



1945

1945

VACUUM-GAUGE TUBE

HYDROGEN-SENSITIVE, IONIZATION TYPE

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

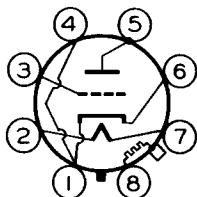
Voltage. $6.3 \pm 10\%$ ac or dc volts
 Current. 0.75 amp

Mechanical:

Mounting Position. Any
 Maximum Overall Length $6\frac{3}{8}"$
 Maximum Diameter $1\frac{5}{16}"$
 Tubulation See Outline Drawing
 Bulb Metal Shell MT8G
 Base Small-Wafer Octal 8-Pin

BOTTOM VIEW

Pin 1 - Cathode
 Pin 2 - Heater
 Pin 3 - Ion
 Collector
 Pin 4 - Cathode
 Pin 5 - Plate, Shell
 DO NOT USE
 FOR GETTER
 CONNECTION



Pin 6 - Cathode
 Pin 7 - Heater
 Pin 8 - Getter

Shell - Plate, Getter
 Connection
 to Hexagonal
 Section of
 Tubulation

LEAK DETECTOR**Maximum Ratings, Absolute Values:**

PLATE VOLTAGE.	300 max. volts
ION-COLLECTOR VOLTAGE	{ -30 max. volts
	-15 min. volts
PLATE CURRENT.	50 max. ma.
PLATE DISSIPATION.	7 max. watts
PEAK HEATER-CATHODE VOLTAGE.	0 max. volts

Typical Operation:

Plate Voltage.	185 . . . volts
Minimum Plate-Supply Voltage	250 . . . volts
Ion-Collector Voltage.	-22.5 . . . volts
Plate Current.	32 . . . ma.
Ion-Collector Current.	Less than 0.5* μ amp
Plate Dissipation.	6 . . . watts

* With no hydrogen in the gauge. When hydrogen from minute leaks enters the gauge tube, the ion-collector current may increase by less than 1%. In order to obtain a definite reading of such small changes in ion-collector current, it is necessary to use an amplifier capable of amplifying dc currents of the order of 0.005 μ amp.

The metal shell of the 1945 contains an indirectly-heated cathode, an ion-collector and a plate made of palladium. The palladium plate located across the inner end of the tubulation serves, when cold, as a vacuum-tight barrier to the vacuum system. This construction permits the metal enclosure to be exhausted to a much better vacuum than

JUNE 20, 1947

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TENTATIVE DATA

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normally exists in a vacuum system. However, when heated, the palladium plate serves as a permeable membrane which permits any hydrogen in the vacuum system to which the 1945 is connected to flow into the tube.

Practical application of the 1945 to locating a leak consists simply of connecting it to the vacuum system and of probing the system with a jet of gas containing a high percentage of hydrogen. If a leak is present, hydrogen enters the vacuum system at the point of leakage, passes through the hot palladium plate, and produces an increase in current to the ion-collector.

Because of its high vacuum, the 1945 can detect far smaller leaks than are detectable using conventional ionization gauges operating at the same pressure as the vacuum system. Actually, an increase in hydrogen pressure of less than 10^{-7} mm of mercury (10^{-4} microns) can be detected by the 1945.

The 1945 can be connected to a hard-glass, soft-glass, or metal vacuum system.

Connection to a hard-glass system may readily be made by breaking off the tip of the glass tubulation (see Outline Drawing), and sealing the (Corning Code 772 Nonex) tubulation to the glass system.

Connection to a soft-glass system requires a graded seal between the hard-glass tubulation of the 1945 and the soft glass of the system.

Connection to a metal system requires that the glass tubulation first be removed by pinching the glass with pliers at a point close to the Kovar seal. Then, the 1945 can be connected to a metal system by a straight pipe coupling which is necessary for clearance of the metal exhaust tubulation. Always apply the wrench to the hexagonal section and never to the metal shell. After the coupling has been tightened, it should be coated with Glyptal to insure that the joint is vacuum tight.

Suitable support should be provided for the 1945. In a glass system, it should be supported by a suitable clamp encircling the metal shell. The clamp should be lined with an asbestos pad so that the clamp does not place a strain on the welds. In a metal system, the 1945 can usually be supported by the pipe coupling.

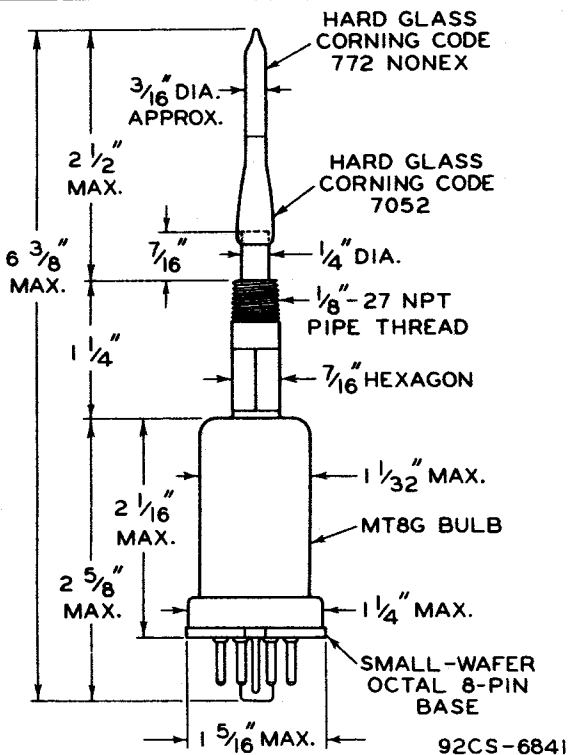
For safety reasons, it is advisable to have the metal shell of the 1945 at ground potential (positive polarity).



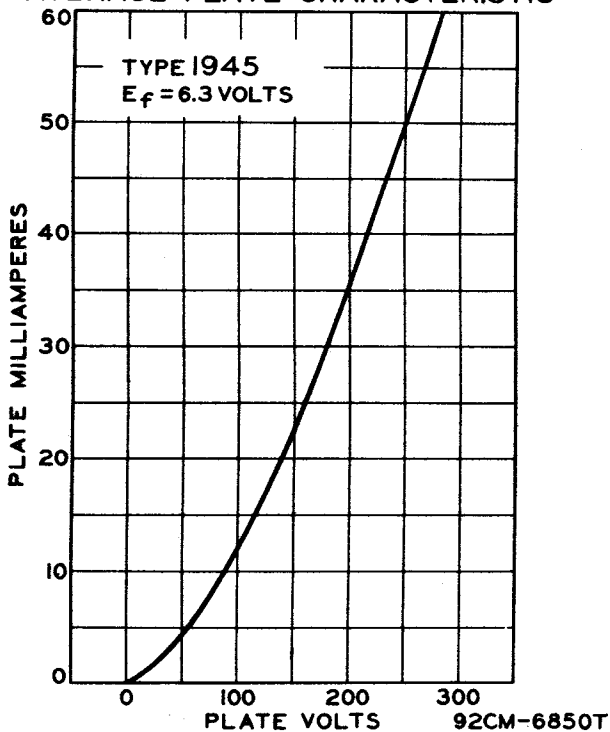
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AVERAGE PLATE CHARACTERISTIC



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