

# ***POLI***

## **Multi-Gas Meters**

### **Service Manual**



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## Read Before Operating

This manual must be carefully read by all individuals who have or will have the responsibility of using, maintaining or servicing this product. The product will perform as designed only if it is used, maintained and serviced in accordance with the manufacturer's instructions. The user should understand how to set the correct parameters and interpret the obtained results.

### CAUTION!

- REMOVE MONITOR COVER ONLY IN AREA KNOWN TO BE NON-HAZARDOUS.
- RECHARGE BATTERY ONLY IN AN AREA KNOWN TO BE NON- HAZARDOUS.
- USE ONLY mPOWER'S RECHARGEABLE LITHIUM BATTERY P/N M004-3002-000.
- USE OF NON-mPower COMPONENTS WILL VOID THE WARRANTY AND CAN COMPROMISE THE SAFE PERFORMANCE OF THIS PRODUCT
- SUBSTITUTION OF COMPONENTS MAY IMPACT INTRINSIC SAFETY.

**CAUTION:** HIGH OFF-SCALE READINGS MAY INDICATE AN EXPLOSIVE CONCENTRATION. ANY RAPID UP-SCALE READING FOLLOWED BY A DECLINING OR ERRATIC READING MAY INDICATE A GAS CONCENTRATION BEYOND UPPER SCALE LIMIT WHICH MAY BE HAZARDOUS.

**ATTENTION:** DES LECTURES SUPÉRIEURES A L'ÉCHELLE PEUVENT INDIQUER DES CONCENTRATIONS EXPLOSIVES. TOUTE LECTURE RAPIDE ET POSITIVE, SUIVIE D'UNE BAISSSE SUBITE AU ERRATIQUE DE LA VALEUR, PEUT INDIQUER UNE CONCENTRATION DE GAZ HORS GAMME DE DÉTECTION QUI PEUT ÊTRE DANGEREUSE.

### WARNINGS !

ONLY THE COMBUSTIBLE GAS DETECTION PORTION OF THIS INSTRUMENT HAS BEEN ASSESSED FOR PERFORMANCE.

UNIQUEMENT, LA PORTION POUR DÉTECTOR LES GAZ COMBUSTIBLES DE CET INSTRUMENT A ÉTÉ ÉVALUÉE.

**CAUTION:** BEFORE EACH DAY'S USE, THE SENSITIVITY OF THE COMBUSTIBLE GAS SENSOR MUST BE TESTED ON A KNOWN CONCENTRATION OF METHANE GAS EQUIVALENT TO 20 TO 50% OF FULLSCALE CONCENTRATION. ACCURACY MUST BE WITHIN 0 AND +20% OF ACTUAL. ACCURACY MAY BE CORRECTED BY A CALIBRATION PROCEDURE.

**ATTENTION:** AVANT CHAQUE UTILISATION JOURNALIERE VERIFIER LA SENSIBILITE AVEC UNE CONCENTRATION CONNUE DE METHANE EQUIVALENTE A 20-50% DE LA PLEINE ECHELLE. LA PRECISION DOIT ETRE COMPRISE ENTRE 0-20% DE LA VALEUR VRAIE ET PEUT ETRE CORRIGEE PARUNE PROCEDURE D'ETALONNAGE.

## **⚠ WARNINGS !**

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**CAUTION:** Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## **Special Conditions for Safe Use**

- The POLI multi-gas detector must be calibrated if it does not pass a bump test, when a new sensor has been installed, or at least once every 180 days, depending on use and sensor exposure to poisons and contaminants
- No precautions against electrostatic discharge are necessary for portable equipment that has an enclosure made of plastic, metal or a combination of the two, except where a significant static-generating mechanism has been identified. Activities such as placing the item on a belt, operating a keypad or cleaning with a damp cloth, do not present a significant electrostatic risk. However, where a static-generating mechanism is identified, such as repeated brushing against clothing, then suitable precautions shall be taken, e.g., the use of anti-static footwear.

**Note:** Users are recommended to refer to ISA -RP12.13, Part II-1987 for general information on installation, operation, and maintenance of combustible gas detection instruments.

## **Proper Product Disposal at the End of Life**



The Waste Electrical and Electronic Equipment (WEEE) directive (2002/96/EC) is intended to promote recycling of electrical and electronic equipment and their components at end of life. This symbol (crossed-out wheeled bin) indicates separate collection of waste electrical and electronic equipment in the EU countries. This product may contain one or more Nickel-metal hydride (NiMH), Lithium-ion, or Alkaline batteries. Specific battery information is given in this user guide. Batteries must be recycled or disposed of properly. At the end of its life, this product must undergo separate collection and recycling from general or household waste. Please use the return and collection system available in your country for the disposal of this product.

# General Information

The POLI multi-gas detectors (MP400 & MP400P) offer 4- or 5-gas monitoring of oxygen (O<sub>2</sub>), combustible (LEL) gases, toxic gases, carbon dioxide (CO<sub>2</sub>), and volatile organic compounds (VOCs). The MP400 is a diffusion sampling model with standard O<sub>2</sub>, LEL, carbon monoxide (CO) and hydrogen sulfide (H<sub>2</sub>S) configuration. A firefighter version uses O<sub>2</sub>, LEL, CO and hydrogen cyanide (HCN) sensors, and a 5-gas version including sulfur dioxide (SO<sub>2</sub>) is also available. The MP400P is a standard model with pump and allows a full selection of sensors, e.g. over 15 different electrochemical (EC) sensors, pellistor for LEL, non-dispersive infrared (NDIR) for hydrocarbons in both LEL and Vol% range and photo-ionization detector (PID) for VOCs. The MP400S and MP400H are pumped and diffusion multi-gas meters used in wireless networks.

This Service Manual describes the advanced maintenance and repair operations not given in the standard User's Guide. To perform the operations described herein it is assumed that the service technician is already familiar with the User's Guide, including simple maintenance, firmware configurations and mPower Suite software operations.

# Maintenance

The POLI requires little maintenance, aside from daily battery charging, regular filter replacement, and sensor replacement as needed (1 to 3 years depending on sensor and use conditions). Under extreme conditions, the pump or battery may need service or replacement.

## Replacing Filters

### External Filter

If the external filter is dirty or clogged, remove it by unscrewing it from the inlet. Discard it and replace it with a new water-trap filter. Dirty filters can be recognized by symptoms such as:

- Visible filter discoloration
- Frequent pump stalls
- A high pump current (I) value shown in the Pump Stall menu



We recommend filter replacement at least every month for instruments that are used regularly, and more frequently, possibly daily, when used under dusty or wet conditions.

### Internal Sintered Filter:

New models of POLI shipping beginning late 2023 have a secondary internal filter added to protect the monitor in case the external water trap filter is lost or disconnected. This filter should be replaced or cleaned if the monitor flow rate or sensor response decreases notably.



Unscrew the Water Trap Filter



Unscrew the Luer Inlet/ Filter Retainer



Remove or Replace Sintered Filter as Needed

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### Incompatible Chemicals:

The sintered filter should NOT be used with chemicals that may react with it and thus be depleted by it. Incompatible chemicals include: HCl, HF, Cl<sub>2</sub>, ClO<sub>2</sub> and NO<sub>2</sub>. Acceptable chemicals include most VOCs, O<sub>2</sub>, CH<sub>4</sub>, CO<sub>2</sub>, CO, H<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, HCN, NO, N<sub>2</sub>O, PH<sub>3</sub>, SO<sub>2</sub>, ETO, THT and methyl mercaptan.

**IMPORTANT!** A pumped POLI should not be calibrated or operated without a filter. Operation without a filter may damage the instrument. The only exception to this requirement is for use with reactive gases that may be partially lost on the filter.

### Housing Filters

To replace the filters above each sensor on the front housing, see the separate section entitled “Housing Filters” below.

## Checking Sensor Strength in Diagnostic Mode

Sensor raw signals can be accessed for aid in troubleshooting sensor problems. Connect the instrument to mPower Suite on a PC or the mobile App, check the “Enable Diagnostic” box in the Configuration screen (“General” section), and send to the instrument. The main screen will show the sensor type, slot position, raw sensor reading, and the gas concentration, for example:

Text	Type	Slot	Raw Reading	Concentration	Sensor Temp. (°C)
CO+3=9390, 0	CO	3	9390	0	29
O2+4=28505,20.9	O2	4	28505	20.9	32
VOC+1=18550,0.0	PID	1	18550	0	29
LEL+2=264400,0	LEL	2	264400	0	34
T=29,32,29,34,0		top down			

The table below lists typical readings for new sensors.\* For sensors not in this table, check the mPower website [www.mpowerinc.com](http://www.mpowerinc.com) for a Technical/Application Note on Diagnostic Mode.

- First check the Raw Zero readings in air. If these are significantly outside the ranges listed below, there is probably something wrong with the sensor or circuit board.
- Apply calibration gas to the instrument. The readings should *increase or decrease*, depending on sensor type, by at least the Delta values listed below. There is no set limit to the minimum Delta change, but commonly if the Delta approaches the Minimum values listed, the sensor is getting weak and it is likely time to replace it. A sensor may still be used if it provides adequate resolution (for the application) on the lowest digit in normal display mode after proper calibration.

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### Sensor Raw Counts

Sensor	Test Gas	Raw Air Zero*	Raw Span*	Minimum Delta*
Combustibles (pellistor) LEL	50% LEL CH <sub>4</sub>	170000-370000	177000-470000	7800
VOC 0-2000 ppm 4-series PID	10 ppm IBE** 100 ppm IBE	9600-44000	10000-49000 16000-92000	660 6600
Oxygen 0-30% lead wool	O <sub>2</sub> 18% O <sub>2</sub> 0% O <sub>2</sub>	10000-45000	19000-53000 16000-65000	950 6900
Oxygen 0-30% lead-free	O <sub>2</sub> 18% O <sub>2</sub> 0% O <sub>2</sub>	6000-20000	6100-22000 7200-32000	160 1200
Carbon Monoxide 0-1000 ppm	CO 60 ppm CO	7300-12000	7500-14000	250
Hydrogen Sulfide up to 200 ppm	H <sub>2</sub> S 15 ppm H <sub>2</sub> S	7300-12000	8000-18000	770

\* Delta = Raw Span reading – Raw Air reading. These values are for reference only and are not to be construed as hard specifications.

\*\* IBE = Isobutylene

The Right Key can be used to scroll through other Diagnostic Mode screens with more information:

#### Battery Status

BatV: Fully charged should be close to 3.8V or slightly more, shut off below about 3.3V

AC Stat: 0 unplugged; >710 plugged in to charge adapter

Charge Stat: 0 unplugged; >720 plugged in to charge adapter

#### gSensor

These are position sensors used by the Man-Down alarm function. Values range from about -1000 to +1000 depending on the orientation the unit is held in.

#### Amblite

The ambient light sensor is located in the upper left side alarm window of the POLI. The raw ambient light readings should be about 3280 in complete darkness and near 0 in full sunlight.

#### Pump Info

This screen shows the pump speed setting, the pump current draw (with maximum and minimum readings in parentheses) and the Pump Stall Threshold setting (see below for adjustment procedures). The pump speed can be toggled between Low and High to check the values and settings for both.

#### Wireless

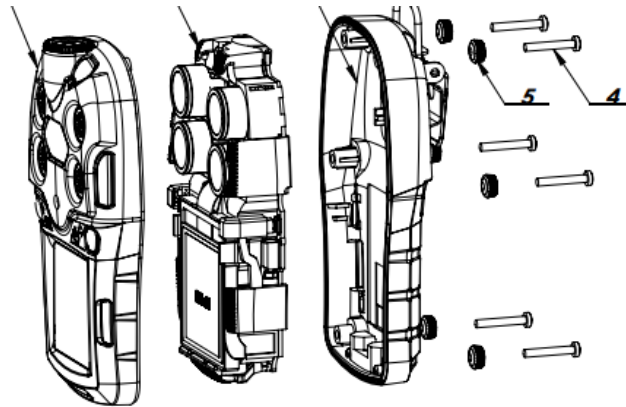
Two or more POLI instruments are needed to test the wireless communication function. This feature appears for all POLI models but is only actually used in wireless models such as MP400S and MP400H. Pushing “Ping” on one unit causes a single ring on a second unit if communication is successful.

# Removing or Replacing Sensor Modules

## ⚠ WARNING!

Replace sensors only in non-hazardous locations.

All sensors are located inside the sensor compartment on the top side of the POLI circuit board assembly. They are accessed by removing the six screws (2-mm or 5/64" Allen wrench or 3/32" flathead screwdriver) in the back of the POLI and then turning the instrument over and lifting off the front cover.



1. Turn off the instrument, remove the six screws from the back side, and lift off the front cover.
2. Carefully lift out each sensor you wish to inspect or replace.
3. Install the replacement sensor. Make sure the electrical contact pins are aligned with the holes in the PC board and that the sensor is seated firmly. The location of sensors does not matter except as noted below. High-power sensors have double winged housings and can only be placed in slots 1 and 2 with double-winged openings. Low-power sensors have single wings and can be inserted into any of the four sensor slots.
4. The firmware automatically recognizes the sensor type at each location.
5. Reassemble, taking care that the sensor gaskets are set smoothly into the sensor caps.
6. Biased sensors like ETO, O<sub>2</sub>-LF, HCl, NO and THT require stabilization time of 1 hour to 1 day.

**IMPORTANT!** Always perform a full calibration after cleaning or replacing sensors.



Single-Wing  
Low-power  
Sensor



Double-Wing  
High-power  
Sensor



Sensor Slot Identification



Sensor Gasket  
in Cap

**NOTE: Some PIDs versions interfere with O<sub>2</sub> Sensors.** If an O<sub>2</sub> sensor gives spurious readings, make sure to install it in a cross position from a PID, e.g., PID in slot 1, O<sub>2</sub> in slot 4, not slots 2 or 3.

**CAUTION! Wireless MP400S Antennae Interfere with Lead-free O<sub>2</sub> Sensors** in positions 2 and 4 and therefore LF-O<sub>2</sub> sensors must be installed in position 1 or 3 in wireless units.



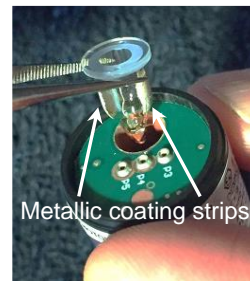
# Cleaning or Changing PID Sensor Detector or Lamp

## PID Lamp Cleaning

1. Pry off the PID sensor cover using a small flathead screwdriver.



2. Put on finger gloves and pull out lamp. Replace lamp or clean window as described below.
3. Use a cotton swab wetted with methanol or acetone to clean the flat window surface of the lamp. If greasy dirt is hard to remove using solvent, the window can be polished using fine alumina powder.
4. Dry the lamp with clean tissue, re-insert into the PID sensor module and close the cover.
5. Some PID versions have a small, 3-pin sensor grid, and/or lamps with 2 conductive coatings on opposite sides. In such cases, be sure to align the lamp coatings with the electrodes inside the lamp socket (usually parallel to the 3 sensor grid sockets), to avoid possibility of a short-circuit. Insert the lamp, then the sensor grid, and then the spacer, filter(s) and cap.



Alternate PID design 3-Pin sensor grid lamp alignment

## PID Sensor Detector Cleaning

1. Pry off the PID sensor cover and pull out the sensor detector.
2. Put the sensor detector into a beaker of pure methanol or ethanol.
3. Place the beaker into an ultrasonic cleaning bath (jewelry cleaner) and sonicate for 15 minutes. Remove the sensor and dry it thoroughly. If possible, use a gentle stream of clean air to blow the residual dust-containing liquid out of the sensor. Complete drying may take a few hours before reassembly to ensure a stable PID baseline.
4. Always re-calibrate the PID after cleaning the sensor.

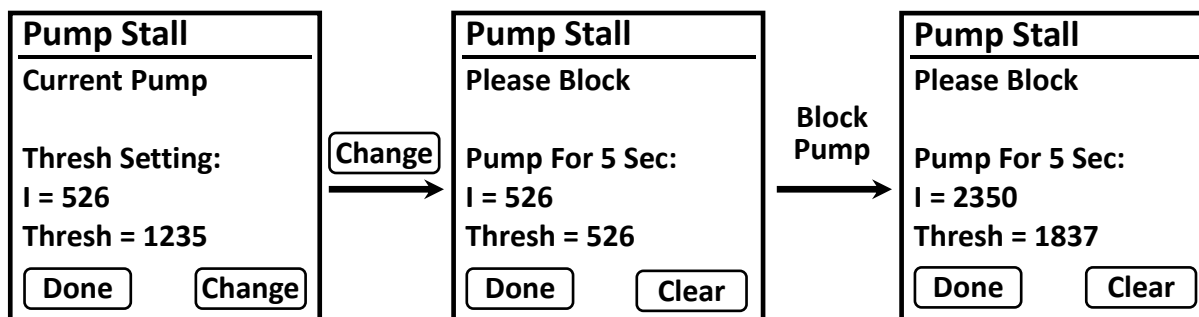


## Sampling Pump

The flow rate should be roughly 150-300 cc/min at low pump speed and 300-400 cc/min at high pump speed when there is no air leakage. When approaching the end of its useful operating life, the pump will consume more energy and draw significantly lower flow. Also, if excessive dust or particles enter the pump, the flow will be reduced. A strong pump should stall and/or nearly stop when a finger is used to block the inlet. If the pump does not stall and the flow is weak, it is likely that particles are trapped in the pump gasket or diaphragm. When this occurs, it is necessary to replace or rebuild the pump, or clean the gasket.

### Pump Stall Setting

The Pump Stall setting defines the current draw threshold the detects a blocked pump. During normal operation if the gas inlet becomes plugged, the pump automatically turns off to avoid further damage. To adjust the stall threshold, enter the Pump Stall menu and press 'Change'. When prompted, block the inlet completely with a finger for 5 seconds and let go. During the blockage the pump should nearly stall and the current (I) reading should increase to a high value. The Threshold will adjust itself automatically. A partial blockage may cause only a small change in the current resulting in a poor stall setting. If the new Threshold seems unsatisfactory for some reason, press 'Clear' and repeat the 5-second blockage. When satisfied, press 'Done' followed by 'Save' to accept the new Pump Stall Threshold.



**NOTE:** A different Pump Stall Threshold must be set for each pump speed. The instrument remembers the corresponding thresholds so that the user does not need to re-set the threshold each time the pump speed is changed.

**NOTE:** The current (I) value is relative and depends on the Pump Speed, the condition of the inlet filter, and the firmware version. At high speed the I value is typically in the range 5000-5500 for firmware 7.1 or later and 90-300 for earlier versions, while at low speed it is typically 6500-7500 for v.7.1 or later and 400-900 for earlier versions. If the I readings are at the high end or above these ranges, or if there is little or no change when the pump is blocked, some maintenance should be done.

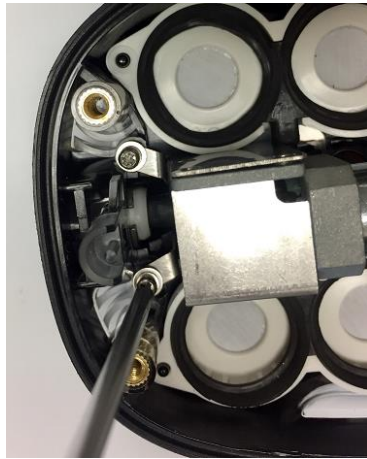
### Pump Service Procedures

1. Check for a dirty or plugged filter by removing the inlet 25-mm filter and re-measuring the flow rate. Replace as needed.
2. Place a finger over the probe inlet and listen for a strain on the pump. It should nearly stop, but may not stop completely. If the pump tone barely changes, check the flow path, such as the inlet probe, inlet filter and/or Luer connector.
3. If the pump still gives low flow (or little strain when flow is blocked), clean the pump gasket as described below:

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Remove the 6 housing screws (2-mm or 5/64" Allen wrench)



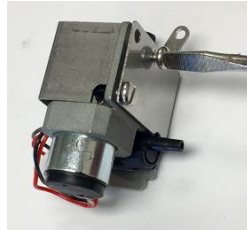
Remove the 2 screws holding down the pump (Phillips head)



Pull the pump up and out (there is strong resistance and will need some rocking motion)



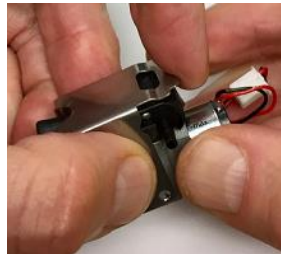
Remove the sensor gaskets and unplug the power connector



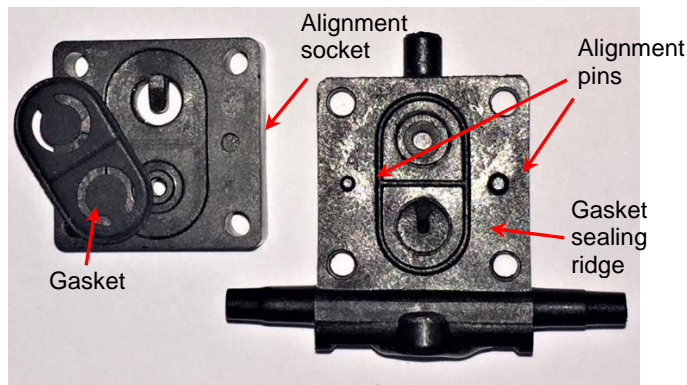
Unscrew the pump casing (flat-head) and slide the pump out



After pulling the pump fully out, remove the inlet gasket



To clean the pump, loosen the 4 screws holding together the pump (Phillips head)



Remove and separate the two pump gasket blocks. Wipe clean the pump gasket. It may help to remove it (very carefully to avoid damage) and clean both sides. In some cases it helps to rotate it. If damaged or deformed, replace the gasket. When reassembling, align pins with sockets.

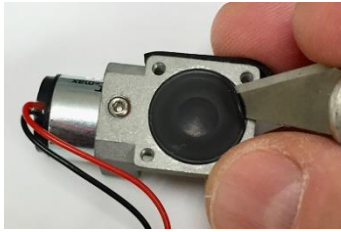


Use care if removing gasket



New gaskets are flat on both sides, but used ones develop grooves caused by the gasket sealing ridge. If re-using a gasket place the grooved side back facing the sealing ridge

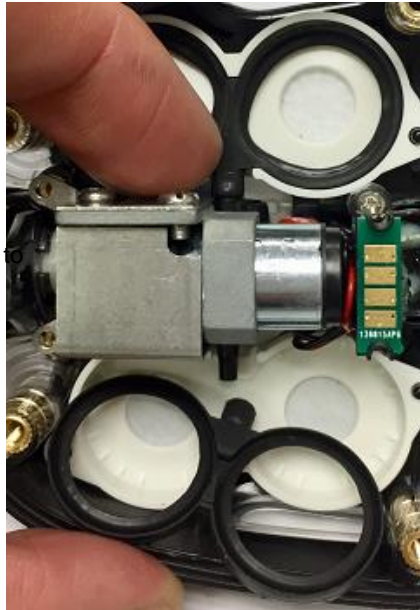
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In extreme cases it is necessary to replace the pump diaphragm, or simply replace the entire pump



Re-assemble in reverse order. Push the sensor gaskets onto the pump effluent hose barbs



Correct sensor gasket placement

Incorrect sensor gasket side – need to flip over

During re-assembly, make sure the sensor gaskets face correctly

4. When re-assembling the components, ensure that
  - a. the pump base is inserted onto the guide/support post
  - b. the pump and circuit board are screwed down securely.
  - c. the gasket between the front and back housing fits snugly and forms a good seal, otherwise the housing could leak and compromise intrinsic safety.

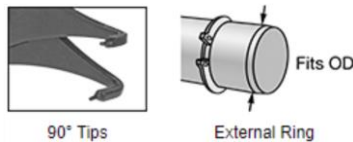
## Gas Inlet

A damaged gas inlet piece is difficult to replace and requires a special tool. If this piece is damaged or leaks, we strongly recommend either replacing the entire housing or returning the unit to mPower for repair. If this repair is attempted, use retaining ring pliers as specified below and ensure that the ring is locked in the slot of the gas inlet piece.

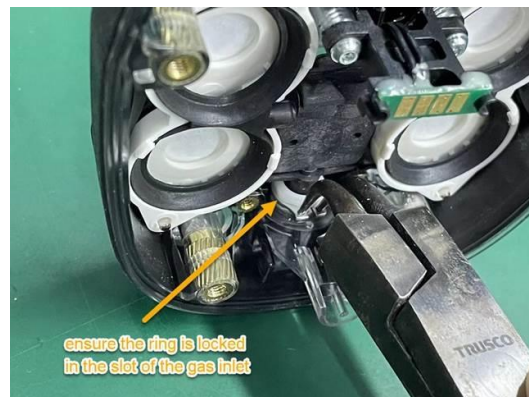
### Original version (before Fall 2023):



Damaged inlet piece is difficult to replace and requires a special pliers.



Retaining ring pliers, 90° tips, tip diameter 0.038" (0.97 mm) for rings up to 7/8" (2.2 cm) OD.



Ensure that the ring is locked in the slot of the gas inlet

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### Sintered Filter version (beginning Fall 2023):



## Housing Filters

Sampling in Diffusion instruments occurs through the filters on the front housing. If response is slow or weak, or if the filters are discolored, replace them as follows:

1. Open the housing and remove the sensor gaskets as shown above for pump removal.
2. If desired, remove the pump (this step may become unnecessary with experience).
3. Using a flat-head screw-driver, lift up the white sensor caps and pry them off the support posts.
4. Insert new left and right sensor cap assemblies.
5. Reassemble, taking care to fit the sensor gaskets smoothly into the sensor caps.



Remove the sensor gaskets



Pry off the left and right sensor cap assemblies

# Battery Replacement

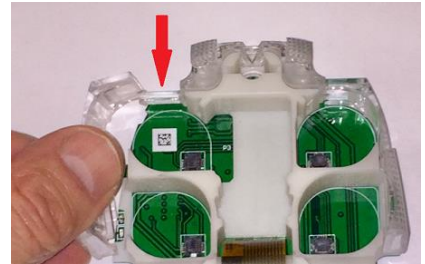
1. Replacing the battery requires removal of the circuit board and should be done by trained technicians at an authorized service center.
2. Open the housing and remove the circuit board/sensor assembly from the back housing.
3. Remove all 4 sensors and pull off the clear plastic alarm window/brackets.
4. Unclip the two white clips on the back side of the circuit board to disconnect it from the white plastic assembly.
5. Slide the LCD out of its bracket as shown below for LCD replacement. It is not necessary to disconnect the LCD cable band.
6. Separate the LCD and white plastic assembly from the circuit board to expose the battery
7. Disconnect the battery plug, insert a replacement battery, and re-assemble.
8. Check that the LCD cable band is pulled taught to ensure that the pump makes good electrical contact



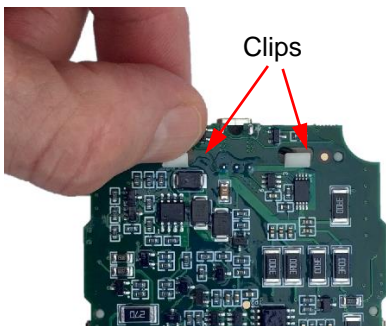
Remove all sensors



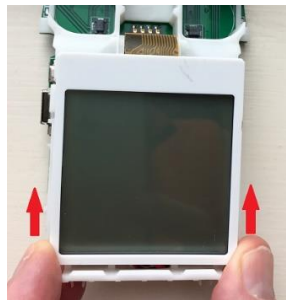
Pull off the alarm window/brackets



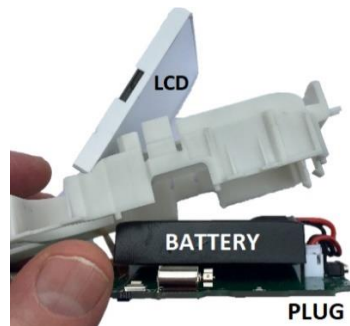
When removing the top/side alarm window/brackets, take care not to break the arrow-shaped clips on the top alarm window/bracket. This is best done using a twisting/peeling motion, pulling out and slightly up. During re-assembly, make sure that these two brackets are connected to each other using the arrow clips



Disconnect circuit board from white plastic assembly



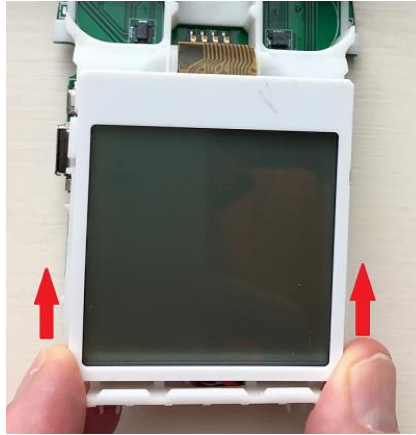
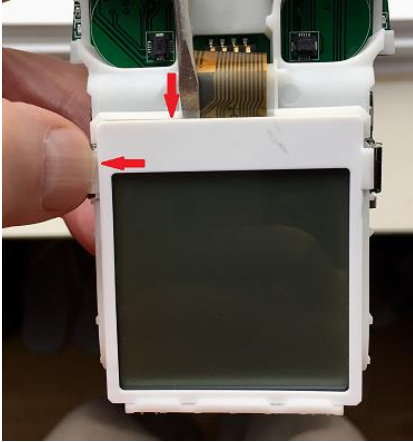
Slide LCD out of its bracket (see below for LCD replacement)



Disconnect battery plug and connect replacement battery, and reassemble

# LCD Replacement

1. LCD replacement requires removal of the circuit board and should be done by an authorized service center.
2. Open the housing and disconnect the circuit board as described above for pump replacement.



Bend off the left retaining clip while pulling out on the top left side of the LCD, using a screw driver or fingernail. Repeat for the right retaining clip.

From the bottom slide the LCD up towards the sensor slots and out of the bottom retaining clip.

On the bottom of the circuit board, loosen the black retaining plugs that secure the LCD cable band.



Using tweezers, carefully pull out the LCD cable band and remove the LCD.

Push on the front of the LCD to remove it from the casing. Insert the new LCD, plug in the cable band, and reassemble the POLI.

# Troubleshooting

Problem	Possible Reasons & Solutions
Cannot turn on power after charging the battery	<p><b>Reasons:</b> Defective USB cable or charging circuit. Defective battery.</p> <p><b>Solutions:</b> Try charging battery again. Replace USB cable or charger.</p>
Cannot communicate with PC	<p><b>Reason:</b> Wrong cable. <b>Solution:</b> Use mPower USB cable P/N M-011-3003-000.</p>
After turn-on, large down arrow is displayed and keys do not function	<p><b>Reason:</b> Firmware corrupt.</p> <p><b>Solution:</b> Use mPower Suite to reload latest firmware. Multiple attempts may be needed. If this fails, contact Service Center to use Service Tool.</p>
Lost password	<p><b>Solutions:</b> Call Technical Support at (408) 320-1266</p>
Buzzer, LED lights, and vibration motor inoperative	<p><b>Reasons:</b> Buzzer and/or other alarms disabled. Bad buzzer.</p> <p><b>Solutions:</b> Check under ‘Alarm Settings’ in Configuration Mode that buzzer or other alarms are not turned off. Call authorized service center.</p>
Pump failed message Pump alarm	<p><b>Reasons:</b> 1) Pump Speed setting changed or long extension hose added. 2) Inlet probe blocked. 3) External filter plugged with dirt or liquid. 4) Water condensed in the internal gas distribution lines. 5) Direct connection to calibration gas outlet before the regulator is opened. 6) Bad pump or pump circuit.</p> <p><b>Solutions:</b> 1) Adjust Pump Stall threshold. 2) Remove blocking materials and press [+ / OK] key to reset the pump alarm. 3) Replace the contaminated external filter. 4) Be careful not to allow water condensation inside unit. 5) Start gas flow before connecting. 6) Replace or rebuild the pump (by Service Center).</p>
Inlet gas flow weak	<p><b>Reasons:</b> Flow path leaks. Pump diaphragm damaged or has debris.</p> <p><b>Solutions:</b> Check flow path for leaks; such sensor module gasket, inlet tubing and filter connections. Perform pump diaphragm cleaning or replace pump.</p>
“Lamp” alarm	<p><b>Reasons:</b> Lamp drive circuit. Weak or defective PID lamp.</p> <p><b>Solutions:</b> Turn unit off and back on. Replace lamp or whole PID sensor.</p>
Readings abnormally high or low or noisy.	<p><b>Reasons:</b> Dirty or plugged filter or inlet. Dirty or old sensor. Excessive moisture and water condensation. Incorrect calibration.</p> <p><b>Solutions:</b> Replace filter. Replace sensor or clean PID sensor. Blow-dry flow path and/or PID sensor module. Calibrate unit.</p>



# Replacement Parts

Description	Part Number	List Price*
Dummy sensor (4 pcs) (to fill empty slots)	M004-2034-004	\$10.00
Inlet port cap (10 pcs) (for diffusion models only)	M004-2028-010	\$10.00
Alligator clip (10 pcs)	M490-0007-010	\$90.00
PID Lamp cleaning and tool kit	M011-3008-000	\$40.00
PID electrometer stack for 4-series PID sensors.	M185-0015-000	\$179.00
Lamp, 1/4", 10.6 eV, for 4-series PID sensors.	M185-0016-000	\$390.00
Calibration connector (Luer fitting and tubing - connects gas regulator to POLI)	M004-3008-000	\$10.00
EU Charging adaptor, 100-240 V AC to 6V, 2A - 1 Port with attached MicroUSB cable	M004-3051-000	\$50.00
US Charging adaptor, 100-240 V AC to 6V, 2A - 1 Port with attached MicroUSB cable	M004-3050-000	\$40.00
USB Charging and communications cable	M011-3003-000	\$25.00
Water trap filters, double male/female Luer for POLI, 30 mm x 0.45 µm (10 pcs)	M490-0005-010	\$45.00
Water trap filters, double male/female Luer for POLI 30 mm x 0.45 µm (100 pcs)	M490-0005-100	\$400.00
Water trap filters, double male/female Luer for POLI, 20 mm x 5 µm (10 pcs)	M070-3010-010	\$45.00
Water trap filters, double male/female Luer for POLI 20 mm x 5 µm (100 pcs)	M070-3010-100	\$400.00
Sintered metal filters for inlet. (10 pcs)	M490-0153-010	\$25.00
Housing filter replacement kit (10 pcs, 5 ea. left & right sensor cap assemblies)	M004-3052-000	\$25.00
Poison-removing carbon filter for 4R LEL Pellistor sensor (1 pc)	M082-0903-000	\$8.00
Poison-removing carbon filter for 4R LEL Pellistor sensor (pack of 10)	M082-0903-010	\$79.00
Sensor gaskets (figure 8, connect to pump, pack of 10)	M004-2016-010	\$35.00
Rubber protector plug for POLI micro USB port (pack of 10, with 10 screws)	M004-2025-010	\$50.00
LCD Display for POLI MP400 & NEO MP18X Series (raw LCD, 10 pcs)	M011-3023-000-SRP	\$150.00
LCD Display for POLI MP400 & NEO MP18X Series (raw LCD, 1 pcs)	M011-3023-001-SRP	\$30.00
Battery pack for POLI MP400 Series	M004-3002-000	\$100.00
Pump module for POLI MP400 Series	M004-3010-000	\$300.00
Pump rebuild kit (3 oval gaskets and 1 piston diaphragm)	M011-3022-000-SRP	\$25.00
Pump Gasket	M004-2048-010	\$15.00
Rubber Pad for POLI Pump	M004-2023-001	\$5.00
Main Board Support	M004-2019-010	\$30.00
Main PC board assembly with firmware, for MP400 & MP400P, CSA (must provide the SN of original POLI, so mPower can set the product model and SN)	M004-1013-000-SRP	\$260.00
Main PC board assembly with firmware & 915MHz wireless modem, for MP400S & MP400H, CSA (must provide the SN of original POLI, so mPower can set the product model and SN) (does not incl. antenna, because MP400H & MP400S antennae differ)	M004-1013-100-SRP	\$360.00
Housing cover assembly (no base) for POLI pump versions (pump included)	M004-3001-000-SRP	\$360.00
Housing base & cover assembly for POLI pump versions (pump not included)	M004-3001-100-SRP	\$118.00
POLI Sinter Filter Inlet Installation Kit (to retrofit old version front housing)	M004-3056-000-SRP	\$30.00
Housing base & cover assembly for POLI diffusion versions	M004-3005-000-SRP	\$98.00
Housing base & cover assembly for POLI MP400H/HS	M004-3001-200-SRP	\$98.00
Housing base assembly for POLI MP400 series	M004-2004-100-SRP	\$50.00
POLI Inlet (female Luer connection) and retaining ring (pack of 5 sets)	M004-3055-000-SRP	\$40.00
Antenna for POLI MP400S, FPC, 915MHz	M550-0019-000	\$20.00
Antenna for POLI MP400H/HS and mLinkP (rubber), SMA Female, 868 & 915 MHz	M550-0020-001	\$20.00
Tubing Connector for Hand Probe, POM, 1/8-6, Blue (10 pcs)	M490-0073-010	\$35.00
Luer adapter for Hand Probe inlet, M5 to Luer (10 pcs)	M490-0024-010	\$30.00
<b>POLI MonoDock Parts</b>	<b>Part Number</b>	<b>List Price*</b>
POLI MonoDock MP400T seat assembly upgrade kit	M004-3058-000	\$90.00
Comm. Cable for POLI MonoDock, Down-angled 90° Micro USB to USB (1 pc)	M410-0017-001	\$25.00
Comm. Cable for POLI MonoDock, Down-angled 90° Micro USB to USB (10 pcs)	M410-0017-010	\$98.00

## POLI Service Manual

\* These prices are for reference and may change at any time. Please refer to the latest version of the mPower List Price Guide or contact mPower for a quotation.



Main Board Support



Pump pad



Inlet w/Luer



Sensor gasket



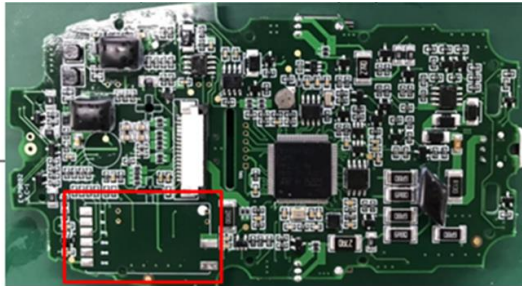
POLI MonoDock  
Comm Cable



Hand Probe connector

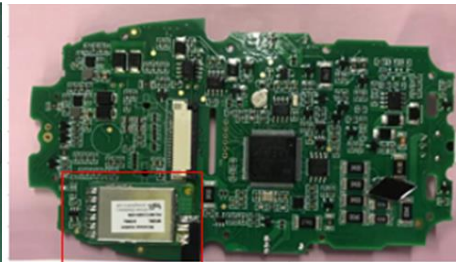


Hand Probe Luer adapter



No 915Mhz wireless modem.

Main Board M004-1013-000-SRP w/o modem



With 915Mhz wireless modem

Main Board M004-1013-100-SRP w/ modem

## Contact Information

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**mPower Electronics**

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