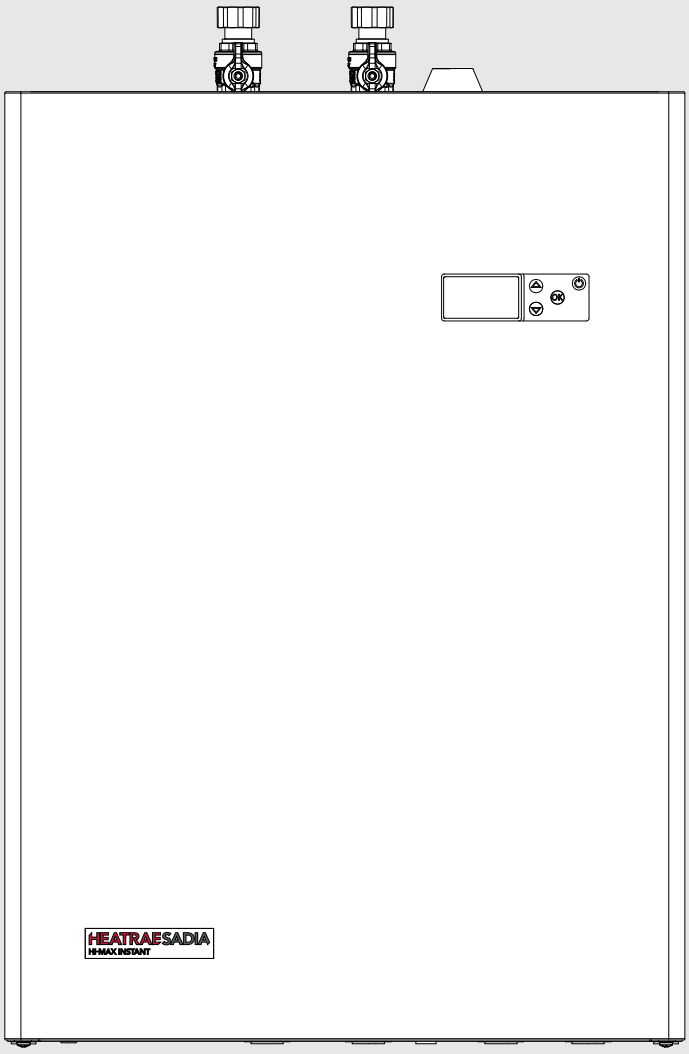
HEATRAE SADIA

SMARTER I CLEANER I WARMER

HI-MAX INSTANT Indirect HIU

Installation, operation and maintenance manual



WARNING

This water heater must only be installed by qualified persons.

Please read and understand these instructions before starting work.
Please leave this leaflet with the user following installation.

Contents

1. Introduction

1.1 General

The following instructions are offered as a guide to the user and installer.

The installation must be carried out by a competent plumbing and electrical installer in accordance with Building Regulations, The Building Standards (Scotland) Regulations 1990, The Building Regulations (Northern Ireland), UK Water Regulations and IEE Electrical Regulations.

1.2 Symbols used

In these instructions various risk levels are employed to draw the user's attention to particular information. In doing so we wish to safeguard the user, avoid hazards and guarantee the correct operation of the appliance.

DANGER

Risk of a dangerous situation causing serious physical injury.

WARNING

Risk of dangerous situation causing slight physical injury.

CAUTION

Risk of material damage.

Signals important information.

1.3 Abbreviations

- DHW - Domestic hot water
- PRV - Pressure reducing valve
- Prv - Pressure relief valve
- HIU - Hydraulic interface unit
- PICV - Pressure independent control valve
- Stv - Safety tempering valve
- PID - Proportional integral derivative

1.4 Liabilities

Manufacturers liability

Our products are manufactured in compliance with the requirements of applicable European Directives.
This appliance complies with the requirements of the CE marking directive and is Kiwa approved to show compliance with Water Regulations and Nemko approved for electrical safety.

In the interest of customers we are continuously endeavouring to make improvements in product quality. All the specifications stated in this document are therefore subject to change without notice.

Our liability as the manufacturer may not be invoked in the following cases:

- Failure to abide by the instructions on using the appliance.
- Faulty or insufficient maintenance of the appliance.
- Failure to abide by the instructions on installing the appliance.

Installer's liability

The installer is responsible for the installation and the commissioning of the appliance. The installer must respect the following instructions:

- Read and follow the instructions given in the manuals provided with the appliance.
- Carry out installation in compliance with the prevailing legislation and standards.
- Perform the initial start up and carry out any checks necessary.
- Complete the commissioning checklist.
- Explain the installation to the user.
- If maintenance is necessary, warn the user of the obligation to check the appliance and maintain it in good working order.
- Leave all the instruction manuals to the user.

Users liability

To guarantee optimum operation of the appliance, the user must respect the following instructions:

- Read and follow the instructions given in the manuals provided with the appliance.
- Call on qualified professionals to carry out installation and initial start up.
- Ask the installer to explain the installation.
- Have the required checks and services carried out annually.
- Keep the instruction manuals in good condition and close to the appliance.

2. Safety

2.1 General safety warnings

DANGER

This unit becomes pressurised when in operation. The combination of pressurisation and hot water could lead to serious physical injury if the safety instructions in this manual are not adhered to.
The unit is also designed to work at district heating hydraulic pressures up to 10 bar g and temperatures up to 90°C, which, if exposed to could lead to serious physical injury.

WARNING

- Only competent persons having received the appropriate training are permitted to work on the appliance and the installation.
- Do not tamper with any of the safety valves or controls supplied with the unit.
- Before any work, isolate the mains electrical supply to the appliance.

WARNING

- Do not adjust the safety tempering valve (Stv). This is factory set to prevent excessive hot water temperatures reaching the taps in the event of a system failure (see figure 1). The purpose of this valve should not be confused with that of a point of use mixing valve which is fitted near to the tap to prevent scalding.
- Do not tamper with any of the safety valves fitted to the system. If a fault is suspected contact a competent installer (see figure 1).

2.2 Recommendations

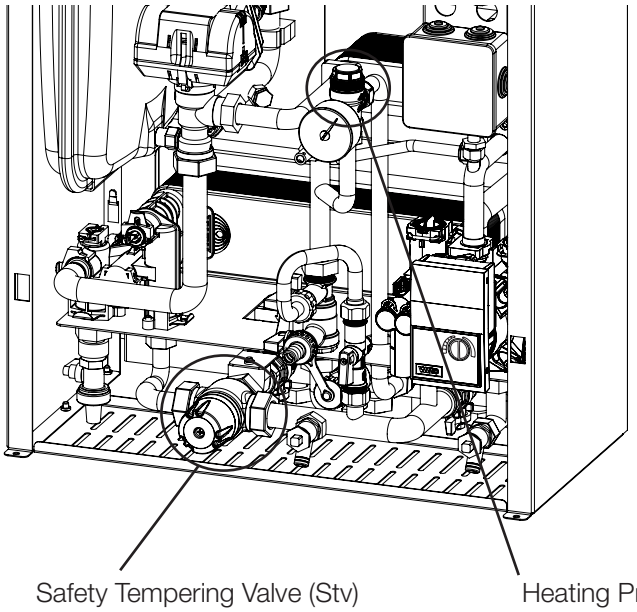
WARNING

When handling the unit, take appropriate precautions for the weight and stability of the unit. Weights can be found in section 3, p6.

CAUTION

Annual maintenance must be carried out by a competent person. Failure to do so will invalidate the warranty

Figure 1: HIU Safety Valves



2.3 Specific safety instructions

WARNING

- Under no circumstances should the factory fitted safety valves (Stv and Prv) be removed by anyone other than a competent person. The unit must not be run if either of these safety valves have been removed. Doing so will invalidate any guarantee or claim.
- Although the unit is suitable for cold water pressures up to 10 bar g it is strongly recommended that pressures above 3 bar g are reduced down using a suitable PRV fitted in the cold feed pipework.
- Where water hammer may be an issue fit a suitably sized potable water shock arrester / expansion vessel.
- Although the water regulations allow potable water expansion from this type of product to be accommodated in cold water supply pipework, if there is a back flow prevention device (eg. check valve) fitted in this pipework, a potable water expansion vessel should be fitted to hold the expanded system water volume (see Figures 17 and 18).
- Where expansion vessels have been fitted, it is good practice to protect the system in the event of its failure using a suitable potable water safety valve.
- No control or safety valves should be tampered with or used for any other purpose.
- The Prv discharge pipe should not be blocked or used for any other purpose.
- Where a tundish is fitted, this should not be located adjacent to any electrical components.

DANGER

Advice relating to the pump within the HIU due to strong magnetic field in the pump motor.

- If the unit consisting of impeller, bearing shield and rotor is pulled out of the motor, persons with medical aids, such as cardiac pacemakers, insulin pumps, hearing aids, implants or similar are at risk. Death, severe injury and damage to property may be the result. For such persons, a professional medical assessment is always recommended.
- Incorrect installation and electrical connection can result in an electric shock or even a fatal injury.
- Installation and electrical connection may only be carried out by a qualified personnel and in accordance with the applicable regulation!
- Any damage to the electrical cables must be rectified by a qualified electrician only.

DANGER

- **The pump will generate electricity if the impellar is able to turn. As such it is important that the hydraulic system and the electrical supply is isolated before any work is carried out on the pump.**

WARNING

Advice relating to the pump within the HIU due to strong magnetic field in the pump motor.

- Inside the pump there is always a strong magnetic field that can cause injury and damage to property in the event of incorrect dismantling.
- It is only permitted to have the rotor removed from the motor housing by qualified personnel.
- Take care when pulling the rotor out of the motor, it may be suddenly pulled back into its initial position by the strong magnetic field.
- Other electronic devices may be impaired functionally or damaged by the strong magnetic field of the motor.
- If the rotor is outside the motor, magnetic objects may be attracted very suddenly. That can result in injury and damage to property.
- In assembled condition, the rotor's magnetic field is guided in the motor's iron core. There is therefore no harmful magnetic field outside the pump motor.

A means for disconnecting the power supply must be incorporated in the fixed wiring in accordance with BS EN 7671:2008

This unit is designed to be permanently connected to the hydraulic systems and as such flexible hose connections should not be used.

Details of how the unit should be fixed to its support can be found on page 27.

For maximum and minimum cold water inlet pressures see table 1 on page 6.

The unit is fitted with an integral pressure relief valve. Water may drip from the discharge pipe of the pressure-relief valve and this can be witnessed through a tundish open to atmosphere. Where discharge pipework is piped to a drain, a trap to prevent foul odours should be installed. The pressure relief valve should be operated regularly to remove lime deposits and to verify it is not blocked. Other advice relating to the safety valve and its discharge pipework can be found on page 29.

The unit is fitted with drain valves on all three hydraulic circuits as detailed in figure 22.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
Children must be supervised to ensure they do not play with the appliance.

3. Technical specifications

3.1 HI-MAX INSTANT ID technical data

Table 1: Technical data

Technical Data	ID 5-60	ID 5-80
Maximum inlet pressure (DHW)	1.0 MPa (10 bar)	
Minimum inlet pressure (DHW) at 25 l/min	0.15 MPa (1.5 bar)	
Maximum pressure (District Heating)	1.0 MPa (10 bar)	
Maximum pressure (Apartment Heating)	0.30 MPa (3.0 bar)	
Apartment heating pressure relief valve setting (Prv)	0.30 MPa (3 bar)	
Maximum primary temperature	90°C	
Maximum DHW temperature (Safety TMV setting)	60°C	
Maximum heating temperature	85°C	85°C
Maximum output in DHW mode (1)	62.8kW	78.75kW
Nominal unit output in heating mode (2)	10.43kW	13.15kW
Maximum chloride content in systems	100 mg/l at 80°C	
Maximum primary pressure differential (3)	400 kPa	
Minimum primary pressure drop at maximum design flow rate (hot water mode) (4)	58 kPa	78 kPa
Maximum primary design flow rate below maximum primary pressure differential (in DHW mode)	990 litres / hour	1330 litres / hour
Maximum primary flow rate (Heating mode)	390 litres / hour	480 litres / hour
Min / Max DHW flow rate at 55°C (45K temperature rise) at 85°C primary flow temperature (5)	2.7 - 19.8395 litres / min	2.7 - 24.95 litres / min
Heating pump nominal head capacity	60 kPa	60 kPa
Primary flow rate in zero demand pulsed flow mode	100 l/hr	100 l/hr
Electrical supply to HIU	1ph / 50Hz / 230V	
Maximum power consumption (6)	53W	
Heat loss (kWh in 24h) in zero demand pulsed flow mode at 85°C district flow (7)	0.364 kWh/day	

(1) Based on a district flow temperature of 85°C.

(2) Output based on a primary flow temperature at 75°C and heating flow temperature of 60°C at maximum primary flow rate in heating mode. Higher heating outputs can be achieved by resetting the maximum primary flow rate.

(3) Maximum Delta P of the PICV.

(4) Excludes pressure drop through the heat meter.

(5) Minimum flow rate is subject to flow sensor tolerances.

(6) At maximum pump speed.

(7) Based on 20°C ambient air temperature.

NB: Primary flow and District flow are the same.

Table 2: Product codes

Product Code	Product Name	Gross Weight	Net Weight
95:050:202	**Heatrae Sadia HI-MAX INSTANT ID 5-60 HIU**	26.2 kg	24.8 kg
95:050:203	**Heatrae Sadia HI-MAX INSTANT ID 5-80 HIU**	26.6 kg	25.0 kg
95:050:206	**Heatrae Sadia HI-MAX INSTANT ID 5-60 HIU with heat meter**	26.5 kg	25.1 kg
95:050:207	**Heatrae Sadia HI-MAX INSTANT ID 5-80 HIU with heat meter**	26.9 kg	25.5 kg
95:970:040	**Heatrae Sadia HI-MAX INSTANT ID HIU Casing**	10 kg	8.4 kg
95:970:042	**Heatrae Sadia HI-MAX INSTANT ID HIU Standard First Fix Rail**	5.4 kg	3.9 kg
95:970:602	**Heatrae Sadia HI-MAX INSTANT ID HIU Basic Stand-off Kit**	8.9 kg	7.1 kg

The HI-MAX INSTANT ID HIU heats the hot water instantaneously as it passes through the DHW plate heat exchanger within the unit. The performance capabilities of the unit are detailed in Figures 2 and 5 of these instructions.

3.2 HI-MAX INSTANT ID 5-60 performance data

Figure 2 DHW Performance HI-MAX INSTANT ID 5-60

The DHW output performance of the Heatrae Sadia HI-MAX INSTANT HIU is related to the district flow temperature and district flow rate available.

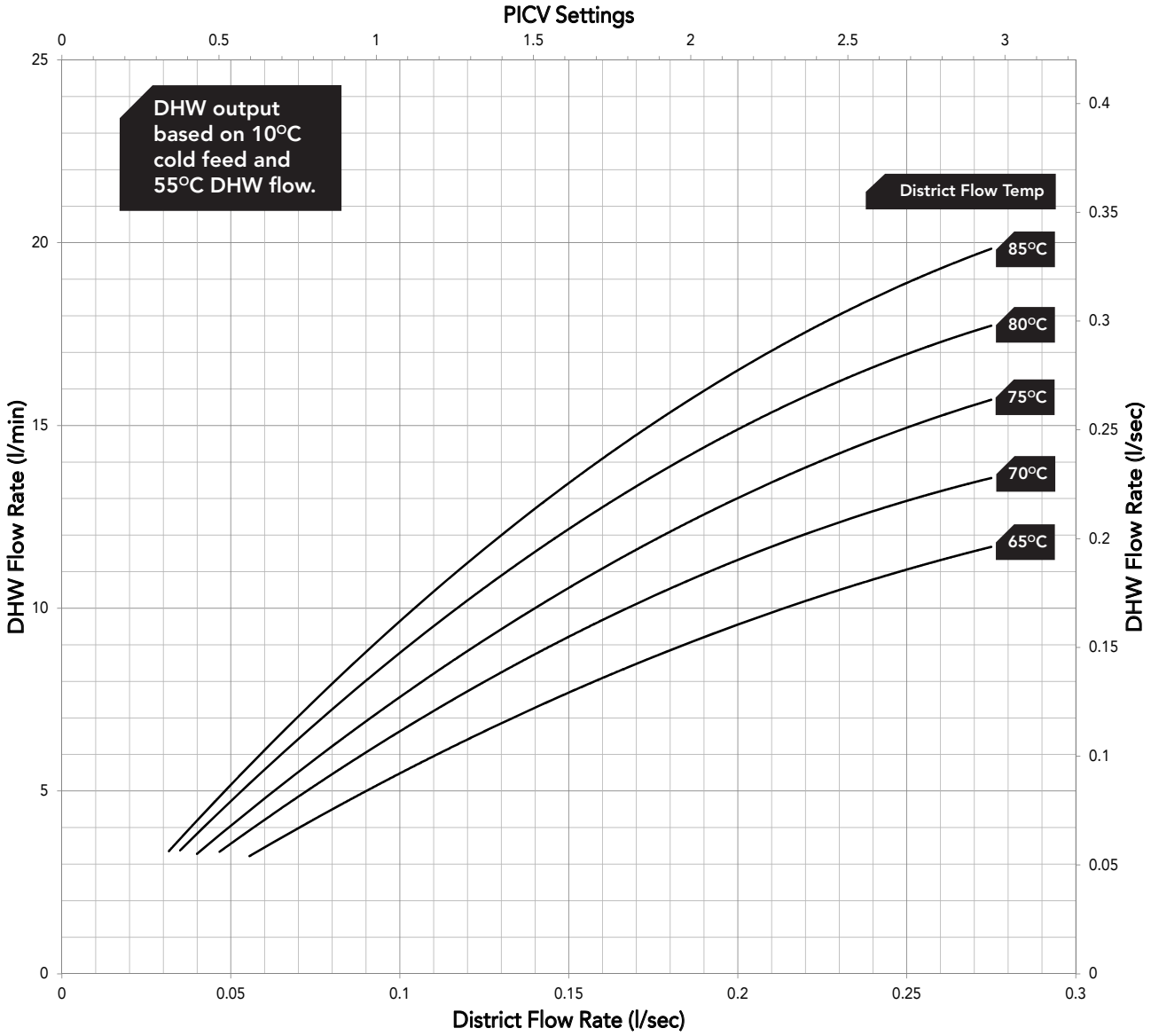


Figure 3 District flow pressure drop

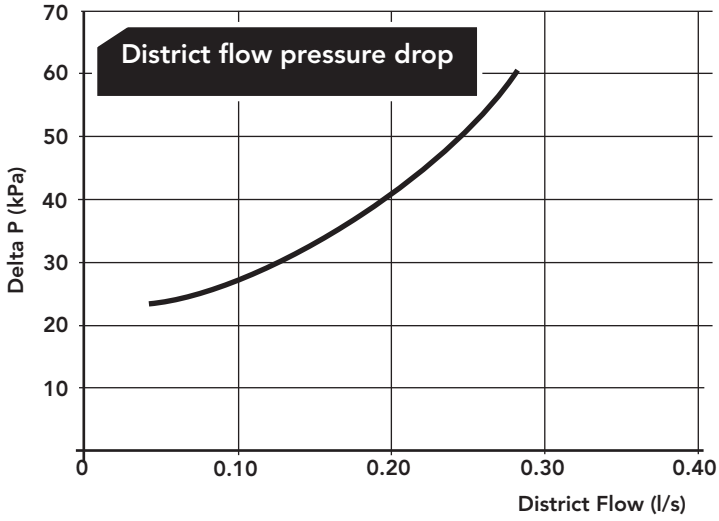
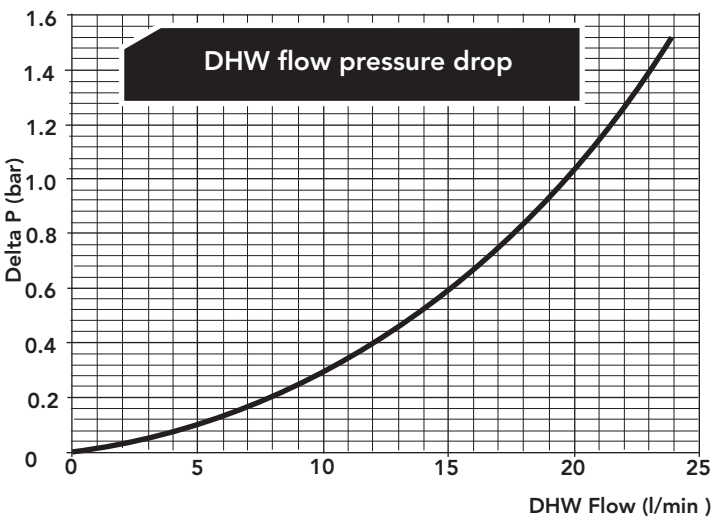


Figure 4 DHW flow pressure drop



Note: District flow pressure drop excludes heat meter.

3.3 HI-MAX INSTANT ID 5-80 performance data

Figure 5 DHW Performance HI-MAX INSTANT ID 5-80

The DHW output performance of the Heatrae Sadia HI-MAX INSTANT HIU is related to the district flow temperature and district flow rate available.

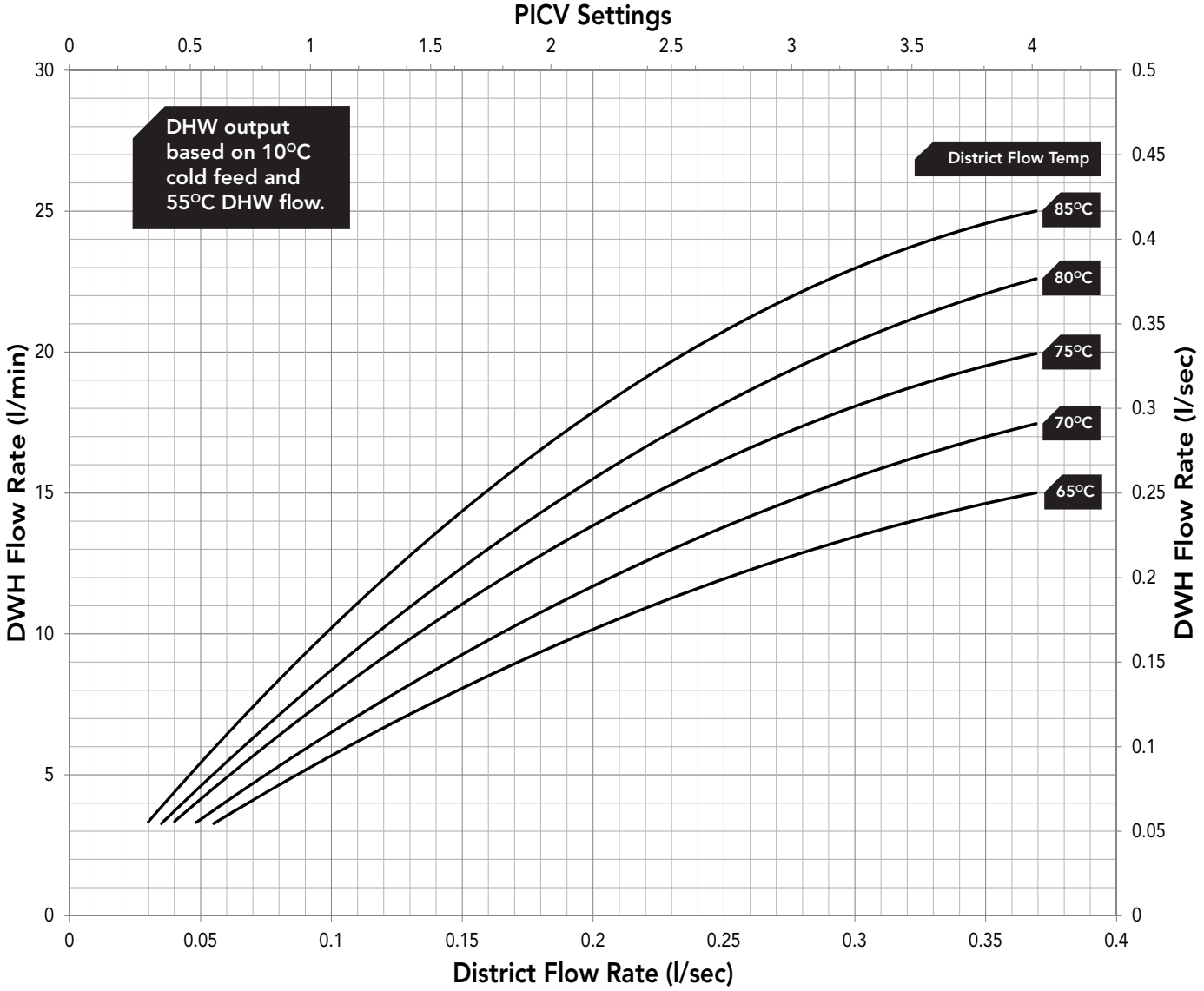


Figure 6 District flow pressure drop

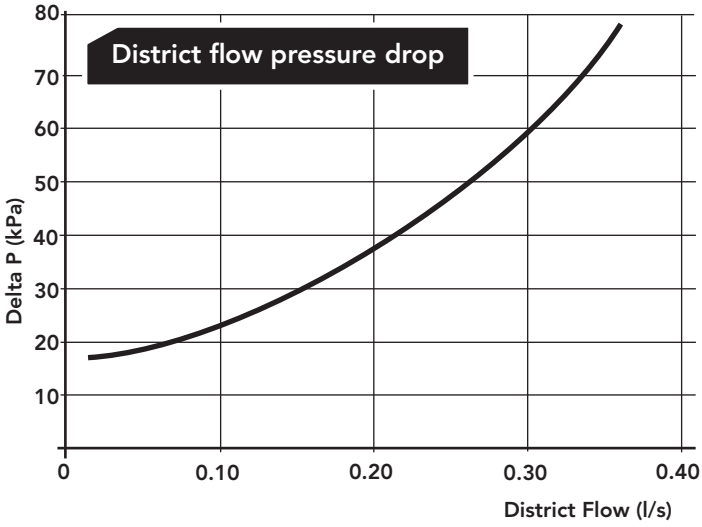
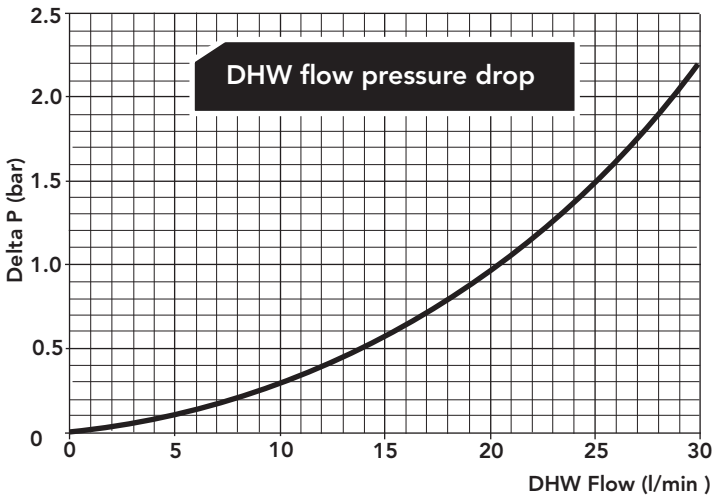


Figure 7 DHW flow pressure drop



Note: District flow pressure drop excludes heat meter.

3.4 HI-MAX INSTANT ID 5-60 and 5-80 heating performance data

Figure 8 Pump duty performance curves (variable pressure setting)

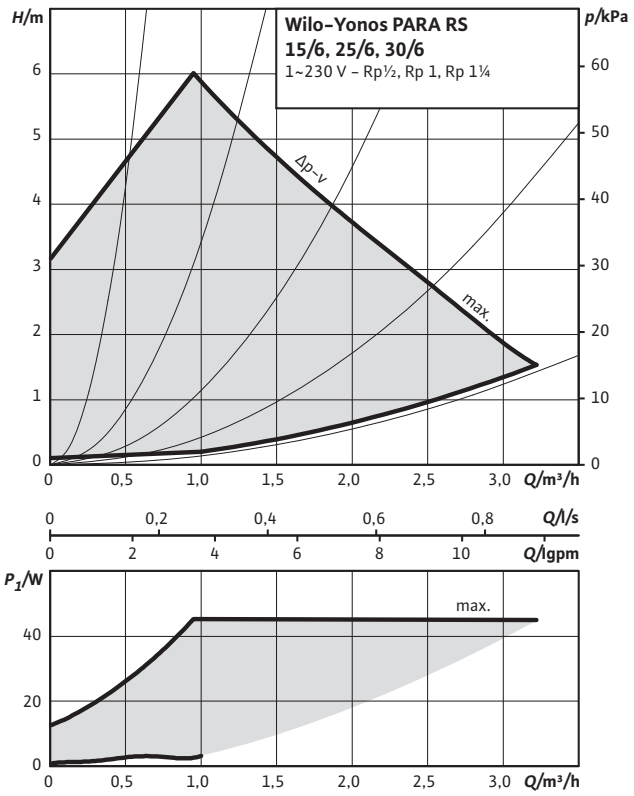


Figure 9 Pump duty performance curves (constant speed setting)

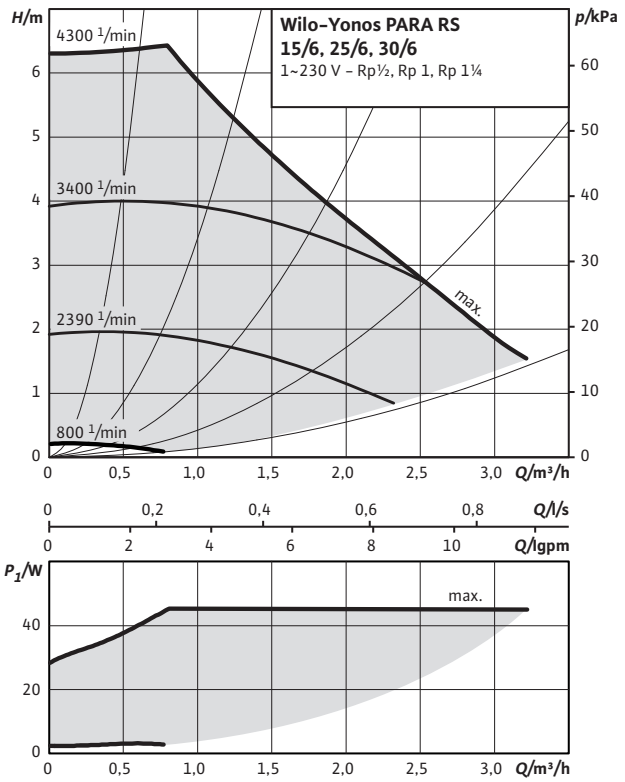
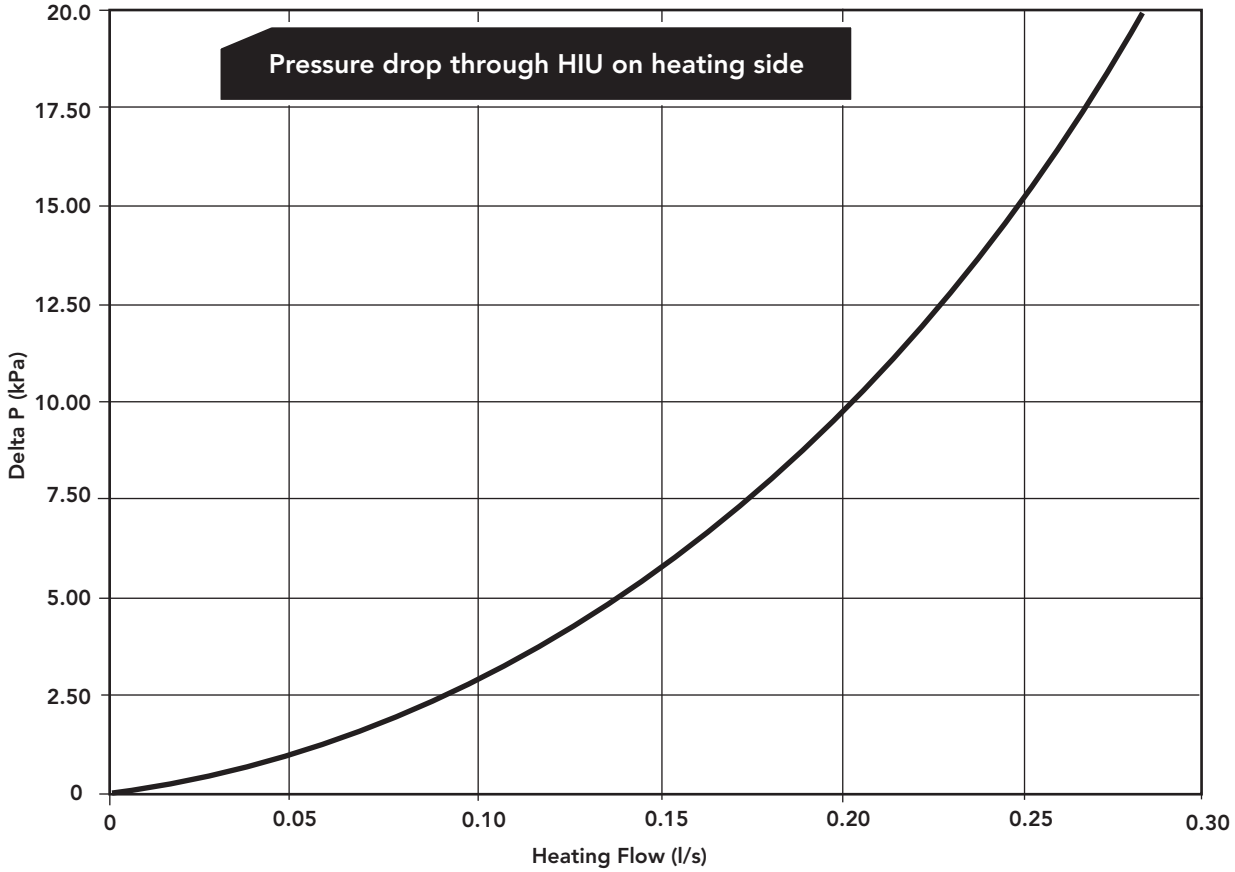


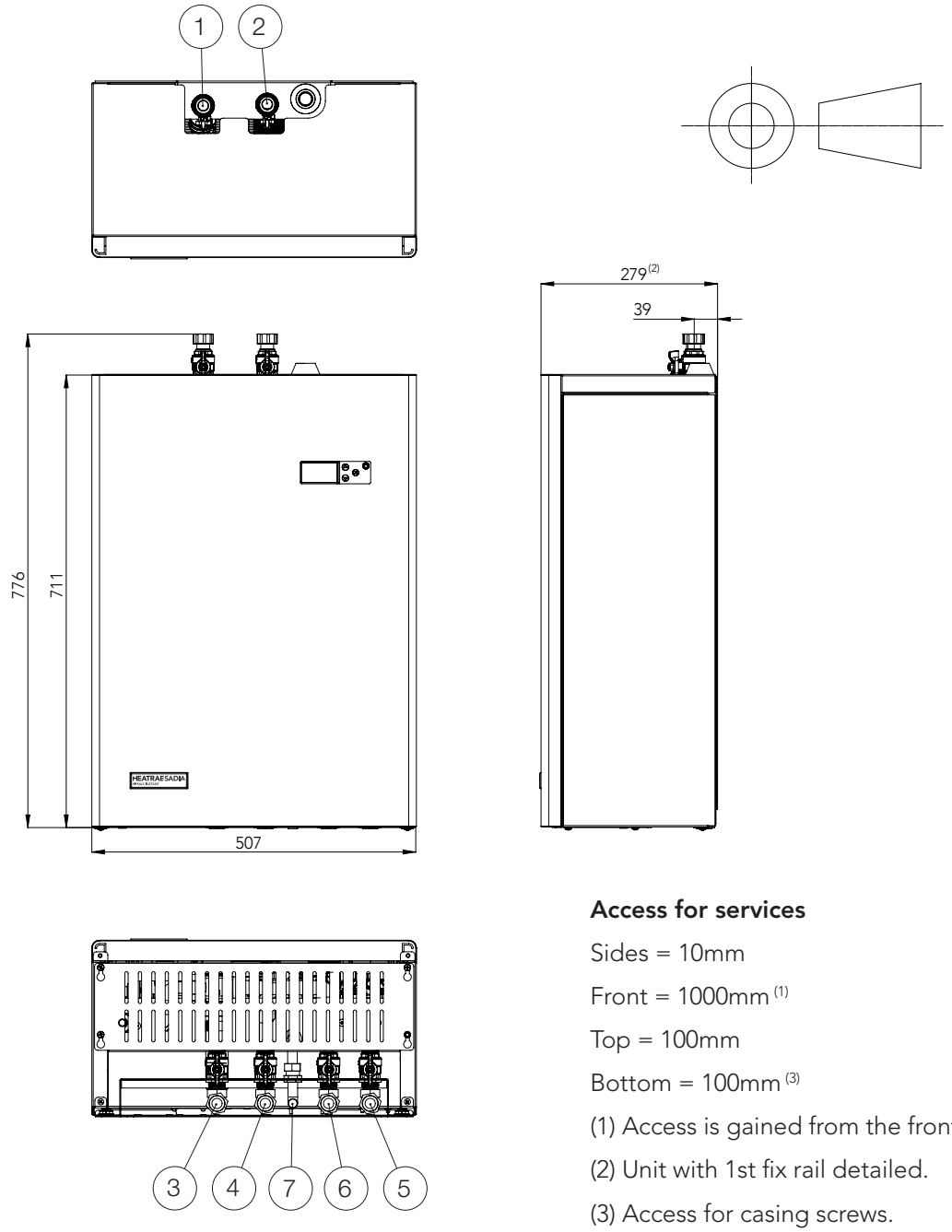
Figure 10 HIU pressure drop on heating side



3.5 Dimensions and connections

3.5.1 Dimensional details

Figure 11 Dimensions



Access for services

Sides = 10mm

Front = 1000mm (1)

Top = 100mm

Bottom = 100mm (3)

(1) Access is gained from the front.

(2) Unit with 1st fix rail detailed.

(3) Access for casing screws.

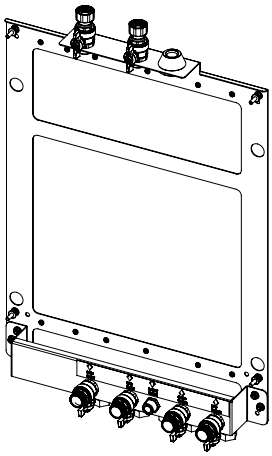
Table 3: Dimensional data

Connection	ID 5-60 & ID 5-80
(1) Community Heating Flow Connection	3/4" BSP Female
(2) Community Heating Return Connection	3/4" BSP Female
(3) Domestic Hot Water Flow Connection	3/4" BSP Female
(4) Apartment Heating Flow Connection	3/4" BSP Female
(5) Apartment Heating Return Connection	3/4" BSP Female
(6) Cold Feed Connection	3/4" BSP Female
(7) Heating Safety Valve Discharge Connection	15mm Pipe

Note: All dimensions are in mm and are reference only

3.6 1st fix rail and stand-off kit

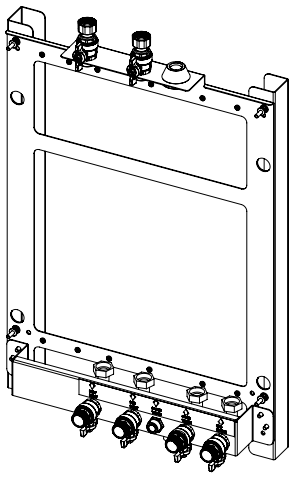
Figure 12 Different connection options



First Fix rail - 1 - Standard Configuration - 95:970:042

Top Connections: District Flow and District Return

Bottom Connections: DHW Flow, Cold Feed, Heating Flow and Heating Return



Basic Stand-off kit - 95:970:602

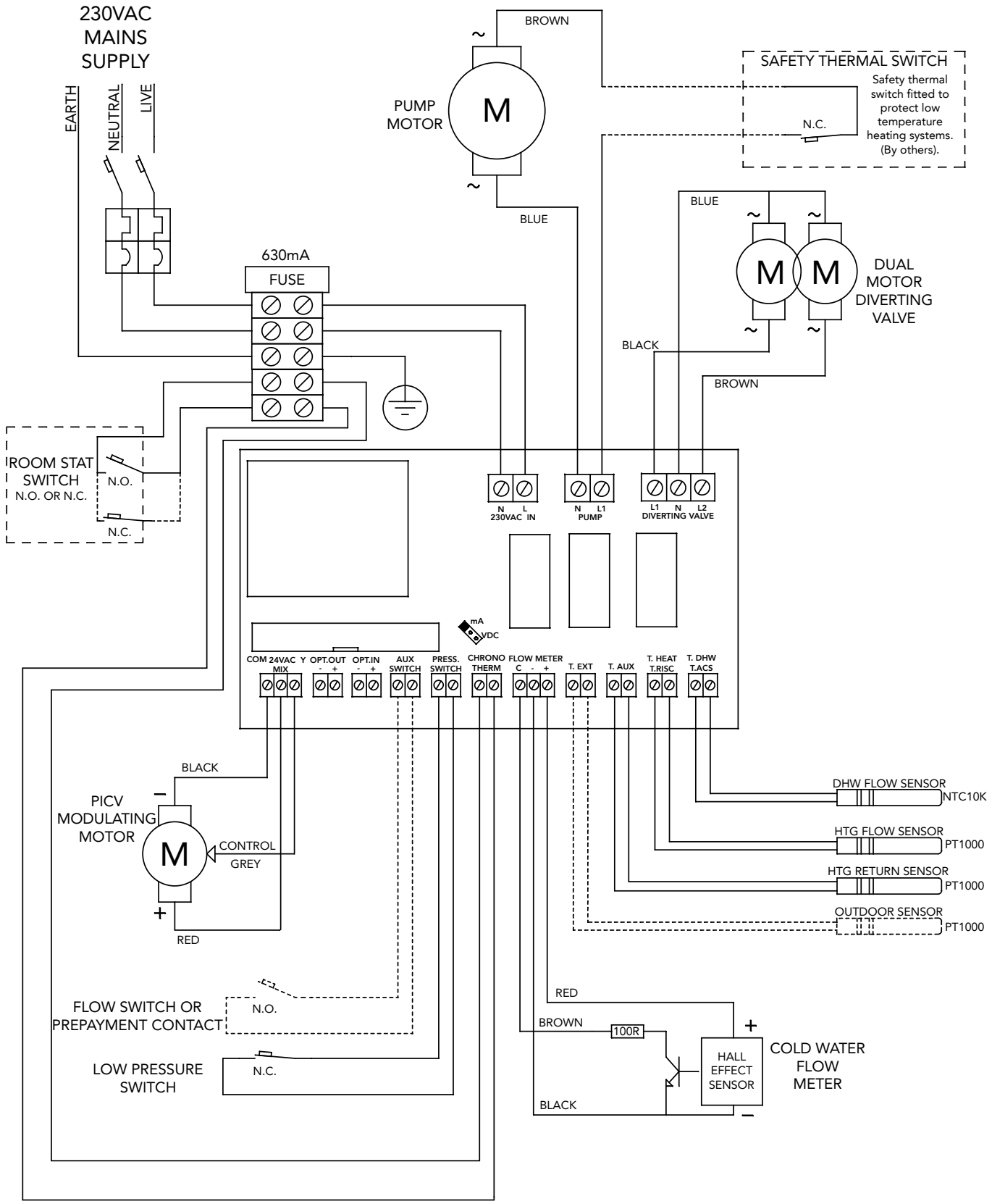
Top Connections: District Flow and District Return

Bottom Connections: DHW Flow, Cold Feed, Heating Flow and Heating Return

Note: Prv discharge connection at bottom on all ID models

3.7 Electrical diagrams

Figure 13: Wiring diagram for the heating and hot water controls



ⓘ For information on outdoor sensors and weather compensation refer to separate document.

DANGER

Ensure the HIU is earthed in accordance with BS EN 7671:2008

A safe means of electrically isolating the HIU must be provided.

Figure 14: Wiring diagram for one heating zone

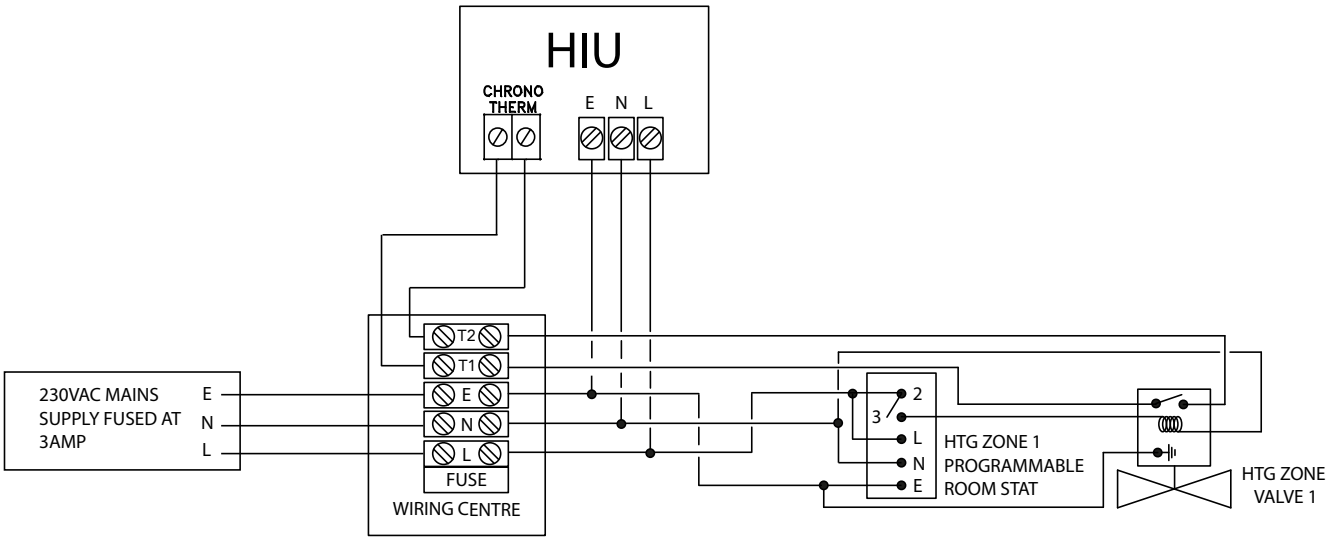
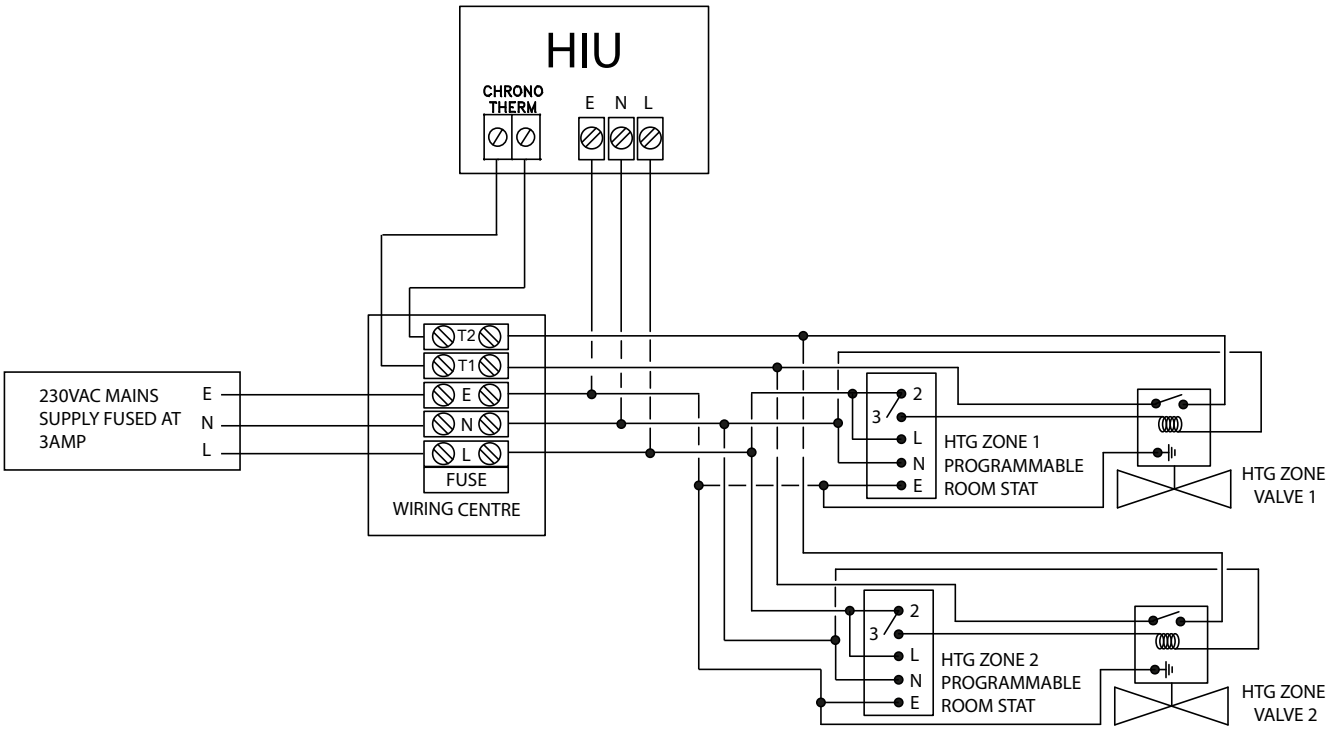


Figure 14 details a single heating zone valve, which may be required on systems where gravitation is a potential issue.

Figure 15: Wiring diagram for two heating zones



DANGER

Ensure the HIU is earthed in accordance with BS EN 7671:2008

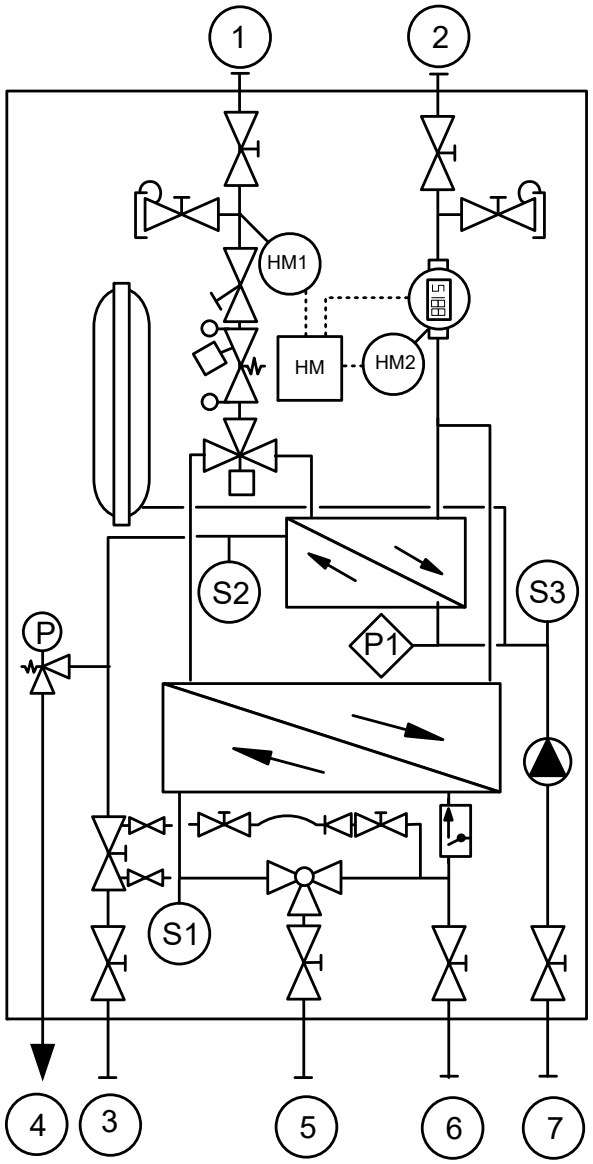
A safe means of electrically isolating the HIU must be provided.

The wiring schematics within this document are for guidance only and do not constitute system design.

3.8 Pipework and Instrumentation (P & I) Diagram

Figure 16: P & I Diagram

HI-MAX INSTANT ID Indirect HIU



Legend

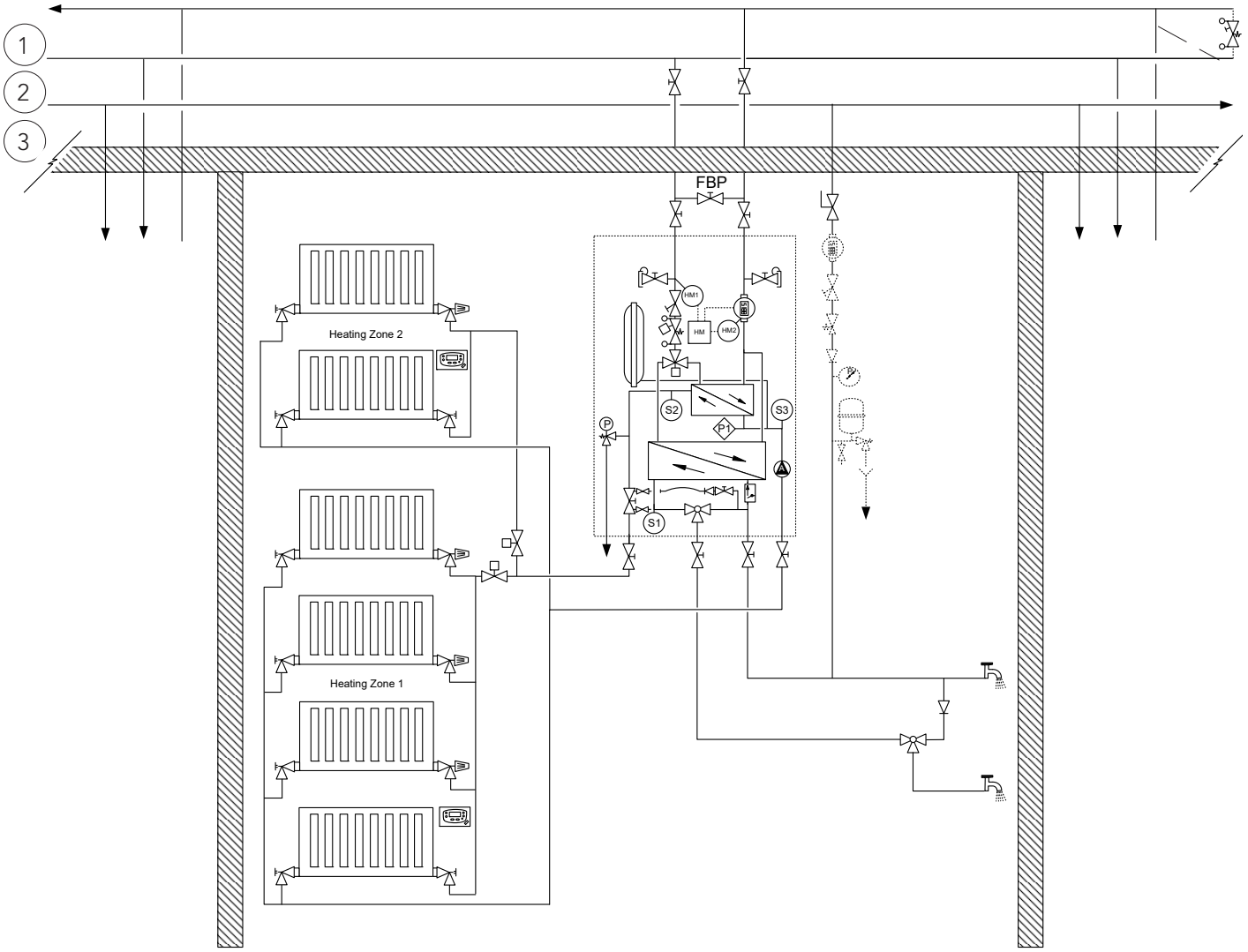
1	District Flow
2	District Return
3	Apartment Heating Flow
4	Apartment Heating Safety Valve Discharge
5	DHW Flow
6	DHW Cold Feed
7	Apartment Heating Return
S1	DHW Flow Temperature Sensor
S2	Apartment Heating Flow Temperature Sensor
S3	Apartment Heating Return Temperature Sensor
P1	Apartment Heating Low Pressure Switch
P	Pressure Gauge
HM	Heat Meter Volumetric Flow Meter
HM1	Heat Meter Flow Temperature Sensor
HM2	Heat Meter Return Temperature Sensor (fitted within the heat meter volumetric flow meter)

The hydraulic schematics within this document are for guidance only and do not constitute system design. Some components may not be detailed and connection positions have been moved for clarity purposes.

For clarification of the position of the connections refer to Figure 11 on page 10.

Figure 17: HI-MAX INSTANT ID Indirect Units - Hydraulic Schematic - Radiator System

Dynamic balancing valve at the end of each branch to maintain primary flow pipe temperatures during periods of no demand. Alternatively enable the pulsed flow bypass function on the HI-MAX INSTANT.



1 District Return

2 District Flow

3 Cold Water Services

The programmable room thermostat should be installed in the coldest room in the property where the only heat source is a radiator without TRV. The radiator should be fitted with lock shield valves to avoid it being inadvertently isolated. It will then act as a system bypass and heat dissipater for the system when there is a small demand on the system.

IMPORTANT INSTALLATION NOTE IF A PRESSURE REDUCING VALVE IS FITTED:

WHERE THE INLET SUPPLY TO THE PRESSURE REDUCING VALVE (PRV) IS ROUTED THROUGH A HEATED SPACE AND IS FITTED WITH A CHECK VALVE OR OTHER FITTING THAT WOULD PREVENT BACK FLOW, HIGH PRESSURES CAN BE EXPERIENCED IN THE INLET PIPE DUE TO WARMING THAT CAN CAUSE DAMAGE TO THE PRV OR OTHER FITTINGS ON THE INLET SUPPLY. IN THESE CIRCUMSTANCES, THE INSTALLATION OF A MEANS TO ACCOMMODATE EXPANSION AND THUS LIMIT THE PRESSURE RISE IN THE INLET PIPE IS RECOMMENDED.

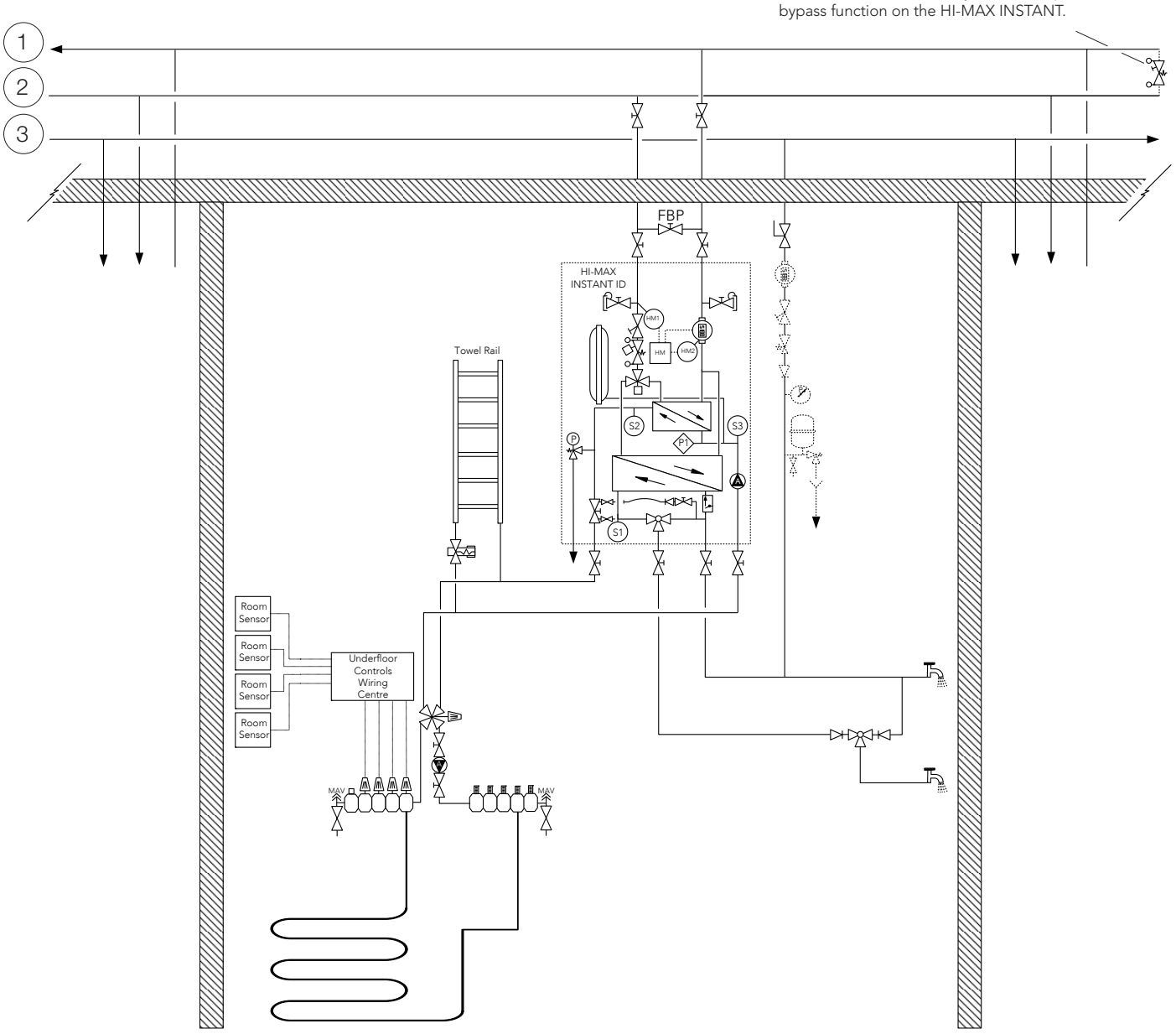
The hydraulic schematics within this document are for guidance only and do not constitute system design. Some components may not be detailed and connection positions have been moved for clarity purposes.

For clarification of the position of the connections refer to Figure 11 on page 10.

When installing the HIU avoid pipe runs that promote gravitation. Where pipes have to be installed directly up from a heat source consider piping in an anti-gravity loop (ie, a section of pipe that goes down before it rises up).

Radiator systems should be designed to operate at low system temperatures in order to keep district return temperatures to a minimum.

Figure 18: HI-MAX INSTANT ID Indirect Units - Hydraulic Schematic - Underfloor Heating Systems



1 District Return
2 District Flow
3 Cold Water Services

The hydraulic schematics within this document are for guidance only and do not constitute system design. Some components may not be detailed and connection positions have been moved for clarity purposes. For clarification of the position of the connections refer to Figure 11 on page 10.

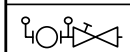
When installing the HIU avoid pipe runs that promote gravitation. Where pipes have to be installed directly up from a heat source consider piping in an anti-gravity loop (ie, a section of pipe that goes down before it rises up).

The HI-MAX INSTANT HIU is capable of controlling the temperature to the underfloor heating manifold, thus removing the need to fit a mixing valve as part of the underfloor heating system. That said, if there are high temperature circuits in addition to the underfloor heating system, a mixing valve will still be required as detailed in Figure 18. A high temperature limit thermostat should also be fitted.

CAUTION
The HI-MAX INSTANT is suitable to run at high or low heating temperatures. To avoid the risk of inadvertently damaging floors etc, the minimum and maximum temperature range that is adjustable by the end user MUST be limited by the installer during commissioning.

3.9 P & I diagram legend

Table 4: P & I diagram legend

Symbol	Description
	Centrifugal fan
	Air intake
	Pump
	Compressor
	Pressure Reducing Valve
	Isolation Valve
	Lock Shield Valve
	Non Return Valve
	Strainer
	Double Reg. Valve
	Orifice Plate
	Commissioning Station
	Flow Setter
	Automatic Bypass Valve
	Safety Valve
	T & P Valve
	3 Port Motorised Valve
	2 Port Motorised Valve

Symbol	Description
	Thermostatic Mixing Valve
	UFH 4 way valve
	Drain Cock
	Angle pattern Drain Cock
	Expansion Vessel
	Automatic Air Vent
	Air Separator
	Pressure Gauge Assembly
	Thermometer
	Tundish
	Temperature Sensor
	Temperature Sensor
	Temperature Sensor
	Temperature Sensor
	Temperature Sensor
	Temperature Sensor
	Immersion Heater

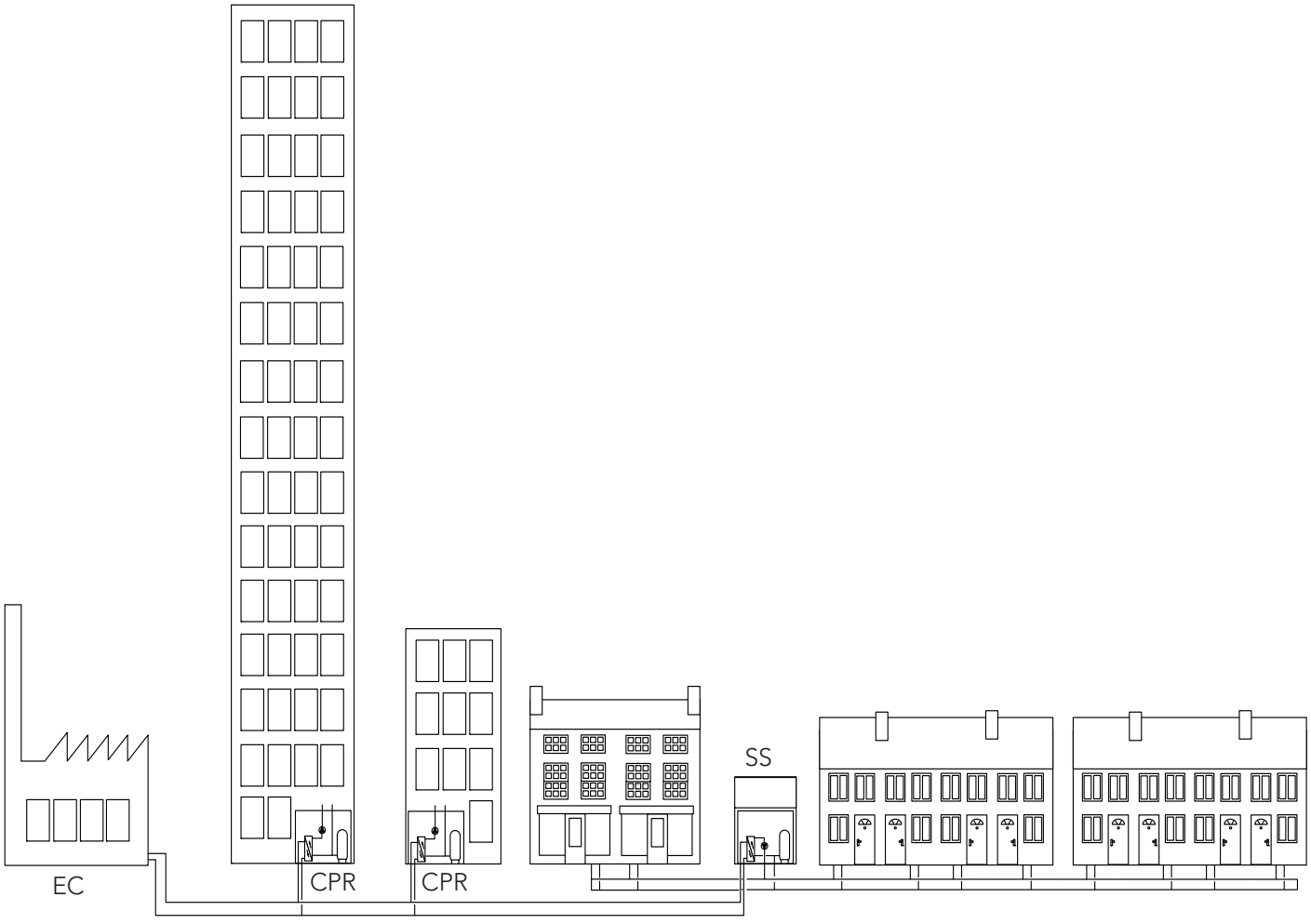
Symbol	Description
	Thermostatic Radiator Valve
	Radiator Lock Shield Valve
	Needle Valve
	Filling Loop
	Flexible Connection
	Aqua Stat
	Thermostat
	Flow Switch
	Flow Meter
	Heat Meter
	Room Stat
	Angle Pattern 2 Port Zone Thermostatic Control Valve
	3 Port Bypass Thermostatic Control Valve
	2 Port Zone Thermostatic Control Valve
	Thermostatic Control Valve Sensor
	Programmable Room Thermostat
	Run Back Timer
	Pre Payment Unit

Symbol	Description
	Air Separator
	Combined Isolation & Check Valve with Thermometer
	Safety Discharge Vessel
	Auto Balancing Valve
	Dynamic Balancing Valve
	HepvO dry trap
	Double Check Valve
	Flushing and Filling Points
	Pressure independent control & balancing valve
	Honeywell SMILE controller
	STW10WE Room Stat
	Stop Cock
	Smartfit Wiring Centre
	Combined Auto balancing & on/off zone valve
	Relay
	Return Temperature Limiter

3.10 District Heating Schemes - Demarcation

- Large community heating or district heating systems can be extensive networks covering large demographic areas. They can be added to later and also linked to other schemes to form an even larger network. As such it is important that the Mechanical and Electrical Designer takes this into consideration when planning and designing a suitable system.
- A key consideration for the designer is that of demarcation. It is important that demarcation lines are as clear as possible to ensure that the responsibility for the maintenance and the up keep of the complete system is easily understood by all stakeholders. Demarcation is important for small community heating schemes as well as larger networks.
- Utilising centralised plantrooms in large buildings and separate substations for smaller buildings are recommended. The use of plate heat exchangers in these plantrooms and substations not only creates clear demarcation lines that separate the main network from each individual building or estate, they also act as a pressure break.
- The use of pressure breaks within the network means that taller buildings do not effect the pressure at which other parts of the network have to work.
- Where plate heat exchangers are deployed, there will be a need for secondary distribution pumps and pressurisation equipment to be installed.

Figure 19: District Heating - Demarcation



EC Energy Centre

CPR Central Plantroom

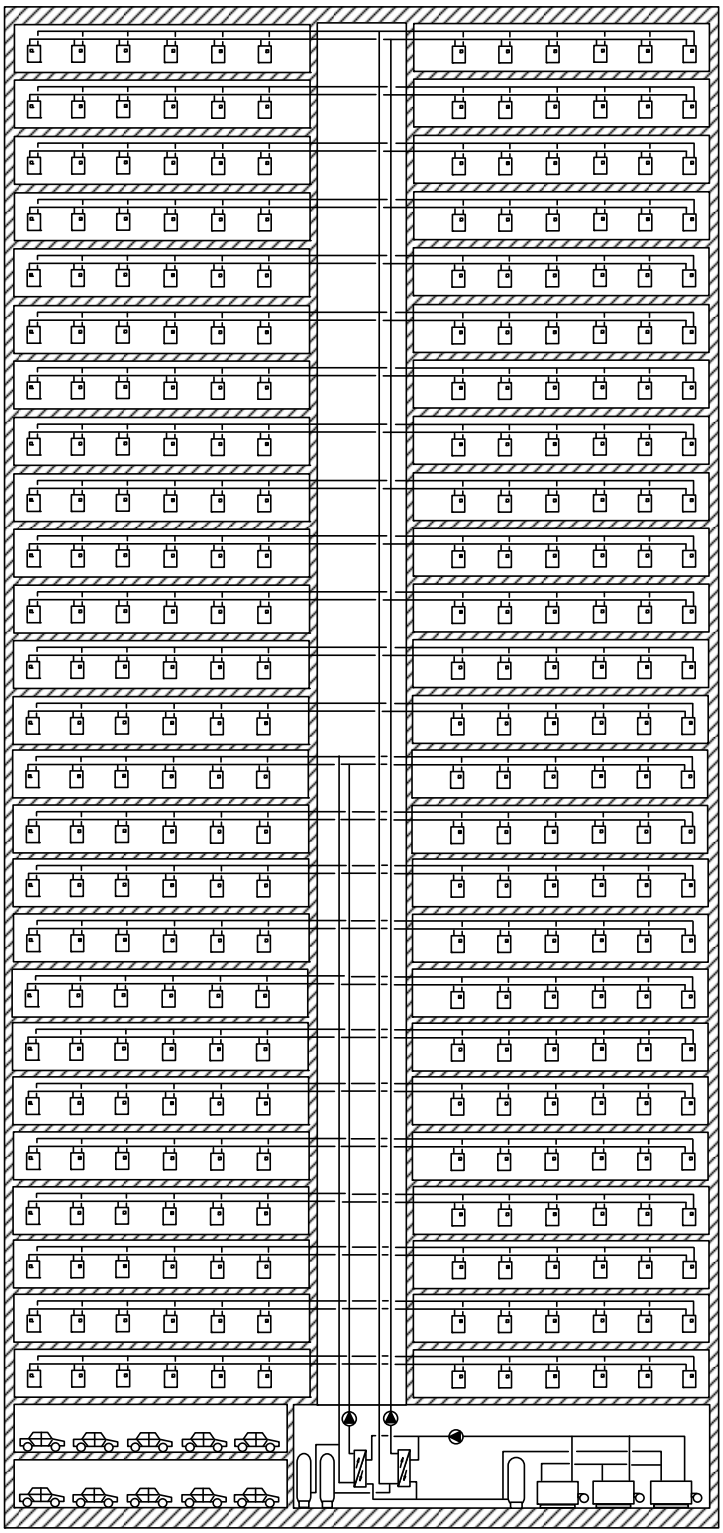
SS Substation

The hydraulic schematics within this document are for guidance only and do not constitute system design. Some components may not be detailed for clarity purposes.

3.11 District Heating Schemes - Pressure Breaks

- On tall buildings and extensive networks it is recommended to install pressure breaks.
- Pressure breaks can be installed in the central plantroom located in the basement as shown in Figure 20 or if the building is very tall pressure break(s) may have to be installed on a floor part way up the building.
- If the plantroom is on the rooftop, a pressure break part way down the building may be required to protect the lower floors from high static pressures.
- A means of isolating the pressure break for service and maintenance purposes is recommended.

Figure 20: District Heating - Pressure Break



The hydraulic schematics within this document are for guidance only and do not constitute system design. Some components may not be detailed for clarity purposes.

4. Description of the product

4.1 General description

The Heatrae Sadia HI-MAX INSTANT hydraulic interface units (HIUs) are a series of wall mounted units that interface with a community heating system to produce domestic hot water instantaneously using plate heat exchanger technology. The apartment's heating system is indirectly heated through a plate heat exchanger within the HIU, this separates the community heating system from the apartment's heating system.

There are two models in the range:

HI-MAX INSTANT ID 5-60 (DHW outputs from 5kW to 62.8 kW using 85°C primary flow).
HI-MAX INSTANT ID 5-80 (DHW outputs from 5kW to 78.75 kW using 85°C primary flow).

The unit is supplied complete with all the necessary safety and control devices needed to allow connection to the cold water mains and district heating system. All these components are preset and should not be tampered with.

The unit is pre-wired and pre-plumbed to allow quick and easy connection to the "in-apartment" services.

The unit is supplied packed and can be ordered in three parts so that the unit can be installed in three phases. The three parts are:

- 1st fix rail / stand-off assembly
- HIU
- HIU casing set

Phase 1 - 1st Fix. This involves fixing into position the first fix rail / stand-off assembly and piping all systems to it, ie the community heating system, cold water services, hot water outlets and heating flow and return pipework. There is also a connection point for the apartment heating safety valve discharge pipe. This allows the installer to carry out all of the plumbing work in one visit.
As the 1st fix rail incorporates a series of isolation valves, once the systems are plumbed in, the pipework can be flushed, filled and tested.
The first fix rail also incorporates the electrical cable entry point to the unit. This allows the electrician to route cables to the unit, with the final termination of cables taking place in phase 2.

Phase 2 - 2nd Fix. When the site build programme permits, the installer can fit the HIU to the 1st fix rail. This entails fixing the HIU to the first fix rail, connecting the isolation valves to the unit, filling and deaerating the unit and then wiring up and commissioning.

Phase 3 - 3rd Fix. Once the unit is commissioned the casings can be removed from their protective packaging and fitted.

4.2 Operation principle

The HI-MAX INSTANT range of HIUs all produce domestic hot water in the same way, ie instantaneously through a plate heat exchanger.
The hot water and heating temperatures programmed in the unit are factory set to 55°C and 60°C respectively, but can be adjusted to suit the installation design.

The domestic hot water is set to an optimum setting of 55°C in the factory in accordance with the recommendations of HSE HSG274. It is recommended that this isn't adjusted because lower temperatures increase the risk of bacterial growth within the hot water system and higher temperatures increase the risks associated with scalding. Higher temperature also increase the rate of scale formation within the hot water system.

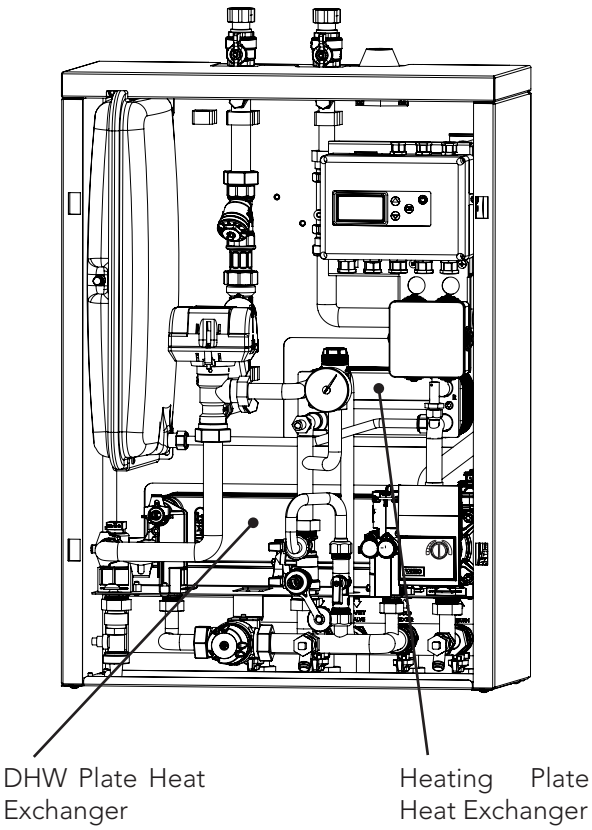
4.2.1 The heart of the unit

At the heart of the HI-MAX INSTANT HIU is a PID (Proportional Integral Derivative) controller which both monitors and regulates the heating and hot water systems in order to optimise performance. PID controllers regulate the rate of change of an output, the time intervals that the changes (outputs) take place and the results are then constantly monitored and adjusted accordingly to be as close as possible.

4.2.2 DHW Operation

As hot water is drawn off, the flow of water is sensed by the flow sensor within the cold feed section of the return hydroblock. The PID controller then activates the diverter to send primary water (district heating flow) through the DHW plate heat exchanger. At the same time, the DHW temperature is monitored by the DHW temperature sensor located in the flow hydroblock on the left hand side of the unit. The PID controller modulates the pressure independent control valve (PICV) to achieve and maintain the DHW set temperature. The more hot water that is drawn off, the more the PICV will open to allow more district heat through the HIU.

Figure 21: Indirect HIU plate heat exchangers



4.2.3 Apartment Heating Operation

The PID controller works with the room thermostat to control the apartment heating system. In simple terms the room thermostat is set to the desired room temperature and the PID controller in the HIU controls the temperature of water going out to the heating system. In AUTO mode the PID controller can compensate the heating system temperatures depending on the system demand to maintain low district heating return temperatures.

Within the unit there is a self-regulating pump which can regulate the flow rates within the heating system to match the demand, thus keeping energy consumption to a minimum.

There are four heating programmes:

1) **Manual heating** - the HIU runs to achieve the heating set point at the heating flow sensor.

2) **Optimised heating** - the HIU runs to achieve the optimised heating return temperature measured by the heating return sensor by calculating the optimum target flow temperature.

3) **Weather compensated heating** - the HIU runs to achieve the heating set point at the heating flow sensor to maintain a desired ambient room temperature calculated by the algorithms. See separate instructions for more details.

4) **Weather compensated and Optimised heating** - The HIU runs to achieve the optimised heating return temperature measured by the heating return temperature sensor taking into consideration the input from the outdoor sensor used for the weather compensated heating set point calculation.

See separate instructions for more details.

4.2.4 Anti-scale function

During times when there is no hot water demand the controller switches the district heating flow to heating plate heat exchanger, this takes heat away from the domestic hot water plate heat exchanger, thus lowering the risk of scale formation within the DHW plate heat exchanger.

4.2.5 Zero demand pulsed flow function

The Heatrae Sadia HI-MAX INSTANT HIU has a built-in pulsed flow function, which if activated, periodically opens the district heating PICV to allow a low flow of primary water (circa 100 litres per hour) through the unit during periods when there is no demand. This feature is designed to maintain the heat within the district heating flow pipe, thus ensuring the HIU responds as quickly as possible to a hot water demand. The start-up time, the pulse duration and the dwell time between each pulse can be adjusted in the installer parameter set-up menu (see Page 54 for details). The start-up time and the dwell time periods are determined by the rate of heat loss in the district flow pipe. The pulse duration time is determined by the distance the HIU is away from the riser and the size of the district flow pipework away from the riser.

4.2.6 Pulsed flow bypass function

This function combines both the anti-scale function and the zero demand pulsed flow function to keep heat in the district flow pipes without continuously heating the domestic hot water through the DHW plate heat exchanger. The function diverts district flow water away from the DHW plate heat exchanger through the heating plate heat exchanger. The heating plate heat exchanger is protected from scale formation by inhibitors. At the same time the district flow rate is reduced to keep energy consumption within the district system to a minimum.

4.2.7 DHW Outlet tempering feature

The unit is fitted with a safety tempering valve (Stv) which is set at 60^{O}C +/-2^{O}C to prevent excessively high temperature hot water going to the taps during a malfunction or power cut.

4.2.8 Anti-seizure function

The heating pump is equipped with an anti-seizure function. This function rocks the impeller backwards and forwards at different torque settings to help free up the pump should it become clogged with debris.

4.2.9 Anti-gravitation feature

The unit and its components have been designed so as not to promote natural circulation when the pump is not in operation. An anti-thermal dip pipe on the primary flow to the DHW plate heat exchanger helps prevent the DHW plate heat exchanger from being heated when not in use.

4.2.10 Sleep mode

The Heatrae Sadia HI-MAX INSTANT has a sleep mode function. Simply press the ON/OFF button for 3 seconds and the unit goes into sleep mode. In sleep mode the unit is still powered ON, but the PICV is fully closed and all functions and features are disabled.

If the unit is in sleep mode, simply press the ON/OFF button again and the unit will go back into standby mode where all activated functions are then available.

Sleep mode enables the unit to come back on line without the need to go through the start up cycle. This is ideal for when you are away from your apartment on holiday or a business trip.

4.3 Heat Meters

Provision is made in the Heatrae Sadia HI-MAX INSTANT HIU for a heat meter comprising:

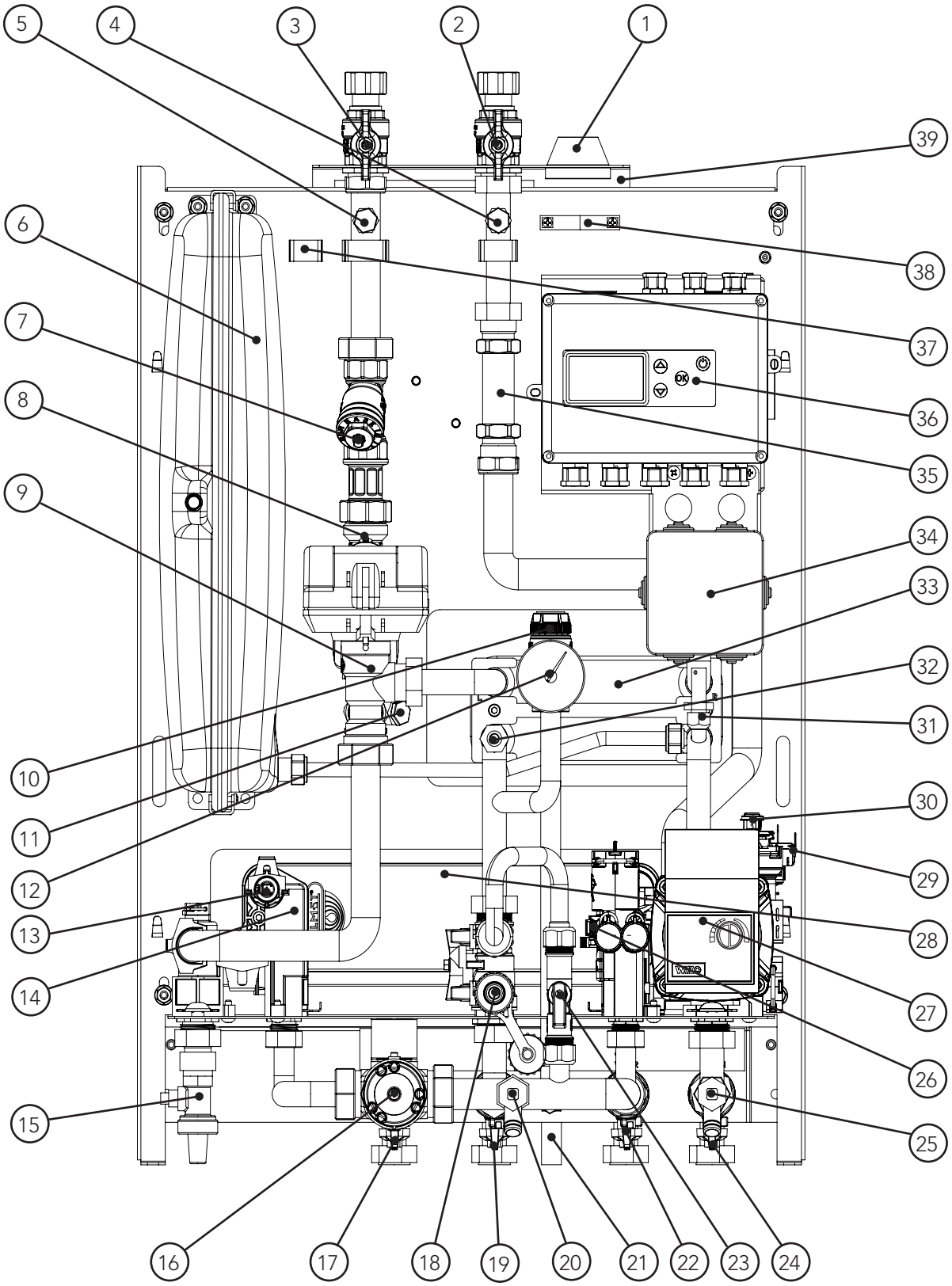
1. A removable stool piece (3/4"bsp x 110mm centres) in the district return pipe to house the volumetric flow measuring part of the heat meter.
2. A 1/4"bsp boss in the district flow pipe to house a district flow temperature sensor.

The heat meter district return temperature sensor is usually incorporated in the body of the heat meter volumetric flow measuring device and as such an additional pocket is not provided. However, there is a 1/4"bsp boss in the district return pipe intended for a P/T test point which could be utilised if necessary. Threaded adaptors (bsp to metric thread) are available on request.

Care must be taken not to under or oversize the heat meter. Undersizing the heat meter can lead to excessive resistance in the district heating system, which will affect the performance of the unit and potentially the whole system. Oversizing can result in energy usage not being detected in low output conditions. Contact Heatrae Sadia for advice.

4.3 Main components - HI-MAX INSTANT ID

Figure 22: Indirect HIU components



Key to Figure 22

1. Electrical cable entry point (grommet)
2. District return isolation valve complete with blue butterfly handle
3. District flow isolation valve complete with red butterfly handle
4. District return P/T test point (blue)
5. District flow P/T test point (red)
6. Apartment heating expansion vessel
7. District heating flow strainer
8. District heating pressure independent control valve complete with 24v actuator
9. District heating diverter valve
10. Apartment heating safety valve
11. Heat meter flow sensor position
12. Apartment heating system pressure gauge
13. DHW temperature sensor
14. Flow hydroblock
15. District heating drain
16. DHW safety TMV
17. DHW flow isolation valve complete with red butterfly handle
18. Apartment heating flush and fill valve
19. Apartment heating flow isolation valve complete with red butterfly handle
20. DHW drain
21. Apartment heating safety valve discharge pipe
22. DHW cold feed isolation valve complete with blue butterfly handle
23. Filling loop isolation valve
24. Apartment heating return isolation valve complete with blue butterfly handle
25. Apartment heating drain
26. DHW cold feed flow sensor
27. Apartment heating pump
28. DHW plate heat exchanger
29. Apartment heating low pressure switch
30. Apartment heating AAV
31. Apartment heating return temperature sensor
32. Apartment heating flow temperature sensor
33. Apartment heating plate heat exchanger
34. Installer terminal box
35. Heat meter stool piece or optional heat meter
36. PID controller
37. Filling loop braided hose pipe clip
38. Cable clamp
39. 1st fix rail

4.4 Standard delivery

The Heatrae Sadia HI-MAX INSTANT unit is supplied to site in three packaged parts:

1) 1st fix rail or optional stand-off kits
2) HIU
3) Casings

Within each box there will be a set of fitting instructions and as necessary a bag of fixings / gaskets.

Accessories:

- Programmable room thermostat
- Stand-off assemblies

Heatrae Sadia Heat Meter Option
- Ultrasonic heat meter MID class 2 approved with MBUS output with 11 year battery life.

Available through Heatrae Sadia's supply partners:
- Ultrasonic heat meter MID class 2 approved with wireless MBUS output with 11 year battery life.
- Nodes for wireless network.
- Data collector for MBUS meters.
- Data collector for wireless MBUS meters.
- 2 pulsed inputs allowing for additional meters to the heat meter data collection system (ie cold water meter, electrical meter, gas meter).
- Outdoor sensor

5. Before installation

5.1 Installation regulations

WARNING

Installation of the appliance must be carried out by a competent person in accordance with prevailing national regulations as listed below.

- Building Regulations
- The Building Standards (Scotland)
- The Building Regulations (Northern Ireland)
- I.E.E Electrical Regulations
- UK Water Regulations

5.2 Installation requirements

Limitations

The HIU should not be used in association with any of the following:

- Situations where maintenance is likely to be neglected or safety devices tampered with. Please note that anti-tamper options are available on request.
- Water supplies that have either inadequate pressure or where the supply may be intermittent. (Minimum pressure 1.5 bar g at a flow rate of 25 l/min for the ID 5-80 model.
- Situations where it is not possible to safely pipe away any discharge from the safety valves.
- In areas where the water consistently contains a high proportion of solids, e.g. suspended matter that could block the strainer, unless adequate filtration can be ensured.
- In areas where the water supply contains chloride levels that exceed 100mg/l.

For information or advice regarding any of the above contact **Technical Enquiries on: 0344 871 1535.**

The Heatrae Sadia HI-MAX INSTANT HIU is connected directly to the district heat source (ie the energy centre). As such there are no safety valves provided on the district heating side of the unit. It is important to note that the maximum working pressure of the district heating system components within the HIU is 10 bar g and that the safety valves fitted within the energy centre MUST be set to a pressure that protects all components within the community heating system. The HIU is provided with a safety valve on the apartment heating side of the unit. This is set to lift at 3 bar g and as such the unit is only suitable for apartment heating systems with a maximum static height of 10 metres WG.

5.3 Transport and Storage

If the unit has to be stored prior to installation, it must be in a secure area free from frost, excessive dampness and humidity.

5.4 Choice of location

The Heatrae Sadia HI-MAX INSTANT HIU must be wall mounted. Although location is not critical, the following points should be considered:

- The HIU should be sited to ensure minimum dead leg distances, particularly to the point of most frequent use.
- Avoid siting where extreme cold temperatures will be experienced. All exposed pipework should be insulated.
- The discharge pipework from the heating system safety valve should have a continuous fall.
- Access to associated controls must be available for the servicing and maintenance of the system.
- Ensure that the wall that the Heatrae Sadia HI-MAX INSTANT is mounted on is level and capable of permanently supporting the weight when the unit is full of water. (see Table 2 on page 6 for the unit weights).

5.5 Positioning and access

Access to the unit and all its components is gained from the front.

It is important that as much access is provided around the unit as is practical. In the event of a component failure, full access in front of the unit is required for servicing.
Access to all isolation valves and controls is also required for normal operation and servicing.

WARNING

- Warning: Water that is left standing in a stainless steel plate heat exchanger for long periods without draw off will become de-oxygenated and potentially corrode the plate material. If the unit is to be left unused following installation and commissioning, the water in the unit should be drained or regularly (quarterly) flushed through with fresh mains water.

CAUTION

Ensure that the Heatrae Sadia HI-MAX INSTANT is correctly positioned.
Consideration should be given to the access and space requirements for operating and servicing the unit.

6. Installation

6.1 General

After reading the previous sections in this booklet and all other associated manuals provided for the system, please install the Heatrae Sadia HI-MAX INSTANT paying attention to the following hydraulic, electrical and commissioning sections.

All hot and cold water pipes should be labelled and insulated in accordance with Part L of the Building Regulations.

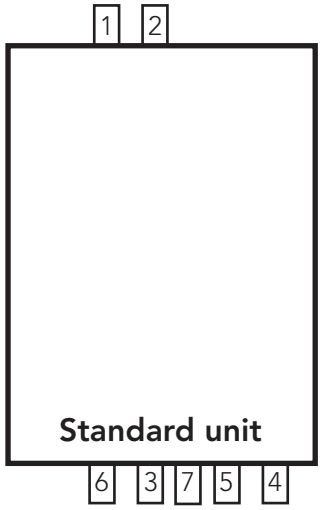
6.2 Water connections

Connection to the unit

The Heatrae Sadia HI-MAX INSTANT is supplied with the following connections:

1) District heating flow connection 3/4"bsp female
2) District heating return connection 3/4"bsp female
3) Apartment heating flow connection 3/4"bsp female
4) Apartment heating return connection 3/4"bsp female
5) DHW cold feed connection 3/4"bsp female
6) DHW flow connection 3/4"bsp female
7) Safety valve discharge pipe 15mm

Figure 23: Hydraulic connection position



6.3 Wall fixing

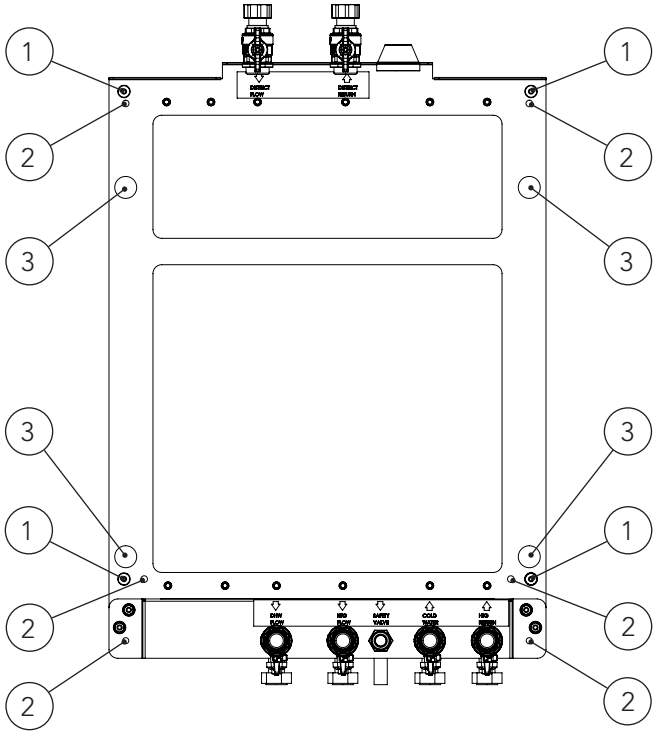
The Heatrae Sadia HI-MAX INSTANT unit can be supplied with a first fix rail for ease of installation. The rail allows the installer to pipe up and test the pipework to and from the heat interface unit without the need to have the heat interface unit on site.

As mentioned in sections 3.6 and 6.2, optional stand-off kits are available with the Heatrae Sadia HI-MAX INSTANT to allow the installer to reconfigure the connection positions.

The wall fixing arrangement is the same for all four stand-off kits.

A safety valve discharge pipe connection is provided in the 1st fix rail to allow the installer to carryout all piping work at the same time.

Figure 24: Mounting details



1) M6 studs for HIU fixing.

2) 7.5mm Dia hole for fixing the 1st fix rail to the wall or the 1st fix rail to the stand-off channels.

3) Access holes to the stand-off kits wall fixing holes.

It is important that all fixing holes (Hole No.2 in Figure 24) are used as they give support to the valve rail. Failure to do so could lead to misalignment issues.

Ensure that all access requirements in section 3.5.1 have been met.

The unit is only suitable to be installed in one orientation, ie. with the community heating system isolation valves positioned at the top as shown in Figure 22.

6.4 Wall fixing procedure

1) Ensure that the access requirements detailed in Fig 11 have been met.

2) Ensure the structure that the HIU will be fixed to will sustain the weight of the unit when full of water and with all its casings on.

3) Position the 1st fix rail / stand-off kit on the wall ensuring it is level using a spirit level and mark out the six fixing holes.

4) Drill and plug the wall as necessary.

5) Fix the 1st fix rail / stand-off kit to the wall using suitable fixings and check that it is still level using a spirit level.

The unit is now ready to be plumbed in.

CAUTION

It is important that when piping to and from the 1st fix rail / stand-off kit that the connecting pipes are aligned with the connections on the 1st fix rail / stand-off kit. Failure to do so could lead to damage of the isolation valves.

Once all plumbing work as been carried out the HIU can be fitted.

6.5 HIU fixing procedure

1) Slide the four M6 studs on the 1st fix rail through the slotted holes in the Heatrae Sadia HI-MAX INSTANT HIU's back plate and secure loosely with the M6 nuts provided.

CAUTION

When fixing the HIU to the first fix rail it is important that you do not over tighten the nuts on the studs provided.
Maximum torque 3Nm.
Use a torque adjustment spanner.

2) Insert the fibre washers supplied between the pipe connections on the HIU and the isolation valves / safety valve discharge pipe connection on the 1st fix rail. Lightly tighten up all of the connection nuts.

3) Make any final adjustments to the HIU position on the 1st first rail / stand-off kit as necessary and tighten up all four fixing studs.

4) Gradually tighten up each flat face joint and finish off by giving each joint a final nip-up.

CAUTION

When connecting the HIU to the 1st fix rail / stand-off kit, do not over tighten the joints.

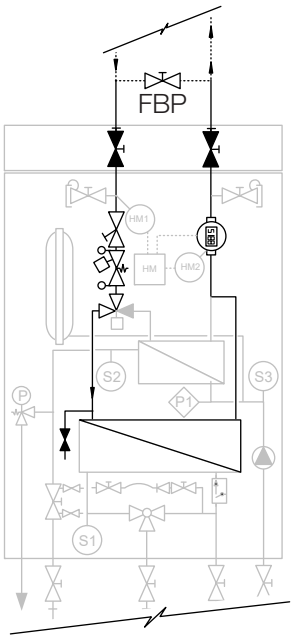
CAUTION

When piping to and from the 1st fix rail / stand-off kit, take care not to flex the bracketry as this could lead to connection misalignment issues.

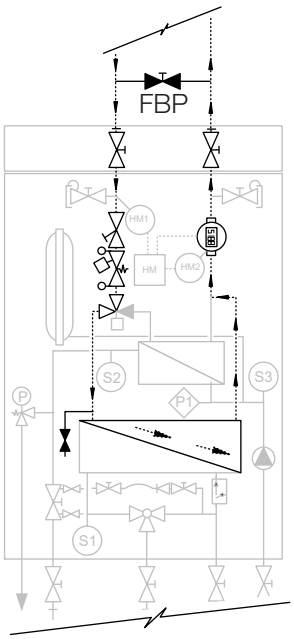
6.6 Community heating flow and return connections

The community heating (district heating) flow and return connections are located at the top of the HIU, unless stand-off bracket B is used, in which case they will be found at the bottom of the unit. Please see Figure 23 on page 26 for more details.

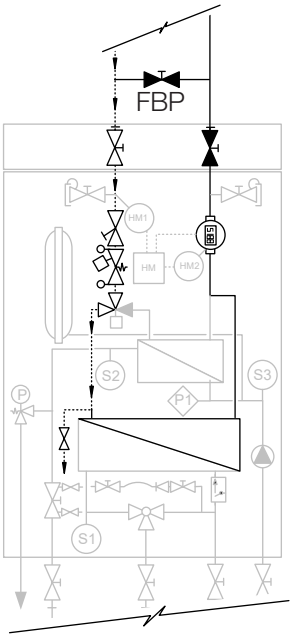
Figure 25: Community heating flushing bypass



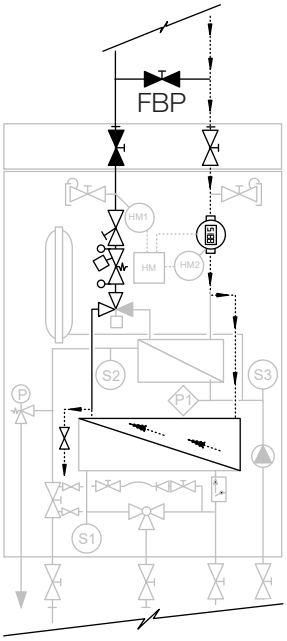
Flushing Bypass during maintenance and commissioning



Flushing Bypass during normal HIU operation



Flushing Bypass during forward flushing



Flushing Bypass during back flushing

Legend

Valve open

Valve closed

Water flow

6.6.1 Community heating flushing bypass

It is recommended that a flushing bypass arrangement is installed in the community heating flow and return pipes to the unit. The flushing bypass (FBP) is a pipe between the district flow and return pipes fitted with an isolation valve to allow the distribution network to be flushed free of debris during the installation and commissioning process (as detailed in Figure 25).

Note there is a drain valve fitted in the HIU which can be used for forward and back flushing purposes during maintenance. Do not forward or back flush debris through the unit during the commissioning phase of the installation.

6.7 Cold water supply connection

Refer to the installation schematic (Figures 17 and 18, pages 15 and 16) for details of the pipework layout.

- A servicing valve is incorporated into the cold water supply pipe on the first fix rail to enable the HIU to be isolated and serviced. Access to this valve is gained from the underside of the unit.
- A stop cock should be fitted in the cold feed pipework as close as is practicable to where the cold mains enters the apartment.
- Generally the cold mains to the unit and the hot water distribution pipework should be minimum 22mm pipe with short runs of 15mm pipe to terminal fittings such as sinks and basins. However, pipe sizes may vary due to system design.
- Consideration should be given to system pressure, thermal expansion and potential water hammer during normal operation.
- Where the water pressure coming into the apartment is high, it is recommended that a PRV is fitted to regulate this down to 3 bar. Where the inlet supply to the Pressure Reducing Valve is routed through a heated space and is fitted with a check valve or other fitting that would prevent backflow, high pressures can be experienced in the inlet pipe due to warming that can cause damage to the PRV or other fittings on the inlet supply. In these circumstances, the installation of a means to accomodate expansion and thus limit the pressure rise in the inlet pipe is recommended
- If a non return valve is fitted in the cold supply line to the unit, it is recommended that a 1 litre potable water expansion vessel is installed to accommodate expansion.
- When fitting an expansion vessel, it is good practice to protect the other system components from excessive pressures against either the expansion vessel diaphragm failing or the gas charge naturally depleting by fitting an expansion relief valve. Expansion vessels should be regularly inspected and serviced, this should be written into the installation's service regime.

6.8 Domestic hot water flow connection

- The domestic hot water flow pipe is fitted with a safety tempering valve (Stv) which acts as an excess temperature safety device. This is factory set to 60°C and must not be adjusted.

Note there is a drain valve fitted in the cold feed pipe in HIU, this can be used for flushing the cold water supply pipework prior to filling the hot water system.

- Note where the hot water system is extensive and there is a requirement to maintain the hot water temperature within the pipes, trace heating should be used.

This unit is not suitable for secondary pumped circulation type systems.

6.9 Apartment heating flow and return connections

- Connections from the Heatrae Sadia HI-MAX INSTANT to the apartment heating system are located at the bottom of the unit unless stand-off assemblies A or D are used. In which case the heating flow and return connections are located at the top of the unit. See Figure 23 on page 26 for more details.
- The Heatrae Sadia HI-MAX INSTANT Indirect units are suitable to connect to either radiator type heating systems or underfloor heating systems.
- When installing indirect units with underfloor heating it is important that the underfloor heating system is capable of mixing the heating flow down to the desired temperatures.

6.10 Apartment heating safety valve discharge connection

- The safety valve discharge has a 15mm pipe connection which is provided in the first fix rail on indirect units so that all plumbing work can be carried out during the first fix stage of the installation.
- The discharge pipework should have a continuous fall to a suitable drain and be in a frost free environment.
- It is good practice to fit a tundish to facilitate commissioning and servicing. A trap should be used when discharging to drain.
- See BS6798 for advice on safety discharge pipework.

WARNING

Although the amount of water discharged from the safety valve is not likely to be great, it is important to note that it is likely to be hot and carry a risk of scalding.

CAUTION

Always check that all connections are still leak free and that all drain valves are closed before attempting to fill the system.

6.11 Electrical connections

Cable entry into the Heatrae Sadia HI-MAX INSTANT unit is from the top of the unit through the cable gland on the top of the first fix rail.

Ensure all casing screws are fitted as these provide earth continuity throughout the casings.

- The power supply MUST be earthed. The supply cable should be 3 core sheathed and must be routed through the cable grip provided with the outer sheath of the cable firmly secured by tightening the screws on the cable grip in accordance with BS EN 7671:2008.

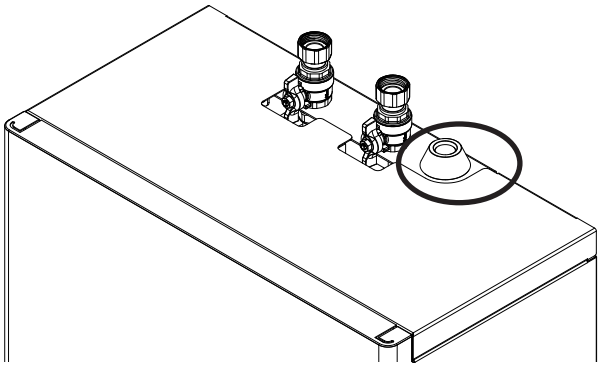
6.11.1 Heating Controls

- The Heatrae Sadia HI-MAX INSTANT requires a programmable room thermostat to control the apartment heating. The switching cable should be routed through the cable grommet on the top of the first fix rail and secured using the cable clamp on the back plate of the HIU before being routed to the Installer terminal box. Refer to the programmable room thermostat instructions for more details.

WARNING

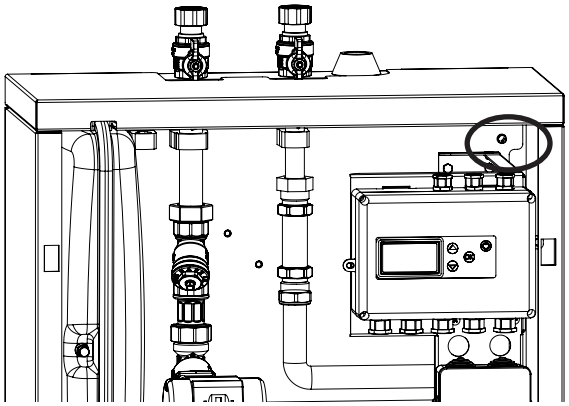
Always isolate the power supply before opening the unit.

Figure 26: Cable routing to the control panel



Ensure the installation is earth bonded in accordance with BS EN 7671:2008. An earthing stud is fitted on the back plate of the HIU, its location is detailed in Figure 27 below.

Figure 27: Earth stud location



Refer to the wiring diagrams on page 12 and 13 for electrical connections.

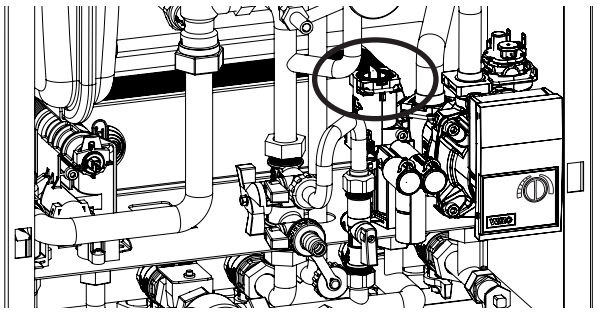
6.12 Filling the installation

6.12.1 Filling the DHW system

- Check all joints are tight.
- **Ensure all drain cocks are CLOSED.**
- Open a hot tap furthest from the Heatrae Sadia HI-MAX INSTANT unit.
- Open the mains stop cock to fill the unit.
- Open the cold feed and DHW flow isolation valves. When water flows from the tap, allow to run for a few minutes to thoroughly flush through any residue, dirt or swarf.
- close the cold feed and DHW flow isolation valves.
- Check the cold water filter located in the return hydroblock for any debris and clean as necessary (see Figure 28).
- Open the cold feed and DHW flow isolation valves and purge any air from the system before closing the hot tap.

CAUTION
Before attempting to remove the cold water filter, ensure that the DHW in the unit is drained off. This will prevent the formation of a vacuum when pulling the filter cartridge out of the hydroblock. When doing this, take care not to break the plastic handle of the cartridge.

Figure 28: Cold water filter cartridge location

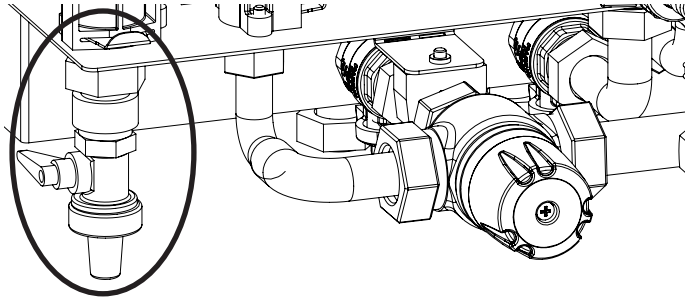


- Once the filter has been checked and cleaned as necessary, open up the cold feed.
- Open successive hot taps to purge the system of air.
- Once flushed through close all hot taps.

6.12.2 Filling the community heating system

- Check all joints for tightness.
- Ensure the Heatrae Sadia HI-MAX INSTANT district heating system drain valve is closed (see Figure 29).

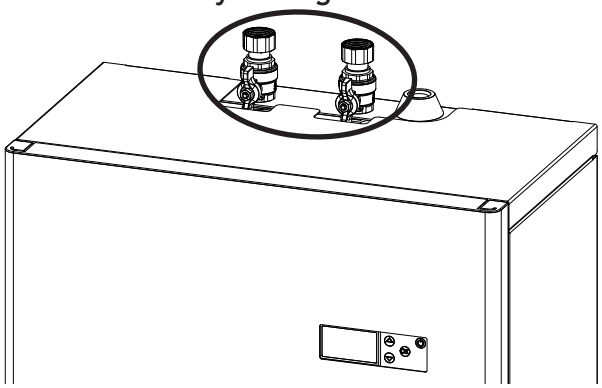
Figure 29: Community heating drain valve



Refer to DIN 4747-1 0 Heating plants for district heating for guidance.

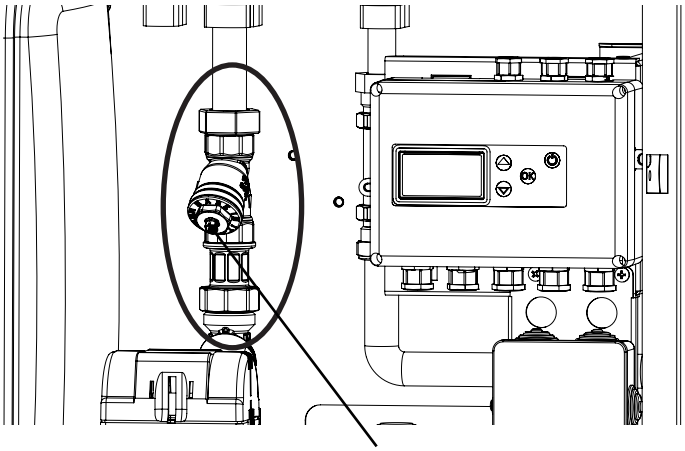
- Ensure that the Heatrae Sadia HI-MAX INSTANT isolation valves on the community heating system are closed whilst the community heating system is being flushed through. This will prevent any debris from getting into the HIU. There are two isolation valves at the top of the unit (See Figure 30).

Figure 30: Community heating isolation valves



- Using the community heating flushing bypass arrangement, flush out any debris from each apartment branch.
- Once all the debris has been flushed out of the community heating system, close the flushing bypass and open up the community heating flow and return isolation valves on the Heatrae Sadia HI-MAX INSTANT as detailed in Figure 30.
- After a few days of operation check the strainer is still clear. This is done by isolating and draining the unit down. Then opening the strainer service cap and removing the strainer's mesh filter and cleaning as necessary. This should be repeated over the installation period and before handover.

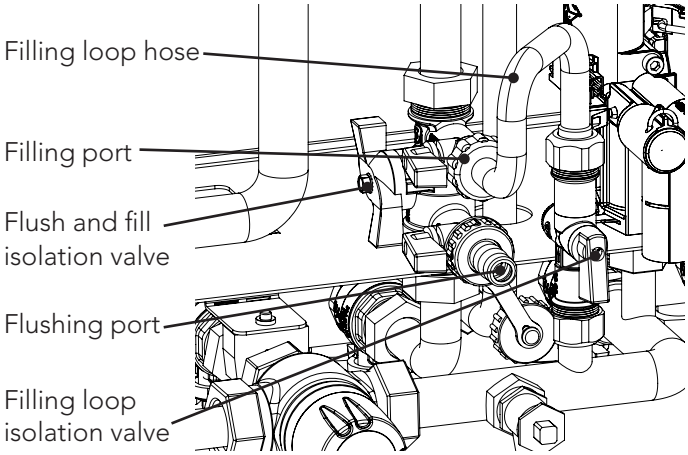
Figure 31: Community heating system strainer



6.12.3 Filling the apartment heating system

- Check all joints are tight.
- **Ensure that the drain valves are closed.**
- Ensure that the cold water supply valve is open.
- Check the gas charge in the expansion vessel is preset to 1 bar g. This should be done without any water in the vessel.
- Using the filling loop provided, connect the hose to the filling port on the flush and fill valve. This is the upper port on the valve as detailed in Figure 32.

Figure 32: Flushing and filling the heating system



- Close the flush and fill isolation valve located in the middle of the valve by making sure the butterfly handle is horizontal.
- Manually open any heating zone valves.
- Connect a hose pipe on to the flushing port hose connection and run into a drain (eg a sink). Open the filling port and the flushing port on the valve by ensuring the handles are horizontal.
- Open cold water supply valve on the filling loop and flush out the system for a few minutes to ensure that any debris has been removed.
- Close the cold water supply valve and the flushing and filling ports on the flush and fill valve.
- Disconnect the filling loop hose from the cold water supply isolation valve and connect to a suitable inhibitor to dose the heating system through the filling loop and filling port on the flush and fill valve.
- Once dosed isolate the filling port and reconnect the 1/2" connection of the filling loop hose to the cold water supply isolation valve.
- Open up the filling port and the cold water supply isolation valve and pressurise the system to 1 bar g.
- Bleed any remaining air out of the radiators / underfloor heating system and top up as necessary.
- Once pressurised, close the filling port and the cold water supply isolation valve and open up the isolation valve in the middle of the flush and fill valve.
- Disconnect the flushing and filling hoses and fit end caps to the flushing and filling ports and the cold water supply isolation valve. Keep the flushing port hose connection next to the flushing and filling valve for future service work.

Note the filling loop braided hose provides a temporary connection between the apartment's heating system and the cold water supply system. It is important that the filling loop braided hose is disconnected after commissioning in accordance with the water regulations. A pipe clip is provided in the top left and side of the unit to safely store the braided hose when not in use.

It is important that the quality of the heating water is in line with BS EN 14866:2005 and VDI2035.

CAUTION

All re-circulatory water systems will be subject to corrosion unless they are flushed and an appropriate water treatment is applied. To prevent this, follow the guidelines given in BS 7593 'Treatment of Water in Domestic Hot Water Central Heating Systems' and the treatment manufacturer's instructions.
Treatment must involve the use of a proprietary cleanser, such as Sentinel X300 or X400, or Fernox F3 and an inhibitor such as Sentinel X100 or Fernox MB-1.
Full instructions are supplied with the products. For further information contact Sentinel or Fernox.
Failure to flush and add inhibitor to the system will invalidate the appliance warranty.

It is important to check the inhibitor concentration after installation, system modification and at every service in accordance with the inhibitor manufacturer's instructions. (Test kits are available from inhibitor stockists.)
For information or advice regarding any of the above contact **Technical Enquiries on: 0344 871 1535.**

6.13 Completing the installation

Ensure that the following has been carried out:

1) All hydraulic connections have been made and all joints are sound in accordance with CIBSE Code W.

2) Check that all air has been bled from the systems.

3) All hot and cold water outlets have suitable flow rates at the taps.

4) Check that the safety discharge pipework is complete. Manually open the safety relief valve to ensure they operate and discharge freely.

5) Ensure that the controls temperature sensors are fitted in the pockets.

6) Ensure that all motorized valves are plugged in and are in the auto position.

7) Ensure that all wiring to the control panel and room thermostat(s) are complete.

8) Ensure that there is a safe means of isolating the unit from the mains power supply in accordance with BS EN 7671:2008.

Depending on the size of the building there will be an element of diversification factored into the design. As such the centralised plant and pumps are unlikely to be able to supply 100% of the heat load to all apartments at any one time. Where extensive parts of the development are ready to be commissioned (especially in the depths of winter), this must be done with a controlled and phased approach to overcome the initial thermal inertia within the building.

7. Commissioning

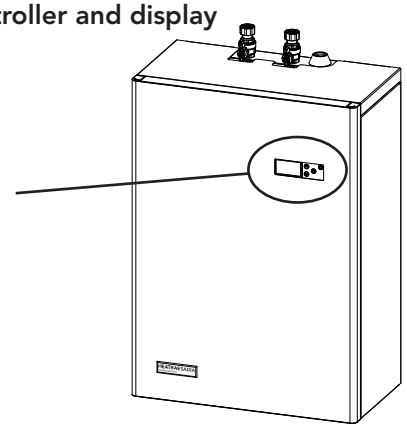
7.1 General

After flushing and filling the installation with water, as set out in the previous section, please carry out the following pre-commissioning and commissioning steps to complete the installation of the unit.

7.2 Checklist before commissioning

- Check all water connections for leaks and rectify as necessary.
- Turn off mains water supply using the stop cock.
- When fitted remove the pressure reducing valve cartridge to access the strainer mesh, clean as necessary and re-fit (see the example in Figure 54).
- Turn the water supply back on.
- Manually open the safety valve (and expansion relief valve if fitted) checking that water is discharged and runs freely through the tundish and out at the discharge point. Check all joints in the discharge pipework for leaks and rectify as necessary.
- Ensure that the safety valve(s) reseats satisfactorily.
- Check community heating flow strainer.
- Ensure that any heating zone valves are in the auto position.
- Ensure all isolation valves linked to the community heating system are now open.
- Check all wiring is correct and connections are secure in the terminals.
- Check that the programmable room thermostat(s) is/are fitted and wired correctly back to the controller.
- Check that pipes have been earth bonded.
- Check that the pump and valves are all plugged in.
- Ensure that all sensors are connected and in their relevant pockets.
- Check any air vents.
- Check that all site pipework is insulated.
- Ensure power supply to the unit is switched on. Once powered up, the controls will boot up and the programme version will be displayed to the right of the screen as detailed in Figure 34.

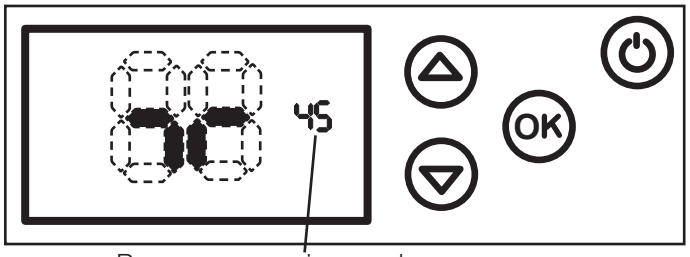
Figure 33: HIU controller and display



WARNING

The safety tempering valve at the bottom of the unit is a factory set safety device and should not be tampered with.

Figure 34: HIU start-up display



7.3 Commissioning procedure

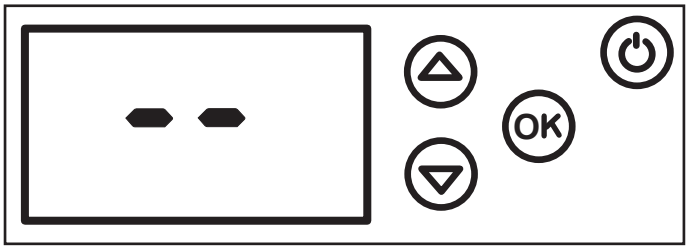
Set the PICV to suit the design flow rate using Figures 2 and 5 on pages 7 and 8 as shown in Figure 55 on page 38.

Ensure that the installer settings have been set to suit the installation and logged on page 54.

7.3.1 Hot water mode.

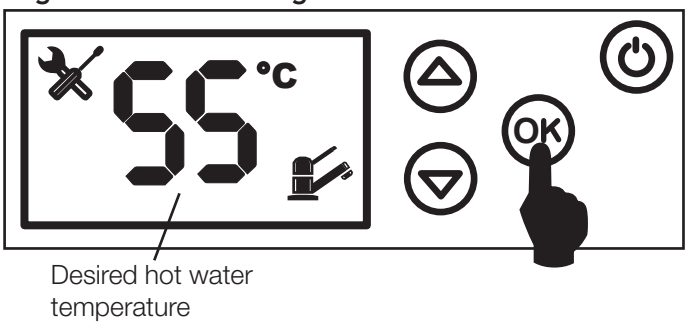
- The HIU is factory set to operate the domestic hot water (DHW) at 55°C, which is the temperature considered to be safe by the health and safety executive. After the unit has initialized, it will sit in standby mode with the back light on and the display will show two dashes as shown in Figure 35 below.

Figure 35: HIU standby display



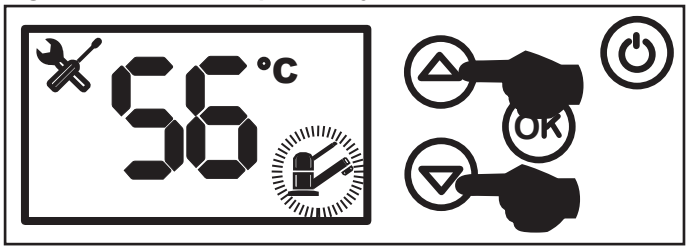
- Press the OK button and the hot water set point will be displayed as detailed in Figure 36 below.

Figure 36: DHW setting



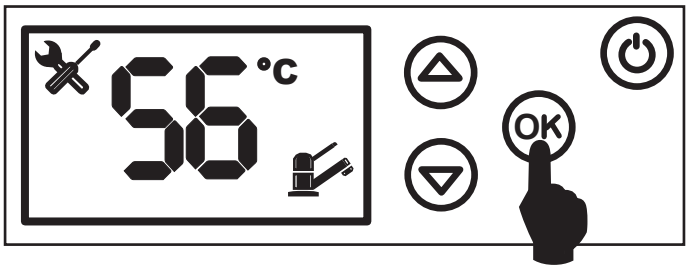
- The hot water temperature setting can be adjusted between 30°C and 65°C. Press the up and down arrow buttons to change the setting as shown in Figure 37 below. When setting up the DHW set point, the tap symbol in the bottom right hand side of the screen will flash.

Figure 37: DHW set point adjustment



- To confirm the change in setting press the OK button. Then wait for 3 seconds and the controller will revert back to the default display.

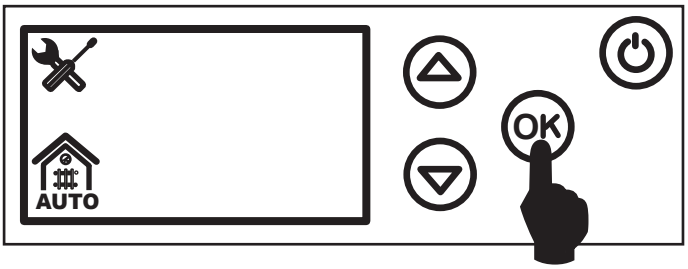
Figure 38: DHW set point confirmation



7.3.2 Heating mode.

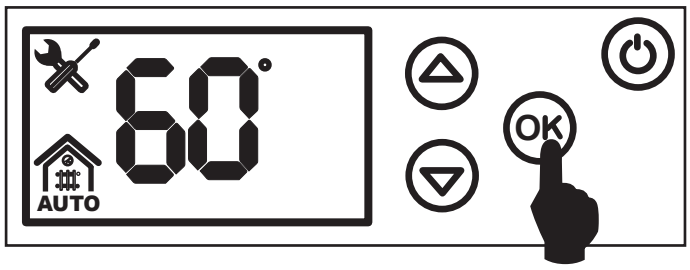
- The HIU is factory set to operate in optimised heating mode at 60°C. The apartment heating flow temperature can be adjusted between 20°C and 85°C. Press the OK button to get the screen detailed in Figure 39. If the AUTO sign isn't shown below the house symbol, this indicates that the heating is in manual mode. Use the up and down arrows to change to AUTO mode and OK to confirm.

Figure 39: Heating set up mode



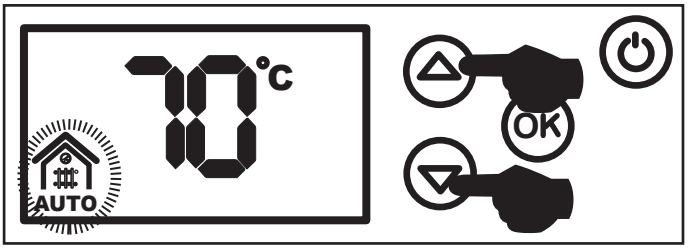
- Press the OK button again to enter the heating set point set up screen as detailed in Figure 40 below. Here the current heating set point is shown.

Figure 40: Heating set up mode



- To change the heating set point temperature use the up and down buttons until your desired setting is reached. When setting up the heating set point, the house symbol in the bottom left hand side of the screen will flash as detailed in Figure 41. To confirm the setting press the OK button again. After confirming the new setting, leave the buttons alone for three seconds and the controller will revert back to the default screen.

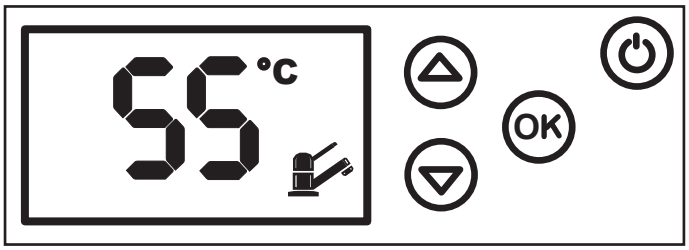
Figure 41: Heating set up mode



7.3.2 Operational check.

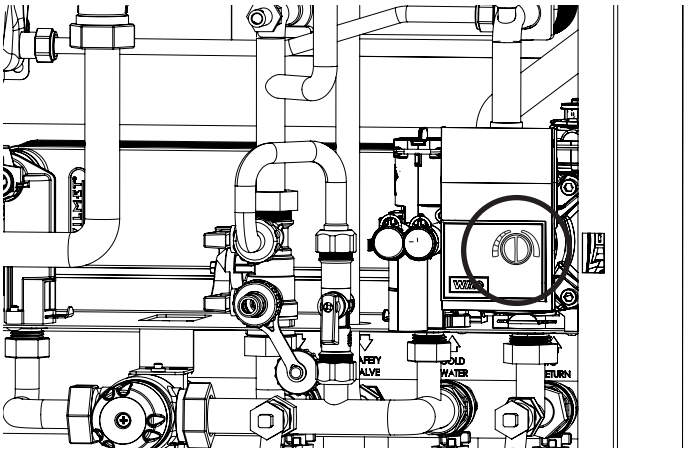
- To confirm that the unit is set correctly in hot water mode simply turn on a hot tap and check with a thermometer. The controller display will now show the tap symbol in the bottom right hand corner and the desired set point in large digits. If district heat is available, hot water will be delivered to the taps. Set hot water tap TMVs as necessary.

Figure 42: Display in DHW mode



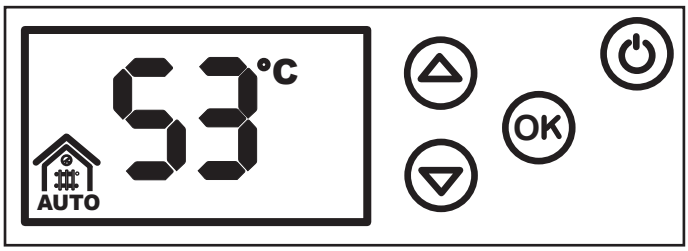
- Once the hot water mode has been set up and checked, turn off the hot water tap(s) and set up the apartments heating system.
- Ensure that the control dial on the pump is set to its minimum flow rate setting (see Figure 43).

Figure 43: Pump control knob setting



- Using the programmable room thermostat, switch the heating on. Refer to the separate programmable room thermostat instructions for details.
- The HIU should now be in heating mode and the display will now show the house symbol in the bottom left hand corner and the desired heating flow temperature in large digits and the pump will illuminate green.

Figure 44: Display in heating mode



To optimise the efficiency of the community heating system, it is important to keep the district return temperatures as low as possible. To achieve this the following set points are recommended:

- **Hot water System = 55 °C**
- **Heating system (radiators) = 50 - 60°C**
- **Heating system (Underfloor) = 32 - 45°C**

For conventional radiator systems with TRVs it is recommended that the pump operates in its variable pressure mode. To do this turn the control dial anti-clockwise to the left. For underfloor heating systems it is recommended that the pump is set to run at a constant speed to do this turn the control dial clockwise to the right (see Figure 43 on page 33).

If you have been able to calculate the design flow rate and system pressure losses, set the control knob to the required setting using the pump curves below.

Figure 45: Variable pressure pump curve

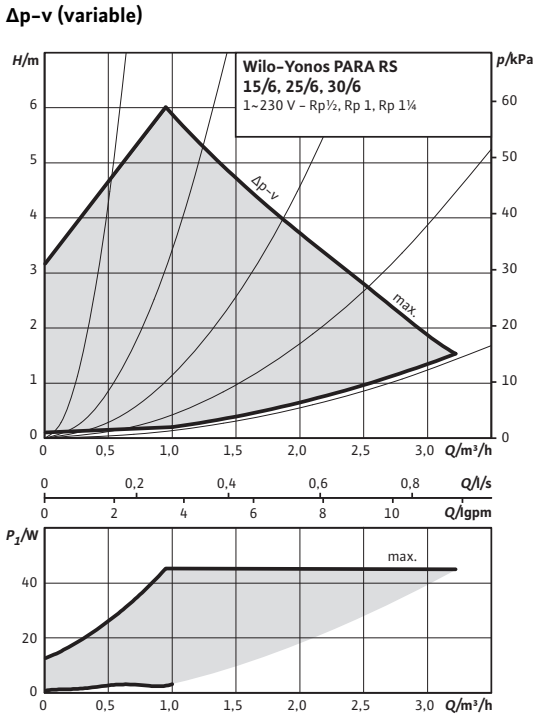
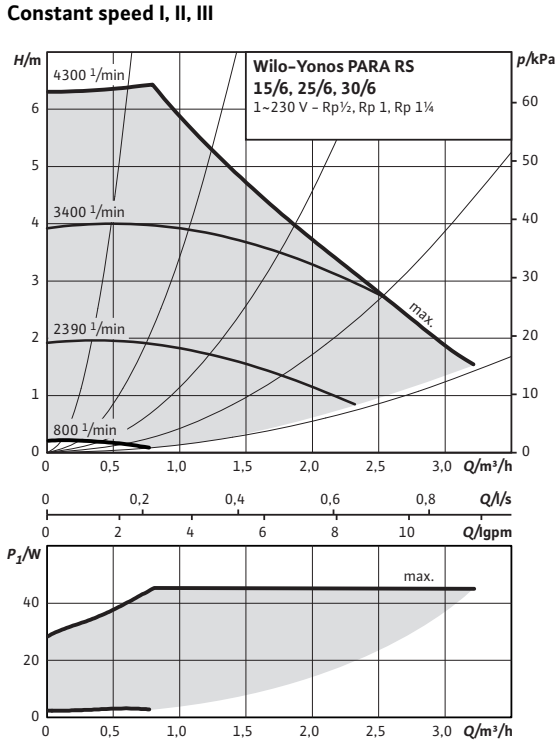


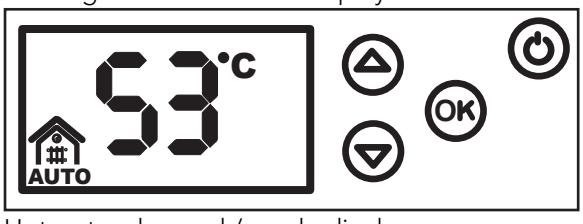
Figure 46: Constant speed pump curve



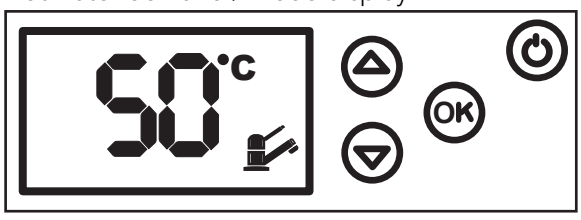
- For radiator systems where the design flow rate and pressure losses are unknown, check the index radiator(s) for heat when the pump is on its minimum setting. The index radiator is the one furthest from the HIU. Increase the pressure capability of the pump incrementally by turning the control dial gradually anticlockwise until the radiator heats up. Then make a note of the pump setting on the benchmark commissioning report at the back of these instructions.
- If the heating times and room temperatures are known, set up the programmable room thermostat and either switch the room thermostat off or leave in auto mode for the end user.
- Using the underfloor heating programmer, switch the heating on. Refer to the separate underfloor heating instructions for details.
- For underfloor heating systems there will be two pumps that work in tandem with each other see Figure 18 on page 16. The HIU pump's role here is to deliver heat through the underfloor heating systems control valve to the underfloor heating pump. The underfloor heating pump then pumps the heat around the underfloor heating system. To set the pump up in the HIU, increase the pump speed capability of the pump incrementally by turning the red knob gradually clockwise until the flow manifold heats up. Then make a note of the pump setting on the benchmark commissioning report at the back of these instructions.
- If the heating times are known, set up the programmer and room thermostats where fitted and either switch the room thermostats off or leave in auto mode for the end user.
- After commissioning you will see three possible displays as shown below in Figure 47.

Figure 47: Default displays

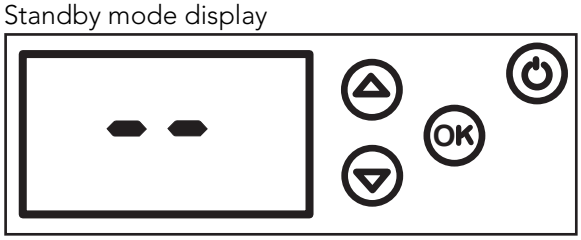
Heating demand / mode display



Hot water demand / mode display



Standby mode display



benchmark COLLECTIVE MARK
THE MARK OF QUALITY FOR THE INSTALLATION, COMMISSIONING AND SERVICING OF DOMESTIC HEATING AND HOT WATER SYSTEMS

Now fill in the benchmark check sheet for the HIU.

8. Operation

8.1 General

Please note that this product has been designed to make the operation of the unit and its subsequent generation of heating and hot water as simple for the end user as possible. The factory settings that the HIU is delivered with are suitable for most systems.

As the unit is designed to be installed on a sealed heating system, from time to time the system will lose pressure and need to be topped up using the filling loop inside the HIU. This can be done by following a simple procedure laid out later in this section of the instructions.

DANGER

Disconnect the electrical supply before opening the cover.

8.1.1 Benchmark

The heat interface unit is covered by the Benchmark Scheme, which aims to improve the standards of installation and commissioning of domestic heating and hot water systems in the UK and to encourage regular servicing to optimise safety, efficiency and performance.

Benchmark is managed and promoted by the Heating and Hot water Industry Council. For more information visit www.centralheating.co.uk.

Please ensure that the installer has fully completed the Benchmark Checklists on pages 52 to 53 of this manual and that you have signed it to say that you have received a full and clear explanation of its operation.

This product should be serviced regularly to optimise its safety, efficiency and performance. The service engineer should complete the relevant Service Record on the Benchmark Checklist after each service. The unit must be serviced annually by a competent engineer to maintain the warranty.

The Benchmark Checklist may be required in the event of any warranty work.

8.1.2 Domestic hot water flow performance

When initially opening hot outlets a small surge in flow may be noticed as pressures stabilise. This is quite normal with unvented systems. In some areas cloudiness may be noticed in the hot water. This is due to aeration of the water, is quite normal and will quickly clear.

8.1.3 DHW temperature controls

The hot water temperature is controlled by a PID controller within the Heatrae Sadia HI-MAX INSTANT HIU. A factory set Stv acts as a high temperature protection device in the event of a component failure or controls malfunction.
Once the PID controller is set there is no need to reset the hot water temperature set point in the HIU.

8.1.4 Heating temperature controls

The heating system flow temperature supplied from the HIU is controlled by the PID controller within the Heatrae Sadia HI-MAX INSTANT HIU. Once the PID controller is set there is no need to adjust this temperature.
The room temperature and the demand for heat from the HIU is controlled by the programmable room thermostat on a radiator system or the underfloor heating controller on an underfloor heating system.

For details on the space heating system controls refer to the separate controls instructions.

CAUTION

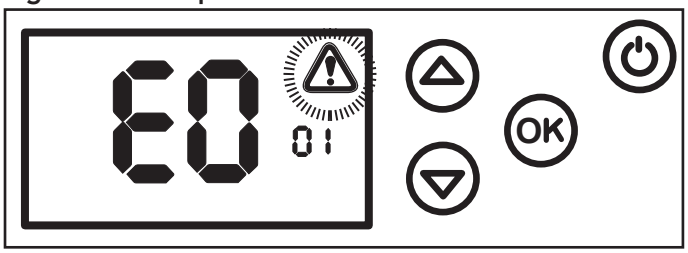
The heating system is set up by the installer to suit the conditions and limitations of the installation. It is imperitive that these settings are not adjusted by the end user, as this could result in damage to the system or property.

8.1.5 Operational faults and errors

Operational faults and their possible causes are detailed in the Fault Finding section on pages 40 to 43 of this book. It is recommended that faults should be checked by a competent installer. These can be identified with a code beginning with an "F".

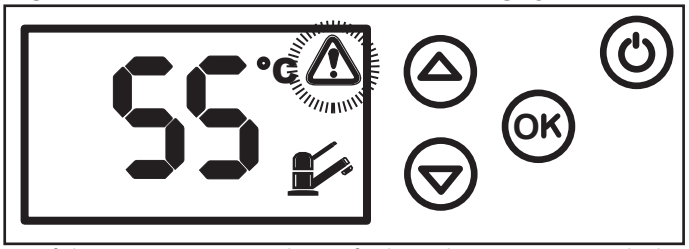
Operational errors occur from time to time and are perfectly normal. As mentioned earlier, one such error is that of a heating system low pressure condition as indicated in Figure 48 below.

Figure 48: Low pressure fault condition



If the heating system pressure drops below the minimum setting (approx 0.7 bar g) the controller will prevent the heating pump from operating. This is to prevent any damage to the pump, in this case the heating system will need to be topped up by following the system top up procedure.

Figure 49: Error or fault with the heating system



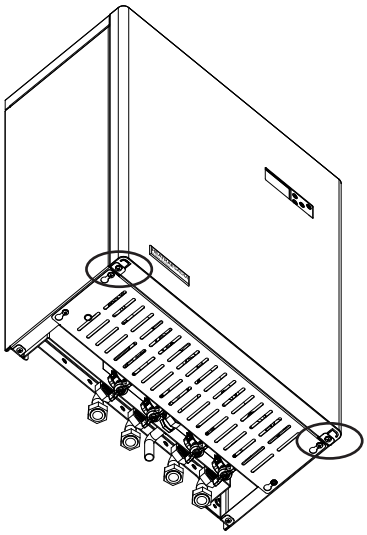
If there is an issue (either a fault and/or an error) with the heating system, the hot water system is still allowed to operate. In which case you will see the screen as detailed in Figure 49 or the two dashes for the standby mode display. Simply press the OK button to scroll through the faults / errors. The number below the flashing triangle indicates the number of faults / errors logged.

8.1.6 Topping up the heating system pressure procedure

1) Isolate the unit from the mains power supply.

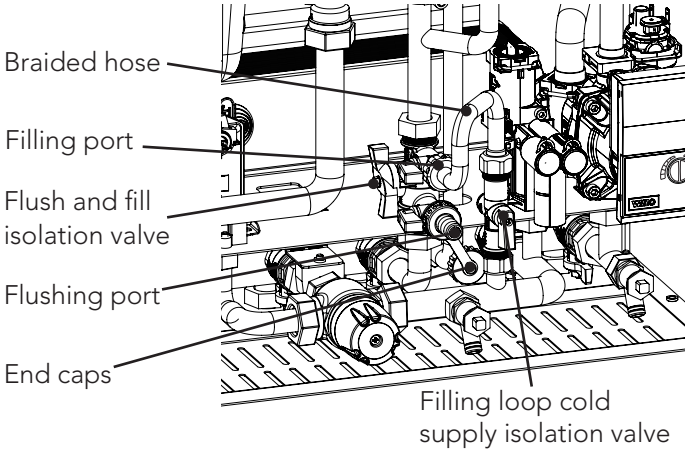
2) Open the front cover by removing the two screws at the bottom of the front panel as detailed in Figure 50 below.

Figure 50: Front panel fixing screws



3) Connect the braided hose of the filling loop to the filling loop cold supply isolation valve and the filling port on the flush and fill valve as detailed in Figure 51.

Figure 51: Flush and fill valve



4) Open up the filling port isolation valve and the filling loop cold supply isolation valve and pressurise the system until the needle on the pressure gauge reads 1.3 bar g. **This should be done when the heating system is cold.**

5) Shut off both the filling port isolation valve and the filling loop cold supply isolation valve.

6) Remove the filling loop braided hose and fit in the storage clip in the top left hand side of the unit.

7) Fit the end caps to both the filling loop port isolation valve and the filling loop cold supply isolation valve.

8) Refit the front panel and secure with the fixing screws.

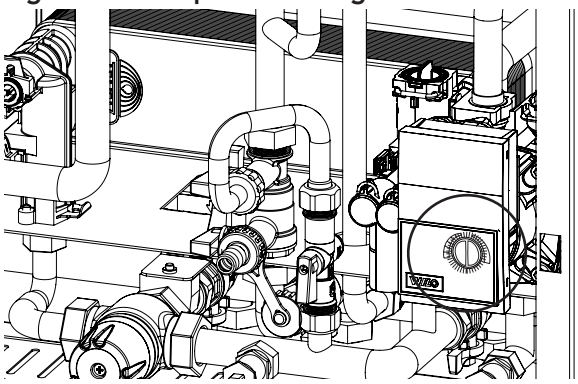
9) Switch the power to the unit back on.

10) The error code should have now gone leaving one of the default displays as detailed in Figure 47 on page 34.

8.1.7 Pump Operation.

- The pump is equipped with a light indication system to show operational and fault conditions as detailed in Figure 52 below.

Figure 52: Pump indicator light

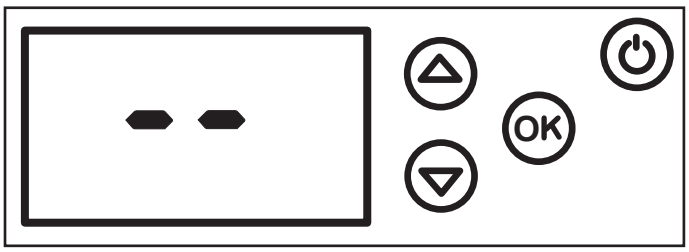


- Under normal operation the pump will be lit in green.
- When the pump flashes red and green this indicates a voltage issue or the pump has overheated and the has stopped. The pump will restart automatically if the issue is cleared.
- When the pump flashes red this indicates an issue with the pump. The pump will not restart automatically.
- When the LED is off, this indicates that there is either no power to the pump, or the LED / electrics are damaged.

8.1.8 Sleep mode.

- The unit can be put into sleep mode by simply pressing the on/off button for 3 seconds. Once in sleep mode the unit is inactive until the on/off button is pressed again. In sleep mode the PICV is fully closed, the heating and hot water functions will not operate and the pulsed flow function is also deactivated. Unlike standby mode the back light is off, the display is detailed in Figure 53 below.

Figure 53: Sleep mode



DANGER

The unit is still powered **ON** in sleep mode.
Do not enter the unit in sleep mode.

CAUTION

It is important that any work carried out on this unit is done by a competent engineer who is familiar with and understands the design of the system. This HIU is linked to a network and as such any unauthorised modifications or adjustments to the way the unit is set up to run could inadvertently affect the operation of other parts of the system. Authorisation from the community heating supplier should be sought before any system changes are carried out.

9. Maintenance

9.1 General

9.1.1 Maintenance requirements

HIUs have an annual maintenance requirement in order to ensure safe working and optimum performance. This is of particular importance in hard water areas or where the water supply contains particulate matter.

It is essential that the safety relief valve(s) are periodically inspected and manually opened to ensure no blockage has occurred in the valves or discharge pipework.

Similarly cleaning of the district heating flow strainer filter mesh and the cold water inlet filter will help to prevent possible operational faults.

Other areas to check are the gas charge in the expansion vessel and the pressure gauge within the heating system.

The maintenance checks described below should be performed by a competent person on a regular basis, e.g. annually to coincide with other maintenance work.

After any maintenance, please complete the relevant Service Interval Record section of the Benchmark Checklist on page 55 of this booklet.

WARNING

Any valves and exposed pipes may be hot!

Before commencing any servicing or maintenance on the HIU ensure that the electrical power supply, the district heating connections, the apartment heating connections and the domestic hot water connections are all isolated.

9.2 Routine inspection & maintenance operations - Domestic Hot Water System

9.2.1 Expansion relief valve operation (where fitted)

WARNING

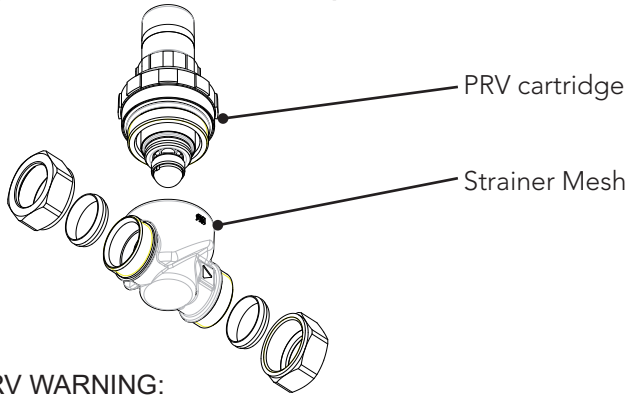
Water discharged may be very hot!

- If fitted, manually operate the expansion relief valve for a few seconds by turning the knob or lifting the lever.
- Check water is discharged and that it flows freely through the tundish and discharge pipework.
- Check valve reseats correctly when released.

9.2.2 PRV Strainer (where fitted)

- Turn off the power supply to the HIU.
- Turn off the cold water supply into the property, space heating system and district heating systems.
- The lowest hot water tap should then be opened to de-pressurise the system.
- Remove the pressure reducing cartridge to access the strainer mesh.
- Wash any particulate matter from the strainer under clean water.
- Re-assemble ensuring the seal is correctly fitted. DO NOT use any other type of sealant.

Figure 54: PRV strainer example



PRV WARNING:
IF THERE IS AN UPSTREAM CHECK VALVE OR FITTING WHICH MAY PREVENT BACKFLOW THEN HIGH PRESSURES CAN BE EXPERIENCED DUE TO AMBIENT TEMPERATURES WHICH CAN CAUSE DAMAGE TO THE VALVES AND FITTINGS

9.2.3 Potable water expansion vessel (where fitted)

- Turn off the in coming cold water supply.
- Drain down the expansion vessel.
- Check the gas charge in the expansion vessel and recharge as necessary. This should be set at the same pressure as the incoming cold water supply. If in doubt check the setting of the PRV.
- Turn on the cold water supply.

DANGER

If the Stv is showing signs of scale build up and is affecting its operation it is important that this is replaced.

9.2.4 Descaling

- Where scale has been allowed to build up and is affecting the operation of the unit, remove and replace the component(s).

In hard water areas where scale build up is an issue it is recommended that a suitable scale prevention device is fitted.

CAUTION

Do not use a sharp implement to remove scale from a component as damage may occur.

- Where gasket seals have had to be broken to replace components, ensure sealing surfaces are clean and gaskets are undamaged. If in doubt fit a new gasket. See spares list on page 51.

9.3 Routine inspection & maintenance operations - community heating system

9.3.1 Isolation

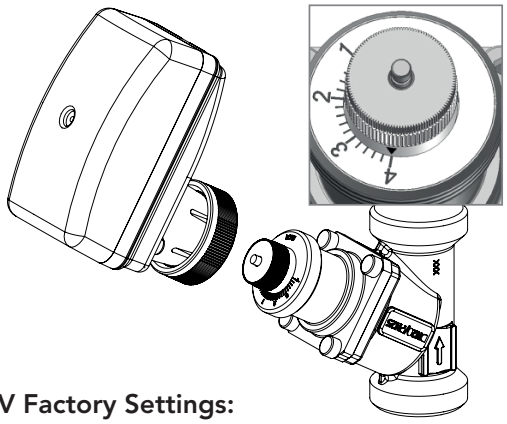
There are two isolation valves located at the top of the unit to isolate the components in the unit from the community heating system and a drain valve at the bottom to drain any water contained within the unit.

9.3.2 Community heating flow verification

- There are two ways of verifying the flow through the unit:

1) Confirm the minimum pressure drop across the unit using a manometer and taking measurements using the P/T test points at the top of the unit. To do this remove the actuator off the PICV, this will open the PICV to the set design flow rate of the valve. Note the valve should be set to 3 on models 5-60 and 4 on 5-80 models on the dial see Figure 55. Note that the Heatrae Sadia HI-MAX INSTANT uses pressure independent flow control technology, which means that as long as the minimum pressure drop across the unit is achieved at the design flow rate the correct flow rate should be achieved. See Figure 56 below for details of the P/T test points (Binder points not supplied) and Table 5 for unit minimum pressure drops.

Figure 55: PICV setting



PICV Factory Settings:
5-60 = 3
5-80 = 4

Figure 56: P/T Test points

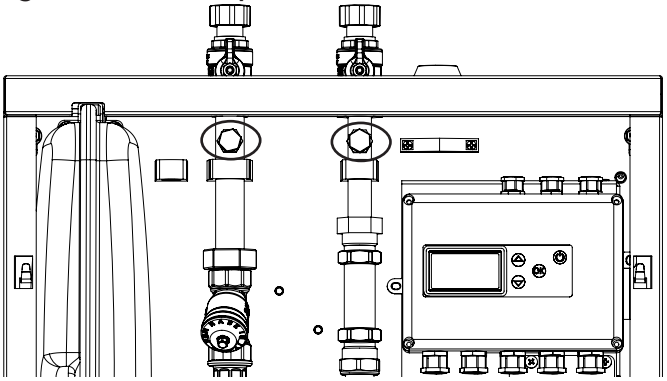


Table 5 Minimum primary system pressure drop at maximum primary flow rate

HIU Model	Minimum ΔP across unit
ID 5-60	61 kPa *
ID 5-80	78 kPa *

* excludes heat meter

2) The heat meter should have the facility to interrogate the actual flow rate through the unit. Again this should be done with the actuator removed.

Important. Check that the PICV actuator pin is in its fully retracted position before fitting. This means driving the actuator to fully open the PICV. To do this follow the procedure below:

9.3.3 Procedure to retract pin in the PICV actuator:

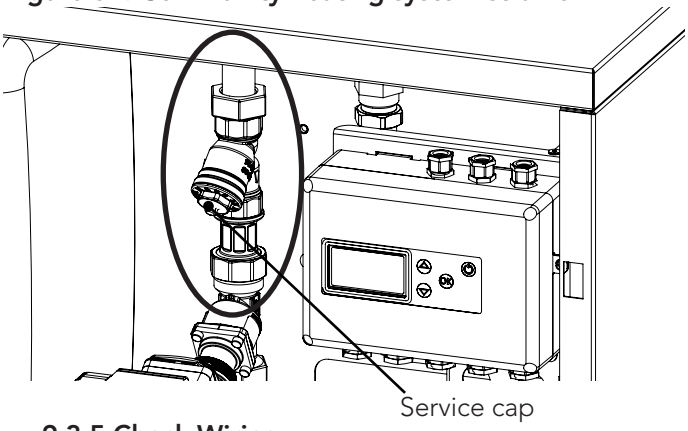
1) When the actuator is removed from the PICV, close the district flow isolation valve.
2) Ensure there is power to the HIU.
3) Open a hot bath tap. The PID controller will attempt reach the DHW set point by trying to open the PICV (ie retracting the pin in the actuator).
4) Wait for 45 seconds to allow the actuator to travel its full distance.
5) Switch the power to the unit off. The actuator pin will remain in its fully retracted position.
The actuator is ready to fit on to the PICV. Carefully screw the actuator back on by hand. **DO NOT USE PIPE GRIPS.**

Tighten the actuator collar by hand only. Do not use a tool such as pipe grips or a wrench.

9.3.4 Check strainer for blockages

- With the unit isolated at the valves on top of the first fix rail, drain down the district heating side of the HIU into a bucket using the drain valve located underneath the flow hydroblock.
- Unscrew the strainer service cap (see Figure 57) and remove the mesh filter. Check for debris and clean as necessary.
- Replace filter and cap.

Figure 57: Community heating system strainer



9.3.5 Check Wiring

- Turn off the electrical supply and remove casings.
- Check that all terminals are still tight and haven't become loose.

9.4 Routine inspection & maintenance operations - apartment heating system

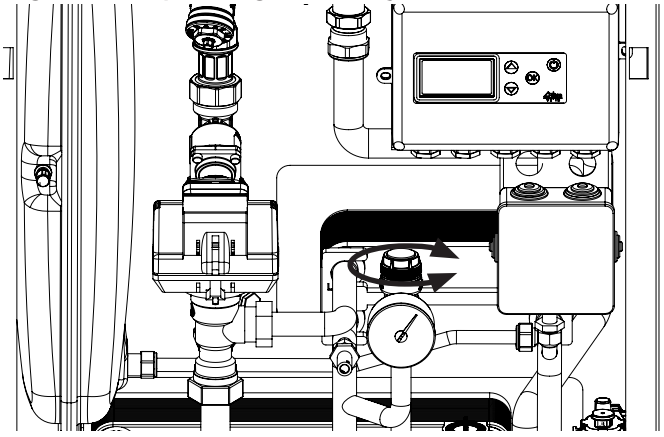
9.4.1 Check Safety Valve

The safety valve should be checked periodically to ensure that the valve is operational. This is done by simply twisting the red plastic cap at the top of the valve. In so doing, a small burst of water will discharge from the valve, which can be witnessed through the tundish. After doing so check the system pressure and top back up to 1.30 bar g as necessary.

WARNING

Although the amount of water discharged from the safety valve is not likely to be great. It is important to note that it is likely to be hot and carries a risk of scalding.

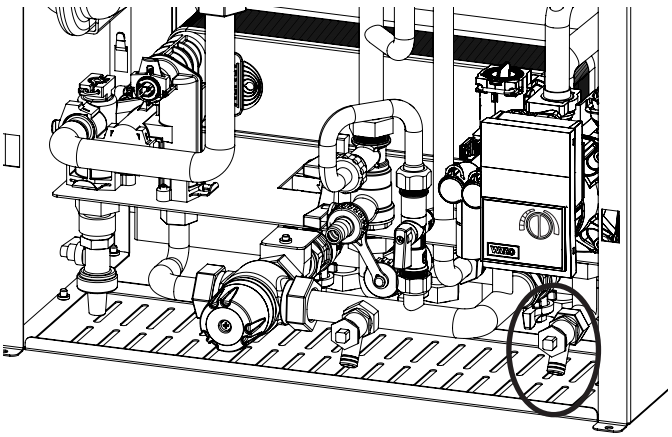
Figure 58: Operating the safety valve



9.4.2 Check expansion vessel gas charge

1) Isolate the central heating flow and return connections.
2) Drain down the Heatrae Sadia HI-MAX INSTANT unit on the apartments' heating circuit using the drain valve on the bottom right hand side of the unit.
See Figure 59 below.
3) Using a pressure gauge, check the gas charge in the expansion vessel. This should be 1.0 bar g.
4) If the gas charge is too low, recharge the gas pressure using a bicycle pump or compressor.

Figure 59: Apartment heating drain valve



9.4.3 Check inhibitor

1) Open the central heating drain cock to take a small sample of the water from the apartment central heating system. Then using a protector test kit, check the concentration of inhibitor in the system.
2) Top up the system using the filling loop and add inhibitor as necessary.
Follow the procedure in section 8.1.6.

9.4.4 Check pressure gauge

1) With the apartment central heating system cold, check the system pressure. This should be 1.3 bar g. Top up using the filling loop as necessary.

9.4.5 Check sensors are in their pockets

1) Check the heating flow and return sensors are in their appropriate pockets. The heating flow sensor can be identified by a red tag and the return by a blue tag.

Now fill in the Benchmark service record on page 55 of this manual.

benchmark
COLLECTIVE MARK
THE MARK OF QUALITY FOR THE INSTALLATION, COMMISSIONING AND SERVICING OF DOMESTIC HEATING AND HOT WATER SYSTEMS

CAUTION
It is important that any work carried out on this unit is done by a competent engineer who is familiar with and understands the design of the system. This HIU is linked to a network and as such any unauthorised modifications or adjustments to the way the unit is set up to run could inadvertently affect the operation of other parts of the system. Authorisation from the community heating supplier should be sought before any system changes are carried out.

10. Troubleshooting

WARNING
Do not tamper with any of the safety valves or controls supplied with the HIU as this will invalidate any guarantee.

10.1 Fault finding

Important

- **After servicing, complete the relevant Service Interval Record section of the Benchmark Checklist located on pages 54 of this book.**
- **Servicing should only be carried out by competent persons in the installation and maintenance of hydraulic interface units and district heating systems.**
- **Any spare parts used MUST be a Heatrae Sadia authorised parts.**
- **Disconnect the electrical supply before removing the casings and any electrical equipment covers.**
- **NEVER operate system without the necessary safety valves and devices.**

WARNING
Water contained in the HIU may be very hot, especially following a thermal control failure. Caution must be taken when draining water from the unit.

The fault finding chart (Table 6, below) will enable operational faults to be identified and their possible causes rectified.

In case of doubt contact service support (see contact details on page 56).

Spare Parts

A full range of spare parts are available for the unit (see Table 8, page 51). Refer to the technical data label on the unit to identify the model installed and ensure the correct part is ordered. You will need to quote the serial number that is printed on the unit's data label, which can be found on the back plate behind the controller.

If a fault code is displayed on the controller refer to the fault codes in Table 7 on page 42 and 43 for details.

Table 6: Fault finding chart

Fault	Possible Cause	Remedy
No hot water flow	No cold water supply	Check that there is cold water to the property
	Cold water supply off	Check and open stop cock
	Filter blocked	Turn off water supply. Remove filter and clean
	Cold water control valves incorrectly fitted	Check and refit as required
Water from hot tap is cold	Controller incorrectly set, faulty, or wired incorrectly.	Check controller settings, wiring and is operating correctly.
	PICV valve blocked or faulty.	Check pipe temperature either side of the valve. Check actuator is operational. Check valve, remove and clean as necessary.
	Diverter stuck in bypass or heating mode.	Check the temperature at the diverter outlets. Remove diverter and check valve and diverter operation. Replace the actuator or diverter valve.
	No heat from the community heating system.	Check the community heating system.
	Community heating flow strainer blocked.	Remove and clean strainer mesh filter.
	Isolation valves in closed position. Incorrectly piped.	Ensure all isolation valves are open. Check piping.
	DHW plate heat exchanger blocked.	Check community heating side of plate heat exchanger and clean or replace as necessary.
	Stv hot port blocked or Stv has been tampered with or faulty.	Check the Stv setting and for blockage and clean or replace as necessary.
	The unit doesn't sense flow.	Ensure that the tap icon comes up on the display. Increase the flow of water to the hot tap or replace the flow sensor as necessary.
	Heat Meter blocked.	Check that the heat meter isn't blocked and replace as necessary.
Water temperature from hot tap unstable	Faulty Stv safety device. Faulty controller. Faulty sensor. Incorrect PID settings in the controller.	Check Stv and replace as necessary. Check controller and replace as necessary. Check calibration of the sensor and replace as necessary. Check PID settings in the controller - contact Heatrae Sadia for advice.

Table 6: Fault finding chart continued...

Fault	Possible Cause	Remedy
Water discharges from expansion relief valve	Intermittently: Check gas charge in expansion vessel.	See Maintenance section (page 39) for re-charging the expansion vessel procedure.
	Continually: Cold water pressure reducer not working correctly. Expansion relief valve seat damaged.	Check pressure from cold water PRV. If greater than 3.0 bar replace pressure reducing valve cartridge. Remove expansion relief valve cartridge, check condition of seat. If necessary fit new expansion relief valve.
Opaque water	Oxygenated water.	Water from a pressurised system releases oxygen bubbles when flowing. The milkiness will disappear after a short while.
No Heating	Controller incorrectly set, faulty, or wired incorrectly.	Check controller settings, wiring and is operating correctly.
	Room thermostat set wrong, faulty, or wired incorrectly.	Check room thermostat settings, wiring and is operating correctly.
	Isolation valves in closed position.	Ensure all isolation valves are open.
	Strainer blocked.	Remove and clean strainer mesh filter.
	Community heating control valve seized, blocked, faulty, fitted or wired incorrectly.	Check valve wiring and is operating correctly. Check pipe temperature either side of the valve. Check actuator is operational. Remove and clean if necessary. Check orientation and wiring.
	No heat from the community heating system.	Check the community heating system
	Check heating PICV isn't seized, faulty, or wired incorrectly.	Check PICV wiring and that the valve is operating correctly.
	Low system pressure	Check system pressure and top up as necessary.
	Pump not running	Check pump is operating correctly. Check light around red control knob, if the light is off it indicates there is no power to the pump. Check light around red control knob, if the light is flashing red and green it indicates a voltage supply fault or the pump is over heating. Check light around red control knob, if the light is flashing red it indicates the pump is faulty and requires changing.
No heating and hot water	No power to the controller / heating system.	Check power supply / fuse / circuit breaker.
	Controller incorrectly set, faulty, or wired incorrectly.	Check controller settings, wiring and is operating correctly.
	Room thermostat set wrong, faulty, or wired incorrectly.	Check cylinder and room thermostat settings, wiring and is operating correctly.
	Community heating control valve seized, blocked, faulty, or wired incorrectly.	Check valve wiring and is operating correctly. Check pipe temperature either side of the valve. Check actuator is operational. Remove and clean if necessary.
	No heat from the community heating system.	Check the community heating system
	Strainer blocked.	Remove and clean filter.
	Isolation valves in closed position.	Ensure all isolation valves are open.
Insufficient heating and hot water	Low district heating flow temperature.	Check district flow pipe temperature / heat meter temperatures. Check central boiler flow temperature settings and boiler size.
	Low district heating flow rate.	Using a manometer, check pressure drop across district control valve to verify flow rate. Check and clean strainer, isolation valves and district control valve. Check the pipe sizing.
	No community heating flow to the unit.	Using a manometer, check pressure drop across district control valve to verify flow rate. Check and clean strainer, isolation valves and district control valve. Check the pipe sizing.
	Distribution pumps not set correctly or under sized.	Check strainer isn't blocked, check isolation valves and district control valve are fully open. Check district heating pumps.

10.2 Levels of fault severity

The HI-MAX INSTANT runs the heating or hot water modes independently of one another. This allows the unit to work with two levels of fault severity.
Level 1 faults are less severe than level 2 faults. If the unit has a level 1 fault, other mode of operation that is not associated with the fault will still be allowed to operate. F0, F1, F2, and F5 are level 1 faults.
Level 2 faults are the most serious. These faults will prevent the unit from operating correctly in all functions.
All faults are indicated by the fault triangle in the top right hand corner. F3, F4 and F6 are level 2 faults.
The unit can still run in either of the other none-effected modes of operation or in standby mode.
If a level 1 fault has occurred, the fault triangle will be indicated along with the other, none effected mode of operation if in operation.
If a level 2 fault has occurred the unit will not run in any mode and the fault will be indicated on the screen. If more than one fault has occurred the faults will be listed in numerical order and the number of faults shown below the fault triangle.

10.3 Fault interrogation

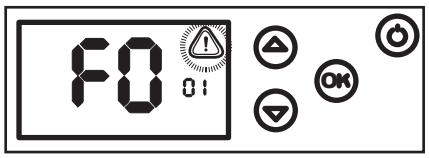
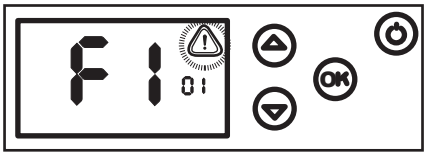
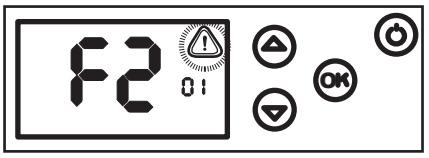
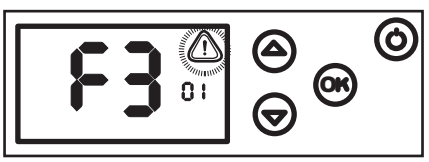
As just mentioned, it is possible that more than one fault can occur at any one time. The number of faults are shown below the fault triangle. In order to find out what fault(s) have occurred simply press the OK button to scroll through them.

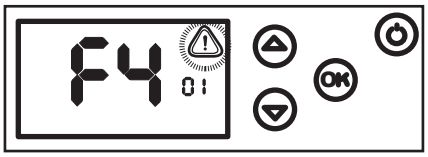
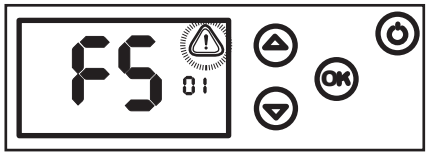
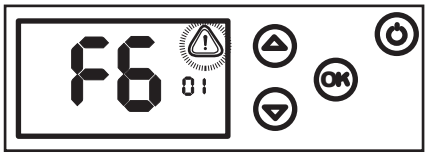
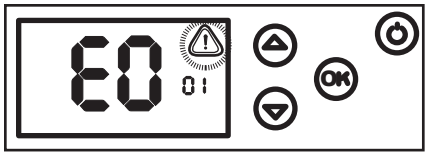
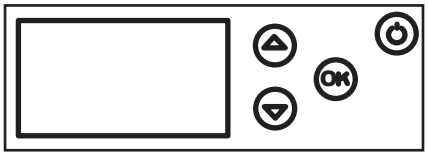
All faults are automatically cleared once the problem has been resolved.

10.4 Fault codes

The HIU fault codes and their likely causes are listed below in Table 7.

Table 7 Fault and Error codes

Fault / Error Code	Fault	Cause of fault	Remedy
	F0 indicates that a fault has been detected by the NTC sensor used to monitor the DHW temperature. The HIU PID Controller automatically defaults the diverter valve to the heating plate heat exchanger. If the unit has an F0 fault DHW is not available until the error has been resolved.	NTC sensor is broken or damaged. NTC sensor detects a temperature > 70°C. NTC sensor is not properly connected into the controller box. NTC cable is broken.	Replace NTC sensor Run hot tap to cool the unit down and clear fault and shut down as necessary. Check the NTC terminals are connected. Replace NTC sensor. The HIU PID Controller will automatically reset to normal operation once the cause of the fault has been corrected.
	F1 indicates that a fault has been detected by the PT1000 central heating flow temperature sensor. The result is that the HIU controller will not allow the central heating to operate until the fault is rectified.	PT1000 heating sensor is broken or damaged. PT1000 sensor detects a temperature > 110°C. PT1000 sensor is not properly connected into the controller box. PT1000 sensor cable is broken.	Replace PT1000 sensor Investigate reason for high temperature and shut down as necessary. Check the PT1000 terminals are connected. Replace PT1000 sensor. The HIU PID controller will automatically reset to normal operation once the cause of the fault has been corrected.
	F2 indicates that a fault in the external (outdoor) PT1000 sensor has been detected. This optional sensor is used for the weather compensated heating function. During this fault the HIU controller will then turn off the 'AUTO' function which is used for weather compensation. The HIU controller reverts to non compensated heating until the fault is rectified. The HIU Controller will automatically reset back to AUTO mode when the fault is rectified	PT1000 heating sensor is broken or damaged. PT1000 sensor detects a temperature > 110°C. PT1000 sensor is not properly connected into the controller box. PT1000 sensor cable is broken.	Replace PT1000 sensor Investigate reason for high temperature and shut down as necessary. Check the PT1000 terminals are connected. The HIU PID controller will automatically reset to normal operation once the cause of the fault has been corrected.
	F3 indicates that a fault has been detected in the electricity transformer inside the HIU controller. The result is that central heating and DHW will not be available as the HIU controller will not allow these functions until the fault is rectified	Incorrect power supply. Transformer faulty.	Check power supply. Once proven the fault lies within the controller then disconnect power supply and disconnect all connections to the HIU PID Controller, marking them ready for reconnection. Remove the controller from it's securing clips. Install the new HIU PID Controller, making all the connections as per the wiring diagram. The HIU PID Controller will automatically reset to normal operation once the cause of the fault has been corrected.

Fault / Error Code	Fault	Cause of fault	Remedy
	F4 indicates that the HIU controller has registered power consumption outside the preset limits. The result is that central heating and DHW will not be available	Issue with the pump motor. Issue with the 3 port diverter motor. Loose wire to the pump or 3 port diverter. Incorrect wiring.	Check that the pump is fully operational. See 8.1.7 on page 36. Check error display on the pump. Check all cable and connectors. Check pump functionality (see Figure 51 page 36). Replace the pump if proven to have failed. Check that the 3 Port Diverter is fully operational. Check cable and connectors. Check valve motor for operation. Replace the valve actuator if proven to have failed. Replace complete valve and actuator if the valve body is suspected of causing the actuator to fail.
	F5 indicates that a fault has been detected in the Aux return PT1000 sensor used for the compensated heating function. During this fault the HIU controller will turn off the 'AUTO' function which is used for compensated heating. The HIU controller reverts to non compensated heating until the fault is rectified. The HIU Controller will automatically reset back to AUTO mode when the fault is rectified.	PT1000 heating sensor is broken or damaged. PT1000 sensor detects a temperature > 110°C. PT1000 sensor is not properly connected into the controller box. PT1000 sensor cable is broken.	Replace PT1000 sensor Investigate reason for high temperature and shut down as necessary. Check the PT1000 terminals are connected. Replace PT1000 sensor. The HIU PID controller will automatically reset to normal operation once the cause of the fault has be corrected.
	F6 indicates a fault has been detected in the PICV actuator. The result is that central heating and DHW will not be available as the HIU controller will not allow these functions until the fault is rectified. The HIU controller will automatically reset to normal operation once the cause of the fault has been corrected.	Actuator faulty. PCB fault. Wiring fault.	Check cable and connectors. Check PICV functionality and replace the PICV actuator valve if found to be faulty.
	E0 indicates that the pressure switch has dropped below its minimum setting. The result is that central heating will not be available as the HIU controller will not allow these functions until the fault is rectified. The HIU controller will automatically reset to normal operation once the cause of the fault has been corrected.	Lack of pressure in the central heating system Electric cable is damaged Pressure switch is faulty	Check system pressure Check cable and connectors to pressure switch Check pressure switch functionality Replace the pressure switch if found to be faulty
	No display when the unit is powered on.	Faulty display board. Faulty ribbon cable.	Check board an replace as necessary. Check ribbon cable and replace as necessary.

11. Decommissioning

11.1 Decommissioning procedure

- Isolate electrical supplies and make safe
- Disconnect all wiring
- Isolate the water supply
- Isolate the community heating system
- Drain the HIU
- Disconnect the unit
- Remove the unit
- Cap pipework

11.2 Environmental information

Products are manufactured from many recyclable materials. At the end of their useful life they should be disposed of at a Local Authority Recycling Centre in order to realise the full environmental benefits.

WEEE Declaration

Disposal of Waste Equipment by Users in Private Household in the European Union.

This symbol on the product indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the company where this product was purchased.

12. Warranty

12.1 Warranty Statement

Heatrae Sadia guarantees the HI-MAX INSTANT against faulty manufacture or materials for a period of three years from the date of purchase including parts and labour.

These guarantees are valid provided that:

The Heatrae Sadia HI-MAX INSTANT has been correctly installed by a competent installer and as per the instructions contained in the Product Guide and all relevant Codes of Practice and Regulations in force at the time of installation.

The Heatrae Sadia HI-MAX INSTANT has not been modified in any way other than by Heatrae Sadia or Heatrae Sadia approved engineers.

The Heatrae Sadia HI-MAX INSTANT has not been subjected to frost, scaling, nor has it been tampered with or been subjected to misuse or neglect.

No factory-fitted parts have been removed for unauthorised repair or replacement.

The Benchmark Commissioning Checklist and Service Record included in the Heatrae Sadia HI-MAX INSTANT Product Guide has been completed.

Regular maintenance has been carried out by a competent person in accordance with the requirements set out in the maintenance section of the Product Guide

and any replacement parts used should be authorised Heatrae Sadia spare parts.

Evidence of purchase and date of supply must be submitted upon making a claim.

It has been installed in the UK.

This guarantee is not valid for installations outside the United Kingdom.

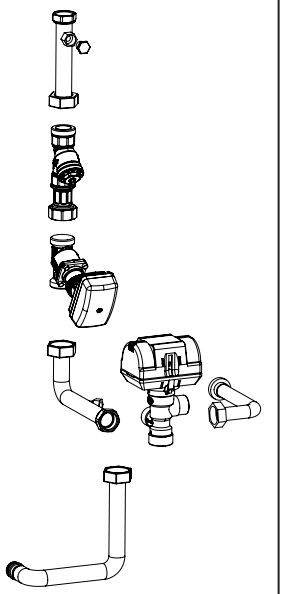
For installations outside of the United Kingdom, please contact either the Heatrae Sadia Export Department on Tel: +44 1603 420271 for further details of the guarantee terms and conditions applicable.

This guarantee does not affect your statutory rights.

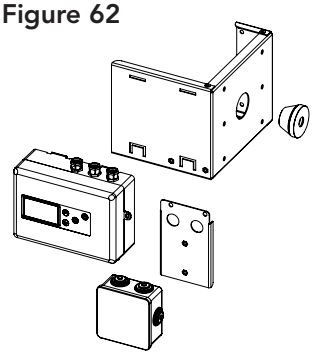
13. Spare parts

Figure 60: Spares - Component parts

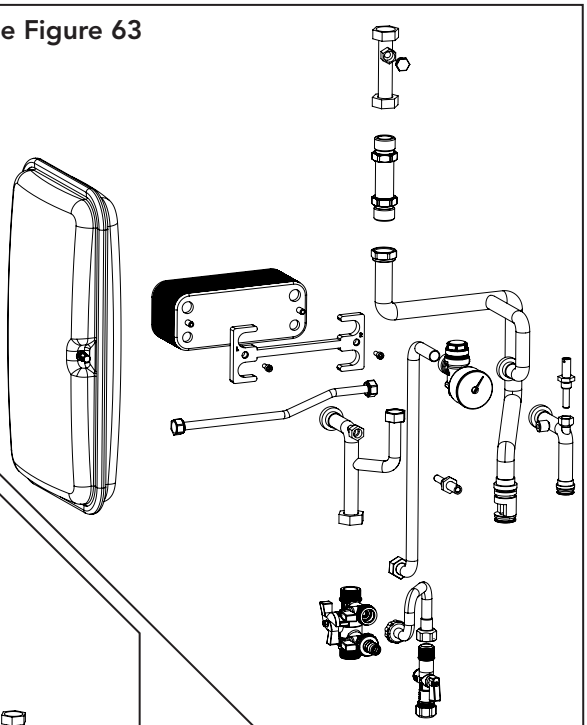
See Figure 61



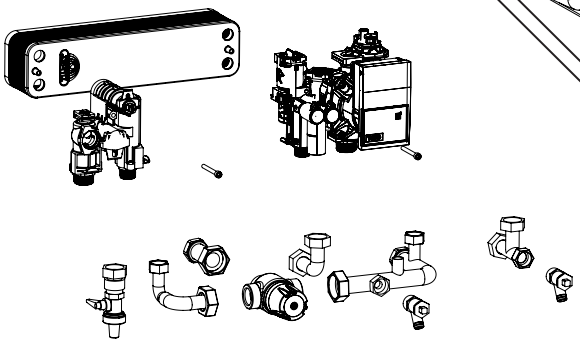
See Figure 62



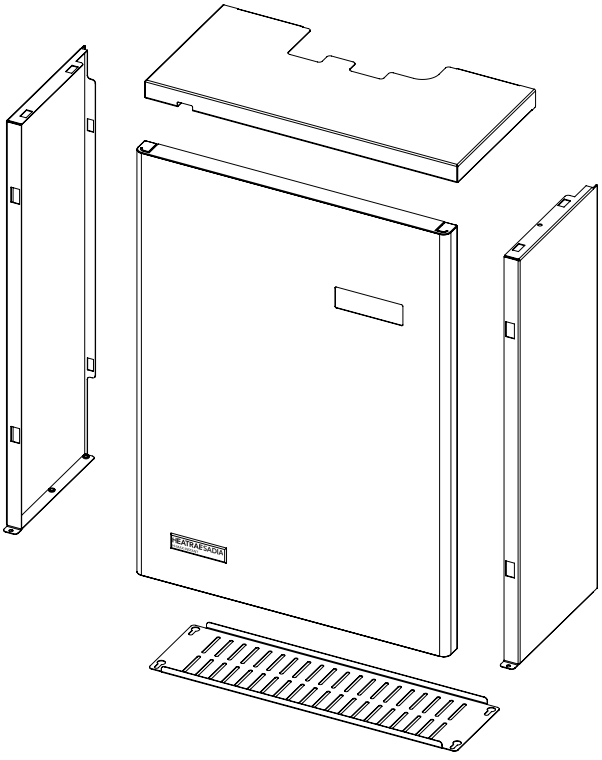
See Figure 63



See Figure 64 and 65



See Figure 66



See Figure 67 to 68

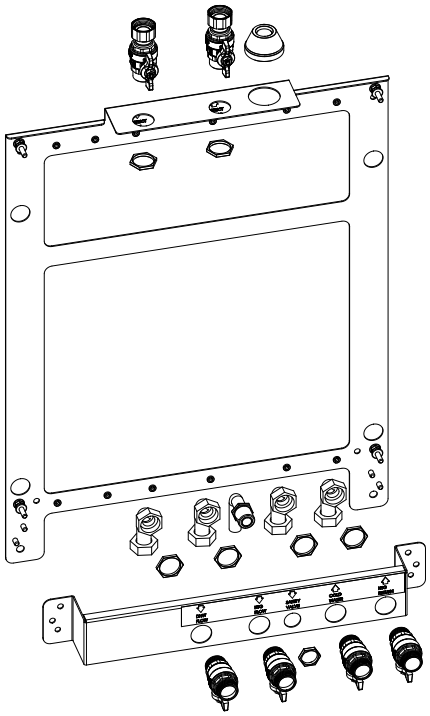


Figure 61: Spares - Component parts

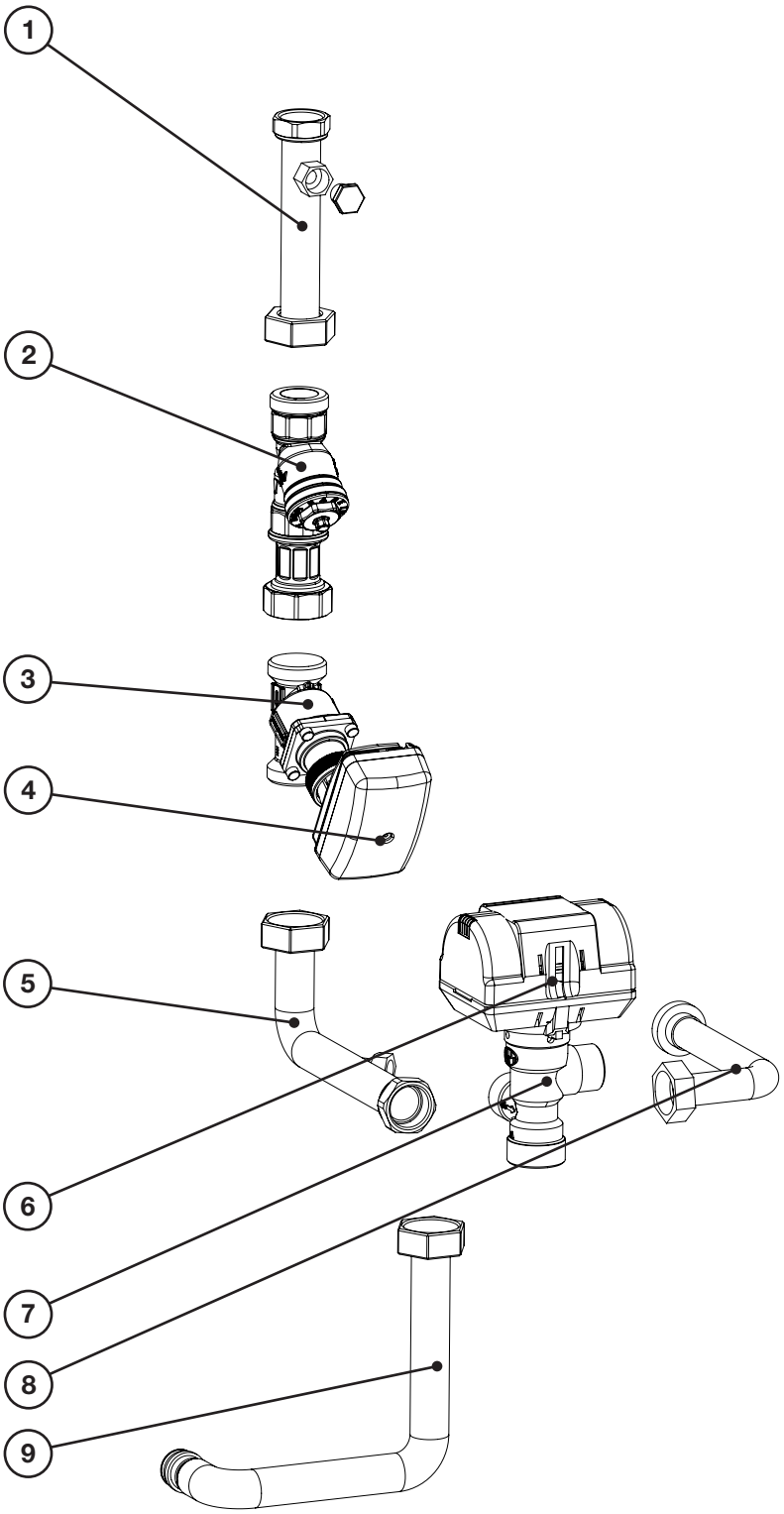


Figure 62: Spares - Component parts

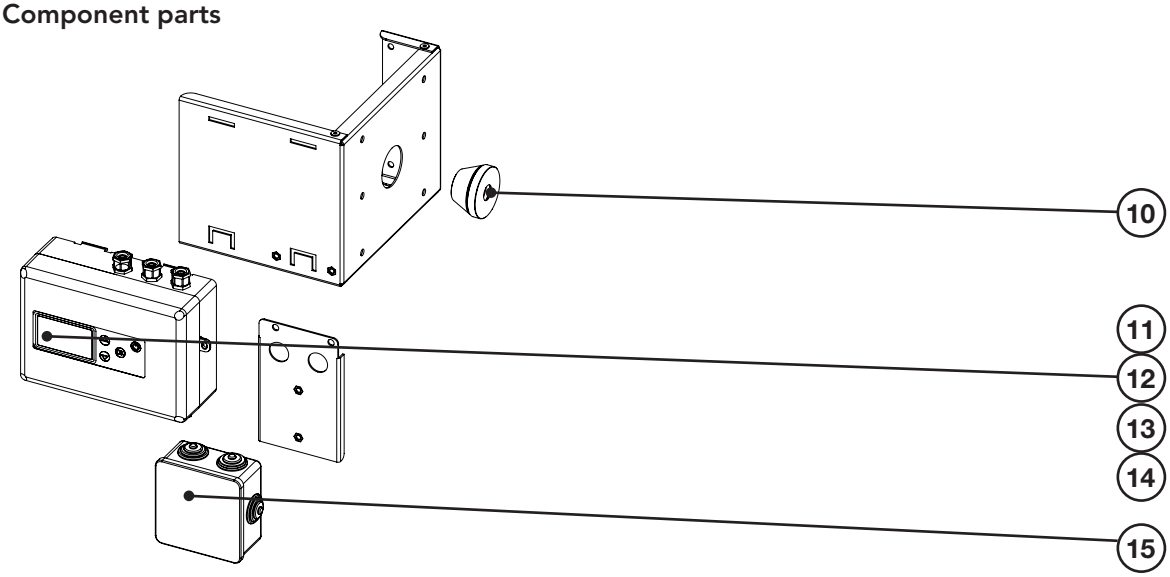


Figure 63: Spares - Component parts

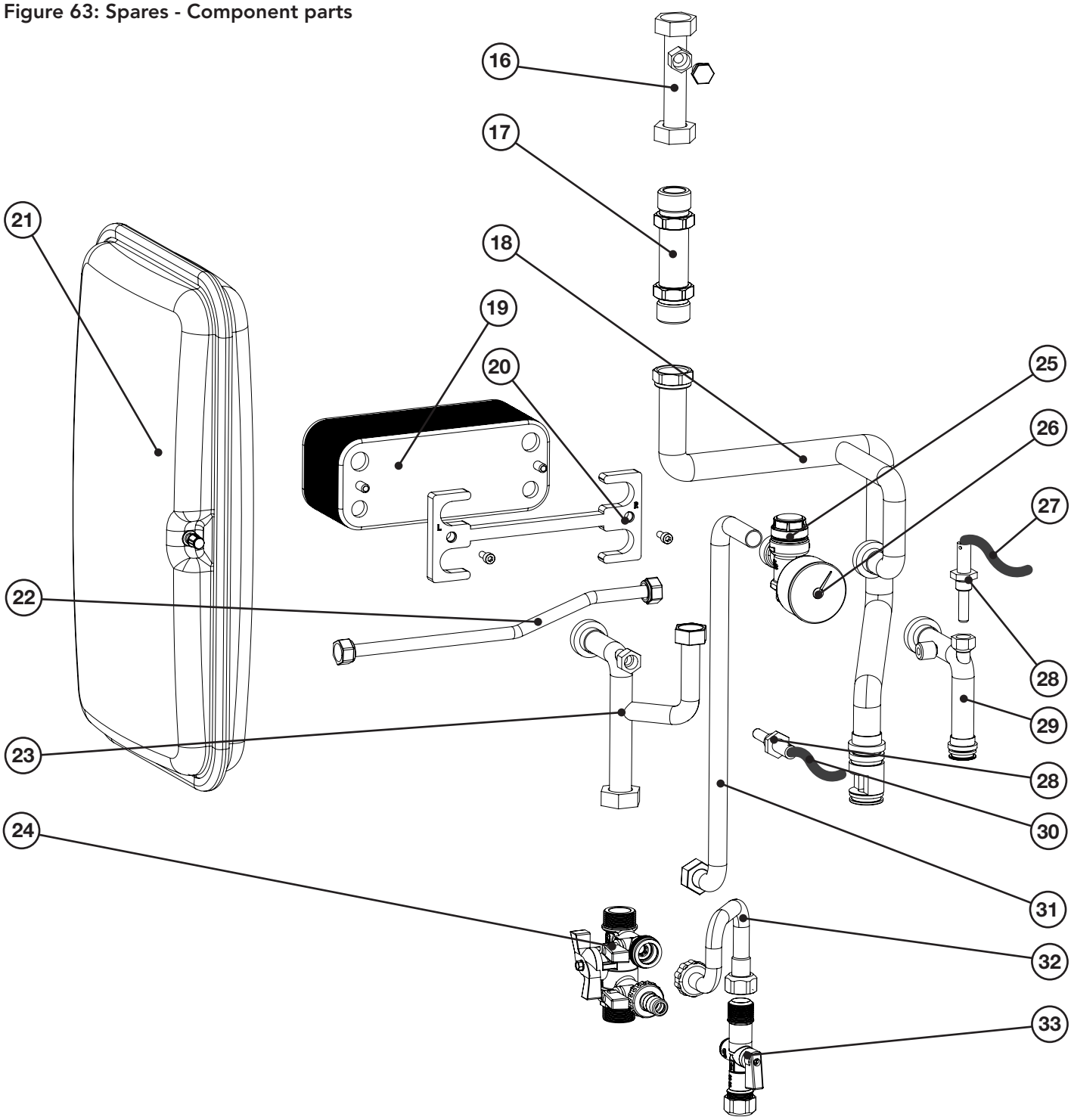


Figure 64: Spares - Component parts

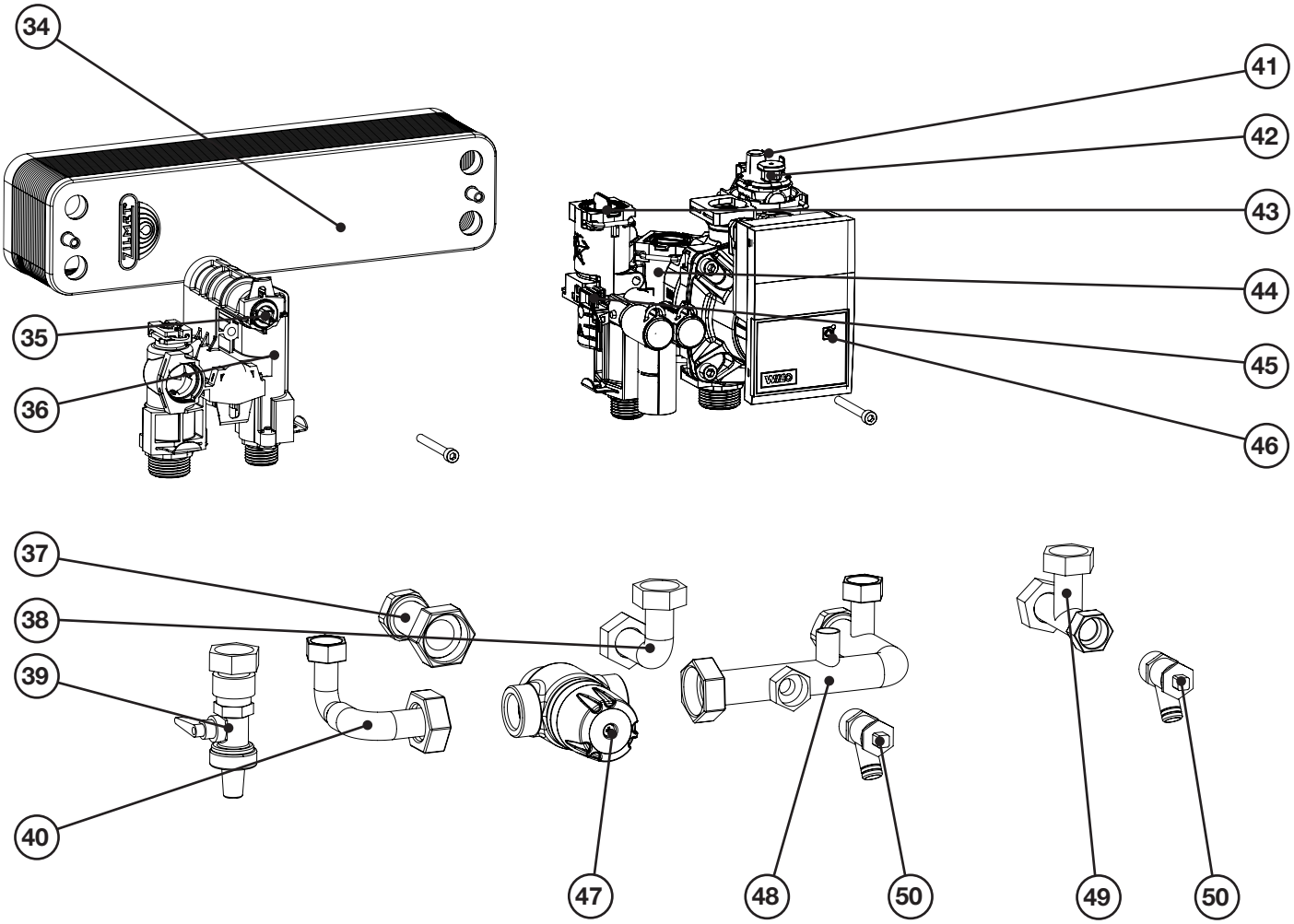


Figure 65: Spares - Flow and return hydroblock detail

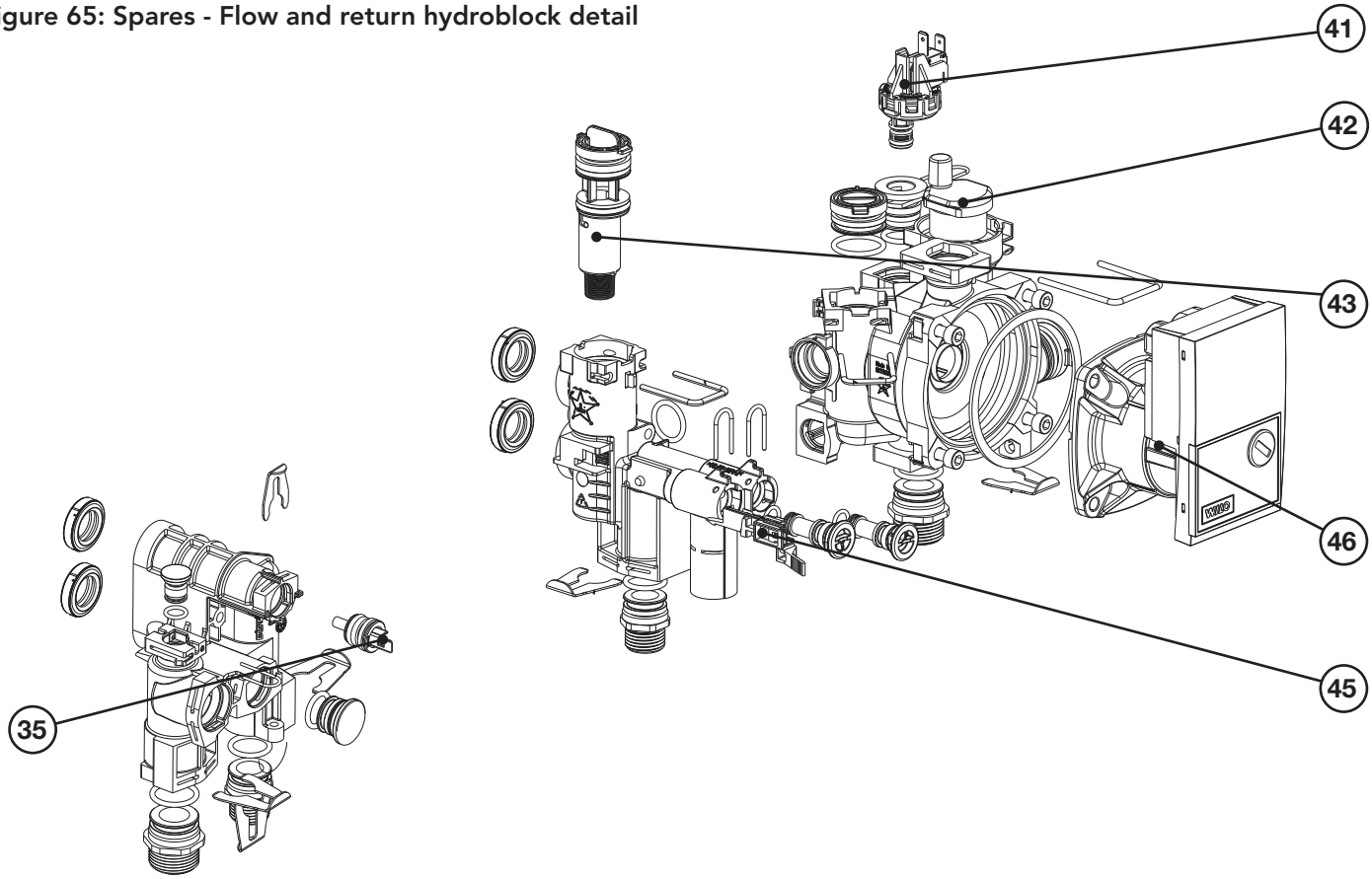


Figure 66: Spares - casings

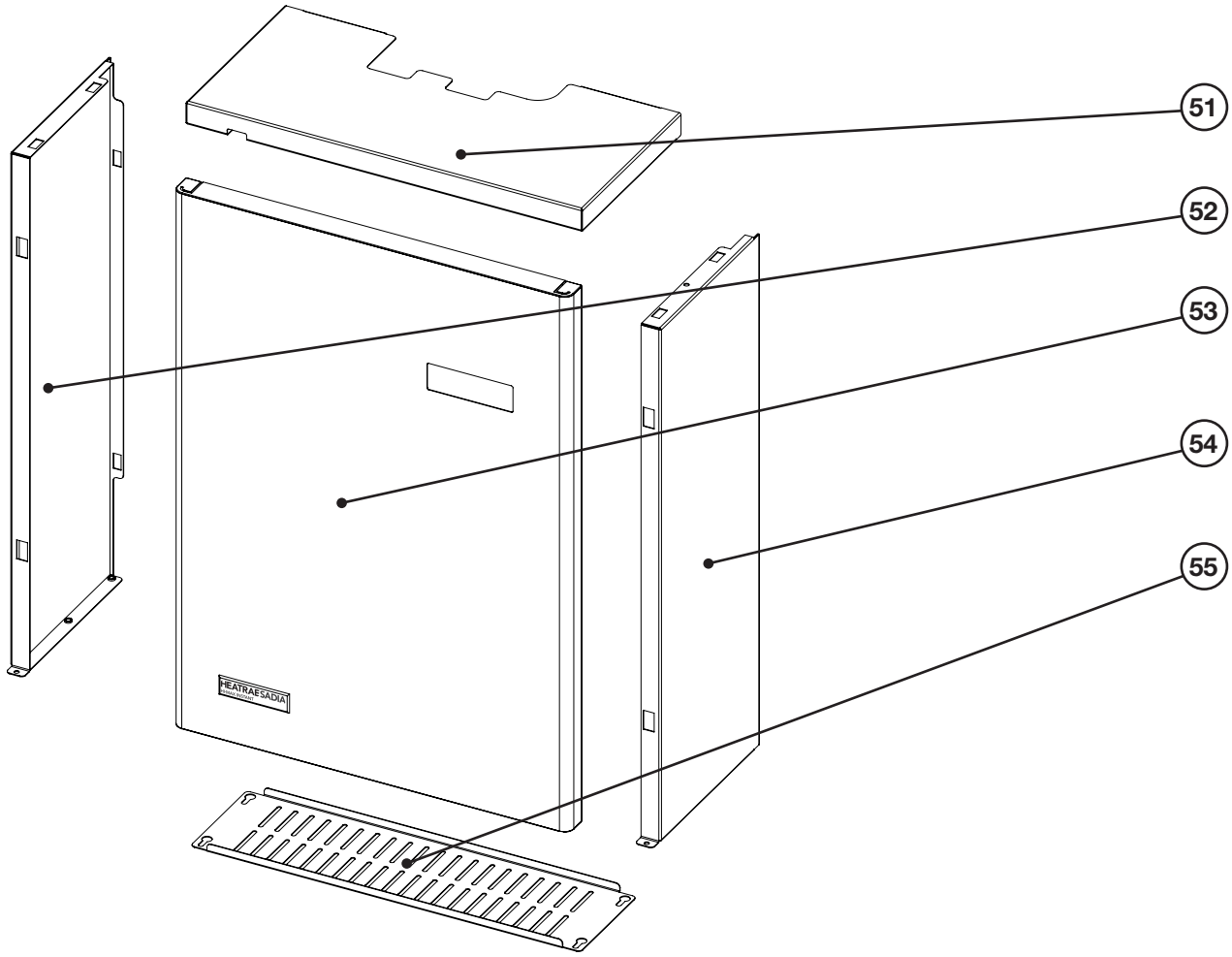


Figure 67: Spares - 1st fix rail

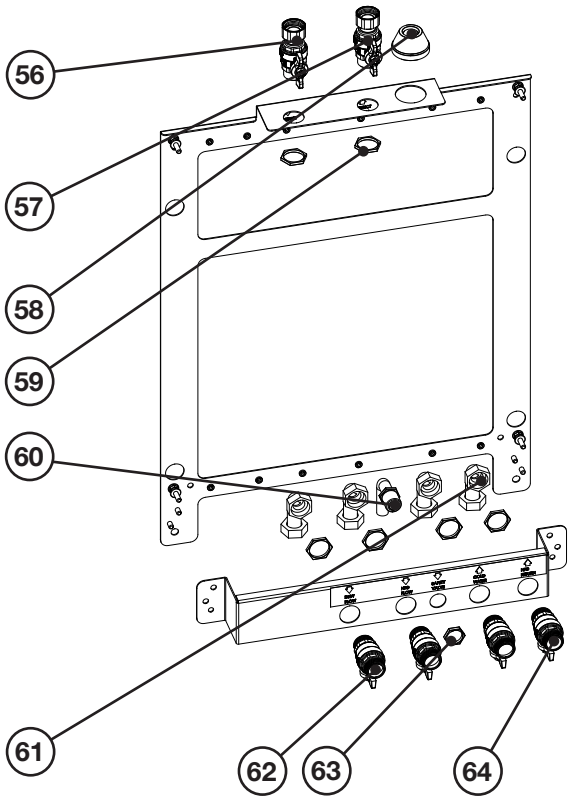
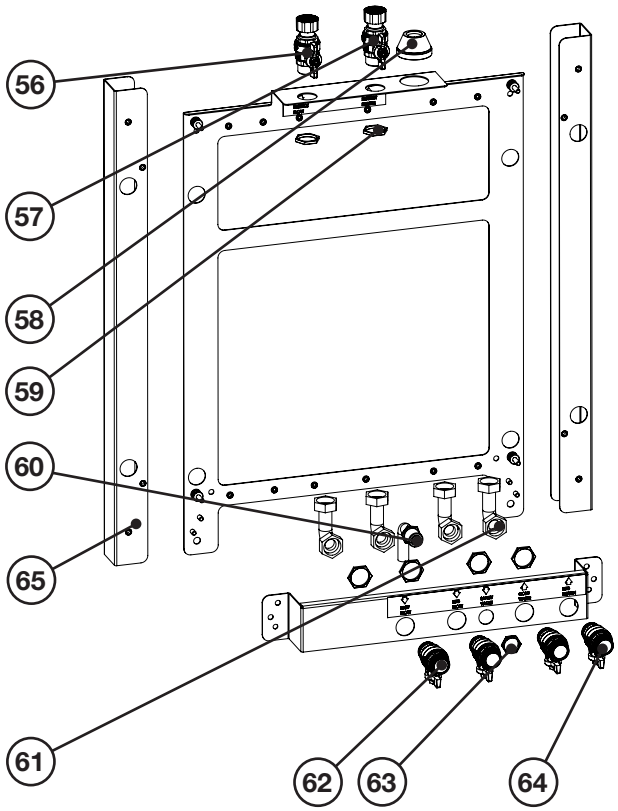


Figure 68: Spares - Basic Stand-off kit



NOTES

Table 8: Spare parts list

Ref	Part Description	Spare Part Number	
		ID 5-60 (95:050:202)	ID 5-80 (95:050:203)
1	Pipe. District flow to strainer pipe with 1/4" test point. With 1 x 3/4" gasket and 1 x 1"bsp gasket.	95607767	95607767
2	DN20 PN16 strainer with 1"bsp male / female connections. 500 micron mesh strainer with 2 x 1" gaskets.	95605113	95605113
3	DN 20 PICV 5.0 high flow 53-1308 (1"m/m) design flow rate of 1000 l/hr.(Valve Setting No. 3) with 2 x 1" gaskets.	95605131	
3	DN 20 PICV 5.0 high flow 53-1308 (1"m/m) design flow rate of 1330 l/hr. (Valve Setting No. 4) with 2 x 1" gaskets.		95605136
4	PICV drive open drive closed modulating actuator.	95605114	95605114
5	Pipe. PICV to 3 port diverter. 1"bsp female union x 3/4" female union with 1 x 1" gasket and 1 x 3/4" gasket.	95607768	95607768
6	Actuator for diverting valve.	95605116	95605116
7	3 port diverting valve with 2 x 3/4" gasket and 1 x 1" gasket.	95605115	95605115
8	Pipe. 3 port valve to heating plate heat exchanger. 3/4" female x o ring connector with 3/4" gasket and o-ring.	95607770	95607770
9	Pipe. 3 port valve to flow hydroblock. 3/4" male x o ring connector with 1" gasket and o ring.	95607769	95607769
10	IP55 Cable gland GW50432.	95605134	95605134
11	Controller (PID) for HI-MAX INSTANT ID HIU.	95605130	95605130
12	Controller (PID) with plugs, leads and sensors for HI-MAX INSTANT ID HIU.	95615100	95615100
13	PCB power supply board for controller for HI-MAX INSTANT ID HIU.	95611100	95611100
14	PCB low voltage board for controller (with connecting cable ribbon).	95611101	95611101
15	Installer Terminal Box	95614313	95614313
16	Pipe. Heat meter to district return connection with 1/4" test point. 3/4"bsp female union x 3/4" male connection with 2 x 3/4" gaskets.	95607776	95607776
17	Heat Meter stool piece 3/4" x 110mm with 2 x 3/4" gaskets.	95605117	95605117
18	Pipe.Return hydroblock to heat meter and heating plate heat exchanger. Complete with 1 x O ring push fit connection for hydroblock, 1 x O ring connector for heating plate heat exchanger and 1 x 3/4"bsp union connection gasket.	95607774	95607774
19	ZB190-31 heating plate heat exchanger suitable for 16 bar g primary and 10 bar g secondary operating pressure complete with O rings & screws.	95606100	95606100
20	Heating plate heat exchanger connection support plate.	95607762	95607762
21	8 litre Expansion vessel type 539/L, Maximum working pressure 3.0 bar g, gas charge 0.75 bar g, maximum operating temperature 90 deg C. with 3/8"bsp male hydraulic connection with 3/8" gasket.	95970600	95970600
22	Pipe. Expansion vessel to return pipe complete with 2 x 3/8" gaskets.	95607815	95607815
23	Pipe. Heating plate heat exchanger to flush and fill valve complete with O ring, 3/4" gasket and 1/2" gasket.	95607771	95607771
24	DN20 flush and fill valve complete with 3/4" gaskets.	95605119	95605119
25	1/2"bsp heating safety valve with 15mm compression outlet and set to lift at 3.0 bar g with 1/2" gasket.	95605121	95605121
26	0-4 bar g pressure gauge.	95970601	95970601
27	Temperature Sensor PT1000 - BLUE.	95607782	95607782
28	1/4" sensor pocket for PT1000 sensor.	95611103	95611103
29	Pipe. Return hydroblock to heating plate heat exchanger with O ring for plate heat exchanger, O ring for hydroblock and 3/8" gasket for expansion vessel pipe.	95607817	95607817
30	Temperature Sensor PT1000 - RED.	95612063	95612063
31	Pipe. 15mm Safety valve discharge pipe. (upper) with 1/2" gasket.	95607777	95607777
32	Filling loop SS braided hose 3/4" x 1/2".	95607760	95607760
33	Filling loop valve 15mm (double check with isolation).	95605128	95605128
34	ZB315-23 DHW plate heat exchanger suitable for 16 bar/10 bar g Plus O Rings.	95606101	
34	ZB315-27 DHW plate heat exchanger suitable for 16 bar/10 bar g Plus O Rings.		95606102
35	NTC 10K DHW temperature sensor with lead.	95612061	95612061
36	Flow composite hydroblock with o rings and screws.	95970030	95970030
37	Pipe. DHW flow pipe from TMV to isolation valve with 1" gasket and 3/4" gasket.	95607780	95607780
38	Pipe. Heating flow pipe from flush and fill valve to isolation valve complete with 2 x 3/4" gaskets.	95607772	95607772
39	Drain valve 1/2" (district heating) side 16 bar.	95605133	95605133
40	Pipe. Flow hydroblock to TMV complete with 1 x 1/2" gasket and 1 x 1" gasket.	95607779	95607779
41	Pressure switch.	95613200	95613200
42	Hydroblock auto air vent	95605129	95605129
43	Hydroblock DHW cold feed filter cartridge	95605127	95605127
44	Return composite hydroblock with Pump	95970031	95970031
45	DHW flow sensor	95613201	95613201
46	Pump Wilo Yonos Para RKC head only with O ring	95605118	95605118
47	Thermostatic mixing valve 1"bsp male/male/male c/w 3 x 1" gaskets.	95605122	95605122
48	Pipe. Cold feed pipe to return hydroblock and TMV complete with 1 x 1/2" gasket, 1 x 3/4" gasket and 1 x 1" gasket.	95607778	95607778
49	Pipe. Isolation valve to return hydroblock complete with 2 x 3/4" gaskets.	95607773	95607773
50	1/2" heating return and cold feed drain valve	95605120	95605120
51	HI-MAX INSTANT ID HIU casing top cover	95608103	95608103
52	HI-MAX INSTANT ID HIU casing LHS cover	95608101	95608101
53	HI-MAX INSTANT ID HIU casing Front cover	95608100	95608100
54	HI-MAX INSTANT ID HIU casing RHS cover	95608102	95608102
55	HI-MAX INSTANT ID HIU casing bottom cover	95608104	95608104
56	Isolation valve - district flow. 3/4"bsp male/female with RED butterfly handle and 2x3/4" gaskets.	95605125	95605125
57	Isolation valve - district return. 3/4"bsp male/female with BLUE butterfly handle and 2x3/4" gaskets.	95605126	95605126
58	IP55 Cable gland GW50432	95605134	95605134
59	Locking nut 3/4" set of 1	95607761	95607761
60	Pipe. Ball valve connection elbow 90° F/F complete with 2 x 3/4" gaskets.	95607781	95607781
61	Pipe. 15mm Safety valve discharge pipe (lower) complete with 1 x 1/2" gasket.	95607816	95607816
62	Isolation valve - heating flow / DHW flow. 3/4"bsp male with RED butterfly handle complete with 2 x 3/4" gaskets.	95605123	95605123
63	Locking nut 1/2" set of 1	95607814	95607814
64	Isolation valve - heating return and cold feed. 3/4"bsp male with BLUE butterfly handle complete with 2 x 3/4" gasket.	95605124	95605124
65	Stand-off channel.	95607784	95607784
Not detailed	Spare Clips for flow and return hydroblocks (bag containing 1 set of clips).	95607765	95607765
Not detailed	Weather Compensation PT1000 temperature sensor.	95612062	95612062
Not detailed	Fuse (Bag of qty 5).	95607766	95607766
Not detailed	HIU Gasket set.	95607783	95607783
Not detailed	Gasket & fixing set 1st Fix.	95611102	95611102
Not detailed	O ring seals pack HI-MAX INSTANT ID HIU.	95607813	95607813
Not detailed	Fixings/screws pack for HIU covers.	95605135	95605135

14. Commissioning / product installation & service documentation

HEAT INTERFACE UNIT COMMISSIONING CHECKLIST

This commissioning checklist is to be completed in full by the competent person who commissioned the HIU as a means of demonstrating how the unit was installed and commissioned and must be handed to the customer to keep for future reference.

Failure to install and commission according to the manufacturer's instructions and complete this Benchmark Commissioning Checklist may invalidate the warranty. This does not affect the customer's statutory rights.

Customer name:	Telephone number:
Address:	Email:
HIU Make and Model:	
HIU Serial Number:	
Commissioned by (PRINT NAME):	Registered Operative ID number:
Company name:	Telephone number:
Company address:	Email:
	Commissioning date:
Installer name:	Installation company:
Installer contact telephone number:	
Building Regulations Notification Number (if applicable)	

HIU TYPE		
1. Hot water only. (1 DHW PHE no Heating controls).	Yes	
2. Direct Apartment Heating Unit (1 DHW PHE with Apartment Heating Controls).	Yes	
3. Indirect Apartment Heating Unit (1 DHW PHE and 1 Apartment Heating PHE with Controls).	Yes	
4. Heat Only (Direct) (No plate heat exchanger just Heating Controls).	Yes	
5. Heat Only (Indirect) (1 Apartment heating plate heat exchanger with Heating Controls).	Yes	
6. HIU with integral cylinder.	Yes	
7. HIU to be connected to a cylinder.	Yes	
NOTE: If connecting HIU to an external cylinder, have you checked compatibility?	Yes	

DISTRICT SYSTEM (COMMUNITY HEATING SYSTEM)					
Primary Control arrangement:		Control Valve within HIU		Control Valve outside HIU	
Balancing arrangements:		Pressure Independent		Differential Pressure	
HIU Flow Regulation:		On/Off		Modulating	
Differential pressure across HIU: (if applicable)					kPa
Static District pressure: (max system pressure)					bar (g)
District flow temperature:					°C
Flow control valve setting: (if applicable)					
Flow control valve type: (if external)					
Make:		Model:			
Size:		Type:			
Primary pressure system breaks:				Yes	
Flushing bypass fitted and closed:				Yes	
Dwelling isolation valves fitted:				Yes	
If 'Yes' where:					
Strainer checked and cleaned if necessary:				Yes	

*All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer.

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HEAT INTERFACE UNIT COMMISSIONING CHECKLIST (cont'd)

DWELLING SYSTEM								
Heat emitters type:	Radiators		Underfloor system		MVHR		Fan Coil	
Controls section:								
Time and temperature control to heating:	Room thermostat and Programmer/Timer				Programmable Room Thermostat			
					Load/Weather Compensation			
Time and temperature control to Hot Water:	Cylinder thermostat			HIU		Not applicable		
Hot Water Zone Valves: (Stored)	Fitted					Not applicable		
Thermostatic radiator valves:	Fitted					Not applicable		
Automatic Bypass to System:	Fitted within HIU					Fitted outside HIU		
Design Detail:								
Pump setting: (if applicable)								
Auto bypass setting: (if adjustable)								
Radiator circuit:					Radial		Manifold	
If 'Manifold' where is it:								
Number of heating zones:								
Cold fill pressure: (bar) (heating circuit)								
Expansion vessel pre charge pressure valve: bar (g)								
Filling loop disconnected and capped:					Yes		Not applicable	
Safety valve setting: bar (g)								
Discharge pipework has been connected:	Yes		(In accordance with the relevant regulations)					
Separate air vent's: (external to unit)					Yes		Not applicable	
If 'yes', location:								
Secondary Strainer fitted:							Yes	
Cold water meter installed?	Inside unit		Outside unit		None			
Drain cocks fitted:							Yes	

DOMESTIC HOT WATER MODE								
Type:	Instantaneous		Vented Store		Unvented Store		Thermal Store	
Store Details: (If present)								
Make and model:								
Serial number:								
Date commissioned:								
Appropriate Benchmark Commissioning Checklist completed for cylinder: (if not instantaneous)							Yes	
Instantaneous systems only: (types 1,2,3)								
What is the incoming static cold water pressure at the inlet to the system? bar (g)								
Has a strainer been cleared of installation debris (if fitted)?					Yes		Not applicable	
Is the installation in a hard water area (above 200ppm)?					Yes		No	
If yes, has a scale reducer been fitted?							Yes	
What type of scale reducer has been fitted?								
What is the hot water temperature set to?								
DHW recirculation fitted?					Yes		No	

HEAT METERS			
Heat Meter commissioned?	Yes		No
Error Codes cleared?			Yes

ALL INSTALLATIONS		
The HIU system complies with the appropriate Building and Trading Regulations?	Yes	
The system has been installed in accordance with the manufacturer's instructions?	Yes	
If an external cylinder has been connected, compatibility with HIU has been checked?	Yes	
The manufacturer's literature, including the Benchmark Checklist and Service Record, has been completed clearly and left with the HIU?	Yes	

Commissioning Engineer's Signature
Commissioning Engineer's Name and Company: (Printed)
Date:
(To confirm satisfactory demonstration and receipt of manufacturer's literature)

*All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer.

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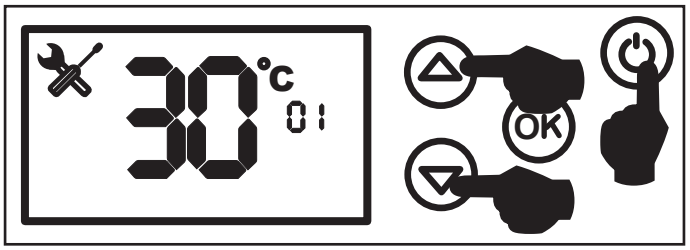
14.1 Accessing the Installer Settings.

To access the installer settings hold the up, down and ON/OFF buttons in for five seconds as shown in Figure 73.

Figure 73: Heating set up mode



14.2 Navigating through the Installer Settings.

To scroll through the parameter list use the OK button. The two small digits on the right of the screen under the fault triangle indicate the parameter number.

14.3 Changing and storing a parameter setting.

To change a parameter value use the up and down arrows and confirm the setting by pressing the OK button.

14.4 Exiting the Installer Settings.

To exit the installer settings press the ON/OFF button or leave the controller alone for 5 seconds. Any unstored setting changes will be lost if they weren't confirmed.

CAUTION

Only competent persons having received the appropriate training are permitted to change any of the settings set in the installer settings. If in doubt contact:
Technical Enquiries on: 0344 871 1535.

CAUTION

When running underfloor heating directly from the HI-MAX INSTANT, it is important that the Maximum Heating Set Point Parameter 4 is set to protect the system and prevent the end user inadvertently adjusting the set point to a temperature that could cause damage to their flooring or system.

It is important that the Installer Parameter Settings are logged in the table below. These instructions and the completed commissioning checklists (on pages 52-54) should be left with the unit for future reference and a copy given to the community heating supplier.

Electronic versions of these checklists are available, contact 0344 871 1535.

Parameter Number	Parameter Description	Unit of Measure	Default Setting	Min Setting	Max Setting	Installer Settings
1	Minimum temperature set point value of the DHW (hot water) settable by the end user. This temperature is measured by the NTC DHW flow sensor in the flow hydroblock.	°C	**30**	30	65	
2	Maximum temperature set point value of the DHW (hot water) settable by the end user. This temperature is measured by the NTC DHW flow sensor in the flow hydroblock.	°C	**65**	30	65	
3	Minimum temperature set point value of the heating flow settable by the end user. This temperature is measured by the PT1000 heating flow sensor in the heating flow pipe.	°C	**20**	30	85	
4	Maximum temperature set point value of the heating flow settable by the end user. This temperature is measured by the PT1000 heating flow sensor in the heating flow pipe.	°C	**85**	20	95	
5	Activation of the outdoor sensor for weather compensation. PT1000 outdoor sensor must be fitted. True = Weather compensation activated and False = Deactivated. See separate weather compensation instructions for more details.	0 = False 1 = True	**(0) False**	(0) False	(1) True	
6	Desired ambient room temperature optimum value (circa 20°C). See separate weather compensation instructions for more details.	°C	**20**	+10	+30	
7	Heating curve offset. See separate weather compensation instructions for more details.	°C	**0**	-10	+10	
8	Heating curve slope. Units are in decimal…..... 0 : 5,0. See separate weather compensation instructions for more details.	1/10	**8**	0	50	
9	Period in minutes across which time an average of the external temperature is calculated. One reading is taken evey minute over this period. See separate weather compensation instructions for more details.	Minutes	**60**	10	99	
10	Activation of the Heating Otimization function. PT1000 return sensor must be fitted. True = Weather compensation activated and False = Deactivated. See separate weather compensation instructions for more details.	0 = False 1 = True	**(1) True**	(0) False	(1) True	
11	The Correction Factor that is applied to calculate the Target Flow Temperature Adjustment (TFTA) in order to achieve the Optimum Return Temperature (ORT). ORT (°C) = Flow Temperature Set Point (°C) - Optimum Temperature Differential (°C) TFTA (°C) = (Actual Return Temperature (°C) - ORT (°C)) x Correction Factor (%) Target Flow Temperature = Actual Flow Temperature (°C) - TFTA (°C)	%	**50**	1	99	
12	Optimum Temperature Differential between the heating flow and the heating return.	°C	**15**	3	40	
13	Time in minutes between readings for calculating and making target flow temperature adjustment.	Minutes	**10**	5	99	
14	Pulsed flow start-up delay, in 10 x minutes, between the end of the last demand (either heating or hot water) and the first pulsed flow. Set parameter 14 to 0 (zero) to disable this function.	10 x Minutes	**2**	0	99	
15	Pulsed flow duration time; duirng this time PICV valve is set to its low flow position. Circa 100 litres per hour.	Minutes	**2**	1	99	
16	Pulsed flow frequency, in 10 x minutes. Indicates the time between two pulse flow periods, during this phase the PICV is fully closed.	10 x Minutes	**2**	1	99	
17	Threshold limit that the Modulating PICV can open in heating mode. The setting refers to the % the valve is closed.	%	**67**	0	99	
18	Operative mode for the AUX input: Mode 0: when the input is closed, start DHW supply Mode 1: when the input is open, the unit is out of credit	0 = False 1 = True	**(0) False**	0	1	
19	Room stat electrical switch (free contact, zero potential) which enables the heating function; Normally Open (NO) contact = TRUE or Normally Closed (NC) contact = FALSE	0 = False 1 = True	**(1) True**	(0) False	(1) True	
20	Used to select the type of control to drive the modulating valve (PICV). For the PICV and Johnson Motor logic is minimum signal (valve fully open) between 0V=0mA (FALSE) or 2V=4mA (TRUE)	0 = False 1 = True	**(1) True**	(0) False	(1) True	
21	Temporary service display function	0 = False 1 = True	**(0) False**	(0) False	(1) True	

SERVICE RECORD

It is recommended that your hot water system is serviced regularly and that the appropriate Service Record is completed.

Service Provider
Before completing the appropriate Service Record below, please ensure you have carried out the service as described in the manufacturer's instructions.

SERVICE 1 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 2 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 3 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 4 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 5 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 6 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 7 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 8 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 9 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 10 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

HEATRAE SADIA

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Pinnacles
Harlow
Essex CM19 5BT
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E-Mail: sales@ewh.co.uk

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Special Product Division
Units 9 & 10
Hexagon Business Centre
Springfield Road
Hayes
Middlesex UB4 0TY
Tel: 020 8606 3567

Parts Center
Tel: 0344 292 7057
www.partscenter.co.uk

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Unit 3-5 Wassage Way
Hampton Lovett Ind. Estate
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WR9 0NX
Tel: 01905 791500
Fax: 01905 791501

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Aztec West
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Bristol BS32 4TF
Tel: 01454 620500

Alternatively contact your local supplying merchant or wholesale branch or use our online stockist finder at www.interpartspares.co.uk

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Heatrae Sadia Heating may introduce modifications to their products from time to time. Consequently, the details given in this brochure are subject to alteration without notice.

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