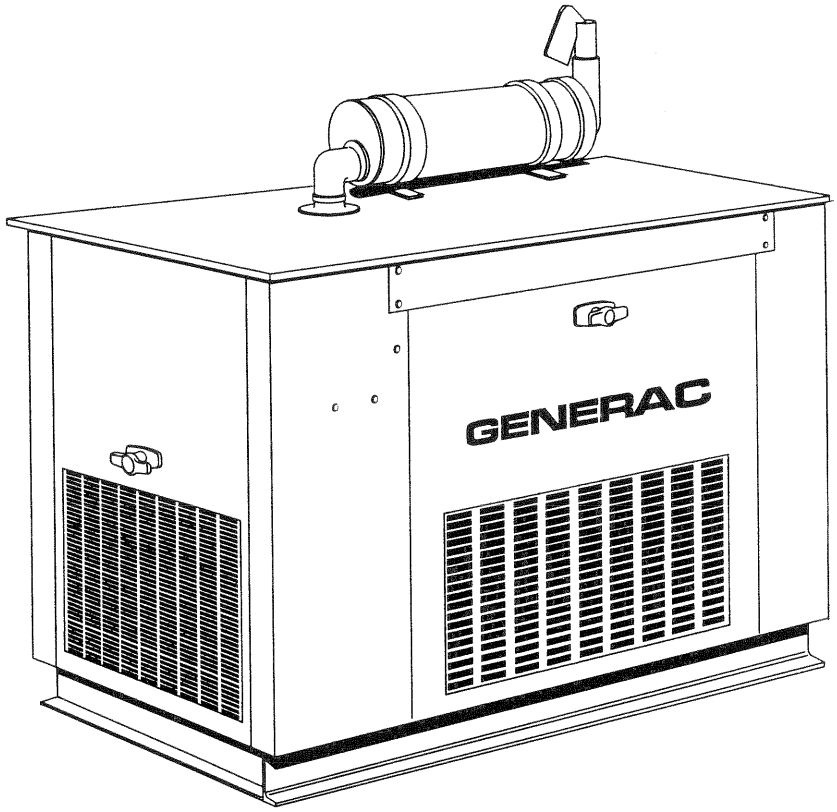
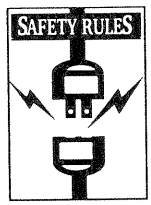
Manual No. A7849

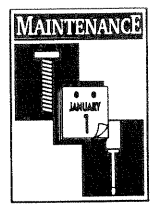
EPS-15 AND EPS-25 Emergency Power System

OWNER'S MANUAL





General Information



GENERAC®

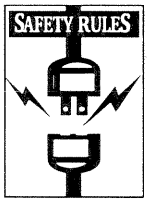
POWER SYSTEMS, INC.

Model No.'s. 00995-0, 00996-0, 00997-0, 00998-0, 04068-0, 04069-0

THIS SYMBOL POINTS OUT IMPORTANT SAFETY INSTRUCTIONS, WHICH, IF NOT FOLLOWED, COULD ENDANGER THE PERSONAL SAFETY AND/OR PROPERTY OF YOURSELF AND OTHERS. READ AND FOLLOW ALL INSTRUCTIONS IN THE MANUAL BEFORE ATTEMPTING TO OPERATE THIS UNIT.

Revision 0 (2/24/99)

Printed in U.S.A.



⚠ WARNING: ⚠

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

IMPORTANT SAFETY RULES

Study these SAFETY RULES carefully before installing, operating or servicing this equipment. Become familiar with the Owner's Manual and with the generator. The generator can operate safely, efficiently and reliably only if it is properly installed, operated and maintained. Many accidents are caused by failing to follow simple and fundamental rules.

Generac cannot possibly anticipate every possible circumstance that might involve a hazard. The warnings in this Manual and on tags and decals affixed to the equipment are, therefore, not all-inclusive. If you use a procedure, work method or operating technique that Generac did not specifically recommend, you must satisfy yourself it is safe for you and others as well as equipment.

Generac suggests these SAFETY RULES be copied and posted near the standby electric system installation. STRESS SAFETY TO ALL OPERATORS AND POTENTIAL OPERATORS OF THIS EQUIPMENT.

1. Due to safety concerns, Generac highly recommends an Authorized Generac Dealer be involved with installation.
2. For fire safety, install and maintain this equipment properly. Installation must always comply with applicable codes, standards, laws and regulations. Adhere strictly to local, state and national electrical and building codes. Comply with regulations the Occupational Safety and Health Administration (OSHA) have established. Also, the generator and related components must be installed completely in conformance with the manufacturer's instructions and recommendations. Following proper installation, do nothing that might alter a safe installation and render the unit in non-compliance with such codes, standards, laws and regulations.
3. Do not smoke around generator. Wipe up all fuel and oil spills immediately. Do not leave oily rags in generator compartment. Keep the area around the generator clean and free of debris.
4. Adequate unobstructed flow of cooling and ventilating air is required for cooling, expelling toxic and flammable fumes, and engine combustion. Do not alter the installation or permit cooling and ventilation openings in the generator compartment to become obstructed. The generator MUST be installed outdoors.
5. The engine exhaust system gives off DEADLY carbon monoxide gas. This dangerous gas, if breathed in sufficient concentrations, can cause unconsciousness or even death. Inspect exhaust system often. Make sure it is not possible for exhaust fumes to enter any building or room where people or animals are located.
6. Keep hands, feet, clothing, etc., away from drive belts, fans, and other moving parts.
7. The National Electric Code requires the frame and external electrically conductive parts of the generator be connected to an approved earth ground. Local electrical codes may also require proper grounding of the generator. Proper grounding helps prevent electrical shock in the case of a ground fault condition.
8. When working on this equipment, remain alert at all times. Never work on the equipment when you are physically or mentally fatigued.
9. After installing this home standby electrical system, the generator may crank and start at any time without warning. When this occurs, load circuits are transferred to the STANDBY (generator) power source. To prevent possible injury if such a start and transfer occur, always set the generator's Auto/Off/Manual switch to its OFF position before working on equipment.
10. UTILITY power delivers extremely high and dangerous voltages to transfer switch as does standby generator when it is running. Making contact with bare wires, terminals or connections can result in very hazardous and possibly FATAL, electrical shock.
11. Do not handle any kind of electrical device while standing in water, while barefoot, or while hands or feet are wet. DANGEROUS ELECTRICAL SHOCK WILL RESULT.
12. In case anyone receives a severe electrical shock, shut down the source of electrical power at once. If you cannot do this, free the victim from the live conductor, but AVOID DIRECT CONTACT WITH THE VICTIM. Use a dry board, dry rope or other non-conducting implement to free the victim. If the victim is unconscious, apply first aid and get medical help.
13. Gaseous fluids such as natural gas and LP (propane) gas are extremely EXPLOSIVE. Install fuel supply system according to applicable fuel-gas codes. Before placing home standby electric system into service, fuel system lines must be properly purged and leak tested according to applicable code. After installation, you must inspect fuel system periodically for leaks. No leakage is permitted.
14. Inspect home standby system periodically. Repair or replace all damaged or defective parts immediately.
15. Keep a fire extinguisher on hand near the generator set. Extinguishers rated "ABC" by the National Fire Protection Association are appropriate to use on the standby electric system. Keep the extinguisher properly charged and be familiar with its use. If you have any question pertaining to fire extinguishers, consult your local fire department.
16. Never wear jewelry while working on this equipment. Jewelry conducts electricity and can cause dangerous electrical shock.
17. Keep this manual for reference.

⚠ DANGER! Despite the safe design of the generator, operating this device imprudently, neglecting its maintenance, or being careless can cause possible injury or death. The generator is powerful enough to deliver fatal electrical shocks. Utility power source voltage delivered to a transfer switch can also cause fatal electrical shock. Permit only responsible and capable persons to operate or maintain this equipment.

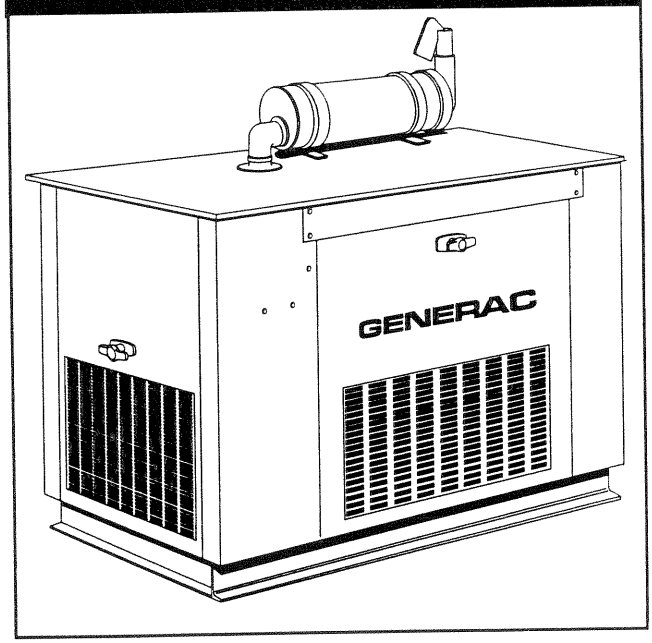
Table of Contents

DEALER LOCATOR PHONE NUMBER

To better assist our customers we have established a Dealer Locator phone number which allows the customer to call 24 hours a day to find the nearest Generac dealer. This is just a dealer locator number. No technical service can be provided on this line.

1-800-333-1322

Figure 1 — Water Cooled Emergency Power System



GENERATOR

This equipment is an water-cooled, engine-driven generator set. The generator is designed to supply electrical power that operates critical electrical loads during utility power failure. The unit has been factory-installed in a weather resistant, all metal enclosure and is intended for outdoor installation only and has been UL approved. Use this generator as a source of electrical power for the operation of 120 and/or 240 volts, single phase loads. The gen-set also includes a pre-wired, automatic transfer switch mounted integrally to the unit.

Six models are available. They are rated as follows:

Model 00995: Provides 15,000 watts (15 kW) of single phase power with a vapor withdrawal LPG fuel system.

Model 00996: Provides 25,000 watts (25 kW) of single phase power with a vapor withdrawal LPG fuel system.

Model 00997: Provides 15,000 watts (15 kW) of single phase power with a liquid withdrawal LPG fuel system.

Model 00998: Provides 25,000 watts (25 kW) of single phase power with a liquid withdrawal LPG fuel system.

Model 04068: Provides 15,000 watts (15 kW) of single phase power with a natural gas fuel system.

Model 04069: Provides 25,000 watts (25 kW) of single phase power with a natural gas fuel system.

WARNING: If this generator is used to power electrical load circuits normally powered by a utility power source, you are required by code to install a transfer switch. The transfer switch must effectively isolate the electric system from the utility distribution system when the generator is operating (NEC 701). Failure to isolate an electrical system by such means results in damage to the generator and may also result in injury or even death to utility power workers due to backfeed of electrical energy.

AUTOMATIC SYSTEM OPERATION

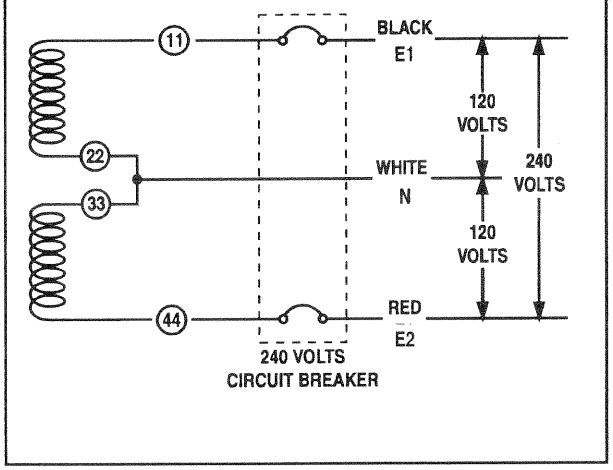
When this generator along with its transfer switch has been installed and interconnected, a circuit board in the generator panel constantly monitors utility power source voltage. Should that voltage drop below a preset value, and remain at such a low state for a preset amount of time, the generator cranks and starts. After the generator starts, the transfer switch transfers load circuits so the generator can power them.

When utility source voltage has been restored, the switch re-transfers back to the utility source voltage and the generator then shuts down.

GENERATOR AC CONNECTION SYSTEM

Figure 2 represents a single-phase, 3-wire generator AC connection system. The stator assembly in this system consists of a pair of stationary windings, with two leads brought out of each winding. Each single winding can supply 120 volts AC, 60 Hertz. When the two windings are connected in series, a 240 volts, 60 Hertz AC output results. Typically the two "hot" leads in the circuit are Wires No. 11 and 44. The "Neutral" leads are the junction of Wires 22 and 33.

Figure 2 — Generator AC Connection System



MAIN CIRCUIT BREAKER

The generator's main circuit breaker is included with the unit as shipped from the factory. The breaker for each unit is described as follows:

MODEL	MAIN CIRCUIT BREAKER RATING
00995	80 amp BQ2 breaker
00996	125 amp KAP 36125 breaker
00997	80 amp BQ2 breaker
00998	125 amp KAP 36125 breaker
04068	80 amp BQ2 breaker
04069	125 amp KAP 36125 breaker

GENERATOR FUEL SYSTEM

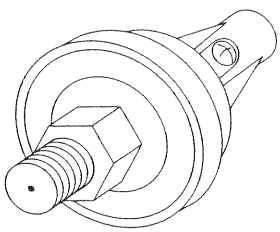
WARNING: Gaseous fuels such as natural and LP (propane) gas are highly explosive. Even the slightest spark can ignite such fuels and cause an explosion. No leakage of fuel is permitted. Natural gas, which is lighter than air, tends to collect in high areas. LP gas is heavier than air and tends to settle in low areas.

ENGINE PROTECTIVE DEVICES

The engine has several safety switches which cause the engine to shut down automatically under the following conditions: low oil pressure, high coolant temperature, engine overspeed, low coolant level or overcrank.

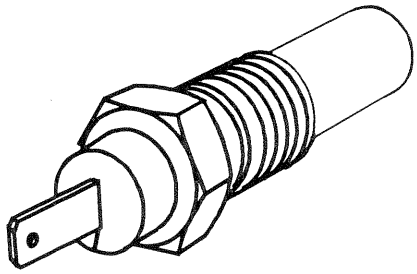
Low Oil Pressure Switch: This switch is normally-closed (N.C.) but is held open by engine oil pressure during engine running. Should operating oil pressure drop below about 8-10 psi (55-68 kPa), the switch contacts close and the engine shuts down automatically (Figure 3).

Figure 3 — Low Oil Pressure Switch



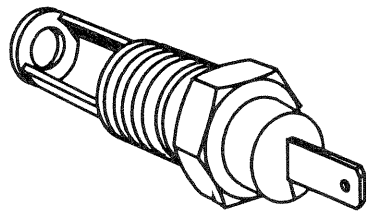
High Coolant Temperature Switch: Normally open (N.O.) thermostatic switch has sensing tip which is immersed in captive coolant. Should coolant temperature exceed about 230°F (110°C), the switch contacts close, which causes the engine to shut down automatically (Figure 4).

Figure 4 — High Coolant Temperature Switch



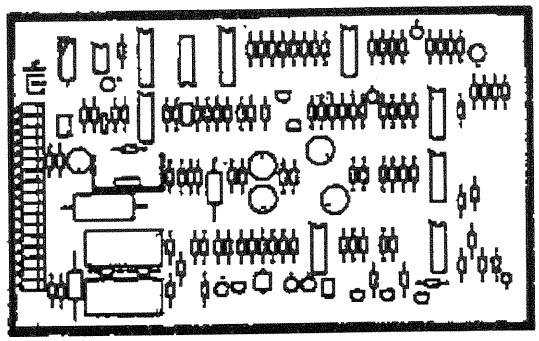
Low Coolant Level Switch: Should engine coolant level drop below the level of the high coolant temperature switch, it is possible for the engine to overheat without automatic shutdown. To prevent such overheating without automatic shut down, the engine has a low coolant level sensor. If the engine coolant drops too low, the engine automatically shuts down (Figure 5).

Figure 5 — Low Coolant Level Sensor



Overspeed Shutdown: The CMA circuit board on liquid cooled units receives AC frequency (rpm) signals directly from the stator AC power windings, via sensing leads S15 and S16. Should AC frequency exceed about 72 Hz, circuit board action will automatically shutdown the engine (Figure 6).

Figure 6 — Control Module Assembly Circuit Board



Overcrank Shutdown: After 90 seconds of crank-rest cycles, this function ends cranking if the engine fails to start in that 90-second span.

UNPACKING

Unpacking Precautions: Handle shipping cartons and crates with care. Use care to avoid damage from dropping, bumping, collision, etc. Store and unpack cartons with the proper side up, as noted on the shipping carton.

Inspection: After unpacking, carefully inspect the generator for any damage that may have occurred during shipment. If loss or damage is noted at the time of delivery, have the person(s) making delivery note all damage on the freight bill or affix his signature under the consignor's memo of loss or damage.

LIFTING THE GENERATOR

WARNING: When lifting or hoisting equipment is used, be careful not to touch overhead power lines. The generators weight of more than 900 pounds requires proper tools, equipment, and qualified personnel to be used in all phases of handling and unpacking.

ENGINE OIL RECOMMENDATIONS

Use a high quality detergent oil that meets or exceeds API Service SF requirements for gasoline engines. The PRIMARY recommended oil has a viscosity of 15W-40.

CAUTION: Any attempt to crank or start the engine before it has been properly serviced with the recommended oil may result in an engine failure.

BEFORE INSTALLATION

Before installing this equipment, check the ratings of both the generator and the transfer switch. Read "Emergency Isolation Method" and "Total Circuit Isolation Method" in the installation manual (Part No. 79699).

The generator's rated wattage/amperage capacity must be adequate to handle all electrical loads that the unit will power. You may have to group the critical (essential) loads together and wire them into a separate "emergency" distribution panel.

SPECIFICATIONS

■ ENGINE SPECIFICATIONS

Make	Mitsubishi
Displacement	1.5 liters (90 inches^3)
Cylinder Arrangement	4, in-line
Valve Arrangement	Overhead Cam
Firing Order	1-3-4-2
Number of Main Bearings	5
Compression Ratio	9.4 to 1
No. of Teeth on Flywheel	104
Ignition Timing	
at 1800 rpm	35 degrees BTDC
at 3600 rpm	43 degrees BTDC
Spark Plug Gap	0.020-0.025 inch
Recommended Spark Plugs	
Champion	RN11YC4
Oil Pressure	30-50 psi
Crankcase Oil Capacity	4.0 U.S. quarts
Recommended Engine Oil	SAE 15W-40
Type of Cooling System	Pressurized, closed recovery
Cooling Fan	Pusher Type
Cooling System Capacity	2 U.S. gallons (7.6 liters)
Recommended Coolant	Use a 50-50 mixture of ethylene glycol base.

Fuel Consumption

Models 00995, 00997 and 004068	
Using Natural Gas	265 cu. ft. per hour
Using LP Gas	110 cubic ft.(2.9 gal.) per hour
Models 00996, 00998 and 04069	
Using Natural Gas	442 cu. ft. per hour
Using LP Gas	183 cubic ft. (4.8 gal.) per hour

NOTE: Fuel consumption is given at rated maximum continuous power output when using natural gas rated at 1000 Btu per cubic foot; or LP gas rated 2520 Btu per cubic foot. Actual fuel consumption obtained may vary depending on such variables as applied load, ambient temperature, engine conditions and other environmental factors.

SPECIFICATIONS

■ GENERATOR SPECIFICATIONS

Model	00995	00996	00997	00998	04068	04069
Rated Maximum Continuous AC Power Output (kw)*	15	25	15	25	15	25
Rated Voltage (volts)	120/240					
Rated Max. Continuous Current At 240 volts, single phase (amps)	62.5	104	62.5	104	62.5	104
No. of Rotor Poles	4	2	4	2	4	2
Driven Speed of Rotor (RPM)	1800	3600	1800	3600	1800	3600
Rotor Excitation System	Direct excited brush type system					
Type of Stator	4-wire					
Rotor and Stator Insulation	Class "F"					
Fuel System	LP Gas, Vapor	LP Gas, Vapor	LP Gas, Liquid	LP Gas, Liquid	Natural Gas	Natural Gas

* Rated power of generator is subject to and limited by such factors as ambient temperature, altitude, engine condition, and other factors. Engine power will decrease about 3.5% for each 1000 feet above sea level and will decrease an additional 1% for each 10°F above 60°F. Maximum output power of the generator is limited by maximum engine power.

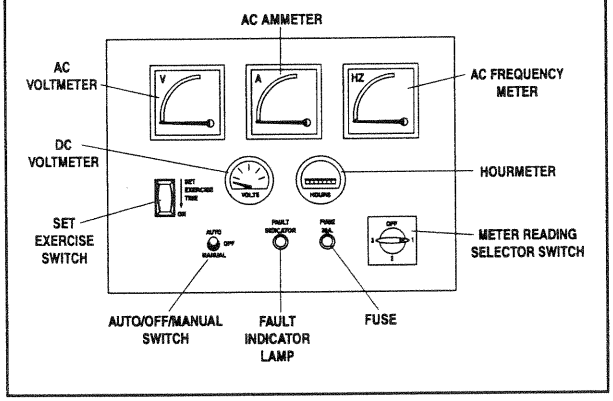
OPERATION

The standard transfer switch has no sensing or controlling circuit boards. Instead, the generator control console houses a "Control Module Assembly", which controls all phases of operation, including engine start up and load transfer.

CONTROL CONSOLE COMPONENTS

The components of a water-cooled generator control console (Figure 7) are as follows:

Figure 7 — Water-Cooled Generator Panel



AC Voltmeter: The voltmeter displays generator AC output voltage during operation. Voltage is regulated by a solid state voltage regulator and is proportional to AC frequency. Refer to your unit's DATA PLATE for rated AC voltage.

AC Ammeter: Indicated current draw of connected electrical loads during operation. DO NOT EXCEED YOUR UNIT'S RATED MAXIMUM CONTINUOUS CURRENT. Refer to the unit DATA PLATE.

AC Frequency Meter: Indicates generator AC output frequency in "Hertz" (cycles per second). Frequency is proportional to engine speed. Units with a 4-pole rotor supplies 60 Hertz at 1800 rpm. Units with a 2-pole rotor supplies 60 Hz at 3600 rpm. Frequency reading with no electrical loads connected (no-load condition) should be between 59-61 Hertz.

DC Voltmeter: The generator is equipped with a belt-driven DC alternator, which maintains battery state of charge when the engine operates. The Control Module Assembly also incorporates a trickle charge circuit which maintains battery state of charge during non-operating periods. Battery voltage should read about 12.5 to 14.5 volts DC. A low battery voltage indicates the battery is discharging.

Hourmeter: Indicates time the engine-generator has oper-

ated, in hours and tenths of hours. Use the hourmeter along with the periodic maintenance schedule for your generator set.

Auto/Off/Manual Switch: Use this 3-position switch as follows:

- Set the switch to "Auto" for fully automatic operation. See "Sequence of Automatic Operation".
- Set switch to "Manual" position to crank and start the generator engine.
- Set switch to "Off" position to shut down an operating engine. With "Off" selected, operation will not be possible.

DANGER! With switch set to "auto", engine can crank and start suddenly without warning. Such automatic start up normally occurs when utility source voltage drops below a pre-set level. To prevent possible injury that might be caused by such sudden starts, set AUTO/OFF/MANUAL switch to "off" before working on or around the unit. Then, place a "do not operate" tag on control console.

Fault Indicator Lamp: Lamp goes ON when one or more of the following engine faults occurs and when engine shuts down.

- Low oil pressure
- High coolant temperature
- Low coolant level
- Overcrank
- Overspeed

30 Amp Fuse: Fuse protects the control console's DC control circuit against electrical overload. If the fuse has melted open because of an overload, engine cranking and startup cannot occur. Should you need to replace the fuse, use only an identical 30-amp replacement fuse.

Meter Reading Selector Switch: Switch permits you to select either line-to-line or line-to-neutral voltage and amperage readings on the console AC voltmeter and ammeter.

Set Exercise Time Switch: Switch allows you to program the generator to start and exercise automatically.

MANUAL TRANSFER AND START UP

To transfer electrical loads to the "Standby" (generator) power source side and start the engine manually, refer to the Owner's Manual of your particular transfer switch.

RETRANSFER AND SHUTDOWN

When utility power source voltage has been restored, electrical loads may be transferred back to that source and the generator can be shut down as follows:

- Verify that utility power supply voltage to the transfer switch has been positively turned "Off," using whatever means provided (such as utility main line circuit breaker).
- Set the generator's main circuit breaker to its "Off" or "Open" position.
- Let the generator engine run at no-load for a few minutes, to stabilize internal unit temperatures.
- On the generator console, set the Auto/Off/Manual switch to "Off". Wait for engine to come to a complete stop.
- For transfer to utility position, refer to the Owner's Manual of your particular transfer switch.
- Turn on the utility power supply to the transfer switch, using whatever means provided (such as a utility main line circuit breaker). The utility power source now powers the loads.

AUTOMATIC OPERATION

To set the system for fully automatic operation, proceed as follows:

- Check that load circuits are connected to the utility power supply.
- Set the Auto/Off/Manual switch to its "Auto" position.
- Set the generator main circuit breaker to its "On" or "Closed" position.

WEEKLY EXERCISE CYCLE

The generator will start and exercise once every 7 days. During this weekly exercise, the unit runs for about 20 minutes and shuts down. Transfer of loads to generator output does not occur during the exercise.

To select day and time for exercising, proceed as follows:

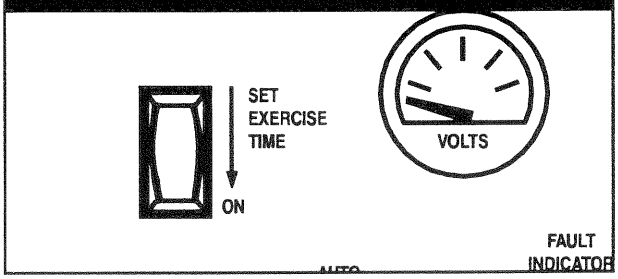
- Set the Auto/Off/Manual switch to OFF.
- Set generator main circuit breaker to OFF or OPEN.
- Locate the rocker switch on the control panel identified with the words "Set Exercise Time" (Figure 8 on page 9).
- Push "Set Exercise Time" switch to ON position for 20 to 30 seconds and then release. Switch will spring back into its original position when released.
- Wait 30 seconds before setting the Auto/Off/Manual switch to "AUTO" position.

CAUTION: If you switch the Auto/Off/Manual switch too soon, the engine may start. If engine does start, it will shut down automatically in about two (2) minutes.

- Set the generator main circuit breaker to its ON or CLOSED position.
- Generator is now programmed to start and exercise every 7 days thereafter, on day and time of day the switch was actuated.
- Place a sign on the generator control panel and the transfer switch, indicating the day and time the generator will be exercising.

NOTE: If battery terminals are disconnected or control panel fuse is removed, the exercise timer needs to be reset for correct automatic exercise operation.

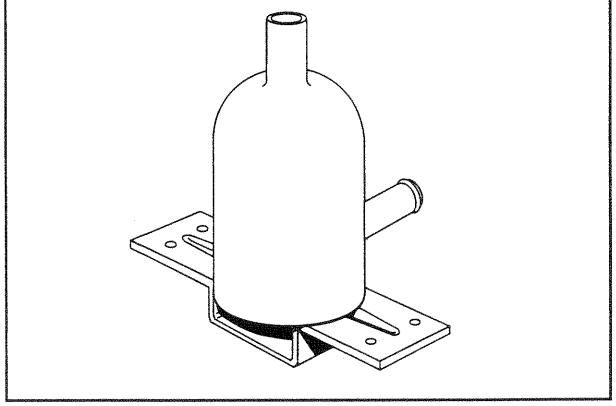
Figure 8 — "Set Exercise" Switch on Control Panel



ENGINE HEATER

Your Generac standby generator comes equipped with a block heater (Figure 9), similar to the block heaters used in automotive applications.

Figure 9 — Engine Block Heater



Refer to applicable wiring diagram(s) and electrical schematic(s) at back of manual for wiring connections.

PERIODIC MAINTENANCE SCHEDULE

A. EVERY THREE MONTHS

1. Check battery state of charge and condition.
2. Inspect and test fuel system.
3. Check transfer switch.
4. Inspect exhaust system.
5. Check engine ignition system.
6. Check fan belts.

B. ONCE EVERY SIX MONTHS

1. Test Engine Safety Devices (low oil pressure, low coolant level, high coolant temperature).

C. ONCE ANNUALLY

1. Test engine governor; adjust or repair, if needed.
2. Clean, inspect generator.
3. Flush cooling system.

D. FIRST 100 OPERATING HOURS

1. Change engine oil and oil filter. (After initial change, service engine oil and filter at 150 operating hours or 6 months, whichever comes first.)
2. Retorque cylinder head.*
3. Retorque intake and exhaust manifold.*

E. EVERY 500 OPERATING HOURS

1. Service air cleaner.
2. Check starter.
3. Check engine DC alternator.

F. EVERY 800 OPERATING HOURS

1. Retorque cylinder head.*
2. Retorque intake and exhaust manifold.*
3. Check engine compression.
4. Check valve clearance.

* Must have Service Dealer/Specifications Book to perform.

OVERLOAD PROTECTION FOR ENGINE DC ELECTRICAL SYSTEM

Engine cranking, start up and running are controlled by a solid state Engine Controller circuit board. Battery voltage is delivered to that circuit board via a 30 amp fuse. These over-current protection devices will open if the circuit is overloaded.

CAUTION! If a circuit breaker opens or a fuse element melts, you should find the cause of the overload before resetting the circuit breaker or replacing the fuse.

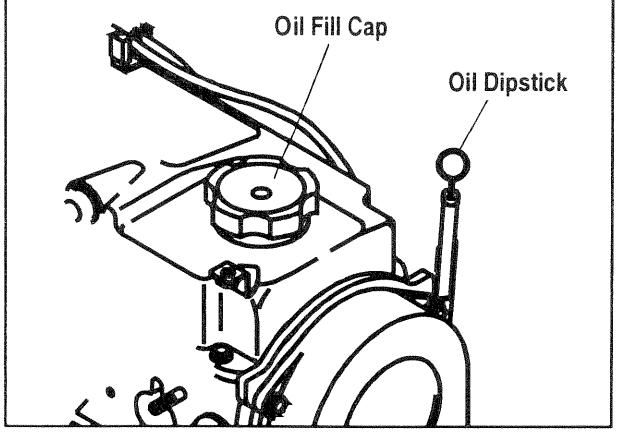
CHECKING FLUID LEVELS

■ CHECK ENGINE OIL

Check engine crankcase oil level (Figure 10) at least every 20 hours of operation, or prior to use.

- Remove oil dipstick and wipe dry with a clean, lint-free cloth.
- Install oil dipstick, then remove again.
- Oil should be between FULL and ADD marks.
- If oil level is below the dipstick ADD mark, remove oil fill cap. Add the recommended oil to bring oil level up to the FULL mark. DO NOT FILL ABOVE THE "FULL" MARK. See page 6 for recommended oils.

Figure 10 — Oil Dipstick and Oil Fill Cap



■ BATTERY FLUID

Check battery electrolyte fluid at least once weekly. Fluid should cover separators in all battery cells. If fluid level is low, add distilled water to cover tops of separators. DO NOT USE TAP WATER IN BATTERY.

■ ENGINE COOLANT

Check coolant level in coolant recovery bottle.

- Add recommended coolant mixture as necessary.
- Periodically remove radiator pressure cap to make sure the coolant recovery system is functioning properly. Coolant should be at bottom of radiator filler neck. If coolant level is low, inspect gasket in radiator pressure cap. Replace cap, if necessary. To have pressure cap tested, contact an authorized Generac Service Facility. Inspect cooling system and coolant recovery system for leaks.

MAINTENANCE OWNER/OPERATOR CAN PERFORM

■ CHECK ENGINE COOLANT LEVEL

See "Checking Fluid Levels" on page 10.

■ INSPECT COOLING SYSTEM

- Inspect engine cooling system at least once each month.
- Check hoses for damage, deterioration, leaks, etc. Correct any discrepancies found.
- Check hose clamps for tightness.

■ INSPECT EXHAUST SYSTEM

Inspect the exhaust system at least once every three months. Check all exhaust system pipes, mufflers, clamps, etc. for condition, tightness, leaks, security, damage.

■ PERFORM VISUAL INSPECTION

Complete a thorough visual inspection of the entire engine-generator monthly. Look for obvious damage, loose, missing or corroded nuts, bolts and other fasteners. Look for fuel, oil or coolant leaks.

■ CHECK BATTERY

- Check battery fluid level each week as outlined under "Check Fluid Levels".
- Check battery cables for condition, tightness, corrosion or damage. Clean, tighten or replace as necessary.

■ EXERCISE SYSTEM

Start the generator engine at least once every seven days and let it run at least 20 minutes. See page 8, "Weekly Exercise Cycle".

■ CHECK ENGINE OIL LEVEL

Refer to "Checking Fluid Levels on page 10.

■ CHECK FAN BELT

- Inspect fan belts every three months. Replace any damaged, deteriorated, worn or otherwise defective belt.
- Check fan belt tension. Thumb pressure, exerted midway between pulleys, should deflect about 3/8 to 3/4 inch. Adjust belt tension as required.

■ INSPECT ENGINE GOVERNOR

Visually inspect electronic governor.

DANGER: Do not attempt to adjust the governor. Only qualified service facilities should adjust the governor. Excessively high operating speeds are dangerous and increase the risk of personal injury. Low speeds impose a heavy load on the engine when adequate engine power is not available and may shorten engine life. Correct rated frequency and voltage are supplied only at the proper governed speed. Some connected electrical load devices may be damaged by incorrect frequency and/or voltage. Only qualified service technicians should adjust the governed speed.

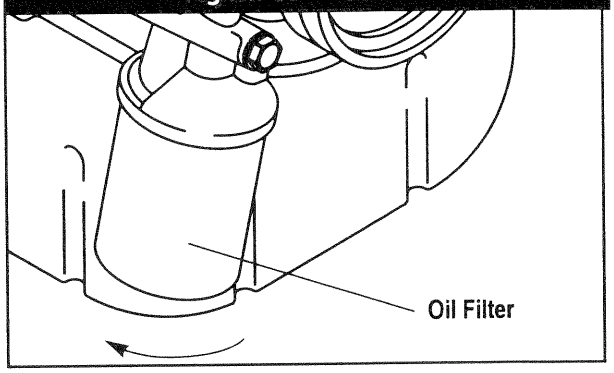
■ CHANGING ENGINE OIL

Refer to PERIODIC MAINTENANCE SCHEDULE for engine oil and filter change frequencies.

Drain the oil while the engine is still warm from running. This means warm up the engine, shut it down and drain immediately as follows:

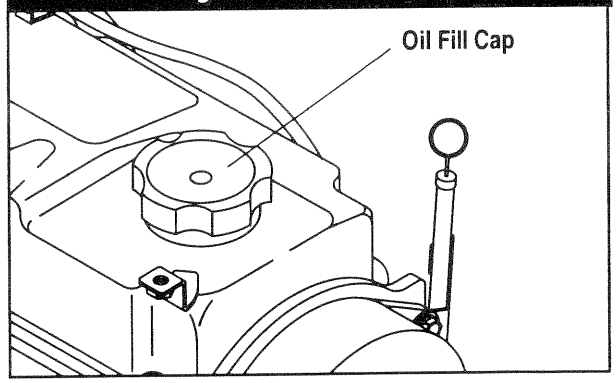
1. Remove OIL DRAIN HOSE from its retaining clip.
2. Loosen and remove OIL DRAIN HOSE CAP. Drain oil completely into suitable container.
3. When all oil has drained, install and tighten OIL DRAIN HOSE CAP.
4. Turn OIL FILTER (Figure 11) counterclockwise and remove. Dispose of old filter.

Figure 11 — Oil Filter



5. Apply light coating of engine oil to seal of new oil filter. Install FILTER and tighten by hand only. DO NOT OVERTIGHTEN.
6. Remove OIL FILL CAP (Figure 12). Add recommended oil (see SPECIFICATIONS). DO NOT FILL ABOVE THE DIPSTICK "FULL" MARK. Crankcase oil capacity is 4.0 U.S. quarts (3.8 liters).

Figure 12 — Oil Fill Cap



CAUTION: After refilling the crankcase with oil, always check oil level on dipstick. NEVER OPERATE ENGINE WITH OIL BELOW THE DIPSTICK "ADD" MARK.

7. Start engine and check for oil leaks.

■ COOLANT CHANGE

Every year, have Authorized Service Facility drain, flush and refill the cooling system. See SPECIFICATIONS for cooling system recommendations.

MISCELLANEOUS MAINTENANCE

■ CLEANING THE GENERATOR

Keep your generator as clean and as dry as possible. Dirt and moisture that accumulates on internal generator windings has an adverse effect on insulation resistance.

Periodically clean generator exterior surfaces. A soft brush may be used to loosen caked on dirt. You can use a vacuum system or dry, low pressure air to remove any accumulations of dirt. The generator is housed inside an all-weather enclosure, clean the enclosure with a soft, damp cloth or sponge and water.

Once each year have the generator cleaned and inspected by an Authorized Service Facility. That facility will use dry, low pressure air to clean internal windings. Parts inside the control console should be cleaned and inspected at this time as well.

Finally, have the insulation resistance of stator and rotor windings checked. If insulation resistances are excessively low, the generator may require drying.

■ BATTERY

All lead-acid storage batteries discharge when not in use. Refer to specific instructions and warnings that accompany your battery. If such information is not available, observe the following precautions when handling a battery:

- DO NOT use jumper cables and a booster battery to crank or start the generator engine.
- DO NOT recharge a weak battery while it is installed in the generator. Remove battery from generator and recharge in a well-ventilated area, away from fuel vapors, sparks, heat or flames.
- Battery electrolyte fluid is an extremely caustic sulfuric solution that can cause severe burns. DO NOT permit fluid to contact eyes, skin, clothing, painted surfaces, wiring insulation, etc. If you spill any battery fluid, flush the affected area with clear water immediately.
- Always wear safety glasses, rubber apron and gloves when handling a battery.
- Batteries give off explosive hydrogen gas while charging. The gas can form an explosive mixture around the battery for several hours after charging. Any spark, heat or flames can ignite the gas and cause an explosion which can shatter the battery, causing blindness or other serious injury.

PERIODIC REPLACEMENT PARTS	
Part Name	**Generac's Part Number**
Oil Filter	# 244-A4531
Radiator Cap	# 46627
Air Cleaner	# 59402
Spark Plug	Champion RN11YC4

TROUBLESHOOTING POINTS

PROBLEM	CAUSE	CORRECTION
Engine won't crank.	1. 30 amp fuse blown. 2. Loose or corroded or defective battery cables 3. Defective starter contactor. 4. Defective starter motor. 5. Dead or Defective Battery.	1. Replace fuse. 2. Tighten, clean or replace as necessary. 3. Replace contactor. 4 Replace starter motor. 5. Remove, change or replace battery.
Engine cranks but won't start	1. Out of fuel. 2. Fuel solenoid (FS) is defective 3. Open Wire #14 from Engine Control. circuit board 4. Spark plugs defective.	1. Replenish fuel. 2. Replace solenoid. 3. Reconnect wire. 4. Clean, regap or replace plugs.
Engine starts hard, runs rough.	1. Flame arrestor (air cleaner) plugged or damaged. 2. Plugged fuel line. 3. Defective spark plugs.	1. Clean or replace as needed. 2. Unclog fuel line. 3. Clean, regap or replace plugs.
Engine starts then shuts down.	1. Engine oil level is low. 2. Engine is overheated. 3. Defective Low Oil Pressure Switch 4. Defective Coolant Temperature Switch 5. Defective Control Module circuit board. 6. Coolant Level is Low.	1. Check oil and add oil as needed. 2. Check cooling system for leaks. 3. Replace switch. 4. Replace switch. 5. Replace board. 6. Repair leak - Add coolant.
Auto/Off/Manual Switch at OFF, engine continues to run	1. Defective Auto/Off/Manual switch 2. Defective Control Module circuit board	1. Replace switch. 2. Replace board.
No AC output from generator.	1. Check main line circuit breaker. 2. Check circuit breaker & fuses. 3. Transfer switch set to NORMAL position 4. Generator internal failure. 5. Thermal circuit breaker open.	1. Reset to ON or CLOSED. 2. Reset and replace, if necessary. 3. Set to GENERATOR position. 4. Take generator to an Authorized Generac facility. 5. Auto-reset - Wait 5 min. and attempt restart.

TRANSFER SWITCH GENERAL INFORMATION

This section has been prepared especially for the purpose of familiarizing personnel with the design, application, installation, operating and servicing of the applicable equipment. Read the manual carefully and comply with all instructions. This will help prevent accidents or damage to equipment that might otherwise be caused by carelessness, incorrect application, or improper procedures.

Every effort has been expended to make sure that the contents of this manual are both accurate and current. Generac, however, reserves the right to change, alter or otherwise improve the product at any time without prior notice.

TRANSFER SWITCH EQUIPMENT DESCRIPTION

The pre-packaged transfer switch is designed to use with pre-packaged standby generator control panels. It is is used for transferring critical electrical loads from a NORMAL (utility) power source to STANDBY (emergency generator) power source. Such a transfer of loads occurs automatically when the NORMAL power source fails or is subsequently reduced and the STANDBY source voltage and frequency have reached an acceptable level. The transfer switch prevents electrical feedback between two different power sources (such as the NORMAL and STANDBY sources) and, for that reason, codes require it in all standby system installations.

Once the transfer is completed, the STANDBY power source then powers electrical loads connected to the transfer switch. When NORMAL source voltage above an acceptable (preset) level has been restored, circuit board action in the pre-packaged control panel, initiates retransfer back to the NORMAL power source. After this retransfer, the circuit board signals to open the start circuit to the generator, which shuts down the engine. The circuit board is then "armed" and ready for the next drop in NORMAL source voltage.

NOTE: Keep in mind the pre-packaged transfer switch is without any kind of electronic controls. It receives signals solely from circuit boards contained in the pre-packaged control panel.

TRANSFER SWITCH DATA PLATE

Affixed permanently to the transfer switch door is a DATA PLATE. Use the transfer switch only within the specific limits shown on the DATA PLATE and on other decals and labels that may be affixed to the switch. This prevents damage to equipment, possible injury to personnel, and provides long and trouble-free life for the equipment.

When requesting information or ordering parts for this equipment, make sure to include all information from the DATA PLATE.

TRANSFER SWITCH ENCLOSURE

The standard switch enclosure is a National Electrical Manufacturer's Association (NEMA) 1 type. NEMA 1 type enclosures primarily provide protection against contact with the enclosed equipment and against a limited amount of falling dirt. Other enclosures are available.

SAFE USE OF TRANSFER SWITCH

Before installing, operating or servicing this equipment, read the SAFETY RULES (inside front cover). Comply with all SAFETY RULES to prevent accidents and/or damage to the equipment. Generac recommends you make a copy of SAFETY RULES and post them near the transfer switch. Also, be sure to real all instructions and information you may find tags, labels and decals affixed to the equipment.

Two publications that outline the safe use of transfer switches are the following:

- National Electrical Code
- UL 1008, STANDARD FOR SAFETY – AUTOMATIC TRANSFER SWITCHES.

This equipment has been wired and tested at the factory. Installing the switch includes these procedures:

- Connecting generator leads.
- Connecting control wiring.
- Connecting any auxiliary contacts (if required).
- Testing functions.

CONNECTING GENERATOR LINES

DANGER! BE SURE TO TURN OFF BOTH THE NORMAL (utility) AND STANDBY (generator) POWER SUPPLIES BEFORE TRYING TO CONNECT POWER SOURCE AND LOAD LINES TO THE TRANSFER SWITCH. SUPPLY VOLTAGES ARE EXTREMELY HIGH AND DANGEROUS. CONTACT WITH SUCH HIGH VOLTAGE POWER SUPPLY LINES CAUSES EXTREMELY HAZARDOUS, POSSIBLY LETHAL, ELECTRICAL SHOCK.

Wiring diagrams and electrical schematics are provided in this manual. Power source load connections are made at a transfer mechanism, inside the switch enclosure.

■ 2-POLE MECHANISMS

These switches (Figures 13 and 14) are used with a single phase electrical system, when the single phase NEUTRAL line is to be connected to Neutral Lug and is not to be switched.

Solderless, screw-type terminals lugs are standard. Conductor sizes must be adequate to handle the maximum current to which they will be subjected. The installation must comply fully with all applicable codes, standards and regulations.

Before connecting wiring cables to terminals, remove any surface oxides from the cable ends with a wire brush. If ALUMINUM conductors are used, apply joint compound to conductors. After tightening the terminal lugs, carefully wipe away any excess joint compound.

All power cables should enter the switch next to transfer mechanism terminals. Standard terminal lugs on the transfer mechanism are solderless, screw-type.

Figure 13 — 100 Amp, 2-pole Transfer Mechanism

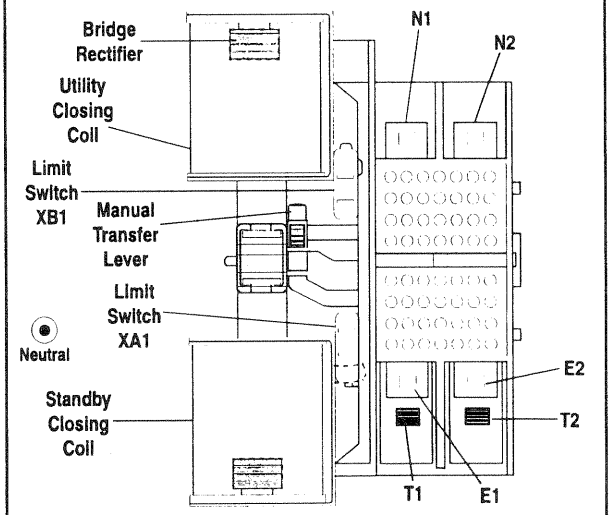


Figure 14 — 200 Amp, 2-pole Transfer Mechanism

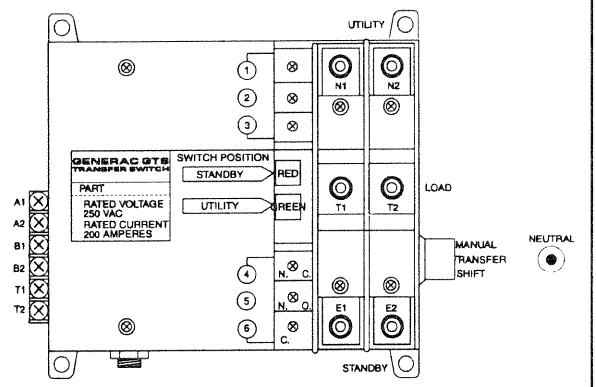
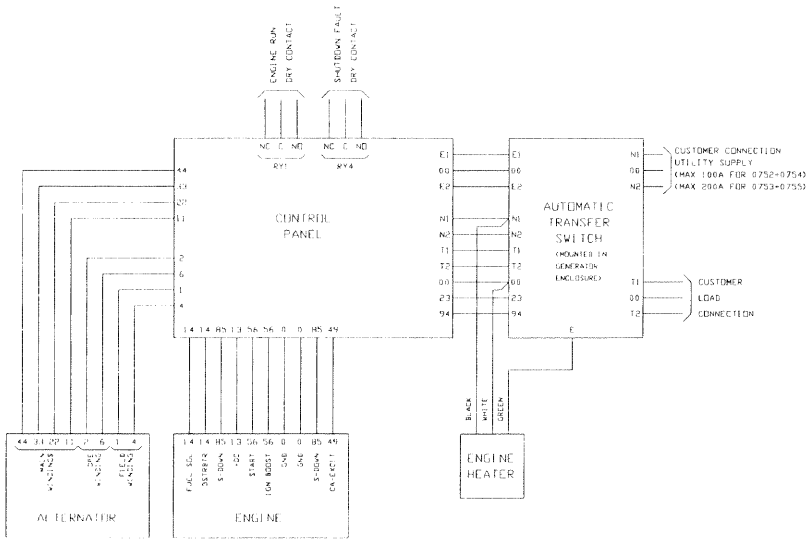


Figure 15 — Transfer Switch Interconnections (20818)



Connect power source load conductors to clearly marked transfer mechanism terminal lugs as follows (Figure 15):

1. Connect NORMAL (utility) power source cables to switch terminals N1, N2, etc.
2. Connect customer LOAD leads to switch terminals T1, T2, etc.

Conductors must be properly supported, of approved insulative qualities, protected by approved conduit, and of the correct wire gauge size in accordance with applicable codes.

Tighten terminals lugs to the following torques:

OUTSIDE LUGS: 110-115 INCH-POUNDS

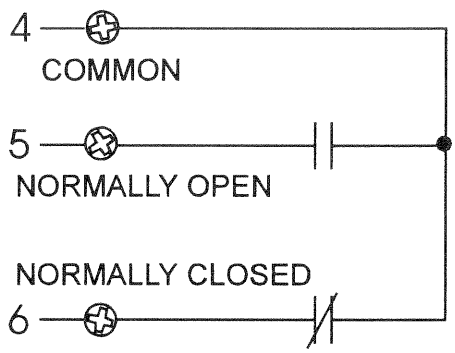
INSIDE LUGS: 80-85 INCH-POUNDS

Be sure to maintain proper electrical 1/2-inch clearance between live metal parts and grounded metal.

■ AUXILIARY CONTACTS (0996 and 0998)

If desired, you can access a set of Auxiliary Contacts on the Transfer Switch to operate customer accessories, remote advisory lights, or remote annunciator devices. A suitable power source must be connected to the COMMON (C) terminal. The contacts labeled 1, 2 and 3 are connected at the factory for operation of transfer switch advisory lights. Contacts 4, 5 and 6 (Figure 16) are available for customer use.

Figure 16 — Schematic for Auxiliary Contacts



Auxiliary contacts are rated 15 amperes at 125, 250 or 480 volts AC; 0.5 ampere at 125 volts DC; 0.25 ampere at 250 volts DC. DO NOT EXCEED THE RATED VOLTAGE AND CURRENT OF THE CONTACTS. Contact operation is shown in the following chart:

	Switch Position	
	Utility	Standby
Common (4) to Normally Closed (6)	Closed	Open
Common (4) to Normally Closed (5)	Open	Closed

■ FUNCTIONAL TESTS AND ADJUSTMENTS

Following transfer switch installation and interconnection, inspect the entire installation carefully. A competent, qualified electrician should make the inspection.

The installation should comply strictly with all applicable codes, standards, laws and regulations. All electrical connections must be correct and in compliance with applicable codes and standards.

Be sure the generator is ready. This includes checking engine oil level, coolant level, fuel supply, batteries and other items specified in the MAINTENANCE section for the engine.

Complete all functional tests as outlined in the FUNCTIONAL TESTS section. Do this before placing the transfer switch into service.

FUNCTIONAL TESTS

Following transfer switch installation, the entire standby electrical system should be inspected and tested. Have all necessary adjustments completed at this time. Functional tests of the transfer switch include these tests: (a) Manual Operation, (b) Voltage Checks and (c) Electric Operation.

CAUTION! To avoid damaging the transfer switch, perform functional tests in the exact order given.

Before proceeding with functional tests, read and be sure you understand all instructions in this section. Also, read the instructions and information on tags and decals affixed to the transfer switch. Note any options and accessories that might be installed or provided with the switch and review their operation.

DANGER! DO NOT ATTEMPT MANUAL OPERATION OF THE TRANSFER SWITCH UNTIL AFTER ALL POWER VOLTAGE SUPPLIES TO THE SWITCH HAVE BEEN TURNED OFF. FAILURE TO TURN OFF POWER VOLTAGE SUPPLIES MAY RESULT IN DANGEROUS AND POSSIBLE FATAL ELECTRICAL SHOCK.

■ MANUAL OPERATION

The pre-packaged transfer switch has a choice two transfer mechanisms — the "V" type (Models 0995 and 0997) and the "Y" type (Models 0996 and 0998).

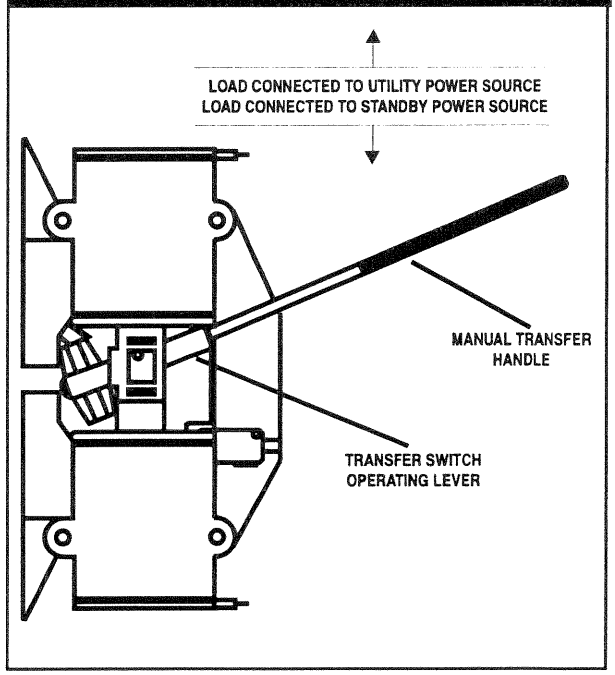
Instructions for "V" type Transfer Switches: Test manual operation as follows:

1. Check that the generator's Auto/Off/Manual switch has been set to OFF position.
2. Turn OFF the UTILITY power supply to the transfer switch, using whatever means provided (such as the UTILITY source main line circuit breaker).
3. Set the generator's main circuit breaker to its OFF or OPEN position.

DANGER! FAILURE TO TURN OFF ALL POWER VOLTAGE SUPPLIES TO THE TRANSFER SWITCH BEFORE ATTEMPTING MANUAL OPERATION RESULTS IN EXTREMELY HAZARDOUS AND POSSIBLY FATAL ELECTRICAL SHOCK.

4. Remove the manual transfer handle from the enclosure.
5. Place open slot of the manual transfer handle on the small tab of the transfer switch operating lever (Figure 17).

Figure 17 — Transfer Switch Operation ("V" type)

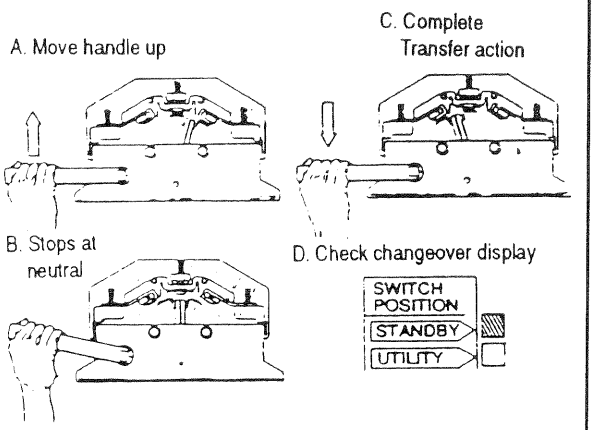


6. Pull manual transfer handle downward, then move it back to original position. If handle is down, LOAD is connected to STANDBY power source. If handle is up, LOAD is connected to UTILITY power source.
7. Move transfer switch main contacts to both positions several times. Leave the transfer switch in UTILITY position and connect LOAD to UTILITY power source (manual operation lever is up).

Instructions for "Y" type Transfer Switches: A manual handle was shipped with the transfer switch. Test manual operation as follows:

1. Check that the generator's Auto/Off/Manual switch has been set to OFF position.
2. Attach the square opening of the manual handle over the square shaft at lower right corner of transfer mechanism.
3. Move the manual handle UP. When movement stops at NEUTRAL, return handle to its orginal position and actuate again (Figure 18).

Figure 18 — Transfer Switch Operation ("Y" type)



4. Observe the changeover display on transfer mechanism as follows:
   - If utilty arrow is aligned with GREEN band, load is connected to UTILITY (normal) power source.
   - If STANDBY arrow is aligned with GREEN band, LOAD is connected to STANDBY (emergency) source.
5. Repeat Steps 3 and 4 several times, being sure the switch main contacts actuate normally to all positions:
6. When certain that switch operates normally, actuate the main contacts to their UTILITY (normal) source.

NOTE: LOAD must be connected to UTILITY source before proceeding. That is, the GREEN BAND must be next to the UTILITY arrow and the RED band must be next to the STANDBY arrow.

TRANSFER SWITCH VOLTAGE CHECKS

1. Turn ON the UTILITY power supply to the transfer switch with whatever means provided (such as the UTILITY main line circuit breaker).

DANGER! PROCEED WITH CAUTION. THE TRANSFER SWITCH IS NOW ELECTRICALLY HOT. CONTACT WITH LIVE TERMINALS RESULTS IN EXTREMELY HAZARDOUS AND POSSIBLY FATAL ELECTRICAL SHOCK.

2. With an accurate AC voltmeter, check for correct voltage across terminal lugs N1 and N2; N1 to NEUTRAL; and finally N2 to NEUTRAL (Figures 13 and 14 on Page 15).
3. When you are certain that UTILITY supply voltage is correct and compatible with transfer switch ratings, turn OFF the UTILITY supply to the transfer switch.
4. On the generator control panel, set the Auto/Off/Manual switch to MANUAL position. The generator should crank and start.
5. Let the generator stabilize and warm up at no-load for least five minutes.
6. Set the generator's main circuit breaker (CB1) to its ON or CLOSED position.

DANGER! PROCEED WITH CAUTION. GENERATOR OUTPUT VOLTAGE IS NOW BEING DELIVERED TO TRANSFER SWITCH TERMINALS. CONTACT WITH LIVE TERMINALS RESULTS IN EXTREMELY DANGEROUS AND POSSIBLY FATAL ELECTRICAL SHOCK.

7. With an accurate AC voltmeter and frequency meter, check the no-load, voltage and frequency meter at transfer switch terminal lugs E1, E2 and NEUTRAL. Readings should be as follows:

   a. Frequency .....59-61 Hz

   b. Terminals E1 and E2.....242-253 volts

   c. Terminal E1 to Neutral .....121-126 volts

   d. Terminal E2 to Neutral .....121-126 volts

8. Set the generator's main circuit breaker (CB1) to its OFF or OPEN position.

9. To shut down the generator, set its Auto/Off/Manual switch to its OFF position.

NOTE: Do NOT proceed until generator AC and frequency are correct and within stated limits. If the no-load voltage is correct but no-load frequency is incorrect, the engine governed probably requires adjustment. If no-load frequency is correct and no-load voltage is incorrect, the voltage regulator may require adjustment.

GENERATOR TESTS UNDER LOAD

1. Set the generator's main circuit breaker to its OFF or OPEN position.

2. Manually actuate the transfer switch main contacts to their STANDBY position.

3. To start the generator, set the Auto/Off/Manual switch to MANUAL. When engine starts, let it stabilize for a few minutes.

4. Turn the generator's main circuit breaker to its ON or CLOSED position. The generator now powers all LOAD circuits. Check generator operation under load as follows:

   - Turn ON electrical loads to the full rated wattage/amperage capacity of the generator. DO NOT OVERLOAD.
   - With maximum rated load applied, check voltage and frequency across transfer switch terminals E1 and E2. Voltage should be greater than 230 volts; frequency should be greater than 58 Hz.
   - Let the generator run under rated load for several minutes. With unit running, listen for unusual noises, vibration, overheating, etc., that might indicate a problem.

5. When checkout under load is complete, set main circuit breaker of the generator to its OFF or OPEN position.

6. Let the generator run at no-load for several minutes, then shut down the generator by setting the Auto/Off/Manual switch to the OFF position.

7. With the manual transfer handle, move the main contacts of the switch back to the UTILITY position, i.e., load connected to utility power supply. Handle and operating lever of transfer switch should be in up position.

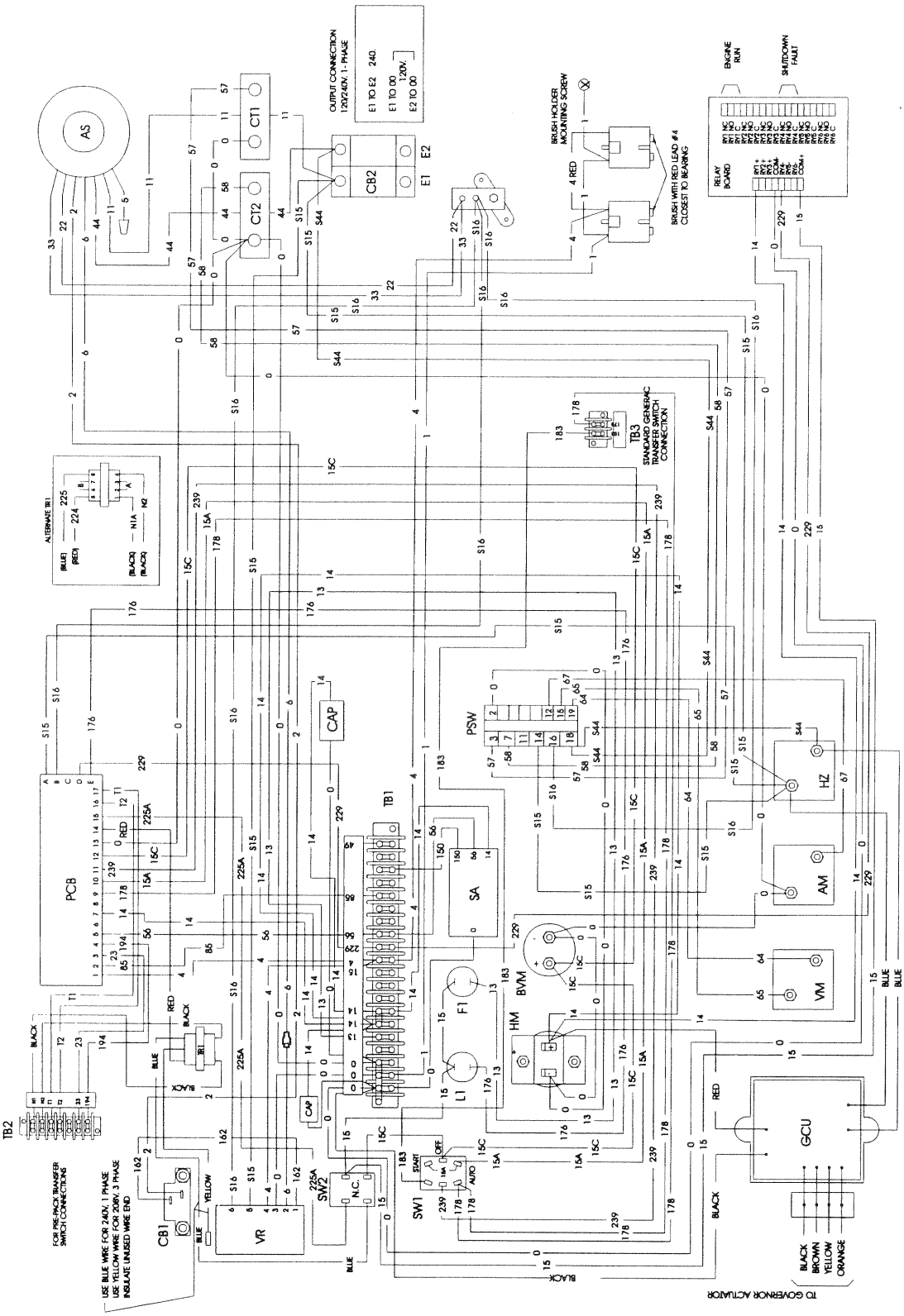
8. Turn on the utility power supply to transfer switch, using whatever means provided (such as a utility main line circuit breaker).

9. Set the generator's Auto/Off/Manual switch to the AUTO position.

10. Close circuit breaker to On or CLOSED position. The system is now set for fully automatic operation.

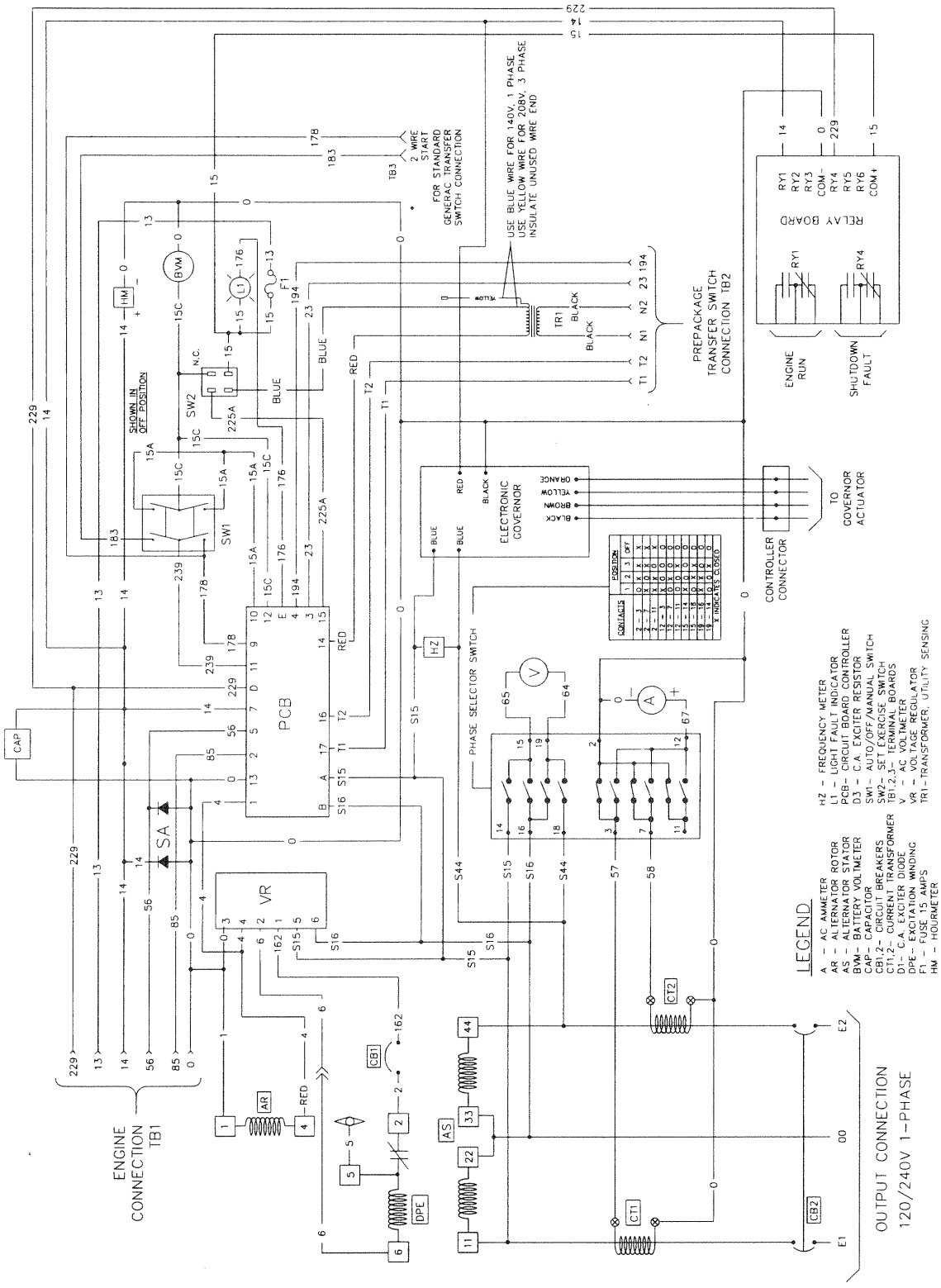
WIRING DIAGRAM — CONTROL PANEL

Drawing A7271 Rev. *



ELECTRICAL SCHEMATIC — CONTROL PANEL

Drawing A7272 Rev. *

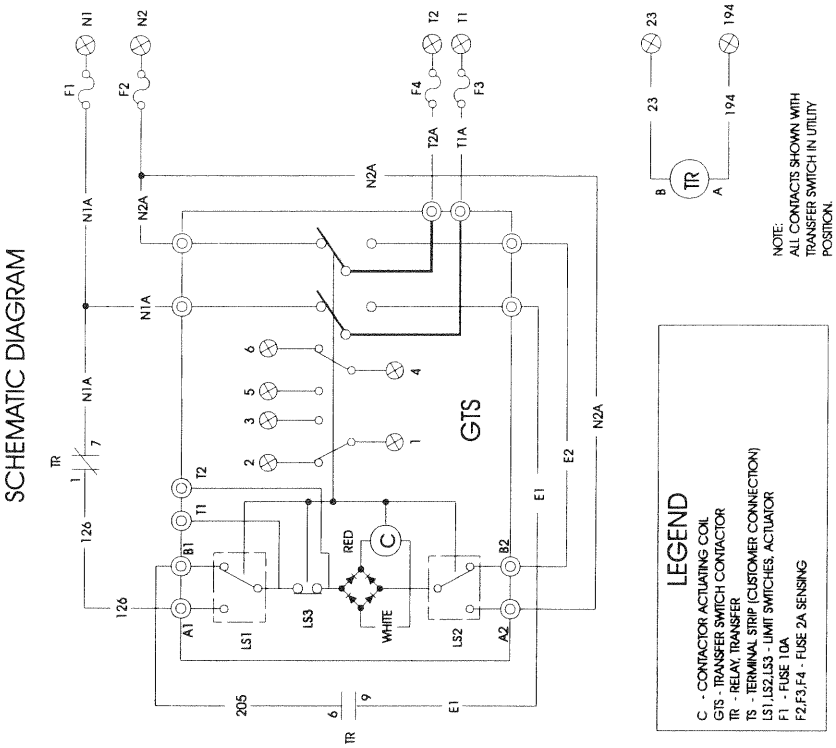


ELECTRICAL DATA — 200A TRANSFER SWITCH

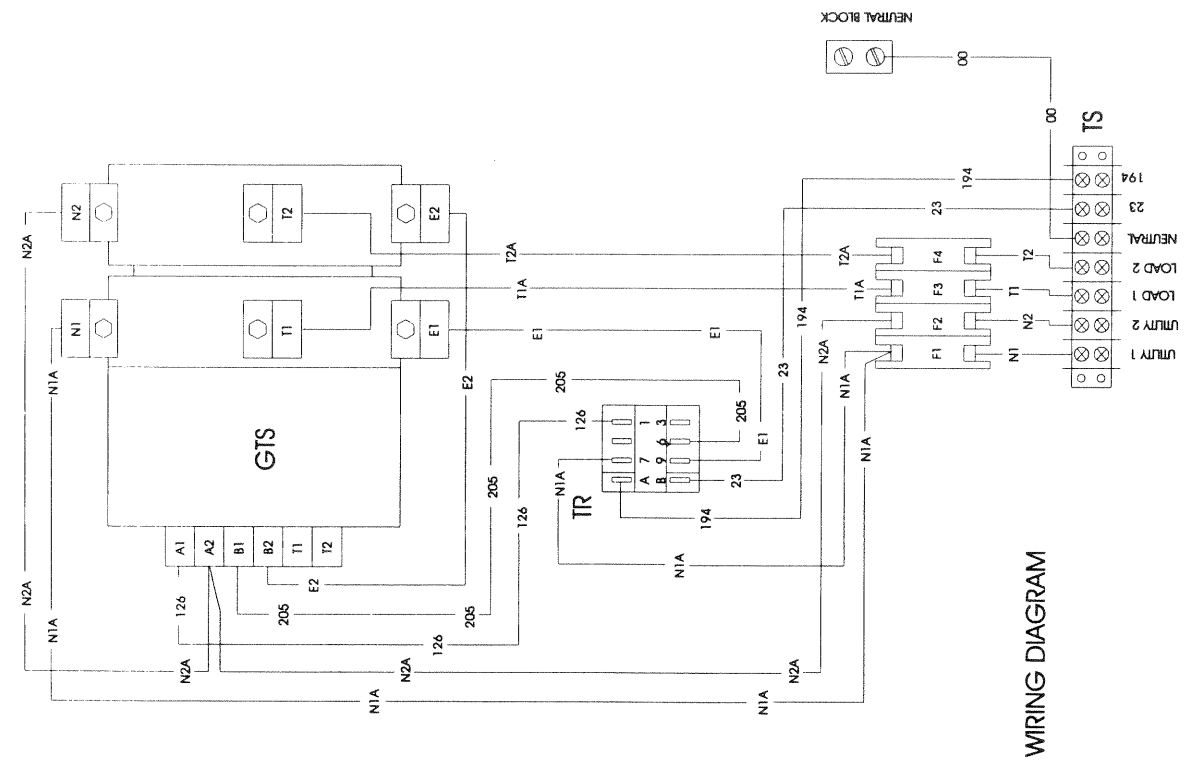
Drawing 20963 Rev. A

Models 0996, 0998, 4069

SCHEMATIC DIAGRAM



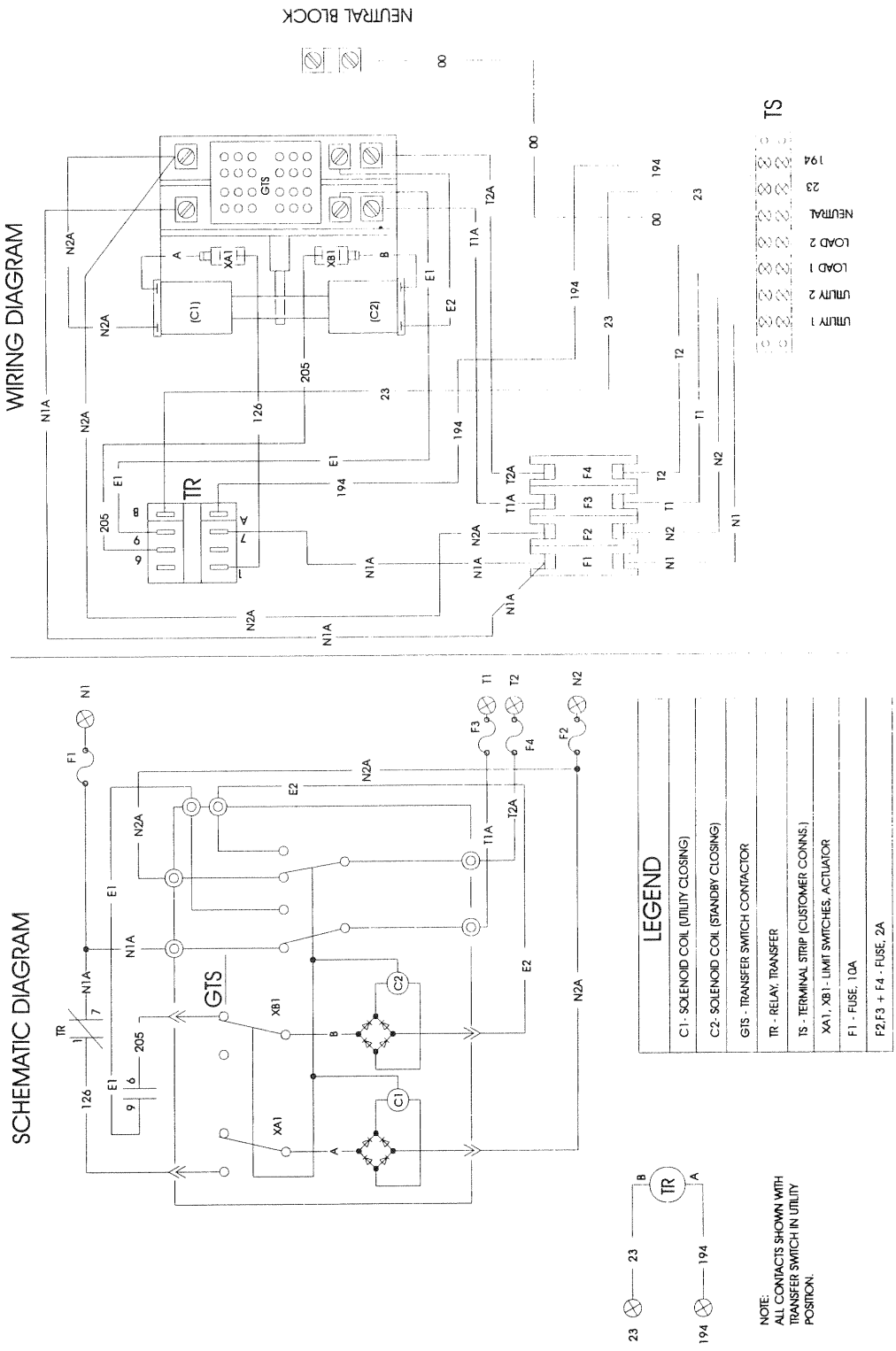
WIRING DIAGRAM



ELECTRICAL DATA — 100A TRANSFER SWITCH

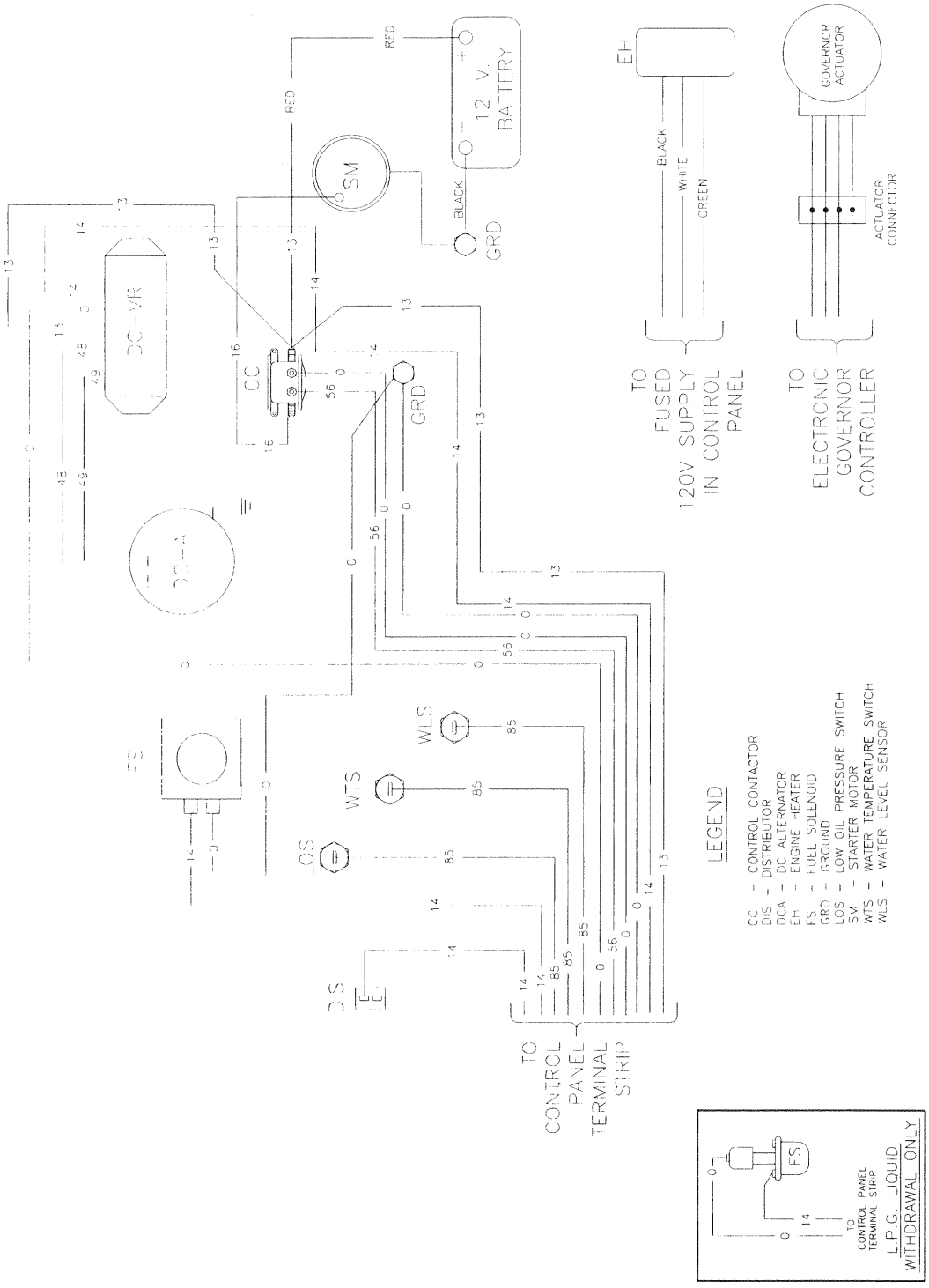
Drawing 20771 Rev. A

Models 0995, 0997, 4068



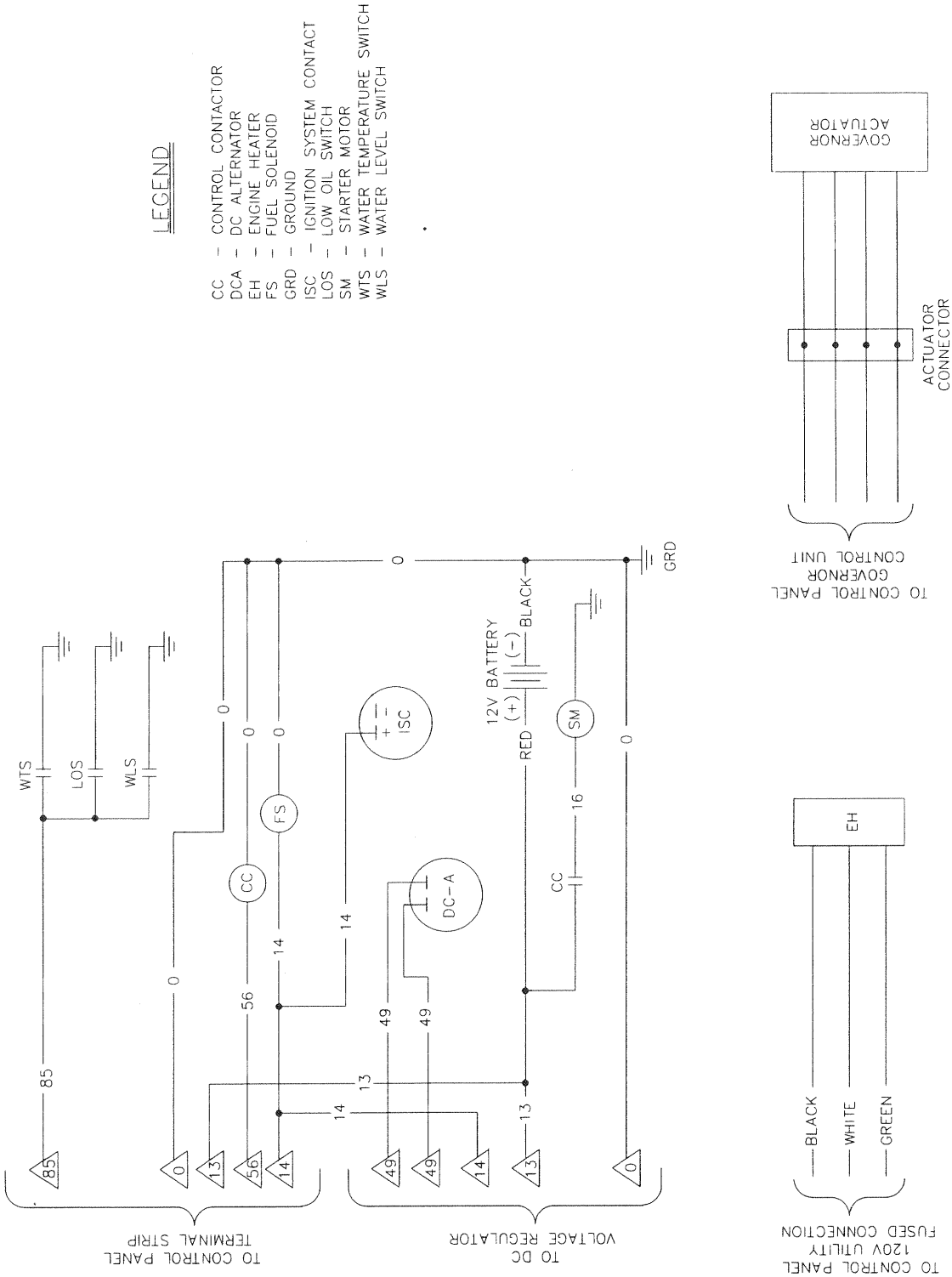
WIRING DIAGRAM — 1.5 LITER ENGINE

Drawing A7176 Rev. *



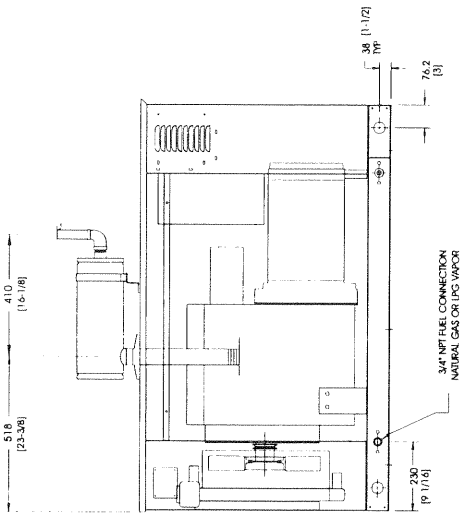
ELECTRICAL SCHEMATIC — 1.5 LITER ENGINE

Drawing A7182 Rev. *

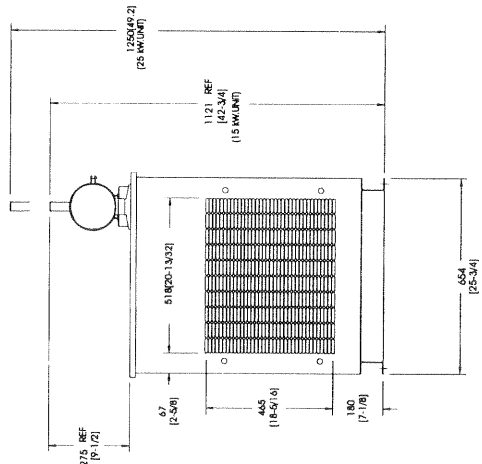


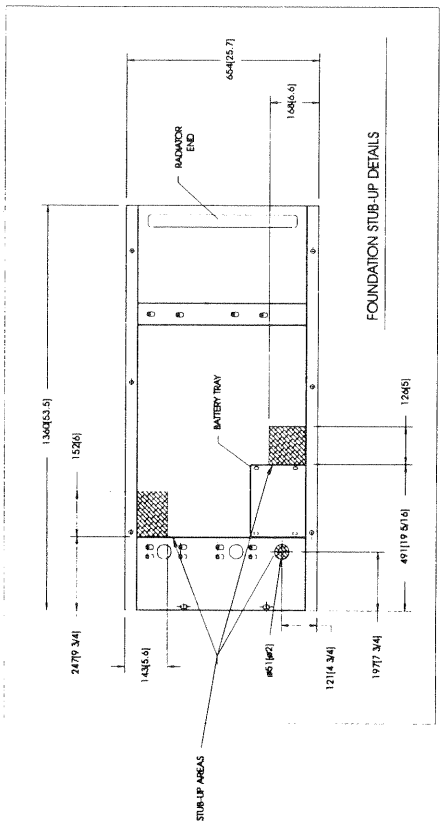
INSTALLATION DRAWING

Drawing A9817 Rev. *



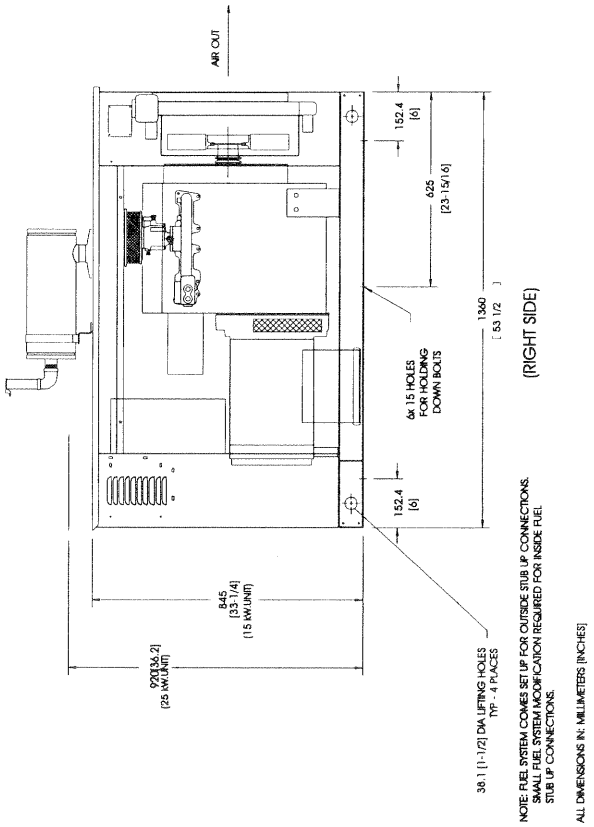
(LEFT SIDE)

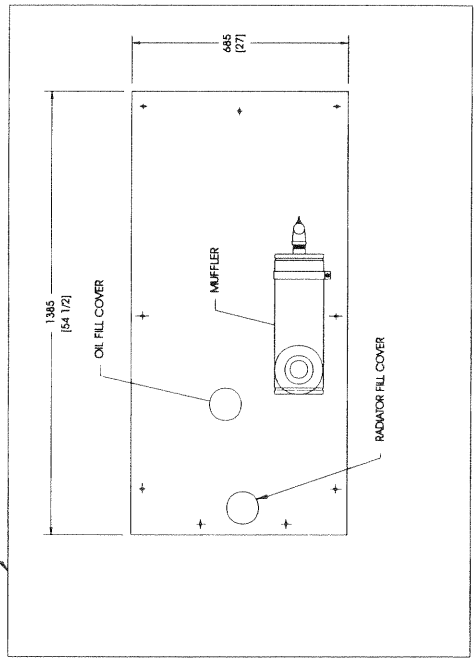


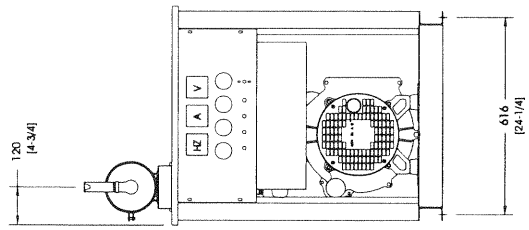


INSTALLATION DRAWING

Drawing A9817 Rev. *

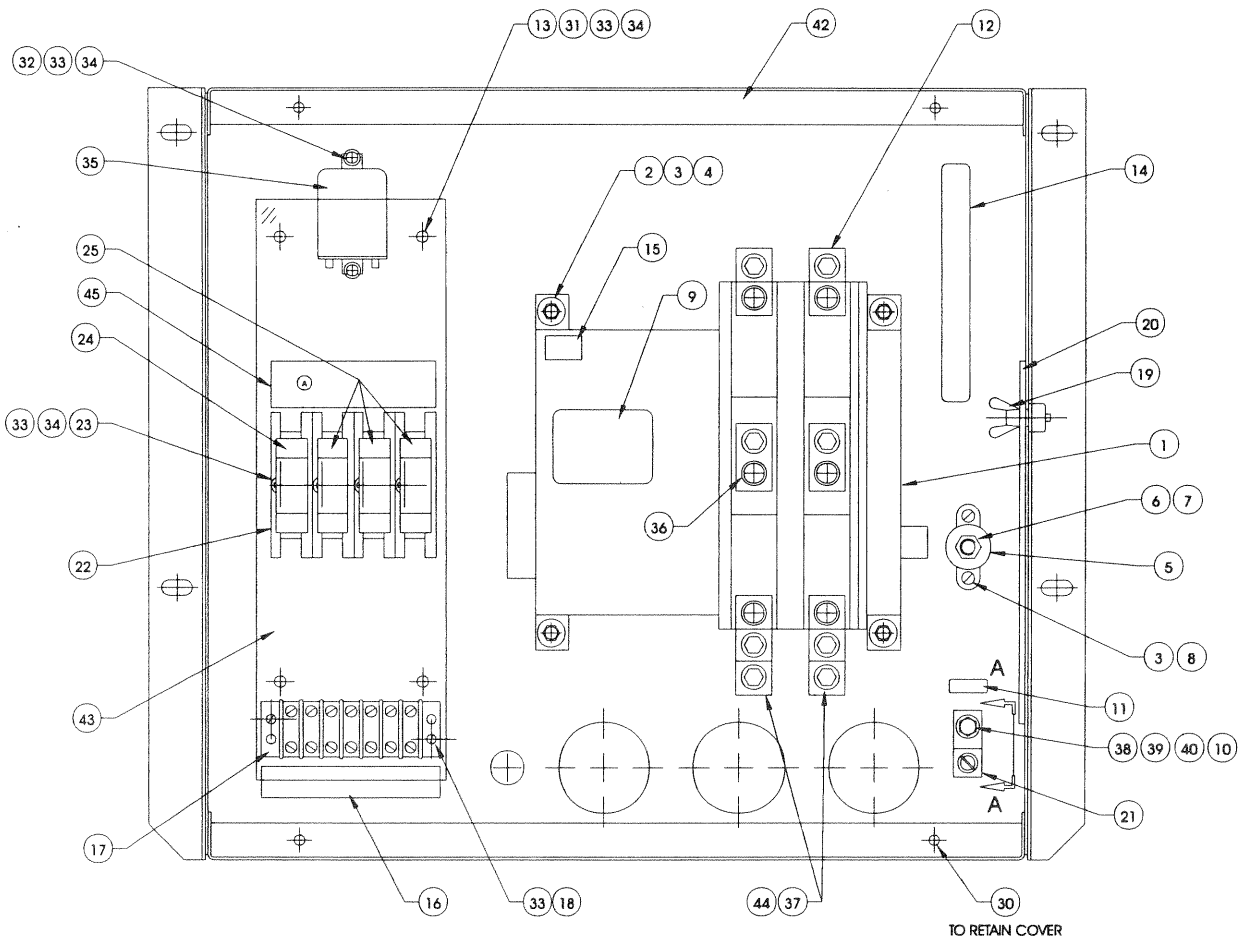


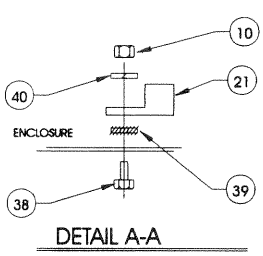




EXPLODED VIEW — TRANSFER SWITCH EPS-25 Drawing 20894 Rev. B

Models 0996, 0998, 4069





DETAIL A-A
(GROUND LUG ASSEMBLY)

* ITEMS NOT SHOWN ON THIS ASM.

ITEM 28 --- PLACE DECAL ON INSIDE OF THE COVER.

EXPLODED VIEW — TRANSFER SWITCH EPS-25 Drawing 20894 Rev. B

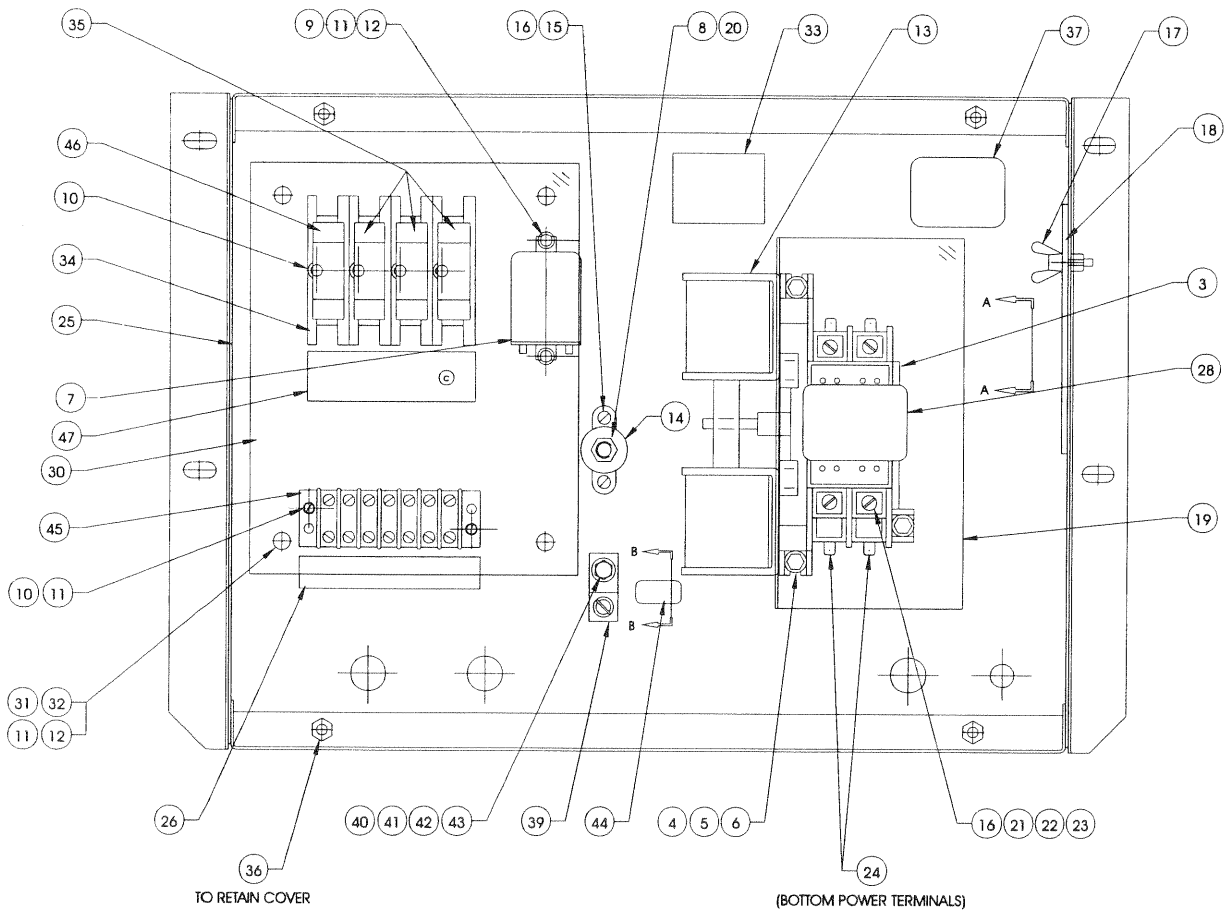
Models 0996, 0998, 4069

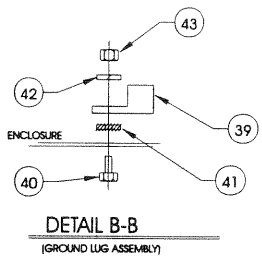
ITEM	PART NO.	QTY.	DESCRIPTION
1	62677	1	SWITCH, TRANSFER
2	52618	4	HEX HD. CAPSCREW, M50.8 x 12MM
3	49226	6	WASHER, LOCK M5
4	23897	4	WASHER, FLAT M5
5	57073	1	LUG, NEUTRAL
6	27628	1	NUT, HEX .37516
7	22131	1	WASHER, LOCK 3/8"
8	76040	2	PHILLIPS PAN HD. MACH. SCREW, M50.8 x 16MM
9	79955	1	DECAL, SWITCH RATING
10	22259	1	HEX NUT, 5/1618
11	67210A	1	DECAL, GROUND
12	62704	2	LUG, 11/32 1350 TO 6
13	79846	4	STANDOFF HEX S/S
14	74991	1	DECAL, MANUAL OPERATIONS
15	75353	1	DECAL, UL COMPONENT RECOGNITION
16	A2595	1	DECAL, TERMINAL STRIP
17	47822	REF.	STRIP, TERMINAL
18	75476	2	PHILLIPS PAN HD. MACH. SCREW, M40.7 x 16MM
19	64113	1	STUD, WING
20	63321	REF.	HANDLE, TRNS. SWITCH
21	57329	1	LUG, GROUND
22	73591	4	FUSE HOLDER
23	36919	6	SCREW, PAN HD. #832 x .625
24	73590B	1	FUSE, 10 AMP. 250V.
25	73590	3	FUSE, 2AMP. 600V.
26	76063	1	ENCLOSURE
27	75506	1	COVER, ENCLOSURE
28*	79959	1	DECAL, UL INFORMATION
29*	21022	1	ASSEMBLY, WIRE HARNESS
30	69254	4	CRIMPTITE
31	22471	4	HEX NUT, #832
32	51676	2	PHILLIPS PAN HD. MACH. SCREW, M40.7 x 12MM
33	22264	12	WASHER, LOCK M4
34	22985	10	WASHER, FLAT M4
35	63617	1	RELAY, 12VDC 10A.
36	62702	2	LUG, 11/32 1350 TO 6
37	26902		TAPTITE, #8 x 1/4"
38	22142	1	HEX HD. CAPSCREW, 5/16 x 3/4"
39	27482	1	WASHER, 5/16 SHAKEPROOF
40	22129	1	LOCK WASHER, 5/16
41*	20892	1	COVER, TRANSFER SWITCH
42	20891	1	BOX, TRANSFER SWITCH
43	79840	1	COVER, RELAY & TERM. BLOCK
44	62705	2	LUG, 11/32 2250 TO 6
45	21787A	1	DECAL

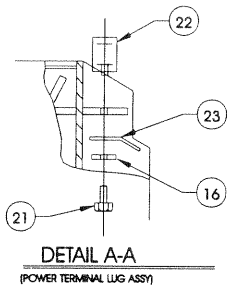
*ITEM NOT SHOWN

EXPLODED VIEW — TRANSFER SWITCH EPS-15 Drawing 20895 Rev. D

Models 0995, 0997, 4068







REPAIR PARTS — TRANSFER SWITCH EPS-15 Drawing 20895 Rev. D

Models 0995, 0997, 4068

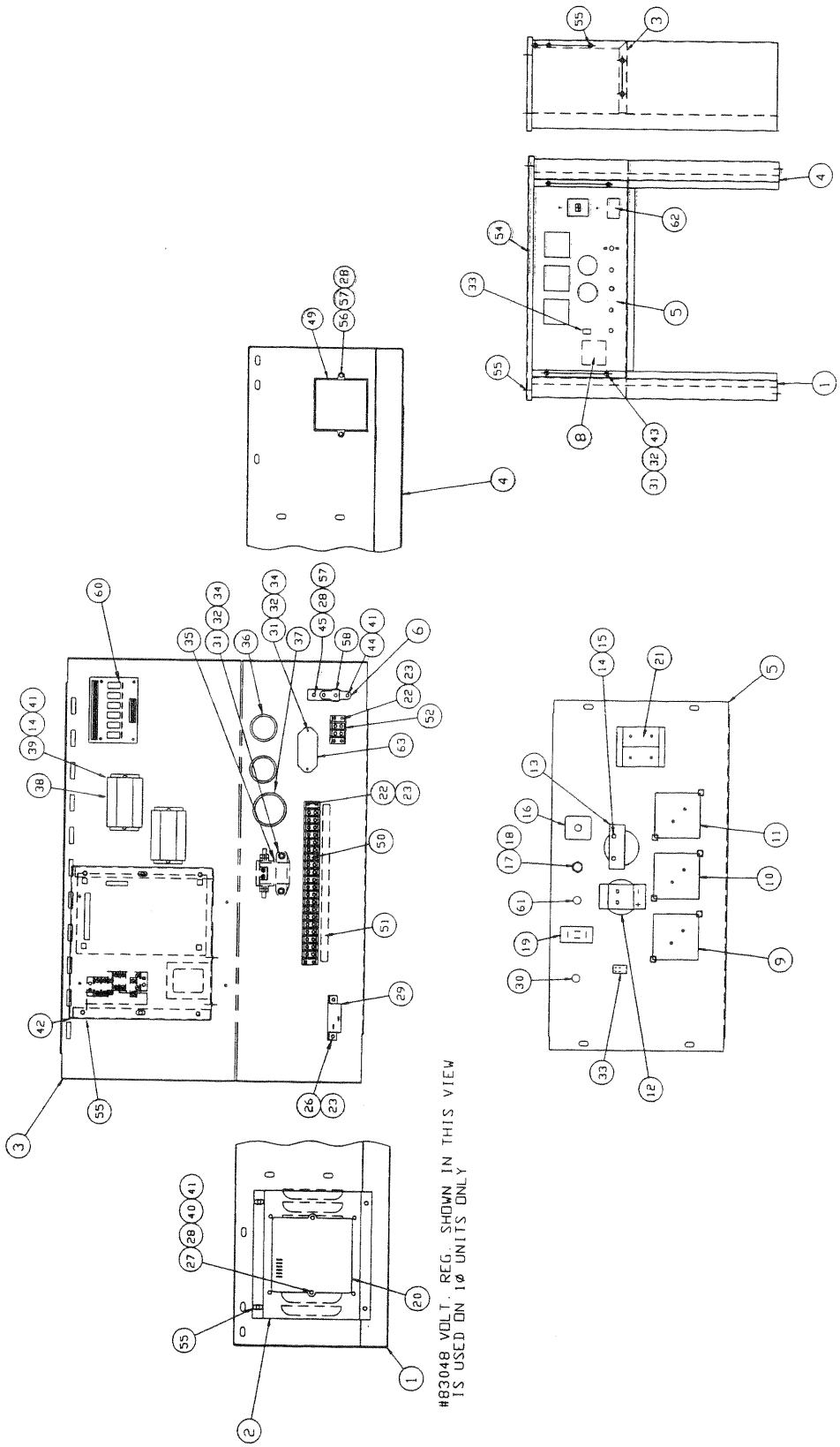
ITEM	PART NO.	QTY.	DESCRIPTION
1	20893	1	ENCLOSURE
2	74975	1	COVER, ENCLOSURE
3	71340	1	SWITCH, TRANSFER 100A 2POLE
4	45770	3	HEX HD. CAPSCREW, M5.8 x 10MM
5	49226	3	WASHER, LOCK M5
6	51713	3	WASHER, FLAT M5
7	63617	1	RELAY, 12V.DC 10A.
8	27628	1	NUT, .37516
9	36917	2	SCREW, PAN HD. #832 x .375"
10	36919	6	SCREW, PAN HD. #832 x .625"
11	22264	8	WASHER, LOCK #8
12	38150	6	WASHER, FLAT #8
13*	75353	1	DECAL, UL COMPONENT RECOGNITION
14	57073	1	LUG, NEUTRAL
15	33530	2	SCREW, PAN HD. #1032 x .625"
16	22152	8	WASHER, LOCK #10
17	64113	1	STUD, WING
18	77441	REF.	HANDLE, TRANSFER SWITCH
19	77440	1	COVER, POWER TERMINAL
20	22131	1	WASHER, FLAT .375 NOM.
21	36932	6	PHILLIPS PAN HD. MACH. SCREW, 1032 x 1/4"
22	77033	6	LUG, SOLDERLESS
23	74138	2	MALE DISCONNECT ADAPTOR (BENT)
24	77052	2	MALE DISCONNECT ADAPTOR
25*	77029	1	DECAL, MANUAL OPERATIONS
26	A2595	1	DECAL, TERMINAL STRIP
27*	21001	1	HARNESS, WIRE
28*	77032	1	DECAL, TRANSFER SWITCH RATING
29*	77036	1	DECAL TEST SEQUENCE
30	20896	1	COVER, RELAY & TERMINAL BLOCK
31	79846	4	STANDOFF HEX S/S
32	22471	4	HEX NUT #832
33	81221	1	DECAL, NAMEPLATE UL
34	73591	4	FUSE HOLDER
35	73590	3	FUSE, 2A 600V.
36	69254	4	CRIMPTITE
37	83736	1	DECAL, CSA
38*	95282	1	DECAL, LIVE CIRCUIT WARNING
39	62684	1	LUG, GROUND
40	22142	1	HEX HD. CAPSCREW, 5/1618 x 3/4"
41	27482	1	WASHER, 5/16 SHAKEPROOF
42	22129	1	LOCK WASHER, 5/16
43	22259	1	HEX NUT, 5/1618
44	67210A	1	DECAL, GROUND
45	47822	REF.	STRIP TERMINAL
46	73590B	1	FUSE, 10A. 250V.
47	21787A	1	DECAL

*ITEMS NOT SHOWN

EXPLODED VIEW — CONTROL PANEL EPS-15

Drawing A3073

Models 0995, 0997, 4068



REPAIR PARTS — CONTROL PANEL EPS-15 Drawing A3073

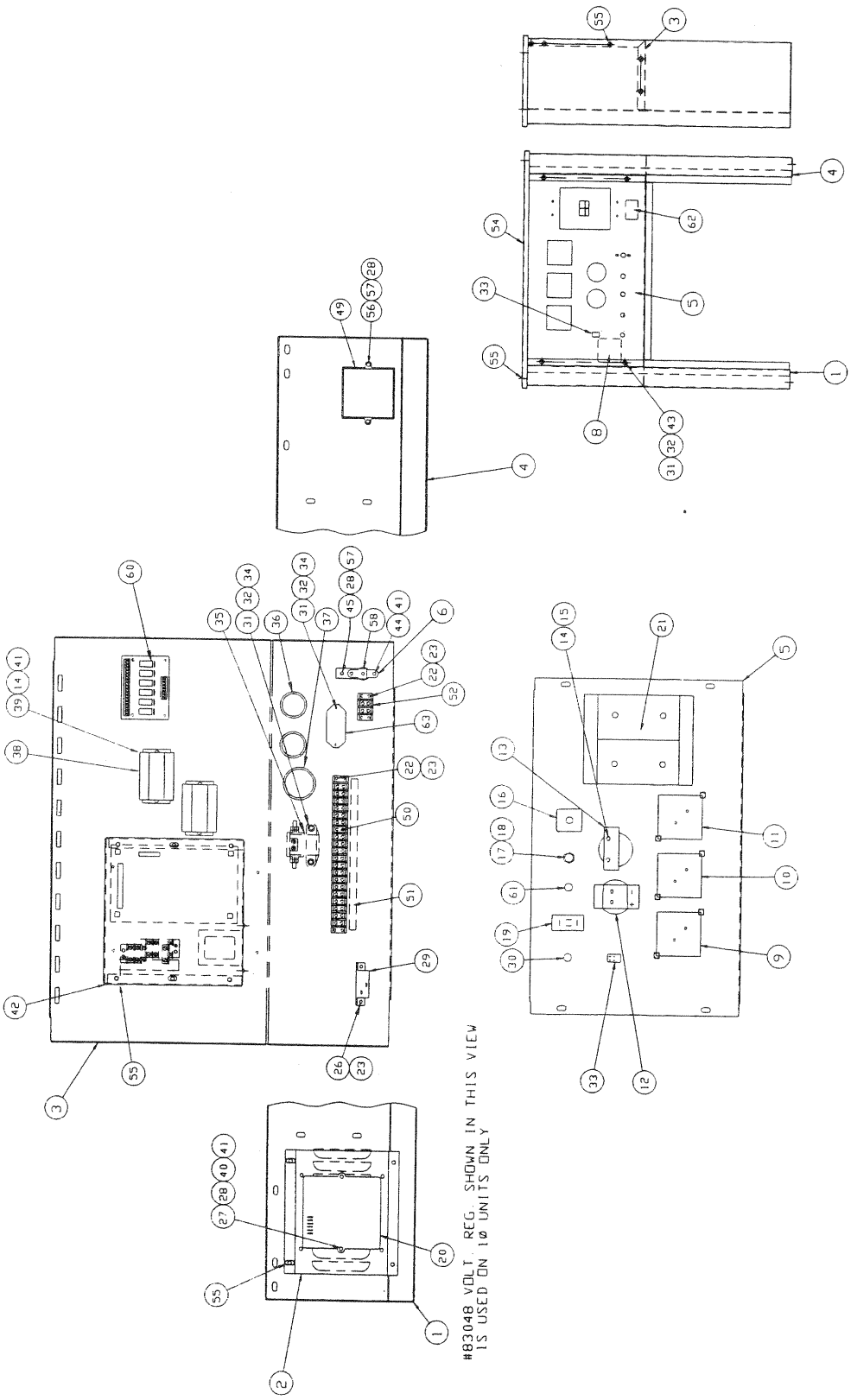
Models 0995, 0997, 4068

ITEM	PART NO.	QTY.	DESCRIPTION
1	98062	1	SUPPORT, CONTROL PANEL
2	75589	1	BRACKET, VOLTAGE REGULATOR
3	20848	1	PANEL, CONTROL BOTTOM & BACK
4	20847	1	SUPPORT, CONTROL PANEL
5	20899	1	PANEL, CONTROL EPS15
6	57073	1	BLOCK, JUNCTION
7	22985	4	WASHER, FLAT
8	81988	1	DECAL, SET EXERCISE TIME
9	70043	1	VOLTMETER, AC
10	70055	1	AMMETER, AC
11	70042	1	METER, FREQUENCY (HERTZ)
12	70081	1	HOURMETER
13	76037	1	VOLTMETER, DC
14	22152	10	WASHER, LOCK#10
15	22158	10	NUT, HEX #1032
16	61945	1	SWITCH, VOLTAGE SELECTOR
17	32300	1	HOLDER, FUSE
18	22676	1	FUSE 15 AMP.
19	76020	1	SWITCH, ON/OFF/ON
20	83048	1	REGULATOR, VOLTAGE ASSEMBLY
21	63452	1	CIRCUIT BREAKER 80A.
22	75476	14	SCREW, PPHM M40.7 x 16MM
23	22264	14	WASHER, LOCKM4
24	72977	1	RELAY PCB6FORM C
25	51715	4	NUT, HEX M40.7
26	75475	2	SCREW, PPHM M40.7 x 10MM
27	76039	2	SCREW, PPHM M50.8 x 40MM
28	51756	3	NUT, HEX M50.8
29	48476	1	BREAK CIRCUIT
30	26536	1	PLUG
31	22097	8	WASHER, LOCK M6
32	22473	8	WASHER, FLAT M6
33	82573	1	ROCKER SWITCH
34	43116	4	HEX HD. CAPSCR.M61.0 x 12MM
35	56739	1	SOLENOID (SILVER)
36	72252	2	GROMMET
37	63212	1	GROMMET
38	61395	2	TRANSFORMER, CURRENT
39	33121	2	HEX HD. MACH. SCREW1032 xc 1/2"
40	49226	2	WASHER, FLATM8
41	23897	2	WASHER, FLATM5
42	75595	1	CMA BOX
43	77438	4	SCREW, PHM M6 x 1.0 x 12MM
44	86381	2	CAPLUG, BPF1/4
45	55440	1	HEX HD. CAPSCR.M50.8 x 25MM
49	98647	1	CONTROL BOARD
50	57335	1	TERMINAL STRIP
51	76061	1	DECAL, TERMINAL STRIP
52	48766	1	BLOCK, TERMINAL STRIP
54	97219	1	COVER, CONTROL PANEL
55	75443	22	CRIMPTITE
56	76040	2	PPHMS M50.8 x 16MM
57	49226	2	WASHER, LOCKM5
58	61979	1	BUS, BAR
59*	21023	1	HARNESS, CONTROL PANEL
60	20757	1	ALARM BOARD
61	64009	1	LAMP, FAULT INDICATOR
62	54199	1	DECAL, DANGER
63	A1354	1	DC VOLTAGE REGULATOR

*NOT SHOWN ON THIS ASSEMBLY

EXPLODED VIEW — CONTROL PANEL EPS-25 Drawing A3073A

Models 0996, 0998, 4069



REPAIR PARTS — CONTROL PANEL EPS-25 Drawing A3073A

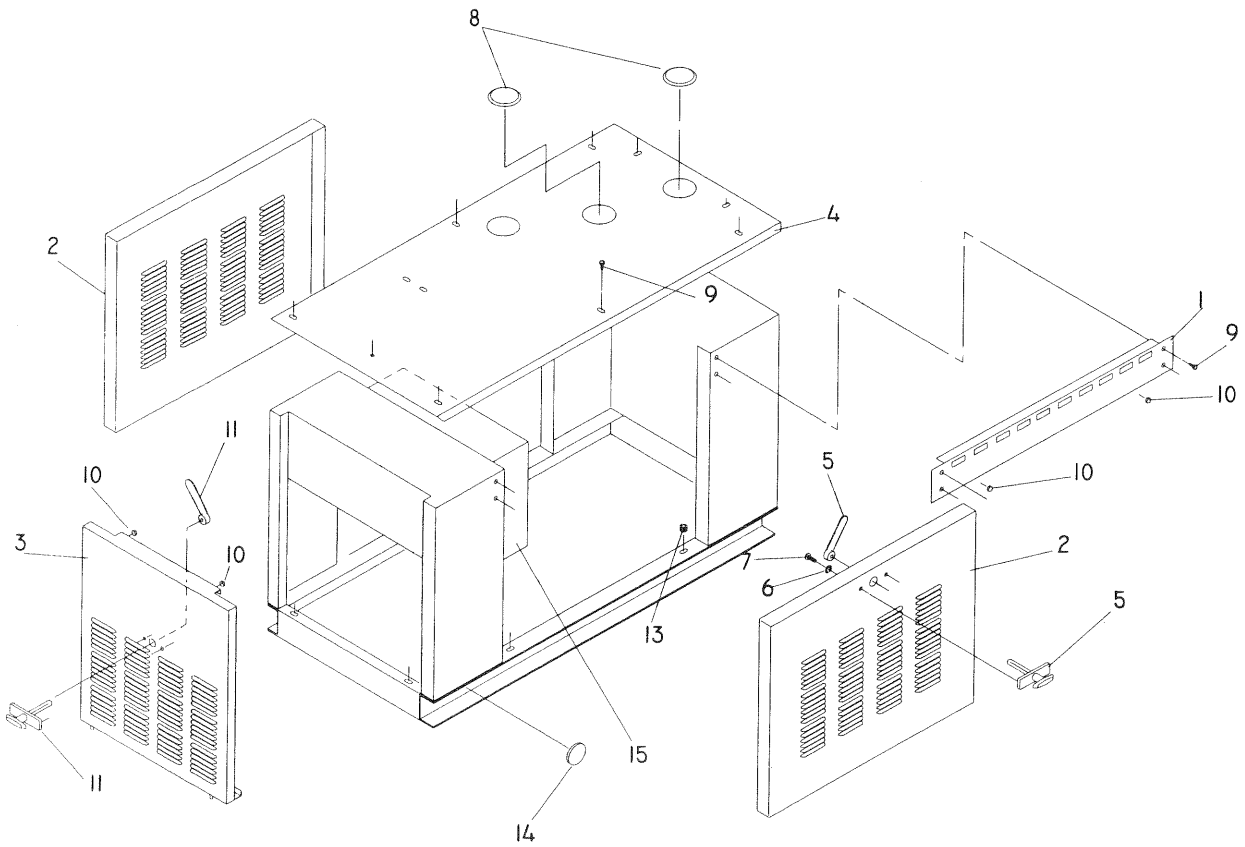
Models 0996, 0998, 4069

ITEM	PART NO.	QTY.	DESCRIPTION
1	98062	1	SUPPORT, CONTROL PANEL
2	75589	1	BRACKET, VOLTAGE REGULATOR
3	20848	1	PANEL, CONTROL BOTTOM & BACK
4	20847	1	SUPPORT, CONTROL PANEL
5	20899	1	PANEL, CONTROL EPS15
6	57073	1	BLOCK, JUNCTION
7	22985	4	WASHER, FLAT
8	81988	1	DECAL, SET EXERCISE TIME
9	70043	1	VOLTMETER, AC
10	70055	1	AMMETER, AC
11	70042	1	METER, FREQUENCY (HERTZ)
12	70081	1	HOURMETER
13	76037	1	VOLTMETER, DC
14	22152	10	WASHER, LOCK#10
15	22158	10	NUT, HEX #1032
16	61945	1	SWITCH, VOLTAGE SELECTOR
17	32300	1	HOLDER, FUSE
18	22676	1	FUSE 15 AMP.
19	76020	1	SWITCH, ON/OFF/ON
20	83048	1	REGULATOR, VOLTAGE ASSEMBLY
21	63452	1	CIRCUIT BREAKER 80A.
22	75476	14	SCREW, PPHM M40.7 x 16MM
23	22264	14	WASHER, LOCKM4
24	72977	1	RELAY PCB6FORM C
25	51715	4	NUT, HEX M40.7
26	75475	2	SCREW, PPHM M40.7 x 10MM
27	76039	2	SCREW, PPHM M50.8 x 40MM
28	51756	3	NUT, HEX M50.8
29	48476	1	BREAK CIRCUIT
30	26536	1	PLUG
31	22097	8	WASHER, LOCK M6
32	22473	8	WASHER, FLAT M6
33	82573	1	ROCKER SWITCH
34	43116	4	HEX HD. CAPSCR.M61.0 x 12MM
35	56739	1	SOLENOID (SILVER)
36	72252	2	GROMMET
37	63212	1	GROMMET
38	61395	2	TRANSFORMER, CURRENT
39	33121	2	HEX HD. MACH. SCREW1032 xc 1/2"
40	49226	2	WASHER, FLATM8
41	23897	2	WASHER, FLATM5
42	75595	1	CMA BOX
43	77438	4	SCREW, PHM M6 x 1.0 x 12MM
44	86381	2	CAPLUG, BPF1/4
45	55440	1	HEX HD. CAPSCR.M50.8 x 25MM
49	98647	1	CONTROL BOARD
50	57335	1	TERMINAL STRIP
51	76061	1	DECAL, TERMINAL STRIP
52	48766	1	BLOCK, TERMINAL STRIP
54	97219	1	COVER, CONTROL PANEL
55	75443	22	CRIMPTITE
56	76040	2	PPHMS M50.8 x 16MM
57	49226	2	WASHER, LOCKM5
58	61979	1	BUS, BAR
59*	21023	1	HARNESS, CONTROL PANEL
60	20757	1	ALARM BOARD
61	64009	1	LAMP, FAULT INDICATOR
62	54199	1	DECAL, DANGER
63	A1354	1	DC VOLTAGE REGULATOR

* NOT SHOWN ON THIS ASSEMBLY

EXPLODED VIEW — COMPARTMENT

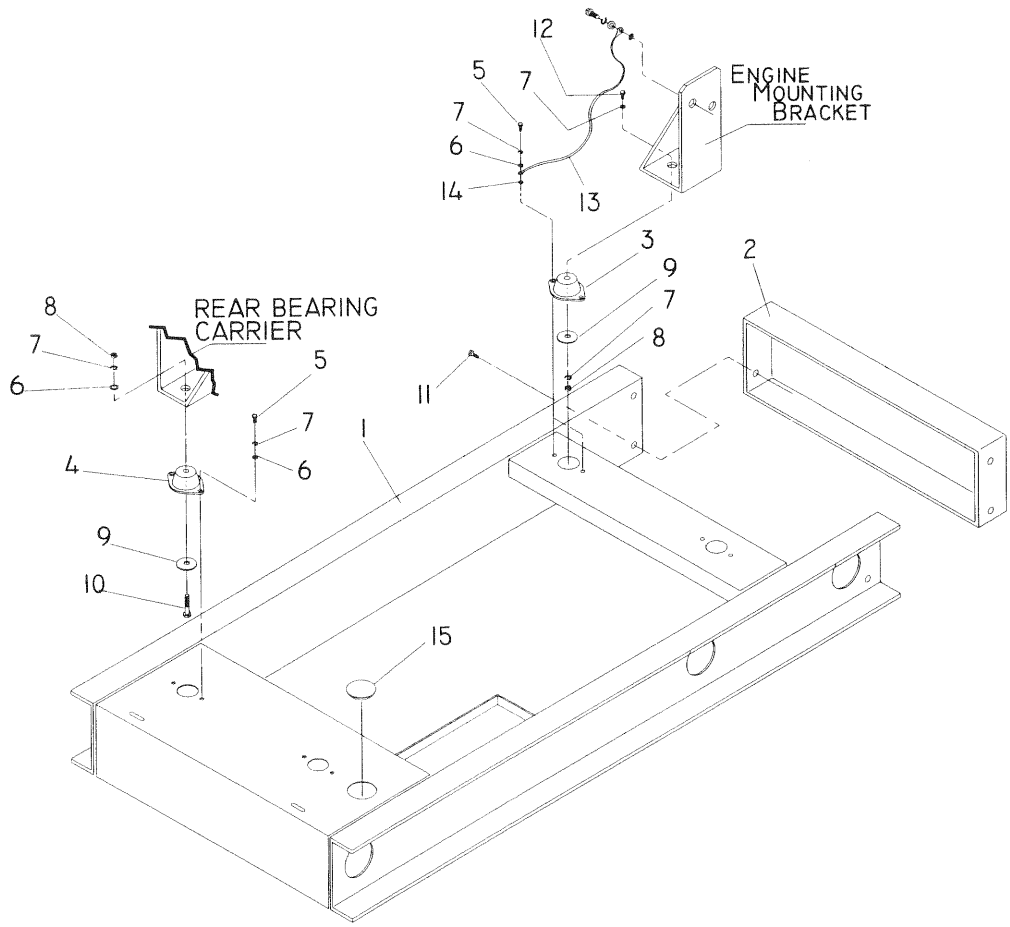
Drawing A7850 Rev. *



ITEM	PART NO.	QTY.	DESCRIPTION
1	A7570	2	BRACE, SIDE(100A. ATS)
	A7581	2	BRACE, SIDE(200A. ATS)
2	A7568	2	DOOR, ENCLOSURE
3	A3768	1	DOOR, ENCLOSURE MODEL 0995, 0997
	21120	1	DOOR, ENCLOSURE MODEL 0996, 0998
4	A7569	1	TOP, ENCLOSURE
5	67042	2	LATCH
6	22264	6	LOCK WASHER, #8
7	67035	6	SCREW, PAN HEAD MACH.#832 x 5/16"
8	82570	2	PLUG4"
9	A7215	10	SWAGE FASTENER W/NYLON WASHER
10	32990	6	BUMPER
11	77442	1	LATCH
13	29107	6	GROMMET 3/167/8
14	A1694	5	BUTTONPLUG 11/2"
15	20987	1	AUTOMATIC TRANSFER SWITCH MODELS 0995, 0997
	20894	1	AUTOMATIC TRANSFER SWITCH MODELS 0996, 0998

EXPLODED VIEW — MOUNTING BASE

Drawing A7805 Rev. *

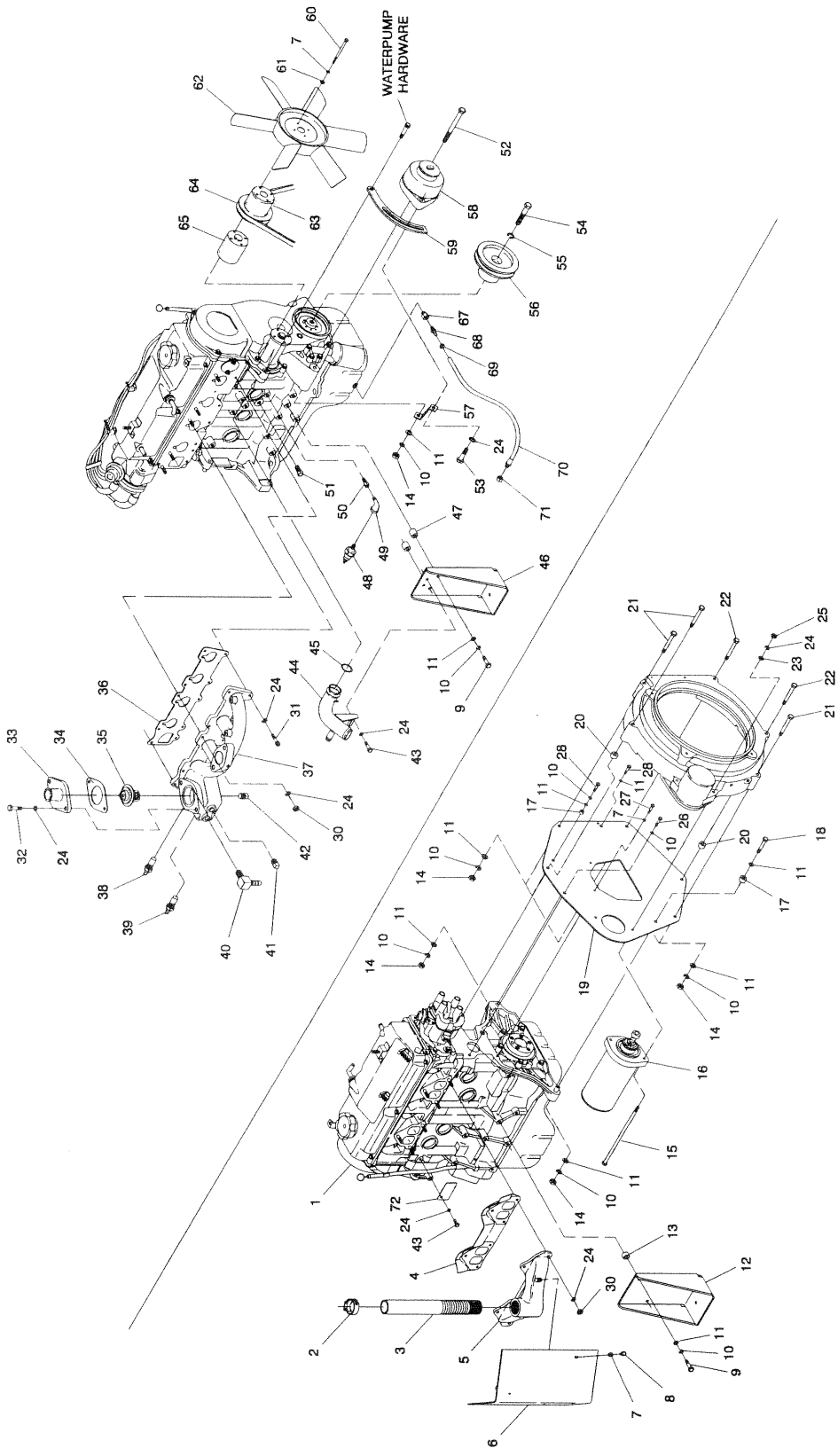


ITEM	PART NO.	QTY.	DESCRIPTION
1	A7448	1	BASE, MOUNTING
2	98829	1	END, MOUNTING BASE
3	70936	2	ISOLATOR, VIBRATION
4	70936C	2	ISOLATOR, VIBRATION
5	39253	8	CAPSCREW, HEX HEAD M8-1.25 x 20MM
6	22145	12	FLAT WASHER M8
7	22129	12	LOCK WASHER M8
8	45771	12	NUT, HEX M8-1.25
9	71956	4	WASHER, VIBRATION ISOLATOR

ITEM	PART NO.	QTY.	DESCRIPTION
10	51730	2	CAPSCREW, HEX HEAD M8-1.25 x 60MM
11	A7215	4	SWAGE FASTENER 1/4"20 x 5/8"
12	57821	2	CAPSCREW, HEX HEAD M8-1.25 x 40MM
13	21991	1	STRAP, GROUNDING
14	27482	1	WASHER, STAR 5/16
15	A2308	1	PLUG, BUTTON

EXPLODED VIEW — ENGINE COMMON PARTS

Drawing A7642 Rev. B



REPAIR PARTS — ENGINE COMMON PARTS

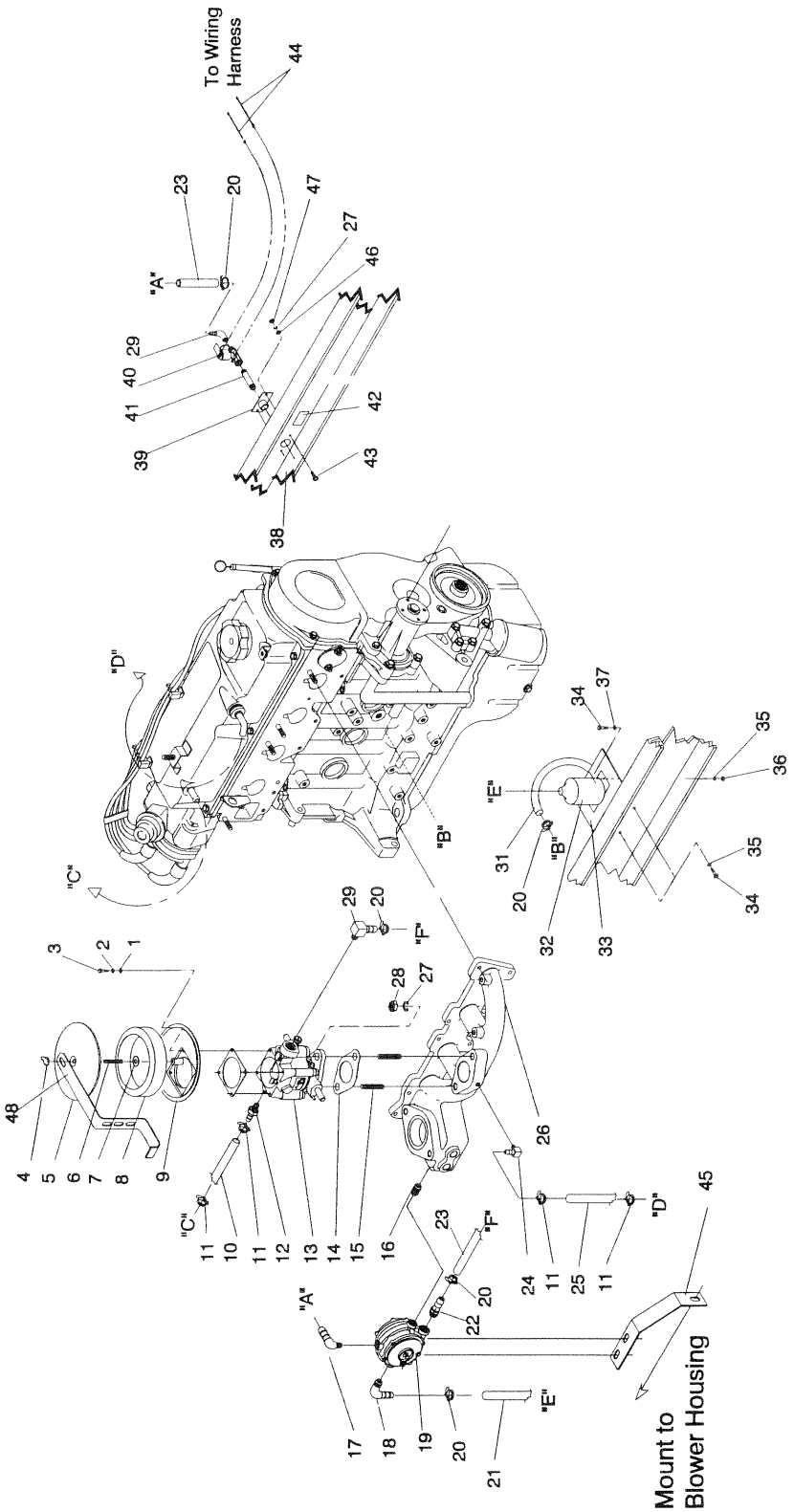
Drawing A7642 Rev. B

ITEM	PART NO.	QTY.	DESCRIPTION
1	A4531	1	ENGINE 1.5L
2	35685	1	CLAMP HOSE#28
3	75546A	1	PIPE FLEX EXHAUST
4	257A4531	1	GASKET, EXHAUST MANIFOLD
5	A4355	1	MANIFOLD EXHAUST
6	A6699	1	SHIELD, HEAT
7	22097	8	WASHER, LOCK1/4"
8	22507	2	HHCS 1/4"20 x 1/2" LG
9	52212	4	HHCS M101.25 x 25 LG
10	46526	14	WASHER, LOCK M10
11	22131	16	WASHER, FLAT M10
12	A4863	1	LEG, LEFT ENG. SUPPORT
13	55993	1	SPACER 1/8" LG
14	45772	4	HEX NUT M101.50
15	99379	2	SHCS 5/16"18 x 3" LG
16	20692	1	STARTER 12V
17	A7005	2	SPACER, ENGINE PLATE
18	52243	1	HHCS ,M101.50 x 60 LG
19	A4772	1	ENGINE PLATE
20	70901	2	DOWEL SLEEVE BLOWER HOUSING
21	51735	3	HHCS M101.50 x 70 LG
22	56768	2	HHCS M101.50 x 90 LG
23	22145	2	WASHER, FLAT 5/16"M8
24	22129	23	WASHER, LOCK 5/16"M8
25	22259	2	HEX NUT 5/16"18
26	52213	1	HHCS M101.25 x 20 LG
27	47411	2	HHCS M61.0 x 16 LG
28	52830	2	HHCS M101.25 x 45 LG
29	46525	1	HEX NUT M101.25
30	45771	10	HEX NUT M81.25
31	58306	5	SHCS M8 1.25 X 25 LG
32	30795	2	HHCS 5/16"18 x 1" LG
33	A2711A	1	ADAPTER, THERMOSTAT
34	48665	1	GASKET, WATER OUTLET
35	75885	1	THERMOSTAT
36	258A4531	1	GASKET, INTAKE MANIFOLD
37	A4682	1	MANIFOLD, INTAKE
38	57522	1	SWITCH, WATER LEVEL
39	A6751	1	SWITCH, WATER TEMP.
40	34339	1	FITTING, HOSE BARB 3/8"P x 5/8"H
41	26925	1	FITTING, PIPE PLUG 3/8" NPT
42	61012	1	FITTING PIPE PLUG 1/8" NPT
43	39253	6	HHCS M81.25 x 20 LG
44	A5110	1	TUBE, WATER INLET
45	A7006	1	SEAL, O-RING
46	A4862	1	LEG, RIGHT ENGINE SUPPORT
47	22500B	2	SPACER1/4"
48	A8584	1	SWITCH, OIL PRESSURE
49	36277	1	FITTING, STREET ELBOW 1/8" NPT
50	42574	1	ADAPTER, OIL PRESSURE SWITCH
51	26073A	1	FITTING PIPE PLUG 1/4" NPT
52	A6701	1	HHCS M101.5 X 110 LG
53	39414	1	HHCS M81.25 X 35 LG
54	A5568	1	HHCS M121.25 x 55 LG
55	51769	1	WASHER, LOCK M12
56	A4804	1	PULLEY, CRANKSHAFT (1800 RPM)
	A4800	1	PULLEY, CRANKSHAFT (3600 RPM)
57	A5839	1	SUPPORT, DC ALT.
58	A1354B	1	DC ALTERNATOR 12V
59	A4839	1	BRACKET, ALTERNATOR ADJUSTMENT
60	55816	4	HHCS M61.0 x 70 LG
61	49811	4	WASHER, FLAT 1/4"M6
62	75614	1	FAN, RADIATOR
63	A2628	1	PULLEY, FAN
64	A5275	1	V-BELT (1800 RPM)
	A5586	1	V-BELT (3600 RPM)
65	A4814	1	SPACER, FAN PULLEY
66	224A4531	1	FILTER, OIL
67	57765	1	ADAPTER, OIL DRAIN
68	55596	1	FITTING, STRAIGHT BARB 3/8"P x 3/8"H
69	70928	1	CLAMP, HOSE
70	69860C	1	HOSE ASSM. OIL DRAIN
71	69811	1	CAP, OIL DRAIN HOSE
72	A5317	1	NAME PLATE, ENGINE

EXPLODED VIEW — LP LIQUID FUEL SYSTEM

Drawing A7360 Rev. B

Models 0997, 0998



REPAIR PARTS — LP LIQUID FUEL SYSTEM

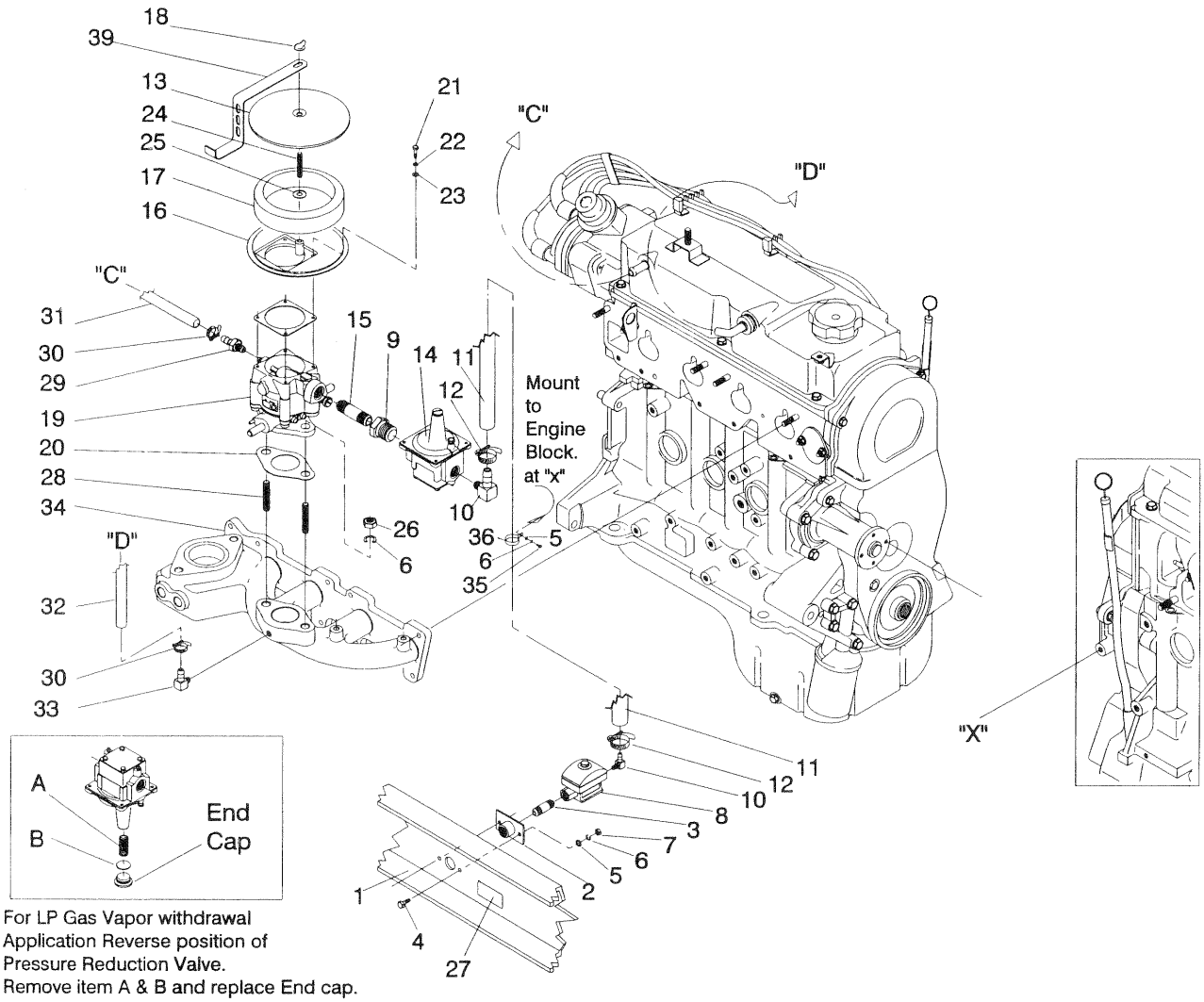
Drawing A7360 Rev. B

Models 0997, 0998

ITEM	PART NO.	QTY.	DESCRIPTION
1	23897	4	WASHER, FLAT #10
2	22152	4	WASHER, LOCK #10
3	76011	4	RD. HD. MACH. SCREW#1024 x 1/2
4	37561	1	WING NUT, 1/4"20
5	A5547	1	COVER, AIR CLEANER
6	61256	1	STUD 1/4"20 x 21/2" LONG
7	22127	1	1/4"20 HEX NUT
8	59402	1	CLEANER, AIR
9	A6593	1	ADAPTOR, AIR CLEANER
10	29032	61/2"	HOSE 5/16" I.D.
11	48031C	4	HOSE CLAMP, 1/4"
12	52219	1	BARB FITTING 5/16"H x 1/8"P
13	59403	1	CARBURETOR
14	59401	1	GASKET, CARBURETOR
15	A6125	2	STUD, 5/16"18 x 11/4" LONG
16	35467	1	CLOSE NIPPLE 3/8" NPT
17	46964	1	ELBOW, BRASSST. 1/4" NPT
18	34339	1	ELBOW, 3/8" NPT x 5/8"
19	51358	1	VAPORIZER, LP GAS
20	57823	5	HOSE CLAMP, #10
21	50967	1	HOSE 5/8" I.D. SAE20R332"
22	44118	1	BARBED ST. 1/2" x 5/8"
23	59194	1	HOSE 5/8" I.D. x 53"
24	32552	1	BARB FITTING 90 DEG. 5/16"H x 1/8"P
25	29032	11"	HOSE 5/16" I.D.
26	A4682	1	MANIFOLD, INTAKE
27	22129	6	WASHER, LOCKM8
28	22259	2	5/16"18 HEX NUT
29	59412	2	FITTING, BARBED 90 DEG. 3/4" NPT x 5/8"
31	50967	1	HOSE 5/8" I.D. SAE20R318"
32	84918	1	KIM, HEATER 500W 1020
33	84427	1	BRACKET, HEATER
34	47411	4	HHCSM61.00 x 16 LONG
35	22097	4	WASHERLOCK, 1/4" M6
36	49815	2	HHCSM50.8 x 16 LONG
37	22473	2	WASHER, FLAT 1/4"M6
38	20844	1	L.H. EPS SIDE, MOUNTING BASE
39	A7668	1	FLANGE, FUEL INLET
40	A7097	1	FUEL SOLENOID LP LIQUID
41	26915	1	NIPPLE, 3/4" NPT
42	A5893	1	DECAL, FUEL INLET
43	39253	2	CAPSCR., HEX HD.M81.25 x 20MM
44	A6615	2	WIRE, FUEL SOLENOID
45	A5904	1	BRACKET, VAPORIZER
46	22145	3	WASHER, FLATM8
47	45771	2	NUT, HEXM81.25
48	A7040	1	BRACKET, RADIATOR HOSE

EXPLODED VIEW — NATURAL GAS/LP VAPOR FUEL SYSTEM Drawing A9349 Rev. *

Models 0995, 0996, 4068, 4069



For LP Gas Vapor withdrawal Application Reverse position of Pressure Reduction Valve. Remove item A & B and replace End cap.

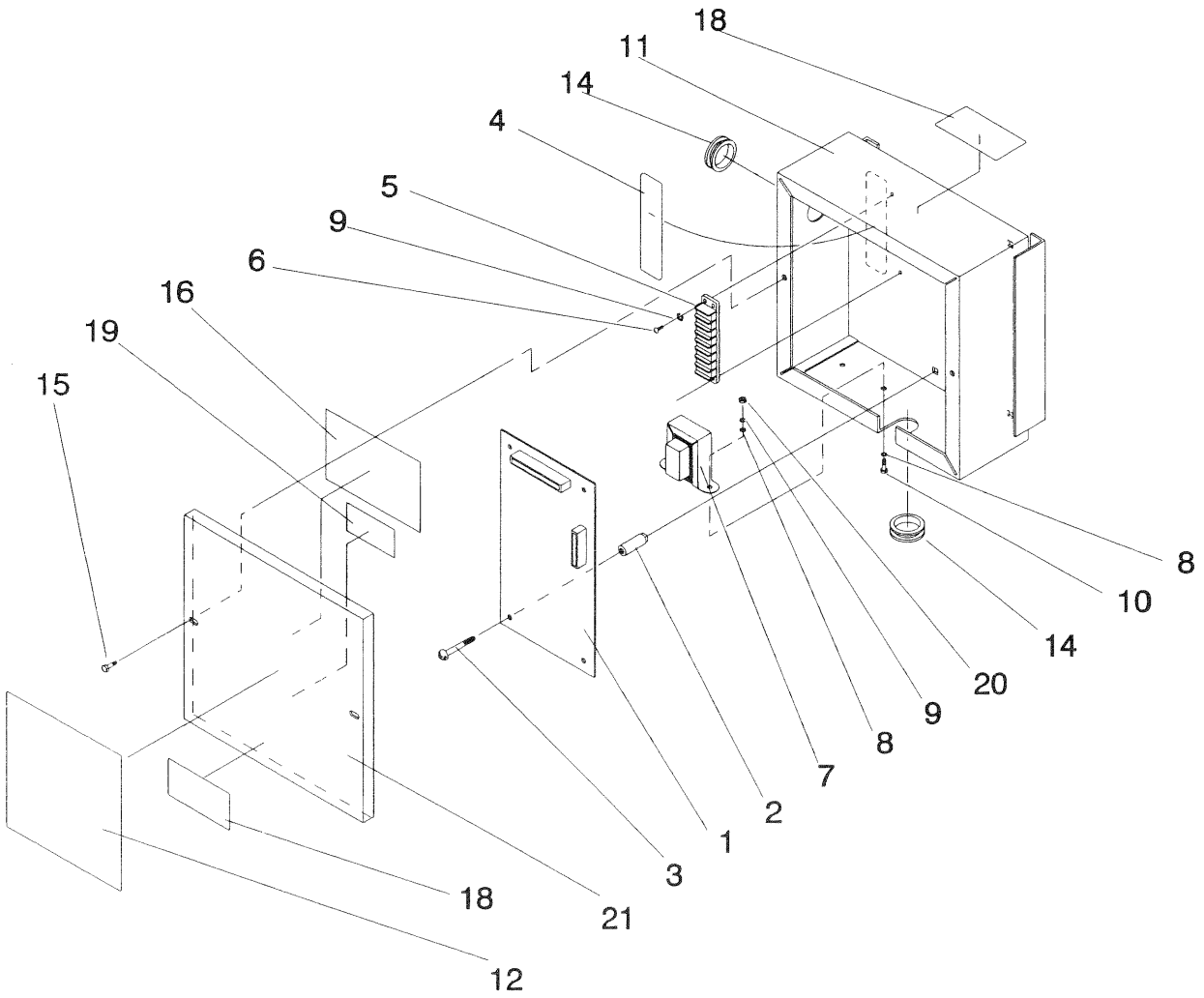
EXPLODED VIEW — NATURAL GAS/LP VAPOR FUEL SYSTEM Drawing A9349 Rev. *

Models 0995, 0996, 4068, 4069

ITEM	PART NO.	QTY.	DESCRIPTION
1	A4874	1	BASE, MOUNTING
2	75580	2	FLANGE, FUEL INLET
3	26915	3	NIPPLE, 3/4"NPT
4	39253	4	CAPSCREW, HEX HD. - M8-1.25 X 20MM
5	22145	5	WASHER, FLAT - M8
6	22129	7	WASHER, LOCK - M8
7	45771	4	NUT, HEX M8-1.25
8	A2666	2	SOLENOID, VALVE
9	46747	1	BUSHING, RED 3/4" X 3/8"
10	59412	3	FITTING, BARBED 90° 3/4" NPT X 5/8"
11	59194	31"	HOSE, 5/8" I.D. X 31" LONG
12	57823	4	CLAMP, HOSE #10
13	A5547	1	COVER, AIR CLEANER
14	C1475	1	REGULATOR, NATURAL GAS (Models 04068 & 04069)
	A9911	1	REGULATOR, LP VAPOR (Models 0995 & 0996)
15	A7989	1	NIPPLE, PIPE 3/8" NPT X 4" LONG
16	A6593	1	ADAPTOR, AIR CLEANER
17	59402	1	CLEANER, AIR
18	37561	1	WING NUT, 1/4-20
19	59403	1	CARBURETOR
20	59401	1	GASKET-CARBURETOR
21	34154	4	PAN HD. MACH. SCREW - #10-24 X 1/2"
22	22152	4	WASHER -LOCK #10
23	23897	4	WASHER - FLAT #10
24	62522	1	STUD 1/4-20 X 3" LONG
25	22127	1	1/4-20 HEX NUT
26	22259	2	5/16-18 HEX NUT
27	50280	1	DECAL, FUEL INLET
28	A6125	2	STUD 5/16-18 X 1-1/4" LONG
29	52219	1	BARB FITTING 5/16H X 1/8P
30	48031C	3	HOSE CLAMP 1/4"
31	29032	6-1/2"	HOSE 5/16" I.D.
32	29032	11"	HOSE 5/16" I.D.
33	32552	1	BARB FITTING 90° 5/16H X 1/8P
34	A4682	1	MANIFOLD - INTAKE
35	42907	1	HHCS - M8-1.25 X 16 LONG
36	55934D	1	CLAMP-VINYL 1"
38	35467	3	CLOSE NIPPLE 3/8 NPT
39	A7040	1	BRACKET-RADIATOR HOSE

EXPLODED VIEW — CMA BOX

Drawing 81086 Rev. C

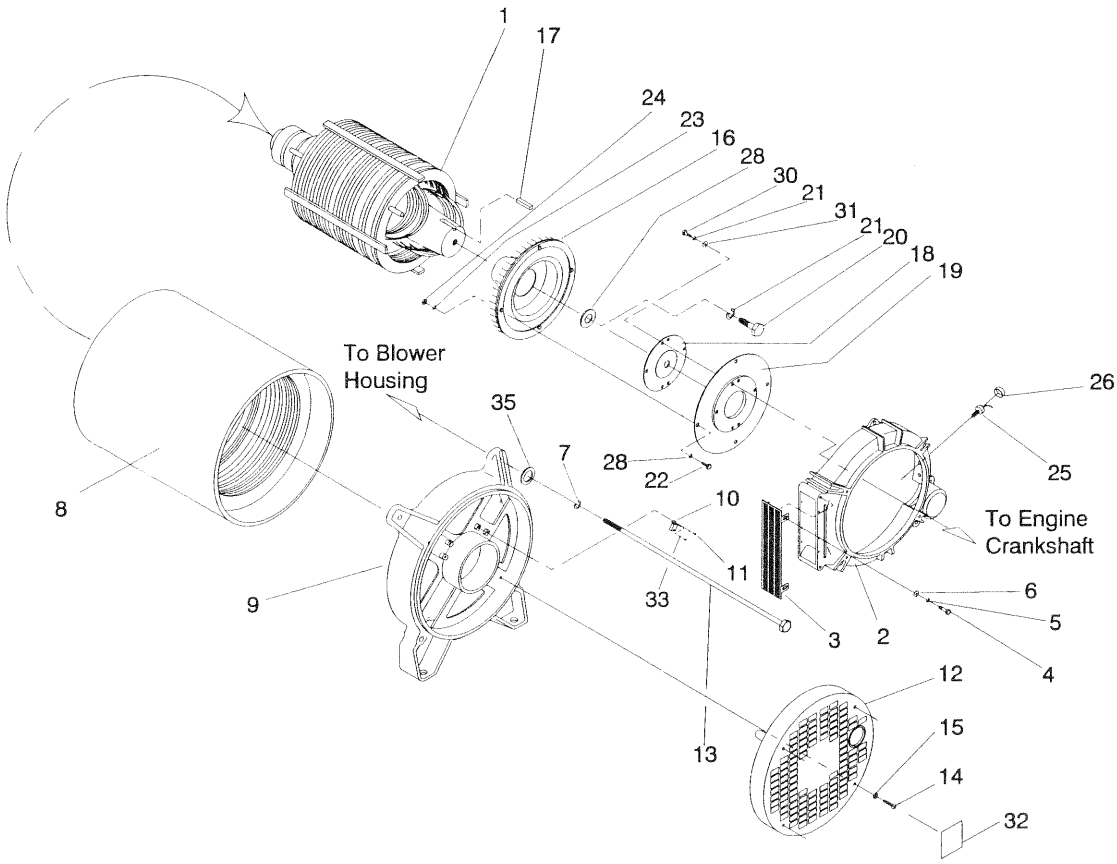


ITEM	PART NO.	QTY.	DESCRIPTION
1	76009A	1	BOARD, CIRCUIT DC CONTROL/CRANK LATCH
2	72566	4	STANDOFF, C. B. SUPPORT
3	80882	4	SCREW, PPH TAPPING #6 x 5/8"
4	74978	1	DECAL, TERMINAL STRIP
5	47822	1	BLOCK, TERMINAL STRIP
6	75476	2	SCREW, PPHM M40.7 x 16MM
7	83264	1	TRNSFRMR. 24VA. 12 SEC
8	22985	4	WASHER, FLAT M4
9	22264	4	WASHER, LOCK M4
10	51787	2	HHCS M40.7 x 16
11	79847	1	BOX, CMA

ITEM	PART NO.	QTY.	DESCRIPTION
12	A8504A	1	DECAL, COVER CMA
13*	22661V	.083'	HEAT SHRINK RED .19
14	38057	2	GROMMET
15	58443	2	CRIMPTITE
16	81224	1	DECAL, MFG NAMEPLATE
17*	79682	1	WIRE HARNESS
18	86093	2	DECAL, CMA WARNING
19	83736	1	DECAL, CSA
20	51715	2	NUT, HEX M40.7
21	74495	1	COVER, CMA BOX
	77401	1	COVER, SILKSCREENED

*NOT SHOWN

EXPLODED VIEW — GENERATOR Drawing A9348 Rev. *

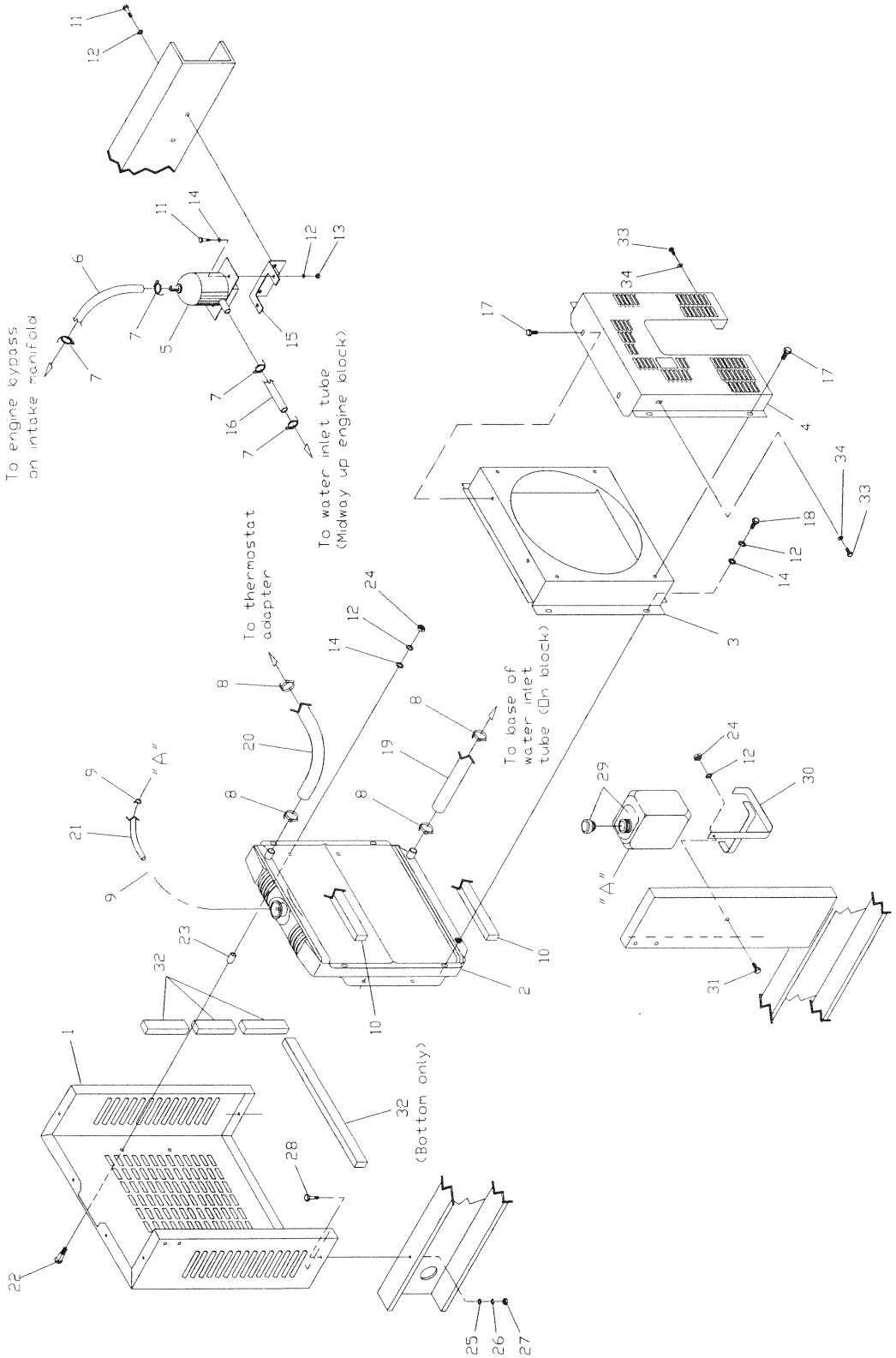


ITEM	PART NO.	QTY.	DESCRIPTION
1	98681	1	ROTOR ASSEM.15KW
	98936	1	ROTOR ASSEM.25KW
2	A5336A	1	HOUSING, BLOWER
3	A1659	1	SCREEN, AIR OUTLET
4	71912	4	CAPSCR., HEX HD. M50.80x10MM
5	22152	4	LOCK WASHERM5
6	51713	4	FLAT WASHERM5
7	22129	4	LOCK WASHERM8(5/16")
8	98682	1	STATOR ASSEM. 15KW 1 PHASE A
	97620	1	STATOR ASSEM. 25KW 1 PHASE A
9	A5382	1	CARRIER, REAR BEARING
10	75591	1	HOLDER, BRUSH ASSEM.
11	52813	4	SCREW, HEX HD. M40.70 x 20MM
12	A5601	1	COVER, REAR BEARING CARRIER
13	75554B	4	BOLT, STATOR
14	A9375	4	#10 24 x 2" RHMS
15	22152	4	LOCK WASHER #10

ITEM	PART NO.	QTY.	DESCRIPTION
16	97146	1	FAN & RING GEAR ASSy.
17	42558	1	KEY3/8" SQUARE x 1" LG
18	A5061	1	SPACER, FLEX PLATE
19	A4989	1	PLATE, FLEX
20	52213	1	CAPSCR., HEX HEAD M12 1.75 x 40MM
21	51769	6	LOCK WASHERM12
22	49541	4	CAPSCR., HEX HD. M101.50 x 35MM
23	46526	4	LOCK WASHERM10
24	45772	4	NUT, HEXM101.50
26	87599	2	PLUG, PLASTIC
27	77043E	1	FLEX GUARD 1" I.D. x 10" LONG (NOT SHOWN)
28	49809	4	FLAT WASHERM10
29	72578	1	WASHERROTOR SHAFT
30	A7043	5	CAPSCREW, M12 1.25 x 25MM
31	49808	5	FLAT WASHER M12
32	58589	1	DECAL WARNING
33	23365	4	STAR WASHER #8
34	23897	4	FLAT WASHER #10

EXPLODED VIEW — RADIATOR

Drawing C1167 Rev. *



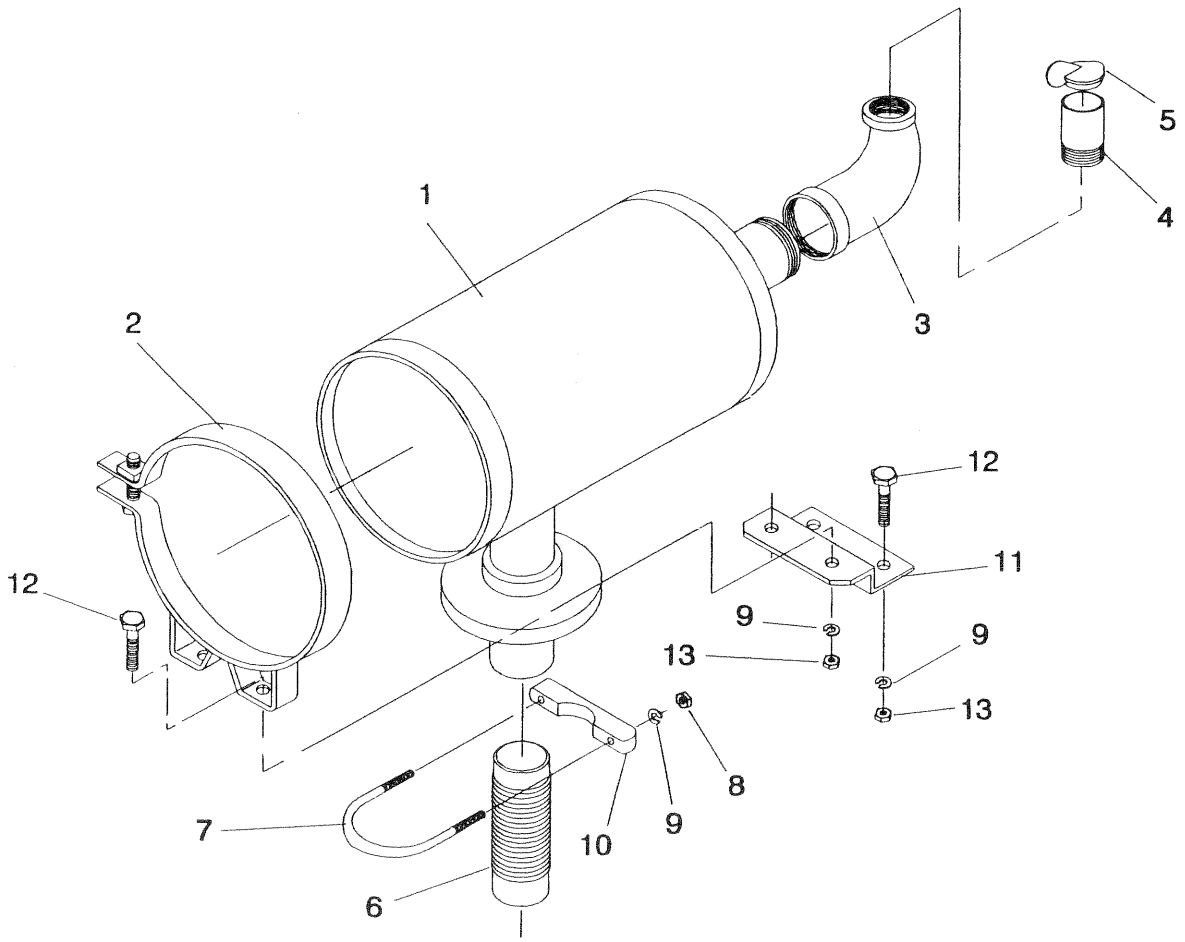
REPAIR PARTS — RADIATOR

Drawing C1167 Rev. *

ITEM	PART NO.	QTY.	DESCRIPTION
1	A6272	1	SUPPORT RADIATOR, MODEL #'s 0995, 0997, 4068
	A7862	1	SUPPORT RADIATOR, MODEL #'s 0996, 0998, 4069
2	A5734	1	RADIATOR
3	A6237	1	VENTURI
4	A6238	1	GUARD, FAN
5	84918	1	ENGINE HEATER
6	50967	12"	HOSE, 5/8" I.D.
7	57823	4	CLAMP, HOSE #10
8	99502	4	CLAMP, HOSE #24
9	83709	2	SPRING CLAMP, HOSE #9
10	52250	14'	TAPE, FOAM 1" SQUARE
11	42568	4	CAPSCREW, HEX HEAD M6-1.00 x 20MM
12	22097	13	WASHER, LOCK M6
13	49813	2	NUT, HEX M6-1.0
14	22473	11	WASHER, FLAT M6
15	84427	1	BRACKET, ENGINE HEATER
16	50967	18"	HOSE, 5/8" I.D.
17	75443	6	CRIMTITE 1/4" x 20-5/8"
18	56892	4	CRIMTITE 10-24 x 3/8"
19	A6284	1	HOSE, LOWER
20	A6258	1	HOSE, UPPER
21	29032	1	HOSE, 5/16" x 120" LONG
22	31669	4	CARRIAGE BOLT 1/4"-20 x 1"-3/4"
23	60035	4	SPACER .41.75.87
24	22127	5	NUT, HEX 1/4"-20
25	22145	4	WASHER, FLAT M8
26	22129	4	WASHER, LOCK M8
27	45771	4	NUT, HEX M8-1.25
28	42907	4	CAPSCREW, HEX HEAD M8-1.25 x 16
29	76749	1	BOTTLE, COOLANT RECOVERY
30	80712	1	BRACKET, BOTTLE
31	A7215	1	SWAGEFORM W / WASHER 1/4"-20 X 5/8"LONG
32	A7275	6'	FOAM CLOSED CELL
33	A2111	2	10325/16 FASTENER
34	65852	2	SPRING CLIP .37.62

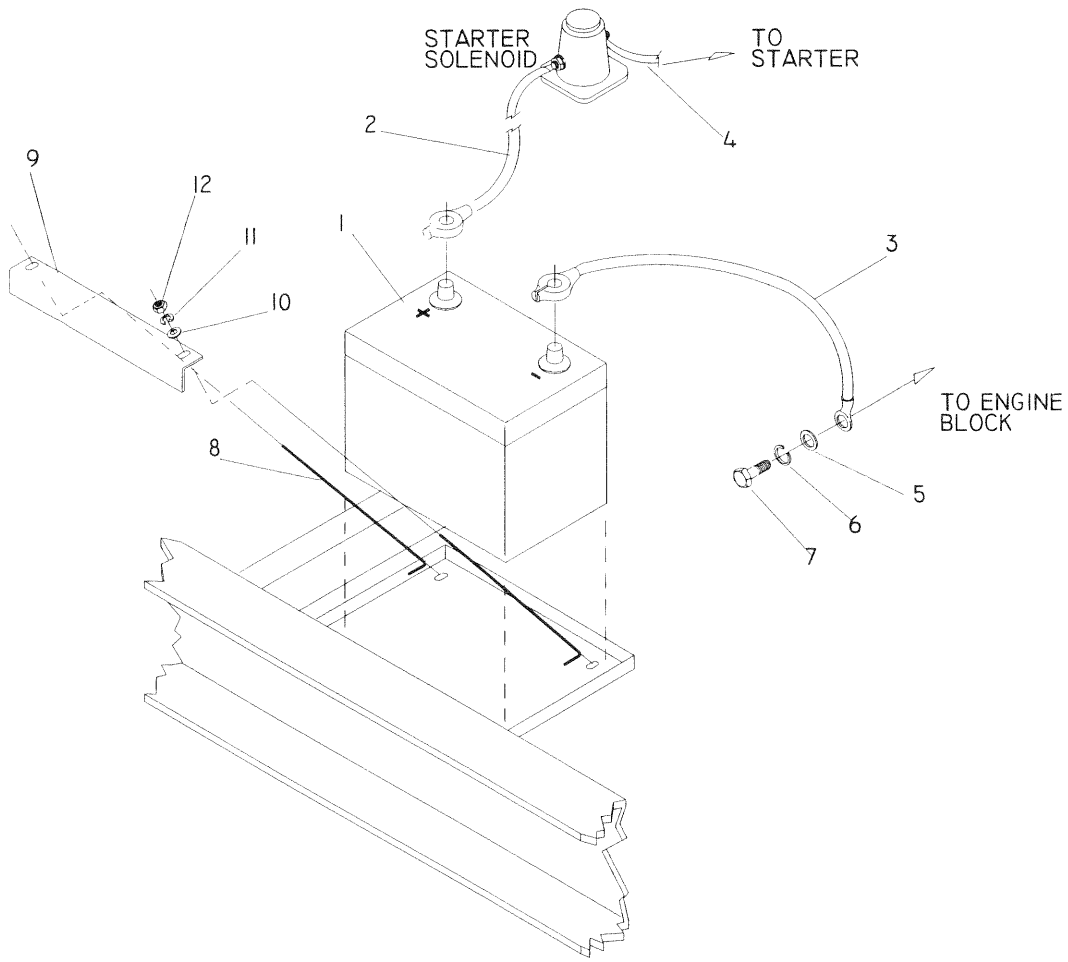
EXPLODED VIEW — MUFFLER

Drawing A7618 Rev. *



ITEM	PART NO.	QTY.	DESCRIPTION
1	20689	1	MUFFLER
2	60366	1	STRAP, MUFFLER
3	59933	1	ELBOW, 90 DEGREE 2" NPT
4	80761	1	PIPE, 2" NPT x 41/2" LONG
5	59939	1	CAP, RAIN
6	75546A	1	PIPE, FLEX EXHAUST
7	36434	1	UBOLT 2" I.D. 5/16"18
8	22259	2	NUT, HEX 5/1618
9	22129	6	WASHER, LOCK 5/16"M8
10	36449	1	SADDLE2"
11	76032	1	SUPPORT, MUFFLER
12	39253	4	CAPSCREW, HEX HEADM81.25 x 20MM
13	45771	4	NUT, HEX M81.25

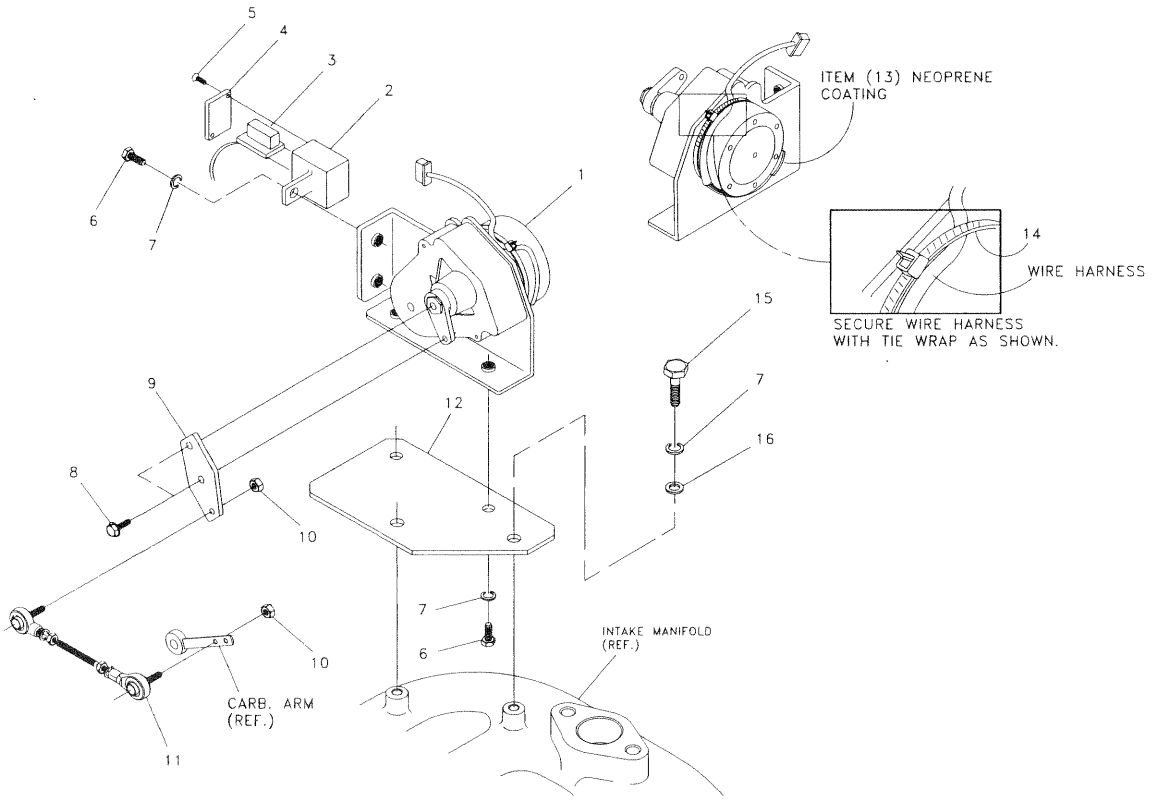
EXPLODED VIEW — BATTERY — Drawing 98922



ITEM	PART NO.	QTY.	DESCRIPTION
1	———	—	BATTERY, GROUP 26
2	38804D	1	CABLE, BATTERY RED, 20"
3	38805B	1	CABLE, BATTERY BLACK, 23"
4	13174260	1	CABLE, RED 29"
5	22131	1	WASHER, FLAT M10
6	46526	1	WASHER, LOCK M10
7	52213	1	HEX HD. CAPSCREW, M10 1.25 x 20 LONG
8	59567	2	JBOLTS, BATTERY HOLD DOWN
9	78121	1	BAR, HOLD DOWN
10	22145	2	WASHER, FLAT 5/16"
11	22129	2	WASHER, LOCK 5/16"
12	22259	2	NUT, HEX 5/16"18

Drawing No. A7216

EXPLODED VIEW — GOVERNOR ASSEMBLY



ITEM	PART NO.	QTY.	DESCRIPTION
1	98290	1	STEPPER MOTOR ASSEMBLY
2	98941A	1	HOUSING, CONNECTOR INTERFACE
3	98958A	1	CONNECTOR, INTERFACE ASSEMBLY
4	98942A	1	COVER, INTERFACE HOUSING
5	98225	2	FHMS #2 x 5/8" SELF TAP
6	43146	3	HHMS M6-1.0 x 10 LONG
7	22097	5	LOCK WASHER, M6
8	64256	2	HHMS #6-32 x 3/8" SELF TAP
9	98783	1	LEVER, STEPPER MOTOR
10	37398	2	NUT NYLOK HEX, #10-32
11	A7041	1	CARBURATOR LINKAGE ASSEMBLY
12	A7106	1	BRACKET, STEPPER MOTOR
13	74031		NEOPRENE COATING
14	29333A	1	TIE WRAP, 7" BLACK
15	22507	2	HHCS 1/4"-20 x 1/2" LONG
16	22473	2	FLAT WASHER, 1/4"

NOTES

GENERAC GENERATORS' STANDARD ONE YEAR

LIMITED WARRANTY FOR STANDBY POWER SYSTEMS

For a period of one (1) year or 1500 hours of operation from the date of original sale, whichever occurs first, an Generac dealer will at its option repair or replace any part which, upon examination by an Generac dealer, is found to be defective under normal use and service. Any equipment which the buyer claims to be defective must be examined by an Generac dealer's nearest authorized warranty service facility. All transportation costs under warranty, including return to the factory, are borne by the buyer and pre-paid.

WARRANTY SCHEDULE

YEAR ONE - 100% coverage on mileage*, labor and parts listed.

ENGINE - All components.

ALTERNATOR - All components.

TRANSFER SYSTEM - All Components.

* Mileage allowance is limited to 300 miles or 7.5 hours, whichever occurs first, and applies only to permanently wired and mounted units.

All warranty expense allowances are subject to the conditions defined in the PUBLISHED GENERAC POLICIES AND PROCEDURES MANUAL.

Units which have been resold are not covered under the Generac Generators warranty.

The warranty shall not apply to:

- Costs of maintenance, adjustments, installation and startup.
- Failures due to normal wear, accident, abuse, misuse, negligence, or improper installation.
- Products which are modified or altered in a manner not authorized by Generac in writing.
- Any incidental, consequential or indirect damages caused by defects in materials or workmanship, or any delay in repair or replacement of the defective parts.
- Failure due to misapplication.
- Telephone, telegraph, teletype or other communication expense.
- Living or travel expenses of persons performing service, except as specifically included within the terms of a specific unit warranty.
- Rental equipment used while warranty repairs are being performed.
- Overtime labor.
- Starting batteries, fuses, light bulbs and engine fluids.

THIS WARRANTY IS IN PLACE OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. SPECIFICALLY, GENERAC GENERATORS MAKE NO OTHER WARRANTIES AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

GENERAC GENERATORS' ONLY LIABILITY SHALL BE THE REPAIR OR REPLACEMENT OF PARTS AS STATED ABOVE. IN NO EVENT SHALL GENERAC GENERATORS BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF SUCH DAMAGES ARE A DIRECT RESULT OF GENERAC'S NEGLIGENCE. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the the above limitation may not apply to you. Buyer agrees to make no claims against Generac Generators based on negligence.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Manufactured by

GENERAC® POWER SYSTEMS, INC.