



# Save time and money Streamline your heat pump business!

Heat Pump Components - Selection guide



# One

**makes a difference**

Save time and money the easy way, by adding just one more Danfoss component to your system. Find out how all the elements add up to maximise your heat pump efficiency.



# ONE REASON ONE PHILOSOPHY

– every component counts

Whether you're producing heat pumps for residential applications or commercial applications of over 20 kW, you know how important it is to choose each component with care. The compressor, heat exchanger, control unit and indeed every other line component make a vital contribution to the smooth running and efficiency of your end product. Once combined, their impact is greater still.

## JUST ONE LESS

Our studies show that even when you reduce the number of suppliers you work with by just one, you can reap significant financial benefits. The countless small efficiency gains – one less order to place, one less delivery to manage – combine to give an impressive reduction in your overall costs while at the same time as reducing the carbon footprint of your product.

Reducing your supplier base, even minimally, makes life that bit simpler. Working with Danfoss, a company that really understands the application, makes it simpler still.

## TAKE THE LEAD

If you're looking to reduce the carbon footprint of your products, to acquire the edge on seasonal performance and to reach (or exceed) the most stringent refrigerant legislation, you need a supplier that fully understands the heat pump application. You need to work with partners who comprehend, as well as you do, exactly how all the elements in your system add up to maximise your heat pump efficiency.

## HOW CAN WE HELP YOU?

Take advantage of our expertise to drive your product development and to design even more efficient and competitive heat pump systems. Thanks to long experience of the heat pump application, we are able to design, select and support each component for optimal performance in this application - continuously pushing forward the boundaries of heat pump technology.





# €10,000

## Annual savings

Notice a dramatic difference in costs when you reduce your heat pump component supplier base by just one!

# FIVE IS **NOT** A CROWD

– it's a solution

Whatever you need for your heat pump system you can find it at Danfoss. Each component is fully developed with the application in focus and is therefore precisely adapted to meet the needs of heat pump systems.

## COMPRESSORS

Danfoss offers an optimized scroll compressor range for use in residential and commercial heat pumps from 5 to 240 kW. Thanks to a new reed valve design and optimized scroll set, our Performer® HHP compressors give you world class efficiency! They improve your heat pump's performance, operating reliably even when outdoor temperatures go down to -20°C. Performer® PSH scroll compressor for commercial heat pumps holds two new innovations: a unique **Liquid Injection** solution to extend the operating envelope and reduce running costs, and a new **Operating Control System** for enhanced protection and reliability. Models range from 20 to 80 kW and can be combined in tandem and trio configuration up to 240 kW.

## HEAT EXCHANGERS

Our new H-range Micro Plate Heat Exchangers (MPHEs) bring world class efficiency to your heat pump applications, working as condensers or evaporators in either air or ground source heat pumps. Designed to utilize the minimum amount of raw materials and refrigerants, they deliver immediate savings as well as improving long term price stability.

## CONTROLLERS

Choose from a wide range of controllers for heat pump applications, all of which are based on a global, open and flexible system and can be programmed using standard communication protocols.

We also offer different options and levels of support to facilitate your development and manufacturing process, as needed.

## LINE COMPONENTS

For compact, lightweight line components that offer high accuracy, choose Danfoss' heat pump line components. Suitable for a variety of applications such as diagnostics and performance monitoring, they offer flexibility in terms of installation and connection options as well as different connection styles.

## EXPANSION DEVICES

Whether you need electronic or thermostatic expansion devices, Danfoss offers extremely safe solutions. Use these well-proven Danfoss components in your heat pump system and pass on the benefits of greater efficiency and reliability to your customers.

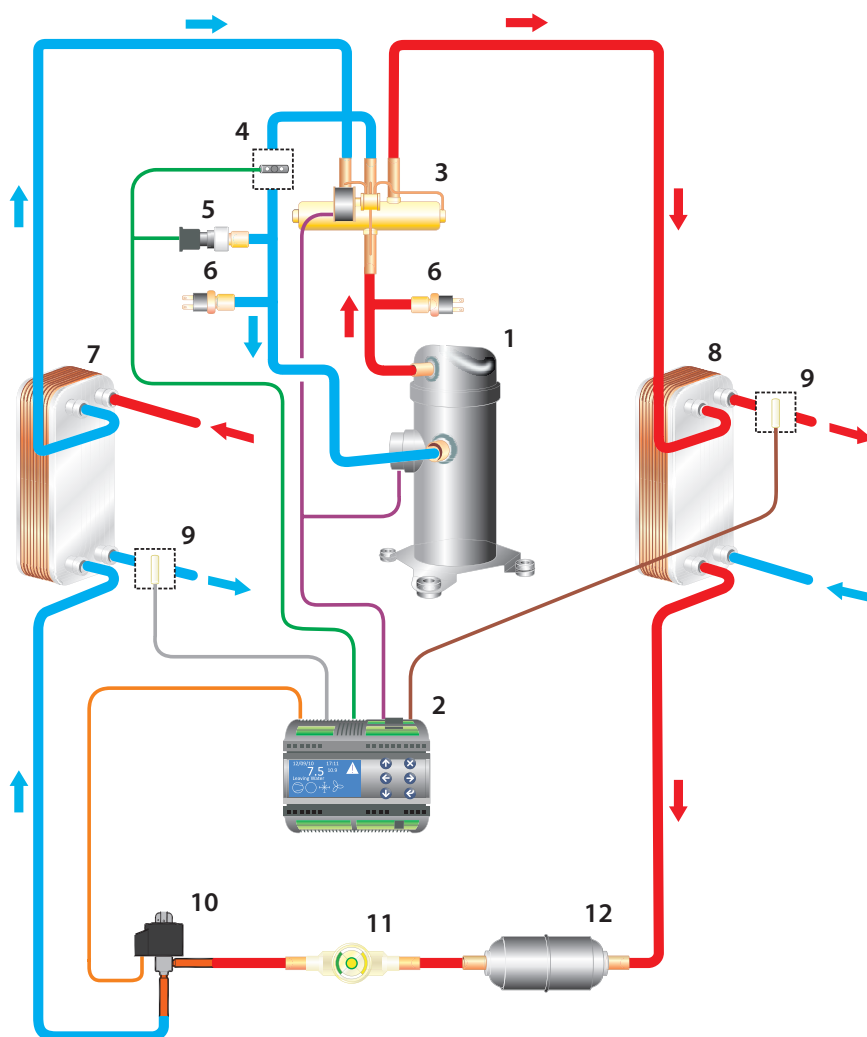


## PARTS OF VALUE

The components

Why not take advantage of Danfoss' expertise to help you choose exactly the right solution for your application? Our components are designed for use in different system designs and with different refrigerants so there are few limitations to the needs we can supply.

Discuss your objectives with us and we'll help identify the best solution, using the correct parts for the job. To get the ball rolling, just call your local Danfoss representative or check for more details on [www.danfoss.com](http://www.danfoss.com).



Heat pump components in typical system. **1.** Compressor. **2.** Controller. **3.** Four-way valve. **4.** Temperature sensor. **5.** Pressure sensor. **6.** Cartridge pressure control. **7.** Evaporator. **8.** Condenser. **9.** Temperature sensor. **10.** Expansion device. **11.** Sight glass. **12.** Liquid line filter drier.

< 10 kW

10-20 kW

> 20 kW

#### COMPRESSORS



HHP015-HHP030

HHP038-HHP045

PSH019-077, SZ084-380

#### HEAT EXCHANGERS



H22, H30, H55, H62

H30, H55, H62

H55, H62, H118

#### EXPANSION DEVICES

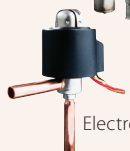
Thermostatic



TUB, TUBE, TUC

TUB, TUBE, TUC TC, TGE

TGE



Electronic

ETS6-10, ETS6-14

ETS6-18, ETS6-25

ETS6-30, ETS6-32, ETS12.5, ETS25

#### CONTROLLERS



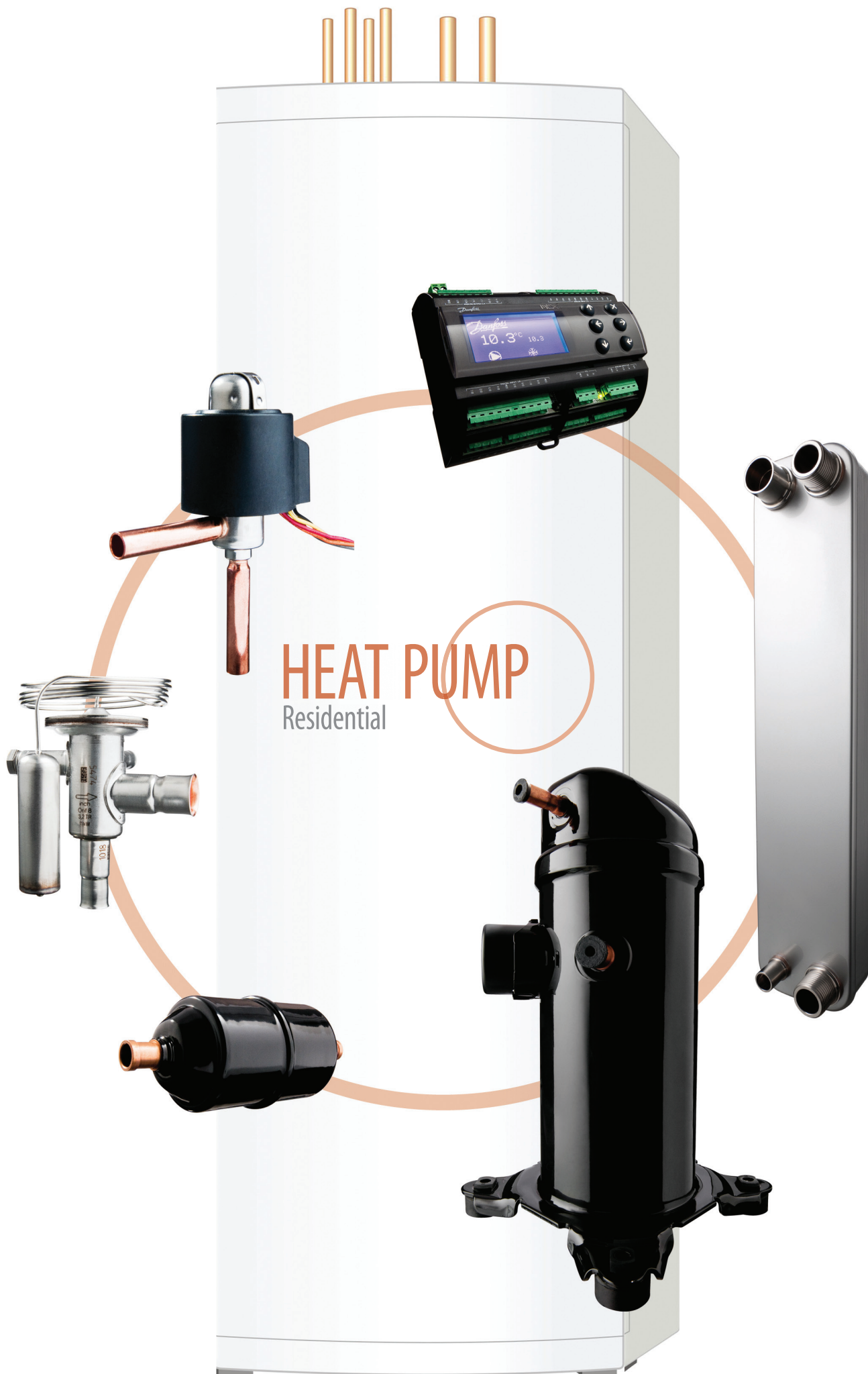
Unit controller able to drive EEV directly (MCX06M1V)

Unit controller (LCX06C, MCX06D) with External EEV driver (EKD316, EKC316)

#### LINE COMPONENTS



Liquid line filter driers mono- and bi-flow (DML/DMB), Sight glasses (SG+), Four-way valves (STF), Solenoid valves (EVR), Ball valves (GBC), Cartridges pressure controls (ACB), Pressure transmitters (AKS/NSK/YSK), Check valves (NRV), Temperature sensor (AKS/EKS).



# HEAT PUMP

Residential

## RESIDENTIAL

Heat Pump component selection

### R407C Brine to water

#### Technical Data

Heating capacity	Compressor	Controller	Expansion device	4-way-valve**	Filter drier	Heat exchanger MPHE evaporator	Heat exchanger MPHE condenser
kW	3-phase						
5.6	HHP015	MCX 06M1V*	ETS 6-18 + ETS 6 coil	STF-0301G	DML033s	H55-E-20	H62-C-20
6.7	HHP019	MCX 06M1V*	ETS 6-18 + ETS 6 coil	STF-0301G	DML033s	H55-E-24	H62-C-24
7.4	HHP021	MCX 06M1V*	ETS 6-18 + ETS 6 coil	STF-0301G	DML033s	H55-E-30	H62-C-30
9.3	HHP026	MCX 06M1V*	ETS 6-25 + ETS 6 coil	STF-0401G	DML033s	H55-E-34	H62-C-34
11.1	HHP030	MCX 06M1V*	ETS 6-25 + ETS 6 coil	STF-0401G	DML033s	H55-E-40	H62-C-40
14.0	HHP038	MCX 06M1V*	ETS 6-25 + ETS 6 coil	STF-0404G	DML034s	H55-E-50	H62-C-50
16.2	HHP045	MCX 06M1V*	ETS 6-30 + ETS 6 coil	STF-0404G	DML034s	H55-E-60	H62-C-60

\*superheat controller built in

\*\*applicable only for reversible units

For rating point B0/W35: te: -3.5°C, tc: +38°C, evap SH: 1K, total SH: 5K, subcooling: 3K

### R407C Air to water

#### Technical Data

Heating capacity	Compressor	Controller	Expansion device	4-way-valve	Filter drier	Heat exchanger MPHE condenser
kW	3-phase					
6.8	HHP015	MCX 06M1V*	ETS 6-18 + ETS 6 coil	STF-0301G	DMB083s	H62-C-20
8.1	HHP019	MCX 06M1V*	ETS 6-18 + ETS 6 coil	STF-0401G	DMB163s	H62-C-24
8.9	HHP021	MCX 06M1V*	ETS 6-25 + ETS 6 coil	STF-0401G	DMB163s	H62-C-30
11.1	HHP026	MCX 06M1V*	ETS 6-25 + ETS 6 coil	STF-0401G	DMB163s	H62-C-34
13.3	HHP030	MCX 06M1V*	ETS 6-25 + ETS 6 coil	STF-0404G	DMB163s	H62-C-40
16.6	HHP038	MCX 06M1V*	ETS 6-25 + ETS 6 coil	STF-0404G	DMB163s	H62-C-50
19.2	HHP045	MCX 06M1V*	ETS 6-30 + ETS 6 coil	STF-0712G	DMB163s	H62-C-60

\*superheat controller built in

For rating point A7/W35: te: +2°C, tc: +38.5°C, evap SH: 1K, total SH: 5K, subcooling: 3K





# COMMERCIAL

Heat Pump component selection

## R407C Brine to water

### Technical Data

Heating capacity	Compressor	Controller	Expansion device	4-way-valve**	Filter drier	Heat exchanger MPHE evaporator	Heat exchanger MPHE condenser
kW	3-phase						
18.6	SZ084	MCX 08M*	ETS 6-30 + ETS 6 coil	STF-0712G	DML 054s	H55-E-70	H62-C-70
19.6	SZ090	MCX 08M*	ETS 6-30 + ETS 6 coil	STF-0712G	DML 054s	H55-E-70	H62-C-70
20.8	SZ100	MCX 08M*	ETS 6-30 + ETS 6 coil	STF-0712G	DML 055s	H55-E-80	H62-C-80
23.8	SZ110	MCX 08M*	ETS 12.5 (includes coil)	STF-1511G	DML 055s	H118-E-60	H118-C-60
27.7	SZ120	MCX 08M*	ETS 12.5 (includes coil)	STF-2011G	DML 085s	H118-E-70	H118-C-70
33.7	SZ148	MCX 08M*	ETS 12.5 (includes coil)	STF-2501	DML 306s	H118-E-80	H118-C-80
36.4	SZ161	MCX 08M*	ETS 12.5 (includes coil)	STF-2501	DML 306s	H118-E-90	H118-C-90
38.7	SZ175	MCX 08M*	ETS 12.5 (includes coil)	STF-2501	DML 306s	H118-E-90	H118-C-90
41.8	SZ185	MCX 08M*	ETS 12.5 (includes coil)	STF-2501	DML 306s	H118-E-100	H118-C-100
56.8	SZ240	MCX 08M*	ETS 25 (includes coil)	STF-3001	DML 417s	H118-E-130	H118-C-130
69.2	SZ300	MCX 08M*	ETS 25 (includes coil)	STF-3001	DML 417s	H118-E-160	H118-C-160
86.3	SZ380	MCX 08M*	ETS 25 (includes coil)	STF-4001	DML 417s	H118-E-200	H118-C-200

\* + superheat controller EXD316

\*\*applicable only for reversible units

For rating point B0/W35: te: -3.5°C, tc: +38°C, evap SH: 1K, total SH: 5K, subcooling: 3K

## COMMERCIAL

Heat Pump component selection

### R410A Brine to water

#### Technical Data

Heating capacity	Compressor	Controller	Expansion device	4-way-valve**	Filter drier	Heat exchanger MPHE evaporator	Heat exchanger MPHE condenser
kW	3-phase						
22.0	PSH019	MCX 08M*	ETS 6-32 + ETS 6 coil	STF-0712G	DML 084s	H55L-E-80	H62L-C-80
25.9	PSH023	MCX 08M*	ETS 6-32 + ETS 6 coil	STF-1511G	DML 165s	H118L-E-60	H118L-C-60
29.4	PSH026	MCX 08M*	ETS 12.5 + (includes coil)	STF-2011G	DML 165s	H118L-E-70	H118L-C-70
34.2	PSH030	MCX 08M*	ETS 12.5 + (includes coil)	STF-2011G	DML 165s	H118L-E-80	H118L-C-80
39.2	PSH034	MCX 08M*	ETS 12.5 + (includes coil)	STF-2501	DML 306s	H118L-E-90	H118L-C-90
44.2	PSH039	MCX 08M*	ETS 12.5 + (includes coil)	STF-2501	DML 306s	H118L-E-100	H118L-C-100
44.5	PSH038	MCX 08M*	ETS 12.5 + (includes coil)	STF-2501	DML 306s	H118L-E-100	H118L-C-100
58.8	PSH051	MCX 08M*	ETS 25 (includes coil)	STF-3001	DML 417s	H118L-E-130	H118L-C-130
74.8	PSH064	MCX 08M*	ETS 25 (includes coil)	STF-3001	DML 417s	H118L-E-180	H118L-C-180
87.6	PSH077	MCX 08M*	ETS 25 (includes coil)	STF-4001	DML 417s	H118L-E-200	H118L-C-200

\* + superheat controller EXD316

\*\*applicable only for reversible units

For rating point B0/W35: te: -5°C, tc: +36°C, evap SH: 2K, total SH: 5K, subcooling: 5K

### R410A Air to water

#### Technical Data

Heating capacity	Compressor	Controller	Expansion device	4-way-valve	Filter drier	Heat exchanger MPHE condenser
kW	3-phase					
23.4	PSH019	MCX 08M*	ETS 6-32 + ETS 6 coil	STF-2011G	DML 165s	H62L-C-80
27.6	PSH023	MCX 08M*	ETS 12.5 (includes coil)	STF-2011G	DML 165s	H118L-C-60
31.2	PSH026	MCX 08M*	ETS 12.5 (includes coil)	STF-2501	DML 306s	H118L-C-70
36.4	PSH030	MCX 08M*	ETS 12.5 (includes coil)	STF-2501	DML 306s	H118L-C-80
41.7	PSH034	MCX 08M*	ETS 12.5 (includes coil)	STF-2501	DML 306s	H118L-C-90
47.0	PSH039	MCX 08M*	ETS 12.5 (includes coil)	STF-2501	DML 306s	H118L-C-100
47.3	PSH038	MCX 08M*	ETS 12.5 (includes coil)	STF-2501	DML 306s	H118L-C-100
62.5	PSH051	MCX 08M*	ETS 25 (includes coil)	STF-3001	DML 417s	H118L-C-130
79.4	PSH064	MCX 08M*	ETS 25 (includes coil)	STF-4001	DML 417s	H118L-C-180
93.0	PSH077	MCX 08M*	ETS 25 (includes coil)	STF-4001	DML 417s	H118L-C-200

\* + superheat controller EXD316

For rating point A7/W35: te: +2°C, tc: +36°C, evap SH: 2K, total SH: 5K, subcooling: 5K



## HEAT PUMP COMPONENT PHILOSOPHY

Save time and money by reducing your supplier base by one! Danfoss applies its years of accumulated knowledge and experience to the development of specially adapted heat pump components. Each individual part is fine-tuned for optimal performance in this application, supporting you in the drive for greater efficiency. Talk to us and find out more!

[www.danfoss.com/HeatPumpComponents](http://www.danfoss.com/HeatPumpComponents)

Address