

Stabil-Ion® Gauge Installed Internal to Vacuum Chamber

Introduction

This instruction sheet describes the components of vacuum cable feedthrough assembly 360245 and their use in installing a Stabil-Ion gauge inside a vacuum chamber to measure pressure at a specific point inside the chamber. The gauge will be operated using a Series 370 Stabil-Ion Gauge Controller. The interconnect between the gauge inside the chamber and the vacuum cable feedthrough is accomplished using a customer supplied vacuum compatible cable, designed to meet the cable signal requirements outlined in this document. The interconnect between the vacuum cable feedthrough and the Series 370 Stabil-Ion Gauge Controller is accomplished using a standard Stabil-Ion Gauge cable with the heat shield removed. This document outlines all components, with the exception of the Stabil-Ion Gauge cable and the Series 370 Controller, needed to meet the requirements of this application.

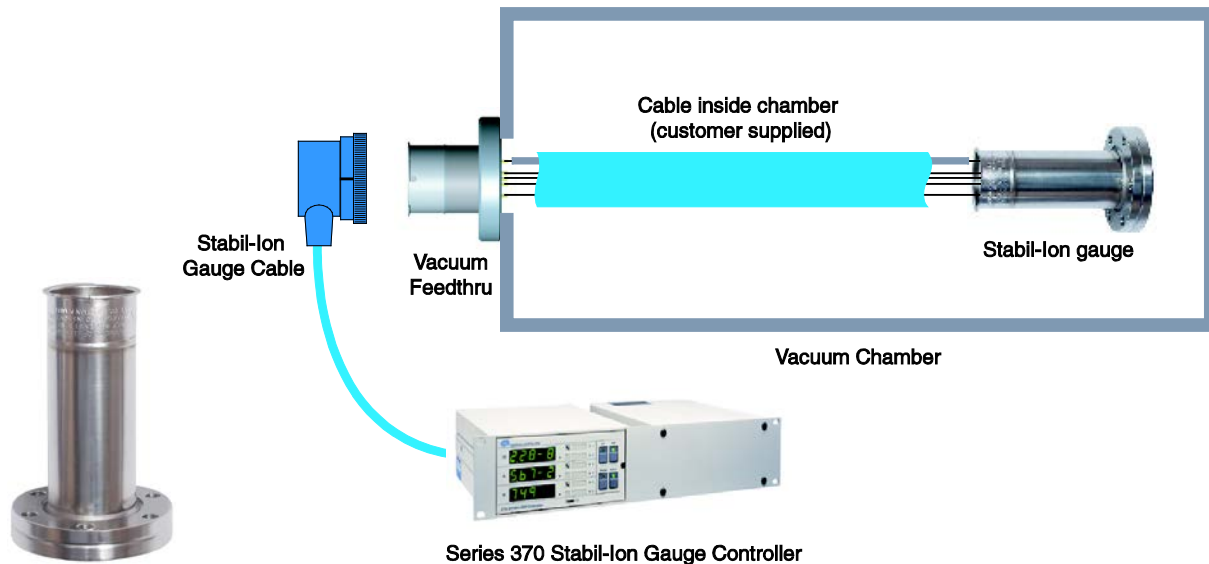


Figure 1. Stabil-Ion Gauge and Vacuum System

Stabil-Ion Gauge (370120)

The extended range Stabil-Ion Gauge, shown in Figure 1, is constructed of all vacuum compatible materials. The Stabil-Ion Gauge is mounted inside the vacuum chamber using the 2.75-inch ConFlat flange.

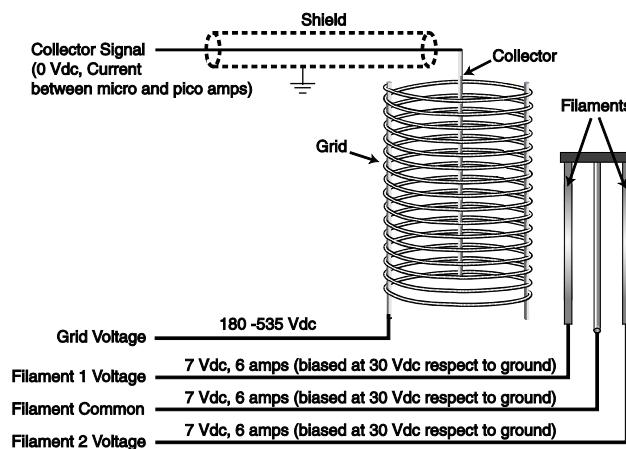


Figure 2. Ion Gauge Signal Levels

Cable Signal Requirements

Signals transmitted between the Stabil-Ion Gauge and the vacuum chamber feed through include the collector signal, the grid voltage, and the filament voltage. The collector signal is a 0 Vdc current signal in the micro to picoamp range. Due to the low signal level on the collector wire, a shielded cable is required with the shield tied to ground. The grid voltage ranges from 180-535 Vdc.

The filament voltage signals are a maximum of 7 Vdc, 6 amps, biased at 30 Vdc with respect to ground. Figure 2 illustrates the cable configuration and defines the signal levels on each wire. The customer supplied vacuum compatible cable must be capable of accommodating these signal levels to ensure proper gauge performance.

Vacuum Cable Feedthrough Assembly

The vacuum cable feedthrough assembly is comprised of the feedthrough and cable connectors described below. The feedthrough provides a 2.75-inch ConFlat fitting to provide a vacuum seal to a mating 2.75-inch ConFlat vacuum port on the vacuum chamber wall. On the inside of the vacuum chamber the feedthrough pins are connected to the customer supplied cable using barrel cable connectors as defined below. Outside the vacuum chamber the feedthrough is designed to connect to a standard Stabil-Ion gauge cable that has had the heat shield removed.

Figure 3 illustrates the feedthrough design. Figure 4 shows the proper wiring between the Stabil-Ion Gauge and the vacuum cable feedthrough. Figure 5 shows the proper pin connections for the cable inside the vacuum chamber.

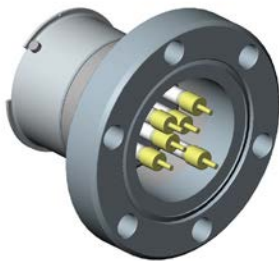


Figure 3 – Vacuum Cable Feedthrough

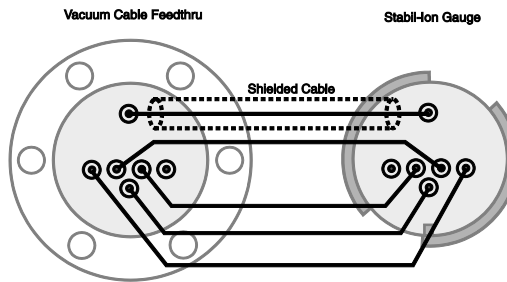


Figure 4 – Wiring Diagram

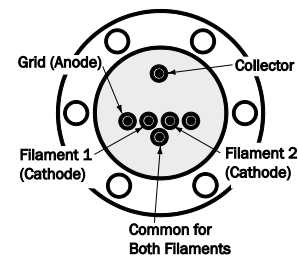


Figure 5 – Pin Connections

Cable Connectors

Two types of connectors are provided in the kit to make the cable connections inside the vacuum chamber to the Stabil-Ion Gauge and to the vacuum cable feedthrough.

The crimp socket contact (GP #004274), shown in Figure 6, is used to connect the vacuum compatible cable to the Stabil-Ion Gauge leads. These crimp socket contacts can be attached to the cable using an AMP tool #90310-1 or T&R tool #AMP 1-66358-0. Five crimp socket contacts are required.

A barrel connector (GP #016434), shown in Figure 7, is used to connect the vacuum compatible cable to the vacuum cable feedthrough. Five barrel cable connectors are required.

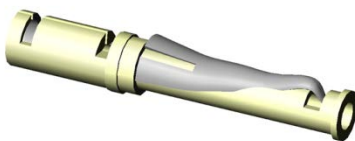


Figure 6 – Crimp Socket Contact



Figure 7 – Barrel Cable Connector



MKS Instruments, Inc.
Granville-Phillips Products
6450 Dry Creek Parkway
Longmont, CO 80503-9501
Phone: 1-303-652-4400 or 1-800-776-6543
Fax: 1-303-652-2844

Visit our website at www.mksinst.com/granville-phillips

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Addendum
Part Number 016552
Revision A
May 2015
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