

IC Low Pressure

Low Pressure Observed - with and without a leak.

Technology: Ion Chromatography

How do you know you have this problem?

The most common cause of an IC system's low pressure is leaks and air bubbles trapped in the flow path. An error message will indicate if a leak is detected but is only observed when the liquid makes it to the leak detector inlet. A low-pressure error message will also appear if the minimum pressure is detected as defined in the IC method. The watch window in the Workplace will show the pressure of the system if no error messages are received.

The below details some troubleshooting, prevention measures, and error handling to help prevent the issue and improve alertness to low pressure.

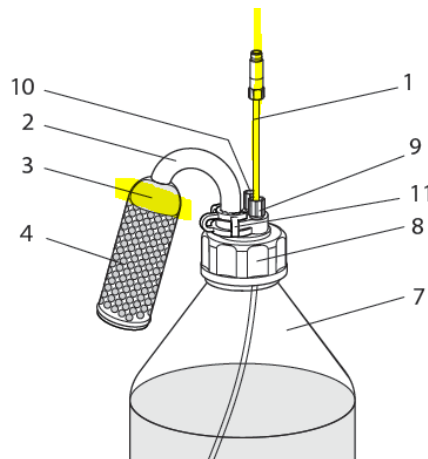
Troubleshooting

Prerequisites: Please check some hard-to-find leaks:

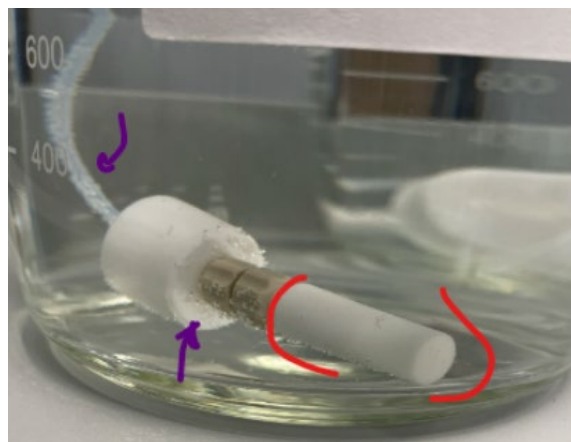
1. Behind the high-pressure pump head. You can use a Kim wipe and slide it behind to determine if liquid or salt is observed.
 1. If liquid is observed, the pump seals must be replaced.
 2. Follow link: [ion chromatography guide | Metrohm](#) > IC High Pressure Pump > **Replacing the seals**
2. For systems with MSMs, check the MSM holder for any liquid.
 1. If liquid is observed, clean the MSM rotor and faceplate, follow the link: [ion chromatography guide | Metrohm](#) > MSM Chemical Regeneration > **Cleaning the MSM**
 2. Reach out to Technical Support for further assistance if the MSM continues to leak.
3. Check the column compartment for any leaking from the inlet of the guard column and the inlet/outlet of the analytical column.

For low pressure without a leak, continue to the next page:

- First, purge the pump of any air and check to see if pressure has returned.
 - [Ion chromatography guide | Metrohm](#) > IC high-pressure pump > Deaerating the pump
- If air bubbles are observed in the eluent container collected along the glass or on the eluent line (picture below), the eluent should be remade by first degassing the water.
- The ascarite is exhausted and blocks absorber tube #3. The eluent bottle will pressurize when the IC Pump starts. Replace the ascarite. Be sure not to over-pack. Allow some movement in the absorber tube.
- A crimp or pinch in tubing #1 prevents eluent. Follow the tubing to the IC connection and check for microfracture. If crimped, pinched cracked, replace the eluent line.
 - Eluent tubing out of the degasser: 6.1834.090 [Connecting tubing for degasser pump, 125 mm | Metrohm](#)
 - Eluent tubing from bottle to degasser, 2m: 6.1834.080 [Aspiration tubing, 2 m | Metrohm](#)



- The eluent filter is dirty and is blocking flow (circled in red) - if this is in use and 18M Ω water is used to make the eluent, please remove it as this causes more issues such as contamination & pressure.



- There is an air bubble trapped in the check valves, which prevents adequate eluent flow. Flush the check valves with alcohol, then reconnect them.
 - Ensure not to over-tighten since this will damage the check valves. Ensure that the check valves are appropriately seated.
 - See video: [Ion chromatography guide | Metrohm > IC high-pressure pump > Inlet Valve / Outlet Valve](#)
 - See the help note for cleaning check valves on the Support Site.
- Contact Technical Support if low pressure is still observed and the above troubleshooting measures do not resolve the issue.

Prevention Measures

Degas the water before mixing in the eluent concentrate or salts:

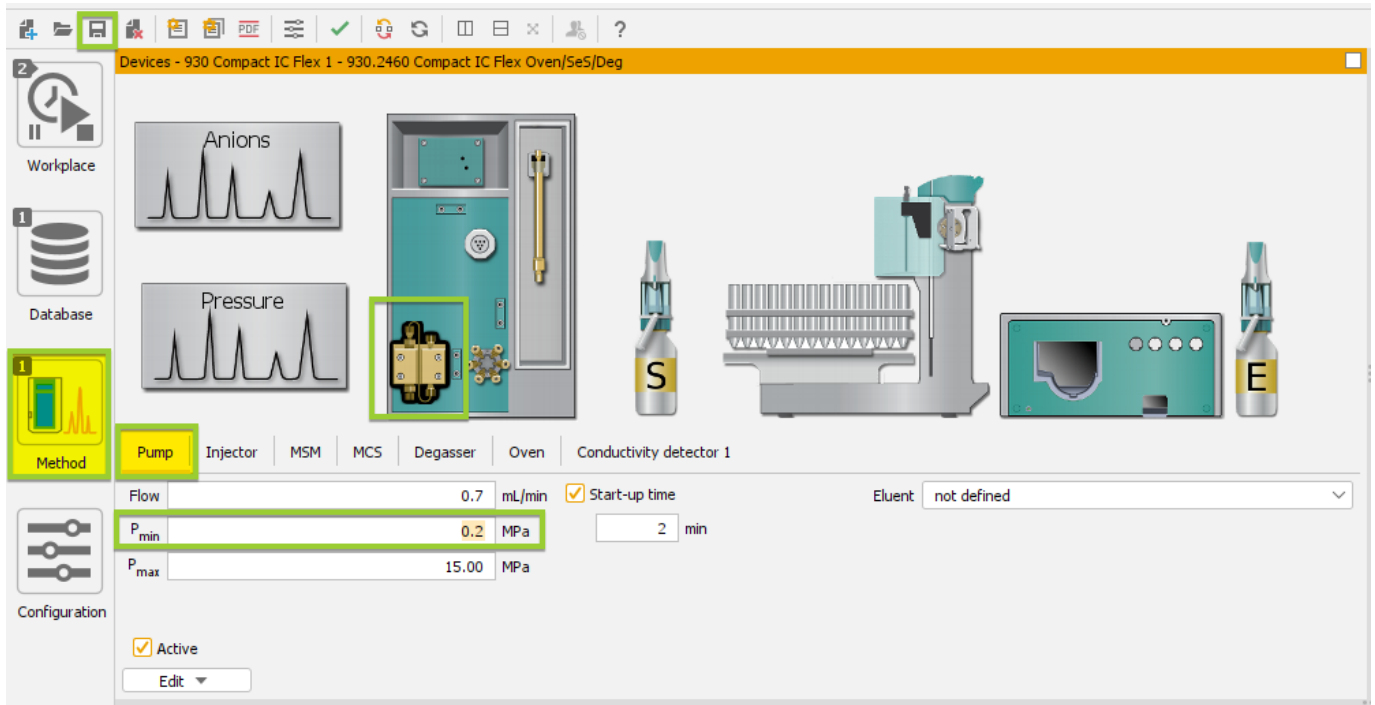
- Boil the water for a few minutes, then allow it to cool in a closed container with little headspace.
- Sonication or stirring under a vacuum also works.
- Be careful not to contaminate the water.

Error Handling for Increased Alertness of Low Pressure

Often, the IC's minimum pressure defaults to 0MPa. When a leak is observed or air bubbles are trapped in the high-pressure flow path, the system rarely reaches 0MPa. The hardware will continue to run and cause unexpected issues, such as inaccurate sample results, eluent running dry, possible damage to the column, MSM rotor, pump seals, etc.

To update the P_{min} in the method (see example screenshot below):

- Go to the Method tab in MagIC Net > File > Open > Select the desired Method.
- Select the Pump on the IC > Update P_{min} to 0.2MPa (29 psi)
- Don't forget to save the method. File > Save.



Devices - 930 Compact IC Flex 1 - 930.2460 Compact IC Flex Oven/SeS/Deg

Method

Pump | Injector | MSM | MCS | Degasser | Oven | Conductivity detector 1

Flow	0.7	mL/min	<input checked="" type="checkbox"/> Start-up time		Eluent	not defined
P _{min}	0.2	MPa	2	min		
P _{max}	15.00	MPa				

Active
Edit ▾