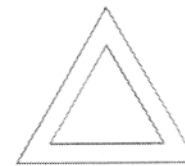


**Athlon™ Capacitor Generator
User's Manual**





ATHLON CAPACITOR GENERATOR

Model AG164S16 – 6 kW

Model AG164T16 – 8 kW

TABLE OF CONTENTS

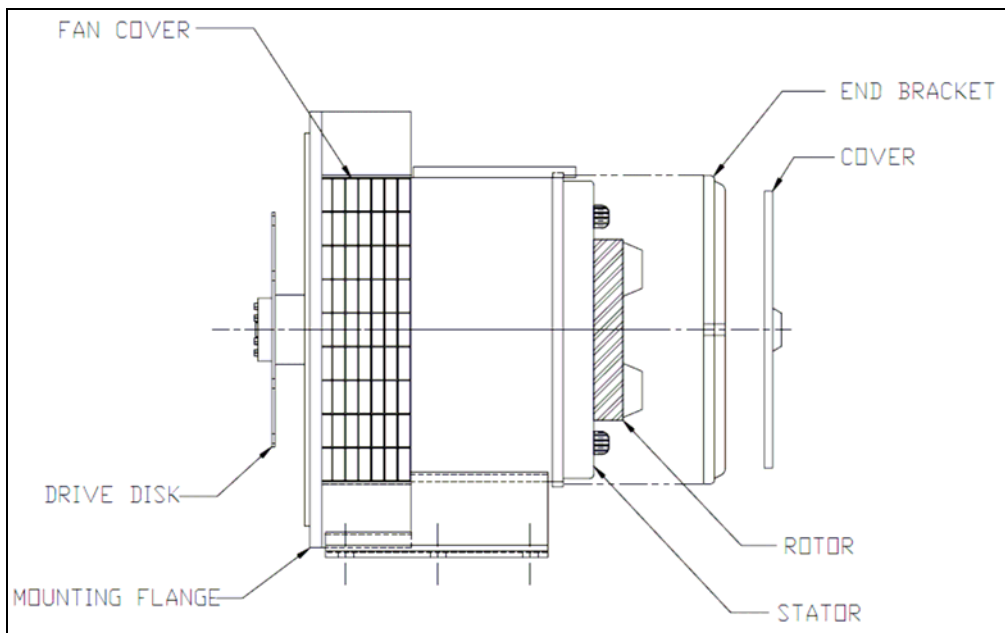
SUBJECT	PAGE
Installation	2
Operation	3
Maintenance	4
Service	4
Appendix A – Electrical Connections	6
Appendix B – Troubleshooting Guide	7

INSTALLATION

Mounting to base/frame

The alternator must be securely mounted to the base, using shims where required to insure that the alternator is not subjected to distortion. Otherwise, dangerous vibrations may occur, causing damage to the alternator.

Mechanical Mounting



CAUTION: Insure that engine starting battery is disconnected before installing the alternator.

- Place a support under the engine flywheel housing.
- Remove the cover from the back of the generator. Disconnect all incoming power leads.
- Remove the exhaust screen band.
- Support the generator rotor assembly with a mounting strap and hoist.
- Remove the rotor assembly from the frame, being especially careful not scratch or cut the copper stator winding when removing the rotor.
- Bolt the rotor assembly's drive disc to the engine flywheel, Torque the drive disc mounting bolts per the engine supplier's specifications.
- Reinstall the generator frame assembly over the rotor. Mount the frame assembly to the engine flywheel housing.
- Remount the exhaust screen band.
- Reconnect all incoming power leads (refer to wiring diagrams).
- Reinstall the cover.
- Remove supports from under the engine flywheel housing.

Electrical Connections

For electrical connections, see connection diagrams in Appendix A. Ground the generator frame and neutral lead in accordance with all National and Local Electrical Codes..

OPERATION

Frequency and voltage are directly dependent on rotational speed. Speed control systems may have a small drop in speed between no-load (NL) and full-load (FL) conditions. Therefore, adjust the speed at no load conditions approximately 3% higher than the full load speed.

Alternator Type	Capacitor (Condenser) Excitation
Speed	60 Hz. - 1850 RPM, NL to 1800 RPM, FL 50 Hz. - 1540 RPM, NL to 1500 RPM, FL
Ambient Temperature Limit	40°C
Insulation	Class H
Voltage Response	≤0.1 second

Initial Start-up

- Check all electrical connections, and insure that all bolts are secure.
- Rotate the shaft to insure that the rotor assembly turns freely.
- Start engine and check for excessive vibration.
- Check the generator voltage at no load and at full load. Voltage is adjusted by changing the engine speed.
- If voltage cannot be adjusted, see Appendix B, "TROUBLE SHOOTING",
- Check temperature rise after 30 minutes of full load operation. If excessive, examine the generator for obstructed air flow.

The alternator has been designed to insure rated output when installed in locations with maximum ambient temperature of 40°C (104°F), and at an altitude not exceeding 3300 feet. For operation at higher ambient temperatures, reduce the generator kW rating 1% for each degree above 40°C. For operation at high altitudes, reduce the generator kW rating 2% for each 1000 ft above sea level.

MAINTENANCE

Periodic Inspection

Clean and inspect the alternator after every 200 hours of normal operation, and more frequently if the unit is in a harsh environment. Dirt and grease build-up will cause the alternator to run hotter, lose efficiency, and reduce the expected life of the unit

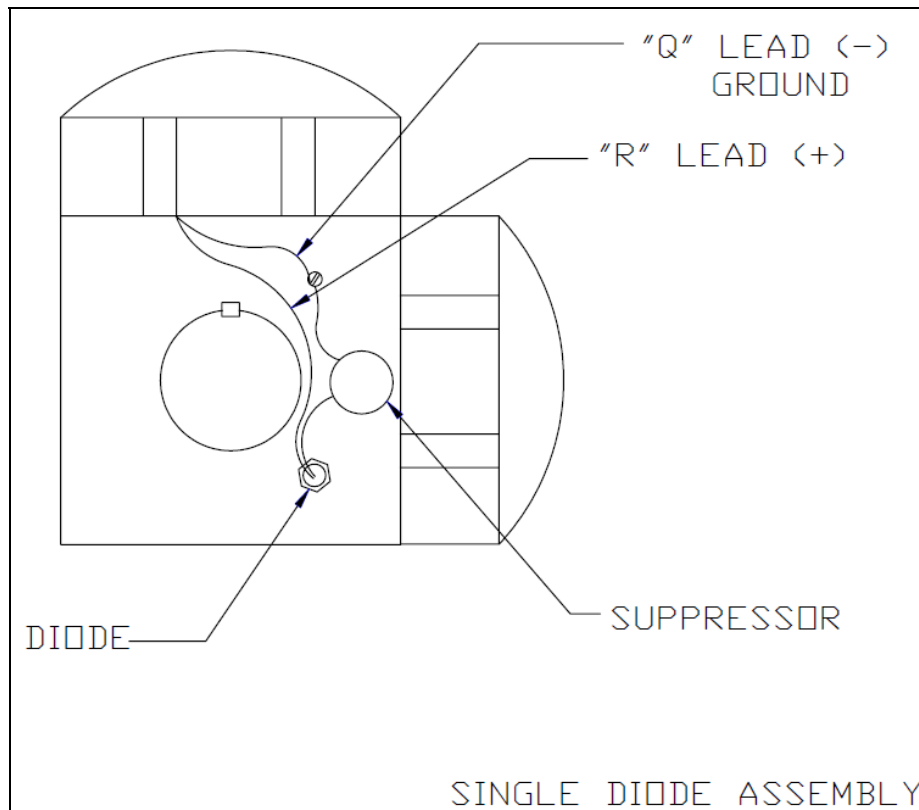
Cleaning

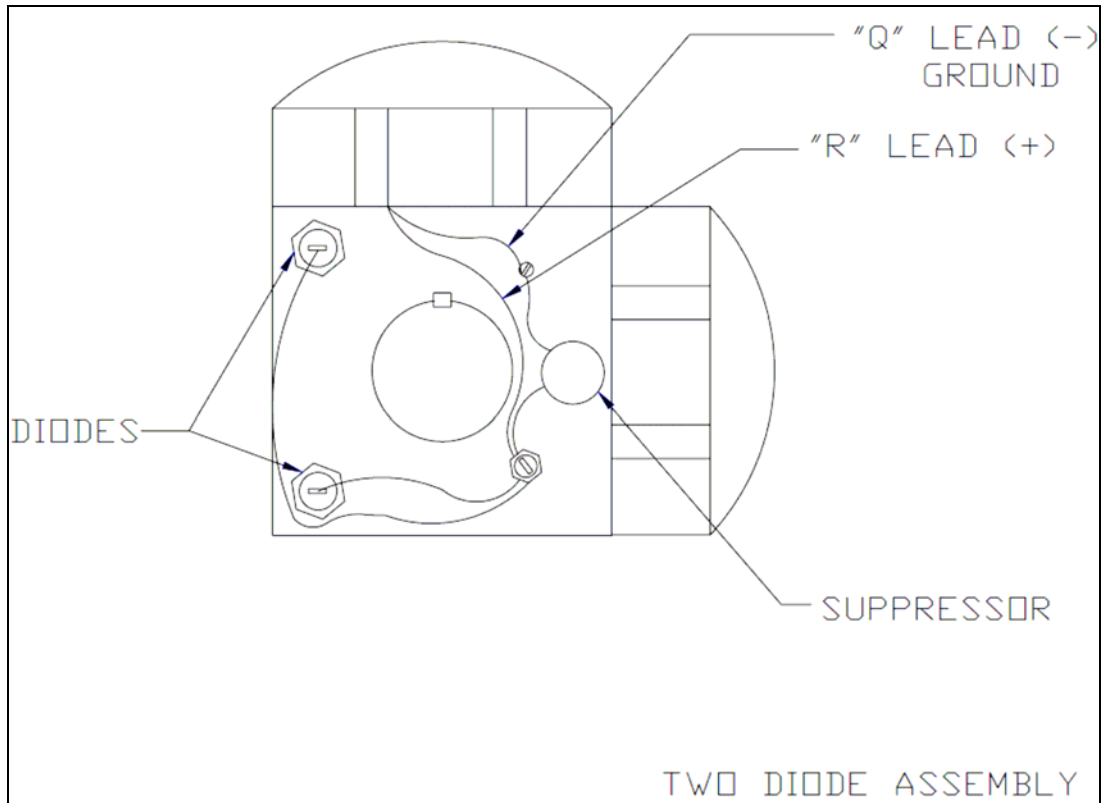
Clean all dirt and oil from external surfaces using clean cloths. Use low-pressure air (25 psi maximum) through a fan opening, to blow contaminants from the internal components. Clean inside the saddle box, and check for loose or damaged lead wires and loose components mounted in the box. Do not use liquid cleaning solutions to clean any parts.

SERVICE

Flashing the Rotor (see figures below)

- Disconnect all incoming power leads to the generator.
- Connect the (+) lead of a 12 volt battery to the "R" connection.
- Connect the (-) lead of the battery to the rotor shaft.
- Disconnect battery leads.
- Check the generator no load terminal voltage. It should be within $\pm 10\%$ of rated value.





Checking the Capacitor Charge

- Check the capacitor "charge and discharge" readings using an ohmmeter on the RX-1000 scale.
- Place the ohmmeter leads on the capacitor terminals, one terminal a time. A meter deflection should be seen (charging), followed by a slow return to infinity (discharging).
- Reverse the ohmmeter leads and repeat the procedure. The results should be the same. No meter deflection or continuity indicates a defective capacitor that should be replaced.

NOTE: A single capacitor is used to regulate the voltage to within 5% of the rated load. It is CRITICAL that caution when handling capacitors since units will still maintain high voltage even after the engine-generator has stopped. Before handling, always discharge the capacitor by using an insulated jumper wire to short the capacitor terminals. Do not handle capacitor or touch any leads on alternator until capacitor is safely discharged. Failure to do so may result in shock and/or injury.

Checking Diodes

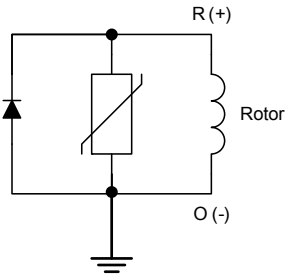
Check each diode by removing the positive (+) rotor lead stud connection. Use a multimeter with a diode check function. With the meter set to diode check, connect each lead to each side of the diode, note the reading, then reverse the leads and note the reading. One reading should be a voltage while the other should indicate either an open circuit or infinite resistance. If both readings are voltages or if both readings are open circuits, the diode needs to be replaced. Repeat this test for second diode if present.

When replacing diodes, torque the diode base between 20 to 30 in-lbs.

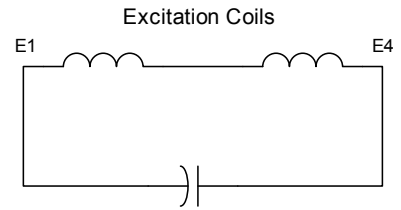
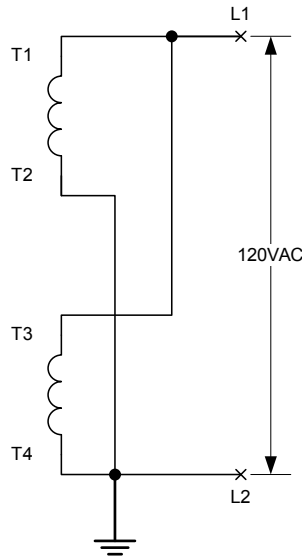
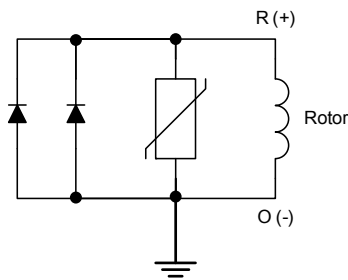
APPENDIX A – ELECTRICAL CONNECTIONS

120VAC WIRING DIAGRAM

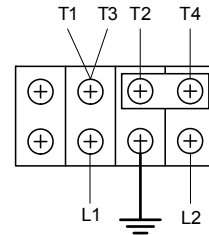
Rectifier Assembly, Single Diode



Rectifier Assembly, Dual Diode



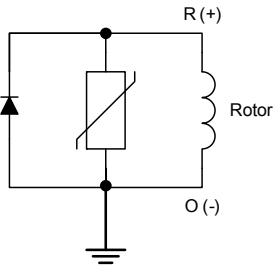
Terminal Wiring



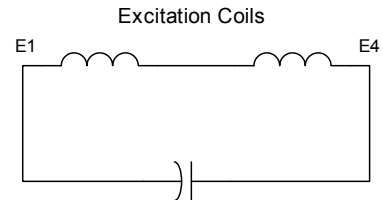
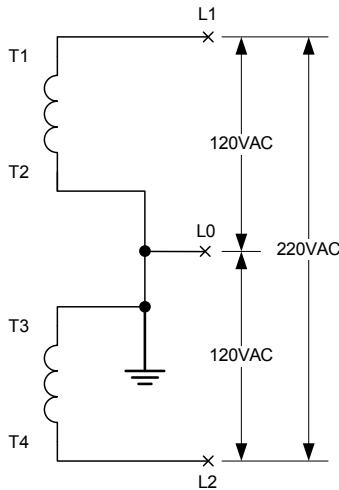
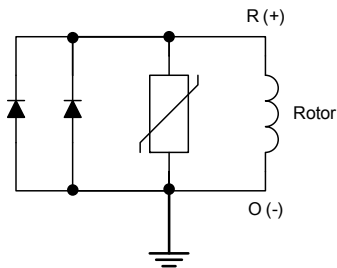
Ground MUST BE connected to frame and frame MUST BE connected to EARTH GROUND and comply with local and national electrical codes

240/120VAC WIRING DIAGRAM

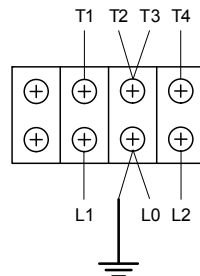
Rectifier Assembly, Single Diode



Rectifier Assembly, Dual Diode



Terminal Wiring



Ground MUST BE connected to frame and frame MUST BE connected to EARTH GROUND and comply with local and national electrical codes

APPENDIX B – TROUBLESHOOTING GUIDE

Problem	Possible Causes		Corrective Actions
Generator excitation failure (does not maintain voltage)	Unit is shorted	→	Flash rotor
	Faulty windings	→	Check windings for broken/burned wires; check resistance
	Pinched leads	→	Examine and correct
	Faulty capacitor	→	Replace capacitor
	Faulty diodes	→	Replace diodes
	Faulty surge suppressor	→	Replace surge suppressor
Full voltage at no load, voltage drops at full load	Loose or broken lead wires	→	Check leads for broken wires or loose connections; check wiring diagram
	Rotor opened or shorted	→	Measure resistance between leads
High No-Load Voltage	Fast engine speed	→	Adjust engine speed
	High capacity capacitor	→	Replace capacitor
Low Voltage under load	Loss of residual magnetism	→	Flash rotor
	Low engine speed	→	Adjust engine speed
	Faulty diode	→	Replace diode
High voltage under loaded conditions	Incorrect engine adjustment	→	Check engine speed & operation
No voltage	Faulty suppressor	→	Disconnect suppressor. If voltage rises, replace suppressor and reconnect.
Unstable voltage	Incorrect voltage adjustment and/or operation	→	Check engine speed and fuel system
	Loose connection	→	Inspect connections
	Faulty ground connection	→	Inspect connections
	Load induced	→	Filter load
Noisy alternator	Worn bearings	→	Replace bearings



Athlon Generator, LLC
Montross, Virginia
U.S.A.