Technical Hints for Osmometer and Cryometer

These technical hints are reflecting user experiences with Osmometer from type 6/OM 806/OM 818 and from type 15/OM 815/OM 819 as well as with Cryometer from type 20 and should help to estimate and solve specific problems.

1. Thermistor pollution:

Sample residues at the glass thermistor will affect the next measured value in a wrong way. After every measuring you must clean thermistor carefully with a soft tissue without any fluffs or fibres remaining at the thermistor. Usually a little rest of sample remains at thermistor when you have switched off and this rest dries until next day. Next one or two measurings will have a little bit higher values than the following of the same concentration. Because of great sensitivity and resolution of the instrument the smallest amount of contamination can cause a deviation of some mosm even though the contamination could not be seen with naked eye. After a longer time of no usage contaminations could come from the environment. In these cases you should do the first two measuring with pure water as dummy measurings to clean thermistor and needle tip.

2. Calibrating problems:

Calibration is long term stable. Contaminations described above will affect following calibration for zero or 300/900 mosm-point (200/400 mmol-point). Because of this thermistor must be cleaned before every calibration. A deviation of ±1 mosm resp. ±0.5% (±2 mmol resp. ±1%) of nominal value will be tolerable. If you get greater deviations from nominal values you should repeat measuring with a **new sample** before calibrating the instrument again. You might discover that new calibration is not necessary!

3. Cleaning of needle and needle hole:

Menu of Osmometer from type 15/OM 815/OM 819 as well as Cryometer from type 20 enables a guided cleaning of needle hole. Just select the corresponding item from menu and follow the instructions displayed on LCD. To fill in cleaning fluid use only the delivered soft funnel to prevent needle hole from damage. Do not use force or spiky tools. Cleaning fluid should be only water with a little bit dish washer. End of cleaning will be marked with a buzzer. Please wipe needle and needle tip with a soft tissue and water or alcohol.

For Osmometer from type 6/OM 806/OM 818 you must switch unit off and wait about 5 min. until all ice have melted. Then clean and dry needle hole using the delivered awl with a little bit of cotton wool wrapped around. Wipe out and dry melt water of the sample slot.

Cleaning is recommended in a daily, minimum in a weekly rhythm. It depends on the number of measurings a day. With organic samples cleaning could be necessary for more than one time a day because needle tip could become water repellent building not enough ice for freezing initiation.

4. Problems with freezing initiation/Error F6 (Osmometer from type 6/OM 806/OM 818):

For Osmometer from type 6/7/7i/OM 806/OM 807/OM 818 you must dip the needle tip in pure water before switching unit on to get ice crystals on the needle tip for a safe freezing initiation from the first measurement. Without ice on the needle freezing initiation and measurement is not possible.

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5. Freezing too early:

Freezing too early [F7 error on Osmometer from type 6/OM 806/OM 818] could have the following reasons and solutions:

- Thermistor has a little crack or dirt on it.
- After every measuring you must clean thermistor carefully with a tissue without any fluffs or fibres remaining at the thermistor.
- Dust or dirt in a sample cup. Only a little bit of dust is necessary to cause “Freezing too early”/F7. Sample cups must be always new and clean.
- Sample is unable to supercool to -7°C. For example a benzene sample would not work because of a freezing point of +5,5°C.
- No air bubbles should be in the sample.
- Sample should have room temperature when you start measuring. Should not come directly from a refrigerator or something similar.
- Thermistor should be not adjusted too deep in the sample, thermistor should never touch sample cup. Please look in service manual page 8 or 9.

I recommend cleaning or exchanging the thermistor and trying again.

If you do not have success with this please try the following:

- Check measuring slot if instrument is switched off. There should be no ice or water in it. Please remove water and ice. Put a sample cup in it and check if it fits well. Please look in service manual page 8 or 9. Sample cup must fit well.
- Then switch unit on and wait for ready. Put an empty sample cup in the measuring slot to prevent it from icing up [only for Osmometer from type 6/OM 806/OM 818].
- Stick a new sample cup with 200µl pure water or alcohol on the measuring head and wait for 2 min. Then remove and wipe thermistor carefully dry.
- Take 3 new sample cups and pipette 100µl of 0, 300 and 900 mosm/kg H_2O in it.
- Remove empty sample cup from measuring slot [only Osmometer type 6] and do measuring for 0, 300 and 900 mosm/kg H_2O.
- After every measuring wipe thermistor carefully clean and dry.

What results do you get? If measurings could be done then probably your samples will cause the freezing too early. If you get “Freezing too early”/F7 what does the display shows before “Freezing too early”/F7 comes? Is the sample really frozen when you push measuring head up immediately and remove sample?

The temperature in the sample slot should be around -10°C (-3,5°C) when you do a measuring and should be not lower. If you can not solve the problem please contact service company or manufacturer.

Attention:

Please observe in every case advices and hints in user manual of your Osmometer/Cryometer.

(...) -Text is valid for Cryometer from type 20 with benzene solutions.

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