HARDEE

BY EVH MFG CO

OPERATOR'S AND MAINTENANCE MANUAL

WITH PARTS LISTING

Long Reach Cutter
Model: LR40148

FOR SERIAL #s STARTING
WITH 011827
RELEASED 07/08/15

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 EVHMFG@HARDEEBYEVH.COM

MODEL NUMBER _____

SERIAL NUMBER _____

DATE OF PURCHASE _____

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

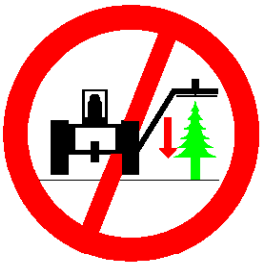

Fig. 1

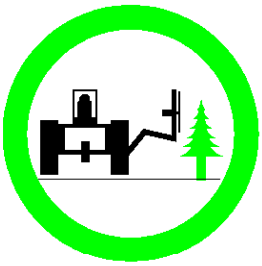

Fig. 2

Fig. 3

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NOTE: KUBOTA TRACTOR REQUIRES REPLUMBING OF THE HYDRAULIC SYSTEM. PLEASE CONTACT US FOR DETAILS.

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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.

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

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 by-standers 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 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
(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)

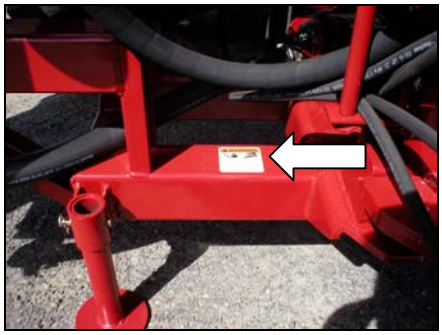
Safety Decals, continued

Deck

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

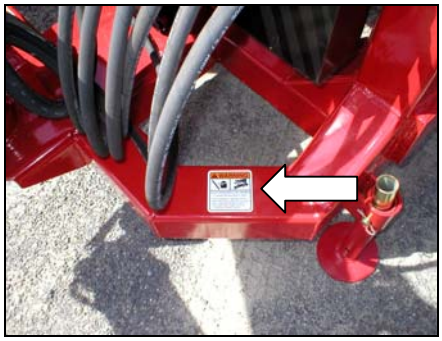
Hitch Frame

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

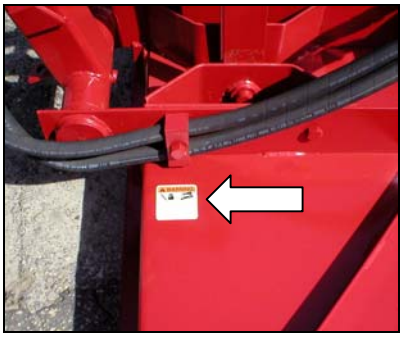


Hitch Frame

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

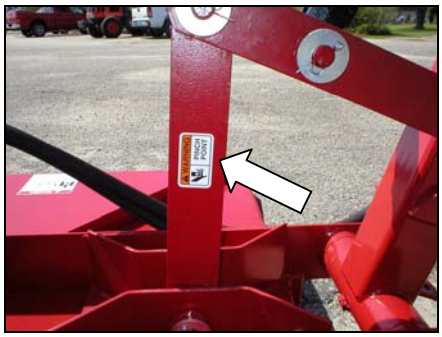


Hitch Frame



Deck

Safety Decals, continued



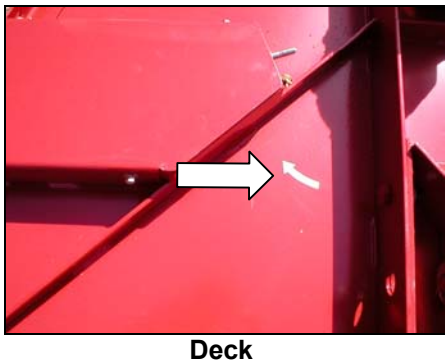
Deck Linkage

Deck Linkage

1st Stage Boom

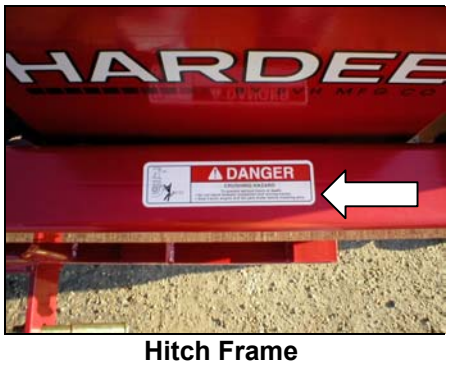
1st Stage Boom

Warning – Pinch Point
(P/N – 15845-3)

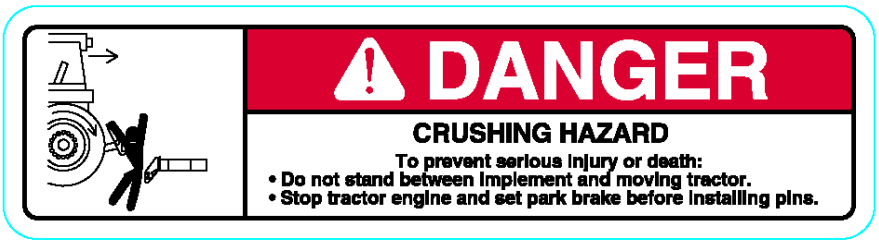


Deck

Blade Rotation
(P/N – 15845-4)



Hitch Frame



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

Safety Decals, continued

Deck

Danger – Keep Clear
(P/N – 15845-1)

Hitch Frame

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

Deck

Danger – Exposed Blades
(P/N – 15338)

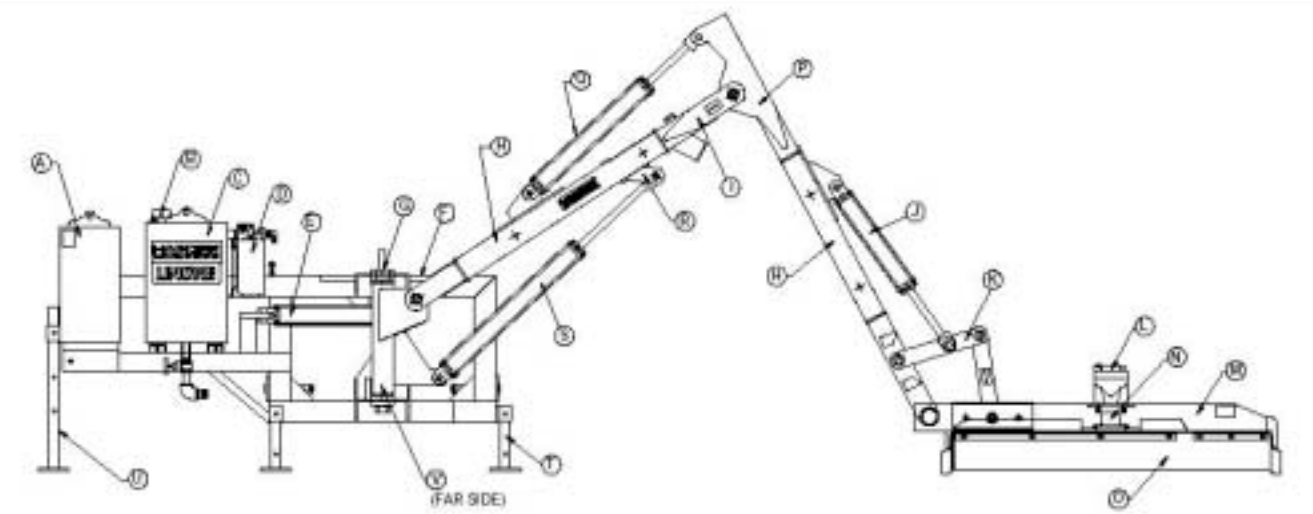
Deck – Front/Rear

Weight Box – Front/Rear

15852 – Red Reflector, Rear
(Not Shown)

15853 – Yellow Reflector, Front

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	2nd Stage (Reach) Boom
F	Hitch Frame	Q	2nd Stage Cylinder
G	Swing Post	R	Lift Break-Away
H	Hose Guard	S	1st Stage Cylinder
I	1st Stage (Lift) Boom	T	Short Stand
J	Deck Cylinder	U	Long Stand
K	Deck Linkage	V	Hydraulic Pump

Tractor Requirements

The Long Reach Cutter 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.

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 LR40148 is designed to work with a standard, category 2 or category 3 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.

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 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.

✓ 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.

✓ 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.

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.

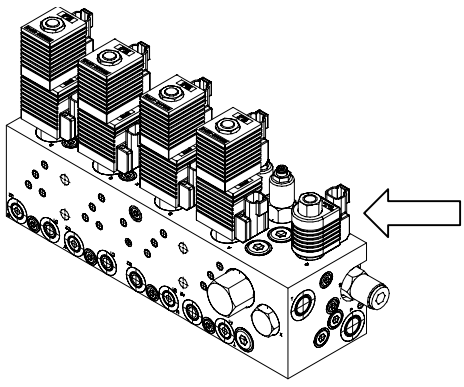
Consult your tractor owner's manual and your tractor dealer to determine what type of hydraulic system your particular tractor has.

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:

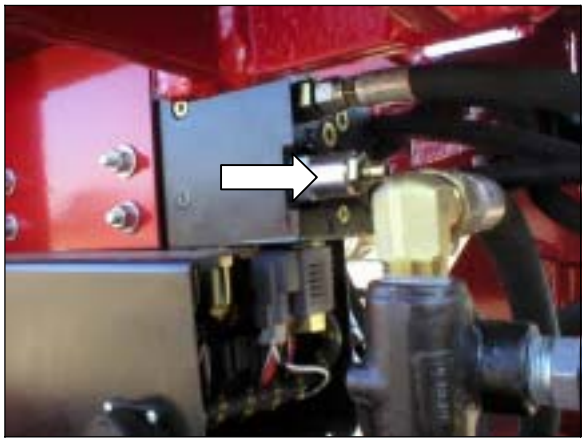
✓ With the tractor engine off and parking lever set, disconnect the electrical plug to the main solenoid. *(See below)* Neatly tuck the male portion of this connection into the wire cover box, as it will no longer be used.

✓ 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.



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 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 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
☐	Check All Fluid Levels, Tractor & Cutter, *For best results, use Hardee hydraulic oil – part number 23333*	-
☐	Grease Points	Page 15
☐	PTO Shaft, Check Grease	Page 15
☐	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.

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!

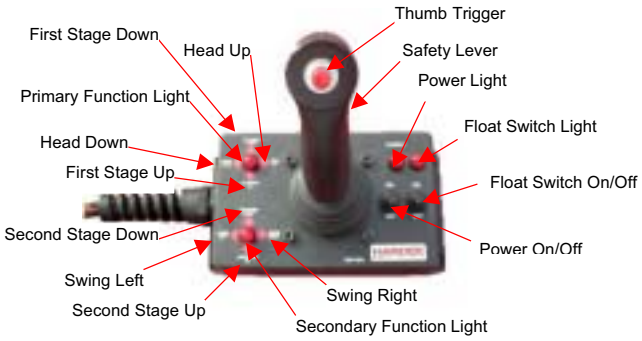
✓ With all controls in neutral, the tractor in park, the throttle in idle position and the joystick power switch off… Start the tractor engine.

✓ 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**: 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 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.

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 LR40148 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*

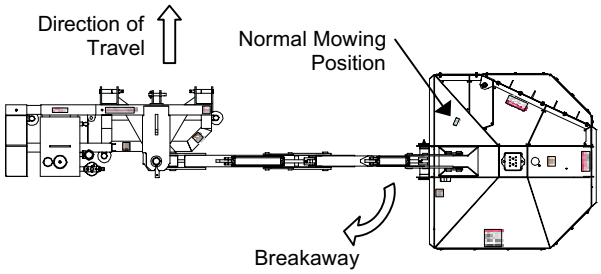


Figure 2

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!

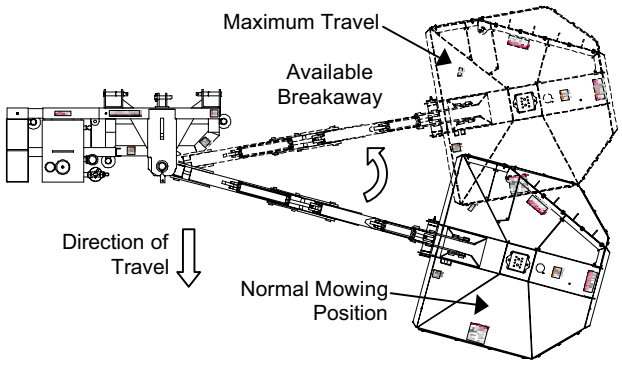


Figure 3

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 LR40160 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.

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

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

Figure 4

⚠ 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 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 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.

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.

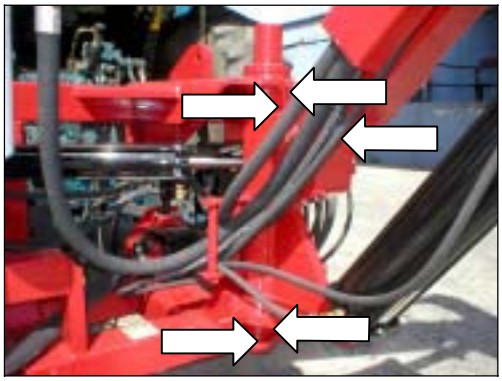
Maintenance and Service Schedule

This section is dedicated to the maintenance of the LR40160. As with any piece of equipment, the performance and life span depends on the proper operation and maintenance.

DANGER

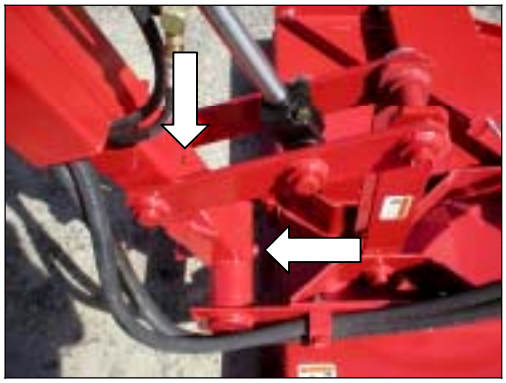
Never attempt any checks, repairs or adjustments with tractor engine running or the power take-off engaged. Adjustment of rotating parts while the tractor engine is running can result in serious personal injury or death if the PTO accidentally engages.

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

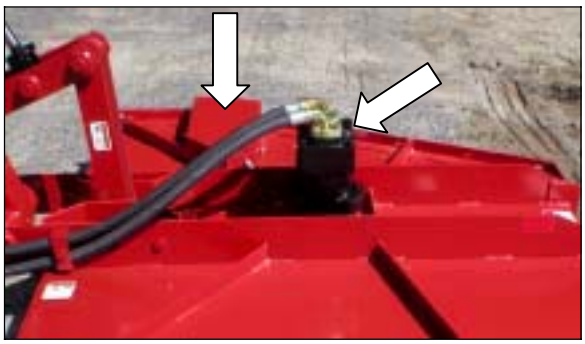


First Stage Boom to Second Stage Boom
Inject with heavy multi-purpose grease. *There is a grease fitting at every hinge point.*

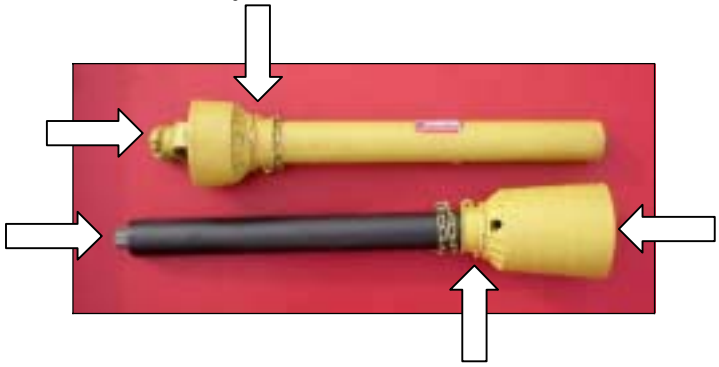
Deck and Second Stage Boom
Inject with heavy multi-purpose grease.



Hydraulic Motor Housing Assembly – Push Gate
Locate fitting on motor housing. Inject with 90W gear oil. Open the push gate cover; inject with heavy multi-purpose grease in grease fitting.



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.



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 33 for reference.*

Checking the Cutter Head Relief Valve

The LR40148 is equipped with a cutter-head 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 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.

Checking the Cutter Head 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 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 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 the 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.

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.

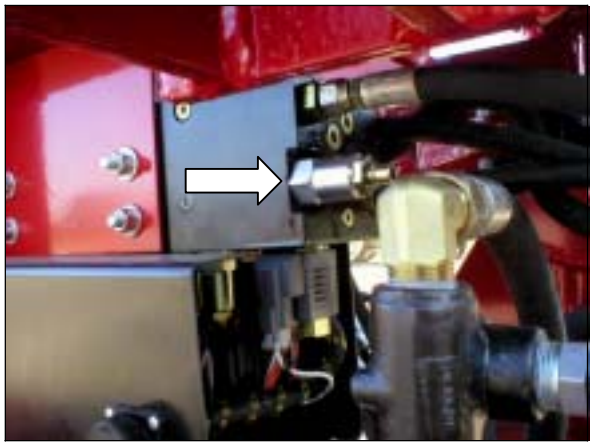


Figure 6

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 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.

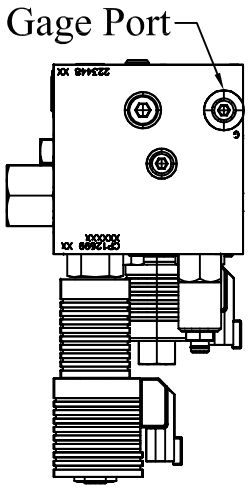
Individual Cylinder Counterbalance Valves (E, H, I and J)

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.

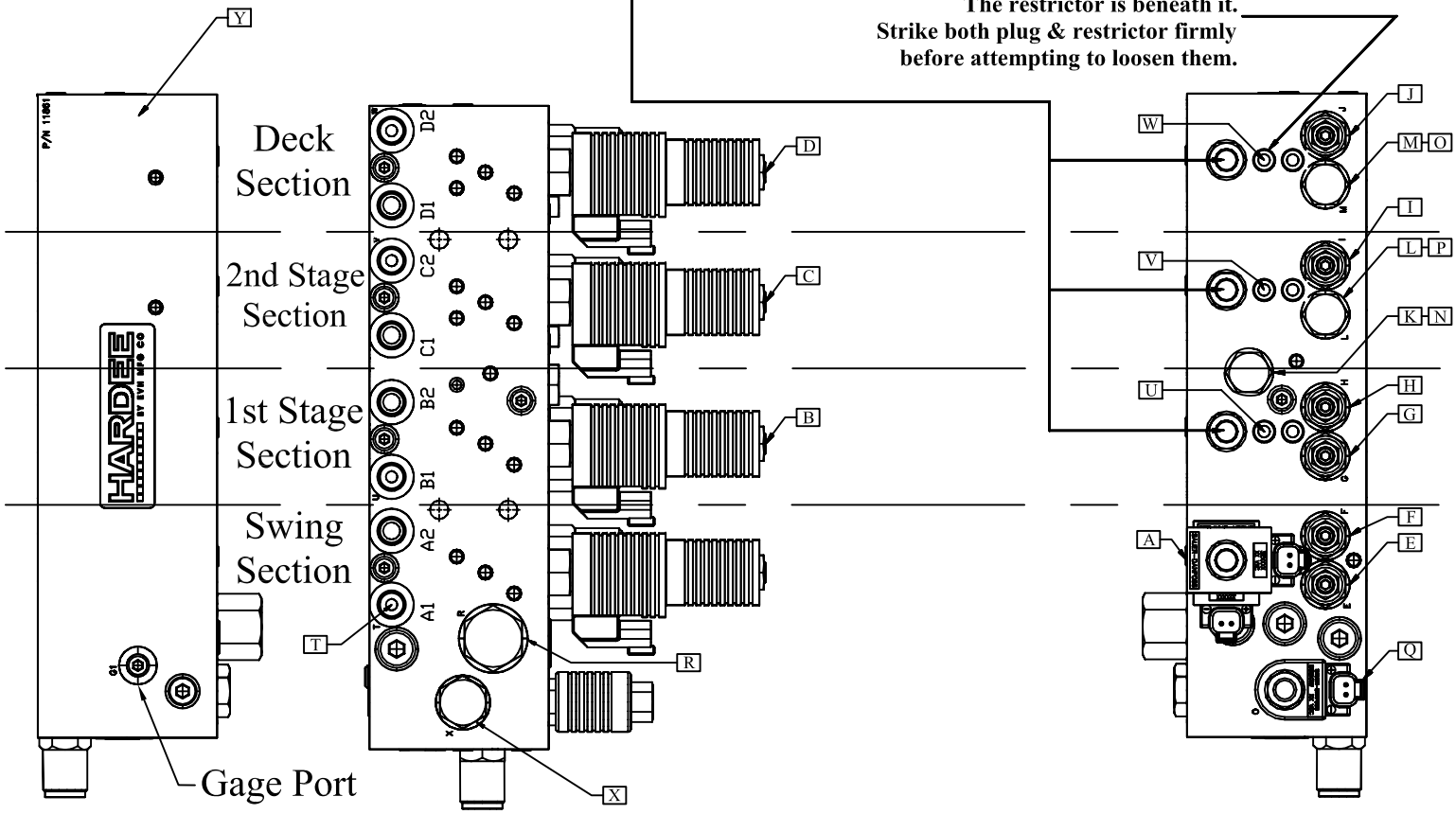
LR40148 Control Valve Port Listing					
Item	**Description**	**EVH P/N**	**Internal Parts**	**Torque**	**Setting**
A	Solenoid Valve	15876	Coil	2.5 ft lbs. - Coil Nut	*N/A*
		15335	Stem	15 ft lbs. - Stem	
		16560	Seal Kit	–	
B	Solenoid Valve	15876	Coil	2.5 ft lbs. - Coil Nut	*N/A*
		15335	Stem	15 ft lbs. - 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*

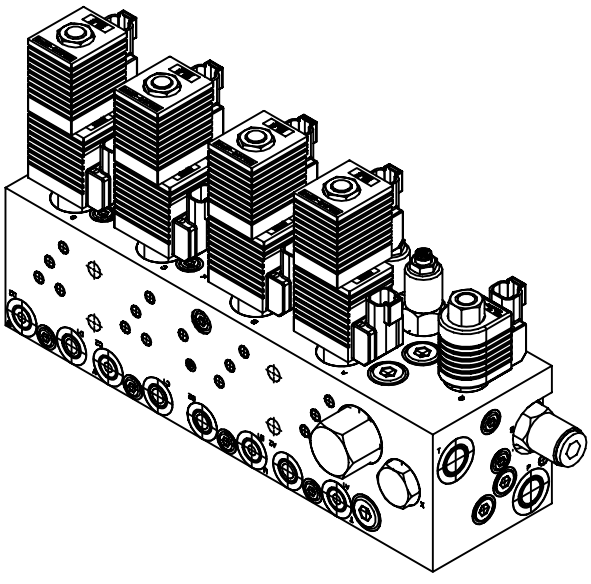
LR40142 & LR40148 Orifice Locations

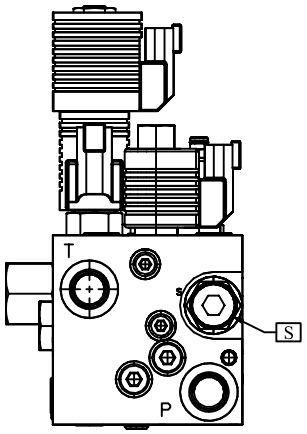


The "Deck", "1st Stage", and "2nd Stage" solenoids have been removed for drawing purposes only in order to show the stems in these three places

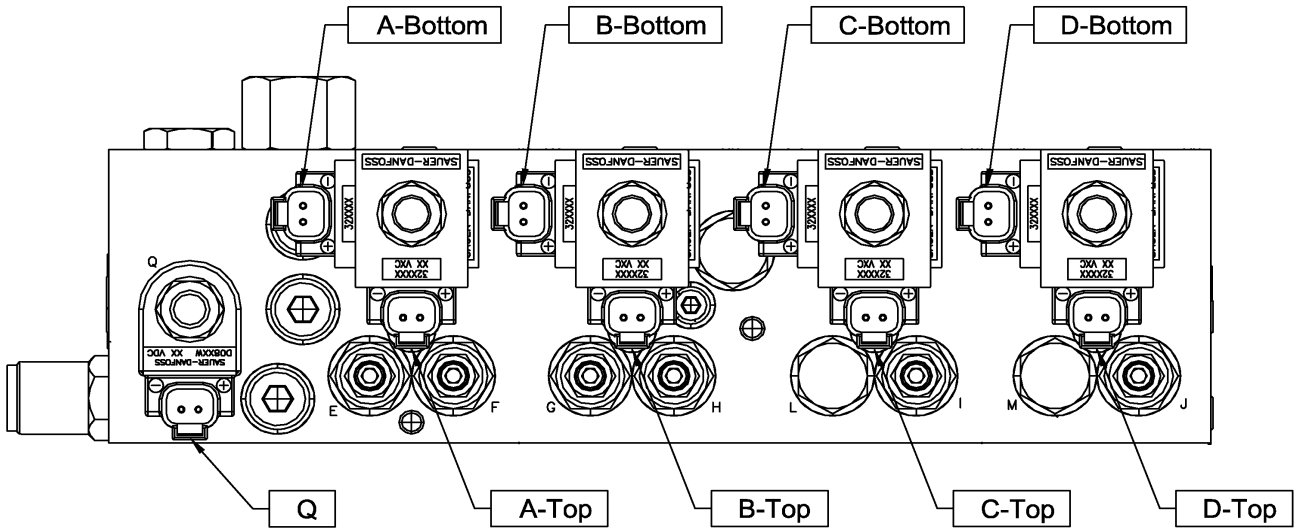
This is a $\frac{3}{16}$" Allen Headed O-ring plug The restrictor is beneath it. Strike both plug & restrictor firmly before attempting to loosen them.







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	Cap	A1	A - Top	Orange	19	White	11	Closed	Right (E)
Swing (Boom) Left	Rod	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	Cap	C1	C - Top	Green	16	White	11	Closed	Up (N)
2nd Stage Up	Rod	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



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 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
	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 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
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

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

DWG. NO.	22780			REV. E
REV	CHANGE	BY	DATE	ECN
D	16682 Will Replace 10375 & 16435	TBB	3/3/15	1578
E	Stand Weldment Replaced (23160 was 23038)	TBB	1/18/16	1620

Item	Part Number	Qty.	Description
1	10002	2	Hex Bolt, 1/4"-20 X 1" Gr.5 Plated
2	10006	4	Hex Bolt 1/4" x 3" gr.5 plated
3	10032	2	Hex Bolt 3/8 x 1-1/2 gr.5 plated
4	10034	2	Hex Bolt 3/8" x 2-1/2" gr.5 plated
5	10039	4	Hex Bolt 3/8 x 5 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	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
11	10153	4	Lock Nut, 1/4" Plated
12	10154	1	Lock Nut 5/16"-18 Plated
13	10166	12	Lock Nut 5/8"-11 plated
14	10167	2	3/4" Hex Nut (Gr.5 Plated)
15	10168	8	3/4"-10 Locknut (Gr.5 Plated)
16	10175	10	3/8"-16 Locknut (Gr.5 Plated)
17	10176	8	1/2" Locknut (Gr.5 Plated)
18	10181	1	Lockwasher 5/16" plated
19	10184	4	Lockwasher 1/2 plated
20	10185	6	Lockwasher 5/8" Plated
21	10186	10	Lockwasher 3/4" Plated
22	10200	2	1/4" Plated Flatwasher
23	10202	10	3/8" Flatwasher (Plated)
24	10204	20	1/2 Flatwasher (Plated)
25	10206	8	Flatwasher 3/4 plated
26	10207	25	Flatwasher, 1" plated
27	10252	12	Cotter Pin 3/16" X 2" Plated
28	10322	3	1/4" Grease Fitting, 1/4"-28 Threaded
29	10335	1	Hardee Red Paint - (Not Shown)
30	10336	1	Gear Oil [85W-140] - (Not Shown)
31	10339	2	Pop Rivet
32	10346	2	3 pt. Snap Pin (Lynch Pin)
33	10368	1	1-1/4" Gate Valve
34	10373	1	Hydraulic Oil
35	10387	2	O-ring
36	10388	1	O-Ring
37	10390	3	Clip Pin (1/8 x 2)
38	10393	3	Universal Clip Pin
39	10419	2	Hitch Pin, Cat. 2 & 3, Clevis Style
40	10448	2	CYLINDER, 3 X 17"
41	10454	1	CYLINDER, 4 X 24"
42	10501	1	FLOW EZY BREATHER
43	10538	2	Sleeve for 10419 Pin
44	10582	1	PRESSURE HOSE 3/8" X 55" W/6-F-JIC
45	10583	1	3/8" SAE 100 R1 X 125" W/6-F-JIC
46	10584	1	PRESSURE HOSE 3/8" X 210" W/6-F-JIC
47	10585	2	PRESSURE HOSE 3/8" X 83" W/6-F-JIC
48	10586	1	3/8" X 86" Pressure Hose W/ 6-F-JIC X 8-M-NPT
49	10587	1	PRESSURE HOSE 3/4" X 106" W/12-M-JIC
50	10588	1	PRESSURE HOSE 3/4" x 127"
51	10646	1	Grease
52	10865	1	PRESSURE HOSE 1" x 127"
53	10866	1	1" X 106" Pressure Hose
54	10872	2	Pressure Flange SET
55	11005	1	Decal, Warning - Thrown Objects
56	11010	3	Large Hardee Logo Decal
57	11032	1	Small Hardee Logo Decal
58	11673	1	Joystick
59	11675	1	Return Filter Assembly
60	11703	1	3/4" Street Elbow
61	11714	6	6-M-JIC X 6-M-ORB Straight
62	11727	1	Serial Number Plate
63	11775	1	Hydraulic 540RPM Pump
64	11850	1	Web Site Decal
65	11860	10	TIE STRAP, (14" LG.) (100/PK)
66	11876	1	Hitch Frame Wiring Harness (Pigtail)
67	13532	2	CLAMP, SIZE 3/4" TO 1-3/4" X 9/16"
68	13535	4	STAINLESS STEEL CLAMP, 1-1/2" TO 1-3/4"
69	13557	1	3/4"-M-NPT X 3/4" Metal Hose Barb
70	13563	1	1-1/4"-M-NPT X 1-1/2" Metal Hose Barb
71	13632	1	1/4" NPT Metal Cap
72	13697	1	1-1/4" NPT Female Threaded Elbow
73	13758	1	20-M-NPT X 16-F-NPT Reducer
74	13778	1	1-1/4" X 3-1/2" Long NPT Nipple
75	13905	8	6-M-JIC X 8-M-NPT 90 Deg. Elbow
76	13909	2	6-M-JIC X 6-M-ORB 90 Deg. Elbow
77	13974	1	16-M-JIC X 16-M-NPT 90 Deg. Elbow
78	13975	2	12-M-ORB X 12-M-JIC 90 Deg. Elbow
79	13981	2	8-M-ORB X 8-M-JIC Straight
80	15241	1	Hydraulic Vane Motor
81	15251	1	1" Hose Clamp Body (SET OF 2)
82	15252	1	3/4" Hose Clamp Body (SET OF 2)
83	15255	2	Hose Clamp Cover Plate
84	15259	1	Control Valve
85	15263	1	Joystick Wiring Harness
86	15273	3	DECAL, MODEL LR40148
87	15326	1	Pressure Hose 3/8" X 17" Lg. W/ 6-F-JIC Both Ends
88	15338	1	Danger Decal, Exposed Blades
89	15339	1	PRESSURE HOSE 3/8" X 32" W/6-F-JIC
90	15453	4	Hex Bolt (M14-2.0 X 25 Gr. 8.8 Plated)
91	15461	2	CAP 37 Deg. Flare #8 (1/2")
92	15466	2	Tubing Insert, 3-1/2" Sqr. X 11
93	15481	1	Slotted Hex Nut 1-1/4" -18UNEF
94	15845	1	Hydraulic Decal Kit
95	15845-1	1	DANGER DECAL (KIT 15845)
96	15845-10	1	WARNING DECAL (KIT 15845)
97	15845-11	2	WARNING DECAL (KIT 15845)
98	15845-12	1	DANGER DECAL (KIT 15845)
99	15845-13	1	DANGER DECAL (KIT 15845)
100	15845-14	1	DANGER DECAL (KIT 15845)
101	15845-15	1	DANGER DECAL (KIT 15845)
102	15845-16	2	DANGER DECAL (KIT 15845)
103	15845-2	1	DANGER DECAL (KIT 15845)
104	15845-3	4	WARNING DECAL (KIT 15845)
105	15845-8	1	DANGER DECAL (KIT 15845)
106	15845-9	1	WARNING DECAL (KIT 15845)
107	15852	2	Red Reflector Decal
108	15853	2	Yellow Reflector Decal
109	15854	1	Manual Holder
110	15860	2	U-Nut, 1/4"-20
111	15910	46	HOSE SLEEVE
112	15928	1	Cylinder, 4" X 24" W/ 2" Rod & 1" Pins
113	15968	1	Cotter Pin 1/4" x 3"
114	16012	2	Fitting,12 F50X-S Straight Thread Connector
115	16050	4	Rivet For Wire Harness
116	16071	1	PRESSURE HOSE 3/8" X 192" W/6-F-JIC
117	16100	1	Sight Gauge 5", With Thermometer
118	16138	2	Lock Nut 7/16"-14 NC with Nylon Insert
119	16335	1	Hour Meter - not for resale
120	16579	1	Hydraulic Motor Housing Assembly
121	16682	2	Relief Valve Assy. - 2700 PSI - Pump Mounted
122	16683	2	Relief Valve 2700 PSI - w/TAMPER PROOF CAP
123	16684	2	Fitting, #12 HB/ M-ORB Straight
124	16685	4	Screw, 7/16-14 X 2-1/4 long - Zinc Plated
125	16686	4	Lock Washer, Zinc Plated 7/16 High Collar
126	16687	4	Screw, M12-1.75 X 60mm long - Zinc Plated
127	16689	4	Lock Washer, Zinc Plated M12mm High Collar
128	16697	2	ORB Hollow Hex Plug
129	20031	1	Access Cover
130	22691	1	LR40148 / LR50148 Front Corner Belting
131	22751	1	Short Belting Flat
132	22770	1	LR40148 / LR50148 Belting Extension Kit
133	22789	1	LR40148 / LR50148 Deck Weldment (6 Bolt)
134	22799	1	LR40148 / LR50148 Rubber Belting Kit
135	22803	1	Blade Holder w/Blades
136	22833	2	Fluid Connector
137	23130	1	Pivot Sleeve
138	23131	1	End Cap Weldment
139	23157	1	RETURN HOSE, 3/4 X 42"
140	23160	2	Stand Weldment, 17-7/8" Tall
141	23226	1	ASSEMBLY Hitch Frame, LR40148
142	23232	1	Support Brace
143	23280	1	WELDMENT, Cylinder Breakaway
144	23287	2	Boom To Deck Bracket Weldment
145	23290	2	WELDMENT, Boom to Deck Bracket, 21"
146	23292	1	PIN WELDMENT (1" x 5" LG)
147	23294	1	1st Stage Boom
148	23310	1	2nd Stage Boom
149	23320	1	Cylinder Mount Weldment
150	23325	1	WELDMENT, Weight Box
151	23335	1	Weldment, Oil Tank
152	23340	1	Stand Weldment
153	23345	1	Head Mounting Bracket Weldment
154	23349	1	Outer Hose Guard Weldment
155	23352	1	Inner Hose Guard Weldment
156	23355	1	WELDMENT, GUARD
157	23361	2	Spacer, 1" X 2-1/8"
158	23363	2	SPACER (1" SCH 40 Pipe x 5/8")
159	23370	1	1-1/2" x 31" SUCTION HOSE
160	23379	2	1-1/4" X 9" Pin Weldment for LR's
161	23380	1	WELDMENT, 1" x 6 1/4" PIN
162	23434	5	Pin Weldment
163	23457	2	COLLAR, for 23379 PIN (Bushing)
164	25117	2	Spacer
165	25724	5	WELDMENT, Cylinder Pin
166	26012	1	Wire Cover Weldment

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.

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

MODELED BY	TBB	3/3/15
DRAWN BY	C.K.N.	3/23/10
MATERIAL	R.M.N.	N/A

Manufactured By:
EVH Mfg. Co., LLC

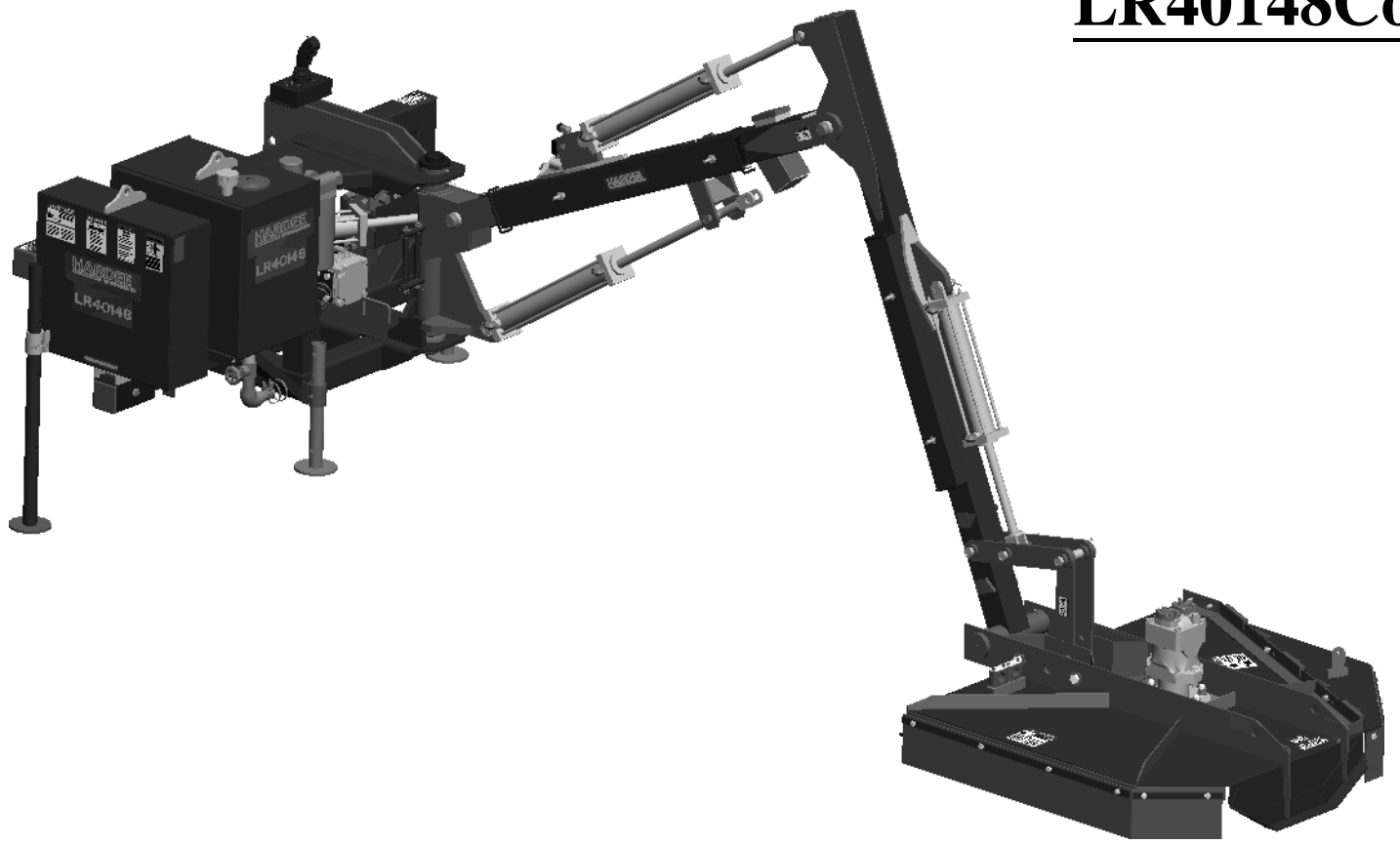
HARDEE BY
EVH MFG. CO.
LORIS S.C.

DESCRIPTION: LR40148 COMPLETE
SHEET 1 of 9

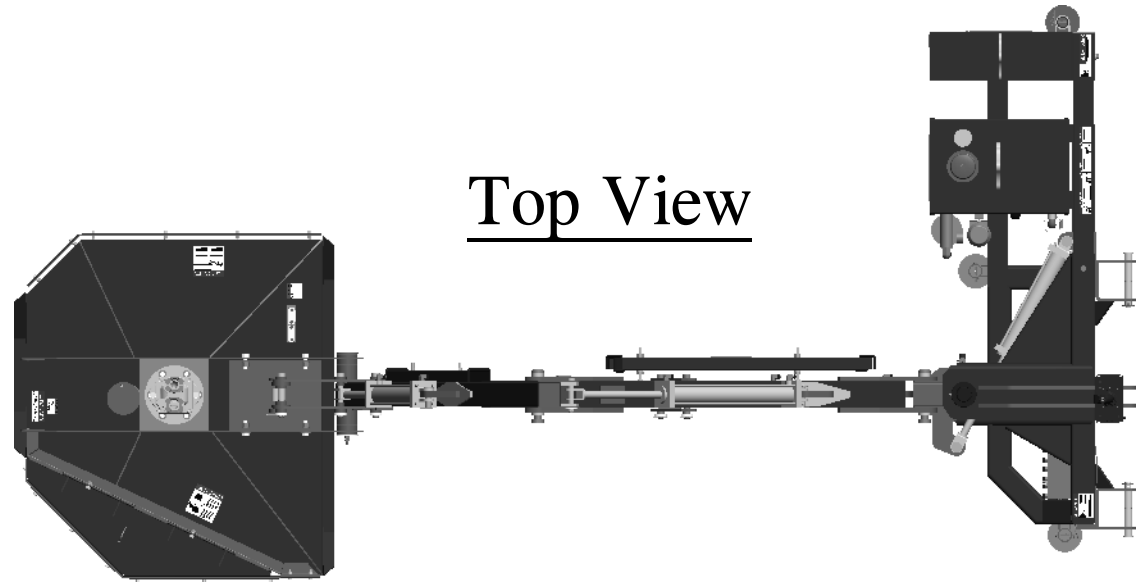
DO NOT SCALE | B DWG SIZE | DWG. NO. 22780

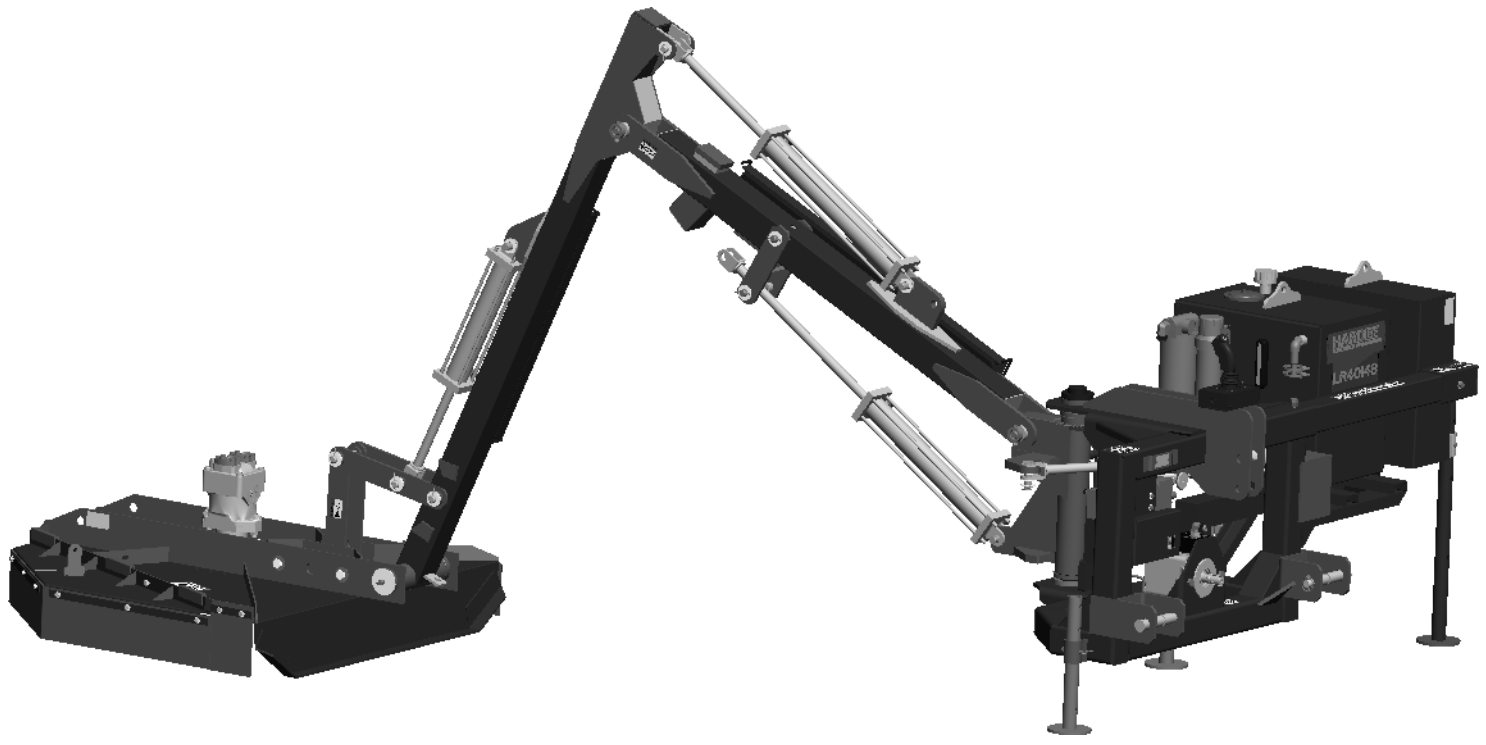
LR40148Complete

DWG. NO.	22780		REV.	E
REV	CHANGE	BY	DATE	ECN
D	16682 Will Replace 10375 & 16435	TBB	3/3/15	1578
E	Stand Weldment Replaced (23160 was 23038)	TBB	1/18/16	1620

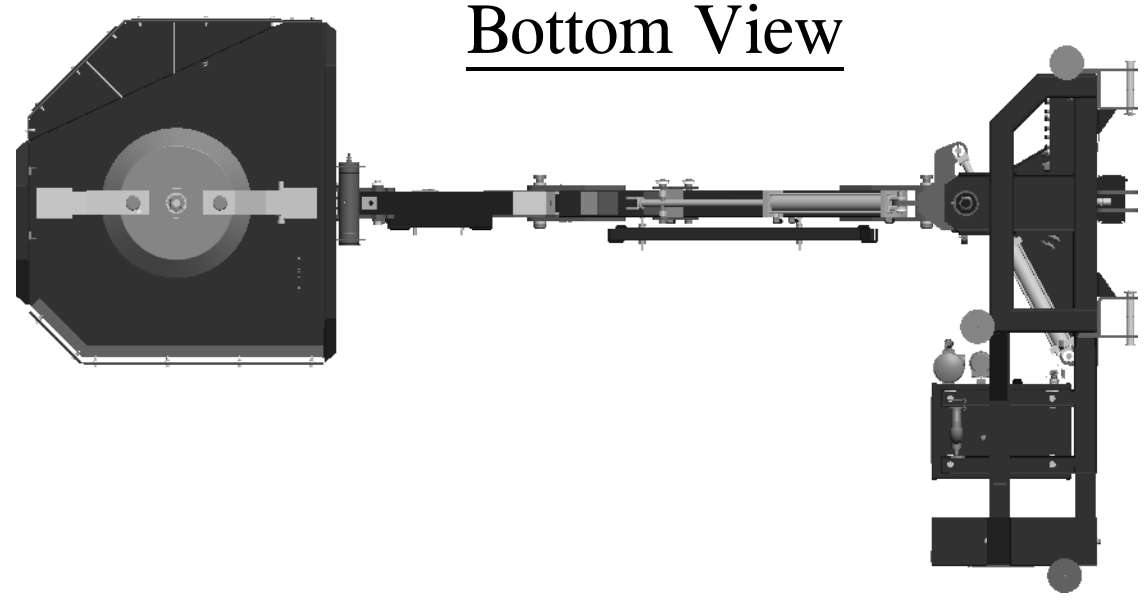


Top View





Bottom View

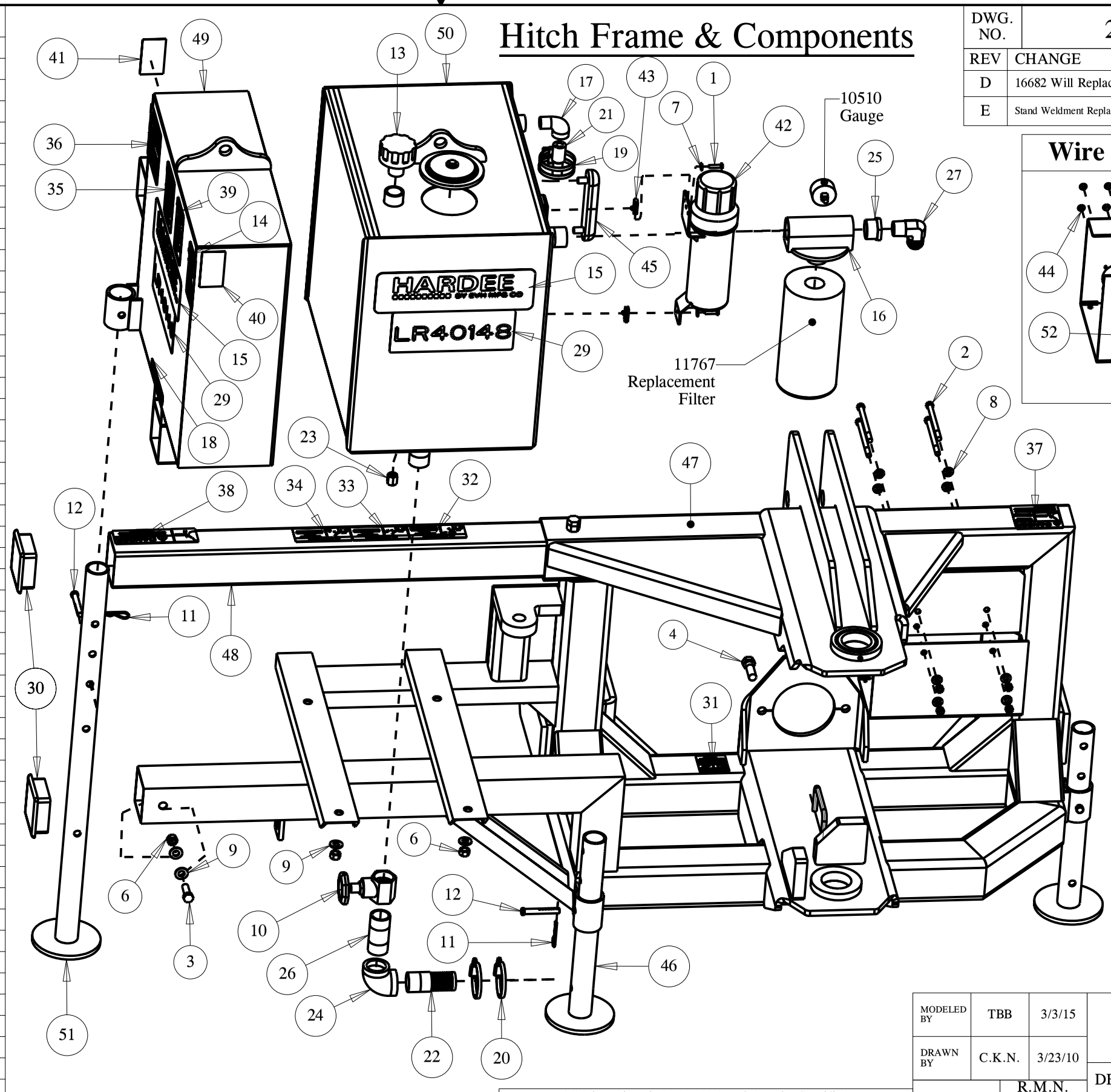


MODELED BY	TBB	3/3/15	HARDEE BY EVH MFG. CO. LORIS S.C.
DRAWN BY	C.K.N.	3/23/10	
MATERIAL	R.M.N. N/A		DESCRIPTION: LR40148 COMPLETE — SHEET 2 of 9
Manufactured By: EVH Mfg. Co., LLC			DO NOT SCALE — B (DWG SIZE) — DWG. NO. 22780

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

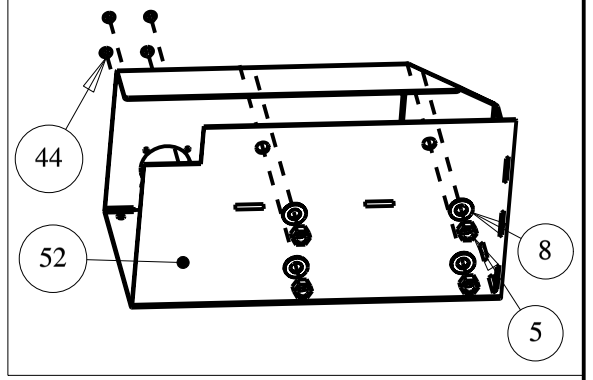
Hitch Frame & Components

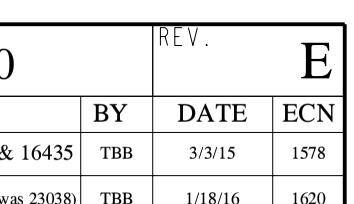
Item	Part Number	Qty.	Description
1	10002	2	Hex Bolt, 1/4"-20 X 1" Gr.5 Plated
2	10039	4	Hex Bolt 3/8 x 5 gr.5 plated
3	10072	2	Hex Bolt 1/2 x 1 1/2 gr.5 plated
4	10092	2	Hex Bolt 5/8 x 2 gr.5 plated
5	10175	4	3/8"-16 Locknut (Gr.5 Plated)
6	10176	6	1/2" Locknut (Gr.5 Plated)
7	10200	2	1/4" Plated Flatwasher
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

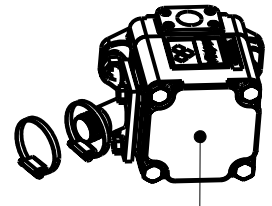


DWG. NO.	22780		REV.	E
REV	CHANGE	BY	DATE	ECN
D	16682 Will Replace 10375 & 16435	TBB	3/3/15	1578
E	Stand Weldment Replaced (23160 was 23038)	TBB	1/18/16	1620

Wire Cover Detailed View







See "Pump Options"

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

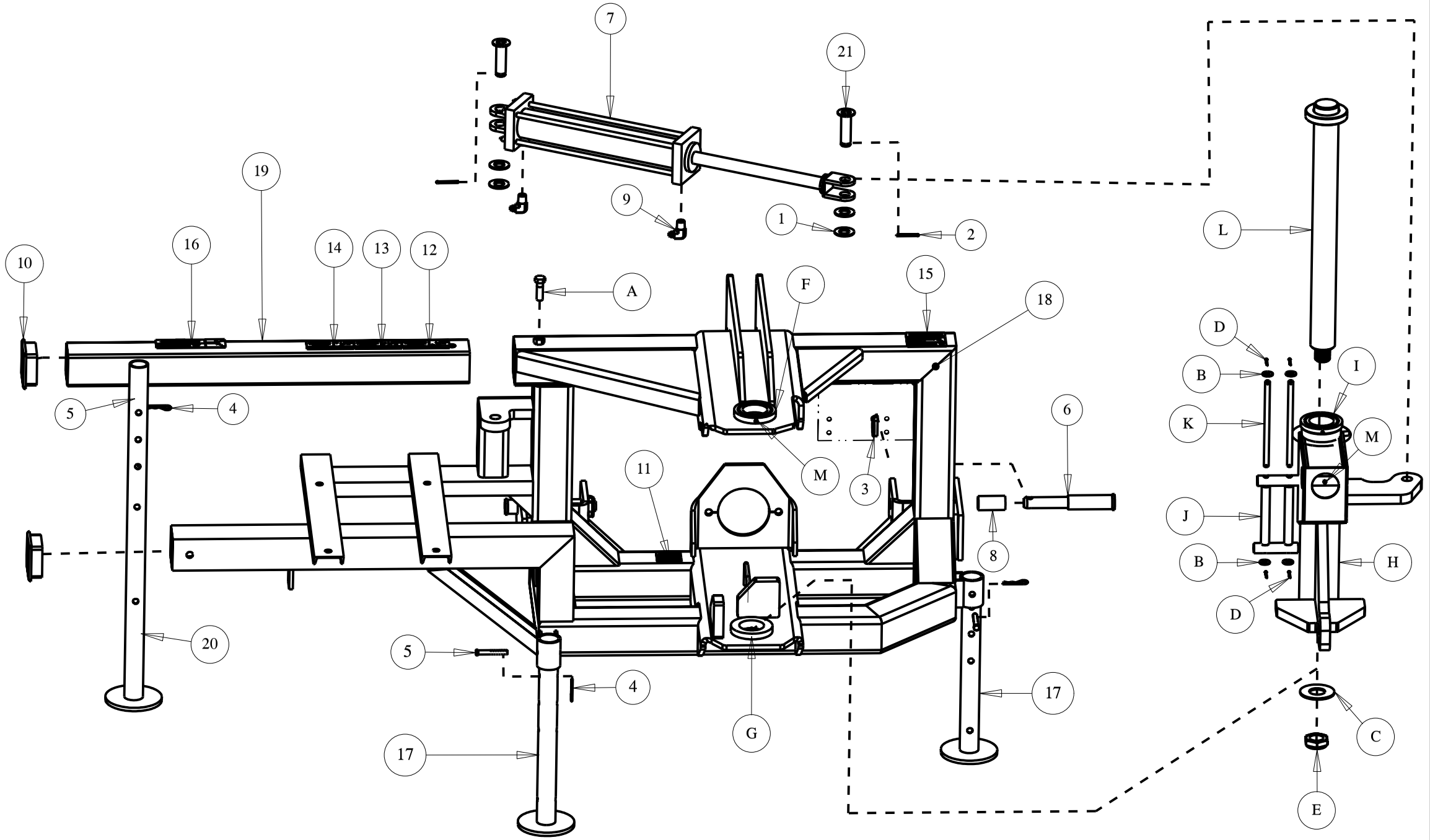
MODELED BY	TBB	3/3/15	HARDEE BY EVH MFG. CO. LORIS S.C.
DRAWN BY	C.K.N.	3/23/10	
MATERIAL	R.M.N. N/A		DESCRIPTION: LR40148 COMPLETE
Manufactured By: EVH Mfg. Co., LLC			SHEET 3 of 9
DO NOT SCALE	B DWG SIZE	DWG. NO.	22780

Hitch Frame & Swivel

DWG. NO.	22780		REV.	E
REV	CHANGE	BY	DATE	ECN
D	16682 Will Replace 10375 & 16435	TBB	3/3/15	1578
E	Stand Weldment Replaced (23160 was 23038)	TBB	1/18/16	1620

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	10448	1	CYLINDER, 3 X 17"
8	10538	2	Sleeve for 10419 Pin
9	13905	2	6-M-JIC X 8-M-NPT 90 Deg. Elbow
10	15466	2	Tubing Insert, 3-1/2" Sqr. X 11
11	15845-11	1	WARNING DECAL (KIT 15845)
12	15845-12	1	DANGER DECAL (KIT 15845)
13	15845-13	1	DANGER DECAL (KIT 15845)
14	15845-14	1	DANGER DECAL (KIT 15845)
15	15845-2	1	DANGER DECAL (KIT 15845)
16	15845-8	1	DANGER DECAL (KIT 15845)
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

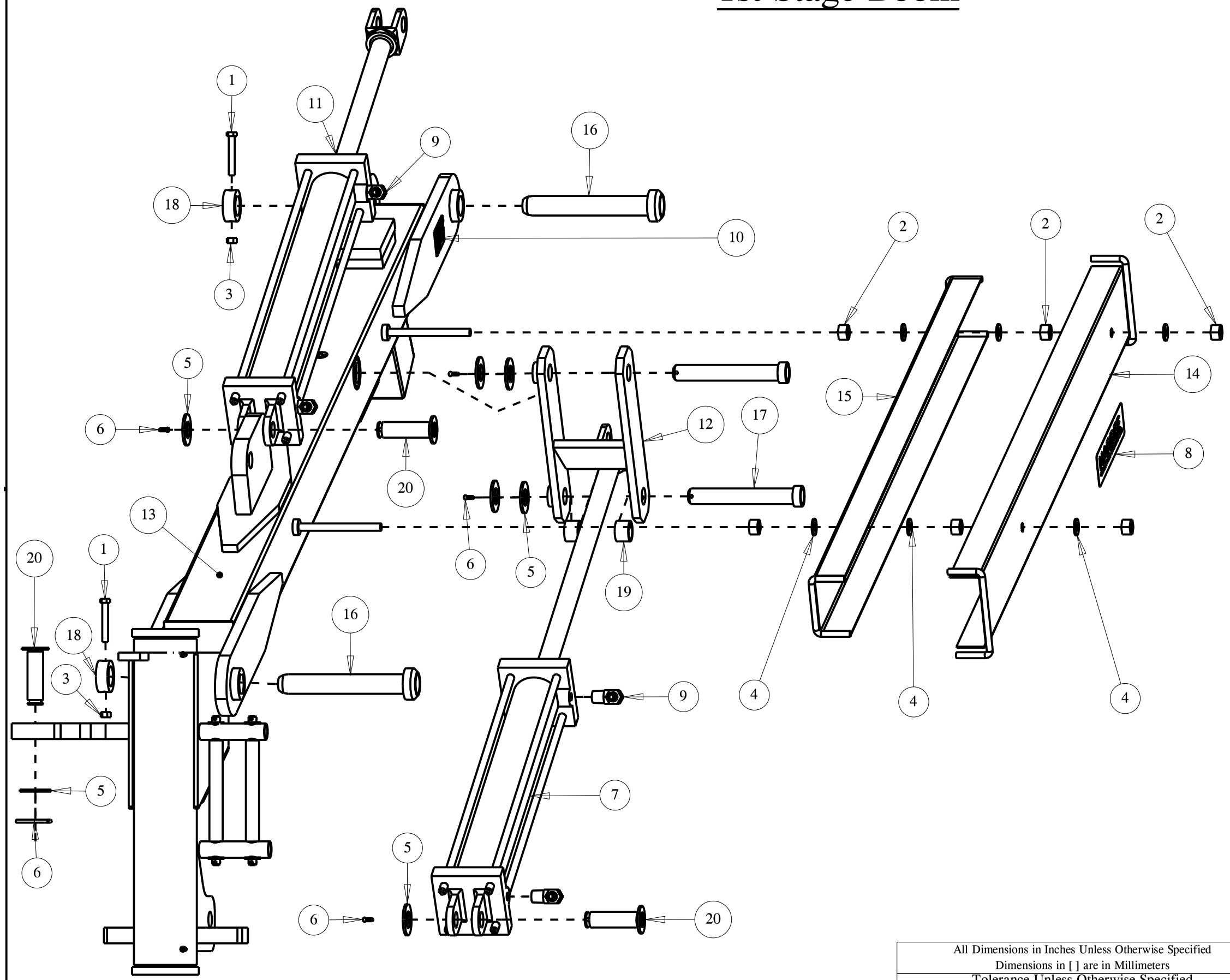


All Dimensions in Inches Unless Otherwise Specified
Dimensions in [ ] are in Millimeters
Tolerance Unless Otherwise Specified
Fractional Dimensions ± 1/16" **Angular Dimensions ± 1°**
Decimal Dim. to Limits Shown All Holes to be +0 -1/32"

MODELED BY	TBB	3/3/15	HARDEE BY EVH MFG. CO. LORIS S.C.
DRAWN BY	C.K.N.	3/23/10	
MATERIAL	R.M.N. N/A		DESCRIPTION: LR40148 COMPLETE
Manufactured By: EVH Mfg. Co., LLC			SHEET 4 of 9
DO NOT SCALE	B (DWG SIZE)	DWG. NO.	22780

1st Stage Boom

DWG. NO.	22780		REV.	E
REV	CHANGE	BY	DATE	ECN
D	16682 Will Replace 10375 & 16435	TBB	3/3/15	1578
E	Stand Weldment Replaced (23160 was 23038)	TBB	1/18/16	1620



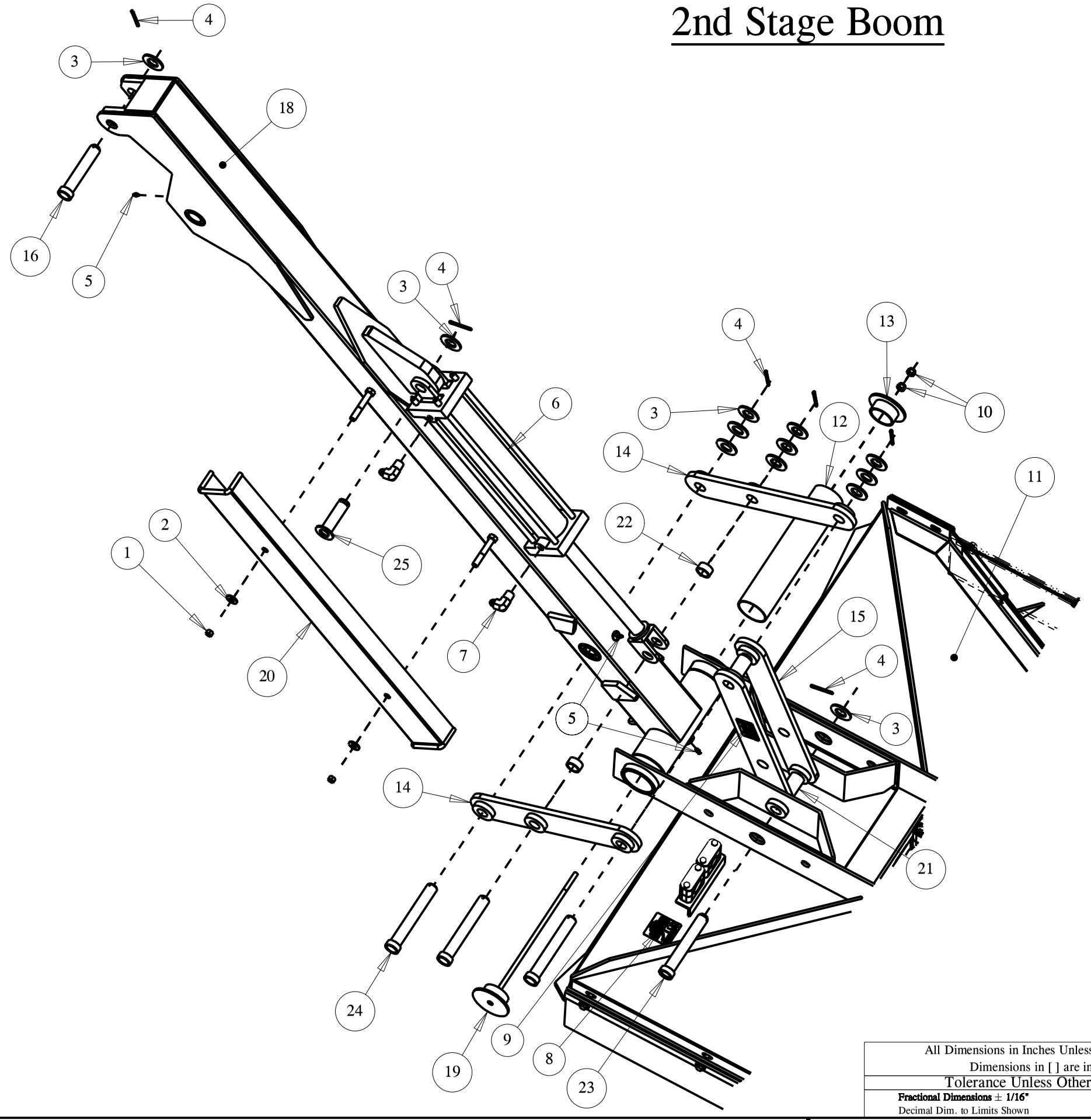
Item	Part Number	Qty.	Description
1	10034	2	Hex Bolt 3/8" x 2-1/2" gr.5 plated
2	10166	6	Lock Nut 5/8"-11 plated
3	10175	2	3/8"-16 Locknut (Gr.5 Plated)
4	10204	6	1/2 Flatwasher (Plated)
5	10207	7	Flatwasher, 1" plated
6	10252	5	Cotter Pin 3/16" X 2" Plated
7	10454	1	CYLINDER, 4 X 24"
8	11032	1	Small Hardee Logo Decal
9	13905	4	6-M-JIC X 8-M-NPT 90 Deg. Elbow
10	15845-3	2	WARNING DECAL (KIT 15845)
11	15928	1	Cylinder, 4" X 24" W/ 2" Rod & 1" Pins
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

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

MODELED BY	TBB	3/3/15	HARDEE BY EVH MFG. CO. LORIS S.C.
DRAWN BY	C.K.N.	3/23/10	
MATERIAL	R.M.N. N/A		DESCRIPTION: LR40148 COMPLETE
Manufactured By: EVH Mfg. Co., LLC			SHEET 5 of 9
DO NOT SCALE	B (DWG SIZE)	DWG. NO.	22780

2nd Stage Boom

DWG. NO.	22780		REV.	E
REV	CHANGE	BY	DATE	ECN
D	16682 Will Replace 10375 & 16435	TBB	3/3/15	1578
E	Stand Weldment Replaced (23160 was 23038)	TBB	1/18/16	1620



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	10448	1	CYLINDER, 3 X 17"
7	13905	2	6-M-JIC X 8-M-NPT 90 Deg. Elbow
8	15845-11	1	WARNING DECAL (KIT 15845)
9	15845-3	2	WARNING DECAL (KIT 15845)
10	16138	2	Lock Nut 7/16"-14 NC with Nylon Insert
11	22789	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

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"

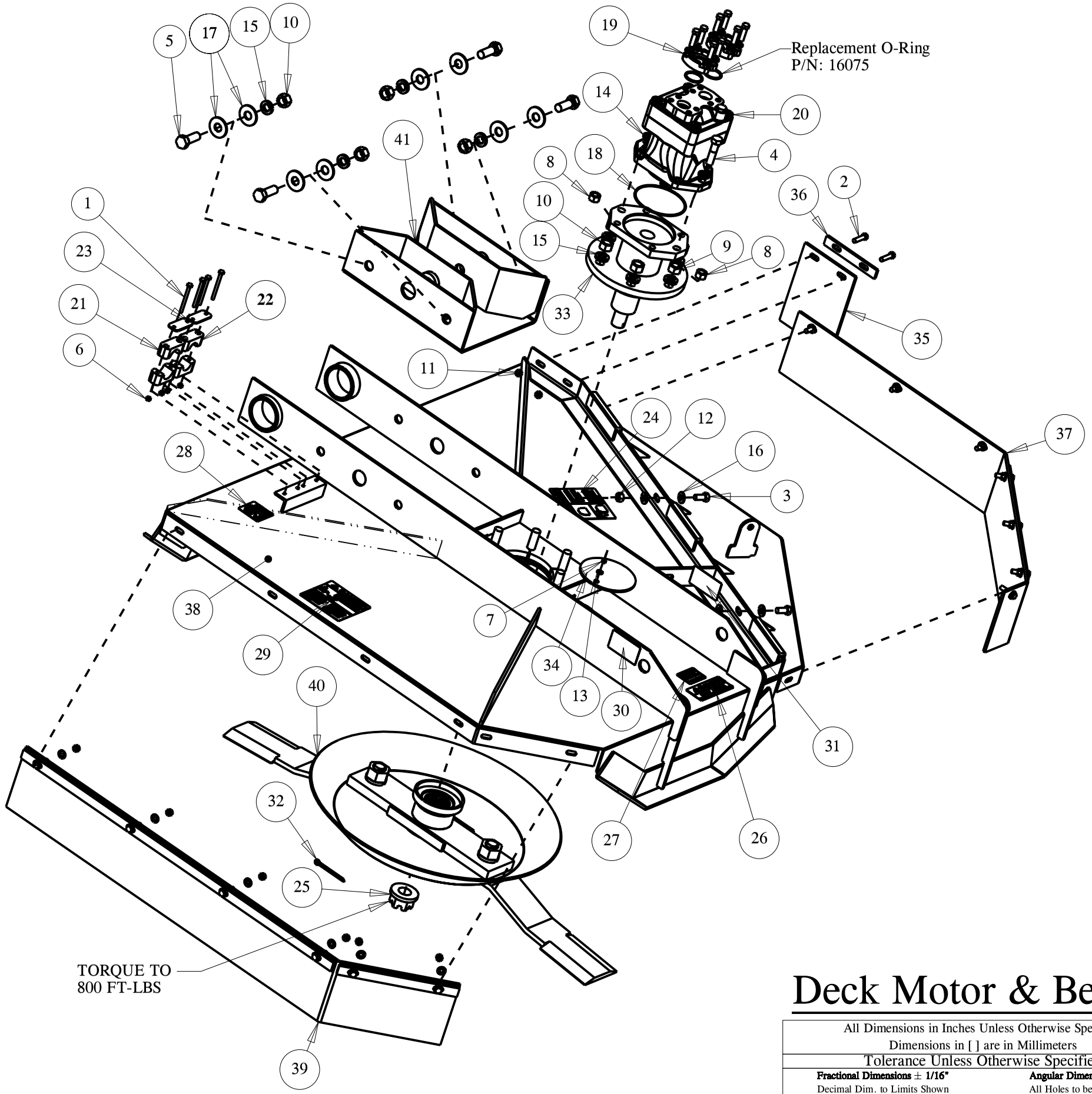
MODELED BY	TBB	3/3/15
DRAWN BY	C.K.N.	3/23/10
MATERIAL	R.M.N.	N/A

Manufactured By:
EVH Mfg. Co., LLC

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

DESCRIPTION: LR40148 COMPLETE
SHEET 6 of 9

DO NOT SCALE | B DWG SIZE | DWG. NO. 22780



DWG. NO.	22780		REV.	E
REV	CHANGE	BY	DATE	ECN
D	16682 Will Replace 10375 & 16435	TBB	3/3/15	1578
E	Stand Weldment Replaced (23160 was 23038)	TBB	1/18/16	1620

Item	Part Number	Qty.	Description
1	10006	4	Hex Bolt 1/4" x 3" gr.5 plated
2	10032	2	Hex Bolt 3/8 x 1-1/2 gr.5 plated
3	10071	2	Hex Bolt 1/2 x 1 gr.5 plated
4	10093	2	Hex Bolt 5/8" x 2-1/2" gr.5 plated
5	10111	4	Hex Bolt 3/4"-10 X 2" gr.5 Plated
6	10153	4	Lock Nut, 1/4" Plated
7	10154	1	Lock Nut 5/16"-18 Plated
8	10166	2	Lock Nut 5/8"-11 plated
9	10167	2	3/4" Hex Nut (Gr.5 Plated)
10	10168	8	3/4"-10 Locknut (Gr.5 Plated)
11	10175	2	3/8"-16 Locknut (Gr.5 Plated)
12	10176	2	1/2" Locknut (Gr.5 Plated)
13	10181	1	Lockwasher 5/16" plated
14	10185	2	Lockwasher 5/8" Plated
15	10186	10	Lockwasher 3/4" Plated
16	10204	4	1/2 Flatwasher (Plated)
17	10206	8	Flatwasher 3/4 plated
18	10388	1	O-Ring
19	10872	2	Pressure Flange SET
20	15241	1	Hydraulic Vane Motor
21	15251	1	1" Hose Clamp Body (SET OF 2)
22	15252	1	3/4" Hose Clamp Body (SET OF 2)
23	15255	2	Hose Clamp Cover Plate
24	15338	1	Danger Decal, Exposed Blades
25	15481	1	Slotted Hex Nut 1-1/4" -18UNEF
26	15845-1	1	DANGER DECAL (KIT 15845)
27	15845-10	1	WARNING DECAL (KIT 15845)
28	15845-11	1	WARNING DECAL (KIT 15845)
29	15845-16	1	DANGER DECAL (KIT 15845)
30	15852	1	Red Reflector Decal
31	15853	1	Yellow Reflector Decal
32	15968	1	Cotter Pin 1/4" x 3"
33	16579	1	Hydraulic Motor Housing Assembly
34	20031	1	Access Cover
35	22691	1	LR40148 / LR50148 Front Corner Belting
36	22751	1	Short Belting Flat
37	22770	1	LR40148 / LR50148 Belting Extension Kit
38	22789	1	LR40148 / LR50148 Deck Weldment (6 Bolt)
39	22799	1	LR40148 / LR50148 Rubber Belting Kit
40	22803	1	Blade Holder w/Blades
41	23320	1	Cylinder Mount Weldment

Deck Motor & Belting

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Angular Dimensions ± 1° All Holes to be +0 -1/32"

MODELED BY	TBB	3/3/15
DRAWN BY	C.K.N.	3/23/10
MATERIAL	R.M.N.	N/A

Manufactured By:
EVH Mfg. Co., LLC

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

DESCRIPTION: LR40148 COMPLETE

SHEET 7 of 9

DO NOT SCALE | B DWG SIZE | DWG. NO. 22780

NOTES:

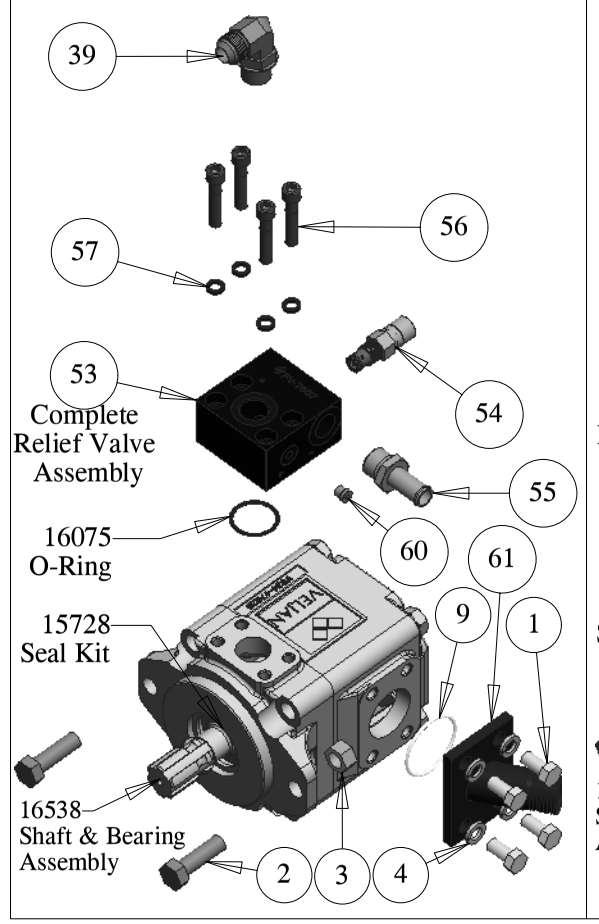
Hydraulic Schematic For LR40148

DWG. NO.	22780		REV.	E
REV	CHANGE	BY	DATE	ECN
D	16682 Will Replace 10375 & 16435	TBB	3/3/15	1578
E	Stand Weldment Replaced (23160 was 23038)	TBB	1/18/16	1620

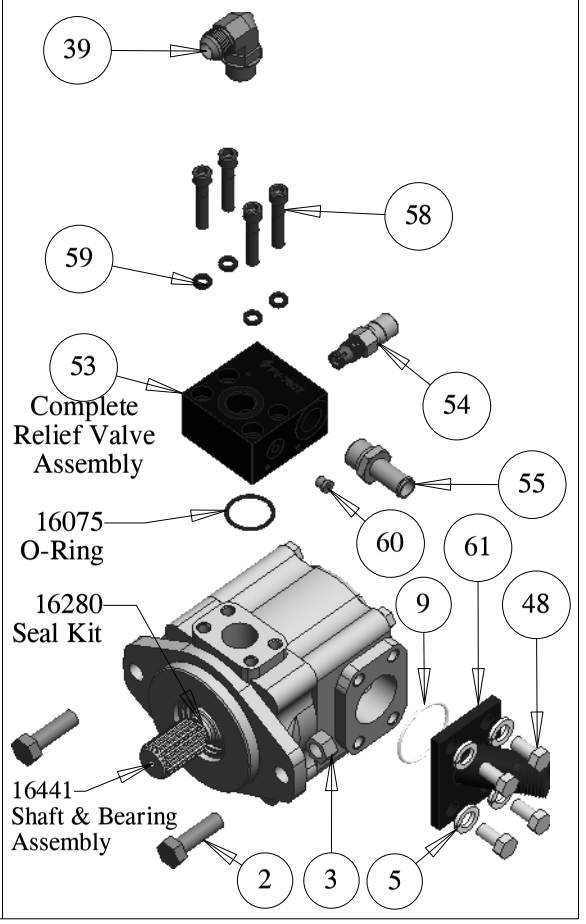
Item	Part Number	Qty.	Description
1	10071	4	Hex Bolt 1/2 x 1 gr.5 plated
2	10092	4	Hex Bolt 5/8 x 2 gr.5 plated
3	10166	4	Lock Nut 5/8"-11 plated
4	10184	4	Lockwasher 1/2 plated
5	10185	4	Lockwasher 5/8" Plated
6	10336	1	Gear Oil [85W-140] - (Not Shown)
7	10368	1	1-1/4" Gate Valve
8	10373	1	Hydraulic Oil
9	10387	2	O-ring
10	10448	2	CYLINDER, 3 X 17"
11	10454	1	CYLINDER, 4 X 24"
12	10501	1	FLOW EZY BREATHER
13	10582	1	PRESSURE HOSE 3/8" X 55" W/6-F-JIC
14	10583	1	3/8" SAE 100 R1 X 125" W/6-F-JIC
15	10584	1	PRESSURE HOSE 3/8" X 210" W/6-F-JIC
16	10585	2	PRESSURE HOSE 3/8" X 83" W/6-F-JIC
17	10586	1	3/8" X 86" Pressure Hose W/ 6-F-JIC X 8-M-NPT
18	10587	1	PRESSURE HOSE 3/4" X 106" W/12-M-JIC
19	10588	1	PRESSURE HOSE 3/4" x 127"
20	10646	1	Grease
21	10865	1	PRESSURE HOSE 1" x 127"
22	10866	1	1" X 106" Pressure Hose
23	11673	1	Joystick
24	11675	1	Return Filter Assembly
25	11703	1	3/4" Street Elbow
26	11714	6	6-M-JIC X 6-M-ORB Straight
27	11775	1	Hydraulic 540RPM Pump
28	11876	1	Hitch Frame Wiring Harness (Pigtail)
29	13532	2	CLAMP, SIZE 3/4" TO 1-3/4" X 9/16"
30	13535	4	STAINLESS STEEL CLAMP, 1-1/2" TO 1-3/4"
31	13557	1	3/4"-M-NPT X 3/4" Metal Hose Barb
32	13563	1	1-1/4"-M-NPT X 1-1/2" Metal Hose Barb
33	13697	1	1-1/4" NPT Female Threaded Elbow
34	13758	1	20-M-NPT X 16-F-NPT Reducer
35	13778	1	1-1/4" X 3-1/2" Long NPT Nipple
36	13905	8	6-M-JIC X 8-M-NPT 90 Deg. Elbow
37	13909	2	6-M-JIC X 6-M-ORB 90 Deg. Elbow
38	13974	1	16-M-JIC X 16-M-NPT 90 Deg. Elbow
39	13975	2	12-M-ORB X 12-M-JIC 90 Deg. Elbow
40	13981	2	8-M-ORB X 8-M-JIC Straight
41	15240	1	Hydraulic 1000RPM Pump
42	15241	1	Hydraulic Vane Motor
43	15259	1	Control Valve
44	15263	1	Joystick Wiring Harness
45	15273	1	DECAL, MODEL LR40148
46	15326	1	Pressure Hose 3/8" X 17" Lg. W/ 6-F-JIC Both Ends
47	15339	1	PRESSURE HOSE 3/8" X 32" W/6-F-JIC
48	15453	4	Hex Bolt (M14-2.0 X 25 Gr. 8.8 Plated)
49	15461	2	CAP 37 Deg. Flare #8 (1/2")
50	15910	46	HOSE SLEEVE
51	15928	1	Cylinder, 4" X 24" W/ 2" Rod & 1" Pins
52	16071	1	PRESSURE HOSE 3/8" X 192" W/6-F-JIC
53	16682	2	Relief Valve Assy. - 2700 PSI - Pump Mounted
54	16683	2	Relief Valve 2700 PSI - w/TAMPER PROOF CAP
55	16684	2	Fitting, #12 HB/ M-ORB Straight
56	16685	4	Screw, 7/16-14 X 2-1/4 long - Zinc Plated
57	16686	4	Lock Washer, Zinc Plated 7/16 High Collar
58	16687	4	Screw, M12-1.75 X 60mm long - Zinc Plated
59	16689	4	Lock Washer, Zinc Plated M12mm High Collar
60	16697	2	ORB Hollow Hex Plug
61	22833	2	Fluid Connector
62	23157	1	RETURN HOSE, 3/4 X 42"
63	23335	1	Weldment, Oil Tank
64	23370	1	1-1/2" x 31" SUCTION HOSE

Pump Options

540 RPM - P/N: 11775



1000 RPM - P/N: 15240



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

MODELED BY	TBB	3/3/15
DRAWN BY	C.K.N.	3/23/10
MATERIAL	R.M.N.	N/A

Manufactured By:
EVH Mfg. Co., LLC

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

DESCRIPTION: LR40148 COMPLETE

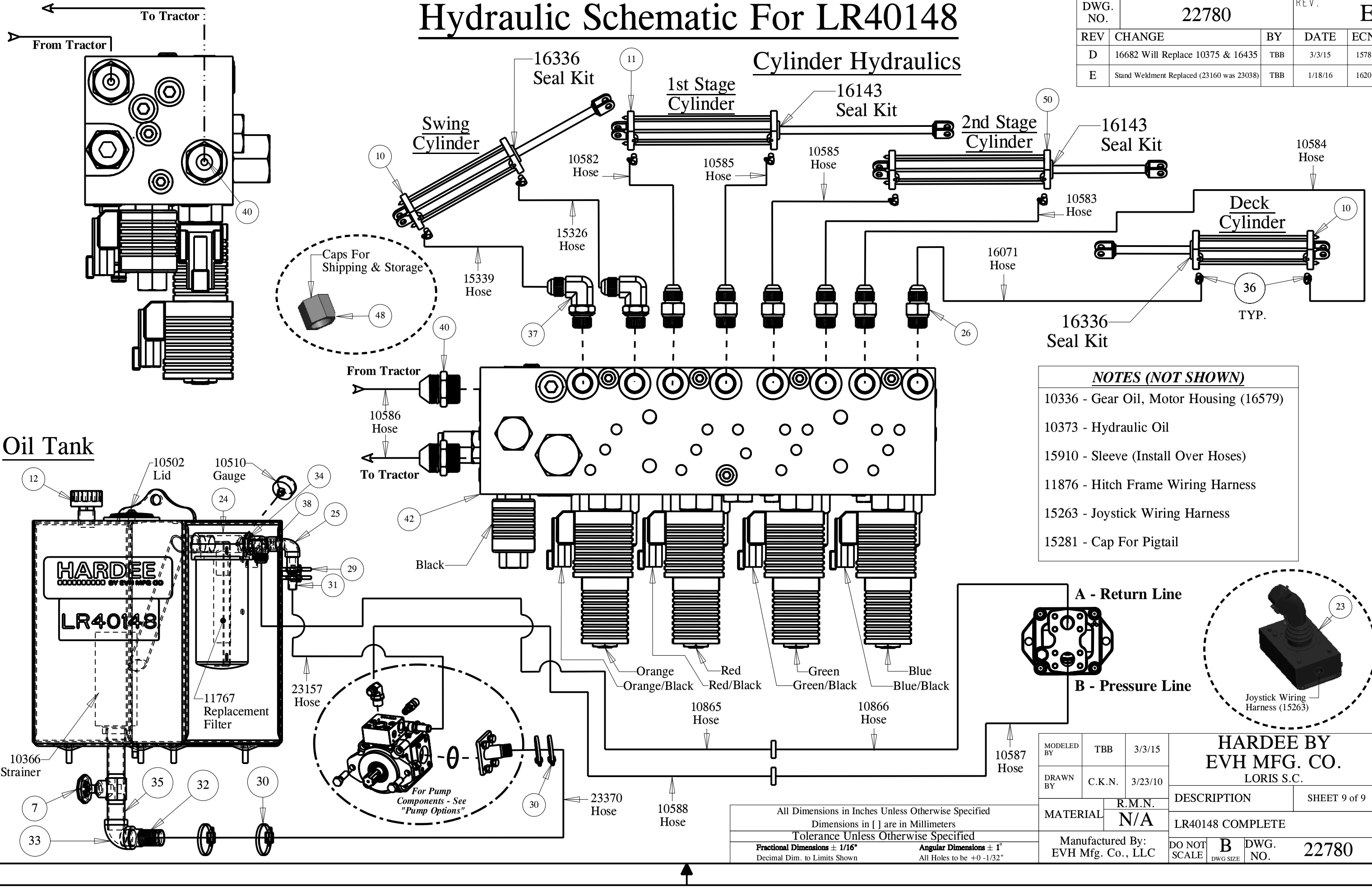
SHEET 8 of 9

DO NOT SCALE | B (DWG SIZE) | DWG. NO. 22780

Hydraulic Schematic For LR40148

DWG. NO.	22780		REV.	E
REV	CHANGE	BY	DATE	ECN
D	16682 Will Replace 10375 & 16435	TBB	3/3/15	1578
E	Stand Weldment Replaced (23160 was 23038)	TBB	1/18/16	1620

Cylinder Hydraulics



Oil Tank

NOTES (NOT SHOWN)

10336 - Gear Oil, Motor Housing (16579)

10373 - Hydraulic Oil

15910 - Sleeve (Install Over Hoses)

11876 - Hitch Frame Wiring Harness

15263 - Joystick Wiring Harness

15281 - Cap For Pigtail

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

MODELED BY	TBB	3/3/15
DRAWN BY	C.K.N.	3/23/10
MATERIAL	R.M.N.	N/A

Manufactured By: EVH Mfg. Co., LLC

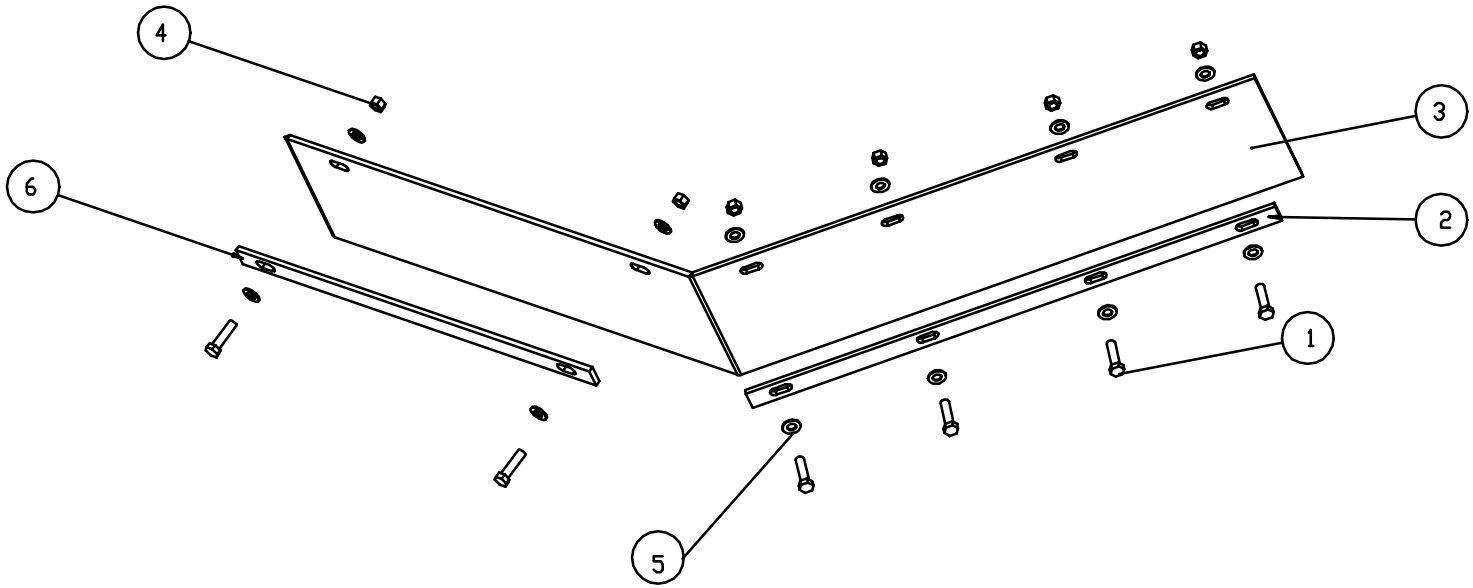
HARDEE BY EVH MFG. CO.
LORIS S.C.

DESCRIPTION: LR40148 COMPLETE

SHEET 9 of 9

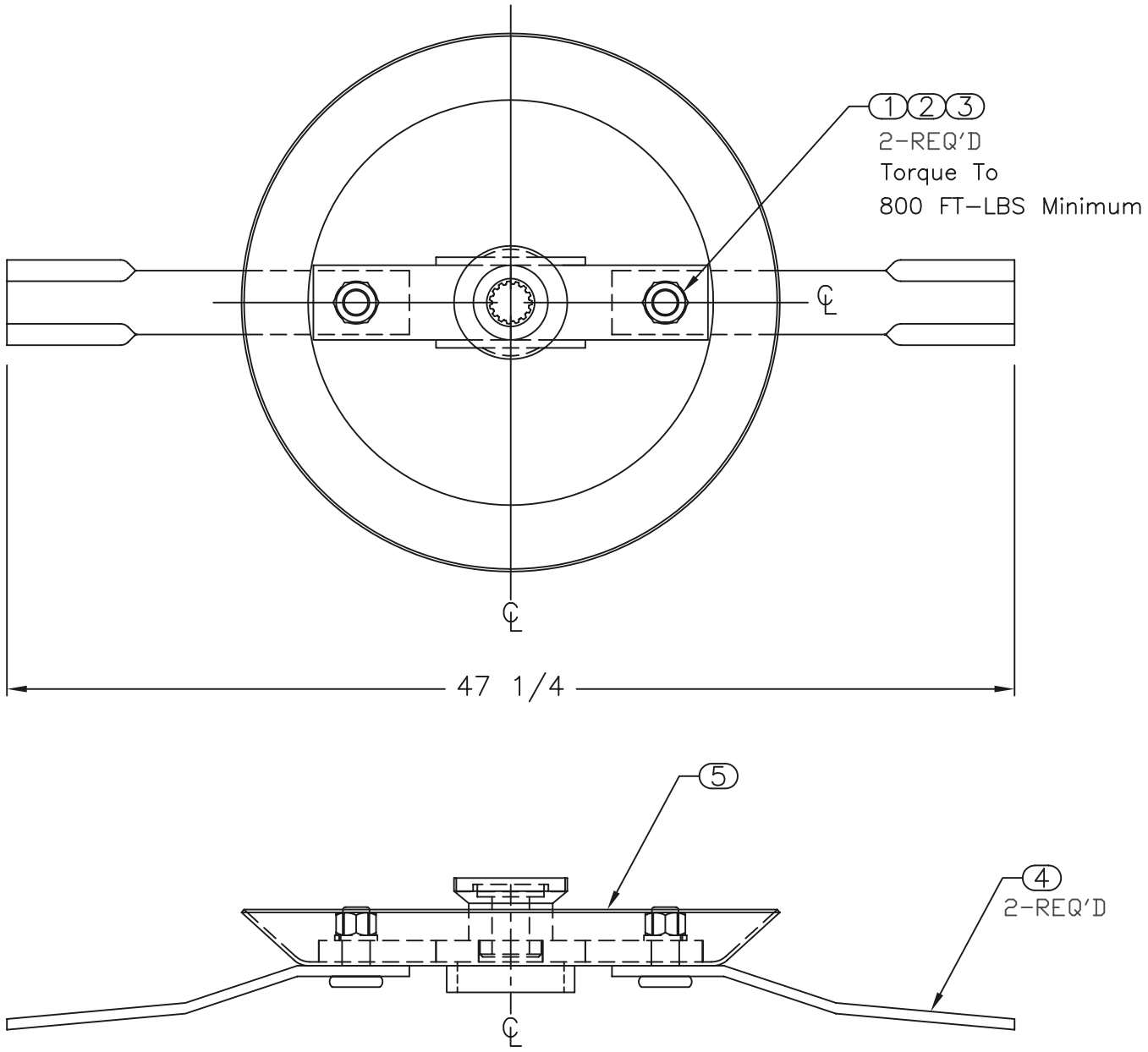
DO NOT SCALE | B DWG SIZE | DWG. NO. 22780

Parts Listing For LR40148 Belting Extension Kit (#22799)			
Item	Part Number	Qty.	Description
1	10032	6	Hex Bolt 3/8 x 1-1/2 gr.5 plated
2	22779	1	Belting Extension Flat
3	22692	1	Belting for LR40148 Extension
4	10175	6	3/8" Locknut (Gr.5 Plated)
5	10202	12	3/8" Flatwasher (Plated)
6	22778	1	Short Rubber Belting Flat



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. 22803			REV. IR
REV	CHANGE	BY	DATE	ECN
IR	INITIAL RELEASE	C.K.N.	9/2/10	1372



All Dimensions in Inches Unless Otherwise Specified
Dimensions in [ ] are in Millimeters

Tolerances Unless Otherwise Specified
Fractional Dimensions ±1/16" Angular Dimensions ±1°
Decimal Dim. to Limits Shown All holes to be $^{+0}_{-1/32}$

DRAWN BY	C.K.N.	9/2/10
CHECKED BY		
MATERIAL	R.M.N.	
MANUFACTURED BY: HARDEE BY EVH MFG.		

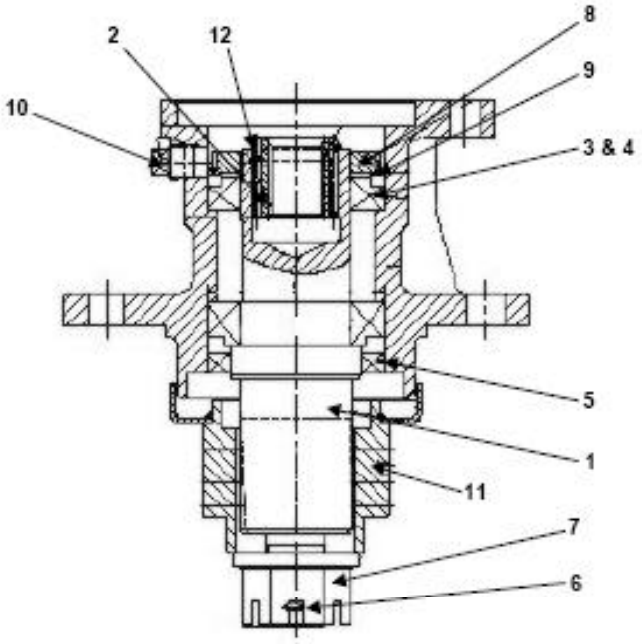
HARDEE BY EVH MFG. CO.
LORIS S.C.

APPLICATION	OLD PART #
LR40148	----

DESCRIPTION BLADE HOLDER W/BLADES COMPLETE W/ANTI WRAP HUB

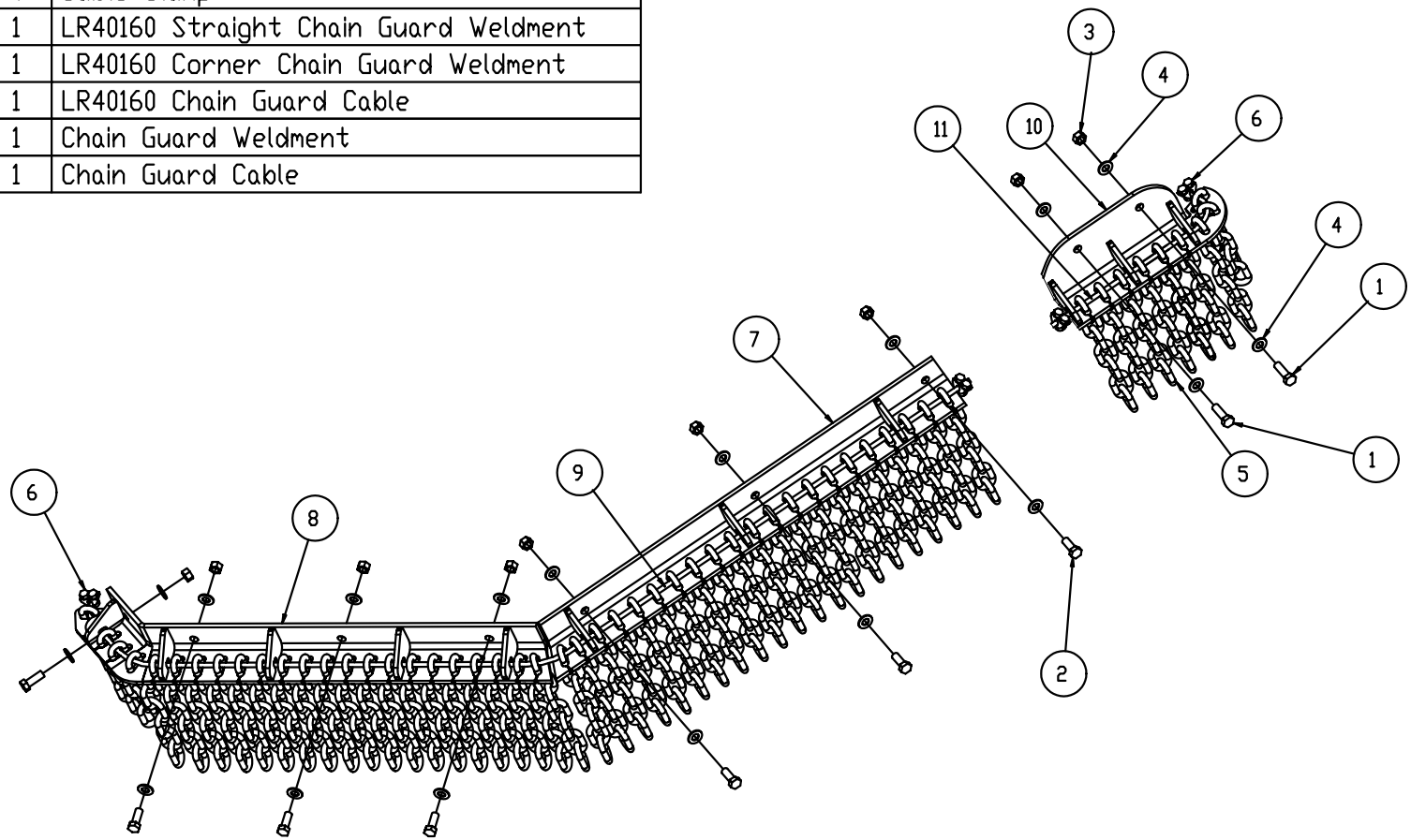
DO NOT SCALE	A DWG SIZE	DWG. NO. 22803

Hydraulic Motor Housing Assembly (Part # 15479)

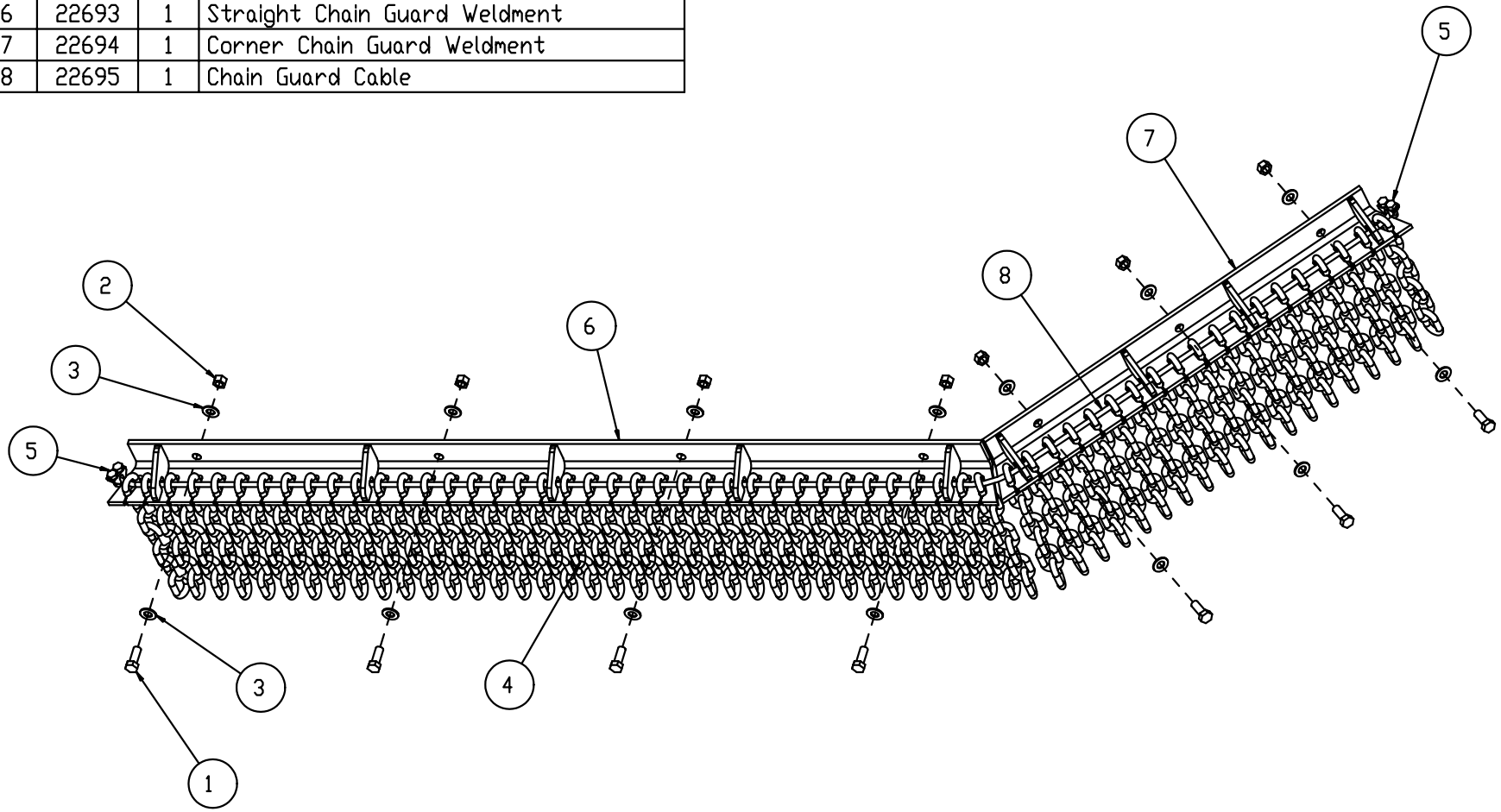


Item No.	Part No.	Quantity	Description
1	15951	1	Shaft, MDH-65C Series
2	15964	1	Adaptor, Spline
3	15952	2	Bearing, Cup 32012
4	15953	2	Bearing, Cone 32012
5	15969	1	Seal, Output Triple Lip
6	15968	1	Cotter Pin 6.3mm x 60mm
7	15481	1	Hex Nut, Slotted 1-1/4’ – 18UNEF
8	15966	1	Locknut, Bearing M60 x 2
9	15965	1	Lockwasher, M60
10	15784	2	3/8” Pipe Plug
11	15480	1	Extra Large Q-Hub for 2-3/8” Shaft
12	15970	1	Retaining Ring, External 45mm

Parts Listing For LR40148 Front Chain Guard (Part # 20775)			
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	LR40160 Straight Chain Guard Weldment
8	20983	1	LR40160 Corner Chain Guard Weldment
9	20986	1	LR40160 Chain Guard Cable
10	20776	1	Chain Guard Weldment
11	20969	1	Chain Guard Cable



Parts Listing For LR40148 Rear Chain Guard (Part # 22696)			
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



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.

Oil Tank

Weight Box

HARDEE BY EVH MFG CO — 11010 – Logo Decal, 4” x 13 1/2”

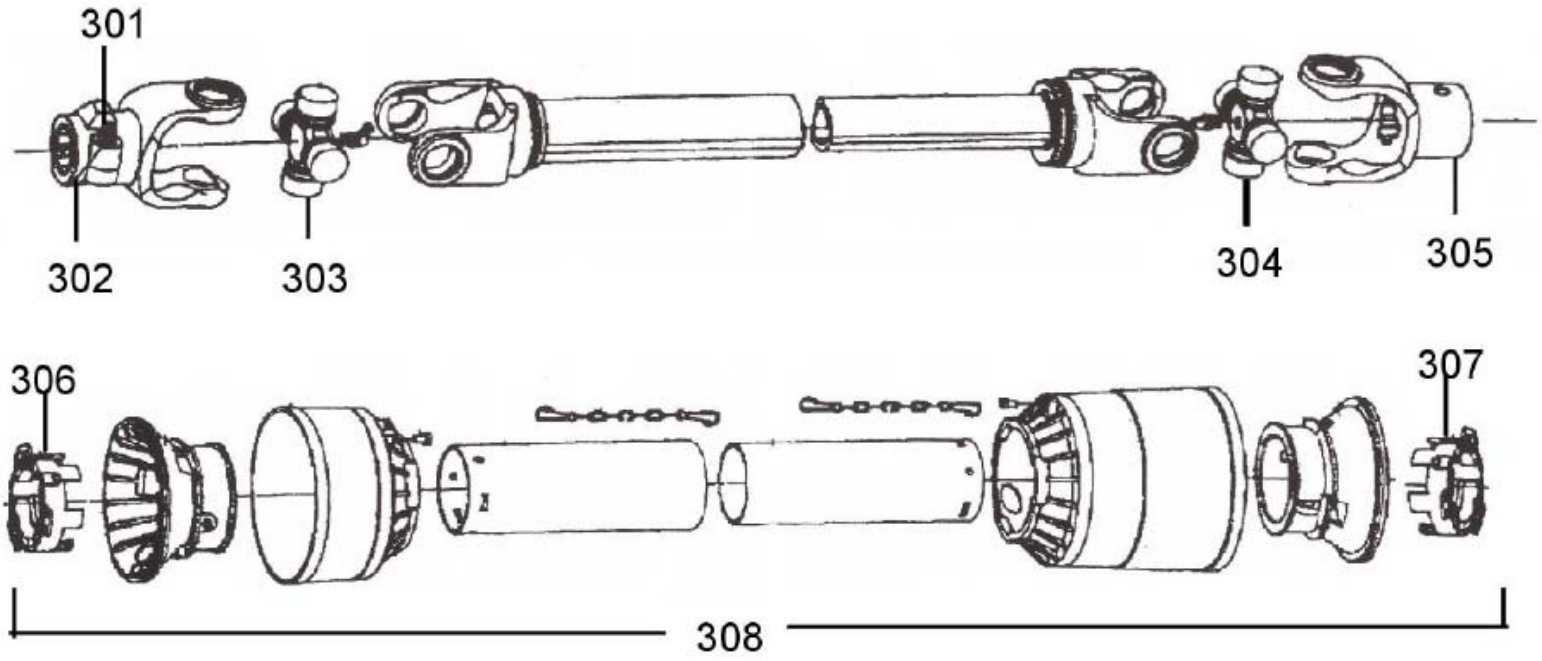
LR40148 — 15273 – Model Number Decal

WWW.EVHMFG.COM — 11850 – Web Site Decal

Hose Guard / 1st Stage Boom

HARDEE BY EVH MFG CO — 11032 – Logo Decal, 2 1/4” x 8 1/8”

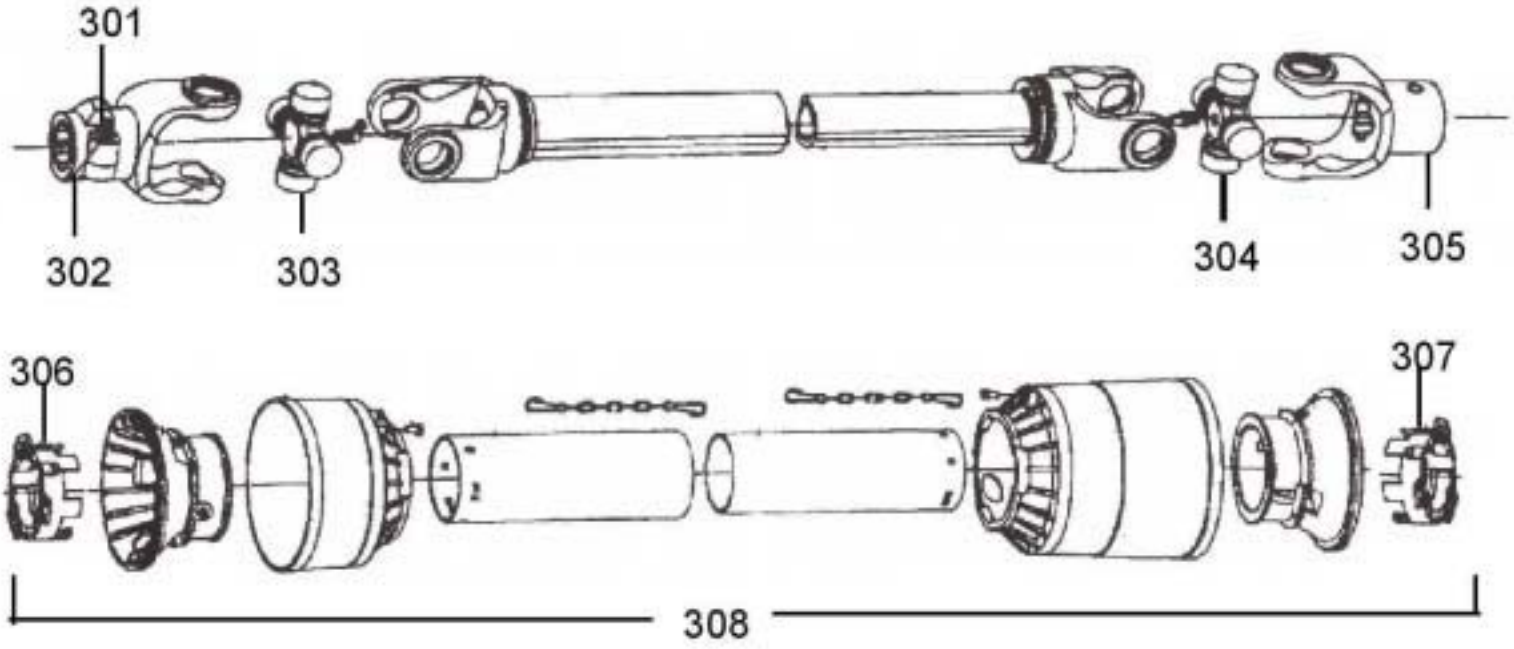
10601 Driveshaft



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

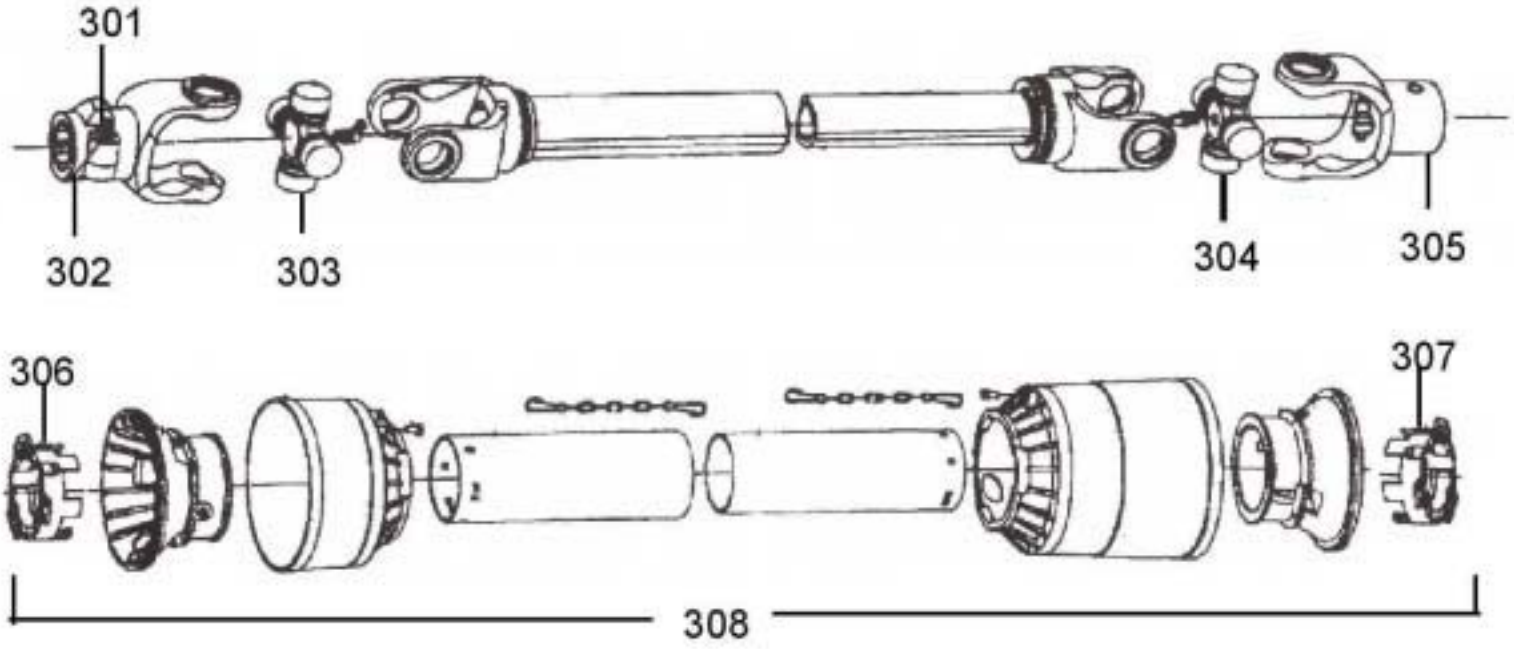
(1 3/4 20spline tractor end & 1 3/8 21spline Imp. end)



Key #	Part No.	Description	Key #	Part No.	Description
301	15779	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	15779	Push pyn 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

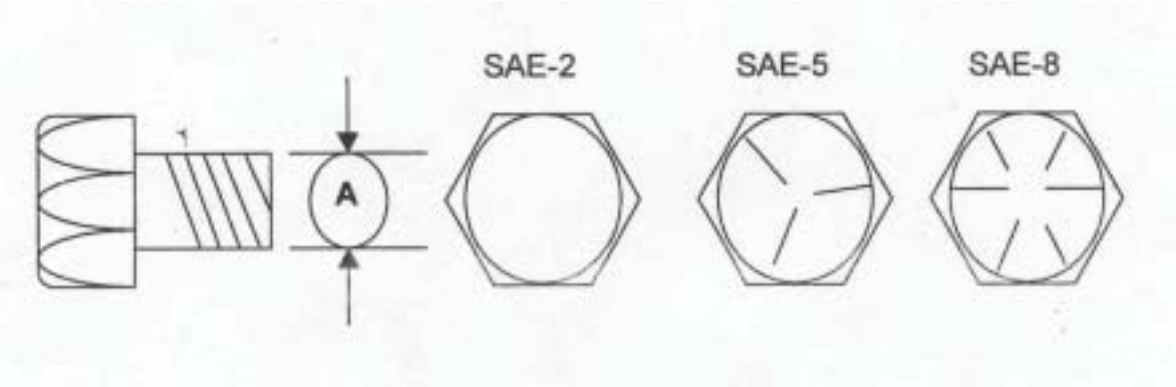
The table shown below gives correct torque values for various bolts and capscrews. Tighten all bolts to the torque specified in the chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same strength bolt. Torque figures indicated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



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.

Revised 12-16-15

NOTES:

HARDEE

BY EVH MFG CO

EVH MANUFACTURING COMPANY, LLC
4895 RED BLUFF ROAD LORIS, SC 29569
PHONE: 843-756-2555
WWW.EVHMFG.COM EVHMFG@EVHMFG.COM