Operator's Manual

Light Tower

LTV 4L/6L



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Original operator's manual

www.wackerneuson.us

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California Proposition 65 Warning



A WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.



A WARNING

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



A WARNING

Cancer and Reproductive Harm www.P65Warnings.ca.gov



A WARNING

Batteries, battery posts, terminals and related accessories contain lead and lead compounds, and other chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. WASH HANDS AFTER HANDLING.







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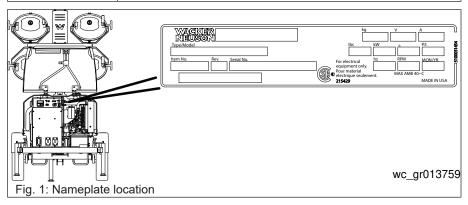


1 Foreword

1.1 Machine Identification

The following machines and variants/options are described:

Machine	Item Number
LTV4L	5100054283, 5100067133, 5100067135, 5100067136, 5100067137, 5100067138
	5100028693, 5100036089, 5100041458, 5100041459, 5100041510, 5100051001, 5100054229, 5100067129, 5100067132



1.2 Machine Documentation

Keep a copy of the operator's manual with the machine at all times.

From this point forward in this documentation, Wacker Neuson America Corporation will be referred to as Wacker Neuson or the manufacturer.

For spare parts information, please see your Wacker Neuson dealer, or visit the Wacker Neuson website at http://www.wackerneuson.com/.

When ordering parts or requesting service information, be prepared to provide the machine model number, item number, and serial number.

1.3 Expectations for Information in This Manual

This manual provides information and procedures to safely operate and maintain this machine. For your own safety and to reduce the risk of injury, carefully read, understand, and observe all instructions described in this manual.

The manufacturer expressly reserves the right to make technical modifications, even without notice, which improve the performance or safety standards of its machines.

The information contained in this manual is based on machines manufactured up until the time of publication. The manufacturer reserves the right to change any portion of this information without notice.

The illustrations, parts, and procedures in this manual refer to the manufacturer's factory-installed components. Your machine may vary depending on the requirements of your specific region.



1.4 Laws Pertaining to Spark Arresters

State Health Safety Codes and Public Resources Codes specify that in certain locations spark arresters be used on internal combustion engines that use hydrocarbon fuels. A spark arrester is a device designed to prevent accidental discharge of sparks or flames from the engine exhaust. Spark arresters are qualified and rated by the United States Forest Service for this purpose. In order to comply with local laws regarding spark arresters, consult the engine distributor or the local Health and Safety Administrator.

1.5 Manufacturer's Approval

This manual contains references to approved parts, attachments, and modifications. The following definitions apply:

- Approved parts or attachments are those either manufactured or provided by the manufacturer.
- Approved modifications are those performed by an authorized service center according to written instructions published by the manufacturer.
- Unapproved parts, attachments, and modifications are those that do not meet the approved criteria.

Unapproved parts, attachments, or modifications may have the following consequences:

- · Serious injury hazards to the operator and persons in the work area
- Permanent damage to the machine which will not be covered under warranty

Contact your dealer immediately if you have questions about approved or unapproved parts, attachments, or modifications.

1.6 Abbreviations

Acronym	Definition	Acronym	Definition
CARB	California Air Resource Board	CDL	Commercial driver's license
CO	Carbon monoxide	EPA	Environmental Protection Agency
GFCI	Ground fault circuit interrupter	GVWR	Gross vehicle weight rating
LED	Light-emitting diode	LTV	Light tower vertical
NATM	National association of trailer manu- facturers	NHTSA	National highway traffic safety administration
PPE	Personal protective equipment	S/N	Serial number
VIN	Vehicle identification number	_	_



2 Usage

2.1 Intended Use

This machine is intended for the illumination of outdoor areas. This machine is also intended for the purpose of supplying electrical power to connected loads. For more information, see Generator on page 97 for the output voltage and frequency of this light tower, and for the maximum output power limit of this light tower.

2.2 Unintended Use

This machine has been designed and built strictly for the intended use described above. Using the machine for any other purpose could permanently damage the machine or seriously injure the operator or other persons in the area. Machine damage caused by misuse is not covered under warranty.

The following are some examples of misuse:

- Connecting a load that has voltage and frequency requirements that are incompatible with the machine output
- Overloading the machine with a device that draws excessive power during either continuous running or start-up
- Operating the machine in a manner that is inconsistent with all federal, state, and local codes and regulations
- · Using the machine as a hoist, or hanging items from the tower
- · Using the machine as a ladder, support, or work surface
- · Operating the machine outside of factory specifications
- Operating the machine in a manner inconsistent with all warnings found on the machine and in the operator's manual

2.3 Residual Risks

This machine has been designed and built in accordance with the latest global safety standards. It has been carefully engineered to eliminate hazards as far as practicable and to increase operator safety through protective guards and labeling.

However, some risks may remain even after protective measures have been taken. They are called residual risks. On this machine, they may include exposure to:

- Heat, noise, exhaust, and carbon monoxide from the engine
- · Heat from the lights
- · Ultraviolet radiation from the lights
- Glare from the lights (lights may blind drivers of nearby motor vehicles if the lights are incorrectly positioned)
- · Fire hazards from improper refueling techniques
- · Fuel and its fumes
- · Electric shock and arc flash



- · Personal injury from improper lifting techniques
- Typical hazards related to towing a trailer on roads and highways

To protect yourself and others, make sure you thoroughly read and understand the safety information presented in this manual before operating the machine.



3 Safety

3.1 Signal Words Used in This Manual

This manual contains DANGER, WARNING, CAUTION, *NOTICE*, and NOTE signal words which must be followed to reduce the possibility of personal injury, damage to the equipment, or improper service.



A DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

► To avoid death or serious injury from this type of hazard, obey all safety messages that follow this signal word.



A WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

► To avoid possible death or serious injury from this type of hazard, obey all safety messages that follow this signal word.



A CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

► To avoid possible minor or moderate injury from this type of hazard, obey all safety messages that follow this signal word.



NOTICE

NOTICE identifies a situation that causes damage if it is not observed.

► To avoid possible damage from this type of hazard, obey all safety messages that follow this signal word.

Note: A Note contains additional information important to a procedure.



Metal Halide Lamp Safety 3.2



A WARNING

Personal injury hazard

Broken or punctured lamps can cause serious skin burns and eye inflammation from shortwave ultraviolet radiation.

- Do not operate the light tower if a lamp is damaged.
- Replace damaged lamps immediately.

Operating safety

- Replace damaged lamps. For instructions, see Replacing/Removing Lamps on page 84.
- · Alternative lamps that automatically extinguish when the outer envelope is broken or punctured are commercially available.

3.3 **Radiation Compliance**

This machine meets the radio interface radiated emission requirements of European Standard EN 13309 for Construction Machinery.

The lamps provided with your light tower are electric discharge lamps. They are designed for use with metal halide ballasts only, and require time to reach full brightness on initial startup and after a power interruption. These lamps comply with FDA regulation performance standard 21 CFR 1040-30.

3.4 Safety Guidelines for Operating the Machine

Operator and service training and knowledge

Before operating, maintaining, or servicing the machine:

- · Familiarize yourself with the location and proper use of all controls and safety devices.
- · Know the rules for the jobsite.
- Contact Wacker Neuson for additional training if necessary.

Operator and service qualifications

Only trained personnel are permitted to start, operate, and shut down the machine. They also must meet the following qualifications:

- · Have received instruction on how to properly use the machine
- · Are familiar with required safety devices

The machine must not be accessed or operated by:

- Children
- People impaired by alcohol or drugs

Application area

Be aware of the application area.



- Remain aware of changing positions and the movement of other equipment and personnel in the application area/jobsite.
- Identify whether special hazards exist in the application area, such as toxic gases or unstable ground conditions, and take appropriate action to eliminate the special hazards before using the machine.
- Do not operate the machine in areas that contain flammable objects, fuels, or products that produce flammable vapors.

Personal protective equipment (PPE)

Wear the following personal protective equipment (PPE) while operating this machine:

- · Close-fitting work clothes that do not hinder movement
- · Safety glasses with side shields
- · Hearing protection
- · Safety-toed footwear

Tie back long hair and remove all jewelry (including rings).

Before starting

The machine, including all components, safety devices, labels, and attachments must be in good condition before use. Be sure the machine is on a firm, level surface and will not tip, roll, slide, or fall while operating.

- Never connect machine to other power sources, such as supply mains of power companies.
- Never use the machine if the insulation on the electrical cord is cut or worn through.
- · Never raise the tower or operate the machine in high winds.
- The tower extends up to 7 m (23 ft). Make sure the area above the trailer is open and clear of overhead wires and obstructions.

Operation

- Remain aware of the machine's moving parts. Keep hands, feet, and loose clothing away from the machine's moving parts.
- Do not consume the operating fluids used in this machine. Depending on your machine model, these operating fluids may include water, wetting agents, fuel (gasoline, diesel, kerosene, propane, or natural gas), oil, coolant, hydraulic fluid, heat transfer fluid (propylene glycol with additives), battery acid, or grease.
- Keep the area under and around the light tower clear of people while raising and lowering the tower.
- Do not move the light tower while it is operating or while the tower is raised.



After use

- Stop the engine when the machine is not being operated.
- Ensure that the machine will not tip over, roll, slide, or fall when not being operated.
- Store the machine in a clean, dry location out of the reach of children.
- Lower the tower when not in use, or if high winds or electrical storms are expected in the area.
- The lamps become extremely hot in use! Allow the lamp and fixture to cool 10–15 minutes before handling.

3.5 Safety Guidelines for Maintenance

Before servicing or maintaining the machine, see Safety Guidelines for Operating the Machine on page 13.

Precautions

Follow the precautions below when servicing or maintaining the machine.

- Read and understand the service procedures before performing any service to the machine.
- Personnel servicing or maintaining the machine must be familiar with the associated potential risks and hazards.
- Turn off the machine before performing maintenance or making repairs.
- Remain aware of the machine's moving parts. Keep hands, feet, and loose clothing away from the machine's moving parts.
- Before servicing the light tower, make sure the engine is turned off, the
 circuit breakers are open (off), and the negative terminal on battery is
 disconnected. Do not perform even routine service (oil/filter changes,
 cleaning, etc.) unless all electrical components are shut down.
- Always turn off light circuit breakers and shut down engine before disconnecting light fixtures or changing light bulbs.

Machine modifications

When servicing or maintaining the machine:

- Use only accessories/attachments that are approved by Wacker Neuson.
- Do not defeat safety devices.
- Do not modify the machine without the express written approval of Wacker Neuson.

Replacing parts and labels

- · Replace worn or damaged components.
- · Replace all missing and hard-to-read labels.



- When replacing electrical components, use components that are identical in rating and performance to the original components.
- When replacement parts are required for this machine, use only
 Wacker Neuson replacement parts or those parts equivalent to the original in all types of specifications, such as physical dimensions, type,
 strength, and material.

Cleaning

When cleaning and servicing the machine:

- Keep the machine clean and free of debris such as leaves, paper, cartons, etc.
- Keep the labels legible.
- Do not clean the machine while it is running.
- Never use gasoline or other types of fuels or flammable solvents to clean the machine. Fumes from fuels and solvents can become explosive.

3.6 Operator Safety while Using Internal Combustion Engines



A DANGER

Carbon monoxide hazard

Exhaust gas from the engine contains carbon monoxide, a deadly poison. Exposure to carbon monoxide can kill you in minutes.

Never operate the machine inside an enclosed area, such as a tunnel, unless adequate ventilation is provided through items such as exhaust fans or hoses.



A WARNING

Personal injury hazard

Failure to follow the warnings and safety standards during operation and fueling could result in severe injury or death.

► Read and follow the warning instructions in the engine owner's manual and the safety guidelines below.

Operating Safety

- Keep the area around the exhaust pipe free of flammable materials.
- Check the fuel lines and the fuel tank for leaks and cracks before starting the engine.
- Do not run the machine if fuel leaks are present or the fuel lines are loose.
- Do not smoke while operating the machine.
- · Do not run the engine near sparks or open flames.



- Do not touch the engine or muffler while the engine is running or immediately after it has been turned off.
- · Do not operate a machine when its fuel cap is loose or missing.
- Do not start the engine if fuel has spilled or a fuel odor is present. Move the machine away from the spill and wipe the machine dry before starting.
- · Do not use the machine in areas with risk of explosion or fire.

Refueling safety

- · Clean up any spilled fuel immediately.
- · Refill the fuel tank in a well-ventilated area.
- · Install the fuel tank cap after refueling.
- Use tools specifically meant for refueling (for example, a fuel hose or funnel).
- Do not smoke when refueling the machine.
- Do not refuel a hot or running engine.
- Do not refuel the engine near sparks or open flames.

3.7 Reporting Safety Defects

If you believe your trailer has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Wacker Neuson.

If NHTSA receives similar complaints, it may open an investigation; and if it finds that a safety defect exists in a group of trailers, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Wacker Neuson.

To contact NHTSA, you may either contact the Vehicle Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153); go to http://www.safercar.gov; or write to:

Administrator

NHTSA

1200 New Jersey Avenue S.E.

Washington, DC 20590

You can also obtain other information about your motor vehicle safety from http://www.safercar.gov



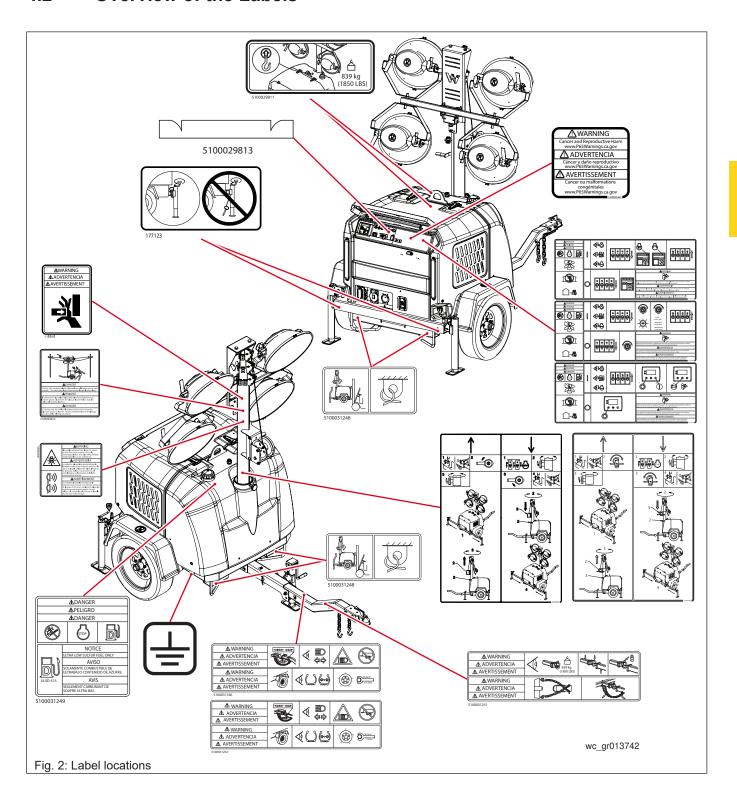
4 Description of the Machine

4.1 Machine Description

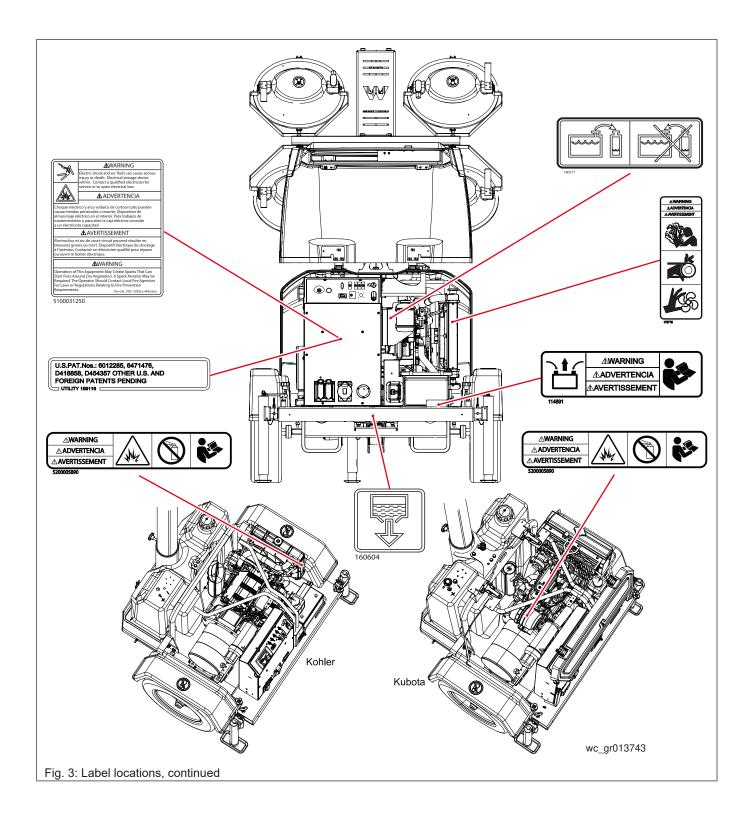
This machine is a mobile, trailer-mounted light tower. The Wacker Neuson light tower consists of a trailer with a cabinet containing a diesel engine, a fuel tank, a control panel, and an electric alternator. A telescoping tower with four metal halide or LED light fixtures is vertically mounted to the front of the unit. As the engine runs, the generator converts mechanical energy into electric power. The metal halide or LED lights run off this power. Receptacle(s) are also provided to power auxiliary loads. The operator uses the control panel to operate and monitor the machine.



4.2 Overview of the Labels

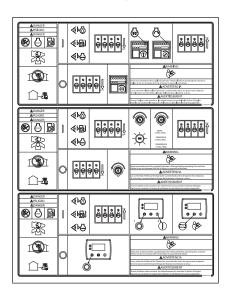








4.3 Safety Label Meanings



DANGER

No sparks, flames, or burning objects near the machine.

Stop the engine before refueling.

Engines emit carbon monoxide.

Do not run the machine indoors or in an enclosed area.

WARNING

Read and understand the supplied operator's manual before operating this machine. Failure to do so increases the risk of injury to yourself or others.

Before starting the engine:

- 1. Check levels of:
 - ⇒ Engine oil
 - ⇒ Fuel
- 2. Move the circuit breakers to the OFF position.

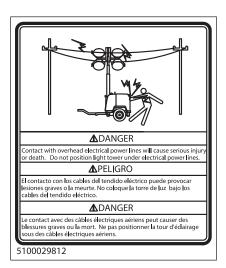
To start the engine:

- 1. On the engine control panel, turn the key switch to the PREHEAT position; the indicator light illuminates during preheating.
- 2. When the Preheat indicator goes out, turn the key switch to the START position for a maximum of 15 seconds.
- 3. When the engine is running, move the circuit breakers to the ON position.

To shut down the machine:

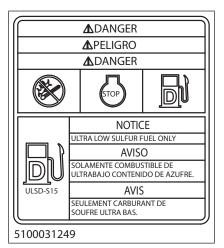
- 1. Move the circuit breakers to the OFF position.
- 2. Turn the key switch to the OFF position to stop the engine.





DANGER

Contact with overhead electrical power lines will cause serious injury or death. Do not position light tower under electrical power lines.



Danger

No sparks, flames, or burning objects near the machine. Stop the engine before refueling.

Notice

Ultra low sulfur fuel only



WARNING

Crushing hazard

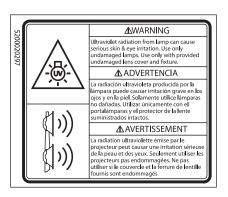
Avoid crushing area.



WARNING

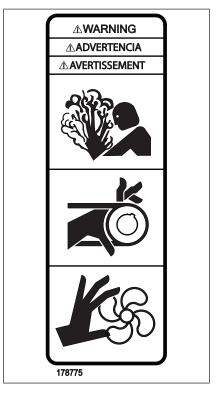
California Proposition 65 Warning Cancer and Reproductive Harm www.P65Warnings.ca.gov





WARNING

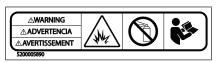
Ultraviolet radiation from lamp can cause serious skin and eye irritation. Use only with undamaged lamps. Use only with provided undamaged lens cover and fixture.



WARNING

Personal injury hazards

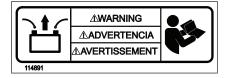
- · Pressurized contents. Do not open when hot!
- Pinching/cutting hazard.
- · Rotating machinery.



WARNING

Explosion hazard (diesel machines)

- Do not use evaporative starting fluids such as ether on this engine.
- The engine is equipped with a cold starting aid. Using evaporative starting fluids can cause an explosion which can cause engine damage, personal injury, or death.
- Read and follow the engine starting instructions in this operator's manual.

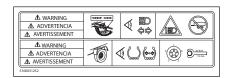


WARNING

Electrical shock hazard

- · Disconnect battery before servicing.
- · Read the operator's manual.







WARNING

(On trailer, if equipped)

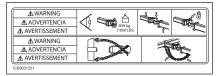
Lights can prevent trailer from being hit by other vehicles. You must:

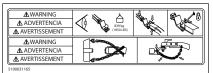
- 1. Connect trailer and two vehicle electrical connectors.
- 2. Check all lights: tail lights, turn signals, and brake lights.
- 3. Do not tow if lights are not working.

WARNING

Tire, wheel, or lug nut failure can cause loss of control. Before towing, you must check:

- 1. Tire pressure and tread.
- 2. Tires and wheels for damage.
- 3. Lug nuts for tightness. Lug nuts should be tightened to 85 ft. lbs. For new and remounted wheels, tighten lug nuts at the first 10, 25, and 50 miles of driving.





WARNING

(On trailer, if equipped)

Uncoupling will cause trailer to come loose from tow vehicle. You must:

- 1. Check that ball load rating is same as or greater than coupler load rating.
- 2. Check that ball size is same as coupler.
- 3. Close coupler clamp on ball.
- 4. Lift coupler upwards to test that it will not separate from ball.
- 5. Lock coupler clamp with pin or padlock.

WARNING

(On trailer, if equipped)

Always use safety chains. Chains hold trailer if connection fails. You must:

- 1. Cross chains underneath coupler.
- 2. Allow slack for trailer to turn.
- 3. Attach chain hooks securely to tow vehicle.

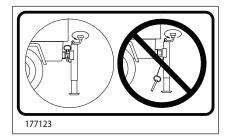




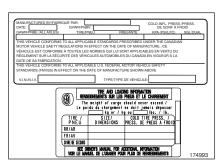
WARNING

Electric shock and arc flash can cause serious injury or death. Electrical storage device within. Contact a qualified electrician for service or to open electrical box.

4.4 Information Label Meanings



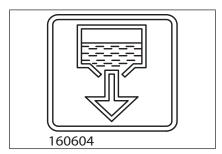
Insert jack locking pin before extending jack.



(on trailer, if equipped)

Certification label (VIN)

Also attached to each unit is a certification label. This label specifies that the trailer conforms with all Federal Motor Vehicle Standards in effect at the time of manufacture. The label includes the vehicle identification number (VIN) for the trailer.

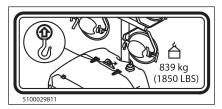


Skid drain access point

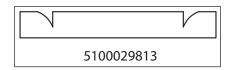




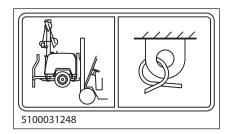
Notification of National Association of Trailer Manufacturers (NATM) compliance



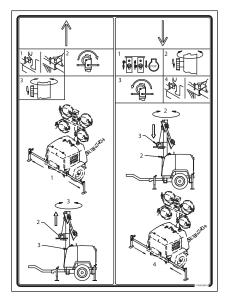
Lifting point



Light cover



Fork lift pocket Tie-down point



Manual winch

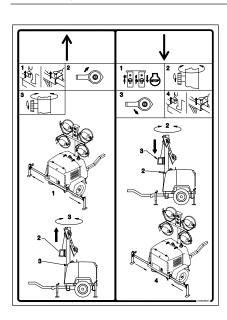
To raise tower

- 1. Lift pins and extend outriggers.
- 2. Raise tower with winch.
- 3. Loosen mast rotation knob to aim tower. Tighten knob when tower is aimed.

To lower tower

- 1. Turn off breakers and engine.
- 2. Loosen mast rotation knob and rotate tower forward. Tighten knob when tower is facing forward.
- 3. Lower tower with winch.
- 4. Lift pins and retract outriggers.





Power winch

To raise tower

- 1. Lift pins and extend outriggers.
- 2. Raise tower with switch.
- Loosen mast rotation knob to aim tower. Tighten knob when tower is aimed.

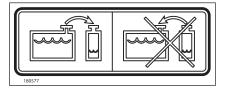
To lower tower

- 1. Turn off breakers and engine.
- 2. Loosen mast rotation knob and rotate tower forward. Tighten knob when tower is facing forward.
- 3. Lower tower with switch.
- 4. Lift pins and retract outriggers.



Electrical ground

U.S.PAT.Nos.: 6012285, 6471476, D416858, D454357 OTHER U.S. AND FOREIGN PATENTS PENDING UTILITY 159118 This machine may be covered by one or more patents.



Coolant overflow bottle only; not a return system



(On trailer, if equipped)

Certification Label (VIN)

Also attached to each unit is a Certification Label. This label specifies that the trailer conforms with all Federal Motor Vehicle Standards in effect at the time of manufacture. The label includes the vehicle identification number (VIN) for the trailer.



5 Transportation

5.1 Safety Guidelines for Lifting and Transporting

When lifting the machine:

- Remain aware of the location of other people when lifting the machine.
- Only use the lifting points and tie-downs described in the operator's manual.
- Make sure the transporting vehicle has sufficient load capacity and platform size to safely transport the machine.

To reduce the possibility of injury:

- Do not stand under the machine while it is being lifted or moved.
- · Do not get onto the machine while it is being lifted or moved.

5.2 Preparing the Machine for Transport on a Truck or Trailer



A WARNING

Crushing hazard

Improperly securing the machine can lead to a crushing hazard.

Use only the designated tie-down points to secure the machine to a truck or trailer.

Requirements

- · Machine stopped.
- · Flatbed truck or trailer capable of supporting the machine's weight.
- · Chains, hooks, or straps capable of supporting the machine's weight.

Checklist

Before transporting the machine, check the following items:

Machine

- · All doors and access panels of the machine are closed.
- All electrical connections are disconnected from the machine.
- · The machine is shut down.
- · The tower is completely lowered.
- The outriggers are in the travel position.
- The outrigger bars and jacks are locked in place.
- The tongue jack is in the travel position.

Loading and transporting equipment

- The transport vehicle or trailer can support the weight of the machine.
- The wheels of the transport vehicle or trailer are chocked during the loading process.



- The transport vehicle or trailer is clean and free of grease, oil, ice, and other loose material.
- The machine's trailer jack is not used to support the trailer tongue during transporting.
- Check that any ramps used in the loading process:
 - Can support the weight of the machine.
 - Are clean and free of grease, oil, ice, and other loose material.
 - Are securely connected to the transport vehicle or trailer.
 - Are of sufficient length to keep the loading angle 15° or less.

In addition:

- Make sure the loading area is flat and the ground is stable.
- Check the overall height of the machine once loaded. Plan your travel route so that there will be adequate clearance for overpasses, road signs, buildings, etc.
- Check local regulations regarding transporting and obey these regulations.

5.3 Lifting the Machine



A WARNING

Crushing hazard

You may be crushed if the lifting devices fail.

- Never stand under, or get onto, the machine while it is being lifted or moved.
- ▶ Use only the designated lifting points to lift the machine.



A WARNING

Crushing hazard

An unstable machine may cause the lifting device to fail. You may be crushed if the lifting device fails.

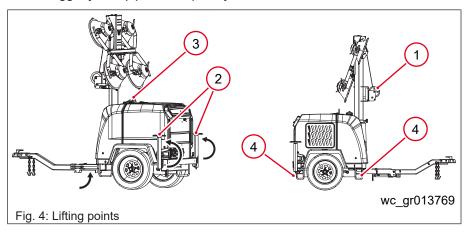
Check for machine stability before continuing.

Requirements

- Properly rated lifting equipment (crane or hoist) is available. For further information, see Machine on page 97.
- The machine is stopped.
- All doors and access covers are closed and secured.
- The tower is completely lowered.
- The winch (1) and light fixtures are facing forward.
- Outriggers have been returned to their travel position.
- Outrigger bars and jacks are locked in place.



• Outrigger jacks (2) are completely cranked in and rotated 180°.



Procedure

- 1. Attach the lifting equipment to the lifting eye (3) on the machine using hooks, shackles, and chains or insert forks into the fork pockets (4).
- 2. Lift the machine a small distance.
- 3. Check for stability. If necessary, lower the machine, reposition the lifting device, and lift the machine a small distance again.
- 4. Continue lifting the machine as necessary.
- Move slowly and position the machine on the ground or on the vehicle, paying particular attention that all the personnel is at a safe distance from the moving load.

5.4 Safety Guidelines for Towing



A WARNING

Severe injury or death hazard

Improper trailer condition and towing technique can lead to an accident.

▶ Obey the instructions below to reduce the risk of an accident.

When towing the machine:

- Do not tow the machine if the towing vehicle's hitch or the trailer's coupler are damaged.
- Do not tow the machine if safety chains are damaged.
- Do not exceed the trailer manufacturer's speed limitations.
- Maintain extra distance between the towing vehicle and other vehicles.
- · Avoid soft shoulders, curbs, and sudden lane changes.
- · Abide by all licensing requirements for your area.

If you have not driven a towing vehicle with trailer before, practice turning, stopping, and backing up the towing vehicle with trailer in an area away from traffic. Only drive the towing vehicle with trailer when you are confident in your ability to do so.



5.5 Before Towing Checklist

Before towing the machine, check the licensing requirements for trailers in your area. Also, check the following items:

Towing vehicle

- The towing vehicle is rated to tow the load.
- · The towing vehicle is in serviceable condition.
- Do any necessary service/maintenance on the towing vehicle.

Machine

- · All electrical connections are disconnected from the machine.
- · The machine is shut down.
- The tower is completely lowered.
- · The outriggers are in the travel position.
- The outrigger bars and jacks are locked in place.
- The tongue jack is in the travel position.

Hitch and coupler

- The towing vehicle and hitch have a rating equal to or greater than the gross vehicle weight rating (GVWR) of the machine. For further information, see Machine on page 97.
- The hitch of the towing vehicle and coupler of the trailer are compatible.
- Check the condition of both the coupler and the hitch.
- All fasteners on the coupler are tight.
- · The coupler has fresh grease applied to it.

Wheels

- · Wheel chocks are available at the work site.
- All lug nuts are in place and are properly torqued.
- Check the tread wear of the tires. Do not tow the machine if the trailer's tires have less than 1.5 mm (1/16 in.) of tread.
- The tires are inflated to the proper pressure.

Trailer preparation

- All doors and access panels are closed and latched.
- The outriggers (if applicable) are retracted.
- Check local regulations regarding hazardous materials placards. If applicable, install the appropriate placards.

Trailer operation

- The trailer jacks are in the travel (horizontal) position.
- The directional and running lights on the trailer function correctly.
- The safety chains of the trailer are connected to the towing vehicle using a crisscross pattern.



- Check the operation of the trailer brakes by braking the towing vehicle at a slow speed. Both the vehicle and the trailer must brake smoothly. If the trailer pushes, check the fluid level in the surge brakes or the operation of the electric brakes.
- The trailer's breakaway cable (if applicable) is attached to the towing vehicle.
- Test the function of the breakaway system (if applicable).

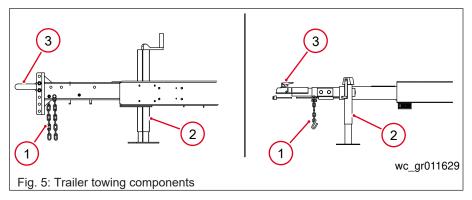
Light fixtures

- · Position the light fixtures down.
- Remove lamps from fixtures for rough or off-road transportation.

5.6 Trailer

Background

The machine's trailer is equipped with safety chains (1), tongue jack (2), lights, and a coupler (pintle- or ball-type) (3).



Licensing requirements

In most states, large trailers must be registered and licensed by the State Department of Transportation. Before towing, be sure to check licensing requirements.

Drivers towing trailers may be required to carry a commercial driver's license (CDL). Check your local and state licensing regulations before towing the machine.

Coupler maintenance

A film of grease on the coupler extends coupler life and eliminates squeaking. Wipe the coupler clean and apply fresh grease each time the trailer is towed.



5.7 Flip-up Tongue



A CAUTION

Pinching and crushing hazard

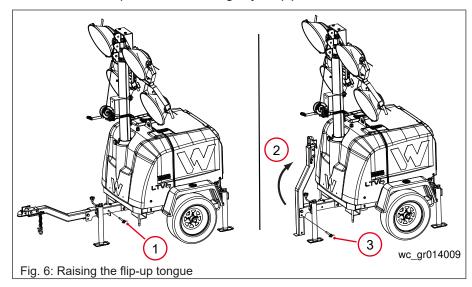
To avoid possible injury, keep fingers away from the pivot point when lowering or raising the trailer tongue.

Background

The flip-up tongue allows the machine to be transported or stored in a smaller space than a machine with a conventional tongue.

Procedure

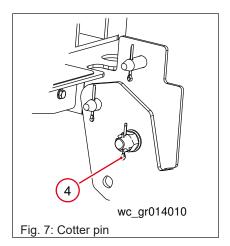
1. Remove the pin behind the tongue jack (1).



- 2. Rotate the tongue into the storage position (2) and insert the pin (3).
- 3. Install cotters (4) in all the pins.

Towing

Reverse the procedure when preparing the tongue for towing.





5.8 Towing the Machine



A WARNING

Personal injury and property damage hazard

Towing the machine at too high a speed may cause a loss of control resulting in an accident.

Wacker Neuson recommends a maximum towing speed of 88 km/h (55 mph) on highways and paved roads and 16 km/h (10 mph) on rugged roads and terrain.



NOTICE

Towing the machine without certain components oriented properly and secured may cause machine damage.

- ▶ Aim the light bar forward before towing.
- ▶ Be sure the locking pin of the mast rotation knob seats into a hole in the light bar. Holes are positioned at 90° angles.

When towing, maintain extra space between vehicles and avoid soft shoulders, curbs, and sudden lane changes. If you have not pulled a trailer before, practice turning, stopping, and backing up in an area away from heavy traffic.

Procedure

- 1. Read and follow the towing safety guidelines. For further information, see Safety Guidelines for Towing on page 30.
- 2. Complete the shut-down procedures.
- 3. Adjust the amount of fuel in the machine to approximately 70% capacity to avoid fuel spillage.
- 4. Complete the Before Towing Checklist. For further information, see Before Towing Checklist on page 31.
- 5. Connect the machine to the towing vehicle and connect the lights.
- 6. Rotate the trailer and tongue jacks to a horizontal position.
- 7. Tow the machine as needed.

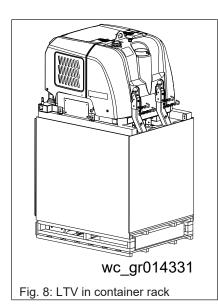


6 Commissioning

6.1 Preparing the Machine for First Use

- Make sure all loose packaging materials have been removed from the machine.
- Check the machine and its components for damage. If there is visible damage, do not operate the machine. Contact your Wacker Neuson dealer immediately for assistance.
- 3. Take inventory of all items included with the machine and verify that all loose components and fasteners are accounted for.
- 4. Attach component parts not already attached.
- 5. Add fluids as needed and applicable, including fuel, engine oil, and battery acid.
- 6. Move the machine to its operating location.

6.2 Standard Racked Assembly



Overview

This set of assembly instructions applies to LTV machines shipped in a container rack as shown.

Tasks

To complete the assembly of your light tower, the following tasks must be performed in the order listed:

Chassis assembly

- 1. Install the axle.
- 2. Install the fenders.
- 3. Install the wheels.
- 4. Install the outriggers and swivel jacks.
- 5. Install the tongue assembly.

Tower assembly

- 1. Install the mast.
- 2. Install the manual winch.
- 3. Install the power winch.

Light fixtures

- 1. Install the light support bracket and light bar.
- 2. Install the metal halide light fixtures.
- 3. Install the LED light fixtures.

Electrical assembly



- 1. Wire the junction box.
- 2. Connect the coiled cord.

Tools and materials

The following tools and materials are needed:

- Basic hand tools (wrenches, screwdrivers, etc.)
- · Torque wrench
- Panduit® crimper CT-100
- Panduit® crimper CT-1550
- Hardware bags: 1, 2, 3, 4, 5, 6, 7, 8, and fabricated parts

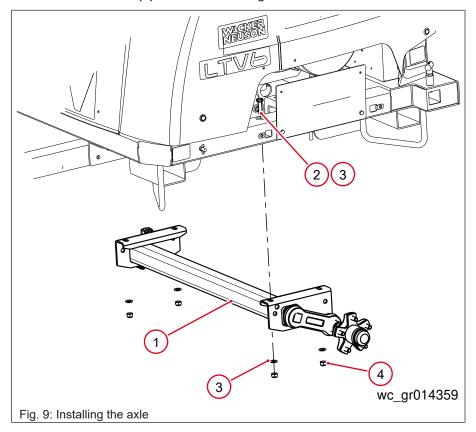
6.3 Installing the Axle

Materials needed

- Axle
- · Hardware bag 1

Installing the axle

- 1. Lift the machine using appropriate lifting gear. For further information, see Lifting the Machine on page 29.
- 2. Locate the axle (1) and hardware bag 1.



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- 3. Install the axle on the trailer using the following hardware from bag 1:
 - ⇒ Four M12 x 45 screws (2)
 - ⇒ Eight flat washers (3)
 - ⇒ Four lock nuts (4)
- 4. Tighten the M12 x 45 screws to a torque of 115 Nm (85 ft. lbs.).

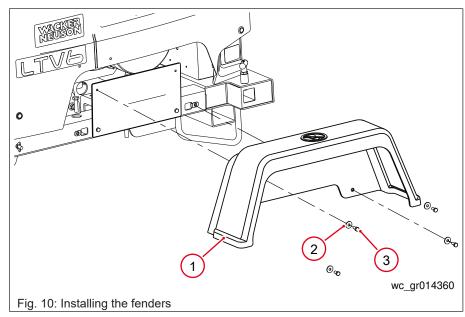
6.4 Installing the Fenders

Materials needed

- Two fenders
- · Hardware bag 2

Installing the fenders

1. Locate the two fenders (1) and hardware bag 2.



- 2. Align each fender as shown.
- 3. Install both fenders on the light tower using the following hardware from bag 2:
 - ⇒ Eight flat washers (2)
 - ⇒ Eight M8 x 25 screws (3)
- 4. Tighten the M8 x 25 screws to a torque of 16 Nm (11.5 ft. lbs.).

6.5 Installing the Wheels

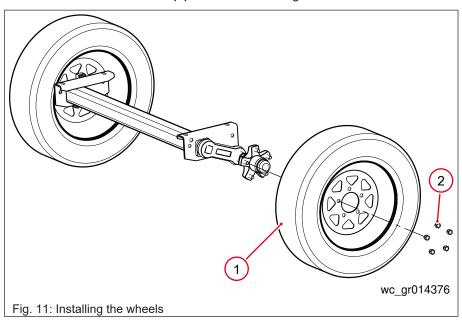
Materials needed

- · Two wheels
- · Hardware bag 3



Installing the wheels

1. Locate the two wheels (1) and hardware bag 3.



- 2. Attach the wheels to the axle using five lug nuts (2) per wheel.
- 3. Tighten the lug nuts in a star pattern to a torque of 115 Nm (85 ft. lbs.).

6.6 Installing the Outriggers and Swivel Jacks

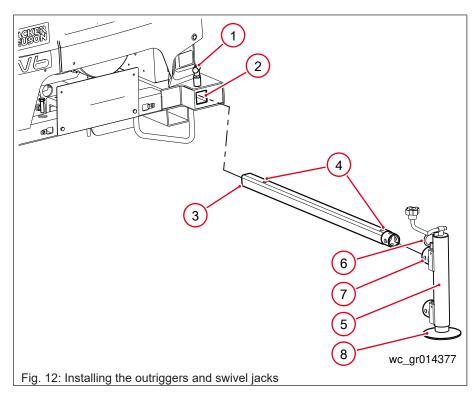
Materials needed

- · Two outriggers
- · Two swivel jacks

Installing the outriggers

1. Locate the locking pin (1) at the outrigger socket (2).





- 2. Position the outrigger (3) so the holes (4) face the same direction as the locking pin.
- 3. Pull the locking pin and insert the square end of the outrigger into the outrigger socket.
- 4. Align the hole in the outrigger with the locking pin. When the hole is aligned, release the locking pin to fasten the outrigger in place.
- 5. Repeat steps 1 through 4 to install the second outrigger on the other side.

Installing the swivel jacks on the outriggers

- 1. Locate a 10-inch swivel jack (5).
- 2. If necessary, remove the locking pin (6) from the swivel jack.
- 3. Fit the socket **(7)** of the swivel jack over the circular end of the outrigger.
- 4. Rotate the swivel jack so the foot (8) rests on the ground.
- 5. Align the top hole in the swivel jack socket with the top hole in the outrigger.
- 6. Insert the locking pin through the aligned holes (top and bottom) to secure the swivel jack in place.
- 7. Repeat steps 1 through 6 to install the second swivel jack on the other side.



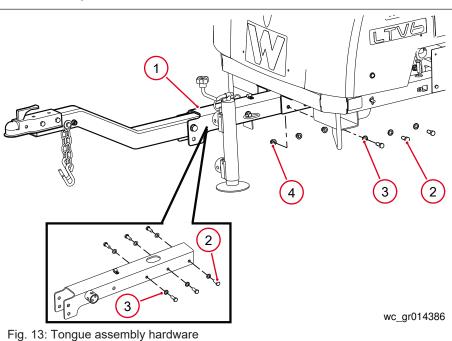
6.7 Installing the Tongue Assembly

Materials needed

- Tongue assembly
- · Swivel jack
- Hardware bag 4

Installing the tongue assembly

- 1. Fasten the tongue assembly **(1)** to the light tower using the following hardware from bag 4 as shown in the illustration below.
 - ⇒ Three M12 x 30 screws (2) on each side of the tongue assembly
 - ⇒ Three B13 flat washers (3) on each side of the tongue assembly
 - ⇒ Three M12 serrated flange nuts (4) on each side of the tongue assembly

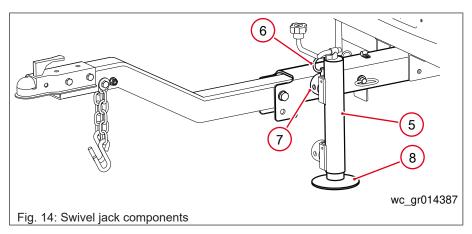


2. Tighten the screws to a torque of 106 Nm (78 ft. lbs.).

Installing the swivel jack

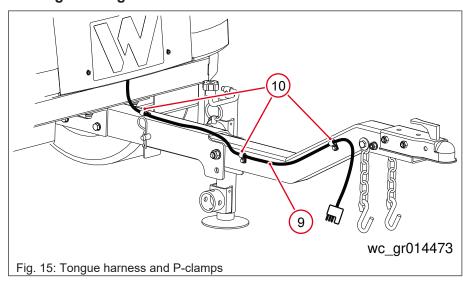
1. Locate the swivel jack (5).





- 2. If necessary, remove the locking pin **(6)** from the holes in the tongue jack.
- 3. Fit the socket **(7)** of the swivel jack over the circular boss on the tongue assembly.
- 4. Rotate the tongue jack so the foot (8) rests on the ground.
- 5. Align the top hole in the swivel jack socket with the top hole on the circular boss.
- 6. Insert the locking pin through the aligned holes (top and bottom) to secure the swivel jack in place.

Routing the tongue harness



- 1. Route the tongue harness **(9)** along the side of the tongue as shown in the illustration.
- 2. Tighten screws on the P-clamps (10) until the P-clamps are completely closed.



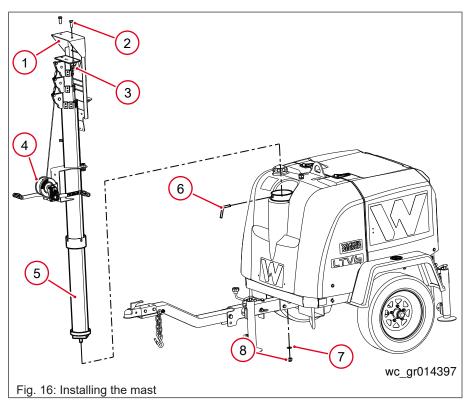
6.8 Installing the Mast

Materials needed

- · Mast assembly
- · Hardware bag 5

Installing the mast

 Attach the light mount bracket (1) with two M16 x 40 serrated flange screws (2) and two M16-10.9 serrated flange nuts (3) at the top of the mast.



- 2. Tighten the M16 x 40 serrated flange screws to a torque of 200 Nm (145 ft. lbs.).
- 3. Attach the standard or power winch (4):
 - ⇒ The manual winch is shown. For further information, see Installing the Manual Winch on page 43.
 - ⇒ The power winch is not shown. For further information, see Installing the Power Winch on page 44.
- 4. Align the mast assembly **(5)** on top of the light tower mast base, as shown.
- 5. Use the tower lock pin (6) to align and stabilize the mast assembly.
- 6. Secure the mast assembly in place with a B21 flat washer (7) and an M20 lock nut (8).

Note: Tighten the M20 lock nut to secure the mast assembly in place while allowing the mast assembly to rotate freely.



7. Adjust the alignment of the tower lock pin, if necessary.

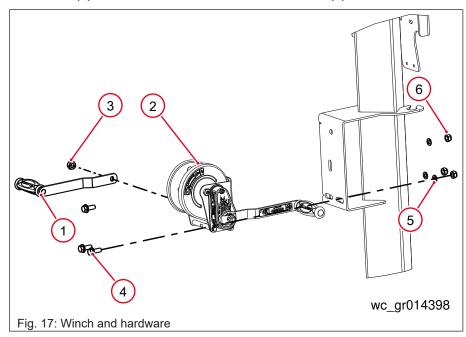
6.9 Installing the Manual Winch

Materials needed

- Manual winch
- · Hardware bag 6

Installing the manual winch

1. Align the manual winch handle (1) to the side of the manual winch drum (2) and secure the winch handle with a nut (3).



- 2. Fasten the manual winch to the mast with the following hardware from bag 6 as shown in the illustration:
 - ⇒ Three M10 x 25 screw (4)
 - ⇒ Three M10 lock washers (5)
 - ⇒ Three M10 lock nuts (6)
- 3. Tighten the M10 x 25 screw to a torque of 58 Nm (42.8 ft. lbs.).

Reversing the manual winch handles

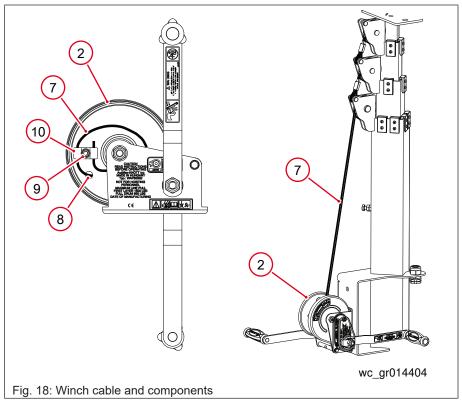
The manual winch handles (1) are installed backward to protect them from shipping damage. Reverse each manual winch handle orientation as follows:

- 1. Remove the nut **(3)** and remove the manual winch handle from the manual winch.
- 2. Turn the manual winch handle so the handgrip is oriented as shown in the illustration.
- 3. Install the manual winch handle and the nut.



Installing the winch cable

1. Pass the winch cable (7) over the top of the manual winch drum (2) and through the side hole (8).



- 2. Wind the winch cable around the manual winch drum once.
- 3. Loosen the nut (9) on the winch cable retainer (10) and insert the free end of the winch cable through the winch cable retainer so approximately 2.5 cm (1 in.) of winch cable extends beyond the winch cable retainer as shown in the illustration.
- 4. Tighten the nut on the winch cable retainer to a torque of 10 Nm (7.5 ft. lbs.).
- 5. Rotate the manual winch clockwise to take up any slack in the winch cable.

6.10 Installing the Power Winch

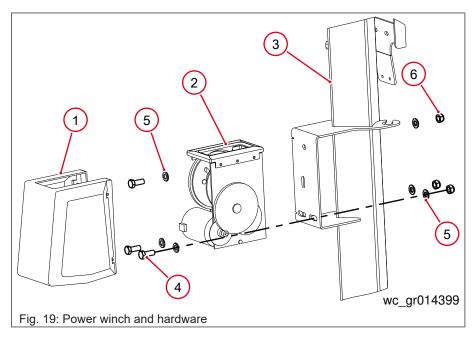
Materials needed

- · Power winch
- Hardware bag 7

Installing the power winch

1. Remove the cover (1) from the power winch (2).

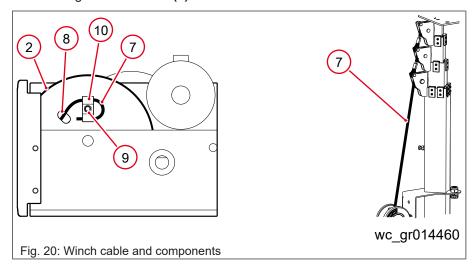




- 2. Fasten the power winch to the mast **(3)** with the hardware from bag 7 as shown in the illustration:
 - ⇒ Three M12 x 30 screws (4)
 - ⇒ Six B13 flat washers (5)
 - ⇒ Three M12 lock nuts (6)
- 3. Tighten the screws to a torque of 48 Nm (35 ft. lbs.).

Installing the winch cable

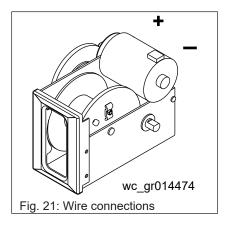
1. Pass the winch cable (7) over the top of the power winch drum (2) and through the side hole (8).



- 2. Wind the winch cable around the power winch drum once.
- 3. Loosen the nut (9) on the winch cable retainer (10) and insert the free end of the winch cable through the winch cable retainer so approximately 2.5 cm (1 in.) of winch cable extends beyond the winch cable retainer as shown in the illustration.



- 4. Tighten the nut on the winch cable retainer to a torque of 10 Nm (7.5 ft. lbs.).
- 5. Rotate the power winch clockwise to take up any slack in the winch cable, if needed.



Wiring the power winch

- . Attach red wire 42 from the machine to the red (positive) wire of the power winch.
- 2. Attach black wire 41 from the machine to the to the black (negative) wire of the power winch.
- 3. Replace the cover on the power winch.

6.11 Installing the Light Support Bracket and Light Bar

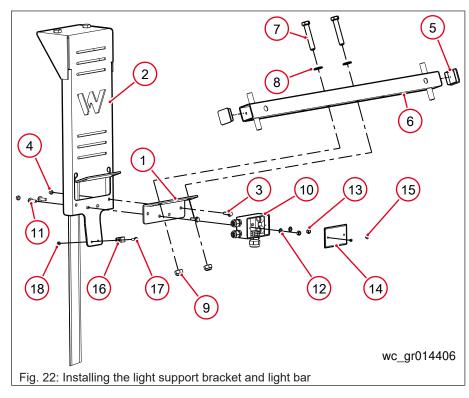
Materials needed

- · Light support bracket and light bar from mast assembly
- · Hardware bag 5

Installing the light support bracket and light bar

 Secure the light support bracket (1) to the light mount bracket (2) with two M8 x 25 serrated flange screws (3) and two M8 lock nuts (4).
 Tighten the M8 x 25 serrated flange screws to a torque of 24 Nm (18 ft. lbs.).





- 2. Press the two light bar plugs (5) into each end of the light bar (6).
- 3. Attach the light bar to the light support bracket with two M16 x 90 screws (7), two B17 flat washers (8), and two M16-10.9 serrated flange nuts (9). Tighten the M16 x 90 screws to a torque of 58 Nm (42.8 ft. lbs.).
- 4. Fasten the wiring junction box (10) to the light support bracket with two M8 x 25 serrated screws (11), two B8.4 flat washers (12), and two M8 lock nuts (13). Tighten the M8 x 25 serrated screws to a torque of 24 Nm (18 ft. lbs.).
- 5. Attach the wiring junction box cover **(14)** to the wiring junction box with two screws **(15)**.
- 6. Fasten a P-clamp (16) to the bottom of the light mount bracket, as shown, with an M6 x 16 serrated flange screw (17) and an M6 lock nut (18).

6.12 Installing the Light Fixtures—Metal Halide (1100W) or LED (300W or 240W)

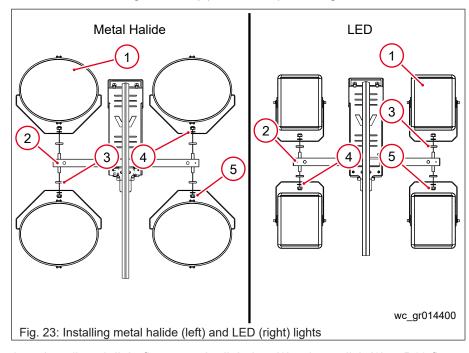
Materials needed

- Four light fixtures—metal halide or LED
 Note: Use four light fixtures of the same kind. Do not combine metal
 halide light fixtures and LED light fixtures on the light bar. Similarly, do
 not combine 240W and 300W LED light fixtures.
- Hardware bag 5



Installing the light fixtures

1. Position each light fixture (1) so the lamp is facing downward.



2. Install each light fixture on the light bar (2) using a disk (3), a B19 flat washer (4), and an M18 lock nut (5).

6.13 Connecting the Wiring at the Junction Box

Special tools and materials needed

- · Coiled cord
- Panduit crimper CT-100
- Panduit crimper CT-1500
- · Hardware bag 5

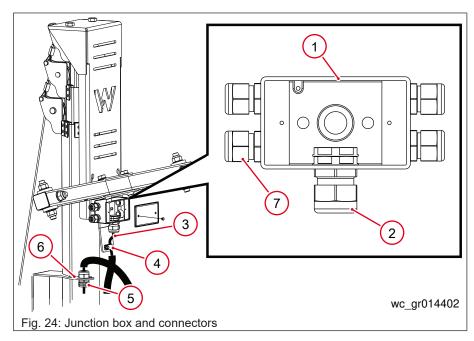
Connecting the wiring at the junction box

Note: This procedure is the same for metal halide and LED light fixtures.

Connecting the coiled cord

1. Remove the screws and the cover plate from the junction box (1).

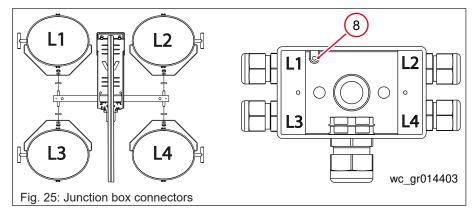




- 2. Use two wrenches to loosen the large connector **(2)** at the bottom of the junction box.
- 3. Insert the end of the coiled cord (3) through the P-clamp (4) and through the large connector so that approximately 1 cm (3/8 in.) of the coiled cord jacket extends into the junction box.
- 4. Tighten the large connector.
- 5. Slide the cord grip connector **(5)** into the winch bracket slot **(6)** and tighten the cord grip connector using two wrenches.

Installing the light fixture cords

1. Use two wrenches to loosen the four connectors **(7)** on the sides of the junction box.



- 2. Insert the light fixture cords through the appropriate four connectors (L1, L2, L3, L4). Approximately 1 cm (3/8 in.) of each light fixture cord jacket should extend into the junction box.
- 3. Tighten the four connectors.



Connecting the wires

Connect the light fixture wires to the coiled cord wires to wires from the four connectors on the sides of the junction box using Panduit wire crimper CT-100 according to the following table.

Position	Light Fixture Wire	Coiled Cord Wire
L1	Black	Red
	White	Orange
	Green	_
L2	Black	Black
	White	Brown
	Green	_
L3	Black	Yellow
	White	White
	Green	_
L4	Black	Blue
	White	Purple
	Green	_

- 1. Install and connect the four green wires from the light fixtures, the green wire from the coiled cord, and the green/yellow ground wire (found in hardware bag 5) into the large connector.
- 2. Crimp the wires and the wire joint terminal (found in hardware bag 5) together using the Panduit wire crimper CT-1500.
- 3. Attach the loose end of the green/yellow ground wire to the ground screw (8) in the junction box.
- 4. Use two wrenches to completely tighten the large connector.
- 5. Replace the cover plate on the junction box.

6.14 Positioning the Machine



A DANGER

Asphyxiation hazard

Exhaust gas from the machine contains carbon monoxide, a deadly poison you cannot see or smell. Exposure to carbon monoxide can kill you in minutes.

▶ Position the machine so that exhaust will not enter any nearby structures.





A WARNING

Fire hazard

Do not move the machine while it is running.

▶ Shut down the machine before moving or repositioning it.



A WARNING

Electric shock hazard

The tower extends up to 7 m (23 ft) and could contact overhead wires or obstructions.

▶ Position the trailer on a firm, flat surface clear of overhead wires and obstructions.



A WARNING

Tipping hazard

Machines positioned on a hill or an incline may slide, break away, or roll over.

▶ Do not position the machine on a hill or an incline.



A WARNING

Explosion and fire hazard

Risk of severe injury or death.

▶ Do not operate the machine near flammable vapors, fuels, or combustibles.

Requirements

Position the machine so that:

- The machine exhaust will not enter nearby structures.
- · The machine does not block traffic.
- The machine is not near any combustible material or flammable vapor.
- · All of the machine's access doors/panels may be accessed.
- The area to be illuminated is at or below the level of the lights.
- There is room around the machine for the outriggers to be extended.



6.15 Aiming the Light Fixtures



NOTICE

Damage may occur to a light fixture that is not secure.

▶ Do not loosen the nuts (2) on the light fixture.

Overview

- Each individual light fixture can be independently aimed up, down, left, or right. There are four total light fixtures on each machine.
- This procedure is not for rotating the lights as a single unit while the tower is raised. This procedure requires the tower to be lowered and the engine stopped. To rotate the lights, see Manually Rotating the Light Bar on page 53.

Requirements

Before adjusting the lights, make sure that the following conditions have been met:

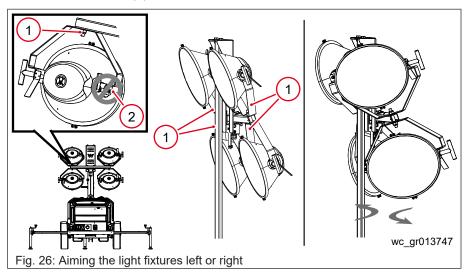
- · The engine is stopped.
- · The tower is completely lowered.
- · The lights are cool to the touch.

Aiming the light fixtures up or down

- 1. Grasp the light fixture (1) and aim it up or down.
- 2. Repeat step 1 for each remaining light fixture, if desired.

Aiming the light fixtures left or right

1. Grasp the light fixture and aim it to the left or right. If necessary, loosen the bracket nut (1) to allow movement of the fixture.





- 2. If loosened, tighten the bracket nut (1) when the light is aimed properly. Note: The bracket nut should be only tight enough so that slight resistance is present when aiming the fixture.
- 3. Repeat steps 1 and 2 for each remaining light fixture, if desired.

6.16 Manually Rotating the Light Bar

Overview

The operator can rotate the light bar 360° while the tower is lowered. Make sure to aim the light bar forward before towing.

Procedure

- 1. Loosen the mast rotation knob (1).
- 2. Rotate the mast to the desired position.
- 3. Tighten the mast rotation knob.

Leveling the Trailer 6.17



A WARNING

Tipping and falling hazard

Failure to level the trailer or extend the outriggers will reduce the stability of the unit.

Extend the outriggers and level the trailer before raising the tower. The outriggers must remain extended while the tower is up.

Procedure

Pull the locking pin on the tongue jack (1) and rotate the tongue jack down 90° as shown. Insert the pin once the jack is in position.

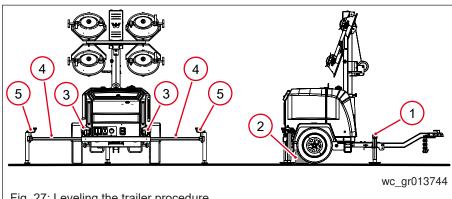


Fig. 27: Leveling the trailer procedure

- 2. Block or chock the trailer wheels (2).
- 3. Crank the tongue jack down to raise the trailer tongue off the vehicle.
- 4. Pull the outrigger lock pins (3) to release the outriggers. Pull both outriggers (4) out until you feel the lock pin snap into place.

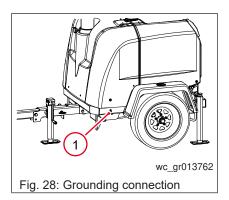


- 5. Pull the locking pins on the outrigger jacks **(5)**. Move the jack to the lower mount. Insert the pins once the jacks are in position.
- 6. Extend the jack(s) on the highest side(s) of the trailer until they rest firmly on the ground. Extend the remaining jacks until the trailer is level.



7 Operation

7.1 Grounding the Machine



External grounding

A ground connection (1) is located on the trailer frame.

Function

This ground connection is used for electrically grounding the machine when necessary to comply with the National Electrical Code and other federal, state, and local regulations. For grounding requirements in your area, consult with a qualified electrician, electrical inspector, or local agency having jurisdiction over electrical compliance.

If the light tower is used at a construction site, there may be additional regulations which must be observed.

Internal grounding

- The exposed, conductive, noncurrent-carrying components that could become energized (for example, engine, generator housing, control panel, trailer, tower sections, and light fixtures) are bonded (connected) to the machine's frame.
- The grounding wires of the machine's power outputs (receptacles) are bonded (connected) to the machine's frame.
- The neutral of the generator stator winding is bonded (connected) to the machine's frame.

7.2 Refueling the Machine



A WARNING

Fire and explosion hazard

Fuel and its vapors are extremely flammable and can be explosive. Burning fuel can cause severe burns.

- ▶ Keep all sources of ignition away from the machine while refueling.
- Store fuel containers in a well-ventilated area, away from any combustible materials or sources of ignition.
- Refuel only when the machine is outdoors.
- Clean up spilled fuel immediately.
- Do not smoke while refueling.
- ➤ To prevent static electricity buildup when transferring the fuel from the pump to the container, place the fuel container on the ground. Hold the hose nozzle firmly against the side of the container while filling it.





A CAUTION

Fire and health hazard

Fuel expands when heated. Expanding fuel in an over-filled tank can lead to spills and leaks.

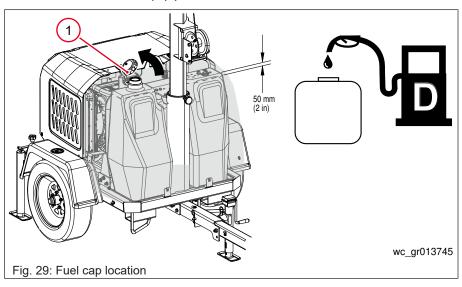
▶ Do not fill the fuel tank completely.

Requirements

- · Machine shut down
- · Engine cool
- · Machine/fuel tank level with the ground
- · Fresh, clean fuel supply

Procedure

1. Remove the fuel cap (1).



- 2. Fill the fuel tank, allowing a minimum of 50 mm (2 in.) expansion space between the fuel level and the top of the tank.
- 3. Install the fuel cap.

7.3 Raising and Lowering the Tower



A WARNING

Electric shock hazard

Do not use the light tower if insulation on any of the electrical cords is cut or worn through. Bare wires in contact with the metal frame of the trailer or tower can cause electrocution.

▶ Repair or replace the cord before using the machine.





A WARNING

Electrocution hazard

Do not position the light tower under electrical power lines.



A WARNING

Tipping/falling hazard

Certain actions may cause the tower to fall or the machine to tip over.

- Do not raise the tower or operate the light tower in high winds.
- ▶ Do not touch the winch pawl while the tower is raised.
- ▶ Do not pull the vertical tower locking pin while the tower is raised.



A WARNING

Personal injury hazard

Bystanders can be struck by the tower as it is being raised or lowered.

▶ Do not allow anyone to stand near the rear of the machine while raising or lowering the tower.

Background

The light tower includes a telescoping winch for raising the tower.

The manual winch is an automatic brake-type winch that automatically brakes when the handle is released. The handle must be rotated to wind in the cable as well as to unwind the cable.

The tower and light bar can be rotated 360°. If you wish to position the light bar so the lights illuminate to the left, to the right, or to the rear, the light bar should be rotated when the tower is fully lowered. For further information, see Manually Rotating the Light Bar on page 53.

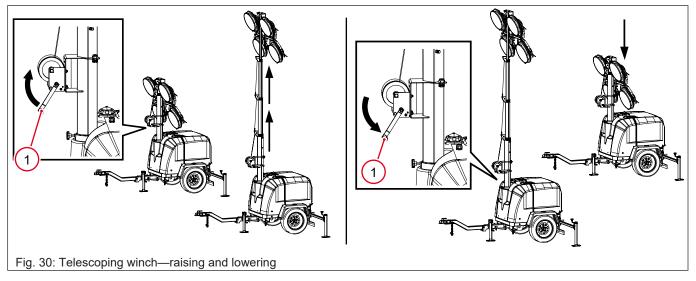
Requirements

- · Machine shut down
- · Machine on a firm, flat surface clear of overhead wires and obstructions
- Winch cables in serviceable condition and resting properly in pulleys
- · Machine leveled with all outriggers extended and locked

Raising the tower using the manual winch

 Check the operation of the telescoping winch (1) by rotating its handle 1/4 turn clockwise ("cable in" direction). The winch pawl must engage the winch gear teeth. When operating properly, the winch pawl makes a "clicking" sound when its handle is rotated clockwise.





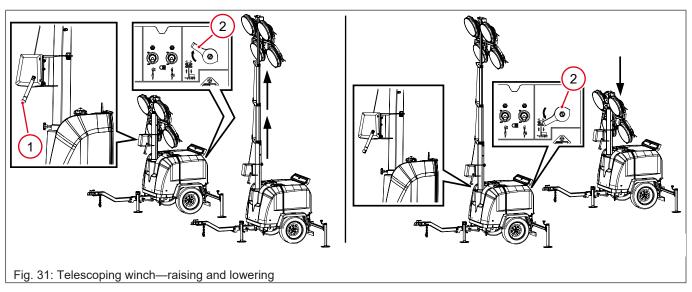
2. Continue rotating the winch handle until the tower is at the desired height. Do not overcrank the winch when the tower is fully extended.

Lowering the tower using the manual winch

Turn the handle on the telescoping winch **(1)** counterclockwise ("cable out" direction) until the tower is lowered completely.

Raising the tower using the power winch

1. Check the operation of the telescoping winch **(1)**. Turn the telescope rotary switch **(2)** on the control panel to the UP position.



Continue to hold the telescope rotary switch until the tower is at the desired height. Release the switch when the tower is at the desired height.



Lowering the tower using the power winch

Hold the rotary switch (2) in the DOWN position ("cable out" direction) until the tower is completely lowered.

7.4 **Adjusting the Power Winch Clutch**

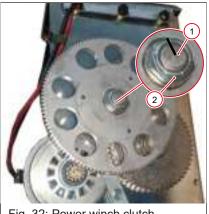
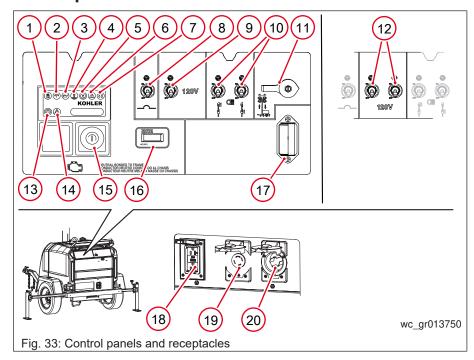


Fig. 32: Power winch clutch

- Verify that the tower is in the completely down position.
- 2. Remove the winch cover. Note the location of the left and right side screws for reassembly as they are different.
- 3. Mark the position of the clutch adjustment nut to stud (1) to aid in adjustment.
- WARNING! All nut adjustments must only be made when the tower is 4. completely down.
- 5. Tighten the nut (2) in 1/12th turn increments and attempt to raise the tower after each adjustment until the winch clutch does not slip until the end of travel is reached. Verify that the clutch slips at end of travel.
 - ⇒ When properly adjusted, at the end of travel, the sound of the winch motor changes, and the clutch engages. When releasing the switch, the main gear counter-rotates approximately 1/8th turn, and the winch brake engages, holding the tower at full extension.
- 6. Lower the tower.
- 7. Replace the winch cover, returning the unit back to its original configuration.

Control Panels and Receptacles—Kohler 7.5





Ref.	Description	Ref.	Description
1	Low fuel indicator (not used)	2	Safety shut-down indicator
3	Low oil pressure shut-down indicator	4	High coolant temperature shut- down indicator
5	Alternator indicator	6	Auxiliary lights (not used)
7	Glow plug indicator	8	Main circuit breaker
9	GFCI circuit breaker	10	Lights circuit breaker
11	Tower winch rotary switch (optional)	12	GFCI circuit breakers (optional)
13	Air filter restriction indicator	14	Auxiliary lights (not used)
15	Key switch	16	Hour meter
17	Control panel light	18	20A GFCI receptacle
19	30A receptacle (optional)	20	Shore power inlet (optional)



7.6 Control Panels and Receptacles—Deep Sea

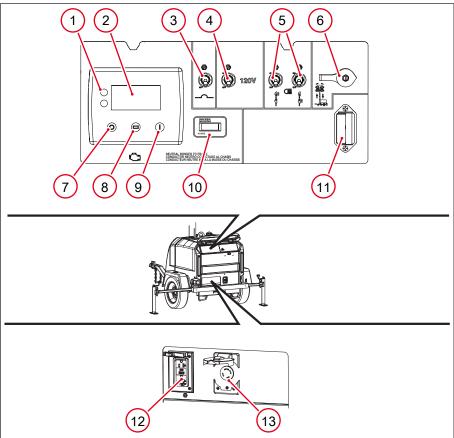


Fig. 34: Control panel and receptacles

Ref.	Description	Ref.	Description
1	Menu navigation buttons (up/down)	2	Controller display
3	Main circuit breaker	4	GFCI circuit breaker
5	Lights circuit breaker	6	Tower winch rotary switch (optional)
7	Stop/reset button	8	Auto start button
9	Start button	10	Hour meter
11	Control panel light	12	20A GFCI receptacle
13	30A receptacle (optional)	_	_



7.7 Before Starting



A CAUTION

Personal injury or equipment damage hazard

Improper machine setup may cause injury or equipment damage.

▶ Perform all pre-start checks listed below. Do not operate the machine until all items on the checklist have been addressed.

Before putting the light tower into service, review each item on the following checklist. Light towers often run unattended for long periods of time. Therefore, it is important to make sure that the machine is set up properly to avoid possible operating problems.

Check machine condition

- · Verify that the machine is level and positioned on a stable surface.
- · Perform a walk-around to check for visible damage.
- · Inspect the lights and lamps: ensure that glass is not broken or cracked.
- · Ensure that all electrical connections are tight.
- Verify that all electrical cords are in serviceable condition with no exposed wires, cuts, or cracks in the insulation.
- · Close and secure access covers before starting the machine.

Check the engine

- · Check fuel, engine oil, and coolant levels. Add fluids if necessary.
- Verify that the fuel lines are undamaged and correctly connected.
- Verify that the air filter element is clean and undamaged. Replace if necessary.
- Check to make sure no debris has lodged in vents, near the radiator, or around the fan.
- Check to make sure that the exhaust compartment is clean and nothing is touching the muffler or exhaust pipes.
- Check fan belt and hoses on engine for loose connections or fraying.
 Tighten or replace as required.

Review safety information

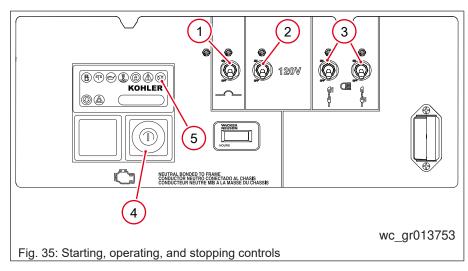
Review and follow instructions provided in the "Safety" chapter at the beginning of this operator's manual. For further information, see Safety on page 12.



7.8 Starting, Operating, Stopping the Machine—Kohler

Requirements

- Before starting checks completed—for further information, see Before Starting on page 62
- Electrical cables in good condition with no cuts or abrasions in the insulation
- Circuit breakers (1, 2, and 3) in the OFF position
- · All loads disconnected from the machine



Starting the machine



NOTICE

Observe the following to avoid damage when starting the machine:

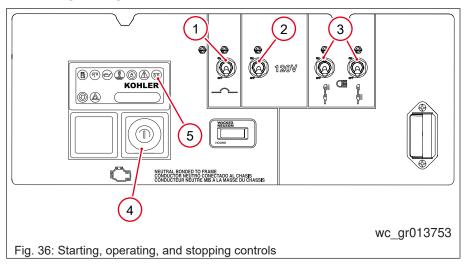
- ▶ Do not use evaporative starting fluids (for example, ether) to start the engine.
- Do not start the engine under load.
- ▶ If the fuel tank was empty, you may need to bleed the fuel lines. Refer to the engine manufacturer's documentation.
- Cranking the engine longer than 20 seconds could cause damage. If the engine does not start, return the key to the OFF position and wait
 1 minute for the starter to cool before proceeding.
- 1. Rotate the starting key (4) one click to the right.
 - ⇒ The glow plug indicator (5) illuminates.
 - ⇒ The glow plug indicator turns off when the engine is preheated.
- 2. Immediately rotate and hold the starting key to the START position until the engine starts, then release the key.
- 3. Allow the engine to warm up before operating the lights.

 Note: If the oil does not reach operating pressure within 30 seconds,



the engine stops. You must return the starting key to the OFF position for 30 seconds before restarting the engine.

Operating the lights



- 1. Turn on the main circuit breaker (1).
- 2. Turn on individual circuit breakers (3) one at a time.

Notes

- Metal halide floodlights require a warm-up time of 5–15 minutes before they reach full brightness.
- After turning the lights off, a cool-down time of 10 minutes is necessary before they can be turned on again.

Stopping the machine



NOTICE

Failure to turn off lights may cause damage to the electrical system.

- ► Turn off the lights before stopping the engine.
- 1. Remove all connected loads from the machine.
- 2. Turn the circuit breakers (1, 2, and 3) off.
- 3. Rotate the starting key (5) to the OFF position.



7.9 Starting, Operating, Stopping the Machine—Deep Sea

Requirements



A WARNING

Explosion hazard

Evaporative starting fluids can cause unexpected explosions.

▶ Do not use evaporative starting fluids, such as ether, on this engine.



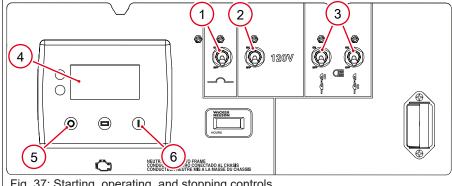
NOTICE

Starting the engine with a load on it may cause damage.

- Do not start the engine under load.
- Before starting checks completed—for further information, see Before Starting on page 62
- · Electrical cables in good condition with no cuts or abrasions in the insulation
- · Circuit breakers (1, 2, and 3) in the OFF position
- · All loads disconnected from the machine

Starting the machine

Press the Start button (6). This initiates the preheat timer, energizes the fuel solenoid, and energizes the starter motor.



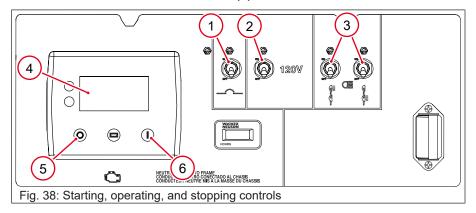
- Fig. 37: Starting, operating, and stopping controls
- The engine cranks and then rests. If the engine does not start immediately, the cycle repeats three times.
- 3. If the engine does not start after three attempts, the starting sequence is terminated and the Overcrank shutdown indicator (4) illuminates.
- 4. When the engine starts, the starter motor is disengaged. Note: After the starter motor has disengaged, the Safety On Timer is activated. This timer has a preset delay and allows oil pressure, high engine temperature, underspeed, and charge failure to stabilize without triggering the fault.



5. Allow the engine to warm up before operating the lights.

Operating the lights

1. Turn on the main circuit breaker (1).



2. Turn on individual circuit breakers (3) one at a time.

Notes

- Metal halide floodlights require a warm-up time of 5–15 minutes before they reach full brightness.
- After turning the lights off, a cool-down time of 10 minutes is necessary before they can be turned on again.

Stopping the machine



NOTICE

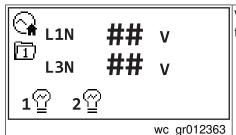
Failure to turn off lights may cause damage to the electrical system.

- ► Turn off the lights before stopping the engine.
- 1. Disconnect all loads from the machine.
- 2. Turn the circuit breakers (1) off.
- 3. Press the Stop button (5) to de-energize the fuel solenoid.

7.10 Machine Monitoring

Engine and generator information is displayed on the LCD panel. The user can scroll through the screens to monitor machine parameters.





Volts "V"—Displays the AC output voltage being produced by the genera-

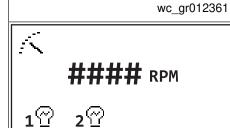


Volts "V"-Displays the AC output voltage being produced by the genera-

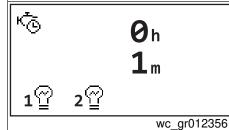
wc_gr012362 \odot 60.0 Hz

2♡

Hertz "Hz"—Displays output frequency. This gauge should read approximately 60 Hz under a no-load condition. If the frequency is too high, check the engine rpm.



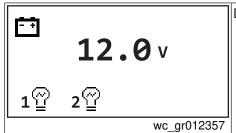
Displays the engine rpm.



Displays the metered usage of the machine in hours (h) and minutes (m).

wc gr012364





Displays the available voltage of the battery.

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Displays the maintenance interval as well as the time remaining until maintenance is required.

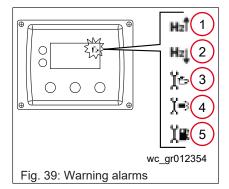
Each parameter is displayed on a separate screen:

- · Oil change
- Air filter
- Fuel filter

7.11 Alarms and Shutdown Conditions

Background

The machine controller monitors variables of engine and machine function. The machine controller has two types of alarms: warning alarms and shutdown alarms.



Warning alarms

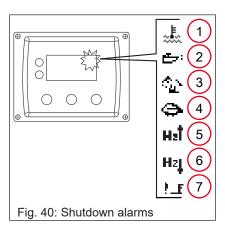
Warnings are non-critical alarm conditions that do not affect the operation of the generator system. They serve to draw the operator's attention to an undesirable condition. Warning alarms are self-resetting when the fault condition is removed.

Warning alarms include:

- Generator over-frequency (1)
- Generator under-frequency (2)
- Time to maintenance—oil (3)
- Time to maintenance—air filter (4)
- Time to maintenance—fuel filter (5)

During a warning alarm condition, the LCD panel displays the type of warning alarm. The machine is not shut down.





Shutdown alarms

Shutdown alarms are latching alarms and stop the generator. Shutdown alarms include:

- High coolant temperature (1)
- Low oil pressure (2)
- Overspeed (3)
- · Underspeed (4)
- Generator over-frequency (5)
- · Generator under-frequency (6)
- Overcrank (7)

During a shutdown alarm condition, the LCD panel displays the type of alarm that caused the machine shutdown. Remove the fault condition, then press "Stop".

The most common alarms are listed here. In rare circumstances, others may appear. If an unknown alarm icon appears, refer to the DSEL401 MKII operator's manual or contact Wacker Neuson for assistance.

Alarm and shutdown limits

Variable	Normal	Warning	Shutdown	To Reset
Overspeed	60 Hz	63 Hz	66 Hz	Press "Stop."
Underspeed	60 Hz	57 Hz	55 Hz	Press "Stop."
Overcrank	_	_	After 3 attempts	Press "Stop."
• Oil	Values vary based on engine/configuration. Scroll through the	0 hours	_	Navigate to the applicable maintenance screen and press and hold "Stop" for 10 seconds.
Air Fuel	controller to check.			

¹⁾ Engine oil service interval decreases when not using ultra low sulfur diesel. Refer to the engine manual.

7.12 Resetting the Maintenance Timers—Deep Sea

Background

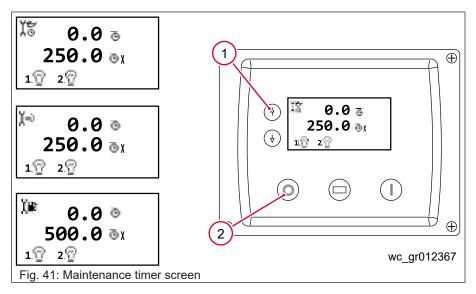
The maintenance timers are preset on the controller. When the timer expires, the alarm displays in the upper right corner of the screen. The maintenance timers vary based on the machine's engine and configuration. Scroll through the controller to check the values.

Procedure

After the required maintenance has been completed, perform the following procedure to reset a maintenance timer.

1. Use the up and down arrows (1) to navigate to the applicable screen.





2. Press and hold the Stop button (2) for 10 seconds. The timer resets.

7.13 Auto Mode (Auto Start/Stop) (if equipped)

The engine controller is capable of automatically starting/stopping the engine.

A scheduled run will begin only if the controller is in Auto Mode (LED is lit) with no shut-down alarm present. If the controller is in Stop/Reset Mode or Manual/Start Mode when a scheduled run begins, the engine will not start. However, if the controller is set to Auto Mode during a scheduled run, the engine will start.

If the engine is running "Off Load" in Auto Mode and a scheduled run configured to "On Load" begins, the set is placed "On Load" for the duration of the schedule.

Front panel configuration

This configuration mode allows the operator to configure the module through its display without the use of the Deep Sea computer software.

Use the controller's buttons to navigate through the menu and change the parameters.





Ref.	Description	Ref.	Description
1	Next section	2	Previous section
3	Previous parameter	4	Edit or save parameter
5	Next parameter	_	_

Editing a parameter

Notes:

- Use the Deep Sea computer software for more comprehensive module configuration.
- If a PIN code is required, contact the generator supplier for the PIN code.
 If the PIN code is lost or forgotten, return the controller to the Deep Sea factory to reset the code. For security purposes, the PIN code entry automatically clears when the editor is exited (manually or automatically).
- 1. To enter the editor mode, press and hold the Stop (3) and Auto (4) buttons simultaneously.
- Press the up (1) and down (2) arrows to select the Operator Editor (human icon) or Configuration Editor (wrench icon). The selected editor flashes.
- Press Auto to enter the selected editor.
 Note: If a PIN code has been set for the Configuration Editor, the PIN request appears.
- 4. Press the up and down arrows to adjust first digit to the correct value.
- 5. Press the Start button **(5)** when the first digit is correctly entered. The digit changes to # for security purposes.
- 6. Enter each of the digits of the PIN code. Press Stop to move back to adjust one of the previous digits.
- 7. After entering the last digit, press Auto to validate the PIN code. If the number is not correct, the editor is exited.
- 8. Once in the selected editor, press the up and down arrows to cycle through sections in increments of 100. Press Stop or Start to cycle through the parameters in increments of 1. The table below lists the parameters needed to configure a schedule.
 - **Note:** Parameter numbers and entry value numbers match what is in the controller. However, descriptions in these tables may have been modified to help clarify the parameter function.
- 9. To select a parameter to edit, press Auto. The parameter value flashes.
- 10. Press Stop or Start to adjust the value to the required setting.
- Press Auto to the save the current value. The value stops flashing.
 Note: For security purposes, the editor automatically exits after 5 minutes of inactivity.
- 12. To save and exit the editor, press and hold Auto. To exit without saving, press and hold Stop.

Note: In the table below, the bold entry choices are required for Auto Mode.



	Operator Editor Parameters for Auto Start by Location			
901	Enable Scheduler	(0) OFF, (1) ON (Must be ON for Location mode)		
902	Schedule Bank A Period	(0) Weekly, (1) Monthly, (2) Daily (Must be Daily for Location mode)		
903	Auto Mode #1 Scheduler	(0) = Scheduler, (1) = Location (1) Clears any Scheduler entries		
904	Load Mode #1 Scheduler	(0) Run, No-Lamps, (1) Run w-Lamps , (2) No Run, Lamp Op Only		
Arrow	Arrow down to 1001			
1001	Time of Day	00:00:00 Hr:Mins:Sec (24 hr format) Preloaded for WI, CST zone		
1002	Day of Month	1–31 Preloaded for WI, CST zone		
1003	Month of Year	1–12 Preloaded for WI, CST zone		
1004	Year	2020 (2000–2029) Preloaded for WI, CST zone		
1005	Enable Daylight Savings	(1) ON, (2) OFF		
1006	Daylight Saving Offset	0:00 Hours:Minutes (+ 0:00 to + 2:00)		
1007	Latitude (+N or -S of Equator)	+ 43.18° Decimal Degrees, Preloaded for WI, CST zone		
1008	Longitude (+E or -W of Greenwich, England)	- 88.09° Decimal Degrees, Preloaded for WI, CST zone		
1009	Time Zone Offset (from Greenwich, England)	- 6:00 Hrs (+E or -W of Greenwich), Preloaded for WI, CST zone		
1010	Sunset Offset	0:00 Hours:Minutes (- 2:00 to + 2:00)		
1011	Sunrise Offset	0:00 Hours:Minutes (- 2:00 to + 2:00)		

	Operator Editor Parameters for Auto Start by Scheduler		
901	Enable Scheduler	(0) OFF, (1) ON (Must be on for Scheduler mode)	
902	Schedule Bank A Period	(0) Weekly, (1) Monthly, (2) Daily ((2) Daily = Same every day)	
903	Auto Mode #1 Scheduler	(0) = Scheduler, (1) = Location ((1) Clears all Scheduler entries)	
904	Load Mode #1 Scheduler	(0) Run, No-Lamps, (1) Run w-Lamps, (2) No Run, Lamps Op Only	
905	Start Time #1 Scheduler	00:00:00 Hr:Mins:Sec (24 hr format)	
906	Start Day #1 Scheduler	(1) M, (2) TU, (3) W, (4) TH, (5) FR, (6) SA, (7) SU	
907	Start Week #1 Scheduler	(1), (2), (3), (4) (2, 3, 4 are for Monthly mode only)	
908	Run Duration #1 Scheduler	00:00:00 (Hrs:Mins:Sec)	
909	Auto Mode #2 Scheduler	(0) = Scheduler, (1) = Location ((1) Clears all Scheduler entries)	
910	Load Mode #2 Scheduler	(0) Run, No-Lamps, (1) Run w-Lamps , (2) No Run, Lamps Op Only	
911	Start Time #2 Scheduler	00:00:00 (Hr:Mins:Sec, 24 hr format)	
912	Start Day #2 Scheduler	(1) M, (2) TU , (3) W, (4) TH, (5) FR, (6) SA, (7) SU	
913	Start Week #2 Scheduler	(1), (2), (3), (4) (2, 3, 4 are for Monthly mode only)	
914	Run Duration #2 Scheduler	00:00:00 (Hrs:Mins:Sec)	
915	Auto Mode #3 Scheduler	(0) = Scheduler, (1) = Location ((1) Clears all Scheduler entries)	
916	Load Mode #3 Scheduler	(0) Run, No-Lamps, (1) Run w-Lamps, (2) No Run, Lamps Op Only	
917	Start Time #3 Scheduler	00:00:00 (Hr:Mins:Sec, 24 hr format)	
918	Start Day #3 Scheduler	(1) M, (2) TU, (3) W , (4) TH, (5) FR, (6) SA, (7) SU	
919	Start Week #3 Scheduler	(1), (2), (3), (4) (2, 3, 4 are for Monthly mode only)	
920	Run Duration #3 Scheduler	00:00:00 (Hrs:Mins:Sec)	
921	Auto Mode #4 Scheduler	(0) = Scheduler, (1) = Location ((1) Clears all Scheduler entries)	
922	Load Mode #4 Scheduler	(0) Run, No-Lamps, (1) Run w-Lamps , (2) No Run, Lamps Op Only	



	Operator Editor Parameters for Auto Start by Scheduler				
000	-	-			
923	Start Time #4 Scheduler	00:00:00 (Hr:Mins:Sec, 24 hr format)			
924	Start Day #4 Scheduler	(1) M, (2) TU, (3) W, (4) TH , (5) FR, (6) SA, (7) SU			
925	Start Week #4 Scheduler	(1), (2), (3), (4) (2, 3, 4 are for Monthly mode only)			
926	Run Duration #4 Scheduler	00:00:00 (Hrs:Mins:Sec)			
927	Auto Mode #5 Scheduler	(0) = Scheduler, (1) = Location ((1) Clears all Scheduler entries)			
928	Load Mode #5 Scheduler	(0) Run, No-Lamps, (1) Run w-Lamps , (2) No Run, Lamps Op Only			
929	Start Time #5 Scheduler	00:00:00 (Hr:Mins:Sec, 24 hr format)			
930	Start Day #5 Scheduler	(1) M, (2) TU, (3) W, (4) TH, (5) FR , (6) SA, (7) SU			
931	Start Week #5 Scheduler	(1), (2), (3), (4) (2, 3, 4 are for Monthly mode only)			
932	Run Duration #5 Scheduler	00:00:00 (Hrs:Mins:Sec)			
933	Auto Mode #6 Scheduler	(0) = Scheduler, (1) = Location ((1) Clears all Scheduler entries)			
934	Load Mode #6 Scheduler	(0) Run, No-Lamps, (1) Run w-Lamps , (2) No Run, Lamps Op Only			
935	Start Time #6 Scheduler	00:00:00 (Hr:Mins:Sec, 24 hr format)			
936	Start Day #6 Scheduler	(1) M, (2) TU, (3) W, (4) TH, (5) FR, (6) SA , (7) SU			
937	Start Week #6 Scheduler	(1), (2), (3), (4) (2, 3, 4 are for Monthly mode only)			
938	Run Duration #6 Scheduler	00:00:00 (Hrs:Mins:Sec)			
939	Auto Mode #7 Scheduler	(0) = Scheduler, (1) = Location ((1) Clears all Scheduler entries)			
940	Load Mode #7 Scheduler	(0) Run, No-Lamps, (1) Run w-Lamps , (2) No Run, Lamps Op Only			
941	Start Time #7 Scheduler	00:00:00 (Hr:Mins:Sec, 24 hr format)			
942	Start Day #7 Scheduler	(1) M, (2) TU, (3) W, (4) TH, (5) FR, (6) SA, (7) SU			
943	Start Week #7 Scheduler	(1), (2), (3), (4) (2, 3, 4 are for Monthly mode only)			
944	Run Duration #7 Scheduler	00:00:00 (Hrs:Mins:Sec)			
945	Auto Mode #8 Scheduler	(0) = Scheduler, (1) = Location ((1) Clears all Scheduler entries)			
946	Load Mode #8 Scheduler	(0) Run, No-Lamps, (1) Run w-Lamps , (2) No Run, Lamps Op Only			
947	Start Time #8 Scheduler	00:00:00 (Hr:Mins:Sec, 24 hr format)			
948	Start Day #8 Scheduler	(1) M, (2) TU, (3) W, (4) TH, (5) FR, (6) SA, (7) SU			
949	Start Week #8 Scheduler	(1), (2), (3), (4) (2, 3, 4 are for Monthly mode only)			
950	Run Duration #8 Scheduler	00:00:00 (Hrs:Mins:Sec)			

Auto-run with photo cell

- 1. Enter the editor mode.
- 2. Press and hold the Stop (3) and Auto (4) buttons simultaneously.



3. Press the up (1) or down (2) arrows to select the Configuration Editor (wrench icon). Refer to the following table.



- 4. Save and exit the editor by pressing and holding the Auto button. To exit without saving, press and hold Stop.
- 5. Enter the editor mode. Press and hold the Stop (3) and Auto (4) buttons simultaneously.
- 6. Press the up or down arrows to select the Operator Editor (human icon). Refer to the following table.
- 7. Save and exit the editor by pressing and holding the Auto button. To exit without saving, press and hold Stop.
- 8. Press the Auto button once. The indicator LED above the Auto button illuminates.
- 9. Place the main breaker and both lamp breakers in the UP position (closed).

The machine is now in Auto Start mode.

Shortly before the sun sets, the machine will start and turn on the lamps automatically.

When the sun rises, the machine will turn off the lamps and then shut down.

This cycle will continue until the machine is taken off Auto mode by pressing the red Stop button.

	Configuration Editor Parameters for Auto Start by Photo Cell					
333	Enable Photo Cell (0) OFF, (20) ON (20 enables photo cell)					
	Operator Editor Parameters for Auto Start by Scheduler or by Location					
901	901 Enable Scheduler (0) OFF, (1) ON (0 disables scheduler)					

7.14 Emergency Shutdown Procedure



A WARNING

Personal injury hazard

Raising or lowering the tower creates situations that if not avoided, will cause death or serious injury from striking, crushing, pinching, electrocution, etc.

► Keep the area under and around the lights clear of people and obstructions while raising and lowering the tower.

General procedures

Perform the procedure below if a breakdown or accident occurs while the machine is operating:

- 1. Stop the engine.
- 2. Disconnect all loads from the machine.
- 3. Lower the tower.
- 4. Allow the machine to cool before opening the cabinet.

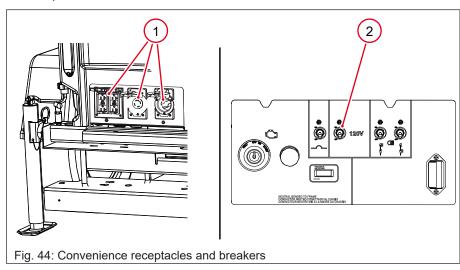


5. Contact the rental yard or machine owner for further instructions.

7.15 Using the Convenience Receptacles—50 Hz and 60 Hz

Description

This machine is equipped with one or more convenience receptacles (1) for running accessories and tools from the generator. Power to the receptacle(s) is available any time the engine is running and the circuit breaker (2) is set to the ON position.

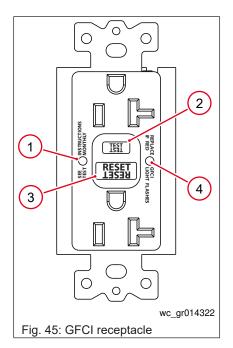


Directions

Follow the directions below to avoid damaging the machine, accessories, or tools.

- Do not use frayed or damaged cords or plugs with the convenience receptacle.
- For machines with metal halide lights, the maximum wattage (with the lights on) drawn from the receptacles shall not exceed the values below.
 - LTV6: 1600W
 - LTV8: 3600W (LTV8 is 60 Hz only)
- Use only tough rubber-sheathed flexible cable or equivalent (per 1EC245-4).
- When using extension cords or mobile distribution networks, the total length of cords should not exceed the values below.
 - 16 gauge: 60 m (197 ft)
 - 13 gauge: 100 m (328 ft)
- Machines with metal halide lights generate increased voltage while the lights are reaching full brightness. To avoid damaging sensitive electronic equipment, do not connect any such devices to the convenience outlet until the machine and lights have been operating for at least 10 minutes.
- Each 120V GFCI receptacle (1) is protected by a 20A circuit breaker (2).





Note: The control panels on 50 Hz and 60 Hz machines have a 16A outlet circuit breaker but do not have GFCI.

Testing a GFCI receptacle

Perform the manual test procedure below before each use to test a GFCI receptacle.

- 1. Turn the power on at the control panel.
 - ⇒ A green LED power on indication light (1) illuminates on the GFCI receptacle.
- 2. Push the test button (2) in.
 - ⇒ The reset button (3) should pop out.
 - ⇒ Power to the GFCI receptacle should be off.
- 3. Push the reset button in.
 - ⇒ A green LED power on indication light illuminates on the GFCI receptacle.

In addition to the manual test shown above, the GFCI receptacle has a self-test feature. The red LED failure indication light **(4)** flashes if the GFCI receptacle has lost its GFCI protection. Do not use the GFCI receptacle until it is replaced.

7.16 Generator Derating

Description

All generators are subject to derating (reduced power output) depending on the altitude and ambient temperature. Derating should not affect the operation of the lights, although it does reduce the available reserve power to the receptacle.

Derating percentages

Power ratings are typically reduced by the following percentages:

- 3% per 300 m (1000 ft) elevation above sea level
- 2% per 5.5°C (10°F) increase in ambient temperature above 25°C (78°F)



7.17 Engine—Jump-starting



A WARNING

Personal injury hazard

Jump-starting a battery incorrectly can cause the battery to explode, resulting in severe personal injury or death.

- Keep all arcs, sparks, flames, and lighted tobacco away from the battery.
- ▶ Do not jump-start a frozen battery.
- ▶ Do not short circuit battery posts. Do not touch the frame or the negative terminal when working on the positive terminal.
- Wear safety glasses and gloves while using cables.



A WARNING

Health hazard

Battery fluid is poisonous and corrosive.

► In the event of ingestion or contact with skin or eyes, seek medical attention immediately.



A CAUTION

Personal injury hazard

Electrical arcing can cause severe personal injury.

▶ Do not allow positive and negative cable ends to touch.



NOTICE

Observe the following precautions to prevent serious damage to the electrical system.

- ▶ Jump-starting a shorted or defective battery will cause the voltage regulator to supply higher than normal voltage. This can severely damage the digital electronics that control machine operation. If there is any doubt as to the battery's condition, a replacement battery should be used or an attempt should be made to charge the battery before starting the machine.
- ▶ Do not connect the negative clamp to a carburetor, fuel lines, or sheet metal body parts.
- ▶ Do not attempt to operate the machine without a battery.
- ▶ Dispose of waste batteries in accordance with local environmental regulations.





NOTICE

Extreme cold can cause the electrolytes inside the battery to freeze. Attempting to jump-start a frozen battery can cause it to rupture.

- ▶ When possible, do not allow the battery to sit in extreme cold.
- ▶ Slowly warm a frozen battery before trying to jump-start it.



NOTICE

Cranking the engine for more than 5 seconds can cause starter damage.

▶ If the engine fails to start, release the Start button and wait 10 seconds before operating the starter again. If the engine still fails to start, see General Troubleshooting on page 88.

Background

Jump-starting may occasionally be required if a battery is discharged. If jump-starting is necessary, the following procedure is recommended to prevent starter damage, battery damage, and personal injuries.

Procedure

- 1. In very cold weather, check the condition of the electrolytes. If it seems slushy or frozen, do not try jump-starting until it thaws.
- 2. Disconnect engine load.
- 3. Use a booster battery of the same voltage as is used with your engine system.
- 4. Attach one end of the positive cable clamp (red) to the positive (+) terminal of the dead battery. Attach the other end of the positive cable clamp to the positive terminal of the booster battery.
- Attach the negative cable clamp (black) to the negative (-) terminal of the booster battery. Attach the other end of negative cable clamp to a solid chassis ground on your engine or unpainted portion of the machine frame away from the "discharged" battery.
- 6. Start the engine on the machine that is being used as a power source.
- 7. Wait for a minimum of 2 minutes while the battery in the stalled machine partially charges.
- 8. Press and hold the Start button until the engine starts.
- 9. Immediately after the stalled engine starts, disconnect the negative cable clamp first from the previously dead battery and then the negative cable clamp of the booster battery.
- 10. Disconnect the positive cable clamp from the booster battery and then the positive cable clamp from the previously dead battery.
- 11. When using light or high amperage draw accessories, idle the engine for a period of 20 minutes to bring the battery to charge state.



8 Maintenance

8.1 General Maintenance



A WARNING

Injury and machine damage hazard

A poorly maintained machine can malfunction, causing injuries or permanent damage to the machine.

► Keep the machine in safe operating condition by performing periodic maintenance and making repairs as needed.

8.2 Maintenance Table

Maintenance cycle	Personnel	For furth	For further information			
Daily	Operating personnel	[▶ 79]	Inspecting the Machine			
		[08]	Maintaining the Trailer			
50 hours	Operating personnel	[▶ 81]	Checking and Draining the Containment System (if equipped)			
250 hours	Operating personnel	[▶ 82]	Cleaning the Machine			
		[▶ 83]	Maintaining the Battery			
As needed	Operating personnel	[▶ 79]	Preparing for Maintenance			
	Service personnel	[▶ 79]	Preparing for Maintenance			
		[▶ 84]	Replacing/Removing Lamps			
		[▶ 87]	Machine Disposal and Decommissioning			

8.3 Preparing for Maintenance

Do not perform even routine service (oil/filter changes, cleaning, etc.) unless all electrical components are shut down. Use the checklist below to prepare this machine for maintenance.

- · Press the Stop button.
- · Open the circuit breakers (set to the OFF position).
- · Disconnect the negative terminal on the battery.
- Attach a "DO NOT START" sign to the control panel.
- If the unit is connected to a remote start or transfer switch, make sure the remote switch is also off and tagged.

8.4 Inspecting the Machine

When

Every 10 hours or daily



Overview

Inspect the machine before each use. A thorough inspection helps to identify mechanical faults or potentially unsafe operating conditions. Correct these problems before operating the machine.

External inspection

Perform an external inspection of the machine. Check for:

- External damage (dents, cracks, broken door latches, etc.)
- · Loose or missing fasteners
- · Loose or missing parts
- · Cut or worn insulation on electrical cords
- · Damaged light fixtures or lamps
- · Fluid leaks
- · Restricted air flow at the engine exhaust
- Problems with the trailer (if equipped, see Maintaining the Trailer on page 80)

Internal inspection

Open the access doors on both sides of the machine. Check for:

- · Damage to control panels, switches, or convenience receptacles
- Loose or missing fasteners
- · Loose or missing parts
- Loose or damaged hoses
- · Fluid leaks
- · Rags, containers, or other debris inside the cabinet

8.5 Maintaining the Trailer

When

Daily

Tires

- · Keep tires inflated to the proper pressure as shown on the tire sidewall.
- · Check tread periodically for wear.
- · Replace tires as required.

Wheels

- · Check that lug nuts holding wheels are tight.
- · Replace any missing lug nuts immediately.

Axle hubs

· Grease axle hubs using a good wheel-bearing grease.



Brakes

Note: If the fluid level has fallen too low, bleed the brake lines to remove any air trapped in the lines. Then, fill to the proper level with clean brake fluid.

- · Check operation of brakes before each trip.
- Check level of brake fluid in actuator at front of trailer at regular intervals.
- Fill brake fluid to approximately 1 inch below top of reservoir using DOT-3 heavy-duty brake fluid.
- · Tighten filler plug securely.

8.6 Checking and Draining the Containment System (if equipped)



NOTICE

It is important to check the containment system regularly. A large amount of fluid collected in a 24-hour period indicates a significant leak.



Environment

Use a suitable container to collect, store, and dispose of drained fluids and lubricants in accordance with current environmental protection regulations.

When

Every 50 hours

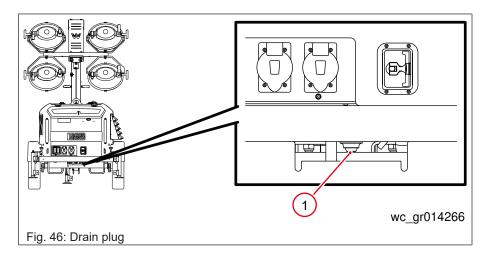
Requirements

- · Machine stopped and engine is cool to the touch
- · Machine is on a level surface
- · Plastic cloth and a container of sufficient volume to collect drained fluid

Overview

Certain machines are equipped with a containment system. The containment system protects the environment by collecting fluid leaks (fuel, coolant, or oil) which might otherwise contaminate the soil.





Procedure

- Open the access door on the side of the machine.
- 2. Check the fluid level in the containment system.
- 3. If fluid has accumulated, drain the containment system.
 - ⇒ Place a plastic cloth and a collection container beneath the machine.
 - ⇒ Remove the drain plug **(1)**. Drain accumulated fluid into a suitable container.
 - ⇒ Apply pipe sealant to the drain plug.
 - ⇒ Install the drain plug.

8.7 Cleaning the Machine



NOTICE

Pressurized water can severely damage the generator and sensitive electronic components.

▶ Do not use a pressure washer to clean this machine.

When

Every 250 hours

Suggested cleaning materials

- · Compressed air
- · Clean water supply
- · Mild detergent
- · Clean, dry cloths

Cleaning the interior

Clean the interior of the machine.



- Check the fluid level in the containment system (if equipped) and drain if necessary. For more information, see Checking and Draining the Containment System (if equipped) on page 81.
- 2. Remove rags, containers, or other debris from the cabinet. Nothing should be stored inside the machine.
- 3. Remove leaves and twigs from the exhaust compartment.
- 4. Wipe interior surfaces clean of oil, dust, and dirt.

Cleaning the exterior

Clean the exterior of the machine with clean water and a mild detergent.

8.8 Maintaining the Battery



A WARNING

Explosion hazard

Batteries can emit explosive hydrogen gas.

- Keep all sparks and flames away from the battery.
- ▶ Do not short-circuit battery posts.

When

Every 250 hours

Safety precautions

Observe the following safety precautions to prevent serious damage to the electrical system.

- Do not disconnect the battery while the machine is running.
- Do not attempt to run the machine without a battery.
- · Do not attempt to jump-start the machine.
- In the event that the machine has a discharged battery, either replace
 the battery with a fully charged battery or charge the battery using an appropriate battery charger.
- Dispose of waste batteries in accordance with local environmental regulations.

Battery connections

To connect the battery:

- Place all electrical switches in the OFF position.
- 2. Connect the red positive (+) battery cable to the battery.
- 3. Connect the black negative (-) battery cable to the battery.

To disconnect the battery:

1. Stop the engine.



- 2. Place all electrical switches in the OFF position.
- 3. Disconnect the black negative (-) battery cable from the battery.
- 4. Disconnect the red positive (+) battery cable from the battery.

Maintaining battery condition

- Follow the battery manufacturer's maintenance recommendations.
- · Keep battery terminals clean and connections tight.
- When necessary, tighten the cables and grease the cable clamps with petroleum jelly.
- Maintain the battery at full charge to improve cold weather starting.

8.9 Replacing/Removing Lamps



A WARNING

Burn hazard

Lamps become extremely hot in use.

Allow lamps and fixtures to cool 10 to 15 minutes before handling.



A WARNING

Personal injury hazard

Ultraviolet radiation from the lamps can cause serious skin and eye irritation.

- Use only undamaged lamps.
- Use the lamps only with undamaged original equipment lenses and fixtures.



A WARNING

Explosion hazard

Grease or oil residue on the lamp can cause the outer jacket to burst or shatter. Hot flying glass particles can cause personal injury, property damage, burns, or fire.

- Do not operate any lamps with lenses that are cracked, damaged, or missing.
- Do not scratch the lamp or subject the lamp to excess pressure.
- Wear eye protection and gloves when removing or replacing lamps.

Requirements

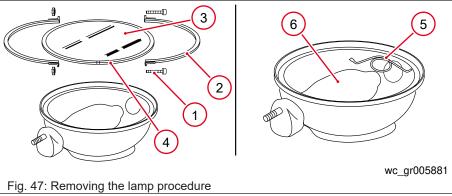
- · Machine shut down
- · Light circuit breakers turned OFF



- · Lamps and fixtures cool to the touch
- · Eye and hand protection

Removing the lamp

1. Remove the screws (1) securing the flange rings (2) and remove the flange rings.



- Remove the lens (3) with the gasket (4) attached.
- 3. Remove the hardware securing one side of the lamp stabilizer (5). Once removed, swing the lamp stabilizer to the side and unscrew the lamp (6).

Installing the lamp

- 1. Screw the lamp in firmly, but not forcibly, to minimize loosening due to vibration. Secure it with the lamp stabilizer.
- 2. Install the gasket around the lens and secure the lens to the reflector with the flange rings and screws.

8.10 Routine Maintenance

Any kind of maintenance work on the light tower must be carried out by authorized and trained personnel. It should be done in a safe working environment and with the machine well stabilized. The engine must be stopped and allowed to cool sufficiently before starting to work on it.

- While performing maintenance work, please use suitable tools and clothes.
- If you need to work while the engine is running, pay attention to all moving parts, hot parts, and electrical parts which may be unprotected while the machine is open.
- · DO NOT modify any component if not authorized.

The repairs cannot be considered among the routine maintenance activities, for example, the replacement of parts that are subject to occasional damage and the replacement of electric and mechanic components that wear with use. This kind of work is not covered by warranty.



The periodic maintenance should be performed according to the documentation provided by the engine and alternator manufacturers. Please refer to the relevant manual supplied with the machine and to the hour meter on the machine in order to determine when service is needed.

8.11 Engine Maintenance—KDW 1003 and KDW 702



A WARNING

Health hazard

Most used liquids from this machine contain small amounts of materials that can cause cancer and other health problems if inhaled, ingested, or left in contact with skin for prolonged periods of time.

- Take steps to avoid inhaling or ingesting used liquids.
- Wash skin thoroughly after exposure to used liquids.

The viscosity of the engine oil is an important factor when determining the correct engine oil to use in your machine. Use an engine oil of appropriate viscosity based on the expected outside air temperature. See the following table.

For additional information, see the engine owner's manual.

The table below lists service intervals for basic machine maintenance.

KDW 1003 and KDW 702 Service Intervals								
	Every X Hours (Frequency)							
Service Item	10	50	100	300	500	1000 (1 year)	2000 (2 years)	4000 (4 years)
Check oil level	X							
Check coolant level	X							
Check/clean air cleaner element	Х							
Check fuel lines	Х							
Check/clean radiator exchange surface	Х							
Initial oil and filter change ¹⁾		Χ						
Drain water separator			Х					
Replace air cleaner element (replace every 60 without Auto Start option)			Х					
Change engine oil and filter (when using ultra low sulfur diesel) ¹⁾						Х		
Check fan/alternator belt tension				Х				
Check coolant hoses				Х				
Check rubber intake hose				Х				
Replace fuel filter				Х				
Replace fan/alternator belt					Х			
Check valve clearance					Х			
Clean and adjust injectors						Х		



KDW 1003 and KDW 702 Service Intervals								
			E۱	ery 2	X Ho	urs (Freq	luency)	
Service Item	10	50	100	300	500	1000 (1 year)	2000 (2 years)	4000 (4 years)
Remove fuel tank sediment						Х		
Replace rubber intake hose						Х		
Check/replace fuel lines						Х		
Change radiator coolant						Х		
Replace radiator hoses and clamps							Х	
Replace timing belt								Х
Oil spec ²⁾	0W-40, full synthetic CJ4							

¹⁾ Engine oil service interval decreases when not using ultra low sulfur diesel. The oil change interval is 1000 hours on standard units and 3000 hours on extended service interval units.

8.12 Machine Disposal and Decommissioning

Introduction

This machine must be properly decommissioned at the end of its service life. Responsible disposal of recyclable components, such as plastic and metal, ensures that these materials can be reused—conserving landfill space and valuable natural resources.

Responsible disposal also prevents toxic chemicals and materials from harming the environment. The operating fluids in this machine, including fuel, engine oil, and grease, may be considered hazardous waste in many areas. Before decommissioning this machine, read and follow local safety and environmental regulations pertaining to the disposal of construction equipment.

Preparation

- Move the machine to a protected location where it will not pose any safety hazards and cannot be accessed by unauthorized individuals.
- Ensure that the machine cannot be operated from the time of final shutdown to disposal.
- Drain all fluids, including fuel, engine oil, and coolant.
- · Seal any fluid leaks.

Disposal

- Disassemble the machine and separate all parts by material type.
- Dispose of recyclable parts as specified by local regulations.
- Dispose of all non-hazardous components that cannot be recycled.
- Dispose of waste fuel, oil, and grease in accordance with local environmental protection regulations.

²⁾ Refer to Kohler engine manual.



9 Troubleshooting

9.1 General Troubleshooting



A WARNING

High voltage

This unit uses high voltage circuits capable of causing serious injury or death.

Only a qualified electrician should troubleshoot or repair electrical problems occurring in this equipment.

Problem	Cause	Remedy
No start (engine)	Battery discharged	Charge battery.
	Battery connections corroded	Clean battery connections.
	Blown fuse	Replace fuse.
	Defective starter	Replace starter.
Start and stop (engine)	No fuel	Fill tank with fuel.
	Clogged fuel filter	Bleed fuel lines.
	Fuel circuit failure	Replace fuel filter.
		Check fuel lines.
No generator output	Main circuit breaker open	Close main circuit breaker.
	Voltage regulator malfunction	Call Wacker Neuson for service.
Low oil pressure	Low oil level	Fill engine sump with oil.
	Clogged oil filter	Replace oil filter.
	Oil pump failure	Call Wacker Neuson for service.
High coolant temperature	Electrical overload	Reduce load.
	Low coolant level	Fill with coolant.
	Low oil level	Fill sump with oil.
	Clogged oil filter	Replace oil filter.
Black smoke from engine	Clogged air filter	Clean/replace air filter cartridges.
	Electrical overload	Reduce load.
	High oil level	Remove excess oil.
	Fuel circuit failure	Call Wacker Neuson for service.



Problem	Cause	Remedy		
No light (lamp)	Lamp is too hot	Allow lamp to cool 10–15 minutes before restarting.		
	Faulty lamp connection	Check that lamp is tight in socket. Check connections inside connection boxes on light fixtures and tower.		
	Plug connection at fixture is loose or damaged	Repair or replace the plug connection.		
	Lamp broken or burned out	Check for the following:		
		broken arc tube or outer lamp jacket		
		broken or loose components in lamp envelope		
		blackening or deposits inside lamp tube		
	Circuit breaker turned on	Turn off circuit breaker.		
	Circuit breaker loose or faulty	Repair or replace the circuit breaker.		
	Generator output incorrect	Check incoming voltage to ballast. Incoming voltage should be 120V ± 5V. If voltage is incorrect, engine speed may need to be adjusted or generator may require service.		
	Low or no ballast output	With the fixture cord removed from its receptacle, the voltage should measure 400 to 445 VAC. If proper voltage is not achieved, perform capacitor check to determine if capacitor or coil needs to be replaced.		
Low light output	Lamp degraded	Replace lamp due to normal lamp life.		
	Low ballast output	Check ballast for proper voltage output.		
	Fixture or lens dirty	Clean reflective surface inside fixture and both inside and outside surface of glass lens.		
Power winch models: Tower does not fully exte	Clutch needs adjustment nd	For further information, see <i>Adjusting the Power Winch Clutch</i> [▶ 59].		

9.2 Troubleshooting LED Lights

Problem	Cause	Remedy
Entire light does not illuminate	The circuit voltage exceeds the applicable LED light voltage range.	Adjust the circuit voltage to ensure it is within the applicable LED light voltage range.
	The circuit connection point of the input end of the LED light (or LED module) is loose or poorly connected.	Tighten the connection point to ensure there is no looseness.
	The driver power supply input wire soldered joint on the PCB board is off or is a rosin joint.	Re-solder the joint firmly.
	There is insufficient or no output voltage at the output end of the drive power supply.	Replace the drive power supply.

Troubleshooting

9.2 Troubleshooting LED Lights



Problem	Cause	Remedy
	The module or LEDs burnt out.	Replace the LED module.
or LEDs do not il- luminate		Replace the LEDs PCB board.
Entire light flashes	The circuit voltage exceeds the applicable voltage range of the drive power supply.	Adjust the circuit voltage to ensure it is within the applicable LED light voltage range.
	The circuit connection point of the input end of the LED light is poor.	Tighten the connection point to make sure the connection is firm.
	There is insufficient output voltage at the output end of the drive power supply.	Replace the drive power supply.
Light output is dim	The LED light module has been used for more than the rated life, and there is light decay.	Replace the LED module.
	The LED light has been used for more than the rated life, and there is light decay.	Replace the LED's PCB board or the LED light.
	The light-emitting surface of the LED light module is polluted.	Remove the pollutants or replace the LED light module.
	The drive power supply is abnormal and the output current is small.	Replace the drive power supply.



10 Storage

10.1 Long-Term Storage



NOTICE

Allowing the battery to freeze or completely discharge is likely to cause permanent damage.

- Periodically charge the battery while the machine is not in use.
- In cold climates, store and charge the battery indoors or in a warm location.

When

Prepare your machine for extended storage if it will not be operated for 30 days or more.

Overview

Extended storage of equipment requires preventive maintenance. Performing these steps helps to preserve machine components and ensures the machine will be ready for future use. While not all of these steps necessarily apply to this machine, the basic procedures remain the same.

Preparing for storage

Perform the procedures below to prepare your machine for storage.

- · Complete any needed repairs.
- Replenish or change oils (engine, exciter, hydraulic, and gearcase) per the intervals specified in the Periodic Maintenance Schedule table.
- Grease all fittings and, if applicable, repack bearings.
- Inspect engine coolant. Replace coolant if it appears cloudy, is more than two seasons old, or does not meet the average lowest temperature for your area.
- If your machine has an engine equipped with a fuel valve, start the engine, close the fuel valve, and run the engine until it stops.
- Consult the engine owner's manual for instructions on preparing the engine for storage.

Stabilizing the fuel

After completing the procedures listed above, fill the fuel tank completely and add a high-quality stabilizer to the fuel.

- Choose a stabilizer that includes cleaning agents and additives designed to coat/protect the cylinder walls.
- Make sure the stabilizer you use is compatible with the fuel in your area, fuel type, grade, and temperature range. Do not add extra alcohol to fuels which already contain it (for example, E10).



- For engines with diesel fuel, use a stabilizer with a biocide to restrict or prevent bacteria and fungus growth.
- Add the correct amount of stabilizer per the manufacturer's recommendations.

Storing the machine

Perform these remaining steps to store your machine.

- · Wash the machine and allow it to dry.
- Move the machine to a clean, dry, secure storage location. Block or chock the wheels to prevent machine movement.
- Use touch-up paint as needed to protect exposed metal against rust.
- If the machine has a battery, either remove or disconnect it.
- Cover the machine. Exposed rubber items should be protected from the weather. Either cover them or use a protectant.



11 Factory-Installed Options

11.1 Overview

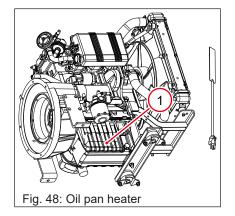
This machine may be equipped with one or more of the following factory-installed options. To verify if any of these options are installed on your machine, contact Wacker Neuson America Corporation at 1-800-770-0957. A nameplate listing the model number, item number, and serial number is attached to each unit. Please have this information available when contacting Wacker Neuson America Corporation.

The illustrations shown in this chapter represent typical installations. The factory-installed options on your machine may look different.

11.2 Cold Weather Package

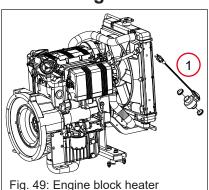
The cold weather package includes the engine block heater, battery blanket, oil pan heater, and 60/40 or cold weather coolant. The Kohler cold weather package also includes the piston fuel pump.

11.3 Oil Pan Heater



Cold, thick engine oil does not flow freely and may cause engine starting difficulties. An oil pan heater (1) installed on the engine oil pan keeps the oil warm and flowing. Heat from this electrical device warms the supply of engine oil contained in the pan while the machine is not in use. Plug the cord into a 120V power supply.

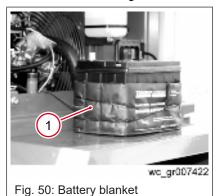
11.4 Engine Block Heater



The engine block heater (1) includes a block heater with a cord. The function of the block heater is to heat the engine coolant/engine block to improve cold-weather engine starting. Plug the cord into a 120V power supply.

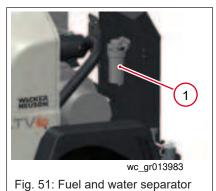


11.5 Battery Blanket



An electrically powered blanket (1) warms the battery while the machine is not in use. The blanket eliminates engine starting difficulties caused by a cold, frozen, or discharged battery. Plug the cord into a 120V power supply.

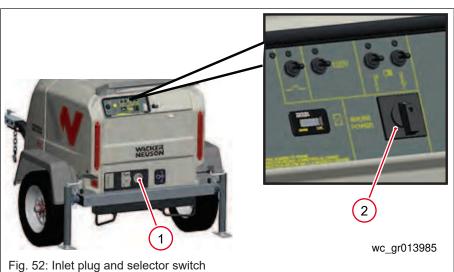
11.6 Fuel and Water Separator



The fuel and water separator (1) removes water from the fuel supply. As fuel flows through the separator element, removed water collects in the bowl.

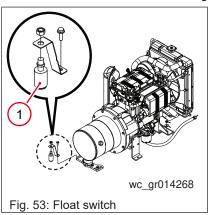
11.7 Shore Power

The machine optionally includes a shore power enabled twist lock inlet plug (1) with selector switch (2) as part of the control panel configuration. Plug into utility or building power to use auxiliary power instead of using the internal generator power.





11.8 Containment System Float Switch



Machines equipped with a containment system protect the environment by collecting fluid leaks (fuel, coolant, or oil) which might otherwise contaminate the soil.

It is important to check the containment system regularly. A large amount of fluid collected in a 24-hour period indicates a significant leak.

The float switch **(1)** is normally closed, but when the collected fluid level in the containment tub rises high enough, the float switch opens. When the float switch opens, electric power to the fuel solenoid is disconnected and the engine stops.

11.9 Positive Air Shutoff

Diesel engines may occasionally continue to run even after the machine has been turned off. This "runaway" condition occurs when combustible intake air is drawn into the engine. Turning the key to OFF alone will not stop a runaway engine.

Some models include a positive air shutoff valve. Activating the positive air shutoff valve blocks the flow of air into the engine intake and stops the engine from running.

11.10 LED Lights

The LED light option includes four 240W, or four 300W, LED fixtures that require less than one second warm-up time and no maintenance. The LED fixtures are rated for use in extreme cold temperatures to -40°F and offer voltage and current protection.



12 Technical Data

12.1 Engine

Kohler

Engine Power Rating

Net power rating per ISO 3046 IFN. Actual power output may vary due to conditions of specific use.

	LTV4L 240W LED	LTV4L 300W LED	LTV6L MH	LTV6L LED
Engine Make	Kohler	Kohler	Kohler	Kohler
Engine Model	KDW702	KDW702	LDW1003	LDW1003
Engine Type	Diesel, Liquid Cooled	Diesel, Liquid Cooled	Diesel, Liquid Cooled	Diesel, Liquid Cooled
Number of Cylinders	2	2	3	3
Rated Standby Power @ Rated Speed	6.0 kW (8.0 hp) @ 1800 rpm	6.0 kW (8.0 hp) @ 1800 rpm	9.1 kW (12.2 hp) @ 1800 rpm	9.1 kW (12.2 hp) @ 1800 rpm
Operating Speed	1800 rpm	1800 rpm	1800 rpm	1800 rpm
Alternator	37.5A @ 120V; 18.8A @ 240V; 4100W	37.5A @ 120V; 18.8A @ 240V; 4100W	50A @ 120V; 25A @ 240V; 6000W	50A @ 120V; 25A @ 240V; 6000W
Battery	12V / 650 ccA	12V / 650 ccA	12V / 650 ccA	12V / 650 ccA
Air Cleaner	Dry-type element	Dry-type element	Dry-type element	Dry-type element
Fuel	Diesel #2—ULSD	Diesel #2—ULSD	Diesel #2—ULSD	Diesel #2—ULSD
Fuel Tank Ca- pacity	173.3L (45.8 gal)	173.3L (45.8 gal)	173.3L (45.8 gal)	173.3L (45.8 gal)
Fuel Consump- tion	1.85 L/hr (0.49 gal/hr)	1.85 L/hr (0.49 gal/hr)	2.74 L/hr (0.72 gal/hr)	2.74 L/hr (0.72 gal/hr)
Fuel Consump- tion—Four Lights	0.83 L/hr (0.22 gal/hr)	0.88L/hr (0.23 gal/hr)	1.68L/hr (0.44 gal/hr)	1.09L/hr (0.29 gal/hr)
Runtime	89 hr	89 hr	60.5 hr	60.5 hr
Coolant Capacity	4.13L (4.36 qt)	4.13L (4.36 qt)	4.13L (4.36 qt)	4.13L (4.36 qt)
Oil Capacity	5.2L (5.5 qt)	5.2L (5.5 qt)	3.8L (4 qt)	3.8L (4 qt)
Oil Grade	10W30	10W30	10W30	10W30



12.2 Generator

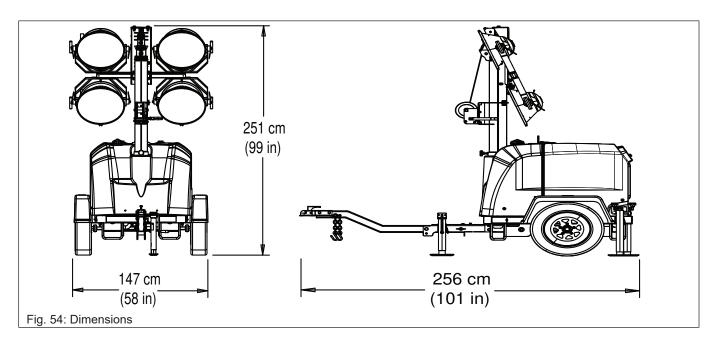
	LTV4L 240W LED	LTV4L 300W LED	LTV6L MH	LTV6L LED
Frequency	60 Hz	60 Hz	60 Hz	60 Hz
Output	4.1 kW	4.1 kW	6 kW	6 kW
Voltage	120V	120V	120V	120V
Phase	1	1	1	1
Amps	34.2A	34.2A	50A	50A
Excitation Type	Capacitor / brushless	Capacitor / brushless	Capacitor / brushless	Capacitor / brushless
Power Factor	1	1	1	1
Voltage Regulation— No Load to Full Load	0.1	0,1	0.1	0.1
Voltage Regulation— Steady State	+/- 6.0%	+/- 6,0%	+/- 6.0%	+/- 6.0%
Operating Speed	1800 rpm	1800 rpm	1800 rpm	1800 rpm

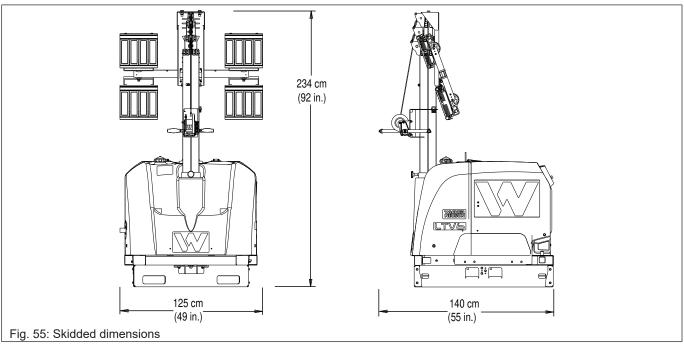
12.3 Machine

	LTV4L 240W LED	LTV4L 300W LED	LTV6L MH	LTV6L LED
Lamp	LED	LED	Metal Halide	LED
Frequency	60 Hz	60 Hz	60 Hz	60 Hz
Lamp Wattage	4 X 240W	4 X 300W	4 X 1100W	4 X 300W
Dimensions	2.56 x 1.47 x 2.51 m (101 x 58 x 99 in.)	2.56 x 1.47 x 2.51 m (101 x 58 x 99 in.)	2.56 x 1.47 x 2.51 m (101 x 58 x 99 in.)	2.56 x 1.47 x 2.51 m (101 x 58 x 99 in.)
Operating Weight	730 kg (1610 lb)	748 kg (1650 lb)	803 kg (1770 lb)	803 kg (1770 lb)
Height—Mast Extended	7 m (23 ft)			
Output	4.1 kW	4.1 kW	6 kW	6 kW
Voltage	120V	120V	120V	120V
Amps	34.2A	34.2A	50A	50A
Power Factor	1	1	1	1
NEMA Beam Spread	Type 4	Type 4	Type 6	Type 4
Lighting Coverage @ 5 fc	403 m² (4342 ft²)	518 m² (5582 ft²)	857 m² (9230 ft²)	518 m² (5582 ft²)
Sound Level	68.8 dB(A)	68.8 dB(A)	67.9 dB(A)	67.9 dB(A)
AC Outlet Receptacle	1-125V, 20A Duplex GFCI	1-125V, 20A Duplex GFCI	1-125V, 20A Duplex GFCI	1-125V, 20A Duplex GFCI



12.4 Dimensions







Emissions Control Systems Information and Warranty: Kohler 13.1

13 Emissions Control Systems Information and Warranty— Kohler

13.1 Emissions Control Systems Information and Warranty: Kohler

The Emission Control Warranty and associated information is valid only for the U.S.A., its territories, and Canada.

13.2 Emission Control System Background Information

Introduction

Wacker Neuson engines/equipment must conform with applicable Environmental Protection Agency (EPA) and California Air Resource Board (CARB) emissions regulations. These regulations require that manufacturers warrant the emission control systems for defects in materials and workmanship.

Furthermore, EPA and CARB regulations require all manufacturers to furnish written instructions describing how to operate and maintain the engines/ equipment including the emission control systems. This information is provided with all Wacker Neuson engines/equipment at the time of purchase.

Exhaust emissions

The combustion process produces carbon monoxide, oxides of nitrogen, and hydrocarbons. Control of hydrocarbons and oxides of nitrogen is very important because, under certain conditions, they react to form photochemical smog when subjected to sunlight. Carbon monoxide does not react in the same way, but it is toxic.

Problems that may affect emissions

If any of the following symptoms arise, have the engine/equipment inspected and repaired by a Wacker Neuson dealer/service center.

- Hard starting or stalling after starting
- Rough idling
- Misfiring or backfiring under load
- · Afterburning (backfiring)
- Presence of black exhaust smoke during operation
- · High fuel consumption

Tampering and altering

Tampering with or altering the emission control system may increase emissions beyond the legal limit. If evidence of tampering is found, Wacker Neuson may deny a warranty claim. Among those acts that constitute tampering are:

- Removing or altering of any part of the air intake, fuel, or exhaust systems.
- Altering or defeating the speed-adjusting mechanism causing the engine to operate outside its design parameters.

Emissions Control Systems Information and Warranty—Kohler

13.3 Limited Defect Warranty for Exhaust Emission Control System



13.3 Limited Defect Warranty for Exhaust Emission Control System

See the supplied engine owner's manual for the applicable emission warranty statement.



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