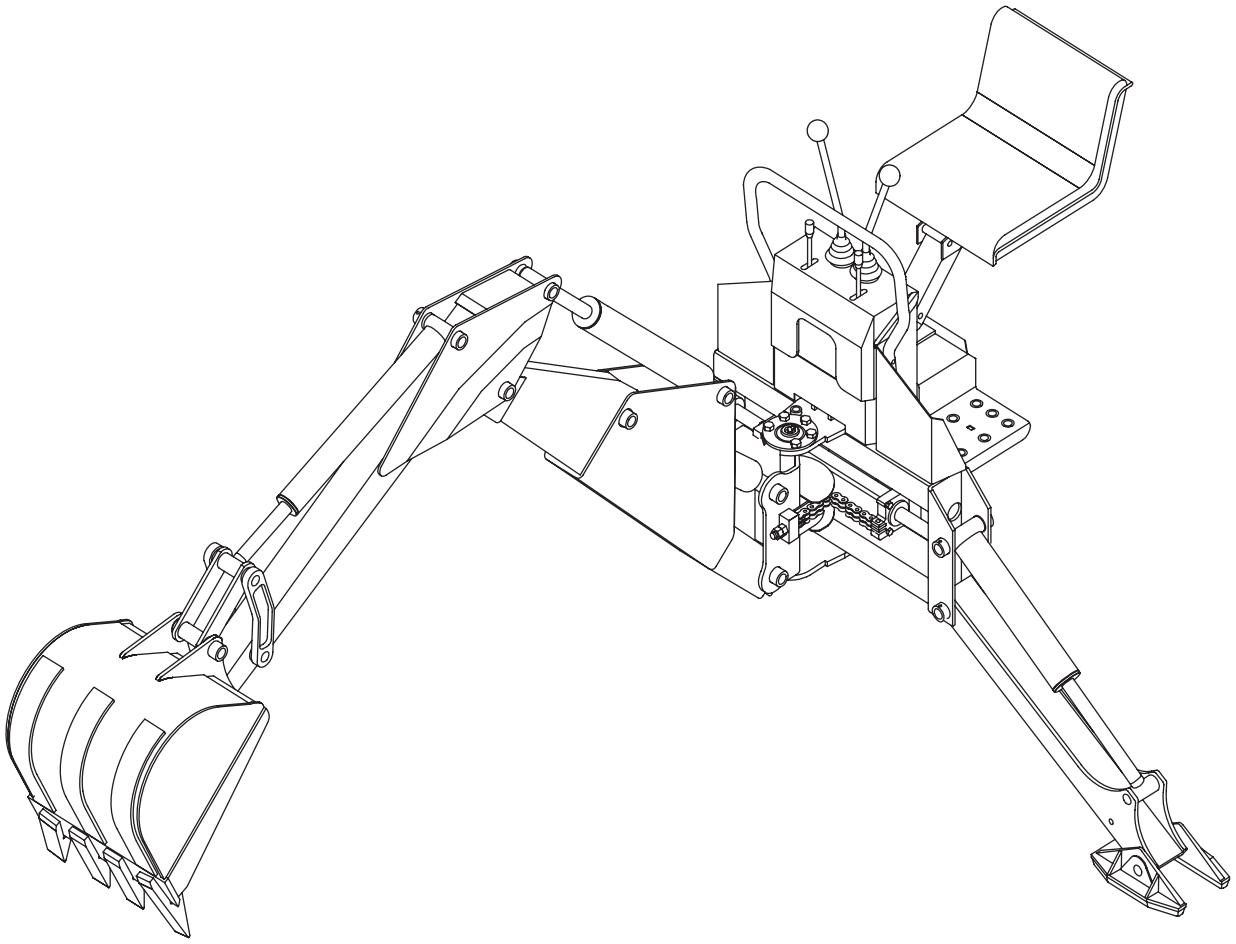
# WOODS

# BACKHOE

## BH6500
## BH7500



OPERATOR'S MANUAL

37541
Rev. 4/14/2006

WOODS®
Tested. Proven. Unbeatable.

**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.

**ALITEC™**
**BMP®**
**CENTRAL FABRICATORS®**
**GANNON®**
**GILL®**
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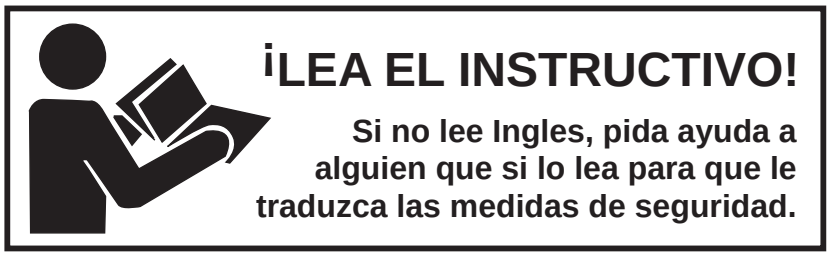
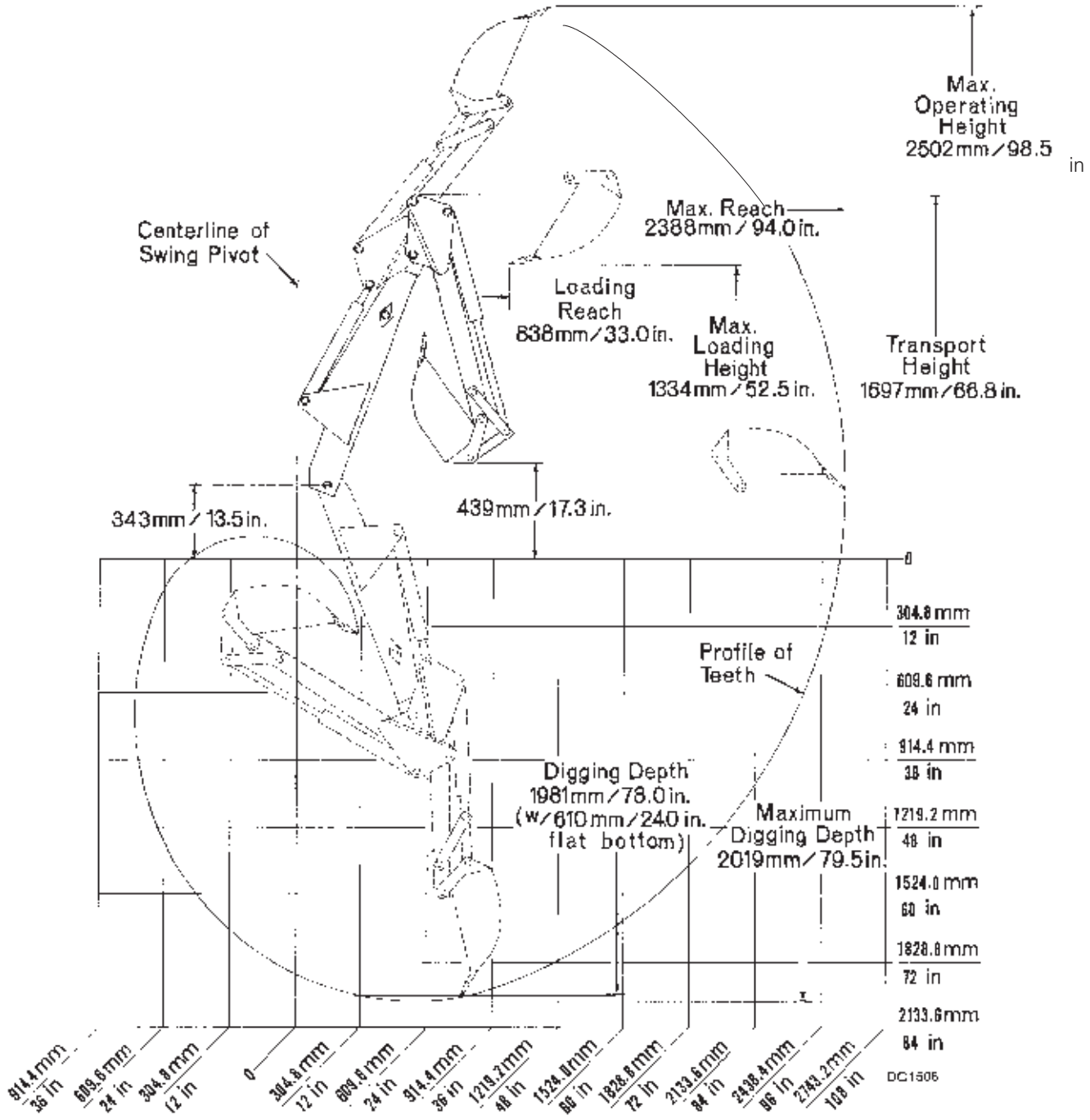


# BH6500 SPECIFICATIONS

| | | |
|---|---|---|
| REACH BELOW GRADE (STANDARD BUCKET) | | |
| Maximum | 79.5" | 2019mm |
| With two-foot flat bottom trench* | 78" | 198mm |
| LOADER HEIGHT* | 52.5" | 1334mm |
| REACH | | |
| From center of swing mast pivot point* | 94" | 2388mm |
| BUCKET ARC | 180° | |
| SWING WORKING ARC | 180° | |
| OPERATING PRESSURE | | |
| Digging* | 2100 psi | 14.5 MPa |
| Swing* | 2100 psi | 14.5 MPa |
| STABILIZER SPREAD | 59" - 88" | 1499 - 2235mm |
| BOOM CYLINDER | | |
| Bore | 2.5" | 63.5mm |
| Stroke | 16.75" | 425.5mm |
| DIPPERSTICK CYLINDER | | |
| Bore | 2.0" | 50.8mm |
| Stroke | 16.75" | 425.5mm |
| Digging Force* | 1284 lbs. | 5,725 N |
| BUCKET CYLINDER | | |
| Bore | 2.0" | 50.8mm |
| Stroke | 16.75" | 425.5mm |
| Digging Force* | 2500 lbs. | 11,150 N |
| SWING CYLINDER | | |
| Bore | 2.5" | 63.5mm |
| Stroke | 10.62" | 269.7mm |
| BUCKET | | RATED CAPACITY |
| 8-Inches | .71 $ft.^3$ | 020$m^3$ |
| 12 Inches | 1.44 $ft.^3$ | 041$m^3$ |
| 16 Inches | 1.66 $ft.^3$ | 047$m^3$ |
| 18 Inched | 1.93 $ft.^3$ | 055$m^3$ |
| 24 Inches | 2.73 $ft.^3$ | 077$m^3$ |

* Per SAE J49 Standards

# BH6500

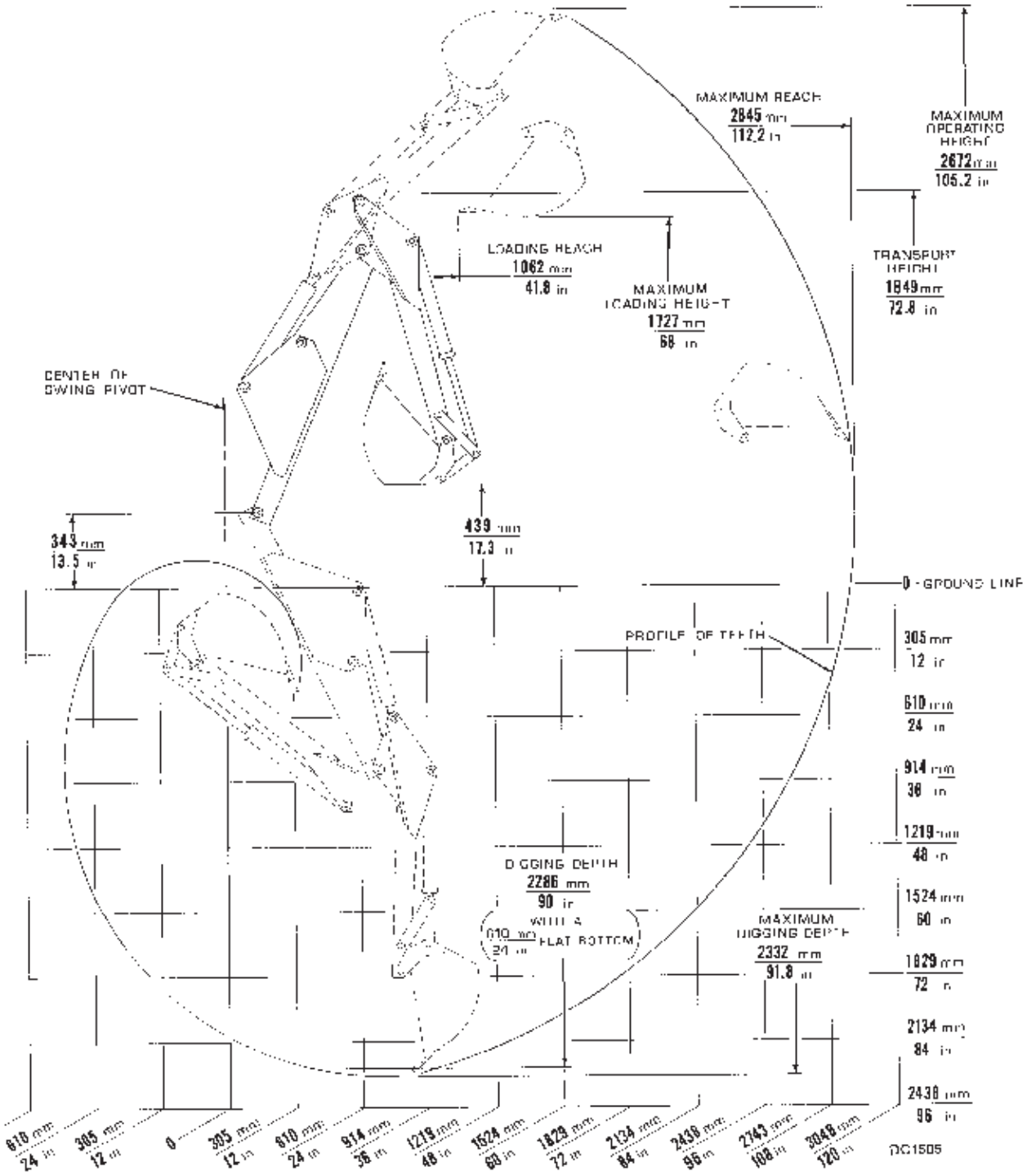

Max.
Operating
Height
2502mm/98.5 in
Max. Reach
2388mm/94.0in.
Centerline of
Swing Pivot
Loading
Reach
838mm/33.0in.
Max.
Loading
Height
1334mm/52.5in.
Transport
Height
1697mm/66.8in.
343mm/13.5in.
439mm/17.3in.
0
304.8mm
12 in
Profile of
Teeth
609.6mm
24 in
914.4mm
36 in
Digging Depth
1981mm/78.0in.
(w/610mm/24.0in.
flat bottom)
Maximum
Digging Depth
2019mm/79.5in.
1219.2mm
48 in
1524.0mm
60 in
1828.8mm
72 in
2133.6mm
84 in
914.4mm 36 in
609.6mm 24 in
304.8mm 12 in
0
304.8mm 12 in
609.6mm 24 in
914.4mm 36 in
1219.2mm 48 in
1524.0mm 60 in
1828.8mm 72 in
2133.6mm 84 in
2438.4mm 96 in
2743.2mm 108 in
DC1506

# BH7500 SPECIFICATIONS

| | | |
|---|---|---|
| REACH BELOW GRADE (STANDARD BUCKET | | |
| Maximum | 91.8" | 2332mm |
| With two-foot flat bottom trench* | 90.0" | 2286mm |
| LOADEDR HEIGHT* | 68.0" | 1727mm |
| REACH | | |
| From center of swing mast pivot point* | 112" | 2845mm |
| BUCKET ARC | 180° | |
| SWING WORKING ARC | 180° | |
| OPERATING PRESSURE | | |
| Digging* | 2100 psi | 14.5 MPa |
| Swing* | 2100 psi | 14.5 MPa |
| STABILIZER SPREAD | 59" - 88" | 1499 - 2235mm |
| BOOM CYLINDER | | |
| Bore | 2.5" | 63.5mm |
| Stroke | 16.75" | 425.5mm |
| DIPPERSTICK CYLINDER | | |
| Bore | 2.0" | 50.8mm |
| Stroke | 16.75" | 425.5mm |
| Digging Force* | 1786 lbs. | 7,964 N |
| BUCKET CYLINDER | | |
| Bore | 2.0" | 50.8mm |
| Stroke | 16.75" | 425.5mm |
| Digging Force* | 2500 lbs. | 11,150 N |
| SWING CYLINDER | | |
| Bore | 2.5" | 63.5mm |
| Stroke | 10.62" | 269.7mm |
| BUCKET | | RATED CAPACITY |
| 8 Inches | .71 $ft.^3$ | 020$m^3$ |
| 12 Inches | 1.44 $ft.^3$ | 041$m^3$ |
| 16 Inches | 1.66 $ft.^3$ | 047$m^3$ |
| 18 Inched | 1.93 $ft.^3$ | 055$m^3$ |
| 24 Inches | 2.73 $ft.^3$ | 077$m^3$ |

* Per SAE J49 Standards

# BH7500


MAXIMUM REACH
2845 mm
112.2 in
MAXIMUM OPERATING HEIGHT
2672 mm
105.2 in
LOADING REACH
1062 mm
41.8 in
MAXIMUM LOADING HEIGHT
1727 mm
68 in
TRANSPORT HEIGHT
1849 mm
72.8 in
CENTER OF SWING PIVOT
343 mm
13.5 in
439 mm
17.3 in
0 - GROUND LINE
PROFILE OF TEETH
305 mm
12 in
610 mm
24 in
914 mm
36 in
1219 mm
48 in
1524 mm
60 in
1829 mm
72 in
2134 mm
84 in
2438 mm
96 in
DIGGING DEPTH
2286 mm
90 in
WITH A
610 mm
24 in
FLAT BOTTOM
MAXIMUM DIGGING DEPTH
2332 mm
91.8 in
610 mm 24 in
305 mm 12 in
0
305 mm 12 in
610 mm 24 in
914 mm 36 in
1219 mm 48 in
1524 mm 60 in
1829 mm 72 in
2134 mm 84 in
2438 mm 96 in
2743 mm 108 in
3048 mm 120 in
DC1505

# 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.**

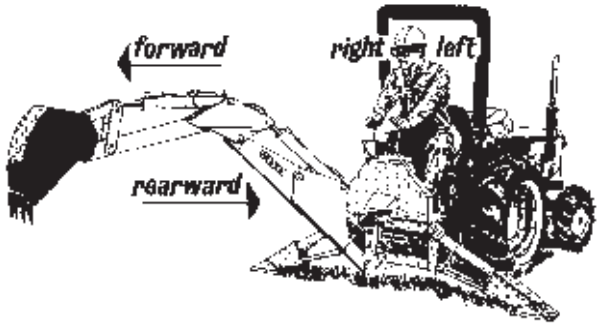



**Figure 1**. Backhoe Directions

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.

1. Bucket
2. Bucket cylinder
3. Dipperstick cylinder
4. Boom cylinder
5. Console
6. Stabilizer
7. Swing cylinder
8. Boom
9. Dipperstick
10. Stabilizer cylinder
11. Swing frame
12. Main frame

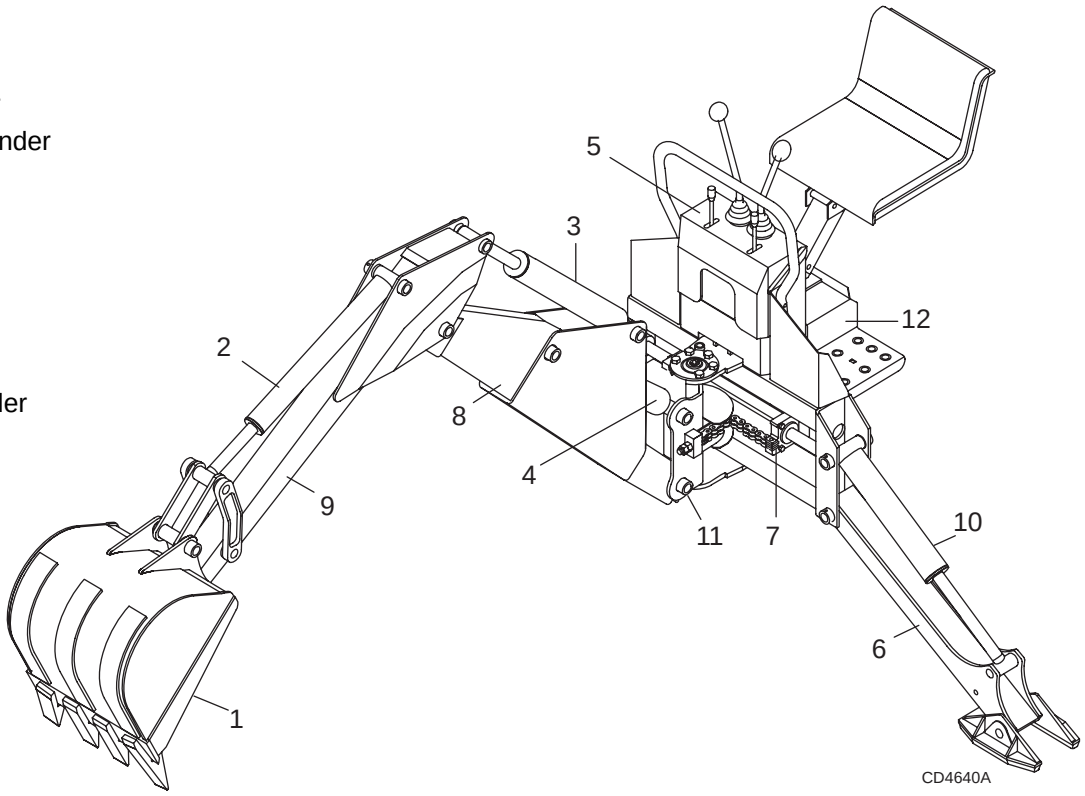



**Figure 2**. Backhoe Components

# 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 gangrene, serious injury, or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

■ **Never allow children or untrained persons to operate equipment.**

### PREPARATION

■ **Check that all hardware is properly installed. Always tighten to torque chart specifications unless instructed otherwise in this manual.**

■ **Air in hydraulic systems can cause erratic operation and allows loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.**

■ **After connecting hoses, check that all control lever positions function as instructed in the Operator's Manual. Do not put into service until control lever and equipment movements are correct.**

■ **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.**

*(Safety Rules continued on next page)*

# SAFETY RULES

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

*(Safety Rules continued from previous page)*

■ **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.**

■ **Only mount this backhoe on Category 1 tractors with 800 lb. lift capacity at 24" behind 3-point lift arm hitch balls.**

■ **Never put backhoe into service unless backhoe manufacturer's 3-point hitch Saf-T-Lok® limiter or sub-frame has been installed and adjusted.**

■ **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.**

■ **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 the top link to tractor. Use a 3/4" x 3-1/2" 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 being trapped should the boom swing control be accidentally activated.**

■ **Operate tractor PTO at the rpm speed stated in "Specifications" section.**

■ **Always dump spoil at least two feet away from opening.**

■ **Use extreme care when working close to fences, ditches, other obstructions, or on hillsides.**

# SAFETY RULES

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

■ **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 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.**

■ **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.**

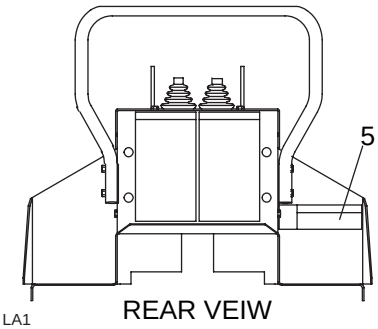
■ **Keep children and bystanders away from storage area.**

■ **Refer to Removing and Storing Backhoe in Operation section of backhoe manual.**

# SAFETY & INSTRUCTIONAL DECALS

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

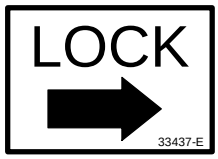
**Replace Immediately If Damaged!**

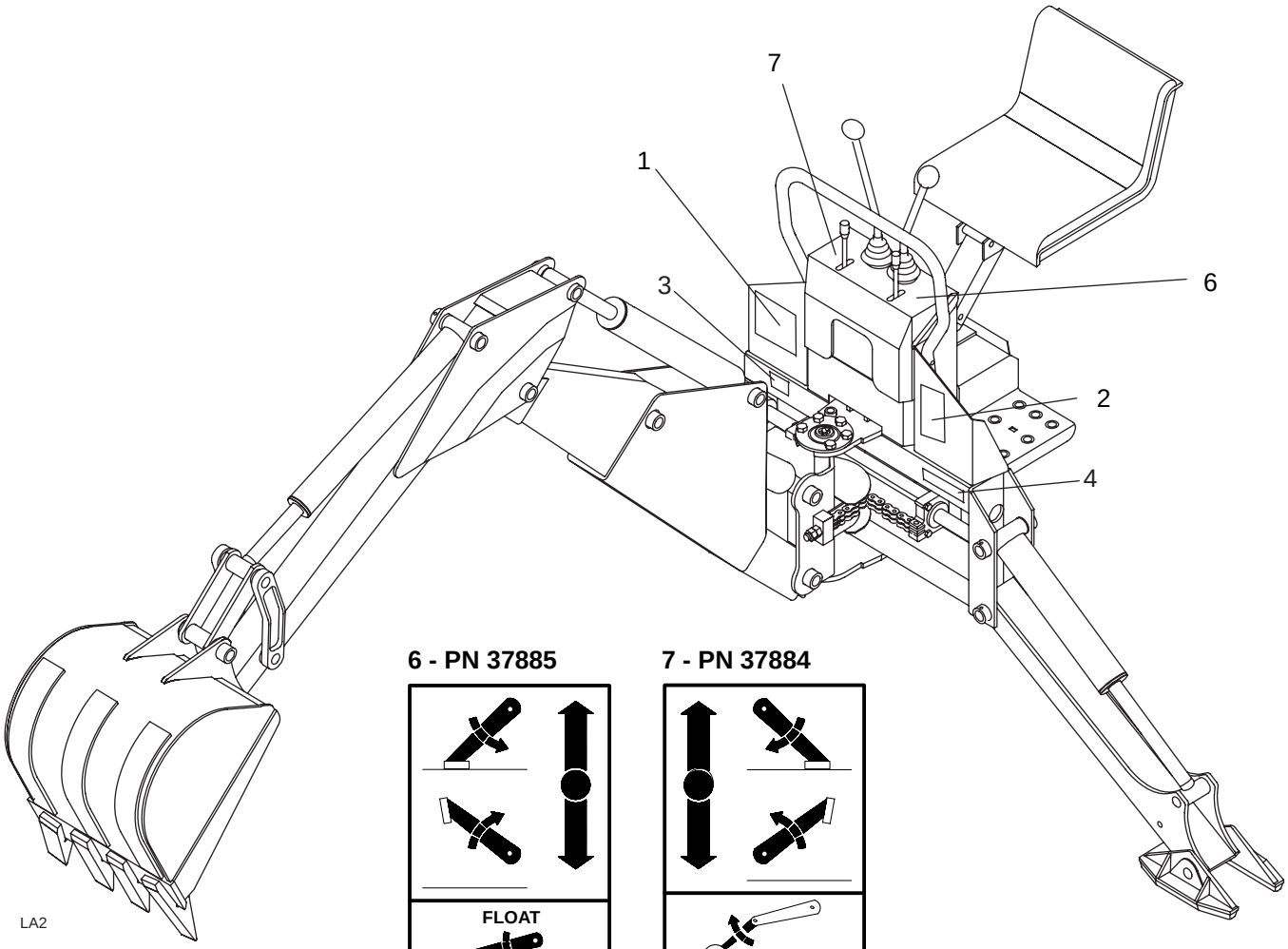



LA1 REAR VEIW

**4 - SERIAL NUMBER PLATE**

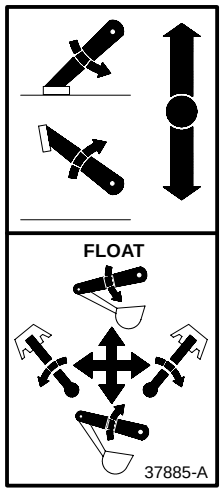

**3 - PN 33437**




LA2

**6 - PN 37885**

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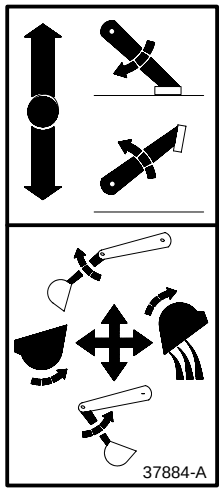


# SAFETY & INSTRUCTIONAL DECALS

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

**Replace Immediately If Damaged!**

**1 - PN 37512**

### WARNING

**TO AVOID SERIOUS INJURY OR DEATH,**

- Before operating, read and follow all safety precautions in Operator's Manual (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.
- Make sure all safety decals are installed and readable. Replace if damaged.
- Make sure all shields are properly installed. Replace if damaged.
- Remove seat and upper support assembly before installing or removing backhoe.
- Only mount on Category 1 tractors under 35 hp with 800 lb. lift capacity at 24" behind hitch balls.
- Maximum allowable hydraulic flow is 8 gpm at 2100 psi.
- Do not use "3-point quick attaching coupler" to mount backhoe on tractor.
- Lock out the draft sensing or set control to "Heavy" (minimum sensitivity) position.
- Do not modify or substitute any part of mounting kit or backhoe.
- A minimum 25% of tractor and equipment weight must be on tractor front wheels with backhoe in transport position.
- Consult local utilities before digging. Know location of and avoid contacting all underground cables, pipelines, overhead wires and other hazards.
- When operating, always sit in backhoe seat; keep bystanders away from operator, stabilizers, and maximum swing area.
- Operate PTO at 540 rpm.
- Backhoe digging forces can lift and turn tractor over. Make sure stabilizer pads are on firm ground and avoid soft or deep banks.
- No riders are allowed on tractor or backhoe.
- Before transporting, attach slow moving vehicle (SMV) sign and engage transport locks.
- Before leaving unattended, raise boom and install transport locks, disengage PTO, relieve pressure on dipperstick and bucket, shut engine off, and remove key.

BH6500 / BH7500 37512-B

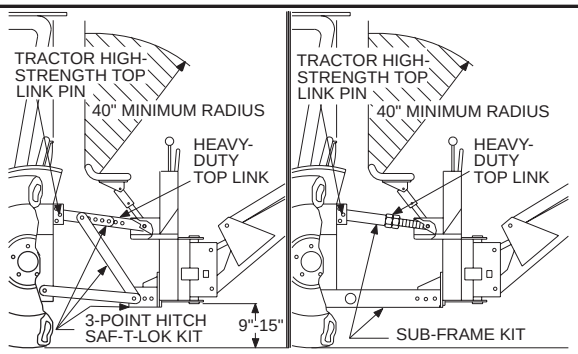
**2 - PN 37511**

### DANGER

**CRUSHING HAZARD**

- Never operate unless the **3-point hitch Saf-T-Lok® kit** or **sub-frame** has been installed as instructed in the Operator's Manual.
- Operator's area (shaded area of 40" radius) must be free from all obstructions.
- Use heavy-duty top link provided in **3-point hitch Saf-T-Lok kit** or **sub-frame kit**.
- Use tractor manufacturer's high-strength top link pin of at least 3/4" diameter. See manual for details.

**Failure to follow the above instructions may result in serious injury or death from backhoe being thrust upward, forward, or rearward by digging forces.**




BH6500/BH7500 37511-B

**5 - PN 19924**

19924-B

### WARNING

**HIGH-PRESSURE HYDRAULIC OIL LEAKS CAN PENETRATE SKIN RESULTING IN SERIOUS INJURY, GANGRENE OR DEATH.**

- Check for leaks with cardboard; never use hand.
- Before loosening fittings: lower load, release pressure, and be sure oil is cool.
- Consult physician immediately if skin penetration occurs.

# 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 pages 7to 11.

**⚠ 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.**

■ **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.**

■ **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 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.**

## START AND STOP OPERATION

**⚠ WARNING**

■ **Operate tractor PTO at the rpm speed stated in "Specifications" section.**

An optional tractor-driven PTO pump supplies hydraulic pressure for backhoe operation. Instructions for engaging and disengaging the PTO are in your tractor manual. Learn how to disengage PTO quickly should an emergency occur.

Never exceed 540 rpm. Operating the pump in excess of 540 rpm will cause overheating and equipment damage.

## OPERATION

**⚠ WARNING**

■ **Keep bystanders away from operator, stabilizer, and maximum bucket swing areas.**

■ **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.**

**⚠ WARNING**

■ **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 dipperstick, 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.

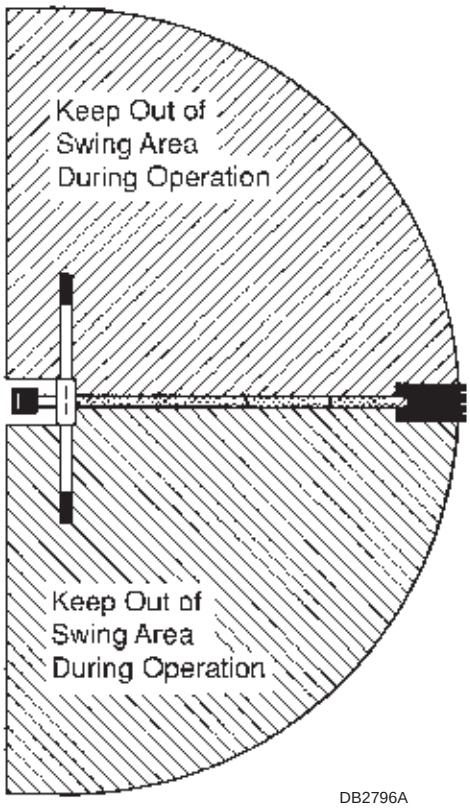



**Figure 3**. Backhoe Swing Area

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.

## 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 (not to exceed 540 rpm).

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 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 dipperstick 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 degrees each way the first few times. Gradually increase arc.

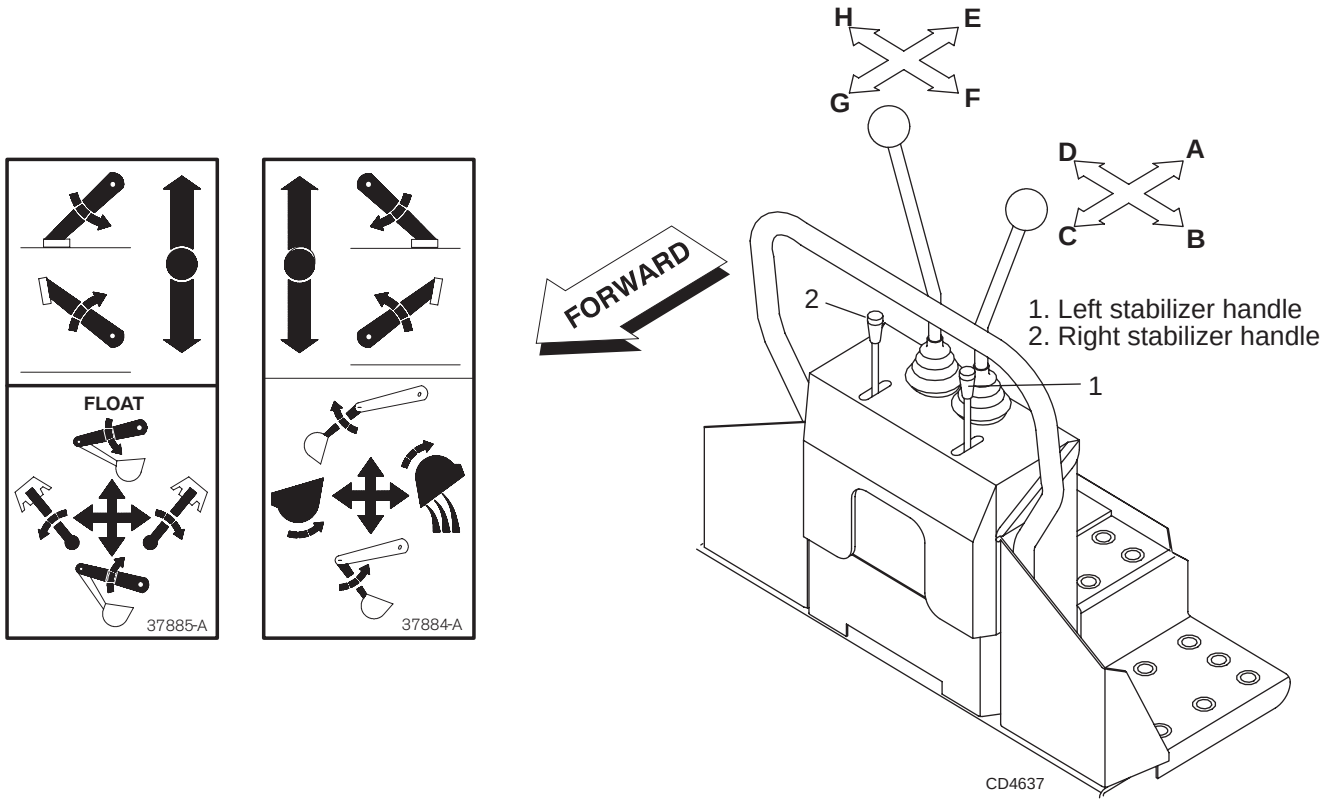



**Figure 4**. Operator's Controls

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.**

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

Actuate the dipperstick cylinder to start digging. Approximately halfway through digging cycle, start bucket curl while continuing crowding dipperstick 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.

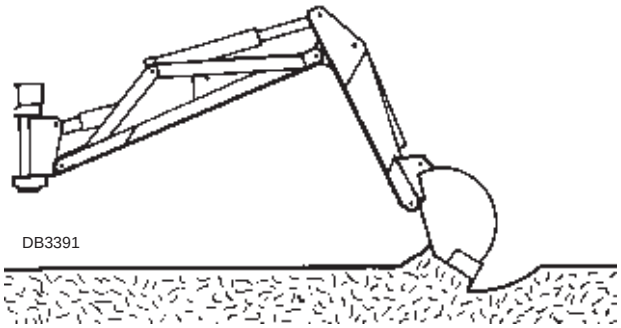



**Figure 5**. Starting Position

## 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 dipperstick and bucket during the digging cycle. As the dipperstick 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 dipperstick and curl bucket completely while starting to lift it out of the excavation. This will allow excess material to fall back into the excavation.

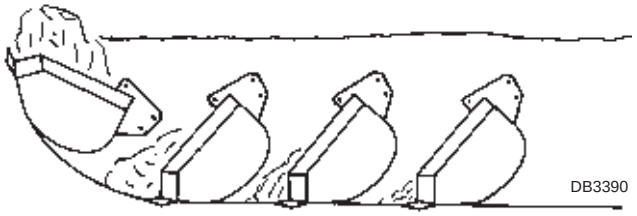



**Figure 6**. Fill Bucket

## DUMP AND RETURN CYCLE

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

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

## TRENCHING AND EXCAVATING

**Refer to Figure 7.**

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.

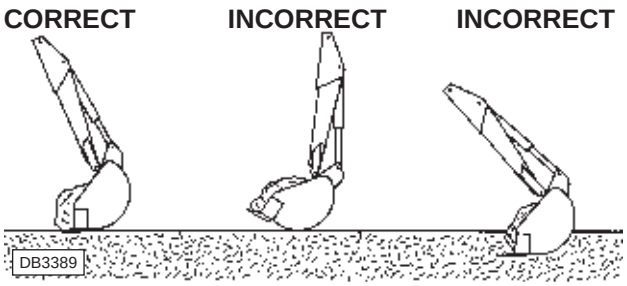



**Figure 7**. Trenching

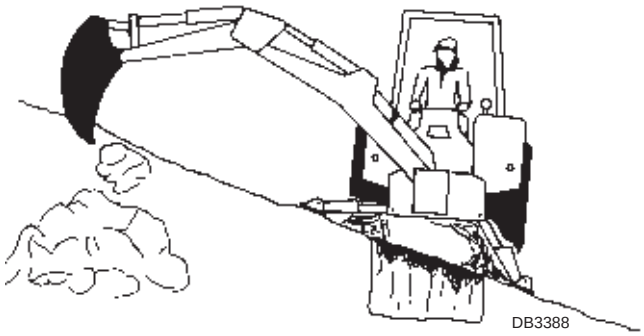
## SIDE SLOPE TRENCHING OR EXCAVATING

**⚠ WARNING**

■ **Be careful when swinging loaded bucket on hillside. 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.




Level the machine on side slope using the stabilizers.

**Figure 8**. Level with Stabilizers

Cut a level pad for the uphill side of the machine and place spoil on the downhill side as shown in Figure 9.

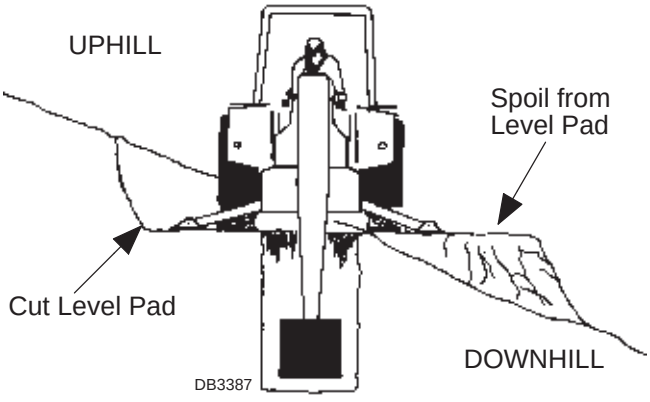



**Figure 9**. Level with Cut Out

## 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.**

■ **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 dipperstick. Position transport lock bar (1), located on right side of swing frame, over transport lock pin (2).

Center boom from side to side and install swing lock pin (3) through kingpost plate (4) and main frame. Secure swing lock pin (3) with a safety pin (5) as shown.

Always raise stabilizers before transporting backhoe.

1. Transport lock bar
2. Transport lock pin
3. Swing lock pin
4. Swing frame plate
5. Safety pin

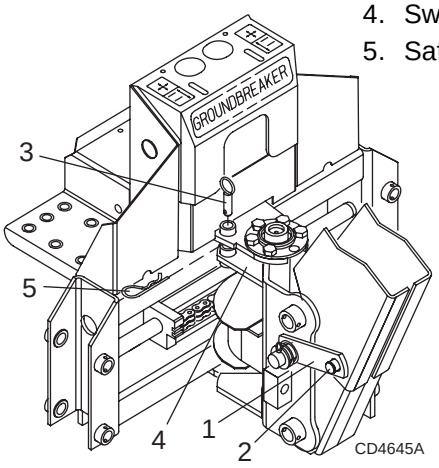



**Figure 10**. Transport and Swing Lock Installation

## 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.**

■ **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.**

### 3-POINT HITCH SAF-T-LOK® WITH AUXILIARY PUMP MOUNTING REMOVAL

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.

### Tractor Hydraulic Hose Disconnection

**For Backhoe Powered with Auxiliary Pump**

Disengage the PTO, stop tractor engine and remove key. Remove pump from PTO and secure it on backhoe. Move tractor carefully away from backhoe.

**For Tractors with Open-Center Valves (Figure 11)**

Stop tractor and remove key.

Disconnect pressure and return hoses. Connect tractor pressure and return hoses together to complete open-center circuit. Connect backhoe pressure and return hoses together for storage.

**NOTE:** Circuit must be complete to prevent damage to tractor hydraulic system.

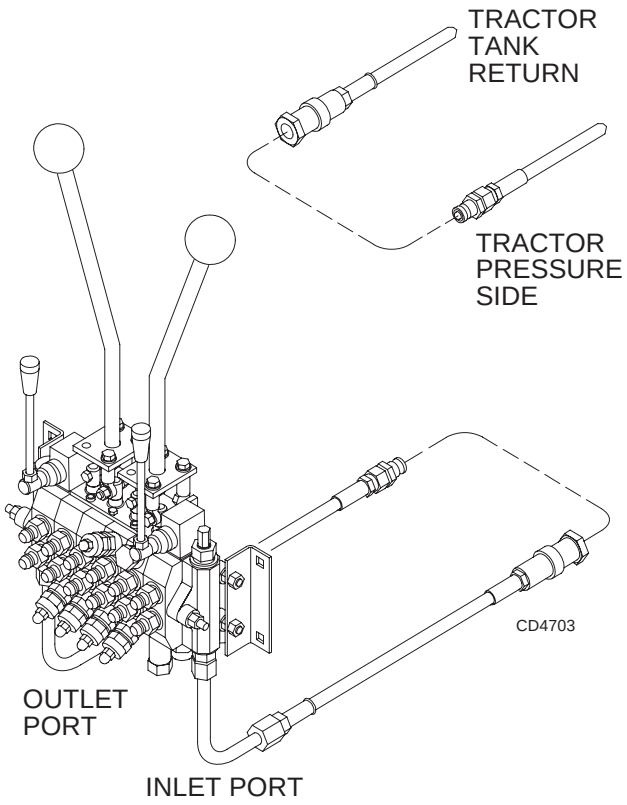



**Figure 11**. Tractors with Open-Center Valves

## Sub-Frame Mounting Removal

Center the boom and install swing lock pin.

Extend boom and dipperstick, dipperstick should be perpendicular (90°) to the ground.

Curl bucket all the way toward operator. Rest bucket on the ground. Lower the stabilizers to take backhoe weight off of tractor.

Shut off tractor. Remove pin that attaches the top link to the tractor. Completely remove top link and seat assembly.

Remove the pin from the front hanger bracket. Start engine. Raise the rear of the backhoe with stabilizers to pivot the front of the sub-frame down. Remove pins from the rear hanger bracket and roll tractor forward.

Place blocks under mainframe and raise the stabilizers to lower the backhoe mainframe onto the blocks. Block the backhoe as necessary to make it stable. Lower the backhoe to a stable position. Disengage the PTO, stop tractor engine and remove key. Remove pump from the PTO and secure it to the backhoe.

## PRE-OPERATION CHECK LIST (OWNER'S RESPONSIBILITY)

The operator should perform the following check list before operating 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 3/4" x 3-1/2" 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.

# 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

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 U.S. gallons.

Drain the oil into a suitable container and dispose of properly in a manner compatible with the environment.

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

### IMPORTANT

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

**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.

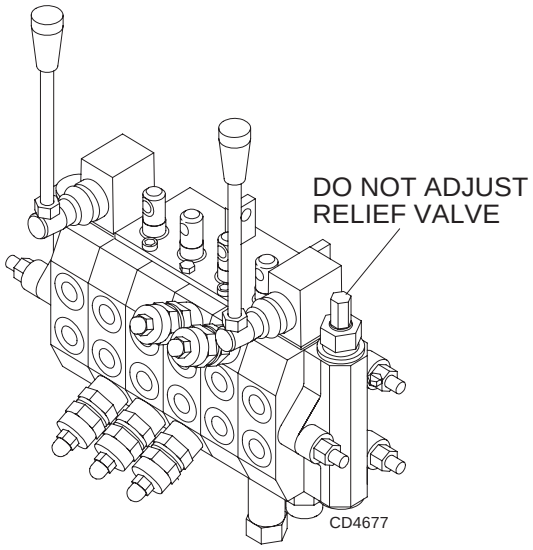



**Figure 12**. Relief Valve

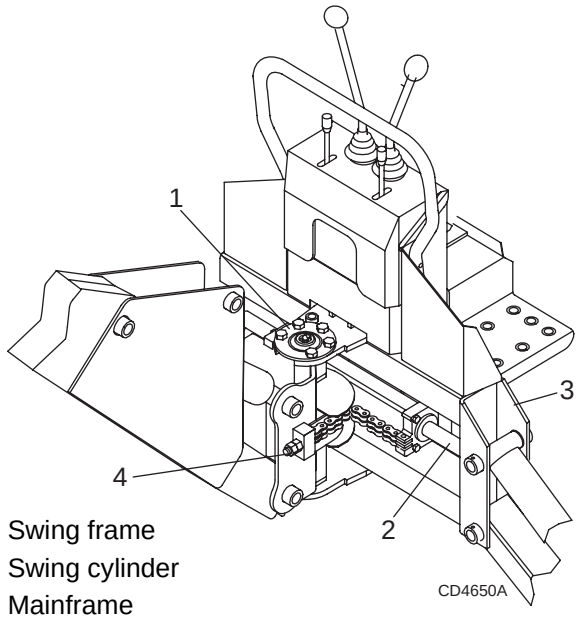
## SWING CHAIN ADJUSTMENT

Center boom to mainframe. Loosen locknuts on chain adjustment bolts and tighten nuts on adjustment rods until all slack is removed from chains. See Figure 13.

### IMPORTANT

■ **Do not over-tighten the chain. Over-tightening will cause excessive load and premature failure.**

Tighten locknuts on chain adjustment bolts.




1. Swing frame
2. Swing cylinder
3. Mainframe
4. Chain adjustment

**Figure 13**. Swing Mechanism

## SWING FRAME AND CYLINDER BOLT INSPECTION

Swing frame and swing cylinder bolts were installed using Loctite® and should not loosen. However, they should be checked daily to be sure they are tight.

Should any loosen, or when replacing them during a repair operation, clean bolts and nuts, apply Loc-quic®primer and Loctite® 609. Tighten as outlined in Bolt Torque Chart on page 52.

## HYDRAULIC HOSES AND FITTINGS

### IMPORTANT

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

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

## LUBRICATION

**⚠ WARNING**

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

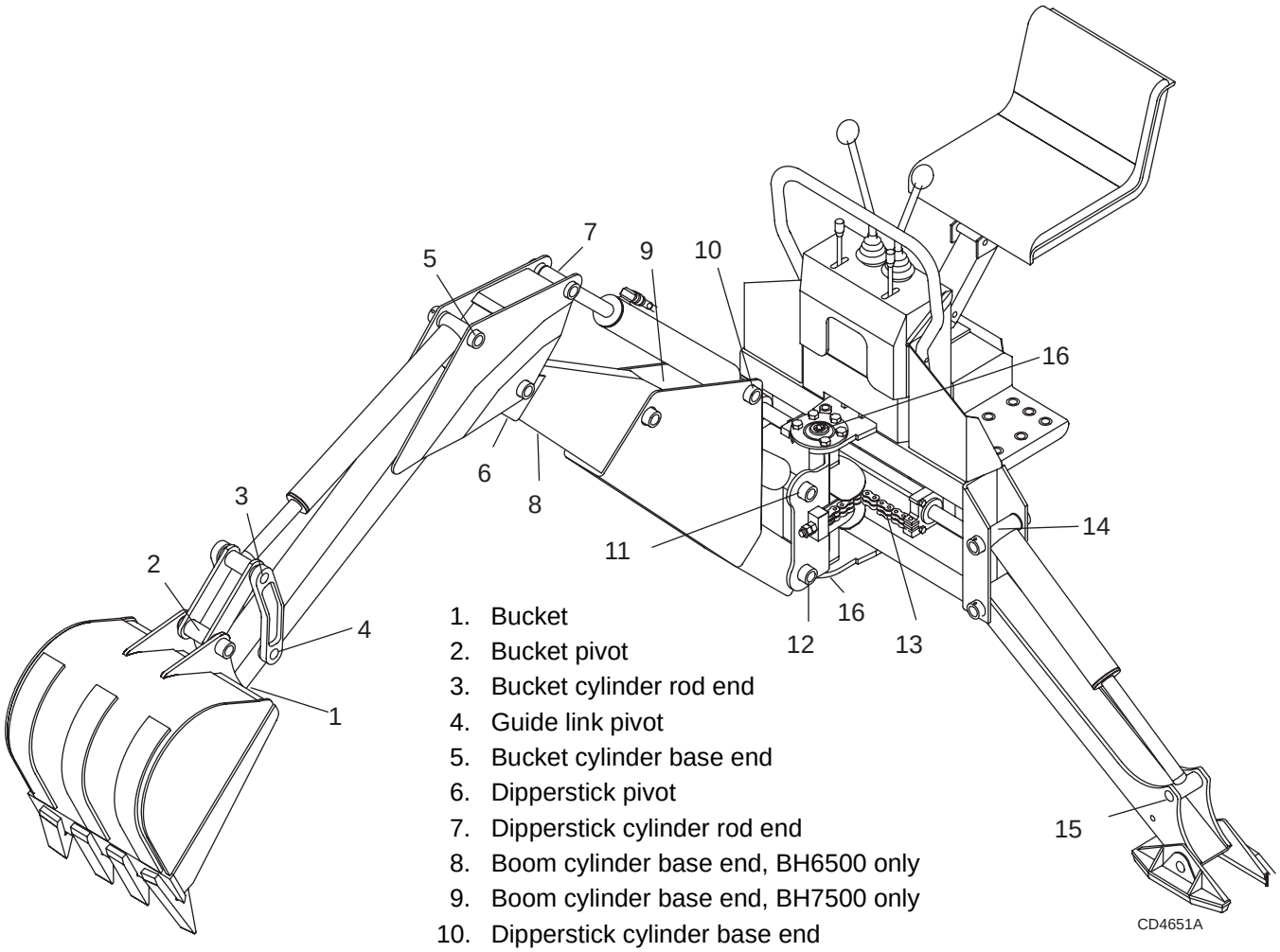
Do not let excess grease collect on or around parts, particularly when operating in sandy areas.

Figure 14 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 dipperstick at 90° to each other with bucket cutting edge vertical and teeth resting on ground. Lower stabilizers to lubricate cylinders.




1. Bucket
2. Bucket pivot
3. Bucket cylinder rod end
4. Guide link pivot
5. Bucket cylinder base end
6. Dipperstick pivot
7. Dipperstick cylinder rod end
8. Boom cylinder base end, BH6500 only
9. Boom cylinder base end, BH7500 only
10. Dipperstick cylinder base end
11. Boom cylinder rod end
12. Boom pivot
13. Swing chain (20W motor oil)
14. Stabilizer cylinder base end (right & left)
15. Stabilizer cylinder rod end (right & left)
16. Swing frame pivot (top & bottom)

**Figure 14**. Lubrication Points

## 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.

# TROUBLE-SHOOTING

| PROBLEM | POSSIBLE CAUSE | SOLUTION |
|---|---|---|
| Noisy pump caused by cavitation | Oil too heavy | Change to proper viscosity |
| | Oil filter plugged | Replace filter |
| | Suction line plugged or too small | Clean line and check for size |
| | Suction line kinked | Replace line |
| Oil heating | Oil supply low | Fill reservoir |
| | Contaminated oil | Drain reservoir, change filter, and refill with clean oil |
| | Setting of relief valve too high or too low | Set to correct pressure |
| | Pump operating too fast | Do not exceed 540rpm PTO speed |
| Shaft seal leakage | Worn shaft seal | Replace shaft seal |
| Foaming oil | Low oil level | Fill reservoir |
| | Air leaking into suction line | Tighten fittings |
| | Wrong kind of oil | Drain and refill reservoir with non-foaming oil |
| | Moisture in oil | Keep oil temperature below 108° and continue to operate as oil dries out, or replace oil and purge system if foaming is excessive |
| Boom drops as dipperstick or bucket cylinder lever is activated while boom control is in raised position | Check valve leaking | Clean or replace check valve assembly |
| Jerky operation | Hydraulic hoses plumed incor-rectly | Check hydraulic plumbing sche-matic and correct hose routing as required |

# DEALER CHECK LIST

## 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 (and sub-frame when applicable) to tractor and make all necessary adjustments.

___ Check that optional 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 sub-frame manual when applicable) 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 and proper procedures to be used when mounting, dismounting and storing backhoe (and sub-frame when applicable).

___ 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.

# 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

#### Disassembly

On the 2" or 2-1/2" spanner nut type cylinders, Figure 15, unscrew spanner nut (4) using a spanner wrench, or carefully use a punch and hammer.

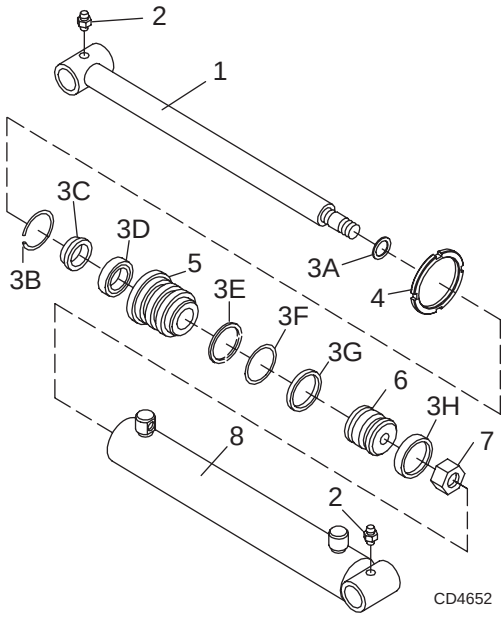
Tap rod guide (5) into barrel (8) about 1/2". Remove round retaining ring (3B). Pull on rod (1) to remove parts from barrel.

**2" CYLINDER**

1. Piston rod
2. Grease fitting

3A. 3/4 x 7/8" O-Ring
3B. 2" Internal retaining ring
3C. 1-1/4" Wiper ring
3D. 1-1/4 x 1-1/2 x 1/4" Seal
3E. 1-13/16 x 2" Back-up ring
3F. 1-13/16 x 2" O-Ring
3G. 2" Piston seal
3H. 2 x 1/4 x 1/8" Wear ring

4. 1/4 x 2-3/8" Spanner nut
5. 2" OD x 1-1/4" ID Guide
6. 2" OD Piston
7. 34" NF-16 Locknut
8. 2" ID Cylinder body




**2-1/2" CYLINDER**

1. Piston rod
2. Grease fitting

3A. 3/4 x 7/8" O-Ring
3B. 2-1/2" Internal retaining ring
3C. 1-1/4" Wiper ring
3D. 1-1/4 x 1-5/8 x 5/16" U-Cup seal
3E. 2-1/4 x 2-1/2" Back-up ring
3F. 2-1/4 x 2-1/2" O-Ring
3G. 2-1/2" Piston seal
3H. 2-1/2 x 1/4 x 1/8" Wear ring

4. 1/4 x 2-7/8" Spanner nut
5. 2-1/2" OD x 1-1/4" ID Guide
6. 2-1/2" OD Piston
7. 7/8" NF-14 Locknut
8. 2-1/2" ID Cylinder body

**Figure 15**. Spanner Nut Type Hydraulic Cylinder Assemblies

1. Piston rod
3A. O-Ring
3B. Retaining ring
3C. Wiper ring
3D. Rod seal
3E. Back-up washer
3F. O-Ring
3G. Piston ring
3I. Piston wear ring
4. Spanner nut
5. Rod guide assembly
6. Piston
7. Locknut
8. Cylinder barrel

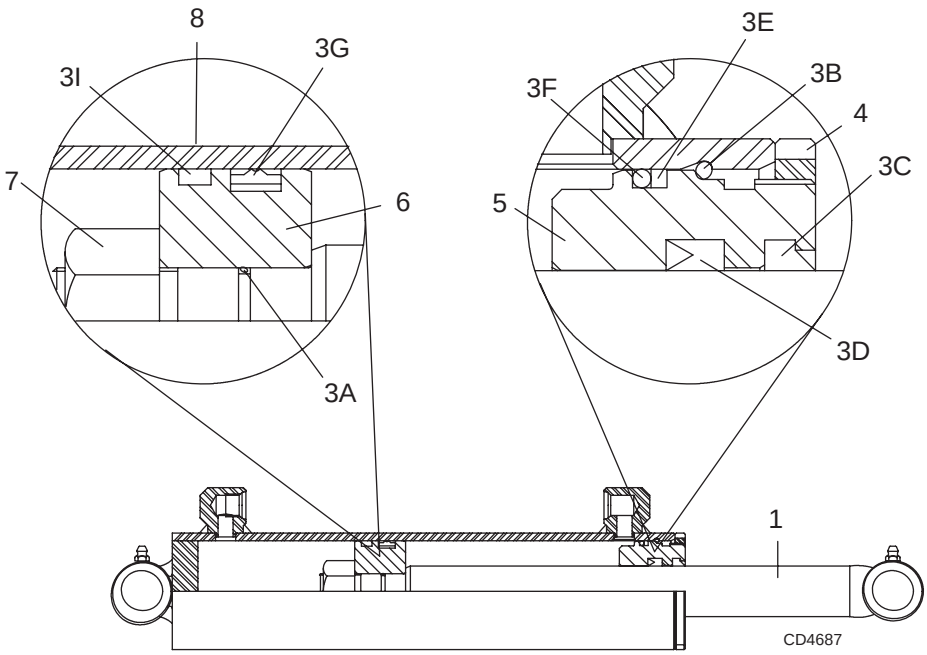



**Figure 16**. Hydraulic Cylinder Assembly

Clamp cross pin end of rod assembly (1) in a vise with protective jaws. Remove locknut (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.

### 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 rod wiper (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 seal (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 locknut (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 (4A) into rod guide (5) using a spanner wrench, or carefully use a punch and hammer.

## Swing Cylinder

### Disassembly

Remove hex nuts (4) from tie rods (2). Remove both piston rod guides (5) from barrel (6).

Remove and discard rod wiper and seal (3A & 3B) from each piston rod guide.

Remove rod assembly (7) from barrel (6). Remove and discard seals.

Clean all components in solvent and blow dry with low pressure air.

### Assembly

Lubricate seals and wipers with clean hydraulic fluid.

Install piston seal (3E) in piston groove.

Carefully insert piston and rod into barrel. Piston seal must be compressed when inserting.

Place back-up ring (3F), if required, into groove on piston rod guide (5), then install O-ring (3C) into groove. Install rod seals (3B), with V-groove toward piston, into each piston rod guide outer groove.

When installing piston rod guides to barrel, make sure chain fastening lugs are positioned properly. With cylinder in front of you, place right rod guide with chain lugs on bottom and left rod guide with chain lugs on top.

Insert the four tie rods (2) with rod guide chain hole center lines parallel. Torque nuts to 40-45 lbs-ft.

2. Cylinder tie rod
3A. Rod wiper
3B. Rod seal
3C. O-Ring
3E. Piston seal
3F. Back-up ring
4. 7/16" Hex nut
5. Piston rod guide
6. Cylinder barrel
7. Piston rod

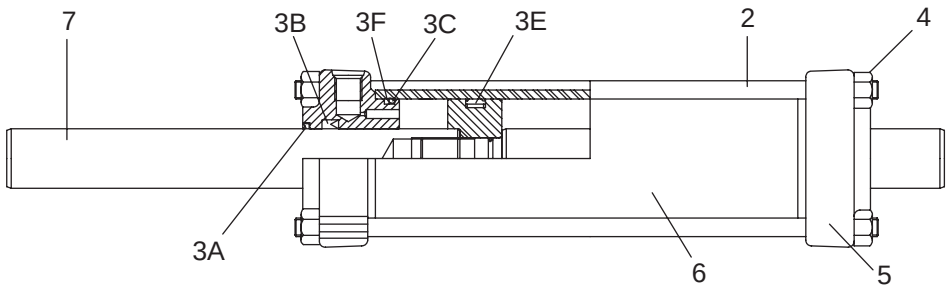



**Figure 17**. Swing Cylinder Assembly

## OPTIONAL AUXILIARY HYDRAULIC PUMP REPAIR

Repair of the optional auxiliary pump is limited to shaft seal replacement.

## HYDRAULIC VALVE REPAIR

**Refer to Figure 17.**

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 preset 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

**⚠ WARNING**

■ **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 the relief valve. When installing pressure gauge, be sure to use steel fittings that will withstand working pressure up to 5000 psi.

Remove cap nut (6a). Adjusting screw (6c) 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 (6a) 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 similar and can be easily mixed up.

| 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.

Replace defective sections as necessary. Make sure you install two spacers between each section of each tie rod. Note the location of O-rings (9 & 10, Figure 17). They must be placed in the location between valve sections as shown.

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.

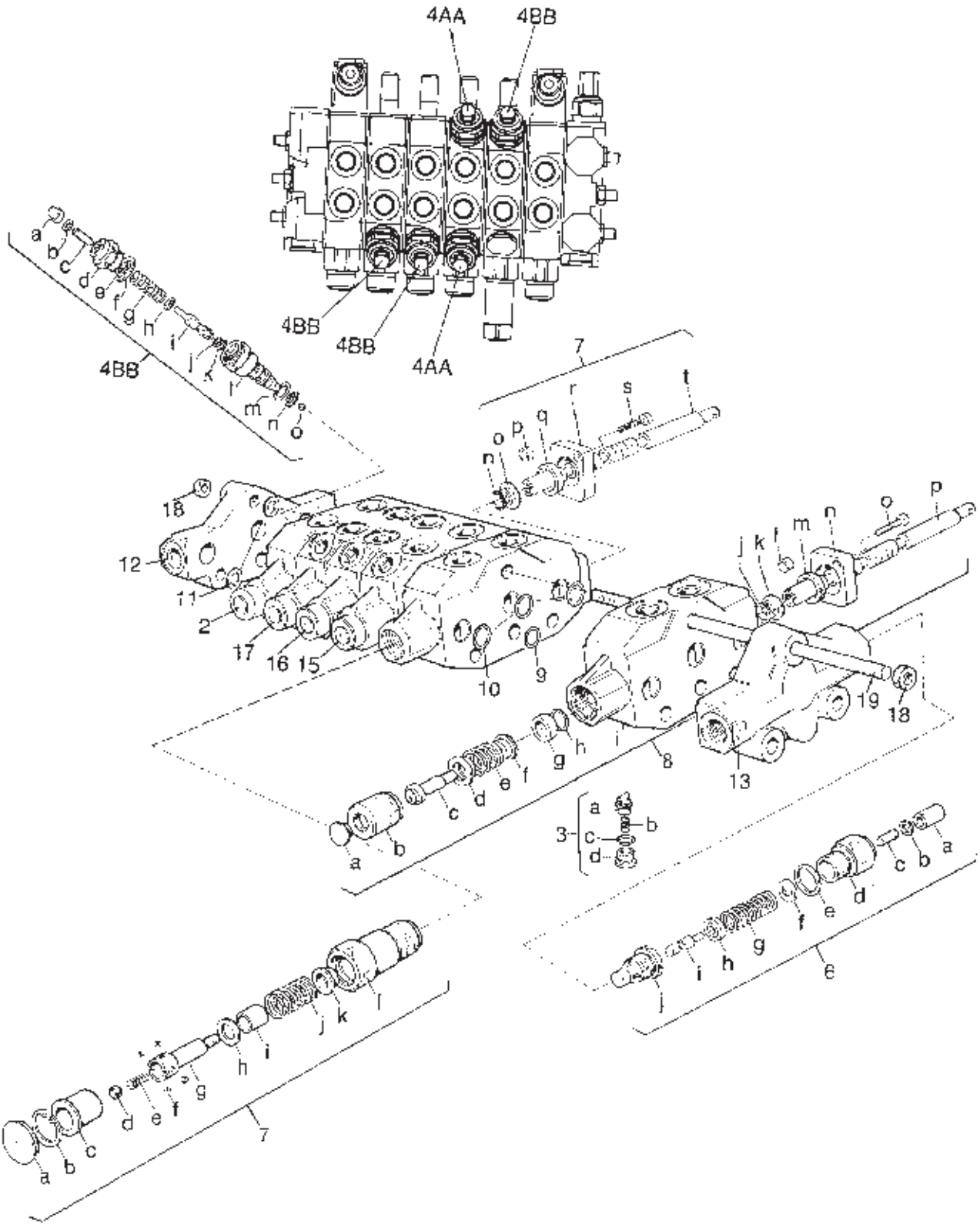



**Figure 18**. Hydraulic Valve Assembly

1. Complete hydraulic valve
2. Left stabilizer segment
3. Check valve assembly
   a. Poppet
   b. Spring
   c. Seal
   d. Car plug

4AA. Shock/dampening valve, 2100 psi

4BB. Shock/dampening valve, 2500 psi
   a. Cap nut
   b. Washer
   c. Adjusting screw
   d. Retainer
   e. Rear spring washer
   f. Copper washer
   g. Spring for relief valve
   h. Front spring washer
   i. Valve poppet
   j. Back-up ring
   k. Seal
   l. Valve seat
   m. Back-up ring
   n. Washer
   o. Ball, Dia. 5

6. 1350 - 3000 Psi Relief valve assembly
   a. Cap nut
   b. Copper washer
   c. Adjusting screw
   d. Retainer
   e. Copper washer
   f. Rear spring washer
   g. Spring
   h. Front spring washer
   i. Valve poppet
   j. Valve seat

7. Spool position control 04 assembly
   a. Plug for 04 positioner
   b. Snap ring
   c. Bushing for 04 positioner
   d. Ball
   e. Spring
   f. Ball
   g. Connecting bolt
   h. Washer
   i. Spacer
   j. Spring for 04 positioner
   k. Spring flange
   l. Housing
   n. O-Ring
   o. Flanged washer
   p. Dowel bushing
   q. Scraper
   r. Lever bracket
   s. Cap screw
   t. Spool

8. Right stabilizer segment complete
   a. Plug
   b. Housing
   c. Connecting bolt
   d. Spring cap
   e. Spring
   f. Spring cap
   g. Spacer
   h. O-Ring
   i. Valve segment
   j. O-Ring
   k. Flanged washer
   l. Dowel bushing
   m. Scraper
   n. Lever bracket
   o. Cap screw
   p. Spool
9. Seal
10. Seal
11. Spacer
12. Standard exhaust section
13. Front port inlet section
14. Boom segment
15. Swing segment
16. Dipperstick segment
17. Bucket segment
18. Nut
19. Tie rod

## CONTROL VALVE LINKAGE ADJUSTMENT

Reconnect control linkage to valve.

Control handles should be positioned with console as shown.

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.

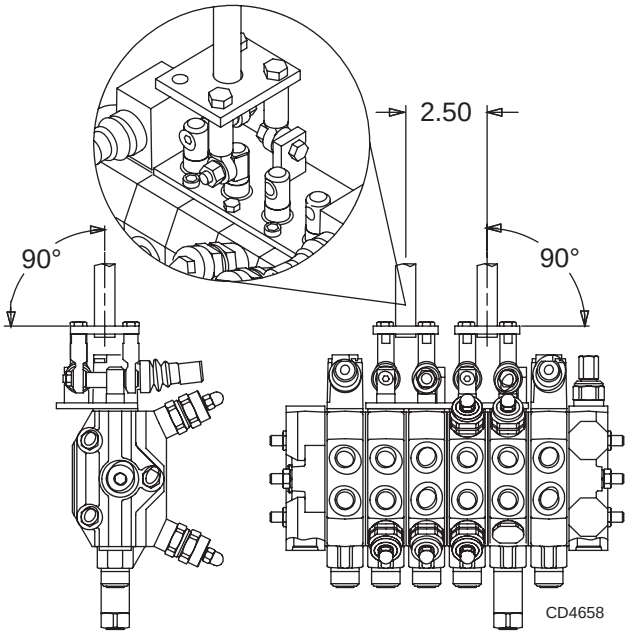



**Figure 19**. Control Lever Adjustment

# ASSEMBLY

## GENERAL ASSEMBLY INSTRUCTIONS

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

The backhoe must only be mounted with a tractor 3-point hitch using WOODS Saf-T-Lok® limiter kit or a WOODS sub-frame kit.

The instructions in this manual are for 3-point Saf-T-Lok® limiter mountings.

When mounting this backhoe on a tractor using a sub-frame mounting, special assembly instructions (which are contained in another manual furnished with the sub-frame) apply to some of the assembly procedures.

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 52.

**NOTE:** References to right, left, forward and rearward directions are determined from the backhoe operator seat position facing rearward.

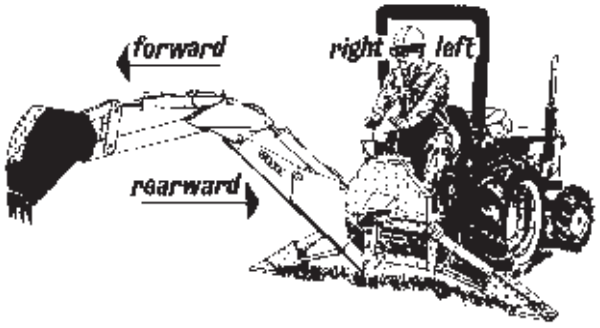



**Figure 20**. Backhoe Directions

**⚠ WARNING**

- **Keep all persons away from operator control area while performing adjustments, service, or maintenance.**
- **Only mount this backhoe on Category 1 tractors with 800 lb. lift capacity at 24" behind 3-point lift arm hitch balls.**
- **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.**

**⚠ CAUTION**

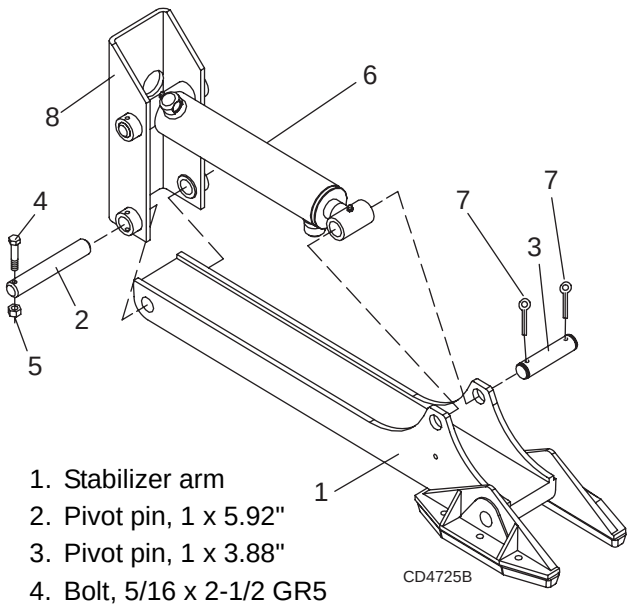
- **Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.**

## STABILIZER INSTALLATION

Cut bands and remove stabilizer arms from pallet.

Remove pivot pins (2 & 3) from their shipping position. Attach stabilizer arm to main frame (8) with pivot pin (2) and secure with bolt (4) and locknut (5).

Attach stabilizer cylinder (6) to stabilizer arm with pivot pin (3) and secure with cotter pins (7).




1. Stabilizer arm
2. Pivot pin, 1 x 5.92"
3. Pivot pin, 1 x 3.88"
4. Bolt, 5/16 x 2-1/2 GR5
5. 5/16" Locknut
6. 2-1/2 x 11" Hydraulic cylinder
7. 3/16 X 1-1/2 Cotter pin
8. Main frame

**Figure 21**. Stabilizer Arm Assembly

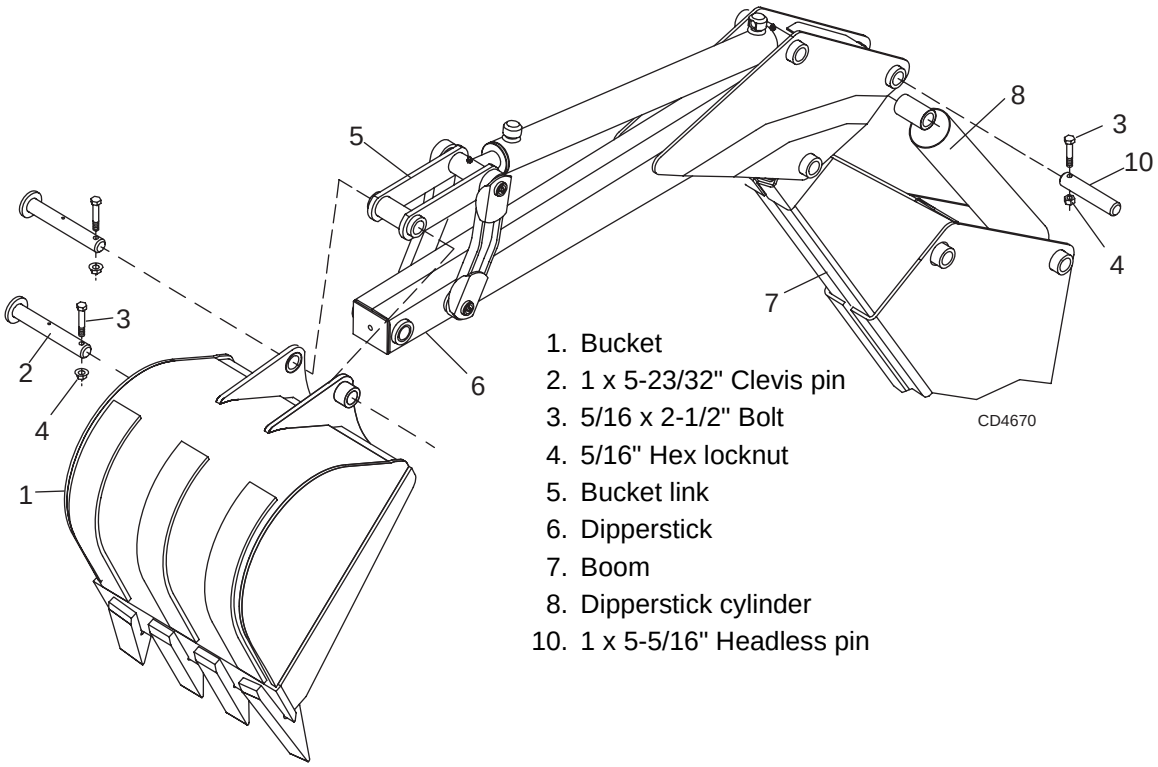
## DIPPERSTICK INSTALLATION

Remove pivot pin (10) from end of dipperstick (6). Attach dipperstick cylinder (8) to dipperstick (6) with pivot pin and secure with bolt (3) and flange locknut (4).

Make sure hydraulic hoses are not twisted after boom and dipperstick are assembled.

## BUCKET INSTALLATION

8", 12", 16", 18" and 24" buckets are available with this backhoe. Remove pivot pins (2) from end of bucket link (5) and dipperstick (6). Attach bucket (1) to bucket link and dipperstick with pivot pins (2) and secure with bolts (3) and locknuts (4).




1. Bucket
2. 1 x 5-23/32" Clevis pin
3. 5/16 x 2-1/2" Bolt
4. 5/16" Hex locknut
5. Bucket link
6. Dipperstick
7. Boom
8. Dipperstick cylinder
10. 1 x 5-5/16" Headless pin

**Figure 22**. Dipperstick and Bucket Installation

## HYDRAULIC INSTALLATION

**Refer to Figure 23.**

**⚠ 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.**

■ **Make sure shields and guards are properly installed and in good condition. Replace if damaged.**

Power to the backhoe can be supplied directly from the tractor hydraulic system. A hydraulic requirement of 5-7 gallons per minute and 2100 PSI is necessary to operate the backhoe efficiently. 3/8" diameter hoses (SAE 100 R1 with 2500 PSI working pressure) should be used to connect the hydraulic source to the backhoe valve. These hoses must be long enough to allow ease of removal or attachment of backhoe. Hoses must include external shielding to prevent oil from spraying on operator if hose fails.

### Open-Center

Remove the console cover from the backhoe to gain access to control valve (1). Connect 3/8" hoses (2 & 3) to the backhoe inlet and outlet ports. Install couplers (4) compatible to the tractor on opposite end of the 3/8" hoses. Determine the direction of flow and connect tractor pressure hose (6) to the inlet side of the control valve (under left foot rest).

Note: The backhoe will not function if oil is routed backwards through the valve. Connect the tractor return hose (5) to the control valve outlet port. Tighten all fittings securely. Start engine and run at low rpm. Activate hydraulic circuit and check for leaks.

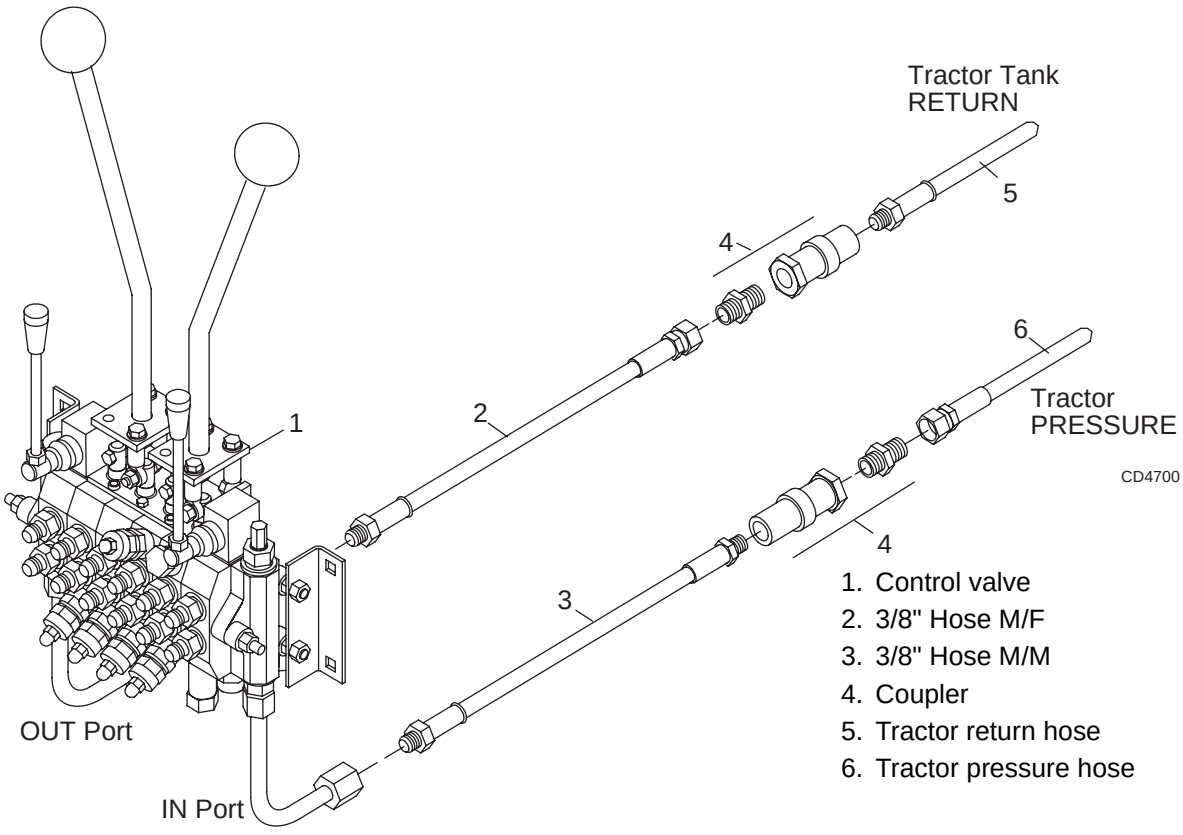



**Figure 23**. Open-Center Plumbing

## HYDRAULIC PUMP INSTALLATION

### IMPORTANT

■ **Clean all fittings and use care to prevent foreign material from entering hydraulic system.**

Assemble hydraulic reservoir (2) to backhoe mainframe with carriage bolt (17), lock washer (18) and hex nut (19).

Install thread sealant to elbow (13) and install in reservoir.

Attach 3/8" high-pressure hose (16) to outlet port of control valve. Attach opposite end of hose to elbow (13).

Additional sealant such as pipe dope or Teflon thread tape is not required on O-ring fittings.

Teflon thread tape is recommended for pipe threads. Use care when applying to prevent excess tape from entering hydraulic system.

Apply Teflon tape to the reservoir filter fitting.

Install filter base inlet port to reservoir fitting. Install elbow (4) in outlet port of filter base. Ideal orientation of the filter is vertical; position filter base to accommodate this location. The filter may be moved to provide clearance when attaching backhoe to tractor if necessary. Install filter in filter base.

To properly install hydraulic fittings with O-rings, completely loosen locknut, screw fitting completely in, hold in position and tighten locknut using two wrenches.

Check pump reducers and elbows for O-rings before installing them.

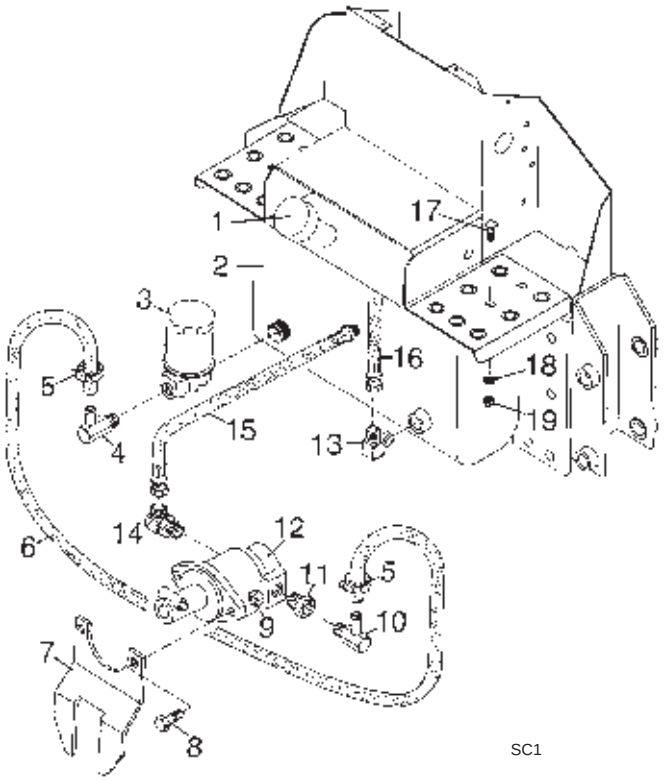
Install reducer (11) in pump suction port.

Install 905 elbow (10) into reducer (11). Install elbow (14) into pump pressure port.

Attach one end of suction hose (6) to elbow (4) at the filter and the other end to elbow (10) at the pump and secure with hose clamps (5).

Attach hose (15) to inlet port of control valve. Attach opposite end of hose to elbow (14).

When backhoe is attached to tractor, it may be necessary to reposition filter and hoses to eliminate interference.




1. Dipstick and breather
2. Reservoir
3. Filter and housing
4. 3/4" Hose x 3/4" pipe, 905 elbow
5. Hose clamp
6. 3/4 x 36" Low-pressure hose
7. Pump mounting plate
8. 1/2 x 1" Bolt
9. 1/2" Locknut
10. 1-1/16 - 12 x 3/4" Hose, 905 elbow
11. 1-5/8" - 12 x 1-1/16" - 12 Reducer
12. Pump
13. 3/4 JIC M x 1/2" NPT M x 905 Elbow
14. 3/4 JIC M x 1-1/16" SAE M x 905 Elbow
15. 3/4 JIC F x 50" High-pressure hose assembly
16. 3/4 JIC F x 13-1/2" High-pressure hose assembly
17. 3/8 NC x 3/4" Carriage bolt
18. 3/8" Lock washer
19. 3/8" NC Hex nut

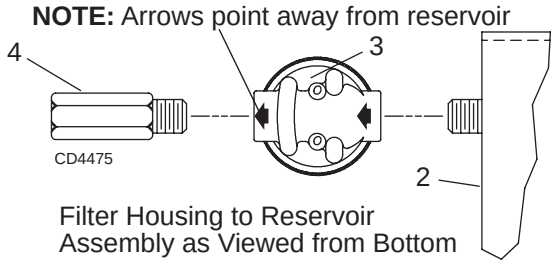



**Figure 24**. Pump Installation

## ATTACHING BACKHOE TO TRACTOR

Remove backhoe from pallet and position on level surface. Back tractor as near as possible and center on backhoe.

Remove seat and upper support before attaching backhoe to tractor.

Service optional hydraulic reservoir by filling to "full" mark on dipstick (approximately 5 to 5-1/2 US gallons). When backhoe is mounted and operated, it will be necessary to add more fluid to reservoir.

## IMPORTANT

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

Use type"A" or "F" Automatic Transmission Fluid, SAE Motor Oil or #303 Hydraulic Fluid.

**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 |

## PUMP MOUNTING BRACKET INSTALLATION

**⚠ 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**

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

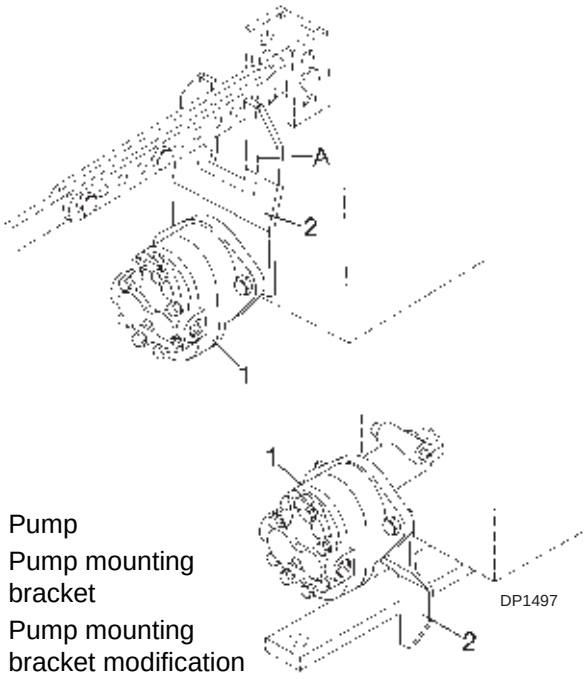
If you are using a sub-frame mounting, refer to the pump mounting instructions provided with the sub-frame.

The pump mounting bracket is designed to slip over tractor drawbar. The best installation is to place bracket offset toward tractor and pump offset down; however, offset may be reversed if interference occurs, Figure 25.

On tractors with non-standard drawbars, it may be necessary to modify pump bracket by enlarging the opening. Bracket may also be inverted and retained on the top link bar. Whatever mounting is used, it is important that pump be restrained from rotating.

Attach pump mounting plate (7) to pump with bolts (8) and nuts (9), Figure 24.

Check all hydraulic fittings and lines to be sure they are tight and free of kinks and twists.




1. Pump
2. Pump mounting bracket

A. Pump mounting bracket modification

**Figure 25**. Pump Mounting Bracket Installation

## OPTIONAL SAF-T-LOK® LIMITER KIT INSTALLATION

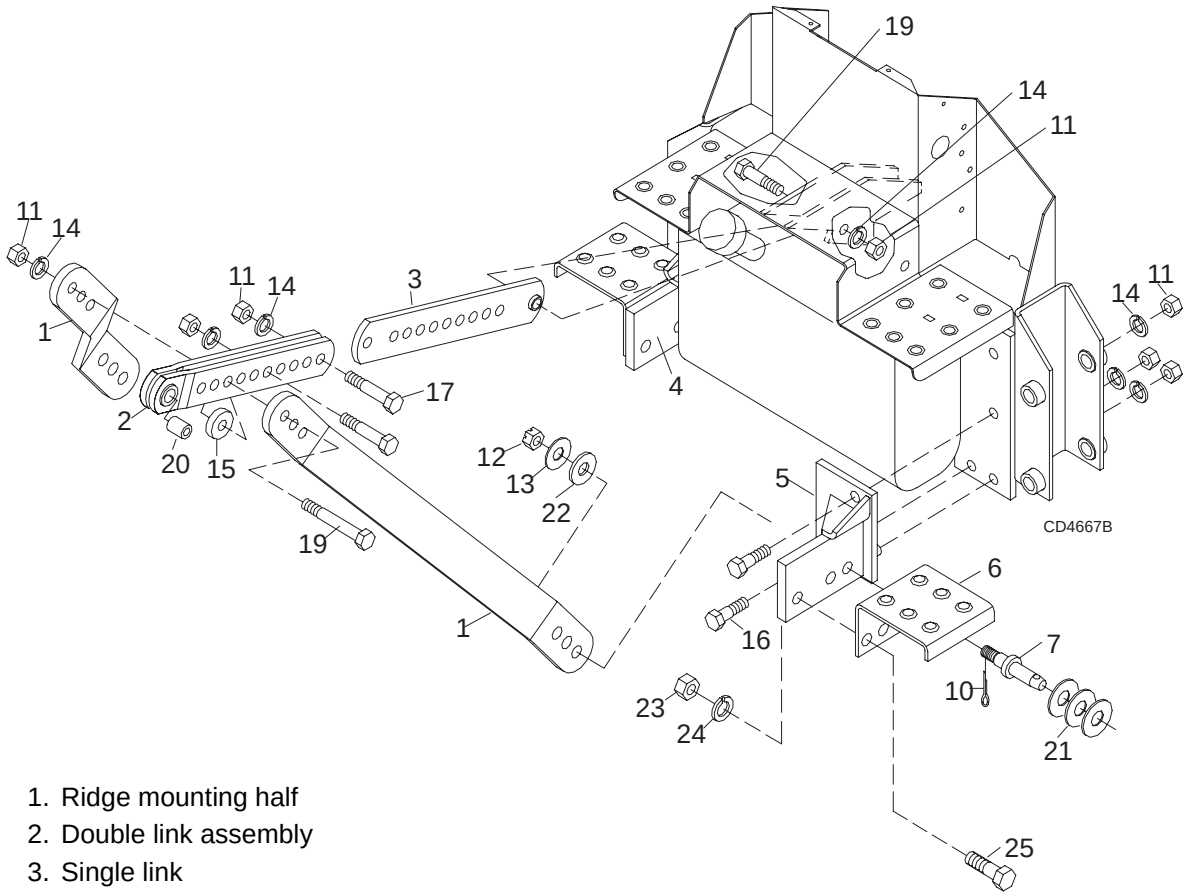
**Refer to 33**

Be sure backhoe controls are in centered neutral position.

With the hydraulic system installed, and tractor PTO and transmission in neutral, start tractor engine idling.

Very little engine power is required to power hydraulic system in this mode. Should engine pull down exces-

sively, check plumbing hook-up for reversed lines or a control lever stuck in an operating position.




1. Ridge mounting half
2. Double link assembly
3. Single link
4. Left mounting bracket
5. Right mounting bracket
6. Backhoe mounting step
7. Category 1 mounting pin
10. 3/16 x 1-1/2" Cotter pin
11. 3/4" Hex nut
12. 3/4" Slotted hex nut
13. 3/4" Flat washer
14. 3/4" Lock washer
15. 3/4 x 2 x1/2" Flat washer
16. 3/4 x 2" Bolt
17. 3/4 x 3" Bolt
19. 3/4 x 4" Bolt
20. Sleeve
21. 7/8" Washer
22. 3/4" Washer

**Figure 26**. Backhoe Attachment

Attach mounting brackets (4 & 5) to main frame with bolt (16), lock washer (14) and nut (11).

Three holes are provided for mounting pins. Use the center hole as shown, if possible, to provide better stability. It will be necessary to use the rear hole if use of forward hole causes interference problems.

Install hitch pin (7) and mounting step (6) in hole selected. Position Saf-T-Lok diagonal bars on hitch pin (7) and secure with washer (13) and castle nut (12). Do not tighten nut at this time.

Attach tractor lower lift arms to backhoe hitch pins and secure with a heavy-duty klik pin. Use spacer washers (21) between lift arms and Klik pin to remove any free play.

Raise backhoe with stabilizer controls to establish between 9 and 15" ground clearance from bottom side of boom pivot to ground (Figure 31). Level backhoe from side to side with stabilizer control. It may not be possible to obtain the ground clearance on small tractors and also maintain minimum head clearance for tractors with ROPS and cabs. Head clearance must take priority.

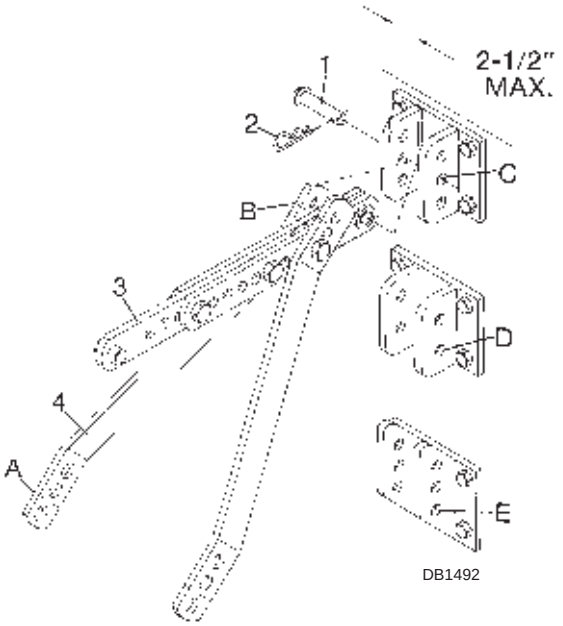
Seat adjustment may be used to obtain adequate head clearance.

Attach single top link bar (3), Figure 28, to backhoe with bolt (19), lock washer (14) and nut (11). Attach double top link bar (2) to tractor top link attachment point using only original equipment HIGH-STRENGTH tractor top link pin. Trap top link bar in center of top link bracket. Add washers or spacers as required.

## IMPORTANT

■ **On Ford 2600 & 3000 series tractors, a special top link is required (Woods P/N 9032) to provide adequate clearance for double top link.**

On **Ford Series 2600 & 3000 tractors**, a special top link is required (Woods P/N 9032) to provide adequate clearance for double top link (1). Replace the top link, supplied with tractor, with the fabricated top link, using existing bolt, nut and special hardened sleeve.




1. Original equipment high-strength tractor top link pin
2. Klik pin
3. Backhoe top link
4. Saf-T-Lok) diagonal bars

A. Cut off here if interference occurs
B. Cut off here if interference occurs
C. Preferred mounting hole
D. Preferred mounting hole
E. Preferred mounting hole

**Figure 27**. Top Link & Saf-T-Lok Hitch Installation

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 top and bottom mounting bolts. See Figure 27.

Note that the maximum width between tractor top link attachment plates must not exceed 2-1/2". This is to prevent excessive bending loads to the tractor top link pin.

Refer to Figure 27 and locate the tractor top link bracket that is similar to your tractor. Attach the single bar to the tractor in the preferred mounting hole as shown.

For tractors with draft control, select hole closest to supporting point of floating link. Block or lock draft control so it is inoperative. Lower manual 3-point lift control to the lowest position to deactivate draft sensing control (refer to tractor manual.)

Position backhoe main frame vertically by extending or retracting the boom cylinder as necessary.

Refer to Figure 31 and align top link members and bolt together using the widest possible spread between bolts. The main frame may be moved off vertical plane slightly to align top link holes.

**⚠ WARNING**

■ **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.**

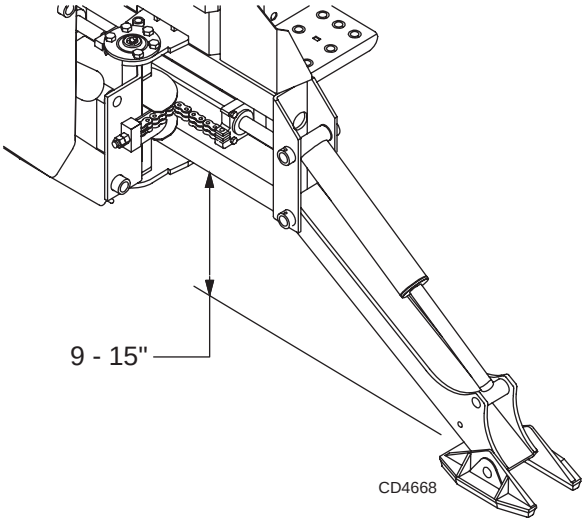



**Figure 28**. Ground Clearance

Align diagonal Saf-T-Lok bars with a top link bar hole as close to tractor as possible. Diagonal Saf-T-Lok bars may be modified as shown in Figure 27 if necessary.

Measure distance between bottom of boom pivot and ground to make sure there is from 9 to 15" clearance. Check to make sure the console is nearly perpendicular (90°) to the ground.

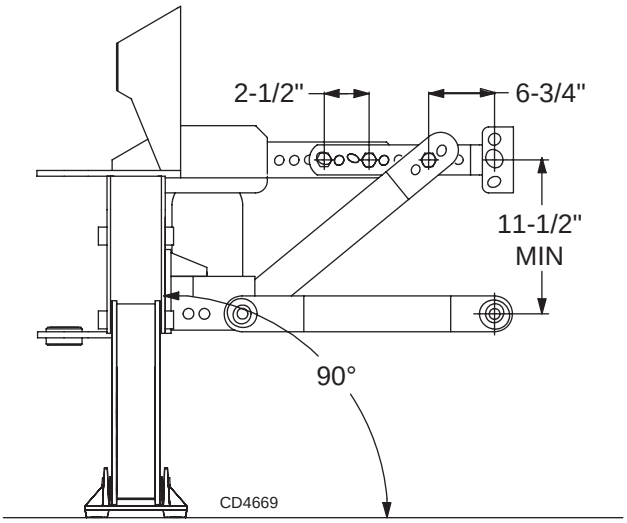



**Figure 29**. Mainframe Vertical Position

Check main frame vertical position as illustrated in Figure 29.

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 brace must not be less than 2-1/2" apart.
3. The vertical height from the top link pin to the tractor attachment point for the lift arms must not be less than 11-1/2".

Remove the backhoe from the tractor, tighten hitch pin nuts to 300 lbs.-ft. and secure with cotter pin.

Mount the backhoe to the tractor and tighten Saf-T-Lok diagonal attachment and top link bolts to 300 lbs.-ft.

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

Operate all functions through full cylinder stroke to purge air from system. CHECK OIL LEVEL again and add fluid as necessary.

## SEAT INSTALLATION AND ADJUSTMENT

Install seat and upper seat support.

The seat may be adjusted fore, aft, up and down for operator comfort. It is necessary to use the two adjustments together. Moving the seat down also moves it forward, moving it up also moves it rearward. The fore and aft adjustment may be used with the up and down adjustment to obtain desired position. Never operate the backhoe unless manufacturer's 3-point hitch Saf-T-Lok Limiter or sub-frame has been installed, adjusted and operator's area (shown shaded in Figure 32) is free from obstructions in a 40" radius from the seat to a point 10" behind the seat back.

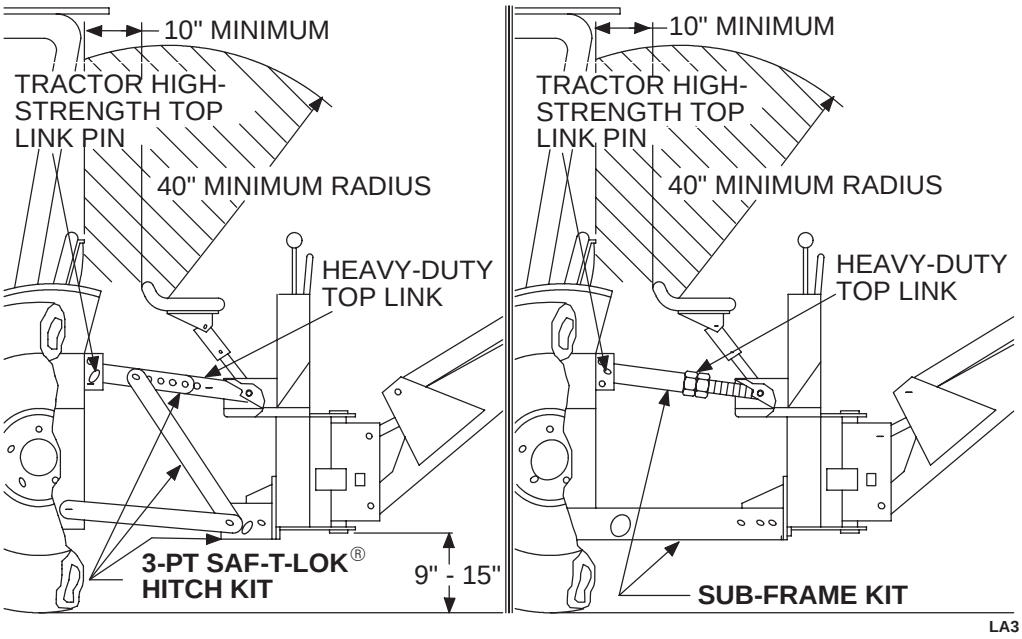
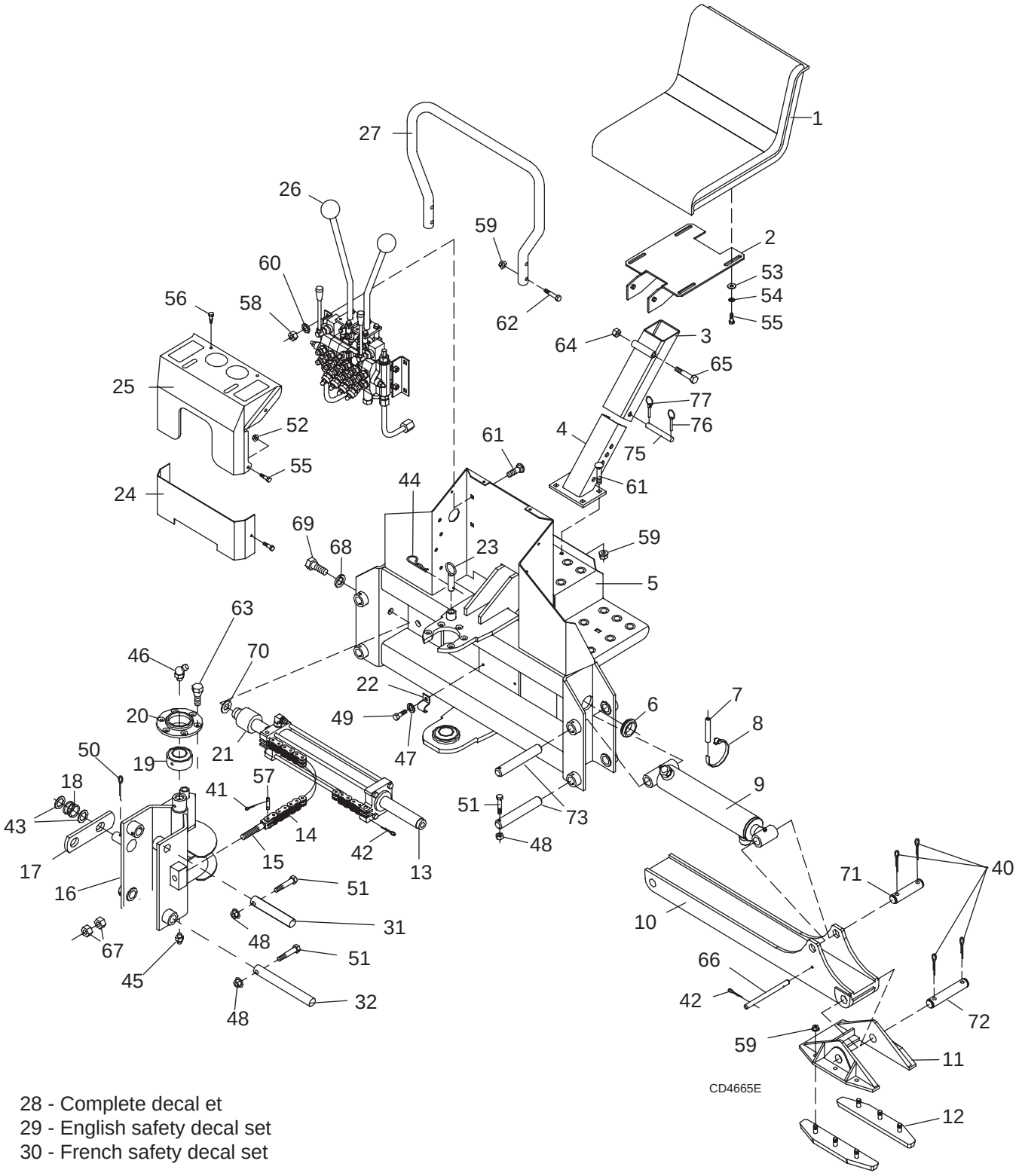



**Figure 30**. Seat Installation and Adjustment

# NOTES

# BH6500 and BH7500

# BH6500 & BH7500 MAIN FRAME ASSEMBLY
# (SN - 682897 AND BEFORE)




28 - Complete decal et
29 - English safety decal set
30 - French safety decal set

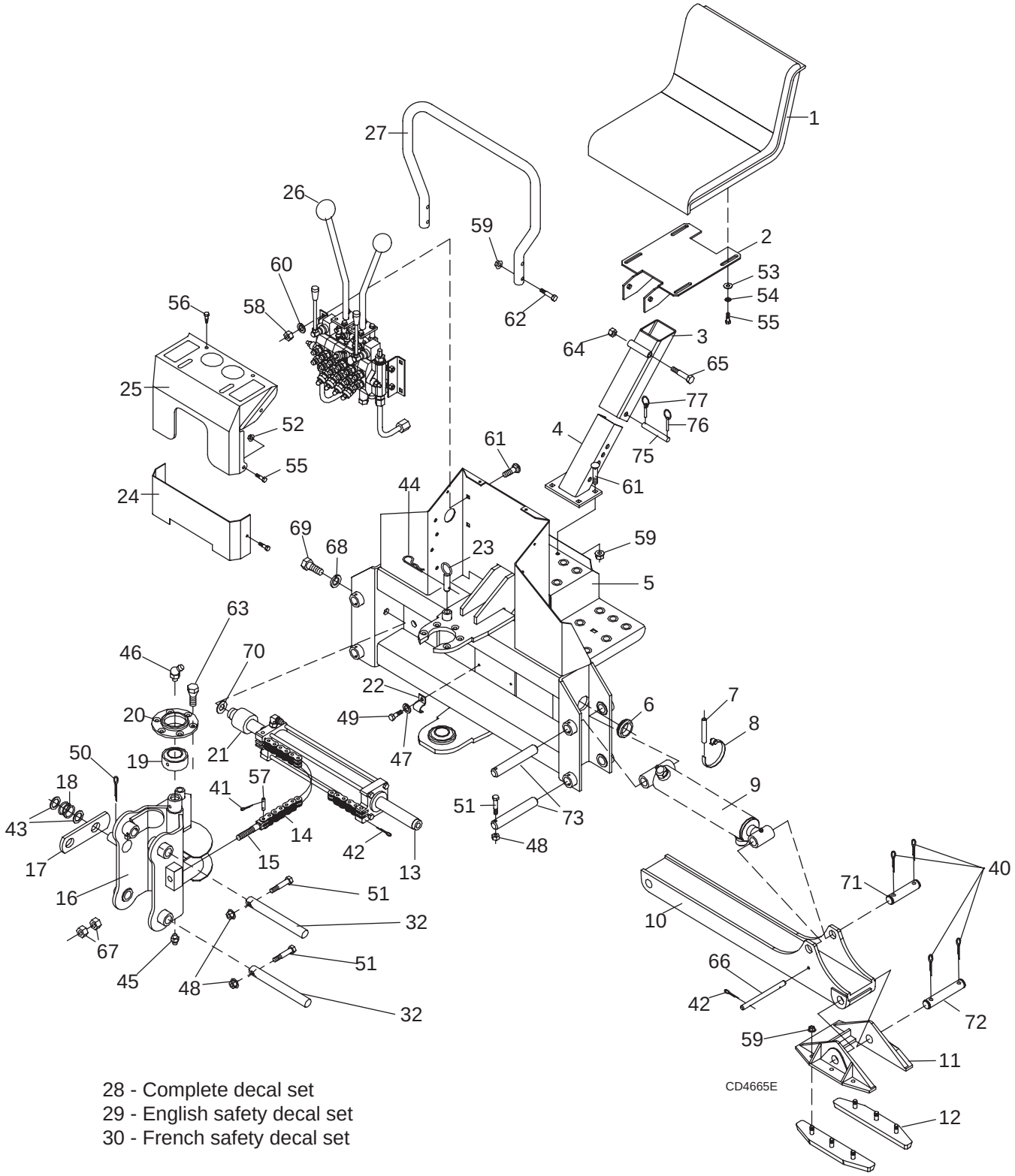
# BH6500 & BH7500 MAIN FRAME ASSEMBLY (SN - 682897 AND BEFORE)

| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 33500 | 1 | High back seat |
| 2 | 37570 | 1 | Seat bracket **-or-** |
| 2 | 1008477 | 1 | Seat bracket (after SN 916555) |
| 3 | 37569 | 1 | Upper seat support **- or -** |
| 3 | 1008476 | 1 | Upper seat support (after SN 916555) |
| 4 | 37697 | 1 | Lower seat support **- or -** |
| 4 | 1008475 | 1 | Lower seat support (after SN 916555) |
| 5 | 37601 | 1 | Main frame |
| 6 | 2 | 2 | Rubber grommet |
| 7 | 62321 | 2 | Hose protector shield |
| 8 | 34181 | 2 | 2-1/2" - 3-1/2" Hose clamp |
| 9 | 37593 | 2 | Hydraulic cylinder, double-acting 2-1/2 x 11 (see breakdown on page 49) |
| 10 | 37767 | 2 | Machined stabilizer arm |
| 11 | 37766 | 2 | Machined stabilizer pad |
| 12 | 1006610 | 4 | Stabilizer rubber pad |
| 13 | 37594 | 1 | Hydraulic cylinder, double-acting, 2.50 x 10.63 (see page 48) |
| 14 | 62405 | 2 | Swing chain |
| 15 | 62404 | 2 | Chain tension bolt |
| 16 | 37545 | 1 | Backhoe swing frame |
| 17 | 37526 | 1 | Link - .38 x 2.0 x 7.1 |
| 18 | 62072 | 1 | Spring, Compression 1.19 x .07 x .627 |
| 19 | 62383 | 2 | 1-1/2 ID Ball bushing |
| 20 | 62327 | 1 | Cap weld assembly - Swing frame |
| 21 | 37566 | 2 | Bumper - 1.25 x 2.25 x 1.75 |
| 22 | 62269 | 2 | Hose clamp |
| 23 | 37599 | 1 | .62 x 3.31 Swing lock pin |
| 24 | 37769 | 1 | 14 GA x 5.13 x 12.9 Cover (BH7500 only) |
| 24 | 38678 | 1 | 11 GA x 5.13 x 12.9 Cover (BH6500 only) |
| 25 | 37529 | 1 | Groundbreaker console cover |
| 26 | ----- | 1 | Valve and console assembly (see page 48) |
| 27 | 37600 | 1 | 1.05 x 13.3 x 15.5 Handle |
| 28 | 38626 | 1 | Complete English decal set |
| 29 | 38627-1 | 1 | English safety decal set |
| 30 | 58627 | 1 | French safety decal set |
| 31 | 62292 | 1 | Bar DR 1.00 x 4.55 x 6.00 |
| 32 | 37690 | 1 | Bar DR 1.00 x 7.30 x 7.69 |

**Hardware**

| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 40 | 1266 | | 3/16 x 1-1/2 Cotter pin |
| 41 | 3145 | * | 3/32 x 1/2 Cotter pin |
| 42 | 62531 | * | 3/32 x 1-1/2 Cotter pin |
| 43 | 62075 | | 10 GA x 1 Bushing |
| 44 | 15036 | | 3/16 Safety pin |
| 45 | 1972 | * | 1/4-28 Tapered thread grease fitting |
| 46 | 3584 | | 45° 1/4 Tapered thread grease fitting |
| 47 | 1985 | * | 1/4 Standard lock washer |
| 48 | 6128 | * | 1/4 NC Hex lock nut |
| 49 | 2457 | * | 1/4 NC x 3/4 Cap screw GR5 |
| 50 | 1285 | * | 1/4 x 1-1/2 Cotter pin |
| 51 | 37531 | | 1/4 NC x 2-1/4 Cap screw GR8 |
| 52 | 14139 | | 5/16 NC Flange lock nut |
| 53 | 4378 | * | 5/16 Standard flat washer |
| 54 | 2472 | * | 5/16 Standard lock washer |
| 55 | 6096 | | 5/16 NC x 3/4 Cap screw GR5 |
| 56 | 27610 | | .31 x .75 Sheet metal screw |
| 57 | 62399 | | .312 x 1.45 Chain pin |
| 58 | 835 | * | 3/8 NC Hex nut plated |
| 59 | 14350 | | 3/8 NC Flange hex lock nut |
| 60 | 838 | * | 3/8 Standard lock washer |
| 61 | 6697 | * | 3/8 NC x 1 Carriage bolt GR5 |
| 62 | 62528 | * | 7/16 NF Hex lock nut |
| 63 | 21016 | | 7/16 NF x 1-1/4 Wheel bolt |
| 64 | 765 | * | 1/2 NC Hex locknut |
| 65 | 10380 | * | 1/2 NC x 4 Cap screw GR5 |
| 66 | 37544 | | .50 x 4.45 Headless pin |
| 67 | 230 | * | 5/8 NC Hex nut |
| 68 | 2522 | * | 3/4 Standard lock washer |
| 69 | 4616 | | 3/4 NC x 1-1/2 Cap screw HT |
| 70 | 11204 | | 13/16 x .010 Shim washer |
| 71 | 53910 | | 1.0 x 3.80 Headless pin |
| 72 | 53920 | | 1.0 x 5.84 Headless pin |
| 73 | 62295 | | 1.00 x 5.92 x 6.31 Headless pin |
| 74 | 976 | * | 3/8 NC x 1-1/2 Cap screw GR5 |
| 75 | 13817 | | 1/4 x 4-1/2 Clevis pin |
| 76 | 62992 | | .11 x 1.1 OD Split ring |
| 77 | 22411 | | 3/16 x 1 Klik pin |
| | | * | Standard hardware, obtain locally |

# BH6500 & BH7500 MAIN FRAME ASSEMBLY (SN - 682898 AND AFTER)




28 - Complete decal set
29 - English safety decal set
30 - French safety decal set

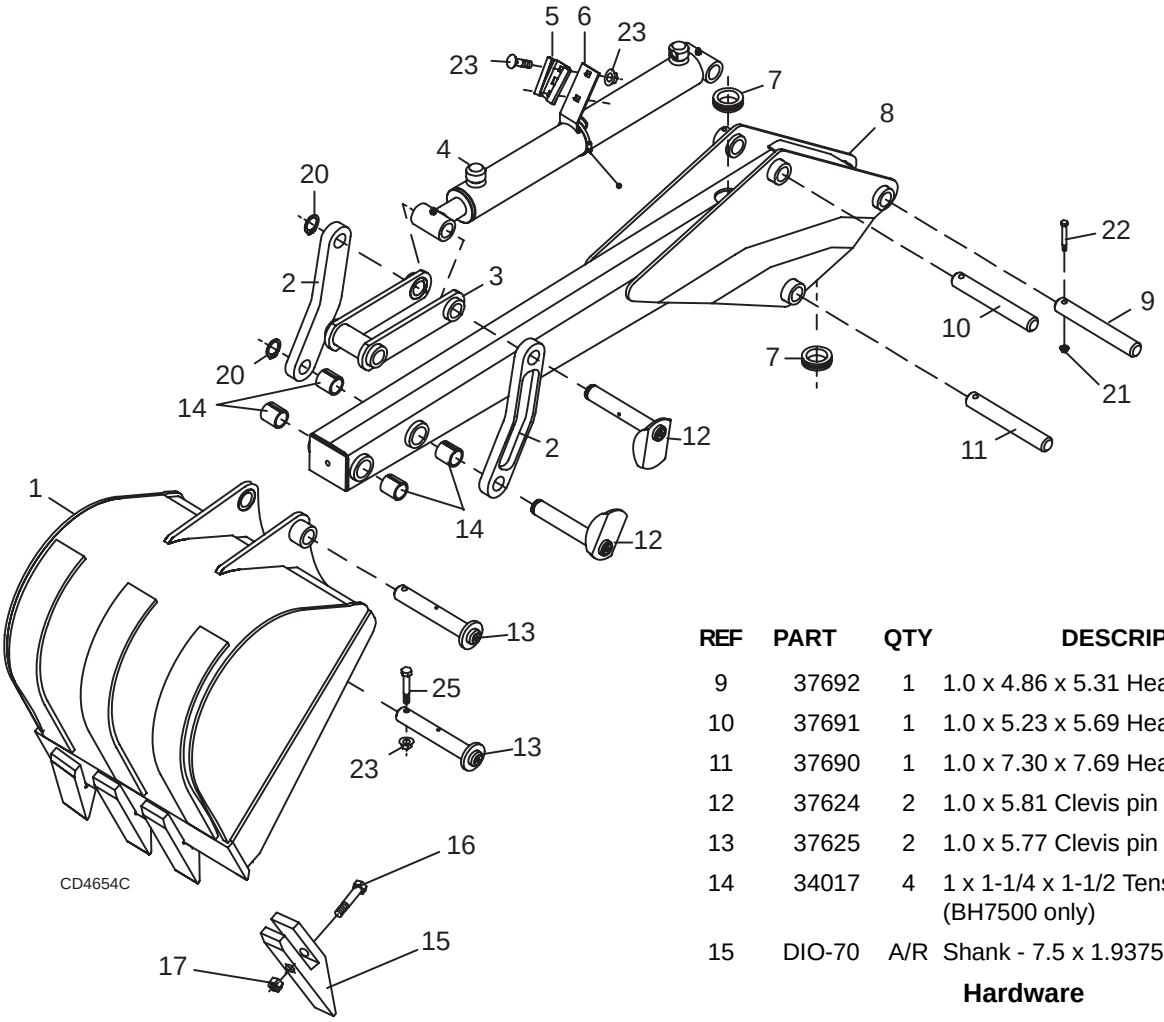
# BH6500 & BH7500 MAIN FRAME ASSEMBLY (SN - 682898 AND AFTER)

| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 33500 | 1 | High back seat |
| 2 | 37570 | 1 | Seat bracket |
| 3 | 37569 | 1 | Upper seat support |
| 4 | 37697 | 1 | Lower seat support |
| 5 | 55240 | 1 | Main frame |
| 6 | 2 | 2 | Rubber grommet |
| 7 | 62321 | 2 | Hose protector shield |
| 8 | 34181 | 2 | 2-1/2" - 3-1/2" Hose clamp |
| 9 | 37593 | 2 | Hydraulic cylinder, double-acting 2-1/2 x 11 (see breakdown on page 49) |
| 10 | 37767 | 2 | Machined stabilizer arm |
| 11 | 37766 | 2 | Machined stabilizer pad |
| 12 | 1006610 | 4 | Stabilizer rubber pad |
| 13 | 37594 | 1 | Hydraulic cylinder, double-acting, 2.50 x 10.63 (see page 48) |
| 14 | 62405 | 2 | Swing chain |
| 15 | 62404 | 2 | Chain tension bolt |
| 16 | 55232 | 1 | Backhoe swing frame |
| 17 | 37526 | 1 | Link - .38 x 2.0 x 7.1 |
| 18 | 62072 | 1 | Spring, Compression 1.19 x .07 x .627 |
| 19 | 62383 | 2 | 1-1/2 ID Ball bushing |
| 20 | 62327 | 1 | Cap weld assembly - Swing frame |
| 21 | 37566 | 2 | Bumper - 1.25 x 2.25 x 1.75 |
| 22 | 62269 | 2 | Hose clamp |
| 23 | 37599 | 1 | .62 x 3.31 Swing lock pin |
| 24 | 37769 | 1 | 14 GA x 5.13 x 12.9 Cover (BH7500 only) |
| | **- or -** | | **- or -** |
| 24 | 38678 | 1 | 11 GA x 5.13 x 12.9 Cover (BH6500 only) |
| 25 | 37529 | 1 | Groundbreaker console cover |
| 26 | ----- | 1 | Valve and console assembly (see page 48) |
| 27 | 37600 | 1 | 1.05 x 13.3 x 15.5 Handle |
| 28 | 38626 | 1 | Complete English decal set |
| 29 | 38627-1 | 1 | English safety decal set |
| 30 | 58627 | 1 | French safety decal set |
| 32 | 55230 | 1 | Pin, 1.00 x 7.21 x 7.8 |

**Hardware**

| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 40 | 1266 | | 3/16 x 1-1/2 Cotter pin |
| 41 | 3145 * | | 3/32 x 1/2 Cotter pin |
| 42 | 62531 * | | 3/32 x 1-1/2 Cotter pin |
| 43 | 62075 | | 10 GA x 1 Bushing |
| 44 | 15036 | | 3/16 Safety pin |
| 45 | 1972 * | | 1/4-28 Tapered thread grease fitting |
| 46 | 3584 | | 45° 1/4 Tapered thread grease fitting |
| 47 | 1985 * | | 1/4 Standard lock washer |
| 48 | 6778 * | | 5/16 NC Hex lock nut |
| 49 | 2457 * | | 1/4 NC x 3/4 Cap screw GR5 |
| 50 | 1285 * | | 1/4 x 1-1/2 Cotter pin |
| 51 | 10509 | | 5/16 NC x 2-1/2 Cap screw GR8 |
| 52 | 14139 | | 5/16 NC Flange lock nut |
| 53 | 4378 * | | 5/16 Standard flat washer |
| 54 | 2472 * | | 5/16 Standard lock washer |
| 55 | 6096 | | 5/16 NC x 3/4 Cap screw GR5 |
| 56 | 27610 | | .31 x .75 Sheet metal screw |
| 57 | 62399 | | .312 x 1.45 Chain pin |
| 58 | 835 * | | 3/8 NC Hex nut plated |
| 59 | 14350 | | 3/8 NC Flange hex lock nut |
| 60 | 838 * | | 3/8 Standard lock washer |
| 61 | 6697 * | | 3/8 NC x 1 Carriage bolt GR5 |
| 62 | 62528 * | | 7/16 NF Hex lock nut |
| 63 | 21016 | | 7/16 NF x 1-1/4 Wheel bolt |
| 64 | 765 * | | 1/2 NC Hex locknut |
| 65 | 10380 * | | 1/2 NC x 4 Cap screw GR5 |
| 66 | 37544 | | .50 x 4.45 Headless pin |
| 67 | 230 * | | 5/8 NC Hex nut |
| 68 | 2522 * | | 3/4 Standard lock washer |
| 69 | 4616 | | 3/4 NC x 1-1/2 Cap screw HT |
| 70 | 11204 | | 13/16 x .010 Shim washer |
| 71 | 53910 | | 1.0 x 3.80 Headless pin |
| 72 | 53920 | | 1.0 x 5.84 Headless pin |
| 73 | 55238 | | 1.00 x 5.84 x 6.38 Headless pin |
| 74 | 976 * | | 3/8 NC x 1-1/2 Cap screw GR5 |
| 75 | 13817 | | 1/4 x 4-1/2 Clevis pin |
| 76 | 62992 | | .11 x 1.1 OD Split ring |
| 77 | 22411 | | 3/16 x 1 Klik pin |
| | * | | Standard hardware, obtain locally |

# BH6500 & BH7500 DIPPERSTICK ASSEMBLY (SN - 682897 AND BEFORE)




| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 37708 | 1 | 8" BH7500 Bucket -or- |
| 1 | 37712 | 1 | 12" BH7500 Bucket -or- |
| 1 | 37716 | 1 | 16" BH7500 Bucket -or- |
| 1 | 37718 | 1 | 18" BH7500 Bucket -or- |
| 1 | 37724 | 1 | 24" BH7500 Bucket |
| 2 | 37768 | 2 | 1.00 Dia. x 9.00 Guide link |
| 3 | 37602 | 1 | Bucket link |
| 4 | 37592 | 1 | 2 x 16.75 Double-acting hyd. cylinder (see page 49) |
| 5 | † | 1 | Socket SMV (Slow Moving Vehicle) |
| 6 | † | 1 | SMV Socket bracket |
| 7 | 37626 | 2 | .19 x 1.50 x 1.75 Grommet (BH7500) |
| 8 | 38670 | 1 | 6.5 Backhoe dipperstick -or- |
| 8 | 37579 | 1 | 7.5 Backhoe dipperstick |

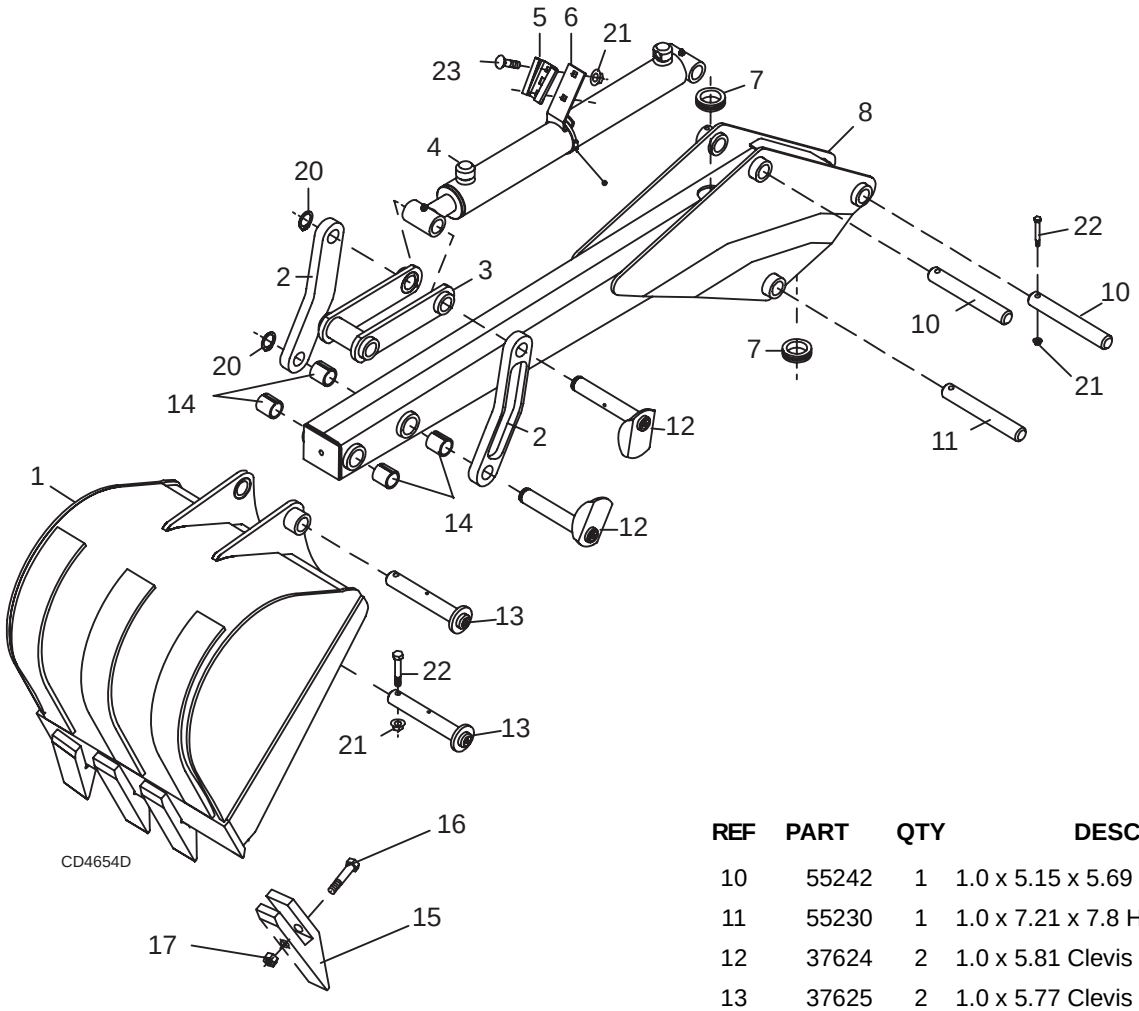
| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 9 | 37692 | 1 | 1.0 x 4.86 x 5.31 Headless pin |
| 10 | 37691 | 1 | 1.0 x 5.23 x 5.69 Headless pin |
| 11 | 37690 | 1 | 1.0 x 7.30 x 7.69 Headless pin |
| 12 | 37624 | 2 | 1.0 x 5.81 Clevis pin |
| 13 | 37625 | 2 | 1.0 x 5.77 Clevis pin |
| 14 | 34017 | 4 | 1 x 1-1/4 x 1-1/2 Tension bushing (BH7500 only) |
| 15 | DIO-70 | A/R | Shank - 7.5 x 1.9375 |

**Hardware**

| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 16 | 10978 | A/R | 7/16 NC x 1-3/4 Cap screw GR5 |
| 17 | 13921 | A/R | 7/16 NC Hex locknut |
| 20 | 62102 | | .042 x .925 External retaining ring |
| 21 | 6128 | | 1/4 NC Hex locknut |
| 22 | 37531 | | 1/4 NC x 2-1/2 Hex head cap screw GR8 |
| 23 | 14139 | | 5/16 NC Flange hex locknut |
| 24 | 62532 | | 5/16 NC x 1/2 Carriage bolt |
| 25 | 10509 * | | 5/16 x 2-1/2 Hex head cap screw GR5 |

† Not serviceable
A/R As required
* Standard hardware, obtain locally

# BH6500 & BH7500 DIPPERSTICK ASSEMBLY (SN - 682898 AND AFTER)




| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 37708 | 1 | 8" BH7500 Bucket -or- |
| 1 | 37712 | 1 | 12" BH7500 Bucket -or- |
| 1 | 37716 | 1 | 16" BH7500 Bucket -or- |
| 1 | 37718 | 1 | 18" BH7500 Bucket -or- |
| 1 | 37724 | 1 | 24" BH7500 Bucket |
| 2 | 37768 | 2 | 1.00 Dia. x 9.00 Guide link |
| 3 | 37602 | 1 | Bucket link |
| 4 | 37592 | 1 | 2 x 16.75 Double-acting hyd. cylinder (see page 49) |
| 5 | † | 1 | Socket SMV (Slow Moving Vehicle) |
| 6 | † | 1 | SMV Socket bracket |
| 7 | 37626 | 2 | .19 x 1.50 x 1.75 Grommet (BH7500) |
| 8 | 55233 | 1 | 6.5 Backhoe dipperstick -or- |
| 8 | 55235 | 1 | 7.5 Backhoe dipperstick |

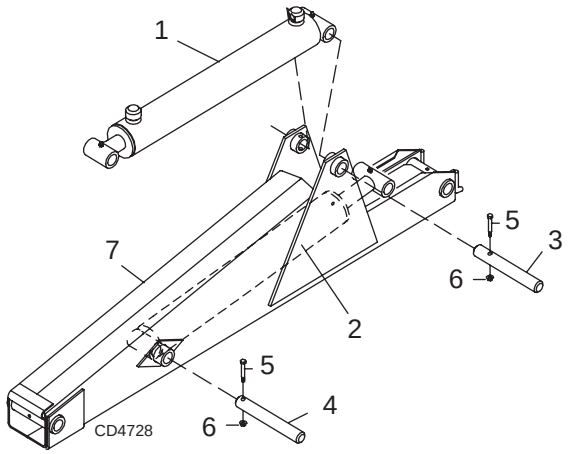
| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 10 | 55242 | 1 | 1.0 x 5.15 x 5.69 Headless pin |
| 11 | 55230 | 1 | 1.0 x 7.21 x 7.8 Headless pin |
| 12 | 37624 | 2 | 1.0 x 5.81 Clevis pin |
| 13 | 37625 | 2 | 1.0 x 5.77 Clevis pin |
| 14 | 34017 | 4 | 1 x 1-1/4 x 1-1/2 Tension bushing (BH7500 only) |
| 15 | DIO-70 | A/R | Shank - 7.5 x 1.9375 |

**Hardware**

| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 16 | 10978 | A/R | 7/16 NC x 1-3/4 Cap screw GR5 |
| 17 | 13921 | A/R | 7/16 NC Hex locknut |
| 20 | 62102 | | .042 x .925 External retaining ring |
| 21 | 6778 | | 5/16 NC Hex lock nut |
| 22 | 10509 * | | 5/16 NC x 2-1/2 Cap screw GR5 |
| 23 | 62532 | | 5/16 NC x 1/2 Carriage bolt |

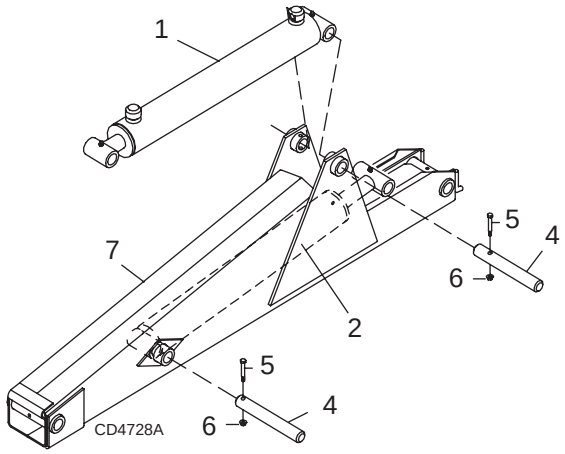
† Not serviceable
A/R As required
* Standard hardware, obtain locally

# BOOM ASSEMBLY



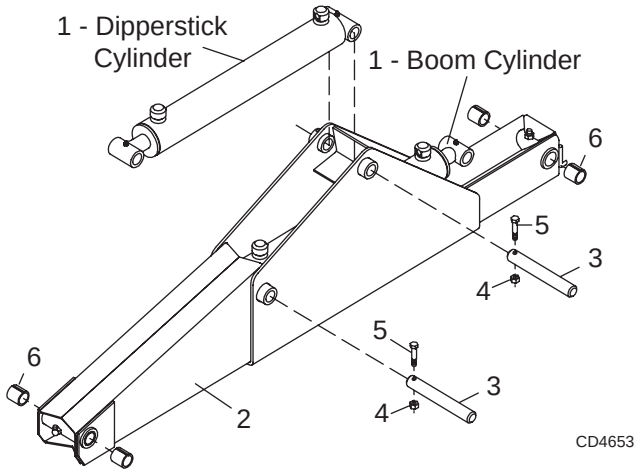

### BH6500 BOOM ASSEMBLY (SN - 682897 AND BEFORE)

| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 37592 | 1 | 2.00 x 16.75 Double-acting hydraulic cylinder - Dipperstick (see page 49) |
| 2 | 37591 | 1 | 2.50 x 16.75 Double-acting hydraulic cylinder - Boom (see page 49) |
| 3 | 62292 | 1 | 1.00 x 4.51 x 5.9 Headless pin |
| 4 | 62295 | 1 | 1.00 x 5.92 x 6.31 Headless pin |
| 5 | 37531 | 2 | 1/4 NC x 2-1/4 Cap screw GR8 |
| 6 | 6128 | 2 | 1/4 NC Hex lock nut |
| 7 | 38669 | 1 | Boom weldment assembly |




### BH6500 BOOM ASSEMBLY (SN - 682898 AND BEFORE)

| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 37592 | 1 | 2.00 x 16.75 Double-acting hydraulic cylinder - Dipperstick (see page 49) |
| 2 | 37591 | 1 | 2.50 x 16.75 Double-acting hydraulic cylinder - Boom (see page 51) |
| 4 | 55238 | 1 | 1.00 x 5.64 x 6.38 Headless pin |
| 5 | 10509 | 2 | 5/16 NC x 2-1/2 Cap screw GR5 |
| 6 | 6778 | 2 | 5/16 NC Hex lock nut |
| 7 | 55234 | 1 | Boom weldment assembly |



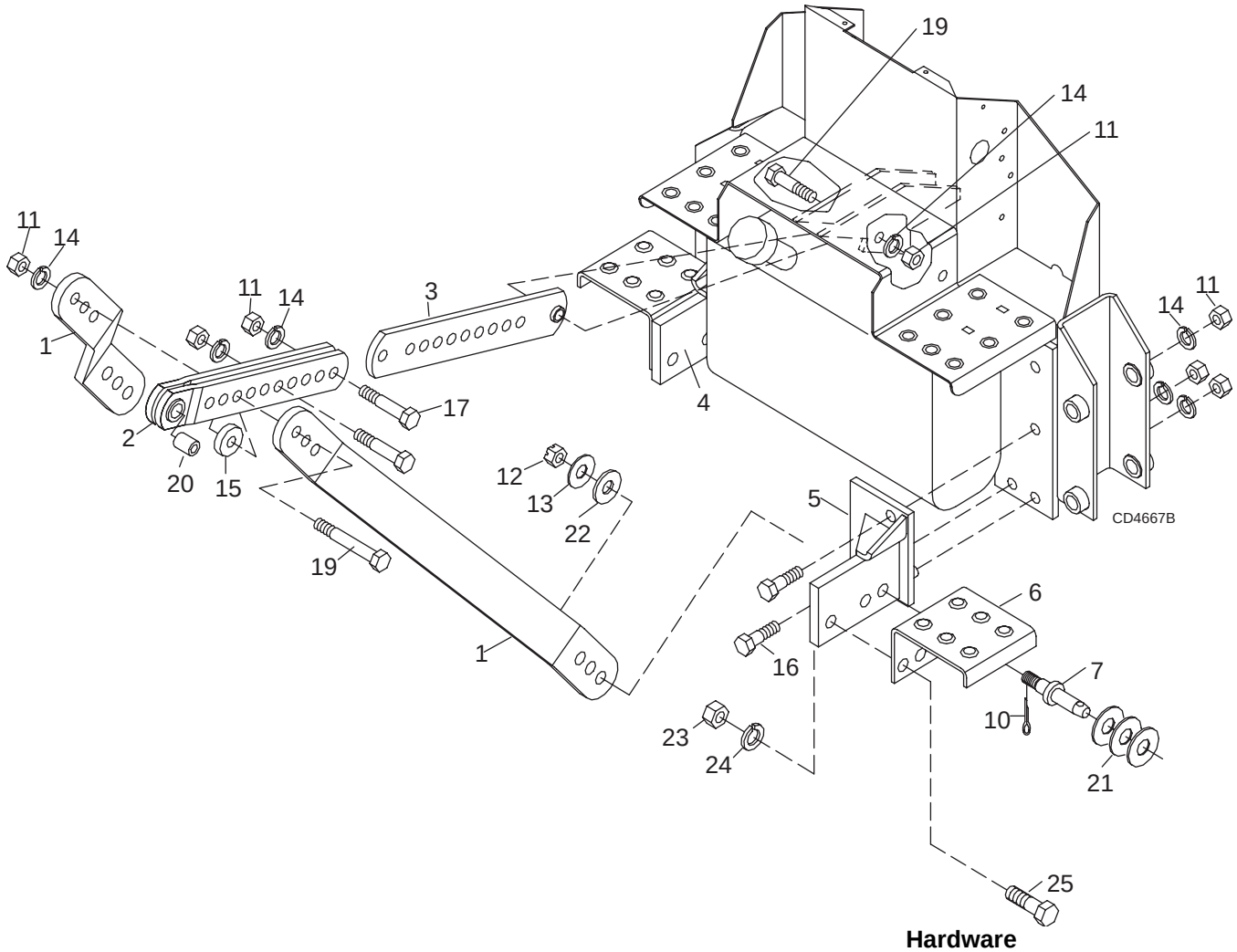

### BH7500 BOOM ASSEMBLY (SN - 682897 AND BEFORE)

| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 37591 | 2 | 2.50 x 16.75 Double-acting hydraulic cylinder - Dipperstick (see page 49) |
| 2 | 37516 | 1 | Boom weldment assembly |
| 3 | 62295 | 2 | 1.00 x 5.92 x 6.31 Headless pin |
| 4 | 6128 | 2 | 1/4 NC Hex lock nut |
| 5 | 37531 | 2 | 1/4 NC x 2-1/4 Cap screw GR8 |
| 6 | 34017 | 4 | 1 x 1-1/4 x 1-1/2 Tension bushing |

### (SN - 682898 AND AFTER)

| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 37591 | 2 | 2.50 x 16.75 Double-acting hydraulic cylinder - Dipperstick (see page 49) |
| 2 | 55241 | 1 | Boom weldment assembly |
| 3 | 55238 | 2 | 1.00 x 5.64 x 6.38 Headless pin |
| 4 | 10509 | 2 | 5/16 NC x 2-1/2 Cap screw GR5 |
| 5 | 6778 | 2 | 5/16 NC Hex lock nut |
| 6 | 34017 | 4 | 1 x 1-1/4 x 1-1/2 Tension bushing |

# BH6500 & BH7500 SAF-T-LOK ASSEMBLY




| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 31230 | 2 | Ridge mounting half |
| 2 | 1007345 | 1 | Double link assembly |
| 3 | 1006835 | 1 | Single link weld assembly |
| 4 | † | 1 | Left mount bracket |
| 5 | † | 1 | Right mount bracket |
| 6 | 62944 | 2 | Backhoe mounting step |
| 7 | 7049 | 2 | Category 1 mounting pin 5-3/4" long |

**Hardware**

| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 10 | 1266 | * | 3/16 x 1-1/2 Cotter pin |
| 11 | 1450 | * | 3/4 NC Hex nut |
| 12 | 5849 | | 3/4 NF Slotted hex nut |
| 13 | 2864 | * | 3/4 SAE Flat washer |
| 14 | 2522 | * | 3/4 Standard lock washer |

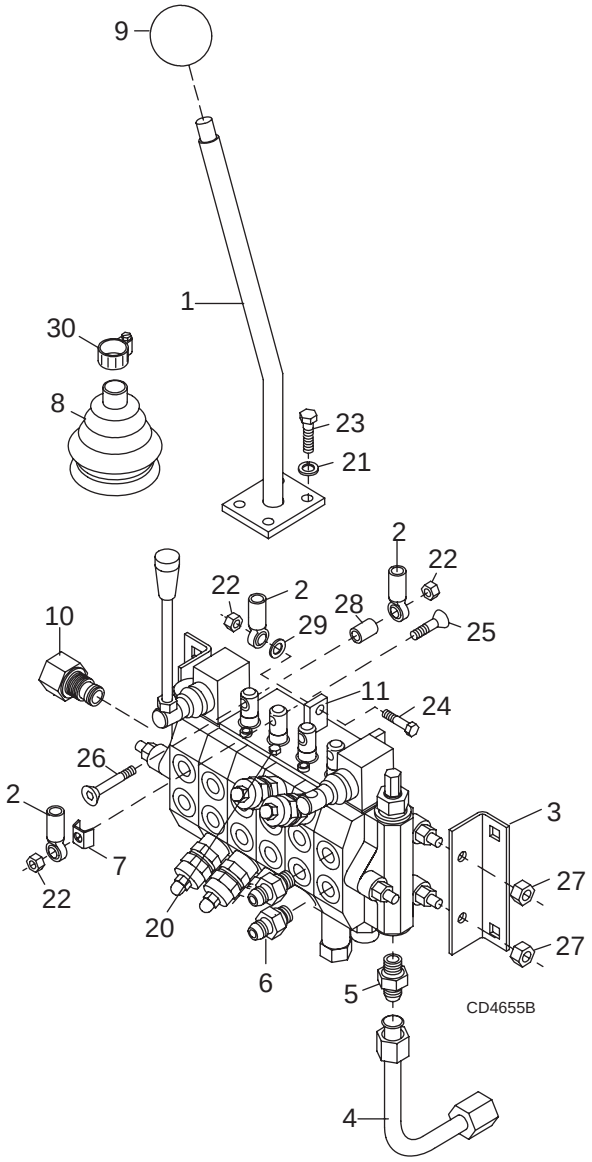
**Hardware**

| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 15 | 10440 | | 3/4 x 2 x 1/2 Flat washer |
| 16 | 735 | * | 3/4 NC x 2 Hex head cap screw |
| 17 | 14334 | | 3/4 NC x 3 Hex head cap screw GR5 |
| 19 | 31207 | | 3/4 NC x 4 Hex head cap screw GR5 |
| 20 | 30067 | | .765 x 1.000 x 1.69 Sleeve |
| 21 | 28539 | | 7/8 Standard SAE flat washer |
| 22 | 7828 | | 3/4 x 2-1/2 x 1/4 HT Flat washer |
| 23 | 4261 | | 7/8 NC Hex nut |
| 24 | 30008 | | 7/8 Lock washer |
| 25 | 62541 | | 7/8 NC x 2-1/2 Hex head cap screw GR5 |

† Not sold separately

* Standard hardware, obtain locally

# BH6500 & BH7500 VALVE CONTROLS & HARDWARE

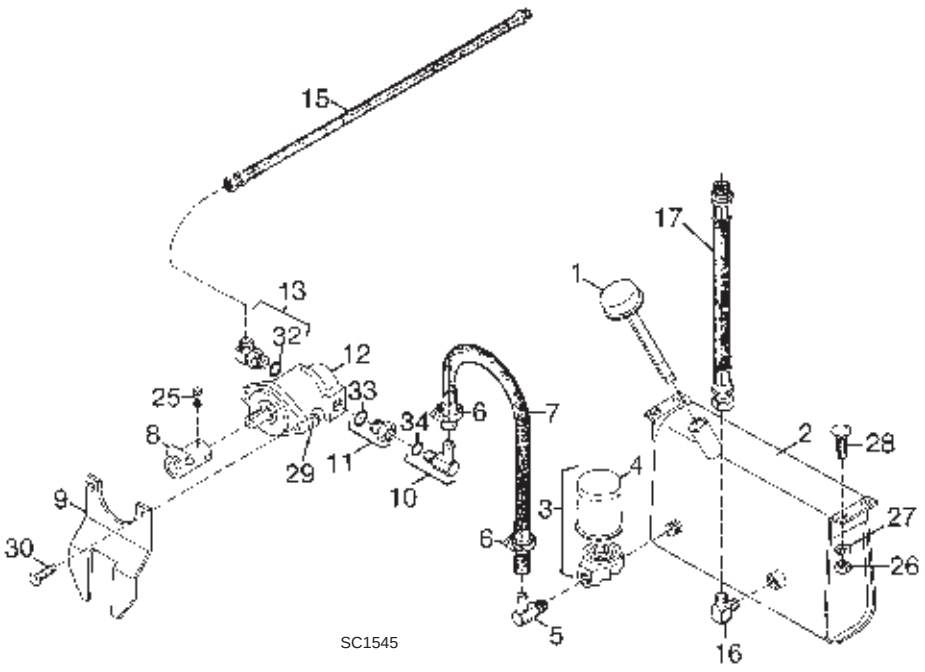



| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 37573 | 2 | Control handle |
| 2 | 37613 | 6 | 5/16 NF Female rod end |
| 3 | 37556 | 2 | Valve mounting bracket |
| 4 | 37761 | 2 | JIC 8F x SAE 8F Hydraulic tube assembly |
| 5 | 61 | 2 | JIC 8M x O-Ring 8M Adapter |
| 6 | 62367 | 12 | 9/16-18 to O-Ring connector |
| 7 | 37548 | 2 | 16 GA x .36 x .67 x .63 Clip |
| 8 | 37765 | 2 | Rubber control boot |
| 9 | 37672 | 2 | 1.88 Dia. x 1/2 NC Knob |
| 10 | 37409 | 1 | Power-Beyond sleeve (optional) |
| 11 | 37552 | 1 | Valve linkage mount |

**Hardware**

| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 20 | 37524 | | 5mm x .8P x 12mm Cap screw |
| 21 | 2472 | * | 5/16 Standard lock washer |
| 22 | 6778 | * | 5/16 NC Hex lock nut |
| 23 | 24405 | * | 5/16 NF x 3/4 Cap screw GR5 |
| 24 | 6250 | * | 5/16 NC x 1-1/4 Cap screw GR5 |
| 25 | 37558 | | 5/16 NC x 1-1/2 Countersunk head screw |
| 26 | 37559 | | 5/16 x 2 Countersunk head screw |
| 27 | 30515 | | 8mm x 1.25P Hex nut |
| 28 | 37551 | | .328 x .463 x .716 Sleeve |
| 29 | 37577 | | .328 x .50 x .093 Washer |
| 30 | 38615 | | .63 - .69 Hose clamp |
| | | * | Standard hardware, obtain locally |

# PUMP & TANK ASSEMBLY



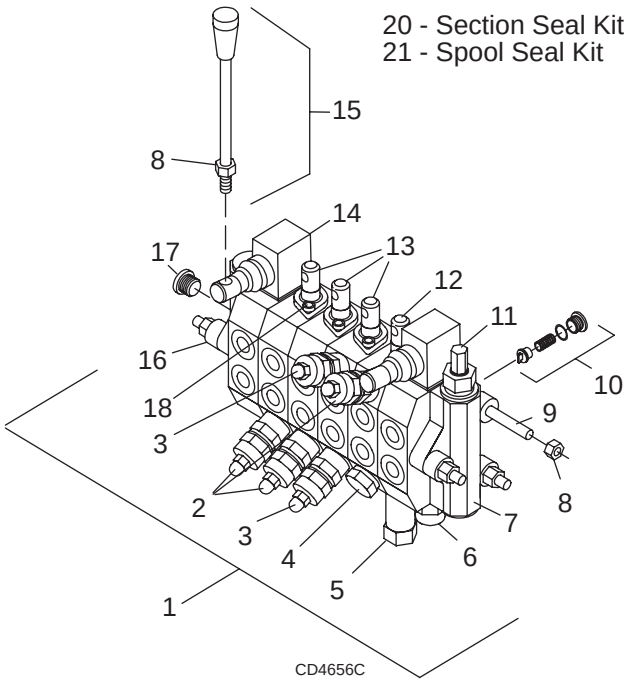

| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 31414 | 1 | Breather cap with dipstick |
| 2 | 37655 | 1 | 5.9 x 13.4 x 19.5 Tank |
| 3 | 62420 | 1 | Filter and housing assembly |
| 4 | 62421 | 1 | Filter element |
| 5 | 62431 | 1 | 3/4 Hose 90° elbow |
| 6 | 62412 | 2 | 1/2 Screw hose clamp |
| 7 | 31210 | 1 | 3/4 Synthetic x 36 hose |
| 8 | 62436 | 1 | Pump adaptor |
| 9 | 31234 | 1 | Pump mounting bracket |
| 10 | 62429 | 1 | 90° Fitting |
| 11 | 62428 | 1 | O-Ring boss reducer |
| 12 | 37909 | 1 | Hydraulic pump, 2.61 CCW |
| - | 38619-1 | - | Shaft seal |
| 13 | 37501 | 1 | Elbow, 3/4 JIC M x 1-1/16 ORBM x 90° |

| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 15 | 37502 | 1 | Hose, 50" x 3/4 JIC F x 3/4 ORBM |
| 16 | 37504 | 1 | Elbow, 3/4 JIC M x 1/2 NPT M x 90° |
| 17 | 37503 | 1 | Hose, 13.5" x 3/4 JIC F x 3/4 ORBM |

**Hardware**

| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 25 | 62147 * | | 5/16 NC x 1 Cup point socket head set screw |
| 26 | 835 * | | 3/8 NC Hex nut plated |
| 27 | 838 * | | 3/8 Standard lock washer |
| 28 | 24597 * | | 3/8 NC x 3/4 Carriage bolt |
| 29 | 765 * | | 1/2 NC Hex lock nut |
| 30 | 3379 * | | 1/2 NC x 1-1/2 Cap screw GR5 |
| 33 | 34987 | | .118 x 1.48 ID O-Ring #920 |
| 34 | 10291 | | .116 x .924 ID O-Ring #912 |

# BH6500 & BH7500 CONSOLE VALVE




| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 37560 | 1 | Control valve assembly |
| 2 | 33341 | 3 | Shock/dampening valve 2500 psi |
| 3 | 38630 | 2 | Port relief valve/anti-cav 2100 psi |
| 4 | 38631-1 | 1 | Plug, Port relief cavity |
| 5 | 33343 | 1 | Spool position control assembly |
| 6 | 33345 | 5 | Spool position control assembly |
| 7 | 38622 | 1 | Valve inlet section |
| 8 | 30515 | 8 | 8mm x 1.25P Hex nut |
| 9 | 33440 | 3 | 8mm x 1.25P x 276mm Cap screw |
| 10 | 33339 | 6 | Check valve assembly |
| 11 | 34368 | 1 | Relief valve assembly |
| 12 | 38624 | 1 | Boom section without relief |
| 13 | 38625 | 5 | Valve spool section without relief |
| 14 | 38628-1 | 2 | Control assembly - Stabilizer |
| 15 | 38629 | 2 | Control handle - Stabilizer |
| 16 | 38623 | 1 | Outlet section with plug |
| 17 | 38632-1 | 1 | Plug, 3/4 SAE M with O-ring |
| 18 | 37524 | 8 | 5M x 0.8P x 12mm Cap screw |
| 20 | 33338 | 7 | Section seal repair kit (not shown) |
| 21 | 33346 | 6 | Spool repair kit (not shown) |

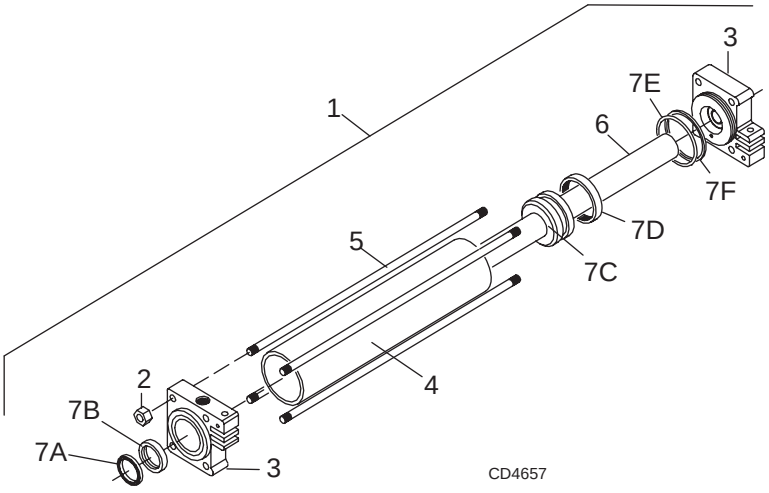
# BH6500 & BH7500 SWING CYLINDER

| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 37594 | 1 | 2-1/2 x 10-5/8 Double acting cylinder |
| 2 | 29685 * | 8 | 7/16 NC Hex nut |
| 3 | 37875 | 2 | 2-1/2 OD x 1-1/4 ID Guide |
| 4 | † | 1 | 2-1/2 ID x 3/16 Wall x 12-3/4 Cylinder tube |
| 5 | 64873 | 4 | .385 Dia. x 16 Tie rod |
| 6 | 37874 | 1 | 1-1/4 x 2-1/2 Piston rod assembly |
| 7 | 37873 | 1 | Seal kit (includes 7A thru 7F) |
| 7A | ----- ** | 2 | 1-1/4 ID x 1-1/2 OD Rod wiper |
| 7B | ----- ** | 2 | 1-1/4 x 1-5/8 x 5/16 U-Cup seal |
| 7C | ----- ** | 1 | 3/4 x 7/8 O-Ring |
| 7D | ----- ** | 1 | 2-1/2 Piston seal |
| 7E | ----- ** | 2 | 2-1/4 x 2-1/2 O-Ring |
| 7F | ----- ** | 2 | 2-1/4 x 2-1/2 Back-up ring |

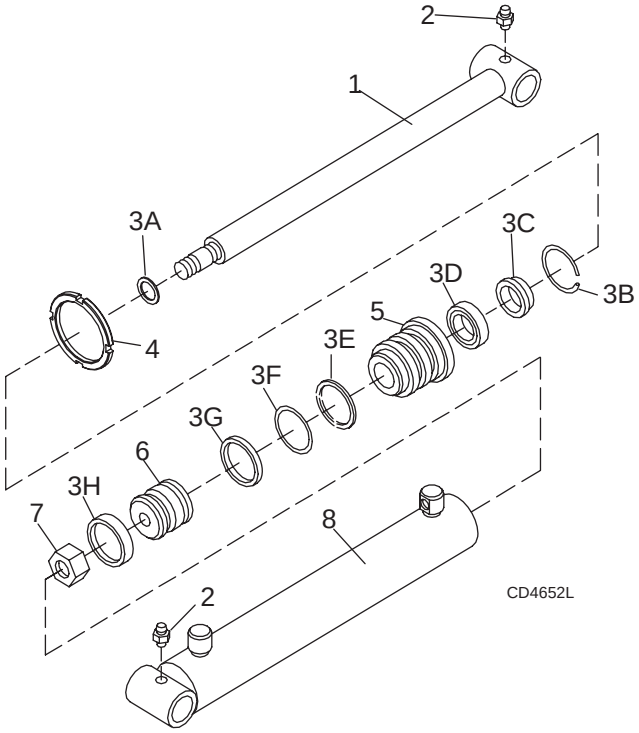
* Standard hardware, obtain locally

** Included in seal kit

† Not serviceable



# HYDRAULIC CYLINDER ASSEMBLIES




**Check chart below and order cylinder repair parts from correct column.**

BH6500 Dipperstick - - - - - - - - - - - Column A
BH7500 Dipperstick - - - - - - - - - - - Column B

BH6500 Bucket- - - - - - - - - - - - - - - Column A
BH7500 Bucket- - - - - - - - - - - - - - - Column A

BH6500 Boom - - - - - - - - - - - - - - - Column B
BH7500 Boom - - - - - - - - - - - - - - - Column B

BH6500 Stabilizer - - - - - - - - - - - - - Column C
BH7500 Stabilizer - - - - - - - - - - - - - Column C

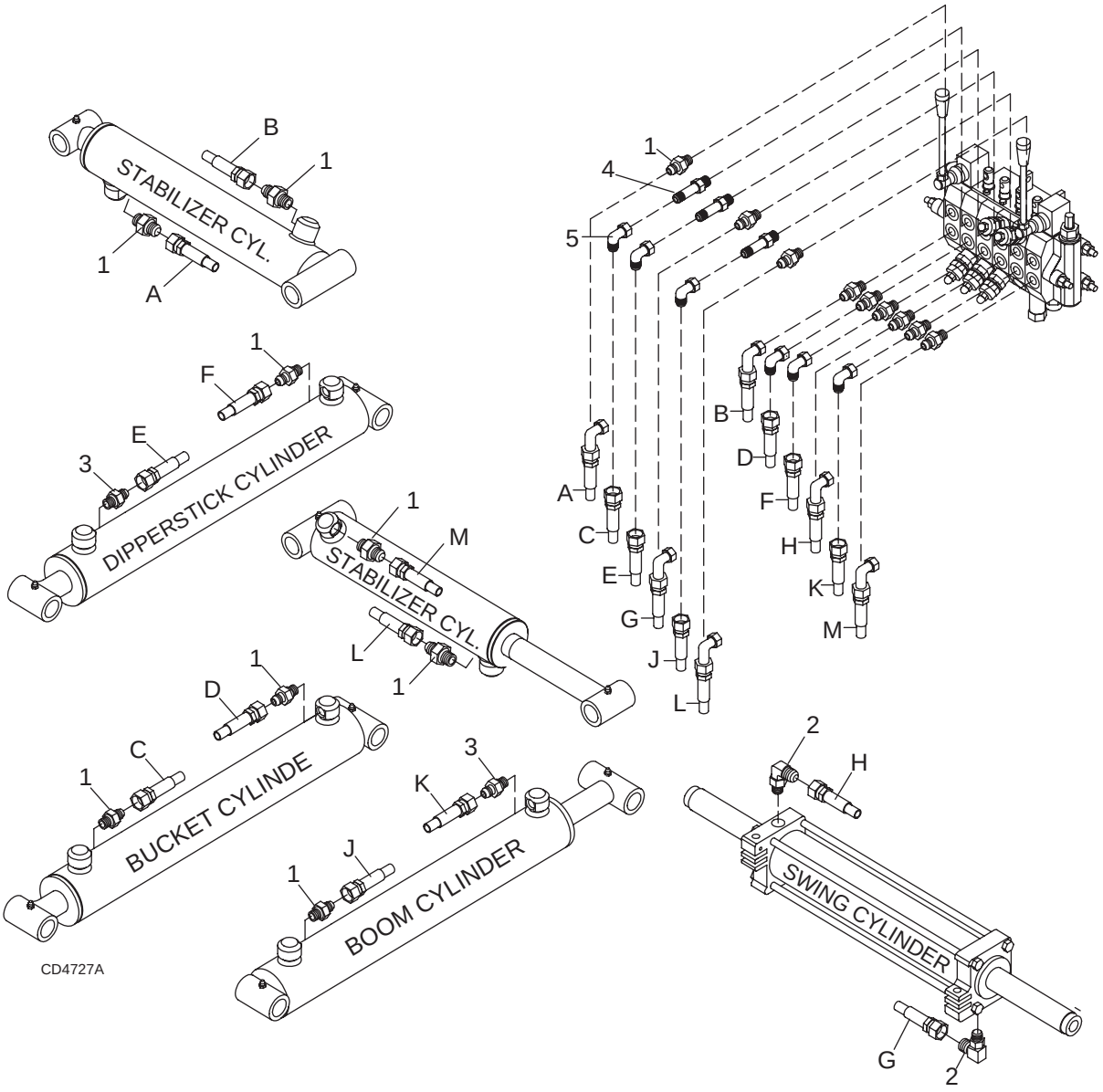
## 2" CYLINDER

| REF | A PART | QTY | DESCRIPTION |
|---|---|---|---|
| -- | 37592 | 1 | Complete cylinder assembly |
| 1 | 37872 | 1 | Piston rod |
| 2 | N/S | 2 | Grease fitting |
| 3 | 37869 | 1 | Seal kit (includes 3A - 3H) |
| 3A | -------- | 1 | 5/8 x 3/4 O-Ring |
| 3B | -------- | 1 | 2 Internal retaining ring |
| 3C | -------- | 1 | 1-1/4 Wiper ring |
| 3D | -------- | 1 | 1-1/4 x 1-1/2 x 1/4 Seal |
| 3E | -------- | 1 | 1-13/16 x 2 Backup ring |
| 3F | -------- | 1 | 1-13/16 x 2 O-Ring |
| 3G | -------- | 1 | 2 Piston seal |
| 3H | -------- | 1 | 2 x 1/4 x 1/8 Wear ring |
| 4 | 65067 | 1 | 1/4 x 2-3/8 Spanner nut |
| 5 | 37871 | 1 | 2" OD x 1-1/4 ID Guide |
| 6 | 37870 | 1 | 2" OD Piston |
| 7 | 30077 | 1 | 3/4 NF Lock nut |
| 8 | N/S | 1 | 2 ID Cylinder body |
| | N/S | | Not Serviceable |

## 2-1/2" CYLINDER

| REF | B PART | C PART | QTY | DESCRIPTION |
|---|---|---|---|---|
| -- | 37591 | 37593 | - | Complete cylinder assembly |
| 1 | 37867 | 37868 | 1 | Piston rod |
| 2 | N/S | N/S | 2 | Grease fitting |
| 3 | 37865 | 37865 | 1 | Seal kit (includes 3A - 3H) |
| 3A | -------- | -------- | 1 | 3/4 x 7/8 O-Ring |
| 3B | -------- | -------- | 1 | 2-1/2 Internal retaining ring |
| 3C | -------- | -------- | 1 | 1-1/4 Wiper ring |
| 3D | -------- | -------- | 1 | 1-1/4 x 1-5/8 x 5/16 U-cupseal |
| 3E | -------- | -------- | 1 | 2-1/4 x 2-1/2 Backup ring |
| 3F | -------- | -------- | 1 | 2-1/4 x 2-1/2 O-Ring |
| 3G | -------- | -------- | 1 | 2-1/2 Piston seal |
| 3H | -------- | -------- | 1 | 2-1/2 x 1/4 x 1/8 Wear ring |
| 4 | 64978 | 64978 | 1 | 1/4 x 2-7/8 Spanner nut |
| 5 | 64935 | 64935 | 1 | 2-1/2 OD x 1-1/4 ID Guide |
| 6 | 37866 | 37866 | 1 | 2-1/2 OD Piston |
| 7 | 64874 | 64874 | 1 | 7/8 NF Lock nut |
| 8 | N/S | N/S | 1 | 2-1/2 ID Cylinder body |
| | | N/S | | Not Serviceable |

# BH6500 HOSES & FITTINGS

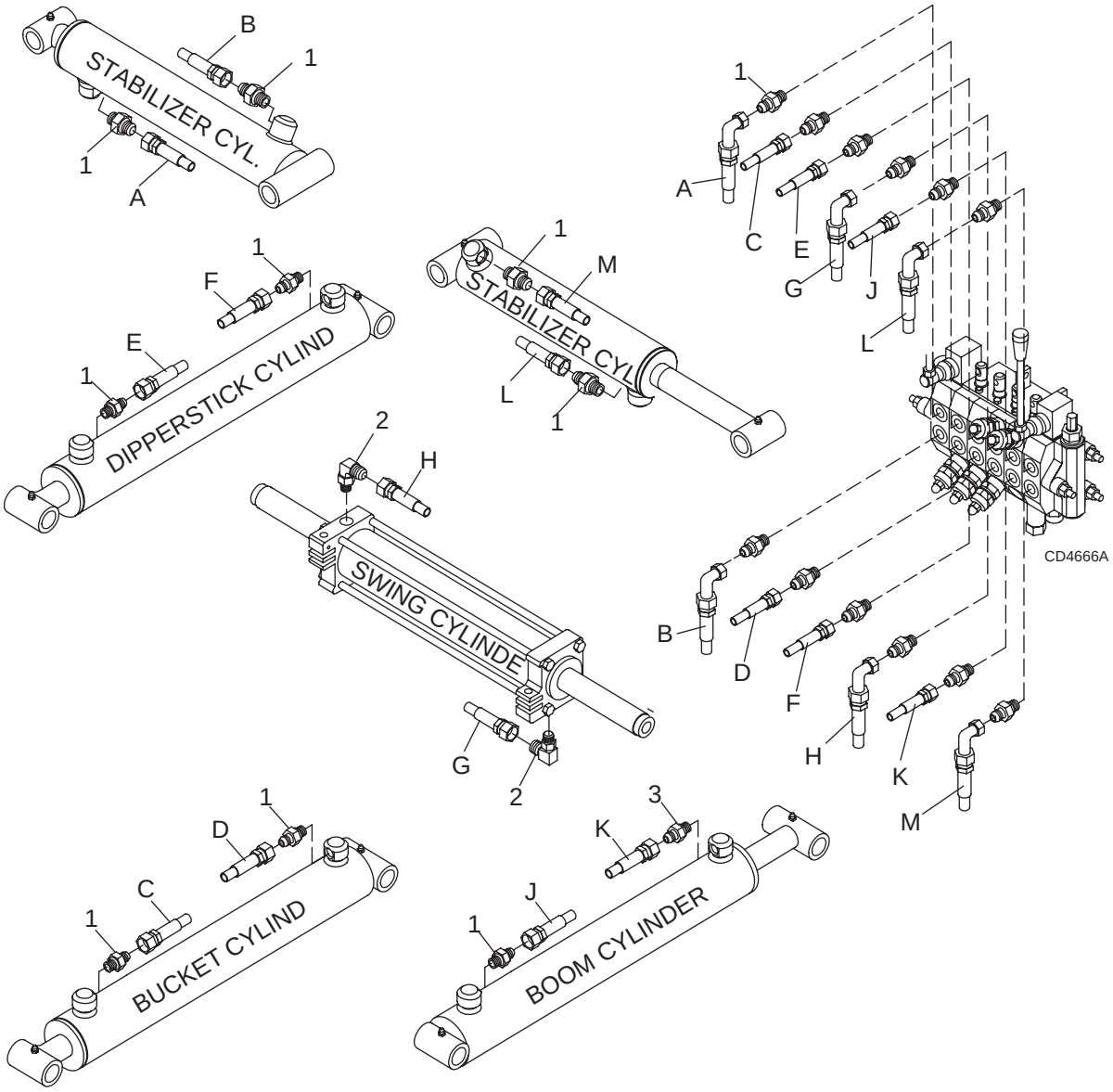



| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 62367 | 17 | 9/16 - 18 To O-Ring connector (Yellow) |
| 2 | 63558 | 2 | 9/16 x 9/16 Swivel elbow |
| 3 | 37508 | 2 | 9/16 JICM x 9/16 ORBM Adapter with 3/32 restricter (Red) |
| 4 | 38605 | 3 | Adapter, Straight 9/16-18 x 1.9 |
| 5 | 38604 | 6 | Elbow, 9/16-18 Swivel x 9/16-18 tube |

## HOSES

| REF | PART | DESCRIPTION |
|---|---|---|
| A | 37860 | Hose - 45" x 9/16 JICF x 9/16 JICF |
| B | 37860 | Hose - 45" x 9/16 JICF x 9/16 JICF |
| C | 38673 | Hose - 94" x 9/16 JICF x 9/16 JICF |
| D | 38673 | Hose - 94" x 9/16 JICF x 9/16 JICF |
| E | 62860 | Hose - 72" x 9/16 JICF x 9/16 JICF |
| F | 62860 | Hose - 72" x 9/16 JICF x 9/16 JICF |
| G | 37860 | Hose - 45" x 9/16 JICF x 9/16 JICF |
| H | 37860 | Hose - 45" x 9/16 JICF x 9/16 JICF |
| J | 38606 | Hose - 57" x 9/16 JICF x 9/16 JICF |
| K | 38606 | Hose - 57" x 9/16 JICF x 9/16 JICF |
| L | 37860 | Hose - 45" x 9/16 JICF x 9/16 JICF |
| M | 37860 | Hose - 45" x 9/16 JICF x 9/16 JICF |

# BH7500 HOSES & FITTINGS



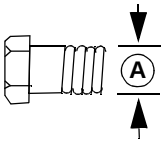

| REF | PART | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 62367 | 21 | 9/16 - 18 To O-Ring connector (Yellow) |
| 2 | 63558 | 2 | 9/16 x 9/16 Swivel elbow |
| 3 | 37508 | 1 | 9/16 JIC M x 9/16 SAE M Adapter with 3/32 restricter (Red) |

## HOSES

| REF | PART | DESCRIPTION |
|---|---|---|
| A | 37860 | Hose - 45" x 9/16 JICF x 9/16 JICF |
| B | 37860 | Hose - 45" x 9/16 JICF x 9.16 JICF |
| C | 37862 | Hose - 107" x 9/16 JICF x 9/16 JICF |
| D | 37862 | Hose - 107" x 9/16 JICF x 9/16 JICF |
| E | 37861 | Hose - 82" x 9/16 JICF x 9/16 JICF |
| F | 37861 | Hose - 82" x 9/16 JICF x 9/16 JICF |
| G | 37860 | Hose - 45" x 9/16 JICF x 9/16 JICF |
| H | 37860 | Hose - 45" x 9/16 JICF x 9/16 JICF |
| J | 37861 | Hose - 82" x 9/16 JICF x 9/16 JICF |
| K | 37861 | Hose - 82" x 9/16 JICF x 9/16 JICF |
| L | 37860 | Hose - 45" x 9/16 JICF x 9/16 JICF |
| M | 37860 | Hose - 45" x 9/16 JICF x 9/16 JICF |

# 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 MAR99 & J1701M JUL96.




## SAE SERIES TORQUE CHART

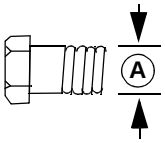
**SAE Grade 2 (No Dashes)**

SAE Bolt Head Identification

**SAE Grade 5 (3 Radial Dashes)**

**SAE Grade 8 (6 Radial Dashes)**

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




## METRIC SERIES TORQUE CHART

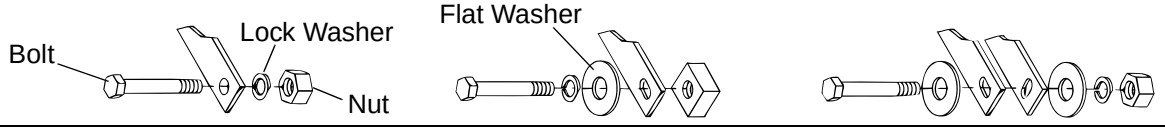

**Metric Grade 8.8**

Metric Bolt Head Identification


**Metric Grade 10.9**

| A Diameter & Thread Pitch (Millimeters) | Wrench Size | COARSE THREAD | | | | FINE THREAD | | | | A 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 |

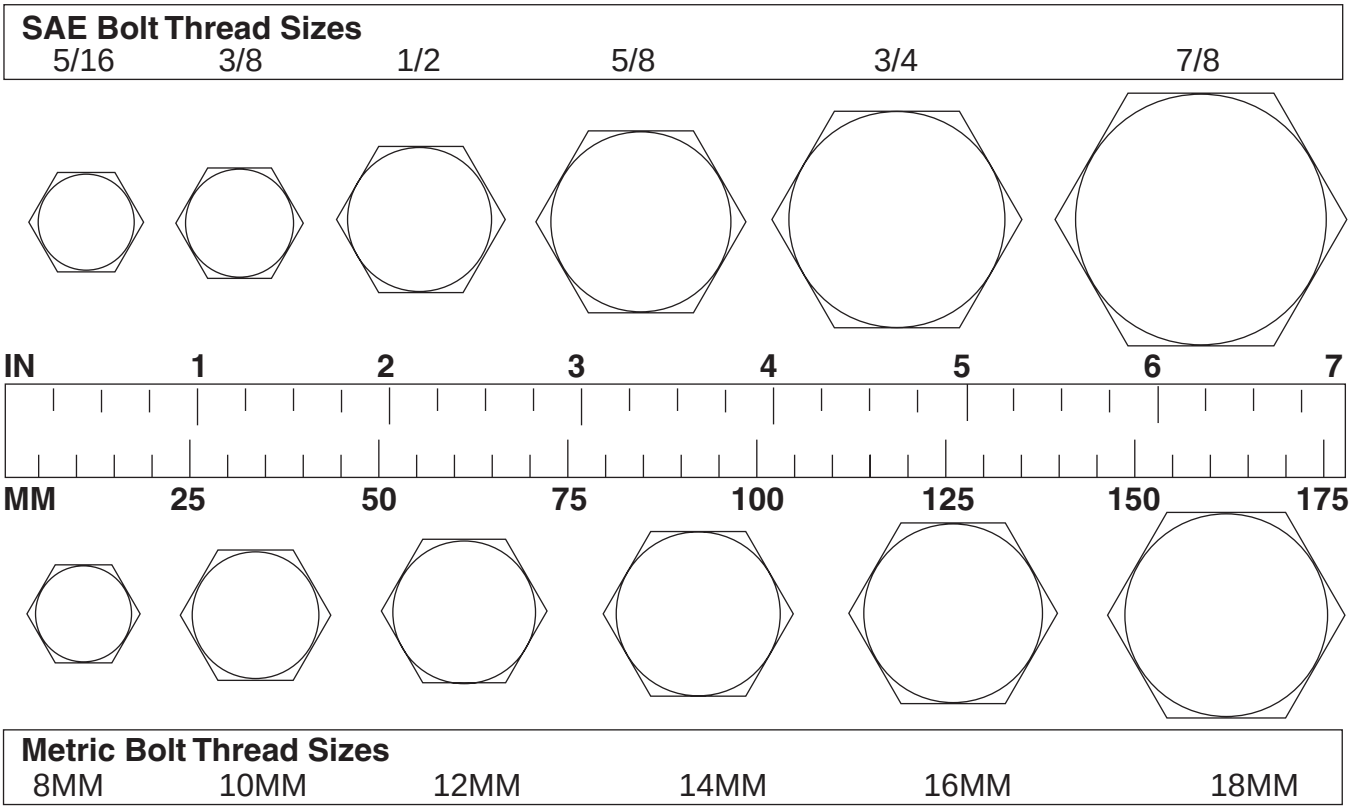
**Typical Washer Installations**




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

# INDEX

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

815-732-2141 tel
815-732-7580 fax
www.WoodsEquipment.com

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