



## Danfoss Heat Pumps: Troubleshooting

### 1 Alarm list

Shown in display in the event of an alarm. To reset alarms 1-5, set the operating mode to OFF or cut the power supply.

Message	Meaning
HIGHPRESS ERROR	Tripped high pressure switch. Compressor stopped. No hot water production.
LOWPRESS ERROR	Tripped low pressure switch. Compressor stopped. No hot water production.
MOTOR P ERROR	Deployed motor protection (Over current relay compressor). Compressor stopped. No hot water production.
BRINE OUT	Brine supply does not exceed set temperature. Compressor stopped. No hot water production. Not normally activated.
BRINEFLOW LOW	Flow sensor not active during last start. Compressor stopped. No hot water production.
ADD. HEAT	Overheating protection deployed. No auxiliary heating active.
SENSOR OUTDOOR	Fault in outside sensor. Zero degrees used for calculations.
SENSOR FRONT	Incorrect supply pipe sensor. Everything stops except circulation pump.
SENSOR RETURN	Return sensor fault. Return temperature = Supply pipe – 5 is used. Calculated supply temperature limited to maximum 45°C.
SENSOR HOT WATER	Fault on sensor for start temperature. No hot water production.
SENSOR DEFROST	Defrost sensor fault. Heat and hot water production is controlled from the outdoor sensor's value instead. (Applies to DHP-A)
MS FAN	Deployed motor protection for outdoor unit fan. Compressor stopped. No hot water production. (Applies to DHP-A)
SENSOR COOLING	Sensor fault. Cooling function stops.



## 2 Measurement points

### Conversion table for sensors

**NOTE! When reading the resistance of the sensors, the sensor leads must first be disconnected from the control equipment.**

Outdoor sensor		Other sensors	
°C	kohm	°C	kohm
-30	1884	0	66,3
-25	1443	5	52,4
-20	1115	10	41,8
-15	868	15	33,5
-10	681	20	27,1
-5	538	25	22,0
0	428	30	18,0
5	343	35	14,8
10	276	40	12,2
15	224	45	10,1
20	183	50	8,5
25	150	55	7,1
30	124	60	6,0
35	103	65	5,0
40	86	70	4,2
		75	3,7
		80	3,1
		85	2,7
		90	2,3
		95	2,0

1. First measure the sensor including the cable.
2. Then measure the sensor only.



## 3 Operational problems

### Heat pump in almost continuous operation

Cause	Troubleshooting	Remedy
Incorrectly dimensioned	<ol style="list-style-type: none"> <li>1. Check cooling</li> <li>2. Changed conditions (increased power output, increased hot water consumption)</li> <li>3. Check refrigerant amount</li> </ol>	-
Lack of refrigerant		
Increased Power Output		
Incorrect flow in cold/hot circuit		
Air in the System		

### The heat pump has short operating intervals despite heat demand

Cause	Troubleshooting	Remedy
Room set point too high.	<ul style="list-style-type: none"> <li>• Poor flow, starts on hysteresis value (low water volume)</li> <li>• Poor pipe system</li> <li>• Small radiators</li> <li>• Heat pump too large</li> </ul>	-
Curve too high, poor heating system circulation		
Closed radiator valves		
Insufficient water volume in the heating system		
Element too small		
Tight fitting system, poor pipe dimensions		

### Heat pump runs on auxiliary heater

Cause	Troubleshooting	Remedy
Output demand is too great for the compressor output.	<ol style="list-style-type: none"> <li>1. Is the control computer correctly set (auto curve)</li> <li>2. Integral value reached AH start</li> <li>3. Max return temperature (high)</li> <li>4. Alarm? Indicator RP = 0</li> <li>5. HP produces peak heat</li> <li>6. Dimensioning / Changed conditions</li> <li>7. Incorrect phase sequence compressor</li> </ol>	Room set point / curve setting too high Check sensor (outdoor, supply pipe, room) Wiring to sensor Check 3-way valve (insert, motor)
The heat pump produces peak heat		
The compressor cuts in for high return.		
The compressor cannot run due to alarm.		



## The heat pump has too high energy consumption

Cause	Troubleshooting	Remedy
Short active collector	<ol style="list-style-type: none"> <li>1. Is the control computer correctly set (auto curve)</li> <li>2. Integral value reached AH start</li> <li>3. Max return temperature (high)</li> <li>4. Alarm? Indicator RP = 0</li> <li>5. HP produces peak heat</li> <li>6. Dimensioning/ Changed Conditions</li> </ol> Incorrect phase sequence compressor <ol style="list-style-type: none"> <li>1. Short active collector</li> <li>2. Incorrect <math>\Delta t</math> on hot/cold side</li> <li>3. Over heating/ cooling</li> </ol>	-
Dry bore hole		
Incorrectly set control computer		
Incorrect sensor heating contact		
Changed conditions		
Compressor incorrect phase sequence		
High curve		

## Auxiliary heater cuts in too soon

Cause	Troubleshooting	Remedy
Collector too long.	<ol style="list-style-type: none"> <li>1. Is the control computer correctly set (auto curve)</li> <li>2. Integral value reached AH start</li> <li>3. Max return temperature (high)</li> <li>4. Alarm? Indicator RP = 0</li> <li>5. HP produces peak heat</li> <li>6. Dimensioning / Changed conditions</li> </ol> Incorrect phase sequence compressor	-
Collector too short		
Sensor fault		
Incorrect output, insufficient brine		
Changed conditions		

## Auxiliary heater runs but not compressor

Cause	Troubleshooting	Remedy
Sensor fault.	<ol style="list-style-type: none"> <li>1. Is the control computer correctly set</li> <li>2. Integral value reached AH start</li> <li>3. Max return temperature (high)</li> <li>4. Alarm? Indicator RP = 0</li> <li>5. HP produces peak heat</li> <li>6. Dimensioning / Changed conditions</li> </ol> Incorrect phase sequence compressor	-
Final phase of peak heating production		
Alarm		
Operating mode ADD. HEAT is selected		
Incorrectly set control computer.		
Built in overheating protection (bi-metal production) in the compressor has tripped		

## Incorrect phase sequence

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Cause	Troubleshooting	Remedy
Incoming phases are in the incorrect order.	<ul style="list-style-type: none"><li>• Check pressure pipe temperature.</li><li>• It should be hot (not just warm) a little way from the compressor.</li><li>• There is a strange noise (loud, rattling) if the phases are in the incorrect order so that the compressor runs backwards.</li></ul>	If the phases are in the incorrect order, switch two incoming phases at the main terminal block.

### Pressure switch open = 0

Cause	Troubleshooting	Remedy
Hot gas temperature too high		
Sensor fault >120 C	Check sensor	Replace defective sensor.
Insufficient filling volume		
Overheating too high	Check over heating	



## 4 Alarm problems

### BRINE LOW FLOW

Cause	Troubleshooting	Remedy
Poor flow	Check flow: - Is the ground water pump running? - Check flow switch	
Incorrectly connected or incorrectly set flow switch	- Calibrating flow switch - System selection in the event of no ground water	

### AH (Auxiliary heater)

Cause	Troubleshooting	Remedy
Phase drop	Check if the overheating protection has tripped.	Resetting overheating protection
No heating system circulation	Check the circulation on the hot side, circ.pump, valves etc.	Bleeding the heating system.
Overheating protection fault		Check the overheating protection, take readings in/out.
Supply pipe sensor fault.	Check the sensor.	Replace the supply pipe sensor.
Tripped before installation		
Defective electric heating element	Measurement check phase, ground and zero.	Replace the electric heating element if it is broken.
Submersible tube is against the electric coil		The submersible tube can be prised out slightly from the coils using a screwdriver or similar.

### SENSORS (All)

Cause	Troubleshooting	Remedy
-	<ul style="list-style-type: none"> <li>• Check sensor</li> <li>• Sensor wiring</li> </ul>	<ul style="list-style-type: none"> <li>• Replace defective sensors and /or wiring.</li> </ul>



## BRINE

Cause	Troubleshooting	Remedy
Brine temperature too low	Check flow: • Is the ground water pump running • Calibrating flow switch • System selection in the event of no ground water	
Defective sensor		Replace defective sensor
Defective circulation pump		Replace defective circulation pump
Blocked ground water exchanger		Clean the ground water exchanger
Defective ground water pump		Replace defective ground water pump

## HP (High pressure)

Cause	Troubleshooting	Remedy
Blocked condenser on gas and/or fluid side.	Check the flow of the heating system/WH • Are valves open (cond.) • Check the filter • Is the 3-way valve working? (electricity, wiring.) • Is the circulation pump running (electricity, pump fault, cleaning) Air in the system Electricity – check pressure switch (HP 31 bar (e)) (Dp 26.5 bar (e)) Wiring – Check pressure switch Check refrigerant circuit (over heating) Check the pressure switch's break value Air in the refrigerant circuit.	
Shut-off main tap on heating system		
Large pressure drop in the heating system (poor pipes)		
Cable break / loose cable to pressure switch		
Incorrectly facing non-return valve or too "strong" valve = incorrect type of valve		
Supply pipe sensor fault.		
Air in the heating circuit.		
Blocked filter.		
Operating pressure switch incorrect break value/does not open		
Closed radiator thermostats.		
Circulation pump defective/jammed.		
High pressure switch incorrect break value		
Overfilled refrigerant circuit		
External system shunt that closes on time setting		
Air in the refrigerant circuit		



## MOTOR PROTECTION

Cause	Troubleshooting	Remedy
Cable break	1. Check fuses	-
Phase drop	2. Check phase drop (network supplier)	
Uneven load between the phases.	3. Uneven load electrical net	
Defective soft start	1. Check supply to contactor / motor protection / soft start before and after contactor / motor protection.	
Defective contactor	4. Setting motor protection	
Defective or incorrectly set motor protection	5. Check power consumption compressors / impedance winding	
Defective compressor		
Blown fuses		



## 5 Heating comfort problems

### Indoor temperature too high

Cause	Troubleshooting	Remedy
3-way valve fault.	Check the function of the 3-way valve by test running it manually.	Replace defective motor or insert.
Sensor fault outdoor, room, supply pipe.	Measure the resistance at the sensors and check against the table in the installation instructions.	Replace defective sensor.
Adjusting - trimming	Check the room set point and heat curve settings.	Adjust incorrect values in the heat pump's control computer.

### Too low indoor temperature

Cause	Troubleshooting	Remedy
Adjusting - trimming	<p>Is the heat pump running? (Current supply fuse)</p> <p>Room set point / curve setting too low</p> <p>Check sensor (outdoor, F1, room)</p> <p>3-way valve (to hw)</p> <p>Flow:</p> <ul style="list-style-type: none"> <li>- Are the circulation pumps running?</li> <li>- closed heating system valves</li> <li>- too few/too small radiators</li> <li>- strainers/condenser etc</li> </ul> <p>Operating mode (only HP) (VL / D-system). Check operation of external auxiliary heater.</p> <p>Changed conditions (modified etc.)</p> <p>Check which power stage(s) can be used.</p>	
3-way valve only to hot water		Check the 3-way valve, motor and insert, replace defective/jammed.
Operating conditions curve		Adjust the settings.
Operating mode		If they are incorrect, replace.
Circulation pumps		The circulation pumps may have jammed, if so, open the bleed screw and try to release the paddle wheel using a screwdriver for example.
Radiator thermostats / valves		
Sensor outdoor / room / supply pipe		If an external auxiliary heater is used, check that it is correctly installed by test running it in manual mode.
Dirty capacitor		
Dirt in filter ball		
Lack of refrigerant		
Radiators too small		
Heat pump too small		
Incorrectly adjusted expansion valve		
Changed conditions		
Max stage permitted	If incorrectly set, adjust in the heat pump's control computer.	



## The temperature in the house oscillates between hot and cold

Cause	Troubleshooting	Remedy
Adjusting - trimming	Curve buckling at different outdoor temperatures.	Check that the room sensor is positioned in a suitable place that is representative of the building.
Operating conditions curve	Positioning room sensors and outdoor sensors.	Check that the outdoor sensor is installed according to the instructions.
Curve adjustment "buckling"	Operating condition Auto / HP / AH in combination with incorrect curve. House performance.	



## 6 Hot water problems

### Temperature and hot water volume too low

Cause	Troubleshooting	Remedy
Pressure too high on incoming cold water	Check the water pressure.	Install pressure reduction valve in the system.
3-way valve motor not working	Check the function of the 3-way valve by test running it manually.	If the motor is defective, replace it.
Jammed 3-way valve insert		Take out and clean the insert, or replace with a new insert.
Air in TWS coil or water heater		Bleed the system (see separate instructions).
Water heater too small		Replace with a larger water heater or supplement with electric heater.
Start temp. of hot water too high	Check that the start temperature is correctly set. Must/should not be set above factory setting.	



## 7 Leakage problems

### Water side

Cause	Troubleshooting	Remedy
Defective gasket or O-ring	Locate the leak.	Replace the gasket or O-ring
Poorly tightened connections	Locate the leak.	Tighten the connection and check that it is sealed If it is still not sealed, replace the entire connection and support sleeve (only at soft pipes)
Cracked nut or connection	Locate the leak.	Replace nut or connection
Leak at soldered joints	Locate the leak.	Drain the system of fluid, repair the leak. If the leak is on the connection pipe to the exchanger, also drain the refrigerant side.
Leak at soldered joint on water heater		Replace the hot water heater
There is no overflow pipe connected to the safety valve(s).	Establish which safety valve does not have an overflow pipe.	Install an overflow pipe according to the applicable norms.
No condensation hose to heat pump's drip tray		Install the drain hose that runs out into the floor drain.
Poor condensation insulation, cold water pipe and brine pipe	Establish where the condensation is coming from.	In the event of problems on the cold water pipes, insulate them. Condensation often accumulates in joints and angled sections of the insulation. Improve the insulation.
Leak at the drain tap at the condenser.	1. Check that the valve is completely closed. 2. Check that the sealed cover is sealed.	If the sealed cover is not sealed, replace the sealed cover or the entire drain tap.
Leak at the bleed valve at the condenser.	Check that it is completely closed.	If it is fully closed and still leaks, replace the bleed screw.
Associated leakage on the water heater	Establish whether water continuously leaks from the safety valve on the expansion vessel on the hot side.	Replace the hot water heater
Associated leakage in the heat exchanger (condenser).		Replace the exchanger
Filler valve between incoming cold water and heating system not closed.	Establish whether water continuously leaks from the safety valve on the expansion vessel on the hot side.	Close the valve.



## Shrieking whistling noise

Cause	Troubleshooting	Remedy
Expansion valve		Take overheating readings, adjust to the recommended value. Try opening and closing the valve fully. Adjust the expansion valve to recommended overheating value again. If the problem persists, replace the expansion valve.
Non-return valve compressor IPR-valve		The IPR valve opens during pressure increases in the compressor. If it remains in the open position, replace the compressor.

## Loud compressor noise

Cause	Troubleshooting	Remedy
Phase drop	Check that there is 400 V between incoming phases on the heat pump. If there is supply to the heat pump, measure all electrical components all the way to the compressor.	If there is correct voltage all the way between phases, replace the compressor.
Touching pipes – vibrations	Establish which pipe(s) is/are causing the problem.	Try to release any tensions that cause the vibrations.
Compressor fault		Replace the compressor.
The compressor is incorrectly installed.	Check whether the support sleeve engages the bottom plate.	Replace the support sleeve.

## Noise in the heating system

Cause	Troubleshooting	Remedy
Circulation noise (hissing)		Check the radiator system. Open any valves or choke valves that are causing circulation noises. Try running the heat pump with a greater delta by reducing the circulation pump's speed and therefore the system's flow.
Tensioned flexible hoses	Flexible hoses must be installed according to the instructions.	Install flexible hoses according to the instructions.



<b>Cause</b>	<b>Troubleshooting</b>	<b>Remedy</b>
Flexible hoses missing	Flexible hoses must be installed according to the instructions.	Install flexible hoses according to the instructions.
Clicking	Establish when clicking occurs.	Locate the clicking noises. Try lubricating lead-ins in walls, ceilings and floors with silicone spray. A surge tank can be installed.
Installing / suspending pipes		Check if the mountings are too rigid, right type, right sizes or too closely installed.

## Noise in the heating system

<b>Cause</b>	<b>Troubleshooting</b>	<b>Remedy</b>
Vibrating cables or protective sleeves to the pressure switches.	Establish where the vibration noise is coming from.	Prevent the insulation sleeve vibrating by using insulation tape for example.