

Multiple Gas #5 Syringe Injection

August 2026

The Multiple Gas #5 GC allows for injection using syringe where there is not enough sample (>20ml) to purge the sample loops to make a valve injection.

There are two on-column injection ports on the front of the GC's column oven.

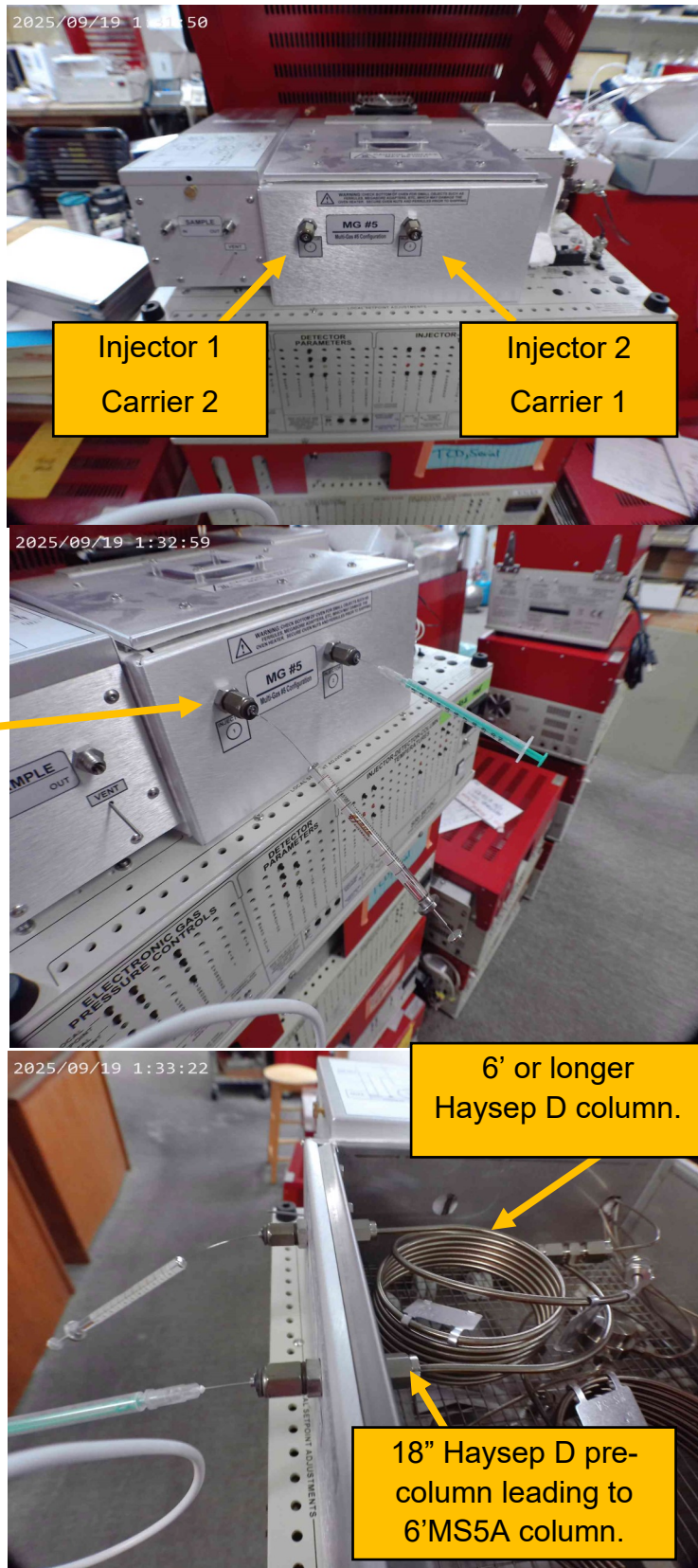
It's a bit confusing but to maintain backwards compatibility with previous MG5 versions, the left side injector #1 is fed by Carrier Gas #2 and the right side Injector #2 is fed by Carrier #1.

You can make gas or "liquid" injections into either injector, but as a practical matter most "liquid" analyses (for methanol/ethanol for example) would be separated by the 6' Haysep D column normally connected to Injector #1. Injector #2 is normally used to measure H₂, O₂, N₂, CH₄ and CO using the MS5A column and Haysep D pre-column.

The photo shows a 10ul liquid syringe poised in the Injector #1 septum nut and a 1ml gas syringe poised in the septum nut of Injector #2.

We like to poise the syringes like this so the tip of the needle touches but does not penetrate the septum and let the syringe hang as shown, supported only by the syringe needle. This saves you from having to "hunt and peck" to find the hole in the needle guide at the time of injection, which is when you want consistent timing after pushing the "start" button.

This photo shows how the columns are connected to the on-column injector fittings. The syringe needle deposits the sample directly into the bore of the column. This is generally a better/more inert/more quantitative injection method than heated or split/splitless injection.



SRI Tech Support:
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If you trace the path of the two carrier gases through the two valves and columns you will see that to make a syringe injection on the left side Injector #1, Valve "F" has to be in the LOAD (Relay F OFF) position so the event table would look like this, with no valve events at all unless you wanted to backflush the column in which case you would turn Relay F ON at some point in the run.

Channel 1 events

C:\Peak499\win10test\ChannelOneEvents.ev

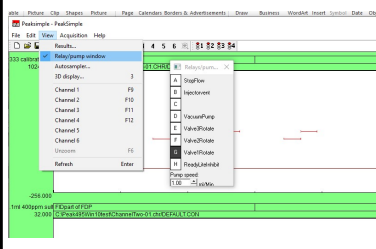
Time	Event
0.000	ZERO
0.000	SOUND

Channel 1 events

C:\Peak499\win10test\ChannelOneEvents.ev

Time	Event
0.000	ZERO
0.000	SOUND
5.000	F ON (Valve2Rotate)

To make a syringe injection into the right side Injector #2, Valve "G" has to already be in the INJECT (Relay G ON) position. To pre-position Relay G to the ON position you click the "G" button in the View/RelayPump window just before you make the syringe injection.



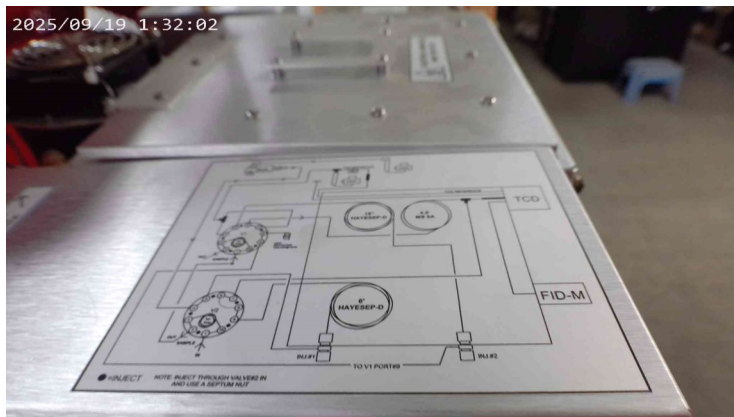
Channel 1 events

C:\Peak499\win10test\ChannelOneEvents.ev

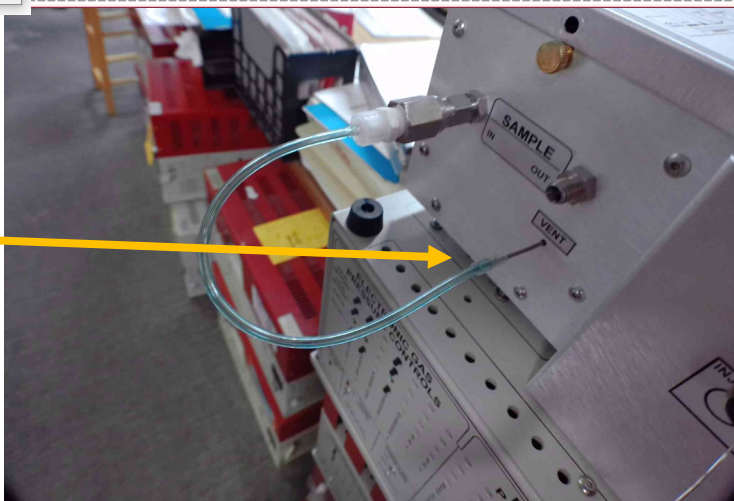
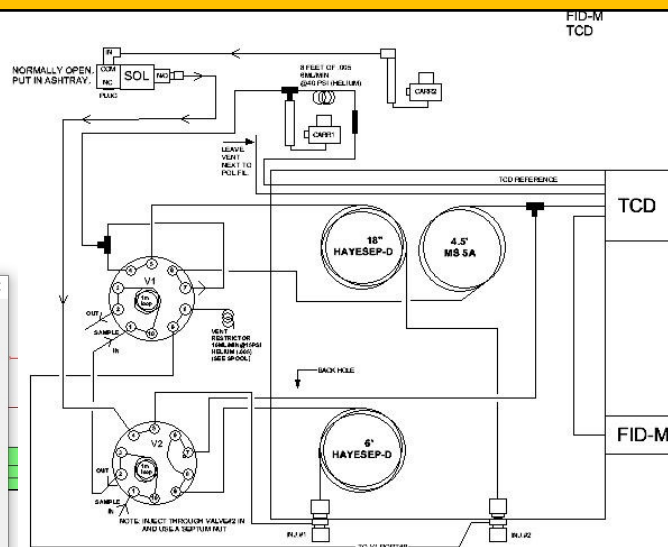
Time	Event
0.000	ZERO
0.000	SOUND
0.700	G OFF (Valve1Rotate)

In the Event table you would turn relay G OFF automatically at the right time to catch unwanted peaks (CO₂, H₂O etc) in the pre-column while allowing H₂, O₂, N₂, CO and CH₄ to enter the MS5A column.

To prevent the random contents of the Valve "G" loop from being injected when pre-positioning Valve "G" you can purge the loop with otherwise wasted carrier gas coming out of the vent fitting on the front of the Valve Oven. Make a leak-proof connection so no air leaks into the flow. When Relay "G" is pre-positioned only carrier gas is injected so no extra peaks interfere with the chromatogram. Poly or metal tubing is OK, but don't use silicone tubing as it will permeate O₂/N₂ into the flow.



Plumbing schematic (map) on top of valve oven.



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