

# Frese - Conheat Dual

# Frese CONHEAT - Heat Interface Units for Apartments

## Content

Item	Page
Important Information	2
Applicable British Standards	2
Safe Handling	2
Schematic Diagrams	3
Components	4
Heat Interface Operation	5
Technical Specification	5
Dimensions	6
Site Requirements	7
Installation	7
Electrical Connections and Wiring Box	8
Pump Setting	8
Water Treatment, Flushing and Filling	8
Final Checks	9
Servicing and Maintenance	9
Fault Detection	10
Grundfos UPM3 AUTO Pump	11
Identification Label	11
Commissioning Check List	Appendix A

In this document we have endeavoured to make the information as accurate as possible.  
We cannot accept any responsibility should it be found that in any respect the information is inaccurate or incomplete or becomes so as a result of future developments.

## Frese CONHEAT - Heat Interface Units for Apartments

### Important

This heat interface unit must be installed in accordance with these instructions and applicable regulations and national standards.

The Frese model number, month and year of manufacture and item number are shown on the information label located on the front side of the back plate for user reference.

The systems must be thoroughly flushed and treated with a suitable inhibitor.

The domestic hot water is supplied at temperatures up to 60°C which may cause scalding. Thermostatic mixing valves and or thermostatic showers should be fitted to reduce the outlet water to the recommended level for the particular outlet to prevent scalding to the user.

### Applicable British Standards

BS EN 12828	Design for water based heating systems.
BS EN 14336	Installation & commissioning of water based heating systems.
BS 7074	Expansion vessels and ancillary equipment for sealed water systems.
BS 7593	Treatment of water in domestic hot water central heating systems.

### Safe Handling

- The following advice should be adhered to during all stages of the installation.
- Most injuries result from inappropriate handling and lifting mainly to the back, but other parts of the body are also vulnerable.
- There is no safe lifting limit for one person as each person has different physical capabilities.
- The Frese Heat Interface Unit (HIU) should be handled and lifted by TWO PEOPLE.
- Appropriate personal protection equipment should be worn e.g. safety footwear, protective gloves and eye protectors etc.
- When handling and lifting the HIU always ensure that the route is clear and unobstructed avoiding steps, wet or slippery surfaces and take special care on ladders.

### Safe Handling

- Where possible use a sack truck or suitable trolley to transport the unit.
- Always assess the risks associated with handling and lifting the unit to suit installation conditions.
- Ensure the wall on which the unit is to be mounted is structurally suitable.

### Components

The pack contains:-

- The heat interface unit.
- The pipe connection bracket and valves
- Information Technotes.

If any component is missing do not start the installation until the missing component has been obtained.

### Contact Details

Frese Ltd.  
605 Merlin Park,  
Ringtail Road,  
Burscough,  
Lancashire.  
L40 8JY

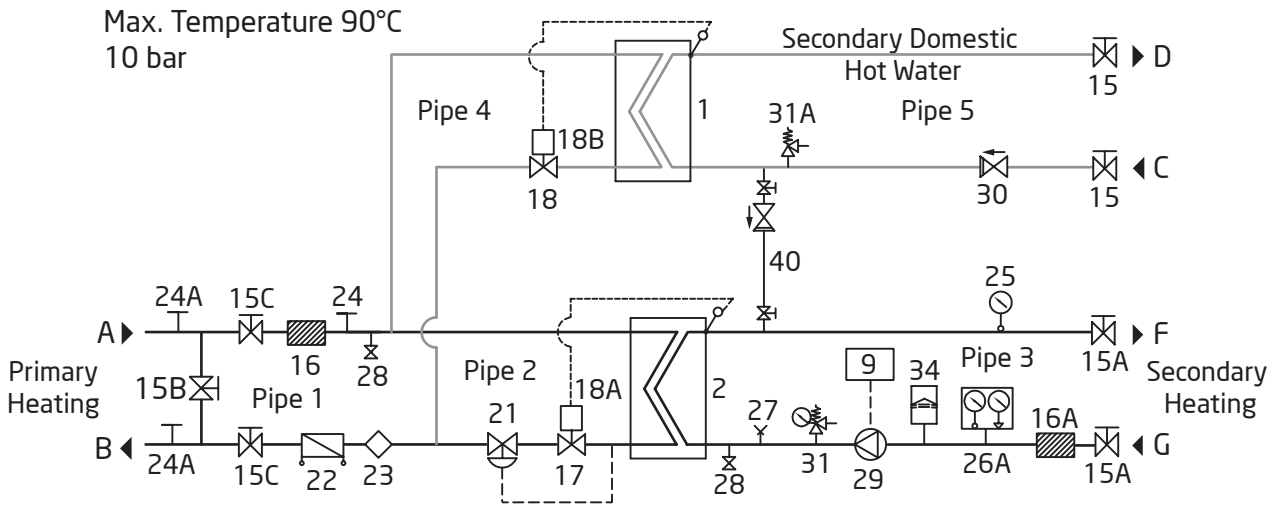
Tel: +44(0) 1704 896 012

Fax: +44(0) 1704 984 019

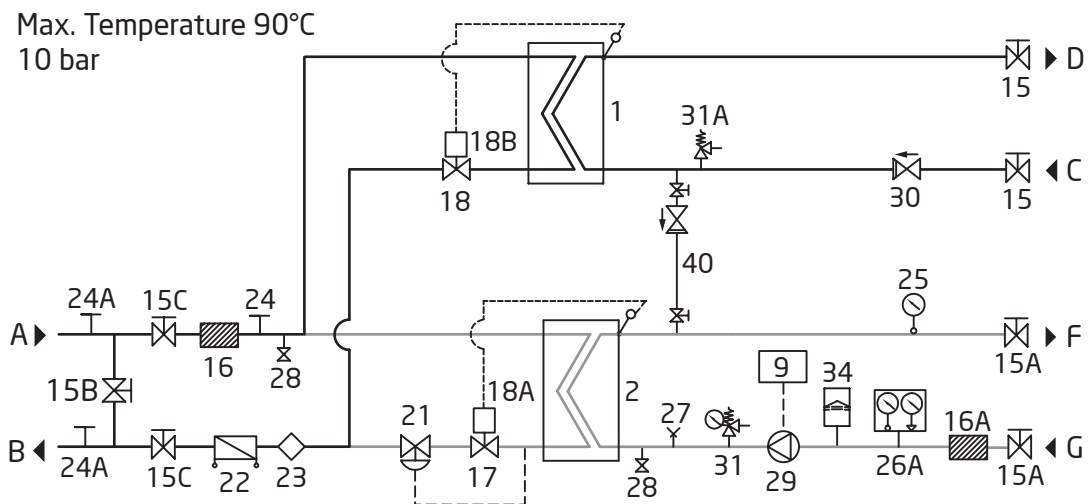
Web: [www.fresehiu.co.uk](http://www.fresehiu.co.uk)

# Frese CONHEAT - Heat Interface Units for Apartments

## Heating Only



## Hot Water Only



All pipework SS 304

Product	HWS Nom. kW	HTG Max. kW	Pipe No - Diameter				
			1	2	3	4	5
Type 1	75	20	Ø18	Ø18	Ø18	Ø18	Ø22
Type 2	85	20	Ø18	Ø18	Ø18	Ø18	Ø22
Type 3	95	20	Ø22	Ø18	Ø18	Ø22	Ø22
Type 4	105	20	Ø22	Ø18	Ø22	Ø22	Ø22

- Bold lines indicate active circuit
- Grey lines indicate non-active circuit



## Frese CONHEAT - Heat Interface Units for Apartments

### Components

Item	Component	Item	Component
1	DHW heat exchanger - insulated	23	Ultrasonic heat meter Kamstrup Multical 302 qP 1.5 m <sup>3</sup> /h with M-bus
2	Heating heat exchanger - insulated	24	
9	Wiring box	24A	Pressure test point
15	Ball valve DN25	25	Temperature gauge 0 to 120°C
15A	Ball valve DN20	26A	Temperature and Pressure Gauge 6 bar 120°C Ø63 x ½ AX
15B	Ball valve		
15C	Ball Valve	27	Automatic air vent
16	Strainer	28	Drain valve
16A	Strainer in Tee piece	29	Grundfos pump UPM3 AUTO 15-70, 130mm
17	Danfoss valve, VMT DN15 Kv 1.5		
18	Control valve	30	Single check valve WRAS DN25
18A	Danfoss RAVK 25-65°C	31	Pressure safety valve, 3 bar
18B	Samson control valve 2430 45-65°C	31A	Pressure safety valve, 8 bar WRAS
21	Differential pressure control valve Frese Compact PV	34	12 litre expansion vessel (5 bar max.)
22		Automatic balancing valve Frese ALPHA + cartridge	40

Components		75 kW	85 kW	95 kW	105 kW
1		Alfa Laval CB20*35IS	Alfa Laval CB20*35IS	Swep IC25*30	Swep IC25*30
2		Swep IC8*20	Swep IC8*20	Swep IC8*20	Swep IC8*30
15A		DN20	DN20	DN20	DN25
15C		DN20	DN20	DN25	DN25
16		DN20	DN20	DN25	DN25
18		Samson 2432 Kv 2.5		Danfoss AVTB20 30-60°C Kv 3.4	
22		DN20	DN20	DN25	DN25
22 Cartridge		49-xxxxx	49-xxxxx	49-xxxxx	49-xxxxx
23	Size	¾" x 110mm	¾" x 110mm	¾" x 110mm	1" x 190mm
25		✓	✓	x	✓
26A		x	x	✓	x
34		✓	✓	✓	½" fitting or vessel



**Frese**

## Frese CONHEAT - Heat Interface Units for Apartments

### Heat Interface Operation

The Frese CONHEAT Heat Interface Unit is designed for use in apartments and small commercial units to provide heating and domestic hot water from a central boiler plant or district heating system.

The unit consists of a 72, 84, 93 or 105 kW heat exchanger to provide instant domestic hot water on demand and a 5 kW or 20kW heat exchanger to provide continuous hot water for space heating.

Primary flow to the domestic hot water circuit is controlled by a temperature control valve which senses and reacts to the temperature at the outlet of the heat exchanger on the secondary side, e.g. when a tap or shower is turned on.

Primary flow to the heating side is controlled by a differential pressure control valve and a temperature control valve which senses and reacts to the temperature at the outlet of the heat exchanger on the secondary side.

A flushing bypass is provided between the primary heating flow and return pipes.

The unit contains all other equipment needed including the ultrasonic heat meter on the primary return circuit.

**TO PREVENT FROST DAMAGE TO THE HIU, HEAT MUST BE PROVIDED VIA THE PRIMARY CIRCUIT FROM THE CENTRAL BOILER PLANT OR DISTRICT HEATING SYSTEM.**

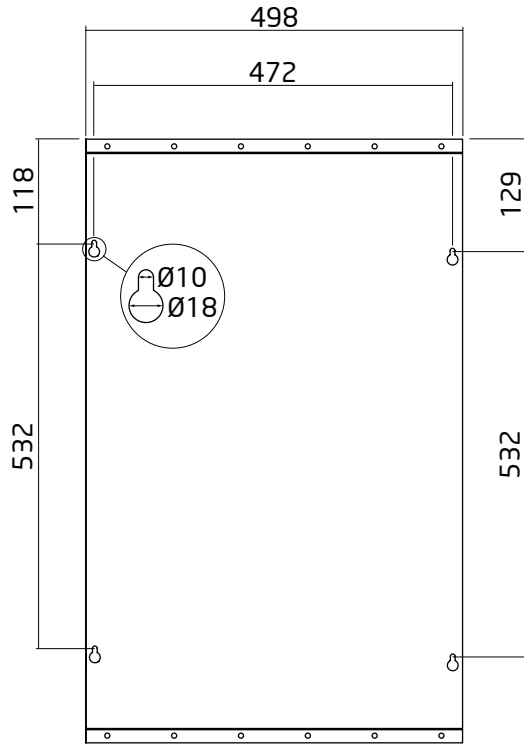
The Frese CONHEAT Heat Interface Unit is suitable for heating sealed pumped systems only.

### Technical Specification

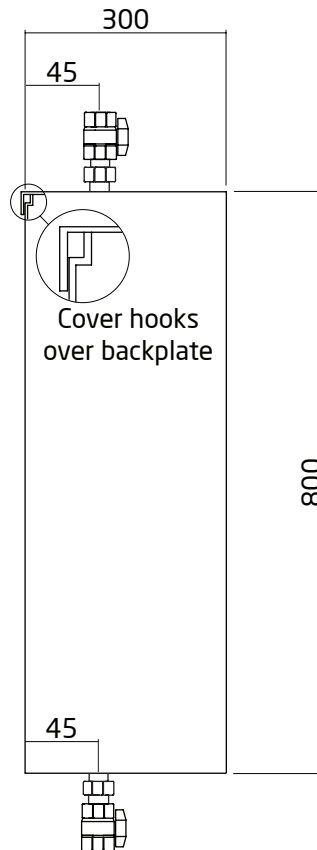
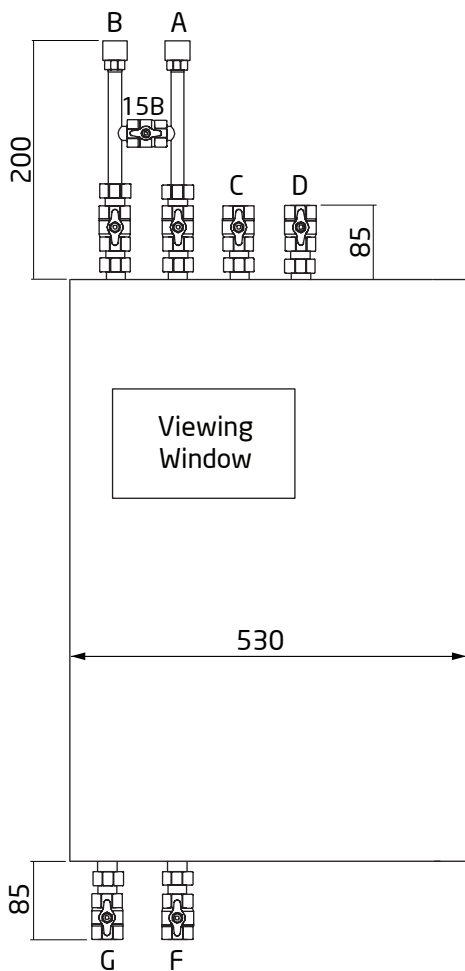
Hot Water			Heating	
Working Pressure		10 bar	Working Pressure	10 bar
Maximum Temperature		80°C	Maximum Temperature	80°C
Maximum Output		75 kW 85 kW 95 kW 105 kW	Maximum Output	20 kW
Primary Temperature	75 kW	Flow 80°C Return 23.5°C	Primary Temperature	Flow 80°C Return 36.6°C
	85 kW	Flow 80°C Return 24.9°C		Flow 80°C Return 35.6°C
	95 kW	Flow 80°C Return 18.13°C		
	105 kW	Flow 80°C Return 18.87°C		Flow 80°C Return 36.6°C
Hot Water Temperature		10 to 60°C	Secondary Temperature	Flow 50°C Return 35°C
Cold Water Temperature		10°C		

# Frese CONHEAT - Heat Interface Units for Apartments

## Dimensions



Item	Connection	Size
A	Primary Flow	3/4"
B	Primary Return	3/4"
C	Cold water input	1"
D	Hot water output	1"
F	Heating flow	3/4"
G	Heating return	3/4"



# Frese CONHEAT - Heat Interface Units for Apartments

---

## Site Requirements

---

The Frese CONHEAT HIU may be fitted to any suitable wall within a building and may be installed in a cupboard or service space.

Ensure that the wall is structurally suitable to support the weight of the unit.

Access must be available to remove the cover from the unit should future maintenance be required and to the six pipe connection points. See dimensions for details.

---

## Installation

---

Unpack the unit and bracket from the packaging, two people will be required to lift the unit.

Dispose of any packing in an appropriate manner most of which can be recycled.

Depending upon the number of units to be fitted and how they will be unpacked there are two ways to position the holes to fix the heat interface unit to the wall.

### Method 1

- Using the dimensions given on the back plate drawing mark the position of the 2 upper holes and drill 2 suitable holes, ensure the unit will be horizontal when fitted.
- Use wall plugs (not supplied) suitable for the structure of the wall.
- Fit screws into the wall plugs and screw almost fully home.
- Remove the cover from the unit to expose the elongated fixing holes.
- Lift the unit by holding the back plate, taking care not to cause any damage to the pipework or fittings, (two people required) and hook onto the 2 screws, ensure the unit is horizontal and fully tighten the fixing screws.
- Using the back plate as a template drill the 2 lower holes, fit wall plugs and fit screws and tighten.
- Fully tighten the upper two screws
- The heat interface unit can be left in position or can be removed and moved to the next location.
- The flow and return pipes for primary heating, domestic hot water and heating can now be connected to the appropriate connections. See 'Dimensions'.
- Ensure all ball valves are closed prior to system pressurisation.
- Refit the unit cover.

### Method 2

If a larger number units are to be fitted, creating a master plywood template for positioning the fixing holes may ease installation.

Two people are required for any lifting of the heat interface unit.

- Unpack one unit and remove the cover.
- Lift the unit by holding the back plate, taking care not to cause any damage to the pipework or fittings.
- Lay the unit on its back on the plywood, ensuring that the top of the unit aligns perfectly with one edge of the plywood. This should ensure that the fixing holes will be correct position when drilled.
- Mark and drill the four holes for the unit, these holes may be the size required for the wall plugs or pilot holes just for positioning.
- Remove the unit from the plywood template.
- Using a spirit level on the top edge of the template drill holes through the template for the unit, fit wall plugs and the four screws for the unit.
- Later lift the unit by holding the back plate, taking care not to cause any damage to the pipework or fittings, (two people required) and hook onto the 4 screws, ensure the unit is horizontal and fully tighten the fixing screws.
- The flow and return pipes for primary heating, domestic hot water and heating can now be connected to the unit using the appropriated connections. See 'Dimensions'.



## Frese CONHEAT - Heat Interface Units for Apartments

### Electrical Connections

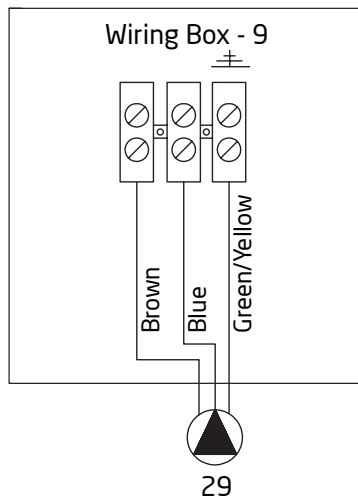
The pump requires connecting to an electrical power supply - see wiring box diagram.

See the Grundfos UPM3 AUTO 15-70 pump page for additional information on the pump.

For comprehensive information about the pump please refer to the manufacturer's technical information.

All electrical connections must be made by a qualified electrician and follow procedures and practices specified in national standards and codes of practice.

### Wiring Box



### Pump Setting

The Grundfos UPM3 AUTO is self controlling and is used as a stand alone pump.

It reacts on changing flow demands from the apartment, supplying hot water to radiators or under floor heating.

The pump automatically measures the differential pressure and always finds the best setting and therefore does not require any additional adjustment.

### Water Treatment, Flushing and Filling

All re-circulating water systems will be subject to corrosion unless appropriate water treatment is applied.

Without water treatment the efficiency of a system will deteriorate as corrosion sludge accumulates, risking damage to pumps, valves and other system components.

### Primary Heating

The primary heating circuit should be flushed thoroughly in accordance with BS 7593 by closing the two isolating valves on connections A and B and opening the bypass valve H. Flushing and draining should follow the procedure specified by the system designer.

System additives - corrosion inhibitors and flushing agents/de-scalers should comply with BS 7593 which should be used in accordance with the manufacturer's instructions. It is important to check the inhibitor concentration after installation and periodically thereafter in accordance with the manufacturer's instructions.

### Secondary Heating

- The secondary heating circuit should be filled using the filling loop (40) between the primary and secondary circuits.
- The secondary heating circuit includes a strainer complete to collect debris.
- After the primary circuit has been filled with treated water, fill and pressurise the secondary heating circuit using the isolating valve on the filling loop, to gradually increase the pressure until the pressure gauge (25) or the temperature and pressure gauge (26A) reaches the specified pressure.
- During filling, open any manual air vent in the secondary heating circuit to allow air to be released.
- Turn the pump on and run the system for several hours during which time any debris should have been collected by the strainer.
- Turn off the pump and isolate the circuit using the isolating valves on connections F and G.
- Drain the circuit using the drain valve (28) and remove and clean the screen from the strainer (16A).
- Close the drain valve (28), refill and pressurise the system using the filling loop and pressure gauge as described previously.
- The system designer should have specified the secondary heat circuit pressure, to which it should be pressurised.
- The system pressure should be checked once the circuit is in service and re-pressurised as required.

## Frese CONHEAT - Heat Interface Units for Apartments

---

### Water Treatment, Flushing and Filling

---

#### Secondary Domestic Hot Water

Gradually turn on the mains cold water supply to the circuit and open the water outlets (hot taps) until water flows steadily from the outlets and any construction debris is flushed through.

---

#### Hard Water Areas

---

If the regional area of the installation is recognised as a **HARD WATER AREA** then a suitable device should be fitted to treat the mains water supply to the boiler plant and cold water supply to the heat interface unit.

Refer to 'Water Fittings and Materials Directory' and or the local water supplier for suitable devices.

---

#### Commissioning

---

A commissioning check list has been prepared in the recommended sequence which should be completed prior to carrying out the Final Checks. See Appendix A.

---

#### Final Checks

---

Most of the commissioning is done during the filling stage. With all water systems, after the system has been operated for several days entrained air can be released which reduces the efficiency on the unit.

The Frese CONHEAT HIU does not have any controls for adjustment by the user. The temperature control valves and differential pressure control valve are factory set.

It is recommended that a final check list is prepared to ensure that all inspections and results are recorded.

When the system has been operated for several days with the heat on, the following checks should be made.

- Check all joints for signs of leakage.
- If connected to a radiator circuit check all radiators for trapped air when the pump is not running.
- If connected to an under floor heating circuit the automatic air vent incorporated into the manifold should have released any trapped air. If the manifold incorporates a manual air vent, release any trapped air.

- Gradually open any manual air vent fitted in the secondary heating circuit to release any trapped air.
- Check the pressure gauge on PRV (31) or (26A) to determine if any pressure loss has occurred, especially if trapped air has been released. Re-pressurise if required.
- Measure the heating flow temperature using the thermometer (26A).
- Open a tap on the domestic hot water circuit and using a digital thermometer, check the hot water temperature. With thermostatic mixing valves and thermostatic showers, the hot water temperature will be that controlled by the thermostatic cartridge.
- Finally, leave these Tech Notes for the apartment occupant.

---

### Servicing and Maintenance

---

The Frese CONHEAT HIU is designed to require little maintenance.

#### Regular Maintenance Actions

- Twice per year - check the pressure in the secondary heating circuit, since it is not uncommon for some pressure loss to occur.
- Twice per year - visual inspection for any signs of leakage or calcification.
- An annual confirmation of performance; hot water temperature, heating and pump operation.
- Removal and cleaning of the strainer screen 16 and 16A.
- Safety valve function confirmed once every six years.

#### More Frequent Actions

- Heating circulation pump to be operated at least once per month for a minimum of one minute.
- Confirm no unusual noises or vibrations; bleed air from the system or confirm pressure settings.
- The exterior of the cabinet should be cleaned with a soft cloth in a mild detergent solution and wiped dry. DO NOT USE abrasive pads or harsh chemical cleaners.

## Frese CONHEAT - Heat Interface Units for Apartments

### Fault Detection

Fault	Check	Action
No domestic hot water or heating	Check with the apartment block manager that the central boiler plant is operating.	Wait until heat is restored. Check and clean the primary strainer (16).
No domestic hot water	Check that the temperature sensor in the heat exchanger is working correctly.	Replace the sensor which is part of the heat exchanger. Replace the heat exchanger Replace the temperature control valve (18).
No heating	Check the ambient temperature in the rooms to ensure the thermostatic radiator valves or room controller have not isolated the valves due to the high ambient temperature.	Wait until the room temperatures fall.
	Valves E and F have not been isolated.	Open the valves.
	Check that the pump (29) is operating correctly.	Replace the pump.
	Check that the temperature sensor in the heat exchanger is working correctly.	Replace the sensor Replace the heat exchanger Replace the temperature control valve (17). Increase the differential pressure by adjusting the DPCV (21).
Heating taking a long time to warm up.	Check that the screen in the strainer has not become partially or fully blocked.	Remove and clean the screen.
	Check the setting on the pump.	Increase the pump speed.
Noise or vibration	Check secondary heating pressure	Bleed air from circuit Re-pressurise circuit

#### NOTE:

If the primary temperature is lower in summer than winter the primary heating VTM temperature control valve (17) will need to be adjusted otherwise the main secondary heating pipework will continually remain hot.

Example: If the primary temperature is 60°C or below and the Danfoss (17) valve is set to 60°C, the valve will continually be fully open and supply heat to the apartment.

The replacement of any component and cleaning the strainer screen should only be undertaken by a qualified and approved heating engineer.

Use only genuine Frese replacement parts or identical replacements to those originally supplied.

For technical help please call our Technical Department on 01704 894012.

# Frese CONHEAT - Heat Interface Units for Apartments

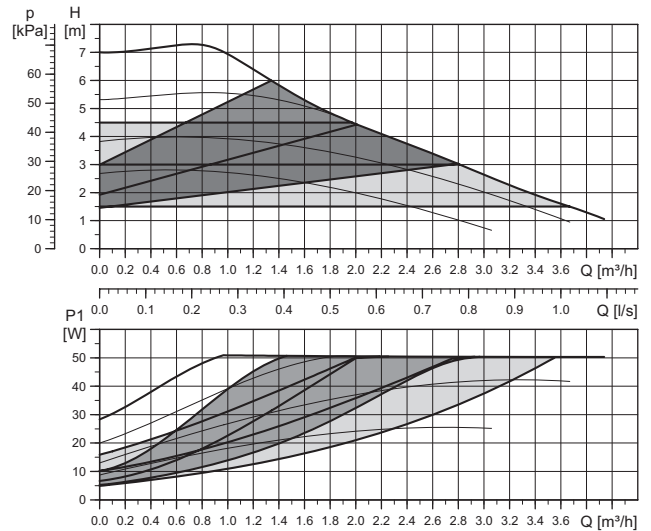
## Grundfos UPM3 AUTO 15-70 Pump

Grundfos UPM3 AUTO pump uses a three phase, 4 pole, synchronous, electronically commutated permanent magnet (ECM/PM) technology in conformance with EuP Directive (Commission Regulation (EC) No 641/2009) The motor is of the canned-rotor type as the pump and motor form an integral unit without shaft seal and with only one gasket for sealing and 4 screws for fastening the stator housing to the pump housing.

The control panel is located on the front and has a single push button selection for the 4 pump setting. Five LEDs, one red/green LED and four yellow LEDs light fields for indication of the selected pump setting, green for standby and a combination of red and yellow for alarm status.

See manufacturer's instructions for full details of the pump.

## Pump Performance Characteristics



## Power Consumption

Speed	P <sub>1</sub> [W]	I <sub>1/1</sub> [A]
Min	2	0.04
Max	53	0.52

## Identification Label

Typical identification label

CE

**KVM-Conheat A/S**  
**Industrivej 6**  
**5492 Vissenberg**  
**Tel: +45 64473200 / Fax: +45 64473230**

CE

---

**Type** Battersea Reach P 84-5

**Year/Month** 2014 / 10      **Item No.** 44110095  
**Order No.** 34115 - 1

	Primary (District Heating)		Secondary (Heating)		Hot Water		Cylinder
<b>Working Pressure</b>	10.0	Bar	3.0	Bar	8	Bar	Bar
<b>Max. Temperature</b>	90	°C	50	°C	60	°C	°C
<b>Capacity</b>	5.0	kw	5.0	kw	72.0	kw	kw
<b>Flow</b>		m <sup>3</sup> /h		m <sup>3</sup> /h		m <sup>3</sup> /h	m <sup>3</sup> /h
<b>Temperature</b>	80/23	°C	50/35	°C	60/10	°C	°C

## Frese CONHEAT - Commissioning Check List - Appendix A

This check list is a guide for the efficient commissioning of the Heat Interface Units

Section	Step	Action	Care Point	Note Results & Observations	Action Completed	Date	Signature
Visual Inspection of the installed HIU	1.1	Remove the outer casing and visually inspect the mechanical status of the HIU	<ul style="list-style-type: none"> <li>Confirm that the flow/return connections are correct for the primary/ secondary heating and the HWS circuit.</li> <li>Check for any damage to the pipework and components</li> <li>Review the capillary tubes for splits or cracks.</li> </ul>				
	1.2	Visually inspect the electrical status of the HIU	<ul style="list-style-type: none"> <li>Confirm that the pump is powered.</li> <li>Confirm that the data cable is connected to the heat meter.</li> </ul>				
Initial Settings	2.1	Close all ball valves					
	2.2	Set the Danfoss/Samson valve (Item 18) to 80°C and the Danfoss valve (17) to 80°C					
	2.3	Check the yellow LED on the pump is lite to confirm the pump is operating.					

## Frese CONHEAT - Commissioning Check List - Appendix A

Section	Step	Action	Care Point	Note Results & Observations	Action Completed	Date	Signature
Primary Flushing	3.1	The flushing bypass is used to flush the primary heat circuit prior to the HIU. Ball valves A and B must be closed to isolate the HIU and the valve in the bypass H must be opened as part of the flushing procedure	<ul style="list-style-type: none"> <li>Do not back flush through the primary circuit as this will risk damage to the plate heat exchanger.</li> </ul>				
Secondary Heating	4.1	Locate the filling loop ball valves and connect the flexible hose					
	4.2	Fill the secondary heating circuit from the primary via the isolating valve on the filling loop	<ul style="list-style-type: none"> <li>Gradually increase the pressure in the circuit to the specified level.</li> <li>Use any air vent to release trapped air while filling.</li> </ul>				
	4.3	Run the heating system, without heat, for several hours by powering the pump					
	4.4	Stop the pump, isolate the circuit and drain	<ul style="list-style-type: none"> <li>Remove all debris from the strainer and clean the screen</li> </ul>				
	4.5	Repeat step 4.2 to fill the system					

## Frese CONHEAT - Commissioning Check List - Appendix A

Section	Step	Action	Care Point	Note Results & Observations	Action Completed	Date	Signature
HWS	5.1	Open the HWS flow isolation valve (connection D) at the top of the unit					
	5.2	Slowly open the CWS valve (connection C) to supply cold water to the HUI					
	5.3	Open the hot tap outlets until a steady flow of clean water has been achieved					
	5.4	Once all the debris has been flushed out and the isolation valves are fully open then the outlet taps should be closed					
Final Commissioning	6.1	Once the system has been operated at temperature for several days without any problems then commissioning is finally complete	<ul style="list-style-type: none"> <li>• Visually check all joints for leakage</li> <li>• Release any air in the unit or in the radiator circuits</li> <li>• Re-pressurise as required</li> <li>• Measure and record heat output to the radiators and the hot water temperature</li> </ul>				
	6.2	Record all results					