



the EcoKnight™ range

Our high efficiency gas fired stainless steel condensing water heaters



Authorised User No. 0043



Lochinvar®
High Efficiency Water Heaters and Boilers

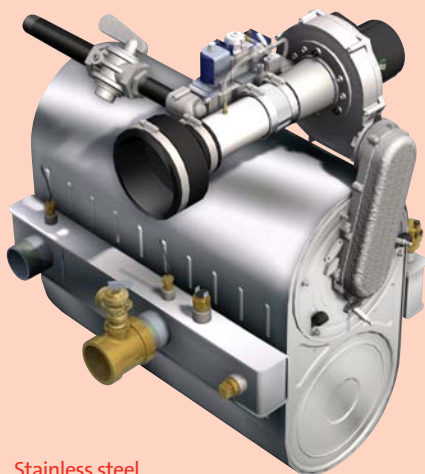
Lochinvar EcoKnight™ water heaters

EcoKnight™ is a range of fully condensing gas fired stainless steel water heaters available in 8 models with outputs ranging from 709 to 3819 litres/hour (based upon a temperature rise of 50°C). EcoKnight™ has low NO_x emissions (less than 36ppm) and can achieve efficiencies up to 98% gross CV helping reduce energy usage and carbon emissions. All models are supplied for installation with separate storage vessels. EcoKnight™ water heaters offer a highly efficient solution for a wide range of commercial and industrial hot water applications and are supported by a 5 year heat exchanger warranty.

Stainless steel condensing heat exchanger

At the heart of the EcoKnight™ water heater is a grade 316L stainless steel heat exchanger with a design that produces superior resistance to corrosion caused by condensation from low water temperature.

The lower the water temperature the more effective is the performance of the EcoKnight water heater, enabling it to operate at a high level of efficiency throughout its life.



Stainless steel heat exchanger

Fully modulating pre-mix burner with 5:1 turndown

EcoKnight™ features advanced gas/air ratio control combustion technology, permitting fan speed to constantly adjust the volume of fuel and air entering the burner. EcoKnight™ is equipped with fully modulating combustion with 5:1 turndown. This means EcoKnight™ can fire as low as 20% of maximum input when water heating demand is lowest, and increase the firing rate up to 100% as demand increases. As a result efficiencies up to 98% (Gross CV) are achievable.

The key to maximising the potential of the EcoKnight™ is in the effectiveness of the "on board" SMART SYSTEM control.

SMART SYSTEM™ control features

- **Easy to use** - simplifies set-up and service procedures and includes various levels of password security
- **Built-in sequencer** - controls up to 8 EcoKnight™ water heaters without the added cost of a separate third party controller
- **Internal control for pump(s)** - full control over primary, system return and de-stratification pumps
- **Advanced time and temperature controls** - time control and anti-legionella* functions built in
- **2 line 16 character display** - system status and diagnostic data in words not code
- **Service reminders** - automatically notifies when maintenance is due
- **PC connections** - for graphic representation of system trends and monitoring



**SMART
SYSTEM™**



SMART SYSTEM™ control user interface
Data in words not code

Note:

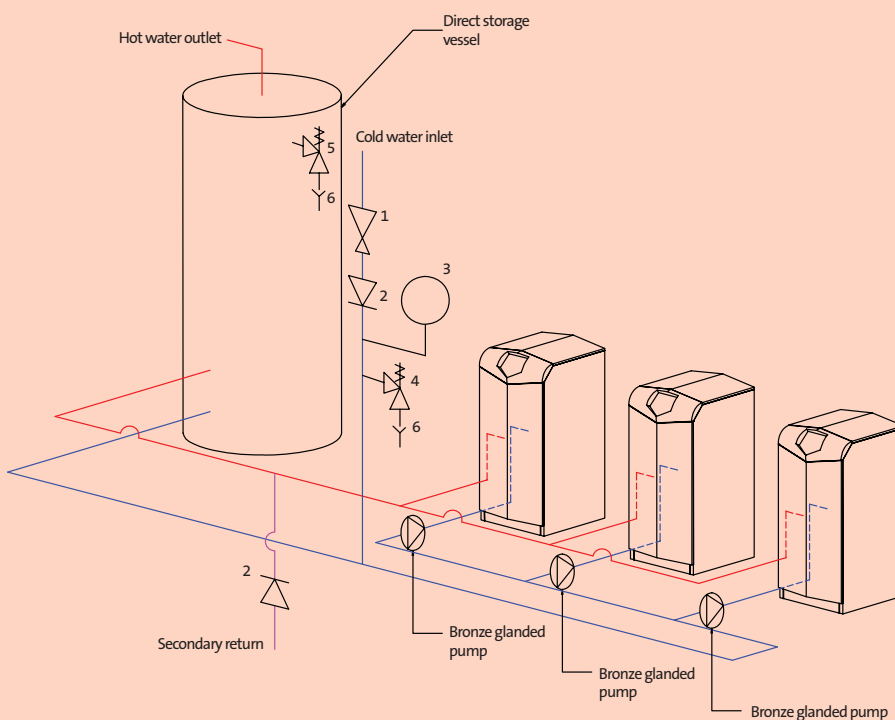
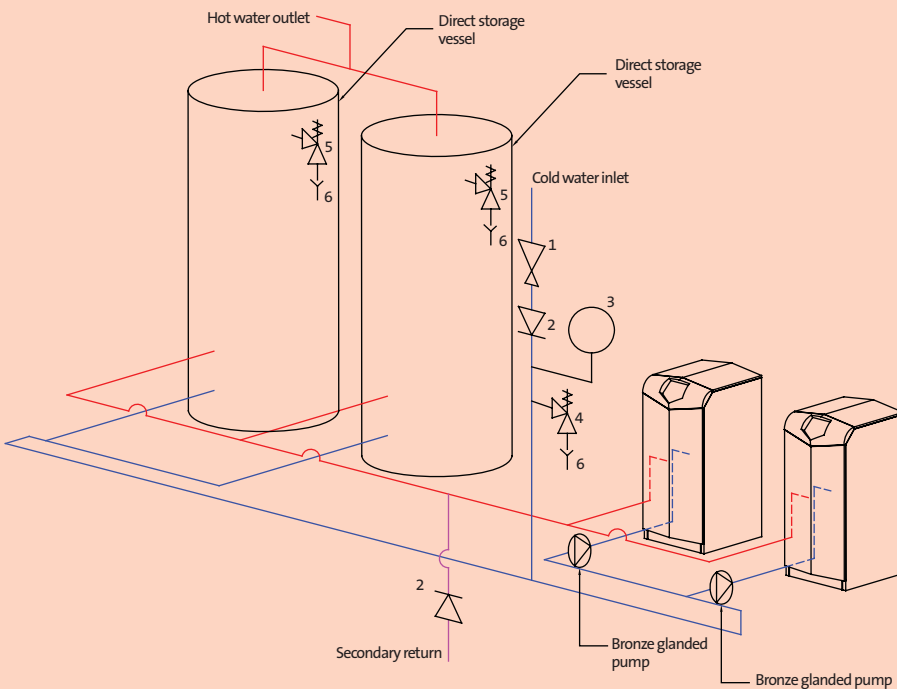
*Anti-legionella function requires tank temperature sensor to be fitted.

Water heater storage vessel combinations

The design of the EcoKnight™ water heater allows for installation flexibility, with numerous water heater / storage vessel combinations possible.



LST storage vessels
4 models with capacities
ranging from 300 to
1155 litres



Legend

1. Pressure reducing valve
2. Non-return valve
3. Expansion vessel
4. Pressure relief valve
5. Pressure & temperature relief valve
6. Tundish for discharge of relief valves

These schematics are given only as examples. We can provide assistance with your design therefore should you be considering alternative combinations please contact us on:

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Storage vessels

EcoKnight™ water heaters are supplied with direct storage vessels from the well-established LST range, which are available in 4 models with capacities ranging from 300 to 1155 litres. Larger capacity vessels are available to 'special order'.

LST storage vessels are constructed from enamel-lined steel, and offer durability and longevity with cathodic protection being provided by sacrificial magnesium anodes. Correx® non sacrificial electrical anodes are also available.

All models include a 100mm diameter hand hole clean out opening and models LST166 and LST250 also benefit from the facility to install back-up immersion heaters giving the added flexibility of alternative fuel standby.

Lochinvar LST storage vessels are specifically designed for use with their direct gas fired water heaters and carry a 5-year warranty against tank leakage.

Note:

All EcoKnight™ water heaters should be installed with a suitably sized circulating pump and separate storage vessels. Both these items are available as ancillary options.

LST storage vessels - technical specifications

Model		LST66	LST100	LST166	LST250
Capacity	Litres	297	450	747	1155
Height	mm	1492	1587	1955	2082
Diameter	mm	609	711	812	1016
Weight Empty	kg	84	157	227	451
Weight Full	kg	381	607	974	1606
Flow/Return	BSP	2"	2"	2½"	3"
Hot Outlet	BSP	2"	2"	2"	2"
Relief Valve Tapping	BSP	1"	1"	1"	1¼"

Flue options

A wide range of flue options are available, including:

- Room sealed concentric balanced flue
- Room sealed twin pipe balanced flue
- Conventional flue

Maximum equivalent flue runs

Concentric balanced flue	30m*
Twin pipe balanced flue	60m**
Conventional flue	60m

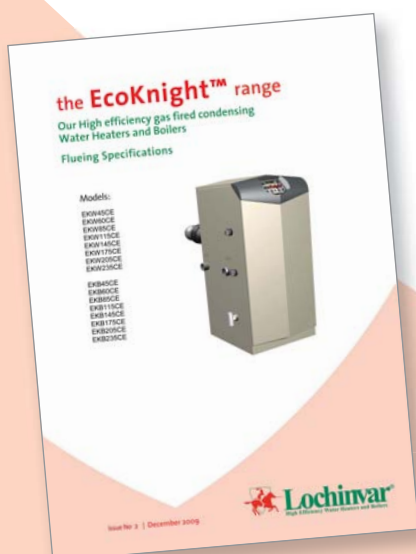
Note:

*13m for EKW145CE

**Combined length of both inlet and exhaust

EcoKnight™ Model	Concentric Flue Dia. (mm)	Twin pipe Flue Dia. (mm)	Conventional Flue Dia. (mm)
EKW45CE	80/125	80-80	80
EKW60CE	80/125	80-80	80
EKW85CE	100/150	100-100	100
EKW115CE	100/150	100-100	100
EKW145CE	100/150	100-100	100
EKW175CE*	150/220	150-150	150
EKW205CE*	150/220	150-150	150
EKW235CE*	150/220	150-150	150

Note: * When using the Concentric flue option the flue system between the water heater and the termination point is run as a twin pipe system.

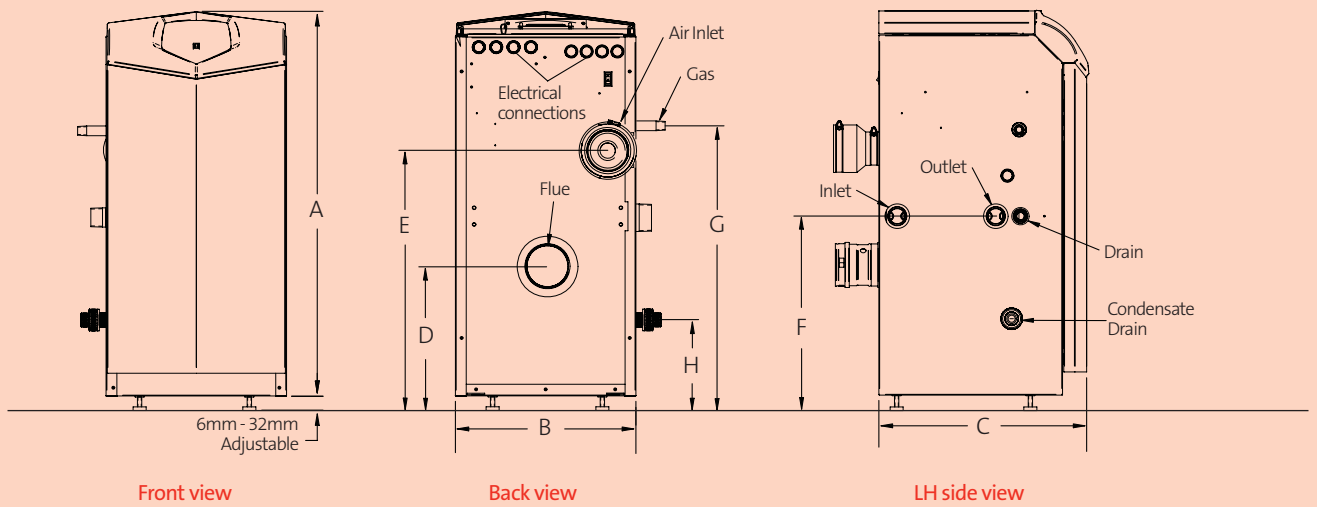


Details of standard component assemblies for all models are available in our Flueing Specifications guide. For a copy please visit our website or contact us on:

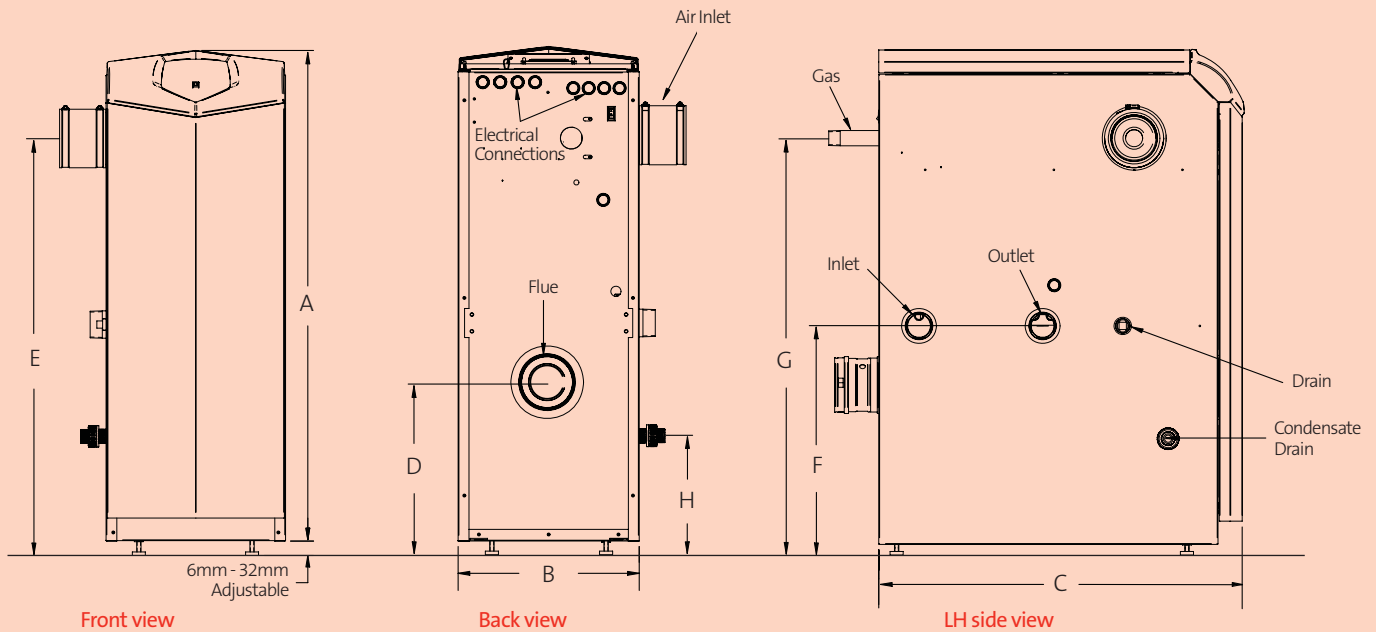
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EcoKnight™ water heaters - dimensions

EKW45CE | EKW60CE



EKW85CE | EKW115CE | EKW145CE | EKW175CE EKW205CE | EKW235CE



Model	EKW45CE	EKW60CE	EKW85CE	EKW115CE	EKW145CE	EKW175CE	EKW205CE	EKW235CE
A Height	845	845	1080	1080	1080	1080	1080	1080
B Width	394	394	394	394	394	394	394	394
C Depth	457	565	502	750	794	921	1022	1149
D Flue outlet	286	286	349	349	349	349	349	349
E Air inlet	540	540	864	864	826	914	914	914
F Water connections	394	394	476	476	476	476	476	476
G Gas connection	584	584	787	864	889	832	832	832
H Condensate outlet	165	165	229	229	229	229	229	229

EcoKnight™ water heater features

- Fully modulating pre-mix burner
- Stainless steel heat exchanger
- Anti-legionellae function
- Suitable for unvented and open vented installation
- Concentric, balanced twin pipe or conventional flue installation
- Small footprint
- Lightweight construction
- Lower than 36ppm NO_x
- Easy access cabinet
- Available for Natural Gas or LPG

EcoKnight™ water heater ancillary options

- Matched primary circulating pump
- Direct storage vessels
- Unvented / boosted water system kits
- Horizontal or vertical room sealed concentric flue assemblies
- Conventional flue assemblies
- Room sealed twin pipe flue assemblies
- Pre-fabricated interconnecting pipework
- Condensate neutralisation kit

Technical specification

Water Heater Model		EKW45CE	EKW60CE	EKW85CE	EKW115CE	EKW145CE	EKW175CE	EKW205CE	EKW235CE
Nominal Input (Net)	kW	39.6	55.4	75.2	105.3	132.0	158.4	184.9	211.3
Nominal Input (Gross)	kW	44.0	61.5	83.5	116.9	146.5	175.8	205.2	234.5
Gas Flow Rate									
(Natural Gas)	m ³ /hr	4.2	5.9	8.0	11.1	14.0	16.8	19.6	22.3
Nominal Output	kW	41.2	59.0	80.2	110.7	143.2	168.9	197.8	222.1
Efficiency									
(Part L2 Gross CV)	%	93.8	95.9	96.1	94.7	97.8	96.1	96.4	94.7
NO _x Emission, (corrected to 0% O ₂)	ppm	32	33	33	35	36	23	23	23
NO _x Emission, (corrected to 0% O ₂)	mg/ kWh	56.4	57.5	58.8	60.8	62.6	41.0	41.0	41.0
Storage Losses	kWh /l/day	not applicable							
Recovery rate @ 44°C	l/hr	806	1153	1567	2164	2768	3302	3865	4338
Recovery rate @ 50°C	l/hr	709	1014	1379	1904	2436	2905	3401	3819
Recovery rate @ 56°C	l/hr	631	902	1227	1694	2192	2508	2937	3300
Dimensions (Height)	mm	845	845	1080	1080	1080	1080	1080	1080
Dimensions (Width)	mm	394	394	394	394	394	394	394	394
Dimensions (Depth)	mm	457	565	502	686	794	921	1022	1149
Water Content	Litre	4.9	6.4	9.1	12.9	15.9	15.9	18.9	21.6
Weight (Empty)	Kgs	75	79	102	129	138	154	168	184
Weight (Full)	Kgs	80	85	111	142	154	170	187	206
Flow Connection	BSP	1 1/4"	1 1/4"	2"	2"	2"	2"	2"	2"
Return Connection	BSP	1 1/4"	1 1/4"	2"	2"	2"	2"	2"	2"
Gas Connection	BSP	1/2"	1/2"	3/4"	1"	1"	1"	1"	1"
Flue Sizes		see data table on page 4							
Electrical Requirements		230V/1PH/50Hz							
Power Consumption	W	120	144	180	180	204	322	322	322
CO ₂ - Flue Gas	%	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Maximum Flue Gas Temperature	°C	120	120	120	120	120	120	120	120
Waterside Pressure Loss @ Minimum Flow Rate	kPa	71.8	65.8	59.5	83.5	77.8	77.5	96.1	92.2
Minimum Flow Rate	l/s	0.98	1.17	1.80	2.82	3.19	3.30	4.00	4.20
Max. Outlet Temp.	°C	80	80	80	80	80	80	80	80
Working Pressure									
Min/Max	bar	0.5/11.0	0.5/11.0	0.5/11.0	0.5/11.0	0.5/11.0	0.5/11.0	0.5/11.0	0.5/11.0



Lochinvar Ltd
7 Lombard Way
The MXL Centre
Banbury
Oxon
OX16 4TJ

Tel: +44 (0) 1295 269981
 Fax: +44 (0) 1295 271640
 Email: sales@lochinvar.ltd.uk

www.lochinvar.ltd.uk



Lochinvar Limited reserve the right to change specifications without prior notice.

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