

# ***The Articulator***

***Models 3696H and 3696M***

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## ***Owner's Manual***

***Serial Number 4570102 - 28320707***

***Manual Part Number: Man-3696H/M-07***

**LASTEC**

**7865 N County Road 100E**

**Lizton, Indiana 46149**

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***www.lastec.com***

CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

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Lastec, Inc.  
7865 N. County Road 100E  
Lizton, IN 46149

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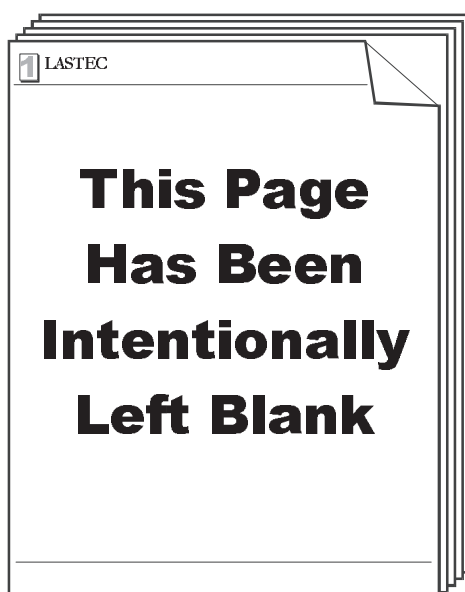
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## SECTION 1 To The Owner

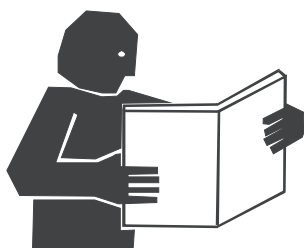


## To The Owner

*Read This Manual In Its Entirety BEFORE Operating The Articulator*

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### 1.1 Read This Manual In Its Entirety BEFORE Operating The Articulator



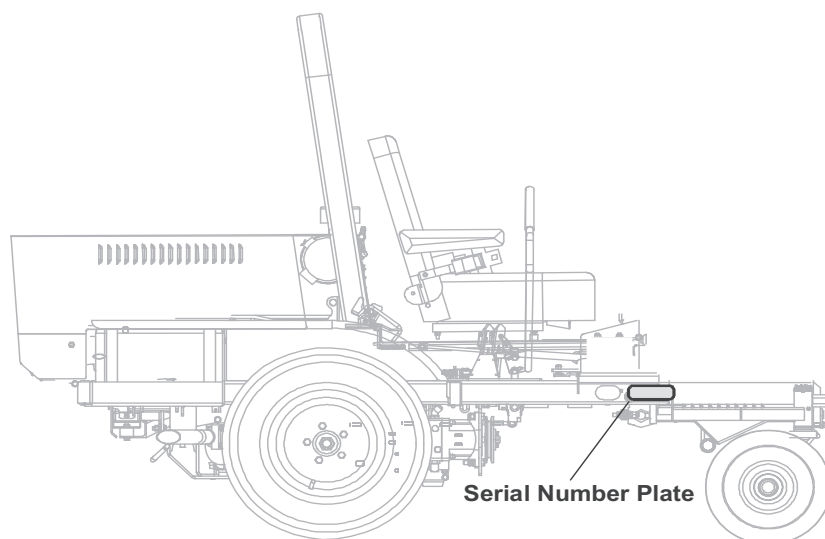
Do not allow anyone to operate the Articulator without first reading and understanding this operator's manual in its entirety. Never allow children to operate the Articulator. Never operate the Articulator when children are present.

The information presented herein will prepare you to operate the Articulator in a safe and knowledgeable manner. Proper operation of the Articulator will provide a safer working environment, and promote higher quality, more efficient results.

Keep this manual at hand at all times for ready reference. The designed and tested safety of the Articulator is dependent upon its operation within the guidelines and limitations as outlined in this manual. Always adhere to all the safety rules presented in this manual.

### 1.2 Product Registration

Immediately record the model and serial numbers of your Articulator in the spaces provided below. These numbers can be found on the serial number plate which is permanently affixed to the mower. The serial number plate is located on the right side of the frame, in front of the control panel.



You should now fill out the warranty registration form (*located in the back of this section*) and mail or fax it to Lastec. This form must be completed and returned to the factory within fifteen (15) days of purchase in order to validate the warranty. **Please do not hesitate!**

### 1.3 If You Need To Order Parts

To order parts, contact your distributor. Be sure to have your model and serial number available as a reference. This will assist them in supplying you the correct and most current parts available for your Articulator. 3696H/M

Model Number:	Articulator 3696H
Serial Number:	



#### CAUTION!

- Always use only genuine Lastec parts when servicing the Articulator! Use of substitute parts will void the warranty and may cause unsafe operation or unsatisfactory performance of the Articulator!



## **1.4 Lastec Product Warranty**

### ***LASTEC LIMITED TURF WARRANTY***

Lastec ("warrantor"), with its place of business at 7865 N. County Road 100E, Lizton, IN 46149 warrants as stated herein to the original purchaser ("purchaser") for two (2) years or 2000 hours\* of equipment use, whichever comes first, on parts and one (1) year of labor for equipment use from the date of purchase from Lastec ("warrantor"), that the equipment manufactured by warrantor and any optional equipment or accessories purchased at the same time, subject to the exclusions herein, will be free from defects in material and workmanship attributable to warrantor so long as it is operated and maintained in accordance with the instructions provided by warrantor and purchaser has completed the registration form or warrantor may chose to not honor any warranty claims. All urethane bushing assemblies will be warranted for five (5) years from the date of purchase from Lastec.

\* Applies to units with hour meters

#### **90 Day Limited Warranty**

Warrantor agrees to replace any defective wear components including but not limited to bearings, idlers with bearings, wheels/tires, bushings, blades and belts for ninety (90) days from date of purchase. After ninety (90) days, all wear components are no longer covered under further warranty from warrantor.

Warrantor agrees to warrant for a period of ninety (90) days from date of purchase to any original purchaser who is a rental yard, lease-based business or temporary use facility that the equipment manufactured by warrantor and any optional equipment or accessories purchased at the same time will be free from defects in material and workmanship attributable to warrantor so long as it is operated and maintained in accordance with instructions provided by warrantor. After ninety (90) days, no further warranty will exist for rental yard, lease-based or temporary use businesses or facilities.

#### **Warrantor's Obligations as to Defects**

Warrantor's only responsibility shall be to replace any covered defects or repairs without cost to purchaser. Warrantor may request that such part or unit be returned to Warrantor's place of business. Purchaser will be responsible for transportation or shipping of part or unit to the distributor and such part must be returned to distributor within fifteen (15) days after requested. Warrantor shall have a reasonable time within which to replace or repair defective part or unit. If warrantor determines that the part or unit is not defective under the terms of this warranty, then purchaser shall be responsible for expenses incurred by warrantor in returning part or unit to original purchaser. Warrantor gives no allowance for labor, travel time, mileage or incidental or consequential damages. Purchaser must submit warranty claims to a distributorship authorized by Warrantor. Warrantor's authorized distributors are responsible for all repairs and the processing of all warranty claims.

### **Limitations and Disclaimers of Other Warranties**

EXCEPT FOR THE EXPRESS WARRANTY PROVISIONS STATED ABOVE, WARRANTOR DISCLAIMS ALL WARRANTIES, EXPRESS AND/OR IMPLIED, INCLUDING WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. No representation or other affirmation of fact by representatives of warrantor, whether verbal or in writing, including photographs, brochures, samples, models, or other sales aids, shall constitute a warranty or other basis for any legal action against warrantor. THE ORIGINAL PURCHASER, ANY PERSONS TO WHOM THIS EQUIPMENT IS TRANSFERRED AND ANY INTENDED USER OR BENEFICIARY OF THIS EQUIPMENT SHALL NOT BE ENTITLED TO RECOVER ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES FROM WARRANTOR FOR ANY REASON WHATSOEVER, INCLUDING WARRANTY OR DEFECT IN THE PRODUCT. Warrantor does not warrant that its equipment meets or complies with the requirements of a particular safety code or governmental requirements.

### **Design Changes**

Warrantor reserves the right to change the design of its products from time to time without notice and without obligation to make corresponding changes in its products previously manufactured.

### **Rights of Purchasers**

The validity and effect of this limited warranty as well as its interpretation, operation and effect, shall be determined exclusively by the principles of law and equity of the State of Indiana. This limited warranty gives purchaser specific legal rights. Purchaser may also have other rights, which may vary from State to State. Some States may not allow limitations as to duration of warranties so the above may not apply.

This contract supersedes all prior written and oral agreements related to the purchase and is intended to be an integration of the entire agreement between the parties. All of the promises, warranties, guarantees and representations made by warrantor or its representatives that are not specifically contained herein are not included in this warranty.

## **1.5 Component Manufacturers' Warranties**

Some of the component parts of the Articulator 3696H/M are warranted by their respective manufacturers. These parts include:

- Kubota Diesel Engine
- Warner Electric Clutch
- Warner Linear Actuator
- Hydro-Gear Hydraulic Pumps
- Ross Hydraulic Motors
- Curtis or Superior Gearbox

Manufacturer's warranties are subject to change. Contact your Articulator dealer if you have questions concerning warranties on these component parts.

## **1.6 Servicing The Articulator**



### **CAUTION!**

- Always use only genuine Lastec parts when servicing the Articulator! Use of substitute parts will void the warranty and may cause unsafe operation or unsatisfactory performance of the Articulator!

---

The Articulator is carefully engineered and manufactured to provide safe, dependable, and satisfactory service. As with all other mechanical equipment, the Articulator requires routine inspection, cleaning and maintenance.

When servicing the Articulator, be sure to use only genuine Lastec parts. Utilization of substitute parts will not only void the warranty, but may also cause unsafe or unsatisfactory operation of the Articulator due to their substandard quality or incorrect application.

In order to handle all of your service needs, your authorized Lastec dealer stocks genuine Lastec parts, and has trained mechanics on hand.

Be sure to complete the following Lastec Warranty Registration Form and return to Lastec within 15 days of the purchase of your Articulator. This will aid you, your Articulator dealer, and Lastec in warranting and servicing of your Articulator.

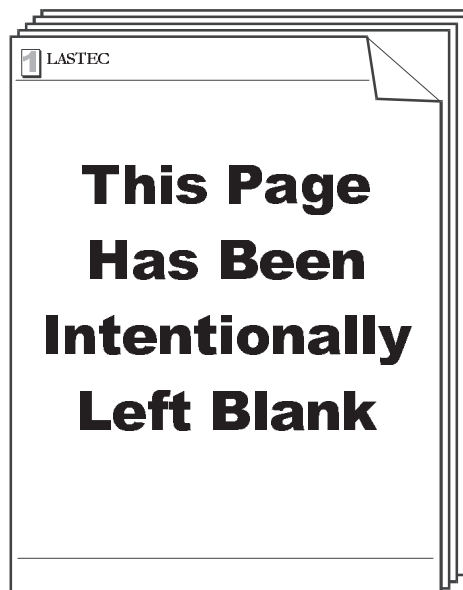
## 1.7 Warranty Registration

<h1 style="margin: 0;">Lastec Warranty Registration Form</h1>											
<p><b>IMPORTANT!</b> To validate the warranty, this registration form must be completed in full and returned to Lastec within fifteen (15) days of purchase!</p>											
<p><b>Company Name</b></p>											
<p><b>Company Contact</b></p>											
<p><b>Mailing Address</b></p>											
<p><b>Shipping Address</b></p>											
<p><b>Phone</b></p>											
<p><b>Fax</b></p>											
<p><b>Authorized Company Representative Signature</b></p>	<p><i>I have read and understand the warranty policy and maintenance sections of the operators manual for the machine described below.</i></p>										
<p><b>Articulator Model</b></p>											
<p><b>Serial Number</b></p>											
<p><b>Distributor/Dealer Purchased From</b></p>											
<p><b>Date Purchased</b></p>											
<p><b>Purchase Price</b></p>											
<h2 style="margin: 0;">Customer Profile Information</h2>											
<p>Please check the box that most accurately describes your business:</p>											
<table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Golf Course</td> <td><input type="checkbox"/> Sod Farm</td> <td><input type="checkbox"/> Schools</td> <td><input type="checkbox"/> Sports Complex</td> <td><input type="checkbox"/> Light Agriculture</td> </tr> <tr> <td><input type="checkbox"/> Municipal</td> <td><input type="checkbox"/> Government</td> <td><input type="checkbox"/> College</td> <td><input type="checkbox"/> Landscaping Company</td> <td><input type="checkbox"/> Other</td> </tr> </table>		<input type="checkbox"/> Golf Course	<input type="checkbox"/> Sod Farm	<input type="checkbox"/> Schools	<input type="checkbox"/> Sports Complex	<input type="checkbox"/> Light Agriculture	<input type="checkbox"/> Municipal	<input type="checkbox"/> Government	<input type="checkbox"/> College	<input type="checkbox"/> Landscaping Company	<input type="checkbox"/> Other
<input type="checkbox"/> Golf Course	<input type="checkbox"/> Sod Farm	<input type="checkbox"/> Schools	<input type="checkbox"/> Sports Complex	<input type="checkbox"/> Light Agriculture							
<input type="checkbox"/> Municipal	<input type="checkbox"/> Government	<input type="checkbox"/> College	<input type="checkbox"/> Landscaping Company	<input type="checkbox"/> Other							
<p>Total Acreage Cut: _____ <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Annually</p> <p>Average Operating Hours: _____ <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Annually</p>											
<h2 style="margin: 0;">How Did You Hear About Us?</h2>	<h2 style="margin: 0;">The Articulator</h2>										
<p>Please help us to better serve you by completing the following survey information:</p>	<p>Please list the features and/or benefits which helped you to choose the articulator:</p>										
<p>Do you own an Articulator, and if so what model?</p>											
<p>How did you hear about Lastec?</p>											
<p>Who referred you to the Articulator?</p>											
<p>Who was the salesman that assisted you?</p>											
<p><input type="checkbox"/> Please check the box to your left if you would not allow Lastec to use your company's name for marketing purposes.</p>											

Detach Here

Detach Here

Detach Here



## **SECTION 2 Safety Information**

## 2.1 Warning Symbols

Following is a legend describing the warning symbols utilized throughout this manual, and the potential types of hazards which they indicate:



### DANGER!

- This symbol indicates a potential serious or fatal injury hazard. *Failing to properly adhere to the instructions, rules, or procedures may result in serious injury or death.*
- 



### WARNING!

- This symbol indicates a potential personal injury hazard. *Failing to properly adhere to the instructions, rules, or procedures may result in personal injury.*
- 



### CAUTION!

- This symbol indicates a potential equipment hazard. *Failing to properly adhere to the instructions, rules, or procedures may result in personal equipment malfunction, damage, or destruction.*
- 

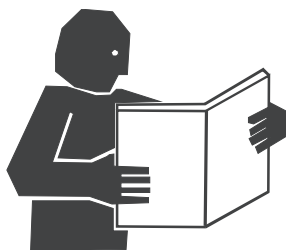
The above illustrated symbols are displayed throughout this manual in order to indicate important safety information. When one of these symbols appears in this manual, be aware of a potential hazard being discussed in the accompanying paragraphs. Hazards such as damage to equipment, serious personal injury, or even fatal injury are possible, perhaps even likely, if the accompanying instructions or procedures are not heeded.

## 2.2 About This Manual



### DANGER!

- Safety instructions are important! Read all safety rules in this manual as well as all safety rules in any related equipment manuals!
- 



The purpose of this manual is to assist you in properly and safely operating and maintaining the Articulator. **Read and understand this entire manual** before attempting to set-up, operate, adjust, perform any maintenance on, or store the Articulator. This manual provides essential information and instructions which will help you enjoy years of dependable performance from the Articulator.

The designed and tested safety of the Articulator is dependent upon its operation within the parameters and limitations explained in this manual. Be familiar with and follow all safety rules in this manual as well all safety rules for any related equipment.

Although these instructions have been compiled through extensive field experience and engineering data, some information presented herein may be general in nature due to unknown and/or varying operating conditions. However, these instructions, combined with your experience with the Articulator, will enable you to develop procedures suitable to your particular application.

The illustrations and data used in this manual were current at the time of printing, but the Articulator may vary slightly due to ongoing engineering changes. Lastec reserves the right to implement engineering and design changes to the Articulator as may be necessary without prior notification.

**NOTE:**

**Throughout this manual are references to right and left directions.  
We determine right and left while sitting in the operator seat and facing  
in the direction of forward travel. Blade rotation is clockwise as viewed  
from the top of the Articulator.**

## **2.3 Safety Guards And Covers**



### **DANGER!**

- NEVER operate the Articulator with any safety covers removed!
- Work safely! Follow all safety rules! A careful operator is the best insurance against accidents!

---

Some illustrations in this manual show the Articulator with safety covers removed in order to provide improved viewing of the particular components being discussed. ***This is for informational purposes only -- NEVER operate the Articulator with any of the safety covers removed!***

**Safety is a primary concern** in the design and manufacture of all Lastec products. Unfortunately, our extensive efforts to provide safe equipment can be negated by a single careless act of an operator. In addition to the design and configuration of the Articulator, hazard control and accident prevention are also dependent upon the awareness, concern, prudence and proper training of all personnel involved in the operation, transportation, maintenance, and storage of the Articulator.

***The best safety device is an informed, careful operator!***

*We ask you to be that kind of operator.*

## 2.4 Pre-operational Safety Rules

### DANGER!



- NEVER allow children to operate the Articulator!
  - NEVER allow children on or near the Articulator!
  - NEVER operate the Articulator when children are present.
  - ALWAYS clear area of all personnel before operating the Articulator!
- 

### WARNING!



- NEVER allow anyone to operate the Articulator without proper instruction! Any and all operators must be instructed in and capable of the safe operation of the Articulator, its attachments, and controls!
  - KNOW the controls and how to stop the Articulator quickly in an emergency!
  - READ this entire manual before attempting to operate the Articulator! Only allow persons who have read and understand the entire operator's manual to operate the Articulator!
- 
- **Always** wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy rough-soled work shoes, as well as protective equipment for the eyes, hands, ears, and head. Never operate the Articulator or related equipment in bare feet, sandals, or sneakers.
  - Clear the cut area of stones, branches, trash, or other debris that may be thrown and cause injury or damage.
  - Verify that all safety decals are properly installed, visible, and intelligible.
  - **Always** remove accumulated debris, fuel, or excess grease and oil from the Articulator engine area to avoid a fire hazard.
  - **Always** perform the pre-operation equipment inspection and the appropriate maintenance schedule before operating the Articulator.
  - Do **not** change the engine governor settings or over-speed the engine.

## 2.5 Operational Safety Rules



### DANGER!

- NEVER allow children to operate the Articulator!
  - NEVER allow children on or near the Articulator!
  - NEVER operate the Articulator when children are present.
  - ALWAYS clear area of all personnel before operating the Articulator!
- 



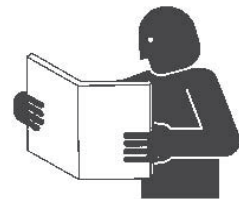
### DANGER!

- NEVER operate the Articulator without all safety covers properly installed and in good condition!
  - ALWAYS stay well clear of all moving parts!
  - ALWAYS stay clear of blades during operation!
- 



### WARNING!

- ALWAYS work safely! Follow all safety rules! A careful operator is the best insurance against accidents!
- ALWAYS clear area of all personnel before operating the Articulator!
- Only allow persons who have read and understand the entire operator's manual to operate the Articulator!



- **Never** operate the Articulator when children are present. Be sure that the parking brake is set before attempting to start the engine.
  - Operate only in daylight or good artificial light. (Min. 200 Lux)
  - Be sure that all auxiliary equipment switches (blades, power outlet, etc.) are in the OFF position before attempting to start the engine.
  - If your Articulator is equipped with a ROPS (*Roll Over Protection System*), be sure to **wear your seat belt**.
  - Never permit any person other than the operator to ride or board the Articulator at any time. **Never allow riders!**
  - Never allow anyone near the Articulator while operating. **Be sure that the area behind you is clear before operating in reverse!**
-

- Never permit people to stand or walk in the path of discharge.
- Never direct/point/aim the discharge in the direction of bystanders, vehicles, or buildings.
- Do not stop or start suddenly when going up or down a hill. Avoid operating on steep slopes.
- Do not mow in reverse unless absolutely necessary - and then only after careful observation of entire area behind the Articulator.
- Use extreme care and maintain minimum ground speed when transporting on a hill-side or over rough ground, and when operating close to ditches, fences, or water.
- Reduce speed on slopes and in sharp turns to minimize potential tipping or loss of control. Use caution when changing directions on slopes.
- Be alert for holes in the terrain as well as any other hidden hazard. Always drive slowly over rough ground.
- Disengage the blades, stop the engine, set the parking brake, and remove the key before dismounting the Articulator or making any adjustments.
- Stop the Articulator immediately upon striking any obstruction. Disengage the blades, turn off the engine, set the parking brake, remove the key, and inspect the Articulator for any damage. Always repair any damage before resuming operation of the Articulator.
- Never adjust the mower deck height or lift the deck into transport position while the blades are engaged.
- Never engage the blades with the mower deck raised into transport position.
- Never place your hands or feet under the Articulator while the engine is running.
- Stay well clear of any and all moving parts.
- Keep hands and feet away from the blades at all times during operation.
- Take all possible precautions when leaving the Articulator unattended: disengage the blades, turn off the engine, set the parking brake, and remove the key anytime you leave the Articulator unattended.
- If your Articulator is equipped with headlights and hazard lights, always activate them whenever crossing or accessing any roadways, driveways, or parking lots. Watch for oncoming traffic.
- Do not allow extended running of engine indoors - **exhaust fumes are deadly.**

- **Handle fuel with caution -**

- Always use approved fuel containers;
- never handle fuel near an open flame;
- never use fuel as a solvent;
- never fuel the Articulator while the engine is running or hot;
- never fuel the Articulator indoors;
- always clean up any spilled fuel;
- never smoke around fuel.



## **2.6 Maintenance Safety Rules**

### **DANGER!**



- ALWAYS disengage the blades, turn off the engine, set the parking brake, and remove the key before performing any service to, maintenance on, or adjustments to the Articulator!
- NEVER allow children on or around the Articulator!

- 
- Never perform maintenance on the Articulator when children are present.
  - Always perform the appropriate maintenance schedule(s) in a timely fashion.
  - Never allow anyone near any operator controls while performing adjustments, service or maintenance.
  - Always use personal protection equipment such as eye, hand, head, and ear protection when performing any service or maintenance.
  - Keep the Articulator engine area free of accumulated debris, fuel, or excess grease and oil to reduce fire hazard.
  - Keep the Articulator in good operating condition with all safety devices in place.
  - Check the blades frequently. Verify that they are sharp, free of nicks or cracks, and securely fastened. **Immediately replace blades that show any signs of cracks.**
  - Periodically tighten all bolts, nuts and screws and check that all fasteners are properly installed to ensure that the Articulator is in safe operating condition.
  - Upon completing any maintenance or service function, verify that all safety guards and devices are properly installed before operating the Articulator.
  - Verify that all warning labels and decals are properly installed, visible, and legible.

- Always remove debris from underneath the Articulator after each use.

## **2.7 Storage Safety Rules**

### **DANGER!**



- NEVER allow the extended running of any engine indoors! Exhaust gasses contain carbon monoxide, an odorless and deadly poison!
  - NEVER allow children on or around the Articulator!
- 

- Never store the Articulator in any area accessible by children.
- Never allow extended running of the engine indoors. Exhaust fumes are deadly.
- Never store equipment with fuel in the tank inside a building where fumes could reach an open flame or spark.
- Allow the engine to cool before storing in an enclosed area.
- Thoroughly clean the entire drive unit, engine compartment, and both the top and bottom of the mower deck before storing.
- Sand chipped or scratched areas and re-paint them to prevent rust during storage.
- Grease all grease fittings and lubricate all moving parts of the Articulator to prevent rust during storage.

## 2.8 Use Caution When Working With Batteries



### DANGER!

- Batteries expel explosive gases. Keep sparks, flames, burning cigarettes, or other ignition sources away at all times. Always wear safety goggles and a face shield when working near batteries. Failure to do so may cause serious injury.<sup>1</sup>
- 



### WARNING!

- Charge the battery in a well ventilated area. Do not attempt to charge a frozen battery.
  - Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.
- 

Use extreme care to avoid spilling or splashing electrolyte (which is dilute sulfuric acid) as it can destroy clothing and burn the skin. If electrolyte is spilled or splashed on clothing or the body, it should be neutralized immediately and then rinsed with clean water. A solution of baking soda, or household ammonia, and water may be used as a neutralizer.

Electrolyte splashed into the eyes is extremely dangerous. If this should happen, force the eye open and flood it with cool, clean water for approximately fifteen minutes. A doctor should be called immediately when the accident occurs and "on-the-spot" medical attention given if possible. If a doctor cannot come to the scene of the accident immediately, follow his instructions concerning actions to take. Do not add eye drops or other medication unless advised to do so by the doctor. Do not place a battery or electrolyte (acid) within the reach of children. If electrolyte (acid) is taken internally drink large quantities of water or milk. Follow with milk of magnesia, beaten egg or vegetable oil. Call a physician immediately.

If electrolyte is spilled or splashed on any surface of the machine, it should be neutralized and rinsed with clean water.



### CAUTION!

- Do not overcharge the battery. Overcharging may reduce the overall service life of the battery.
- 

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1. Battery Council International, copyright 1987

**SAFE HANDLING OF BATTERY ACID**

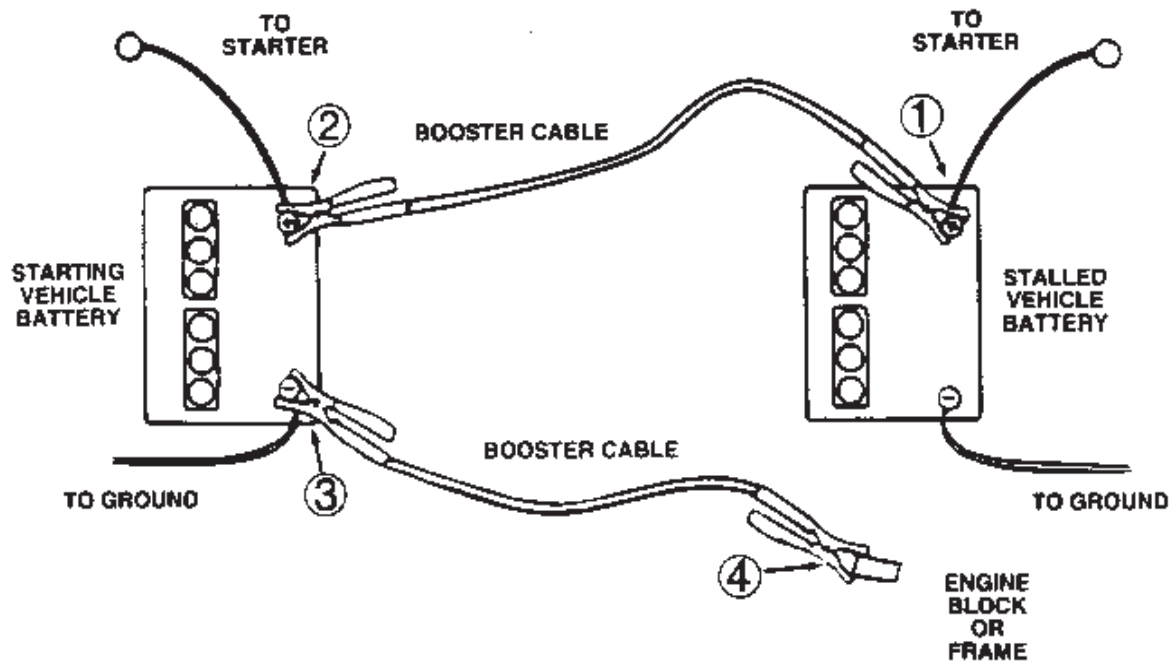
Battery acid, or electrolyte, is a solution of sulfuric acid and water that can destroy clothing and burn the skin. Use extreme caution when handling electrolyte and keep an acid neutralizing solution—such as baking soda or household ammonia mixed with water—readily available. When handling battery acid:

- **Always wear proper eye, face and hand protection.**
- If the electrolyte is splashed into an eye, immediately force the eye open and flood it with clean, cool water for at least 15 minutes. Get prompt medical attention.
- If electrolyte is taken internally, drink large quantities of water or milk. **DO NOT** induce vomiting. Call a physician immediately.
- Neutralize with baking soda any electrolyte that spills on a vehicle or in the work area. After neutralizing, rinse contaminated area clean with water.

To prepare electrolyte of a desired specific gravity, always pour the concentrated acid slowly into the water; **DO NOT pour water into the acid.** Always stir the water while adding small amounts of acid. If noticeable heat develops, allow the solution to cool before continuing to add acid.

**SAFE BOOSTER CABLE OPERATION**

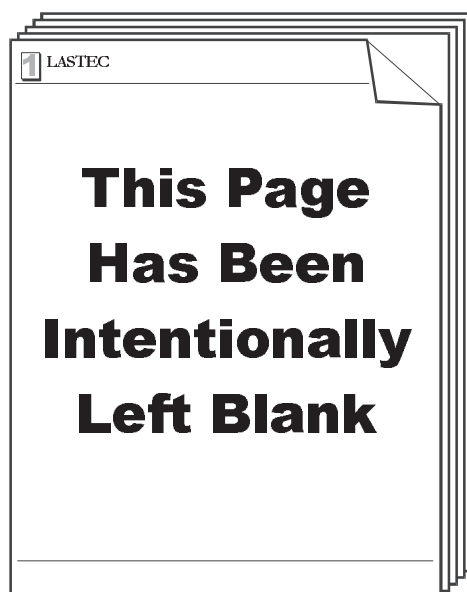
1. When jump starting a battery, **always wear proper eye protection and never lean over battery.**
2. Inspect both batteries before connecting booster cables. **Do not jump start a damaged battery.**
3. Be sure vent caps are tight and level.
4. Make certain that the vehicles are not touching and both ignition switches are turned to the OFF position.
5. Connect positive (+) booster cable to positive (+) terminal of discharged battery.
6. Connect other end of positive (+) cable to positive (+) terminal of assisting battery.
7. Connect negative (-) cable to negative (-) terminal of assisting battery.
8. **MAKE FINAL CONNECTION OF NEGATIVE (-) CABLE TO ENGINE BLOCK OF STALLED VEHICLE, AWAY FROM BATTERY.**
9. Start engine and remove cables in **REVERSE** order of connections.



**2.9 Hazard Identified Chart**

Hazard Identified	Risk Source	Control Measure
Operator injury	Inexperience	<ul style="list-style-type: none"> <li>• Complete Owners Manual supplied covering all aspects of operating the unit</li> <li>• Various warning decals strategically placed on the unit</li> </ul>
Unit overturning, crushing operator	Operating on steep or slippery slopes	<ul style="list-style-type: none"> <li>• ROPS framework on the unit</li> <li>• Seat belts for the operator</li> <li>• Warning decals</li> <li>• Clear warning in manual</li> </ul>
Risk of burns to hands and fingers	Hot surfaces from operations, such as exhaust system	<ul style="list-style-type: none"> <li>• Warning decals</li> <li>• Clear warning in manual</li> </ul>
Burns and scalds from radiator	Hot steam or water jets from opening radiator when engine is hot	<ul style="list-style-type: none"> <li>• Clear warnings outlined in manual</li> </ul>
Danger of entanglement	Moving parts. Guards not in place.	<ul style="list-style-type: none"> <li>• Warning decals stating guards must be in place</li> <li>• Physical guards around belts and pulleys</li> <li>• Clear warning in manual</li> </ul>
Battery explosion	Improper battery handling or jumping	<ul style="list-style-type: none"> <li>• Instructions on battery handling from the Battery Council International included in manuals</li> </ul>
Danger of dismemberment	Cutting blades	<ul style="list-style-type: none"> <li>• Warning decals</li> <li>• Clear warning in manual</li> <li>• Physical guards around blades</li> <li>• Clear prohibitions outlined in manual</li> </ul>
Danger of projectile strike	Ejected debris from cutting blades	<ul style="list-style-type: none"> <li>• Warning decals</li> <li>• Clear warning in manual</li> <li>• Physical guards around blades</li> </ul>

Personnel injury	Persons riding as passengers	<ul style="list-style-type: none"> <li>• Warning decals</li> <li>• Clear warning in manual</li> </ul>
Fuel fire/explosion	Improper refueling or fuel handling	<ul style="list-style-type: none"> <li>• Warning decals</li> <li>• Clear warning in manual</li> </ul>
Inhalation of exhaust fumes/ carbon monoxide	Extended running of engine indoors or in a poorly ventilated area	<ul style="list-style-type: none"> <li>• Clear warning in manual</li> </ul>
Finger pinch points	Moving parts	<ul style="list-style-type: none"> <li>• Warning decals stating hazardous locations</li> <li>• Physical guards around such points</li> <li>• Clear warning in manual</li> </ul>
Electrical Shock	Improper battery handling or jumping	<ul style="list-style-type: none"> <li>• Instructions on battery handling from the Battery Council International included in manuals</li> </ul>



## SECTION 3 Initial Set-Up

### **3.1 Assembly**

The Articulator requires a minimum amount of assembly before operation. Follow the steps below to assemble the Articulator:

- 10.** Remove the loose deck (deck one (1)) and the rocker assembly from the skid.
- 11.** On deck one (1), remove the tie wraps which are retaining the bushings in the deck pivot plates, and in the rocker mount tube.
- 12.** On the drive unit, remove the tie wraps which are retaining the deck belt and deck lift cable.
- 13.** Remove the 3/4" pin weldments and hardware, and 1/2"-13 x 3" bolts and nuts from the pivot plates on the deck assembly (deck four (4)).
- 14.** Install deck one (1) onto the deck assembly. Slide the pivot plates on deck one (1) between the pivot plates on deck four (4), and slide the trap door (the zinc plated plate located under the rubber flap) UNDER the edge of deck four (4), with the rubber flap riding ON TOP of deck four (4). Block up deck one (1) to keep it parallel with deck four (4) during assembly. Re-install 3/4" pins and hardware, and 1/2"-13 x 3" bolts and nuts into front and rear pivot plates. Tighten all hardware. *(You may find it easier to install the rear pivot pin if you lift the rear wheel for greater clearance).*
- 15.** Install the deck belt from deck four (4) to deck one (1). Route the front of the belt around the spindle pulley on deck one (1), then wrap the flat side of the belt back around the flat-faced idler pulley, then the bevel side of the belt back around the grooved idler pulley, and the back of the belt returns to deck four (4). *(Refer to the deck belt illustration on page 5-10 of the operators maintenance section).*
- 16.** Remove the loose 1" pin weldment and hardware from the rocker assembly.
- 17.** Slide the 3/8"-16 x 2" bolt into the pivot bracket from the back side and secure with a lock-nut.
- 18.** Mount the rocker assembly to deck one (1), with the swivel wheel to the front of the deck. Align the pivot plates on the rocker assembly with the mount collar on the deck. Re-install the pin weldment and hardware into the rocker mount collar. Tighten all hardware.
- 19.** Mount the rocker pivot limit weldment (on the rear of the rocker assembly) between the two tabs on deck one (1), secure with the clevis pin and hitch pin.
- 20.** Install the deck one (1) belt cover using the wing nut and fender washer on the deck.
- 21.** The deck lift cables (3696H only) are factory calibrated. The adjustment nuts on the

cable for deck one (1) cable are locked into position during shipping, eliminating the need for adjustment after re-assembly. Simply install the cable into the mount plate on the side of the rocker assembly. Seat the locked jam nuts against the back of the plate, and tighten the third nut to the front of the plate. Attach the cable eyelet to the fork located to the front of the rocker assembly, and secure with the clevis pin and cotter pin.

22. Attach the hydraulic lift arm between the two mount plates on deck one (1), secure with 3/8-16 bolt and hardware.
23. Attach the rear stabilizer between the two plates on the rear of deck one (1). Secure ball swivel end with 3/4" clevis pin and hitch pin.

## 3.2 Parking Brake

### WARNING!

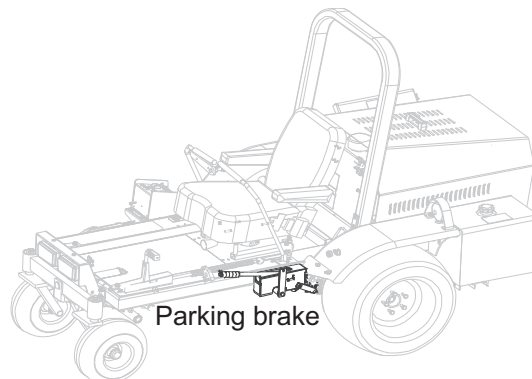


- ALWAYS set the parking brake before performing any set-up, inspection, adjustments, or maintenance to the Articulator!
- ALWAYS release the parking brake before operating the Articulator!

The parking brake is located to the left of the operator seat, just in front of the left steering control arm. To set the parking brake, grasp the handle and pull upward, increasing the brake tension, until the tension prevents any further travel of the handle. The ratchet gear will lock the handle into position.

To release the parking brake, pull upward on the handle to relieve the brake tension, depress the button on the end of the handle, and slowly return the handle all the way down to its original position.

Brake tension can be adjusted by loosening or tightening the knob at the end of the brake handle.



### 3.3 Fuel



#### DANGER

- NEVER store diesel fuel in unapproved containers, in confined areas, or near spark or open flame! Diesel fuel is flammable
- NEVER smoke near diesel fuel!



#### DANGER

- ALWAYS turn off engine before refueling!
- NEVER refuel indoors or when engine is hot!
- ALWAYS clean up all spilled fuel before starting engine!
- NEVER smoke while refueling!



#### CAUTION!

- NEVER allow fuel tank to drain completely of fuel! Air can get into the fuel system and disable the engine, necessitating bleeding of entire fuel system prior to operation!

---

The Articulator 3696H and 3696M are equipped with an 8.5 gallon fuel tank, located behind the left fender. The Articulator is shipped dry (no fuel) from the factory, so you will need to fuel the Articulator before operating. (The engine has been run at the factory, so bleeding the fuel lines is unnecessary.) The fuel tank cap has a gauge that shows the approximate fuel level at all times. ***Do not attempt to fuel the Articulator until you read and understand the entire INITIAL SET-UP section of this manual..***

**Diesel Fuel:** Use only No. 2 diesel fuel. Do not use any other alternative fuel. Kerosene and low quality diesel fuel will adversely affect the engine. Contaminants in the fuel can adversely affect the fuel injection pump.

Do not allow the fuel tank to drain completely of fuel. This can allow air into the fuel system. If this happens, the fuel system will have to be bled before restarting the engine.

Refer to the *Kubota Diesel Engine Operator's Manual* for proper instructions.

### 3.4 Engine Cover/Operator Seat Pan



#### WARNING!

- Always clean the entire engine area and deck area of any excess grease, oil, fuel, or debris to prevent damage to the equipment, fire hazard, and projectile hazards!

In order to fully access the mower deck, many of the drive components or controls, or the engine area, you will need to open the operator seat pan or the engine cover:

**Operator seat pan:** Facing the operator seat, firmly grasp one of the handles located to the left and right rear of the operator seat. Pull the release lever (located in the seat pan just below the lift handle) toward the lift handle. Lift the operator seat pan all the way forward, to its maximum open position. If assistance is required when either lifting or lowering the operator seat pan, have someone help you with the second handle located on the other side of the operator seat.

**Engine cover (hood):** Release the two rubber latches located at the front of the engine cover. Using the handle on top of the cover, lift the cover back all the way until the strap stops, holding the cover in the open position.

Clean the entire engine area (under the engine cover) and mower deck area (under the operator seat pan) of all excess grease, oil, fuel, grass, or debris before operating the Articulator. This will help prevent damage to the equipment, fire hazard, and projectile hazards.

Be sure both the operator seat pan and engine cover are closed, latched, and secure.

### 3.5 Fuel Shut-Off Valve

The fuel shut-off valve is located on the fuel filter housing, between the fuel tank and the fuel filter (the fuel filter is located under the engine cover, behind the hydraulic oil tank, to the left of the engine). Be sure the fuel shut-off valve is in the ON position (parallel to the fuel line) prior to attempting to start the engine.

### 3.6 Engine Oil

#### WARNING!



- ALWAYS turn off engine before checking the oil level, changing the oil, or changing the oil filter!
  - ENGINE OIL IS HOT! ALWAYS allow ample time for oil to cool before changing or repairing leaks!
- 

#### CAUTION!



- Be sure to use the correct oil in the engine crankcase!
  - Be sure to check the engine oil level and quality daily!
  - Incorrect oil, inadequate oil level, or contaminated oil will cause engine damage!
- 

It is important that the proper type of oil be used in the crankcase. It is also important that the oil level and quality be checked daily. Use of incorrect oil, inadequate oil level, or contaminated oil will cause engine damage.

Be sure the Articulator is parked on level ground before checking the oil level. Always check the oil level before starting the engine, or wait more than five minutes after turning off an engine that has been running. Check the oil level with the dipstick located under the engine cover, on top of the engine, to the right of the oil intake cap. To add or change the engine oil and/or oil filter, allow ample time for the engine and engine oil to cool. Consult the *Kubota Diesel Engine Operator's Manual* for the proper procedures.

When operating in temperatures ranging from 32° - 77°F (0° - 25°C), engine oil should be MIL-L-2104C or have properties of API classification CD/CE grades, with an SAE viscosity grade of 10W-30. Due to the nature of the lawn care industry, it is assumed that operation of the Articulator will typically be in air temperatures within the above listed range. If you will be operating the Articulator in air temperatures **outside** this range, consult the *Kubota Diesel Engine Operator's Manual* for the proper SAE viscosity grade of oil that should be used.

### 3.7 Air Cleaner

The air cleaner is located under the engine cover, to the upper front of the engine attached to the firewall. There are two filter elements within the air cleaner. The cap (located on the rear of the air cleaner) is opened by unlatching both silver latches located on the sides of the filter housing. Check that both filter elements are clean and free of debris. Clean or replace if necessary. Consult the *Kubota Diesel Engine Operator's Manual* for the proper procedures.

### 3.8 Coolant

#### WARNING!



- The radiator is pressurized!
- NEVER check the coolant while the engine is running!
- COOLANT IS HOT! Always allow ample time for coolant to cool before checking, changing, or repairing leaks!

#### CAUTION



- Clean radiator daily! Overheating may occur if radiator is not cleaned daily.
- Brush out and clean radiator and hood grills daily to prevent overheating!
- Be sure the coolant system is filled to the proper level, the coolant is mixed properly, and is in good condition!
- ALWAYS check to be sure there are no coolant leaks before operating the Articulator!
- Incorrect mixture, inadequate coolant level, poor condition, or leaks of any kind can cause severe engine damage!

Be sure engine is turned off, and allowed to cool.

The radiator is located under the engine cover, behind the engine.

Overheating may occur if the radiator is not cleaned daily. Brush out and clean the radiator and hood grills daily to prevent overheating.

#### NOTE:

**Blades will shut off will sound automatically if overheating occurs.**

Check the coolant level in the reserve tank (located to the right front of the radiator). The coolant level should maintain a level of 3/4 full at all times. If the coolant level is low, add premixed coolant prior to operation. If the coolant appears excessively contaminated or diluted, change the coolant prior to operation. Consult the *Kubota Diesel Engine Operator's Manual* or proper coolant types and mixtures.

Check the entire coolant system for any leaks. Areas to inspect include the radiator, overflow tank, all hoses, clamps, and fittings, the entire engine area, and under the engine. If any leaks are discovered, allow ample time for coolant to cool. Repair or replace the defective parts and re-fill the coolant system with premixed coolant before operating the Articulator.

### 3.9 Hydraulic Fluid

#### WARNING!



- Hydraulic fluid is pressurized! ALWAYS keep well away from any leaks or loose connections while system is pressurized!
  - HYDRAULIC FLUID IS HOT! Always allow ample time for hydraulic fluid to cool before changing or repairing leaks!
- 

#### CAUTION!



- Be sure to use the correct fluid in the hydraulic tank! Check fluid level and quality daily! Incorrect fluid, inadequate fluid level, or contaminated fluid will cause damage to the hydraulic system!
- 

The Articulator 3696H/M uses a specific type of oil in the hydraulic system. This oil is formulated to prolong the life of the hydrostatic pumps. Lastec has developed a kit, which contains (2) 2 1/2 gallon reusable containers of oil and (2) oil filters. This is enough oil and filters for (2) complete hydraulic system oil changes (system capacity is approximately 7 quarts).

- The 5 gal hydraulic oil kit part number is 028536.
- A 2.5 gal hydraulic oil kit part number is 028490.
- A quart of hydraulic fluid part number is 040642.

With the engine turned off, check the hydraulic fluid level and condition. The hydraulic oil tank is located under the engine cover, to the left of the engine. Make sure the hydraulic oil level remains at the FULL mark at all times. **Do not overfill.**

Inspect the entire hydraulic system for leaks. Areas to inspect include the motors and pumps, the filter, tank, and coolers, the deck lift arm cylinder (under the front left of the frame), all hoses, clamps, and fittings, and the entire area under the hydraulic system. If any leaks are discovered, allow ample time for the hydraulic fluid to cool. Repair or replace the defective parts and re-fill the hydraulic system before operating the Articulator. Be sure to close the engine cover, and secure all latches.

### 3.10 Hydrostatic Pump Adjustment

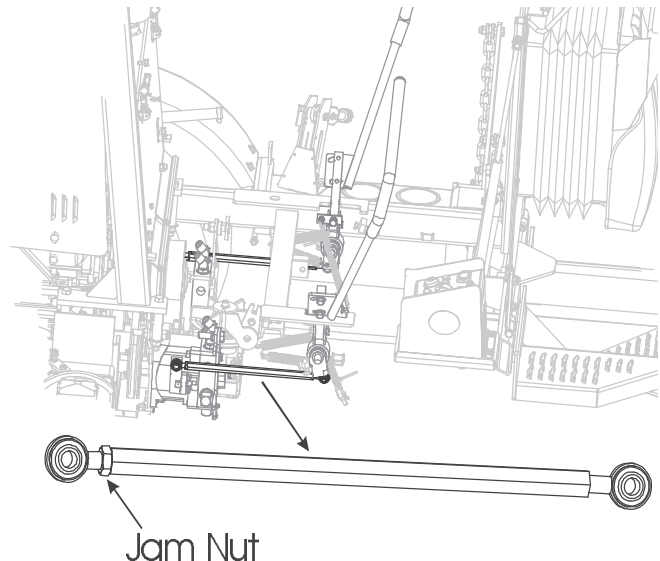


#### DANGER!

- Always use jack stands when adjusting the hydrostatic pumps!
- Keep everyone clear of all controls while adjusting the hydrostatic pumps!

Occasionally, you may need to adjust the hydrostatic pumps to keep the drive wheels from creeping. Follow these procedures to adjust the pumps:

1. Lift the rear of the drive unit until the drive tires clear the ground. Use jack stands for safety.
2. Be sure steering control arms are locked in neutral position.
3. Start the drive unit, and set the throttle arm to 3/4 full.
4. If either drive tire rotates, you need to adjust the hydrostatic pump link arm for that tire. The link arm is attached to the bottom of the steering control arm and the pump. To adjust the link arm, loosen the jam nut from the hydrostatic pump link arm. Slowly turn the link arm, watching the tire as it turns. If the tire begins turning faster, turn the link arm in the opposite direction until it slows, and eventually stops. Tighten the jam nut to lock the link arm into this position.
5. When finished, turn off the drive unit.
6. Be sure that both link arm jam nut on both sides are tight.
7. Lift the drive unit, remove the jack stands, and lower the unit to the ground.



### **3.11 Towing (Hydrostatic Pump Adjustment)**

When towing the Articulator, it is necessary to make minor adjustments to both of the hydrostatic pumps. This will allow the hydraulic fluid to bypass the hydrostatic pump. Please follow the instructions below for the proper procedure:

1. Locate the bypass valve. This will be located on the side of each pump.
2. Turn the valves no more than (2) two turns in a counterclockwise motion. The drive tires should rotate freely.
3. Tow the unit to the desired destination at a slow speed.
4. When towing is completed, return the valves to their original position by turning them in a clockwise motion until they are tight (84-120 in-lbs).

### **3.12 Hydrostatic Pump Belts**

#### **WARNING!**



- NEVER inspect, adjust, or change the hydrostatic pump belts while the engine is running!
- 

The hydrostatic pump drive belts are located under the operator seat pan, between the engine main drive pulley and the hydrostatic pumps both to the left and right of the engine. Each pump mount pivots away from the engine at the frame above the pump. The tension springs located under each pump tension the belts to the proper level.

Check the belts for visible wear or damage. If either belt appears excessively worn, damaged, cracked, weathered, or otherwise appears to pose an unsuitable or unsafe operating condition, replace the belt.

When the belt is properly tensioned by the tension springs, the pump should orient square to the frame. If this is not the case, such as the pump pivots excessively past square, or comes into contact with any peripheral apparatus, you must replace the belt. If the belt you are checking is new, and the pump pivots excessively past square, or comes into contact with any peripheral apparatus, it is likely you have installed the wrong size belt. Contact your Lastec dealer for the proper belt lengths for your Articulator.

If you are unable to install a new belt with the pump pivoted to its closest proximity to the engine drive pulley, it is likely you are installing the wrong size belt. Again, contact your Lastec dealer for proper belt lengths for your Articulator.

Be sure that each pump tensioning spring is properly installed and in good condition. If for some reason this spring becomes loose, detached, or fatigued, the pump mount will not properly tension the belt.

### 3.13 Gearbox



#### CAUTION!

- Be sure to use the correct fluid in the gearbox!
- Check fluid level and quality daily!
- Incorrect fluid, inadequate fluid level, or contaminated fluid will cause gearbox damage!

---

Check the oil level and condition in the gearbox. The gearbox should be approximately half full (6 ounces). Add oil if low. If the oil appears excessively contaminated, change the oil. Use Exxon-Spartan Synthetic EP 100 gear oil for Curtis gearboxes and 75W90 oil for Superior gearboxes. **Check which gearbox is on your Articulator.**

Inspect the entire area around and under the gearbox for any oil leakage. If a leak is discovered, repair it and refill the gearbox before operating the Articulator.

Grease the gearbox every two hundred hours or 6 months for maximum life expectancy.



### 3.14 Gearbox Belts

#### WARNING!

- NEVER inspect, adjust, or change the gearbox belt while the engine is running!

#### CAUTION!

- Gearbox drive belt tension is **preset**. Increasing the spring tension could cause serious damage.
- Improper gearbox belt tension can cause serious damage to the engine!

---

The gearbox drive belt is located under the operator seat pan, between the electric clutch (in front of the engine main drive pulley) and the gearbox (below the engine main drive pulley).



### 3.15 Gearbox Alignment

It is important that the gearbox pulleys are correctly aligned. If the pulleys are not aligned, it will result in over-tensioning and premature belt failure.

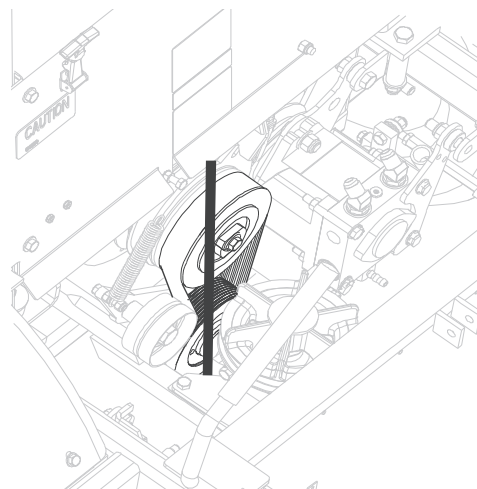
To check the alignment of the gearbox pulley, use a straight edge. The front face of the clutch pulley should align with the front face of the gearbox pulley.

If the pulley alignment is not correct, then loosen the gearbox pulley and reposition it. After alignment, at least 7/16" of the gearbox shaft protrudes from the pulley.

Snug up the three bolts (do not tighten) of the split taper bushing, position gearbox and check that the face of both pulleys are still aligned. Then tighten the hub bolts 1/2 a turn in sequence till all are tight (100 in-lb torque) and check again.

When the pulley hub is tightened it will normally pull the pulley backwards resulting in the correct alignment. Now add the two shims to raise the gearbox by 1/16" and reassemble.

Additional gearbox shims may be added if alignment was incorrect.



### 3.16 Mower Deck Drive Belt

#### WARNING!

- NEVER inspect, adjust, or change the deck drive belt while the engine is running!
- ALWAYS clean the entire deck area (under the operator seat pan) of all grease, oil, fuel, grass, or debris to prevent fire and projectile hazards!



The mower deck drive belt is located under the operator seat pan, between the gearbox (under the engine main drive pulley) and the center mower deck. The spring-loaded idler system automatically tensions the belt to the proper level.

Check the belt for visible wear or damage. If the belt appears excessively worn, damaged, cracked, weathered, or otherwise appears to pose an unsuitable or unsafe operating condition, replace the belt.

Check the belt for proper tension. If the idler tensioner pivots to its maximum stroke without adequately tightening the belt, you need to replace the belt. If the belt you are checking is new, and the idler tensioner goes to its maximum stroke without adequately tightening the belt, it is likely you have installed the wrong size belt. Contact your Lastec dealer for the proper belt lengths for your Articulator.

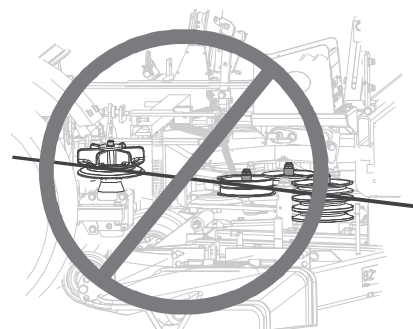
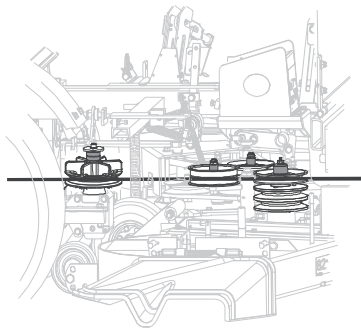
If you are unable to install a new belt with the idler system at its minimum stroke, it is likely you are installing the wrong size belt. Contact your Lastec dealer for proper belt lengths for your Articulator.

Be sure that the idler tensioning spring is properly installed and in good condition. If for some reason this spring becomes loose, detached, or fatigued, the idler will not properly tension the belt.

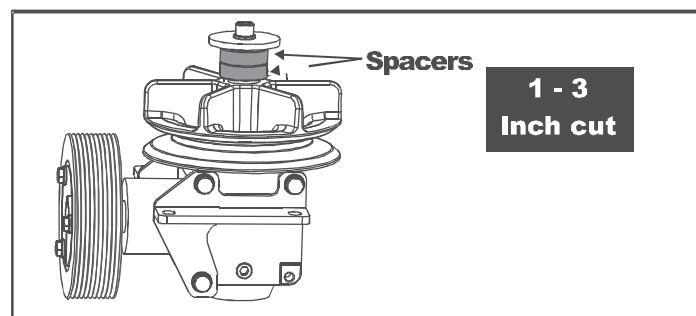
Clean entire mower deck area (under the operator seat pan) of all excess grease, oil, fuel, grass, or debris before operating the Articulator. This will help prevent damage to the equipment, fire hazard, and projectile hazards.

## Leveling the Belt

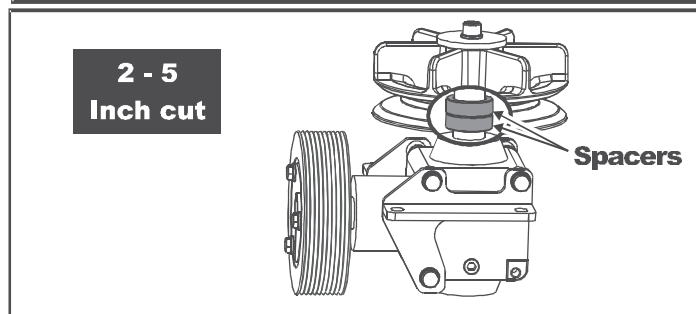
To prevent premature wear on the drive belt, a level routing of the belt between the gearbox and deck pulleys should be maintained. Operation of the deck is not effected by the pulley position, but belt wear can be.



On the upper gearbox pulleys, spacers are used. These spacers can be adjusted either above or below the pulleys, depending on the average grass cutting height desired. The spacers should be used in whatever combination results in the most level position of the belt. The gearbox wave spring should always remain on the top.



For intermittent deck height adjustments, the spacer need not be readjusted, as the height does not interfere with mower operation. However under long term usage, a proper belt level should be maintained.



### 3.17 Mower Deck Belts



#### WARNING!

- NEVER inspect, adjust, or change the deck drive belt while the engine is running!
  - ALWAYS clean the entire deck area (under the operator seat pan) of all grease, oil, fuel, grass, or debris to prevent fire and projectile hazards!
- 

The mower deck belts are located under the molded plastic belt covers on each deck. To access each belt, remove the nuts and washers and lift the belt cover from the mower deck.

The double-pulley idler belt tensioning system automatically tensions the belts on the mower decks, thus eliminating the need for manual belt tension adjustment.

Check the belts for visible wear or damage. If any belt appears excessively worn, damaged, cracked, weathered, or otherwise appears to pose an unsuitable or unsafe operating condition, replace the belt.

Check the belts for proper tension. If an idler tensioner pivots to its maximum stroke without adequately tightening the belt, you need to replace the belt. If the belt you are checking is new, and the idler tensioner pivots to its maximum stroke without adequately tightening the belt, it is likely you have installed the wrong size belt. Contact your Lastec dealer for the proper belt lengths for your Articulator.

If you are unable to install a new belt with the idler system at its minimum stroke, it is likely you are installing the wrong size belt. Contact your Lastec dealer for proper belt lengths for your Articulator.

Be sure that each idler pulley tensioning spring is properly installed and in good condition. If for some reason this spring becomes loose, detached, or fatigued, the idler will not properly tension the belt.

Clean each entire deck (including under the belt covers) of all excess grease, oil, fuel, grass, or debris before operating the Articulator. This will help prevent damage to the equipment, fire hazard, and projectile hazards.

Be sure to replace all belt covers and hardware.

### 3.18 Weight Transfer Springs

It is important that the weight transfer system is operating properly. The weight transfer springs help to lighten the mower deck by transferring excess weight to the drive unit. The elimination of excess weight allows more agile floating of the mower deck, resulting in a higher quality cut and a lower incidence of turf damage.

The weight transfer springs are located under the operator seat pan, running from the mounting bolt on the right front of the frame to the two pivot arms located in front of the right steering control arm. The pivot arms extend to the outer left and right of the frame, and are connected by chains to the left and right sides of the mower deck.

Check to be sure that all weight transfer springs are properly mounted and secure, both to the mounting bolt in front and the pivot arms in back. Also verify that the chains running from the outer pivot arms to the mower deck are properly mounted and intact.

Proper operation of the weight transfer system will allow you to lift the rear of the mower deck by hand with little effort.

### 3.19 Blades

#### DANGER!



- NEVER inspect, adjust, change, or perform any other maintenance to the blades while the engine is running!
- ALWAYS turn off the blades, turn off the engine, remove the key, and set the parking brake before attempting to inspect, adjust, change, or perform any other maintenance to the blades!
- Keep all personnel clear of all controls while inspecting, adjusting, changing, or performing maintenance to the blades!

---

The Articulator 3696H/M utilizes four individual 25" high-lift blades.

NEVER go near, or expose yourself or others in any way to the blades while the engine is running!

ALWAYS turn off the blades, turn off the engine, remove the key, and set the parking brake before attempting to inspect, adjust, change or perform any other maintenance to the blades!

Keep all personnel clear of all controls while inspecting, adjusting, changing, or performing maintenance to the blades!

Inspect all blades for proper installation, orientation, tightness, sharpness, and overall condition. Tighten the bolts that hold the blade on to a recommended torque value of **75 ft-lbs** of pressure.

Be sure the lift fins are oriented to the top of the blades. Verify that the mount bolts are secure, the blades are sharp, and free of any nicks, cracks, or bends. Always replace any damaged, dull, cracked, or missing blades before operating the Articulator.

Lastec also offers low-lift blades and mulching blades for certain mowing applications. Contact your Articulator dealer for further information about optional blades available.

### **3.20 Operator Seat**

Check that the operator seat pan is properly latched and operator seat is secure. Be sure the seatbelt is secure and operable.

Adjust the seat forward or back so that the operator can easily reach the control panel, steering control arms, and mower deck height adjustment pedal.

### **3.21 Steering Control Arms**

Check that both steering control arms are properly linked, free of debris, and operating freely. Swing the arms toward the operator seat, removing them from the neutral lock position. Slowly push both arms all the way forward, then all the way back. They should both move smoothly and easily, with no sticking, obstruction, or uneven tension. They should also “snap” back to neutral position, which is straight up and down and centered with the neutral position lock (notch in the frame).

Be sure to return and lock both control arms into neutral position.

The control arms can be adjusted for operator comfort by repositioning the control arms on the control assembly.

### **3.22 Lights**

Check the function of the headlights and hazard lights. From the operator seat, turn the key switch clockwise to the RUN position. **DO NOT START THE ENGINE.** Using the toggle switches located on the lower right of the control panel, turn on first the headlights, then the hazard lights, checking them for proper operation. If any lights fail to activate, repair the problem before attempting to operate the Articulator.

Turn the headlights and flashers off, and return the key switch to the OFF position.

**NOTE:**

**Any time the ignition switch is activated for 9 seconds or more, an audible warning beeper will sound until either the ignition switch is turned off or the engine is started.**

### 3.23 Mower Deck Height



#### CAUTION!

- NEVER attempt to change the cutting deck height while the engine is running!

The Articulator 3696H/M has a mower deck height range of 1" to 4 1/2", in 1/4" increments. If you wish to change the deck height, do so before attempting to operate the Articulator.

The mower deck height adjustment lever has one (1) permanently fixed spacer, and sixteen (16) adjustable spacers, each equal to 1/4" of deck height adjustment. The deck is at its minimum height of one (1) inch when only the fixed spacer is in front of the lever lock bracket. Each adjustable spacer on the adjustment lever that is placed in front of the lock bracket raises the deck height by 1/4", up to 4 1/2". The spacers which mark the 2", 3", and 4" deck height positions are knurled for quick identification.

To adjust the deck height, push the deck height control valve (located behind the control box) forward to remove the tension from the deck height adjustment lever, allowing the spacers to move freely along the lever. This motion will also temporarily raise the deck. While maintaining tension on the control valve, raise the hand lever from the locking bracket and adjust the spacers to the desired height setting. Each spacer placed in front of the lock plate will indicate an additional 1/4" of deck height. When the desired height setting is reached, place the hand lever back into the locking bracket to secure the spacers in place. Slowly release the control valve, replacing the tension to the adjusting lever. **Be sure to keep fingers away from the locking bracket.**

This sets all the decks on the 3696H and the **center deck for the 3696M**. To set the remaining decks on the 3696M, turn the spacer locking knob counter-clockwise on the height adjustment lever on the rocker arm of each deck, until the spacers and lever are loose. Raise the lever from the locking bracket and adjust the spacers to the desired height setting. Each spacer placed in front of the lock plate will indicate an additional 1/4" of deck height. When the desired deck height setting is reached, place the lever back into the locking bracket and turn the spacer locking knob clockwise until the spacers are tight. **Avoid trapping fingers between the spacers and the lock plate during adjustment.** Repeat process on all deck height adjusting rods.

### 3.24 Mower Deck Height Calibration (3696H)

#### WARNING!



- NEVER make any adjustments to the deck height while the engine is running!
  - ALWAYS be sure to set the parking brake before making any adjustments to the Articulator!
- 

Occasionally, you will need to calibrate the mower deck height. Follow these procedures to calibrate:

1. Park the Articulator on a flat, level surface. Be sure to turn off the engine and set the parking brake before making any adjustments to the Articulator.
2. Be sure both rear drive tires are properly inflated to 10 lb. PSI.
3. Be sure all gauge wheels are pointing forward.
4. Set the deck height adjustment arm spacers to 2".
5. Measure the front of each deck from the tip of the blade to the floor. They should all measure 2", +/- 1/8".
6. If any deck does not fall within this range, you will need to adjust the corresponding cable for that deck. The adjustment point is on the rocker tube. If you would run out of adjustment, an additional adjustment point is located on the inside of the frame.
7. To adjust the cable on the rocker, loosen the front nut at the end of the deck cable. Adjust the two rear nuts to raise or lower the deck. When standing in front of the rocker, turning the rear cable nuts counter-clockwise will raise the deck, clockwise will lower it. Once adjusted, tighten both rear nuts to lock them into place.
8. Re-measure the fronts of all decks. They should all measure 2", +/- 1/8", from the bottom of the pan to the floor. If any deck does not fall within this range, repeat the cable adjustment procedures for that deck.
9. Once the fronts of the decks are adjusted, you must adjust the rear of the decks to measure between 2" and 2 1/2".
10. Loosen the lock nut on the tie rod running from deck 2 to the rear dual wheel axle.
11. From in front of the deck, turn the tie rod counter-clockwise to raise the decks, clockwise to lower them. Adjust the tie rod until all decks measure between 2" and 2 1/2".
12. Tighten the tie rod lock nut.
13. Re-measure all decks, and repeat adjustment procedures if necessary.

### 3.25 Mower Deck Height Calibration (3696M)

#### WARNING!



- NEVER make any adjustments to the deck height while the engine is running!
  - ALWAYS be sure to set the parking brake before making any adjustments to the Articulator!
- 

Occasionally, you will need to calibrate the mower deck height. Follow these procedures to calibrate:

1. Park the Articulator on a flat, level surface. Be sure to turn off the engine and set the parking brake before making any adjustments to the Articulator.
2. Be sure both rear drive tires are properly inflated to 10 lb. PSI.
3. Be sure all gauge wheels are pointing forward.
4. Set the deck height adjustment arm spacers to 2".
5. Measure the front of each deck from the tip of the blade to the floor. They should all measure 2", +/- 1/8".
6. If any deck does not fall within this range, place 2" blocks underneath the front and back of each deck. Make sure that the 2" blocks are positioned on a flat surface. The 2" blocks need to be positioned at the closest point to each wheel.
7. Starting with the center deck first, adjust the cable by loosening the front nut at the end of the deck cable. Adjust the two rear nuts to raise or lower the deck. When standing in front of the deck, turning the rear cable nuts counter-clockwise will raise the deck, clockwise will lower it.
8. Proceed to the next deck height adjustment arm. Turn the arm until the deck is at two inches. When standing in front of the rocker arm, turning the rear control arm nuts counter-clockwise will raise the deck, clockwise will lower it.
9. Continue with the other decks until all decks have been adjusted.
10. Remove the 2" blocks from under the blades.
11. Re-measure the fronts of all decks. They should all measure 2", +/- 1/8", from the tip of the blade to the floor. If any deck does not fall within this range, repeat the steps above.
12. Re-measure all decks, and repeat adjustment procedures if necessary.

### 3.26 Tires and Wheels

All tires are foam filled with the exception of the rear drive tires.

Check the air pressure in the rear drive tires. Maintain air pressure at 10 psi.

Verify proper function of all mower deck wheels. The wheels should turn freely without excessive side-to-side motion, and be free of debris. Clean, adjust, replace, and grease as necessary.

Check that each wheel swivels freely in the shaft pivot collar, and the bushings are in good condition. If any wheel does not swivel freely, clean and grease the shaft collar assembly. Replace the bushings if necessary.

### 3.27 General Inspection

Verify that all warning decals are in place, visible, and legible.

Verify that all covers and safety devices are properly installed and secure.

Check that the discharge chute is clear of debris, properly mounted, and in good condition.

Inspect entire Articulator for loose or entangled parts, debris, obstructions, misplaced tools, or any other possible safety hazards, equipment hazards, or projectile hazards.

### 3.28 Battery



#### WARNING!

- EXPLOSIVE GAS!
- Batteries produce explosive hydrogen gas while being charged!
- Always charge batteries in a well-ventilated area!
- Keep all batteries out of the reach of children!



---

See section 2.8 ***Use Caution When Working With Batteries Use Caution When Working With Batteries***

The Articulator utilizes a 12-volt battery with ratings: CA@32°F=680; CCA@0°F=540. The battery is located under the engine hood to the left of the engine. To access, release the rubber latches located behind the operators seat and open the engine cover. Be sure both battery cables and connections are secure, clean, and in good condition. Be sure both rubber connector boots are in place and secure.

Close the engine cover and secure the rubber latches.

Check to see that the battery is sufficiently charged by momentarily starting the engine.

1. From the operator seat, verify all switches on the control panel are in the OFF position.
2. Verify both steering control arms are locked into neutral position.
3. Turn the key switch clockwise to the RUN position. DO NOT START THE ENGINE.
4. Verify the neutral start and operator-presence indicator lights are activated (the two green lights on the control panel directly above the key switch). If the operator-presence switch is not activated, or the steering control arms are not locked into neutral position, the engine will not crank.
5. Turn the key switch to the GLOW position (counter-clockwise), for a maximum of 9 seconds to preheat the glow plugs. After 9 seconds, the audible warning beeper will sound, signifying adequate preheat.
6. Turn the key switch clockwise to the START position, and start the engine. If the battery charge is not sufficient to crank the engine, charge the battery. If, after charging, the battery charge is not sufficient to crank the engine, replace the battery.

**NOTE: Do not crank the engine over 10 seconds!**

To change the battery, insure all control switches are in the OFF position before disconnecting the negative (-) ground cable. If control switches are active, sparking and explosion are possible. See section 2.8 **Use Caution When Working With Batteries Use Caution When Working With Batteries.**

Batteries produce explosive hydrogen gas while being charged. To prevent fire or explosion, only charge batteries in well-ventilated areas, away from any spark, open flame, or other sources of ignition. Always remove jewelry before handling batteries. **Keep all batteries out of the reach of children!**

### 3.29 Engine

While the engine is running, check the exhaust. During proper operation, the exhaust should be colorless. If the engine runs continuously with dark exhaust, stop the engine and correct the problem before operating the Articulator. Refer to the *Kubota Diesel Engine Operator's Manual* for proper instructions.

Listen for any unusual engine noises. If the engine suddenly slows down or accelerates, makes abnormal noises, runs roughly, or displays any other usual characteristics, stop the engine and correct the problem. Refer to the *Kubota Diesel Engine Operator's Manual* for proper instructions.

Check the oil pressure and water temperature indicator lights (the center and left red lights located

at the top of the control panel). These lights will indicate an inadequate engine oil pressure, or an excessive engine coolant temperature. If either light is activated while the engine is running, stop the engine and correct the problem before operating the Articulator. Refer to the *Kubota Diesel Engine Operator's Manual* for proper instructions.

**NOTE: Blades will shut off automatically if overheating occurs.**

### 3.30 Mower Deck Lift



#### CAUTION!

- NEVER attempt to lift the cutting deck into transport position while the blades are engaged! Lifting the cutting deck into transport position while the blades are engaged can cause serious damage to the Articulator!
- 

The Articulator is equipped with a hydraulic deck lift arm which lifts the deck of the unit. Test the operation of the hydraulic deck lift arms while the engine is running. **Insure the blades are NOT engaged.** Never lift the mower deck into transport position while the blades are engaged.

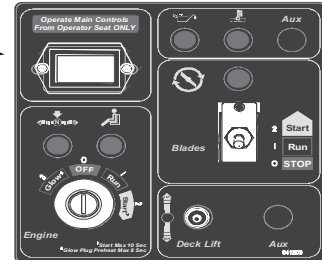
**On the 3696H**, the hydraulic deck lift arm is operated with the foot control device located on the front center of the seat pan. From the operator seat, slowly depress the TOP of the foot control device activating the hydraulic deck lift cylinder. The arm retracts, lifting the mower deck slightly off the ground and locking into position. The arm should stay locked in this position even after discontinuing the pressure on the foot pedal.

Once you have determined that the hydraulic deck lift arm is both lifting and locking the mower deck properly, depress the foot control device again to release the hydraulic deck lift cylinder. (If you are preparing to travel to the cut site, you may wish to leave the hydraulic deck lift arm locked into transport position.) Turn off the engine.

**On the 3696M**, the manual deck lift arm lifts the mower deck to the transport position. It is lift valve handle is located to the right of the operator seat, behind the steering control arm, in front of the fender. Pull the deck lift lever toward the operator seat, lifting the mower deck, where the lever locks into place at the transport position. Insure that the deck is in the desired height to transport. If not, adjust it by lowering the deck (releasing the chain tension) and placing the appropriate chain link on the chain hook.

### 3.31 Hour Meter

The hour meter is located in the upper left corner of the control panel. This meter records the total hours on the engine, and cannot be reset. You may wish to record the hour meter reading prior to operation of the Articulator for tracking of maintenance schedules, job timing, billing, or other records.



### 3.32 Maintenance Checklists

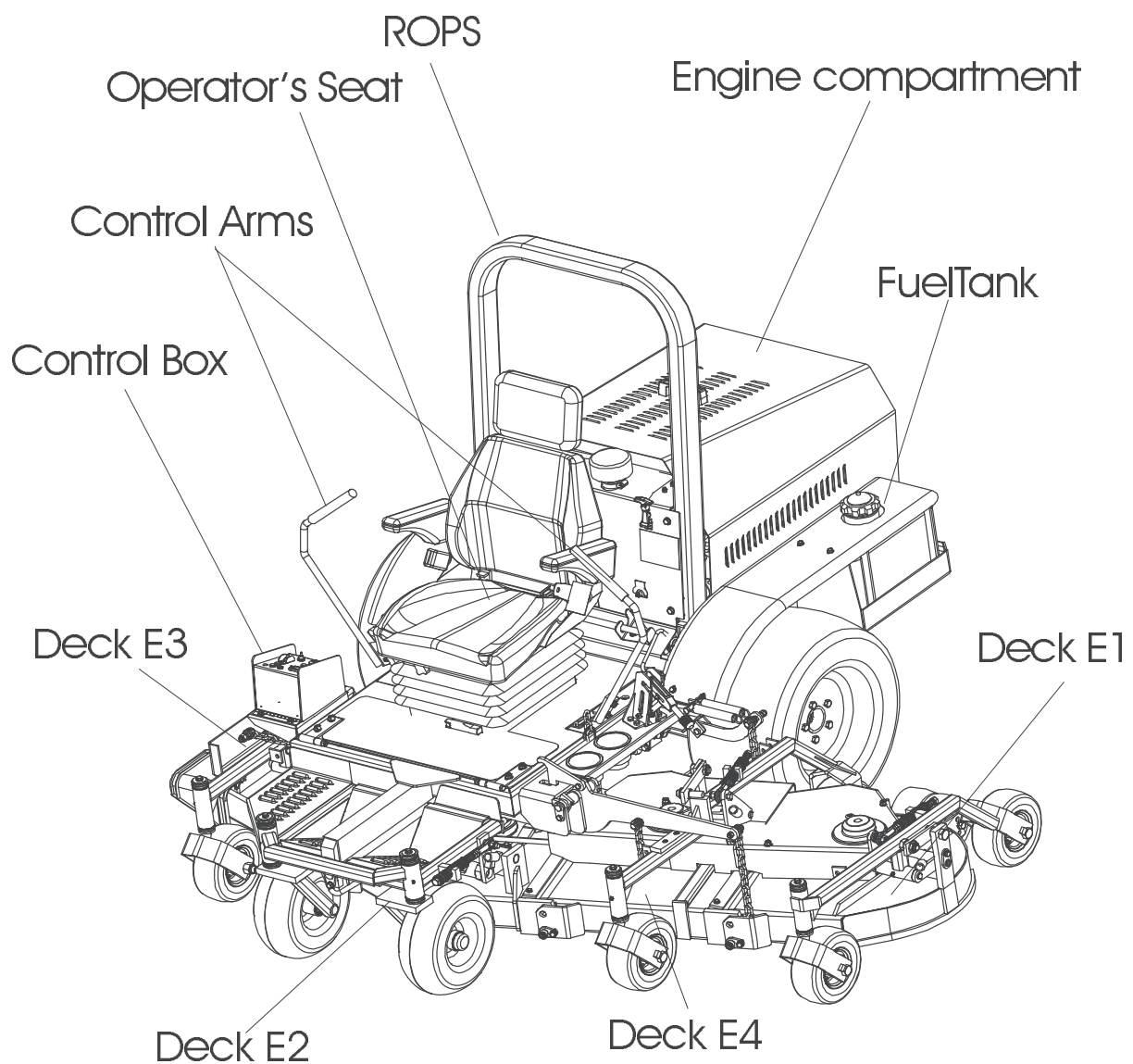
Complete the appropriate maintenance checklists in a timely manner. (See section 5).

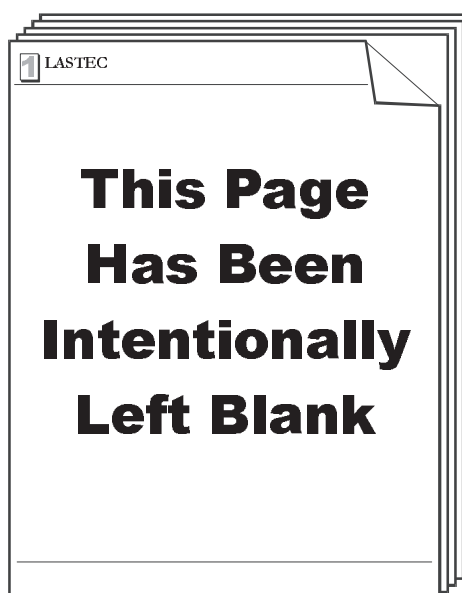
### 3.33 Pre-Operation Equipment Inspection Checklist

Perform the following equipment inspection prior to each operation of the Articulator:

- ☐ Verify that the parking brake is set.
- ☐ Check the fuel level.
- ☐ Verify that the fuel shut-off valve (behind and left of the operator) is in the Left or Right position.
- ☐ Check engine oil level and condition.
- ☐ Check the air cleaner and filter elements for contamination or debris.
- ☐ Brush out and clean the radiator and hood grills.
- ☐ Check coolant level and condition in overflow tank.
- ☐ Check hydraulic fluid level and condition. Add if low - do not overfill. Change oil and filter if necessary.
- ☐ Inspect the entire hydraulic system for leaks.
- ☐ Adjust hydrostatic pumps if needed.
- ☐ Check both hydrostatic pump belts and tension springs for proper installation, tension and condition.
- ☐ Check the gearbox oil level and condition.
- ☐ Check entire area around and under gearbox for oil leaks.
- ☐ Check the gearbox belts for proper tension and condition. Gearbox drive belt tension is **PRESET**. *Increasing the spring tension could cause serious damage. Use Lastec Part No. 018818 (spring) ONLY.*
- ☐ Check the mower deck drive belt and idler tension spring for proper installation, tension and condition.
- ☐ Clean entire mower deck area under operator seat pan of any grease, oil, fuel, grass, or debris.
- ☐ Check all mower deck belts and idler tension springs for proper installation, tension, and condition.
- ☐ Clean each deck under the belt covers of any grease, oil, fuel, grass, or debris.
- ☐ Inspect all blades for proper installation, orientation, tightness, sharpness, and overall condition.
- ☐ Be sure the seatbelt is secure and operable.
- ☐ Adjust the operator seat for proper operator position.
- ☐ Check that both steering controls arms are properly linked, free of debris, and operating freely.
- ☐ Set the mower deck height to the desired level.
- ☐ Calibrate the mower deck height adjustment rods if needed.
- ☐ Check the air pressure in the rear drive tires. (10 PSI.)
- ☐ Verify proper function of all gauge wheels.
- ☐ Verify that all warning decals are in place, visible and legible.
- ☐ Verify that all covers and safety devices are properly installed and secure.
- ☐ Check that the discharge chute is clear of debris, properly mounted, and in good condition.
- ☐ Inspect entire Articulator for loose or entangled parts, debris, obstructions, or neglected tools.
- ☐ Verify that the battery has sufficient charge to start the engine.
- ☐ Check engine for abnormal exhaust or sounds.
- ☐ Check oil pressure and coolant temperature lights.
- ☐ Check the mower deck lift arms for proper lifting and locking operation.
- ☐ Be sure the operator seat pan and engine cover are properly closed, latched, and secure.
- ☐ Record the hour meter setting if desired.
- ☐ Complete the appropriate maintenance checklist (section 5).

### 3.34 Major Features





## **SECTION 4   Operating Procedures**

## 4.1 Starting The Engine

### DANGER!



- NEVER allow extended running of any engine indoors! Exhaust gasses contain carbon monoxide, an odorless and deadly poison!
  - NEVER operate the Articulator when children are present!
- 

### WARNING!



- NEVER attempt to operate the Articulator until you have read and understand this manual in its entirety!
  - NEVER allow anyone to operate the Articulator without proper training and without first reading and understanding this manual in its entirety!
- 

### CAUTION!



- ALWAYS perform the pre-operation equipment inspection before attempting to operate the Articulator!
  - ALWAYS perform the appropriate maintenance schedule(s) before attempting to operate the Articulator!
- 

*After you have:*

read and understood this manual *in its entirety*,  
reviewed all safety rules,  
completed the pre-operation inspection checklist,  
and performed the appropriate maintenance schedule(s),

*then you are ready to begin operating the Articulator.*

From the operator seat, be sure all auxiliary switches (blades, power outlet, etc.) on the control panel are in the OFF positions and the hand control levers are locked into NEUTRAL position. The parking brake must be set to the ON position.

The operator-presence switch (located within the operator seat) and the neutral start switches (located on the steering control arms) must all be activated in order to start the engine. If the operator seat is not occupied, either steering control arm is not locked into neutral position, or the parking brake is not in the ON position, you cannot start the engine.

Activation of these switches is indicated by the operator present and neutral start lights on the control panel (the two green lights directly above the key switch). Turn the key switch clockwise to the RUN position. If both green indicator lights are activated, you are ready to start the engine.

As with any diesel engine, you must first pre-heat the glow plugs under cold conditions before attempting to start the engine. To do this:

1. Turn the key switch counter-clockwise to the GLOW position for 9 seconds. After 9 seconds, the audible warning beeper will sound, signifying adequate preheat.
2. Turn the key switch clockwise to START position, cranking the engine for a maximum of 10 seconds.

**NOTE:**

**Cranking engine for more than 20 seconds will cause electrical failure!**

3. If the engine does not start within 10 seconds, discontinue cranking by turning the key switch counter-clockwise to the OFF position. Wait 60 seconds. Repeat steps 1 through 3. If, after several attempts, the engine will still not start, discontinue the starting process until the cause of malfunction is determined.
4. When the engine starts, adjust the throttle lever (located to the lower right of the operator seat, behind the right steering control arm) forward until the engine is running at a steady idle. Do not overpower the engine.

## 4.2 **Stopping The Engine**

Stop the engine by throttling down to a slow idle, then turning the ignition key switch to the OFF position. Wait for all motion to stop. Be sure all auxiliary switches are in the OFF position. Set the parking brake before dismounting the Articulator.

## 4.3 **Motion Control**

### **WARNING!**



- ALWAYS clear the entire area of all personnel before operating the Articulator!
- ALWAYS verify that all safety covers are in place and secure before operating the Articulator!
- ALWAYS wear the seatbelt when operating the Articulator!

---

The Articulator 3696H/M is equipped with two hydrostatic pumps, one operating each rear drive wheel. These pumps are controlled separately with each of the steering control arms (located to the left and right of the operator seat).

Verify that all safety covers are in place and secure before operating the Articulator. Buckle the seatbelt. Always wear the seatbelt when operating the Articulator. Clear the entire area of all personnel before operating the Articulator.

Start the engine in accordance with section 4.1 of this manual.

Pushing a steering control arm forward activates the hydrostatic pump on the corresponding side, turning the drive wheel in the corresponding direction. (i.e., pushing the right steering control arm forward activates the right drive wheel in the forward direction. Pulling the right steering control arm back activates the right drive wheel in the reverse direction.)

The steering control arms also govern the ground speed of the Articulator. The farther from the neutral position the arm is pushed or pulled, the faster the corresponding drive wheel turns. Always use the steering control arms to regulate ground speed - NOT the throttle control.



---

**CAUTION!**

- Loss of control may occur when breaking in an emergency (pushing steering control arms from full reverse to full forward, or vice versa). **Training is required.**
- 

Release the parking brake. Verify that both the parking brake indicator light (located in the upper right corner of the control panel) and the audible parking brake alarm are off before attempting any travel with the Articulator.

In order to maneuver the Articulator, you must first remove both steering control arms from the neutral lock position. Simply grasp each steering control arm with each hand, and pull them both toward the center of the unit until they are free from the neutral lock. You are now ready to begin maneuvering the Articulator. Following are the proper steering procedures

- **To travel forward:** Push both control levers forward evenly. The farther they are pushed, the faster the Articulator travels.
- **To travel in reverse:** Pull both control levers backward evenly. The farther they are pushed, the faster the Articulator travels.
- **To turn to the right:** Push the left control lever forward slowly, and maintain the right control lever in neutral position.
- **To turn to the left:** Push the right control lever forward slowly, and maintain the left control lever in neutral position.
- **To obtain a zero turn radius (ZTR) to the right:** Push the left control lever forward slowly, while simultaneously pulling the right control lever backward slowly.
- **To obtain a zero turn radius (ZTR) to the left:** Push the right control lever forward slowly, while simultaneously pulling the left control lever backward slowly.
- **To stop:** Return both control levers to the neutral position.
- **To change directions:** Slowly return both control levers to the neutral position, and allow the Articulator to slow to a stop. Then slowly move the control levers into the appropriate positions to travel in the desired direction.

**NOTE:**

**When the control levers are released, they automatically return to the neutral position, stopping all motion of the Articulator.**

## **4.4 Ground Speed**

The Articulator 3696H/M is designed to cut cleanly and efficiently at relatively high ground speeds. Reduced ground speed is required when operating on severe contours, when cutting excessively tall, wet, or thick grass, or when traveling up or down large or steep hills. Maximum ground speed is intended for transport to and from the work site only, and should not be attempted during any cutting operation.

Attempting to change directions at high ground speed, whether cutting or transporting, can cause damage to the turf, especially in wet conditions. Direction changes should be made by slowing to a near or complete stop (returning the control levers to neutral position), and slowly changing the control lever positions to begin travel in the desired direction. This prevents turf damage, as well as prolonging equipment life and promoting safer operation of the Articulator.

## **4.5 Mower Height Adjustment (3696H)**

To adjust the mower deck height, depress the deck height adjustment control stick (located to the right of the operator seat, directly behind the control box). This relieves pressure to the adjustment cylinder, allowing height adjustment of the deck by moving the spacers located on the control rod arm (immediately to the left and forward of the operator). When the proper adjustments are made, return the control rod arm back into the holder and reset pressure to the cylinder with the control stick. **Avoid trapping fingers between the spacers and the lock plate during adjustment.**

## **4.6 Mower Height Adjustment (3696M)**

On the rocker arm of each deck, turn the spacer locking knob on the height adjustment lever counter-clockwise until the spacers and lever are loose. Raise the lever from the locking bracket and adjust the spacers to the desired height setting. Each spacer placed in front of the lock plate will indicate an additional 1/4" of deck height. When the desired deck height setting is reached, place the lever back into the locking bracket and turn the spacer locking knob clockwise until the spacers are tight. **Avoid trapping fingers between the spacers and the lock plate during adjustment.** Repeat process on all three deck height adjusting rods.

## 4.7 Mower Deck Operation

### DANGER!

- ALWAYS clear area of all personnel before engaging the blades!
- ALWAYS verify that all safety covers are in place before operating the Articulator!
- NEVER aim/point/etc. the discharge in the direction of bystanders, vehicles, or buildings!
- ALWAYS stay well clear of blades during operation!
- NEVER operate the Articulator when children are present!



The Articulators 3696H and 3696M are equipped with a 96" wide mower deck, which is comprised of four independently articulating 25" decks. All four decks are belt driven - the drive belt (located under the operator seat pan between the gearbox and the main deck) drives the main deck, and the deck belts (running between the decks) drive each deck. (See the figure at right.) The individual decks pivot at blade level, and the idler belt tension system takes up excess belt length or releases additional belt length as necessary during the up and down articulation of the decks. This allows the Articulator to hold the contour of the ground with precision.

Refer to the Initial Set-Up, *Mower Deck Height Calibration* of this manual for instructions on setting the mower deck height to the desired level.

The Articulator is equipped with an electric clutch which activates the gearbox, thus engaging the blades of all four decks simultaneously. The blades may only be engaged while the engine is running.

In order to engage the blades, the operator-presence switch (located within the operator seat) must be activated. The activation of the operator-presence switch is indicated by the operator present light located on the control panel just above the key switch.




From the operator seat, switch the BLADES toggle switch (located in the center of the main control panel) to the START position. It is a *momentary switch* - release it immediately upon activation of the clutch.

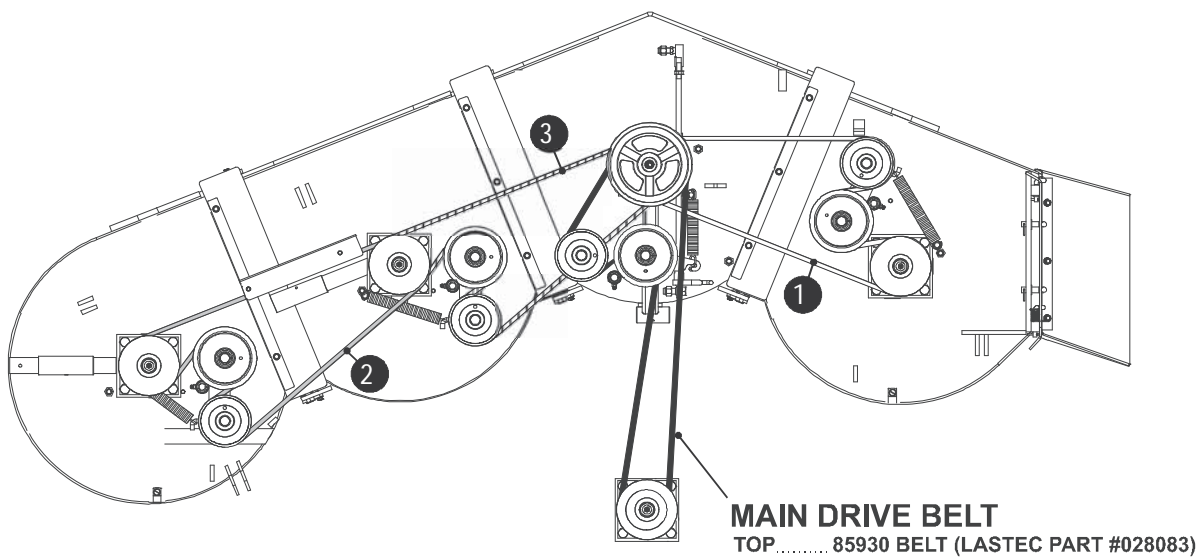
### NOTE:

**Leaving the operator seat at any time while the blades are engaged will cause the blades to automatically disengage.  
Blades will shut off automatically if overheating occurs.**

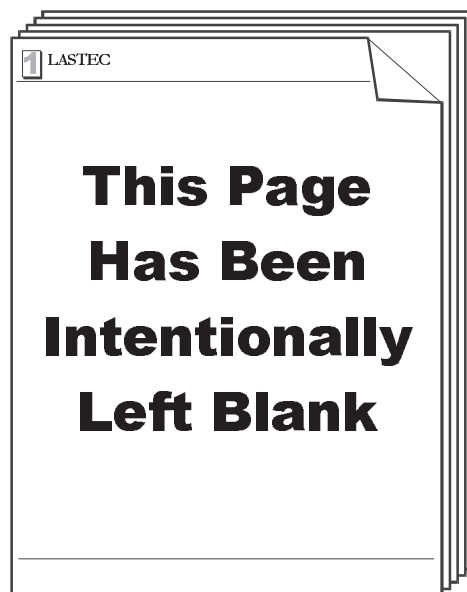
## Articulator 3696H/M BELT DIAGRAM

### DECK BELTS

- 1  2<sup>ND</sup> FROM TOP ..... 85870 BELT (LASTEC PART #P707)
- 2  3<sup>RD</sup> FROM TOP ..... 85890 BELT (LASTEC PART #P706)
- 3  LOWEST ..... 85890 BELT (LASTEC PART #P706)



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## SECTION 5 Maintenance

## 5.1 **Maintenance**



### **DANGER!**

- NEVER allow children to operate the Articulator!
  - NEVER allow children on or near the Articulator!
  - NEVER operate the Articulator when children are present!
  - NEVER perform maintenance to the Articulator when children are present!
- 



### **CAUTION!**

- Proper maintenance of the Articulator is important!
  - ALWAYS perform the appropriate maintenance checklist at the proper time interval!
  - Failure to complete the appropriate maintenance checklists at the proper time intervals will cause damage to the Articulator, unsafe operating conditions, substandard performance, and will void the warranty!
  - Warranty issues are dependent upon proper maintenance!
- 

Along with completing the **Pre-Operation Equipment Inspection Checklist** (section 3.29) *each time* you operate the Articulator, complete the following Maintenance Checklists at the indicated time intervals. (Also see **Maintenance Chart** in section 5.13.)

## 5.2 **Every 8 Operating Hours or Daily**

- Complete the Pre-Operation Equipment Inspection Checklist.
- Verify all hardware is functional, securely fastened and in good condition.
- Grease all grease zerks.
- Inspect the spindle bearing grease seals (under each deck) for grease leakage or improper seating.
- Inspect gearbox and seals for leaks.
- Lubricate all joints and moving parts which are not equipped with grease fittings. (*Recommend the use a nickel-based anti-seize for these areas*).
- Verify that all brake cables and hardware are functional, securely fastened and in good condition.
- Inspect and clean air filter elements.

- Grease all wheel hubs.
- Inspect all belts for cracks, wear, or damage; replace as needed.
- Verify proper installation, operation, and flow of grass chute.
- Inspect entire Articulator for loose or entangled parts, debris, obstructions, misplaced tools, or any other possible safety hazards, equipment hazards or projectile hazards. Clean off decks of any dirt, grease, or oil.
- Depending on current cutting conditions, brush out and clean the radiators and hood grills periodically during the day to ensure proper flow of cooling air.
- Check each deck hinge for compacted grass
- Clean and guage wheels to reset the bearing pre-loads. (Reference Service Bulletin SB-0149)

### **5.3 First 50 Operating Hours**

- Change engine oil and filter.<sup>1</sup>
- Change the hydraulic oil and filter.
- Change gearbox lubrication with proper oil for your gearbox.

### **5.4 Every 50 Operating Hours**

- Inspect engine fuel lines and clamps. Replace as needed. <sup>1</sup>
- Grease all blade spindle bearing housings. Fill until grease purges from weep hole in bearing housing.
- Inspect all bushings for wear. Replace as needed.
- Check and clean if necessary any debris that may have accumulated during operation.
- Check gearbox lubrication levels and condition.

---

*1. Refer to the Kubota Diesel Engine Operator's Manual accompanying this manual.*

### **5.5 Every 100 Operating Hours**

- Inspect air cleaner and filter elements. Replace as needed.<sup>1</sup>
- Inspect engine fan and alternator belt. Replace as needed.
- Clean fuel filter.<sup>1</sup>

### **5.6 Every 200 Operating Hours**

- Change engine oil and filter.<sup>1</sup>
- Change gearbox oil with 75W90 synthetic.
- Change the hydraulic oil and filter.

### **5.7 Every 400 Operating Hours**

- Replace fuel filter cartridge.<sup>1</sup>

### **5.8 Every 500 Operating Hours**

- Inspect and re-pack all wheel bearings. Replace if needed.
- Inspect all component parts and wear points. Replace any worn damaged or missing parts on:
  - Deck hinges
  - Idler arms
  - H-blocks
  - Rocker arms
  - Wheel Yokes
  - Other pivot points
- Flush fuel tanks.<sup>1</sup>
- Flush radiator.<sup>1</sup>
- Replace engine fan and alternator belts.<sup>1</sup>
- Check engine valve clearance.<sup>1</sup>

- Check head mounting bolt torque while performing valve check.<sup>1</sup>
- Inspect all blade spindle bearings for wear or damage; replace if needed.

## **5.9 Annual**

- Replace deck pivot bushings and pins.
- Replace air cleaner filter elements if necessary.<sup>1</sup>
- Replace fuel filter cartridge.
- Change the hydraulic oil and filter.
- Replace the gearbox shaft seals and V-ring seals
- Rotate tires.
- Change engine oil and filter
- Change gearbox oil with 75W90 synthetic.

## **5.10 Bi-Annual**

- Replace fuel pipes and clamps.<sup>1</sup>
- Replace radiator hoses and clamps.<sup>1</sup>
- Replace battery.

---

*1. Refer to the Kubota Diesel Engine Operator's Manual accompanying this manual.*

## 5.11 Maintenance Schedule

	Daily	First 50 hours	Every 50 Hours	Every 100 Hours	Every 200 Hours	Every 400 Hours	Every 500 Hours	Annually	Bi-annually
Grease all wheel hubs	X								
Complete the <i>Pre-operation Equipment Checklist</i>	X								
Inspect air filter elements	X								
Grease all zerks	X								
Inspect all spindle grease seals under each deck	X								
Lubricate all joints and moving parts that are not equipped with grease zerks	X								
Verify that hardware is functional, securely fastened, and in good condition	X								
Verify proper installation, operation, and flow of grass chute	X								
Inspect entire Articulator for loose or entangled parts, debris, obstructions, neglected tools, or other hazards	X								
Inspect gearbox lubrication level and condition			X						
Change Hydraulic oil and filter		X							
Change engine oil and filter		X							
Change gearbox lubrication (75W90 Synthetic)		X		X			X		
Inspect engine fuel lines and clamps			X	X			X		
Grease all blade spindle bearing housings			X	X			X		
Inspect all bushings			X	X			X		
Inspect alternator and fan belts				X					
Replace fuel filter cartridge		X			X		X		
Inspect gearbox seals for leaks	X								
Inspect and repack wheel bearings						X			
Flush radiator						X			
Flush fuel tank of debris						X			
Check engine valve clearance						X			
Check head mounting bolt torque (while performing valve check)						X			
Rotate tires							X		
Replace air cleaner filter elements							X		
Replace engine fuel lines and clamps								X	
Replace radiator hoses and clamps								X	
Replace battery								X	
Inspect all component parts and wear points						X			
Check deck hinges for compacted grass	X								
Clean fuel filter			X						
Replace engine fan and alternator belts									
Replace gearbox shaft seals and V-ring seals							X		
Retighten guage wheels to reset pre-loads	X								
Inspect all blade spindle bearings for wear or damage					X				

## 5.12 Daily Maintenance Checklist



Model: \_\_\_\_\_

Serial No: \_\_\_\_\_

Hours: \_\_\_\_\_

Date: \_\_\_\_\_

### Lastec Articulator 3696 Daily Maintenance Checklist

Maintenance Item	Maintenance Interval						
	MON	TUES	WED	THUR	FRI	SAT	SUN
Complete Pre-operation Checklist							
Inspect and clean air filter elements							
Brush or blow our radiator							
Inspect all spindle grease seals under deck							
Inspect all gearbox and seals for leaks							
Inspect belts for wear, cracks, or damage							
Inspect deck hinges for compacted grass							
Inspect unit for loose parts, debris, tools							
Verify hardware is functional and secure							
Verify proper installation of grass chutes							
Retighten gauge wheels bearing pre-load							
Grease all zerks <sup>1</sup>							
Grease all wheel hubs <sup>1</sup>							
Lubricate all joints and moving parts <sup>1</sup>							

<sup>1</sup> Perform service immediately after each washing

Maintenance Concerns		
Initials	Date	Comments

## 5.13 Articulator 3696H/M Specifications

**PART #**

<b>Mower Deck</b>	Mower Deck Configuration	(4) 25" Articulating Decks	
	Cutting Width	96"	
	Transportation Width		
	Blades	(4) 25" High-Lift (US option)	P701
		(4) 25" Low-Lift	P849
		(4) 25" Gator Blades (US option)	P848
	Blade Tip Speed	Normal Operating Range Of 15,000 to 18,000 FPM	
	Mower Deck Height Range	1" to 4 1/2"	
	Gross Weight	2,015 lbs.	
	Gauge Wheels	(7) 9" x 3" Urethane-Filled Tires	A150
	Front Tires	(2) 13" x 6" Air-Filled Tires	019107
	Drive Tires	(2) 24" x 13-12 Pneumatic Tires (10 psi)	018891
	Deck D1 Belt	Goodyear Insta-Power 85890	P706
	Deck D2 Belt (Deck Drive)	Goodyear Insta-Power 85930	028083
	Deck D3 Belt	Goodyear Insta-Power 85870	P707
	Deck D4 Belt	Goodyear Insta-Power 85890	P706
	Gearbox (Curtis)	Curtis Model 215, Rat 1:1, Type B	018786
	Gearbox Oil (Curtis)	Exxon-Spartan Synthetic EP 100, 16 Oz	
	Gearbox (Superior)	Superior R100 CCW/Input,CCW/Out	040805
	Gearbox Oil (Superior)	Mobilube SCH 75W90 (6 ounces)	
	Gearbox Belts	Hydro Belts, gearbox, Poly-v	041734
	Clutch	Diesel Warner Poly-V	048209
<b>Transmission</b>	Hydraulic Pump, Left	Hydro Gear BDP-21L-103	P823
	Hydraulic Pump, Right	Hydro Gear BDP-21L-203	P824
	Hydraulic Motors Left	Ross MB29	018741
	Hydraulic Motors Right	Ross MB29	018741
	Hydraulic Fluid	Lastec Hydro Oil, Qt (Shell TTF-SB)	040642
		2.5 gal and 1 filter	028490
		5 gal and 2 filters	028536
	Hydraulic Fluid Filter	25 Micron, 7 GPM Full-Flow, 3/8" NPT	027998
	Hydraulic Fluid Capacity	7 Quart (4qt in reservoir)	
	Hydraulic Pump Drive Belt (left)	BX-34	028082
	Hydraulic Pump Drive Belt (right)	BX-35	041702

**PART #**

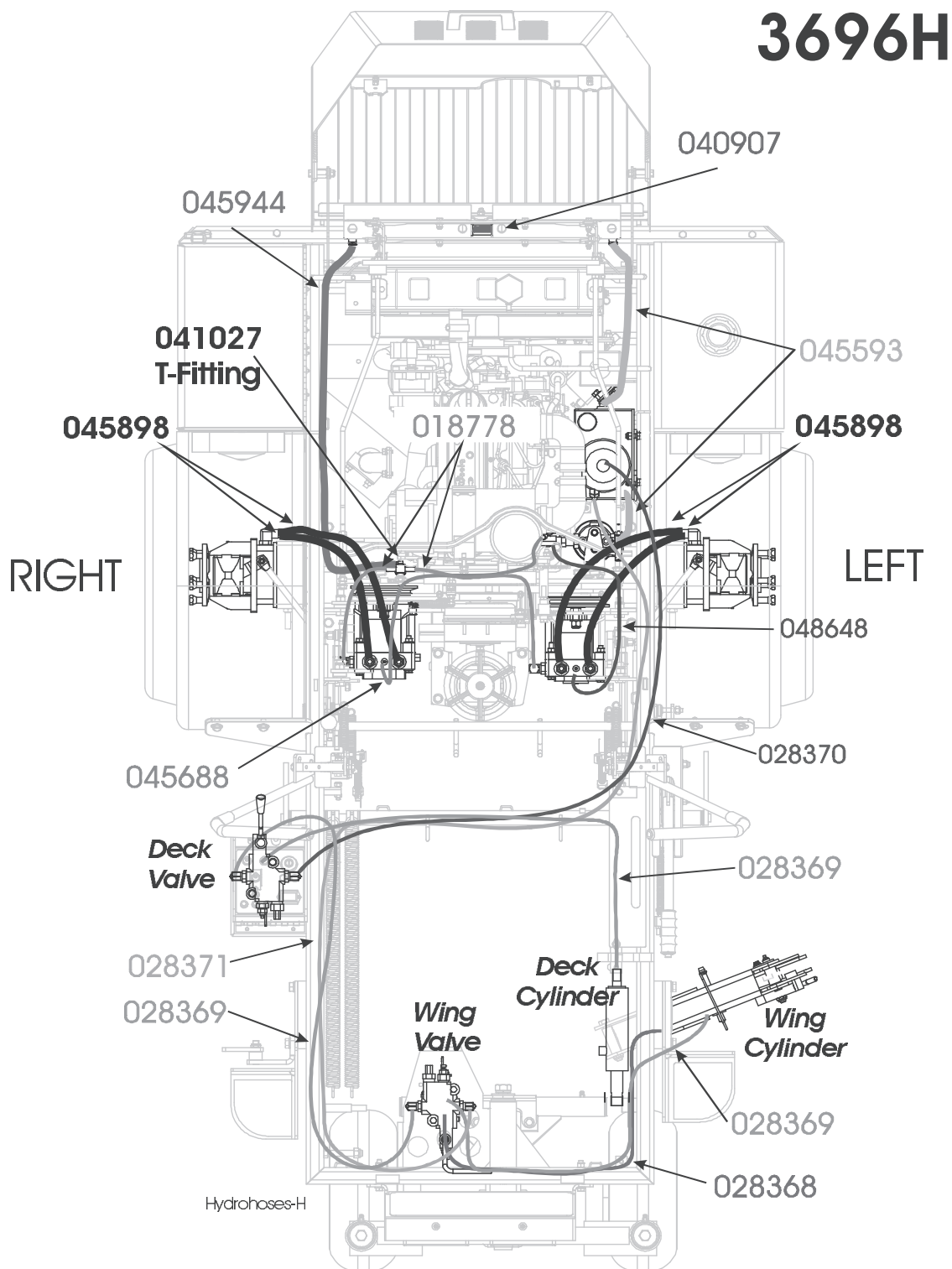
<b>Engine</b>	Model	Kubota V1505-E Water-Cooled Diesel	028534
	Bore and Stroke	74mm x 78.4mm	
	Total Displacement	1498 cm <sup>3</sup> / 91.41 cu in	
	Power	36 HP	
	High / Low Idle Speed	3000 RPM / 800 RPM	
	Compression Ratio	23:1	
	Dry Weight	242.5 lbs.	
	Oil	API Service Class SC or SH, SAE 10W-30	
	Oil Capacity	6.0L / 6.34 Qt	
	Oil Filter	Kubota 16271-32090	018050
	Fuel	Diesel Fuel No.2-D (ASTM D975)	
	Fuel Capacity	8.5 Gal	
	Fuel Filter Element	Racor R12T 10 Micron	028084
	Battery	Deka 600U 12V DC, Ratings: CA@32°F=680; CCA@0°F=540	P08638
	Coolant Capacity	4.0L / 1.06 Gal	
	Fan Belt	Kubota 16282-97010	028514
	Coolant	50/50 Eth glyco/water	
<b>Other</b>	Grease	Citgo Lithopex RT, NLGI grade 2 or equivalent	
	Annual Service Kit	TBA	
	50 Hour Service Kit		040996

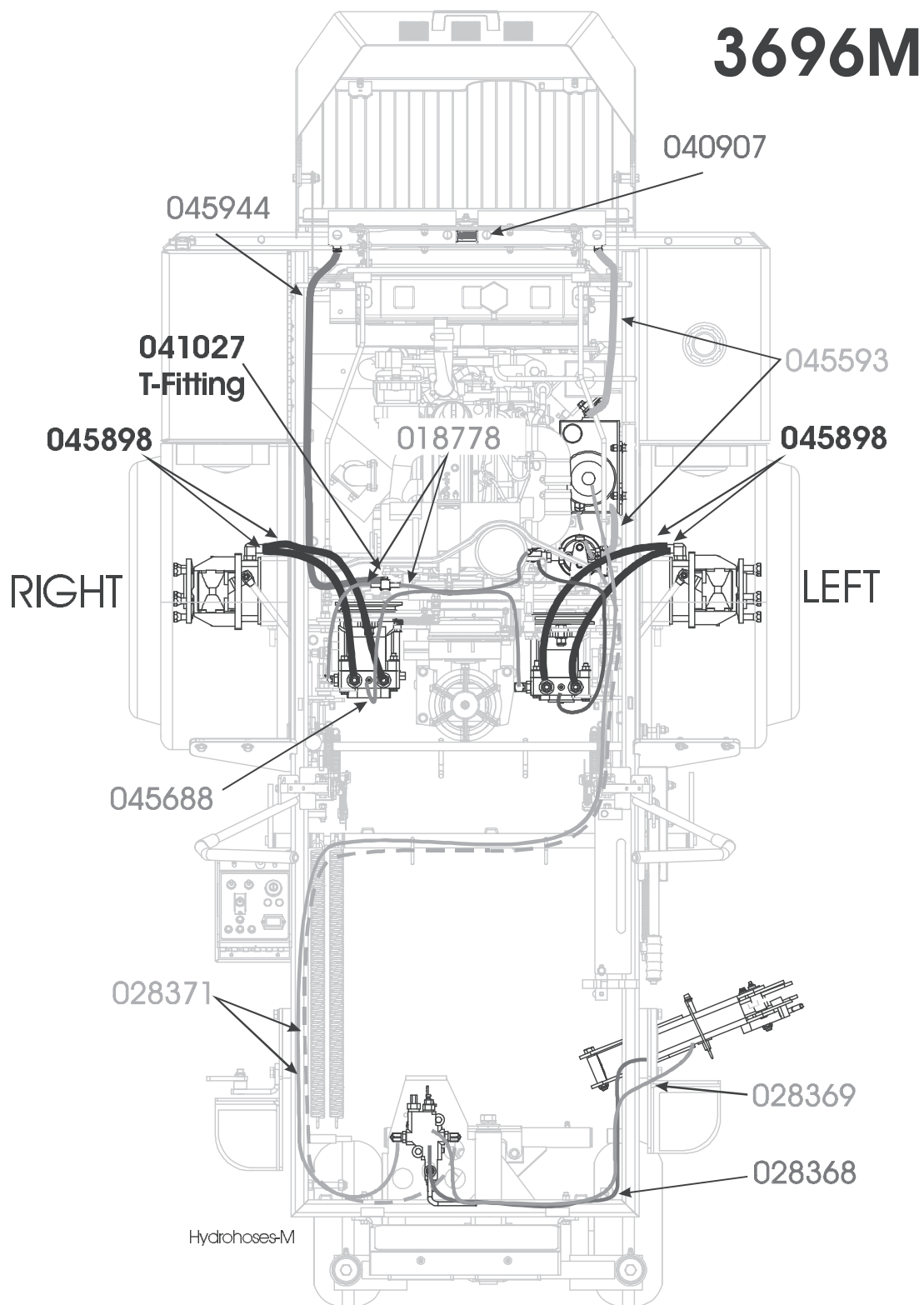
## CE Required Specifications

<b>Vibration</b>			
	HAV Left Handle	3.6 m/s <sup>2</sup>	
	HAV Right Handle	2.5 m/s <sup>2</sup>	
	WBV Seat	1.7 m/s <sup>2</sup>	
		All values shown are vector sums.	
	Time Limit	7 hours continuous use	

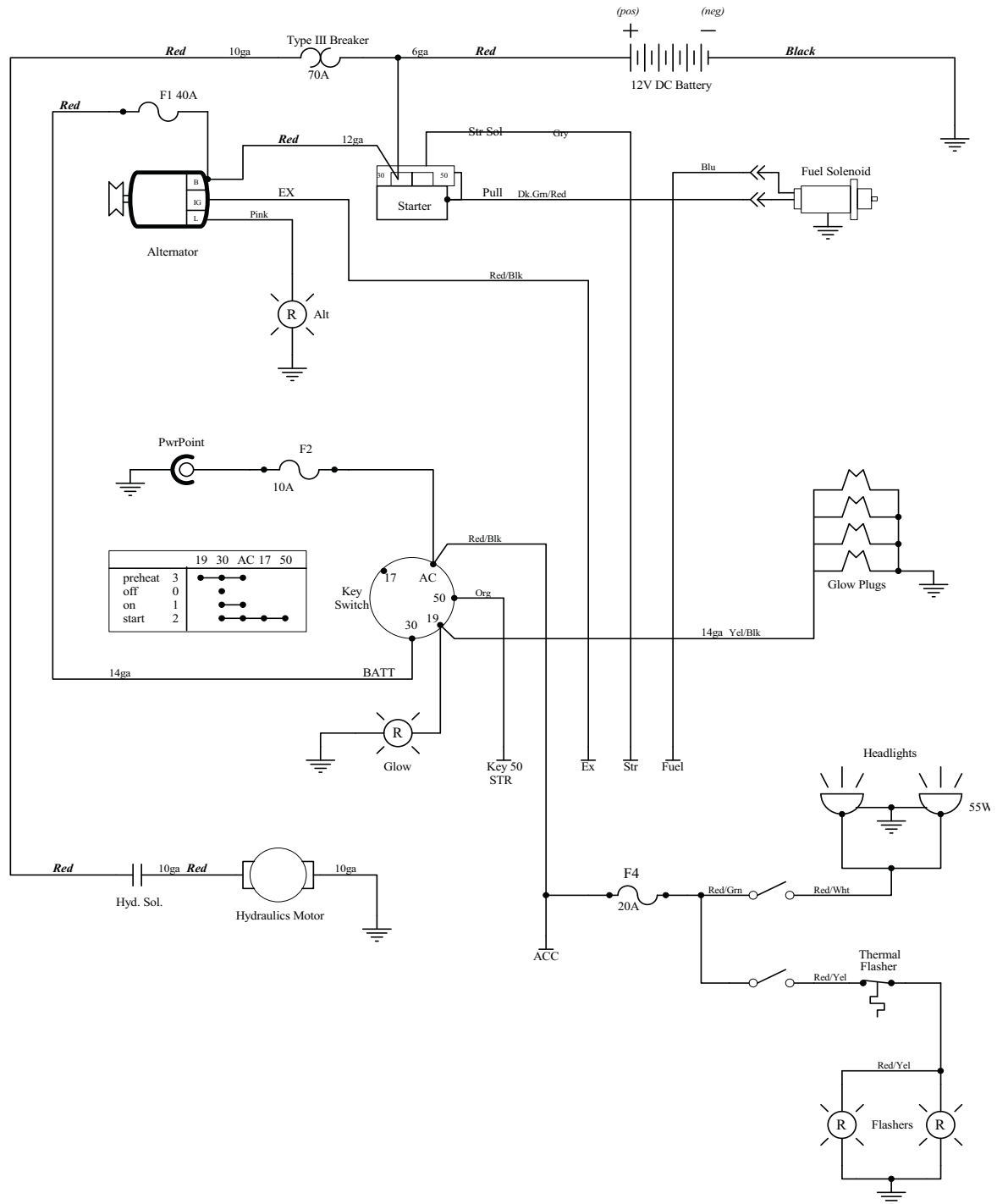
<b>Noise</b>			
	Noise Levels	< 105 dBA	

## 5.15 Hydraulic System Diagram



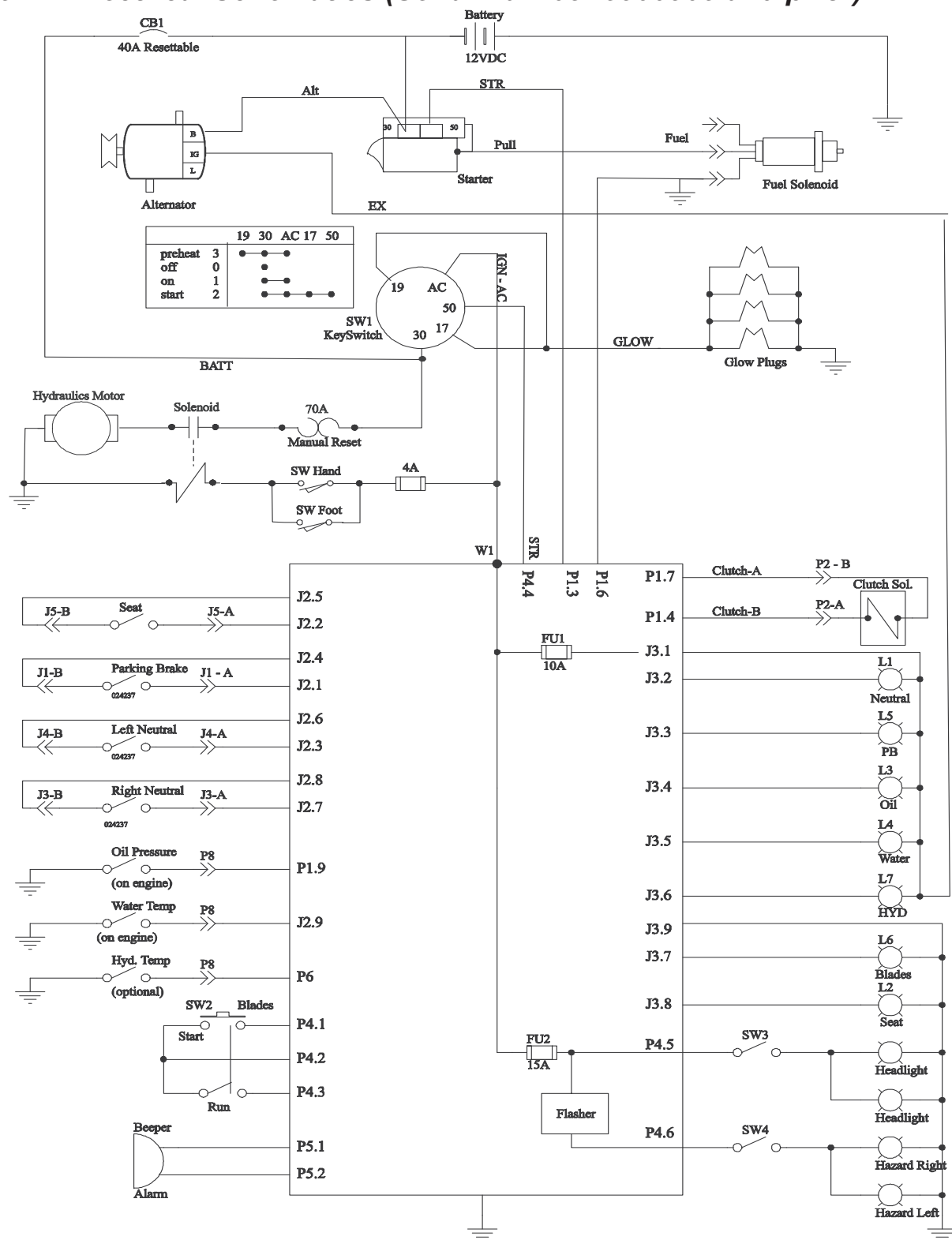


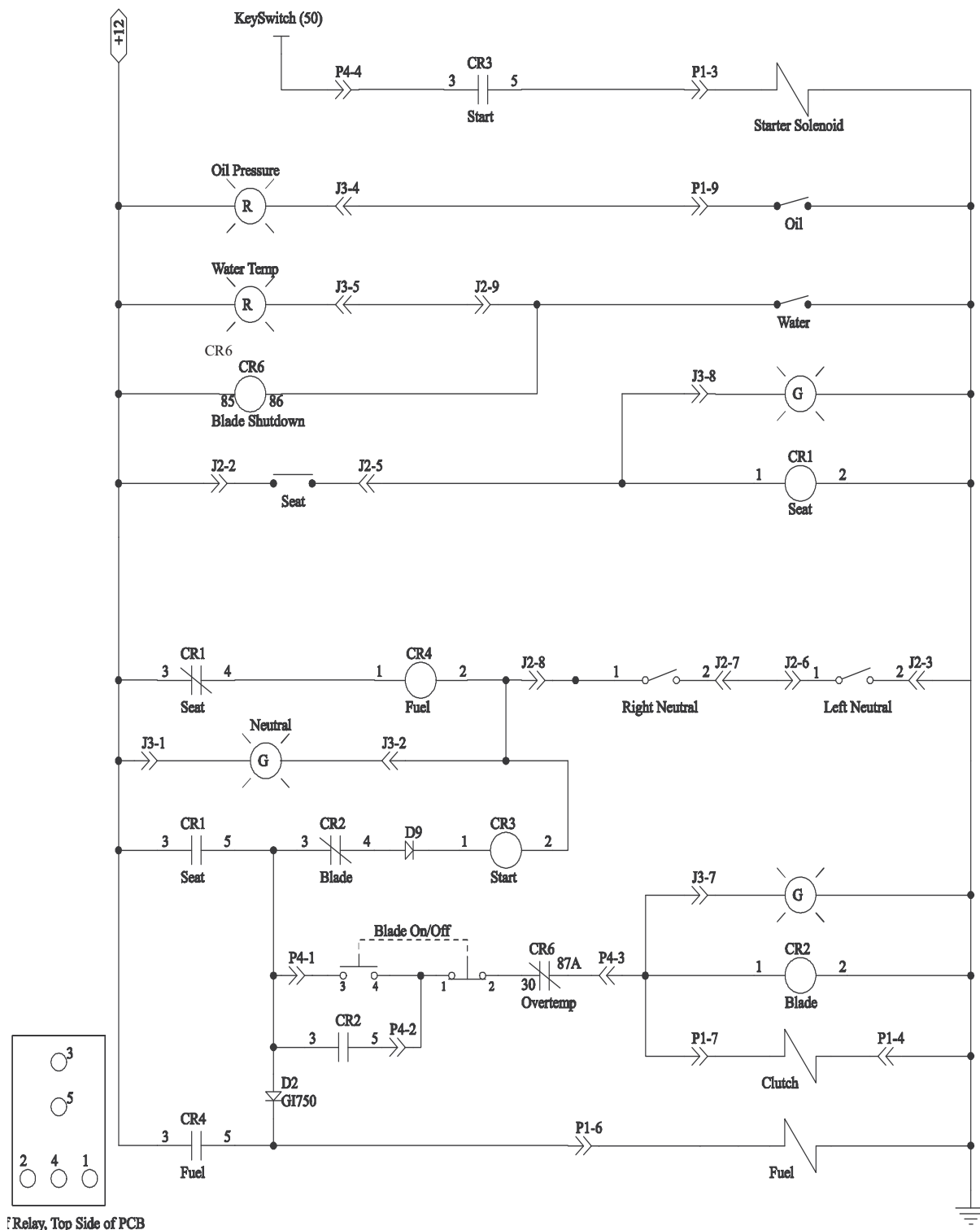
### 5.16 Schematics (Serial Number 5911005 and later)

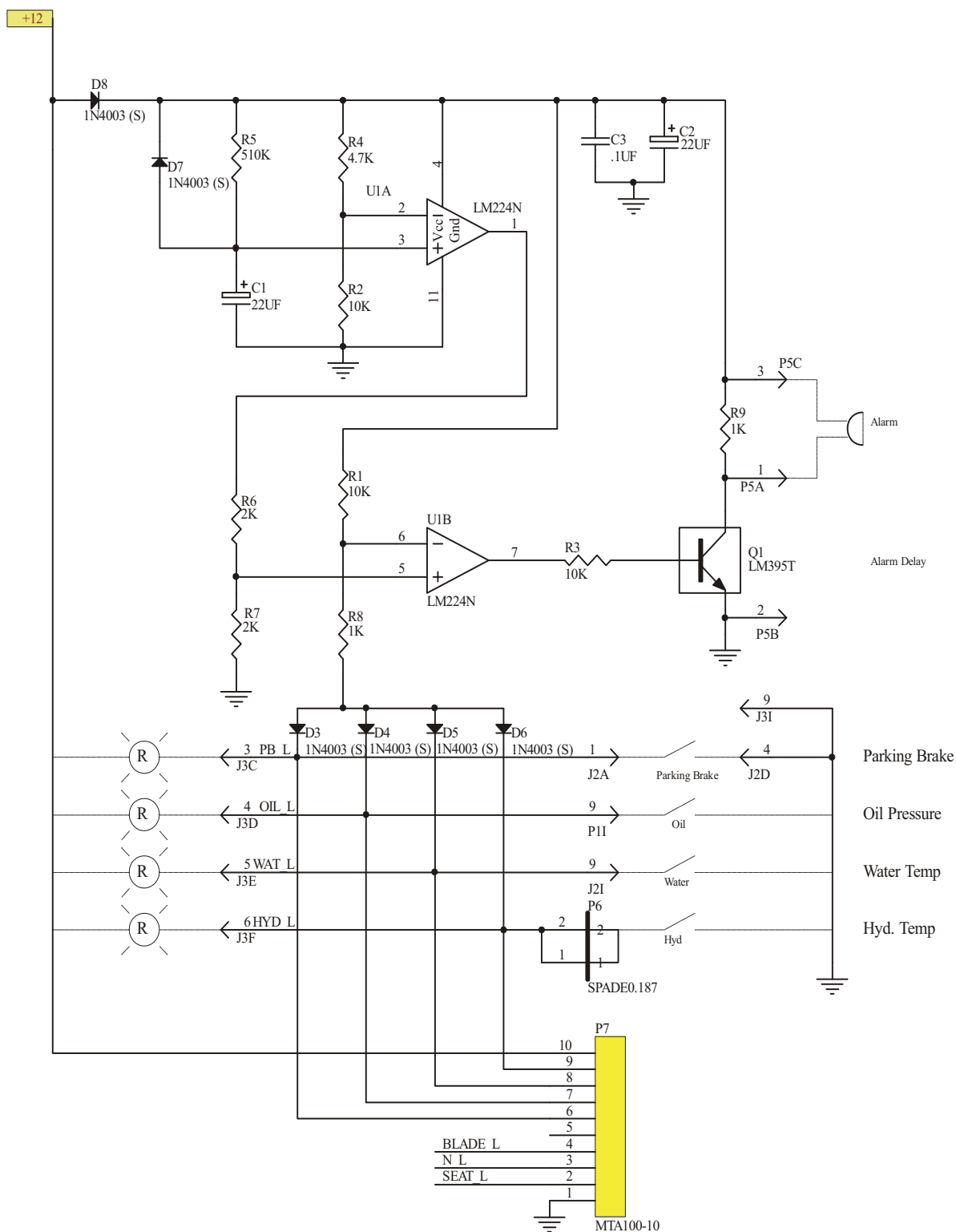




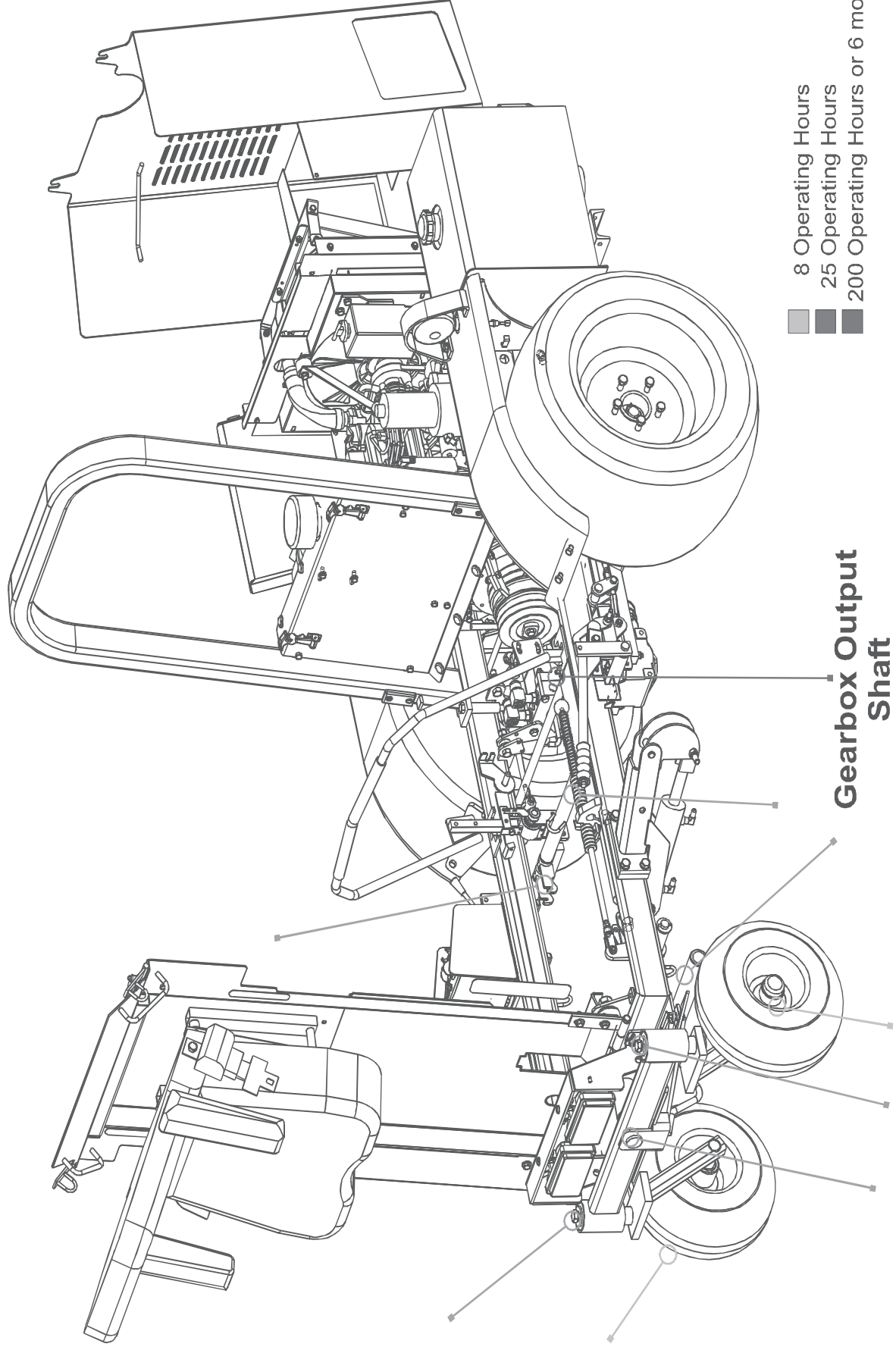
### 5.17 Electrical Schematics (Serial Number 5900905 and prior)



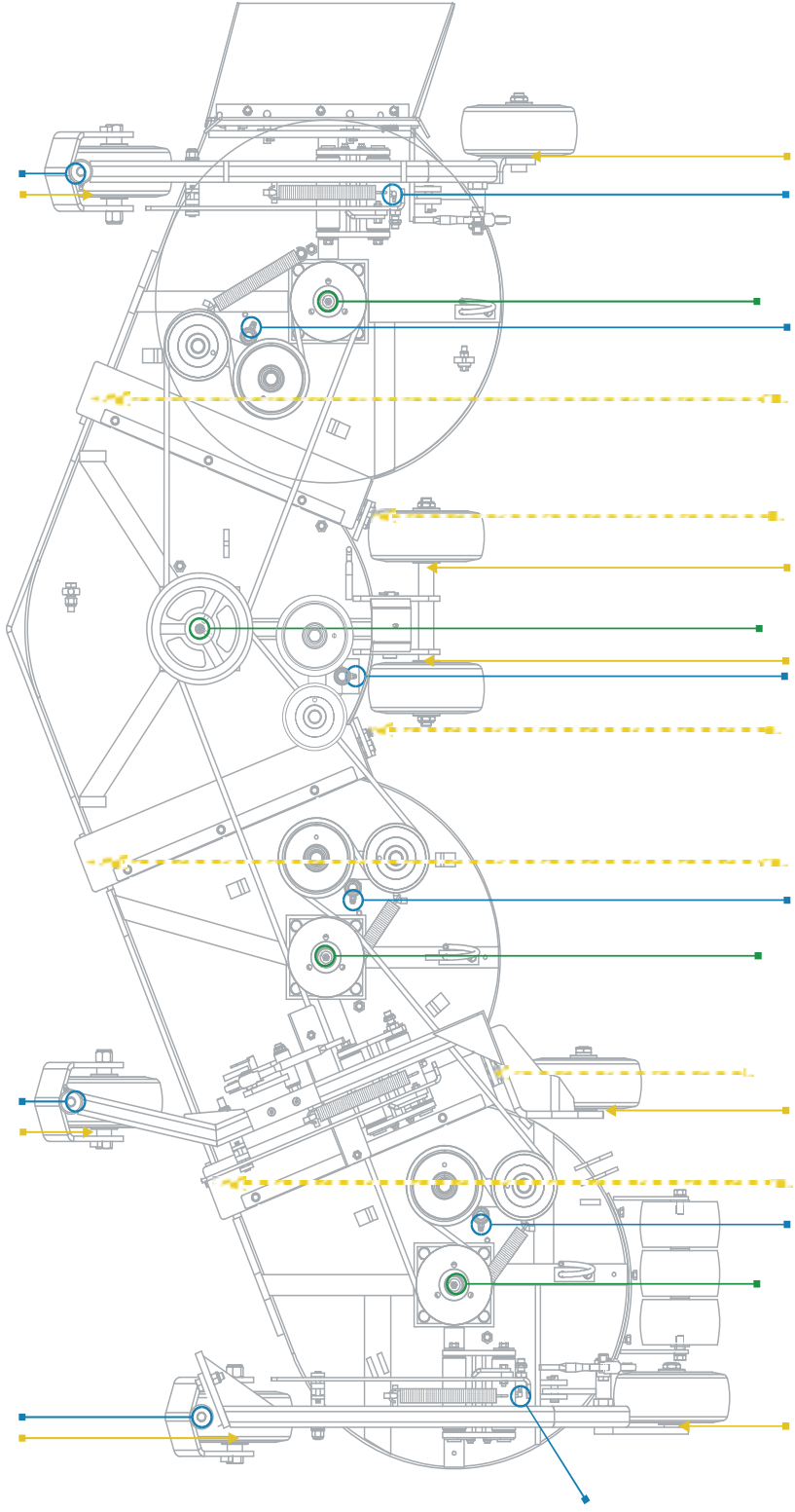




## 5.18 Articulator 3696H/M Lubrication Diagram (Drive Unit)



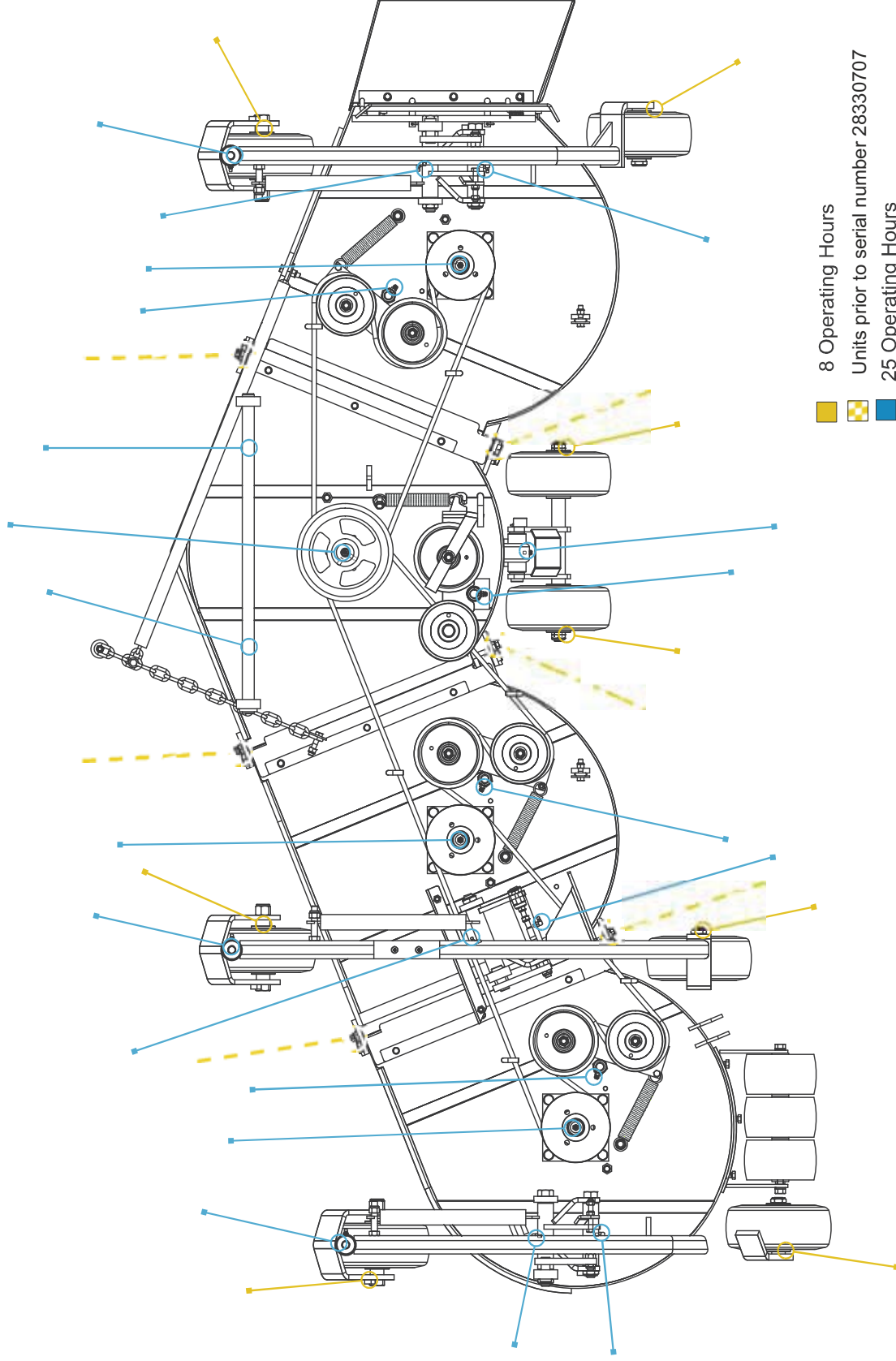
5.19 Articulator 3696H/M Lubrication Diagram (Deck)  
3696M Deck Lubrication Chart



- 8 Operating Hours
- Units prior to serial number 28330707
- 25 Operating Hours
- 50 Operating Hours



# 3696H Deck Lubrication Chart

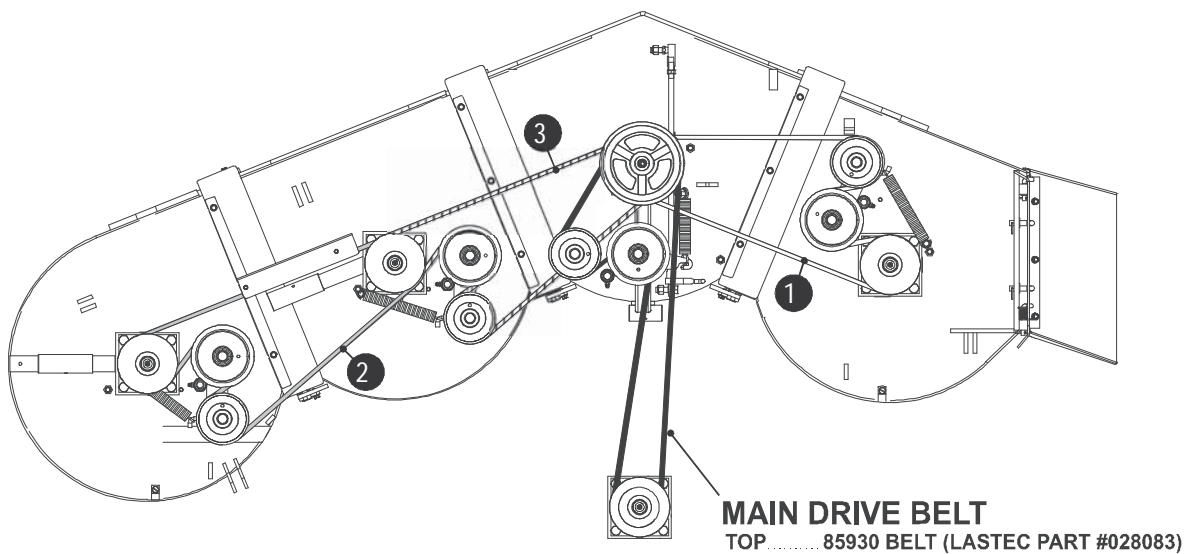


## 5.20 Deck Belt Illustration

### Articulator 3696H/M BELT DIAGRAM

#### DECK BELTS

- |   |                          |                                |
|---|--------------------------|--------------------------------|
| 1 | 2 <sup>ND</sup> FROM TOP | 85870 BELT (LASTEC PART #P707) |
| 2 | 3 <sup>RD</sup> FROM TOP | 85890 BELT (LASTEC PART #P706) |
| 3 | LOWEST                   | 85890 BELT (LASTEC PART #P706) |

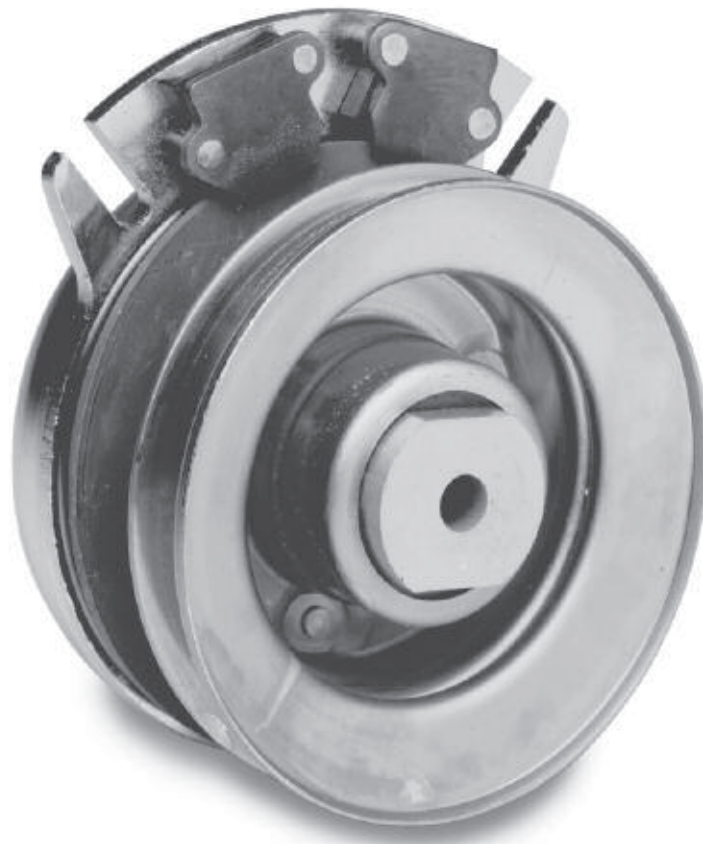


040851

# Residential, TG-2000, and Commercial MagStop® Clutch/Brake

P-1177  
819-0457

Installation & Operation



 **Warner**  
Electric



Contents

Terminology . . . . . 4

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Electrical Evaluation. . . . . 17

This guide applies to Warner Electric MagStop® clutches and clutch/brakes used on power equipment.

Residential, TG-2000, and Commercial MagStops are available in a range of torque capacities. The MagStop® name comes from the permanent magnet brake (magnetic stop-ping) rather than conventional spring activated mechanical brakes. In addition to these general procedures, any applicable OEM general and safety procedures must also be followed.

**⚠ WARNING** Failure to follow these instructions may result in product damage, equipment damage, and serious or fatal injury to personnel.

# MagStop® Bearing Mounted Electric Clutch and Clutch/Brake Assemblies and Operation

Components: (See Figure 1 on page 5.)

## 1. Rotor Assembly

Generally, the input of the clutch. Includes a keyed hub which mates with the keyway in the crank shaft. The rotor transmits the torque from the crankshaft (driving shaft) to the armature assembly (output).

## 2. Armature Assembly

Generally, the output of the clutch. Consists of a disk, springs and pulley (or output flange). With power applied the armature transmits torque from the rotor to the driven load. Power from the armature disk is transmitted to the pulley or flange by means of the leaf springs.

## 3. Field Assembly

The clutch "power" source contains the coil which generates magnetic attractive force.

## 4. Brake Poles

The two permanent magnets and plates affixed to the field shell provide the brake torque when the clutch is disengaged. Brake poles are not present if the assembly is a clutch only.

## 5. D-drive Spacer

A hub that is inserted into either armature or field bearing (see Figure 2). The head has flats that can be held with a wrench to prevent rotation of the crankshaft when tightening the mounting bolt (see Figure 5). This hub also takes the place of the standard retaining washer.

## 6. Anti-rotation Slot

Anti-rotation Slot (used with OEM's anti-rotation device) prevents MagStop from rotation with crankshaft. If the field is bolted rigidly or if its axial movement is restricted the bearing in the field assembly will be improperly loaded and may fail. Use OEM supplied anti-rotation.

## Optional Washer

A single .250 inch (6.35 mm) minimum thick steel washer must be used between the clutch and the crank shaft retaining bolt if the D-drive spacer is not used.

**⚠ WARNING** A washer less than .250 inch (6.35 mm) thick will deform and allow the clamping load to be lost, resulting in damage to the clutch and/or the crankshaft and possible personal injury due to clutch separating from the shaft. Multiple thinner washers are not acceptable.

## MagStop® Components

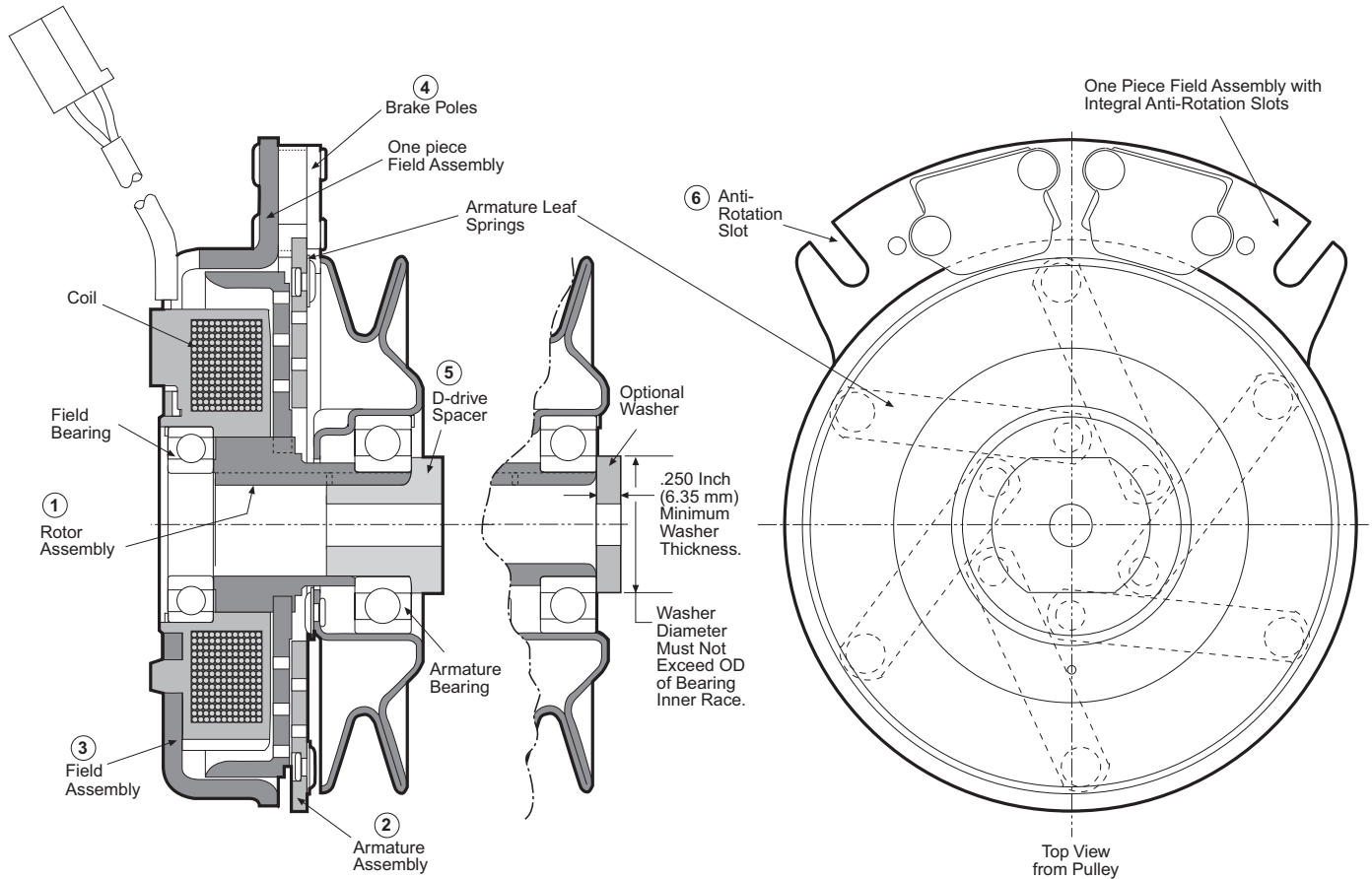


Figure 1

## D-drive Spacer Removal/Installation

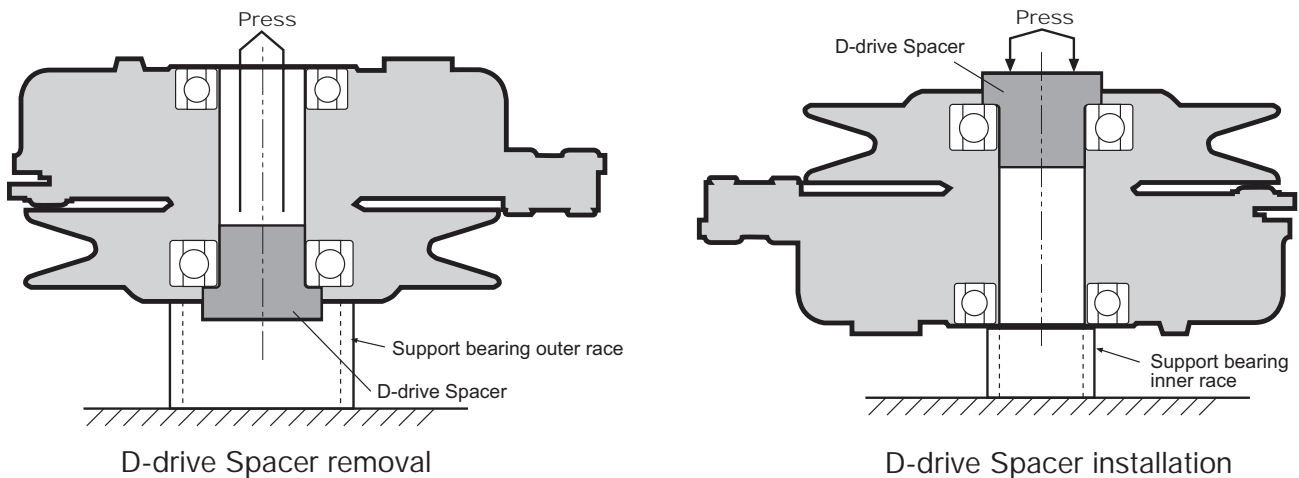


Figure 2

D-drive spacer may be installed on either end of clutch by OEM.

**CAUTION** D-drive spacer must be removed or installed using an arbor press or equivalent. On installation, opposite bearing INNER race must be supported or bearing damage may occur. On removal, adjacent bearing OUTER race must be supported or bearing damage may occur.

# REQUIREMENTS

for a

## Successful Clutch Application/Installation

### Critical Requirements

The two most important requirements for a successful clutch application or installation are:

1. Antirotation device must allow both axial and radial free-play!

Failure to allow this free-play will result in field bearing failure. The greater the restriction the faster the bearing will fail!

2. Mounting bolt torque to be minimum of:

- 3/8 -24 UNF use Grade 8 bolt torqued to 40-45 lb.-ft. (Grade 5 bolt is unacceptable)
- 7/16-20 UNF Grade 5 or 8 bolt torqued to 50-55 lb.-ft. (Grade 5 or 8 bolt is acceptable)
- M 10 X 1.50 Class 10.9 torqued to 55-60 N-m

Note: All values are for dry (unlubricated) plated bolts, please consult fastener manufacturer if any type of locking element (thread lock compound, patch etc.) is to be used.

Failure to adhere to these requirements will result in the failure of the clutch!

Mounting

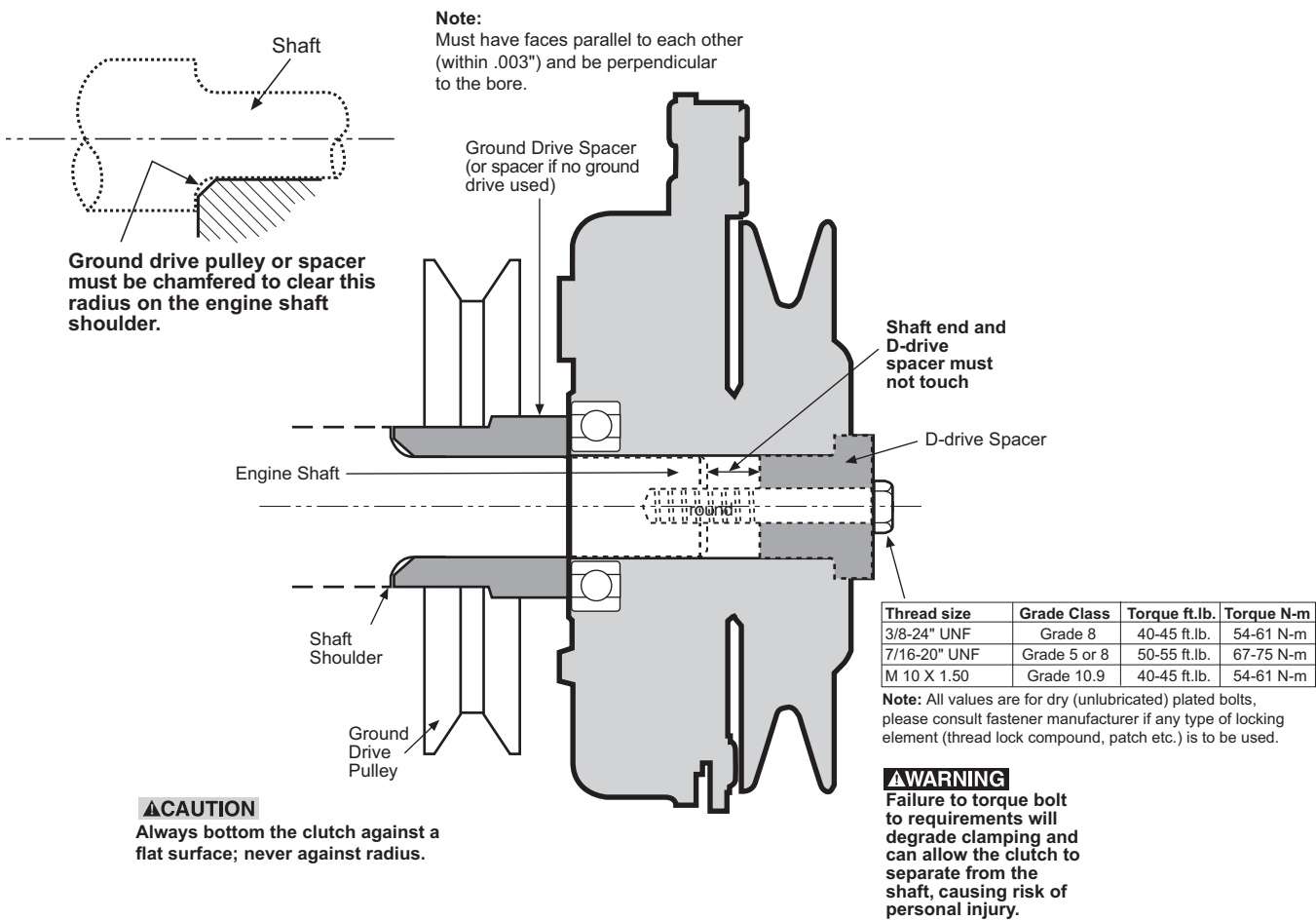


Figure 3  
Typical Engine Installation with Ground Drive Pulley

Anti-Rotation

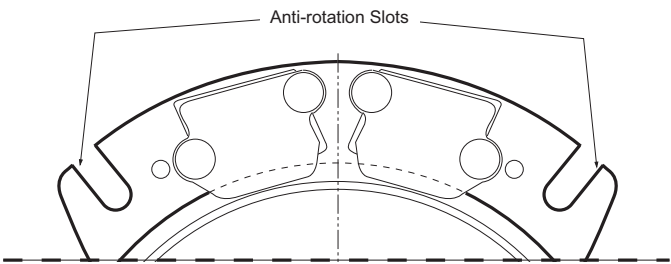
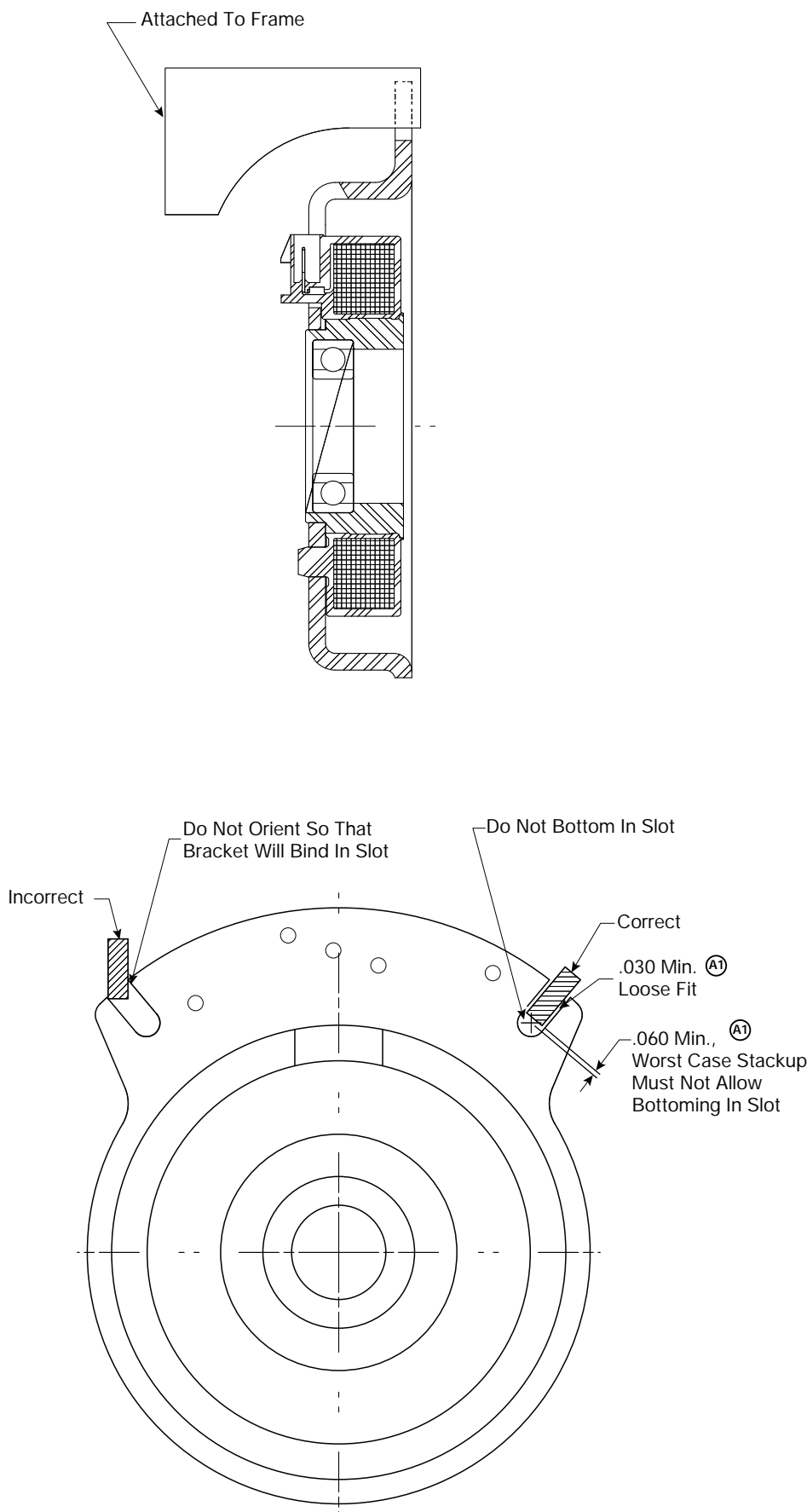


Figure 4

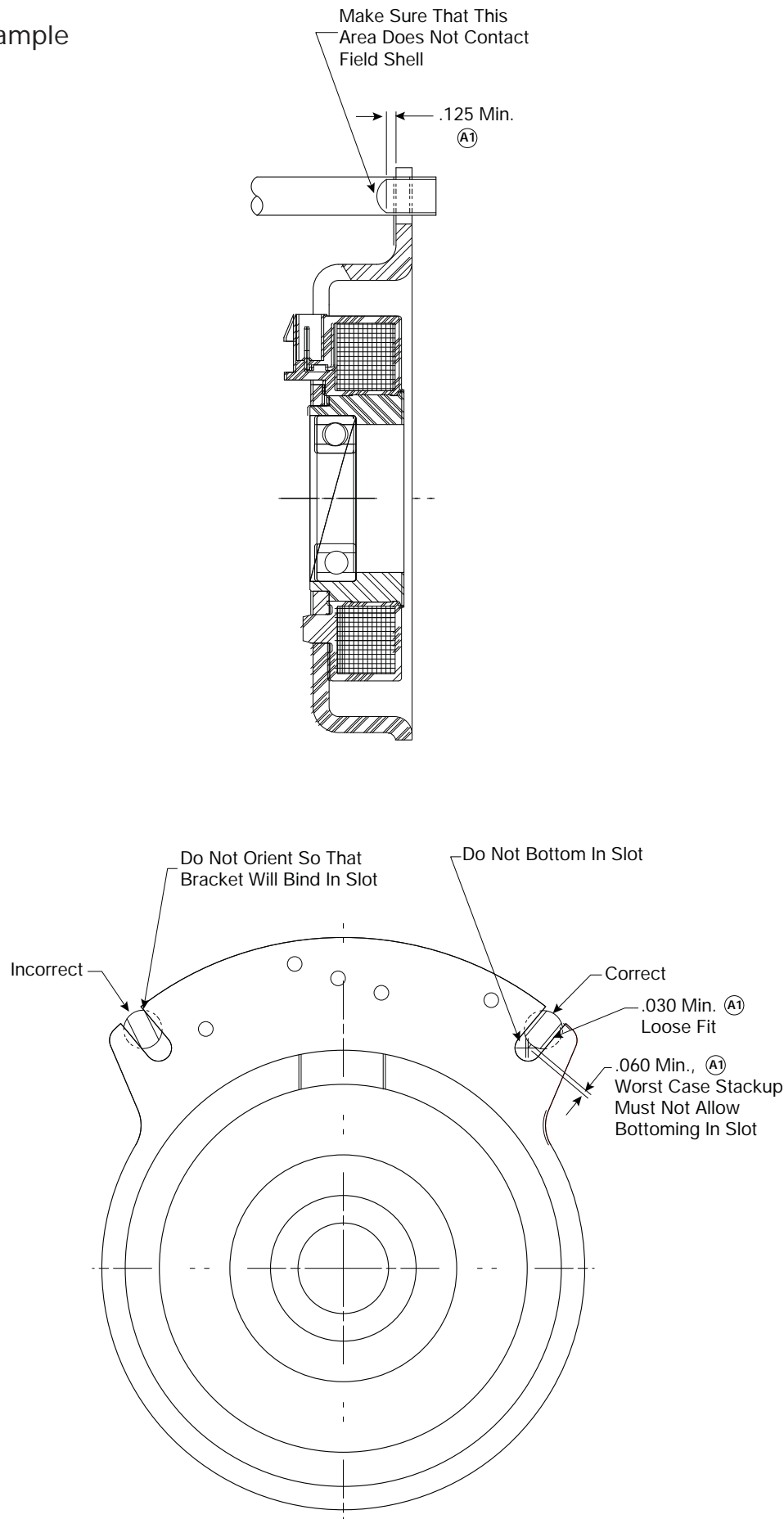
See Anti-Rotation Examples on pages 8-14

**CAUTION** If the field is bolted rigidly or if its axial movement is restricted, the bearing in the field assembly will be improperly loaded and may fail. Use only factory installed anti-rotation device.

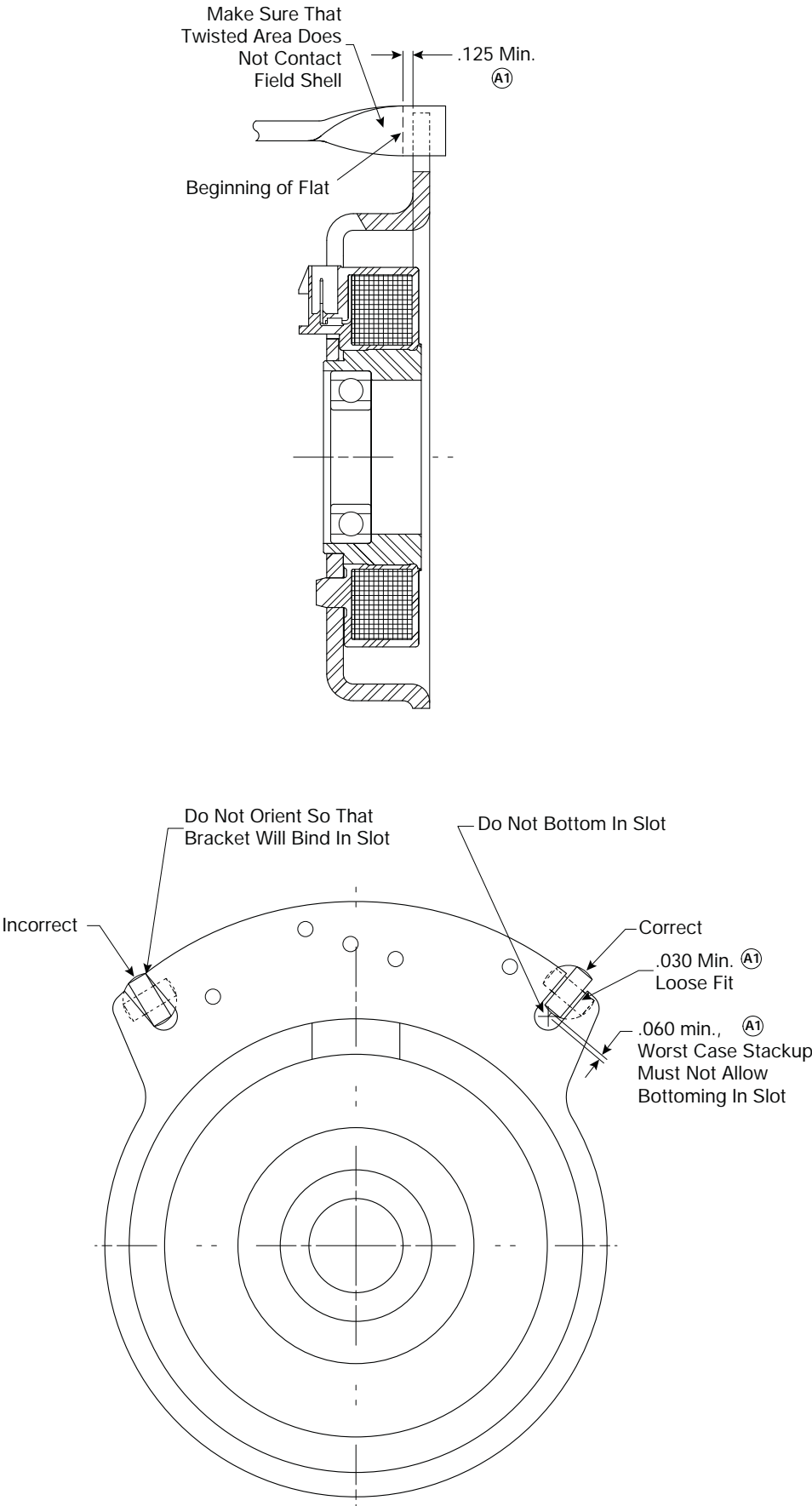
Anti-Rotation Example



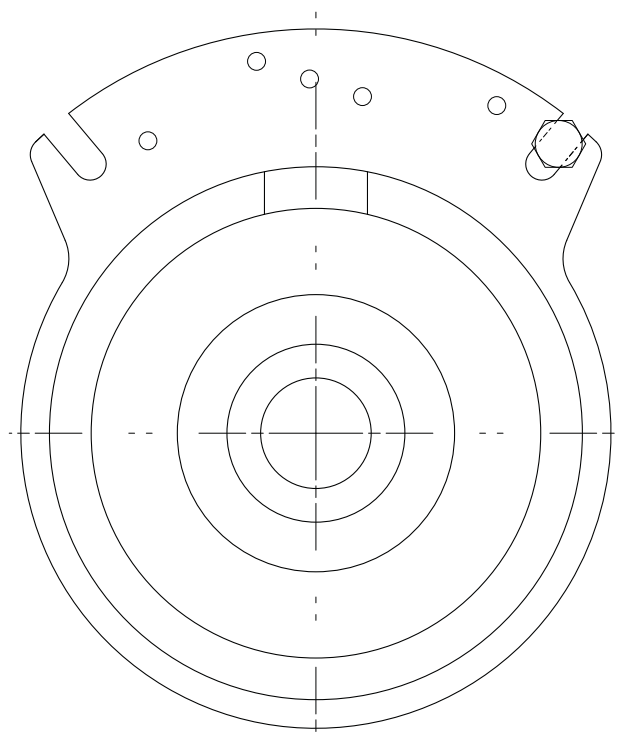
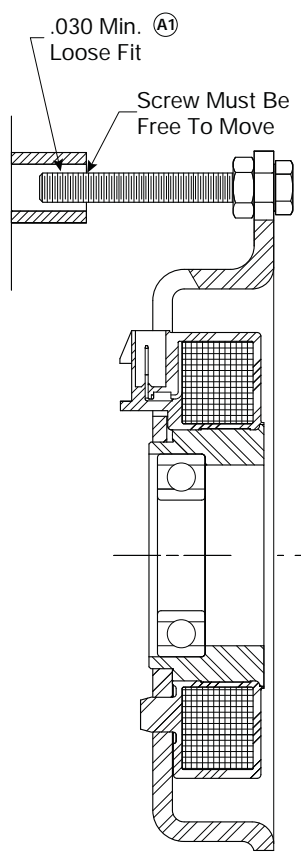
Anti-Rotation Example



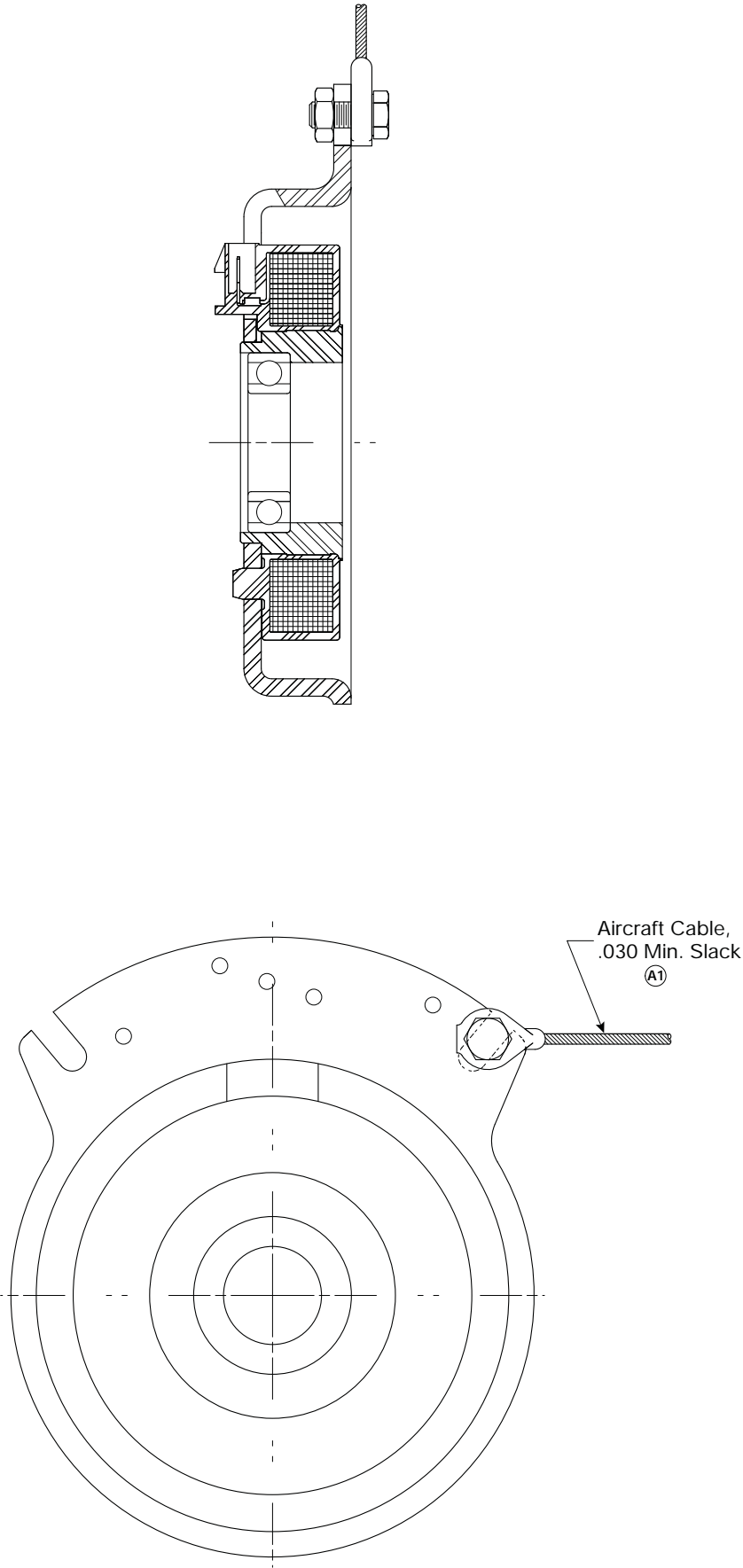
Anti-Rotation Example



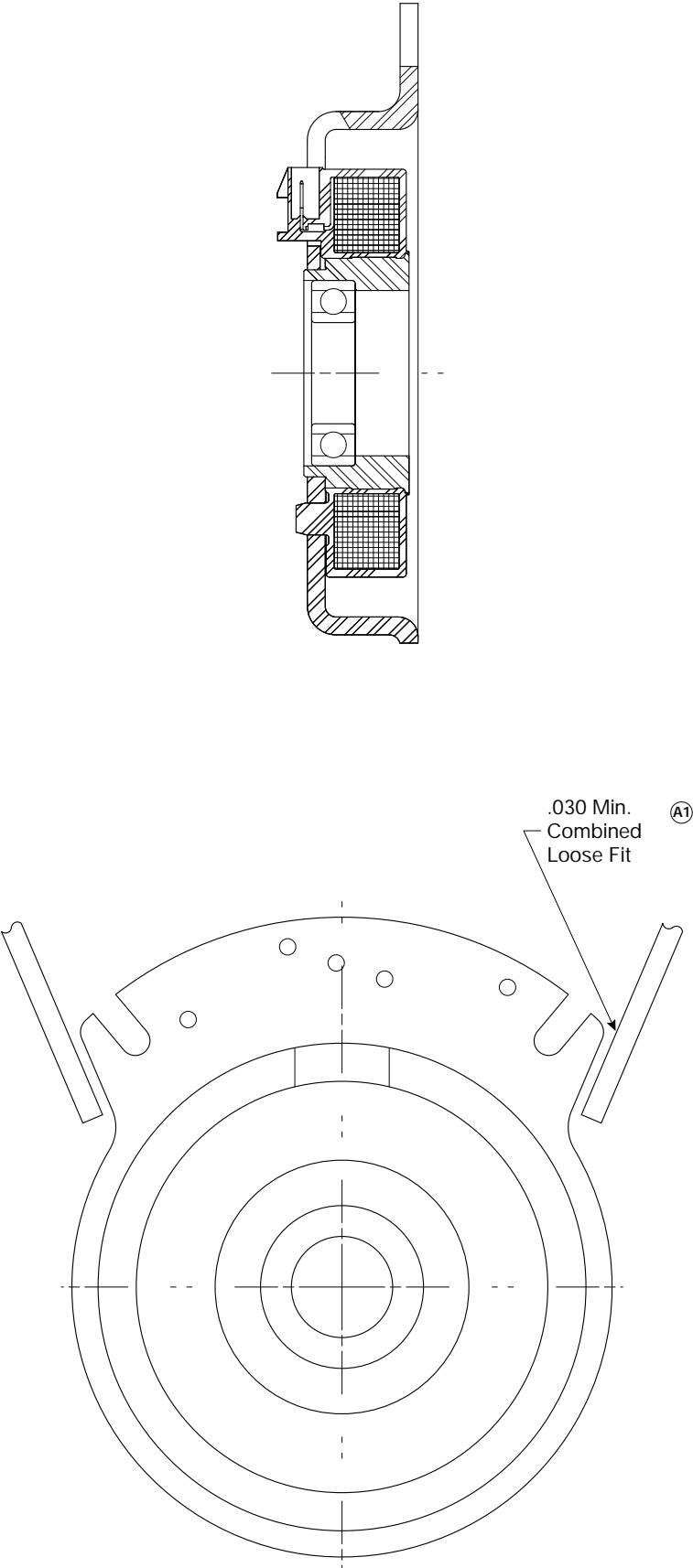
Anti-Rotation Example



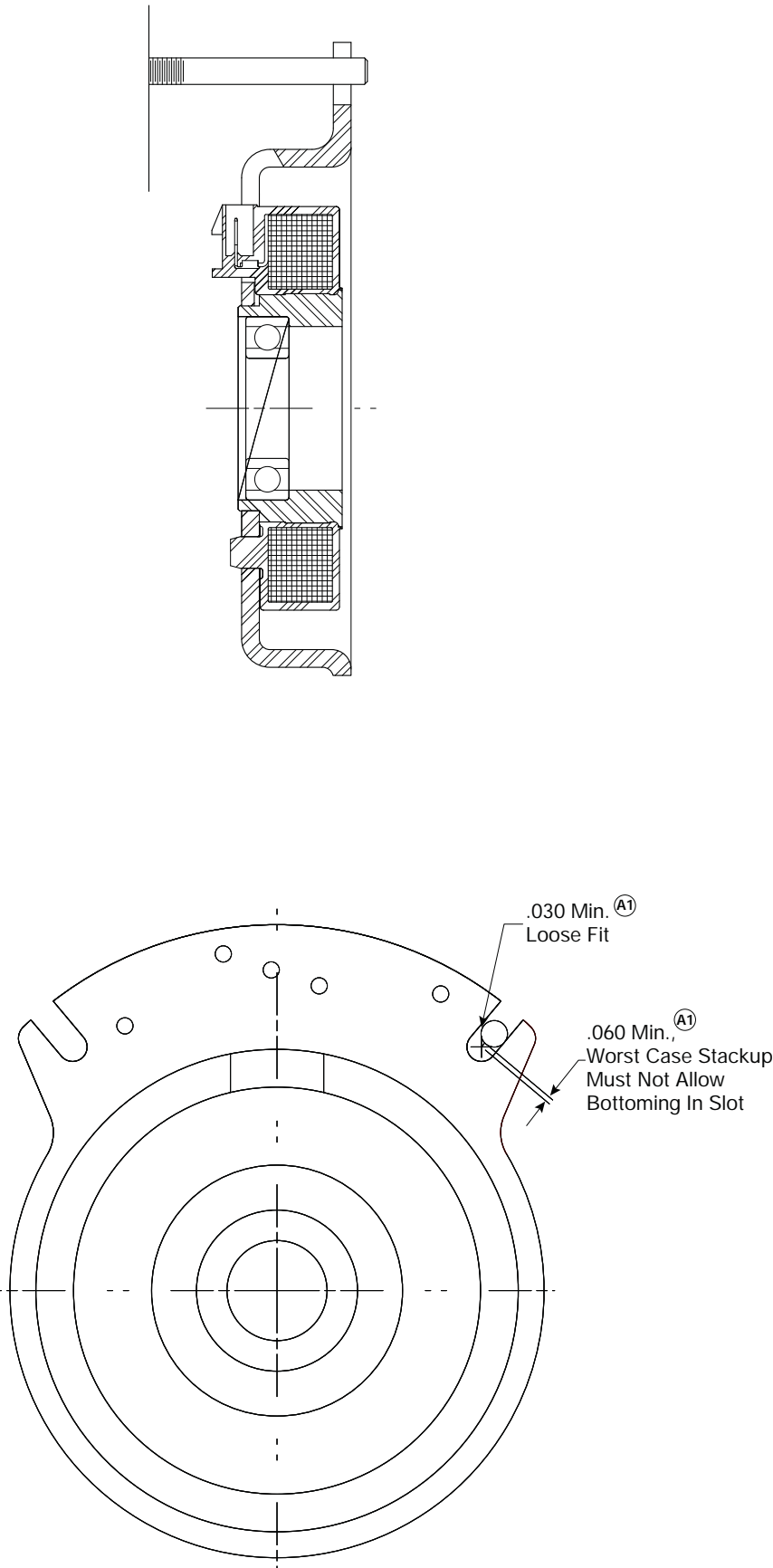
Anti-Rotation Example



Anti-Rotation Example



Anti-Rotation Example



## Troubleshooting Checklist

### A. Symptom: Clutch will not engage

Problem	Possible Causes	Solution
<b>Blown fuse</b>	<ul style="list-style-type: none"> <li>• Low coil resistance</li> <li>• Defective battery</li> <li>• Faulty charging system</li> <li>• Bad wiring or connections, PTO switch</li> </ul>	<ul style="list-style-type: none"> <li>• Replace with new MagStop unit</li> <li>• Replace</li> <li>• Repair or replace</li> <li>• Repair or replace</li> </ul>
<b>Low voltage supply</b> (Less than 12 VDC at clutch)	<ul style="list-style-type: none"> <li>• Defective battery</li> <li>• Faulty charging system</li> <li>• Bad wiring or connectors, PTO switch</li> </ul>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Repair or replace</li> <li>• Repair or replace</li> </ul>
<b>Incorrect coil resistance</b> (see Step 1, page 17)	<ul style="list-style-type: none"> <li>• Damaged coil</li> </ul>	<ul style="list-style-type: none"> <li>• Replace with new MagStop unit</li> </ul>
<b>Inadequate current supply</b>	<ul style="list-style-type: none"> <li>• Broken clutch lead wire</li> <li>• Faulty electrical system</li> </ul>	<ul style="list-style-type: none"> <li>• Repair</li> <li>• Measure clutch coil resistance and supply voltage at the clutch. If both are correct, electrical system is faulty. Repair or replace.</li> </ul>
<b>Rotor/armature airgap too large</b> (greater than .125 inch/3.18mm)	<ul style="list-style-type: none"> <li>• Rotor/armature wear. End of usable life</li> </ul>	<ul style="list-style-type: none"> <li>• Replace with new MagStop unit</li> </ul>

### B. Symptom: Brake will not engage

Problem	Possible Causes	Solution
<b>Armature/brake poles wore out</b>	<ul style="list-style-type: none"> <li>• End of usable life</li> </ul>	<ul style="list-style-type: none"> <li>• Replace with new MagStop unit</li> </ul>
<b>Contaminated friction surfaces</b>	<ul style="list-style-type: none"> <li>• Engine oil leak on brake</li> </ul>	<ul style="list-style-type: none"> <li>• Repair leak</li> <li>• Replace with new MagStop unit</li> </ul>

### C. Symptom: Clutch slip

Problem	Possible Causes	Solution
<b>Low voltage supply</b> (less than 12 VDC at clutch)	<ul style="list-style-type: none"> <li>• Defective battery</li> <li>• Faulty charging system</li> <li>• Bad wiring or connectors, PTO switch</li> </ul>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Repair or replace</li> <li>• Repair</li> </ul>
<b>Inadequate current supply</b>	<ul style="list-style-type: none"> <li>• Broken clutch lead wire</li> <li>• Faulty electrical system</li> </ul>	<ul style="list-style-type: none"> <li>• Repair</li> <li>• Measure clutch coil resistance and supply voltage at the clutch. If both are correct, electrical system is faulty. Repair or replace.</li> </ul>
<b>Overloaded clutch</b>	<ul style="list-style-type: none"> <li>• Clogged deck, back spindle, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Remove excess grass</li> <li>• Replace spindle</li> </ul>
<b>Contaminated friction surfaces</b>	<ul style="list-style-type: none"> <li>• Engine oil leak on clutch</li> </ul>	<ul style="list-style-type: none"> <li>• Repair leak</li> <li>• Replace with new MagStop unit</li> </ul>

## Troubleshooting Checklist (Continued)

### D. Symptom: Noisy clutch/Vibration

Problem	Possible Causes	Solution
Failed bearing	<ul style="list-style-type: none"> <li>• Loose mounting (bolt not torqued properly)</li> <li>• Field assembly movement restricted</li> </ul>	<ul style="list-style-type: none"> <li>• Replace (see Mounting Figure 3, page 7)</li> <li>• Confirm proper Anti-rotation (see Anti-rotation, Figure 4, page 7)</li> </ul>
Adapter plate rattles against anti-rotation pin	<ul style="list-style-type: none"> <li>• Some noise is normal</li> </ul>	<ul style="list-style-type: none"> <li>• If noise is excessive, repair or replace anti-rotation device. (Follow OEM's Specifications. See Anti-rotation, Figure 4, page 7).</li> </ul>
Clutch loose on shaft	<ul style="list-style-type: none"> <li>• Loose mounting (bolt not torqued properly)</li> <li>• Mounting bolt too long and bottoms in engine shaft before clamping clutch</li> <li>• Mounting washer too thin and deforms when bolt is tightened.</li> <li>• Shaft bottoms on D-drive</li> </ul>	<ul style="list-style-type: none"> <li>• Tighten mounting bolt to specification. See Mounting, Figure 3. page 7.</li> <li>• Use correct length bolt (see Mounting page 7, Figure 3)</li> <li>• See Figure 1 and Warning on page 5.</li> <li>• Use proper spacer (see Mounting page 7)</li> </ul>
Clutch not mounted square	<ul style="list-style-type: none"> <li>• Ground Drive Spacer mounting shoulder not squared. See Mounting Figure 3.</li> <li>• Clutch integral key hitting end of keyway in engine shaft</li> <li>• Incorrect or no chamfer on ground drive spacer.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Space clutch away from radius in shaft keyway.</li> <li>• Increase chamfer on ground drive spacer. See Caution, Figure 3, page 7.</li> </ul>
Broken Spring	<ul style="list-style-type: none"> <li>• Loose mounting</li> </ul>	<ul style="list-style-type: none"> <li>• Replace clutch</li> </ul>

**⚠ WARNING** A clutch with broken rivets or springs may separate from the shaft and cause personal injury.

### Burnishing Procedure when installing a new MagStop® Clutch/Brake

This procedure should be performed with the load attached (mowing deck, snowblower, pump etc.)

Note: Do NOT add additional load (e.g. cutting grass).

1. Run engine at full throttle and engage load bringing load to full speed then disengage load.
2. Let load come to a full stop then engage again.

3. Repeat these procedures (1 and 2) 10 times. After burnish procedure is complete, to maximize deck drive train life, always engage clutch at half throttle.

Electrical Evaluation

Step 1. How to Measure Clutch Coil resistance  
(See Figure 5)

- 1. Turn engine and PTO switch off.
- 2. Disconnect clutch at clutch connector.
- 3. Select meter setting for ohm reading.
- 4. Connect meter leads to clutch.
- 5. Check meter reading and refer to the chart below for correct clutch resistance reading. (values are @ 68°F.)

If reading falls in acceptable range proceed to step 2, if not replace the clutch.

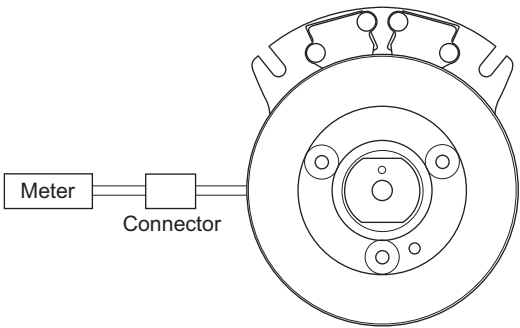


Figure 5  
Resistance Measurement

Table 1

Model	Torque		Resistance at 70° F (ohms) ±5%
	(ft.-lb.) Nom.	Nm	
MS-60	60	81	7.18
MS-80	80	108	3.68
TG2K-125	125	169	2.84
CMS-150	150	203	2.47
CMS-175	175	237	2.30
CMS-200	200	271	1.84

Note: If bench tested with 12 volts applied, armature may not pull away from brakepoles. Rotational motion is required to engage clutch.

Step 2. Measure the supply voltage at the clutch  
(See Figure 6)

- 1. Turn engine off.
- 2. Connect meter leads at the clutch connector.
- 3. Select meter setting for voltage reading.
- 4. Make sure wires will not become entangled in rotating components of clutch.
- 5. Start engine and engage PTO switch.
- 6. Measure voltage across the leads at the connectors.
- 7. Voltage should be 12-14 volts DC. If clutch still fails to operate, replace clutch.
- 8. If voltage is not within 12-14 volt range consult EOM's service manual.

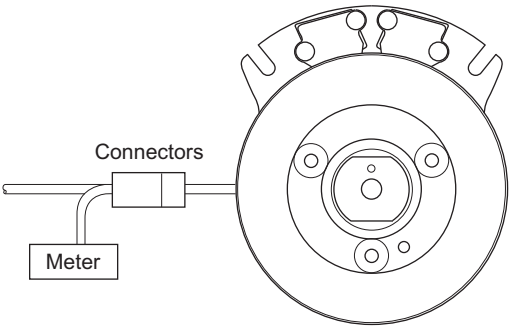


Figure 6  
Voltage Measurement



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