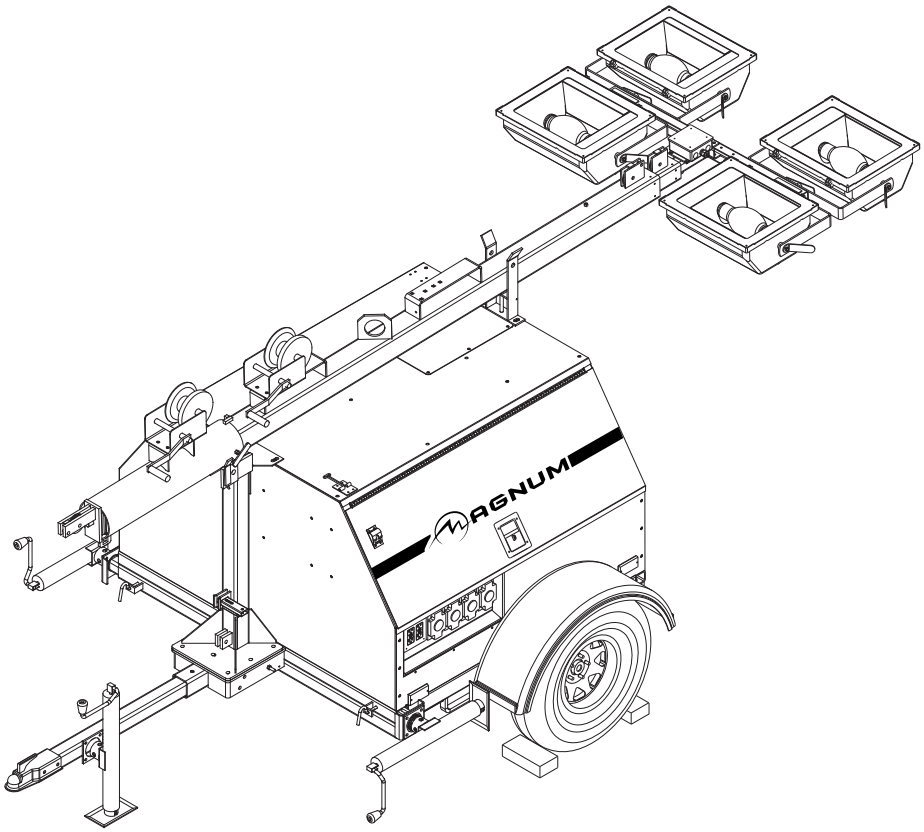
MAGNUM™
PRODUCTS LLC

MLT 5250



OPERATING/PARTS MANUAL

This manual provides information and procedures to safely operate and maintain the light tower, engine and generator. 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.

Keep a copy of this manual with the unit at all times. Additional copies are available from Magnum Products LLC. An engine operators 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 operators manual are available from the engine manufacturer.

MAGNUM PRODUCTS LLC
215 Power Drive • Berlin, WI 54923
U.S.A.
Phone: 920-361-4442
FAX: 920-361-4416
Toll Free: 1-800-926-9768
www.m-p-llc.com

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 tower 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 tower. The following points should be practiced at all times:

- The area immediately surrounding the light tower should be dry, clean, and free of debris.
- Position and operate the light tower on a firm, level surface.
- **NEVER** start a unit in need of repair.
- Lower tower when not in use, or if high winds or electrical storms are expected in the area.
- Make certain light tower is well grounded and securely fastened to a good earthen ground.
- The tower extends up to 30 ft. (9m). 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 behind trailer clear of people while raising and lowering mast!
- **NEVER** raise, lower or turn mast while unit is operating!
- Trailer must be leveled and outriggers extended before raising tower. Outriggers must remain extended while tower is up.
- If for any reason any part of mast hangs up or winch cable develops slack while raising or lowering tower, STOP immediately! Contact an authorized service representative.
- **NEVER** remove safety pin or pull mast locking pin while tower is up!
- **NEVER** use tower 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!

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 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** 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.
- Keep area around exhaust pipes and air ducts free of debris to reduce the chance of an accidental fire.
- Prolonged exposure to sound levels in excess of 85 DBA can cause permanent hearing loss. Wear hearing protection when working around a running engine. **DO NOT operate the unit without a functional exhaust system.**
- 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. Operating on a combustible surface.
    7. Protective covers are loose or missing.
    8. If the ambient air temperature is above 110° 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 tower, 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 tower. 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.
- 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. Also, some states require that large trailers be registered and licensed. Contact your local Department of Transportation office to check on license requirements for your particular unit.

- 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.
- Inspect the hitch and coupling for wear or damage. **DO NOT** tow trailer using defective parts!
- Make sure the trailer hitch and the coupling are compatible. Make sure the coupling is securely fastened to the vehicle.
- Connect safety chains in a crossing pattern under the tongue and attach the breakaway cable **TO THE REAR BUMPER OF THE TOWING VEHICLE.** Do not attach the cable to the trailer hitch.
- Make sure directional and brake lights on the trailer are connected and working properly.
- Check that all lug nuts holding wheels on are tight and that none are missing.
- Maximum recommended speed for highway towing is 45 m.p.h. Recommended off-road towing speed is not to exceed 10 m.p.h. or less depending on terrain.

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

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

REPORTING TRAILER SAFETY DEFECTS

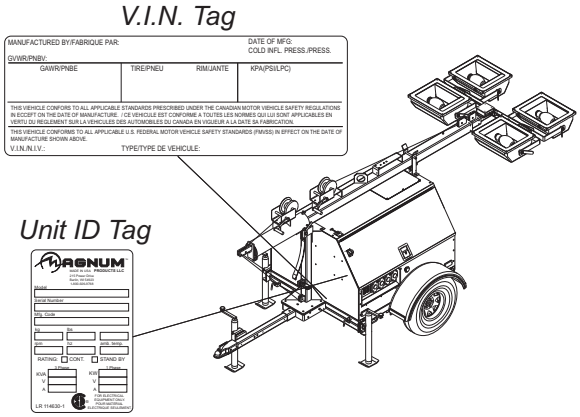
If you believe your trailer has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Magnum Products LLC. If NHTSA receives similar complaints, it may open an investigation; and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problem between you, your dealer, or Magnum Products LLC.

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1-888-327-4236 or by fax at: (202)-366-7882. Additional contact information can be found at: www.nhtsa.dot.gov.

UNIT SERIAL NUMBER LOCATIONS

Refer to the locations illustrated below 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.

V.I.N. Tag



Unit ID Tag

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 beginning of the parts section of this 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 tower 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.

MAGNUM MODEL	**MLT 5250**

Engine Specifications

Engine Manufacturer	Isuzu
Engine Model	4LE1-PV 05
Engine Type	Diesel, 4-cyl, liquid cooled 4-stroke
Engine Horsepower - standby	34.5 hp (25.7 kW) @1800 rpm
Engine Horsepower - prime	31.5 hp (23.5 kW) @1800 rpm
Fuel Tank Capacity	56 gal. (215.8 L)
Fuel Consumption	2.1 gph (7.90 Lph)

Generator Output

Generator Output 3Ø Standby kW/kVa	20/25
Generator Output 1Ø Standby kW/kVa	16/16
Generator Output 3Ø Prime kW/kVa	18/23
Generator Output 1Ø Prime kW/kVa	15/15
Generator Output Voltage 3Ø	208, 220, 440, 480
Generator Output Voltage 1Ø	120, 138, 208, 220, 240, 277
Generator Output Amperes 3Ø (480/208)	30/69
Generator Output Amperes 1Ø (240)	67

Generator Specifications

Generator Manufacturer	Marathon Electric
Generator Model	282NSL1505
Generator Frequency	60 Hz
Generator Power Factor	0.8
Generator Insulation	Class “H1”

Light Specifications

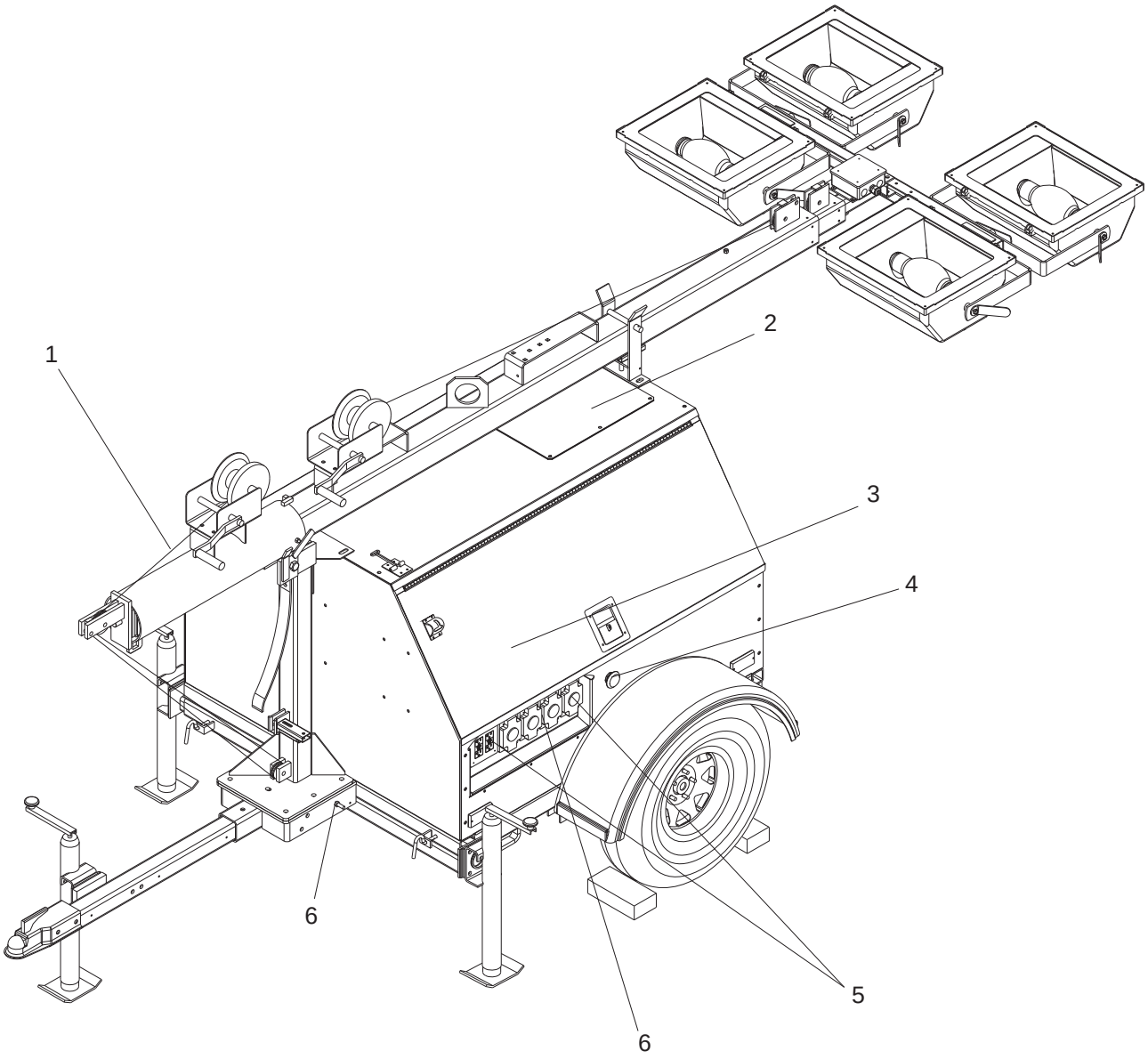
Lighting Type	Metal halide or high press. sodium
Ballast Type	Coil & core
Lumens	440,000
Coverage (approximate)	5-7 acres (20,235-28,329 sq. m)

Weights and Dimensions

Weight (no fuel)	2315 lbs (1050 kg)
Weight with Fuel (approximate)	2713 lbs. (1231 kg)
Width	62 in. (157.48 cm)
Height	68 in. (172.72 cm)
Maximum Height of Tower	30 ft. (9.14 m)
Length with Mast Stowed	170 in. (431.8 cm)
Width with Outriggers Extended	140 in. (355.6 cm)

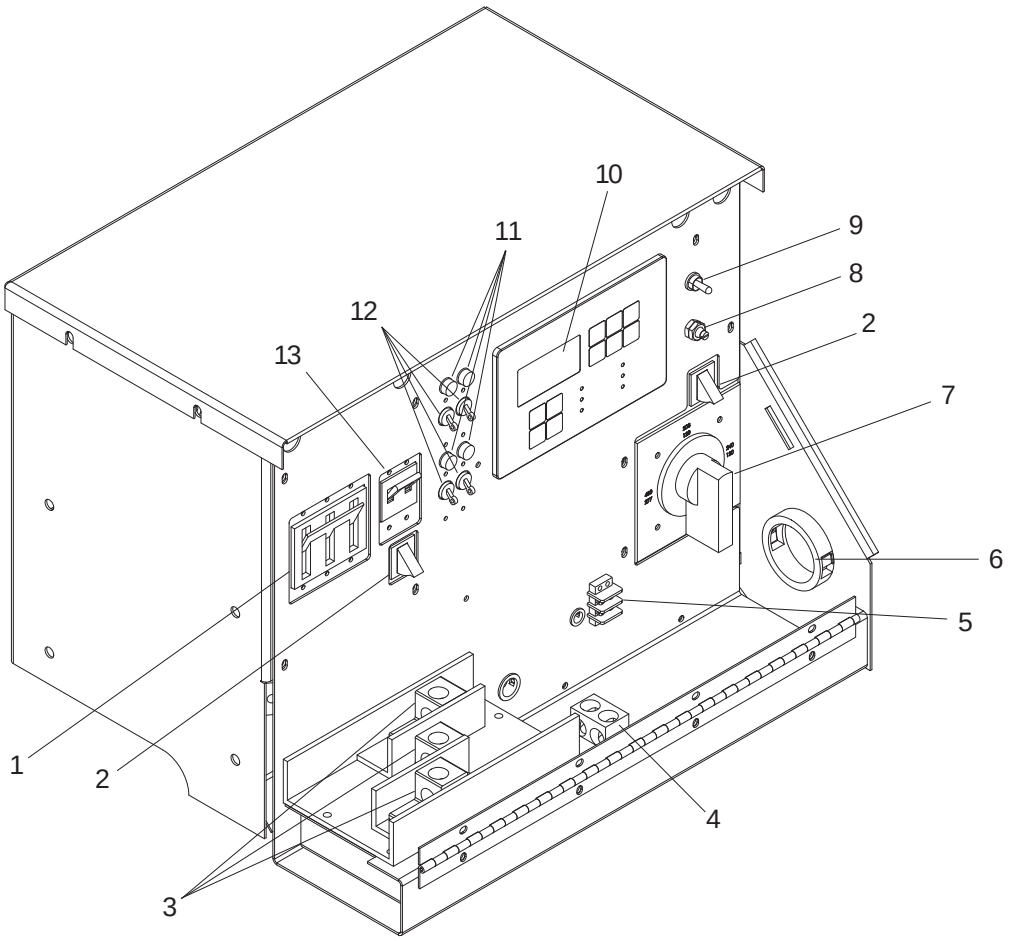
SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

EXTERIOR LOCATIONS



1. **FUEL FILLER LOCATION (under door):** Use clean **DIESEL FUEL ONLY**.
2. **RADIATOR ACCESS PANEL:** Remove this panel for engine coolant service.
3. **CONTROL PANEL LOCATION (under door):** Engine/generator controls and all circuit breakers.
4. **EMERGENCY STOP SWITCH:** For emergency shutdown; stops engine and trips main circuit breaker.
5. **EQUIPMENT OUTLETS:** Circuit breaker protected outlets; 20, 30 and/or 50 amp ratings.
6. **GROUND STUDS (2):** For grounding generator and equipment connected to the equipment outlets.

MAIN CONTROL PANEL COMPONENTS



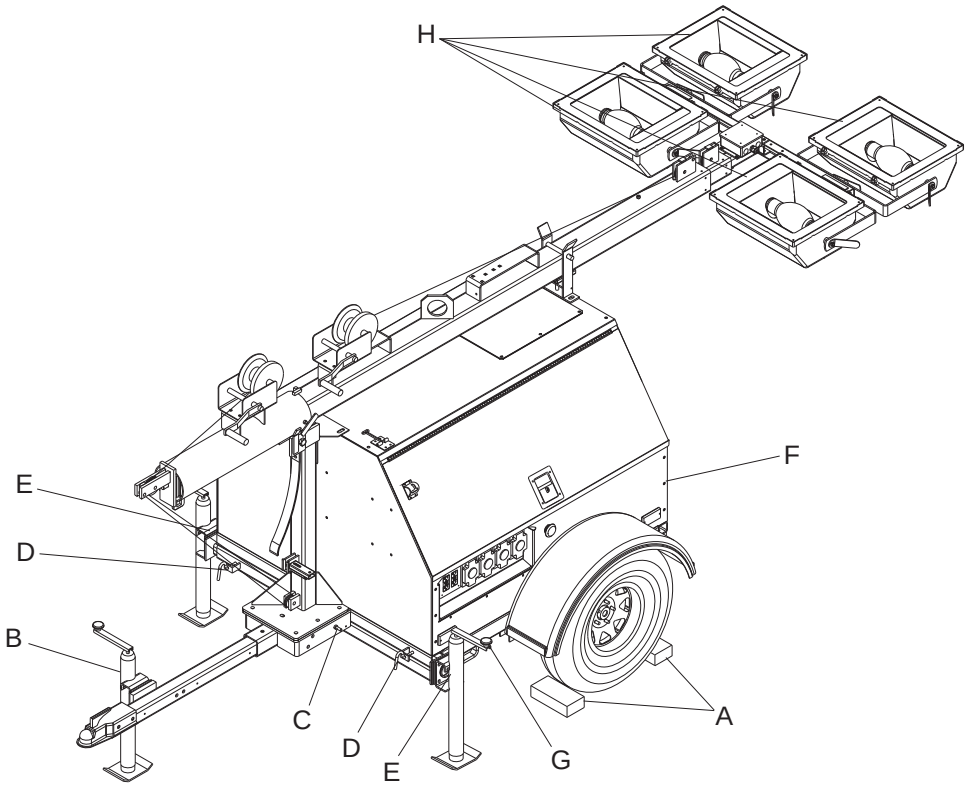
1. **MAIN CIRCUIT BREAKER (90A):** This breaker will disconnect power to the connection lugs.
2. **LUG DOOR SAFETY SWITCHES:** These switches will shut the generator down if the lug door is opened when the generator is running.
3. **GENERATOR OUTPUT CONNECTION LUGS:** These allow appropriate loads to be wired directly to the generator.
4. **GENERATOR GROUND CONNECTION LUG:** This lug is for connecting a good earthen ground per any local, state or National Electric Code (NEC) guidelines before starting the generator.
5. **REMOTE START TERMINAL BLOCK:** Allows connections for remote starting of the generator.
6. **CABLE ACCESS:** Allows for entry of load cables to the connection lugs with the lug box door closed.
7. **PHASE SELECTOR SWITCH:** This switch will change the generator output between three phase and single phase power. See the VOLTAGE SELECTOR SWITCH section for more information.
8. **VOLTAGE ADJUSTMENT RHEOSTAT:** Used to fine tune generator output voltage.
9. **CONTROL POWER SWITCH:** This is the main power switch for the controller in MANUAL or AUTO mode.
10. **ENGINE CONTROL PANEL:** See pages 14 - 15 for additional information.
11. **BALLAST INDICATOR LIGHTS:** Indicates power from the ballast to each light.
12. **INDIVIDUAL CIRCUIT BREAKERS:** One breaker is supplied for each light.
13. **AUXILIARY OUTLET MAIN CIRCUIT BREAKER (100A):** This breaker disconnects power to the auxiliary equipment outlets.

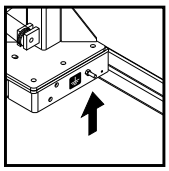
LIGHT TOWER SET-UP

1. For maximum light coverage locate tower at ground level or in a spot higher than the area being illuminated by the lamps.

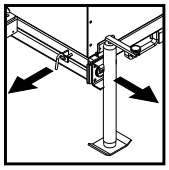
⚠ WARNING

Check for any overhead obstructions such as utility lines or vegetation as the tower extends up to 30 ft. (9.14 m). Do not set up the tower if high winds or storms capable of producing lightening are expected in the area!





DETAIL C



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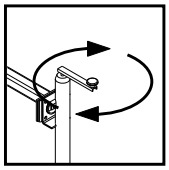
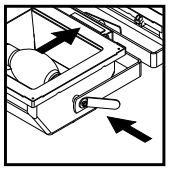


DETAIL G



DETAIL H

2. Place the trailer on firm ground that is relatively flat. This will make it easier to level the tower. Block the wheels on the trailer to keep it from moving (A).

3. Pull the locking pin on the tongue jack and rotate it 90º until the spring loaded pin snaps back into place (B). Turn the jack handle clockwise to raise the trailer tongue off of the towing vehicle.

4. Connect a good earthen ground to the grounding stud on the frame of the trailer near the trailer tongue (C).

5. Pull the locking pins (D) on the outriggers (E) and pull the outriggers out until the spring loaded locking pin snaps back into place. Pull the locking pin on the outrigger jacks and rotate them 90º until the spring loaded pin snaps back into place.

6. Pull the locking pin on the rear jack (F) and rotate it 90º until the spring loaded pin snaps back into place. Turn the jack handle clockwise to start leveling the trailer. Adjust all four jacks by turning their handles clockwise until they are firmly in contact with the ground and the trailer is as level as possible (G).

7. Before raising the tower it may be necessary to adjust the lamps. The lamps may be adjusted up, down, left or right by loosening the wing bolts on the lamp fixture (H) and aiming them in the desired direction. Tighten the hardware completely and make sure the lamps are connected to the junction box.

RAISING THE TOWER

⚠ WARNING

The trailer must be leveled with the outriggers extended before raising the tower. The outriggers must remain extended while the tower is up. Failure to level the trailer or extend the outriggers will severely reduce the stability of the unit and could allow the tower to tip and fall.

1. Remove the mast cradle locking pin from the mast cradle (I).

2. Check both sets of mast cables for excessive wear or damage. Make sure the cables are properly centered in each pulley (J). Check the electrical cord for damage.

⚠ 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 the area behind the unit is clear before raising the mast to the vertical position.

4. Remove the safety pin (K) from the mast lock bar (L). Using the handle for the lower mast winch (M), raise the mast until it is vertical and the tab on the mast is positioned into the mast lock. The mast lock bar should snap into place automatically. Secure the lock with the safety pin (N).

5. After the mast is up and locked into place, use the upper mast winch (O) to telescope the tower 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 tower sections get stuck, STOP IMMEDIATELY and contact an authorized service center.

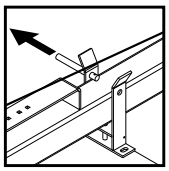
⚠ CAUTION

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

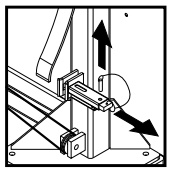
6. The mast can be rotated by loosening the locking knob at the bottom of the mast (Q). Turn the mast until the lights face in the desired direction and then tighten the knob.

⚠ WARNING

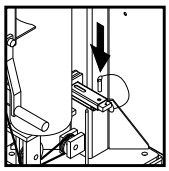
Never raise or lower the mast while the unit is operating! Never remove the safety pin or mast lock while the tower is up. Releasing the lock will cause the mast to fall.



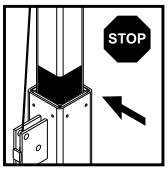
DETAIL I



DETAIL K



DETAIL N



DETAIL P

RAISING THE TOWER WITH THE OPTIONAL ELECTRIC WINCH

1. Set up and level the trailer as described on page 11, and follow steps 1-3 on page 12.

2. Remove the safety pin from the mast lock bar (R).

3. Press the lower winch control toggle switch upward to raise mast into the vertical position (S). Hold switch until the mast lock is engaged. The mast lock bar should snap into place automatically. ***Note:*** *On light towers equipped with the electric winch option, a limit switch on the mast tube will disconnect power to the lower electric winch to prevent deadheading the winch.*

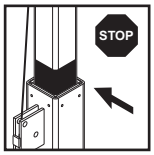
4. Secure the lock with the safety pin (T).

5. Press and hold the upper winch control toggle switch upward to telescope the mast to desired height (U). Extend the mast slowly, making sure that the coiled 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 tower sections get stuck, STOP IMMEDIATELY and contact an authorized service center.

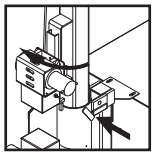
⚠ CAUTION

Do not extend the mast beyond the colored mark on top of the lower mast section (V). On light towers equipped with the electric winch option, a limit switch on the main mast section will disconnect power to the upper electric winch to prevent over extending the mast.

6. The mast can be rotated by loosening the locking knob at the bottom of the mast (W). Turn the mast until the lights face in the desired direction and then tighten the knob.



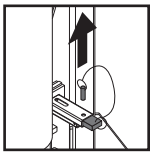
DETAIL V



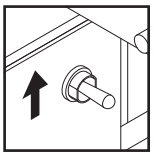
DETAIL W

⚠ WARNING

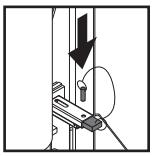
Never raise or lower the mast while the unit is operating! Never remove the safety pin or mast lock while the tower is up. Releasing the lock will cause the mast to fall.



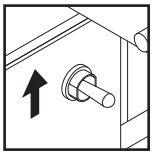
DETAIL R



DETAIL S

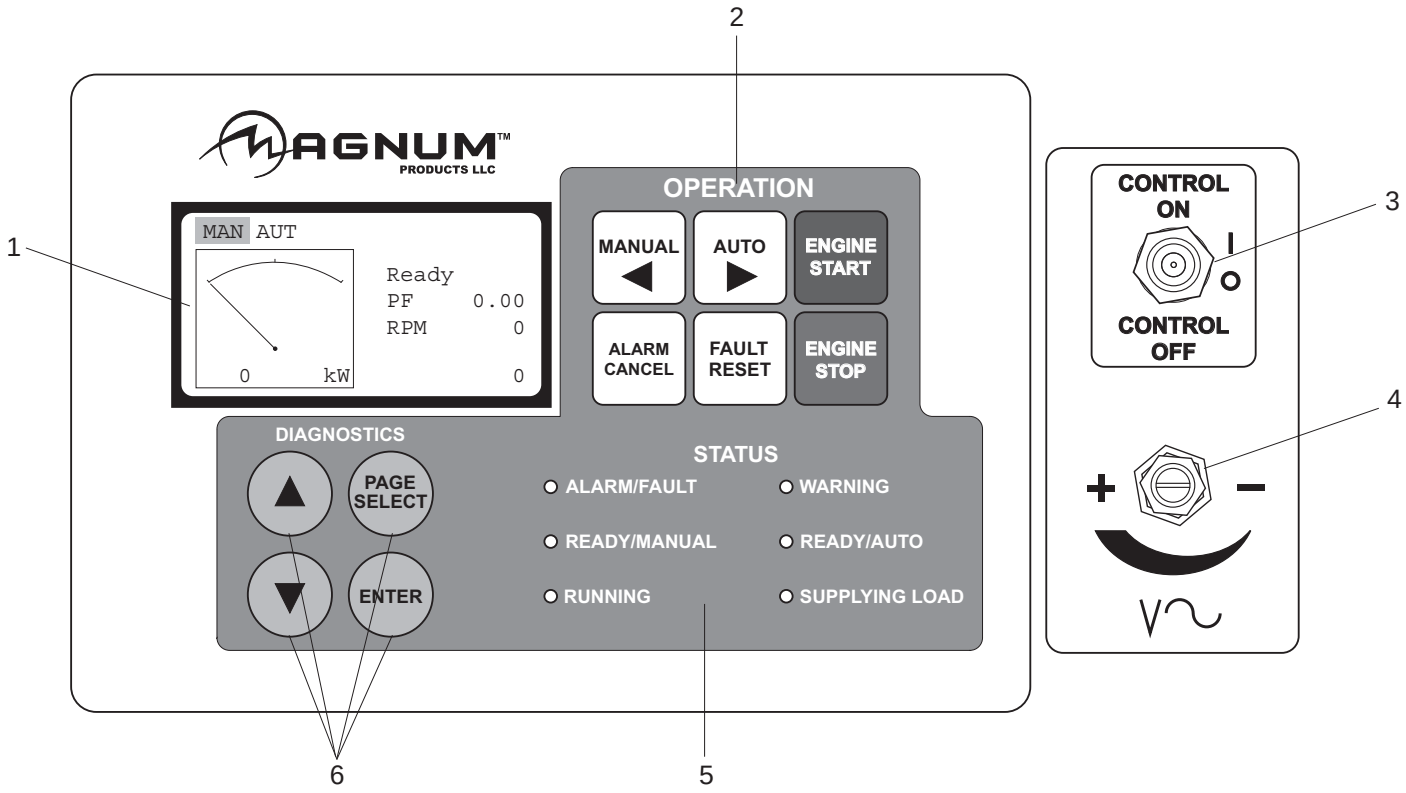


DETAIL T



DETAIL U

ENGINE CONTROLLER FEATURES



1. LCD DISPLAY

This display shows the controller status in, MANUAL and AUTO (remote start) modes.

Should a shut down fault occur, the LCD display will show the condition causing the fault. At the same time, the engine will shut down.

The LCD display will also show any possible Engine Sender Failures and Time To Service information. These conditions will not shut down the engine; they are used to alert the operator.

2. OPERATION KEYS

◀ MANUAL	Press to switch from AUTO to MANUAL mode.
▶ AUTO	Press to switch from MANUAL to AUTO mode for remote starting of generator.
ENGINE START	Press to start engine.
ALARM CANCEL	Press to cancel alarms (visual or audio if equipped).
FAULT RESET	Press to clear ALARM LIST fault codes.
ENGINE STOP	Press to stop engine.

3. CONTROL POWER SWITCH

This main power switch turns the controller on and off.

4. VOLTAGE ADJUSTMENT RHEOSTAT

This adjusting screw allows the end user to fine adjust the output voltage from the generator. ***Note:*** *This will need to be adjusted each time the voltage selector switch is changed.*

5. OPERATION STATUS LED'S

ALARM / FAULT	Indicates active or inactive alarms.
READY / MANUAL	Indicates controller is in MANUAL mode, ready to start.
RUNNING	Indicates running engine.
WARNING	Indicates active or inactive warnings.
READY/AUTO	Indicates controller is in AUTO mode, ready for remote start signal.
SUPPLYING LOAD	Indicates the genset is running, giving proper voltage and frequency and is supplying load.

6. DIAGNOSTICS

▲ UP

▼ DOWN Switch between:
POWER SCREEN DISPLAY (DISPLAYS FROM MANUAL TO AUTO MODE)
ALARM SCREEN DISPLAY
HOUR SCREEN DISPLAY
POWER DETAIL SCREEN DISPLAY

Note: *The controller automatically returns to the ENGINE/GENERATOR DISPLAY SCREENS after 60 seconds.*

PAGE SELECT Provides access to programming and resets.

ENTER Allows access to the next level.

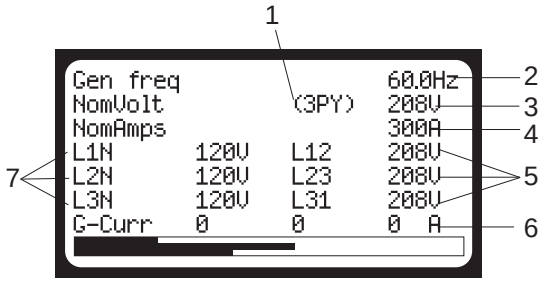
GENERATOR MONITORING

Generator information is shown on the LCD display in a repeating manner while the unit is running in MANUAL or AUTO mode. Generator information will show the voltage, amperage and frequency of each phase.

Additional information can be viewed when the unit is MANUAL or AUTO modes. Pressing PAGE SELECT then UP or DOWN on the key pad will display, Alarm Screen, Hour Screen, and Power Detail Screen displays.

Note: *When loading the generator it is important to observe the amperage to determine the load balance on each line of the generator. Minor load unbalances, usually 5% or less, will not cause any particular problems. Every effort should be made to distribute the load equally between all lines.*

1. PHASE - Indicates generator configuration, 3 phase or single phase.
2. HERTZ - Displays output frequency.
3. NOMINAL VOLTS - Displays generator nominal voltage in current phase switch selection.
4. NOMINAL AMPS - Displays maximum amps in current phase switch selection.
5. GENERATOR OUTPUT VOLTAGE - Line to Line display (3Ø).
6. AMPS - Displays the AC output amperage produced by the generator.
7. GENERATOR OUTPUT VOLTAGE - Line to Neutral display (1Ø).

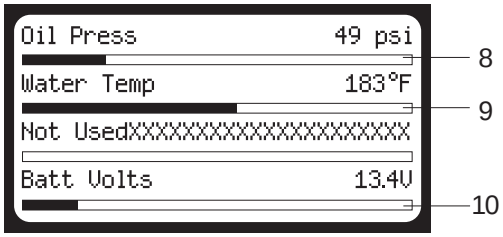


ENGINE MONITORING

Engine information is shown on the LCD display in a repeating manner while the unit is in MANUAL or AUTO mode. Engine information will show the oil pressure, water temperature, fuel level and battery voltage.

8. OIL - Displays engine oil pressure. The display registers oil pres sure between 0-100 psi. Normal operating pressure is between 35-80 psi.

9. TEMPERATURE - Displays the temperature of the engine's coolant. If the coolant temperature exceeds the Max Water Temp the engine will automatically shut down. Zero "0" will be displayed until a minimum of 100° F is reached.



10. BATTERY - Displays the engine battery voltage. A normal reading is 13-14V on 12 volt systems and 24-26V on 24 volt systems.

GENERATOR OUTPUT CONNECTION LUGS

The generator is equipped with connection lugs behind a door below the controller face. The lugs provide connection points for attachment of external loads to the generator. A large decal on the inside of the connection lug door details the proper connections for selected voltages.

⚠ WARNING

It is HIGHLY RECOMMENDED that only a trained and licensed electrician perform any wiring and related connections to the generator. Installation should be in compliance with the National Electric Code (NEC) as well as any local or state guidelines as required by law. Failure to follow proper installation requirements may result in equipment or property damage, personal injury or death.

⚠ WARNING

Before any connections are made to the generator, make sure that the main circuit breaker and the control power switch are in the OFF "O" position. Potentially lethal voltages may be present at the generator connection lugs.

⚠ DANGER

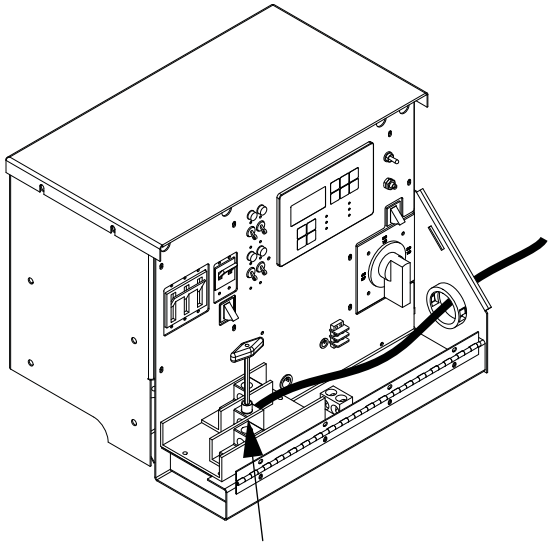
IMPROPER OR INCORRECT CONNECTIONS TO A BUILDINGS ELECTRICAL SYSTEM CAN CAUSE POTENTIALLY LETHAL VOLTAGE TO BACKFEED ONTO UTILITY LINES. THIS MAY RESULT IN INJURY OR ELECTROCUTION TO UTILITY WORKERS NEARBY. MAKE SURE THE GENERATOR IS SUPPLYING POWER TO AN ISOLATED OBJECT OR BUILDING THAT IS NOT CONNECTED TO ANY UTILITY LINES.

Connections to the lugs should be made by running the power cables through the circular plastic bushing on the lower right side of the control box. DO NOT make any connections directly to the lugs without routing the cables through this bushing. The lug door is equipped with safety interlock switches that will automatically trip the main circuit breaker and disable the voltage regulator when the lug door is opened. Use a hex-wrench to tighten the cable connections.

⚠ WARNING

Never attempt to disable or modify the lug door safety switches. Equipment damage, personal injury or death may result.

A ground connection is located next to the connection lugs. The unit **MUST HAVE** this ground lug connected to a good earthen ground for proper operating safety. The ground connection should be in compliance with the National Electric Code (NEC) as well as any state or local guidelines or codes.



TIGHTEN CONNECTION LUGS WITH A HEX WRENCH

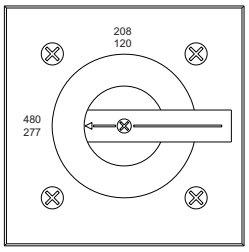
VOLTAGE SELECTOR SWITCH

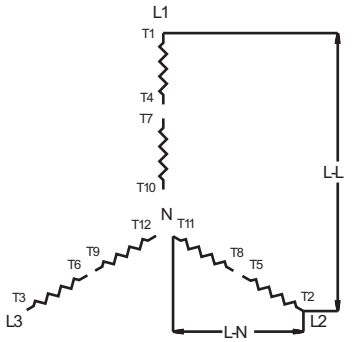
The voltage selector switch is located behind the lug door, underneath the engine controller panel. The selector switch is a three position switch that mechanically changes the connections between the generator output leads and the connection lugs. Voltage ranges are selected by rotating the handle on the switch to the desired voltage.

NOTICE

Never change the voltage selector switch while the engine is running!
This will cause sever arcing and damage to the switch and generator windings.

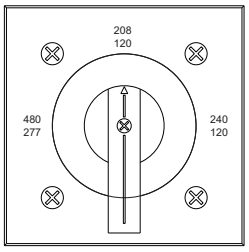
480/277V
3-PHASE

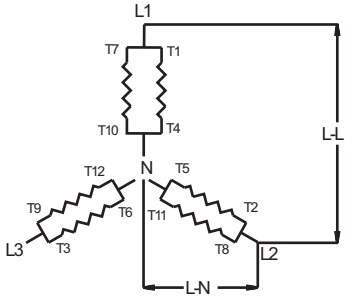




L1 - L2 = 480V L1 - N = 277V
L2 - L3 = 480V L2 - N = 277V
L3 - L1 = 480V L3 - N = 277V
N = ⏚

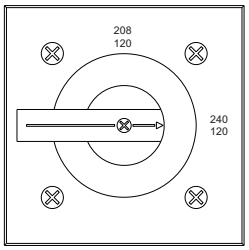
208/120V
3-PHASE

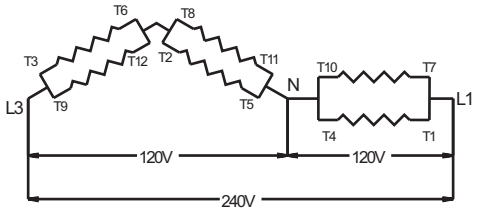




L1 - L2 = 208V L1 - N = 120V
L2 - L3 = 208V L2 - N = 120V
L3 - L1 = 208V L3 - N = 120V
N = ⏚

240/120V
1-PHASE





L1 - L3 = 240V L2 - N = -------
L1 - N = 120V L3 - N = 120V

The voltage switch is equipped with a locking mechanism. Once the proper voltage has been selected, push the red latch on the inside of the phase switch handle up and insert a padlock through the handle. By locking the handle in place you will prevent unauthorized personnel from changing the switch settings.

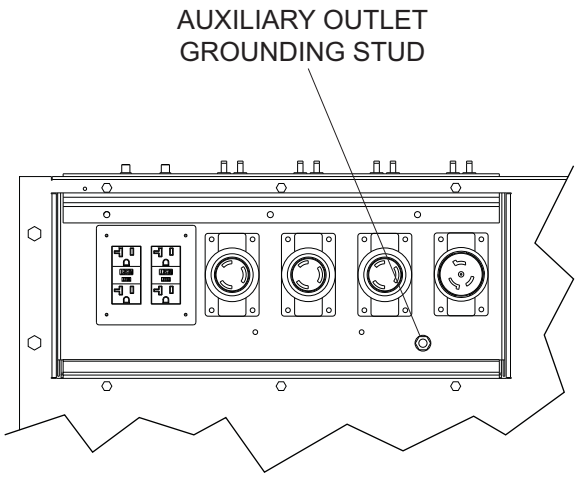
***Note**: When the voltage selector switch is in position for 480/277V 3Ø, voltage at the two GFCI duplex convenience outlets is 139 Volts and the voltage at the three twist-lock outlets is 240/139 Volts. When the voltage selector switch is in position for 208/120V 3Ø, voltage at the three twist-lock outlets and the two GFCI outlets is 208/120 Volts.*

AUXILIARY OUTLETS

The control panel is equipped with six outlets for running accessories or tools from the generator. Power is supplied to the outlets any time the engine is running and the main circuit breaker and the auxiliary outlet main circuit breaker are switched in the ON "I" position.

Should the main breaker trip, or the auxiliary outlet main circuit breaker trip, remove some of the load to the outlets before turning them back on.

Note: *To ensure proper grounding, anytime the generator is providing power to any equipment or load panels that do not have a grounded plug, a ground wire* ***must be*** *added between the equipment and the grounding stud on the outlet panel per any local, state or NEC codes and guidelines.*



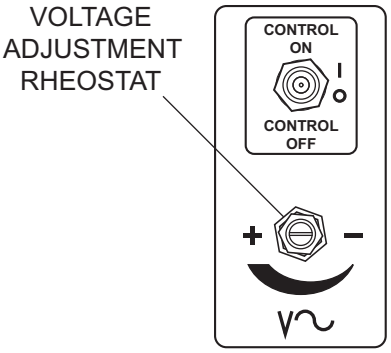
VOLTAGE REGULATION

The electronic voltage regulator controls the output of the generator by regulating the current into the exciter field. The regulator has three screwdriver adjustable potentiometers that may be adjusted for voltage, stability and under frequency (U/F). 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.

FINE VOLTAGE ADJUSTMENT

The output voltage can be fine adjusted after the generator is running by using the fine voltage adjustment rheostat. The adjusting screw is located directly below the control power switch next to the control panel. This rheostat will provide an increase (+) or a decrease (-) in the output voltage.

To adjust the voltage, check the output voltage on the LCD display. Loosen the lock nut at the base of the rheostat and turn the screw in the desired direction until the required voltage is shown on the LCD display.

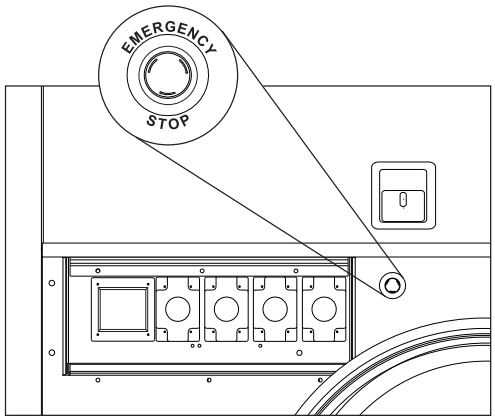


Note: V Detect *is a 45 second delay before the electronic controller records the generator nominal voltage set point. Fine voltage adjustments should be made during this 45 second delay. After this 45 second delay, fine voltage adjustment greater than 10% of the nominal voltage set point will cause a shut down on over or under voltage. Clearing the fault and restarting the unit will allow the control to adjust to the new nominal voltage setting.*

EMERGENCY STOP SWITCH

The generator is equipped with one emergency stop switch, located on the side panel next to the auxiliary outlet panel. The switch is clearly labeled with "**EMERGENCY STOP**" and is red in color. The switch can be accessed and activated with all doors closed and locked.

Activate the emergency stop switch by pushing the red button in until it locks down. This will trip the main circuit breaker which will open the contact disconnecting the load to the connection lugs. This will also open the fuel circuit, shutting down the engine and the Emergency Stop fault will be displayed on the LCD. The switch will remain closed until it is pulled out. ***Note:*** *Use the EMERGENCY STOP only when the generator must be shut down immediately. For any other shut down, follow the detailed shut down procedure.*



MAIN CIRCUIT BREAKER

The main circuit breaker is located on the main control panel. When the breaker is in the OFF “O” position, power is interrupted between the customer connection lugs and the generator. Once the connections have been made to the connection lugs and the generator has been started and allowed to reach normal operating temperature, the breaker may be switched to the ON “I” position.

The main circuit breaker will be tripped, disconnecting power to the connection lugs, if any of the following items occur while the unit is running:

1. Overload of the generator circuits to the connection lugs.
2. The lug box door covering the customer connection lugs is opened.
3. If the emergency stop switch is activated.

Make sure that any problems that caused the main circuit breaker to trip are corrected before returning the switch to the ON “I” position.

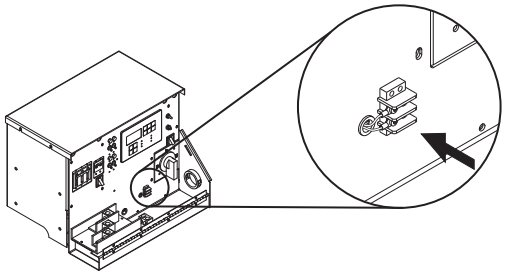
NOTICE

The main circuit breaker interrupts power to the customer connection lugs only. The customer convenience outlets have power even if the main circuit breaker is in the OFF “O” position. The auxiliary outlet main circuit breaker, located next to the main circuit breaker, will disconnect all power to the auxiliary outlet panel.

REMOTE START TERMINAL BLOCK

The remote start terminal block is located under the lug box door just below the voltage selector switch. It provides a connection for installation of a remote start switch which will allow the generator to be started by a remote dry-contact closure switch.

Before pressing the AUTO button, verify that the contacts on any remote switch linked to the generator are OPEN. If the contacts on a remote switch are closed, the generator will crank and start when AUTO is selected on the controller. Attach the switch leads to the two unused terminals on the generators remote start block. For additional information on starting the generator, see the GENERATOR START UP section of this manual.



When the generator is used as a standby power supply, it must be equipped with a transfer switch which isolates it from the utility’s distribution system. A transfer switch is designed to transfer electrical loads from the normal power source (utility) to the emergency power source (generator) when normal voltage falls below a prescribed level. The transfer switch automatically returns the load back to the normal source when power is restored back to operating levels.

⚠ DANGER

FAILURE TO ISOLATE THE GENERATOR FROM THE NORMAL POWER UTILITY CAN CAUSE POTENTIALLY LETHAL VOLTAGE TO BACKFEED INTO THE UTILITY LINES. THIS MAY RESULT IN INJURY OR ELECTROCUTION OF UTILITY WORKERS NEARBY. MAKE SURE THAT THE GENERATOR IS ISOLATED BY A TRANSFER SWITCH FROM ANY LOCAL UTILITY LINES. THIS ALSO APPLIES IF THE GENERATOR IS BEING USED AS A BACK UP TO SOME OTHER TYPE OF POWER SUPPLY.

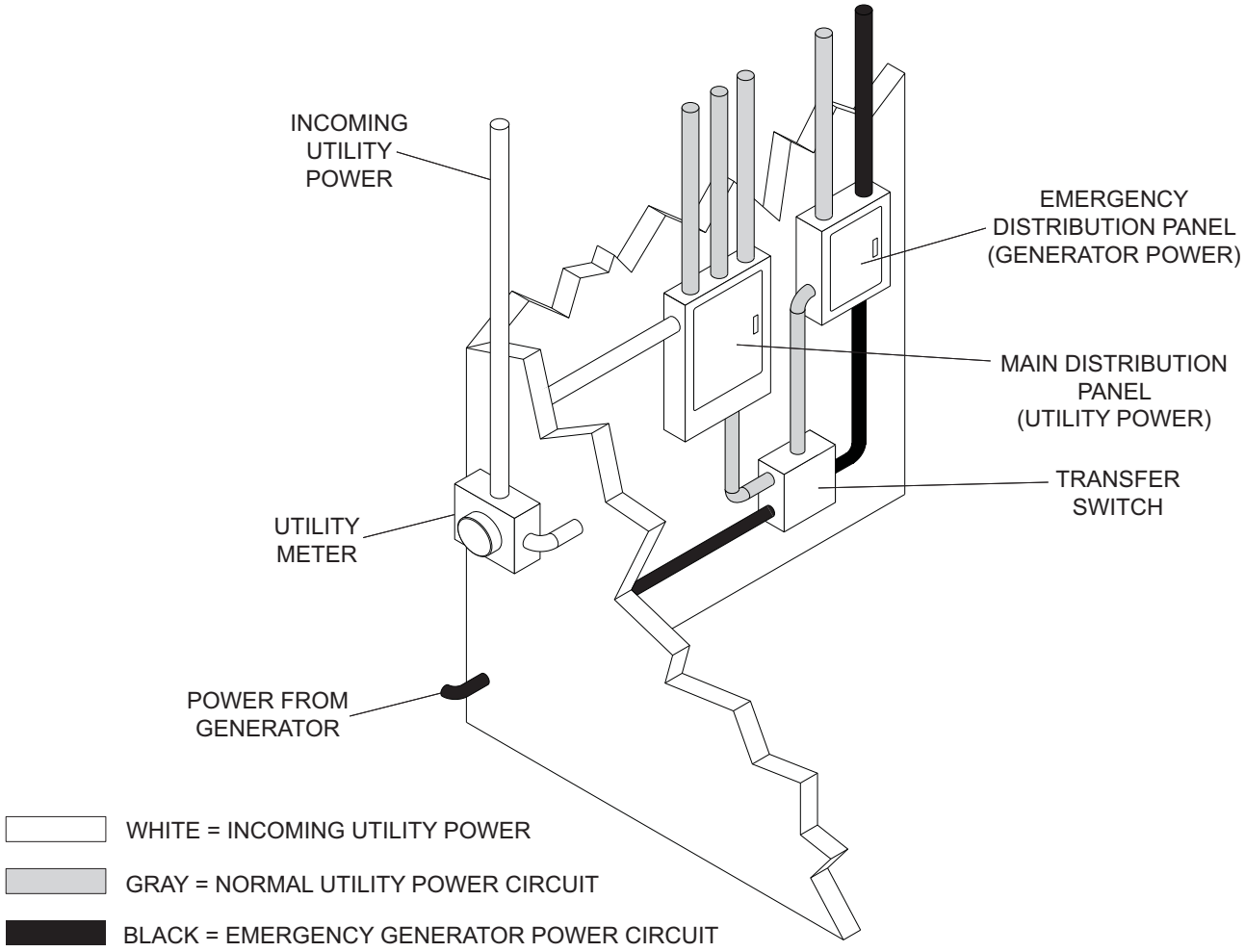
Installation of a transfer switch or other type of remote starting device is the responsibility of the generator user. Installation of such devices must be performed by following all directions supplied by the manufacturer of the switch. If attaching generator to a power supply normally serviced by a utility company, notify the utility company and check local and state regulations. Familiarize yourself with all instructions and warning labels supplied with the switch.

⚠ WARNING

It is strongly recommended that ONLY a licensed electrician perform any wiring and any related connections to the generator. Installation should be in compliance of the National Electric Code as well as any state or local codes or regulations. Failure to follow these procedures could result in property damage, personal injury or death. Before any connections are attempted, make sure the main circuit breaker and the engine start switch are in the OFF "O" position and that the negative (-) battery cable has been disconnected from the engine starting battery.

NOTICE

When using the generator as a stand by or substitute power supply, make sure the output voltage and phase rotation of the generator match those of the local power utility. Improper voltage or phase rotation may cause equipment damage or malfunction.



LIGHT TOWER START UP

Before starting the light tower, carefully read the pre-start check list. Make sure that all of the items are checked before trying to start the light tower. This check list applies for both manual and remote starting.

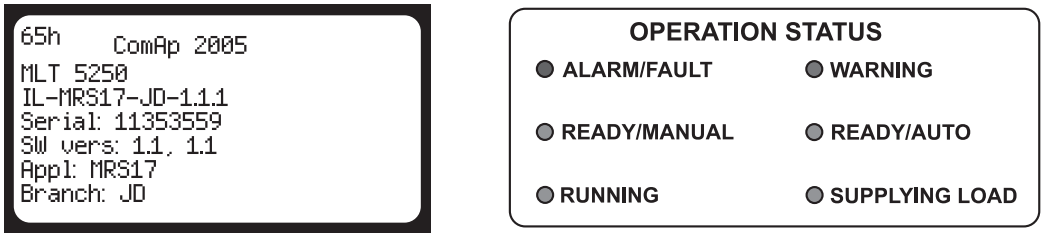
PRE-START CHECK LIST

1. Make sure the control power switch is in the OFF “O” position.
2. Make sure that the circuit breakers (main and auxiliary) are switched OFF “O”.
3. Check that the light tower is properly grounded to a good earthen ground per local and NEC regulations.
4. Check all electrical connections at the connection lugs. Are they wired correctly?
5. Are the connection lugs tight?
6. Check the voltage selector switch and make sure that it is set to the desired voltage.
7. Is the voltage selector switch locked?
8. Is the light tower sitting level?
9. Check for any water inside, on, or near the unit. Dry the unit before starting.
10. Check engine oil level, engine coolant level and engine battery connections.
11. Check engine fan belt tension and condition.
12. Check engine fan belt guard.
13. Check engine exhaust system for loose or rusted components.
14. Check radiator and surrounding shroud for debris.
15. Are any of the generator covers loose or missing?

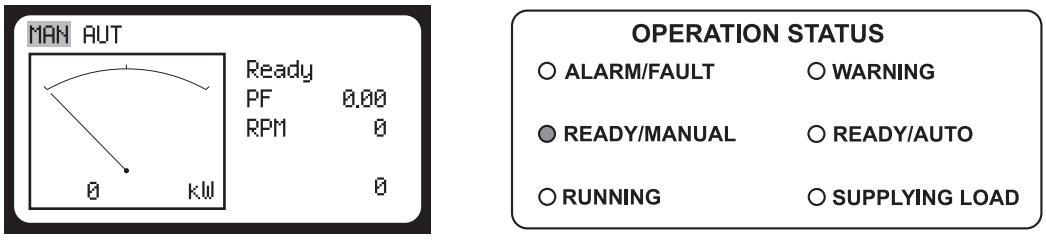
MANUAL STARTING OF THE LIGHT TOWER

1. Move the control power switch to the “CONTROL ON” position.

2. The LCD screen will quickly display system information, all LEDS will flash.

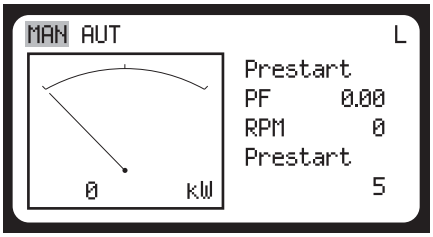


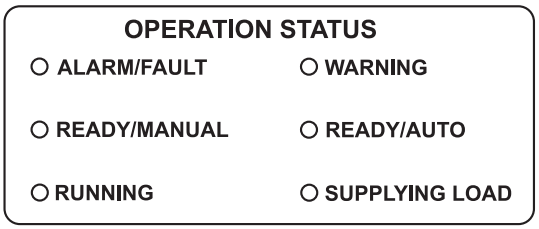
3. The LCD Screen will indicate MAN mode and Ready. Ready/Manual LED will be lit.



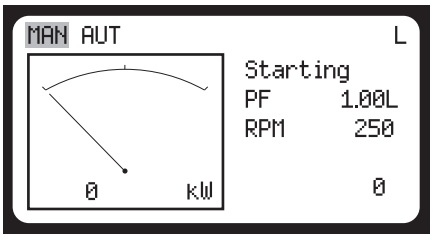
4. Press the green ENGINE START key. ***Note:*** *Unit must be in MAN Mode with READY/MANUAL LED lit.*

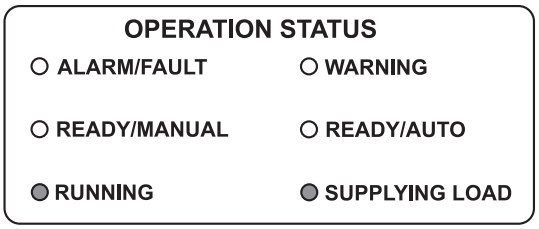
5. The Prestart screen will display (if programmed).



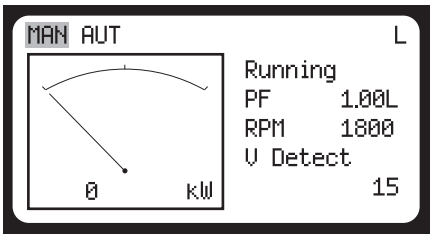


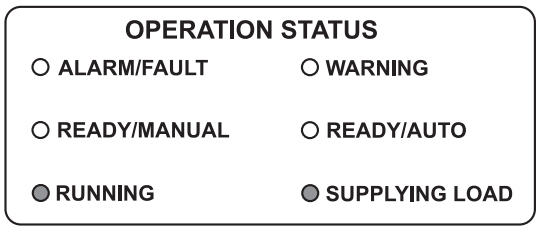
6. The Starting screen will display. The engine will crank and start running.



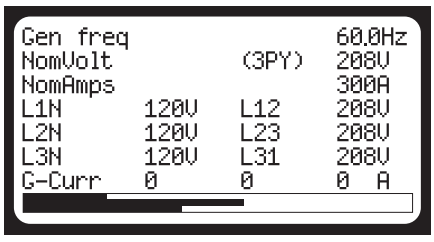


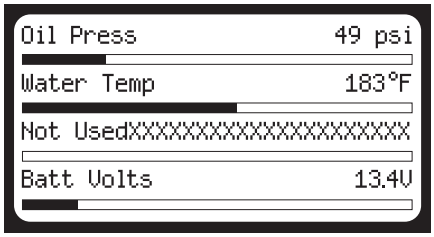
7. The Running screen will display. ***Note: V Detect*** *is a 45 second delay before the Controller records the generator nominal voltage set point. Fine voltage adjustments should be made during this 45 second delay. After this 45 second delay, fine voltage adjustment greater than 10% of the nominal voltage set point will cause a shut down on over or under voltage. Clearing the fault and restarting the unit will allow the control to adjust to the new nominal voltage setting.*





8. The LCD will switch from the Running screen and toggle between the Generator Output and Operating Parameters screens:





9. If the engine does not start after the first cranking attempt the controller will wait for 15 seconds to allow the starter to cool and the LCD will show “PAUSE”. The engine will make two more attempts to start for a total of three crank cycles.

10. Should the engine not start and run the LCD display will show “SD StartFail”. The starting sequence may be repeated after the starter has had a minimum of two minutes to cool. The FAULT RESET button needs to be pressed to clear the controller. The unit will start by pressing the ENGINE START button. ***Note:*** *The engine controller may skip the pre-heat acquisition and engine pre-heat steps.*

11. Once the engine starts it will slowly begin speeding up to a constant 1800 rpm. On units with isochronous engine governing, the engine may hunt or change speeds until operating temperature is reached. After a few minutes of operation the engine will be warmed up and the LCD display will show engine and generator operating parameters. Temperature will be shown as “0” until the engine temperature is approximately 100° F.

Once the generator is at normal operating temperature, check the generator for excessive noise, vibration and for coolant, oil or fuel leaks before applying any loads.

12. Check that the AC output voltage is correct. The output voltage can be fine adjusted by using the fine voltage adjustment screw, described on page 18.

13. Check that the frequency (Hz) is correct. With no loads connected to the generator, the frequency should read approximately 60-62 Hz, depending on the type of engine governing used.

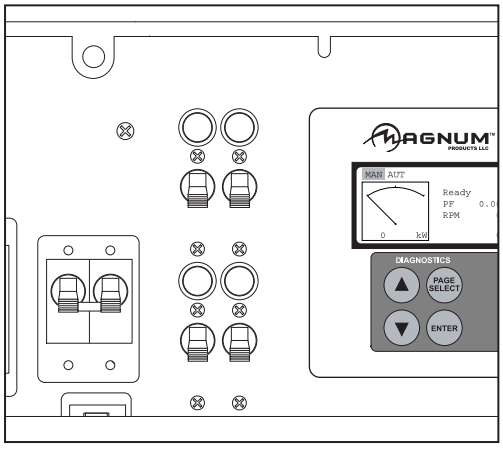
14. If all wiring connections have been made correctly, switch the main circuit breaker to the ON “I” position and then add any loads attached to the convenience outlets by switching the respective circuit breaker to the ON “I” position. You will notice a slight change in engine noise.

LIGHT OPERATION

1. Once the engine is up to temperature and running smoothly, switch main circuit breaker to the ON “I” position.

2. With main circuit breaker on, switch each individual circuit breaker for the lights to ON “I”, one at a time.

3. The green ballast indicator lights will come on momentarily 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. Refer to the troubleshooting section on page 28.

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 tower uses four 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.

⚠ CAUTION

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

EZ-1 CONTROLLER INFORMATION DISPLAYS AND FUNCTION

The MAGNUM EZ-1 controller constantly monitors vital generator and engine functions for a number of operation, alarm and fault conditions. When a fault condition occurs, the engine will shut down automatically and the LCD display will show the fault that has caused the shut down. To resume operation, the fault condition must be resolved. To reset the EZ-1 and resume operation, press the FAULT RESET button. Operation, alarm and fault conditions and (displayed message) are described in the following table:

CONTROLLER ALARM LIST WITH DESCRIPTION

Alarm Display	Shutdown or Alarm	Description	Possible Cause
Wrn Oil press	Alarm	Warning level of oil pressure reached	Low oil, faulty sender, low engine oil pressure
Sd Oil press	Shut Down	Shutdown Level of oil pressure reached	Low oil, faulty sender, failed engine
Fls Oil Pressure	Alarm	False Oil Pressure Sender Signal	Sending unit / wiring defective
Wrn Wtemp Low	Alarm	Warning water temp is cold	Cold exterior, block heater not functioning
Wrn Water temp	Alarm	Warning for High water temp	Low water level, thermostat, faulty sending unit, poor radiator performance
Sd Water temp	Shut Down	Shutdown level for high water temp	Low water level, thermostat, faulty sending unit, poor radiator performance
Fls Water Temp	Alarm	False Water Temp Sender Signal	Sending unit / wiring defective, water temp outside of sender curve
Wrn Fuel Level	Alarm	Warning level for Low Fuel	Low fuel / faulty sender
Sd Fuel Level	Shut Down	Shutdown for Low Fuel Level	Low fuel, faulty sender
FLS Fuel Level	Alarm	False Fuel Level Signal	Sending unit / wiring defective
Emergency Stop	Shut Down	E stop mechanism has been activated	Emergency Stop has been activated
Wrn Overload	Alarm	Warning level of kW overload reached	Approaching kW overload shutdown
Sd Overload	Shut Down	Shut down level of kW overload reached	kW draw on generator is to high
Sd Underspeed	Shut Down	Shutdown level for underspeed Reached	Fuel, air, generator load
Stop Fail	Shut Down	Controller expects unit to be shutdown, but is receiving engine running data	Fuel rack stuck
Sd Overspeed	Shut Down	Shutdown level for Overspeed reached	Slow reaction to rapid unload, Engine governor, incorrect flywheel setting
Wrn Batt Volt	Alarm	Warning level for high or low battery voltage	Replace alternator, DC voltage regulator, battery
Wrn Vg1 Under	Alarm	Warning level for Line 1 under voltage	No generator output, Voltage regulator, safety switch
Wrn Vg2 Under	Alarm	Warning level for Line 2 under voltage	No generator output, Voltage regulator, safety switch
Wrn Vg3 Under	Alarm	Warning level for Line 3 under voltage	No generator output, Voltage regulator, safety switch
Sd Vg1 Under	Shut down	Shutdown level for Line 1 under voltage	No generator output, Voltage regulator, safety switch
Sd Vg2 Under	Shut Down	Shutdown level for Line 1 under voltage	No generator output, Voltage regulator, Safety switch
Sd Vg3 Under	Shut Down	Shutdown level for Line 1 under voltage	No generator output, Voltage regulator, safety switch
Wrn Vg1 Over	Alarm	Warning level for Line 1 over voltage	Voltage regulator, voltage adjustment after V-detect time delay
Wrn Vg2 Over	Alarm	Warning level for Line 2 over voltage	Voltage regulator, voltage adjustment after V-detect time delay
Wrn Vg3 Over	Alarm	Warning level for Line 3 over voltage	Voltage regulator, voltage adjustment after V-detect time delay
Sd Vg1 Over	Shut Down	Shutdown level for line 1 over voltage	Voltage regulator, voltage adjustment after V-detect time delay
Sd Vg2 Over	Shut Down	Shutdown level for line 2 over voltage	Voltage regulator, voltage adjustment after V-detect time delay
Sd Vg3 Over	Shut Down	Shutdown level for line 3 over voltage	Voltage regulator, voltage adjustment after V-detect time delay
Sd Igen Unbal	Shut Down	Shutdown level for Generator current unbalance condition	Generator load is unbalanced, failed equipment

CONTROLLER ALARM LIST WITH DESCRIPTION (CONTINUED)

Alarm Display	Shutdown or Alarm	Description	Possible Cause
Sd Vgen Unbal	Shut Down	Shutdown level for generator voltage unbalanced	Generator load is unbalanced, failed equipment
Wrn Fgen Under	Alarm	Warning for generator under frequency	Fuel, air, generator load
Sd Fgen Under	Shut Down	Shutdown for generator under frequency	Fuel, air, generator load
Wrn Fgen Over	Alarm	Warning level for Generator over frequency	Slow reaction to rapid unload, Engine governor, incorrect flywheel setting
Sd Fgen Over	Shut Down	Shut down level for Generator over frequency	Slow reaction to rapid unload, Engine governor, incorrect flywheel setting
Sd IDMT	Shut Down	Shut down for delayed overcurrent	Generator current is higher than setpoint, reduce load
Sd Short Igen	Shut Down	Shut down for instantaneous current overload	Generator is overloaded, possible motor starting issue, reduce load
Wrn Service Time	Alarm	Time to service has expired	Engine needs service, reset time to service interval clock
Sd StartFail	Shut Down	Engine failed to start after 3 attempts	Fuel, air, engine, battery issue
Gph opposed	Alarm	Wrong Generator phase sequence (L1, L2, L3)	Generator phases L1, L2, L3, COM are not terminated in proper location on controller
Gen L1 neg	Alarm	Generator phase L1 is inverted	
Gen L2 neg	Alarm	Generator phase L2 is inverted	
Gen L3 neg	Alarm	Generator phase L3 is inverted	
Gph + L1 Neg	Alarm	Wrong generator sequence (L1, L2, L3) and is inverted	
Gph + L2 Neg	Alarm	Wrong generator sequence (L1, L2, L3) and is inverted	
Gph + L3 Neg	Alarm	Wrong generator sequence (L1, L2, L3) and is inverted	

SHUTTING DOWN THE LIGHT TOWER

Check with other personnel using power supplied by the generator and let them know that the power is going to be turned off. Make sure the power shutdown will not create any hazards by accidentally turning off equipment that needs to be kept on (pumps, compressors, lights, etc.).

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. Turn the ENGINE START SWITCH to the OFF position.

ADJUSTING DISPLAY BACK LIGHTING

While in any screen except programming:

Press and hold **ENTER** while pressing the down button to decrease contrast.
Press and hold **ENTER** while pressing the up button to increase contrast.

LOWERING THE TOWER

1. Shut down the lights and engine. Allow the lights to cool 10-15 minutes before lowering the tower.
2. Turn the upper mast winch handle to collapse the tower to its lowest position. Make sure the electrical cord returns to the storage tube properly.

⚠ 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.

3. Loosen the mast rotation knob and rotate the tower so the mast mounted winches face the front of the unit. The white alignment arrow points should line up on the mast sections and the metal stop tabs should be touching. Tighten the mast rotation knob.
4. Release the mast lock by pulling the safety pin on the mast lock and pulling the lock free. Turn the handle of the lower mast winch until the mast spring begins to pivot the tower down. Release the mast lock and continue to lower the tower until it rests in the cradle. ***Note:*** *If the mast lock does not pull free, operate lower winch slightly to relieve pressure on the mast lock.*
5. After the mast is completely down, insert the cradle lock pin and secure it with the safety pin.
6. Position lights to aim at the ground. If the trailer is going to be moved, Magnum Products LLC strongly recommends that the lights be removed from the mast and stowed for transportation. On units equipped with quick disconnect fittings for the lights, disconnect the power cords from the junction box at the top of the mast. Replace the dust caps on the junction box. On other units, remove the junction box cover on the top of the mast and disconnect the wires from the terminal blocks by clipping the wires as close as possible to the terminal blocks. ***Note:*** *Pull any excess wire strands from the terminal blocks. When reconnecting the lights the next time the light tower is used, strip 1/2" of the insulation from each wire and insert the bare wires into the correct terminal block until locked.*
7. Remove the lights by removing the wing nut that holds the light fixture bracket to the cross tube. Attach the lights to the optional storage brackets (if equipped) located on the mast tube on either side of the central lifting eye.

LOWERING THE TOWER EQUIPPED WITH THE OPTIONAL ELECTRIC WINCH

1. Shut down the lights and engine. Allow the lights to cool 10-15 minutes before lowering the tower.
2. Loosen the mast rotation knob and rotate the tower so the mast mounted winches face the front of the unit. The white alignment arrow points should line up on the mast sections and the metal stop tabs should be touching. Tighten the mast rotation knob.
3. Press and hold the upper winch control toggle switch downward to collapse the mast to its lowest level. Make sure the coiled electrical cord on the top sections of the mast does not get tangled on the mast sections. ***Note:*** *Some electric winch models are equipped with an anti-backlash safety limit switch. This switch will disconnect power to the winch if excess cable slack is detected, preventing accidental lowering of the tower. If, for any reason, the cable begins to develop slack or any of the tower sections get stuck,* ***STOP IMMEDIATELY*** *and contact an authorized service center.*
4. Release the mast lock bar by pulling the safety pin on the mast lock and pulling the lock bar free. Lower the mast by holding the lower winch control toggle switch to the right until the mast is resting in the transport cradle. ***Note:*** *If the lock bar does not pull free, activate lower winch slightly to relieve pressure on the mast lock bar.*
5. After the mast is completely down, insert the cradle lock pin and secure it with the safety pin.
6. Position lights to aim at the ground. If the trailer is going to be moved, Magnum Products LLC strongly recommends that the lights be removed from the mast and stowed for transportation. On units equipped with quick disconnect fittings for the lights, disconnect the power cords from the junction box at the top of the mast. Replace the dust caps on the junction box. On other units, remove the junction box cover on the top of the mast and disconnect the wires from the terminal blocks by clipping the wires as close as possible to the terminal blocks. ***Note:*** *Pull any excess wire strands from the terminal blocks. When reconnecting the lights the next time the light tower is used, strip 1/2" of the insulation from each wire and insert the bare wires into the correct terminal block until locked.*
7. Remove the lights by removing the wing nut that holds the light fixture bracket to the mast cross bar. Attach the lights to the optional storage brackets (if equipped) located on the mast tube on either side of the central lifting eye.

TROUBLESHOOTING SHUTDOWN CONDITIONS

LOW OIL PRESSURE SHUTDOWN

1. Check the level of the engine oil with the dipstick. The engine controller will shut the engine down when the oil pressure is less than 20 psi. Add oil if required.
2. Visually inspect the engine for oil leaks.
3. If the oil level is good, restart the unit and verify the loss of oil pressure. Shut the engine down immediately if the oil pressure value does not read 5 psi within five (5) seconds.
4. Check the oil pressure sender on the engine block and the connecting wiring for damage. To check for continuity between the sender and the engine controller, remove the bolts at the top and center of the control panel and open the panel like a door. Consult the DC wiring diagrams in this manual for the proper path between the engine controller and the pressure sender.
5. If the oil level, pressure sender and wiring are good, the oil loss may be caused by engine failure. Consult the ENGINE OPERATION AND MAINTENANCE MANUAL for additional information on excessive oil consumption.

HIGH COOLANT TEMPERATURE SHUTDOWN

1. Check the coolant level in the overflow jug.
2. Restart the engine and read the coolant temperature to verify High Coolant Temperature Shutdown. Stop the engine immediately if the coolant temperature is 230°F or more.
3. **Allow the engine to cool!** Add coolant to the overflow jug if it is low and then check the level of coolant in the radiator. To access the radiator cap, you must remove the small access panel located on top of the generator enclosure directly above the radiator. Add coolant until it is 3/4" below the filler neck. Replace the radiator cap and access panel.
4. Check the radiator shroud and ducting for blockage and remove any foreign matter.
5. Inspect coolant hoses, engine block and water pump for visible leaks.
6. Check the tension of the serpentine drive belt for the water pump.
7. Check the coolant temperature sender on the engine block and the connecting wiring for damage. To check for continuity between the sender and the engine controller, remove the bolts around the control panel and slowly drop panel down. Consult the DC wiring diagrams in this manual for the proper path between the engine controller and the pressure sender.
8. If the sender and wiring are good and no other problems are found, restart the engine. Observe the coolant temperature and shut the engine down immediately if it starts to overheat.
9. Reduce the load on the generator and restart the engine. Observe the coolant temperature and shut the engine down immediately if it starts to overheat. Consult the ENGINE OPERATION AND MAINTENANCE MANUAL for additional information on engine overheating.

OVERCRANK SHUTDOWN

1. Check the fuel level in tank.
2. Check for proper operation of the fuel pump.
3. Check air filter for blockage.
4. If the engine will not start, consult the ENGINE OPERATION AND MAINTENANCE MANUAL for additional information on troubleshooting starting problems.

OVERSPEED OR UNDERSPEED SHUTDOWN

1. Disconnect all loads and restart the generator. Read the frequency (Hz) on the LCD display. With no loads on the generator, the frequency should read 60.0 Hz.
2. If the frequency is above or below 60.0 Hz, the engine speed will have to be adjusted. See the ENGINE OPERATION AND MAINTENANCE MANUAL for throttle adjustments on mechanically governed units and see the ELECTRONIC GOVERNOR MANUAL for electronically controlled units.

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 inside the mast junction box and each mast light housing/socket.
5. Check the mast electrical cord for damage and check the cord connections inside the control box.

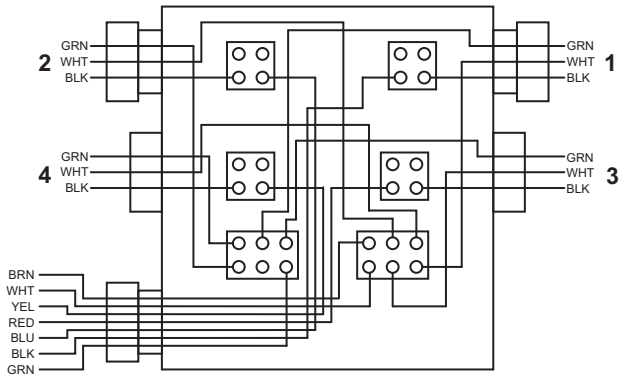
MAST LIGHTS OFF AND BALLAST INDICATORS ON CONTROL PANEL ARE OFF:

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. On quick disconnect models, measure across the junction box terminals when the light is unplugged. On hard wired models, remove the mast junction box cover and insert the wire probes into the connector blocks for the lights and ground. If proper voltage is not achieved, perform capacitor check to determine if the capacitor or coil needs to be replaced.

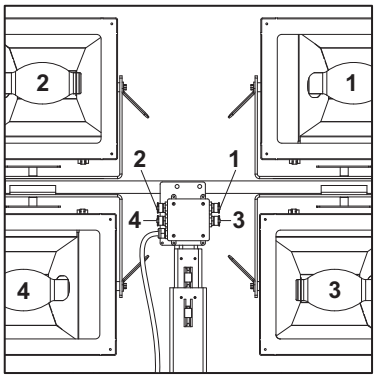
MAST LIGHTS ON BUT THE LIGHT OUTPUT IS LOW:

1. Fixture or lens dirty. Clean reflective surface inside fixture and both inside and outside surface of glass lens.
2. Bulb worn. Replace bulb due to normal use.
3. Check the mast coil cord, mast junction box 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.



MAST JUNCTION BOX WIRING

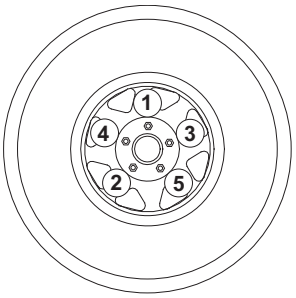


MAST LIGHT CONNECTIONS

TOWING THE TRAILER

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

1. Raise the rear jack completely and release the locking pin to rotate it up into the travel position. Make sure the locking pin snaps into place.
2. Raise the outrigger jacks completely and release the jack locking pin to swing the jacks up into the travel position. Make sure the locking pins snap into place. Release the outrigger locking pins and slide the outriggers into the trailer frame until the locking pins snap into place.
3. Use the tongue jack to raise or lower the trailer onto the hitch of the towing vehicle. Lock the hitch coupling and attach the safety chains or cables to the vehicle. Release the jack locking pin and rotate the jack into the travel position. Make sure the locking pin snaps into place.
4. To ensure proper operation of the jacks, lube the grease fittings located on the leveling jacks.
5. Connect any trailer wiring to the tow vehicle. Check for proper operation of the stop and signal lights.
6. Make sure the mast cradle locking pin is in place.
7. Make sure the doors are properly latched.
8. If the trailer is going to be driven over rough ground, remove the bulbs from the light fixtures.
9. Check for proper inflation of the trailer tires. The maximum tire inflation is 50 psi.
10. Attach a red flag to the end of the mast before towing.
11. 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.

12. Maximum recommended speed for highway towing is 45 mph. Recommended off-road towing speed is not to exceed 10 mph or less depending on terrain.

TRAILER WHEEL BEARINGS

The generator 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.

LIFTING THE TRAILER

When lifting the light tower and trailer, attach any slings, chains or hooks directly to the central lifting eye. The lifting eye is located on the mast between the two forklift pockets.

1. Make sure the equipment being used to lift the light tower has sufficient capacity. ***Note:*** *See the unit specifications on page 8 for approximate weights.*
2. Make sure the mast cradle locking pin is in place.
3. Always remain aware of the position of other people and objects around you as you move the unit.

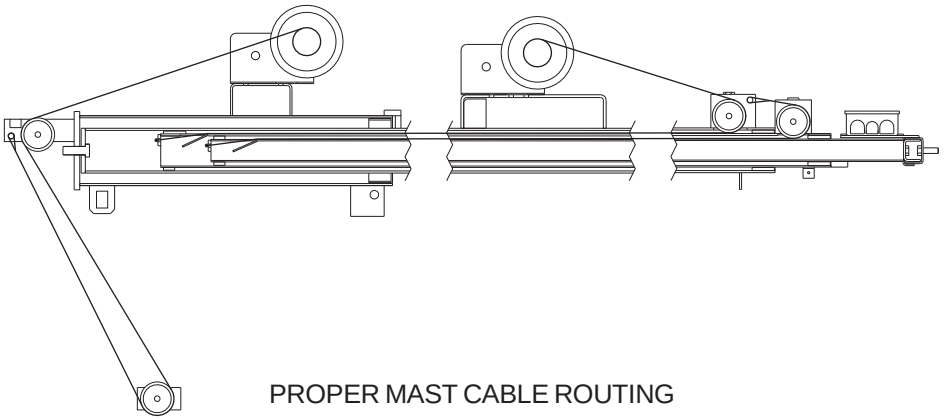
ENGINE AND GENERATOR MAINTENANCE

Poorly maintained equipment can become a safety hazard! In order for the equipment to operate safely and properly over a long period of time, periodic maintenance and occasional repairs are necessary. **NEVER** perform even routine service (oil/filter changes, cleaning, etc.) unless all electrical components are shut down. When servicing this equipment always follow the instructions listed below.

Before servicing this machine, make sure the control power switch is turned to OFF “O”, the circuit breakers are open (OFF “O”), the emergency stop switch is activated (pushed in), and the negative (-) terminal on battery is disconnected. Attach a “DO NOT START” sign to the control panel. This will notify everyone that the unit is being serviced and will reduce the chance of someone inadvertently trying to start the unit. If the unit is connected to a remote start or transfer switch, make sure the remote switch is also off and tagged.

Never wash the unit with a high pressure hose or with any kind of power washer. Never wash the engine block or fuel tank with a power washer or steam cleaner. Water may enter the cabinet and collect in the generator windings or other electrical parts, causing damage. If the unit is stored outside, check for water inside the cabinet and generator and dry the unit thoroughly before starting.

1. Inspect condition of electrical cords. **DO NOT** use light tower 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.



PROPER MAST CABLE ROUTING

3. Check that the safety pins for the mast lock rod and mast lock bar are present and secured with a chain. Check that the spring located in the mast lock bar is not broken or missing. Check the operation of the mast lock bar.
4. Check the fuel, oil and coolant levels.
5. Check the operation of the trailer parking brake (if equipped).
6. 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 on page 29.

RELOADING THE TIME TO SERVICE REMINDER

After scheduled service work has been completed, it is necessary to reload the Time To Service reminder on the controller. The timer can be reset to count down from 250 hrs. Follow the programming instructions below:

1. Press PAGE SELECT.
2. Press ▼ to select **> Engine protect.**
3. Press ENTER.
   Display reads **> NextServTime.**
4. Press ENTER.
5. Press ▲ to scroll value to **250.**
6. Press **ENTER.**
7. Press **PAGE SELECT**, Press **PAGE SELECT** again to exit.

MAINTENANCE CHECKS

The periodic maintenance schedule below lists basic maintenance intervals for the engine. For detailed maintenance procedures refer to the engine operators 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 operators manual, contact an authorized engine dealer in your area.

	Check Daily	Every 50 Hours	Every 250 Hours	Every 500 Hours	Every 1000 Hours	Every 2 Years
Check Tire Pressures	■					
Check Engine Oil Level	■					
Check Engine Coolant Level	■					
Check Fuel Level	■					
Check Alternator Belt	■					
Drain Fuel Filter		■				
Check Radiator Hoses		■				
Change Engine Oil & Filter		■*	■			
Clean Air Filter Element			■			
Check All Electrical Connections			■			
Check For Fuel Leaks			■			
Replace Fuel Filter			■			
Inspect and Clean Radiator Fins				■		
Lubricate Leveling Jacks				■		
Replace Air Filter Element					■	
Replace Alternator Belt					■	
Inspect Engine Starting Battery					■	
Check Valve Clearance						■
Drain and Clean Fuel Tank						■
Change Engine Coolant						■
Replace Radiator Hoses						■

* Change the engine oil and filter after the first 50 hours of operation, then every 250 hours.
Change the engine oil and filter every 1,000 hours for extended oil pan option.

OPTIONAL LOWER RADIATOR HOSE HEATER USE AND MAINTENANCE

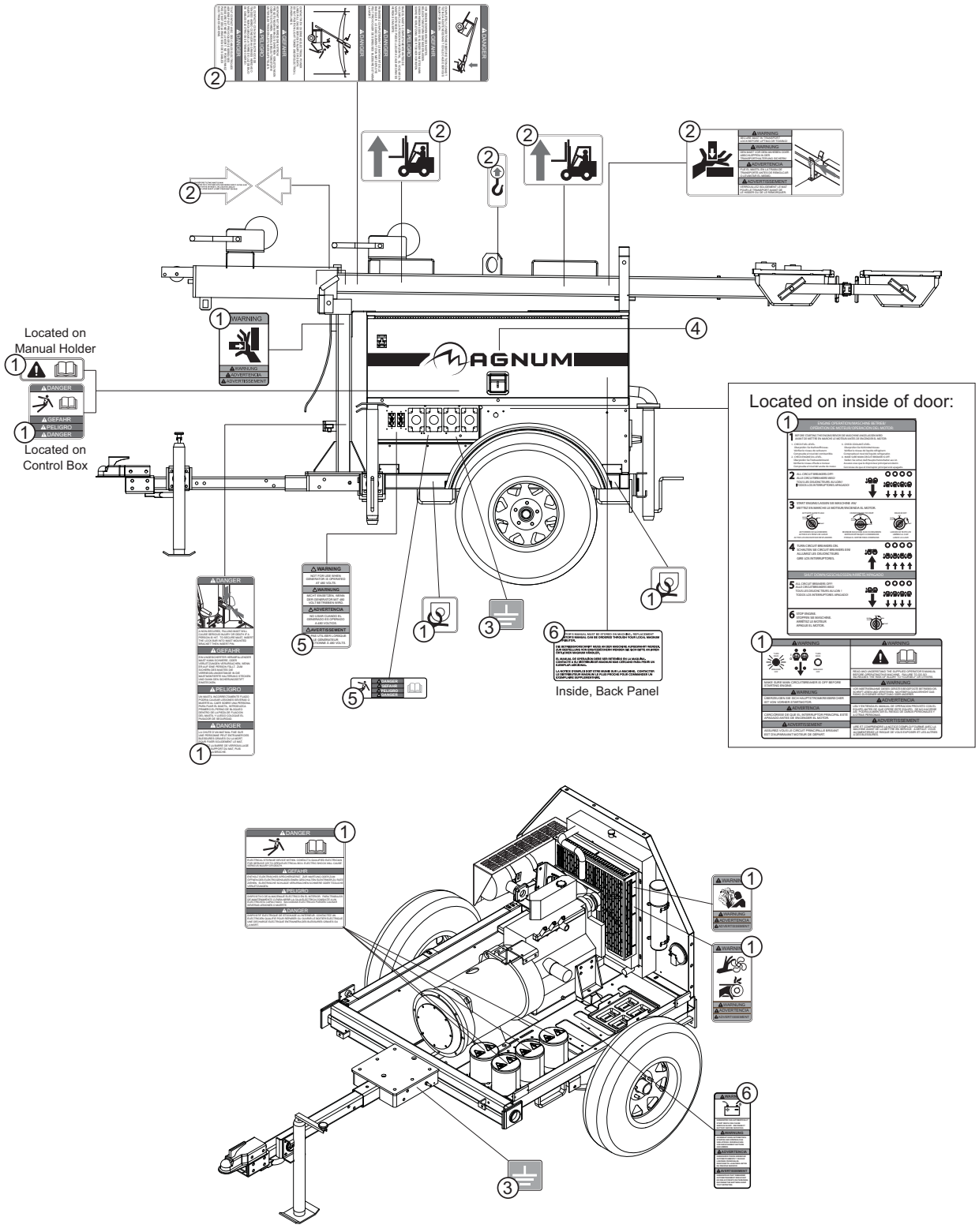
The following points should be followed when operating a unit equipped with a lower radiator hose heater. Improper use of this equipment could result in serious injury.

- Ensure cooling system is full of proper mixture of water and engine coolant before each heater use.
- Heater is designed for all-night operation; however, 2-5 hours of heating just prior to starting is usually sufficient for proper engine starting.
- When heater is in operation, unit must be parked in a level position to maintain the proper orientation of the heater.
- Use only an undamaged extension cord, outdoors rated, three-prong grounded 120VAC cord with a minimum amperage rating of 10A. Connect to properly grounded 120VAC, GFCI outlet only.
- Unplug extension cord from power first; then unplug heater cordset from extension cord before starting the engine.

DERATING FOR ALTITUDE

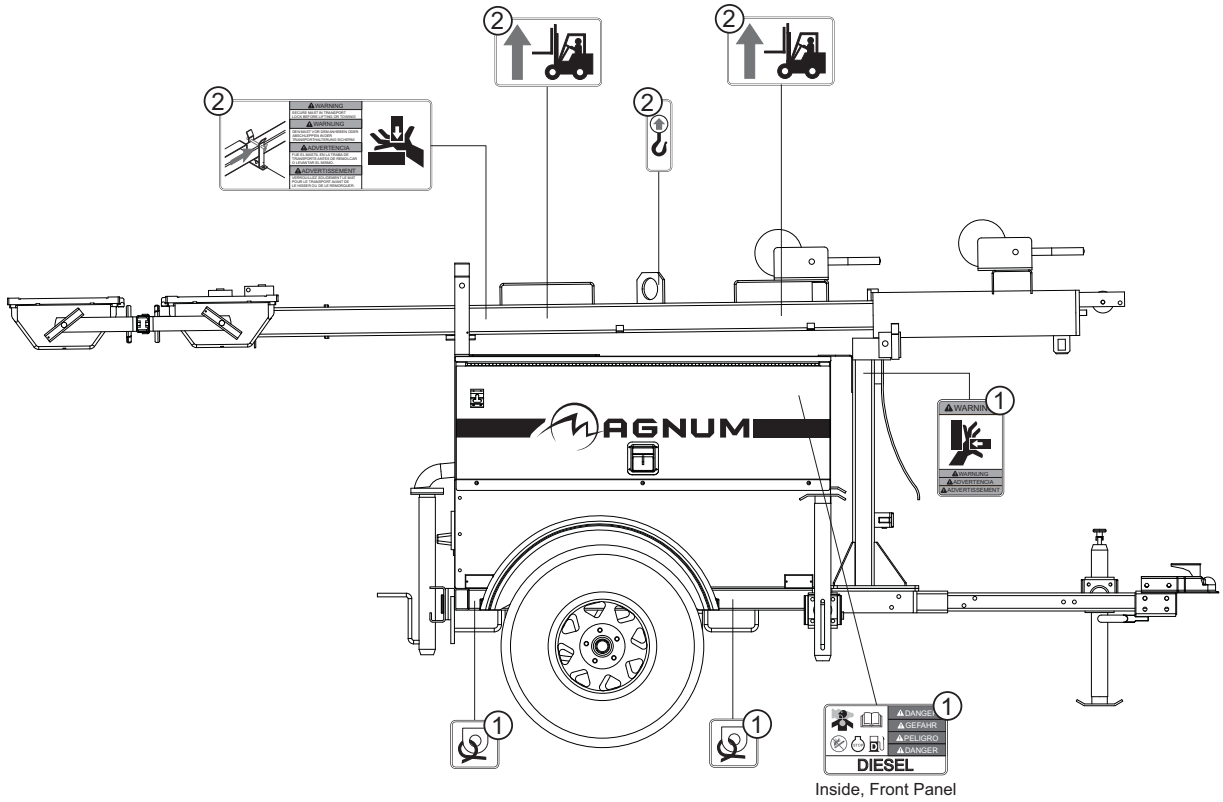
All light towers are subject to derating for altitude and temperature; this will reduce the available power for operating to tools and accessories connected to the auxiliary outlets. Typical reductions in performance are 2-4% for every 1000 ft. (305 meters) of elevation and 1% per 10º F (3-5º C) increase in ambient air temperature over 72º F (22.2º C).

UNIT DECALS

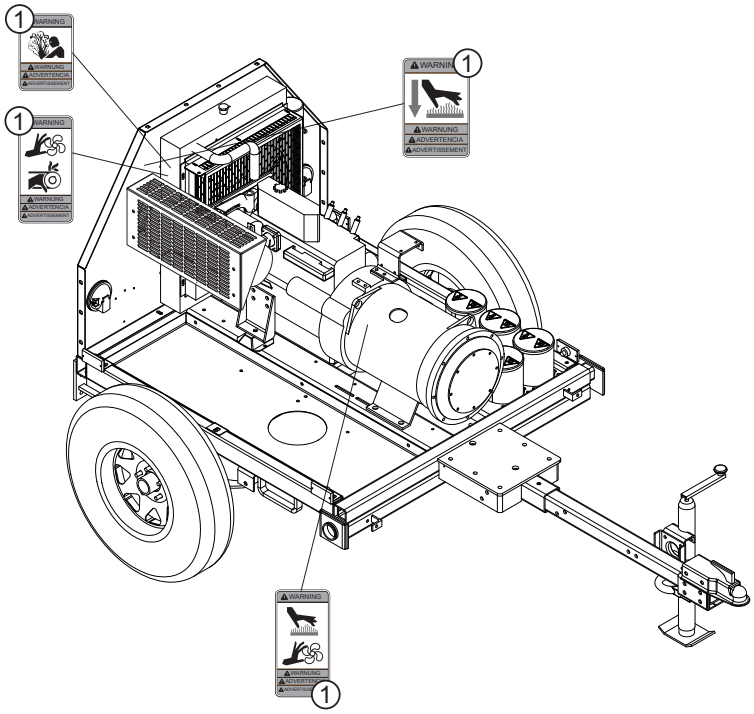


ITEM NO.	PART NO.	QTY	DESCRIPTION
1	12141	1	Decal set, LT eng/safety 4-lang
2	12140	1	Decal set, common mast 4-lang
3	12142	2	Decal, ground
4	16488	1	Decal, Magnum logo with red stripe
5	13136	1	Decal set, MLT4250
6	12747	1	Decal, label set - MLG25 W/ GAC controller

UNIT DECALS

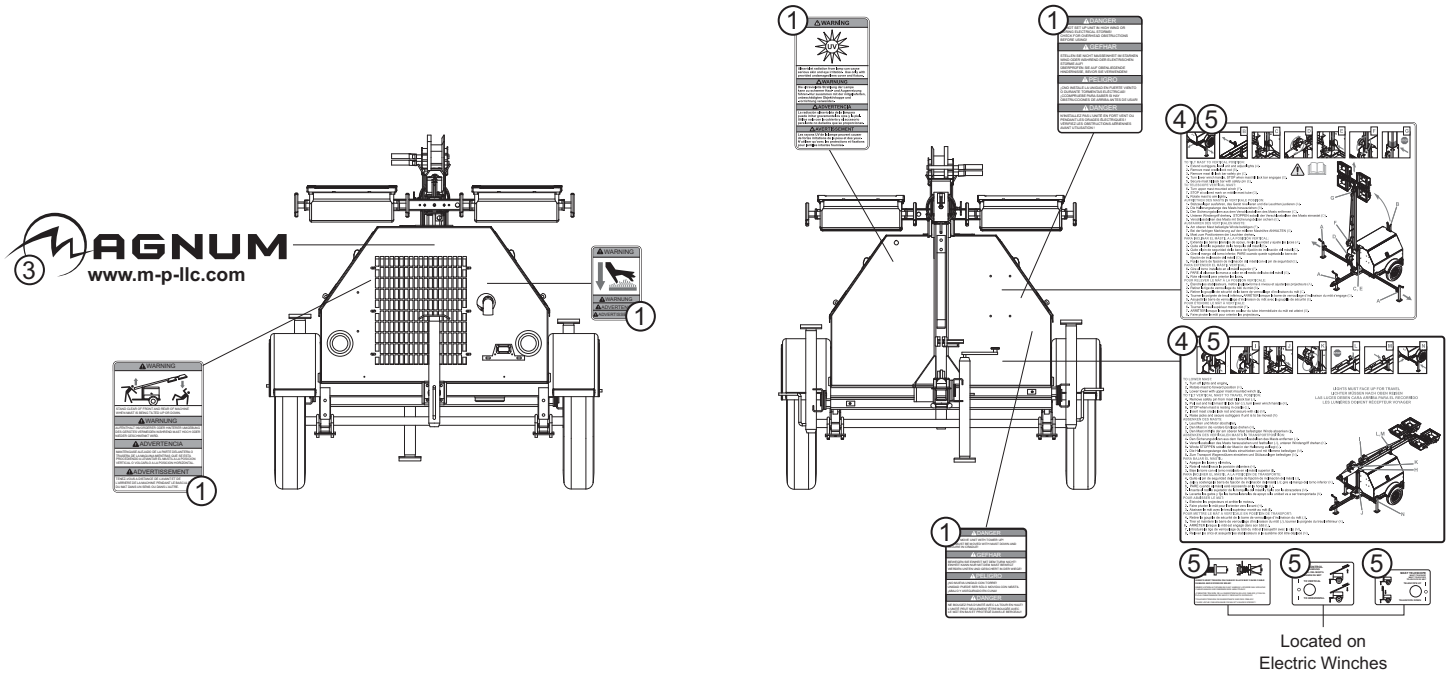


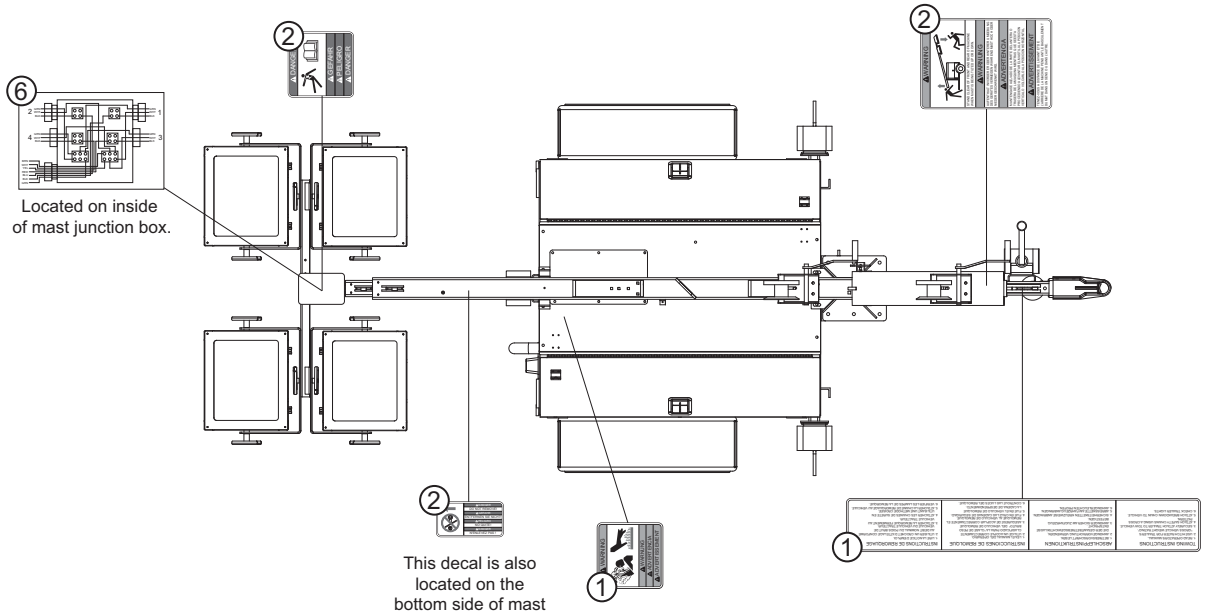
Inside, Front Panel



ITEM NO.	PART NO.	QTY	DESCRIPTION
1	12141	1	Decal set, LT eng/safety 4-lang
2	12140	1	Decal set, common mast 4-lang

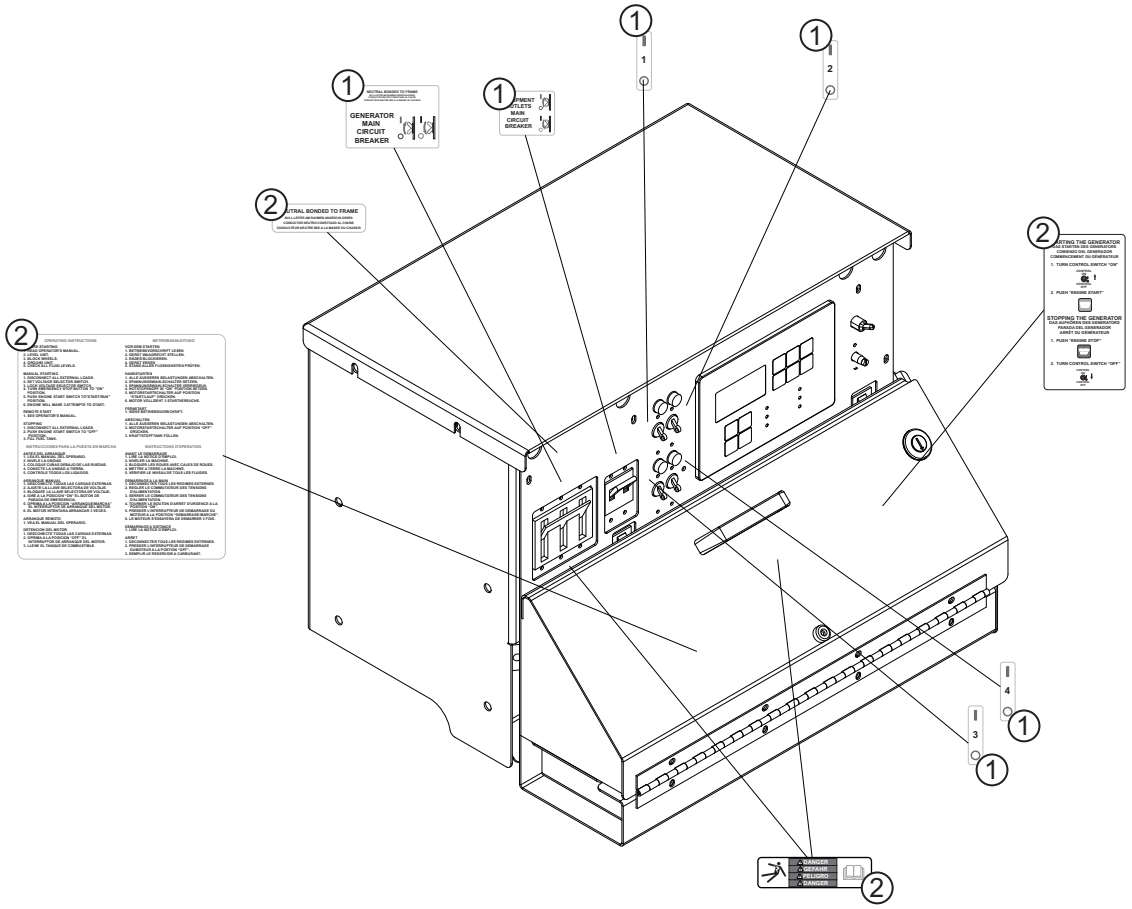
UNIT DECALS



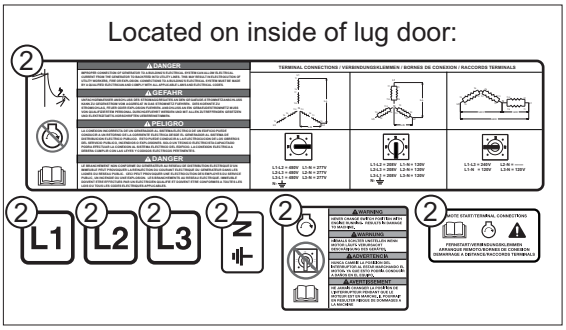


ITEM NO.	PART NO.	QTY	DESCRIPTION
1	12141	1	Decal set, LT eng/safety 4-lang
2	12140	1	Decal set, common mast 4-lang
3	11275	1	Decal, Magnum logo w/web, red vinyl
4	12262	1	Decal, 4000/5000 set up 4-lang (manual winch)
5	12880	1	Decal, instruction 4000/5000 4-lang (electric winch)
6	12404	1	Decal, mast junction box wiring - 4 light

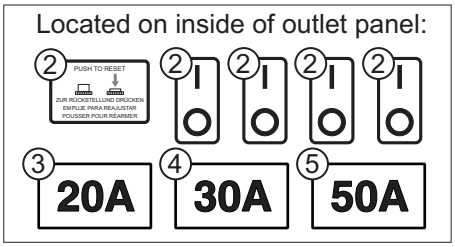
UNIT DECALS



Located on inside of lug door:

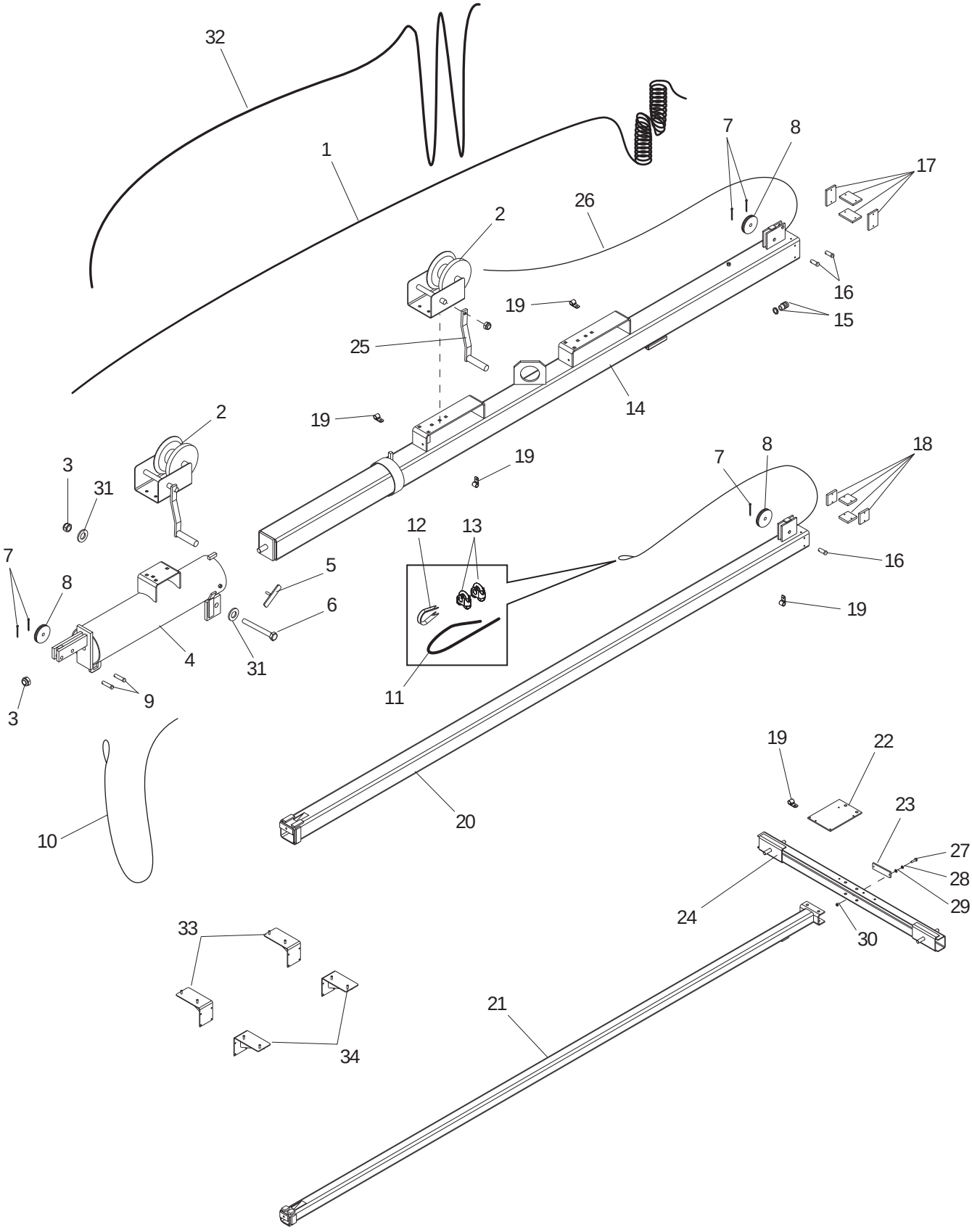


Located on inside of outlet panel:

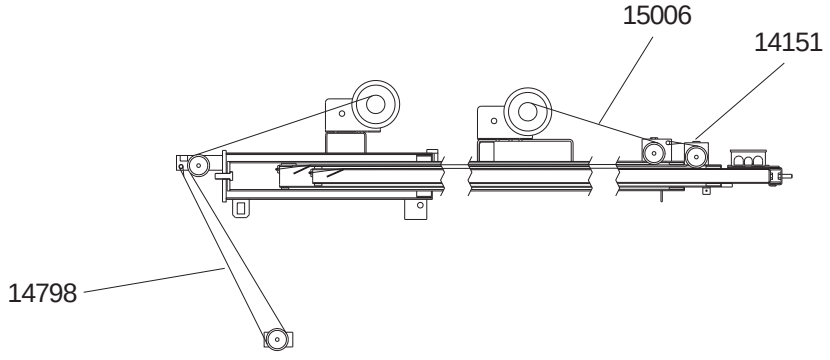


ITEM NO.	PART NO.	QTY	DESCRIPTION
1	13136	1	Decal set, MLT4250
2	12747	1	Decal, label set - MLG25 W/ GAC controller
3	22960	--	Decal, breaker 20 Amp
4	23203	--	Decal, breaker 30 Amp
5	23204	--	Decal, breaker 50 Amp

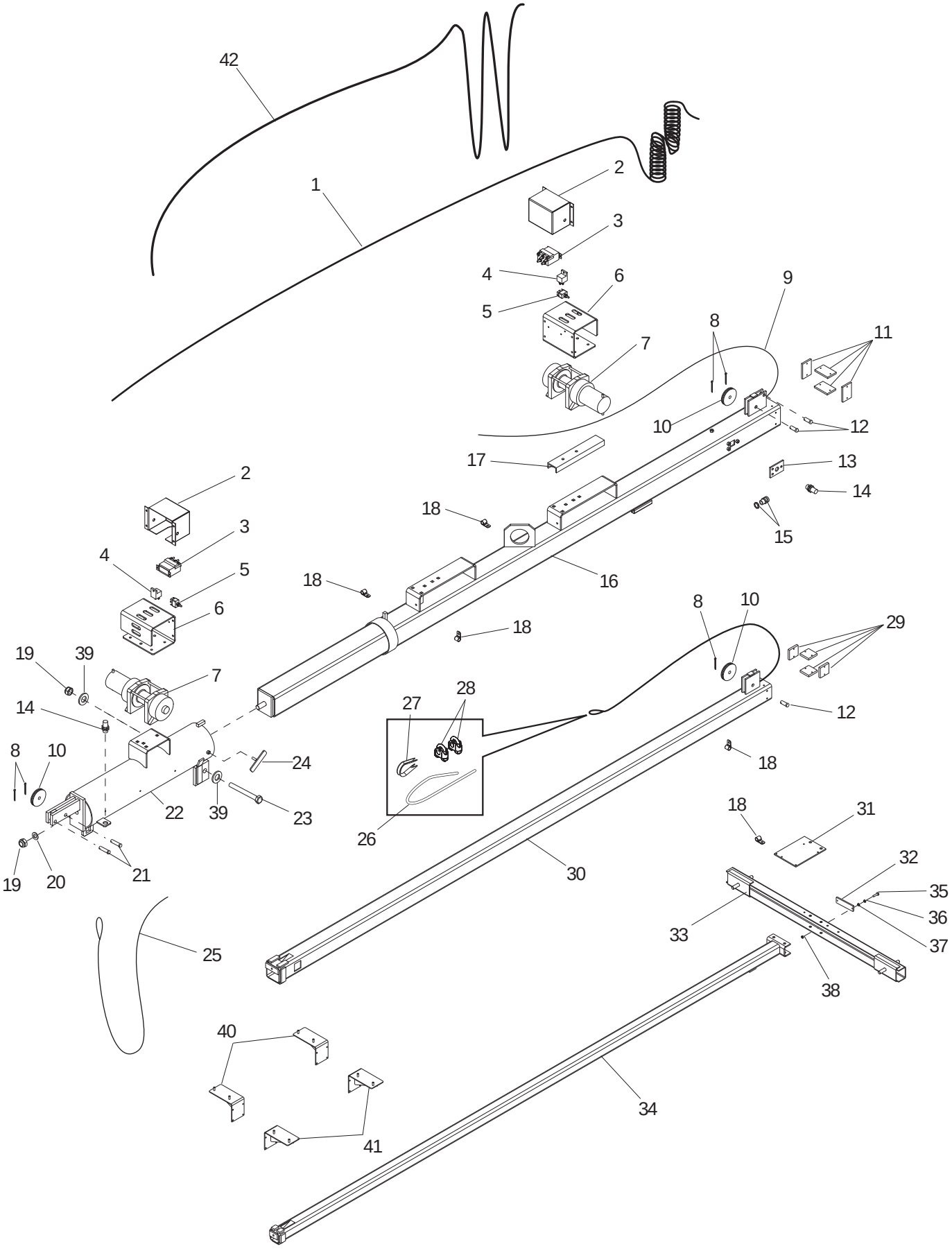
MANUAL WINCH MAST ASSEMBLY



ITEM NO.	PART NO.	QTY	DESCRIPTION
1	11954	1	Coil cord, mast
2	16600	2	Winch, manual
3	60308	2	Nut, nylock .750-10 hx nylock SS
4	11902B	1	Weldment, mast tube
5	11649Z	1	Weldment, t-bolt
6	15292	1	Screw, .750-10X6.500 hx hd SS
7	15380	4	Pin, cotter - .125X1.250
8	14262	3	Sheave, 3 in.
9	14234	2	Pin, clevis .500 x 2.00
10	14798	1	Cable, .188 in. X 16 ft. steel w/teardrop
11	14151	1	Cable, .188 in. X 11 ft. steel w/ball swedge
12	15003	1	Thimble, cable - .188
13	15002	2	Clamp, cable - .188
14	11933B	1	Weldment, mast - 4.00
15	14439	1	Strain relief - .50 NPT, .50 cord, water tight
16	15015	3	Pin, clevis .500 x 1.25
17	15014	4	Shim, 2 x 3 x .281 GSM
18	15013	4	Shim, 2 x 2 x .344 GSM
19	16143	5	Clamp, tubing .500
20	11934B	1	Weldment, mast - 3.00
21	16257B	1	Weldment, mast - 2.00
22	12095B	1	Bracket, junction box
23	15829	1	Reflector, red
24	12751B	1	Weldment, mast crossbar
25	15623	2	Winch handle, 9.00 in. long
26	15006	1	Cable - .188 in. X 27 ft. galv steel w/swedge
27	60397	1	Screw, 10-32X1.000 pan hd phil
28	60252	2	Washer, split lock #10
29	60237	2	Washer, flat #10
30	14231	2	Nut, 10-32 hx
31	60744	2	Washer, .750 flat 1.250/.060 delrin
OPTIONAL FEATURES:			
32	15612	1	Cable, 16-7 cold mast drape
33	12456B	2	Weldment, light storage
34	12457B	2	Weldment, light storage

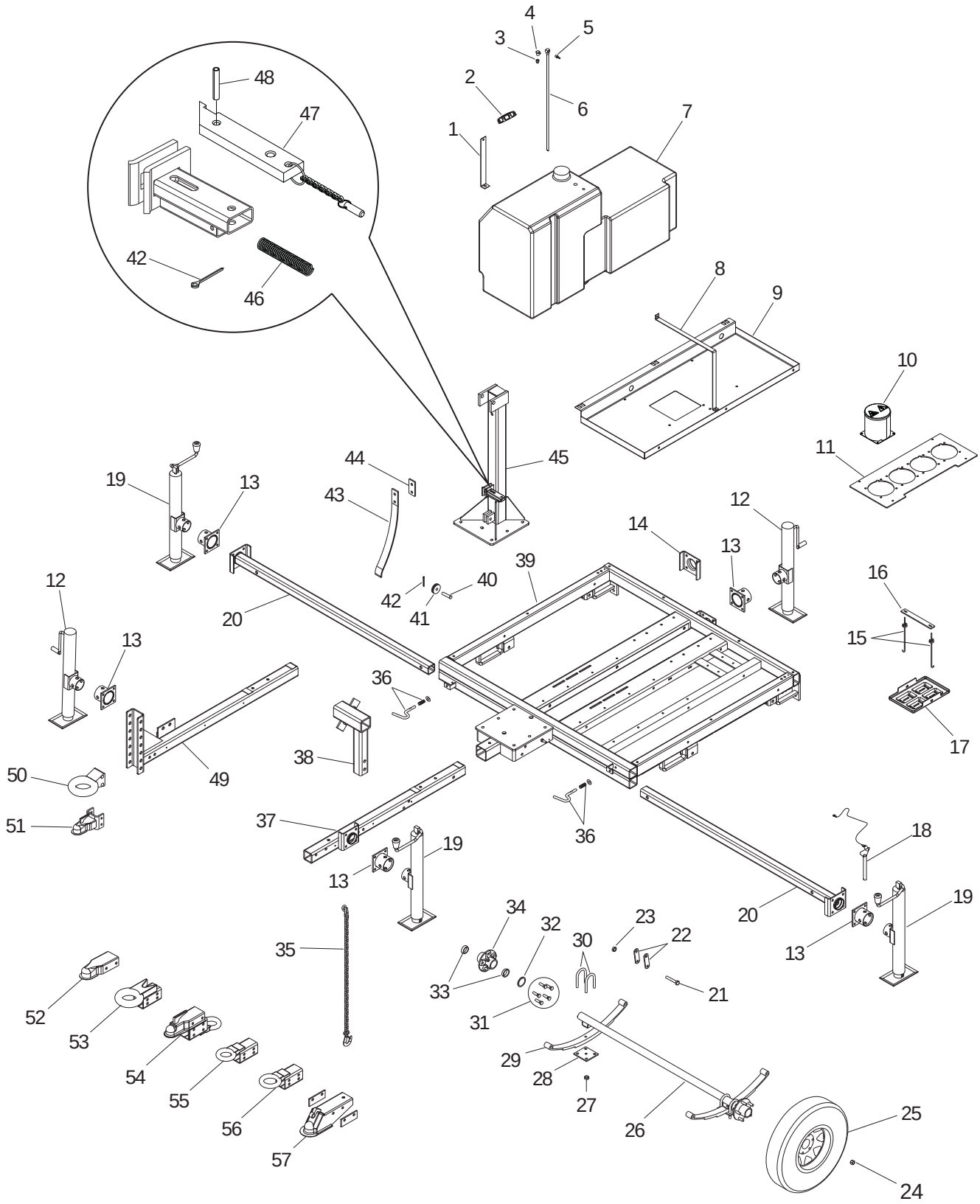


ELECTRIC WINCH MAST ASSEMBLY



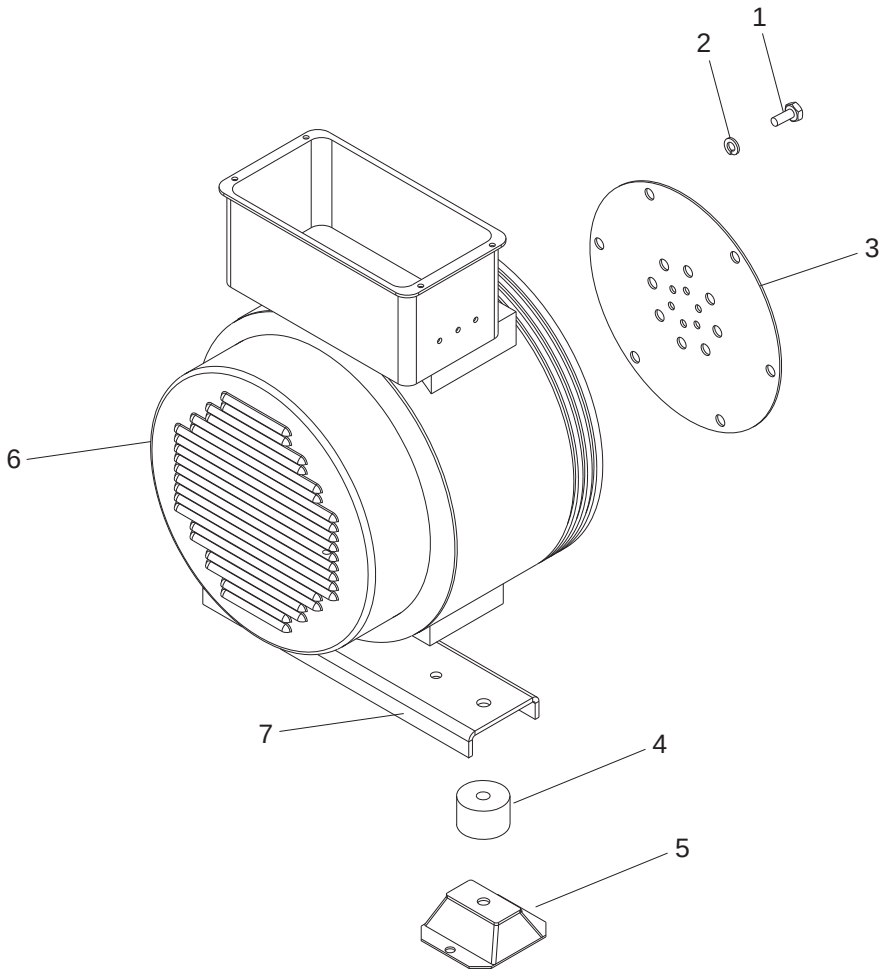
ITEM NO.	PART NO.	QTY	DESCRIPTION
1	11954	1	Coil cord
2	12875B	2	Cover, winch contactor
3	11293	2	Contactor, electric winch - warn
4	65049	2	Relay, 12V 30/40A N.O. w/diode
5	65707	2	Switch, toggle - SPDT spring weatherproof
6	12872B	2	Bracket, winch mounting
7	12874	2	Winch, electric - 770LB hoist
8	15380	5	Pin, cotter - .125X1.250
9	15006	1	Cable, .188 in. x 27 ft. w/ball swedge
10	14262	3	Sheave, 3 in.
11	15014	4	Shim, 2 x 3 x .281 GSM
12	15015	3	Pin, clevis .500 x 1.25
13	65510B	1	Bracket, sensor mtg
14	65511	2	Sensor, proximity
15	14439	1	Strain relief- .50 NPT, .50 cord
16	12085B	1	Weldment, 4.00 mast - Electric Winch
17	11967B	1	Channel, electric winch mount
18	16143	2	Clamp, tubing .500
19	60308	2	Nut, nylock .750-10 nylock SS
20	60247	1	Washer, flat .750
21	14234	2	Pin, clevis .500 x 2.00
22	12876B	1	Weldment, mast tube - Electric Winch
23	15292	1	Screw, 750-10 x 6.50 hx hd SS
24	11649Z	1	Weldment, t-bolt
25	14798	1	Cable - .188 in. X 16 ft. steel w/teardrop
26	14151	1	Cable - .188 in. X 11 ft. steel w/swedge
27	15003	1	Thimble, cable - .188
28	15002	2	Clamp, cable - .188
29	15013	4	Shim, 2 x 2 x .344 GSM
30	12084B	1	Weldment, 3.00 mast
31	12095	1	Bracket, junction box
32	15829	1	Reflector, red
33	12751B	1	Weldment, mast crossbar
34	16257B	1	Weldment, mast - 2” removable crossarm
35	60397	1	Screw, 10-32X1.000 pan hd phil
36	60252	2	Washer, split lock #10
37	60237	2	Washer, flat #10
38	14231	2	Nut, 10-32 hx
39	60744	2	Washer, flat .750ID/1.25OD/.06th delrin
OPTIONAL FEATURES:			
40	12456B	2	Weldment, light storage
41	12457B	2	Weldment, light storage
42	15612	1	Cable, 16-7 cold mast drape

FRAME AND COMPONENTS



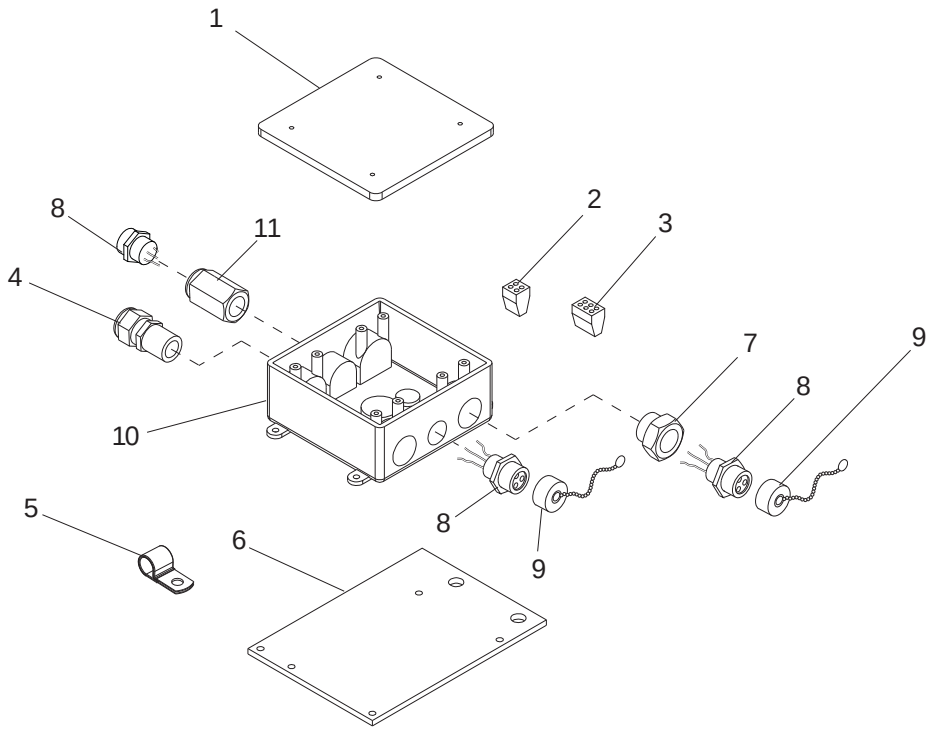
ITEM NO.	PART NO.	QTY	DESCRIPTION
1	12361B	1	Weldment, fuel tank strap.
2	12137	1	Cap, fuel tank - vent, 3.5 dia. grn
3	16270	1	Fitting, .375MNPT TO .250 FNPT straight
4	16271	1	Fitting, .250NPT X .188 hose barb
5	15142	1	Fitting, .250NPT X .312 hose barb
6	12259	1	Fuel pick up tube - 24.00 in.
7	12162	1	Tank, fuel - 56 gallon poly
8	12359B	1	Weldment, fuel tank strap
9	12358B	1	Pan, fuel tank
10	13301	4	Assy, transformer - can and base
11	13873B	1	Bracket, cyl trans.- rect box frame
12	14223	1	Jack, sidewind - 2000lb
13	11965Z	4	Weldment, jack adapter
14	11221	1	Bracket, jack mounting
15	14682	1	Bracket, battery hold-down
16	60984	2	Bolt, J - .250-20 X 7.00
17	14145	1	Battery tray
18	23256	4	Pin, jack - 2000# tube mtd
19	23254	3	Jack, 3000# top wind
20	12408Z	2	Weldment, outrigger
21	60503	6	Screw, .562-18 hx shackle GR5
22	19637	4	Plate, shackle bracket
23	60504	6	Nut, .562-18 hx shackle lock
24	60096	10	Nut, .500-20 wheel lug
25	15589	2	Wheel - P205 x 75R15 w/tube
26	12833	1	Axle - 2500LB 58TC 45SC
27	11279	8	Axis axle nut 3500lb
28	11278	2	Axis axle tie - plate 3500lb
29	11280	2	Spring, axle
30	11277	4	Axis axle u-bolt 3500lb
31	60674	10	Stud, wheel - .500-20 GR8
32	11199	2	Axle bearing seal - Axis
33	11276	2	Axis axle hub w/races 3500lb
34	11511	4	Axis axle roller bearing
35	23367	2	Chain, safety - 7,800 lbs rating
36	14324	2	Kit, plunger
37	12420B	1	Weldment, tongue
38	12235B	1	Weldment, spare tire holder
39	12113B	1	Weldment, chassis MLT 5000
40	15015	1	Pin, clevis - .500 DIA X 1.250
41	14261	1	Sheave - 2 in.
42	15380	2	Pin, cotter - .125X1.250
43	14845B	1	Spring, kickback - 50LB
44	11554B	1	Spacer plate - kick-back spring
45	11057B	1	Weldment, mast post
46	14275	1	Spring - 2.75
47	11215	1	Assy, latch bar
48	15165	1	Pin, roll - .250 x 1.250
49	11368B	1	Weldment, tongue, adjustable hitch
50	19335B	1	Hitch, pintle eye 3.00", adjustable height
51	19518	1	Hitch, 2" ball, adjustable height
52	16830	1	Coupler, 2 in. ball/2.5 in. channel
53	11672B	1	Weldment, hitch - 3.00x1.625 ring
54	16741B	1	Weldment, combo hitch - 2.5 in. tongue
55	16835B	1	Weldment, lunette ring - 3.00 ID/2.50 tongue
56	16999B	1	Weldment, lunette ring - 2.50 ID/2.50 tongue
57	12156	1	Kit, coupler, 2 5/16 ball/3" tongue w/spacers

GENERATOR ASSEMBLY



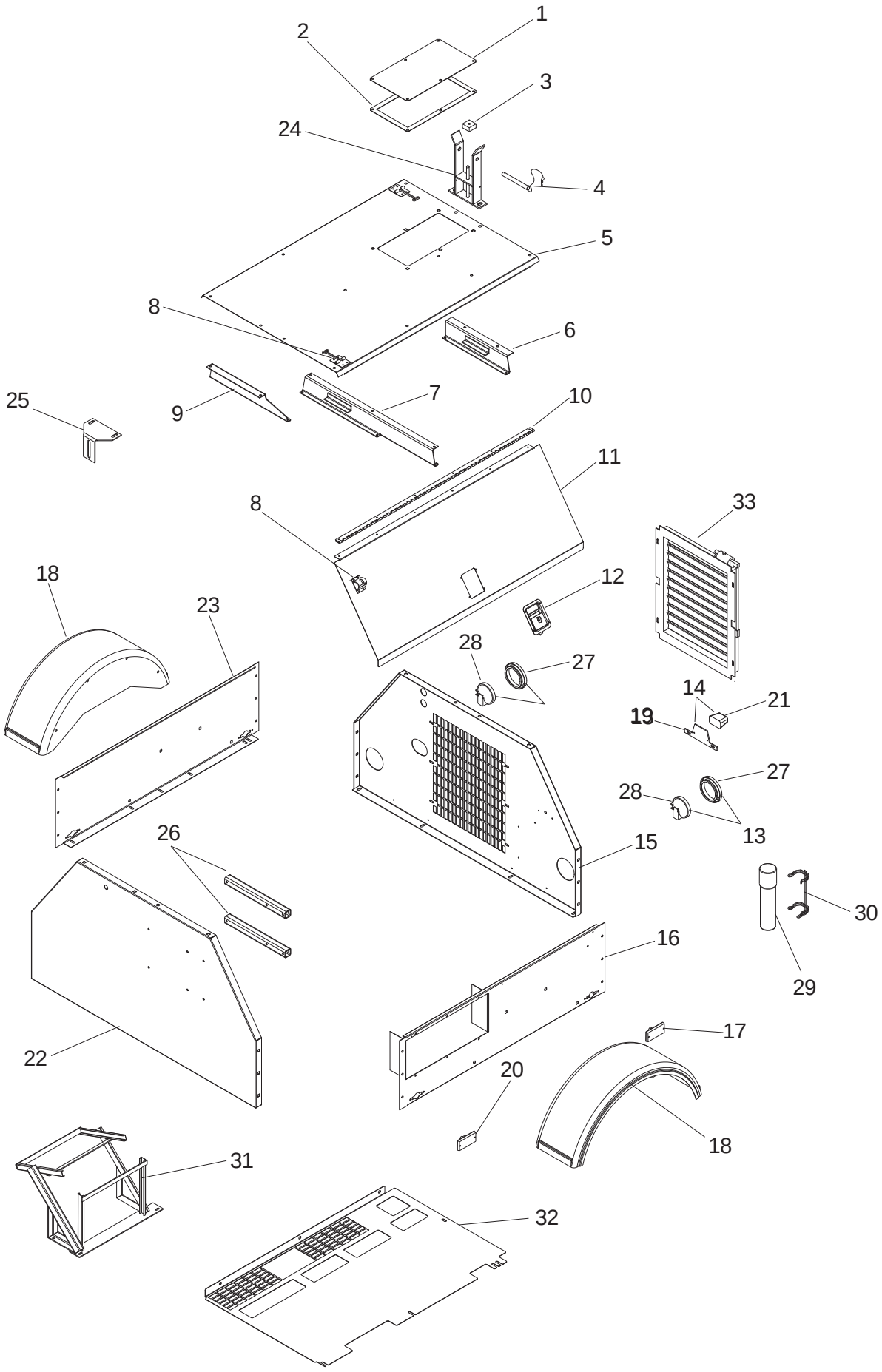
ITEM NO.	PART NO.	QTY	DESCRIPTION
1	60177	6	Screw, M10X1.25X30 hx hd
2	60206	14	Washer, split lock .375
3	11000	1	Plate, drive - SAE 7.5
4	11515B	2	Spacer, 2.00 dia x 1.00
5	11524	2	Compression mount, engine
6	22899	1	Generator, 282NSL1505
7	11597B	1	Bracket, gen mount

MAST JUNCTION BOX ASSEMBLY
QUICK DISCONNECT LIGHTS



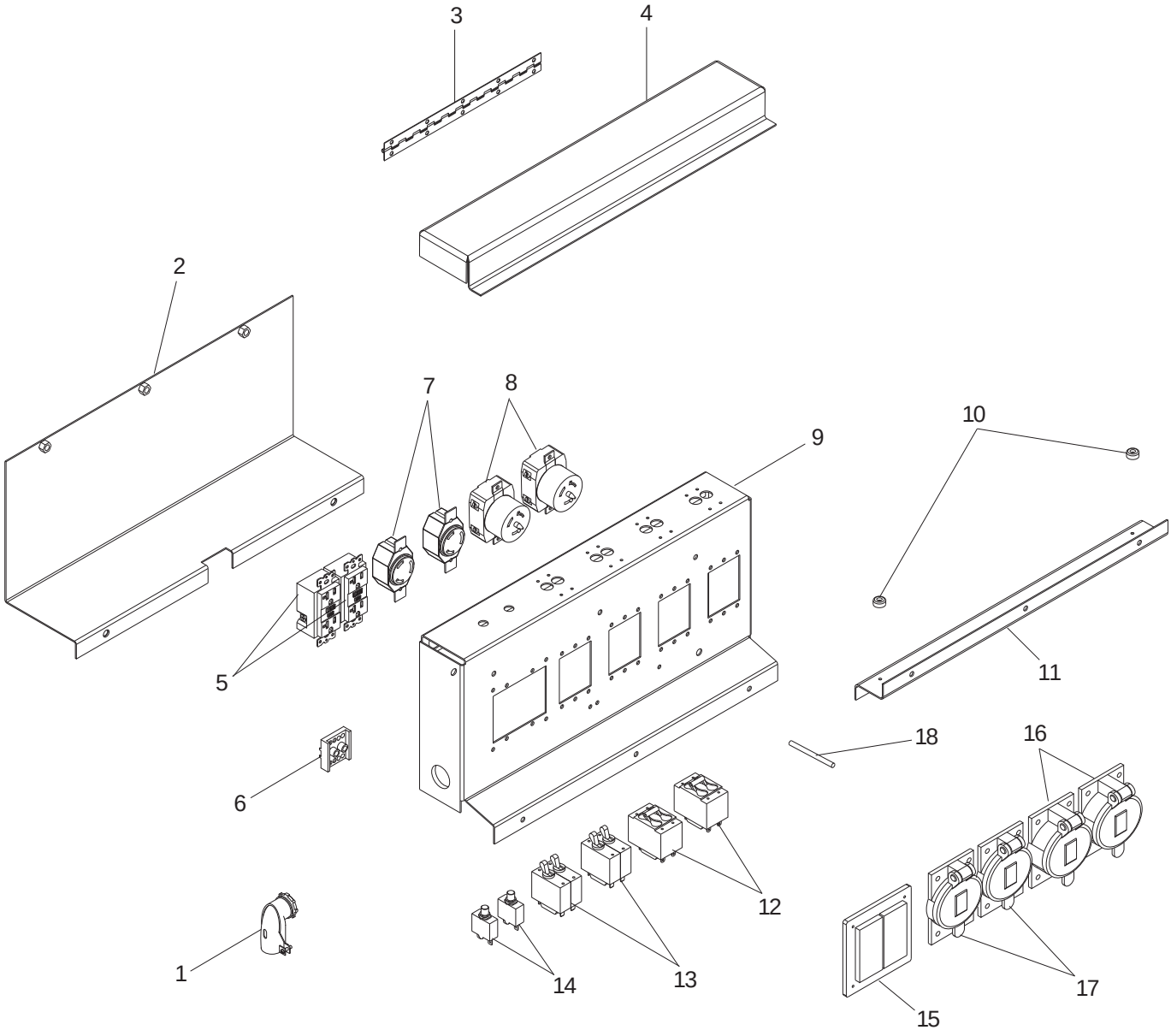
ITEM NO.	PART NO.	QTY	DESCRIPTION
1	12109	1	Box cover, 2-gang plastic
2	65514	4	Connector, 4 position
3	65515	2	Connector, 6 position
4	14656	1	Strain relief, .750NPT water tight
5	16143	1	Clamp, tubing .500
6	12095B	1	Bracket, junction box
7	60755	2	Fitting, .750MNPT x .500FNPT nylon
8	15403	4	Connector, quick disconnect (female)
9	15404	4	Cap, receptacle w/chain
10	12094	1	Box, junction
11	12713	1	Fitting, adapter-1/2"-14 male to 1/2"-14 female
-	11957	-	Assembly, mast junction box

ENCLOSURE ASSEMBLY



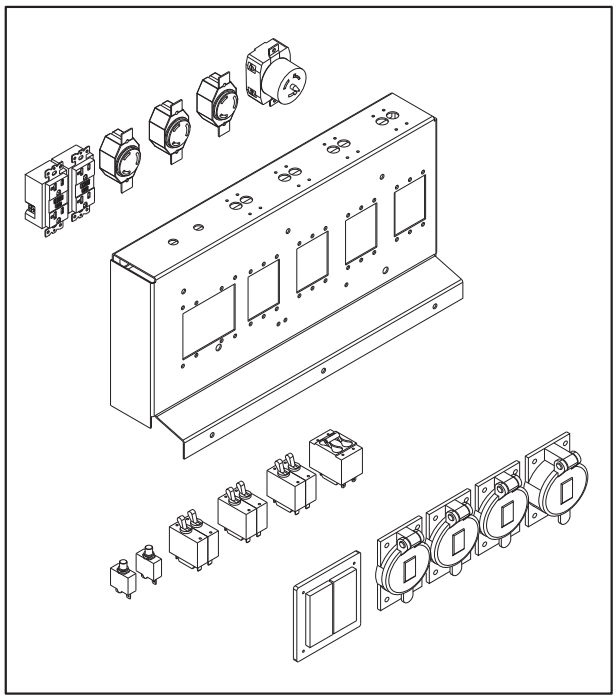
ITEM NO.	PART NO.	QTY	DESCRIPTION
1	25333W	1	Panel, back access
2	12195	1	Gasket, radiator access plate
3	11935	1	Pad, rubber 2.00 x 2.00 x 1.00
4	16099	1	Assembly, cradle pin
5	12119W	1	Panel, top - MLT5000
6	12253B	1	Weldment, light storage, upper rear
7	12252B	1	Weldment, light storage, upper middle
8	12605	2	Door latch SS - T-style
9	12251B	1	Weldment, light storage, upper front
10	16598	2	Hinge, door
11	16591W	2	Panel, door
12	15123	2	Latch, paddle
13	10219	2	Assembly, rear tail/turn light
14	10223	1	Assembly, license plate light/bracket
15	12118W	1	Panel, rear
16	11505W	1	Panel, side - LH MLT 5200
17	65406	2	Light, clearance marker red
18	11381	2	Fender, plastic
19	10224	1	Bracket, license plate
20	65407	2	Light, clearance marker amber
21	10225	1	Light, license bracket
22	12126W	1	Panel, front -MLT5000
23	11507W	1	Panel, side - RH MLT 5200
24	12344Z	1	Weldment, cradle - common mast
25	14459B	1	Bracket, door adjusting
26	11543B	2	Spacer, control box
27	10221	2	Grommet, rear light rubber 4.5"
28	10220	2	Light, rear tail/turn mlt no grommet
29	11121	1	Holder, manual black tube
30	11222	1	Bracket, manual holder
31	12146B	1	Weldment, light storage, lower
32	12335	1	Panel, bellypan
33	12349	1	Shutters, thermostatically controlled group

AUXILIARY OUTLET PANEL ASSEMBLY

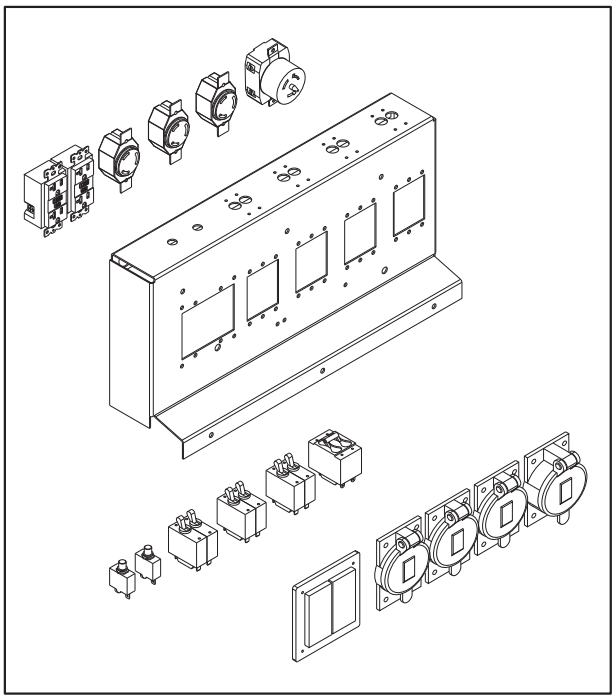


ITEM NO.	PART NO.	QTY	DESCRIPTION
1	65535	1	Clamp, 90° 3/4" 2 screw
2	12248B	1	Weldment, outlet cover
3	10081	1	Hinge, continuous - 11.00 in.
4	11484B	1	Cover, breaker
5	14130	2	Receptacle, 120V/20A GFCI
6	65530	2	Block, terminal - 2 pole lug type, 7 pos./pole
7	14137	2	Receptacle, 240V/30A twist lock
8	18089	2	Receptacle, 120/ 240V 50A twist lock
9	12246B	1	Weldment, outlet panel
10	15215	2	Rubber bumper
11	11485B	1	Angle, mounting support
12	65492	2	Breaker, 50A, 250V, 2 pole aux contact
13	65851	2	Breaker, 30A, 250V, 2 pole, screw term w/ aux
14	65849	2	Breaker, 20A, 120V, 1-pole, push button
15	15849	1	Cover, receptacle - weather proof
16	65467	2	Cover, receptacle 50A twist lock
17	65460	2	Cover, 20/30A 240V twist lock
18	18992	1	Stud, ground
--	12398	1	Receptacle panel (2x5-20R, 2xL6-30R, 2x50A)

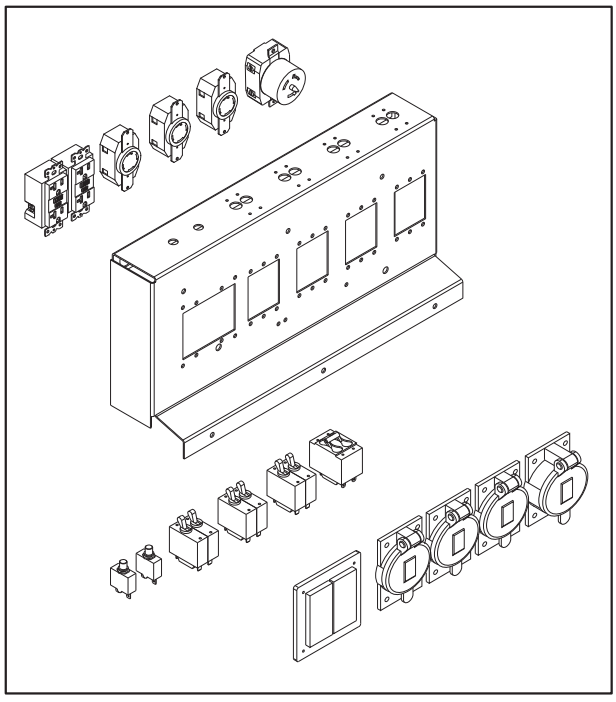
AUXILIARY OUTLET PANEL OPTIONS



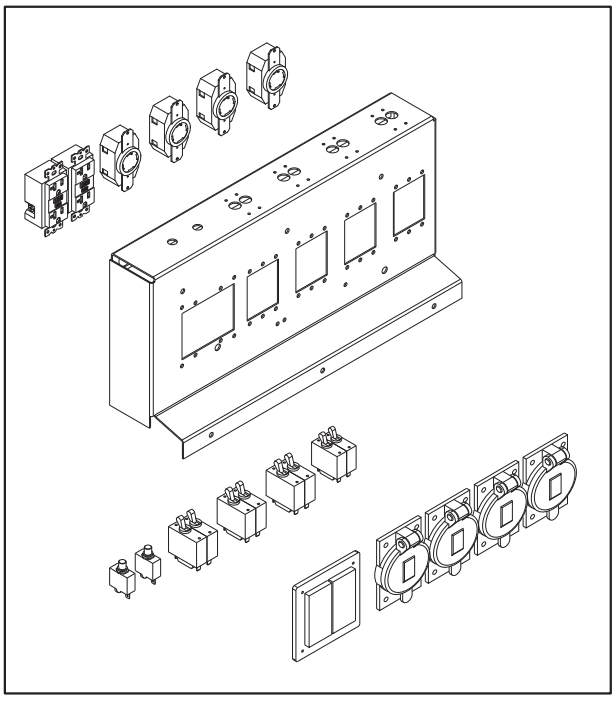
PART NUMBER 12399
Receptacle Panel (2x5-20R, 3xL6-30R, 1x50A)



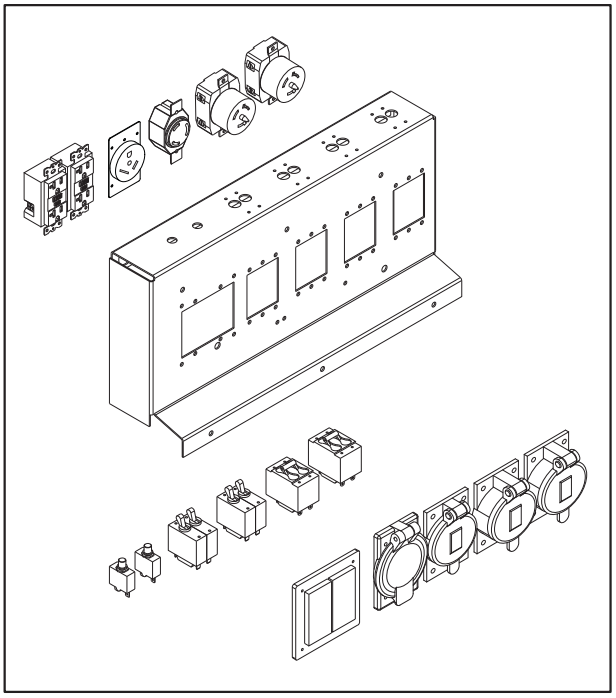
PART NUMBER 12402
Receptacle Panel (2x5-20R, 3xL6-20R, 1x50A)

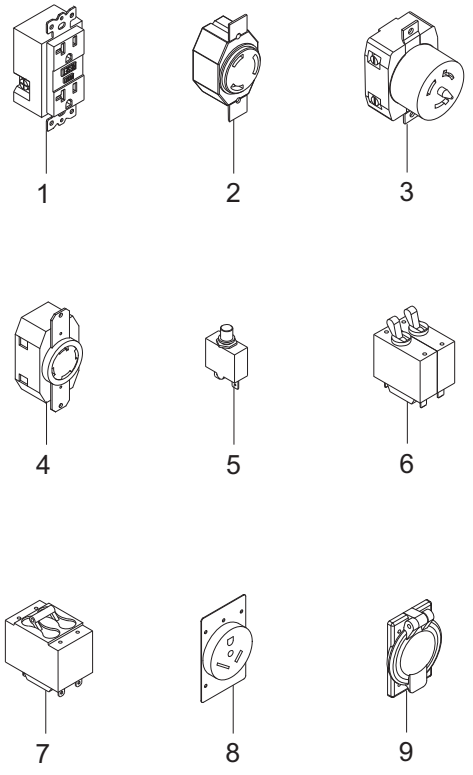


PART NUMBER 12400
Receptacle Panel (2x5-20R, 3xL14-30R, 1x50A)



PART NUMBER 12401
Receptacle Panel (2x5-20R, 4xL14-30R)



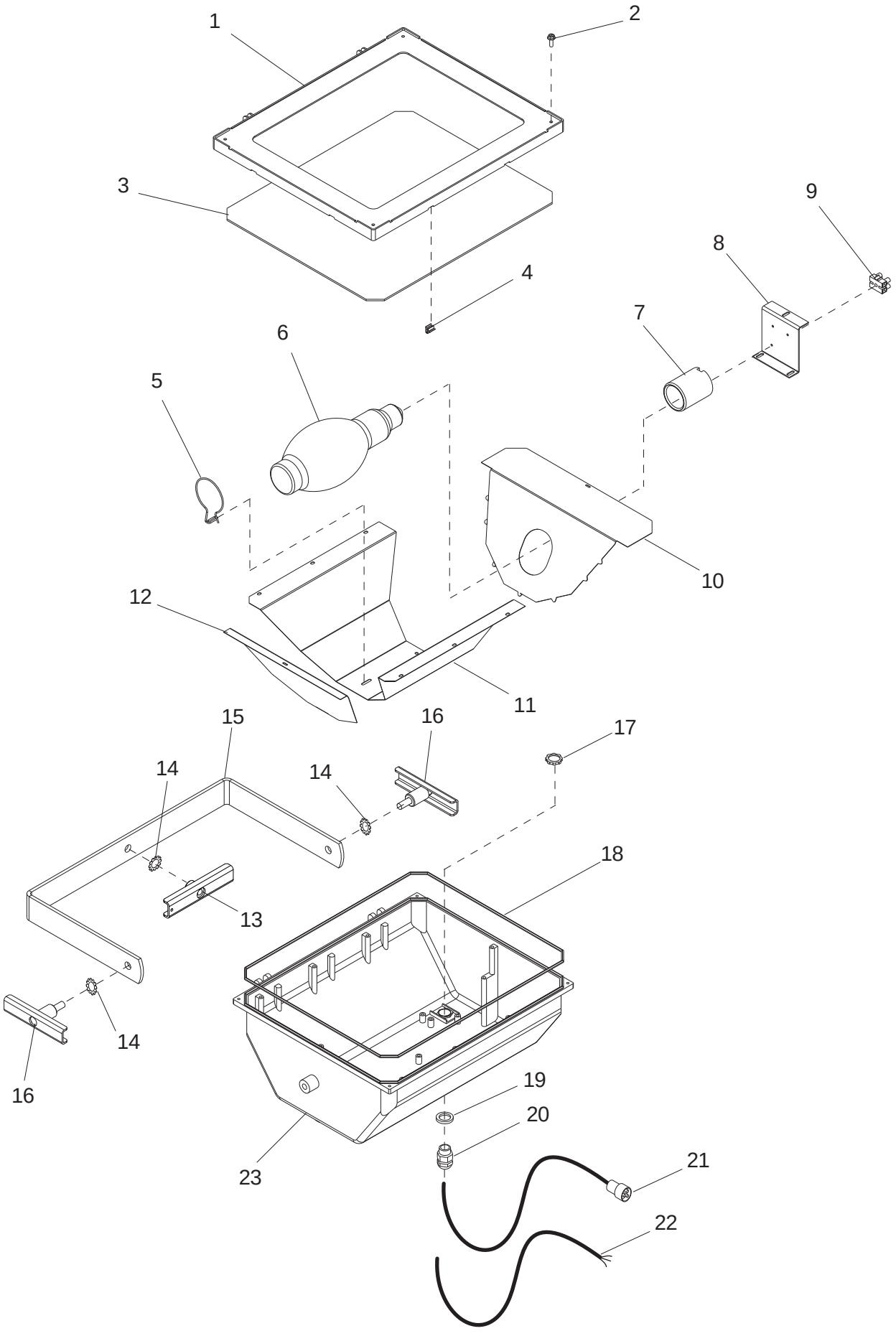


PART NUMBER 13540

Receptacle Panel (2x5-20R, 1xTT-30R, 1xL6-30R, 2x50A)

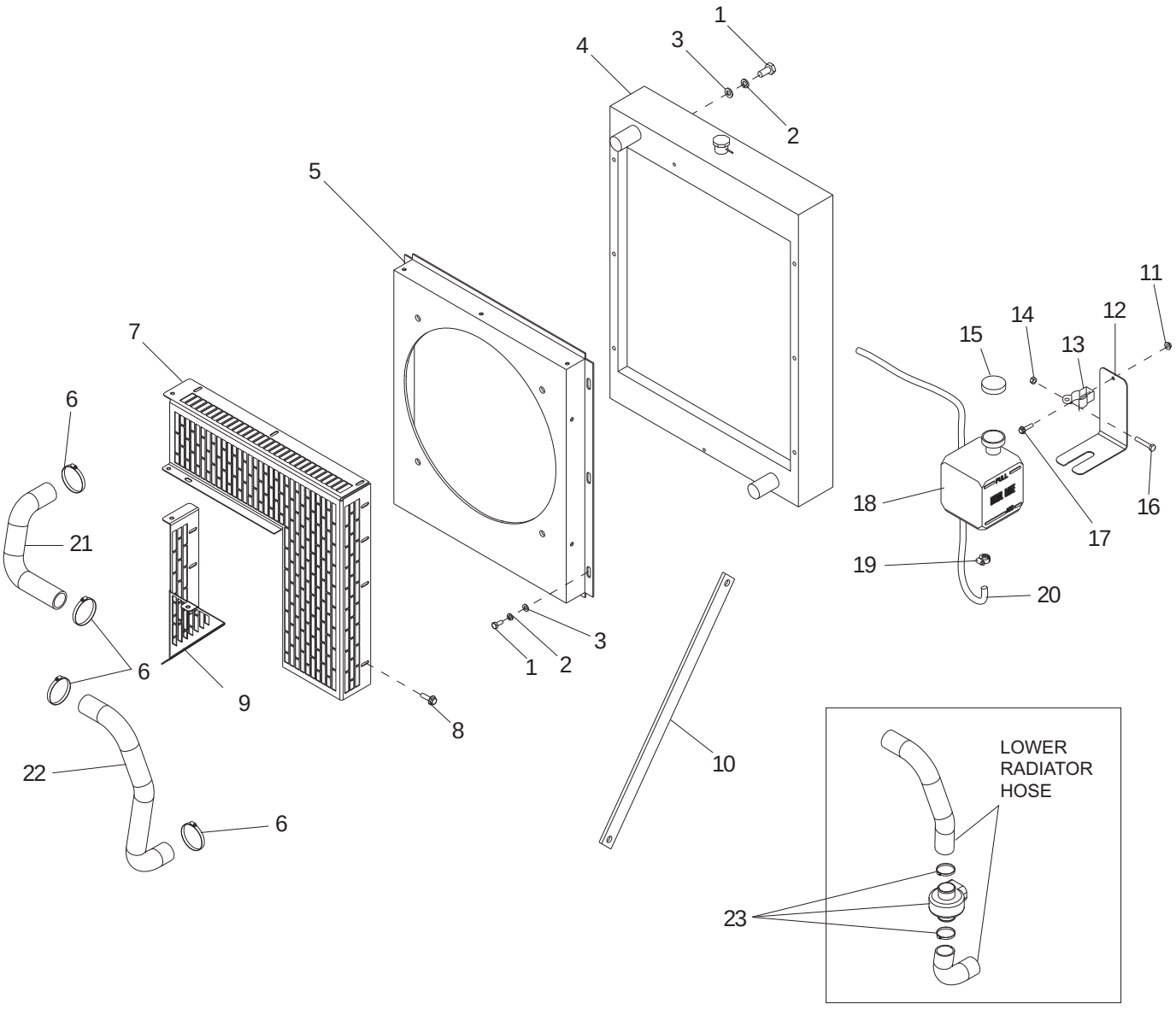
ITEM NO.	PART NO.	QTY	DESCRIPTION
1	14130	2	Receptacle, 120V 20A GFCI
2	14137	-	Receptacle, 240V 30A twist lock
3	18089	-	Receptacle, 125/250V 50A twist lock
4	65488	-	Receptacle, 240V 30A twist lock
5	65849	2	Breaker, 20A, 120V, 1 pole, push button
6	65851	2	Breaker, 30A 250V 2 pole (JA) screw term, w/aux
7	65492	-	Breaker, 50A 250V 2 pole aux contact
8	65489	1	Receptacle, 120V/30A (TT-30R) (RV)
9	65520	1	Cover, receptacle - weather proof 50A 3-wire

LIGHT ASSEMBLY



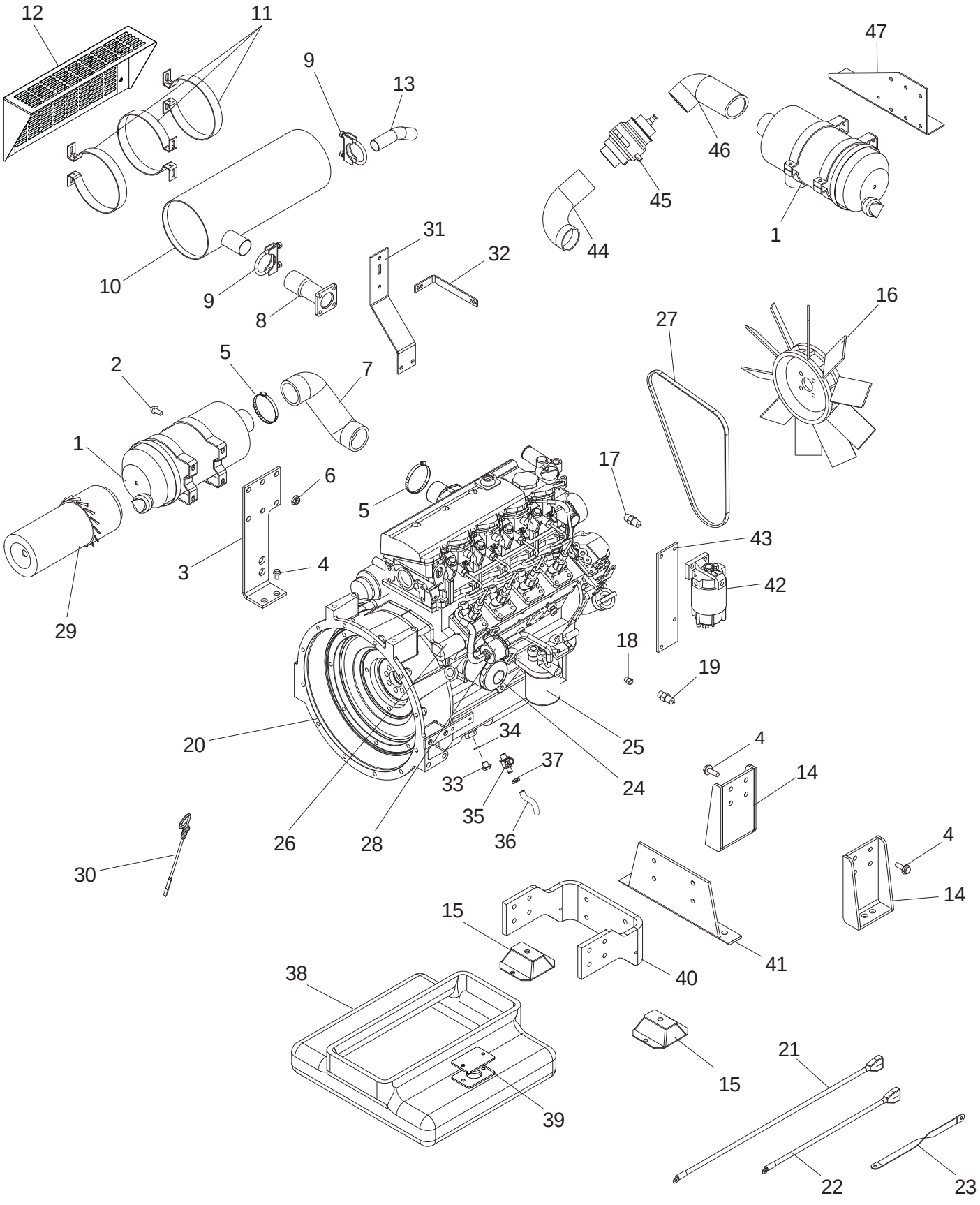
ITEM NO.	PART NO.	QTY	DESCRIPTION
1	11393	1	Cover, Magnum light
2	61059	4	Screw, 10-32X1 slot hex w/flange SS
3	11303	1	Lens, Magnum rectangular light
4	11392	8	Clip, glass Magnum light
5	11398	1	Support, bulb Magnum light
6	11391	1	Bulb - 1000W MH short length
	11465	1	Bulb - 1000W HPS short length
7	11394	1	Socket, Magnum light
8	11460	1	Bracket, light socket
9	65458	1	Block, terminal - 2 pos, 90A, 600V
10	11424	1	Reflector, end Magnum light
11	11399	1	Reflector, wrap around - Magnum light
12	11423	1	Reflector, hole in end - Magnum light
13	12993Z	1	Weldment, wing nut - Magnum light
14	60369	3	Washer, ext star lock M12
15	12991Z	1	Bracket, trunnion - Magnum light
16	12992Z	2	Weldment, wing bolt - Magnum light
17	15861	1	Nut, .500 NPT lock
18	11456	1	Gasket, lens
19	15697	1	Washer, rubber sealing - .500NPT
20	15864	1	Strain relief - .50NPT watertight
21	14166	1	Cord, 3 ft. w/quick disconnect plug
22	11457	1	Cable, light - hard wire
23	11400	1	Housing - Magnum light
–	65485	1	Kit, reflector 1000W (parts 10-12)
–	11402	1	Assy, light fixture - 1000W MH non quick-disc.
–	11790	1	Assy, light fixture - 1000W HPS non quick-disc.
–	12997	1	Assy, light fixture - 1000W MH quick disc.
–	11955	1	Assy, light fixture - 1000W HPS quick disc.

ENGINE COOLING ASSEMBLY



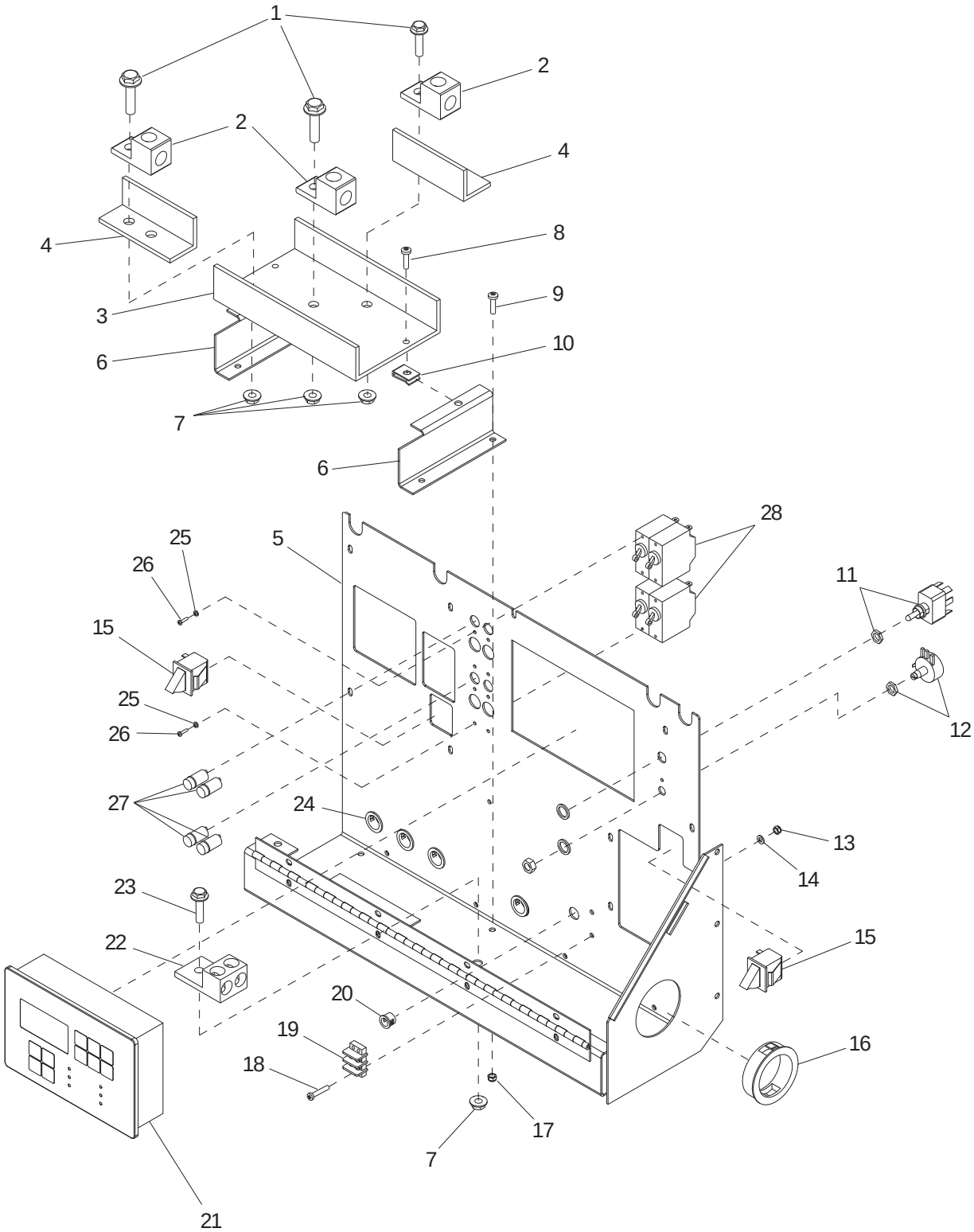
ITEM NO.	PART NO.	QTY	DESCRIPTION
1	60034	12	Screw, .375-16X.750 hx ser flg
2	60206	12	Washer, split lock .375
3	60386	12	Washer, flat .375
4	26305	1	Radiator, aluminum
5	11626B	1	Weldment, fan shroud
6	15422	4	Clamp, hose SAE 20
7	11760B	1	Panel, fan guard - right
8	60115	8	Screw, M6X1.0X12 hx ser flg
9	11769B	1	Weldment, fan guard - left
10	11596B	1	Strut, radiator support
11	60144	1	Nut, .250-20 nylock
12	22419B	1	Bracket, support overflow jug .5 gal.
13	19726	1	Clamp, overflow bottle
14	60047	1	Nut, M6 hx lock class 6 DIN985
15	19714	1	Cap, overflow bottle
16	60014	1	Screw, M6X1.0X35 hx GR8.8 DIN933
17	60135	1	Screw, M6X1.0X20 hx ser flg
18	20287	1	Jug, overflow 2 qt. (.5 gal.)
19	14216	1	Clamp, hose SAE 04
20	19220	1	Hose, overflow
21	12064	1	Hose, radiator upper
22	12356	1	Hose, radiator lower
OPTIONAL FEATURES			
23	65650	1	Heater, engine - low rad hose 1.5"

ENGINE ASSEMBLY



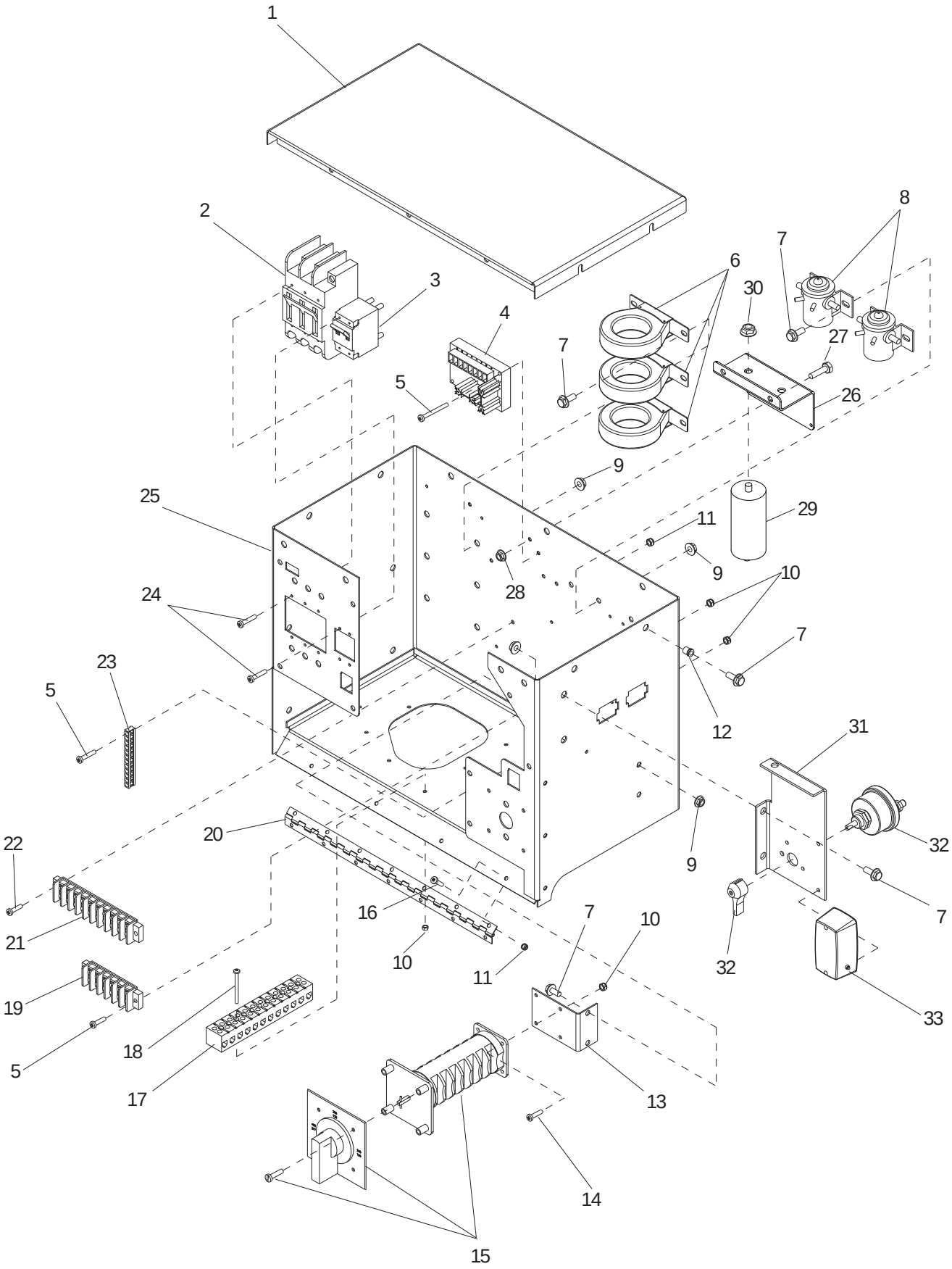
ITEM NO.	PART NO.	QTY	DESCRIPTION
1	12969	1	Filter, air - metallic
2	61091	4	Screw, .312-18X1.000 ser flg hx G5
3	12990B	1	Bracket, air filter
4	60018	14	Screw, M10-1.25X20 ser flg hx G10.9
5	60316	2	Clamp, hose - SAE 32
6	60095	4	Nut, .312-18 ser flg G5 case hard
7	22320	1	Hose, air filter
8	12421B	1	Weldment, exhaust flange
9	25455	2	Clamp, muffler - 1.50
10	12608	1	Muffler
11	12606B	3	Bracket, muffler
12	12612B	1	Heat shield
13	12683B	1	Pipe, tail - 1.50 OD
14	11471B	2	Weldment, engine mount
15	12450	2	Compression mount, - silicone
16	19258	1	Fan, 15.75 in.
17	15370	1	Switch, water temp Isuzu
18	19232	1	Fitting, straight -.125FNPTX.125-28MBSP
19	16677	1	Switch, oil pressure
20	18064	1	Engine, Isuzu 4LEPVO5
21	15074	1	Cable, battery - 4 AWG X 38 in. red
22	15073	1	Cable, battery - 4 AWG X 25 in blk .38 lug
23	13083	1	Strap, braided ground - 10 in.
24	15183	1	Filter, oil - Isuzu
25	15331	1	Fuel filter element
26	22893	1	Solenoid, fuel shutdown
27	22258	1	Belt, fan - 4LE1-PV05
28	16205	1	Pump, fuel - Isuzu
29	12973	1	Element, air filter - metal
30	23899	1	Dipstick, oil, Isuzu 4LE PV05
31	12634B	1	Bracket, muffler mounting
32	12635B	1	Bracket, muffler support
33	11040	1	Isuzu, plug, oil pan
34	11041	1	Isuzu, oil plug gasket
-	11952	1	Valve, drain - 20X1.5mm thread/barb
-	24036	1	Harness, engine (not shown)
OPTIONAL FEATURES:			
35	11952	1	Valve, drain - 20X1.5MM thread/barb
36	50051	.25 ft.	Hose, fuel - .375 ID 50 PSI SAE 30R7
37	60777	1	Clamp, hose - .312 fuel hose crimp style
38	12416	1	Oil pan, extended capacity
39	12614B	1	Cover, port - ext. oil cap pan
40	12366B	1	Engine mount, ext oil capacity
41	12367B	1	Weldment, engine mount, ext oil capacity
42	11607	1	Filter, fuel - heated
43	11941B	1	Plate, fuel filter mount
44	12445	1	Hose, positive air shutdown
45	12352	1	Assy, air intake shutdown
46	12444	1	Hose, positive air shutdown
47	12433B	1	Bracket, air filter mount - pos air shutdown
-	12417	1	Gasket, oil pan, ext. capacity (not shown)
-	12441	1	Cable, battery - 4 AWG x 31” blk (not shown)
-	12442	1	Cable, battery - 2 AWGx58.5” blk (not shown)
-	22970	1	Cable, battery - red 50” (not shown)

CONTROL PANEL ASSEMBLY



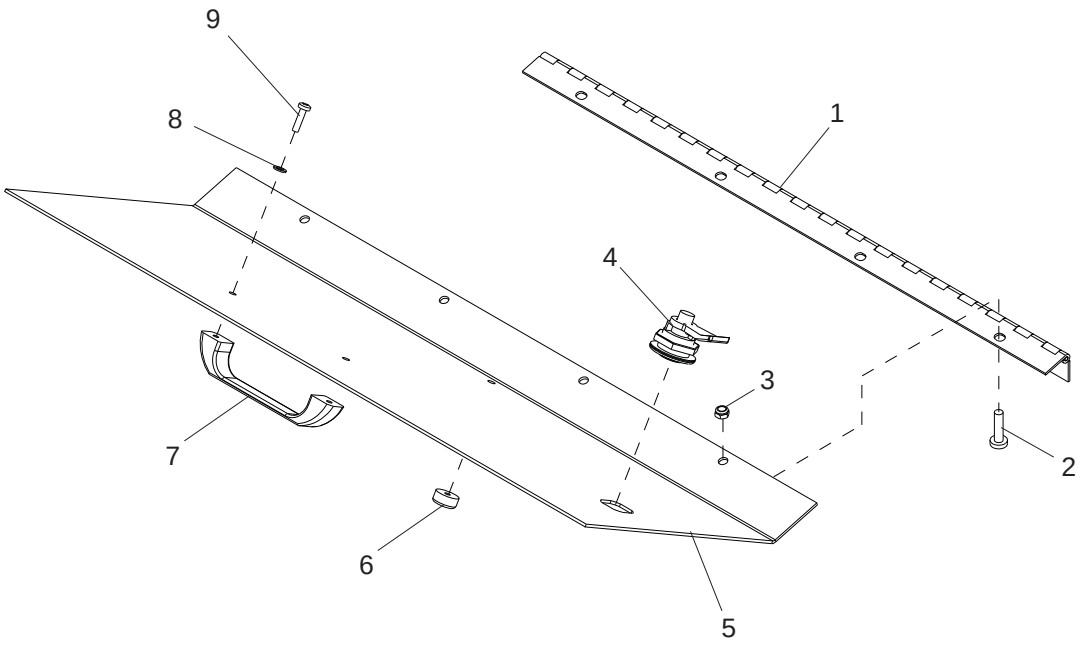
ITEM NO.	PART NO.	QTY	DESCRIPTION
1	60160	3	Screw, M8X1.25X30 hx ser flg
2	65287	3	Lug, terminal single #6-350 MCM
3	12065	1	Channel, glastic
4	12066	2	Angle, glastic
5	13126W	1	Panel, control
6	11811W	2	Bracket, glastic plate
7	60020	7	Nut, M8 hx ser flg lock
8	60062	3	Screw, 10-32X.750 pan hd phil
9	60044	2	Screw, M5X0.8X12 pan hd phil
10	60738	2	Nut, 10-32 speed u-type
11	25077	1	Switch, toggle - SPST 20A VAC
12	18113	1	Potentiometer, 2.5K 2 watt
13	60057	4	Nut, M4 hx hd
14	60084	2	Washer, flat M4
15	12632	2	Switch, trigger safety, N.O. & N.C.
16	18496	1	Bushing, 2.50 x 2.00 ID
17	60038	4	Nut, M5 HX nylock
18	60355	2	Screw, M4X25 pan hd phil
19	18890	1	Terminal block, 2-pos
20	19163	1	Bushing, .500 x .375 ID
21	24129	1	Controller, eng/gen - programmed
22	18614	1	Lug, terminal dual #6-250MCM 2 hole
23	60009	3	Screw, M8X1.25X25 hx ser flg
24	19227	4	Bushing, .812 OD x .625 ID
25	60058	8	Washer, #6 split lock
26	60190	8	Screw, 6-32X.312 pan phil
27	65325	4	Light, indicator - green w/ wire
28	14249	4	Breaker, 15A 250V 1pole
-	18934	1	Guard, potentiometer (not shown)
-	12628	1	Assembly, control panel (complete)

CONTROL BOX ASSEMBLY



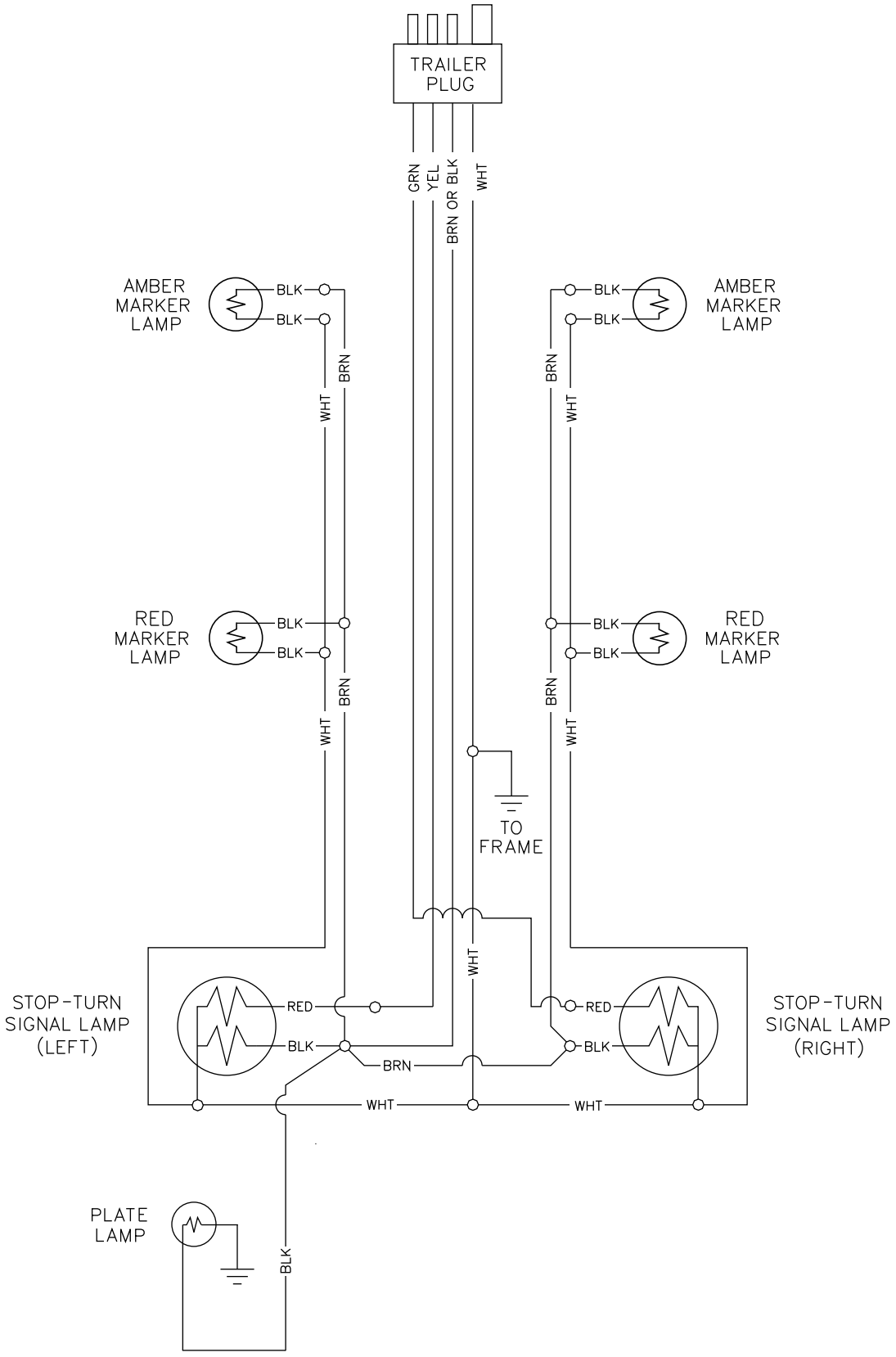
ITEM NO.	PART NO.	QTY	DESCRIPTION
1	12694W	1	Panel, top control box
2	65619	1	Breaker, 90A, 3 pole
3	65429	1	Breaker, 100A, 250V, 2 pole
4	18556	1	Regulator, voltage - SE 350
5	60355	6	Screw, M4X35 pan head phil
6	65442	3	Transformer, current - 200:5A
7	60115	25	Screw, M6X1.0X12 hx ser flg
8	18081	2	Relay, ignition solenoid (12V-65 A)
9	60036	14	Nut, M6 hx ser flg lock
10	60051	11	Nut, M4 hx nylock
11	60061	6	Nut, 10-32 hx nylock
12	60023	11	Insert, threaded M6
13	11764B	1	Bracket, phase switch
14	60091	4	Screw, M4X12 pan hd phil
15	65456	1	Switch, phase - 63A, 3-pos (Y,y,Z)
16	60044	4	Screw, M5X0.8X12 pan hd phil
17	65590	1	Block, terminal - 12 pos. lug type
18	60045	3	Screw, M4X35 pan hd phil
19	65481	1	Block, terminal - 6 pos.
20	18598	1	Hinge, controller panel - 18.75
21	14203	1	Block, terminal 10 pos.
22	60062	2	Screw, 10-32X.750 pan hd phil
23	14204	1	Kit, ground bar
24	60190	10	Screw, 6-32X.312 pan hd phil
25	13137W	1	Weldment, control box
26	13343B	1	Bracket, dual cap mount
27	60168	2	Screw, .312-18X.750 hx hd G5
28	60095	2	Nut, .312-18 ser flg G5 case hard
29	65959	2	Capacitor, dual 24 *u*F sealed stud mount
30	60098	2	Nut, .500-13 ser flg G5
-	12625	1	Assembly, control box enclosure
-	12624	1	Assembly, control box (complete)
OPTIONAL FEATURES:			
31	12021B	1	Bracket, control box roof (optional)
32	65498	1	Switch, disconnect (optional)
33	11947	1	Light, interior with switch (optional)

LUG DOOR ASSEMBLY

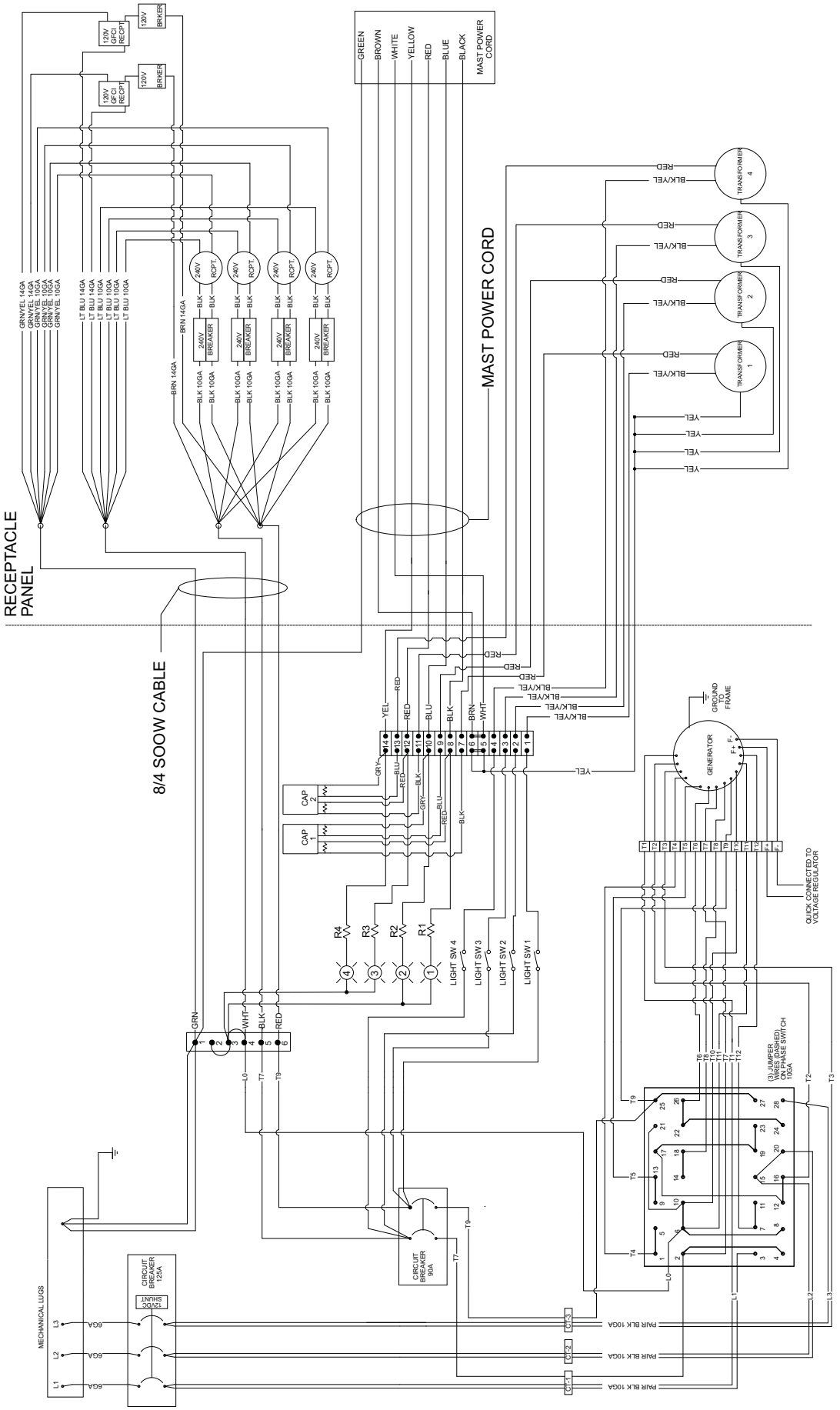


ITEM NO.	PART NO.	QTY	DESCRIPTION
1	18598	1	Hinge, controller panel - 18.75
2	60156	8	Screw, M5X0.8X16 pan hd phil
3	60038	4	Nut, M5 hx nylock DIN985
4	20762	1	Lock, door - 1/4 turn cam
5	12631W	1	Panel, lug door
6	15215	1	Bumper, rubber
7	18893	1	Handle, lug door
8	60043	2	Washer, split lock M5 DIN127
9	60068	2	Screw, 10-24X.500 pan phil
--	12630	1	Assembly, lug door

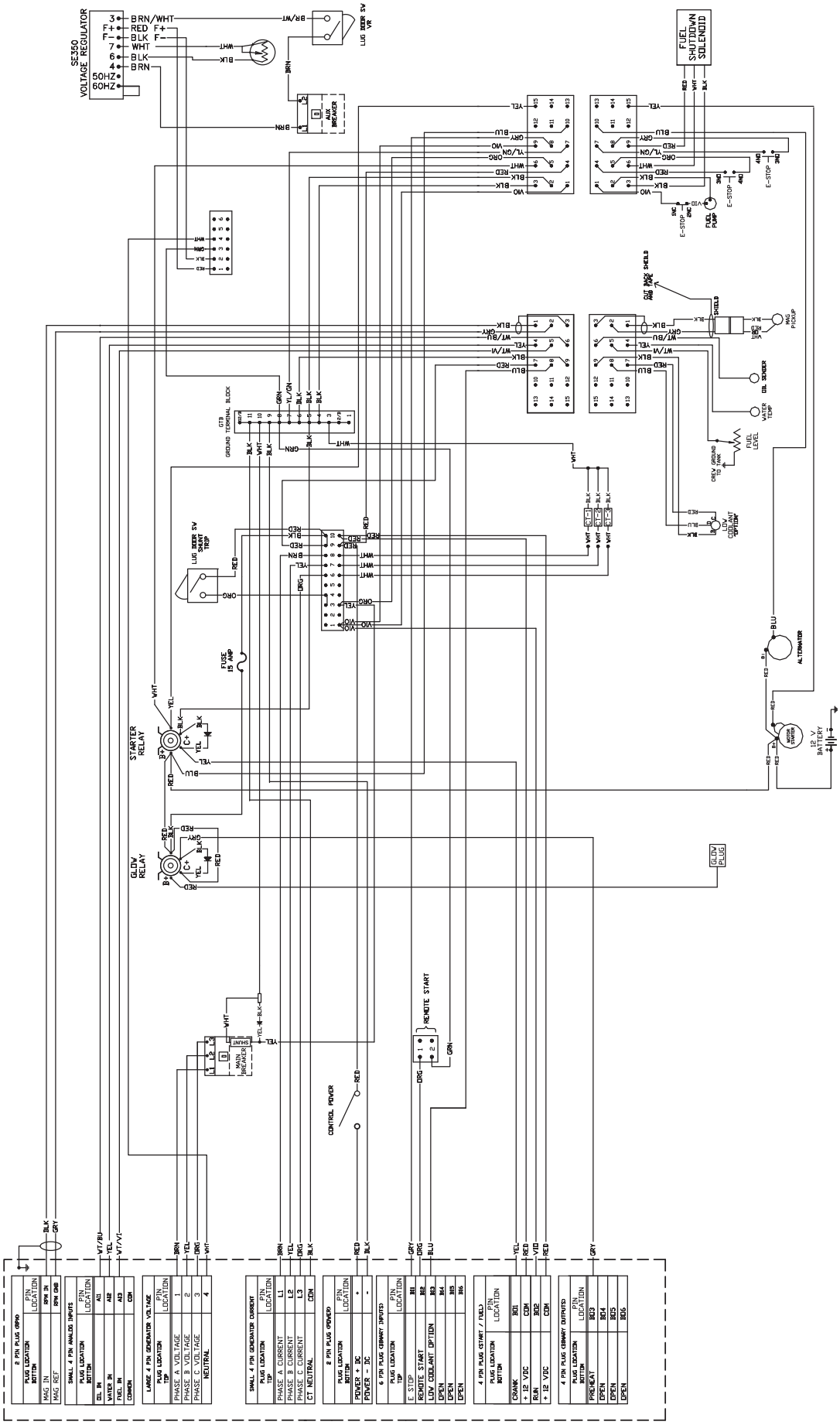
TRAILER LIGHTS WIRING DIAGRAM



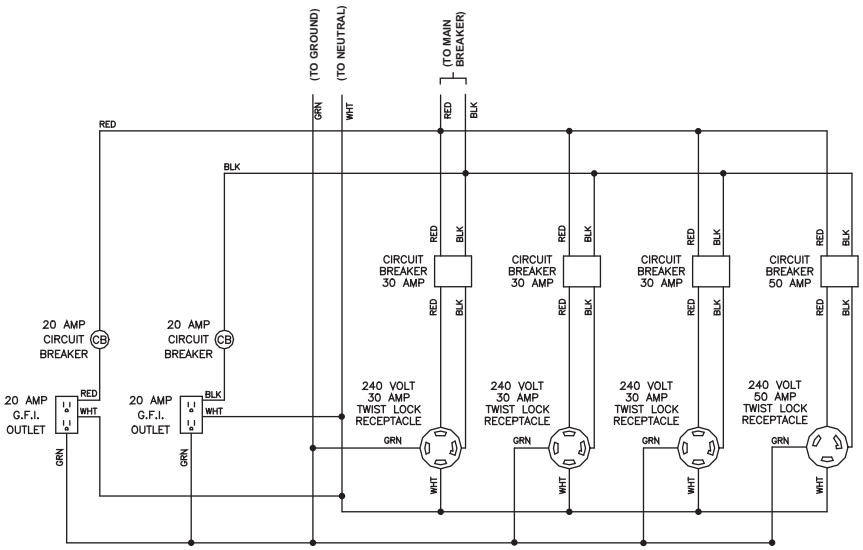
AC WIRING DIAGRAM



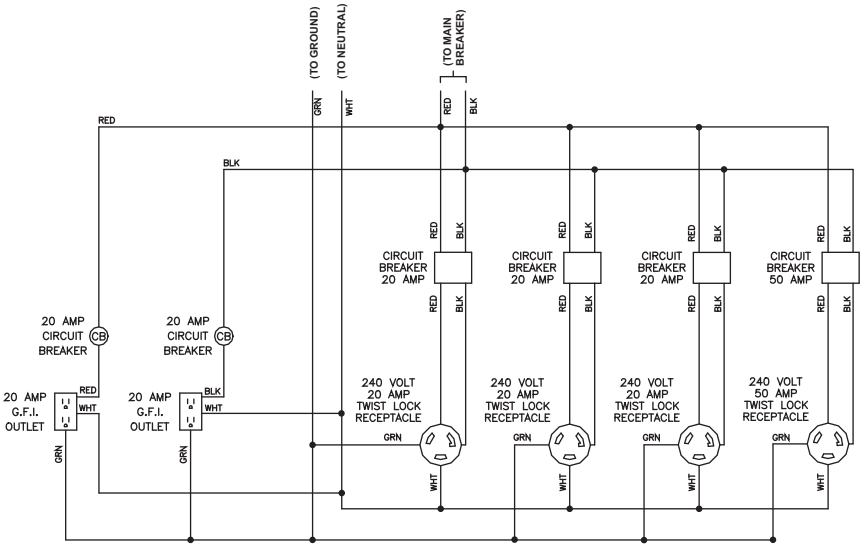
DC WIRING DIAGRAM



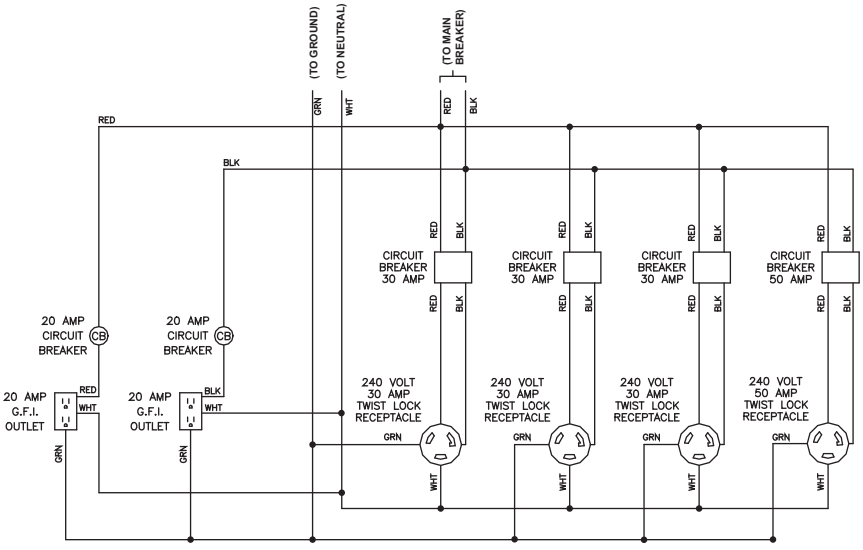
AC WIRING PANEL OPTIONS



PART NUMBER 12399; Receptacle Panel (2x5-20R, 3xL6-30R, 1x50A)

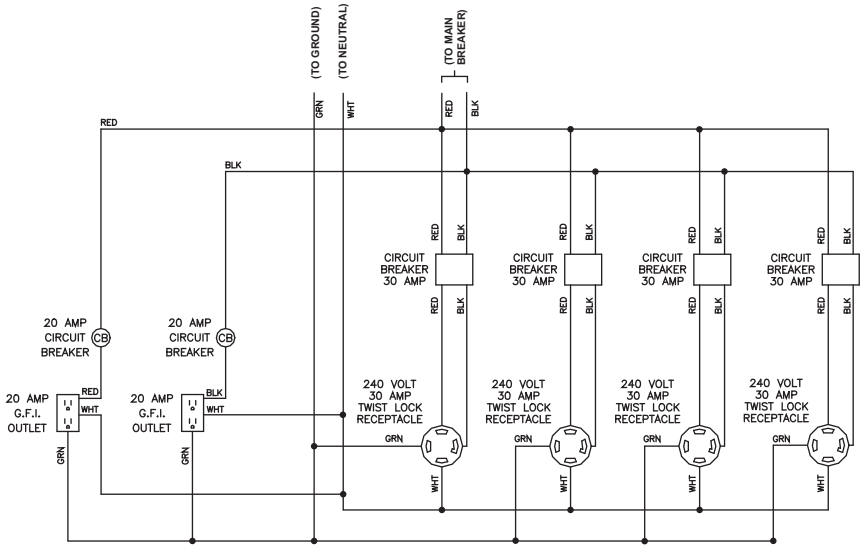


PART NUMBER 12402; Receptacle Panel (2x5-20R, 3xL6-20R, 1x50A)

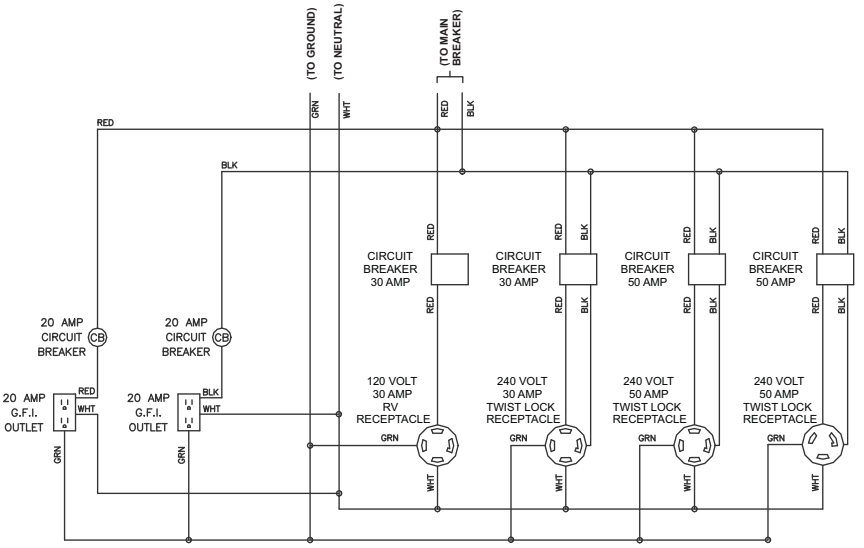


PART NUMBER 12400; Receptacle Panel (2x5-20R, 3xL14-30R, 1x50A)

AC WIRING PANEL OPTIONS

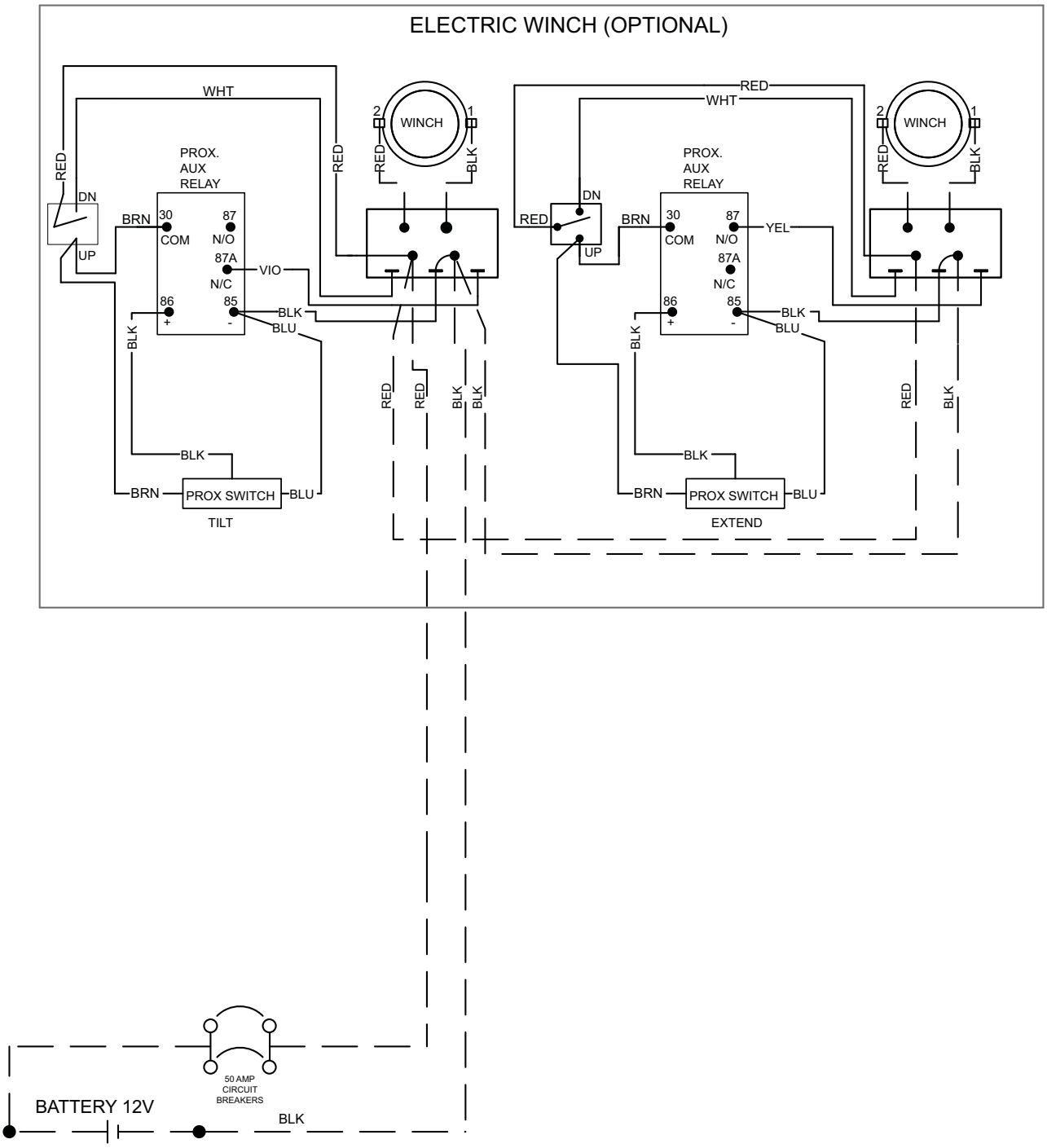


PART NUMBER 12401; Receptacle Panel (2x5-20R, 4xL14-30R)

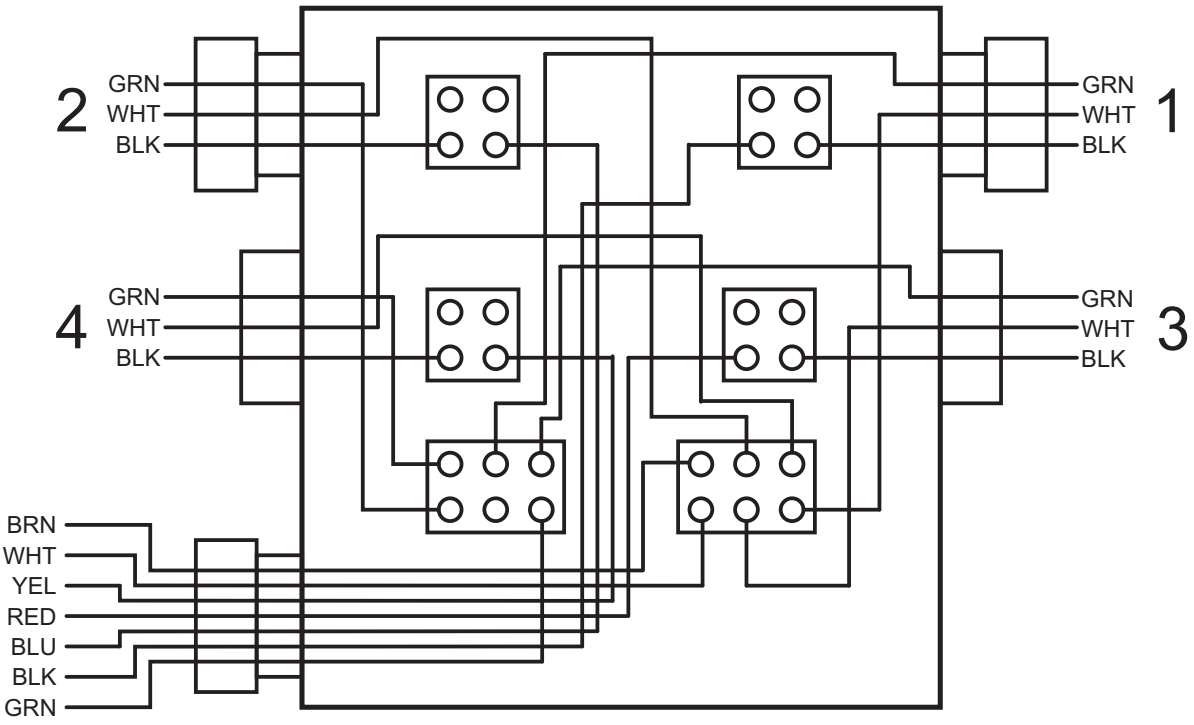


PART NUMBER 13540; Receptacle Panel (2x5-20R, 1xTT-30R, 1xL6-30R, 2x50A)

DC CIRCUIT WIRING DIAGRAM, DUAL ELECTRIC WINCH



MAST JUNCTION BOX WIRING DIAGRAM



REV: ORG
PART NO: 13875
4. 07.08