# Updated leak check procedures for the Thermo Scientific PDM3700 personal dust monitor

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Technical Bulletin

## Key Words

- Performing leak checks
- Failed leak tests

## Goal

We have learned that, in the course of performing leak tests on the Thermo Scientific™ PDM3700 Personal Dust Monitors ("PDMs"), some users have experienced failed leak tests even though the integrity of the flow path and case remained intact (i.e. the leak test results in a false indication of a leak). We believe that this result follows from use of the pump as a check valve to create a vacuum during the procedure.

To remedy this issue, we have developed a new procedure for performing leak tests. The new leak check procedure requires the user to use a specific putty to seal the pump exhaust port during leak testing. Since, under normal operation, the unit's exhaust exits this port, it cannot act as a leak source.

Periodically, or if the front cover has been removed for maintenance, perform a case leak check on the PDM3700 unit. Tools/materials needed for this procedure include the case leak check suction cup, sample line plug, and pump exhaust port leak check putty (Figure 1).

WARNING: Whenever the PDM3700 case is opened for maintenance, you must perform a case leak check after reassembling the case. The system must pass the case leak check prior to operating the instrument. Correct the leak and re-test the instrument if the leak check does not initially pass. Do not operate the instrument if the system does not pass the case leak check.


Figure 1. Leak check putty.


Figure 2. Pump exhaust port.

## Performing a sample path leak check

1. Disconnect the sample line from the inlet bracket.
2. Locate the pump exhaust port as shown in Figure 2.
3. Clean the surface of the unit and pump exhaust port to remove coal dust and other debris.
4. Connect the PDM3700 unit to its charger and start the WinPDM software.
5. When in the PDM - COM1 screen, select the "Leak Check" button to display the Leak Check Routines screen (Figure 3).

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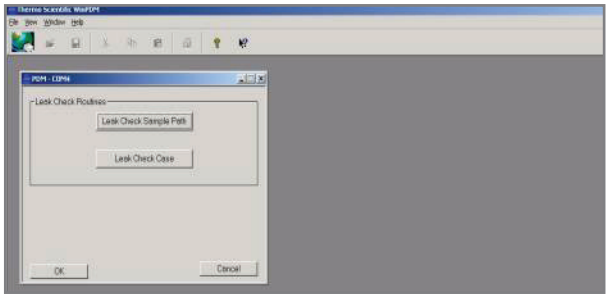


Figure 3. Leak Check screen.

6. A sample path leak check must be performed before a case leak check can be performed. Select the Leak Check Sample Path Routine and follow the instructions on the screen. Remove the sample line from the steel inlet adapter and plug using the insert inlet plug (Figure 4).

Figure 4. Insert inlet plug.

7. Prior to the start of the leak check, locate the pump exhaust port (Figure 5). When the sample path leak check starts, the pump will start to run until a proper vacuum level is achieved in the flow line and the pump is turned off. At this time press a portion of leak check putty onto the pump exhaust port. Press firmly, but not so that putty gets stuck in the pump exhaust port opening.
8. When the process is complete, a leak check passed or failed message is displayed on the screen. Remove leak check putty. If the leak check fails, refer to the Troubleshooting section for information about failures.

Figure 5. Placing the leak check putty in pump exhaust port opening.

## Performing a Case Leak Check

1. After the sample path leak check passes, select the "Leak Check Case" button. A Warning/Confirmation screen will display with a "Place the inlet adapter in the inlet" message. Install the case leak check suction cup into the sample line (Figure 6). Select "OK."
2. Another Warning/Confirmation screen will display with an "Attach the inlet adapter to the PDM" message. Install the suction cup side of the housing leak check suction cup onto the battery compartment vent that is located below the communication

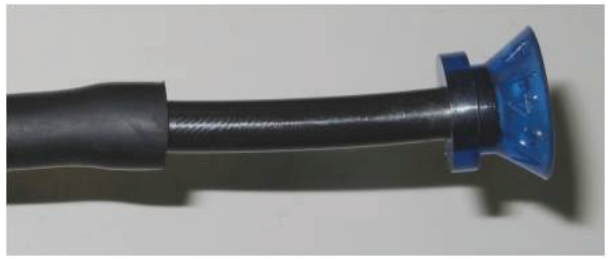

Figure 6. Leak check adapter installed in sample line.

connections on the PDM3700 (Figure 7 and Figure 8). Select the "OK" button. As with the flow path leak check, the pump will start and draw a vacuum. When the pump stops, press leak check putty firmly onto the pump exhaust port.

3. The Leak Check screen will display with a "Performing case check" message. The PDM3700 unit will perform the case leak check and display a pass or fail message on the Leak Check screen (Figure 9). Remove the leak check putty from the pump exhaust port.

Figure 7. Battery compartment vent.

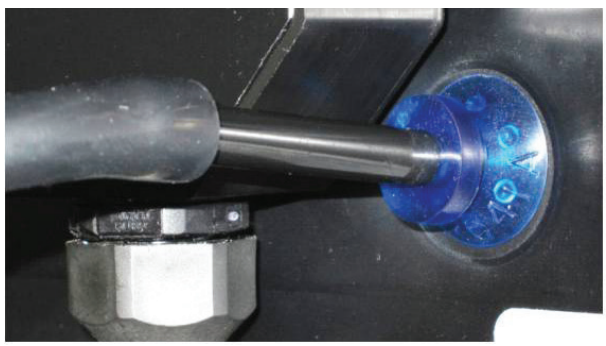

Figure 8. Leak check suction cup installed on battery compartment vent.

4. If the leak check passes, remove the case leak check suction cup from the battery compartment vent and remove the case leak check suction cup from the sample line. Return to normal operation. If the leak check fails, refer to the Troubleshooting section in the manual.

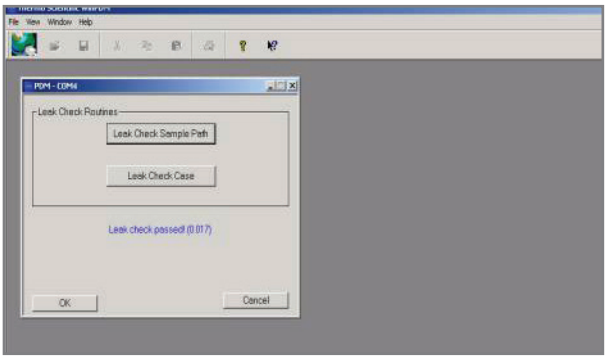


Figure 9. Leak Check screen with "passed" message.

WARNING: Do not operate the PDM3700 if its case is damaged or otherwise compromised.

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