Organomation

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Preventative Maintenance Guide for MICROVAP Model 11801

Regular preventive maintenance will help extend the life of your MICROVAP and ensure consistent, trouble-free performance. This guide outlines the recommended maintenance procedure for a 96 position MICROVAP model 11801.

Organomation recommends a full preventive maintenance (PM) check every 1–2 years. Recommended maintenance includes temperature calibration, realignment of moving parts, replacement of routine wear parts, inspection of longer-life serviceable parts, and a final gas flow check. The estimated time to complete is 1-3 hours, depending on the condition of the unit and your familiarity with maintenance activities. PM can be performed in-house by lab personnel or scheduled with a certified Organomation service provider.

If you've purchased a preventive maintenance kit, all routine replacement parts are included. Additional parts are available from Organomation upon request if wear is noticed on any longer-life serviceable parts during inspection.

Maintenance kit contents:

- Air filter
- Silicone gas tubing (15" cut length)
- Thermometer adapter
- Lubricant packet
- 1/8 hex key
- Maintenance guide

Additional tools needed:

- Calibrated digital thermometer
- Phillips head screwdriver

Scan here for day-to-day cleaning and maintenance to keep your MICROVAP running smoothly between scheduled PM checks

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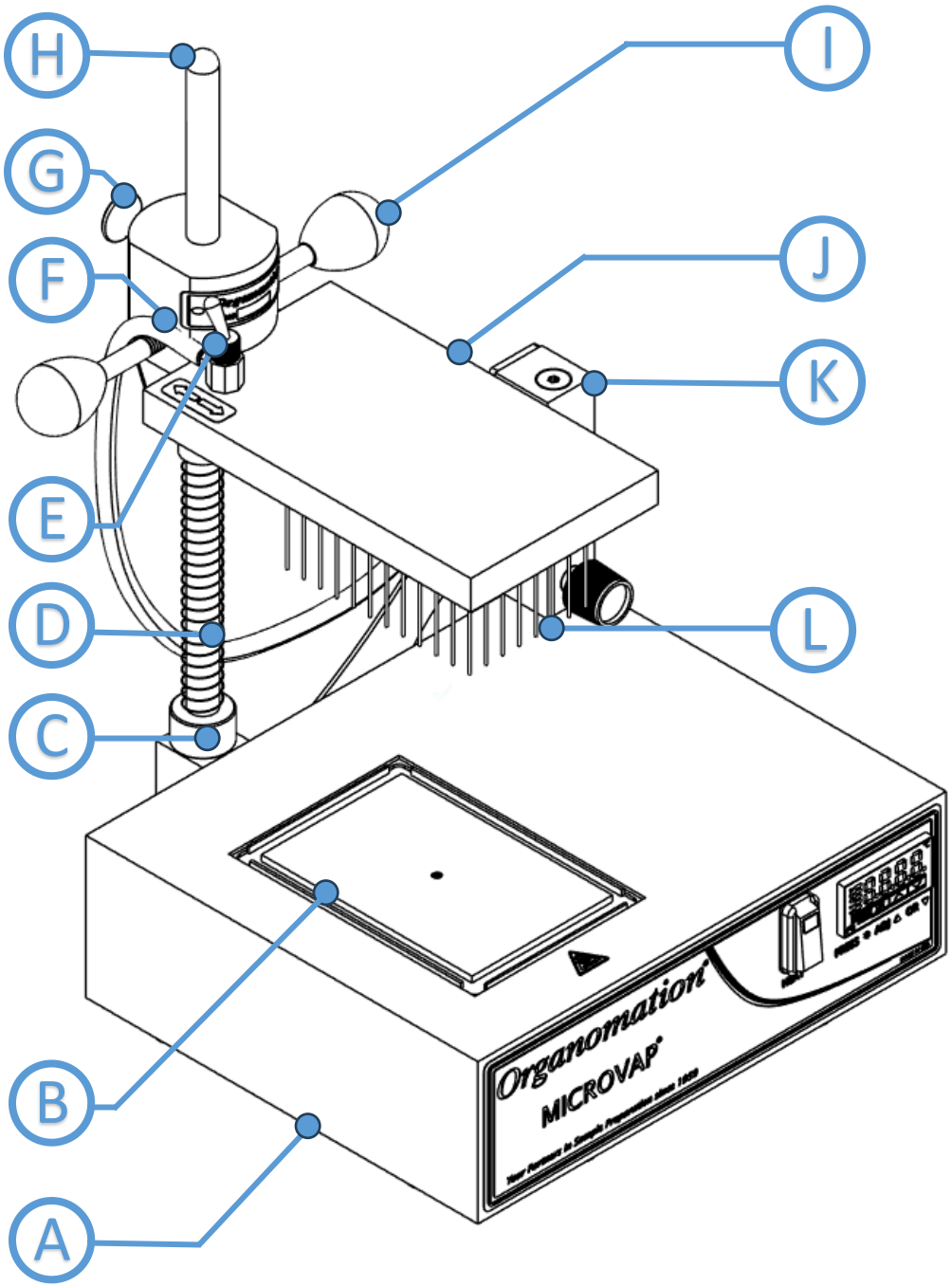
Instrument Diagram



Instrument Component	
A	Heating Unit
B	Heat Block
C	Stop Collar
D	Compression Spring
E	Manifold Gas Switch
F	Silicone Tube
G	Accessory Thumb Screw
H	Stainless Rod
I	Manifold Thumb Screw
J	Instrument Manifold
K	Flowmeter
L	Needle

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Heat Block Calibration

Check the calibration on the heat block using an external NIST-calibrated thermometer. A thermometer adapter is provided for this purpose. A traceable calibrated thermometer can be purchased from Organomation if needed.

The heat block can be calibrated using either one-point or two-point calibration. Two-point calibration provides the best performance across a broader temperature range. In most cases, one-point calibration is sufficient.

Proceed with the following steps to determine the best method and calibrate the heat block:

1. Place the provided thermometer adapter on the center of the heat block.
2. Determine low end discrepancy
    a. Heat the block to 40 °C and wait for the temperature on the controller display to stabilize. This may take 30-60 minutes.
    b. Place a calibrated thermometer in the thermometer adapter and record the measured temperature below.
    c. Calculate the temperature discrepancy between the external thermometer and the bath temperature display. If the external thermometer reading is lower than the bath temperature display, the discrepancy will be negative.

        External thermometer readout (T_1): _____
        Bath temperature display readout (B_1): 40
        Temperature discrepancy ($E_1 = T_1 - B_1$): _____

3. Determine high end discrepancy
    a. Increase the bath temperature to 90 °C and wait for the temperature on the controller display to stabilize. This may take an additional 30-60 minutes.
    b. Place a calibrated thermometer in the thermometer adapter and record the measured temperature below.
    c. Calculate the temperature discrepancy between the external thermometer and the bath temperature display.

        External thermometer readout (T_2): _____
        Bath temperature display readout (B_2): 90
        Temperature discrepancy ($E_2 = T_2 - B_2$): _____

4. If the difference between E_1 and E_2 is less than (<) 2, then a one-point calibration is sufficient (see step 5). If the difference is greater than 2, a two-point calibration should be used (see step 6).

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5. One-point calibration

   Recommended when the difference between E_1 and E_2 is less than 2. Example: $ABS(E_1 - E_2) \leq 2$

   a. Press and hold both ▲ and ▼ simultaneously until the screen reads **TUNE**.
   b. Release the buttons and push ▼ until the screen reads **LEVL**.
   c. Hold ✱ and press ▼ until the screen reads 3, then release ✱.
   d. Press ▲ until the screen reads **ZERO**.
   e. Calculate the average discrepancy range using the following formula:

      $$Average\ Discrepancy\ Range = \frac{E_2 - E_1}{2}$$

      Average Discrepancy Range: _____

   f. Hold ✱ and press ▲ or ▼ to adjust **ZERO** to the discrepancy calculated in step 5e. Make sure to pay attention to the calculated sign.
      i. Use ▼ for negative (-) values
      ii. Use ▲ for positive (+) values
   g. Once the correction has been entered, release ✱.
   h. Press and hold both ▲ and ▼ simultaneously to save the new settings and exit the calibration menu.

6. Two-point calibration

   Recommended when the difference between E_1 and E_2 is 2 or greater. Example: $E_1 = 1$ and $E_2 = 4$

   a. Press and hold both ▲ and ▼ simultaneously until the screen reads **TUNE**.
   b. Release the buttons and push ▼ until the screen reads **LEVL**.
   c. Hold ✱ and press ▼ until the screen reads 3, then release ✱.
   d. Press ▲ until the screen reads **SPAN**.
   e. Calculate discrepancy range

      $$Discrepancy\ Range = \frac{E_2 - E_1}{T_2 - T_1} \times 130$$

      Discrepancy range: _____

   f. Hold ✱ and press ▲ or ▼ to adjust **SPAN** to the discrepancy range calculated in step 6e. Make sure to pay attention to the calculated sign.
      i. Use ▼ for negative (-) values
      ii. Use ▲ for positive (+) values
   g. Once the correction has been entered, release ✱.

Press and hold both ▲ and ▼ simultaneously to save the new settings and exit the calibration menu.

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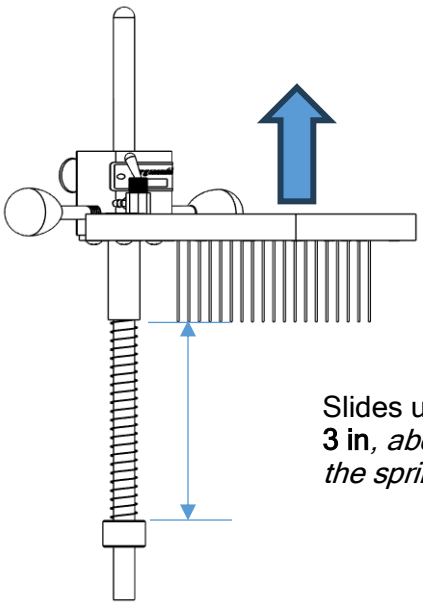
Hoist Lubrication

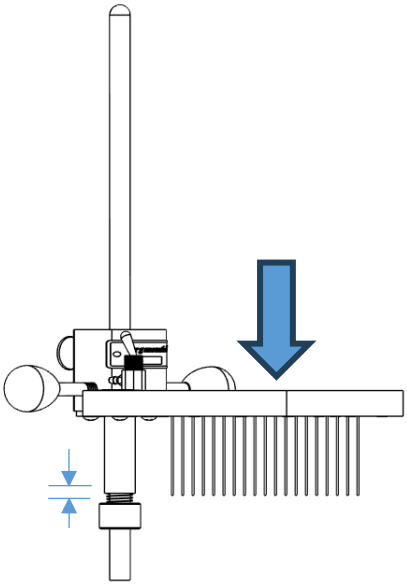
Check that the manifold slides up and down smoothly, without jumping.



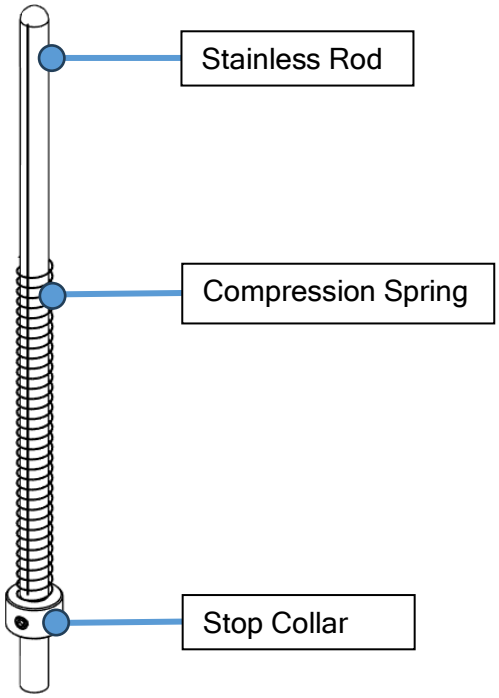
Slides up:
3 in, *about half the spring height*

TO

Slides down:
0 in, *fully seats on stop collar*



If the manifold sticks or jumps when moved:



1. Clean any corrosion from the rod and compression spring if necessary. Use a laboratory cleaning agent and an abrasive scouring pad like Scotch-Brite.

2. Lubricate the rod using the provided packet and a clean cloth. Cycle the manifold along the rod to spread the lubricant between both the rod and manifold collar.

3. If binding persists, the compression spring may need to be replaced. Try removing the spring to check. If binding persists, reach out to sales@organomation.com for additional troubleshooting help.

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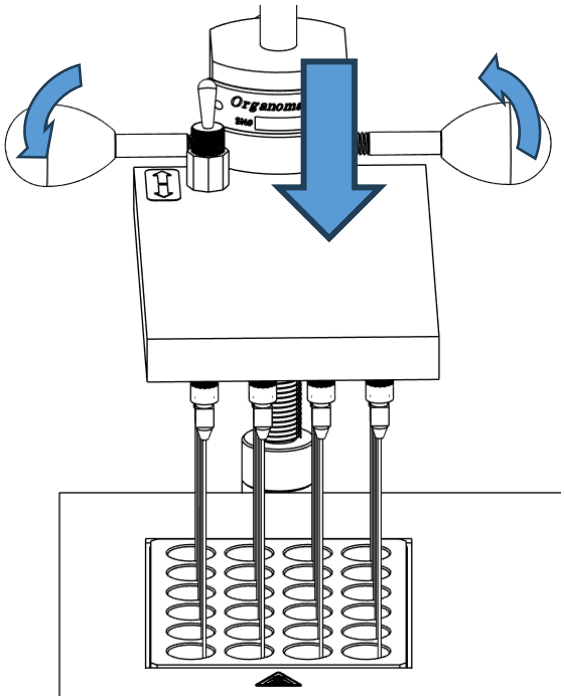
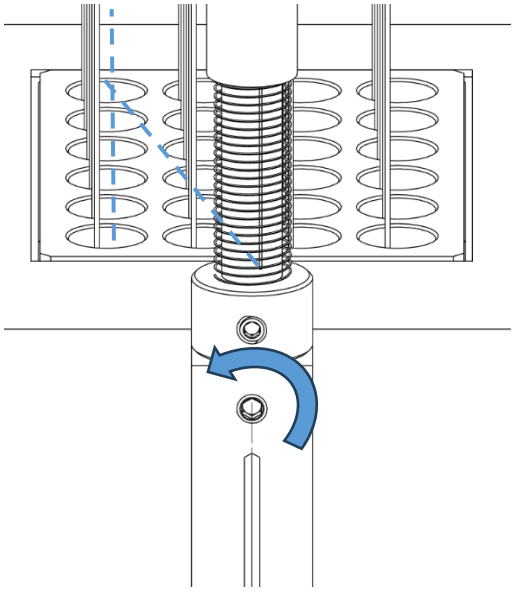
Manifold Alignment

Check that the needle tips line up with the center of each sample position when the manifold is lowered. If the needle array is offset from the sample block, adjust as follows:

Left-right alignment



1. Lower the manifold to visually aid the alignment progress



2. Use a 1/8 hex key to loosen the set screw securing the rod to the MICROVAP base, located in the rear of the MICROVAP.

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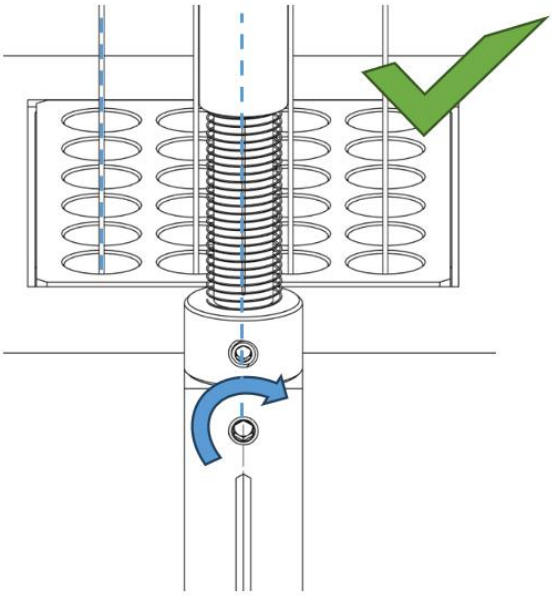
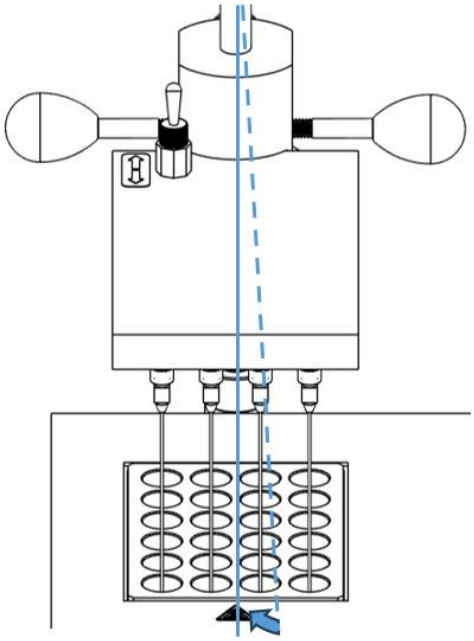
3. Rotate the rod as needed so that the vertical groove is directly aligned with the rear of the MICROVAP and tighten the set screw.





4. The manifold should be centered side-to-side when locked into the groove.

   If the manifold does not lock into the groove, use the 1/8 hex key to tighten the spring plunger set screw in the lower rear of the manifold.

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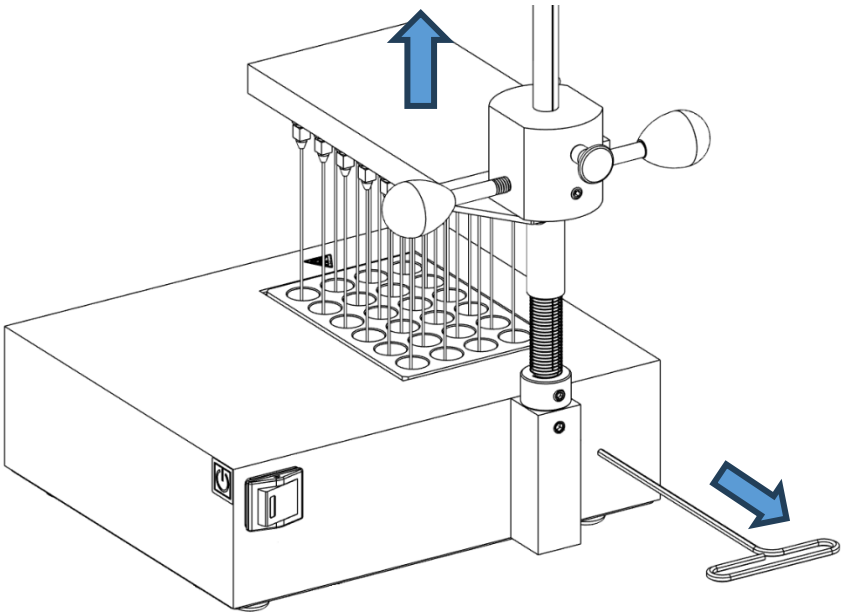
5. Raise the manifold to a resting position and inspect for normality



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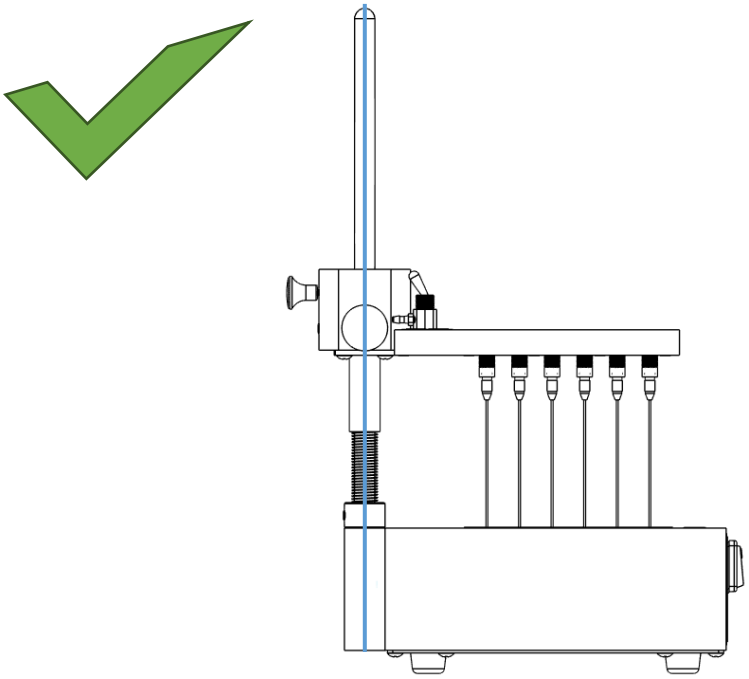
Hoist Lubrication and Alignment

Front-back alignment
In most cases, no front-back alignment will be necessary. This alignment is performed at Organomation's factory and typically will not shift with usage.

If the needle array is too far forward or backward compared to the sample block, adjustments can be made by loosening the set screw holding the rod to the bath. In rare cases, the screws holding the manifold to the collar may require adjustment which can displace the needles in the XY directions.

Rod Alignment

1. The manifold should be parallel to the bath and the rod should stand perpendicular.



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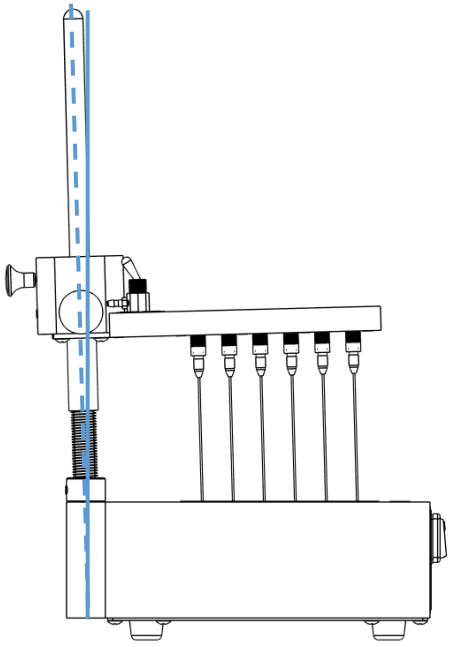
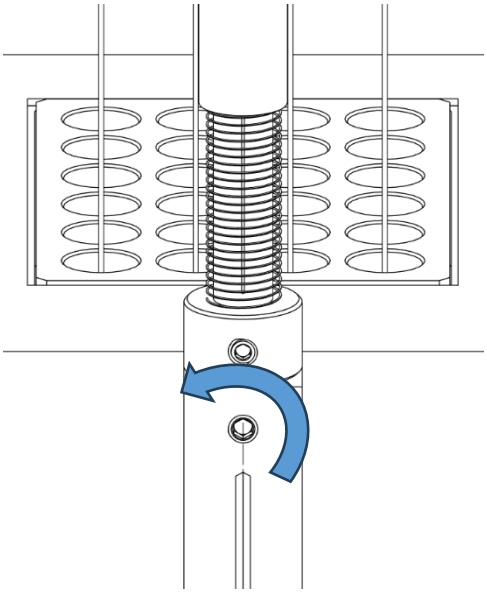
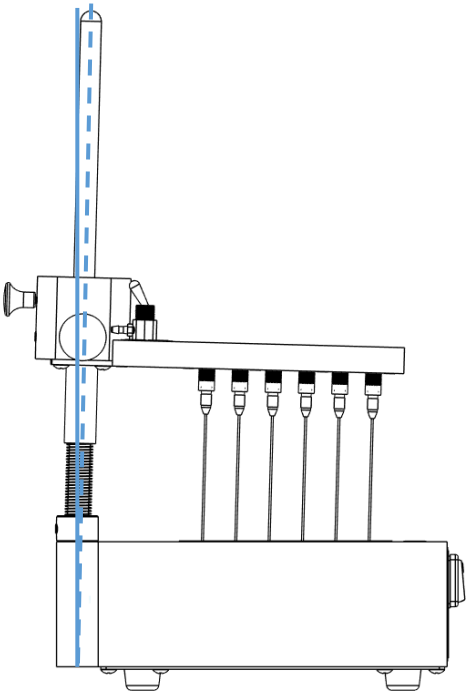
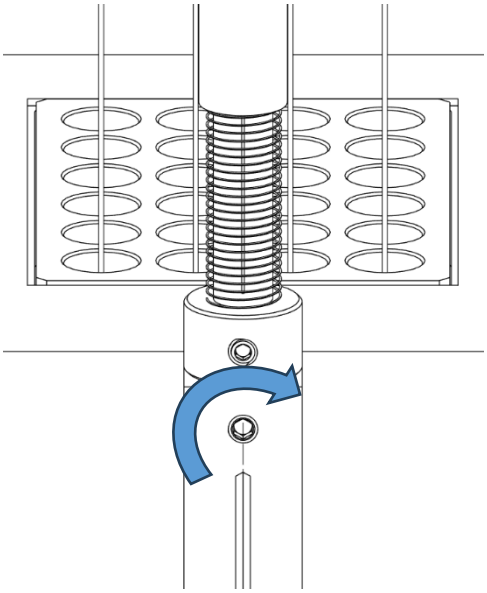
2. If the needle points direct air forward, then loosen the rear set screw.





3. If the needle points direct air backward, then tighten the rear set screw.





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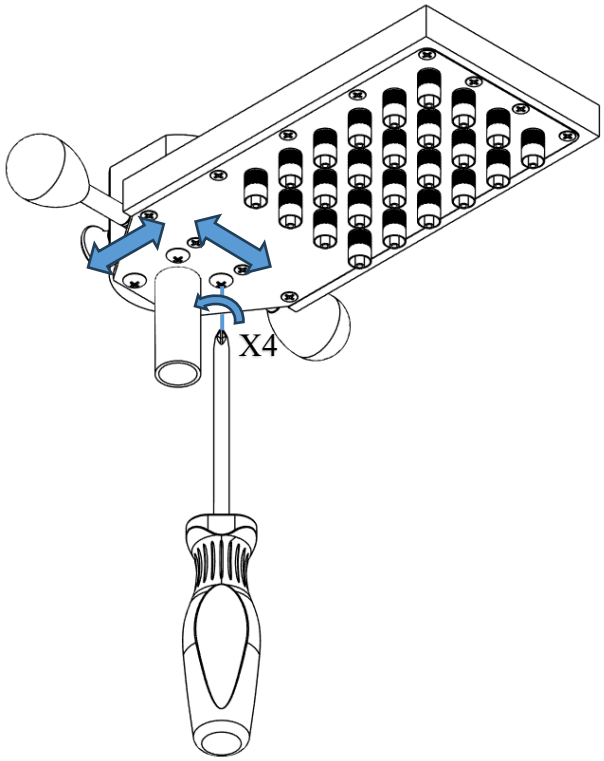
Collar Alignment

The manifold is aligned at Organomation's factory location. If adjustment is needed after rod alignment, use the following method to adjust the manifold and the needle displacement. Remember, needing this type of alignment is rare. If the needles are already centered over the samples, skip to the next section.

1. Loosen the four screws around the shaft of the manifold collar approximately ¼ turn each

   The holes are sized for minor adjustments by altering the relative position of the screws to the mounting hole centers.



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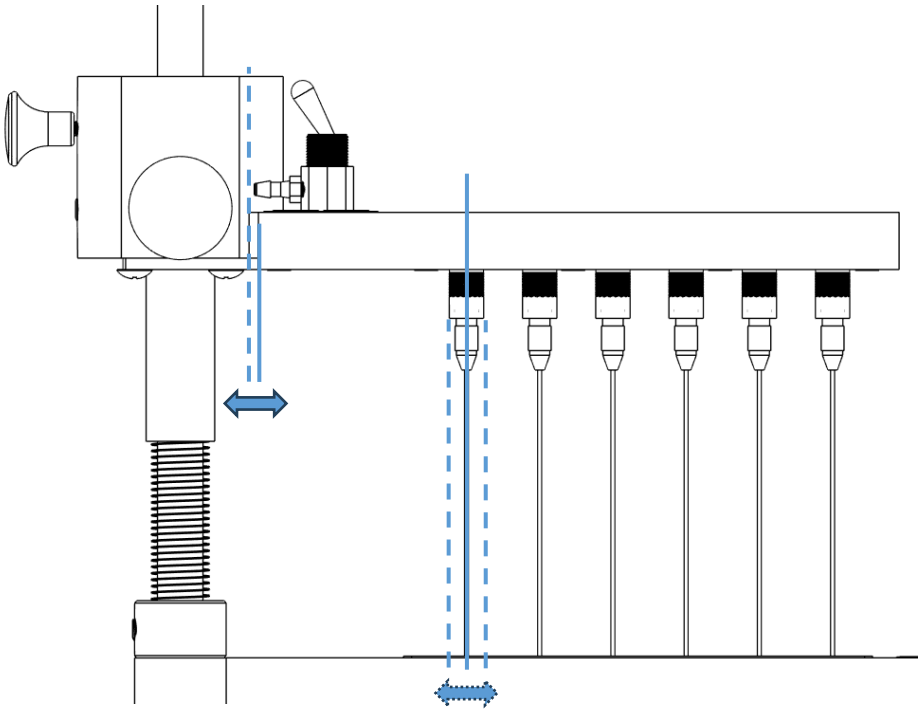
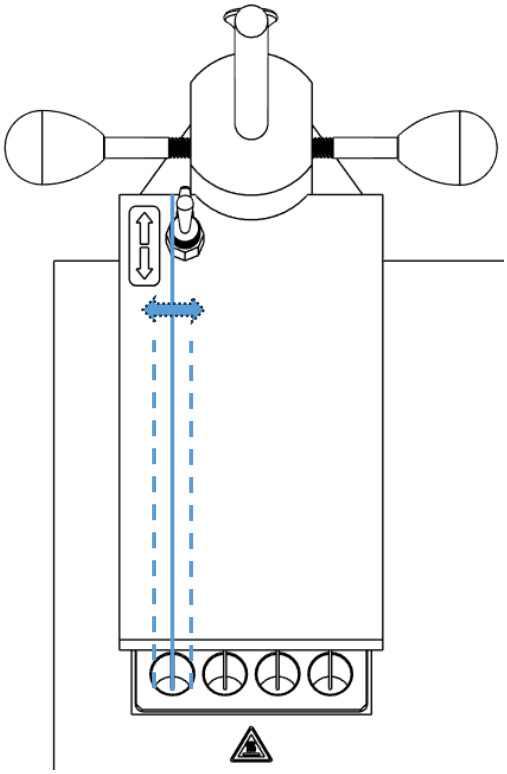


2. Shift the manifold forwards or backwards if necessary.

   A gap between the collar and manifold will not affect performance.



3. Shift the manifold left or right if necessary.

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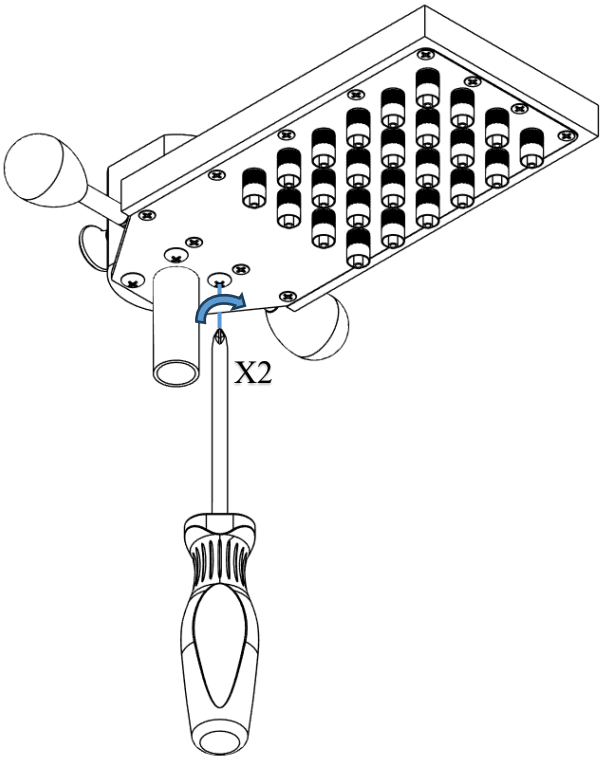
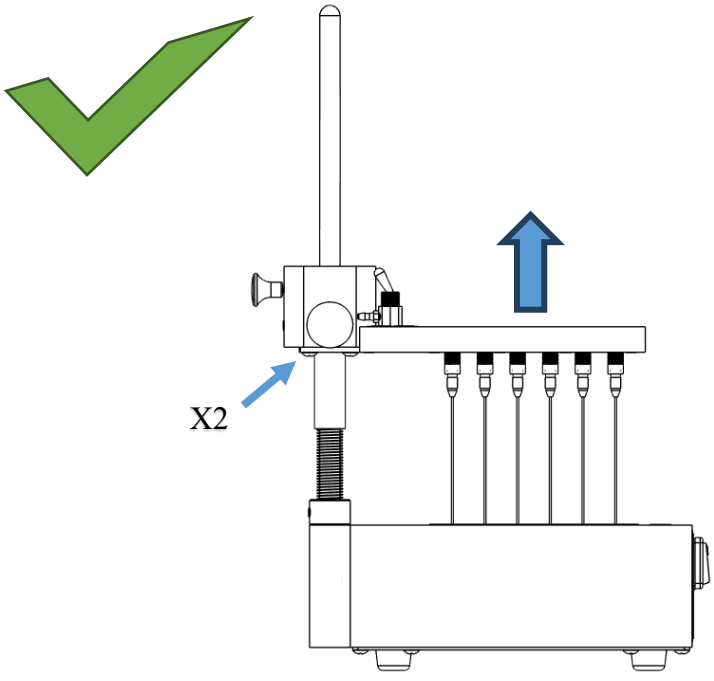


4. Once you are satisfied with the alignment, tighten the front two screws to secure the manifold in place.



5. Raise the manifold and tighten the remaining two screws.

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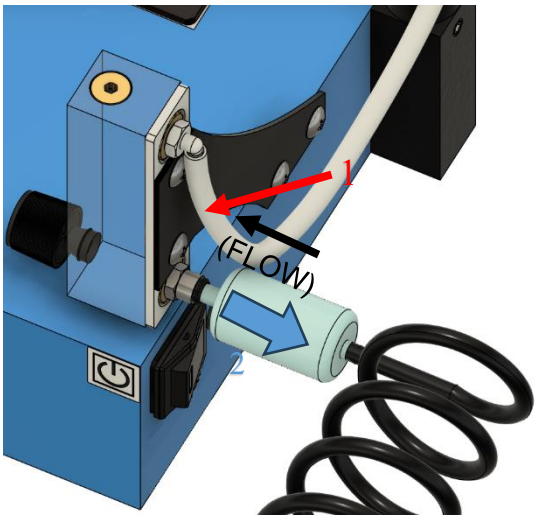
Routine Wear Parts

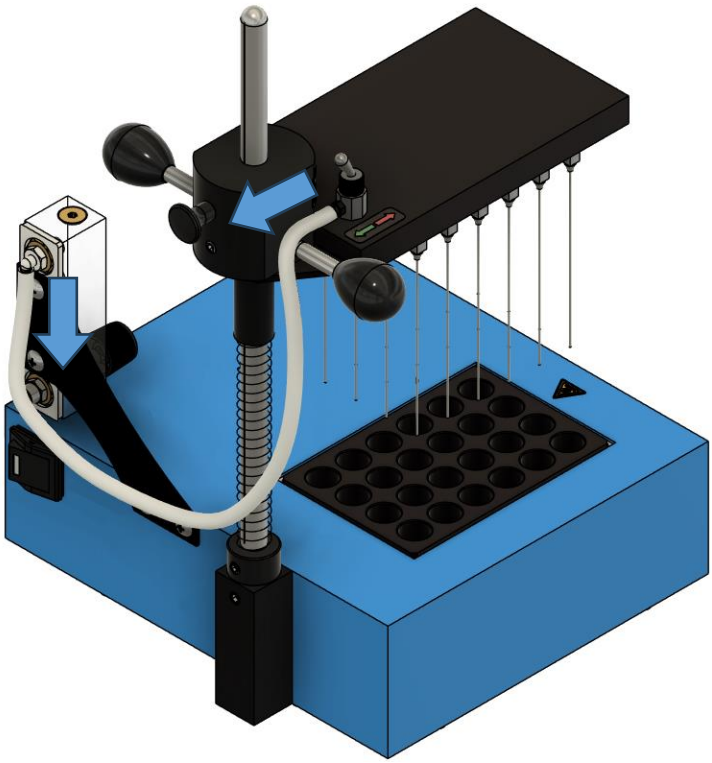
The following wear parts are included in the maintenance kit and should be preemptively replaced for optimal performance.

Air filter

The air filter is located at the rear of the flow meter. Remove the old air filter by depressing the black ring (1) to release the first fitting while pulling the filter (2) away from the fitting. Repeat for the second fitting.

Connect the new filter in the same position. The flow arrow on the filter should point in, from the gas connector tube to the flow meter.





Silicone tubing

Remove the 15” length of silicone tubing connecting the flow meter to the manifold. Grasping the tubing in the center, first pull up on the lower portion to disconnect it from the flow meter and then pull horizontally to disconnect it from the manifold. Do not attempt to disconnect both sides of the tubing at once—the torque may cause the barbs to snap. Replace with the tubing provided.

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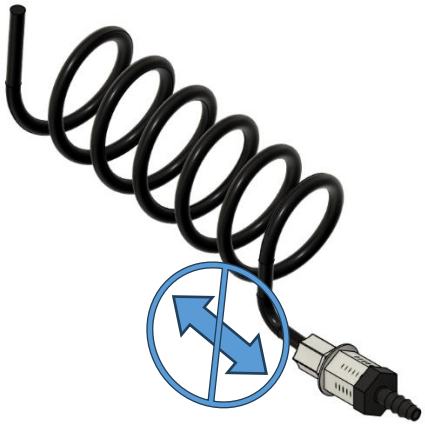
Serviceable Parts

The following parts should be inspected for wear and replaced if necessary. The expected lifetime for these parts is longer than two years, but lifespan can be altered based on operating conditions. Replacements can be ordered by contacting sales@organomation.com.

Catalog #	Description	Inspection	Picture
NA1807	Evaporation needles	Check for bends, blockage or significant corrosion	
NA1101	Coiled gas connector tube	Check for leaks, kinks, or cracks. Make sure that tubing is still held securely in multi-part fitting.	
P1303	Manifold gas switch	Check for leaks, blockage, or debris that might affect gas delivery to the manifold.	
	Hose barb	Make sure that the tubing is held securely by the barbed end.	

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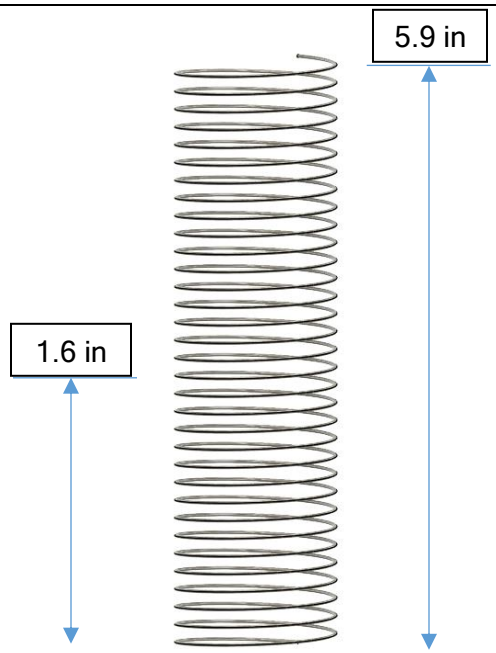
	Instrument manifold collar	Check for cracks. Should hold manifold securely and move along rod smoothly	
	Hoist spring	Check for spring state heights: Free height = 5.9” Compressed = 1.6” Check for contamination, rust, debris that might constrain actuation that prevent spring from lifting manifold above sample block	

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Gas Flow Verification

Even if there were no flow issues observed before maintenance, it is a good idea to perform these final checks to make sure the gas path is tight and everything is still functioning as intended.

1. Check functioning of flow meter
    a. Completely close the flow meter by rotating the flow meter dial clockwise until it stops.
    b. Flip the manifold gas switch to “on” (green arrow)
    c. Turn on the gas source and adjust input pressure to 20-30 psi.
    d. Rotate the flow meter dial counterclockwise. This should open the valve, causing the ball to respond. If there is no response, contact Organomation for further troubleshooting instructions.
2. Listen for leaks throughout the system
    a. Flip the manifold gas switch to “off” (red arrow) and open the flowmeter fully by rotating the dial counterclockwise. Make sure that the gas source is still on with an input pressure to the MICROVAP of 20-30 psi.
    b. Listen for leaks. The flow meter should hold steady at 0 L/min. If in doubt, spray a dilute soap mixture over potential leak sites. Bubbles will form if there is a leak.

If leaks persist, contact Organomation for support.

Organomation Technical Support

Email: sales@organomation.com
Phone: 1 (978) 838-7300
Web: www.organomation.com/contact

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Preventative Maintenance Checklist

Model: 11801
Serial Number: _____
Date Completed: _____
Next Service Date: _____
Performed By: _____

Heating unit calibration

- ☐ Heating unit calibrated against a traceable thermometer
  Select calibration method used:
  - ☐ One-point calibration
  - ☐ Two-point calibration

Hoist lubrication

- ☐ Manifold slides up and down smoothly

Comments: _____

Manifold alignment

- ☐ Manifold is parallel to the surface of the heat block
- ☐ Needles are aligned with the center of each sample position

Comments: _____

Routine wear parts replacement

- ☐ Air filter
- ☐ Silicone tubing

Comments: _____

Serviceable components

- ☐ Evaporation needles (NA1807)
  - ☐ All in good condition (no cracks, blockages, or bent needles)
  - ☐ In need of replacement
- ☐ Gas connector tube (NA1101)
  - ☐ Good condition (no cracks, leaks, or kinks)
  - ☐ In need of replacement
  - ☐ N/A: Alternative gas tubing used for installation
- ☐ Manifold gas switch (P1303)
  - ☐ Good condition (no leaks or blockages)
  - ☐ In need of replacement
- ☐ Instrument manifold collar
  - ☐ Good condition (no cracks, slides smoothly on rod)
  - ☐ In need of replacement

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- ☐ Hoist spring
  - ☐ Good condition (lifts manifold 2-4 inches above sample block; little to no corrosion)
  - ☐ In need of replacement

Comments: _____

Gas flow verification

- ☐ Flow meter responds to gas flow
- ☐ No leaks observed in system

Comments: _____