

Testing procedure for metal radiant ceilings

Datasheet
0414EN 02/2019



➤ Radiant ceiling systems

Modular radiant drop ceiling with metal surface finish, particularly fit for heating and cooling of offices, hospitals, airports, commercial units, schools and, more generally, tertiary industry buildings.

From a construction standpoint, the system is made by active and inactive sheet steel panels, sheet steel bearing structures and a suspension system with rigid droppers for flawless planarity and horizontality of the ceiling.

- The **GK series** enables to create two different types of modular ceilings: 600x1200 mm (GK60, parallel structure); 1200x1200 mm (GK120, crossed structure).
- The **GK PSV series** enables to create two different types of modular ceilings: 600x600 mm (GK60x60 PSV); 600x1200 mm (GK60x120 PSV).

The two types of activations (C and A) meet various thermal output needs.

Components from other systems that need to face the room - such as lighting appliances or air diffusers - can be easily integrated without drilling or profiling thanks to the precut inactive panels.

Easy and rapid to install, radiant drop ceilings can be accessed any time to inspect and service the systems inside the plenum. The microperforated panels are the ideal solution when using the plenum for delivery of exchanged dehumidified air or to improve soundproofing thanks to their enhanced sound-absorption capacity.

A special thermo-acoustic panel in polyester fiber can be fit on top of the panels when thermal insulation or enhanced soundproofing is required.

► Hydraulic testing procedure

As for all fluid-based installations, radiant systems must be hydraulically tested after installation and before use.

The testing stages given below must be followed strictly:

- 1) pressure sealing test with air;
- 2) pressure sealing test with room-temperature water;
- 3) pressure sealing test with heated water;
- 4) pressure sealing test with refrigerated water.

1) Pressure sealing test with air

After connecting the single panels of a series and the power lines, we recommend carrying out an initial sealing test with air compressed at least at 4 relative bar (if a compressor with enough power is available, perform the test with a working nominal pressure of 6 bar). All loops of the radiant ceiling must be tested for sealing.

For proper testing, shut off the automatic air vents and supply one installation circuit at a time.

In case of localized leaks within a loop, shut off the ball valves on the supply line, identify the leak and solve the problem.

The pressure sealing test with air can be carried out both on closed-loop and open-loop panels.

Tested circuits must be pressurized for at least 24 h; after that, vent the air to reset the circuits on atmospheric pressure.

2) Pressure sealing test with room-temperature water

After supplying all main distribution lines with room-temperature water and venting the air, fill the radiant circuits one by one giving the air inside the loops enough time to be discharged from the automatic vents.

We recommend carrying out the water sealing test on closed-loop panels.

When all circuits are filled with water, increase pressure to working value making sure there are no leaks.

Then start the system circulators to remove the remaining air bubbles from the circuits.

To properly carry out this operation on large systems, first perform an approximate balancing of the loops to prevent water circulation only in those with reduced losses of pressure and reduced or no circulation in those with larger losses of pressure.

When the air has been completely vented from the system (after about 24 h), stop the circulators and increase the pressure by 1.5 times the working pressure, with a minimum of 6 bar.

The system must be set under such conditions for at least 24 h while monitoring the circuit sealing.

In case of localized leaks within a loop, shut off the ball valves on the supply line, identify the leak and solve the problem.

Once the testing cycle is completed, set the pressure on the working value.

3) Pressure sealing test with heated water

Maintain the system pressure on the working value with circulators ON, increase the water temperature slowly to 40 °C and leave the system running for 24 h. Then, while the circulators are still ON; let the water cool down to room temperature.

This procedure is generally carried out on closed loops.

The purpose is to make sure water flows inside all loops connected to the main supply network and have the pipes and connections undergo a heating thermal cycle to eliminate installation stresses and stabilize the couplings.

4) Pressure sealing test with refrigerated water

Maintain the system pressure on the working value with circulators ON, increase the water temperature slowly to 15 °C and leave the system running for 24 h.

Then, with circulators still ON, let the water cool down to room temperature.

This procedure is generally carried out on closed loops.

To prevent condensation on the panel surface during this test, the installation room should have low absolute humidity values.

With high humidity values providing dew-points exceeding 13 °C, we recommend turning ON the air treatment machines to control and maintain room humidity on values that prevent surface condensation.

NOTE. Testing procedures 1) and 2) are essential.

Testing procedures 3) and 4) are strongly recommended as they expose the system components to a temperature cyclic test that ensures very high safety levels. During test 3 or 4, we recommend full thermal vision of the system to verify the compliance of the ceiling surface temperatures.

⚠ Safety Warning. Installation, commissioning and periodical maintenance of the product must be carried out by qualified operators in compliance with national regulations and/or local standards. A qualified installer must take all required measures, including use of Individual Protection Devices, for his and others' safety. An improper installation may damage people, animals or objects towards which Giacomini S.p.A. may not be held liable.

♻ Package Disposal. Carton boxes: paper recycling. Plastic bags and bubble wrap: plastic recycling.

ℹ Additional information. For more information, go to giacomini.com or contact our technical assistance service. This document provides only general indications. Giacomini S.p.A. may change at any time, without notice and for technical or commercial reasons, the items included herewith. The information included in this technical sheet do not exempt the user from strictly complying with the rules and good practice standards in force.

♻ Product Disposal. Do not dispose of product as municipal waste at the end of its life cycle. Dispose of product at a special recycling platform managed by local authorities or at retailers providing this type of service.