



02-014C  
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**INSTRUCTIONS FOR REPLACING THE DETECTOR/PREAMP IN A TAPI M3XX ANALYZER**

**I. PURPOSE:**

The purpose of this service note is to provide instructions on how to replace detectors in an M3XX analyzer. This applies to Teledyne API model M300/M300H/M360 and the M320.

**II. TOOLS:**

Phillips screwdriver

**III. PARTS:**

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**IV. PROCEDURE:**

1. On the analyzer, press SETUP-MORE-VARS and change the password to 929. Press ENTR.
2. Press NEXT until you see RS232\_MODE record this number. Press NEXT until you see FACTORY\_OPTIONS. Write down the number that this variable is set to.
3. Remove power to the analyzer.
4. Remove the top cover from the analyzer.
5. Locate the detector/preamp cover. This is mounted in the left rear corner of the analyzer (on top of the bench). Remove the two #6 screws and remove lift off the cover. (Location of screws shown in figure 1)
6. Follow the cable from the detector to the main board and disconnect it at the main board.
7. Follow the cable from the detector to the Power Supply Module and disconnect at the Power Supply Module.
8. The detector/preamp board is secured onto standoffs by two screws. There are also two holes in the PCB (near the detector), which allow you to insert a screwdriver down through the PCB to access the two screws, which secure the detector to the bench. (Locations of screws shown in figure 2.)
9. Remove the two screws holding the detector to the bench. Remove the two screws holding the detector PCB to the standoffs. (Location shown in figure 2.)
10. Remove the entire detector assembly from the bench ensure that the o-ring for the detector is removed as well. Protect the detector from ambient light by wrapping the detector in a piece of aluminum foil.
11. Replace the o-ring that was removed with the detector and replace with the orange o-ring that comes with the new board.
12. **NOTE:** The lock washers securing the detector to the bench must be replaced with two #4 flat washers. Install the new detector inserting the small screws with flat washers through the detector flange, and then carefully positioning the detector into the hole in the bench. Hand tighten the screws. Install the two screws with lock washers for the preamp board, and then snug down the detector screws. **CAUTION! DO NOT TIGHTEN THE TWO DETECTOR SCREWS TO MORE THAN 30 IN/LBS.**
13. Perform a leak test on the bench assembly.
  - a. Bypass the sample pump by connecting the input and output lines.
  - b. Connect the leak checker to the exhaust port on the rear panel.
  - c. Cap the sample port.

- d. Pressurize the system to 15 PSI and ensure the system maintains the pressure for 5 minutes. If not check detector assembly for leaks and repeat.
  - e. **IMPORTANT** – upon the conclusion of test release pressure slowly.
- Install the detector/preamp cover. Connect the cable from the preamp to the main board, and the cable from the preamp to the Power Supply Module.
14. Power up the analyzer.
  15. Allow the analyzer to warm up for at least two hours.
  16. Input zero air and allow the analyzer to stabilize for 15 minutes.
  17. Adjust R7 on the Sync-Demod board until the COMEAS value is between 4000 and 4500 counts.
  18. Press SETUP-MORE-DIAG-ENTR. Press NEXT until you see DARK CAL. Press ENTR-CAL-ENTR. After two minutes it should finish its dark calibration and you can exit to the main menu.
  19. Allow 15 minutes on zero air for analyzer to stabilize. Press CAL-ZERO-ENTR to ZERO the analyzer. Exit to the main menu.
  20. Input a span gas value and allow the analyzer to stabilize for 15 minutes.
  21. Press CAL-CONC and enter the value of span gas. Press ENTR. Exit to main menu.
  22. Press CAL-SPAN-ENTR to SPAN the analyzer. Exit to main menu.
  23. If the analyzer does not give you a SPAN or ZERO button when performing steps 17-20 then you must RESET the MEMORY (follow steps 22-27). If it does give you a SPAN or ZERO button then go to step 30.
  24. Press SETUP-MORE-DIAG and change the password to 929. Press ENTR.
  25. Press NEXT until you see MEMORY RESET or similar. Press ENTR. Press EEPROM-ENTR. The analyzer will now go through a power up cycle.
  26. When it has powered up, press SETUP-MORE-VARS and change the password to 929. Press ENTR. Press NEXT until you see FACTORY\_OPTIONS. Press ENTR.
  27. Take the number that you recorded in step 2 enter it Press ENTR.
  28. Press PREV until you see RS232\_MODE. Enter the value recorded in step 2. Press ENTR. Exit to the main menu.
  29. When it comes up, perform the DAC calibration found in Section 9.2 of the M300 manual.
  30. Cycle power on the analyzer.
  31. Once the analyzer has powered up repeat steps 13-21
  32. This completes calibration of the analyzer

Figure 1

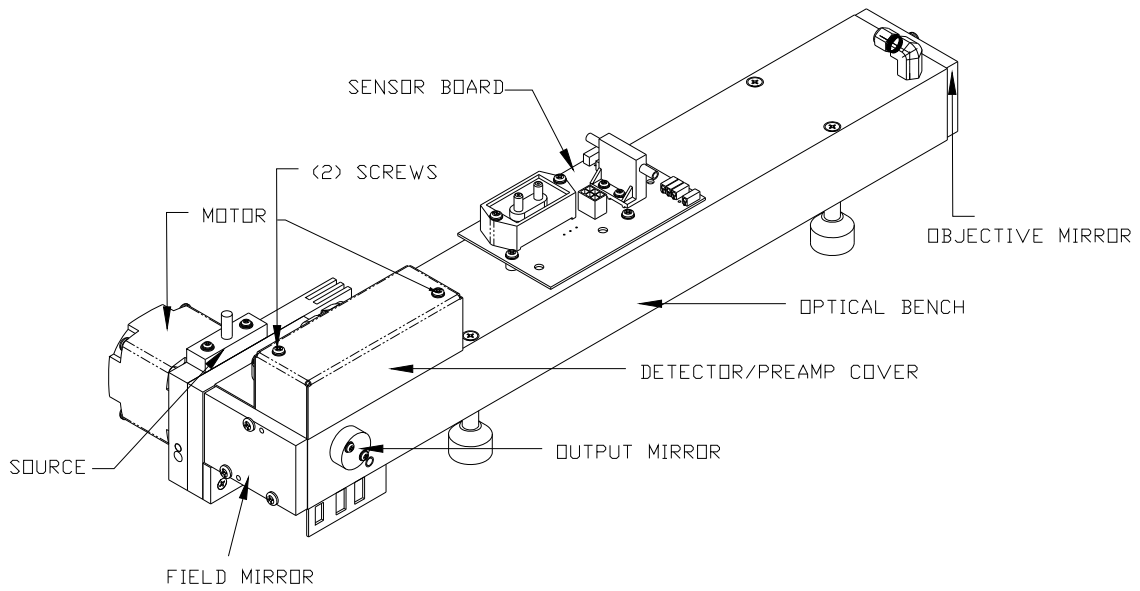


Figure 2.

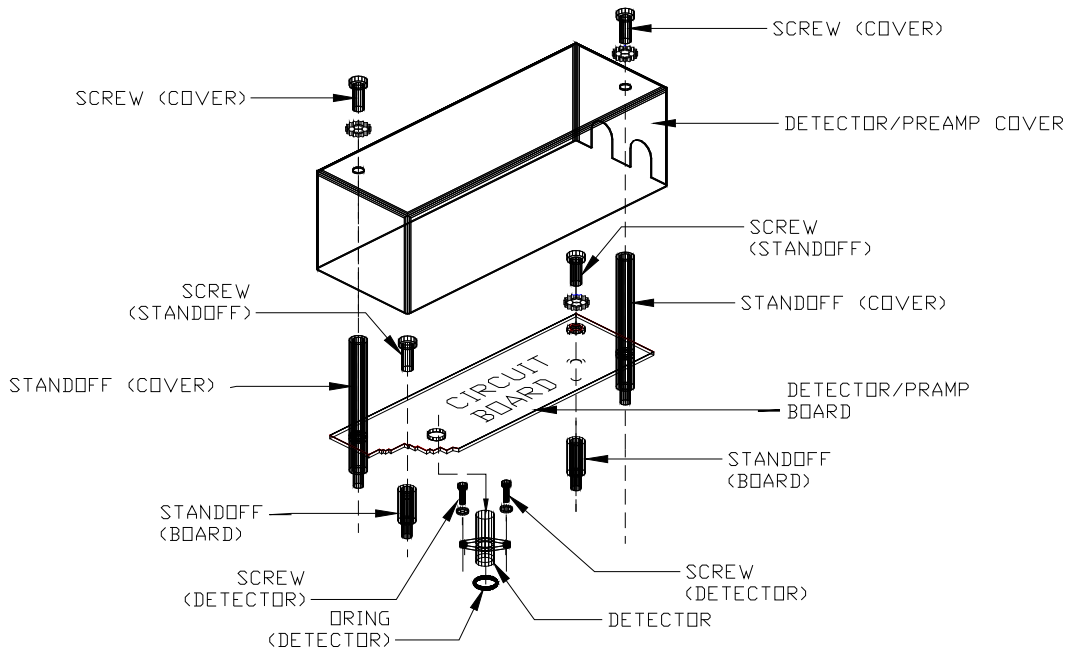


Figure 3

Detector/Preamp Board Assembly

