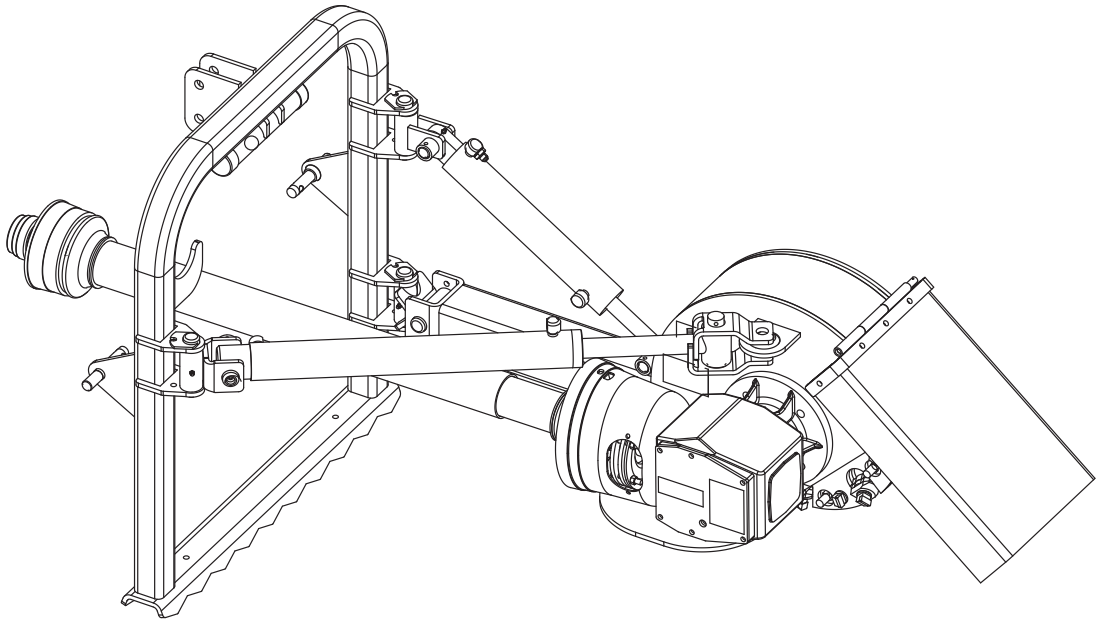
WOODS®

STUMP GRINDER
TSG50



OPERATOR'S MANUAL

MAN0495
(Rev 06/20/2023)

TO THE DEALER:

Assembly and proper installation of this product is the responsibility of the Woods® dealer. Read manual instructions and safety rules. Make sure all items on the Dealer's Pre-Delivery and Delivery Checklists in the Operator's Manual are completed before releasing equipment to the owner.

The dealer must complete the online Product Registration form at the Woods Dealer Website which certifies that all Dealer Checklist items have been completed. Dealers can register all Woods product at dealer.WoodsEquipment.com under Product Registration.

Failure to register the product does not diminish customer's warranty rights.

TO THE OWNER:

Read this manual before operating your Woods 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 adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your dealer. To obtain complete warranty details, visit WoodsEquipment.com/warranty. You may also request a hard copy by calling 1-800-319-6637 or mail your request to: Woods Equipment Company, Attn: Warranty Dept. 2606 South Illinois Route 2, Oregon, IL 61061. To locate your nearest dealer, check the Dealer Locator at www.WoodsEquipment.com, or in the United States and Canada call 1-800-319-6637.

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. Lubricate the unit as specified. Observe all safety information in this manual and safety decals on the equipment.

For service, your authorized Woods dealer has trained mechanics, genuine Woods service parts, and the necessary tools and equipment to handle all your needs.

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

Model: _____ **Date of Purchase:** _____

Serial Number: (see Safety Decal section for location) _____

Provide this information to your dealer to obtain correct repair parts.

Throughout this manual, the term **NOTICE** 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 is the safety alert symbol. It is used to alert you to potential physical injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

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

WARNING Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

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

IMPORTANT or *NOTICE* Is used to address practices not related to physical injury.

NOTE Indicates helpful information.

TABLE OF CONTENTS

¡LEA EL INSTRUCTIVO!

Si no lee Ingles, pida ayuda a alguien que si lo lee para que le traduzca las medidas de seguridad.

This Operator's Manual should be regarded as part of the machine. Suppliers of both new and second-hand machines must make sure that this manual is provided with the machine.

TSG50 SPECIFICATIONS

3-Point hitch	Category 1 or Category 2
Weight	540 lbs
Cutting wheel diameter	20 inches
Speed of wheel	1037 rpm
Cutting speed	5428 ft/min
Required horsepower	15 to 50 HP
Cutting teeth	24 carbide steel teeth
Maximum stump height	16 inches
Maximum cutting depth	16 inches
Horizontal cut	32 inches
Hub torque	
15 HP	76 lbs-ft
50 HP	253 lbs-ft
Force @ tooth tip	
15 HP	91 lbs
50 HP	304 lbs

GENERAL INFORMATION

The purpose of this manual is to assist you in operating and maintaining your 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.

⚠ WARNING

- **Some illustrations in this manual show the grinder with safety shields removed to provide a better view. The equipment should never be operated with any safety shielding removed.**

The illustrations and data used in this manual were current at the time of printing. However, due to possible inline production changes, your machine may vary slightly in detail. We reserve the right to redesign and change the machines as may be necessary without notification.

Throughout this manual, references are made to right and left directions. These are determined from the operator's position in the tractor seat.

SAFETY RULES

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out 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, judgement, and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said "The best safety device is an informed, careful operator." We ask you to be that kind of operator.

TRAINING

- **Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals and safety decals are available from your dealer. To locate your nearest dealer, check the Dealer Locator at www.WoodsEquipment.com, or in the United States and Canada call 1-800-319-6637.) 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.

PREPARATION

- **Check that all hardware is properly installed. Always tighten to torque chart specifications unless instructed otherwise in this manual.**
- **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; and respirator or filter mask where appropriate.**
- **Make sure attachment is properly secured, adjusted, and in good operating condition.**
- **Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS systems in "locked up" position at all times.**
- **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.**

OPERATION

- **Do not allow bystanders within 25 feet of the area when operating, attaching, removing, assembling, maintaining, or servicing equipment.**
- **Consult local utilities before working. Know location of all underground cables, pipelines, overhead wires, and other hazards in working area and avoid contact.**
- **Do not put stump grinder into service unless all shields and guards are in place and in good condition. Replace if damaged.**
- **Keep bystanders at least 100 feet away from equipment.**
- **Do not operate or transport equipment while under the influence of alcohol or drugs.**
- **Operate only in daylight or good artificial light.**
- **Avoid contact with electrical wires.**
- **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.**
- **Never allow riders on power unit or attachment.**

SAFETY RULES

⚠ ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! ⚠

- **Power unit must be equipped with Roll Over Protection System (ROPS) or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS system in "locked up" position at all times.**
- **Always sit in power unit seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting power unit engine.**
- **Shift tractor transmission into park or neutral and set brakes before engaging PTO and grinding.**
- **Do not operate PTO during transport.**
- **Connect PTO driveline directly to power unit PTO shaft. Never use adapter sleeves or adapter shafts. Adapters can cause driveline failures due to incorrect spline or incorrect operating length and can result in personal injury or death.**
- **Do not operate auxiliary hydraulics during transport.**
- **Look down and to the rear and make sure area is clear before traveling in reverse.**
- **Use extreme care when working close to fences, ditches, other obstructions, or on hillsides.**
- **Do not operate or transport 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.**

MAINTENANCE

- **Service and maintenance work not covered in OWNER SERVICE must be done by a qualified dealership. Special skills, tools, and safety procedures may be required. Failure to follow these instructions can result in serious injury or death.**
- **Before performing any service or maintenance, disconnect driveline from tractor PTO.**
- **Do not modify or alter or permit anyone else to modify or alter the equipment or any of its components in any way.**
- **Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.**
- **Do not allow bystanders within 25 feet of the area when operating, attaching, removing, assembling, maintaining, or servicing equipment.**
- **Make sure attachment is properly secured, adjusted, and in good operating condition.**
- **Never perform cleaning, service or maintenance with engine running.**
- **Keep all persons away from operator control area while performing adjustments, service, or maintenance.**
- **Tighten all bolts, nuts, and screws to torque chart specifications. Check that all cotter pins are installed securely to ensure equipment is in a safe condition before putting unit into service.**
- **Make sure shields and guards are properly installed and in good condition. Replace if damaged.**
- **When lubricating telescoping PTO drives, keep fingers out of shield access slots to prevent injury.**

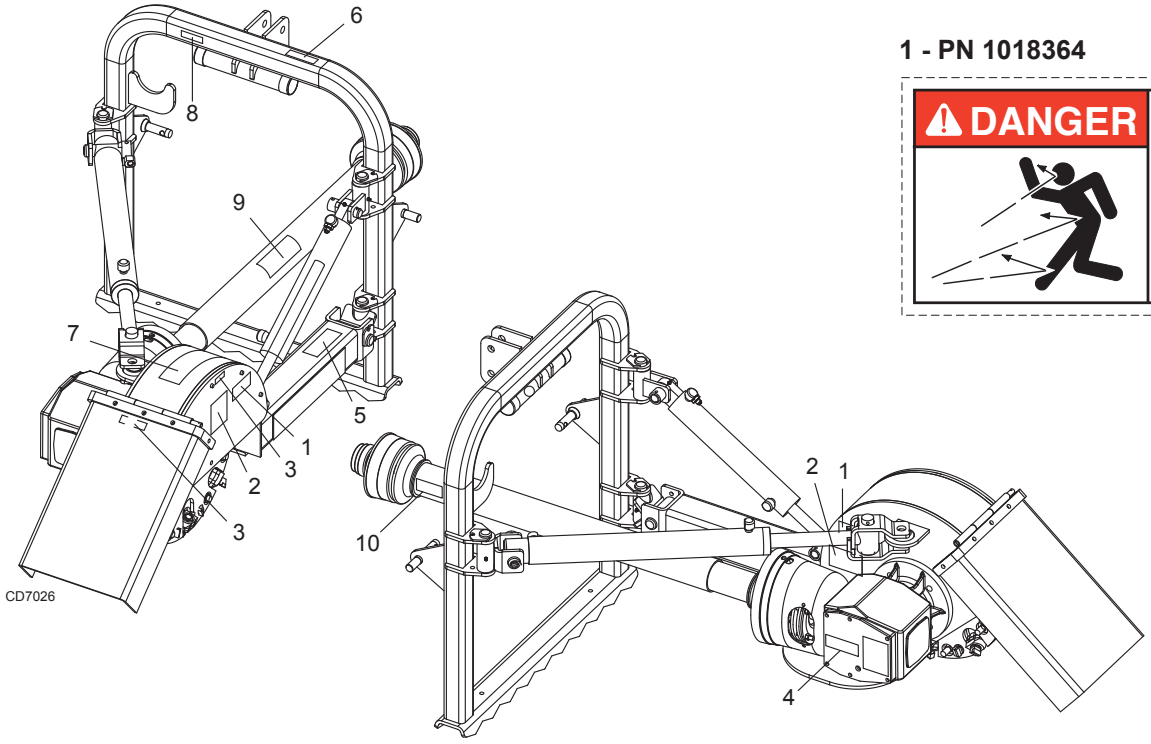
STORAGE

- **Do not climb or lean on equipment stored on stand.**
- **Keep children, bystanders and animals away from equipment and storage area.**

SAFETY & INSTRUCTIONAL DECALS

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

Replace Immediately If Damaged!



1 - PN 1018364

2 - PN 1018365

3 - PN 18869

4 - PN 1004114

BE CAREFUL!

Keep safety decals clean and visible.

Use a clean, damp cloth to clean safety decals.

Avoid spraying too close to decals when using a pressure washer; high-pressure water can enter through very small scratches or under edges of decals causing them to peel or come off.

Replace safety decals if they are missing or illegible.

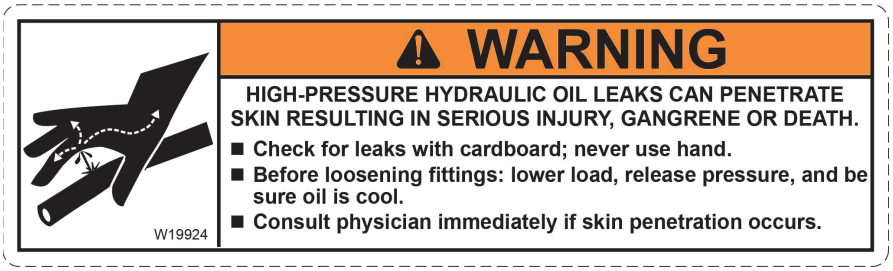
Replacement safety decals can be ordered free from your Woods dealer. To locate your nearest dealer, check the Dealer Locator at www.WoodsEquipment.com, or in the United States and Canada call 1-800-319-6637.

SAFETY & INSTRUCTIONAL DECALS

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

Replace Immediately If Damaged!

5 - PN W19924



6 - PN 18866

3 - Serial Number Plate

9 - PN 18864

10 - PN 33347

7 - PN 1021070

OPERATION

The operator is responsible for the safe operation of the grinder. The operator must be properly trained. Operators should be familiar with the grinder, the tractor, and all safety practices before starting operation. Read the Safety Rules and Safety Decals on page 5 through page 8.

⚠ WARNING

- **Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.**
- **Keep bystanders at least 100 feet away from equipment.**

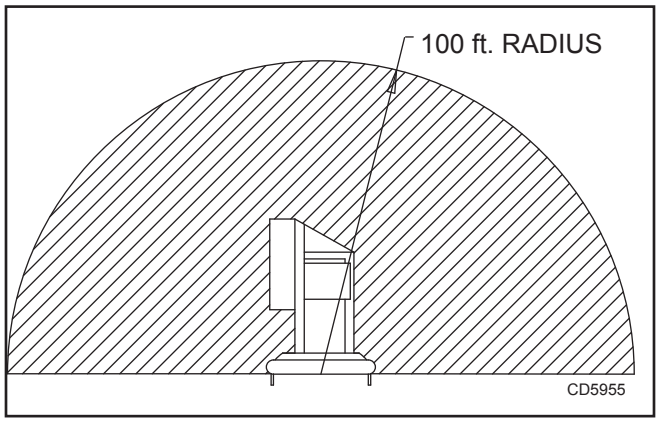


Figure 1. 100 ft. Hazard Zone

- **Do not put stump grinder into service unless all shields and guards are in place and in good condition. Replace if damaged.**
- **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.

- **Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.**
- **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.**
- **Never allow children or untrained persons to operate equipment.**
- **Make sure attachment is properly secured, adjusted, and in good operating condition.**

⚠ CAUTION

- **Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.**

STUMP GRINDER PREPARATION

NOTE: For operation of this stump grinder, references to right, left, forward, and rearward directions are determined from the operator's position in the tractor seat.

NOTICE

- **Gearbox comes filled with oil. Check oil level before operating.**

Instructions for checking gearbox oil level can be found on page 12 in gearbox lubrication section.

ATTACH STUMP GRINDER TO TRACTOR

NOTICE

- **Lift cylinder must be completely raised to avoid driveline damage before raising 3-point lower lift arms.**

1. Attach tractor 3-point lower lift arm to stump grinder hitch pins and secure.
2. Attach tractor top link to stump grinder clevis and secure with tractor top link pin.
3. Connect driveline to tractor PTO shaft.
4. Slide lock collar back (Figure 2) or push lock pin in to make connection.

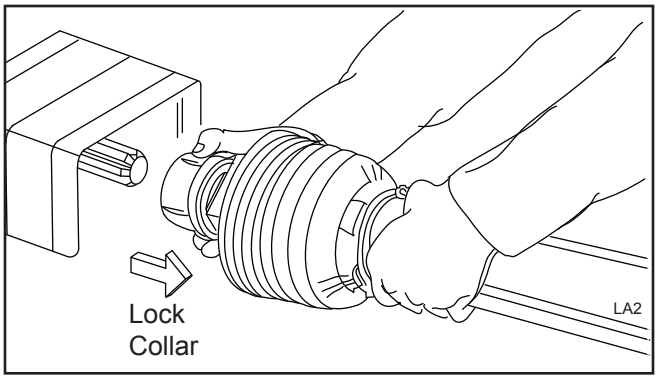


Figure 2. Lock Collar Connection

5. Make sure connection is secure. Lock collar or lock pin should snap back into original position.
6. Adjust the tractor 3-point arm anti-sway devices to prevent stump grinder from swaying side-to-side during transport.
7. Adjust tractor drawbar so that it will not interfere with stump grinder or driveline.
8. Attach quick couplers to tractor hydraulic source.

TRACTOR STABILITY

⚠ WARNING

- **A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, front tractor wheels could raise up resulting in loss of steering. The weight may be attained with front wheel weights, ballast in tires, front tractor weights or front loader. Weigh the tractor and equipment. Do not estimate.**

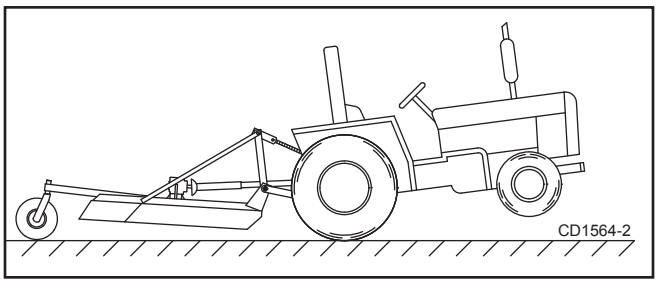


Figure 3. Tractor Stability

OPERATING TECHNIQUE

NOTICE

- **DO NOT ENGAGE PTO WITH STUMP GRINDER MAIN FRAME OFF THE GROUND. Always lower tractor 3-point arms until main frame crossbrace is on the ground and the cutting head is in the raised position. Adjust 3-point anti-sway links to prevent stump grinder from moving during operation.**

NOTICE

- **Make sure lift cylinder is completely retracted before backing up to a stump. If cylinder is extended, debris guard may get pushed into the cutting wheel and be destroyed.**

1. Power for operating the stump grinder is supplied by the tractor PTO. Know how to stop the tractor and stump grinder quickly in an emergency.
2. Position stump grinder above stump to be removed with the main frame crossbrace on the ground and the cutting wheel in the raised position.
3. Engage PTO at low engine rpm to minimize stress on the drive system and gearbox. With PTO engaged, increase PTO speed to 540 rpm and maintain throughout grinding operation.
4. Activate lift cylinder to lower the cutting wheel onto the stump to desired depth.

   NOTE: The amount of material removed may vary depending on tractor size and hardness of wood.
5. Start cutting wheel on left edge of stump and slowly activate swing cylinder to begin grinding. Cutting wheel can pivot 44-degrees from side to side.
6. With pass across stump completed, lower cutting wheel on the right edge of the stump and slowly activate the swing cylinder to the left. The cutting wheel has cutting teeth on both sides to perform the cut.

NOTE: If stump is too large to remove in one pass, reposition tractor and start operating procedures over.

NOTICE

- **Lift cylinder must be completely retracted to avoid driveline damage before raising 3-point lift arms.**
- **Always raise cutting head to avoid pushing the debris guard into the cutting wheel during repositioning.**

When finished grinding stump, disengage PTO, raise lift cylinder, and raise stump grinder main frame off the ground with the 3-point lower lift arms.

STUMP GRINDER STORAGE

1. Lower stump grinder with 3-point lower lift arms until main frame crossbrace is on the ground. Activate lift cylinder and lower cutting head to the ground.
2. Disconnect driveline from tractor and place in storage bracket.

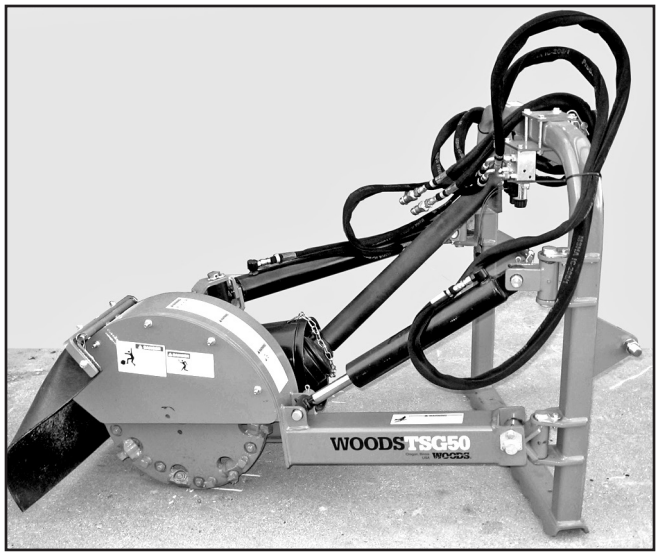


Figure 4. Stump Grinder in Storage Position

CLEANING

After Each Use

- **Remove large debris such as clumps of dirt, grass, crop residue, etc. from machine.**
- **Inspect machine and replace worn or damaged parts.**
- **Replace any safety decals that are missing or not readable.**

Periodically or Before Extended Storage

- **Clean large debris such as clumps of dirt, grass, crop residue, etc. from machine.**
- **Remove the remainder using a low-pressure water spray.**

1. Be careful when spraying near scratched or torn safety decals or near edges of decals as water spray can peel decal off surface.
2. Be careful when spraying near chipped or scratched paint as water spray can lift paint.
3. If a pressure washer is used, follow the advice of the pressure washer manufacturer.

- **Inspect machine and replace worn or damaged parts.**
- **Sand down scratches and the edges of areas of missing paint and coat with Woods spray paint of matching color (purchase from your Woods dealer).**
- **Replace any safety decals that are missing or not readable (supplied free by your Woods dealer). See Safety Decals section for location drawing.**

PRE-OPERATION CHECKLIST

(OWNER'S RESPONSIBILITY)

_____ Review and follow all safety rules and safety decal instructions on page 5 through page 8.

_____ Check that all safety decals are installed and in good condition. Replace if damaged.

_____ Check that all shields and guards are properly installed and in good condition. Replace if dam aged.

_____ Check all lubrication points and grease as instructed in "Lubrication Information" on page 12. **NOTE:** For operation of this stump grinder, references to right, left, forward, and rearward directions are determined from the operator's position in the tractor seat.

_____ Check that all hardware is properly installed and secured.

_____ Check that equipment is properly and securely attached to tractor.

_____ Inspect area and remove stones, branches or other hard objects that might be thrown, causing injury or damage.

_____ Make sure driveline spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove and in gearbox spline groove.

_____ Check condition of stump grinder teeth before operation. Check for dull or chipped teeth. Make sure jam nuts are torqued to 170 lbs-ft.

OWNER SERVICE

The information in this section is written for operators who possess basic mechanical skills. If you need help, your dealer has trained service technicians available. For your protection, read and follow the safety information in this manual.

⚠ WARNING

- **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.
- **Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.**
- **Before performing any service or maintenance, lower equipment to ground or block securely, turn off engine, remove key, and disconnect driveline from tractor PTO.**
- **Never perform service or maintenance with engine running.**
- **Keep all persons away from operator control area while performing adjustments, service, or maintenance.**

⚠ CAUTION

- **If you do not understand any part of this manual and need assistance, see your dealer.**

LUBRICATION INFORMATION

1. Do not let excess grease collect on or around parts, particularly when operating in sandy areas.
2. Use a lithium grease of #2 consistency with a MOLY (molybdenum disulfide) additive for all locations unless otherwise noted.

   NOTE: Be sure to clean fittings thoroughly before attaching grease gun. One good pump of most guns is sufficient when the lubrication schedule is followed.
3. Grease stump grinder pivot points every 8 hours.

Gearbox Lubrication

For gearbox, use a high quality gear oil with a viscosity index of 80W or 90W and an API service rating of GL–4 or GL–5.

Fill gearbox until the oil runs out the side plug on gearbox. Check gearbox daily for evidence of leakage, and contact your dealer if leakage occurs.

Driveline Lubrication

1. Lubricate the driveline slip joint every eight operating hours. Failure to maintain proper lubrication could result in damage to the U-joints, gearbox, and driveline. See Figure 5.
2. Lower stump grinder to ground, disconnect driveline from tractor PTO shaft, and slide halves apart but do not disconnect from each other.
3. Apply a bead of grease completely around male half where it meets female half. Slide drive halves over each other several times to distribute grease.

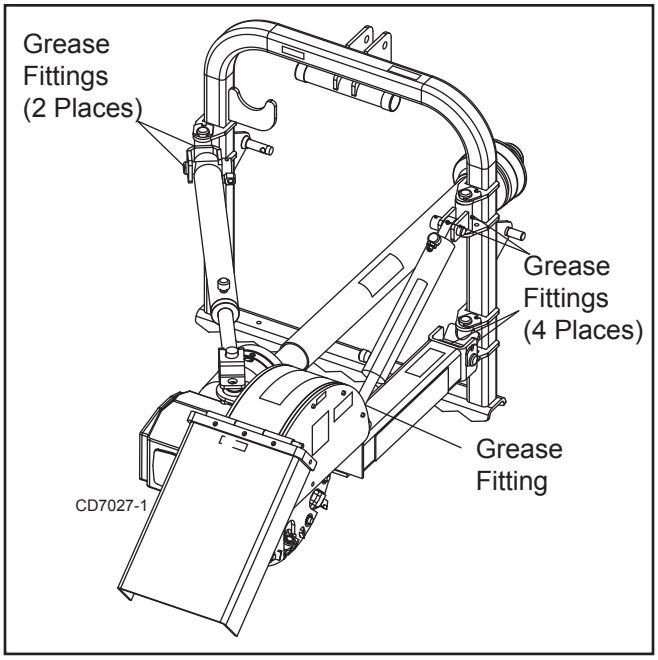


Figure 5. Lubrication Points

STUMP GRINDER TOOTH REPLACEMENT

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

NOTICE

- **Never operate the stump grinder with missing teeth.**

1. Use a 15/16 socket wrench and remove the 5/8" jam nuts as shown in Figure 6.
2. Remove hex nut from tooth and remove tooth.
3. When installing new teeth, torque the 5/8" jam nuts to 170 lbs-ft (230 N-m).

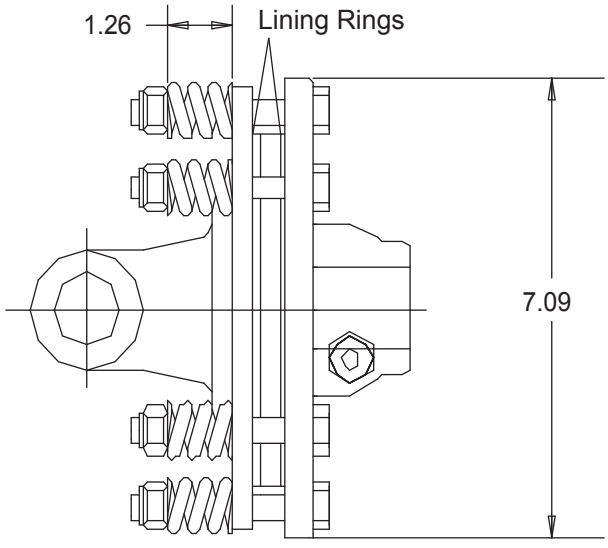
Figure 6. Tooth Installed

SLIP CLUTCH ADJUSTMENT

The slip clutch is designed to slip so that the gearbox and driveline are protected if the cutter strikes an obstruction.

A new slip clutch or one that has been in storage over the winter may seize. Before operating the grinder, make sure it will slip by performing the following operation:

1. Turn off tractor engine and remove key.
2. Loosen eight 10 mm cap screws (6) to remove all tension from pressure plate (5). Springs should rotate freely.
3. Place a mark on edge of lining rings (3).
4. Hold flanged hub (4) solid and rotate driveline to make sure clutch slips. Check marks on edge of lining rings to see if they have moved.
5. If clutch does not slip freely, disassemble and clean surface of flanged hub (4), flange yoke (1), and pressure plate (5).
6. Reassemble clutch.
7. Tighten springs (7) until they are compressed to the 1.26 inches shown in Figure 7.
8. If a clutch continues to slip when the springs are compressed to the 1.26 inch dimension, check lining rings (3) for excessive wear. Rings are 1/8" when new. Replace rings after 1/32" wear to ensure proper operation.



1. Flange yoke
2. Bushing
3. Lining ring
4. Flanged hub
5. Pressure plate
6. Bolt and nut M10 x 80
7. Spring

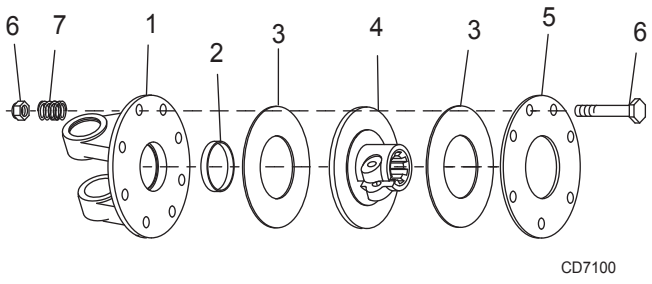


Figure 7. Slip Clutch Assembly

DEALER SERVICE

The information in this section is written for dealer service personnel. The repair described here requires special skills and tools. If your shop is not properly equipped or your mechanics are not properly trained in this type of repair, you may be time and money ahead to replace complete assemblies.

⚠ WARNING

- **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 perform service or maintenance with engine running.**
- **Keep all persons away from operator control area while performing adjustments, service, or maintenance.**
- **Check that all hardware is properly installed. Always tighten to torque chart specifications unless instructed otherwise in this manual.**

⚠ CAUTION

- **Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.**

GEARBOX MAINTENANCE

NOTE: Read this entire section before starting any repair. Many steps are dependent on each other.

NOTE: Repair to this gearbox is limited to replacing bearings, seals, and gaskets. Replacing gears, shafts, and a housing is not cost effective. Purchasing a complete gearbox is more economical.

Inspect gearbox for leakage and bad bearings. Leakage is a very serious problem and must be corrected immediately.

Bearing failure is indicated by excessive noise and side-to-side or end-play in gear shafts.

Cutting Wheel Removal

1. Position stump grinder on a hard level surface with main frame crossbrace firmly on the ground.
2. Remove hardware and side shield from the right side of the cutter frame.
3. Remove cotter pin and slotted hex nut from end of horizontal gearbox shaft and remove wheel and hub (Figure 10).

   NOTE: You will need to use a heavy-duty puller to remove cutting wheel and hub from gearbox shaft.

Cutting Wheel Installation

Slide cutting wheel onto gearbox shaft. Install washer and nut. Torque nut to 200 ft-lbs. Replace cotter pin. Replace side shield.

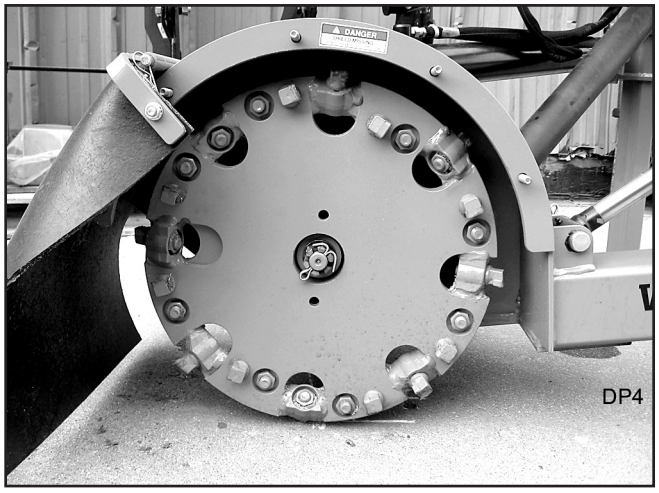


Figure 10. Cutting Wheel and Hardware

Gearbox Removal

1. Disconnect and remove the driveline from the tractor.
2. Disconnect and remove the driveline from the gearbox.
3. Remove the four bolts that attach gearbox to stump grinder and remove gearbox.

Seal Replacement

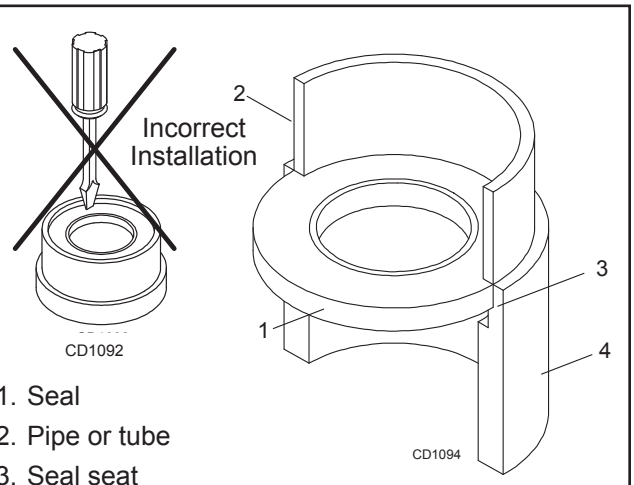
Recommended sealant for gearbox repair is Permatex® Aviation 3D Form-A-Gasket or equivalent.

Leakage can occur at the input or output gaskets and shaft seals.

Seal Installation

NOTE: Proper seal installation is important. An improperly installed seal will leak.

1. Clean area in housing where seal outer diameter (OD) seats. Apply a thin coat of Permatex.
2. Inspect area of shaft where seal seats. Remove any burrs or nicks with an emery cloth.
3. Lubricate gear shaft and seal lips.
4. Place seal squarely on housing, spring-loaded lip toward housing. Select a piece of pipe or tubing with an OD that will sit on the outside edge of the seal but will clear the housing. Tubing with an OD that is too small will bow seal cage and ruin seal. See Figure 22.
5. Carefully press seal into housing, avoiding distortion to the metal seal cage.



1. Seal
2. Pipe or tube
3. Seal seat
4. Casting

Pipe or tube must press at outer edge of seal

Figure 11. Seal Installation

Output Shaft Seal Repair

Refer to Figure 12.

1. Remove vent plug (9) and siphon gear lube from housing through this opening.
2. Remove output shaft seal (16). Replace with new seal (see Seal Installation, page 15).

   Output seal should be recessed in housing. Input seal should be pressed flush with outside of housing.

   NOTE: Distortion to seal cage or damage to seal lip will cause seal to leak.
3. Remove and replace any seal damaged in installation.
4. Fill gearbox with SAE 80W or 90W gear lube. Fill instructions can be found on page 12 in gearbox lubrication section.

Input Shaft Seal Repair

Refer to Figure 12.

1. Remove vent plug (9) and siphon gear lube from housing through this opening.
2. If the leak occurred at input shaft, remove oil seal (4). Replace with new one (refer to Seal Installation, page 15).
3. Fill gearbox with SAE 80W or 90W gear lube. Fill instructions can be found on page 12 in gearbox lubrication section.

GEARBOX REPAIR

Refer to Figure 12.

NOTE: Repair to this gearbox is limited to replacing bearings, seals, and gaskets. Replacing gears, shafts, and a housing is not cost effective. Purchasing a complete gearbox is more economical.

Gearbox Removal

Follow instructions page 14 to remove cutting wheel and gearbox.

Disassemble Gearbox

1. Remove plug from side of gearbox and pour out remaining gear oil.
2. Support housing in vise in a vertical position.
3. Remove input seal (4) (to be replaced).
4. Remove retaining rings (6) and (8).
5. Remove the six cap screws (24), washers (23) and top cover (2) from housing.
6. Remove retaining ring (6) behind gear (3).
7. Support gearbox in hand press and pull input shaft (5) through gear (3). Remove ball bearing (21).
8. Remove ball bearing (20) and gear spacer (7) from input shaft (5).
9. Support housing in vise in a horizontal position.
10. With the hub cutting wheel, castle nut, cotter pin, wire and washer already removed, remove the four cap screws (13), lock washers (12) and output cap (17).
11. Remove output gaskets (11) and (10).
12. Push output shaft and pinion (19) down and remove ball bearing (20), output bearing spacer (18), and retaining ring (6). Remove output shaft and pinion (19).

13. Inspect gears for broken teeth and wear. Some wear is normal and will show on loaded side. Forged gear surfaces are rough when new. Check that wear pattern is smooth.
14. Inspect vertical and horizontal shafts for grooves, nicks, or bumps in the areas where the seals seat. Resurface any damage with emery cloth.
15. Inspect housing and caps for cracks or other damage.

SEAL REPAIR

Refer to Figure 12.

Vertical Shaft Seal Repair

1. Disconnect and remove the driveline from the gearbox.
2. Remove vent plug (9) and siphon gear lube from housing through this opening.
3. Remove cutting wheel (see Cutting Wheel Removal, page 14).
4. Remove output cap (17) and output seal (16) by removing four cap screws (13) and washers (12). Replace with new seal (see Seal Installation, page 15).

   Vertical seal should be recessed in output cap.

   NOTE: Distortion to seal cage or damage to seal lip will cause seal to leak.
5. Secure output cap (17) on to bottom of gearbox using four cap screws (13) and lock washers (12).

   NOTE: Make sure output gasket (10) and (11) are in place.
6. Fill gearbox with SAE 80W or 90W gear lube until it runs out the side level plug.
7. Remove and replace any seal damaged in installation.

Horizontal Seal Leak Repair

1. Disconnect and remove the driveline from the gearbox.
2. Remove vent plug (9) and siphon gear lube from housing through this opening.
3. Remove input seal (4). Replace with new one (refer to Seal Installation, page 15).

Fill gearbox with SAE 80W or 90W gear lube until it runs out the side level plug.

Reassemble Gearbox

Refer to Figure 12.

1. Clean housing, paying specific attention to areas where gaskets will be installed.
2. Wash housing and all components thoroughly. Select a clean area for gearbox assembly. Replace all seals, bearings, and gaskets. All parts must be clean and lightly oiled before reassembling.
3. Insert upper output bearing cups (20) in the housing and press using a round tube with the correct diameter.
4. Slide shims (25) over output shaft (16). Use the same thickness as removed as a starting point.
5. Push bearing cone (20) onto output shaft (16). Shims maybe required between cone (20) and retaining ring (6) to eliminate any space.

   NOTE: Make sure there is no endplay or gaps in this assembly.
6. Insert output bearing spacer (18) and bearing cone (20) over output shaft until seats against upper bearing (20). Press lower bearing cup into position as shown.
7. Secure output cap (17) with new output seal (16) installed to bottom of gearbox housing using the four 10mm x 1.5 x 25 cap screws (13) and lock washers (12). Use shim gaskets (10) and (11) to adjust output bearings to a rolling torque of 9 to 12 In-lbs.

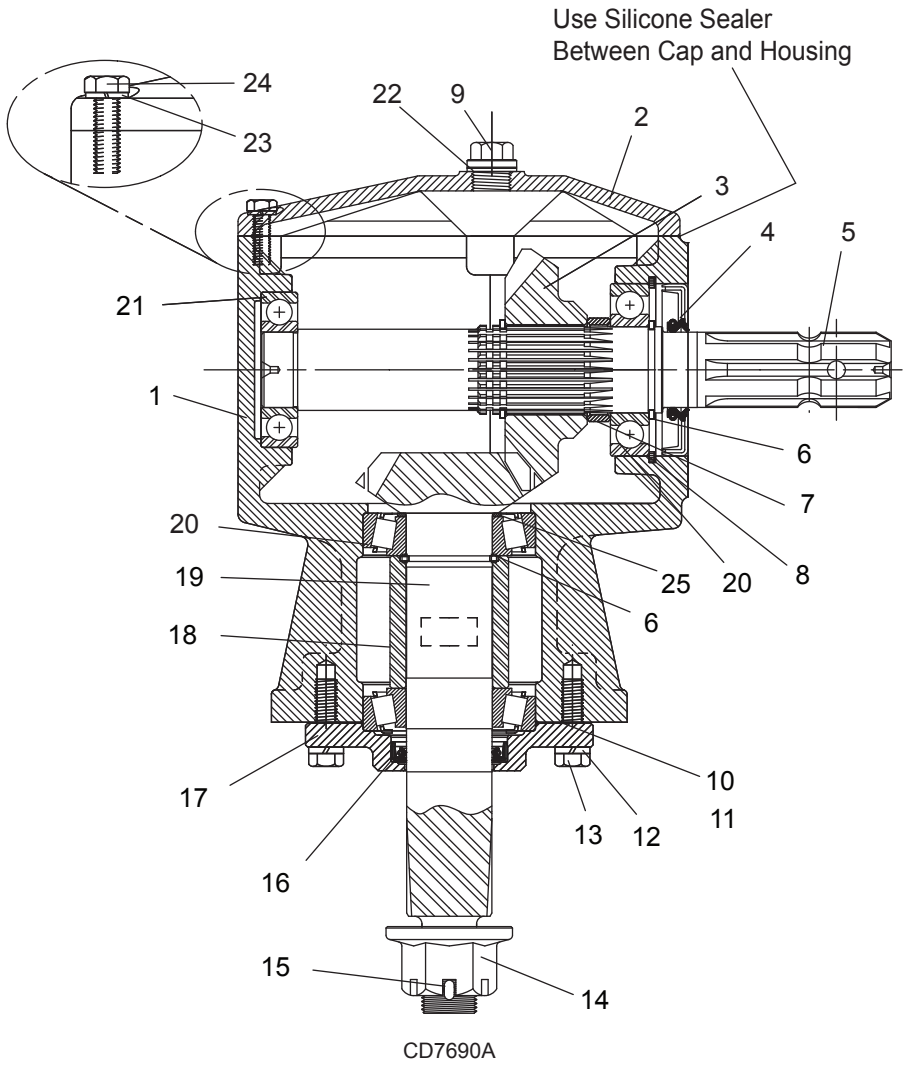
   NOTE: Be sure output gaskets (10 and 11) are in place. Apply grease to output seal (16) lip for easy installation.
8. Place ball bearing (21) at back of housing and press in socket using a round tube of the correct diameter and a hand press until fully seated.
9. Insert input shaft (5) part way through housing and slide gear (3) and retaining ring (6) over input shaft (5). Keep gear (3) and retaining ring (6) loose.
10. Insert input shaft (5) into roller bearing (21) until seated against each other.
11. Slide gear (3) forward and attach retaining ring (6) in groove closest to front of input shaft (5). Slide gear (3) back against retaining ring (6).
12. Check that the gear backlash is between 0.006" and 0.016". You should not have to adjust the backlash.
13. Slide gear spacer (7) and ball bearing (20) on input shaft (5) and secure with retaining rings (6) and (8).
14. Slide input seal (4) onto input shaft (5) and press into housing flush with front using a tube of correct diameter. Be careful not to damage seal lip.
15. Check gearbox housing for leaks by plugging all holes except one. Apply 4 psi compressed air and immerse the gearbox in water to verify that there are no leaks.

Remove gearbox from water and dry off with compressed air. Add SAE 80W or 90W EP oil until it runs out of side level hole. Tighten all plugs.

Gearbox Installation

Gearbox is heavy; do not attempt to move without mechanical assistance.

Attach gearbox to stump grinder with bolts and nuts previously removed. Torque bolts to 170 lbs-ft.



1. Housing
2. Inspection cover
3. 22 Tooth gear
4. Input seal
5. Input shaft
6. Retaining ring
7. Gear spacer
8. Retaining ring
9. Vent Plug and Washer
10. Output gasket (0.30)
11. Output gasket (0.13)
12. Lock washer
13. M10 x 1.5 x 25 Cap screw
14. 1” - 14 Slotted flange nut
15. Cotter pin
16. Output seal
17. Output cap
18. Output bearing spacer
19. Output shaft & pinion
20. Ball bearing
21. Ball bearing
22. Sealing washer
23. M8 Lock washer
24. M8 x 1.5 x 25 Cap screw
25. Shim Kit

Figure 12. Gearbox Assembly

CYLINDER SERVICE

The cylinders are designed to be reliable and easy to service. If a cylinder should malfunction during the warranty period, return the complete cylinder assembly, without disassembling, to your authorized service department or contact your authorized service department for instructions. Unauthorized disassembly of a cylinder in the warranty period will VOID WARRANTY.

NOTE: Repair to cylinders is limited to replacing seals, wear rings, and O-rings. Replacing rod, barrel, or pistons is not cost effective. Purchasing a complete cylinder is more economical.

The lift cylinder on the stump grinder was assembled with either a spanner nut assembly or threaded rod guide assembly. See Figure 13 and Figure 14 to determine the style of cylinder on your loader. Spanner nut cylinders can also be identified by the letter “J” included in the stamping located at the base end port. Follow repair procedures for each style of cylinder.

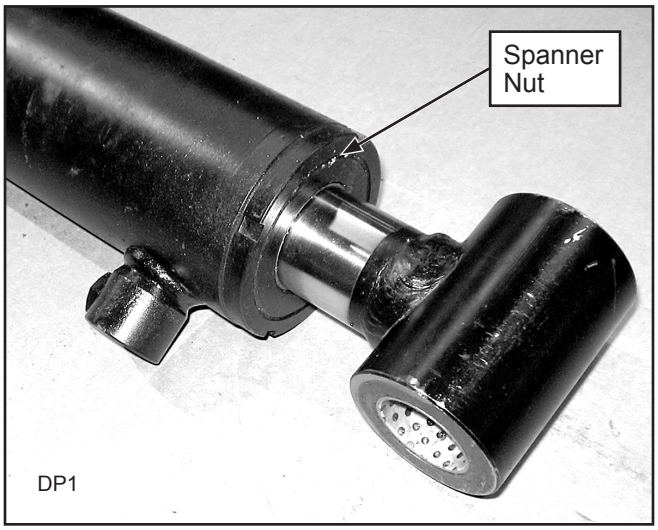


Figure 13. Spanner Nut Cylinder

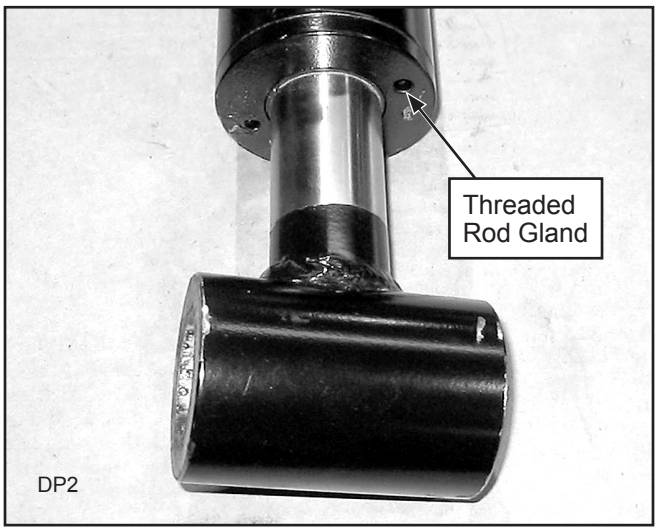


Figure 14. Threaded Rod Gland Cylinder

LIFT CYLINDER REPAIR

Spanner Nut Cylinders

Disassemble

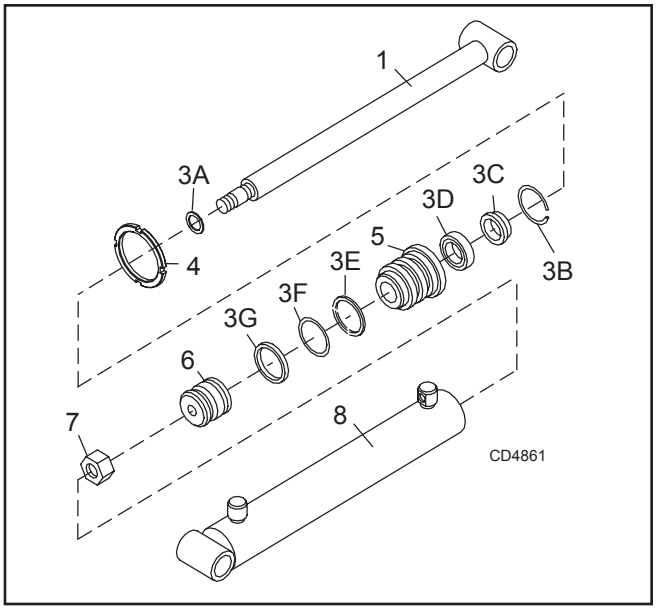


Figure 15. Spanner Nut Cylinder Assembly

On spanner nut style cylinders, unscrew spanner nut (4) using a spanner wrench, or carefully use a punch and hammer. (Spanner wrench 1021841 is available from Woods to help with these procedures.)

Tap rod guide (5) into barrel (8) about 1/2". Remove round retaining ring (3B). Pull on rod (1) to remove parts from barrel.

Clamp cross pin end of rod assembly (1) in a vise with protective jaws. Remove lock nut (7) from rod assembly. Remove piston (6), stop tube (2), and rod guide (5) from rod.

Remove and discard all seals, wear rings and O-rings. Clean all components in solvent and blow dry with low pressure air.

Inspect inside diameter of barrel (8). Replace cylinder if damaged.

Assemble

Lubricate O-rings and seals with clean hydraulic fluid. Install back-up washer (3E) on rod guide (5), then install O-ring (3F) in exterior O-ring groove of rod guide. Install rod seal (3D) into inner groove of rod guide with open portion of V-groove toward piston.

Place rod wiper (3C) in outer rod guide groove. Slide rod guide assembly (5) onto rod (1). Place crown piston seal (3G) in piston groove.

Lightly coat rod threads with hydraulic oil and slide O-ring (3A) over threads and into groove. Install stop tube and piston (6) onto rod (1) as shown in Figure 16.

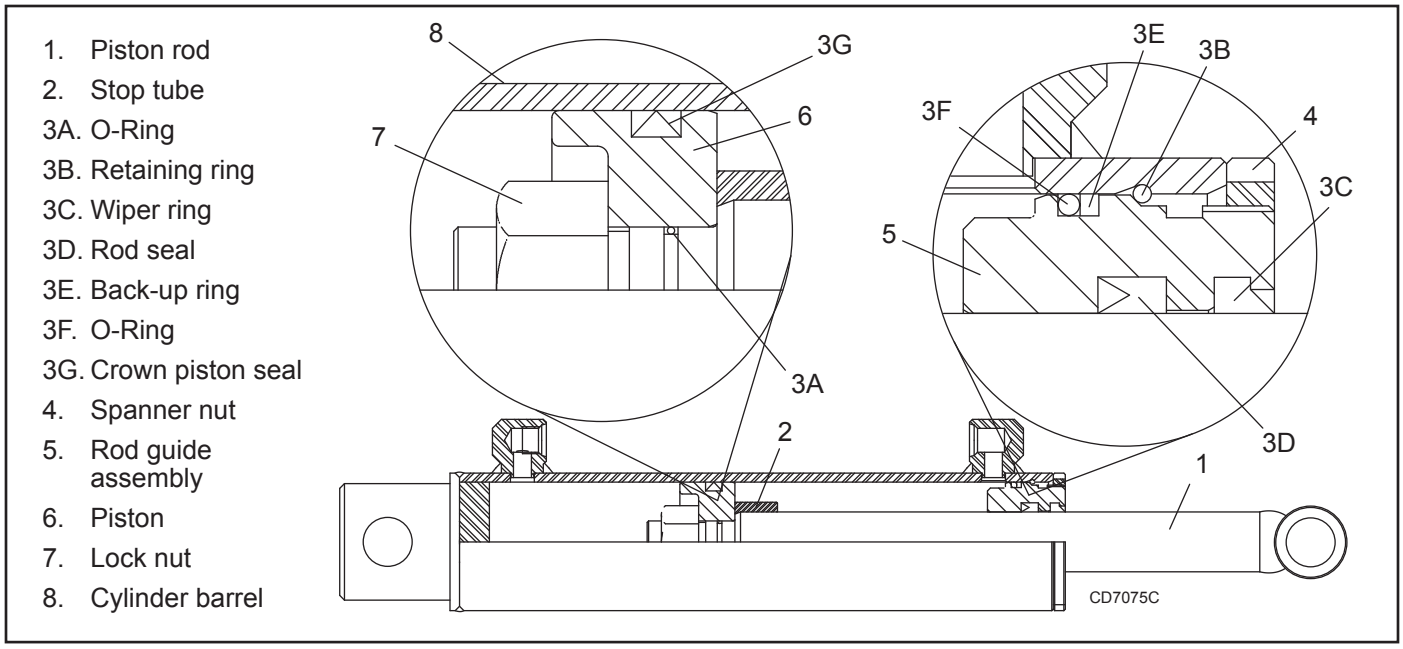


Figure 16. Spanner Nut Cylinder Assembly

Completely clean threads of hydraulic oil, apply Locquic® Primer 7649 and Loctite® 242 to the rod threads, and install lock nut (7). Torque to 175 lbs-ft.

Compress crown piston seal and carefully insert piston and rod assembly into barrel. Use care to prevent damage while installing.

Carefully push or tap rod guide (5) into barrel (8) just past groove inside barrel. Insert retaining ring (3B) into groove and pull rod (1) to seat rod guide (5) against ring. Apply Loctite 242 to rod guide threads. Screw spanner nut (4) into rod guide (5) using a spanner wrench, or carefully use a punch and hammer.

Threaded Rod Guide Cylinders

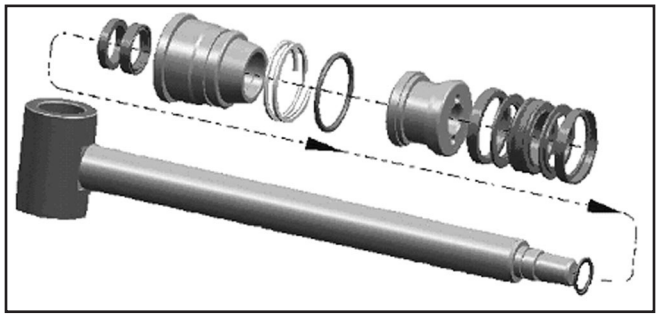


Figure 17. Seal Kit

Disassemble

On threaded guide type cylinders, unscrew guide (5) using a spanner wrench, or carefully use a punch and hammer. (Spanner wrench 1021841 is available from Woods to help with these procedures.) Pull on rod (1) to remove parts from barrel.

Clamp cross pin end of rod assembly (1) in a vise with protective jaws. Unscrew piston (6) from end of rod assembly using a spanner wrench, or carefully use a punch and hammer. Remove rod guide (5) from rod.

Remove and discard all seals, wear rings and O-rings. Clean all components in solvent and blow dry with low pressure air.

Inspect inside diameter of barrel. Replace cylinder if damaged.

Assemble

For these assembly instructions the front surface of the threaded rod guide with two holes will be referred to as the “rod guide face”.

Lubricate O-rings and seals with clean hydraulic fluid. Install back-up washer (3D) on rod guide (5), and then install O-ring (3E) in exterior O-ring groove of rod guide. See Figure 17 or Figure 18. Make sure that the back-up ring is located closest to the rod guide face. Place rod wiper (3B) in outer rod guide groove. Install rod seal (3C) into the second groove from the rod guide face with the open portion of V-groove toward piston.

With all of the rod guide seals installed, slide the rod guide assembly (5) onto rod (1).

Place O-ring (3F) into narrow deep groove in piston (6). Install piston seal (3G) around O-ring (3F) in piston groove. Install guide ring (3H) into wide groove of piston (6).

Install crown piston seal (3J) onto piston (6). Install offset rings (3H) on both sides of the crown piston seal (3J) in the large groove on the piston (6). The profile of the offset ring (3H) should mate with the lip on the crown piston seal (3J). Place the “L” shaped guide ring (3G) on the outside of each offset ring (3H).

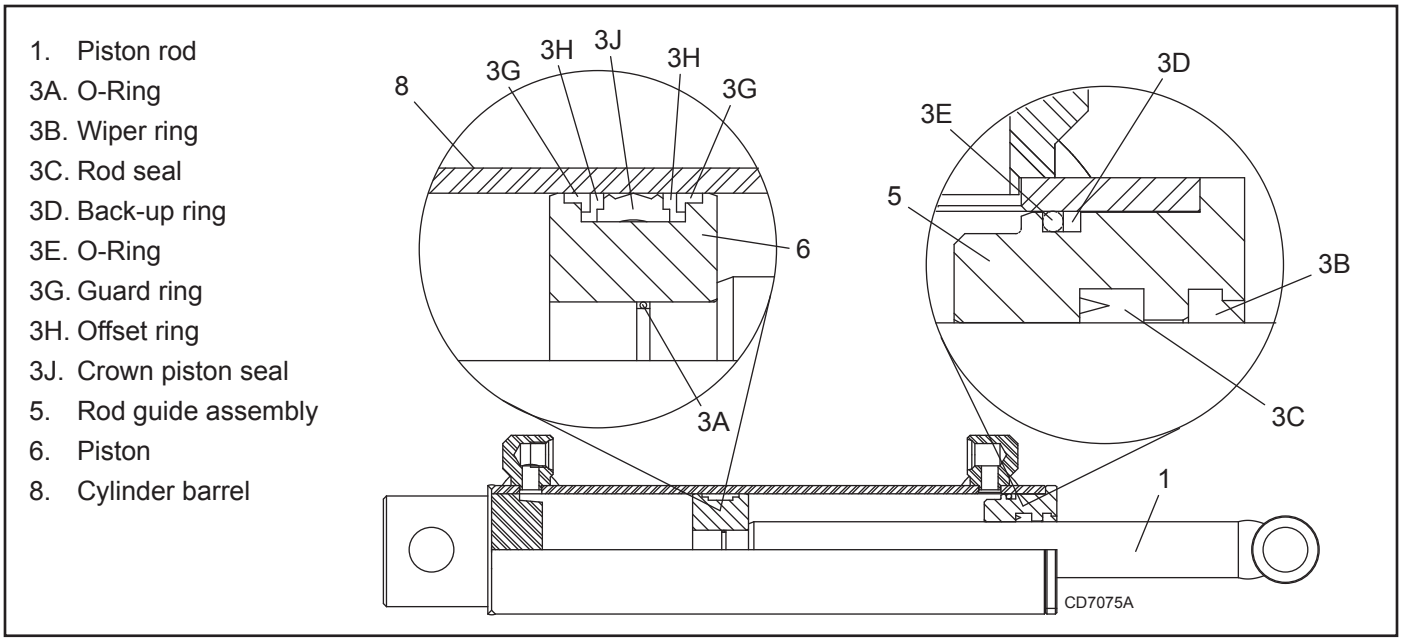


Figure 18. 1021509 Hydraulic Cylinder

Lightly coat rod threads with hydraulic oil and slide O-ring (3A) over threads and into groove. Completely clean threads of hydraulic oil, apply Locquic Primer 7649 and Loctite 242 to the rod threads, and thread piston (6) onto rod (1) with the two holes in the piston orientated away from the rod. Torque the piston (6) to 100 lbs-ft.

Compress wear rings and piston seals and carefully insert piston and rod assembly into barrel. Use care to prevent damage while installing. Carefully screw rod guide (5) into barrel (8) using a spanner wrench, or carefully use a punch and hammer.

SWING CYLINDER REPAIR

Repair to cylinders is limited to replacing seals, wear rings, and O-rings. Replacing rod, barrel, or pistons is not cost effective. Purchasing a complete cylinder is more economical.

Disassembly

Remove retaining ring (G) from barrel (2). Slide rod assembly (3) out of barrel. Inspect inside of cylinder barrel and rod surface for any scratches or scouring. Small scratches can be removed with fine crocus cloth. If scratches cannot be repaired, replace entire cylinder.

Clamp tube end of rod assembly in vise. Use a small torch to heat nut (4) and break down the thread-locking compound. Remove nut. Remove piston (5) and rod guide (1) from rod assembly. Clean threads on rod assembly and nut. Discard all seals.

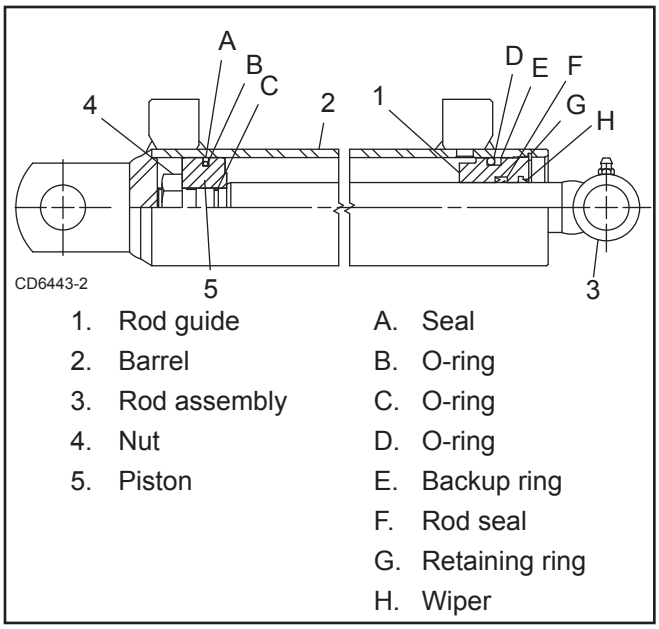


Figure 19. Swing Cylinder Components

Assembly

Lubricate new seals with clean oil. Install O-ring (D) and back up ring (E) in the outer groove of guide (1). Note the position of the backup ring. Install rod seal (F) in inner groove of rod guide. Note that the lips of the seal should be toward the piston side of the guide. Install wiper (H) with lip pointed outward from guide. Slide rod guide onto rod assembly.

Install O-ring (B) and seal (A) on piston (5). Apply oil to threads on rod assembly. Slide O-ring (C) over threads. Install piston. Apply permanent type thread-locking compound to rod threads and install nut. Torque nut to 125-135 lbs-ft.

Lubricate seals, slide rod assembly into tube and install snap ring (G) to complete assembly.

UNIVERSAL JOINT REPAIR

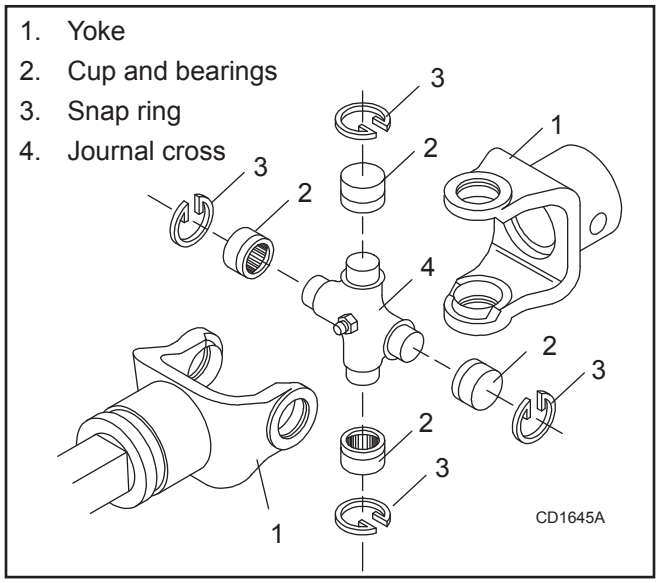


Figure 20. U-Joint Exploded View

U-Joint Disassembly

1. Remove external snap rings from yokes in four locations as shown in Figure 21.

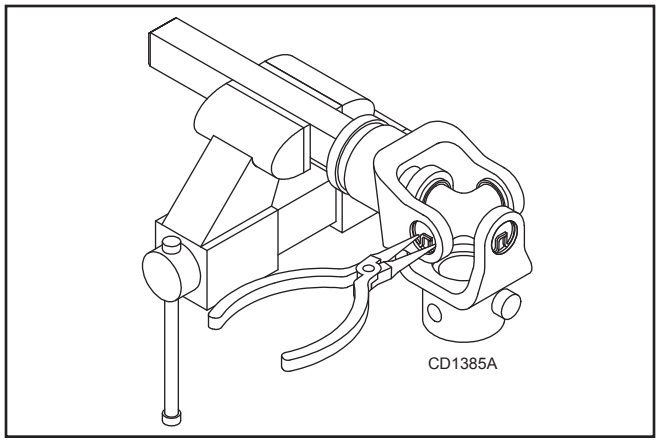


Figure 21.

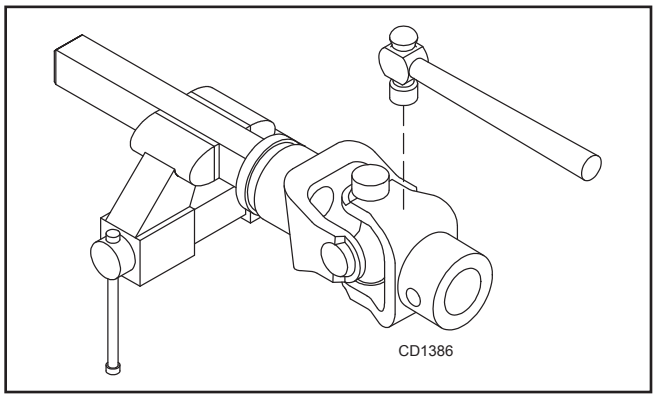


Figure 22.

2. With snap rings removed, support drive in vise, hold yoke in hand, and tap on yoke to drive cup up out of yoke. See Figure 22.

3. Clamp cup in vise as shown in Figure 23 and tap on yoke to completely remove cup from yoke. Repeat Step 2 and Step 3 for opposite cup.

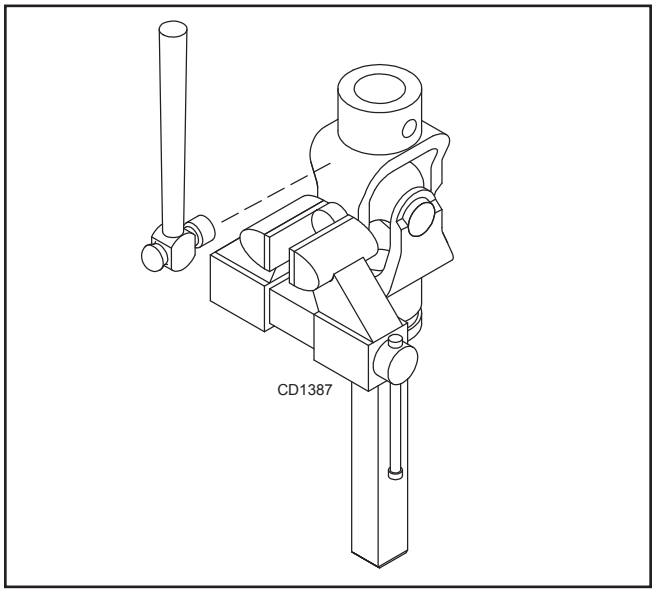


Figure 23.

4. Place universal cross in vise as shown in Figure 24 and tap on yoke to remove cup. Repeat Step 3 for final removal. Drive remaining cup out with a drift and hammer.

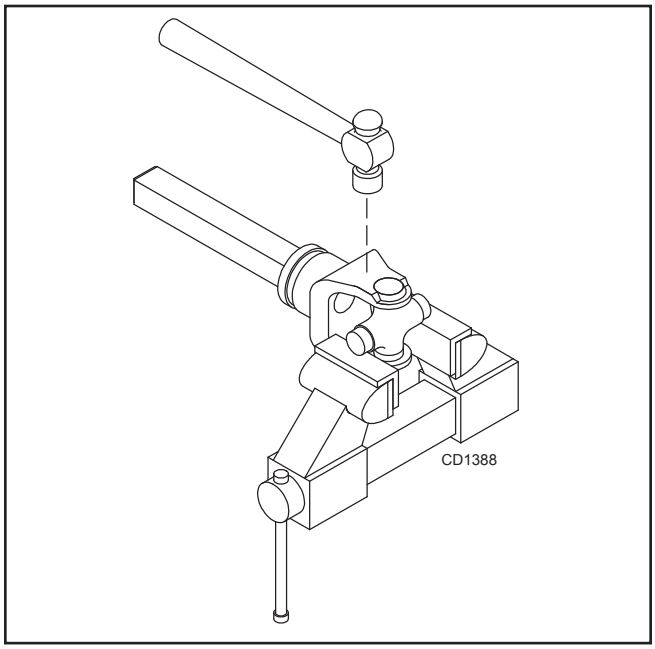


Figure 24.

U-Joint Assembly

1. Place seals securely on bearing cups. Insert cup into yoke from outside and press in with hand pressure as far as possible. Insert journal cross into bearing cup with grease fitting away from shaft. Be careful not to disturb needle bearings. Insert another bearing cup directly across from first cup and press in as far as possible with hand pressure.

   Trap cups in vise and apply pressure. Be sure journal cross is started into bearings and continue pressure with vise, squeezing in as far as possible. Tapping the yoke will help.

2. Seat cups by placing a drift or socket (slightly smaller than the cup) on cup and rap with a hammer. See Figure 25. Install snap ring and repeat on opposite cup.

3. Repeat Step 1 and Step 2 to install remaining cups in remaining yoke.

4. Move both yokes in all directions to check for free movement. If movement is restricted, rap sharply on yokes with a hammer to relieve any tension.

   Repeat until both yokes move in all directions without restriction.

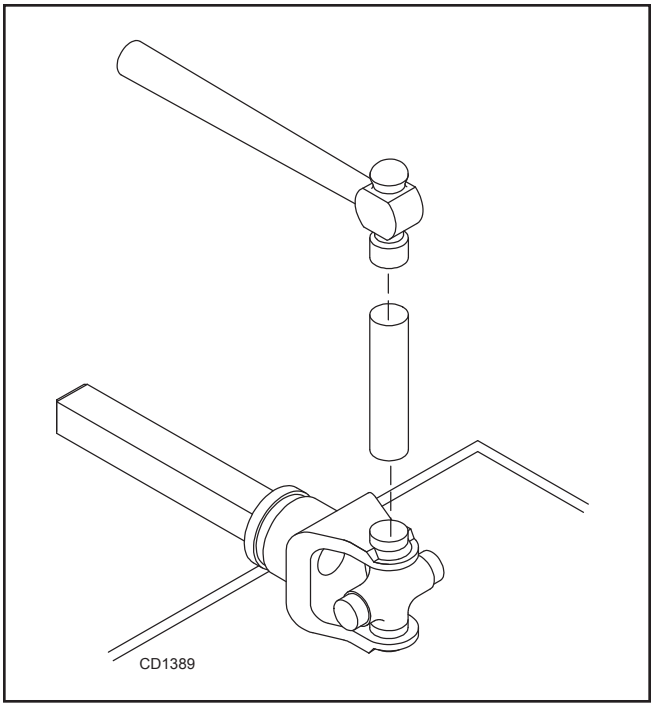


Figure 25.

ASSEMBLY

DEALER SET-UP INSTRUCTIONS

Assembly of this stump grinder is the responsibility of the Woods dealer. It should be delivered to the owner completely assembled, lubricated, and adjusted for normal grinding conditions.

Assembly will be easier if parts are aligned and loosely assembled before tightening hardware. Recommended torque values for hardware are located in the Bolt Torque Chart, page 40.

Complete checklists on page 28 when you have completed the assembly.

DRIVELINE INSTALLATION

A new slip clutch, or one that has been in storage over the winter, may seize.

A. 1/2 NC x 3 Cap screw GR8 (not shown)
B. 1/2 NC Lock nut (not shown)
18. Clutch shield
40. M8 x 1.25P x 20 mm Cap screw
41. 5/16 Flat washer

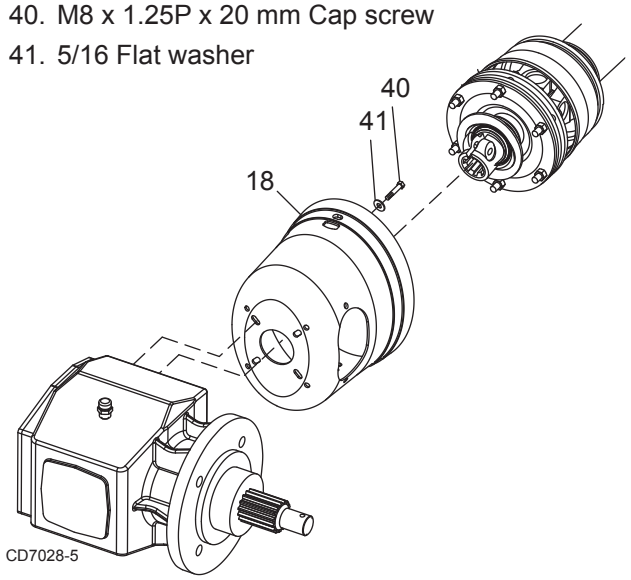


Figure 26. Slip Clutch Driveline Installation

1. Position clutch shield (18) against gearbox. Secure using cap screws (40) and flat washers (41). Torque hardware to 15 lbs-ft.
2. Slide driveline onto gearbox input shaft and secure with bolt (A) and nut (B) supplied with drive.
3. Lubricate rear driveline half and install front driveline half.
4. Attach tether chain.
5. Before operating slip clutch, make sure it will slip. Refer to Slip Clutch Adjustment, page 13.

OPTIONAL EQUIPMENT

Category 2 Hitch Pin Installation

The stump grinder comes equipped with category 1 hitch pins. Optional category 2 pins are available.

1. Remove Cat 1 hitch pins from stump grinder.
2. Attach Cat 2 hitch pins to the stump grinder frame using nuts and washers supplied with each pin.
3. Place hitch pins on the outside of frame; they should point outward.
4. Torque pins to 474 lbs-ft.

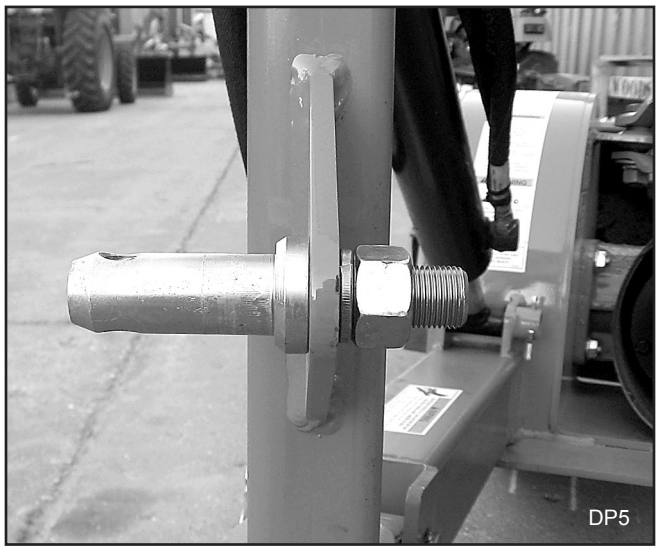


Figure 27. Cat 2 Hitch Pin Installed - Right Side Shown

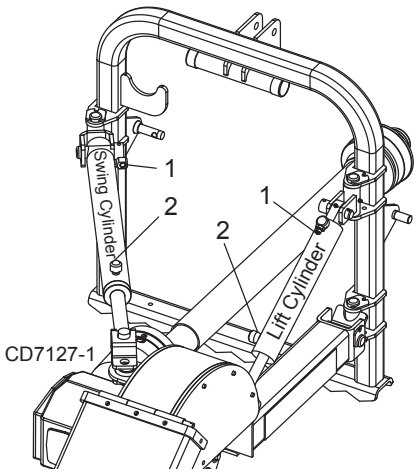
Hose Kit Installation (Optional)

Refer to Figure 28.

These instructions are for operating the Stump Grinder using the tractor dual hydraulic remote couplers.

1. Attach adapter (1) to base end of each cylinder.
2. Attach restrictor adapter (2) to the rod end of each cylinder.
3. Connect male quick couplers to end of supply hoses.

   NOTE: The male hydraulic quick couplers and adapters for connection to tractor are NOT INCLUDED with this hose kit but are available as service parts.
4. Connect opposite end of supply hoses to the cylinders.
5. Keep hoses away for driveline and close to stump grinder frame. Secure hoses using tie straps provided.



1. Adapter, 9/16 JICM x 9/16 ORBM
2. Adapter, 9/16 JICM x 9/16 ORBM restricted
3. Hose, 80” x 9/16 JICF x 9/16 JICF (not shown)

Figure 28. Hose and Fitting Installation

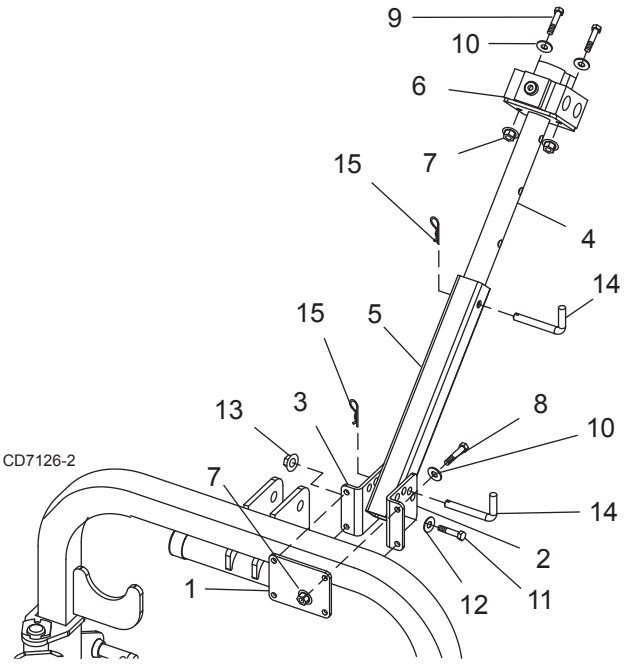
Manual Selector Valve Kit Installation (Optional)

These instructions are for operating the Stump Grinder using manual select control valve and a single set of tractor hydraulic remote couplers.

Valve Bracket Installation (Figure 29)

1. Attach right bracket (3), left bracket (2), and plate (1) to the top of stump grinder frame using four cap screws (8), washers (10), and whiz nuts (7).
2. Place mounting tube (5) between brackets (2 & 3) and secure using one cap screw (11), washer (12) and lock nut (13). Do not over tighten hardware. Tube must be able to pivot between brackets.
3. Insert pin (14) in desired hole and secure with safety pin (15).
4. Attach selector valve (6) to valve bracket (4) using two cap screws (9), washers (10), and whiz nuts (7).
5. Attach valve handle to selector valve using hardware provided.
6. Insert valve bracket (4) in mounting tube (5). Adjust bracket to desired position and secure using pin (14) and safety pin (15). Valve handle should be positioned towards the tractor seat.

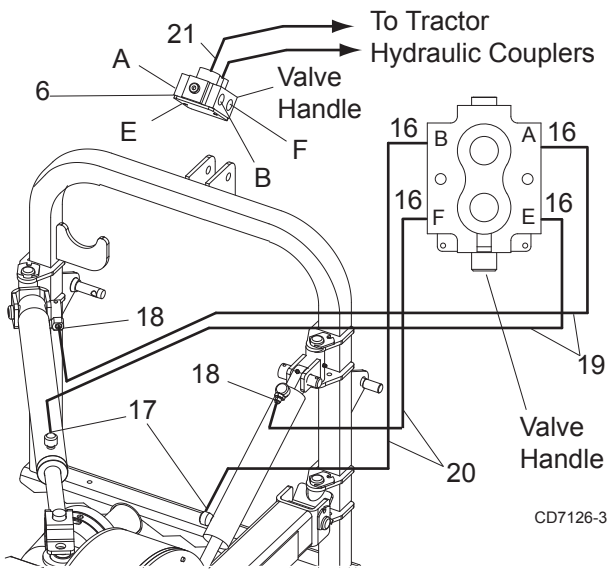
   NOTE: Adjust valve bracket and mounting tube so selector valve can be reached from the tractor seat.



1. Plate
2. Left bracket
3. Right bracket
4. Valve bracket
5. Valve mounting tube
6. Selector valve
7. 3/8 NC Whiz nut
8. 3/8 NC x 3-1/2 HHCS GR5
9. 3/8 NC x 3 HHCS GR5
10. 3/8 Flat washer
11. 1/2 NC x 3-1/2 HHCS GR5
12. 1/2 Flat washer
13. 1/2 NC Lock nut
14. Bent pin
15. 5/32 Hair pin, cotter

Figure 29. Selector Valve Bracket Installation

Hoses and Fittings Installation



6. Selector valve
16. Adapter, 1-1/16 ORBM x 3/4 JICM
17. Adapter, 9/16 JICM x 9/16 ORBM restricted
18. Adapter, 9/16 JICM x 9/16 ORBM
19. Hose, 94” x 9/16 JICF x 3/4 JICF 90°
20. Hose, 72” x 9/16 JICF x 3/4 JICF 90°
21. Hose, 36” x 9/16 JICF x 9/16 JICF 90°

Figure 30. Hydraulic Hose and Fitting Installation

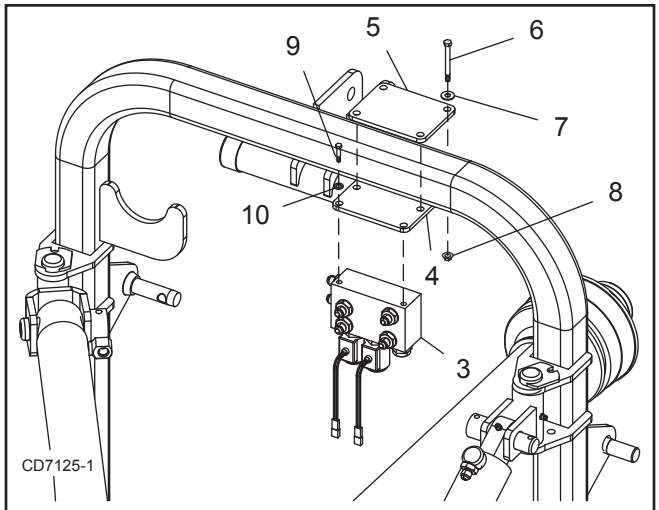
1. Attach adapter (18) to base end of each cylinder.
2. Attach restrictor adapter (17) to the rod end of each cylinder.
3. Install adapters (16) to each port (six) of the selector valve (6).
4. Attach straight hose (19) to the base end of swing cylinder. Attach 90° end of hose to port (A) on the selector valve.
5. Attach second hose (19) to the rod end of swing cylinder. Attach 90° end of hose to port (E) on the selector valve.
6. Attach straight end of hose (20) to the base end of lift cylinder. Attach 90° end of hose to port (F) on the selector valve.
7. Attach second hose (20) to the rod end of lift cylinder. Attach 90° end of hose to port (B) on the selector valve.
8. Attach 90° ends of supply hose (21) to the top ports on the selector valve.
9. Connect male quick couplers to opposite ends of supply hoses.
10. Keep hoses away from driveline and close to stump grinder frame. Secure hoses using tie straps provided.
11. The male hydraulic quick couplers and adapters for connection to tractor are NOT INCLUDED with this hose kit but are available as service parts.

Electric Selector Valve Kit Installation (Optional)

These instructions are for operating the Stump Grinder using an electronic selector control valve and a single set of tractor hydraulic remote couplers.

Selector Valve Installation

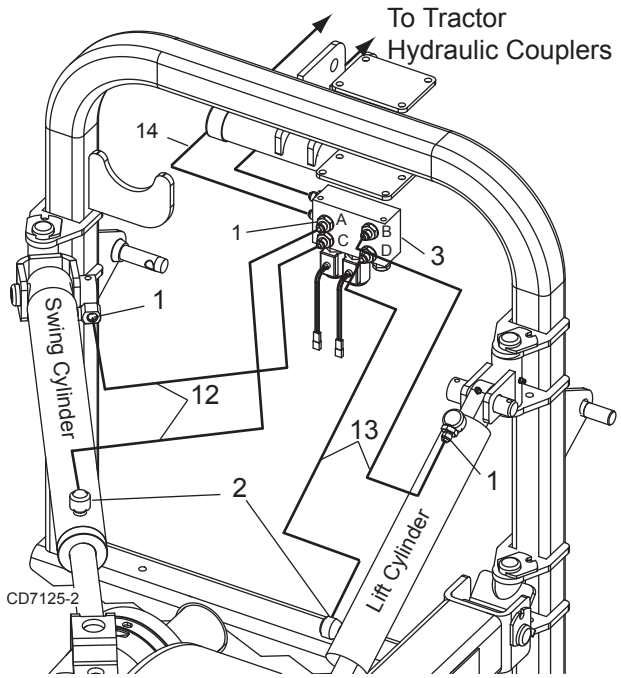
1. Place upper plate (5) and lower plate (4) between stump grinder frame and secure together using four cap screws (6), flat washers (7), and whiz nuts (8).
2. Attach selector valve (3) to the bottom side of lower plate (4) using two cap screws (9) and lock washers (10).



3. Valve assembly
4. Lower plate bracket
5. Upper plate bracket
6. 3/8 NC x 3-1/2 HHCS GR5
7. 3/8 Flat washer
8. 3/8 NC Flange whiz nut
9. 3/8 NC x 3/4 HHCS GR5
10. 3/8 Lock washer

Figure 31. Selector Valve Installation

Hose and Fitting Installation



1. Adapter, 9/16 JICM x 9/16 ORBM
2. Adapter, 9/16 JICM x 9/16 ORBM restricted
3. Valve assembly
12. Hose, 67” x 9/16 JICF x 9/16 JICF 90°
13. Hose, 55” x 9/16 JICF x 9/16 JICF 90°
14. Hose, 36” x 9/16 JICF x 9/16 JICF 90°

Figure 32. Hose and Fitting Installation

1. Attach adapter (1) to base end of each cylinder.

2. Attach restrictor adapter (2) to the rod end of each cylinder.

3. Install adapters (1) to each port (six) of the selector valve (3).

4. Attach straight hose (12) to the base end of swing cylinder. Attach 90° end of hose to port (A) on the selector valve.

5. Attach second hose (12) to the rod end of swing cylinder. Attach 90° end of hose to port (C) on the selector valve.

6. Attach straight end of hose (13) to the base end of lift cylinder. Attach 90° end of hose to port (B) on the selector valve.

7. Attach second hose (13) to the rod end of lift cylinder. Attach 90° end of hose to port (D) on the selector valve.

8. Attach 90° ends of supply hose (14) to the side ports on the selector valve.

9. Connect male quick couplers to opposite ends of supply hoses.

NOTE: The male hydraulic quick couplers and adapters for connection to tractor are NOT INCLUDED with this hose kit but are available as service parts.

10. Connect green and white wire leads from harness switch assembly to leads on valve assembly (3) shown in Figure 33.

11. Attach harness switch assembly to a desired location on the tractor.

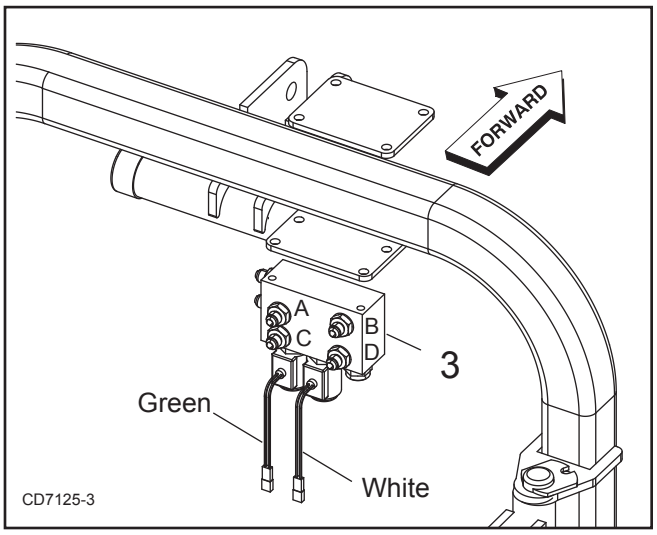


Figure 33. Harness to Valve Assembly Connection

12. Keep hoses and wires away for driveline and close to the stump grinder frame. Secure hoses and wires using tie straps provided.

13. Connect red wire on harness switch assembly to positive terminal and black wire to the negative terminal on tractor battery.

NOTES

DEALER CHECKLISTS

DEALER PRE-DELIVERY CHECKLIST
(DEALER'S RESPONSIBILITY)

Inspect the equipment thoroughly after assembly to ensure it is set up properly before delivering it to the customer.

The following checklists are a reminder of points to inspect. Check off each item as it is found satisfactory or after proper adjustment is made.

_____ Check that shields and guards are properly installed and in good condition. Replace if damaged.

_____ Check all bolts to be sure they are properly torqued.

_____ Gearboxes are not filled at the factory. Prior to delivery, fill as specified in the Stump Grinder Preparation, page 9 and check to see that there are no leaking seals.

_____ Check that all cotter pins and safety pins are properly installed. Replace if damaged.

_____ Check and grease all lubrication points as identified in Lubrication Information, page 12. **NOTE:** For operation of this stump grinder, references to right, left, forward, and rearward directions are determined from the operator's position in the tractor seat.

DEALER DELIVERY CHECKLIST
(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 Operator's Manual and request that customer and all operators read it before operating equipment. Point out the manual safety rules, explain their meanings and emphasize the increased safety hazards that exist when safety rules are not followed.

_____ Show customer how to make adjustments and select proper PTO speed.

_____ Show customer how to make sure driveline is properly installed and that spring-activated locking pin or collar slides freely and is seated in groove on tractor PTO shaft.

_____ Instruct customer how to lubricate and explain importance of lubrication.

_____ Point out the correct mounting and routing of hydraulic hoses. Explain that during operation, mounting, dismounting and storage, care must be taken to prevent hoses from pulling, twisting and kinking.

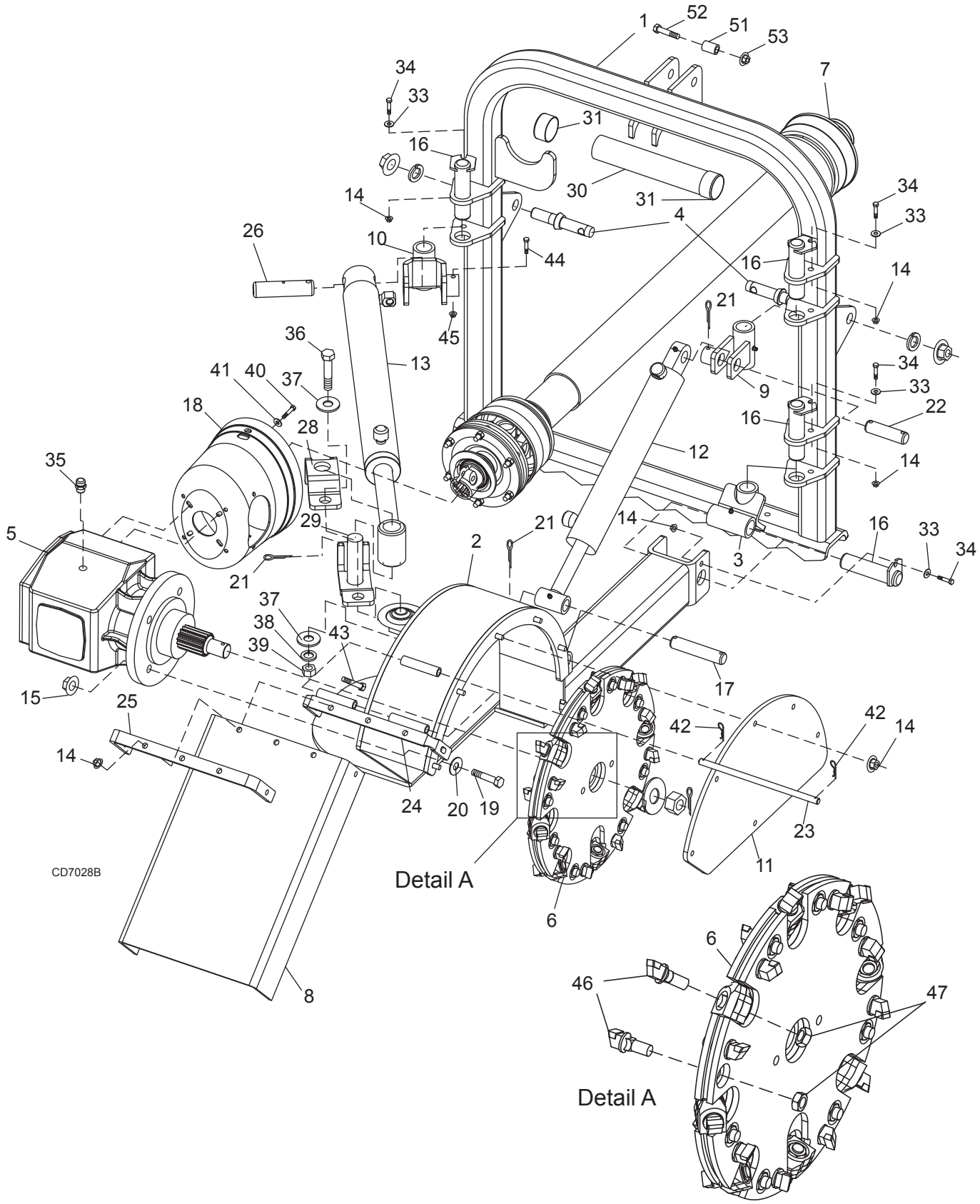
WOODS®

PARTS INDEX

Stump Grinder:

TSG50

STUMP GRINDER ASSEMBLY



STUMP GRINDER PARTS LIST

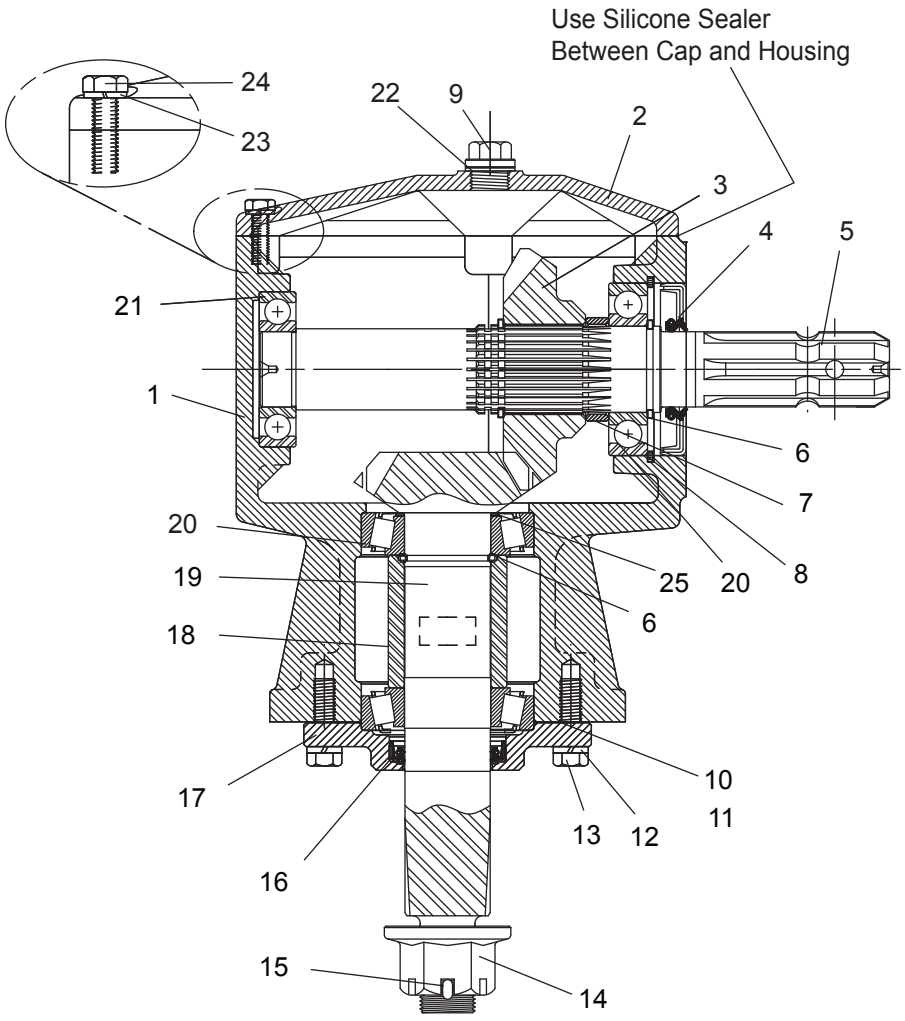
REF	PART	QTY	DESCRIPTION
1	1024692	1	TSG50 Frame with decals
2	1024693	1	TSG50 Shroud with decals
3	1018360	1	Clevis
4	33661 *	2	Category 1 mounting pin
4	30006 *	2	Category 2 mounting pin (optional)
5	610566RP	1	Gearbox, CCW 1:1.93
6	610591RP	1	TSG50 Cutting wheel
7	------	1	Complete drive assembly (see pages 33 and 34)
8	1018367	1	Debris guard
9	1018073	1	Clevis
10	1018308	1	Clevis
11	1024694	1	Shroud panel with decals
12	1008201	1	Hydraulic cylinder 2.25 x 1.125 x 12.5
13	1021509	1	Hydraulic cylinder 2.48 x 1.5 x 20
14	W70069 *	14	3/8 NC Flange whiz nut
15	19025 *	4	5/8 NC Flange lock nut
16	1021821	5	Pin, 1.0 x 4.0 x 5.64 headless
17	8345	1	Pin, 1.0 x 4.08 headless
18	1002048	1	Clutch shield
19	902 *	4	5/8 NC x 2 HHCS GR5
20	57817	4	5/8 Hardened flat washer
21	6185 *	6	1/4 x 2-1/4 Cotter pin
22	1631	1	Headless pin, 1 x 2.72
23	1021818	1	Pin, .50 x 11.2 headless
24	1018359	1	Guard clamp weldment
25	1018358	1	Guard clamp
26	1020279	4	Pin, 1.25 x 4.88
28	1018368	2	Bent lug .38 x 2.0 x 7.38
29	1016984	1	Link weldment
30	1004656	1	Manual tube

REF	PART	QTY	DESCRIPTION
31	1004657	2	Caplug 2.0 x 1.0
33	565 *	3	3/8 Flat washer
34	12169 *	3	3/8 NC x 1-1/4 HHCS GR5
35	1011780RP	1	Vent plug, M18 x 1.5
36	58494	1	7/8 NC x 4 HHCS GR8
37	W28539 *	2	7/8 SAE Flat Washer
38	30008 *	1	7/8 Lock washer
39	4261 *	1	7/8 NC Hex nut
40	24801 *	1	M8 x 1.25P x 20 mm HHCS
41	35037 *	4	5/16 Standard flat washer
42	21363 *	2	1/16 x 1 Hair pin cotter
43	976 *	5	3/8 NC x 1-1/2 HHCS GR5
44	7164 *	1	5/16 NC x 2-1/4 HHCS GR5
45	14139 *	1	5/16 Flange lock nut
46	1007684	24	Bit, short - Sandvik
47	38042 *	24	5/8 NF Jam nut
48	1024749	1	Tooth kit, (set of 24 teeth & nuts) not shown
50	1026022	1	4.5" Hose clamp to attach manual tube (item 30) to attach frame (item 1) (not shown)
51	1003614	1	Quick hitch bushing, upper
52	15007 *	1	3/4 NC x 3-1/2 HHCS GR5
53	W302207 *	1	3/4 NC Flange lock nut
54	------	2	Quick hitch bushing, lower (not shown)
NS	1018363	1	Model Decal, TSG50

NS	Not Shown
HHCS	Hex Head Cap screw
*	Standard hardware, obtain locally

NOTE: For safety decals, see pages 7 and 8. Order decals separately.

GEARBOX ASSEMBLY



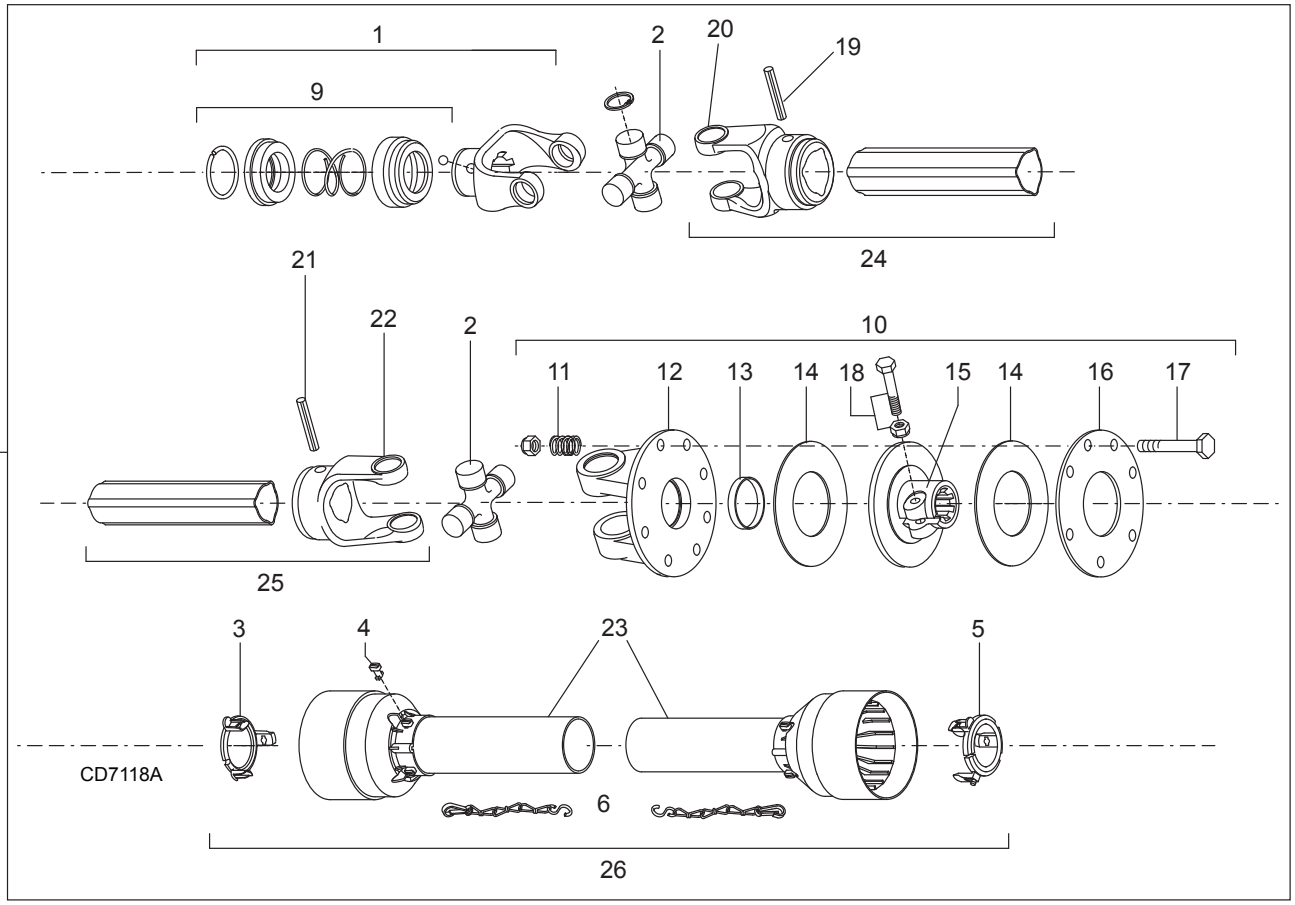
CD7690A

REF	PART	QTY	DESCRIPTION
A	610566RP	1	Gearbox repair assembly
1	-----	1	Housing
2	1019632	1	Inspection cover
3	-----	1	22 Tooth gear
4	1018327RP	1	Input seal
5	-----	1	Input shaft
6	-----	1	Retaining ring
7	-----	1	Gear spacer
8	-----	1	Retaining ring
9	1019601	1	Plug, hex head M18 x 1.5
10	1018329	A/R	Output gasket (0.30)
11	1018330	A/R	Output gasket (0.13)
12	----- *	4	Lock washer, 10mm
13	----- *	4	M10 x 1.5 x 25 cap screw
14	1018331	1	1" - 14 Slotted flange nut

REF	PART	QTY	DESCRIPTION
15	----- *	1	Cotter pin
16	1018328RP		Output seal
17	1038357		Output cap
18	-----		Output bearing spacer
19	-----		Output shaft and pinion
20	1018326RP		Ball bearing
21	1018325RP		Ball bearing
22	-----		Sealing washer w/ plug
23	----- *		Lock washer, 8mm
24	----- *		M8 x 1.5 x 25 cap screw
25	1032963		Shim kit
	*		Standard Hardware, obtain locally
	A/R		As Required

DRIVELINE ASSEMBLY

(Used on machines built prior to February 2019. Check part number on outer plastic shield.)

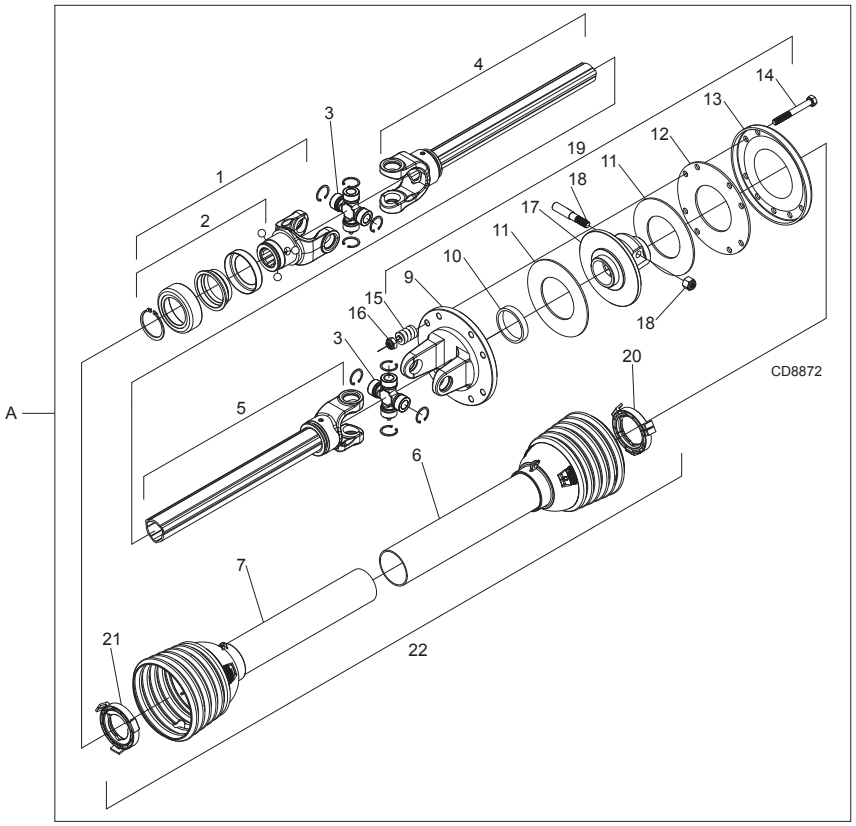


REF	PART	QTY	DESCRIPTION
A	1020901	1	Complete drive assembly (1020901 no longer available. Order 601750)
1	-----	1	Complete collar yoke 1-3/8 - 6
2	-----	2	Cross & bearing kit
3	-----	1	Outer cone fix ring
4	-----	6	Shield retainer
5	-----	1	Inner cone fix ring
6	-----	2	Shield tether chain
9	1001340	1	Lock collar repair kit
10	-----	1	Friction clutch
11	-----	8	Spring
12	-----	1	Flange yoke
13	1001313	1	Bushing
14	1001314	2	Friction disc - lining ring
15	-----	1	Flange hub
16	-----	1	Pressure plate
17	----- *	8	M10 x 80 mm HHCS & nut

REF	PART	QTY	DESCRIPTION
18	----- *	1	M12 x 1.25P x 60 mm HHCS & nut
19	-----	1	Flex pin
20	-----	1	Outer yoke tube
21	-----	1	Flex pin
22	-----	1	Inner tube yoke
23	-----	1	Shield, tube assembly
24	-----	1	Outer yoke & tube
25	-----	1	Inner yoke & tube
26	639713	1	Shield complete (includes 3, 4, 5, 6, 23)
	*		Standard Hardware, obtain locally

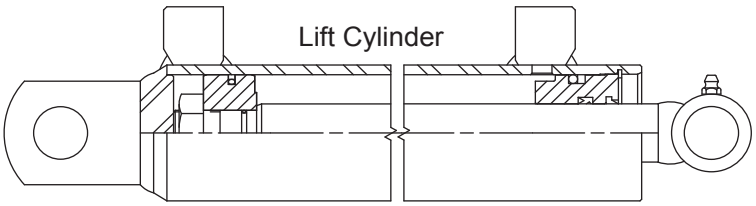
DRIVELINE ASSEMBLY

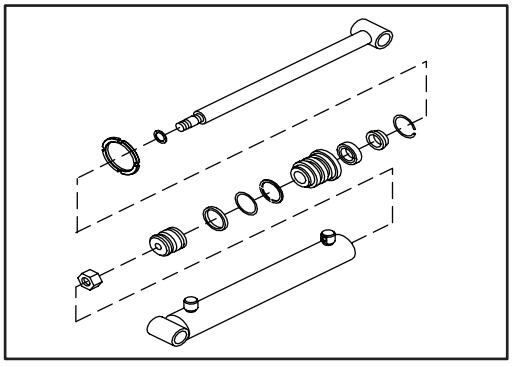
(Used on machines built February 2019 and after. Check part number on outer plastic shield.)



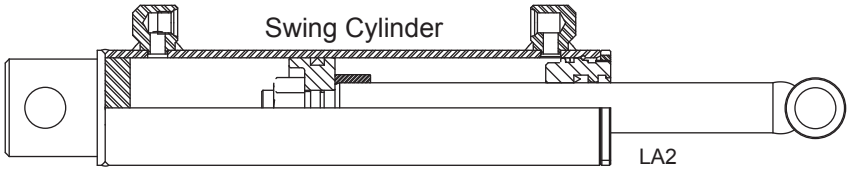
REF	PART	QTY	DESCRIPTION
A	601750	1	Complete driveline and clutch asy (Used on machines built February 2019 and after)
1	-----	1	Complete collar yoke C12 1-3/8 - 6
2	1044050	1	Lock collar repair kit
3	1044052	2	Cross & bearing kit
4	-----	1	Outer yoke & tube
5	-----	1	Inner yoke & tube
6	-----	1	Outer shield with bearing
7	-----	1	Inner shield with bearing
9	-----	1	Flanged yoke
10	1043994	1	Bushing
11	1044083	2	Friction disc
12	-----	1	Internal disc
13	-----	1	Pressure plate
14	----- *	8	M10 x 1.5 x 85, HHCS
15	-----	8	Clutch spring
16	----- *	8	M10 x 1.5P Nylon lock nut
17	-----	1	Clutch hub
18	1044091	1	Tapered pin & nut
19	-----	1	Friction clutch assembly
20	-----	1	Outer shield bearing
21	-----	1	Inner shield bearing
22	639691	1	Shield Kit Complete
	*		Standard Hardware, obtain locally

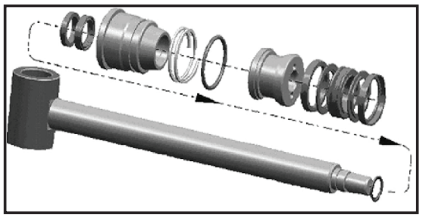
CYLINDER





SPANNER NUT STYLE

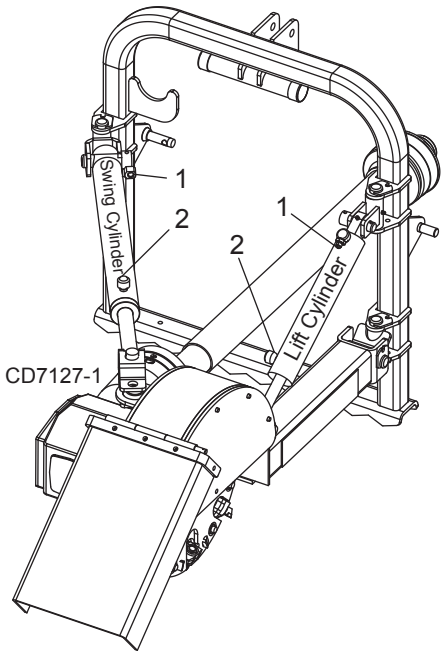




THREADED ROD GLAND STYLE

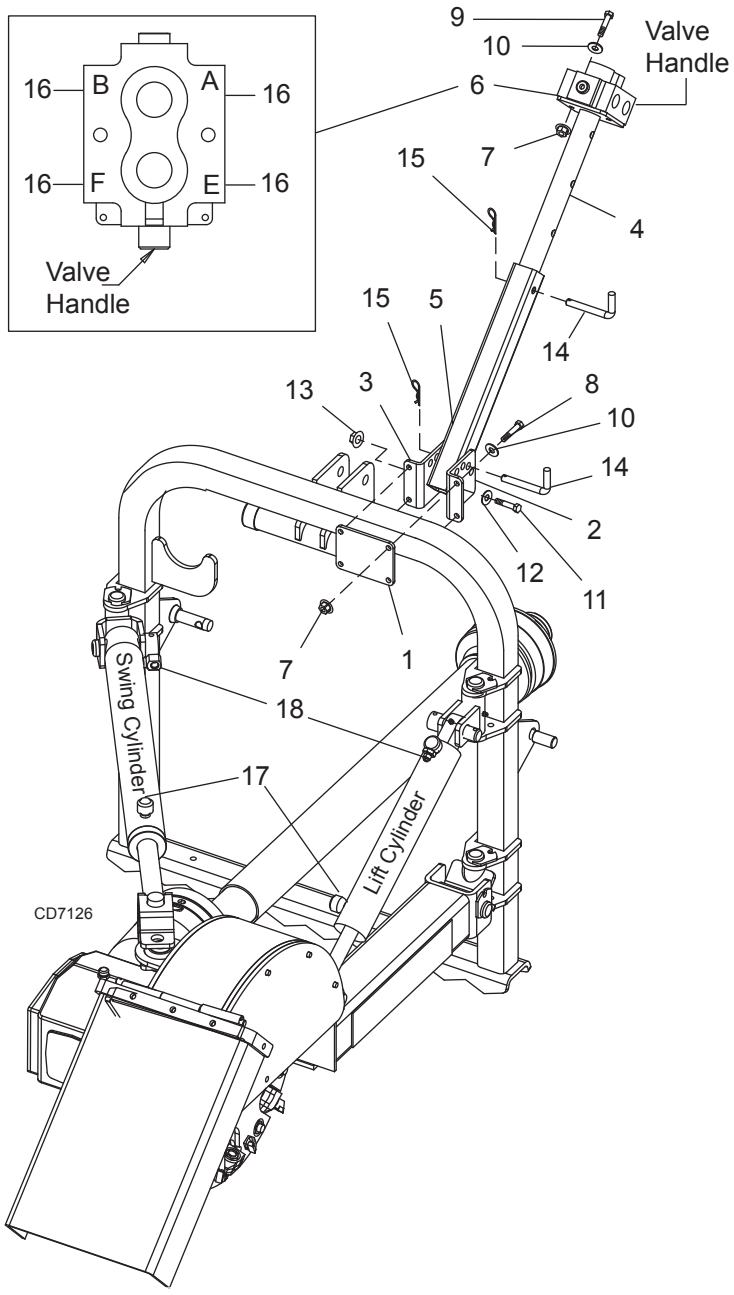
FUNCTION	COMPLETE ASSEMBLY	BASE END STYLE	RETRACTED LENGTH	EXTENDED LENGTH	BORE DIA	ROD DIA	SEAL KIT
Lift	1008201	Tang	19.50	32.00	2.25	1.12	1008410
Swing	1021509		28.75	48.75	2.48	1.5	1023732 (Spanner Nut Style) 1023734 (Threaded Rod Gland Style)

1024682 HOSE KIT (OPTIONAL)



REF	PART	QTY	DESCRIPTION
1	F1044	2	Adapter, 9/16 JICM x 9/16 ORBM
2	37508	2	Adapter, 9/16 JICM x 9/16 ORBM restricted
3	H1224	4	Hose, 80" x 9/16 JICF x 9/16 JICF
4	54315 †	4	Adapter, 1/2 NPTM x 9/16 JICM (Tractor Hydraulic Couplers)
5	66511 †	4	QD, Male ISO 1/2 NPT (Tractor Hydraulic Couplers)
	†		Not Shown

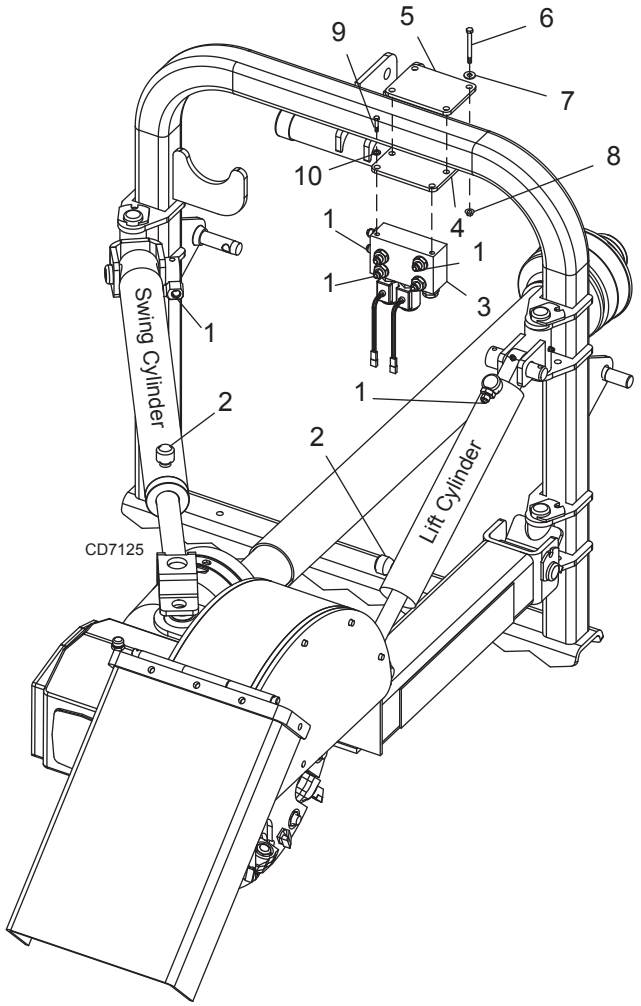
1021809 MANUAL SELECTOR VALVE KIT (OPTIONAL)



REF	PART	QTY	DESCRIPTION
1	1021824	1	Upper plate
2	1021813	1	Left valve bracket
3	1021814	1	Right valve bracket
4	1023100	1	Manual valve bracket
5	1021812	1	Valve tube
6	1004261	1	Selector valve
7	W70069 *	4	3/8 NC Whiz nut
8	31138 *	4	3/8 NC x 3-1/2 HHCS GR5
9	7747 *	2	3/8 NC x 3 HHCS GR5
10	565 *	6	3/8 Flat washer
11	1637 *	1	1/2 NC x 3-1/2 HHCS GR5
12	854 *	1	1/2 Flat washer
13	11900 *	1	1/2 NC Lock nut
14	16329	2	Bent pin
15	2688 *	2	5/32 Hair pin, cotter
16	316017	6	Adapter, 3/4 JICM x 1-1/16 ORBM
17	37508	2	Adapter, 9/16 JICM x 9/16 ORBM restricted
18	F1044	2	Adapter, 9/16 JICM x 9/16 ORBM
19	1024686 †	2	Hose, 94" x 9/16 JICF x 3/4 JICF 90° (swing cylinder)
20	1024687 †	2	Hose, 72" x 9/16 JICF x 3/4 JICF 90°(lift cylinder)
21	H1183 †	2	36" x 9/16 JIFCF x 9/16 JICF 90° (tractor hydraulic couplers)
22	1004295 †		Seal kit, selector valve
23	1004296 †		Handle kit, selector valve
24	54315 †	2	Adapter, 1/2 NPTM x 9/16 JICM (Tractor Hydraulic Couplers)
25	66511 †	2	QD, Male ISO 1/2 NPT (Tractor Hydraulic Couplers)

†	Not shown
HHCS	Hex head cap screw
*	Standard hardware, obtain locally

1021822 ELECTRIC SELECTOR VALVE KIT (OPTIONAL)



REF	PART	QTY	DESCRIPTION
1	F1044	8	Adapter, 9/16 JICM x 9/16 ORBM
2	37508	2	Adapter, 9/16 JICM x 9/16 ORBM restricted
3	1012113	1	Valve assembly, 2-stage
4	1021823	1	Lower plate
5	1021824	1	Upper plate
6	31138 *	4	3/8 NC x 3-1/2 HHCS GR5
7	565 *	4	3/8 Flat washer
8	W70069 *	7	3/8 NC Flange whiz nut
9	1686 *	2	3/8 NC x 3/4 HHCS GR5
10	838 *	2	3/8 Lock washer
11	E0066 †	1	Wire harness assembly
12	H1222 †	2	Hose, 67" x 9/16 JICF x 9/16 JICF 90° (swing cylinder)
13	H1163 †	2	Hose, 55" x 9/16 JICF x 9/16 JICF 90° (lift cylinder)
14	H1183 †	2	Hose, 36" x 9/16 JICF x 9/16 JICF 90° (tractor hydraulic couplers)
15	54315 †	2	Adapter, 1/2 NPTM x 9/16 JICM (Tractor Hydraulic Couplers)
16	66511 †	2	QD, Male ISO 1/2 NPT (Tractor Hydraulic Couplers)

†	Not shown
HHCS	Hex head cap screw
*	Standard hardware, obtain locally

NOTES

INDEX

BOLT TORQUE CHART

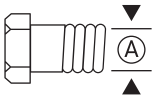
Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application.

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 MAR 99 & J1701M JUL 96.

SAE SERIES TORQUE CHART



SAE Bolt Head Identification

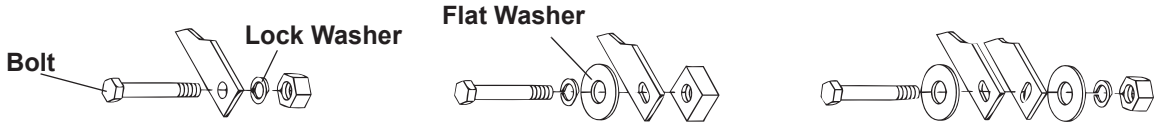

SAE Grade 2
(No Dashes)


SAE Grade 5
(3 Radial Dashes)

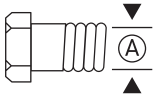

SAE Grade 8
(6 Radial Dashes)

Ⓐ 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

TYPICAL WASHER INSTALLATIONS



METRIC SERIES TORQUE CHART



Metric Bolt Head Identification

Metric
Grade 8.8

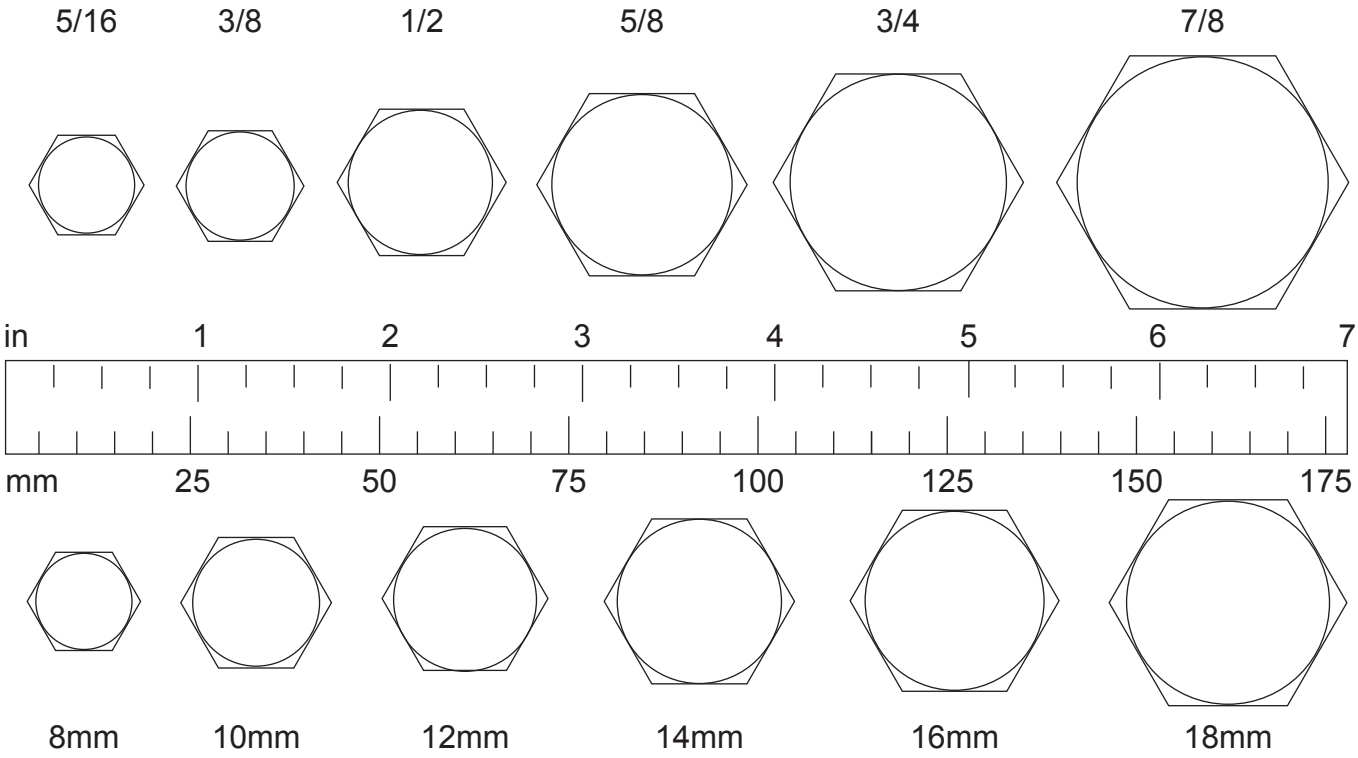
Metric
Grade 10.9

Ⓐ Diameter & Thread Pitch (Millimeters)	Wrench Size	Coarse Thread				Fine Thread				Ⓐ Diameter & Thread Pitch (Millimeters)
		Marking on Head				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

BOLT SIZE CHART

NOTICE: Chart shows bolt thread sizes and corresponding head (wrench) sizes for standard SAE and metric bolts.

SAE BOLT THREAD SIZES



METRIC BOLT THREAD SIZES

ABBREVIATIONS

AG . . . . . Agriculture
ASABE . . . . . American Society of Agricultural & Biological Engineers (formerly ASAE)
ASAE . . American Society of Agricultural Engineers
ATF . . . . . Automatic Transmission Fluid
BSPP . . . . . .British Standard Pipe Parallel
BSPTM . . . . . British Standard Pipe Tapered Male
CV . . . . . Constant Velocity
CCW . . . . . Counter-Clockwise
CW . . . . . .Clockwise
F . . . . . Female
FT . . . . . Full Thread
GA . . . . . .Gauge
GR (5, etc.) . . . . . Grade (5, etc.)
HHCS . . . . . .Hex Head Cap Screw
HT . . . . . Heat-Treated
JIC . . . . . Joint Industry Council 37° Degree Flare
LH . . . . . Left Hand
LT . . . . . Left
m . . . . . Meter
mm . . . . . Millimeter
M . . . . . .Male
MPa . . . . . Mega Pascal
N . . . . . Newton
NC . . . . . .National Coarse
NF . . . . . National Fine
NPSM . . . . . National Pipe Straight Mechanical
NPT . . . . . National Pipe Tapered
NPT SWF . . National Pipe Tapered Swivel Female
ORBM . . . . . .O-Ring Boss - Male
P . . . . . Pitch
PBY . . . . . Power-Beyond
psi . . . . . Pounds per Square Inch
PTO . . . . . Power Take Off
QD . . . . . .Quick Disconnect
RH . . . . . Right Hand
ROPS . . . . . Roll-Over Protective Structure
RPM . . . . . .Revolutions Per Minute
RT . . . . . Right
SAE . . . . . .Society of Automotive Engineers
UNC . . . . . Unified Coarse
UNF . . . . . .Unified Fine
UNS . . . . . Unified Special

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