

*Commissioning and
test protocols*

aquatherm **black**



Flushing, filling, and venting

Before any plastering or panelling work, aquatherm black must undergo a pressure test. To achieve this, the pipes are flushed and filled section by section, for instance, using the filling and draining valves on the heating circuit manifolds. Thanks to the self-venting nature of the grids, air is expelled from the system through the pipework with proper filling.

Water is introduced into the system at a low flow rate and filling pressure (maximum 0.5 bar) until it flows out without bubbles. Wall heating systems must always be filled from the bottom upwards, starting with the return pipe. Hydraulic balancing should be adjusted based on the calculated settings.

Leak test

Similar to underfloor heating systems, aquatherm black must undergo a leak test in accordance with DIN EN 1264-4.

The maximum test pressure is 4 bar. The system must be depressurised at intervals to verify permanent tightness. The system should be pressurised to the test pressure for one hour, then depressurised. Afterward, it is pressurised to 1 bar for 15 minutes. Once depressurised again, this procedure is repeated two more times. This test pressure must be maintained during the application of wall and ceiling plaster or any bonding work. The tightness and test pressure results must be recorded in a test report (refer to page 6).

If there is a risk of freezing, suitable precautions must be taken, such as using antifreeze or controlling the building's temperature. If frost protection is no longer needed for normal operation, the antifreeze must be removed by draining and flushing the system with at least three water changes.



Functional heating

1. Functional heating for wet-laid surface heating and/or surface heating and cooling systems

Functional heating must be performed to verify the integrity of the heated or cooled wall or ceiling construction. This process serves as confirmation for the heating contractor that the work has been completed without defects. The following minimum drying times must be observed before starting the heating phase, depending on the thickness and binder of the heat distribution layer.

Wall	Drying time
Lime cement	1 day per mm layer thickness
Lime	1 day per mm layer thickness
Plaster	1/2 day per mm layer thickness
resp.	___ days according to manufacturer's instructions

2. Functional heating for surface heating and cooling systems as a dry system

Functional heating must be performed to verify the function of the heated or cooled wall or ceiling construction. For dry systems, functional heating is only carried out once the levelling or bonding work has been completed. The levelling compound or adhesive must be fully hardened, and the manufacturer's instructions must be followed.

Protocols for functional heating for both wet and dry systems can be found on pages 4 and 5.

Functional heating as a functional test__

Function test for wet-laid surface heating and/or surface heating and cooling systems (for walls and ceilings)

Client _____

Building / Property _____

Construction phase/part
Floor / flat _____

Plant section _____

Requirements

Functional heating must be performed to verify the operation of the heated or cooled wall or ceiling construction. This serves as confirmation for the heating contractor that the work has been completed without defects. Depending on the thickness and binder of the heat distribution layer, the following minimum drying times must be observed before beginning the heating phase.

The maximum design temperature (usually up to 45° C) must be maintained for one day. If there is a risk of frost, the system must then be left in operation accordingly. Any manufacturer's specifications deviating from this protocol or DIN EN 1264-4 must be observed.

- ☐ Lime cement 1 day per mm layer thickness ☐ Plaster 1/2 day per layer thickness
☐ Lime 1 day per mm layer thickness ☐ or ____ days according to manufacturer's instructions

Documentation

- Type of heat distribution layer (make, if applicable): _____
binder used: _____
- End of work on the heat distribution layer (date) : _____
- Start of functional heating (date): _____
with constant max. design flow temperature $t_v =$ _____ ° C
- End of functional heating (date): _____
If there is a risk of frost, appropriate protective measures must be taken (e.g. frost protection mode).
- The rooms were ventilated without draughts, and after turning off the panel heating and cooling system all windows and external doors were locked: Yes ____ No ____
- The system was released for further construction work at an outside temperature of ____ ° C.
____ The system was out of operation.
____ The heat distribution layer was heated with a flow temperature of ____ ° C.

Confirmation

Place, date

Place, date

Place, date

Building owner / client
Stamp / Signature

Building owner / client
Stamp / Signature

Building owner / client
Stamp / Signature

Functional heating as a functional test__

Function test for surface heating and cooling systems as dry systems

Client

Building / Property

Construction phase/part
Floor / flat

Plant section

Requirements

Functional heating must be performed to verify the operation of the heated or cooled wall or ceiling construction. For drying systems, functional heating is performed only after the levelling or bonding work has been completed. The levelling compound or adhesive must be fully cured.

The manufacturer's specifications must be considered. The maximum design flow temperature for one day is generally up to 45°C. If there is a risk of frost, the system should remain in operation as necessary. Any manufacturer's specifications that deviate from the standard or this protocol must be followed and recorded.

Documentation

1. Type of heat distribution layer (make, if applicable): _____
binder used: _____
2. End of work on the heat distribution layer (date): _____
3. Start of functional heating (date): _____
with constant max. design flow temperature $t_v =$ _____ °C
4. End of functional heating (date): _____
If there is a risk of frost, appropriate protective measures must be taken (e.g. frost protection mode).
5. The rooms were ventilated without draughts, and after switching off the panel heating and cooling system, all windows were closed and external doors were locked: Yes ____ No ____
6. The system was released for further construction work at an outside temperature of ____ °C.
____ The system was out of operation.
____ The heat distribution layer was heated with a flow temperature of ____ °C.

Caution: After the heating phase, when switching off the panel heating, the heating surface must remain off to prevent exposure to draughts and rapid cooling.

Confirmation

Place, date

Place, date

Place, date

Building owner / client
Stamp / Signature

Building owner / client
Stamp / Signature

Building owner / client
Stamp / Signature

Leak testing of surface heating and cooling systems__

Test protocol

Client _____

Building project _____

Construction phase / floor _____

Requirements

The tightness of the heating/cooling circuits of the surface heating/surface cooling (thermally tested and certified surface system and pipe system) is ensured by a water pressure test conducted immediately before laying the screed, plaster, or levelling compound.

Contrary to VOB C (DIN 18380), the maximum test pressure in this case is 6 bar. This pressure must be maintained throughout the installation of the screed/plaster.

The leak test is performed in sections after flushing the individual heating circuits. It is essential to ensure that other parts of the system are safeguarded against excessive pressure (if necessary, using main shut-offs from the manifold).

Alternatively, the leak test can also be conducted using compressed air, with a maximum test pressure of 3 bar.

Maximum permissible operating pressure: 4 bar

Interval test

1. Test pressure 6 bar _____ bar
30 minutes, followed by

Test pressure 1 bar _____ bar
min. 15 minutes

2. Test pressure 6 bar _____ bar
30 minutes, followed by

Test pressure 1 bar _____ bar
min. 15 minutes

Main test

1. Test pressure 4 bar
Print after 60 minutes _____ bar

2. Test pressure 1 bar
Print after 15 minutes _____ bar

The pipework must be depressurised between each cycle.

The tightness was verified, and no permanent deformation was observed in any component.

Confirmation

Place, date

Place, date

Place, date

Building owner / client
Stamp / Signature

Building owner / client
Stamp / Signature

Building owner / client
Stamp / Signature

aquatherm GmbH

Biggen 5 | D-57439 Attendorn | Germany
Tel: +49 2722 950 0 | Mail: info@aquatherm.de



Detailed technical information on
aquatherm black can be found on our website.



Part of the Solution
www.aquatherm.de