



**OPERATOR'S AND MAINTENANCE MANUAL  
WITH PARTS LISTING**

**Long Reach Cutter  
Model: LR40142**



**⚠ DANGER**  
*Read this manual and the manual for  
your tractor carefully to acquaint yourself  
with both machines before operating!*

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**FOR SERIAL #s STARTING WITH 007251 AND  
ENDING WITH 007814  
RELEASED 03/04/09**

MODEL NUMBER \_\_\_\_\_  
 SERIAL NUMBER \_\_\_\_\_  
 DATE OF PURCHASE \_\_\_\_\_

Customer Pre-Operation Check List		Reference
<input type="checkbox"/>	Read, understand and follow the general safety rules listed in this manual.	Page 2
<input type="checkbox"/>	Check all shields and guards.	Page 2
<input type="checkbox"/>	Cut driveshaft to the proper length for your tractor.	Page 8
<input type="checkbox"/>	Add ballast to the rear tractor tires and space them six feet or wider apart.	Page 8
<input type="checkbox"/>	Add ballast and front weights to your tractor, if needed.	Page 8
<input type="checkbox"/>	The cutter hydraulic system must be compatible with your tractors open or closed hydraulic remote with the control valve properly adjusted.	Page 9
<input type="checkbox"/>	Do not exceed 5 GPM in tractor's hydraulic remote.	Page 10
<input type="checkbox"/>	Check all fluid levels, tractor and cutter.	Page 11
<input type="checkbox"/>	Turn gate valve under the oil tank "on".	Page 12
<input type="checkbox"/>	Check all grease fittings.	Page 15

### Service Notice

Please take extra care in cleaning the hydraulic quick coupling ends for both the control valve and your tractor remotes. If the ends are not cleaned properly, dirt and grime can get into the hydraulic control valve located on your mower. Contaminates in the oil WILL cause faulty operation or premature failure of components in the hydraulic control valve.

**NOTE:** KUBOTA TRACTOR requires replumbing of the hydraulic system. Please contact us for details.

### Disclaimer

**THIS CUTTER IS NOT DESIGNED TO CUT TREES FROM TOP TO BOTTOM (VERTICALLY) WITH THE CUTTER DECK IN THE HORIZONTAL POSITION (See Fig. 1).** The cutter is designed to trim branches with the cutter deck in the VERTICAL position while moving the tractor forwards or backwards, repositioning the cutter deck after each path (See Fig. 2).

The cutter is also designed to cut tree trunks and branches up to 4" in diameter with the "Hinged Gate" in the unlocked, secured raised position and the cutter deck in the HORIZONTAL position, perpendicular to the trunk and/or branch of the tree (See Fig. 3).

Any modes of operation other than the ones described above and shown below, while cutting trees and/or branches are not permitted and shall void the warranty. Moreover, HARDEE by EVH Manufacturing Company, LLC does not accept any liability to any person and/or material when the cutter is operated in violation of the above information.



Fig. 1

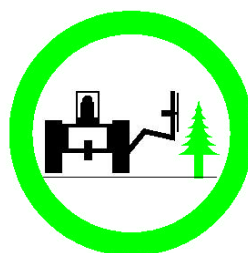


Fig. 2



Fig. 3

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## **Introduction**

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### **To Our Customers**

We at Hardee by EVH Manufacturing Company thank you for buying your new Long Reach Cutter.

We have tried hard to build a cutter to do the work you have in mind. Many hours of engineering, field-testing and improvement have gone into the design and fabrication of your cutter. We will strive to continue this quality of manufacturing in the future, always keeping the customer's needs clearly in mind.

The best performance of your cutter will depend on you. Proper lubrication, maintenance, hookup, adjustments and operation are essential for it to give you long and dependable service. However, as with any type of equipment, your cutter is designed to perform specific functions.

In this manual, you will find instructions on cutter features, maintenance and operation. If customer service or repair parts are required, contact your local Hardee dealer. Please specify model and serial number when ordering parts.

### **Owner's Responsibility**

The manufacturer has no control over the ultimate use of the cutter and therefore assumes no responsibility or liability for damage or injury resulting from the use of this machine.

The upkeep of the hydraulic cutter is the responsibility of the user. This upkeep includes all shielding, guards, and safety decals (OSHA Regulation 1928.57). You can obtain replacement parts from any authorized Hardee dealer.

Read this Operator's Manual before operating the cutter. Failure to do so could result in injury to the operator or to others. Remember that most accidents occur due to neglect or carelessness. The operator is responsible for inspecting and making repairs as may be necessary. Cleaning after each use and storage under a shelter will extend the life of the cutter.

### **Purpose of This Manual**

This manual provides information on safety, operation, adjustments, troubleshooting and maintenance of your new cutter. Please read and follow all the recommendations to help ensure that you get many years of service from your new Hardee cutter.

If you need additional copies of this manual, please contact your local Hardee dealer or download a copy from our website at [www.evhmfg.com](http://www.evhmfg.com).

### **Safety-Alert Symbol**



This symbol is the safety alert symbol. It appears throughout this manual to call your attention to instructions involving your personal safety and the safety of others. Failure to follow these instructions can result in injury or death.

### **Signal Words**

Safety signal words are words that call attention to the safety sign and designate a degree or level of hazard seriousness. The signal words used throughout this manual are DANGER, WARNING and CAUTION. Please read and follow all safety messages that have these signal words shown for your protection.



#### **DANGER**

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



#### **WARNING**

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



#### **CAUTION**

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

### **Customer Assistance**

The Hardee sales team would like you to be satisfied with your new Long Reach Cutter. If for some reason you have any questions about the information in this manual or have a problem with your cutter, please discuss the problem or question with the management of your local dealership. If further assistance is required, please contact:

**EVH Manufacturing Company, LLC**  
**Sales Department**  
 4895 Red Bluff Road  
 Loris, SC 29569  
 843-756-2555

## Safety Information

### General Safety Rules

This section of your manual will address the safe operation of your new cutter. We at Hardee strive to produce a machine that is both a quality product and safe to operate. Please take the time to read, understand and follow the safety rules listed below and throughout this manual.

Your safety also depends on you becoming familiar with the basic operation of your new cutter. You can find complete instructions for this cutter in the Operation Instruction section of this manual. We believe that using your cutter safely, in a safe environment will give you great results!

#### DANGER

*This machine is designed for use on a closed cab tractor only! If your tractor has an open cab, then it MUST be equipped with operator protective equipment in the form of shielding from thrown objects and Roll Over Protective Structure (ROPS) to operate this equipment safely.*

#### DANGER

*Rotary cutters have the inherent ability to throw debris considerable distances when the blades are allowed to strike foreign objects. The operator must use caution or serious injury may result. Be sure bystanders are at a safe distance at all times when the cutter is in use.*

#### WARNING

*Always keep your tractor level as you reach over ditches, etc. Be careful to keep ample distance between the rear tire and the top of the ditch bank to avoid a cave-in of the bank.*

#### WARNING

*Failure to keep the tractor level may result in loss of traction, tipping, rollover, property damage, personal injury or death.*

#### WARNING

*Never stand, or allow others to stand, under the boom or cutterhead at any time. Never park the unit without placing the cutterhead squarely and firmly on the*

*ground. Serious injury or death by crushing may occur in case of hydraulic failure.*

#### DANGER

*Do not look under the cutterhead or attempt to remove objects or branches from under the cutterhead while the tractor is running. Serious injury, loss of limb or death may result.*

#### DANGER

*Do not reach under the cutterhead at any time. Cutting blades may cause serious injury, loss of limb or disfigurement.*

#### WARNING

*Never use the cutter for a crane or lifting device of any kind. It is not designed for this purpose. Serious damage to unit may occur. Serious bodily injury may be incurred from this misuse.*

#### WARNING

*Never use the cutter for a man-lift or personnel lift. It is not designed for this purpose. Serious damage to unit may occur. Serious bodily injury may be incurred from this misuse.*

#### DANGER

*Never operate the cutter within 10 feet of overhead power lines or utility lines. Do not trim trees with power lines running through them. Serious injury or death by electrocution may occur.*

#### WARNING

*Never allow the cutter to impact rock piles, piles of gravel, steel guardrails or concrete abutments. Contact with these objects could cause blade failure. Serious machine damage, property damage or bodily injury may occur. Check the area for these items before mowing.*

#### DANGER

*Never attempt to use the cutter to remove brush or trees larger than 4 inches in diameter. Failure to use caution when cutting trees, may lead to the tree falling on the cutter deck and tipping the tractor over.*

## Safety Information

### Safety Decals

Your Hardee cutter ships with all safety decals in place. They are located in areas on the cutter that are potentially hazardous. Please locate, read and follow the information you find on these decals.

By law, you must replace any safety decals that are damaged or missing. You can order replacement decals from any local Hardee dealer. Just ask for part number 15845.

To apply the replacement decals:

- Clean the surface to place the new decal.
- Peel the decal away from the paper backing.
- Press firmly onto the clean surface.
- Squeeze out any air pockets using a straight edge.



Deck



Danger – Thrown Object



Oil Tank



Operating Safety and General Instruction



Danger – Rotating Driveline

## Safety Information

### Safety Decals, continued



Deck



Warning – Rotating Components



Weight Box



Danger – Crushing Hazard



Swing Post



Warning – High Pressure Fluid Hazard



Swing Post



Deck

# Safety Information

## Safety Decals, continued



Deck Linkage



Deck Linkage



1<sup>st</sup> Stage Boom



1<sup>st</sup> Stage Boom



Warning – Pinch Point



Deck



Blade Rotation



Hitch Frame



Danger – Crushing Hazard



## Safety Information

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### Safety Decals, continued



Deck



Danger – Keep Clear



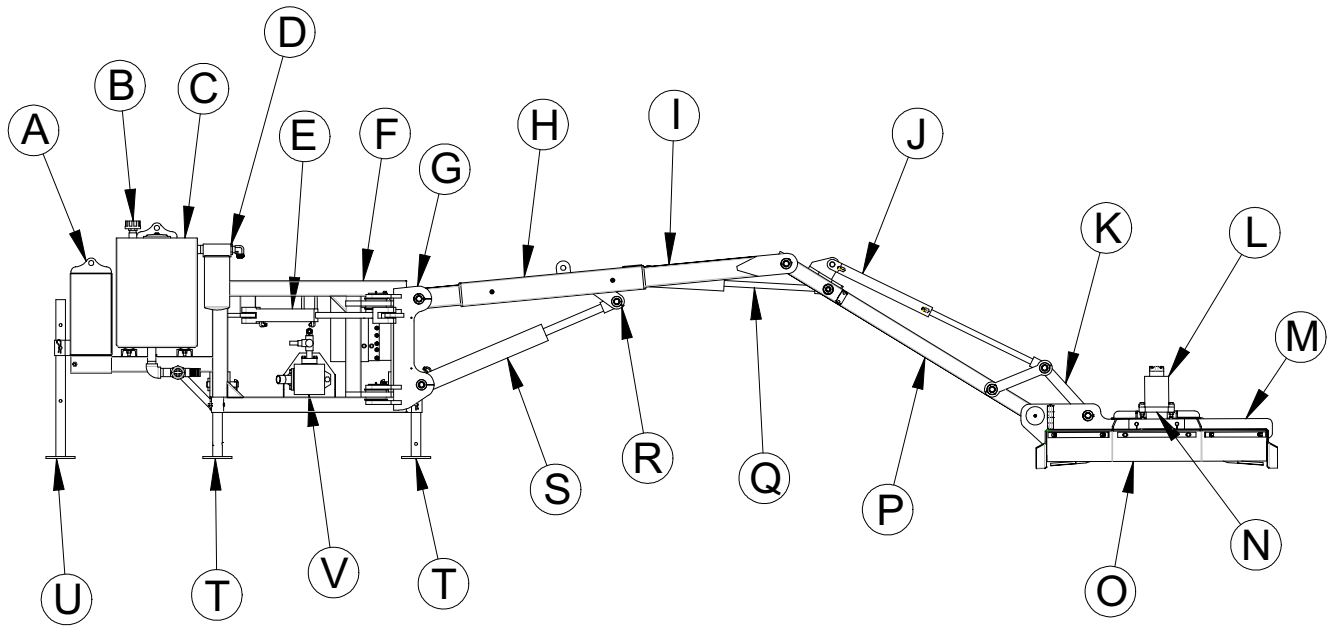
Hitch Frame



Danger – Electrocution, Falling and Crushing Hazard

## Assembly and Installation

### Component Identification and Terminology



A	Weight Box	L	Hydraulic Motor
B	Dipstick	M	Deck
C	Oil Tank	N	Motor Drive Housing
D	Return Filter	O	Rubber Shielding
E	Swing Cylinder	P	2 <sup>nd</sup> Stage (Reach) Boom
F	Hitch Frame	Q	2 <sup>nd</sup> Stage Cylinder
G	Swing Post	R	Lift Break-Away
H	Hose Guard	S	1 <sup>st</sup> Stage Cylinder
I	1 <sup>st</sup> Stage (Lift) Boom	T	Short Stand
J	Deck Cylinder	U	Long Stand
K	Deck Linkage	V	Hydraulic Pump

## Assembly and Installation

### Tractor Requirements

The Long Reach Cutter you have purchased is designed for use with tractors of 60 horsepower or above equipped with a (540 RPM 1 3/8" - 6 spline) rear power take-off (PTO).

Your tractor must also be equipped with a category 2 hitch or category 2 quick hitch to use this cutter.



To insure stability of your tractor, the rear tires should be spaced at their widest setting. We recommend six feet or wider. You should also add ballast to maintain proper steering control and balance. In addition, unless your tractor is 4-wheel drive, you may also need to add front weights. Please refer to the operator's manual for your tractor to determine the correct setup.



#### DANGER

*This machine is designed for use on a closed cab tractor only! If your tractor has an open cab, then it MUST be equipped with operator protective equipment in the form of shielding from thrown objects and Roll Over Protective Structure (ROPS) to operate this equipment safely.*

### Driveshaft Installation

The make of your tractor will determine the length of driveshaft you require to connect from the end of the pump shaft to the PTO connection of your tractor. This step may require cutting the standard driveshaft included with the Hardee cutter. We recommend contacting your local Hardee dealer for assistance.

#### Driveshaft Installation on Pump Shaft

Refer to Figure 1 for reference

- ✓ Verify that driveshaft is the proper length.
- ✓ Grease both pump shaft and driveshaft.
- ✓ Attach equipment end of driveshaft to pump.  
*Tractor end has a figure of a tractor stamped onto the guard.*
- ✓ Rotate driveshaft to line up holes for securing with the bolt and nut provided.
- ✓ Fix shaft guard to the cutter using anti-rotation chain.



Figure 1

### Tractor Hook-Up Procedures

- ✓ Connect joystick to 12-volt system.
  - Red wire to hot.
  - Green wire to ground.
- ✓ Mount the joystick control box firmly on the right hand side of your tractor cab.
- ✓ Hook tractor 3-point hitch to cutter hitch frame. The LR40142 is designed to work with a standard category 2 or category 2 quick hitch.



#### WARNING

*Before leaving the tractor seat, always engage the tractor brake and/or set the transmission of the tractor in parking gear. Stop engine and remove key. Always make sure that no one is between the tractor and the cutter when tractor is in motion.*

- ✓ Attach driveline to tractor (PTO shaft). (See below for instructions)
  - Verify that the shaft is sufficiently lubed before attachment.
  - Verify that drive shaft is the proper length.
- ✓ Connect joystick to quick disconnect on wire cover weldment.
- ✓ Hydraulic Hose Hook-up.

## Assembly and Installation



### DANGER

Never use hands or skin to check for hydraulic leaks, use cardboard or wood. High-pressure oil leaks can penetrate skin causing injury and gangrene. Always wear safety goggles when working around high-pressure lines.

- € Hook the hydraulic hoses from the control valve into a set of tractor remotes equipped with detent. (Refer to *Cylinder Hydraulics drawing on page 37*).
    1. Pressure line to top port (marked P).
    2. Return line to bottom port (marked T).
  - € Check all fluid levels, tractor and cutter.
 

*For best results use Hardee hydraulic oil, it's special formula will help prevent foaming – ask for it at your local Hardee dealer.*
  - € Move tractor hydraulic remote lever to detent position, power on control box.
  - € If the hydraulics do not operate, detent in other direction or flip hoses.
- J Raise all jack stands before moving cutter.

## Driveshaft Installation on PTO



### WARNING

Never attempt any checks, repairs or adjustments with the tractor engine running or the PTO engaged. Adjustment of rotating parts with tractor engine running may result in severe personal injury or death if the PTO accidentally engages.

- J Lift tractor PTO guard.
- J Pull U-joint guard back along driveshaft.
- J Press driveshaft yoke plunger in and slip driveshaft U-joint yoke onto splined PTO shaft. Ensure that yoke plunger returns to locked position.
- J Position U-joint guard over driveshaft U-joint.
- J Lower tractor PTO guard.
- J Fix shaft guard to tractor with anti-rotation chain.

## Hydraulic System Setup



### IMPORTANT

The hydraulic system setup information contained in the following pages should be used only as a guide. Consult your tractor manufacturer for more detailed information or for assurance that any continuous duty equipment will not overheat your hydraulic system.

The LR40142 is set-up at the factory as an open center hydraulic system. This means that it is for use with tractors that have an open center hydraulic system.

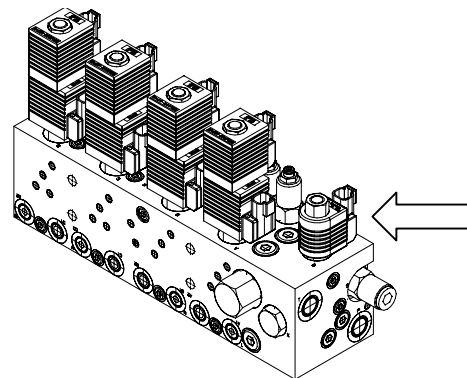
The LR40142 is designed to function with either open or a closed center hydraulic system. However, you must make some alterations for it to function efficiently and properly on closed center hydraulic systems.

Consult your tractor owner's manual and your tractor dealer to determine what type of hydraulic system your particular tractor has.

There is an optional closed center conversion plug available for "pressure compensating closed center systems". All "closed center load sense" (CCLS) systems require implements to be set to operate as open center systems. See the chart on page 10 for reference.

The procedure for installing this plug is as follows:

- J With the tractor engine off and parking lever set, disconnect the electrical plug to the main solenoid. (See below) Neatly tuck the male portion of this connection into the wire cover box, as it will no longer be used.
- J Remove the main solenoid coil, then remove the solenoid cartridge (the stem that the solenoid coil was attached to) completely from the cylinder control valve.



## Assembly and Installation

### Hydraulic System Setup, continued

- J Screw the closed center conversion plug into the cylinder control valve where the solenoid cartridge was.
- J Adjust the main relief valve. (See the picture below) **In closed center configuration, the main relief valve must be adjusted to its maximum setting.** If this is not done properly, your tractor will overheat!



- J Remove the relief valve cover using a 5/16" allen-wrench, and then tighten the 3/16" allen-head adjusting stem down completely! Replace and tighten the cover.
- J The conversion is now complete and the LR40142 is set-up for **PRESSURE COMPENSATING CLOSED CENTER HYDRAULIC SYSTEMS ONLY!**



#### IMPORTANT

If the LR40142 is set-up for closed center hydraulics (closed center conversion plug installed), **IT MUST NOT BE USED WITH OPEN CENTER TRACTORS.**



#### IMPORTANT

Listen to the tractor hydraulic system the first time you run the LR40142 after performing the conversion. If you hear the hydraulic system squealing and it sounds like oil is being forced over the relief valves, you may not have a closed center system or your main relief valve may not be set properly (refer to the main relief valve adjustment step above).

If this is the case, **DO NOT OPERATE YOUR TRACTOR IN THIS CONDITION.** Simply remove the conversion plug and reinstall the main solenoid.

Whether your tractor has an open or closed center system, another important consideration is the proper adjustment of variable flow remotes. The LR40142 control valve requires 5 GPM to be supplied from your tractor remotes. **DO NOT** operate your variable flow remotes above 5 GPM. A higher setting will cause the excess flow to be cycled back to your tractor and could cause overheating.

If you have any questions, consult your local Hardee dealer.

#### Working Safely with Hydraulic Lines

Purge all air from hydraulic system before attempting to raise or lower the cutter boom and deck.



#### DANGER

Stand clear if lowering or raising deck, hydraulic deck can fall suddenly from system failure.



#### DANGER

Do not use your hand or skin to check for hydraulic leaks, use cardboard or wood. High-pressure oil leaks can penetrate skin causing injury and gangrene. Consult a doctor immediately.

#### Hydraulic Set-Up Chart

Type of Hydraulic System	Plug
Open Center	Factory Standard (No Plug)
Pressure Compensating Closed Center	Closed Center Conversion Plug Required
Closed Center Load Sense (CCLS)	Factory Standard (No Plug)

## Operation Instruction

### Operation Instructions

#### During Operation



#### WARNING

Ensure that all bystanders are clear of the cutter before starting tractor engine. Objects thrown by the cutter blades can cause severe personal injury or death.

Before any operation of the cutter, be familiar with the locations and functions of the unit's controls. Being familiar with the cutter and its controls will increase efficiency and reduce the possibility of serious injury or damage to the unit.

The operator should work slowly and carefully until he feels comfortable with the cutter. Speed and skill will be attained much more easily if the necessary time is spent to familiarize yourself with the cutter and its operation.

Get into the habit of completing a walkaround inspection before use. This procedure is a simple method of inspecting your unit's condition by walking around and looking at each component of the unit, including the tractor. This procedure has been used by airline pilots for many years as a final inspection before flight and is also used by long distance ground transportation drivers on buses and trucks. During the walkaround, you will visually search your units tire condition, look for hydraulic leaks, fuel leaks, inspect hose condition and condition of hydraulic cylinders. Look for loose or worn components, see that all guards are in place, check blade condition, look for broken or inoperative lights and determine that it is or is not operable before use. We recommend that you follow this procedure before start up.

Daily Start-Up Checklist		
	Check	Section
<input type="checkbox"/>	Check All Fluid Levels, Tractor & Cutter, For best results, use Hardee hydraulic oil – part number 23333	-
<input type="checkbox"/>	Grease Points	Page 15
<input type="checkbox"/>	PTO Shaft, Check Grease	Page 15
<input type="checkbox"/>	Blade Tightness	Page 16

### Operating Environment

#### Application Do's and Don'ts

There are obvious and hidden potential hazards in operating this mower. **REMEMBER!** This machine is often operated in rough terrain conditions that include gullies, holes, slopes and hidden obstructions. Serious injury or even death may occur unless care is taken to assure the safety of the operator and bystanders in the area.

Included here is a list of safety messages, which should be followed. Observing these messages and using common sense learned from experience help eliminate the hazards of operating this and other machinery.



#### DANGER

Read this manual and the manual for the tractor carefully to acquaint yourself with both machines before operating. **REMEMBER,** power-driven equipment should be operated only by those trained and familiar with the operation and instructed to do so. Working with unfamiliar equipment or in unfamiliar conditions can lead to accidents.



#### WARNING

Before leaving the tractor seat, always engage the tractor brake and/or set the transmission of the tractor in parking gear. Stop engine and remove key.



#### DANGER

Never allow riders on tractor or equipment. Falling off can cause serious injury or death.



#### WARNING

Worn or dull cutter blades can cause excessive cutter vibration resulting in damage to the gearbox and structural damage to the cutter. You should replace or sharpen blades in pairs. Excessive vibration can cause rotating parts to break and fly off the cutter, causing serious injury or death to the operator or bystanders.



#### DANGER

Do not modify or alter this machine or any of its components or any equipment function without consulting EVH Manufacturing Company.

## Operation Instruction

### Using Your Cutter

#### Getting Started

You will need to spend some time getting the “feel” of your new cutter. Spend time reviewing the following steps before using your cutter for the first time. The time that you take will greatly enhance your ability to get the desired results when you begin mowing.

- ✓ Locate the joystick mounted on the right side of the tractor and move it through the positions shown on the instruction decal.
- ✓ The next step is to attach the cutter to the tractor, see the hook-up procedures on page 8 for complete instructions. After you have the cutter attached, double check to ensure that no part of the tractor is in contact with the cutter.
- ✓ Next, follow the instructions for installing the driveshaft and hooking-up the hydraulic system lines on page 9 of this manual. Check to see that all PTO guards are in place correctly.
- ✓ Connect joystick cable to the quick-connect on the valve cover box. Make sure that all hoses and the joystick connection cable will not contact the PTO shaft.
- ✓ Check the blades for sharpness. Check the blade carrier castle nut and both blade bolts for tightness. Verify that the gate valve under the oil tank is “on”. *The cutter is shipped with the gate valve in the “off” position.*

#### DANGER

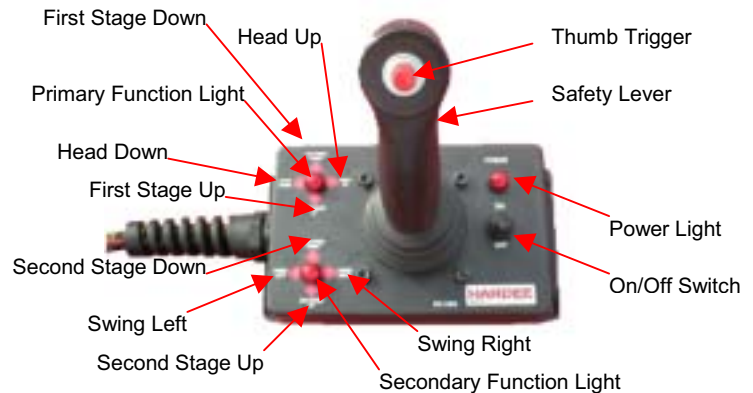
*Before proceeding, make sure that no other persons are in close proximity to the cutter!*

- ✓ With all controls in neutral, the tractor in park, the throttle in idle position and the joystick power switch off... Start the tractor engine.
- ✓ Slowly engage the tractor hydraulic system to detent position. Leaving the tractor PTO “off”.
- ✓ Now with the cutter under power, practice using the joystick to control the movement of the cutterhead and boom arms.

#### Joystick Control

- Turn “Power On” switch located to the right of the joystick control handle, “on”.

- Depress “Safety Lever” to control primary functions (head up, head down, first stage up, first stage down). “Primary Function Light” will indicate “on”.
- Depress “Safety Lever” and “Thumb Trigger” to work secondary functions (swing left, swing right, second stage up, second stage down). The “Secondary Function Light” will indicate “on”.



**Note:** *If the hydraulics do not function, detent in the other direction or flip hoses.*

If you feel like you need to adjust the speed of the cutter, refer to the instructions on page 17.

After you feel comfortable with the basic cutter control, the next step is to start the blades.

- ✓ Slowly increase the tractor throttle to a high idle speed and slowly engage the PTO.

#### DANGER

*Do not change the blade rotation direction! Blades must rotate in the clockwise direction indicated by the rotation decal on the mowing deck.*

- ✓ After the cutter is running smoothly, increase the tractor to 540 PTO RPM and lift the cutterhead off the ground. Swing the cutterhead to the mowing position, which is three o'clock on the right side of your tractor.
- ✓ Release the tractor from park and put the transmission in low range. You are now in mowing mode and are underway.

## Operation Instruction

The terrain and the kind of material being cut will determine your ground speed. Remember that you will need to raise and lower the cutterhead to follow the ground contour you are cutting.

### Boom Breakaway

The LR40142 is designed with an automatic breakaway system to protect the cutter booms. This works when the cutterhead contacts a solid obstruction or the cutterhead is “grounded” while the tractor is in motion. The breakaway is activated through the hydraulic valve and will function mowing both forward and backward.

When the cutterhead strikes a solid object the booms will begin to break back, IMMEDIATELY stop your tractor and adjust the position of the booms to clear the object.

If you “ground” the cutterhead and the booms begin to break back, simply lift the boom slightly to free the cutterhead, then swing the boom back into normal cutting position. See figure 2

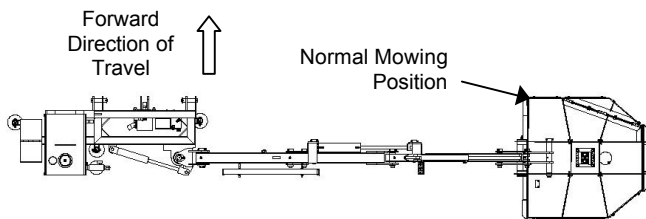


Figure 2

### Mowing in Reverse

Your Hardee unit can cut as easily when the tractor is moving in reverse as forward. The breakaway protection works in the same way. The only difference being you must swing the booms to the rear 10 – 15 degrees. This will allow for more boom breakaway travel. This space is critical so as not to bottom-out the boom arm. See figure 3

### Caution

*You will do severe damage to your cutter if you allow the boom arm to reach the bottoming-out point!*

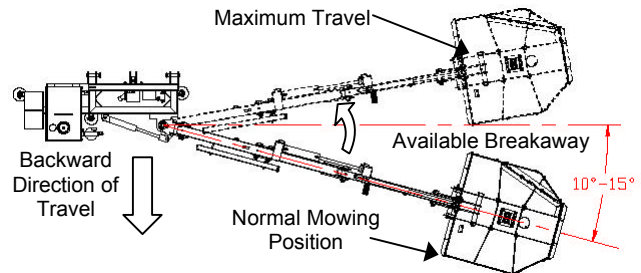


Figure 3

### Caution

*You must allow for the extra boom travel when mowing in reverse. See figure 3. If you have any questions about these instructions, please ask your local Hardee dealer immediately! Warranty claims for equipment used improperly will not be honored.*

### Side Dressing Trees

The design of your heavy-duty brush cutter will allow you to “side dress” trees if needed. To do this, raise the booms to the desired height and tilt the cutterhead to the vertical position. With the blades “on” move forward slowly, removing only approximately 12 inches of material per pass.

### DANGER

*Never operate the cutter within 10 feet of overhead power lines or utility lines. Do not trim trees with power lines running through them. Serious injury or death by electrocution may occur.*

### Cutting Larger Brush and Trees

A unique feature on the LR40142 is the cutterhead “Push Gate”. The push gate is used when you need to remove trees as large as 4 inches in diameter. This is accomplished by first positioning the push gate at a right angle to the tree you want to cut. Then apply slow steady pressure with the boom arm to slide open the push gate, exposing the blade tips to the tree. The tree will be neatly clipped and the push gate will immediately spring back to the closed position.



## Operation Instruction

We recommend removing small sections at a time, no more than two or three feet in length per pass. See *figure 4*



Figure 4

- ✓ Disconnect joystick cable at the junction plug on the black wire cover box.
- ✓ Unhook tractor hitch from 3-point frame on mower.

### Post Use Care

- Never leave driveshaft hanging down and touching the ground.
- Never leave quick couplers on hydraulic remote lines hanging on the ground.
- Store joystick inside in a dry place.

## DANGER

*Never attempt to use the cutter to remove brush or trees larger than 4 inches in diameter. Failure to use caution when cutting trees, may lead to the tree falling on the cutter deck and tipping the tractor over.*

### Unhook and Post Use Care

Before unhooking the tractor from your mower, always clean the unit thoroughly to remove any grass, mud or debris. This mower should always be stored on a hard level surface.

#### Unhooking the LR40142

- ✓ To unhook from your unit, first lower all jack stands to the storage position.
- ✓ Lower the tractor lift arms so that the mower will rest firmly and evenly on all jack stands.
- ✓ Lower the boom arms and cutter deck so that they too rest firmly and evenly on the ground.
- ✓ Be sure to relieve all hydraulic pressure on the boom arms and deck before unhooking.
- ✓ Disconnect hydraulic lines from tractor remotes.
- ✓ Disconnect driveshaft from tractor.

## Maintenance

### Maintenance and Service Schedule

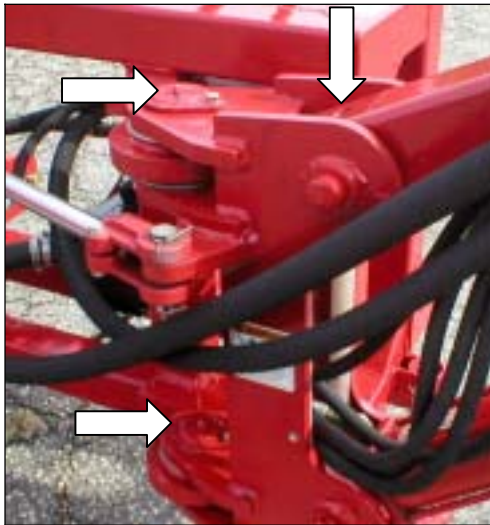
This section is dedicated to the maintenance of the LR40142. As with any piece of equipment, the performance and life span depends on the proper operation and maintenance.

#### DANGER

Never attempt any checks, repairs or adjustments with tractor engine running or the power take-off engaged. Adjustment of rotating parts while the tractor engine is running can result in serious personal injury or death if the PTO accidentally engages.

#### First Stage Boom

Inject with heavy multi-purpose grease. There are two grease fittings on the swing post.



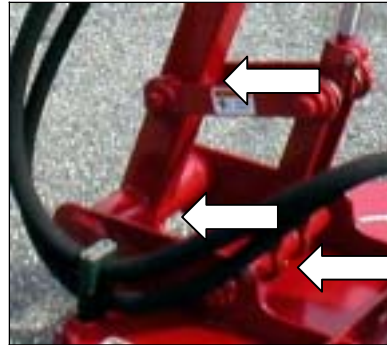
#### First Stage Boom to Second Stage Boom

Inject with heavy multi-purpose grease. There is a grease point at every hinge point.



#### Deck and Second Stage Boom

Inject with heavy multi-purpose grease.



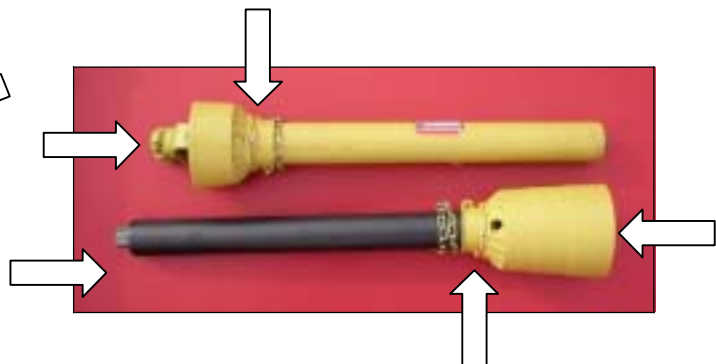
#### Hydraulic Motor Housing Assembly

Locate fitting on motor housing. Inject with 90W-gear oil.



#### Greasing PTO Driveshaft to Pump

Remove PTO shaft from cutter before greasing. Use heavy multi-purpose grease at all grease fitting and on shaft. Remember to grease the shield grease fittings as well as the u-joints.



## Maintenance

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### Replaceable Bushings

All pivot points are designed with replaceable bushings. They are all greaseable and should be checked for wear regularly. Locations and part numbers can be found by referencing the parts breakdowns located on pages 31-36.

### Inspection and Replacement of Blades

The cutting blades on the Hardee cutter are designed and made to exact specifications and should be replaced with only original Hardee parts. Always replace blades in pairs to retain balance on the blade holder. Never weld the blades, as this will change the temper of the steel. Never modify the blades. Check for cross sectional thickness (1/2") and deterioration of blades. Replace as necessary.

When the replacement of cutter blade is required, a few rules should be followed:

- Replace blades in pairs.
- Inspect bolt holes.
- If bolt holes are elongated, replace blade holder. *See instructions below.*
- Cutting heavy brush causes excess stress on the blade bolts, because of this they will require inspection that is more frequent.
- When replacing blades always replace bolts and nuts. Never reuse blade bolts and nuts.

### Inspection and Replacement of Blade Holder

#### Inspection

- ✓ First, completely extend boom. Rotate cutter deck all the way up; drop boom until deck rests on ground. Switch off tractor, secure parking brake and remove key.
- ✓ When inspecting, pay particular attention to any small hairline cracks between spindle bolt hole and blade bolt holes. This indicates metal fatigue from severe abuse and holder must be replaced.
- ✓ Blade and spindle bolts and nuts should be checked daily.

#### Replacement

- ✓ Remove cotter pin and castle nut.

- ✓ With an assistant, carefully remove the blade holder.
- ✓ Then position the new blade holder in place.
- ✓ Replace the castle nut and cotter pin. *See parts breakdown drawing on page 36 for reference.*

### Checking the Cutter Head Relief Valve

The LR40142 is equipped with a cutter-head relief valve that comes pre-set from the factory. This valve is bolted to the top of the pump (Item 35 on page 31). Before checking the pressure on the valve, make certain that a clean filter is installed and that the reservoir contains the correct amount of hydraulic oil.

The procedure to check the pressure on the cutter-head relief is as follows:

- ✓ Start the tractor and with the tractor in park, place the cutter-head on the ground. Engage the tractor PTO to power the cutter-head and increase engine speed until 540 PTO RPM is reached. Allow the mower to run at this speed for 3 to 5 minutes.
- ✓ Disengage the PTO and stop tractor engine.
- ✓ Remove the pump pressure line. Install a 3000 or 5000 psi pressure gauge into the 12-M-JIC outlet. The gauge should block off the pump outlet downstream of the relief valve. Place the loose pressure line in a clean container to catch any spillage.



### CAUTION

*Be sure all fittings are tight before proceeding!*

- ✓ Start the tractor engine and increase engine speed to 1200 **ENGINE** RPM. Engage tractor PTO and immediately observe the pressure reading and disengage tractor PTO. (If pressure reads 2500 psi or less, you may proceed.)
- ✓ Increase tractor engine speed to 540 PTO RPM. Engage tractor PTO and immediately observe the pressure reading and disengage tractor PTO.

**The correct pressure setting is 2500 psi.** If the reading is less than 2000 or more the 2500, contact your local Hardee dealer for assistance.

## Maintenance

### Checking the Cutter Head Relief Valve, continued

#### **CAUTION**

Never vary from the 2500-psi cutterhead pressure. Failure to comply with this specification will cause severe hydraulic heat, loss of power and damage to components.

#### **DANGER**

Exceeding 2500 psi will cause premature hose failure (rupture), and possible bodily injury or property damage.

### Adjusting Cylinder Speed

The LR40142 is equipped with several features that allow operator control over the travel speed of individual cylinders, or the entire system. Before adjusting any hydraulic settings, make certain that the tractor hydraulic reservoir is filled to the proper level and all hydraulic lines on the LR40142 are purged free of air.

#### To Adjust the Speed of all Hydraulic Cylinders in Unison

If the tractor is equipped with variable flow hydraulic remotes, it is not necessary to make any adjustments to the LR40142. Simply leave the unit set at the factory pre-sets, and adjust the variable flow remotes on the tractor to throttle back or increase the amount of fluid that is being sent to the LR40142. This will increase or decrease the speed of all hydraulic cylinders. **DO NOT** operate your variable flow remotes above 5 GPM. A higher setting will cause the excess flow to be cycled back to your tractor and could cause overheating.

#### To Adjust the Speed of Individual Hydraulic Cylinders

The cylinder control valve on the LR40142 comes equipped with a provision that will allow easy adjustment of the individual cylinder speeds. Work ports A1, B1, C2, and D2 are drilled and tapped to accept 1/16" NPT orifice plugs. See figure 5

Installing or changing the orifice in the work port where the cylinder is attached can change cylinder speeds. The smaller the orifice, the slower the cylinder speed.

NOTE: To install an orifice, the hydraulic hose and the 6-M-JIC X 6-M-ORB hydraulic fitting it attaches to must be disconnected from the valve.

#### **WARNING**

Hydraulic cylinder lines are under high pressure. Make sure that the booms and deck rest firmly on the ground, all hydraulic pressure is relieved, and tractor engine is off before removing hydraulic lines.

With hose and fitting removed from the work port, the orifice can be screwed in directly to the inner threaded hole in the work port. Be sure to keep the port and fittings free of dirt and metal shavings.

#### **CAUTION**

The control valve is made of aluminum and can be damaged by overtightening the orifice plug or fitting.

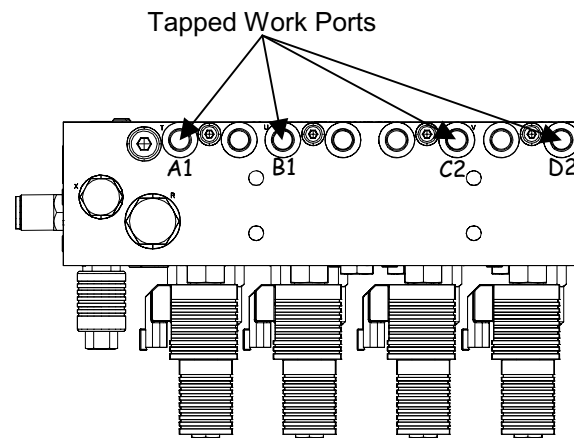


Figure 5

## Maintenance

### Adjusting the Cylinder Control Valve

The LR40142 comes from the factory with the cylinder control valve pre-set at the proper pressures. The cylinder control valve has a total of seven relief valves. There is a main relief (Item S), and six individual cylinder counterbalance valves (Items E, F, G, H, I and J). *The chart on page 19 lists the proper settings for these valves.*

*Note: When working with the control valve it may be necessary to first “break” the seal on the allen-head fittings by striking it firmly with a hammer. Taking care not to damage the aluminum valve block.*

The procedure for checking the pressures on the cylinder control valve is as follows:

#### Main Relief Valve

- ✓ Rest the deck of the LR40142 on the ground to relieve all pressures on the hydraulic lines.
- ✓ With the tractor engine off and parking brake set, remove the hydraulic test port plug (see page 20 for gauge port locations). Install a 3000 or 5000 psi pressure gauge with a 4-M-ORB fitting into the hydraulic test port and place the gauge where you can easily see it from a safe distance.
- ✓ Start the tractor and bring the engine up to operating speed (540 PTO RPM). Engage the tractor hydraulic remote, raise the cutter deck off the ground, and swing the boom so that it is straight behind the tractor.
- ✓ Activate the joystick in the “HEAD UP” position until the deck cylinder fully retracts. Continue to hold the joystick in this position and have someone read the pressure on the gauge.



#### WARNING

*While reading the gauge, be careful not to stand in an area where inadvertent movement of the booms could trap or crush you. If you fail to heed this warning, **SERIOUS INJURY OR DEATH COULD OCCUR.***

The correct pressure setting for the main relief is 2500 psi. See Figure 6 for location.

To increase or decrease pressure, remove the relief valve cover using a 5/16” allen-wrench, then turn the 3/16” allen-head adjusting stem.

NOTE: The allen-head valve adjusting stem increases pressure when turned clockwise and decreases pressure when turned counterclockwise. Pressure increases or decreases rapidly with only a slight movement. Move adjusting stem in increments of ¼ turn or less.



#### CAUTION

*NEVER attempt to adjust the valve when in the “on” (loaded) position. Always make adjustments in the “off” (neutral) position with the tractor engine turned off.*



Figure 6

When 2500 psi is obtained, replace the relief valve cover. Then re-test the pressure to be sure 2500 psi is retained.

- ✓ When the adjustment is complete, rest the cutter deck back on the ground to relieve pressure in the hydraulic lines. Remove the pressure gauge and re-install the hydraulic test port plug.

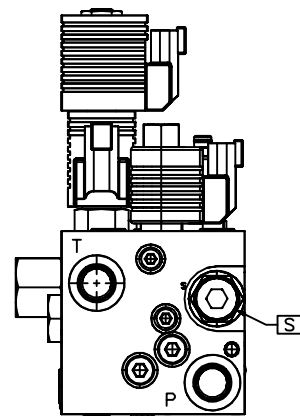
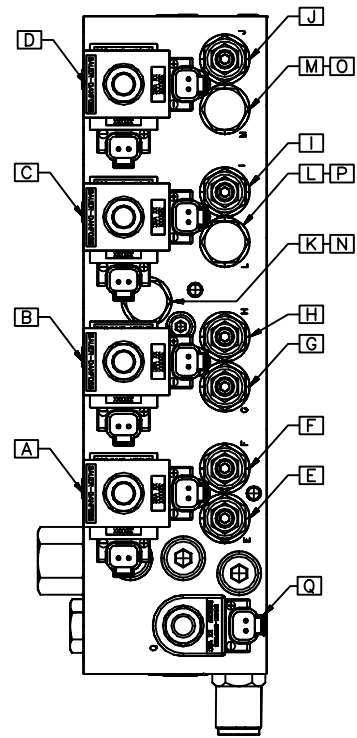
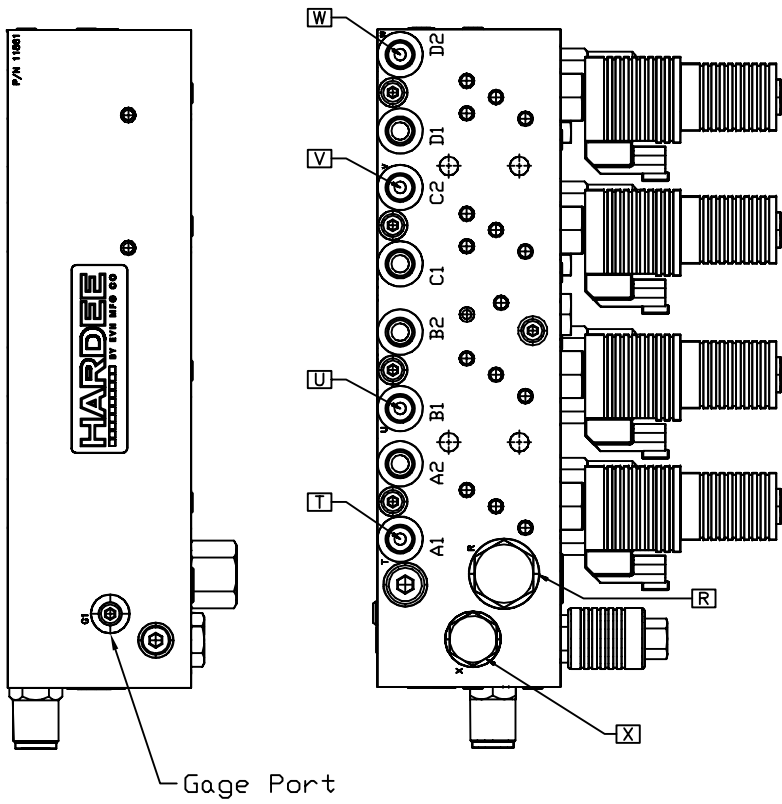
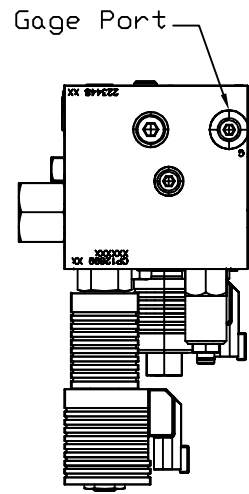
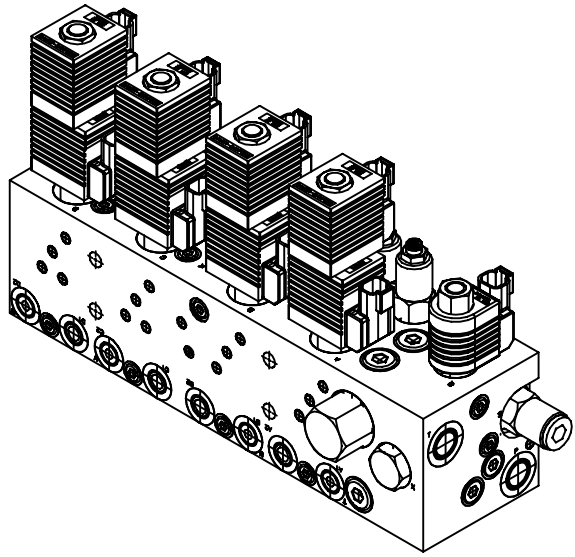
#### Individual Cylinder Counterbalance Valves (E, H, I and J)

Each cylinder has counterbalance valves that provide both work port relief and load control. These valves are 100% inspected and pre-set from the factory to ensure the proper settings. Do not alter the settings on these valves.

If you need assistance, contact your local Hardee dealer.

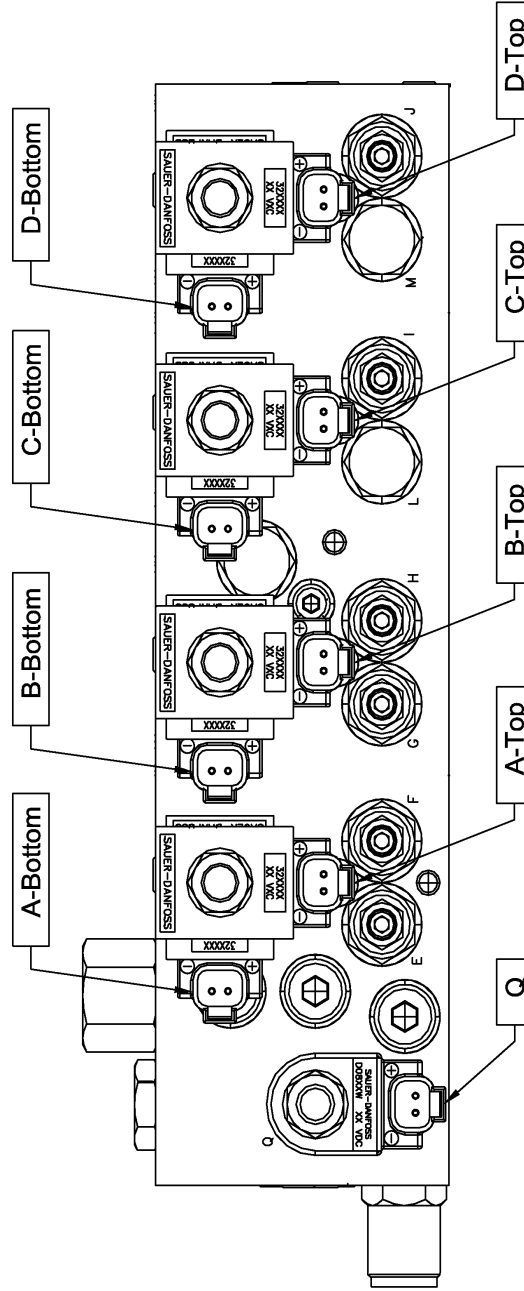
## LR40142 Control Valve Port Listing

Item	Description	Setting	Torque	Coil Nut
A	Solenoid Valve		15 ft lbs.	2.5 ft lbs.
B	Solenoid Valve		15 ft lbs.	2.5 ft lbs.
C	Solenoid Valve		15 ft lbs.	2.5 ft lbs.
D	Solenoid Valve		15 ft lbs.	2.5 ft lbs.
E	Counterbalance	1200 PSI	33 ft lbs.	
F	Counterbalance	1100 PSI	33 ft lbs.	
G	Counterbalance	1650 PSI	33 ft lbs.	
H	Counterbalance	600 PSI	33 ft lbs.	
I	Counterbalance	3500 PSI	33 ft lbs.	
J	Counterbalance	2000 PSI	33 ft lbs.	
K	Check Valve		33 ft lbs.	
L	Check Valve		33 ft lbs.	
M	Check Valve		33 ft lbs.	
N	Piston Ref. 621459		33 ft lbs.	
O	Piston Ref. 621459		33 ft lbs.	
P	Piston Ref. 621459		33 ft lbs.	
Q	Solenoid Valve		15 ft lbs.	2.5 ft lbs.
R	Priority Flow Control	5.0 GPM	33 ft lbs.	
S	Relief Valve	2500 PSI		
T	1/16-27 NPTF Orifice	1200 PSI		
U	1/16-27 NPTF Orifice			
V	1/16-27 NPTF Orifice			
W	1/16-27 NPTF Orifice			
X	Check Valve		44 ft lbs.	



### LR40142 Valve / Joystick Wiring Schematic

Function	Cylinder Port	Valve Port	Coil	Wire Color (+)	Pin No.	Wire Color (-)	Pin No.	Thumb Switch	Handle Position
Swing (Boom) Right	Rod	A1	A - Top	Orange	19	White	11	Closed	Right (E)
Swing (Boom) Left	Cap	A2	A - Bottom	Orange / Black	8	White	11	Closed	Left (W)
1st Stage Up	Cap	B1	B - Top	Red	9	White	11	Open	Down (S)
1st Stage Down	Rod	B2	B - Bottom	Red / Black	17	White	11	Open	Up (N)
2nd Stage Down	Rod	C1	C - Top	Green	16	White	11	Closed	Up (N)
2nd Stage Up	Cap	C2	C - Bottom	Green / Black	13	White	11	Closed	Down (S)
Head Down	Cap	D1	D - Top	Blue	18	White	11	Open	Left (W)
Head Up	Rod	D2	D - Bottom	Blue / Black	12	White	11	Open	Right (E)
Main	N/A	N/A	Q	Black	2	White	11	Any	Any
Float	N/A	Float	Float	Gray	1	White	11	Any	Any





**Maintenance****Routine Maintenance Checklist**

Interval	Item	Check	Lube	Change	Comments
Daily Or 10 Hours	Pump Drive Shaft		•		
	Pivot Points		•		
	Grease Fittings		•		
	Blades	•			Change If Damaged
	Blade Bolts (Blade To Disk)	•			
	Blade Holder Nut	•			
	Spindle Bolts (Spindle To Deck)	•			
	Main Frame And Deck Bolts	•			
	Rubber Shielding	•			Change If Damaged
Weekly Or 50 Hours	Hydraulic Return Filter			•	Change After 1st 50 Hours, Then Every 500 Hours
	Hydraulic Fittings	•			
Monthly Or 150 Hours	Tank Breather	•			
	Hydraulic Fluid Level	•			
Seasonal Or 500 Hours	In Tank And Return Hydraulic Filters			•	
	Replaceable Bushings	•	•	•	Replace If Worn

## Troubleshooting

### Troubleshooting Guide

#### Hydraulic System, Blade System, Pump, Motor, Fluid Lines

<b>Problem</b>	<b>Possible Cause</b>	<b>Solution / Correction</b>
Cylinder Will Not Operate	No Power To Joystick	Repair / Replace Connections
	Fuse Blown Inside Joystick	Replace Fuse
	Joystick Not Connected To A 12-Volt System	Connect To 12-Volt Power Supply
	Joystick Not Connected To Valve	Examine Quick Connection To Valve
	Valve Master Solenoid Not Functioning	Repair Electrical Connections To Solenoid Or Replace Solenoid
	Tractor Remotes Not Engaged	Engage Remote
	Tractor Remotes Engaged In Reverse	Engage Remotes Opposite Way Or Switch Hydraulic Lines In Tractor Remotes
Head Drifts Back When In Operation	Improper Relief Valve Setting	Adjust Relief Valves To Specifications (Refer To Pages 18 - 19)
	Cylinder Leakage	Repair / Replace Cylinders
Boom Drifts Down	Improper Relief Valve Setting	Adjust Relief Valves To Specifications (Refer To Pages 18 - 19)
	Cylinder Leakage	Repair / Replace Cylinders
Leaking Motor	Motor Seal Blown	Repair / Replace Seal And Check Filter For Blockage (Repair / Replace Filter)
Blades Loose Speed In Cutting	Improper Relief Valve Setting	Check Relief Valve Setting (Refer To Page 16)
		Repair / Replace Relief Valve
Pump Whines	Worn Or Damaged Pump	Repair / Replace Pump
	Improper Oil In System	Replace Oil
		Requires Hardee Oil Part NO 23333 Or Comparable Oil With Proper Viscosity
	Pressure Setting On Relief Valve Too Low	Check Relief Valve Setting (Refer To Page 16)
Motor Whines	Worn Or Damaged Motor	Repair / Replace Motor
	Improper Oil In System	Replace Oil
		Requires Hardee Oil Part NO 23333 Or Comparable Oil With Proper Viscosity
	Pressure Setting On Relief Valve Too Low	Check Relief Valve Setting (Refer To Page 16)
Motor Seal Continually Blows Out	Internal Popit Valve Damaged	Replace Popit Valves
Unit Vibrates Severely	Broken Blade	Replace Blades, Blade Bolts And Nuts (Refer To Page 16)
	Blade Holder Loose	Repair / Replace Blade Holder (Refer To Page 16)
	Loose Output Shaft	Repair / Replace Shaft's Bearings In Cutter Head Housing
Cutter Head Grinds And Roars When Operating	Worn Bearings Or Improper Lubrication In Cutter Hydraulic Motor Housing	Repair / Replace Components (Bearing, Seals And Housing) As Required

## Troubleshooting

### Troubleshooting Guide, continued

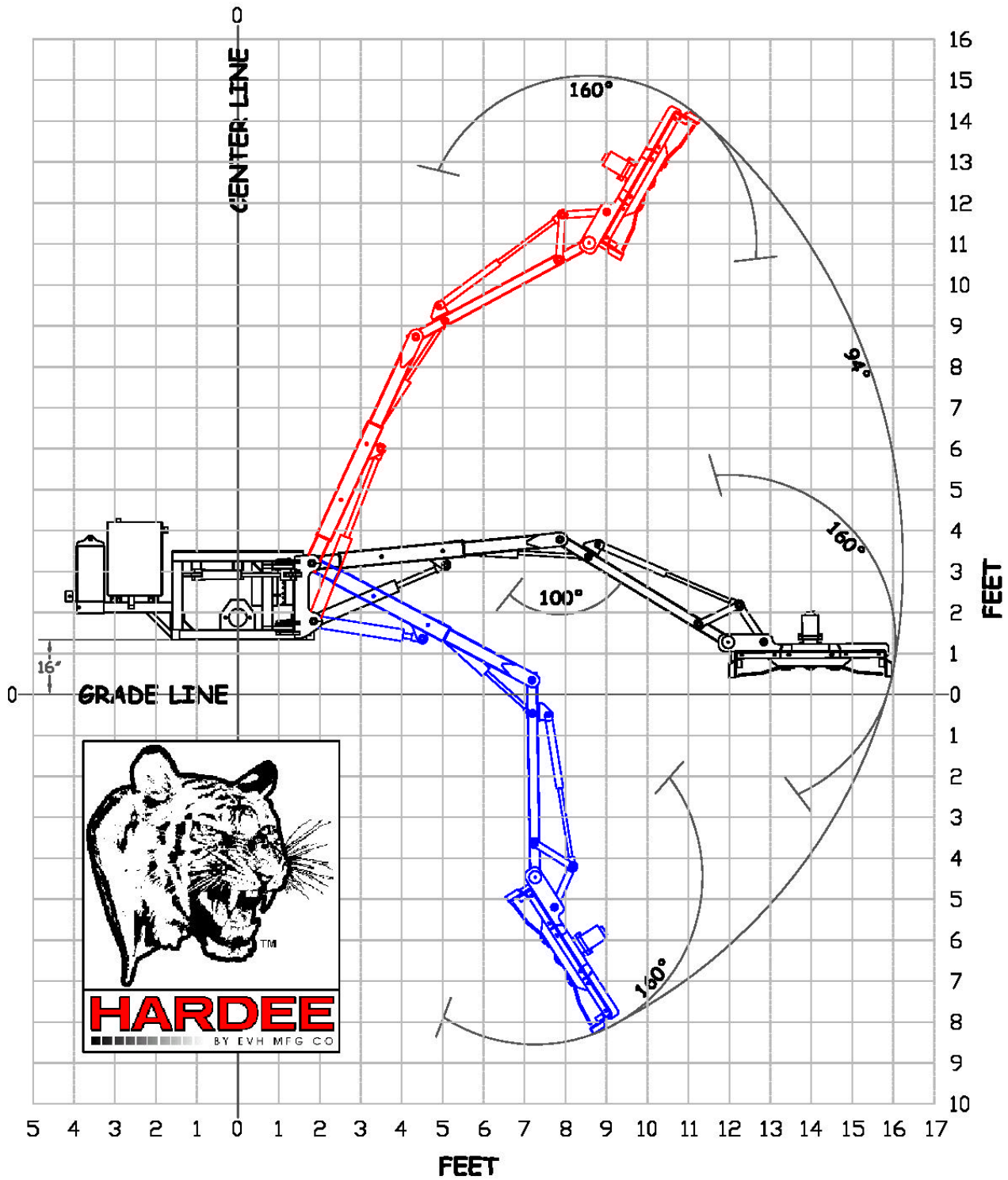
#### Hydraulic System, Blade System, Pump, Motor, Fluid Lines

Problem	Possible Cause	Solution / Correction
Individual Cylinders Leak Down	Blown Or Worn Cylinder Packing	Repair / Replace Cylinder
Relief Valve Will Not Adjust To Specifications	Defective Or Worn Valve Seat	Repair / Replace Relief Valve And Adjust To Specifications
	Hydraulic Valve Cracked Internally	Repair / Replace Valve
	Improper Oil	Repair / Replace Oil (Use Hardee Oil Part No. 23333)
No Power To Control Box	No Power To Joystick	
	Improper Connection To Joystick	Repair / Replace Connections
	Fuse Blown Inside Joystick	Replace Fuse
	Joystick Not Connected To A 12-Volt System	Connect To 12-Volt Power Supply
Filter Gauge Is In The Red At All Times	Filter Restricted	Repair / Replace Filter
	Bad Gauge	Repair / Replace Gauge
	Hydraulic Oil Too Heavy For Region Or Climate	Replace Oil
PTO Shaft Won't Telescope	PTO Shaft Not Lubed Properly	Lube Driveshaft (Per Daily Routine Check Sheet On Page 15)
	Bent Shaft	Replace PTO Shaft
Excessive Slack In Boom Hinges	Pins Worn	Repair / Replace Pins
	Bushing Worn	Repair / Replace Bushing
Beams Squeak When Operating	No Lubrication Or Improper Lubrication	Lube Hinge Points (Per Instructions On Page 15)
	Defective Lube Fittings	Repair / Replace Fittings
Boom Operates Erratically	Speed Is Too Fast	Adjust Flow Rate In Tractor Remote
	Speed Is Still Too Fast	Adjust Individual Cylinder Speeds (Per Instructions On Page 17)
	Air In Lines	Purge Hydraulic Lines
Blades Won't Start-Up	Oil Flow Restricted	Open Gate Valve
		Repair / Replace Hydraulic Lines
		Replace In-Tank Filter

## Specifications

### Summary of Specifications

Model	LR40142
Approximate Weight (lbs.)	1,950 - Ready To Mow
Blade Tip Speed (ft/min)	14,720
Blades	½" X 3", Free Swinging
Cutting Capacity / Suggested Usage	Grass, Heavy Brush Up To 4" In Diameter
Cutting Width	42"
Deck Height	7 ¾"
Deck Thickness	10 Gauge
Driveline	Category 3
Driveline Protection	Hydraulic Relief Valve
Hitch	Combination Category 2 And Category 2 Quick Hitch
Motor	Hydraulic Vane Motor
Overall Length	243 ¾"
Overall Width	46"
Transport Width	67" – Unit Fits Within Tractor Tires Set On 6 Foot Spacing
PTO Operating Speed	540 Rpm
Pump	Hydraulic Vane Pump
Round Blade Holder	Standard
Rubber Shielding	Standard – Front & Rear
Skids	Standard – Weld On
Tractor HP Required	60 And Up
Reach At Grade ( From Center Line)	192"
Cutting Height Above Grade	180"
Cutting Height Below Grade	102"
Topping Height Above Grade	132"
Topping Height Below Grade	60"
Swing Travel	110°
1 <sup>st</sup> Stage Boom Articulation	94°
2 <sup>nd</sup> Stage Boom Articulation	100°
Cutter Deck Articulation	160°
Cutter Deck Articulation With 1 <sup>st</sup> Stage Boom	254°
Hydraulic Oil System Capacity	35 Gallons
Controls	Cab Mounted Joystick



## Parts Listing For Long Reach Cutter LR40142

Item	Part Number	Qty.	Description
1	10020	8	Hex Bolt 5/16" X 2 1/2" Gr.5 Plated
2	10021	1	Hex Bolt 5/16" X 3" Gr.5 Plated
3	10031	3	Hex Bolt 3/8 X 1 Gr.5 Plated
4	10032	11	Hex Bolt 3/8 X 1-1/2 Gr.5 Plated
5	10039	4	Hex Bolt 3/8 X 5 Gr.5 Plated
6	10052	4	Hex Bolt 7/16 X 2 Gr.5 Plated
7	10071	7	Hex Bolt 1/2 X 1 Gr.5 Plated
8	10074	2	Hex Bolt 1/2 X 2-1/2 Gr.5 Plated
9	10092	2	Hex Bolt 5/8 X 2 Gr.5 Plated
10	10154	10	Lock Nut 5/16" Plated
11	10162	4	3/8" Hex Nut (Gr.5 Plated)
12	10164	2	Hex Nut 1/2" Plated
13	10166	6	Lock Nut 5/8 Plated
14	10173	1	Castle Flange Nut
15	10175	17	3/8" Locknut (Gr.5 Plated)
16	10176	7	1/2" Locknut (Gr.5 Plated)
17	10181	1	Lockwasher 5/16" Plated
18	10182	3	Lockwasher 3/8 Plated
19	10183	4	Lockwasher 7/16 Plated
20	10184	2	Lockwasher 1/2 Plated
21	10185	4	Lockwasher 5/8" Plated
22	10196	2	7/16" Locknut (Gr. 5 Plated)
23	10202	22	3/8" Flatwasher (Plated)
24	10204	4	1/2 Flatwasher (Plated)
25	10207	7	Flatwasher 1 Plated
26	10216	4	2" Type "A" Plain Washer (4 1/2" O.D. X 2 1/8" I.D. 3/16" THICK)
27	10252	1	Cotter Pin 3/16" X 2" Plated
28	10311	2	Blade Bolt Nut
29	10312	2	Blade Bolt Lockwasher
30	10313	2	1 1/4" Blade Bolt
31	10322	8	1/4" Grease Fitting
32	10346	2	3 Pt. Snap Pin (Lynch Pin)
33	10368	1	1-1/4" Gate Valve
34	10372	1	1/4" Drain Valve
35	10375	1	Relief Valve
36	10386	1	O-Ring
37	10387	1	O-Ring
38	10390	3	Clip Pin (1/8 X 2)
39	10393	3	Universal Clevis Pin

## Parts Listing For Long Reach Cutter LR40142

Item	Part Number	Qty.	Description
40	10466	2	Cat. 2 Lower Hitch Pin
41	10501	1	Breather / Dipstick
42	10502	1	Reservoir Cover
43	10510	1	Pressure Gauge
44	10586	2	1/2" X 86" Pressure Hose W/ 8-F-JIC X 8-M-NPT Ends
45	10601	1	Driveshaft
46	10236	3	Cotter Pin (1/8" X 1")
47	10366	1	Strainer, 60 Mesh
48	11673	1	Joystick
49	11675	1	Return Filter Assembly
50	11688	1	Head For Hydraulic Filter
51	11703	2	3/4" Street Elbow
52	11714	6	6-M-JIC X 6-M-ORB Straight
53	11767	1	Filter Element
54	11775	1	Hydraulic Pump
55	11846	1	Hydraulic Motor Housing Assembly
56	11847	1	Hydraulic Vane Motor
57	16162	1	O-Ring
58	24466	1	Rubber Shield Flat - Short
59	11861	1	Cylinder Control Valve
60	11862	2	3/8" X 25" Pressure Hose W/ 6-F-JIC Swivel Both Ends
61	11863	1	3/8" X 26" Pressure Hose W/ 6-F-JIC Swivel Both Ends
62	11864	1	3/8" X 46" Pressure Hose W/ 6-F-JIC Swivel Both Ends
63	11865	1	3/8" X 93" Pressure Hose W/ 6-F-JIC Swivel Both Ends
64	11866	1	3/8" X 100" Pressure Hose W/ 6-F-JIC Swivel Both Ends
65	11867	1	3/8" X 112" Pressure Hose W/ 6-F-JIC Swivel Both Ends
66	11868	1	3/8" X 135" Pressure Hose W/ 6-F-JIC Swivel Both Ends
67	11869	1	3/4" X 96" Pressure Hose W/ 12-F-JIC Swivel Both Ends
68	11870	1	1" X 109" Pressure Hose W/ 16-F-JIC Swivel Both Ends
69	11872	4	6-M-NPT X 6-M-JIC 90 Deg. Elbow
70	11874	1	8-M-NPT X 6-M-JIC 45 Deg. Elbow
71	11876	1	Wiring Harness (Pigtail)
72	11877	2	Pressure Flange Set W/Bolts. L.W. & Seal (#16)
73	11878	1	3/4" X 106" Pressure Hose W/12-M-JIC & #16 Flange 90 Deg. Ends
74	11879	1	1" X 106" Pressure Hose W/16-M-JIC & #16 Flange 90 Deg. Ends
75	11882	4	3/16" X 1.072" Pop Rivet
76	13532	2	3/4" Hose Clamp
77	13535	4	1-1/2" Hose Clamp
78	13557	2	3/4"-M-NPT X 3/4" Metal Hose Barb

## Parts Listing For Long Reach Cutter LR40142

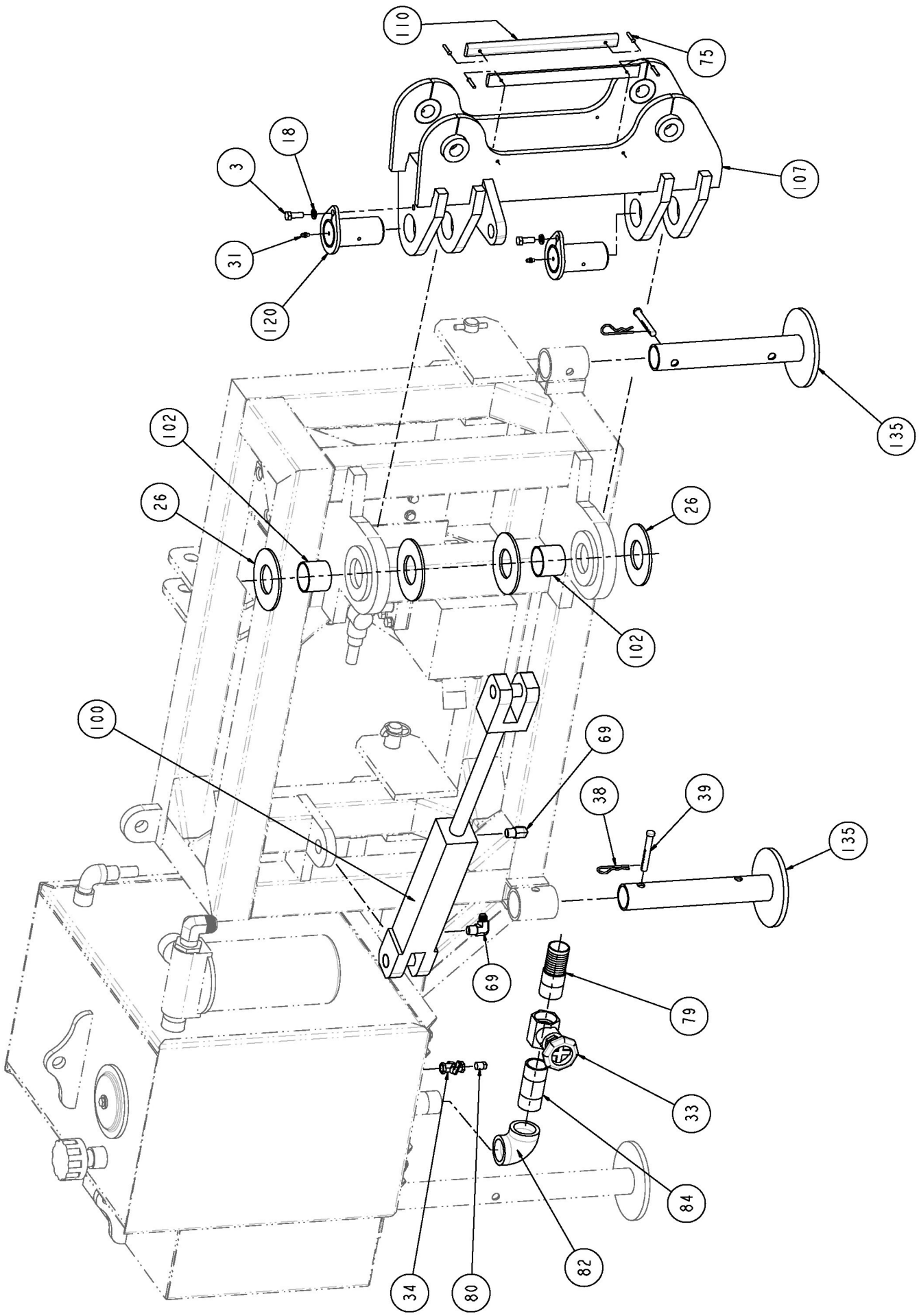
Item	Part Number	Qty.	Description
79	13563	1	1-1/4"-M-NPT X 1-1/2" Metal Hose Barb
80	13591	1	1/4" NPT Plug
81	13675	2	3/4" NPT X 1-1/2" Metal Nipple
82	13697	1	1-1/4" NPT Female Threaded Elbow
83	13758	1	20-M-NPT X 16-F-NPT Reducer
84	13778	1	1-1/4" X 3-1/2" Long NPT Nipple
85	13905	1	6-M-JIC X 8-M-NPT Elbow
86	13909	2	6-M-JIC X 6-M-ORB 90 Deg. Elbow
87	11505	2	8-M-JIC X 8-M-ORB 90 Deg. Elbow
88	13974	1	16-M-JIC X 16-M-NPT 90 Deg. Elbow
89	13976	1	12-M-JIC X 12-M-NPT 90 Deg. Elbow
90	15237	2	Blade
91	15251	4	1" Hose Clamp Half
92	15252	4	3/4" Hose Clamp Half
93	15253	4	Hose Clamp Stack Bolts
94	15254	2	Hose Clamp Safety Plate
95	15255	2	Hose Clamp Cover Plate
96	15256	4	Hex Bolt (1/4" X 2-3/8" Gr. 5 Plated)
97	15833	1	3 1/2" Cylinder (32 1/4" To 54 1/4")
98	15834	1	2" Cylinder (30 1/4" To 50 1/4")
99	16141	1	2 1/2" Cylinder (24 1/4" To 38 1/4")
100	15836	1	2 1/2" Cylinder (20 1/4" To 30 1/4")
101	15838	10	1" X 1-1/2" Bearing
102	15839	2	2" X 1-3/4" Bearing
103	22810	1	LR40142 Blade Holder Assembly
104	22811	1	Hitch Frame Weldment
105	22830	1	Wire Cover Weldment
106	22833	1	LR40142 Fluid Connector Weldment
107	22835	1	Swing Arm Weldment
108	23157	1	3/4" X 31" Relief Hose For LR40142
109	23370	1	1 1/2" X 31" Suction Hose
110	22842	2	Hose Wear Guard For LR40142
111	22861	1	First Stage Boom Weldment
112	22862	1	Second Stage Boom Weldment
113	22865	1	H-Bracket Weldment
114	24425	1	Deck Weldment For LR40142
115	22878	1	Deck Clevis Weldment
116	22880	1	Linkage Weldment (With Holes)
117	22881	1	Linkage Weldment (Without Holes)

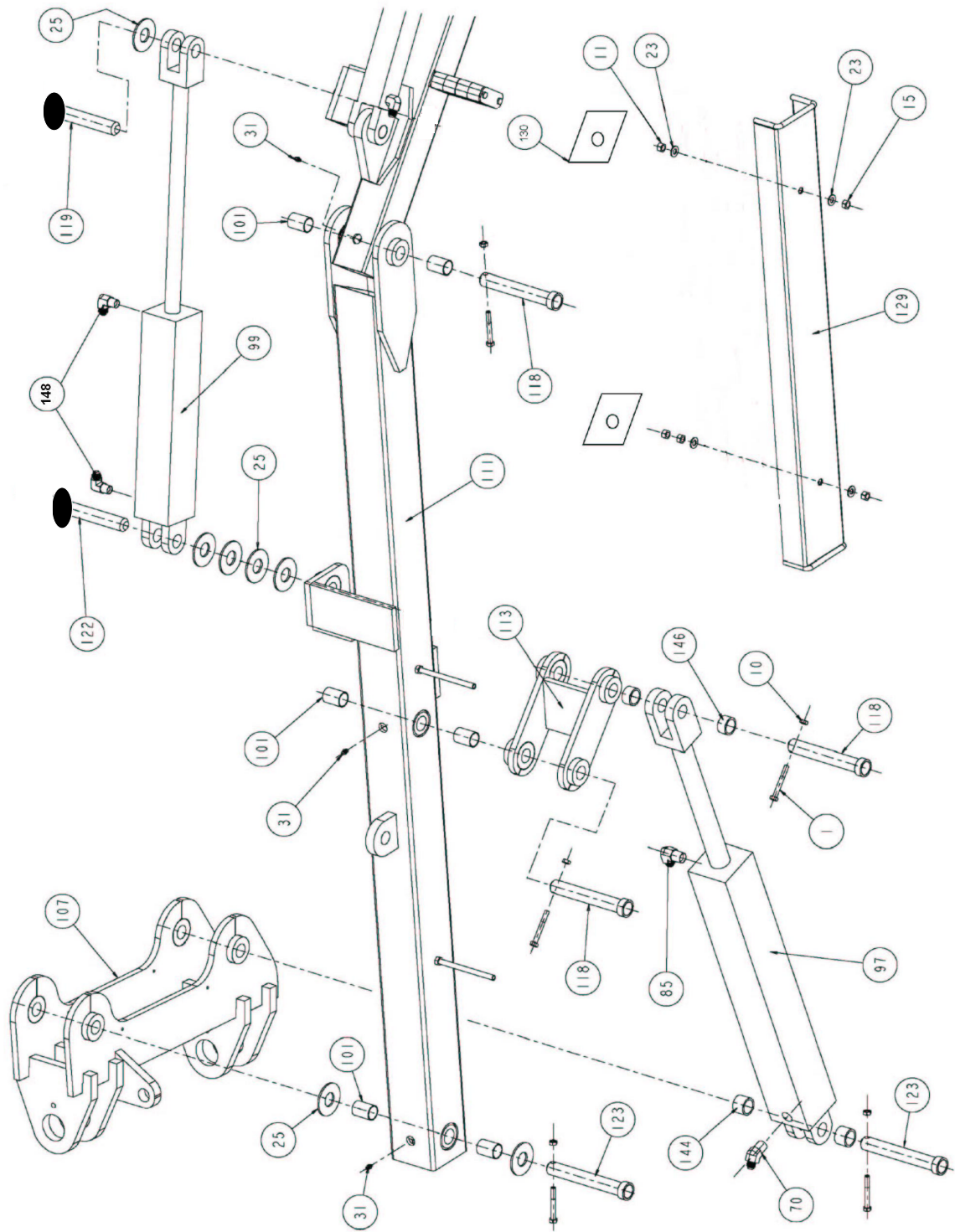


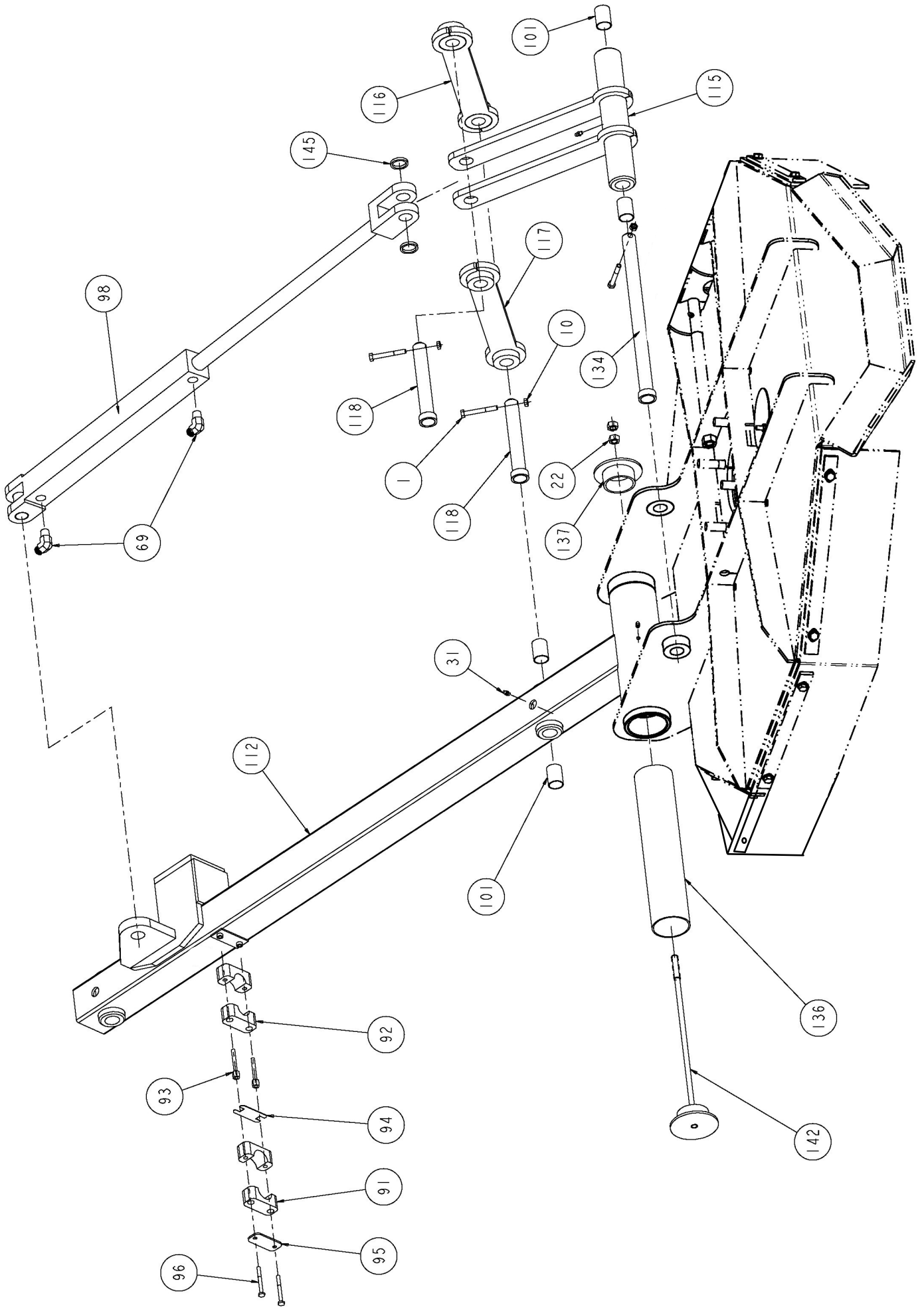
## Parts Listing For Long Reach Cutter LR40142

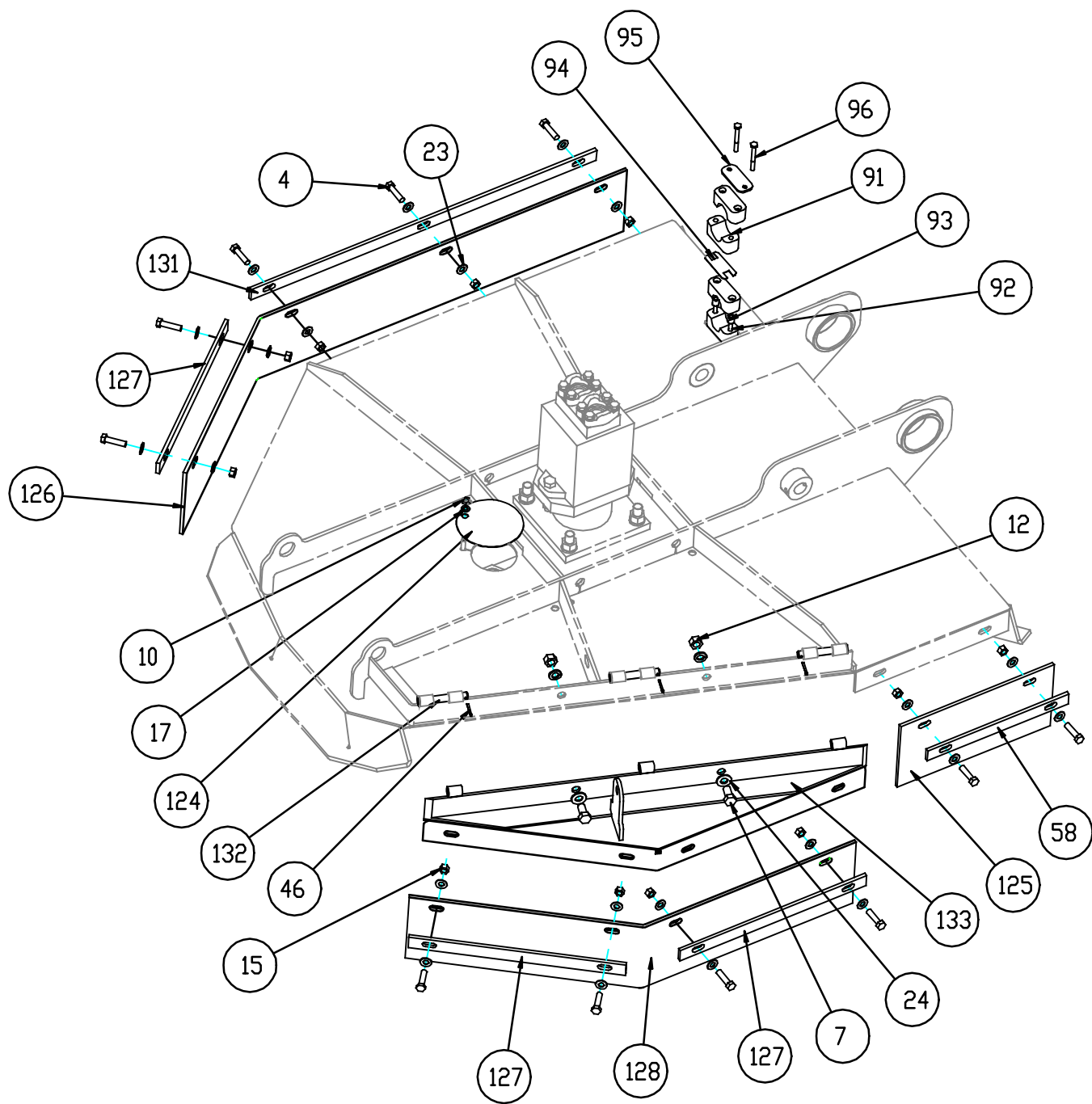
Item	Part Number	Qty.	Description
118	22884	5	Pin Weldment
119	25724	3	Cylinder Pin Weldment
120	22888	2	Pin Weldment (2" Dia.)
121	22892	1	Weight Box Weldment
122	25724	3	Cylinder Pin Weldment
123	22896	2	Pin Weldment (7-3/8")
124	22898	1	Access Cover
125	24469	1	42" Deck Rubber Shield
126	24470	1	42" Deck Rubber Shield - Right
127	22902	3	Rubber Shield Flat For LR40142
128	24468	1	42" Deck Rubber Shield - Short
129	22905	1	Hose Guard Weldment
130	24478	1	Hose Guard Plate
131	24467	1	Rubber Shield Flat - Right
132	24480	3	Hinge Pin Weldment
133	24430	1	Hinge Gate Weldment
134	22917	1	Pin Weldment (14-3/4")
135	23038	2	Stand Weldment
136	23130	1	Pivot Sleeve
137	23131	1	End Cap Weldment
138	23136	1	Pressure Flange
139	23323	1	Blade Holder Weldment
140	23335	1	Oil Tank Weldment
141	23340	1	Stand Weldment
142	23345	1	Head Mounting Bracket Weldment
143	22831	1	Wire Cover Base
144	23373	2	Spacer (1" SCH40 Pipe X 15/16")
145	23382	2	Spacer (1" SCH40 Pipe X 3/16")
146	23383	2	Spacer (1" SCH40 Pipe X 11/16")
147	15461	2	Cap 37 Deg Flare #8 (1/2")
148	13914	2	8-M-ORB X 6-M-JIC 90 Deg. Elbow

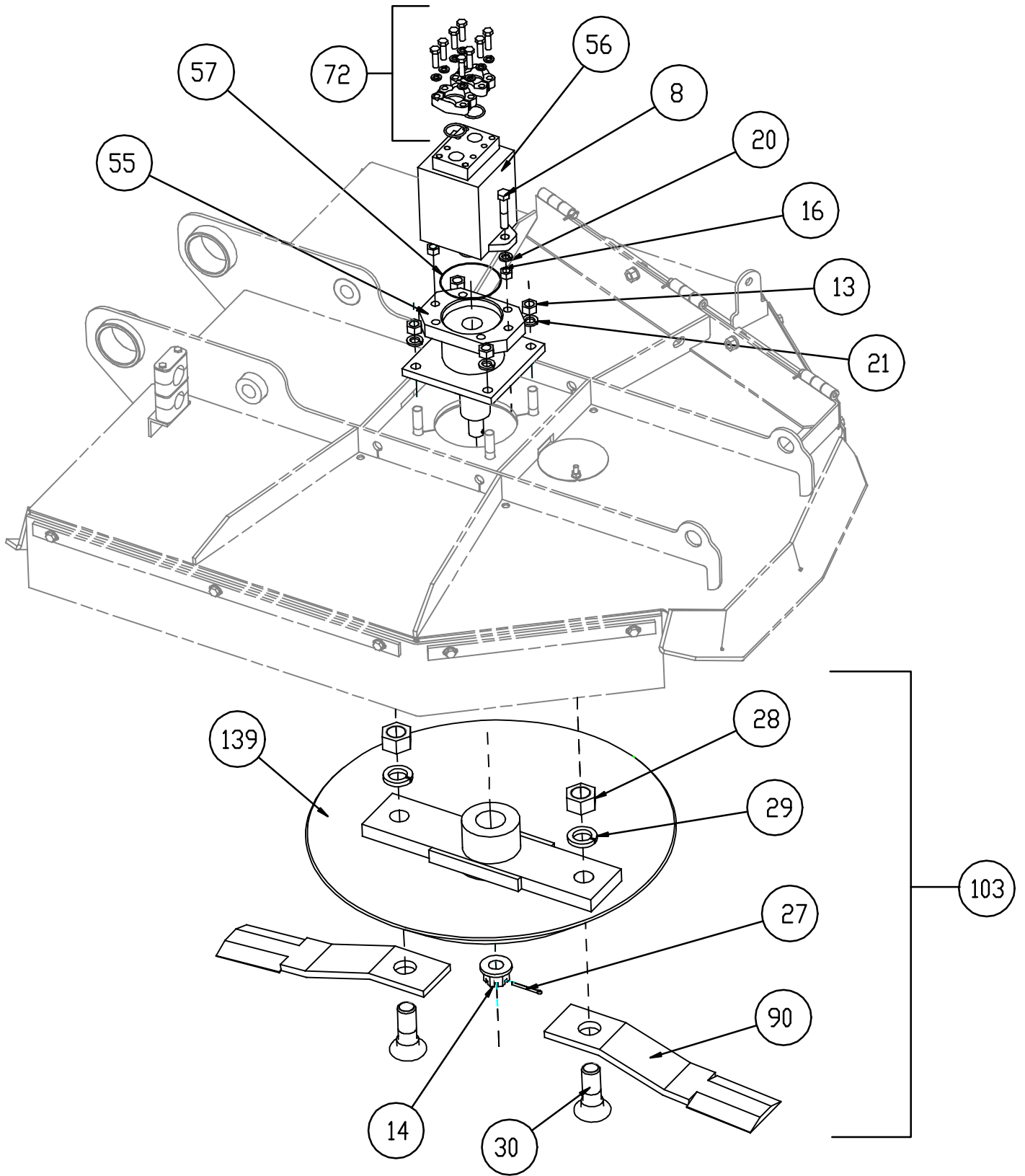




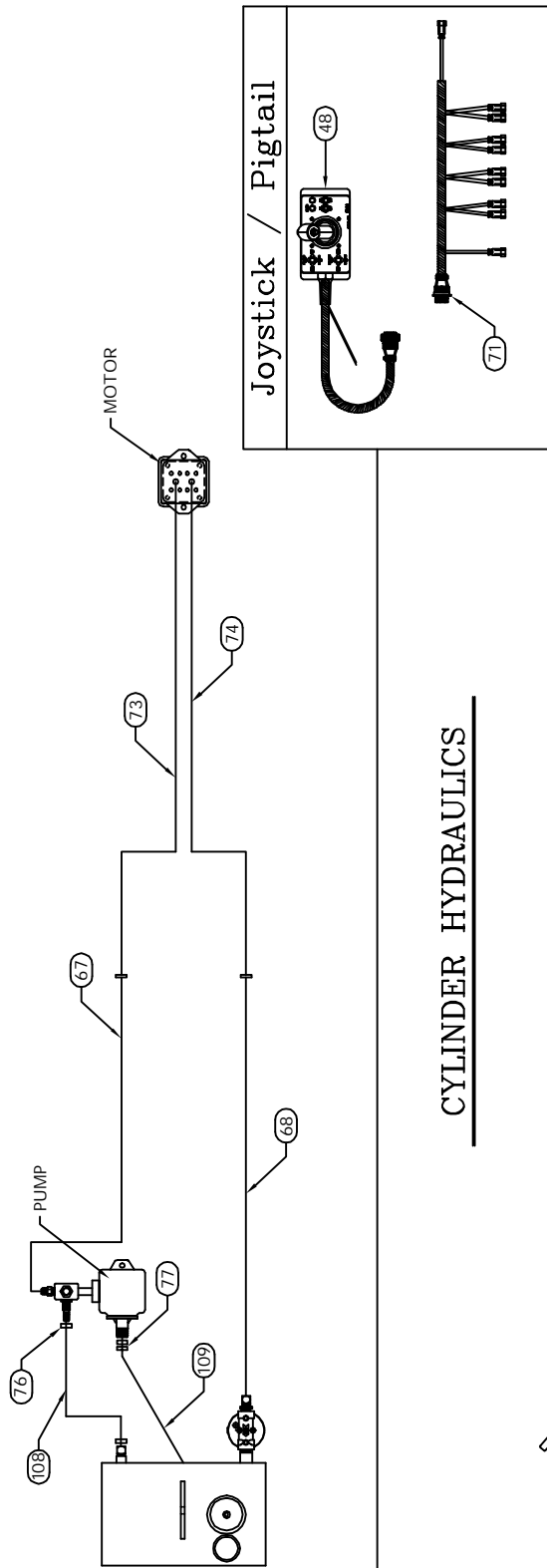




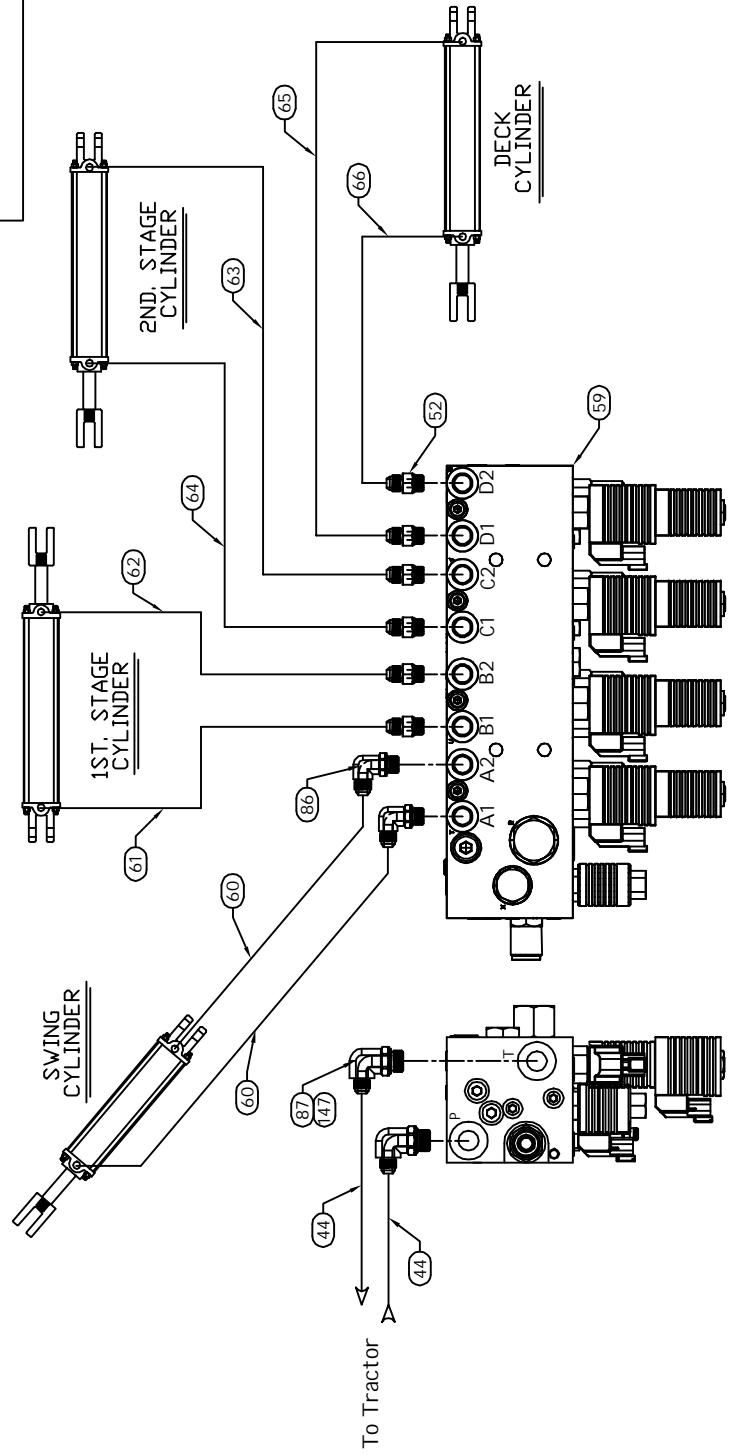




# BLADE HYDRAULICS

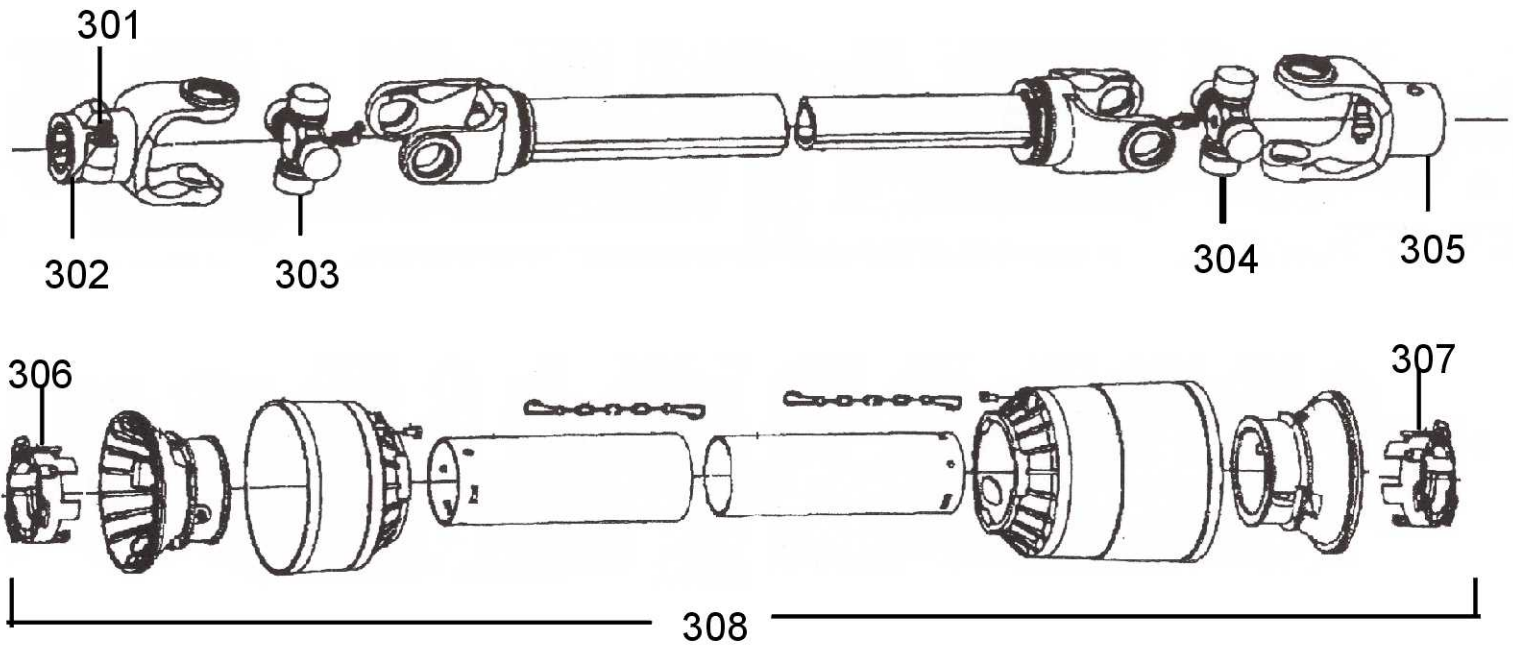


# CYLINDER HYDRAULICS





# 10601 Driveshaft



Key #	Part No.	Description	Key #	Part No.	Description
301	15579	Push pin complete	305	11443	Yoke, Imp end
302	11441	Yoke, Tractor end	306	15804	Shield bearing
303	11200	Cross kit	307	15805	Shield bearing
304	11200	Cross kit	308	11448	Shield kit complete

## Logo Decal Replacement

### Logo Decals

If the original decals applied to your cutter at the factory become worn or damaged, you can order replacements by referencing the examples below.

You can order new decals from any local Hardee dealer.

To apply the replacement decals:

- Clean the surface to place the new decal.
- Peel the decal away from the paper backing.
- Press firmly onto the clean surface.
- Squeeze out any air pockets using a straight edge.



11010 – Logo Decal, 4" x 13 1/2"



15846 – Model Number Decal

[WWW.HARDEEBYEVH.COM](http://WWW.HARDEEBYEVH.COM)

11850 – Web Site Decal



11032 – Logo Decal, 2 1/4" x 8 1/8"

## Reference

### Bolt Torque

#### Checking Bolt Torque

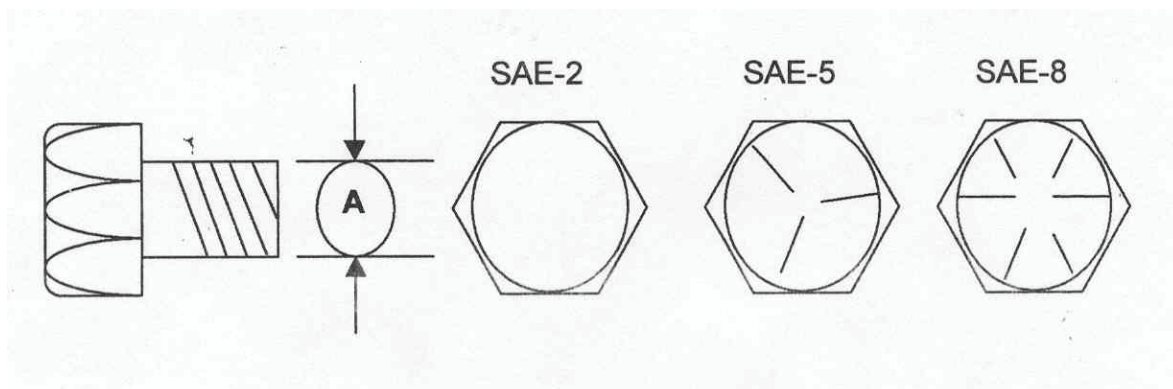
The table shown below gives correct torque values for various bolts and capscrews. Tighten all bolts to the torque specified in the chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same strength bolt. Torque figures indicated are valid for non-greased or non-oiled threads and heads unless otherwise specified.

Therefore, do not grease or oil bolts or capscrews unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

*Torque value for bolts and capscrews are identified by their head markings.*

#### Torque Specifications

Diameter "A"	Bolt Torque					
	SAE-2		SAE-5		SAE-8	
	LB-FT	N.m	LB-FT	N.m	LB-FT	N.m
1/4"	6	8	9	12	12	17
5/16"	10	13	19	25	27	36
3/8"	20	27	33	45	45	63
7/16"	30	41	53	72	75	100
1/2"	45	61	80	110	115	155
9/16"	70	95	115	155	165	220
5/8"	95	128	160	215	220	305
3/4"	165	225	290	390	400	540
7/8"	170	230	420	570	650	880
1"	225	345	630	850	970	1320



**Notes**



**OPERATOR'S AND MAINTENANCE MANUAL**

**WITH PARTS LISTING**

**Long Reach Flail Cutter  
Model: LR40142-F**



**DANGER**

*Read this manual and the manual for your tractor carefully to acquaint yourself with both machines before operating!*

## **Introduction**

### **To Our Customers**

We at Hardee by EVH Manufacturing Company thank you for buying your new Long Reach Cutter.

We have tried hard to build a cutter to do the work you have in mind. Many hours of engineering, field-testing and improvement have gone into the design and fabrication of your cutter. We will strive to continue this quality of manufacturing in the future, always keeping the customer's needs clearly in mind.

The best performance of your cutter will depend on you. Proper lubrication, maintenance, hookup, adjustments and operation are essential for it to give you long and dependable service. However, as with any type of equipment, your cutter is designed to perform specific functions.

In this manual, you will find instructions on cutter features, maintenance and operation. If customer service or repair parts are required, contact your local Hardee dealer. Please specify model and serial number when ordering parts.

### **Owner's Responsibility**

The manufacturer has no control over the ultimate use of the cutter and therefore assumes no responsibility or liability for damage or injury resulting from the use of this machine.

The upkeep of the hydraulic cutter is the responsibility of the user. This upkeep includes all shielding, guards, and safety decals (OSHA Regulation 1928.57). You can obtain replacement parts from any authorized Hardee dealer.

Read this Operator's Manual before operating the cutter. Failure to do so could result in injury to the operator or to others. Remember that most accidents occur due to neglect or carelessness. The operator is responsible for inspecting and making repairs as may be necessary. Cleaning after each use and storage under a shelter will extend the life of the cutter.

### **Purpose of This Manual**

This section provides information on safety, operation, adjustments, troubleshooting and maintenance of your new flail cutter. You will need to read all the sections preceding this one before using your cutter. Following all the recommendations will help ensure that you get many years of service from your new Hardee cutter.

If you need additional copies of this manual, please contact your local Hardee dealer or download a copy from our website at [www.evhmfg.com](http://www.evhmfg.com).

### **Safety-Alert Symbol**



This symbol is the safety alert symbol. It appears throughout this manual to call your attention to instructions involving your personal safety and the safety of others. Failure to follow these instructions can result in injury or death.

### **Signal Words**

Safety signal words are words that call attention to the safety sign and designate a degree or level of hazard seriousness. The signal words used throughout this manual are DANGER, WARNING and CAUTION. Please read and follow all safety messages that have these signal words shown for your protection.

#### **DANGER**

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

#### **WARNING**

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

#### **CAUTION**

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

### **Customer Assistance**

The Hardee sales team would like you to be satisfied with your new Long Reach Cutter. If for some reason you have any questions about the information in this manual or have a problem with your cutter, please discuss the problem or question with the management of your local dealership. If further assistance is required, please contact:

**EVH Manufacturing Company, LLC**  
**Sales Department**  
 4895 Red Bluff Road  
 Loris, SC 29569  
 843-756-2555

## Safety Information

### General Safety Rules

This section of your manual will address the safe operation of your new cutter. We at Hardee strive to produce a machine that is both a quality product and safe to operate. Please take the time to read, understand and follow the safety rules listed below and throughout this manual.

Your safety also depends on you becoming familiar with the basic operation of your new cutter. You can find complete instructions for this cutter in the Operation Instruction section of this manual. We believe that using your cutter safely, in a safe environment will give you great results!

#### DANGER

*This machine is designed for use on a closed cab tractor only! If your tractor has an open cab, then it MUST be equipped with operator protective equipment in the form of shielding from thrown objects and Roll Over Protective Structure (ROPS) to operate this equipment safely.*

#### DANGER

*Rotary cutters have the inherent ability to throw debris considerable distances when the blades are allowed to strike foreign objects. The operator must use caution or serious injury may result. Be sure bystanders are at a safe distance at all times when the cutter is in use.*

#### WARNING

*Always keep your tractor level as you reach over ditches, etc. Be careful to keep ample distance between the rear tire and the top of the ditch bank to avoid a cave-in of the bank.*

#### WARNING

*Failure to keep the tractor level may result in loss of traction, tipping, rollover, property damage, personal injury or death.*

#### WARNING

*Never stand, or allow others to stand, under the boom or flail head at any time. Never park the unit without placing the flail head squarely and firmly on the*

*ground. Serious injury or death by crushing may occur in case of hydraulic failure.*

#### DANGER

*Do not look under the flail head or attempt to remove objects or branches from under the flail head while the tractor is running. Serious injury, loss of limb or death may result.*

#### DANGER

*Do not reach under the flail head at any time. Cutting knives may cause serious injury, loss of limb or disfigurement.*

#### WARNING

*Never use the cutter for a crane or lifting device of any kind. It is not designed for this purpose. Serious damage to unit may occur. Serious bodily injury may be incurred from this misuse.*

#### WARNING

*Never use the cutter for a man-lift or personnel lift. It is not designed for this purpose. Serious damage to unit may occur. Serious bodily injury may be incurred from this misuse.*

#### DANGER

*Never operate the cutter within 10 feet of overhead power lines or utility lines. Do not trim trees with power lines running through them. Serious injury or death by electrocution may occur.*

#### WARNING

*Never allow the cutter to impact rock piles, piles of gravel, steel guardrails or concrete abutments. Contact with these objects could cause knife failure. Serious machine damage, property damage or bodily injury may occur. Check the area for these items before mowing.*

#### DANGER

*Never attempt to use the cutter to remove brush or trees larger than 2 inches in diameter. Failure to use caution when cutting trees, may lead to the tree falling on the cutter deck and tipping the tractor over.*

## Safety Information

### Safety Decals

Your Hardee cutter ships with all safety decals in place. They are located in areas on the mower that are potentially hazardous. Please locate, read and follow the information you find on these decals.

By law, you must replace any safety decals that are damaged or missing. You can order replacement decals from any local Hardee dealer. Just ask for part number 15845.

To apply the replacement decals:

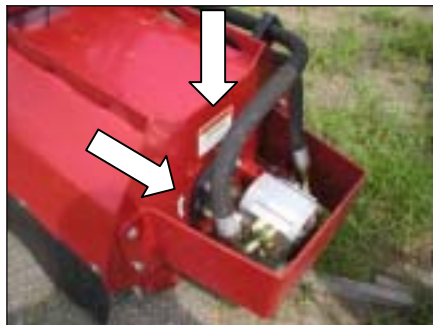
- Clean the surface to place the new decal.
- Peel the decal away from the paper backing.
- Press firmly onto the clean surface.
- Squeeze out any air pockets using a straight edge.



Flail Head



Warning – High Pressure Fluid Hazard



Flail Head – Motor End



Warning – Rotating Components



Blade Rotation



## Operation Instruction

### Operation Instructions



#### IMPORTANT

Before reading this section you must read and understand the information in the sections starting on page 7 – 10. In that section you will learn about:

- Component Identification and Terminology
- Tractor Requirements
- Driveshaft Installation on Pump Shaft
- Tractor Hook-Up Procedures
- Driveshaft Installation on PTO
- Hydraulic System Setup

#### During Operation



#### WARNING

Ensure that all bystanders are clear of the cutter before starting tractor engine. Objects thrown by the cutter knives can cause severe personal injury or death.

Before any operation of the cutter, be familiar with the locations and functions of the unit's controls. Being familiar with the cutter and its controls will increase efficiency and reduce the possibility of serious injury or damage to the unit.

The operator should work slowly and carefully until he feels comfortable with the cutter. Speed and skill will be attained much more easily if the necessary time is spent to familiarize yourself with the cutter and its operation.

Get into the habit of completing a walkaround inspection before use. This procedure is a simple method of inspecting your unit's condition by walking around and looking at each component of the unit, including the tractor. This procedure has been used by airline pilots for many years as a final inspection before flight and is also used by long distance ground transportation drivers on buses and trucks. During the walkaround, you will visually search your units tire condition, look for hydraulic leaks, fuel leaks, inspect hose condition and condition of hydraulic cylinders. Look for loose or worn components, see that all guards are in place, check knives condition, look for broken or inoperative lights and determine that it is or is not operable before use. We recommend that you follow this procedure before start up.

Daily Start-Up Checklist		
	Check	Section
<input type="checkbox"/>	All Fluid Levels, Tractor & Cutter, For best results, use Hardee hydraulic oil – part number 23333	-
<input type="checkbox"/>	Grease Points	Page 15 / 51
<input type="checkbox"/>	PTO Shaft, Check Grease	Page 15
<input type="checkbox"/>	Knives For Tightness	Page 52
<input type="checkbox"/>	Motor Torque Arm Plate Bolt For Correct Tightness	Page 52
<input type="checkbox"/>	Excess Vibration	Page 55

### Operating Environment

#### Application Do's and Don'ts

There are obvious and hidden potential hazards in operating this mower. **REMEMBER!** This machine is often operated in rough terrain conditions that include gullies, holes, slopes and hidden obstructions. Serious injury or even death may occur unless care is taken to assure the safety of the operator and bystanders in the area.

Included here is a list of safety messages, which should be followed. Observing these messages and using common sense learned from experience help eliminate the hazards of operating this and other machinery.



#### DANGER

Read this manual and the manual for the tractor carefully to acquaint yourself with both machines before operating. **REMEMBER,** power-driven equipment should be operated only by those trained and familiar with the operation and instructed to do so. Working with unfamiliar equipment or in unfamiliar conditions can lead to accidents.



#### WARNING

Before leaving the tractor seat, always engage the tractor brake and/or set the transmission of the tractor in parking gear. Stop engine and remove key.



#### DANGER

Never allow riders on tractor or equipment. Falling off can cause serious injury or death.

## Operation Instruction



### DANGER

Check all cutter knives, bolts and nuts for tightness.



### IMPORTANT

Do not operate cutter without bearing guard and motor guard in place. Doing so could do severe damage to motor and rotor shaft. **Warranty claims for equipment used improperly will not be honored!**



### WARNING

Check rubber belting guards are secure and not worn.



### IMPORTANT

Grease all grease points. See page 15 and the flail maintenance section page 51 for more information.



### WARNING

Worn or dull cutter knives can cause excessive cutter vibration resulting in damage to the motor and structural damage to the cutter. You should replace knives in sets. Excessive vibration can cause rotating parts to break and fly off the cutter, causing serious injury or death to the operator or bystanders. See the flail maintenance section for more information.



### DANGER

Do not modify or alter this machine or any of its components or any equipment function without consulting EVH Manufacturing Company.

## Using Your Cutter

### Getting Started

You will need to spend some time getting the “feel” of your new cutter. Spend time reviewing the following steps before using your cutter for the first time. The time that you take will greatly enhance your ability to get the desired results when you begin mowing. See figure 7 for reference.

- ✓ Locate the joystick mounted on the right side of the tractor and move it through the positions shown on the instruction decal.
- ✓ The next step is to attach the cutter to the tractor, see the hook-up procedures on page 8 for complete instructions. After you have the cutter

attached, double check to ensure that no part of the tractor is in contact with the cutter.

- ✓ Next, follow the instructions for installing the driveshaft and hooking-up the hydraulic system lines on page 9 of this manual. Check to see that all PTO guards are in place correctly.
- ✓ Connect joystick cable to the quick-connect on the valve cover box. Make sure that all hoses and the joystick connection cable will not contact the PTO shaft.
- ✓ Check the knives for damage and tightness. Check the motor torque arm plate bolt for correct tightness. Verify that the gate valve under the oil tank is “on”. *The cutter is shipped with the gate valve in the “off” position.*



### DANGER

Before proceeding, make sure that no other persons are in close proximity to the cutter!

- ✓ With all controls in neutral, the tractor in park, the throttle in idle position and the joystick power switch off... Start the tractor engine.
- ✓ Slowly engage the tractor hydraulic system to detent position. Leaving the tractor PTO “off”.
- ✓ Now with the cutter under power, practice using the joystick to control the movement of the flail head and boom arms.

### Joystick Control

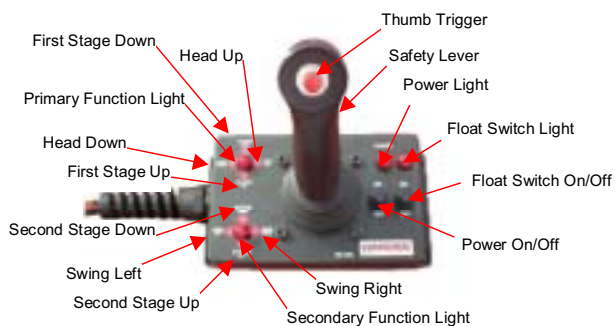
- Turn “Power On” switch located to the right of the joystick control handle, “on”.
- Depress “Safety Lever” to control primary functions (head up, head down, first stage up, first stage down). “Primary Function Light” will indicate “on”.
- Depress “Safety Lever” and “Thumb Trigger” to work secondary functions (swing left, swing right, second stage up, second stage down). The “Secondary Function Light” will indicate “on”.
- The joystick controller also has a built-in “float” function to help you keep the flail head level with the contours of the ground you are mowing.

## Operation Instruction

When the float switch is turned “on” it over-rides the function of the deck cylinder. This allows the flail head to “float” along the top of the ground. *You will need to turn this function “off” when the head is off the ground or more control over the cutter head is needed. For example, cutting brush or side dressing trees.*

**Note:** *If the hydraulics do not function, detent in the other direction or flip hoses.*

If you feel like you need to adjust the speed of the cutter, refer to the instructions on page 17.



**Figure 7**

After you feel comfortable with the basic cutter control, the next step is to start the flail head.

- ✓ Slowly increase the tractor throttle to a high idle speed and slowly engage the PTO.



### DANGER

*Do not change the rotor rotation! Knives must rotate in the direction indicated by the rotation decal on the flail head. The rotor rotation is reverse from forward tractor travel. See page 45 for decal location!*

- ✓ After the cutter is running smoothly, increase the tractor to 540 PTO RPM and lift the flail head off the ground. Swing the flail head to the mowing position, which is three o'clock on the right side of your tractor.
- ✓ Lower the flail head until the rear roller is resting on the ground.
- ✓ Lower the 1<sup>st</sup> stage cylinder slightly to distribute more weight of the boom to the rear roller. *If the boom constantly breaks-back when mowing, raise the 1<sup>st</sup> stage cylinder slightly to remove some of the boom arm weight.*

- ✓ Turn the “Float Switch” located on your joystick to the “on” position.
- ✓ Release the tractor from park and put the transmission in low range. You are now in mowing mode and are underway.

### Mowing



### CAUTION

*Check area for objects that might be thrown by cutter before mowing.*

To get the best result from your new Hardee cutter you should follow these directions.

- A flail mower will cut best when mowing dry grass. Wet grass will cause the grass to clump behind the cutter when discharged.
- When mowing tall grass, it's best to mow the area using the cutters highest adjustment setting. Then make a second pass using the final preferred rear roller height setting.
- When you begin mowing, mow an area about 15 feet long, stop the engine and inspect the cutting height. This is the time to make any roller height adjustments you need. *See the roller adjustment instructions on page 49.*
- Making turns with your cutter will require you to reduce the tractor ground speed and raise the flail head slightly off the ground.



### CAUTION

*Do not make sharp turns or attempt to back-up while your flail head is on the ground. Failure to raise the flail head will do severe damage to your cutter if you allow the boom arm to reach the bottoming-out point!*

The terrain and the kind of material being cut will determine your ground speed. Remember that you will need to raise and lower the 1<sup>st</sup> stage cylinder to follow the ground contour you are cutting.

### Boom Breakaway

The LR40142-F is designed with an automatic breakaway system to protect the cutter booms. This works when the flail head contacts a solid obstruction or the flail head is “grounded” while the tractor is in motion.

## Operation Instruction

The breakaway is activated through the hydraulic valve and will function mowing both forward and backward.

When the flail head strikes a solid object the booms will begin to break back, IMMEDIATELY stop your tractor and adjust the position of the booms to clear the object.

If you “ground” the flail head and the booms begin to break back, simply lift the boom slightly to free the flail head, then swing the boom back into normal cutting position. See figure 8

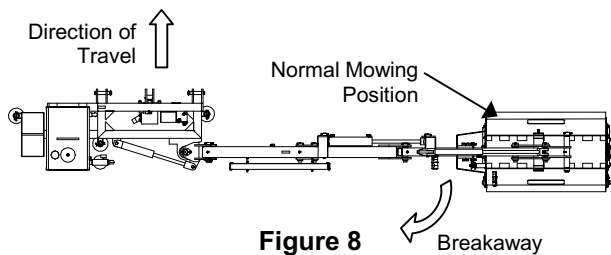


Figure 8

### Mowing in Reverse

Because of the flail head design we caution against the practice of mowing in reverse! If you choose to mow in reverse, the breakaway protection works in the same way. The only difference being you must swing the booms to the rear 10 – 15 degrees. This will allow for more boom breakaway travel. This space is critical so as not to bottom-out the boom arm. See figure 9

### CAUTION

*You will do severe damage to your cutter if you allow the boom arm to reach the bottoming-out point!*

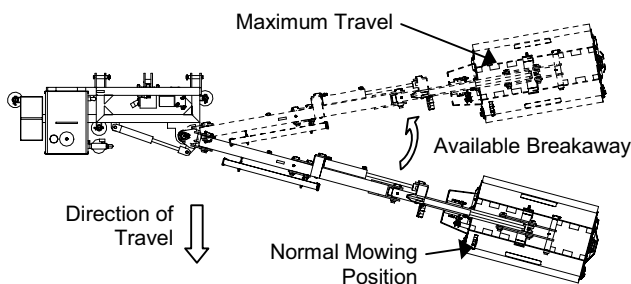


Figure 9

### CAUTION

*You must allow for the extra boom travel when mowing in reverse. See figure 9. If you have any questions about these instructions, please ask your local Hardee dealer immediately! Warranty claims for equipment used improperly will not be honored.*

### Side Dressing Trees

The design of your heavy-duty flail cutter will allow you to “side dress” trees if needed. To do this, turn the “Float Switch” to the “off” position, raise the booms to the desired height and tilt the flail head to the vertical position. With the knives “on” move forward slowly, removing only approximately 6 or 8 inches of material per pass.

### DANGER

*Never operate the cutter within 10 feet of overhead power lines or utility lines. Do not trim trees with power lines running through them. Serious injury or death by electrocution may occur.*

### DANGER

*Never attempt to use the cutter to remove brush or trees larger than 2 inches in diameter. Failure to use caution when cutting trees, may lead to the tree falling on the cutter deck and tipping the tractor over.*

### Rear Roller Adjustment

Refer to figure 10 for reference

### DANGER

Never attempt any checks, repairs or adjustments with tractor engine running or the power take-off engaged. Adjustment of rotating parts while the tractor engine is running can result in serious personal injury or death if the PTO accidentally engages.

The position of the rear roller determines the height of your cutting knives. To adjust that height, follow the directions below.

- ✓ Remove the top bolts and nuts that hold the rear roller on both sides.
- ✓ Loosen the bottom bolts and nuts on both sides.

## Operation Instruction

- ✓ Select the correct height by rotating the top of the roller assembly to the next set of holes on both sides.
- ✓ Replace and tighten all the bolts and nuts.

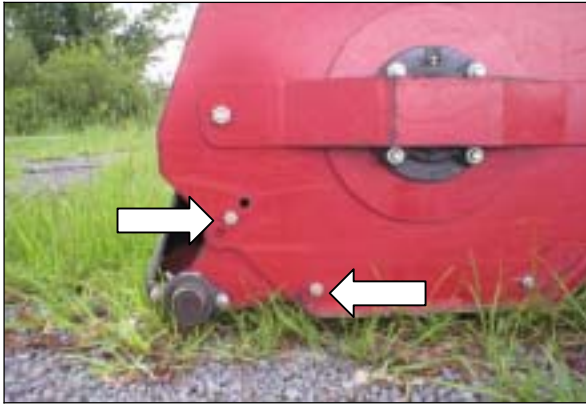


Figure 10

### Post Use Care

- Never leave driveshaft hanging down and touching the ground.
- Never leave quick couplers on hydraulic remote lines hanging on the ground.
- Store joystick inside in a dry place.

### Unhook and Post Use Care

Before unhooking the tractor from your mower, always clean the unit thoroughly to remove any grass, mud or debris. This mower should always be stored on a hard level surface.

#### Unhooking the LR40142-F

- ✓ To unhook from your unit, first lower all jack stands to the storage position.
- ✓ Lower the tractor lift arms so that the mower will rest firmly and evenly on all jack stands.
- ✓ Lower the boom arms and cutter deck so that they too rest firmly and evenly on the ground.
- ✓ Be sure to relieve all hydraulic pressure on the boom arms and deck before unhooking.
- ✓ Disconnect hydraulic lines from tractor remotes.
- ✓ Disconnect driveshaft from tractor.
- ✓ Disconnect joystick cable at the junction plug on the black wire cover box.
- ✓ Unhook tractor hitch from 3-point frame on mower.

## Maintenance

### Maintenance and Service Schedule

#### **IMPORTANT**

Before reading this section you must read and understand the information in the sections starting on page 15 – 24. In those sections you will learn about:

- Boom Grease Points
- Greasing PTO Driveshaft to Pump
- Replaceable Bushings
- Checking the Cutter Head Relief Valve
- Adjusting Cylinder Speed
- Adjusting the Cylinder Control Valve
- Control Valve Port Listing
- Valve / Joystick Wiring Schematic
- Routine Maintenance Checklist
- Troubleshooting Guide – Boom Systems

This section is dedicated to the maintenance of the LR40142-F. As with any piece of equipment, the performance and life span depends on the proper operation and maintenance.

#### **DANGER**

Never attempt any checks, repairs or adjustments with tractor engine running or the power take-off engaged. Adjustment of rotating parts while the tractor engine is running can result in serious personal injury or death if the PTO accidentally engages.

#### **Rear Roller Assembly**

Inject with heavy multi-purpose grease. Repeat on other end of roller.



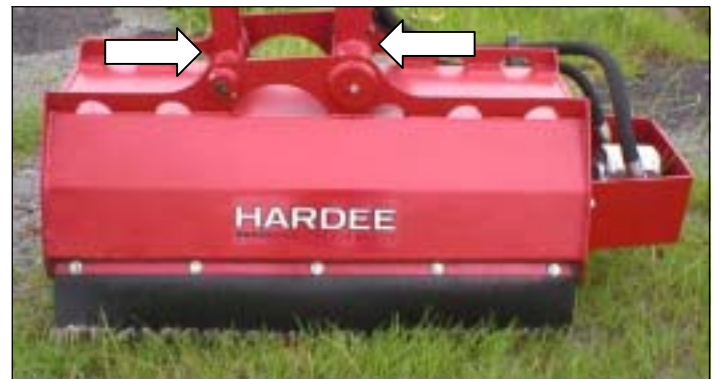
#### **Rotor Bearings**

Inject with heavy multi-purpose grease. Repeat on other end of rotor.



#### **Flail Head and Second Stage Boom**

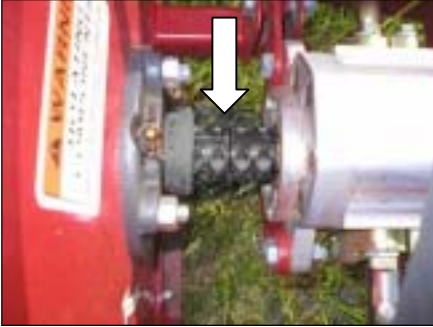
Inject with heavy multi-purpose grease.



## Maintenance

### Motor – Torque Screws in Rigid Coupling

Use Loctite 242 – "Blue" to help prevent torque screws from loosening due to shock and vibration. Seating torque for these screws are 170 lb./in.



### Motor – Torque Arm Plate Bolt



#### IMPORTANT

To prevent damage to the motor, follow these directions carefully!

DO NOT over tighten the motor torque plate bolt and nut! The bolt should be able to turn freely without binding against the torque plate. This arm must be allowed to move freely or you will damage the motor!



### Inspection and Replacement of Knives

The knives on the Hardee cutter are designed and made to exact specifications and should be replaced with only original Hardee parts. See your local Hardee dealer for replacements. Also ask about the different styles of knives available for your cutter. Always replace knives in sets to retain the proper rotor balance.

When the replacement of cutter knives are required, a few rules should be followed:

- Replace knives in sets.
- Cutting heavy brush causes excess stress on the knife bolts, because of this they will require inspection that is more frequent.
- When replacing knives always replace bolts and nuts. Never reuse knife bolts and nuts.

#### Inspection

- ✓ First, completely extend boom. Turn "Float Switch" to the "off" position. Rotate flail head all the way up; drop boom until flail head rests on ground. Switch off tractor, secure parking brake and remove key.
- ✓ After every eight hours of operation. Inspect the knives and bolts. Replace any that may be damaged or missing!
- ✓ Check knives for sharpness. If some knife sets are dull they can be rotated 180°. Replace the old bolts and nuts with new 3/8" X 1-1/4" Gr. 5 carriage bolts and 3/8" Gr. 5 lock nuts.



#### IMPORTANT

When knife sets have been used on both sides, they must be replaced.



#### WARNING

Never operate your flail cutter with missing knife sets! Excessive vibration will do severe damage to your cutter!

#### Replacement

See parts breakdown drawing on page 59 for reference.

- ✓ Remove bolt and nut from flail hanger.
- ✓ Replace worn knives with new set on flail link.
- ✓ Replace old bolts and nuts with new 3/8" X 1-1/4" Gr. 5 carriage bolts and 3/8" Gr. 5 lock nuts. See the chart on page 40 for proper bolt torque.



#### IMPORTANT

Knives should only be replaced with original Hardee parts.

**Maintenance****Routine Maintenance Checklist**

Interval	Item	Check	Lube	Change	Comments
Daily Or 10 Hours	Pump Drive Shaft		•		
	Pivot Points		•		
	Grease Fittings		•		
	Knives	•			Change If Damaged
	Flail Hanger Bolts	•			
	Motor Torque Arm Plate Bolt	•			Check For Correct Tightness
	Main Frame And Deck Bolts	•			
	Rubber Shielding	•			Change If Damaged
	Vegetation Wrapped Around Rotor Shaft And Knives	•			
Weekly Or 50 Hours	Hydraulic Return Filter			•	Change After 1st 50 Hours, Then Every 500 Hours
	Hydraulic Fittings	•			
	Motor Torque Screws	•			Use "Blue" Loctite #242 Only
Monthly Or 150 Hours	Tank Breather	•			
	Hydraulic Fluid Level	•			
Seasonal Or 500 Hours	In Tank And Return Hydraulic Filters			•	
	Replaceable Bushings	•	•	•	Replace If Worn



**Notes**

## Troubleshooting

### Troubleshooting Guide

#### Hydraulic System, Flail Head System, Pump, Motor, Fluid Lines

Problem	Possible Cause	Solution / Correction
Cylinder Will Not Operate	No Power To Joystick	Repair / Replace Connections
	Fuse Blown Inside Joystick	Replace Fuse
	Joystick Not Connected To A 12-Volt System	Connect To 12-Volt Power Supply
	Joystick Not Connected To Valve	Examine Quick Connection To Valve
	Valve Master Solenoid Not Functioning	Repair Electrical Connections To Solenoid Or Replace Solenoid
	Tractor Remotes Not Engaged	Engage Remote
Head Drifts Back When In Operation	Tractor Remotes Engaged In Reverse	Engage Remotes Opposite Way Or Switch Hydraulic Lines In Tractor Remotes
	Improper Relief Valve Setting	Adjust Relief Valves To Specifications (Refer To Pages 18 - 19)
Boom Drifts Down	Cylinder Leakage	Repair / Replace Cylinders
	Improper Relief Valve Setting	Adjust Relief Valves To Specifications (Refer To Pages 18 - 19)
Leaking Motor	Cylinder Leakage	Repair / Replace Cylinders
	Motor Seal Blown	Repair / Replace Seal And Check Filter For Blockage (Repair / Replace Filter)
Flail Head Loses Speed In Cutting	Improper Relief Valve Setting	Check Relief Valve Setting (Refer To Page 16)
		Repair / Replace Relief Valve
Pump Whines	Worn Or Damaged Pump	Repair / Replace Pump
	Improper Oil In System	Replace Oil
		Requires Hardee Oil Part NO 23333 Or Comparable Oil With Proper Viscosity
	Pressure Setting On Relief Valve Too Low	Check Relief Valve Setting (Refer To Page 16)
Motor Whines	Worn Or Damaged Motor	Repair / Replace Motor
	Improper Oil In System	Replace Oil
		Requires Hardee Oil Part NO 23333 Or Comparable Oil With Proper Viscosity
	Pressure Setting On Relief Valve Too Low	Check Relief Valve Setting (Refer To Page 16)
Excess Vibration	Damage To Knives / Missing Knives	Replace Knives
	Motor Torque Arm Plate Bolt	Adjust Bolt (Refer To Page 52)
	Vegetation Wrapped Around Rotor Shaft And Knives	Remove Debris
Cutting Grass Too Short	Improper Rear Roller Height	Raise Rear Roller Height (Refer To Page 49)

## Troubleshooting

### Troubleshooting Guide, continued

#### Hydraulic System, Flail Head System, Pump, Motor, Fluid Lines

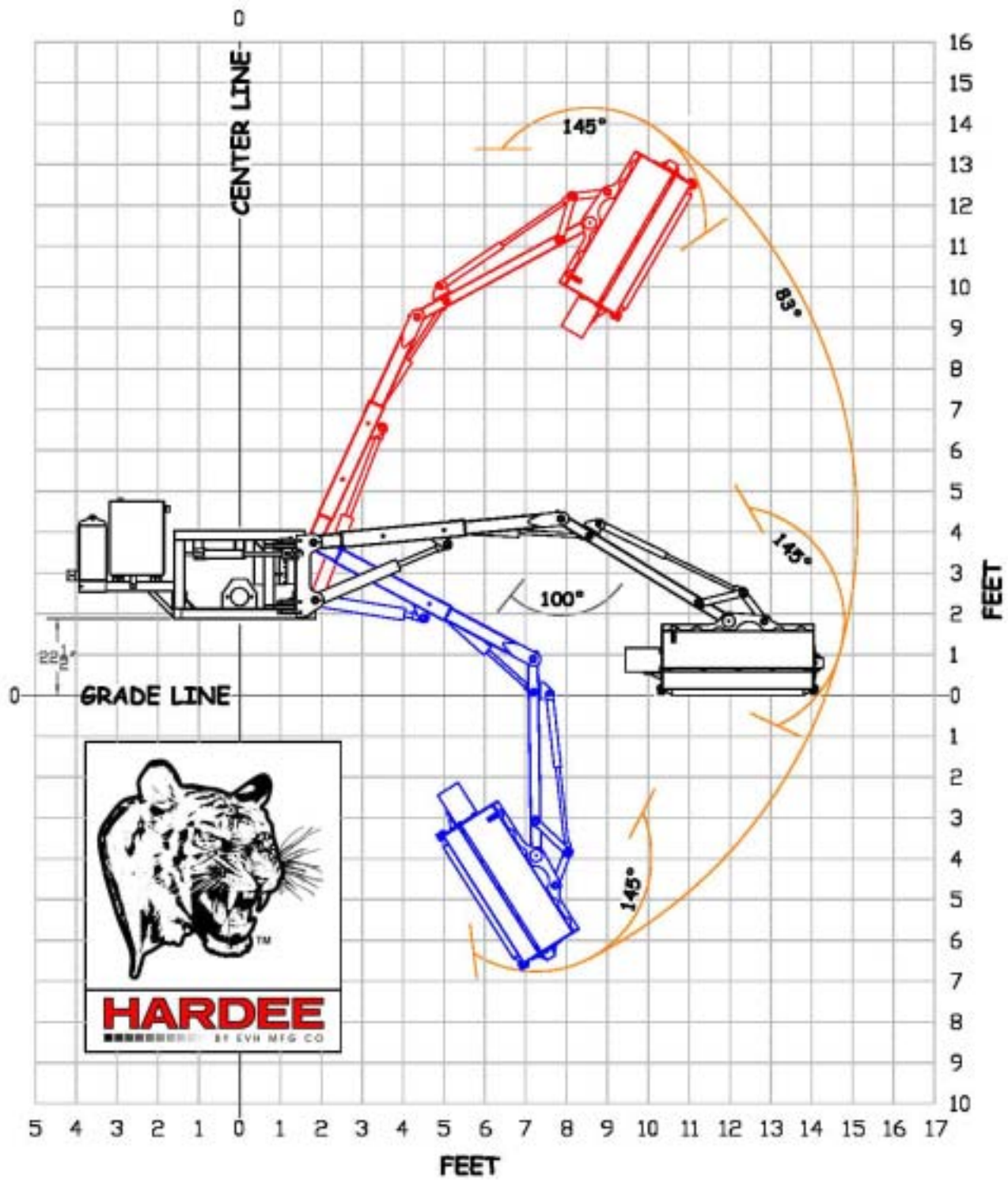
Problem	Possible Cause	Solution / Correction
Individual Cylinders Leak Down	Blown Or Worn Cylinder Packing	Repair / Replace Cylinder
Relief Valve Will Not Adjust To Specifications	Defective Or Worn Valve Seat	Repair / Replace Relief Valve And Adjust To Specifications
	Hydraulic Valve Cracked Internally	Repair / Replace Valve
	Improper Oil	Repair / Replace Oil (Use Hardee Oil Part No. 23333)
No Power To Control Box	No Power To Joystick	
	Improper Connection To Joystick	Repair / Replace Connections
	Fuse Blown Inside Joystick	Replace Fuse
	Joystick Not Connected To A 12-Volt System	Connect To 12-Volt Power Supply
Filter Gauge Is In The Red At All Times	Filter Restricted	Repair / Replace Filter
	Bad Gauge	Repair / Replace Gauge
	Hydraulic Oil Too Heavy For Region Or Climate	Replace Oil
PTO Shaft Won't Telescope	PTO Shaft Not Lubed Properly	Lube Driveshaft (Per Daily Routine Check Sheet On Page 15)
	Bent Shaft	Replace PTO Shaft
Excessive Slack In Boom Hinges	Pins Worn	Repair / Replace Pins
	Bushing Worn	Repair / Replace Bushing
Beams Squeak When Operating	No Lubrication Or Improper Lubrication	Lube Hinge Points (Per Instructions On Page 15)
	Defective Lube Fittings	Repair / Replace Fittings
Boom Operates Erratically	Speed Is Too Fast	Adjust Flow Rate In Tractor Remote
	Speed Is Still Too Fast	Adjust Individual Cylinder Speeds (Per Instructions On Page 17)
	Air In Lines	Purge Hydraulic Lines
Flail Head Won't Start-Up	Oil Flow Restricted	Open Gate Valve
		Repair / Replace Hydraulic Lines
		Replace In-Tank Filter
Leaving Strips Of Uncut Grass	Damage To Knives	Turn Knives 180° / Replace Damaged
	Engine Speed Too Slow	Throttle Up To 540 PTO RPM
	Ground Speed Too Fast	Shift Tractor To A Lower Gear
	Some Knives Missing	Replace Knives
Grass Cutting Uneven	Ground Speed Too Fast	Shift Tractor To A Lower Gear
	Missing Knives	Replace Knives
	Flail Head Not Following Ground Contour	Turn Float Switch On

## Specifications

### Summary of Specifications

Model	LR40142-F
Approximate Weight (lbs.)	2,000 - Ready To Mow
Knife Tip Speed (ft/min)	9,500
Rotor Shaft Speed	2200 RPM
Knives	Articulated "Y" Blades
Number Of Knives	48
Cutting Capacity / Suggested Usage	Grass, Medium Brush Up To 2" In Diameter
Cutting Height	1"-3.5"
Cutting Width	44"
Flail Head Housing Thickness	10 Gauge
Driveline	Category 3
Driveline Protection	Hydraulic Relief Valve
Hitch	Combination Category 2 And Category 2 Quick Hitch
Motor	Hydraulic Gear Motor
Overall Length (Head Only)	58"
Overall Width (Head Only)	26"
Transport Width	67" – Unit Fits Within Tractor Tires Set On 6 Foot Spacing
PTO Operating Speed	540 RPM
Pump	Hydraulic Vane Pump
Selectable Floating Head	Standard
Boom Breakaway	Hydraulic Valve - Standard
Hydraulic Oil System Capacity	35 Gallons
Rotor Diameter	3"
Rotor Rotation	Reverse Rotation – Forward Travel
Rear Roller Diameter	4"
Rubber Shielding	Standard – Front & Rear
Skids	Standard – Bolt On
Tractor HP Required	60 And Up
Reach At Grade ( From Center Line)	168"
Cutting Height Above Grade	174"
Cutting Height Below Grade	78"
Topping Height Above Grade	114"
Topping Height Below Grade	72"
Swing Travel	110°
1 <sup>st</sup> Stage Boom Articulation	83°
2 <sup>nd</sup> Stage Boom Articulation	100°
Flail Head Articulation	145°
Flail Head Articulation With 1 <sup>st</sup> Stage Boom	228°
Controls	Cab Mounted Joystick With Float Switch

# Specifications

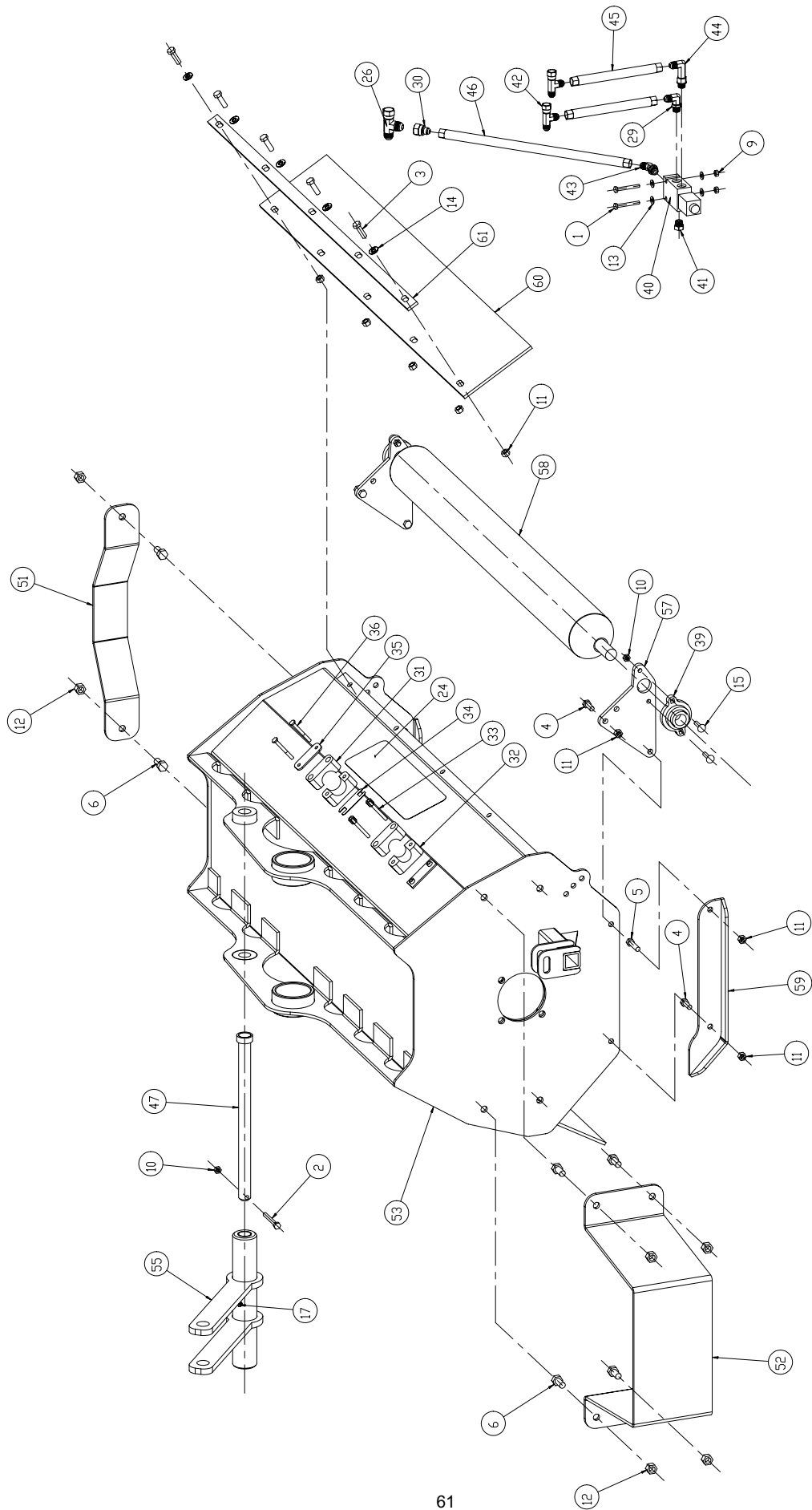


## Parts Listing For Long Reach Flail Cutter LR40142-F

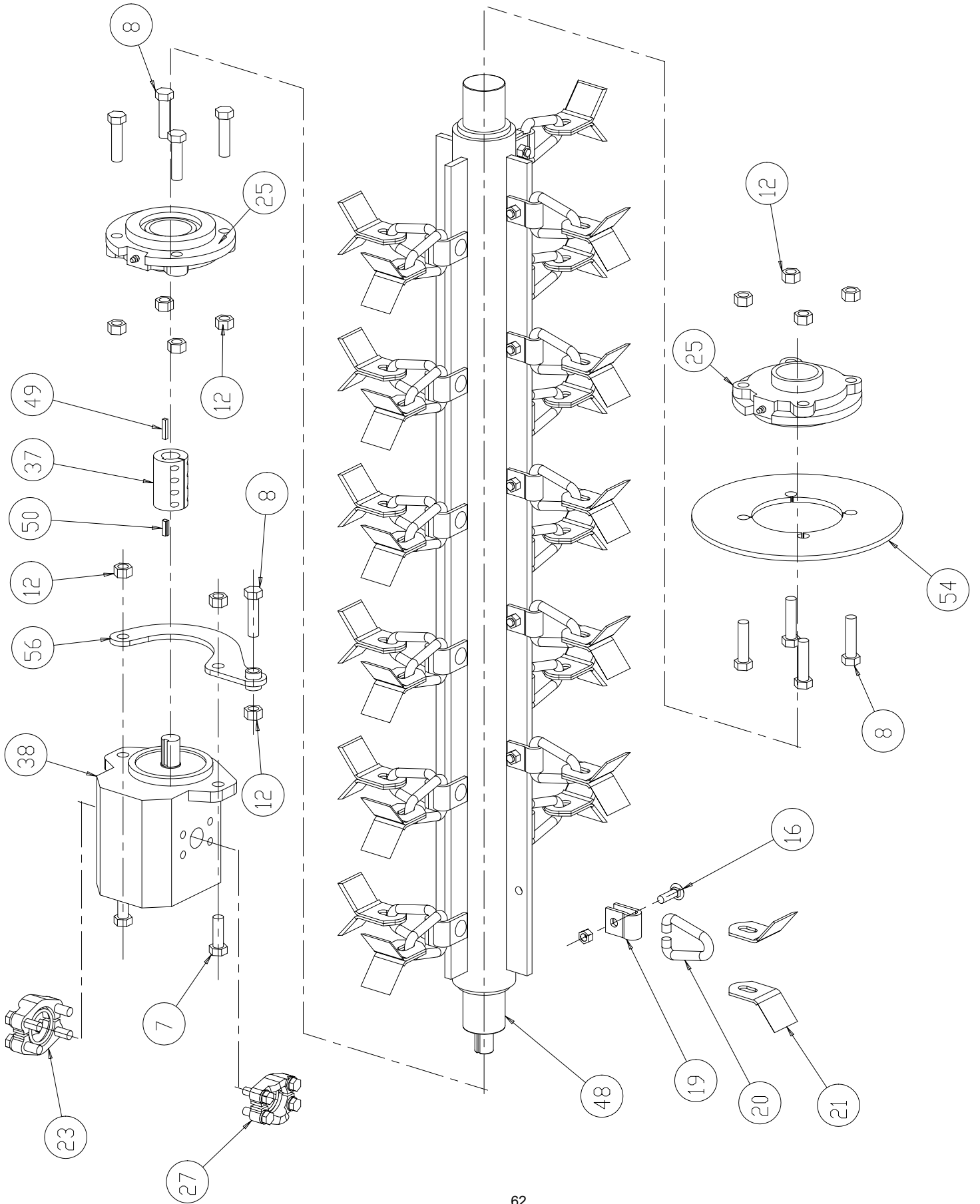
Item	Part Number	Qty.	Description
1	10004	2	Hex Bolt 1/4" X 2" Gr.5 Plated
2	10020	1	Hex Bolt 5/16" X 2-1/2" Gr.5 Plated
3	10029	10	Hex Bolt 3/8" X 1-1/4" Gr.5 Plated
4	10031	4	Hex Bolt 3/8" X 1" Gr.5 Plated
5	10032	2	Hex Bolt 3/8" X 1-1/2" Gr.5 Plated
6	10071	6	Hex Bolt 1/2" X 1" Gr.5 Plated
7	10072	2	Hex Bolt 1/2" X 1-1/2" Gr.5 Plated
8	10073	9	Hex Bolt 1/2" X 2" Gr.5 Plated
9	10153	2	Lock Nut 1/4" Plated
10	10154	5	Lock Nut 5/16" Plated
11	10175	40	Lock Nut 3/8" (Gr.5 Plated)
12	10176	17	Lock Nut 1/2" (Gr.5 Plated)
13	10200	4	1/4" Flatwasher (Plated)
14	10202	10	3/8" Flatwasher (Plated)
15	10273	4	Carriage Head Bolt 5/16" X 1-1/4" Gr.5 Plated
16	10276	24	Carriage Head Bolt 3/8" X 1-1/4" Gr.5 Plated
17	10322	1	1/4" Grease Fitting
18	10335	1	Hardee Red Paint
19	10687	24	Flail Hanger
20	10688	24	Flail Link
21	10689	48	Flail Blade
22	10866	1	1" X 106" Pressure Hose
23	10872	1	Pressure Flange Set (#20 Cd. 61)
24	11010	2	Large Hardee Logo Decal
25	11155	2	2" Flange Bearing
26	11710	1	8-M-JIC X 8-M-JIC X 8-F-JIC Run Tee
27	11877	1	Pressure Flange Set (#16 Cd. 61)
28	11878	1	3/4" X 106" Pressure Hose
29	13909	1	6-M-JIC X 6-M-ORB 90 Degree Elbow
30	14260	1	8-F-JIC X 6-M-JIC Reducer
31	15251	2	1" Hose Clamp Half
32	15252	2	3/4" Hose Clamp Half
33	15253	2	Hose Clamp Stack Bolts
34	15254	1	Hose Clamp Safety Plate
35	15255	1	Hose Clamp Cover Plate
36	15256	2	Hex Bolt 1/4" X 2-3/8" Gr.5 Plated
37	15303	1	Rigid Coupling

## Parts Listing For Long Reach Flail Cutter LR40142-F

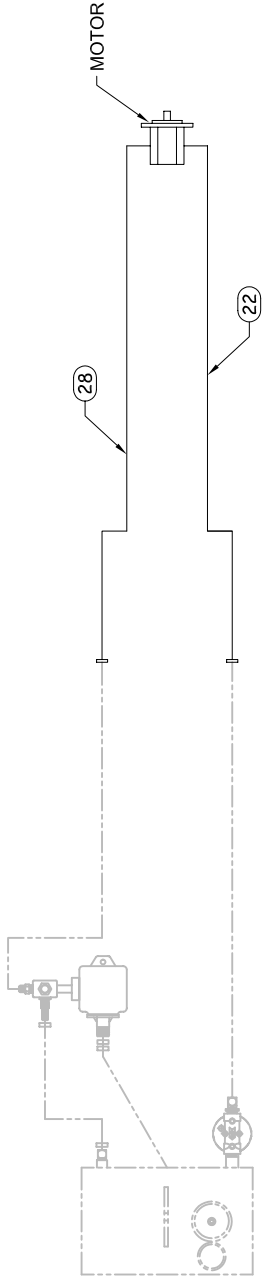
Item	Part Number	Qty.	Description
38	15305	1	Hydraulic Motor
39	15312	2	1" 2 Bolt Flange Bearing
40	15314	1	Float Valve
41	15321	1	6-M-ORB Plug
42	15322	2	6-F-JIC X 6-M-JIC X 6-M-JIC Female Run Tee
43	15323	1	6-M-ORB X 6-M-JIC 45 Degree Elbow
44	15324	1	6-M-JIC X 6-M-ORB Long 90 Degree Elbow
45	15325	2	Pressure Hose 3/8" X 8" Long W/ 6-F-JIC Both Ends
46	15326	1	Pressure Hose 3/8" X 17" Long W/ 6-F-JIC Both Ends
47	22917	1	Pin Weldment (14-3/4")
48	22925	1	Rotor Weldment
49	22931	1	3/16" Keyway
50	22932	1	Stepped Keyway
51	22933	1	Bearing Guard
52	22934	1	Motor Guard
53	22935	1	Flail Head Weldment
54	22941	1	Reinforcement Plate
55	22947	1	Deck Clevis Weldment
56	22950	1	Motor Torque Plate Weldment
57	22954	2	Roller Mount Plate
58	22955	1	Flail Roller Weldment
59	22961	2	Flail Skid Weldment
60	22964	2	Flail Belting
61	22965	2	Flail Belting Flat







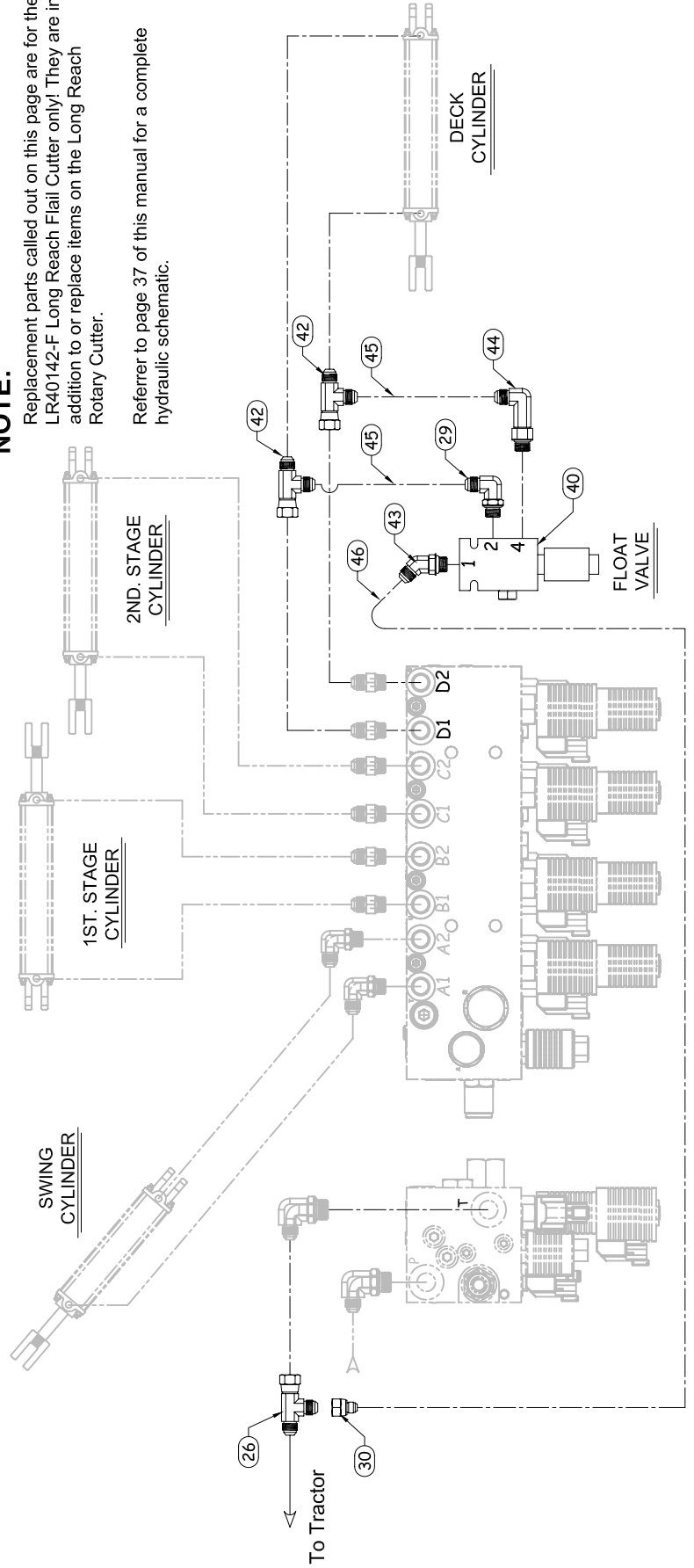
## FLAIL HYDRAULIC HOSES



## FLAIL CYLINDER HYDRAULICS

**NOTE:**  
Replacement parts called out on this page are for the LR40142-F Long Reach Flail Cutter only! They are in addition to or replace items on the Long Reach Rotary Cutter.

Refer to page 37 of this manual for a complete hydraulic schematic.



## Hydraulic Mower Limited Warranty

Hardee warrants its **Hydraulic Mowers** for one year or **350 hours** (whichever comes first) to the original non-commercial, non-governmental, or non-municipal purchaser. And warrants for 90 days or 350 hours, to the original commercial, industrial or municipal purchaser, that the goods are free from defects in material or workmanship.

This limited warranty does not apply to any part of the goods which has been subjected to improper or abnormal use, negligence, alteration, modification, or accident, damaged due to lack of maintenance, wrong oil or lubricants, or which has served its normal life.

Hardee Hydraulic Mowers include the following units: CM2160, DB4048, DB4060, LR40142, LR40142-F, LR40148, LR40160, HR2360 and MR1442.

THEREFORE, EFFECTIVE JANUARY 1, 2010 WE ARE CHANGING OUR WARRANTY ON "HYDRAULIC MOWERS" AS FOLLOWS:

1. Standard Hydraulic Mower warranty will be one year or **350 hours** (whichever comes first) from the purchase date, to the original purchaser.
2. You may be able to purchase an additional 350-hour warranty at the expiration of the standard warranty, provided that. The warranty card is filled out and returned within **30 days** of purchase. No warranty will be allowed without a properly completed and returned warranty card.
3. And upon inspection, No evidence is found of improper or abnormal use, negligence, alteration, modification, accident, or damage due to lack of maintenance or use of wrong oil or lubricants. This warranty does not apply to expendable items such as blades and blade bolts, shields, guards and wear plates except as specifically found in your operator's manual.
4. Near the end of the first 90 to 120 day period, Someone from Service will visit your farm. The additional 350-hour warranty may then be purchased, upon acceptance by Service.
5. Cost of an additional **350 hour, (P/N 26025) is \$500.00.**

"Our obligation under this warranty shall be limited to repair or replacement of any part or parts of this implement which in our judgement shows evidence of such defect and provided further that said parts shall be removed and returned by the owner at the owner's expense to Hardee by EVH Manufacturing Co. LLC, Loris, SC, through an authorized dealer, transportation prepaid, free and clear of liens or encumbrances.

**This warranty shall not include normal wear items.**

Changes or alterations to the implement made without the **written** authorization of the manufacturer will render this warranty void. Tampering with or removal of the factory installed hour meter will void this warranty.

This warranty does not obligate this company to bear any labor costs in replacement of defective parts.

Hardee by EVH Manufacturing Co., LLC reserves the right to make changes or improvements in its equipment at any time, with the express understanding that such changes or improvements do not impose any obligation of the company to install such changes or improvements on implements previously manufactured.

Hardee Hydraulic Mowers are designed as **Agricultural** machines. They are designed to be used intermittently in **farm** use, **not** constantly as in "Commercial" use. Our machines are designed with brains instead of brawn, to fit the maximum number of tractors. They are not designed nor priced as Commercial machines that operate 8 hour daily / 5 days weekly.

The CM2160 is the exception to the above statement, having been designed as a Commercial machine.

**IMPLIED WARRANTIES:** You may have some implied warranties. For example, you may have an implied warranty of merchantability (that the hydraulic mower is reasonably fit for the general purpose for which it was sold) or an implied warranty of fitness for a particular purpose (that the hydraulic mower is suitable for your special purposes). This special purpose must be specifically disclosed to Hardee itself, and not merely to the dealer before your purchase, and Hardee itself, not just the dealer must approve, in writing that the special purpose is warrantable.

**These implied warranties do not apply at all if you use your hydraulic mower for business or commercial use.**



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