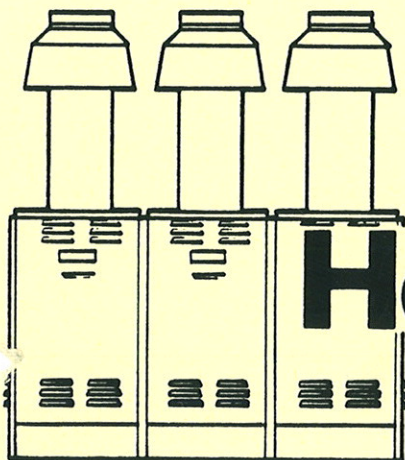
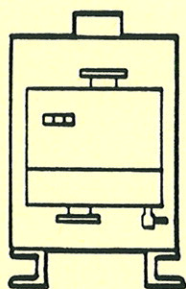


HAMWORTHY
heating products



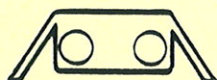
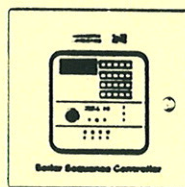
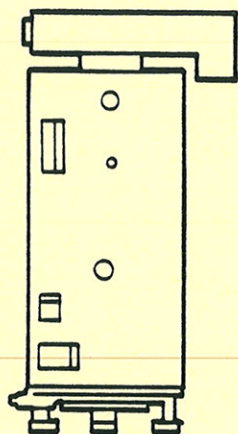
Hamworthy Heating Products



UR Series Low Line Modular Hot Water Boilers Installation, Commissioning and Maintenance Manual

(To be used in conjunction with
Manual for UR Series Modular
Hot Water Boilers Publication

No. 500001009)



BS 5750 Part 1
Certificate No. FM 10082

UR 265 LL

UR 384 LL

(LOWLINE)

MODULAR HOT WATER BOILERS
FOR HEATING AND HOT WATER SUPPLIES

INSTALLATION AND COMMISSIONING INSTRUCTIONS
SUPPLEMENT.

(Was Publication No. CDH 3129 0785)

RENUMBERED 500001010

A

FOR USE IN CONJUNCTION WITH THE MAIN UR SERIES
INSTALLERS GUIDE PUBLICATION NO. 500001009
AND APPENDICES A, B1, B2, C1 & D1.

DELIVERY

All the boilers are factory assembled, tested and delivered individually packed on a wooden pallet with integral draught diverter/collector hood pre-assembled or in a wood and wire crate with integral draught diverter/collector hood in a separate carton. A casing kit (either single or multi) complete with two modified casing panels is delivered with the boiler in a separate cardboard carton and a further small carton contains the thermostat assembly.

To check the boiler model supplied, the rating label is attached to the square gas manifold in front of the boilers.

DESCRIPTION

The boilers, manufactured in 2 sizes, UR 265 LL and UR 384 LL are generally as described in the Main Installers Guide with the following important differences:-

- a) The draught diverter is an integral construction with the collector hood. The appropriate draught diverter/ collector hood must be clamped to the top of the boiler without modification and no other draught diverter or stabilizer is required in the flue system.
- b) To suit the longer and deeper draught diverter/ collector hood, special top and rear top casing panels are supplied.
- c) The water flow connection is horizontal at the rear of the boilers and the pipework must extend beyond the rear of the draught diverter opening before any valves or unions are fitted.

CASING

The steel casings for the 2 boiler models can be supplied in single or multi casing form but each casing is supplied with additional top and rear top panels to accommodate the integral draught diverter. The casing for the UR 384 LL is deeper than that for the UR 265 LL and therefore the casings for the two models cannot be assembled together. For typical layouts, See Fig 2.

TECHNICAL DATA

See Table 1.

Note: It is advisable to make a combustion check at initial commissioning.
A flue gas sampling point is not provided but access to the main flue gas stream is available via the draught diverter.
Utilise a right angled probe to enter the collector hood from the diverter opening.

To check combustion, take a flue gas sample from the collector hood of each module in turn

For Natural Gas:-

Normal CO₂ = 8-9 % by volume

Normal CO level should not exceed 200 p.p.m. or 0.02% by volume.

All for dry gas sample.

FAULT FINDING

Refer to Main Installers Guide.

SERVICING

WARNING: ISOLATE THE ELECTRICAL SUPPLY AND TURN OFF THE GAS SERVICE COCK TO THE MODULE BEING SERVICED.

Refer to the Main Installers Guide apart from removal of the draught diverter/ collector hood, the procedure for which is as follows:-
Remove the large casing top panel. Check that the flue above the draught diverter is self supporting before removing section of connecting flue (a maintenance joint should have been provided for this purpose).
Loosen and remove the 2 tie bar top nuts and spacers (UR 265 LL) and the two rear securing nuts (UR 384 LL) and lift off the integral draught diverter / collector hood to expose the flue gas baffle and the module flue ways. Remove the flue gas baffle and brush through the flue ways diagonally in both directions using the brush provided to remove deposits from the finned surfaces. Re-assemble the flue components in the reverse order.

Note: A new rope seal should be fitted between the module top section and the integral draught diverter/ collector hood in order to ensure a gas tight seal.

RECOMMENDED SPARES

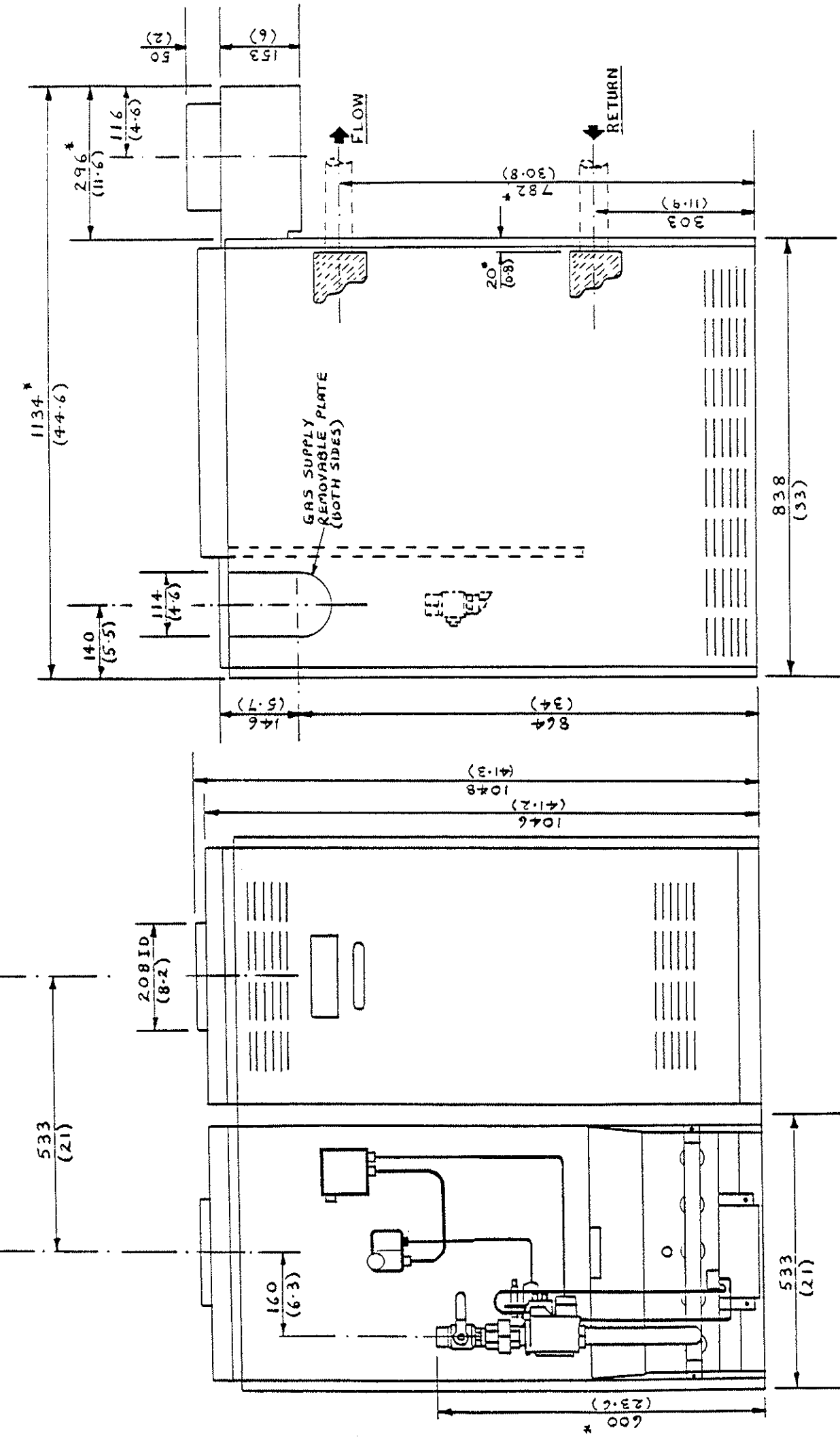
Refer to Main Installers Guide.

Note: Spares for the UR 265 LL are the same as those specified for the UR 300.

Spares for the UR 384 LL are the same as those specified for the UR 430.

TECHNICAL DATA - TABLE 1.

MODEL	UR 265 LL	UR 384 LL
Input (Gross)	77.5 kW 264,350 Btu/h	112.5 kW 384,000 Btu/h
Output (to water)	59.4 kW 202,800 Btu/h	86.2 kW 294,000 Btu/h
Approx. Weight (Dry) (Less Casing)	275 kg 606 lb	340 kg 750 lb
Maximum Water Pressure	6.8 bar 100 psi	6.8 bar 100 psi
Minimum Water Pressure - Modular Applications 82°C Flow with 11°C Δt.	0.42 bar 6.1 psi	0.42 bar 6.1 psi
Water Pressure Drop at 11°C Δt.	0.23m w.c. 9.25in w.g.	0.55m w.c. 21.51in w.g.
Nominal Gas Inlet Pressure	17.5 mbar 7 in w.g.	17.5 mbar 7 in w.g.
Maximum Gas Inlet Pressure	49 mbar 19.7 in w.g.	49 mbar 19.7 in w.g.
Gas Burner Setting Pressure <i>AND PILE GAS VALVE</i>	10.8 mbar 4.3in w.g.	7.7 mbar 3.1in w.g.
Injector Diameter <i>THE SAME.</i>	3.20 mm 0.1260 in	4.20 mm 0.1654 in
Injector Marking	320	420
No. Of Burners	5	5
Input Gas Rate Natural Gas GCV : 39.3 MJ/m ³ (1035 Btu/ft ³)	7.23 m ³ /h 255.4 ft ³ /h	10.50m ³ /h 371.0 ft ³ /h
Water Flow Rate for 11°C Rise.	77.6 l/min 17.1 UK gal/min	112.5 l/min 24.8 UK gal/min
Minimum water flow rate 22°C Rise.	38.8 l/min 8.5 UK gal/min	56.3 l/min 12.4 UK gal/min
Approx. Nett Exhaust Gas Temperature.	228 °C 442 °F	217 °C 423 °F
Approx. Exhaust Gas Volume at N.T.P.	98 m ³ /h 3450 ft ³ /h	147 m ³ /h 5200 ft ³ /h



UR 265 LL DIMENSIONED VIEWS (SHOWN AS A MUR 530 LL - 2 x UR 265 LL IN 'A' BATTERY)

DIMENSIONS IN MILLIMETRES (INCHES)

DIMENSIONS MARKED * ARE SUBJECT TO SLIGHT VARIATION

An altitude gauge and a temperature gauge should be fitted to the flow header beyond the entry of the last module but before any take-offs to different circuits. A Rc 3/4 (3/4 in BSP) plugged tapping is available for use on these modules for relief valves/ gauges and the casing top panel contains a corresponding cut-out.

On filling, the system should be flushed out until satisfactory conditions are attained. This is especially true of an old system when only the boilers are being changed. If any doubt exists regarding the amount of debris in the system, a filter should be fitted on the return header. When full, remove air from the system. Check for leaks and repair.

b) GAS

Refer to Main Installers Guide.

FLUES

Where the integral draught diverter/ collector hood is supplied in a separate carton it must be fitted to the module in the following manner:-

- a) Remove flue gas baffle located on top of the module and check module flueways are clear.
- b) Reposition the flue gas baffle ensuring that it is laying flat on the top module section.
- c) Ensure the rope seal is in position in the groove around the top section.
- d) For the UR 265 LL - remove the topmost nuts and spacers of the two tie rods (one front and one rear on the module). Position integral draught diverter/ collector hood on the tie rods and rope seal with boiler outlet spigot at rear. Replace spacers and nuts on tie bars and tighten to ensure a gas tight seal - do not over tighten.

For the UR 384 LL - remove the topmost nuts and spacers from the two front tie rods - ensure the securing strap is bolted down to the top casting via the two rear tie bars and remove the nuts from the welded bolts at either end of the strap. Position the integral draught diverter/ collector hood on front tie bars, rope seal and rear strap bolts with the flue outlet to the rear. Replace the nuts and spacers on the front tie bars and the nuts on the rear strap bolts and tighten to ensure a gas tight seal - do not over tighten.

The flue system should be erected with the module connecting leg fitting inside the draught diverter spigot and the joint sealed with a suitable material. The spigot is designed with an integral land of 6mm (0.25in) to prevent the connecting flues from penetrating the diverter and causing an obstruction.

Note 1: The flue system must be self supporting. Check that the flue and chimney are clear from any obstruction.

Note 2: The draught diverter is designed to operate with the lagged water flow pipe immediately beneath it but it is important that the opening is not further obstructed in any way.

CASING

The casing carton contains a standard single or multi casing and may be marked UR 250/UR 300 which is suitable for the UR 265 LL or marked UR 430 which is suitable for the UR 384 LL. The casing should be assembled in accordance with the instructions provided within each carton except that the L H and R H top panels together with the top rear panel should be replaced by the modified top and top rear panels supplied.

The assembly should be delayed until the installation is complete to avoid damage but it should be noted that the inside front panel which is normally delivered packed inside the module crate, needs to be in position before the thermostat and hence before the electrical installation can be completed. The pipe lagging should be terminated 50 - 75mm (2-3in) short of the casing to enable the panels to be removed if necessary.

ELECTRICAL

Refer to Main Installers Guide.

MODE OF OPERATION

Refer to Main Installers Guide

COMMISSIONING

Module Checks

Procedure for Initial Firing and Adjustment

Refer to Main Installers Guide.

GENERAL REQUIREMENTS

Refer to Main Installers Guide

WATER SYSTEM

For details of feed water quality, time clock control and minimum water system pressure, refer to Main Installers Guide.

ADEQUATE WATER FLOW

Hamworthy modular boilers are designed as quick response, low water content units, to run continuously with a minimum or no operating problems. Care should be taken in the initial design and layout having due regard for adequate water flow through the boilers and the influence of the system controls.

Normal and minimum recommended water flow rates are shown in Technical Data - Table 1. The control system and valves, where fitted should be regulated to avoid lower flows occurring. The flow rate corresponding to a 22°C temperature rise across the boiler is the minimum recommended flow at any time. For module pressure drops the UR 300/ UR 430 curve should be used from Fig 3 of the Main Installers Guide.

AIR FOR COMBUSTION AND VENTILATION

Refer to Main Installers Guide

FLUE SYSTEM

The Hamworthy UR LL Series modular boilers are designed to be used with natural draught flues. Flue system should be designed in accordance with current regulations and with reference to the British Gas Publication "Flues for Commercial and Industrial Gas Fired Boilers and Air Heaters".

The following points should be noted:-

- a) Each module must have its appropriate integral draught diverter/collector hood fitted correctly and in an unmodified condition before connection to the flue system.
- b) The bottom of the flue header should be at least 500mm (20in) above the integral draught diverter skirt bottom, which is equivalent to approximately 350mm (14in) of vertical flue between the flue outlet and the header.

- c) These vertical connector flues from each module should contain removable maintenance sections to allow removal of the integral draught diverter/ collector hood for cleaning.
- d) The flue system must be self supporting in the correct position to avoid strain occurring on the integral draught diverter/ collector hood together with the module sections beneath, and to enable its removal for cleaning.
- e) The modules should be located as near the chimney as possible, the nearest being not more than 2 m (6ft) away.
- f) The flue system should be designed to achieve a suction of 0.125 mbar (0.05in w.g.) at all times at the flue outlet on each module in the bank. In some instances, mechanical assistance may be necessary. The modules are suitable for connection to a fan diluted flue system, refer to British Gas Publication "Flues for Commercial and Industrial Gas Fired Boilers and Air Heaters".
- g) The approximate volume and temperature of the exhaust gases used for design of the flue system are shown in Technical Data - Table 1.

INSTALLATION INSTRUCTIONS

Location

Refer to Main Installers Guide

CONNECTIONS

a) Water

Each module has one flow and one return tapping horizontally at the rear. The modules should be connected by flow and return headers but sufficient length of connecting pipe should be allowed to clear the casing on the return, and the draught diverter opening on the flow before connecting into valves, unions and headers. The headers should be connected to the system in a "reverse return" arrangement (the water flow in each header is in the same direction) to ensure equal flow through each module - See Fig 2.

Note: Header connections forced to "mate" can cause nipple leakage. Each isolatable module or bank of modules should be fitted with a drain cock to BS 2879 at the lowest point, a pressure relief valve and an open vent.

UR LOWLINE SERIES MODULAR HOT WATER BOILERSFOR USE ON PROPANE AND BUTANE

To be used in conjunction with Main Installers Guide - Publication No.500001009
Appendix A.

DESCRIPTION

The Hamworthy lowline boilers, models UR 265 LL and UR 384 LL can be supplied as standard to fire commercial Propane or Butane gases. The boilers are very similar to the natural gas models, the differences being the same as those outlined in Appendix A' of the Main Installers Guide.

TECHNICAL DATA

MODEL	UR 265 LL	UR 384 LL
Input (Gross)	77.5 kW 264,350 Btu/h	112.5 kW 384,000 Btu/h
Input Gas Rate-Propane	2.97 m ³ /h 104.9 ft ³ /h	4.31 m ³ /h 152.4 ft ³ /h
Input Gas Rate-Butane	2.34 m ³ /h 82.6 ft ³ /h	3.40 m ³ /h 120.0 ft ³ /h
Output (to water)	59.4 kW 202,800 Btu/h	86.2 kW 294,000 Btu/h
Gas Inlet Pressure Propane	37 mbar 14.85 in w.g.	37 mbar 14.85 in w.g.
Gas Inlet Pressure Butane	28 mbar 11.25 in w.g.	28 mbar 11.25 in w.g.
Injector Diameter Propane/Butane	1.95 mm 0.0768 in	2.40 mm 0.0940 in
Injector marking	195	240
No. Of Bar Burners	5	5

Gas rates shown are based on gross calorific values as follows:-

Propane 95.75 MJ/m³ (2,520 Btu/ft³)
Butane 121.5 MJ/m³ (3,200 Btu/ft³)

All other data is as shown for natural gas models in Table 1 of this publication.

GENERAL REQUIREMENTS - INSTALLATION - COMMISSIONING - SERVICING.

Refer to Appendix A, the Main Installers Guide and the lowline supplement.

ADDITIONAL RECOMMEND SPARES

In additional to those relevant items in Appendix A.

<u>H.E.L. Part Number</u>	<u>Description</u>
330513527	195 Injector - UR 265 LL
330513519	240 Injector - UR 384 LL

I N S T A L L E R S G U I D E S U P P L E M E N T

UR LOWLINE SERIES MODULAR HOT WATER BOILERS

FITTED WITH FULLY AUTOMATIC CONTROLS FIRING NATURAL GAS

To be used in conjunction with the Main Installers Guide Publication No. 500001009; Appendix B1.

DESCRIPTION

The Hamworthy lowline boiler models, UR 265 LL and UR 384 LL can be supplied as standard fitted with Fully Automatic controls which dispense with the permanent pilot, providing instead spark ignition and flame proving of the centre burner bar which only ignites when the boiler is called to fire. The instructions in Appendix B1 of the main installers Guide concerning the Fully Automatic units apply equally to the lowline boilers but the following points should be noted:-

- 1) The technical data for the Fully Automatic lowline boilers firing natural gas, particularly the main injector diameter and the gas setting pressure, is the same as that shown in Table 1 of this publication for the standard lowline models.
- 2) Additional recommended spares are as shown in Appendix B1 of the main Installers Guide except for the injectors.

Note; Spares for the UR 265 LL Fully Automatic are the same as those specified for the UR 300 Fully Automatic.

Spares for the UR 384 LL Fully Automatic are the same as those specified for the UR 430 Fully Automatic.

I N S T A L L E R S G U I D E S U P P L E M E N T

UR LOWLINE SERIES MODULAR HOT WATER BOILERS

FITTED WITH FULLY AUTOMATIC CONTROLS FIRING PROPANE OR BUTANE

To be used in conjunction with the Main Installers Guide - Publication No. 500001009 - Appendix B2, and Appendix A LL of this publication.

DESCRIPTION

The Hamworthy lowline boilers models UR 265 LL and UR 384 LL can be supplied as standard with Fully Automatic Controls, and suitable for firing commercial Propane and Butane gases. The instructions in Appendix B2 of the Main Installers Guide apply equally to the Lowline boilers but the following points should be noted;-

- 1) Both the UR 265 LL and UR 384 LL employ the Honeywell VR 4900 C and VR4705 A gas control valves.
- 2) The technical data for the fully automatic lowline boilers firing Propane or Butane, particularly the injector diameter and the setting pressure is different from that shown in the technical data table of Appendix A LL of this publication. (See table overleaf).
- 3) Additional recommended spares are as shown in Appendix B2 of the main installers guide except for the injectors.

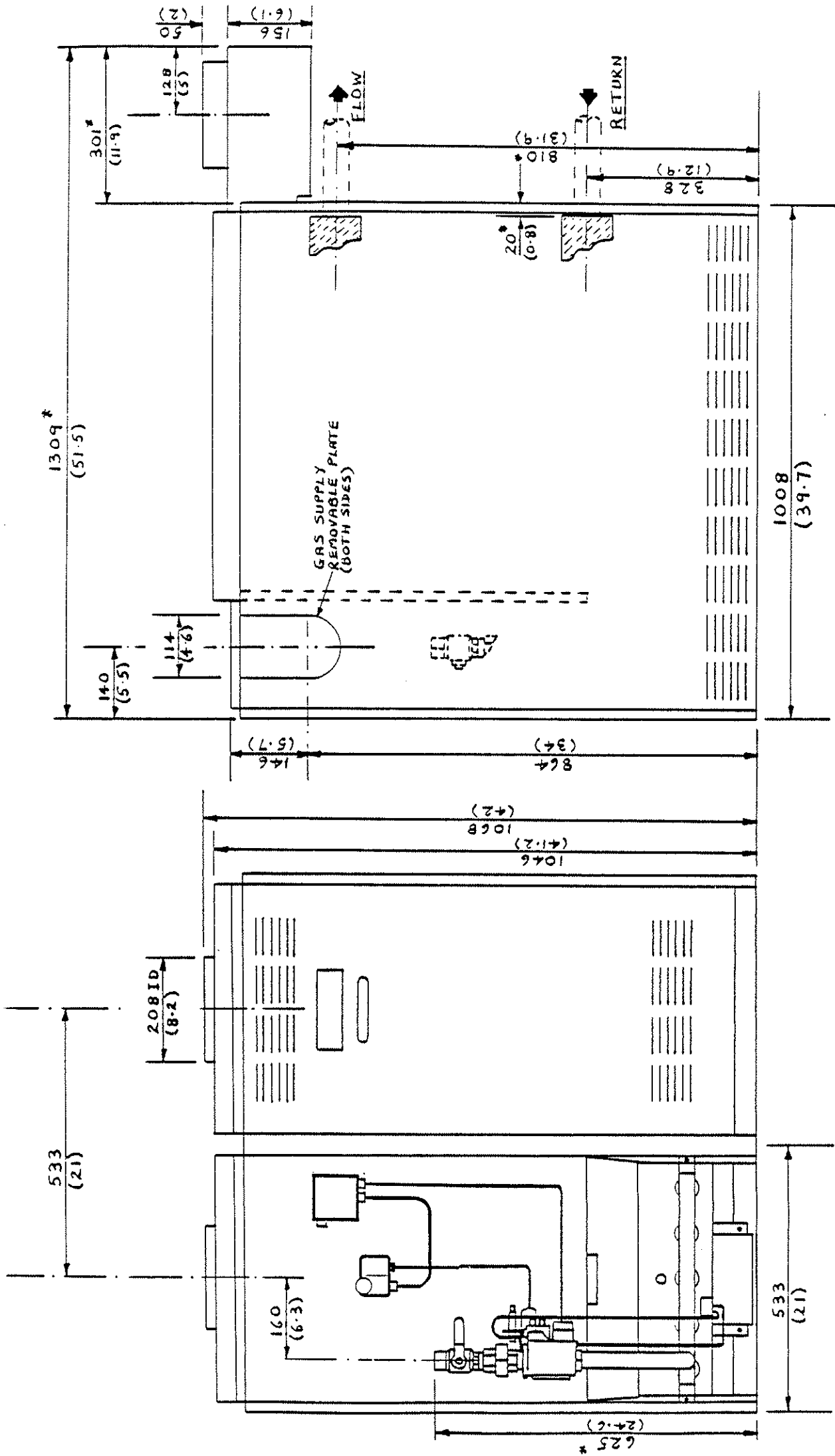
Note: - Spares for the UR 265 LL Fully Automatic LPG are the same as those specified for the UR 300 Fully Automatic LPG.

Spares for the UR 384 LL Fully Automatic LPG are the same as those specified for the UR 430 Fully Automatic LPG.

TECHNICAL DATA	UR 265 LL	UR 384 LL
PILOT BURNER (CENTRE) SETTING PRESSURE PROPANE	21.4 mbar 8.59" wg	22.3 mbar 8.95" wg
PILOT JET SIZE (CENTRE BURNER)	2.15 mm 0.0846 inches	2.60 mm 0.1024 inches
MAIN BURNERS SETTING PRESSURE PROPANE	31.6 mbar 12.69" wg	30.7 mbar 12.32" wg
MAIN JET SIZE	1.95 mm 0.0768 inches	2.40 mm 0.0945 inches
PILOT BURNER (CENTRE) SETTING PRESSURE BUTANE	16.5 mbar 6.62" wg	17.2 mbar 6.91" wg
PILOT JET SIZE (CENTRE BURNER)	2.15 mm 0.0846 inches	2.60 mm 0.1024 inches
MAIN BURNERS SETTING PRESSURE BUTANE	24.4 mbar 9.80" wg	23.7 mbar 9.51" wg
MAIN JET SIZE	1.95 mm 0.0768 inches	2.40 mm 0.0945 inches

ADDITIONAL RECOMMENDED SPARES

330513048 UR 265 LL - 215 Injector - (Pilot/Centre Burner)
532902003 UR 384 LL - 260 Injector - (Pilot/Centre Burner)



UR 384LL DIMENSIONED VIEWS (SHOWN AS A MUR 768LL - 2 x UR 384LL IN 'A' BATTERY)

DIMENSIONS IN MILLIMETRES (INCHES)

DIMENSIONS MARKED * ARE SUBJECT TO SLIGHT VARIATION

CONNECTIONS

- Water: Water Flow Rc2 (2in BSP Internal thread taper)
 Water Return Rc2 (2in BSP Internal thread taper)
- Gas: Gas cock Rc 3/4 (3/4in BSP Internal thread taper on gas cock)
- Electrical: Electrical supply 240V 50Hz single phase fused at 5 amps.
- Flue: Nominal flue size UR 265 LL and UR 384 LL - 200mm (8in)
- Dimensions: Detailed dimensions of both boilers are shown in Figs 1a & 1b.

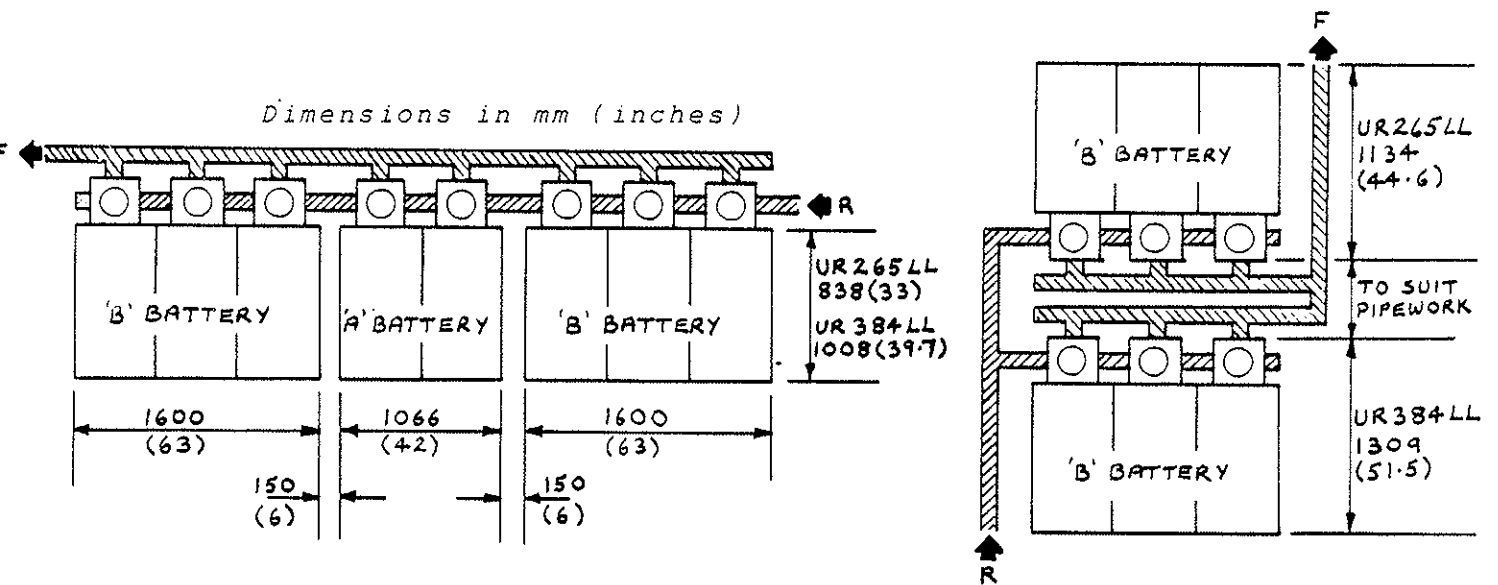


Illustration showing recommended reverse return water flow and typical battery layouts

Fig. 2

NOTE: Banks containing two boiler modules are designated 'A' Batteries.
 Banks containing three boiler modules are designated 'B' Batteries.

I N S T A L L E R S G U I D E S U P P L E M E N T

UR LOWLINE SERIES MODULAR HOT WATER BOILERS

PILOT FLAME FAILURE INDICATION

Pilot Flame Failure indication can be fitted to the UR Lowline boilers in exactly the same manner as that described in Appendix C1 of the Main Installers Guide - Publication No. 500001009



Customer Services

CUSTOMER SERVICES

APPLICATION

To supplement the detailed Technical Information Booklets, technical advice on the application and use of the Hamworthy Heating Product Range is available from Poole and through the regional Sales offices and Accredited Agents.

COMMISSIONING

A commissioning service is offered for all the Hamworthy Heating Products. Commissioning by the manufacturer ensures the most efficient performance is achieved safely and ensures correct operation.

Hamworthy commissioning reports are detailed and definitive. Such information reports on the original status of the plant are essential for future routine maintenance and fault finding situations.

ROUTINE SERVICE

Hamworthy offer routine service contracts for all products. Planned maintenance of equipment by routine servicing reduces operational costs considerably below that associated with repair or breakdown approach. Regular servicing by Hamworthy trained staff ensures that all equipment is operating to optimum efficiency.

The frequency of visits to maintain installations up to required level is variable depending upon the equipment type and usage.

BREAKDOWN SERVICE, REPAIR, REPLACEMENT

Even when the commissioning and routine servicing has been carried out to the highest standard there are always occasions when the unexpected breakdowns occurs. Hamworthy provide a rapid response breakdown, repair or replacement service through its regional offices and Accredited Agents located throughout the UK.

SPARE PARTS

A comprehensive spares parts service is operated from our head office at Poole providing delivery, even for out of date items in most cases. In some instances spares may be available from regional offices and Accredited Agents.

Delivery of parts and components is normally from stock within 7 days. However, a 24 hour service is available for breakdowns and emergencies for the additional cost of the courier.

For your spares enquiries and orders please contact Carol Miller on 0202 665566.

To help Carol and her staff help you, please give as much detail as possible of the product type, *serial number* or any other identifying marks or codes.

HEAD OFFICE (DEPOT & WORKS)
HAMWORTHY HEATING LIMITED
FLEETS CORNER,
POOLE, DORSET BH17 7LA
TEL: 0202 665566
FAX: 0202 665111

OFFICES:

MIDLANDS

HAMWORTHY HEATING LIMITED
Shady Lane,
Great Barr,
Birmingham B44 9EX
Tel: 021 360 7000
Fax: 021 325 0890

ACCREDITED AGENTS:

BERKS, BUCKS, OXON,
SURREY & WEST LONDON
FOWLER COMBUSTION CO. LIMITED
18 Oxford Road,
Wokingham,
Berks RG11 2XY
Tel: 0734 784350 Fax: 0734 771497

SOUTH (CENTRAL)

DRIVER ENGINEERING LIMITED
778 Wimborne Road,
Moordown,
Bournemouth BH9 2DX
Tel: 0202 525140 Fax: 0202 536442

BRISTOL AREA & SOUTH WALES

Mr J Hyde,
26 Waterloo Street,
Clifton,
Bristol BS8 4BP
Tel: 0272 744607

NORTH WEST (PART)

GILLIES MODULAR SERVICES
210-218 New Chester Road,
Birkenhead,
Merseyside L41 9BG
Tel: 051 666 1030

NORTH EAST (PART)

ALLISON HEATING PRODUCTS
12 Sunnyside Lane,
Cleadon Village,
Sunderland,
Tyne & Wear SR6 7XB
Tel: 091 536 2562

SCOTLAND

McDOWALL MODULAR SERVICES
97a Hawthorn Street,
Glasgow G22 6JD
Tel: 041 336 8795 Fax: 041 336 4444

NORTHERN IRELAND

McCAIG COLLIM LIMITED
94 Dargan Crescent,
Duncrue Industrial Estate,
Belfast BT3 9JP
Tel: 0232 777788


HAMWORTHY
Heating Products

Offices and Agents throughout the world