

Techo EFFI Klimapaneler

Instalationsvejledning og teknisk manual. (GB)

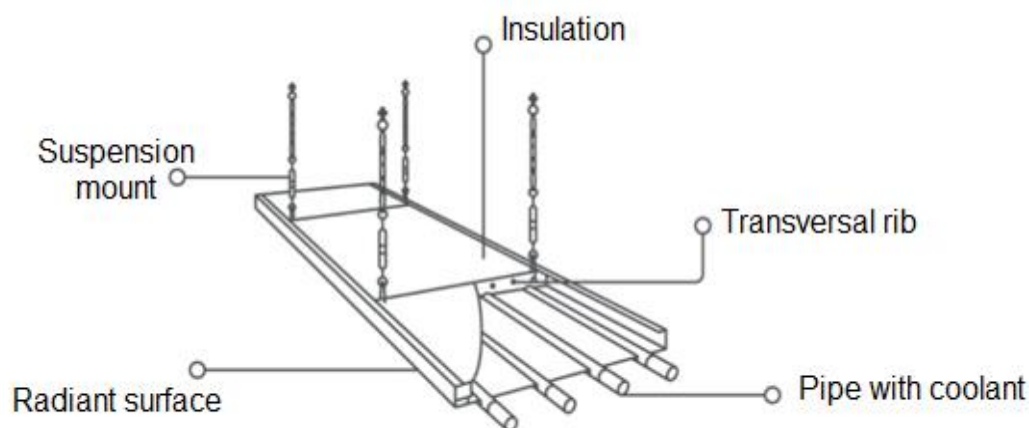
1. Purpose and scope.

EFFI climate panels designed for use as heating devices in water heating systems of various types of buildings. Climate panels can be used for both independent heating systems and central heating systems. Climate panels designed for heating high and large rooms. Water is a heat carrier. It is also possible to use climate panels as cooling devices in summer.

2. Technical characteristics.

The module of the climate panel is a shaped steel sheet with a protective coating and powder coating, in which 4 outside galvanized steel pipes (d=15 mm) are mounted. Over it, there is a layer of thermal insulation 50 mm thick. To impart strength of the item there are built-in steel galvanized transversal fins with mounting holes d= 8mm in them.

Figure 1. The climate panel scheme.



To mount the climate panels to each other as well as to connect them to collectors press-fittings with a diameter of 15 mm are used. The maximum length of the line of the climate panels is 50 m. In the places where the panels connected together and where the collectors are connected, joint covering plates installed.

Figure 2. Dimensions of standard modules of EFFI climate panels.

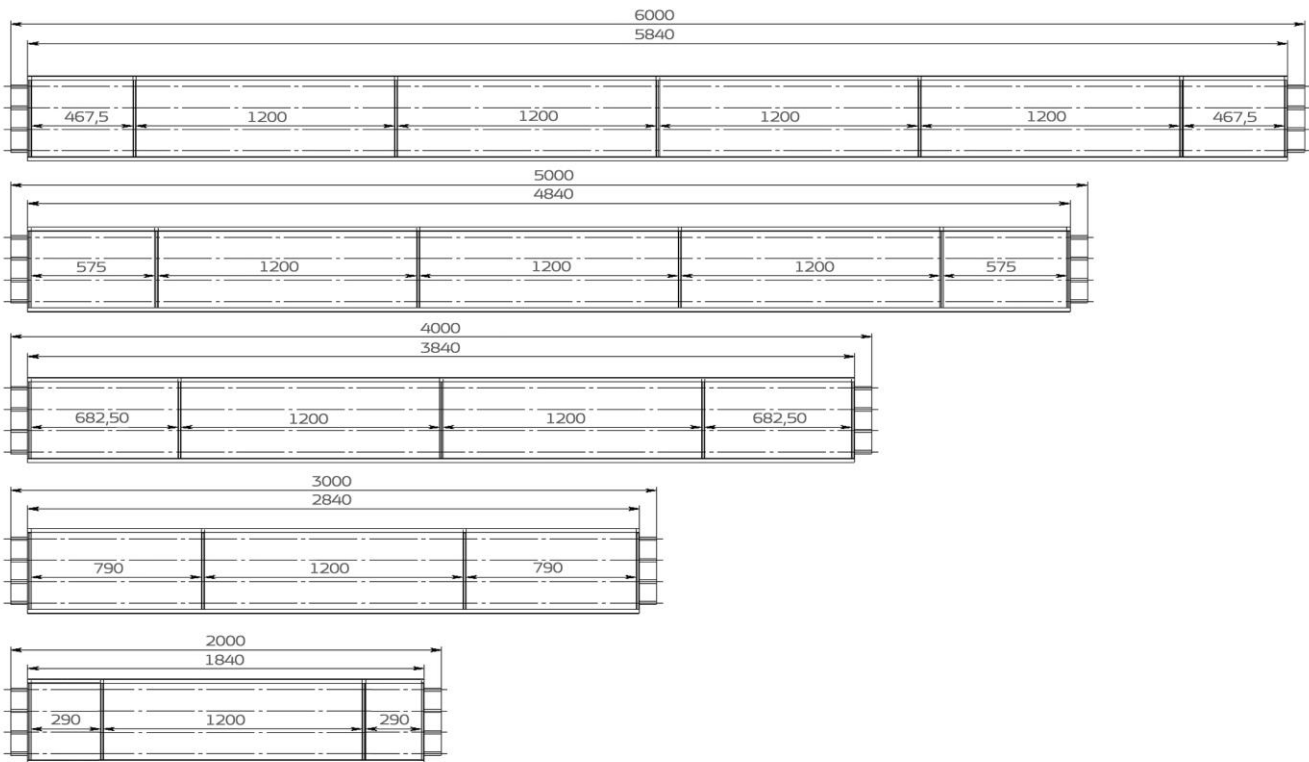


Figure 3. Cross section of the climate panel EFFI.

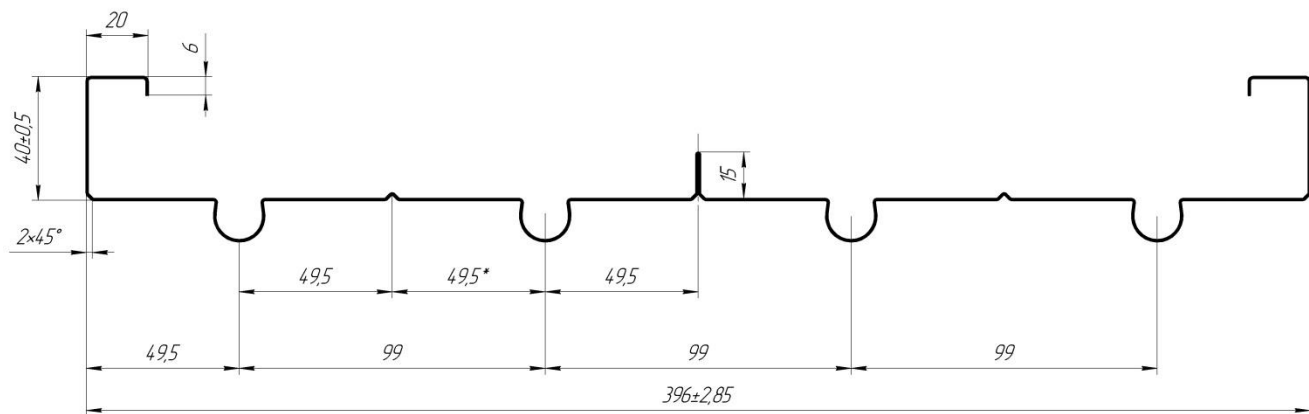


Table 1. Basic technical data.

Parameter and /or the size	Unit of measurement	Value
Installation Width	mm	396,0
Number of pipes	pc	4
Distance between the pipes	mm	99
Minimum intallation length of the climate panel	mm	2000
Maximum intallation length of the climate panel	mm	6000
Number of suspension points per axle	pc	2
Distance between suspension points	mm	323
Maximum heat carrier temperature	°C	120
Maximum working pressure	mPa (bar)	1,0 (10)
Panel weight without water with insulation	kg/m	4,3
Collector weight	kg	1,15
Water content	l/m	0,53
Operating weight of the panel with water	kg/m	4,83
Heating power at $\Delta t = 55$ K	W/m	208
Cooling power at $\Delta t = 10$ K	W/m	40

The resistance to pressure and heating power of EFFI climate panels are tested according to EN 14037-1:2016 and EN 14037-2:2016 by EU notified body laboratory WSP LAB at Stuttgart, Germany. Declaration of Performance on demand.

3. Heating power.

Table 2 shows the heating power of the linear meter and the collector pair of climate panels, depending on the temperature difference. To calculate the heat flow under conditions other than the design criteria, please, contact the manufacturer.

Table 2.

EFFI climate panels heating power

$\Delta t_{\text{heat}} \text{ (K)}$	W/rm	W/coll. pair	$\Delta t_{\text{heat}} \text{ (K)}$	W/rm	W/coll. pair
80	321	92	48	178	46
78	311	89	46	170	44
76	302	86	44	161	41
74	293	83	42	153	39
72	284	80	40	145	36
70	275	77	38	136	34
68	266	74	36	128	31
66	257	71	34	120	29
64	248	68	32	112	27
62	239	65	30	104	24
60	230	62	28	96	22
58	222	60	26	88	20
56	213	57	24	80	18
55	208	55	22	73	16
54	204	54	20	65	14
52	195	51	18	58	12
50	187	49	16	51	10

4. Installation instructions.

4.1 Only the persons who completed the relevant training, instruction in safety precautions and who have appropriate approvals for high-altitude works allowed to the installation of climate panels.

4.2 Preparation of the working area. This process includes a check of the presence of tools, necessary mounting fittings and a mounting kit (press tools, fittings, sealing rings, collectors, couplings, air-purge valves, chains, turnbuckles, carabines, etc.).

4.3 Visual inspection of the mounted panels for mechanical damage and the presence of foreign objects inside. If damages are found, replace it with properly functioning ones. While finding foreign objects in internal volumes you should remove them.

4.4 Please remove the protective transparent transport tape from the outside of the panel housing and joint cover plates. **The tape on the panels adversely affects the efficiency of their work!**

4.5 Connection of collector pairs to modules and modules with each other:

- check the presence of sealing rings in press fittings, as well as their technical state;
- remove possible contaminants and foreign substances from the rings of press fittings;
- remove possible contaminants and foreign substances from manifold lugs and panels;
- due to the minimum tolerances for connection dimensions, a small effort may be required when connecting the lugs to the fittings. If necessary, use a soap solution or water as a lubricant. Do not use grease and oil as a lubricant;
- completely, as far as it will go, push the fittings onto the module's nozzles;



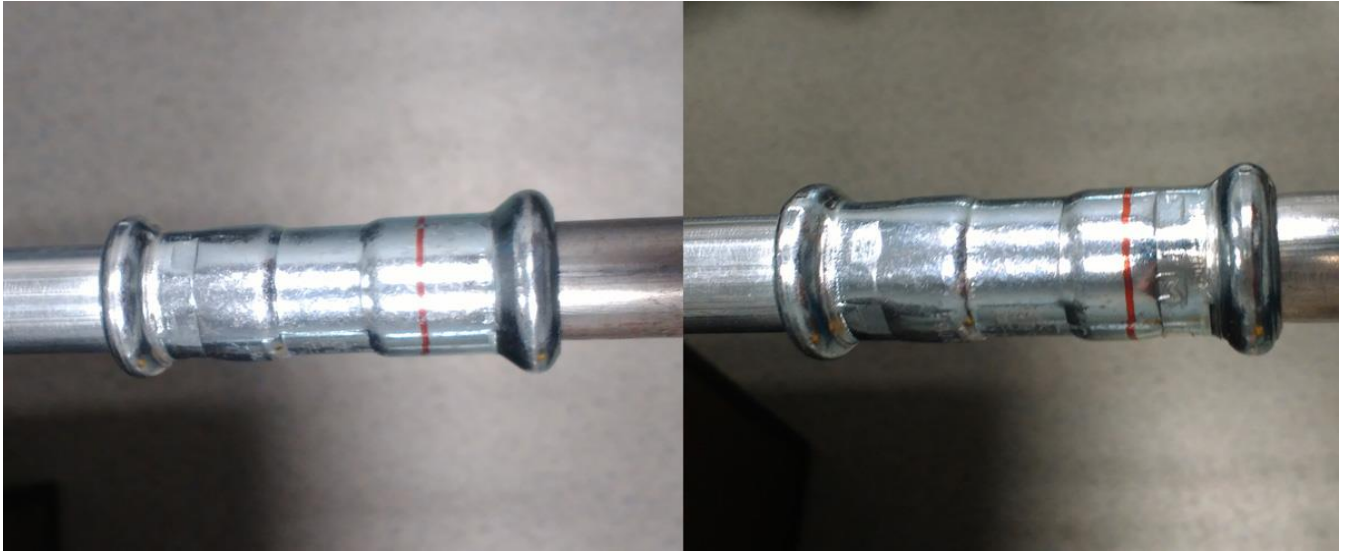
- join the panel module and collector:



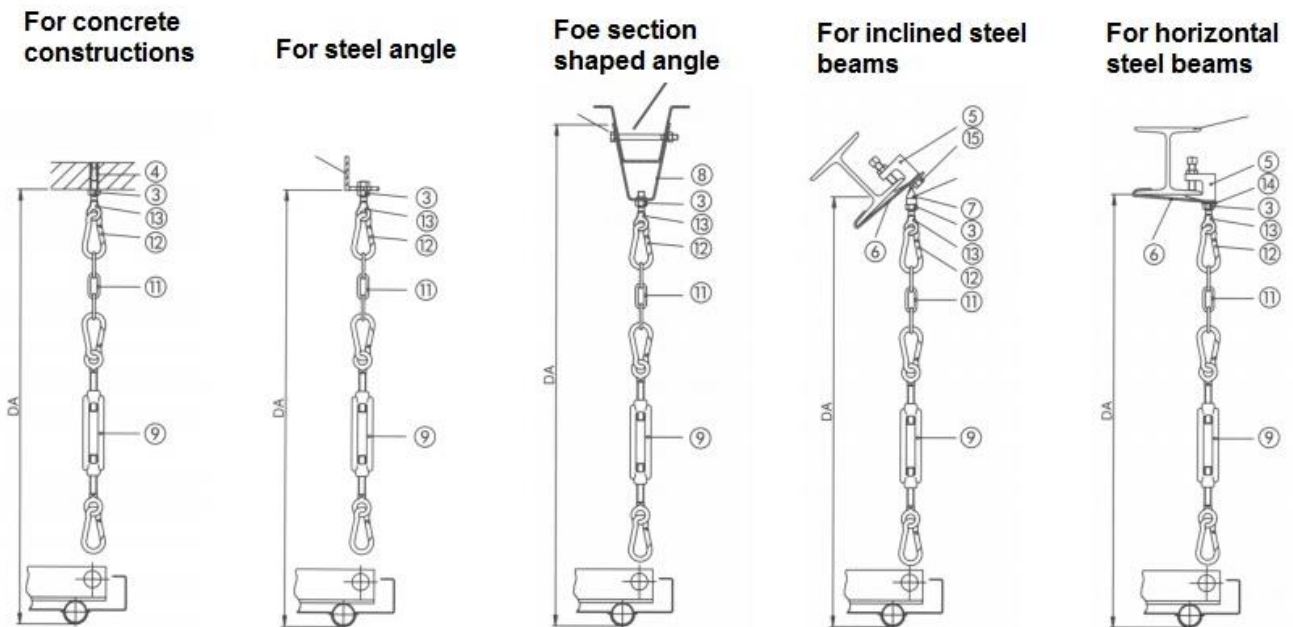
- press all fittings on both sides with the help of a suitable press-tool (type of pressing tongs/crimper is M15):



- make sure that the crimping was made correctly. Correctly pressed press-fittings has clearly defined facets 360-degree:



4.6 Fastening of suspension chains according to the scheme of the project of the structural arrangement of the building according to one of the listed variants:



The distance between the suspension chains axes should not be more than 2.5 m. The fin spacing for fastening the panels is indicated in Figure 1. Please see the distance between the suspension points on the fin in Table 1.

4.8 For the removal of water and air from the panels it is recommended to install panels with a slope along the path of the heat carrier. It is important that the air-relief valve on the collector is at the highest point of the system and the drainage port of the system in the lower one.

4.9 Filling the system with a heat carrier. Check that there is no air in the system. The maximum operating pressure is 10 bar:

- open the water supply valves in one panel (in the entire line of the panels for serial connection);
- open the air-relief valve at the top of the system;
- switch on the main-line pump to fill the panel with water;
- wait until the system is completely filled with water. The system is considered to be completely filled when the water start to flow out through the air-relief valve;
- when the filling is completed, close the air-relief valve;
- close the water supply valve to the panel (in the line of the consecutive panels);
- repeat the same with the next line of panels and so on until the last one;
- when you fulfill the above point and complete the filling of the entire system, open all the water supply valves in the system.

4.10 Test run of the system, system check for density, coolant leakage and performance. Hydraulic testing of a system with a pressure of 1.5 times the working pressure, but not less than 0.6 MPa at a constant operating temperature of water.

5. Operating and maintenance requirements.

The climate panels must be operated only with the operating parameters specified in this passport. It is not allowed to leave the climate panel completely closed for 2 hours during the first two weeks after the start of the system and 4 hours thereafter. Do not operate the climate panel in a system in which there is electrical potential.

The water used as the heat carrier must meet the requirements given in the tables below:

Table 3

№	Parameters	Water temperature, ° C		
		Up to 75	Up to 100	Up to 115
1.	Carbonate hardness	1,5	0,7	0,7
2.	Dissolved oxygen, mg / kg	0,1	0,1	0,05
3.	Free carbon dioxide, mg / k	no		
4.	pH	6,5-8,5		
5.	Suspended substances, mg / kg	5,0	5,0	5,0
6.	Residual total hardness (allowed in closed heat supply systems)	-	0,1	0,05
7.	Oils and petroleum products, mg / kg	-	0,1	-

For steel steam boilers, the quality of the feedwater must meet the requirements shown in Table 4:

Table 4

No	Parameters	Water quality standards
1.	Total hardness, $\mu\text{g-eq} / \text{kg}$, not above	200
2.	Dissolved oxygen, $\mu\text{g} / \text{kg}$, not above	100
3.	Free carbon dioxide, mg / kg , not above	10
4.	pH, not lower than	7
5.	Suspended substances	no

The salt content and alkalinity of the boiler water are defined on the basis of thermochemical tests. Relative alkalinity is not standardized. Two shut-off devices/valves and a control valve between them are installed on the standby water lines connected to the lines of softened water or condensate, and also to the feeding tanks.

Shut-off devices must be in the closed position and be sealed, and the control valve must be opened. Each feeding of the boiler with raw water should be recorded in a water treatment log. It is recommended to wipe the surface of the climate panel from dust and dirt with a soft rag. It is not allowed to use substances containing any solvents.

Draining of the heat carrier from the climate system is allowed only in emergency cases for up to 1 day during the entire service life. The manufacturer recommends to install the automatic valves to discharge air from the piping system.

6. Storage and transportation.

Climate panels should be stored in a package provided by the manufacturer. During transportation, the manipulation marks on the climate panel packaging should be strictly taken into account. The manufacturer is not responsible for transport damages of the climate panels if the transportation is not carried out in the packaging materials provided by the manufacturer.

7. Warranty.

The manufacturer guarantees the absence of production defects in products for 5 years from the date of shipment. The warranty does not cover defects caused by: disturbance of the conditions of recommended storage, installation, testing, operation and maintenance of the product, inadequate transportation and handling, the consequences impact of substances corrosive to the materials of the product, the presence of damage caused by fire, force majeure circumstances, damage caused by improper handling of the selling organization, installation organization, consumer or third parties, unauthorized construction of the product.

The service life of the EFFI climate panels is 25 years.

7.1 Terms of warranty service.

Claims to the quality of the goods may be brought within the warranty period. Defective products during the warranty period are repaired or exchanged for new ones free of charge. The decision to replace or repair the product is made by the manufacturer. The replaced product or parts thereof, obtained as a result of repair, become the property of the manufacturer. The costs for the dismantling, installation and transportation of the defective item during the warranty period are not reimbursed to the consumer. In case of unreasonable claims, costs for diagnostics and examination of the product are paid by the consumer. Only the fully completed products are accepted for warranty repair (as well as return).

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