ENGINEERING
TOMORROW

Data Sheet

EvoFlat 4.0 W-FR

Domestic hot water

Description

Product

The EvoFlat 4.0 W Flat station is easy to install, maintain and use. It is particularly suitable for multi family buildings, with central or district heating.

The innovative unit sets a new standard. Its “body” is made from reinforced PPS composite. This makes the station lightweight and limits internal heat emission. The smooth surface reduces the risks of scaling and clogging.

All components are mounted with click-fit connections. Compared to conventionel stations with lots of pipes and screw connections, this technology does not require retightening during installation.

Domestic hot water (DHW)

Four sizes of heat exchanger are available to cover every requirement from 37 kW up to 80 kW. A special built-in flow actuator allows primary and secondary side flow through the heat exchanger, only when hot water is tapped. It blocks the flow immediately after ending the tapping.

The EvoFlat 4.0 is characterized by an intelligent controller taking both flow volume and temperature into account. This self-acting thermostatic flow controller ensures accurate and stable water temperatures and optimized hydronic balance among all stations connected to the same heating source.

If necessary, it is possible to equip the station with an optional domestic hot water cirlulation set.

Features & benefits

- Low weight
- Easy to install, maintain and use
- Durable composit material
- Minimum space required for installation
- High insulation EPP cover
- Prepared for build-in heat meter
- Prepared for build-in water meter
- Compatable with several heat sources, such as district heating or heat pumps

Ordering

Product code numbers standard stations

Flat station	Brazing (HEX) copper	Brazing (HEX) Stainless steel
EvoFlat 4.0 W (HEX size 1)	183B3012	
EvoFlat 4.0 W (Hex size 2)	183B3013	
EvoFlat 4.0 W (HEX size 3)	183B3014	
EvoFlat 4.0 W (HEX size 4)	183B3014	

Domestic hot water circulation
If needed a set with pump and valve can be ordered for easy connection to the flat station.

Domestic hot water circulation

Code number	
183B0500	Circulation set EvoFlat SAC
183B0547	Circulation set EvoFlat SAC insulated

Accessories

Recess box
Is made of galvanized steel with frame and door powder-coated on both sides in RAL9016. Brackets for mounting the flat station and distribution unit are prepared to make installation easy and fast.
The box is closed on all sides, open at the bottom with mounting feet, that can be adjusted in height by a maximum of 120 mm. A mounting rail including seven ball valves are included separately .
Can be installed in wall or on wall.

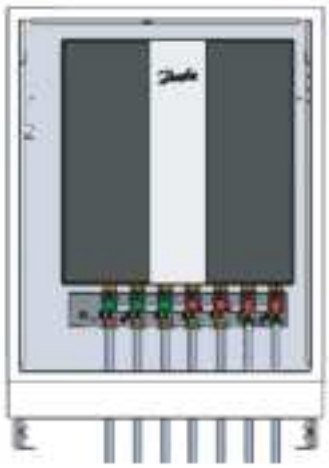
Reces boxes

Code number		Wide	Height	Depth
183U6028	Recess box w/mounting rail	610	910	150
183U6029	Recess box w/mounting rail	690	910	150
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



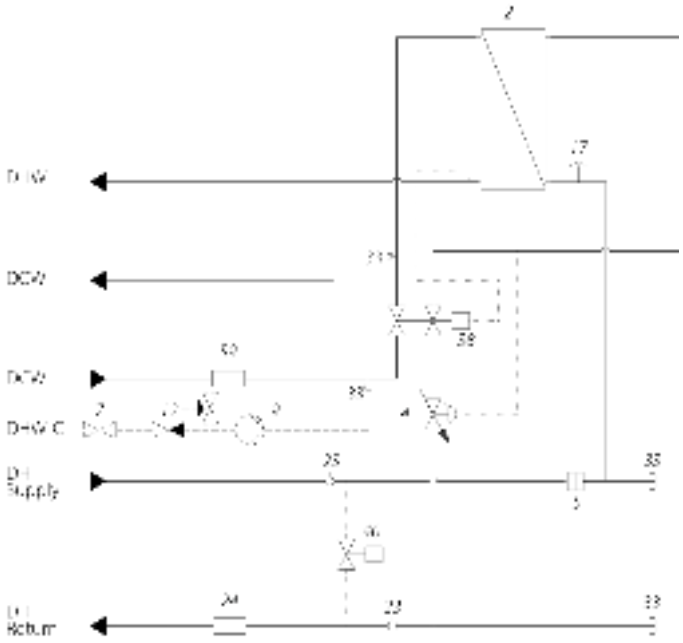
The distribution units fits on the back plate of the recess boxes but can also be mounted on the wall.

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

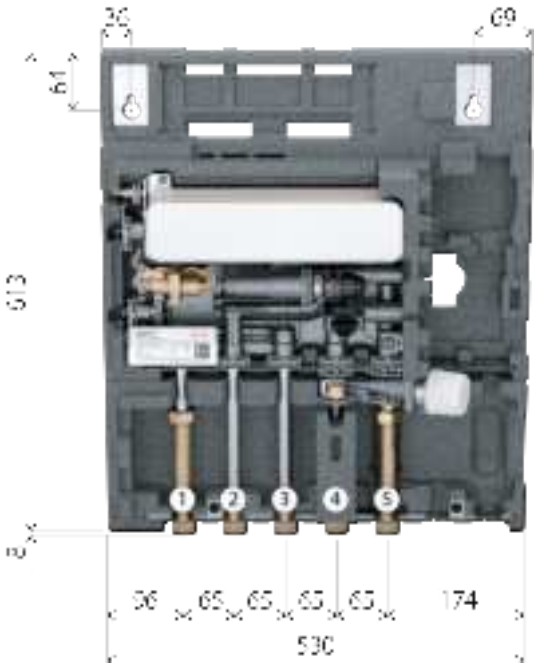
Standard station:
Recess box W 610 / H 910 / D 150 mm

Station with DHW circulation
Recess box W 690 / H 910 / D 150 mm

Circuit diagram



2 DHW plate heat exchanger
4 Differential pressure controller
5 Strainer
7 Ball valve*
9 DHW circulation pump*
12 Safety valve*
17 Air vent
23 Sensor pocket
24 Fitting piece for energy meter 3/4" x 110 mm
33 Connection for DHW circulation
38 Hot water controller
40 Summer bypass
59 Fitting piece for water meter 3/4" x 110 mm
*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	TPC-M
Nominal pressure	PN10
Max. supply temperature (DH)	95 °C
DCW static cold water	P_{min} = 1.5 bar
Brazing (HEX)	Copper or stainless steel
Weight excl. cover	8.7 - 10.4 kg
Insulation	EPP λ 0.039
Electrical supply	230V AC
Connection sizes	G 3/4" 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

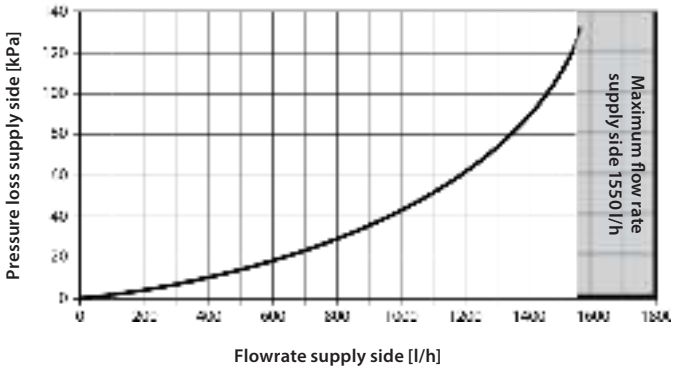
DHW capacity examples

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
	43	65/16	750	32	15.4
Type 2	45	65/15	770	29	16.2
	49	65/15	844	35	17.6
Type 3	55	65/15	943	40	19.8
	38	55/19	901	37	13.7
Type 4	60	65/14	1014	41	21.6
	70	65/14	1197	57	25.2
	49	55/19	1158	52	17.6

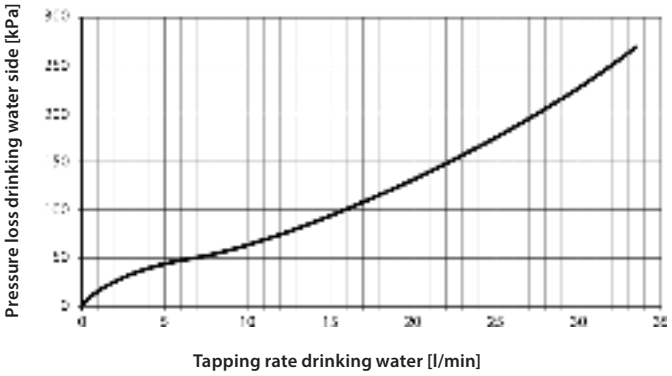
*Energy meter not included

Flowrate type 1 HEX

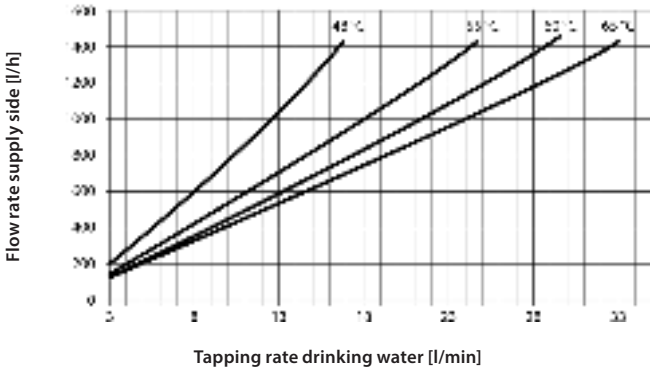
Pressure loss supply side (primary heating water)



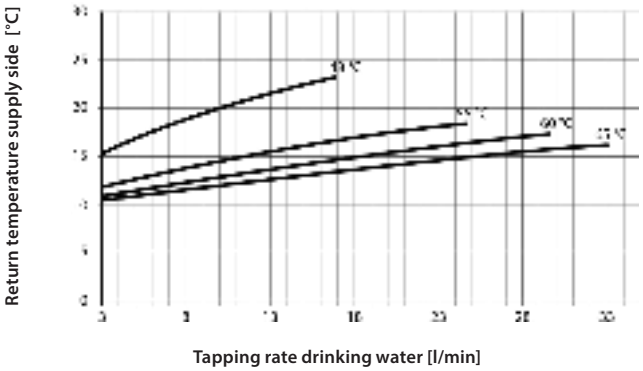
Pressure loss drinking waer side (secondary)



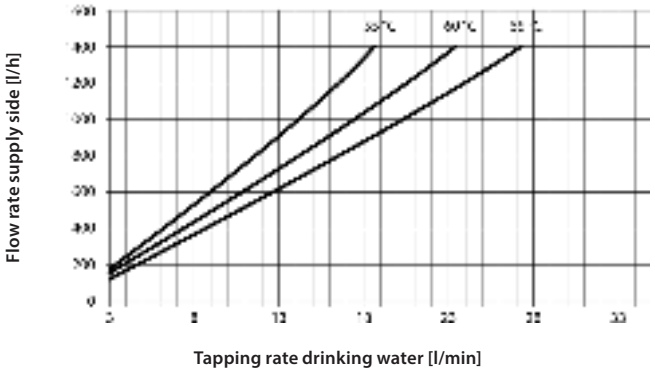
Flow rate supply side at different supply temperatures
DHW heating from 10 to 45 °C



Return temperature supply side at different supply temperatures
DHW heating from 10 to 45 °C



Flow rate supply side at different supply temperatures
DHW heating from 10 to 55 °C



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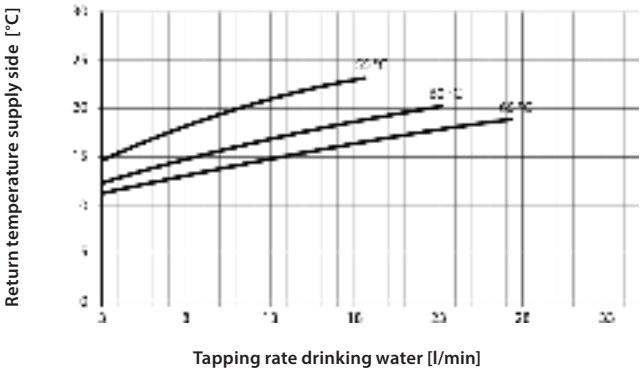
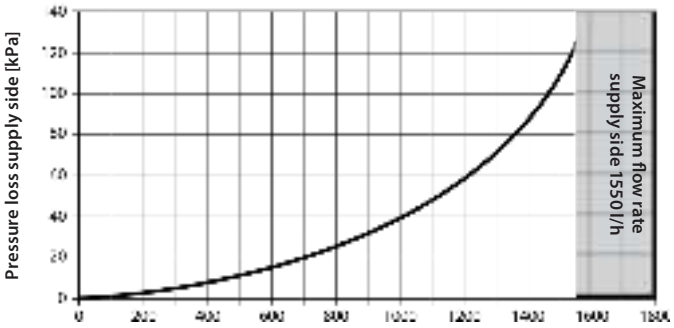
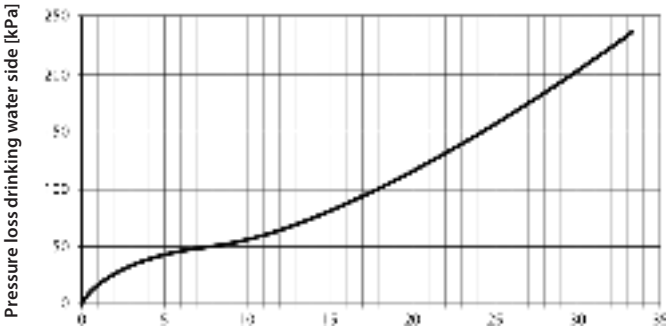


Flowrate type 2 HEX

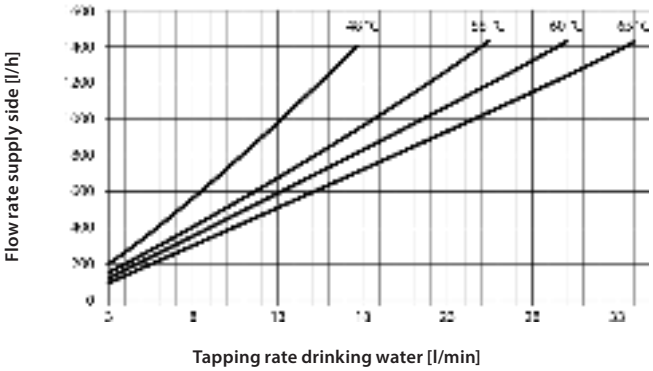
Pressure loss supply side (primary heating water)



Pressure loss drinking waer side (secondary)



Flow rate supply side at different supply temperatures
DHW heating from 10 to 45 °C



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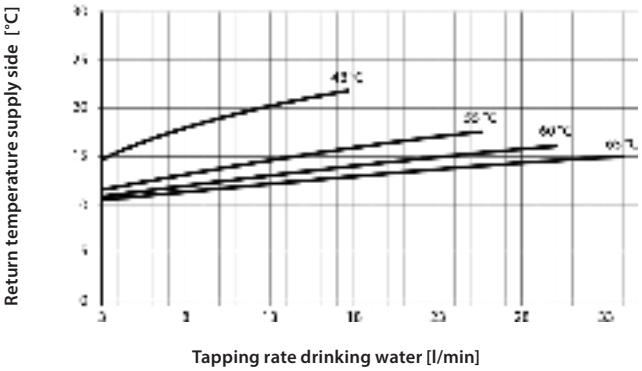
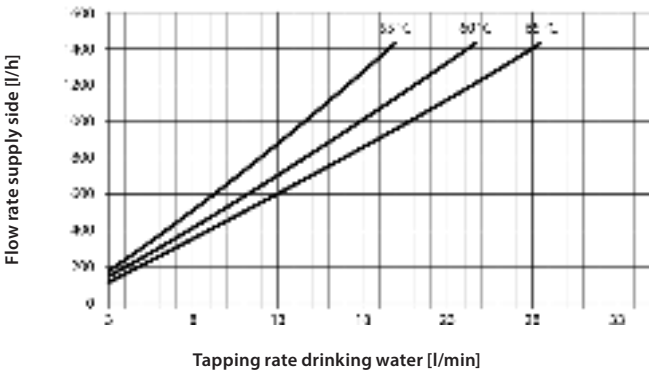
DHW heating from 10 to 45 °C



Flow rate supply side at different supply temperatures
DHW heating from 10 to 55 °C



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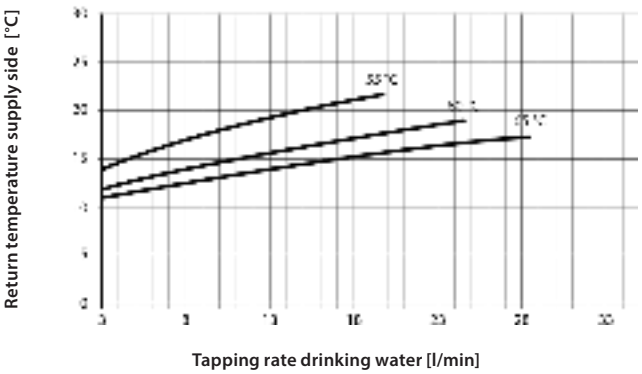
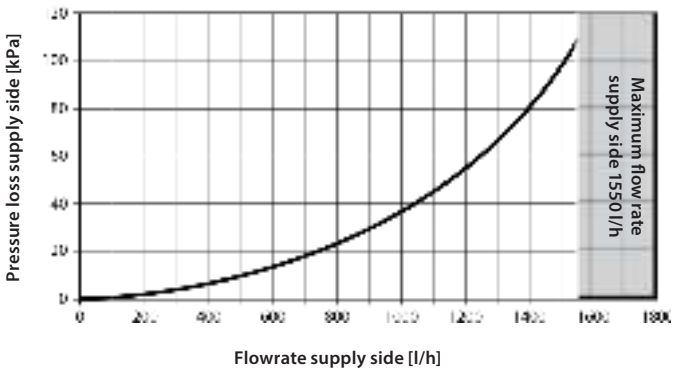
DHW heating from 10 to 55 °C

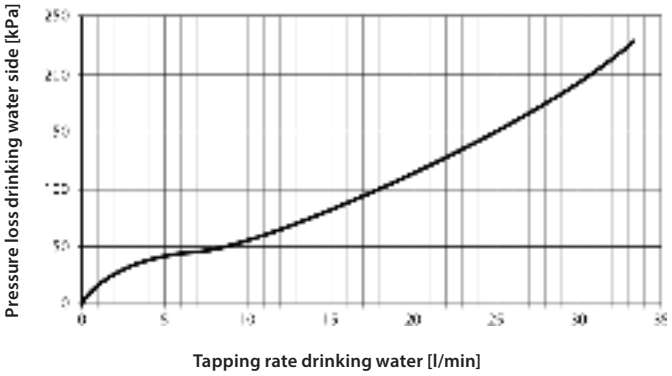


Flowrate type 3 HEX

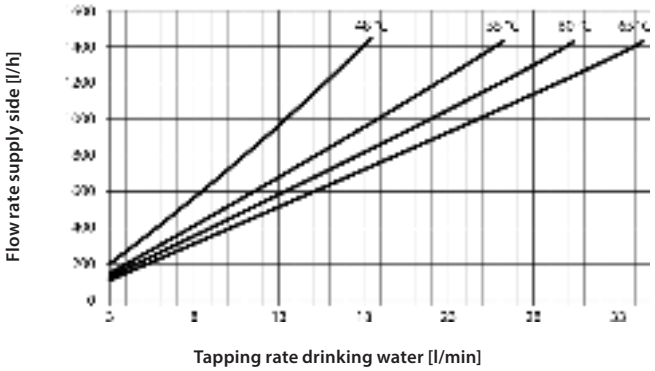
Pressure loss supply side (primary heating water)



Pressure loss drinking waer side (secondary)



Flow rate supply side at different supply temperatures
DHW heating from 10 to 45 °C



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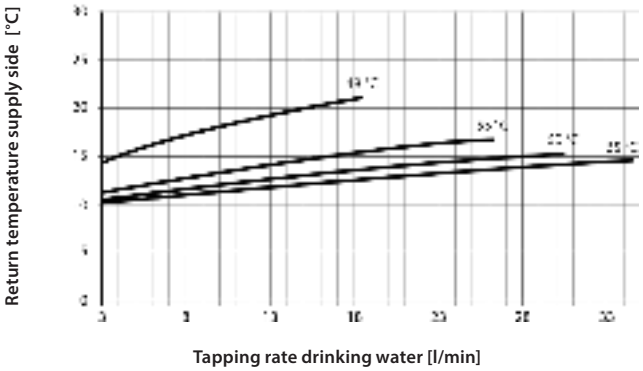
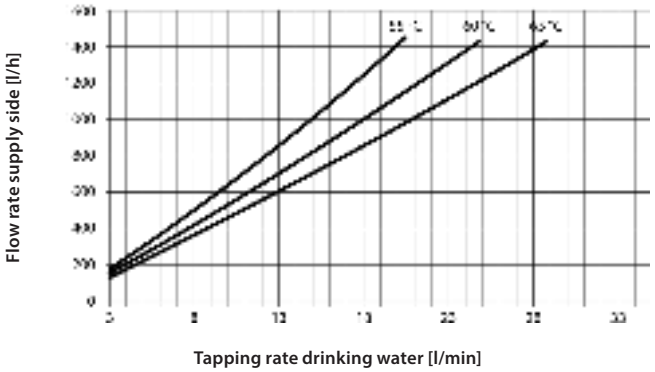
DHW heating from 10 to 45 °C



Flow rate supply side at different supply temperatures
DHW heating from 10 to 55 °C



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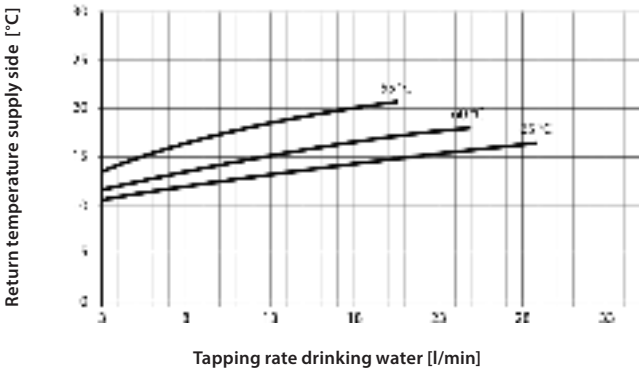
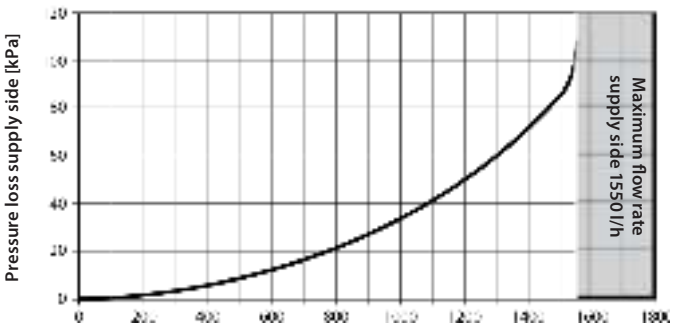
DHW heating from 10 to 55 °C

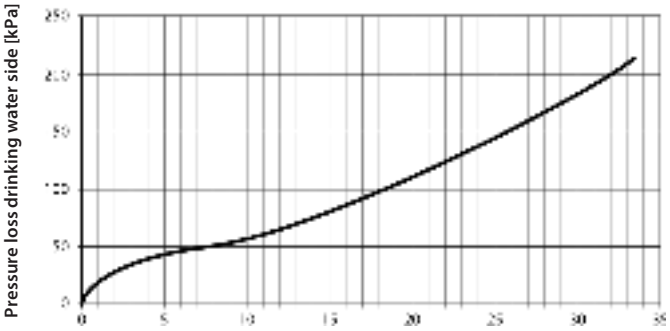


Flowrate type 4 HEX

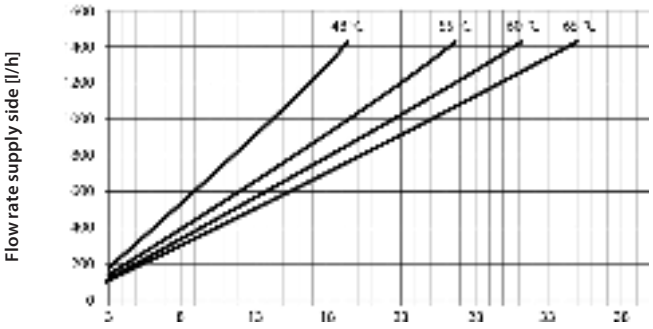
Pressure loss supply side (primary heating water)



Pressure loss drinking waer side (secondary)



Flow rate supply side at different supply temperatures
DHW heating from 10 to 45 °C



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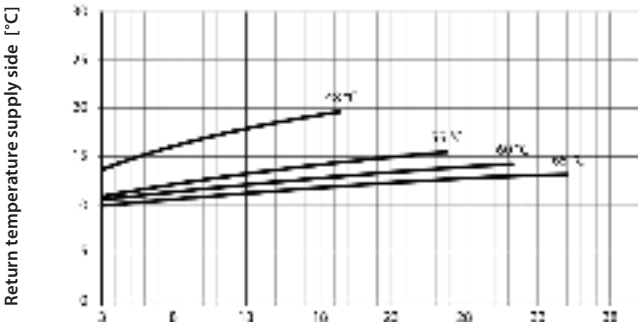
DHW heating from 10 to 45 °C



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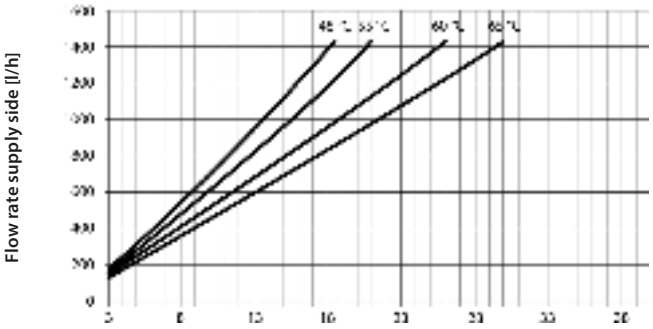
DHW heating from 10 to 55 °C



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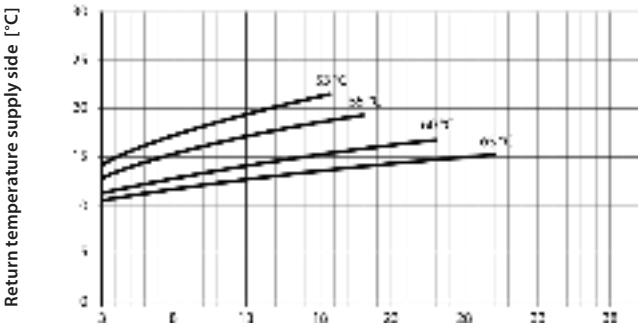
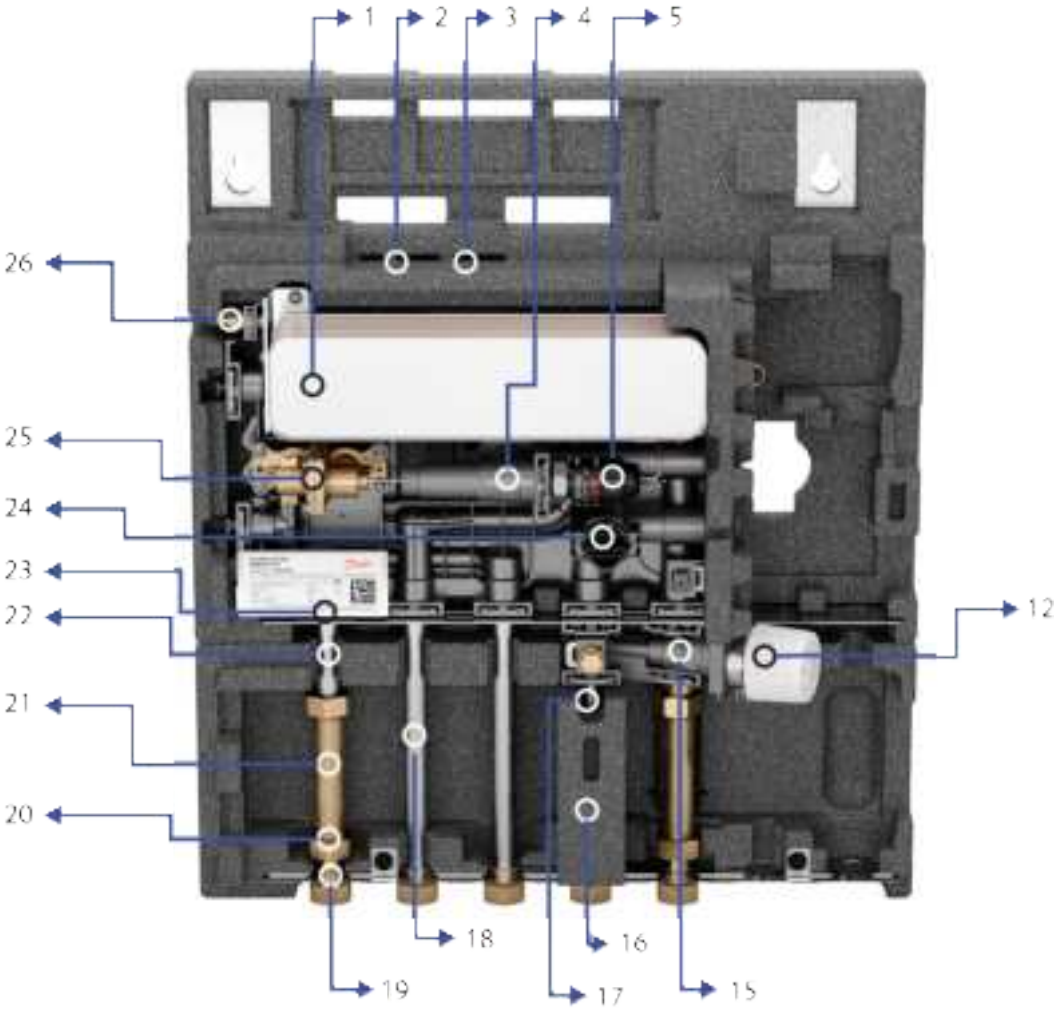
DHW heating from 10 to 55 °C



Spare parts



Spare parts

Pos.	Code number	Describpion
1	183B0503	Service kit type 1 heat exchanger in copper
1	183B0504	Service kit type 2 heat exchanger in copper
1	183B0505	Service kit type 3 heat exchanger in copper
1	183B0506	Service kit type 4 heat exchanger in copper
1	183B0507	Service kit type 1 heat exchanger in stainless steel
1	183B0508	Service kit type 2 heat exchanger in stainless steel
1	183B0509	Service kit type 3 heat exchanger in stainless steel
1	183B0510	Service kit type 4 heat exchanger in stainless steel
2	183U2104	Bracket kit for EvoFlat 4.0
3	145H3819	Plast screw 15x25
4	183B0511	DHW control valve set EvoFlat 4.0
5	183B512	DHW control thermostat set EvoFlat 4.0
12	183B0517	Bypass valve set thermostatic EvoFlat 4.0
15	183B0516	Bypass valve set manual EvoFlat 4.0
16	183B0003	Block for bypass IFS PPS 30GF
17	530Z388	Pipe Ø18 171 mm
18	830Z219	Pipe Ø18 223 mm
19	183N5020	Bushing w/nuts 3/4"x3/4"x32mm
20	145H3120	EPDM shore 3/4" udst. 24x17.5x3mm
21	144B2192	Insert 3/4"x110mm
22	830Z207	Pipe Ø18 77mm
23	183B0000	Washer Ø18.2xØ23.45x2mm
23	145.083	O-ring 17.50x3.50
24	183B0515	Strainer set EvoFlat 4.0
25	183B0514	Flow activator with screws and gaskets
26	183B0513	Air vent set Danfoss EvoFlat 4.0
	183B0521	EPP cover set Danfoss EvoFlat 4.0
	183B0518	Plug/O-ring/clips set 2 pc EvoFlat 4.0
	183B0519	Clips set 5 pcs./size EvoFlat 4.0
	183B0520	Gasket set EvoFlat 4.0
	183B0533	Flushing Tool EvoFlat 4.0 HEX
	183B0550	Conversion kit EvoFlat 4.0 W to M
	183B0551	Conversion kit EvoFlat 4.0 W to F

Guide lines 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 (StS). 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.

			Plate	Brazing material		
Parameter	**Unit**	**Value or concentration**	**AISI 316L W. Nr. 1.4404**	**Cu**	**CoResist**	**StS**
pH		< 0.6	o	-	-	o
		6.0 -7.5	+	o/-	o	+
		7.5 - 10.5	+	+	+	+
		> 10.5	+	o	o	+
Conductivity	µS/cm	< 10	+	+	+	+
		10 - 500	+	+	+	+
		500 - 1000	+	o	+	+
		> 1000	+	-	o	+
Free Chlorine	mg/l	< 0.5	+	+	+	+
		0.5 - 1	0	+	+	+
		1 - 5	-	o	o	o
		> 5	-	-	-	-
Ammonia (NH_3, NH_4+)	mg/l	< 2	+	+	+	+
		2 - 20	+	o	o	+
		> 20	+	-	-	+
Alkalinity (HCO_3-)	mg/l	< 60	+	+	+	+
		60 - 300	+	+	+	+
		> 300	+	o	+	+
Sulphate (SO^{42}-)	mg/l	< 100	+	+	+	+
		100 - 300	+	o/-	o	+
		> 300	+	-	-	+
HCO_3- / SO_4^{2}-	mg/l	< 1.5	+	+	+	+
		> 1.5	+	0/-	0	+
Nitrate (NO_3)	mg/l	< 100	+	+	+	+
		> 100	+	o	+	+
Manganese (Mn)	mg/l	< 0.1	+	+	+	+
		> 0.1	+	o	o	+
Iron (Fe)	mg/l	< 0.2	+	+	+	+
		> 0.2	+	o	+	+
* Hardness ratio [Ca^2+, Mg^2+]/[HCO_3-]		0 - 0.3	+	-	-	+
		0.3 - 0.5	+	o/-	+	+
		> 0.5	+	+	+	+

+	**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:

Application temperature	Chloride concentration
at T ≤ 20°C	max 1000 mg/l
at T ≤ 50°C	max 400 mg/l
at T ≤ 80°C	max 200 mg/l
at T ≥ 100°C	max 100 mg/l

Certificates, declarations and approvals

CE	
EU RoHS	
EPD	

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 G¾"x110mm in return flow, sensor holder as direct immersion sensor M10x1mm

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 G¾"x110mm (CW inlet)

Technical data

Heating

max. capacity [kW]:	17.5
at max. volume flow [m^3/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:	G¾" (union, 7x)
Electrical connection:	230V 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)

Tender text

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 G¾"x110mm in return flow, sensor holder as direct immersion sensor M10x1mm

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 G¾"x110mm (CW inlet)

Technical data

Heating

max. capacity [kW]:	17.5
at max. volume flow [m^3/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:	G¾" (union, 7x)
Electrical connection:	230V 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 F

Flat station for domestic hot water and radiator heating.

EvoFlat 4.0 M

Flat station for domestic hot water and floor heating.

EvoFlat 4.0 Four pipe

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

Danfoss A/S
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