WORLD HEAT
CYLINDERS

MADE IN
MANCHESTER

U-CYL+ UNIVERSAL PRE-PLUMBED HEAT PUMP CYLINDERS WITH ELECTRICAL CONTROL BOX

Installation, Commissioning & Service Manual



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U-CYL+ UNIVERSAL PRE-PLUMBED HEAT PUMP CYLINDERS WITH ELECTRICAL CONTROL BOX

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Revision log

—	—	First issue: made from the Unvented cylinders installation, commissioning and service

WARNING
Could cause injury: follow it exactly.

CAUTION
Could damage the cylinder or the system.

NOTE
Good to know.

01

SECTION 1

Introduction

U-Cyl+ (U-Cyl Plus): a pre-plumbed stainless steel unvented heat pump cylinder, made in Manchester



About the U-Cyl+ (U-Cyl Plus)

World Heat Cylinders manufacture a full range of unvented pre-plumbed heat pump cylinders for connection to all air source heat pump systems, with the tank kit included.

Key features

- Universal: for connection to any air source heat pump.
- Electrical control box with two relays: one lets the heat pump switch the immersion heater, one switches the heat pump on and off through a volt-free contact where the heat pump needs it.
- Immersion relay switches 13 amps, for legionella protection where the heat pump can't switch an immersion heater itself.
- Tank kit included.

Quality

> **NOTE**
> All World Heat products are manufactured under a ISO9001:2008 Quality management system.

02

SECTION 2

Before you start

Storage, handling and everything in the box

Storage & handling

World Heat cylinders must be stored in the supplied packaging in an upright orientation and should be stored in a dry environment.

CAUTION

When lifting or carrying any pre-plumbed cylinders do not use any factory fitted pipe work or connections as these can be damaged. Safe manual handling and lifting procedures must be used when carrying any cylinder.



What is fitted and supplied

Tank kit included.

Fitted with an A-rated circulating pump, a 2-port heating zone valve, a 3-port hot water diverter valve and a 28 mm magnetic filter.

Primary pipework and components are all 28 mm compression.

Potable expansion vessel and 28 mm flow setter supplied separately.

NOTE

G3 building regulation should always be considered when installing unvented systems.

Pre-installation checklist

Tick each one before you start. Each comes from the section named.

The mains pressure and flow rate have been checked: no less than 1.5 bar and 25 l/m on a domestic installation (Water supply)	☐ YES	☐ NO
The base is stable and can support the weight when the cylinder is full of water (Positioning)	☐ YES	☐ NO
There is space to mount the primary and secondary expansion vessels (Positioning)	☐ YES	☐ NO
The immersion heater can be withdrawn for servicing: they are 375mm long (Positioning)	☐ YES	☐ NO
A 22mm quarter turn full bore lever handled ball valve is fitted before the cylinder equipment (Installation)	☐ YES	☐ NO
Every connection to the cylinder has a drain valve (Installation)	☐ YES	☐ NO
The discharge pipe work can be routed in accordance with Part G3 (Discharge pipework)	☐ YES	☐ NO
The primary circuit is positively pumped and the heat source has thermostatic temperature controls (Installation)	☐ YES	☐ NO
Exposed pipe work will be insulated and the unit protected from frost (Positioning)	☐ YES	☐ NO

03

SECTION 3

Water supply & positioning

The mains supply and where the cylinder goes

Mains cold water supply

The World Heat unvented range operates at either 2.1 bar (copper) or 3 bar (Stainless). This is controlled by the pressure reducing valve in the inlet manifold which is capable of providing a flow rate of over 50 litres per minute. The inlet manifold is designed to allow the greatest flow rate possible, however the performance of any unvented system is only as good as the mains water supply.

The water demand requirements of a property need to be assessed and care should be made to take into account that hot and cold services are supplied simultaneously from the mains cold water feed.

The flow rate and pressure should be checked to confirm it can meet the demand of the property.

When measuring the water pressure please be aware that a static pressure (no flow) is no guarantee of good flow availability.

NOTE

On a domestic installation the minimum pressure and flow rate should be no less than 1.5 bar and 25 l/m respectively.

If the recommended minimum pressure or flow rate is not being achieved any existing ½"(15mm) cold mains pipe work may need to be increased in size.

Positioning the cylinder

CAUTION

The World Heat unvented range must be installed vertically on a stable base which must be capable of supporting the weight when the cylinder is full of water.



The minimum recommended installation space is dependent on the specification of the cylinder, the slimline models are recommended if available space is limited. Additional considerations should be made to allow space to mount the primary and secondary expansion vessels. Full specifications, weights and dimensions of the product range are provided in this booklet.

Access for maintenance of all equipment should be considered when positioning the unvented cylinder. Care should be taken that the immersion heater can be withdrawn for servicing if required these are 375mm long. Building regulation G3 should always be followed when installing discharge pipe work from the safety valves.

Any hot outlets which are higher than the cylinder will reduce in pressure by 0.1 bar for every 1m of height difference.

NOTE

All exposed pipe work should be insulated and additional considerations should be taken to protect the unit from frost damage. Particular care is needed if the cylinder is to be installed in an exposed location such as an outhouse or garage.

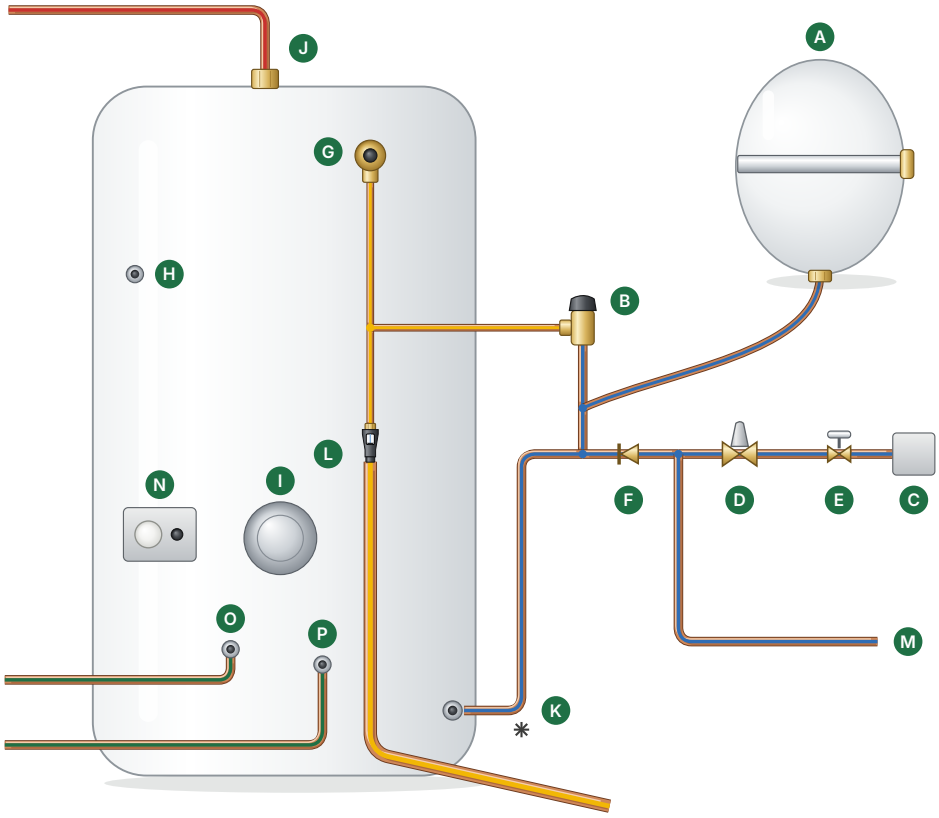
04

SECTION 4

System schematic

How the unvented kit connects to the cylinder

Schematic diagram



Cold Hot Discharge Primary

System schematic. Letters as the key above.

A	Expansion Vessel	I	Immersion Heater
B	Expansion Relief Valve	J	Hot Water Outlet
C	Cold Main	K	Cold Feed Connection & Drain
D	Pressure Reducing Valve	L	Tundish
E	Isolating Valve	M	Isolating Valve
F	Non Return Valve	N	Dual Thermostat
G	Pressure & Temp. Relief Valve	O	Primary Flow
H	Secondary Return*	P	Primary Return

* Selected Models Only

05

SECTION 5

Installation

Cold mains, expansion, connections and the primary circuit

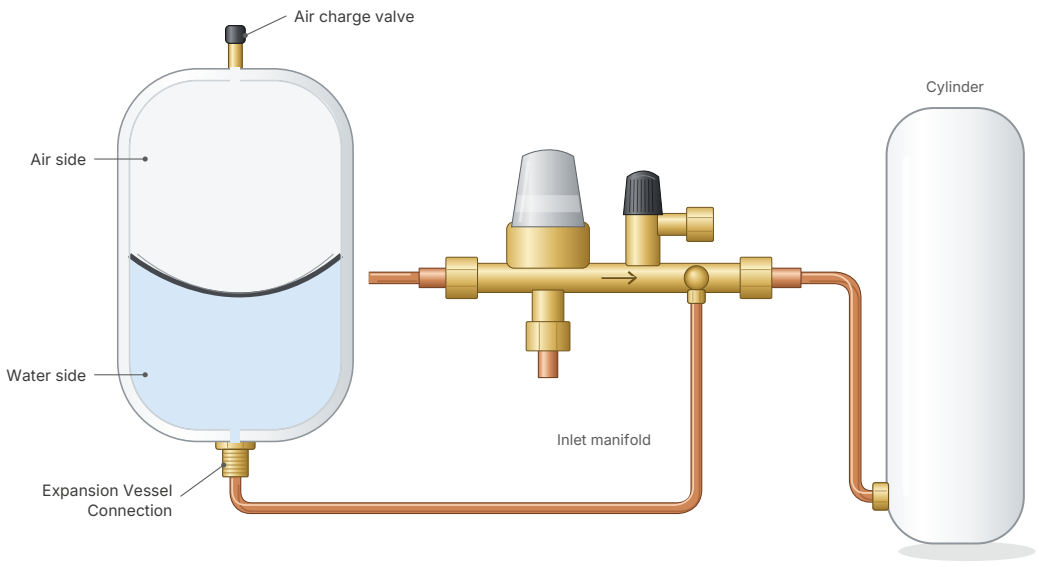
Cold mains pipe work and manifold

1. Install the cold main pipe work to the area where the cylinder is to be installed. Care should be taken not to run the cold pipe near hot pipes so that the heat transfer is minimized.
2. Install a cold water isolating valve before any of the cylinder equipment which is NOT supplied. A 22mm quarter turn full bore lever handled ball valve is recommended to allow full flow to the cylinder. Do not use gate valve or similar as they can cause a restriction to the flow rate.
3. Ensure all connections to the cylinder have drain valves incorporated.
4. Try to position the mains inlet control manifold at the top of the cylinder to ensure that the cylinder does not have to be drained down in order to service the items in the inlet manifold.

> **NOTE**
>
> There is an arrow on the inlet manifold which indicates the correct direction of water flow.

Expansion vessel

The expansion vessel can be mounted in any orientation. Access must be available to the top and bottom of the vessel. The vessel should be fixed to a solid wall using the brackets provided, please remember that the vessel will get much heavier once it is full of water.

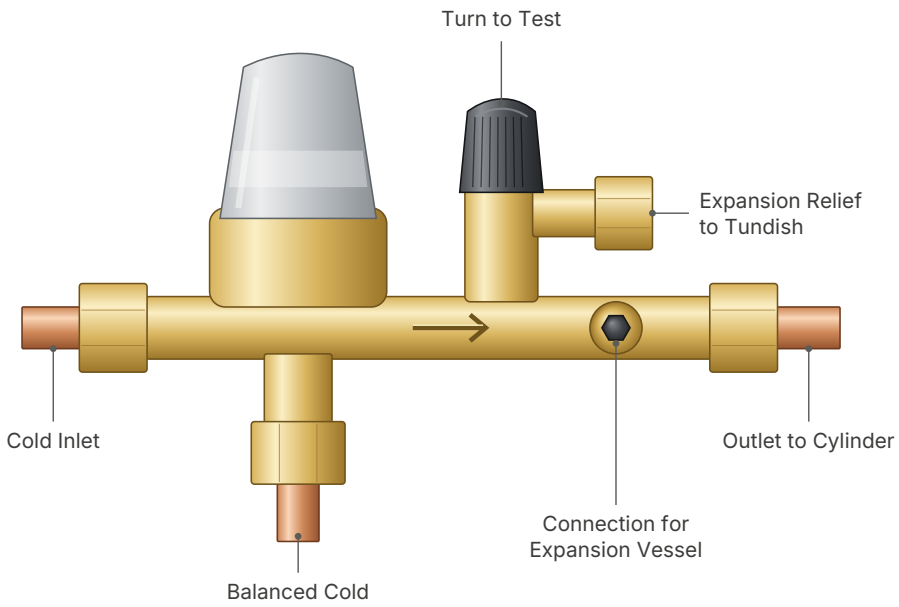


The expansion vessel, cut away to show the diaphragm, and how it connects to the inlet manifold and the cylinder.

05 **Installation** continued

Balanced cold connection

For mixer showers and taps a balanced cold feed at the same pressure as the hot feed may be necessary. A 22mm balanced connection on the inlet manifold is provided for this purpose. Pipe work should initially run in 22mm then this can be reduced where necessary.



The inlet manifold (cold feed combination control set). Water flows left to right, as the arrow on the body shows.

It is good practice to keep the length of the hot draw off pipe work to a minimum so that the time taken for the hot water to reach the outlet is as little as possible.

WARNING

Do not use mixer tap or showers if they are not fed from the balanced cold connection. Outlets of this type can pass the higher cold pressure back through the hot to the cylinder and result in discharge of the relief valve. No shut off or isolation valves whatsoever should be fitted between the expansion relief valve and the storage cylinder. The relief valve connections must not be used for any other purpose than they are intended.

Connecting to the cylinder

Before filling and pressuring the cylinder care should be taken to check and tighten all connections including factory fitted connections as they may work loose during transportation and positioning.

Table X tube should only be used to connect to these connections. Good working practices should be used when preparing pipe work such as using correct pipe cutters and de-burring.

Primary heat exchanger connections

The primary connections supplied are compression connections. The primary circuit must be positively pumped, gravity circulation will not provide the required heat transfer through the coil.

NOTE

The primary coil has a maximum working pressure of 3.5 bar.

With pressurised primary circuits an additional expansion vessel needs to be sized to suit the circuit volume and installed along with a safety relief valve and filling loop.

The primary heat source must be complete with thermostatic temperature controls.

WARNING

Uncontrollable heat sources such as wood burning stove and back boilers are not suitable.

Secondary return circulation

Although it is not recommended for efficiency reasons certain models have a connection for a secondary circulation pump.

A WRAS approved bronze circulator suitable for use with potable water should be used and a non-return valve also installed to prevent backflow. Where a secondary circulation loop is deemed to be large an extra expansion vessel may be required to ensure expansion of the additional volume is absorbed.

06

SECTION 6

Discharge pipework

Building Regulations G3: the tundish, D1 and D2

Discharge pipe arrangement

Position the inlet control group so that the discharge from both safety valves can be joined together via a 15mm end feed Tee. Connect the Tundish and route the discharge pipe.

WARNING

The discharge pipe work must be routed in accordance with Part G3 of schedule 1 of the Building Regulations.

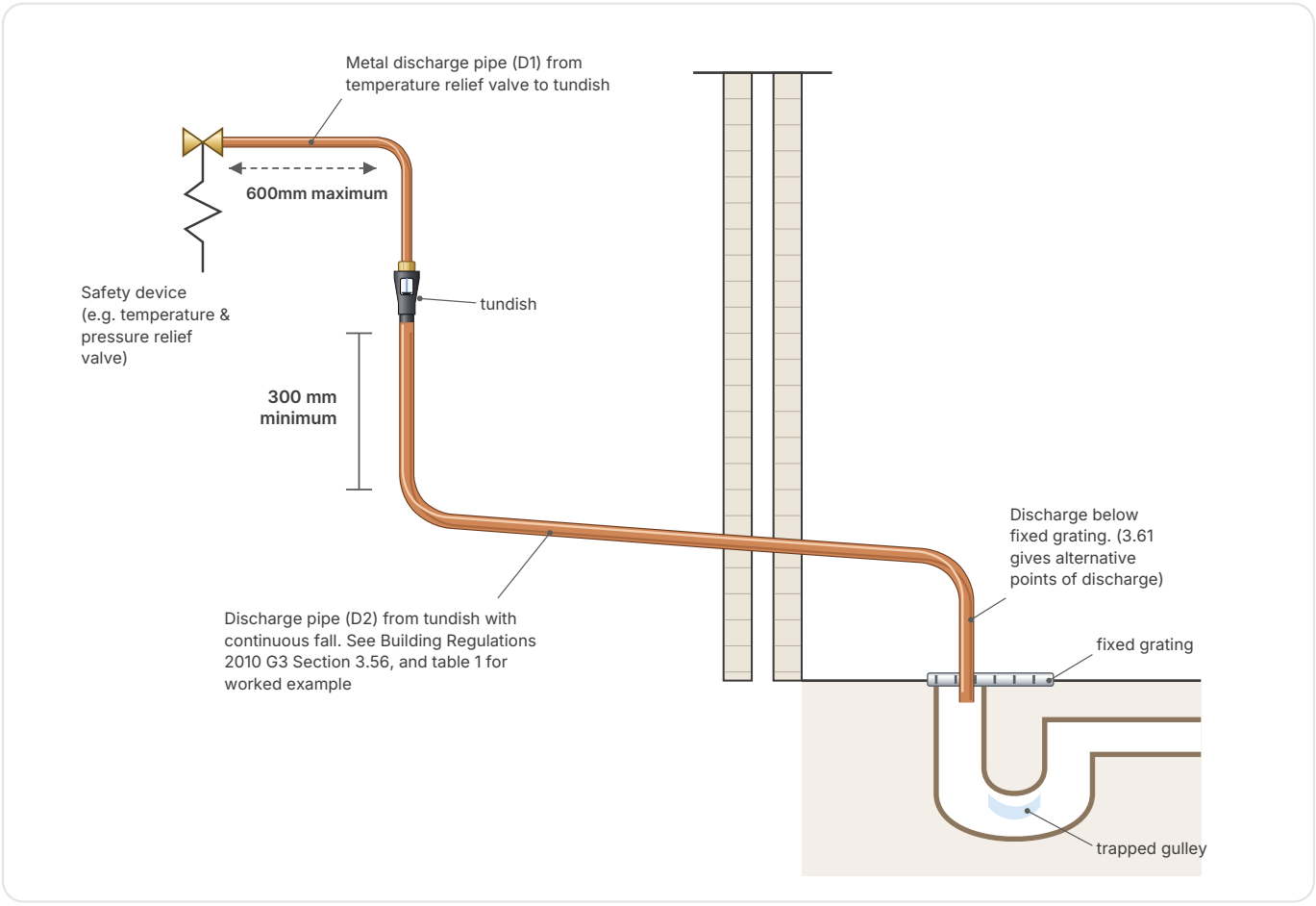
The information that follows is not exhaustive and if you are in doubt you should seek advice. The two safety valves will only discharge water under fault conditions. When operating normally water will not be discharged.

NOTE

The tundish should be vertical, located in the same space as the unvented hot water storage system and be fitted as close as possible to, and lower than, the safety device, with no more than 600mm of pipe between the valve outlet and the tundish.

Any Discharge should be visible at the tundish. The tundish should be located such that any discharge is visible. In addition, where discharges from safety devices may not be apparent, e.g. people with impaired vision or mobility, consideration should be given to the installation of a suitable safety device to warn when discharge takes place, e.g. electronically operated.

06 Discharge pipework continued



Discharge pipework (D1, D2)

Diagram 1: typical discharge pipe arrangement.

The discharge pipe (D2) from the tundish should:

A Have a vertical section of pipe at least 300mm long, below the tundish before any elbows or bends in the pipe work.

B Be installed with a continuous fall of at least 1 in 200 thereafter.

Discharge pipe (D2)

WARNING

The discharge will consist of scalding water and steam. Asphalt, roofing felt and non-metallic rainwater goods may be damaged by such discharges.

D2 pipe from tundish is now allowed to be installed in soil stacks within premises. This activity is not recommended as discharge from T&P may continue for long periods of time. It is the installer's responsibility to ensure the discharge pipe work can support the discharge for prolonged periods. If used follow guidance on mechanical seal without water trap given in G3 Building Regulations. As discharge can be in excess of 90ºC discharge into plastic pipe work is also not recommended.

The discharge pipe (D2) from the tundish should be of metal or other material that has been demonstrated to be capable of withstanding temperatures of the water discharged.

06 Discharge pipework continued

The discharge pipe (D2) should be at least one pipe size larger than the nominal outlet size of the safety device unless its total equivalent hydraulic resistance exceeds that of a straight pipe 9m long i.e. discharge pipes between 9m and 18m equivalent resistance length should be at least two sizes larger than the nominal outlet size of the safety device, between 18 and 27m at least 3 sizes larger, and so on. Bends must be taken into account in calculating the flow resistance. Refer to diagram 1, Table 1 and the worked example. An alternative approach for sizing discharge pipes would be to follow BS6700 Specification for design installation, testing and maintenance of services supplying water for domestic use within Buildings.

The discharge pipe (D2) should terminate in a safe place where there is no risk to persons in the vicinity of the discharge. Examples of acceptable discharge arrangements are:

- To a trapped gully with the end of the pipe below the fixed grating and above the water seal.
- Downward discharges at a low level; i.e. up to 100mm above external surfaces such as car parks, hard standings, grassed areas etc. are acceptable providing that where children play or otherwise come into contact with discharges, a wire cage or similar guard is positioned to prevent contact whilst maintaining visibility.
- Discharges at a high level; e.g. in to metal hopper and metal down pipe with the end of the discharge pipe clearly visible or onto a roof capable of withstanding high temperature discharges of water and 3m from any plastic guttering systems that would collect such discharges.
- Device to warn when discharge takes place.

Worked example and Table 1

The example below is for a G1/2 temperature relief valve with a discharge pipe (D2) having 4 No. elbows and length of 7m from the tundish to the point of discharge.

1. Maximum resistance allowed for a straight length of 22mm copper discharge pipe (D2) from a G1/2 temperature relief valve is: 9.0m.
2. Subtract the resistance for 4 No. 22mm elbows at 0.8m each = 3.2m.
3. Therefore the maximum permitted length equates to: 5.8m.
4. 5.8m is less than the actual length of 7m therefore calculate the next largest size.
5. Maximum resistance allowed for a straight length of 28mm pipe (D2) from a G1/2 temperature relief valve equates to: 14m.
6. As the actual length is 7m, a 28mm (D2) copper pipe will be satisfactory.

Table 1: Sizing of copper discharge pipe 'D2' for a temperature relief valve with a G1/2 outlet (as supplied)

Size of discharge pipework	Maximum length of straight pipe (no bends or elbows)	Deduct the figure below from the maximum length for each bend or elbow in the discharge pipe
22mm	Up to 9m	0.8m
28mm	Up to 18m	1m
35mm	Up to 27m	1.4m

07

SECTION 7

Wiring

The unit's controls and the immersion heater wiring

Controls and wiring

Controls

- Electrical control box with two relays: one lets the heat pump switch the immersion heater, one switches the heat pump on and off through a volt-free contact where the heat pump needs it.
- Immersion relay switches 13 amps, for legionella protection where the heat pump can’t switch an immersion heater itself.

Fitted with an A-rated circulating pump, a 2-port heating zone valve, a 3-port hot water diverter valve and a 28 mm magnetic filter. The controls each model is supplied with, and their ratings, are listed for every model in Technical specifications.

WARNING

The electrical supply to the cylinder and its controls must be installed by a qualified electrician.

NOTE

We have air source heat pump (ASHP) wiring instructions: ask our technical team and we’ll send them.

07 **Wiring** continued

Electric immersion heaters

WARNING

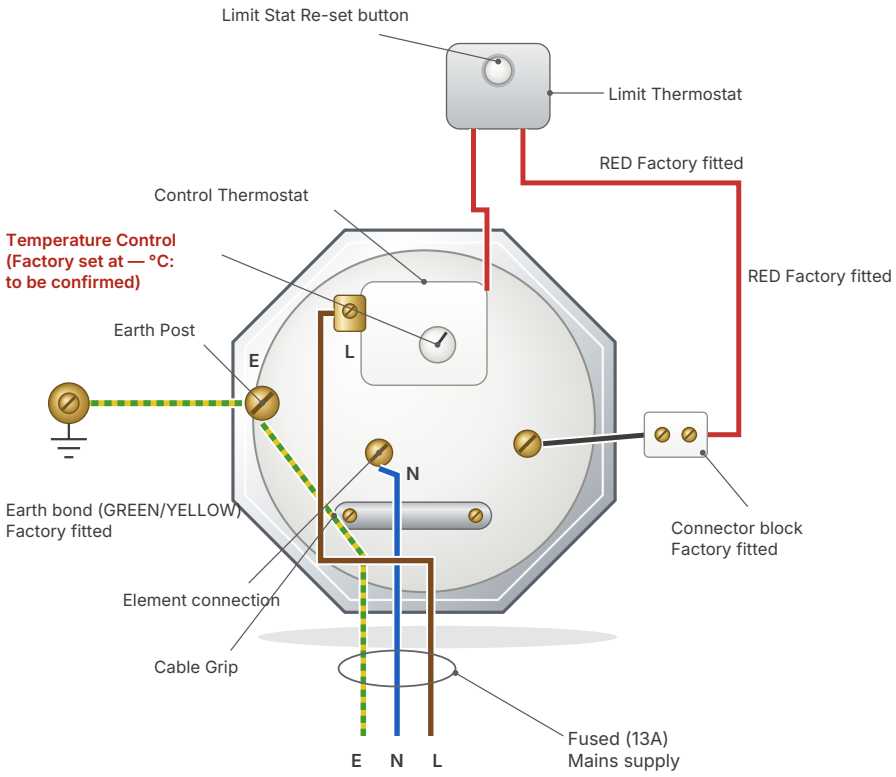
Only immersion heaters with a high temperature cut-out <95 deg C may be used. The electrical supply to each immersion heaters must be installed by a qualified electrician. The fuse rating should be sized correctly to suit the heater's duty and isolators must be double pole to BS 3456.

Each immersion comes complete with integral control thermostat and a high limit cut-out. If a replacement immersion heater is required please order them from World Heat, installation of a non-approved immersion may affect your warranty.

Correct cable sizing must be carried out based on the power, cable length and cable enclosures however in most domestic applications 2.5mm² cable is suitable. Heat resistance sheathed flex complying to BS 6141:1981 should be used.

Do not energise the immersion heater until the cylinder has been filled with water as this will cause damage to the element.

Do not operate the immersion heater if any cleaning agents are in the cylinder as this will also cause premature failure of the element immersion.



Live (L) Neutral (N) Earth (E) RED (factory fitted)

Immersion heater wiring (as supplied).

08

SECTION 8

Commissioning

Filling, storage temperature and safety valve checks



Filling the cylinder

1. Before filling please ensure the pressure in the expansion vessel is 2.1 bar for copper vessels and 3bar for stainless steel, this is the same as the setting of the pressure reducing valve. The valve is a Schrader type like a bicycle tyre.

Please check all connections including any which are factory made for tightness such as the immersion heater, temperature and pressure relief valve before filling.

2. The hot tap furthest away from the Cylinder should be opened to allow the air in the pipe work to be forced out.
3. Gradually open the main cold isolation valve, the cylinder will begin to fill. When the cylinder is filled and water flows from the tap allow it to run for a short while to flush through any dirt or pipe jointing residue. Once this is completed close the furthest tap and open all others to remove all remaining air.

Storage temperature

The recommended storage temperature for a World Heat unvented cylinder is 60-65°C. Considerations should be made to reduce this temperature down to 50-55°C in hard water areas to help reduce scaling.

> **NOTE**
> Considerations should be made for the prevention of legionella control - For details please consult the HSE Legionella approved code of conduct and guidance document.

Safety valve checks

The safety valve correct operation should be checked prior to cylinder heat up.

1. To do this turn the tops of both valves independently and ensure water passes through the tundish from each valve.
2. Once this is confirmed open both valves together allowing as much water as possible to flow through the tundish as possible.
3. At this point make sure that your discharge pipe work is free from debris and is transporting the water away to waste effectively.
4. The valves can then be released and a check should be made to ensure they have re-seated correctly.

If water begins to discharge from either of the pressure relief valves during

08 Commissioning continued

Commissioning checklist

Expansion vessel pressure checked before filling: 3bar for stainless steel, the same as the setting of the pressure reducing valve	☐ YES	☐ NO
All connections checked for tightness, including the immersion heater and the temperature and pressure relief valve	☐ YES	☐ NO
Cylinder filled from the hot tap furthest away, flushed, and all air removed	☐ YES	☐ NO
Both safety valves turned independently, then together: water passes through the tundish and the discharge pipe work carries it away	☐ YES	☐ NO
Both valves re-seated correctly	☐ YES	☐ NO
Storage temperature set: 60-65°C (50-55°C in hard water areas) ..... °C		
Log book commissioning certificate completed and left with the customer	☐ YES	☐ NO

09

SECTION 9

Service & maintenance

Draining, the annual service and water quality

Servicing the World Heat unvented range

WARNING

You must be a G3 qualified engineer to service and maintain an unvented domestic hot water cylinder, any spare parts required must be purchased from World Heat. Safety devices should not be bypassed under any circumstances.

How to drain the cylinder

1. Before draining the cylinder the immersion heater should be isolated to prevent the element from burning out.
2. Shut the cold feed ball valve to isolate the cylinder from the mains cold feed.
3. Securely connect a hose pipe to the drain connection on the cylinder and take the other end to a nearby waste or soak-away. The drain point should be below the level of the cylinder to ensure that the maximum amount of water is drained from the cylinder.
4. The nearest hot tap should be opened to allow air back into the system and prevent a vacuum being pulled in the cylinder.

WARNING

Care must be taken as the draining water may be hot.

Annual inspection & maintenance

The World Heat unvented range requires an annual service to ensure continued safe operation and optimum efficiencies. It is essential that the following tasks are carried out by a qualified engineer on an annual basis.

1. Turn the cap of the expansion relief valve on the cold inlet manifold, water should be allowed to flow for at least 5 seconds. Upon release make sure it re-seats fully. Carry out the same procedure with the pressure / temperature relief valve. In both cases check that the discharge pipe work (D1 and D2) is carrying the water away adequately. If not check for any potential blockages and clear them where necessary.
   WARNING: THE DISCHARGING WATER MAY BE HOT!
2. Check that the factory installed immersion heater is working and the internal thermostat is controlling the water at the required temperature.
3. Test the air pressure in the expansion vessel with the pressure in the Cylinder dropped, this should be at 2.1 bar for copper vessels and 3 bar for stainless, if this is low the pressure can be topped up with a standard bicycle pump.

09 Service & maintenance continued

4. Clean the mesh filter in the cold feed combination manifold, this is accessed through the screwed plastic fitting on the top of the pressure reducing valve.
5. The World Heat unvented log book supplied with this unit must be completed on every service visit.

Maintenance schedule

Task	How often	Check
Turn the cap of the expansion relief valve and the pressure / temperature relief valve	Every year	Water flows for at least 5 seconds, each re-seats fully, D1 and D2 carry the water away
Immersion heater and its thermostat	Every year	Working, and controlling the water at the required temperature
Expansion vessel air pressure (cylinder pressure dropped)	Every year	3 bar for stainless
Mesh filter in the cold feed combination manifold	Every year	Cleaned
Log book	Every service visit	Completed

Water quality and scale

Considerations should be made to reduce the storage temperature down to 50-55°C in hard water areas to help reduce scaling.

The water quality shall be in accordance with European Council Directive 98/83 EC, or revised version at the date of installation, and is not fed with water from a private supply.

Chloride content	Sulphate content	Combination Chloride/sulphate
Max. 250 mg/l	Max. 250 mg/l	Max. 300 mg/l (in total)

NOTE

Record on the log book whether a water scale reducer has been fitted, and which type.

10

SECTION 10

Troubleshooting

Common symptoms, their causes and what to do

Fault finding

In the unlikely event of a fault with the system some basic fault finding may be required.

In-depth fault finding on the unvented range should only be completed by a qualified engineer.

If required please contact World Heat for information on the training courses we provide.

Issue	Probable Causes	Recommended Solution
No Hot Water Coming through Taps.	Fault with primary heating system.	Check that the heat pump is operating correctly. See manufacturers service manual for further fault finding information.
Water passing through expansion relief valve.	Continues - Either the pressure reducing valve is faulty or the expansion relief valve is not re-seating correctly.	Replace pressure reducing valve or expansion relief valve.
	Intermittent - The expansion vessel air charge may have reduced or the internal diaphragm may have perished	Check expansion vessel and repair/replace if necessary
Water passing through pressure and temperature relief valve	Back pressure from higher cold feed pressure	Install a pressure reducing valve on the cold main to the property to balance both the hot and cold pressures.
	System overheat - Immersion heater or primary heat source controls have failed.	Investigate heat source thermal controls and replace where necessary.
Water passing through case	Hot draw off connection on top of cylinder passing water	Check and reseal hot draw off connection
Cloudy Water	Oxygen/Air in System	All mains pressure cylinders will release oxygen from the water when it flows. The bubbles will eventually settle after a short period of operation
No hot water flow	Cold main off	Check and open stop cock.
	Strainer blocked in pressure reducing valve.	Isolate water supply and clean
	Inlet control set may be fitted incorrectly	Check and refit as required.
Noise during draw off	Loose pipework	Install extra clips
Hot or warm water from cold tap	If tap runs cold after a minute or so the pipe is picking up heat from heating pipework	Insulate / re-route

11

SECTION 11

Product guarantee

What the guarantee covers and how to keep it

Product guarantee

The World Heat Unvented Cylinder range carries a 25 year guarantee on stainless steel unvented cylinders up to 300 litres against faulty materials or manufacture provided that:



- It has been correctly installed as per this document and all relevant standards, regulations and codes of practice in force at the time.
- It has not been modified in any way.
- It has not been misused, tampered with or subjected to neglect.
- It has only been used for the storage of potable water.
- It has not been subject to frost damage.
- The unit has been serviced annually.
- The World Heat log book has been filled in after each annual service.
- The guarantee period starts from the date of purchase and no registration is required.
- The system is fed from a public water supply.

> **NOTE**
> Please note that invoices for servicing may be requested to prove that the unit has been serviced annually.

All components fitted to or supplied with the unvented range carry a 12 month guarantee.

Register your cylinder

Register your cylinder online at worldheat.co.uk/warranty/ so we hold the installation details, serial number and installer with your guarantee.

12

SECTION 12

Technical specifications

Every figure from World Heat's product data, as on the product information sheets

Technical specifications

Every figure below is from World Heat's product data, the same figures the product information sheets and brochures print.

12 Technical specifications continued

TECHNICAL SPECIFICATIONS

U-Cyl+ pre-plumbed

worldheat.co.uk/products/u-cyl-plus/



U-Cyl Plus Pre-Plumbed Heat Pump Cylinder

Immersion heaters: 3 kW

Capacity (L) / product code	150 L 150UCYLSSPLUS	180 L 180UCYLSSPLUS	210 L 210UCYLSSPLUS	250 L 250UCYLSSPLUS	300 L 300UCYLSSPLUS
H × W × D (mm)	1,424 × 550 × 700	1,550 × 550 × 700	1,738 × 550 × 700	1,988 × 550 × 700	1,994 × 600 × 750
Buffer (L)	50	50	50	50	50
Empty (kg)	78	82	88	94	104
Full (kg)	278	312	348	394	454
Coil (m^2)	2.29	2.29	3.31	3.31	3.31
3 kW immersion	1 cylinder + 1 buffer	1 cylinder + 1 buffer	1 cylinder + 1 buffer	1 cylinder + 1 buffer	1 cylinder + 1 buffer
Secondary return	No	No	Yes	Yes	Yes
Heat loss (kWh/24h)	1.55	1.71	1.89	2.17	2.22
Heat loss (W)	64.58	71.25	78.75	90.42	92.5
ErP	C	C	C	C	C
Packaged dimensions H × W × D (mm)	1725 x 600 x 900	2050 x 600 x 900	1920 x 600 x 900	2220 x 600 x 900	2125 x 1200 x 1200
Packaged weight (kg)	77	81	86	92	99
Expansion vessel	12L	12L	19L	18L	24L
T&P valve	7.0 Bar & 90°C	7.0 Bar & 90°C	7.0 Bar & 90°C	7.0 Bar & 90°C	7.0 Bar & 90°C
Expansion vessel charge pressure	3.0 Bar	3.0 Bar	3.0 Bar	3.0 Bar	3.0 Bar
Insulation thickness	50mm	50mm	50mm	50mm	50mm
Voltage	230 - 240 V	230 - 240 V	230 - 240 V	230 - 240 V	230 - 240 V
DHW control stat	Heat pump controls	Heat pump controls	Heat pump controls	Heat pump controls	Heat pump controls
High limit stat	Mechanical 90°C	Mechanical 90°C	Mechanical 90°C	Mechanical 90°C	Mechanical 90°C
Electronic immersion control	Heat pump controls / third party timer	Heat pump controls / third party timer	Heat pump controls / third party timer	Heat pump controls / third party timer	Heat pump controls / third party timer
DHW immersion heater duty	3kW (13 Amps 230V ac)	3kW (13 Amps 230V ac)	3kW (13 Amps 230V ac)	3kW (13 Amps 230V ac)	3kW (13 Amps 230V ac)
Primary (buffer) immersion heater duty	3kW (13 Amps 230V ac)	3kW (13 Amps 230V ac)	3kW (13 Amps 230V ac)	3kW (13 Amps 230V ac)	3kW (13 Amps 230V ac)
System circulating pump	Grundfos UPM3 8m head, A rated	Grundfos UPM3 8m head, A rated	Grundfos UPM3 8m head, A rated	Grundfos UPM3 8m head, A rated	Grundfos UPM3 8m head, A rated
Central heating zone valve	Honeywell 28mm, 2 port (1 No.)	Honeywell 28mm, 2 port (1 No.)	Honeywell 28mm, 2 port (1 No.)	Honeywell 28mm, 2 port (1 No.)	Honeywell 28mm, 2 port (1 No.)

12 Technical specifications continued

Capacity (L) / product code	150 L 150UCYLSSPLUS	180 L 180UCYLSSPLUS	210 L 210UCYLSSPLUS	250 L 250UCYLSSPLUS	300 L 300UCYLSSPLUS
Domestic hot water zone valve	Honeywell 28mm, 3 port diverter (1 No.)	Honeywell 28mm, 3 port diverter (1 No.)	Honeywell 28mm, 3 port diverter (1 No.)	Honeywell 28mm, 3 port diverter (1 No.)	Honeywell 28mm, 3 port diverter (1 No.)
Central heating controller	3rd party controls	3rd party controls	3rd party controls	3rd party controls	3rd party controls
Hot water controller	Heat pump controls	Heat pump controls	Heat pump controls	Heat pump controls	Heat pump controls
Magnetic filter	28mm magnetic filter	28mm magnetic filter	28mm magnetic filter	28mm magnetic filter	28mm magnetic filter
Flow setter valve	28mm inline flow setter (supplied separately)	28mm inline flow setter (supplied separately)	28mm inline flow setter (supplied separately)	28mm inline flow setter (supplied separately)	28mm inline flow setter (supplied separately)
Mains inlet pressure regulator	3.0 Bar	3.0 Bar	3.0 Bar	3.0 Bar	3.0 Bar
Expansion relief valve	6.0 Bar	6.0 Bar	6.0 Bar	6.0 Bar	6.0 Bar
Primary pressure drop of cylinder pipework	16kPa @ 17 litres per minute	16kPa @ 17 litres per minute	16kPa @ 17 litres per minute	16kPa @ 17 litres per minute	16kPa @ 17 litres per minute
Re-heat time	35 - 45 minutes	35 - 45 minutes	35 - 45 minutes	35 - 45 minutes	35 - 45 minutes

12 Technical specifications continued

U-Cyl Plus Pre-Plumbed Heat Pump Cylinder

Immersion heaters: 3 kW

Capacity (L) / product code	150 L 150UCYLSSPLUSSLIM	180 L 180UCYLSSPLUSSLIM
H × W × D (mm)	1,824 × 475 × 600	2,040 × 475 × 600
Buffer (L)	30	30
Empty (kg)	78	82
Full (kg)	258	292
Coil (m^2)	2.29	2.29
3 kW immersion	1 cylinder + 1 buffer	1 cylinder + 1 buffer
Secondary return	No	No
Heat loss (kWh/24h)	1.66	1.79
Heat loss (W)	69.17	74.58
ErP	C	C
Packaged dimensions H × W × D (mm)	2000 x 600 x 900	2100 x 600 x 900
Packaged weight (kg)	77	81
Expansion vessel	12L	12L
T&P valve	7.0 Bar & 90°C	7.0 Bar & 90°C
Expansion vessel charge pressure	3.0 Bar	3.0 Bar
Insulation thickness	50mm	50mm
Voltage	230 - 240 V	230 - 240 V
DHW control stat	Heat pump controls	Heat pump controls
High limit stat	Mechanical 90°C	Mechanical 90°C
Electronic immersion control	Heat pump controls / third party timer	Heat pump controls / third party timer
DHW immersion heater duty	3kW (13 Amps 230V ac)	3kW (13 Amps 230V ac)
Primary (buffer) immersion heater duty	3kW (13 Amps 230V ac)	3kW (13 Amps 230V ac)
System circulating pump	Grundfos UPM3 8m head, A rated	Grundfos UPM3 8m head, A rated
Central heating zone valve	Honeywell 28mm, 2 port (1 No.)	Honeywell 28mm, 2 port (1 No.)
Domestic hot water zone valve	Honeywell 28mm, 3 port diverter (1 No.)	Honeywell 28mm, 3 port diverter (1 No.)
Central heating controller	3rd party controls	3rd party controls
Hot water controller	Heat pump controls	Heat pump controls
Magnetic filter	28mm magnetic filter	28mm magnetic filter
Flow setter valve	28mm inline flow setter (supplied separately)	28mm inline flow setter (supplied separately)
Mains inlet pressure regulator	3.0 Bar	3.0 Bar
Expansion relief valve	6.0 Bar	6.0 Bar
Primary pressure drop of cylinder pipework	16kPa @ 17 litres per minute	16kPa @ 17 litres per minute
Re-heat time	35 - 45 minutes	35 - 45 minutes

13

SECTION 13

Log book

Installation, commissioning and service record

Installation, Commissioning and Service Record Log Book

IT IS THE RESPONSIBILITY OF THE INSTALLER TO COMPLETE THIS LOGBOOK AND PASS IT ON TO THE CUSTOMER. FAILURE TO DO SO MAY INVALIDATE THE CYLINDER GUARANTEE

The code of practice for the installation, commissioning & servicing of mains pressure hot water storage

CUSTOMER DETAILS

NAME .....

ADDRESS .....

TEL No. .....

IMPORTANT

1. Please, keep the Log Book in a safe place for future reference.
2. This Log Book is to be completed in full by the competent person(s) who commissioned the equipment and then handed to the customer. When this is done, the Log Book is a commissioning certificate that can be accepted as evidence of compliance with the appropriate Building Regulations.
3. Failure to install and commission this appliance to the manufacturer's instructions may invalidate the guarantee.

The above does not affect your statutory rights.

Installer & commissioning engineer details

INSTALLER DETAILS

COMPANY NAME .....

DATE .....

ADDRESS .....

INSTALLER NAME .....

TEL No. .....

REGISTERED OPERATIVE ID CARD No. (if applicable) .....

COMMISSIONING ENGINEER (IF DIFFERENT)

NAME .....

DATE .....

ADDRESS .....

INSTALLER NAME .....

TEL No. .....

REGISTERED OPERATIVE ID CARD No. (if applicable) .....

13 **Log book** continued

Guarantee - WH CYLINDERS unvented hot water cylinder

The World Heat unvented vessel is guaranteed against material defect or manufacturing faults for a period of 3 years from the date of purchase. All other parts including, but not limited to factory fitted electrical elements (damage caused by lime scale excluded), expansion vessel, thermostats and valves are guaranteed against material defects or manufacturing faults for 2 years from the date of purchase. In the event of a replacement component being required World Heat will supply such part(s) free of charge and freight paid, on condition that the defective component is delivered, freight paid to World Heat within 2 weeks of written notice being given to World Heat of the defect. Such replacement parts shall be guaranteed under the terms of this guarantee to the unexpired period of the aforementioned 2 year period.

This warranty is conditional upon the World Heat cylinder being installed in compliance with the World Heat Installation & Maintenance Instructions, all current legislation, codes of practice and regulations governing the installation of unvented hot water cylinders in force at the date of installation and provided that:

1. The water quality shall be in accordance with European Council Directive 98/83 EC, or revised version at the date of installation, and is not fed with water from a private supply. Particular: Chloride content: Max. 250 mg/l; Sulphate content: Max. 250 mg/l; Combination Chloride/sulphate: Max. 300 mg/l (in total)
2. The World Heat cylinder is filled with water before turning on the electricity supply on to the immersion heater elements.
3. The log book commissioning certificate is completed at the time of installation.
4. The World Heat cylinder is serviced and maintained every 12 months and is marked as such in the benchmark logbook provided with the cylinder. Invoices for the maintenance work should be kept as proof of regular maintenance. Care should be taken of the logbook and invoices as they serve as the guarantee certificate for the cylinder.
5. If the newly fitted water heater is not in regular use then it must be flushed through with fresh water for at least 15 minutes. Open at least one hot water tap once per week, during a period of at least 4 weeks.
6. The World Heat unvented cylinder has not been modified in any way other than by World Heat and is only used for the storage of potable water.
7. No factory fitted parts have been removed for unauthorized repair or replacement.
8. Defects caused by frost, excess pressure, salt dehardner process, transient voltage, lightning strikes or incorrect installation, repair or use, are not covered by this warranty. A laboratory evaluation of possible defects can be ordered by the user, however the user must pay for this where the above-mentioned conditions have not been fulfilled. Evidence of the purchase date and the date of supply must also be submitted with your claim.
9. To validate the warranty the user must complete and return the warranty card supplied accompanied by proof of purchase within 60 days of purchase. Evidence of the purchase date and the date of supply / installation must be submitted.

This guarantee does not confer any rights other than those expressly set out above and does not cover any claims for consequential loss or damage. This guarantee is offered as an extra benefit and does not affect your statutory rights as a consumer.

IT IS THE RESPONSIBILITY OF THE INSTALLER TO COMPLETE THIS LOGBOOK AND PASS IT ON TO THE CUSTOMER. FAILURE TO DO SO MAY INVALIDATE THE CYLINDER GUARANTEE

13 **Log book** continued

Appliance & time control details

MANUFACTURER: World Heat .....

MODEL .....

CAPACITY ..... litres

SERIAL No. .....

TYPE: UNVENTED .....

TIME CONTROL ☐ PROGRAMMER ☐ TIME SWITCH

Commissioning procedure information

BOILER PRIMARY SETTINGS (INDIRECT HEATING ONLY) ALL BOILERS

IS THE PRIMARY A SEALED OR OPEN VENTED SYSTEM? ☐ SEALED ☐ OPEN

WHAT IS THE BOILER FLOW TEMPERATURE? ..... °C

ALL MAINS PRESSURISED SYSTEMS

WHAT IS INCOMING STATIC COLD WATER PRESSURE AT THE INLET TO THE PRESSURE REDUCING VALVE? ..... bar

HAS STRAINER (IF FITTED) BEEN CLEANED OF INSTALLATION DEBRIS? ☐ YES ☐ NO

HAS A WATER SCALE REDUCER BEEN FITTED? ☐ YES ☐ NO

WHAT TYPE OF SCALE REDUCER HAS BEEN FITTED? .....

UNVENTED SYSTEMS

ARE COMBINED TEMPERATURE AND PRESSURE RELIEF VALVE AND EXPANSION VALVE FITTED AND DISCHARGE TESTED? ☐ YES ☐ NO

IS PRIMARY ENERGY SOURCE CUT OUT FITTED (NORMALLY 2 PORT VALVE)? ☐ YES ☐ NO

WHAT IS THE PRESSURE REDUCING VALVE SETTING (IF FITTED)? ..... bar

WHERE IS THE OPERATING PRESSURE REDUCING VALVE SITUATED? ☐ YES ☐ NO

HAS THE EXPANSION VESSEL OR INTERNAL AIR SPACE BEEN CHECKED? ☐ YES ☐ NO

WHAT IS THE HOT WATER TEMPERATURE AT THE NEAREST OUTLET? ..... °C

UNVENTED SYSTEMS

DOES THE HOT WATER SYSTEM COMPLY WITH THE APPROPRIATE BUILDING REGULATIONS? ☐ YES

HAS THE SYSTEM BEEN INSTALLED AND COMMISSIONED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS? ☐ YES

HAVE YOU DEMONSTRATED THE OPERATION OF THE SYSTEM CONTROLS TO THE CUSTOMER? ☐ YES

HAVE YOU LEFT ALL THE MANUFACTURER'S LITERATURE WITH THE CUSTOMER? ☐ YES

COMPETENT PERSON'S SIGNATURE .....

CUSTOMER SIGNATURE .....

(To confirm demonstrations of equipment and receipt of appliance instructions)

NOTE

PLEASE FOLLOW THE INSTALLATION AND COMMISSIONING INSTRUCTIONS IN THE INSTALLATION MANUAL SUPPLIED WITH THE EQUIPMENT

13 **Log book** continued

Service interval record

SERVICE INTERVAL RECORD

It is recommended that your hot water system is serviced regularly and that your service engineer completes the appropriate Service Interval Records below.

NOTE

SERVICE PROVIDER Before completing the appropriate Service Interval Record below, please ensure you have carried out the service as described in the manufacturer's instructions and in compliance with all relevant codes of practice.

SERVICE 1

DATE: .....

ENGINEER NAME .....

COMPANY NAME .....

TEL No. .....

COMMENTS .....

.....

SIGNATURE .....

SERVICE 2

DATE: .....

ENGINEER NAME .....

COMPANY NAME .....

TEL No. .....

COMMENTS .....

.....

SIGNATURE .....

SERVICE 3

DATE: .....

ENGINEER NAME .....

COMPANY NAME .....

TEL No. .....

COMMENTS .....

.....

SIGNATURE .....

SERVICE 4

DATE: .....

ENGINEER NAME .....

COMPANY NAME .....

TEL No. .....

COMMENTS .....

.....

SIGNATURE .....

SERVICE 5

DATE: .....

ENGINEER NAME .....

COMPANY NAME .....

TEL No. .....

COMMENTS .....

.....

SIGNATURE .....

SERVICE 6

DATE: .....

ENGINEER NAME .....

COMPANY NAME .....

TEL No. .....

COMMENTS .....

.....

SIGNATURE .....

13 Log book continued

SERVICE 7

DATE: .....

ENGINEER NAME .....

COMPANY NAME .....

TEL No. .....

COMMENTS .....

.....

SIGNATURE .....

SERVICE 8

DATE: .....

ENGINEER NAME .....

COMPANY NAME .....

TEL No. .....

COMMENTS .....

.....

SIGNATURE .....

SERVICE 9

DATE: .....

ENGINEER NAME .....

COMPANY NAME .....

TEL No. .....

COMMENTS .....

.....

SIGNATURE .....

SERVICE 10

DATE: .....

ENGINEER NAME .....

COMPANY NAME .....

TEL No. .....

COMMENTS .....

.....

SIGNATURE .....

When all the above services have been completed, please contact your Service Engineer for an additional service interval record sheet.

Warranty certificate

WARRANTY CERTIFICATE

This World Heat Stainless Steel Cylinder is warranted to the owner for a period of 25 years from the date of dispatch from our factory.

This warranty protects against defects in manufacture of the cylinder only and does not cover corrosion, incorrect installation or any components supplied which carry a different length of warranty.

This certificate must be read in conjunction with our standard warranty terms & conditions which are available in our installation and service manual.

Installer Signature .....

Date .....

Owner Signature .....

Date .....

WORLD HEAT
CYLINDERS

World Heat Cylinders

U-Cyl+ universal pre-plumbed heat pump cylinders with electrical control box

PHONE 0161 343 8610

EMAIL sales@whcylinders.co.uk

WEB worldheat.co.uk

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SK16 4RN

MADE IN MANCHESTER

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