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INSTRUMENTS
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Service Note

01-012C
2 May, 2007

INSTALLING THE SWITCHING H_2S RETROFIT INTO A M100A ANALYZER

I. PURPOSE:

To guide you through the installation of the Switching H_2S Retrofit Option in to the M100A, SO_2 analyzer.

II. TOOLS:

7/16" wrench
½" wrench
9/16" wrench
Flat tip screwdriver
Phillips tip screwdriver
Tubing cutter

III. PARTS:

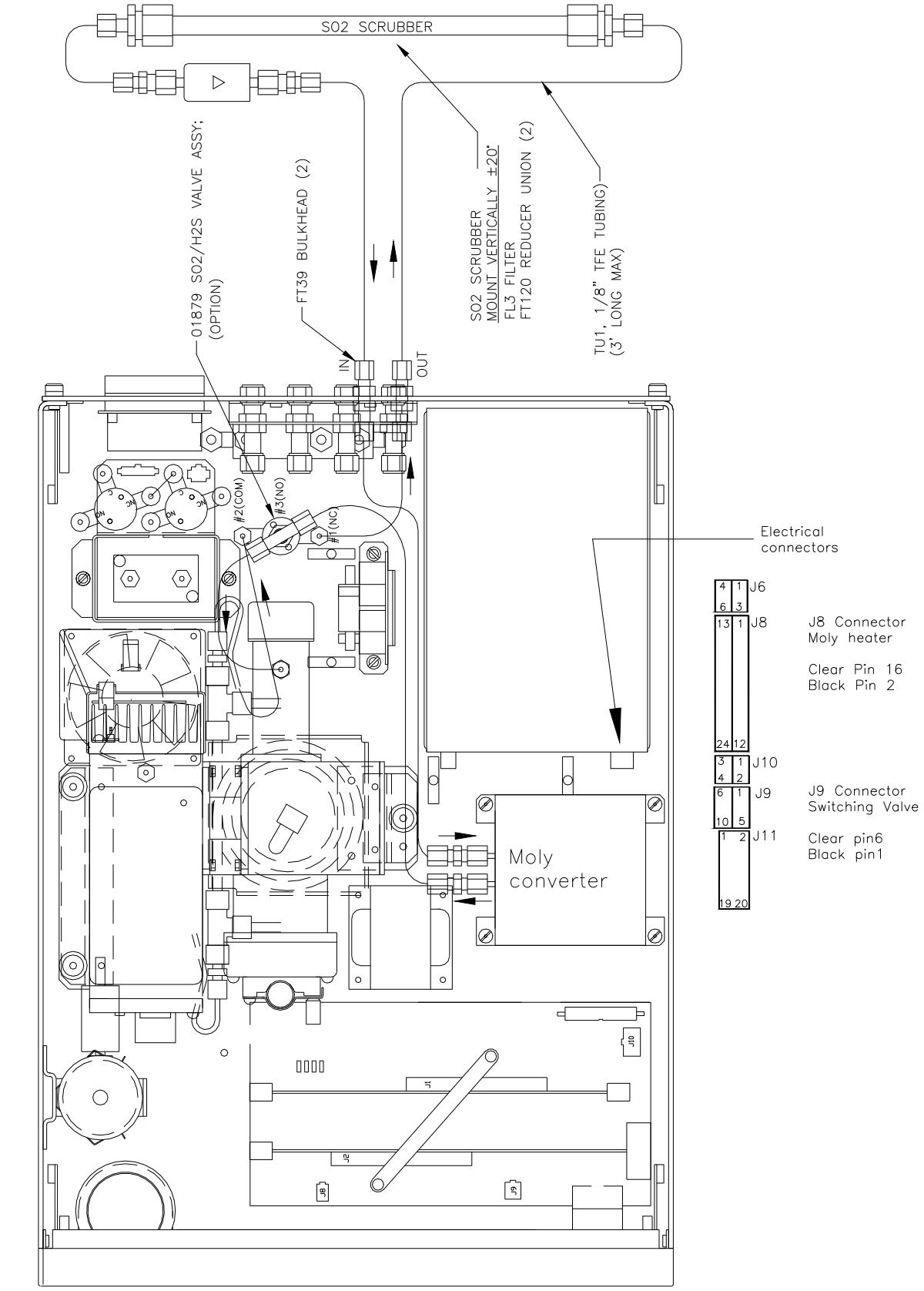
KIT000114 - H_2S retrofit, switching.

IV. PROCEDURE:

1. Remove the power from the analyzer and remove the cover.
2. If the analyzer has a perm tube, remove the perm tube from the oven and put it into the approved container for that tube.
3. Remove the two fittings from the top of the pump and connect them together with the ¼" union that is in the kit.
4. Remove the pump from the analyzer and cover the leads that go to the pump with some electrical tape or heat shrink so that they will not be able to contact the analyzer chassis or a person when the analyzer is turned back on.
5. Locate J8 pin 16 (J8.16) on the power supply module. See if there is a wire in that pin of the connector. If there is, follow the cable to the end where you should find an electrical connector that has heat shrink around it. Cut the heat shrink off of the electrical connector.
6. If your analyzer does not have a wire installed into J8.16 take the wire out of the kit that is labeled for the Moly converter. Remove the J8 connector from the power supply module (PSM), and turn it so that you can insert the cable ends into the connector. Put the clear wire into pin 16 of the J8 connector and the black wire into pin 2 of the J8 connector. (See diagram on page 4).
7. Locate the J9 electrical connector on the power supply module and see if pins 1 and 6 have any wires installed in them. If they do then follow the cable to the end and find the connector that goes to the switching valve.
8. If your analyzer does not have wires in pins 1 and 6, then remove the cable from the kit and install the clear cable into pin 6 and the black cable into pin 1.
9. Install the valve into the analyzer behind the sensor assembly as shown in the diagram on page 4. Plug the valve into the cable that you have just installed into J9 of the power supply module.
10. Install the Moly into the analyzer so that the tubes coming out of the Moly are facing inward, towards the RxCell of the analyzer.
11. Connect the power wire that you just installed to the Moly converter heater.
12. Connect the thermocouple (TC) from the Moly converter to the connector on the status temp card.
13. Lower the front panel of the analyzer and remove the CPU and v/f card from the analyzer motherboard.

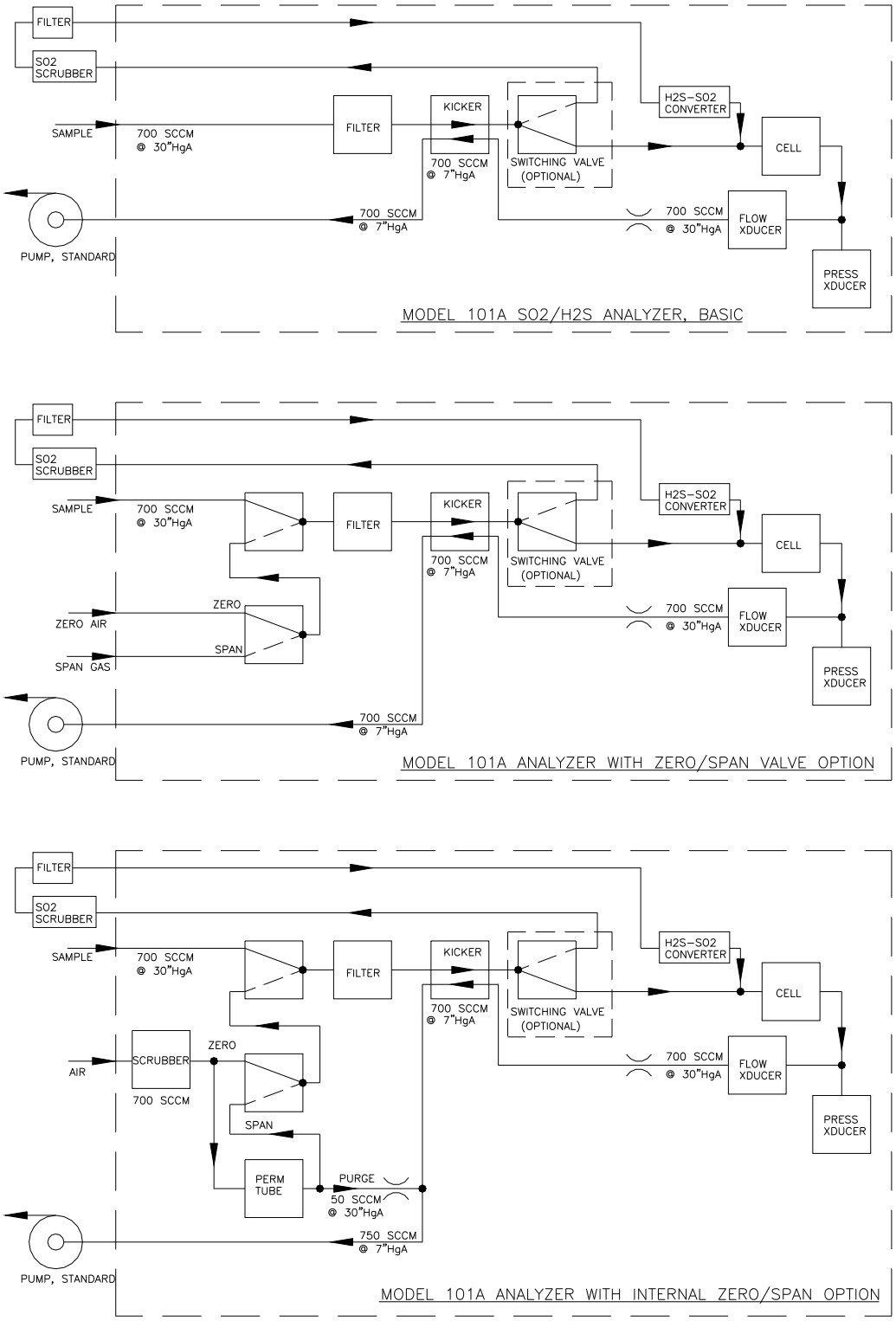
14. Turn the entire assembly over so that the CPU assembly is facing up toward you. Notice that you have the UV prom (EPROM) facing you so that you can read the words on the prom.
15. Retrieve the prom that comes with the kit and compare it to the one that is on the CPU assembly.
16. If the prom that we just shipped you does not have the same number of legs on it that the one that is in the CPU now contact the Teledyne API service department with the following information. What the number is that is written on the prom that is in the CPU now and what the serial number is of the analyzer that you are trying to convert to H_2S.
17. If the new prom and the old prom have the same number of legs then, remove the old prom from the CPU card. Install the new prom into the socket that you just removed the prom from checking to ensure that the chip is facing the same direction that the old one was facing.
18. Put the CPU and v/f card assembly back into the analyzer.
19. Turn the analyzer around so that the rear panel is facing you.
20. Put the two 1/8" bulkhead fittings that are in the kit into the holes in the rear panel that are marked "converter: in and out".
21. For the next 10 steps, see the diagram on page 4.
22. Remove the black 1/8" line from the reaction cell and connect it to the #2 port (Common, C) on the valve that you just installed.
23. Connect one end of the tubing that you received in the kit to the valve on port #1 (Normally Closed, N/C).
24. Connect the other end of the tube to the fitting on the rear panel that is labeled "out to converter". When you are installing this tube, make sure that you have enough length in this line so that you can fold down the rear panel of the analyzer.
25. Connect the other side of the "out to converter" to the input to the Sox scrubber. Make sure that you connect this tube to the side of the Sox scrubber that does NOT have the particulate filter connected to it.
26. Connect the other side of the Sox scrubber to the "in from converter" fitting on the rear panel. This is the side of the sox scrubber that does have the DFU on it.
27. Connect the inboard side of the "in from converter" fitting to the input to the Moly converter.
28. Connect the output side of the Moly converter to the #3 (normally open, NO) side of the valve on one side of the "T".
29. Connect the other side of the "T" to the 1/8" fitting on the rear of the cell.
30. Leak check the analyzer. If you don't know how to leak check the analyzer, see the API service note 98-018 or 98-044. Another note of interest regarding Teledyne API manufactured leak checkers is 99-027.
31. Once you have the leak check performed and the analyzer does not have any leaks, then turn on the analyzer.
32. Push the following buttons "SETUP_MORE_VARS_929_ENTER_NEXT" to "FACTORY_OPTION" write down this number, and EXIT back to the sample menu.
33. Push the following buttons "SETUP_MORE_DIAG_929_ENTER_NEXT" to "MEMORY RESET" push "EDIT_EEPROM_ENTER". The CPU will now reset.
34. Push the buttons in step 32 and go to the factory option push "EDIT" and enter in the number that you wrote down in step 32.
35. Push the following buttons on the front panel "SETUP_MORE_VARS_ENTER_NEXT" to "MEAS_MODE" then press "EDIT" and change this to:
    H_2S H_2S only mode
    SO_2 SO_2 only mode
    $H_2S\_SO_2$ Switching mode
    push "ENTER" and EXIT to the sample menu.
36. You can now input your H_2S span gas and calibrate this analyzer.
37. Please read the addendum that comes with this service note to understand more about this option and what it does and how to calibrate the analyzer.

38. When you are putting this analyzer into service please keep in mind that the Sox scrubber on the rear panel of the instrument must hang vertically. We would NOT recommend that the Sox scrubber hang any more than 10° off of vertical. If you lay the SO_x scrubber flat down the media in the scrubber tube will channel and eventually not come into contact with the sample going through it. This means that you are not going to scrub the Sox out of your sample and your H_2S readings on the front panel are going to read higher than the true levels of H_2S.
39. If you have any doubts about the converter efficiency you can input SO_2 into the rear panel of the instrument and push the "CAL" button. Now it will ask you if you want to calibrate on SO_2 or H_2S, select SO_2 and see what the analyzer reads. The analyzer should read from 80 to 100% of what you are inputting into the rear panel.
40. If you have any questions about this service note please contact the Teledyne API service department. If you don't think that the analyzer is performing properly or if the analyzer is showing any faults, please fill out the repair form for the analyzer and fax it to Teledyne API.



M101A LAYOUT WITH SWITCHING VALVE

FIGURE 101A–3



M101A H2S/SO2 PNEUMATIC DIAGRAM
(WITH OPTIONAL SWITCHING VALVE)