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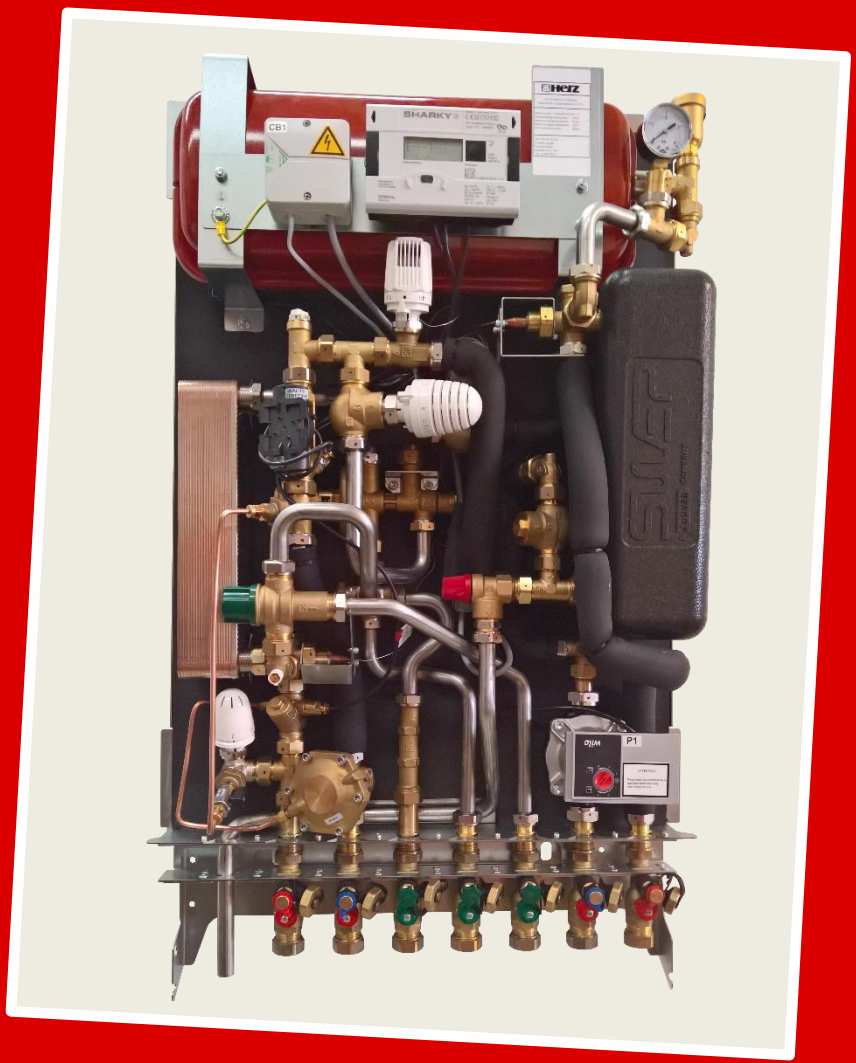
Herz Guildford Heat Interface Unit

The Modern Solution for Apartment Heating and Domestic Hot Water Services



BESA BUILDING ENGINEERING SERVICES ASSOCIATION

BSRIA Member

kiwa approved UK WATER REGULATION 4

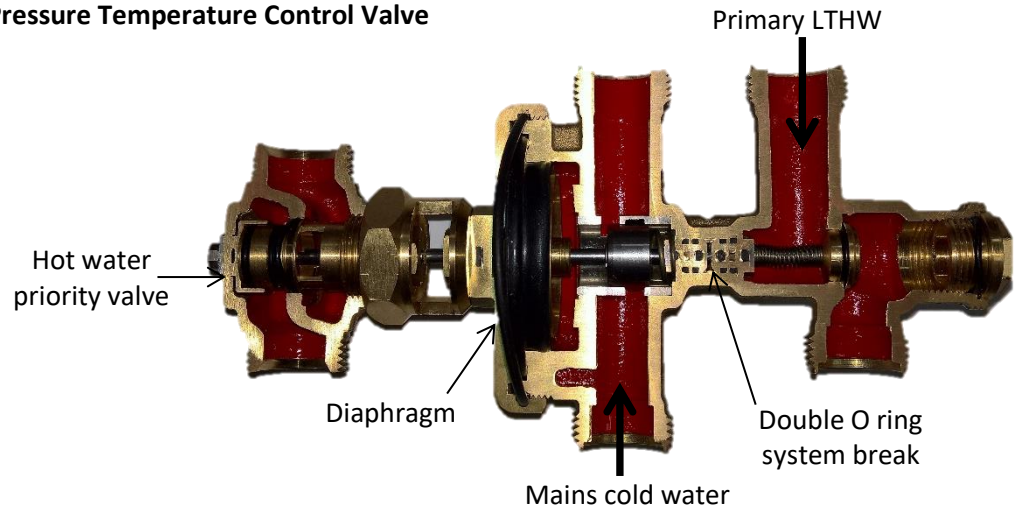
General Description

The Herz Guildford HIU is suitable for all community schemes and enables LTHW from a central plant to provide heating and DHWS to each dwelling with complete hydraulic separation between the LTHW primary and secondary heating and DHWS systems.

The HIU is a complete package comprising of all components mounted on a frame, factory assembled and tested.

Main Components

Pressure Temperature Control Valve



As a hot water tap is opened the pressure temperature control valve reacts to the difference in pressure via a diaphragm and opens allowing the cold and primary heating water to flow through the heat exchanger. At the same time, a hot water priority valve closes the primary feed to the secondary heat exchanger, thus ensuring maximum flow is available at the domestic heat exchanger. In order to prolong the life of the DHW heat exchanger and prevent lime scale build up, the temperature of the domestic hot water is controlled by a thermostat fitted to a thermostatic control valve. Using an immersion sensor, this thermostat controls the temperature of the hot water that exits the heat exchanger. The pressure temperature control valve has proportional control and regulates the primary water flowrate depending on the hot water demand, thus maximising the energy efficiency of both the HIU and the primary system.

Summer Bypass Thermostatic Circulation Valve

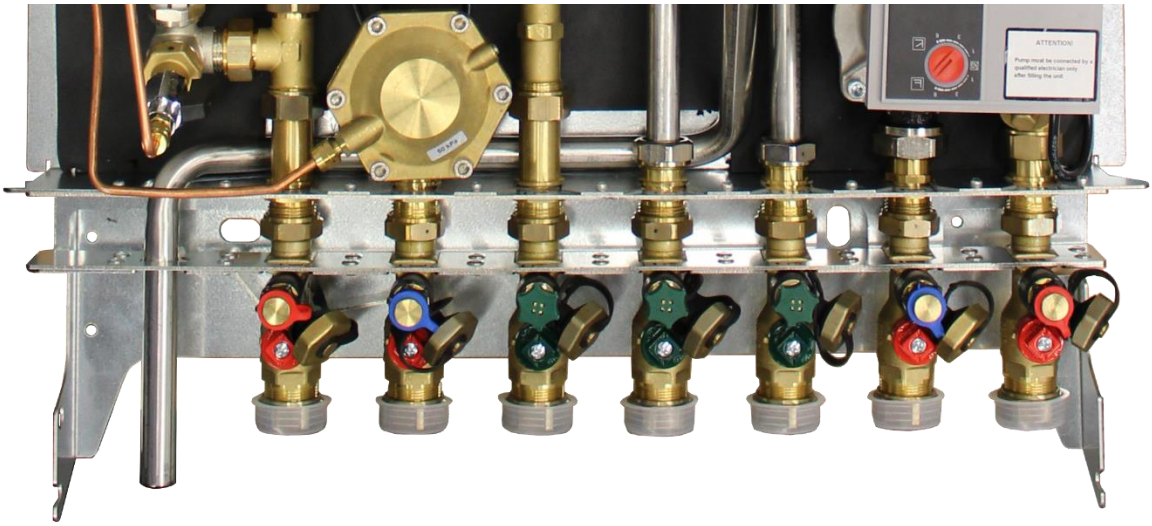
The ”Summer bypass” valve utilises a return temperature limiter head fitted to a thermostatic valve installed in a bypass between the primary flow and return pipework within the HIU. This maintains a minimum primary temperature when the space heating is not in use. The thermostatic bypass valve is installed upstream of the heat meter. Combined with the Pressure Temperature Control Valve, which only allows water through the DHW heat exchanger when there is a demand, ensures that it is impossible to have meter creepage or standing losses from the Herz Guildford HIU. It is possible to turn the summer bypass off to reduce the volume of circulating water in the system and increase the energy efficiency, there has to be a downstream HIU with the thermostatic bypass open in order to achieve this.

Secondary Temperature Limiter

The secondary flow temperature is controlled by a thermostatic valve installed in the primary return, this is fitted with a thermostatic head with a contact sensor attached to the secondary flow pipe.

First Fix Rail

The First Fix Rail is a pre-assembled unit fitted with all the isolation ball valves required for the various circuits installed within the HIU. The unit is installed at first fix and allows shell and core pipework to be completed without the HIU being fitted. The first fix rail ball valves are fitted with drain valves to facilitate draining with integral test points fitted on the primary and secondary heating circuits to aid additional temperature or pressure measurement if required. The first fix rail with ball valves also allows maintenance to be carried out on the HIU as the main unit can be removed easily.



Top Entry stand-off Bracket

The Guildford HIU has the option to have a stand-off bracket installed to enable the services to be connected from the top of the unit. The top entry stand-off bracket enables any combination of services to be piped from above or below the HIU. Pre-formed, pre-insulated pipes, complete with all connections, are available to provide full flexibility.

Other Features

- Instantaneous hot water and space heating to properties
- Twin heat exchangers provide hydraulic separation
- Thermostatic hot water temperature control
- Tempering valve to prevent risk of scalding
- Primary Differential Pressure Control Valve
- Insulated back board, secondary heating heat exchanger & heating pipework
- Insulated lockable cover with viewing window allows meter reading without casing removal
- Low primary return temperature maximises system efficiency
- Automatic Air Vent on secondary system to facilitate quick commissioning
- Optional primary flushing bypass available
- Option for heat meter (110mm Spool piece provided as standard)
- Option for water meter (110mm Spool piece provided as standard)
- UK Water Reg 4 Compliant

Functions

a) Residents Heating System

The primary flow to the heating system heat exchanger is controlled by a two port on/off actuated valve linked to a programmable room thermostat (Herz 3 F799 17). This valve will close when the room temperature setting has been achieved or when the heating system is not in use. A fixed spring differential pressure control valve is fitted across the primary flow and return circuits on each HIU to protect the control valves from excessive DP and govern the primary flowrate.

The secondary heating circuit is provided with an expansion vessel and secondary domestic heating pump installed on the return which varies the system flow rate automatically based on demand.

b) Residents Hot Water (DHW)

Domestic hot water is generated via the DHW heat exchanger mounted in the HIU and provides instantaneous hot water on demand.

DHW temperature and primary flow rate through the heat exchanger is controlled via the Pressure temperature control valve, which is temperature compensated and requires no auxiliary power to operate.

When a hot water tap is opened the drop in pressure in the hot water pipe will open the 4 port pressure temperature control valve which in turn will allow primary hot water into the heat exchanger.

When the hot water demand ceases the pressure temperature control valve will immediately stop the primary flow into the heat exchanger. Therefore there is no drain on the primary heating when there is no demand, so no “extra energy usage” when residents are on holiday for example.

A tempering valve is provided to counter the effect of temperature overshoot caused when a hot tap is closed and opened again in a short space of time, this also ensures a stable output temperature.

A thermostatic “summer” bypass valve is fitted to maintain a minimum primary temperature when the space heating is not in use. This provides a quick DHW response and avoids unnecessary energy usage.

Energy Metering

The HIU can be supplied with a battery powered energy meter for mounting in the primary heating return pipe.

The meter will measure flow using the ultrasonic principle with an accuracy complying with EN1434 and MID in Class 2.

The heat meter has options for pulse and wired or wireless M-Bus.

Pre-payment options are available on request.

The heat calculator will display energy usage in kW hours.

Battery life approximately 11 years.

Primary System Balancing

BSRIA BG 62/2015 states that each HIU should include a differential pressure control device so that the operation of the HIU is independent of fluctuations in the primary pressure. A Differential Pressure Control Valve is included in the Herz Guildford HIU to protect the HIU from pressure fluctuations in the primary system and to govern the primary flow rate to the HIU. This means that the Herz Guildford HIU is effectively self-balancing and requires no other commissioning valves.

Secondary System Balancing

CIBSE CP1 2015 Best practice guidelines advocate the use of variable speed pumps for the dwelling radiator circuit to reduce electricity use and the need for high bypass flows. BSRIA BG 62/2015 states that "Variable speed circulators should be commissioned to provide a constant pressure differential so that energy is not wasted pumping against closed thermostatic control valves etc." The Herz Guildford HIU is fitted with a high efficiency variable speed pump with fixed DP setting to ensure correct flow rates via pre settable TRVs in the space heating circuit.

BSRIA BG 62/2015 states that radiators should be fitted with thermostatic control valves, which will reduce flow rates and hence return temperatures under part-load and CIBSE CP1 2015 Best practice recommends that "Pre-settable thermostatic radiator valves designed for low flow rates shall be used. Herz has a full range of Pre-settable TRVs available capable of ultra-low flowrates.

Presettable TRVs utililised in HIU space heating circuits, will ensure that radiators will receive correct design flowrates. This will, therefore maintain the temperature differential in the secondary and avoid the high primary return temperatures which can be caused by unbalanced space heating circuits.

Herz Presettable TRVs

TS-99-V LF Presettable TRV (Purple)
0.0011 – 0.037 l/s
4 – 134 l/hr

TS-98-V Presettable TRV (Orange)
0.008 – 0.073 l/s
28 – 263 l/h

Available as valve sets, please see accessories list

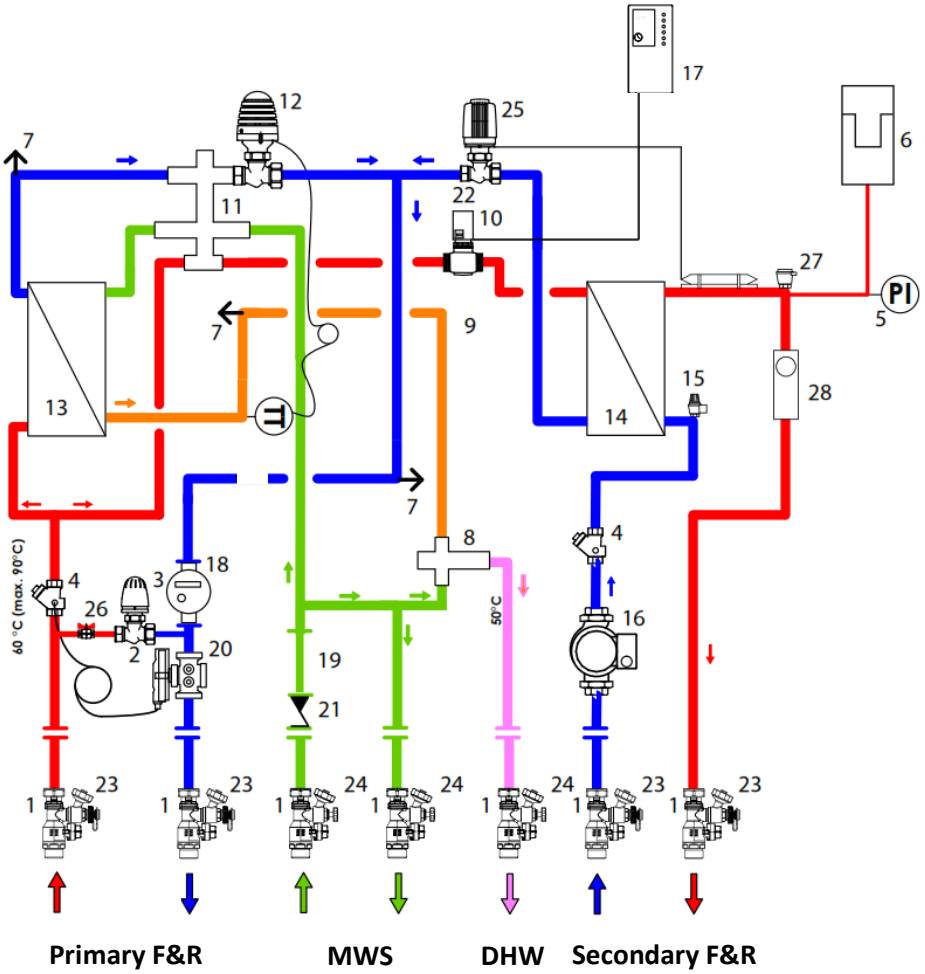
kW load	10°Δt	15°Δt	20°Δt	25°Δt	30°Δt
0.2	TS-99-V	TS-99-V	TS-99-V	TS-99-V	TS-99-V
0.5	TS-99-V	TS-99-V	TS-99-V	TS-99-V	TS-99-V
1.0	TS-99-V	TS-99-V	TS-99-V	TS-99-V	TS-99-V
1.5	TS-99-V	TS-99-V	TS-99-V	TS-99-V	TS-99-V
2.0	TS-98-V	TS-99-V	TS-99-V	TS-99-V	TS-99-V
2.5	TS-98-V	TS-98-V	TS-99-V	TS-99-V	TS-99-V
3.0	TS-98-V	TS-98-V	TS-99-V	TS-99-V	TS-99-V
3.5	TS-98-V	TS-98-V	TS-98-V	TS-99-V	TS-99-V
4.0	TS-98-V	TS-98-V	TS-98-V	TS-99-V	TS-99-V
4.5	TS-98-V	TS-98-V	TS-98-V	TS-98-V	TS-99-V

Technical Data

Guildford HIU Data

Description	Data
Maximum DHW output	63 kW (20 l/min) 73 kW (26 l/min)
Maximum secondary heating output	15 kW (8kW UFH)
Maximum primary supply temperature	90°C
Maximum DHW temperature	55°C
Maximum DHW flowrate	20 l/min & 26 l/min
Recommended minimum DP	50kPa
Maximum working pressure primary side	16 bar
Maximum working pressure DHW side	10 bar
Min dynamic cold water pressure for max output	2.5 bar
Safety relief valve setting secondary heating side	3 bar
Safety relief valve stainless steel tail	18mm
Expansion vessel capacity	8 litres
Ball valve connections	22mm/15mm compression
Dimensions H x W x D	829mm (1010mm c/w ball valves) x 606mm x 190mm
Dimensions H x W x D (top entry)	829mm (1010mm c/w ball valves) x 674mm x 253mm

Guildford HIU Schematic



No	Description	No	Description
1	First fix pre-mounting rail ball valves	15	Pressure relief safety valve
2	Summer bypass valve	16	Secondary circulating pump
3	Return temperature limiter head	17	Room temperature controller (optional)
4	Strainer 0.5mm mesh	18	Ultrasonic Heat meter with pockets (optional)
5	Pressure gauge	19	Spacing piece (110mm) for water meter
6	Expansion vessel 7.5 litres	20	Differential pressure control valve
7	Manual air vent	21	Non-return valve
8	Tempering valve	22	Thermostatic control valve
9	Zone valve	23	Drain valve with test point
10	Actuating drive for zone valve	24	Drain valve
11	PTC valve with hot water priority valve	25	Secondary flow temperature limiter
12	Thermostatic control valve with contact sensor	26	Summer bypass isolation valve
13	DHW heat exchanger - Stainless Steel brazed	27	Automatic air vent
14	Space heating heat exchanger - Stainless Steel brazed	28	Temperature safety switch

Water Quality

Consideration should be given to the use of a scale prevention device when aggressive water supplies are present.

UK Water Reg 4 Compliant

Guildford HIU KUKReg4 certificate No: 2203755

BESA UK HIU Test Regime

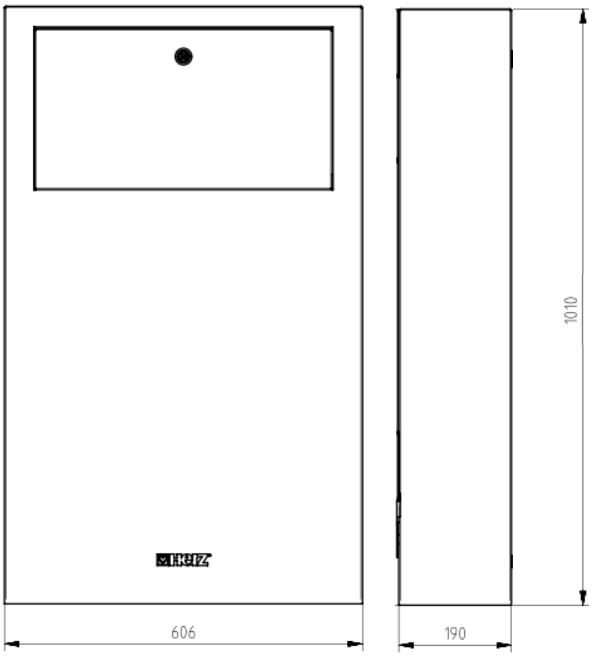
Herz Guildford HIU has been tested in accordance with the BESA UK HIU test regime October 2018 version at BSRIA, a UKAS accredited test facility.

Guildford HIU Accessories (more accessories available please contact sales office for info)

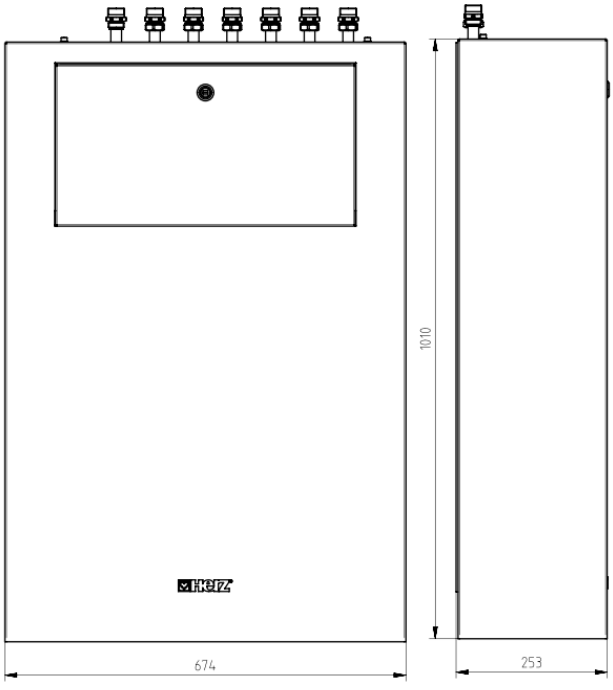
HVHIUFL-01	WRAS approved filling loop for charging a secondary sealed system via temporary connection to the mains supply	
Top entry pipe 1401887 First fix entry 1401888	Flushing bypass can be connected to the primary flow & return ball valves on the first fix pre-mounting rail or the pipes in the top entry bracket	
HVHIUTRV-99	Presettable low flow TRV kit comprising body, head, Lockshield and copper connections. Suitable for radiators up to 3kW at 20°C Δt.	
HVHIUTRV-98	Presettable TRV kit comprising body, head, Lockshield and copper connections. Suitable for radiators up to 3kW at 20°C Δt.	
3F79917	230V Programmable digital thermostat with individual time and temperature adjustment on a weekly basis	
HVSOLV-02	Solenoid Valve for pre-payment applications supplied separately , ¾" NC 230V/50hz DIN plug included	
HVHIUWM-01	SMART C+ single jet water meter WRAS approved, MID approved, can be installed in the Guildford HIU and fitted with a radio or pulse emitter	
HVHIUHM-02	Ultrasonic heat meter MID Class 2 with integrated M-Bus, can be installed in the Guildford HIU	

Guildford HIU Drawings

Bottom entry version



Top entry version



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