

# Flat Stations

## EvoFlat 4.0 W

Domestic hot water

## Description

Danfoss EvoFlat 4.0 station is particularly suitable for multi family buildings with central heat generation or district heating. The innovative unit sets new standard. It consists of functional blocks made of a specially reinforced PPS composite material. This makes the station extremely lightweight and limits internal heat emission. The smooth surface reduces the risks of scaling and clogging.

All components are assembled with newly designed click-fit connections. Compared to conventional substations with pipes and screw connections, this new connection technology does not require retightening during installation and commissioning.

### Primary side (DH)

The flat station is equipped with two differential pressure controller and a central strainer. A summer bypass keeps the supply line warm during standstill. This ensures a fast response time for DHW during the summer. The bypass is thermostatically controlled.

### Domestic hot water (DHW)

Four sizes of heat exchanger are available to cover all requirements from 37 kW up to 70 kW. The Evoflat 4.0 M is equipped with an intelligent controller that regulates the supply side flow based on the domestic hot water temperature and the volume of water drawn. The station features an integrated differential pressure controller on the supply side of the domestic hot water heating system. This eliminates the need for hydraulic balancing of the station. If necessary, the station can be expanded with a hot water circulation set.

## Features & benefits

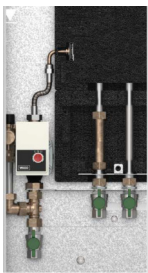
- Light weight
- Easy installation, maintenance and operation
- Durable composite material
- Minimum space required for installation
- Minimal heat loss thanks to EPP insulation cover
- Prepared for build-in heat meter
- Prepared for build-in water meter
- Compatible with various heat sources, such as district heating, heat pumps, biomass etc.

## Ordering

### Product code numbers

Flat station	Brazing (HEX) copper	Brazing (HEX) Stainless steel
EvoFlat 4.0 W (HEX size 1)	183B3000	183B3500
EvoFlat 4.0 W (Hex size 2)	183B3001	183B3501
EvoFlat 4.0 W (HEX size 3)	183B3002	183B3502
EvoFlat 4.0 W (HEX size 4)	183B3003	183B3503

### Accessories code numbers



#### Domestic hot water circulation

If required a set with pump and safety valve (10 bar) can be ordered for easy connection to the flat station. This increases the width of the recess box to at least 690 mm.

#### Domestic hot water circulation

Code number	
183B0500	Circulation set EvoFlat 4.0
183B0547	Circulation set EvoFlat 4.0 with insulation shell for circulation pump



#### White steel cover

If the station is to be installed on a wall and a large recess box is not desired, Danfoss offers a steel cover to conceal the station, allowing it to blend seamlessly with a white wall. The cover is simply pressed into place over the EPP.

Code number	Description
004U8578	White steel cover for station RAL 9016



### Recess box

Is made of galvanized sheet steel metal, with frame and door powder-coated on both sides in RAL 9016.

Appropriate mounting bolts are provided on the rear wall for quick and easy installation of the flat station and distribution unit.

The box is closed all around, open at the bottom, and features mounting feet that are height-adjustable by up to 120 mm.

A mounting rail with seven ball valves (supplied loose) is included.

The box can be mounted in a wall or on a wall.

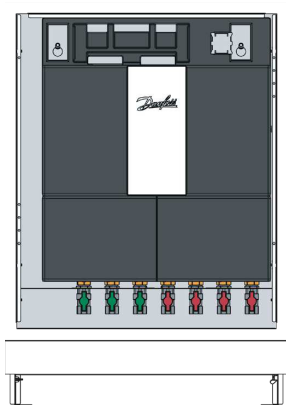
### Recess boxes

Code number		Wide	Height	Depth
183U6028	Recess box w/mounting rail and loose ball valves	610	910	150
145H4901	Door + frame for Recess box 183U6028			
183U6029	Recess box w/mounting rail and loose ball valves	690	910	150
145H4903	Door + frame for Recess box 183U6029			
183U6033*	Feet set for recess box			
183L5142*	Ball valve set 3/4" 7 connections			

\*Spare parts

### On wall panels for recess boxes

Code number		Wide	High	Depth
183U6012	On wall panels	610	910	150
183U6014	On wall panels	690	910	150



### On wall panels for recess boxes

The distribution units fits on the back plate of the recess boxes but can also be mounted on the wall.

Recess boxes for built-in variants are available in two sizes:

Standard station:

Recess box W 610 / H 910 / D 150 mm

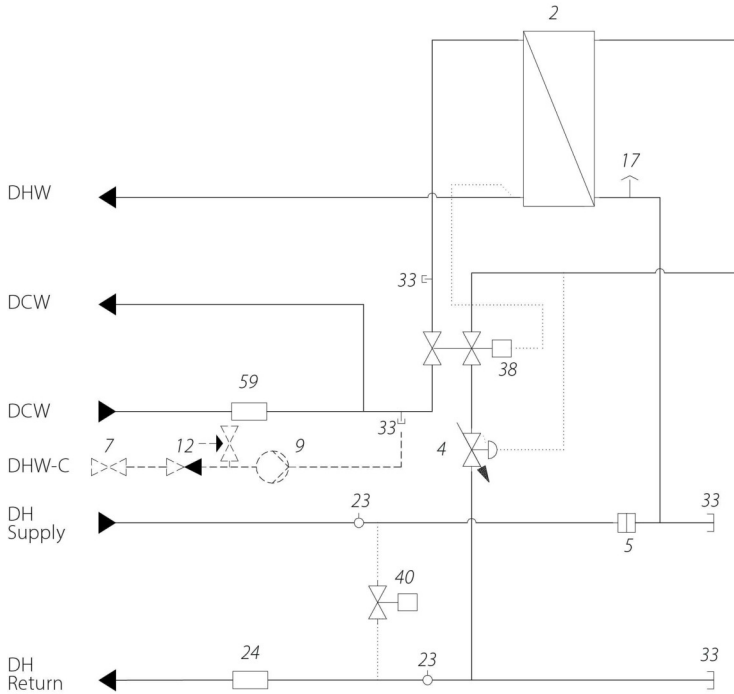
Station with DHW circulation:

Recess box W 690 / H 910 / D 150 mm

## Product details

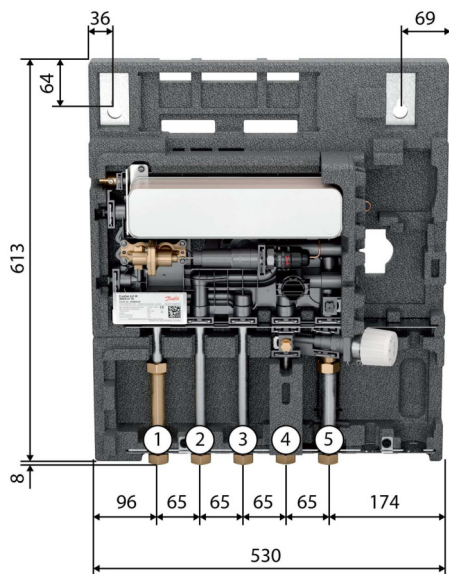
### General data

#### Circuit Diagram



2	DHW plate heat exchanger	23	Sensor pocket
4	Differential pressure controller	24	Fitting piece for energy meter 3/4" x 110 mm
5	Strainer	33	Connection for DHW circulation
7	Ball valve*	38	Hot water controller
9	DHW circulation pump*	40	Summer bypass
12	Safety valve*	59	Fitting piece for water meter 3/4" x 110 mm
17	Air vent		*Optional

#### Connections



1	Domestic cold water (DCW) inlet
2	Domestic hot water (DHW) supply
3	Domestic cold water (DCW) outlet
4	Heating source (DH) supply
5	Heating source (DH) return

## Technical data:

Domestic hot water controller	Flow compensated temperature controller
Nominal pressure	PN10
Max. supply temperature (DH)	95 °C
DCW static cold water	P <sub>min</sub> = 1.5 bar
Brazing (HEX)	Copper or stainless steel
Weight excl. cover	8.7 – 10.4 kg
Insulation	EPP λ 0.039
Electrical supply	230 V AC
Connection sizes	G ¾" internal thread
Pressure nominal primary	10 bar
Pressure nominal secondary	10 bar
Weight without accessories - Type 1 HEX	9.9 kg
Weight without accessories - Type 2 HEX	10.3 kg
Weight without accessories - Type 3 HEX	10.7 kg
Weight without accessories - Type 4 HEX	11.6 kg

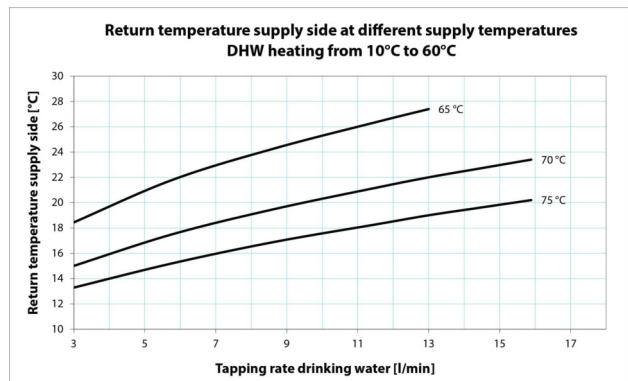
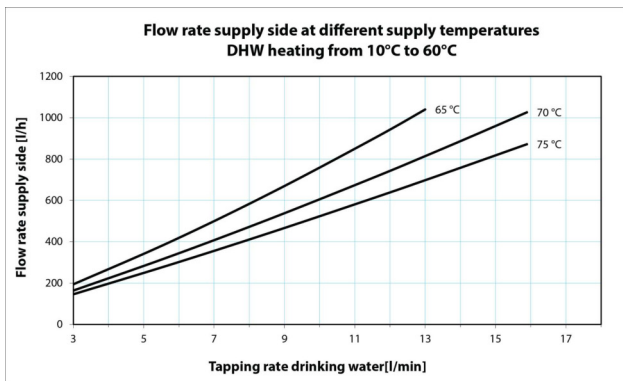
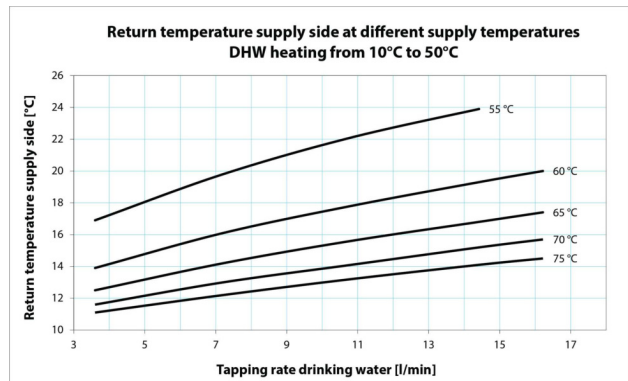
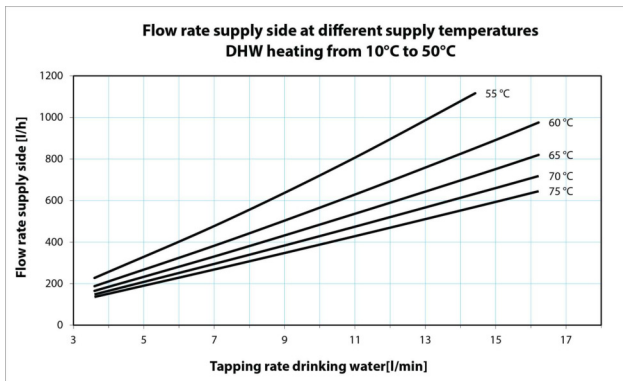
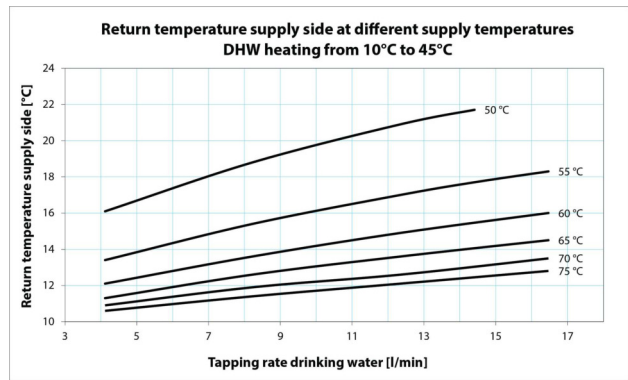
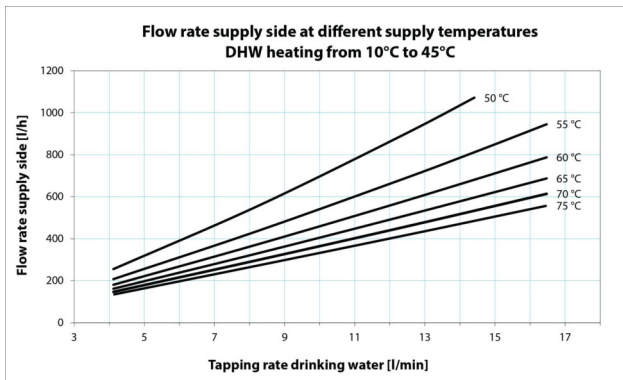
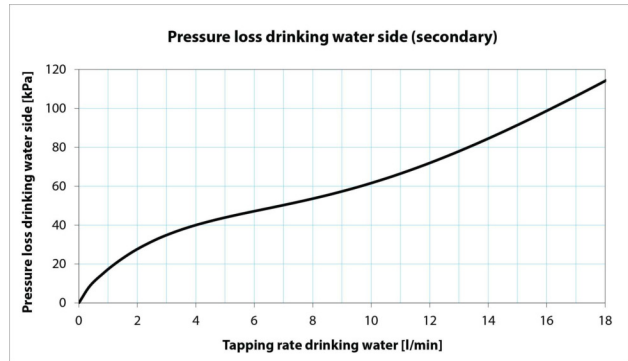
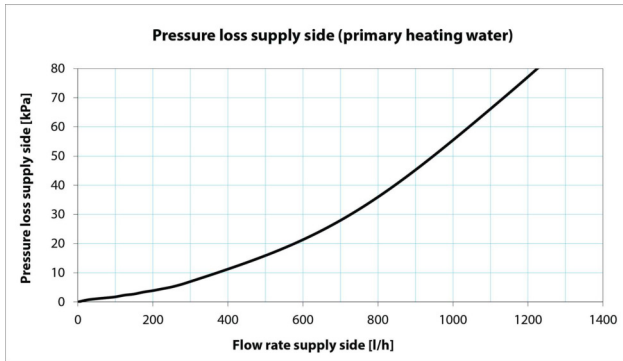
## Capacity

Unit type HEX	DHW capacity [kW]	Temperature DHS/DHR [°C]	Flow rate primary [l/h]	Pressure loss Primary* [kPa]	Tap load 50 °C [l/min]
Type 1	37	65/15	637	25	13.3
	45	65/17	820	31	16.2
Type 2	45	65/15	770	29	16.2
	50	65/17	896	33	18.0
Type 3	55	65/16	978	39	19.8
	40	53/24	1205	57	14.4
Type 4	60	65/16	1056	38	21.6
	70	65/14	1197	57	25.2
	45	53/23	1310	63	16.2

\*Energy meter not included

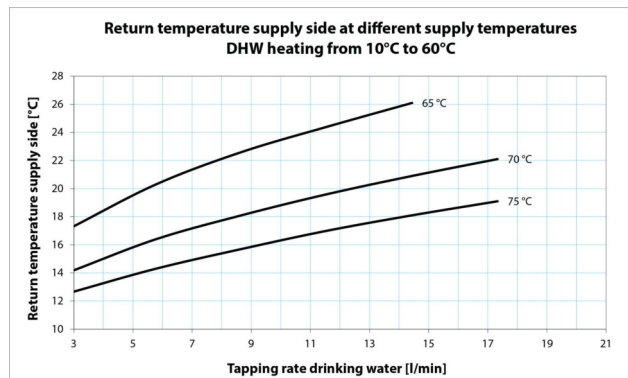
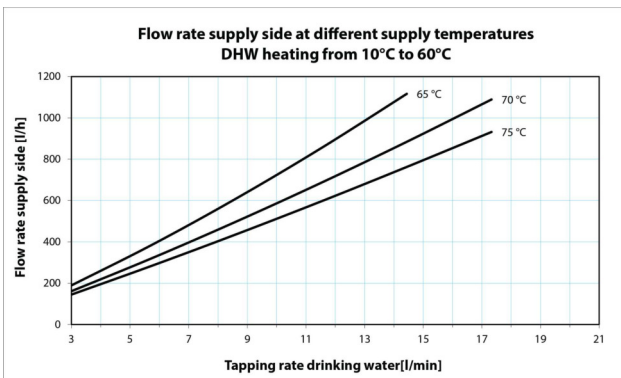
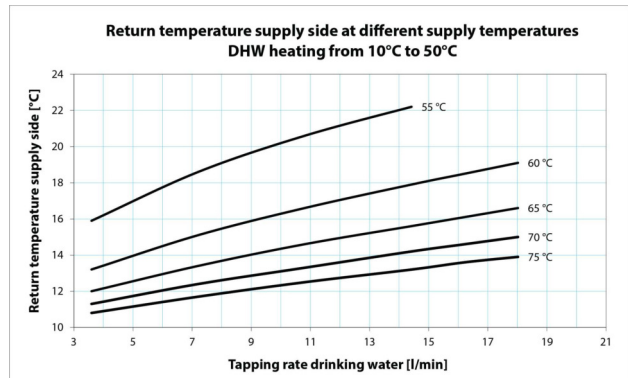
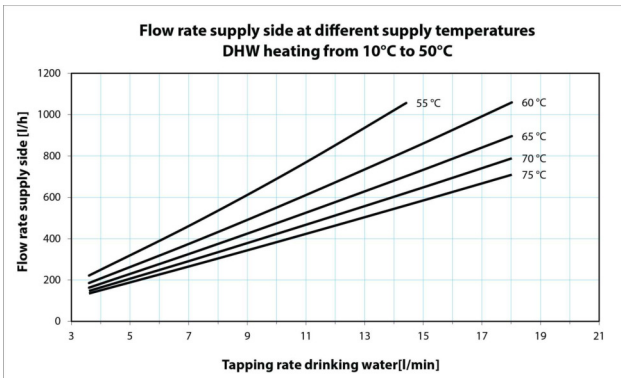
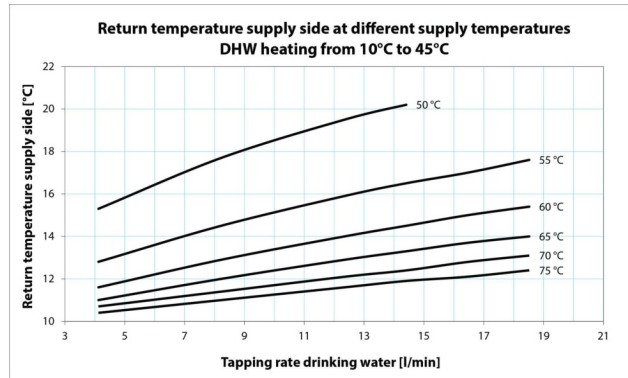
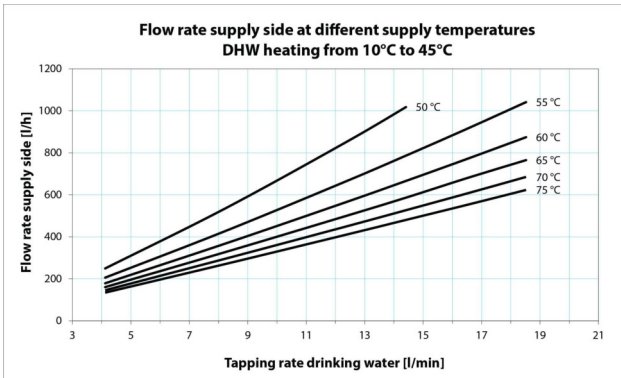
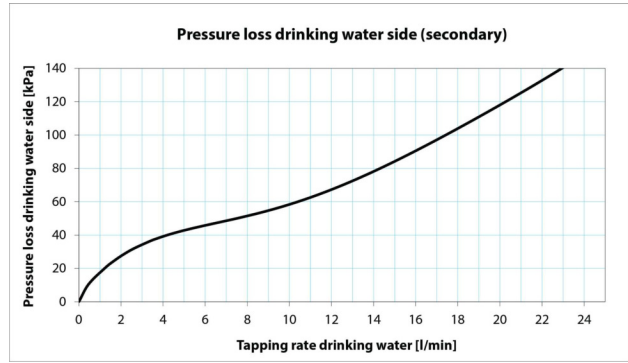
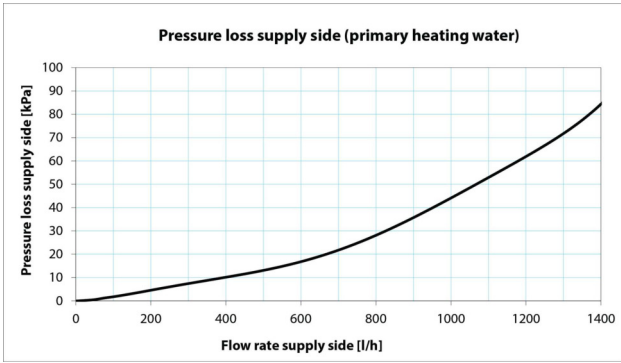
## Pressure and temperature data

### Flowrate type 1 HEX

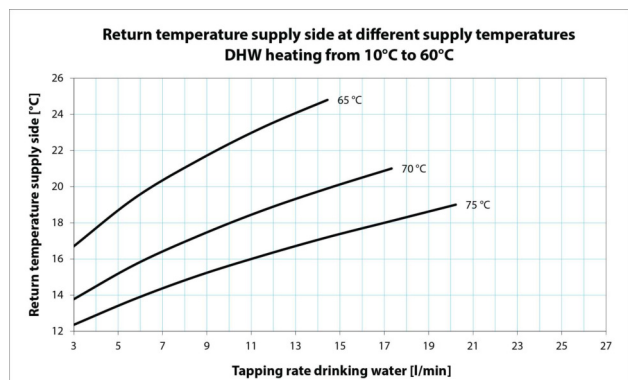
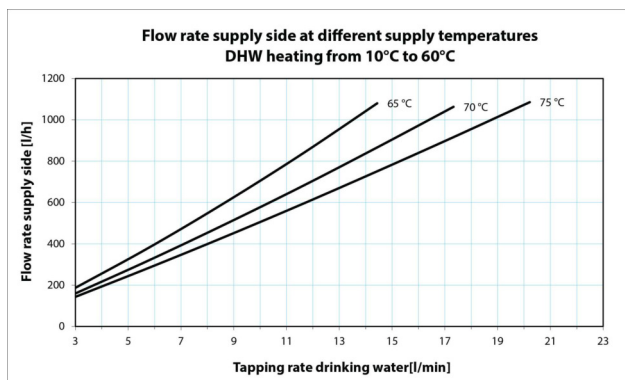
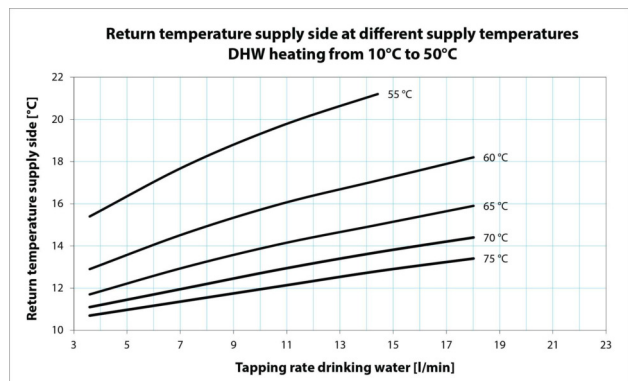
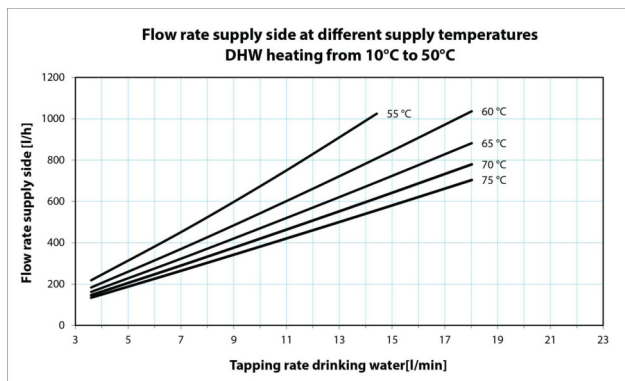
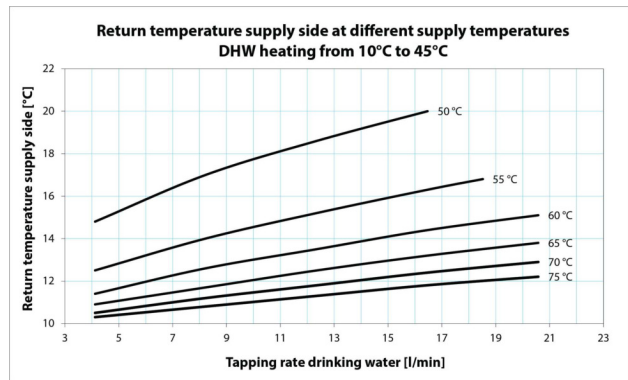
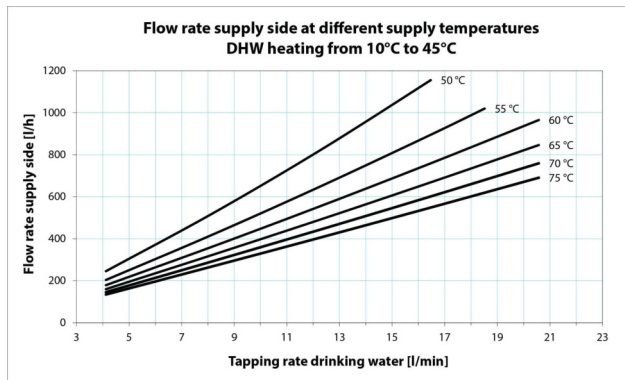
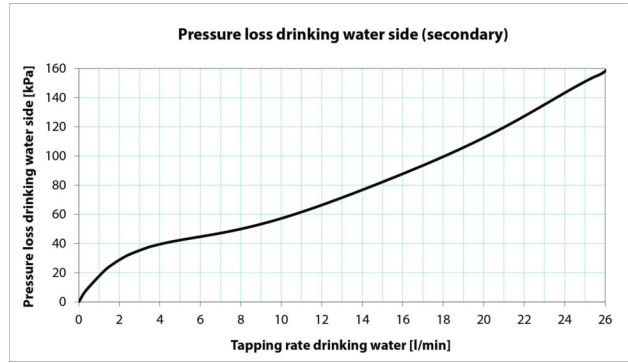
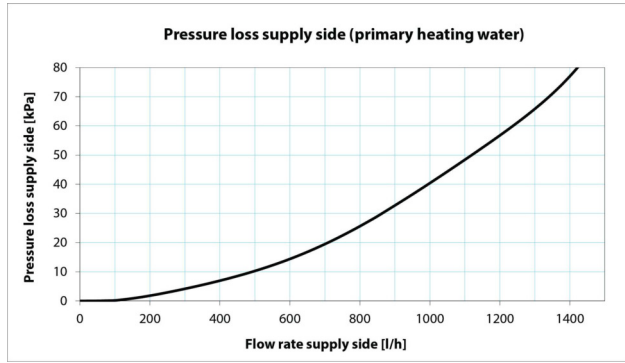




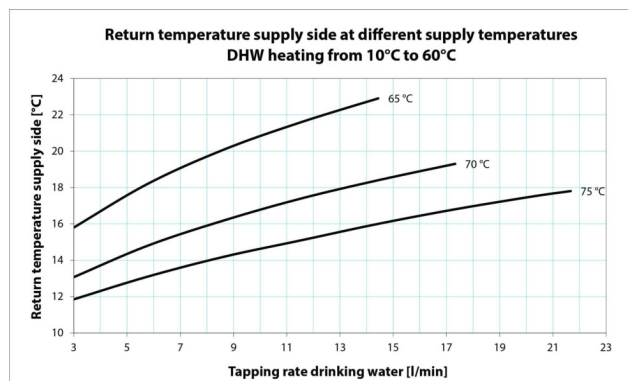
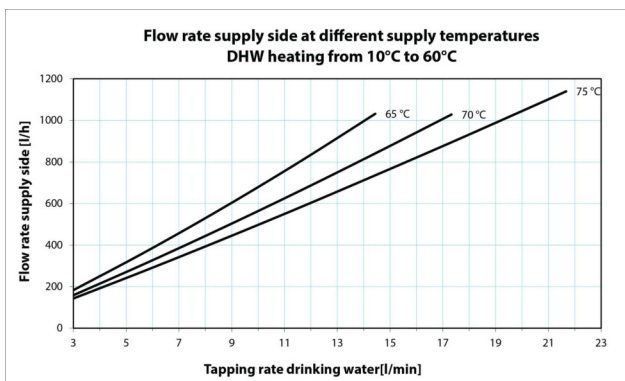
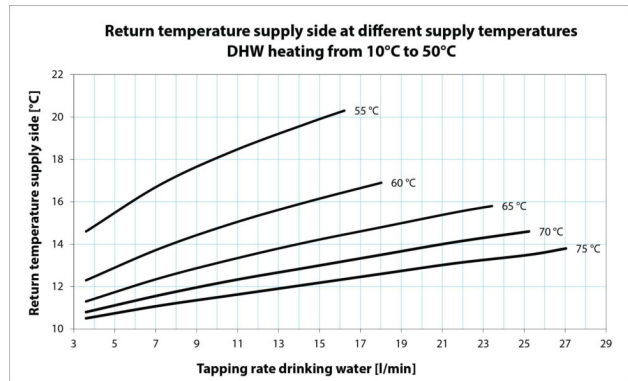
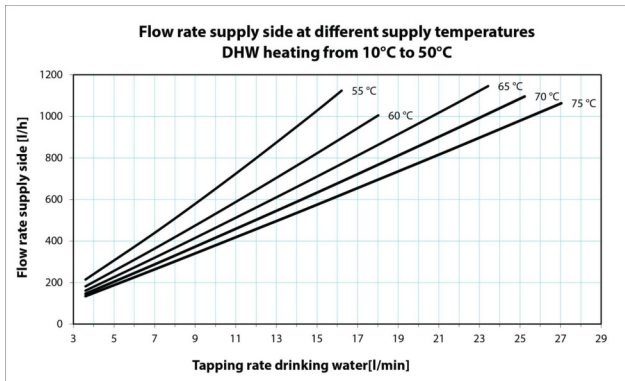
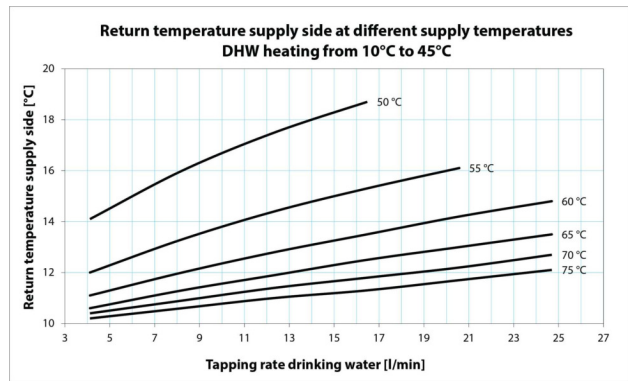
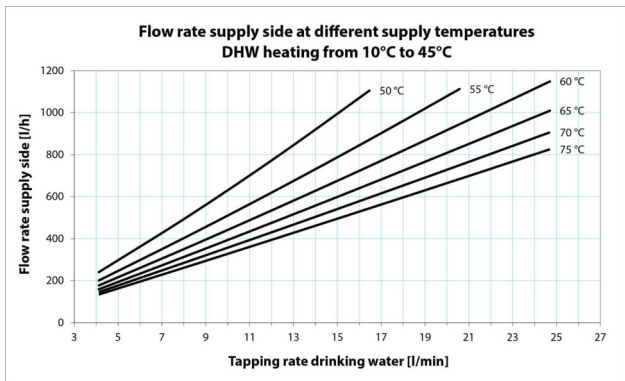
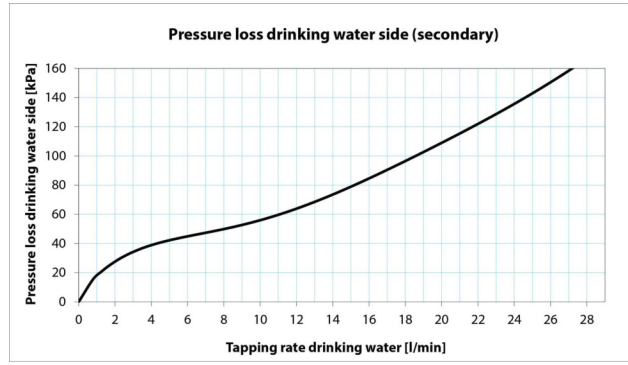
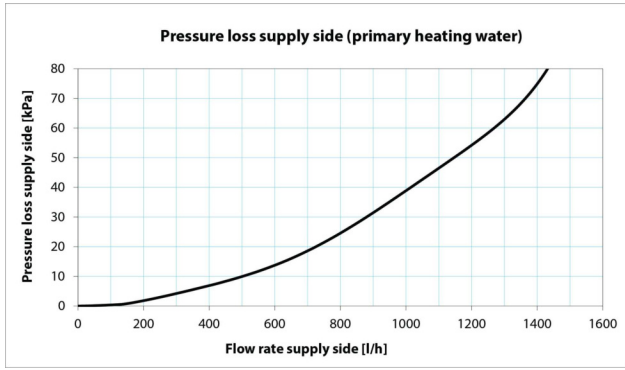
## Flowrate type 2 HEX



## Flowrate type 3 HEX



## Flowrate type 4 HEX



## Guidelines for water quality

Danfoss has prepared this guideline for the water quality of tap water and district heating water used in plate heat exchangers of stainless steel (EN 1.4404 ~ AISI 316L) brazed with pure Copper (Cu), CoResist (Cn) or Stainless Steel (StSt). It is important to point out that the water specification is not a guarantee against corrosion, but it must be considered as a tool to avoid the most critical water applications.

Parameter	Unit	Value or concentration	Plate	Brazing material		
			AISI 316L W. Nr. 1.4404	Cu	CoResist	StS
pH		< 6.0	o	-	-	o
		6.0 – 7.5	+	o/-	o	o
		7.5 – 10.5	+	+	+	+
		> 10.5	+	o	+	+
Conductivity	μS/cm	< 10	+	+	+	+
		10 – 500	+	+	o	+
		500 – 1000	o	+	+	+
		> 1000	o	-	o	o
Free Chlorine	mg/l	< 0.5	+	+	+	+
		0.5 – 1	o	+	+	+
		1 – 5	-	o	o	o
		> 5	-	-	+	+
Ammonia (NH <sub>3</sub> , NH <sub>4</sub> <sup>+</sup> )	mg/l	< 2	+	+	+	+
		2 – 20	+	+	+	+
		> 20	o	+	+	+
Alkalinity (HCO <sub>3</sub> <sup>-</sup> )	mg/l	< 60	o	+	+	+
		60 – 300	+	+	+	+
		> 300	o	+	o	+
Sulphate (SO <sub>4</sub> <sup>2-</sup> )	mg/l	< 100	+	+	+	+
		100 – 300	+	o/-	o	+
		> 300	-	-	-	-
HCO <sub>3</sub> <sup>-</sup> / SO <sub>4</sub> <sup>2-</sup>	mg/l	< 1.5	-	-	+	+
		> 1.5	+	o/-	o	+
Nitrate (NO <sub>3</sub> <sup>-</sup> )	mg/l	< 100	+	+	+	+
		> 100	o	+	+	+
Manganese (Mn)	mg/l	< 0.1	+	+	+	+
		> 0.1	+	+	o	+
Iron (Fe)	mg/l	< 0.2	+	+	+	+
		> 0.2	-	-	+	+
*Hardness ratio [Ca <sup>2+</sup> , Mg <sup>2+</sup> ]/[HCO <sub>3</sub> <sup>-</sup> ]		0 – 0.3	+	+	+	+
		0.3 – 0.5	+	o/-	+	+
		> 0.5	o	o	-	-

+	Good corrosion resistance
o	**Corrosion could happen when more parameters are evaluated with o
o/-	Risk of corrosion
-	Use is not recommended

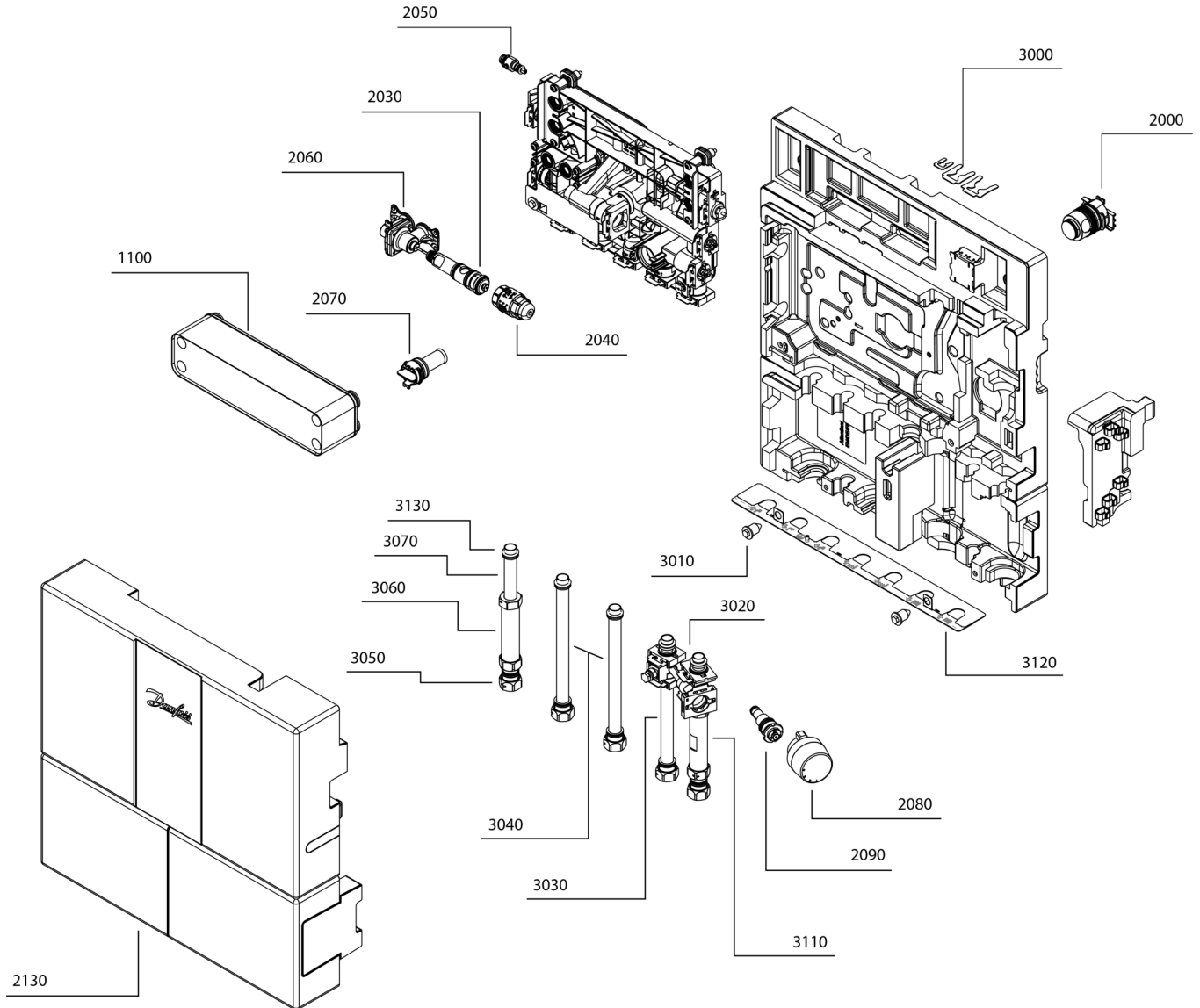
\* Hardness ration limits defined per experience and internal tests in Danfoss laboratory

\*\* In case of three or more parameters evaluated with o consultancy is needed with Consultant for Corrosion & Microbiology or BU HHE Representative

Recommended Chloride concentration to avoid Stress Corrosion Cracking (SCC) in the stainless-steel plates:

<b>Application temperature</b>	<b>Chloride concentration</b>
at $T \leq 20$ °C	max 1000 mg/l
at $T \leq 50$ °C	max 400 mg/l
at $T \leq 80$ °C	max 200 mg/l
at $T \geq 100$ °C	max 100 mg/l

### Spare part code numbers:



Pos.	Code number	Description
1100	183B0503	Service kit type 1 heat exchanger in copper
1100	183B0504	Service kit type 2 heat exchanger in copper
1100	183B0505	Service kit type 3 heat exchanger in copper
1100	183B0506	Service kit type 4 heat exchanger in copper
1100	183B0507	Service kit type 1 heat exchanger in stainless steel
1100	183B0508	Service kit type 2 heat exchanger in stainless steel
1100	183B0509	Service kit type 3 heat exchanger in stainless steel
1100	183B0510	Service kit type 4 heat exchanger in stainless steel
2000	183B0563	Dp regulator DHW EvoFlat 4.0 SAC
2030	183B0511	DHW control valve set EvoFlat 4.0 SAC
2040	183B0512	DHW control thermostat set EvoFlat 4.0 SAC
2050	183B0513	Air vent set Danfoss EvoFlat 4.0
2060	183B0514	Flow activator with screws and gaskets
2070	183B0515	Strainer set EvoFlat 4.0
2080		FJVR thermostat
2090	183B0517	Bypass valve thermostatic EvoFlat 4.0 SAC
2130	183B0521	EPP cover set Danfoss EvoFlat 4.0
3000	183B0552	Bracket kit for EvoFlat 4.0
3010	183B0553	Plast screw 15x25
3020	183B0554	Block for bypass EvoFlat 4.0
3030	183B0555	Pipe Ø18 – 171 mm
3040	183B0556	Pipe Ø18 – 223 mm
3050	183B0557	Bushing w/nuts ¾" x ¾" x 32 mm
3060	183B0558	Fitting piece ¾" x 110 mm - DHW
3070	183B0559	Pipe Ø18 - 77 mm
3110	183B0565	Fitting piece ¾" x 110 mm - HE
3120	183B0566	Mounting rail with symbols for EvoFlat 4.0
3130	183B0560	Clips, O-rings & washers for EvoFlat 4.0
	183B0533	Flushing Tool EvoFlat 4.0 HEX

## Certificates, declarations and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

Approval type	Title	Certification body	Approval topic
Hygienic Certificate	<a href="#">CARSO 25 ACC LY 385</a>	CARSO - Laboratoire Santé Environnement Hygiène de Lyon	Drinking Water
Manufacturer's Declaration	<a href="#">Danfoss MD DHEUMD101.B</a>	Danfoss	PED, Pressure
Export Control Declaration	<a href="#">Export Control Declaration - Small stations</a>	Danfoss	
Hygienic Certificate	<a href="#">Eurofins Certificate No 014-01</a>	eurofin - eurofin Product Service GmbH	Drinking Water

## Tender text

### Copper HEX

#### Design

Danfoss EvoFlat™ flat station for direct heating and hygienic safe hot water provision with a control valve without auxiliary energy in the continuous flow system. Mounted on a heat-insulated base plate including EPP heat insulation hood, for flush or surface mounting.

#### Domestic hot water (DHW)

Tap water is heated by means of heat exchangers based on the continuous flow principle. The tap water temperature is regulated by the self-acting controller. These controllers ensure outstanding ease of use. The flow-controlled part allows primary and secondary flow through the heat exchanger only during hot water tapping. The flow is blocked immediately after completion of hot water tapping.

The thermostat part in turn regulates the hot water temperature.

Thanks to the fast-acting control valve, limescale deposits and bacteria growth are largely avoided.

The controller in combination with the differential pressure controller ensures a constant DHW temperature even with varying flow temperatures and differential pressures.

The primary line is kept warm by a thermostatically controlled bypass valve (summer bypass).

The flat station is equipped with a connection for domestic hot water circulation. The circulation kit is available as an option.

#### Supply-side equipment

Temperature and pressure regulators, two differential pressure regulators, zone valve, strainer and ventilation

Mark: Danfoss

Fitting piece for heat meter G $\frac{3}{4}$ "x110mm in return flow, sensor holder as direct immersion sensor M10x1 mm

#### Heat exchanger

Seal less stainless steel plate heat exchanger, copper brazed under vacuum to form a compact unit. New Micro Plate™ heat exchanger technology with unique plate structure for more effective heat transfer, lower pressure losses and longer service life. Corrosion resistant design.

Calculation and materials according to AD data sheets. Manufactured in accordance with DIN ISO 9001, CE tested in accordance with Pressure Equipment Directive 97/23/EC (PED).

Mark: Danfoss Type: XB05H

#### Tap-water-side equipment

Fitting piece for cold water meter G $\frac{3}{4}$ "x110mm (CW inlet)

## Technical data

Heating	
max. capacity [kW]:	17.5
at max. volume flow [m <sup>3</sup> /h]:	0.5 (supply side) / 1.29 (consumer side)

Tap water heating	
max. capacity [kW]:	45 @ VL65°C (Type 1 HEX)
at max. tapping capacity [l/min]:	13.2
max. capacity [kW]:	53 @ VL65°C (Type 2 HEX)
at max. tapping capacity [l/min]:	15.4
max. capacity [kW]:	60 @ VL65°C (Type 3 HEX)
at max. tapping capacity [l/min]:	17.4
max. capacity [kW]:	80 @ VL65°C (Type 4 HEX)
at max. tapping capacity [l/min]:	28.3
Pressure level (tap water side):	PN10
Pressure level (supply side):	PN10
DH network, max. differential pressure [bar]:	4
CW network, min. static pressure [bar]:	1.5
DH network, max. flow temperature [°C]:	95
Nominal connection size:	G <sup>3</sup> / <sub>4</sub> " (union, 7x)
Electrical connection:	230 V AC
Dimensions H/W/D [mm]:	613/530/150
Weight [kg]:	7.7 (Type 1 HEX)
	8.1 (Type 2 HEX)
	8.8 (Type 3 HEX)
	9.3 (Type 4 HEX)

## Stainless steel HEX

### Design

Danfoss EvoFlat™ flat station for direct heating and hygienic safe hot water provision with a control valve without auxiliary energy in the continuous flow system. Mounted on a heat-insulated base plate including EPP heat insulation hood, for flush or surface mounting.

#### Domestic hot water (DHW)

Tap water is heated by means of heat exchangers based on the continuous flow principle. The tap water temperature is regulated by the self-acting controller. These controllers ensure outstanding ease of use. The flow-controlled part allows primary and secondary flow through the heat exchanger only during hot water tapping. The flow is blocked immediately after completion of hot water tapping.

The thermostat part in turn regulates the hot water temperature.

Thanks to the fast-acting control valve, limescale deposits and bacteria growth are largely avoided.

The controller in combination with the differential pressure controller ensures a constant DHW temperature even with varying flow temperatures and differential pressures.

The primary line is kept warm by a thermostatically controlled bypass valve (summer bypass).

The flat station is equipped with a connection for domestic hot water circulation. The circulation kit is available as an option.

#### Supply-side equipment

Temperature and pressure regulators, two differential pressure regulators, zone valve, strainer and ventilation

Mark: Danfoss

Fitting piece for heat meter G $\frac{3}{4}$ "x110 mm in return flow, sensor holder as direct immersion sensor M10x1 mm

#### Heat exchanger

Sealless stainless steel plate heat exchanger, brazed with stainless steel braze under vacuum to form a compact unit. New Micro Plate™ heat exchanger technology with unique plate structure for more effective heat transfer, lower pressure losses and longer service life. Corrosion resistant design.

Calculation and materials according to AD data sheets. Manufactured in accordance with DIN ISO 9001, CE tested in accordance with Pressure Equipment Directive 97/23/EC (PED).

Mark: Danfoss Type: XB05H

#### Tap-water-side equipment

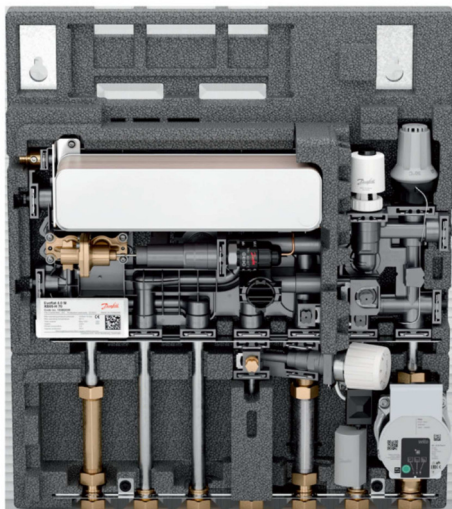
Fitting piece for cold water meter G $\frac{3}{4}$ "x110 mm (CW inlet)

## Technical data

Heating	
max. capacity [kW]:	17.5
at max. volume flow [m <sup>3</sup> /h]:	0.5 (supply side) / 1.29 (consumer side)

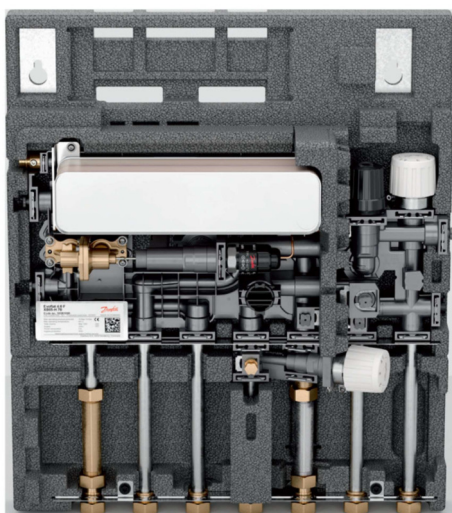
Tap water heating	
max. capacity [kW]:	45 @ VL65 °C (Type 1 HEX)
at max. tapping capacity [l/min]:	13.2
max. capacity [kW]:	53 @ VL65 °C (Type 2 HEX)
at max. tapping capacity [l/min]:	15.4
max. capacity [kW]:	60 @ VL65 °C (Type 3 HEX)
at max. tapping capacity [l/min]:	17.4
max. capacity [kW]:	80 @ VL65 °C (Type 4 HEX)
at max. tapping capacity [l/min]:	28.3
Pressure level (tap water side):	PN10
Pressure level (supply side):	PN10
DH network, max. differential pressure [bar]:	4
CW network, min. static pressure [bar]:	1.5
DH network, max. flow temperature [°C]:	95
Nominal connection size:	G <sup>3</sup> / <sub>4</sub> " (union, 7x)
Electrical connection:	230 V AC
Dimensions H/W/D [mm]:	613/530/150
Weight [kg]:	7.7 (Type 1 HEX)
	8.1 (Type 2 HEX)
	8.8 (Type 3 HEX)
	9.3 (Type 4 HEX)

## Other stations in this portfolio



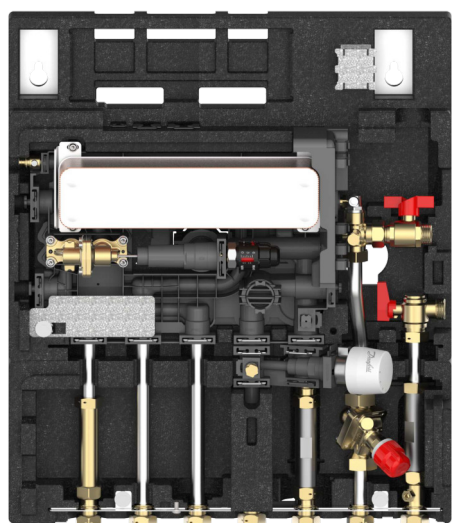
### **EvoFlat 4.0 M**

Flat station for domestic hot water and floor heating.



### **EvoFlat 4.0 F**

Flat station for domestic hot water and radiator heating.



### **EvoFlat 4.0 Four pipe**

Flat station for domestic hot water and floor heating. Especially made for heat pumps.

## Contact details

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