

FID to NPD conversion

1-20-2023

The FID/NPD convertible detector is mounted on this GC.

There are two injector ports, the Heated Split/Splitless injector is on the left and the on-column injector is on the right.

A 10meter MXT 502 column with .25 micron film thickness is connected to the on-column injector in this photo.

Both injectors are supplied with carrier gas from the single carrier gas EPC (electronic pressure controller).

Whichever injector is not used is capped off with a Swagelok cap fitting.



The FID/NPD detector is located on the right side



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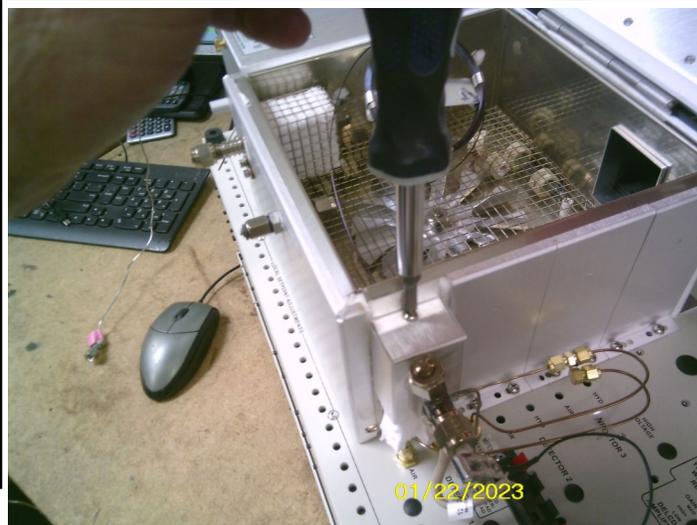
The NPD bead plugs into the terminal strip just below the detector body.



The hydrogen makeup supply can be connected to either restrictor tube. The NPD restrictor tube requires 10psi of H₂ pressure to get a flow of 2ml/minute.

The FID restrictor tube requires 20psi to get a flow of 20ml/minute.

To switch from NPD to FID and back-again, remove the screw covering the insulation



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The insulation is easy to break so handle it carefully.

Unplug the NPD bead from the terminal strip. Note that the NPD plugs into separate terminals from the FID ignitor. Its important not to plug the NPD bead into the FID ignitor terminals because the NPD bead will burn out (be damaged).

Using a 5/16" wrench, loosen the air connection to the NPD body. The air pressure is adjusted from 5 psi for the FID to 2 psi for the NPD, but the wrong pressure will not damage the NPD.



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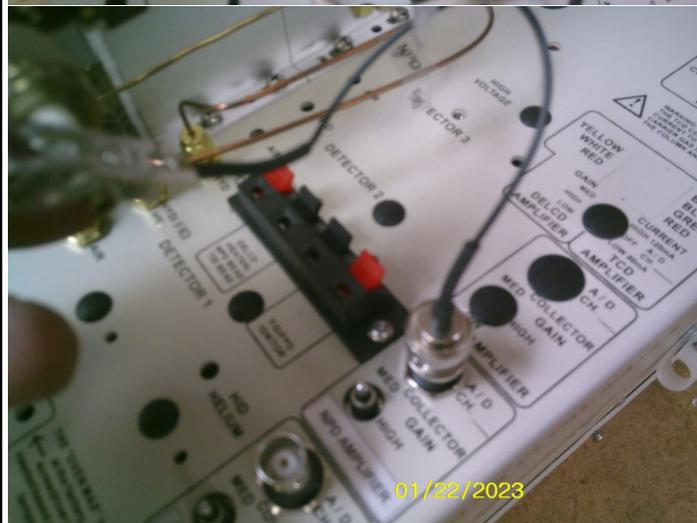
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Using a 7/16" wrench loosen the nut holding the NPD body into the bulkhead fitting. It may be difficult to turn because the heat it operates in makes the metal sticky.

Dis-connect the collector electrode wire by twisting the BNC connector 1/4 turn and lifting.

The NPD detector body can now be removed from the GC.



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Using two 5/16" wrenches, switch the H2 makeup gas from the NPD tube to the FID tube. If you leave the tube connected to the NPD tube there will not be enough H2 for the FID to light. FID needs 20ml/minute where the NPD needs 2ml/minute.

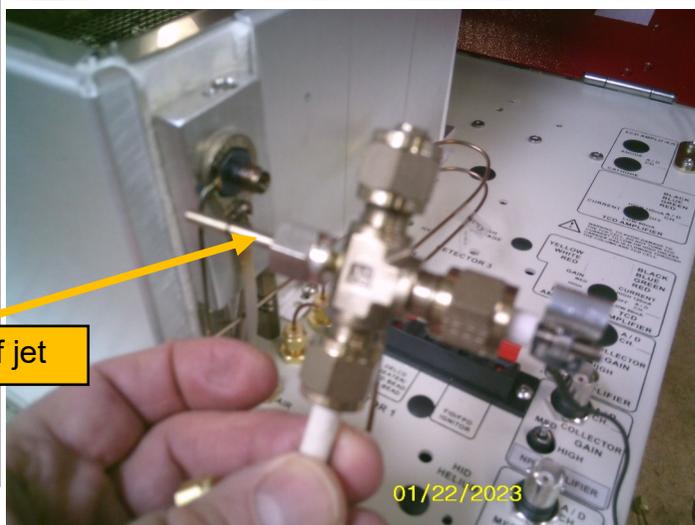
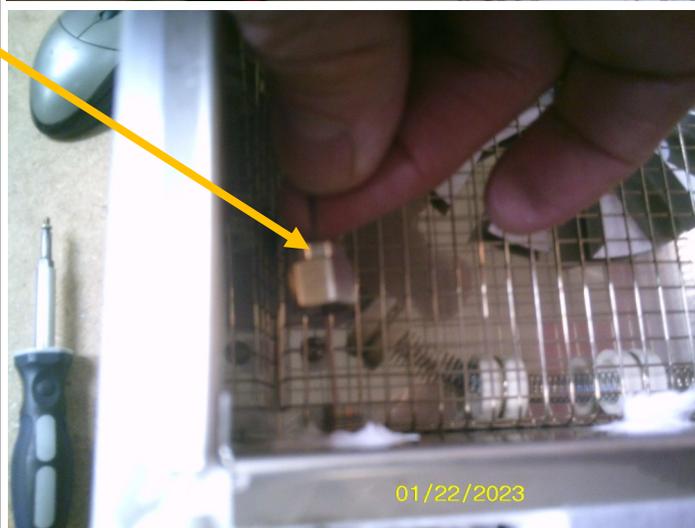
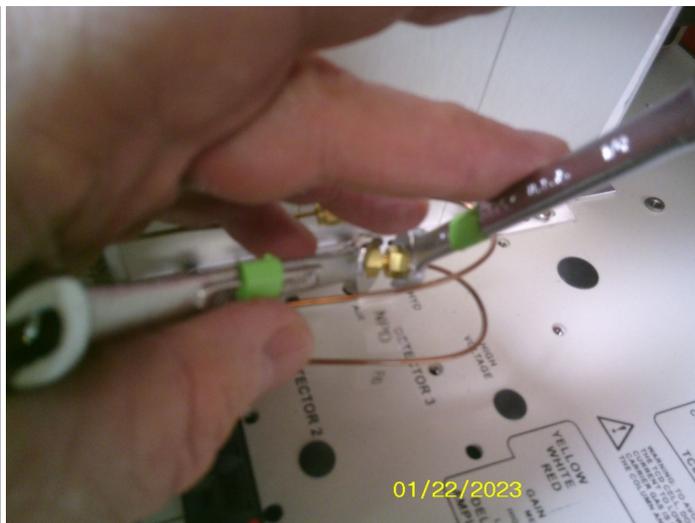
Temporarily remove the column from the FID/NPD inlet inside the column oven.

It may be difficult to insert the FID detector into the bulkhead fitting if the column is in the way.

Insert the FID body into the bulkhead fitting and tighten the nut. The nut should be tight enough that the FID body can not easily move, but not so tight that the fitting is damaged.

Then re-connect the column. The end of the column should be positioned at about the middle of the jet tube if it is a capillary column so the column exit is located in a stream of flowing H2 just upstream of the tip of the jet. Its important not to insert the column all the way thru the jet because it will hit the NPD bead and possibly crack the bead.

Middle of jet



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Re-attach the air connection from the FID body. There is zero pressure at this fitting so the nut does not have to be overtight to stop a leak.

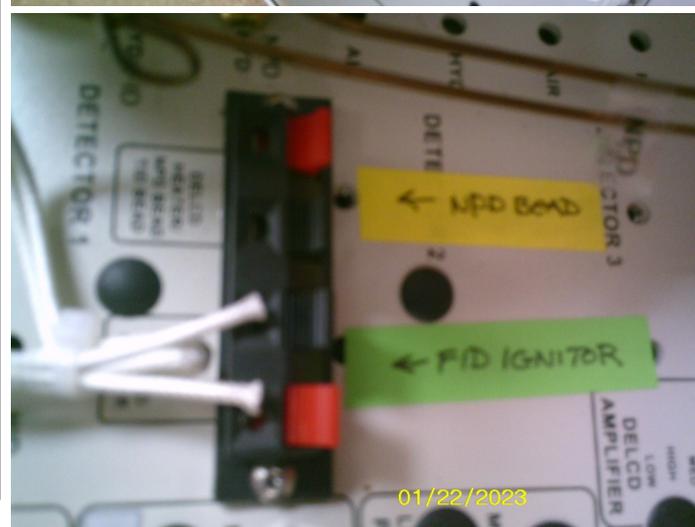
Re-assemble insulation and plug in FID ignitor to the two right hand terminals on the terminal strip.

Re-connect the collector electrode to the BNC (amp).



Adjust the H2 makeup gas pressure EPC to 20psi to get 20ml/min of H2 flow.

Adjust the air EPC to 5psi to adjust the flow to 250ml/minute.



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