Operator’s Manual

Light Tower

LTT4 / LTT6

Machine Type	**Light Tower**
Material Number	**5100075445 / 3300035116**
Version	**04**
Date	**07/2024**
Language	**[en-US]**

Imprint

Publisher and copyright holder:

Wacker Neuson America Corporation

N92W15000 Anthony Ave

Menomonee Falls, WI 53051, USA

www.wackerneuson.us

Original instructions

California Proposition 65 Warning

⚠ WARNING

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

⚠ 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.

⚠ WARNING

Cancer and Reproductive Harm

www.P65Warnings.ca.gov

⚠ 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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Table of Contents

1 Foreword

1.1 Machine Identification

The following machines and variants/options are described:

Machine	Item Number
LTT6	5100067767
LTT4	5100066804
LTT4 RAC	5100068463
LTT4 50 Hz	5100068462

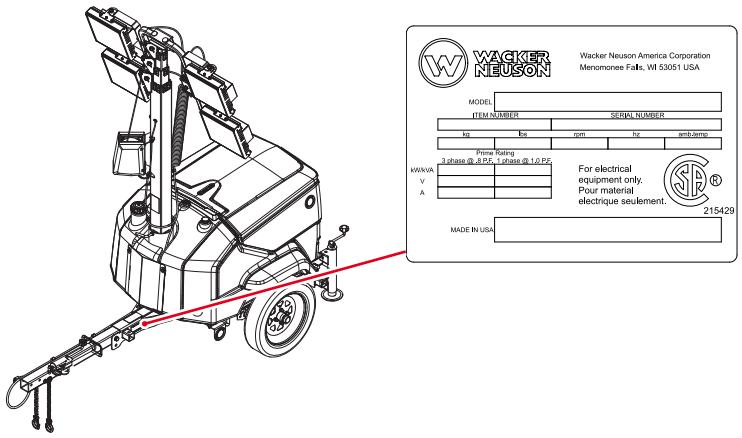


Fig. 1: Nameplate location

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	LTT	Light tower trailered
NATM	National association of trailer manufacturers	NHTSA	National highway traffic safety administration
PPE	Personal protective equipment	RAC	Remote air cleaner
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 86 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
- 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.

⚠ 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.

⚠ 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.

⚠ 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.

3.2 Safety Guidelines for Operating the Machine

Operator and service training, knowledge, and qualifications

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.

When operating this machine:

- Do not allow improperly trained people to operate the machine.
- People operating the machine must be familiar with the potential risks and hazards associated with it.
- Follow legal and other mandatory regulations relevant to accident prevention and environmental protection. These may include handling hazardous substances, issuing and/or wearing PPE, or obeying traffic regulations.

The machine must not be accessed or operated by:

- Children
- People impaired by alcohol, drugs, or prescription drugs

Application area

Be aware of the application area.

- Keep unauthorized personnel, children, and pets away from the machine.
- Remain aware of changing positions and the movement of other equipment and personnel in the application area/job site.
- Do not operate the machine in areas that contain flammable objects, fuels, or products that produce flammable vapors.
- Keep the area around the muffler free of debris such as leaves, paper, cartons, etc. A hot muffler could ignite the debris and start a fire.

Safety devices, controls, and attachments

Only operate the machine when:

- All safety devices and guards are in place and in working order.
- All controls operate correctly.
- The machine is set up correctly according to the instructions in the operator's manual.
- The machine is clean.
- The machine's labels are legible.

To ensure safe operation of the machine:

- Do not operate the machine if any safety devices or guards are missing or inoperative.
- Do not modify or defeat the safety devices.
- Only use accessories or attachments that are approved by the manufacturer.

Personal protective equipment (PPE)

Wear the following PPE while operating, servicing, or maintaining this machine:

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

In addition, before servicing or maintaining the machine:

- Tie back long hair.
- 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.
- Close the fuel valve on engines equipped with one 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 properly when it is not being used. The machine should be stored in a clean location out of the reach of children.

3.3 Safety Guidelines for Maintenance

Before servicing or maintaining the machine, see Safety Guidelines for Operating the Machine on page 12.

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 tower is lowered, 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.

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.

3.4 Safety Guidelines for Using Internal Combustion Engines

⚠ DANGER

Poisoning hazard

Exhaust gas contains carbon monoxide, a deadly poison.

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

⚠ 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.

Running the engine

- Keep the area around the exhaust pipe free of flammable materials.
- Make sure the engine compartment is free of debris before running the machine.
- 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 a risk of explosion or fire.

Refueling safety

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

3.5 Safety Guidelines for Mobile Generators

⚠ DANGER

Carbon monoxide hazard

Using this machine indoors can kill you in minutes. Exhaust gas contains carbon monoxide (CO). This is a deadly poison you cannot see or smell. If you can smell the exhaust, you are breathing CO. Even if you cannot smell the exhaust, you could still be breathing CO.

- ► Never operate the machine inside an enclosed area, such as a home, tunnel, or garage unless it is vented properly.
- ► Only use the machine outside and far away from windows, doors, and vents. These openings can pull in exhaust gas.
- ► Always use a battery-powered or battery-backup CO alarm in nearby structures. Even when you use the machine correctly, CO may leak into nearby structures.
- ► If you start to feel sick, dizzy, or weak after the machine has been running, move to fresh air IMMEDIATELY. See a doctor. You could have carbon monoxide poisoning.

⚠ WARNING

Electrocution hazard

Generators present special hazards during operation and servicing. These include the risk of electrocution or severe electrical shock. Failure to follow the safety information below can result in severe injury or death.

- ► Read and follow the safety instructions in this operator's manual.
- ► Contact the generator manufacturer for additional information regarding the generator.

⚠ WARNING

Injury hazard

Backfeed from the generator into the public power distribution system can cause serious injury or death to utility workers.

- ► Connections to a building's electrical system must be made by a qualified electrician and comply with all applicable laws and electrical codes.

Installing as backup power

Special hazards exist when installing this machine as a backup power supply. Improper connection of the mobile generator to a building's electrical system can allow electrical current from the generator to backfeed into utility lines. This may result in electrocution of utility workers, fire, or explosion.

If connected to a building's electrical system, the generator must meet the power, voltage, and frequency requirements of the equipment in the building. Differences in power, voltage, and frequency requirements may exist and improper connection may lead to equipment damage, fire, and personal injury or death.

General safety

- Do not use evaporative starting fluids to start the engine. They are highly explosive.
- Do not store items such as excess oil, rags, or tools on top of or inside the machine. These items are a fire hazard and can restrict cooling air.
- Ensure that electrical cords attached to the machine are in serviceable condition without cuts, cracks, or exposed wires.
- Do not route electrical cords over vibrating or hot parts of the machine.
- Do not stand on the machine.
- Do not enclose or cover the machine when it is in use, or when it is hot.

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 LED light fixtures is vertically mounted to the front of the unit. As the engine runs, the alternator converts mechanical energy into electric power. The LED lights run off this power. Receptacle(s) (optional) are also provided to power auxiliary loads. The operator uses the control panel to operate and monitor the machine.

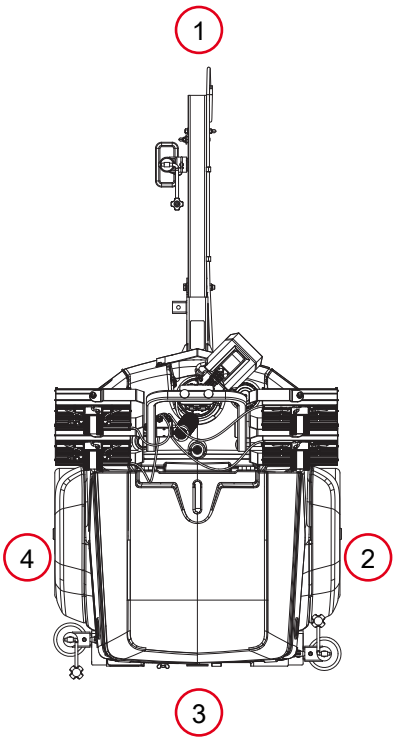


Fig. 2: Top view of machine

Right/left/front/rear

The following terms are used in this manual referring to sides of the machine.

- Front **(1)**
- Right **(2)**
- Rear **(3)**
- Left **(4)**

4.2 Overview of the Labels

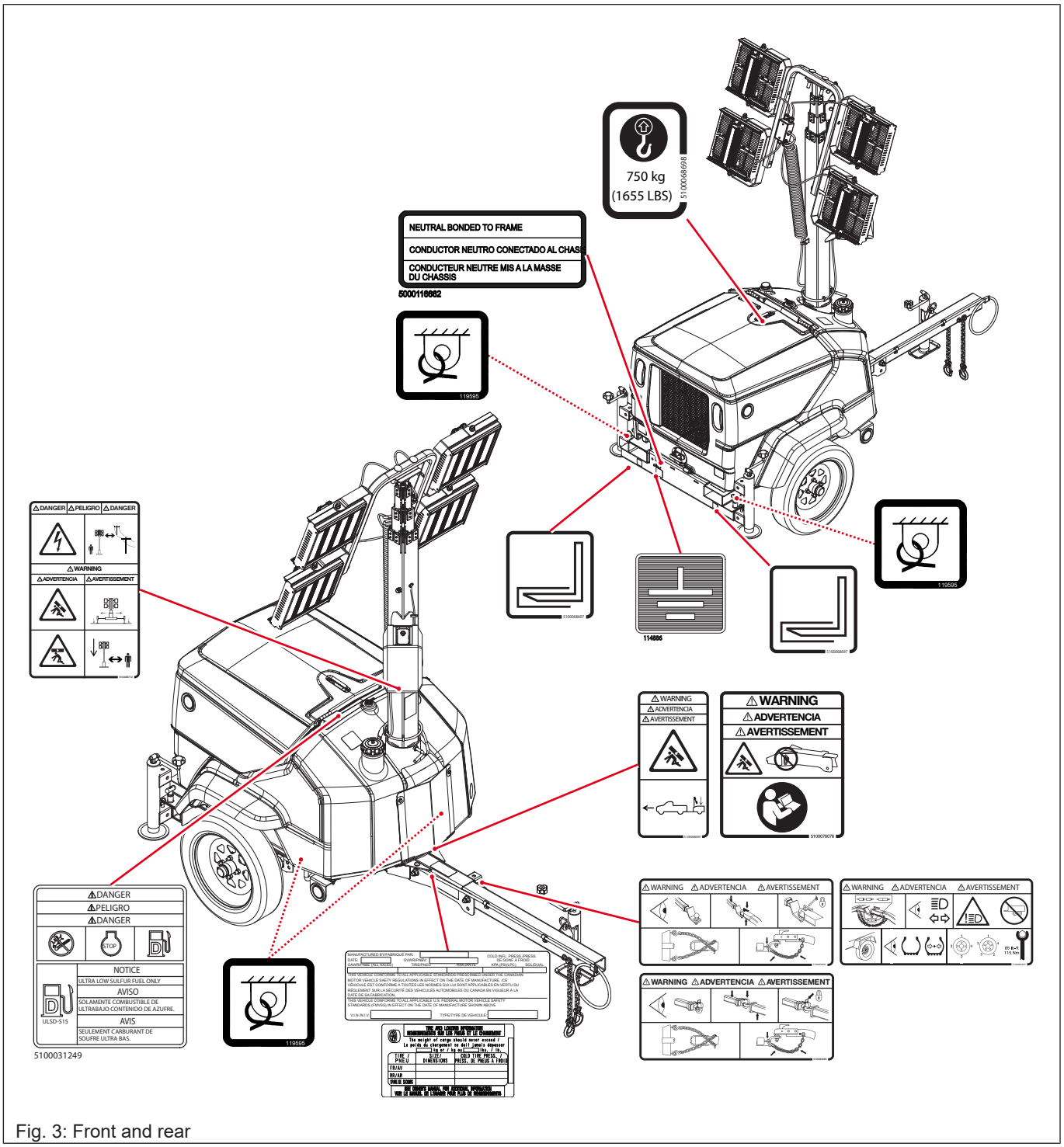


Fig. 3: Front and rear

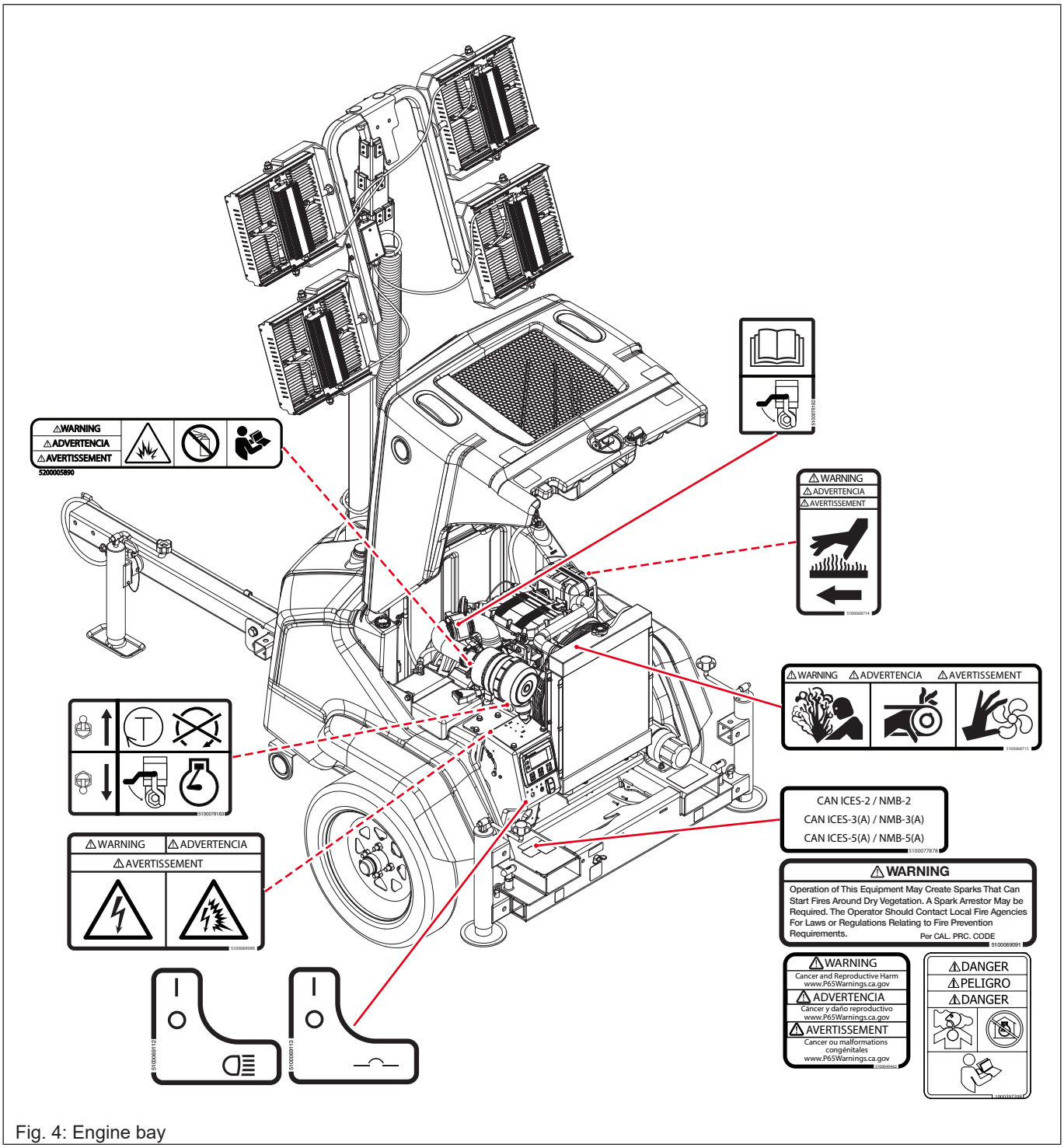


Fig. 4: Engine bay

4.3 Safety Label Meanings

DANGER

Asphyxiation hazard

- Engines emit carbon monoxide.
- Do not run the machine indoors or in an enclosed area unless adequate ventilation, through such items as exhaust fans or hoses, is provided.
- Read the operator's manual. For further information, see Safety Guidelines for Using Internal Combustion Engines on page 15 and see Safety Guidelines for Mobile Generators on page 17.

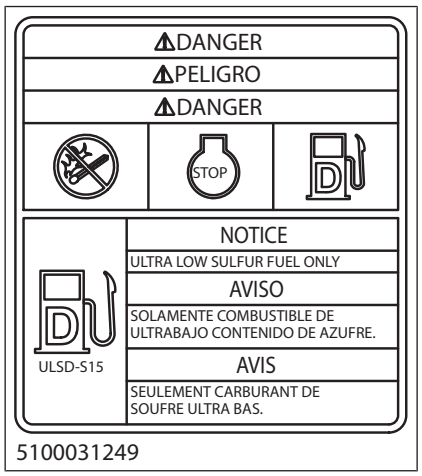
DANGER

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

WARNING

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.

Bystanders can be struck by the tower as it is being raised or lowered. Do not allow anyone to stand near the tower while raising or lowering the tower.



Danger

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

Stop the engine before refueling.

Notice

Ultra low sulfur fuel only

WARNING

Crushing hazard due to machine tipping

Do not remove pin from the trailer tongue before installing the jack to the front mount on the skid.

For further information, see Lowering and Raising the Trailer Tongue on page 29.

WARNING

California Proposition 65 Warning

Cancer and Reproductive Harm

www.P65Warnings.ca.gov

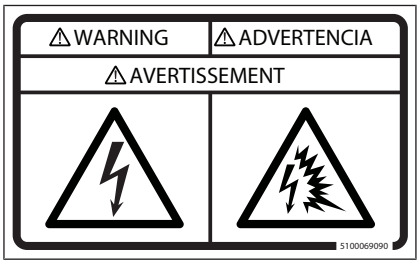
WARNING

Hot surface hazard

WARNING

Personal injury hazards

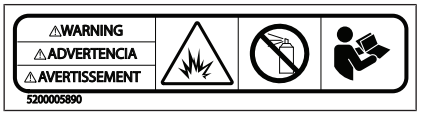
- Pressurized contents. Do not open when hot.
- Pinching/cutting hazard.
- Rotating machinery.



WARNING

Personal injury hazard

Electric shock and arc flash can cause serious injury or death.



WARNING

Explosion hazard (diesel machines)

- 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.
- Do not use evaporative starting fluids such as ether on this engine.
- Read and follow the engine starting instructions in this operator's manual.

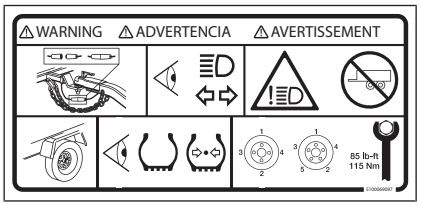
WARNING

Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrester may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

WARNING

Tipping/falling hazard

Lower the tower before towing.



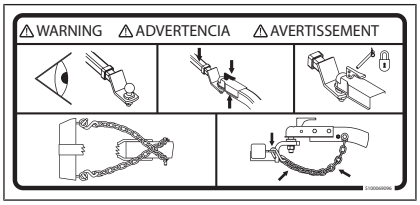
WARNING

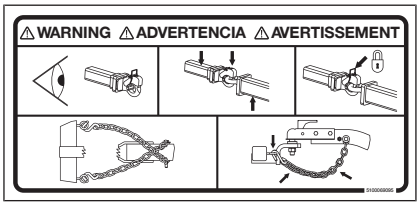
Lights can prevent trailer from being hit by other vehicles. You must:

- Connect the trailer harness to the vehicle.
- Check all lights: tail lights, turn signals, and brake lights.
- Do not tow if lights are not working.

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

- Tires and wheels for damage
- Tire pressure and tread
- Lug nuts for tightness
  Note: Lug nuts should be tightened to 115 Nm (85 lb-ft.). For new and remounted wheels, tighten the lug nuts at the first 10, 25, and 50 miles of driving.



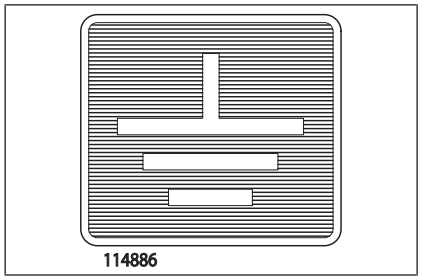


WARNING

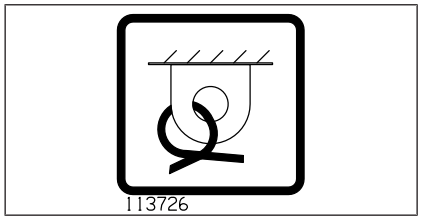
Uncoupling will cause trailer to come loose from tow vehicle. Always use safety chains. Chains hold trailer if connection fails. You must:

1. Check that the ball load rating is the same as or greater than the coupler load rating. Check that the ball size is same as the coupler.
2. Close the coupler clamp on ball. Lift the coupler upwards to test that it will not separate from the ball.
3. Lock the coupler clamp with a pin or padlock.
4. Cross the chains underneath the coupler, and attach chain hooks securely to the tow vehicle.
5. Allow slack for the trailer to turn, but make sure the chains do not contact the ground.

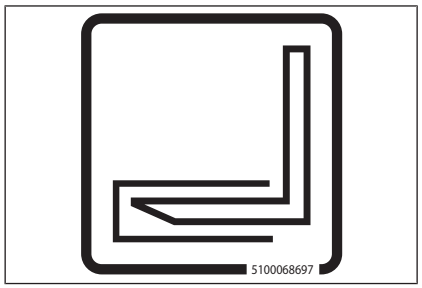
4.4 Information Label Meanings



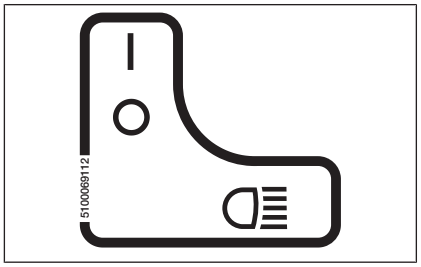
Electrical ground



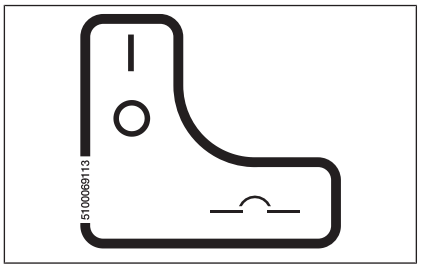
Tie-down point



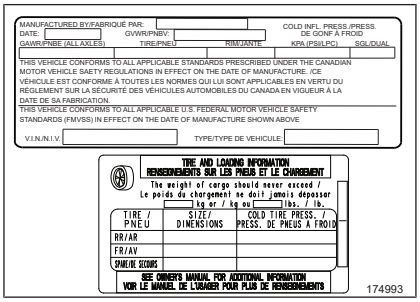
Fork lift pocket



Light breaker/switch

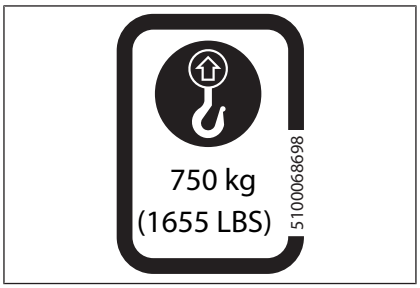


Main breaker/switch



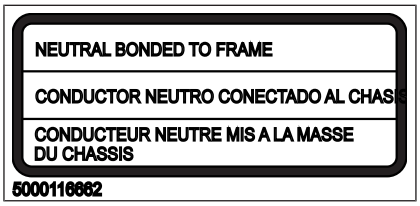
Certification label (VIN)

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.



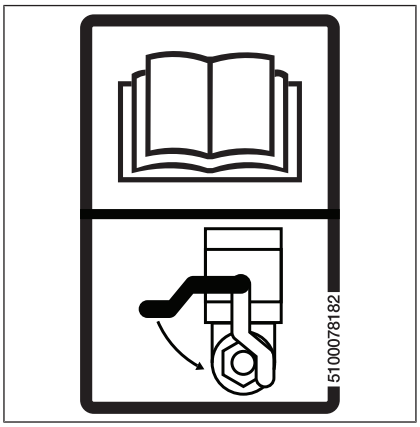
Lifting point

750 kg (1,655 lb)

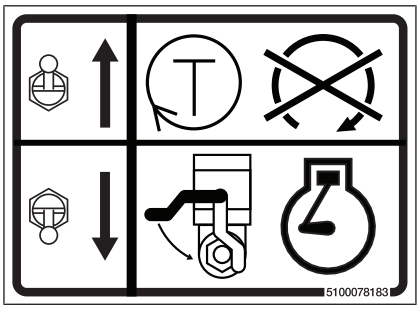


Neutral bonded to frame

There is a permanent conductor between the generator (stator winding) and the frame.



Read the operator's manual. To reset the system, turn the positive air shutoff lever 90° counterclockwise until it locks into position. For further information, see Positive Air Shutoff on page 84.



Flip the switch up to test the positive air shutoff system.

Flip the switch to the run position (down). To reset the system, turn the positive air shutoff lever 90° counterclockwise until it locks into position. For further information, see Checking and Testing the Positive Air Shutoff System (if equipped) on page 70.

5 Transportation

5.1 Machine Positions

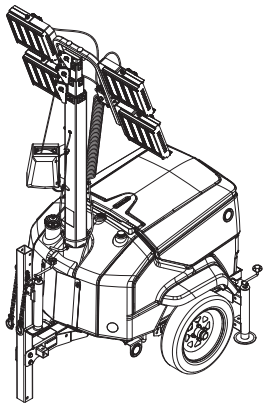


Fig. 5: Shipping/storage position

The following machine positions are referred to in this manual.

Shipping/storage position

This position is intended mainly for the shipping process but can also be used for storage to save space.

- Tongue flipped up
- Tongue jack parallel with flipped tongue
- Lights facing toward the trailer tongue
- Outriggers retracted
- Jacks stowed in higher mounting position

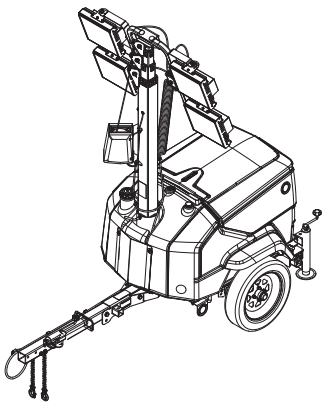


Fig. 6: Travel/horizontal position

Travel/horizontal position

This position is used to tow the machine.

- Tongue flipped down
- Tongue jack parallel with flipped tongue
- Outriggers retracted
- Jacks stowed in higher mounting position
- Lights facing toward the trailer tongue

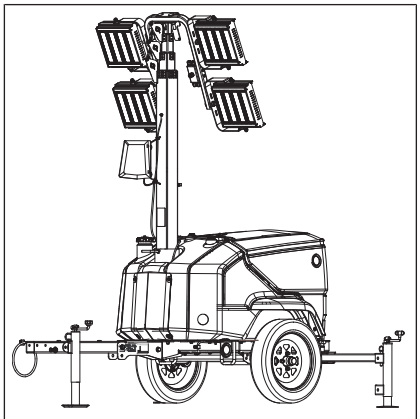


Fig. 7: Operating position

Operating position

This position is used when operating the machine.

- Tongue flipped down
- Tongue jack perpendicular to tongue and lowered
- Outriggers extended
- Jacks in lower mounting position

5.2 Lowering and Raising the Trailer Tongue

⚠ WARNING

Crushing hazard

If the pin is removed from the trailer tongue, the machine will tip forward onto the pivot point.

► Do not remove the pin before installing the rear outrigger jack to the front mount on the skid.

⚠ CAUTION

Pinching and crushing hazard

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

Overview

The trailer tongue folds to save space, mainly during the shipping process. Perform the following procedure to lower the tongue. Reverse the procedure to raise the tongue for shipping or storage purposes.

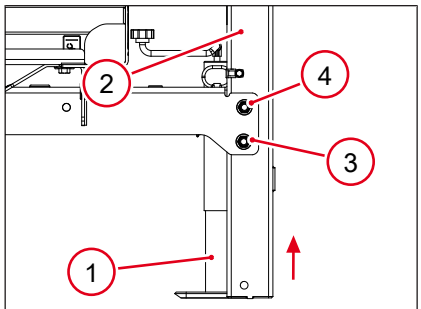


Fig. 8: Trailer tongue in raised position

Procedure

1. Position the rear outrigger jack **(1)** on the skid mount and lower the jack to move the foldable portion **(2)** of the trailer tongue about 5.08 cm (2 in.) off the ground.
2. While supporting the foldable portion of the trailer tongue, remove the lower pin **(3)**.
3. Loosen, but do not remove, the top nut **(4)** and bolt securing the trailer tongue.

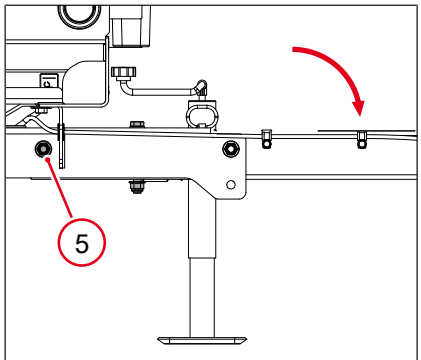


Fig. 9: Trailer tongue in lowered position

4. Carefully rotate the foldable portion of the trailer tongue down.
5. Install the pin removed earlier in the position shown **(5)**.
6. Tighten all hardware to a range of 160–180 Nm (118–132 lb-ft).

5.3 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.

5.4 Preparing the Machine for Transport on a Truck or Trailer

⚠ 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.

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, tongue, and jack are in the shipping position. For further information, see Machine Positions on page 28.

Loading and transporting equipment

- The transport vehicle or trailer can support the weight of the machine.
- The lifting equipment, such as chains, hooks, or straps, 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.

5.5 Lifting the Machine

Before lifting the machine, see Safety Guidelines for Lifting and Transporting on page 30 and see Preparing the Machine for Transport on a Truck or Trailer on page 30.

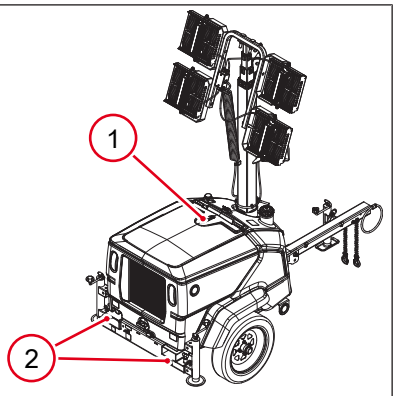


Fig. 10: Lifting eye

Procedure

1. Attach the lifting equipment to the lifting eye **(1)** on the machine using hooks, shackles, and chains or insert forks into the fork pockets **(2)**.
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.
5. 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.
6. If loading onto a transport vehicle, secure the machine to the transport deck using the specified front **(3)** and rear **(4)** tie-down points on the machine with certified straps, chains, or cables.

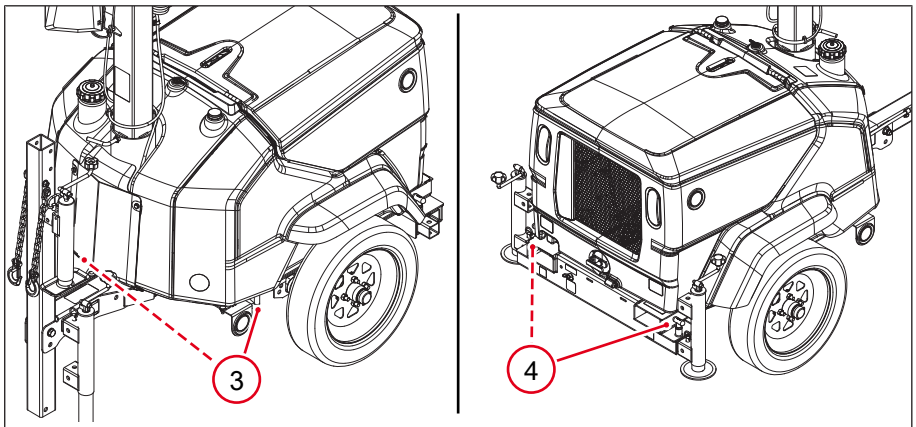


Fig. 11: Tie-down points

5.6 Safety Guidelines for Towing

⚠ 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. 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.
- 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.

5.7 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 .

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 .

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

5.8 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 winch and light fixtures are in the travel position, facing toward the trailer tongue.

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, --- MISSING LINK ---.
- The hitch of the towing vehicle and coupler of the trailer are compatible.
- The coupler and the hitch are in good condition.
- All fasteners on the coupler and chains are tight.
- The coupler has fresh grease applied to it.

Wheels

- All lug nuts are in place and are properly torqued.
- The trailer's tires have more 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 and in the travel position. For further information, see Machine Positions on page 28.
- Appropriate hazardous material placards are installed, if applicable, according to local regulations.

Trailer operation

- The trailer jack is in the travel (horizontal) position. For further information, see Machine Positions on page 28.
- 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.

5.9 Trailer

Background

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

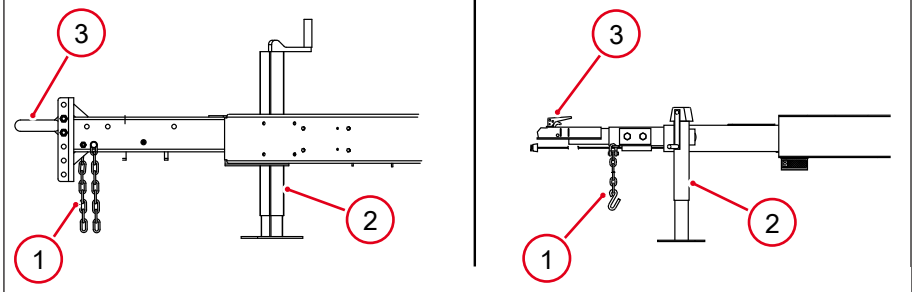


Fig. 12: Trailer towing components

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.

5.10 Towing the Machine

NOTICE

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

- ► Configure the machine into the travel position. For further information, see Machine Positions on page 28.
- ► When aiming the lights, be sure the locking pin of the mast rotation handle seats into a notch in the tower.

Procedure

1. Read and follow the towing safety guidelines. For further information, see Safety Guidelines for Towing on page 32.
2. Complete the shutdown procedures.
3. Complete the Before Towing Checklist. For further information, see Before Towing Checklist on page 32.
4. Configure the machine into the travel position. For further information, see Machine Positions on page 28.
5. Connect the machine to the towing vehicle and connect the lights.
6. Tow the machine as needed.

6 Commissioning

6.1 Preparing the Machine for First Use

1. Make sure all loose packaging materials have been removed from the machine.
2. 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, but not limited to, fuel, engine oil, and coolant.
6. Move the machine to its operating location.

6.2 Positioning the Machine

⚠ WARNING

Fire hazard

Do not move the machine while it is running.

► Shut down the machine before moving or repositioning it.

⚠ 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.

⚠ 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.

⚠ WARNING

Explosion and fire hazard

Risk of severe injury or death.

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

Before positioning the machine, see Safety Guidelines for Using Internal Combustion Engines on page 15.

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.
- For machines with trailers, chocks **(1)** are installed under the wheels.
- 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.

6.3 Aiming the Light Fixtures

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. To rotate the lights, see Manually Rotating the Light Bar on page 37.

Requirements

- Machine shut down
- Tower lowered
- Lights cool to the touch

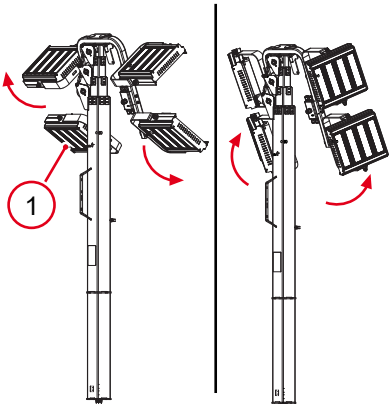


Fig. 13: Aiming the lights

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 a light fixture and aim it to the left or right.
2. Repeat step 1 for each remaining light fixture, if desired.

6.4 Manually Rotating the Light Bar

Overview

The operator can rotate the light bar 360° while the tower is raised or lowered. Do not rotate the tower past 360° to avoid exceeding the length of the wire.

Procedure

1. Loosen the rotation locking handle **(1)**.

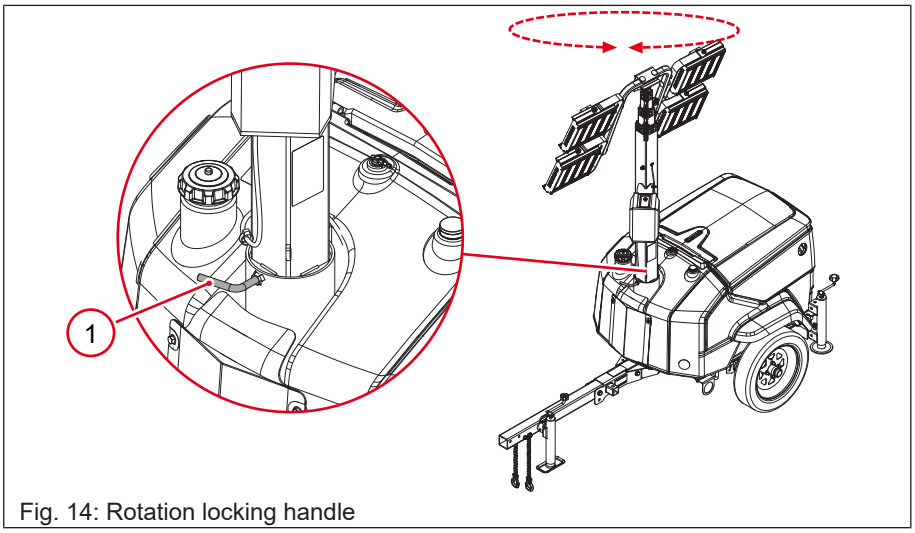


Fig. 14: Rotation locking handle

2. Rotate the tower to the desired position.
3. Tighten the rotation locking handle.

6.5 Leveling the Trailer

⚠ 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

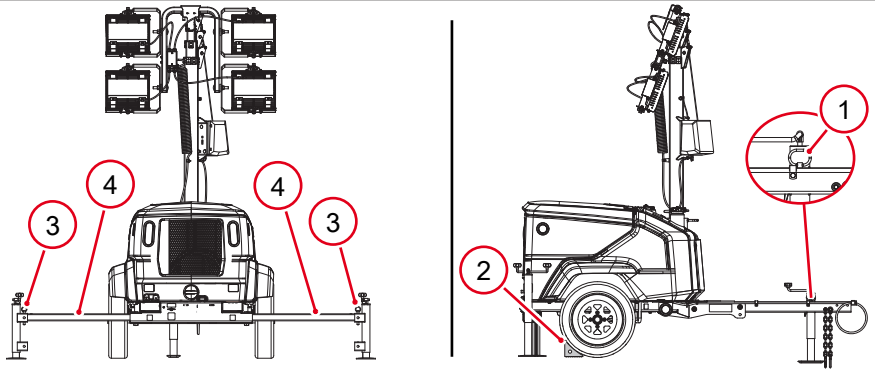


Fig. 15: Outriggers in operating position

Configure the outriggers, tongue, and jack into the operating position. For further information, see Machine Positions on page 28.

From the travel position:

1. Pull the pin **(1)** on the tongue jack and rotate the tongue jack down 90° as shown. Insert the pin once the jack is in position.
2. Block or chock **(2)** the trailer wheels.
3. Move the outrigger jacks to their lower mount position.
4. Pull the outrigger pins **(3)** to release the outriggers. Pull both outriggers **(4)** out until you feel the pin snap into place.
5. Lower the jacks until they rest firmly on the ground. Adjust the jacks until the trailer is level.

7 Operation

7.1 Grounding the Machine

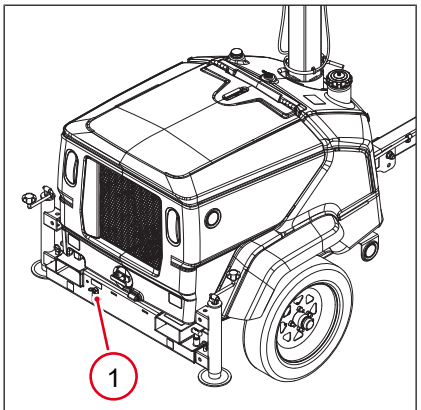


Fig. 16: Grounding connection

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

⚠ 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 draining the fuel tank.

► Clean up spilled fuel immediately.

► Do not smoke while refueling.

⚠ 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

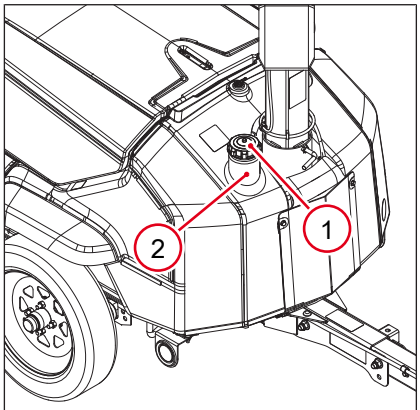


Fig. 17: Fuel cap location

1. Remove the fuel cap **(1)**.
2. Fill the fuel tank to the bottom of the fuel tank neck **(2)** to allow for expansion space between the fuel level and the top of the tank.
3. Install the fuel cap.

7.3 Control Panels and Receptacles

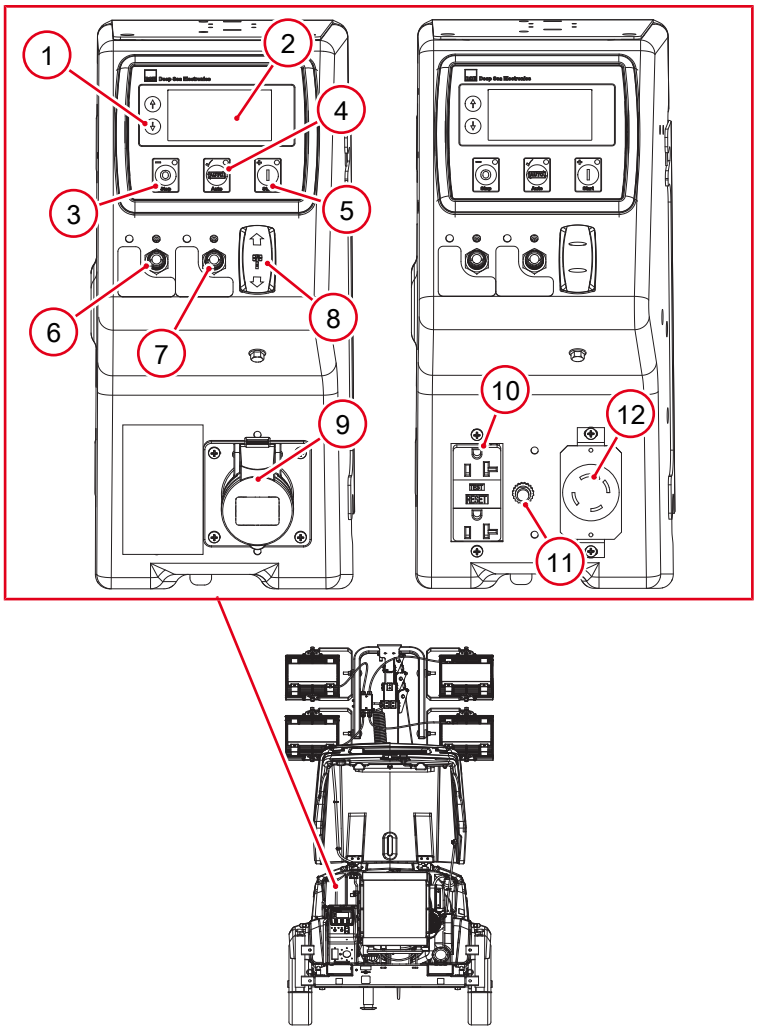


Fig. 18: Control panel and receptacles

Ref	Description	Ref	Description
1	Menu navigation buttons (up/down)	2	Controller display
3	Stop/reset button	4	Auto start button
5	Start button	6	Main circuit breaker or light circuit breaker if receptacle is not included
7	Light circuit breaker on machines equipped with a receptacle	8	Tower winch rocker switch (optional)
9	250V 20A 2P/3W receptacle (optional)	10	120V 20A GFCI duplex receptacle (optional)
11	120V receptacle circuit breaker (optional)	12	120/240V 30A twist receptacle (optional)

7.4 Before Starting

⚠ 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. 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
  - Fluid leaks
  - Restricted air flow at the engine exhaust
  - Problems with the trailer (if equipped, see Maintaining the Trailer on page 61)
- Carefully inspect the winch cable for any kinks, frays, or abnormal stiffness, and replace it, if damaged.
- 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 after starting the machine.

Check internal components

Open the access hood on the rear of the machine. Check for:

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

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.

7.5 Starting the Machine

⚠ WARNING

Electric shock hazard

Do not start the generator if the insulation on the tower electrical cable is cut or worn through.

Note: If fuel tank was drained or run dry it may be necessary to bleed fuel lines. Refer to the engine operator's manual.

Prerequisites

- Circuit breakers in their OFF positions

Procedure

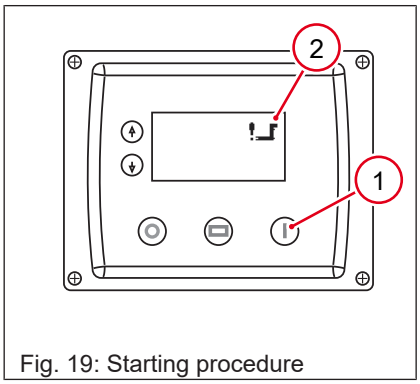


Fig. 19: Starting procedure

1. Wake the controller from sleep mode by pressing any button.
2. Press the Start button **(1)**.
3. Once the controller is active, press the Start button again within 30 seconds to start the machine.
   - ⇨ If the engine does not start, the starting sequence is terminated, and the fail to start shutdown indicator **(2)** illuminates. Wait 15 seconds before attempting to start again.
   - ⇨ When the engine starts, the starter motor is disengaged. **Note:** After the starter motor has disengaged, the safety on timer is activated. This timer is pre-set for a 10 second delay and allows oil pressure, high engine temperature, underspeed, and charge failure to stabilize without triggering the fault.

7.6 Operating the Lights

1. Turn on the main circuit breaker.
2. Turn on the lights circuit breaker.

Note: If the machine is not equipped with any convenience receptacles, the main circuit breaker is also the lights circuit breaker.

7.7 Shutting Down the Machine

NOTICE

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

► Do not start the engine under load.

NOTICE

Shutting down the engine before turning off the lights may lead to premature wear or failure of generator components.

1. Disconnect all loads from the machine.
2. Turn all breakers off.
3. Press the Stop button to stop the machine.

7.8 Raising and Lowering the Tower

⚠ 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.

⚠ WARNING

Electrocution hazard

► Do not position the light tower under electrical power lines.

⚠ 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.

⚠ 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 right side of the winch while raising or lowering the tower.

NOTICE

Allowing loose cable to wind onto drum may shorten the life of the cable and cause serious winch damage. Make sure that the first layer of cable on the drum is wound neatly and tightly. Excess cable length makes loose, criss-crossing wraps more likely.

Background

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

The manual winch is an automatic brake-type winch that engages the 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°. For further information, see Manually Rotating the Light Bar on page 37.

Requirements

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

Raising the tower using the manual winch

1. Check the operation of the telescoping winch by rotating its handle 1/4 turn clockwise **(1)** (when viewed from the right side of the winch, “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.

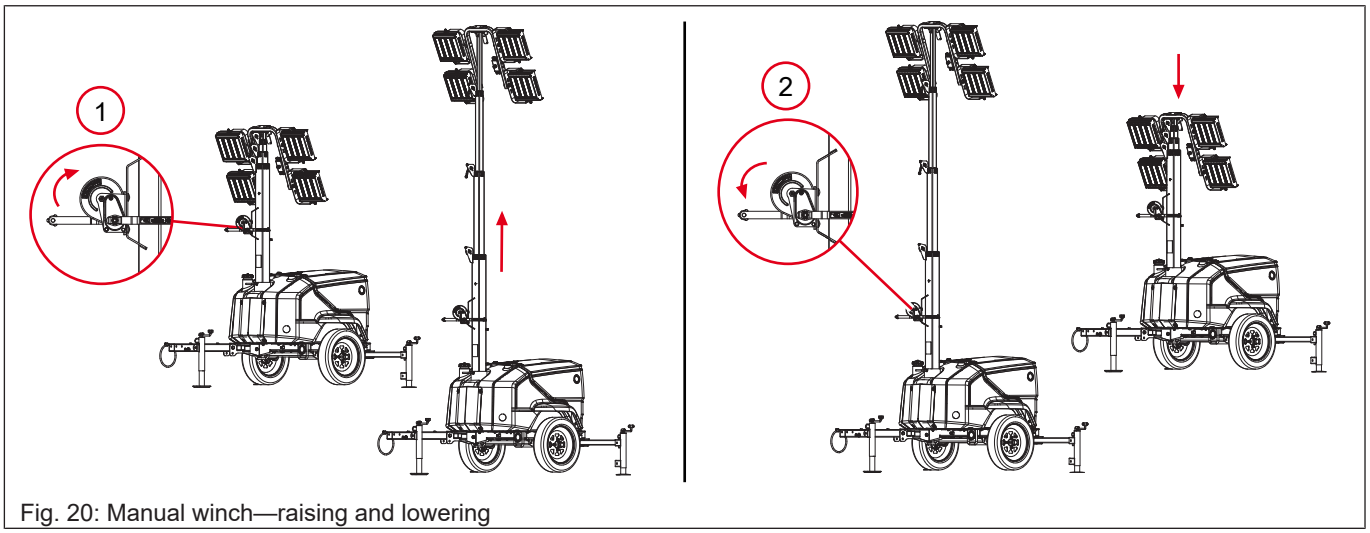


Fig. 20: Manual winch—raising and lowering

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 counterclockwise **(2)** (when viewed from the right side of the winch, “cable out” direction) until the tower is lowered completely.

Raising the tower using the power winch

1. If the machine is off, press the red Stop button to wake the Deep Sea controller.
2. Check the operation of the telescoping winch **(3)**. Press and hold the telescope rocker switch **(4)** on the control panel in the UP position.

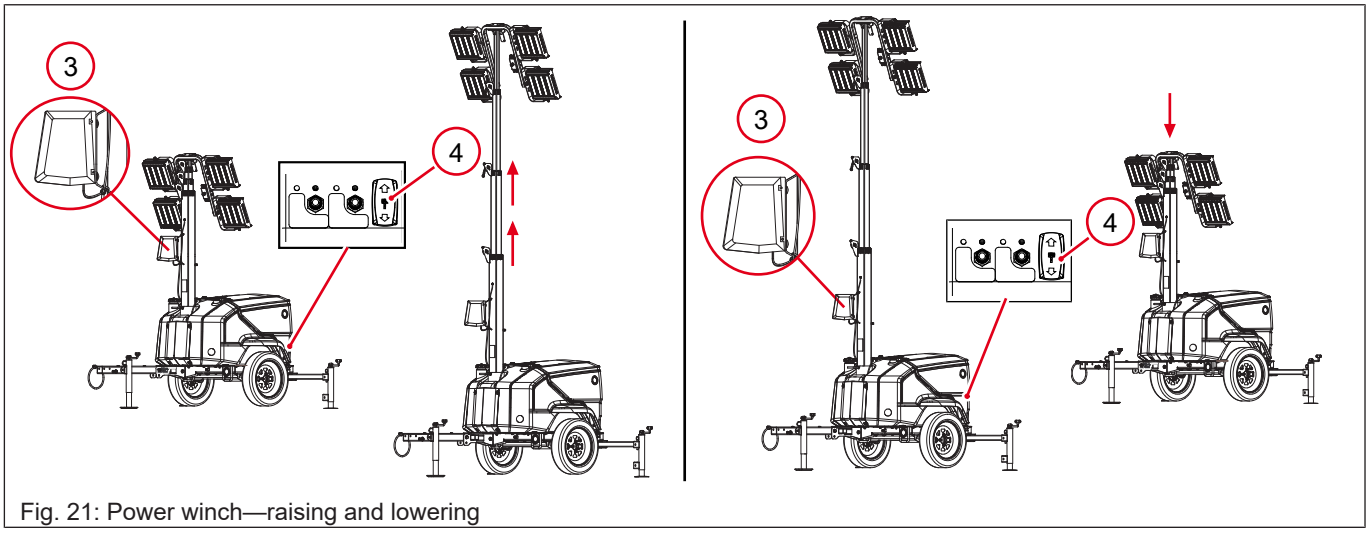


Fig. 21: Power winch—raising and lowering

3. Release the switch when the tower is at the desired height. Do not overcrank the winch when the tower is fully extended.

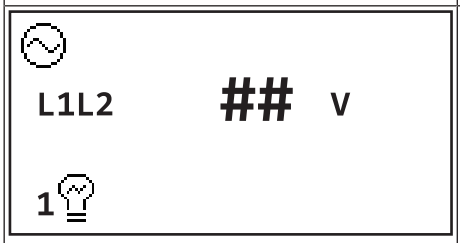
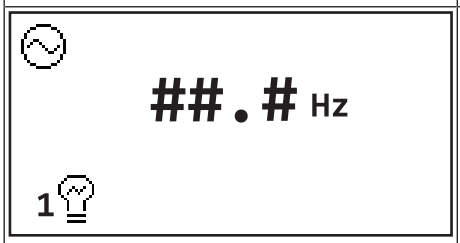
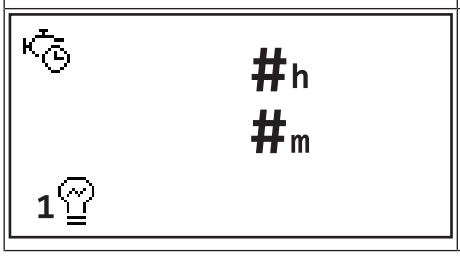
Lowering the tower using the power winch

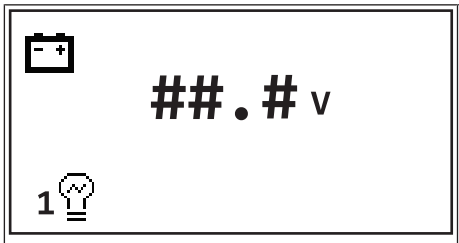
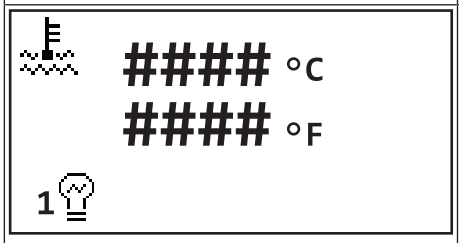
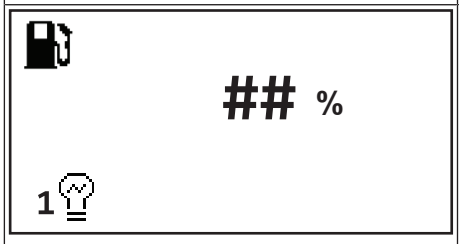
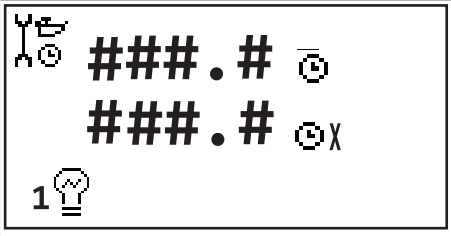
Hold the rocker switch in the DOWN position (“cable out” direction) until the tower is completely lowered.

Note: To lower the tower in the event of a power failure, remove the plug in the side of the winch housing and install the manual crank supplied with the machine. Rotate the handle until the tower is fully lowered.

7.9 Machine Monitoring

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

	Displays the AC output voltage being produced by the generator.
	Displays the AC output voltage being produced by the generator.
	Displays output frequency.
	Displays the engine rpm.
	Displays the metered usage of the machine in hours (h) and minutes (m).

	Displays the available voltage of the battery.
	Displays the engine coolant temperature.
	Displays the fuel level (machines with Morey telematics units only).
	Displays the time remaining until maintenance (oil change) is required and the maintenance interval.

7.10 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:

Icon	Description
	Over-voltage
	Under-voltage

Icon	Description
	Overspeed
	Underspeed
	Over-voltage on 12V battery
	Under-voltage on 12V battery
	Charge alternator low
	Intake filter restricted
	Oil maintenance
	Low fuel (machines with Morey telematics units only)

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:

Icon	Description
	High coolant temperature
	Low oil pressure
	Overspeed
	Underspeed
	Overvoltage
	Charge alternator fail
	Emergency stop (if equipped)

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.

7.11 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.

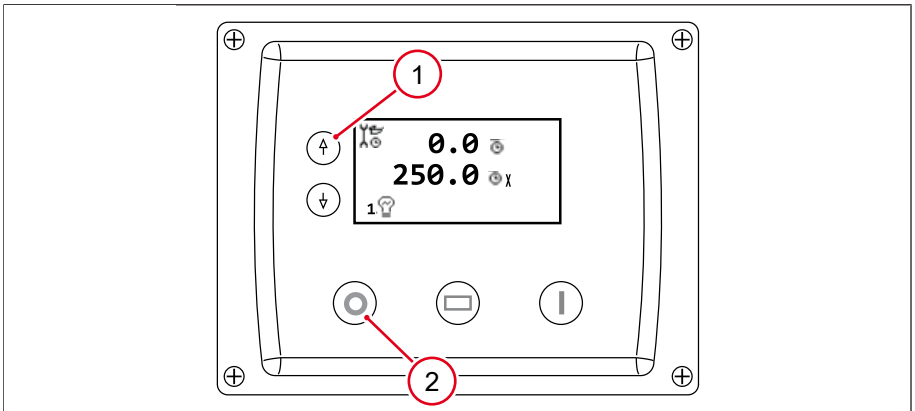


Fig. 22: Maintenance timer screen

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

7.12 Adjusting the Screen Contrast

1. Enter the editor mode by pressing and holding the Stop **(1)** and Auto **(2)** buttons simultaneously.

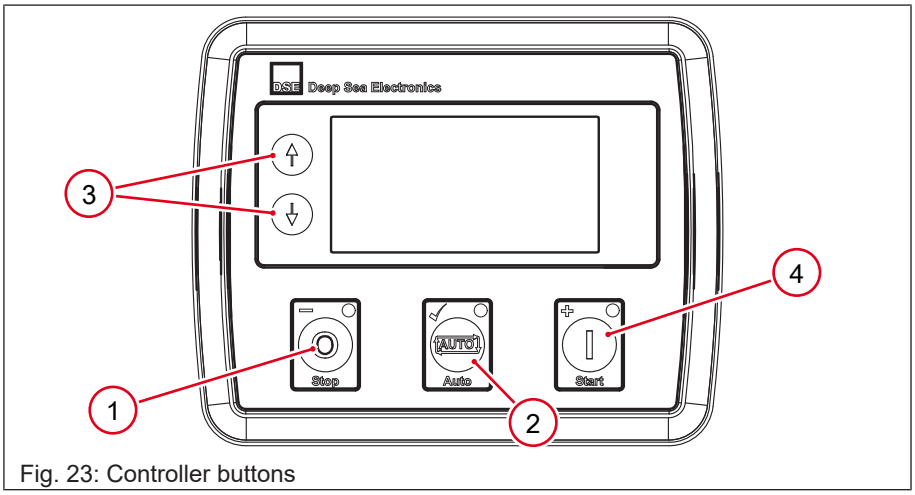


Fig. 23: Controller buttons

2. Press the up or down arrows **(3)** and then the Auto button to select the configuration editor (wrench icon). Refer to the following table.
   Note: If a PIN code is required, contact Wacker Neuson for the PIN code. For security purposes, the PIN code entry automatically clears when the editor is exited (manually or automatically).
3. Press the down button.
4. Press the Auto button to select 101.
5. Press the Auto button again to edit the value.
6. Press the Stop (-) or Start (+) **(4)** buttons to adjust the value.
7. Save and exit the editor by pressing and holding the Auto button. To exit without saving, press and hold Stop.

Configuration Editor Parameters for Contrast		
Unit	**Description**	**Parameter**
101	Adjust screen contrast	0 (%)

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

⚠ WARNING

Personal injury hazard

Machine can automatically start which can cause serious injury.

► Make sure the machine is positioned outside in an area free of hazards. For further information, see Positioning the Machine on page 35.

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

A scheduled run will begin only if the controller is in auto mode (LED **(1)** is lit) with no shutdown 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.

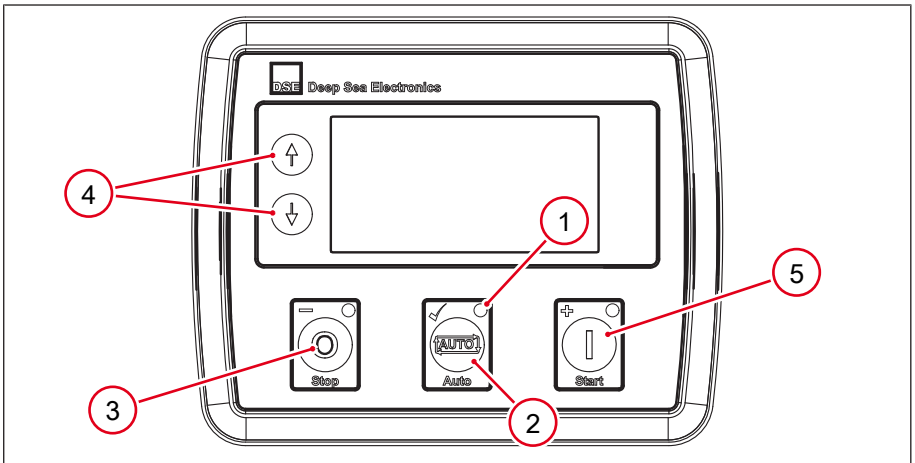


Fig. 24: Controller buttons

Auto start by photo cell

Note: Auto start by photo cell is on by default.

1. Press the Auto button **(2)** once. The indicator LED above the Auto button illuminates.
2. Place the main breaker and light breaker(s) in the UP position (closed).

The machine is now in auto mode.

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

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

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

To configure auto start by photo cell:

1. Enter the editor mode by pressing and holding the Stop **(3)** and Auto buttons simultaneously.
2. Press the up or down arrows **(4)** and then the Auto button to select the configuration editor (wrench icon). Refer to the following table.
   Note: If a PIN code is required, contact Wacker Neuson for the PIN code. For security purposes, the PIN code entry automatically clears when the editor is exited (manually or automatically).
   - ⇨ Press the up and down arrows to cycle through the editor in increments of 100.
   - ⇨ Press the Stop (-) or Start (+) buttons to cycle through the editor in increments of 1.
   - ⇨ When viewing the parameter to be edited, press the Auto button. The value flashes.
   - ⇨ Press the Stop (-) or Start (+) buttons to adjust the value to the required setting.
3. Save and exit the editor by pressing and holding the Auto button. To exit without saving, press and hold Stop.

Configuration Editor Parameters for Auto Start by Photo Cell		
Unit	**Description**	**Parameter**
328	Enable photo cell	(0) OFF, **(20) ON** (20 enables photo cell)

Auto start by Morey telematics

Note: Auto start by telematics is on by default.

1. Disable auto start by photo cell. See *Auto start by photo cell* for instructions.
2. Press the Auto button once. The indicator LED above the Auto button illuminates.
3. Place the main breaker and light breaker(s) in the UP position (closed).

The machine is now in auto mode.

Auto mode remains active until the machine is taken off auto mode by pressing the red Stop button.

When the machine receives an ON command via telematics, the machine starts and turns on the lights automatically. When the machine receives an OFF command via telematics, the lights turn off, and the machine shuts down.

To configure auto start by telematics:

1. Enter the editor mode by pressing and holding the Stop and Auto buttons simultaneously.
2. Press the up or down arrows and then the Auto button to select the configuration editor (wrench icon). Refer to the following table.
   Note: If a PIN code is required, contact Wacker Neuson for the PIN code. For security purposes, the PIN code entry automatically clears when the editor is exited (manually or automatically).
   ⇨ Press the up and down arrows to cycle through the editor in increments of 100.
   ⇨ Press the Stop (-) or Start (+) buttons to cycle through the editor in increments of 1.
   ⇨ When viewing the parameter to be edited, press the Auto button. The value flashes.
   ⇨ Press the Stop (-) or Start (+) buttons to adjust the value to the required setting.
3. Save and exit the editor by pressing and holding the Auto button. To exit without saving, press and hold Stop.

Configuration Editor Parameters for Auto Start by Telematics		
Unit	**Description**	**Parameter**
333	Enable telematics start/stop	(0) OFF, **(22) ON** (22 enables telematics start/stop)

Auto start using the scheduler

Notes

- Auto start by photo cell should be off before using the scheduler or telematics (if equipped). To reenable auto start by photo cell, first disable the scheduler.
- For the scheduler to work, the date and time must be set correctly first. Refer to the following table.

To set the date and time:

1. Enter the editor mode. Press and hold the Stop and Auto buttons simultaneously.
2. Press the up or down arrows and then the Auto button to select the operator editor (human icon). Refer to the following table.
3. Save and exit the editor by pressing and holding the Auto button. To exit without saving, press and hold Stop.

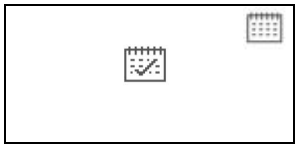
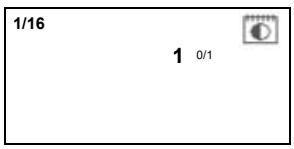
Configuration Editor Parameters for Time, Date, and Location Settings		
Unit	**Description**	**Parameter**
1001	Time of day	(0) OFF, **(20) ON** (20 enables photo cell)
1002	Day of month	1–31 preloaded for CST zone

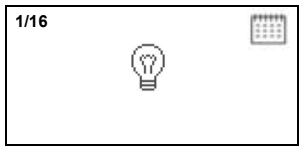
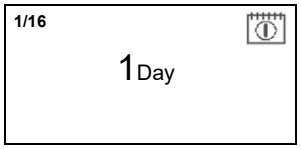
Configuration Editor Parameters for Time, Date, and Location Settings		
Unit	**Description**	**Parameter**
1003	Month of year	1–12 preloaded for CST zone
1004	Year	2020 (2000–2029) preloaded for CST zone
1005	Enable daylight savings	(1) ON, (0) OFF
1006	Daylight saving offset	0:00 Hours:Minutes (+0:00 to +2:00)
1007	Latitude (**+**N or **-**S of equator)	**+43.18°** Decimal Degrees, preloaded for CST zone
1008	Longitude (**+**E or **-**W of Greenwich, England)	**-88.09°** Decimal Degrees, preloaded for CST zone
1009	Time zone offset (from Greenwich, England)	**-6:00** Hrs (+E or -W of Greenwich), preloaded for 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)

To configure auto start by schedule:

1. To access the scheduler editor, navigate to the scheduler page(s) using the arrows and press and hold the Stop button.
2. Use the Stop (-) or Start (+) **(5)** buttons or arrow buttons to scroll through the scheduler editor.
3. To edit the parameters, press the Auto button.
4. Use the Stop (-) or Start (+) buttons to change the value. The displayed value or icon flashes when in edit mode.
5. Press the Auto button to set the new value.
6. Press and hold the Auto button to save the changes and exit the scheduler editor.

Use the Deep Sea computer software for more comprehensive module configurations.

Screen	Parameter	Description
	Scheduler enable	Select whether the scheduler is enabled or disabled
	Schedule period	Select a schedule period of weekly, monthly, or daily.
	Auto mode	Select either 0 or 1, where 0 uses the configured time, and 1 uses the sunrise and sunset calculation.

Screen	Parameter	Description
	Run mode	Scroll through the light bulb icons to select the filled light bulb for on load (load switch closed).
	Start time	Set the time at which the schedule should start.
	Start day	Set the day of the week on which the schedule should start. This screen only appears if you set the schedule to run weekly or monthly. The days correspond with numbers, as follows: 1=Monday, 2=Tuesday, 3=Wednesday, 4=Thursday, 5=Friday, 6=Saturday, 7=Sunday
	Start week	Select the week of the month on which the schedule should start: 1, 2, 3, or 4. This screen only appears if you set the schedule to run monthly.
	Duration	Set the duration, in hours, of the schedule.

7.14 Emergency Shutdown Procedure

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

7.15 Using the Convenience Receptacles—50 Hz and 60 Hz (if equipped)

Description

This machine can be equipped with one or more optional convenience receptacles (a 120V GFCI receptacle **(1)**, a 120V/240V 30A twist lock **(2)**, or a 50Hz CEE outlet **(3)**) 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 **(4)** is set to the ON position.

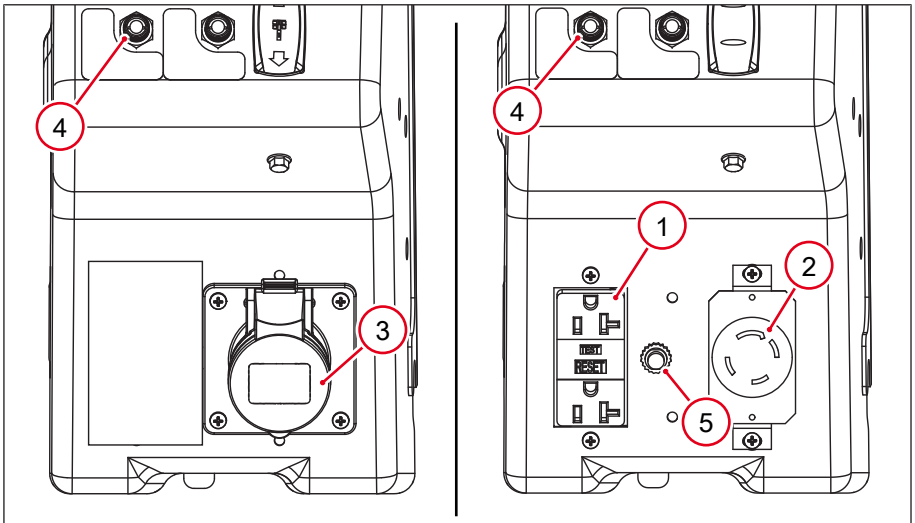


Fig. 25: Convenience receptacles and breakers

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.
- Use only tough rubber-sheathed flexible cable or equivalent.
- 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)
- The 120V GFCI receptacle is protected by a 20A circuit breaker **(5)**.

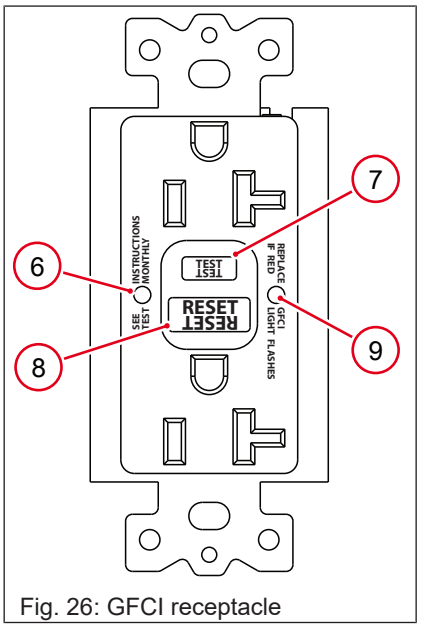


Fig. 26: GFCI receptacle

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 **(6)** illuminates on the GFCI receptacle.
2. Push the test button **(7)** in.
   ⇨ The reset button **(8)** 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 **(9)** 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:

- 1% every 100 m (328 ft) altitude
- 2% every 5°C (10°F) above 25°C (77°F)

7.17 Engine—Jump-starting

⚠ 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.

⚠ WARNING

Health hazard

Battery fluid is poisonous and corrosive.

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

⚠ 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 10 seconds can cause starter damage.

► If the engine fails to start, release the Start button and wait 15 seconds before operating the starter again. If the engine still fails to start, see General Troubleshooting on page 80.

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 80.

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 all electrical loads and turn off all breakers.
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.
5. 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 from the machine with the previously dead battery, and then disconnect the negative cable clamp from 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 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

⚠ 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 further information	
Daily	Operating personnel	[► 62]	Checking and Filling the Engine Oil
		[► 63]	Checking the Radiator
		[► 64]	Checking and Filling Engine Coolant
		[► 67]	Checking and Replacing the Air Filter
First 50 hours	Operating personnel	[► 73]	Changing the Engine Oil and Filter
10 hours	Operating personnel	[► 42]	Before Starting
		[► 61]	Maintaining the Trailer
		[► 65]	Checking and Draining the Containment System (if equipped)
125 hours	Operating personnel	[► 67]	Checking and Replacing the Air Filter
200 hours	Operating personnel	[► 69]	Checking the Rubber Hoses
		[► 70]	Checking and Testing the Positive Air Shutoff System (if equipped)
		[► 71]	Checking and Replacing the Alternator Belt
		[► 74]	Checking and Replacing the Air Intake Hose (if equipped)
250 hours	Operating personnel	[► 72]	Maintaining the Battery
500 hours	Operating personnel	[► 71]	Checking and Replacing the Alternator Belt
750 hours	Operating personnel	[► 67]	Checking and Replacing the Air Filter
1000 hours	Operating personnel	[► 68]	Replacing the Fuel Filter
		[► 73]	Changing the Engine Oil and Filter
		[► 74]	Checking and Replacing the Air Intake Hose (if equipped)
		[► 75]	Replacing the Engine Coolant
		[► 76]	Replacing Radiator Hoses
As needed	Operating personnel	[► 67]	Cleaning the Machine

8.3 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.

8.4 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.

8.5 Maintaining the Trailer

When

Daily before towing

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 are tight.
- Replace any missing lug nuts immediately.

Axle hubs

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

Brakes

- Check operation of brakes before each trip.
- Check the functionality of the breakaway switch if the trailer is equipped with electric brakes.

Safety chains

- Inspect the safety chains for any damage.

Lights

- Check the functionality of all lights.

8.6 Checking and Filling the Engine Oil

⚠ 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.

NOTICE

Engine damage can occur if the oil level is too high or if the incorrect oil is used.

► Oil must be removed from the engine if the oil level is above the max line.

► Use only the recommended oil.

NOTICE

Prevent dirt and debris from contaminating the engine oil. Carefully clean the oil cap, dipstick, and the surrounding area before removing the cap.

Do not mix different types of engine oil. This can adversely affect the lubricating properties of the engine oil.

Environment

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

When

Every 10 hours or daily

Requirements

- Machine parked on a level surface
- Machine shut down for at least 2 minutes
- Clean paper towel or rag

Overview

The oil dipstick is located on the lower left side of the engine.

Procedure

1. Remove the oil dipstick. Being careful not to drip any oil, wipe the dipstick clean.
2. Insert the dipstick into its tube, and make sure it is fully seated.
3. Remove the dipstick, and make sure the level is between the minimum **(1)** and maximum **(2)** markings.
   - ⇨ If the level is below the minimum marking, add about 100 mL (3.5 oz.) of oil and recheck the level. Continue this procedure until the level is at or near the maximum marking.
   - ⇨ If the level is above the maximum marking, drain some of the oil. For further information on draining oil, see Changing the Engine Oil and Filter on page 73.

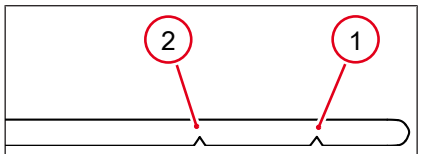


Fig. 27: Minimum and maximum oil levels

8.7 Checking the Radiator

⚠ CAUTION

Personal injury hazard

Using compressed air or high-pressure water may cause eye injuries due to flying debris, dust, and steam.

► Wear eye protection when using compressed air or high-pressure water.

NOTICE

Cleaning the radiator improperly will damage the radiator fins.

► Do not use high-pressure water or compressed air at a pressure greater than 28 psi (193 kPa).

► Do not use a wire brush.

When

Every 10 hours or daily

Requirements

- Machine shut down and cool to the touch
- Compressed air
- Water hose

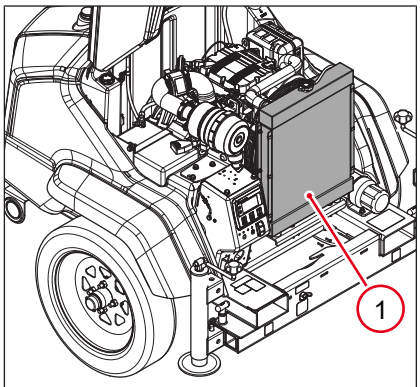


Fig. 28: Radiator

Overview

To access the radiator **(1)**, open the access hood. The radiator is located at the rear of the machine.

Procedure

1. Inspect the radiator for any buildup of debris.
2. Use compressed air to clean loose debris from the radiator.
3. Using a low pressure water stream, clean the radiator fins until they are free of dirt and debris.

8.8 Checking and Filling Engine Coolant

⚠ WARNING

Burn hazard

Engine coolant is hot and under pressure at operating temperature. It can cause severe personal injury.

- ► Check the engine coolant level only after the engine has been shut down and is cool.
- ► Do not add engine coolant directly to the radiator when hot.
- ► Check the coolant level at the reserve tank and add coolant as needed.
- ► Wear eye protection when handling the engine coolant.
- ► Tighten the radiator cap securely after checking the radiator. Steam can escape during engine operation if the cap is loose.

⚠ WARNING

Burn hazard

Engine coolant can contain alkali.

- ► Avoid engine coolant contact with skin and eyes.

NOTICE

Automotive-type coolants do not contain the correct coolant additives to protect heavy-duty diesel engines. They often contain a high concentration of silicates which can damage the engine and cooling system.

► Use an OAT or HOAT coolant mixed to the appropriate percentage with distilled water. For further information, Coolant.

NOTICE

Use long-life ethylene glycol coolant in this engine. Refer to the engine owner's manual for more information.

When

Every 10 hours or daily

Requirements

- Engine shut down and cool to the touch
- Fresh coolant

Procedure

1. Slowly rotate the radiator cap counterclockwise to release any remaining system pressure.
2. Unscrew and remove the radiator cap after the pressure is released.
3. Fill the radiator with fresh coolant until the pipes inside the radiator are covered by about 5 mm (0.25 in.).

8

8.9 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 10 hours or daily

Requirements

- Machine shut down with tower lowered
- Engine cool to the touch
- Machine on a level surface
- Plastic sheet and 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 (coolant or oil) which might otherwise contaminate the soil.

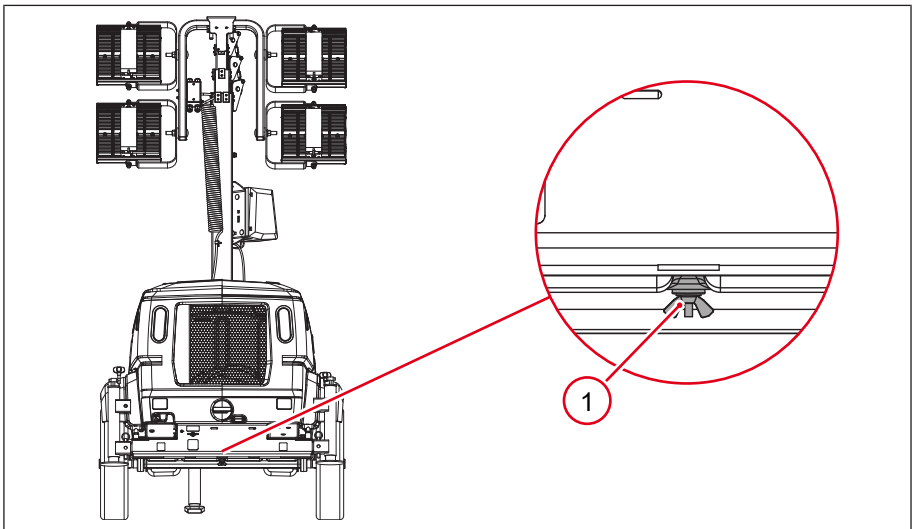


Fig. 29: Drain plug

Procedure

Note: Lowering the front jack or raising the rear jacks aid in draining the containment system.

1. Open the access hood on the rear of the machine.
2. Check the fluid level in the containment system.
3. If fluid has accumulated, drain the containment system.
   - ⇨ Place a plastic sheet and a suitable collection container beneath the machine.
   - ⇨ Remove the drain plug **(1)**. Drain accumulated fluid into the container.
   - ⇨ Install the drain plug.

8.10 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

As needed

Requirements

- Clean water supply
- Mild detergent
- Clean, dry cloths

Interior

- Remove rags, containers, or other debris from the cabinet. Nothing should be stored inside the machine.
- Remove leaves and twigs from the exhaust pipe.
- Wipe interior surfaces clean of oil, dust, and dirt.

Exterior

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

8

8.11 Checking and Replacing the Air Filter

⚠ WARNING

Fire hazard

Flammable liquids pose a fire hazard when cleaning.

► Do not use gasoline or other types of low flash point solvents to clean the air cleaner.

NOTICE

Compressed air can damage air filter elements.

► Do not use compressed air to clean the air filter elements.

When

- Every 10 hours—check the air filter
- Every 125 hours—clean the air filter

- Every 750 hours or when indicated on the controller—replace the air filter
- Replace the air filter more frequently if operating in especially dusty conditions

Requirements

- Machine shut down and cool to the touch
- Replacement air filter (when replacing the air filter)

Overview

The air filter is located on the top left side of the engine.

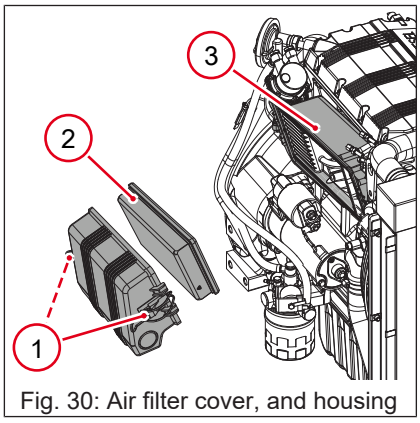


Fig. 30: Air filter cover, and housing

Procedure

1. Release the two fasteners **(1)** on the air filter cover.
2. Remove the air filter **(2)**.
3. Clean the inside of the air filter housing **(3)** with a damp cloth.
4. Tap the air filter lightly, dirty side down, on a hard surface to remove any loose dirt particles.
5. Install the air filter, making sure it is properly seated. If the air filter is overly dirty, install a new air filter.
6. Put the air filter cover back in place and secure the two fasteners.

8.12 Replacing the Fuel Filter

⚠ WARNING

Explosion and fire hazard when handling fuel!

Can cause serious burns or death.

- ► Bleed the fuel system only if the engine is cold.
- ► Wear protective equipment.
- ► Never perform work on the fuel system near open flames or sparks.
- ► Do not smoke.
- ► Keep the maintenance area clean.

Environment

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

When

- Every 1,000 hours
- Replace the fuel filter more frequently if operating in especially dusty conditions

Requirements

- Machine parked on a level surface
- Engine shut down and cool to the touch
- Container of sufficient volume to collect fluid
- Replacement fuel filter

Overview

The fuel filter is located on the bottom left side of the engine, under the starter.

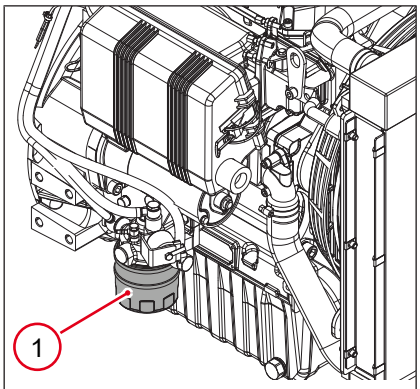


Fig. 31: Fuel filter

Procedure

1. Place a container under the fuel filter **(1)**.
2. Loosen and remove the fuel filter cartridge.
3. Lubricate the gasket on the new fuel filter cartridge.
4. Install the new fuel filter cartridge to the fuel filter adapter.

8.13 Checking the Rubber Hoses

When

Every 200 hours

Requirements

- Machine shut down and cool to the touch
- Protective gloves

Overview

The following procedure is intended to check the integrity of the coolant, fuel, and air hoses. Rubber hoses are made of materials that break down over time due to weather (heat and cold), inattentive care (oil spilled on hoses and not cleaned off), and simple general usage. Hoses must be checked periodically to prevent leakage and a possible machine breakdown.

Procedure

1. Starting with any of the hoses, exert a slight deflection on the hose near the hose clamps.
2. If the hose exhibits signs of cracks, tears, cuts, or leaks, or if they do not retain a certain degree of elasticity, replace the hose.
3. Repeat this procedure for all rubber hoses on the engine.

8.14 Checking and Testing the Positive Air Shutoff System (if equipped)

When

- Every 200 hours or monthly
- Before operating the machine in a situation that would necessitate use of the positive air shutoff system

Requirements

- Clean water supply
- Mild detergent
- Clean, dry cloths

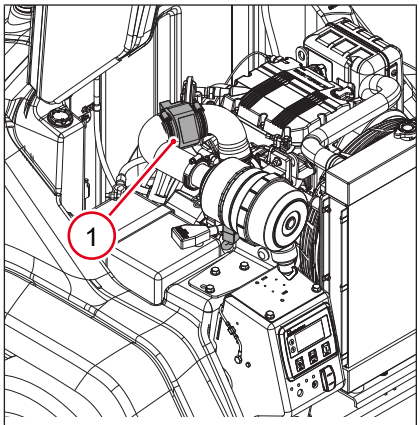


Fig. 32: Positive air shutoff system

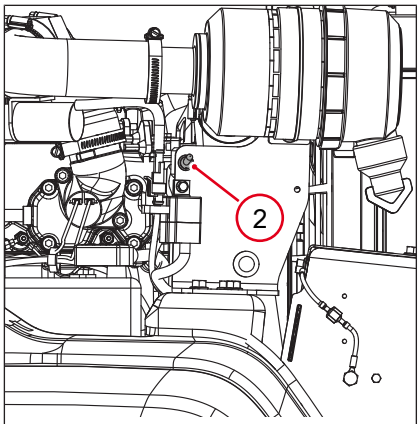


Fig. 33: Positive air shutoff test switch

Procedure

1. Perform a visual inspection of the positive air shutoff system **(1)**.
   - ⇨ Check the unit for debris and clean if necessary.
   - ⇨ Inspect hoses for signs of cracks, tears, cuts, or leaks. Repair or replace if necessary.
   - ⇨ Check clamps for tightness.
   - ⇨ Check wires and electrical components for cracks, cuts, and corrosion. Repair or replace if necessary.
2. Start the engine.
3. Flip the switch **(2)** on the air cleaner bracket to the test position (up).
   - ⇨ The valve trips and shuts down the engine.
   - ⇨ An overspeed shutdown icon Hz appears on the display.
4. Flip the switch to the run position (down).
5. Reset the positive air shutoff by turning the lever **(3)** 90° counterclockwise until it locks into position.
   - ⇨ **Note:** Push in the solenoid plunger to move the lever past.

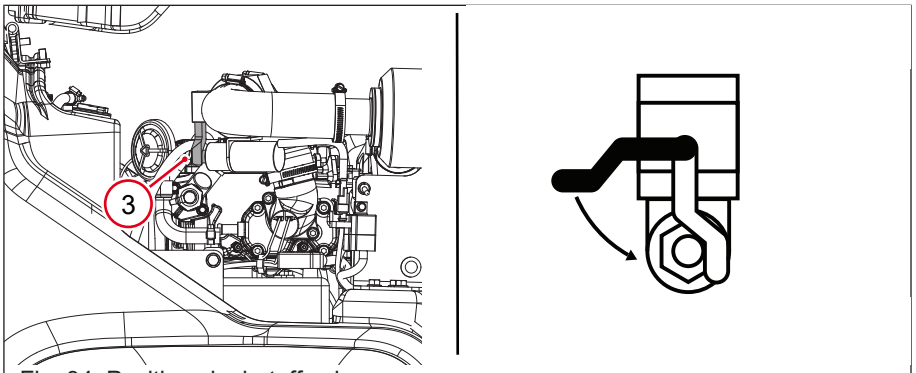


Fig. 34: Positive air shutoff valve

6. Press the Stop button on the display to clear the alarm.

Troubleshooting

If the valve does not activate, make sure the valve is clear of any debris around the solenoid plunger and lever. After cleaning debris, repeat the test. If the valve still does not activate, contact your Wacker Neuson dealer for assistance.

8.15 Checking and Replacing the Alternator Belt

When

Every 200 hours—check the belt condition and tension

Every 500 hours—replace the belt

Requirements

- Engine shut down and cool to the touch
- New alternator belt

Procedure

To check the belt condition and tension:

1. Examine the belt for the following:
   - ⇨ Cracking
   - ⇨ Splitting
   - ⇨ Fraying
   - ⇨ Glazing on the sides
   - ⇨ Separating layers when twisting the belt
2. Check the tension by applying an approximate 10 kg (22 lb) force to the point of the belt halfway in between the alternator pulley **(1)** and the crank pulley **(2)**.
   - ⇨ The belt movement must be less than 10 mm (0.4 in.).
3. If necessary, adjust the belt tension by loosening the fastening bolts **(3)**.
4. Pull the alternator **(4)** outward to put more tension on the belt.
5. Tighten the bottom fastening bolt to 45 Nm (33 lb-ft).
6. Tighten the upper fastening bolt to 25 Nm (18 lb-ft).

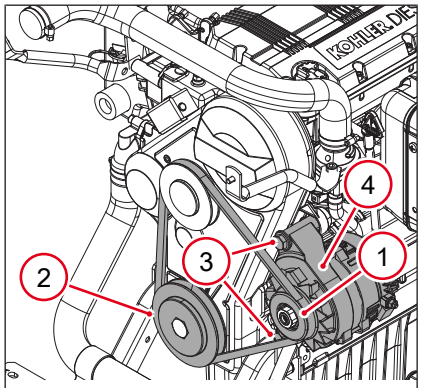


Fig. 35: Belt, alternator, and bolts

8

8.16 Maintaining the Battery

⚠ 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.
- 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:

1. 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.

8.17 Changing the Engine Oil and Filter

⚠ 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.

NOTICE

Engine damage can occur if the oil level is too high or if the incorrect oil is used.

► Oil must be removed from the engine if the oil level is above the max line.

► Use only the recommended oil.

NOTICE

Prevent dirt and debris from contaminating the engine oil. Carefully clean the oil cap, dipstick, and the surrounding area before removing the cap.

Do not mix different types of engine oil. This can adversely affect the lubricating properties of the engine oil.

Environment

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

When

- After the first 50 hours
- Every 1,000 or 12 months, whichever comes first
- Change the engine oil and filter more frequently if not using ultra low sulfur diesel

Requirements

- Machine parked on a level surface
- Engine shut down but still warm
- Container(s) of sufficient volume to collect drained fluid
- Replacement oil filter
- New drain plug gasket
- Fresh oil

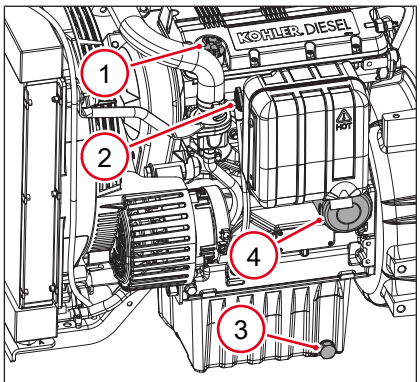


Fig. 36: Oil filler cap, dipstick, drain plug, and filter

Overview

The engine oil filler cap, dipstick, filter, and drain plug are all located on the left side of the engine from top to bottom.

Procedure

1. Loosen the oil filler cap, and pull out the oil dipstick slightly.
2. Place a container under the engine to collect the drained oil.
3. Remove the oil drain plug and gasket.
4. Make sure the container catching the engine oil will also catch oil from the oil filter. If not, place another container under the oil filter.
5. Remove the oil filter.
6. Using fresh engine oil, lubricate the gasket on the new oil filter.
7. Install the oil filter, and tighten it to 15 Nm (11 lb-ft).
8. Install the oil drain plug with a new gasket.
9. Tighten the oil drain plug to 35 Nm (26 lb-ft).
10. Add engine oil as follows:
    - ⇨ For 702 engines, add 1.6L (1.7 qt) of 5W40.
    - ⇨ For 1003 engines, add 2.4L (2.5 qt) of 5W40.
11. Remove the oil dipstick and wipe it clean.
12. Insert the oil dipstick and check the level. Add oil as necessary.

8.18 Checking and Replacing the Air Intake Hose (if equipped)

When

Every 200 hours—check the hose

Every 1,000 hours or 12 months, whichever comes first—replace the hose

Requirements

- Engine shut down and cool to the touch
- New air intake hose

Overview

Rubber hoses are made of materials that break down over time due to weather (heat and cold), inattentive care (oil spilled on hoses and not cleaned off), and simple general usage. Hoses must be checked periodically to prevent leakage and a possible machine breakdown.

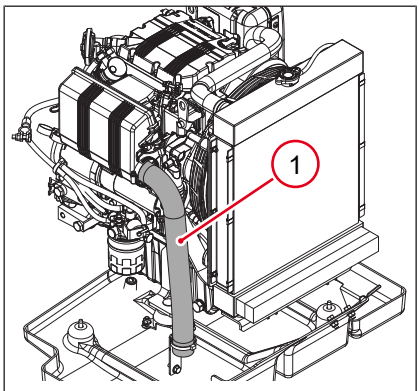


Fig. 37: Hose on engine with containment system option

Depending on the machine's options, it may have different air intake hoses. The first configuration consists of a single hose **(1)** running from the air filter housing down toward the bottom of the engine. The second configuration consists of a hose **(2)** similar to the first configuration, and it also has a hose running from the air filter housing to the air intake manifold.

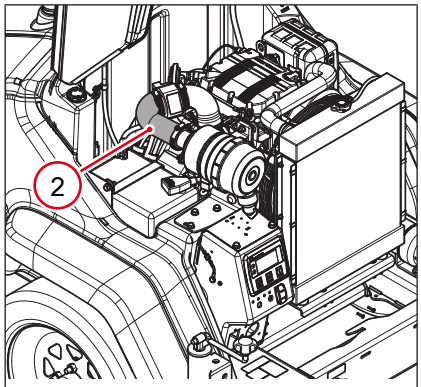


Fig. 38: Hose on engine with remote air cleaner option

Procedure

1. Exert a slight deflection on the hose near the air filter housing.
2. If the hose exhibits signs of cracks, tears, cuts, or leaks, or if it does not retain a certain degree of elasticity, replace the hose.
3. To replace the hose, loosen the clamp at either end of the hose.
4. Loosen the clamp at the other end of the hose.
5. Remove the hose from the engine.
6. Using new hose clamps (recommended), attach the new hose to the air filter housing in the same orientation as the old hose.

8

8.19 Replacing the Engine Coolant

When

Every 1,000 hours or 12 months, whichever comes first

Requirements

- Engine shut down and cool to the touch
- Containers of sufficient volume to collect drained fluid
- Fresh coolant

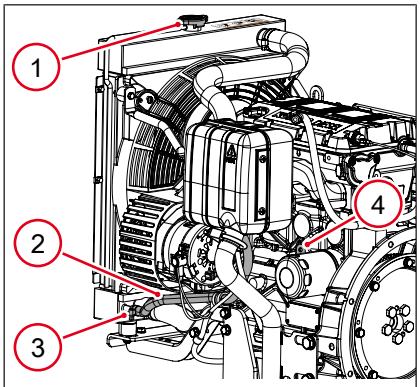


Fig. 39: Radiator cap, thermostat hose, clamp, and coolant plug

Procedure

1. Slowly rotate the radiator cap counterclockwise to release any remaining system pressure.
2. Unscrew and remove the radiator cap after the pressure is released.
3. Place a container under the thermostat hose.
4. Loosen the clamp securing the thermostat hose to the radiator.
5. Carefully remove the thermostat hose and let the coolant drain into the container.
6. Place another container under the coolant plug on the right side of the engine.

Note: The coolant plug is located between the alternator and the oil filter.

7. Remove the coolant plug and gasket, and the let the coolant drain into the container.
8. Install a new gasket with the coolant plug.
9. Tighten the coolant plug to 35 Nm (26 lb-ft).
10. Attach the thermostat hose to the radiator using the clamp.
11. Fill the radiator with fresh coolant until the pipes inside the radiator are covered by about 5 mm (0.25 in.).
12. Install the radiator cap.
13. Start the engine and run it until it reaches operating temperature.
14. Shut down the engine and wait for it to cool.
15. Slowly rotate the radiator cap counterclockwise to release any remaining system pressure.
16. Unscrew and remove the radiator cap after the pressure is released.
17. Fill the radiator with fresh coolant until the pipes inside the radiator are covered by about 5 mm (0.25 in.).
18. Install the radiator cap.

8.20 Replacing Radiator Hoses

When

Every 1,000 hours or 12 months, whichever comes first

Requirements

- New radiator hoses
- New hose clamps
- Container of sufficient volume to collect drained fluid

Overview

Rubber hoses break down over time due to various factors. Replacing them at regular intervals helps avoid unexpected coolant leaks that can lead to engine damage.

Procedure

1. Slowly rotate the radiator cap counterclockwise to release any remaining system pressure.

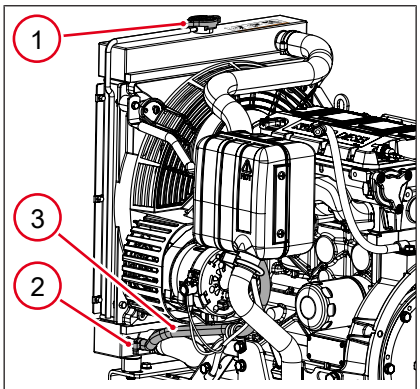


Fig. 40: Radiator cap, clamp, and thermostat hose

2. Unscrew and remove the radiator cap **(1)** after the pressure is released.
3. Place a container under the thermostat hose.
4. Loosen the clamp **(2)** securing the thermostat hose **(3)**.
5. Carefully remove the thermostat hose and let the coolant drain into the container.

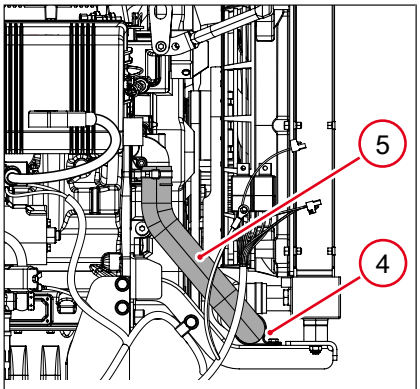


Fig. 41: P-clamp and lower radiator hose

6. Remove the P-clamp **(4)** securing the lower radiator hose **(5)** to the radiator support bracket.

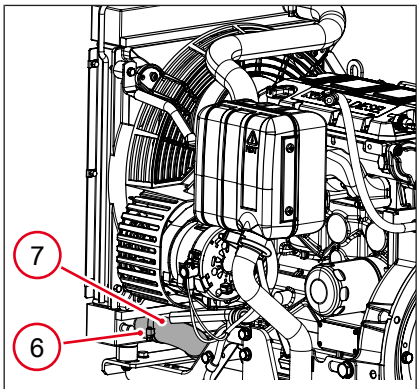


Fig. 42: Clamp and radiator hose

7. Loosen the clamp **(6)** securing the lower radiator hose **(7)** to the radiator.
8. Carefully remove the hose from the radiator.

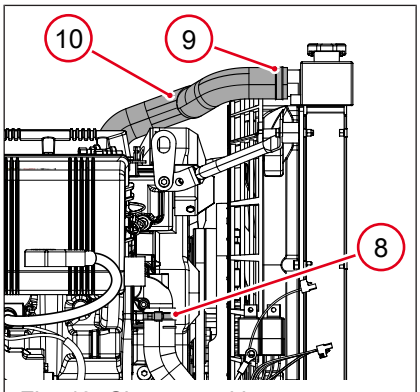


Fig. 43: Clamps and hoses

9. Loosen the clamp **(8)** at the other end of the lower radiator hose where it connects to the water pump flange.
10. Remove the hose from the engine.
11. Loosen the clamp **(9)** securing the upper radiator hose **(10)** to the radiator.

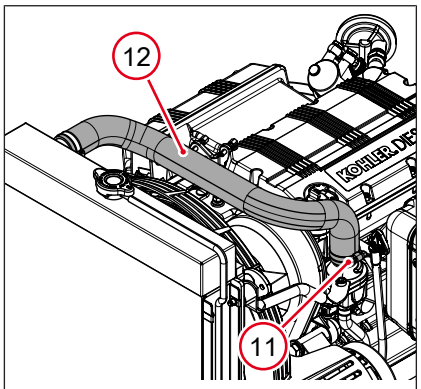


Fig. 44: Clamp and hose

12. Loosen the clamp **(11)** securing the upper radiator hose **(12)** to the thermostat cover.
13. Remove the upper radiator hose from the engine.
14. Using new hose clamps, install the new radiator hoses in the reverse order of removal.
15. Fill the radiator with fresh coolant until the pipes inside the radiator are covered by about 5 mm (0.25 in.).
16. Install the radiator cap.
17. Start the engine and run it until it reaches operating temperature.
18. Shut down the engine and wait for it to cool.
19. Slowly rotate the radiator cap counterclockwise to release any remaining system pressure.
20. Unscrew and remove the radiator cap after the pressure is released.
21. Fill the radiator with fresh coolant until the pipes inside the radiator are covered by about 5 mm (0.25 in.).
22. Install the radiator cap.

8.21 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.

9 Troubleshooting

9.1 General Troubleshooting

⚠ 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.
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.
	Blocked or dirty radiator	Clean radiator.
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.

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 Oil Pan Heater

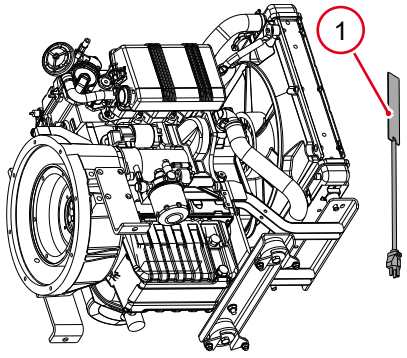


Fig. 45: Oil pan heater

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. 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.

11.3 Engine Block Heater

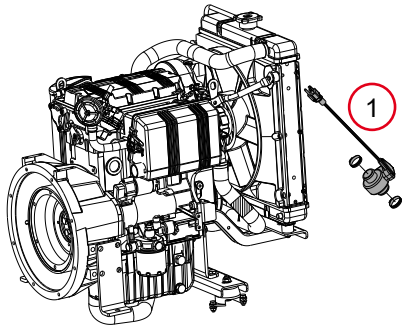


Fig. 46: Engine block heater

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.

11.4 Battery Blanket

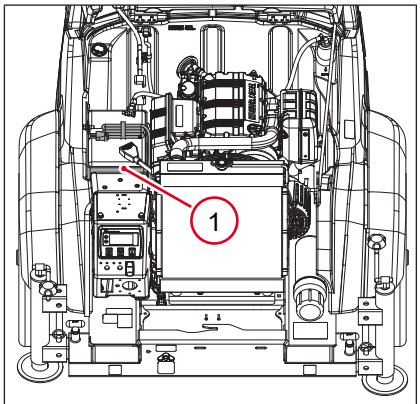


Fig. 47: Battery blanket

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.

11.5 Positive Air Shutoff

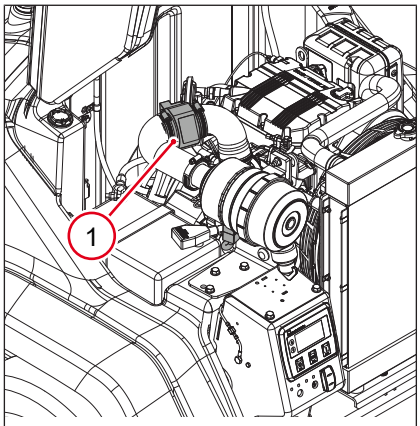


Fig. 48: Positive air shutoff system

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. Stopping the machine alone will not stop a runaway engine.

Some models include a positive air shutoff valve **(1)**. The positive air shutoff valve blocks the flow of air into the engine intake and stops the engine from running.

In the case of a runaway engine, the positive air shutoff activates automatically, and an overspeed shutdown icon Hz appears on the display.

To reset the positive air shutoff system:

1. Turn the positive air shutoff lever **(2)** 90° counterclockwise until it locks into position.

   ⇨ **Note:** Push in the solenoid plunger to move the lever past.

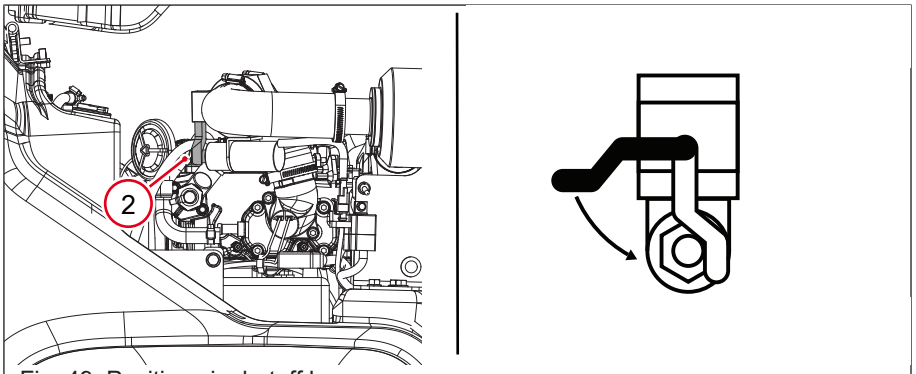


Fig. 49: Positive air shutoff lever

2. Press the Stop button on the display to clear the alarm.

The positive air shutoff system requires regular maintenance to function correctly. For further information, see Checking and Testing the Positive Air Shutoff System (if equipped) on page 70.

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.

Item	Unit	LTT4			LTT6
		50 Hz	60 Hz	RAC	60 Hz
Make	—	Kohler			
Model	—	KDW702			KDW1003
Type	—	2-cylinder, liquid-cooled diesel			3-cylinder, liquid-cooled diesel
Max. rated power @ rated speed	kW (hp)	5.0 (6.7)	6 (8.0)		9.2 (12.3)
Battery	V / ccA	12 / 650			
Air filter	type	Dry-type element			
Fuel	type	Ultra low sulfur diesel #2			
Fuel tank capacity	L (gal)	198.4 (52.4)			
Fuel consumption	L (gal) / hr				
Prime load		1.56 (0.41)	1.76 (0.46)		2.7 (0.71)
Four lights (320W)		0.8 (0.21)	0.92 (0.24)		1.12 (0.3)
Four lights (240W)		0.72 (0.19)	0.83 (0.22)		—
Running time	hours				
100% load		124.5	110.3		71.9
320W lights only		242.7	211.1		173.4
240W lights only		269.7	234		—
Coolant capacity	L (qt)	4.13 (4.36)			
Oil capacity	L (qt)	5.25 (5.55)			4.25 (4.49)
Oil grade	SAE	10W30 CJ4			

12.2 Generator

Item	Unit	LTT4			LTT6
		50 Hz	60 Hz	RAC	60 Hz
Frequency	Hz	50	60		
Continuous output	kW	4			6.0
Voltage	Volts, phase	230, 1	120/240, 1		
Amps	A	17.4	33.3 (at 120V) 16.7 (at 240V)		50 (at 120V) 25 (at 240V)
Excitation type	—	Capacitor / brushless			
Power factor	—	1.0			
Voltage regulation—no load to full load	%	10			
Voltage regulation—steady state	%	±6.0			
Speed (no load)	rpm	1,500	1,800		

12.3 Machine

Item	Unit	LTT4			LTT6
		50 Hz	60 Hz	RAC	60 Hz
Light	type	LED			
Light wattage	W	240 320			
Dimensions (L x W x H)	m (in.)	2.56 x 1.21 x 2.55 (101 x 47.5 x 100.3)			
Operating weight	kg (lb)	687 (1,515)	680 (1,500)		705 (1,555)
Height — mast extended	m (ft)	7 (23)			
NEMA beam spread	type	4			
Total luminous flux 240W lights 320W lights	lm @ 5700K	 144,000 192,000			
Lighting coverage @ 0.5 fc at 7m (23 ft), -20° horizontal, 0° side to side 240W lights 320W lights	m^2 (ft^2)	 2,480 (26,685) 2,990 (32,172)			
Sound level at 7m (23 ft) (prime load)	dB (A)	66.9	68.6		70.8
AC outlet receptacles (if equipped)	V, A, type	1-250, 20, 2P/ 3W 6h	1-125, 20, duplex GFCI 1-125/250, 30, twist lock		

12.4 Dimensions

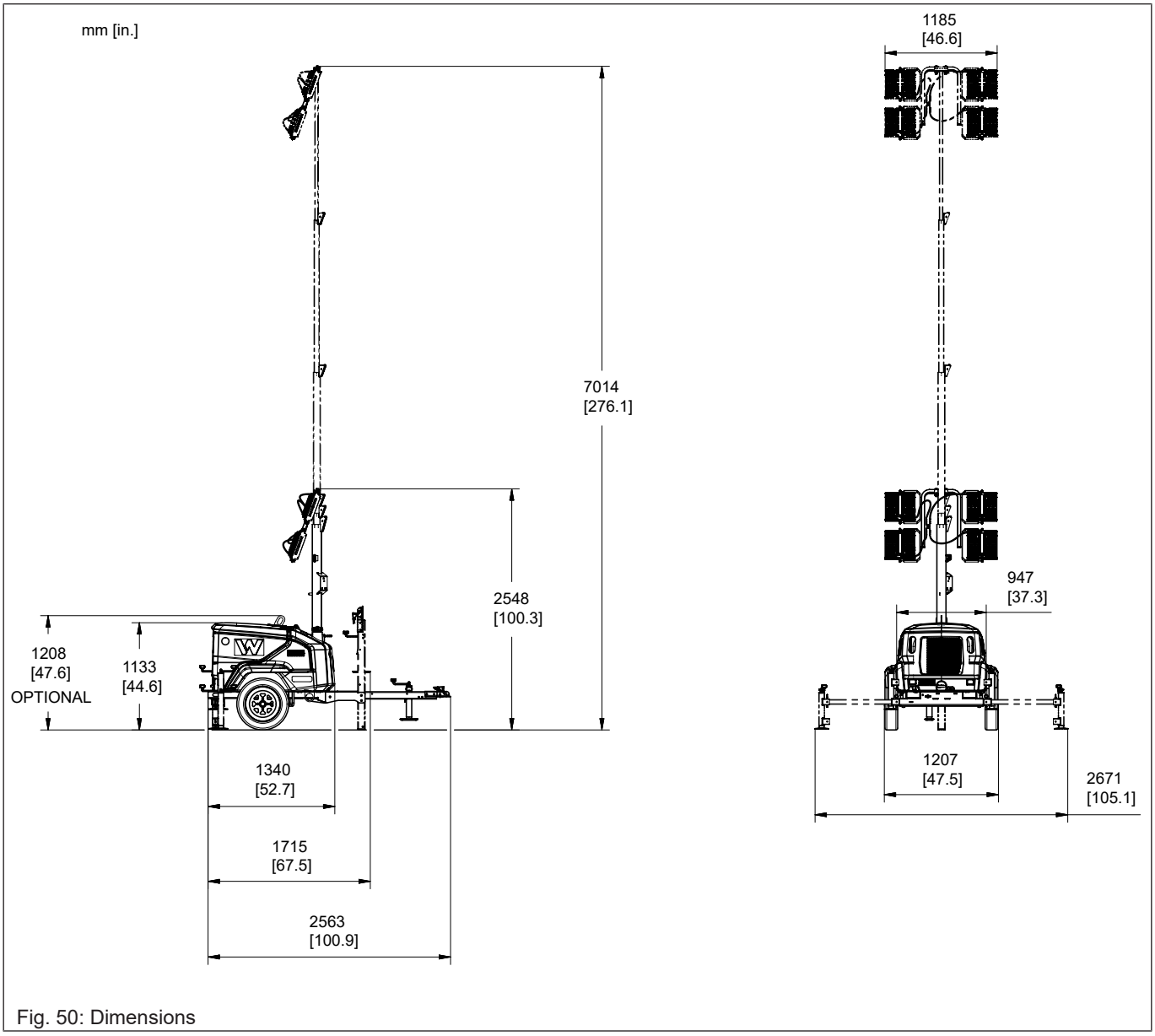


Fig. 50: Dimensions

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