



ECONOPLATE H1 HEAT INTERFACE UNIT

Installation, Commissioning and Servicing Instructions

**Note: THESE INSTRUCTIONS MUST BE READ AND UNDERSTOOD BEFORE
INSTALLING, COMMISSIONING, OPERATING OR SERVICING EQUIPMENT.**

**THE ECONOPLATE H1 UNIT IS INTENDED FOR USE IN LOW TEMPERATURE
'DISTRICT HEATING' SCHEMES.**

STOKVIS ENERGY SYSTEMS

**UNIT 34 CENTRAL PARK ESTATE
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THIS HEAT INTERFACE UNIT COMPLIES WITH THE ESSENTIAL REQUIREMENTS OF THE LOW VOLTAGE DIRECTIVE 2006/95/EC AND THE ELECTROMAGNETIC COMPATIBILITY DIRECTIVE 2004/108/EC.

1.0 GENERAL WARNINGS



**Caution – Risk of
Electrical Shock**



**Caution – Risk of
Danger**

Inside the unit there is 230V, so unit MUST be isolated when being worked on and must only be serviced by a competent and authorised person.

Water inside the unit can be at temperatures of up to 85°C so great care must be taken when changing, adjusting or servicing components within the unit and again must only be done by a competent and authorised person.

2.0 GENERAL REQUIREMENTS

2.1 Related Documents

The Pressure Systems Safety Regulations 2000

It is the law that pressure system appliances are installed, maintained and serviced by competent persons in accordance with the above regulations. Failure to install appliances correctly could lead to prosecution. It is in your own interest and that of safety, to ensure that this law is complied with.

The installation of the Econoplate H1 unit should be in accordance with the relevant requirements of the Pressure System Regulations, Building Regulations and IEE Regulations.

2.2 Mains Water Connections

All connections to local water mains must comply with local requirements.

3.0 PRODUCT DESCRIPTION

This district heat interface unit is designed to be used on low temperature district hot water supply of up to 85°C. The unit is configured to provide direct heating which can be either via underfloor heating system or radiator system. Hot Water is provided via a heat exchanger within the unit.

The Econoplate H1 unit is housed in a powder coated steel cabinet with a removable front cover. Inside there is prefabricated pipework assembled together with a set of electronic valves that are controlled by an electronic controller which takes care of heating and hot water demand.

4.0 TECHNICAL DATA

The basic overall dimensions of the unit are shown below in Figure 1.

Figure 1 – Basic Overall Dimensions

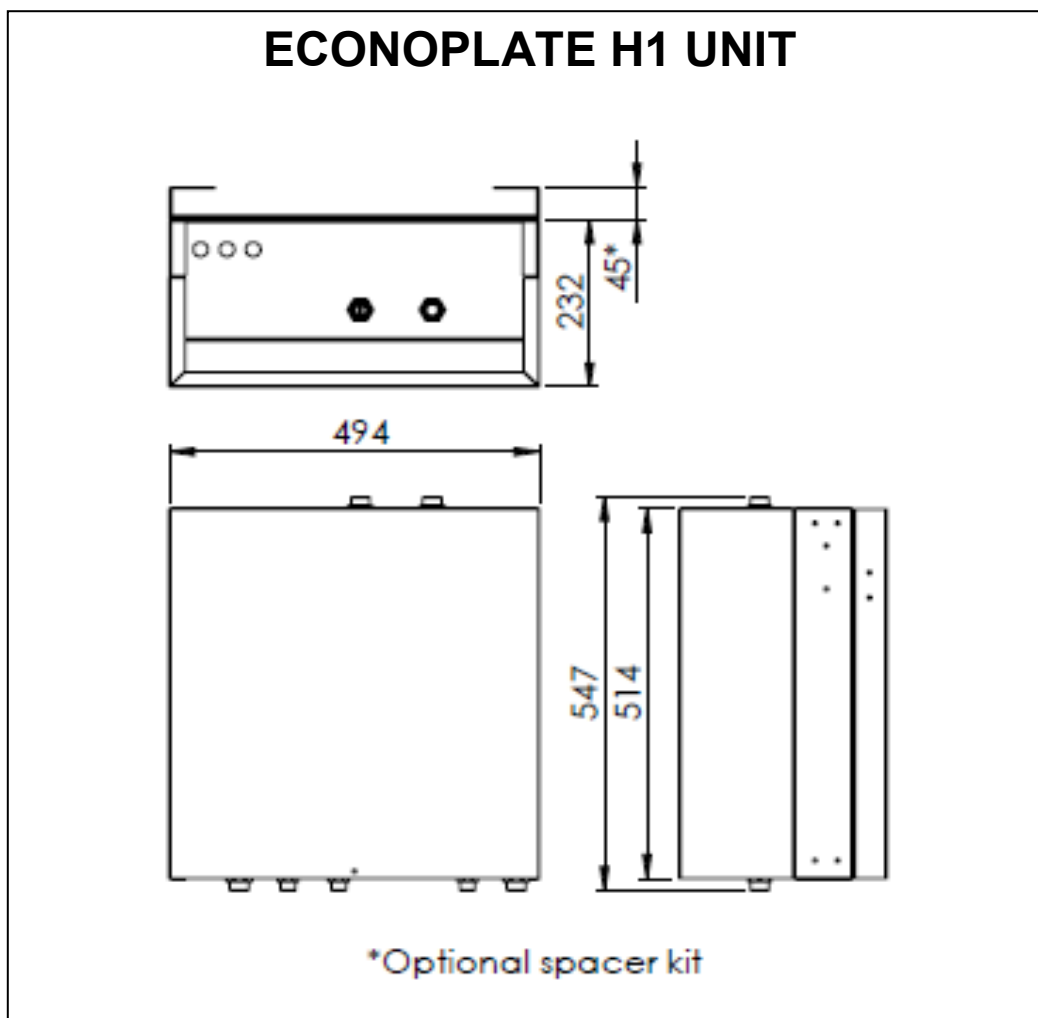


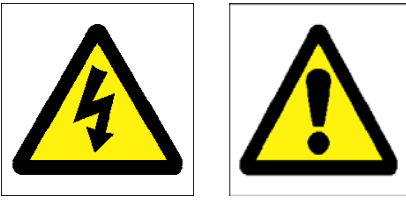
Figure 2 – Econoplate H1 Technical Data

GENERAL DATA	Units	DIRECT HEATING INDIRECT HOT WATER		
		H1-0/14	H1-0/24	H1-0/40
Maximum Pressure - District	Bar	6		
Maximum Pressure - Heating	Bar	6		
Maximum Pressure - ColdFeed/Domestic Hot Water	Bar	10		
Maximum District Temperature	°C	85		
Maximum District Flow Rate	l/min	18		
Weight Empty	kg	21		
Dimensions HxWxD	mm	547x494x232		
Electrical Supply		230V/50Hz AC		
Power Consumption	W	105		
TEMPERATURE RANGES				
Heating Temperatures - Low Mode	°C	30-45		
Heating Temperatures - High Mode	°C	60-80		
Hot Water Temperatures	°C	40-60		
WATER CONNECTIONS				
District - Inlet & Outlet	BSP male	3/4"		
Heating System - Inlet & Outlet	BSP male	3/4"		
Cold Inlet/Outlet & Hot Water Outlet	BSP male	1/2"		
HEATING PERFORMANCE				
Heat Output @ ΔT11K & 18 l/min Flow	kW	14		
Heat Output @ ΔT15K & 18 l/min Flow	kW	18		
Heat Output @ ΔT20K & 18 l/min Flow	kW	25		
Note for H1 units: The district flow rate is equal to the heating flow rate as this is a direct circuit				
XS Head from Integral Pump @ ΔT11K	kPa	16		
XS Head from Integral Pump @ ΔT15K	kPa	16		
XS Head from Integral Pump @ ΔT20K	kPa	16		
Note for H1 units: XS head assumes a balanced supply with no additional head from the district at the Econoplate				
HOT WATER PERFORMANCE				
Nominal Hot Water Output @ 10-50°C	l/min	14		
	kW	39		
District Flow Rate Required @ 80°C	l/min	11.70	10.11	9.36
District Flow Rate Required @ 70°C	l/min	16.76	13.45	11.98
Maximum Hot Water Output	°C	45.7	49.5	52.3
	kW	44.7	49.5	53.0
District Flow Rate Required @ 70°C	l/min	18		
Maximum Hot Water Output	°C	52.0	56.5	59.7
	kW	52.7	58.2	62.3
District Flow Rate Required @ 80°C	l/min	18		
Maximum Hot Water Output	°C	55.2	60.0	60.0
	kW	56.7	62.6	62.6
District Flow Rate Required @ 85°C	l/min	18		

Figure 3 – System Features

Hot Water Priority
Preheat Function to keep hot water heat exchanger warm
Heating ramp up within 3 minutes
Unit shutdown if heating temperature goes to 50-55°C on Underfloor Model
Pump anti-lock feature – runs pump 5 secs every 24 hours
Anti Calcification pump run on after hot water provision

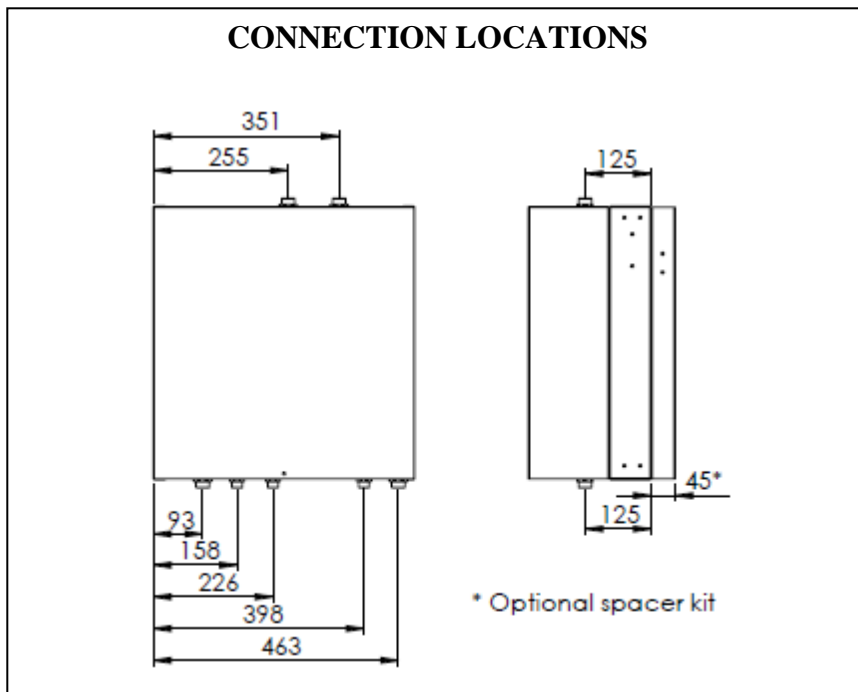
5.0 INSTALLATION



Note – when working with the unit, supply services when connected could reach 85°C, and once electrically connected the unit has 230V present within.

5.1 Location

Figure 4 – Connection Locations & Dimensions



Refer to above Figure 4 for connection dimensions. You will need access from above and below the unit to run the relevant pipework to and from the unit. Find a suitable space to mount the unit.

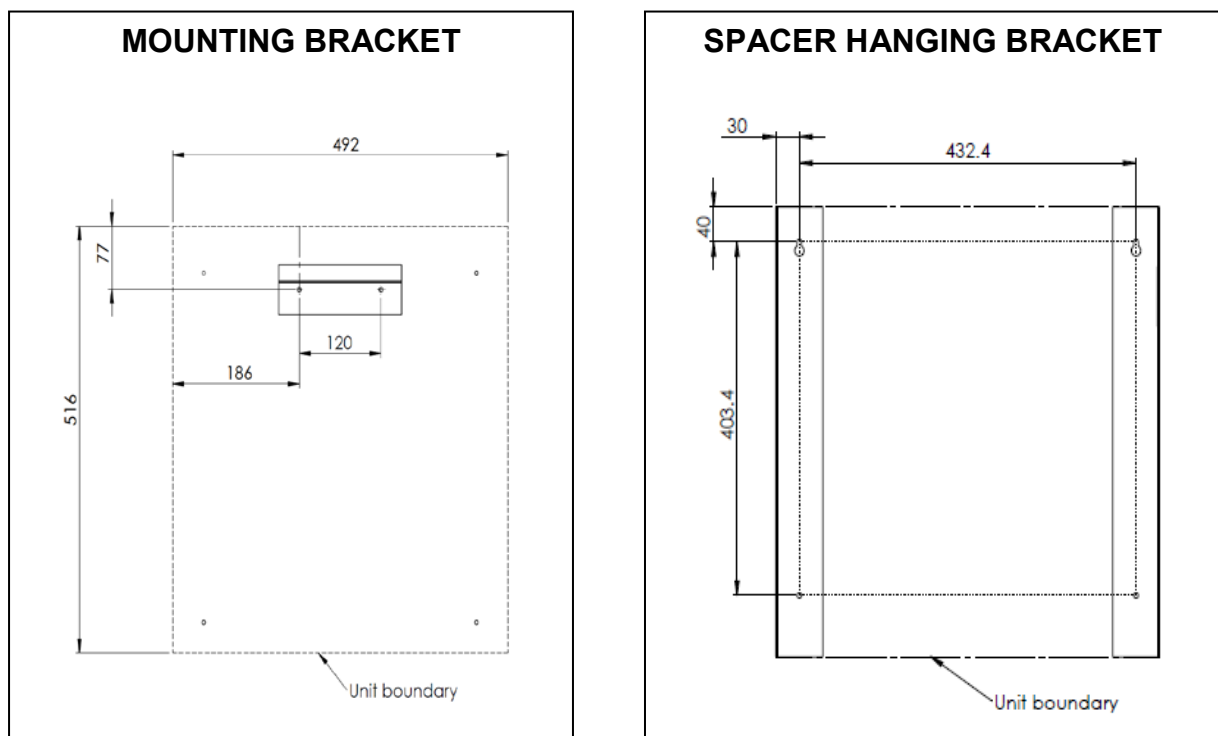
The unit is designed for wall mounting. The unit can be mounted using either a wall bracket or spacer hanging bracket [see Fig 5]. The spacer hanging bracket provides space to run pipes behind the unit if required.

Either bracket should be fixed to a flat wall. Hold the relevant bracket to the wall, making sure it is square, and mark the hanging bracket holes or top 2 holes of spacer bracket on the wall and drill appropriate holes in the wall, inserting wall plugs. Screw the relevant bracket to the wall, ensuring the bracket is square.

If using the wall bracket, then hang the unit on the bracket, mark the four locating holes on the wall, remove unit again, drill appropriate holes in the wall, insert wall plugs, remount the unit and secure to wall.

If using the spacer hanging bracket, mark the two bottom holes, remove the bracket and drill appropriate holes in the wall, insert wall plugs, re-mount the bracket and secure via the bottom holes, then mount the unit onto the bracket and secure to the bracket using the 4 x M4 screws provided.

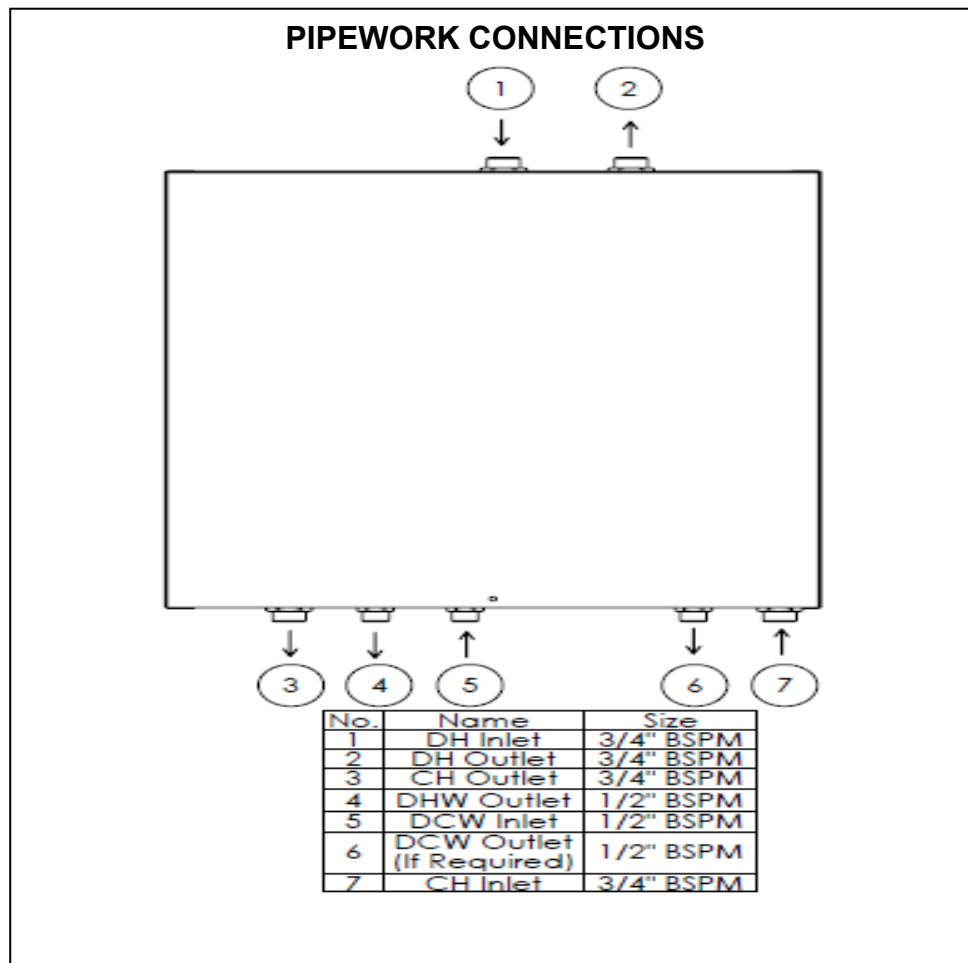
Figure 5 - Mounting Bracket / Spacer Hanging Bracket Dimensions



5.2 Pipework Connections

The 'district' and apartment pipework should be connected to the appropriate points labelled on the figure below. It is advisable to provide means of isolation and disconnection [via unions] on all connections to the unit to facilitate replacement of the unit if this is ever required. You need to ensure that the systems you are connecting to, are clean or have been flushed out appropriately.

Figure 6 – Pipework Connections



1) 'District' Inlet and Outlet – 3/4" Male BSP

These are situated at the top of the unit, with inlet on the left [Connection 1, Figure 6] and outlet on the right [Connection 2, Figure 6]. When connecting the district supply to and from the unit, ensure to provide air eliminator at upper most point of pipework.

2) Heating Inlet and Outlet – 3/4" Male BSP

These are situated at the bottom of the unit with the heating flow on the far left [Connection 3, Figure 6] and heating return on the far right [Connection 7, Figure 6]. Connect these to your heating distribution system.

3) Cold Water Inlet/Outlet and Hot Water Outlet – 1/2" Male BSP

These are situated at the bottom of the unit with the cold water inlet the middle of the 1/2" connections [Connection 5, Figure 6].

There is a cold water outlet if the unit is provided with cold water meter to the left of the heating return [Connection 6, Figure 6]. Finally the hot water outlet is to the right of the heating flow [Connection 4, Figure 6]. Connect your mains cold water to the cold water inlet and outlet if being used in accordance with local by-laws, and connect your hot water distribution pipe to the hot water outlet on the unit.

5.3 Electrical connections

All wiring to the unit must be in accordance with the IEE regulations, and any local regulations which apply. Note: If in any doubt a qualified electrician should be consulted.

The unit is supplied with a 2m 3-core flying lead for connection to mains supply. Mains connection must be done through a fused isolator rated at 3 Amps and positioned locally to the unit.

The unit is also provided with a 2m 2-core flying lead for connection to a remote controller.

6.0 OPERATION OF THE UNIT

Refer to Appendix 1 for system schematic to help understand how the unit works.

6.1 Unit Operation

Whenever power is applied to the unit, the stepper motors are reset to ensure they are in their correct position, so you are likely to hear a clicking noise from the motors. This is normal. Once the motors are in their correct position the unit is ready for its operation.

It is recommended that you use the unit with the Nordgas "Easyremote" control device, as this enables you to set hot water and heating temperatures using the programmer. Alternatively you can provide your own Open Therm programmer or room thermostat with volt free contacts to operate the unit.

6.2 Heating

When there is a heating requirement, as programmed in your controller or room thermostat, the unit will go into heating mode. The diverter valve will switch to heating port, the solenoid valve will open, the pump will come on, and the mixing valve will start to operate and will gradually ramp up the temperature of the heating water to the set temperature over a period of up to 3 minutes. The unit will continue to provide heating [at set temperature or 'district' inlet temperature whichever is the lower], until desired room temperature has been achieved or unit switches into hot water mode, where the solenoid valve will close, and the pump will stop. The unit will restart its heating cycle every time it switches in to heating mode.

The unit will come set as requested:-

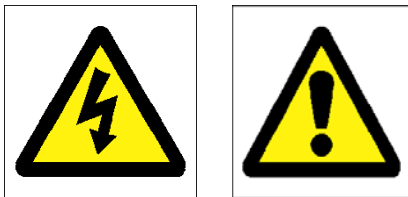
- a. Underfloor heating mode, which comes with a cut out Klixon that will stop the heating from working if the heating flow temperature reaches between 50°C and 55°C. If this occurs then the heating will have to be reset on the electronic box before heating mode will operate again [see section 8.0, Figure 7].
- b. Radiator heating mode.

6.3 Hot Water

Hot Water has priority [unless remote programmer has been programmed otherwise] and when the hot water flow detector senses a flow of greater than 2.1 l/m \pm 0.3 then the unit switches into hot water mode. The diverter valve will switch to hot water port, the solenoid valve will open, the pump will come on, and the mixing valve will start to operate, controlling the 'district' temperature to the heat exchanger to keep hot water temperature at set temperature as long as there is sufficient temperature in the district flow.

When the flow rate goes below 2.0 l/m \pm 0.3 then the unit will switch out of hot water mode. The solenoid valve will close but the pump will continue for 5 seconds to cool down the heat exchanger to reduce lime scaling.

7.0 COMMISSIONING



Note – when working with the unit, supply services when connected could reach 85°C, and once electrically connected the unit has 230V present within.

7.1 Remote Controller / Room Thermostat

If the unit has been provided with the Nordgas “Easyremote” control device, then refer to the instructions supplied with this item. However please note that with our unit the following items are not available as detailed in the booklet:-

Page 12 – P04 Thermo-regulation type. As the electronics do not allow for outside temperature sensor, you can only use setting 0, 1 and 4. Option 1 is the best to use.

Page 17 – KD Outside Probe not available on this unit.

Page 24 – Setting up outside probe KD value not available on this unit.

Page 37 – Outside Probe Temperature, System Water Pressure, S03 Temperature and S04 Temperature are all not available on this unit.

Page 39 – Display temperature outside probe not available on this unit.

Page 40 – Display system water pressure not available on this unit.

If you do not take the Nordgas “Easyremote”, then the heating and hot water flow temperatures have been factory preset. If you wish to change the temperatures then you need to access the electronic box and take off the plug covering the potentiometers – P1 [hot water flow temperature] and P2 [heating flow temperature] [see appendix 2]. Twisting either potentiometer clockwise with a screwdriver will increase the temperature and anti clockwise will reduce the temperature. Refer to Figure 2 [page 4] to see the settable range.

7.2 Heat Meter

If provided the booklet is attached to these instructions.

7.3 Cold Water Meter

If provided the booklet is attached to these instructions.

7.4 System Safety Relief Valve

It is assumed that there are system safety valves in place to take care of this so no pressure relief is provided within the unit, although please note that maximum pressure is 6 bar.

7.5 Pre-Heat Function

There is a pre-heat function available which should only be used if length of time to get hot water from the unit takes too long as this function might aid quicker provision of the hot water. If this function is required, then obtain access to the electronic box and locate the dip switches [see Appendix 2]. To turn on the pre-heat function then flick dip switch 5 to on [see Appendix 3]. This will then heat the exchanger when it goes to 15°C below hot water set temperature and switches back off when it reaches 10°C below hot water set temperature. This could in turn speed up time to achieve hot water set temperature.

8.0 FAULT FINDING

Figure 7 – Nordgas “Easyremote” Error Codes

Error Code	Fault Description	Course of Action
E 5	Faulty Heating Temperature Sensor	Replace the Heating Temperature Sensor [see Figure 9].
E 6	Faulty Hot Water Temperature Sensor	Replace the Hot Water Temperature Sensor [see Figure 9].
E 69	Klixon safety device tripped	If you are satisfied that there is no reason why the fault manifested itself and the temperature at the Klixon has gone, you can restart Heating mode by pressing reset button on the electronic control box [see Appendix 2] and red light should come off.
E 76	Faulty Solenoid Valve	Check the Solenoid Valve.
E 79	Faulty Dip Switch Configuration	Check that dip switches 2 and 3 inside the electronic control box are in off position [see Appendix 3].

If the Nordgas “Easyremote” is fitted then always first check if any error messages appear on the display [see Figure 7 above]. Check also the fault light on the electronic box [see Appendix 3].

If there are no error messages or fault lights, then firstly switch off power to the unit, wait for 10 seconds and then re-start the unit as this will reset the stepper motors.

If the unit still does not operate, then the next step is to check all wiring is correctly connected to the right component, especially if connectors have been taken off at any stage. Refer to Appendix 2 for wiring explanation.

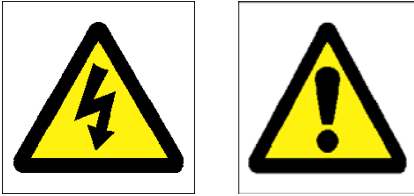
If the above does not rectify the problem and the unit still does not operate satisfactorily, then below are some suggestions of potential issues. Alternatively consult supplier for assistance.

Figure 8 – Fault Finding Guide

Fault	Possible Causes	Action
'District' water not entering the unit.	Blocked strainer Solenoid valve not operating correctly.	Unscrew the strainer cap bolt and take the strainer out, ensuring you have isolated unit and waited for water to cool down. Clean or replace accordingly. Ensure there is positive pressure between inlet and outlet of valve Check that 24V is being supplied to the DC coil. If above does not resolve issue, replace solenoid coil.
No Hot Water or Heating	Remote Controller not calling for Heating and/or Hot Water Electronics in Fault Mode Solenoid valve not operating	Adjust the Remote Controller accordingly Refer to Figure 7 above See above

<p>No Hot Water or Heating</p>	<p>Control Valve not operating or Diverter Valve no operating</p> <p>Pump not operating</p> <p>Hot Water Flow sensor not working</p> <p>Safety klixon tripped [if fitted]</p> <p>'District' water temperature too low</p>	<p>Check that 24V is being supplied to either or both DC coils.</p> <p>If above does not resolve issue, replace relevant stepper motor</p> <p>Check that impeller has not seized.</p> <p>Check you have 240 volts going to pump.</p> <p>If above does not resolve issue, replace pump</p> <p>Flow rate is above 2.5 l/m</p> <p>If light on with no flow replace the sensor electronic.</p> <p>If light doesn't come on with a flow rate of more than 2.5l/m replace sensor electronic</p> <p>Review why klixon has tripped out and re-set electronics [see appendix 2]</p> <p>If above does not resolve issue, replace Klixon</p> <p>Check 'District' supply conditions</p>
<p>Low Hot Water flow rate</p>	<p>Heat Exchanger blocked</p> <p>Blocked cold water strainer</p>	<p>Flush Heat Exchanger or replace</p> <p>Take out flow sensor cartridge and check and clean strainer</p>

9.0 SERVICING SCHEDULE



Note – when working with the unit, supply services when connected could reach 85°C, and once electrically connected the unit has 230V present within.

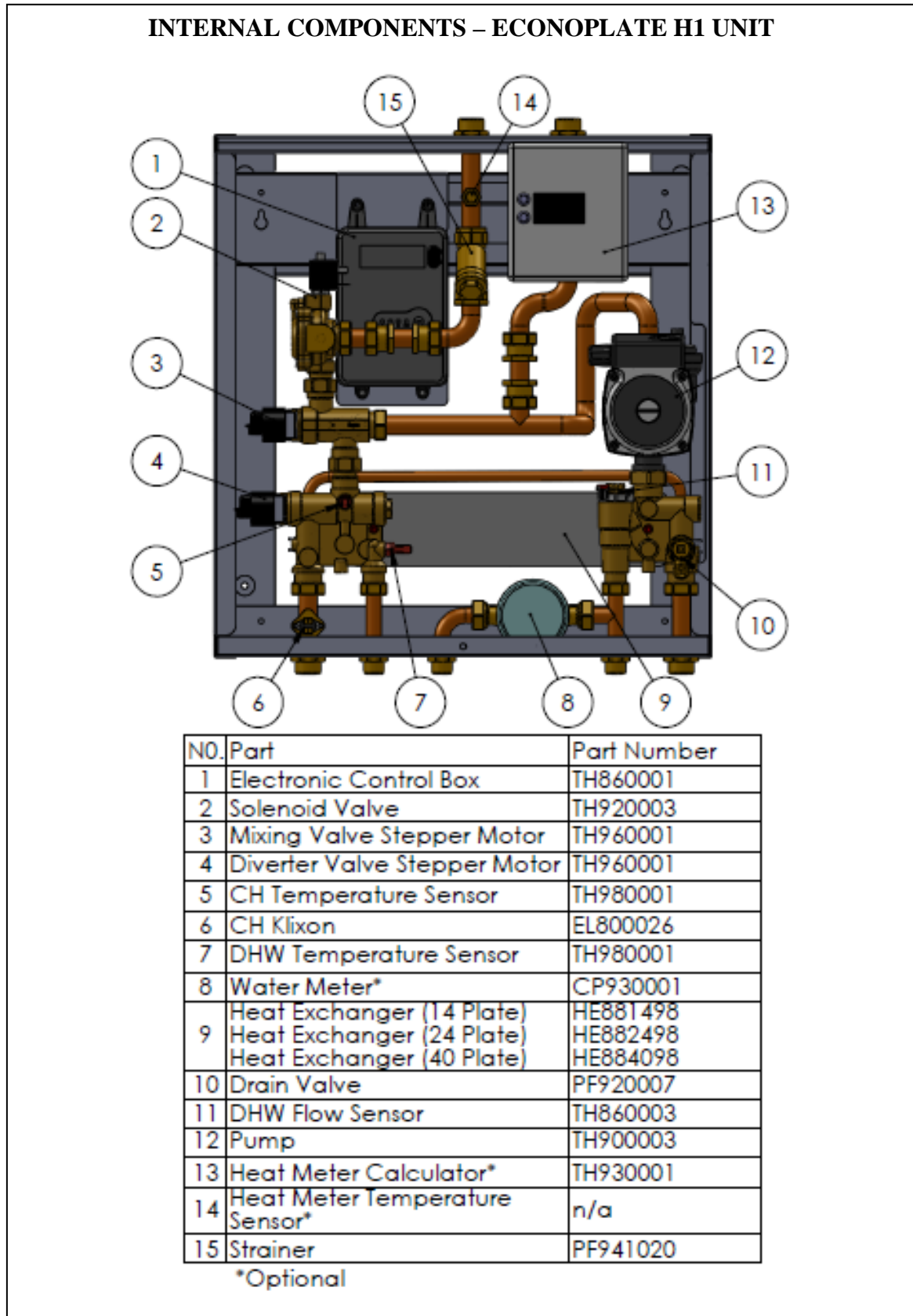
It is recommended that the unit is serviced once every 12 months to maintain its efficiency and longevity.

9.1 Servicing the Strainer (Part 15 – Figure 9)

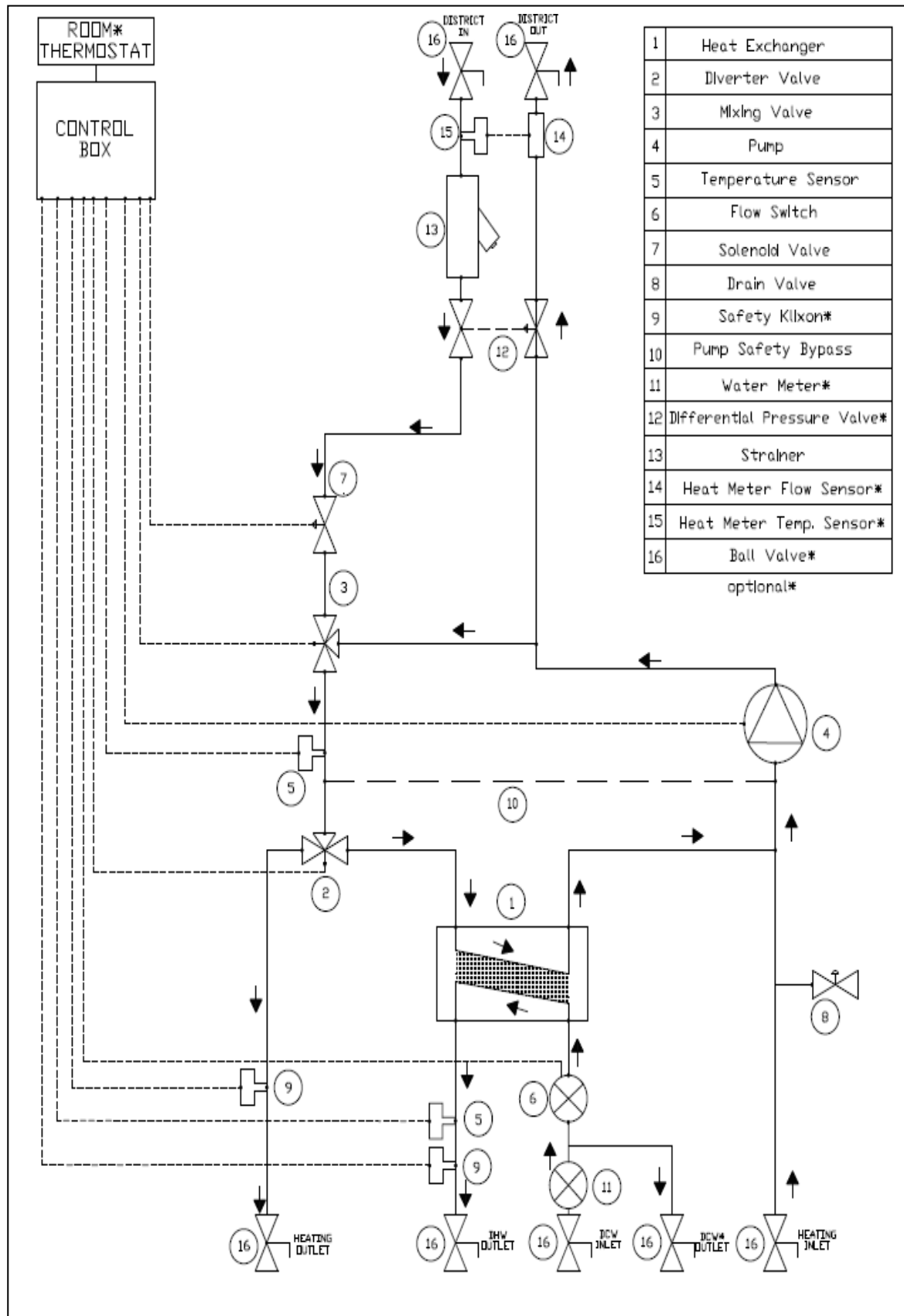
Isolate the unit from district supply. Open the screw cap from the strainer and take the filter cartridge out. Depending on the condition either clean it or replace it and put the screw cap back on again. Note the district water in the strainer could be 85°C.

10.0 INTERNAL COMPONENTS

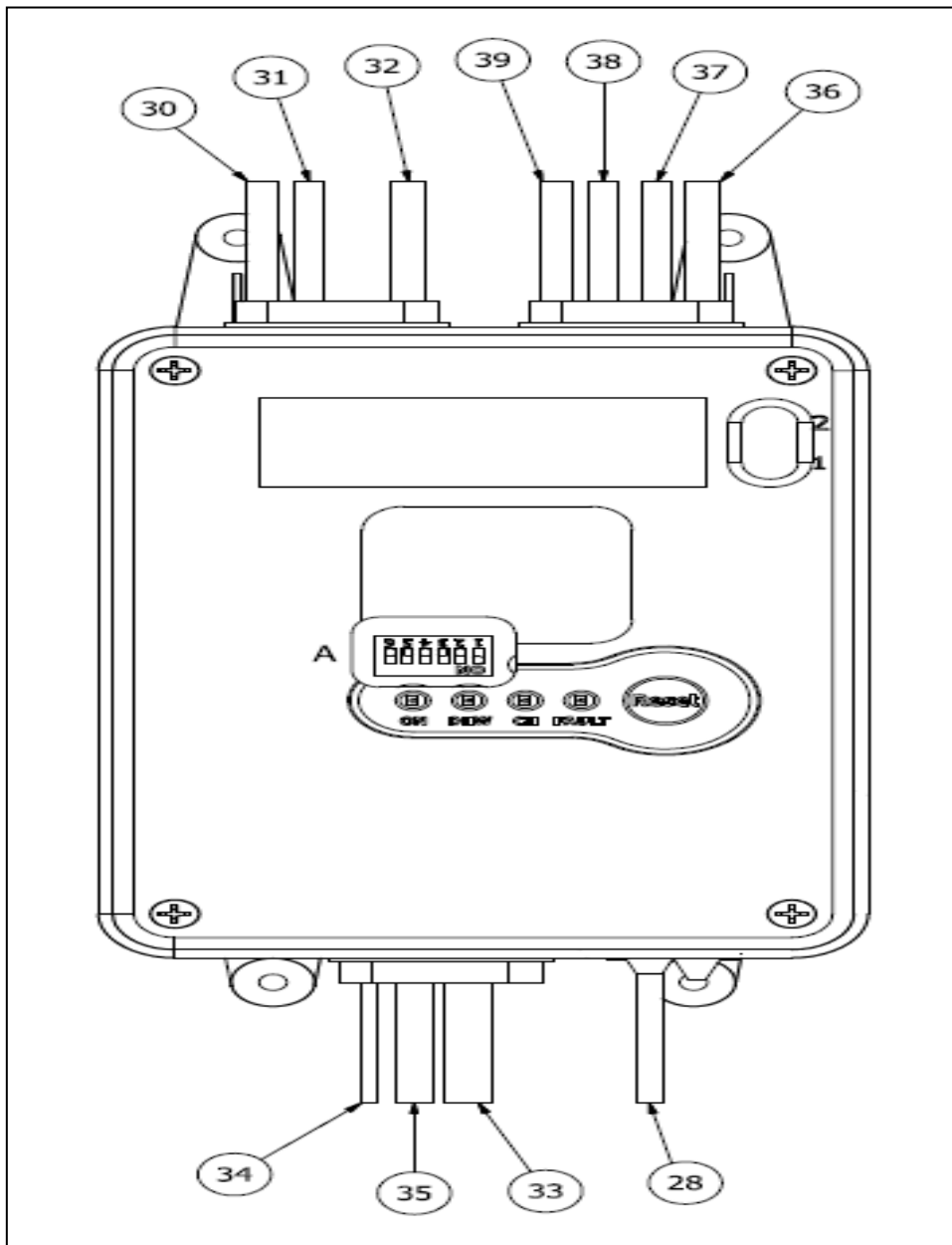
Figure 9 – Internal Components and Part Numbers



Appendix 1 – Unit Schematic

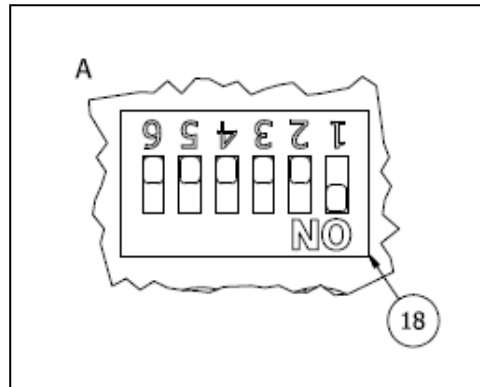


Appendix 2 – Wiring Schematic



No	Description	Individual Wiring	Connector
28	Remote Controller / Volt free Time clock or Room thermostat	2 Black	n/a
30	DHW Temperature Sensor	2 White	Black Connector
31	DHW Flow Sensor	Red, White and Blue	White Connector
32	Mixing Valve Stepper Motor	Blue, Black, Brown and Green	White Connector
33	Mains Cable	Blue, Brown and Green/Yellow	n/a
34	Earth Cable	Green/Yellow	Uninsulated Crimp Ring
35	Pump	N/a	Black Connector
36	Diverter Valve Stepper Motor	Blue, Black, Brown and Green	Blue Connector
37	CH Temperature Sensor	2 Red	Black Connector
38	Solenoid Valve	2 White	2 Terminal Crimps
39	CH Safety Thermostat	2 Black	2 Terminal Crimps

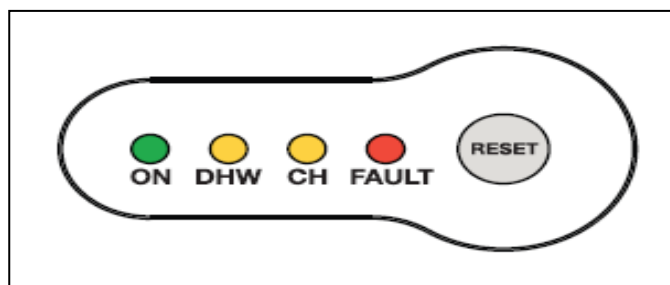
Appendix 3 – Dip Switches and LED Lights



SWITCH	FUNCTION	ON	OFF
1	High temp / Low temp central heating	Low temp	High temp
2	N/A	N/A	Correct
3	N/A	N/A	Correct
4	Single plate / Twin plate	Twin (H2) N/A	Single (H1) Correct
5	DHW preheating	Enabled	Disabled
6	N/A	N/A	Correct

N.B Switches 2, 3 and 6 should always be in the off position

MATRIX LED



ANOTATION	COLOUR	LIGHT OFF	LIGHT ON	LIGHT FLASHING
ON	Green	Power Off	Power On	N / A
DHW	Yellow	No DHW Demand	In DHW Mode	Preheat Running
CH	Yellow	No CH Demand	In CH Mode	N / A
FAULT	Red	No Fault	Low Temperature lockout – requires reset	Sensor faults – self restoring when fault rectified

APPENDIX 4 – PUMP INFORMATION

Pump curves and power draw

