



Model 4430 PID Maintenance and Troubleshooting

Cleaning the Lamp Window

Use the PID lamp window polishing kit (PN 214924) to prevent deposits forming on the outer PID lamp window. Window deposits may also include residue from the O-ring, which should be cleaned with methanol and a lab tissue.

Removing the PID Lamp

CAUTION:

If an ELCD is installed in tandem with the PID, make sure the solvent pump is off. Failure to do so damages the reaction tube, PID, and column.

1. Turn off the lamp power. If an ELCD is installed on the PID, turn the solvent pump off.
2. Disconnect the lamp high-voltage cable from the PID sensor (Figure 5.1).

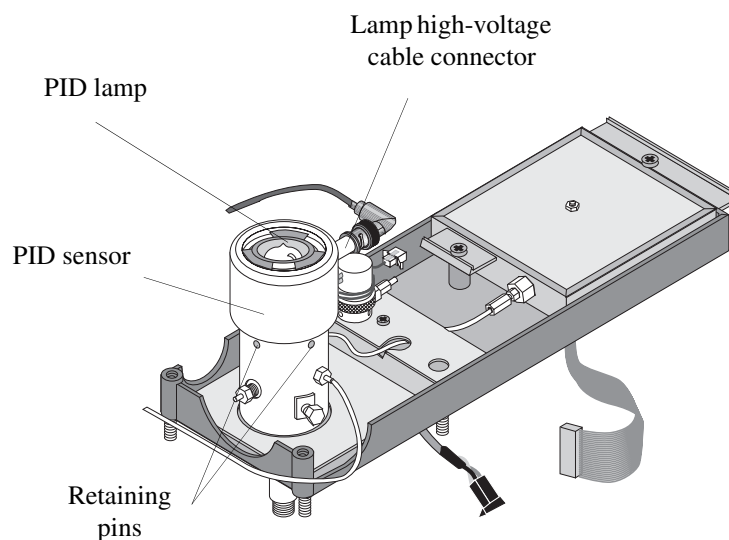


Figure 5.1. PID sensor assembly

3. Remove the PID sensor by pressing the two small retaining pins on the base.
4. Carefully remove the PID lamp to expose the lamp window.

Cleaning the Window

1. Open the lamp window polishing kit, and remove the cleaning compound and cotton swabs.

NOTE: If the lamp window polishing kit is not available, polish the lamp window using a jeweler's rouge or toothpaste and water.

2. Dampen the lamp window with reagent water.
3. Moisten a cotton swab and dip the swab tip into the cleaning compound until well coated.

4. Swab the lamp window using light pressure.
5. Rinse the lamp window thoroughly with reagent water. Dry before reinstalling the lamp by blowing clean air on the lamp window or wiping it dry using a clean laboratory tissue.
6. Dissolve specific contaminants using diluted acids or methanol, as necessary.

Clean lamp sealing O-ring residue with methanol and a laboratory tissue.

7. Reinstall the lamp. Replace the lamp sealing O-ring (PN 255679). Reinstall the PID sensor into the base, verifying all seals, washers, and springs are reinstalled properly (Figure 5.2).

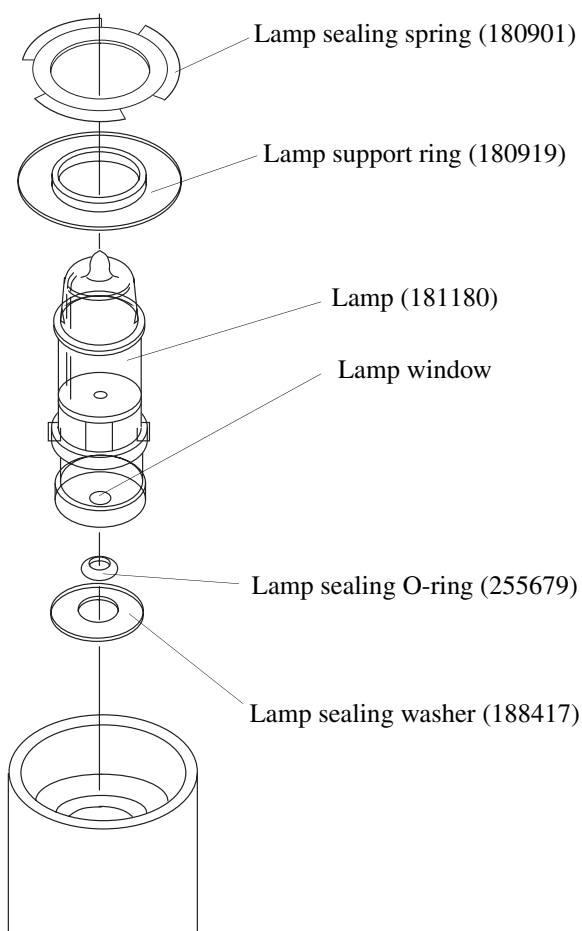


Figure 5.2. PID lamp assembly

8. Reconnect the lamp high-voltage cable.
9. Once the PID is installed and operating properly, note the detector signal and record a typical baseline with zero offset on a strip chart recorder or data system. Retain a copy of a typical chromatogram to compare with future responses.

Cleaning the PID Sensor with the Hexane Boiling Procedure

CAUTION:

Do not remove the six hex nuts from the PID sensor base. Removing these nuts render the sensor inoperative.

CAUTION:

Hexane vapors can be explosive. Use extreme care when using this solvent.

1. Cool the PID base to 80°C.
2. Cool the detectors mounted in tandem with the PID.
3. Turn off the lamp power supply.
4. Disconnect the cable from the PID sensor. Remove the sensor, PID lamp, O-ring, and washer. Turn off the sweep gas (hydrogen) and column makeup gas (helium).
5. Drip hexane into the center opening of the PID sensor base until the cavity is full. Raise the PID base temperature to 100°C and clean up all particles and contamination with a paper towel. Repeat as many times as necessary until the paper towel no longer shows any discoloration or particles.
6. Reassemble the PID and restore all gas flows. If using a tandem detector, ensure the sidemounted detector (e.g., XSD, FID, or ELCD) points to the left side of the GC.
7. Raise the PID base temperature to 200°C. Monitor the PID baseline to see if the signal drops below the level prior to cleaning.
8. If the signal drops rapidly, allow the PID to bake and stabilize.
9. If the signal is still at or near its original level, no additional cleaning may be necessary.

Additional Cleaning

1. If contamination is severe, lower the GC oven temperature to ambient (30°C) and remove the column for additional cleaning.
 2. Mark the column at the column nut.
 3. Disconnect the column, column adapter, and makeup gas tee.
 4. Clean the column adapter and makeup gas tee externally either by sonicating or soaking with a squeeze bottle of hexane.
 5. Inspect the column end under magnification for particles or other contamination.
 6. Cut off the column at the point where it appears clean and mark the distance from the old column end to the mark to maintain the correct insertion depth.
 7. Reconnect the column, column adapter, and makeup gas tee, then proceed with baking the column.
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