

342 AND 343 IONIZATION GAUGE TUBE
INSTALLATION AND OPERATING INSTRUCTIONS

You should read this instruction sheet before installing, using or servicing this equipment.

This instruction sheet is to be used with Series 342 and 343 Ionization Gauge Tubes with the following part numbers:

20342003 - 342003	20342012 - 342012	342027	20343001 - 343001	20343003 - 343003
20342004 - 342004	20342015 - 342015		20343002 - 343002	

YOU SHOULD READ THIS INSTRUCTION MANUAL BEFORE INSTALLING, USING, OR SERVICING THIS EQUIPMENT.

SAFETY INSTRUCTIONS

SAFETY PAYS. THINK BEFORE YOU ACT. UNDERSTAND WHAT YOU ARE GOING TO DO BEFORE YOU DO IT. READ THIS INSTRUCTION SHEET BEFORE INSTALLING, USING, OR SERVICING THIS EQUIPMENT. IF YOU HAVE ANY DOUBTS ABOUT HOW TO USE THIS EQUIPMENT SAFELY, CONTACT THE GRANVILLE-PHILLIPS PRODUCT MANAGER FOR THIS EQUIPMENT AT THE ADDRESS LISTED ON THIS INSTRUCTION SHEET.

ELECTRICAL SHOCK WARNING:

Ionization gauges are safe for use only if all exposed conductors on the gauge and on the controller and on the vacuum system are grounded.

All connections to the gauge tube pins should be covered by insulation. All gauge tubes pins should be covered by connectors or by pin covers. In normal operation, 180 volts is on the grid connections.

Implosion and Explosion

Glass ionization gauges, if roughly handled, may implode under vacuum causing flying glass which may injure personnel. Be sure that cabling to the gauge tube has proper strain relief so that cable tension cannot break the glass. If pressurized above atmospheric pressure, glass tubes may explode, causing dangerous flying glass. A substantial shield should be placed around vacuum glassware to prevent injury to personnel.

Overpressure

Do not use quick connects or other friction type connections where positive pressure will exist within the gauge tube, such as in backfilling operations.

INSTALLATION INSTRUCTIONS

Receiving Inspection, Domestic Shipments

Inspect all material received for shipping damage. Confirm that your shipment includes all material and options ordered. If materials are missing or damaged the carrier that made the delivery must be notified within 15 days of delivery in accordance with Interstate Commerce regulations in order to file a valid claim with the carrier. Any damaged material, including all containers and packing, should be held for carrier inspection. Contact our Customer Service Department, 5675 Arapahoe Avenue, Boulder, Colorado 80303, (303) 443-7660 if your shipment is not correct for reasons other than shipping damage.

International Shipments

Inspect all material received for shipping damage. Confirm that your shipment includes all material and options ordered. If items are missing or damaged the carrier making delivery to the customs broker must be notified within 15 days of delivery.

Example

If an airfreight forwarder handles the shipment and their agent delivers the shipment to customs, the claim must be filed with the airfreight forwarder.

If an airfreight forwarder delivers the shipment to a specific airline and the airline delivers the shipment to customs, the claim must be filed with the airline, not the freight forwarder.

Vacuum Connections

1. Location on system: The gauge tube should be located as close as possible to the section of the vacuum system where pressure measurement is important. Valves or other constrictions between the gauge tube and the area where pressure measurement is required may cause erroneous readings.
2. Gauge port: Pressure measurement in the high vacuum range does not require special attention to port size. However, as the pressure of interest approaches the limits of the gauge, a small conductance between the gauge tube and the system volume of interest can cause a significant difference in the two pressures.
3. Mounting orientation: All orientations are acceptable.

Electrical Connections

Fig. 1 shows the pin connections for the Series 342 and 343 gauge tubes.

Do not use gauge cables with exposed conductors such as alligator clips. All gauge tube pins should be covered by connectors or by pin covers. Gauge cables should be firmly clamped to the vacuum station to provide strain relief. This ensures there will be negligible strain transmitted to the gauge tube pins if there is relative motion between the vacuum station and the ionization gauge controller.

SPECIFICATIONS

	342 Triode Gauge	343 B-A Gauge
Pressure Range	Below 5×10^{-7} Torr to 5×10^{-2} Torr (N ₂ or Air)	Below 5×10^{-8} Torr to 5×10^{-3} Torr (N ₂ or Air)
Typical Accuracy	±15%	+30% -15%
Sensitivity For N ₂	6.2/Torr	5.2/Torr

ELECTRICAL DATA

Filament Voltage	1.5 to 3.5 V.
Filament Current	1.75 to 2.25 amperes.
Grid Voltage	120 to 250 Vdc.
Collector Voltage	-20 to -50 V.
Emission Current	10 mA maximum, 2 mA or less recommended.
Typical Operating Power	3 to 4 W.

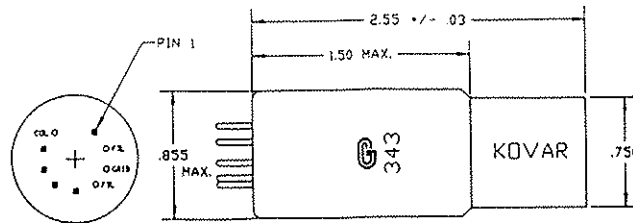
MECHANICAL DATA

Filament	Thoria Coated Iridium.
Bulb Material	Lime glass.
Tube Diameter	.855 in. max. O.D.
Tube Length	2.8 in. max., including pins.
Mounting Position	Any.
Pin Diameter	.040.
Pin Length	.270.

CONNECTION DATA

(Bottom view-numbers clockwise, based on a 9 pin miniature tube pin out)

Collector Pin	9
Grid Pin	3
Filament Pin	2
Filament Pin	4



Limited Warranty

This Granville-Phillips Company product is warranted against defects in materials and workmanship for one year from the date of shipment provided the installation, operating and preventive maintenance procedures specified in this instruction manual have been followed. Granville-Phillips Company will, at its option, repair, replace or refund the selling price of the product if GPC determines, in good faith, that it is defective in materials or workmanship during the warranty period, provided the item is returned to Granville-Phillips Company together with a written statement of the problem.

Defects resulting from or repairs necessitated by misuse or alteration of the product or any cause other than defective materials or workmanship are not covered by this warranty. GPC EXPRESSLY DISCLAIMS ANY OTHER WARRANTY, WHETHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. UNDER NO CIRCUMSTANCES SHALL GRANVILLE-PHILLIPS COMPANY BE LIABLE FOR CONSEQUENTIAL OR OTHER DAMAGES RESULTING FROM A BREACH OF THIS LIMITED WARRANTY OR OTHERWISE.



WARNING! Safe operation of vacuum equipment requires grounding of all exposed conductors of the gauges and the vacuum system., **LETHAL VOLTAGES** may be established under some operating conditions unless correct grounding is provided.

Research at Granville-Phillips has established that ion producing equipment, such as ionization gauges, mass spectrometers, sputtering systems, etc., from many manufacturers may, under some conditions, provide sufficient electrical conduction via a plasma to couple a high voltage electrode potential to the vacuum chamber. If exposed conductive parts of the gauge, controller, and chamber are not grounded, they may attain a potential near that of the high voltage electrode during this coupling. Potentially fatal electrical shock could then occur because of the high voltage between these exposed conductors and ground.

During routine pressure measurement using ionization gauge controllers from any manufacturer, about 160 V may become present on ungrounded conductors at pressures near 10^{-3} Torr. All isolated or insulated conductive parts of the controller, the gauge, and the vacuum system must be grounded to prevent these voltages from occurring.

Grounding, though simple, is very important! Please be certain that the ground circuits are correctly utilized on your ion gauge power supplies, gauges, and vacuum chambers, regardless of their manufacturer, for this phenomenon is not peculiar to Granville-Phillips equipment. If you have questions, please contact one of our technical personnel.

GRANVILLE-PHILLIPS



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