



OPERATOR'S AND MAINTENANCE MANUAL

WITH PARTS LISTING

Long Reach Cutter Model: LR40148

FOR SERIAL #s STARTING
WITH 13511
RELEASED 08/14/17



DANGER

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

4895 RED BLUFF RD LORIS, SC 29569 (843) 756-2555

WWW.HARDEEBYEVH.COM

INFO@HARDEEBYEVH.COM

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.

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

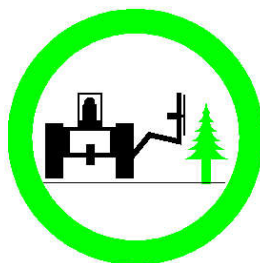


Fig. 2



Fig. 3

Table of Contents

Section 1 Introduction	1	Adjusting The Cylinder Control Valve	18
To Our Customers	1	Main Relief Valve	18
Owner's Responsibility	1	Individual Cylinder Counterbalance Valves	18
Purpose Of This Manual	1	LR40148 Control Valve Port Listing	19-20
Safety-Alert Symbol	1	LR40148 Valve / Joystick Wiring Schematic	21
Signal Words	1	Routine Maintenance Checklist	22
Customer Assistance	1	Section 6 Troubleshooting	23
Section 2 Safety Information	2	Troubleshooting Guide	23-24
General Safety Rules	2	Section 7 Specifications	25
Safety Decals	3-6	Summary Of Specifications	25
Section 3 Assembly And Installation	7	Section 8 Replacement Parts	26
Component Identification And Terminology	7	Parts Listing For Long Reach Mower LR40148	26-32
Tractor Requirements	8	Hydraulic Schematic	33-34
Driveshaft Installation	8	Belting Extension Kit Breakdown	35
Driveshaft Installation On Pump Shaft	8	Blade Holder With Blades Breakdown	36
Tractor Hook-Up Procedures	8	Hydraulic Motor Assembly	37
Driveshaft Installation On PTO	9	Front Chain Guard Breakdown	38
Hydraulic System Setup	9	Rear Chain Guard Breakdown	39
Working Safely With Hydraulic Lines	10	Logo Decal Replacement	40
Section 4 Operation Instruction	11	10601 Driveshaft Breakdown	41
Operation Instructions	11	11716 Driveshaft Breakdown	42
During Operation	11	11717 Driveshaft Breakdown	43
Daily Start-Up Checklist	11	Section 9 Reference	44
Operating Environment	11	Bolt Torque	44
Application Do's And Don'ts	11	Checking Bolt Torque	44
Using Your Mower	12	Torque Specifications	45
Getting Started	12	Section 10 Warranty	46
Joystick Control	12		
Boom Breakaway	13		
Mowing In Reverse	13		
Side Dressing Trees	13		
Cutting Larger Brush And Trees	13		
Unhook And Post Use Care	14		
Unhooking The LR40148	14		
Post Use Care	14		
Section 5 Maintenance	15		
Maintenance And Service Schedule	15		
First Stage Boom	15		
First Stage Boom To Second Stage Boom	15		
Deck And Second Stage Boom	15		
Hydraulic Motor Housing Assembly – Push Gate	15		
Greasing PTO Driveshaft To Pump	15		
Inspection And Replacement Of Blades	16		
Inspection And Replacement Of Blade Holder	16		
Inspection	16		
Replacement	16		
Checking The Cutter Head Relief Valve	16		
Adjusting Cylinder Speed	17		
All Hydraulic Cylinders In Unison	17		
Individual Hydraulic Cylinders	17		

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NOTE: A single remote from the tractor is required; Valve must have a detent position for constant flow. TRACTORS, EQUIPMENT AND OPTIONS VARY, VERIFY THROUGH THE TRACTOR MANUFACTURER OR DEALER TO CONFIRM IF YOUR TRACTOR MAY REQUIRE A POWER BEYOND KIT; TO PREVENT DAMAGE TO THE TRACTOR AND IMPLEMENT HYDRAULIC SYSTEMS.

Introduction

To Our Customers

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

We have tried hard to build a mower 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 mower. 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 mower 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 mower is designed to perform specific functions.

In this manual, you will find instructions on mower 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 mower and therefore assumes no responsibility or liability for damage or injury resulting from the use of this machine.

The upkeep of the hydraulic mower 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 mower. 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 mower.

Purpose of This Manual

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

If you need additional copies of this manual, please contact your local Hardee dealer or download a copy from our website at www.hardeebyevh.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 Mower. If for some reason you have any questions about the information in this manual or have a problem with your mower, 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 mower. 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 mower. You can find complete instructions for this mower in the Operation Instruction section of this manual. We believe that using your mower 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 mowers 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 mower 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 mower deck at any time. Never park the unit without placing the mower deck 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 mower deck or attempt to remove objects or branches from under the mower deck while the tractor is running. Serious injury, loss of limb or death may result.

DANGER

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

WARNING

Never use the mower 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 mower 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 mower 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 mower 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 mower 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 mower deck and tipping the tractor over.

Safety Information

Safety Decals

Your Hardee mower 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.

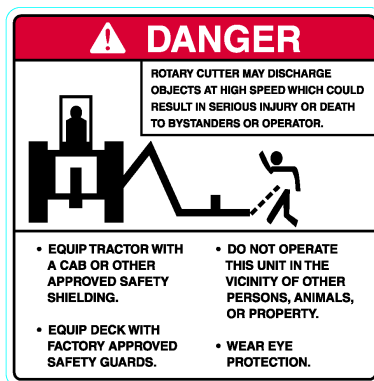
By law, you must replace any safety decals that are damaged or missing. You can order replacement decals from any local Hardee dealer. Just ask for part number 15845.

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.



Deck



Danger – Thrown Object
(P/N – 15845-16)



Danger – Rotating Driveline
(P/N – 15845-15)



Weight Box



Operating Safety and General
Instruction
(P/N – 15845-9)



Warning – Thrown Object
(PN 11005)

Safety Information

Safety Decals, continued



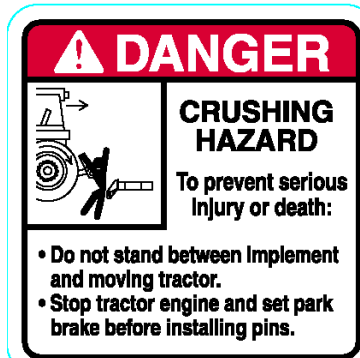
Deck



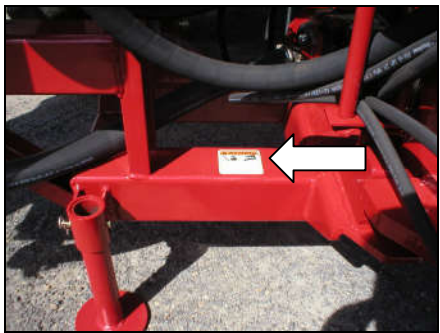
Warning – Rotating Components
(P/N – 15845-10)



Hitch Frame



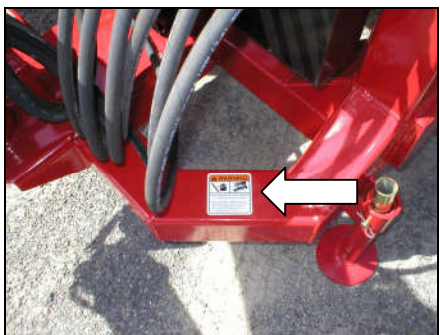
Danger – Crushing Hazard
(P/N – 15845-2)



Hitch Frame



Warning – High Pressure Fluid Hazard
(P/N – 15845-11)



Hitch Frame



Deck

Safety Information

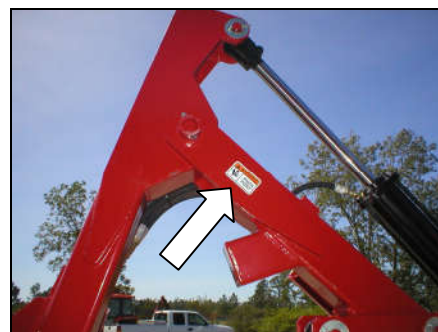
Safety Decals, continued



Deck Linkage



Deck Linkage



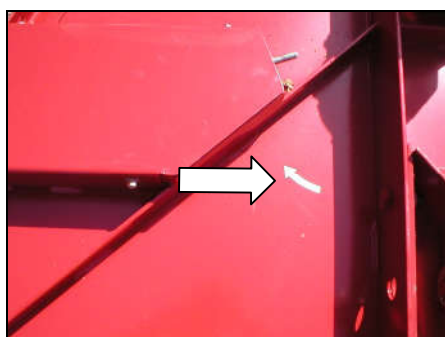
1st Stage Boom



1st Stage Boom



Warning – Pinch Point
(P/N – 15845-3)



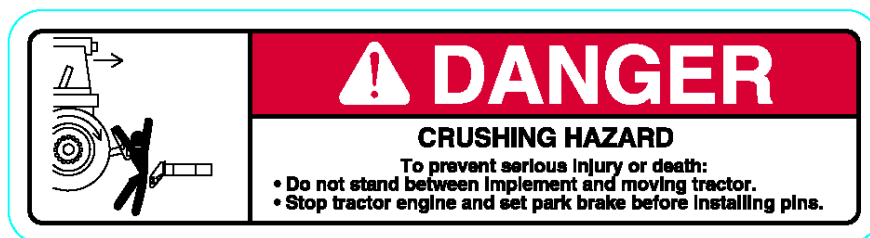
Deck



Blade Rotation
(P/N – 15845-4)



Hitch Frame



Danger – Crushing Hazard
(P/N – 15845-8)

Safety Information

Safety Decals, continued



Deck



Danger – Keep Clear
(P/N – 15845-1)



Hitch Frame



Danger – Electrocuting, Falling and Crushing Hazard
(P/N – 15845-12) (P/N – 15845-13) (P/N – 15845-14)



Deck



Danger – Exposed Blades
(P/N – 15338)



Deck – Front/Rear



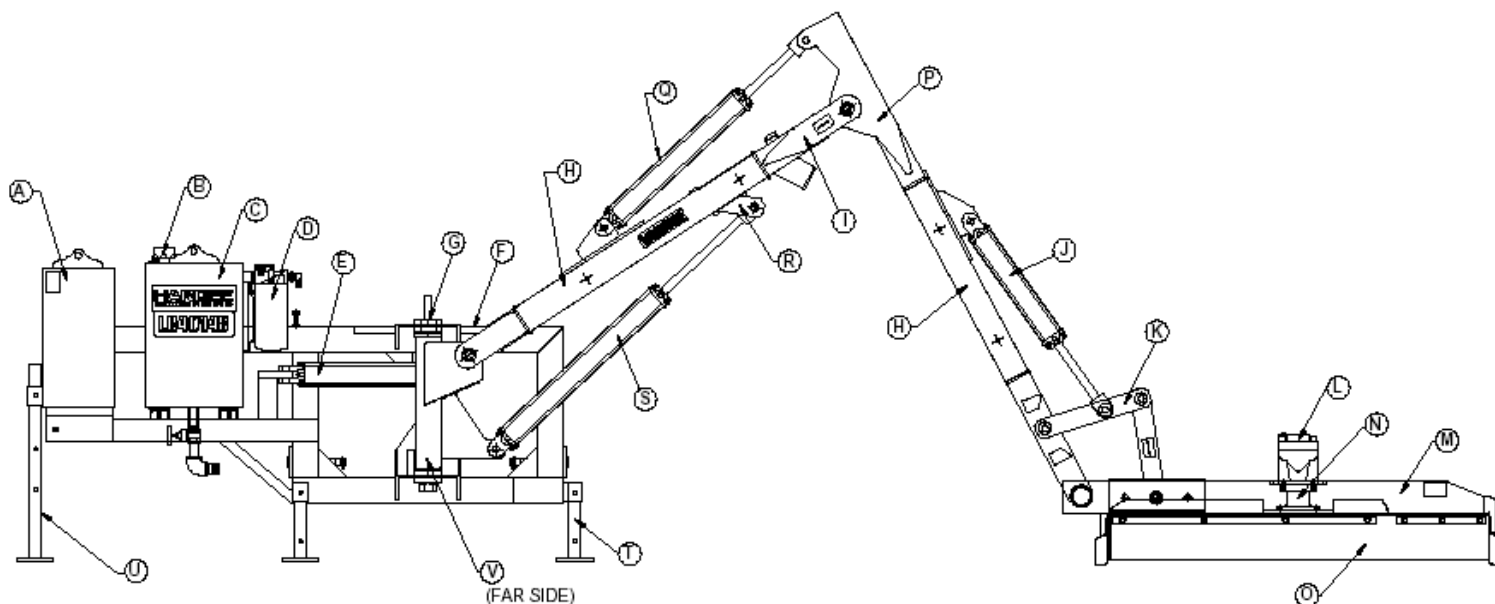
Weight Box – Front/Rear

15852 – Red Reflector, Rear
(Not Shown)

15853 – Yellow Reflector, Front

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 nd Stage (Reach) Boom
F	Hitch Frame	Q	2 nd Stage Cylinder
G	Swing Post	R	Lift Break-Away
H	Hose Guard	S	1 st Stage Cylinder
I	1 st 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 Mower you have purchased is designed for use with 80 horsepower; 4-wheel drive or 90 horsepower; 2-wheel drive and above tractors, equipped with a 540 RPM or 1000 RPM rear power take-off (PTO).

Your tractor must also be equipped with a standard hitch. A category 2 or 3 quick hitch can also be used with 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.



Figure 1



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.

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 mower hitch frame. The LR40148 is designed to work with a standard, category 2 or category 3 quick hitch.

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 mower. 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 mower using anti-rotation chain.



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 mower 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 36).
 1. Pressure line to top port (marked P).
 2. Return line to bottom port (marked T).
 - Check all fluid levels, tractor and mower. 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.
- ✓ Raise all jack stands before moving mower.

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.

- ✓ Lift tractor PTO guard.
- ✓ Pull U-joint guard back along driveshaft.
- ✓ Press driveshaft yoke plunger in and slip driveshaft U-joint yoke onto splined PTO shaft. Ensure that yoke plunger returns to locked position.
- ✓ Position U-joint guard over driveshaft U-joint.
- ✓ Lower tractor PTO guard.
- ✓ 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. **SEE NOTES ON TABLE OF CONTENTS PAGE.**

The LR40148 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.

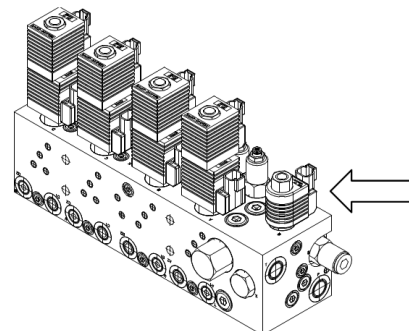
The LR40148 is designed to function with either open or a closed center hydraulic system. However, you must make some alterations for it to function efficiently and properly on closed center hydraulic systems.

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:

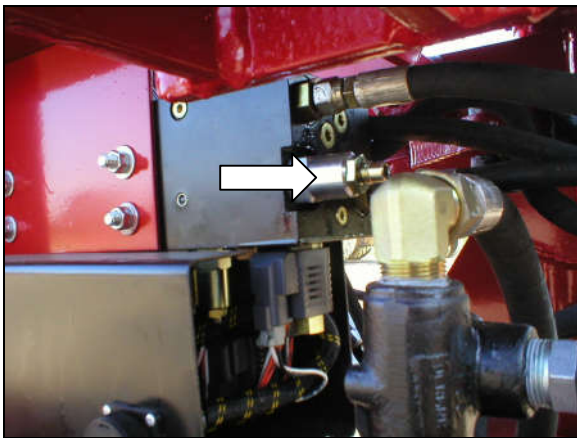
- ✓ With the tractor engine off and parking lever set, disconnect the electrical plug to the main solenoid. (See below) Neatly tuck the male portion of this connection into the wire cover box, as it will no longer be used.
- ✓ Remove the main solenoid coil, then remove the solenoid cartridge (the stem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



Assembly and Installation

Hydraulic System Setup, continued

- ✓ Screw the closed center conversion plug into the cylinder control valve where the solenoid cartridge was.
- ✓ 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!



- ✓ Insert a 1/4" allen-wrench into the adjusting stem at the top of the valve. Loosen the 3/4" lock nut at the base of the stem slightly, and now tighten the adjusting stem down completely! Re-tighten the stem lock nut.
- ✓ The conversion is now complete and the LR40148 is set-up for **PRESSURE COMPENSATING CLOSED CENTER HYDRAULIC SYSTEMS ONLY!**



IMPORTANT

If the LR40148 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 LR40148 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 LR40148 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 mower 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 mower before starting tractor engine. Objects thrown by the mower blades can cause severe personal injury or death.

Before any operation of the mower, be familiar with the locations and functions of the unit's controls. Being familiar with the mower 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 mower. Speed and skill will be attained much more easily if the necessary time is spent to familiarize yourself with the mower 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, <i>For best results, use Hardee hydraulic oil – part number 23333</i>	-
<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 mower blades can cause excessive mower vibration resulting in damage to the gearbox and structural damage to the mower. You should replace or sharpen blades in pairs. Excessive vibration can cause rotating parts to break and fly off the mower, 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 Mower

Getting Started

You will need to spend some time getting the “feel” of your new mower. Spend time reviewing the following steps before using your mower 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 mower to the tractor, see the hook-up procedures on page 8 for complete instructions. After you have the mower attached, double check to ensure that no part of the tractor is in contact with the mower.
- ✓ 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 mower 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 mower!

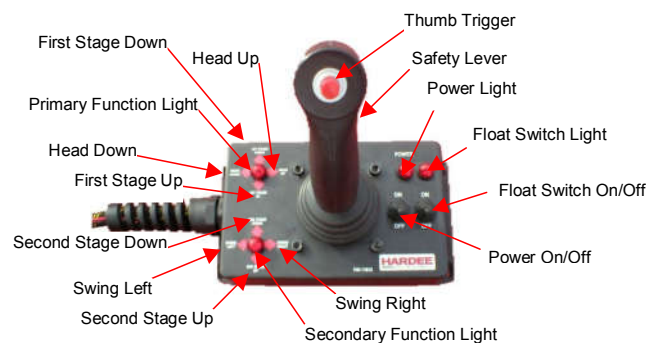
- ✓ With all controls in neutral, the tractor in park, the throttle in idle position and the joystick power switch off... Start the tractor engine.
- ✓ Slowly engage the tractor hydraulic system to detent position. Leaving the tractor PTO “off”.
- ✓ Now with the mower under power, practice using the joystick to control the movement of the mower deck 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: Float switch is for Flail unit only.



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

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

After you feel comfortable with the basic mower 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 mower is running smoothly, increase the tractor to 540 PTO RPM and lift the mower deck off the ground. Swing the mower deck 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 mower deck to follow the ground contour you are cutting.

Boom Breakaway

The LR40148 is designed with an automatic breakaway system to protect the mower booms. This works when the mower deck contacts a solid obstruction or the mower deck 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 mower deck 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 mower deck and the booms begin to break back, simply lift the boom slightly to free the mower deck, then swing the boom back into normal cutting position. See figure 2

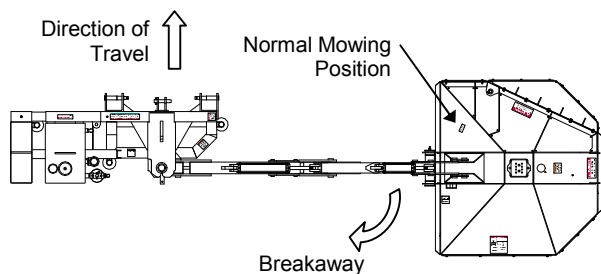


Figure 2

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 mower if you allow the boom arm to reach the bottoming-out point!

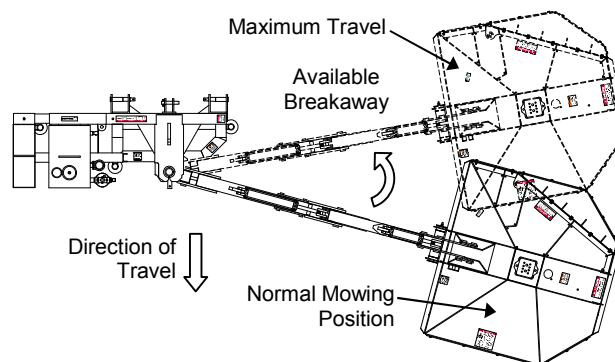


Figure 3



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 mower will allow you to “side dress” trees if needed. To do this, raise the booms to the desired height and tilt the mower deck to the vertical position. With the blades “on” move forward slowly, removing only approximately 12 inches of material per pass.



DANGER

Never operate the mower 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 LR40148 is the mower deck “Flip Gate”. The flip gate is used when you need to remove trees as large as 4 inches in diameter. This is accomplished by positioning the flip gate at a right angle to the tree you want to cut. Apply slow steady pressure with the boom arm to expose the blade tips to the tree.

Operation Instruction

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

Note: The Lift Gate is an option that can be purchased from any Hardee dealer.



Figure 4

DANGER

Never attempt to use the mower 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 mower 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 LR40148

- ✓ 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 mower 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.

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.

Maintenance

Maintenance and Service Schedule

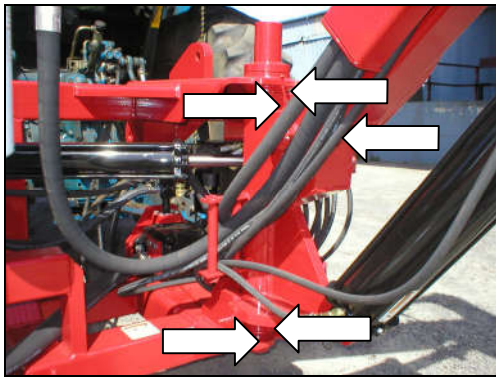
This section is dedicated to the maintenance of the LR40148. As with any piece of equipment, the performance and life span depends on the proper operation and maintenance.

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.

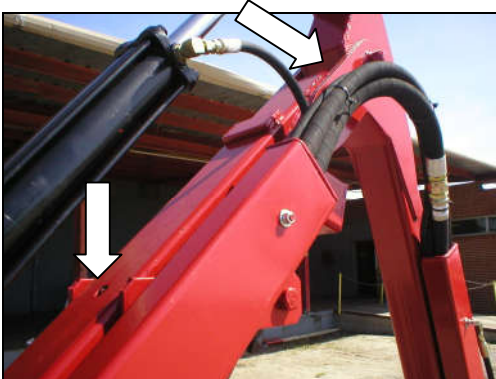
First Stage Boom

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



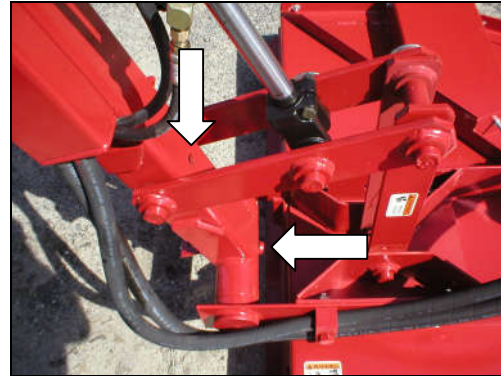
First Stage Boom to Second Stage Boom

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



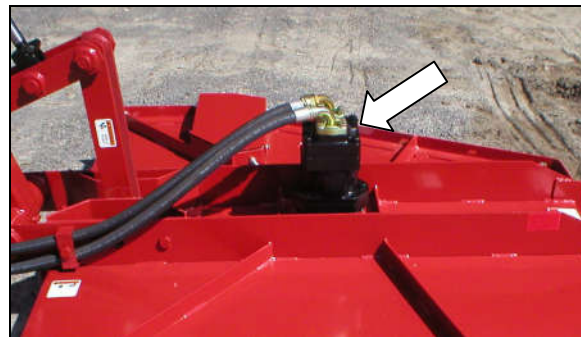
Deck and Second Stage Boom

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 mower 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

Inspection and Replacement of Blades

The cutting blades on the Hardee mower 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 mower 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 mower 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 33 for reference.*

Checking the Mower Deck Relief Valve

The LR40148 is equipped with a mower deck relief valve that comes pre-set from the factory. This valve is attached to the top of the pump (Shown on Pages 35-36). 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 mower deck relief is as follows:

- ✓ Start the tractor and with the tractor in park, place the mower deck on the ground. Engage the tractor PTO to power the mower deck 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 than 2500, contact your local Hardee dealer for assistance.

Maintenance

Checking the Mower Deck Relief Valve, continued



Caution

Never let the unit operate in the capped position for over 5 seconds. A reading can be obtained accurately in this amount of time.

- ✓ Now you can remove the cap and gauge, and re-install the pressure line.



CAUTION

Never vary from the 2500-psi mower deck 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 LR40148 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 LR40148 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 LR40148. 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 LR40148. 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 LR40148 comes equipped with a provision that will allow easy adjustment of the individual cylinder speeds.

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

NOTE – Referring to; Swing Section: To

change/resize an orifice, remove the hydraulic hose and the 6-M-JIC X 6-M-ORB hydraulic fitting it attaches to must be disconnected from the valve. Be sure to keep the port and fittings free of dirt and metal shavings.

NOTE – Referring to; 1st Stage, 2nd Stage, and Deck Sections: To change/resize an orifice, Remove Coils/Plug, the orifice can be screwed in/out directly to the inner threaded hole. Be sure to keep the port and fittings free of dirt and metal shavings.

-See pages 19 and 20 for factory orifice size and location.



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.



CAUTION

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

Maintenance

Adjusting the Cylinder Control Valve

The LR40148 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 LR40148 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, insert a 1/4” allen-wrench into the adjusting stem at the top of the valve. Loosen the 3/4” lock nut at the base of the stem slightly, and then turn the adjusting stem to make your pressure change. Re-tighten the stem lock nut.

Note: The allen-head 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 1/4 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.

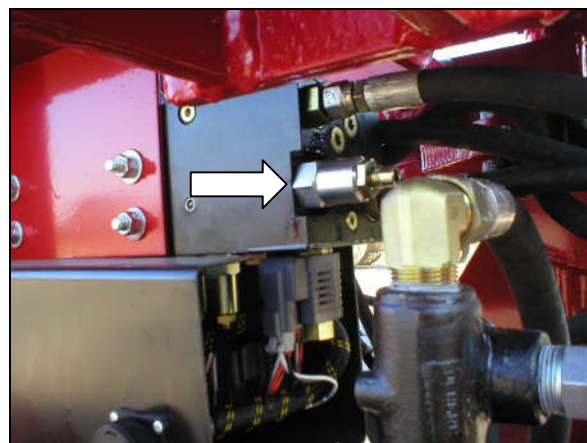


Figure 6

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 mower 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.

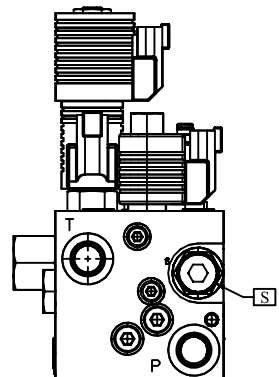
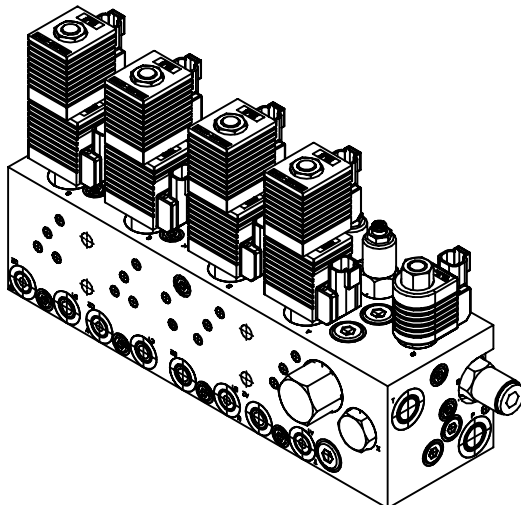
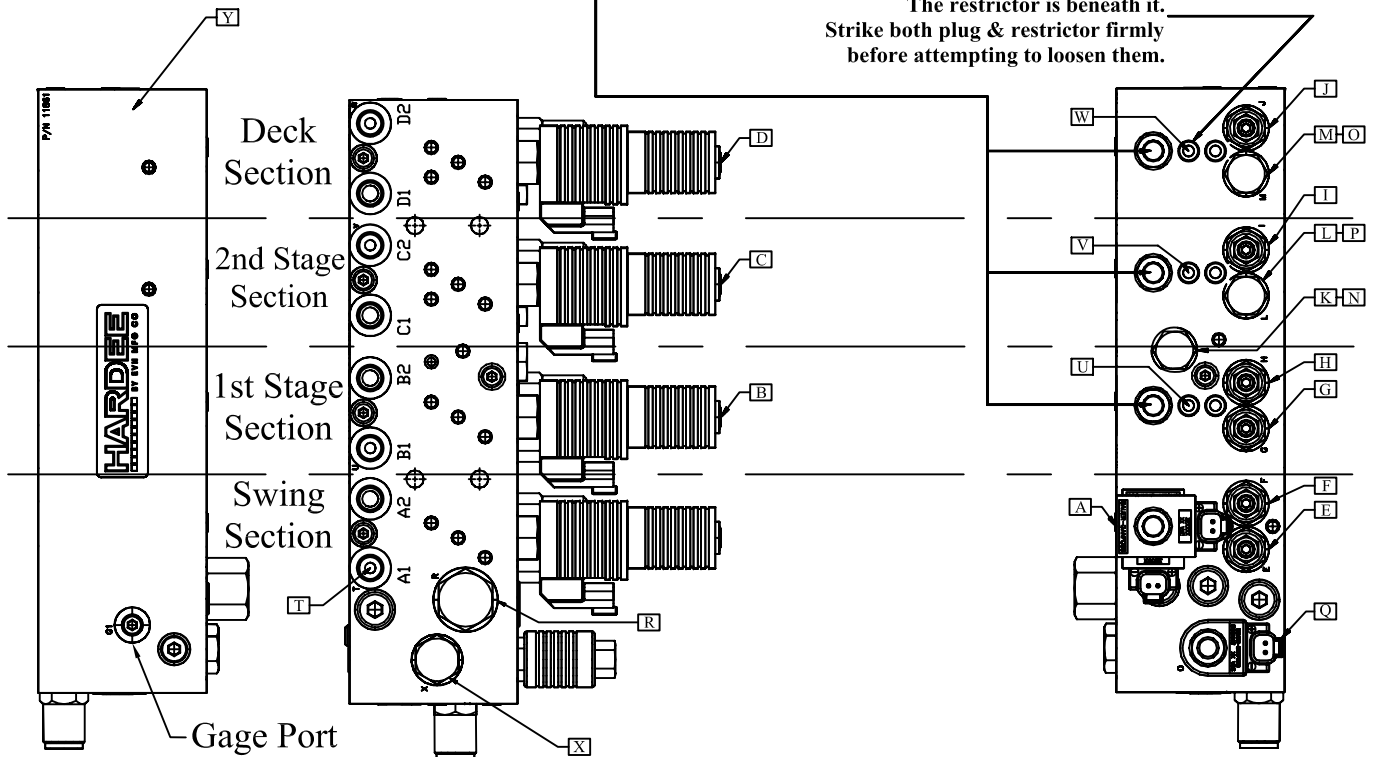
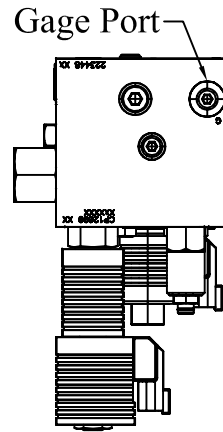
LR40148 Control Valve Port Listing

Item	Description	EVH P/N	Internal Parts	Torque	Setting
A	Solenoid Valve	15876	Coil	2.5 ft lbs. - Coil Nut	N/A
		15335	Stem	15 ft lbs. - Stem	
		16560	Seal Kit	-	
B	Solenoid Valve	15876	Coil	2.5 ft lbs. - Coil Nut	N/A
		15335	Stem	15 ft lbs. - Stem	
		16560	Seal Kit	-	
C	Solenoid Valve	15876	Coil	2.5 ft lbs. - Coil Nut	N/A
		15335	Stem	15 ft lbs. - Stem	
		16560	Seal Kit	-	
D	Solenoid Valve	15876	Coil	2.5 ft lbs. - Coil Nut	N/A
		15335	Stem	15 ft lbs. - Stem	
		16560	Seal Kit	-	
E	Counterbalance	16186	Valve	33 ft lbs.	1000 PSI
		16542	Seal Kit	-	
F	Counterbalance	16186	Valve	33 ft lbs.	1000 PSI
		16542	Seal Kit	-	
G	Counterbalance	16187	Valve	33 ft lbs.	1500 PSI
		16542	Seal Kit	-	
H	Counterbalance	16188	Valve	33 ft lbs.	800 PSI
		16542	Seal Kit	-	
I	Counterbalance	16189	Valve	33 ft lbs.	1800 PSI
		16542	Seal Kit	-	
J	Counterbalance	16189	Valve	33 ft lbs.	1800 PSI
		16542	Seal Kit	-	
K	Check Valve	16293		33 ft lbs.	N/A
L	Check Valve	16293		33 ft lbs.	N/A
M	Check Valve	16293		33 ft lbs.	N/A
N	Piston Ref. 621459	N/A		33 ft lbs.	N/A
O	Piston Ref. 621460	N/A		33 ft lbs.	N/A
P	Piston Ref. 621461	N/A		33 ft lbs.	N/A
Q	Solenoid Valve	15881	Coil	2.5 ft lbs. - Coil Nut	N/A
		15880	Stem	15 ft lbs. - Stem	
		16561	Seal Kit	-	
R	Priority Flow Control	16288	Valve	33 ft lbs.	5.0 GPM
		16512	Seal Kit	-	
S	Relief Valve	15908		-	2500 PSI
T	1/16-27 NPTF Orifice (.040)	15299		-	N/A
U	1/16-27 NPTF Orifice (.062)	16713		-	N/A
V	1/16-27 NPTF Orifice (.040)	15299		-	N/A
W	1/16-27 NPTF Orifice (.040)	15299		-	N/A
X	Check Valve	16293		44 ft lbs.	N/A
Y	Block Only	16525		-	N/A

LR40142 & LR40148 Orifice Locations

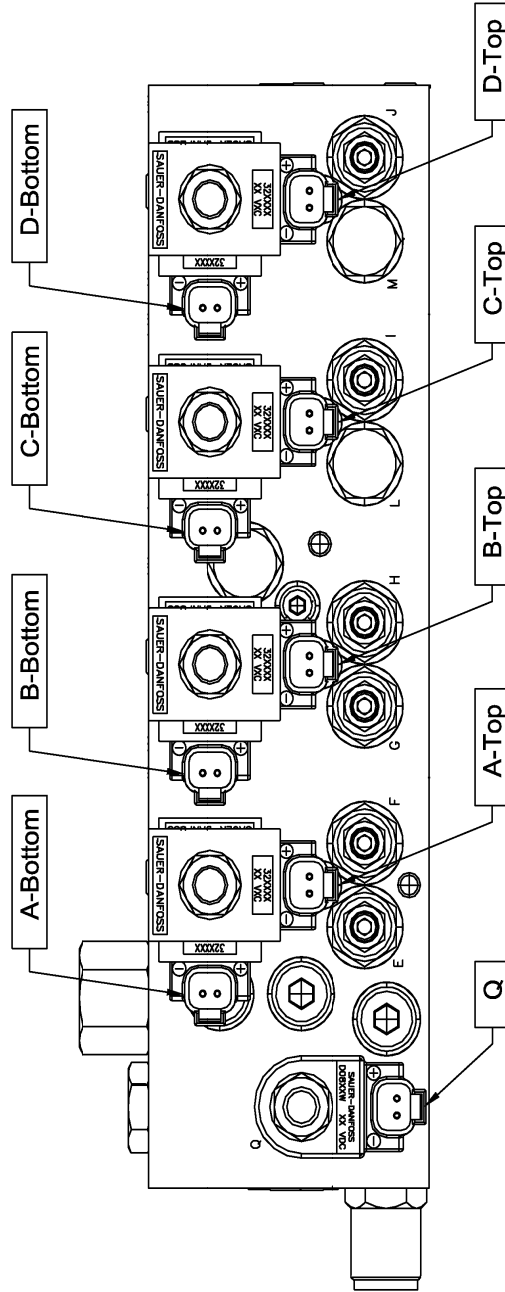
The "Deck", "1st Stage", and "2nd Stage" solenoids have been removed for drawing purposes only in order to show the stems in these three places

This is a $\frac{3}{16}$ " Allen Headed O-ring plug
The restrictor is beneath it.
Strike both plug & restrictor firmly before attempting to loosen them.



LR40148 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)
Unload	N/A	N/A	Q	Black	2	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			•	

Troubleshooting

Troubleshooting Guide

Hydraulic System, Blade 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)
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
Motor Whines	Pressure Setting On Relief Valve Too Low	Check Relief Valve Setting (Refer To Page 16)
	Worn Or Damaged Motor	Repair / Replace Motor
	Improper Oil In System	Replace Oil
Motor Seal Continually Blows Out Unit Vibrates Severely		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)
	Internal Popit Valve Damaged	Replace Popit Valves
	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 Mower Deck Housing
Mower Deck Grinds And Roars When Operating	Worn Bearings Or Improper Lubrication In Mower 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 Relief Valve Will Not Adjust To Specifications	Blown Or Worn Cylinder Packing	Repair / Replace Cylinder
	Defective Or Worn Valve Seat	Repair / Replace Relief Valve And Adjust To Specifications
	Hydraulic Valve Cracked Internally Improper Oil	Repair / Replace Valve 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
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	LR40148
Approximate Weight (lbs.)	2,900 - Ready To Mow
Blade Tip Speed (ft/min)	540 PTO – 16,096 ft/min / 1000 PTO – 16,210 ft/min
Blades	1/2" X 3", Free Swinging
Cutting Capacity / Suggested Usage	Grass, Heavy Brush Up To 4" In Diameter
Cutting Width	48"
Deck Height	8 1/8"
Deck Thickness	10 Gauge
Driveline	Category 3
Driveline Protection	Hydraulic Relief Valve
Hitch	Standard Hitch, Category 2 Or 3 Quick Hitch
Motor	Hydraulic Vane Motor
Overall Length	272"
Overall Width	68"
Transport Width	86"
PTO Operating Speed	540 OR 1000 RPM
Pump	Hydraulic Spring Loaded Vane Pump
Round Blade Holder	Standard
Rubber Shielding	Standard – Front & Rear
Skids	Standard – Weld On
Tractor HP Required	80 And Up
Hydraulic Oil System Capacity	35 Gallons
Controls	Cab Mounted Joystick
Tractor Hydraulics	(1) Hydraulic Remote With Detent Needed

NOTES

LR40148Complete

Item	Part Number	Qty.	Description	DWG. NO.			REV.		
				REV	CHANGE	BY	DATE	ECN	H
1	10002	2	Hex Bolt, 1/4"-20 X 1" Gr.5 Plated	F	16705 REPLACED 15240(1000 RPM PUMP)	C.K.N.	12/15/16	1672	
2	10006	4	Hex Bolt 1/4" x 3" gr.5 plated		16747 REPLACED 10448 (Hyd. Cylinder)	T.B.B.	1/16/17	1655	
3	10032	2	Hex Bolt 3/8 x 1-1/2 gr.5 plated		16750 REPLACED 15928 (Hyd. Cylinder)	T.B.B.	2/3/17	1675	
4	10034	2	Hex Bolt 3/8" x 2-1/2" gr.5 plated	G	16751 REPLACED 10454 (Hyd. Cylinder)	T.B.B.	2/17/17	1674	
5	10039	4	Hex Bolt 3/8 x 5 gr.5 plated		22806 REPLACED 22806 (Deck Weldment)	T.B.B.			
6	10071	10	Hex Bolt 1/2 x 1 gr.5 plated						
7	10072	2	Hex Bolt 1/2 x 1 1/2 gr.5 plated	H	16845 REPLACED 16750 (Hyd. Cylinder)	V.A.M.	8/11/17	1686	
8	10092	4	Hex Bolt 5/8 x 2 gr.5 plated						
9	10093	2	Hex Bolt 5/8" x 2-1/2" gr.5 plated						

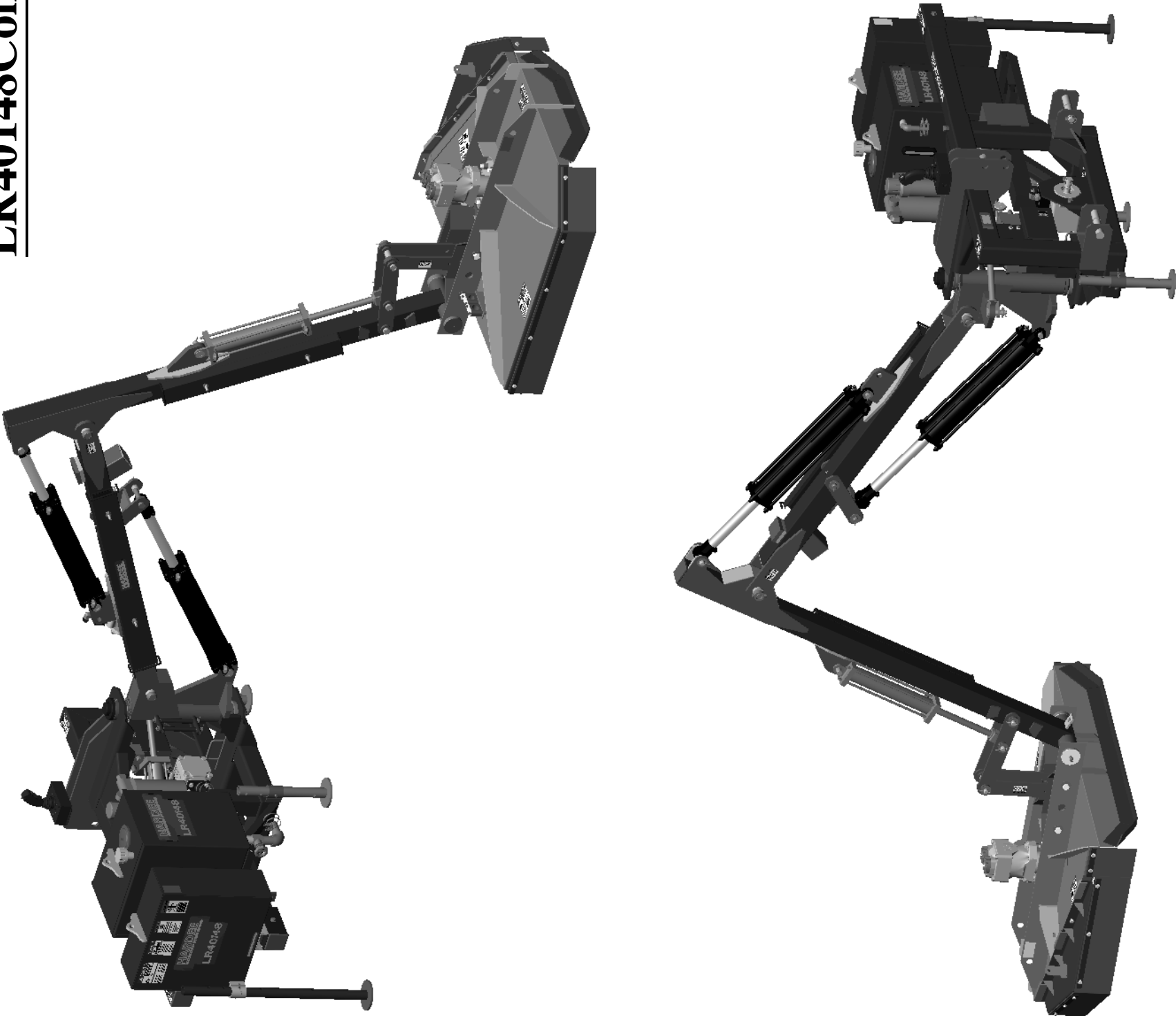
10	10111	4	Hex Bolt 3/4"-10 X 2" gr.5 Plated	50	10865	1	PRESSURE HOSE 1" x 127"	95	15845-13	1	DANGER DECAL (KIT 15845)	138	23232	1	Support Brace
11	10153	4	Lock Nut, 1/4" Plated	51	10866	1	1" X 106" Pressure Hose	96	15845-14	1	DANGER DECAL (KIT 15845)	139	23280	1	WELDMENT, Cylinder Breakaway
12	10154	1	Lock Nut 5/16"-18 Plated	52	10872	2	Pressure Flange SET	97	15845-15	1	DANGER DECAL (KIT 15845)	140	23287	2	Boom To Deck Bracket Weldment
13	10166	12	Lock Nut 5/8"-11 plated	53	11005	1	Decal, Warning - Thrown Objects	98	15845-16	2	DANGER DECAL (KIT 15845)	141	23290	2	WELDMENT, Boom to Deck Bracket, 21"
14	10167	2	3/4" Hex Nut (Gr.5 Plated)	54	11010	3	Large Hardee Logo Decal	99	15845-2	1	DANGER DECAL (KIT 15845)	142	23292	1	PIN WELDMENT (1" x 5" LG)
15	10168	8	3/4"-10 Locknut (Gr.5 Plated)	55	11032	1	Small Hardee Logo Decal	100	15845-3	4	WARNING DECAL (KIT 15845)	143	23294	1	1st Stage Boom
16	10175	10	3/8"-16 Locknut (Gr.5 Plated)	56	11673	1	Joystick	101	15845-8	1	DANGER DECAL (KIT 15845)	144	23310	1	2nd Stage Boom
17	10176	8	1/2" Locknut (Gr.5 Plated)	57	11675	1	Return Filter Assembly	102	15845-9	1	WARNING DECAL (KIT 15845)	145	23320	1	Cylinder Mount Weldment
18	10181	1	Lockwasher 5/16" plated	58	11703	1	3/4" Street Elbow	103	15852	2	Red Reflector Decal	146	23325	1	WELDMENT, Weight Box
19	10184	8	Lockwasher 1/2 plated	59	11714	6	6-M-JIC X 6-M-ORB Straight	104	15853	2	Yellow Reflector Decal	147	23335	1	Weldment, Oil Tank
20	10185	2	Lockwasher 5/8" Plated	60	11727	1	Serial Number Plate	105	15854	1	Manual Holder	148	23340	1	Stand Weldment
21	10186	10	Lockwasher 3/4" Plated	61	11850	1	Web Site Decal	106	15860	2	U-Nut, 1/4"-20	149	23345	1	Head Mounting Bracket Weldment
22	10200	2	1/4" Plated Flatwasher	62	11860	10	TIE STRAP, (14" LG.) (100/PK)	107	15910	46	HOSE SLEEVE	150	23349	1	Outer Hose Guard Weldment
23	10202	10	3/8" Flatwasher (Plated)	63	11876	1	Hitch Frame Wiring Harness (Pigtail)	108	15968	1	Cotter Pin 1/4" x 3"	151	23352	1	Inner Hose Guard Weldment
24	10204	20	1/2 Flatwasher (Plated)	64	13332	2	CLAMP, SIZE 3/4" TO 1-3/4" X 9/16"	109	16012	2	Fitting, 12 F50X-S Straight Thread Connector	152	23355	1	WELDMENT, GUARD
25	10206	8	Flatwasher 3/4 plated	65	13335	4	STAINLESS STEEL CLAMP, 1-1/2" TO 1-3/4"	110	16050	4	Rivet For Wire Harness	153	23361	2	Spacer, 1" X 2-1/8"
26	10207	25	Flatwasher, 1" plated	66	13557	1	3/4"-M-NPT X 3/4" Metal Hose Barb	111	16071	1	PRESSURE HOSE 3/8" X 192" W/6-F-JIC	154	23363	2	SPACER (1" SCH 40 Pipe x 5/8")
27	10252	12	Cotter Pin 3/16" X 2" Plated	67	13563	1	1-1/4"-M-NPT X 1-1/2" Metal Hose Barb	112	16100	1	Sight Gauge 5", With Thermometer	155	23370	1	1-1/2" x 31" SUCTION HOSE
28	10322	3	1/4" Grease Fitting, 1/4"-28 Threaded	68	13632	1	1/4" NPT Metal Cap	113	16138	2	Lock Nut 7/16"-14 NC with Nylon Insert	156	23379	2	1-1/4" X 9" Pin Weldment for LR's
29	10335	1	Hardee Red Paint - (Not Shown)	69	13697	1	1-1/4" NPT Female Threaded Elbow	114	16335	1	Hour Meter - not for resale	157	23380	1	WELDMENT, 1" x 6 1/4" PIN
30	10336	1	Gear Oil [85W-140] - (Not Shown)	70	13758	1	20-M-NPT X 16-F-NPT Reducer	115	16579	1	Hydraulic Motor Housing Assembly	158	23434	5	Pin Weldment
31	10339	2	Pop Rivet	71	13778	1	1-1/4" X 3-1/2" Long NPT Nipple	116	16682	2	Relief Valve Assy. - 2700 PSI - Pump Mounted	159	23457	2	COLLAR, for 23379 PIN (Bushing)
32	10346	2	3 pt. Snap Pin (Lynch Pin)	72	13905	8	6-M-JIC X 8-M-NPT 90 Deg. Elbow	117	16683	2	Relief Valve 2700 PSI - w/TAMPER PROOF CAP	160	25117	2	Spacer
33	10368	1	1-1/4" Gate Valve	73	13909	2	6-M-JIC X 6-M-ORB 90 Deg. Elbow	118	16684	2	Fitting, #12 HB/ M-ORB Straight	161	25724	5	WELDMENT, Cylinder Pin
34	10373	1	Hydraulic Oil	74	13974	1	16-M-JIC X 16-M-NPT 90 Deg. Elbow	119	16685	8	Screw, 7/16-14 X 2-1/4 long - Zinc Plated	162	26012	1	Wire Cover Weldment
35	10387	2	O-ring	75	13975	2	12-M-ORB X 12-M-JIC 90 Deg. Elbow	120	16686	8	Lock Washer, Zinc Plated 7/16 High Collar				
36	10388	1	O-Ring	76	13981	2	8-M-ORB X 8-M-JIC Straight	121	16697	2	ORB Hollow Hex Plug				
37	10390	3	Clip Pin (1/8 x 2)	77	15241	1	Hydraulic Vane Motor	122	16747	2	CYLINDER, 3 X 17"				
38	10393	3	Universal Clip Pin	78	15251	1	1" Hose Clamp Body (SET OF 2)	123	16751	1	CYLINDER, 4 X 24 TIE ROD, Long Rod, LR"				
39	10419	2	Hitch Pin, Cat. 2 & 3, Clevis Style	79	15252	1	3/4" Hose Clamp Body (SET OF 2)	124	16845	1	Cylinder, 4" X 24" With 2.0" Rod				
40	10501	1	FLOW EZY BREATHER	80	15255	2	Hose Clamp Cover Plate	125	20031	1	Access Cover				
41	10538	2	Sleeve for 10419 Pin	81	15259	1	Control Valve	126	22691	1	LR40148 / LR50148 Front Corner Belting				
42	10582	1	PRESSURE HOSE 3/8" X 55" W/6-F-JIC	82	15263	1	Joystick Wiring Harness	127	22751	1	Short Belting Flat				
43	10583	1	3/8" SAE 100 R1 X 125" W/6-F-JIC	83	15273	3	DECAL, MODEL LR40148	128	22770	1	LR40148 / LR50148 Belting Extension Kit				
44	10584	1	PRESSURE HOSE 3/8" X 210" W/6-F-JIC	84	15326	1	Pressure Hose 3/8" X 17" Lg. W/ 6-F-JIC Both Ends	129	22799	1	LR40148 / LR50148 Rubber Belting Kit				
45	10585	2	PRESSURE HOSE 3/8" X 83" W/6-F-JIC	85	15338	1	Danger Decal, Exposed Blades	130	22803	1	Blade Holder w/Blades				
46	10586	1	3/8" X 86" Pressure Hose W/ 6-F-JIC X 8-M-NPT	86	15339	1	PRESSURE HOSE 3/8" X 32" W/6-F-JIC	131	22806	1	LR40148 / LR50148 Deck Weldment (6 Bolt)				
47	10587	1	PRESSURE HOSE 3/4" X 106" W/12-M-JIC	87	15461	2	CAP 37 Deg. Flare #8 (1/2")	132	22833	2	Fluid Connector				
48	10588	1	PRESSURE HOSE 3/4" x 127"	88	15466	2	Tubing Insert, 3-1/2" Sqr. X 11	133	23130	1	Pivot Sleeve				
49	10646	1	Grease	89	15481	1	Slotted Hex Nut 1-1/4" -18UNEF	134	23131	1	End Cap Weldment				
				90	15845	1	Hydraulic Decal Kit	135	23157	1	RETURN HOSE, 3/4 X 42"				
				91	15845-1	1	DANGER DECAL (KIT 15845)	136	23160	2	Stand Weldment, 17-7/8" Tall				
				92	15845-10	1	WARNING DECAL (KIT 15845)	137	23226	1	ASSEMBLY Hitch Frame, LR40148				
				93	15845-11	2	WARNING DECAL (KIT 15845)								
				94	15845-12	1	DANGER DECAL (KIT 15845)								

Note:
This list of components is strictly to be viewed as a "BILL OF MATERIALS" of the "COMPLETE" mower. It is not related to any illustration.

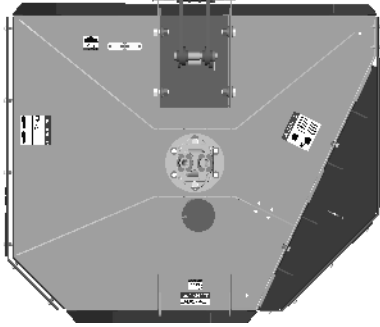
MODELED BY		T.B.B.	1/18/16	HARDEE BY		
				EVH MFG. CO.		
DRAWN BY		C.K.N.	3/23/10	LORIS S.C.		
				DESCRIPTION		
MATERIAL		R.M.N.		SHEET 1 of 9		
		N/A		LR40148 COMPLETE		
Manufactured By: EVH Mfg. Co., LLC				DO NOT SCALE	B DWG. NO.	22780
				DWG SIZE		

LR40148Complete

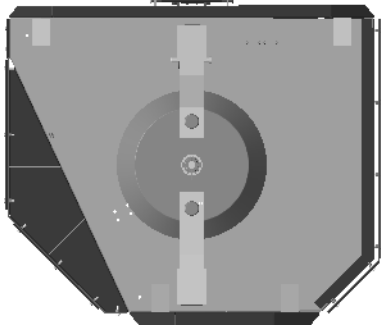
DWG. NO.		22780		REV.		H
REV	CHANGE	BY	DATE	ECN		
F	16705 REPLACED 15240(1000 RPM PUMP)	C.K.N.	12/15/16	1672		
	16747 REPLACED 10448 (Hyd. Cylinder)	T.B.B.	1/16/17	1655		
G	16750 REPLACED 15928 (Hyd. Cylinder)	T.B.B.	2/3/17	1675		
	16751 REPLACED 10454 (Hyd. Cylinder)	T.B.B.	2/17/17	1674		
H	22806 REPLACED 22806 (Deck Weldment)	T.B.B.	2/17/17	1674		
	16845 REPLACED 16750 (Hyd. Cylinder)	V.A.M.	8/11/17	1686		



Top View



Bottom View

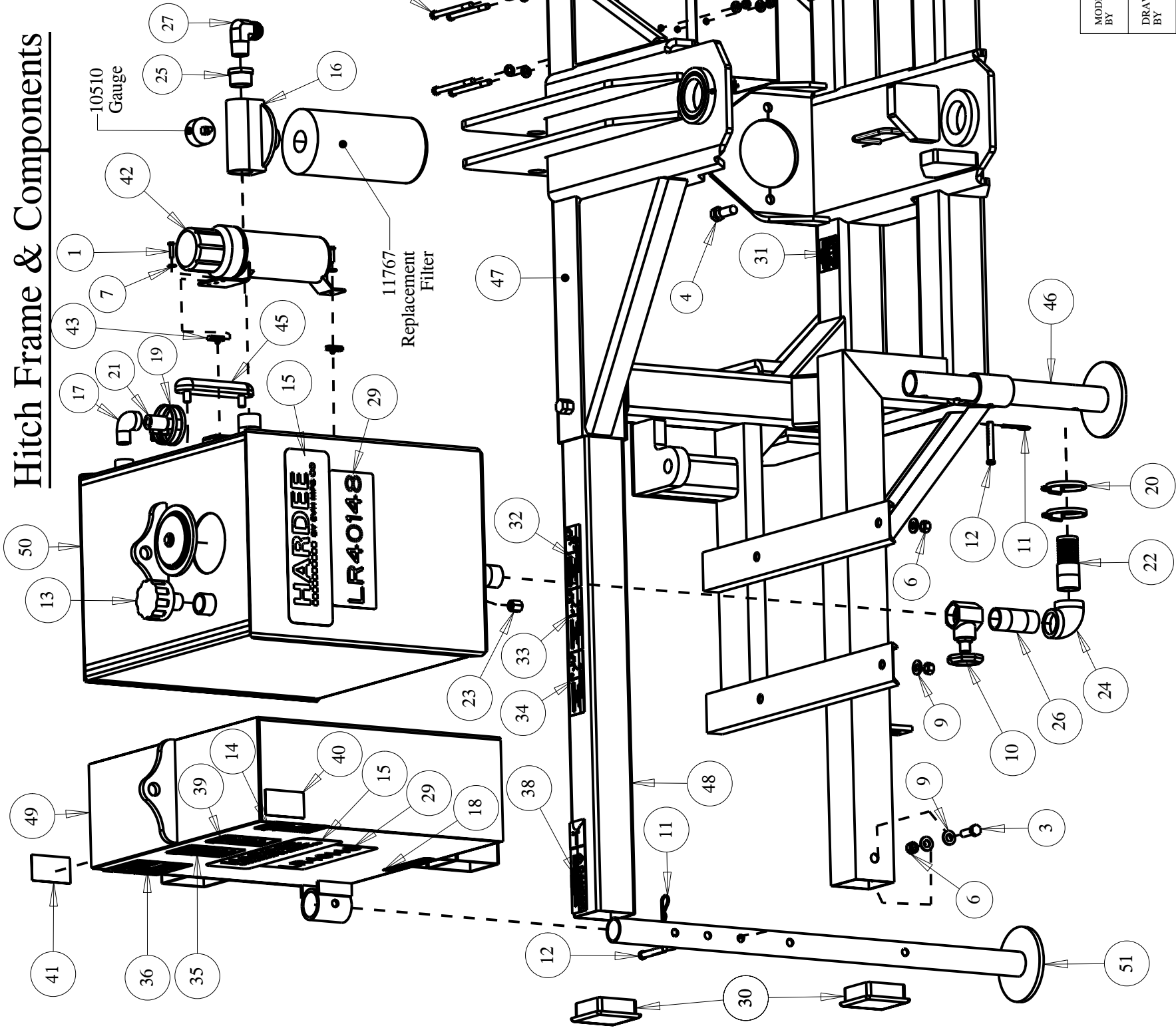


MODELED BY		T.B.B.	1/18/16	HARDEE BY	
DRAWN BY		C.K.N.	3/23/10	EVH MFG. CO.	
MATERIAL		R.M.N.		LORIS S.C.	
				DESCRIPTION	
				SHEET 2 of 9	
		N/A		LR40148 COMPLETE	
Manufactured By:		EVH Mfg. Co., LLC		DO NOT SCALE	DWG. NO.
				B	22780

All Dimensions in Inches Unless Otherwise Specified	
Dimensions in [] are in Millimeters	
Tolerance Unless Otherwise Specified	
Fractional Dimensions ± 1/16"	Angular Dimensions ± 1°
Decimal Dim. to Limits Shown	
All Holes to be +0 -1/32"	

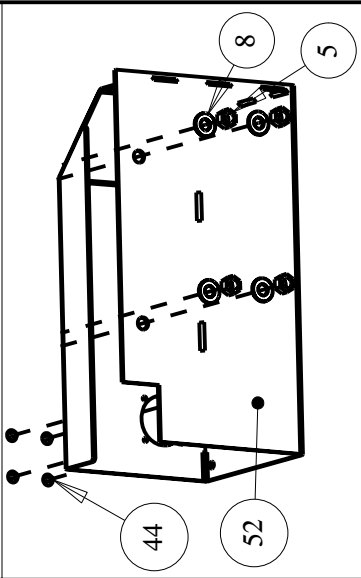
Item	Part Number	Qty.	Description
1	10002	2	Hex Bolt, 1/4"-20 X 1" Gr.5 Plated
2	10039	4	Hex Bolt 3/8 x 5 gr.5 plated
3	10072	2	Hex Bolt 1/2 x 1 1/2 gr.5 plated
4	10092	2	Hex Bolt 5/8 x 2 gr.5 plated
5	10175	4	3/8"-16 Locknut (Gr.5 Plated)
6	10176	6	1/2" Locknut (Gr.5 Plated)
7	10200	2	1/4" Plated Flatwasher
8	10202	8	3/8" Flatwasher (Plated)
9	10204	8	1/2 Flatwasher (Plated)
10	10368	1	1-1/4" Gate Valve
11	10390	3	Clip Pin (1/8 x 2)
12	10393	3	Universal Clip Pin
13	10501	1	FLOW EZY BREATHER
14	11005	1	Decal, Warning - Thrown Objects
15	11010	3	Large Hardee Logo Decal
16	11675	1	Return Filter Assembly
17	11703	1	3/4" Street Elbow
18	11850	1	Web Site Decal
19	13532	2	CLAMP, SIZE 3/4" TO 1-3/4" X 9/16"
20	13535	4	STAINLESS STEEL CLAMP, 1-1/2" TO 1-3/4"
21	13557	1	3/4"-M-NPT X 3/4" Metal Hose Barb
22	13563	1	1-1/4"-M-NPT X 1-1/2" Metal Hose Barb
23	13632	1	1/4" NPT Metal Cap
24	13697	1	1-1/4" NPT Female Threaded Elbow
25	13758	1	20-M-NPT X 16-F-NPT Reducer
26	13778	1	1-1/4" X 3-1/2" Long NPT Nipple
27	13974	1	16-M-JIC X 16-M-NPT 90 Deg. Elbow
28	15259	1	Control Valve
29	15273	3	DECAL, MODEL LR40148
30	15466	2	Tubing Insert, 3-1/2" Sqr. X 11
31	15845-11	1	WARNING DECAL (KIT 15845)
32	15845-12	1	DANGER DECAL (KIT 15845)
33	15845-13	1	DANGER DECAL (KIT 15845)
34	15845-14	1	DANGER DECAL (KIT 15845)
35	15845-15	1	DANGER DECAL (KIT 15845)
36	15845-16	1	DANGER DECAL (KIT 15845)
37	15845-2	1	DANGER DECAL (KIT 15845)
38	15845-8	1	DANGER DECAL (KIT 15845)
39	15845-9	1	WARNING DECAL (KIT 15845)
40	15852	1	Red Reflector Decal
41	15853	1	Yellow Reflector Decal
42	15854	1	Manual Holder
43	15860	2	U-Nut, 1/4"-20
44	16050	4	Rivet For Wire Harness
45	16100	1	Sight Gauge 5", With Thermometer
46	23160	2	Stand Weldment, 17-7/8" Tall
47	23226	1	ASSEMBLY Hitch Frame, LR40148
48	23232	1	Support Brace
49	23325	1	WELDMENT, Weight Box
50	23335	1	Weldment, Oil Tank
51	23340	1	Stand Weldment
52	26012	1	Wire Cover Weldment

Hitch Frame & Components



DWG. NO.	22780	REV.	H
REV	CHANGE	BY	DATE
F	16705 REPLACED 15240(1000 RPM PUMP)	C.K.N.	12/15/16
	16747 REPLACED 10448 (Hyd. Cylinder)	T.B.B.	1/16/17
G	16750 REPLACED 15928 (Hyd. Cylinder)	T.B.B.	2/3/17
	16751 REPLACED 10454 (Hyd. Cylinder)	T.B.B.	2/17/17
H	22806 REPLACED 22806 (Deck Weldment)	T.B.B.	8/11/17
	16845 REPLACED 16750 (Hyd. Cylinder)	V.A.M.	1686

Wire Cover Detailed View



See "Pump Options" —

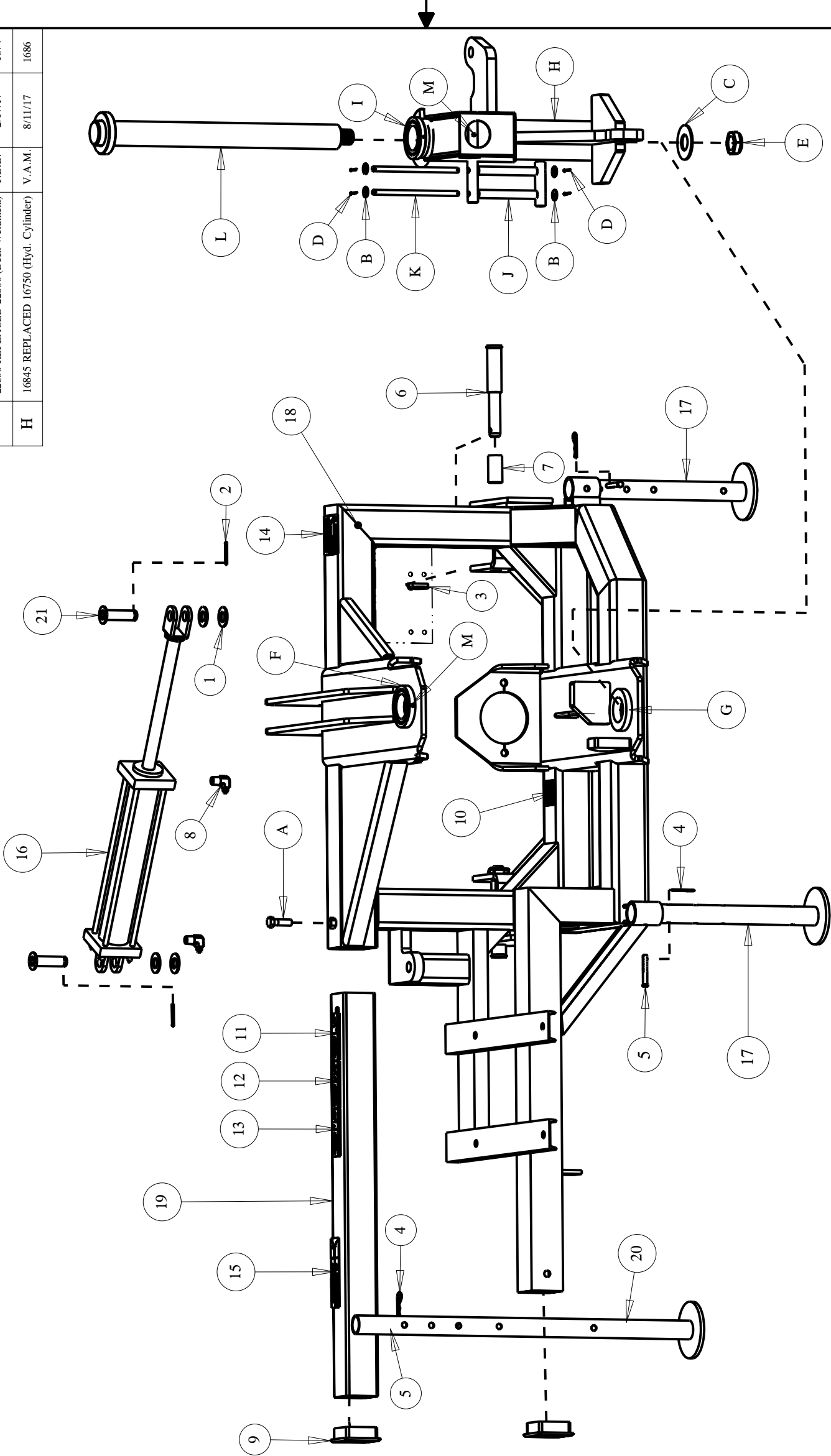
MODELED BY	T.B.B.	1/18/16	<div> <div>HARDEE BY</div> <div>EVH MFG. CO.</div> <div>LORIS S.C.</div> </div>	
DRAWN BY	C.K.N.	3/23/10		
MATERIAL		R.M.N.	DESCRIPTION	SHEET 3 of 9
		N/A	LR40148 COMPLETE	
Manufactured By: EVH Mfg. Co., LLC			DO NOT SCALE	<div> <div>B</div> <div>DWG. NO.</div> </div> <div>22780</div>

Item	Part Number	Qty.	Description
1	10207	4	Flatwasher, 1" plated
2	10252	2	Cotter Pin 3/16" X 2" Plated
3	10346	2	3 pt. Snap Pin (Lynch Pin)
4	10390	3	Clip Pin (1/8 x 2)
5	10393	3	Universal Clip Pin
6	10419	2	Hitch Pin, Cat. 2 & 3, Clevis Style
7	10538	2	Sleeve for 10419 Pin
8	13905	2	6-M-JIC X 8-M-NPT 90 Deg. Elbow
9	15466	2	Tubing Insert, 3-1/2" Sqr. X 11
10	15845-11	1	WARNING DECAL (KIT 15845)
11	15845-12	1	DANGER DECAL (KIT 15845)
12	15845-13	1	DANGER DECAL (KIT 15845)
13	15845-14	1	DANGER DECAL (KIT 15845)
14	15845-2	1	DANGER DECAL (KIT 15845)
15	15845-8	1	DANGER DECAL (KIT 15845)
16	16747	1	CYLINDER, 3 X 17"
17	23160	2	Stand Weldment, 17-7/8" Tall
18	23226	1	ASSEMBLY Hitch Frame, LR40148
19	23232	1	Support Brace
20	23340	1	Stand Weldment
21	25724	2	WELDMENT, Cylinder Pin

Item	Part Number	Qty.	Description
A	10092	1	HEX BOLT (5/8" X 2" GR. 5 PLATED)
B	10204	4	FLAT WASHER, 1/2" Plated, USS
C	10215	1	FLAT WASHER (1-1/2") USS Plain Zinc
D	10237	4	COTTER PIN (1/8" X 1-1/4" PLATED)
E	16294	1	LOCKNUT, 1-1/2"-12 Zinc Plated Nylon Insert Jam
F	23257	2	BUSHING W/ GREASE FITTING, 4-1/4" OD
G	23258	2	BUSHING, 4-1/4" OD X 7/8" LG.
H	23261	1	WELDMENT, Swivel, LR50160
I	23268	2	BUSHING W/GREASE FITTING, 4-1/4" OD
J	23272	2	HOSE BRACKET ROLLER
K	23273	2	Hose Bracket Rod
L	23284	1	WELDMENT, Swing arm shaft, LR50160/LR40160
M	10322	5	GREASE FITTING, 1/4"-28 Thd

Hitch Frame & Swivel

DWG. NO.	22780		REV.	
	REV	CHANGE	BY	DATE
F	16705	REPLACED 15240(1000 RPM PUMP)	C.K.N.	12/15/16
	16747	REPLACED 10448 (Hyd. Cylinder)	T.B.B.	1/16/17
G	16750	REPLACED 15928 (Hyd. Cylinder)	T.B.B.	2/3/17
	16751	REPLACED 10454 (Hyd. Cylinder)	T.B.B.	2/17/17
H	22806	REPLACED 22806 (Deck Weldment)	T.B.B.	1674
	16845	REPLACED 16750 (Hyd. Cylinder)	V.A.M.	8/11/17
				1686



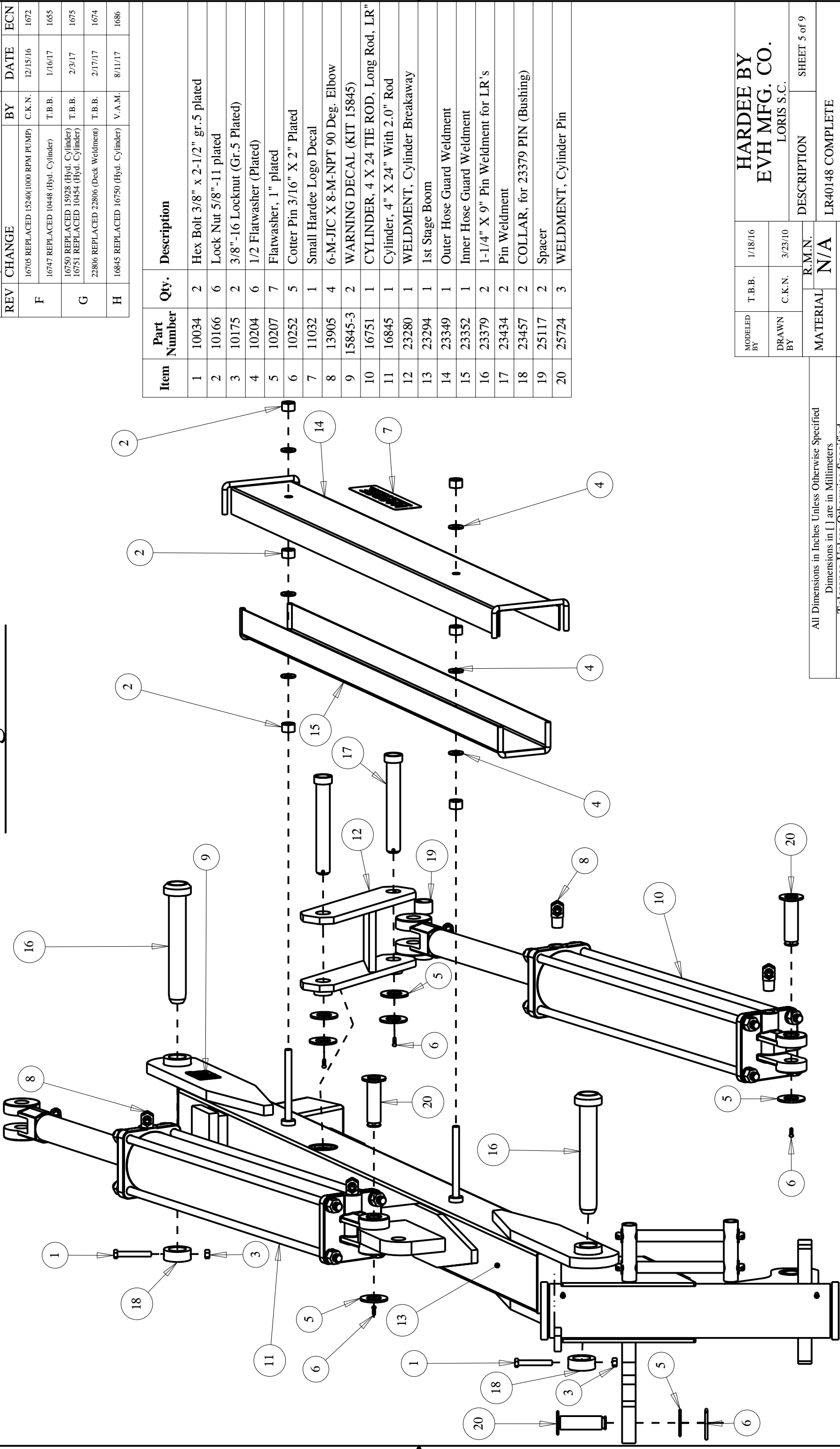
MODELED BY		T.B.B.	1/18/16	HARDEE BY	
DRAWN BY		C.K.N.	3/23/10	EVH MFG. CO.	
		R.M.N.		LORIS S.C.	
MATERIAL				DESCRIPTION	SHEET 4 of 9
		N/A		LR40148 COMPLETE	
Manufactured By:					
EVH Mfg. Co., LLC		DO NOT SCALE		B DWG. NO.	22780
				DWG SIZE	

All Dimensions in Inches Unless Otherwise Specified	
Dimensions in [] are in Millimeters	
Tolerance Unless Otherwise Specified	
Fractional Dimensions ± 1/16"	Angular Dimensions ± 1°
Decimal Dim. to Limits Shown	
All Holes to be +0 -1/32"	

1st Stage Boom

DWG. NO.		22780		REV.		H	
REV	CHANGE	BY	DATE	ECN			
F	16705 REPLACED 15240(1000 RPM PUMP)	C.K.N.	12/15/16	1672			
	16747 REPLACED 10448 (Hyd. Cylinder)	T.B.B.	1/16/17	1655			
G	16750 REPLACED 15928 (Hyd. Cylinder)	T.B.B.	2/3/17	1675			
	16751 REPLACED 10454 (Hyd. Cylinder)	T.B.B.	2/17/17	1674			
H	22806 REPLACED 22806 (Deck Weldment)	T.B.B.	2/17/17	1674			
	16845 REPLACED 16750 (Hyd. Cylinder)	V.A.M.	8/11/17	1686			

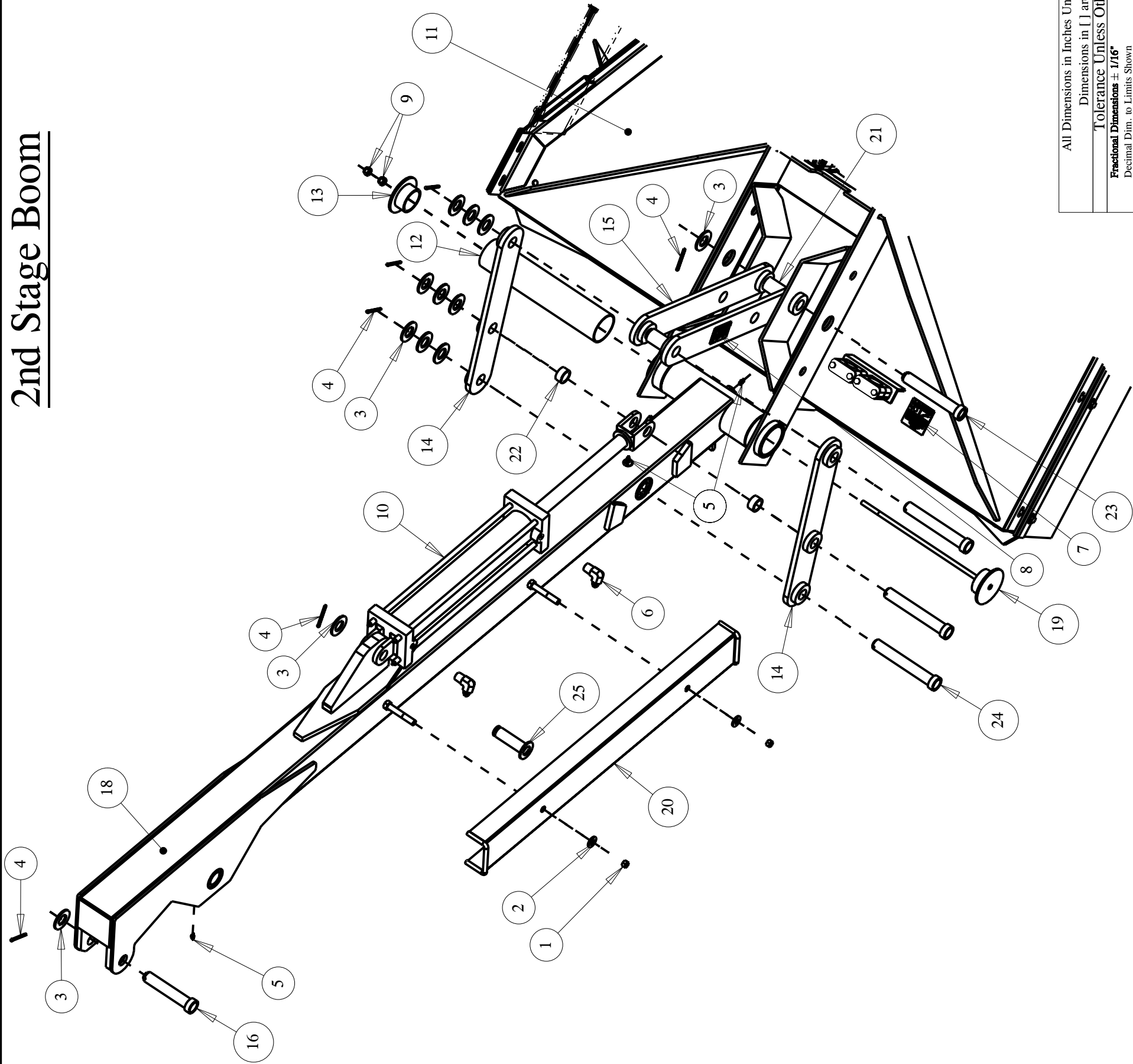
Item	Part Number	Qty.	Description
1	10034	2	Hex Bolt 3/8" x 2-1/2" gr.5 plated
2	10166	6	Lock Nut 5/8" -11 plated
3	10175	2	3/8"-16 Locknut (Gr.5 Plated)
4	10204	6	1/2 Flatwasher (Plated)
5	10207	7	Flatwasher, 1" plated
6	10252	5	Cotter Pin 3/16" X 2" Plated
7	11032	1	Small Hardee Logo Decal
8	13905	4	6-M-JIC X 8-M-NPT 90 Deg. Elbow
9	15845-3	2	WARNING DECAL (KIT 15845)
10	16751	1	CYLINDER, 4 X 24 TIE ROD, Long Rod, LR"
11	16845	1	Cylinder, 4" X 24" With 2.0" Rod
12	23280	1	WELDMENT, Cylinder Breakaway
13	23294	1	1st Stage Boom
14	23349	1	Outer Hose Guard Weldment
15	23352	1	Inner Hose Guard Weldment
16	23379	2	1-1/4" X 9" Pin Weldment for LR's
17	23434	2	Pin Weldment
18	23457	2	COLLAR, for 23379 PIN (Bushing)
19	25117	2	Spacer
20	25724	3	WELDMENT, Cylinder Pin



MODELED BY	T.B.B.	1/18/16	HARDEE BY	
DRAWN BY	C.K.N.	3/23/10	EVH MFG. CO.	
			LORIS S.C.	
MATERIAL		R.M.N.	DESCRIPTION	SHEET 5 of 9
		N/A	LR40148 COMPLETE	
Manufactured By:		DO NOT SCALE	DWG. NO.	22780
EVH Mfg. Co., LLC			DWG SIZE	

All Dimensions in Inches Unless Otherwise Specified
Dimensions in [] are in Millimeters
Tolerance Unless Otherwise Specified
Fractional Dimensions ± 1/16"
Angular Dimensions ± 1°
Decimal Dim. to Limits Shown
All Holes to be +0 -1/32"

2nd Stage Boom



DWG. NO.	22780	REV.	H
F	REV	CHANGE	BY
	16705 REPLACED 15240(1000 RPM PUMP)	C.K.N.	DATE
G	16747 REPLACED 10448 (Hyd. Cylinder)	T.B.B.	1/6/17
	16750 REPLACED 15928 (Hyd. Cylinder)	T.B.B.	2/3/17
	16751 REPLACED 10454 (Hyd. Cylinder)	T.B.B.	2/17/17
H	22806 REPLACED 22806 (Deck Weldment)	T.B.B.	8/11/17
	16845 REPLACED 16750 (Hyd. Cylinder)	V.A.M.	1686

Item	Part Number	Qty.	Description
1	10175	2	3/8"-16 Locknut (Gr.5 Plated)
2	10204	2	1/2 Flatwasher (Plated)
3	10207	12	Flatwasher, 1" plated
4	10252	6	Cotter Pin 3/16" X 2" Plated
5	10322	3	1/4" Grease Fitting, 1/4"-28 Threaded
6	13905	2	6-M-JIC X 8-M-NPT 90 Deg. Elbow
7	15845-11	1	WARNING DECAL (KIT 15845)
8	15845-3	2	WARNING DECAL (KIT 15845)
9	16138	2	Lock Nut 7/16"-14 NC with Nylon Insert
10	16747	1	CYLINDER, 3 X 17"
11	22806	1	LR40148 / LR50148 Deck Weldment (6 Bolt)
12	23130	1	Pivot Sleeve
13	23131	1	End Cap Weldment
14	23287	2	Boom To Deck Bracket Weldment
15	23290	2	WELDMENT, Boom to Deck Bracket, 21"
16	23292	1	PIN WELDMENT (1" x 5" LG)
17	23294	1	1st Stage Boom
18	23310	1	2nd Stage Boom
19	23345	1	Head Mounting Bracket Weldment
20	23355	1	WELDMENT, GUARD
21	23361	2	Spacer, 1" X 2-1/8"
22	23363	2	SPACER (1" SCH 40 Pipe x 5/8")
23	23380	1	WELDMENT, 1" x 6 1/4" PIN
24	23434	3	Pin Weldment
25	25724	1	WELDMENT, Cylinder Pin

[illegible]

NOTES

Hydraulic Schematic For LR40148

Item	Part Number	Qty.	Description
1	10071	8	Hex Bolt 1/2 x 1 gr.5 plated
2	10092	4	Hex Bolt 5/8 x 2 gr.5 plated
3	10166	4	Lock Nut 5/8"-11 plated
4	10184	8	Lockwasher 1/2 plated
5	10336	1	Gear Oil [85W-140] - (Not Shown)
6	10368	1	1-1/4" Gate Valve
7	10373	1	Hydraulic Oil
8	10387	2	O-ring
9	10501	1	FLOW EZY BREATHER
10	10582	1	PRESSURE HOSE 3/8" X 55" W/6-F-JIC
11	10583	1	3/8" SAE 100 R1 X 125" W/6-F-JIC
12	10584	1	PRESSURE HOSE 3/8" X 210" W/6-F-JIC
13	10585	2	PRESSURE HOSE 3/8" X 83" W/6-F-JIC
14	10586	1	3/8" X 86" Pressure Hose W/ 6-F-JIC X 8-M-NPT
15	10587	1	PRESSURE HOSE 3/4" X 106" W/12-M-JIC
16	10588	1	PRESSURE HOSE 3/4" x 127"
17	10646	1	Grease
18	10865	1	PRESSURE HOSE 1" x 127"
19	10866	1	1" X 106" Pressure Hose
20	11673	1	Joystick
21	11675	1	Return Filter Assembly
22	11703	1	3/4" Street Elbow
23	11714	6	6-M-JIC X 6-M-ORB Straight
24	11775	1	Hydraulic 540RPM Pump
25	11876	1	Hitch Frame Wiring Harness (Pigtail)
26	13532	2	CLAMP, SIZE 3/4" TO 1-3/4" X 9/16"
27	13535	4	STAINLESS STEEL CLAMP, 1-1/2" TO 1-3/4"
28	13557	1	3/4"-M-NPT X 3/4" Metal Hose Barb
29	13563	1	1-1/4"-M-NPT X 1-1/2" Metal Hose Barb
30	13697	1	1-1/4" NPT Female Threaded Elbow
31	13758	1	20-M-NPT X 16-F-NPT Reducer
32	13778	1	1-1/4" X 3-1/2" Long NPT Nipple
33	13905	8	6-M-JIC X 8-M-NPT 90 Deg. Elbow
34	13909	2	6-M-JIC X 6-M-ORB 90 Deg. Elbow
35	13974	1	16-M-JIC X 16-M-NPT 90 Deg. Elbow
36	13975	2	12-M-ORB X 12-M-JIC 90 Deg. Elbow
37	13981	2	8-M-ORB X 8-M-JIC Straight
38	15241	1	Hydraulic Vane Motor
39	15259	1	Control Valve
40	15263	1	Joystick Wiring Harness
41	15273	1	DECAL, MODEL LR40148
42	15326	1	Pressure Hose 3/8" X 17" Lg. W/ 6-F-JIC Both Ends
43	15339	1	PRESSURE HOSE 3/8" X 32" W/6-F-JIC
44	15461	2	CAP 37 Deg. Flare #8 (1/2")
45	15910	46	HOSE SLEEVE
46	16071	1	PRESSURE HOSE 3/8" X 192" W/6-F-JIC
47	16682	2	Relief Valve Assy. - 2700 PSI - Pump Mounted
48	16683	2	Relief Valve 2700 PSI - w/TAMPER PROOF CAP

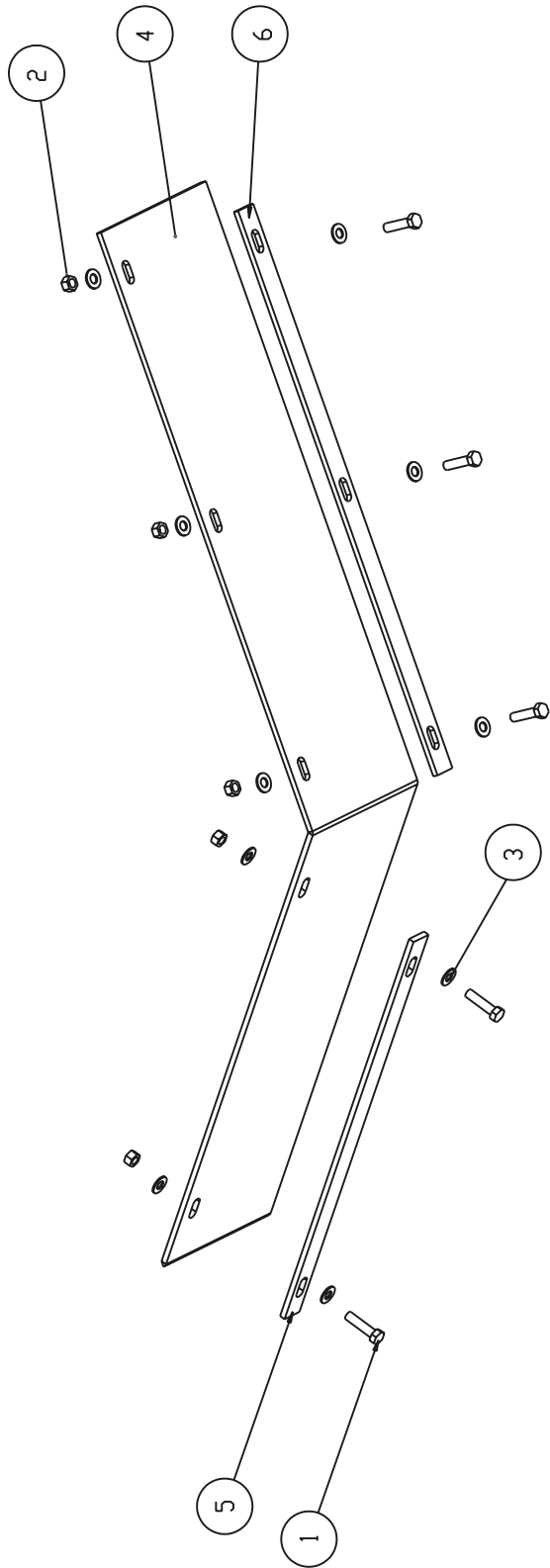
DWG. NO.	22780		REV.	H
REV	CHANGE	BY	DATE	ECN
F	16705 REPLACED 15240(1000 RPM PUMP)	C.K.N.	12/15/16	1672
	16747 REPLACED 10448 (Hyd. Cylinder)	T.B.B.	1/16/17	1655
G	16750 REPLACED 15928 (Hyd. Cylinder)	T.B.B.	2/3/17	1675
	16751 REPLACED 10454 (Hyd. Cylinder)	T.B.B.	2/17/17	1674
H	22806 REPLACED 22806 (Deck Weldment)	T.B.B.	8/11/17	1686
	16845 REPLACED 16750 (Hyd. Cylinder)	V.A.M.		

Pump Options

Pump Options	
540 RPM - P/N: 11775	
1000 RPM - P/N: 16705	

	All Dimensions in Inches Unless Otherwise Specified Dimensions in [] are in Millimeters	MODELED BY		T.B.B.	1/18/16	HARDEE BY EVH MFG. CO. LORIS S.C.	
		DRAWN BY		C.K.N.	3/23/10		
		MATERIAL		R.M.N.		DESCRIPTION	
				N/A		LR40148 COMPLETE	
Tolerance Unless Otherwise Specified		Manufactured By:		DO NOT SCALE			
Fractional Dimensions ± 1/16"		EVH Mfg. Co., LLC		B DWG. NO.			
Decimal Dim. to Limits Shown				22780			
Angular Dimensions ± 1°							
All Holes to be +0 -1/32"							

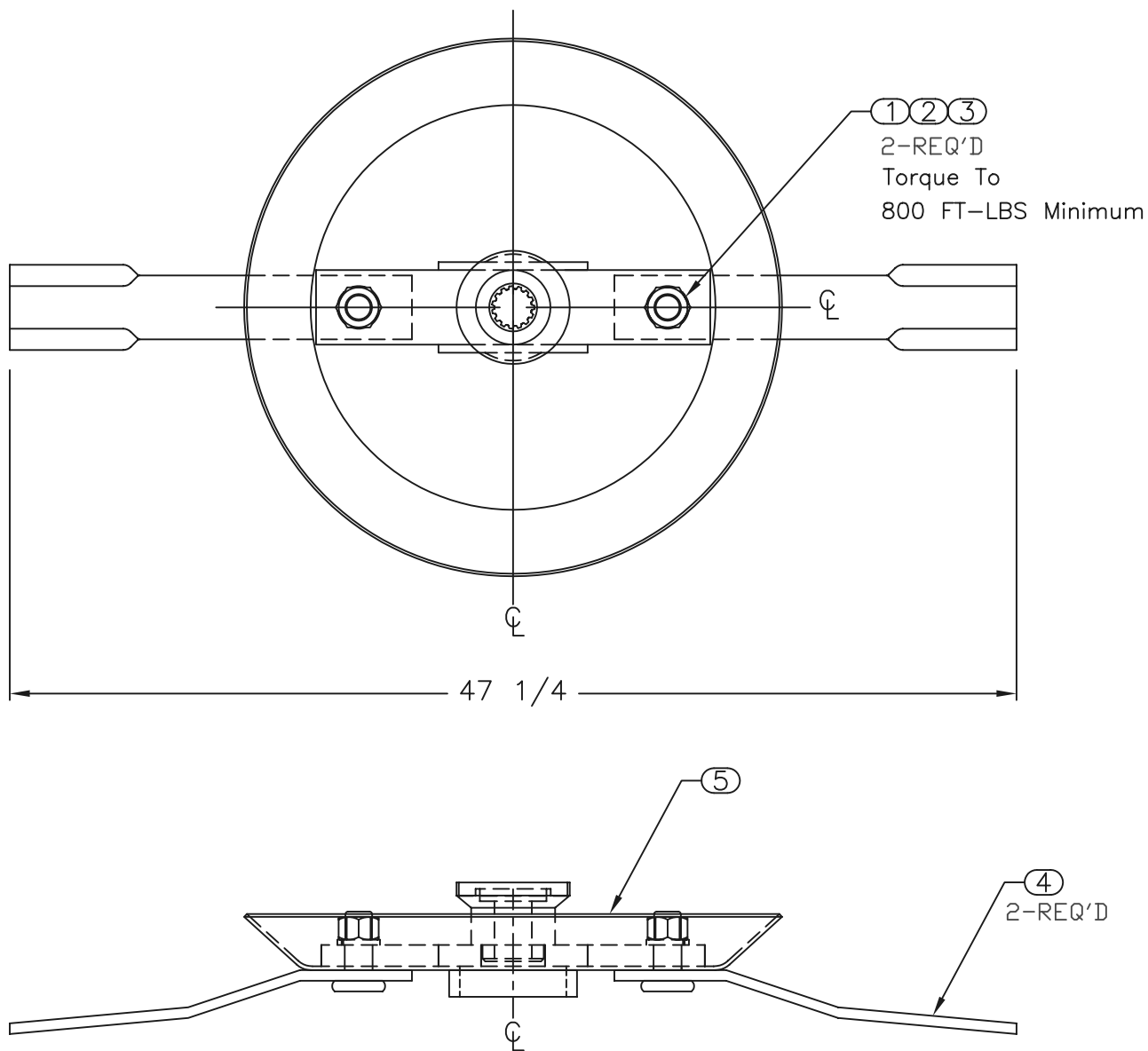
Item	Part Number	Qty.	Description	DWG. NO.	22799	REV.	IR
1	10032	6	Hex Bolt 3/8 x 1-1/2 gr.5 plated	REV	CHANGE	BY	DATE
2	10175	6	3/8" Locknut (Gr.5 Plated)	IR	INITIAL RELEASE	BC	8/22/07
3	10202	12	3/8" Flatwasher (Plated)				
4	22692	1	Belting for LR40148 Extension				
5	22778	1	Short Rubber Belting Flat				
6	22779	1	Belting Extension Flat				



MODELED BY	BC	8/22/07	HARDEE EVH MFG CO. LORIS SC.		SHEET 1 of 1	
DRAWN BY	BC	8/22/07				
MATERIAL		R.M.N.	N/A		DESCRIPTION	
Manufactured by:		EVH MFG CO, LLC		LR40148 / LR50148 Rear Belting Kit		
Tolerance Unless Otherwise Specified		Angular Dimensions ± 1°		DO NOT SCALE		DWG. NO.
Fractional Dimensions ± 1/16"		All Holes to be +0 -1/32"				22799
Decimal Dim. to Limits Shown						

ITEM NO.	PART NUMBER	QTY REQD.	NOMENCLATURE OR DESCRIPTION
1	10311	2	BLADE BOLT NUT GR.8
2	10312	2	BLADE BOLT LOCKWASHER GR.8
3	10313	2	BLADE BOLT GR.8
4	10427	2	NON-DIRECTIONAL BLADE
5	22804	1	BLADE HOLDER WELDMENT

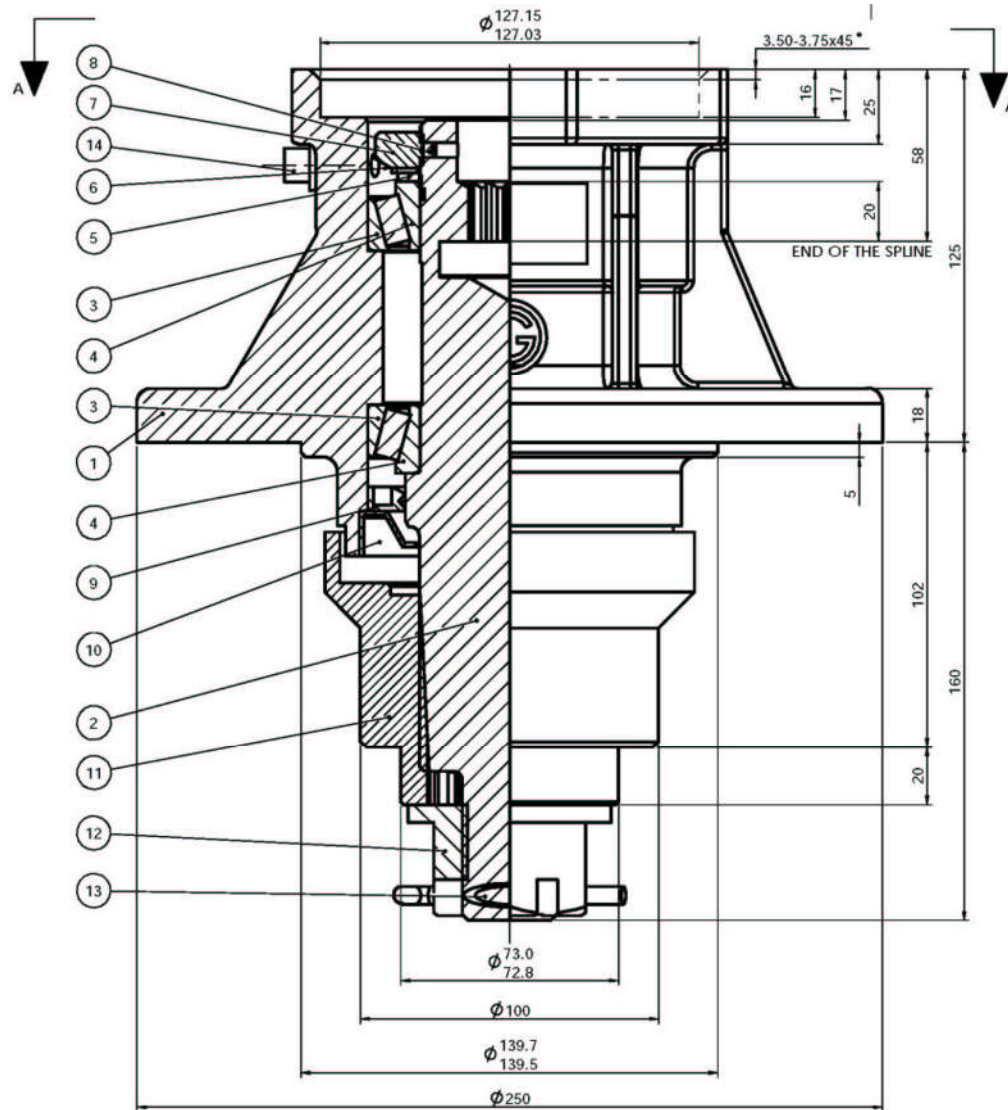
DWG. NO.			REV.	
22803			IR	
REV	CHANGE	BY	DATE	ECN
IR	INITIAL RELEASE	C.K.N.	9/2/10	1372



DRAWN BY			C.K.N.		9/2/10	HARDEE BY EVH MFG. CO. LORIS S.C.	
CHECKED BY							
MATERIAL			R.M.N.			APPLICATION	OLD PART #
MANUFACTURED BY:			HARDEE BY EVH MFG.			LR40148	----
All Dimensions in Inches Unless Otherwise Specified Dimensions in [] are in Millimeters Tolerances Unless Otherwise Specified Fractional Dimensions $\pm 1/16"$ Decimal Dim. to Limits Shown			Angular Dimensions $\pm 1^\circ$ All holes to be $^{+0}_{-1/32}$		DESCRIPTION BLADE HOLDER W/BLADES COMPLETE W/ANTI WRAP HUB		
					DO NOT SCALE	A DWG SIZE	DWG. NO. 22803

Hydraulic Motor Housing

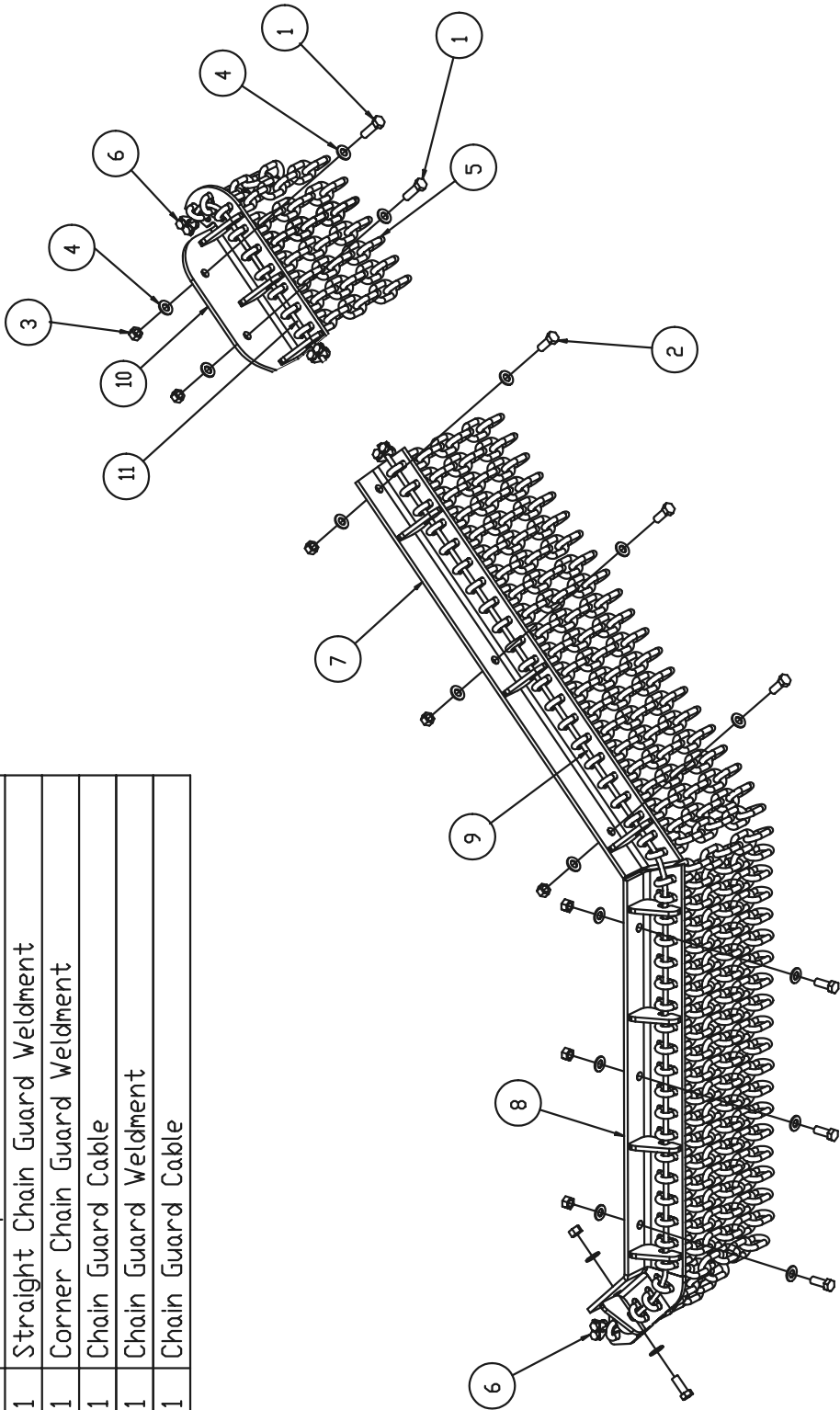
EVH P/N 16579



<u>Key #</u>	<u>Part No.</u>	<u>Description</u>	<u>Key #</u>	<u>Part No.</u>	<u>Description</u>
1	N/A	Housing	8	16480	Set Screw
2	N/A	Shaft	9	16491	Lip Seal-Output
3	15952	Cup	10	16488	Seal Protector
4	15953	Bearing	11	16580	Blade Hub
5	16492	Washer w/tang	12	15481	Nut, Hex Slotted
6	15965	Lockwasher	13	15968	Cotter Pin
7	15966	Locknut	14	15784	Plug, Pipe

DWG. NO.	20775		REV.		A
REV	CHANGE	BY	DATE	ECN	
IR	INITIAL RELEASE	K.N.	6/30/08	---	
A	CHAIN SLOTS/HOLES ARE NOW SINGLE CUT		T.B.B.	10/8/14	1587

Item	Part Number	Qty.	Description
1	10029	2	Hex Bolt 3/8 x 1-1/4 gr.5 plated
2	10031	7	Hex Bolt 3/8 x 1 gr.5 plated
3	10175	9	3/8" Locknut (Gr.5 Plated)
4	10202	18	3/8" Flatwasher (Plated)
5	10317	54	5 Link Chain
6	10332	4	Cable Clamp
7	20981	1	Straight Chain Guard Weldment
8	20983	1	Corner Chain Guard Weldment
9	20986	1	Chain Guard Cable
10	20776	1	Chain Guard Weldment
11	20969	1	Chain Guard Cable

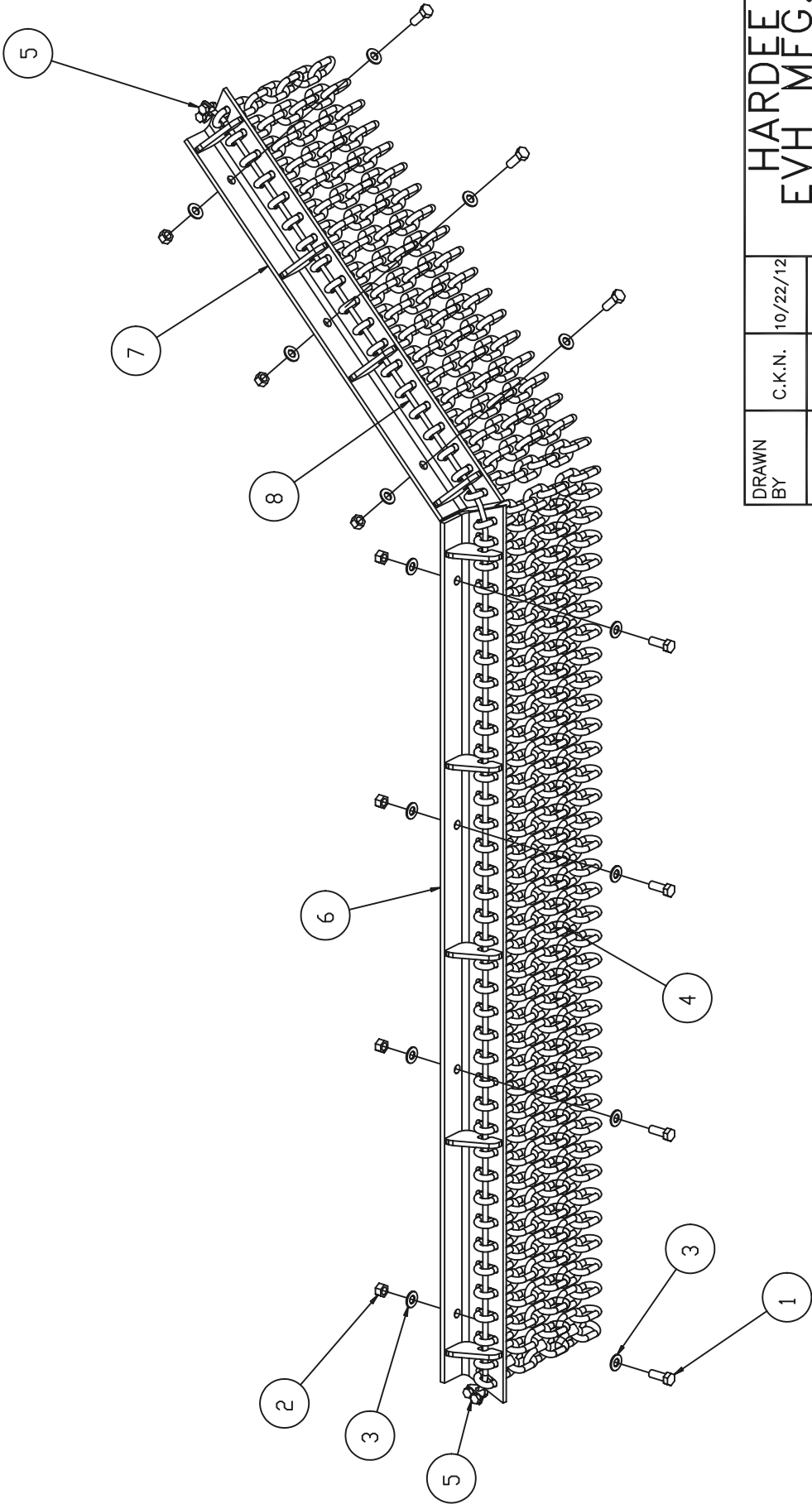


MODELED BY			HARDEE	
DRAWN BY	K.N.	6/30/08	EVH MFG CO.	
MATERIAL		R.M.N.	LORIS S.C.	
			DESCRIPTION	SHEET 1 of 1
			LR40148 / LR50148 Front Chain Guard Complete	
DO NOT SCALE	A	DWG. NO.	20775	

All Dimensions in Inches Unless Otherwise Specified
 Dimensions in [] are in Millimeters
 Tolerance Unless Otherwise Specified
 Fractional Dimensions $\pm 1/16"$ Angular Dimensions $\pm 1^\circ$
 Decimal Dim. to Limits Shown All Holes to be $\pm 0 -1/32"$

DWG. NO.		REV.	
22696		A	
REV	CHANGE	BY	DATE
—	INITIAL RELEASE	C.K.N.	10/22/12
A	CHAIN SLOTS/HOLES ARE NOW SINGLE CUT	T.B.B.	10/8/14
		1587	

Item	Part Number	Qty.	Description
1	10031	7	Hex Bolt 3/8 x 1 gr.5 plated
2	10175	7	3/8" Locknut (Gr.5 Plated)
3	10202	14	3/8" Flatwasher (Plated)
4	10317	48	5 Link Chain
5	10332	2	Cable Clamp
6	22693	1	Straight Chain Guard Weldment
7	22694	1	Corner Chain Guard Weldment
8	22695	1	Chain Guard Cable



DRAWN BY		C.K.N.	10/22/12
CHECKED BY			
MATERIAL		R.M.N.	N/A
N/A			
APPLICATION		OLD PART #	
---		---	
DESCRIPTION			
Rear Chain Guard - LR40148 / LR50148			
DO NOT SCALE	A	DWG. NO.	22696
DWG SIZE			

All Dimensions in Inches Unless Otherwise Specified Dimensions in [] are in Millimeters	
Tolerances Unless Otherwise Specified Fractional Dimensions $\pm 1/16"$ Decimal Dim. to Limits Shown	
Angular Dimensions $\pm 1^{\circ}$ All holes to be $+\frac{0}{-1/32}$	

HARDEE BY EVH MFG. CO. LORIS S.C.	
-----------------------------------------	--

Logo Decal Replacement

Logo Decals

If the original decals applied to your mower 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.



Oil Tank



Weight Box



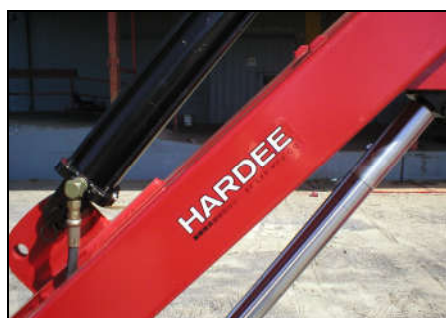
11010 – Logo Decal, 4" x 13 1/2"



15273 – Model Number Decal

WWW.EVHMFG.COM

11850 – Web Site Decal

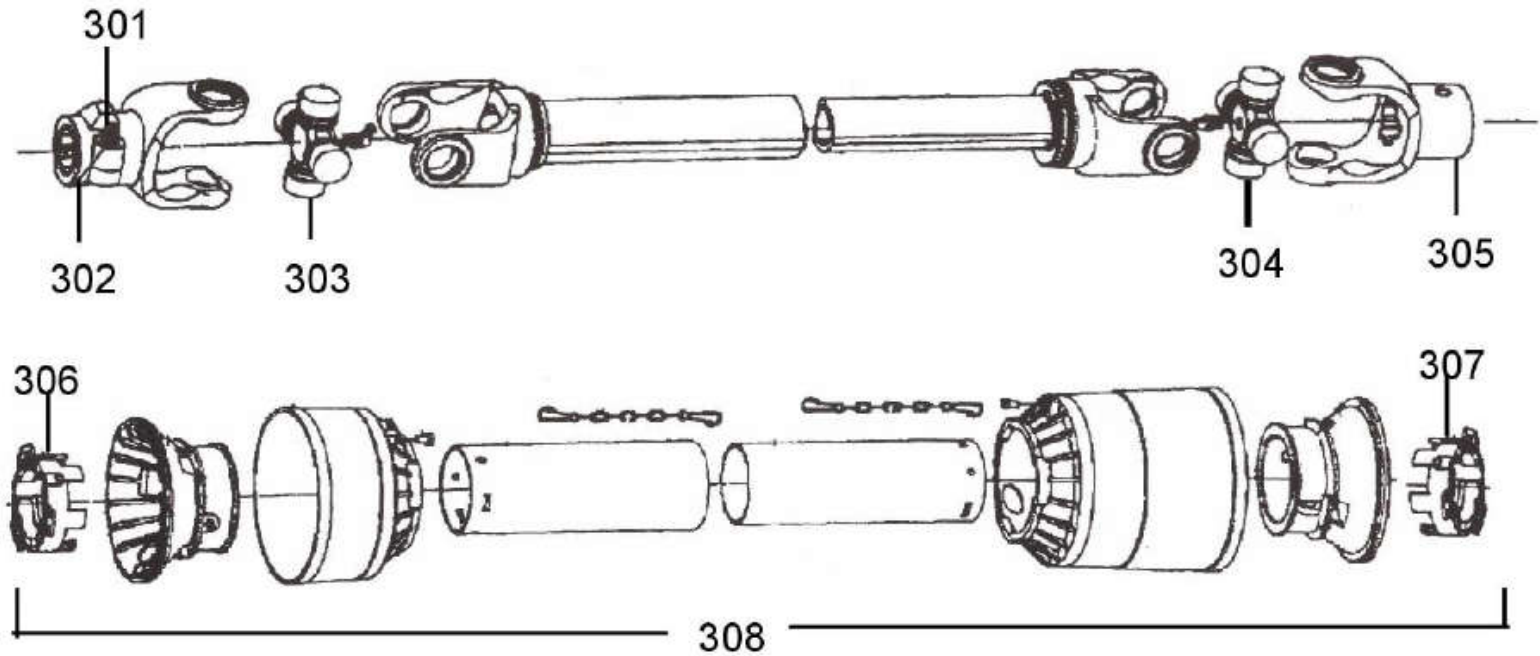


Hose Guard / 1st Stage Boom



11032 – Logo Decal, 2 1/4" x 8 1/8"

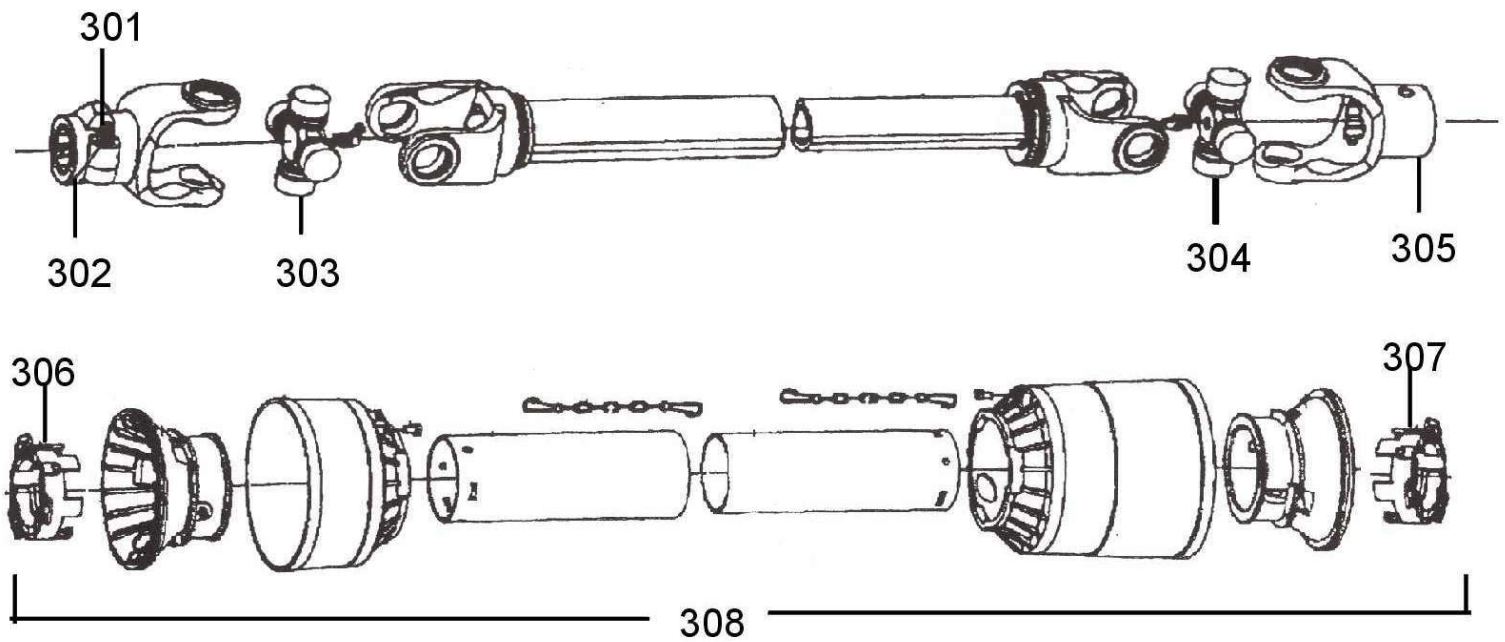
10601 Driveshaft



Key #	Part No.	Description	Key #	Part No.	Description
301	15579	Push Pin complete	305	16521	Yoke, Imp end
302	11436	Yoke, Tractor end	306	15804	Shield bearing
303	11437	Cross Kit	307	15805	Shield Bearing
304	11437	Cross Kit	308	11448	Shield kit complete

11716 Driveshaft

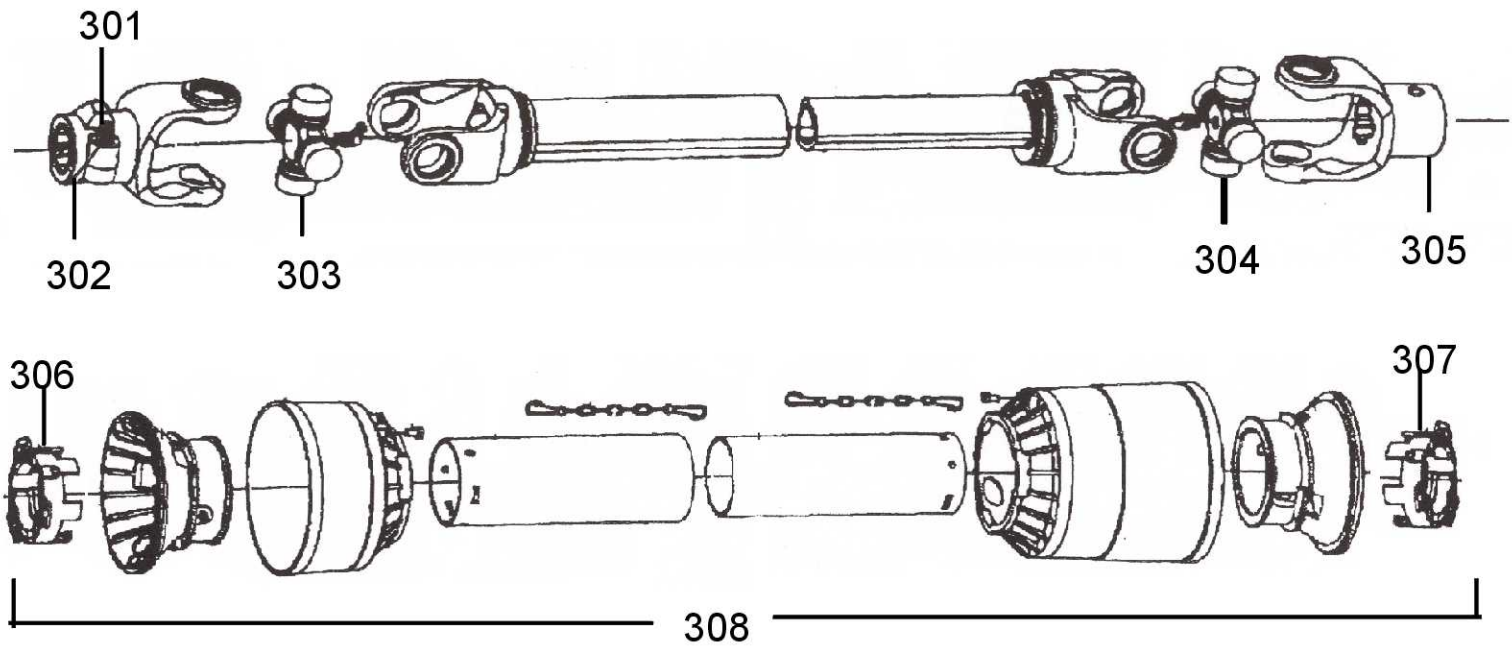
(1 3/4 20spline tractor end & 1 3/8 21spline Imp. end)



Key #	Part No.	Description	Key #	Part No.	Description
301	16857	Push pin complete	305	15807	1 3/8 21 spline yoke w/swell pin cat5
302	11855	1 3/4 20 spline yoke tractor end	306	15809	Shield bearing
303	15629	Cross kit	307	15810	Shield bearing
304	15629	Cross kit	308	15811	Shield kit complete

11717 Driveshaft

(1 3/8 21 spline yoke both ends)



Key #	Part No.	Description	Key #	Part No.	Description
301	15579	Push Pin Complete	305	15807	1 3/8 21 spline yoke w/swell pin cat3
302	10969	1 3/8 21 spline yoke tractor end	306	15804	Shield bearing
303	11200	Cross kit	307	15805	Shield bearing
304	11200	Cross kit	308	11448	Shield kit complete

Bolt Torque

Checking Bolt Torque

The tables shown below give 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 cap screws unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

NOTE: Bolt Torques shown are maximum allowable values for ultimate safe working strength or external load-carrying capacity. The bolt torque are not applicable in cases where bolts are used as a pin-like device, holding together two or more movable objects and keeping them from spreading apart. – “Clamping Torque” Being dependent upon the application of the bolt. -

*Torque value for bolts and cap screws are identified by their head markings.
See Page 45*

Torque Specifications for Coarse Threads

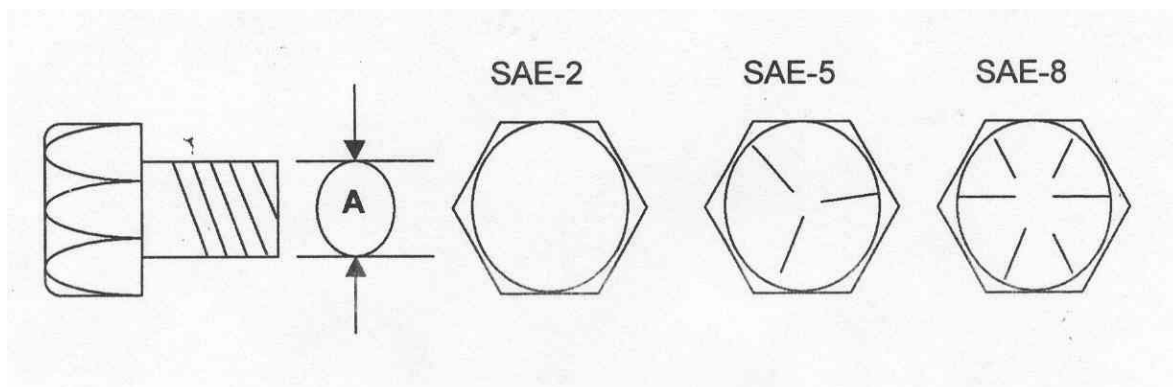
Diameter “A”	Bolt Torque		Coarse Thread			
	SAE-2		SAE-5		SAE-8	
	LB-FT	N.m	LB-FT	N.m	LB-FT	N.m
1/4" - 20	6	8	9	12	12	17
5/16" - 18	10	13	19	25	27	36
3/8" - 16	20	27	33	45	45	63
7/16" - 14	30	41	53	72	75	100
1/2" - 13	45	61	80	110	115	155
9/16" - 12	70	95	115	155	165	220
5/8" - 11	95	128	160	215	220	305
3/4" - 10	165	225	290	390	400	540
7/8" - 9	170	230	420	570	650	880
1" - 8	225	345	630	850	970	1320
1 1/8" - 7	354	478	794	1072	1287	1737
1 1/4" - 7	500	675	1120	1512	1875	2531
1 3/8" - 6	655	884	1470	1985	2382	3216
1 1/2" - 6	870	1175	1950	2632	3161	4267

See next page for Torque Specifications for Fine Threads and Head Markings

Torque Specifications for Fine Threads

Diameter "A"	Bolt Torque		Fine Thread			
	SAE-2		SAE-5		SAE-8	
	LB-FT	N.m	LB-FT	N.m	LB-FT	N.m
1/4" - 28	6	8	10	14	14	19
5/16" - 24	12	16	19	26	27	36
3/8" - 24	22	31	35	47	49	66
7/16" - 20	36	49	55	74	78	105
1/2" - 20	55	74	85	115	120	162
9/16" - 18	80	108	122	165	172	232
5/8" - 18	110	148	170	230	240	324
3/4" - 16	200	270	297	400	420	567
7/8" - 14	180	243	474	640	668	402
1" - 12	274	370	705	952	995	1343
1" - 14	280	378	721	973	1019	1376
1 1/8" - 12	397	536	890	1201	1444	1950
1 1/4" - 12	553	747	1241	1675	2012	2716
1 3/8" - 12	746	1007	1672	2257	2712	3661
1 1/2" - 12	979	1322	2194	2962	3557	4802

Head Markings



Hardee by EVH Manufacturing Co., LLC Hydraulic Mower Limited Warranty

Hardee by EVH Manufacturing Co., LLC warrants its **Hydraulic Mowers** for one year or **350 hours** (whichever comes first) to the **original** non-commercial, non-governmental, or non-municipal purchaser. For the **original** commercial, industrial, or municipal purchaser, the goods are warranted for 90 days or **350 hours** (whichever comes first) to be free from defects in material or workmanship.

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

Hardee by EVH Manufacturing Co., LLC **Hydraulic Mowers** include the following units: Miti Mike-35, Tiger SS, DB4048, DB4060, EV1442, MR1442, LR40142, LR40148, LR50148, LR50160, HR2360, and CM2160 Mowers.

The Warranty Card **must** be filled out and returned within **30 days** of purchase. **No** warranty will be allowed without a properly completed and returned warranty card.

“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 removing 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 by EVH Manufacturing Co., LLC 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 hours a day / 5 days a week.

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). Special purposes must be specifically disclosed to Hardee by EVH Manufacturing Co., LLC, and not merely to the dealer before your purchase. Hardee by EVH Manufacturing Co., LLC itself 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.



HARDEE
■■■■■■■■■■ BY EVH MFG CO

EVH MANUFACTURING COMPANY, LLC
4895 RED BLUFF ROAD LORIS, SC 29569
PHONE: 843-756-2555 OR 1-888-990-2555
WWW.HARDEEBYEVH.COM INFO@HARDEEBYEVH.COM