

ENGINEERING  
TOMORROW



Installation Guide

EvoFlat





AN35894903989801-000101

to the Product  
Store

to the Pump  
manual


**Flat station for single-family, semi-detached and terraced houses as well as flats**  
Flat station for direct heating and instantaneous domestic hot water. Innovative self-acting TPC-M controller for control of heating and DHW temperature. Designed for wall mounting or built in wall.

EvoFlat FSS 1/2/3 — a compact and simple to operate flat station for direct radiator heating and instantaneous domestic hot water with an innovative self-acting TPC-M controller for control of heating and DHW temperature. Digit behind the name shows the type of HEX.

EvoFlat MSS 1/2/3 — a compact and simple to operate flat station for direct heating with mixing loop and instantaneous domestic hot water with an innovative self-acting TPC-M controller for control of heating and DHW temperature.

EvoFlat WSS — A fully insulated water heater for flats, single- and multi-family houses. DHW heating based on flow principle with thermostatic temperature controller. Innovative, energy-saving controller TCP-M in combination with high performance heat exchanger for on-demand water heating without no-load losses.

EvoFlat FSF — Apartment station with integrated fresh water system for apartments, single and multi-family houses. Suitable for heat pumps. Directly heated home station for heating and DHW using the flow principle. Innovative TCP-M controller and MPHE heat exchanger for needs-based DHW heating.

 Installation must be in compliance with local standards and regulations.

Heat Source (HS) — In the following sections, HS refers to the heat source which supplies the flat stations. A variety of energy sources, such as oil, gas or solar power, could be used as the primary supply to Danfoss flat stations. For the sake of simplicity, HS can be taken to mean the primary supply.

### Installation

#### Mounting:

- Adequate space**  
Please allow adequate space around the flat station for mounting and maintenance purposes.
- Orientation**  
The station must be mounted so that components, keyholes and labels are placed correctly. If you wish to mount the station differently please contact your supplier.
- Drillings**  
Where flat stations are to be wall-mounted, drillings are provided in the back mounting plate.
- Labelling**  
Each connection on the flat station is labelled.

#### Before installation:

- Clean and rinse**  
Prior to installation, all flat station pipes and connections should be cleaned and rinsed.
- Tightening**  
Due to vibration during transport, all flat station connections must be checked and tightened before installation. Check that all hairpins in click connections are completely pushed in.
- Unused connections**  
Unused connections and shut-off valves must be sealed with a plug. Should the plugs require removal, this must only be done by an authorized service technician.

#### Installation:


- Strainer**  
If a strainer is supplied with the station it must be fitted according to schematic diagram. Please note that the strainer may be supplied loose.
- Connections**  
Connection to the household installation and district heating pipes connections must be made using threaded, flanged or welded connections.  
The internal connections of the flat station is made by click-fit connections.

#### Start-up

##### Start-up, Direct heating

The shut-off valves should be opened and the unit observed as it enters service. Visual checking should confirm temperatures, pressures, acceptable thermal expansion and absence of leakage. If the heat exchanger operates in accordance with design, it can be put to regular use.

After water has been added to the system and the system has been put into operation, re-tighten **ALL** connections. Check that all hairpins in click connections are completely pushed in.




**Re-tighten connections**  
After water has been added to the system and the system has been put into operation, re-tighten **ALL** connections. Check that all hairpins in click connections are completely pushed in.

##### Start-up, Heating with mixing loop

#### Start-up:

##### 1: Pump speed


Set the pump to its highest speed of rotation before start-up. On radiator systems, the selector switch is normally set in “Variable curve / Proportional curve” setting, in “max. pos. “. For floor heating systems, the selector switch is normally set in “Constant curve” setting, in “max. pos. “.



**Re-tighten connections**  
After water has been added to the system and the system has been put into operation, re-tighten **ALL** connections. Check that all hairpins in click connections are completely pushed in.

##### 2: Start pump

Start the pump and heat through the system.



**Pump**  
The pump must be switched off during system fill.

##### 3: Open shut-off valves

The shut-off valves should then be opened and the unit observed as it enters service. Visual checking should confirm temperatures, pressures, acceptable thermal expansion and absence of leakage. If the system operates in accordance with design, it can be put to regular use, — always taking into account the conditions in the building.


##### 4: Vent system

Switch off the pump and vent the installation after the system has been warmed up. Please note that some pump types feature a built-in venting function. For others the installation can be vented by using a vent valve in the flat station or on the radiators, or, if appropriate, the air valve at the highest point of the system — For additional information, please refers to the enclosed pump and manual.


##### 5: Adjust pump speed

Set the pump to the lowest possible position, depending on the heating requirement for the building — taking into account aspects such as cooling and power consumption. If the heating requirement increases the pump setting can be changed by means of the selector switch. Please refer to the enclosed instruction manual for detailed information about setting ranges. In the summer, you can switch off the power to the pump at the mains if you want to save electricity by not heating your home. It should be ensured that no inappropriate hydraulic situation will occur, when the power to your pump is turned off. For start-up and venting — see above and the enclosed pump manual. **To see complete manual use the QR code on the front side.**


#### Safety Notes




**Authorized personnel only**  
Assembly, start-up and maintenance work must be performed by qualified and authorized personnel only.




**Please observe instructions carefully**  
To avoid injury to persons and damage to the device, it is absolutely necessary to read and observe these instructions carefully.




**Warning of high pressure and temperature**  
Be aware of the installation's permissible system pressure and temperature. The maximum temperature of the flow medium in the flat station is 95 °C. The maximum operating pressure of the flat station is 10 bar. The risk of persons being injured and equipment damaged increases considerably if the recommended permissible operating parameters are exceeded. The flat station installation must be equipped with safety valves, however, always in accordance with local regulations.



**Warning of hot surface**  
The flat station has got hot surfaces, which can cause skin burns. Please be extremely cautious in close proximity to the flat station. Power failure can result in the motor valves being stuck in open position. The surfaces of the flat station can get hot, which can cause skin burns. The ball valves on district heating supply and return should be closed.



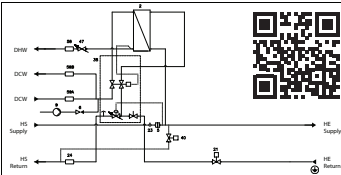
**Warning of transport damage**  
Before flat station installation, please make sure that the flat station has not been damaged during transport.



**IMPORTANT — Tightening of connections**  
Due to vibrations during transport all flange connections, screw joints and electrical clamp and screw connections must be checked and tightened before water is added to the system. After water has been added to the system and the system has been put into operation, re-tighten **ALL** connections. Check that all hairpins in click connections are completely pushed in.

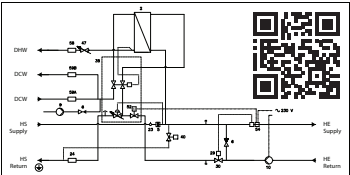
#### Schematic

##### FSS (to see complete manual use the QR code)



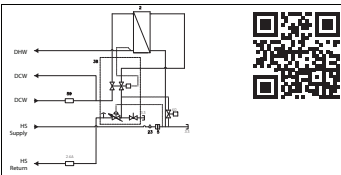
Your flat station might look different than the schematic diagram shown.

##### MSS (to see complete manual use the QR code)



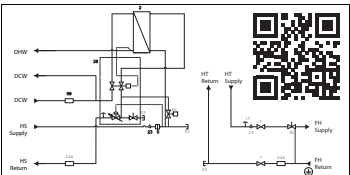
Your flat station might look different than the schematic diagram shown.

##### WSS (to see complete manual use the QR code)



Your flat station might look different than the schematic diagram shown.

##### FSF (to see complete manual use the QR code)



Your flat station might look different than the schematic diagram shown.

#### Technical parameters

Nominal pressure:	PN10 / PN10 and PN6* / PN10
Max. DH supply temperature:	95 °C
Min. DCW static pressure:	1,0 bar
Brazing material (HEX):	Cooper and stainless steel
Heat exchangers test pressure:	25 bar

\* for station with shunt only

#### Dimensions (mm)

With connections: H: 590 × W: 550 × D: 150 (Depth incl. mounting plate).  
H: 590 × W: 590 × D: 150 (In gasketed versions).

#### Connection size

DH, HE, DHW, DCW: G¾" ET (int. thread) space 65 mm.

#### DHW: Capacity examples

DHW capacity [kW]	Type	Temperature primary [°C]	Temperature secondary [°C]	Flow rate primary [l/h]	Flow rate secondary [l/h]	Pressure loss primary [°kpa]
37	1	65/19,1	10/45	707	910	16
37	1	65/22,4	10/50	762	796	18
45	2	65/17,6	10/45	833	1106	18
45	2	65/20,6	10/50	890	968	21
55,5	3	65/14	10/45	950	1365	41
53	3	65/15,8	10/50	950	1140	41
42	3	55/16,3	10/45	950	1033	41
33,7	3	50/19,1	10/45	950	829	41

#### Maintenance

The flat station requires little monitoring, apart from routine checks. It is recommended to read the energy meter at regular intervals, and to write down the meter readings. Regular inspections of the flat station according to this Instruction are recommended, which should include:

**Strainers** — Cleaning of strainers.

**Meters** — Checking of all operating parameters such as meter readings.

**Temperatures** — Checking of all temperatures, such as HS supply temperature and DHW temperature.

**Connections** — Checking all connections for leakages.

**Safety valves** — The operation of the safety valves should be checked by turning the valve head in the indicated direction.

**Venting** — Checking that the system is thoroughly vented.

Inspections should be carried out minimum every two years.

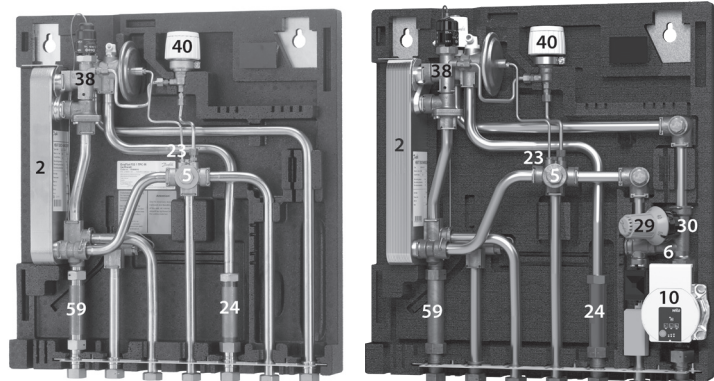
Spare parts can be ordered from Danfoss. Please ensure that any enquiry includes the flat station serial number.

#### Danfoss A/S

Heating Segment • heating.danfoss.com • +45 7488 2222 • E-Mail: heating@danfoss.com

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#### Design, standard



Your flat station might look different than the flatstation shown.

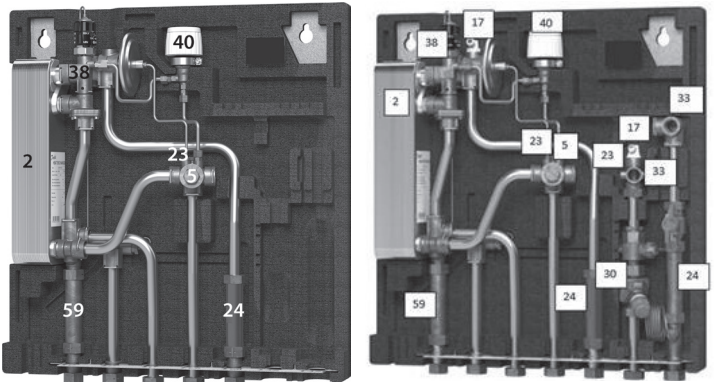
#### Design description

##### FSS 1, 2, 3 (left photo):

- 2 Plate heat exchanger
- 5 Strainer
- 21 Return temperature limiter
- 23 Sensor pocket
- 24 Fitting piece, energy meter
- 38 DHW controller type TPM-C
- 40 Summer by-pass
- 59 Fitting piece, water meter

##### MSS 1, 2, 3 (right photo):

- 2 Plate heat exchanger
- 5 Strainer
- 6 Check valve
- 10 Circulation pump mixing circuit
- 23 Sensor pocket
- 24 Fitting piece, energy meter
- 29 Actuator
- 30 Valve HE
- 38 DHW controller type TPM-C
- 40 Summer by-pass
- 59 Fitting piece, water meter



Your flat station might look different than the flatstation shown.

#### Design description

##### WSS 1, 2, 3 (left photo):

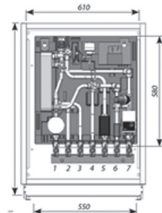
- 2 Plate heat exchanger
- 5 Strainer
- 23 Sensor pocket
- 24 Fitting piece for energy meter
- 38 DHW controller type TPM-C
- 40 Summer by-pass
- 59 Fitting piece, water meter

##### FSF (right photo):

- 2 Plate heat exchanger
- 5 Strainer
- 17 Air valve
- 23 Sensor pocket for heat meter
- 24 Fitting piece for heat meter: ¾" x 110 mm
- 30 Valve HE
- 33 Plugs
- 38 DHW controller type TPM-C
- 40 Danfoss FJVR for bypass/circulation
- 59 Fitting piece, cold water meter ¾" x 110 mm

#### Connections:

- Domestic cold water (DCW) inlet.
- Domestic hot water (DHW).
- Domestic cold water (DCW) outlet.
- Primary side (HS) supply.
- Primary side (HS) return.
- Heating (HE) supply.
- Heating (HE) return.




#### Before making electrical connections, please note the following:

**Safety notes** — Please read the relevant parts of the safety notes.

**230 V** — The flat station must be connected to 230 V AC and earth.

**Disconnection** — The flat station must be electrically connected so that it can be disconnected for repairs.

**Grounding / potential compensation** — The station should be connected to a grounding point on the right side of the station mounting rail.



**Authorized electrician**  
Electrical connections must be made by an authorized electrician only.

**Local standards.**  
Electrical connections must be made in accordance with current regulations and local standards.

#### Troubleshooting in general

In the event of operating disturbances, the following basic features should be checked before carrying out actual troubleshooting:

- the flat station is connected to electricity,
- the strainer on the HS supply pipe is clean,
- the supply temperature of the HS is at the normal level,
- the differential pressure is equal to or higher than the normal (local) differential pressure in the HS network — if in doubt, ask the HS plant supervisor.

#### Declaration

#### EC-DECLARATION OF CONFORMITY

**Danfoss A/S**  
**DK-6430 Nordborg**  
**Denmark**

declares on our sole responsibility that the product(s)

**EvoFlat**

Covered by this declaration is in conformity with the following directive(s), standard(s) or other normative document(s), provided that the product is used in accordance with our instructions.

##### EMC – Directive – 2004/108/EC

EN 61000-6-1 2007. Electromagnetic compatibility — General standard: Immunity for residential, commercial and light industry.  
EN 61000-6-3 2007. Electromagnetic compatibility — Generic standard: Emission for residential, commercial & light industry.

##### Machinery Directive 2006/42/EC

EN 14121-1. Safety of machinery — Risk assessment.  
EN 60204-1. Safety of machinery — Electrical equipment of machines — Part 1: General requirements.

##### Pressure Equipment Directive – 97/23/EC

Equipment category: 0 (article 3.3).



