

# 7890A GC to the G1888A Headspace Sampler

## For the Agilent 7890A Gas Chromatograph Installation Instructions

For a 7890A GC (GC) equipped with a pneumatics control module (PCM), this kit provides constant pressure at the G1888A headspace sampler (HS) sample vial pressurization / depressurization vent. Constant pressure at the vent improves run-to-run reproducibility in vapor phase component concentrations passed to the GC for quantitative analysis.

**WARNING**

**Refer to the Safety Manual that came with your Agilent 7890A Gas Chromatograph and G1888A Headspace Sampler for hazards that may exist when maintaining your instrument.**

**NOTE**

**Before proceeding, does your GC have an available PCM (both Channels)?**

**If not, then stop here to do what is needed to provide the necessary PCM support.**

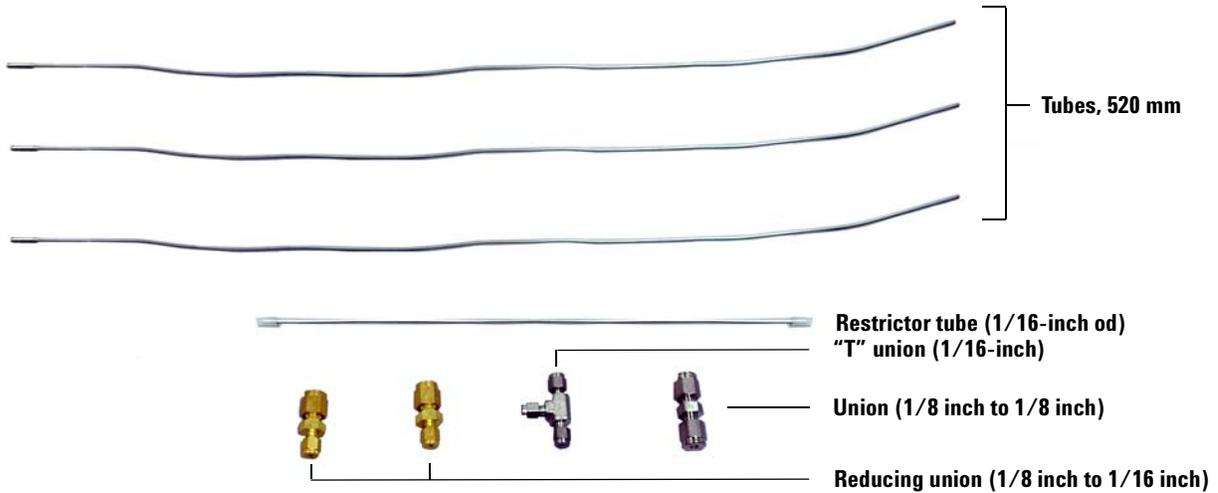
## Parts Supplied

**Table 1** Parts supplied

Description	Quantity
Restrictor tube (0.010-inch id x 1/16-inch od x 30 cm)	1
Tube (520 mm x 1/16 inch x 1/8 inch)	3
"T" union (1/16-inch fittings)	1
Reducing union (1/8-inch to 1/16-inch), package of 2	1
Union (1/8-in to 1/8-in)	1
1/8-in brass nut & ferrules	1



## Parts Identification



**Figure 1** Parts identification (1/8-in brass nut and ferrules not shown)

## Tools Required

- 5/16-inch open-end wrenches (2)
- 1/2-inch open-end wrenches (2)

## Assembly Preparation

Prepare a clean work area with the supplied parts ([Table 1](#) and [Figure 1](#)) and required tools at hand.

### CAUTION

The following steps involve making secure, leak-free swage connections: use *pairs* of wrenches against each other to prevent twisting of tubing. Follow proper swaging methods.

### CAUTION

Take care to not bend or otherwise deform the precision restrictor tube. Doing so may affect its pneumatic characteristics.

Assemble component parts as shown in Figure 2 and Figure 3:

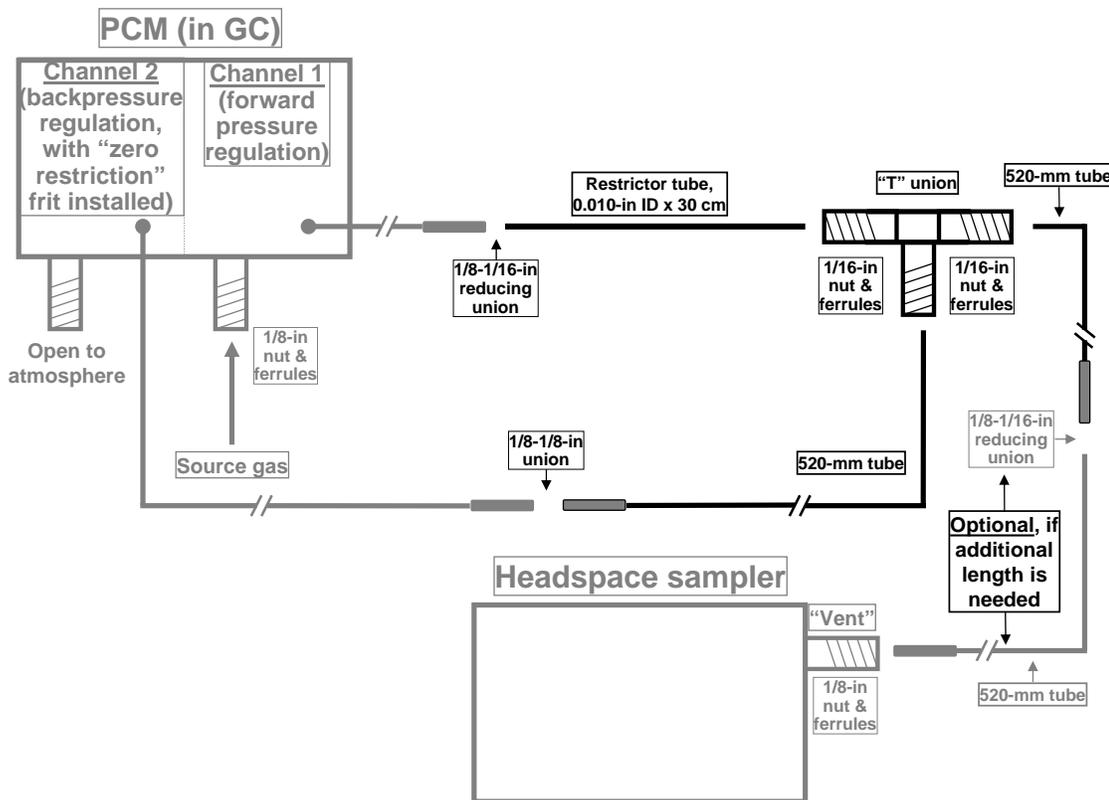


Figure 2 Assembly diagram

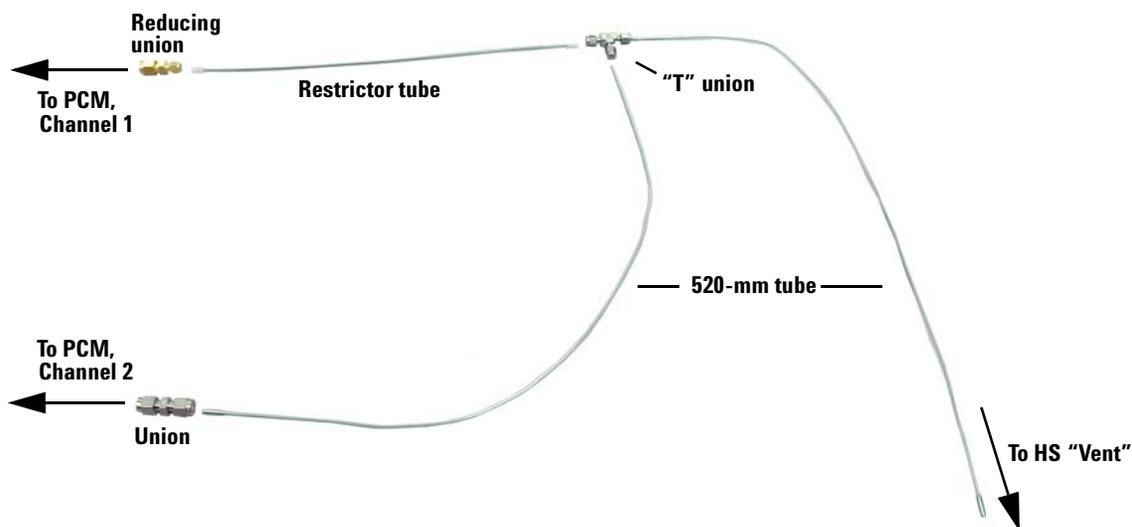


Figure 3 Parts assembly layout (optional reducing union and 520-mm tube not shown)

**NOTE**

**An additional reducing union (1/8 inch to 1/16 inch) and 520-mm tube are included to provide extra length to connect to the HS “Vent” fitting if needed.**

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This completes preassembly of provided parts.

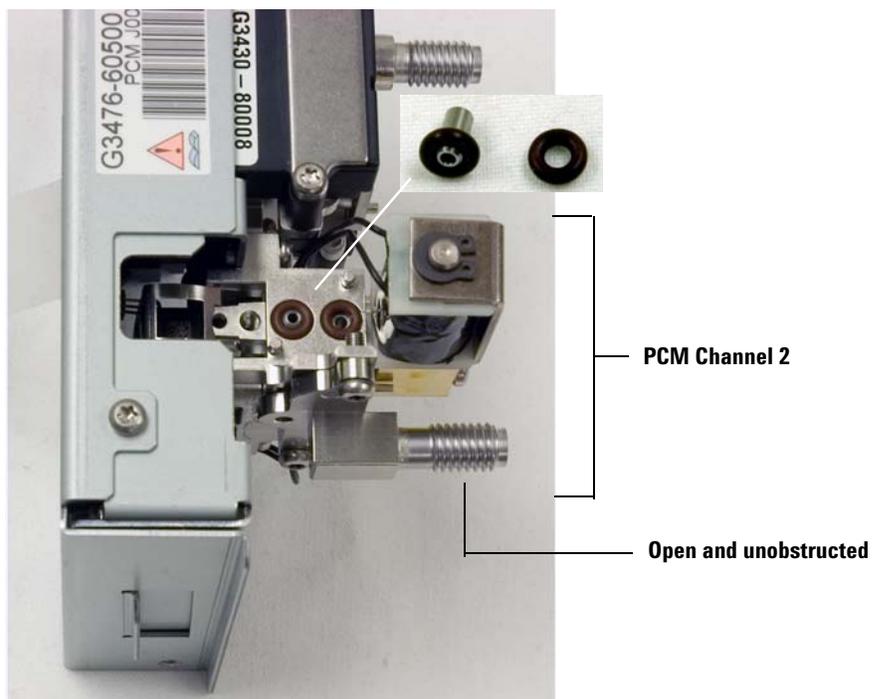
## Preparing the GC

- 1 Turn off the GC and unplug its power cord.
- 2 Unsnap the pneumatics cover by pressing black clips on the sides of the cover, then lift the cover up and off.

## PCM Verification

In this application, Channel 2 of your PCM operates in back pressure regulation mode. For this to work properly, two items must be verified:

- Referring to [Figure 4](#), either a “zero restriction” frit must be installed, or there must be no frit present at all. Verify this by removing the tube to Channel 2 at the PCM (one screw) and inspect the frit location: it should either have no frit at all, or, if a frit is present, it must be completely open, straight through. Replace the frit if necessary, or simply remove it and store it in a clean, safe place. Note that the O-ring is always required whether a frit is present or not.
- The swage connection to Channel 2 must be open and unobstructed to ambient air pressure (that is, functioning as a vent to atmosphere).



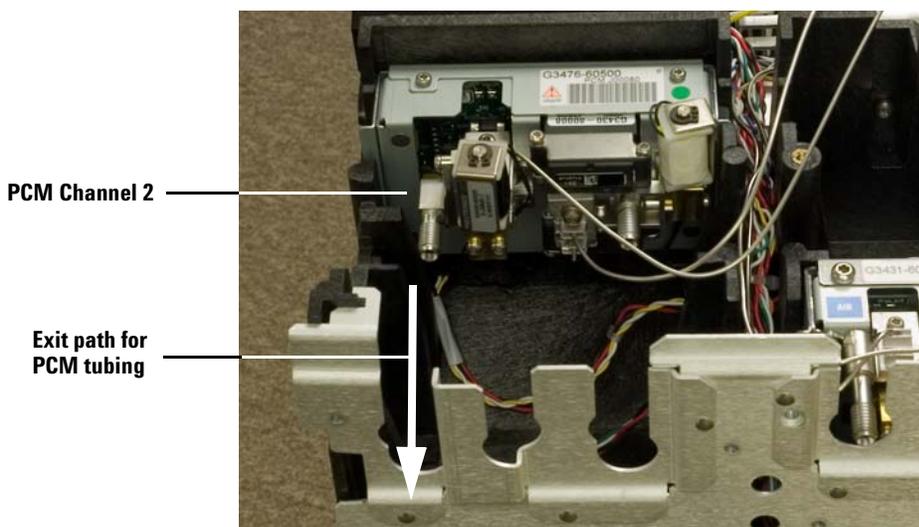
**Figure 4** Zero restriction frit (PCM Channel 2)

Replace the PCM Channel 2 tube: be careful not to dislodge O-rings during the process. This completes PCM frit verification.

## Installation Procedure

Again referencing [Figure 2](#) and [Figure 3](#) on page 3 and using pairs of wrenches against each other and proper swaging procedures:

- 1 Route both PCM tubes to the area behind the GC through the slot in the GC back panel. Note that it is critical to keep track of the Channel 1 tube versus the Channel 2 tube: labeling them is strongly recommended.



**Figure 5** PCM tube routing

### CAUTION

In making final connections, take care to not bend or otherwise deform the precision restrictor tube. Doing so may affect its pneumatic characteristics.

- 2 Again referencing [Figure 2](#) and [Figure 3](#) on page 3, and using pairs of wrenches against each other and proper swaging procedures:
  - a Connect the source gas line to the PCM Channel 1 swage fitting using a 1/8-in nut and ferrules.
  - b Join the Channel 1 PCM tube to the restrictor tube via the 1/8-in to 1/16-in reducing union.
  - c Join the Channel 2 PCM tube to the 520-mm tube via the 1/8-in to 1/8-in union.
  - d Connect the remaining 520-mm tube to the “Vent” fitting at the rear of the HS using a 1/8-in nut and ferrules. If needed for extra length, an optional 520-mm tube and 1/8-inch to 1/16-inch reducing union are provided.

This completes the installation.

## Restore the GC to Operating Condition

- 1 Replace instrument covers in the reverse order in which they were removed.
- 2 Plug in the GC and turn on the power.
- 3 For a new PCM, follow instructions supplied with its installation guide. For an existing PCM, refer to the *7890A Advanced User Guide* for details concerning PCM configuration. Two items must be verified and, if necessary, set properly:
  - The gas type used (the same for *both* Channel 1 and Channel 2).
  - The control mode used for Channel 2: *backpressure* control.
- 4 Turn on your gas source to Channel 1 to pressurize the system, then leak check all fittings.

## Initial Operation

The following steps are sufficient for initial operation but not necessarily optimal for your specific applications. For a detailed example application using this constant HS “Vent” pressure connection, see *Better precision, sensitivity, and higher sample throughput for the analysis of residual solvents in pharmaceuticals* by Albert E. Gudat, Roger L. Firor, and Ute Bober, Agilent publication 5989-6023EN (February, 2007).

Further, if you are unfamiliar with 7890A GC and/or G1888A HS operation, consult your user documentation as needed.

- 1 Depending upon the HS model, set vial pressure to 15 psig manually at the HS, or electronically via an AuxEPC channel installed in the GC.
- 2 Set the forward pressure regulator portion of the PCM (Channel 1) to 12 psig.
- 3 Set the backpressure regulator portion of the PCM (Channel 2) to 5 psig. Monitor the actual pressure for this Channel for a few minutes to verify stability.
  - If the observed actual pressure for Channel 2 is unstable, return to Step 2 and raise the setpoint pressure slightly (by 1 - 2 psig) and return to monitoring Channel 2 pressure.
  - If still unstable, lower the setpoint pressure slightly (by 1 - 2 psig) and return to monitoring Channel 2 pressure.

If necessary, try different Channel 1 setpoint values near the nominal 12 psig value such that Channel 2 pressure is stable at 5 psig. When stability is achieved, the GC/HS system is operational.



### **Warranty**

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