

# LT-12D GEN-SET DIAGNOSTIC

This documentation can be used as a guide when inspecting and diagnosing failure associated with the generator end on the LT12D.

There are two different Gen-Sets used in the LT12D. Earlier models came with the C2 series Gen-Set and the current models come with the LT3 series Gen-Set (see below).





C2 - Series Square Gen-Set MQ part # (29643) No Longer Available

Contact Multiquip parts department for individual replacement parts. Parts Department (800) 427-1244

LT3 - Series Round Gen-Set MQ part # (29895)

**NOTE:** Notice the C2 series box cover mounted on top of the Gen-Set, this is where the capacitors and main wiring terminal is located unlike with the LT3 series the capacitors and main terminal is mounted on the wall inside the control panel of the unit (see page 2).

#### Serial Number Break

Serial #	Gen-Set Part #
902149 - and below	29643 C2 N/A
902169 - and above	29895 LT3

#### **Inspection points**

- 1. Check Gen-Set output for correct AC voltage. (see page 2 3)
- 2. Check stator resistance values and short to ground. (see page 2 3)
- **3.** Check the excitation capacitor. (see page 4)
- 4. Check rotor resistance values and rotor diodes. (see page 5 6)

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## **Checking Gen-Set Output on the LT3 Series**

Removing the control panel cover provides access to the capacitor and main wiring terminal strip, disconnecting the wires is not necessary for checking AC voltage output.

NOTE: when checking voltage output always ensure engine is set to the correct rpm speed.

RPM – 1850 no load o RPM – 1800 under load

#### Gen-Set Wiring

There are (6) wires coming out of the main harness:

- (2) Red excitation wires
- (4) Black voltage output wires

The voltage output wires are black with blue labels, numbered 1,2,3,4

AC voltage output can be checked at the terminals:

1 & 2	120V AC
3&4	120V AC
1&4	230V AC



Capacitor and Gen-Set wiring terminal strip is located inside the control panel

Control panel cover

## **Checking Stator Resistance on the LT3 Series**

In order to measure the correct resistance value from the stator you must isolate all stator wires from the terminal strip and capacitor.

#### Gen-Set Wiring

- (2) Red excitation wires
- (4) Black voltage output wires

Ohms resistance values:

1 & 2	.4 Ω ohms
3&4	.4 Ω ohms
Red	2.2 Ω ohms

Also check each individual wire for short to ground.

Use of a megger meter can be used to check wire insulation.



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## **Checking Gen-Set Output on the C2 Series**

Removing the cover on top of the Gen-Set provides access to the capacitors and main wiring, disconnecting the wires is not necessary for checking AC voltage output.

**NOTE**: when checking voltage always ensure engine is set to the correct rpm speed.

#### RPM – 1850 no load o RPM – 1800 under load

#### **Gen-Set Wiring**

There are (4) wires coming in from the main harness connected to a terminal block

AC voltage output can be checked at the terminals:

Black & White	120V AC
Red & White	120V AC
Black & Red	230V AC





View of cover removed

## **Checking Stator Resistance on the C2 Series**

In order to measure the correct resistance value from the stator you must isolate all stator wires from the terminal block and capacitor.

#### **Gen-Set Wiring**

- (2) Black excitation wires
- (4) Black voltage output wires
- (1) Black not used

Ohms resistance values:

1 & 5	.36 Ω ohms
3&4	.36 Ω ohms
60 & 60	1.7 Ω ohms

Also check each individual wire for short to ground.

Use of a megger meter can be used to check wire insulation.





## CHECKING THE EXCITATION CAPACITOR

Easiest method is to use a capacitor tester, the capacitor in the picture test good at 28 microfarads.

#### If using a multi-meter

- Disconnect the two wires from the stator and isolate the capacitor.
- Discharge the capacitor by hooking an insulated test lead to both sides of the capacitor terminals. Remove the test lead after 5 seconds.
- Set the meter for ohms Ω and place the leads on the capacitor.
- If the meter reads low resistance initially and increases, the capacitor is GOOD.
- If the meter reads low resistance initially and does not change, it is SHORTED and must be replaced.
- If the meter reads high resistance initially and does not change, it is OPEN and must be replaced.





#### **Excitation Capacitors**

Below are the three different capacitors used in the LT12 MQ Light Towers.



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The Gen-Set must be removed from the unit in order to gain access to the rotor. Checking the rotor involves testing the winding resistance and 2 rotating diodes.



Remove and isolate the diodes





## CHECKING THE ROTOR CONTINUED

A good diode will test no continuity in one direction and a reading between .4 to .5 V in the opposite direction. Rotor diode

Ohm resistance values

А	.45 V
В	OL



After unsoldering the leads at the diode you will have isolated the winding and are able to check the resistance of each winding.

- Correct resistance should measure 2.9ohms
- Check for short to ground

Use of a megger meter can be used to check winding insulation.



LT3 – Series Rotor MQ part # (GELT3100ROTOR60)



C2 – Series Rotor assembly MQ part # (4500561290)



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