

# WIGGINS

LIFT CO., INC.

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## Service Manual



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It is the Service Mechanic's responsibility to read and understand this manual before servicing the Wiggins Yard eBull®. It is important that the owner and mechanic know and understand all applicable laws, rules and requirements for service training and certification. As a mechanic of this powered industrial truck, the technician is responsible for the safety of him/herself and co-workers or bystanders. Good safety practices not only protect the technician and the equipment, but also protect anyone who might be in the vicinity. Only trained and authorized persons are allowed to service the Wiggins Yard eBull®. This Service and Safety Manual must always be kept in the cabin or in the vicinity of the authorized technician for reference.

**READ BEFORE ORDERING**

1. SPECIFY SERIAL NUMBER OF UNIT.
2. SPECIFY MODEL NUMBER OF UNIT.
3. PROVIDE PART NUMBER AND PART DESCRIPTION.



## Introduction

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**Date of Shipment:** \_\_\_\_\_

To: Company Representative

In conjunction with Wiggins Warranty Policy, enclosed are four (4) check sheets that must be performed at their respective intervals in order for Wiggins to honor the warranty policy. It is mandatory that a copy of completed check sheets and a signed copy of this agreement be mailed or faxed, within thirty (30) days of ship date, for Wiggins records.

**Failure to comply with the above requirements may invalidate warranty claims.**

Wiggins warranty for this vehicle is for \_\_\_\_\_ starting on \_\_\_\_\_ and ending on \_\_\_\_\_. It will remain in effect by performing the required maintenance check lists in the following documents.

Accepted By: \_\_\_\_\_

Serial Number: \_\_\_\_\_

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



# Introduction

## New eBull Delivery Inspection Report

Owner name: _____	Dealer name: _____
Street address: _____	Street address: _____
City, State, Zip: _____	City, State, Zip: _____
Date of Inspection: _____	Machine model: _____
Hour meter: _____	Serial Number: _____
Powertrain make and S/N: _____	Rated lift capacity: _____ @ _____ LC

Average number of lifts per month: \_\_\_\_\_ Per year: \_\_\_\_\_

Note: Do not use check marks. Indicate by Yes, No, or O.K. If fluid level is checked, indicate whether high, low, or O.K.

### A. General checks:

- \_\_\_\_\_ CHECK FOR ANY SHIPPING DAMAGE BEFORE UNLOADING
- \_\_\_\_\_ 24V Battery connections      \_\_\_\_\_ Fan Operation      \_\_\_\_\_ Check Wheel Nut Indicators
- \_\_\_\_\_ 24V Battery Cables      \_\_\_\_\_ Charge Port Clean      \_\_\_\_\_ Lube complete machine
- \_\_\_\_\_ HV Batteries, Mounting Secure      \_\_\_\_\_ All gauges working      \_\_\_\_\_ Check seat belt
- \_\_\_\_\_ A/C Compressor Connections      \_\_\_\_\_ All controls working well      \_\_\_\_\_ Safety Noise Operation
- \_\_\_\_\_ Battery Air cleaners Secure      \_\_\_\_\_ Pump drive coupling      \_\_\_\_\_ Tighten wheel nuts
- \_\_\_\_\_ Coolant in radiator      \_\_\_\_\_ Check hyd hoses & fittings
- \_\_\_\_\_ Check steer axle hoses      \_\_\_\_\_ Check hyd oil level

### B. Main unit structures:

- \_\_\_\_\_ Check for deformed, cracked welds or misaligned members in the frame and body
- \_\_\_\_\_ Check all bolts
- \_\_\_\_\_ Check mast hanger pins, all cylinder pins for lube and C clips
- \_\_\_\_\_ Check paint and decals

### C. Drive axle and wheels:

- \_\_\_\_\_ Oil level in drive axle      \_\_\_\_\_ Check for damaged tires
- \_\_\_\_\_ Check drive line bolts      \_\_\_\_\_ Lube steer axle bearings, king pins, axle pivot
- \_\_\_\_\_ Operate steering system      \_\_\_\_\_ Tire Inflation \_\_\_\_\_ PSI

### D. Mast system:

- \_\_\_\_\_ Check pins, bearings, rods,      \_\_\_\_\_ Alignment of chains and rollers
- \_\_\_\_\_ rollers and locking devices      \_\_\_\_\_ Alignment of hoses and rollers
- \_\_\_\_\_ Chain Adjustment      \_\_\_\_\_ Check Lift Arms for level

### E. Test:

- \_\_\_\_\_ Carefully turn on machine      \_\_\_\_\_ Drive Forward and Reverse
- \_\_\_\_\_ Record any error codes.      \_\_\_\_\_ Check Steering
- \_\_\_\_\_ Release Park Brake (foot on      \_\_\_\_\_ Raise and lower carriage
- \_\_\_\_\_ service brake)      \_\_\_\_\_ Operate all hydraulic functions



## Introduction

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Always test with load close to rated capacity of machine.

LOAD TESTED: \_\_\_\_\_ Describe: \_\_\_\_\_

Total weight of load: \_\_\_\_\_ Length of load: \_\_\_\_\_

Have you briefed the operator on proper use and operation of this machine: \_\_\_\_\_

Have you briefed maintenance personnel in required scheduled maintenance of this machine: \_\_\_\_\_

Customer comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

FAILURE TO COMPLY WITH THE ABOVE REQUIREMENTS AND TO RETURN THIS FORM TO WIGGINS LIFT COMPANY WITHIN 30 DAYS OF DELIVERY MAY INVALIDATE WARRANTY CLAIMS.

Customer: \_\_\_\_\_ Title: \_\_\_\_\_

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

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

**RECOGNIZE SAFETY INFORMATION:**

This is the **safety-alert symbol**. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury. Follow recommended precautions and safe operating practices.

**UNDERSTAND SIGNAL WORDS:**

A signal-word — DANGER, WARNING, or CAUTION — is used with the safety-alert symbol. DANGER identifies the most serious hazards.

Safety signs with signal word DANGER or WARNING are typically near specific hazards.

General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

**HIGH VOLTAGE HAZARDS:**

Unique to a Battery Electric Vehicle is the hazard of high voltage components and wiring. **ORANGE** cables may have high voltage or high current exposure and should only be disconnected by trained and authorized mechanics. Any boxes inside the truck that are marked with the High Voltage Hazard type decals do not contain user serviceable or user repairable parts and must only be opened by trained and authorized mechanics.

**FOLLOW SAFETY INSTRUCTIONS:**

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without proper training and instruction.





**WARNING:** Drugs and Alcohol will affect an operator's alertness and coordination. An operator should NEVER use drugs or alcohol while operating a forklift. An operator taking prescription or over-the-counter medication must consult a medical professional regarding any side effects of the medication that would hinder their ability to safely operate this equipment. NEVER allow anyone to operate this forklift when their alertness or coordination is impaired.

**WEAR PROTECTIVE CLOTHING** - Wear all protective gear and clothing issued to you or called for by job conditions.

- Wear close fitting clothing and safety equipment appropriate to the job.
- Wear a suitable hearing protective device such as earmuffs or earplugs to protect from objectionable or uncomfortable loud noises.
- When you drive connecting pins in or out, guard against injury from flying pieces of metal or debris; wear goggles or safety glasses.

You may also need: Hard Hat, Safety Shoes, Heavy Gloves, Reflective clothing, Wet Weather gear, Respirator or filter mask.

**KNOW THE EQUIPMENT:**

Study all safety and information decals on your forklift and in your operators' manual. Make sure all manufacturers' protective structures, guards, shields, screens, panels, and seat belts are in good repair, in place and fastened. NEVER modify or remove any safety components on your forklift. Know the pinch points and rotating parts on the forklift – awareness on YOUR part can prevent accidents.

**Know the following about your forklift:**

- How to operate all controls.
- The functions of all gauges, lights, and dials.
- The rated load capacity at different load positions.
- Directional Control with F-N-R switch.
- Braking and steering characteristics.
- Turning radius and clearances.
- How to Plug In Charge Cord
- How to Unplug Charge Cord

## AVOID POWER LINES:

- Serious injury or death can result from contact with electric lines.
- Never move any part of the machine or load closer to electric lines than 3 m (10 ft) plus twice the line insulator length. Use a signal person to guide operator. Use shrouds or insulators as necessary.

## KNOW THE WORK AREA:

Before you operate, learn as much as possible about the work area. Observe the worksite and inspect the surface(s) over which you will travel. Avoid: Holes, Drop-offs, Obstacles, Rough Spots, Electrical Lines and apparatus, Soft Soil, Deep Mud, Standing Water, Oil Spills, Wet Spots, and Slippery Surfaces. If any of these conditions exist in the work area, correct the condition before operating.

When operating on docks, ramps, or floors, check for weak spots. Clear the worksite of any trash or anything that could puncture a tire. When required, check the forklifts fully loaded ground pressure weight when operating on a hollow floor system.

Watch for conditions that could cause: Loss of Control, Collision, or a Tip-over. Know exactly how much clearance you have under power lines, telephone lines, doorways and canopies.

## PLAN YOUR WORK:

Before you operate, know how and where you will travel, turn and pickup, lift and place loads. Choose a smooth level route to prevent possible tip-over or loss of load. If possible, avoid crossing: Ruts, Ditches, Curbs, and Exposed Railroad Tracks. When these conditions cannot be avoided, keep the load as low as possible and travel VERY SLOWLY and with EXTREME CAUTION.

Check for blind spots on the worksite. Stop and sound your horn before proceeding slowly around a blind corner.

Know the weights of all the loads you will transport before lifting. Avoid loads of loose material if possible and check that loads are properly secured.

Obtain written instructions and approval from the equipment manufacture before suspending “free-rig” loads. Suspended loads are very dangerous.

Use a signal person if you will be placing loads in landing areas with poor visibility.

## Know and Understand:

- The rules covering traffic at the worksite;
- The meaning of all signs, flags, and markings.
- Hand, flag, whistle, siren, or bell signals.

## USE a signal person Near the Point the Load is to be Landed



Know the rules for movement of people and forklifts on the worksite. Slow down and sound your horn, making sure that your approach has been acknowledged by those in your path. Stop your forklift until your presence has been recognized or until the path is clear.

Operating in an area with public access requires that you create a “safety zone” for the operation of your machine. Mark your working “safety zone” using cones, barricades and warning tape. Make sure a trained signal person is available to warn people away from the working area. Be sure that all available warning devices are activated and working properly.

Ensure that adequate clearance is provided between both rear tail swing and front fork swing of the forklift to avoid injury to personnel or damage to objects nearby.

Know where you will be expected to park your forklift at the end of the work day, preferably in a level area out of traffic. If the area is on a slope or incline, position the forklift straight up the slope, set the parking brake, lower the forks to the ground, and block the wheels.

Remember:

- Be Alert – Knowing that conditions can change.
- Use Common Sense – Showing that you are a responsible operator.
- Be a Defensive Operator – Preventing accidents before they happen.

**START SAFELY:**

Before entering the operator’s compartment, walk completely around the forklift checking that no one is under or on the forklift.

**USE HANDHOLDS AND STEPS:**

- Falling is one of the major causes of personal injury.
- When you get on and off the machine, always maintain a three point contact with the steps and handrails and face the machine. Do not use the steering wheel or any controls as hand holds.
- Never jump on or off the machine. Never mount or dismount a moving machine.
- Be careful of slippery conditions on steps and handrails when leaving the machine.

Always use “three point contact” with the machine, face the machine when you enter or leave the machine.

(“Three point contact” means that three out of the four arms and legs are in contact with the machine at all times during mount and dismount.)

**Warning:** Never grab onto control levers or the steering wheel when mounting. Avoid stepping on foot pedals while entering, to prevent you from accidentally engaging or disengaging a control, which could cause unexpected forklift movement.

**PROVIDE  
Adequate Clearance for  
Fork and Tail Swing****ENGAGE  
Parking Brake  
BEFORE Dismounting**

**Daily Safety Check**

- \_\_\_\_\_ 1. Check for broken, missing or damaged parts. Check for loose or missing fasteners.
- \_\_\_\_\_ 2. Check that no safety switches have been bypassed and that no warning tags have been placed on the vehicle.
- \_\_\_\_\_ 3. Check that warning decals, special instructions and operator's manuals are legible and stored in the proper location.
- \_\_\_\_\_ 4. Check forks for rust, cracks or misalignment. Replace the forks IN SETS when the condition of the fork(s) is questionable. Replace with factory approved forks ONLY.

**IMPORTANT:** DO NOT use forks which have been repaired by welding.

- \_\_\_\_\_ 5. Check that the means to retain forks, if so equipped, are in place to prevent forks from changing position or coming off the carriage.
- \_\_\_\_\_ 6. Check tires for cuts, bulges, tread depth and air pressure if pneumatic.
- \_\_\_\_\_ 7. Check service and parking brakes for proper operation.
- \_\_\_\_\_ 8. Keep radiator clean and free of dirt and other debris.
- \_\_\_\_\_ 9. Check coolant bottle for proper level. Add coolant as required to reservoir bottle only.
- \_\_\_\_\_ 10. Check the level of the hydraulic system. If necessary, fill to the required level with the proper type fluid.
- \_\_\_\_\_ 11. Inspect hydraulic hoses and connections for wear or leaks. Repair or replace any damaged or worn hose with officially original accepted hydraulic hoses.
- \_\_\_\_\_ 12. Check condition and operation of seat belt and its mounts.
- \_\_\_\_\_ 13. Keep steps, pedals and non-skid surfaces clean and free of grease, oil, dirt, snow or ice.
- \_\_\_\_\_ 14. Make sure all doors, guards or covers are in place and secured properly.
- \_\_\_\_\_ 15. Perform the Pre-Operation Check.
- \_\_\_\_\_ 16. Perform all maintenance procedures as required. Check AutoLube grease level.
- \_\_\_\_\_ 17. Make sure work lights, mirror, gauges and operator console are kept clean. Check that lights, horn, and wipers operate properly. Make sure electrical connections are clean and free of damage. Check **ORANGE** cables for nicks or wear.
- \_\_\_\_\_ 18. Remove or secure any loose objects.
- \_\_\_\_\_ 19. Survey the work area and notice any potential obstacles.

COMPLETED BY: \_\_\_\_\_  
O.K.: \_\_\_\_\_ DATE: \_\_\_\_\_

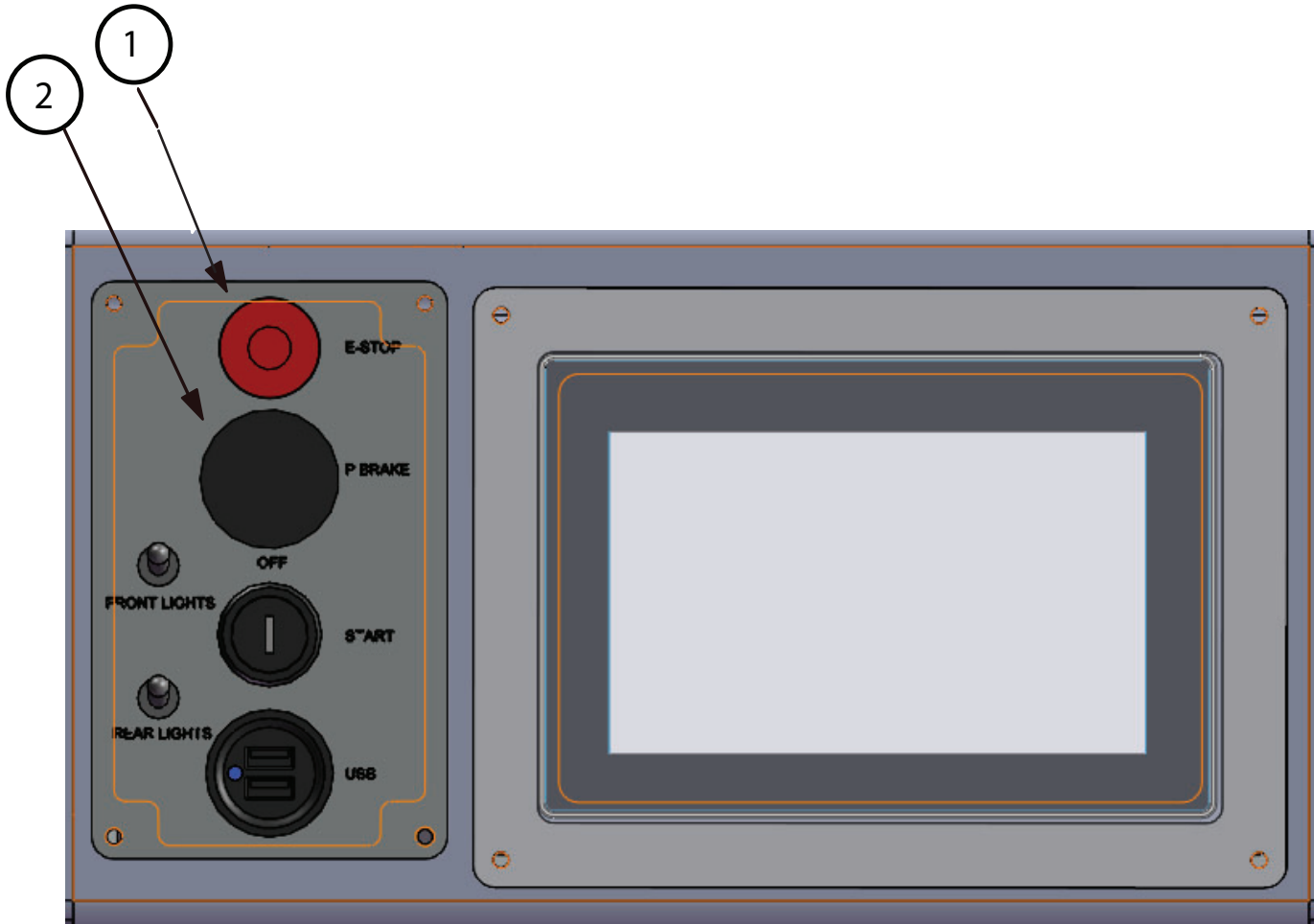
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HOURS: \_\_\_\_\_

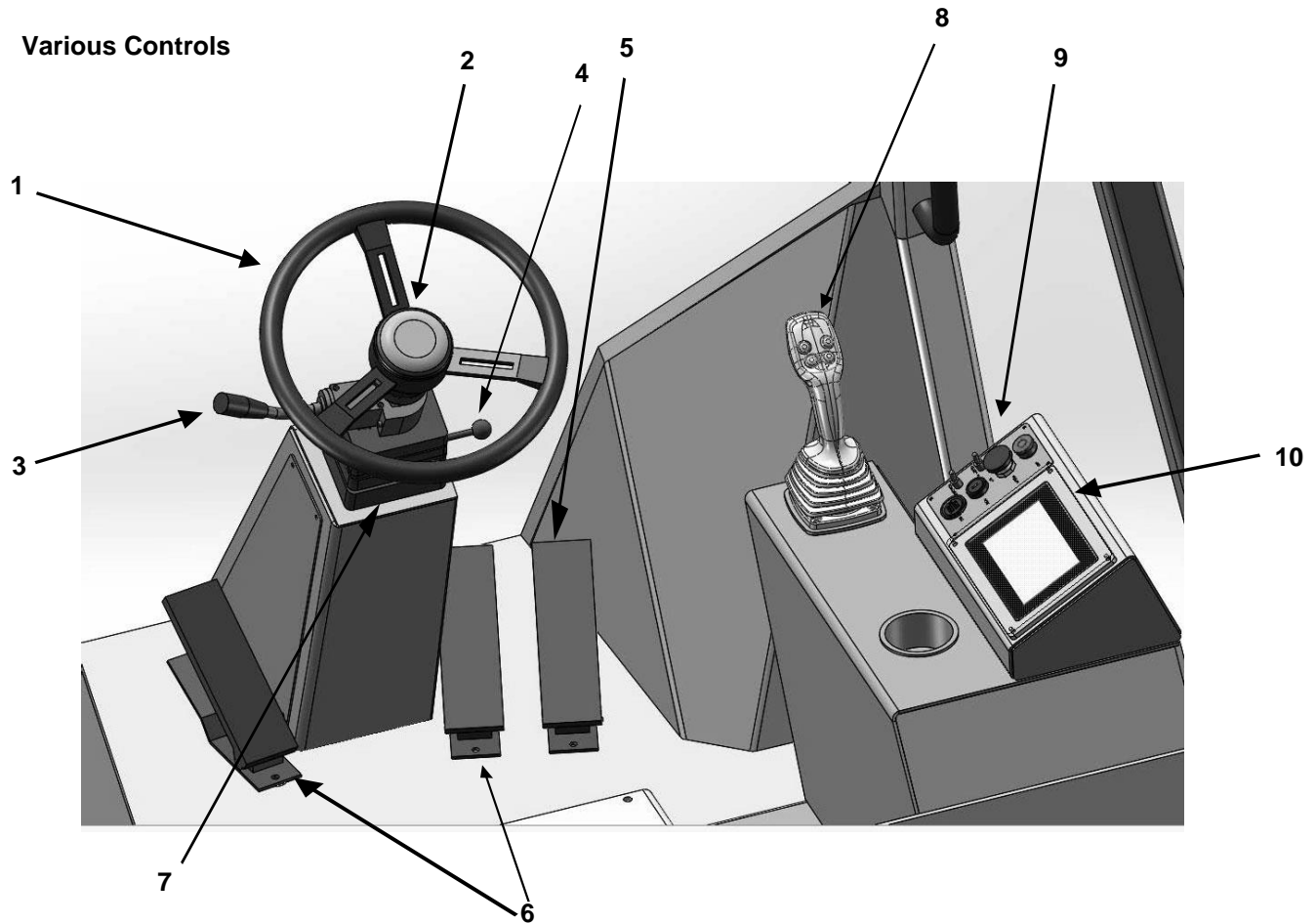
**Do not operate the Wiggins Yard eBull® if any of the Daily Safety Check procedures are faulty. If in doubt always contact the Dealer or Wiggins Lift Co.**

**Descriptions of Safety Features and Components:** The Wiggins Yard eBull® has safety features to protect the operator, nearby pedestrians, the loads being moved and the equipment itself. The operator must learn these features in order to safely operate this sophisticated and highly capable machine. Always wear your seatbelt!

**Horn and Motion Alarm:** The center of the steering wheel is a button for activating a horn to warn pedestrians and other equipment operators. Because electric motors are quiet, and difficult for pedestrians to hear in noisy work environments, a white noise device is activated whenever the directional control is in FWD and the truck is moving FWD. In addition, whenever the forklift truck is in REV, a beeping motion alarm will sound. This motion alarm will not sound when the transmission is in neutral. It has a switch that can be set at two levels. It is Wiggins factory pre-set at the recommended higher level.

**Brakes and E-Stop:** There are two brakes: Service and Parking. The Service Brake is connected to the foot brake pedal and the amount of braking is controlled by the amount of foot pressure on the pedal. The Parking Brake is also the emergency brake. When this brake is activated, the truck comes to stop in a short distance. The red E-Stop (#1) button on the dash panel will stop the motors, which stops the hydraulic pump, and the Parking Brake will come on. If there is damage to the hydraulic system and the system loses pressure, the Parking Brake will come on. The Parking Brake switch (#2) on the dash panel will also turn on this brake. If the Parking Brake has been activated while the truck was in motion, the brake pads must be inspected by qualified personnel.





### 1. Steering Wheel

- Turn wheel left for left turn.
- Turn wheel right for right turn.

### 2. Horn Button

- Push to activate.

### 3. Shifter

- Center position is Neutral.
- Pull Up & Push forward for forward drive
- Pull Up & Pull Back for reverse drive

### 4. Signal Control Lever

- Push forward for left Turn.
- Pull back for Right Turn,
- Pull tab out for Hazard lights.

### 5. Accelerator Pedal

- Push to increase speed.

### 6. Brake Pedal (2 pedals)

- Push to engage service brake.

### 7. Steering Column Adjustment

- Push button under steering wheel to adjust steering column angle.

### 8. Joystick - Operation

- Forward = Lower
- Rearward = Lift
- Right = Tilt Forward
- Left = Tilt Back

#### Push & Hold Left Button for LH Fork Position

- Tilt Joystick to the Left = Move Left Fork Left
- Tilt Joystick to the Right = Move Left Fork Right

#### Push & Hold Right Button for RH Fork Position

- Tilt Joystick to the Left = Move Right Fork Left
- Tilt Joystick to the Right = Move Right Fork Right

#### Pull & Hold Trigger Button for Side Shift

- Tilt to the Left = Side Shift both forks to the Left
- Tilt to the Right = Side Shift both forks to the Right

### 9. Switch Panel

### 10. IQAN Display

**Foot Pedals:** The brake pedal and throttle pedal are on the floor to the right side of the steering column and perform the same as in an automobile. A second brake pedal is provided to the left side of the steering column for operators who prefer to drive two-footed. Either pedal applies the service brake.

**Steering:** The steering is hydraulic. On some short wheel base trucks, the hydraulic pressure may not be sufficient to move the steer tires past a certain point unless the truck is moving forward or reverse. This is normal. Even rolling just a few inches allows the steer tires to turn to their fullest extent.

**Drive:** The Directional Control is the F-N-R switch to the left side of the steering column behind the steering wheel. Moving the control forward allows the truck to move forward. Moving the control backwards toward the operator allows the truck to move backward. Care and patience while driving will allow the operator to maintain control of the load and the forklift and allow enough time so the operator can watch the tail swing and load clearances. Start moving slowly at first. Wiggins suggests driving at a reasonable speed when carrying a load. With exceptionally long or wide loads or high lifts, Wiggins recommends use of one or two spotters.

**Lift a Load:** Wiggins Yard eBulls® are designed for many different load handling configurations. For attempting to lift loads of uncertain weight and load center, Wiggins provides an indicator that can protect the equipment and the operator from an overload condition. Any attachments with ratings approved by Wiggins are listed on the Capacity and ID plate.

**Park and Shutdown:** Select a flat and level area to stop the forklift in the charge yard. Lower the forks to the ground. Set the parking brake and turn the key to the off position. The official authorized person must always remove the starter key if the Wiggins Yard eBull® is left unattended. The key must be safely stored.

**Blue Lights Indicate Battery Level:** Blue LED lights on the machine indicate a low State of Charge when the key is on. The blue lights begin flashing slowly when the State of Charge is less than 20% and the operator should begin planning to return to the charge yard. The blue lights change to rapid flashing when below 10%. At the 5% level the machine performance also slows down to indicate to the operator it is time to plug in a charger cord. The most efficient charging rate is between 10% and 90%.

**Charging:** After the forklift is parked and shutdown in a designated parking spot within reach of an available charge station, and the key is off and removed, open the charge port door and insert the charge plug. Use the key card to activate the charge station. Verify that charging has started. Blue corner lights on the truck should flash. The Charge Station should indicate that charging has started after a short delay. Place the truck key and key card in a safe location.

**Complete Charge and Stow Charge Cable:** If DC charging on the large Fast Charger, follow the instructions on the screen to stop charging. Remove cable and stow aboard the Charge Station. If AC charging using the small Level 2 charge station, simply unplug the cord and stow aboard its charge station. Close charge port door.

**TOWING A DISABLED VEHICLE:**

If the truck no longer moves under its own power, it may be towed out of the way with the procedure described here. It is critical to safety that the load and the forklift be under control at all times, and be prevented from unexpected movement.

The load should be carefully lowered and removed from the forks or attachment by another forklift of the same or greater capacity. If no hydraulic or electrical power is available, the load may be lowered to the ground by trained and authorized mechanics.

If no hydraulic or electrical power is available aboard the truck, the steering and service brakes will not function and the park brake will not release. The park brake spring will apply the park brake by default. Care must be taken to maintain control of the machine. In order to move the truck, the park brake must be safely released while the wheels are chocked or the truck is secured by strap or chain to a fixed strong point or to another vehicle. See Service Manual for instructions to open the park brake calipers.

**TOW SPEED MUST BE LESS THAN 2 MPH.**

If there is 24V electrical power available, then release the park brake using the switch on the operator console. If it does not release, then there is not enough pressure in the brake accumulator.

Straps may be used around the lower carriage bar at the front or around the rear counterweight tub.



**Controls** - The controls of the Wiggins Yard eBull® are conveniently located within easy reach of the operator.

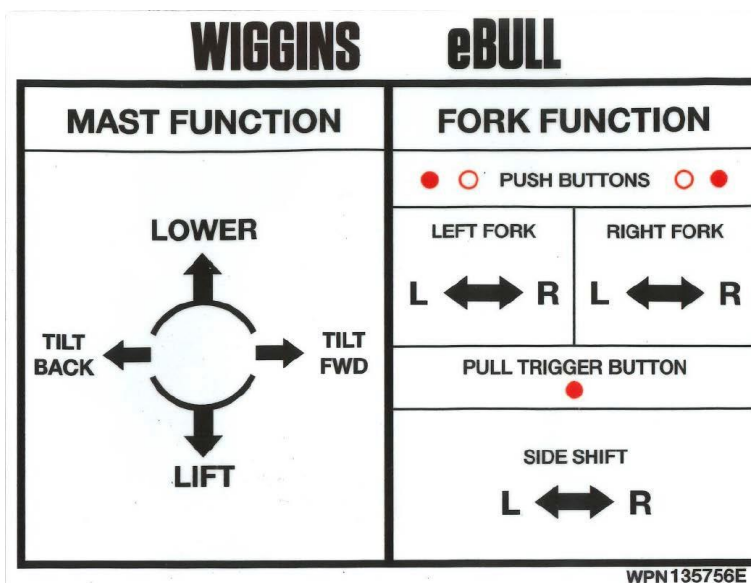
**Control Panel:** The parking brake switch is guarded from accidental activation. Push the parking brake button down to turn the parking brake off and the truck is free to move. Pull up, the parking brake is on. The key switch has two positions: Off and On.

**Hydraulic Controls:** The hydraulic controls are an electric joystick with buttons, to select different functions. The response speed of any hydraulic function is directly related to the amount movement of the control. The operator should always begin activation of a control by moving the control a small amount until the function responds so the operator can be satisfied that the correct function and direction is happening as expected.

The joystick can be moved left and right, forward and back to control the mast lift and tilt. There are two buttons and one trigger for controlling the forks.

Pulling the joystick backwards raises the carriage. Pushing the joystick forward lowers the carriage. Pulling the joystick to the left toward the operator tilts the mast back toward the operator. Pushing the joystick to the right away from the operator tilts the mast forward away from the operator.

There are three functions for the forks: Left Fork Position, Right Fork Position and Side Shift. The Side Shift control moves the forks in the same direction at the same time and can be used with the rated load in place. Push and hold the **left** button while moving the joystick left and right to move the **left** fork left and right. Push and hold the **right** button while moving the joystick left and right to move the **right** fork left and right. Pull and hold the **trigger** under the joystick while moving the joystick left and right to move both forks and the load left and right for **side shift**.



**Transport and Setup:** Some Wiggins Yard Bulls® are designed with long tilt cylinders to enable shipment on single trailers. The larger capacity models or models with lift heights above about 25 feet typically require the removal of the mast and shipment in two or three parts. Both cases are described below.

**If Mast is Attached:** Care must be taken to prevent damage to the mast, lift cylinders, lift chain and hydraulic hoses. When the truck is to be driven on or off the trailer, the mast must be upright to provide ground clearance at the bottom of the ramp.

**Loading:** With the mast in its tilt back position, drive the Yard Bull® in reverse up the trailer ramp to provide maximum traction to the drive tires. Once the truck is in position, the mast may be lowered. Set the parking brake and secure the engine key prior to leaving the truck. Do not place chain over an axle, any mast parts, cylinder base or frame piece except as shown in the diagram. Ensure that the tires are at least 60% on the trailer deck support. Install cylinder rod protection materials to the lift cylinders to prevent damage from the slackened chain.

**Unloading:** Ensure that all chains are disconnected and removed from the trailer bed. Check tire condition. Check for hydraulic fittings that may have loosened during transport. Turn key to on position and check for hydraulic leaks. Raise mast to the upright position. Install or position forks as required.

**If Mast is Shipped Separately:** Care must be taken to prevent damage to the mast, lift cylinders, lift chain and hydraulic hoses. The mast assembly can weigh 10 to 20 tonnes and the crane must be selected accordingly.

**Loading:** Secure the lifting bridle to the top of the mast. When the crane has control of the mast, remove the tilt cylinder pins at the counterweight and retract the tilt cylinders. Disconnect all hydraulic hoses and electrical wiring between the truck and the mast. Remove the retaining bolts from the mast pins on the frame and remove the pins. The mast is now free to be moved to its shipping location. Drive the Yard Bull in reverse up the trailer ramp to provide maximum traction to the drive tires. Set the parking brake and secure the engine key prior to leaving the truck. Do not place chain over an axle, any mast parts, cylinder base or frame piece except as shown in the diagram. Ensure that the tires are at least 60% on the trailer deck support.

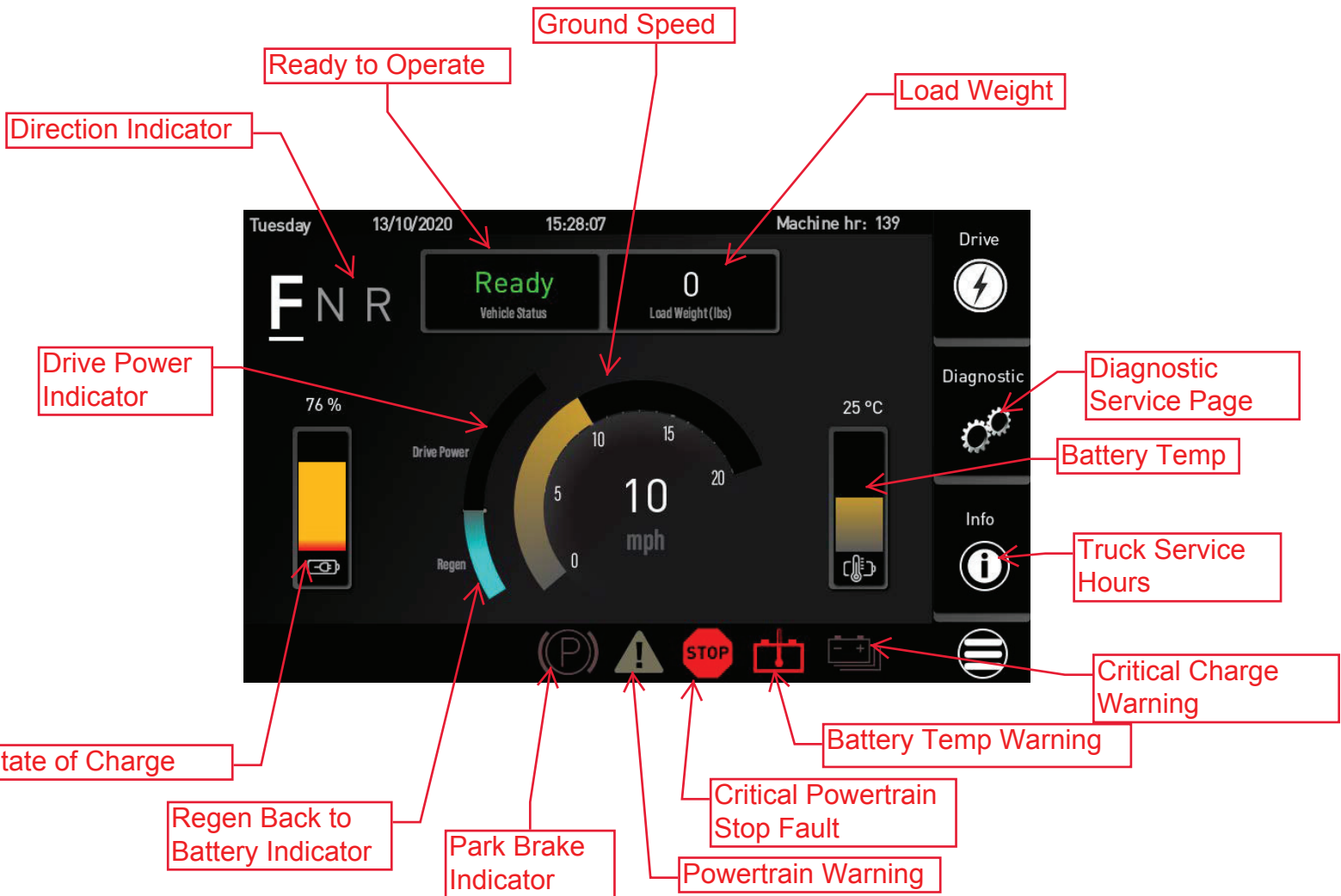
**Unloading:** Ensure that all chains are disconnected and removed from the trailer bed. Check tire condition. Check for hydraulic fittings that may have loosened during transport. Start and check for hydraulic leaks. Drive the truck carefully down the ramp – **CAUTION** – due to light weight on the front axle, excessive use of the brakes while on the ramp may cause the front tires to skid. Drive the truck to the mast and line up the pin holes to insert the mast pins. After the pins are inserted, install the retaining bolts and tighten. Use the tilt cylinder controls to line up the tilt clevis pins so they can be installed. Connect the remainder of the hoses and electrical wires to the mast. Remove the crane lifting bridle. Verify proper operation of all functions. Install carriage and forks as needed.

**If in doubt always contact the Dealer or Wiggins Lift Co.**

### Wiggins Information Center

#### Introduction

The Wiggins Information Center with the state of the art IQAN™ System keeps the operator informed about powertrain performance and status. The Info Center will show an automatic reminder of daily checks as well as information for the Mechanic about required service intervals. The Info and Diagnostic screens can be used by a Service Technician to monitor and diagnose system performance and problems based on the information from the VCU (Vehicle Control Unit) about the HV Batteries and components. See SERVICE MANUAL.



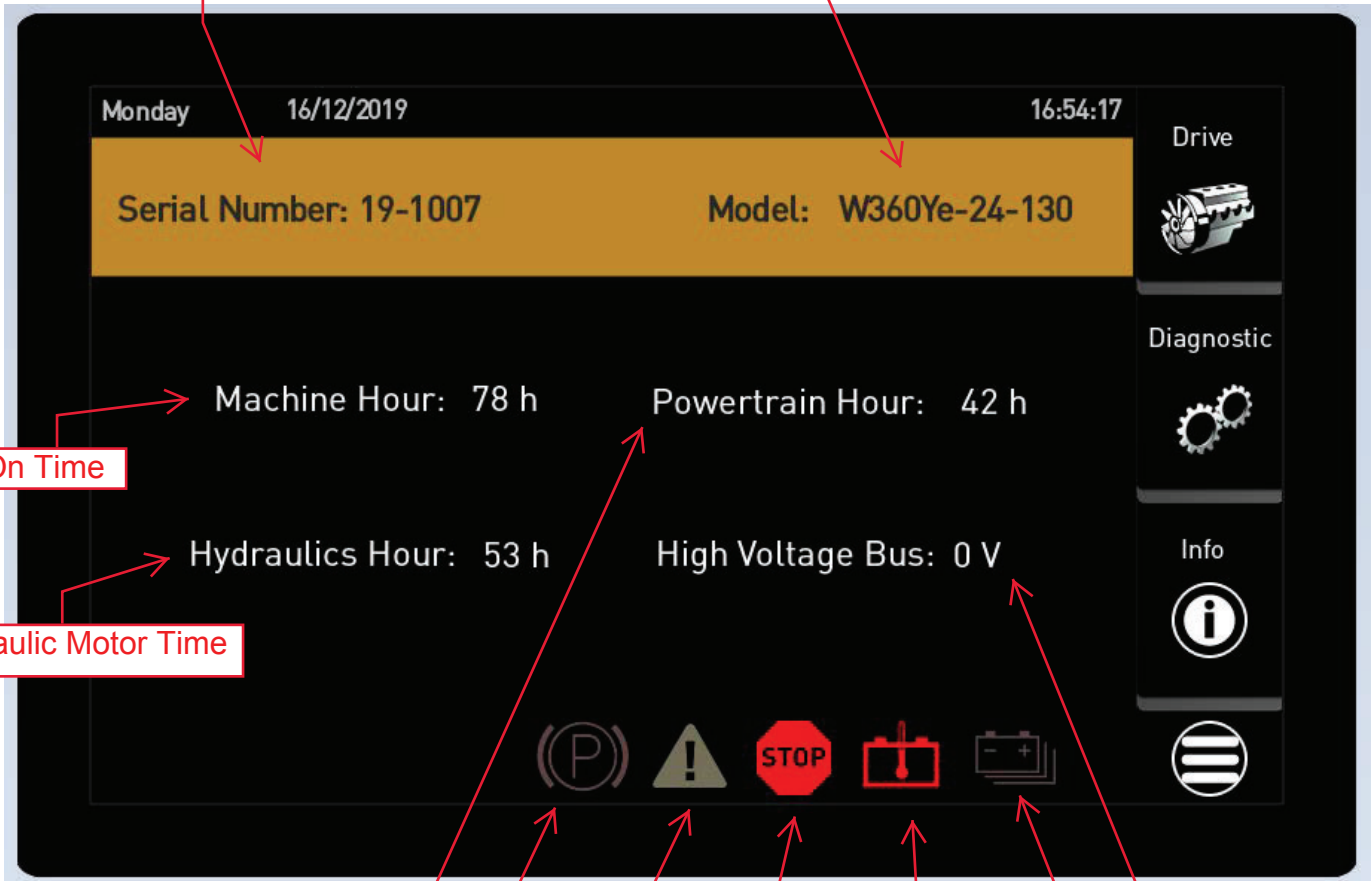
### Info Page:

Displays Truck Serial Number, Truck Model, Machine Hours, Powertrain Hours, Hydraulics Hours, High Voltage Bus Value.

Select "Info" to display Information Page.

Wiggins Unit Serial Number

Wiggins Unit Model Number



Key On Time

Hydraulic Motor Time

Drive Motor Time

Park Brake Indicator

Powertrain Warning

Critical Powertrain Stop Fault

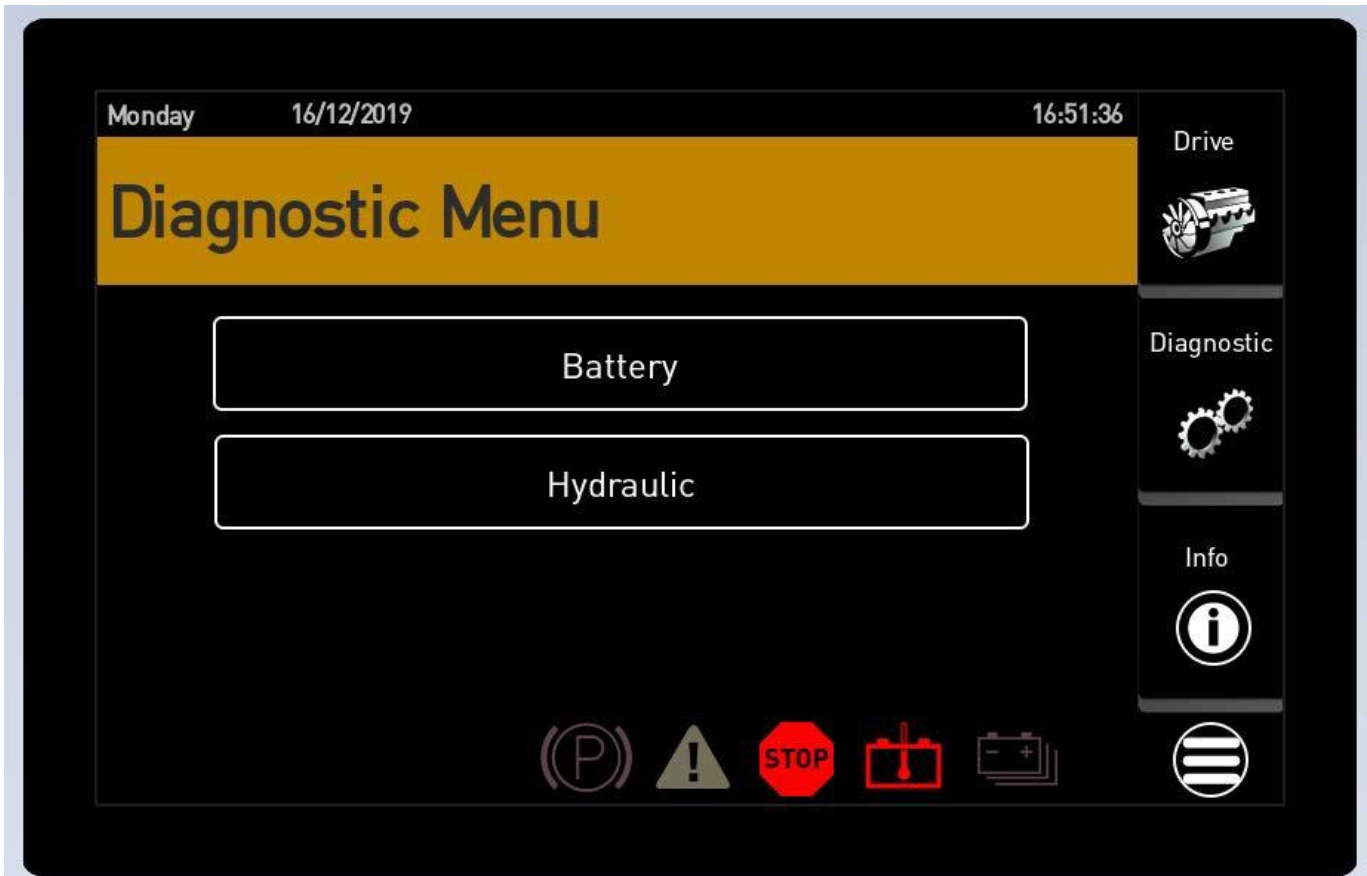
Battery Temp Warning

Battery Voltage

Battery System Warning

### Diagnostic Deatails Page:

Only trained and authorized mechanics can safely work on the Battery, High Voltage Bus, and Hydraulic System.



Batteries Online: 0

Batt1 status DL		Batt2 status DL		Batt3 status DL		Batt4 status DL	
SOC1	0.00	SOC2	0.00	SOC3	0.00	SOC4	0.00
Contactor LoadSt1	0 A	Contactor LoadSt2	0 A	Contactor LoadSt3	0 A	Contactor LoadSt4	0 A
BattState1	0	BattState2	0	BattState3	0	BattState4	0
TBatMax1	0 C	TBatMax2	0 C	TBatMax3	0 C	TBatMax4	0 C
TBatMin1	0 C	TBatMin2	0 C	TBatMin3	0 C	TBatMin4	0 C
BalancingAct1	0 V	BalancingAct2	0 V	BalancingAct3	0 V	BalancingAct4	0 V
ChargeComplete1	0 A	ChargeComplete2	0 A	ChargeComplete3	0 A	ChargeComplete4	0 A
Batt1 Current		Batt2 Current		Batt3 Current		Batt4 Current	
IChgLim1	0 A	IChgLim2	0 A	IChgLim3	0 A	IChgLim4	0 A
IDischrgLim1	0 A	IDischrgLim2	0 A	IDischrgLim3	0 A	IDischrgLim4	0 A
IShunt1	0 mA	IShunt2	0 mA	IShunt3	0 mA	IShunt4	0 mA
Batt1 Voltage		Batt2 Voltage		Batt3 Voltage		Batt4 Voltage	
CellMax1	0 mV	CellMax2	0 mV	CellMax3	0 mV	CellMax4	0 mV
CellMin1	0 mV	CellMin2	0 mV	CellMin3	0 mV	CellMin4	0 mV
TerminalVolt1	0 V	TerminalVolt2	0 V	TerminalVolt3	0 V	TerminalVolt4	0 V

#### 4. IQAN Characteristics

##### Display

###### **Touch function**

The IQAN-MD4 display has a capacitive touch screen (PCAP touch screen) enabling the user to control the display with the use of fingers, passive stylus, thin gloves or thicker gloves with conductive material in the finger tips. The touch sensor is protected from wear behind a glass surface.

###### **Polarization**

The MD4-7 (7") screen has polarizers, and the display component is defined as landscape mode display.

###### **Scratch resistance**

In order to maximize the life cycle of the optical performance of the display, the glass surface does not have any anti-reflection treatment. Such surface treatments have a tendency to mechanically wear down over time and would give a worn out appearance of the display and a reduced optical performance.

- Menu button 

###### **Maintenance**

Reasonable care should be taken to maintain the glass.

The display can be cleaned with an LCD cleaning solution found in many stores. Use a lightly dampened lint-free, non-abrasive cloth when cleaning the display.

###### **Notice**

To avoid scratches, do not wipe or clean a dry display.

###### **Water**

IQAN-MD4 is a hardened module suitable for both in-cab and outdoor use.

The display will not be damaged by water, but the touch sensor has been tuned to reduce the risk of unintentional activation of buttons from water drops. The touch interface can have limited functionality if an excessive amount of water droplets remain on the screen. If the MD4 display is placed in exposed locations where water spray can hit the display, additional splash protection could be used.

###### **Notice**

It is recommended to place the display in a vertical position so that water droplets that hit the display roll off the display glass.

###### **Brightness**

The brightness is easily adjusted by pressing the 'menu' touch button and following the prompts to the backlight settings section. The backlight is automatically dimmed at supply voltage <14V.

**Burn-in**

The IQAN-MD4 TFT display, like other computer screens can have a ghost picture occur if a static image is left on the display for extended periods of time. For the best viewing over the life of the product we recommend using the screensaver functionality.

**NOTICE**

To avoid burn-in, use the screensaver on the display.

**Back of Unit**

If the rear surface of the IQAN-MD4 unit is exposed and will be subjected to pressure cleaning, care should be taken around the connector assemblies. The Deutsch DTM connectors are IP67 rated which is suitable for outdoor conditions. However, concentrating the cleaning jets on the connectors of the IQAN-MD4 can cause damage to the connector seals, wire insulation, or IQAN-MD4 and should be avoided. Use of shielding is recommended to block high pressure cleaning jets, if the rear of the unit is exposed.

**SAFETY WHILE SERVICING:**

Stop the machine. **DO NOT** service the machine if running or hot, or if the machine is in motion.

***Any marked High Voltage component or any orange wire or connector is only to be touched or handled by authorized and fully trained personnel. During the warranty period, only Wiggins personnel or other authorized warranty service personnel are allowed to touch or exchange components. No field repairs will be performed on individual components and no high voltage components will be opened in the field.***

*Note: When making major repairs or complex adjustments, it is recommended that you consult your Wiggins Dealer and have the work carried out by trained personnel.*

**RECHARGE SAFELY - AVOID ELECTRIC SHOCK**

- Do not insert any objects or fingers into the charge port socket.
- Keep charge port door closed except when charging.
- Do not handle a damaged charge cable or plug.

**PREPARE FOR EMERGENCIES**

- Be prepared before a fire starts.
- Keep a first aid kit and fire extinguisher handy.
- Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.

**AVOID HIGH-PRESSURE FLUIDS**

- Escaping fluid under pressure can penetrate the skin causing serious injury.
- Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.
- Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.
- If an accident occurs, see a doctor immediately.

**HANDLE CHEMICAL PRODUCTS SAFELY**

Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with Wiggins Lift equipment may include such items as lubricants, coolants, paints, and adhesives.

A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques.

Check the MSDS before you start any job using a hazardous chemical. That way you will know exactly what the risks are and how to do the job safely. Then follow procedures and recommended equipments.

(See your Wiggins Lift Co., INC dealer for MSDS's on chemical products used with Wiggins Lift equipment.)

**WORK IN CLEAN AREA**

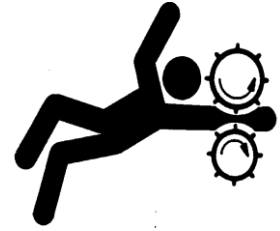
Before starting a job:

- Clean work area and machine.
- Make sure you have all necessary tools to do your job.
- Have the right parts on hand.
- Read all instructions thoroughly; do not attempt shortcuts.

**SERVICE MACHINES SAFELY**

Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.

**ILLUMINATE WORK AREA SAFELY**

Illuminate your work area adequately and safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite anything flammable nearby.

**REPLACE SAFETY SIGNS**

Replace missing or damaged safety signs. Refer to the Decal Locations Page located in your Wiggins Manual.

**USE PROPER LIFTING EQUIPMENT**

Lifting heavy components incorrectly can cause severe injury or machine damage.

Follow recommended procedure for removal and installation of components in the manual.

**AVOID HARMFUL ASBESTOS DUST**

Avoid breathing dust that may be generated when handling materials containing asbestos fibers. Inhaled asbestos fibers may cause lung cancer.

Components in products that may contain asbestos fibers are brake pads, brake band and lining assemblies, insulation, and some gaskets. The asbestos used in these components is usually found in a resin or sealed in some way. Normal handling is not hazardous as long as airborne dust containing asbestos is not generated.

Avoid creating dust. Never use compressed air for cleaning. Avoid brushing or grinding material containing asbestos. When servicing, wear an approved respirator. A special vacuum cleaner is recommended to clean asbestos. If not available, apply a mist of oil or water on the material containing asbestos.

Keep bystanders away from the area.

**AVOID HEATING NEAR PRESSURIZED FLUID LINES**

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders.

Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area.

**REMOVE PAINT BEFORE WELDING OR HEATING**

Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Do all work outside or in a well ventilated area. Dispose of paint and solvent properly.

Remove paint before welding or heating:

- If you sand or grind paint, avoid breathing the dust.

Wear an approved respirator.

- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

**USE PROPER TOOLS**

Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards.

Use power tools only to loosen threaded parts and fasteners.

For loosening and tightening hardware, use the correct size tools. DO NOT use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches.

Use only service parts meeting OEM specifications.

**CONSTRUCT DEALER-MADE TOOLS SAFELY**

Faulty or broken tools can result in serious injury. When constructing tools, use proper, quality materials, and good workmanship.

Do not weld tools unless you have the proper equipment and experience to perform the job.

**DISPOSE OF WASTE PROPERLY**

Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with Wiggins equipment include such items as oil, coolant, filters, and batteries.

Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

Do not pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your OEM dealer.

**LIVE WITH SAFETY**

Before returning machine to customer, make sure machine is functioning properly, especially the safety systems. Install all guards and shields.

**COOLING SYSTEM**

- **DO NOT** remove the radiator cap. Add coolant to overflow bottle only.
- **DO NOT** add coolant while the forklift is on or charging. **Pumps are on when Batteries are Charging.**
- When adding coolant, make sure coolant being added is compatible and will mix with existing coolant into overflow bottle.

**ELECTRICAL SYSTEM - "LV" Low Voltage**

To prevent serious injury or death from exploding gases:  
Do not work on LV batteries without proper instruction and training.

The 24v LV battery supply has two 12v batteries connected in series to achieve 24v. The OEM batteries are AGM, do not have liquid electrolyte, and do not produce gases. However, someone may have installed other batteries, so practice safe battery handling.

Always wear protective clothing and eye protection when servicing. In case of electrolyte contact, rinse area with plenty of water and seek medical attention.



**Prevent LV Battery Explosions:**

**CAUTION:** Battery can explode.

- Before making adjustments or servicing the electrical system, disconnect the LV battery negative (-) cable first to prevent short circuits.
- Do not produce sparks with cable clamps when charging the LV battery or powering the machine on with a slave (jumper) battery.
- Keep sparks and flames away from batteries.
- Never check LV battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.
- Always remove grounded (-) battery clamp first and replace it last.

**ELECTRICAL SYSTEM - "HV" High Voltage**

Do not work on HV batteries or Orange Cables - Contact OEM

Only trained and authorized personnel may remove or replace HV Batteries.

**HYDRAULIC SYSTEM**

**High pressure fluid hazard.** To prevent serious injury or death:

Relieve pressure on system before repairing, adjusting or disconnecting.



Wear proper hand and eye protection when searching for leaks.  
Keep all components in good care.



- Ensure all hydraulic connections are tight.
- Relieve all pressures before disconnecting hoses or lines. Escaping oil under pressure can cause serious injury.

- **NEVER** check for leaks with your hand. Leaks can be located by holding a piece of cardboard or wood (at least two feet long) with your hand at one end and passing the other end over the suspected area (wear eye protection). Look for discoloration of the cardboard or wood.
- Hydraulic fluid escaping through a pin hole sized opening can burn or puncture skin, resulting in wounds that could cause blood poisoning, infection, disability, gangrene, amputation, or death.
- **NEVER** adjust the pressure of the pump or valve.
- If injured by escaping fluid, no matter how small the wound is, see a doctor at once. A typical injection injury may be a small wound that does not look serious. However, severe infection or reaction can result if proper medical treatment is not administered immediately by a doctor who is familiar with injection injuries.

### WHEELS and TIRES

**Do not attempt to service a tire unless you have the proper equipment and experience to perform the job. Have the work carried out by your Wiggins Dealer or a qualified repair service.**

- This machine must be supported on suitable blocks or stands, NOT a hydraulic jack.
- NEVER exceed 10 bar (145 psi) or the maximum pressure inflation pressure specified on the tire. Overinflating may break the bead, or the rim, with dangerous, explosive force.
- Wear suitable protective clothing, gloves, and eye/face protection.

### REPLACEMENT PARTS

Where replacement parts are necessary for periodic maintenance and servicing, replacement parts from Wiggins must be used to restore your equipment to original specifications. Wiggins will not claim responsibility for installation of unapproved parts and/or accessories and damages as a result of their usage.

### WARNING DECAL

#### Before Operation:




- Be trained and authorized.
- Read and understand your operator's manual.
- Inspect and check your truck daily.
- Do not operate a faulty truck.
- Know and understand the capacity of your truck.  
Do not overload.

#### During Operation:

- Watch for pedestrians, obstructions and overhead wires.
- Observe all safe driving rules.
- Do not carry passengers or lift people.
- Wear seat belt.
- Drive slowly and do not turn on a slope.
- Travel with load secure and stable.
- Keep forks as low as possible and tilted back as necessary.

#### Parking:

- Lower attachments.
- Shift into Neutral.
- Set parking brake.
- Turn off key.
- Do not park on a slope.

<b>⚠ WARNING</b>	
	<b>BEFORE OPERATION:</b> <ul style="list-style-type: none"> <li>• Be trained and authorized.</li> <li>• Read and understand operator's manual.</li> <li>• Inspect and check your truck daily.</li> <li>• Do not operate a faulty truck.</li> <li>• Know and understand the capacity of your truck. Do not overload.</li> </ul>
	<b>DURING OPERATION:</b> <ul style="list-style-type: none"> <li>• Watch for pedestrians, obstructions and overhead wires.</li> <li>• Observe all safe driving rules.</li> <li>• Do not carry passengers or lift people.</li> <li>• Wear seat belt.</li> <li>• Drive slowly and do not turn on a slope.</li> <li>• Travel with load secure and stable.</li> <li>• Keep forks as low as possible and tilted back as necessary.</li> </ul>
	<b>PARKING:</b> <ul style="list-style-type: none"> <li>• Lower attachments.</li> <li>• Shift into Neutral.</li> <li>• Set parking brake.</li> <li>• Turn off key.</li> <li>• Do not park on a slope.</li> </ul>
WIGGINS LIFT TRUCK 805-485-7821 <span style="float: right;">Part No. 106282</span>	

**SAFETY WHILE OPERATING**

Review ENTIRE manual before operating this machine.

**Safety Instructions:**

1. Before you operate this truck you must be trained and authorized.
2. Read and understand the operator's manual and all safety labels before operating this truck.
3. Perform operator daily check before operating this truck.
4. Before lifting load, adjust forks for a stable load.
5. When traveling and turning, slow down and watch for side clearances for both the load and the tail swing.
6. Watch for overhead obstructions including high voltage wires and doors.
7. Drive carefully, keeping forks as low as possible and tilted back as necessary.
8. Do not stand or walk under an elevated load.

**SAFETY INSTRUCTIONS**

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6. Watch for overhead obstructions including high voltage wires and doors.
7. Drive carefully, keeping forks as low as possible and tilted back as necessary.
8. Do not stand or walk under an elevated load.

WIGGINS LIFT TRUCK 805-485-7821Part No. 106283**Load Handling Safety:****Heed these safety rules:**

- When lifting or loading, tilt mast back.
- Use caution when tilting mast forward to ensure load does not shift off forks.
- Never carry maximum rated load with center of load 24 inches above forks.
- Avoid sudden starts and stops to prevent load from shifting.
- Lift loads on level ground to prevent rollover.
- Always watch for overhead obstructions when operating and lifting loads.
- Do not exceed the lifting capacity of the forklift.
- Always ensure forks of the proper capacity are used. Never interchange forks with forks of a different rating.
- Do not add or subtract weight from the counterweight.
- Avoid raising the load when the wind velocity is excessive.



**WARNING** – Avoid traveling with mast or boom elevated. Start, stop, travel, steer and brake smoothly. Slow down for turns. Slow down for rough, slippery, or soft terrain.



## Modification, Record Retention, Ownership Records, Instructions for Pressure Washing

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### MODIFICATION

Modification or alteration of the forklift shall be made only with prior consent from Wiggins Lift Co., INC.

### RECORD RETENTION

The owner shall retain the following records for at least 3 years:

- A. **Purchase Information**
- B. **Records of persons trained upon delivery of the equipment.**
- C. **Written records of frequent inspections, maintenance performed and parts replaced.**

### OWNERSHIP RECORDS

When a change of ownership occurs, it is the responsibility of the seller to notify Wiggins Lift Co., INC. with the following within 60 days of the sale:

- A. **Serial number of machine.**
- B. **Name and address of new owner.**

### INSTRUCTIONS FOR PRESSURE WASHING

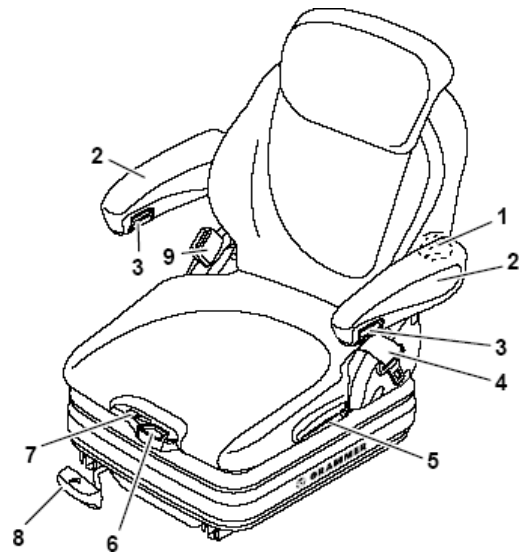
When pressure washing, protect and **DO NOT** direct jet on the following components:

**Batteries, HV Components, Axle Pivot pins, Radiator, Charge Port, Hydraulic oil cooler, Transmission oil cooler, Instrument panel, Electrical Harness and Connections, and Safety Decals.**

**Seat Controls and Indicators**

(Controls and indicators may vary depending on particular model of seat used)

1. Knob for lumbar support
2. Armrest
3. Knob for armrest angle adjustment
4. Belt Roller
5. Handle for backrest adjustment
6. Handle for level adjustment
7. Seat level indicator
8. Handle for fore/aft adjustment
9. Seat belt buckle

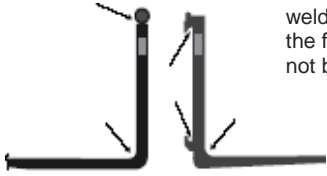




**Maintenance Check Lists:** The maintenance check lists provided are based on normally expected operating conditions. Unusual conditions, such as high or low temperatures, dusty winds or severe rain storms may require more frequent lubrication or filter replacement.

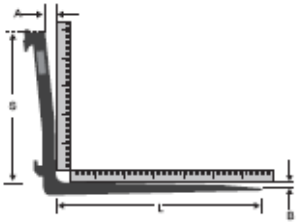
Forks in use shall be inspected at intervals of not more than 12 months (for single shift operations) or whenever any defect or permanent deformation is detected. Certain applications will require more frequent inspections, and possibly non-destructive testing methods to check for cracks.

### 1. Inspect for surface cracks.



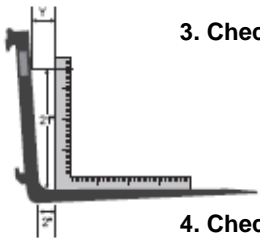
Pay special attention to the heel and welds attaching all mounting components to the fork blank. Forks with surface cracks shall not be returned to service.

### 2. Check for straightness of blade and shank.



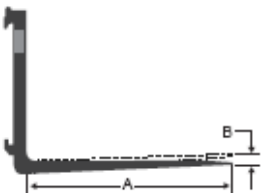
The fork should be withdrawn from service if the deviation from straightness exceeds allowable "A" and "B" values.  
 Allowable "A" = (.005) x (S)  
 Allowable "B" = (.005) x (L)  
 Example: 48" or 1,219 mm long blade Allowable B = (.005) x (48") = .24"  
 or B = (.005) x (1,219) mm = 6.10 mm

### 3. Check for excessive fork angle.



When Y value exceeds 2 3/8" (60 mm) or 2 3/4" (70 mm) on fully tapered, the fork is rejected.

### 4. Check tip alignment.



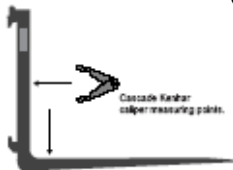
When "A" is less than or equal to 42" (1,067 mm), then the maximum recommended difference in fork tip elevation is B = .25" (6.35 mm). If "A" greater than 42" (1,067 mm), then the maximum recommended difference in fork tip elevation is B = .375" (9.53 mm).

### 5. Check for positioning lock damage.



Check the positioning lock and other fork retention devices to make sure they are in place and working.

### 6. Check for wear.



Set the top jaws of caliper by measuring the thickness of the shank. Position the bottom jaws over the flanks of the fork arm blade. If inside jaws of caliper hit fork, it is OK. If inside jaws of caliper pass over the fork arm, it must be taken out of service. Refer to clipboard.

### 7. Check fork marking.



If the fork identification marking is not clearly legible, it shall be renewed.

Lift Truck Serial # \_\_\_\_\_

Inspection Date	Inspected By	Observations/Comments
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____
7. _____	_____	_____

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#### 6.2.8 Inspection and Repair of Forks in Service on Fork Lift Trucks

(a) Forks in use shall be inspected at intervals of not more than 12 months (for single shift operations) or whenever any defect or permanent deformation is detected. Several applications will require more frequent inspection.

(b) Individual and Load Rating of Forks. When forks are used in pairs (the normal arrangement), the rated capacity of each fork shall be at least half of the manufacturer's rated capacity of the truck, and at the rated load center distance shown on the lift truck nameplate.

**6.2.8.1 Inspection.** Fork inspections shall be carried out carefully by trained personnel with the aim of detecting any damage, failure, deformation, etc., which might impair safe use. Any fork which shows such a defect shall be withdrawn from service, and shall not be returned to service unless it has been satisfactorily repaired in accordance with para 6.2.8.2.

**(a) Surface Cracks.** The fork shall be thoroughly examined visually for cracks and if considered necessary, subjected to a non-destructive crack detection process, special attention being paid to the heel and welds attaching all mounting components to the fork blank. This inspection for cracks must also include any special mounting mechanisms of the fork blank to the fork carrier including bolt type mountings and forged upper mounting arrangements for hook or shaft type carriages. The forks shall not be returned to service if surface cracks are detected.

**(b) Straightness of Blade and Shank.** The straightness of the upper face of the blade and the front face of the shank shall be checked. If the deviation from straightness exceeds 0.5% of the length of the blade and/or the height of the shank, respectively, the fork shall not be returned to service until it has been repaired in accordance with para 6.2.8.2.

**(c) Fork Angle** (Upper Face of Blade to Load of the Shank). Any fork that has a deviation of greater than 3 deg. from the original specification shall not be returned to service. The rejected fork shall be reset and tested in accordance with para 6.2.8.2.

**(d) Difference in Height of Fork Tips.** The difference in height of one set of forks when mounted on the fork

carrier shall be checked. If the difference in tip heights exceeds 3% of the length of the blade, the set of forks shall not be returned to service until repaired in accordance with para 6.2.8.2.

**(e) Positioning Lock** (Where Originally Provided). It shall be confirmed that the positioning lock is in good repair and correct working order. If any fault is found, the fork shall be withdrawn from service until satisfactory repair has been effected.

#### **(f) Wear**

(1) Fork Blade and Shank. The fork blade and shank shall be thoroughly checked for wear, special attention being paid to the vicinity of the heel. If the thickness is reduced to 90% of the original thickness, the fork shall not be returned to service.

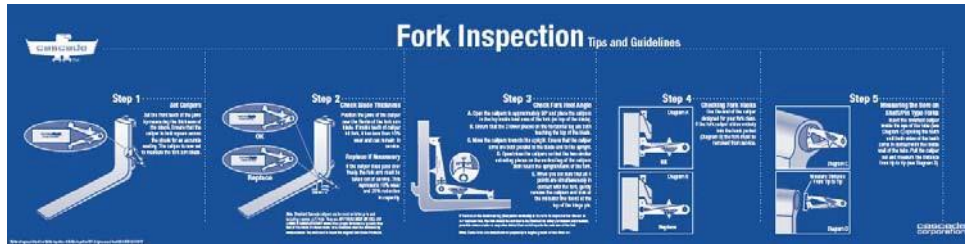
(2) Fork Hooks (Where Originally Provided). The support face of the top hook and the retaining faces of both hooks shall be checked for wear, crushing, and other local deformations. If these are apparent to such an extent that the clearance between the fork and the fork carrier becomes excessive, the fork shall not be returned to service until repaired in accordance with para 6.2.8.2.

**(g) Legibility of Marking** (When Originally Provided). If the fork marking in accordance with para 7.25.2 is not clearly legible, it shall be renewed. Marking shall be renewed per instructions from original supplier.

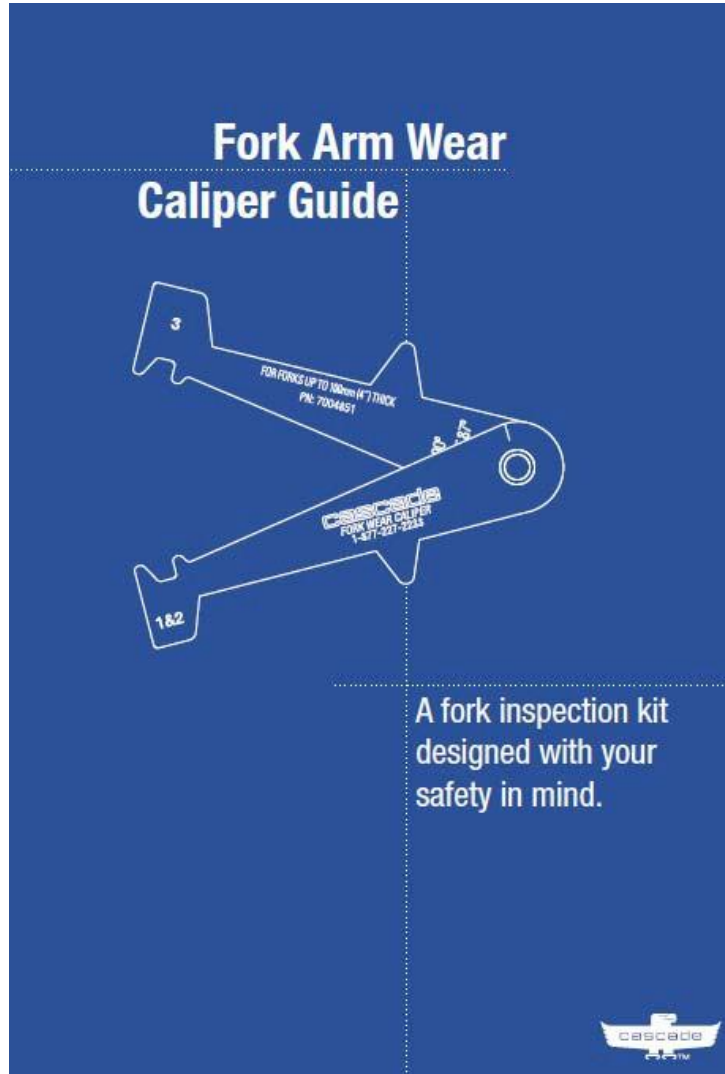
#### **6.2.8.2. Repair and Testing**

**(a) Repair.** Only the manufacturer of the fork or an expert of equal competence shall decide if a fork may be repaired for continual use, and the repairs shall only be carried out by such parties. It is not recommended that surface cracks or wear be repaired by welding. When repairs necessitating resetting are required, the fork shall subsequently be subjected to an appropriate heat treatment, as necessary.

### FORK INSPECTION POSTER (Open Link Below "CNTRL + Click Link")



### FORK ARM WEAR CALIPER GUIDE (Open Link Below "CNTRL + Click Link")



**8 HOUR DAILY, WEEKLY AND MONTHLY SERVICE SHEET**

- \_\_\_\_\_ 1. CHECK GENERAL CONDITION OF UNIT-**DAILY**
- \_\_\_\_\_ 2. CHECK COOLANT LEVEL IN COOLANT BOTTLE-**DAILY**
- \_\_\_\_\_ 3. CHECK HYDRAULIC OIL LEVEL GAUGE-**DAILY**
- \_\_\_\_\_ 4. CHECK HYDRAULIC OIL FILTER FOR LEAKS-**DAILY**
- \_\_\_\_\_ 5. CHECK ALL HYDRAULIC HOSES & FITTINGS FOR LEAKS-**DAILY**
- \_\_\_\_\_ 6. CHECK ALL WIRE HARNESSSES AND CONNECTORS FOR ABRASION - **DAILY**
- \_\_\_\_\_ 7. CHECK EMERGENCY BRAKE OPERATION-**DAILY**
- \_\_\_\_\_ 8. CHECK BRAKES UNDER POWER-**DAILY**
- \_\_\_\_\_ 9. DRIVE UNIT & OPERATE ALL HYDRAULIC SYSTEMS-**DAILY**
- \_\_\_\_\_ 10. CHECK ADJUSTMENT OF TILT BACK LOCK NUTS FOR TIGHTNESS-**WEEKLY**
- \_\_\_\_\_ 11. CHECK ALL LUBE POINTS-**WEEKLY**
- \_\_\_\_\_ 12. LUBRICATE COMPLETE LIFT-**WEEKLY**
- \_\_\_\_\_ 13. CHECK DIFFERENTIAL OIL LEVEL (IF APPLICABLE)-**EVERY PM**
- \_\_\_\_\_ 14. CHECK AXLE MOUNTING NUTS AND BOLTS-**DAILY** FOR THE FIRST 40 HRS. THEN EVERY **PM** THEREAFTER. CALL WIGGINS LIFT CO., INC. FOR TORQUE SPECS.
- \_\_\_\_\_ 15. CHECK WHEEL NUTS-**DAILY** FOR THE FIRST 40 HRS. THEN EVERY **PM** THEREAFTER. CALL WIGGINS LIFT CO., INC. FOR TORQUE SPECS.
- \_\_\_\_\_ 16. CHECK TIRE AIR PRESSURE (IF APPLICABLE) -**WEEKLY**. CALL WIGGINS LIFT CO., INC. OR TIRE MANUFACTURER FOR PROPER TIRE PRESSURES.

NEEDS ATTENTION: \_\_\_\_\_

COMPLETED BY: \_\_\_\_\_ SERIAL #: \_\_\_\_\_

O.K.: \_\_\_\_\_ DATE: \_\_\_\_\_ HOURS: \_\_\_\_\_

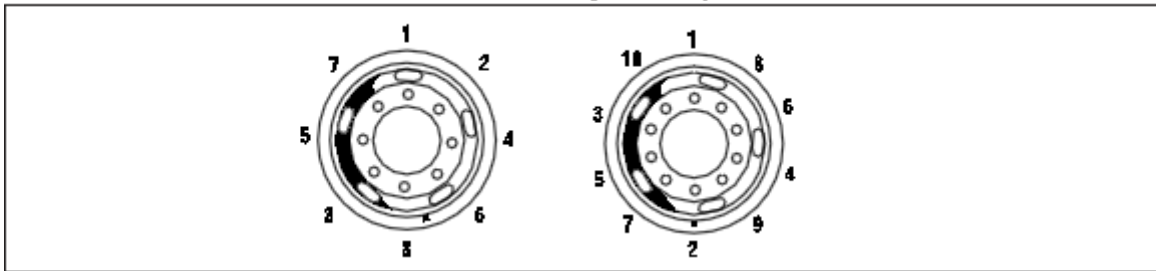


## Maintenance Check Lists

**WIGGINS LIFT CO - MAINTENANCE SCHEDULE**  
**WIGGINS eBULL - NORMAL USE - ELECTRIC POWERTRAIN**  
**SEE MANUAL FOR DETAILS**

	DAILY	WEEKLY	EVERY 250 HOURS	EVERY 500 HOURS	2000 HRS OR 5 YRS	6000 HRS
TURN KEY ON, CHECK FOR STATE OF CHARGE	X					
SAFETY CHECK	X					
INSPECT FOR LEAKS	X					
CHECK HYDRAULIC FLUID LEVELS	X					
CHECK WARNINGS ON DISPLAY	X					
CHECK COOLANT LEVEL	X					
OPERATIONAL CHECK		X				
LUBRICATE MAST AND AXLE GREASE FITTINGS		X				
LUBRICATE CHAIN		X				
LUBRICATE LINKAGES, PEDALS, HINGES		X				
INSPECT HOSE AND CHAIN ROLLERS		X				
INSPECT (ADJUST) WEAR PAD CLEARANCES		X				
INSPECT HYDRAULIC HOSES FOR RUBBING		X				
INSPECT WIRE HARNESSSES AND CABLES FOR RUBBING		X				
CHECK TILT BACK ADJUSTMENT		X				
CHECK PNEUMATIC TIRE AIR PRESSURE		X				
CHECK MACHINE FOR RUST		X				
CHECK MACHINE FOR LOOSE NUTS AND BOLTS		X				
INSPECT PARKING BRAKE PADS FOR WEAR			X			
CLEAN HYDRAULIC OIL FILTER MAGNETS			X			
CLEAN RADIATOR AND CHECK COOLANT HOSES			X			
CHECK DIFFERENTIAL FLUID LEVEL			X			
CHECK BATTERY CABLES FOR CORROSION			X			
CHECK ELECTRICAL CONNECTORS			X			
CHECK FAN BLADES			X			
CHECK TIRE WEAR			X			
CHECK WHEEL NUT TORQUE			X			
CHECK HV BATTERY MTG HARDWARE & BRKTS			X			
SAMPLE HYDRAULIC OIL, CHANGE WHEN REQUIRED			X			
CHANGE HYDRAULIC OIL FILTER(S)				X		
CHANGE DIFFERENTIAL OIL				X		
REPACK STEER AXLE WHEEL BEARINGS				X		
CHECK A/C SYSTEM FOR LEAKS OR DAMAGE					X	
CHANGE COOLANT						X
CHECK EVAPORATOR FILTERS; CHANGE WHEN REQD		X	X	X	X	X
CIRCLE SERVICE INTERVAL, ABOVE.						
<b>WIGGINS YARD BULL SERIAL NUMBER:</b>				<b>MODEL NUMBER:</b>		
<b>RECORD ENGINE HOURS:</b>						
<b>PERFORMED BY:</b>						
<b>DATE:</b>						
<b>PLEASE SEND COPY OF THIS REPORT TO WIGGINS LIFT CO. FOR OUR RECORDS</b>						

### WHEEL NUT TORQUING SEQUENCE



Torque values:

¾-16            450-500 Dry  
                  320-384 Lubed

M22x1.5        480-575 Dry  
                  450-500 Lubed

1 1/8-16        750-900 Dry

PRC 7534       ¾-16

PRC 3805/3806 ¾-16 – Typical but may vary

PRC 1756       Most common M22x1.5, but Taylor has a ¾-16 option.

PRC 785        M22x1.5

JD1400         ¾-16

JD1600         ¾-16

Most Wiggins Steer Axle use 1 1/8-16 Nuts

Lubed refers to a pressure bearing grease or anti-seize lubricants, not a light coat of oil. Threads should be lubricated, but it is important to keep the faces of the rim, washer or nut free from lubricant

For nuts used on hub-piloted wheels, apply two drops of oil to a point between the nuts and flanges and two drops to the last 2 or 3 threads at the end of each stud. Also, lightly lubricate the pilots on the hub to ease wheel installation and removal. Do not get lubricant on the mounting face of the drum or wheel.

**Fluid Sampling:**

Proper fluid sampling consists of the following procedure:

- The first sample data point must be from an unused, new fluid sample to establish initial levels for which subsequent used oil samples will be compared.
- Second sample data points of used oil samples should be taken at 250 hours.
- Subsequent draw of used oil samples should be at 250 hours and will continue until the fluid exceeds any of the limits.

**Extraction of Fluid Sample:**

To obtain a representative fluid sample, the following conditions must exist at the time the fluid sample is taken:

1. Hydraulic tank temperature above 60°C (140°F) (If hydraulic oil temperature is not available, coolant must be at operating temperature).
2. Direction Selector in Neutral.
3. Vehicle wheels chocked and vehicle brakes applied.
4. Before attaching collection bottle, allow a minimum of three fluid ounces (90ml) to purge into a container. This removes prior oil/debris trapped in valve and/or remote oil sample hose.
5. Once valve and/or remote oil sample hose has been purged, install collection bottle and fill approximately 3/4 full.
6. Discard the used materials properly. Do not reuse

**Fluid Analysis:**

Hydraulic component protection and fluid change intervals can be optimized by monitoring fluid viscosity and oxidation. Fluid degradation is monitored by testing for viscosity and Total Acid Number

(TAN•). Fluid Viscosity Limit +/- 25% Change From New Fluid

- Total Acid Number +3.0 Change From New Fluid

Since limits are referenced from an unused oil sample, when beginning fluid analysis or repurchasing bulk oil stock, i.e. 55 gallon drum and larger, collect a new, unused oil sample and submit for analysis. Viscosity and TAN values measured from unused sample create the baseline that future used oil sample will be measured against.

**Monitoring Contaminant Levels:**

The presence of contaminants in the hydraulic fluid is detrimental and indicates a fluid change is necessary. Contaminant limits:

- Contaminant Limit of Water - 0.2% Maximum
- Contaminant Limits of Glycol - No Trace Allowed
- Contaminant Limits of any fluid not approved – No Trace Allowed

**Monitoring Wear:**

Absolute maximum values are not applied to wear metals of a hydraulic system due to the many variables present that affect concentration limits. Wear metal analysis results must be evaluated using a trendline approach. A trendline approach plots the concentration level of each wear metal over a period of time. A line of best fit drawn through the plotted points is considered a trendline. A minimum of 4 data points for each wear metal is required to establish a trendline.

Concern should only occur when significant deviations in the established trendline are present. While trendline analysis on wear metals can prove informative and useful, a hydraulic component removal decision should not be based solely upon the analysis. The results should be used in conjunction with other inspection procedures such as a functional check, road test, oil tank/ internal filter inspection, or elevated particle counts. A removal based solely on wear metal analysis may result in an unnecessary teardown. Hydraulic component removal should occur only if the additional investigation warrants it.

If there is ever any doubt on the significance of any fluid analysis reports, or a need to react to a condition, assistance should be sought through a servicing outlet or Transmission Manufacturer’s regional office.

The following part per million (PPM) values represent general guidelines which may be used for references as normal limits:

Iron	Fe	125 PPM
Copper	Cu	350 PPM
Silicon	Si	20 PPM
Aluminum	Al	15 PPM
Lead	Pb	50 PPM
Chromium	Cr	5 PPM

### LUBRICATION and MAINTENANCE

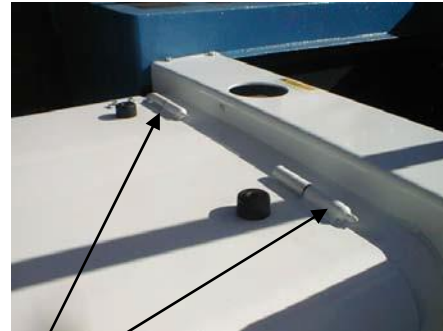
#### Grease Recommendations:

Use grease based on the expected air temperature range during the service interval.

The following greases are preferred:

- SAE Multipurpose EP grease with a maximum of 5% molybdenum disulfide.
- For the ambient temperature range 14 F° to 122 F° (-10 C° to 50 C°) use SAE NLGI # 2.
- For the ambient temperature range -4 F° to 86 F° (-20 C° to 30 C°) use SAE NLGI # 1.
- For the ambient temperature range -22 F° to 50 F° (-30 C° to 10 C°) use SAE NLGI # 0.

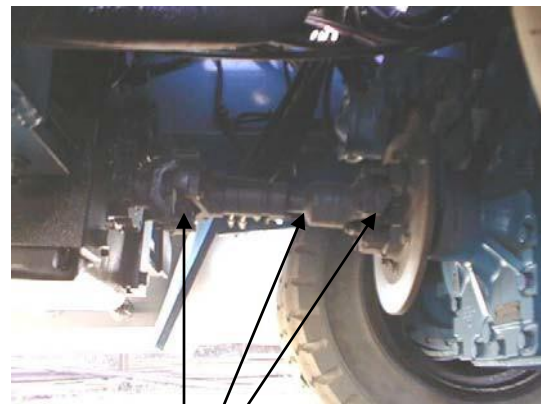
Contact Wiggins Lift Co., Inc. for more information (805) 485-7821.



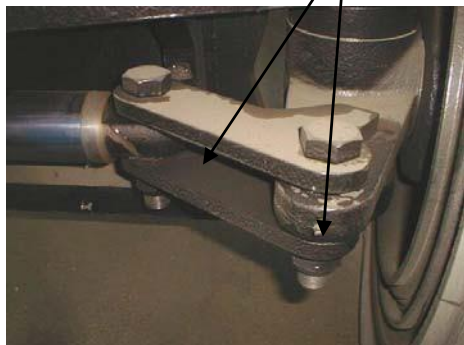
All Hood and Door Hinge Points



Steer Axle Points



Drive Line Points

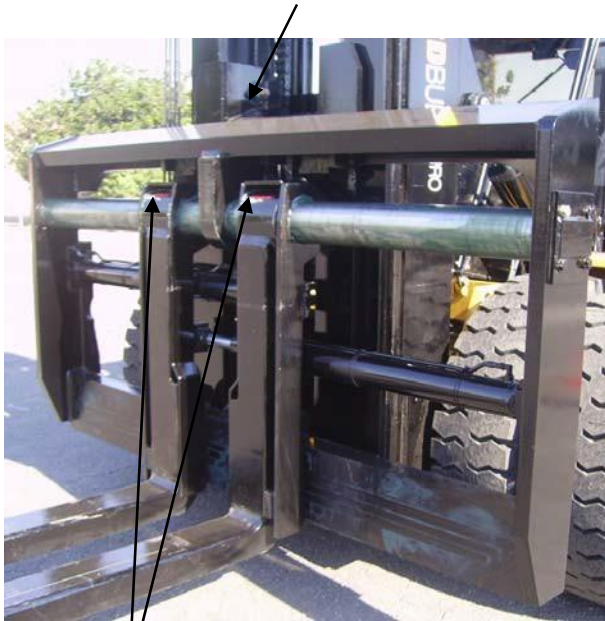


Mast Cylinder Tilt Pin



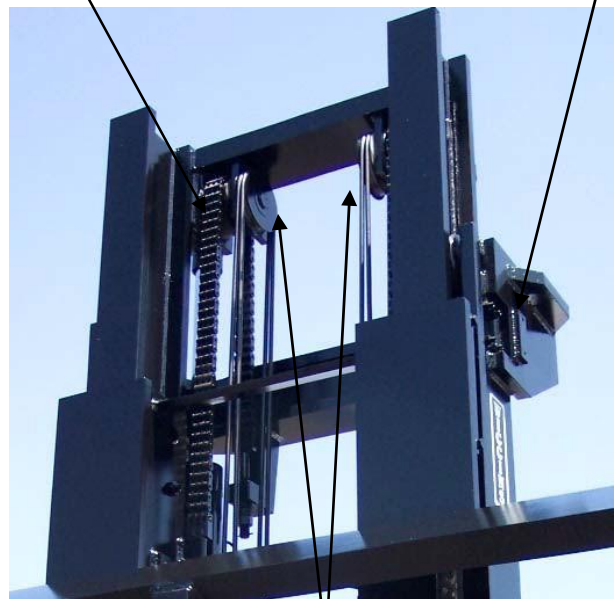
Chassis Cylinder Tilt Pin

Carriage Roller Bearing Lube Points  
(Inside Carriage Rail)



Fork Bushing Lube Points

Mast Chain use Tefgel  
(Wpn - 671864)

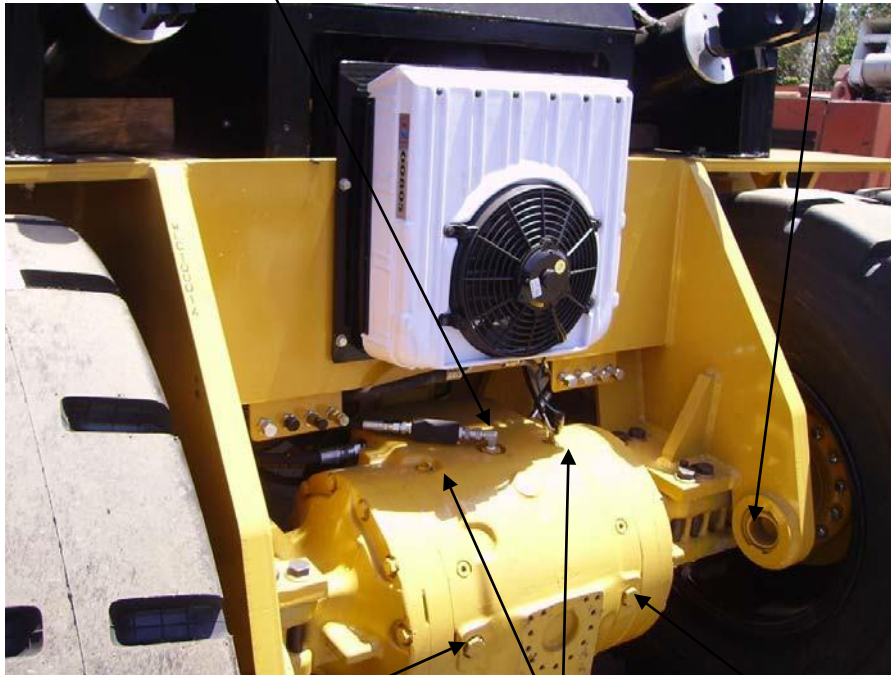


Mast roller bearings lube points

Chain Roller Pins

Differential Valve Bleeder

Mast Pin Location



Oil Level Plug

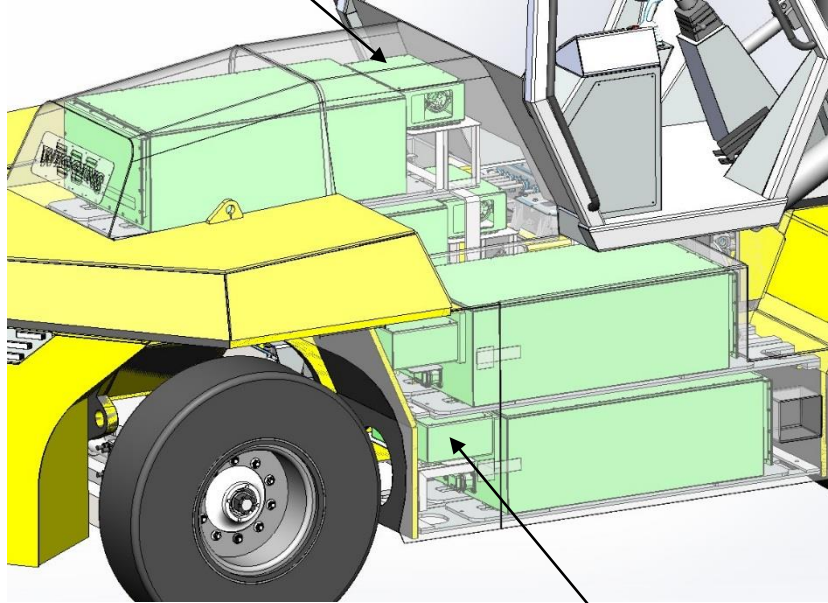
Hydraulic Brake Bleeder

Oil Level Plug

**John Deere Axle Oil Level Check**

### Maintenance Item Locations

Evaporator Filter Locations



Remove Evaporator cover to access Filter

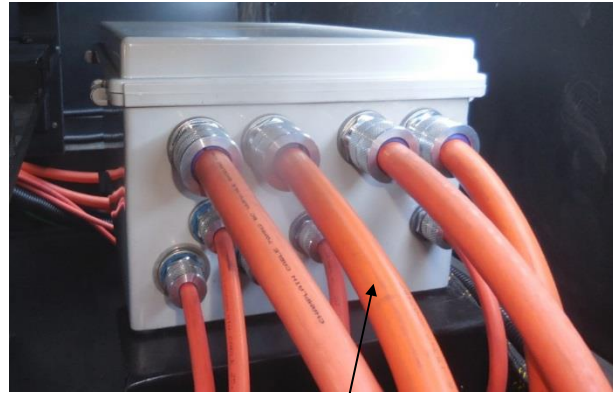
Evaporator Filter Locations



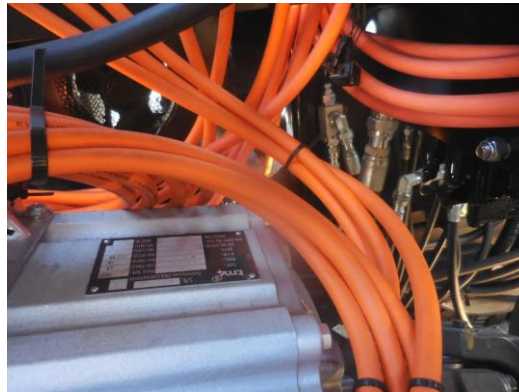
**HV Battery mounting hardware and brackets; Inspect quarterly for loose or broken bolts, cracks in welds, etc. Repair or replace as required.**



**Coolant should be changed generally every 30,000 miles. That would be around 6,000 hrs. In a stationary motor like a generator or forklift in this case**



**Inspect all High Voltage cables located throughout the forklift for damage, discoloration, cracks, cuts, or evidence of rubbing/abrasion. HV Cables are distinguished by their color orange.**



**\* Hoses, Low Voltage Harness and High Voltage Cables should be thoroughly inspected a couple times a year unless something is found during the daily inspection.**

**DRIVE AXLE – Refer to the Drive Axle Manual**

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**MAST**

For proper operation and extended life, your Wiggins Lift Mast should be inspected and serviced regularly as part of your normal lift truck maintenance schedule according to the following outlines and ANSI B56.1 procedures. The recommended intervals are for masts operating under normal conditions. If the mast is operating in severe conditions or corrosive atmospheres (including salt air), the inspections should be performed more frequently.



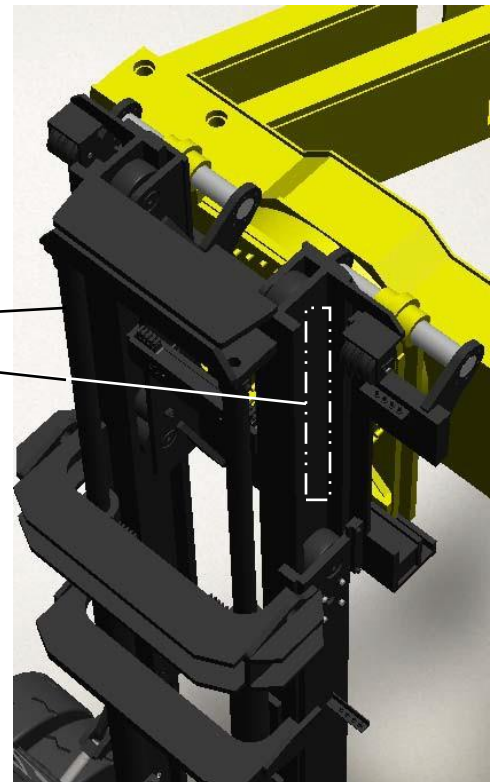
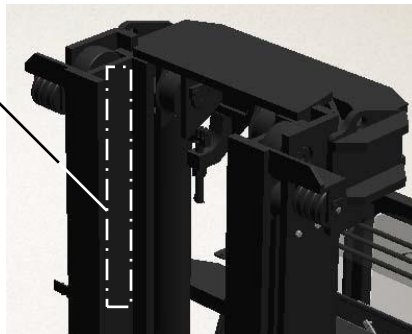
**WARNING:** Never work on the mast with a load on the forks or attachment, in the raised position without supports or while anyone is near the lift truck control handles per ANSI B56.1.

**Daily Inspection:**

1. Extend the carriage a few inches off the ground and make sure the mast chains are under equal tension. Refer to Chain Inspection Section.
2. Extend the mast to its fullest height to make sure the mast rails and carriage extend freely without binding.
3. While the mast is extended, inspect the upright rails for proper lubrication. Refer to Rail Lubrication Section (see Next Page).
4. Make sure the internal reeving hoses (if equipped) travel evenly in the hose guides. Adjust the hose ends if required. Tighten the fittings making sure they do not twist.

**Mast Lubrication:**

- Lubricate all grease fittings on the mast per Wiggins Maintenance Schedule. (Refer to “Lube and Grease Points” pages for locations and recommend grease).
- To lubricate Inner Mast Rail, fully extend mast. Apply Tefgel, (Wpn – 671864), to both outside webs of Inner Mast Sections.
- To Lubricate inside webs of inner rails, lower mast sections and apply to exposed inner mast rail.



### 100 Hour Inspection

After each 100 hours of lift truck operation, and in addition to the daily inspection:

1. Inspect and lubricate the full length of the chains with Tefgel. (Wiggins Part Number 671864 - TEFGEL PEN GEL LUBE)

**CAUTION:** The chains must be coated with a film of lubricant at all times.

### 500 Hour Inspection

After each 500 hours of lift truck operation, and in addition to the daily and 100 hour inspection:

1. Check for equal distances between the insides of the uprights (See Fig 1). If the distances are not equal, follow the applicable instructions described below:

Canted Mast Bearings – Typical for Extruded Rail (Shown in Fig 1)

- a. Shim the load rollers on the uprights and carriage so that the total side clearance is no greater than .06 inches (1.5 mm) occurs at the tightest point throughout the travel of the member. Pry between the upright and load roller so that the opposite load roller is tight against the upright. (See Fig 1)

Straight Mast Bearing – Typical for Fabricated Rail (Shown in Fig 2 and 3)

- b. Adjust set screws so the uprights and carriage distances are equal. Tighten locking nut to secure set screw. (See Fig 2 and 3)
2. Check the Chains for wear and stretch. Refer to Chain Inspection section

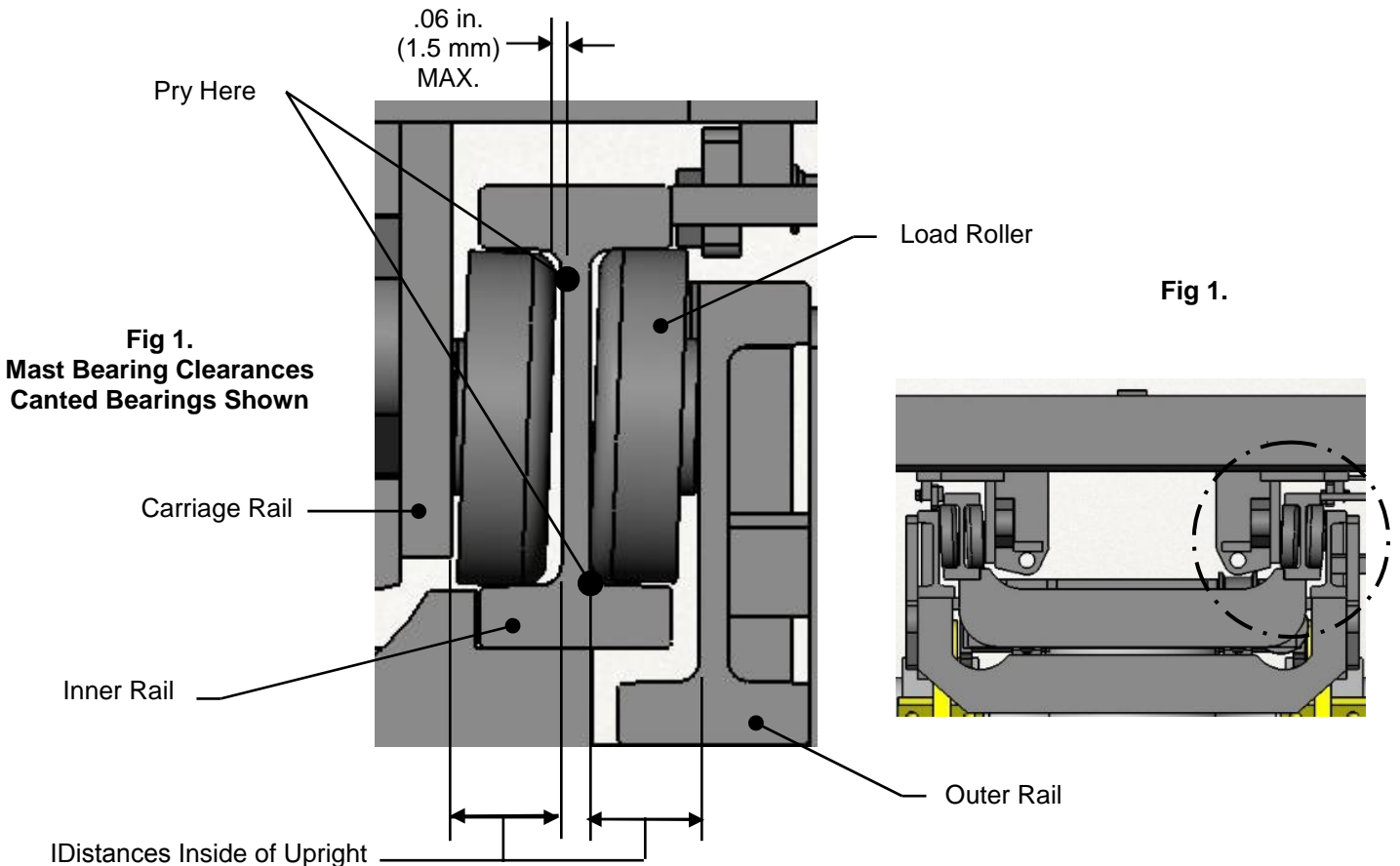


Fig 2.

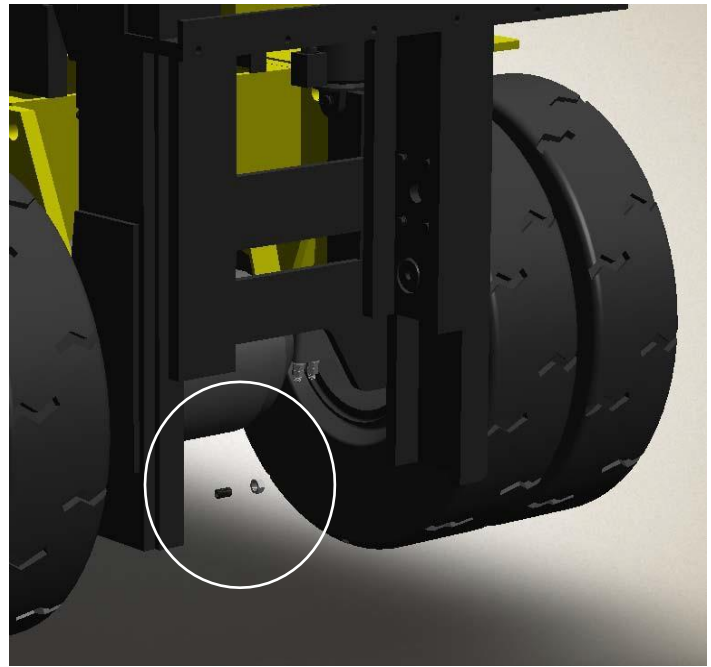
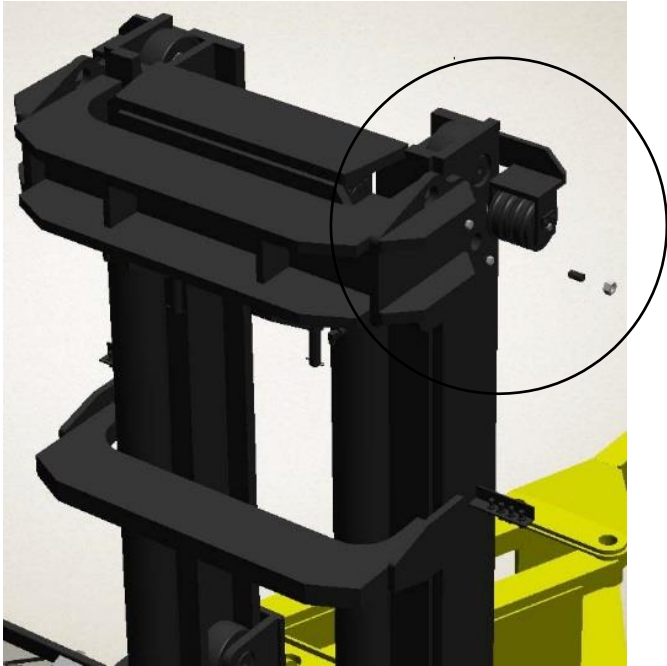
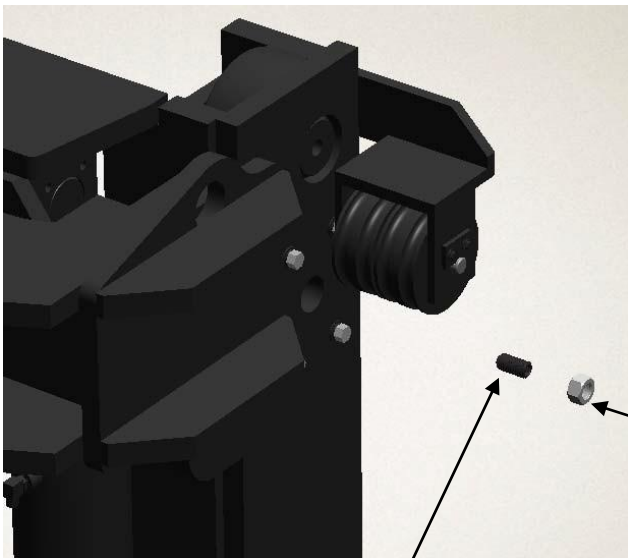


Fig 3.



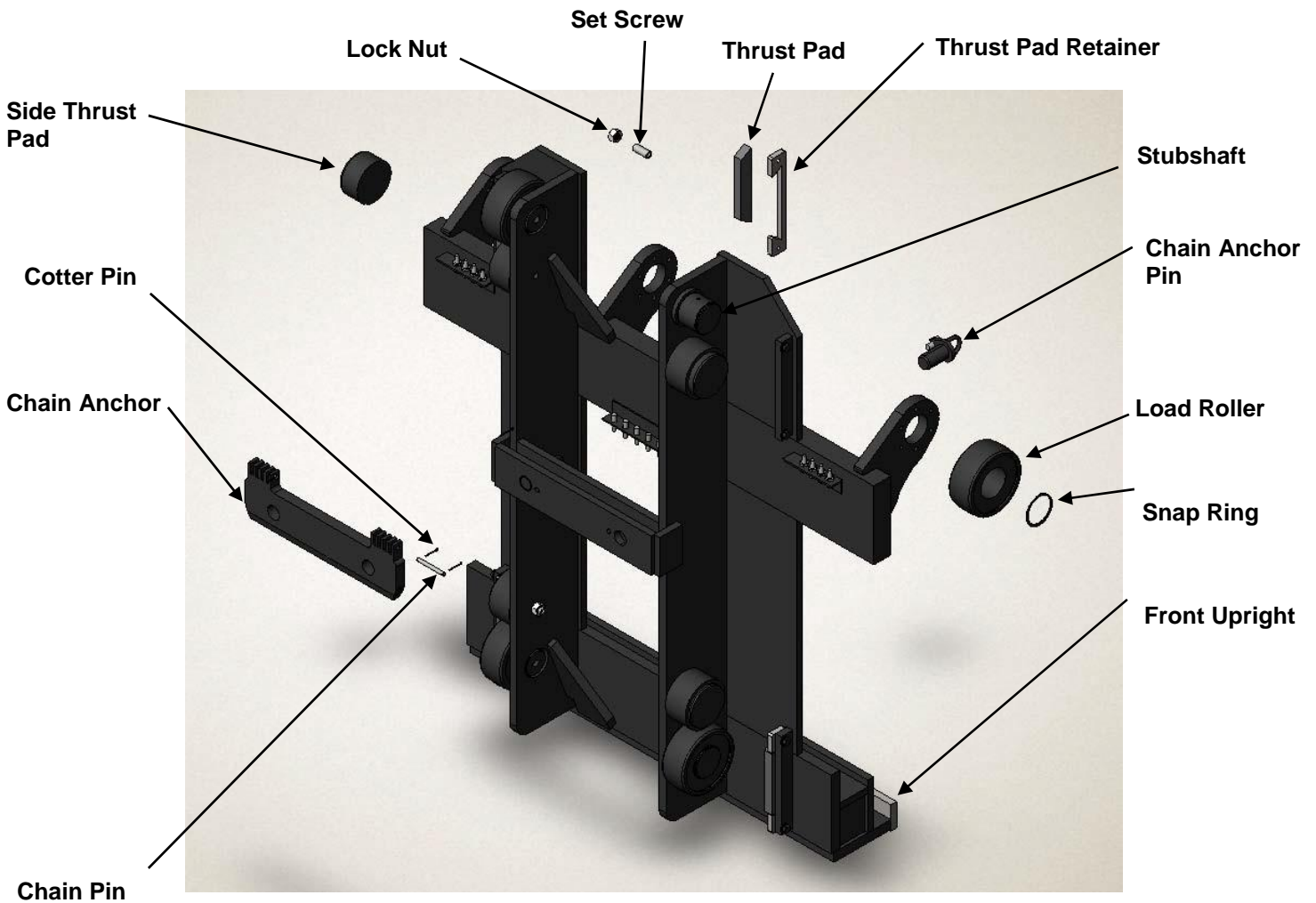
SET SCREW

LOCK NUT



**Carriage Inspection**

1. Inspect the rollers for excessive wear or damage. Rollers with visible flat spots or cracks should be replaced.
2. Lower Fork or Attachment to level ground and tilt the mast forward or back to release load on rollers. Inspect the roller bearings by turning the rollers on their shafts. Rollers with roughness or noticeable restrictions to turning should be replaced.
3. Inspect all welds between the carriage side plates and the carriage fork bars. If any welds are cracked, replace the carriage.
4. Inspect the roller stub shafts. If they are damaged or if there are cracks at the base of the stub shafts, the carriage must be replaced or repaired. Contact Wiggins Lift Co., Inc. for repair procedures.



**Carriage shown above is for a Tire Handler**  
Additional Service, Safety and Maintenance information on NON-Wiggins attachments will be provided as a separate manual.

### Chains

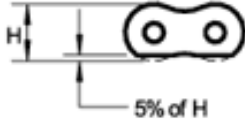


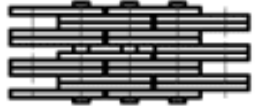
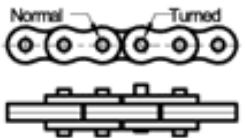

#### Inspection and Tension

Each pair of chains has been factory-lubricated using heat and pressure to force the lubricant thoroughly into the chain links. Avoid removal or contamination of this factory lubricant. **Do not wash, sand blast, etch, steam clean, or paint the chains on initial mast installation.**

The chains must be adjusted with equal tension to ensure proper load distribution and mast operation. To determine equal tension, extend the unloaded mast to put the chains under tension. Press the center of a strand of chain with your thumb, then press at the same place on the other chain of the pair. Each chain in a pair should have equal “give”. If tension is not equal, adjust the chains as described in **Chain Adjustment**.

Inspect the chains. If inspection reveals that one strand of a pair of chains requires replacement, **both** strands of the pair should be replaced.

- Check for rust and corrosion.
- Check for cracked side plates. If you find cracked side plates, replace **both** strands of chain.
- Check for tight joints. If tight joints are caused by rust or corrosion, loosen them with SAE 40 wt. oil or penetrating oil. If they cannot be loosened, or if the tight joints are caused by bent pins or plates or worn contour, replace **both** strands of chain.
- Check for abnormal protrusion or turned pins. Replace **both** strands of chain.
- Check for chain side wear. If pins and outside plates show signs of wear, check for misalignment. If wear is excessive, replace **both** strands of chain.
- Check for work, broken or misaligned chain anchors. Replace or adjust as required.
- Lubricate the full length of the chains with Tefgel (WPN -671864)

Worn contour	
Worn surfaces on outer plates or pin heads	
Tight joints	
Missing parts	
Abnormal protrusion or turned pins	
Cracked plates (fatigue)	

### Measuring Chain Stretch

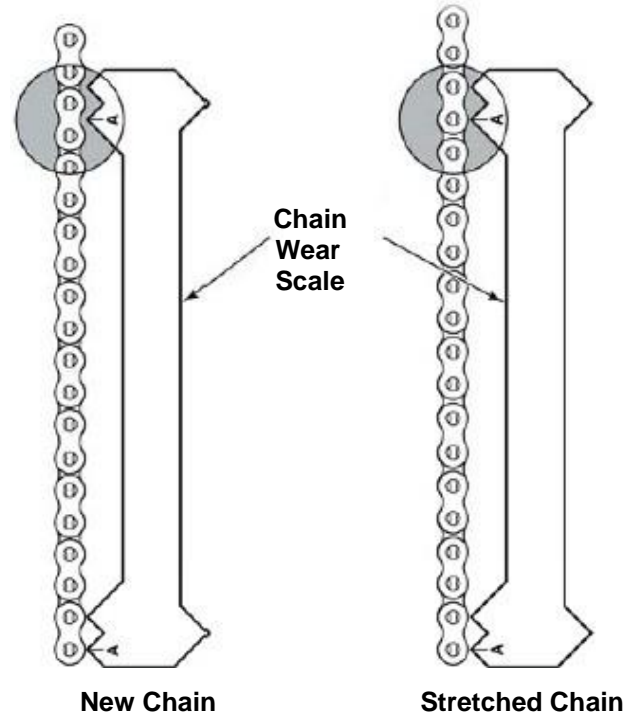
Regular inspection and lubrication of the chains will increase their service life and reduce down time.

If the chains stretch beyond the recommended amount, they should be replaced in pairs. Chain stretch can be measured with the chain wear scale. Measure the chains according to the instructions printed on the chain wear scale. Measure the chains according to the instructions printed on the chain wear scale, without a load on the carriage.

- To check the free lift chains, raise the carriage 1ft. (30 cm)

off the ground to put tension on the chains.

- To check the main lift chains, raise the mast until the inner upright starts to extend putting tension on the chains.

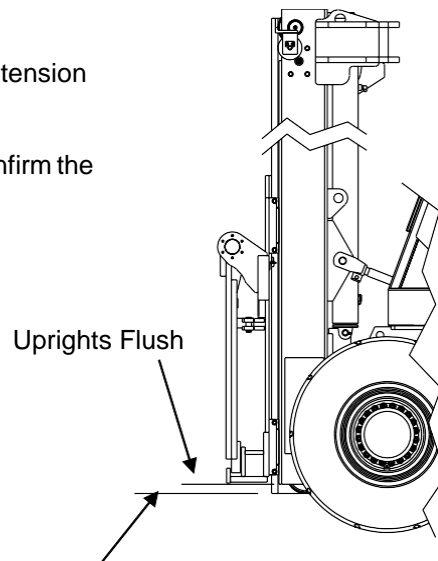


### Main Lift Chain Adjustment

The main lift chains should be adjusted so that when the unloaded mast is fully lowered, the uprights are positioned as shown.

Approximately 10 in (25.4 cm)  
Ground Clearance

1. Adjust on chain to achieve the correct upright position when fully lowered.
2. Adjust the other chain to achieve equal chain tension. Tighten the nuts together.
3. Raise and lower the mast several times to confirm the adjustments.



Carriage 2.5-3 in (6.3-7.6 cm)  
Below Uprights

**HYDRAULIC SYSTEM****Hydraulic Oil Filler**

- Refer to the Wiggins Maintenance Schedule for Oil Filter replacement recommendation.

**Hydraulic Oil Filler**

- Refer to the Wiggins Maintenance Schedule for Oil Change recommendation.

**Hydraulic Oil Gauge**

- Check Hydraulic oil level Daily

**Hydraulic Oil Recommendations**

Wiggins Lift Co. Inc. recommends the use of mineral-based hydraulic oil containing anti-wear additives. Use oil viscosity based on the expected air temperature range during the period of oil change. The following oils are preferred:

For the ambient temperature range is -25 F° to 104 F° (-32 C° to 40 C°) use Chevron synthetic All-Weather THF CPS226607 (SAE 10W)

For the ambient temperature range is 23 F° to 115 F° (-5 C° to 46 C°) use Chevron 1000 THF (SAE 30)

**Troubleshooting**  
**Wiggins Yard eBull®**

This section provides general guidelines on the types of problems operators may encounter in the field, the causes of the problems, and suggestions for proper corrective actions.

**NOTE THAT ONLY TRAINED AND AUTHORIZED MECHANICS OR TECHNICIANS MAY DIAGNOSE THE HIGH VOLTAGE POWERTRAIN AND COMPONENTS. CAUTION AND EXTREME CARE MUST BE TAKEN WHEN WORKING NEAR ANY ORANGE CABLES OR ANYTHING CONNECTED WITH AN ORANGE CABLE. WATCH FOR ANYTHING LABELED "HIGH VOLTAGE".**

**WARNING**

When troubleshooting, ensure that the forklift is parked on a firm, level surface, there is no load on the forks, parking brake is on and use wheel chocks. Turn Master Switch to off position (vertical).

When replacing or testing the continuity of any LOW VOLTAGE electrical component, disconnect the 24V battery ground cable.

When changing hydraulic components, make sure the truck is stopped and key is off. Keep the component clean.

**General Procedure**

Troubleshooting should be carried out in two steps. First, to determine the possible causes, both the hydraulic and electric schematics should be thoroughly studied. Loose terminal connections and short circuits are always a potential cause when troubleshooting. Second, check suspect components electrically, hydraulically and mechanically to determine if there is a fault.

Careful inspection and accurate analysis of the symptoms listed in the Troubleshooting Guide will help the mechanic find the problem more quickly. This manual cannot cover all possible problems that may occur. If a specific problem is not covered in this manual, call 805-485-7821 for service assistance.

SYMPTOM	POSSIBLE CAUSE	SOLUTION
Forks cannot be positioned or swung	<ol style="list-style-type: none"> <li>1. Faulty Counterbalance Valve</li> <li>2. Faulty fork cylinder</li> <li>3. Faulty joystick or control valve</li> <li>4. Faulty wiring or other low voltage electrical issue</li> </ol>	<p>Investigate and repair</p> <p>Call Dealer or Wiggins for support</p>
Truck will not steer	<ol style="list-style-type: none"> <li>1. Faulty Relief Valve</li> <li>2. Faulty Hydraulic Pump</li> <li>3. Faulty Electric Motor</li> <li>4. Faulty Priority Valve</li> <li>5. Faulty Steer Motor</li> <li>6. Faulty steer cylinder</li> </ol>	<p>Investigate and repair</p> <p>Call Dealer or Wiggins for support</p>
Service Brake does not work properly	<ol style="list-style-type: none"> <li>1. Faulty accumulator</li> <li>2. Faulty Brake Pedal Valve</li> <li>3. Faulty Charge Valve</li> <li>4. Faulty Brake inside axle</li> <li>5. Faulty wiring or other low voltage electrical issue</li> </ol>	<p>Investigate and repair</p> <p>Call Dealer or Wiggins for support</p>
Parking Brake does not work properly	<ol style="list-style-type: none"> <li>1. Faulty Brake Solenoid Valve</li> <li>2. Faulty Park Brake Switch</li> <li>3. Faulty accumulator</li> <li>4. Faulty Charge Valve</li> <li>5. Faulty or worn Parking Brake</li> <li>6. Faulty wiring or other low voltage electrical issue</li> <li>7. Loss of hydraulic pressure at park brake caliper: hose, leak, fitting.</li> </ol>	<p>Investigate and repair</p> <p>Call Dealer or Wiggins for support</p>
Display does not power on	<ol style="list-style-type: none"> <li>1. Master Disconnect Switch is in OFF position</li> <li>2. E-Stop is applied</li> <li>3. 24 V battery power low</li> <li>4. Faulty Display</li> </ol>	<p>Turn Master Switch to ON (full clockwise)</p> <p>Release E-Stop</p> <p>Check 24V battery voltage. Connect suitable 24V automotive battery charger.</p> <p>Call Dealer or Wiggins for support.</p>

<p>Fault Lights on Display are flashing; READY does not light up; Error Codes on Diagnostic Screen</p>	<ol style="list-style-type: none"> <li>1. Faulty wiring or other low voltage electrical issue</li> <li>2. High Voltage Battery has low State of Charge</li> <li>3. High Voltage Component or system failure</li> </ol>	<p>Inspect and repair low voltage harness and connectors.</p> <p>Connect to charge station.</p> <p>Remove Display screen cover to gain access to diagnostic menus. Call authorized mechanic or Wiggins Lift at 805-485-7821. <b>Do Not Attempt Repair of High Voltage System Components.</b></p>
<p>Oil or coolant leaking</p>	<ol style="list-style-type: none"> <li>1. Loose fitting</li> <li>2. Worn or damaged hose</li> <li>3. Cracked or faulty housing or seal</li> </ol>	<p>Tighten fitting</p> <p>Replace Hose</p> <p>Replace seals or component</p> <p>Call Dealer or Wiggins for support.</p>

# WIGGINS LIFT TRUCK LIMITED WARRANTY- CORE 2023

## WARRANTY PERIOD

Wiggins Lift Co., Inc. (WLC) warrants new fork lift truck products and other products manufactured by WLC associated with new fork lift trucks to be free, under normal use and with proper maintenance, from defects in workmanship or material and in compliance with the design and construction specifications of:

- 1) Part II ANSI 856.6 as required by OSHA standard 1910.176(b)(2);
- 2) Part III ANSI 856.1, revision in effect at the time of manufacture;
- 3) fire protection designation (G,LPG,D,E,etc) specified on the product if applicable

for 36 months or 6,500 hours of operation, whichever occurs first from the date the truck is placed into service or from the date of delivery to the original customer from an authorized Wiggins dealer.

See “What is Covered” and “What is Excluded” on Coverages Page.

## WLC RESPONSIBILITIES

If a defect in material or workmanship is identified during the Warranty Period, Wiggins will, during normal working hours and through a place of business of a Wiggins Fork Lift Truck dealer or other WLC authorized source:

- Provide (at WLC’s choice) new, remanufactured or WLC –approved repaired parts or assembled components needed to correct the defect.
- **NOTE:** Items replaced under the Warranty become the property of WLC.
- **NOTE:** Repair work will be done on-site, without removal of parts or machine to a separate location. Transportation cost to any off-site location is not covered.
- Replace lubricating oil, filters, antifreeze and other service items made unusable by the defect.
- Provide labor to correct the defect.
- Up to 2.5 hrs mechanic travel time each way. Issue should be resolved on first visit. 5 hours maximum drive time allowed per claim.

Wiggins is **NOT** responsible for the following:

- Any use or installation which WLC determines improper.
- Repairs by other than a WLC authorized repair facility.
- Reimbursement of travel time in excess of 2.5 hours each way.
- Abuse, accident, neglect and/or improper repair or storage.
- Any parts or accessories installed on a Wiggins Lift Truck which were not manufactured, recommended or installed by WLC including, without limitation, forks, attachments, masts, tires, and batteries. Claims with respect to such items, if any, shall be made solely to the respective manufacturer.
- Loss of time, loss of equipment use, other consequential damage or other matters not specifically included.
- Warranty claims submitted more than 10 days after the date of service.

Parts replaced under this Warranty are warranted for the remainder of the original Warranty Period for the Wiggins Fork Lift Truck. WLC reserves the right to make any changes in design and improvement without incurring any obligation to incorporate such improvements in any product already shipped from its factory premises or which is in the hands of a customer.

**TRUCKS WITH KNOWN FAILED OR DEFECTIVE PARTS MUST BE IMMEDIATELY REMOVED FROM SERVICE.**

## CUSTOMER RESPONSIBILITIES:

The customer is responsible for:

- All transportation expenses, if any, related to a claim under this Warranty

- Labor expenses, except as stated under “WLC Responsibilities”
- Customer must provide opportunity for repair work to be done on-site.
- Federal, State and local taxes, if applicable.
- Parts shipping charges in excess of those which are usual and customary.
- Expenses to investigate complaints, unless the problem is caused by a defect in WLC material or workmanship.
- Giving WLC notice within 30 days of defect covered by the Warranty and promptly making the Wiggins Fork Lift Truck available for repair. All claims for coverage under the warranty must be filed with WLC no later than thirty (30) days after the expiration of the Warranty Period.
- Giving timely prior written notice of the transfer of ownership of the Wiggins Fork Lift Truck covered to this Warranty. Any transfer of ownership of the Wiggins Fork Lift Truck covered by this Warranty will be covered only for the remainder of the Warranty Period, if any.

**NOTE:** All international Warranty parts shipments are F.O.B. point of debarkation, duties and tariffs included, (local taxes excluded).

This warranty requires **timely maintenance, lubrication, fastener tightening, and periodic inspection** of the Wiggins Fork Lift Truck as indicated in the operator’s manual furnished with each Wiggins Fork Lift Truck. The cost of routine maintenance and service is the responsibility of the customer. The customer is required to keep documented evidence of when and by whom maintenance and service are performed.

## WARRANTY LIMITATIONS / DISCLAIMERS

THE FOREGOING SHALL CONSTITUTE THE SOLE AND EXCLUSIVE REMEDY OF ANY OWNER OF A WIGGINS FORK LIFT AND THE SOLE AND EXCLUSIVE RESPONSIBILITY OF WLC, AND IN LIEU OF ALL OTHER WARRANTIES EXPRESSED, IMPLIED OR STATUTORY, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE. WLC NEITHER ASSUMES NOR AUTHORIZES ANY PERSONS TO ASSUME FOR IT ANY OTHER OBLIGATION OR RESPONSIBILITY IN CONNECTION WITH THIS WIGGINS FORK LIFT TRUCK WARRANTY. IN NO EVENT SHALL WLC BE RESPONSIBLE FOR DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, OR ANY DELAY OR ECONOMIC OR COMMERCIAL LOSS RESULTING FROM WLC’S PERFORMANCE OR NON-PERFORMANCE UNDER THIS WARRANTY. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL WARRANTIES, OBLIGATIONS OR RESPONSIBILITIES OF WIGGINS’ DEALERS, EXPRESSED, IMPLIED OR STATUTORY.

WARRANTY COVERAGE IS NOT EXTENDED TO REPAIRS OR PARTS AND SERVICE REQUIRED AS A RESULT OF NORMAL OR ACCELERATED WEAR AND TEAR, NOR IS IT EXTENDED TO PERIODIC MAINTENANCE WHICH IS PERFORMED IN ACCORDANCE WITH PUBLISHED SCHEDULES.

See “What is Covered” and “What is Excluded” on Coverages Page.

MODEL: \_\_\_\_\_ SERIAL NO.: \_\_\_\_\_

MAINTENANCE WIGGINS DEALER: \_\_\_\_\_

CUSTOMER: \_\_\_\_\_

DATE: \_\_\_\_\_

# WIGGINS LIFT TRUCK LIMITED WARRANTY – COVERAGES PAGE

## WHAT IS INCLUDED (BUT NOT LIMITED TO)

### **3 Years or 6,500 hours, whichever occurs first**

- All welded structures such as
  - Frame
  - Steer Axle Beam
  - Mast
  - Forks (as applicable)
  - Carriage
  - Counterweight
  - Wheels (Nuts must be torqued to spec)
- Powertrain (Preventive Maintenance must be followed)
  - Electric Drive Motor – Internal Parts Only
  - Batteries – Internal Parts Only
  - Drive Axle (excluding brakes)
  - Driveline
  - Parking Brake (excluding wear pads)
- Hydraulics (Preventive Maintenance must be followed and hydraulic pressure must be set to factory spec – see Manual)
  - Pumps (excluding seals)
  - Solenoid Valves
  - Control Valves (excluding seals)
  - Cylinders (excluding seals)

### **1 Year or 2,000 hours, whichever occurs first**

- Electronics and Electrical (Daily Checks for corrosion must be performed – issues related to corrosion not covered)
  - Controllers
  - Display
  - Remote Control
  - Safety Sensors
  - Wire Harnesses, Connectors, Switches (Inspect frequently)
- Bearings, Bushings, Hinges, Carriage Blocks (must be lubed)
- Wheel nuts, wheel studs (Torque checked weekly)

### **90 Days**

- Tires, Fork Covers (hold down bolts must be kept tightened)
- Wear Pads on Forks, Carriage, Mast
- Cylinder Seal Kits; Pump Seals; other hydraulic seals
- Hydraulic Hoses (Any loose fittings need to be tightened by Owner)
- LED Lights & Cameras (both backup & forward)
- Paint (All chips, scratches, and rust spots must be repaired promptly by Owner. Operating in or near salt water requires daily fresh water wash – See Operating Manual)

### **5 Years or 6,500 hours, whichever occurs first**

- Batteries retain at least 80% of original capacity

## WHAT IS EXCLUDED (BUT NOT LIMITED TO)

- Preventive Maintenance Services
- Damage due to improper use
- Damage due to contaminated hydraulic fluid
- Belts, Seat Cushions and Arms
- Hydraulic leaks due to loose fittings after 30 days
- Lights and bulbs after 90 days
- Cylinder seals after 90 days
- Filters and Fluids
- Wheels, wheel nuts, wheel studs due to over tightening or under tightening (See manual for specifications)
- Wheel nuts, wheel studs after 1 year
- Part failure or accelerated wear due to improper maintenance
- Bearings, Bushings, Hinges, Carriage Blocks due to lack of grease
- Any moving parts operating without proper lubrication

## Procedure for Filing a Claim

- Consult with Dealer, Mechanic, or Wiggins Factory for Prior Authorization for Warranty Work. (Time Critical exceptions handled on a case-by-case basis.)
- Fill out Claim Form with as much information as possible
  - Work with your Dealer to describe problem and corrective actions taken.
  - Include photos when applicable.
  - Include Part Numbers, Part Serial Numbers whenever possible.
  - Include Wiggins Serial Number, In-Service Date.
- Make sure that faulty part is returned to Wiggins Factory
- Warranty claims must be submitted no later than 10 days from date of service to be considered for reimbursement
- **Reimbursement will occur only after claim is approved and faulty part is received by Wiggins.**

# WIGGINS LIFT COMPANY WARRANTY CLAIM

<b>CLAIM NUMBER</b>	<b>NEW DEFECTIVE INV#</b>	<b>MAIL TO:</b> <b>WIGGINS LIFT CO., INC.</b> <b>WARRANTY DEPARTMENT</b> <b>2571 CORTEZ STREET</b> <b>P.O. BOX 5187</b> <b>OXNARD, CA 93031-5187</b>	Servicing Dealers Name: _____	
Serial No.	Application		Hours	Address: _____
Model	Options/S.O.		City and State: _____	
Date Sold to Retail Customer	Date Repair Completed		Present Owner: _____	
			Address: _____	
			City and State: _____	
			<b>APPROVED</b> <input type="checkbox"/> _____ by _____ date _____ <b>RETURNED</b> <input type="checkbox"/> _____ by _____ date _____ <small>reason code</small>	
			<b>DENIED</b> <input type="checkbox"/> _____ by _____ date _____ <small>reason code</small>	

### MATERIAL

Note: A copy of ALL work orders, parts invoices, and sublet labor must be submitted with this form

	Rtd Parts ✓	PART NO.	PART DESCRIPTION	INVOICE NO.	PARTS PRICING			WLC Use Only
					QTY.	UNIT	AMOUNT	
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

### LABOR OPERATIONS

### WLC USE ONLY

	LABOR DESCRIPTION	HOURS	RATE	AMOUNT	LABOR ADJ	ADJ HRS
11						
12						
13						
14						
15						
16						

### DETAILS OF FAILURE

### MATERIAL DISPOSITION INSTRUCTIONS

Ship checked items before \_\_\_\_\_

Collect  Prepaid

Scrap items not checked

Ship To: \_\_\_\_\_

On behalf of servicing dealer, I hereby certify that the information contained hereon is accurate. Services described were performed at no charge to owner. There was no indication from the appearance of the unit that any part repaired or replaced under this claim had been connected in any way with any accident, negligence or misuse. Records supporting this claim are available for one (1) year at the servicing dealer for inspection by representatives of WLC.

Signed \_\_\_\_\_ Date \_\_\_\_\_

Total Parts					Adj Parts
Total Labor					Adj Labor
Total					Total