



HARDEE

■■■■■■■■■■ BY EVH MFG CO

Hydraulic Boom Mower



FEATURES

- * Category 1 Standard Hitch
- * Replaceable Bushing in all Pivots
- * Folds Behind Tractor For Compact Transport
- * 1/2" X 3 1/2" Free Swinging Blade
- * 540 RPM PTO Operating Speed
- * Self contained unit no remotes needed
- * 13' Reach & 42" Cutting Deck
- * No-Drift Load Holding Valve
- * Hydraulic Valve Features Both Vertical & Horizontal Break-away
- * Blade Tip Speed is 14,720
- * Cutting Capacity up to 4" in Diameter
- * Flip-up Gate
- * Cutter Weight 1625 lbs.

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www.hardeebyevh.com evhmf@hardeebyevh.com

FOR SERIAL #s STARTING WITH 012436

RELEASED 04/15/16

MODEL NUMBER _____
 SERIAL NUMBER _____
 DATE OF PURCHASE _____

Customer Pre-Operation Check List		Reference
<input type="checkbox"/>	Read, understand and follow the general safety rules listed in this manual.	Page 2
<input type="checkbox"/>	Check all shields and guards.	Page 2
<input type="checkbox"/>	Cut driveshaft to the proper length for your tractor.	Page 7
<input type="checkbox"/>	Add ballast to the rear tractor tires and space them six feet or wider apart.	Page 7
<input type="checkbox"/>	Add ballast and front weights to your tractor, if needed.	Page 7
<input type="checkbox"/>	Check all fluid levels, tractor and cutter.	Page 8
<input type="checkbox"/>	Turn gate valve under the oil tank "on".	Page 9
<input type="checkbox"/>	Check all grease fittings.	Page 11

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.

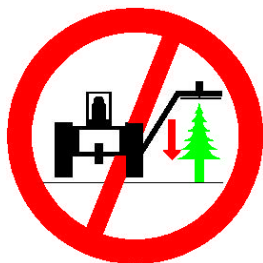


Fig. 1

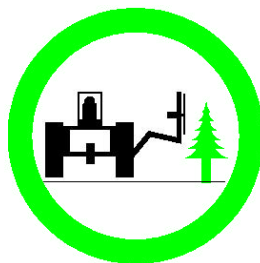


Fig. 2

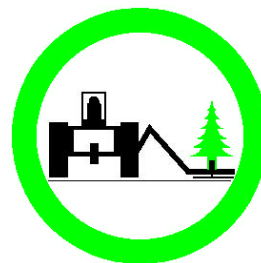


Fig. 3

Introduction

To Our Customers

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

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

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

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

Owner's Responsibility

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

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

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

Purpose of This Manual

This 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

Safety Information

General Safety Rules

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

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

DANGER

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

DANGER

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

WARNING

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

WARNING

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

WARNING

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

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

DANGER

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

DANGER

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

WARNING

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

WARNING

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

DANGER

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

WARNING

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

DANGER

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

Safety Information

Safety Decals

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

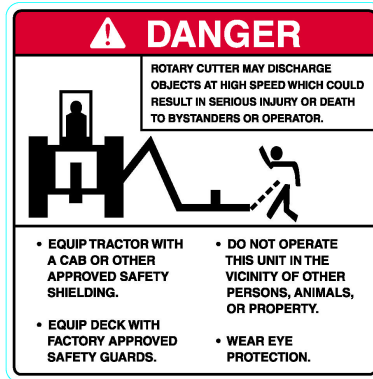
By law, you must replace any safety decals that are damaged or missing. You can order replacement decals from any local Hardee dealer. Just ask for part number 15845.

To apply the replacement decals:

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



Deck



Danger – Thrown Object



Oil Tank



Operating Safety and General Instruction



Danger – Rotating Driveline

Safety Information

Safety Decals, continued



Deck



Warning – Rotating Components



Weight Box



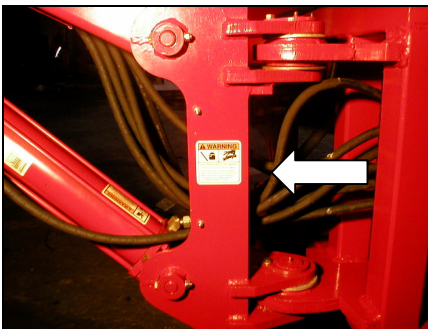
Danger – Crushing Hazard



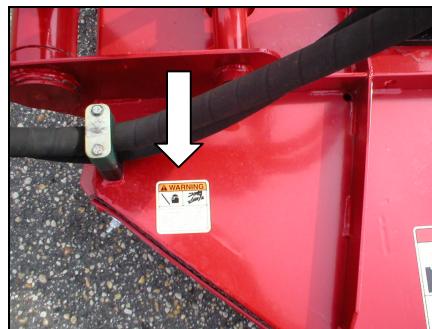
Swing Post



Warning – High Pressure Fluid Hazard



Swing Post



Deck

Safety Information

Safety Decals, continued



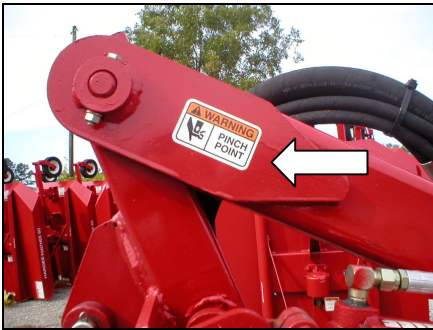
Deck Linkage



Deck Linkage



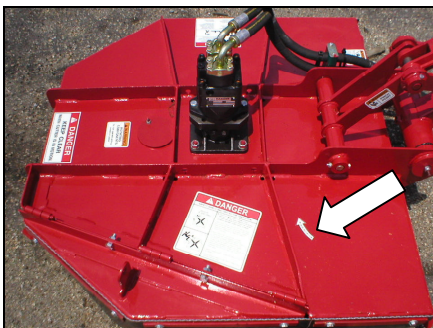
1st Stage Boom



1st Stage Boom



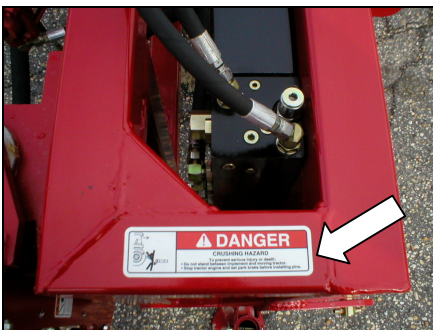
Warning – Pinch Point



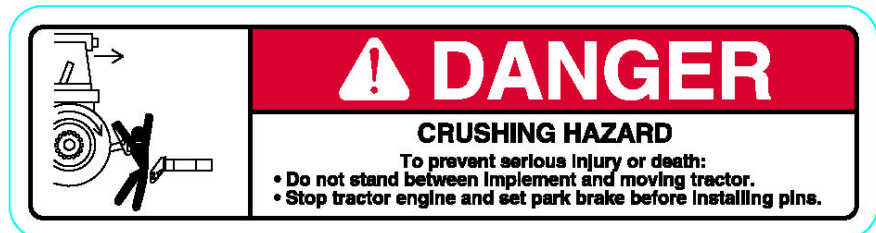
Deck



Blade Rotation



Hitch Frame



Danger – Crushing Hazard

Safety Information

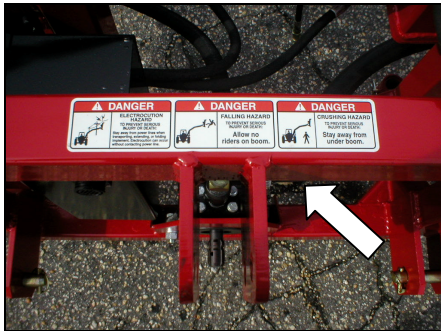
Safety Decals, continued



Deck



Danger – Keep Clear



Hitch Frame



Danger – Electrocution, Falling and Crushing Hazard

Assembly and Installation

Tractor Requirements

The Long Reach Cutter you have purchased is designed for use with tractors of 40-45 horsepower or above equipped with a (540 RPM 1 3/8" - 6 spline) rear power take-off (PTO).



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

- ✓ Hook tractor 3-point hitch to cutter hitch frame. The EV1442 is designed to work with a standard category 1.
- ✓ Connect joystick to bulkhead connector on the wire cover panel of the controller.
- ✓ Connect joystick to 12-volt system. (Cigarette lighter plug provided with the joystick. Hardee dealer can supply receptacle.)
- ✓ Raise all jack stands before moving mower.



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.

Operation Instruction

Operation Instructions

During Operation



WARNING

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

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

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

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

Daily Start-Up Checklist	
Check	Section
<input type="checkbox"/> Check All Fluid Levels, Tractor & Cutter, For best results, use Hardee hydraulic oil – EVH part number 23333	-
<input type="checkbox"/> Grease Points	Page 11
<input type="checkbox"/> PTO Shaft, Check Grease	Page 11
<input type="checkbox"/> Blade Tightness	Page 12

Operating Environment

Application Do's and Don'ts

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

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



DANGER

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



WARNING

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



DANGER

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



WARNING

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



DANGER

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

Operation Instruction

Using Your Cutter

Getting Started

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

- ✓ Position the joystick controls inside your tractor cab and move them through the positions shown in the following sections.
- ✓ The next step is to attach the cutter to the tractor, see the hook-up procedures on page 7 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. Check to see that all PTO guards are placed correctly.
- ✓ 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.
- ✓ Now with the cutter under power, practice using the joystick to control the movement of the cutterhead and boom arms.

Description of Operation

The EV1442 is set-up at the factory as a self-contained hydraulic system. This means that the mower pump powers **ALL** hydraulic functions.

A Programmable Processor controls four cylinder functions (swing, first stage boom lift, second stage boom lift, and mower deck tilt) and one motor function which drives the mower head. A single tethered handheld grip serves as the operator input. The grip includes a dead-man bar, a left two-axis thumb controlled proportional joystick, a right two-axis thumb controlled proportional joystick and a momentary switch controlling a latching circuit turning the mower head motor on and off. A proximity switch is used to decelerate the swing velocity near both stroke ends.

Joystick Functions

- ✓ Left X-axis (horizontal) controls Deck Down (W) and Deck Up (E).
- ✓ Left Y-axis (vertical) controls First Stage Boom Up (N) and Boom Down (S).
- ✓ Right X-axis (horizontal) controls Swing Left (W) and Swing Right (E).
- ✓ Right Y-axis (vertical) controls Second Stage Boom Up (N) and Boom Down (S).
- ✓ LED should be Red when mower head motor is active and Green when the system is active but the mower head is off. LED remains active if dead-man is released until system hibernates.
- ✓ Push Button controls mower head motor. Motor switches on when dead-man bar is depressed and push button is held for two seconds. Motor switches OFF when push button is instantly depressed or fifteen seconds after the dead-man bar is released.
- ✓ System becomes active when Dead-Man Bar is depressed for two seconds. Bar must remain depressed for all control functions to be active except for the fifteen second motor off delay mentioned above. System Hibernates after ten minutes of inactivity on the Dead-Man Bar.

Refer to Figure 2 for joystick functions on Page 9A.

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

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



Danger

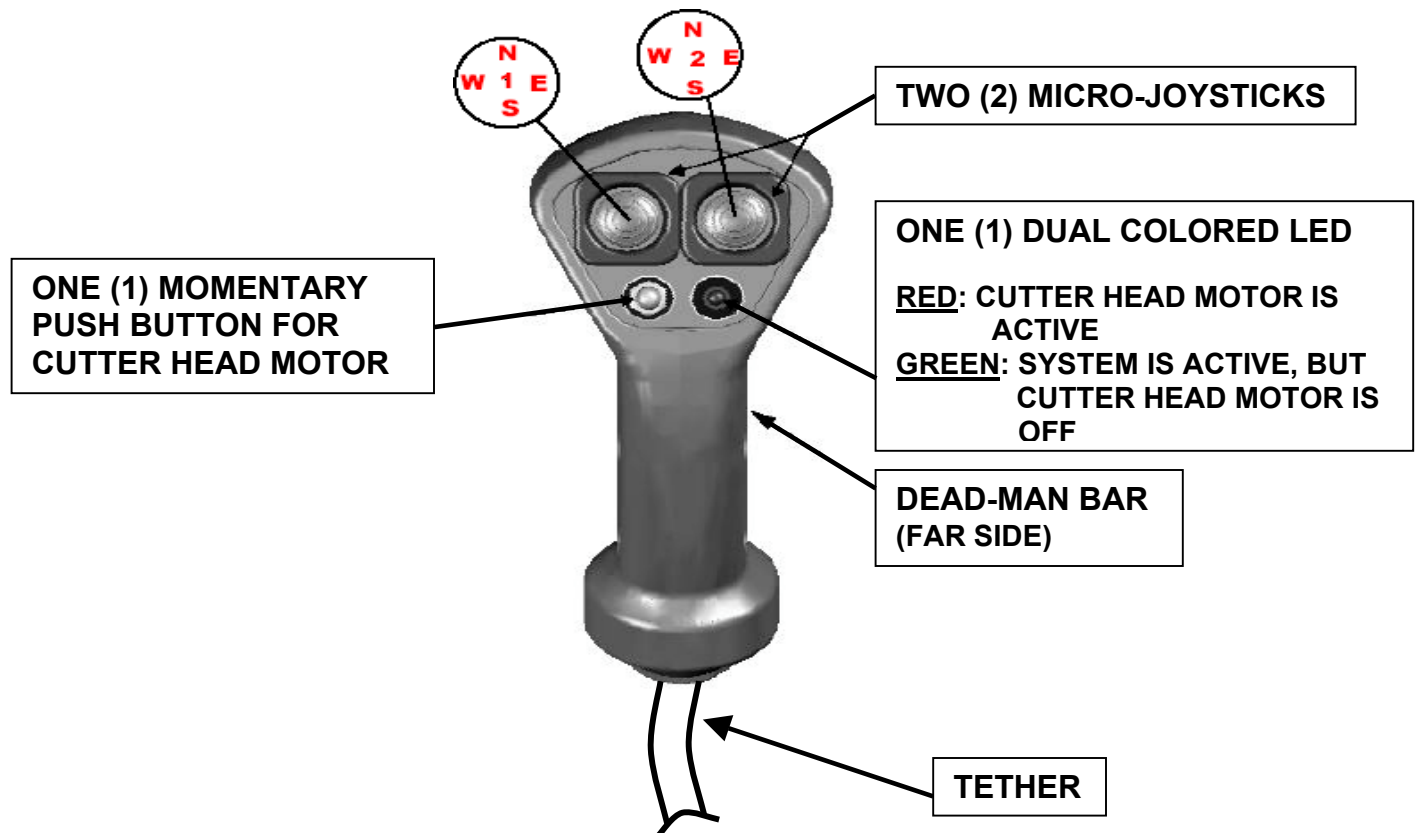
Do not change the blade rotation direction! Blades must rotate in the clockwise direction indicated by the rotation decal on the mowing deck.

- ✓ 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.

TETHERED GRIP WITH MICRO-JOYSTICKS

1W – DECK DOWN
1E – DECK UP
1N – 1ST STAGE BOOM UP
1S – 1ST STAGE BOOM DOWN

2W – SWING LEFT
2E – SWING RIGHT
2N – 2ND STAGE BOOM UP
2S – 2ND STAGE BOOM DOWN



JOYSTICK RECALIBRATION

CLEAR CURRENT CALIBRATION

- 1.0 - POWER UP THE CONTROLLER BOX WITH JOYSTICK CONNECTOR (***ENGINE SHOULD BE SHUT OFF***).
- 2.0 - PULL "DEAD-MAN BAR" UNTIL GREEN LED COMES ON, THEN RELEASE "DEAD-MAN BAR".
- 3.0 - HOLD DOWN THE CUTTER HEAD SWITCH (***ENGINE SHOULD BE SHUT OFF***) WHILE PUSHING THE LEFT JOYSTICK (1) UP AND THE RIGHT JOYSTICK (2) DOWN FOR 5-SECONDS.
THE GREEN LED WILL BEGIN TO FLASH, INDICATING THE CALIBRATION HAS BEEN RESET.

CALIBRATE JOYSTICK

- 4.0 -WITH JOYSTICK (1): PUSH AND HOLD IN EACH DIRECTION FOR 5 SECONDS EACH. N, S, W AND E
 - 5.0 -WITH JOYSTICK (2): PUSH AND HOLD IN EACH DIRECTION FOR 5 SECONDS EACH. N, S, W AND E
 - 6.0 -AFTER THE CALIBRATION HAS BEEN COMPLETED THE GREEN LED WILL STOP FLASHING.
 - 7.0 -POWER DOWN THE CONTROLLER FOR 10 SECONDS AND THEN POWER UP THE SYSTEM AGAIN.
PULL THE DEAD-MAN BAR FOR 2 SECONDS TO VERIFY THAT CALIBRATION WAS ACCEPTED (THE LED WILL BE A STEADY GREEN).
- NOTE: THE BOOM AND SWING FUNCTIONS WILL NOT WORK UNTIL ALL POSITIONS OF THE JOYSTICKS ARE CALIBRATED.

Operation Instruction

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

Boom Breakaway

The **EV1442** 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

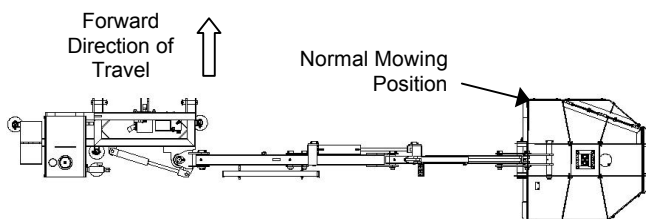


Figure 2

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!

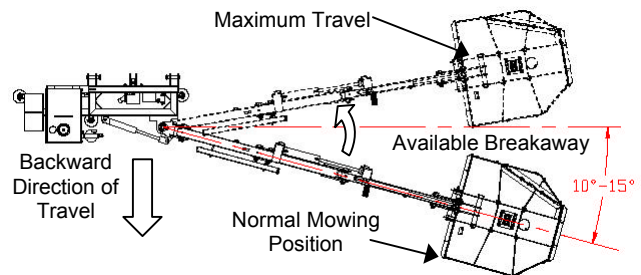


Figure 3

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.



The above figure shows the gate folded up and bolted to the deck plate to allow cutting thick shrubs and bushes. **Do not** attempt to cut large trees and shrubs over 3 inches in diameter.

Maintenance

Maintenance and Service Schedule

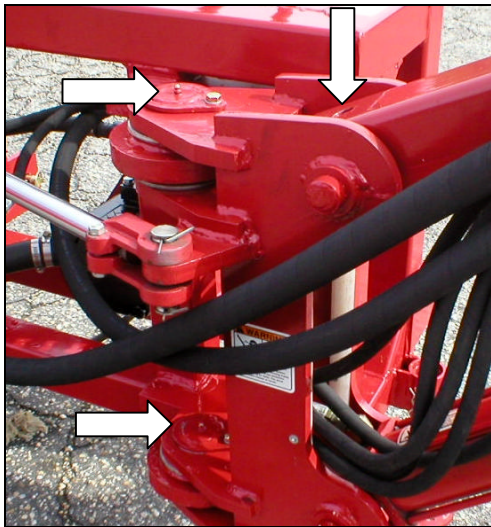
This section is dedicated to the maintenance of the **EV1442**. As with any piece of equipment, the performance and life span depends on the proper operation and maintenance.

⚠ DANGER

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

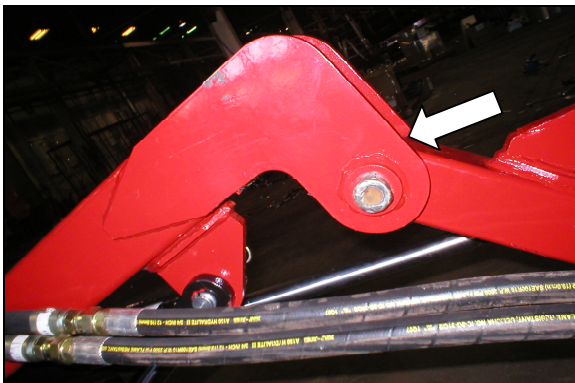
First Stage Boom

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



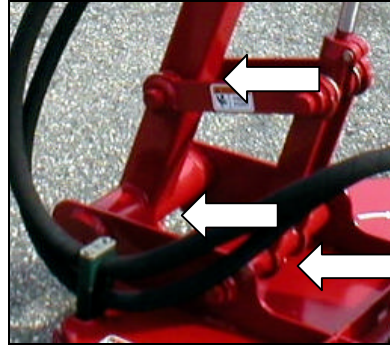
First Stage Boom to Second Stage Boom

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



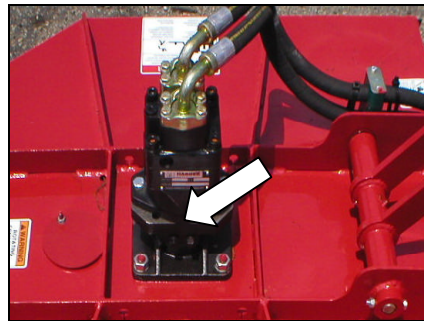
Deck and Second Stage Boom

Inject with heavy multi-purpose grease.



Hydraulic Motor Housing Assembly

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



Greasing PTO Driveshaft to Pump

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



Maintenance

Replaceable Bushings

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

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 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.*

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 EV1442

- ✓ 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 driveshaft from tractor.
- ✓ Disconnect joystick cable wire from the bulkhead connector on cutter.
- ✓ Unhook tractor hitch from 3-point frame on mower.



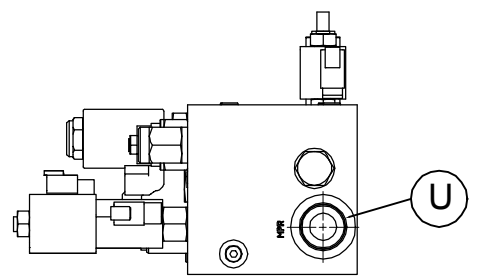
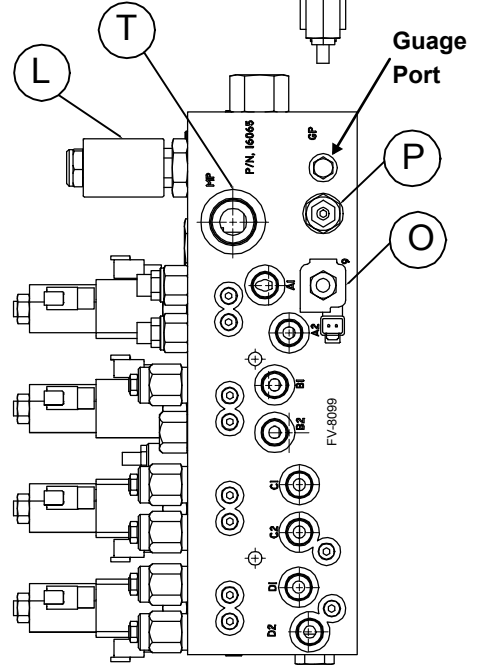
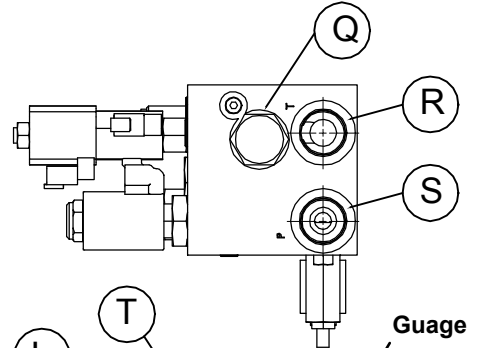
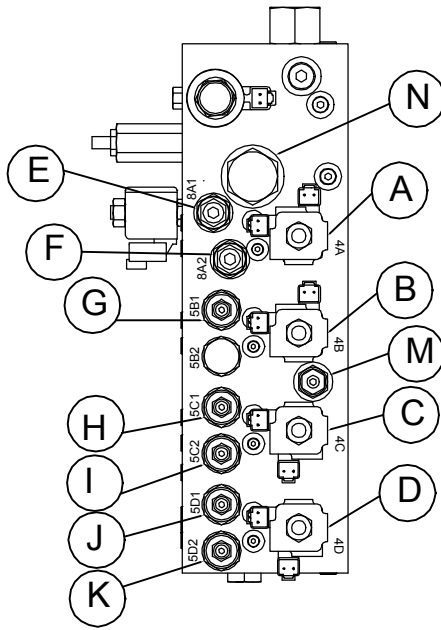
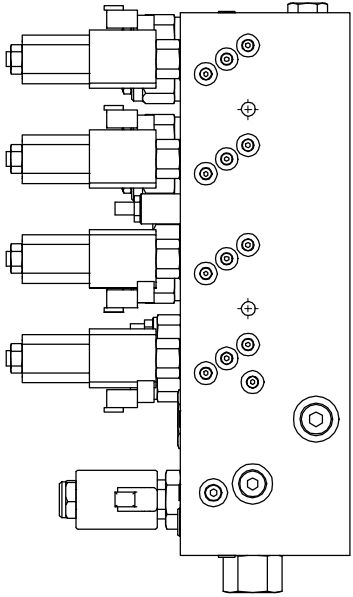
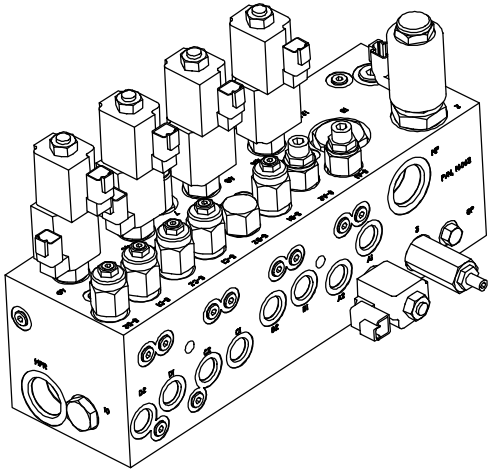
NOTE

Never leave driveshaft hanging down and touching the ground.

Maintenance

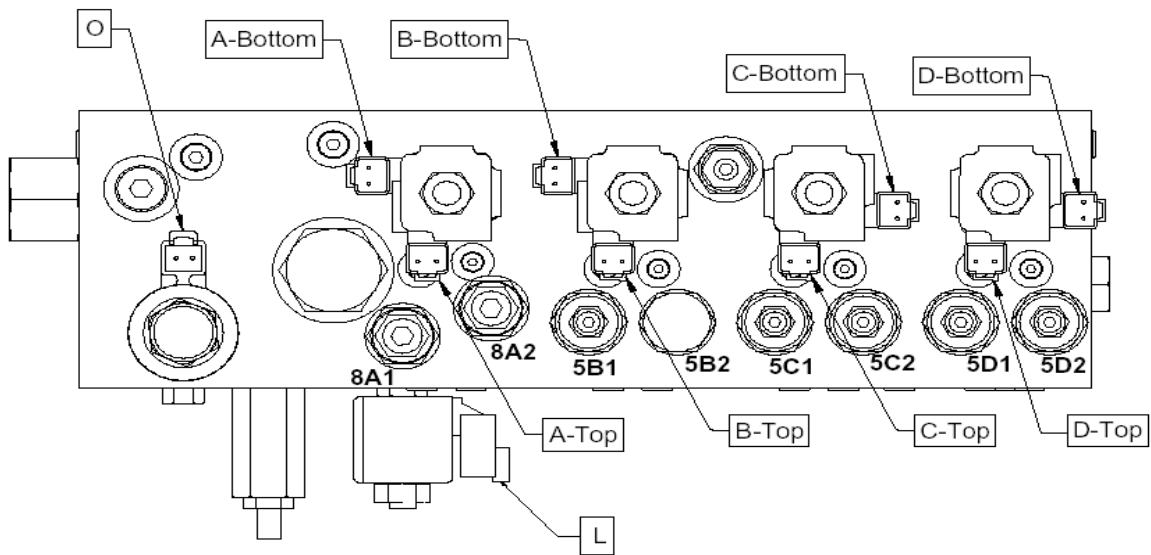
EV1442 CONTROL VALVE PORT LISTING							
Item	EVH P/N		Description	Code	Setting	Torque	Coil Nut
A	16262	Stem	Solenoid Valve (Deck Cyl. Control)	4A		25 ft lbs.	2.5 ft lbs.
	16263	Coil					
B	16262	Stem	Solenoid Valve (II stg Boom Control)	4B		25 ft lbs.	2.5 ft lbs.
	16263	Coil					
C	16262	Stem	Solenoid Valve (I stg Boom Control)	4C		25 ft lbs.	2.5 ft lbs.
	16263	Coil					
D	16262	Stem	Solenoid Valve (Swing Control)	4D		25 ft lbs.	2.5 ft lbs.
	16263	Coil					
E	16258		Counterbalance Valve (Swing Right)	8A1	1050 PSI	35 ft lbs.	
F	16258		Counterbalance Valve (Swing Left)	8A2	1050 PSI	35 ft lbs.	
G	16256		Counterbalance Valve (1st Stage Up)	5B1	1800 PSI	35 ft lbs.	
H	16256		Counterbalance Valve (2nd Stage Down)	5C1	1800 PSI	35 ft lbs.	
I	16256		Counterbalance Valve (2nd Stage Up)	5C2	1800 PSI	35 ft lbs.	
J	16256		Counterbalance Valve (Deck Down)	5D1	1800 PSI	35 ft lbs.	
K	16257		Counterbalance Valve (Deck UP)	5D2	1400 PSI	35 ft lbs.	
L	N/A		Proportional Flow Control	2		50 ft lbs.	
M	16259		Cylinder Relief Valve	7	1650 PSI	25 ft lbs.	
N	N/A		Check Valve	13		130 ft lbs.	
O	16260	Stem	Solenoid Valve (Deck Motor Control)	9		22 ft lbs.	
	16261	Coil					
P	16255		Main Relief	3	2700 PSI	37 ft lbs.	
Q	N/A		Pilot Opp. Dir. Valve	6		80 ft lbs.	2.5 ft lbs.
R	N/A		Return Port	T			
S	N/A		Pump Port	P			
T	N/A		Deck Motor Pressure Port	MP			
U	N/A		Deck Motor Return Port	MPR			
NOT SHOWN	16496		MAIN CONTROLLER				
NOT SHOWN	16278		JOYSTICK WITH WIRE HARNESS				
NOT SHOWN	16249		PROX SENSOR FOR SWING				
NOT SHOWN	16497		HITCH FRAME WIRING HARNESS FOR MAIN CONTROLLER				

CONTROL VALVE PORT SCHEMATIC



Maintenance

EV1442 Valve / Joystick Wiring Schematic					
Function	Valve Port	Coil	Wire Color (+)	Connector No.	Handle Position
Swing (Boom) Right	8A1	A - Top	White	C10	Right (E)
Swing (Boom) Left	8A2	A - Bottom	White	C9	Left (W)
1st Stage Up	5B1	B - Top	White	C17	Up (N)
1st Stage Down	5B2	B - Bottom	White	C16	Down (S)
2nd Stage Down	5C1	C - Top	White	C12	Down (S)
2nd Stage Up	5C2	C - Bottom	White	C11	Up (N)
Deck Down	5D1	D - Top	White	C15	Left (W)
Deck Up	5D2	D - Bottom	White	C14	Right (E)
Deck Motor	9	O	Black	C19	Any
Proportional Control	2	L	Black	C20	Any



Maintenance**Routine Maintenance Checklist**

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

Troubleshooting

Troubleshooting Guide

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

Problem	Possible Cause	Solution / Correction
Cylinder Will Not Operate	No Power To Joystick	Repair / Replace Connections
	Fuse Blown Inside Lighter Plug	Replace Fuse
	Joystick Not Connected To A 12-Volt System	Connect To 12-Volt Power Supply
	Joystick Not Connected To Valve Proportional Valve Not Functioning	Examine Bulkhead Connection To Mower Repair Electrical Connections To Solenoid Or Replace Solenoid
Head Drifts Back When In Operation	Improper Counter Balance Valve Setting	Call Factory 1-888-990-2555
	Cylinder Leakage	Repair / Replace Cylinders
Boom Drifts Down	Improper Counter Balance Valve Setting	Call Factory 1-888-990-2555
	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 Mowing	Improper Relief Valve Setting	Call Factory 1-888-990-2555
		Repair / Replace Relief Valve
Pump Whines	Worn Or Damaged Pump	Repair / Replace Pump (Make sure gate valve is open)
	Improper Oil In System	Replace Oil Requires Hardee Oil Part NO 23333 Or Comparable Oil With Proper Viscosity
		Call Factory 1-888-990-2555
	Pressure Setting On Relief Valve Too Low	Call Factory 1-888-990-2555
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	Call Factory 1-888-990-2555
Motor Seal Continually Blows Out Unit Vibrates Severely	Internal Popit Valve Damaged	Replace Popit Valves
	Broken Blade	Replace Blades, Blade Bolts And Nuts (Refer To Page 12)
	Mismatched/Unbalanced Blades	Refer to Page 12
	Blade Holder Loose	Repair / Replace Blade Holder (Refer To Page 12)
	Loose Output Shaft	Repair / Replace Shaft's Bearings In Mower Head Housing
Mower Head Grinds And Roars When Operating	Worn Bearings Or Improper Lubrication In Mower Hydraulic Motor Housing	Repair / Replace Components (Bearing, Seals And Housing) As Required

Troubleshooting

Troubleshooting Guide, continued

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

Problem	Possible Cause	Solution / Correction
Individual Cylinders Leak Down	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
	Worn Pump	Replace Pump
	Gate Valve Closed	Open Gate Valve
	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 / Joystick Not Connected To A 12-Volt System	Connect To 12-Volt Power Supply
	Improper Connection To Joystick	Repair / Replace Connections
	Fuse Blown Inside Cigarette Lighter Plug	Replace Fuse
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 11)
	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 11)
	Defective Lube Fittings	Repair / Replace Fittings
Boom Operates Erratically	Speed Is Too Fast	Call HARDEE Dealer
	Defective Controller	Check Blink Codes on Page 19
	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

Fault Codes for Status LED

Blink Code	Reason for Fault	Corrective Action
21	Left Joystick X axis Voltage out of range	Check Joystick and wires
22	Left Joystick Y axis Voltage out of range	Check Joystick and wires
23	Right Joystick X axis Voltage out of range	Check Joystick and wires
24	Right Joystick Y axis Voltage out of range	Check Joystick and wires
25	Left X axis No cal	Recalibrate the Joysticks
26	Left Y axis No cal	Recalibrate the Joysticks
27	Right X axis No cal	Recalibrate the Joysticks
28	Right Y axis No cal	Recalibrate the Joysticks
31	Stage 1 Down/Stage 2 Down Output Open or Short Circuit	Check valve coil and wires
32	Proportional Unloader Output Open or Short Circuit	Check valve coil and wires
33	Head Down/Swing Right Output Open or Short Circuit	Check valve coil and wires
34	Head Up/Swing Left Valve Output Open or Short Circuit	Check valve coil and wires
35	Cutter Head Motor Valve Output Open or Short Circuit	Check valve coil and wires
36	LED Output Open or Short Circuit	Check valve coil and wires
37	Stage 1 Up/Stage 2 Up Output Open or Short Circuit	Check valve coil and wires
38	Relay Driver Output Open or Short Circuit	Check relay and wires

How to interpret the “BLINK CODE”:

On the bottom of the Controller Box, locate two (2) LED's; one Red; one Green. Whenever the red LED lights up you may see the following “BLINKS”:

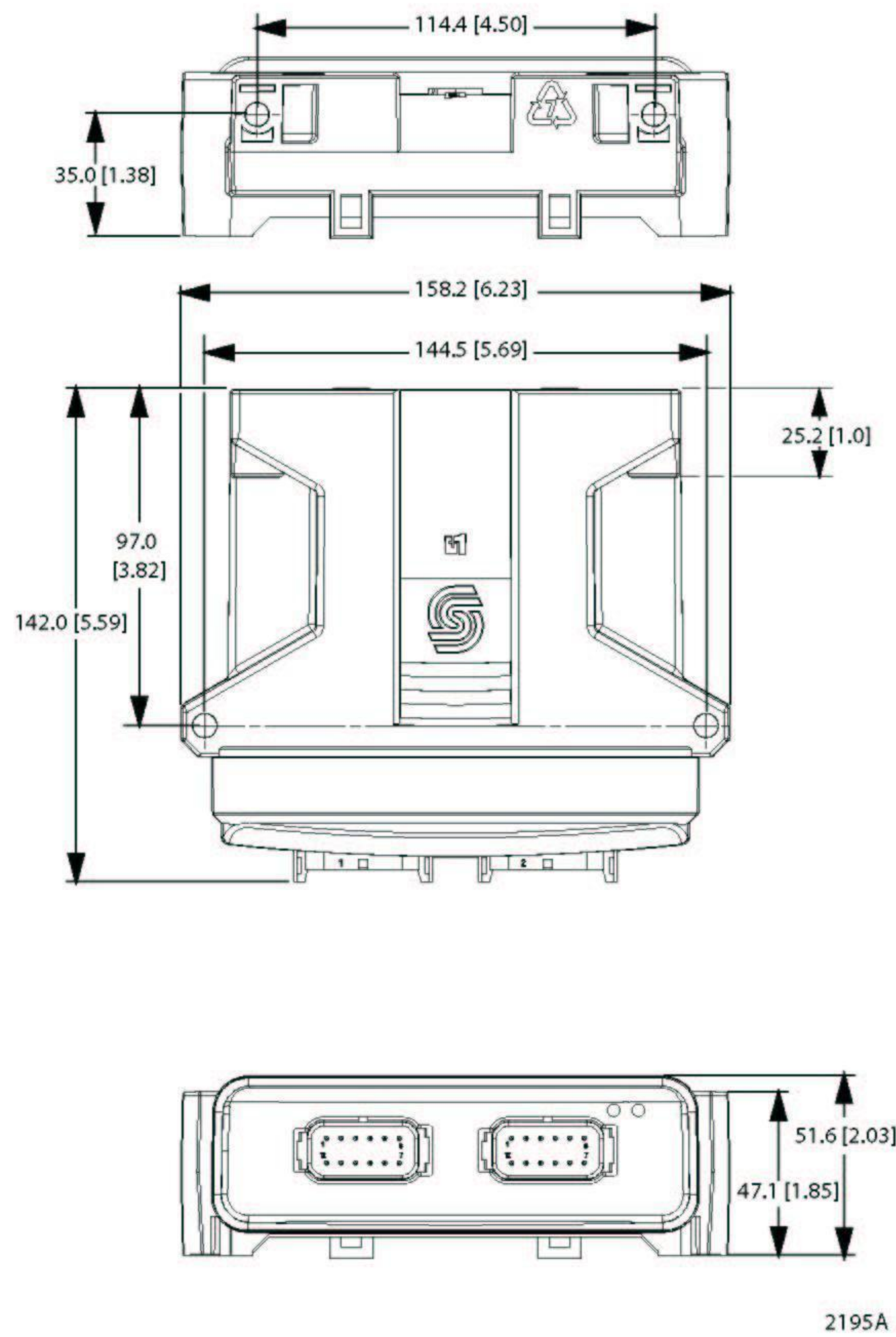
- (2) Red “BLINKS” – pause – (1) Red “BLINK” = “BLINK CODE” 21
- (3) Red “BLINKS” – pause – (6) Red “BLINKS” = “BLINK CODE” 36

ETC.

- Now check “Reason for Fault” and “Corrective Action” opposite the corresponding “BLINK CODE”.

MC024-020-00000 PLUS+1 CONTROLLER

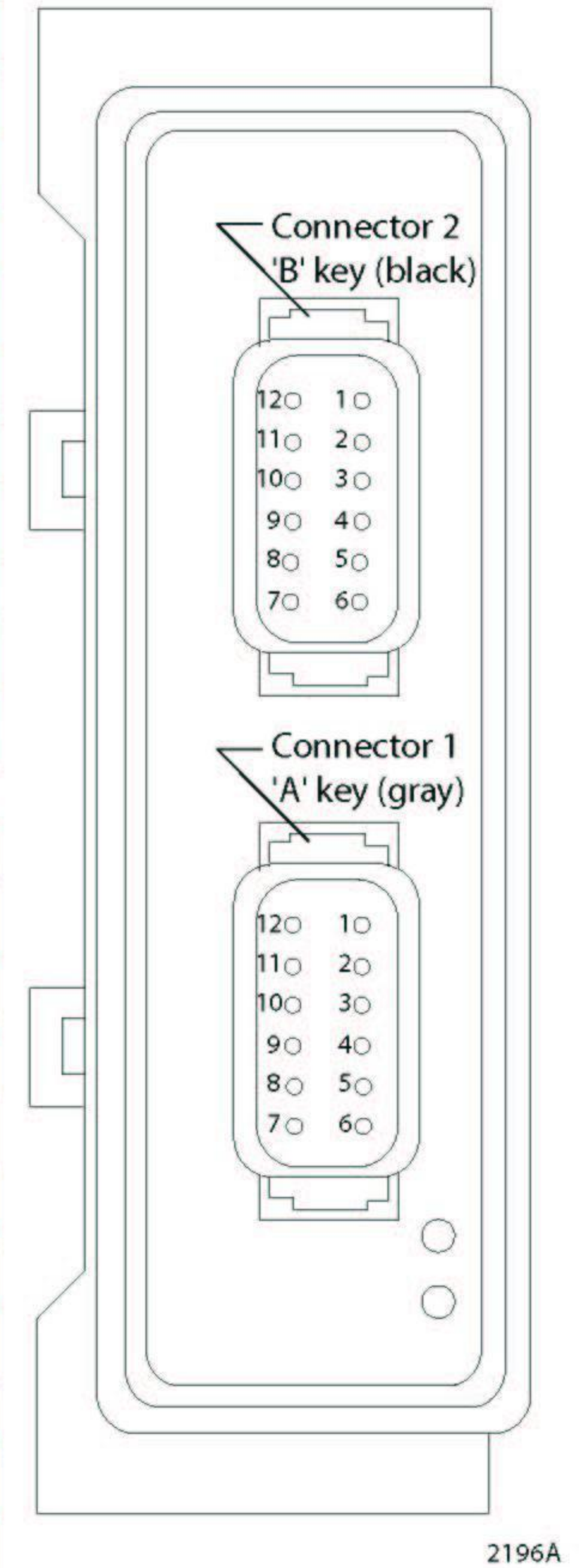
Dimensions and Pin Assignment



MC024-020-00000 mounting dimensions

DIN/AIN/FreqIN	C2-P1
DIN/AIN/FreqIN	C2-P2
PWMOUT/DOUT/PVG Power supply 1	C2-P3
PWMOUT/DOUT/PVG Power supply 2	C2-P4
PWMOUT/DOUT/PVGOUT 1	C2-P5
PWMOUT/DOUT/PVGOUT 1	C2-P6
PWMOUT/DOUT/PVGOUT 1	C2-P7
PWMOUT/DOUT/PVGOUT 2	C2-P8
PWMOUT/DOUT/PVGOUT 2	C2-P9
PWMOUT/DOUT/PVGOUT 2	C2-P10
Power Supply +	C2-P11
Power Supply +	C2-P12

Power ground -	C1-P1
Power supply +	C1-P2
CAN +	C1-P3
CAN -	C1-P4
AIN/CAN shield	C1-P5
DIN	C1-P6
DIN	C1-P7
5 V DC sensor power +	C1-P8
Sensor power ground -	C1-P9
DIN/AIN/FreqIN	C1-P10
DIN/AIN/FreqIN	C1-P11
DIN/AIN/FreqIN	C1-P12



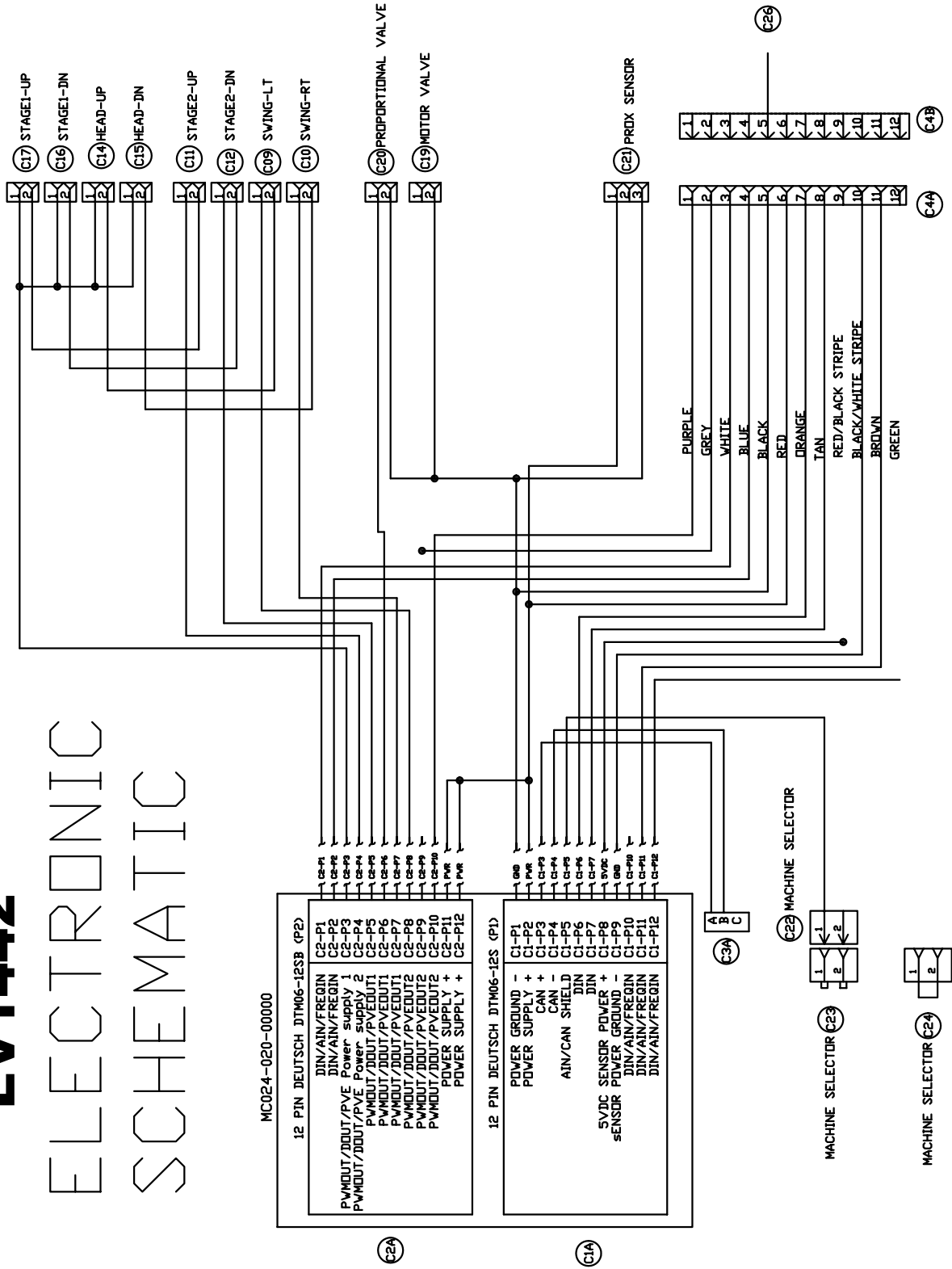
MC024-020-00000 24 pin connector

Specifications

Product Parameters	
Supply voltage:	9 to 36 V
Operating temperature (ambient):	-40 to 70° C
Storage temperature:	-40 to 85° C
IP rating:	IP 67
EMI/RFI rating:	100 V/M
Weight:	0.40 kg (0.88 lb)
Vibration:	IEC 60068-2-64
Shock:	IEC 60068-2-27 test Ea
Maximum current, sourcing:	24 A
Maximum current, sinking:	8 A

EV1442

ELECTRONIC SCHEMATIC



EV1442 Complete

DWG. NO.	24620		REV.	B
REV	CHANGE	BY	DATE	ECN
A	1st STG. CYL. - 16536 was 16556	CKN	01/26/12	---
B	Re-Drawn / Re-Modeled in Creo 2.0	TBB	10/10/17	1691

Item	Part Number	Qty.	Description	50	11727	1	Serial Number Plate	97	15910	46	HOSE SLEEVE	140
1	10001	4	Hex Bolt, 1/4" X 3/4" Gr.5 Plated	51	11775	1	Hydraulic 540RPM Pump	98	15980	2	3/8" x 96" Pressure Hose W/12-M-JIC	140
2	10002	2	Hex Bolt, 1/4"-20 X 1" Gr.5 Plated	52	11847	1	Hydraulic Vane Motor	99	15982	1	Hose Assy, 3/8" X 110" LG. w/6-F-JIC Swivel Both Ends	141
3	10006	2	Hex Bolt 1/4" x 3" gr.5 plated	53	11850	1	Web Site Decal	100	15983	1	Hose Assy, 3/8" X 43" LG. w/6-F-JIC Swivel Both Ends	141
4	10010	4	1/4"-20 x 5" Grade 5 Zinc Finish Hex Bolt	54	11860	10	TIE STRAP, (14" LG.) (100/PK)	101	15984	1	Pressure Hose, 3/8" X 69" LG. W/6-F-JIC Swivel Both Ends	142
5	10020	6	Hex Bolt 5/16" X 2 1/2" gr.5 Plated	55	11862	1	3/8" X 25" Pressure Hose W/ 6-F-JIC Swivel Both Ends	102	16065	1	CONTROL VALVE & Joy Stick Kit	143
6	10032	11	Hex Bolt 3/8 x 1-1/2 gr.5 plated	56	11863	1	3/8" X 26" Pressure Hose W/ 6-F-JIC Swivel Both Ends	103	16070	8	ELBOW, 3/8", 90Deg. Swivel Nut - 37Deg. Flare / 37Deg. Swivel	144
7	10041	2	HEX BOLT (3/8" X 6" GR. 5 PLATED)	57	11868	1	3/8" X 135" Pressure Hose W/ 6-F-JIC Swivel Both Ends	104	16077	2	Straight Fitting - 1"	145
8	10052	4	Hex Bolt 7/16 x 2 gr.5 plated	58	11869	2	3/4" X 96" Pressure Hose W/ 12-F-JIC Swivel Both Ends	105	16086	4	Reducer 37 Deg. Flare (16-12 TRIXN-S)	146
9	10071	6	Hex Bolt 1/2 x 1 gr.5 plated	59	11872	2	6-M-NPT X 6-M-JIC 90 Deg. Elbow	106	16100	1	Sight Gauge 5", With Thermometer	147
10	10074	2	Hex Bolt 1/2 x 2-1/2 gr.5 plated	60	11874	1	8-M-NPT X 6-M-JIC 45 Deg. Elbow	107	16138	2	Lock Nut 7/16"-14 NC with Nylon Insert	148
11	10092	2	Hex Bolt 5/8 x 2 gr.5 plated	61	11877	2	Pressure Flange Set (#16 Cd. 61)	108	16181	1		149
12	10135	2	HEX BOLT(M6x1x20MM GR.5 ZINC)	62	13532	2	CLAMP, SIZE 3/4" TO 1-3/4" X 9/16"	109	16191	2	16-M-JIC X 16-M-NPT 90 Deg. Elbow	150
13	10153	10	Lock Nut, 1/4" Plated	63	13535	4	STAINLESS STEEL CLAMP, 1-1/2" TO 1-3/4"	110	16278	1	JOYSTICK, HR2360 / LR50160	151
14	10154	7	Lock Nut 5/16"-18 Plated	64	13563	1	1-1/4"-M-NPT X 1-1/2" Metal Hose Barb	111	16312	1	Hose Assy, 3/4" X 19" LG. w/12-F-JIC Swivel Both Ends	152
15	10164	2	1/2" Hex Nut (Gr.5 Plated)	65	13632	1	1/4" NPT Metal Cap	112	16335	1	Hour Meter - not for resale	153
16	10166	6	Lock Nut 5/8"-11 plated	66	13697	1	1-1/4" NPT Female Threaded Elbow	113	16496	1	CONTROLLER, MC 024 020 for 16065	154
17	10173	1	1" Castle Flange Nut	67	13757	1	20-M-NPT X 16-F-NPT Reducer	114	16500	1	O-Ring	
18	10175	17	3/8"-16 Locknut (Gr.5 Plated)	68	13778	1	1-1/4" X 3-1/2" Long NPT Nipple	115	16536	1	3-1/2" Cylinder (32-1/4" to 54-1/4")	
19	10176	6	1/2" Locknut (Gr.5 Plated)	69	13902	8	STRAIGHT, 6-M-JIC X 8-M-ORB	116	16546	1	Hydraulic Motor Housing Assembly	
20	10181	1	Lockwasher 5/16" plated	70	13905	5	6-M-JIC X 8-M-NPT 90 Deg. Elbow	117	16745	1	3" Cylinder (24-1/4" to 38-1/4")	
21	10183	4	Lockwasher 7/16 plated	71	13976	1	12-M-JIC X 12-M-NPT 90 Deg. Elbow	118	16746	1	CYLINDER, 3 X 17"	
22	10184	6	Lockwasher 1/2 plated	72	13978	1	STRAIGHT, 12-M-JIC X 12-M-NPT	119	16752	1	2-1/2" Cylinder (20-1/4" to 30-1/4")	
23	10185	6	Lockwasher 5/8" Plated	73	15251	2	1" Hose Clamp Body (SET OF 2)	120	16775	1	ELBOW, Swivel Nut - 3/4" 90 Deg.,	
24	10200	10	1/4" Plated Flatwasher	74	15252	2	3/4" Hose Clamp Body (SET OF 2)	121	16805	3	DECAL, MODEL EV1442	
25	10202	30	3/8" Flatwasher (Plated)	75	15255	2	Hose Clamp Cover Plate	122	20031	1	Access Cover	
26	10204	8	1/2 Flatwasher (Plated)	76	15268	2	FITTING, 3/4" HB X 12-F-JIC	123	22833	1	Fluid Connector	
27	10207	17	Flatwasher, 1" plated	77	15338	1	Danger Decal, Exposed Blades	124	22841	1	1-1/2" x 27" Suction Hose	
28	10252	7	Cotter Pin 3/16" X 2" Plated	78	15465	1	Tubing Insert, 3" Sqr. X 5-8 Gage	125	22880	1	Linkage Weldment (with holes)	
29	10322	5	1/4" Grease Fitting, 1/4"-28 Threaded	79	15838	4	Bearing	126	22881	1	Linkage Weldment (without holes)	
30	10335	1	Hardee Red Paint - (Not Shown)	80	15845	1	Hydraulic Decal Kit	127	22884	3	Pin Weldment	
31	10336	1	Gear Oil [85W-140] - (Not Shown)	81	15845-1	1	DANGER DECAL (KIT 15845)	128	22896	2	Pin Weldment (7-3/8")	
32	10339	2	Pop Rivet	82	15845-10	1	WARNING DECAL (KIT 15845)	129	22902	3	Rubber Shield Flat For 42" Decks	
33	10346	2	3 pt. Snap Pin (Lynch Pin)	83	15845-11	3	WARNING DECAL (KIT 15845)	130	22917	1	Pin Weldment (14-3/4")	
34	10368	1	1-1/4" Gate Valve	84	15845-12	1	DANGER DECAL (KIT 15845)	131	23130	1	Pivot Sleeve	
35	10373	1	Hydraulic Oil	85	15845-13	1	DANGER DECAL (KIT 15845)	132	23131	1	End Cap Weldment	
36	10382	2	Hose Assy., 3/8" x 104" w/6-F-JIC Both Ends	86	15845-14	1	DANGER DECAL (KIT 15845)	133	23136	1	Pressure Flange	
37	10386	1	O-ring	87	15845-15	1	DANGER DECAL (KIT 15845)	134	23157	1	RETURN HOSE, 3/4 X 42"	
38	10387	1	O-ring	88	15845-16	2	DANGER DECAL (KIT 15845)	135	23335	1	Weldment, Oil Tank	
39	10390	2	Clip Pin (1/8 x 2)	89	15845-2	1	DANGER DECAL (KIT 15845)	136	23345	1	Head Mounting Bracket Weldment	
40	10393	2	Universal Clip Pin	90	15845-3	2	WARNING DECAL (KIT 15845)	137	24419	1	Assembly, Hitch Frame EV1442	
41	10469	2	HITCH PIN (4-1/4" CAT. 1)	91	15845-8	1	DANGER DECAL (KIT 15845)	138	24425	1	Weldment, Deck	
42	10501	1	FLOW EZY BREATHER	92	15845-9	1	WARNING DECAL (KIT 15845)	139	24448	1	Weldment, Hose Guard EV/MR1442	
43	10601	1	Driveshaft	93	15852	2	Red Reflector Decal					
44	10646	1	Grease	94	15853	2	Yellow Reflector Decal					
45	11005	1	Decal, Warning - Thrown Objects	95	15854	1	Manual Holder					
46	11010	3	Large Hardee Logo Decal	96	15860	2	U-Nut, 1/4"-20					
47	11032	1	Small Hardee Logo Decal									
48	11283	2	12-M-JIC X 12-F-JIC 45 DEGREE SWIVEL ELBOW									
49	11675	1	Return Filter Assembly									

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"

Note:

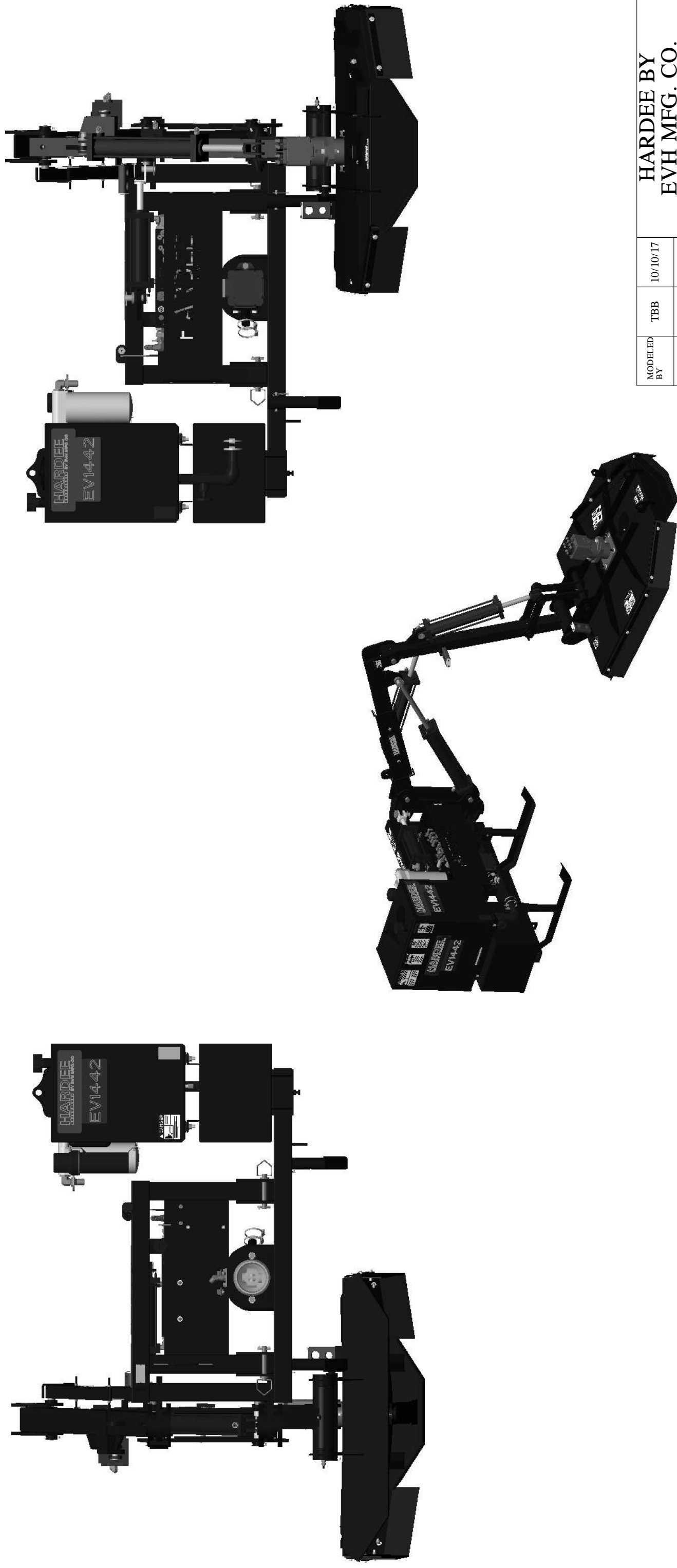
This list of components is strictly to be viewed as a "BILL OF MATERIALS" of the "COMPLETE" mower. It is not related to any illustration.

MODELED BY	TBB	10/10/17	HARDEE BY
DRAWN BY	CKN	01/26/12	EVH MFG. CO.
MATERIAL	R.M.N.		LORIS S.C.
	N/A		DESCRIPTION
Manufactured By:	EVH Mfg. Co., LLC	EV1442 COMPLETE	
DO NOT SCALE	B	DWG. NO.	24620
		DWG. SIZE	

SHEET 1 of 9

EV1442 Complete

DWG. NO.	24620			REV.	B
REV	CHANGE	BY	DATE	ECN	
A	1st STG. CYL. - 16536 was 16556	CKN	01/26/12	---	
B	Re-Drawn / Re-Modeled in Creo 2.0	TBB	10/10/17	1691	

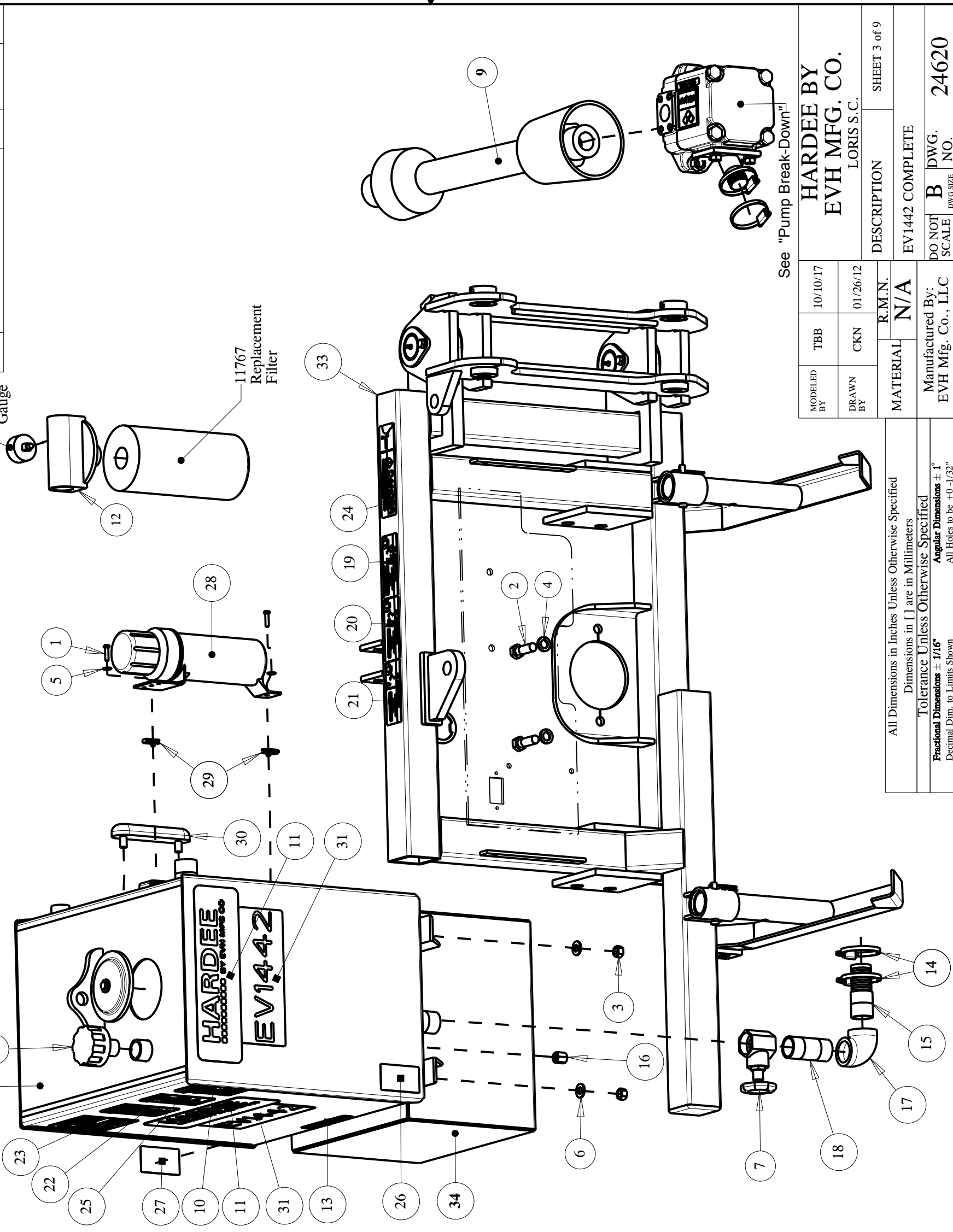


All Dimensions in Inches Unless Otherwise Specified
 Dimensions in [] are in Millimeters
 Tolerance Unless Otherwise Specified
Fractional Dimensions ± 1/16"
 All Holes to be +0 -1/32"
 Decimal Dim. to Limits Shown

MODELED BY	TBB	10/10/17	HARDEE BY	
DRAWN BY	CKN	01/26/12	EVH MFG. CO.	
			LORIS S.C.	
MATERIAL	R.M.N.		DESCRIPTION	SHEET 2 of 9
	N/A		EV1442 COMPLETE	
Manufactured By:			DO NOT SCALE	DWG. NO.
EVH Mfg. Co., LLC			B	24620

Hitch Frame & Components

DWG. NO.	24620			REV.	B		
REV	CHANGE	BY	DATE	ECN			
A	1st STG. CYL. - 16536 was 16556	CKN	01/26/12	---			
B	Re-Drawn / Re-Modeled in Creo 2.0	TBB	10/10/17	1691			



See "Pump Break-Down"

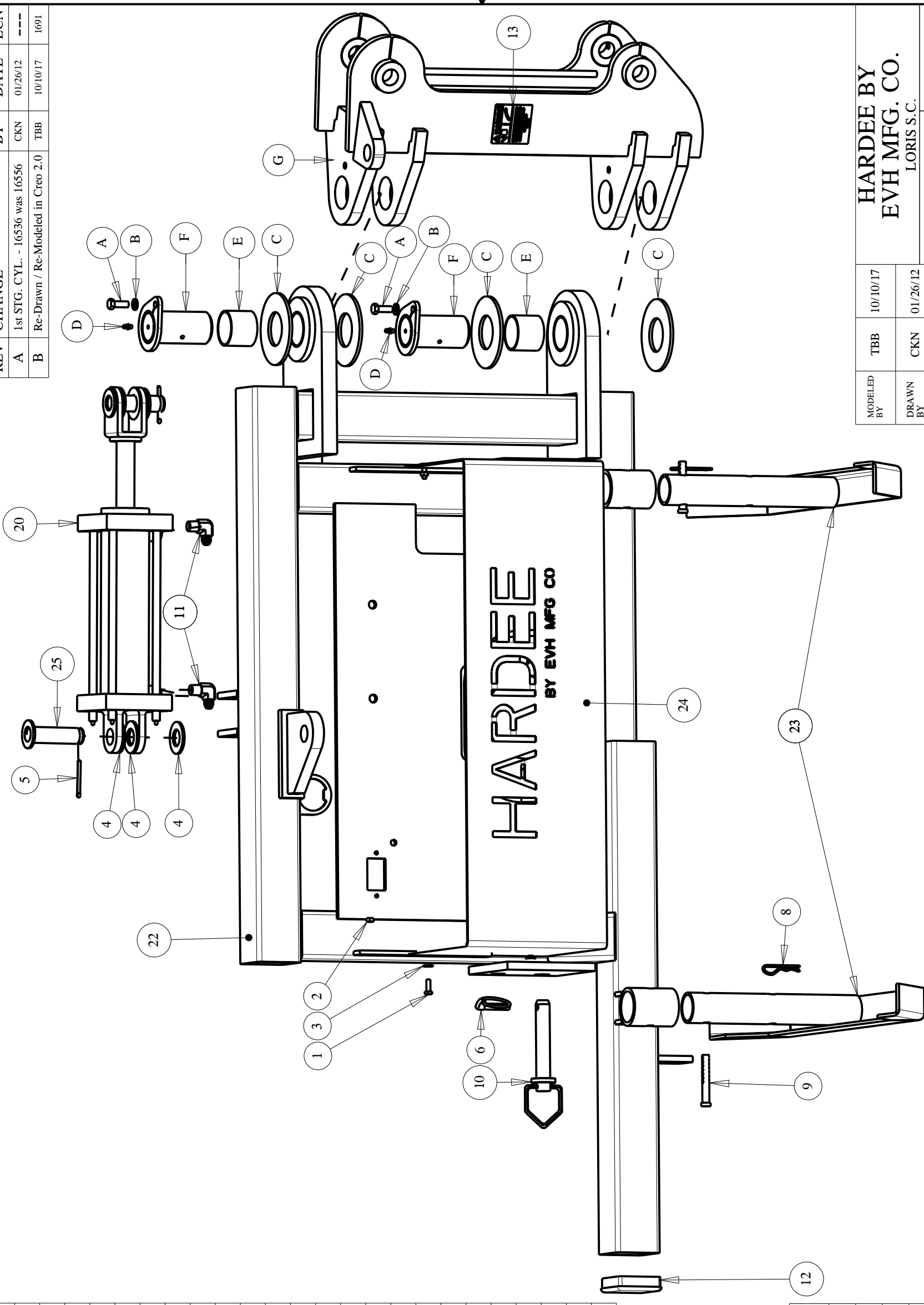
MODELED BY	TBB	10/10/17	R.M.N.	N/A	DESCRIPTION	EV1442 COMPLETE
DRAWN BY	CKN	01/26/12				
HARDEE BY EVH MFG. CO. LORIS S.C.			SHEET 3 of 9			
Manufactured By:	EVH Mfg. Co., LLC		DO NOT SCALE	DWG. NO.	24620	

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

Item Number	Qty.	Description
1	2	Hex Bolt, 1/4"-20 X 1" Gr.5 Plated
2	2	Hex Bolt 5/8 x 2 gr.5 plated
3	4	1/2" Locknut (Gr.5 Plated)
4	2	Lockwasher 5/8" Plated
5	2	1/4" Plated Flatwasher
6	4	1/2 Flatwasher (Plated)
7	1	1-1/4" Gate Valve
8	1	FLOW EZY BREATHER
9	1	Driveshaft
10	1	Decal, Warning - Thrown Objects
11	3	Large Hardee Logo Decal
12	1	Return Filter Assembly
13	1	Web Site Decal
14	4	STAINLESS STEEL CLAMP, 1-1/2" TO 1-3/4"
15	1	1-1/4"-M-NPT X 1-1/2" Metal Hose Barb
16	1	1/4" NPT Metal Cap
17	1	1-1/4" NPT Female Threaded Elbow
18	1	1-1/4" X 3-1/2" Long NPT Nipple
19	1	DANGER DECAL (KIT 15845)
20	1	DANGER DECAL (KIT 15845)
21	1	DANGER DECAL (KIT 15845)
22	1	DANGER DECAL (KIT 15845)
23	1	DANGER DECAL (KIT 15845)
24	1	DANGER DECAL (KIT 15845)
25	1	WARNING DECAL (KIT 15845)
26	1	Red Reflector Decal
27	1	Yellow Reflector Decal
28	1	Manual Holder
29	2	U-Nut, 1/4"-20
30	1	Sight Gauge 5", With Thermometer
31	3	DECAL, MODEL EV1442
32	1	Weldment, Oil Tank
33	1	Assembly, Hitch Frame EV1442
34	1	Weldment, Weight Box EV/MR1442

Hitch Frame & Swing Arm

DWG. NO.	24620			REV.	B
REV	CHANGE	BY	DATE	ECN	
A	1st STG. CYL. - 16536 was 16556	CKN	01/26/12	---	
B	Re-Drawn / Re-Modeled in Creo 2.0	TBB	10/10/17	1691	



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

Item Number	Qty.	Description
1	4	Hex Bolt, 1/4" X 3/4" Gr.5 Plated
2	4	Lock Nut, 1/4" Plated
3	4	1/4" Plated Flatwasher
4	6	Flatwasher, 1" plated
5	2	Cotter Pin 3/16" X 2" Plated
6	2	3 pt. Snap Pin (Lynch Pin)
7	2	Hose Assy., 3/8" x 104" w/6-F-JIC Both Ends
8	2	Clip Pin (1/8 x 2)
9	2	Universal Clip Pin
10	2	HITCH PIN (4-1/4" CAT. 1)
11	2	6-M-NPT X 6-M-JIC 90 Deg. Elbow
12	1	Tubing Insert, 3" Sqr. X 5-8 Gage
13	2	WARNING DECAL (KIT 15845)
14	2	3/8" x 96" Pressure Hose W/12-M-JIC
15	1	Hose Assy, 3/8" X 119" LG. w/6-F-JIC Swivel Both Ends
16	1	Hose Assy, 3/8" X 43" LG. w/6-F-JIC Swivel Both Ends
17	1	Pressure Hose, 3/8" X 69" LG. W/6-F-JIC Swivel Both Ends
18	1	
19	1	Hose Assy, 3/4" X 19" LG. w/12-F-JIC Swivel Both Ends
20	1	2-1/2" Cylinder (20-1/4" to 30-1/4")
21	1	1-1/2" x 27" Suction Hose
22	1	Assembly, Hitch Frame EV1442
23	2	Weldment, Stand - Angle Foot
24	1	Cover, Pump EV1442
25	2	WELDMENT, Cylinder Pin

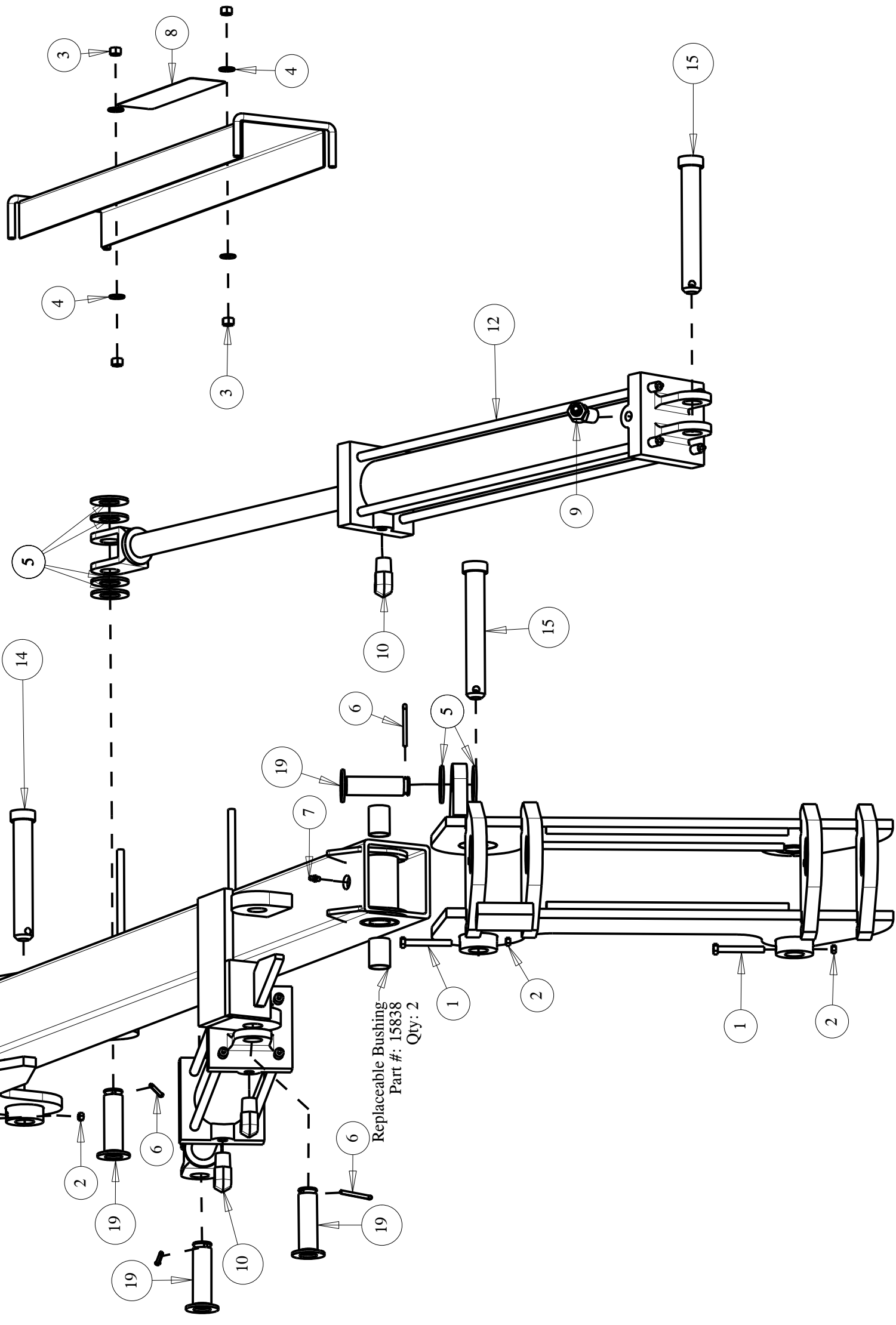
Swing Arm B.O.M.

Item Number	Qty.	Description
A	2	Hex Bolt 3/8" x 1" Gr.5 Plated
B	2	Lockwasher 3/8" Plated
C	4	2" Type "A" Plain Washer (4-1/2" x 2-1/8" , 3/16" THICK)
D	2	1/4" Grease Fitting
E	2	2" X 1-3/4" Bearing
F	2	Pin Weldment (2" Dia.)
G	1	Swing Arm Weldment

MODELED BY	TBB	10/10/17	R.M.N.	DESCRIPTION	SHEET 4 of 9
DRAWN BY	CKN	01/26/12			
MATERIAL			N/A	EV1442 COMPLETE	
Manufactured By:			HARDEE BY EVH MFG. CO.		
EVH Mfg. Co., LLC			LORIS S.C.		
DO NOT SCALE	B	DWG. NO.	24620		

1st Stage Boom

DWG. NO.	24620			REV.	B
REV	CHANGE	BY	DATE	ECN	
A	1st STG. CYL. - 16536 was 16556	CKN	01/26/12	---	
B	Re-Drawn / Re-Modeled in Creo 2.0	TBB	10/10/17	1691	



Item	Part Number	Qty.	Description
1	10020	3	Hex Bolt 5/16" X 2 1/2" gr.5 Plated
2	10154	3	Lock Nut 5/16" -18 Plated
3	10175	4	3/8"-16 Locknut (Gr.5 Plated)
4	10202	4	3/8" Flatwasher (Plated)
5	10207	9	Flatwasher, 1" plated
6	10252	4	Cotter Pin 3/16" X 2" Plated
7	10322	1	1/4" Grease Fitting, 1/4"-28 Threaded
8	11032	1	Small Hardee Logo Decal
9	11874	1	8-M-NPT X 6-M-JIC 45 Deg. Elbow
10	13905	3	6-M-JIC X 8-M-NPT 90 Deg. Elbow
11	15845-3	2	WARNING DECAL (KIT 15845)
12	16536	1	3-1/2" Cylinder (32-1/4" to 54-1/4")
13	16746	1	CYLINDER, 3 X 17"
14	22884	1	Pin Weldment
15	22896	2	Pin Weldment (7-3/8")
16	24419	1	Assembly, Hitch Frame EV1442
17	24448	1	Weldment, Hose Guard EV/MR1442
18	24483	1	First Stage Boom Weldment, EV/MR1442
19	25724	4	WELDMENT, Cylinder Pin

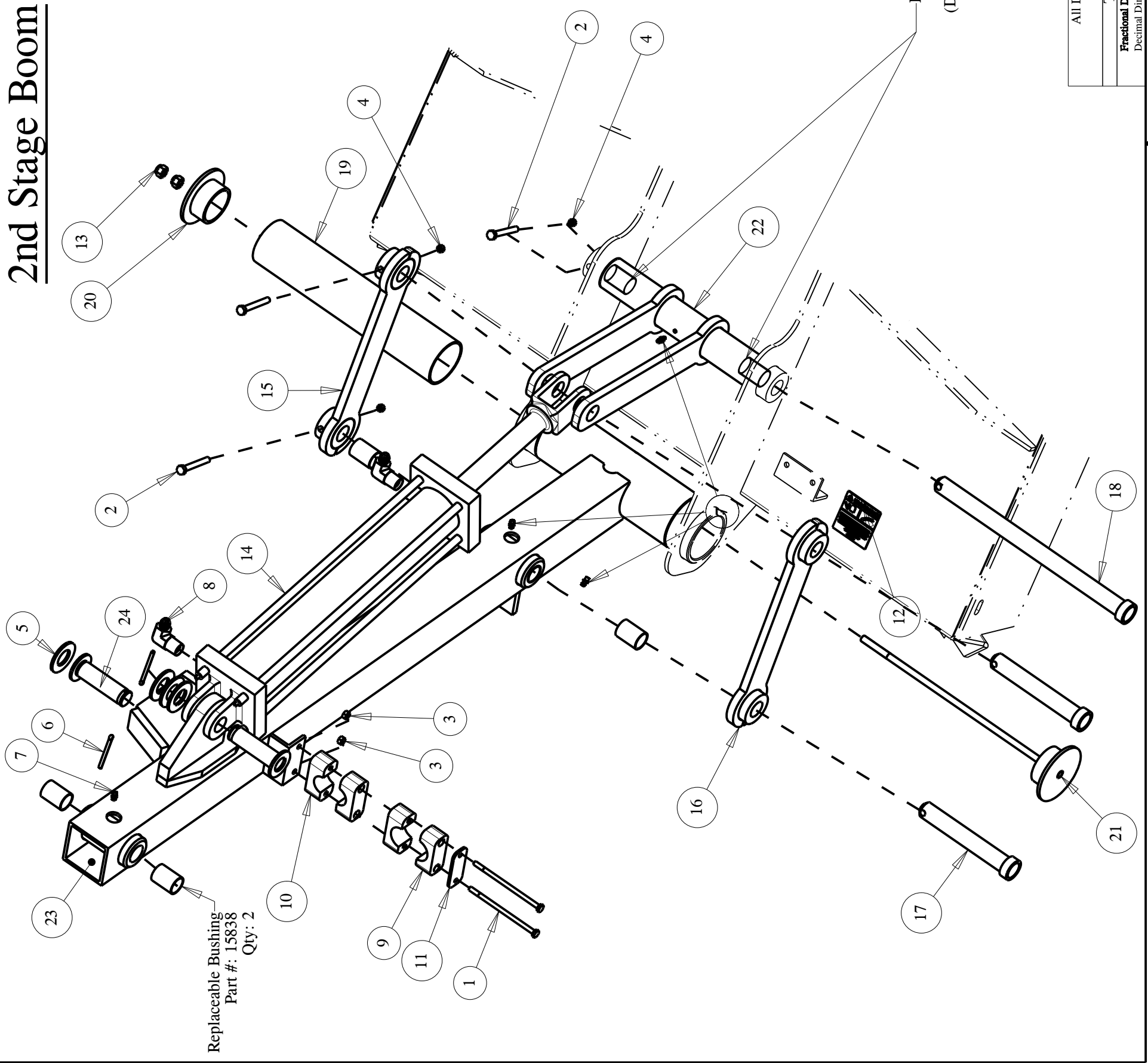
MODELED BY	TBB	10/10/17	HARDEE BY EVH MFG. CO. LORIS S.C.
DRAWN BY	CKN	01/26/12	
MATERIAL	R.M.N. N/A		
DESCRIPTION			
EV1442 COMPLETE			
Manufactured By:	EVH Mfg. Co., LLC		
DO NOT SCALE	B	DWG. NO.	24620
SCALE	DWG SIZE		

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

2nd Stage Boom

DWG. NO.	24620			REV.	B
REV	CHANGE	BY	DATE	ECN	
A	1st STG. CYL. - 16536 was 16556	CKN	01/26/12	---	
B	Re-Drawn / Re-Modeled in Creo 2.0	TBB	10/10/17	1691	

Item Number	Part Number	Qty.	Description
1	10010	2	1/4" -20 x 5" Grade 5 Zinc Finish Hex Bolt
2	10020	3	Hex Bolt 5/16" X 2 1/2" gr.5 Plated
3	10153	2	Lock Nut, 1/4" Plated
4	10154	3	Lock Nut 5/16"-18 Plated
5	10207	4	Flatwasher, 1" plated
6	10252	2	Cotter Pin 3/16" X 2" Plated
7	10322	4	1/4" Grease Fitting, 1/4"-28 Threaded
8	13905	2	6-M-JIC X 8-M-NPT 90 Deg. Elbow
9	15251	1	1" Hose Clamp Body (SET OF 2)
10	15252	1	3/4" Hose Clamp Body (SET OF 2)
11	15255	1	Hose Clamp Cover Plate
12	15845-11	1	WARNING DECAL (KIT 15845)
13	16138	2	Lock Nut 7/16"-14 NC with Nylon Insert
14	16745	1	3" Cylinder (24-1/4" to 38-1/4")
15	22880	1	Linkage Weldment (with holes)
16	22881	1	Linkage Weldment (without holes)
17	22884	2	Pin Weldment
18	22917	1	Pin Weldment (14-3/4")
19	23130	1	Pivot Sleeve
20	23131	1	End Cap Weldment
21	23345	1	Head Mounting Bracket Weldment
22	24460	1	Weldment, Deck Clevis EV/MR1442
23	24482	1	Second Stage Boom Weldment, EV/MR1442
24	25724	2	WELDMENT, Cylinder Pin



MODELED BY	TBB	10/10/17	DESCRIPTION	EV1442 COMPLETE
DRAWN BY	CKN	01/26/12		
MATERIAL	R.M.N.			
	N/A			
Manufactured By:		DO NOT SCALE	DWG. NO.	24620
EVH Mfg. Co., LLC			DWG. SIZE	

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

DESCRIPTION

EV1442 COMPLETE

DO NOT SCALE

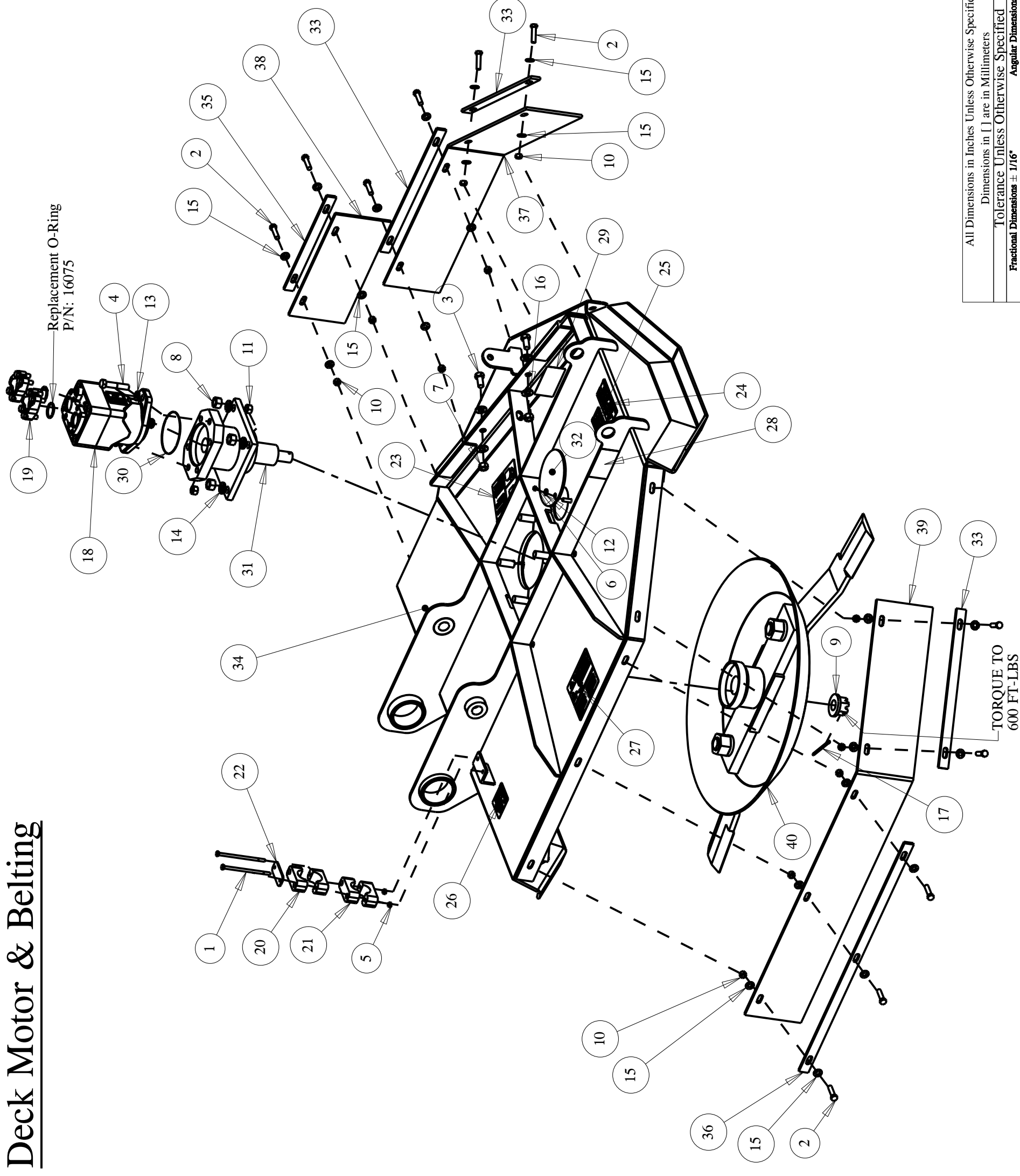
DWG. NO. 24620

DWG. SIZE

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

Deck Motor & Belting

DWG. NO.	24620			REV.	B
REV	CHANGE	BY	DATE	ECN	
A	1st STG. CYL. - 16536 was 16556	CKN	01/26/12	---	
B	Re-Drawn / Re-Modeled in Creo 2.0	TBB	10/10/17	1691	



Item	Part Number	Qty.	Description
1	10010	2	1/4"-20 x 5" Grade 5 Zinc Finish Hex Bolt
2	10032	11	Hex Bolt 3/8 x 1-1/2 gr.5 plated
3	10071	2	Hex Bolt 1/2 x 1 gr.5 plated
4	10074	2	Hex Bolt 1/2 x 2-1/2 gr.5 plated
5	10153	2	Lock Nut, 1/4" Plated
6	10154	1	Lock Nut 5/16"-18 Plated
7	10164	2	1/2" Hex Nut (Gr.5 Plated)
8	10166	4	Lock Nut 5/8"-11 plated
9	10173	1	1" Castle Flange Nut
10	10175	11	3/8"-16 Locknut (Gr.5 Plated)
11	10176	2	1/2" Locknut (Gr.5 Plated)
12	10181	1	Lockwasher 5/16" plated
13	10184	2	Lockwasher 1/2 plated
14	10185	4	Lockwasher 5/8" Plated
15	10202	22	3/8" Flatwasher (Plated)
16	10204	4	1/2 Flatwasher (Plated)
17	10252	1	Cotter Pin 3/16" X 2" Plated
18	11847	1	Hydraulic Vane Motor
19	11877	2	Pressure Flange Set (#16 Cd. 61)
20	15251	1	1" Hose Clamp Body (SET OF 2)
21	15252	1	3/4" Hose Clamp Body (SET OF 2)
22	15255	1	Hose Clamp Cover Plate
23	15338	1	Danger Decal, Exposed Blades
24	15845-1	1	DANGER DECAL (KIT 15845)
25	15845-10	1	WARNING DECAL (KIT 15845)
26	15845-11	1	WARNING DECAL (KIT 15845)
27	15845-16	1	DANGER DECAL (KIT 15845)
28	15852	1	Red Reflector Decal
29	15853	1	Yellow Reflector Decal
30	16500	1	O-Ring
31	16546	1	Hydraulic Motor Housing Assembly
32	20031	1	Access Cover
33	22902	3	Rubber Shield Flat For 42" Decks
34	24425	1	Weldment, Deck
35	24466	1	Flat, Rubber Shield Left-Short
36	24467	1	Flat, Rubber Shield Right
37	24468	1	Shielding, Deck Hinge
38	24469	1	Shielding, Rubber Short
39	24470	1	Shielding, Rubber Right
40	26950	1	Blade Holder Assembly For 42" Decks

MODELED BY	TBB	10/10/17	R.M.N.	
DRAWN BY	CKN	01/26/12	N/A	
MATERIAL			EV1442 COMPLETE	
Manufactured By:			EVH Mfg. Co., LLC	
DO NOT SCALE			DWG. NO. 24620	
DESCRIPTION			EV1442 COMPLETE	
SHEET 7 of 9			LORIS S.C.	
HARDEE BY			EVH MFG. CO.	

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"

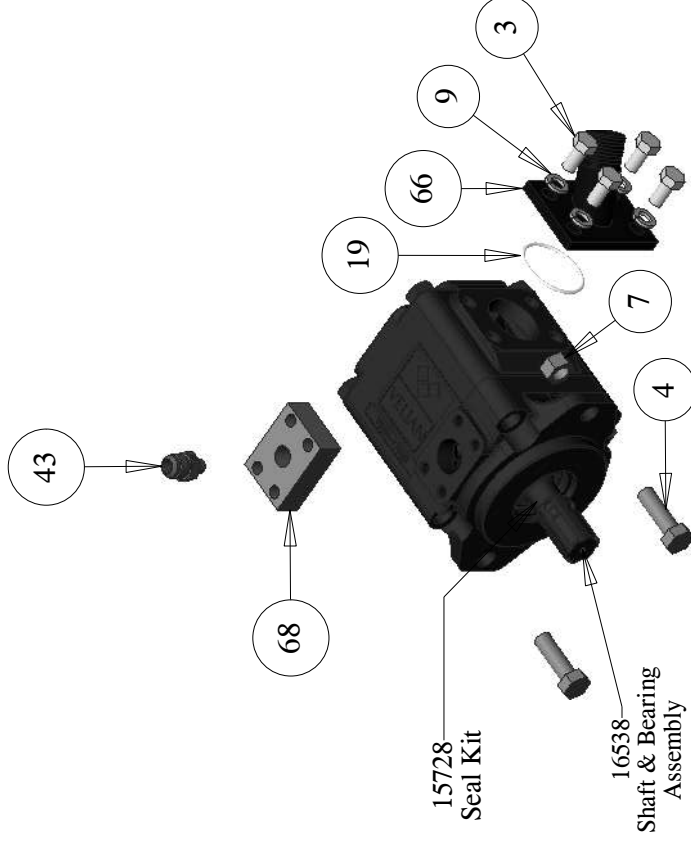
TORQUE TO
600 FT-LBS

Hydraulic Schematic For EV1442

DWG. NO.	24620		REV.	B
REV	CHANGE	BY	DATE	ECN
A	1st STG. CYL. - 16536 was 16556	CKN	01/26/12	---
B	Re-Drawn / Re-Modeled in Creo 2.0	TBB	10/10/17	1691

Item	Part Number	Qty.	Description
1	10006	2	Hex Bolt 1/4" x 3" gr.5 plated
2	10041	2	HEX BOLT (3/8" X 6" GR. 5 PLATED)
3	10071	4	Hex Bolt 1/2 x 1 gr.5 plated
4	10092	2	Hex Bolt 5/8 x 2 gr.5 plated
5	10135	2	HEX BOLT(M6x1x20MM GR.5 ZINC)
6	10153	2	Lock Nut, 1/4" Plated
7	10166	2	Lock Nut 5/8"-11 plated
8	10175	2	3/8"-16 Locknut (Gr.5 Plated)
9	10184	4	Lockwasher 1/2 plated
10	10185	2	Lockwasher 5/8" Plated
11	10200	4	1/4" Plated Flatwasher
12	10202	2	3/8" Flatwasher (Plated)
13	10335	1	Hardee Red Paint - (Not Shown)
14	10336	1	Gear Oil [85W-140] - (Not Shown)
15	10368	1	1-1/4" Gate Valve
16	10373	1	Hydraulic Oil
17	10382	2	Hose Assy., 3/8" x 104" w/6-F-JIC Both Ends
18	10386	1	O-ring
19	10387	1	O-ring
20	10501	1	FLOW EZY BREATHER
21	10646	1	Grease
22	11010	1	Large Hardee Logo Decal
23	11283	2	12-M-JIC X 12-F-JIC 45 DEGREE SWIVEL ELBOW
24	11675	1	Return Filter Assembly
25	11775	1	Hydraulic 540RPM Pump
26	11847	1	Hydraulic Vane Motor
27	11860	10	TIE STRAP, (14" LG.) (100/PK)
28	11862	1	3/8" X 25" Pressure Hose W/ 6-F-JIC Swivel Both Ends
29	11863	1	3/8" X 26" Pressure Hose W/ 6-F-JIC Swivel Both Ends
30	11868	1	3/8" X 135" Pressure Hose W/ 6-F-JIC Swivel Both Ends
31	11869	2	3/4" X 96" Pressure Hose W/ 12-F-JIC Swivel Both Ends
32	11872	2	6-M-NPT X 6-M-JIC 90 Deg. Elbow
33	11874	1	8-M-NPT X 6-M-JIC 45 Deg. Elbow
34	13532	2	CLAMP, SIZE 3/4" TO 1-3/4" X 9/16"
35	13535	4	STAINLESS STEEL CLAMP, 1-1/2" TO 1-3/4"
36	13563	1	1-1/4"-M-NPT X 1-1/2" Metal Hose Barb
37	13697	1	1-1/4" NPT Female Threaded Elbow
38	13757	1	20-M-NPT X 16-F-NPT Reducer

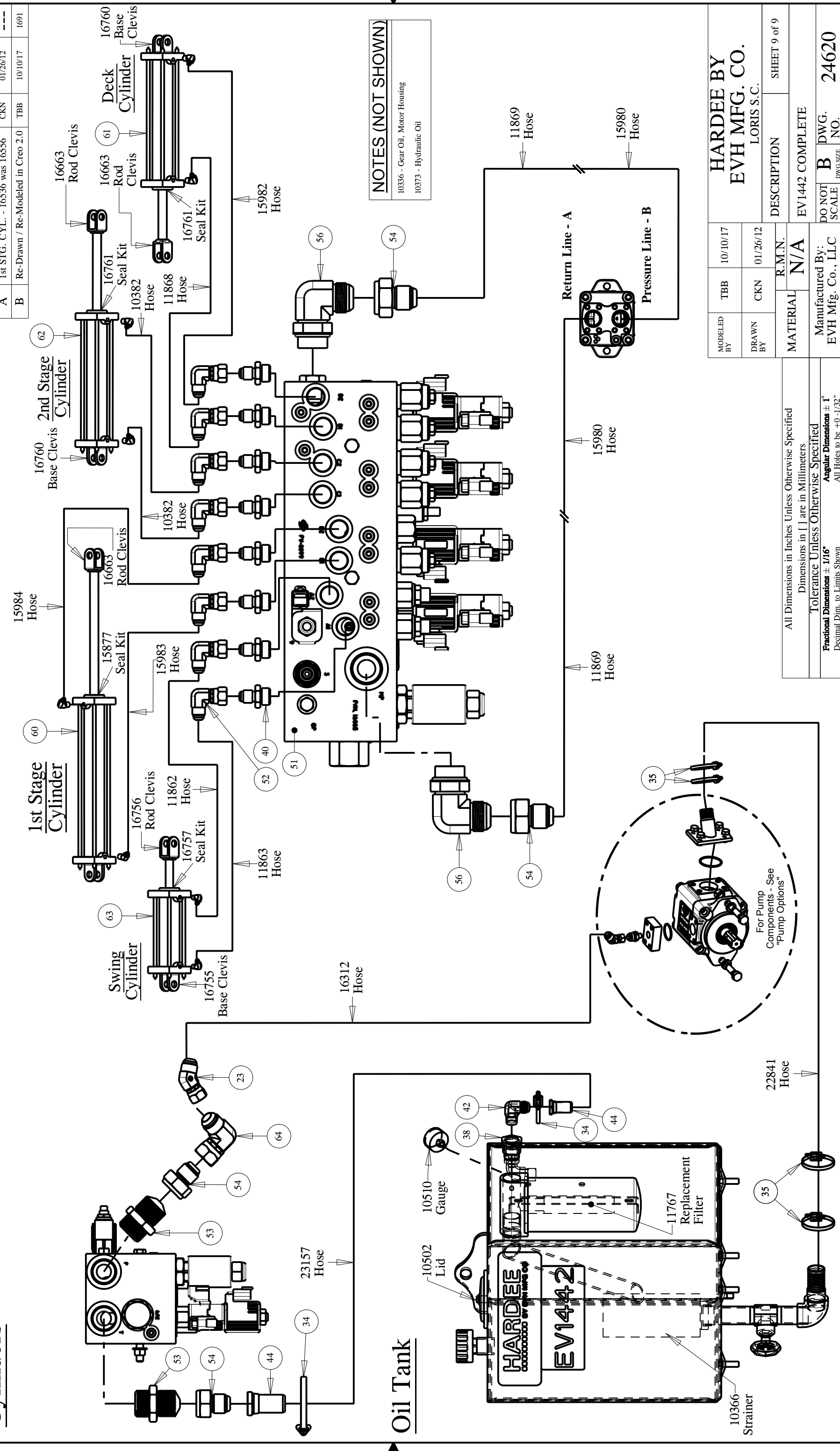
Pump Break-Down 540 RPM - P/N: 11775



MODELED BY	TBB	10/10/17	HARDEE BY	
DRAWN BY	CKN	01/26/12	EVH MFG. CO.	
MATERIAL		R.M.N.	LORIS S.C.	
N/A		EV1442 COMPLETE	DESCRIPTION	
Manufactured By:		EVH Mfg. Co., LLC	DO NOT SCALE	DWG. NO.
EVH Mfg. Co., LLC		EVH Mfg. Co., LLC	B	24620
All Dimensions in Inches Unless Otherwise Specified Dimensions in [] are in Millimeters		SHEET 8 of 9		
Tolerance Unless Otherwise Specified				
Fractional Dimensions ± 1/16"				
Decimal Dim. to Limits Shown				

Hydraulic Schematic For EV1442

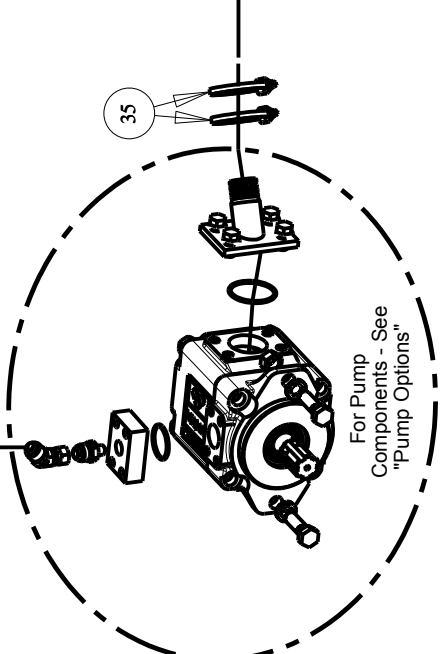
DWG. NO.	24620			REV.	B		
REV	CHANGE	BY	DATE	ECN			
A	1st STG. CYL. - 16536 was 16556	CKN	01/26/12	---			
B	Re-Drawn / Re-Modeled in Creo 2.0	TBB	10/10/17	1691			



NOTES (NOT SHOWN)
 10336 - Gear Oil, Motor Housing
 10373 - Hydraulic Oil

MODELED BY	TBB	10/10/17	R.M.N.	N/A	DESCRIPTION	EV1442 COMPLETE
DRAWN BY	CKN	01/26/12				
HARDEE BY EVH MFG. CO. LORIS S.C.			SHEET 9 of 9			
Manufactured By: EVH Mfg. Co., LLC			DO NOT SCALE	B	DWG. NO.	24620

All Dimensions in Inches Unless Otherwise Specified
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 Fractional Dimensions ± 1/16"
 Angular Dimensions ± 1°
 Decimal Dim. to Limits Shown

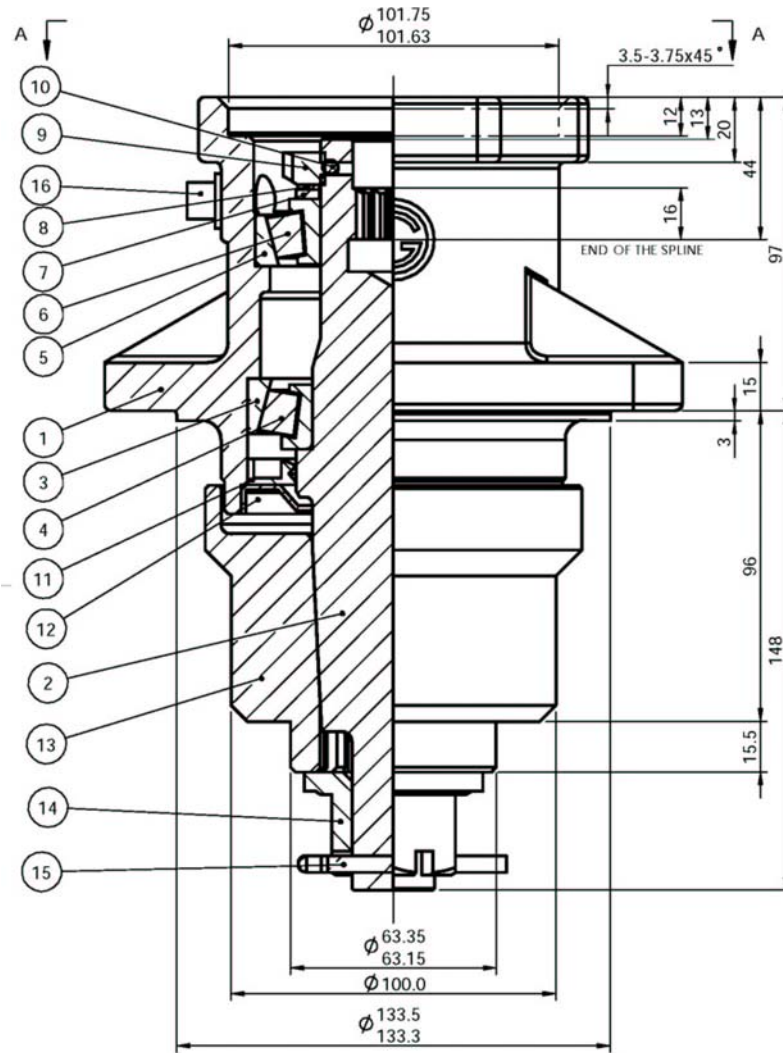


Cylinders

Oil Tank

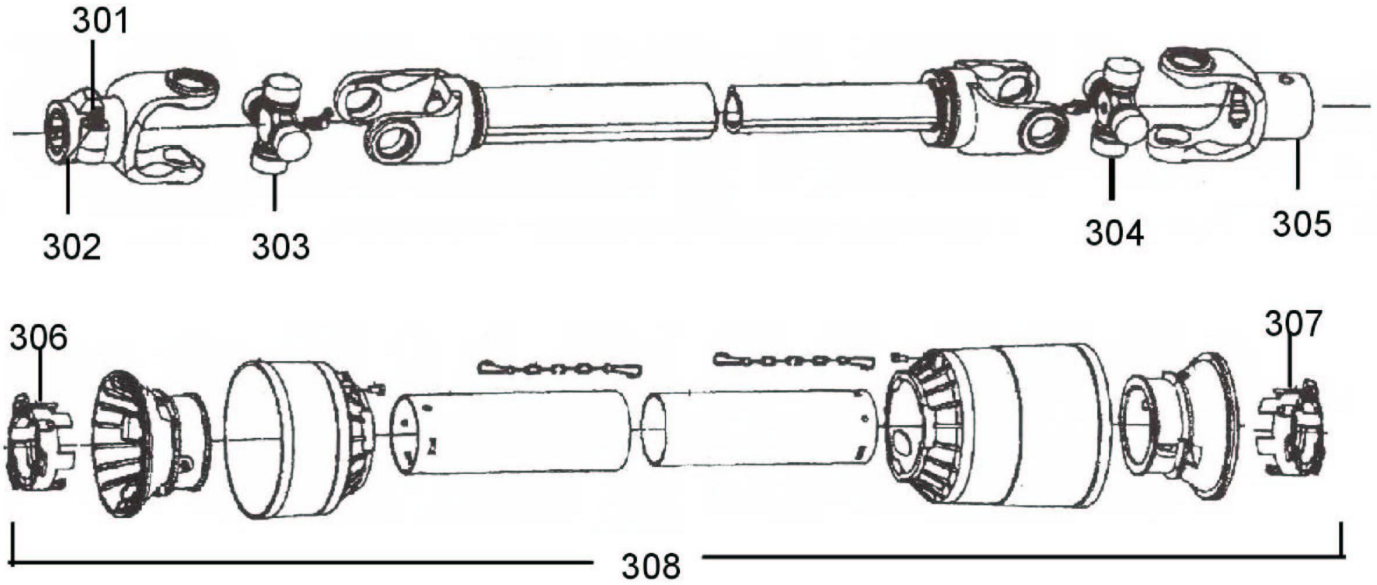
EVH P/N 16546

Hydraulic Motor Housing
For
MR1442 and LR40142

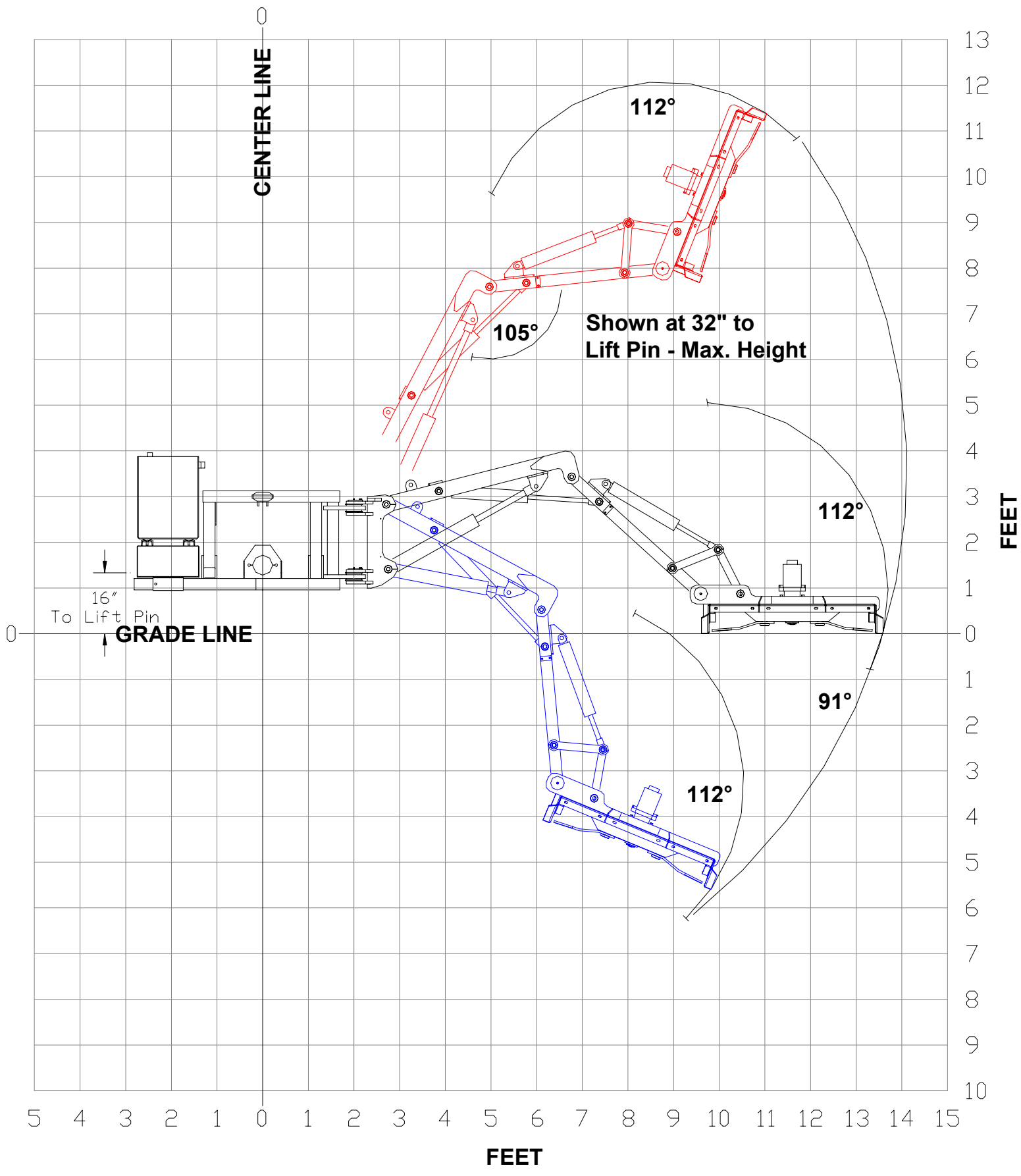


<u>Key #</u>	<u>Part No.</u>	<u>Description</u>	<u>Key #</u>	<u>Part No.</u>	<u>Description</u>
1	N/A	Housing	9	16481	Locknut
2	N/A	Shaft	10	16480	Set Screw
3	15777	Cup	11	16479	Lip Seal-Output
4	15778	Bearing	12	16478	Seal Protector
5	15779	Cup	13	16472	Blade Hub
6	15780	Bearing	14	10173	Nut, Hex Slotted
7	16482	Washer w/tang	15	10252	Cotter Pin
8	15783	Lockwasher	16	15784	Plug, Pipe

10601 Driveshaft



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



NOTES:

NOTES:

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.



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