



## Product Description

Spark testing is an important maintenance technique used on glass-lined steel equipment. It is used to locate defects in the glass lining of vessels and accessories, to perform routine preventive maintenance checks, to verify suspected failure, and to locate areas to be repaired.

In-plant spark testing involves a 6000-volt source, either AC or DC. The voltage potential is applied across the clean, dry glass surface by an insulated, hand-held fault probe. Any exposed metal causes a visible spark to jump between the probe and the flaw, alerting the operator to its location. On the DC tester, additional warning signals are given (see below).

## DC Spark Testing

De Dietrich Process System's standard GlssTron-6 Model 104 tester is conveniently portable and rechargeable. It is very accurate and results are easy to interpret. A constant potential of 6000 volts DC is assured by the solid-state circuitry. Objects being tested must be electrically grounded to the spark tester for safety and proper operation.

In operation, the probe is moved gently across the glass surface. Any defect - a pinhole, chip, crack, etc. - is indicated by a visible spark at the end of the probe, a red alarm light, an audible signal, and a drop in output voltage. After the high-voltage charge on the glass surface has been erased, the damaged areas are marked for later repair.

## AC Spark Testing

While DC testing is preferred method, it can only be used on grounded equipment. Certain glass-lined equipment, such as DDPS's GlasLock® agitator blades, are totally encapsulated with glass so that they cannot be grounded. In such cases, DDPS's Model 60000 AC tester can be used.

In operation, the probe brush is passed across the surface to be tested, any discontinuity in the glass lining will be indicated by a spark as the brush approaches the defect and again as it leaves it. After de-energizing the probe, the damaged areas can be marked for later repair.



### GlasTron-6 Model 104 DC Tester

#### Specifications

*Kit weight:* 12 lbs.

*Kit dimensions:* 16.5 x 11.75 x 6.75 inches.

*Tester weight:* 5.3 lbs.

*Tester Dimensions:* 7 x 8 x 4 inches.

*Probe cord length:* 20 ft. probe extensions: two, each 12 in. long.

*Power input to integral charger:* 120 V AC, 60 Hz, single phase, 10 VA.

*Tester power output:* 6000 V DC, probe negative, 0.172 mA average.

*Fault indication by:* Visual spark, LED warning indicator, audible alarm, decrease in digital test voltage display.

*Circuitry:* Solid state

#### Characteristics of equipment

*Grounding:* Objects being spark tested must be grounded with the tester ground lead.

*Reliability:* Voltage does not vary with decreased contact between probe and lining.

*Voltage:* Constant 6000 DC volts assured by the solid-state circuitry and confirmed on digital display.

*Portability:* Portable with battery and integral charger. Can be plugged into standard 120 V AC outlet for recharging when not in use.

### Model 6000 AC Tester

#### Specifications

*Kit weight:* 11.2 lbs.

*Kit dimensions:* 11.2 x 9.2 x 5.5 inches.

*Tester weight:* 4.2 lbs.

*Probe input:* 120 V AC, 60Hz, single-phase, 30 W.

*Power output:* 6000 V at 0.2 MHz, 0.5 W max.

*Fuse:* 500 mA A/S.

*Circuitry:* Solid state

#### Characteristics of equipment

*Grounding:* While grounding objects to be tested is preferable, it is not essential.

*Reliability:* Voltage can surge with decreased contact of probe with lining.

*Voltage:* Voltage can drift, so an AC tester should be calibrated annually. As a rule of thumb, a spark length of  $\frac{1}{4}$  in. indicates approximately 6000 V. A longer spark indicates excessive voltage which can damage glass lining.

*Portability:* Semi-portable; must be plugged into 120 V AC outlet when in use.

*Interference:* Generates radio frequency interference.

### DC vs. AC Spark Testing

DC spark testing equipment costs somewhat more than AC testing equipment, but its superior sophistication justifies the increment for most users. Its most important advantages are accuracy, with voltage regulated by solid-state circuitry and verified on the test instrument. The DC tester is fully portable making testing of glassed components in storage yards easier. Defects are signaled in multiple ways, eliminating guesswork and like hood of error or misinterpretation.

AC testing generates radio frequency interference and is less accurate than DC. However, it is an acceptable test method if proper precautions are taken, and must be used if the equipment to be tested cannot be grounded.

With either method, field testing should be limited to 6,000 volts to avoid the possible chance of damaging the glass lining. As a further precaution, with AC testing the probe should not be allowed to remain in contact with the one spot for a long time, but it should be moved continuously to prevent possible damage. While 6000 volts at 0.2 MHz and low amperage is considered non-lethal, direct contact with the spark should always be avoided, as it may produce an involuntary reflex reaction which could result in possible personal injury.

Spark testing should only be done by qualified and trained operator who is thoroughly familiar with the instructions for the specific equipment to be used.