MANUAL P/N 24546

HARDEE

BY EVH MFG CO

OPERATOR'S AND MAINTENANCE MANUAL

Commercial Mower
Model: CM2160

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 at their widest setting.	Page 8
☐	Add ballast and front weights to your tractor, if needed.	Page 8
☐	Check all fluid levels in the mower.	Page 10
☐	Turn gate valve under the oil tank "on".	Page 11
☐	Check all grease fittings.	Page 14

Service Notice

Please take extra care while servicing the hydraulic system by keeping all openings properly covered, thus preventing contamination of the hydraulic components. Contaminates in the oil WILL cause faulty operation or premature failure of components in the hydraulic control valve, pump, and motor.

Disclaimer

The mower is designed to trim branches with the mower deck in the VERTICAL position while moving the tractor forwards or backwards, repositioning the mower deck after each path (See Fig. 1).

The mower is also designed to cut tree trunks and branches up to 6" in diameter with the "Hinged Gate" in the unlocked, secured raised position and the mower deck in the HORIZONTAL position, perpendicular to the trunk and/or branch of the tree (See Fig. 2).

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 mower is operated in violation of the above information.

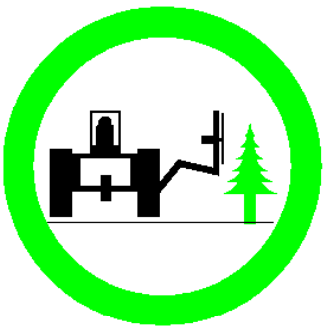

Fig. 1

Fig. 2

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To Our Customers

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

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

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

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

Owner's Responsibility

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

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

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

Purpose of This Manual

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

If you need additional copies of this manual, please contact your local Hardee dealer or download a copy from our website at www.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 Commercial Mower. If for some reason you have any questions about the information in this manual or have a problem with your mower, please discuss the problem or question with the management of your local dealership. If further assistance is required, please contact:

Hardee By 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 mower. We at Hardee strive to produce a machine that is both a quality product and safe to operate. Please take the time to read, understand and follow the safety rules listed below and throughout this manual.

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

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

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

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

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

WARNING
Never stand, or allow others to stand, under the boom or mowerhead at any time. Never park the unit without placing the mowerhead 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 mowerhead or attempt to remove objects or branches from under the mowerhead while the tractor is running. Serious injury, loss of limb or death may result.

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

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

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

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

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

DANGER
Never attempt to use the mower to remove brush or trees larger than 6 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 mower ships with all safety decals in place. They are located in areas on the mower that are potentially hazardous. Please locate, read and follow the information you find on these decals.

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

To apply the replacement decals:

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

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

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

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

Warning – Thrown Object
(P/N – 11005)

WEIGHT BOX

Safety Decals, continued

Deck

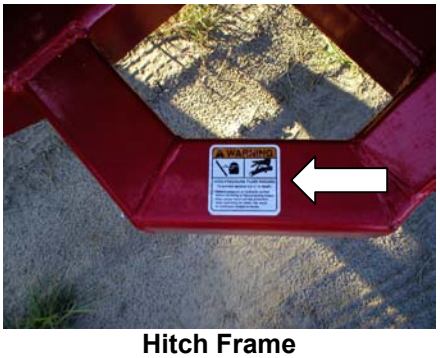
Warning – Rotating Components
(P/N – 15845-10)

Hitch Frame

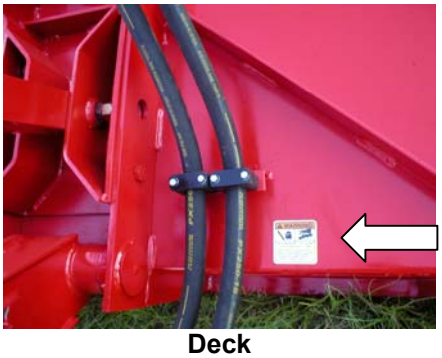
Danger – Crushing Hazard
(P/N – 15845-2)

Hitch Frame

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



Hitch Frame



Deck

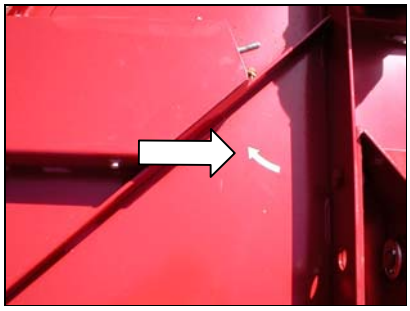
Safety Decals, continued

Deck Linkage (BOTH SIDES)

1st Stage Boom

1st Stage Boom

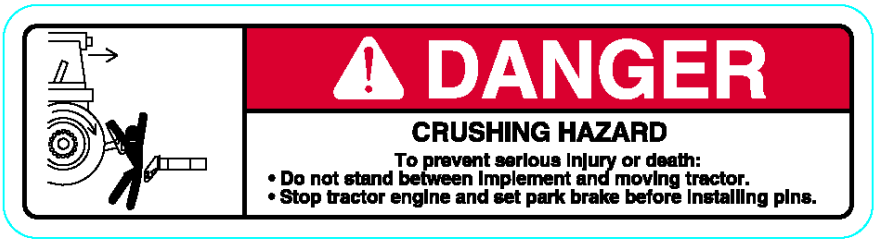
Warning – Pinch Point
(P/N – 15845-3)



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)

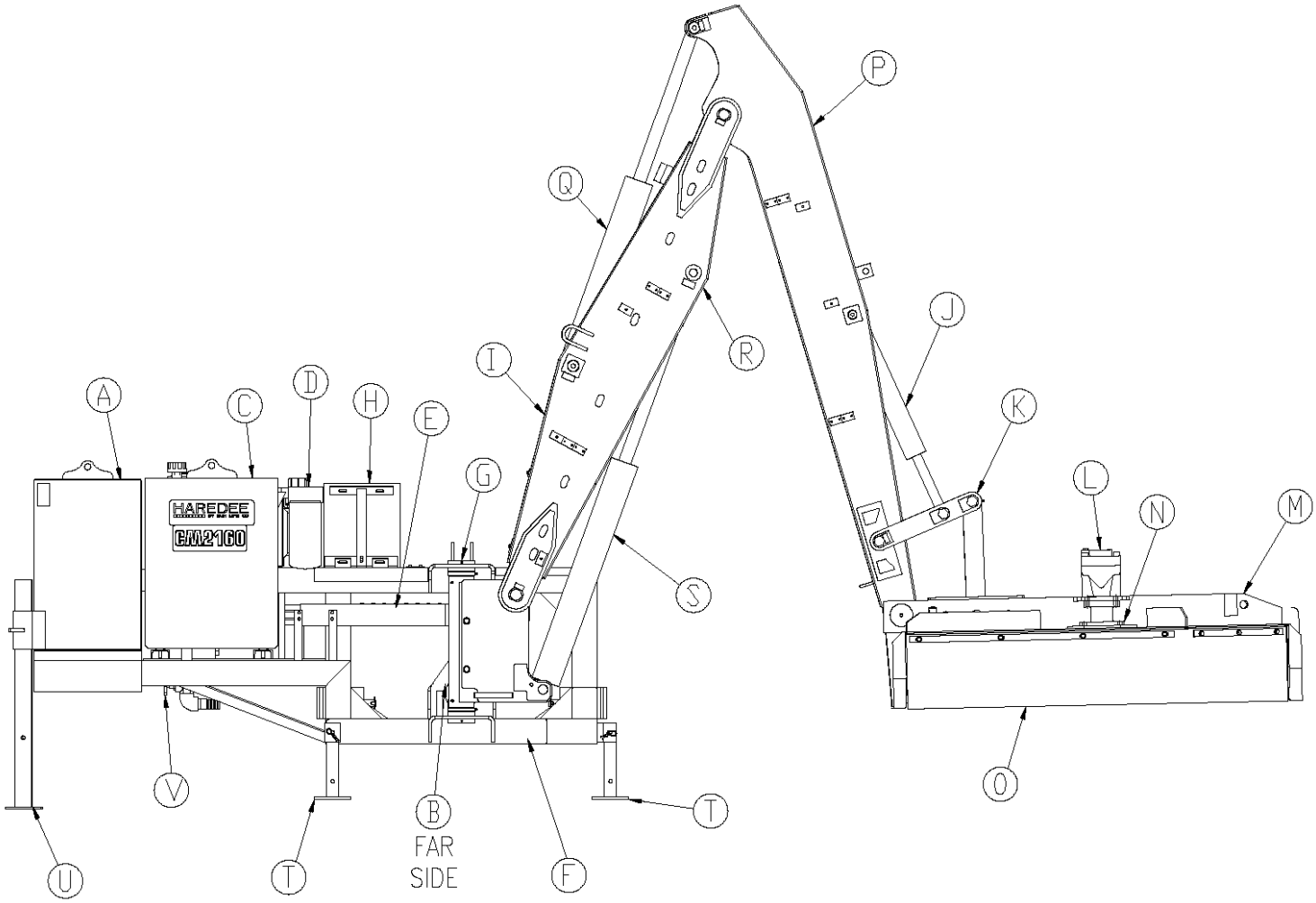
Deck – Front/Rear

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	Hydraulic Pump	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 Breakaway
H	Oil Cooler	S	1st Stage Cylinder
I	1st Stage (Lift) Boom	T	Short Stand (2)
J	Deck Cylinder	U	Long Stand (2)
K	Deck Linkage	V	Gate Valve

Tractor Requirements

The Commercial Mower you have purchased is designed for tractors with 150 horsepower and above and weighing 15,500 lbs. plus, equipped with a 1000 RPM rear power take-off (PTO).

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

To insure stability of your tractor, the rear tires should be spaced at their widest setting. 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 mower. We recommend contacting your local Hardee dealer for assistance.

Driveshaft Installation on Pump Shaft

Refer to Figure 1 for reference

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

Figure 1

Tractor Hook-Up Procedures

- ✓ Hook Tractor 3-point hitch to mower hitch frame. The CM2160 is designed to work with a standard, 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 mower when tractor is in motion.

- ✓ Attach driveline to tractor (PTO shaft). *(See below for instructions)*
  - Verify that the shaft is sufficiently lubed before attachment.
  - Verify that drive shaft is the proper length.
- ✓ Connect (8) hoses to bulkhead on the hitch frame and to the corresponding tractor remote outlets on the tractor. Note: 2950 PSI Max. Pressure and 4 to 7 GPM flow.
- ✓ Connect oil cooler control to 12-volt system.
- ✓ Raise all jack stands before moving mower.

Driveshaft Installation on PTO

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

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

Hydraulic System Setup

IMPORTANT
The hydraulic system setup information contained in the following sections should be used only as a guide. Consult your local Hardee dealer or mower manufacturer for more detailed information.

Working Safely with Hydraulic Lines

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

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

DANGER
Do not use your hand or skin to check for hydraulic leaks, use cardboard or wood. High-pressure oil leaks can penetrate skin causing injury and gangrene. Consult a doctor immediately. Always wear safety goggles when working around high-pressure lines.

Description of Operation

The CM 2160 is designed as a “Tractor-Contained” main hydraulic system. This means that the tractor powers all hydraulic cylinder functions (swing, first stage boom lift, second stage boom lift, and mower deck tilt), and the mower pump powers the motor function, which in turn drives the mower head.

Basically, all cylinder functions are actuated by the “Tractor-Contained” control valves, whereas the motor function is activated by the PTO control lever on the tractor.

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

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

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

Daily Start-Up Checklist		
	Check	Section
☐	Check All Fluid Levels on the mower, *For best results, use Hardee hydraulic oil – part number 10373*	-
☐	Grease Points	Page 14
☐	PTO Shaft, Check Grease	Page 14
☐	Blade Tightness	Page 15

Operating Environment

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

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

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

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

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

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

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

Using Your Mower

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

- ✓ The first step is to attach the mower to the tractor, see the hook-up procedures on page 8 for complete instructions. After you have the mower attached, double check to ensure that no part of the tractor is in contact with the mower.
- ✓ Next, follow the instructions for installing the driveshaft on page 8. Check to see that all PTO guards are in place correctly.
- ✓ Make sure that all hoses and the electric connection cables will not contact the PTO shaft. (Use tiewraps to secure hoses and electric cable).
- ✓ 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 mower!

- ✓ With all controls in neutral, the tractor in park, the throttle in idle position, start the tractor engine.
- ✓ Now with the mower under power, practice using the tractor's hydraulic control valves to regulate the movement of the mowerhead and boom arms.

After you feel comfortable with the basic mower controls, the next step is to start the blades:

- ✓ Slowly engage the PTO shaft.

⚠ Danger

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

- ✓ After the mower is running smoothly, increase the tractor to 800 PTO RPM (Max.1000 RPM) and lift the mowerhead off the ground. Swing the mowerhead to the mowing position, which is three o' clock on the right side of your tractor. (If moving in reverse, swing deck back 15º).
- ✓ 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 mowerhead to follow the ground contour you are cutting.

Boom Breakaway
The CM2160 is designed with an automatic breakaway system to protect the mower booms. This works when the mowerhead contacts a solid obstruction or the mowerhead 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 mowerhead 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 mowerhead and the booms begin to break back, simply lift the boom slightly to free the mowerhead, then swing the boom back into normal cutting position. *See figure 3.*

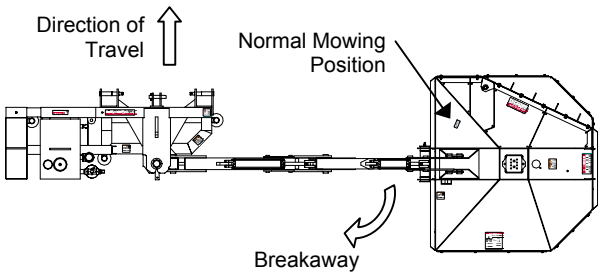


Figure 3

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 4.*

Caution

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

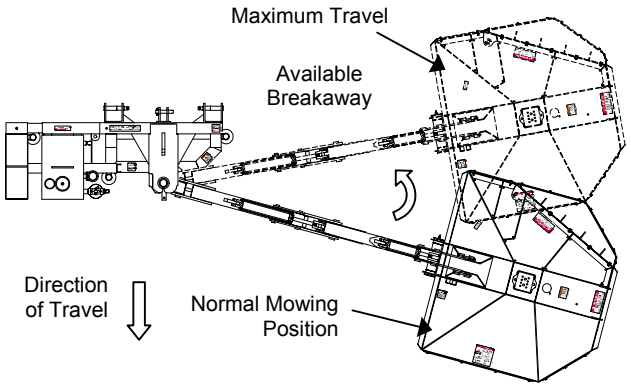


Figure 4

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 accepted.

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

DANGER

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

Cutting Larger Brush and Trees
A unique feature on the CM2160 is the mowerhead "HINGED GATE". The "HINGED GATE" is used when you need to remove trees as large as 6 inches in diameter. This is accomplished in the following manner:

- ✓ Be sure that the mower blades and tractor are turned "OFF".
- ✓ Unlock the "HINGED GATE" by removing the two bolts. *Refer to Figure 5 & 6 on Page 13 .*
- ✓ Replace one bolt on the main deck for storage and use the second bolt to lock the gate in its raised up position.

Figure 5

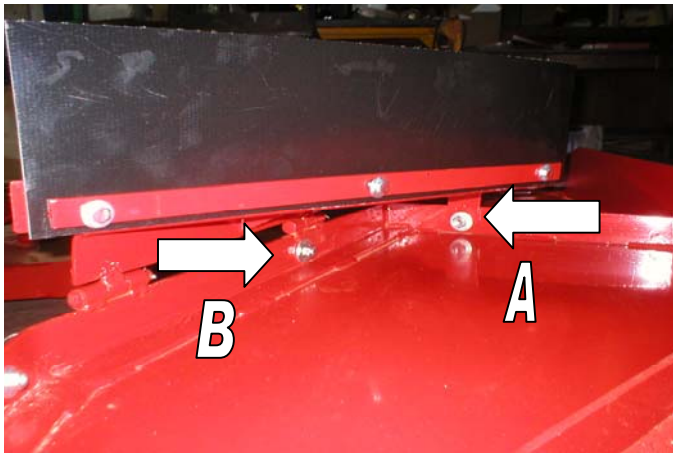


Figure 6

Figure 6 shows the two sets of bolts, nuts and washers that go on the "HINGED GATE". Bolt A is used to lockdown the hinged gates to the CM2160 DECK when cutting trees and bolt B is tightened onto the deck for storage during the tree-cutting process.

⚠ DANGER

Never attempt to use the mower to remove brush or trees larger than 6 inches in diameter. Failure to use caution when cutting trees, may lead to the tree falling on the tractor/mower deck and tipping the tractor over.

Hydraulic Oil Cooler (Air Cooled)

1. The oil cooler built into the hydraulic circuit of your CM2160 mower is designed to maintain fluid temperature and viscosity within optimum limits.
2. Hydraulic oil temperatures are affected by mode of operation (excessive operation over the relief valve settings and/or operating in high ambient temperatures).
3. Excess heat sooner or later creates trouble for any hydraulic system. Too much heat breaks down oil, damages seals and bearings, and increases wear on pumps, motors and other components.
4. Hardee specifies hydraulic oil part number 10373. The oil has a viscosity grade of ISO VG68. This means that the hydraulic oil temperature should read at least 60° F before full operation of the CM2160 can start (circulate the hydraulic oil at engine idle without engaging in any mowing operation).
5. Once started the mowing operation, the oil temperature should not exceed 180° F (optimum temperature is 167° F). The thermostatically controlled fan on the oil cooler turns on at 140° F. Care must be taken that the starting point of the fan corresponds' to the oil temperature gauge on the oil tank.

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 CM2160

- ✓ To unhook from your unit, first lower all jack stands to the storage position.
- ✓ Lower the tractor lift arms so that the mower will rest firmly and evenly on all jack stands.
- ✓ Lower the boom arms and mower deck so that they too rest firmly and evenly on the ground.
- ✓ Be sure to relieve all hydraulic pressure on the boom arms and deck before unhooking.
- ✓ Disconnect driveshaft from tractor.
- ✓ Disconnect oil cooler electrical cables at the bulkhead connector.
- ✓ Disconnect the (8) hydraulic hoses from the tractor remotes.
- ✓ Unhook tractor hitch from 3-point frame on mower.

Post Use Care

- Never leave driveshaft hanging down and touching the ground.

Maintenance and Service Schedule

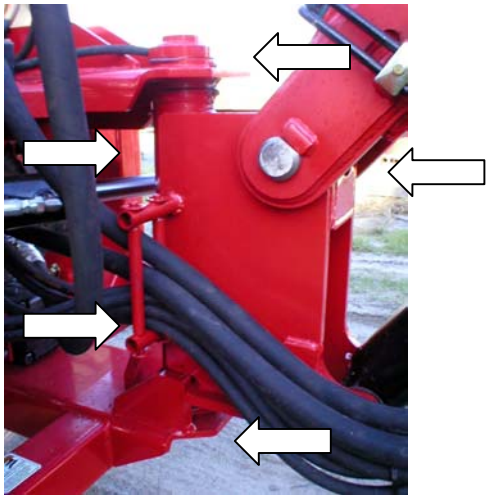
This section is dedicated to the maintenance of the CM2160. As with any piece of equipment, the performance and life span depends on the proper operation and maintenance.

DANGER

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

First Stage Boom

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

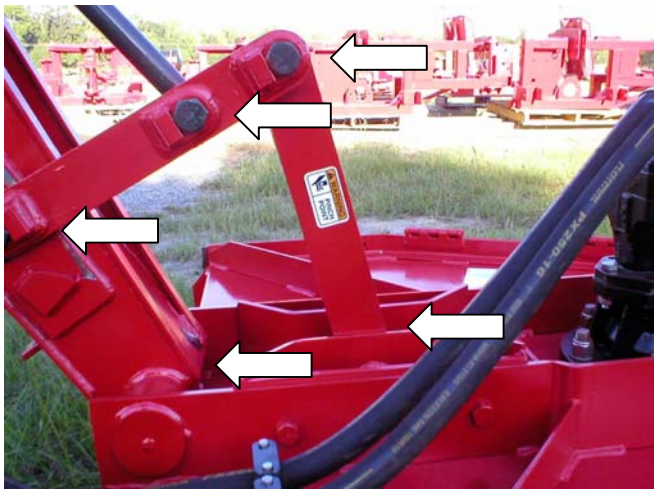


First Stage Boom to Second Stage Boom

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

Deck and Second Stage Boom

Inject with heavy multi-purpose grease.



Hydraulic Motor Housing Assembly

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

Greasing PTO Driveshaft to Pump

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

Inspection and Replacement of Blades

The cutting blades on the Hardee mower are designed and made to exact specifications and should be replaced with only original Hardee parts. Always replace blades in pairs to retain balance on the blade holder. Never weld the blades, as this will change the temper of the steel. Never modify the blades. Check for cross sectional thickness (5/8") and deterioration of blades. Replace as necessary.

When the replacement of mower blades is required, a few rules should be followed:

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

Inspection and Replacement of Blade Holder

Inspection

✓ First, completely extend boom. Rotate mower deck all the way up; lower 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 Pages 21-24 for reference.*

Checking the Main Relief Valve

The CM2160 is equipped with a mowerhead relief valve that comes pre-set from the factory. This valve is attached to the top of the pump (see illustration on hydraulic circuit schematic). 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 mowerhead on the ground. Engage the tractor PTO to power the mowerhead and increase engine speed until 1000 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 16-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 2700 psi or less, you may proceed.)

✓ Increase tractor engine speed to 1000 PTO RPM. Engage tractor PTO and immediately observe the pressure reading and disengage tractor PTO.

The correct pressure setting is 2700 psi. If the reading is less than 2200 or more the 2700, contact your local Hardee dealer for assistance.

⚠ Caution

Never let the unit operate in the blocked-off pump outlet position for over 5 seconds. A reading can be obtained accurately in this amount of time.

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

CAUTION

Never vary from the 2700-psi mowerhead pressure. Failure to comply with this specification will cause severe hydraulic heat, loss of power and damage to components.

DANGER

Exceeding 2700 psi will cause premature hose failure (rupture), and possible bodily injury or property damage.

Checking the Tractor's Cylinder Control Valve

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

Cylinder Relief Valve

- ✓ Rest the deck of the CM2160 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. Install a 3000 or 5000 psi pressure gauge 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 800 (Max.1000) PTO RPM. Activate the tractor control valve, raise the mower deck off the ground, and swing the boom so that it is straight behind the tractor.
- ✓ Activate the control valve in the "HEAD UP" position until the deck cylinder fully retracts. Continue to hold the control valve in this position for not more than 5 seconds at a time, 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 cylinder relief should be 2800 PSI +/- 150 PSI. The hydraulic flow should be set between 4 and 7 GPM. To increase or decrease pressure or flow, follow the instructions in your tractor manual.

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

If you need assistance, contact your local Hardee dealer.

Hydraulic Oil Cooler (Air-Cooled)

1. The unit should be inspected regularly for corrosion and dirty or clogged heat transfer surface. Dirt and dust can be removed by washing, brushing or blowing out with compressed air. Greasy surfaces can be brushed or sprayed with a non-flammable degreasing fluid that is safe for use on aluminum. Follow with a hot water rinse and dry thoroughly.

2. Once a year, or as required by the application, piping should be disconnected and a degreasing agent circulated through the unit to remove sludge from turbulators and internal surfaces to return the unit to full capacity.

3. DC motors are not serviceable and must be replaced. Replacement fan/motor assemblies are available from your dealer.

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	Tractor Control Valve Not Functioning	Examine Bulkhead Connection to Mower;
		Repair Valve
Head will not Swing	Improper Tractor Valve Setting Too Low or Too High	Adjust Tractor's Valves To Specifications 2950 PSI Max. and 4 to 7 GPM flow.
	Breakaway Valve Open	Check Setting(1100 PSI) Replace
	Cylinder Leakage	Repair / Replace Cylinders
Head Drifts Back When In Operation	Improper Tractor Valve Setting	Adjust Tractor's Valves To Specifications 2950 PSI Max. and 4 to 7 GPM flow
	Cylinder Leakage	Repair / Replace Cylinders
Boom Drifts Down	Improper Tractor Valve Setting	Adjust Tractor's Valves To Specifications 2950 PSI Max. and 4 to 7 GPM flow
	Cylinder Leakage	Repair / Replace Cylinders
Leaking Motor	Motor Seal Blown	Repair / Replace Seal And Check Filter For Blockage (Repair / Replace Filter)
Blades Lose Speed In Cutting	Improper Relief Valve Setting	Check Relief Valve Setting (Refer To Pages 15 & 16)
		Repair / Replace Relief Valve
	Poppet Valve in Motor	Check/Replace Poppet Valves in Motor
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 10373 Or Comparable Oil With Proper Viscosity
	Pressure Setting on Relief Valve Too Low	Check Relief Valve Setting (Refer to Pages 15 & 16)
Motor Whines	Worn or Damaged Motor	Repair / Replace Motor
	Improper Oil In System	Replace Oil
		Requires Hardee Oil Part NO 10373 Or Comparable Oil With Proper Viscosity
	Pressure Setting On Relief Valve Too Low	Check Relief Valve Setting (Refer To Pages 15 & 16)
Motor Seal Continually Blows Out	Internal Poppet Valve Damaged	Replace Poppet Valves
Unit Vibrates Severely	Broken Blade	Replace Blades, Blade Bolts And Nuts (Refer To Page 15)
	Blade Holder Loose	Repair / Replace Blade Holder (Refer To Page 15)
	Loose Output Shaft	Repair / Replace Shaft's Bearings In Cutter 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 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. 10373)
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 14)
	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 14)
	Defective Lube Fittings	Repair / Replace Fittings
Boom Operates Erratically	Speed Is Too Fast	Call HARDEE Dealer
	Defective Tractor Control Valve	Follow Tractor's Manual Instructions
	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	CM2160
Approximate Weight (lbs.)	5,250# - Ready To Mow
Blade Tip Speed (ft/min)	800 PTO RPM – 15,200 ft/min
	1000 PTO RPM – 19,000 ft/min (Max.)
Blades	5/8 x 12” Free Swinging
Cutting Capacity / Suggested Usage	Grass, Heavy Brush Up To 6” In Diameter
Cutting Width	60”
Deck Height	12”
Deck Thickness	7 Gauge
Driveline	Category 4/5
Driveline Protection	Hydraulic Relief Valve
Hitch	Standard Hitch, Category 3 Quick Hitch
Motor	Hydraulic Vane Motor
Overall Length (MAX.)	Approximately 316”
Overall Width	Approximately 86”
Transport Width	92”
PTO Operating Speed	750 to 1000 RPM
Pump	Hydraulic Spring Loaded Vane Pump
Rubber Shielding	Standard – Front & Rear
Skids	Standard – Weld On
Tractor Weight Required	15,500 lbs. And Up
Tractor HP Required	150 And Up
Hydraulic Oil System Capacity	55 Gallons (Hardee 403 Oil Type)
Controls	Tractor-Controlled 2950 PSI Max. and 4 to 7 GPM flow
Allowable System Working Pressure	2950 PSI
Hydraulic Filtration	Replaceable 100 Micron Mesh Strainer and Spin on Filter (10 micron)
Hydraulic Oil Cooler With DC Fan Assembly	Heat Rejection: 40,000 BTU/HR @ 100 F – ETD (Entering Temperature Difference) with 25 GPM Oil Flow

Item	Part Number	Qty.	Description
1	10002	2	Hex Bolt, 1/4"-20 X 1" Gr.5 Plated
2	10003	27	HEX BOLT (1/4" X 1-1/2" GR. 5 PLATED)
3	10032	9	Hex Bolt 3/8 x 1-1/2 gr.5 plated
4	10034	1	Hex Bolt 3/8" x 2-1/2" gr.5 plated
5	10035	2	Hex Bolt 3/8" x 3" gr.5 plated
6	10071	4	Hex Bolt 1/2 x 1 gr.5 plated
7	10074	4	Hex Bolt 1/2 x 2-1/2 gr.5 plated
8	10092	2	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	10154	5	Lock Nut 5/16"-18 Plated
12	10166	4	Lock Nut 5/8"-11 plated
13	10168	4	3/4"-10 Locknut (Gr.5 Plated)
14	10175	8	3/8"-16 Locknut (Gr.5 Plated)
15	10176	4	1/2" Locknut (Gr.5 Plated)
16	10181	1	Lockwasher 5/16" plated
17	10183	4	Lockwasher 7/16 plated
18	10186	4	Lockwasher 3/4" Plated
19	10200	2	1/4" Plated Flatwasher
20	10202	23	3/8" Flatwasher (Plated)
21	10206	8	Flatwasher 3/4 plated
22	10207	10	Flatwasher, 1" plated
23	10252	2	Cotter Pin 3/16" X 2" Plated
24	10335	1	Hardee Red Paint - (Not Shown)
25	10336	1	Gear Oil [85W-140] - (Not Shown)
26	10339	2	Pop Rivet
27	10346	2	3 pt. Snap Pin (Lynch Pin)
28	10368	1	1-1/4" Gate Valve
29	10373	1	Hydraulic Oil
30	10387	1	O-ring
31	10390	4	Clip Pin (1/8 x 2)
32	10393	2	Universal Clip Pin
33	10501	1	FLOW EZY BREATHER
34	10646	1	Grease
35	10872	2	Pressure Flange SET
36	11005	1	Decal, Warning - Thrown Objects
37	11010	3	Large Hardee Logo Decal
38	11032	1	Small Hardee Logo Decal
39	11505	3	8-M-ORB X 8-M-JIC 90 DEG.ELBOW
40	11506	6	7/8" Hex Locknut
41	11508	6	Lock Washer, 7/8"
42	11675	1	Return Filter Assembly
43	11727	1	Serial Number Plate
44	11775	1	Hydraulic 540RPM Pump
45	11848	1	O-Ring
46	11850	1	Web Site Decal
47	11860	10	TIE STRAP, (14" LG.) (100/PK)
48	13535	4	STAINLESS STEEL CLAMP, 1-1/2" TO 1-3/4"
49	13563	1	1-1/4"-M-NPT X 1-1/2" Metal Hose Barb
50	13632	1	1/4" NPT Metal Cap
51	13697	1	1-1/4" NPT Female Threaded Elbow
52	13758	1	20-M-NPT X 16-F-NPT Reducer
53	13778	1	1-1/4" X 3-1/2" Long NPT Nipple
54	13974	1	16-M-JIC X 16-M-NPT 90 Deg. Elbow
55	13981	2	8-M-ORB X 8-M-JIC Straight
56	15251	6	1" Hose Clamp Half
57	15255	3	Hose Clamp Cover Plate
58	15256	4	Hex Bolt (1/4" X 2-3/8" Gr. 5 Plated)
59	15293	7	Cover Plate - Twin, Group 2
60	15338	1	Danger Decal, Exposed Blades
61	15461	8	CAP 37 Deg. Flare #8 (1/2")
62	15466	1	Tubing Insert, 3-1/2" Sqr. X 11
63	15845	1	Hydraulic Decal Kit
64	15845-15	1	DANGER DECAL (KIT 15845)
65	15845-16	1	DANGER DECAL (KIT 15845)
66	15845-9	1	WARNING DECAL (KIT 15845)
67	15852	2	Red Reflector Decal
68	15853	2	Yellow Reflector Decal
69	15854	1	Manual Holder
70	15860	2	U-Nut, 1/4"-20
71	15899	2	Tubing Insert, 4" Sqr. X 11
72	15968	1	Cotter Pin 1/4" x 3"
73	16041	2	PIN, Bent, (1/2"Dia. X 8" LG.)
74	16042	1	Sight Gauge 10"
75	16060	1	HYDRAULIC MOTOR
76	16075	1	O'RING, 1-1/4" SAE
77	16077	1	Straight Fitting - 1"
78	16082	1	Swivel Nut Elbow - 1/2" 90 Deg.
79	16084	3	Swivel Nut Run Tee - 37 Deg. Flare
80	16138	2	Lock Nut 7/16"-14 NC with Nylon Insert
81	16160	1	HOUSING, Hydraulic Motor, MDH-100
82	16174	2	HEX LOCKNUT, NYLON INSERT, 1-1/2"- 6NC
83	16179	2	SPRING LOCKWASHER, 1-1/2" DIA
84	16209	1	Hex Slotted Nut - 1-3/4"-12UN
85	16273	1	HEX LOCKNUT, NYLON INSERT, 1-1/4"
86	16335	1	Hour Meter - not for resale
87	16340	3	Decal, Model Number For CM2160
88	16345	1	HYD CYLINDER, 3 X 18" WELDED, CM2160 SWING
89	16346	1	HYD CYL., 4 X 24" Welded
90	16347	1	HYD CYLINDER, Custom, 4 x 24"
91	16349	1	HYD CYLINDER 3"X18", CM2160 DECK
92	16353	4	16 M-JIC - 12 MORB Elbow
93	16354	1	Fitting, 16-M-ORB/16-F-JIC0
94	16391	3	Clamp, Stainless Steel, 3"-5"
95	16395	8	BULKHEAD 1/2" M-JIC w/LOCKNUT
96	16396	1	CROSS 1/2" M-JIC
97	16397	1	RUN TEE 1/2" M-JIC/ M-ORB/ M-JIC
98	16398	1	ADAPTER 1/2" M-ORB/ F-JIC
99	16399	1	Spiral Guard for 1/2" Hose
100	16400	1	DECAL - CM2160 HYD LINE CONNECTIONS
101	16403	1	Relief Valve Assemlby @ 1100psi
102	16404	1	CHECK VALVE- INLINE 5 PSI
103	16406	14	1/2" Special Hose Clamp CUSHION (SET OF 2)
104	16409	16	1" Special Hose Clamp CUSHION (SET OF 2)
105	16410	8	Cover Plate
106	16414	3	Hex Locknut 7/8"-9 Thrd Sz,
107	16415	3	Flat Washer - 7/8" Screw Size, 1-3/4" OD
108	16417	1	Hex Nut - 3/4"-10 Thrd Sz, 1-1/16" W, 7/8" H
109	16418	1	Flat Washer - 3/4" Screw Size, 1-15/32" OD
110	16419	3	BOLT-HR2160 1" X 11" LG.
111	16420	4	Thin Hex Nut 1"-8 Thread Size, 1-1/2" width, 35/64" Height
112	16421	4	Hex Locknut - Grade 8 Steel Nylon-Insert
113	16422	1	BOLT-HR2160 1" X 8" LG.
114	16424	2	BOLT-HR2160 1-1/2" X 12-1/2"" LG.
115	16431	1	WIRING HARNESS, Oil Cooler
116	16432	1	90 DEG 1/2" M-JIC/M-ORB (PAINTED RED)
117	16433	3	90 Deg. Fitting w/ .062 Restriction (Painted Black)
118	16568	2	BOTTOM HITCH PIN FOR HYD, CAT 3
119	16617	1	OIL COOLER
120	16618	1	TEMPERATURE SWITCH
121	16682	1	Relief Valve Assy. - 2700 PSI - Pump Mounted
122	16683	1	Relief Valve 2700 PSI - w/TAMPER PROOF CAP
123	16685	4	Screw, 7/16-14 X 2-1/4 long - Zinc Plated
124	16686	4	Lock Washer, Zinc Plated 7/16 High Collar
125	16697	1	ORB Hollow Hex Plug
126	20031	1	Access Cover
127	22710	1	Short Belting Flat
128	22833	1	Fluid Connector
129	23130	1	Pivot Sleeve
130	23131	1	End Cap Weldment
131	23160	2	Stand Weldment, 17-7/8" Tall
132	23345	1	Head Mounting Bracket Weldment
133	25629	1	Brace Support 3-1/2" x 3-1/2" x 66" LG.
134	25660	1	HR2360 BELTING EXTENSION KIT
135	25662	1	HR2360 / CM2160 Belting Kit
136	25664	1	HR2360 Front Corner Belting
137	25670	1	Weldment, Oil Tank - HR2360
138	25680	1	WELDMENT, WEIGHT BOX,
139	25686	2	WELDMENT, Stand Tube, HR2360
140	25700	1	WELDMENT, Deck, HR2360 HD
141	25724	2	WELDMENT, Cylinder Pin
142	25857	1	WELDMENT-OIL COOLER SUPPORT
143	26751	1	ASSEMBLY - HITCH FRAME - CM2160
144	26753	1	WELDMENT - 1ST STAGE - CM2160
145	26754	1	2ND STAGE BOOM WELDMENT
146	26756	1	BREAK-AWAY WELDMENT W/ ROD TUBE
147	26757	1	WELDMENT- CYLINDER MOUNT- CM2160
148	26760	1	WELDMENT- LINKAGE- BOOM W/STOPS- CM2160
149	26761	1	PLATE- CYL. MOUNT
150	26762	1	BOOM TO DECK BRACKET WELDMENT
151	26763	1	ACCUMULATOR-CHARGED TO 1300 PSI
152	26764	1	BOOM TO DECK BRACKET WELDMENT
153	26765	1	Blade Holder Assembly W/Blades - Square Holes
154	26776	1	CLAMP- ACCUMULATOR
155	26788	1	Spacer (1" SCH 40 PIPE X 2-3/8")
156	26799	1	Spacer (1" SCH 40 PIPE X 1-3/8")
157	26843	1	PIN- FIRST STAGE
158	26845	1	PIN- 2nd STAGE CYL.- ROD END
159	26846	2	WELDMENT- 2nd STAGE CYL.- ROD END
160	26848	1	WELDMENT- PIN- DECK CYL.- ROD END
161	26850	1	BOLT- BREAK-AWAY
162	26855	1	WELDMENT - FAN GUARD FOR OIL COOLER

DWG. NO.	26750	REV.	F

REV	CHANGE	BY	DATE	ECN
A	26765 Replaces 26758 (Blade Holder)	K.H.N.	3/15/11	1562
-	The revison letter of this drawing has been increased to match that of hydraulic schematics.	T.B.B.	10/20/14	----
D	16682 will Replace 10375 & 16435	T.B.B.	10/20/14	1578
E	Oil Cooler Support Backet Added to drawing (Wasn't listed/shown)	T.B.B.	12/31/14	1591
F	Stand Weldment Replaced (23160 was 23038)	T.B.B.	1/15/16	1620

Section 8

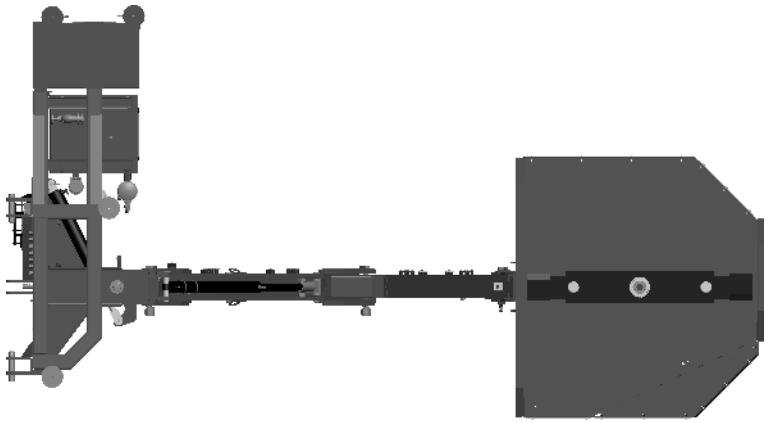
Note:

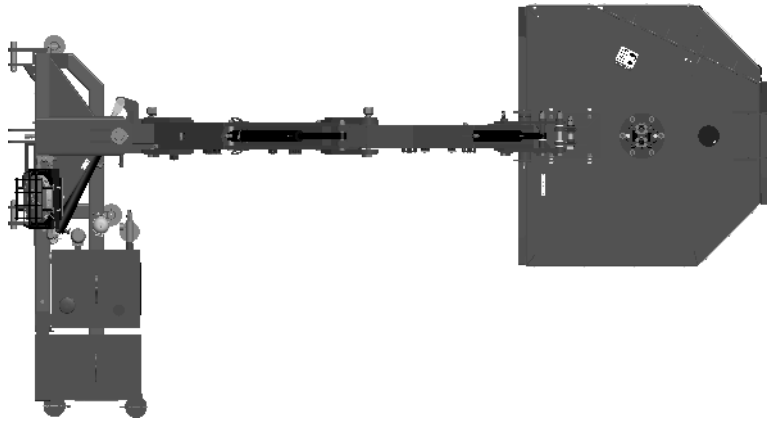
This list of components is strictly to be viewed as a "BILL OF MATERIALS" of the "COMPLETE" mower. It is not related to any illustration.

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	C.K.N.	3/15/11	HARDEE BY EVH MFG. CO. LORIS S.C.
DRAWN BY	K.H.N.	3/15/11	
MATERIAL	R.M.N. N/A		DESCRIPTION: CM2160 Boom Mower, Complete
Manufactured By: EVH Mfg. Co., LLC			SHEET 1 of 10
DO NOT SCALE	B (DWG SIZE)	DWG. NO.	26750

DWG. NO.	26750		REV.	F
REV	CHANGE	BY	DATE	ECN
A	26765 Replaces 26758 (Blade Holder)	K.H.N.	3/15/11	1562
-	The revison letter of this drawing has been increased to match that of hydraulic schematics.	T.B.B.	10/20/14	----
D	16682 will Replace 10375 & 16435	T.B.B.	10/20/14	1578
E	Oil Cooler Support Backet Added to drawing (Wasn't listed/shown)	T.B.B.	12/31/14	1591
F	Stand Weldment Replaced (23160 was 23038)	T.B.B.	1/15/16	1620





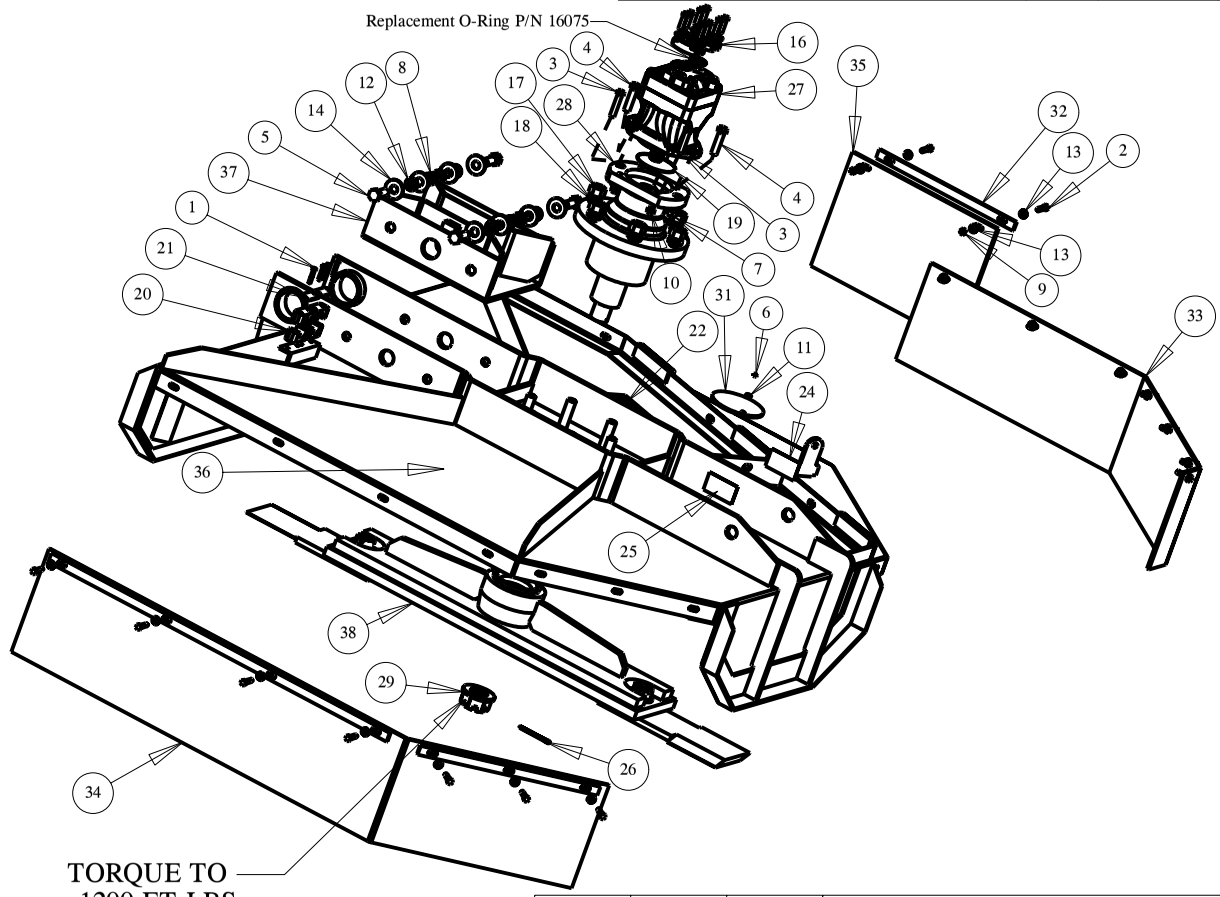
MODELED BY	C.K.N.	3/15/11	HARDEE BY EVH MFG. CO. LORIS S.C.
DRAWN BY	K.H.N.	3/15/11	
MATERIAL	R.M.N. N/A		DESCRIPTION: CM2160 Boom Mower, Complete
Manufactured By: EVH Mfg. Co., LLC			SHEET 2 of 10
DO NOT SCALE	A DWG SIZE	DWG. NO.	26750

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"

Item	Part #	Qty.	Description
1	10003	4	HEX BOLT (1/4" X 1-1/2" GR. 5 PLATED)
2	10032	2	Hex Bolt 3/8 x 1-1/2 gr.5 plated
3	10074	4	Hex Bolt 1/2 x 2-1/2 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	10154	1	Lock Nut 5/16"-18 Plated
7	10166	2	Lock Nut 5/8"-11 plated
8	10168	4	3/4"-10 Locknut (Gr.5 Plated)
9	10175	2	3/8"-16 Locknut (Gr.5 Plated)
10	10176	4	1/2" Locknut (Gr.5 Plated)
11	10181	1	Lockwasher 5/16" plated
12	10186	4	Lockwasher 3/4" Plated
13	10202	4	3/8" Flatwasher (Plated)
14	10206	8	Flatwasher 3/4 plated
15	10336	1	Gear Oil [85W-140] - (Not Shown)
16	10872	2	Pressure Flange SET
17	11506	6	7/8" Hex Locknut
18	11508	6	Lock Washer, 7/8"
19	11848	1	O-Ring
20	15251	4	1" Hose Clamp Half
21	15255	2	Hose Clamp Cover Plate
22	15338	1	Danger Decal, Exposed Blades
23	15845	1	Hydraulic Decal Kit
24	15852	1	Red Reflector Decal
25	15853	1	Yellow Reflector Decal
26	15968	1	Cotter Pin 1/4" x 3"
27	16060	1	HYDRAULIC MOTOR
28	16160	1	HOUSING, Hydraulic Motor, MDH-100
29	16209	1	Hex Slotted Nut - 1-3/4"-12UN
30	16421	1	Hex Locknut - Grade 8 Steel Nylon-Insert
31	20031	1	Access Cover
32	22710	1	Short Belting Flat
33	25660	1	HR2360 BELTING EXTENSION KIT
34	25662	1	HR2360 / CM2160 Belting Kit
35	25664	1	HR2360 Front Corner Belting
36	25700	1	WELDMENT, Deck, HR2360 HD
37	26757	1	WELDMENT- CYLINDER MOUNT- CM2160
38	26765	1	Blade Holder Assembly W/Blades - Square Holes

DWG. NO.	26750	REV.	F

REV	CHANGE	BY	DATE	ECN
A	26765 Replaces 26758 (Blade Holder)	K.H.N.	3/15/11	1562
-	The revison letter of this drawing has been increased to match that of hydraulic schematics.	T.B.B.	10/20/14	----
D	16682 will Replace 10375 & 16435	T.B.B.	10/20/14	1578
E	Oil Cooler Support Backet Added to drawing (Wasn't listed/shown)	T.B.B.	12/31/14	1591
F	Stand Weldment Replaced (23160 was 23038)	T.B.B.	1/15/16	1620



Belting, Hinge Gate & Motor, Blade Holder

MODELED BY	C.K.N.	3/15/11
DRAWN BY	K.H.N.	3/15/11

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

MATERIAL	R.M.N. N/A

DESCRIPTION: CM2160 Boom Mower, Complete

SHEET 3 of 10

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"

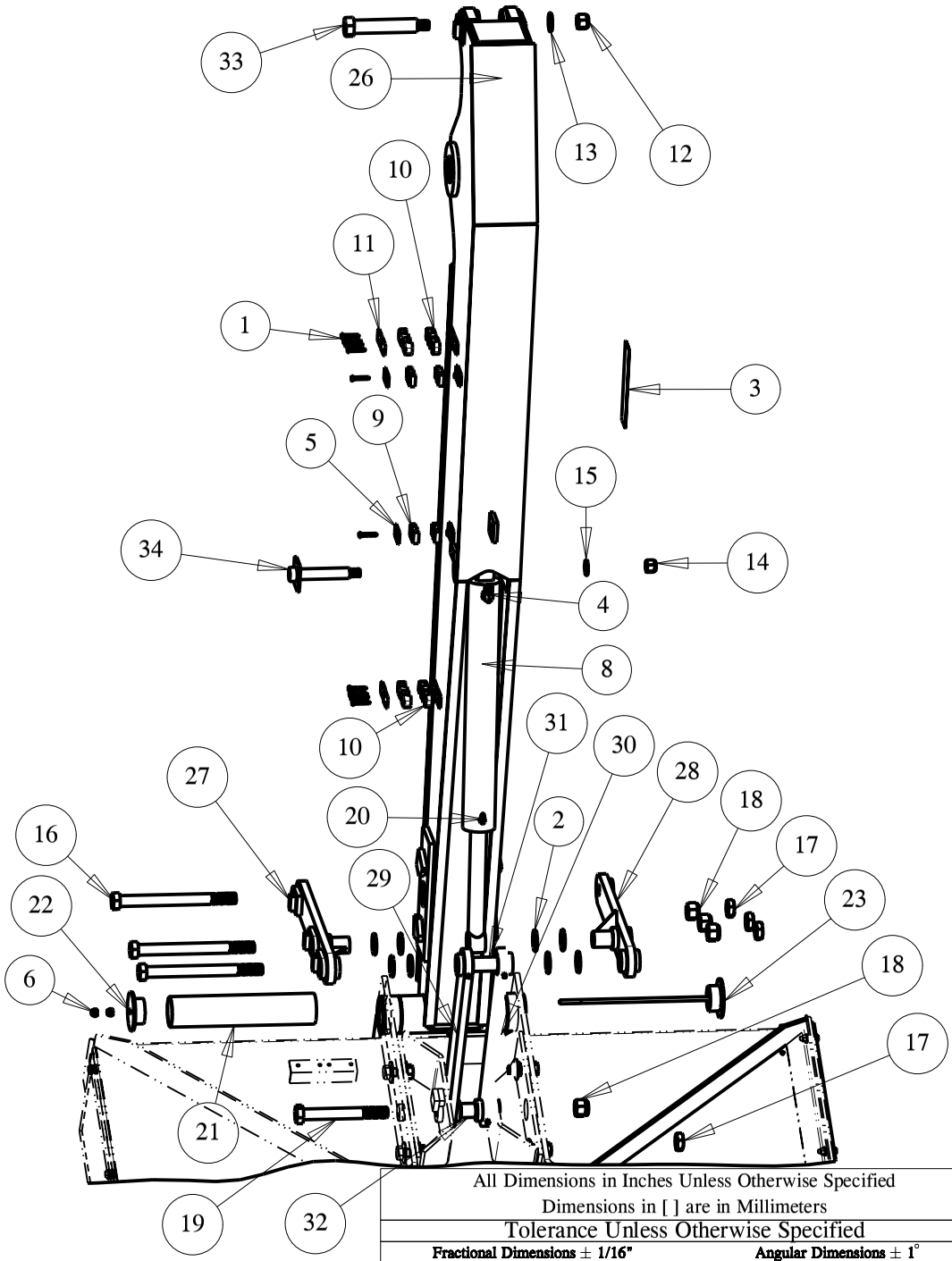
Manufactured By:
EVH Mfg. Co., LLC

DO NOT SCALE | A DWG SIZE | DWG. NO. 26750

DWG. NO.	26750	REV.	F

REV	CHANGE	BY	DATE	ECN
A	26765 Replaces 26758 (Blade Holder)	K.H.N.	3/15/11	1562
-	The revison letter of this drawing has been increased to match that of hydraulic schematics.	T.B.B.	10/20/14	----
D	16682 will Replace 10375 & 16435	T.B.B.	10/20/14	1578
E	Oil Cooler Support Backet Added to drawing (Wasn't listed/shown)	T.B.B.	12/31/14	1591
F	Stand Weldment Replaced (23160 was 23038)	T.B.B.	1/15/16	1620

2nd Stage Boom



Item	Part Number	Qty.	Description
1	10003	10	HEX BOLT (1/4" X 1-1/2" GR. 5 PLATED)
2	10207	10	Flatwasher, 1" plated
3	11032	1	Small Hardee Logo Decal
4	11505	1	8-M-ORB X 8-M-JIC 90 DEG.ELBOW
5	15293	2	Cover Plate - Twin, Group 2
6	16138	2	Lock Nut 7/16"-14 NC with Nylon Insert
7	16174	2	HEX LOCKNUT, NYLON INSERT, 1-1/2"- 6NC
8	16349	1	HYD CYLINDER 3"X18", CM2160 DECK
9	16406	4	1/2" Special Hose Clamp CUSHION (SET OF 2)
10	16409	8	1" Special Hose Clamp CUSHION (SET OF 2)
11	16410	4	Cover Plate
12	16414	1	Hex Locknut 7/8"-9 Thrd Sz,
13	16415	1	Flat Washer - 7/8" Screw Size, 1-3/4" OD
14	16417	1	Hex Nut - 3/4"-10 Thrd Sz, 1-1/16" W, 7/8" H
15	16418	1	Flat Washer - 3/4" Screw Size, 1-15/32" OD
16	16419	3	BOLT-HR2160 1" X 11" LG.
17	16420	4	Thin Hex Nut 1"-8 Thread Size, 1-1/2" width, 35/64" Height
18	16421	4	Hex Locknut - Grade 8 Steel Nylon-Insert
19	16422	1	BOLT-HR2160 1" X 8" LG.
20	16433	1	90 Deg. Fitting w/ .062 Restriction (Painted Black)
21	23130	1	Pivot Sleeve
22	23131	1	End Cap Weldment
23	23345	1	Head Mounting Bracket Weldment
24	25686	2	WELDMENT, Stand Tube, HR2360
25	26751	1	ASSEMBLY - HITCH FRAME - CM2160
26	26754	1	2ND STAGE BOOM WELDMENT
27	26760	1	WELDMENT- LINKAGE- BOOM W/STOPS- CM2160
28	26761	1	PLATE- CYL. MOUNT
29	26762	1	BOOM TO DECK BRACKET WELDMENT
30	26764	1	BOOM TO DECK BRACKET WELDMENT
31	26788	1	Spacer (1" SCH 40 PIPE X 2-3/8")
32	26799	1	Spacer (1" SCH 40 PIPE X 1-3/8")
33	26845	1	PIN- 2nd STAGE CYL.- ROD END
34	26848	1	WELDMENT- PIN- DECK CYL.- ROD END

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	C.K.N.	3/15/11
DRAWN BY	K.H.N.	3/15/11
MATERIAL	R.M.N.	N/A

Manufactured By:
EVH Mfg. Co., LLC

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

DESCRIPTION: CM2160 Boom Mower, Complete

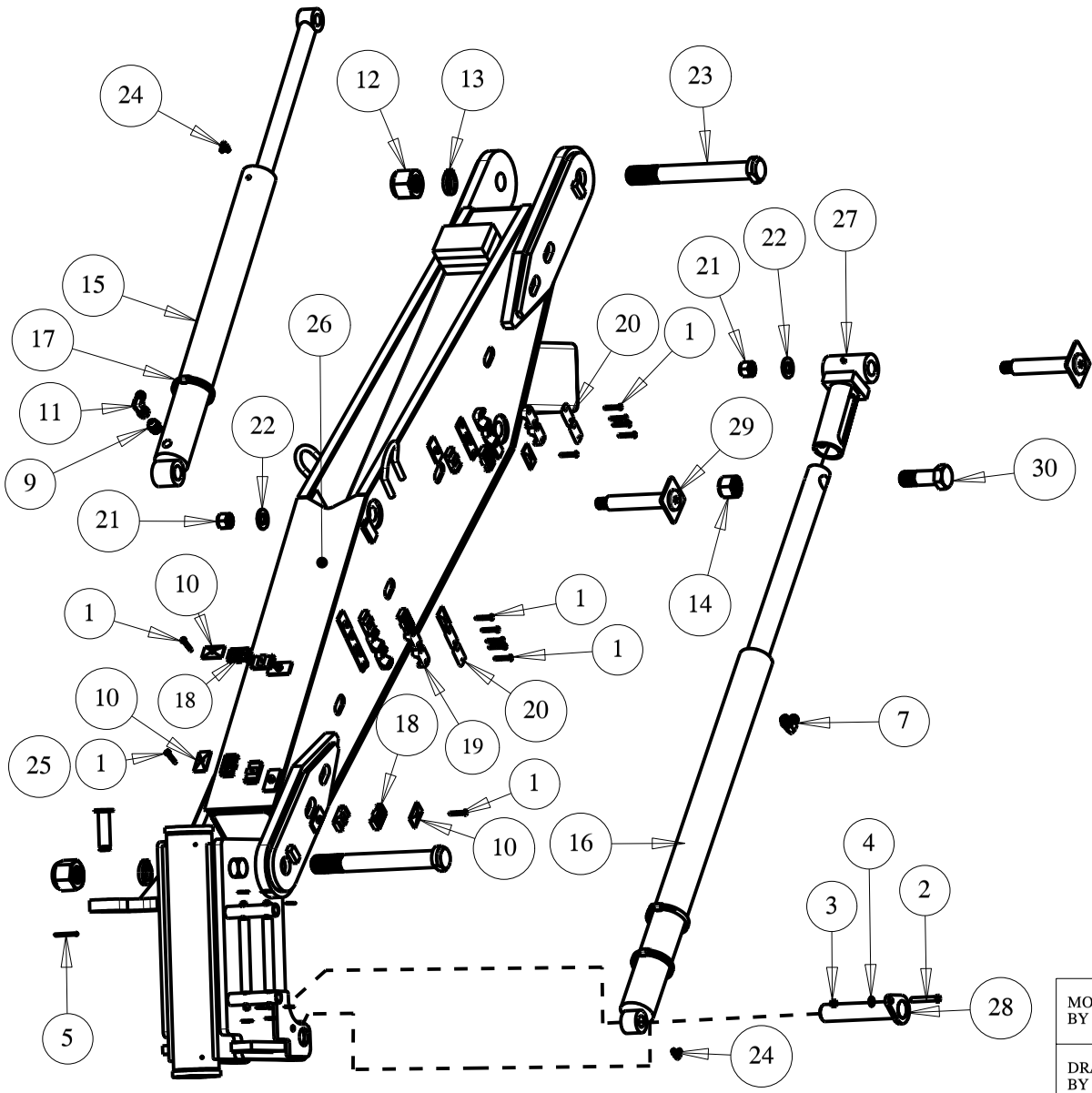
SHEET 4 of 10

DO NOT SCALE | A DWG SIZE | DWG. NO. 26750

DWG. NO.	26750	REV.	F

REV	CHANGE	BY	DATE	ECN
A	26765 Replaces 26758 (Blade Holder)	K.H.N.	3/15/11	1562
-	The revison letter of this drawing has been increased to match that of hydraulic schematics.	T.B.B.	10/20/14	----
D	16682 will Replace 10375 & 16435	T.B.B.	10/20/14	1578
E	Oil Cooler Support Backet Added to drawing (Wasn't listed/shown)	T.B.B.	12/31/14	1591
F	Stand Weldment Replaced (23160 was 23038)	T.B.B.	1/15/16	1620

1st Stage Boom



Item	Part Number	Qty.	Description
1	10003	13	HEX BOLT (1/4" X 1-1/2" GR. 5 PLATED)
2	10034	1	Hex Bolt 3/8" x 2-1/2" gr.5 plated
3	10175	1	3/8"-16 Locknut (Gr.5 Plated)
4	10202	1	3/8" Flatwasher (Plated)
5	10252	1	Cotter Pin 3/16" X 2" Plated
6	10335	1	Hardee Red Paint - (Not Shown)
7	11505	1	8-M-ORB X 8-M-JIC 90 DEG.ELBOW
8	11860	10	TIE STRAP, (14" LG.) (100/PK)
9	13981	1	8-M-ORB X 8-M-JIC Straight
10	15293	5	Cover Plate - Twin, Group 2
11	16082	1	Swivel Nut Elbow - 1/2" 90 Deg.
12	16174	2	HEX LOCKNUT, NYLON INSERT, 1-1/2"- 6NC
13	16179	2	SPRING LOCKWASHER, 1-1/2" DIA
14	16273	1	HEX LOCKNUT, NYLON INSERT, 1-1/4"
15	16346	1	HYD CYL., 4 X 24" Welded
16	16347	1	HYD CYLINDER, Custom, 4 x 24"
17	16391	3	Clamp, Stainless Steel, 3"-5"
18	16406	10	1/2" Special Hose Clamp CUSHION (SET OF 2)
19	16409	8	1" Special Hose Clamp CUSHION (SET OF 2)
20	16410	4	Cover Plate
21	16414	2	Hex Locknut 7/8"-9 Thrd Sz,
22	16415	2	Flat Washer - 7/8" Screw Size, 1-3/4" OD
23	16424	2	BOLT-HR2160 1-1/2" X 12-1/2"" LG.
24	16433	2	90 Deg. Fitting w/ .062 Restriction (Painted Black)
25	25724	1	WELDMENT, Cylinder Pin
26	26753	1	WELDMENT - 1ST STAGE - CM2160
27	26756	1	BREAK-AWAY WELDMENT W/ ROD TUBE
28	26843	1	PIN- FIRST STAGE
29	26846	2	WELDMENT- 2nd STAGE CYL.- ROD END
30	26850	1	BOLT- BREAK-AWAY

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	C.K.N.	3/15/11
DRAWN BY	K.H.N.	3/15/11
MATERIAL	R.M.N.	N/A

Manufactured By:
EVH Mfg. Co., LLC

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

DESCRIPTION | SHEET 5 of 10

CM2160 Boom Mower, Complete

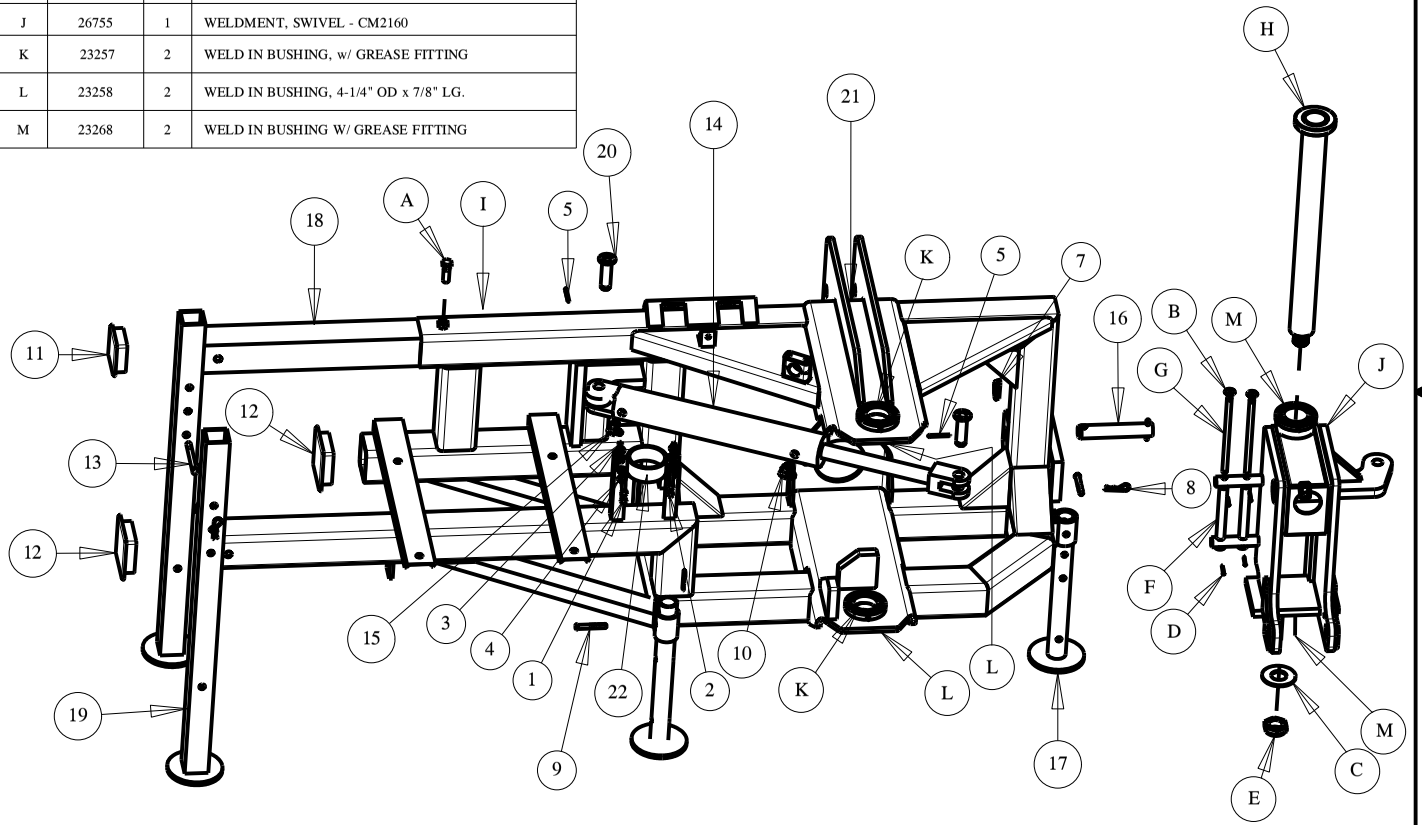
DO NOT SCALE | A DWG SIZE | DWG. NO. 26750

Item	Part Number	Qty.	Description
1	10032	2	Hex Bolt 3/8 x 1-1/2 gr.5 plated
2	10035	2	Hex Bolt 3/8" x 3" gr.5 plated
3	10154	4	Lock Nut 5/16"-18 Plated
4	10202	8	3/8" Flatwasher (Plated)
5	10252	2	Cotter Pin 3/16" X 2" Plated
6	10339	2	Pop Rivet
7	10346	2	3 pt. Snap Pin (Lynch Pin)
8	10390	4	Clip Pin (1/8 x 2)
9	10393	2	Universal Clip Pin
10	11505	1	8-M-ORB X 8-M-JIC 90 DEG.ELBOW
11	15466	1	Tubing Insert, 3-1/2" Sqr. X 11
12	15899	2	Tubing Insert, 4" Sqr. X 11
13	16041	2	PIN, Bent, (1/2"Dia. X 8" LG.)
14	16345	1	HYD CYLINDER, 3 X 18" WELDED, CM2160 SWING
15	16432	1	90 DEG 1/2" M-JIC/M-ORB (PAINTED RED)
16	16568	2	BOTTOM HITCH PIN FOR HYD, CAT 3
17	23160	2	Stand Weldment, 17-7/8" Tall
18	25629	1	Brace Support 3-1/2" x 3-1/2" x 66" LG.
19	25686	2	WELDMENT, Stand Tube, HR2360
20	25724	2	WELDMENT, Cylinder Pin
21	26751	1	ASSEMBLY - HITCH FRAME - CM2160
22	26776	1	CLAMP- ACCUMULATOR

Item	Part Number	Qty.	Description
A	10092	1	FLAT WASHER (1-1/2") USS Plain Zinc
B	10204	2	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	23272	2	HOSE BRACKET ROLLER
G	23273	2	Hose Bracket Rod
H	23284	1	WELDMENT, Swing arm shaft, LR50160/LR40160
I	26752	1	WELDMENT, Hitch Frame
J	26755	1	WELDMENT, SWIVEL - CM2160
K	23257	2	WELD IN BUSHING, w/ GREASE FITTING
L	23258	2	WELD IN BUSHING, 4-1/4" OD x 7/8" LG.
M	23268	2	WELD IN BUSHING W/ GREASE FITTING

DWG. NO.	26750	REV.	F

REV	CHANGE	BY	DATE	ECN
A	26765 Replaces 26758 (Blade Holder)	K.H.N.	3/15/11	1562
-	The revison letter of this drawing has been increased to match that of hydraulic schematics.	T.B.B.	10/20/14	----
D	16682 will Replace 10375 & 16435	T.B.B.	10/20/14	1578
E	Oil Cooler Support Backet Added to drawing (Wasn't listed/shown)	T.B.B.	12/31/14	1591
F	Stand Weldment Replaced (23160 was 23038)	T.B.B.	1/15/16	1620



Hitch Frame & Swivel

MODELED BY	C.K.N.	3/15/11
DRAWN BY	K.H.N.	3/15/11
MATERIAL	R.M.N.	N/A

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"

Manufactured By:
EVH Mfg. Co., LLC

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

DESCRIPTION | SHEET 6 of 10

CM2160 Boom Mower, Complete

DO NOT SCALE | A DWG SIZE | DWG. NO. 26750

Item	Part Number	Qty.	Description
1	10002	2	Hex Bolt, 1/4"-20 X 1" Gr.5 Plated
2	10032	7	Hex Bolt 3/8 x 1-1/2 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	10166	2	Lock Nut 5/8"-11 plated
6	10175	5	3/8"-16 Locknut (Gr.5 Plated)
7	10183	4	Lockwasher 7/16 plated
8	10200	2	1/4" Plated Flatwasher
9	10202	18	3/8" Flatwasher (Plated)
10	10335	1	Hardee Red Paint - (Not Shown)
11	10336	1	Gear Oil [85W-140] - (Not Shown)
12	10368	1	1-1/4" Gate Valve
13	10373	1	Hydraulic Oil
14	10387	1	O-ring
15	10501	1	FLOW EZY BREATHER
16	10646	1	Grease
17	11005	1	Decal, Warning - Thrown Objects
18	11010	3	Large Hardee Logo Decal
19	11675	1	Return Filter Assembly
20	11775	1	Hydraulic 540RPM Pump
21	11850	1	Web Site Decal
22	11860	10	TIE STRAP, (14" LG.) (100/PK)
23	13535	4	STAINLESS STEEL CLAMP, 1-1/2" TO 1-3/4"
24	13563	1	1-1/4"-M-NPT X 1-1/2" Metal Hose Barb
25	13632	1	1/4" NPT Metal Cap
26	13697	1	1-1/4" NPT Female Threaded Elbow
27	13758	1	20-M-NPT X 16-F-NPT Reducer
28	13778	1	1-1/4" X 3-1/2" Long NPT Nipple
29	13974	1	16-M-JIC X 16-M-NPT 90 Deg. Elbow
30	13981	1	8-M-ORB X 8-M-JIC Straight
31	15251	2	1" Hose Clamp Half
32	15255	1	Hose Clamp Cover Plate
33	15256	4	Hex Bolt (1/4" X 2-3/8" Gr. 5 Plated)
34	15461	8	CAP 37 Deg. Flare #8 (1/2")
35	15466	1	Tubing Insert, 3-1/2" Sqr. X 11
36	15845-15	1	DANGER DECAL (KIT 15845)
37	15845-16	1	DANGER DECAL (KIT 15845)
38	15845-9	1	WARNING DECAL (KIT 15845)
39	15852	1	Red Reflector Decal
40	15853	1	Yellow Reflector Decal
41	15854	1	Manual Holder
42	15860	2	U-Nut, 1/4"-20
43	15899	2	Tubing Insert, 4" Sqr. X 11
44	16042	1	Sight Gauge 10"
45	16075	1	O'RING, 1-1/4" SAE
46	16077	1	Straight Fitting - 1"
47	16084	3	Swivel Nut Run Tee - 37 Deg. Flare
48	16335	1	Hour Meter - not for resale
49	16340	3	Decal, Model Number For CM2160
50	16353	4	16 M-JIC - 12 MORB Elbow
51	16354	1	Fitting, 16-M-ORB/16-F-JIC0
52	16395	8	BULKHEAD 1/2" M-JIC w/LOCKNUT
53	16396	1	CROSS 1/2" M-JIC
54	16397	1	RUN TEE 1/2" M-JIC/ M-ORB/ M-JIC
55	16398	1	ADAPTER 1/2" M-ORB/ F-JIC
56	16399	1	Spiral Guard for 1/2" Hose
57	16400	1	DECAL - CM2160 HYD LINE CONNECTIONS
58	16403	1	Relief Valve Assemlby @ 1100psi
59	16404	1	CHECK VALVE- INLINE 5 PSI
60	16431	1	WIRING HARNESS, Oil Cooler
61	16617	1	OIL COOLER
62	16618	1	TEMPERATURE SWITCH
63	16682	1	Relief Valve Assy. - 2700 PSI - Pump Mounted
64	16683	1	Relief Valve 2700 PSI - w/TAMPER PROOF CAP
65	16685	4	Screw, 7/16-14 X 2-1/4 long - Zinc Plated
66	16686	4	Lock Washer, Zinc Plated 7/16 High Collar
67	16697	1	ORB Hollow Hex Plug
68	22833	1	Fluid Connector
69	23160	2	Stand Weldment, 17-7/8" Tall
70	25670	1	Weldment, Oil Tank - HR2360
71	25680	1	WELDMENT, WEIGHT BOX,
72	25857	1	WELDMENT-OIL COOLER SUPPORT
73	26751	1	ASSEMBLY - HITCH FRAME - CM2160
74	26763	1	ACCUMULATOR-CHARGED TO 1300 PSI
75	26855	1	WELDMENT - FAN GUARD FOR OIL COOLER

DWG. NO.	26750	REV.	F

REV	CHANGE	BY	DATE	ECN
A	26765 Replaces 26758 (Blade Holder)	K.H.N.	3/15/11	1562
-	The revison letter of this drawing has been increased to match that of hydraulic schematics.	T.B.B.	10/20/14	----
D	16682 will Replace 10375 & 16435	T.B.B.	10/20/14	1578
E	Oil Cooler Support Backet Added to drawing (Wasn't listed/shown)	T.B.B.	12/31/14	1591
F	Stand Weldment Replaced (23160 was 23038)	T.B.B.	1/15/16	1620

Hitch Frame & Components

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	C.K.N.	3/15/11
DRAWN BY	K.H.N.	3/15/11
MATERIAL	R.M.N.	N/A

Manufactured By:
EVH Mfg. Co., LLC

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

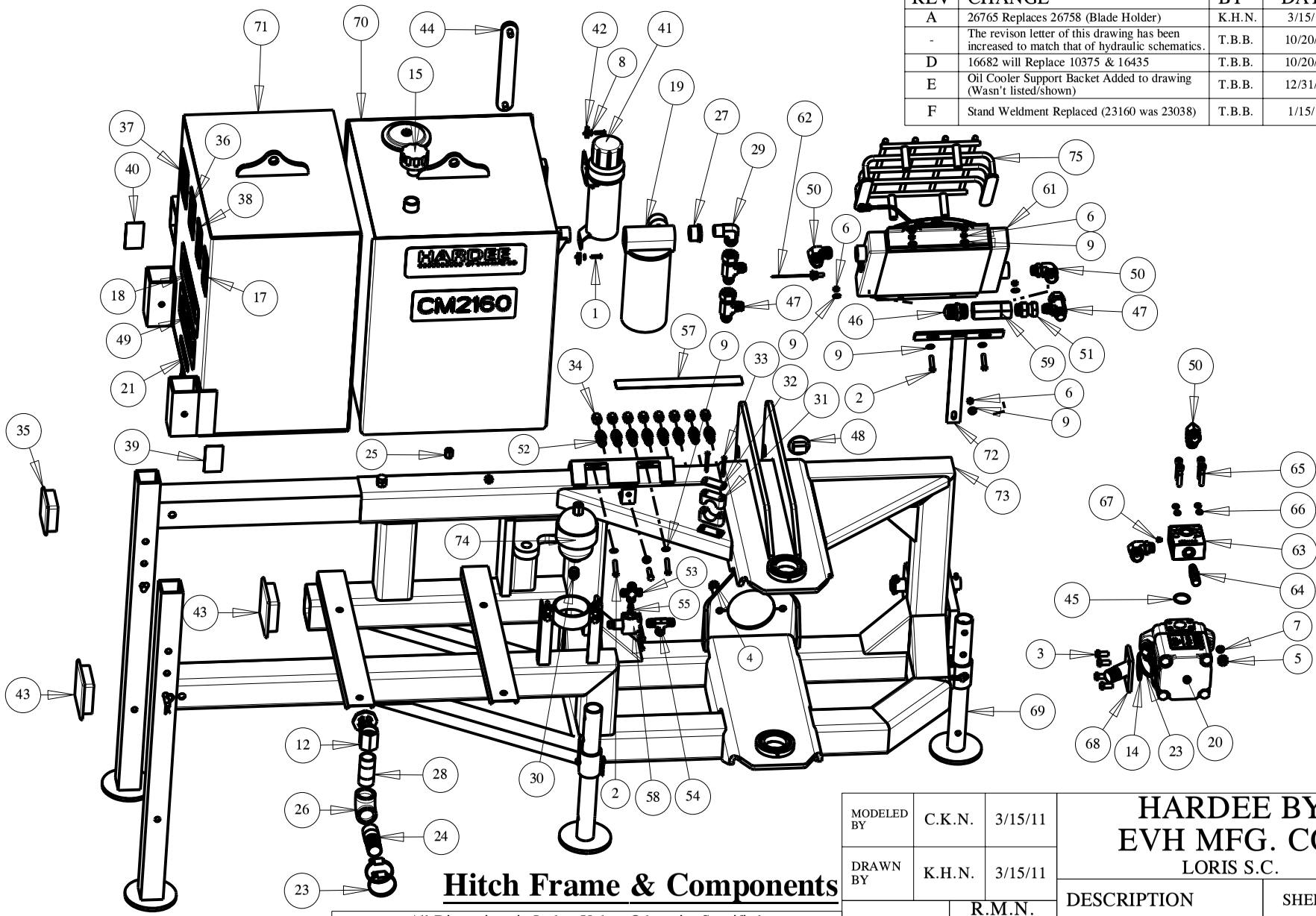
DESCRIPTION | SHEET 7 of 10

CM2160 Boom Mower, Complete

DO NOT SCALE | A DWG SIZE | DWG. NO. 26750

DWG. NO.	26750	REV.	F

REV	CHANGE	BY	DATE	ECN
A	26765 Replaces 26758 (Blade Holder)	K.H.N.	3/15/11	1562
-	The revison letter of this drawing has been increased to match that of hydraulic schematics.	T.B.B.	10/20/14	----
D	16682 will Replace 10375 & 16435	T.B.B.	10/20/14	1578
E	Oil Cooler Support Backet Added to drawing (Wasn't listed/shown)	T.B.B.	12/31/14	1591
F	Stand Weldment Replaced (23160 was 23038)	T.B.B.	1/15/16	1620



Hitch Frame & Components

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	C.K.N.	3/15/11
DRAWN BY	K.H.N.	3/15/11
MATERIAL	R.M.N.	N/A

Manufactured By:
EVH Mfg. Co., LLC

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

DESCRIPTION | SHEET 8 of 10

CM2160 Boom Mower, Complete

DO NOT SCALE | A DWG SIZE | DWG. NO. 26750

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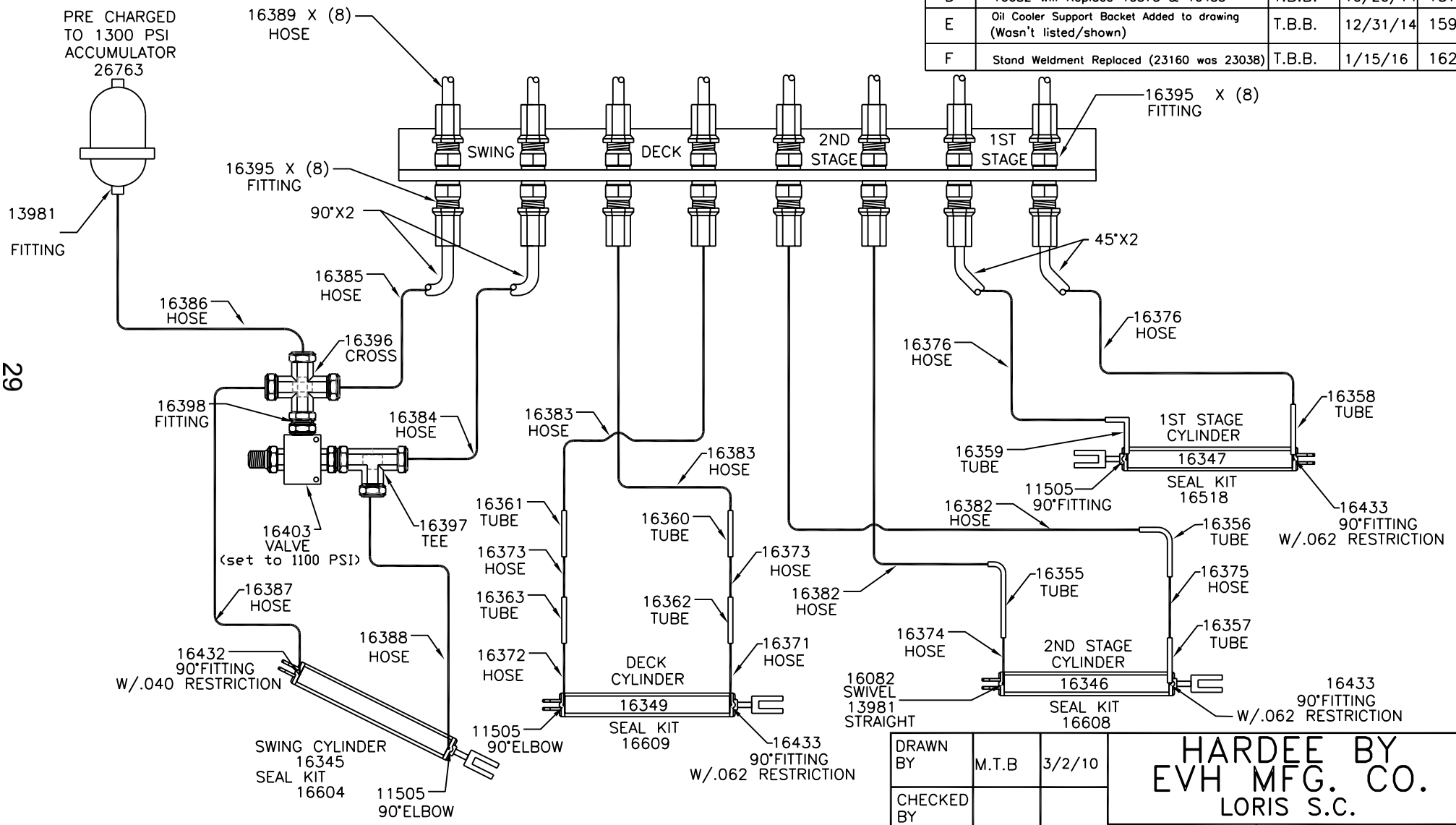
DWG. NO. 26750			REV. F	
REV	CHANGE	BY	DATE	ECN
–	INITIAL RELEASE	M.T.B	3/5/10	---
A	16594 WAS 16349 / 16595 WAS 16346	C.K.N.	8/24/12	1509
B	16617 WAS 16344 / 16618 WAS 16405	C.K.N.	11/21/12	1525
C	16349 WAS 16594 / 16346 WAS 16595	C.K.N.	02/14/13	1527
D	16682 will Replace 10375 & 16435	T.B.B.	10/20/14	1578
E	Oil Cooler Support Bracket Added to drawing (Wasn't listed/shown)	T.B.B.	12/31/14	1591
F	Stand Weldment Replaced (23160 was 23038)	T.B.B.	1/15/16	1620

CYLINDER HYDRAULICS

TRACTOR CYLINDER SETTINGS
2950 PSI MAX
4 TO 7 GPM FLOW



29

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	M.T.B	3/2/10
CHECKED BY		

MATERIAL N/A R.M.N. N/A

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

APPLICATION	OLD PART #
CM2160	--

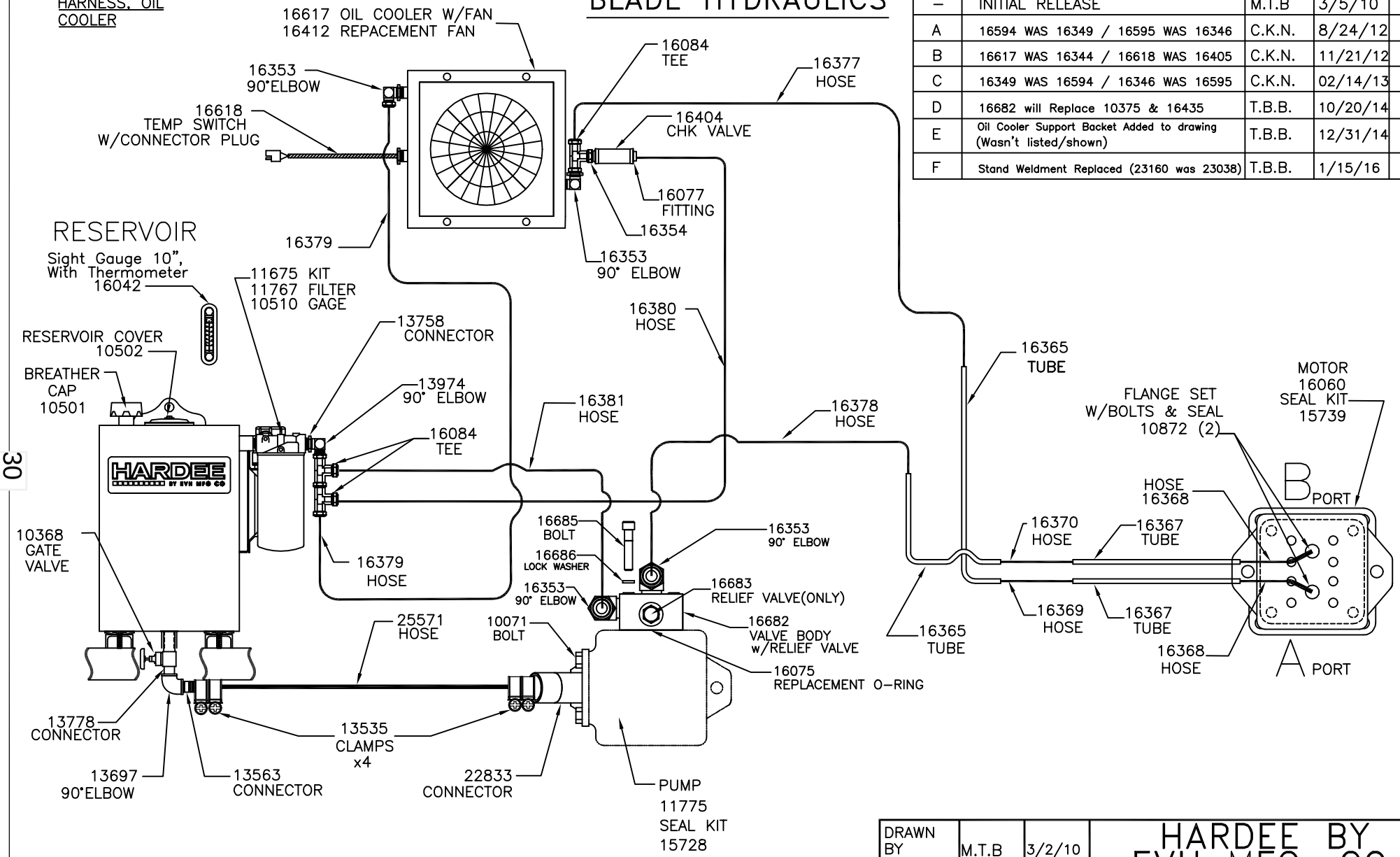
DESCRIPTION
HYDRAULIC SCHEMATICS FOR CM2160

DO NOT SCALE	A DWG SIZE	DWG. NO. SHT 9 OF 10 26750

DWG. NO. 26750			REV. F	
REV	CHANGE	BY	DATE	ECN
–	INITIAL RELEASE	M.T.B	3/5/10	---
A	16594 WAS 16349 / 16595 WAS 16346	C.K.N.	8/24/12	1509
B	16617 WAS 16344 / 16618 WAS 16405	C.K.N.	11/21/12	1525
C	16349 WAS 16594 / 16346 WAS 16595	C.K.N.	02/14/13	1527
D	16682 will Replace 10375 & 16435	T.B.B.	10/20/14	1578
E	Oil Cooler Support Backet Added to drawing (Wasn't listed/shown)	T.B.B.	12/31/14	1591
F	Stand Weldment Replaced (23160 was 23038)	T.B.B.	1/15/16	1620

NOT SHOWN
16431– WIRING HARNESS, OIL COOLER

BLADE HYDRAULICS



DRAWN BY	M.T.B	3/2/10	HARDEE BY EVH MFG. CO. LORIS S.C.
CHECKED BY			
MATERIAL	R.M.N. N/A		N/A

APPLICATION	OLD PART #
CM2160	--

DESCRIPTION: HYDRAULIC SCHEMATICS FOR CM2160

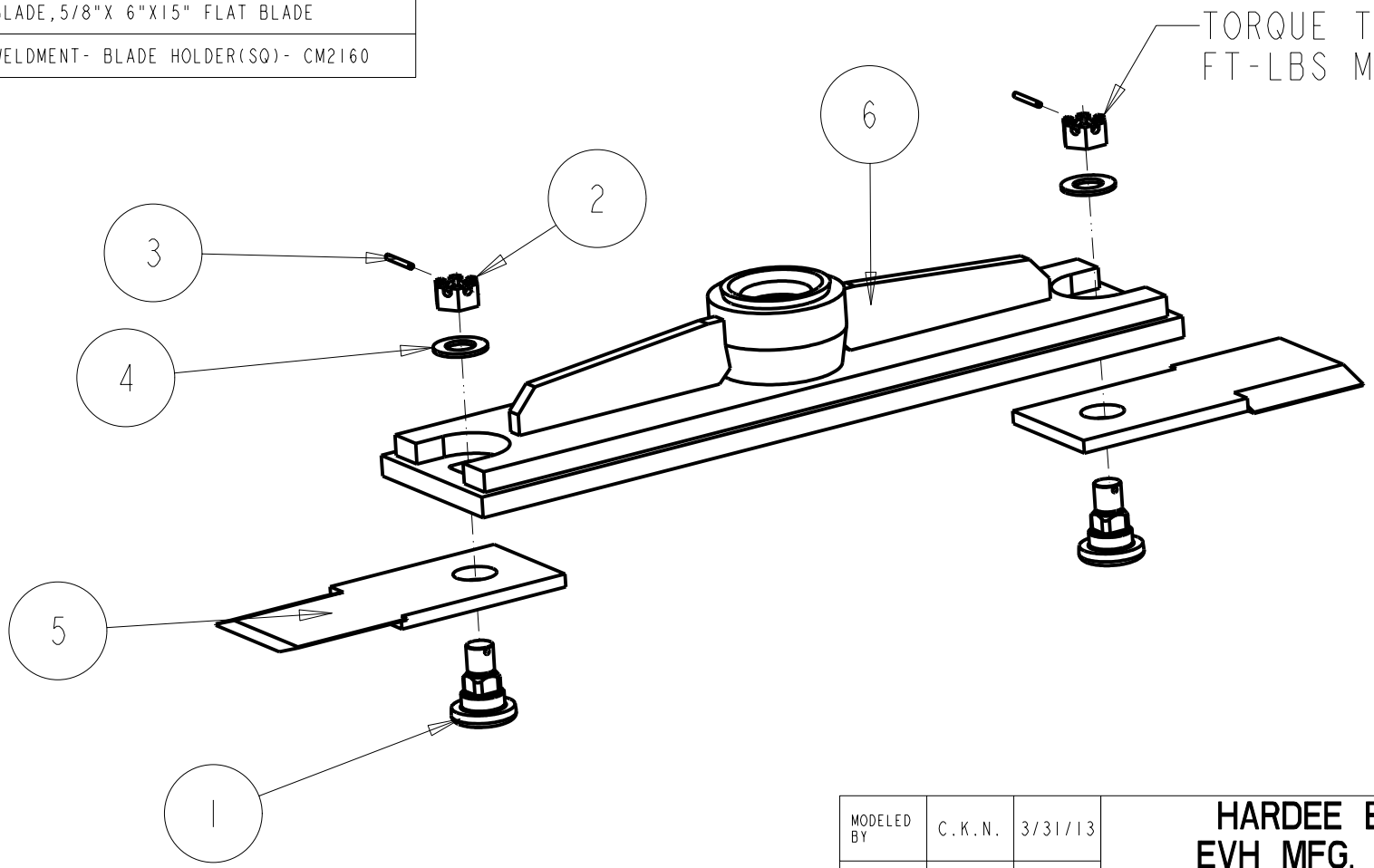
DO NOT SCALE	DWG SIZE	DWG. NO.
	A	SHT 10 OF 10 26750

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 $^{+0}_{-1/32}$

Item	Part Number	Qty.	Description
1	16671	2	Blade Bolt(sq) for 5/8" Thick Blades
2	16672	2	HEX NUT, Slotted, 1-1/4"-12
3	16673	2	1/4"-Coiled Spring Pin-HD
4	16674	2	1 1/4", Flat Washer, Thur-Hardend High Strength, SAE , Yellow Zinc
5	16675	2	BLADE,5/8"X 6"X15" FLAT BLADE
6	26766	1	WELDMENT- BLADE HOLDER(SQ)- CM2160

DWG. NO.	26765		REV. 1R
REV	CHANGE	BY	DATE	ECN
1R	INITIAL RELEASE	C.K.N.	3/31/14	1562



MODELED BY	C.K.N.	3/31/13
DRAWN BY	C.K.N.	3/31/14
MATERIAL	R.M.N.	N/A

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"

Manufactured By:
EVH Mfg. Co., LLC

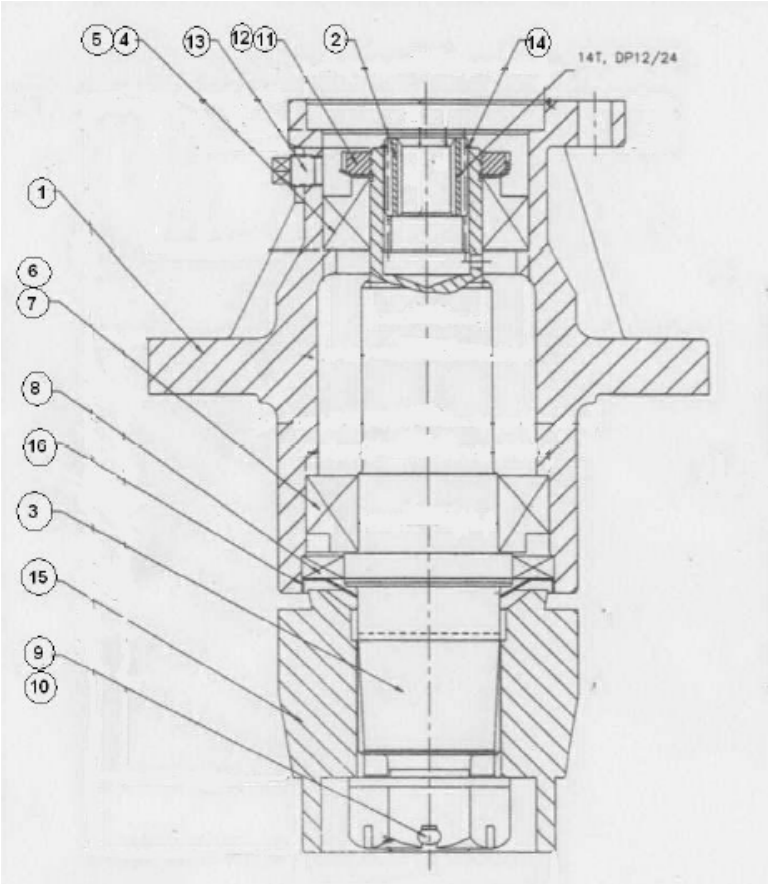
HARDEE BY
EVH MFG. CO.
LORIS S.C.

DESCRIPTION | SHEET 1 of 1

Blade Holder Assembly
W/Blades - Square Holes

DO NOT SCALE | A DWG SIZE | DWG. NO. 26765

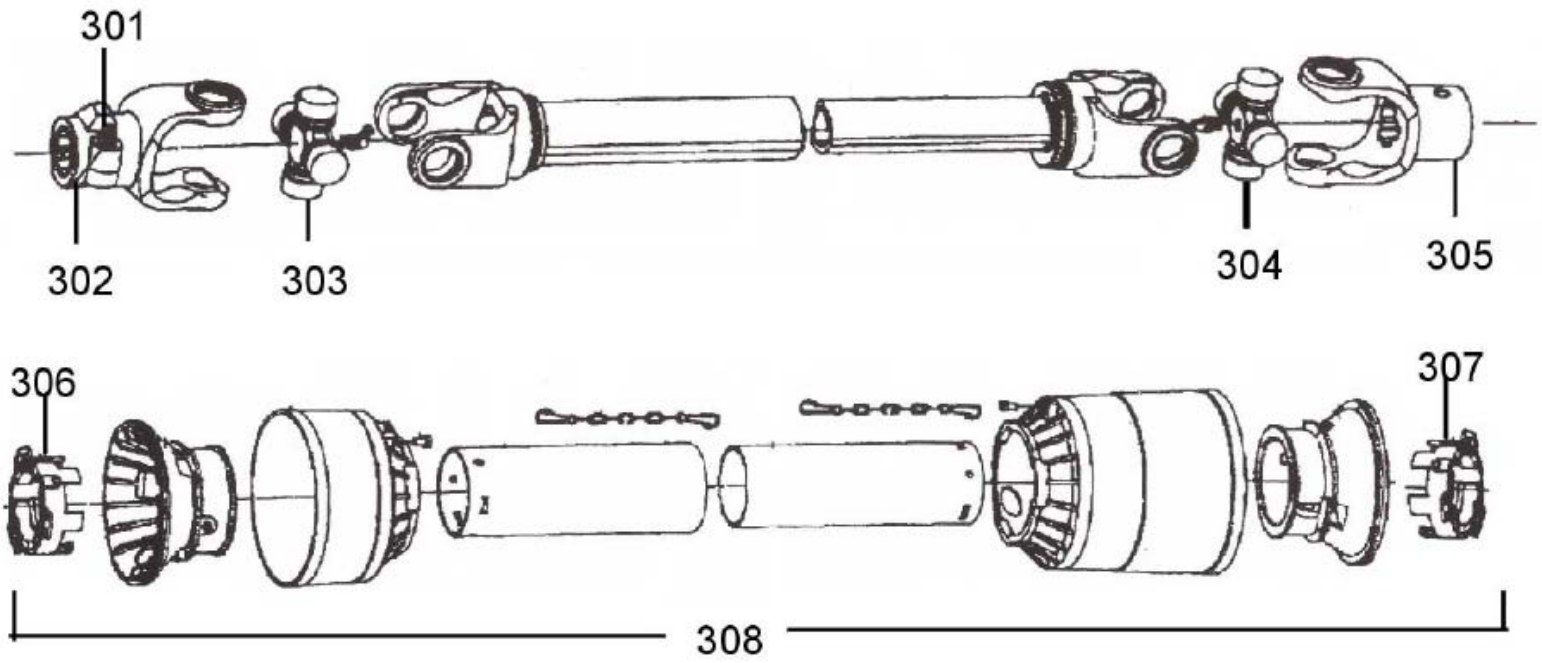
Hydraulic Motor Housing Assembly
(Part # 16160)



Item No.	Part No.	Quantity	Description
1	16203	1	Housing, MDH-100
2	16159	1	Spline Adapter
3	16204	1	Shaft
4	16207	1	Cup Bearing, 33212
5		1	Cone Bearing, 33212
6	16205	1	Cup Bearing, 33215
7		1	Cone Bearing, 33215
8	16197	1	Output Triple Lip Seal
9	15968	1	Cotter Pin 6.3mm x 60mm
10	16209	1	Hex Slotted Nut, 1-3/4” – 12UN
11	15966	1	Locknut, Bearing M60 x 2
12	15965	1	Lockwasher, M60
13	15784	2	3/8”-18NPT Pipe Plug
14	15970	1	Retaining Ring, External 45 mm
15	16190	1	Blade Hub
16	16210	1	Seal Protector

25792 Driveshaft

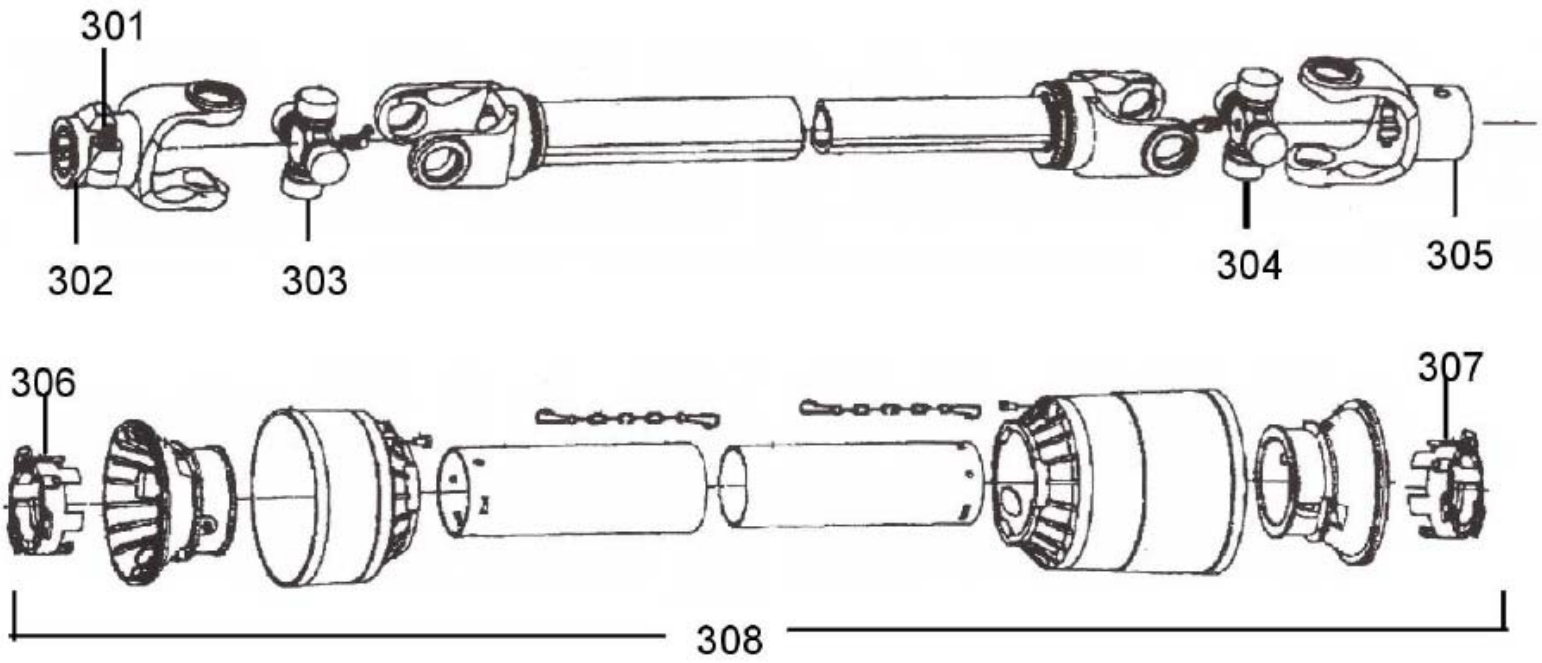
(1 3/4 - 20 spline Tractor end & 1 3/8 – 6 spline Imp. end)



Key #	Part No.	Description	Key #	Part No.	Description
301	16857	Push Pin complete	305	15658	Yoke, Imp end
302	11855	Yoke, Tractor end	306	15804	Shield bearing
303	15629	Cross Kit	307	15805	Shield Bearing
304	15629	Cross Kit	308	11448	Shield kit complete

25793 Driveshaft

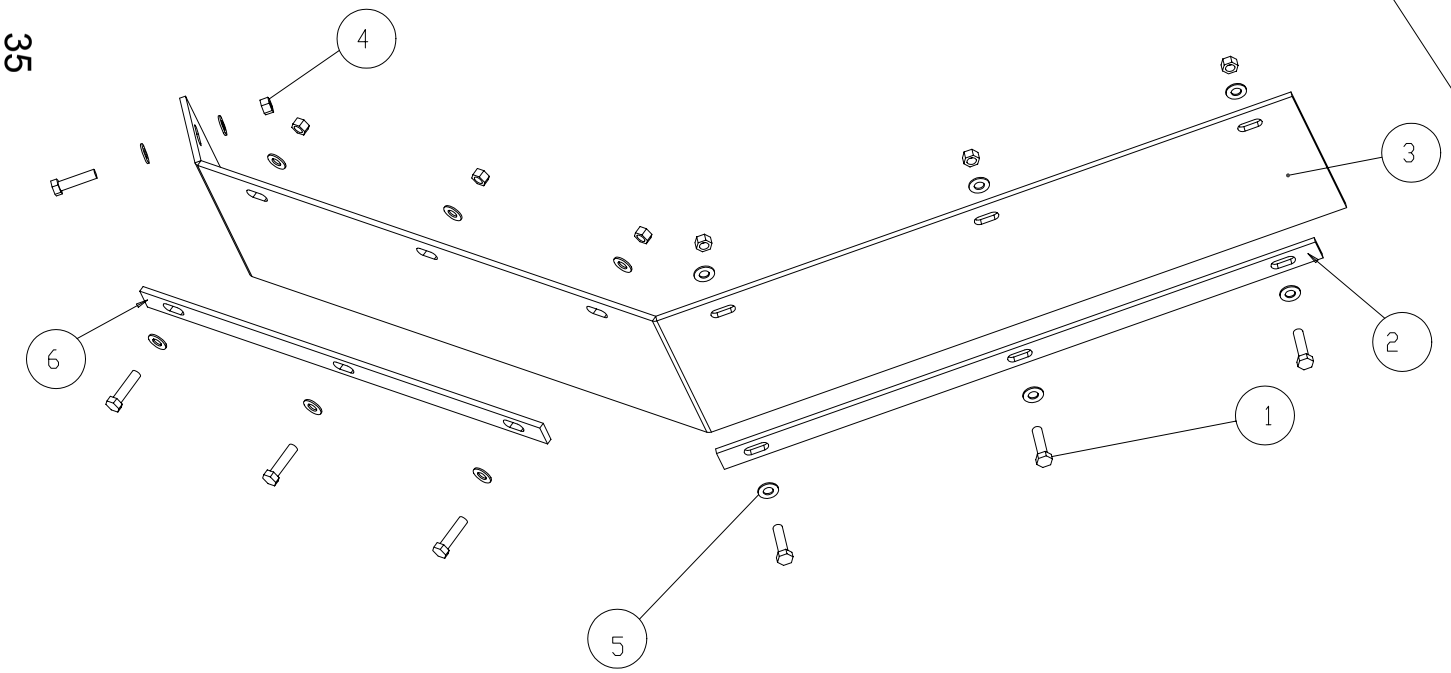
(1 3/8 - 21 spline Tractor end & 1 3/8 – 6 spline Imp. end)



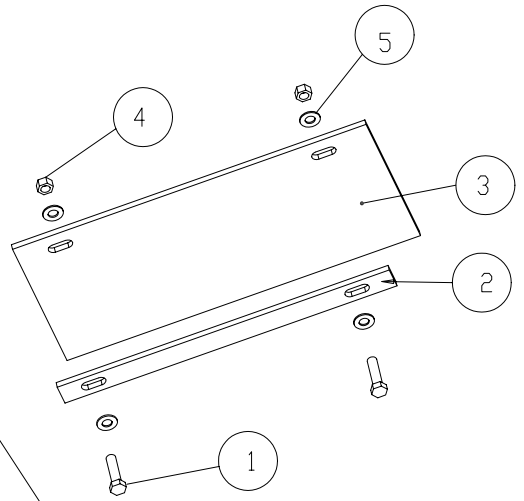
Key #	Part No.	Description	Key #	Part No.	Description
301	15579	Push Pin complete	305	16521	Yoke, Imp end
302	15900	Yoke, Tractor end	306	15804	Shield bearing
303	11437	Cross Kit	307	15805	Shield Bearing
304	11437	Cross Kit	308	11448	Shield kit complete

SECTION 8
BELTING

PARTS LISTING FOR CM2160 AND HR2360 FRONT BELTING EXTENSION KIT (PART # 25660)			
Item	Part Number	Qty.	Description
1	10032	7	Hex Bolt 3/8 x 1-1/2 gr.5 plated
2	22776	1	Belting Extension Flat
3	25661	1	Belting for HR2360 Extension
4	10175	7	3/8" Locknut (Gr.5 Plated)
5	10202	14	3/8" Flatwasher (Plated)
6	22731	1	Short Rubber Belting Flat

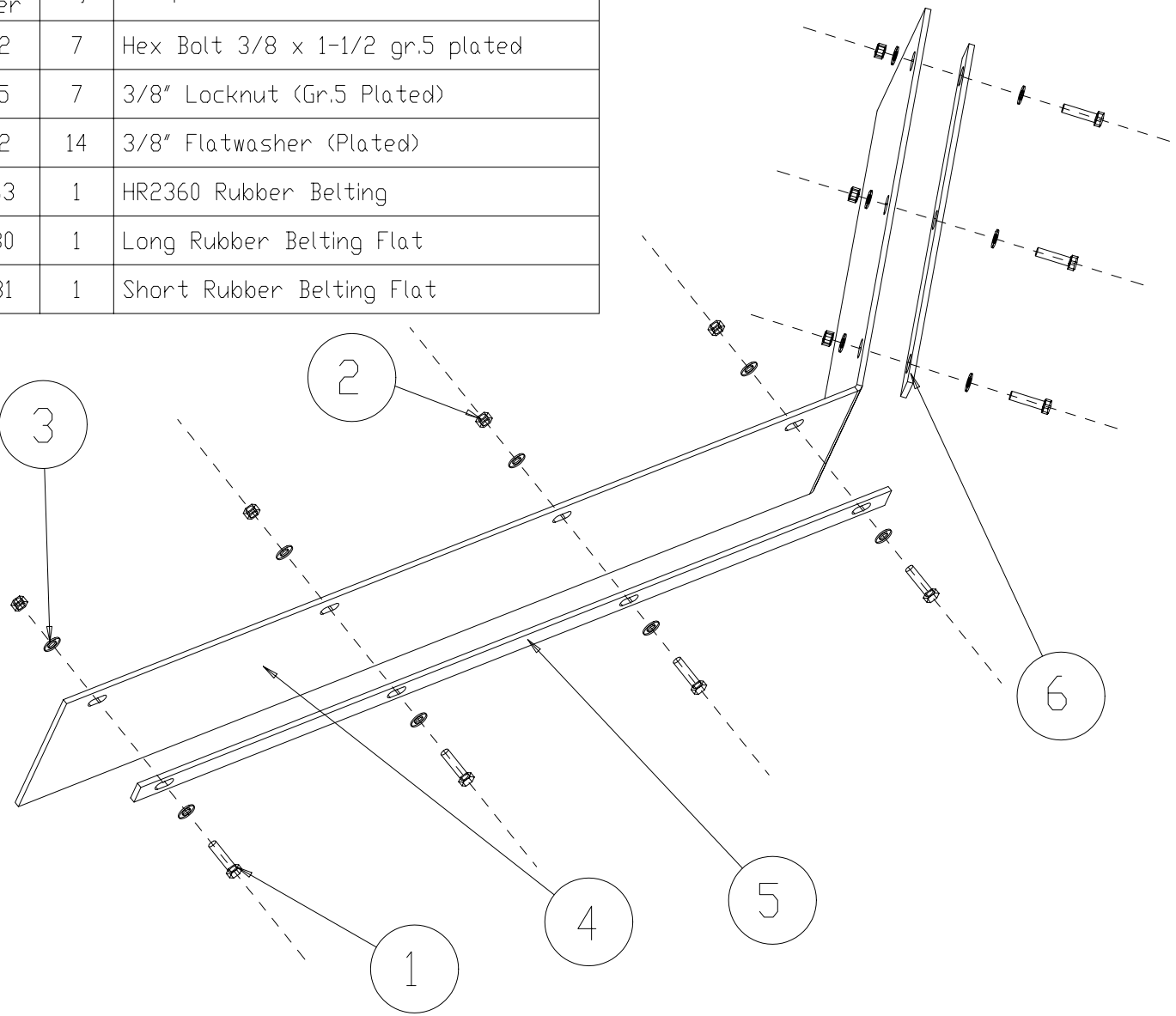


PARTS LISTING FOR CM2160 AND HR2360 FRONT BELTING-SHORT			
Item	Part Number	Qty.	Description
1	10032	2	Hex Bolt 3/8 x 1-1/2 gr.5 plated
2	25710	1	Belting Extension Flat
3	25664	1	Belting for HR2360 Extension
4	10175	2	3/8" Locknut (Gr.5 Plated)
5	10202	4	3/8" Flatwasher (Plated)



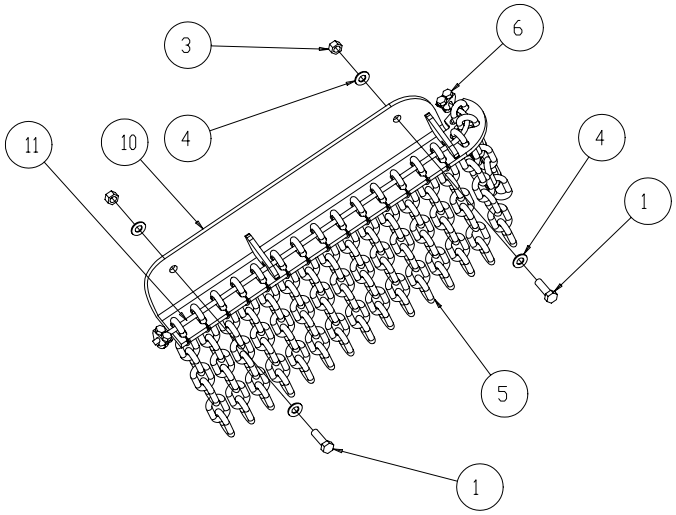
SECTION 8 - BELTING

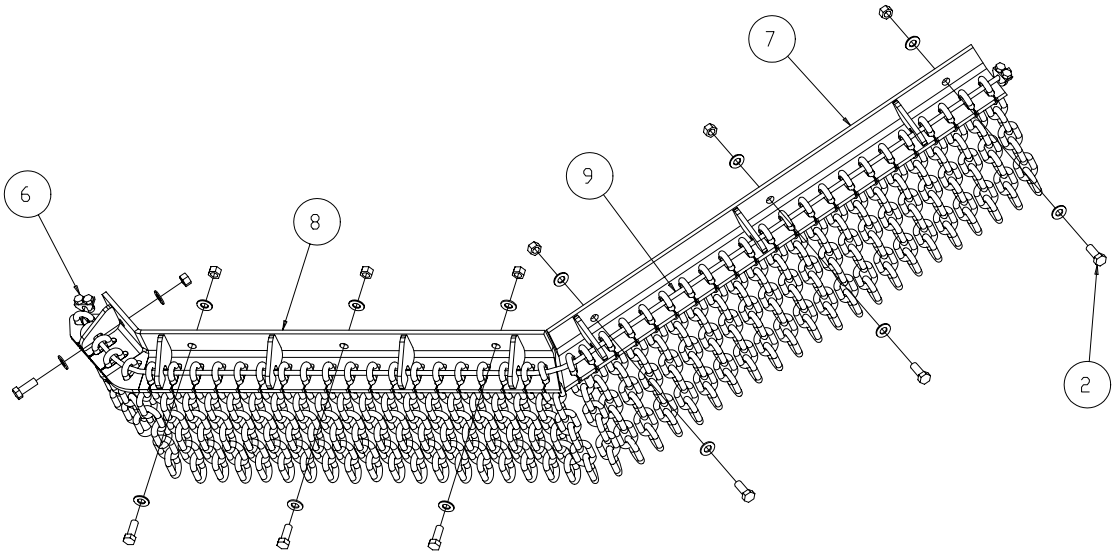
PARTS LISTING FOR CM2160 AND HR2360 REAR BELTING KIT (PART # 25662)			
Item	Part Number	Qty.	Description
1	10032	7	Hex Bolt 3/8 x 1-1/2 gr.5 plated
2	10175	7	3/8" Locknut (Gr.5 Plated)
3	10202	14	3/8" Flatwasher (Plated)
4	25663	1	HR2360 Rubber Belting
5	22730	1	Long Rubber Belting Flat
6	22731	1	Short Rubber Belting Flat



SECTION 8 - CHAIN GUARD

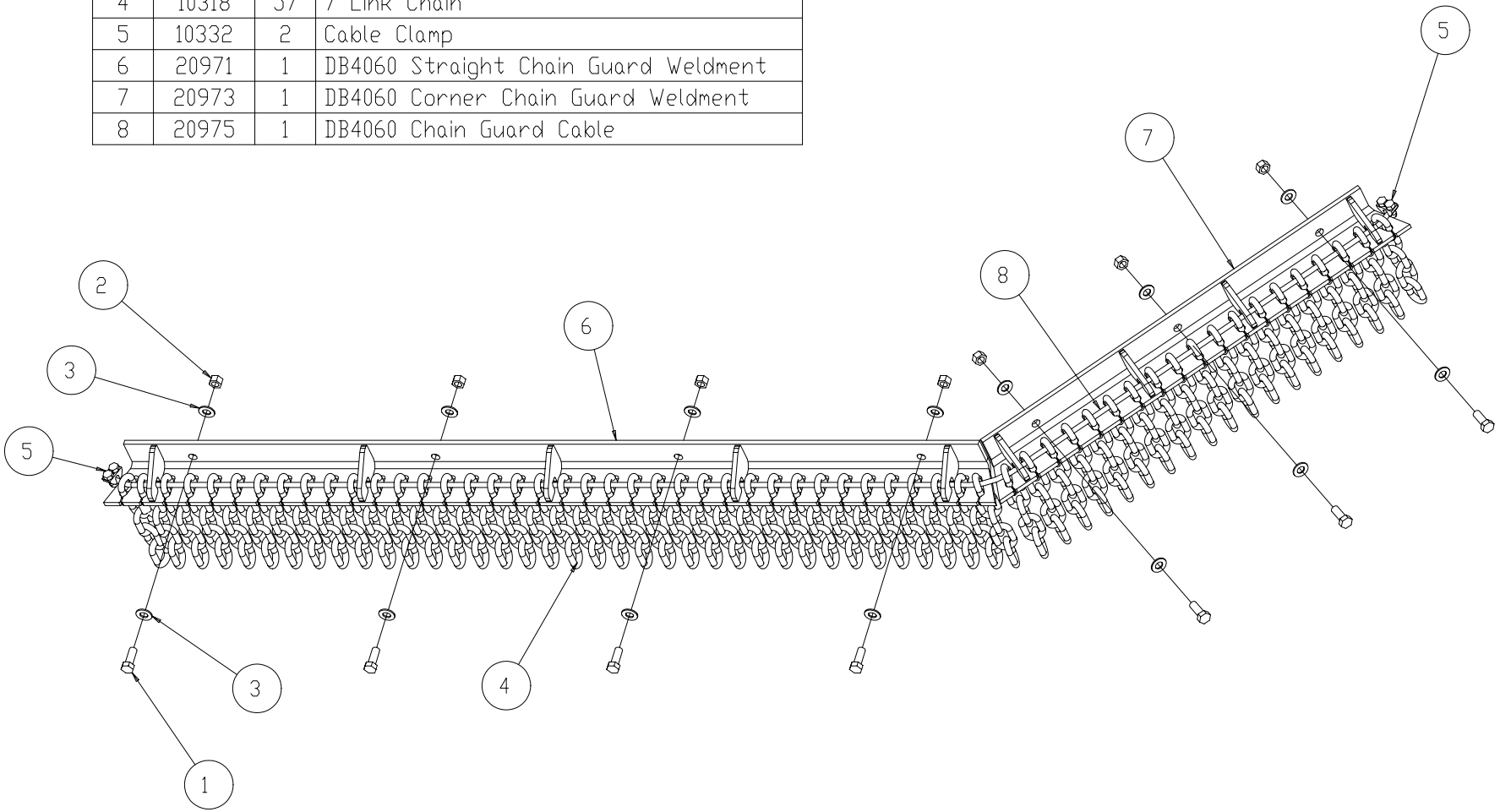
PARTS LISTING FOR CM2160 AND HR2360 FRONT CHAIN GUARD KIT (PART # 20989)			
Item	Part Number	Qty.	Description
1	10029	2	Hex Bolt 3/8 x 1-1/4 gr.5 plated
2	10031	7	Hex Bolt 3/8 x 1 gr.5 plated
3	10175	9	3/8" Locknut (Gr.5 Plated)
4	10202	18	3/8" Flatwasher (Plated)
5	10318	63	7 Link Chain
6	10332	4	Cable Clamp
7	20981	1	LR40160 Straight Chain Guard Weldment
8	20988	1	HR2360 Corner Chain Guard Weldment
9	20986	1	LR40160 Chain Guard Cable
10	20978	1	Chain Guard Weldment
11	20977	1	Chain Guard Cable





SECTION 8 - CHAIN GUARD

PARTS LISTING FOR CM2160 AND HR2360 REAR CHAIN GUARD KIT (PART # 20990)			
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	10318	57	7 Link Chain
5	10332	2	Cable Clamp
6	20971	1	DB4060 Straight Chain Guard Weldment
7	20973	1	DB4060 Corner Chain Guard Weldment
8	20975	1	DB4060 Chain Guard Cable



Bolt Torque

Checking Bolt Torque

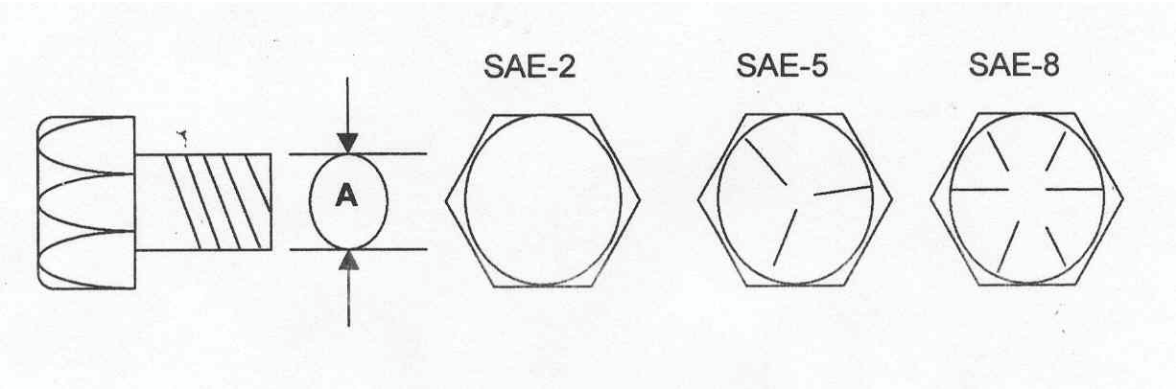
The table shown below gives correct torque values for various bolts and capscrews. Tighten all bolts to the torque specified in the chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same strength bolt. Torque figures indicated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

NOTES:

HARDEE

BY EVH MFG CO

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