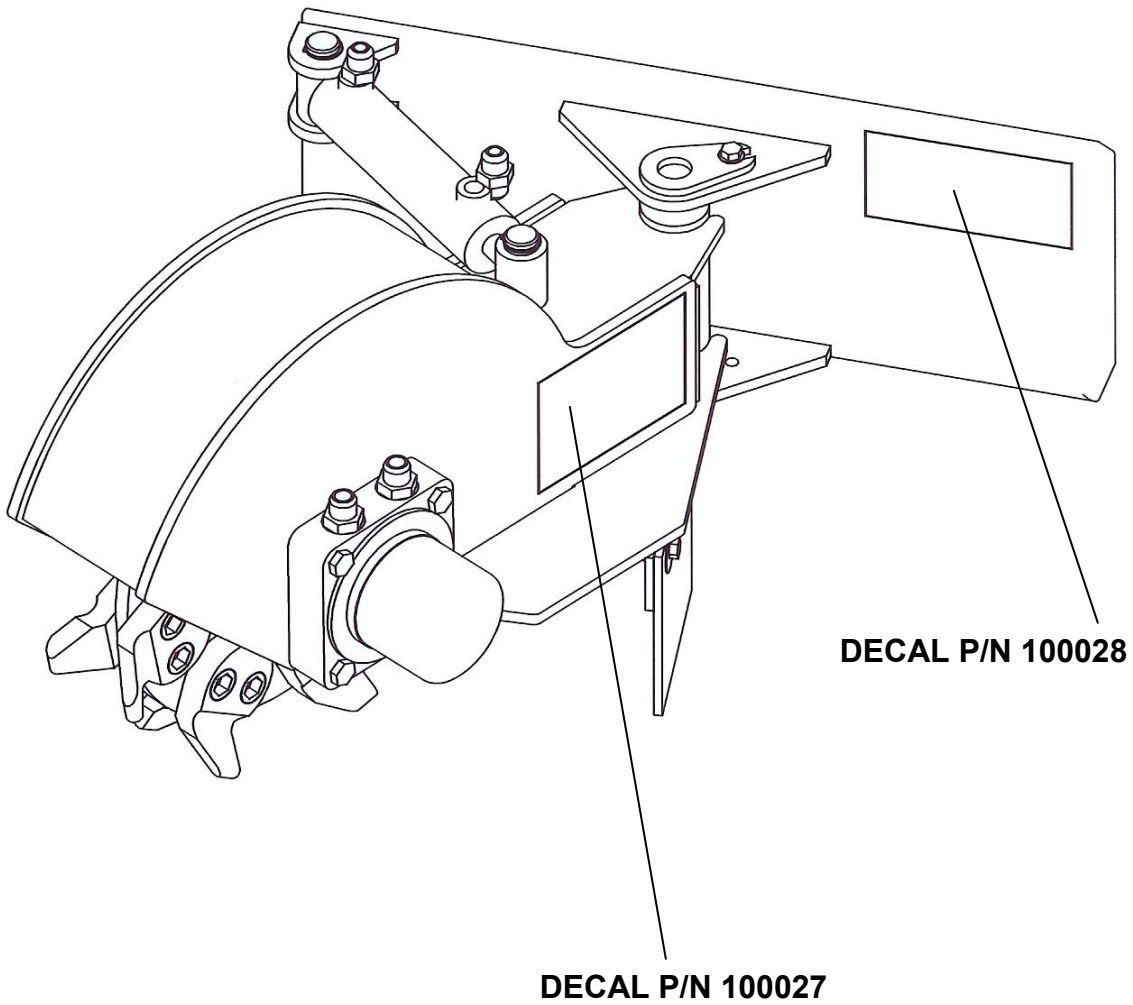
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 WARNING	
	<p>TO AVOID SERIOUS INJURY OR DEATH:</p> <ul style="list-style-type: none">• Read operators manual before operating, servicing or repairing unit. Follow all safety rules and instructions.• Allow NO untrained persons or children to operate this attachment.• Only operate the attachment from behind the loader. Stop engine and lower lift arms before servicing unit.

P/N 100028



SAFETY AND INSTRUCTIONAL DECALS
ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!
REPLACE IMMEDIATELY IF DAMAGED!



OPERATION



WARNING

- **Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals are available from your dealer or call 317-509-4085). Failure to follow instructions or safety rules can result in serious injury or death.**



WARNING

- **The operator is responsible for the safe operation of this equipment. Operators must be instructed in and be capable of the safe operation of the equipment, its attachments and all controls. Do not allow anyone to operate this equipment without proper instructions.**

PRE-OPERATION CHECK LIST

(OWNER'S RESPONSIBILITY)

- | | |
|--|--|
| — Review and follow all safety rules. See SAFETY RULES on pages 4 through 6. Review and follow all safety decal instructions. See SAFETY AND INSTRUCTIONAL DECALS on page X through Y. | — Do not allow riders. |
| — Check that all safety decals are installed and in good condition. Replace if damaged. | — Keep all bystanders away from equipment working area. |
| — Check that all shields and guards are properly installed and in good condition. Replace if damaged. | — Check all lubrication points and grease as instructed. |
| — Check that equipment is properly attached to skid steer. | — Check that all hydraulic hoses and fittings are in good condition and not leaking before starting skid steer. |
| — Check that all hardware and cotter pins are properly installed and secured. | — Check that hoses are not twisted, bent sharply, kinked, frayed or pulled tight. Replace any damaged hoses immediately. |

OPERATION

Attaching the Stump Grinder

1. Make sure coupler stake pins are disengaged on the skid loader.
2. Make sure the attachment hydraulic lines are clear of the receiver plate and there are no other obstructions in front of the attachment.
3. Approach the attachment slowly with the attach plate on the loader rolled out.
4. Continue to advance the loader toward the unit, making sure the sides of the loader attach plate and the attachment receiver plate are closely aligned.
5. When contact with the receiver plate is made, stop advancing and raise the lift arms on the loader until the top of the attach plate meets the lip of the attachment receiver plate.
6. Slowly roll back the loader attach plate until the attach plate and receiver plate are mated. Retract the curl cylinder on the loader completely and raise the loader arms so that the loader supports the entire weight of the attachment.
7. Engage the parking brake on the loader (if

equipped).

8. Stop the engine.
9. Engage the coupler stake pins on the loader attach plate. Visually verify that the pins are completely engaged and in the locked position.

Connecting Hydraulic Lines

1. Make quick disconnect couplers on the loader and the attachment are relatively clean and free of dirt and debris before attempting to make a connection. If necessary, take a clean cloth and wipe the ends of the connectors.
2. Connect hoses as shown in **Figure 1**.
3. Make sure hoses are not kinked and are free from interference with loader arms and other moving parts.

Connecting Wire Harness

1. Connect the 2 electrical connectors to the solenoid valves. There is no order or preference when connecting the electrical harness.
2. Make sure that the harness has no kinks and has ample slack while keeping it free from pinch areas or other moving parts.

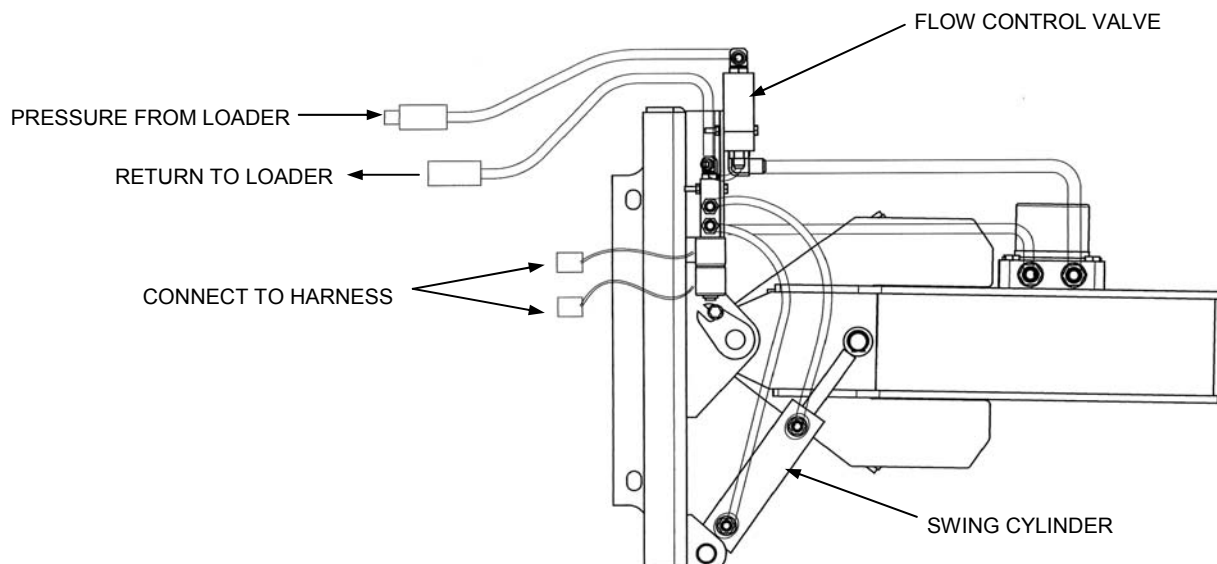


Figure 1 Hooking up Hydraulic Lines

OPERATION

Stump Grinder Operation

The stump grinder attachment is a hydraulically driven implement for grinding tree stumps. It should be used for no other purpose. The performance of the stump grinder can vary greatly depending on the host vehicle (skid steer loader) and the type of wood being cut. The following operating procedure will help ensure the best results. All the directional references made in this section are made from the point of view of the operator's platform which is behind the skid steer loader, looking forward toward the attachment.

1. Start the loader's engine
2. Raise the stump grinder off the ground until the teeth are clear.
3. Run the engine at operating rpm and engage the auxiliary hydraulic circuit.
4. Engage the motor hydraulic circuit and make sure the cutting wheel is rotating counter-clockwise as viewed from the operators left hand side. (Note: motor side of attachment)
5. Actuate the rocker switch (with cutter head rotating) to verify swing cylinder operation. If the cylinder does not move or moves erratically, stop auxiliary flow and adjust the flow control valve (See page 15 for this procedure). If the cylinder does not operate, see the troubleshooting section.

Do not raise the stump grinder more than 24 in above the ground during cutting wheel operation. Doing so could expose the operator to serious injury from flying debris.

Stump Grinding

1. Advance the loader's engine to full throttle.
2. Raise the stump grinder enough to clear the stump.
3. Pull forward until the cutting wheel is posi-

tioned over the front edge of the stump.

4. Actuate the rocker switch to swing the stump grinder head across the stump. If the head advances too quickly so that it repeatedly stalls, re-adjust the control valve. (See page 15 for this procedure).
5. After a complete pass across the stump, slowly lower the head of the stump grinder about 1 inch using the loader arms and swing the cutting head across the stump in the opposite direction.
6. If the wheel stalls or vibrates excessively, it may be an indication that the cut is too aggressive (deep). Raise the loader arms to clear the obstruction and repeat step 4.
NOTE: attempting to cut too deeply in to the stump is most often the reason for excessive vibration and stalling. Learn how much to lower the grinder head to avoid this situation through practice.
7. Continue cutting the stump by repeatedly making passes across the face of the stump. Depending on the size of the stump, you may have to advance the loader forward or backward between passes to completely grind the stump.
8. Periodically stop the motor and clear the stump of accumulated debris to verify the depth of material removal.
9. Disengage motor hydraulic flow and shut off the loader hydraulics and engine.

When transporting the stump grinder, make sure the wheel does not contact the ground. This may cause the wheel to turn resulting in damage to the motor.

OPERATION

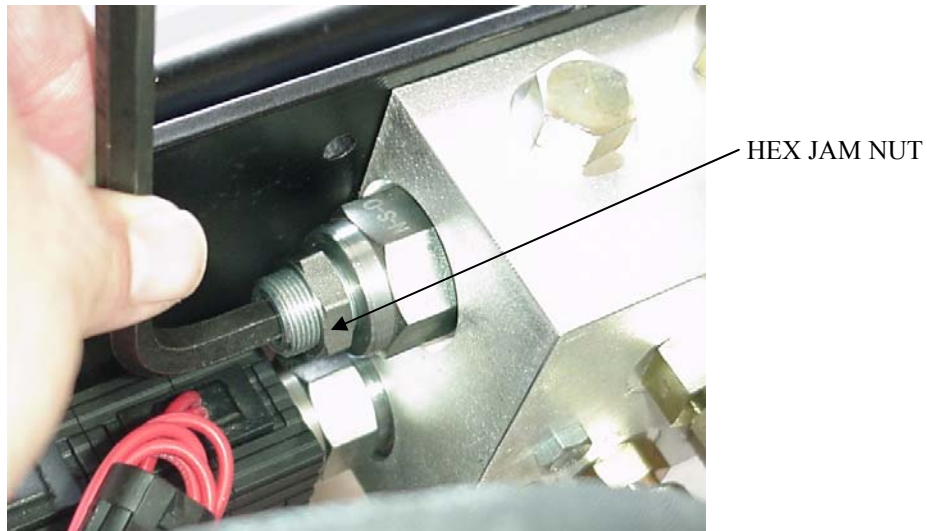


FIG. - ADJUSTING THE FLOW CONTROL VALVE

ADJUSTING THE TRAVEL SPEED OF THE SWEEP CYLINDER



WARNING

NEVER MAKE ANY ADJUSTMENTS TO THE VALVE WHILE THE ENGINE IS RUNNING. ALWAYS STOP THE ENGINE AND MAKE SURE THE CUTTING WHEEL HAS STOPPED TURNING COMPLETELY BEFORE PERFORMING ANY MAINTENANCE.

PRINCIPLE OF OPERATION:

THIS VALVE IS DESIGNED SUCH THAT THE CYLINDER WILL NOT OPERATE WITHOUT A MINIMUM AMOUNT (PRIORITY) OF OIL BEING DIRECTED TO THE CYLINDER. ANY AMOUNT OVER THIS SETTING IS DIRECTED TO THE MOTOR.

1. LOOSEN THE HEX JAM NUT SHOWN IN FIG. A3 BY TURNING COUNTERCLOCKWISE.
2. INSERT AN ALLEN STYLE WRENCH IN THE HEX SLOT OF THE VALVE STEM.
3. **TURN THE ADJUSTMENT SCREW COUNTERCLOCKWISE TO DECREASE FLOW TO THE CYLINDER (reduce swing speed) OR CLOCKWISE TO INCREASE FLOW (increase swing speed).** THE ADJUSTMENT SCREW MAY BE TURNED APPROXIMATELY 8 FULL TURNS. IF THE SCREW IS TURNED COMPLETELY COUNTERCLOCKWISE, NO OIL WILL BE SUPPLIED TO THE CYLINDER AND THE VALVE WILL NOT OPERATE CORRECTLY. MAKE SURE THE VALVE IS TURNED AT LEAST ONE -QUARTER TURN CLOCKWISE FROM THIS POSITION IF MINIMUM FLOW TO THE CYLINDER IS DESIRED.
4. TIGHTEN HEX JAM NUT TO 20 FT-LBS. (DON'T OVER TIGHTEN OR DAMAGE MAY OCCUR).

STORAGE

1. Store the stump grinder inside when possible. Otherwise, store the stump grinder on a pallet.
2. Be sure hydraulic couplers, hose and the cutting wheel are off the ground.
3. Cap the hydraulic couplers to prevent contamination.
4. Keep children and bystanders away from storage area.

TROUBLE SHOOTING GUIDE

PROBLEM	POSSIBLE CAUSES	CHECK THE FOLLOWING
1. Motor on the stump grinder will not operate.	<ul style="list-style-type: none"> • Auxiliary hoses are not hooked up to the skid steer. • There is an obstruction in one or both of the auxiliary hoses. • One or more seals on the motor have failed. • Skid steer auxiliary hydraulics are not operating properly. • Hoses are improperly connected. 	<p>Inspect the connections visually (make sure QDs are fully engaged). Remove and inspect the hoses visually.</p> <p>Contact your dealer.</p> <p>Refer to the skid steer owner's manual.</p> <p>Verify that the pressure line from the loader matches the diagrams in this manual.</p>
2. Wheel rotates sluggishly.	<ul style="list-style-type: none"> • Excessive back pressure in the return hose. • Insufficient hydraulic flow from the skid steer. • The hydraulic oil filter on the skid steer is dirty. • One or more seals on the motor have failed. 	<p>Check back pressure at the skid steer.</p> <p>Refer to the skid steer owner's manual.</p> <p>Refer to the skid steer owner's manual.</p> <p>Contact your dealer.</p>
3. Motor operates, but the wheel does not rotate.	<ul style="list-style-type: none"> • 1. Key on the motor is sheared. 	<p>Inspect visually and replace as required.</p>
4. Oil is leaking from the motor area.	<ul style="list-style-type: none"> • One or more seals on the motor have failed. • o-rings on the fittings are damaged. • Fittings are loose or damaged. • Hydraulic hoses are loose or damaged. 	<p>Contact your dealer.</p> <p>Visually inspect the O-rings and replace as needed.</p> <p>Replace or tighten as required.</p> <p>Replace or tighten as required.</p>
5. Insufficient cutting power	<ul style="list-style-type: none"> • One or more seals on the motor have failed. • Oil filter on the skid steer is dirty. • Insufficient auxiliary flow from the skid steer. • Relief valve on the skid steer is not set properly. • Improper setting on flow control valve 	<p>Contact your dealer.</p> <p>Refer to the skid steer owner's manual.</p> <p>Refer to the skid steer owner's manual.</p> <p>Refer to the skid steer owner's manual.</p> <p>Check flow setting on control valve and adjust if necessary.</p>

TROUBLE SHOOTING GUIDE

PROBLEM	POSSIBLE CAUSES	CHECK THE FOLLOWING
6. Excessive oil temperature.	Obstruction in one or both auxiliary hydraulic hoses.	Remove and visually inspect and replace hoses as necessary.
8. Excessive vibration during grinding operation.	<ul style="list-style-type: none">• Teeth are excessively worn.• Incorrect operating procedure.• One or more teeth are broken or missing.	Visually inspect the teeth and replace as necessary. Cut with the lower front section of the wheel. Visually inspect the teeth and replace as necessary.

OWNER SERVICE

Tooth Replacement

NOTE: Replace teeth whenever they become damaged, broken, or excessively worn. Excessively worn cutting edges greatly decrease cutting efficiency.

IMPORTANT

- **Never operate the stump grinder with missing teeth.**
1. Support the stump grinder chassis so that it does not rest on any of the cutting teeth.
 2. Remove the two, 5/8 socket head cap screws (1). Note that both the threaded tooth (2) and non-threaded tooth (3) are now free.
 3. Replace tooth or both teeth, as required, by reinstalling the two 5/8 socket head cap screws.
 4. **NOTE:** make sure teeth are installed in the orientation as shown in figure 1.
 5. Torque the two cap screws to 170 ft-lbs. each.

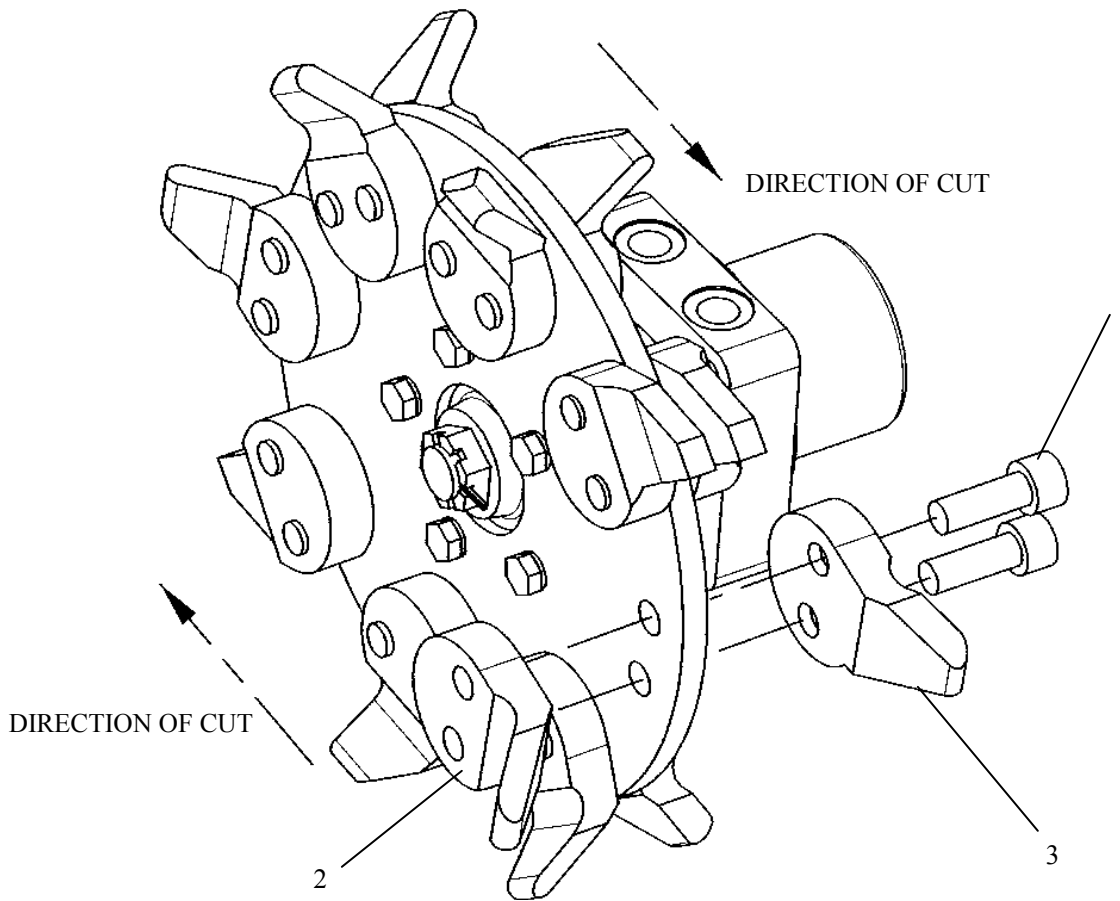


Figure 1 Replacing Cutting Teeth

OWNER SERVICE Cont'd

Cutting Wheel Removal and Installation

1. Support the stump grinder cutting wheel (3) so that it is restrained laterally.
2. Remove the four 1/2 x 2 bolts (2), nuts and washers (not shown).
3. Using a hoist or other means, lift the stump grinder chassis (4) up and off of the motor (1).
4. To reassemble, follow the reverse procedure and torque the 1/2 bolts to 90 ft-lbs.

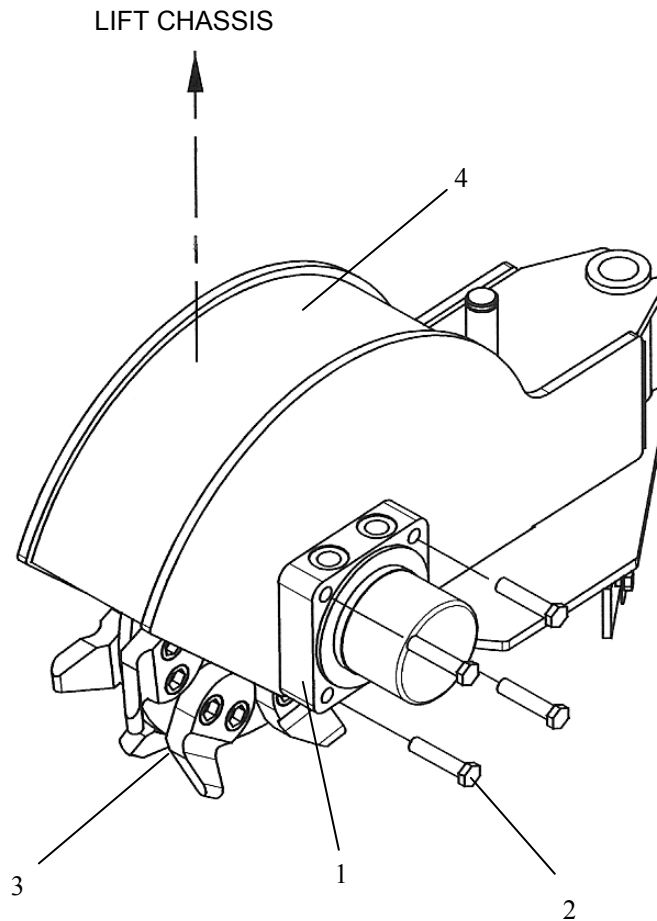


Figure 2 Wheel/Motor Assembly Removal

OWNER SERVICE Cont'd

Motor Removal

1. Remove the motor/cutting wheel assembly per the previous procedure.
2. Remove the five 1/2-20 x 1 inch bolts (1) and lock washers (2).
3. Remove cotter pin (3) and castle nut (4).
4. Using a wheel puller or similar tool, remove hub.

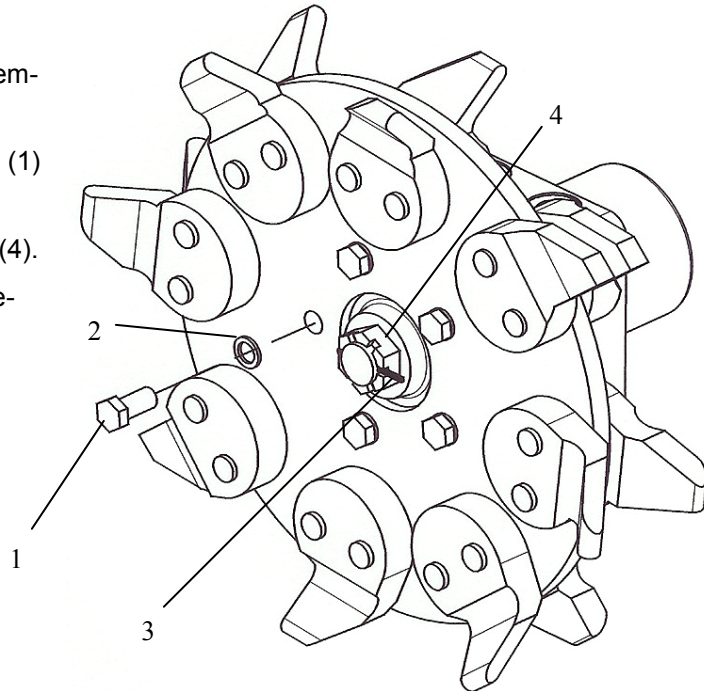


Figure 3 Motor Removal

Motor Installation

1. Apply anti-seize compound to motor shaft.
2. Install hub on motor shaft making sure key is correctly positioned on shaft.
3. Install castle nut on shaft and torque to 150 ft-lbs. Check alignment of the slots on the nut with the cotter pin hole on the motor shaft; it may be necessary to further torque the nut to obtain proper alignment of the two.
4. Install cotter pin and bend the legs to provide positive retention.
5. Assemble the cutting wheel to the hub with five 1/2-20 bolts and lock washers and torque to 90 ft-lbs.
6. Reinstall the cutting wheel/ motor assembly per the procedure outlined in the section, "Cutting Wheel Removal and Installation."

OWNER SERVICE Cont'd

Lubrication

Figure 4 below shows the grease points that should be lubricated daily.

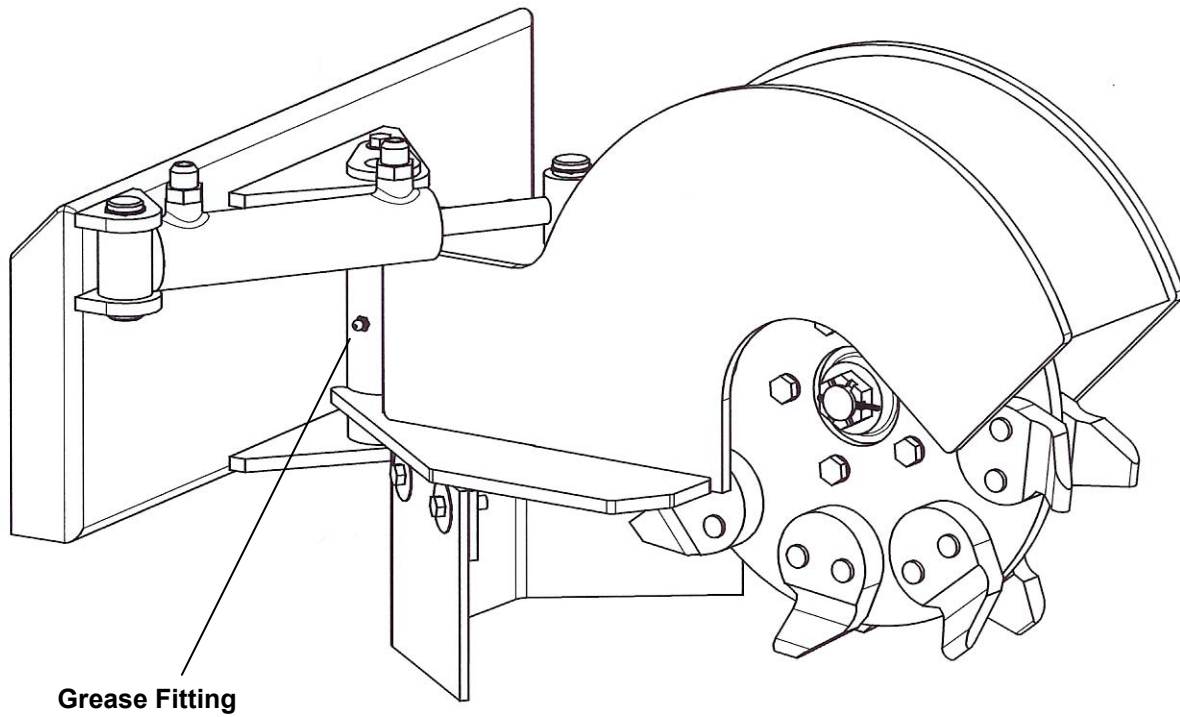
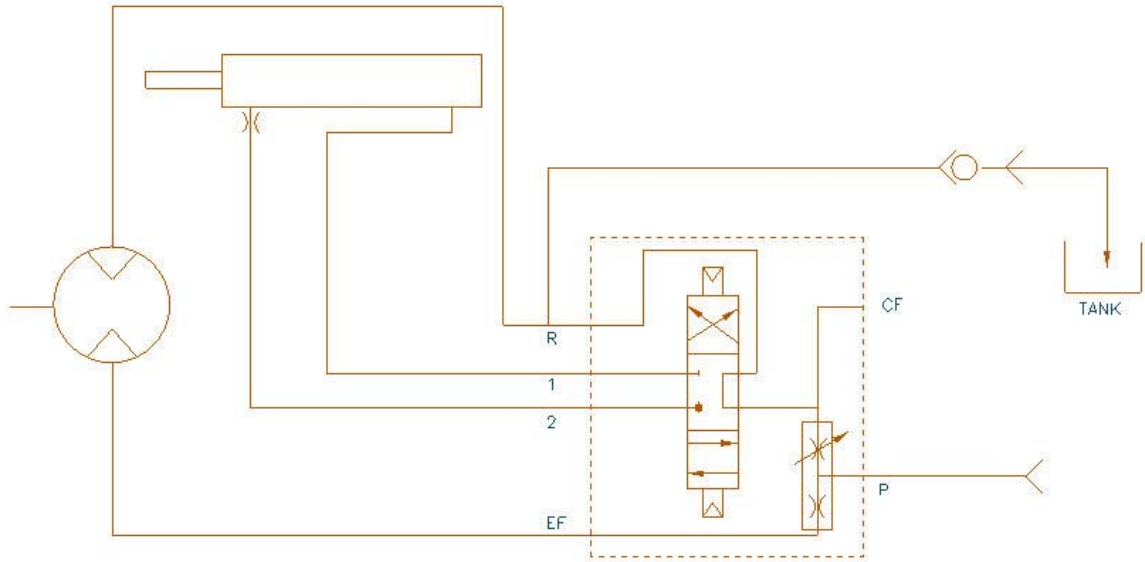
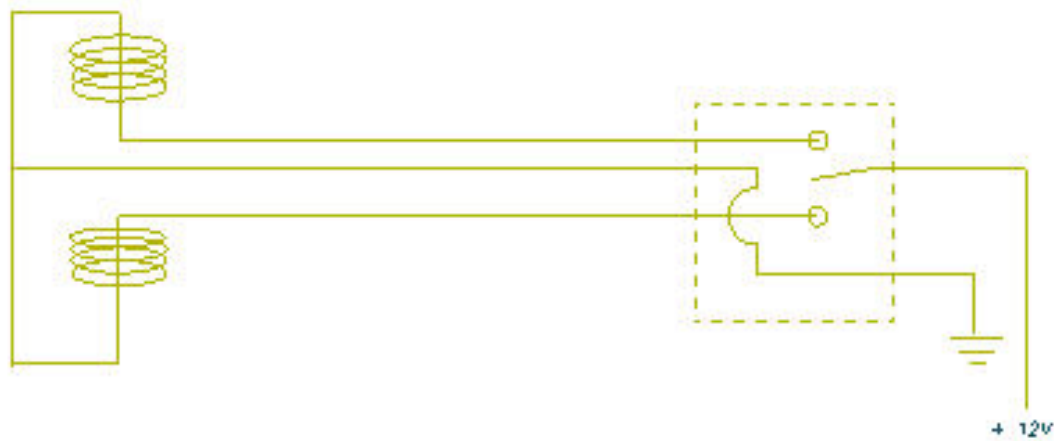


Figure 4 Grease Points

SCHEMATICS



HYDRAULIC SCHEMATIC—SG13 (DITCH WITCH)



ELECTRICAL SCHEMATIC—SG13 (DITCH WITCH)

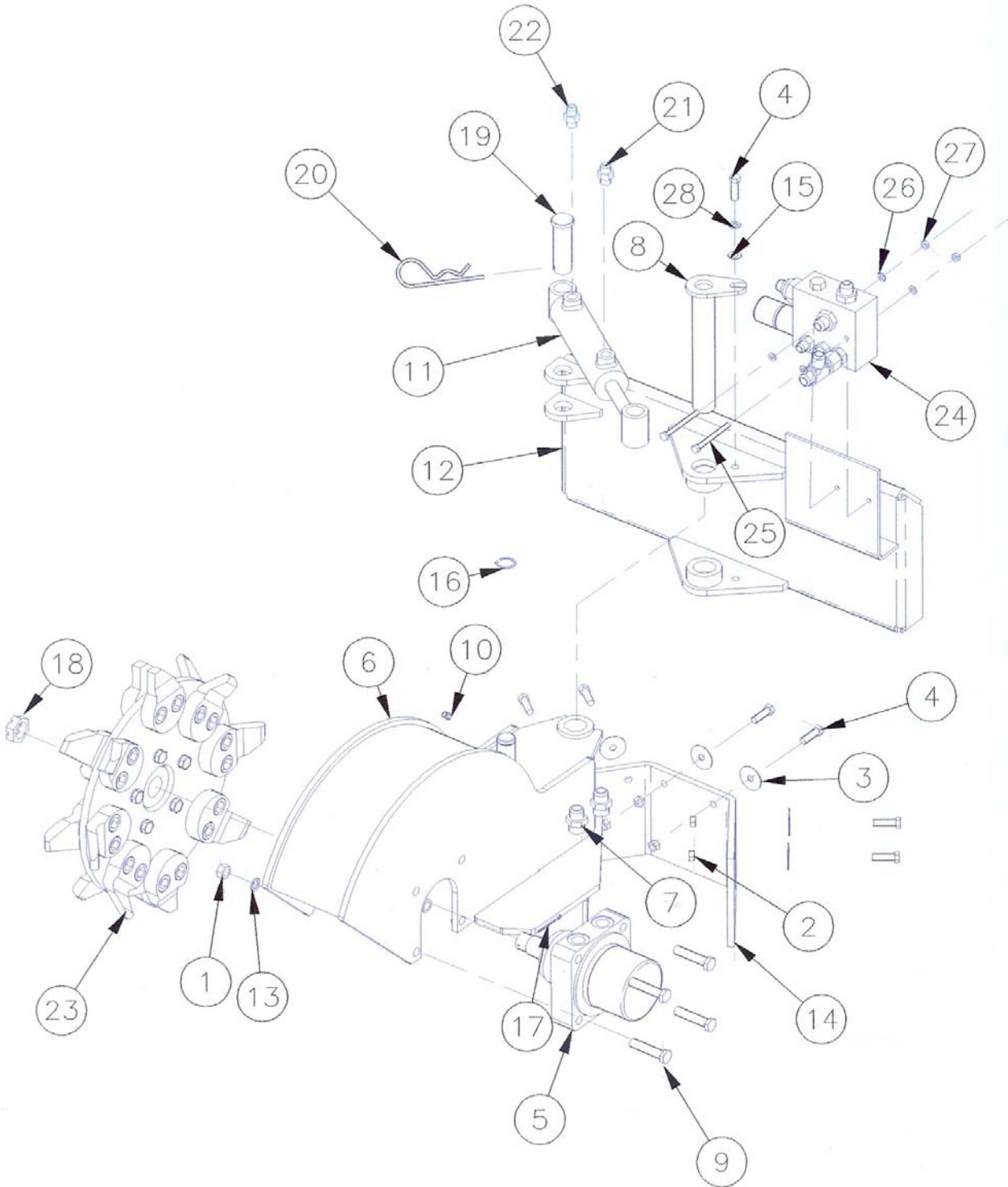
PARTS LIST

SG13 ASSEMBLY			
ID	QTY	NAME	PART NO
1	4	NUT, 1/2 IN	HD1005
2	7	NUT, 3/8 UNC	HD1013
3	6	WASHER, 3/8 FENDER	HD1010
4	7	BOLT, 3/8 X 1.25 LN UNC	HD1008
5	1	MOTOR, GEROLER, 2.2 CU. IN	100114
6	1	WELD, CHASSIS, SG13	100009
7	2	ADAPTER	HF1002
8	1	WELD, FLAG PIN	100020
9	4	BOLT, 1/2 X 2 LN UNC	HD1003
10	1	ZERK, .25 DRIVE IN	HD1011
11	1	CYLINDER, 1.5 IN. BORE X 5 IN. STROKE	100010
12	1	WELD, BACKPLATE, SG13	100085
13	4	WASHER, 1/2 LOCK	HD1004
14	1	RUBBER SKIRT	100018
15	1	WASHER, 3/8 FLAT	HD1009
16	1	RETAINING RING, 1 IN EXT	HD1012
17	1	COTTER PIN, 1/8 IN X 1.75	HD1007
18	1	CASTLE NUT	HD1006
19	1	CLEVIS PIN, 1 X 3	HD1030
20	1	RETAINING CLIP	HD1021
21	1	ORIFICE FITTING, #6 ORM X .030	HF1003
22	1	ADAPTER	HF1012
23	1	CUTTING WHEEL ASSY	REF
24	1	MANIFOLD ASSY	REF
25	2	BOLT, 1/4 X 3.0 UNC	HD1066
26	4	WASHER, 1/4 FLAT	HD1067
27	2	NUT, 1/4 UNC, NYLOK	HD1068
28	1	3/8 LOCK WASHER	HD1014

see P. 25

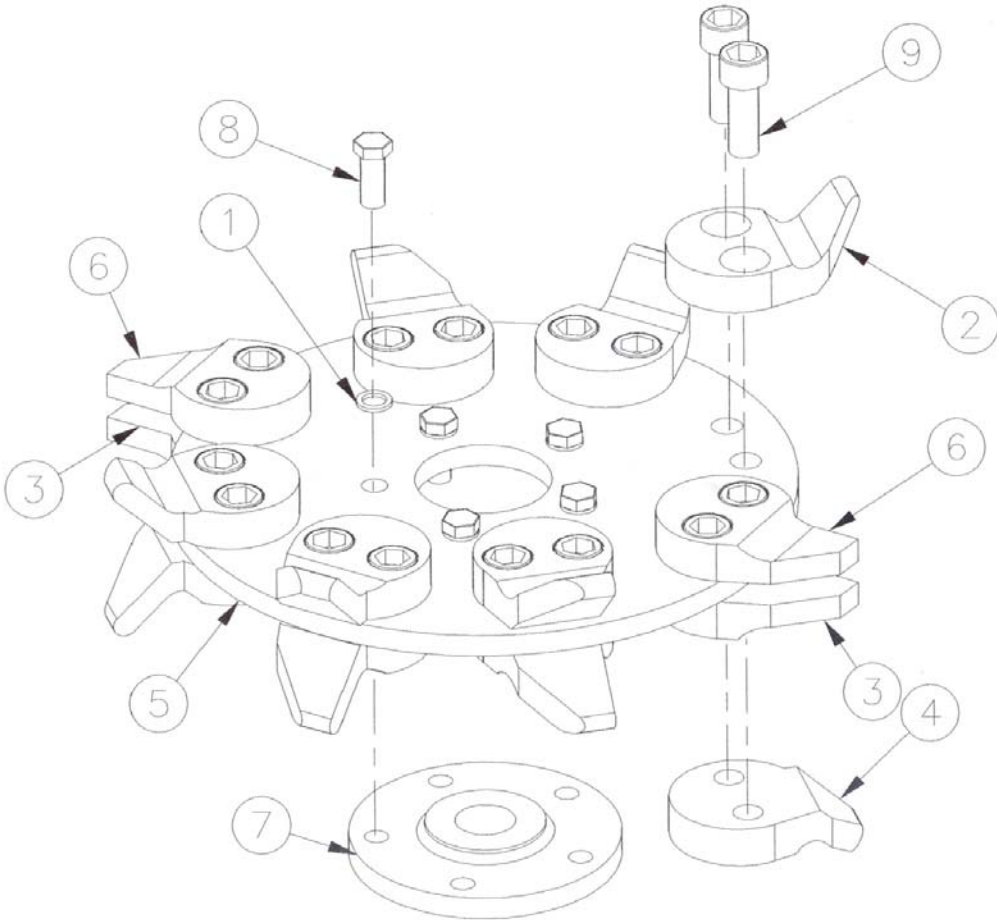
see P. 26

PARTS LIST

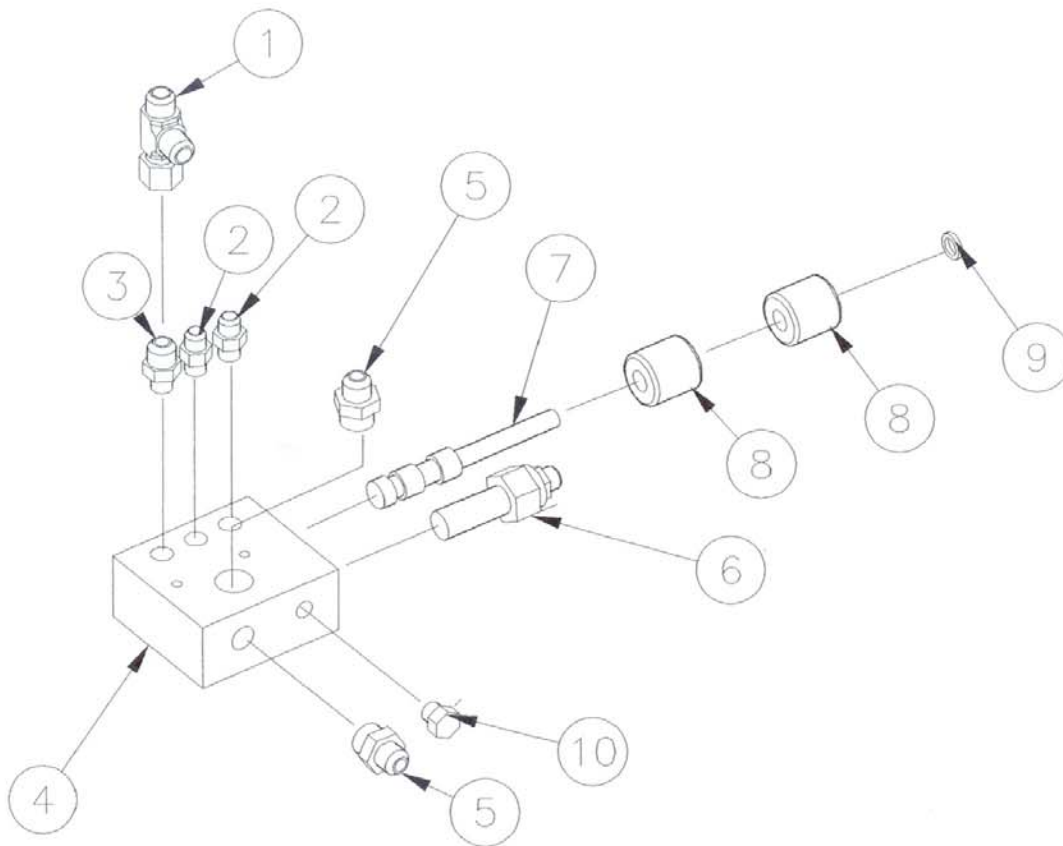


PARTS LIST—CUTTING WHEEL ASSEMBLY

COMPONENT LIST			
ID	QTY	NAME	PART NO
1	5	WASHER, 1/2 LOCK	HD1004
2	6	TOOTH – OFFSET, COUNTER-BORED	100024
3	2	TOOTH – STRAIGHT, THREADED	100025
4	6	TOOTH – OFFSET, THREADED	100026
5	1	WHEEL, CUTTER	100008
6	2	TOOTH – STRAIGHT, COUNTER-BORED	100023
7	1	HUB, 5 BOLT	100019
8	5	BOLT, 1/2 X 1.25 UNF	HD1001
9	16	SOCKET HEAD CAP SCREW, 5/8 X 1.75 UNF	HD1002



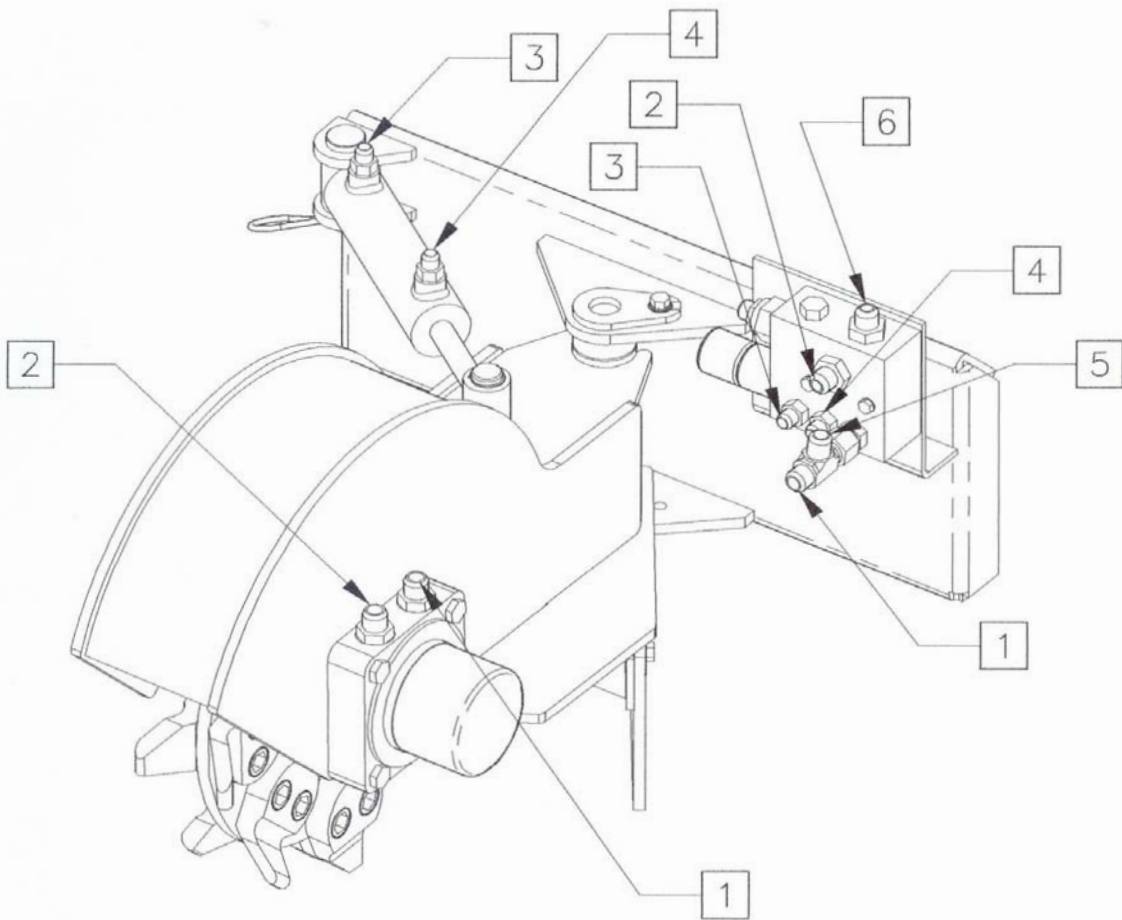
PARTS LIST—HYDRAULIC MANIFOLD ASSEMBLY



COMPONENT LIST			
ID	QTY	NAME	PART NO
1	1	ADAPTER, TEE	HF1013
2	2	ADAPTER	HF1012
3	1	ADAPTER, STR, #6 SAE ORM X #8 JIC 37 M	HF1011
4	1	MANIFOLD HOUSING, MACHINED	100281
5	2	ADAPTER, STR, #6 SAE ORM X #8 JIC 37 M	HF1011
6	1	FLOW CONTROL VALVE, ADJUSTABLE	100209
7	1	VALVE SPOOL, 4 WAY 3 POS	100116
8	2	COIL, SOLENOID	100117
9	1	NUT, VALVE STEM	100118
10	1	ADAPTER	HF1012

PARTS LIST

HOSE ROUTING		
ID	PART NO.	DESCRIPTION
1-1	HA1008	RETURN LINE – MOTOR TO VALVE (#8)
2-2	HA1008	SUPPLY LINE – VALVE TO MOTOR (#8)
3-3	HA1003	CYLINDER BASE TO VALVE (#6)
4-4	HA1004	CYLINDER ROD END TO VALVE (#6)
5-5	HA1006	RETURN LINE TO LOADER (#8)
6-6	HA1007	SUPPLY LINE FROM LOADER (#8)



NOTES: ALL HOSES SHOULD MEET SAE R17 RATING.
HOSE END FITTINGS MAY VARY AND EXACT HOSE
CONFIGURATIONS ARE NOT SHOWN IN THIS DIAGRAM.

PARTS LIST

REPAIR KITS	
PART NUMBER	DESCRIPTION
100057	SEAL KIT, MOTOR
100058	SEAL KIT, CYLINDER
100120	SEAL KIT, 3 WAY VALVE
100121	HANDLE KIT, FLOW CONTROL VALVE

MISC REPAIR PARTS (NOT SHOWN)	
PART NUMBER	DESCRIPTION
100123	ELECTRICAL HARNESS
100124	ROCKER SWITCH
100125	POWER ADAPTER (MALE—12V)
HF1018	QUICK DISCONNECT FITTING (FEMALE)
HF1019	QUICK DISCONNECT FITTING (MALE)

BOLT TORQUE CHART

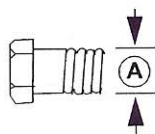
Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application.

Fasteners must always be replaced with the same grade as specified in the manual parts list.

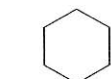
Always use the proper tool for tightening hardware: SAE for SAE hardware and Metric for metric hardware.

Make sure fastener threads are clean and you start thread engagement properly.

All torque values are given to specifications used on hardware defined by SAE J1701 & J1701M JUL96.



SAE SERIES TORQUE CHART



SAE Grade 2
(No Dashes)

SAE Bolt Head
Identification

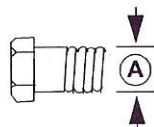


SAE Grade 5
(3 Radial Dashes)



SAE Grade 8
(6 Radial Dashes)

A Diameter (Inches)	Wrench Size	MARKING ON HEAD					
		SAE 2		SAE 5		SAE 8	
		Lbs.-Ft.	N-m	Lbs.-Ft.	N-m	Lbs.-Ft.	N-m
1/4"	7/16"	6	8	10	13	14	18
5/16"	1/2"	12	17	19	26	27	37
3/8"	9/16"	23	31	35	47	49	67
7/16"	5/8"	36	48	55	75	78	106
1/2"	3/4"	55	75	85	115	120	163
9/16"	13/16"	78	106	121	164	171	232
5/8"	15/16"	110	149	170	230	240	325
3/4"	1-1/8"	192	261	297	403	420	569
7/8"	1-5/16"	306	416	474	642	669	907
1"	1-1/2"	467	634	722	979	1020	1383



METRIC SERIES TORQUE CHART



8.8
Metric
Grade 8.8

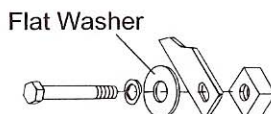
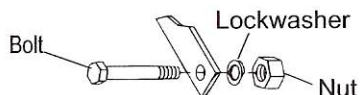
Metric Bolt Head
Identification



10.9
Metric
Grade 10.9

A Diameter & Thread Pitch (Millimeters)	Wrench Size	COARSE THREAD				FINE THREAD				A Diameter & Thread Pitch (Millimeters)
		MARKING ON HEAD								
		Metric 8.8		Metric 10.9		Metric 8.8		Metric 10.9		
		N-m	Lbs.-Ft.	N-m	Lbs.-Ft.	N-m	Lbs.-Ft.	N-m	Lbs.-Ft.	
6 x 1.0	10 mm	8	6	11	8	8	6	11	8	6 x 1.0
8 x 1.25	13 mm	20	15	27	20	21	16	29	22	8 x 1.0
10 x 1.5	16 mm	39	29	54	40	41	30	57	42	10 x 1.25
12 x 1.75	18 mm	68	50	94	70	75	55	103	76	12 x 1.25
14 x 2.0	21 mm	109	80	151	111	118	87	163	120	14 x 1.5
16 x 2.0	24 mm	169	125	234	173	181	133	250	184	16 x 1.5
18 x 2.5	27 mm	234	172	323	239	263	194	363	268	18 x 1.5
20 x 2.5	30 mm	330	244	457	337	367	270	507	374	20 x 1.5
22 x 2.5	34 mm	451	332	623	460	495	365	684	505	22 x 1.5
24 x 3.0	36 mm	571	421	790	583	623	459	861	635	24 x 2.0
30 x 3.0	46 mm	1175	867	1626	1199	1258	928	1740	1283	30 x 2.0

Typical Washer Installations



8/9/00

WARRANTY

Please enter the following information below and save for future reference:

Date Purchased: _____ From (Dealer): _____
Model Number: _____ Serial Number: _____

Terra Power Attachments Incorporated ("TERRA POWER ATTACHMENTS"), warrants this product to be free from defect in material and workmanship. Except as otherwise set forth below, the duration of this Warranty shall be for TWELVE (12) MONTHS COMMENCING ON THE DATE OF DELIVERY OF THE PRODUCT TO THE ORIGINAL PURCHASER.

Under no circumstances will this Warranty apply in the event that the product, in the good faith opinion of TERRA POWER ATTACHMENTS, has been subjected to improper operation, improper maintenance, misuse, or an accident. This Warranty does not apply in the event that the product has been materially modified or repaired by someone other than TERRA POWER ATTACHMENTS, a TERRA POWER ATTACHMENTS authorized dealer or distributor, and/or a TERRA POWER ATTACHMENTS authorized service center. This Warranty does not cover normal wear or tear, or normal maintenance items. This Warranty also does not cover repairs made with parts other than those obtainable through TERRA POWER ATTACHMENTS.

This Warranty is extended solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this Warranty does not transfer to the third party purchaser in any way. There are no third party beneficiaries of this Warranty.

TERRA POWER ATTACHMENTS makes no warranty, express or implied, with respect to engines, batteries, tires or other parts or accessories not manufactured by TERRA POWER ATTACHMENTS. Warranties for these items, if any, are provided separately by their respective manufacturers.

TERRA POWER ATTACHMENTS' obligation under this Warranty is limited to, at TERRA POWER ATTACHMENTS' option, the repair or replacement, free of charge, of the product if TERRA POWER ATTACHMENTS, in its sole discretion, deems it to be defective or in noncompliance with this Warranty. **Authorization must be granted by TERRA POWER ATTACHMENTS in order to arrange the return or repair of product by obtaining a return goods authorization number ("RGA number").** After authorization and receipt of the component(s), TERRA POWER ATTACHMENTS shall examine the component(s) in question (or authorize repair at its discretion), determine warranty eligibility, and complete such repair or replacement within a reasonable time after TERRA POWER ATTACHMENTS receives the product. THERE ARE NO OTHER REMEDIES UNDER THIS WARRANTY. THE REMEDY OF REPAIR OR REPLACEMENT IS THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS WARRANTY. TERRA POWER ATTACHMENTS MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND TERRA POWER ATTACHMENTS SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY AND/OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

TERRA POWER ATTACHMENTS shall not be liable for any incidental or consequential losses, damages or expenses, arising directly or indirectly from the product, whether such claim is based upon breach of contract, breach of warranty, negligence, strict liability in tort or any other legal theory. Without limiting the generality of the foregoing, Terra Power Attachments specifically disclaims any damages relating to (i) lost profits, business, revenues or goodwill (ii) any expense or loss incurred for labor, supplies, substitute machinery or rental; or (iii) any other type of damage to property or economic loss.

This Warranty is subject to any existing conditions of supply which may directly affect TERRA POWER ATTACHMENTS' ability to obtain materials or manufacture replacement parts.

No agent, representative, dealer, distributor, serviceperson, salesperson, or employee of any company, including without limitation, TERRA POWER ATTACHMENTS, its authorized dealers, distributors, and service centers, is authorized to alter, modify, or enlarge this Warranty.

Answers to any questions regarding warranty service and locations may be obtained by contacting:

TERRA Power Attachments, Inc.
6680 E. Ridgeway Drive
Mooresville, IN 46158
PH: 317-509-4085

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