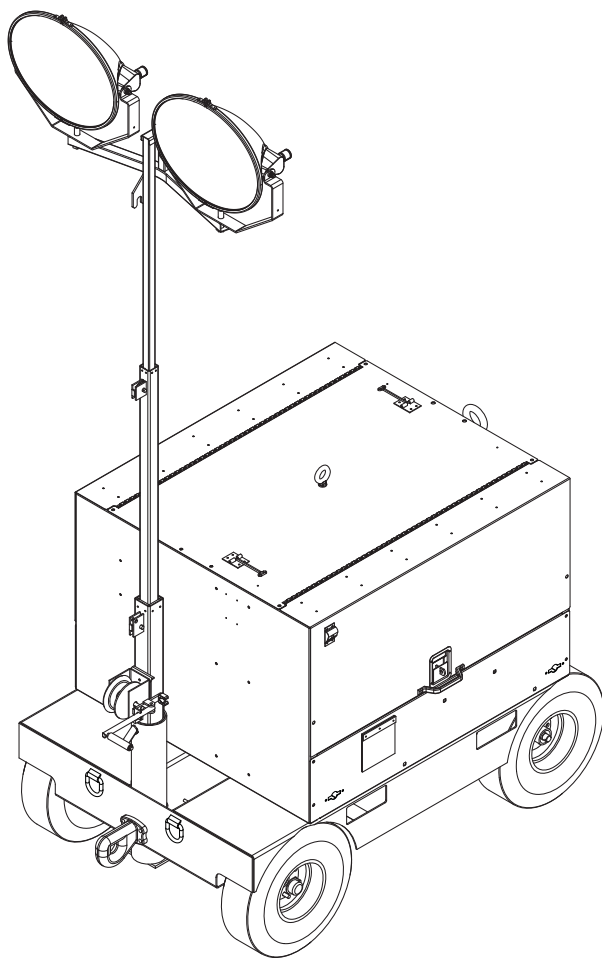




LIGHT CART MLC4064AF



OPERATING MANUAL

INTRODUCTION

This manual provides information and procedures to safely operate and maintain the light cart. For your own safety and protection from physical injury, carefully read, understand, and observe the safety instructions described in this manual. *The information contained in this manual was based on machines in production at the time of publication. Magnum Products LLC reserves the right to change any portion of this information without notice.*

DO NOT MODIFY or use this equipment for any application other than which it was designed for.

Magnum Products LLC recommends that a trained and licensed professional perform all electrical wiring and testing functions. Any wiring should be in compliance with the United States National Electric Code (NEC), state and local codes and Occupational Safety and Health Association (OSHA) guidelines.

Keep a copy of this manual with the unit at all times. Additional copies are available from Magnum Products LLC. An Engine Operator's Manual was also supplied with the unit at the time of shipment from the factory. The manual provides detailed operation and maintenance procedures for the engine. Additional copies of the Engine Operator's Manual are available from the engine manufacturer.

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For technical or parts QUESTIONS, please contact Magnum Products' Customer Support or Technical Support team at 920-361-4442 or toll free at 1-800-926-9768. Please have your serial number available.

To ORDER SERVICE PARTS, please contact the dealer from which you purchased the unit, or call Magnum Products to locate a dealer in your area.

Engine Make: _____
Engine Serial Number: _____
Engine Model Number: _____
Generator Make: _____
Generator Model Number: _____
Generator Serial Number: _____
Unit Model Number: _____
Unit Serial Number: _____

▲ WARNING

CALIFORNIA PROPOSITION 65 WARNING: Diesel engine exhaust and some of its constituents are known to the state of California to cause cancer, birth defects and other reproductive harm.

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SAFETY NOTES



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

This manual contains DANGERS, WARNINGS, CAUTIONS, NOTICES and NOTES which must be followed to prevent the possibility of improper service, damage to the equipment, personal injury or death. The following formatting options will apply when calling the readers attention to the DANGERS, WARNINGS, CAUTIONS, NOTICES and NOTES.

▲ DANGER

INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY.

▲ WARNING

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

▲ CAUTION

Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE

Indicates a hazardous situation which, if not avoided, may result in property or equipment damage.

Note: Notes contain additional information important to a procedure and will be found within the regular text body of this manual.

OPERATING SAFETY



Before using the light cart be sure you read and understand all of the instructions! This equipment was designed for specific applications; DO NOT modify or use this equipment for any application other than which it was designed for. Equipment operated improperly or by untrained personnel can be dangerous! Read the operating instructions and familiarize yourself with the location and proper use of all instruments and controls. Inexperienced operators should receive instruction from someone familiar with the equipment before being allowed to operate or set up the light cart. The following points should be practiced at all times:

- The area immediately surrounding the light cart should be dry, clean, and free of debris.
- Position and operate the light cart on a firm, level surface.
- **NEVER** start a unit in need of repair.
- Lower mast when not in use, or if high winds or electrical storms are expected in the area.
- Make certain light cart is well grounded and securely fastened to a good earthen ground.
- The mast extends up to 12 ft. (3.66m). Make sure area above trailer is open and clear of overhead wires and obstructions.
- Bulbs become extremely hot in use! Allow bulb and light fixture to cool 10-15 minutes before handling.
- Keep area around cart clear of people while raising and lowering mast!
- Keep all body parts and other loose items clear of winch and cable during operation and while in tension.
- **NEVER** raise, lower or turn mast while unit is operating!
- If for any reason any part of mast hangs up or winch cable develops slack while raising or lowering mast, STOP immediately! Contact an authorized service representative.
- **NEVER** use light cart if insulation on electrical cord is cut or worn through.

- **NEVER** operate lights without protective lens cover in place or with a lens cover that is cracked or damaged!
- Only use mild soap and water to clean the lens covers. Other chemicals may have an adverse effect on the glass.
- **NEVER** operate a unit while tired, distracted, or under the influence of drugs or alcohol.

ENGINE SAFETY



Internal combustion engines present special hazards during operation and fueling! Failure to follow the safety guidelines described below could result in severe injury or death. Also read and follow all safety warnings described in the Engine Operator's Manual. A copy of this manual was supplied with the unit when it was shipped from the factory.

- **DO NOT** run engine indoors or in an area with poor ventilation unless exhaust hoses are used. Diesel engine exhaust contains carbon monoxide, a deadly, odorless and colorless gas which, if inhaled, can cause nausea, fainting or death. Make sure engine exhaust cannot seep into closed rooms or ventilation equipment.
- **DO NOT** operate the unit on a combustible surface.
- **DO NOT** fill fuel tank near an open flame, while smoking, or while engine is running. **DO NOT** fill tank in an enclosed area with poor ventilation.
- **DO NOT** operate with the fuel tank cap loose or missing.
- **DO NOT** touch or lean against hot exhaust pipes or engine cylinders.
- **DO NOT** clean air filter with gasoline or other types of low flash point solvents.
- **DO NOT** remove engine coolant cap while engine is hot.
- **DO NOT** operate the unit without a functional exhaust system. Prolonged exposure to sound levels in excess of 85dBA can cause permanent hearing loss. Wear hearing protection when working around a running engine.
- Keep area around exhaust pipes and air ducts free of debris to reduce the chance of an accidental fire.
- Batteries contain sulfuric acid which can cause severe injury or death. Sulfuric acid can cause eye damage, burn flesh or eat holes in clothing. Protective eye wear and clothing are necessary when working on or around the battery. Always disconnect the NEGATIVE (-) battery cable from the corresponding terminal before performing any service on the engine or other components.
- Shut the engine down if any of the following conditions exist during operation:
 1. Noticeable change in engine speed.
 2. Loss of electrical output.
 3. Equipment connected to the generator overheats.
 4. Sparking occurs.
 5. Engine misfires or there is excessive engine/generator vibration.
 6. Protective covers are loose or missing.
 7. If the ambient air temperature is above 120° F.

SERVICE SAFETY



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.

- Before servicing light cart, make sure the engine start switch is turned to OFF, circuit breakers are open (off) and the negative terminal on the battery is disconnected. **NEVER** perform even routine service (oil/filter changes, cleaning, etc.) unless all electrical components are shut down.
- **NEVER** allow water to accumulate around the base of the light cart. If water is present, **DO NOT** service!
- **NEVER** service electrical components if clothing or skin is wet. If the unit is stored outside, check the engine and generator for any moisture and dry the unit before use.
- **NEVER** wash the unit with a power washer or high pressure hose.
- Open main circuit breaker before disconnecting battery cables.
- Keep hands, feet, and loose clothing away from moving parts on generator and engine.
- Wear heavy leather gloves when handling winch cables. Never let cables slip through bare hands.
- 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 equipment safely. Always remain aware of the position of other people around you when lifting the equipment.

TOWING SAFETY



Towing a trailer requires care! Both the trailer and vehicle must be in good condition and securely fastened to each other to reduce the possibility of an accident.

NOTICE

This equipment was not designed for use on public roadways, and therefore does not meet all requirements for Department of Transportation (DOT) and National Highway Traffic Safety Administration (NHTSA) compliance. Please reference all Federal, State and Local trailer and towing requirements before attempting to tow the light cart on a public roadway.

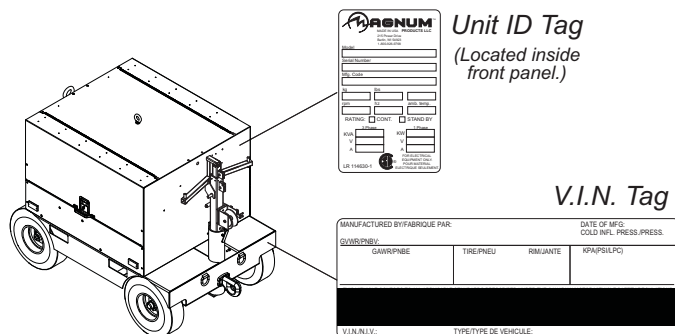
- Check that the hitch and coupling on the towing vehicle are rated equal to, or greater than, the trailer's "gross vehicle weight rating" (GVWR).
- Check tires on trailer for tread wear, inflation, and condition.
- **DO NOT** tow trailer using defective parts! Inspect the hitch and coupling for wear or damage.
- Make sure the trailer hitch and the coupling are compatible. Make sure the coupling is securely fastened to the vehicle.
- Check that all lug nuts holding wheels on are tight and that none are missing.
- Do not exceed 20 MPH when towing a single light cart on pavement and 10 MPH on graded gravel. High speed could make the light cart unstable, resulting in equipment damage.
- Do not exceed 10 MPH when towing two light carts at the same time. At higher speeds the light carts will be unstable and difficult to stop, resulting in possible equipment damage.
- **NEVER** tow more than two light carts at a time.

When towing, maintain extra space between all types of vehicles and avoid soft shoulders and curbs. If you have not pulled a trailer before, practice turning, stopping, and backing up in an area away from any obstacles.

When towing two light carts, avoid sharp turns and any ditches, curbs or depressions greater than 12" deep.

UNIT SERIAL NUMBER LOCATIONS

Refer to the locations illustrated to find the unit ID tag, and trailer ID tag on your unit. Important information, such as the unit serial number, model number and Vehicle Identification Number (V.I.N.) for your trailer are found on these tags. Record the information from these tags, so it is available if the tags are lost or damaged. When ordering parts or requesting technical service information, you may be asked to specify this information.



SAFETY SYMBOL SUMMARY

This equipment has been supplied with numerous safety and operating decals. These decals provide important operating instructions and warn of dangers and hazards. Replace any missing or hard to read decals and use care when washing or cleaning the unit. Decal placement and part numbers can be found in the parts manual. Below is a summary of the intended meanings for the symbols used on the decals.

	Safety alert symbol; Used to alert you to potential personal injury hazards.		Asphyxiation hazard; Operate in well ventilated area.
	Hot surface(s) nearby.		Dangerous voltage may be present.
	Belt/entanglement hazard; Keep body parts clear of this area.		Anchor/tie down point.
	Fan hazard; Keep body parts clear of this area.		Forklift here only.
	Crush hazard; Keep body parts clear of this area.		Use clean diesel fuel only.
	Ultraviolet radiation hazard; Operate only with lens intact.		Burn/scald hazard; pressurized steam.
	Stop engine before fueling.		Read and understand the supplied operator's manual before operating unit.
	Fire/explosion hazard; Keep open flames away from unit.		Unit electrical ground.
	Lift here only.		

SPECIFICATIONS

Read this manual carefully before attempting to use this light cart. The potential for property damage, personal injury or death exists if this equipment is misused or installed incorrectly. Read all of the manuals included with this unit. Each manual details specific information regarding items such as set up, use and service requirements. Specifications are subject to change without notice.

MAGNUM MODEL

MLC4064AF

Engine

Make/Brand.....	KUBOTA
Model	D1005-E3BG
Type	Diesel, liquid cooled, 4-stroke
Horsepower - prime hp (kW)	11.7 (8.7)
Horsepower - standby hp (kW)	13.1 (9.8)
Operating Speed rpm	1800
Displacement in₃ (L)	61.08 (1.00)
Cylinders - qty	3
Fuel Consumption - 100% prime gph (Lph)	0.50 (1.89)
Battery Type - Group Number	24
Battery Voltage (Quantity per Unit)	12V (1)
Battery Rating	720 CCA

Generator

Make/Brand.....	Marathon Electric
Model	281PSL1763
Type, Insulation	Brushless, H4

Generator Set (Engine/Generator)

Output kW (kVA)	6.0 (6.0)
Output Voltage V	120/240, single phase
Output Amperes 120V (240V) A	50 (25)
Frequency Hz	60
Power Factor.....	1 (1Ø)

Weights

Dry Weight lbs (kg)	1659 (753)
Operating Weight lbs (kg)	1879 (852)

Capacities

Fuel Tank Volume gal (L)	30 (114)
Coolant (incl. engine) qt (L)	4.8 (4.5)
Oil (incl. filter) qt (L)	5.4 (5.1)
Maximum Run Time hrs	60

AC Distribution

Circuit Breaker Size	28
Voltage Regulation	+/-1%
Voltages Available 1Ø.....	120, 240

Lighting

Lighting Type.....	Metal Halide
Ballast Type	Coil & Core
Lumens	220,000
Coverage acres (m₂)	3-4 (12,141 - 16,187)

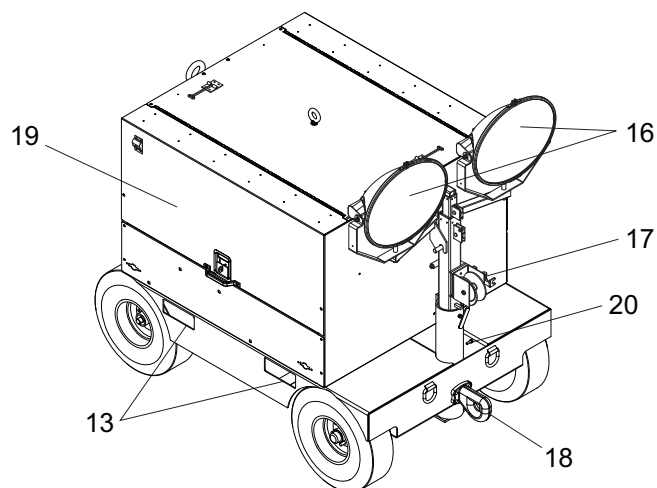
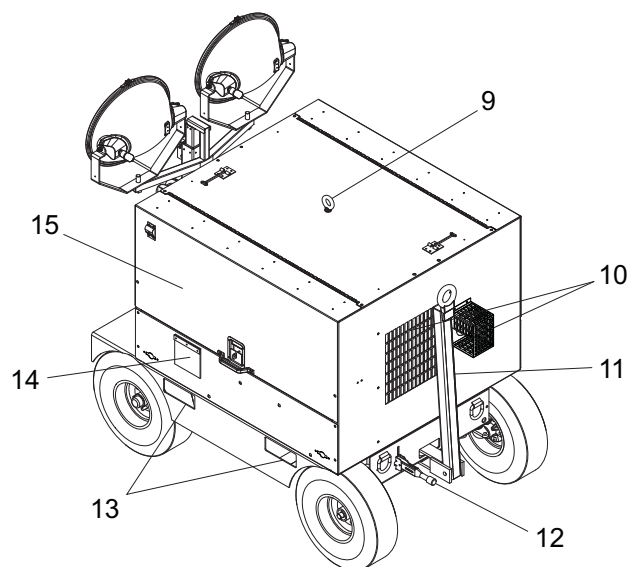
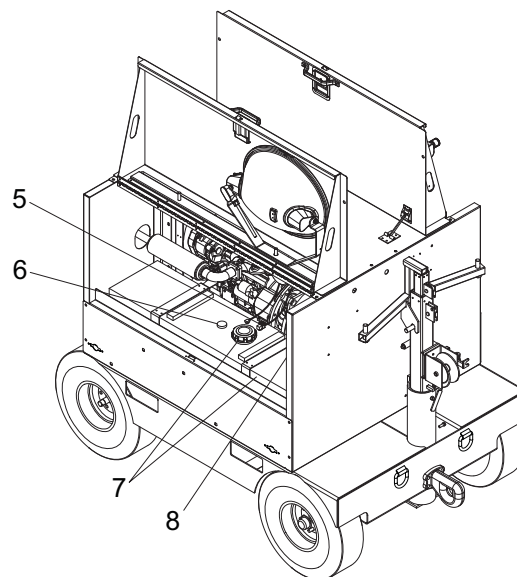
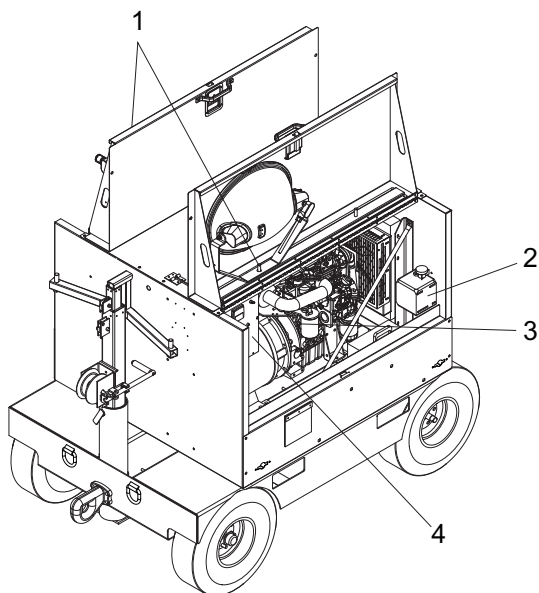
Dimensions

Length in tow position in (m)	115 (2.92)
Width in (m)	47 (1.19)
Height, mast retracted w/o lights in (m)	63 (1.60)
Height, mast retracted w/ lights in (m)	72 (1.83)
Maximum height of mast ft (m)	12 (3.66)

Trailer

Number of Axles	3
Capacity - Axle Rating lbs (kg)	2000 (907)
Tire Size in	6.90/6.00 - 9
Brakes	Manual Parking
Hitch - Standard	2.5" Ring
Maximum Tire Pressure psi	60

COMPONENT LOCATIONS

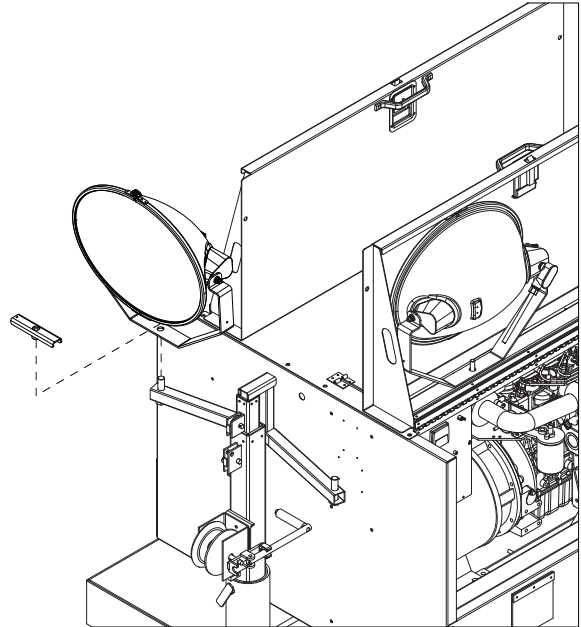


1. MAST LIGHT STORAGE BRACKETS
2. COOLANT OVERFLOW BOTTLE
3. ENGINE OIL DIPSTICK
4. CONTROL PANEL
5. FUEL SHUT-OFF VALVE
6. FUEL LEVEL GAUGE
7. FUEL TANK AND FUEL TANK FILL CAP
8. DOCUMENT STORAGE BOX
9. CENTRAL LIFTING EYE
10. EXHAUST PIPE & RADIATOR OPENING

11. TRAILER TONGUE
12. PARKING BRAKE
13. FORKLIFT POCKETS
14. CABLE ACCESS PORT
15. RIGHT SIDE DOOR
16. MAST LIGHTS
17. MAST WINCH
18. TANDEM TOW HITCH
19. LEFT SIDE DOOR
20. GROUND STUD

LIGHT CART SET UP

1. For maximum light coverage locate the light cart at ground level or in a spot higher than the area being illuminated by the lamps. Set the parking brake after disconnecting the light cart from the prime mover.
2. Check for overhead obstructions such as utility wires, building overhangs or foliage. Keep the light cart clear from runways, taxiways and landing pads to avoid collisions between aircraft and the light cart.
3. Connect a good earthen ground to the grounding stud on the frame of the trailer near the base of the mast. **Note:** *Consult local codes for proper grounding requirements.*
4. Before raising the mast, the lights must be removed from their storage brackets inside the unit and mounted to the mast cross bar.
 - A. Open both doors on the light cart and secure them with the door holder latches.
 - B. Remove the mast lights from their storage brackets by turning the T-handle nut counterclockwise. Place one light on each of the studs on the mast cross bar. The lights are interchangeable, so they are not numbered. Secure the light with the T-handle nut.
 - C. Adjust each light to shine in the desired area by swiveling the light up or down.
 - D. Connect each light to the mast cords by inserting the male end of the mast lamp cord in the corresponding female outlet (located on the mast crossbar) and secure the cord by tightening the threaded sleeve completely.



RAISING THE MAST

⚠ WARNING

The mast extends up to 12 ft (3.66 m). Make sure area above the trailer is open and clear of overhead wires and obstructions.

1. Before raising the mast, always check for any overhead obstructions such as foliage, equipment or utility and power lines. Do not attempt to raise the mast if any obstructions are overhead! Make sure the lights are properly adjusted and the mounting hardware is tight. Inspect the winch cables and make sure they are centered in each pulley.
2. Unlock the mast winch handle from the transport position and turn the mast winch clockwise to raise the mast to the desired height. Extend the mast slowly, making sure that the electrical cord is extending at the top sections of the mast. If, for any reason, the winch cable begins to develop slack or any of the mast sections get stuck, STOP IMMEDIATELY and contact an authorized service center. The maximum mast height is indicated by a yellow band on the middle tube.

⚠ CAUTION

Do not extend the mast beyond the colored mark on the middle mast tube.

⚠ WARNING

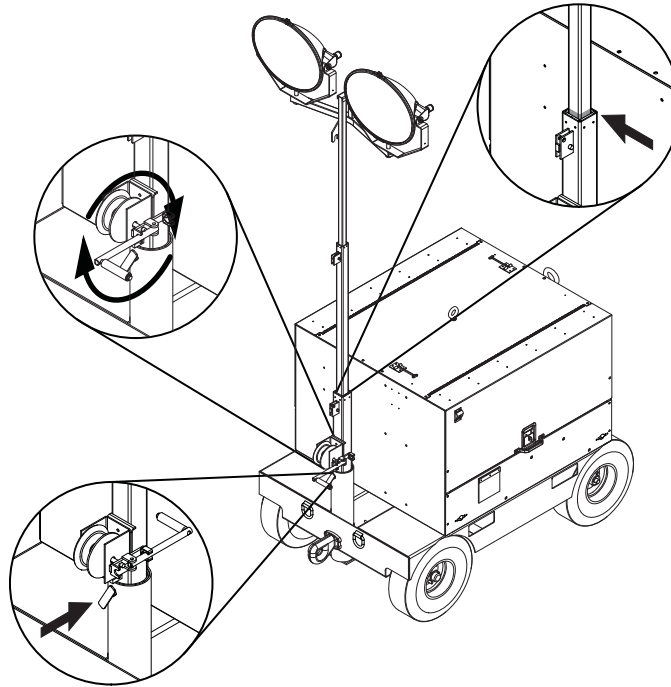
Do not start the unit if the insulation on the electrical cord is cut or worn through. Bare wires in contact with the mast or frame may energize the trailer and cause electrocution. Repair or replace cord.

ROTATING THE MAST

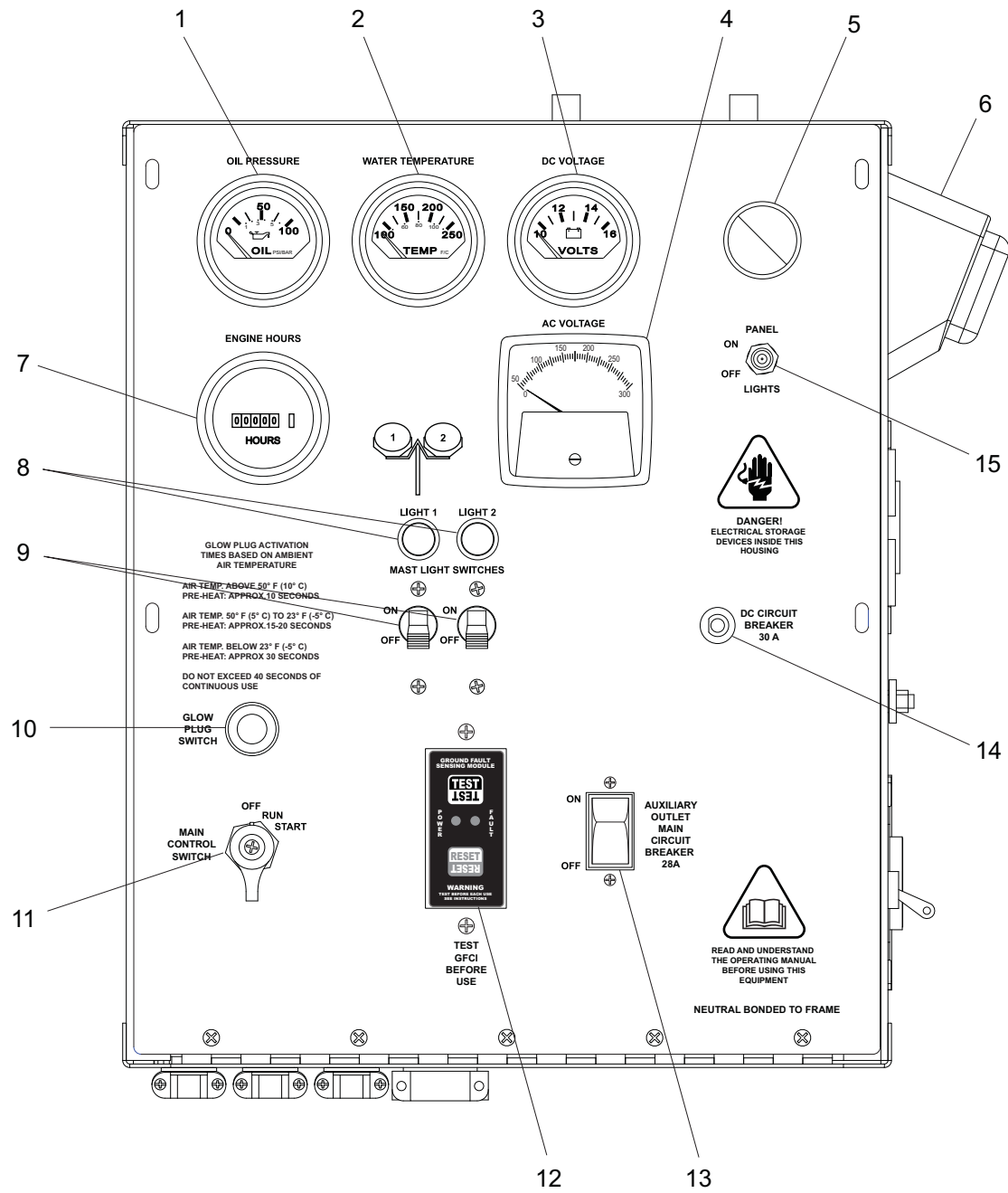
1. The light cart mast can be rotated 355° to illuminate any area surrounding the unit. Loosen the mast rotation lock on the front of the mast tube. Turn the mast to the desired direction; there are two metal tabs on the mast tube that will prevent turning the mast too far to prevent tangling of the mast cords.
2. Tighten the mast rotation lock.

⚠ WARNING

Never raise or lower the mast while the unit is operating!



MAIN CONTROL PANEL COMPONENTS



1. **OIL PRESSURE GAUGE:** This analog gauge indicates the oil pressure.
2. **COOLANT TEMPERATURE GAUGE:** This analog gauge indicates the coolant temperature.
3. **DC VOLTAGE GAUGE:** This analog gauge indicates the DC voltage.
4. **AC VOLTAGE GAUGE:** This analog gauge indicates the AC voltage.
5. **CONTROL PANEL LIGHT:** This light illuminates the control panel; it is toggled on and off by the "Panel Light Switch" (see item 15).
6. **INTERIOR HOUSING LIGHT:** This light illuminates the inside of the cabinet; it is toggled on and off by the "Panel Light Switch" (see item 15).
7. **ENGINE HOUR METER:** This meter tracks the amount of hours the engine has run.
8. **BALLAST INDICATOR LIGHTS:** Indicates power from the ballast to each light.
9. **MAST LIGHT SWITCHES:** One circuit breaker is supplied for each light.
10. **GLOW PLUG SWITCH:** This switch activates the glow plugs.
11. **MAIN CONTROL SWITCH:** This switch starts and stops the engine.
12. **GFCI MODULE:** This module is the ground fault circuit interrupter to protect all electrical outlets.
13. **AUXILIARY OUTLET MAIN CIRCUIT BREAKER:** This 28A breaker will disconnect power to the lights and auxiliary outlets.
14. **DC CIRCUIT BREAKER:** Circuit breaker (30A) for the engine electrical system.
15. **PANEL LIGHT SWITCH:** Toggles the "Control Panel Light" and the "Interior Housing Light" on and off.

ENGINE STARTING AND OPERATION

1. Check engine oil, fuel and coolant levels. **Note:** If the engine was run out of fuel or the fuel tank was drained, it may be necessary to bleed the fuel lines. Refer to the Engine Operator's Manual supplied with the unit.
2. Check the condition of the electrical cord on the inside of the unit.

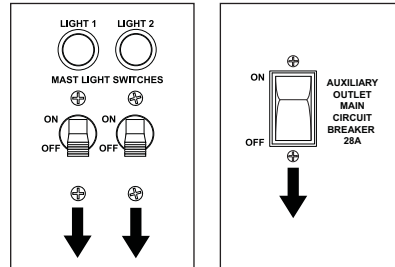
⚠ WARNING

Do not start the unit if the insulation on the electrical cord is cut or worn through. Bare wires in contact with the mast or frame may energize the trailer and cause electrocution. Repair or replace cord.

3. Make sure all circuit breakers are OFF (open) and that there are no loads connected to any outlets.

⚠ WARNING

**NEVER START THE ENGINE WITH ANY OF THE CIRCUIT BREAKERS SWITCHED ON!
Any load on the generator during start up will cause severe damage or destroy the generator!**



4. Open the fuel tank shutoff valve by turning it 90°. The valve is located near the fuel fill cap on the fuel tank.
5. Press and hold the GLOW PLUG SWITCH for five seconds. For cold weather conditions, hold the GLOW PLUG SWITCH for ten seconds.

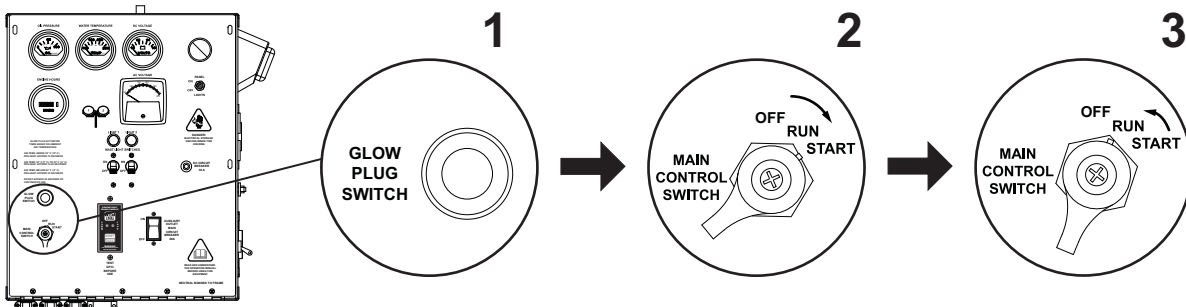
NOTICE

Do not activate the glow plugs for more than 40 seconds. Equipment damage may result.

6. Turn the main control switch to the START position and hold it to crank the engine. When the engine starts, release the switch and it will automatically move to the RUN position.

NOTICE

Do not crank the engine longer than 10 seconds at a time. If the engine will not start, wait 30 seconds to allow the starter motor to cool and then repeat the starting procedure. Excessive cranking will drain the battery and cause damage to the starter.



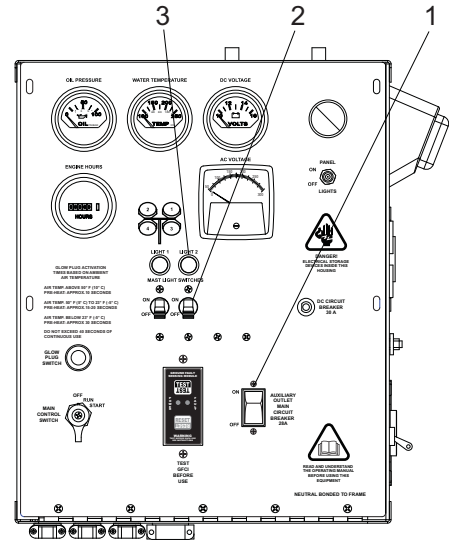
Note: If oil pressure is not obtained within 15 seconds after the main control switch is released to the RUN position, the low-oil automatic shutdown will stop the fuel supply, shutting the engine down. Check the oil level and turn the main control switch to the OFF position to reset the time delay relay before attempting to restart the engine.

Note: If the operating temperature climbs beyond the safe operating limit, the high-temperature automatic shutdown will stop the fuel supply, shutting the engine down. Check the coolant level once the engine has sufficiently cooled and turn the main control switch to the OFF position to reset the time delay relay before attempting to restart the engine.

7. Allow the engine to warm up for five minutes before applying loads or operating the lights.

LIGHT OPERATION

1. Once the engine is up to temperature and running smoothly, switch main circuit breaker (1) to the ON "I" position.
2. With main circuit breaker on, switch each individual circuit breaker for the lights (2) to ON "I", one at a time.
3. The ballast indicator lights (3) will come on momentarily, then go dark as the lights strike. As the lights warm up, the ballast indicator lights will continue to get brighter and then remain on. This confirms that power is coming from the ballasts to the lights.
4. If an indicator light does not come on, the ballast may need to be serviced. If the indicator light comes on and stays lit but the related light is not illuminated, check the bulb or the mast wiring.
5. The lights require a warm up period of 5-15 minutes before they reach full output. If the lights are shut down, they require a cool-down period of approximately 10 minutes before they can be switched on again.
6. The light cart uses two 1000W bulbs. When checking or replacing the bulbs, wipe them with a clean cloth to avoid leaving any grease, oil residue or fingerprints on the glass. Any residue can create a hot spot on the bulb, causing premature bulb failure.



⚠ WARNING

NEVER OPERATE THE LIGHTS WITHOUT THE PROTECTIVE LENS COVER OR WITH A LENS COVER THAT IS CRACKED OR DAMAGED! The bulbs in the light fixtures produce high temperatures and operate under pressure. A broken or missing lens cover could cause the bulbs to shatter, causing injury.

⚠ WARNING

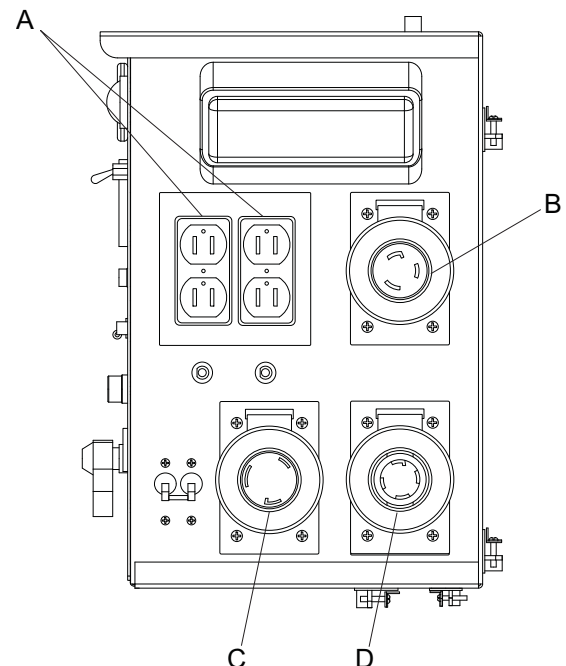
Bulbs become extremely hot in use! Allow bulb fixture to cool 10-15 minutes before handling.

AUXILIARY OUTLETS

This unit is equipped with two 120VAC duplex outlets (A), one 120VAC twist-lock outlet (B), one 20A 240VAC twist-lock outlet (C) and one 30A 240VAC twist-lock outlet (D), all located on the side of the control box. These outlets are provided for running accessories or tools from the generator. Power is supplied to the outlets any time the engine is running and the AUXILIARY OUTLET MAIN CIRCUIT BREAKER is switched ON.

The mast mounted lights are split so light number 1 and the 120 VAC duplex outlets share one leg of the generator - L1 (A). Light 2 and the 120VAC twist-lock outlet share the other generator leg - L2 (B). The 240 VAC outlets use both generator legs (C & D) for power. If the circuit breaker for one of the outlets trips (opens), reduce the load to the outlets and reset the circuit breaker.

A ground fault circuit interrupter (GFCI) module is located on the control panel to protect all electrical outlets, and should be tested before each use.



GFCI TEST INSTRUCTIONS

NOTICE

ALWAYS test GFCI outlets before connecting any loads to the generator.

Normal Operating State: The sensing device green LED is “ON” and the circuit breaker is in the “ON” position.

1. Press the “TEST” button. The green LED should go out and the red LED should come on. The circuit breaker should trigger to the “OFF” position.
2. If the LED does not change state, or the breaker does not trip, DO NOT USE! Consult an electrician for assistance.
3. Press the “RESET” button. The red LED should turn off and the green LED should turn on.
4. Manually reset the circuit breaker to the “ON” position to restore circuit power.

VOLTAGE REGULATION

This unit is equipped with an electronic voltage regulator. This voltage regulator controls the output of the generator by regulating the current into the exciter field. The voltage regulator on your unit is adjusted before shipment from the factory. Contact Magnum Products LLC for additional information before attempting to adjust the voltage regulator.

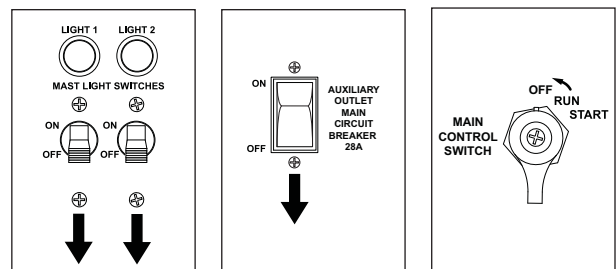
DERATING FOR ALTITUDE

All light carts are subject to derating for altitude and temperature. Although derating should not affect the operation of the lights, it will reduce the available power for operating tools and accessories connected to the auxiliary outlets. Typical reductions in performance are 2-4% for every 1000 ft. (305 m) of elevation and 1% per 10° F (3-5° C) increase in ambient air temperature over 72° F (22.2° C).

SHUTTING DOWN

Notify nearby personnel before switching off the mast lights or components connected to the auxiliary outlets; and prior to shutting down light cart operation. Make sure any critical components connected to the outlets and illuminated areas will not be affected.

1. Remove any loads from the auxiliary outlets.
2. Switch the individual circuit breakers for each light to the OFF “O” position.
3. Switch the main circuit breaker to the OFF “O” position.
4. Allow the engine to operate with no load for 5-10 minutes.
5. Turn the MAIN CONTROL SWITCH to the OFF position.
6. Turn the fuel supply valve 90° to shut off the fuel supply.



LOWERING THE MAST

1. Shut down the lights and engine. Allow the lights to cool 10-15 minutes before lowering the mast.

▲ WARNING

The mast lights will be hot! Avoid contact with the lights until they have cooled enough to be handled safely!

2. Loosen the mast rotation lock and turn the mast tower until the winch faces the rear.

3. Tighten the mast rotation lock. Turn the mast winch handle counterclockwise to lower the tower to its transport position. As you lower the tower make sure the mast cord does not get trapped or tangled in the mast sections.

⚠ WARNING

If the mast hangs up or the winch cable begins to develop slack, STOP IMMEDIATELY! Excess slack in the cable could cause the mast to collapse should it free up without warning. Contact an authorized service center.

4. If the light cart is going to be moved, Magnum Products LLC strongly recommends that the lights be removed from the mast and stowed for transportation. See REMOVING LIGHTS FOR TRANSPORTATION section below.

REMOVING THE LIGHTS FOR TRANSPORTATION

1. Disconnect the power cords from the outlets on the mast. Replace the dust caps on the outlets.
2. Remove the lights by removing the T-handle nut that holds the light fixture bracket to the mast cross bar. Stow one light on each side of the light cart, using the rear (closest to the mast assembly) storage bracket on each side. Secure the lights with the T-handle nuts.

TOWING THE LIGHT CART

Once the engine is shut down and the mast and lights are properly stowed, the light cart can be made ready for transport.

1. Verify the mast lights are secured in their storage brackets. If the cart is going to be driven over rough ground, remove the bulbs from the light fixtures.
2. Verify the fuel tank cap and battery hold down brackets are tight.
3. Close and secure both doors. Verify the mast is completely lowered. Verify the mast rotation knob is tight.
4. Check the tire pressures of the trailer tires. They should be at 60 psi cold.
5. Release the parking brake. See "PARKING BRAKE OPERATION" on page 21.
6. Connect the light cart to the towing vehicle.
7. Follow all work site procedures for towing equipment.

NOTICE

This equipment was not designed for use on public roadways, and therefore does not meet all requirements for Department of Transportation (DOT) and National Highway Traffic Safety Administration (NHTSA) compliance. Please reference all Federal, State and Local trailer and towing requirements before attempting to tow the light cart on a public roadway.

⚠ CAUTION

Do not exceed 20 MPH when towing a single light cart on pavement and 10 MPH on graded gravel. High speed could make the light cart unstable, resulting in equipment damage.

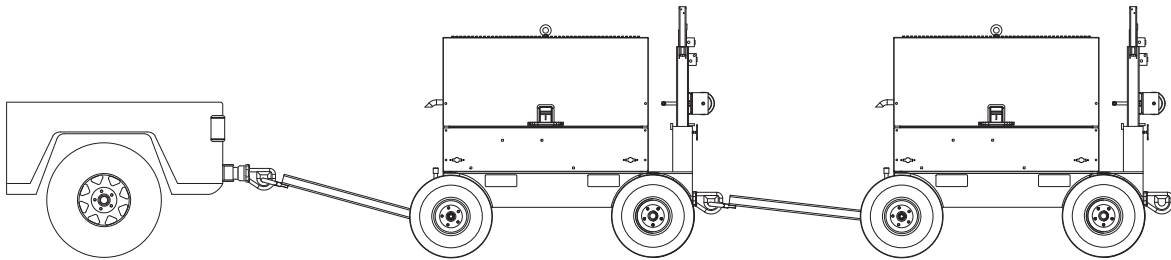
TANDEM TOWING

⚠ CAUTION

Never tow more than two light carts at the same time. Any extra light carts will be unstable and difficult to stop, resulting in possible equipment damage.

This unit is equipped with tandem towing capabilities. The following procedure gives step by step instructions on setting up the units for tandem towing.

1. Verify the mast lights are secured in their storage brackets.
2. Verify the fuel tank cap and battery hold down brackets are tight.
3. Close and secure both doors. Verify the mast is completely lowered. Verify the mast rotation knob is tight.
4. Check the tire pressures of the trailer tires. They should be at 60 psi cold.
5. Connect the primary light cart to the towing vehicle.
6. Connect the secondary light cart to the primary cart by attaching the tongue of the trailer to the pintle ring on the back of the primary trailer.
7. Release the parking brakes on both light carts.

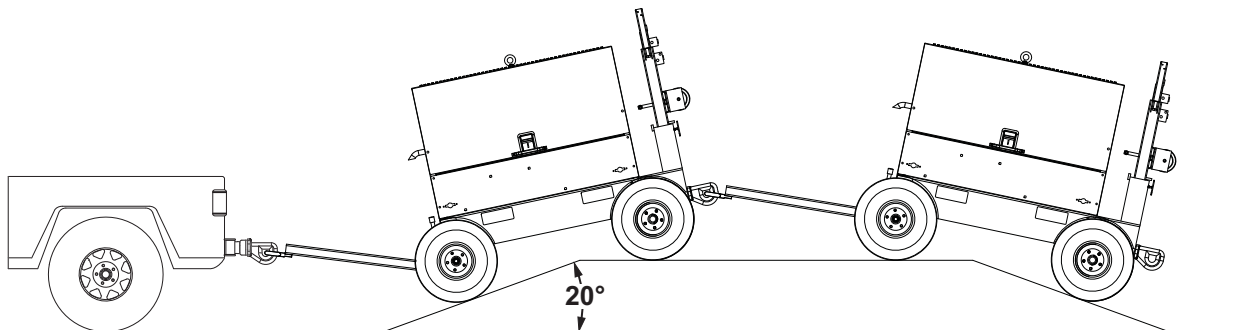


8. Follow all work site procedures for towing equipment.

⚠ CAUTION

Do not exceed 10 MPH when towing two light carts at the same time. At higher speeds the light carts will be unstable and difficult to stop, resulting in possible equipment damage. Do not cross any ditches, curbs or depressions greater than 12" deep.

9. Use extreme care when moving the light cart over terrain that may have departure or approach angles greater than 20° from horizontal. The chassis may bottom out or become high centered on edge of the angle.



LIFTING THE LIGHT CART

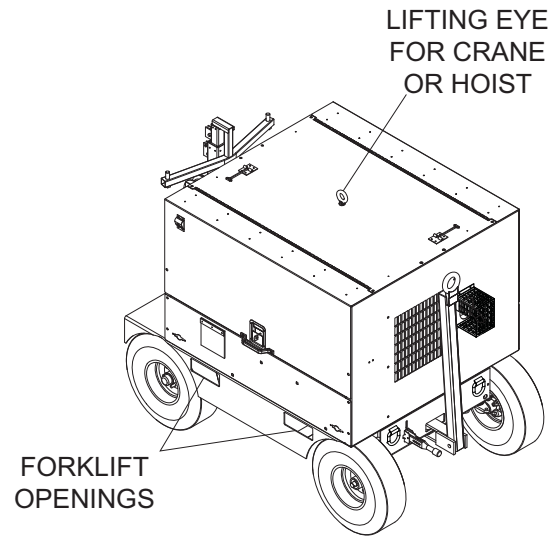
Use extreme care when lifting the light cart. Always remain aware of the position of other people and objects around you as you move the unit. Only use equipment designed and rated for lifting. **Note:** See the unit specifications on page 8 for approximate weights.

When overhead lifting with a crane or hoist, attach a hook or chain directly to the lifting eye on the roof of the light cart.

When lifting with a forklift, approach the light cart from either side and carefully insert the tines through the side openings in the light cart chassis. Make sure any obstructions are clear of the forklift tines before lifting.

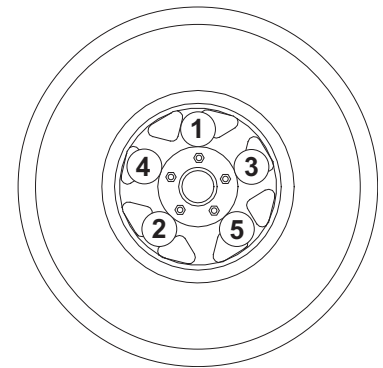
⚠ CAUTION

Never attempt to lift the light cart by placing the forklift tines underneath the chassis, or by lifting the light cart from the front or rear. Equipment damage could result.



DAILY INSPECTION

1. Inspect condition of electrical cords. **DO NOT** use light cart if insulation is cut or worn through.
2. Check that winch cables are in good condition and that they are centered on each pulley. **DO NOT** use a cable that is kinked or starting to unravel.
3. Check the fuel, oil and coolant levels.
4. Check the operation of the parking brake. See the operating and adjustment instructions on page 21.
5. Check the wheel lugs. Tighten or replace any that are loose or missing. If a tire has been removed for axle service or replaced, tighten the lugs in the order shown to the following specifications:
 - A. Start all lug nuts by hand.
 - B. First pass tighten to 20-25 Ft-Lbs (27-33 Nm).
 - C. Second pass tighten to 50-60 Ft-Lbs (67-81 Nm).
 - D. Third pass tighten to 90-120 Ft-Lbs (122-162 Nm).



After the first road use, re-torque the lug nuts in sequence.

TRAILER WHEEL BEARINGS

The light cart is equipped with a grease zerk fitting to allow lubrication of the wheel bearings without the need to disassemble the axle hub. To lubricate the axle bearings, remove the small rubber plug on the grease cap, attach a standard grease gun fitting to the grease zerk fitting and pump grease into the fitting until new grease is visible around the nozzle of the grease gun. Use only a high quality grease made specifically for lubrication of wheel bearings. Wipe any excess grease from the hub with a clean cloth and replace the rubber plug when finished. The minimum recommended lubrication is every 12 months or 12,000 miles; more frequent lubrication may be required under extremely dusty or damp operating conditions.

ENGINE MAINTENANCE

Note: During the first 50 hours of operation, avoid long periods of no load or sustained maximum load operation. If the light cart is to run for longer than five minutes without a load, shut the engine down.

The periodic maintenance schedule below lists basic maintenance intervals for the light cart. For detailed maintenance procedures refer to the Engine Operator's Manual. A copy of this manual was supplied with the unit when it was shipped from the factory. For additional or replacement copies of the Engine Operator's Manual, contact an authorized engine dealer in your area.

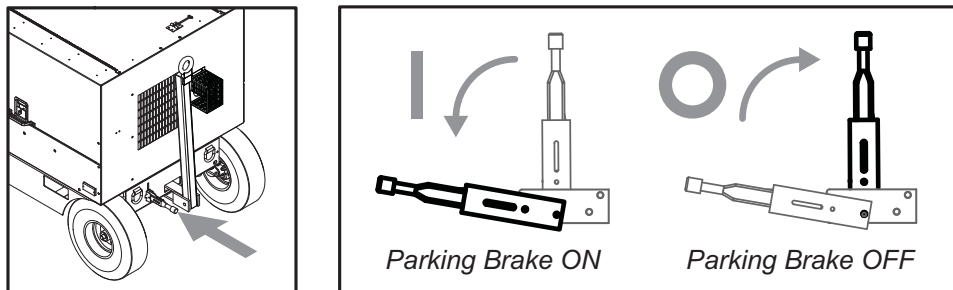
Maintenance Action	Daily	100 Hours	200 Hours	500 Hours	800 Hours	Every 2 Years
Check Engine Oil Level	◆					
Check Engine Coolant Level	◆					
Check Fuel Level	◆					
Check Tire Pressures	◆					
Check for Fuel Leaks	◆					
Check for Coolant Leaks	◆					
Check Parking Brake Operation	◆					
Check Fan Belt Tightness		◆				
Drain Fuel Filter, Water Separator		◆				
Check Battery		◆				
Clean Air Filter Element		◆				
Check Radiator Hoses			◆			
Change Engine Oil and Filter		*	◆			
Check Intake Air Line			◆			
Replace Fuel Filter Element			◆			
Inspect and Clean Radiator Fins				◆		
Clean Air Filter Element, Replace if Necessary				◆		
Replace Alternator Belt				◆		
Check All Electrical Connections					◆	
Check Valve Clearance					◆	
Drain and Clean Fuel Tank						◆
Change Engine Coolant						◆
Replace Cooling System Hoses						◆

* Drain the fuel filter daily in rainy or humid conditions.

** Change the engine oil and filter after the first 50 hours of operation, then every 250 hours.

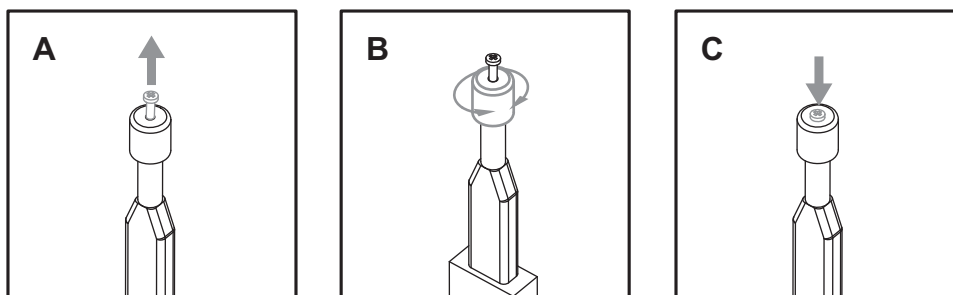
PARKING BRAKE OPERATION

1. Locate the parking brake.
2. Set the parking brake by pushing down on the handle until it locks into the down position.
3. Ensure the parking brake is set before starting the engine; before leaving the unit unattended; when the unit is parked on an incline; or while the unit is being serviced.
4. To release the parking brake, pull the handle until it is locked into the upright position.



PARKING BRAKE ADJUSTMENT

1. Disengage the parking brake.
2. To adjust the brake tension, loosen the screw at the end of the handle. See Figure A.
3. Turn the knob clockwise to tighten, or counter-clockwise to loosen. See Figure B.
4. With the light cart parked on a level surface, engage the parking brake and carefully attempt to roll the light cart. Proper tension has been attained when the light cart does not roll with the brake in the ON position. Repeat steps 1 - 3 as necessary.
5. While keeping the knob stationary, tighten the locking screw to secure the appropriate tension setting. See Figure C.
6. Test the brake operation again to ensure proper adjustment.



WINCH USE, OPERATION & MAINTENANCE

PRIOR TO USE:

- Inspect rope or cable and replace if damaged.
- Check mounting hardware for proper tightness and re-torque if necessary.
- Gears, ratchet pivot point and shaft bushings must be kept lubricated with a thin oil or grease.

OPERATION:

Take Line/Load In:

1. The cable must be securely fastened to the object being lifted and to the winch drum.
2. Always be sure that the cable and cable attachments are not damaged and are strong enough for the load. Assure there is adequate safety factor, of at least three times the maximum load for all components used.
3. Referring to the “Cable In/Cable Out” decal on the winch, turn handle according to the specified direction to lift. The ratchet **MUST** make a loud clicking sound while pulling line in.

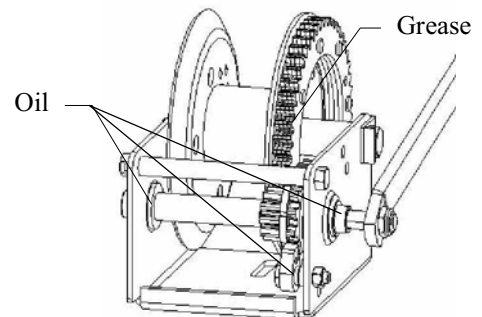
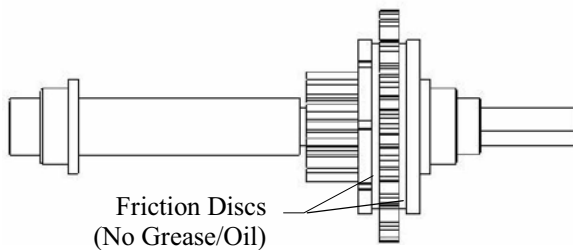
Let Line/Load Out:

1. Referring to the “Cable In/Cable Out” decal on the winch, turn handle according to the specified direction to lower. No clicking will be heard because the brake system is activated.

MAINTENANCE:

The following procedures should be performed at least annually:

1. The gears and bushings of the winch must be kept lubricated. Apply a thin film of grease to the gear teeth, and oil the bushings as needed.
 2. The ratchet pawl pivot point must be kept lubricated with a thin oil.
- Do not get oil or grease on the friction discs.



TROUBLESHOOTING THE LIGHTS

⚠ DANGER

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.

MAST LIGHTS OFF BUT BALLAST INDICATORS ON CONTROL PANEL ARE ON:

1. Mast light is too hot. Allow light to cool 10-15 minutes before restarting.
2. Faulty bulb connection. Check that the bulb is tight in the socket.
3. Bulb broken. Check for broken arc tube or outer bulb jacket, broken or loose components in bulb envelope or blackening/deposits inside tube.
4. Check the connections at each mast light housing/socket.
5. Check the mast electrical cord for damage and check the cord connections inside the control box.

MAST LIGHTS OFF AND BALLAST INDICATORS ON CONTROL PANEL ARE OFF:

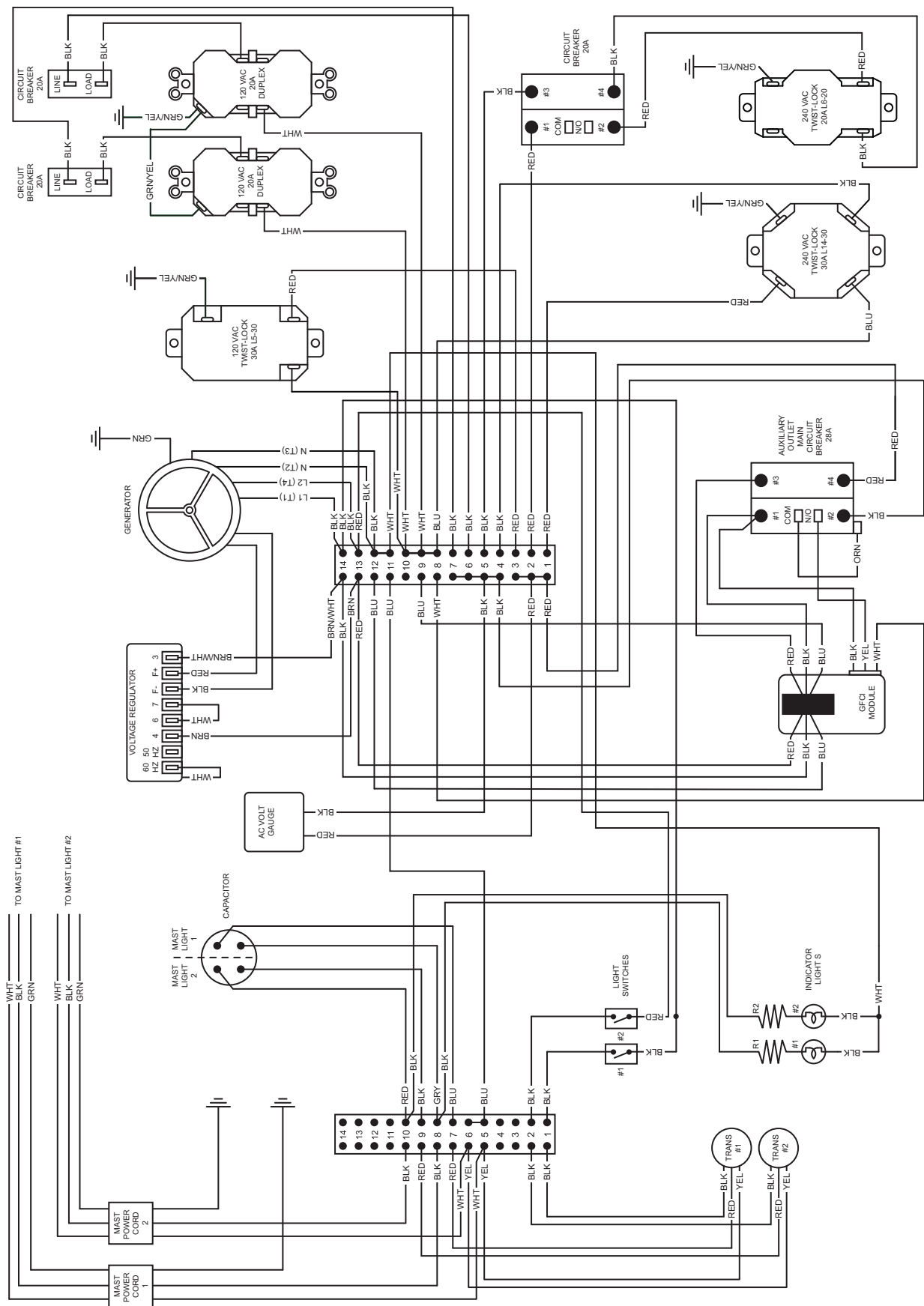
1. Check the connections inside the control box and inside each ballast box.
2. Generator output incorrect. Check the incoming voltage to the ballast by checking the available voltage on the duplex receptacle. Incoming voltage should be 120V +/- 5V. If voltage is incorrect engine speed may need to be adjusted or generator may require service. Contact Magnum Products Technical Service Department for more information.
3. Low transformer output. The voltage from the transformer should read approximately 400 VAC as the light "strikes" (induces an arc), then drop and slowly rise back up to stabilize at 240-260 VAC. Measure across the connection points when the light is unplugged. If proper voltage is not achieved, perform a capacitor check to determine if the capacitor or coil needs to be replaced.

MAST LIGHTS ON BUT THE LIGHT OUTPUT IS LOW:

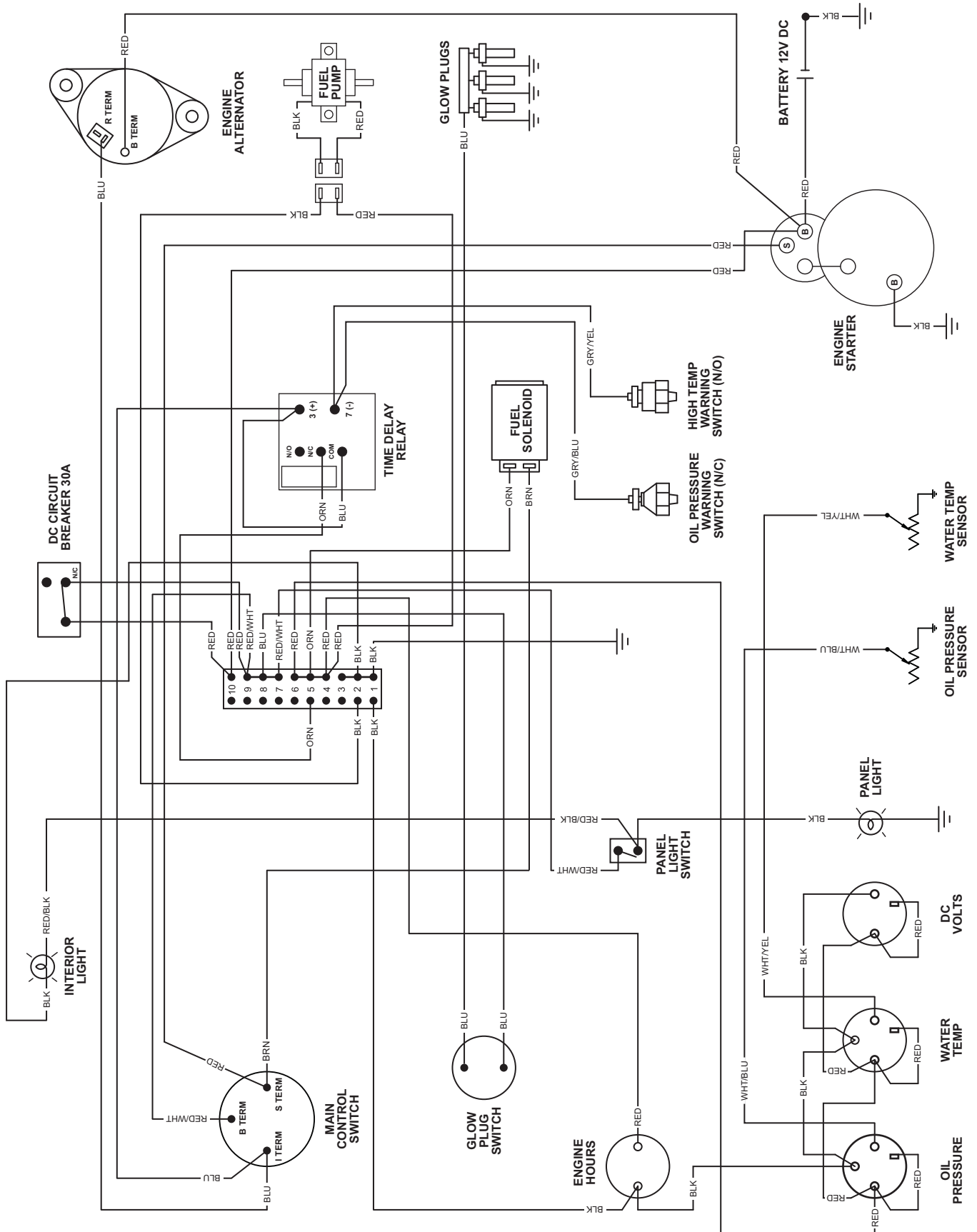
1. Fixture or lens dirty. Clean reflective surface inside fixture and both inside and outside surface of glass lens. Use mild soap and water to clean lens. Other chemicals may have an adverse effect on the glass.
2. Bulb worn. Replace bulb due to normal use.
3. Check the mast coil cord and mast light connections.
4. Generator output incorrect. Check the incoming voltage to the ballast. Incoming voltage should be 120V +/- 5V. If voltage is incorrect engine speed may need to be adjusted or generator may require service.
5. Low transformer output. Perform transformer check as described above.

If problems persist, contact Magnum Products Technical Service for assistance.

AC CIRCUIT WIRING DIAGRAM



DC CIRCUIT WIRING DIAGRAM



NOTES

[illegible]

SERVICE LOG

OIL GRADE: _____ BRAND: _____

COOLANT MIXTURE: _____ BRAND: _____

[illegible][illegible][illegible]

REV: A
PART NO: 13498
03.04.11