

LabScat use in cold operation

As known, turbidity measurement is depending on temperature. This applies in particular for turbidity measurement in the brewery laboratory. With increasing temperature, proteins get dissolved, hence turbidity values decrease. Typically, beer filtration is done at a temperature of around 0 – 2° C. The correct verification of turbidity values in the lab should be made at the same temperature to get comparable results.

Some breweries demand in their internal testing standards that the laboratory measurement must be carried out at 0° C. A cooled water circulating system is needed, which keeps the water bath of the LabScat at a constant temperature. So called “recirculating coolers” are typically used.

In the past we have been asked every now and then if we could give some recommendation which cooler should be used, therefore, we have tested units from two well-known manufacturers. The instruments are made by the company „Julabo“, www.julabo.com (Pict. 1) and „Lauda“, www.lauda-brinkmann.com (Pict. 2):



Pict. 1: Julabo Recirculating Cooler FL601



Pict. 2: Lauda Micro cool MC 250

Both coolers are working in combination with the LabScat and they can be recommended if customers ask for a reference.

Additional accessories such as hoses, insulation material, hose clamps and coolant liquids (or use a 50/50 demineralized water/glycol mixture) can be bought directly from the manufacturers.

The article numbers are as follows:

Julabo

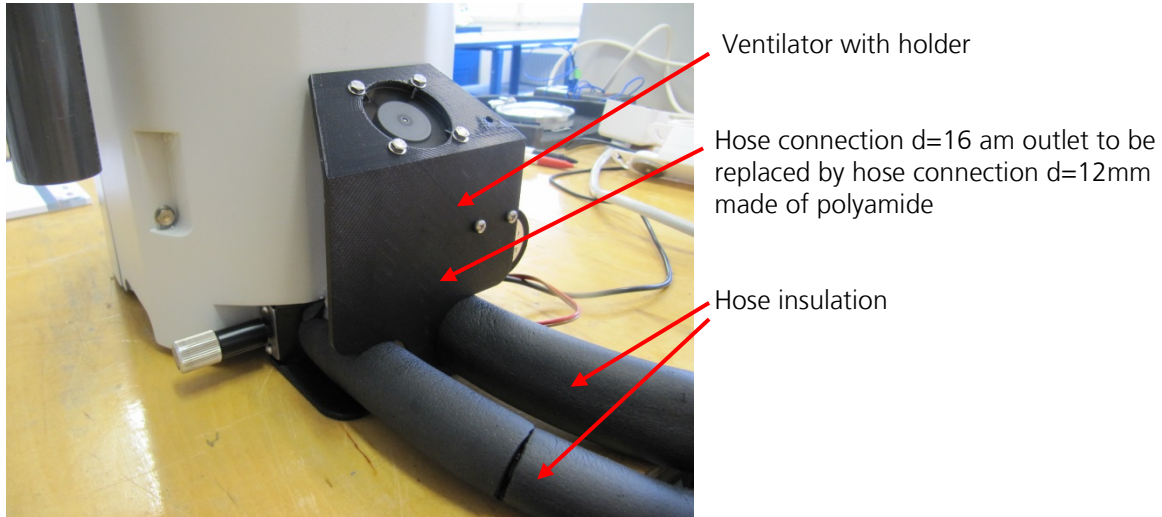
9661006	Recirculating cooler FL601
8930008	Tempering hose, 1m CR-hose, 8mm I.W. (-20 ... +120°C)
8930012	Tempering hose, 1m CR-hose, 12mm I.W. (-20 ... +120°C)
8930410	Hose insulation, 1m insulation, 14mm I.W.
8930412	Hose insulation, 1m insulation, 18mm I.W.
8970480	2 Hose clamps, size 1
8970481	2 Hose clamps, size 2
8940124	Coolant liquid, Thermal G, colour: slightly yellow, 10 litres (min. 7 litres required for operating the LabScat)

Lauda

LA1 LWG 118	Lauda Micro cool MC 250
LA2 LZS 007	Silicone hose, insulated, 11mm I.W., 9mm insulated, -60...100°C, L=2m
LA2 EZS 012	Hose clamp stainless steel 10 to 16mm AD (4 pieces required)
LA2 IG010	Tempering liquid, water/glycol mixture, 5 litres can (min. 3 litres required for operating the LabScat)

LabScat Accessories kit for cooling operation (article-no. 119705)

When using the LabScat in cold operation, condensation will occur on the hose connections and on the outside of the housing. To avoid such condensation, a ventilator is required. The accessories kit also includes a hose connection made of polyamide $d = 12\text{mm}$ (water outlet LabScat, fits the connecting diameters of the recirculating coolers Julabo/Lauda). In addition the value of the water quality limit must be increased from 0.200 EBC to 0.500 EBC in „Menu/Spec.function/Waterqual.limit“.



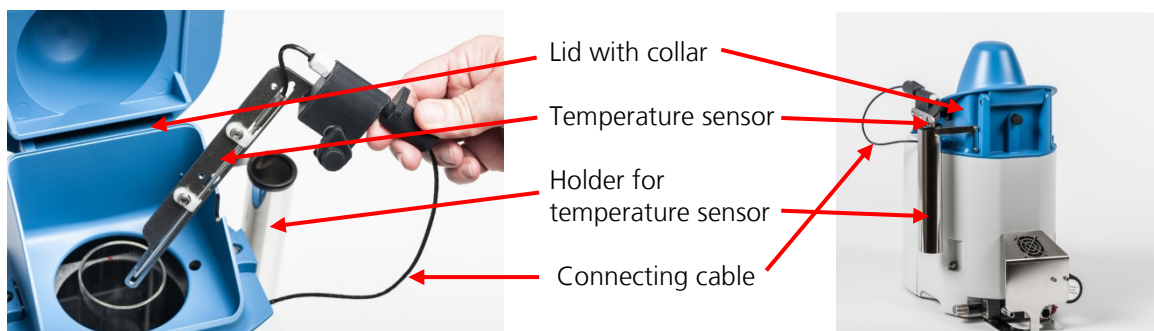
Pict. 3: LabScat with mounted accessories kit for cooling operation

Temperature control system for LabScat

An optionally available accessory kit allows automated measurement at a user-defined temperature. This option allows cooling down a sample from e.g. room temperature to 4°C , after which an automatic measurement is performed.

Typical example for this application is the quality assurance used in the whisky production. A controlled temperature decrease from room temperature to typically 4°C simulates the situation, whereby a consumer adds ice cubs to the whisky. In case of an insufficient cold treatment and filtration there's a risk that so called chill haze occurs due to the precipitation of organic esters or other complex-forming substances. For this and similar applications, an accessory is available, article number 119471. The set includes the following parts:

- A lid with a special collar and holder to store the temperature sensor
- A temperature sensor with connecting cable



Pict. 4: Temperature control for LabScat

ATTENTION: For a proper function, the following articles must be additionally ordered and used:

- Accessories kit for cooling operation, article-no. 119705
- Cuvette KPL50/190 for LabScat with temperature control system only, article-no. 111786



Pict. 5: LabScat with inserted cuvette & temperature sensor (lid open)

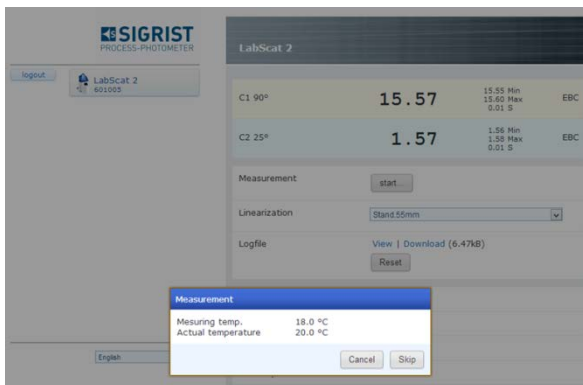


Pict. 6: Cuvette article-no. 111786



Pict. 7: Accessories kit for cooling operation, article-no. 119705

Controlling the temperature measurement is done via the menu in the LabScat. Alternatively, controlling can be done via a PC. For this the LabScat is connected using an optional Ethernet cable, controlling is done via the web connection.



Pict. 8: Web user interface LabScat with temperature control

Remarks:

- A LabScat with integrated temperature control can be used like a „normal“ LabScat at any time.
- It is possible to retrofit an existing LabScat with the temperature control option.
- Price information and article numbers are found on our web site.

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