Operator’s Manual

Light Tower

LTW6K-V, LTW6K-VS
LTW8K-V, LTW8K-VS

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Manufacturer

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www.wackerneuson.com

Original instructions

This Operator’s Manual presents the original instructions. The original language of this Operator’s Manual is American English.

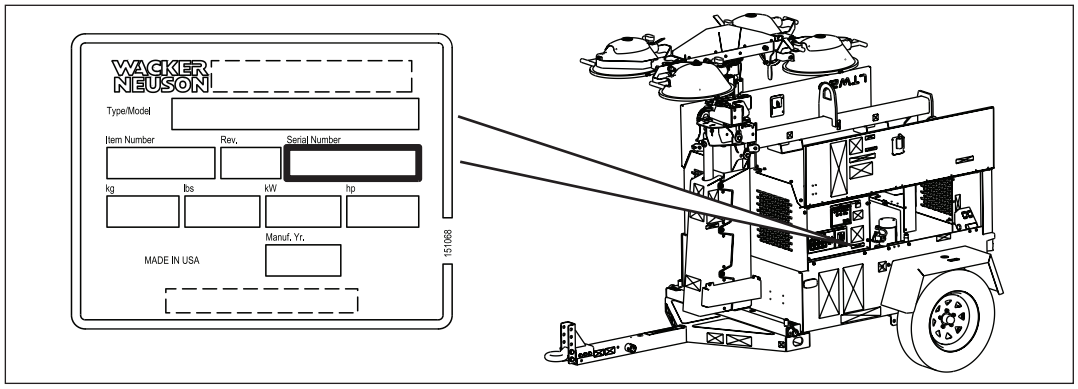
Foreword

SAVE THESE INSTRUCTIONS—This manual contains important instructions for the machine models below. These instructions have been written expressly by Wacker Neuson Production Americas LLC and must be followed during installation, operation, and maintenance of the machines.

Machines covered by this manual

This manual covers machines with the following item numbers:

Machine	Item Number
LTW 6K -V	5200012864, 5200012868, 5200012882
LTW 8K -V	5200012865, 5200012869, 5200012883
LTW 6K-VS	5200018555, 5200018559, 5200018563
LTW 8K-VS	5200018556, 5200018560, 5200018564
LTN 8K-VS (Skid)	5100015095



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Machine identification

A nameplate listing the model number, item number, revision number, and serial number is attached to this machine. The location of the nameplate is shown above.

Serial number (S/N)

For future reference, record the serial number in the space provided below. You will need the serial number when requesting parts or service for this machine.

Serial Number:

Machine documentation

- From this point forward in this documentation, Wacker Neuson Production Americas LLC will be referred to as Wacker Neuson.
- Keep a copy of the Operator's Manual with the machine at all times.
- Use the separate Parts Book supplied with the machine to order replacement parts.
- If you are missing any of these documents, please contact Wacker Neuson to order a replacement or visit www.wackerneuson.com.
- When ordering parts or requesting service information, be prepared to provide the machine model number, item number, revision number, and serial number.

Expectations for information in this manual

- This manual provides information and procedures to safely operate and maintain the above Wacker Neuson model(s). For your own safety and to reduce the risk of injury, carefully read, understand, and observe all instructions described in this manual.
- Wacker Neuson 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. Wacker Neuson reserves the right to change any portion of this information without notice.
- The illustrations, parts, and procedures in this manual refer to Wacker Neuson factory-installed components. Your machine may vary depending on the requirements of your specific region.

CALIFORNIA Proposition 65 Warning

Combustion exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Laws pertaining to spark arresters

NOTICE: 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.

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 Wacker Neuson.
- **Approved modifications** are those performed by an authorized Wacker Neuson service center according to written instructions published by Wacker Neuson.
- **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 Wacker Neuson dealer immediately if you have questions about approved or unapproved parts, attachments, or modifications.

1 Safety Information

1.1 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.

This is the safety alert symbol. It is used to alert you to potential personal hazards.

- ▶ Obey all safety messages that follow this symbol.

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: Used without the safety alert symbol, NOTICE indicates a situation which, if not avoided, could result in property damage.

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

1.2 Machine Description and Intended Use

Machine description

This machine is a mobile, trailer-mounted light tower. The Wacker Neuson Light Tower consists of a trailer with a cabinet containing a diesel engine, a fuel tank, a control panel, and an electric alternator. A telescoping tower with four metal halide lights is vertically mounted to the top of the machine. A hydraulic cylinder, combined with a cable and pulley system, raises and lowers the telescoping tower. As the engine runs, the generator converts mechanical energy into electric power. The metal halide lights run off this power. Receptacle(s) are also provided to power auxiliary loads. The operator uses the control panel to operate and monitor the machine.

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. Refer to the machine specifications for the output voltage and frequency, and for the maximum output power limit of this Light Tower.

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 startup
- Operating the machine in a manner that is inconsistent with all federal, state, and local codes and regulations
- Using the machine as a ladder, support, or work surface
- Using the machine to carry or transport passengers or equipment
- Using the machine as a hoist, or hanging items from the tower
- 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

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This machine has been designed and built in accordance with the latest global safety standards. It has been carefully engineered to eliminate hazards as far as practicable and to increase operator safety through protective guards and labeling. However, some risks may remain even after protective measures have been taken. They are called residual risks. On this machine, they may include exposure to:

- Heat, noise, exhaust, and carbon monoxide from the engine
- Heat from the lights
- Ultraviolet radiation from the lights
- Fire hazards from improper refueling techniques
- Fuel and its fumes
- Electric shock and arc flash
- Personal injury from improper lifting the trailer tongue

- Glare from lights (lights may blind drivers of nearby motor vehicles if the lights are incorrectly positioned)
- 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.

1.3 Safety Guidelines for Operating the Machine

Operator training

Before operating the machine:

- Read and understand the operating instructions contained in all manuals delivered with the machine.
- Familiarize yourself with the location and proper use of all controls and safety devices.
- 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.

Operator qualifications

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

- have received instruction on how to properly use the machine
- are familiar with required safety devices

The machine must not be accessed or operated by:

- children
- people impaired by alcohol or drugs

Application area

Be aware of the application area.

- 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.
- Identify whether special hazards exist in the application area, such as toxic gases, or unstable ground conditions, and take appropriate action to eliminate the special hazards before using the machine.

Be aware of the application area.

- Do not operate the machine in areas that contain flammable objects, fuels, or products that produce flammable vapors.

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 Wacker Neuson.

Safe operating practices

When operating this machine:

- Remain aware of the machine's moving parts. Keep hands, feet, and loose clothing away from the machine's moving parts.

When operating this machine:

- Do not operate a machine in need of repair.

Personal Protective Equipment (PPE)

Wear the following Personal Protective Equipment (PPE) while operating this machine:

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

Work area

- Make sure the area immediately surrounding the Light Tower is clean, neat, and free of debris.
- The tower extends up to 9 m (30 ft). Make sure the area above the trailer is open and clear of overhead wires and obstructions.

Machine setup

- Make sure the machine is on a firm, level surface and will not tip, roll, slide, or fall while operating.
- Make sure the machine is well-grounded and securely fastened to a good earthen ground per national and local regulations.
- The trailer must be leveled and the outriggers extended before raising the tower. The outriggers must be extended while the tower is up.
- Never connect the machine to other power sources, such as supply mains of power companies.

Machine integrity

- Do not start a machine in need of repair.
- Do not use the machine if the insulation on any electrical cord is cut or worn through.
- Do not operate the lights without the protective lens cover in place or with a lens cover that is cracked or damaged.
- Replace or repair electrical components with components that are identical in rating and performance to the originals.

While operating the machine

- Keep the area behind the trailer clear of people and obstructions while raising and lowering the tower.
- Do not raise the tower or operate the machine in high winds. Lower the tower immediately if high winds or electrical storms are expected in the area.

- Do not raise, lower, or turn the tower while the unit is operating.
- If any part of the tower hangs up, or the winch cable develops slack while raising or lowering the tower, STOP immediately! Contact an authorized Wacker Neuson service representative.
- Do not disengage the tower locking pin while the tower is up.
- Lamps become extremely hot in use! Allow the lamps and fixtures to cool 10–15 minutes before handling.
- Lower the tower when not in use.

1.4 Lamp Safety

Description

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

WARNING

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

- ▶ Do not operate the Light Tower if a lamp is damaged.
- ▶ Replace damaged lamps immediately.

Operating safety

- Replace damaged lamps according to the instructions in section *Removing / Replacing Lamps.*
- Alternative lamps that automatically extinguish when the outer envelope is broken or punctured are commercially available.

1.5 Operator Safety while Using Internal Combustion Engines

WARNING
Internal combustion engines present special hazards during operation and fueling. Failure to follow the warnings and safety standards could result in severe injury or death.

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

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

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

Operating safety

When running the engine:

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

When running the engine:

- 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.

Refueling safety

When refueling the engine:

- Clean up any spilled fuel immediately.
- Refill the fuel tank in a well-ventilated area.
- Re-install the fuel tank cap after refueling.
- Use suitable tools for refueling (for example, a fuel hose or funnel).

When refueling the engine:

- Do not smoke.
- Do not refuel a hot or running engine.
- Do not refuel the engine near sparks or open flames.

1.6 Safety Guidelines for Towing the Machine

WARNING
Risk of severe injury or death. Improper trailer condition and towing technique can lead to an accident.

- ▶ Obey the trailer manufacturer's instructions and 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 any of the trailer's lug nuts are missing.
- Do not tow the machine if the trailer's tires have less than 1.5 mm (1/16 inch) of tread.
- Do not tow the machine unless the trailer's brakes are functioning properly.
- Do not exceed the trailer manufacturer's speed limitations.

When towing the machine:

- Only tow the machine when the trailer's lug nuts are properly torqued.
- Only tow the machine when the trailer's tires are properly inflated.
- Only tow the machine when all trailer lights are functioning correctly.
- Only tow the machine when the trailer's safety chains are connected to the towing vehicle in a crisscross pattern.
- 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.

1.7 Service Safety

WARNING
High voltage! This machine produces high voltage capable of causing serious injury or death.
- ▶ Only a qualified electrician should troubleshoot or repair electrical problems occurring with this machine.

Precautions
- To reduce the risk of personal injury, read and understand the service procedures before performing any service to the machine.
- All adjustments and repairs MUST be completed before operation. Do not operate the machine with a known problem or deficiency! All repairs and adjustments should be completed by a qualified technician.
- Do not service the machine if your clothing or skin is wet.

Personal Protective Equipment (PPE)

Wear the following Personal Protective Equipment (PPE) while 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 servicing the machine
- Turn the engine off before performing maintenance or making repairs.
- Make sure the engine start switch is turned to OFF.
- Make sure the circuit breakers are open (off).
- Make sure the negative terminal on the battery is disconnected.
- Do not perform even routine service (oil / oil filter changes, cleaning, etc.) unless all electrical components are shut down.
- Make sure water has not accumulated around the base of the machine. If water is present, move the machine and allow it to dry before servicing.
- If the machine must be started while servicing, keep hands, feet, and loose clothing away from moving parts on the generator and engine.

Safety devices and modifications
- Replace all safety devices and guards after repair and maintenance.
- Do not modify the machine without the express written approval of the manufacturer.

Replacing parts and labels
- Replace worn or damaged components.
- Use only spare parts recommended by Wacker Neuson.
- Replace all missing and hard-to-read labels.
- Check all external fasteners at regular intervals.

Lifting and transporting

When lifting the machine:

- Make sure slings, chains, hooks, ramps, jacks and other types of lifting devices are attached securely and have enough weight-bearing capacity to lift or hold the machine safely.
- Remain aware of the location of other people when lifting the machine.

To reduce the possibility of injury:

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

1.8 Hydraulic Fluid Safety

WARNING
Possibility of severe injury. Hydraulic fluid is under high pressure and becomes very hot during operation.

▶ To avoid injury, obey the safety instructions listed below.

Safety instructions

- Inspect the hydraulic system thoroughly before operating the machine.
- Do not touch hydraulic fluid or hydraulic components while the machine is operating. Wait until the machine is cool.
- Before disconnecting hydraulic fittings or hoses, ensure that all pressure has been bled from the circuit. Set all controls in neutral, turn engine off, and allow the fluids to cool before loosening hydraulic fittings or attaching test gauges.
- Hydraulic fluid escaping under high pressure may penetrate the skin, cause burns, blind, or cause other serious injuries or infections. Contact a physician immediately for treatment if your skin has been penetrated by hydraulic fluid, even if the wound seems minor.
- Fluid leaks from small holes are often practically invisible. Do not use your bare hands to check for leaks. Check for leaks using a piece of cardboard or wood.
- Hydraulic fluid is extremely flammable. Stop the engine immediately if a hydraulic leak is detected.
- After servicing the hydraulics, make sure all components are reconnected to the proper fittings. Failure to do so may result in damage to the machine and/or injury to a person on or near the machine.

1.9 Safety Guidelines for Lifting and Transporting the Machine

When lifting the machine:

- Make sure slings, chains, hooks, ramps, jacks, forklifts, cranes, hoists, and any other type of lifting device used is attached securely and has enough weight-bearing capacity to lift or hold the machine safely. See section *Technical Data* for machine weight.
- 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.

1.10 Reporting Safety Defects

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

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

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

Administrator
NHTSA
1200 New Jersey Avenue S.E.
Washington, DC 20590

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

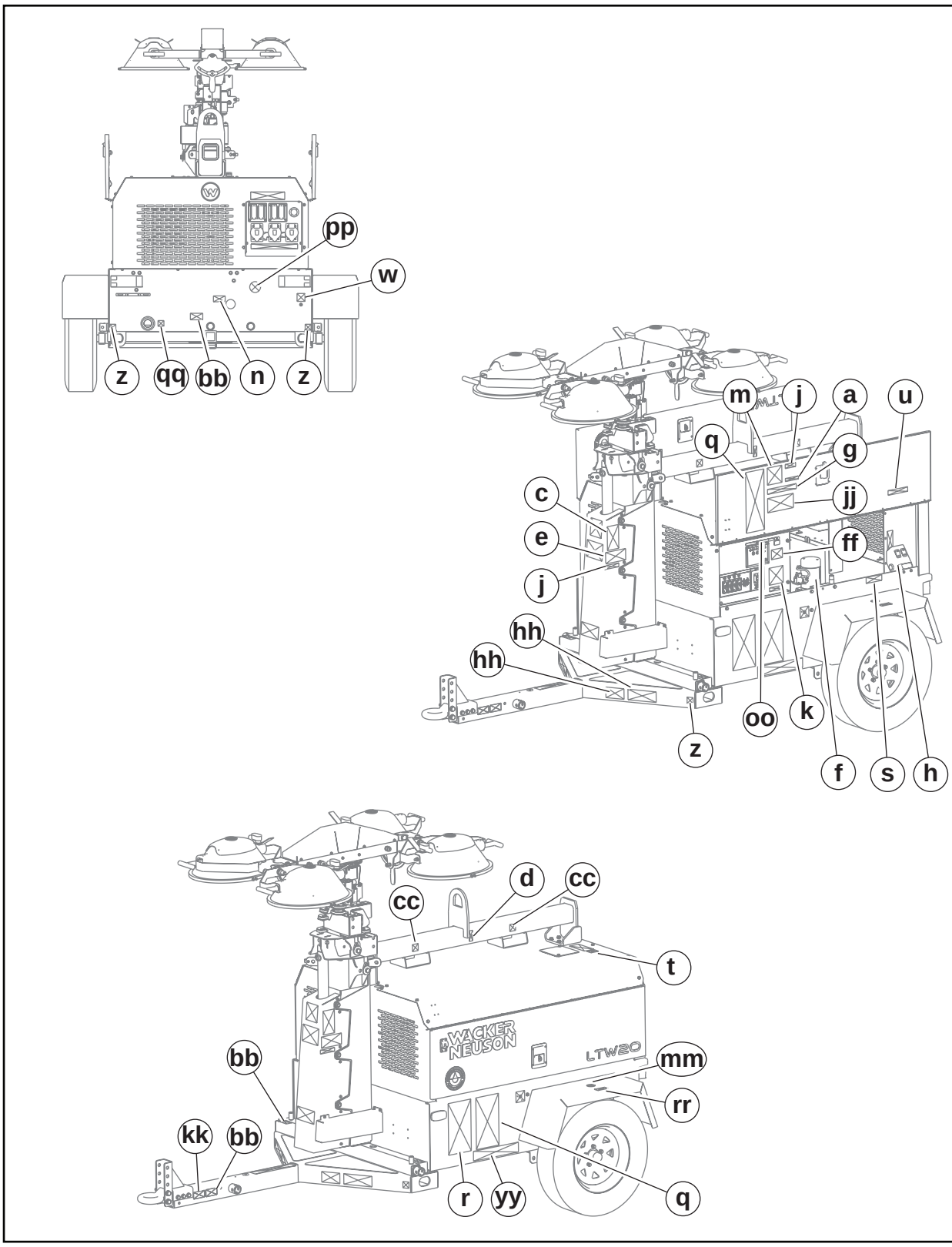
1.11 Radiation Compliance

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

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

2 Labels

2.1 Label Locations - LTW 6/8K-V



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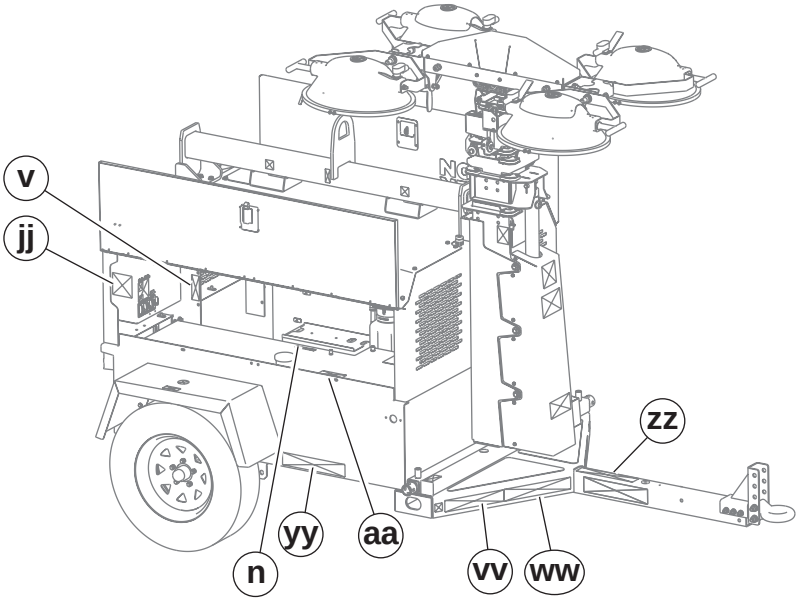

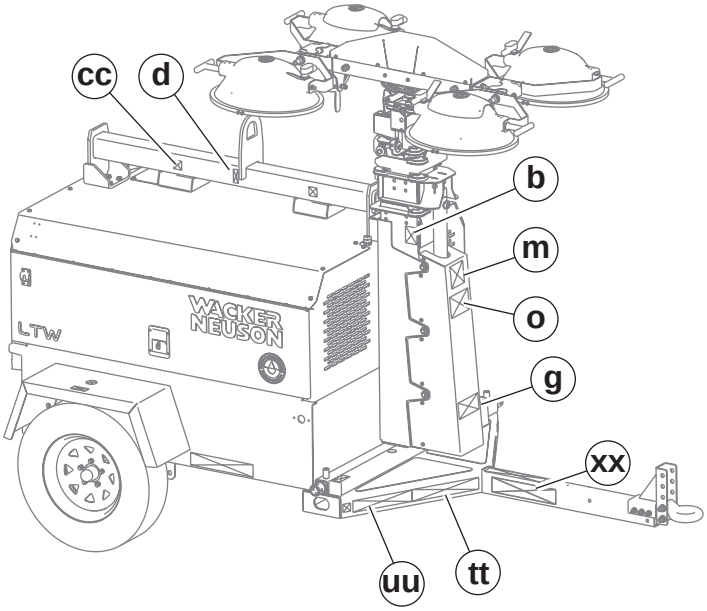

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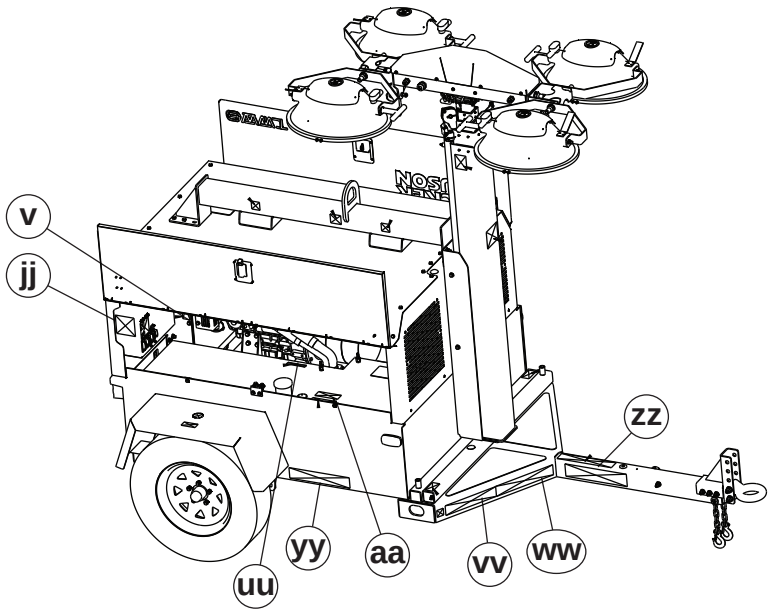
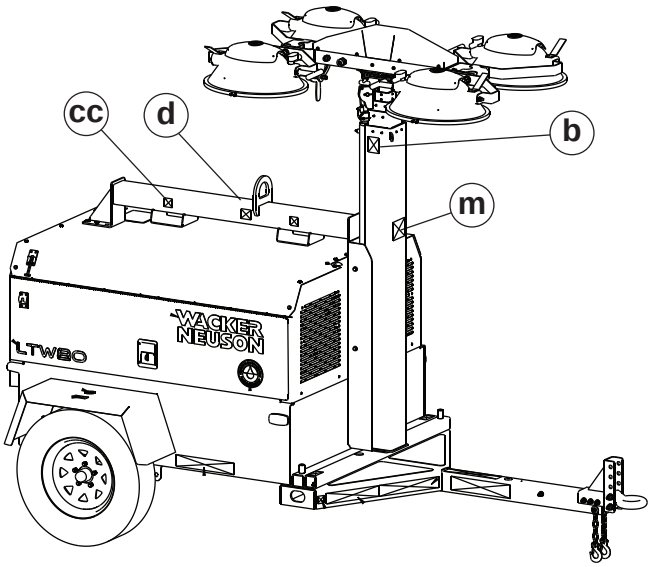
2.2 Label Locations - LTW 6/8K-VS





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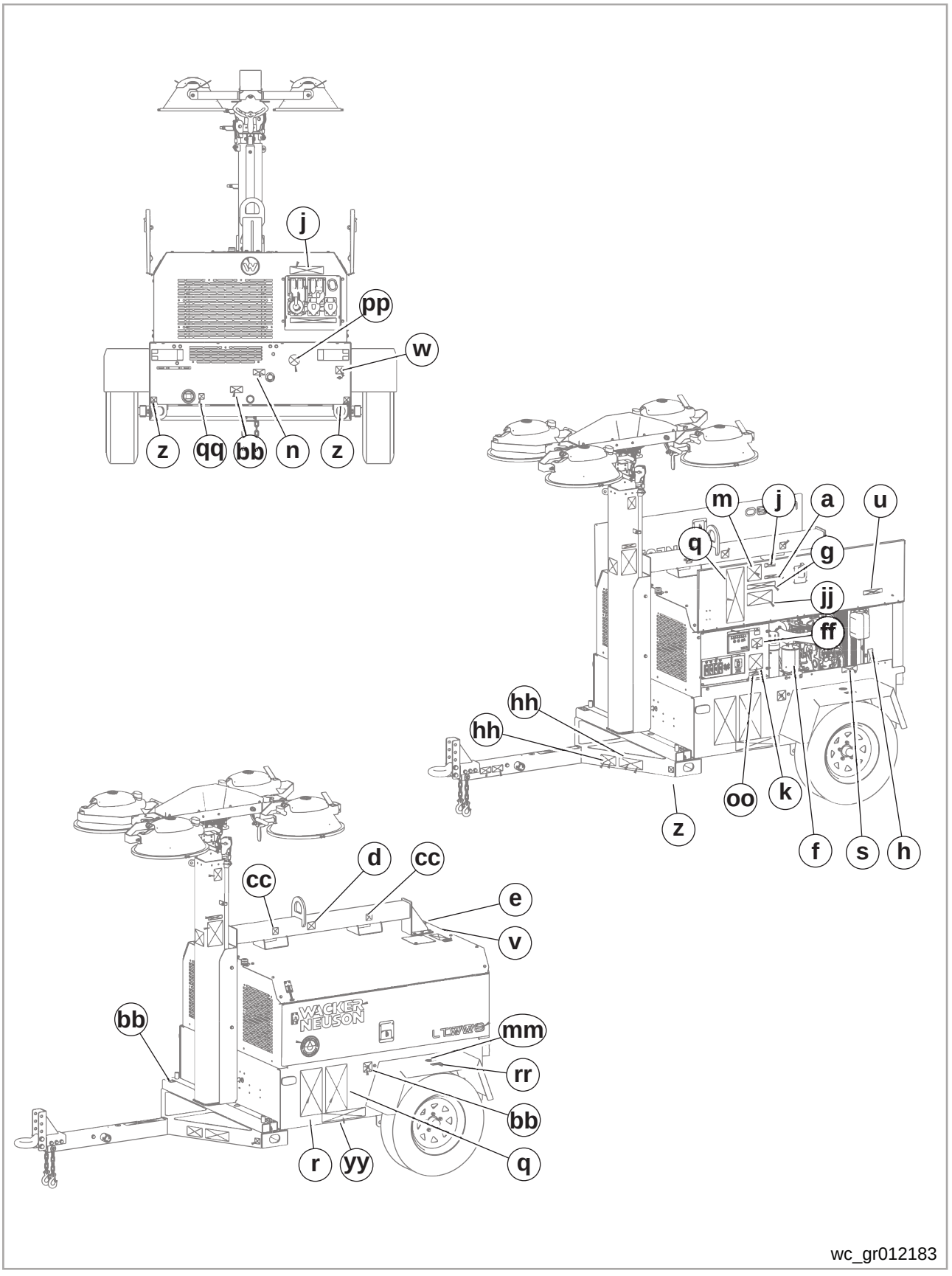
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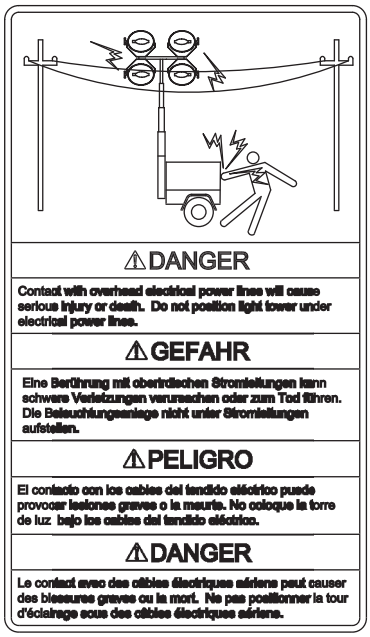
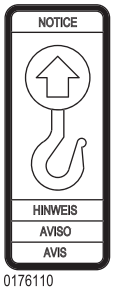
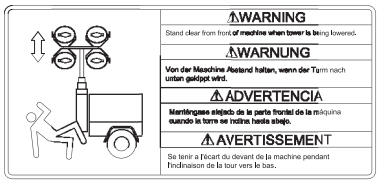
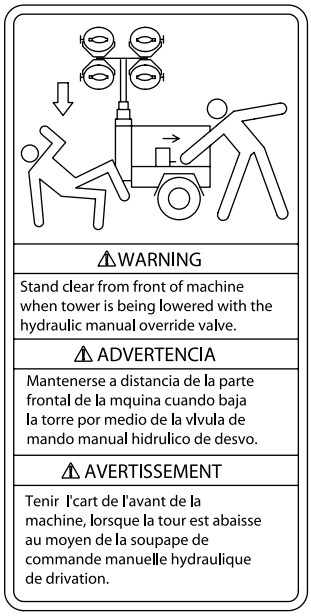
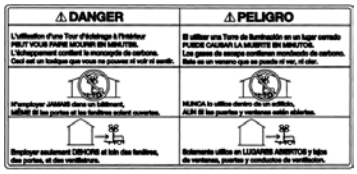
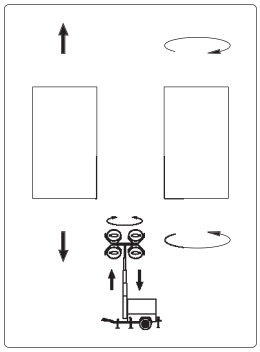
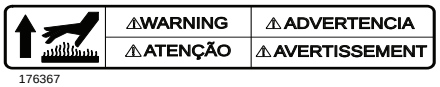
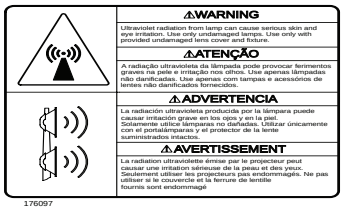
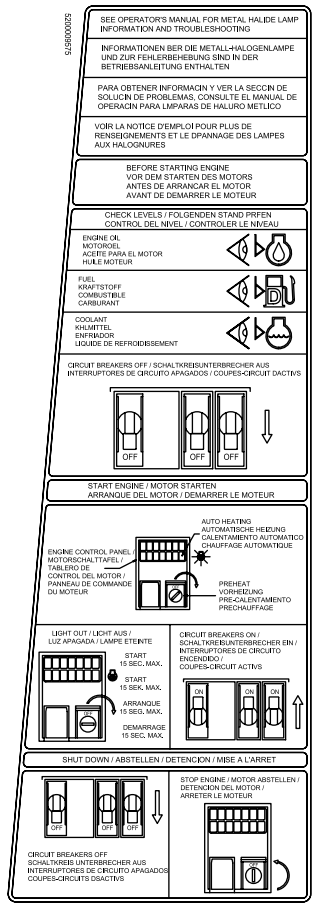
2.3 Label Meanings

a	 5200005890	WARNING Explosion hazard. Do not use evaporative starting fluids such as ether on this engine. The engine is equipped with a cold starting aid. Using evaporative starting fluids can cause an explosion which can cause engine damage, personal injury, or death. Read and follow the engine starting instructions in this Operator's Manual.
b		WARNING Avoid crushing area.
c	 5200003793	DANGER Contact with overhead electrical power lines will cause serious injury or death. Do not position Light Tower under electrical power lines.
d	 0176110	NOTICE Lifting point

e		WARNING Crushing hazards. Stand clear of front and rear of machine when tower is being raised or lowered.
f		WARNING Crushing hazards. Stand clear of the front of the machine when the tower is being lowered with the hydraulic manual override valve.
g	 183802  183803	DANGER Using a light tower indoors CAN KILL YOU IN MINUTES. Light tower exhaust contains carbon monoxide. This is a poison you cannot see or smell. NEVER use inside a home or garage, EVEN IF doors and windows are open. Only use OUTSIDE and far away from windows, doors, and vents.
h		Tower and light adjustment switches. ■ The switch on the left controls the up and down movement of the tower. ■ The switch on the right controls the auto-rotation of the tower (optional).

j	 114474	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. ■ No sparks, flames, or burning objects near the machine. ■ Stop the engine before refueling.
k	 176080	WARNING Electric shock and arc flash can cause serious injury or death. Electrical storage device within. Contact a qualified electrician for service or to open electrical box.
m	 176103	Read and understand the supplied Operator's Manual before operating the machine. Failure to do so increases the risk of injury to yourself and others.
n	 117037  176367	WARNING Hot surface
o	 176097	WARNING Ultraviolet radiation from lamp can cause serious skin and eye irritation. Use only with undamaged lamps. Use only with provided undamaged lens cover and fixture.

p



See Operator's Manual for metal halide lamp information and troubleshooting.

BEFORE STARTING THE ENGINE:

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

TO START THE ENGINE:

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

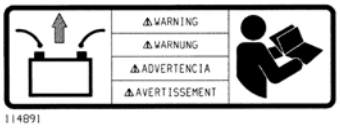
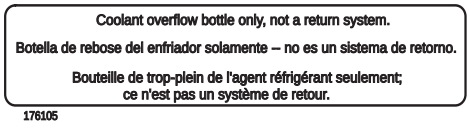
TO SHUT DOWN THE MACHINE:

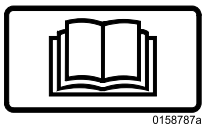
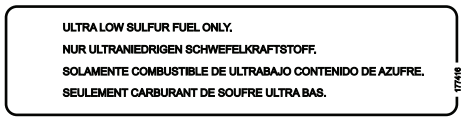
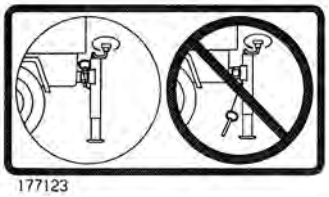
- Move the circuit breakers to the OFF position.
- Turn the key switch to the OFF position to stop the engine.

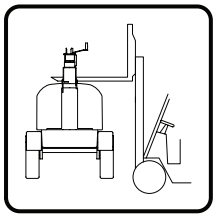
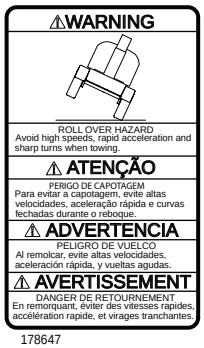
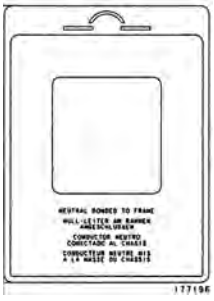
q

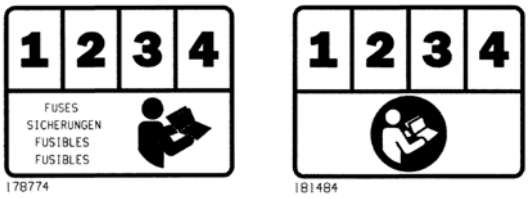
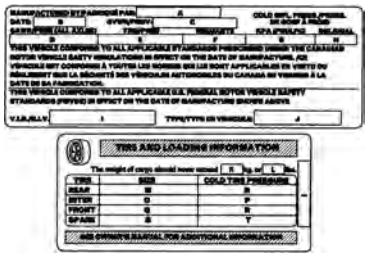
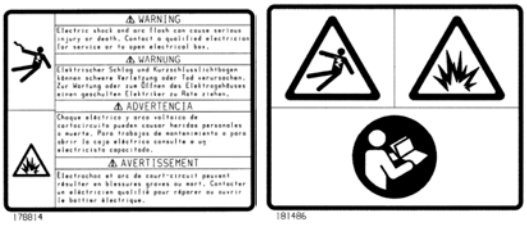
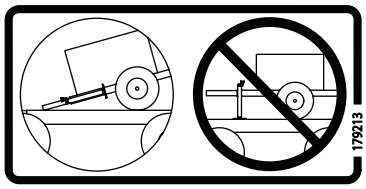
TO RAISE TOWER
TO ALLOW EASIER ACCESS TO LIGHTS:
1. Use switch inside door to rotate light bar perpendicular to machine.
TO AIM LIGHTS:
2. Swivel and tilt lights manually to desired position.
3. Loosen knob.
4. Use handle to adjust light set to desired position.
5. Tighten knob.
6. Rotate light bar to desired position.

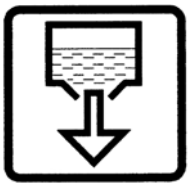
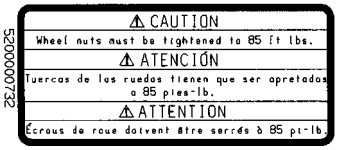
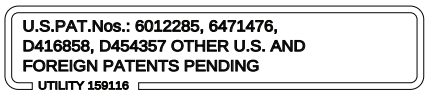
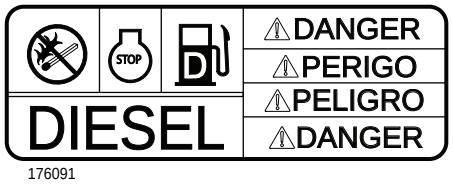
TO RAISE TOWER:
7. Use switch inside door to raise tower.

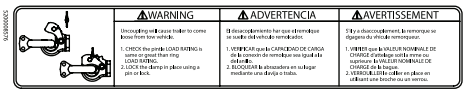
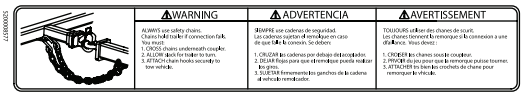
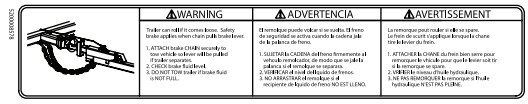
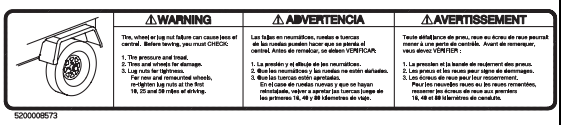
r		TO LOWER TOWER: 1. Turn off all lights and engine. 2. Use switch inside door to lower tower. TO SECURE TOWER FOR TRANSPORT: 3. Loosen knob. 4. Use handle to rotate sets so lights are level. 5. Tighten knob. 6. Use switch inside door to rotate light bar parallel to machine.
s		WARNING Disconnect battery before servicing. Read the Operator's Manual.
t		WARNING Pressurized contents. Do not open when hot!
u		Coolant overflow bottle only, not a return system.

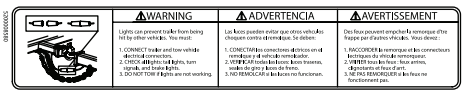
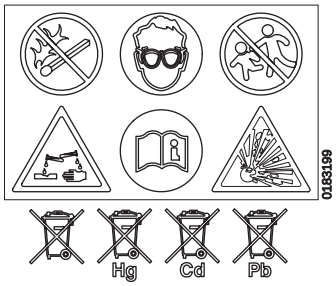
v		WARNING Pinching hazard. Rotating machinery.
w		Electrical ground
x		Operator’s Manual must be stored on machine. Replacement Operator’s Manual can be ordered through your local Wacker Neuson distributor.
z		Tie-down point
aa		Ultra low sulfur fuel only
bb		Insert jack locking pin before extending jack.

cc	 177124	Fork lift pocket
dd	 178647 	WARNING Roll-over hazard To prevent injury or equipment damage, avoid high speeds and sharp turns when towing.
ee		Towing Instructions Read Operator’s Manual. Use hitch rated from trailer’s “Gross Vehicle Weight Rating”. Securely attach trailer to tow vehicle. Attach safety chains using cross pattern. Attach breakdown chain to vehicle. Check trailer lights.
ff		Neutral bonded to frame

gg		Fuses 1.Not used 2. Controller 3. Fuel pump / solenoid 4. Alternator
hh		(on trailer, if equipped) Certification Label (VIN Number) 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.
jj		WARNING Electric shock and arc flash can cause serious injury or death. Electrical storage device within. Contact a qualified electrician for service or to open electrical box.
kk		Transport position of the jack
mm		Not a step
oo		Engine controls Hour meter

pp		Protecting Our Environment Fluid containment system (if equipped)
qq		Skid drain access point
rr		CAUTION Wheel nuts must be tightened to 85 ft.lbs.
ss		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.
tt		This machine may be covered by one or more patents.
uu		DANGER No sparks, flames, or burning objects near machine. Stop the engine before adding fuel. Use only diesel fuel.

vv		Uncoupling will cause trailer to come loose from tow vehicle. 1. CHECK the pintle LOAD RATING is same or great than ring LOAD RATING. 2. LOCK the clamp in place using a pin or lock.
ww		ALWAYS use safety chains. Chains hold trailer if connection fails. You must: 1. CROSS chains underneath coupler. 2. ALLOW slack for trailer to turn. 3. ATTACH chain hooks securely to tow vehicle.
xx		Trailer can roll if it comes loose. Safety brake applies when chain pulls brake lever. 1. ATTACH brake CHAIN securely to tow vehicle so lever will be pulled if trailer separates. 2. CHECK brake fluid lever. 3. DO NOT TOW trailer if brake fluid is NOT FULL.
xx		Trailer can roll if it comes loose. Electric safety brake applies when cable pulls pin out of switch box. 1. PULL hard to get pin out of switch box. 2. CHECK brake by PULLING TRAILER with tow vehicle. 3. ATTACH pin CABLE to tow vehicle so pin will be pulled out if trailer separates. 4. Promptly REPLACE pin in switch box.
yy		Tire, wheel, or lug nut failure can cause loss of control. Before towing you much check: 1. Tire pressure and tread. 2. Tires and wheels for damage. 3. Lug nuts for tightness. ■ For new and remounted wheels, re-tighten lug nuts at the first 10, 25, and 50 miiles of driving.

zz		Lights can prevent trailer from being hit by other vehicles. You must: 1. CONNECT trailer and tow vehicle electrical connectors. 2. CHECK all lights: tail lights, turn signals, and brake lights. 3. DO NOT TOW if lights are not working.
—		WARNING ■ Keep all sparks and open flames away from the battery. ■ Wear eye protection. ■ Keep away from children. ■ Battery acid is poisonous and corrosive. ■ Read the Operator's Manual. ■ Explosion hazard. Dispose of waste batteries in accordance with local environmental regulations. Battery contains mercury (Hg), cadmium (Cd), or lead (Pb).

3 Lifting and Transporting

3.1 Before Lifting or Transporting Checklist

Requirements

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

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 lifting or transporting the machine, check the following items:

Machine

- ☐ Check that all accessories are securely stored within the machine.
- ☐ Check that all doors and access panels of the machine are closed.
- ☐ Check that all electrical supplies are disconnected from the machine.
- ☐ Check that the generator is shut down.
- ☐ Check that the outriggers are retracted.
- ☐ Allow the lights to cool for 10-15 minutes before lifting or moving the machine.

Loading and transporting equipment

- ☐ Check that the transport vehicle or trailer can support the weight of the machine.
- ☐ Check that the transport vehicle or trailer is wide enough to support the machine.
- ☐ Check that the wheels of the transport vehicle or trailer are chocked during the loading process.
- ☐ Check that the transport vehicle or trailer is clean and free of grease, oil, ice, and other loose material.
- ☐ 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:

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

3.2 Before Towing Checklist

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

Towing vehicle

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

Hitch and coupler

- ☐ Check that the towing vehicle and hitch have a rating equal to or greater than the GVWR of the machine. See *Technical Data*.
- ☐ Check that the hitch of the towing vehicle and coupler of the trailer are compatible.
- ☐ Check the condition of both the coupler and the hitch.
- ☐ Check that all fasteners on the coupler are tight.
- ☐ Check that the coupler has fresh grease applied to it.

Wheels

- ☐ Check that wheel chocks are available at the work site.
- ☐ Check that all lug nuts are in place and are properly torqued.
- ☐ Check the tread wear of the tires.
- ☐ Check that the tires are inflated to the proper pressure.

Trailer preparation

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

Trailer operation

- ☐ Check that the trailer jacks are in the traveling (horizontal) position.
- ☐ Check that the directional and running lights on the trailer function correctly.
- ☐ Check that the safety chains of the trailer are connected to the towing vehicle using a crisscross pattern.
- ☐ Check the operation of the trailer brakes by braking the towing vehicle at a slow speed. Both the vehicle and the trailer must brake smoothly. If the trailer pushes, check the fluid level in the surge brakes or the operation of the electric brakes.
- ☐ Check that the trailer’s breakaway cable (if applicable) is attached to the towing vehicle.
- ☐ Test the function of the breakaway system (if applicable).

Lights

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

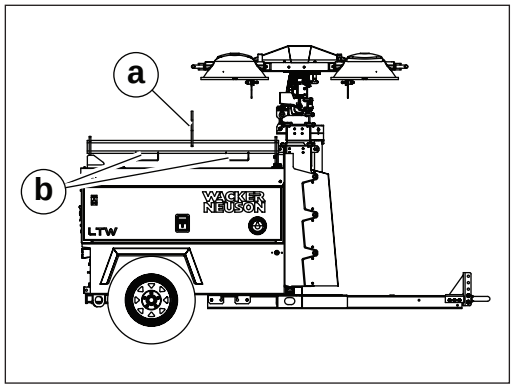
3.3 Lifting the Machine

Requirements

- Lifting equipment (crane, hoist, or fork truck) capable of supporting the machine's weight
- Lifting devices (hooks, chains, and shackles) capable of supporting the machine's weight
- Engine stopped

Lifting points

- A lifting eye **(a)** is used for lifting the machine using a crane or hoist.
- Fork pockets **(b)** are used for lifting the machine using a fork truck.



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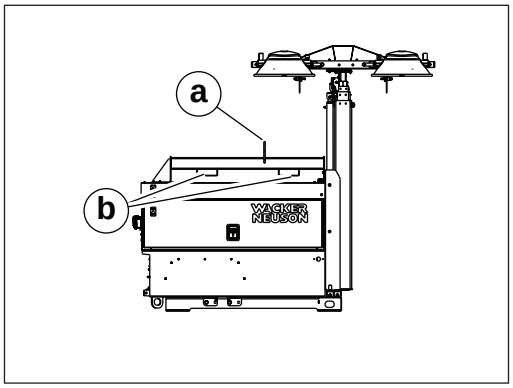

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Procedure

Perform the procedure below to lift the machine.

1. Attach the lifting devices and equipment to the lifting eye or insert the fork truck tines into the fork pockets. Do not attach lifting devices to any other part of the machine.
2. Lift the machine a small distance.

WARNING
Crushing hazard. An unstable machine may cause the lifting devices and equipment to fail. You may be crushed if the lifting devices and equipment fail.

▶ Check for stability before continuing.

3. Check for stability. If necessary, lower the machine, reposition the lifting devices, and lift the machine a small distance again.
4. Continue lifting the machine only when it is stable.

3.4 Tying Down and Transporting the Machine

Requirements

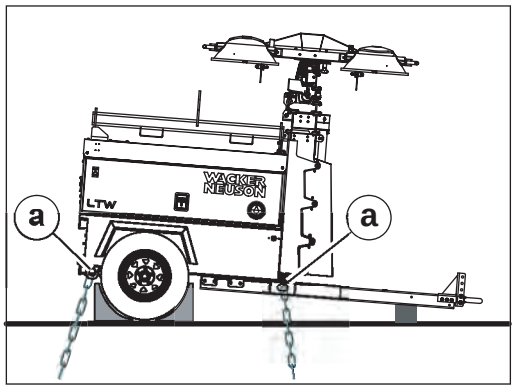
- Engine shut down
- Transport vehicle (flatbed truck or trailer) capable of handling the weight and size of the machine. See *Technical Data* for dimensions and weights.

NOTICE: Do not position steel ropes or chains across the machine frame or panels when tying down the machine. Damage to the machine may occur.

Procedure

Perform the procedure below to tie down the machine.

1. Close and secure all access doors on the machine.
2. Move the machine onto the transport vehicle.
3. If equipped, block or chock the wheels and trailer tongue as shown. Do not use the jack to support the machine during transport.
4. Attach steel ropes or chains to each of the tie down points **(a)** on the front and rear of the machine.



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5. Attach the other end of the chains to the flatbed or trailer.

3.5 Testing the Breakaway System (Electric Brakes)

Requirements

- Voltmeter
- Battery charger or backup battery (charged)

When

Test the breakaway system:

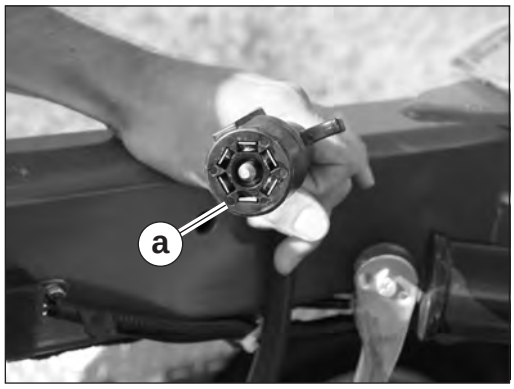
- Before towing
- Monthly if the machine is not in service

Procedure

Perform the following procedure to test the breakaway system.

NOTICE: Disconnect the trailer wiring plug from the tow vehicle before testing. Failure to do so will result in severe damage to the electronic brake control.

1. Connect the machine/trailer to the tow vehicle.
2. Disconnect the trailer wiring plug **(a)** from the tow vehicle.



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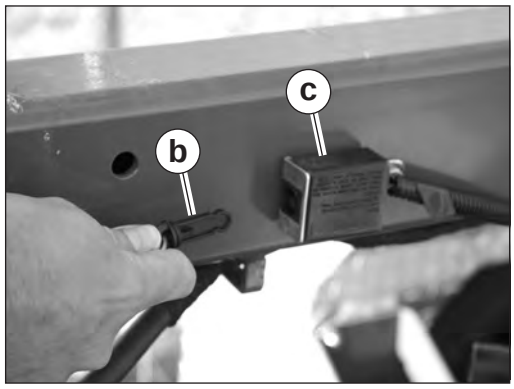

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3. Pull the breakaway pin **(b)** out of the brake switch **(c)** (to activate the brakes) and attempt to tow the machine/trailer at a very slow speed (less than 5 mph). When activated, a properly working breakaway system will cause substantial drag on the trailer wheels and may even cause the trailer wheels to lock.
4. Stop the tow vehicle.

WARNING

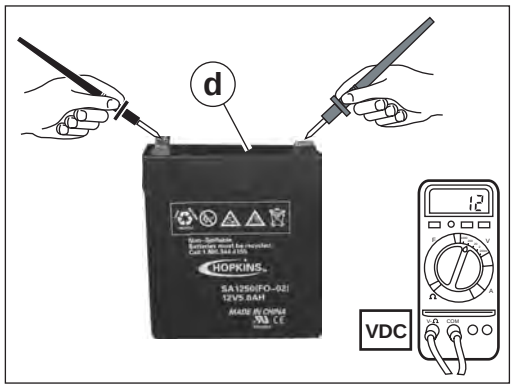
Personal injury hazard. A faulty breakaway system may lead to an accident and personal injury if the machine/trailer breaks away.

▶ Do not tow the machine/trailer if the breakaway system is faulty.

This procedure continues on the next page.

Continued from the previous page.

5. If the brakes did not function, check the voltage of the breakaway battery. To do so:
   a. Remove the cover of the battery box.
   b. Remove the wires connected to the breakaway battery **(d)**.
   c. Measure the voltage. If 12–14 VDC is not measured, replace or recharge the breakaway battery.



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6. If 12–14 VDC was measured but the brakes did not function, there is a wiring or mechanical fault with the brakes. Repair any faults before towing.
7. If the brakes function properly:
   a. Reconnect the wires to the breakaway battery.
   b. Re-install the cover to the battery box.
   c. Re-install the breakaway pin **(b)** into the brake switch.
   d. Connect the trailer wiring plug to the tow vehicle.

Result The procedure to test the breakaway system is now complete.

3.6 Testing the Breakaway System (Hydraulic Surge Brakes)

Requirements

- Hydraulic reservoir filled
- Machine parked on a flat surface

When

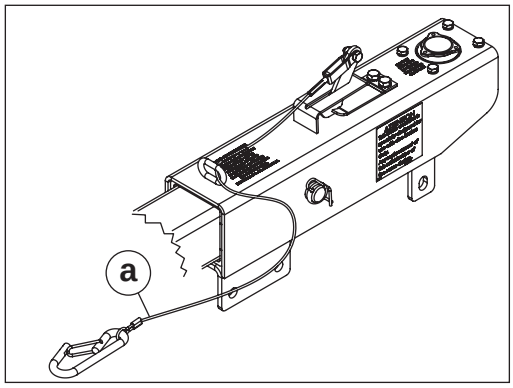
Test the breakaway system:

- Before towing
- After filling the hydraulic reservoir

Procedure

Perform the following procedure to test the breakaway system.

1. Position the machine/trailer on a flat surface.
2. Connect the breakaway cable **(a)** to the tow vehicle. Do not connect the machine/trailer to the tow vehicle via the hitch.



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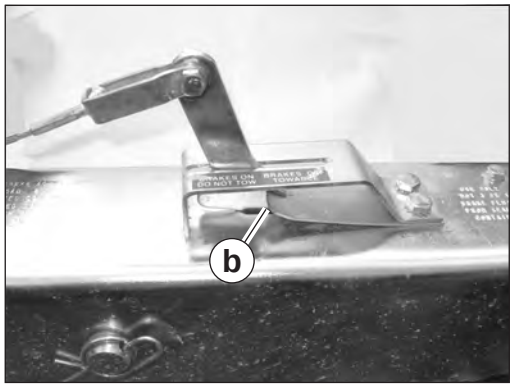

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3. Slowly move the tow vehicle so that it pulls on the breakaway cord until the emergency lever reaches its second notch **(b)** and locks into the ON position.
4. Connect the machine/trailer to the tow vehicle via the hitch.
5. Attempt to tow the machine/trailer at a very slow speed (less than 5 mph). When activated, a properly working breakaway system will cause substantial drag on the trailer wheels and may even cause the trailer wheels to lock.

WARNING

Personal injury hazard. A faulty breakaway system may lead to an accident and personal injury if the machine/trailer breaks away.

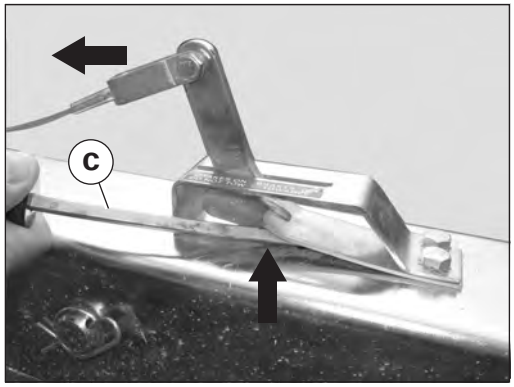
- ▶ Do not tow the machine/trailer if the breakaway system is faulty.

6. If the brakes did not function, repair any faults before towing.

This procedure continues on the next page.

Continued from the previous page.

7. Stop the tow vehicle.
8. Release the brake by simultaneously pulling on the breakaway cord and prying the locking spring with a screwdriver **(c)** or pry bar.



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Result The procedure to test the breakaway system is now complete.

4 Operation

4.1 Preparing the Machine for First Use

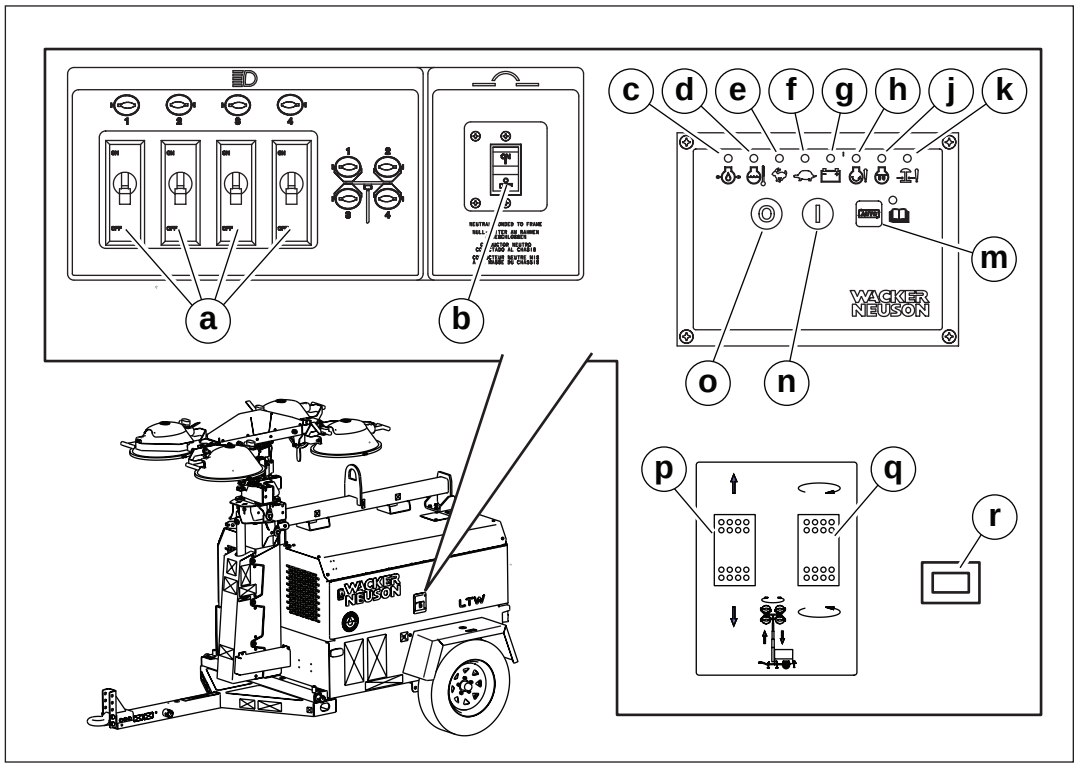
1. Make sure all loose packaging materials have been removed from the machine.
2. Check the machine and its components for damage. If there is visible damage, do not operate the machine! Contact your Wacker Neuson dealer immediately for assistance.
3. Take inventory of all items included with the machine 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 fuel, engine oil, and battery acid.
6. Move the machine to its operating location.

4.2 General Sequence of Operation

Perform the sequence of operation below. Refer to the specific topic for details.

Task	See Topic
Startup	
1. Position the machine.	4.4
2. Ground the machine.	4.6
3. Level the trailer.	4.7
4. Adjust (aim) the lights.	4.9
5. Raise the tower.	4.18
6. Start the engine.	4.11
7. Allow engine to warm up 2-10 minutes.	—
8. Turn on the lights.	4.12
9. Connect auxiliary equipment.	—
Shutdown	
10. Turn off the lights.	4.12
11. Disconnect auxiliary equipment.	—
12. Stop the machine.	4.14
13. Lower the tower.	4.18
14. Adjust the lights to aim at the ground.	4.9
15. Retract the outriggers.	4.7
16. Disconnect the ground.	—

4.3 Control Panels



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Ref.	Description	Ref.	Description
a	15A lights circuit breaker	**j**	Glow plug indicator
b	LTW 6K-V: 25A circuit breaker LTW 8K-V: 33A circuit breaker LTW 20Z1-V: 80A circuit breaker LTW 20Z3-V: 70A circuit breaker	**k**	E-stop indicator
c	Low oil pressure indicator	**m**	Auto mode button
d	High coolant temperature indicator	**n**	Start button
e	Overspeed fault indicator	**o**	Stop button
f	Underspeed fault indicator	**p**	Tower actuation switch
g	Charge failure indicator	**q**	Tower rotation switch
h	Overcrank fault indicator	**r**	Hour meter

4.4 Positioning the Machine

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

- ▶ Never run the machine indoors or in an enclosed area.

WARNING
Electric shock or equipment damage hazards. The tower extends up to 9 m (30 ft.) and could interfere with overhead wires and obstructions.

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

CO Alarms

Because this machine produces carbon monoxide (CO), Wacker Neuson recommends that CO alarms be installed in all structures in close proximity to the machine. CO alarms provide an extra measure of protection against this poison that you cannot see or smell.

Install battery-operated CO alarms or plug-in CO alarms with battery backup, according to the manufacturer's instructions. CO alarms should be certified to the requirements of the latest safety standards (UL 2034, IAS 6-96, or CSA 6.19.01). Test the CO alarm batteries monthly.

Guidelines

Observe the following guidelines when positioning the machine for operation.

- For maximum coverage, position the machine at or above the elevation of the area that is being illuminated.
- Machine must be on flat, firm surface clear of overhead wires and obstructions.
- Install wedge blocks under the wheels to prevent movement.
- Machine must have adequate room on both sides to fully extend outriggers.

4.5 Mounting the Machine

Important Skidded machines do not include trailers or outriggers. The skidded machines must be mounted to a suitable surface before use.

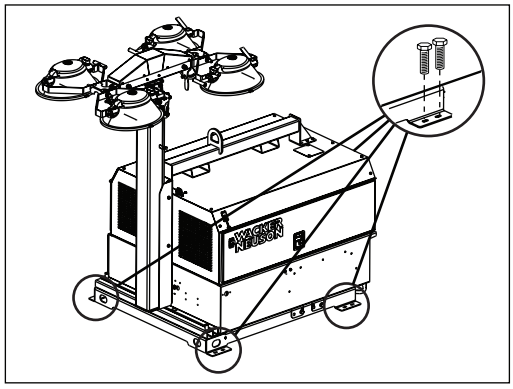
NOTICE: Mount the machine before raising the tower or operating the machine.

Requirements

- Level mounting surface
- M12 mounting hardware (8 sets)
- Observe the applicable safety information as outlined in this manual

Procedure

1. Insert the mounting hardware through the slots in the mounting brackets.



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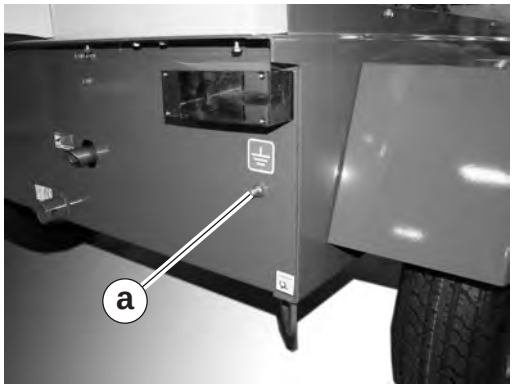
2. Secure the machine as appropriate for your mounting surface.

4.6 Ground Connection

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



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Function

This ground connection is used for electrically grounding the Light Tower 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.

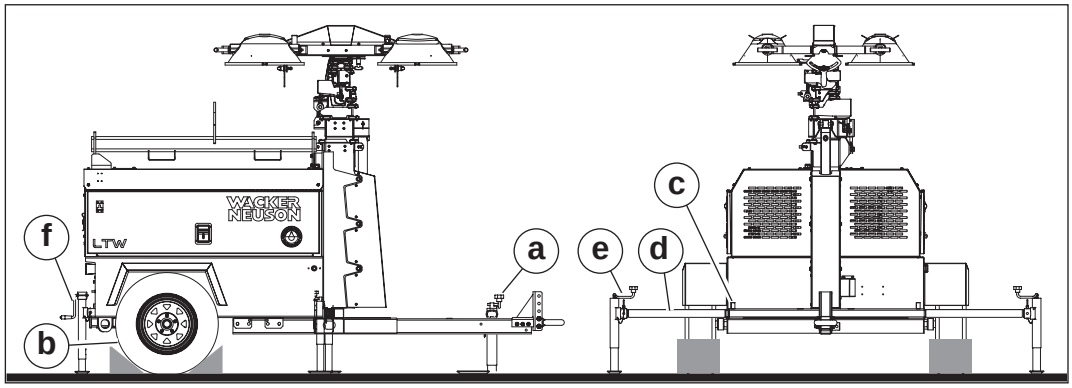
4.7 Leveling the Trailer

WARNING
Tipping / falling hazard. Failure to level the trailer or extend the outriggers will severely reduce the stability of the unit.

- ▶ Level the trailer and extend the outriggers before raising the tower. The outriggers must remain extended while the tower is up.

Procedure Perform the procedure below to level the trailer.

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



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2. Block or chock the trailer wheels **(b)**. Crank the tongue jack down to raise the trailer tongue off the vehicle.
3. Pull the outrigger lock pin **(c)** to release the outrigger. Pull both outrigger extensions **(d)** out until you feel outrigger lock pin lock back into place.
4. Pull the locking pins on the outrigger jacks **(e).** Rotate the jacks 90° down. Reinsert the pins once the jacks are in position.
5. Pull the locking pin on the rear jack **(f)** and rotate the rear jack down 90° as shown. Reinsert the pin once the jack is in position.
6. Extend the jack(s) on the highest side(s) of the trailer until they rest firmly on the ground. Extend the remaining jacks until the trailer is level.

4.8 Refueling the Machine

Requirements

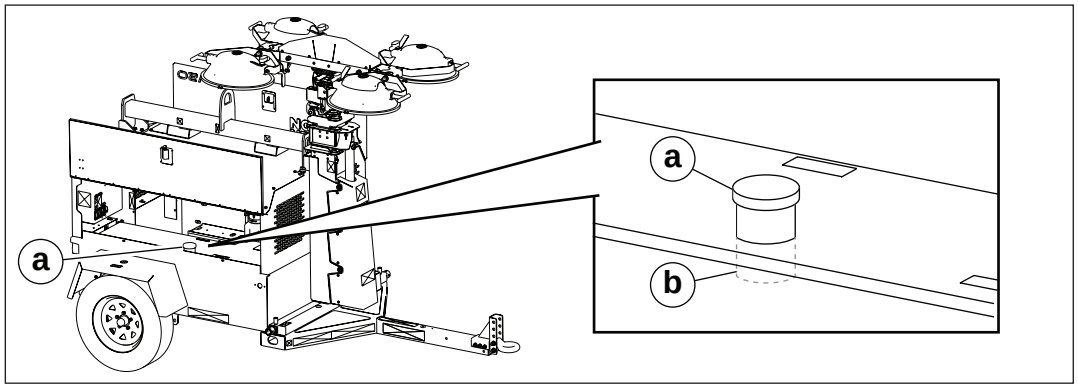
- Machine shut down
- Engine cool
- Machine/fuel tank level with the ground
- Fresh, clean fuel supply

Procedure Perform the procedure below to refuel the machine.

WARNING
Fire hazard. Fuel and its vapors are extremely flammable. Burning fuel can cause severe burns.

- ▶ Keep all sources of ignition away from the machine while refueling.
- ▶ Refuel only when the machine is outdoors.
- ▶ Clean up spilled fuel immediately.

1. Remove the fuel cap **(a)**.



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2. Fill the fuel tank to the bottom of the fuel tank neck **(b)**.

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

- ▶ Do not overfill the fuel tank.

3. Reinstall the fuel cap.

4.9 Aiming the Lights - LTN-V

Overview

- Each individual light fixture can be aimed up, down, left, or right independent of one another. There are four total light fixtures on each machine.
- The light bars, which include two light fixtures each, can be tilted 45° in each direction from horizontal.
- This procedure is not for rotating the lights as a single unit while the tower is raised. This procedure requires the tower is lowered and the is machine stopped. To rotate the lights, see topic *Rotating the Lights*.

Requirements

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

- Machine is stopped
- Tower is completely lowered
- Lights are cool to the touch

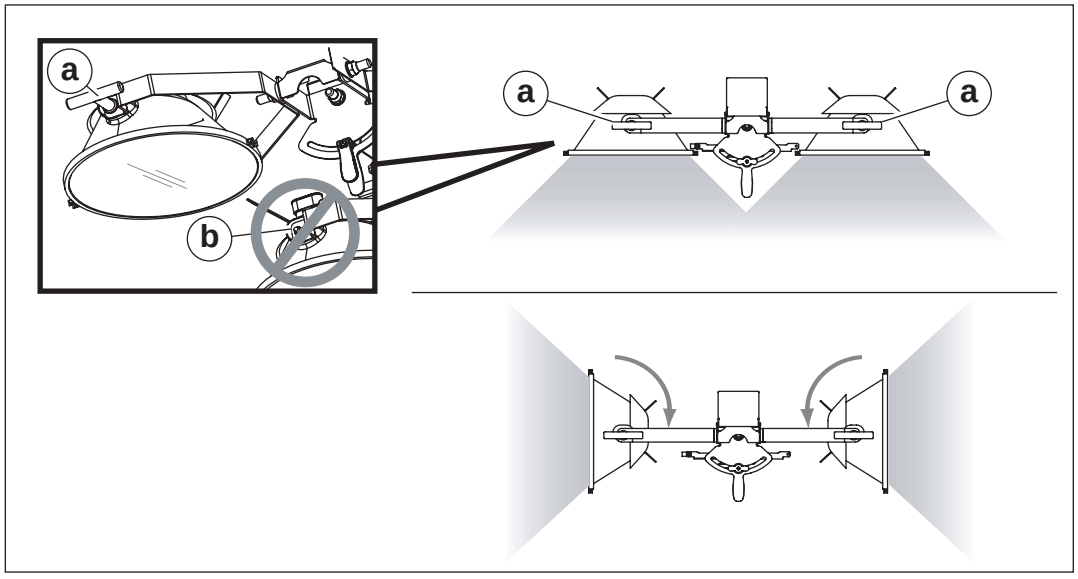
Aiming the light fixtures

Aiming Up or Down

Perform the procedure below to aim an individual light fixture up or down.

1. Loosen the T-handle **(a)** and aim the light up or down.

NOTICE: Do not loosen the nut **(b).** Damage to the light fixture may occur.



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2. Tighten the T-handle **(a)** when the light is aimed properly.
3. Repeat steps 1—3 for each remaining light fixture, if desired.

This procedure continues on the next page.

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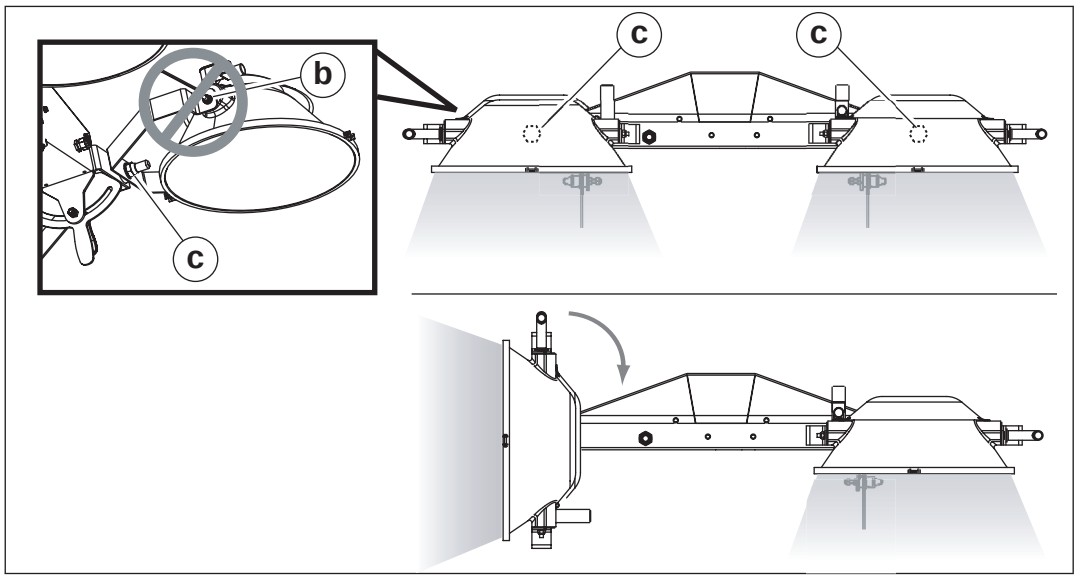
Aiming Left or Right

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

NOTICE: Do not loosen the nut **(b).** Damage to the light fixture may occur.



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2. If loosened, tighten the bracket nut **(c)** when the light is aimed properly.
Note: *The bracket nut* **(c)** *should be only tight enough so that slight resistance is present when aiming the fixture.*

3. Repeat steps 1—2 for each remaining light fixture, if desired.

This procedure continues on the next page.

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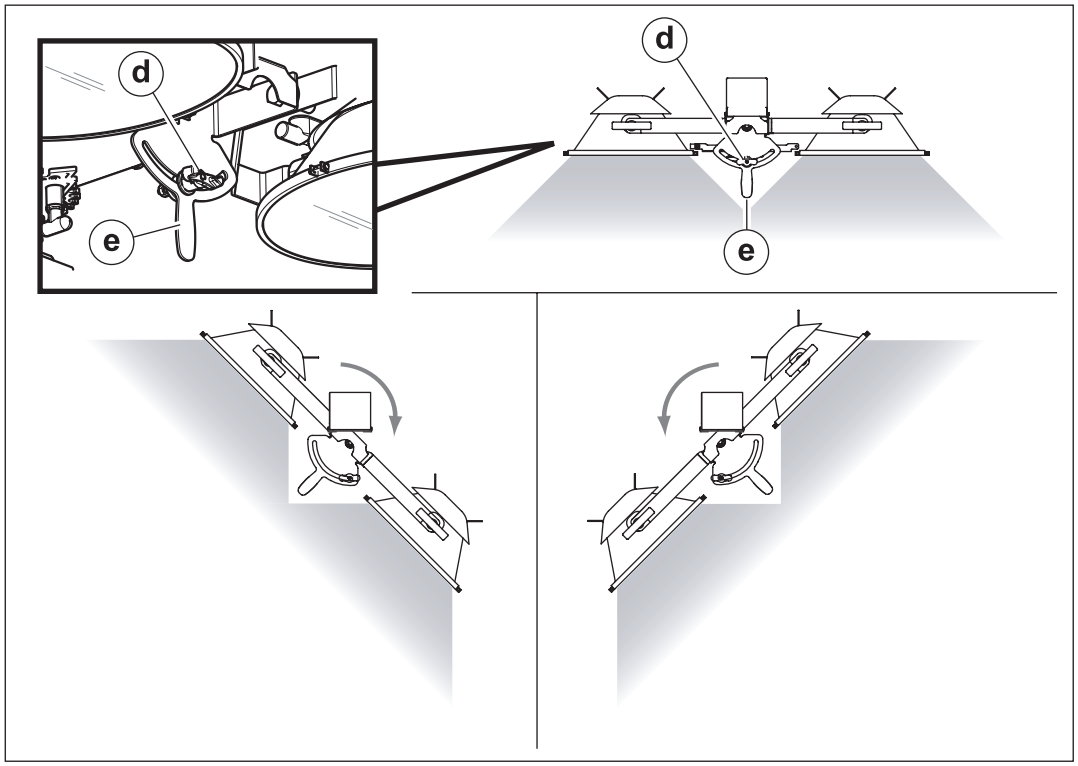
Aiming the light bars

Perform the procedure below to aim the light bars.

1. Loosen the knob **(d)**, grasp the handles **(e)**, and tilt the light bar to the desired angle.



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2. Tighten the knob **(d)** when the light bar is in the desired position.
3. Repeat steps 1—2 for the other light bar, if desired.

4.10 Before Starting

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.

CAUTION

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.

Check machine condition

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

Check the engine

- ☐ Check fuel, engine oil, and coolant levels. Add fluids if necessary.
- ☐ Verify that the 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 Information” chapter at the beginning of this Operator’s Manual.

4.11 Starting the Engine

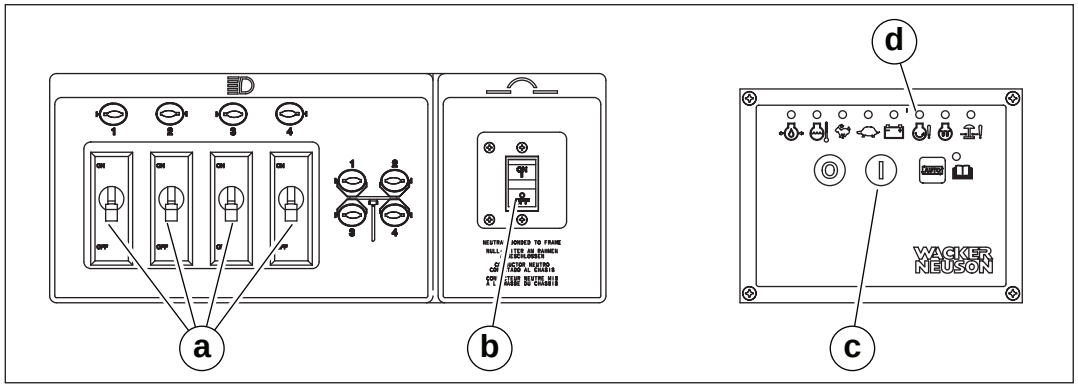
Requirements Review all items in topic *Before Starting*.

NOTICES

- Do not use evaporative starting fluids (for example, ether) to start the engine.
- Do not start the engine under load.
- If the fuel tank was empty, you many need to bleed the fuel lines. Refer to the engine manufacturer's documentation.

Procedure Perform the procedure below to manually start the engine.

1. Verify that circuit breakers **(a)** and **(b)** are in the "OFF" position.



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2. Press the START button **(c)**. The pre-heat sequence will begin. Immediately follwing the pre-heat cycle, the following occurs in sequence.
   a. Fuel solenoid energizes
   b. Starter energizes
   c. Engine cranks for ten seconds
   - If the engine does not start immediately, the cycle above will repeat three times.
   - If three cycles fail, the starting sequence is terminated and the Overcrank shutdown indicator light **(d)** will illuminate. See topic *Meanings of Genset Controller Indicator Lights.*

Note: *After the starter motor has disengaged, the Safety On Timer is activated. This timer is pre-set for a 12 second delay and allows oil pressure, high engine temperature, underspeed, and charge failure to stabilize without triggering a fault.*

3. If a fault occurs after the 12-second delay, see topic *Meanings of Genset Controller Indicator Lights.*
4. Allow the engine to warm up before operating lights.

4.12 Operating the Lights

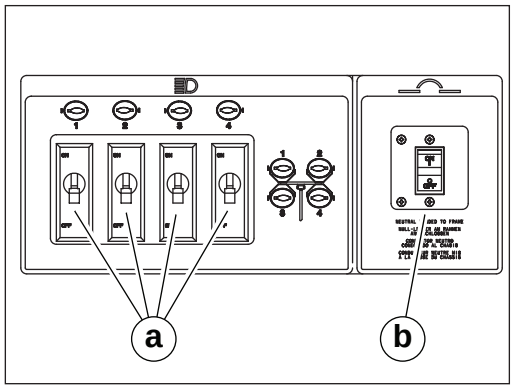
Requirements

- Review all items in Section 4.10 *Before Starting.*
- Raise tower to desired height
- Start and warm up engine

Procedure

Perform the procedure below to operate the lights.

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



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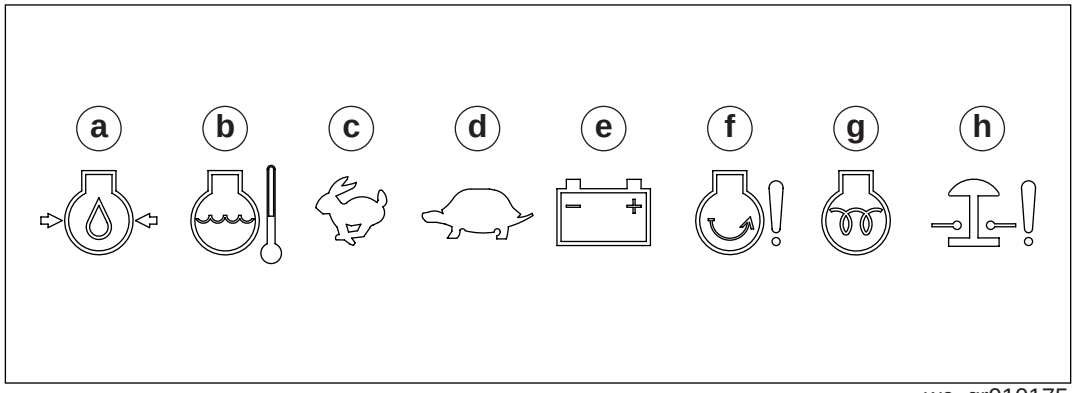
2. Turn on individual circuit breakers **(b)** one at a time.

Notes

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

4.13 Meanings of Genset Controller Indicator Lights

Background The genset controller includes eight LED indicator lights. Six of the indicators signal fault conditions. Two of the indicators signal operational conditions. See topic *Troubleshooting Automatic Shutdown* for more information.



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Ref.	Meaning	Description
a	Low oil pressure	*This indicator flashes when the engine has shutdown due to a low oil pressure condition.
b	High coolant temperature	*This indicator flashes when the engine has shutdown due to a high coolant temperature condition.
c	Engine overspeed	*This indicator flashes when the engine has shutdown due to an engine overspeed condition.
d	Engine underspeed	*This indicator flashes when the engine has shutdown due to an engine underspeed condition.
e	Charge failure	This indicator flashes when voltage is not detected.
f	Engine overcrank	This indicator flashes when the start sequence has been terminated after three attempts.
g	Glow plug**	This indicator is on steady when the glow plugs are activated.
h	Safety stop**	This indicator is on steady when the E-stop switch has been pressed.
* After **Safety On** timer has expired (12 seconds). ** Not a fault condition.		

This procedure continues on the next page.

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Clearing a fault

To clear a fault condition, preform the recommended actions listed below for the activated indicator. If indicator lights persist, contact Wacker Neuson.

WARNING

Possibility of personal injury or equipment damage. A machine down for service must be secured so that no one is allowed to run it until repairs are made.

- ▶ Close and lock all doors.
- ▶ Hang a “Do Not Run” sign on the metering panel.

NOTICE: All faults must be corrected before the ECM can reset.

Fault condition	Recommended actions
Low oil pressure	■ Check oil level. Add oil if required. ■ Inspect engine for oil leaks. ■ Attempt starting again. Verify low oil pressure condition. ■ Check oil pressure switch, connections, and wires.
High coolant temperature	Allow engine to cool, then ■ Check coolant level in the radiator. Add coolant if required. ■ Inspect coolant hoses and engine block for leaks. Repair all leaks. ■ Check fan belt tension on the water pump. Adjust the belt tension if required. ■ Check the high temperature shutdown switch and wires on the engine block. ■ Check the wiring between temperature switches, engine block, and ECM. ■ Consult the engine manufacturer’s documentation.
Engine overspeed Engine underspeed	■ Restart the engine and read the AC frequency using a meter. Meter should read approximately 61.5 Hz under no-load conditions. ■ Consult the engine manufacturer’s documentation.
Charge failure	■ Check the battery for proper charge. Charge the battery if required. ■ Check the wiring to and from the battery and control panel.
Engine overcrank	■ Check the fuel level. ■ Check the fuel pump for proper operation. ■ Consult the engine manufacturer’s documentation.
Note: *The generator can also cause problems. Consult a qualified electrician or your nearest Wacker Neuson dealer for possible causes of generator problems.*	

Restarting the machine

After fault conditions have been identified and rectified, press the red stop button and restart the machine. All fault indicators will automatically be cleared. See topic *Starting the Machine*.

4.14 Stopping the Machine

Prerequisite

- Lights are turned off.

NOTICE: Generator will be damaged if the engine is shut down before turning off the lights.

Stopping the machine

Push the STOP button **(m)** to de-energize the fuel solenoid.

4.15 Automatic/Remote Start-Up

The engine controller is capable of automatically starting the engine. Contact Wacker Neuson Product Support for more information.

4.16 Generator Derating

Background

All generator sets are subject to derating for altitude and temperature. Although derating should not affect operation of the lights, it will reduce the available reserve power to the receptacles.

Derating percentages

Ratings are typically reduced 3% per 300 m (1000 ft.) elevation above sea level, and 2% per 5.5°C (10°F) increase in ambient temperature above 25°C (78°F).

4.17 Raising the Tower

Overview

The tower is raised by the action of a hydraulic cylinder **(c)**.

Note: *The tower can be raised without running the engine.*

WARNING

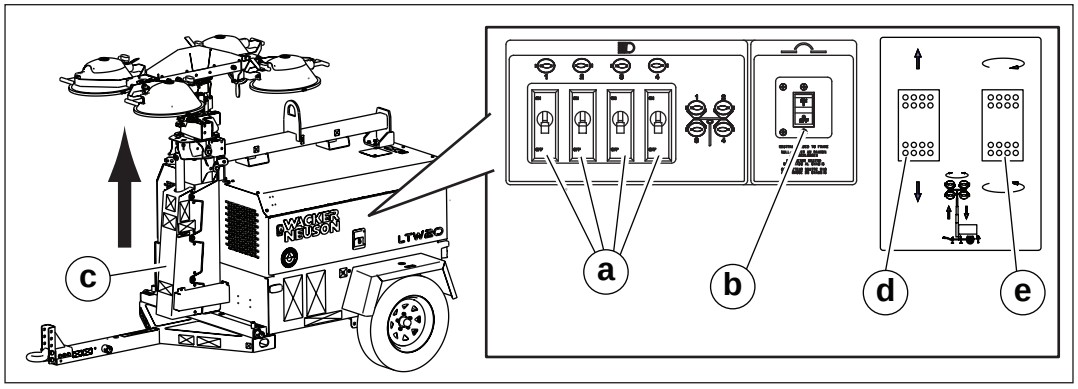
Personal injury hazard. Raising or lowering the tower creates situations that if not avoided, will cause death or serious injury from striking, crushing, pinching, electrocution, etc.

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

Procedure

Perform the procedure below to raise the tower.

1. If equipped, engage the parking brake on the trailer.
Note: *The tower will not raise if the brake is not engaged.*
2. Aim the lights. See topic *Aiming the Lights.*
3. Start the engine. See topic *Starting the Machine*.
4. Turn on the circuit breakers **(a,b)**. See topic *Operating the Lights*.



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5. Press and hold the upper half of the tower switch **(d)**. Release the switch when the tower reaches the desired height. See topic *Rotating the Mast* for more information.

4.18 Lowering the Tower

Overview

A low-voltage electrical circuit controls the release of pressure in the hydraulic cylinder **(c)**. When pressure is released, the tower will lower.

Notes

- The engine does not need to be running to lower the tower.
- The hydraulic circuit includes a pressure release valve that lowers the tower in an emergency situation. See topic *Emergency Shutdown Procedure*.
- If the parking brake on the trailer is disengaged while the tower is raised, it will lower automatically.

WARNING

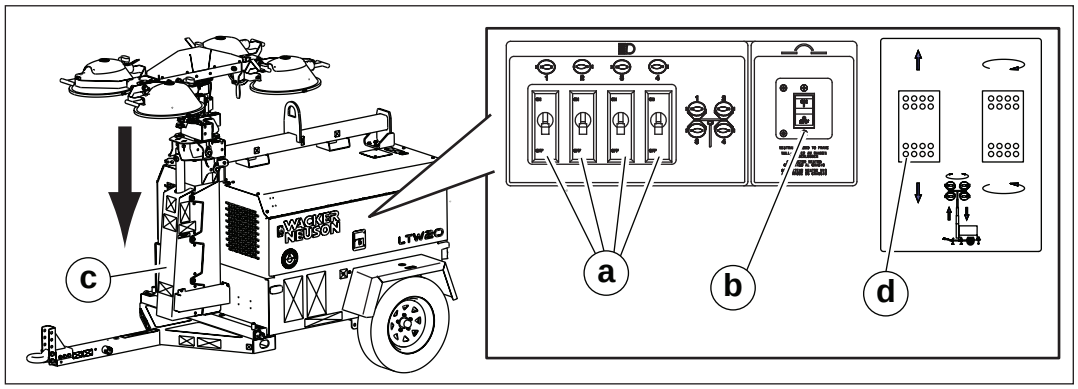
Personal injury hazard. Raising or lowering the tower creates situations that if not avoided, will cause death or serious injury from striking, crushing, pinching, electrocution, etc.

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

Procedure

Perform the procedure below to lower the tower.

1. Stop the engine.
2. Turn off the circuit breakers **(a, b)**.



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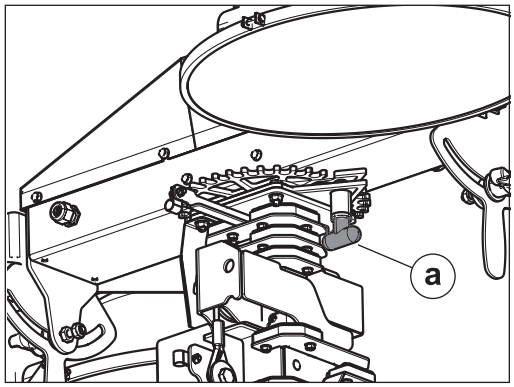
3. Press and hold the lower half of the tower switch **(d)**. Release the switch when the tower is completely lowered.

4.19 Manually Rotating the Mast

Overview The operator can rotate the mast 360° while the tower is lowered.

Procedure Perform the procedure below to rotate the mast.

1. Pull out the locking pin **(a)** on the bottom of the mast.



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2. Rotate the mast to the desired position.
3. Engage the locking pin **(a)**.

Note: *Be sure the locking pin seats into a groove on the sprocket.*

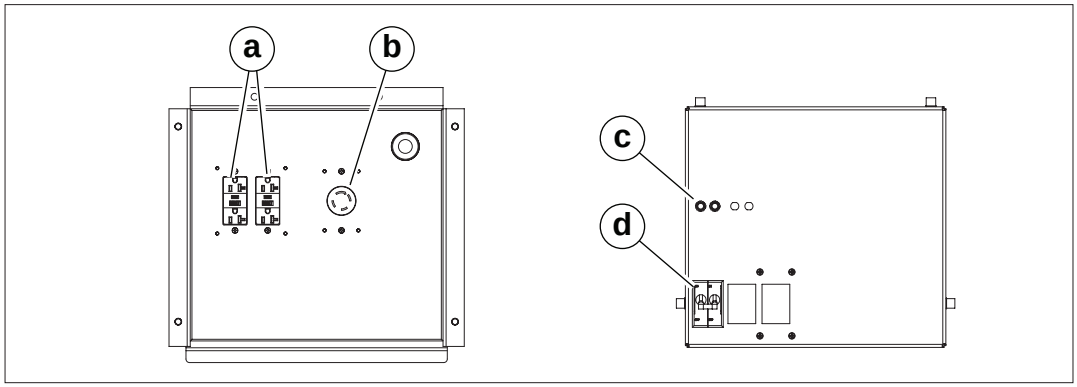
4.20 Receptacle Panel

Overview

The Light Tower is equipped with receptacles for running accessories and tools from the generator. Power to these receptacles is available any time the engine is running and the circuit breakers are “ON”.

Receptacles

The receptacle panels are equipped as follows:



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Ref	Qty	Description
a	2	120V Ground Fault Interrupt (GFI) convenience receptacle
b	1	120/240V single-phase receptacle
c	2	Circuit breaker for 120V GFI receptacle
d	1	Circuit breaker for 120/240V and 240V single phase receptacle (*LTW8 only*)

Note: *Do not draw more than 2,000 watts (LTW6) or 4000 Watts (LTW8) from the receptacles with all of the lights on, or the lights will turn off. Load to at least 50% of the rated load to prevent wet stacking.*

Circuit breakers

Circuit breakers **(c)** on the back of the receptacle panel protect the GFI receptacles. The GFI receptacles should be tested for proper operation each time they are used.

LTW8K and LTW8K-V only: Circuit breaker **(d)** on the back of the receptacle panel protects the receptacle **(b)**.

Testing a GFI

To test a GFI:

1. Push the test button in. The reset button should pop out. Power to the receptacle is now off.
2. To restore power to the receptacle, push the reset button.

NOTICE: If the reset button does not pop out, the GFI is defective. **Do not** use the receptacle until the problem can be corrected.

If the reset button pops out during use, check the generator and attachments for defects.

4.21 Emergency Stop Switch

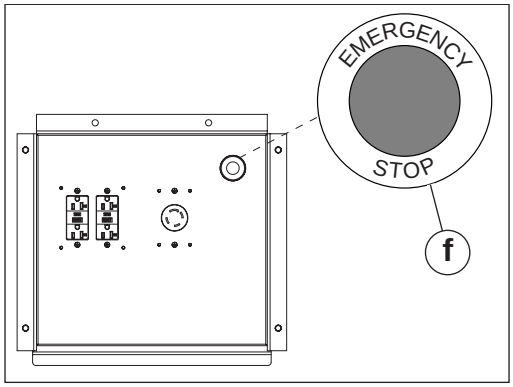
Location

The emergency stop switch **(f)** is the red button located on the receptacle panel at the rear of the Light Tower cabinet.

Operation

- Activate the emergency stop switch by pushing the red button in.
- Pushing the emergency stop switch opens the main circuit breaker and the fuel solenoid and results in the engine shutting down and an indicator to illuminate.
- The switch will remain in until the button is pulled out.

NOTICE: Press the emergency stop button only in the case of an actual emergency where the generator must be stopped immediately! In all other instances, open the main line circuit breaker and then press the engine controller Off “O” button.



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4.22 Emergency Shutdown Procedure

General procedures

If a breakdown or accident occurs while the machine is operating, follow the procedure below:

1. Stop the engine.
2. Disconnect all loads from the machine.
3. Lower the tower.
4. Allow the machine to cool before opening the cabinet.
5. Contact the rental yard or machine owner for further instructions.

Hydraulic release valve

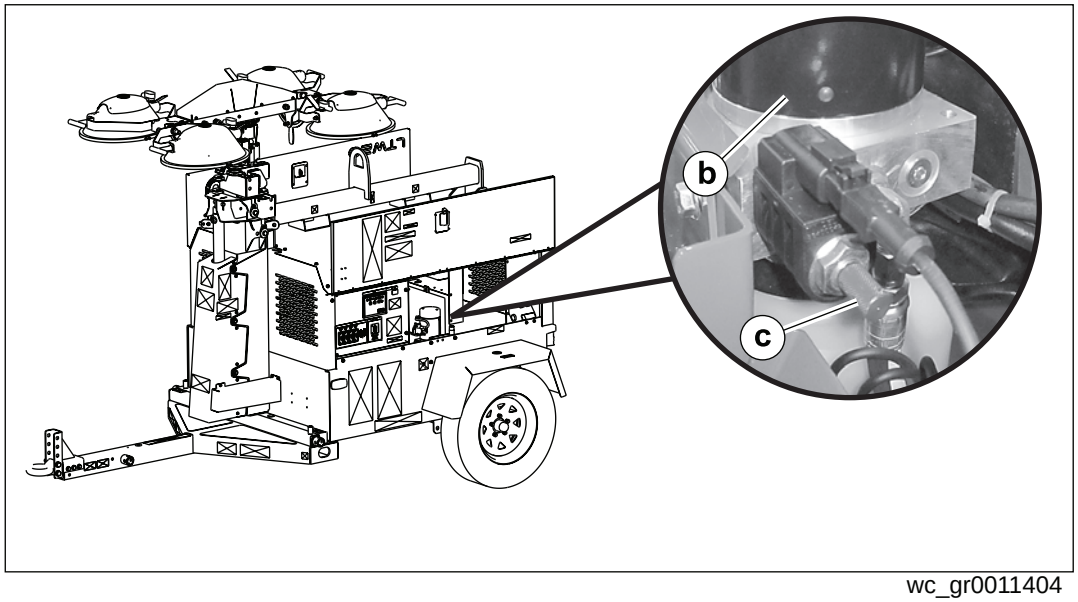
The hydraulic pump **(b)** is equipped with a pressure release valve **(c).** This valve enables the tower to be lowered manually.

- If electrical power is lost, or the tower switch is inoperable, pull the knob on the pressure release valve. The hydraulic cylinder will retract and the tower will lower. Push the knob to close the valve after the tower is fully lowered.

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.



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5 Factory-Installed Options

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 Corporation at 1-800-770-0957. A nameplate listing the Model Number, Item Number, Revision, and Serial Number is attached to each unit. Please have this information available when contacting Wacker Neuson Corporation.

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

5.1 Available Options

Brakes

See *Towing Safety* for information about connecting and checking the brakes.

Electric Brakes

Machines equipped with electric brakes draw power from the tow vehicle. An electrical wiring harness connects the tow vehicle's brake pedal to the brake actuators on the trailer. Pressing the brake pedal applies the brakes to both the tow vehicle and the trailer.

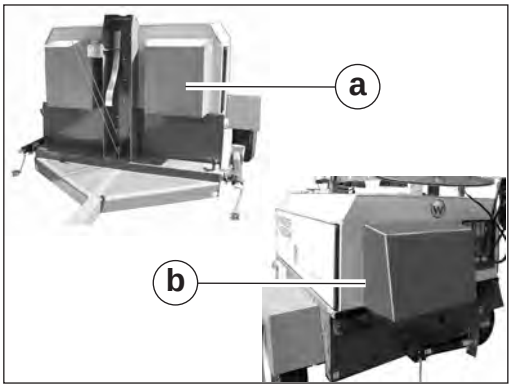
Surge Brakes

Machines equipped with hydraulic surge brakes do not require any electrical connection to the tow vehicle. The braking system is completely self-contained, using momentum to actuate the trailer's brake master cylinder and apply the brakes when the tow vehicle slows or stops.

Cold Weather Shrouds

Machines equipped with cold weather shrouds **(a, b)** are designed to operate optimally in cold weather environments.

- Machines equipped with cold weather shrouds can be operated at full load in ambient temperatures up to 35°C (95°F).
- At ambient temperatures above 35°C (95°F), machines must be derated accordingly.



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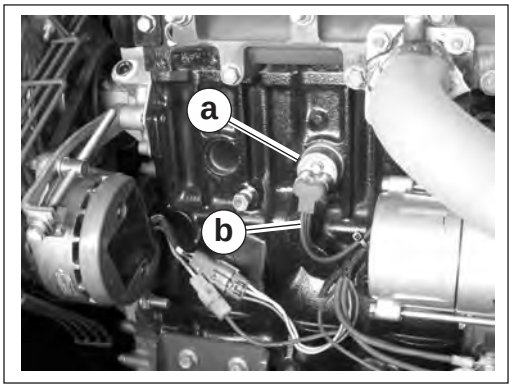
Engine Block Heater

The engine block heater includes a block heater **(a)** with a cord **(b)**. 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.



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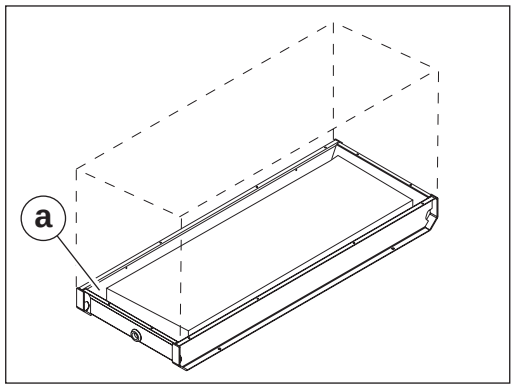
Containment System

Overspills and leaks are captured in the containment system **(a)**. The containment system holds over 110% of the fluid contained in the machine.

The containment system should be checked every 50 hours or 2 weeks and drained when necessary. If fluid is found in the containment tank, trace the cause of the leak and correct.

Note: *In the interests of environmental protection, place impermeable sheeting and a container under the machine to collect the liquid which drains off. Dispose of this liquid in accordance with environmental protection legislation.*



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Lockable Battery Disconnect

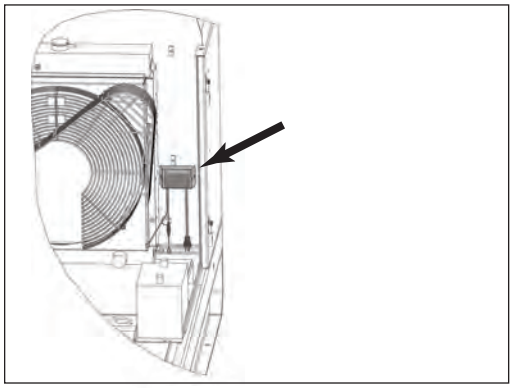
A lockable ON/OFF switch is available which disconnects the battery. A padlock (not included) securely locks the switch in the OFF position. If equipped, the battery disconnect switch is mounted to the skid beneath the access door on the right side of the machine.

NOTICE: Do not use the battery disconnect switch while the engine is running. Damage to electrical components may occur.

wc_gr010877

Battery Charger

An optional battery charger maintains the battery at peak power while the machine is turned off. Use of a battery charger is recommended when the generator is not operated on a regular basis. The battery charger prevents voltage drain and reduces the possibility of having to jump-start the engine after long periods of inactivity. Plug the cord into a 120V power supply.



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Internal Light Storage

This option allows the light fixtures to be detached from the tower and stored inside the Light Tower cabinet. Internal storage protects the fixtures from damage on the job site, during transport, or during long-term storage.

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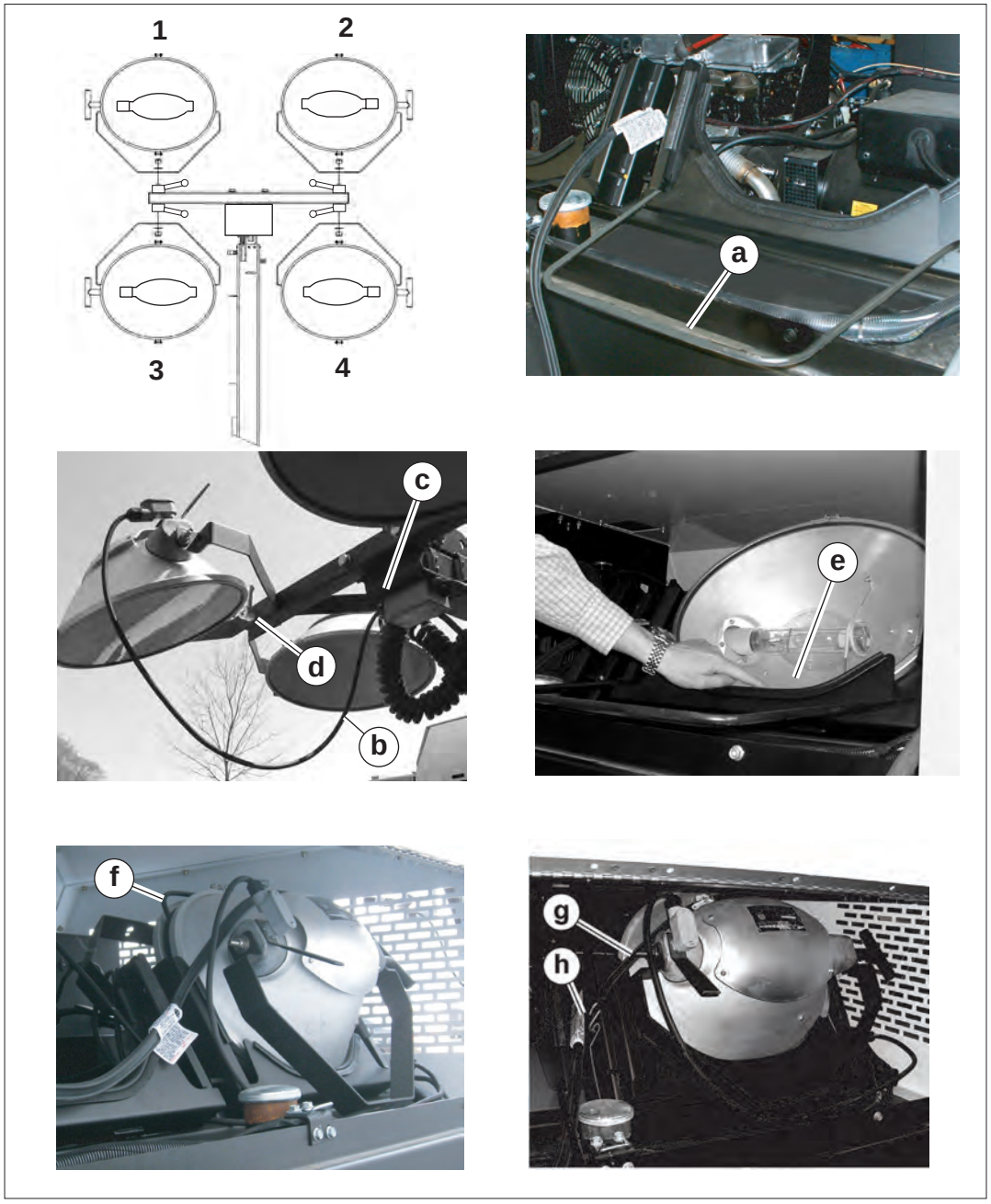
5.2 Using the Internal Light Storage

Prerequisites

- Machine shut down
- Left side of Light Tower cabinet open



wc_gr005287

Procedure

Perform the procedure below to store the light fixtures.

1. Rotate the two retaining wires **(a)** forward so that they lie flat in an open position.
2. Disconnect the electrical cables **(b)** from the junction box **(c)**.
3. Detach light fixture #2 from the tower by removing the swivel handle **(d)** from the threaded stud and lifting the fixture off the tower.

Note: *Re-install the swivel handle on the threaded stud after detaching the fixture.*

4. Orient light fixture #2 so that the lens is facing you and the mounting bracket is on the top side. Place the fixture behind the left-hand divider **(e)** inside the light tower cabinet.

NOTICE: Avoid pinching the electrical cables beneath the fixtures or between the fixtures and dividers.

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5. Repeat this procedure with light fixture #4, placing it behind the right-hand divider inside the light tower cabinet.
6. Rotate the retaining wires upward so that they rest against the lens frames.
7. Detach and remove light fixture #1.
8. Orient light fixture #1 so that the lens is facing away from you and the mounting bracket is on the bottom side. Place the fixture in front of the right-hand divider, resting it against the retaining wire **(f)**.
9. Repeat this procedure with light fixture #3, placing it in the left-hand divider.
10. Use the tie-down straps **(g)** to secure the fixtures in place. Each pair of fixtures is secured with one strap. Tighten the strap across the top surface of the outer fixture and close the buckle to fasten the strap in place.

Note: *Make sure to hook the tie-down straps in the cutouts provided for this purpose **(h)**.*

5.3 Cold Weather Options

Cold Weather machines include the following options:

- Containment system
- Cold weather shrouds
- Electric brakes
- Manual winch
- Electronic governor
- Engine block heater
- Battery disconnect
- Battery charger

5.4 North Slope Options

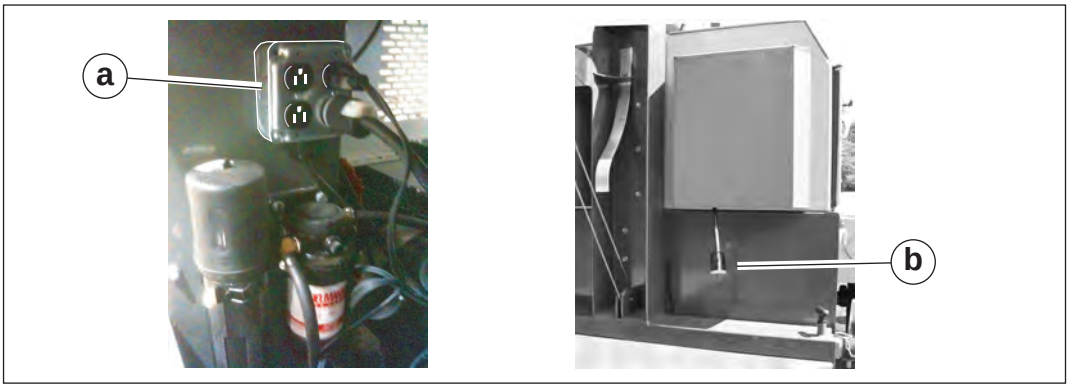
North Slope machines include the following options:

- Containment system
- Electric brakes or surge brakes
- Manual winch or power winch
- Electronic governor
- Engine block heater
- Battery charger
- Rear hitch

Additional options included with North Slope machines:

Quad Outlet Box

North Slope machines are equipped with an internal 4" receptacle box **(a)**. This box functions as a central location to plug in cold weather accessories such as an engine block heater, oil pan heater, battery blanket, and battery charger. An electrical cord **(b)** allows the receptacle box to be directly connected to an external power source.



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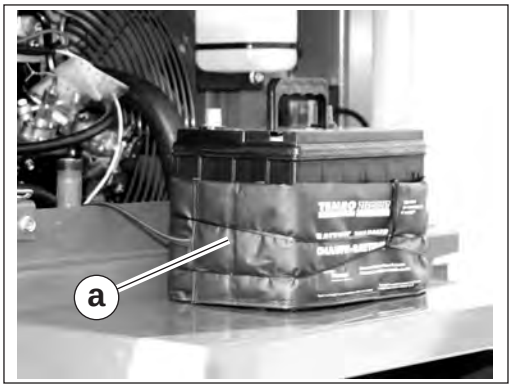
Battery Blanket

An electrically powered blanket **(a)** 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.



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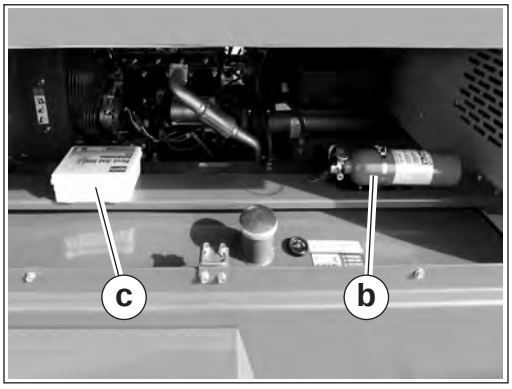
Oil Pan Heater

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

Fire Extinguisher and First Aid Kit

The North Slope machine is equipped with a fire extinguisher **(b)** and a first aid kit **(c)** for operator convenience and safety in the field.



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WARNING
Machine damage or burn hazards.
- ▶ Before each machine startup, always make sure the fire extinguisher is fully charged, accessible, and undamaged.
- ▶ Train machine operators in the proper use of the fire extinguisher.

Quick Connect Oil Drain System

The oil drain hose is located inside the Light Tower cabinet. North Slope machines are equipped with a quick connect fitting at the end of the hose.

Containment Suction Access Point

A vertical pipe **(e)** with a 3/4" NPT thread is provided next to the battery on the control panel side of the machine. The pipe extends into the containment skid tank, enabling suction cleanout of the tank.

wc_gr007424

6 Maintenance

6.1 Maintaining the Emission Control System

For machines sold in North America:

Normal maintenance, replacement, or repair of emission control devices and systems may be performed by any repair establishment or individual; however, warranty repairs must be performed by a dealer/service center authorized by Wacker Neuson. The use of service parts that are not equivalent in performance and durability to authorized parts may impair the effectiveness of the emission control system and may have a bearing on the outcome of a warranty claim.

6.2 Periodic Maintenance Schedule

The table below lists basic machine maintenance. Tasks designated with check marks may be performed by the operator. Tasks designated with square bullet points require special training and equipment.

		Interval (hours of service)							
Item	**Task**	**Before each use**	**100**	**200**	**400**	**500**	**800**	**1 yr**	**2 yr**
Fluids	Check for leaks.	✓							
Engine oil	Check level.	✓							
Fuel	Check level.	✓							
Coolant	Check level.	✓							
Air filter dust cup	Empty dust.	✓							
Battery electro-lyte	Check level.		✓						
Fan belt	Check condi-tion and tension.		✓						
Air filter element	Clean.		■						
Radiator hoses	Check condi-tion.			✓					
Intake air hose	Check condi-tion and clear obstructions.			✓					
Fuel filter	Replace.	*Replace after every 250 hours of operation.*							
Engine oil	Change.*	*Replace after every 250 hours of operation.*							

		Interval (hours of service)							
Item	**Task**	**Before each use**	**100**	**200**	**400**	**500**	**800**	**1 yr**	**2 yr**
Oil filter	Replace.					■			
Radiator	Flush.					■			
Fan belt	Replace.					■			
Fuel tank	Remove sediment.					■			
Valve clearance	Check and adjust as needed.						■		
Air filter element	Replace.							■	
Radiator coolant	Change.								■
Battery	Replace.								■
Radiator hoses and clamps	Replace.								■
Fuel pipes and clamps	Replace.								■

** Change engine oil and filter after first 50 hours of operation.*

6.3 Removing and Replacing Lamps

Prerequisites

- Engine shut down
- Light circuit breakers turned OFF
- Lamps and fixtures cool to the touch
- Eye and hand protection

WARNING
Burn hazard. Lamps become extremely hot in use.

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

WARNING
Personal injury hazard. Ultraviolet radiation from the lamps can cause serious skin and eye irritation.

▶ Use only undamaged lamps.

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

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

▶ Do not operate the lights with a lens that is cracked, damaged, or missing.

▶ Do not scratch the lamp or subject the lamp to excess pressure.

▶ Wear eye and hand protection when removing or replacing lamps.

This procedure continues on the next page.

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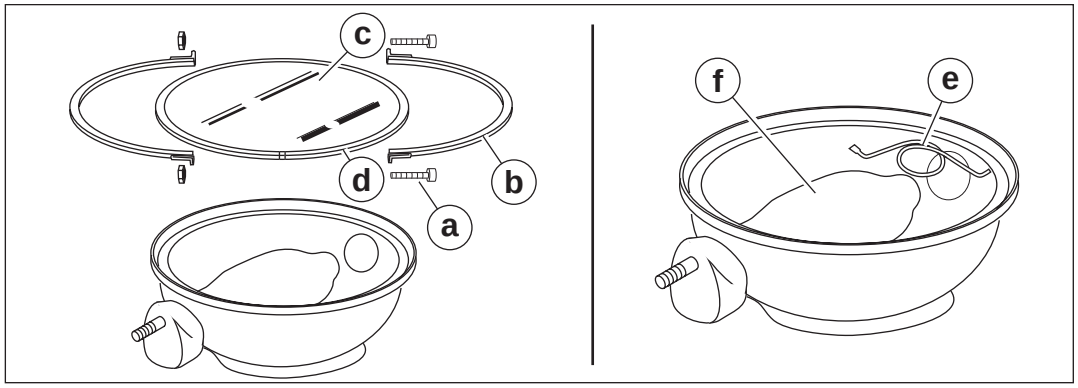
Perform the procedures below to remove and install the lamp.

Removing the lamp

1. Remove the screws **(a)** securing the flange rings **(b)** and remove the flange rings.



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2. Remove the lens **(c)** with the gasket **(d)** attached.
3. Remove the hardware securing one side of the lamp stabilizer **(e)**. Once removed, swing the lamp stabilizer to the side and unscrew the lamp **(f)**.

Installing the lamp

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

6.4 Inspecting the Machine

When

Daily

Overview

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

External inspection

Perform an external inspection of the machine. Check for:

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

Internal inspection

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

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

6.5 Checking the Engine Coolant Level

When Daily

Requirements

- Machine shut down
- Engine cool
- 50/50 coolant/water solution (as needed)

NOTICE: Do not use water alone to fill the radiator. Use a long-life ethylene glycol coolant.

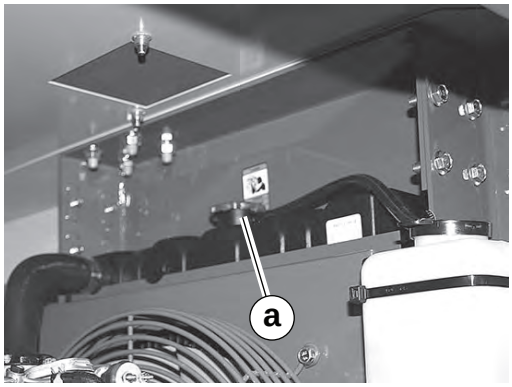
Procedure Perform the procedure below to check the engine coolant level.

WARNING
Burn hazard. Engine coolant is hot and under pressure at operating temperature.

► Check the coolant level only after the engine has been shut down and is cool.

NOTICE: Do not add fluid to the over-flow reservior.

1. Open one of the cabinet doors**.**
2. Slowly rotate the radiator cap **(a)** counterclockwise to release system pressure. Unscrew and remove the radiator cap after the pressure has been released.
3. Verify that the coolant level of the radiator is 19 mm (3/4 in.) below the bottom of the filler neck. Add more coolant if necessary to maintain this level.



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NOTICE: Do not overfill the radiator. The machine will be damaged.

WARNING
Burn hazard. Coolant can contain alkali.

► Avoid coolant contact with skin and eyes.

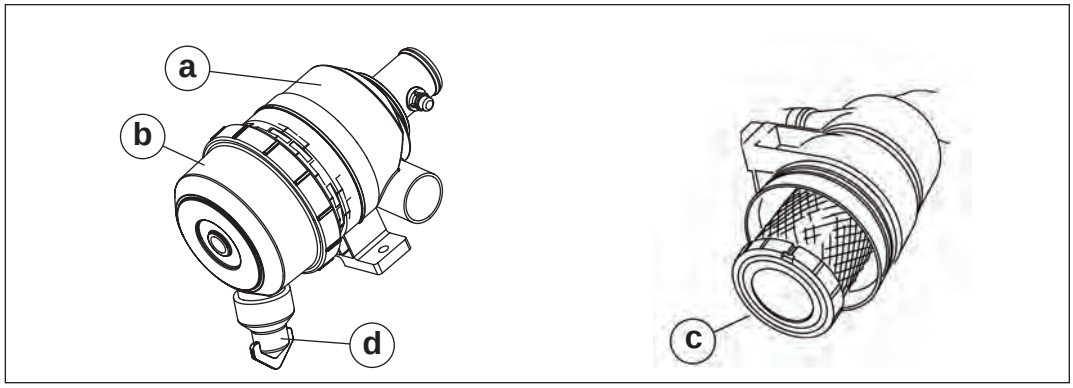
4. Inspect the radiator filler cap and filler cap seal for damage. Clean the radiator filler cap or replace it if necessary.
5. Reinstall the radiator filler cap.

6.6 Cleaning Air Filter Element

When Clean the air filter element every 100 hours.

Procedure Perform the procedure below to clean the air filter element.

1. Remove the cover **(b)** from the air filter housing **(a)**.
2. Remove the air filter element **(c)**.



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3. To clean the air filter element, lightly tap on a hard surface to eliminate all excess dirt. Do not blow the paper with compressed air to clean.
4. Wipe the inside of the air cleaner housing with a clean, dry cloth.
5. Replace the air filter element inside the air cleaner housing, and then re-install the cover.
6. Open the evacuator valve **(d)** once a week under ordinary operating conditions, or daily if the light tower is being used in a dusty place. This will clean large particles of dust and dirt from the air cleaner.

6.7 Changing Engine Oil

WARNING
Most used oil contains 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 engine oil.
- ▶ Wash skin thoroughly after exposure to used engine oil.

When

Change the engine oil every 250 hours.

Prerequisites

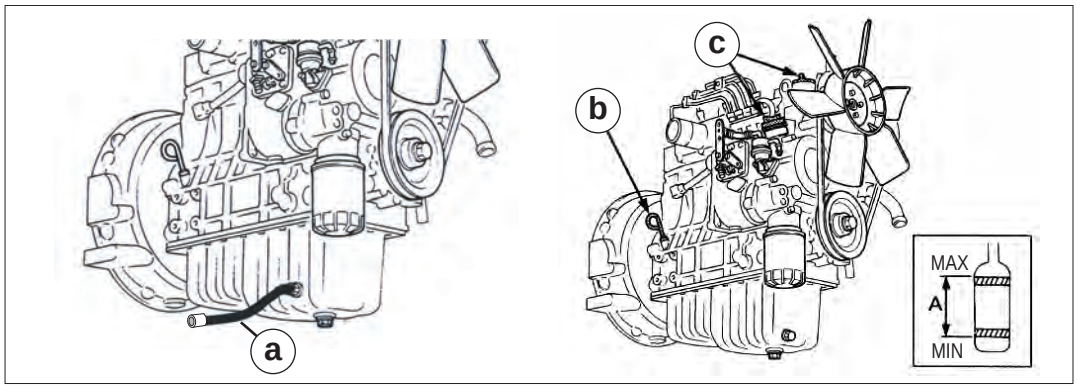
- Warm engine
- Plastic sheet and container of suitable size to collect drained oil
- Replacement oil (see *Technical Data* for oil quantity and type)

Note: *In the interests of environmental protection, place a plastic sheet and a container under the machine to collect any liquid which drains off. Dispose of this liquid in accordance with environmental protection legislation.*

Procedure

Perform the procedure below to change the engine oil.

1. Locate the oil drain hose **(a)** at the base of the engine and feed it through the opening at the rear of the light tower cabinet.



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2. Remove the cap from the oil drain hose.
3. Allow the oil to drain into a suitable container.
4. Replace the cap on the oil drain hose. Return the hose to its stored location.
5. Fill the engine crankcase through one of the oil filler plugs **(c)** to the upper mark on the dipstick **(b)**. Engine oil level should fall within the “A” range on the graphic. See *Technical Data* for oil quantity and type.
6. Reinstall the oil filler plug.

Result

The procedure is now complete.

6.8 Maintaing the Fuel and Water Separator

When

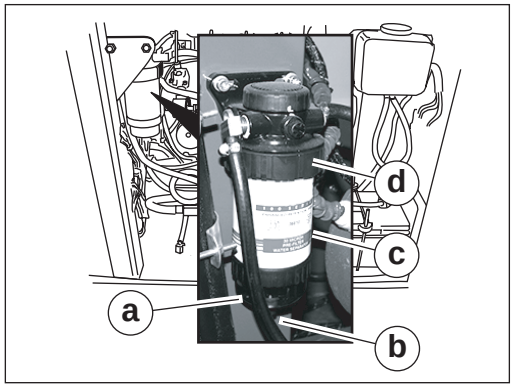
- Drain bowl as needed
- Replace element every 250 hours (along with fuel filter) or as needed

Requirements

- Container
- Replacement element

Draining bowl

Perform the procedure below to drain water bowl **(a)**.



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1. Open the water bowl drain cock **(b)**.
2. Allow water to drain into container.
3. Close the water bowl drain cock.

Replacing the separator element

Follow the procedure below to replace the separator element.

1. Loosen and remove the element retainer **(d)** and element **(c)**.
2. Remove the separator bowl from the element and replace with a new element.
3. Re-install the bowl, element, and retainer.

Result

The fuel and water separator element has been replaced.

6.9 Maintaining the Trailer

Tires

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

Wheels

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

Axle Hubs

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

Brakes

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

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

6.10 Long-Term Storage

Introduction

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.

When

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

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 Scheduled Maintenance 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.

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.

- Cover the machine. Tires and other exposed rubber items should be protected from the weather. Either cover them or use a readily available protectant.

6.11 Connecting and 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.

WARNING
Battery fluid is poisonous and corrosive.
- ▶ In the event of ingestion or contact with skin or eyes, seek medical attention immediately.

Battery connections

To connect the battery:
- Connect the positive (+) battery cable to the battery.
- Connect the negative (-) battery cable to the battery.

To disconnect the battery:
- Stop the engine.
- Place all electrical switches in the OFF position.
- Disconnect the negative (-) battery cable from the battery.
- Disconnect the positive (+) battery cable from the battery.

Maintaining the battery
- 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.

Precautions

Observe the following precautions to prevent serious damage to the electrical system.
- Do not disconnect the battery while the machine is running.
- Do not attempt to run the machine without a battery.
- Do not attempt to jump-start the machine.
- In the event that the machine has a discharged battery, either replace the battery with a fully charged battery or charge the battery using an appropriate battery charger. See chapter *Technical Data* for the equivalent battery specification.
- Dispose of waste batteries in accordance with local environmental regulations.

7 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
Engine doesn't start	Battery discharged	Charge battery.
	Battery connections corroded	Clean battery connections.
	Blown fuse	Replace fuse.
	Faulty starter	Replace starter.
Engine tries to start but stops	No fuel	Fill tank with fuel. Bleed fuel lines.
	Clogged fuel filter	Replace fuel filter.
	Fuel circuit failure	Check fuel lines.
No generator output	Main circuit breaker open	Close main circuit breaker.
	Voltage regulator malfunction	Call Wacker Neuson for service.
Low oil pressure	Low oil level	Fill engine sump with oil.
	Clogged oil filter	Replace oil filter.
	Oil pump failure	Call Wacker Neuson for service.
High coolant temperature	Electrical overload	Reduce load.
	Low coolant level	Fill with coolant.
	Low oil level	Fill sump with oil.
	Clogged oil filter	Replace oil filter.
Engine emits black smoke	Clogged air filter	Clean/replace air filter cartridges.
	Electrical overload	Reduce load.
	High oil level	Remove excess oil.
	Fuel circuit failure	Call Wacker Neuson for service.

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

8 Technical Data

8.1 Engine

Engine Power Rating

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

Machine		**LTW 6K, LTW 6K-V**	**LTW 8K, LTW 8K-V**
Engine			
Make		Kubota	
Model		D1005-E3BG, Tier IV	D1105-E3BG, Tier IV
Type		3-cylinder, 4-cycle, liquid-cooled diesel	
Max. rated standby power @ rated speed	kW (Hp)	9.8 (13.1) @ 1800 rpm	11.5 (15.4) @ 1800 rpm
Operating speed	rpm	1800	
Alternator	V / A / W	12 / 30 / 360	
Battery	V/CCA	12 / 750	
Air cleaner	type	Dry-type element	
Fuel	type	No. 2 diesel	
Fuel tank capacity	l (gal.)	215.8 (57)	
Fuel consumption	l (gal.) / hr.	2.58 (0.68)	2.97 (0.79)
Running time (continuous load)	hours	80.5	69.8
Coolant capacity	l (qts.)	10.0 (10.6)	
Oil capacity	l (qts.)	5.1 (5.4)	
Oil weight	SAE	10W30 CD or higher	

8.2 Generator

Machine		LTW 6K, LTW 6K-V, LTW 6K-VS	LTW 8K, LTW 8K-V, LTW 8K-VS
Generator			
Make / Type		Mecc Alte / Brushless	
Frequency	Hz	60	
Generator speed	rpm	1800	
Continuous output	kW	6.0	8.0
AC voltage output	volts/phase	120 / 240, 1Ø	
Amps	A	50 / 25	67 / 33
Excitation type		Capacitor / Brushless	
Power factor		1.0	
Voltage regulation	%	± 6.0	

8.3 Machine - LTW 6/8K-V

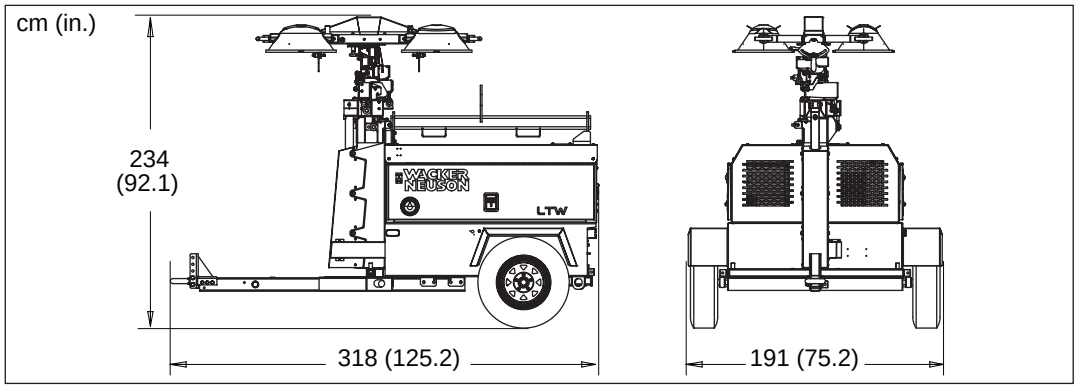
Machine		LTW 6K-V	LTW 8K-V
Operating weight	kg (lbs.)	1380.28 (3043)	1398.43 (3083)
Dry weight	kg (lbs.)	1194.31 (2633)	1212.45 (2673)
Travel Dimensions (l x w x h)	cm (in.)	318 X 191 X 234 (125.2 X 75.2 X 92.1)	
Height - tower extended	m (ft.)	8.7m (28.54)	
Lighting system		4—1000W	
Ballast		Coil and core	
Max. lighting coverage @ 5 ft. candles (54 lux)	m^2 (ft^2)	12, 960 (1204)	
Sound level at 7 m (23 ft.)	dB(A)	64.3	67.3
AC receptacles		2 duplex, 1 Twist-lock	
120V GFI receptacles		2—20A	
120V/240V Twist-lock receptacles		1—30A	
Surge brakes (if equipped)	Fluid type	DOT3	
Tires	size	ST 205 / 75D15 (C)	

8.4 Machine - LTW 6/8K-VS

Machine		LTW 6K-VS	LTW 8K-VS
		LTW 6K-VS (custom)	LTW 8K-VS (custom)
		LTW 6K-VS (CW)	LTW 8K-VS (CW)
Dry weight	kg (lbs.)	1293 (2850.6)	1315 (2899.1)
		1320 (2910.1)	1343 (2960.8)
		1313 (2894.7)	1336 (2945.4)
Dry weight (Cold weather, skid version)	kg (lbs.)	—	989 (2180)
Dimensions (L x W x H)	cm (in.)	332.8 X 190.5 X 256.5 (131 X 75 X 101)	
Dimensions (skid version)	cm (in.)	263 X 145 X 231 (104 X 57 X 91)	
Lighting system		4—1000W	
Ballast		Coil and core	
Sound level at 7 m (23 ft.)	dB(A)	64.3	67.3
AC receptacles		2 duplex, 1 Twist-lock	
120V GFI receptacles		2—20A	
120V/240V Twist-lock receptacles		1—30A	
Surge brakes (if equipped)	Fluid type	DOT3	
Tires	size	ST 205 / 75D15 (C)	

8.5 Dimensions - LTW 6K-V, LTW 8K-V

-



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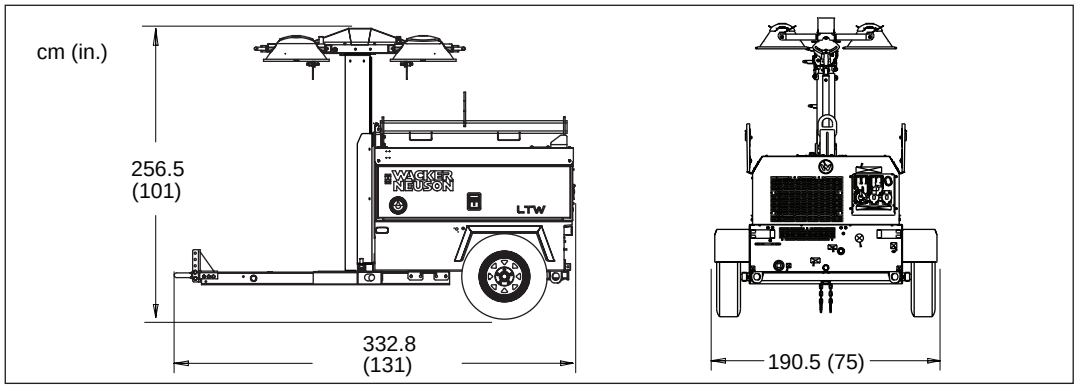
8.6 Dimensions - LTW 6K-VS, LTW 8K-VS



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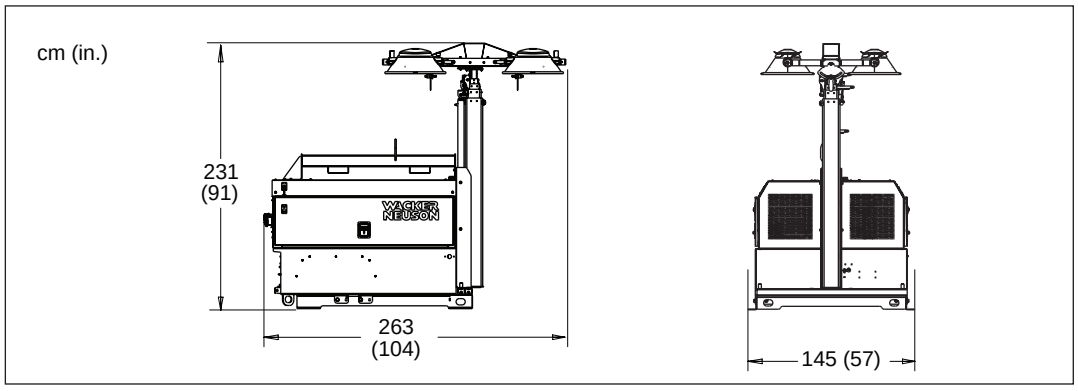
8.7 Dimensions - LTW Skid



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Tire Safety Information

Introduction to Tire Safety Information

Federal Regulation 49 CFR 575 requires trailer manufacturers to include certain tire information in the owner’s manuals for the trailers they manufacture. This regulation requires that the information be in the English language. This chapter includes all the information required by Federal Regulation 49 CFR 575.

1. TIRE SAFETY INFORMATION

This portion of the User's Manual contains tire safety information as required by 49 CFR 575.6.

Section 1.1 contains "Steps for Determining Correct Load Limit - Trailer".

Section 1.2 contains "Steps for Determining Correct Load Limit – Tow Vehicle".

Section 1.3 contains a Glossary of Tire Terminology, including "cold inflation pressure", "maximum inflation pressure", "recommended inflation pressure", and other non-technical terms.

Section 1.4 contains information from the NHTSA brochure entitled "Tire Safety – Everything Rides On It". This brochure This brochure, as well as the preceding subsections, describes the following items;

- Tire labeling, including a description and explanation of each marking on the tires, and information about the DOT Tire Identification Number (TIN).
- Recommended tire inflation pressure, including a description and explanation of:
  A. Cold inflation pressure.
  B. Vehicle Placard and location on the vehicle.
  C. Adverse safety consequences of under inflation (including tire failure).
  D. Measuring and adjusting air pressure for proper inflation.
- Tire Care, including maintenance and safety practices.
- Vehicle load limits, including a description and explanation of the following items:
  A. Locating and understanding the load limit information, total load capacity, and cargo capacity.
  B. Calculating total and cargo capacities with varying seating configurations including quantitative examples showing / illustrating how the vehicles cargo and luggage capacity decreases as combined number and size of occupants' increases. This item is also discussed in Section 3.
  C. Determining compatibility of tire and vehicle load capabilities.
  D. Adverse safety consequences of overloading on handling and stopping on tires.

1.1. STEPS FOR DETERMINING CORRECT LOAD LIMIT – TRAILER

Determining the load limits of a trailer includes more than understanding the load limits of the tires alone. On all trailers there is a Federal certification/VIN label that is located on the forward half of the left (road) side of the unit. This certification/VIN label will indicate the trailer's Gross Vehicle Weight Rating (GVWR). This is the most weight the fully loaded trailer can weigh. It will also provide the Gross Axle Weight Rating (GAWR). This is the most a particular axle can weigh. If there are multiple axles, the GAWR of each axle will be provided.

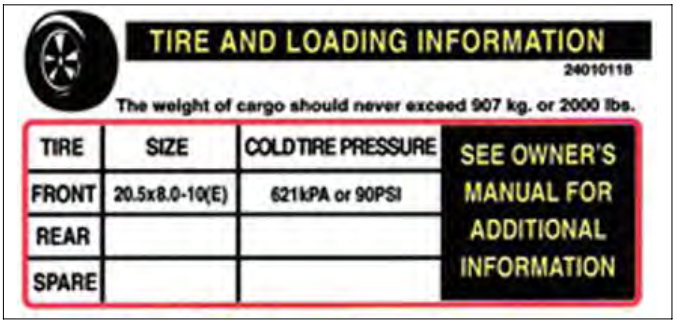
If your trailer has a GVWR of 10,000 pounds or less, there is a vehicle placard located in the same location as the certification label described above. This placard provides tire and loading information. In addition, this placard will show a statement regarding maximum cargo capacity. Cargo can be added to the trailer, up to the maximum weight specified on the placard. The combined weight of the cargo is provided as a single number. In any case, remember: the total weight of a fully loaded trailer can not exceed the stated GVWR.

For trailers with living quarters installed, the weight of water and propane also need to be considered. The weight of fully filled propane containers is considered part of the weight of the trailer before it is loaded with cargo, and is not considered part of the disposable cargo load. Water however, is a disposable cargo weight and is treated as such. If there is a fresh water storage tank of 100 gallons, this tank when filled would weigh about 800 pounds. If more cargo is being transported, water can be off-loaded to keep the total amount of cargo added to the vehicle within the limits of the GVWR so as not to overload the vehicle. Understanding this flexibility will allow you, the owner, to make choices that fit your travel needs.

When loading your cargo, be sure it is distributed evenly to prevent overloading front to back and side to side. Heavy items should be placed low and as close to the axle positions as reasonable. Too many items on one side may overload a tire. The best way to know the actual weight of the vehicle is to weigh it at a public scale. Talk to your dealer to discuss the weighing methods needed to capture the various weights related to the trailer. This would include the weight empty or unloaded, weights per axle, wheel, hitch or king-pin, and total weight.

Excessive loads and/or underinflation cause tire overloading and, as a result, abnormal tire flexing occurs. This situation can generate an excessive amount of heat within the tire. Excessive heat may lead to tire failure. It is the air pressure that enables a tire to support the load, so proper inflation is critical. The proper air pressure may be found on the certification/VIN label and/or on the Tire Placard. This value should never exceed the maximum cold inflation pressure stamped on the tire.

1.1.1. Trailers 10,000 Pounds GVWR or Less



Tire and Loading Information Placard – Figure 1-1

1. Locate the statement, “The weight of cargo should never exceed XXX kg or XXX lbs.,” on your vehicle’s placard. See figure 1-1.
2. This figure equals the available amount of cargo and luggage load capacity.
3. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage load capacity.

The trailer’s placard refers to the Tire Information Placard attached adjacent to or near the trailer’s VIN (Certification) label at the left front of the trailer.

1.1.2. Trailers Over 10,000 Pounds GVWR (Note: These trailers are not required to have a tire information placard on the vehicle)

1. Determine the empty weight of your trailer by weighing the trailer using a public scale or other means. This step does not have to be repeated.
2. Locate the GVWR (Gross Vehicle Weight Rating) of the trailer on your trailer’s VIN (Certification) label.
3. Subtract the empty weight of your trailer from the GVWR stated on the VIN label. That weight is the maximum available cargo capacity of the trailer and may not be safely exceeded.

1.2. Steps for Determining Correct Load Limit – Tow Vehicle

1. Locate the statement, “The combined weight of occupants and cargo should never exceed XXX lbs.,” on your vehicle’s placard.
2. Determine the combined weight of the driver and passengers who will be riding in your vehicle.
3. Subtract the combined weight of the driver and passengers from XXX kilograms or XXX pounds.
4. The resulting figure equals the available amount of cargo and luggage capacity. For example, if the “XXX” amount equals 1400 lbs. and there will be five 150 lb. passengers in your vehicle, the amount of available cargo and luggage capacity is 650 lbs. (1400-750 (5 x 150) = 650 lbs.).
5. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage capacity calculated in Step # 4.
6. If your vehicle will be towing a trailer, load from your trailer will be transferred to your vehicle. Consult the tow vehicle’s manual to determine how this weight transfer reduces the available cargo and luggage capacity of your vehicle.

1.3. Glossary Of Tire Terminology

Accessory weight
The combined weight (in excess of those standard items which may be replaced) of automatic transmission, power steering, power brakes, power windows, power seats, radio and heater, to the extent that these items are available as factory-installed equipment (whether installed or not).

Tire Safety Information

Bead
The part of the tire that is made of steel wires, wrapped or reinforced by ply cords and that is shaped to fit the rim.

Bead separation
This is the breakdown of the bond between components in the bead.

Bias ply tire
A pneumatic tire in which the ply cords that extend to the beads are laid at alternate angles substantially less than 90 degrees to the centerline of the tread.

Carcass
The tire structure, except tread and sidewall rubber which, when inflated, bears the load.

Chunking
The breaking away of pieces of the tread or sidewall.

Cold inflation pressure
The pressure in the tire before you drive.
Cord
The strands forming the plies in the tire.

Cord separation
The parting of cords from adjacent rubber compounds.

Cracking
Any parting within the tread, sidewall, or inner liner of the tire extending to cord material.

CT
A pneumatic tire with an inverted flange tire and rim system in which the rim is designed with rim flanges pointed radially inward and the tire is designed to fit on the underside of the rim in a manner that encloses the rim flanges inside the air cavity of the tire.

Curb weight
The weight of a motor vehicle with standard equipment including the maximum capacity of fuel, oil, and coolant, and, if so equipped, air conditioning and additional weight optional engine.

Extra load tire
A tire designed to operate at higher loads and at higher inflation pressures than the corresponding standard tire.

Groove
The space between two adjacent tread ribs.

Gross Axle Weight Rating
The maximum weight that any axle can support, as published on the Certification / VIN label on the front left side of the trailer. Actual weight determined by weighing each axle on a public scale, with the trailer attached to the towing vehicle.

Gross Vehicle Weight Rating
The maximum weight of the fully loaded trailer, as published on the Certification / VIN label. Actual weight determined by weighing trailer on a public scale, without being attached to the towing vehicle.

Hitch Weight
The downward force exerted on the hitch ball by the trailer coupler.

Innerliner
The layer(s) forming the inside surface of a tubeless tire that contains the inflating medium within the tire.

Innerliner separation
The parting of the innerliner from cord material in the carcass.

Intended outboard sidewall
The sidewall that contains a white-wall, bears white lettering or bears manufacturer, brand, and/or model name molding that is higher or deeper than the same molding on the other sidewall of the tire or the outward facing sidewall of an asymmetrical tire that has a particular side that must always face outward when mounted on a vehicle.

Light truck (LT) tire
A tire designated by its manufacturer as primarily intended for use on lightweight trucks or multipurpose passenger vehicles.

Load rating
The maximum load that a tire is rated to carry for a given inflation pressure.

Maximum load rating
The load rating for a tire at the maximum permissible inflation pressure for that tire.

Maximum permissible inflation pressure
The maximum cold inflation pressure to which a tire may be inflated.

Maximum loaded vehicle weight
The sum of curb weight, accessory weight, vehicle capacity weight, and production options weight.

Measuring rim
The rim on which a tire is fitted for physical dimension requirements.

Pin Weight
The downward force applied to the 5^{th} wheel or gooseneck ball, by the trailer kingpin or gooseneck coupler.

Non-pneumatic rim
A mechanical device which, when a non-pneumatic tire assembly incorporates a wheel, supports the tire, and attaches, either integrally or separably, to the wheel center member and upon which the tire is attached.

Non-pneumatic spare tire assembly
A non-pneumatic tire assembly intended for temporary use in place of one of the pneumatic tires and rims that are fitted to a passenger car in compliance with the requirements of this standard.

Non-pneumatic tire
A mechanical device which transmits, either directly or through a wheel or wheel center member, the vertical load and tractive forces from the roadway to the vehicle, generates the tractive forces that provide the directional control of the vehicle and does not rely on the containment of any gas or fluid for providing those functions.

Non-pneumatic tire assembly
A non-pneumatic tire, alone or in combination with a wheel or wheel center member, which can be mounted on a vehicle.

Normal occupant weight
This means 68 kilograms (150 lbs.) times the number of occupants specified in the second column of Table I of 49 CFR 571.110.

Occupant distribution
The distribution of occupants in a vehicle as specified in the third column of Table I of 49 CFR 571.110.

Open splice
Any parting at any junction of tread, sidewall, or innerliner that extends to cord material.

Outer diameter
The overall diameter of an inflated new tire.

Overall width
The linear distance between the exteriors of the sidewalls of an inflated tire, including elevations due to labeling, decorations, or protective bands or ribs.

Tire Safety Information

Ply
A layer of rubber-coated parallel cords.

Ply separation
A parting of rubber compound between adjacent plies.

Pneumatic tire
A mechanical device made of rubber, chemicals, fabric and steel or other materials, that, when mounted on an automotive wheel, provides the traction and contains the gas or fluid that sustains the load.

Production options weight
The combined weight of those installed regular production options weighing over 2.3 kilograms (5 lbs.) in excess of those standard items which they replace, not previously considered in curb weight or accessory weight, including heavy duty brakes, ride levelers, roof rack, heavy duty battery, and special trim.

Radial ply tire
A pneumatic tire in which the ply cords that extend to the beads are laid at substantially 90 degrees to the centerline of the tread.

Recommended inflation pressure
This is the inflation pressure provided by the vehicle manufacturer on the Tire Information label and on the Certification / VIN tag.

Reinforced tire
A tire designed to operate at higher loads and at higher inflation pressures than the corresponding standard tire.

Rim
A metal support for a tire or a tire and tube assembly upon which the tire beads are seated.

Rim diameter
This means the nominal diameter of the bead seat.

Rim size designation
This means the rim diameter and width.

Rim type designation
This means the industry of manufacturer’s designation for a rim by style or code.

Rim width
This means the nominal distance between rim flanges.

Section width
The linear distance between the exteriors of the sidewalls of an inflated tire, excluding elevations due to labeling, decoration, or protective bands.

Sidewall
That portion of a tire between the tread and bead.

Sidewall separation
The parting of the rubber compound from the cord material in the sidewall.

Special Trailer (ST) tire
The "ST" is an indication the tire is for trailer use only.

Test rim
The rim on which a tire is fitted for testing, and may be any rim listed as appropriate for use with that tire.

Tread
That portion of a tire that comes into contact with the road.

Tread rib
A tread section running circumferentially around a tire.

Tread separation
Pulling away of the tread from the tire carcass.

Treadwear indicators (TWI)
The projections within the principal grooves designed to give a visual indication of the degrees of wear of the tread.

Vehicle capacity weight
The rated cargo and luggage load plus 68 kilograms (150 lbs.) times the vehicle's designated seating capacity.

Vehicle maximum load on the tire
The load on an individual tire that is determined by distributing to each axle its share of the maximum loaded vehicle weight and dividing by two.

Vehicle normal load on the tire
The load on an individual tire that is determined by distributing to each axle its share of the curb weight, accessory weight, and normal occupant weight (distributed in accordance with Table I of CRF 49 571.110) and dividing by 2.

Weather side
The surface area of the rim not covered by the inflated tire.

Wheel center member
In the case of a non-pneumatic tire assembly incorporating a wheel, a mechanical device which attaches, either integrally or separably, to the non-pneumatic rim and provides the connection between the non-pneumatic rim and the vehicle; or, in the case of a non-pneumatic tire assembly not incorporating a wheel, a mechanical device which attaches, either integrally or separably, to the non-pneumatic tire and provides the connection between tire and the vehicle.

Wheel-holding fixture
The fixture used to hold the wheel and tire assembly securely during testing.

1.4. TIRE SAFETY - EVERYTHING RIDES ON IT

The National Traffic Safety Administration (NHTSA) has published a brochure (DOT HS 809 361) that discusses all aspects of Tire Safety, as required by CFR 575.6. This brochure is reproduced in part below. It can be obtained and downloaded from NHTSA, free of charge, from the following web site:

http://www.nhtsa.dot.gov/cars/rules/TireSafety/ridesonit/tires_index.html

Studies of tire safety show that maintaining proper tire pressure, observing tire and vehicle load limits (not carrying more weight in your vehicle than your tires or vehicle can safely handle), avoiding road hazards, and inspecting tires for cuts, slashes, and other irregularities are the most important things you can do to avoid tire failure, such as tread separation or blowout and flat tires. These actions, along with other care and maintenance activities, can also:

- Improve vehicle handling
- Help protect you and others from avoidable breakdowns and accidents
- Improve fuel economy
- Increase the life of your tires.

This booklet presents a comprehensive overview of tire safety, including information on the following topics:
- Basic tire maintenance
- Uniform Tire Quality Grading System
- Fundamental characteristics of tires

Tire Safety Information

Use this information to make tire safety a regular part of your vehicle maintenance routine. Recognize that the time you spend is minimal compared with the inconvenience and safety consequences of a flat tire or other tire failure.

1.5. SAFETY FIRST–BASIC TIRE MAINTENANCE

Properly maintained tires improve the steering, stopping, traction, and load-carrying capability of your vehicle. Underinflated tires and overloaded vehicles are a major cause of tire failure. Therefore, as mentioned above, to avoid flat tires and other types of tire failure, you should maintain proper tire pressure, observe tire and vehicle load limits, avoid road hazards, and regularly inspect your tires.

1.5.1. FINDING YOUR VEHICLE'S RECOMMENDED TIRE PRESSURE AND LOAD LIMITS

Tire information placards and vehicle certification labels contain information on tires and load limits. These labels indicate the vehicle manufacturer's information including:

- Recommended tire size
- Recommended tire inflation pressure
- Vehicle capacity weight (VCW–the maximum occupant and cargo weight a vehicle is designed to carry)
- Front and rear gross axle weight ratings (GAWR– the maximum weight the axle systems are designed to carry).

Both placards and certification labels are permanently attached to the trailer near the left front.

1.5.2. UNDERSTANDING TIRE PRESSURE AND LOAD LIMITS

Tire inflation pressure is the level of air in the tire that provides it with load-carrying capacity and affects the overall performance of the vehicle. The tire inflation pressure is a number that indicates the amount of air pressure– measured in pounds per square inch (psi)–a tire requires to be properly inflated. (You will also find this number on the vehicle information placard expressed in kilopascals (kpa), which is the metric measure used internationally.)

Manufacturers of passenger vehicles and light trucks determine this number based on the vehicle's design load limit, that is, the greatest amount of weight a vehicle can safely carry and the vehicle's tire size. The proper tire pressure for your vehicle is referred to as the "recommended cold inflation pressure." (As you will read below, it is difficult to obtain the recommended tire pressure if your tires are not cold.)
Because tires are designed to be used on more than one type of vehicle, tire manufacturers list the "maximum permissible inflation pressure" on the tire sidewall. This number is the greatest amount of air pressure that should ever be put in the tire under normal driving conditions.

1.5.3. CHECKING TIRE PRESSURE

It is important to check your vehicle's tire pressure at least once a month for the following reasons:

- Most tires may naturally lose air over time.
- Tires can lose air suddenly if you drive over a pothole or other object or if you strike the curb when parking.
- With radial tires, it is usually not possible to determine underinflation by visual inspection.

For convenience, purchase a tire pressure gauge to keep in your vehicle. Gauges can be purchased at tire dealerships, auto supply stores, and other retail outlets.
The recommended tire inflation pressure that vehicle manufacturers provide reflects the proper psi when a tire is cold. The term cold does not relate to the outside temperature. Rather, a cold tire is one that has not been driven on for at least three hours. When you drive, your tires get warmer, causing the air pressure within them to increase. Therefore, to get an accurate tire pressure reading, you must measure tire pressure when the tires are cold or compensate for the extra pressure in warm tires.

1.5.4. Steps for Maintaining Proper Tire Pressure

- Step 1: Locate the recommended tire pressure on the vehicle's tire information placard, certification label, or in the owner's manual.
- Step 2: Record the tire pressure of all tires.
- Step 3: If the tire pressure is too high in any of the tires, slowly release air by gently pressing on the tire valve stem with the edge of your tire gauge until you get to the correct pressure.
- Step 4: If the tire pressure is too low, note the difference between the measured tire pressure and the correct tire pressure. These "missing" pounds of pressure are what you will need to add.
- Step 5: At a service station, add the missing pounds of air pressure to each tire that is underinflated.
- Step 6: Check all the tires to make sure they have the same air pressure (except in cases in which the front and rear tires are supposed to have different amounts of pressure).

If you have been driving your vehicle and think that a tire is underinflated, fill it to the recommended cold inflation pressure indicated on your vehicle's tire information placard or certification label. While your tire may still be slightly underinflated due to the extra pounds of pressure in the warm tire, it is safer to drive with air pressure that is slightly lower than the vehicle manufacturer's recommended cold inflation pressure than to drive with a significantly underinflated tire. Since this is a temporary fix, don't forget to recheck and adjust the tire's pressure when you can obtain a cold reading.

1.5.5. Tire Size

To maintain tire safety, purchase new tires that are the same size as the vehicle's original tires or another size recommended by the manufacturer. Look at the tire information placard, the owner's manual, or the sidewall of the tire you are replacing to find this information. If you have any doubt about the correct size to choose, consult with the tire dealer.

1.5.6. Tire Tread

The tire tread provides the gripping action and traction that prevent your vehicle from slipping or sliding, especially when the road is wet or icy. In general, tires are not safe and should be replaced when the tread is worn down to 1/16 of an inch. Tires have built-in treadwear indicators that let you know when it is time to replace your tires. These indicators are raised sections spaced intermittently in the bottom of the tread grooves. When they appear "even" with the outside of the tread, it is time to replace your tires. Another method for checking tread depth is to place a penny in the tread with Lincoln's head upside down and facing you. If you can see the top of Lincoln's head, you are ready for new tires.

1.5.7. Tire Balance and Wheel Alignment

To avoid vibration or shaking of the vehicle when a tire rotates, the tire must be properly balanced. This balance is achieved by positioning weights on the wheel to counterbalance heavy spots on the wheel-and-tire assembly. A wheel alignment adjusts the angles of the wheels so that they are positioned correctly relative to the vehicle's frame. This adjustment maximizes the life of your tires. These adjustments require special equipment and should be performed by a qualified technician.

1.5.8. Tire Repair

The proper repair of a punctured tire requires a plug for the hole and a patch for the area inside the tire that surrounds the puncture hole. Punctures through the tread can be repaired if they are not too large, but punctures to the sidewall should not be repaired. Tires must be removed from the rim to be properly inspected before being plugged and patched.

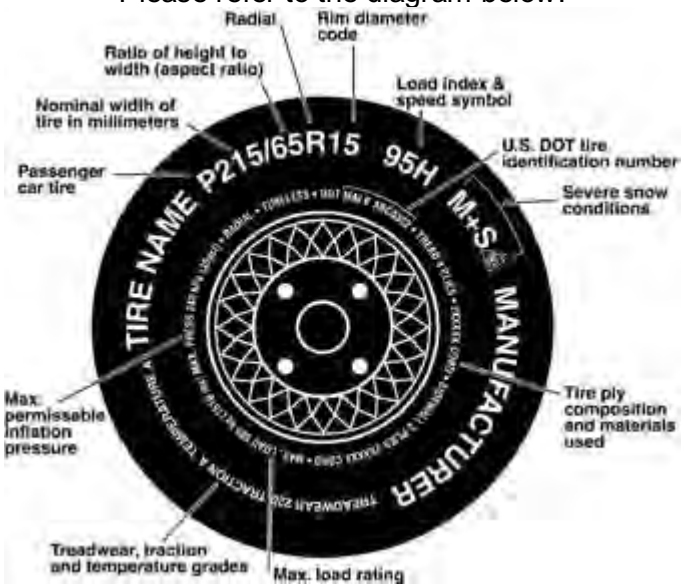
1.5.9. Tire Fundamentals

Federal law requires tire manufacturers to place standardized information on the sidewall of all tires. This information identifies and describes the fundamental characteristics of the tire and also provides a tire identification number for safety standard certification and in case of a recall.

Tire Safety Information

1.5.9.1. Information on Passenger Vehicle Tires

Please refer to the diagram below.



P
The "P" indicates the tire is for passenger vehicles.

Next number
This three-digit number gives the width in millimeters of the tire from sidewall edge to sidewall edge. In general, the larger the number, the wider the tire.

Next number
This two-digit number, known as the aspect ratio, gives the tire's ratio of height to width. Numbers of 70 or lower indicate a short sidewall for improved steering response and better overall handling on dry pavement.

R
The "R" stands for radial. Radial ply construction of tires has been the industry standard for the past 20 years.

Next number
This two-digit number is the wheel or rim diameter in inches. If you change your wheel size, you will have to purchase new tires to match the new wheel diameter.

Next number
This two- or three-digit number is the tire's load index. It is a measurement of how much weight each tire can support. You may find this information in your owner's manual. If not, contact a local tire dealer. Note: You may not find this information on all tires because it is not required by law.

M+S
The "M+S" or "M/S" indicates that the tire has some mud and snow capability. Most radial tires have these markings; hence, they have some mud and snow capability.

Speed Rating
The speed rating denotes the speed at which a tire is designed to be driven for extended periods of time. The ratings range from 99 miles per hour (mph) to 186 mph. These ratings are listed below. Note: You may not find this information on all tires because it is not required by law.

Letter Rating	Speed Rating
Q	99 mph
R	106 mph
S	112 mph
T	118 mph
U	124 mph
H	130 mph
V	149 mph
W	168* mph
Y	186* mph

* For tires with a maximum speed capability over 149 mph, tire manufacturers sometimes use the letters ZR. For those with a maximum speed capability over 186 mph, tire manufacturers always use the letters ZR.

U.S. DOT Tire Identification Number
This begins with the letters "DOT" and indicates that the tire meets all federal standards. The next two numbers or letters are the plant code where it was manufactured, and the last four numbers represent the week and year the tire was built. For example, the numbers 3197 means the 31st week of 1997. The other numbers are marketing codes used at the manufacturer's discretion. This information is used to contact consumers if a tire defect requires a recall.

Tire Ply Composition and Materials Used
The number of plies indicates the number of layers of rubber-coated fabric in the tire. In general, the greater the number of plies, the more weight a tire can support. Tire manufacturers also must indicate the materials in the tire, which include steel, nylon, polyester, and others.

Maximum Load Rating
This number indicates the maximum load in kilograms and pounds that can be carried by the tire.

Maximum Permissible Inflation Pressure
This number is the greatest amount of air pressure that should ever be put in the tire under normal driving conditions.

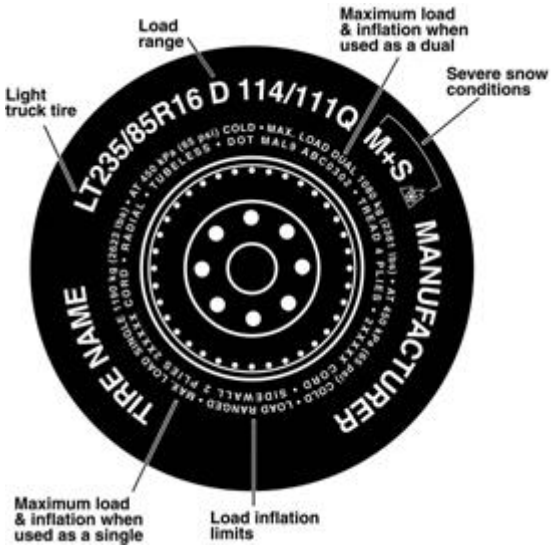
1.5.9.2. UTQGS Information

Treadwear Number
This number indicates the tire's wear rate. The higher the treadwear number is, the longer it should take for the tread to wear down. For example, a tire graded 400 should last twice as long as a tire graded 200.

Traction Letter
This letter indicates a tire's ability to stop on wet pavement. A higher graded tire should allow you to stop your car on wet roads in a shorter distance than a tire with a lower grade. Traction is graded from highest to lowest as "AA","A", "B", and "C".

Temperature Letter
This letter indicates a tire's resistance to heat. The temperature grade is for a tire that is inflated properly and not overloaded. Excessive speed, underinflation or excessive loading, either separately or in combination, can cause heat build-up and possible tire failure. From highest to lowest, a tire's resistance to heat is graded as "A", "B", or "C".

Please refer to the following diagram.



Tires for light trucks have other markings besides those found on the sidewalls of passenger tires.

LT
The "LT" indicates the tire is for light trucks or trailers.

ST
An "ST" is an indication the tire is for trailer use only.

Max. Load Dual kg (lbs) at kPa (psi) Cold
This information indicates the maximum load and tire pressure when the tire is used as a dual, that is, when four tires are put on each rear axle (a total of six or more tires on the vehicle).

Max. Load Single kg (lbs) at kPa (psi) Cold
This information indicates the maximum load and tire pressure when the tire is used as a single.

Load Range
This information identifies the tire's load-carrying capabilities and its inflation limits.

1.6. TIRE SAFETY TIPS

Preventing Tire Damage

- Slow down if you have to go over a pothole or other object in the road.
- Do not run over curbs or other foreign objects in the roadway, and try not to strike the curb when parking.

Tire Safety Checklist

- Check tire pressure regularly (at least once a month), including the spare.
- Inspect tires for uneven wear patterns on the tread, cracks, foreign objects, or other signs of wear or trauma.
- Remove bits of glass and foreign objects wedged in the tread.
- Make sure your tire valves have valve caps.
- Check tire pressure before going on a long trip.
- Do not overload your vehicle. Check the Tire Information and Loading Placard or User's Manual for the maximum recommended load for the vehicle.

9 Schematics

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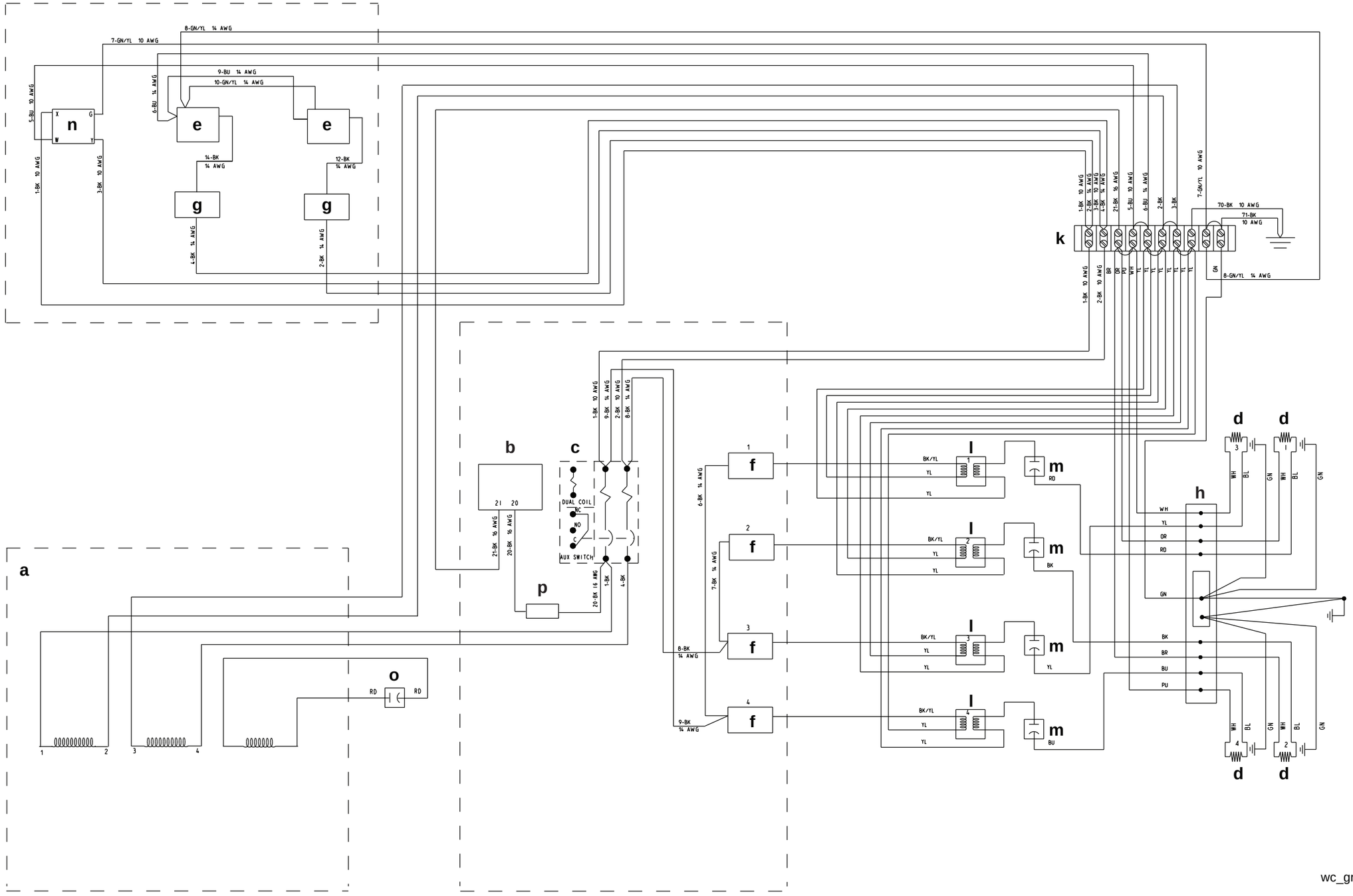
9.1 LTW 6K—Electrical Schematic



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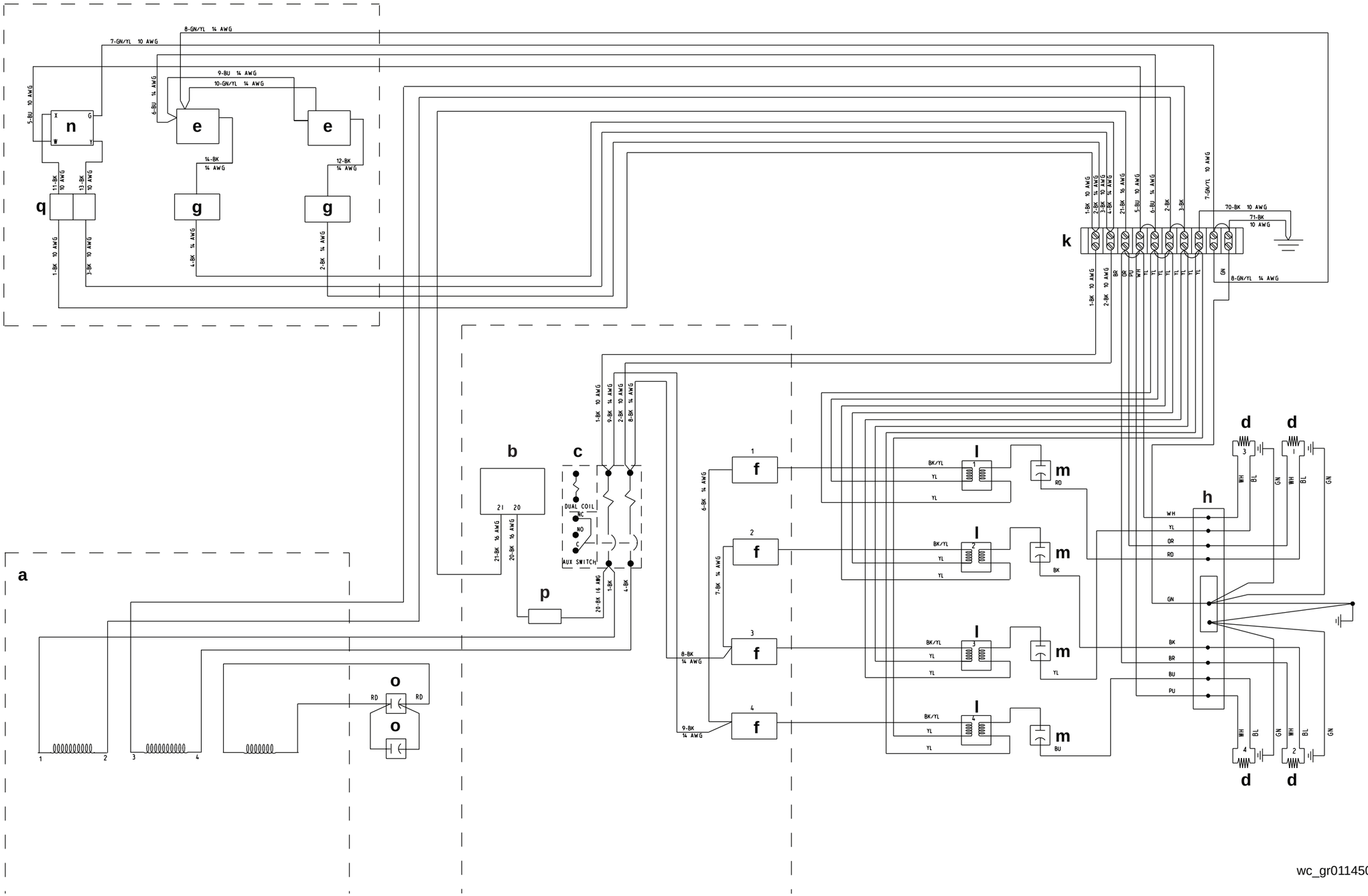
9.2 LTW 6K-V-Electrical Schematic Components

Ref.	Description	Ref.	Description
a	Generator	**h**	Light bar
b	Engine controller	**k**	Terminal strip
c	Main circuit breaker	**l**	Transformers
d	Floodlights	**m**	Capacitors, 24 mF
e	Receptacle, 120V GFI	**n**	Receptacle, 125/250V 30A
f	Circuit breaker, 15A	**o**	Capacitor, generator excitation
g	Circuit breaker, 20A	**p**	Fuse, 2A

Wire Colors							
BK	Black	RD	Red	YL	Yellow	OR	Orange
GN	Green	TN	Tan	BR	Brown	PU	Purple
BU	Blue	VIO	Violet	CL	Clear	SH	Shield
PK	Pink	WH	White	GY	Gray	LB	Lt. blue

9.3 LTW 8K—Electrical Schematic



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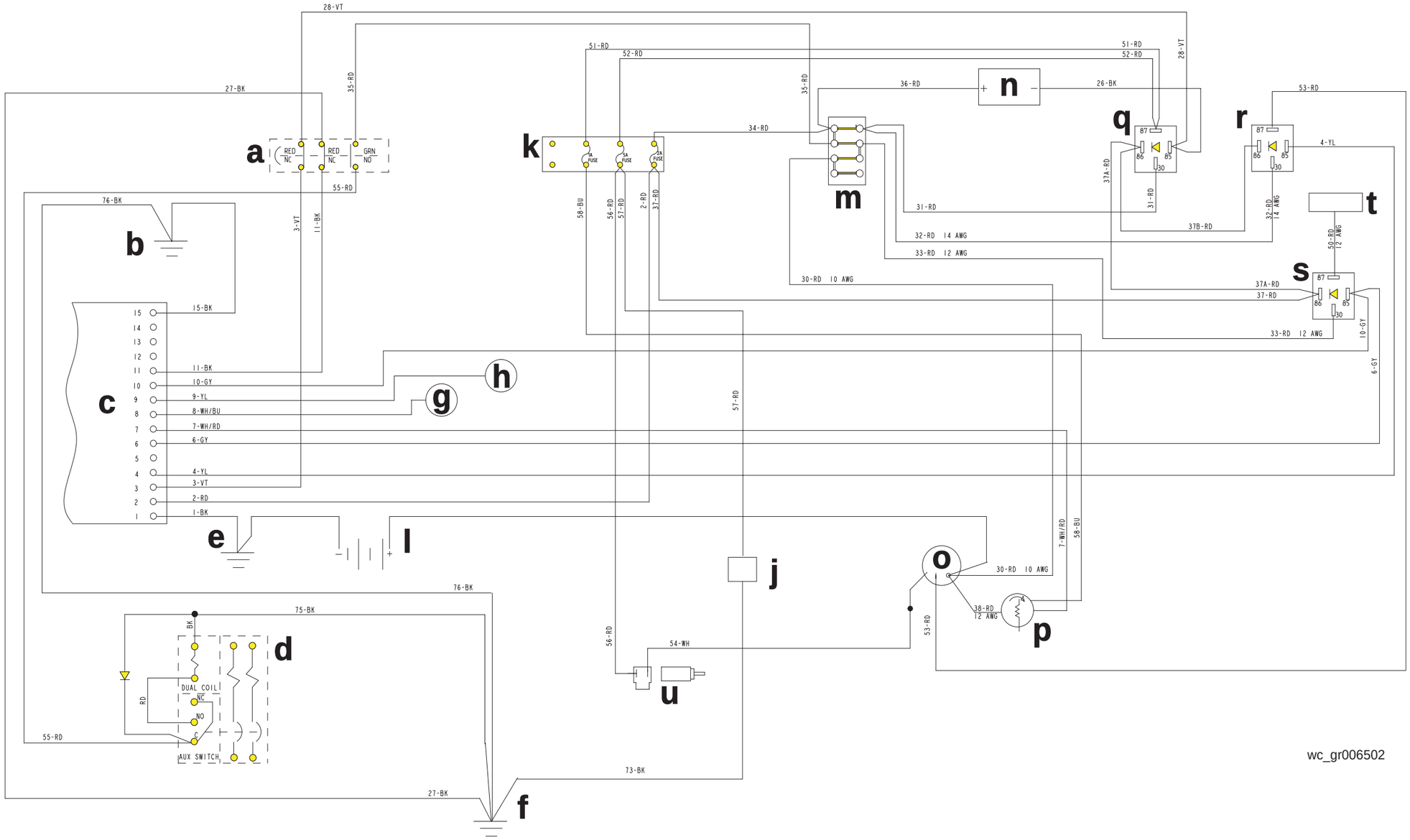
9.4 LTW 8K-V-Electrical Schematic Components

Ref.	Description	Ref.	Description
a	Generator	**k**	Terminal strip
b	Engine controller	**l**	Transformers
c	Main circuit breaker	**m**	Capacitors, 24 mF
d	Floodlights	**n**	Receptacle, 125/250V 30A
e	Receptacle, 120V GFI	**o**	Capacitor, generator excitation
f	Circuit breaker, 15A	**p**	Fuse, 2A
g	Circuit breaker, 20A	**q**	Circuit breaker, 30A (250V)
h	Light bar	**—**	**—**

Wire Colors							
BK	Black	RD	Red	YL	Yellow	OR	Orange
GN	Green	TN	Tan	BR	Brown	PU	Purple
BU	Blue	VIO	Violet	CL	Clear	SH	Shield
PK	Pink	WH	White	GY	Gray	LB	Lt. blue

9.5 Engine Wiring



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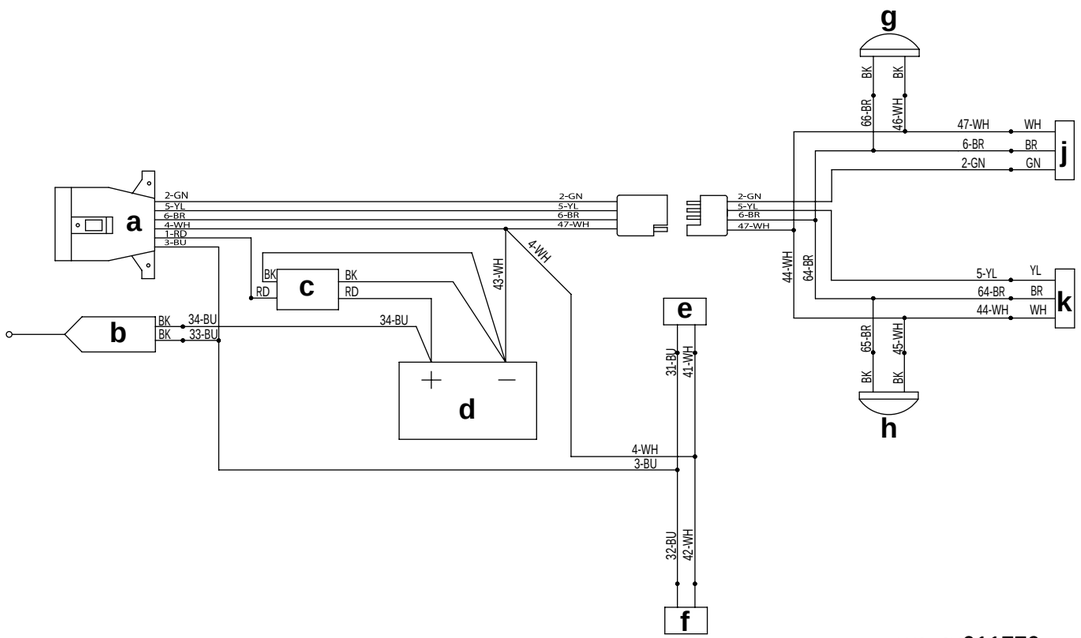
9.6 Engine Wiring Components

Ref.	Description	Ref.	Description
a	Emergency stop switch	l	Battery
b	Control panel ground	m	Terminal block
c	Engine controller	n	Hour meter
d	Main breaker	o	Starter motor
e	Engine ground	p	Alternator
f	Control box ground	q	Fuel pump relay
g	Oil pressure sensor	r	Starter relay
h	Water temperature sensor	s	Glow plug relay
j	Fuel pump	t	Glow plugs
k	Fuse box	u	Fuel solenoid

Wire Colors							
BK	Black	RD	Red	YL	Yellow	OR	Orange
GN	Green	TN	Tan	BR	Brown	PU	Purple
BU	Blue	VIO	Violet	CL	Clear	SH	Shield
PK	Pink	WH	White	GY	Gray	LB	Lt. blue

9.7 Trailer Wiring (Electric Brakes)



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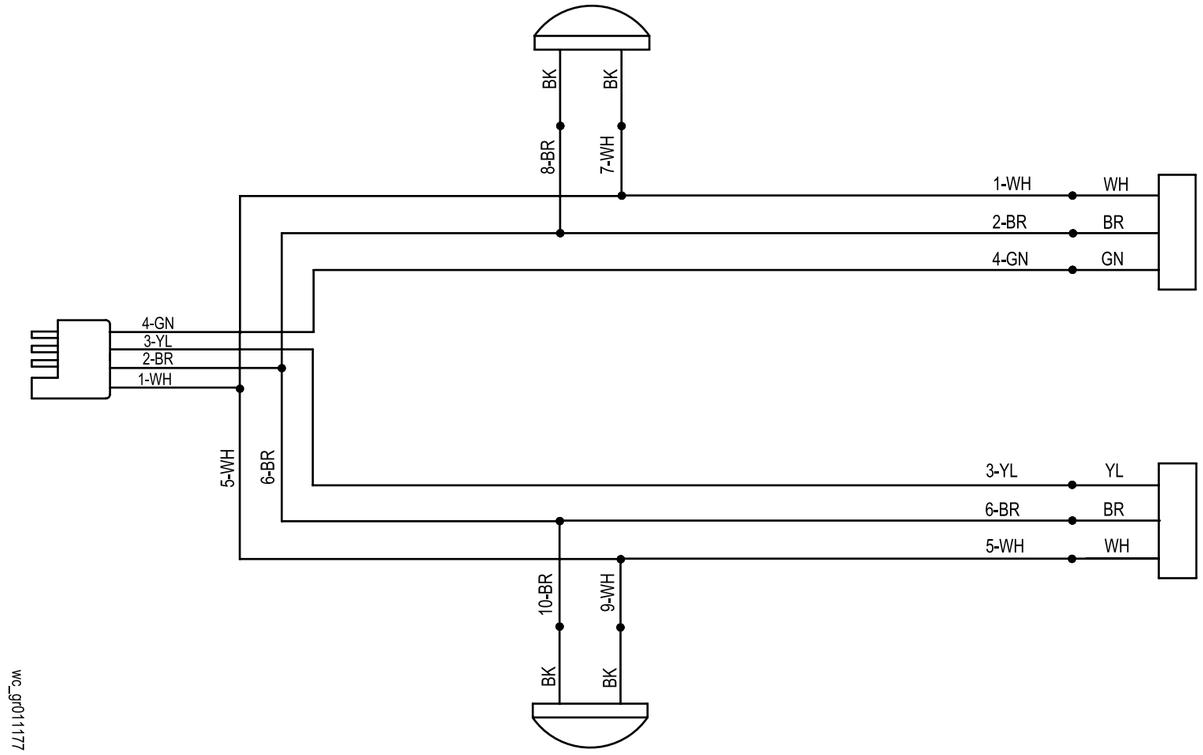
9.8 Trailer Wiring Components (Electric Brakes)

Ref.	Description	Ref.	Description
a	Main trailer plug	f	Left brake
b	Breakaway switch	g	Front right side light
c	Battery charger	h	Front left side light
d	Breakaway battery	j	Rear right tail light
e	Right brake	k	Rear left tail light

Wire Colors							
BK	Black	RD	Red	YL	Yellow	OR	Orange
GN	Green	TN	Tan	BR	Brown	PU	Purple
BU	Blue	VIO	Violet	CL	Clear	SH	Shield
PK	Pink	WH	White	GY	Gray	LB	Lt. blue

9.9 Trailer Wiring (Surge Brakes / No Brakes)



Wire Colors							
BK	Black	RD	Red	YL	Yellow	OR	Orange
GN	Green	TN	Tan	BR	Brown	PU	Purple
BU	Blue	VIO	Violet	CL	Clear	SH	Shield
PK	Pink	WH	White	GY	Gray	LB	Lt. blue

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

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