



ELECTRONIC TUBE REFERENCE

1950

Specialized - Gauge Tube electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
GAUGE

Soft-glass ionization vacuum-gauge tube similar to type 1949, intended for measuring gas pressure in vacuum systems.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	5 V / 3.5 A	PARALLEL HEATER	— / —
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Gauge

No fixed ratings recorded.

Soft-glass ionization vacuum-gauge tube similar to 1949.

1950 — Ionization-Type Vacuum-Gauge Tube

An ionization-type vacuum-gauge tube constructed with soft glass, designed for the determination of gas pressures in vacuum systems and vacuum enclosures.

Overview

The **1950** is an ionization-type vacuum-gauge tube designed for measuring gas pressures in vacuum systems and vacuum enclosures. It is similar in design and function to the type [1949](#) vacuum-gauge tube but is constructed using soft glass. The device operates by ionizing gas molecules within the vacuum system, allowing the resulting ion current to be measured as an indicator of gas pressure. It is capable of measuring extremely low pressures, with a useful sensitivity range extending below 0.1 microns of mercury (Hg).

Construction and Physical Dimensions

The 1950 is constructed with a soft glass envelope made of Corning Code 012 Lead glass. This material choice distinguishes it from other vacuum-gauge tubes that may use hard glass or alternative materials.

The physical dimensions of the tube are substantial, designed to facilitate connection to vacuum systems:

- **Maximum Length:** 11-3/4 inches (excluding the flexible leads)
- **Maximum Diameter:** 2-3/16 inches (representing the maximum radius of the bulb)
- **Tubulation Diameter:** 1/2 inch, which serves as the physical port for connecting the tube's internal volume to the vacuum system under test

Filament and Operating Ratings

The tube contains a filament designed to provide the electron emission necessary for gas ionization. The electrical requirements and maximum operating limits must be strictly observed to prevent damage to the tube and ensure accurate pressure readings.

Filament Ratings

- **Nominal Filament Voltage:** 5.0 V
- **Nominal Filament Current:** 3.5 A
- **Maximum Operating Filament Voltage:** 6.5 V

Maximum Operating Ratings

These ratings represent the absolute limits within which the tube must be operated:

- **Maximum DC Plate Voltage:** -100 V
- **Maximum DC Grid Voltage:** +200 V
- **Maximum Ambient Temperature:** 100 °C

The negative plate voltage and positive grid voltage are characteristic of ionization gauge operation, where the grid accelerates electrons to ionize gas molecules, and the negative plate collects the resulting positive ions.

Terminal Connections and Operating Position

The 1950 features a specific terminal arrangement to connect the internal electrodes to external control and measurement circuitry. The pinout configuration is as follows:

- **Pin 1:** Common lead to filaments
- **Pin 2:** Filament (F)
- **Pin 3:** Filament (F)
- **Pin 4:** Grid (G)
- **Plate (P):** External/separate connection

The plate connection is kept separate from the main pin base, which helps minimize leakage currents and maintain high insulation resistance, critical for measuring the very small ion currents generated at low pressures.

Operating Position

The tube offers flexibility in mounting, but its orientation must comply with the following specified positions:

- **Vertical:** Mounted vertically with the tubulation pointing either up or down.
- **Horizontal:** Mounted horizontally, provided that the stem press is aligned in the vertical plane.

Pressure Measurement Application

The primary application of the 1950 is the measurement and monitoring of gas pressures in high-vacuum systems. The tube's useful sensitivity range is optimized for high-vacuum conditions, specifically operating **below 0.1 microns of Hg** (which is equivalent to pressures below 10^{-4} mm of Hg).

In operation, electrons emitted from the heated filament are accelerated toward the highly positive grid (up to +200 V). As these electrons collide with gas molecules remaining in the tube, they ionize them. The resulting positive ions are attracted to the negative plate (biased up to -100 V). The current flowing in the plate circuit is proportional to the gas density (and thus the pressure) within the tube, allowing for precise calibration and measurement of the vacuum level.

Technical Summary

The **1950** is a soft-glass, ionization-type vacuum-gauge tube designed for measuring gas pressures below 0.1 microns of Hg. It features a Corning Code 012 Lead glass envelope, a 1/2-inch tubulation for system connection, and a filament rated nominally at 5.0 V and 3.5 A. With a maximum operating grid voltage of +200 V and a plate voltage of -100 V, it provides a reliable means of monitoring high-vacuum systems when mounted in approved vertical or horizontal orientations.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1960 RCA Industrial and Communications Types

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1960 RCA INDUSTRIAL AND COMMUNICATIONS TYPES

Section 1 · Gauge

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum filament voltage	6.5 V	—
Maximum plate voltage	-100 V	Polarity as printed
Maximum grid voltage	200 V	—

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Useful pressure upper	0.1 micron Hg	—
Useful pressure lower	0.0001 micron Hg	—

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