



Electronic Heat Interface Unit Operating Manual

In this document Thermalee have endeavoured to make all the information and procedures accurate. Thermalee cannot accept responsibility should it be found that in any respect the information is inaccurate or incomplete as a result of future developments.

Section - Important information and introduction.

These instructions describe the installation, assembly, operation, maintenance and fault finding of the Heat Interface Unit (HIU). For operation of the entire plant, the technical documentation of all the components used such as, boiler, tank, pumps, pipework and valves must be complied with. Thermalee accepts no responsibility for the network design or performance.

Installation should only be carried out by a qualified and competent plumbing installer and a qualified and competent electrical installer in accordance with the current Building, Water and Electrical Regulations, Legislation and Standards. Do not start installation until you have thoroughly read and understood these Assembly and Operating Instructions and have complied with all safety provisions.

Symbols are used in this manual;



DANGER – immediate risk of physical injury or even death.
DANGER – immediate risk of serious damage.



IMPORTANT – information critical to the installation or installer.
IMPORTANT – information critical to the user.



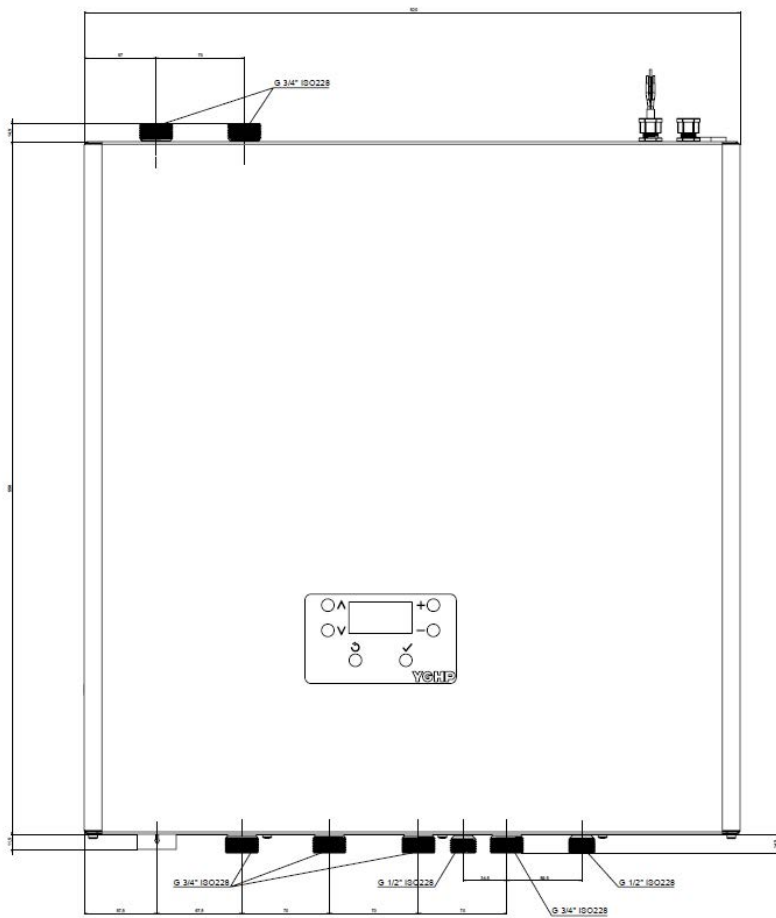
NOTE – useful information regarding the operation or installation of the HIU.

Heat Interface Units (HIU) deliver heat generated from a centralised heating plant to multiple homes, apartments or flats. The HIU interfaces the heat network and dwellings systems through plate heat exchangers and a control valve regulates the supply of heat to provide hot water (DHWS) and room heating (HTG) to the dwelling. The HIU has been developed to this concept with unique control features to optimise its performance and operation.

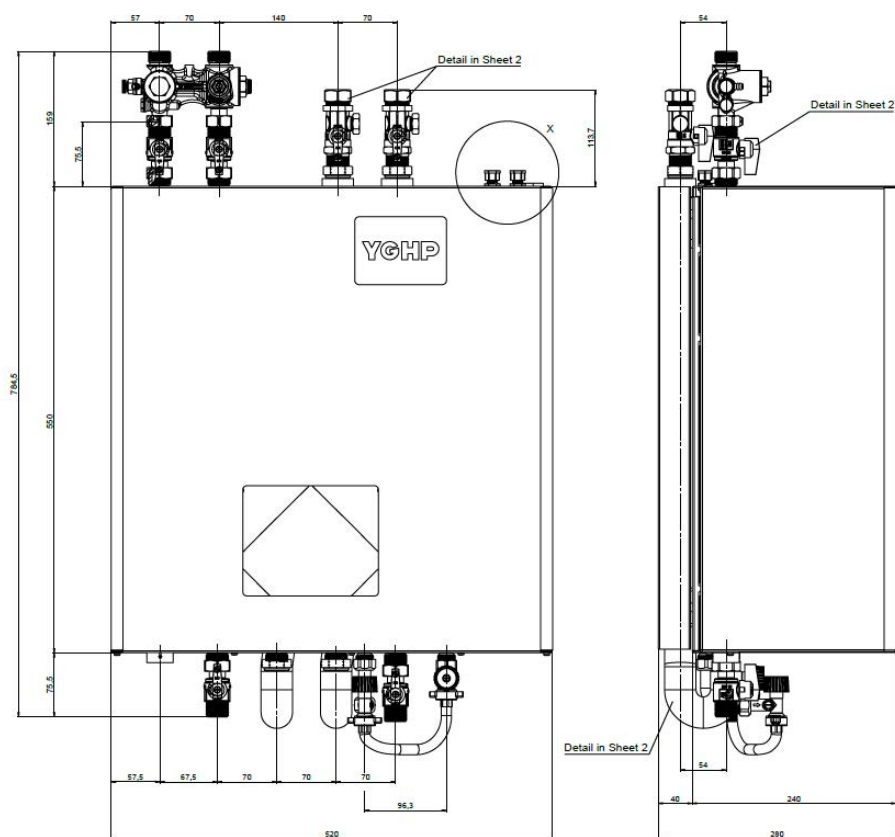
Heat from the main boiler plant is transferred to the home by two plate heat exchangers. One plate heat exchanger (PHE) provides the hot water supply (DHWS) and the other plate heat exchanger supplies the central heating circuit (CH). This can be by either radiators or underfloor heating, the installer has the option to commission for either.

HIUs do not generate their own heat so to deliver DHW and CH most suitable for the requirement of the home or apartment it is the responsibility of the installer and or system designer that the heat network delivers heat at sufficient flow rate and temperature to do so.

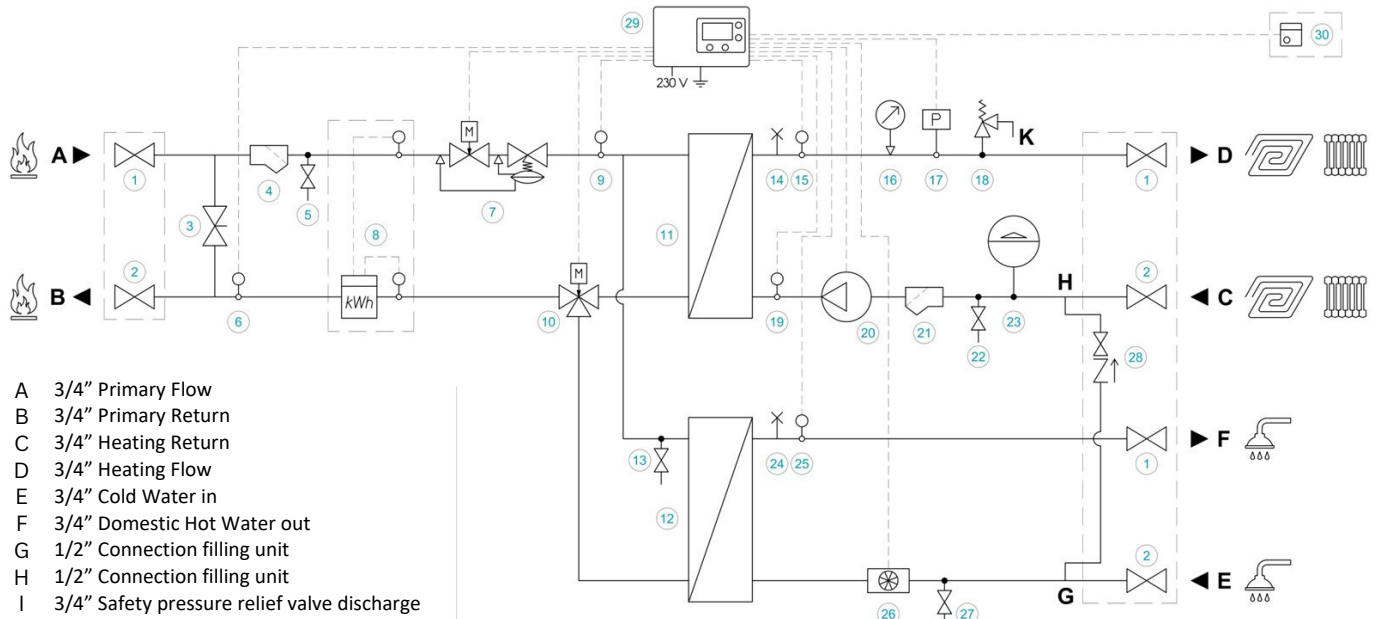
Section - HIU Dimensions.



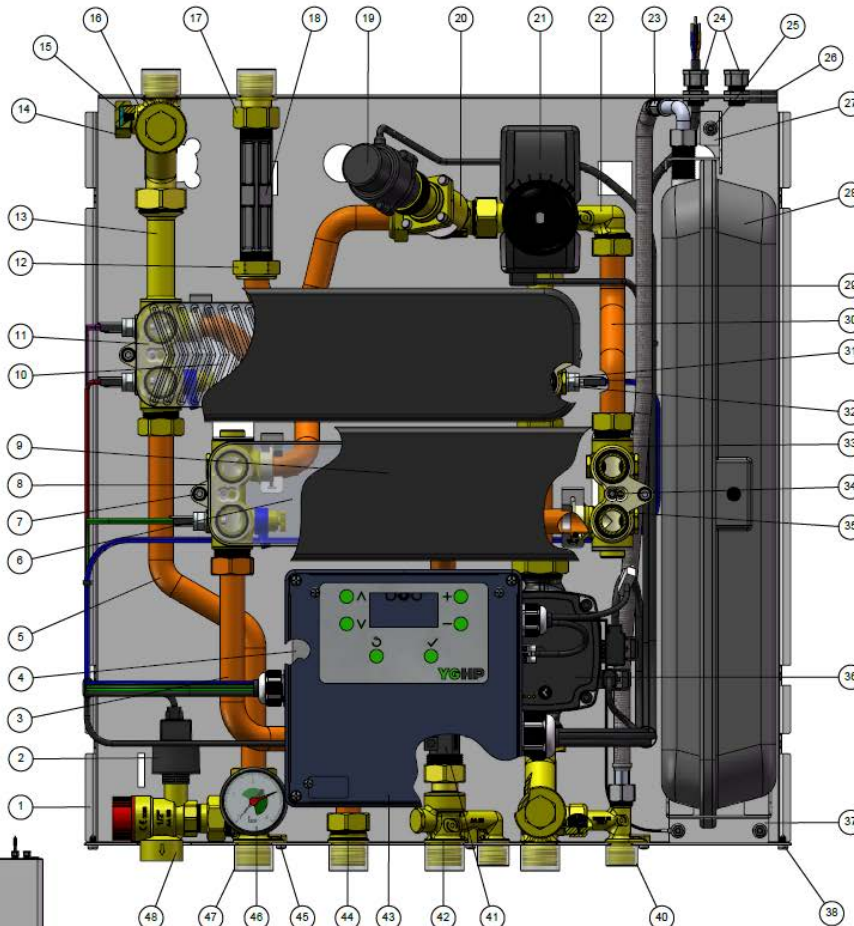
Section - HIU Dimensions W/Standoff Bracket.



Section - Schematic

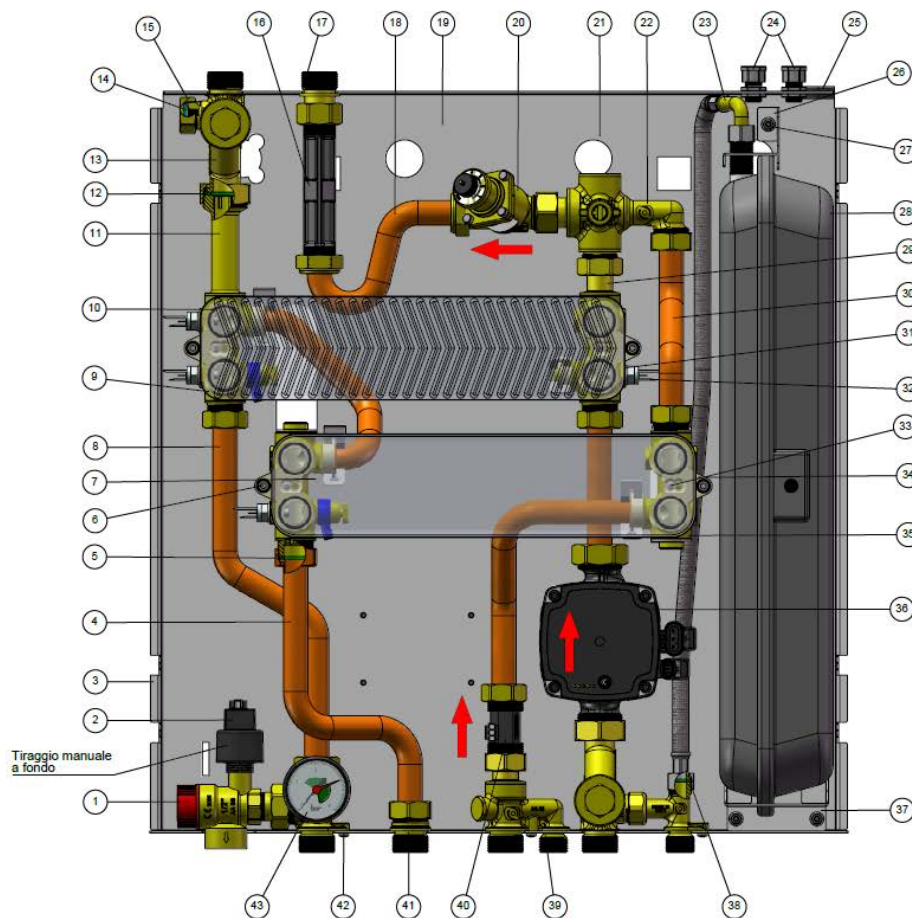


Section - Components and connections.



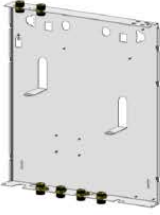
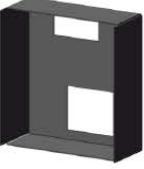
58	LABEL	Paper	1	59505001	00	GRANDE	
57	BOX	Paper	1	59105140	00	-	600x550x290
56	PACKAGING	EPS	2	59405524	00	26000	
55	PACKAGING	EPS	4	59405523	00	26000	
54	GREASE	BERLUB	0.00007	59605003	00	-	
53	SCREW	STEEL	3	52110047	00	-	4x10
52	GASKET	KLINGERSIL C-4400	1	52605498	00	6000	1"
51	GASKET	KLINGERSIL C-4324	14	52705090	00	483	3/4"
50	GASKET	KLINGERSIL C-4324	2	52706121	00	-	3/8"
49	CABING COVER	FE-50	1	59405248	01	35001	
48	SAFETY GROUP		1	M0105524F	00	3624F	3/4"x3/4"
47	CAP	POM	6	51165455	00	480	3/4"
46	PRESSURE GAUGE		1	54105014	00	3161	
45	SCREW	FE-50	7	52110044	00	510	
44	OUTPUT FITTING	CW617N	1	32605008	00	3697	3/4"x3/4"
43	CONTROL GROUP		1	99902041		35007	
42	FITTING CONNECTION		1	M1105101		3698	3/4"x3/4"
41	FLOW METER	PPE	1	50405014	00	1202	DN 10
40	CAP	POM	2	51805009	00	1202	1/2"
39	INSTRUCTION	Paper	1	59505616	00	35007	
38	SCREW	FE-360	4	52105010	00	-	
37	LOWER SHELF EXPANSION VESSEL	FE-50	1	59405127	01	30000	
36	PRE-ASSEMBLY		1	999P30002	00	30000	DN 15
35	O-RING	EPDM 70 ND/C	8	52905036	00	30000	30/30
34	VITE	FE-50	4	52110029	00	8000	M5
33	PRE-ASSEMBLY		1	999P30000	00	30000	DN 15
32	SENSOR		1	53705001	00	-	1/8"
31	WASHER	Aluminum	3	52005003	00	-	1/8"
30	PIPE	Copper	1	53505918	00	35001 HIU V5	Ø18
29	GROUP		1	M1105011	00	3700	3/4"x3/4"
28	EXPANSION VESSEL	FE-360	1	53005105	00	30000	9 L
27	UPPER BRACKET EXPANSION VESSEL	FE-50	1	59405126	00	30000	
26	BROUINET	PVC	1	53505111	00	-	Ø 13.5
25	NUT	STEEL	7	51510026	00	1100	
24	CABLE GLAND	NYLON	4	53505002	00	PIG7	
23	FLEXIBLE HOSE	/	1	53805062	00	-	3/8" - 600mm
22	DIVERTER VALVE	/	1	74105015	00	584L	3/4"
21	MOTOR	/	1	83005202	00	NVMG2	
20	PICV VALVE	/	1	56105000	00	-	DN15 3/4"
19	ACTUATOR		1	31105012	00	35007	
18	PIPE	PP	1	53505116	00	11000	3/4"
17	OUTPUT FITTING		1	M2605047	00	35007	DN 15
16	GROUP		1	M1105099	00	35007	DN 15
15	GASKET	WRC TEGNIT-BAU	1	52605009	00	1252	1/2"
14	CORK	CW617N	1	32305026	00	1252/C	1/2"
13	PRE-ASSEMBLY		1	999P30001	00	30000	DN 15
12	PIPE	Copper	1	53505052	00	35007	DN 15
11	HEAT EXCHANGER	Stainless Steel	1	51015414	00	178315	13 piastre
10	INSULATION	PE-HD	1	59405130	00	30000	13 PIASTRE
9	INSULATION	PE-HD	1	59405147	00	30000	
8	CONNECTION FLANGE	CW617N	4	32605003	00	3700	-
7	SCREW	FE-50	4	52110020	00	-	M5
6	HEAT EXCHANGER	Stainless Steel	1	54905002	00	35007	DN 15
5	PIPE	Copper	1	53505915	00	35001 HIU V5	Ø18
4	BRACKET	FE-50	1	58305009	00	35007	
3	PIPE	Copper	1	53505914	00	35001 HIU V5	Ø18
2	SENSOR	PAS GF 30	1	53705020	00	35007	3/8"
1	FRAME	FE-50	1	59405248	01	35000	520x550
NUM. Art.	Particolare	Material	N° Pz	Code	REV.	Articolo	Size

Section - Components and connections.



44	GREASE	BERULLUB	0.00007	59605003	00	-	
43	PRESSURE GAUGE		1	54105014	00	3161	
42	VITE	FE-50	7	52110044	00	510	
41	OUTPUT FITTING	CW617N	1	32650508	00	3697	3/4"x3/4"
40	FLOW METER	PPE	1	50405014	00		DN 10
39	FITTING CONNECTION		1	M1105101	00	3698	3/4"x3/4"
38	GASKET	KLINGERSIL C-4324	2	52705121	00	/	3/8"
37	LOWER SHELF	FE-50	1	59405127	01	30000	
36	PRE-ASSEMBLY		1	999P30002	00	30000	DN 15
35	PRE-ASSEMBLY		1	999P30000	00	30000	DN 15
34	CONNECTION FLANGE	CW617N	4	32650503	00	3700	/
33	SCREW	FE-50	4	52110009	00	8000	M5
32	SENSOR		1	53705001	00	-	1/8"
31	WASHER	ALLUMINUM	3	52050503	00	/	1/8"
30	PIPE	Copper	1	53505916	00	35001 HIU V5	Ø18
29	GROUP		1	M1105011	00	3700	3/4"x3/4"
28	EXPANSION VASSEL	FE-580	1	53805108	00	35000	9 L
27	NUT	Steel	3	51510026	00	1100	
26	UPPER BRACKET	FE-50	1	59405126	00	30000	
25	GROMMET	PVC	1	53505111	00		Ø 13.5
24	CABLE GLAND	NYLON	4	53605002	00	PG7	
23	FLEXIBLE HOSE		1	53805062	00	-	3/8" - 600mm
22	DIVERTER VALVE	/	1	74105015	00	584L	3/4"
21	MOTOR		1	83005202	00	NVM02	
20	PICV VALVE	/	1	56105000	00	-	DN15 3/4 MM
19	ACTUATOR		1	31105012	00	35007	
18	PIPE	Copper	1	53505521	00	35007	DN 15
17	OUTPUT FITTING		1	M2605047	00	35007	DN 15
16	PIPE	PP	1	53505116	00	11000	3/4"
15	CORK	CW617N	1	32305026	00	1252C	1/2"
14	GASKET	WRC TERNI-BAU	1	52650509	00	1252	1/2"
13	GROUP		1	M1105099	00	35007	DN 15
12	GASKET	KLINGERSIL C-4300	1	52650486	00	6000	1"
11	PRE-ASSEMBLY		1	999P30001	00	30000	DN 15
10	O-RING	EPDM 70 N01C	8	52650581	00	35001	3581
9	HEAT EXCHANGER	STEEL	1	50105414	00	178315	13 plate
8	PIPE	Copper	1	53505915	00	35001 HIU V5	Ø18
7	HEAT EXCHANGER	STEEL	1	54905002	00	35007	DN 15
6	SCREW	FE-50	4	52110028	00	-	M5
5	GASKET	KLINGERSIL C-4324	14	52705080	00	483	3/4"
4	PIPE	Copper	1	53505914	00	35001 HIU V5	Ø18
3	FRAME	FE-50	1	59405245	01	35000	520x550
2	SENSOR	PA6 GF30	1	53705002	00	35007	3/8"
1	SAFETY GROUP		1	M0105624F	00	3634F	3/4"x3/4"
Num. Art.		Particular	Material	N° Pz	Code	Rev.	Article
							Size

Section - Accessories.

HIU wall bracket and fixing screws Cod. 19999104 	HIU wall bracket and fixing screws + Isolation ball valves (x6) and gaskets Cod. 19999102 	HIU wall bracket and fixing screws + Isolation ball valves (x2) and gaskets Cod. 19999103 	Isolation ball angle valves (x4) and gaskets Cod. 19905581 	Flushing by-pass, strainer, drain cock, connection for flow temperature sensor, interaxis 70 mm Cod. C1105019 	Kit Filling Group Cod. 19999101 
First Fix JIG pre-installation template Cod. 19999105 	Stand off bracket frame kit Cod. 19999007 	Casing cover internal insulation, crosslinked closed cellular polyolefin foam material Cod. 59405164 			

7.1 Before installation read and comply with the following



Comply with all safety provisions. The Installer's Responsibility -in accordance with Part L of the Building Regulations, all hot and cold-water pipes should be labelled and insulated to the current standards. Installation should only be carried out by a qualified and competent plumbing installer and a qualified and competent electrical installer in accordance with the current document Building Regulations, Legislation and Standards.

It is the installer's responsibility to ensure that the place of installation and wall is suitable.

An unsuitable location or provision of adequate supplies (Primary Heating and Cold-Water mains) will not justify any warranty or fault claim.

- The wall must be capable of bearing the weight of the HIU filled with water permanently.
- Locations where access is restricted for maintenance, see page 3.
- The HIU is only for WALL MOUNTING in the orientation shown in this manual.
- Locations where criminal damage or illegal tampering cannot be reasonably preventable.
- Locations where discharge pipe is not able to be safely or legally installed and connected.
- Supplies which are not suitably clean, and free from contaminants.
- Supplies which contain chemical contaminants.
- Supplies with inadequate flow or pressure (less than 1.5 bar)
- All cold and hot water pipes must be labelled and insulated in line with Part L of the Building Regulations
- Cold water mains supply should be protected from excessive high pressures.
- A Pressure Reducing Valve is recommended and pre-set to 3 bar.
- Wall fixing bolts provided by the installer and be suitable to bear the weight of the HIU permanently when full of water.
- The position of the HIU should be where the pipe run lengths to DHW outlets are kept to a minimum.

7.2 Consider which installation method is to be used.



- HIU as delivered to site.
- HIU and standoff brackets as delivered to site
- HIU JIG at First Fix Pipe work stage, with the HIU to follow later.
- HIU JIG and standoff brackets, with the HIU to follow later.



- Ensure all hot and cold water pipes are labelled and insulated in accordance with Part L of the building regulations.
- The HIU can only be installed in one orientation, with the heat network connections at the top, and in a vertical position.

7.3 General installation notes

Ensure the chosen installation site is inside the building, weather proofed and provides good access for maintenance, minimum requirements as on page 3. Note and mark where and which pipe connections will be required, and pay attention to where the safety valve discharge pipe will terminate, and ensure this meets all current building regulations and has a continuous fall. All pipe runs for domestic hot water services (DHWS) should be at a minimum to prevent water wastage and maximise DHWS delivery times.

Making sure the wall the HIU is to be mounted on complies with 5.1, mark up the position for the wall bracket.

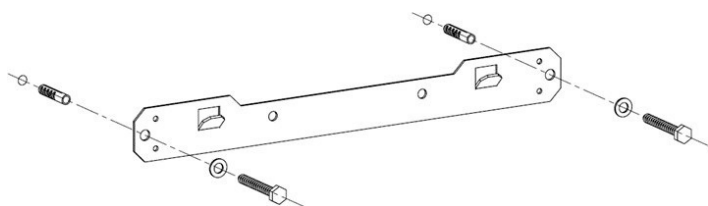
The position of the HIU is to be on a true vertical plane as in 5.3. Drill and plug the wall and secure the HIU wall bracket with suitable wall fixings.



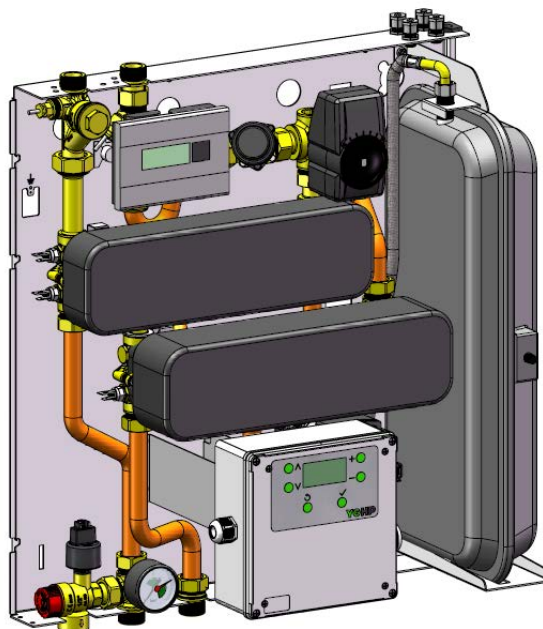
If the First Fix JIG is being used to first fix, refer to the JIG instructions at this point.

Section - Installation (continued)

7.4 - Fix the Wall Bracket.

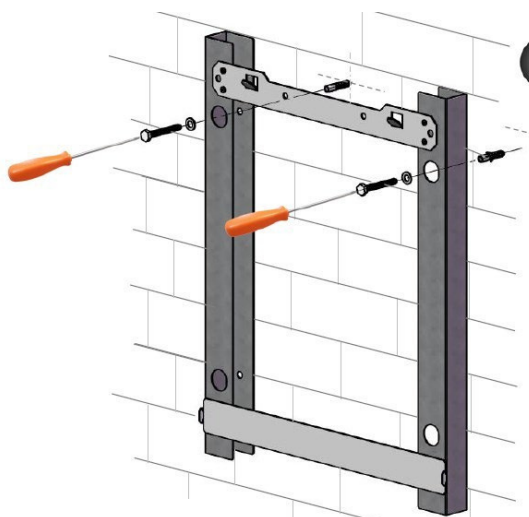
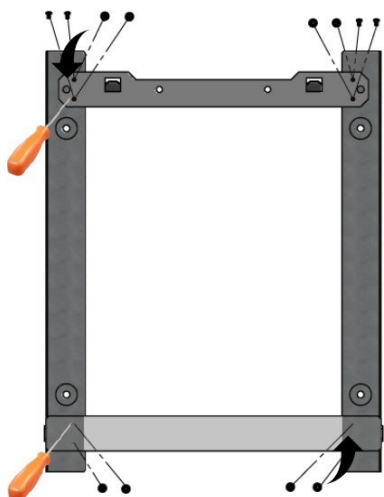


7.5 - Lift the HIU onto the wall bracket, locating securely onto the bracket hooks as shown.



7.6 - Remove the HIU Casing cover by removing the screws as shown above. Keep the HIU casing cover and fixing screws aside and store to prevent loss or damage.

Option - Stand off bracket frame assemble the frame, fixing the wall bracket to the stand off frame as illustrated below. The position of the HIU is to be on a true vertical plane as in 5.3. Drill and plug the wall, and secure the Stand Off Frame to the wall with the fixings provided or suitable fixings as provided by the installer.



Section 7. Installation (continued).

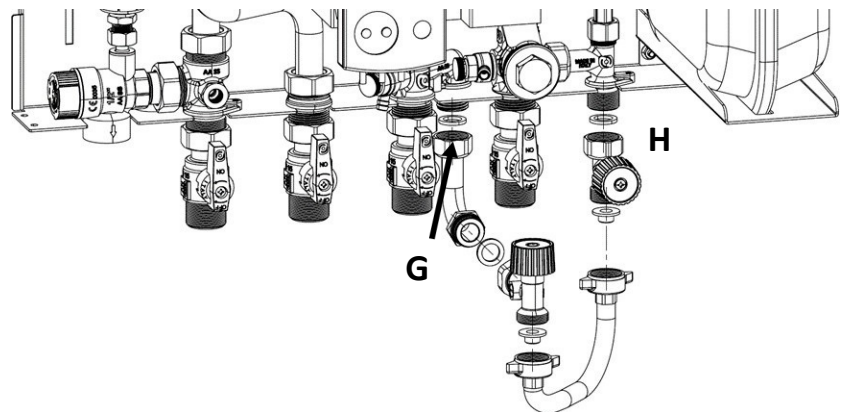
7.7

Connect pipe work using the isolation valve kits as described in ACCESSORIES section.



Connections

- | | |
|---|---|
| A | 3/4" Primary Flow |
| B | 3/4" Primary Return |
| C | 3/4" Heating Return |
| D | 3/4" Heating Flow |
| E | 3/4" Cold Water in |
| F | 3/4" Domestic Hot Water out |
| G | 1/2" Connection filling unit |
| H | 1/2" Connection filling unit |
| K | 3/4" Safety pressure relief valve discharge |



6.7 Safety valve discharge pipe.

The safety valve has female threaded connection. A pipe coupling to be provided by the installer.

The discharge pipe should have a continuous fall and conform to BS6798. The discharge should be safe and visible by means of a tundish. The maximum distance from the safety valve to the tundish should be 600mm. After the tundish, should 28mm pipe be used the maximum length of the pipe should be 9M with no elbows or bends. Where a 28mm elbow is used subtract 1M, or 1M from that length for each 28mm elbow, Where the pipe empties into a drain then that area must be frost free.

Section - Electrical wiring.

Before electrical connection read and comply with the following.



Installation should only be carried out by a competent electrical installer and the installation conform to all IEE regulations.



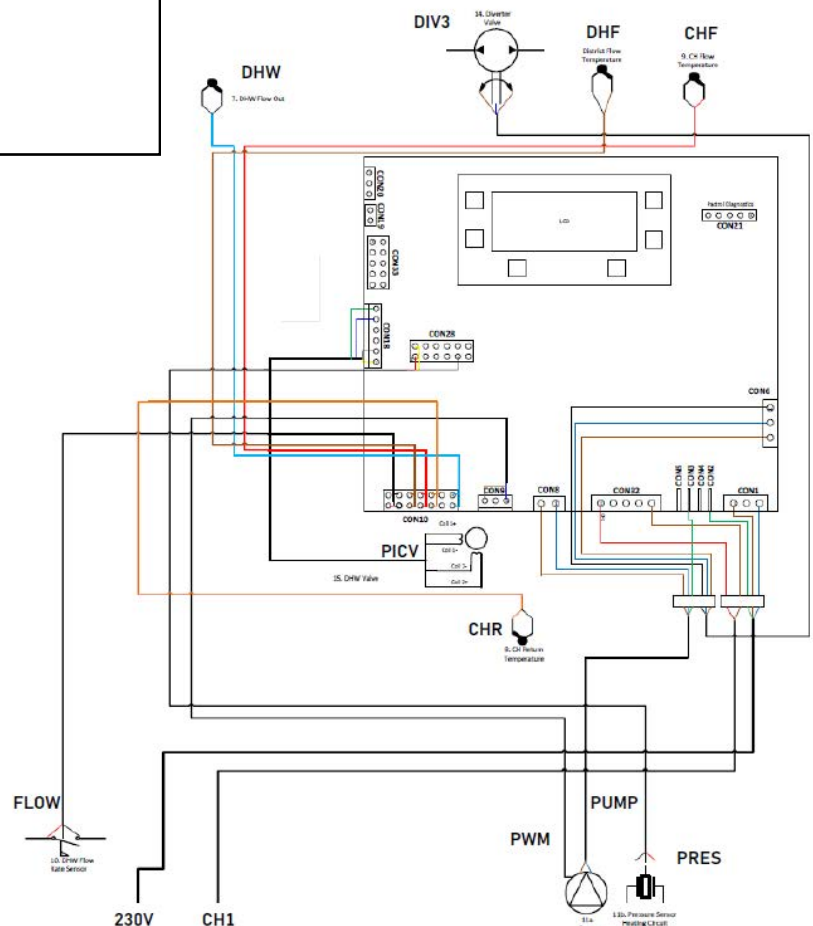
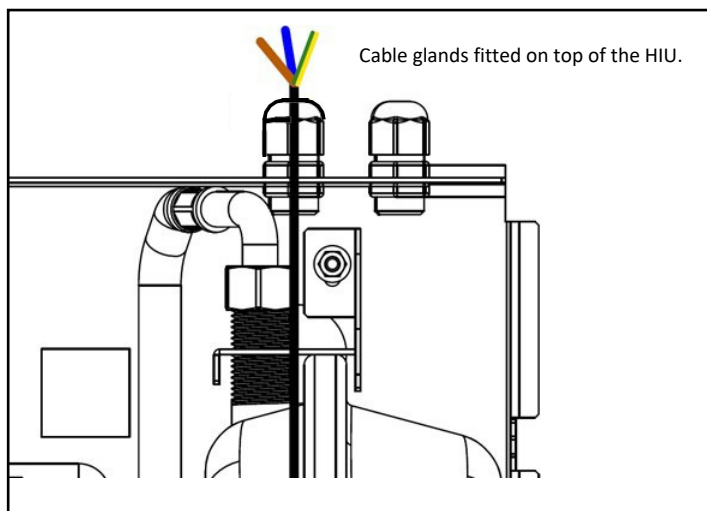
Note that the Room thermostat switching must be VOLT FREE!!



Note that the billing connection for pre-payment function must be VOLT FREE!!

The appliance is supplied with an electric supply cable which is not fitted with a plug. The appliance should be electrically connected to a 230 V (ac) single-phase + earth mains supply using the three-wire cable, observing the LIVE (L) - NEUTRAL (N) polarities and the earth connection. This line must be connected to a circuit breaker device. To extend the cable, if necessary, use a flexible cable suitable for kitchen and heating appliances and for home, kitchen and office installations, also in humid environments subject to medium levels of mechanical stress. Make sure that the electrical system can withstand the maximum power consumption of the appliance, with particular emphasis on the cross-section of the wires. If you have any doubts, contact a qualified technician to request a thorough check of the electrical system.

Before starting the HIU, visually check the hydraulic connections for the absence of any leakage and all the electric connections. After finishing the check, activate the electric supply to the HIU and check for the presence of any error signal.



Section - The HIU Controller on first power up and set up.



On first power up (only) the controller will automatically proceed to a set up menu after it has booted up unless any faults are detected.

INITIAL SET UP SEQUENCE - START HERE

1.

SET LANGUAGE
ENGLISH



2.

SET DATE

25 / 12 / 20

SET TIME

00.00



Next set the correct date and time

Next.....

3.

SET HEATING
FLOORHEATING

SET HEATING
RADIATOR



Use the arrow keys to choose the heating method.
Radiators or underfloor heating?

SLAB DRYING

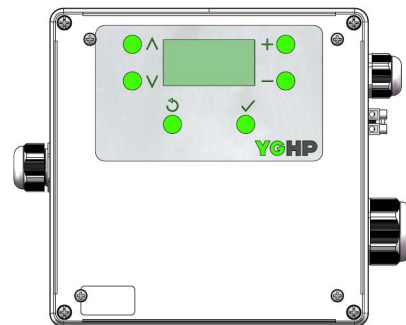


SLAB DRYING ON
STOP=167h 14m



MIN TEMP SLAB
29 C

Drying starts at the minimum temperature then rises to the maximum factory set temperature over a 3-day period. The maximum temperature can be reset in parameter 12 in the installer menu. The screen shows the total time left for this operation. The function can be stopped by pressing the OFF button.



BUTTON FUNCTIONS

ON/OFF - hold down to turn off OK - confirm entry

ARROW UP - increase setting ARROW DOWN - decrease setting.

Radiator heating selected.....

3b

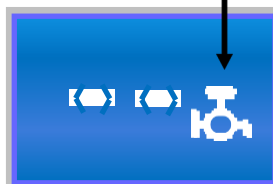


TEMP RADIATOR
60 C

Factory setting for radiators is 60C. Change with the up and down arrow keys if required. Press OK to confirm the change.



The icon seen shows that the 'Keep Warm' function is activated.



The controller is now in run or standby mode awaiting a hot water or heating demand signal.

Section - The HIU Controller on first power up and set up.



All features and functions can be accessed in the installer level programming. How to access, and a list of all the parameters which can be programmed are in a separate document that is not to be left with the end user as misuse of these set parameters may cause the HIU to not operate as efficiently as when it was commissioned by the installer.

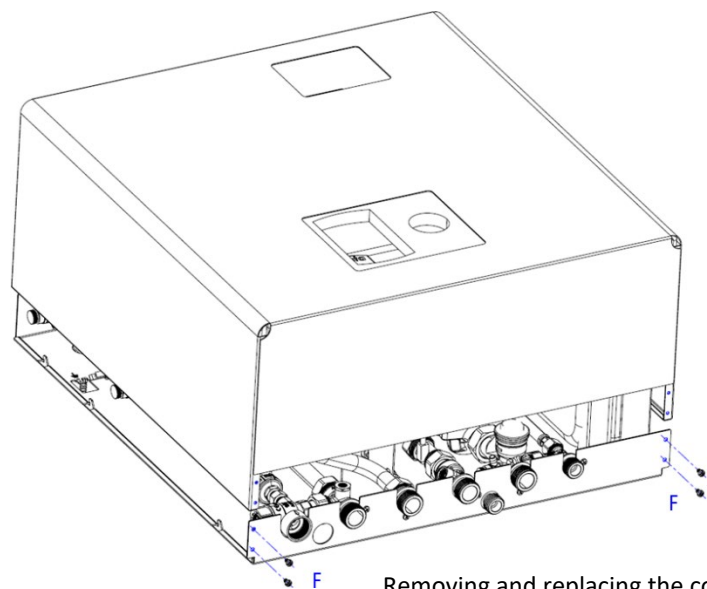
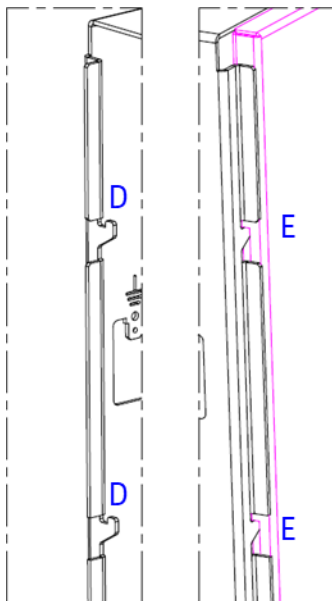
To request Installer Controller Parameter Settings Guide contact Thermalee.

UFH or Radiator Heating.
UFH floor draying (slab draying)
Minimum temperature limiting (HTG and DHW) Maximum temperature limiting (HTG and DHW) Optimised heating (reduced flow as temperature nears set point)
Flow limiting in HTG mode, full power as used for DHW not required for meeting the heating loads).
Temperature control of primary return when in keep warm mode.
Frost protection.
PWM pump control.
Manual mode the pump.
Manual mode for the PICV actuator.
Manual mode for the diverter valve.

Option to temperature control and additional domestic hot water (DHW) storage cylinder.
Option to switch a second pump to load the DHW cylinder. Keep warm function switch ON or OFF.
Option to redirect the keep warm bypass through the heating PHE to prevent scaling of the DHW PHE. Anti-Legionella pasteurisation temperature and timed function.
Prepayment operation and shutting down of the HIU when out of credit (no additional valve required).
User settings lock.
Room thermostat switching options for normally open or normally closed switching.

When switching on power to the HIU, the controller will perform a diagnostics check, if any component is faulty a 'F' Fault code will be displayed.

If during operation a 'E' Error code be displayed, this is not a HIU fault, this is a warning that supply conditions from the primary heat network are not sufficient or correct, or that possibly a maintenance check is required.



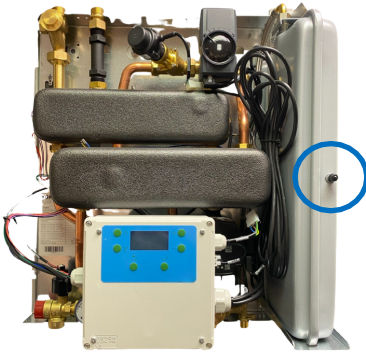
Removing and replacing the cover.

Leaving about one centimeter distance from the bottom of the metal frame, slide the casing cover downwards so that the projecting fins (D) on the frame fit with the slots (E) of the casing cover. If the casing cover is not completely closed on the sides, apply a slight pressure frontally to force it to close. Check the centering of the PID controller display, heat meter display and pressure gauge. Warning: if it does not close perfectly, check that there are no projecting.

Fix the casing cover on the HIU by screwing the 4 screws (F) in the bottom side as indicated in the picture.

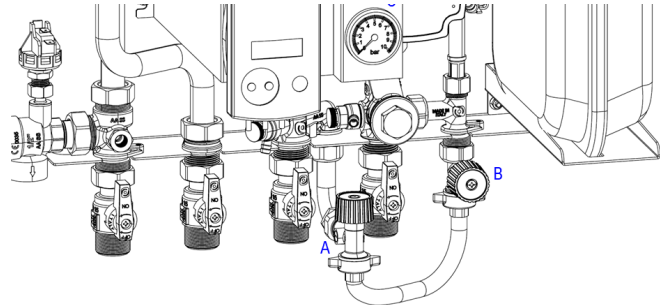
Operational checks - expansion vessel pre-charge.

7



Remove the plastic cap on the air valve of the vessel and check for the correct factory set pre-charge (with a tolerance of $\pm 20\%$) with a controlled manometer. Adjust the vessel pre-charge to the required value; replace and tighten the plastic cap on the air valve. Factory pre-charge: $1 \pm 0,2$ bar.

8



Operational checks - filling the secondary heating system.

The HIU can be fitted with an approved Filling Group (see accessories) with integral backflow preventer (A), check valves (A) and 2 two isolation valves (A, B). Depending on the configuration of the HIU, this kit could be pre-mounted on the HIU or to be mounted separately.

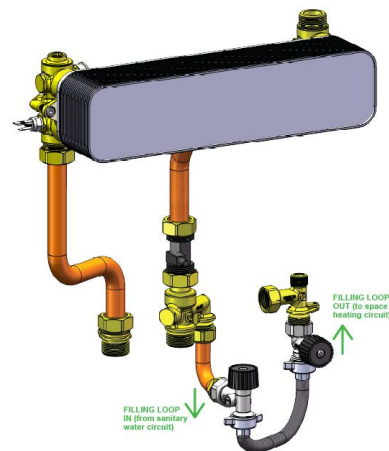
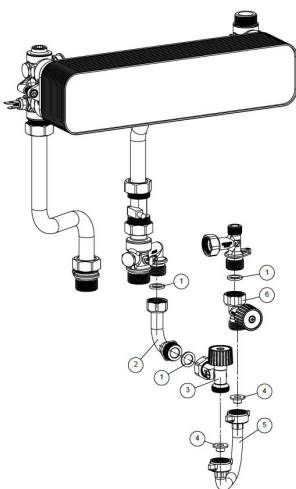
When filling the system for the first time or for subsequent top-up procedures following a heating circuit pressure switch fault, restore the heating system pressure ($1,2 \pm 2$ bar) by opening cocks (A, B) and checking the value by means of the pressure gauge (C).

- Flush the heating system with the HIU disconnected so that debris is not pushed into the plate heat exchanger
- Add chemical inhibitor to the system before filling. Check the suitability of the chemical, this may be different to the chemicals used in the primary system!
- Check the heating filter is clean and any additional magnetic filter.

With the cold water mains connected start filling, open valves A and B.

Once the correct pressure has been reached, close the cocks (A, B), vent the system and re-check the pressure. Allow the pressure to settle, then repeat the filling process if necessary).

The HIU is pre-flushed at the factory and ready for filling with by-pass operation. The PICV actuator must not be disassembled for the HIU flushing phase. Disassembly of the actuator provides for the immediate forfeiture of the product warranty. The PICV actuator should only be removed during the operation of being replaced, and hand tight but ensuring that the full travel of movement is available. In this case, the actuator shall be mounted by hand without the use of any tools.



Operational checks - filling the secondary heating system.

It is recommended to vent the HIU and remove all air. Air in the HIU prevents heat transfer. Venting valves are shown on the above positions 1,2,3 & 4. Flexible drain hoses are provided specifically for draining the HIU without spillage. Lower drain valves position 5 and 6.

Section - Commissioning - operational checks.

Operational checks - setting up of the pump.

The HIU is equipped with a **GRUNDFOS** circulating pump model **UPM3 HYBRID** 15-70. Controlled externally via a PWM signal or can be controlled in the following modes:

PP - Proportional Pressure (3 speeds and Auto Adapt)

CP - Constant Pressure (3 speeds and Auto Adapt)

CC - Constant Curve (3 speeds)

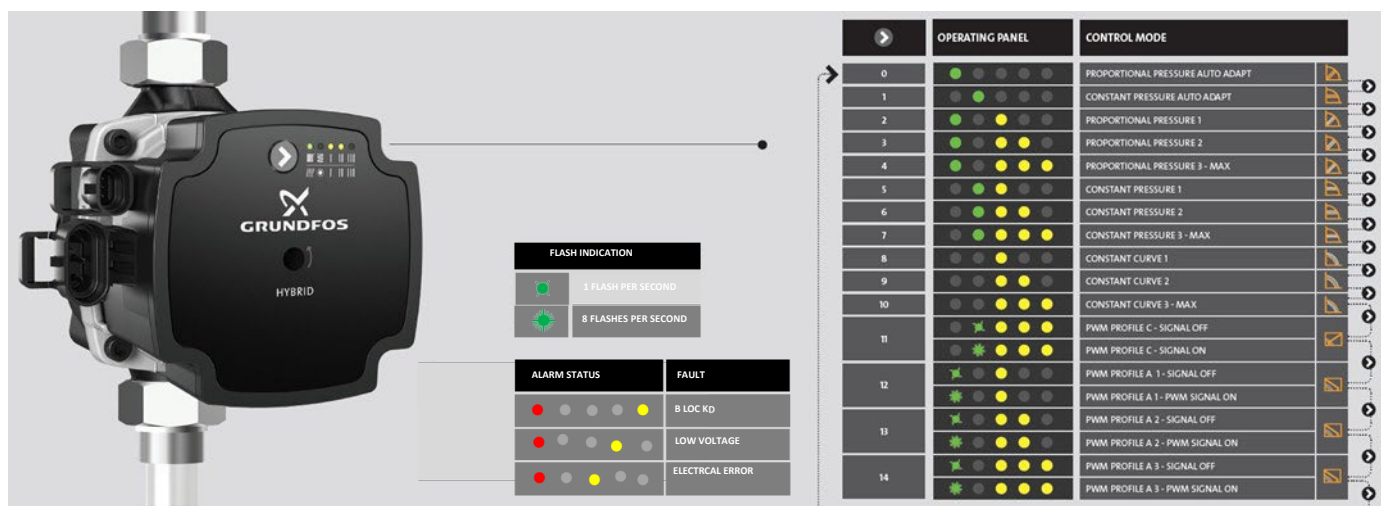
By default, the pump setting is with the maximum proportional pressure characteristics.

To change the characteristic, hold down the front key for more than 2 seconds and then press the same key repeatedly until reaching the required characteristics (refer to the figure below). Having identified the required characteristics (pressure - flow rate chart shown below) wait for about 10 seconds for the setting to be accepted by the pump.

A long press of the front key (>10 s) locks the pump setting, preventing possible incorrect modifications of the curve. Unlocking can be done in the same way, with a long press (>10 s) of the front key.

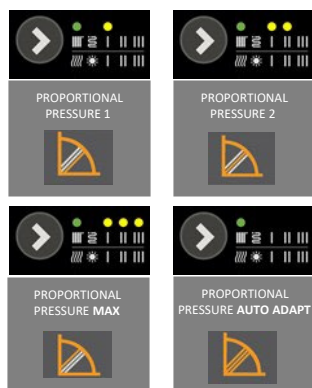
The pump also has a self-diagnostics system to reveal any possible operating problems.

Any problem detected is shown by a sequence of LEDs (alarm status).



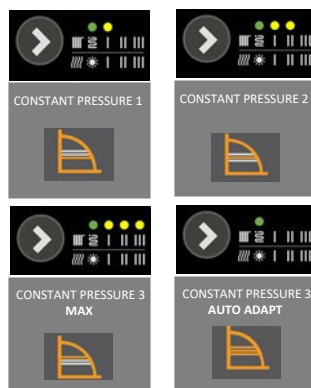
PROPORTIONAL PRESSURE

Systems with medium/high pressure drops and variable over time. Example, radiator systems with thermostatic valves



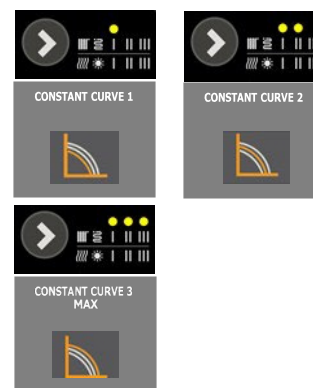
CONSTANT PRESSURE

Systems with low and constant pressure drops. Example, thermostatic mixed UFH systems.



CONSTANT CURVE

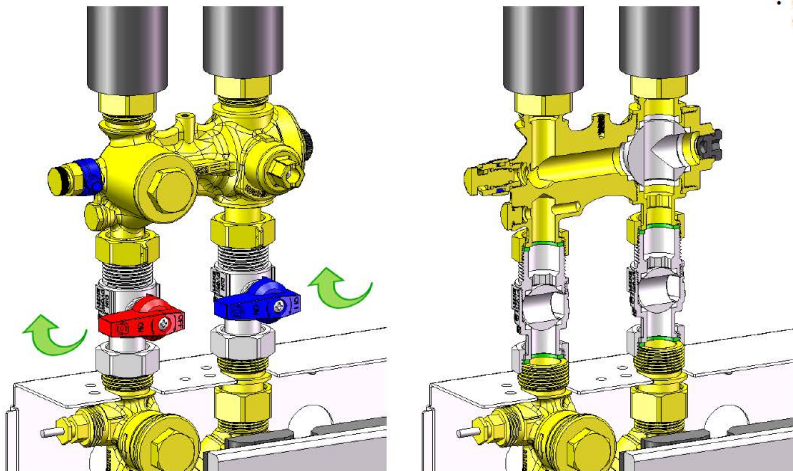
Systems with known and constant pressure drops. Examples, radiator systems or systems with hot water cylinder loading



Section - Commissioning - system flushing.

1

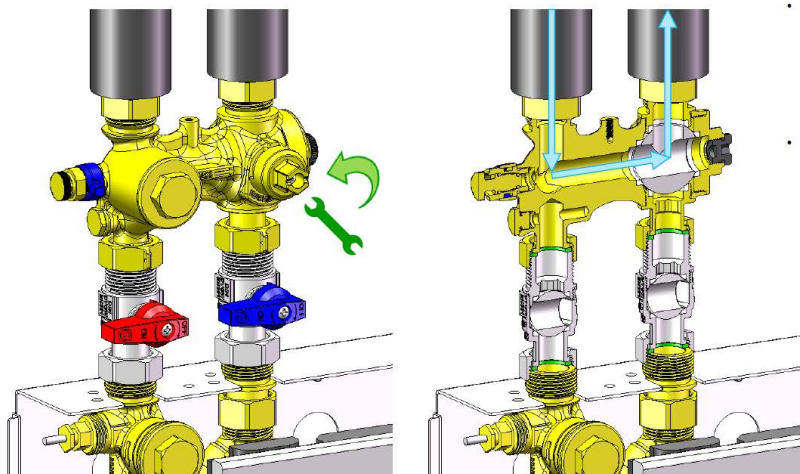
- Close the isolation ball valves to disconnect the HIU



Vertical cut → NO BY-PASS

2

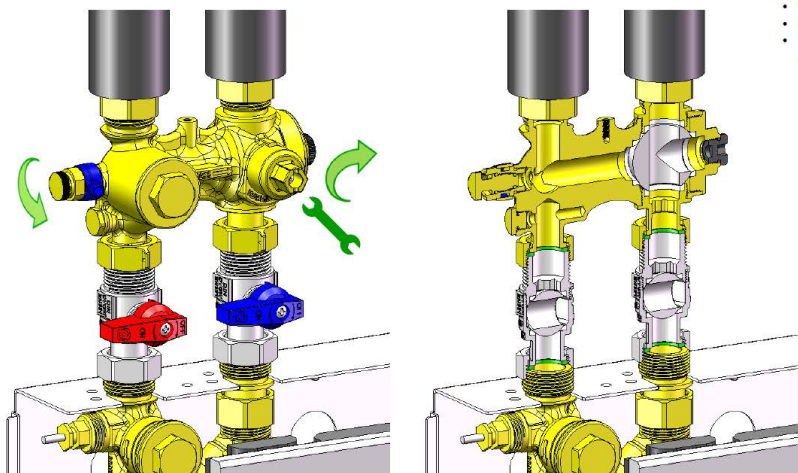
- Open the by-pass valve to activate the flushing function; the writing on the brass body of the valve are visible means of easily identifying when the by-pass is open → only possible through a specific tool (wrench 13); not possible to open accidentally
- Carry out the primary network flushing operation for the necessary time indicated by the system designer



Horizontal cut → BY-PASS

3

- Close the heat primary network
- Close the by-pass valve (vertical cut)
- If necessary, open the drain cock to release the fluid above the strainer



Vertical cut → NO BY-PASS

Section - Commissioning (completion).

Confirm the HIU has been registered and the warranty activated

YES

NO

☐
☐

Commissioning Record

No	HIU Commissioning Checklist	Comment and confirm the below has been checked.
1.		
2	Verify and record primary: flow, temperature and pressure. Primary flow rate can be read from the Heat Meter.	Flow Rate M3/hr: Primary flow temperature °C:
3	Verify and record if the room thermostat is voltage free <i>If the room thermostat is not voltage free do not turn on power to the HIU and abort commissioning!</i>	Record make and model of room thermostat: Volt free switching YES / NO
4	Verify and record if the primary side strainer inside the HIU is clean.	
5	Verify and record if the secondary side strainer inside the HIU is clean, and which inhibitor was used and when added.	
6	Verify and record in-coming water mains pressure	
7	Verify that the discharge pipe-work has a continuous fall and record that it conforms to regulations.	
8	Verify and record if present, any manual bypass valve is closed or flushing pipe on the PRIMARY is removed and capped.	
9	Verify and record that all pipes have been insulated and in accordance with current building regulations.	
10	Verify and record the wiring polarity and that earth connections are correct. Check for Earth continuity.	

Section - Fault Codes (as displayed on the controller screen)

Diagnostics - Fault code definitions.

When a fault occurs the relevant code will be displayed on the controller screen.

Fault codes inform that the controller has diagnosed a fault in one of the HIU's components.

code	Cause	Effect	Remedy
F0	DHW temperature sensor is short circuit or broken circuit, or disconnected	The HIU will not operate in DHW demand. It will still operate in heating demand mode.	Check that the sensor cable plug connection is good, and if OK then check the connection inside the controller. If this doesn't clear the F0 code, then replace the sensor.
F1	Primary flow temperature sensor is short circuit or broken circuit, or disconnected.	The HIU will not operate in DHW or heating demand. Without information of the primary temperature in, the controller can not function.	The F0 will clear and return to normal operation. Check that the sensor cable plug connection is good, and if OK then check the connection inside the controller. If this doesn't clear the F1 code, then replace the sensor.
F2	DHW storage tank temperature sensor is short circuit or broken circuit, or disconnected.	The controller disconnects the control of a optional hot water cylinder and all it's parameters.	The F1 will clear and return to normal operation. Check that the sensor cable plug connection is good, and if OK then check the connection inside the controller. If this doesn't clear the F2 code, then replace the sensor.
F3	Heating flow temperature sensor is short circuit or broken circuit, or disconnected.	The HIU will not operate in Heating mode. It will still operate in hot water demand mode.	The F2 will clear and return to normal operation. Check that the sensor cable plug connection is good, and if OK then check the connection inside the controller. If this doesn't clear the F3 code, then replace the sensor.
F4	Primary return temperature sensor is short circuit or broken circuit, or disconnected.	The HIU 'keep warm' function is disabled as this sensor controls the DHW PHE temperature during periods of non-use. Also efficiency is reduced as there is no control of the primary return temperature DHW and Heating are both still operational.	The F3 will clear and return to normal operation. Check that the sensor cable plug connection is good, and if OK then check the connection inside the controller. If this doesn't clear the F4 code, then replace the sensor. F4 will clear and return to normal operation.
F5	Heating return temperature sensor is short circuit or broken circuit, or disconnected.	The HIU 'heating optimisation' function is disabled as this sensor controls the heating return temperature . DHW and Heating are both still operational.	Check that the sensor cable plug connection is good, and if OK then check the connection inside the controller. If this doesn't clear the F5 code, then replace the sensor. The F5 will clear and return to normal operation.
F6	It is a notification that unexpected fluctuations in the return temperature have been monitored during hot water production. Probable cause is the network supply to the HIU.	The F6 error code is a notification that this is unusual. F6 will reset back to normal operation after 60 seconds.	Check the network supply temperature and flow and remedy. If F6 persists, then do a factory reset (parameter 00). This will recalibrate the PICV actuator. Check DHW sensor is in the correct position. Check with a manual operation of the PICV. Set this on parameter 91. If not working, replace the PICV actuator as a last resort.
F7	Either the pressure in the heating system is too low or the pressure switch is faulty.	The HIU will not operate in heating mode. It will still operate in hot water mode.	Check the system pressure on the gauge on the HIU. The pressure switch will cut out at 0.15 bar. Refill system to 1.2 bar. Resets normal operation after 30 seconds. If low pressure is not the issue, replace the pressure switch.
F8	The controller is recognising from the feed-back from the electrical connection that the rotation of the pump is not what it is expected to be.	Depending on the issue, it's most likely that heating will not be available.	Check wiring connections to the pump. Check pump for red LED lights signifying a fault. Check PWM is not set as ON in parameter 24. Setting must be 00 as factory set. Only consider replacing the pump head once all else has been checked Check water quality which is usually the cause of a premature pump failure

Section - Error Codes—as displayed on the controller screen.

Diagnostics - Error code definitions.

When an error code is seen, the controller is warning of unsuitable operating conditions that may be causing the HIU to operate inefficiently or possibly not at all. Also could be an potential operating conditions that could if left in that state become a safety issue

code	Cause	Effect	Remedy
E1	The measured primary temperature is lower than the set point temperature is for heating or hot water, so the HIU will not be able to achieve the set temperature, this is after 60 seconds of flow.	The function is re-enabled when the primary exceeds the setpoint temperature.	Remedy? Check the set point in the controller, adjust is the set point is set higher than the design supply temperature. Check that the primary temperature probe is correctly connected to the primary pipe. When the primary temperature and set point are aligned, the error code E1 automatically disappears.
E2	In installations where Radiators are at very high temperatures, then this is a warning that the return temperature is higher than the maximum allowed in parameter 20	As this is a safety function, the PICV closes until the sensor on the primary return sees a temperature drop of 10C below the parameter 20 set point for maximum. .	. Check parameter 20 is set correctly, if too low, reset this at 5C higher than secondary heating flow set temperature. Check the temperature probe is positioned correctly. Reset (turn power on and off) to recalibrate the PICV actuator
E3	The controller is recognising that the HIU performance is not as the algorithm predicts. The energy transfer is poor.	Heat transfer is inefficient, hot water production reduced and temperature control unstable.	If signs of blockage it could be the strainer is blocked or the PHE is partially blocked with lime scale. Check PICV fully open – check flow on the heat meter, low flow now would prove a blockage of some sort is the issue.
E4	No hot water	The controller has detected that the hot water temperature control behaviour is consistent with the sensor being in the wrong position, and shut down hot water production as a safety precaution. The HIU will automatically rest after 10 minutes, but repeat the shutdown again if the issue is not resolved.	Check DHW temperature sensor position is correct. Reposition. Then system reset, turn off the power at the supply, and then turn on again to allow the PICV actuator to re-calibrate its position.
E5	Heating is not reaching the set point so is performing poorly or not at all.	Heating stops after 20 minutes and shows the E5 code. Resets after 30 seconds Or Error LEDs on the pump? Power ON and OFF at the mains switch, this allows the PICV to recalibrate, and in doing this will allow a small flow into the PHE, which then proves the PICV and Diverter not at fault. Return temperature is to high with no apparent	Check the following possibilities. - Primary is too low (heat network issue to resolve)? - Is the set temperature on the controller higher than the incoming primary (network) temperature and temperature is impossible to reach? Rest set the temperature so it is 10C lower than the primary. - PICV blocked / strainer blocked? - Diverter in the wrong position? <u>This error code is showing that either;</u>
E6	Temperature information from the heating temperature sensors is wrong or unusual.	control being seen.	1. The heating temperature sensors have been wrongly positioned with the flow on the return and the return on the flow, change then to their correct position. 2. The installer has not connected the primary connections correctly, with the flow connected to the return connection. Verify by recording the primary temperatures. <u>The E7 will automatically reset itself after 10</u>
E7	The heating return temperature is too high and the HIU is warning the operator. Various causes may be considered, example all TRVs may be closed with only 1 x small radiator open, but the room thermostat is still calling for heat.	Various causes may be considered, example all TRVs may be closed with only 1 x small radiator open, but the room thermostat is still calling for heat. The return temperature is much too high, so the HIU ceases .The effect is that the controller shuts down the pump before re-starting again after 10 minutes.	minutes. Attention should be paid to the set up of the heating radiators and controls. Is the room thermostat positioned correctly to turn off before all the TRVs shut down? Is the radiator circuit balanced correctly at the radiator valves? E7 may occur under certain test conditions where unnatural operating conditions are forced.

Section - Trouble shooting.

Performance issues where no fault code is displayed

Ref	REPORTED ISSUES	Trouble Shooting Checklist
1	The water from the hot taps is COLD.	Is there power to the HIU? Is the unit going into hot water mode? Possible blockages – if there is heat coming into the HIU from the Primary? Measure the flow through the heat meter and decide if it's sufficient. Is the PICV opening? Check for signs of flow. Check controller diagnostics. Plate Heat Exchanger blockage, possibly scale. If suspected take the necessary steps to remove and clean. Is there water at the cold taps? If not, check the mains stop tap.
2	There is NO WATER at the Hot Taps.	If it is found to be closed, open it and check the fault is resolved. Check piping. Are the HIU isolation valves open or closed? Is the flow switch working? Is there a bypass fitted on the primary before the HIU, and it has been left open? CLOSE the valve, the HIU will now work as designed.
3	Insufficient Hot Water at the taps, but no error codes at the Controller.	Is there enough PRIMARY FLOW at the HIU? Check the flow at the heat meter. Check the PRIMARY temperature. Does it meet the design criteria? Check the settings on the controller. Check the ambient temperature. Is the reason that the room thermostat setting is too low to switch on the heating?
4	- No Room Heating - Radiators are COLD. - Under Floor Heating is installed Floor is COLD.	system low pressure. Has the safety valve discharged? Check system pressure and top up if necessary. Air blockage in the radiators. Check the Circulating Pump (see LED lights on the pump which can warn of a problem or a fault). Is the pump fully operational? Is the controller set up correctly? See Installer settings. Is the Room thermostat wired correctly? Is it working? Check the PRIMARY FLOW and Temperature. Check then that the isolation valves to the unit are open. Is the Bypass Valve open on the valve above the HIU? Is the PICV actuator fitted correctly?

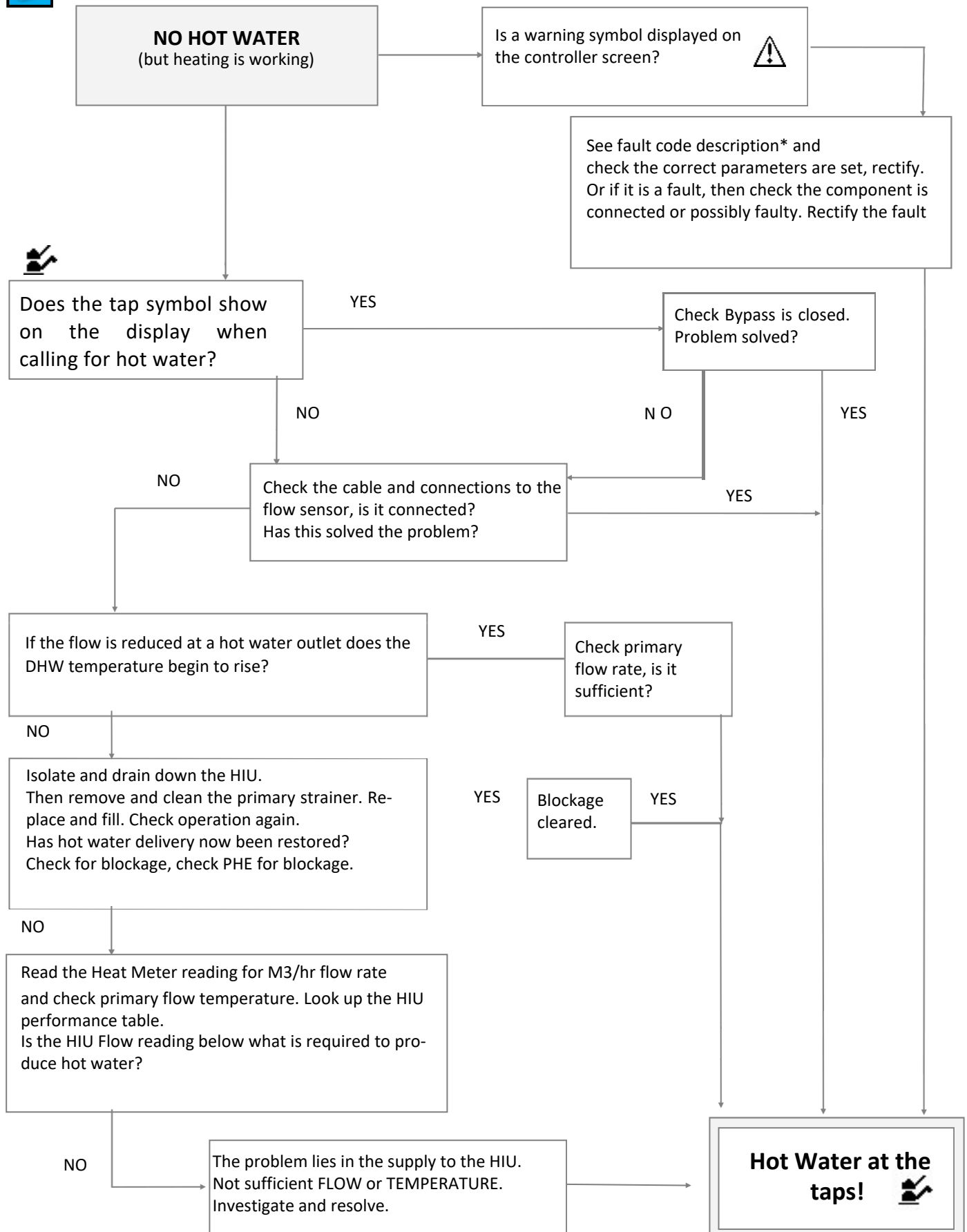
Pump fault LED lights

FAULT	OPERATING PANEL	REMEDY
		
		
		
		

Section - Trouble shooting.



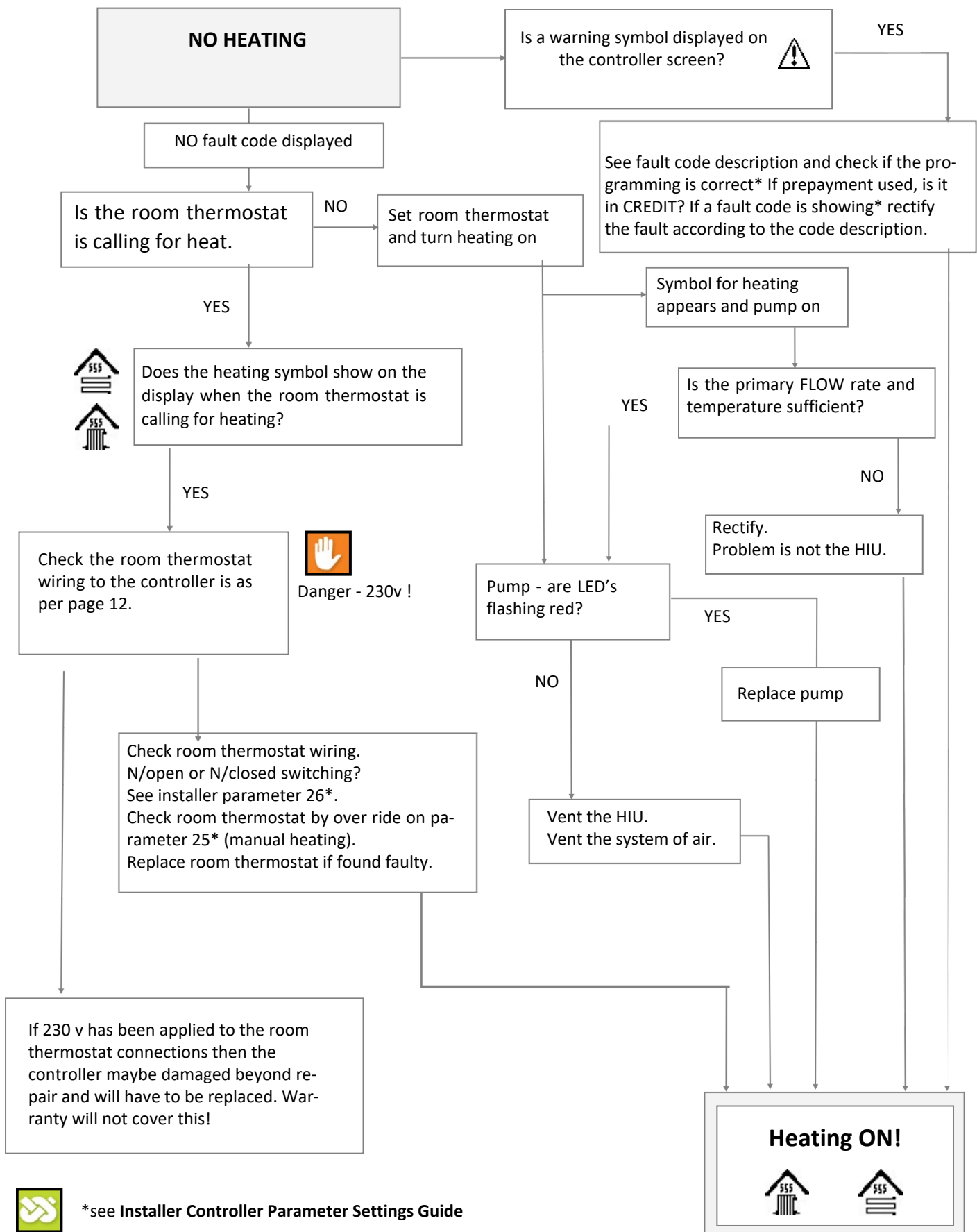
* Have the 'Controller Programming Guide' at hand!



Section -Trouble shooting.



* Have the 'Controller Programming Guide at hand!



*see Installer Controller Parameter Settings Guide

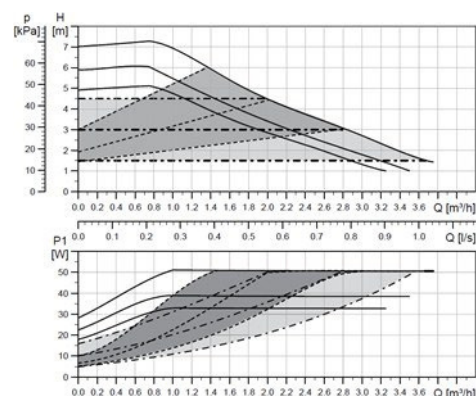
Technical Specification.

PRIMARY (heat supply from communal heat source) Max. PRESSURE	16 bar
PRIMARY (heat supply from communal heat source) Max. TEMPERATURE	95° C
PRIMARY (heat supply from communal heat source) Max. PRESSURE DIFFERENTIAL	6 bar
PRIMARY (heat supply from communal heat source) Max. FLOW RATE	1300 l/hr
SECONDARY (central heating) MAXIMUM PRESSURE	3 bar
SECONDARY (central heating) MAXIMUM TEMPERATURE	90° C
SECONDARY (central heating) TEMPERATURE ADJUSTMENT	20°C to 85°C
SECONDARY (central heating) Max. HEATING OUTPUT at Primary 70C	18kW
DOMESTIC HOT WATER (including cold water supply main) Max. PRESSURE	10 bar
DOMESTIC HOT WATER TEMPERATURE ADJUSTMENT	30°C to 65°C
DOMESTIC HOT WATER OUTPUT at Max. primary flow / 85C at Max. primary flow / 70C	70 kW 65 kW
DOMESTIC HOT WATER Max. FLOW at Max. primary flow / 85C	28 l/min
COLD WATER MAINS SUPPLY RECOMMENDED PRESSURE AT INLET TO THE HIU	2 Bar
HIU weight	30kg
Connections	¾" M
Power supply	230V / 50Hz / 1PH
Electrical consumption	Max. 52 W
Expansion vessel	9 ltr
Pump - UPM3 Hybrid 15-70 130	Grundfos
Residual head at 1000 l/hr	50 kPa

PUMP CURVES

Grundfos UPM3 Hybrid
1" Flange Connections.

Line type	Description
—	Constant curve
- - - - -	Proportional pressure
- · - · - · -	Constant pressure



Maintenance.



Annual servicing is required to ensure that the conditions of the warranty are met.

Ref	Checklist - Maintenance	Remarks /Notes
1	Turn off all HIU Isolation valves. Isolate the electrical supply to the HIU at the fused spur switch. Drain* the Primary side pipework of the HIU. If leaving the installation while maintenance is in progress notices should be placed accordingly to prevent others from interfering with equipment and valves.	
2	Inspect STRAINER on the HIU Primary side flow. REMOVE CAP, REMOVE MESH, CLEAN AND REPLACE. Sample the Primary water chemical composition and check against specification. Report any abnormalities to the Building manager immediately.	
3	DRAIN* the HIU secondary heating circuit using the built in drain valves. See page 5 for of strainers (position 2).	
4	Check all strainers, including filters fitted on the cold water mains supply. This may also include Pressure Reducing Valves with integral strainer cartridges. Always isolate any components before maintenance.	
5	Central Heating side of the HIU - check the safety valve discharges by twisting the cap. Check the safety valve re-seats and seals.	
6	Central Heating side of the HIU - check the expansion vessel pressure and adjust or re-charge to 0.75 bar.	
7	PLATE HEAT EXCHANGERS - MAINTENANCE Special attention should be given to the plate heat exchangers, recent reported loss of performance may be caused by dirty or blocked plates (lime scale). After cleaning (or replacing) refit both plate heat exchangers. .	
8	Check all drain* valves are closed, open isolation valves and REFILL (secondary and primary), check for leaks and vent air* from the systems.	
9	Satisfied all is checked, replace casing and carry out commissioning check list.	

KIT CONTROTELAIO HIU

HIU SUBFRAME KIT



YATES GROUP HEATING PRODUCTS



HIU

V1

V2

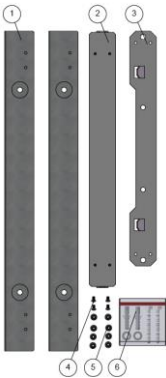
V3

V4

V5

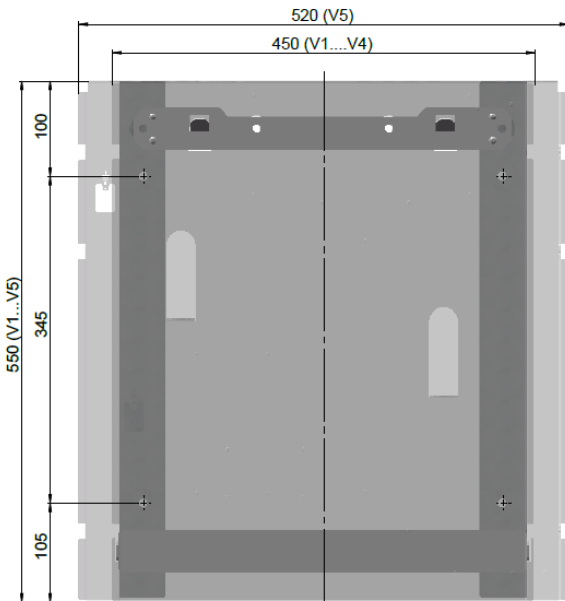
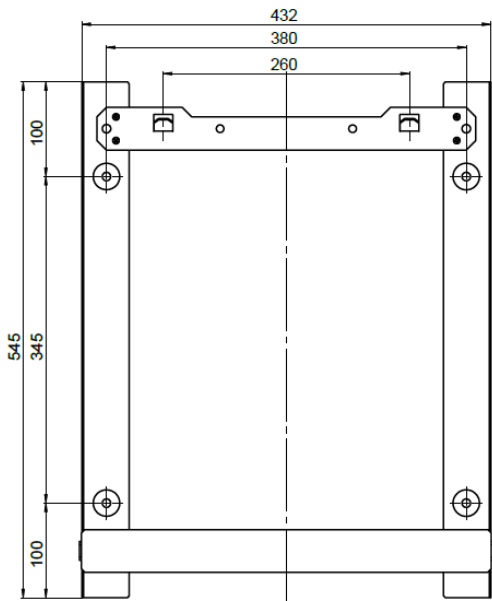
All models

19999007



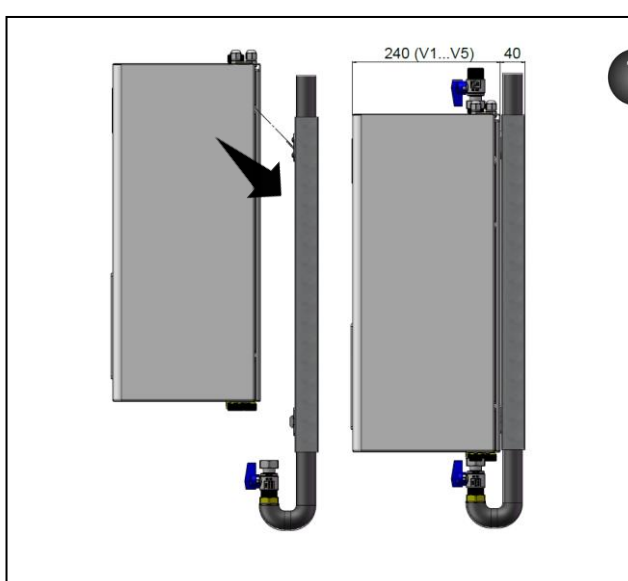
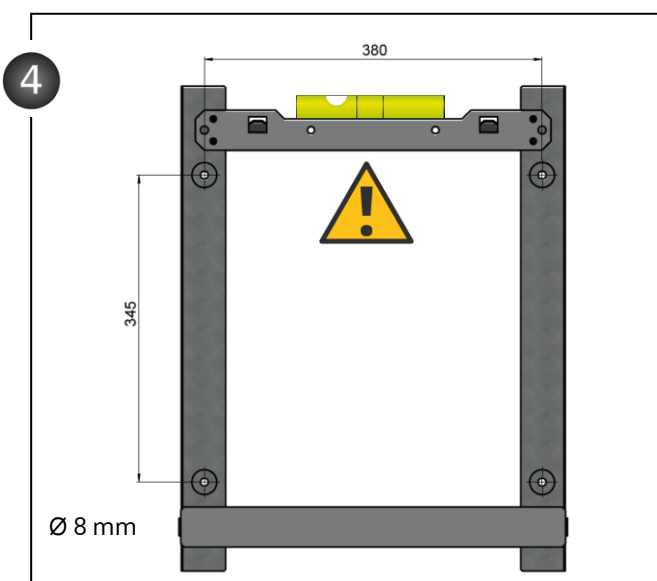
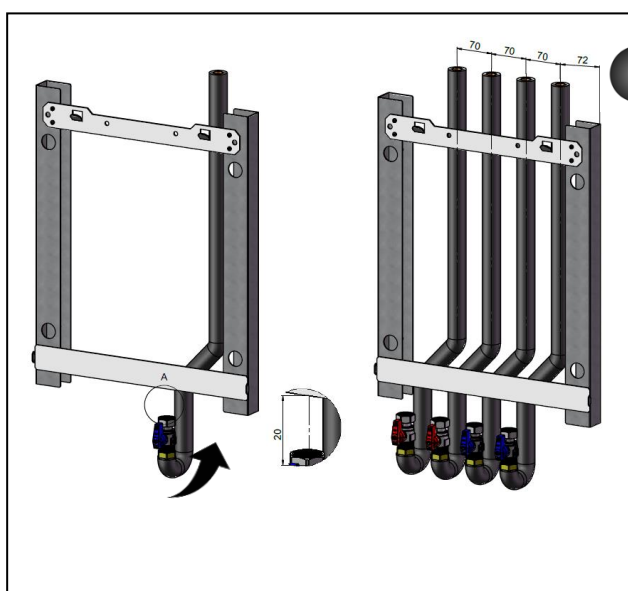
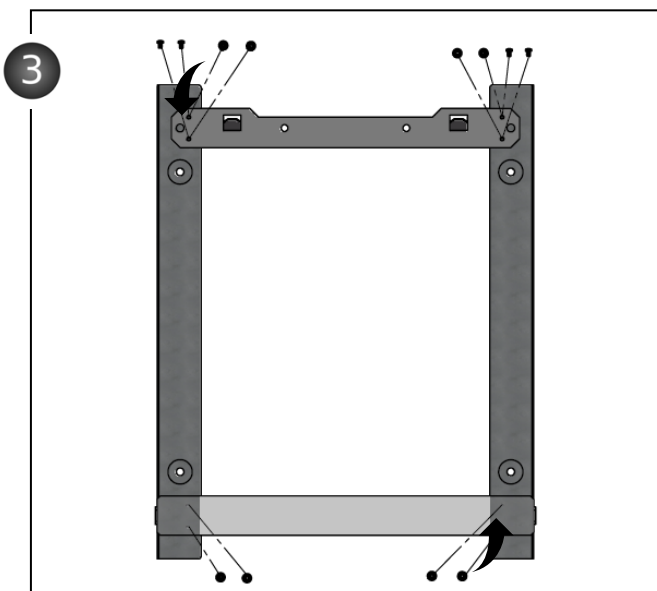
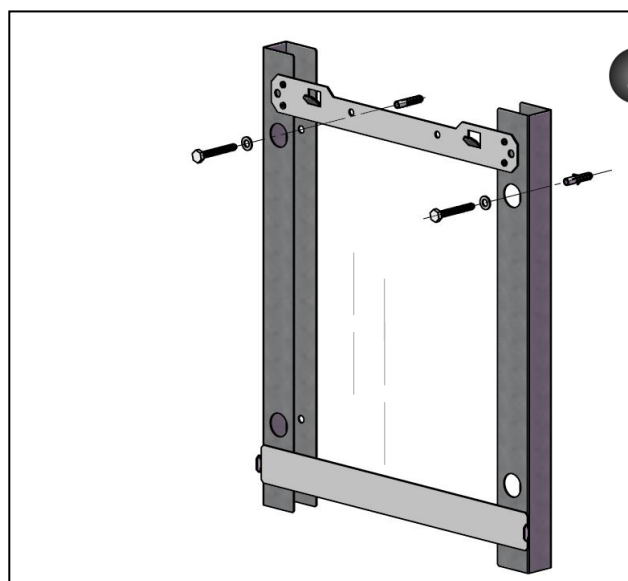
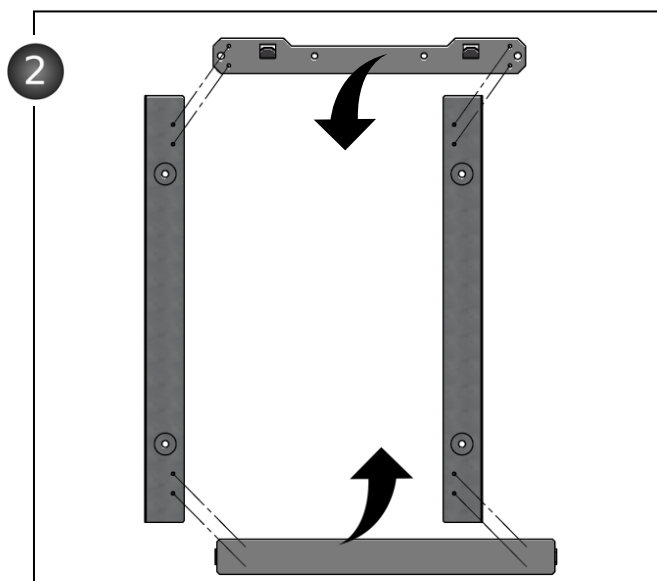
Num Item	Q.ty
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2	1
3	1
4	4
5	8
6	1

1



KIT CONTROTELAIO HIU

HIU SUBFRAME KIT





Twin Plate Heat Interface Unit
Instantaneous priority hot water and heating
