

Guardian 1000 Series Light Ballast Application

A ballast is defined as the circuit element that serves to limit the electric current or to provide a starting voltage, as in certain types of lamps such as fluorescent ceiling fixtures*. A ballast circuit diagram is illustrated in Figure 1. In Fluorescent Lighting Fixture applications, the ballast is the transformer that converts line voltage to a lower voltage that then illuminates the lamps. The transformers **MUST** be tested to verify that when a consumer changes a bulb the transformer does not allow hazardous line voltage to pass to any surface where the consumer may come in contact with it.

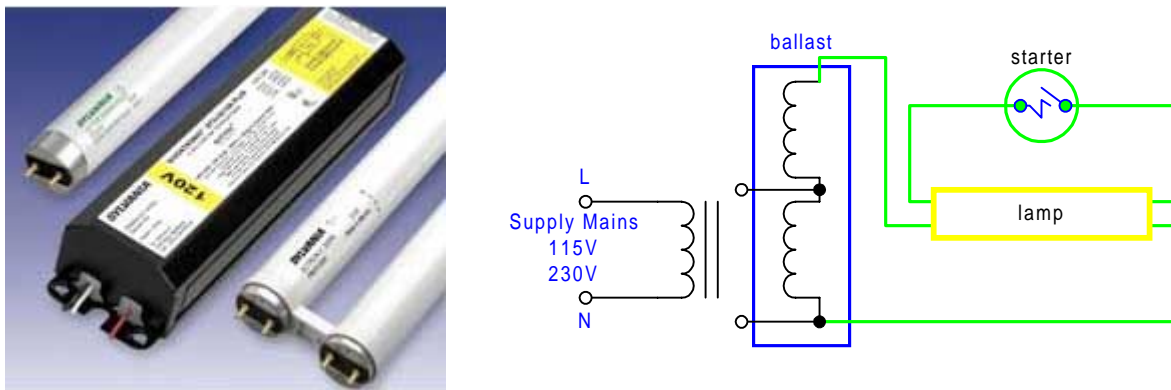


Figure 1: Commercial Fluorescent Light Ballast and Ballast Circuit

Let's take a closer look at how a fluorescent lamp works and how the ballast fits into this equation. Figure 2.0 illustrates the basic layout of a fluorescent lamp. The current flows through the starter switch, to the electrodes, ionizing the mercury atoms and creating the path for electrical current. The ballast inhibits the increasing current, modulating it such that only an occasional flicker is noticeable to the human eye.

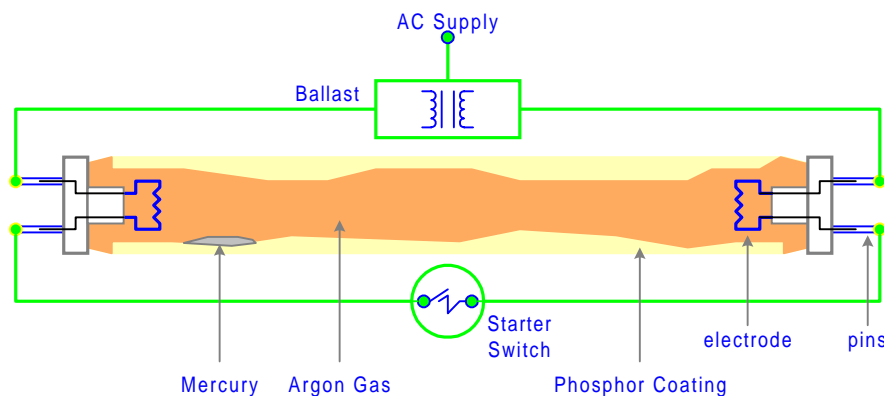


Figure 2: Fluorescent Lamp

* McGraw-Hill Dictionary of Scientific and Technical Terms, 1974 McGraw-Hill, Inc.

Ballast Test

To ensure that the consumer never comes in contact with the line voltage, the ballast is tested with typical input (primary) voltages up to 2700 Volts and an output (secondary) voltage of 4000 to 5000 Volts with a 3mA current trip limit. The input and output (primary and secondary) of the transformer both must be tested on each transformer and if any failure occurs the unit is discarded. If the transformer can withstand such a test then it can be safely assumed that a 115 or 230 Volt line signal will not degrade the transformer. Figure 3.0 illustrates the AC hipot test using a Guardian 1030S AC/DC/IR/SC Hipot Tester.

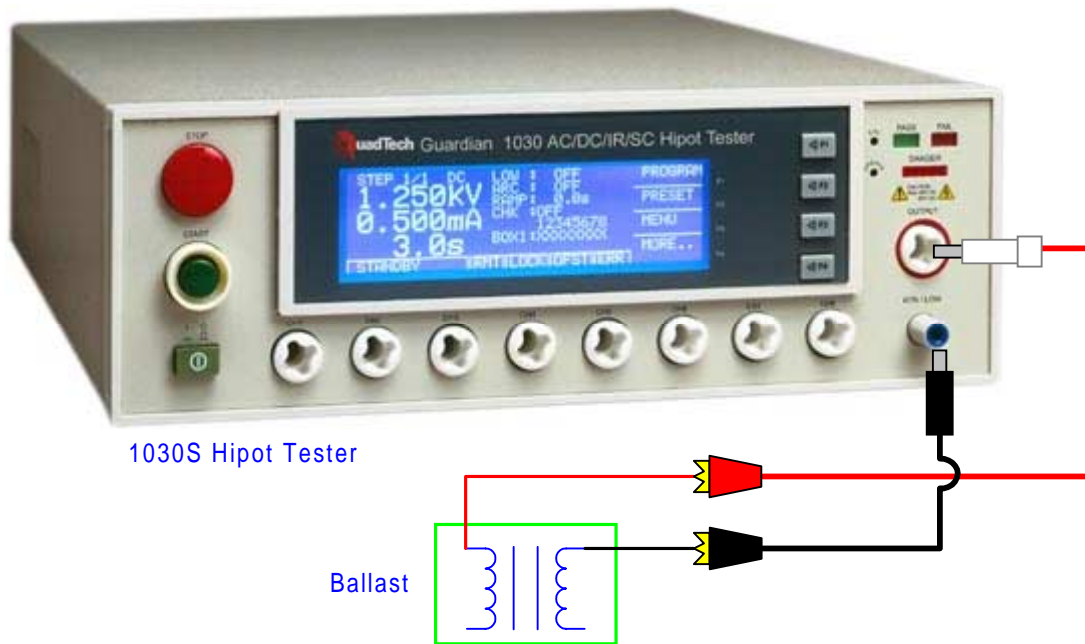


Figure 3.0: AC Hipot Test on Ballast

QuadTech manufactures a complete line of hipot testers and electrical safety analyzers capable of performing this ballast application test. Table 1.0 lists the applicable QuadTech instruments and their output voltage capability.

Table 1.0: QuadTech Hipot Testers

Instrument	Output Voltage
Sentry 10-35 AC/DC/IR Hipot Testers	100-5000V AC, 6000V DC
Guardian 1000 Series AC/DC/IR/SC Hipot Testers	50-5000V AC, 6000V DC
Guardian 2500 Series AC/DC/IR Hipot Testers	100-5000V AC, 6000V DC
Guardian 6000 Electrical Safety Analyzer	50-5000V AC, 6000V DC

For complete product specifications on those products mentioned above or any of our other test instrumentation please visit us at <http://www.quadtech.com/products>. Do you have an application specific test? Call us at 1-800-253-1230 or email your questions to info@quadtech.com.

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