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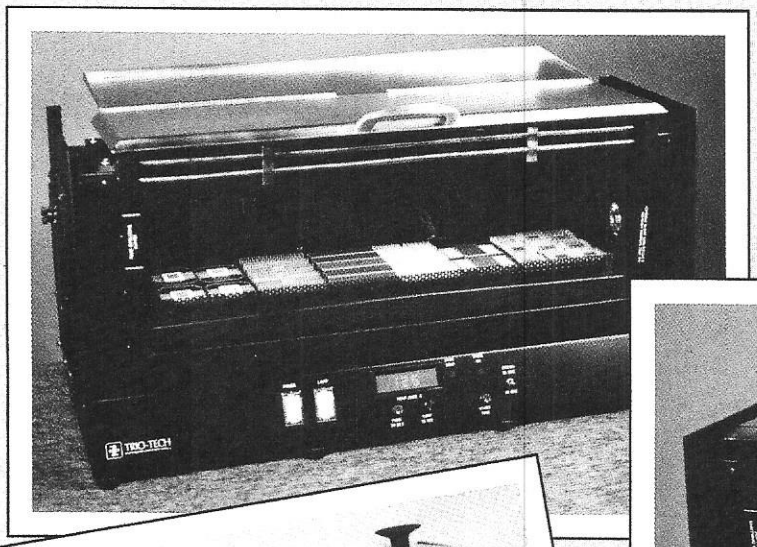
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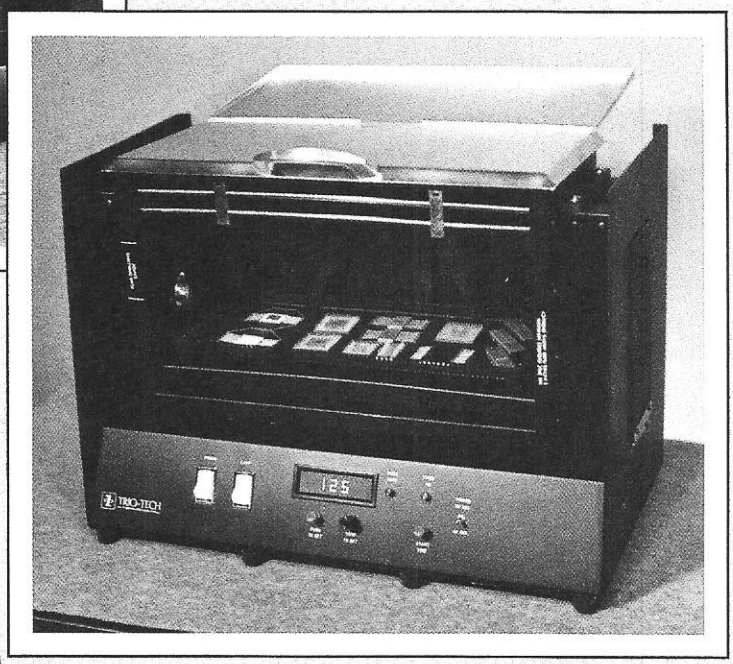
TRIO-TECH INTERNATIONAL

BUBBLE TEST LEAK DETECTORS

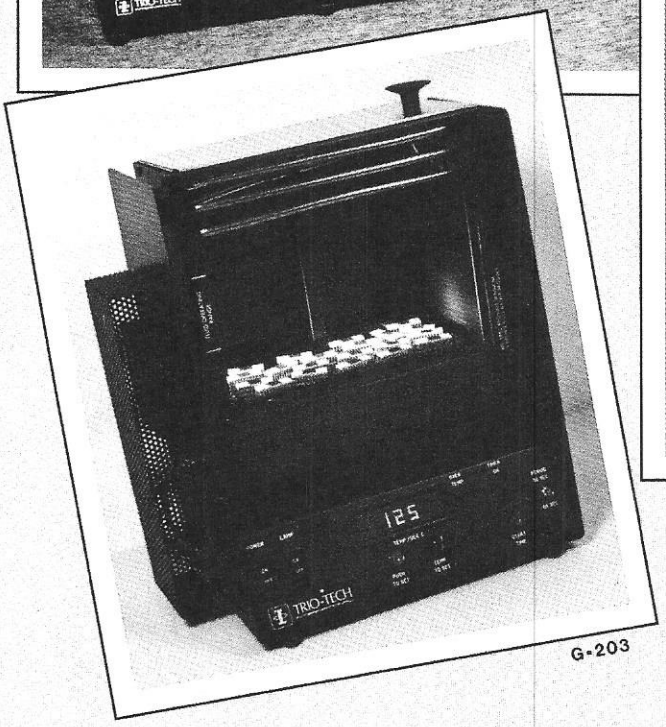
INDUSTRY LEADERS IN COMPLETE LEAK DETECTION SYSTEMS



◀ G-253



G-254



G-203

- The Industry Standard for Function and Reliability
- Mil-Spec 1014.9 Gross Leak Detection
- Absolute Maximum 'Open Field' Distortion-free Viewing
- Digital Temp Display
- Temp Range: 50°C to 145°C ±5°C
- Exceeds Mil-Spec Candlepower Requirement
- Unique 'Stand Alone' Filtration System — Redundant Fluid Conditioners Unneeded
- Overtemp Safety Protection
- Cost Saving Fluorocarbon Recovery Hood Reduces FC Losses Far Beyond Any Other Available System
- A Family of Leak Detectors to Fit Your Specific Needs
- Excellence Through Evolution

DESCRIPTION

Testing for the Trio-Tech Bubble Test Stations and accessories occurs under Test Condition C, Method 1014.9 of MIL-STD-883. The Bubble Testers are used in conjunction with the Trio-Tech 489 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-489R 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.

ADAPTABLE TO YOUR TESTING FACILITIES

The Trio-Tech Bubble Test Station uniquely combines the exacting Military Standard procedure with both laboratory and production test capabilities. From solid state temperature controller to crystal-clear optics, Trio-Tech Bubble Testers fit your microelectronics testing setup. You may choose from three standard tank sizes, or custom sizes where required.



PRESSURIZATION SYSTEM

Trio-Tech's Model G-489R 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 microprocessor controlled, key pad programmable, fully automatic, totally self-contained closed loop system providing gross leak detection $\geq 10^{-5}$ atm cc/sec.

Each unit is equipped with a chill ring to minimize the fluorochemical evaporation. Since service water is not available in some labs, a self-contained coolant assembly is available that may be used with the chill ring assembly. Special FC recovery hoods are optional and reduce FC loss to an absolute minimum.

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. Note: Under most conditions, normal shop water is all that is required.

Trio-Tech makes available three standard Bubble Detectors — Models G-203, G-254 and G-253. These units differ primarily in tank and parts tray sizes. One will probably fit your precise testing requirements. (See back page for specifications.)

Trio-Tech also manufacturers the Model G-350 Vapor Detection System for applications requiring this specific technology. Vapor detectors eliminate operator judgment as to leak rate, but do not allow the user to see the location of a leak. Both technologies have advantages. Please request the G-350 brochure for further data.

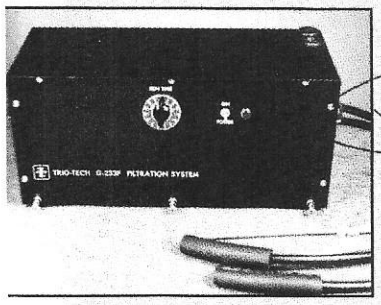
* FC®-40 and FC®-72 are Fluorinert® Liquid products of 3M

OPTIONAL EQUIPMENT



528320 FRIGID-flo REFRIGERATED RECIRCULATING COOLER

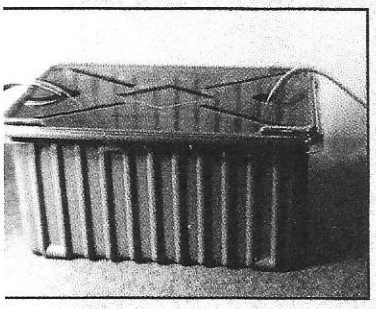
DIMENSIONS: 24" deep x 14½" wide x 24" high
MAXIMUM COOLING CAPACITY: (@20°C) 7150 BTU/hr., 2100 watts, 1806 Kcal/hr.
TEMPERATURE RANGE: +5°C to +35°C
TEMPERATURE STABILITY: ±1.0°C
COMPRESSOR: ¾ H.P.
PUMPING CAPACITY: 1 GPM
PUMPING PRESSURE: 10-80 PSI
RESERVOIR VOLUME: 1.1 gallon (4.1 liters)
POWER REQUIREMENTS: 230 VAC, 50/60 cycles (8.5 amps)



$2120.00

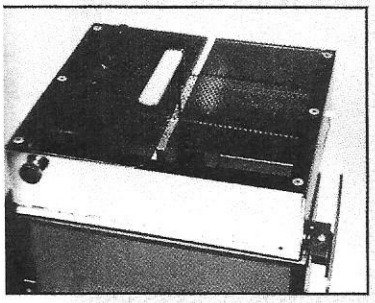
G-233F FILTRATION SYSTEM

DIMENSIONS (approx.): 20½" wide x 9" deep x 10" high
TIMER: Adjustable – 0 to 15 minutes
SIGNAL LIGHT: RED – Power
PUMP CAPACITY: 3.0 gallons/minute
POWER: 120 VAC with 7A fuse and 4' cord; line switch
OPTIONAL FEATURE: 240 VAC, 50/60 cycle



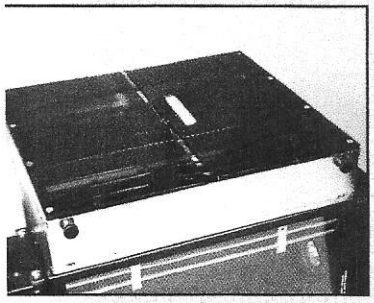
481-C COOLANT ASSEMBLY

DIMENSIONS (approx.): 17" wide x 12" deep x 9" high
CHAMBER CAPACITY: 3.0 gallon
PUMP CAPACITY: 2.0 gallons/minute
POWER: 120 VAC with 5A fuse and 3' line cord
OPTIONAL FEATURE: 240 VAC, 50/60 cycle



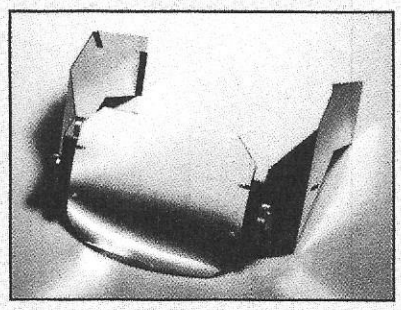
G-235 HOOD

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 Model G-203 Bubble Test Station.
BASKET TRAY SIZE: 2-7/8" x 7-7/8" I.D.



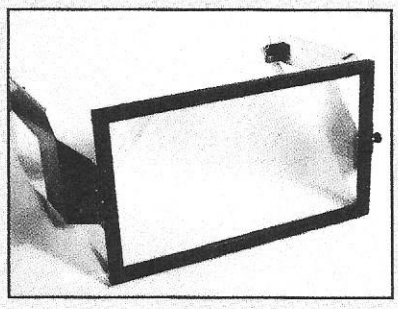
G-236 HOOD

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 Model G-254 Bubble Test Station.
BASKET TRAY SIZE: 5-7/8" x 13-7/8" I.D.



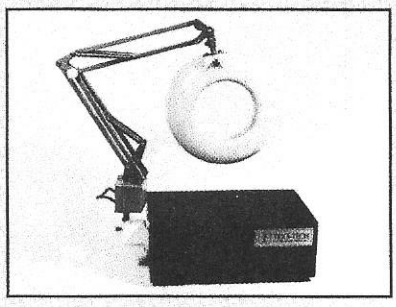
G-225M 'WIDE-VU' MAGNIFIER

SPECIFICATIONS: Optical grade acrylic lens for full view magnification. Fits Model G-203 Bubble Test Station.
LENS DIMENSIONS: 6" high x 8" wide



G-245 MAGNIFIER

SPECIFICATIONS: Optical grade Fresnel lens for full view magnification. Fits Model G-254 Bubble Test Station.
LENS DIMENSIONS: 18½" wide x 10¾" high



481-L MAGNIFIER

SPECIFICATIONS: An adjustable, illuminated, swivel magnifier with stand for use with G-203 Bubble Test Station.
DIMENSIONS (Stand): 14" wide x 9" deep x 5½" high

NOT SHOWN

Model G-237 Hood for Model G-253 Bubble Test Station.

SPECIFICATIONS

	G-203 BUBBLE TESTER	G-253 BUBBLE TESTER	G-254 BUBBLE TESTER
DIMENSIONS (approx.)	13.5" wide x 8" deep x 15.75" high	30" wide x 10" deep x 14.75" high	21.65" wide x 11.42" deep x 16.50" high
USABLE WORK TRAY AREA	2-7/8" x 7-7/8" (7.37 cm x 20.19 cm)	4.75" x 22" (12.06 cm x 55.44 cm)	5-7/8" x 13-7/8" (15.06 cm x 35.57 cm)
CHAMBER CAPACITY	1 gallon	3.4 gallons	3.5 gallons
COOLANT REQUIREMENT (20°C Water)	.2 gallon/minute	.7 gallon/minute	.7 gallon/minute
TIMER	Selectable 30/60 seconds	Selectable 30/60 seconds	Selectable 30/60 seconds
SIGNAL LIGHTS	RED – Power, Timer and Heater	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	120 or 240 VAC with 7A fuse and 7. cord; line switch
OPTIONAL FEATURES	Extra Tray(s), P/N 481290 G-233F Filtration Unit 481-C Coolant Assembly G-235 Hood G-225M 'Wide-Vu' Magnifier 481-L Magnifier with Stand FRIGID-flo Refrigerated Recirculating Cooler	Extra Tray(s), P/N 481365 240 VAC, 50/60 cycle 233-F Filtration Unit 481-C Coolant Assembly G-237 Hood G-240 Fresnel Lens (Magnifier) FRIGID-flo Refrigerated Recirculating Cooler	Extra Tray(s), P/N 481365-501 G-233F Filtration Unit 481-C Coolant Assembly G-236 Hood G-245 Fresnel Lens (Magnifier) FRIGID-flo Refrigerated Recirculating Cooler
OPERATING PARAMETERS	50°C to 145°C ±5°C	50°C to 145°C ±5°C	50°C to 145°C ±5°C
STANDARD FEATURES	Digitial temp display, overtemp safety control, illuminated controls, triple chill ring, drain tray, 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, overtemp safety control, illuminated controls, triple chill ring, drain tray, fluorocarbon savings cover, dual 15,000 footcandle light source, adjustable temp range, 30 or 60 second timer selector, two (2) parts trays (P/N 481365), one year Warranty	Digital temp display, overtemp safety control, illuminated controls, triple chill ring, drain tray, fluorocarbon savings cover, dual 15,000 footcandle light source, adjustable temp range, 30 or 60 second timer selector, two (2) parts trays (P/N 481365-501), one year Warranty

TRIO-TECH INTERNATIONAL

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