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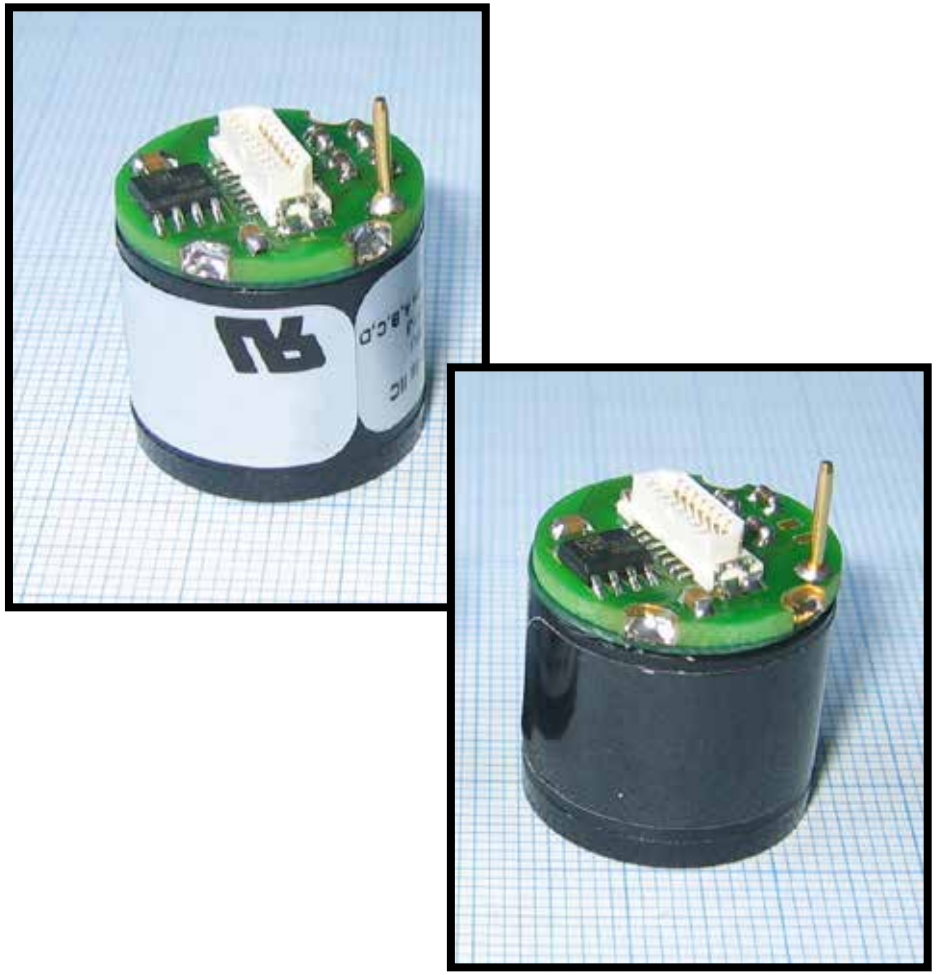
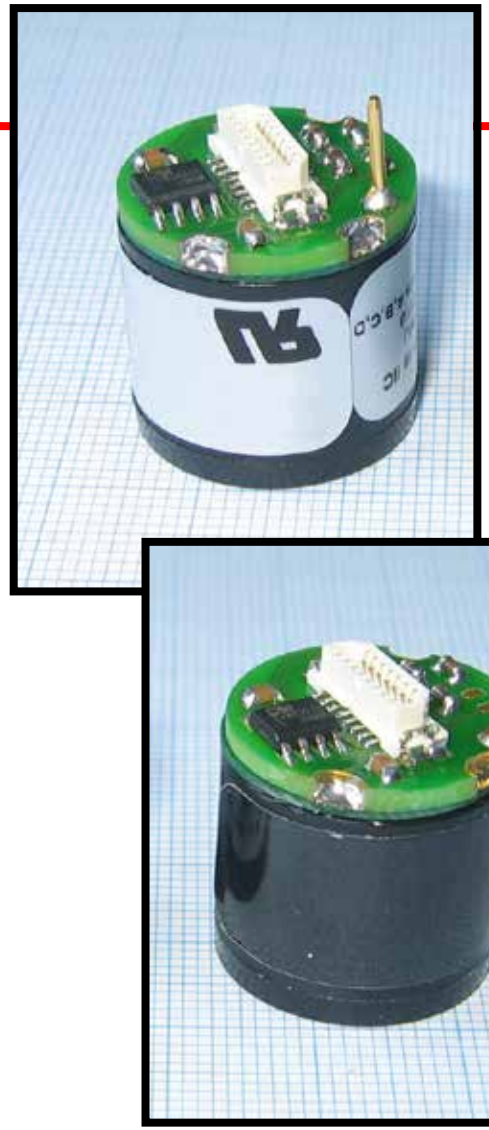
G450 / G460 Advanced Service Procedures

WARNING:
Advanced service procedures should only be undertaken by authorized personnel

- ***PID Smart-Sensor***
  - ***Broad range VOC measurement***
  - ***Extremely sensitive***
  - ***Available in two ranges:***
    - ***0.5 – 2,000 ppm (Standard PID sensor)***
    - ***0.1 – 500 ppm (Optional high resolution PID sensor)***

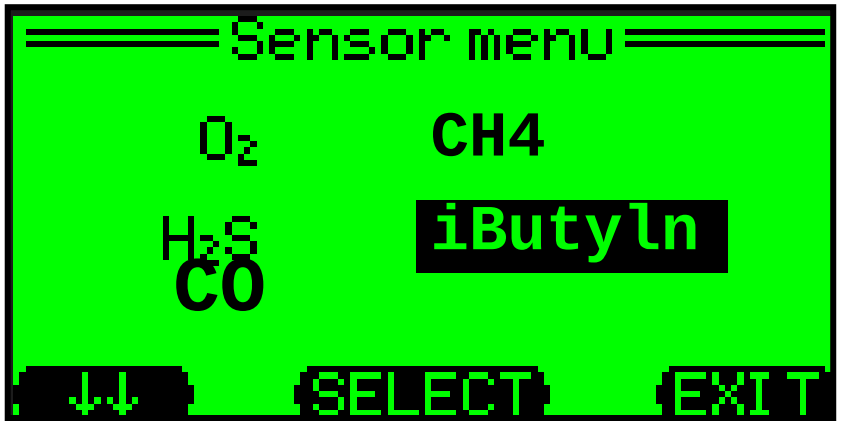


PID range and resolution



- *Two versions of the PID sensor available for G460:*
  - *“Standard” PID provides 0.5 ppm resolution over 0 – 2000 ppm (isobutylene scale)*
  - *“High Resolution” PID provides 0.1 ppm resolution over 0 – 500 ppm (isobutylene scale)*
- *“VOC” choice allows the user to specify custom correction factor for a gas not included in the standard on-board library*
- *The full range for the gas selected depends on the relative response of the sensor to the target gas compared to isobutylene*
  - *For instance, when “NH3” (ammonia) is selected, because of the lower relative response to ammonia compared to isobutylene, the full range is expanded from 0 – 2000 (iso scale) to 0 – 6000 ppm (NH3 scale)*

- *PID sensor choices include "Range and Gas"*
- *Use to choose correction factor for new gas from PID library*
- *PID readings displayed in measurement units of gas selected*
- *Name of gas selected will appear in the sensor menu PID position*
- *In normal operation screen will show name of new gas*



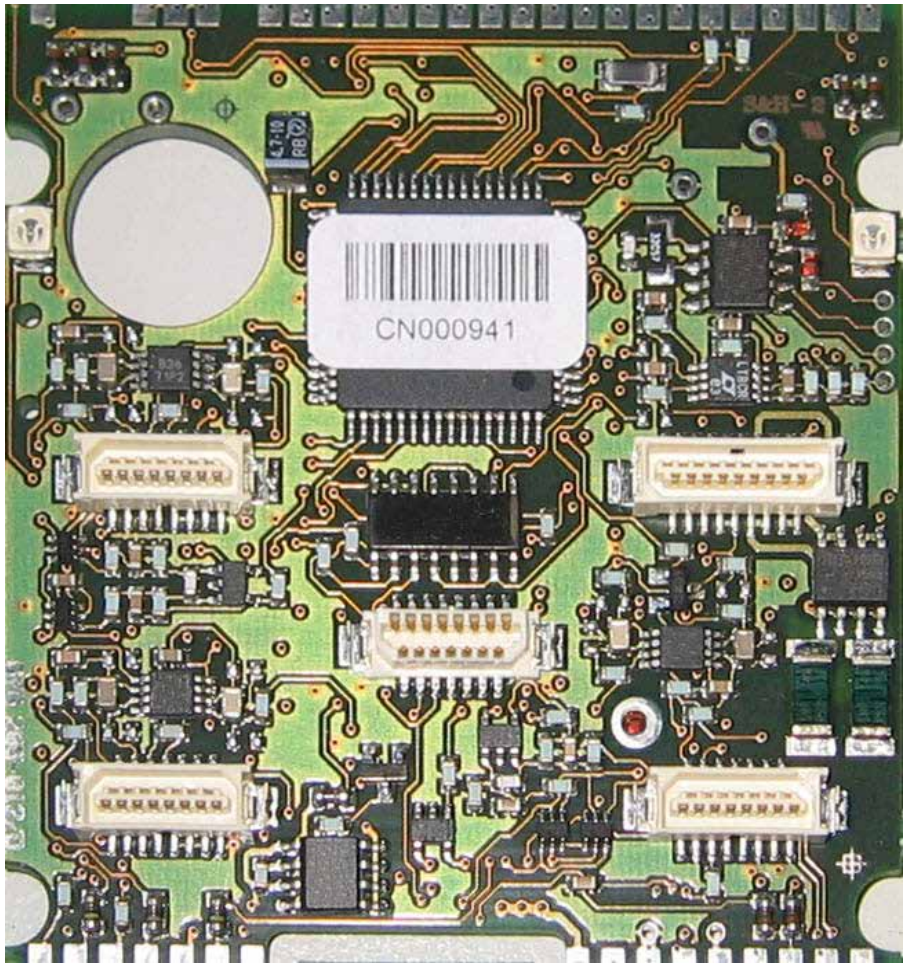
PID sensor “Gas and Unit” library choices

PID Gas List Abbreviations	Common Name	Range with 0 – 2000 ppm full range PID (ISO)	Range with 0 – 500 ppm full range PID (ISO)
iButyln	Isobutylene	0 – 2000	0 – 500
VOC	Generic VOC with user assigned CF	0 – 2000	0 – 500
Gasolin	Gasoline	0 – 2000	0 – 500
MIBK	Methyl-iso-butyl-ketone	0 – 2000	0 – 500
Acetone	Acetone	0 – 2000	0 – 500
Deether	Diethylether	0 – 2000	0 – 500
Propyln	Propylene	0 – 2000	0 – 500
MEK	Methyl-ethyl-ketone	0 – 1500	0 – 375
Diesel	Diesel	0 – 1500	0 – 375
TrClEyn	Trichloroethylene	0 – 1000	0 – 250
Benzene	Benzene	0 – 1000	0 – 250
Toluene	Toluene	0 – 1000	0 – 250
Xylene	Xylene	0 – 1000	0 – 250
Styrene	Styrene	0 – 800	0 – 200
Jetfuel	Jet fuel (JP-8)	0 – 800	0 – 200
nButnol	n-Butyl-alcohol	0 – 6000	0 – 1500
EtActat	Ethyl acetate	0 – 6000	0 – 1500
nHexane	n-Hexane	0 – 6000	0 – 1500
NH3	Ammonia	0 – 6000	0 – 1500
cHexane	Cyclo hexane	0 – 3000	0 – 750
VyChlrd	Vinyl chloride (VCM)	0 – 3000	0 – 750
MeBromd	Methyl bromide	0 – 3000	0 – 750
nNonane	n-Nonane	0 – 3000	0 – 750
Octane	Octane	0 – 3000	0 – 750
Heptane	Heptane	0 - 3000	0 – 750

G460 Interchangeable Smart Sensors

- *Five Smart Sensor positions on PCB:*
- *All you need to do is plug the sensor into a position designed for that type of sensor*
  - *EC 1:* *COSH*
  - *EC 1, 2, 3:* *CO, H2S, O2, NH3, SO2, H2, PH3, HCN*
  - *EC 2, 3:* *NO, NO2, CL2, HCL, ETO, O3, ClO2, HF*
  - *EC 2: PID*
  - *PL:* *1 – 100% LEL "pellistor" sensor*
  - *IR:* *0.1 - 5.0 Vol % CO2; 0 – 100% LEL combustible; 0 – 100% vol combustible*

G460 Main PCB: Five Smart Sensor Positions



EC3 (Upper Left)

PL (Upper Right)

EC2 / PID (Lower Right)

IR (Center)

EC1 (Lower Left)

- ***The G460 PID is protected by both external and internal filters***
  - ***Because gas diffuses into and out of the sensor (rather than using a pump to pull the atmosphere across the lamp and electrodes) the system is less prone to particulate contamination***

> ***Note: The PID lamp and electrodes should only be cleaned when needed!***

- ***The primary symptoms that indicate the need to clean the lamp are:***
  1. ***Unstable readings***
  2. ***Oversensitivity to humidity***
  3. ***Failure to calibrate***

- *The following slides show the step-by-step procedure for cleaning the G460 PID*

- *The manufacturer of the PID lamp (Baseline-MOCON, Inc.) has also posted a training video at the following link:*

  http://vimeopro.com/gasanalysis/pid-tech-plus

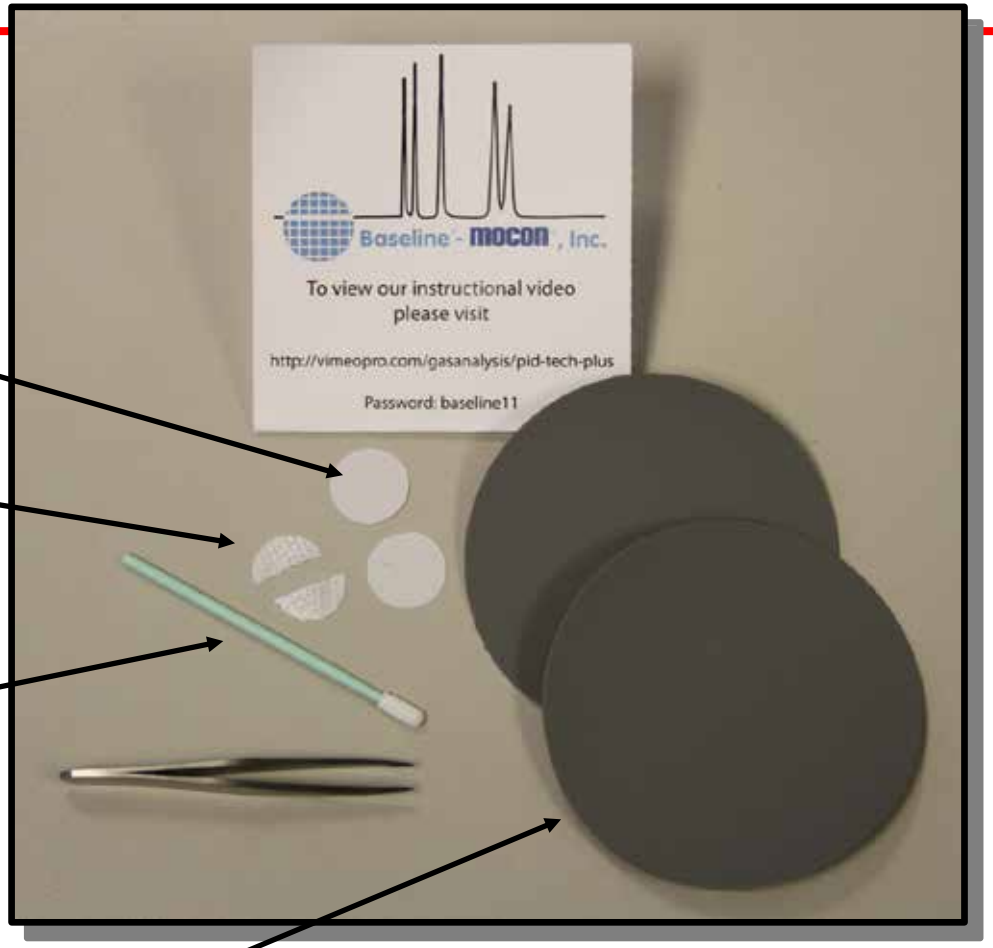
  The password is: baseline11

- *G460 PID cleaning kit (PN 7740-026): includes replacement filters, lamp polishing pads, tweezers and compressor stick*

> ***Note: The appearance of the Baseline-MOCON "PID Plus" sensor in the video is slightly different from the GfG PID version. The procedure for disassembly and cleaning the lamp is exactly the same, however.***

G460 PID Maintenance Kit

- ***PID maintenance kit components***



Inner filter

Outer filter (moisture barrier)

Padded stick

Lamp polishing pad

G460 PID Maintenance Cautions

- ***Wear gloves when handling or disassembling PID***

Note: Direct contact between fingers and PID lamp, electrodes and other components can leave oils and contaminants behind that can degrade performance

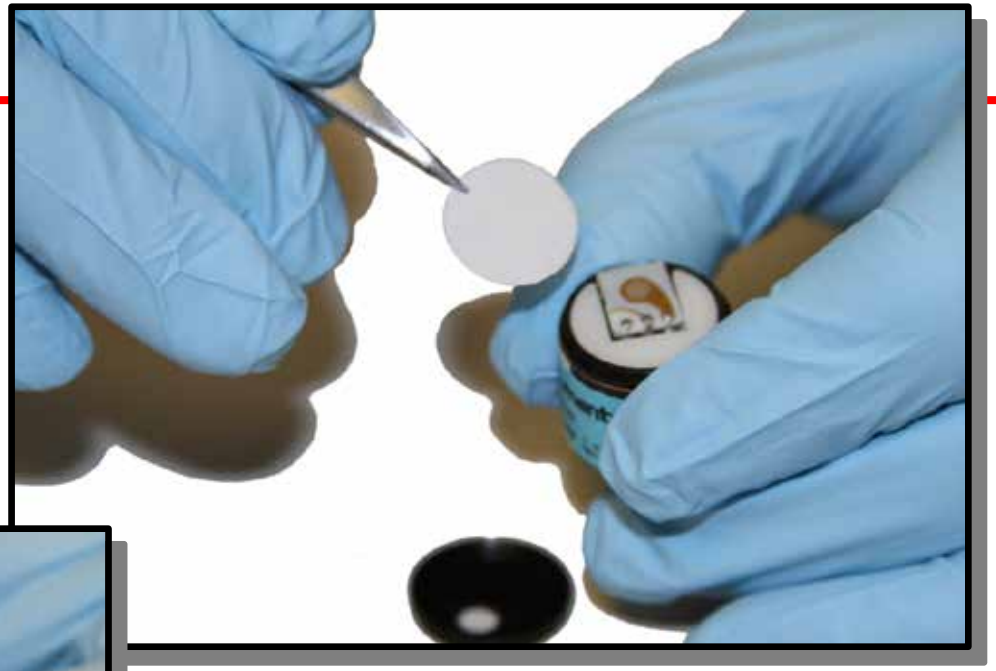
G460 PID Maintenance

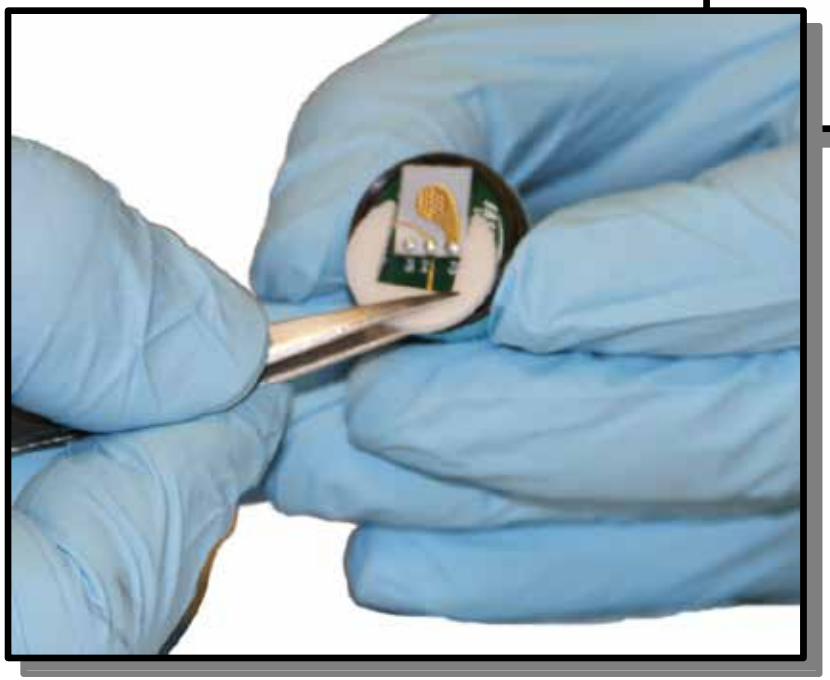
- *Make sure instrument is turned off!*
- *Remove battery, open housing, and CAREFULLY remove main board and display assembly exposing sensors*
- *Remove PID sensor*

- ***Use tweezers to pry the top off of the sensor***
- ***Position the tweezers next to the cap opening***
- ***Remove the sensor cap***

G460 PID Maintenance

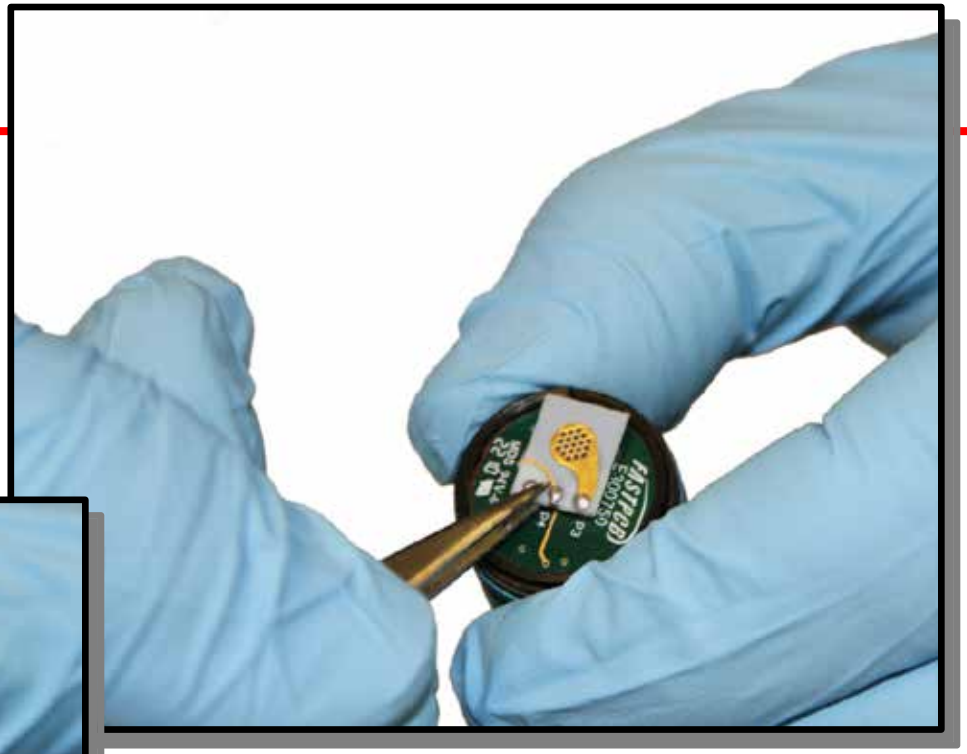
- *Remove filters (inner and outer)*
- *Remove spacer*

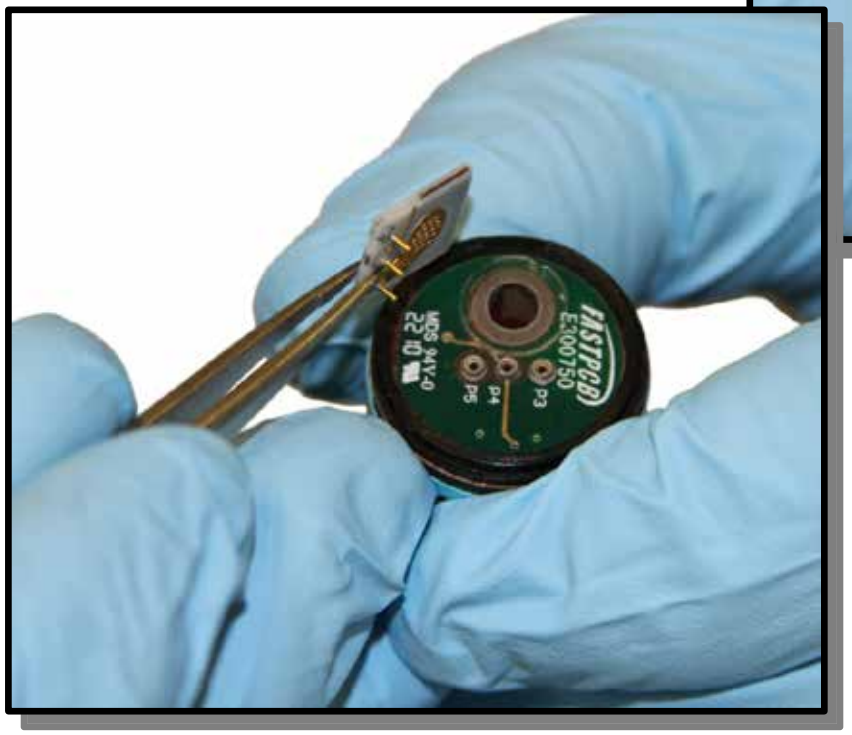




G460 PID Maintenance

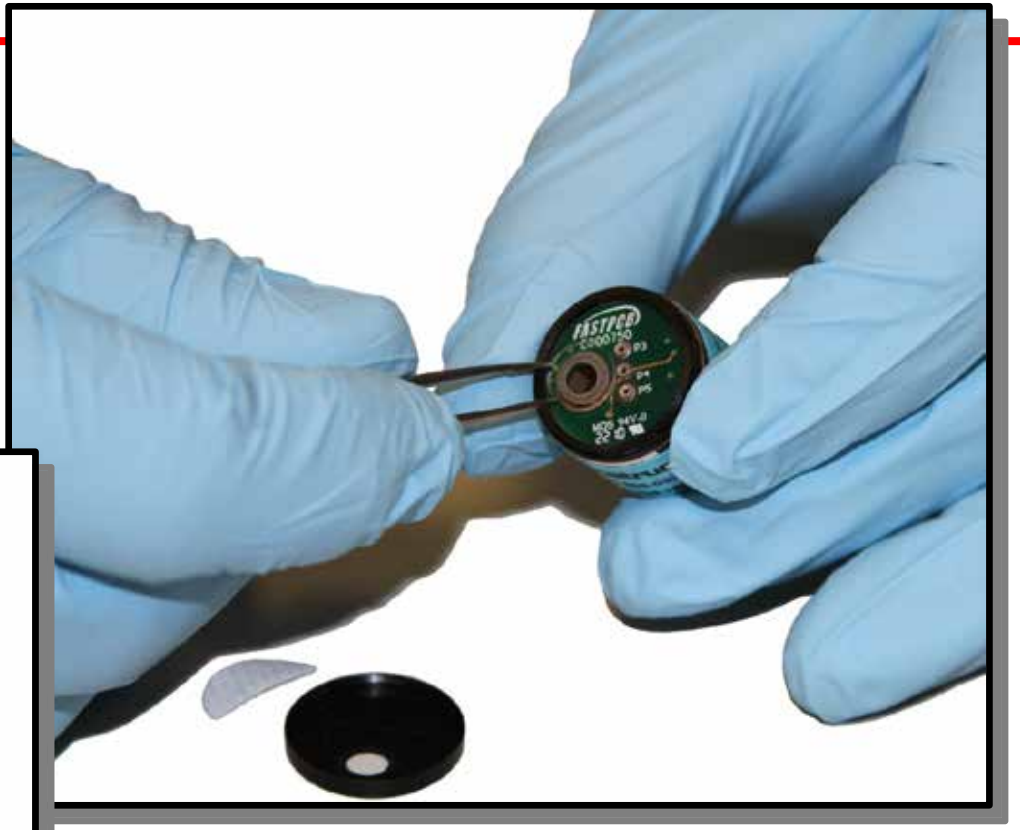
- *Gently remove sensor PCB*
- *Grip at back of board (near pins)*



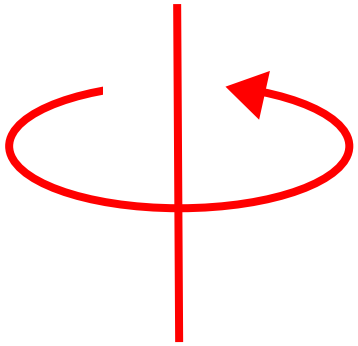


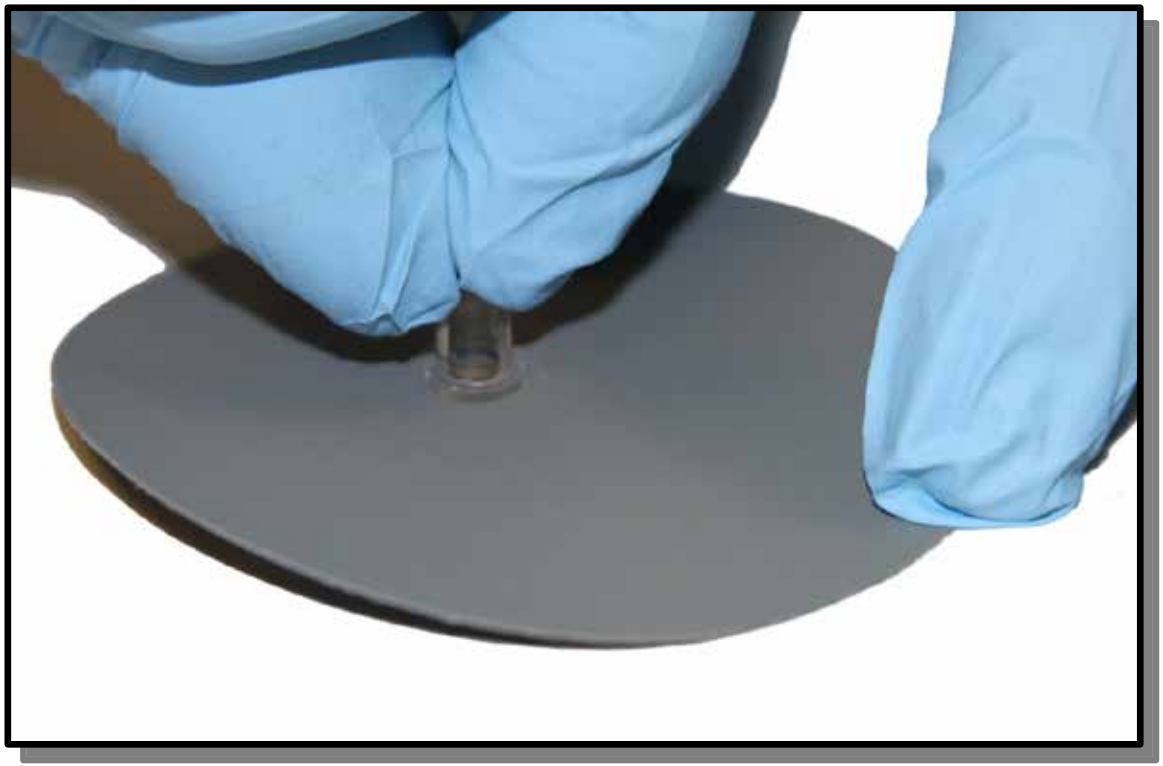
G460 PID Maintenance

- ***Use tweezers to GENTLY pry the lamp out of the sensor***
- ***Do not touch window or body of lamp with naked fingers***



- ***Use circular motion to polish face of lamp window with polishing pad***





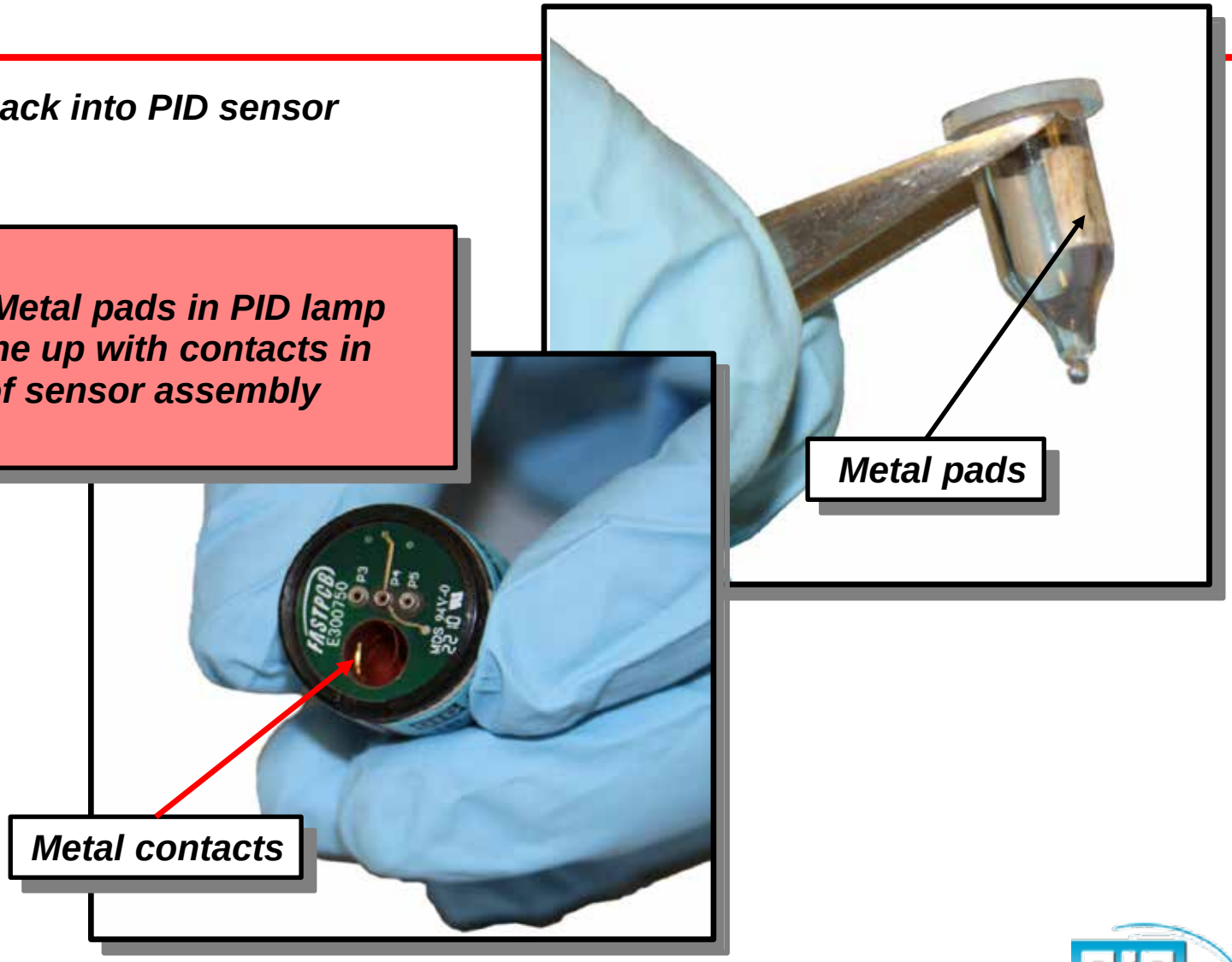
G460 PID Maintenance

- *Clean any lamp, pin, or electrode PCB surfaces that have come into contact with naked skin with alcohol before reassembling*
- *Make sure that all components are COMPLETELY air-dried before reassembly*
- *Do not use blowers or heated air sources to speed up drying!*

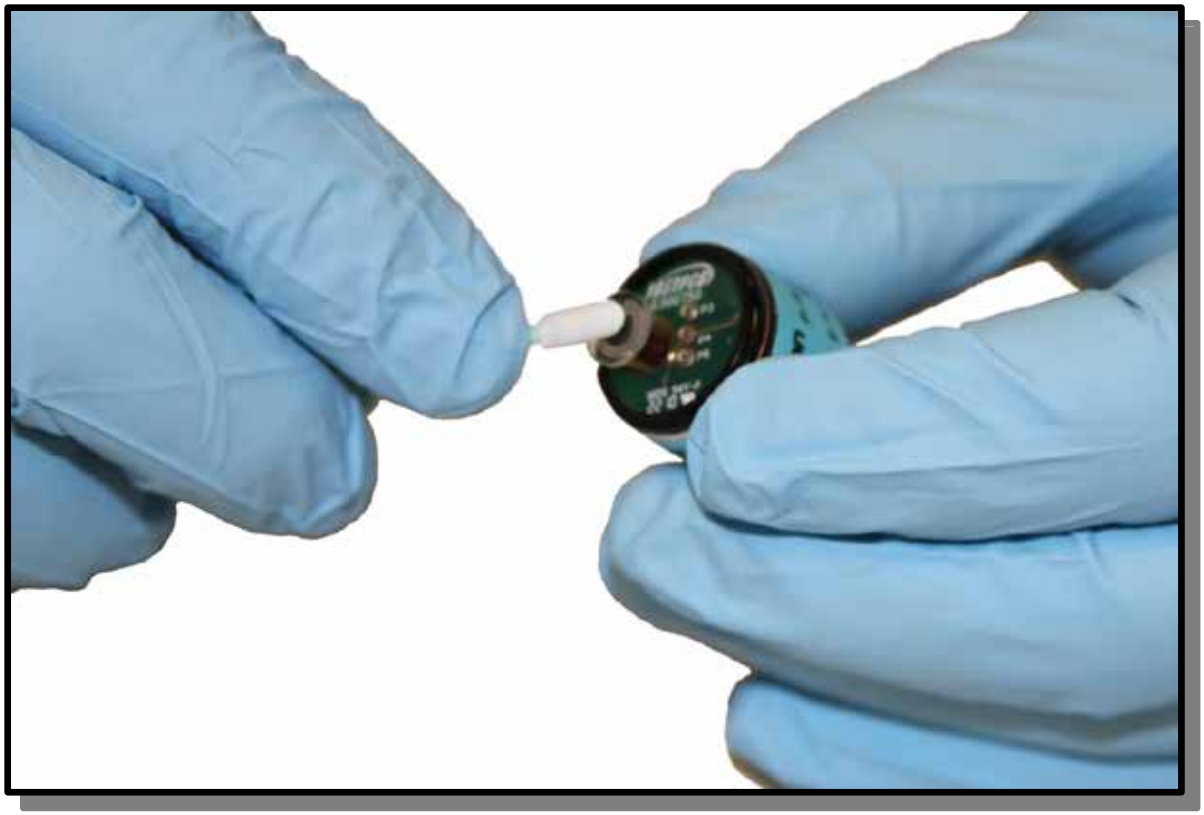
G460 PID Maintenance

- *Insert lamp back into PID sensor assembly*

NOTE: Metal pads in PID lamp MUST line up with contacts in socket of sensor assembly



- ***Use padded stick to press lamp into place***



G460 PID Maintenance

- ***Reassemble:***
  - ***Sensor PCB***
  - ***Spacer***
  - ***Filters (2)***
  - ***Sensor cap***
- ***Plug PID sensor back into instrument***

Calibrate the PID sensor before returning the G460 to service!

Returning the instrument to service

- ***Calibrate ALL sensors in the instrument (whether or not they have been changed) before returning the instrument to service***
- ***It is best to let new sensors stabilize in the instrument for 30 minutes prior to calibration***

Questions?