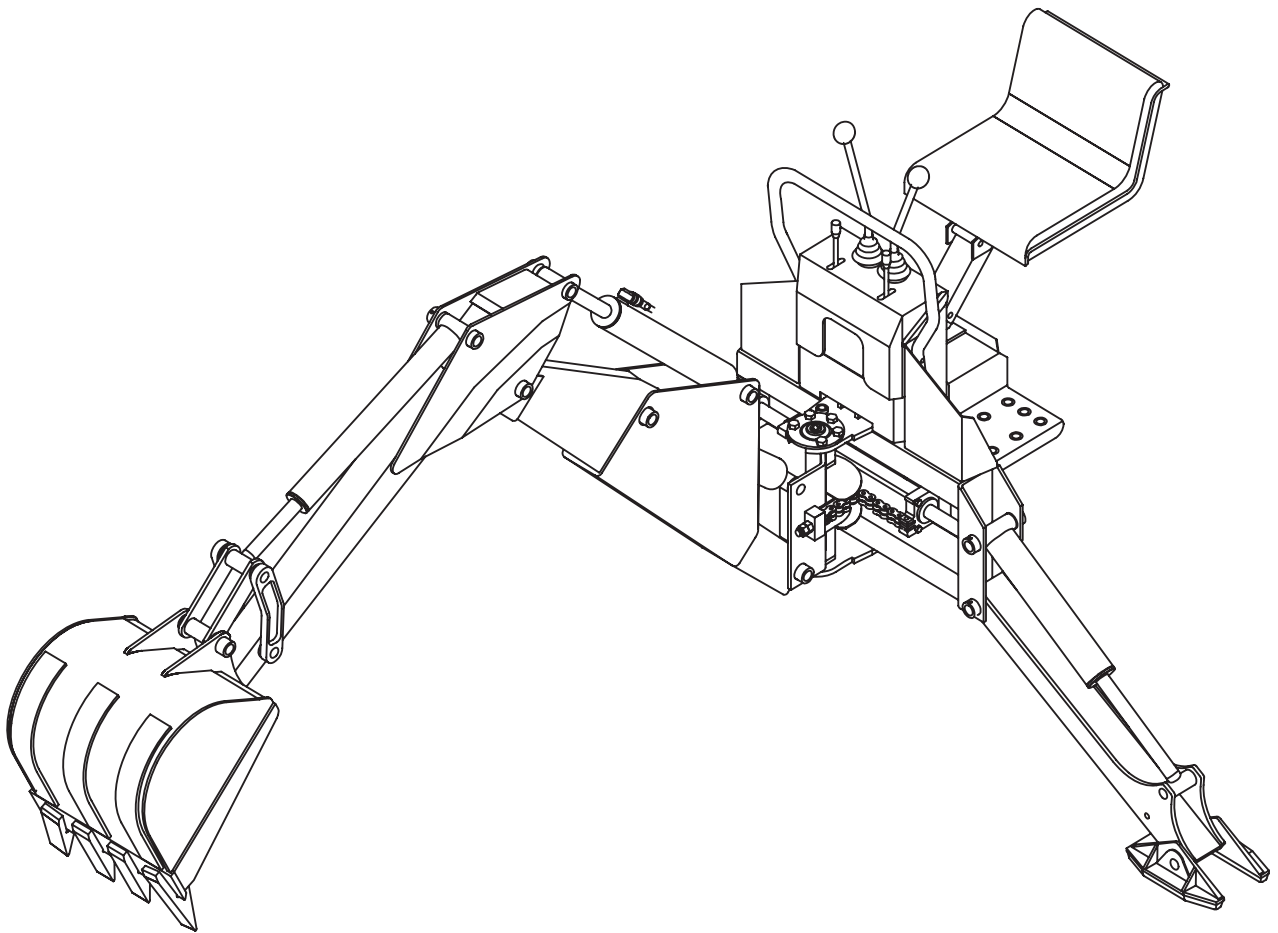


WOODS BACKHOE 1050



51861
Rev. 7/7/2006

WOODS®
Tested. Proven. Unbeatable.

OPERATOR'S MANUAL

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 Check Lists in the Operator's Manual are completed before releasing equipment to the owner.

The dealer must complete the Product Registration included with the Operator's Manual. The customer must sign the registration which certifies that all Dealer Check List items have been completed. The dealer is to return the prepaid postage portion to Woods, give one copy to the customer, and retain one copy. **Failure to complete and return this card 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 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 **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.

WOODS®

ALITEC™

BMP®

CENTRAL FABRICATORS®

GANNON®

GILL®

WAIN-ROY®

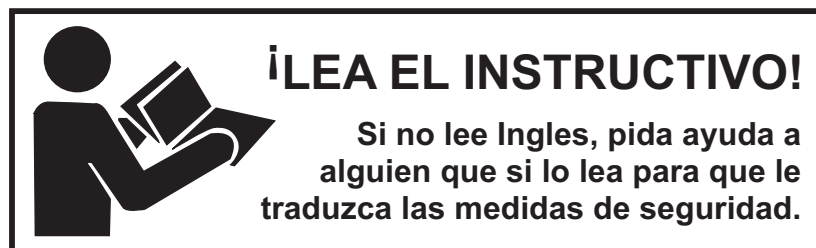
WOODS®

2 Introduction

Gen'l (Rev. 6/6/2005)

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BH1050 SPECIFICATIONS

Reach Below Grade (Standard Bucket)

Maximum	127" (3225.8 mm)
With Two Foot Flat Bottom Trench*	126" (3200.4 mm)

Loading Height* 98" (2489.2 mm)

Loader Reach 68" (1727.2 mm)

Reach From Center of Swing Mast Pivot Point* 157" (3987.8 mm)

Bucket Arc (In Degrees of Curl) 180°

Swing Working Arc (In Degrees) 180°

Operating Pressure

Digging* .2100 psi (14.5 MPa)

Swing* .2100 psi (14.5 MPa)

Stabilizer Spread

Up 83" (2108.2 mm)

Down 113" (2870.2 mm)

Lift Cylinder

Bore 3" (76.2 mm)

Stroke 27" (685.8 mm)

Dipperstick Cylinder

Bore 3" (76.2 mm)

Stroke 27" (685.8 mm)

Digging Force* 2863 lbs. (12734.6 N)

Bucket Cylinder

Bore 2.5" (63.5 mm)

Stroke 28" (711.2 mm)

Digging Force* 6000 lbs. (26688.0 N)

Swing Cylinder

Bore 2.5" (63.5 mm)

Stroke 13" (330.2 mm)

Stabilizer Cylinder

Bore 2.5" (63.5 mm)

Stroke 15" (381.0 mm)

Buckets

Rated Capacity

12 Inches 1.44 ft. (.041 m)

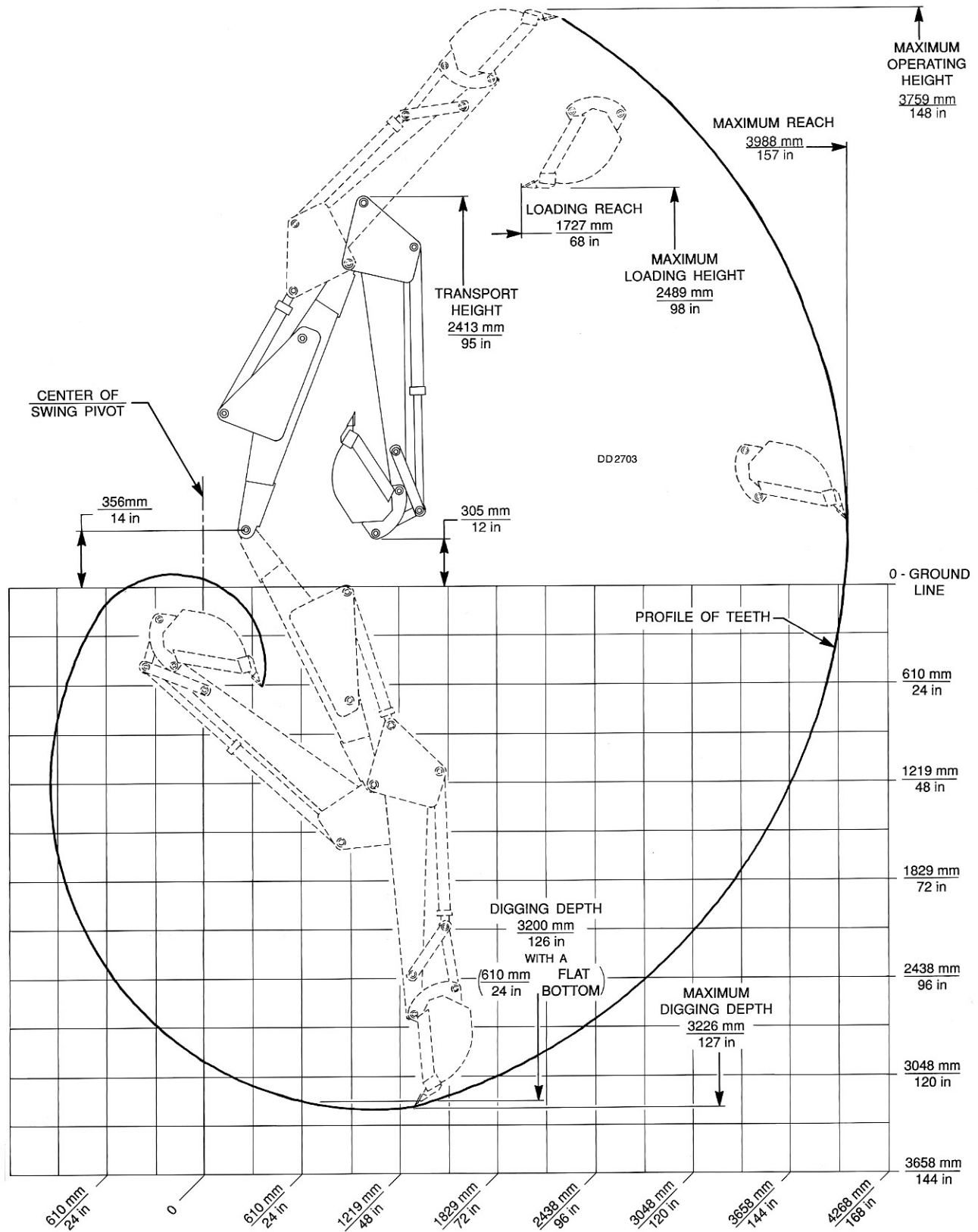
18 Inches 1.66 ft. (.047 m)

24 Inches 1.93 ft. (.055 m)

36 Inches 2.73 ft. (.077 m)

* Per ICED (SAE J49) Definition as found in "A" dictionary of terms and definitions of industrial tractors and construction equipment.

BH1050 SPECIFICATIONS



GENERAL INFORMATION

The purpose of this manual is to assist in setting up, operating and maintaining your backhoe. 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 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 in-line 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.

WARNING

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

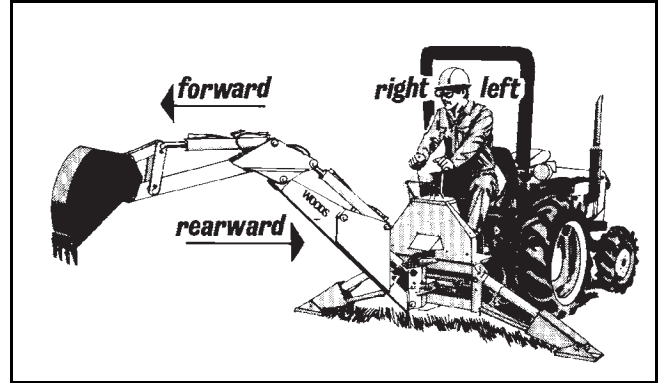


Figure 1. Backhoe Directions

Throughout this manual, references are made to right, left, forward and rearward directions. These are determined from the backhoe operator seat position facing rearward as shown in Figure 1.

Terms for backhoe components have some variations throughout the industry. We use SAE designations as shown in Figure 2.

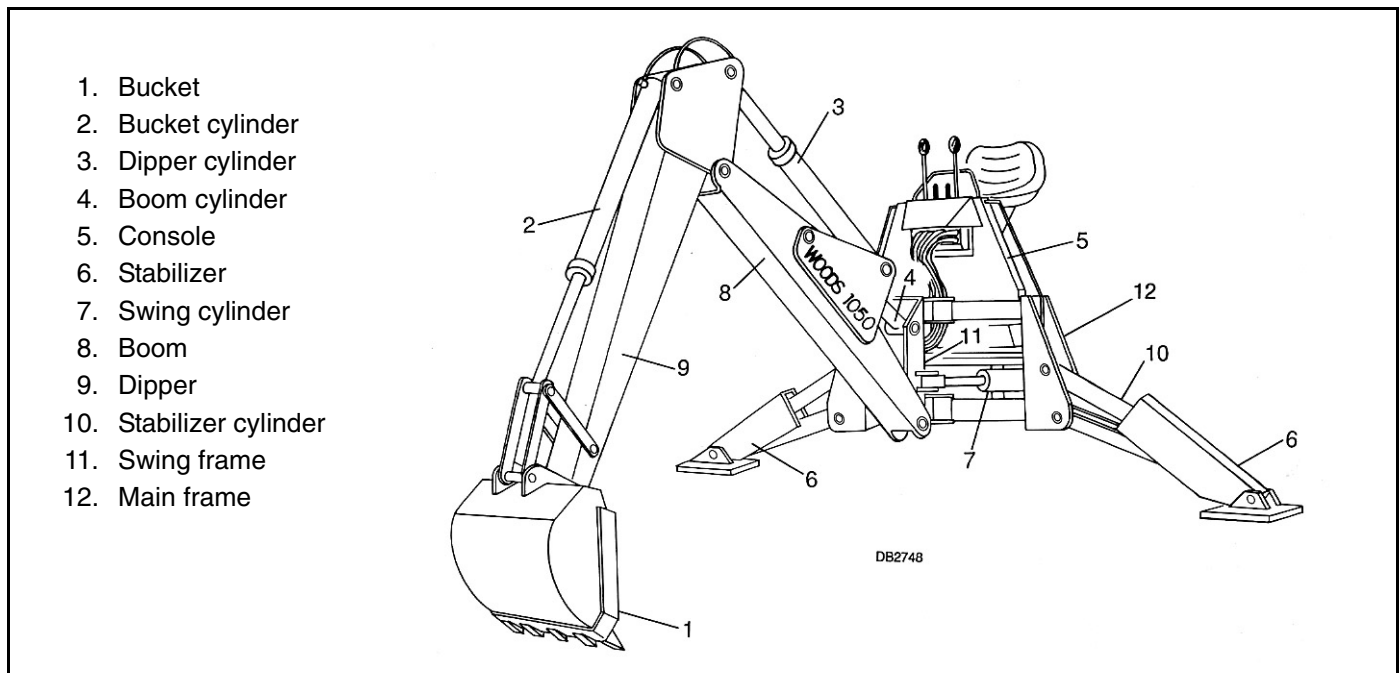


Figure 2. Backhoe Components



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.

INSTALLATION

■ 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 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 gan-

grene, 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.

■ Protective hose sleeves must cover all hydraulic hoses within 20 inches of the operator and be secured onto metal hose fittings. Replace hoses or sleeves if damaged or if protective sleeve cannot be properly positioned or secured.

■ 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.

■ 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.

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

■ 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 system in "locked up" position at all times.

SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



- Only mount this backhoe on 50 hp or greater, Category 2 or 3 tractors with 2000 lb. lift capacity and with OEM high-strength top link pin of at least 1" diameter or approved top link brackets and pins. Brackets and pins are available from your WOODS dealer for some tractors not originally equipped with 1" diameter pins.
- Refer to "Mounting Guide" (available from your dealer) for some tractors not originally equipped with 1" diameter pins.
- Never put backhoe into service unless backhoe manufacturer's 3-point hitch Saf-T-Lok[®] limiter or sub-frame has been installed and adjusted.
- Do not use a 3-point quick hitch. The quick hitch will result in improper PTO driveline geometry.
- To avoid possible hitch failure, read and follow the Saf-T-Lok Limiter Installation Instructions in the Assembly section before mounting backhoe to tractor 3-point hitch.
- Remove seat and upper support assembly before installing or removing backhoe from tractor. Failure to comply may result in equipment failure and/or personal injury.
- 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.
- Make sure safety chain is properly connected and secured to tractor.
- Do not operate backhoe unless there is adequate operator clearance as shown on safety decal. (Refer to Danger decal in Safety Decal section.)
- Always use the special heavy-duty top link (provided with backhoe) and the OEM high-strength top link pin (provided with tractor) to mount top link to tractor. Use a 1" x 5" grade 5 bolt to mount top link to backhoe.
- Be sure that backhoe is properly mounted, adjusted, and in good operating condition.
- Place and keep 3-point lift quadrant lever in lowered position at all times.
- If tractor is equipped with draft sensing control, set control to "HEAVY" (minimum sensitivity) position.
- 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.
- A minimum 25% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires, or front tractor weights. Weigh the tractor and equipment. Do not estimate.
- Clean all dirt, trash, and grease from operator's platform and steps.

OPERATION

- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- Before operating, make sure stabilizer pads are lowered firmly to the ground. Stabilizer arms provide support for the backhoe and support for the backhoe mounting brackets.
- Consult local utilities before working. Know location of all underground cables, pipelines, overhead wires, and other hazards in working area and avoid contact.
- Keep bystanders away from operator, stabilizer, and maximum bucket swing areas.
- Do not operate or transport equipment while under the influence of alcohol or drugs.
- Operate only in daylight or good artificial light.
- 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.
- 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 system in "locked up" position at all times.
- When operating controls, always sit in backhoe seat.
- The only time the backhoe may be operated from a position other than the operator seat is during backhoe attachment and removal. Operator must:
 - Read Mounting Kit Manual instructions on attaching and removing backhoe and use extreme care.
 - Always stand between rear tire and backhoe stabilizer arms or along side of tractor to avoid

SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



being trapped should the boom swing control be accidentally activated.

- Do not exceed these PTO speeds:
 - 540 rpm on 6-tooth spline PTO
 - 1000 rpm on 21-tooth spline PTO.
- Always dump spoil at least two feet away from opening.
- Use extreme care when working close to fences, ditches, other obstructions, or on hillsides.
- Be careful when swinging loaded bucket on a hillside. Always dump spoil on uphill side of backhoe to minimize the possibility of upset.
- Never leave equipment unattended with engine running or with bucket in raised position. Always engage swing and boom transport locks, relieve system pressure by operating controls, and remove ignition key before leaving equipment.
- Do not use backhoe for craning; it is primarily designed for digging. Mechanical failures such as hose rupture will cause a load to drop suddenly.

TRANSPORTATION

- Always engage swing and boom transport locks and attach Slow Moving Vehicle (SMV) sign before transporting backhoe.
- 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 system in “locked up” position at all times.
- Never exceed 20 mph during transport.
- Always comply with all state and local lighting and marking requirements.
- Never allow riders on power unit or attachment.
- Do not operate PTO during transport.
- Do not operate or transport on steep slopes.
- A minimum 20% of tractor and equipment weight must be on tractor front wheels when attachments are in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires, or front tractor weights. When attaining the minimum 20% weight on the front wheels, you must not exceed the Roll Over Protection Structure (ROPS) weight certification. Weigh the tractor and equipment. Do not estimate.
- Do not operate or transport equipment while under the influence of alcohol or drugs.

MAINTENANCE

- Do not modify or alter or permit anyone else to modify or alter the equipment or any of its components in any way.
- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- Your dealer can supply original equipment hydraulic accessories and repair parts. Substitute parts may not meet original equipment specifications and may be dangerous.
- Adjustment of system relief pressure must be done by a qualified, experienced dealership. Incorrect adjustment can result in system failures and serious personal injury.
- 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.
- Dealer service personnel must perform work that requires engine operation during service.
- Before working on backhoe, extend boom and dipperstick and place bucket on ground. Make sure that all system pressure has been relieved by operating controls before performing maintenance or service or before disconnecting any hydraulic lines.
- 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 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.

STORAGE

- Block equipment securely for storage.
- Keep children and bystanders away from storage area.
- Refer to Removing and Storing Backhoe in Operation section of backhoe manual.

SAFETY & INSTRUCTIONAL DECALS



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!
Replace Immediately If Damaged!

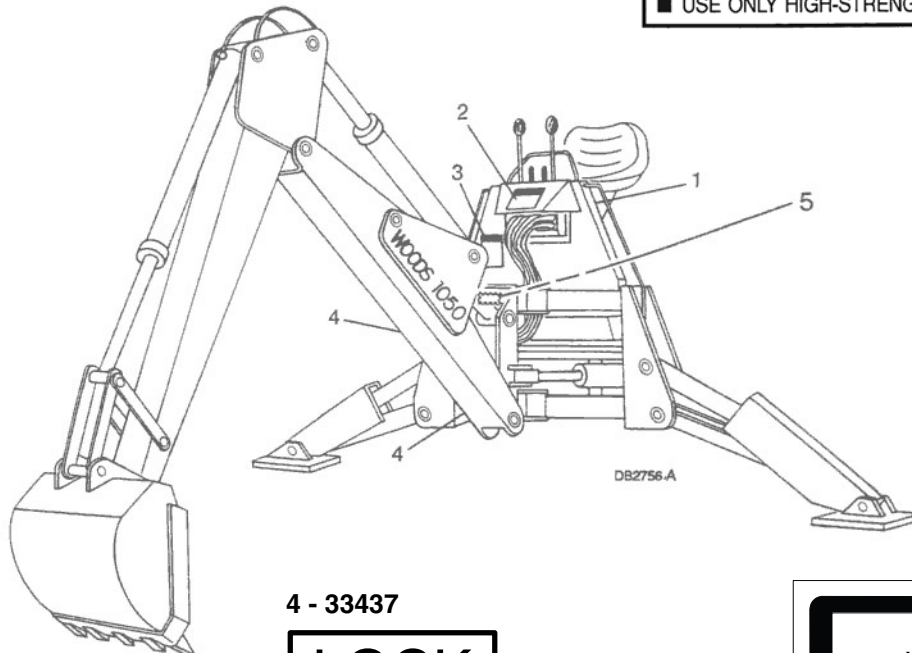


BE CAREFUL!

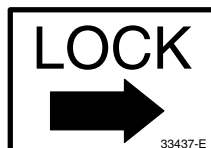
Use a clean, damp cloth to clean safety decals.


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.

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.




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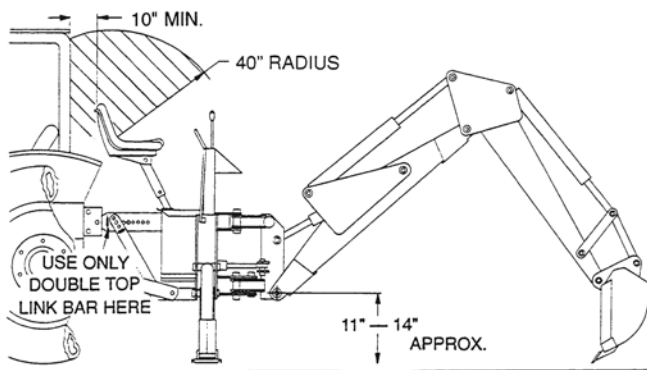
DANGER



CRUSHING HAZARD

FAILURE TO FOLLOW THESE STEPS MAY RESULT IN SERIOUS INJURY OR DEATH FROM BACKHOE BEING THRUST UPWARD, FORWARD OR REARWARD BY DIGGING FORCES.

- NEVER OPERATE BACKHOE UNLESS THE 3-POINT HITCH SAF-T-LOK® LIMITER HAS BEEN INSTALLED AND ADJUSTED AND OPERATOR'S AREA (SHOWN SHADED) IS FREE FROM OBSTRUCTIONS IN A 40" RADIUS FROM THE SEAT TO A POINT 10" BEHIND THE SEAT BACK.



- SEE MANUAL FOR PROPER ADJUSTMENT PROCEDURE.
- USE ONLY SPECIAL HEAVY TOP LINK PROVIDED WITH BACKHOE.
- USE ONLY HIGH-STRENGTH TOP LINK PINS.

34994

1 - 34994

5 - SERIAL NUMBER PLATE





SAFETY & INSTRUCTIONAL DECALS

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!
Replace Immediately If Damaged!



2 - 34296



WARNING

BEFORE OPERATING, READ MANUAL FOR ADDITIONAL INFORMATION ON SAFETY, OPERATION, SERVICE AND MAINTENANCE.

BACKHOE DIGGING FORCES CAN LIFT AND TURN TRACTOR OVER; TO AVOID SERIOUS INJURY OR DEATH:

- NEVER OPERATE BACKHOE UNTIL SAF-T-LOK® HITCH LIMITER OR SUB-FRAME HAS BEEN PROPERLY INSTALLED AND ADJUSTED. REFER TO OPERATOR'S MANUAL AND DANGER DECAL.

- OPERATE BACKHOE ONLY FROM SEAT AND WITH ALL SAFETY SHIELDING IN PLACE. MAKE SURE STABILIZER PADS ARE ON FIRM GROUND; AVOID SOFT OR STEEP BANKS.

DO NOT MOUNT BACKHOE ON TRACTOR WITH "QUICK ATTACH COUPLER" TYPE HITCH. NEVER ALLOW RIDERS OR OPERATE BACKHOE WITH BYSTANDERS IN THE MAXIMUM SWING AREA.

A MINIMUM 25% OF TRACTOR AND EQUIPMENT WEIGHT MUST BE ON TRACTOR FRONT WHEELS WITH BACKHOE IN TRANSPORT POSITION.

BEFORE TRANSPORTING, DISENGAGE PTO AND ENGAGE TRANSPORT LOCKS.

BEFORE LEAVING UNATTENDED, FULLY EXTEND BOOM AND DIPPERSTICK, THEN LOWER BUCKET TO GROUND, SHUT ENGINE OFF AND REMOVE KEY.

IF HIGH-PRESSURE OIL PENETRATES SKIN, IT MUST BE SURGICALLY REMOVED WITHIN A FEW HOURS BY A DOCTOR FAMILIAR WITH THIS FORM OF INJURY OR GANGRENE MAY RESULT.

KNOW LOCATION OF AND AVOID CONTACTING ALL UNDERGROUND CABLES, PIPELINES, OVERHEAD WIRES AND OTHER HAZARDS IN DIGGING AREA.

34296

3 - 34244



WARNING

MOUNTING

ONLY MOUNT ON CATEGORY "2" AND "3" TRACTORS WITH 2000 LB. MINIMUM LIFT CAPACITY AND WITH ORIGINAL EQUIPMENT HIGH-STRENGTH TOP LINK PIN OF AT LEAST 1" DIAMETER OR APPROVED TOP LINK BRACKETS AND PINS AVAILABLE FROM YOUR WOODS DEALER FOR SOME TRACTORS NOT ORIGINALLY EQUIPPED WITH 1" DIAMETER PINS.

FOLLOW THESE STEPS:

1. KEEP 3-POINT LIFT QUADRANT LEVER IN LOWERED POSITION AT ALL TIMES.
2. SET DRAFT SENSING CONTROL TO "HEAVY" (MINIMUM SENSITIVITY) POSITION.
3. MAKE SURE SAFETY CHAIN IS PROPERLY CONNECTED.

FAILING TO COMPLY WITH THESE REQUIREMENTS AND STEPS WILL BYPASS SAFETY DEVICES, CREATING ADDITIONAL LOADS ON TRACTOR AND BACKHOE COMPONENTS, AND MAY RESULT IN DEATH, PERSONAL INJURY, AND/OR SERIOUS EQUIPMENT FAILURE.

PTO SPEED

DO NOT EXCEED THESE PTO SPEEDS:

540 RPM ON 6-TOOTH SPLINE PTO;

1000 RPM ON 21-TOOTH SPLINE PTO.

HIGHER PTO SPEEDS CAN CAUSE EQUIPMENT FAILURE AND PERSONAL INJURY.

34244

OPERATION

The operator is responsible for the safe operation of the backhoe. The operator must be properly trained. Operators should be familiar with the backhoe, the tractor, and all safety practices before starting operation. Read the safety rules and safety decals on page 7 to page 11.

Hydraulic pressure for backhoe operation is supplied by a tractor PTO driven pump. Two pumps are available to operate at either 540 or 1000 rpm. Make sure you have the proper pump for your tractor rpm. Never exceed the rated pump rpm. Operating the pump in excess of the rated rpm will cause overheating and damage to the equipment.

DANGER

- **Never put backhoe into service unless backhoe manufacturer's 3-point hitch Saf-T-Lok® limiter or sub-frame has been installed and adjusted.**
- **Do not operate backhoe unless there is adequate operator clearance as shown on safety decal. (Refer to Danger decal in Safety Decal section.)**

WARNING

- **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.**
- **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.**
- **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.**
- **Consult local utilities before working. Know location of all underground cables, pipelines, overhead wires, and other hazards in working area and avoid contact.**
- **A minimum 20% of tractor and equipment weight must be on tractor front wheels with back-**

hoe in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires, or front tractor weights. When attaining the minimum 20% weight on the front wheels, you must not exceed the Roll Over Protection Structure (ROPS) weight certification. Weigh the tractor and equipment. Do not estimate.

Start and Stop Operation

WARNING

- **Operate tractor PTO at 540 RPM. Do not exceed.**

Power for operating backhoe hydraulic system is supplied by a hydraulic pump driven by the tractor PTO. Instructions for engaging and disengaging the PTO are in your tractor manual. Learn how to disengage PTO quickly should an emergency occur.

Never exceed the rated pump rpm. Operating the pump in excess of the rated rpm will cause overheating and equipment damage.

GENERAL OPERATION

WARNING

- **Place and keep 3-point lift quadrant lever in lowered position at all times.**
- **If tractor is equipped with draft sensing control, set control to "HEAVY" (minimum sensitivity) position.**
- **Do not use backhoe for craning; it is primarily designed for digging. Mechanical failures such as hose rupture will cause a load to drop suddenly.**
- **Never allow children or untrained persons to operate equipment.**

CAUTION

- **When operating controls, always sit in backhoe seat.**

Mechanical failures such as a hose rupture will cause a load to drop. Lifting a heavy load with the dipper, then operating the boom, could cause boom to drop. In either case, if anyone is in the operating area (maximum reach of bucket) as shown in Figure 3, serious injury or death could occur.

Do not dig with backhoe unless stabilizers are down and on a firm surface. Stay clear of steep areas or excavation banks that are soft or could give way.

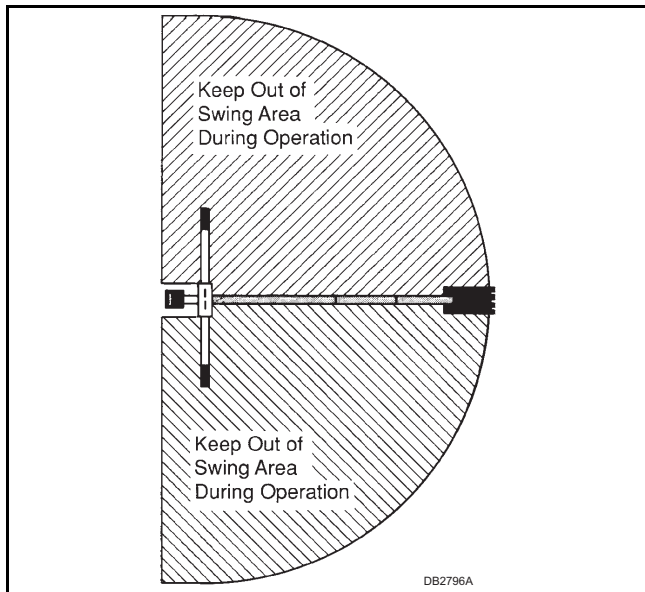


Figure 3. Backhoe Swing Area.

POSITION THE MACHINE

Before operating in an unfamiliar area, walk around the full length of the proposed site and check for hidden holes, drop-off or obstacles that could cause an accident.

Lower stabilizers until they carry the weight of the backhoe. If tractor is equipped with a front loader, place the bucket flat on the ground. Lower loader lift arms until weight is removed from front tractor tires.

Level the machine using stabilizers and front loader before starting to dig.

Stability is very important when operating backhoe in the extreme swing positions as this causes weight transfer.

CONTROL HANDLE OPERATION

Refer to Figure 4.

Assume your position in the operator's seat.

When engaging optional PTO-mounted pump, engine rpm should always be low. Once engaged, engine rpm may be increased to desirable operation speed.

When becoming familiar with backhoe controls, start with a lower rpm.

Before operating, perform a functional test by placing control handles in their various positions and making certain correct operation occurs, matching decals on operator's console. Pay specific attention to the float position of boom. Do not operate backhoe if functions differ from decal; serious injury or death could occur.

It is not difficult to become a successful operator. Control lever operating decals (shown in Figure 4) are next to the operating control levers. Study these decals; they will assist you in becoming familiar with the controls.

Pushing handle 1 forward will lower left stabilizer; pulling back raises it.

Pushing handle 2 forward will lower right stabilizer; pulling back raises it.

Pulling left control back (toward A) raises boom; pushing it forward (toward C) lowers it. Full forward (toward C) is the float position.

Moving left handle left (toward B) swings boom left; moving it right (toward D) swings boom right.

Pulling right control back (toward E) moves dipper down and toward operator; pushing it forward (toward G) moves it up and away from operator.

Moving right handle left (toward F) curls bucket toward operator; moving it right (toward H) extends bucket out away from operator.

Operate the control levers, swinging the boom several times to practice control. Do not operate the swing more than 45° each way the first few times. Gradually increase arc.

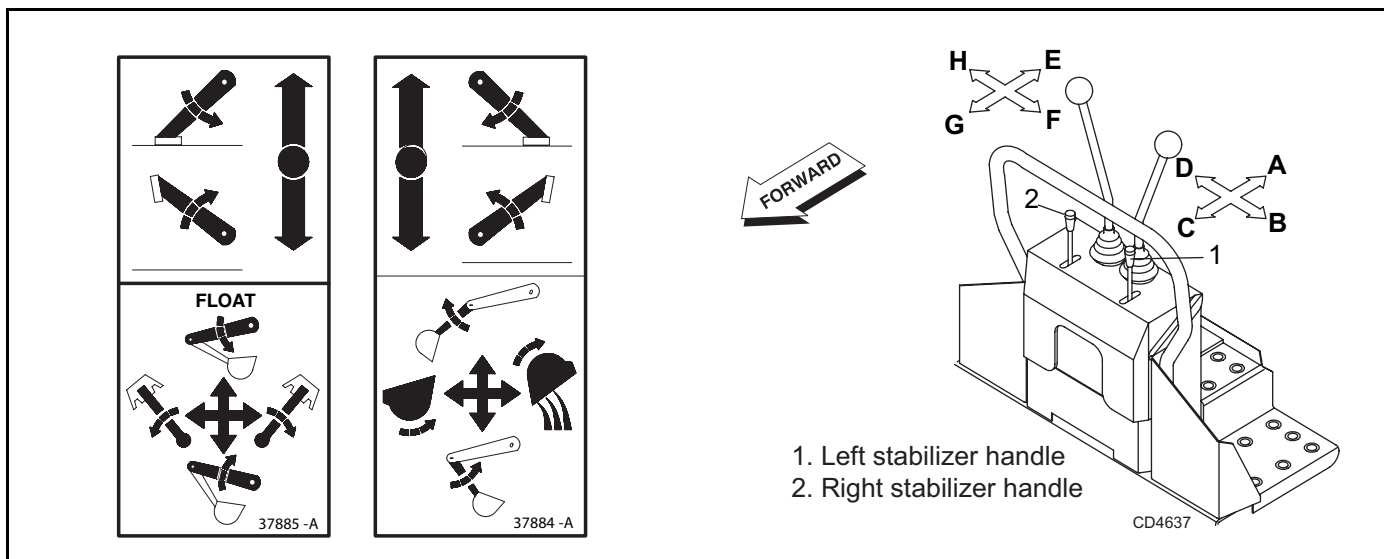


Figure 4. Operator's Controls (Typical View)

After becoming familiar with the backhoe operation, practice coordinated use of the controls in a safe open area at reduced engine speed. Gradually increase engine speed as the technique is mastered.

Operate backhoe gently and smoothly. Avoid swinging boom into mainframe. Sudden stopping or jerking could result in serious damage to tractor and backhoe.

Strive to develop a smooth digging cycle. Avoid abrupt or jerky movements. This is accomplished by operating two or more controls at the same time and not allowing the cylinders to reach the limit of travel.

Should you become confused during operation, simply let go of the controls. The valve control handles will automatically return to neutral.

START EXCAVATION

! WARNING

■ Consult local utilities before working. Know location of all underground cables, pipelines, overhead wires, and other hazards in working area and avoid contact.

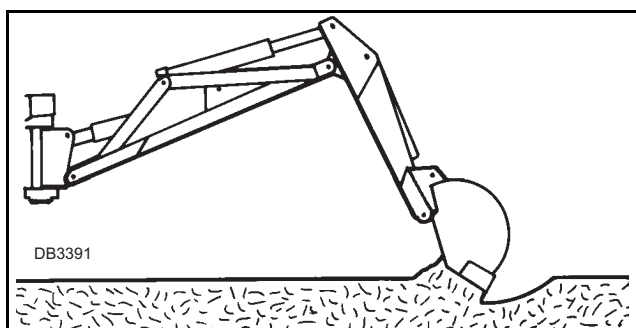


Figure 5. Starting Position

To start the excavation, position backhoe as shown in Figure 5 for maximum breakout force.

Actuate the dipper cylinder to start digging. Approximately halfway through digging cycle, start bucket curl while continuing crowding dipper in. Should bucket stall, raise boom slightly.

Do not use down pressure on the boom when starting to dig, as this will lift the machine and move it out of alignment with the work.

FILL BUCKET

Control bucket attitude throughout digging cycle to keep teeth parallel to bottom of excavation. This will provide best penetration angle and minimize dragging and scraping bucket through the ground.

Penetration depth is determined by soil condition and type.

Only use dipper and bucket during the digging cycle. As the dipper moves the bucket through the soil, curl bucket to maintain proper bucket position.

At the end of the pass, or when bucket is full, curl bucket completely, lift bucket from excavation and swing boom to dump site.

To obtain a cleaner trench and avoid material buildup directly in front of backhoe, extend dipper and curl bucket completely while starting to lift it out of the excavation. This will allow excess material to fall back into the excavation.

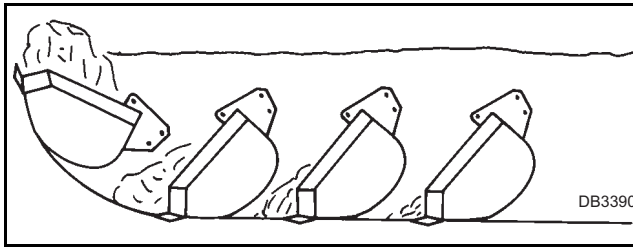


Figure 6. Fill Bucket

DUMP AND RETURN CYCLE

Keep the swing-dump-return cycle as brief as possible. Keep dipper moving outward and start boom swing as soon as the bucket clears the excavation. Continue extending dipper and, as you approach the spoil pile, start to dump bucket.

When bucket is empty, dipper and bucket are in position to resume digging upon return to the excavation.

TRENCHING AND EXCAVATING

Trenching is the most basic backhoe digging operation. Other operations are variations of this basic function.

To maintain a level trench bottom, set bucket at proper approach angle and while crowding dipper-stick in, continually move bucket curl lever to maintain correct cutting angle. At the same time, place boom control in the full forward (float) position and keep the bucket in the same plane.

When handle is placed in the float position, pressure on both sides of boom cylinder is released.

Digging near center of swing so material may be dumped on either side will produce good results. Never dig near stabilizers.

Continue the trench by moving machine along trench centerline away from existing excavation. Move machine approximately one-half the effective backhoe reach. Moving too far will require excessive down pressure for digging and hand clean-up of trench bottom.

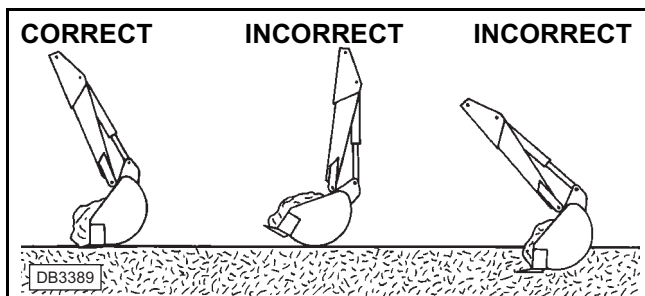


Figure 7. Trenching

SIDE SLOPE TRENCHING / EXCAVATING

! WARNING

- Be careful when swinging loaded bucket on hill-side. Always dump spoil on uphill side of backhoe to minimize rollover possibility.

When operating on a side slope, the backhoe must be positioned using one of these two methods as shown in Figure 8 or Figure 9.

When operating on a side slope, always place the trench spoil on the uphill side.

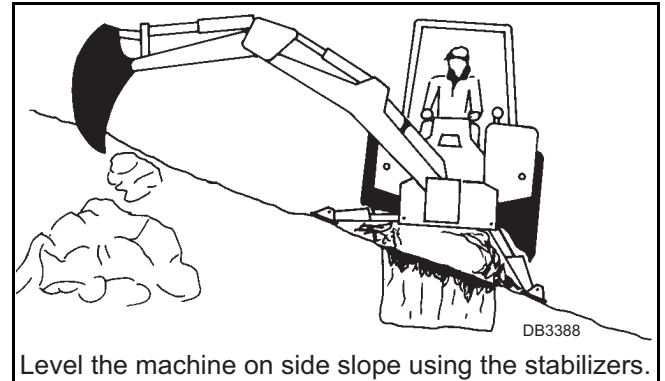


Figure 8. Level with Stabilizers

When leveling with a cutout, cut a level pad for the uphill side of the machine and place spoil on the downhill side as shown in Figure 9.

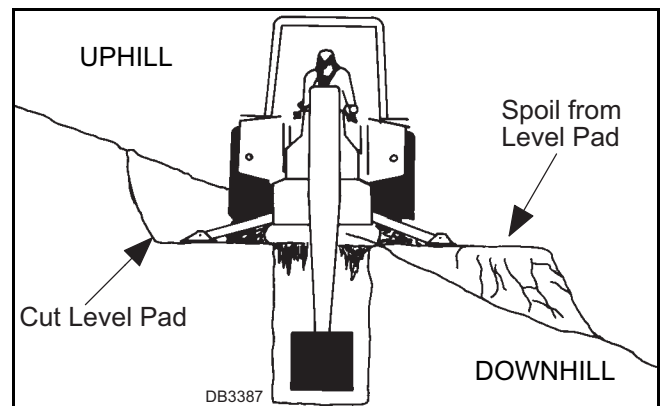


Figure 9. Level with Cut Out

TRANSPORTING

! WARNING

- Always engage swing and boom transport locks and attach Slow Moving Vehicle (SMV) sign before transporting backhoe.

- 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 system in “locked up” position at all times.

WARNING

■ Never leave equipment unattended with engine running or with bucket in raised position. Always engage swing and boom transport locks, relieve system pressure by operating controls, and remove ignition key before leaving equipment.

Transport and Swing Lock Installation

IMPORTANT

■ Before operating backhoe, disengage transport lock bar and store swing lock pin. Push transport lock bar down fully to prevent damage.

Engage transport lock by fully retracting boom and dipper. Position transport latch plate (1), located on right side of swing frame, over transport lock pin (2). Secure with safety pin (4). See Figure 10.

Center boom from side to side and install swing lock pin (6) through plates (8) and swing frame (7). Place swing lock pin (6) in storage hole (9) when not in use.

Always raise stabilizers before transporting backhoe.

REMOVING AND STORING BACKHOE

DANGER

■ The only time the backhoe may be operated from a position other than the operator seat is during backhoe attachment and removal. Operator must:

- Read Mounting Kit Manual instructions on attaching and removing backhoe and use extreme care.
- Always stand between rear tire and backhoe stabilizer arms or along side of tractor to avoid being trapped should the boom swing control be accidentally activated.

WARNING

■ Keep all persons away from operator control area while performing adjustments, service, or maintenance.

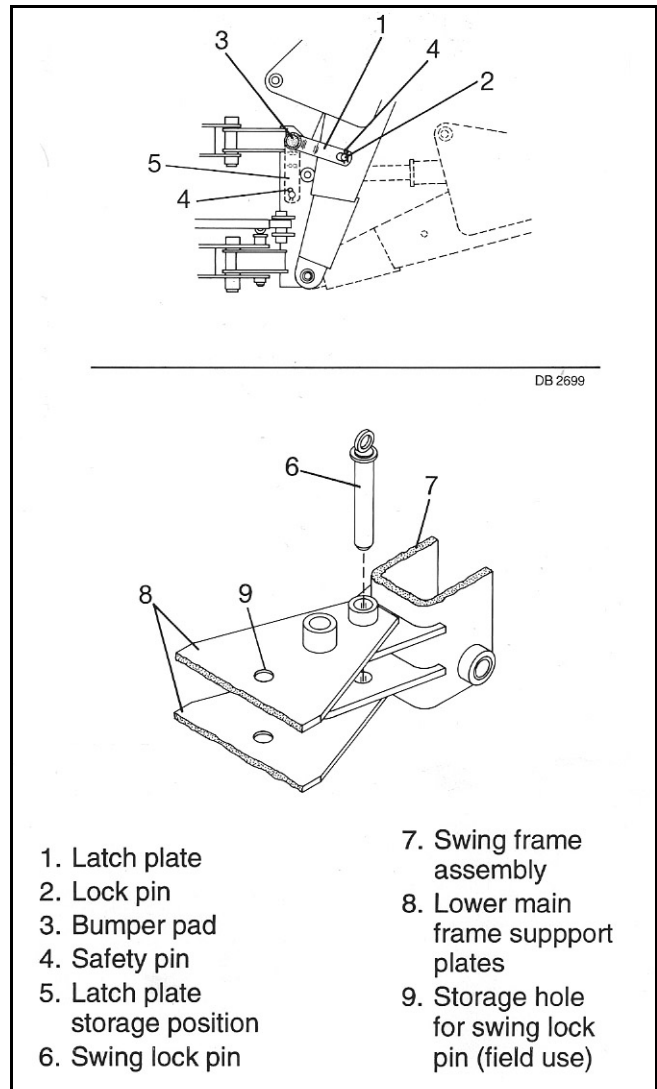


Figure 10. Transport and Swing Lock Installed

3-Point Hitch Saf-T-Lok®

Center the boom, install swing lock pin, then extend boom and dipperstick. Rest bucket on the ground. Lower stabilizers to take backhoe weight off of tractor.

Remove pin that attaches top link to tractor. Remove lower 3-point arms from backhoe. Place blocks under mainframe and raise stabilizers to lower backhoe mainframe onto blocks. Block backhoe as necessary to make it stable.

Disconnect hydraulic pump from tractor and store off ground. Slowly drive tractor away from backhoe.

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 CHECK LIST (OWNER'S RESPONSIBILITY)

The operator should perform the following check list before operating the backhoe.

- ___ Check that backhoe is properly and securely attached to tractor.
- ___ Make sure all hydraulic connections are tight and all hydraulic lines and hoses are in good condition before engaging tractor PTO.

- ___ Check that there are no leaks in the hydraulic system. Before operating, all hydraulic hoses must be routed properly and not be twisted, bent sharply, kinked, pulled tight or frayed.
- ___ During inspection, check that all nuts and bolts are secure and clevis pins are properly cotter pinned.
- ___ Be sure special heavy-duty top link, provided with backhoe, is installed.
- ___ Make sure only original equipment high-strength top link pin, provided with tractor, is used to attach top link to tractor.
- ___ Use a 1" x 5" grade 5 bolt to mount top link to backhoe.
- ___ Make sure tractor lower lift arm stabilizers (blocks or chains) are positioned to prevent lift arms and backhoe from swaying.
- ___ Place all backhoe controls in neutral position before starting tractor engine.
- ___ Check hydraulic reservoir level.
- ___ Remove transport lock bar from the boom. Push transport lock bar down fully to prevent damage.
- ___ Place and keep 3-point lift quadrant lever in lower position at all times.
- ___ Set draft sensing control to "heavy" (minimum sensitivity) position. The minimum sensitivity setting indicates to the tractor lift system that a heavy load is being applied to the lift arms and will minimize the potential for the lift arms to raise. Raising lower lift arms would apply greater loads to the Saf-T-Lok® diagonal braces, which is not desirable.



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.**

■ Before working on backhoe, extend boom and dipperstick and place bucket on ground. Make sure that all system pressure has been relieved by operating controls before maintenance, service, or disconnecting any hydraulic lines.

! 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.

OPTIONAL AUXILIARY PUMP AND HYDRAULIC SYSTEM

IMPORTANT

■ Fill with clean oil. Do not mix oil types or grades.

Daily, check the fluid level in reservoir with filler cap dipstick. Contamination will shorten the life of hydraulic system components. Change oil and filter after first 20 hours of operation and then every 200 hours of operation or annually, whichever occurs first. In extremely dusty or dry conditions, more frequent changes may be necessary. System capacity is approximately 5 to 5-1/2 US gallons.

Engage PTO and run at idle for 5 minutes, then check oil level. Add fluid as necessary.

Recommended Oils and Temperature Ranges **Do not mix oil grades or types**

SAE Hydraulic Transmission Fluid	All Temperatures
Type "A" or "F" ATF	All Temperatures
SAE 30-30W	90° F and above
SAE 20-20W	35° - 90° F
ASAE 10-10W	35° F and below

RELIEF VALVE

This valve is pre-set at the factory to prevent system pressure from exceeding 2100 psi. Do not attempt to reset the valve for open-center hydraulic systems. If valve is malfunctioning, replace it with an authorized factory replacement part or have service done by a qualified dealer.

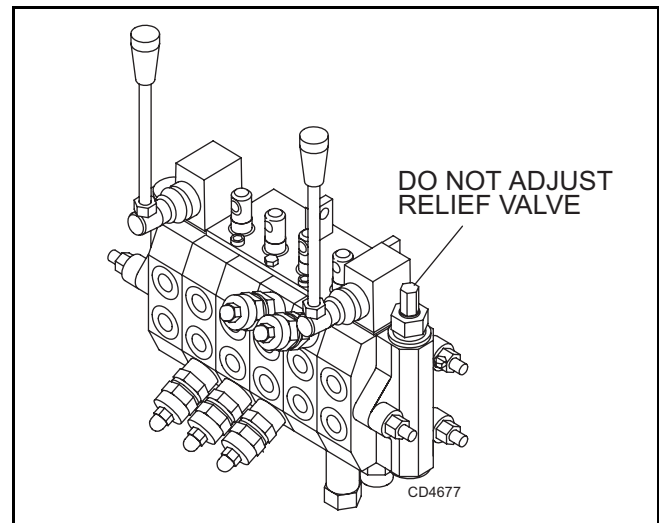


Figure 11. Relief Valve

BUCKET TOOTH REPLACEMENT

Remove worn tooth by driving a chisel between shank and tooth.

Install replacement tooth and use a punch to peen tooth to shank on both sides.

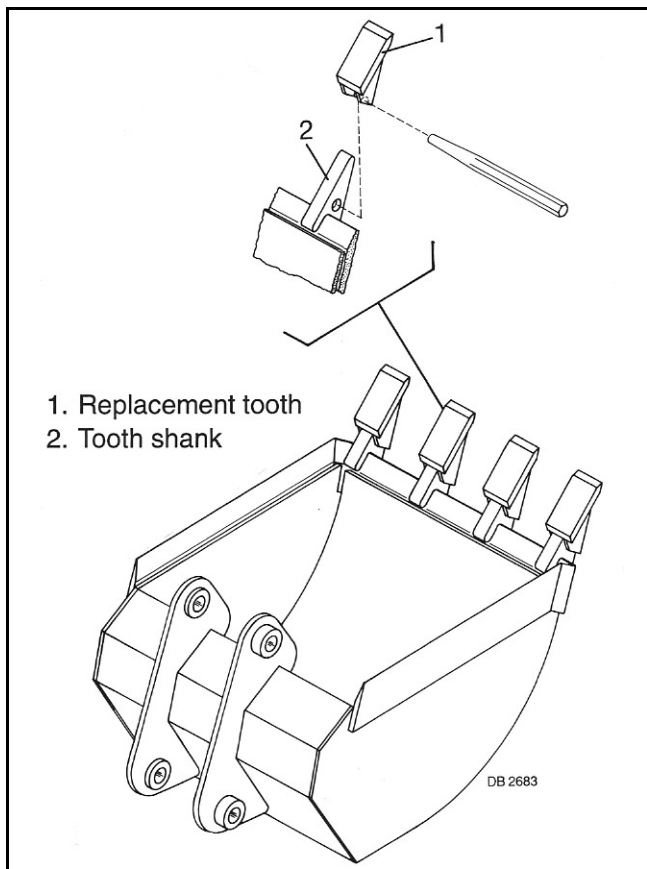


Figure 12. Tooth Replacement

HYDRAULIC HOSES AND FITTINGS

Hydraulic hoses are severely worked on a backhoe. Examine them daily and replace if necessary. Hose routing is very important. Make certain hoses can move freely, without kinking, and cannot be damaged or cut by backhoe action.

When tightening hoses and fittings, always use two wrenches: one to hold hose and one to tighten fitting. This will prevent hose from twisting and kinking.

Always back lock nut off and screw fitting all the way in for fitting that use O-rings for sealing. Then hold in position and tighten lock nut.

IMPORTANT

■ **Fittings with O-rings and flange do not require additional sealant, replace damaged O-rings.**

LUBRICATION

⚠ WARNING

■ **Keep all persons away from operator control area while performing adjustments, service, or maintenance.**

Do not let excess grease collect on or around parts, particularly when operating in sandy areas. Figure 13 shows lubrication points for the backhoe.

It is recommended that all fittings be lubricated daily or every eight hours of operation. In very wet or dry conditions, lubricate every four hours of operation. Use an SAE multi-purpose type grease for all locations shown unless otherwise specified. Be sure to clean fitting thoroughly before using grease gun. One good pump of most guns is sufficient.

Position backhoe for easy lubrication by placing boom and dipper at 90° to each other with bucket cutting edge vertical and teeth resting on ground. Lower stabilizers to lubricate cylinders.

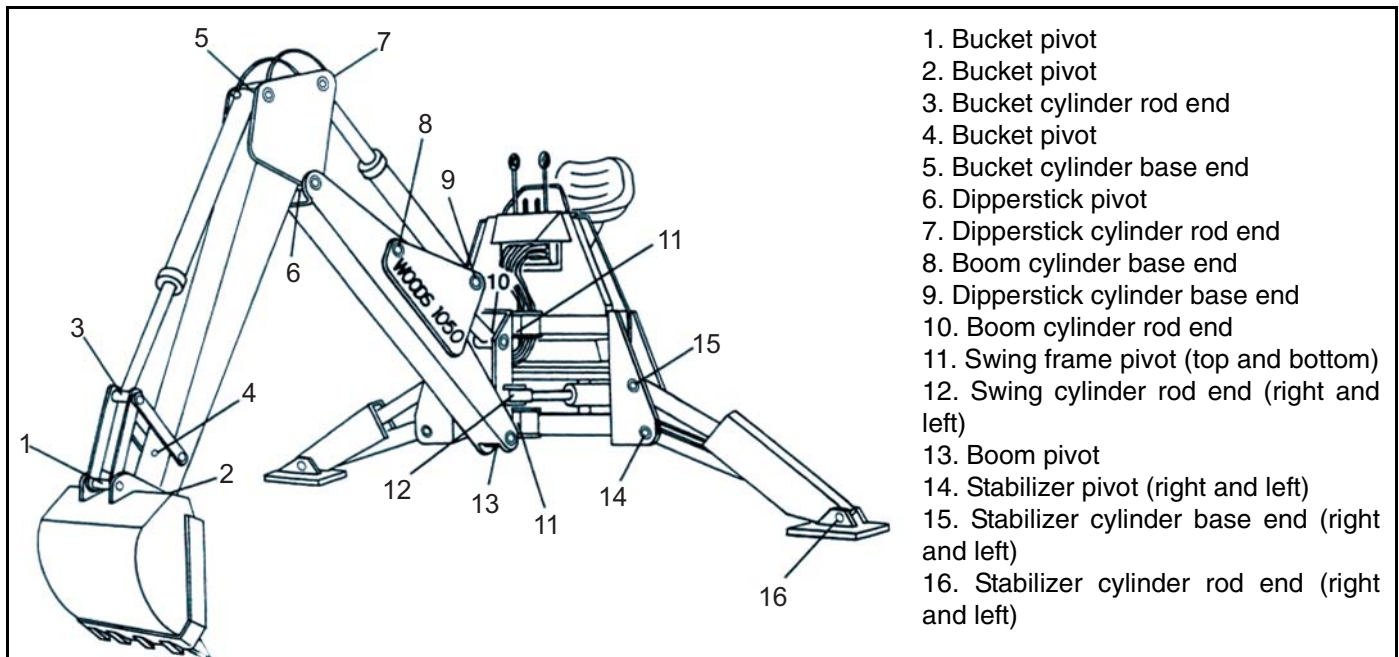


Figure 13. Lubrication Points

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Noisy pump caused by cavitation	Oil too heavy Oil filter plugged Suction line plugged or too small Suction line kinked	Change to proper viscosity. Replace filter. Clean line and check for size. Replace line.
Oil heating	Oil supply low Contaminated oil Setting of relief valve too high or too low Pump operating too fast	Fill reservoir. Drain reservoir, change filter, and refill with clean oil. Set to correct pressure. Do not exceed recommended rpm PTO speed.
Shaft seal leakage	Worn shaft seal	Replace shaft seal.
Foaming oil	Low oil level Air leaking into suction line Wrong kind of oil Moisture in oil	Fill reservoir. Tighten fittings. Drain and refill reservoir with non-foaming oil. Keep oil temperature below 180° and continue to operate as oil dries out, or replace oil and purge system if foaming is excessive.
Boom drops as dipper or bucket cylinder lever is activated while boom control is in raised position	Load check valve leaking	Clean or replace check valve assembly.
Jerky operation	Hydraulic hoses plumbed incorrectly	Check hydraulic plumbing schematic and correct hose routing as required.

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, it may be more time and cost effective 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.**

■ **Before working on backhoe, extend boom and dipperstick and place bucket on ground. Make sure that all system pressure has been relieved by operating controls before maintenance, service, or disconnecting any hydraulic lines.**

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.

HYDRAULIC CYLINDER REPAIR

General Hydraulic Repair Information

A clean working area is essential for any hydraulic repair.

All parts must be carefully cleaned before reassembly. We recommend that when repairing hydraulic components, you always replace existing seals with new ones. Clean all components in solvent and blow dry with low pressure air.

Boom, Dipperstick, Bucket & Stabilizer Cylinders (Figure 14)

Disassembly

On the 2" or 2-1/2" spanner nut type cylinders, Figure 14, unscrew spanner nut (4) using a spanner wrench, or carefully use a punch and hammer.

Tap rod guide (5) into cylinder body (8) about 1/2". Remove 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) 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.

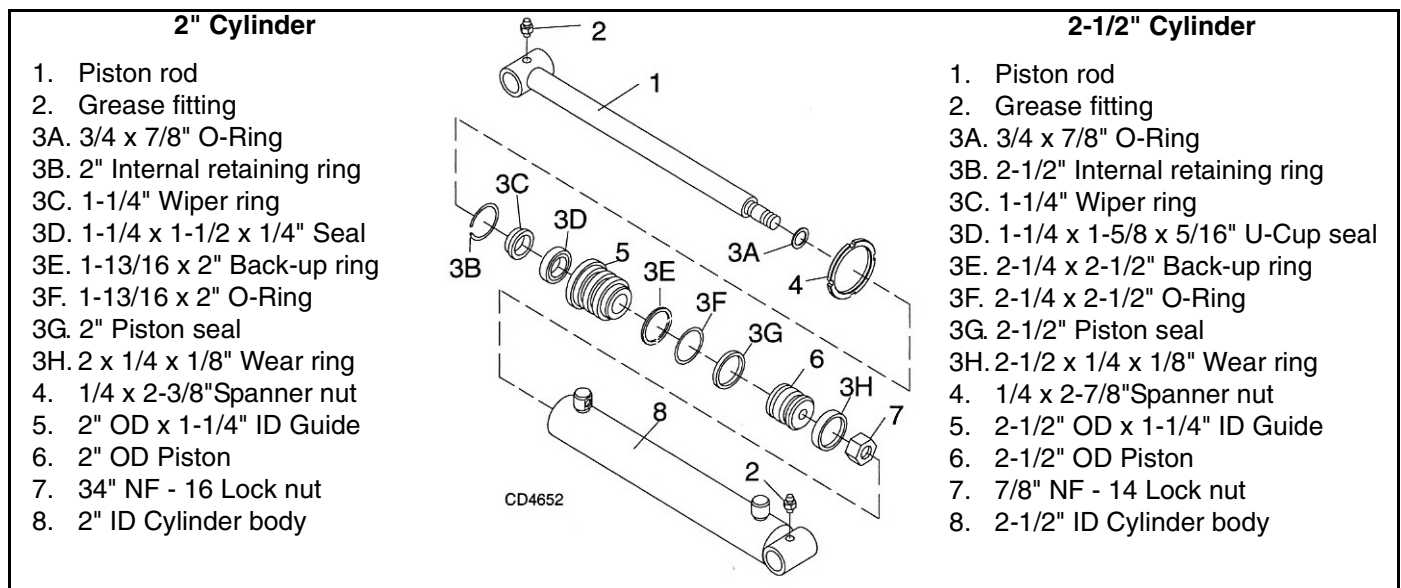


Figure 14. Spanner Nut Type Hydraulic Cylinder Assemblies

Assembly

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 wiper ring (3C) in outer rod guide groove. Slide rod guide assembly (5) onto rod (1). Place wear ring (3I) in narrow groove of piston. Place piston ring (3G) in wide piston groove.

Lightly coat rod threads with hydraulic oil and slide O-ring (3A) over threads and into groove. Install piston (6) onto rod (1) with wear ring on side away from rod guide. Install lock nut (7) and torque to 175 lbs-ft.

Compress wear ring and 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. Screw spanner nut (4) into rod guide (5) using a spanner wrench, or carefully use a punch and hammer.

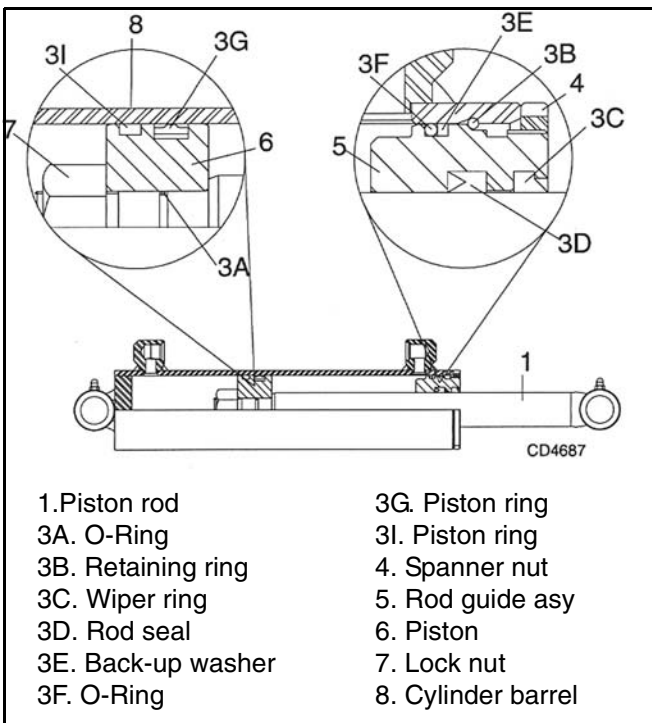


Figure 15. Hydraulic Cylinder Assembly

Installing Valve

Reconnect control linkage to valve.

Control handles should be positioned with console as shown in Figure 16.

When completing a maintenance function on the valve, perform a functional test by placing control handles in

their various positions and make certain the correct operation occurs corresponding to the decals on the operator's console. Pay specific attention to the float position of the boom. Do not operate backhoe if functions differ from the decal.

If the functions differ from the decal, check to make sure control linkage is correctly installed and check plumbing schematics to make sure hoses are correctly connected.

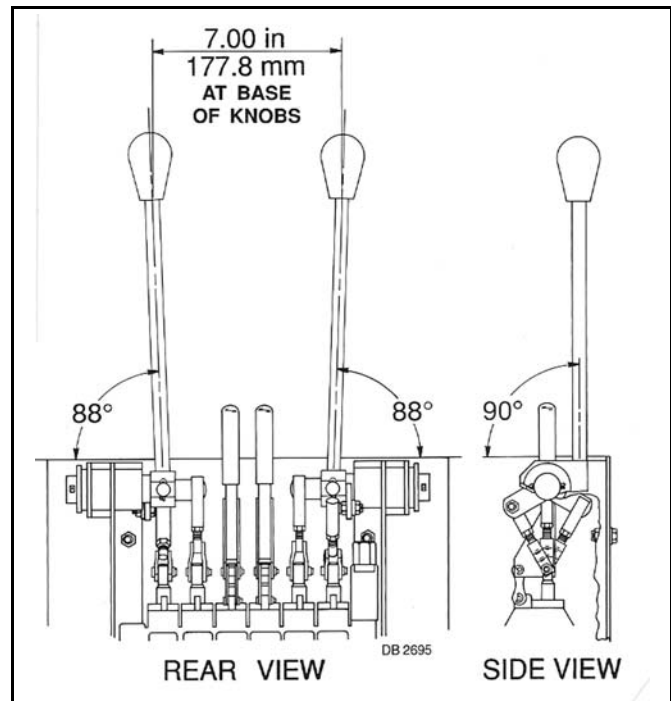


Figure 16. Control Lever Adjustment

HYDRAULIC PUMP REPAIR

There are two suppliers approved for backhoe pumps. They are Cessna and Sundstrand. Either type of pump may be used to supply hydraulic pressure for the backhoe, but the components of the pumps are not interchangeable. You must determine which pump you are repairing and obtain the correct repair parts.

Repair of the pump is limited to shaft seal replacement.

HYDRAULIC VALVE REPAIR

Valve repair should be accomplished in a clean work place. Individual components for many of the assemblies are not available as repair parts. This will simplify repair and allow you to replace complete assemblies.

Pressure Settings on Shock/Dampening Valves

Pressure settings on shock/dampening valves are pre-set at the factory. Although they are adjustable, they must not be reset in the field using backhoe hydraulic

system. The backhoe pump will separate or crack if system pressure exceeds the maximum.

Relief valve adjustment requires a test bench and accurate gauges.

Adjusting System Relief Valve Pressure



■ Adjustment of system relief pressure must be done by a qualified, experienced dealership. Incorrect adjustment can result in system failures and serious personal injury.

Place a pressure gauge in the pump pressure line at relief valve. When installing pressure gauge, be sure to use steel fittings that will withstand pressure up to 5000 psi.

Remove cap nut (2a), see Figure 17. Adjusting screw (2c) has a hex socket - rotate screw clockwise to increase pressure and counter-clockwise to decrease pressure.

Start tractor PTO and set system relief valve pressure at 2100 psi. When pressure is adjusted, shut tractor PTO and tractor off. Replace cap nut (2a) on system valve.

Replacing Shock/Dampening Valves

It is not necessary to remove console valve from console to replace shock/dampening valve cartridges. Remove console cover and replace them. Be sure you install valve cartridges set at the correct pressure. Valves are all pre-set at 2400 psi.

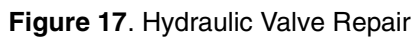
Shock / Dampening Valve	Pressure Setting
4AA	2100 psi
4BB	2500 psi

Segment Replacement

Relieve system pressure and remove valve from backhoe. Remove tie rods and separate the valve sections. See Figure 17.

Replace defective sections as necessary. Make sure you install two spacers between each section of each tie rod. Note the location of O-rings (7 & 8). They must be placed in the location between valve sections as shown in Figure 17.

When assembling valve sections, use care when torquing nuts on tie rods. This must be done in steps - that is to say, gradually increasing the tightening torque up to 13 lbs-ft. in an alternating sequence. Non-uniform or excessive tightening can cause binding of spools. Failure to attain the proper torque can result in leaks. Always use a torque wrench.



1.Complete hydraulic valve	p. Dowel bushing	h. Front spring washer
2.1350 - 3000 PSI Relief valve asy	q. Scraper	i. Valve poppet
a. Cap nut	r. Lever bracket	j. Back-up ring
b. Copper washer	s. Cap screw	k. Seal
c. Adjusting screw	t. Spool	l. Valve seat
d. Retainer	5.Dipperstick segment complete	m. Back-up ring
e. Copper washer	a. Plug	n. Washer
f. Rear spring washer	b. Housing	o. Ball, Dia. 5
g. Spring	c. Connecting bolt	10.Swing segment
h. Front spring washer	d. Spring cap	11.Left stabilizer segment
i. Valve poppet	e. Spring	12.Right stabilizer segment
j. Valve seat	f. Spring cap	13.Bucket segment
3.Check valve assembly	g. Spacer	14.Spacer
a. Poppet	h. O-Ring	15.Standard exhaust section
b. Spring	i. Dipperstick segment	16.Tie rod
c. Seal	j. O-Ring	17. Nut
d. Car plug	k. Flanged washer	18.Shock/dampening valve, 2400 PSI
4.Spool position control 04 asy	l. Dowel bushing	a. Cap nut
a. Plug for 04 positioner	m. Scraper	b. Washer
b. Snap ring	n. Lever bracket	c. Adjusting screw
c. Bushing for 04 positioner	o. Cap screw	d. Retainer
d. Ball	p. Spool	e. Copper washer
e. Spring	6.Front port inlet section	f. Rear spring washer
f. Ball	7.O-Ring	g. Spring for relief valve
g. Connecting bolt	8.O-Ring	h. Front spring washer
h. Washer	9.Shock/dampening valve, 2400 PSI	i. Valve poppet
i. Spacer	a. Cap nut	j. Back-up ring
j. Spring for 04 positioner	b. Washer	k. Seal
k. Spring flange	c. Adjusting screw	l. Valve seat
l. Housing	d. Retainer	m. Back-up ring
m. Boom segment	e. Rear spring washer	n. Seal
n. O-Ring	f. Copper washer	o. Washer
o. Flanged washer	g. Spring for relief valve	

SWING CYLINDER CUSHION OIL FLOW **(FIGURE 18 & FIGURE 19)**

Swing Cylinder Operational Theory

Our swing cylinders are designed to cushion and soften swing action.

Cross sections are shown in Figure 19 to give you a view of the internal workings of the cylinder. Cushioning action is obtained by incorporating restrictors in the cylinders. When the boom is swung, the fluid is allowed to flow normally until the cylinder nears the end of the stroke, then fluid is forced through the restrictors to obtain the cushioning action.

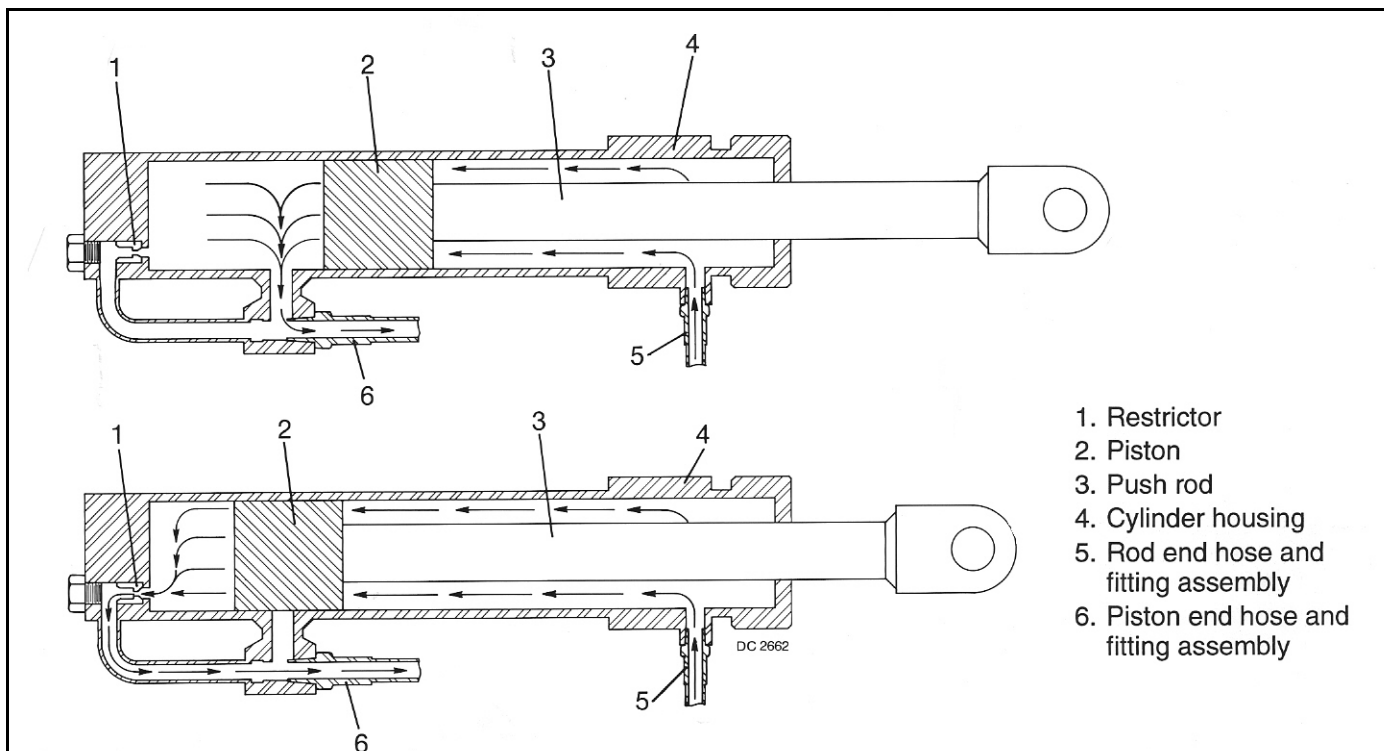


Figure 18. Swing Cylinder Oil Flow - Energy

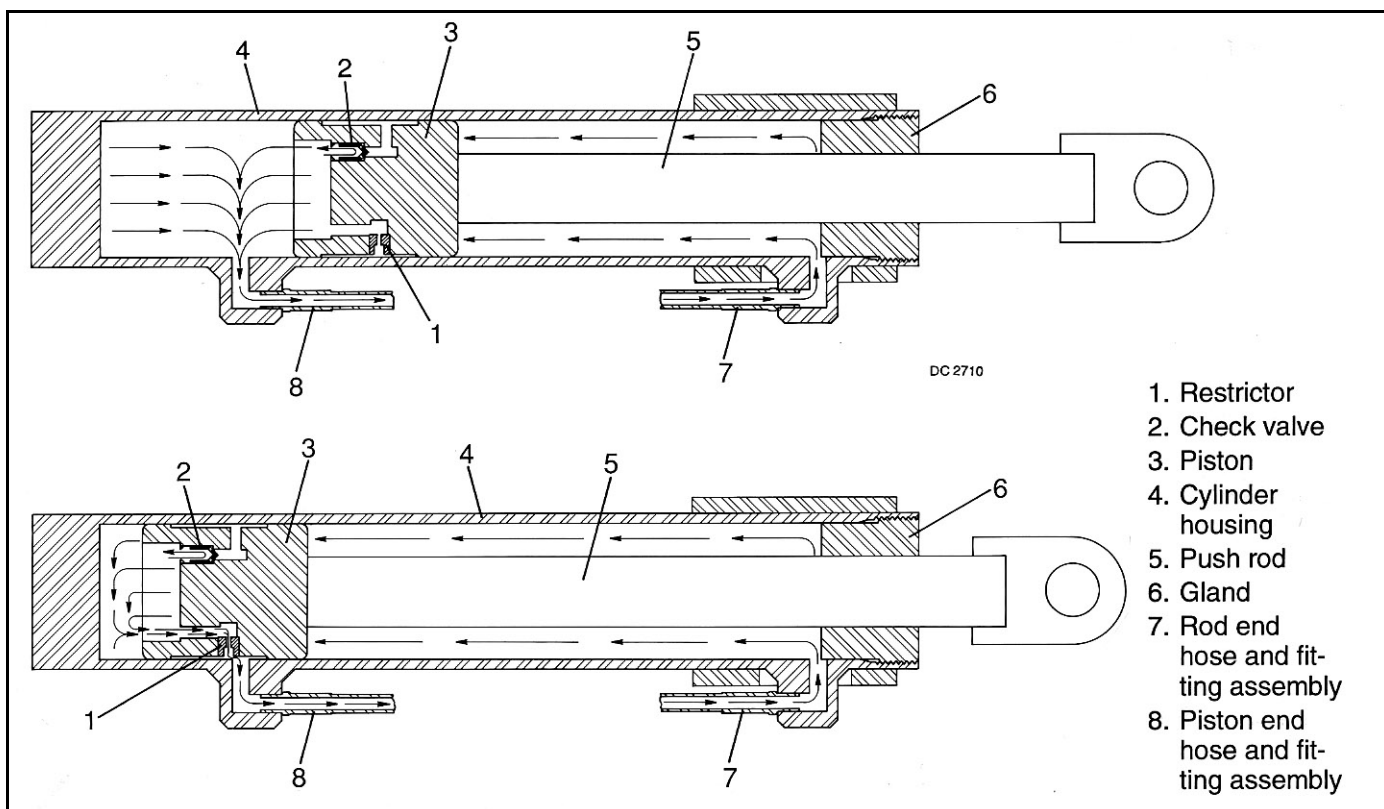


Figure 19. Swing Cylinder Oil Flow - Prince

ASSEMBLY

DEALER SET-UP INSTRUCTION

Backhoe assembly is the responsibility of the WOODS dealer. The backhoe should be delivered to the owner completely assembled, lubricated and adjusted for normal operating conditions.

Set up backhoe as received from the factory with the instructions and illustrations.

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.

A lifting bar is provided to maneuver the backhoe while it is on the pallet. While backhoe is on a pallet, do not lift from any other point. When backhoe is removed from the pallet, remove lifting bar and discard.

Remove lag screw from swing frame, rotate boom and dipper and install swing lock pin. Open parts bag and box and lay out parts to make identification easy. Refer to parts lists and exploded view drawing.

The backhoe is shipped partially assembled. Assembly will be easier if components are aligned and loosely assembled before tightening hardware.

Recommended torque values for hardware are given on page 55.

IMPORTANT

■ When finished with assembly, the dealer is to complete the check lists on page 34.

ASSEMBLY PROCEDURE

WARNING

■ It is recommended that power unit 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.

■ Refer to “Mounting Guide” (available from your dealer) for some tractors not originally equipped with 1” diameter pins.

■ A minimum 20% of tractor and equipment weight must be on tractor front wheels with backhoe in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires, or front tractor weights. When attaining the minimum 20% weight on the front wheels, you must not exceed the Roll Over Protection Structure (ROPS) weight certification. Weigh the tractor and equipment. Do not estimate.

Read instructions before starting assembly. You will save yourself assembly time.

Move Seat Support Assembly

Move seat support assembly from the four forward holes on main frame to the four rearward holes for operation. It will be easier to do this before mounting backhoe on tractor.

Bucket & Dipperstick Installation

Align dipperstick cylinder (4) with dipperstick (2) and install pivot pin (6) as shown in Figure 20. Line up hole in pivot pin (6) with hole in pivot bushing and secure with clevis pin (8) and cotter pin (9).

Align bucket (3) with pivot bushings of bucket arm (5) and dipperstick (2) and install pivot pins (7). Line up hole in pivot pin (6) with hole in pivot bushing and secure with bolts (10) and lock nuts (11).

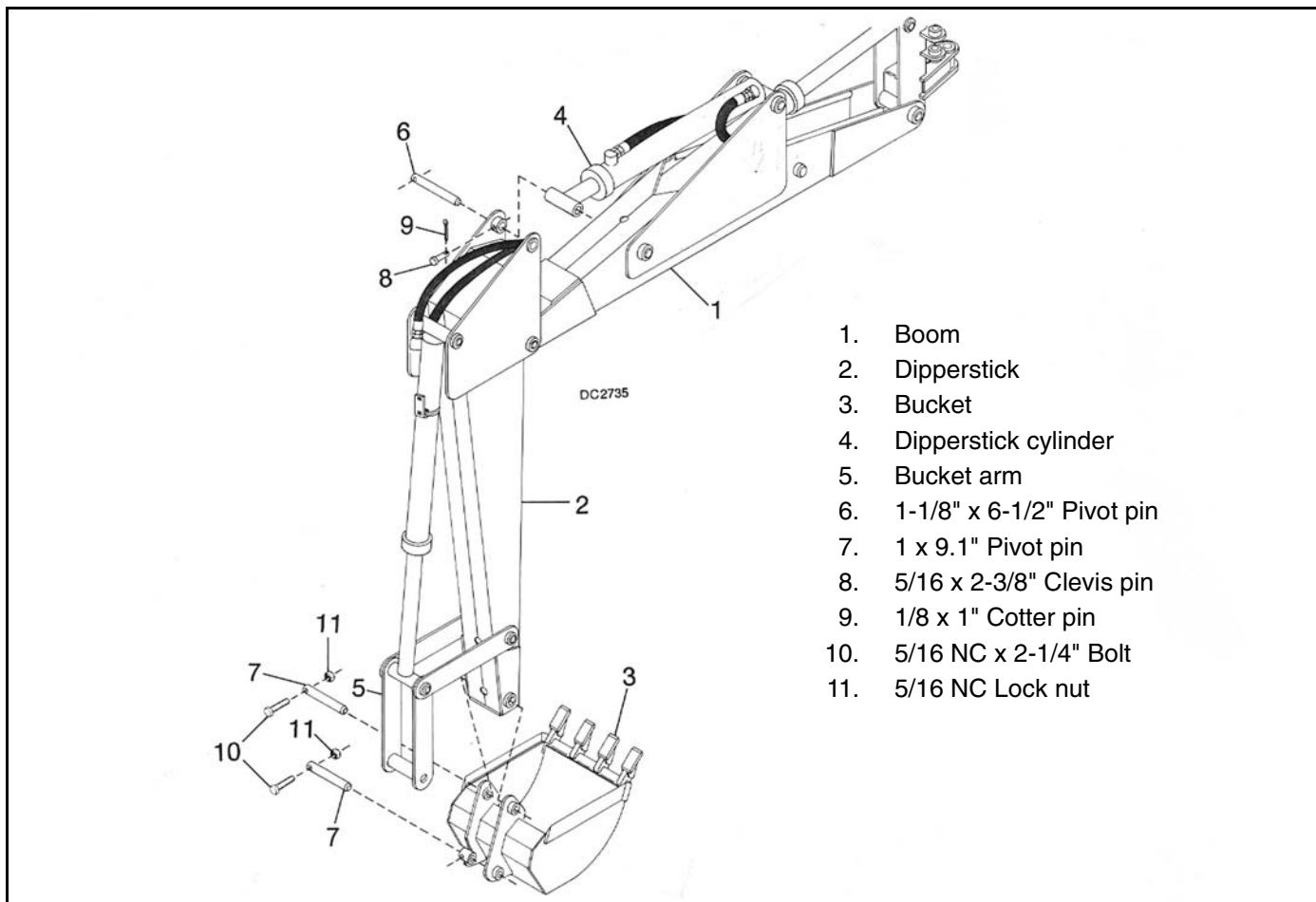


Figure 20. Dipperstick & Bucket Assembly

Plumbing Installation

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.**

■ Before working on backhoe, extend boom and dipperstick and place bucket on ground. Make sure that all system pressure has been relieved by operating controls before maintenance, service, or disconnecting any hydraulic lines.

WARNING

■ 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.

IMPORTANT

■ Clean all hydraulic fittings and secure to prevent foreign material from entering hydraulic fittings. On fittings using O-rings, no additional sealant such as pipe dope or teflon thread tape should be used. We recommend the use of teflon thread tape on pipe threads. Be care when applying teflon tape to prevent it from entering the hydraulic system.

1. Main frame assembly
2. 540 RPM Pump
- 2A. 1000 RPM Pump & PTO adapter
3. Pump mounting bracket
4. PTO Adapter
5. 1/2 NPT x 70" High-pressure hose asy
6. 1 x 30" Low-pressure hose
7. 1" NPT to 1" Hose nipple
8. 1-1/2" Screw hose clamp
9. 1-5/16 - 12 - 1" NPSM 90° Elbow
10. 1-1/16 - 12 - 1/2" NPSM 90° Elbow
11. Oval tapered knob
12. Breather cap/dipstick
13. 1/2" NC Hex lock nut
14. 1/2" NC x 1-1/2" Bolt GR5

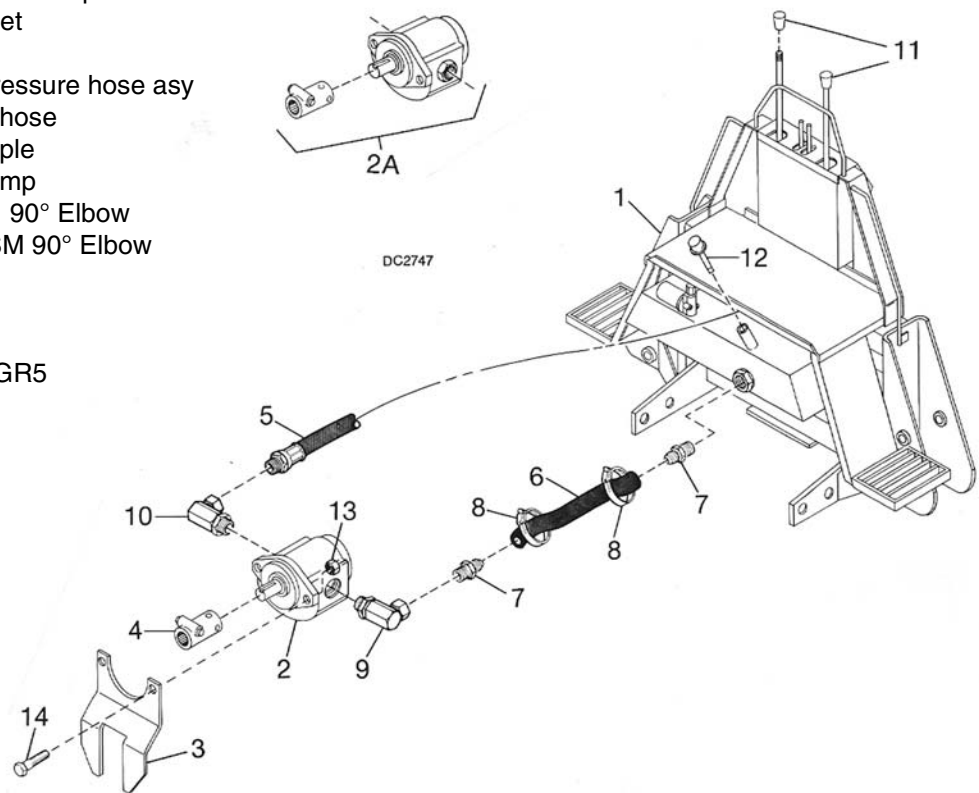


Figure 21. Pump Installation

Apply teflon tape to hose nipple (7) threads and install one into reservoir suction screen filter and one into 90° elbow (9).

IMPORTANT

■ **Fittings with O-rings must be installed properly. Loosen lock nut completely, install fitting all the way, position it and tighten lock nut.**

Make sure O-rings are installed on elbows before installing in pump.

Install 90° elbow (9) into pump suction port. Install 90° elbow (10) into pump pressure port. Place suction hose (6) on hose nipples (7) and secure with hose clamps (8). Install fitting on hose (5) in 90° elbow (10).

Refer to Pump Mounting Bracket Installation in next section and attach mounting bracket (3) to pump with bolts (14) and lock nuts (13). Install tapered knobs (11) to control handles as shown in Figure 21.

A lifting bar is provided to maneuver backhoe while it is on the pallet. While backhoe is on a pallet, do not lift from any other point. When backhoe is removed from pallet, remove lifting bar and discard.

Remove lag screws from rear of backhoe and remove backhoe from skid.

ATTACHING BACKHOE TO TRACTOR

Use either 540 or 1000 rpm PTO speed; never exceed the rated pump rpm.

Only mount this backhoe on 50 hp or greater, Category 2 and 3 tractors with 2000 lb. minimum lift capacity and with original equipment high-strength top link pin of at least 1" diameter or approved top link brackets and pins available from your WOODS dealer for some tractors not originally equipped with 1" diameter pins.

Service hydraulic reservoir by filling to full mark on dipstick (approximately 9-1/2 to 10 U.S. gallons). When backhoe is mounted and cylinders are filled, it will be necessary to add fluid to reservoir. System capacity is approximately 14 U.S. gallons.

IMPORTANT

■ **Fill with clean oil. Do not mix oil types or grades.**

Contamination will shorten the life of hydraulic system components. Change oil and filter after first 20 hours of operation and then every 200 hours of operation.

ENGAGE PTO AND RUN AT IDLE FOR 5 MINUTES, THEN CHECK OIL LEVEL. Add Fluid as necessary.

RECOMMENDED OILS AND TEMPERATURE RANGES

Do not mix oil grades or types

SAE Hydraulic	
Transmission Fluid All Temperatures
Type "A" or "F" ATF All Temperatures
SAE 30-30W 90 ° F and above
SAE 20-20W 35-90 ° F
SAE 10-10W 35 ° F and below

Position backhoe on level surface. Back tractor up as near as possible to center of backhoe. Refer to Figure 23 and select a pump mounting that will work on you specific tractor.

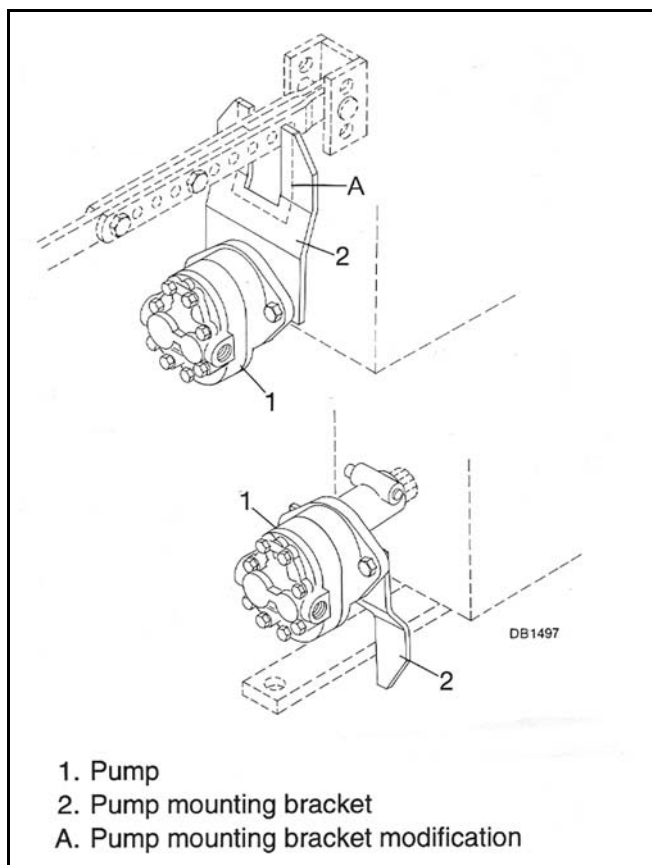


Figure 22. Pump Mounting Bracket Installation

The purpose of the pump mounting bracket is to keep pump from rotating.

The bracket is designed to slip over the tractor drawbar. The best installation is to place bracket down and offset toward tractor. Offset may be reversed if interference occurs.

For tractors with a non-standard drawbar, it may be necessary to enlarge pump bracket opening. Bracket may be inverted and retained on top link bar. Make sure pump is retained, whichever mounting configuration is used.

WARNING

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

When pump is positioned, check that all hoses and fittings are positioned to avoid contact with other components.

Make sure backhoe controls are in centered neutral position.

With backhoe hydraulic pump securely mounted and tractor PTO and transmission in neutral, start tractor engine idling. Engage PTO very carefully and allow pump to start smoothly.

Very little engine power is required to power the hydraulic system in this mode. Should engine pull down excessively, check plumbing hook-up for reversed lines or a control lever stuck in an operating position.

DANGER

■ **The only time the backhoe may be operated from a position other than the operator seat is during backhoe attachment and removal. Operator must:**

- **Read Mounting Kit Manual instructions on attaching and removing backhoe and use extreme care.**
- **Always stand between rear tire and backhoe stabilizer arms or along side of tractor to avoid being trapped should the boom swing control be accidentally activated.**

■ **Never use 3-point mounted backhoe on tractor equipped with cab or ROPS unless 3-point hitch Saf-T-Lok^{®1} diagonal bars are properly installed and adjusted. (Refer to Danger decal in Safety Decal section.)**

1. Saf-T-Lok is a registered trademark of Woods Equipment Co.

Saf-T-Lok® Installation

Insert hitch pin (4) through rear holes as shown in Figure 23 and place diagonal bars (3) on hitch pins. Install slotted hex nut (18) and snug up bit do not tighten at this time. Attach tractor lower lift arms to backhoe hitch pins (use sleeves (19) for category 3 tractors) and secure with a heavy-duty Klik pin. Use spacer washers between lift arms and Klik pin to remove any free play.

IMPORTANT

■ Install hitch pins (4) and diagonal bars (3) only in end holes of mainframe lugs as shown or serious damage to swing cylinders will result.

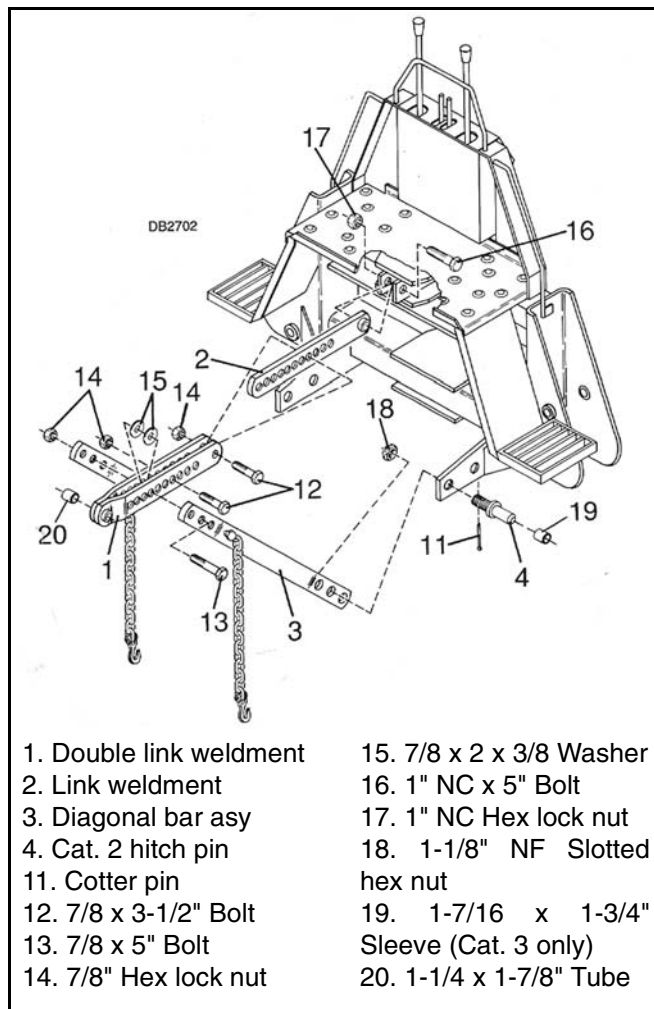


Figure 23. Saf-T-Lok Hitch

Start engine and engage PTO, raise backhoe with stabilizer controls and establish ground clearance between 11" and 14" from center of boom pivot and ground as shown in Figure 24. Level backhoe form side to side with stabilizers. On some tractors it may not be possible to obtain desired ground clearance and

maintain required minimum head clearance for tractors with ROPS or cabs. Required head clearance must take priority. The adjustable seat may be used in obtaining minimum head clearance. (Refer to Seat Installation on page 33.)

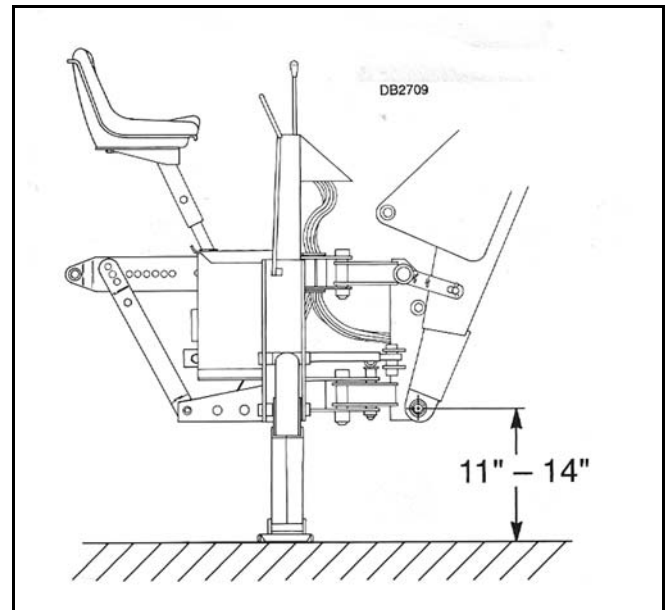


Figure 24. Ground Clearance

Attach link weldment (2) to backhoe with bolt (16) and lock nut (17). See Figure 23. Tighten nut against backhoe bracket but do not tighten to torque specifications.

The double link weldment (1) will be attached to the tractor top link bracket using only original equipment, HIGH-STRENGTH tractor top link pin with a minimum 1" diameter. On Category 3 tractors use tube (20) in this installation.

Trap double link weldment (1) in center of tractor top link bracket with washers or spacers as required. Refer to "Mounting Guide" available from your dealer for some tractors not originally equipped with 1" diameter pins.

⚠ WARNING

■ Always use the special heavy-duty top link (provided with backhoe) and the OEM high-strength top link pin (provided with tractor) to mount top link to tractor. Use a 1" x 5" grade 5 bolt to mount top link to backhoe.

■ To avoid possible hitch failure, read and follow the Saf-T-Lok® Limiter Installation Instructions in the Assembly section before mounting backhoe to tractor 3-point hitch.

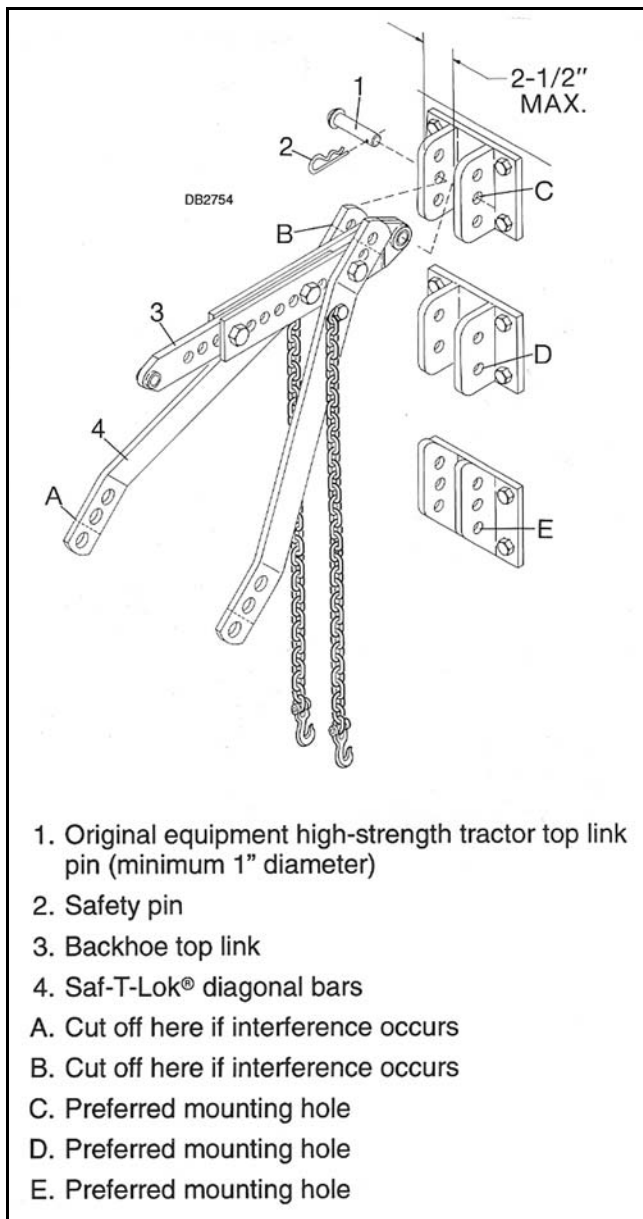


Figure 25. Top Link and Saf-T-Lok Hitch Installation

IMPORTANT

■ **There may be more than one hole provided in tractor top link attachment bracket; select the hole that most evenly distributes the load between top link bracket and its mounting bolts. See Figure 25.**

Note that the maximum width between tractor top link attachment plates must not exceed 2-1/2". This is to prevent excessive bending loads on the top link pin. Pin must be located in one of the positions shown.

WARNING

■ **If tractor is equipped with draft sensing control, set control to "HEAVY" (minimum sensitivity) position.**

On tractors with draft control select hole closest to supporting point of floating link to mount top link.

Use boom cylinder control to position backhoe main frame vertically by extending or retracting cylinder as required.

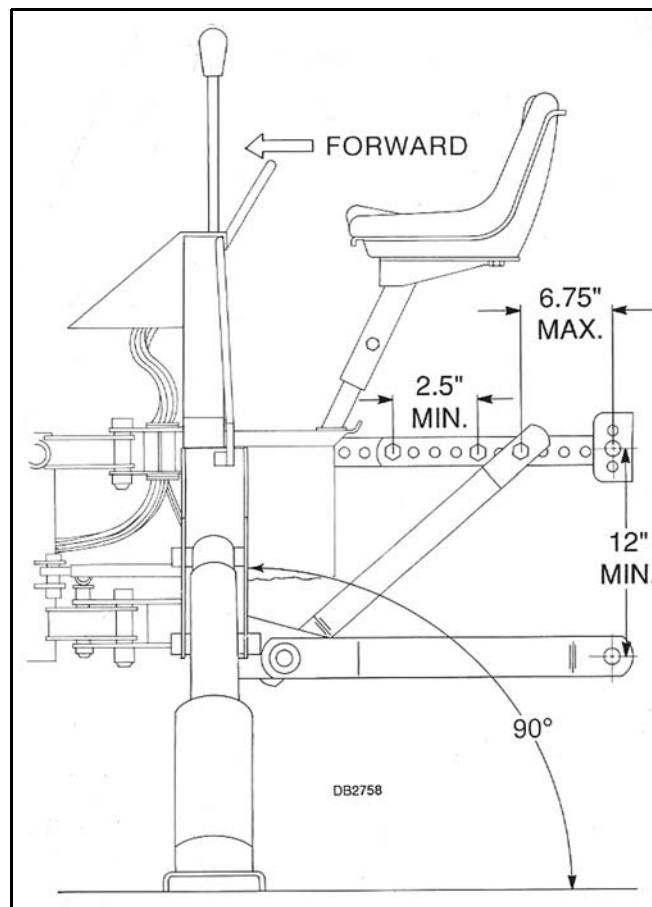


Figure 26. Saf-T-Lok Adjustment

With backhoe main frame vertical, refer to Figure 26, align double and single top link bars and bolt together using widest spread between bolts as possible. It may be necessary to move main frame slightly off vertical plane to align holes of top link.

Mount Saf-T-Lok diagonal bars to hole in top link bar as close to tractor as possible; do not mount further than 6-3/4" away from tractor. Cut end of Saf-T-Lok diagonal bars off to obtain mounting space if necessary. Place two spacer washers between double top link bar when mounting Saf-T-Lok diagonal bars.

Check distance from center of boom pivot pin and ground to be sure there is from 11" to 14" clearance. Check that console is nearly vertical with the ground.

Make sure you meet minimum clearance distances between ROPS or tractor cab. Required head clearance must take priority. Refer to Danger decal on page 10. Make any adjustments required.

1. The bolt center distance attaching the diagonal brace to the top link must not be more than 6-3/4" from the tractor top link pin.
2. The bolts joining the two halves of the top link must not be less than 2-1/2" apart.
3. The vertical distance between the attachment point for the lower lift arms and the top link pin must not be less than 12".

When clearance distances are verified and attachment is complete, tighten hitch pin nuts to 600 ft-lbs. and secure with cotter pin. Hitch pin nuts may be easier to torque if the backhoe is removed from tractor.

Mount backhoe to tractor and tighten bolts attaching Saf-T-Lok® diagonal bars to top link and bolts attaching top link bars together to 450 ft-lbs.

Safety Chain Installation

Secure backhoe to tractor by inserting safety chain through lower lift arm bracket (21) or wrapping around tractor axle (22). The preferred attachment is through bracket (21). Remove as much slack from chain as you can.

WARNING

■ **Make sure safety chain is properly connected and secured to tractor.**

Make sure tractor lower lift arm stabilizers (blocks or chains) are positioned to prevent lift arms and backhoe from swaying.

Secure hydraulic hoses between pump and backhoe with nylon ties to prevent them from contacting sharp objects.

Check hose positioning carefully through full range of swing cylinder movement.

Fully extend and retract all cylinders several times to purge all air from the hydraulic system. Retract all cylinder and fill hydraulic reservoir to full mark on dipstick.

Seat Installation

The seat (2) may be adjusted fore and aft by loosening mounting hardware. It may also be moved up and down using the adjustment holes in the seat support assembly (1). Make sure you do not adjust seat into a position that will place the operator in the danger zone as outlined on the safety decals.

! DANGER

■ **Do not operate backhoe unless there is adequate operator clearance as shown on safety decal. (Refer to Danger decal in Safety Decal section.)**

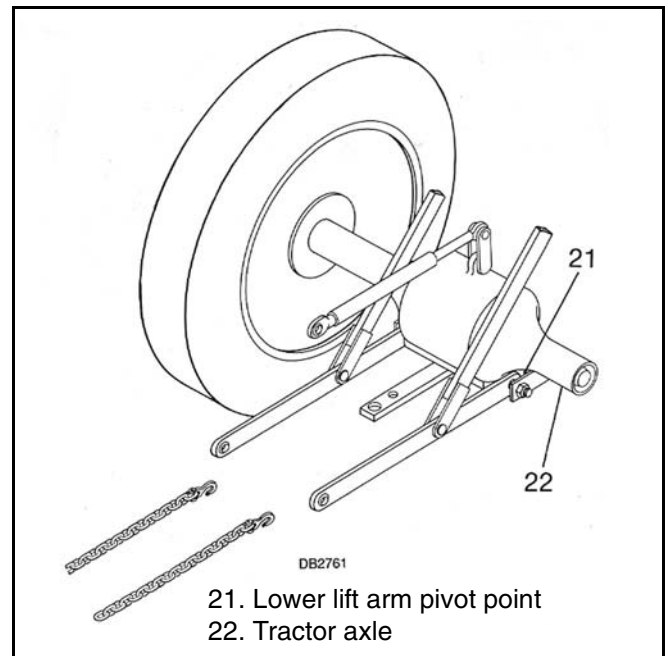


Figure 27. Safety Chain Installation

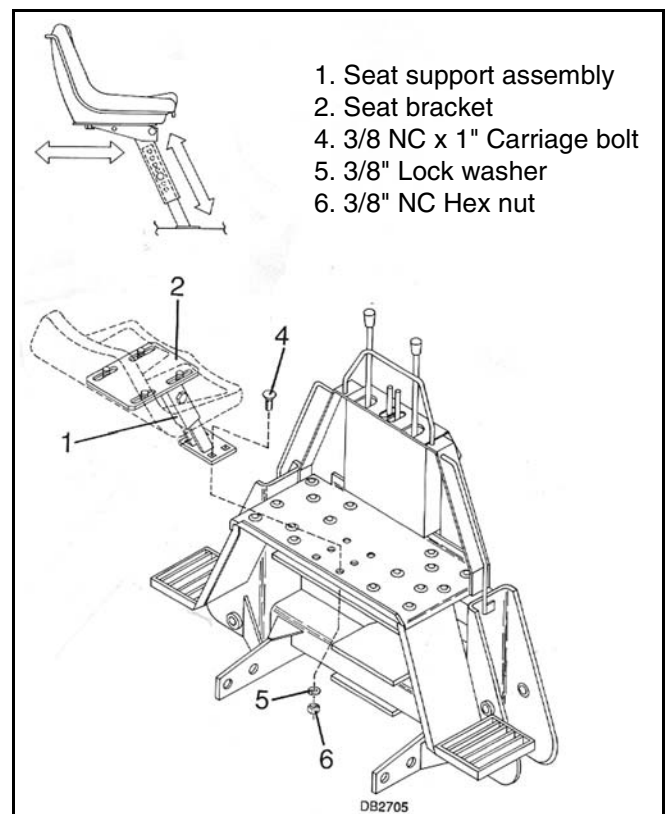


Figure 28. Seat Installation

DEALER CHECK LISTS

PRE-DELIVERY CHECK LIST

Dealer's Responsibility

Inspect the backhoe (and sub-frame when applicable) thoroughly after assembly to be certain it is set up properly before delivering it to the customer. The check lists are a reminder of points to inspect. Check off each item as it is found satisfactory or after proper adjustments are made.

- ___ Check all bolts to be sure they are tight.
- ___ Check that all lubrication points have been lubricated.
- ___ Check that all cotter pins and safety pins are properly installed.
- ___ Properly attach backhoe to tractor and make all necessary adjustments.
- ___ Check that hydraulic reservoir has been serviced and that hydraulic system and all functions have been operated through full cylinder stroke to purge air from system.
- ___ Make sure all hydraulic fittings are tight and hoses are properly routed and not twisted, bent sharply, kinked or pulled tight.
- ___ After pressurizing and operating all backhoe functions, stop tractor and make sure there are no leaks in the hydraulic system. Follow all safety rules when checking for leaks.

DELIVERY CHECK LIST

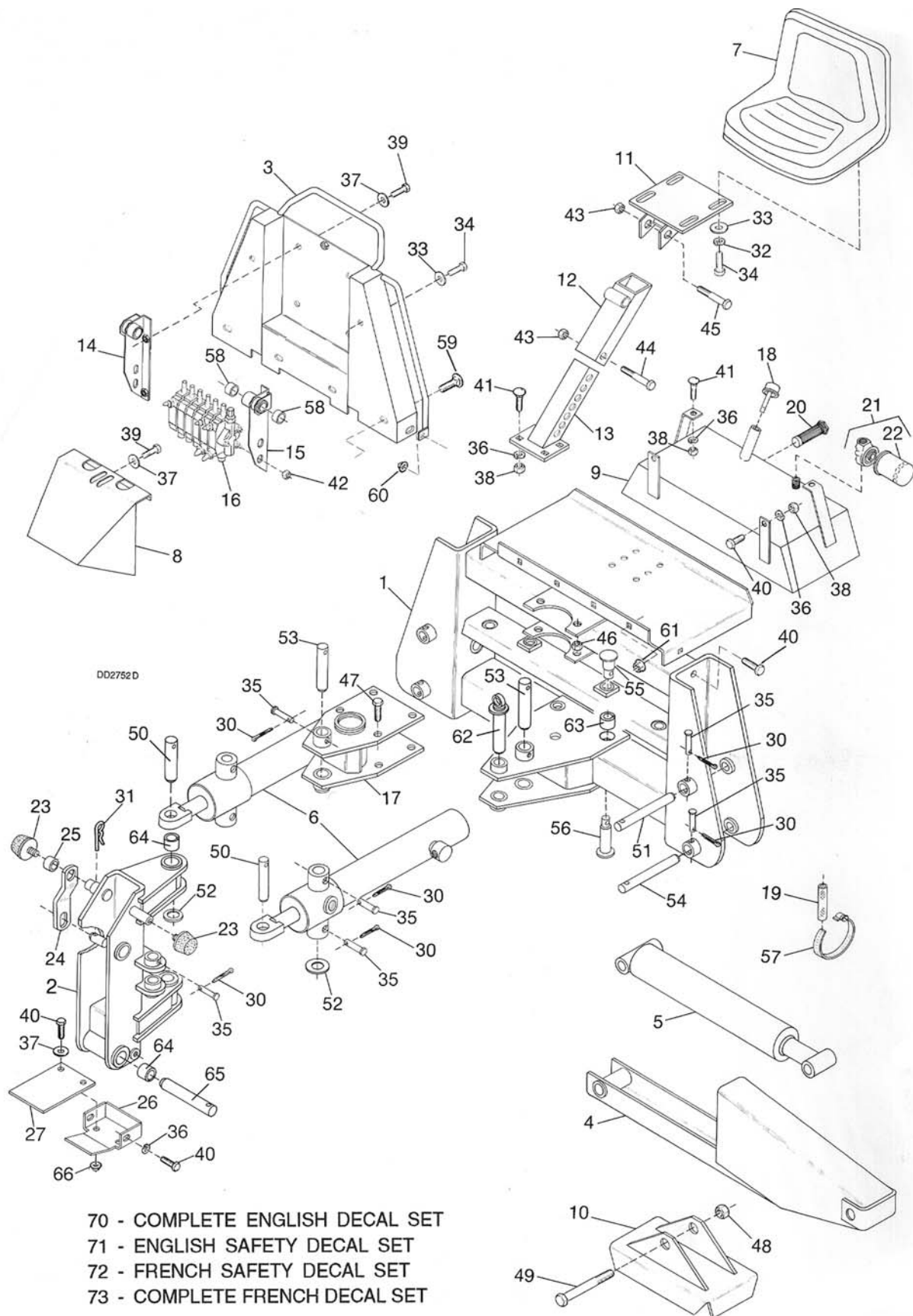
Dealer's Responsibility

- ___ Present Operator's Manual and request that customer and all operators read it before operating equipment.
- ___ Point out all safety features of the equipment. Explain the importance and meaning of all safety decals and emphasize the potential hazards when not followed.
- ___ Show customer how to make adjustments.
- ___ Explain importance of lubrication and show lubrication points to customer.
- ___ Show customer the safe proper procedures to be used when mounting, dismounting and storing backhoe.
- ___ If backhoe is mounted to tractor 3-point hitch, explain the importance of the Saf-T-Lok) limiter. Point out (as shown in Operator's Manual) the correct attachment and adjustment of the limiter.
- ___ Point out the correct mounting of the hydraulic pump and routing of the hoses. Explain that during operation, mounting, dismounting and storage, care must be taken to prevent hose damage from pulling, twisting and kinking.

BH1050

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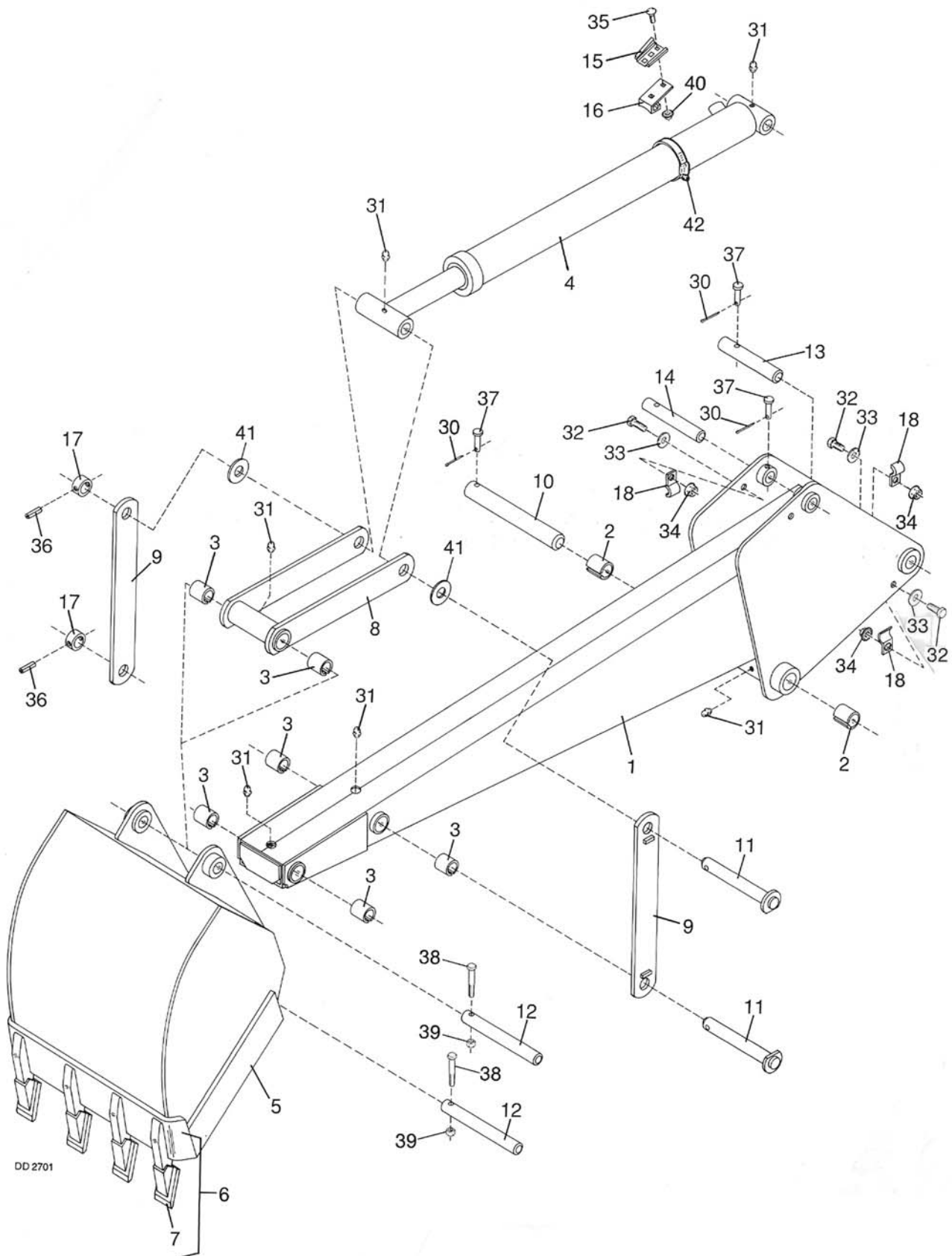
BH1050 MAIN FRAME ASSEMBLY



BH1050 MAIN FRAME ASSEMBLY

REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
1	34060	1	Main frame (includes item 63)	34	14562	* -	5/16 NC x 1 HHCS GR5
2	34041	1	Swing frame (includes item 64)	35	34178	-	5/16 x 2-3/8 Clevis pin HT
3	34344	1	Console assembly and decal	36	838	* -	3/8 Standard lock washer
4	34100	2	Stabilizer	37	565	* -	3/8 Standard flat washer
5	34218	2	2-1/2 x 15 Stabilizer cylinder (see page 50)	38	835	* -	3/8 NC Hex nut, plated
6	34219	2	2-1/2 x 13 Swing cylinder (see page 49)	39	1686	* -	3/8 NC x 3/4 HHCS GR5
7	33500	1	High-back seat	40	839	* -	3/8 NC x 1 HHCS GR5
8	34345	1	Console cover assembly and decals	41	6697	* -	3/8 NC x 1 Carriage bolt
9	34346	1	Tank assembly and decal (includes item 20)	42	30515	-	8 mm x 1.25 mm Pitch hex nut
10	34107	2	Stabilizer pad (standard) (see optional pad kits on page 54)	43	765	* -	1/2 NC Hex lock nut
11	34125	1	Seat bracket	44	12024	* -	1/2 NC x 3-3/4 HHCS GR5
12	34123	1	Seat tube	45	10380	* -	1/2 NC x 4 HHCS GR5
13	34121	1	Seat support	46	6239	* -	5/8 NC Hex lock nut
14	34134	1	Right valve bracket assembly (includes item 58)	47	7832	* -	5/8 NC x 1-1/2 HHCS HT
15	34135	1	Left valve bracket assembly (includes item 58)	48	2371	* -	3/4 NC Hex lock nut
16	34179	1	Console valve (see page 42)	49	29489	-	3/4 NC x 6-1/2 HHCS GR5
17	34095	1	Upper pivot bracket	50	34177	2	1 x 4 Pivot pin
18	31414	1	Breather cap/dipstick	51	34175	2	1 x 7-1/2 Pivot pin HT
19	62321	2	Hose protector shield	52	34168	4	1-1/4 SAE Flat washer GR8
20	34230	1	Suction filter	53	34171	2	1-1/4 x 7-1/4 Pivot pin HT
21	62420	1	Filter and housing assembly	54	34239	2	1-1/4 x 8 Pivot pin HT
22	62421	1	Filter element	55	63993	2	Pivot pin
23	62440	2	Bumper pad assembly	56	34156	2	Pivot pin HT
24	34166	1	Latch plate	57	34181	-	2-1/2 x 3-1/2 Hose clamp
25	65131	1	1" Schedule 40 x 1-1/2 pipe	58	33545	4	1.015 x 1.25 x 1 Oilite bushing
26	19003	1	Cap, lower swing frame	59	16148	* -	5/16 NC x 3/4 Carriage bolt
27	19004	1	Belt, rubber 4 x 8.50	60	6698	* -	3/8 NC Hex lock nut
HARDWARE				61	14139	-	5/16 NC Flanged hex lock nut
30	3597	* -	1/8 x 1 Cotter pin	62	34162	1	Swing lock pin assembly
31	18270	* -	3/16 Safety pin	63	34348	4	Bushing, Split tension
32	2472	* -	5/16 Standard lock washer	64	34014	6	1-1/4 x 1-1/2 x 1-1/2 Tension bushing
33	4378	* -	5/16 Standard flat washer	65	30057	1	Dipperstick pivot pin
				66	14350	-	3/8 NC Flanged hex lock nut
				70	34341	1	Complete English decal set
				71	34342	1	English safety decal set
				72	54342	1	French safety decal set
				73	54341	1	Complete French decal set
						*	Obtain locally

BH1050 DIPPERSTICK & BUCKET ASSEMBLY



BH1050 DIPPERSTICK & BUCKET ASSEMBLY

REF	PART	QTY	DESCRIPTION
1	34011	1	Dipperstick (includes items 2, 3, and 31)
2	34014	2	1-1/4 x 1-1/2 x 1-1/2 Tension bushing
3	34017	6	1 x 1-1/4 x 1-1/2 Tension bushing
4	34217	1	2-1/2 x 28 Hydraulic bucket cylinder assembly (see page 51)
5	58012	1	12" Bucket (includes items 6 and 7) -or-
5	58016	1	16" Bucket (includes items 6 and 7) -or-
5	58018	1	18" Bucket (includes items 6 and 7) -or-
5	58024	1	24" Bucket (includes items 6 and 7) -or-
5	34205	1	36" Bucket (includes items 6 and 7)
6	34193	A/R	Trencher shank assembly - crimp-on style (includes item 7) -or-
6	D1055	A/R	Tooth assembly 2.00 x 9.48, pin-on style
7	30000	A/R	Point weldment assembly, crimp-on style -or-
7	HEX156	A/R	Tooth point, pin-on style
8	34152	1	Bucket arm (includes item 3)
9	34154	2	Link weldment
10	30057	1	Pin pivot, dipperstick
11	34159	2	Pivot pin, bucket HT
12	34127	2	1 x 9.1 Pivot pin HT

REF	PART	QTY	DESCRIPTION
13	34173	1	1-1/8 x 6-1/2 Pivot pin HT
14	34176	1	1 x 6-1/2 Pivot pin HT
15	62484	1	Socket, SMV emblem
16	62263	1	Bracket, SMV emblem
17	33374	2	Pivot pin retaining sleeve
18	34169	3	Hose clamp

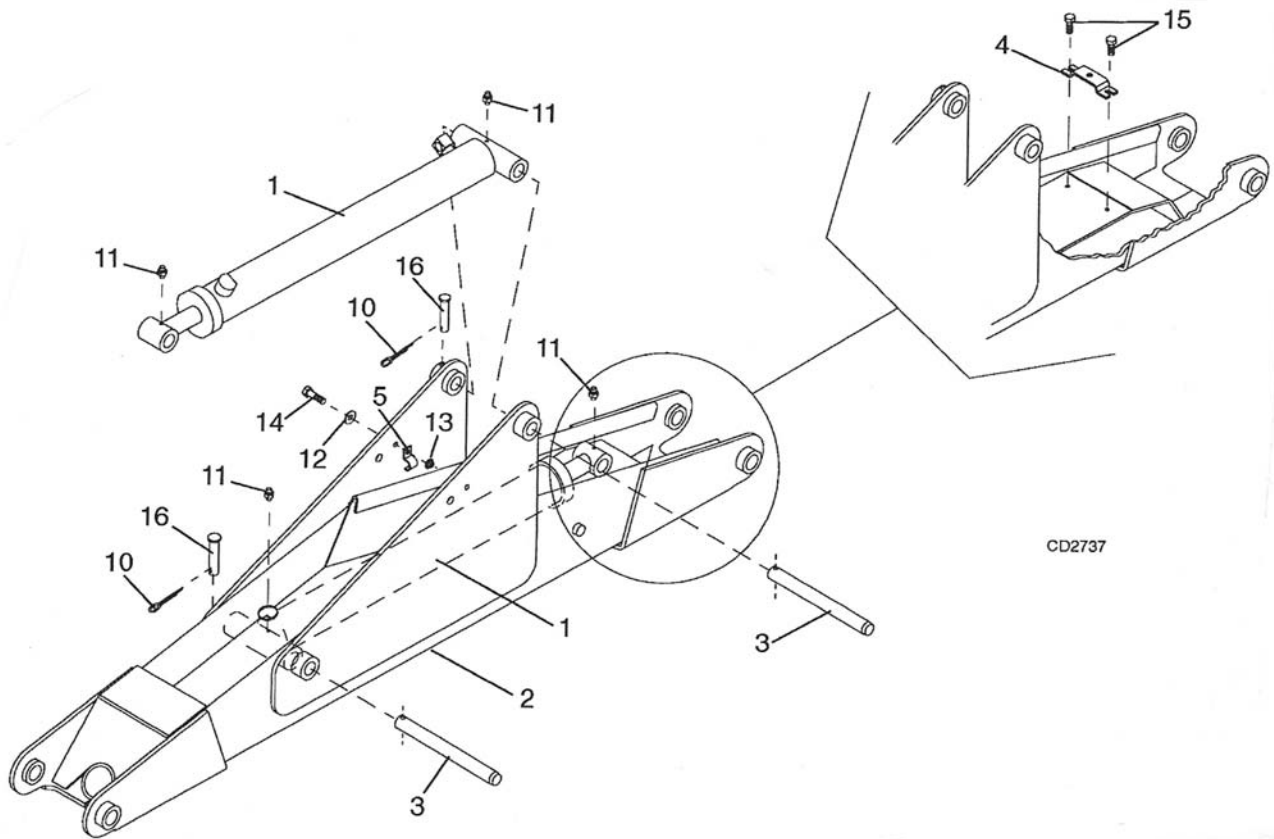
HARDWARE

REF	PART	QTY	DESCRIPTION
30	3597	* -	1/8 X 1 Cotter pin
31	1972	* -	1/4 - 28 Tapered thread grease fitting
32	10378	* -	1/4 NC x 1 HHCS GR5
33	5336	* -	1/4 Standard flat washer
34	62521	-	1/4 NC Flanged hex lock nut
35	62532	-	5/16 NC x 1/2 Carriage bolt
36	11880	* -	5/16 x 1-3/4 Spirol pin
37	34178	-	5/16 x 2-3/8 Clevis pin HT
38	7164	* -	5/16 NC x 2-1/4 HHCS GR5
39	6778	* -	5/16 NC Hex lock nut
40	14139	-	5/16 NC Flanged hex lock nut
41	1863	-	1" SAE Flat washer
42	34181	-	2-1/2 x 3-1/2 Hose clamp

* Obtain locally

A/R As required

BH1050 BOOM ASSEMBLY



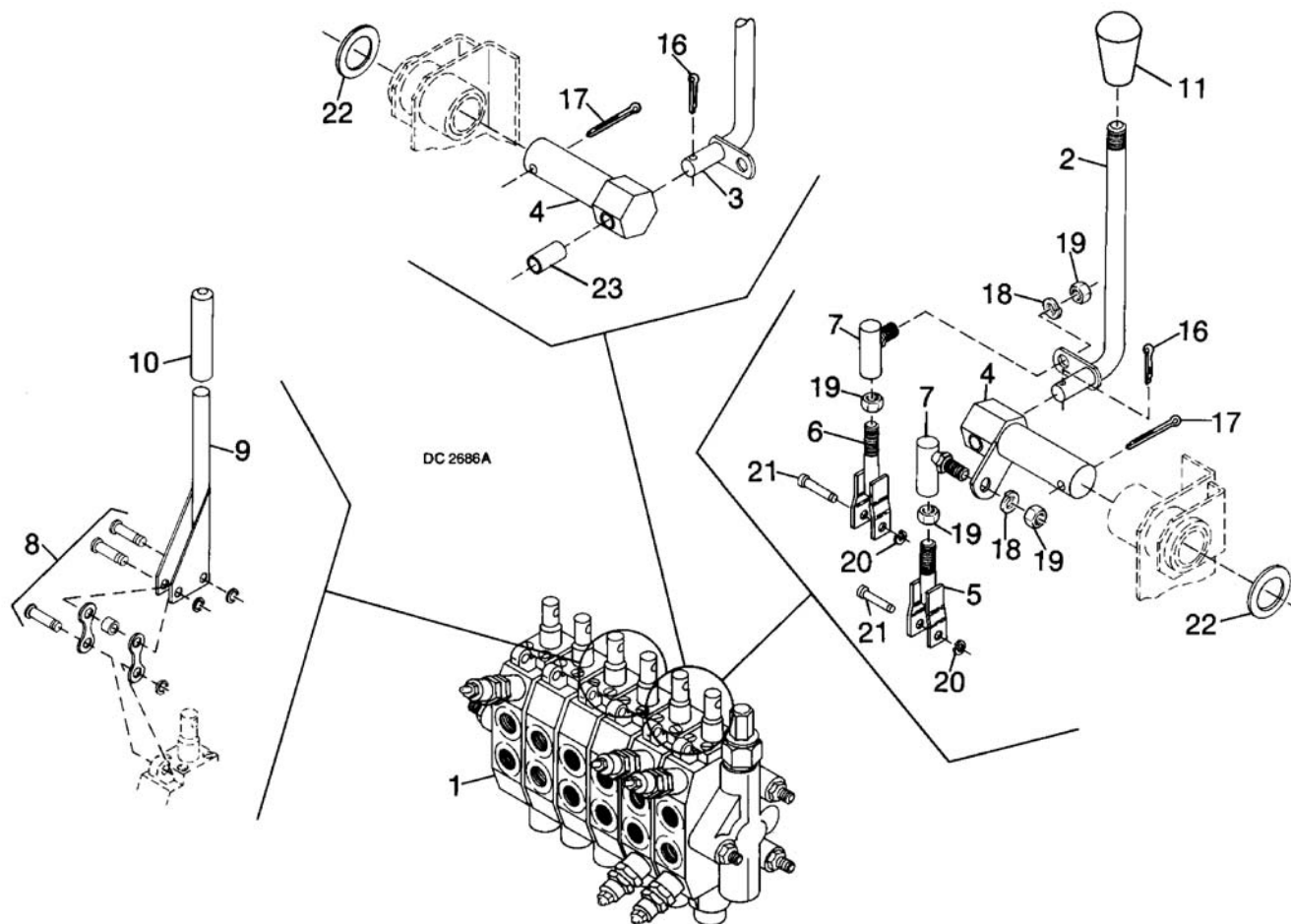
REF	PART	QTY	DESCRIPTION
1	34216	2	3 x 27 Hydraulic cylinder assembly (see page 52)
2	34343	1	Boom
3	34172	2	1-1/8 x 10-3/4 Pin HT
4	34167	1	4-Hose clamp
5	34169	1	Hose clamp

HARDWARE

REF	PART	QTY	DESCRIPTION
10	3597	* -	1/8 x 1 Cotter pin
11	1972	* -	1/4 - 28 Tapered thread grease fitting
12	5336	* -	1/4 Standard flat washer
13	62521	-	1/4 NC Flanged hex lock nut
14	10378	* -	1/4 NC x 1 HHCS GR5
15	30036	-	.31 x .75 Type T self-tap cap screw
16	34178	-	5/16 x 2-3/8 Clevis pin HT

* Obtain locally

VALVE CONTROLS & HARDWARE



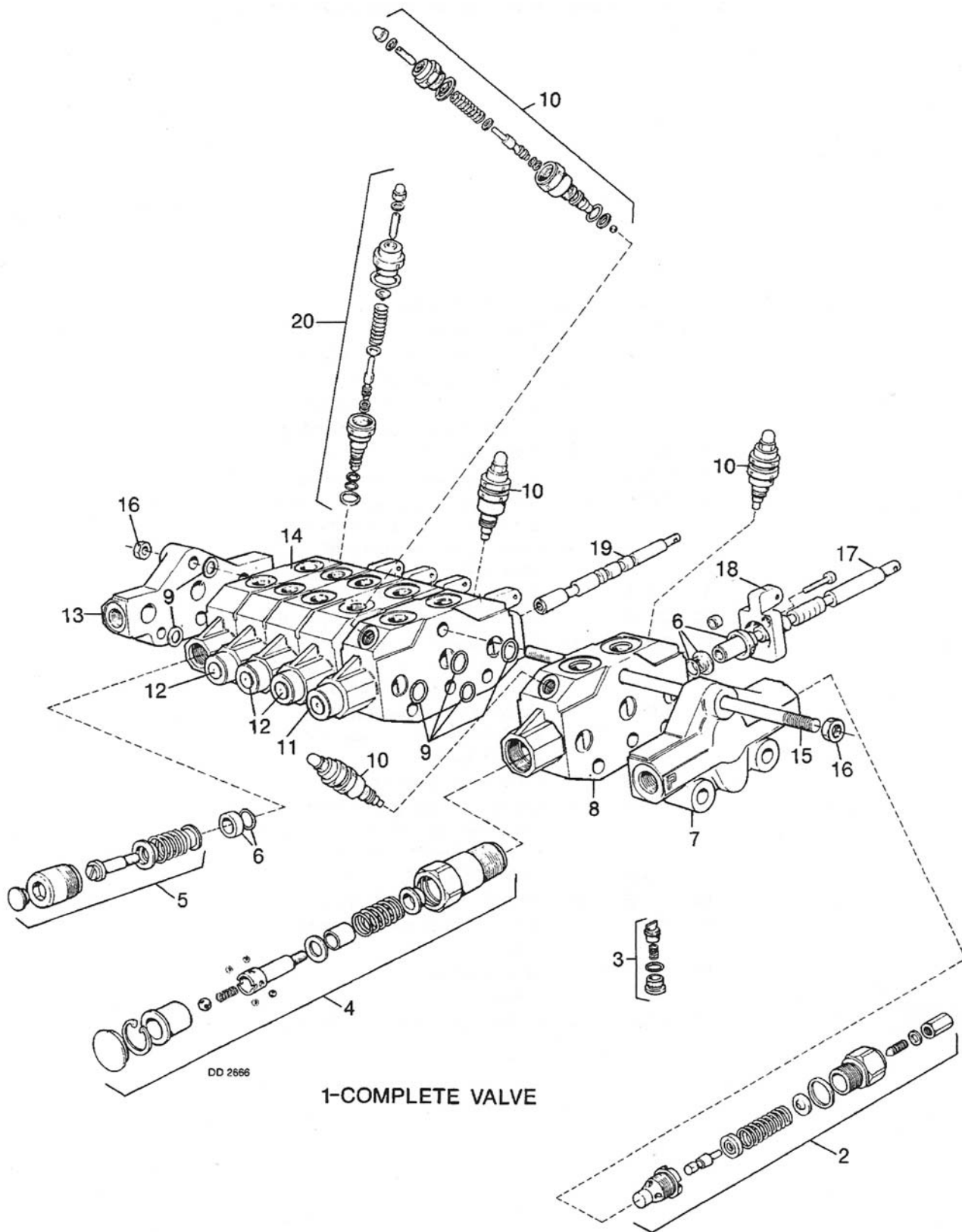
REF	PART	QTY	DESCRIPTION
1	34179	1	Console valve (see page 42)
2	34141	1	Left handle assembly
3	34140	1	Right handle assembly
4	34144	2	Linkage pivot assembly
5	34149	2	2.31 Valve link, right and left
6	34147	2	2.75 Valve link, right and left
7	30050	4	5/16 NF Ball joint
8	62377	2	Linkage assembly, right and left
9	31225	2	Stabilizer control handle, right and left

HARDWARE

REF	PART	QTY	DESCRIPTION
10	31416	2	Rubber handle
11	31246	* 2	1-5/8 Oval tapered knob
16	3597	2	1/8 x 1 Cotter pin
17	64803	* 2	3/16 x 2 Cotter pin
18	2472	* 2	5/16 Lock washer
19	302054	* 4	5/16 NF Hex nut
20	34303	2	Retaining ring
21	34302	2	Valve linkage pin
22	31303	2	1-1/6 x 1-9/16 x 10 GA Washer
23	33545	1	.502 x .629 x 1.25 Bronze bushing

* Obtain locally

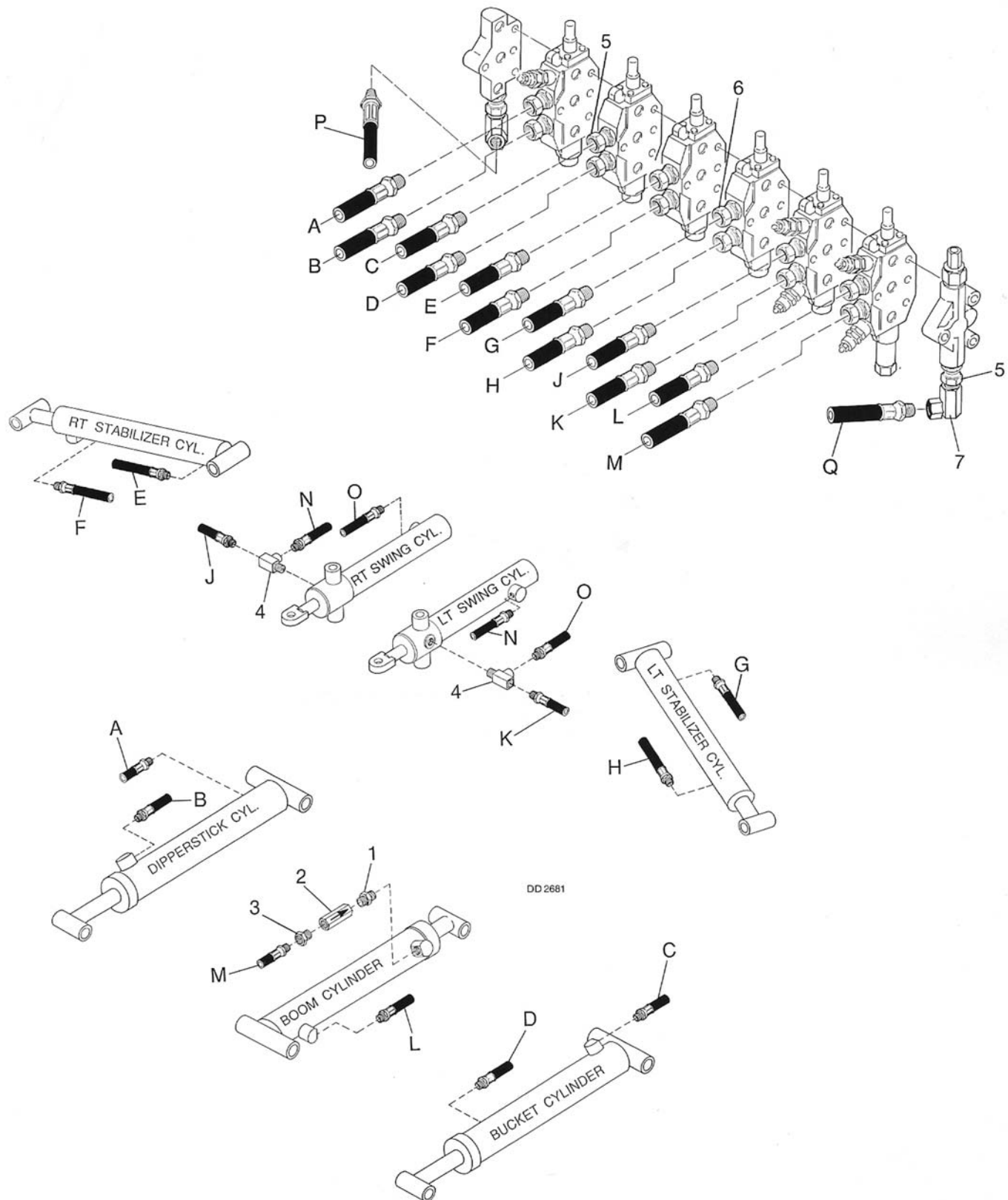
BH1050 CONSOLE VALVE ASSEMBLY



BH1050 CONSOLE VALVE ASSEMBLY

REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
1	34179	1	Console valve	12	33443	3	Bucket and stabilizer segments complete (includes body, spool & check valve)
2	34368	1	Relief valve assembly, 2100 psi	13	33445	1	Standard exhaust section
3	33339	6	Check valve assembly	14	34370	1	Dipperstick segment complete (includes body, spool, check valve and 2400 psi relief assembly)
4	33343	1	Spool position control assembly	15	33440	3	M8 x 1.25 P x 276 mm Tie rod
5	33345	5	Spool position control assembly	16	30515	6	8 mm x 1.25 mm Pitch hex nut
6	33346	6	Spool repair kit	17	-----	1	Spool (used on boom segment only)
7	34369	1	Front port inlet section complete	18	33447	6	Lever bracket
8	34372	1	Boom segment complete (includes body, spool with float position, valve check, 2400 psi relief assemblies)	19	-----	5	Spool
9	33338	1	Section seal repair kit	20	34367	1	Shock / dampening valve, 2400 psi
10	34366	4	Shock / dampening valve, 2400 psi				
11	34371	1	Swing segment complete (includes body, spool, check valve & two 2400 psi relief assemblies)				

BH1050 HOSES & FITTINGS



BH1050 HOSES & FITTINGS

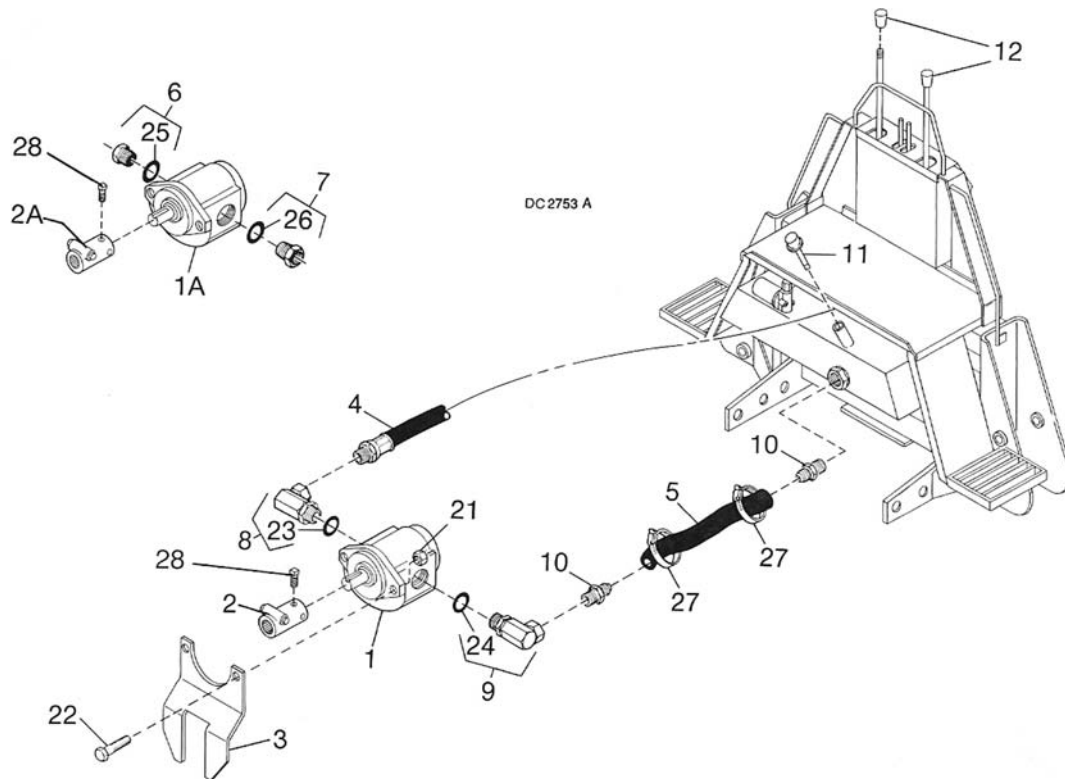
REF	PART	QTY	DESCRIPTION
1	34234	1	3/8 NPT x 1/2 NPT Nipple
2	34180	1	Restrictor valve
3	10802	* 1	3/8 x 1/2 Pipe reducer bushing, straight
4	31274	2	1/4 NPT Run tee
5	31275	8	9/16 - 18 x 3/8 O-Ring union
6	14396	6	9/16 - 18 x 1/4 O-Ring union
7	34232	2	3/8 x 1/2 90° Swivel elbow
A	34223	-	3/8 NPT x 100" High pressure hose assembly
B	34224	-	3/8 NPT x 112" High pressure hose assembly
C	34225	-	3/8 NPT x 157" High pressure hose assembly
D	34226	-	3/8 NPT x 187" High pressure hose assembly
E	34221	-	1/4 NPT x 65" High pressure hose assembly
F	34221	-	1/4 NPT x 65" High pressure hose assembly
G	34221	-	1/4 NPT x 65" High pressure hose assembly

REF	PART	QTY	DESCRIPTION
H	34221	-	1/4 NPT x 65" High pressure hose assembly
J	34215	-	1/4 NPT x 48" High pressure hose assembly
K	34215	-	1/4 NPT x 48" High pressure hose assembly
L	34223	-	3/8 NPT x 100" High pressure hose assembly
M	34223	-	3/8 NPT x 100" High pressure hose assembly
N	34222	-	1/4 NPT x 30" High pressure hose assembly
O	34222	-	1/4 NPT x 30" High pressure hose assembly
P	34220	-	1/2 NPT x 34" High pressure hose assembly
Q	34227	-	1/2 NPT x 70" High pressure hose assembly

* Obtain locally

NOTE: On hoses with one swivel fitting only, the swivel fitting attaches to the cylinder port.

BH1050 PUMP ASSEMBLY



REF	PART	QTY	DESCRIPTION
1	34231	1	540 RPM Gear pump assembly (see page 47) -or-
1A	62437	1	1000 RPM Gear pump assembly (see page 48)
2	34238	1	540 RPM Pump adapter -or-
2A	34281	1	1000 RPM Pump adapter
3	34285	1	Pump mounting bracket
4	34227	1	1/2 NPT x 70" High-pressure hose assembly
5	34228	1	1x 30" Low-pressure hose
6	34283	1	1-5/16 - 12M - 1-1/16 O-Ring reducer
7	34284	1	1-5/8 - 12M - 1-5/16 O-Ring reducer
8	34237	1	1-1/16 - 12M - 1/2 NPSM 90° Swivel elbow
9	34236	1	1-5/16 - 12M - 1" NPSM 90° Elbow
10	27312	2	1" NPT to 1 Hose nipple
11	31414	1	Breather cap / dipstick

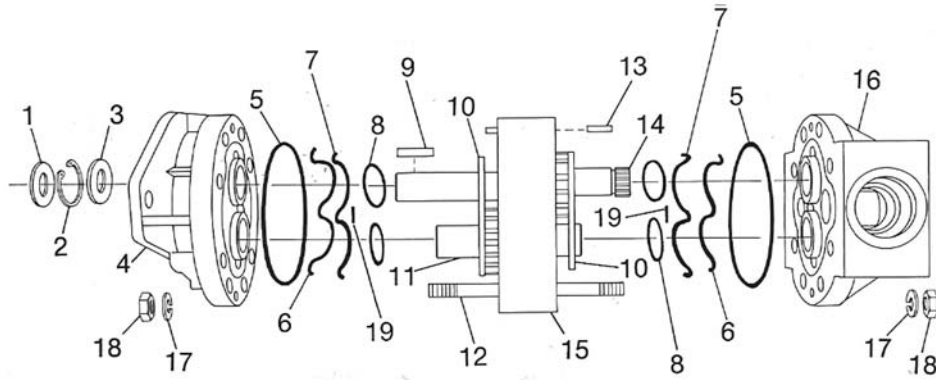
REF	PART	QTY	DESCRIPTION
12	31246	1	1-5/8 Oval tapered knob

HARDWARE

REF	PART	QTY	DESCRIPTION
21	765	*	1/2 NC Hex lock nut
22	3379	*	1/2 NC x 1-1/2 HHCS GR5
23	-----	-	O-Ring
24	-----	-	O-Ring
25	-----	-	O-Ring
26	-----	-	O-Ring
27	27314	-	1-1/2 Screw hose clamp
28	62147	*	5/16 NC x 1 Cup point square head set screw

* Obtain locally

BH1050 540 RPM HYDRAULIC PUMP



20 — SEAL KIT
21 — GEAR PUMP ASSEMBLY

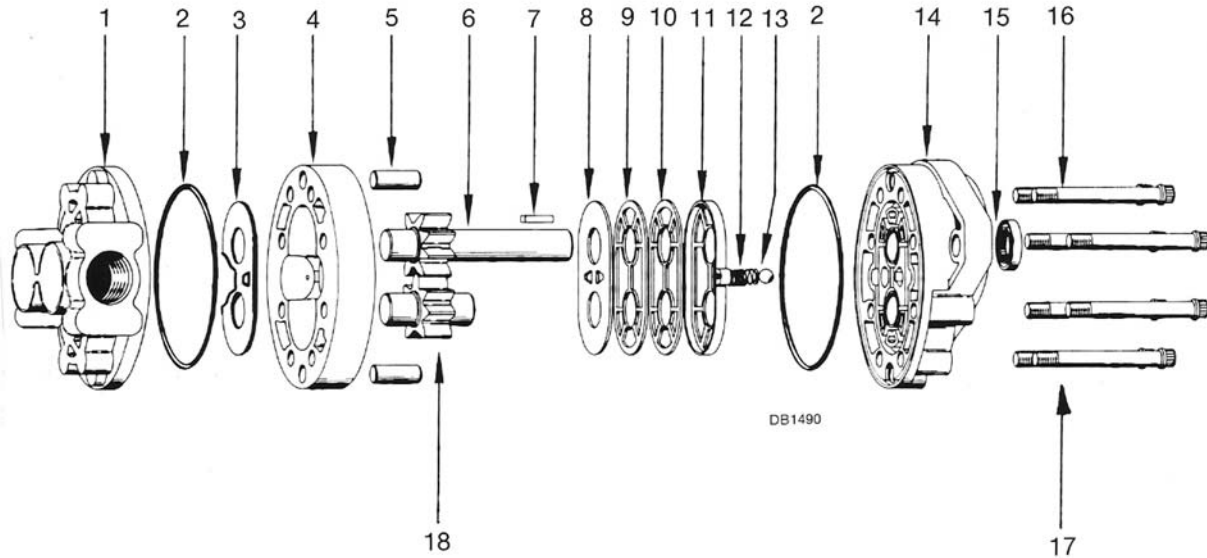
DB2764

REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
1	----- †	1	Front seal	14	NSS	1	Drive gear
2	NSS	1	Retaining ring	15	NSS	1	Gear housing
3	----- †	1	Rear seal	16	NSS	1	Rear cover
4	NSS	1	Mounting flange	17	NSS	8	.438 Washer
5	----- †	2	Outer O-Ring	18	NSS	8	.438 Hex nut
6	----- †	2	Nylon back-up strip	19	----- †	2	Stuffer strip
7	----- †	2	O-Ring	20	34365	1	Pump seal kit, Sundstrand (includes items 1, 3, 5, 6, 7, and 19)
8	NSS	4	Plate O-ring	21	-----	-	Hydraulic gear pump assembly, Sundstrand
9	NSS	1	Key				
10	NSS	2	Pressure plate				
11	NSS	1	Idler gear				
12	NSS	4	.438 Fastener				
13	NSS	4	Dowel				

† Included in seal kit

NSS Not sold separately

BH1050 1000 RPM HYDRAULIC PUMP



REF	PART	QTY	DESCRIPTION
1	NSS	1	Back plate assembly
2	----- †	2	O-Ring
3	----- †	1	Thrust plate
4	NSS	1	Body
5	NSS	2	Dowel pin
6	NSS	1	Drive gear assembly
7	62536 *	1	1/4 x 1/4 x 15/16 Key
8	----- †	1	Diaphragm
9	----- †	1	Back-up gasket
10	----- †	1	Protector gasket
11	----- †	1	Diaphragm seal
12	NSS	2	Spring
13	NSS	2	Steel ball
14	NSS	1	Front plate assembly

REF	PART	QTY	DESCRIPTION
15	10409	1	Shaft seal
16	NSS	4	Tie bolt
17	NSS	4	Tie bolt
18	NSS	1	Idler gear assembly
NS	62438	1	Seal kit complete (includes items 2, 3, 8-11, and 15) (for pumps with 1-5/16 - 12 SAE pressure port only)
			-or-
NS	1019621	1	Seal kit complete (for pumps with 1-1/16 - 12 SAE pressure port only)
19	-----	-	1000 RPM Gear pump assembly, Cessna

* Obtain locally

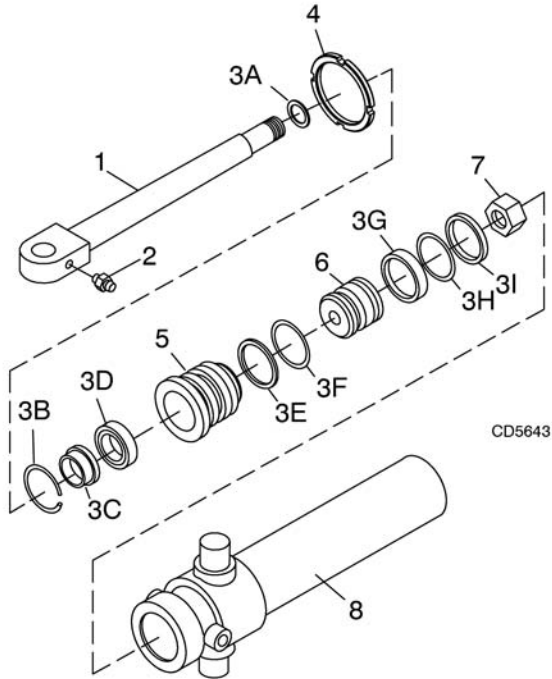
† Included in seal kit

NSS Not serviced separately

BH1050 SWING CYLINDER

Note: Before ordering parts, check for "E" or "P" stamped on cylinder and order from correct parts list.

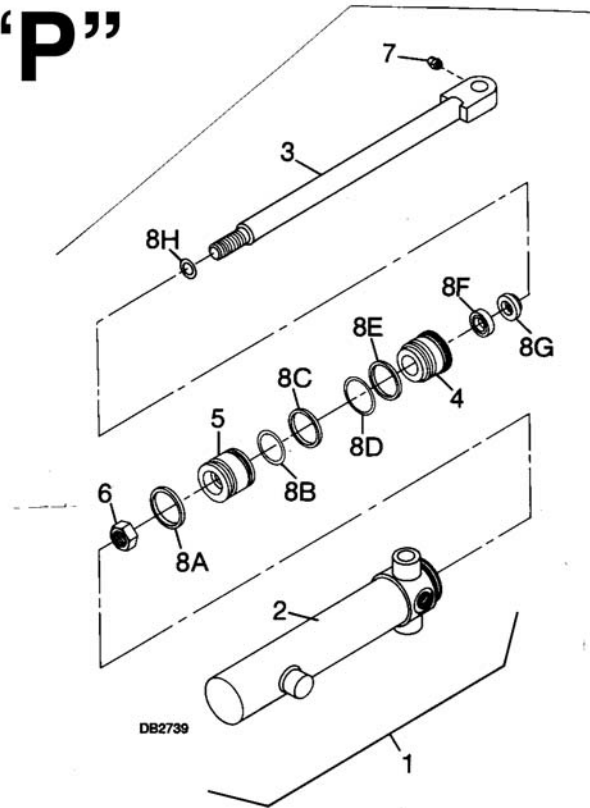
"E"



REF	PART	QTY	DESCRIPTION
-	34219	1	Complete cylinder assembly
1	34273	1	Piston rod
2	1972 *	1	1/4-28 Tapered threaded fitting
3	58822	1	Seal kit (items 3A - 3I)
3A	----- †	1	O-Ring .75 x .875
3B	----- †	1	Internal retaining ring 2.500
3C	----- †	1	Wiper ring 1.250 heavy section
3D	----- †	1	U-Cup 1.25 x 1.625 x .312
3E	----- †	1	Backup ring 2.25 x 2.50
3F	----- †	1	O-Ring 2.25 x 2.50
3G	----- †	1	Piston seal 2.5 OD
3H	----- †	1	O-Ring 2.062 x 2.25
3I	----- †	1	Piston ring 2.50 OD x .115 Sq.
4	64978	1	Spanner nut
5	64935	1	Rod guide
6	34274	1	Piston
7	64878	1	7/8 - 14 UNF Lock nut
8	-----	1	Cylinder body

* Obtain locally
† Included in seal kit

"P"

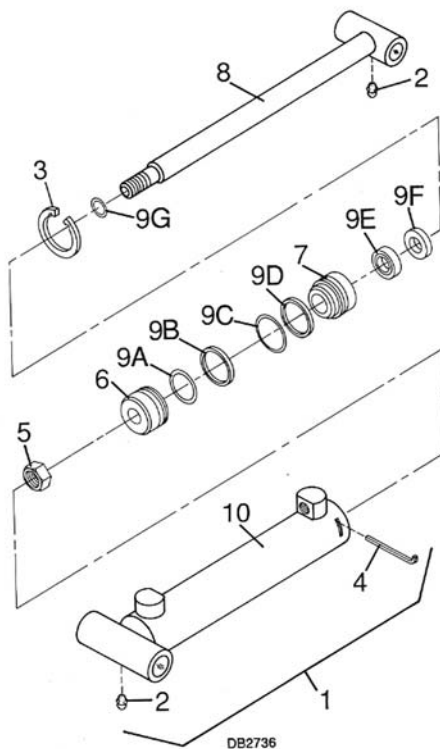


REF	PART	QTY	DESCRIPTION
1	34219	1	2-1/2 x 13 Hydraulic swing cylinder
2	-----	1	Cylinder barrel assembly
3	34332	1	Rod assembly (includes item 7)
4	34334	1	Gland
5	34333	1	Piston
6	34328	1	3/4 - 16UNF Hex lock nut
7	1972 *	1	1/4 - 28 Tapered thread grease fitting
8	34277	1	Seal kit (contains item 8A - 8H)
8A	----- †	1	Piston ring
8B	----- †	1	O-Ring
8C	----- †	1	Teflon seal
8D	----- †	1	O-Ring
8E	----- †	1	Back-up washer
8F	----- †	1	U-Cup
8G	----- †	1	Wiper
8H	----- †	1	O-Ring

* Obtain locally
† Included in seal kit

BH1050 STABILIZER CYLINDER

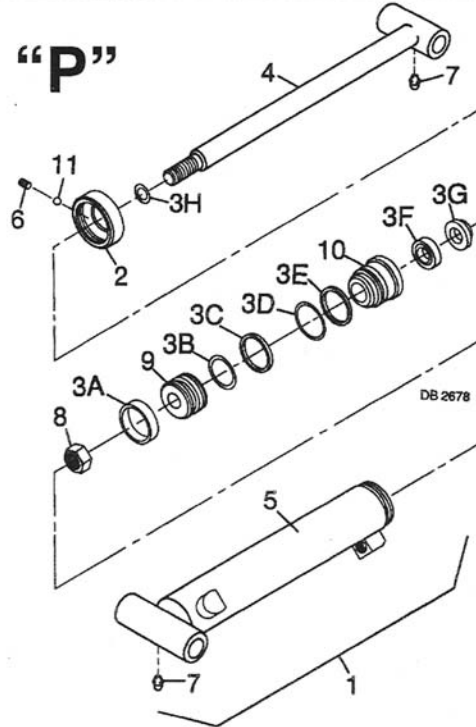
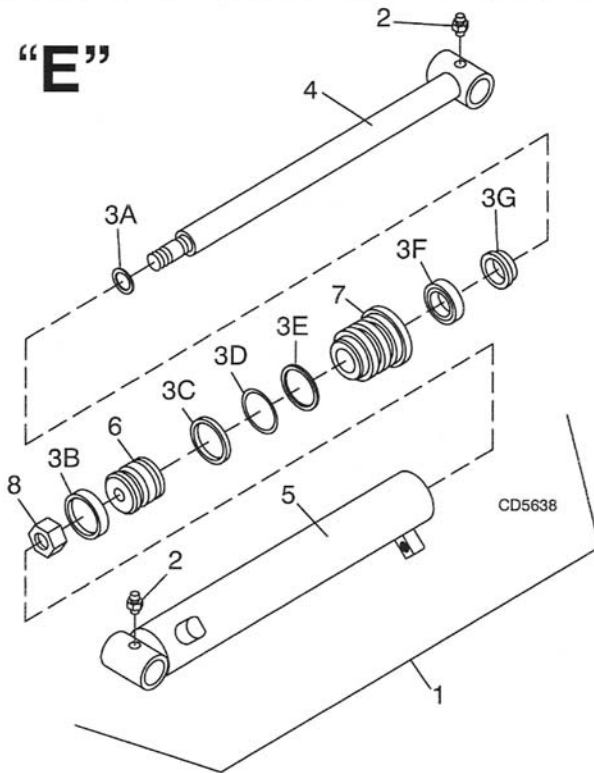
NOTE: Before ordering parts, check for "E" or "P" stamped on cylinder and order from correct parts column.



REF	"E" PART	"P" PART	QTY	DESCRIPTION
1	34218	34218	1	2-1/2 x 15 Hydraulic cylinder assembly
2	1972 *	1972 *	2	1/4 - 28 Tapered thread grease fitting
3	34330	N/A	1	Retaining ring, internal 2-1/2 x 15
4	N/A	N/A	1	Wire retainer, 1/2 x 15
5	64874	34328	1	Hex lock nut
6	34254	34325	1	Piston
7	34256	34326	1	Gland
8	34257	34257	1	Rod assembly
9	34255	34255	1	Seal kit (contains item 9A-9G)
9A	----- †	----- †	1	O-Ring, 2-1/16 ID x 2-1/4 OD
9B	----- †	----- †	1	Piston ring, 2-1/2
9C	----- †	----- †	1	O-Ring, 2-1/8 ID x 2-1/2 OD
9D	----- †	----- †	1	Back-up ring, 2-1/8 ID x 2-1/2 OD
9E	----- †	----- †	1	Poly seal, 1-1/2 x 1-7/8 x 5/16 deep
9F	----- †	----- †	1	Wiper ring, 1-1/2
9G	----- †	----- †	1	O-Ring, 3/4 ID x 7/8 OD
10	-----	-----	1	Cylinder barrel assembly
			*	Obtain locally
			†	Included in seal kit

BH1050 BUCKET CYLINDER

Note: Before ordering parts, check for "E" or "P" stamped on cylinder and order from correct parts list.



REF	PART	QTY	DESCRIPTION
1	34217	1	2-1/2 x 28 Hydraulic cylinder asy
2	1972 *	2	1/4 - 28 Tapered thread grease fitting
3	34266	1	Seal kit (contains items 3A-3G) (for lock collar style cylinders) -or-
3	58797	1	Seal kit (contains items 3A-3G) (for internal threaded gland style cylinders)
3A	----- †	1	O-Ring .875 ID x 1.000 OD
3B	----- †	1	Wear ring 2.50 OD x 1/2 x 1/8
3C	----- †	1	Piston seal 2.500 OD
3D	----- †	1	O-Ring 2.125 ID x 2.50 OD
3E	----- †	1	Backup ring 2.125 ID x 2.50 OD
3F	----- †	1	Poly seal 1.50 ID x 1.875 OD x .312
3G	----- †	1	Wiper ring 1.500 heavy section
4	34267	1	Piston rod
5	-----	1	Cylinder body
6	34268	1	Piston
7	34269	1	Rod guide
8	34323	1	1-14UNS - 2B Hex lock nut

* Obtain locally

† Included in seal kit

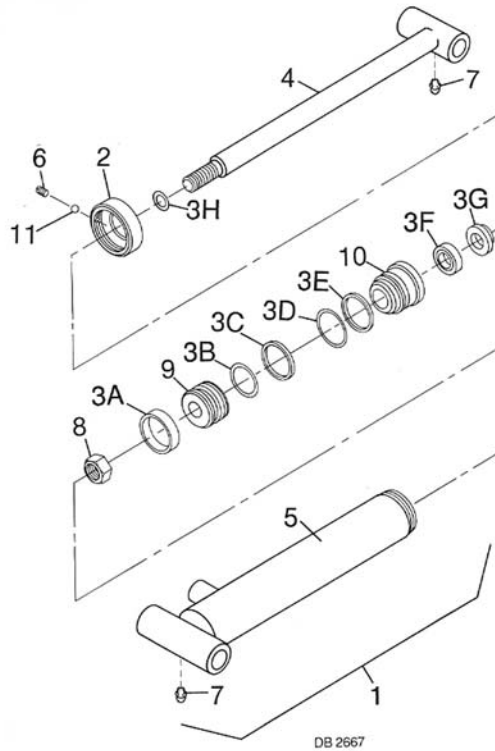
REF	PART	QTY	DESCRIPTION
1	34217	1	2-12 x 28 Hydraulic cylinder asy
2	N/A	1	Collar, 2-7/8 - 12UN
3	34266	1	Seal kit (contains items 3A-3H)
3A	----- †	1	Wear ring, 2-1/2 OD x 1/2 x 1/8
3B	----- †	1	O-Ring, 2-1/16 ID x 2-1/4 OD
3C	----- †	1	Piston ring, Teflon 2-1/2 OD
3D	----- †	1	O-Ring, 2-1/4 ID x 2-1/2 OD
3E	----- †	1	Back-up ring, 2-1/4 ID x 2-1/2 OD
3F	----- †	1	Poly seal, 1-3/4 ID x 2-1/8 OD x 3/8 deep
3G	----- †	1	Wiper ring, Heavy section 1-3/4
3H	----- †	1	O-Ring, 1.0 ID x 1-1/8 OD
4	34320	1	Piston rod
5	-----	1	Cylinder body
6	N/A	1	5/16 NC x 5/16 Socket head set screw
7	1972 *	2	1/4 - 28 Tapered thread grease fitting
8	34323	1	1-14 UNS Hex lock nut
9	34322	1	Piston
10	34321	1	Gland
11	N/A	1	3/16 OD Nylon ball

* Obtain locally

† Included in seal kit

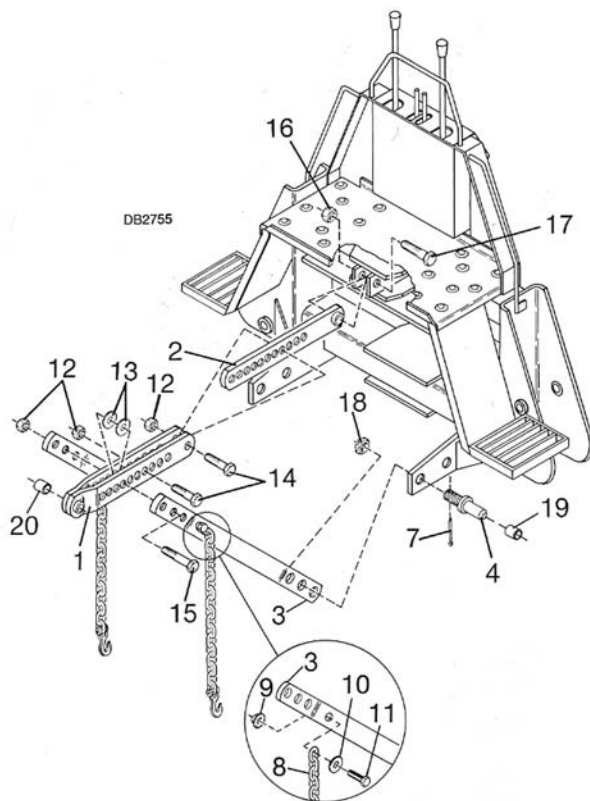
BH1050 BOOM & DIPPERSTICK CYLINDER

NOTE: Before ordering parts, check for "E" stamped on cylinder.



REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
1	34216	1	3 x 27 Hydraulic cylinder assembly	4	34261	1	Piston rod
2	34259	1	Collar	5	-----	1	Cylinder body
3	34260	1	Seal kit (contains items 3A-3H)	6	34359	1	5/16 NC x 5/16 Socket head set screw
3A	-----	†	1 Wear ring	7	3584	2	45D 1/4 Tapered thread grease fitting
3B	-----	†	1 O-Ring, 2-9/16 ID x 2-3/4 OD	8	34323	1	1-14 UNS Hex lock nut
3C	-----	†	1 Piston ring	9	34262	1	Piston
3D	-----	†	1 O-Ring, 2-3/4 ID x 3.0 OD	10	34263	1	Gland
3E	-----	†	1 Back-up ring, 2-3/4 ID x 3.0 OD	11	34360	1	3/16 OD Nylon ball
3F	-----	†	1 Poly seal, 1-1/2 ID x 1-7/8 OD x 5/16 deep				
3G	-----	†	1 Wiper ring, Heavy section 1-1/2				* Obtain locally
3H	-----	†	1 O-Ring, 1.0 ID x 1-1/3 OD				† Included in seal kit

BH1050 SAF-T-LOK® ASSEMBLY



REF	PART	QTY	DESCRIPTION
1	34129	1	Double link assembly
2	34131	1	Link assembly
3	34993	2	Saf-T-Bar assembly, only for S/N 3700 and above (includes item 8-11) -or-
3	34292	2	Saf-T-Bar assembly for S/N 3000-3699 only (includes items 8-11)
4	14012	2	Category 2 hitch pin, 1-1/8 drilled

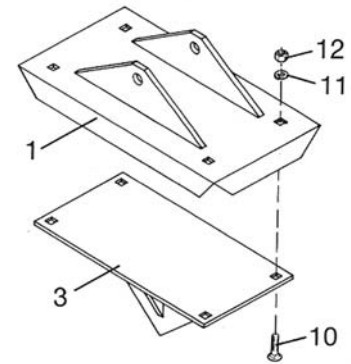
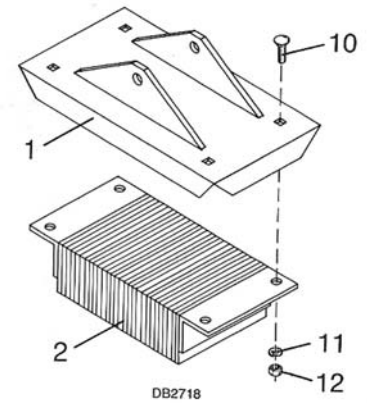
HARDWARE

REF	PART	QTY	DESCRIPTION
7	6185	*	1/4 x 2-1/4 Cotter pin
8	34293	-	5/16 x 60 Chain and grab hook
9	11900	*	1/2 NC Flanged hex lock nut
10	854	*	1/2 Standard flat washer
11	3699	*	1/2 NC x 2 HHCS GR5
12	34194	-	7/8 Hex lock nut
13	11073	-	7/8 x 2 x 3/8 Flat washer
14	34157	-	7/8 NC x 3-1/2 HHCS GR5
15	34163	-	7/8 NC x 5 HHCS GR5
16	34279	-	1" NC Hex lock nut
17	34278	-	1" NC x 5" HHCS GR5
18	14153	-	1-1/8 NF Slotted hex nut
19	34291	-	5/32 Wall x 1-7/16 x 1-3/4 tube
20	34143	-	1/8 Wall x 1-1/4 x 1-7/8 tube
		*	Obtain locally

BH1050 STABILIZER PAD KIT (OPTIONAL)

REF	PART	QTY	DESCRIPTION
1	34107	2	Stabilizer pad assembly (standard)
2	34093	2	Rubber street pad (optional)
3	34106	2	Stabilizer spike pad (optional)
10	29893	8	1/2 NC x 1-1/2 Carriage bolt HT
11	855 *	8	1/2 Extra-heavy lock washer
12	1093	8	1/2 NC Heavy hex nut

* Obtain locally



BOLT TORQUE CHART

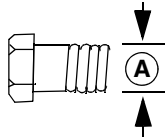
Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application.

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 Grade 2
(No Dashes)

SAE Bolt Head
Identification

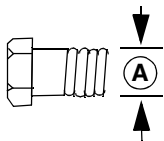


SAE Grade 5
(3 Radial Dashes)



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



METRIC SERIES TORQUE CHART



8.8
Metric
Grade 8.8

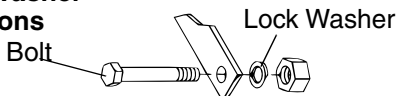
Metric Bolt Head
Identification



10.9
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

Typical Washer Installations



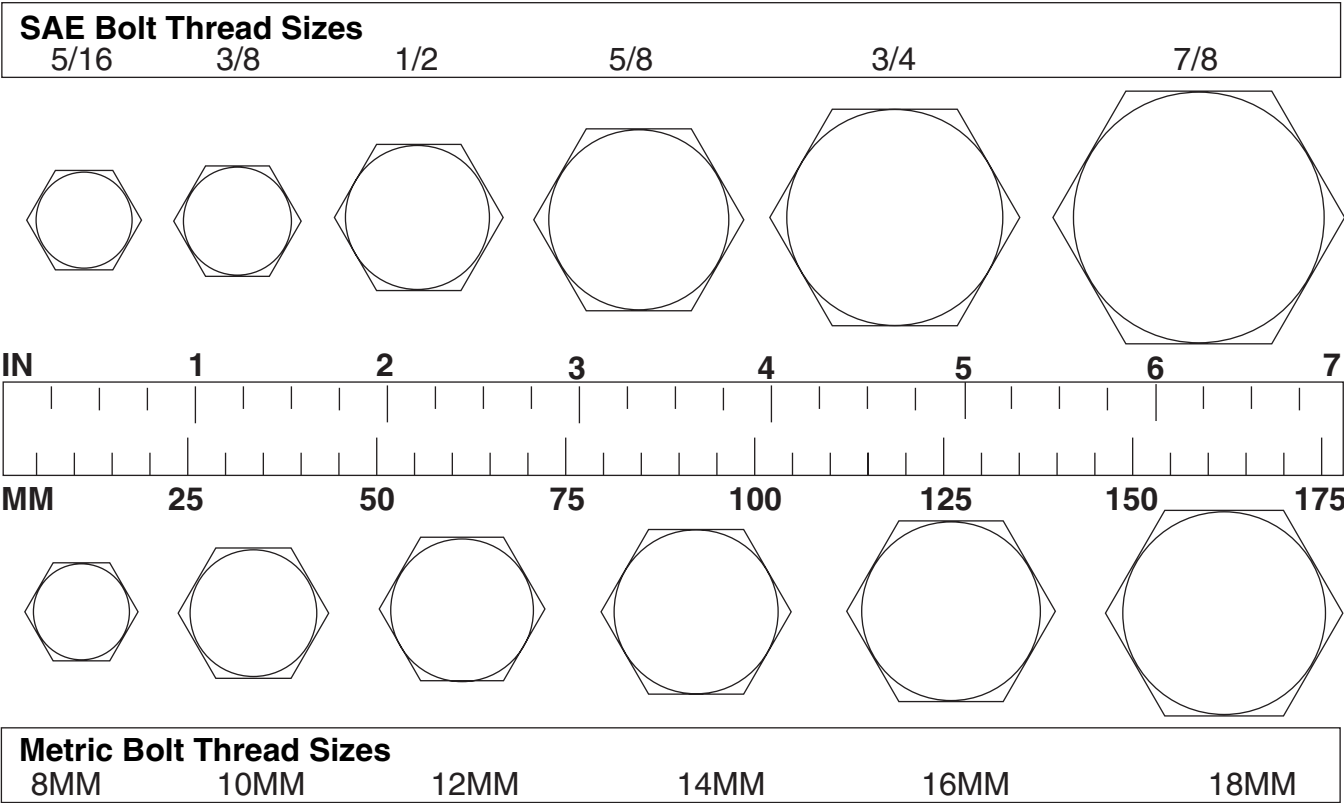
Flat Washer



8/9/00

BOLT SIZE CHART

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



ABBREVIATIONS

AG Agriculture
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
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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WARRANTY

(All Models Except Mow'n Machine™ Zero-Turn Mowers and Woods Boundary™ Utility Vehicles)

Please Enter Information Below and Save for Future Reference.

Date Purchased: _____

From (Dealer): _____

Model Number: _____

Serial Number: _____

Woods Equipment Company ("WOODS") 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.

The warranty periods for certain gearboxes and blade spindles are listed below:

Model No.	Part Warranted	Duration
PHD25, PHD35, PHD65, PHD95, 1260, 2162, 3240, BB48, BB60, BB72, BB84, BB600, BB720, BB840, BB6000, BB7200, BB8400, BW180-2, BW1800, DS96, DS120, RCC42, RM550-2, RM660-2, RM990-3, PRD6000, PRD7200, PRD8400, 7144RD-2, 9180RD-2, 9204RD-2, S15CD, S20CD, S22CD, S25CD, S27CD	Gearbox components	5 years from the date of delivery to the original purchaser.
RDC54, RD60, RD72	Gearbox components	3 years from the date of delivery to the original purchaser.
RDC54, RD60, RD72	Gearbox components	1 year from the date of delivery to the original purchaser if used in rental or commercial applications.
RM550-2, RM660-2, RM990-3, PRD6000, PRD7200, PRD8400, 7144RD-2, 9180RD-2, 9204RD-2	Blade spindles	3 years from the date of delivery to the original purchaser.

Under no circumstances will this Warranty apply in the event that the product, in the good faith opinion of WOODS, 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 WOODS, a WOODS authorized dealer or distributor, and/or a WOODS 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 WOODS.

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.

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

WOODS' obligation under this Warranty is limited to, at WOODS' option, the repair or replacement, free of charge, of the product if WOODS, in its sole discretion, deems it to be defective or in noncompliance with this Warranty. **The product must be returned to WOODS with proof of purchase within thirty (30) days after such defect or noncompliance is discovered or should have been discovered, routed through the dealer and distributor from whom the purchase was made, transportation charges prepaid.** WOODS shall complete such repair or replacement within a reasonable time after WOODS 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. WOODS MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND WOODS SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY AND/OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

WOODS 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, Woods specifically disclaims any damages relating to (i) lost profits, business, revenues or goodwill; (ii) loss of crops; (iii) loss because of delay in harvesting; (iv) any expense or loss incurred for labor, supplies, substitute machinery or rental; or (v) any other type of damage to property or economic loss.

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

No agent, representative, dealer, distributor, serviceperson, salesperson, or employee of any company, including without limitation, WOODS, 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:

Woods Equipment Company

2606 South Illinois Route 2
Post Office Box 1000
Oregon, Illinois 61061

800-319-6637 tel
800-399-6637 fax
www.WoodsEquipment.com

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BMP®

CENTRAL FABRICATORS®

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GILL®

WAIN-ROY®

WOODS®



WARRANTY

(Replacement Parts For All Models Except Mow'n Machine™
Zero-Turn Mowers and Woods Boundary™ Utility Vehicles)

Woods Equipment Company ("WOODS") warrants this product to be free from defect in material and workmanship for a period of ninety (90) days from the date of delivery of the product to the original purchaser with the exception of V-belts, which will be free of defect in material and workmanship for a period of 12 months.

Under no circumstances will this Warranty apply in the event that the product, in the good faith opinion of WOODS, has been subjected to improper operation, improper maintenance, misuse, or an accident. This Warranty does not cover normal wear or tear, or normal maintenance items.

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.

WOODS' obligation under this Warranty is limited to, at WOODS' option, the repair or replacement, free of charge, of the product if WOODS, in its sole discretion, deems it to be defective or in noncompliance with this Warranty. **The product must be returned to WOODS with proof of purchase within thirty (30) days after such defect or noncompliance is discovered or should have been discovered, routed through the dealer and distributor from whom the purchase was made, transportation charges prepaid.** WOODS shall complete such repair or replacement within a reasonable time after WOODS 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.

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WOODS 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, Woods specifically disclaims any damages relating to (i) lost profits, business, revenues or goodwill; (ii) loss of crops; (iii) loss because of delay in harvesting; (iv) any expense or loss incurred for labor, supplies, substitute machinery or rental; or (v) any other type of damage to property or economic loss.

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