

A1998 IONISATION GAUGE

The A1998 ionisation gauge is a thermionic device intended to indicate degrees of vacuum.

It is supplied with a 3 mm. diameter pinch stem by which it may be connected directly to the vacuum system, and instructions are given below for use under these conditions. It is permissible, however, for the gauge to be re-stemmed at the wide end of the envelope with a 16 mm. diameter tube and higher sensitivity realised as described under the appropriate section below.

OPERATING CONDITIONS

USING NORMAL 3 mm. STEM

The gauge must be thoroughly outgassed each time the electrodes have been exposed to the atmosphere.

1. Bake at 350°—380°C. for 5 minutes.
2. Still under bake, connect anode and grid to +200 volts supply.
3. Adjust emission current by varying the filament voltage (6.7 volts A.C.) and bring up slowly to 50 mA.
4. Maintain anode temperature at 900°—1000°C. (bright orange-red) for 15 minutes.

Conditions of use (external collection).

Grid Potential	...	...	...	...	...	...	...	...	+100	volts
Anode (collector)	...	...	...	...	...	...	...	...	-20	volts
Emission Current	...	...	...	...	...	...	...	...	2	mA

Obtain correct emission current by adjustment of filament voltage (4.0 approx. volts).

Positive ion current varies linearly with the pressure up to about one micron (0.001 mm. Hg).

The sensitivity is 20 μ A per micron.

Conditions of use (internal collection).

Anode Potential	...	...	...	...	...	...	...	...	+100	volts
Grid (collector)	...	...	...	...	...	...	...	...	-10	volts
Emission Current	...	...	...	...	...	...	...	...	4	mA

The sensitivity is 10 μ A per micron linear up to about 2 microns.

USING 16 mm. OR LARGER STEM

No special outgassing treatment is required, but the gauge should be run under operating conditions for 15 minutes before any readings are taken. If operated under the conditions described in the previous section the same sensitivities are obtained, in addition, however, the following higher sensitivity is now attainable.

Conditions of use (external collection).

Grid Potential	...	...	...	...	...	...	...	...	+166	volts
Anode (collector)	...	...	...	...	...	...	...	...	-9	volts
Emission Current	...	...	...	...	...	...	...	...	25	mA

Obtain correct emission current by adjustment of filament voltage (5.0 approx. volts).

Positive ion current is linear with pressure up to about 0.8 micron (0.0008 mm. Hg).

Sensitivity is 150 μ A per micron.

GENERAL

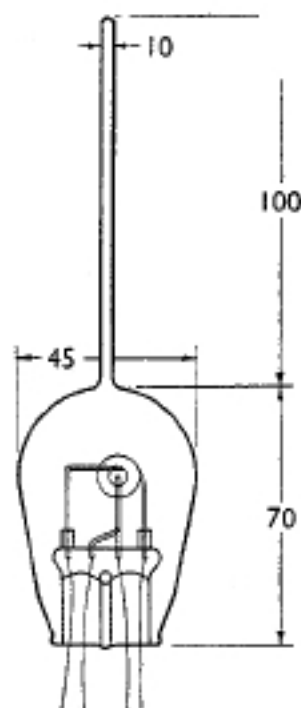
The calibrations are for dry air only. It is essential to use a liquid air trap as water vapour will lead to spurious readings.

Stability of supply voltages is most important. The filament should be operated from an accumulator of ample capacity.

The lowest pressure which can be recorded is limited only by the sensitivity of the meter used for recording the positive ion current.

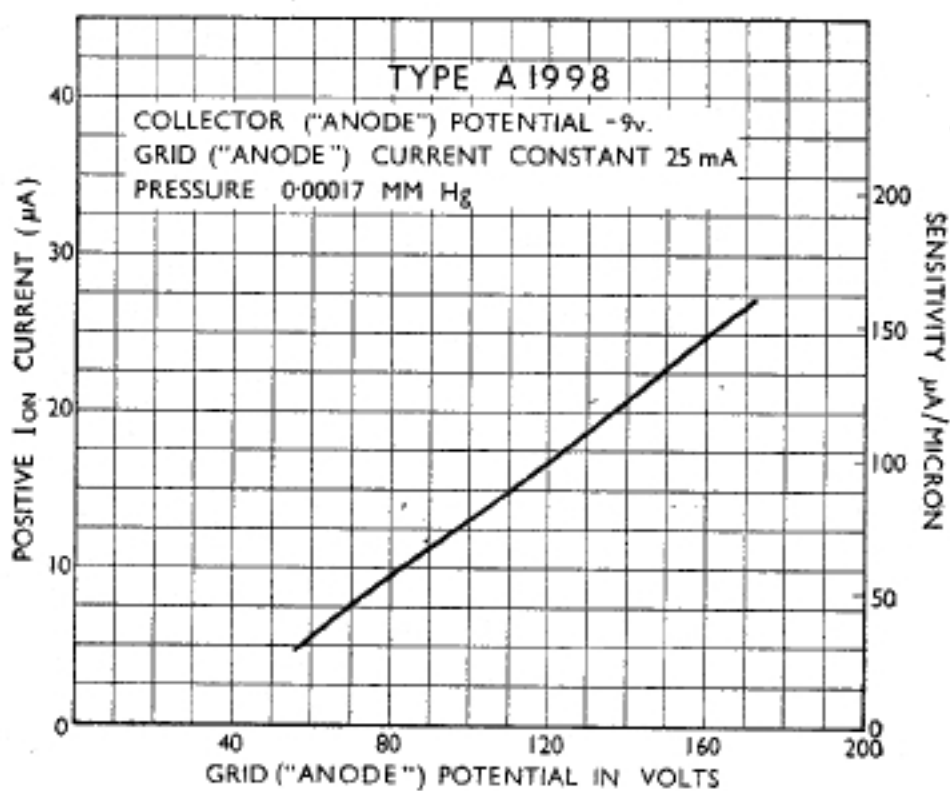
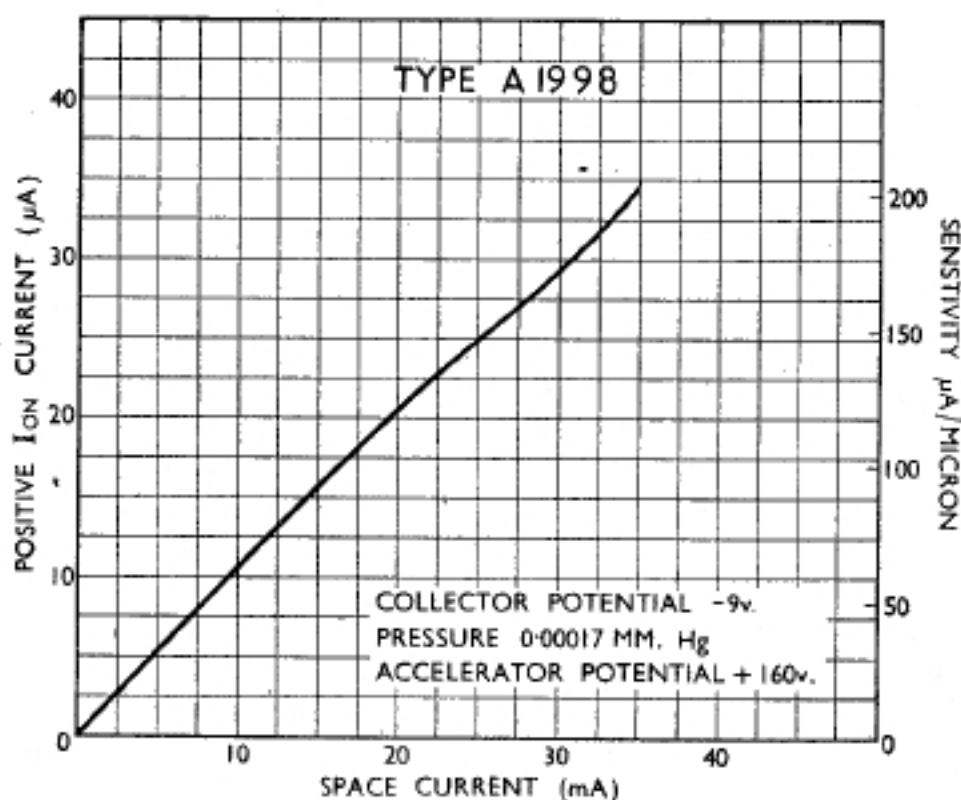
It is not recommended that the gauge be operated up to the limit of the linear characteristic. Pressures should be kept below 0.0005 mm. Hg whenever possible.

DIMENSIONS



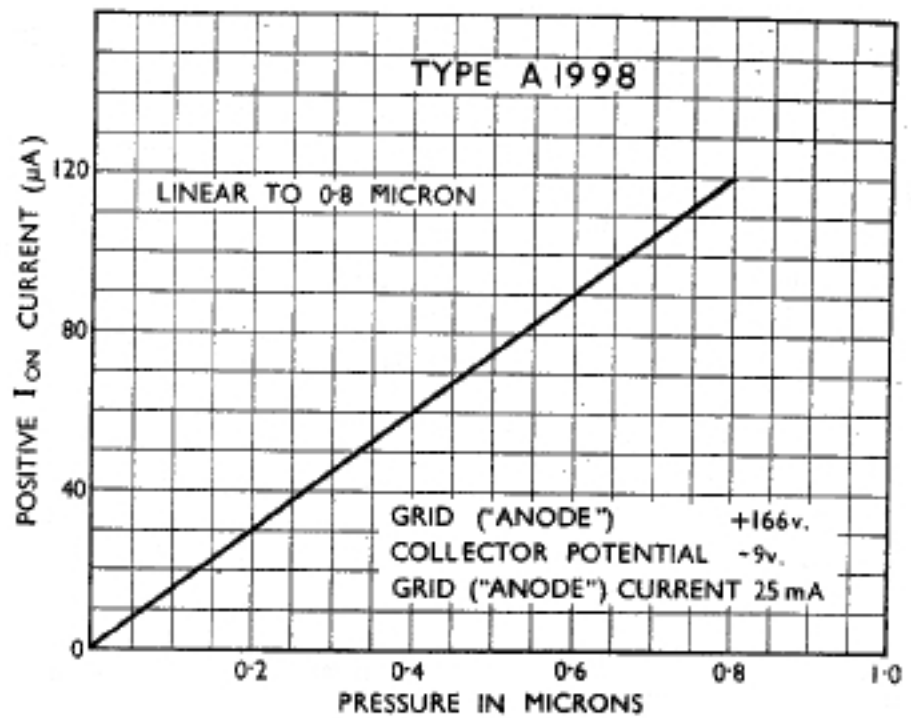
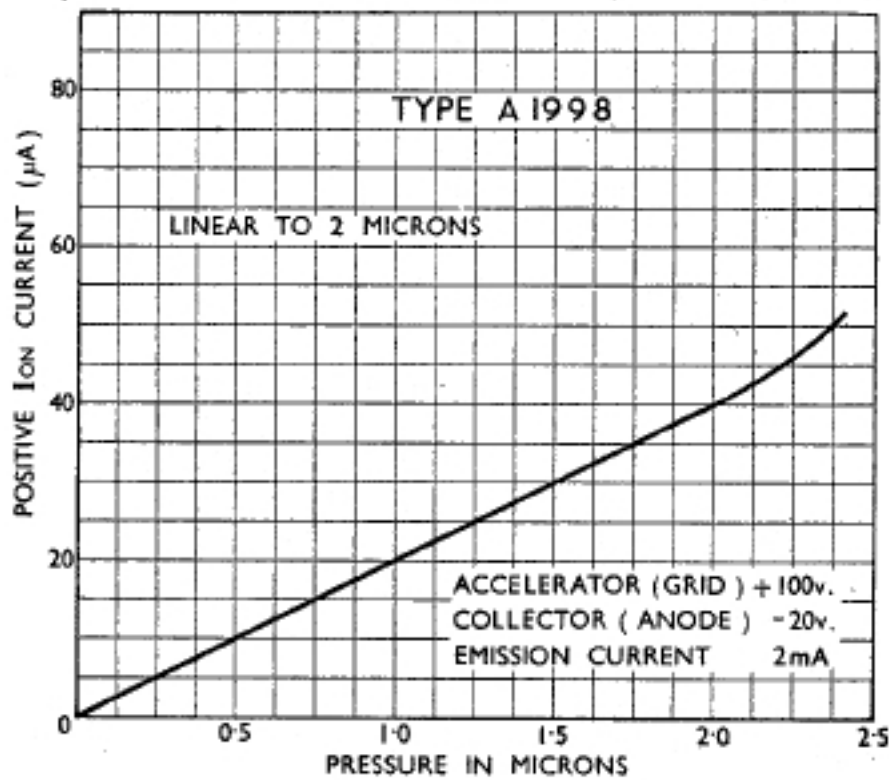
All dimensions are in mm. and are the maximum except where otherwise stated.

TYPE A1998



CHARACTERISTIC CURVES OF AVERAGE VALVE.

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