



TRIO-TECH
INTERNATIONAL

G-203
LEAK DETECTORS

INDUSTRY LEADERS IN COMPLETE LEAK DETECTION SYSTEMS



Model G-203

THE BUBBLE TEST STATION FOR MIL-STD MICROELECTRONICS GROSS LEAK TESTING

- Distortion-free Viewing
- Digital Temp Display
- Exceeds Mil-Spec Candlepower Requirement
- Temp Range: 50°C to 145°C ±5°C
- Quick-change Lamps and Heater Rod
- Overtemp Safety Control
- Gross Leak Detection $\geq 10^{-5}$ atm cc/sec
- Reduce Costly Fluorocarbon Usage
- Self-contained Test Unit Designed with Function and Safety in Mind
- Assure Production Continuity with Rapid On-Time Testing While Providing Years of Dependable Service
- Reduce Semiconductor Inventories by Screening and Shelving Only the Hi-Rel Devices Needed

DESCRIPTION

Testing for the Trio-Tech Bubble Test Stations and accessories occurs under Test Condition C, Method 1014.7 of MIL-STD-883. The Bubble Testers are used in conjunction with the Trio-Tech 488 Series of Gross Leak Pressurization Systems.

TEST CONDITION 'C' Fluorocarbon Gross Leak

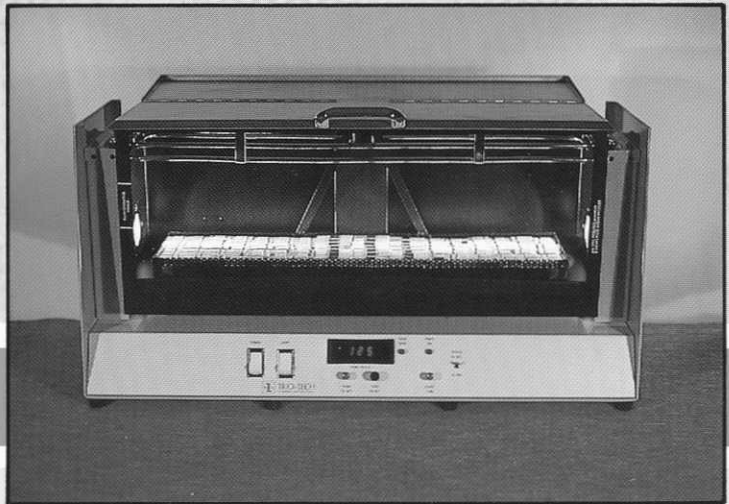
The Test Condition 'C' immersion procedure is as follows: *Immerse devices in FC-40* or equivalent indicator fluid. Maintain the fluid at 125°C ±5°C. Immerse the devices with the top portion no less than two inches below the surface of the indicator fluid. Immerse the devices in any arrangement. Make sure, however, that it is easy to observe individual bubbles from any device in the group. Observe devices through a magnifier against a dull, non-reflective black background while it is illuminated. The minimum observation time is 30 seconds (from the instant of immersion) unless the devices are rejected earlier.*

TEST 'C' GROSS LEAK TESTING THEORY

In most commercial gross leak testing, the component (device) is immersed in 125°C FC-40. An observer watches (for a specified time) for bubbles escaping from the component cavity. Increased pressure (due to elevated temperature) inside the component's cavity causes gross leakers $\geq 1 \times 10^{-3}$ atm cc/sec to bubble.

In Test 'C', the component is pre-conditioned (with FC-72* fluorochemical inert liquid or equal using a Model G-488 Pressurization System) by a vacuum soak and pressurization cycle before the bubble test is performed. Because FC-72 boils at 56°C, there is a high pressure inside the gross leaking component when it is immersed in 125°C FC-40 (which boils at 155°C). Because of the increased internal pressure, it is possible to detect leak rates ($\geq 1 \times 10^{-5}$ atm cc/sec) with a standard bubble test.

Regardless of the variation in your laboratory facilities, Trio-Tech can furnish a Gross Leak Bubble Test System that uses all or none of many accessory units.



MODEL G-253

SPECIALLY BUILT MODELS
AVAILABLE UPON REQUEST

Accessory equipment may include: G-233F fluorochemical Filtration Unit, self-contained 481-C Coolant Assembly, G-225M 'Wide-Vu' Magnifier, G-235 fluorocarbon savings Hood, and/or 481-L Adjustable Lighted Magnifier with tester Stand. Where several Bubble Testers are in use in the same area, a FRIGID-flo Refrigerated Coolant System for use in high temperature areas is also available.

ADAPTABLE TO YOUR TESTING FACILITIES

The Trio-Tech Bubble Test Station uniquely combines the exacting Military Standard procedure with practical laboratory testing facilities. From solid state temperature controller to crystal-clear optics, the Trio-Tech Bubble Tester fits your microelectronics testing setup. You may choose from two standard tank sizes.

Each unit is equipped with a chill ring to minimize the fluorochemical evaporation. Since service water is not available in many labs, a self-contained coolant assembly is available that may be used with the chill ring assembly.

To elevate the Bubble Tester and magnify the chamber area, an illuminated, adjustable Magnifier with Stand is available for Model G-203.

The larger Model G-253 has a useable tray area of 22" x 4.75". When testing 300 mil, 16-lead devices and allowing for generous spacing between them, 207 pieces will fit on the tray. Using a 45-second cycle time or 80 cycles per hour, the thruput is 16K parts per hour. With 600 mil, 28-lead devices, the tray holds 84 parts; and 80 cycles per hour would test 6.7K parts per hour. And if these were 48-lead devices, 48 pieces could be accommodated; thruput would be 3.8K parts per hour.

*FC-40 & FC-72 3M Fluorinert® Brand Electronic Liquids

ACCESSORY EQUIPMENT



G-233F FILTRATION SYSTEM

DIMENSIONS (approx.):
20½" wide x 9" deep x 10" high

TIMER:
Adjustable – 0 to 15 minutes

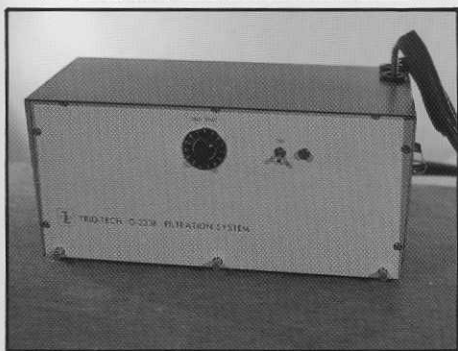
SIGNAL LIGHT:
RED – Power

PUMP CAPACITY:
3.0 gallon/minute

POWER:
120 VAC with 7A fuse and 4' cord; line switch

OPTIONAL FEATURE:
240 VAC, 50/60 cycle

↑ PLEASE NOTE:
↓ PICTURES OF THE 481-C
AND G-233F HAVE BEEN
TRANSPOSED



481-C COOLANT ASSEMBLY

DIMENSIONS (approx.):
17" wide x 12" deep x 9" high

CHAMBER CAPACITY:
3.0 gallon

PUMP CAPACITY:
2.0 gallon/minute

POWER:
120 VAC with 5A fuse and 3' line cord

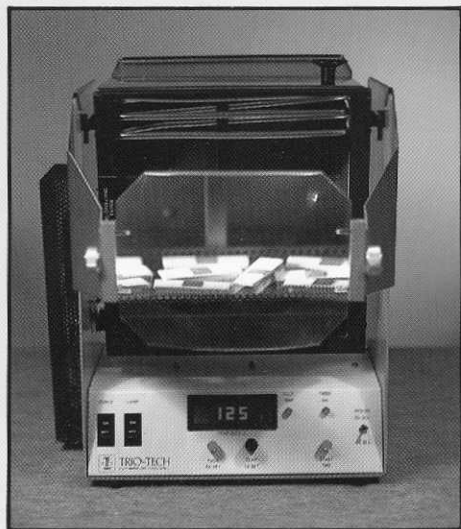
OPTIONAL FEATURE:
240 VAC, 50/60 cycle



G-235 HOOD

SPECIFICATIONS:
Reduces fluorocarbon loss from excess boil-off, carry-off and ventilation systems. Features additional chill ring coils, rear drain tray, spring-hinged front and rear doors, complete with two parts baskets. Fits Models G-203, G-202 and A-481-10 Bubble Test Stations having openings of 9-7/8" x 4-1/2".

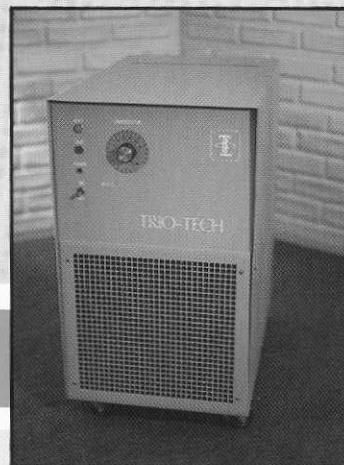
BASKET TRAY SIZE:
7-7/8" x 2-7/8" I.D.



G-225M "WIDE-VU" MAGNIFIER

SPECIFICATIONS:
Optical grade acrylic lens for full view magnification. Adaptable to Models G-203, G-202 and A-481-10 Bubble Test Stations having clearance of approximately 11-7/16" between outer upright supports.

LENS DIMENSIONS:
6" high x 8" wide



528320 FRIGID-flo REFRIGERATED RECIRCULATING COOLER

DIMENSIONS:
24" D x 14½" wide x 24" high

MAXIMUM COOLING CAPACITY:
(@ 20°C) 7150 BTU/hr., 2100 watts, 1806 Kcal/hr.

TEMPERATURE RANGE:
+5°C to +35°C

TEMPERATURE STABILITY:
±1.0°C

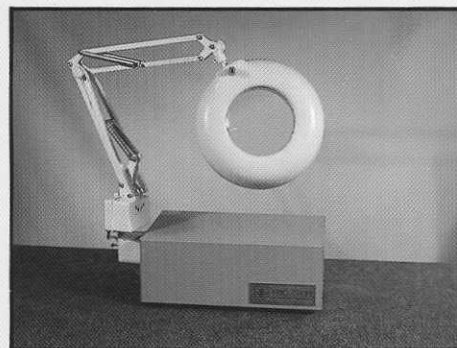
COMPRESSOR:
¾ H.P.

PUMPING CAPACITY:
1 GPM

PUMPING PRESSURE:
10-80 PSI

RESERVOIR VOLUME:
1.1 gallon (4.1 liters)

POWER REQUIREMENTS:
115 VAC, 60 cycle – 18 amps
230 VAC, 50 cycle – (8.5 amps)



481-L MAGNIFIER

SPECIFICATIONS:
An adjustable, illuminated, swivel magnifier with stand for use with Bubble Test Stations.

DIMENSIONS:
14" wide x 9" deep x 5½" high

PRESSURIZATION SYSTEM ►

Trio-Tech's Model G-488 Pressurization System is used to increase the sensitivity of microelectronics gross leak bubble testing to Military Standards. A variety of chamber sizes are available for bulk or stick-to-stick testing. The unit is a solid state, fully automatic, totally self-contained closed loop system providing gross leak detection $\geq 10^{-5}$ atm cc/sec.



SPECIFICATIONS

	G-203 BUBBLE TESTER	G-253 BUBBLE TESTER
DIMENSIONS (approx.)	13.5" wide x 8" deep x 15.75" high	30" wide x 10" deep x 14.75" high
USABLE WORK TRAY AREA	3" x 8" (7.62 cm x 20.32 cm)	4.75" x 22" (12.06 cm x 55.44 cm)
CHAMBER CAPACITY	1 gallon	3.4 gallons
COOLANT REQUIREMENT (20°C Water)	.2 gallons/minute	.7 gallons/minute
TIMER	Selectable 30 or 60 seconds	Selectable 30 or 60 seconds
SIGNAL LIGHTS	RED – Power, Timer and Heater	RED – Power, Timer and Heater
POWER	120 or 240 VAC with 7A fuse and 7' cord; line switch	120 VAC with 15A fuse and 7' cord; line switch
OPTIONAL FEATURES	Extra Tray(s), P/N 481290 G-233F Filtration Unit 481-C Coolant Assembly G-225M "Wide-Vu" Magnifier G-235 Hood 481-L Magnifier with Stand	Extra Tray(s), P/N 481365 240 VAC, 50/60 cycle G-233F Filtration Unit 481-C Coolant Assembly 481-L Magnifier
OPERATING PARAMETERS	50°C to 145°C $\pm 5^\circ\text{C}$	50°C to 125°C $\pm 5^\circ\text{C}$
STANDARD FEATURES	Digital temp display, large tank and tray areas, burn out proof heating rod, overtemp safety control, illuminated controls, triple chill ring, drain tray, permanently hinged fluorocarbon savings cover, 15,000 foot-candle light source, adjustable temp range, 30 or 60 second timer selector, two (2) parts trays (P/N 481290), one year Warranty	Digital temp display, large tank and tray areas, burn out proof heating rod, overtemp safety control, illuminated controls, triple chill ring, fluorocarbon savings cover, dual 15,000 footcandle light sources, adjustable temp range, 30 or 60 second timer selector, two (2) parts trays (P/N 481365), one year Warranty



TRIO-TECH
INTERNATIONAL

2040 No. Lincoln Street - Burbank, California 91504 - 818/846-9200
TLX 194811 • FAX 818/843-0850 • Cable TRIOCAL

Other Trio-Tech Facilities:

Sunnyvale, California 94086 • 975 Benicia Avenue • 408/245-7100
Tempe, Arizona 85281 • 2414 West 14th Street • 602/894-9644
Singapore • 1004, Toa Payoh North • 04-05/07 • 2540255
Ireland • Abbey Road, Deansgrange • Co. Dublin • 01/800395

For additional information on this or other Trio-Tech products – Gross Leak Bubble Testers, TRACER-flo® Process Fine Leak Detection Systems, Gross Leak Pressurization Systems, Helium Fine Leak Detection Systems, CENTRISAFE® Centrifuges and Fixturing, Krypton 85 Tracer Gas, BISIC® Static/Dynamic and Liquid Burn-in Systems, or Complete Testing Services – please contact our Burbank facility directly or the local Representative in your area.