



CAVALIER ECO

STORAGE-TYPE ELECTRIC WATER HEATERS



KEY FEATURES

- Fully compatible with renewable technologies
- Inbuilt control system enables custom efficiency programming
- Live fault reporting to enable quick repair
- Economy mode allows dual set point controls to maximise efficiency
- Peak 1 hour supply 288-1081 litres/hour @50°C temperature rise
- Zero on site emissions
- Up to 9 electrical elements with cascade control
- BMS connections a standard
- Built in redundancy to eliminate downtime



Lochinvar Cavalier Eco Electric storage water heaters

Cavalier Eco electric storage water heaters are floor standing and available in seven models with storage capacities ranging from 173 to 264 litres. They can provide hot water recovery rates from 150 to 870 litres per hour, based upon a temperature rise of 50°C.

Suitable for a range of small to medium-sized commercial and industrial applications, they provide hot water with zero on-site emissions; as such they are fully BREEAM and 'London plan' compliant.



Cavalier Eco water heater
7 models available

ErP / EcoDesign certified product

The Cavalier Eco range has been tested and certified in accordance with the EcoDesign directive, providing peace of mind for specifiers, contractors and end users.

Insulated and jacketed storage vessel

With a storage vessel construction from enamelled steel, Cavalier Eco water heaters are capable of operating at working pressures of up to 8bar.

An integral magnesium anode provides cathodic protection.

The storage vessel is insulated with 65mm polyurethane foam and encased in an enamelled grey jacket; heat losses are substantially lower than the maximum allowed under Building Regulations, Part L.

Designed for ease of maintenance

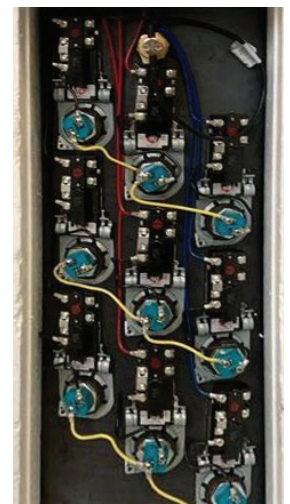
Access to electrics is provided from the front of the Cavalier Eco water heater.



Multiple immersion elements

This is one of the key features of the Cavalier Eco range; each model has multiple Immersion elements ranging from 3 x 3kW elements at the lowest output (9Kw) model up to 9 x 6kW elements on the highest output (54kW) model.

Each element has its own adjustable thermostat, with settings ranging from 49 to 82°C, and operate in sequence to provide fast recovery of hot water and better efficiency especially during off-peak demand periods. The independent operation of each element provides stand-by, in the event of individual element failure.



BREEAM and zero on-site emissions

BREEAM is the world's longest established method of assessing, rating and certifying the sustainability of buildings. It aims to help construction professionals and building owners to manage and mitigate risk through demonstrating sustainability performance during planning, design, construction, operation or refurbishment. It is also designed to help lower running costs, maximise returns through market value, attract, and retain tenants with desirable places to live and work.

Cavalier Eco water heaters do not have any on-site carbon or NO_x emissions making them particularly suitable for BREEAM projects.

breeam

Technical specification

Water heater model		AMP200-9 ECO G	AMP200-18 ECO G	AMP200-36 ECO G	AMP300-9 ECO G	AMP300-18 ECO G	AMP300-36 ECO G	AMP300-54 ECO G
Input	kW	9	18	36	9	18	36	54
Efficiency data - building regulations								
Efficiency	%	100	100	100	100	100	100	100
Storage vessel heat loss	kWh/24 Hr	1.5	1.5	1.5	1.9	1.9	1.9	1.9
Electrical data								
Input	kW	9	18	36	9	18	36	54
Number of elements	-	3	3	6	3	3	6	9
Electrical requirements	VAC/Hz/Phase	400 (-15%, +10%) / 50 / 3						
Electric current	A	11-13	23-25	46-50	11-13	23-25	46-50	69-75
General data								
Recovery rate @ 44°C	l/hr	170	330	660	170	330	660	990
Recovery rate @ 50°C	l/hr	150	290	580	150	290	580	870
Dimensions (height)	mm	1420	1420	1420	1540	1540	1540	1540
Dimensions (width)	mm	560	560	560	640	640	640	640
Dimensions (depth)	mm	690	690	690	790	790	790	790
Storage capacity	litres	173	173	173	264	264	264	264
Weight (empty)	kg	78	78	78	110	110	110	110
Weight (full)	kg	251	251	251	374	374	374	374
Hot outlet connection (inches)	NPT	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"
Cold feed connection (inches)	NPT	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"
Sound power level	LWA(dB)	15	15	15	15	15	15	15
Max outlet temperature	°C	83	83	83	83	83	83	83
Maximum working pressure	bar	8	8	8	8	8	8	8

ErP data / Energy Labeling Data

Water heater model		AMP200-9 ECO G	AMP200-18 ECO G	AMP200-36 ECO G	AMP300-9 ECO G	AMP300-18 ECO G	AMP300-36 ECO G	AMP300-54 ECO G
Load profile	-	XL	XL	XL	XL	XL	XL	XL
Water heating energy efficiency Class	-	C	C	C	C	C	C	C
Water heating energy efficiency (η _{wh})	%	38.0	38.5	38.7	38.0	38.5	39.1	38.1
Mixed Water of 40°C (according V40)	l/tr.	270	270	270	460	430	430	430
Annual Electricity Consumption (AEC)	kWh	4412	4352	4329	4403	4350	4290	4394
Annual fuel consumption (GCV) (AFC)	GJ	0	0	0	0	0	0	0
Daily electricity consumption (Qelec)	kWh	20.161	20.161	20.161	20.120	20.120	20.120	20.120
Daily fuel consumption (GCV) (Qfuel)	kWh	0	0	0	0	0	0	0
Thermostat temperature setting	°C	60	60	60	60	60	60	60
Acoustic level (Lwa)	dB	15	15	15	15	15	15	15

Installation

Packaging

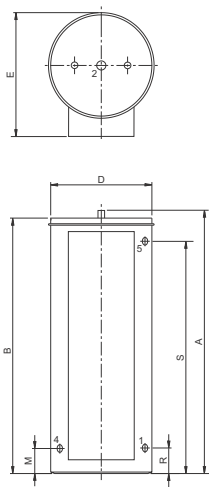
The unit is supplied mounted within wooden frames, shrink-wrapped and on a wooden base. This packaging should be removed as close as possible to the installation point to reduce the chances of damage whilst manoeuvring into position.

Conditions

The installation site must be frost free, be able to bear the load of the water heater when full of water and comply with the conditions below:

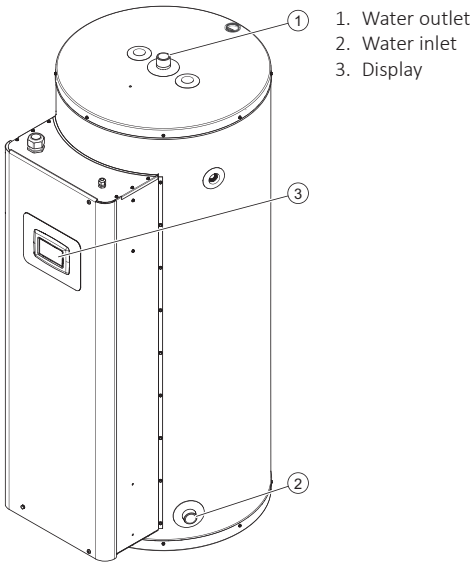
Air humidity	Max 93% RH at 25°C
Ambient temperature	To comply with building regulations but must be <40°C

Product Dimensions

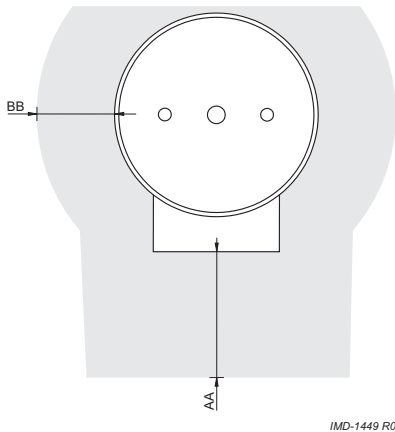


Description			AMP200 Models	AMP300 Models
A	Height hot water connection	mm	1460	1580
B	Height of upper side of device	mm	1420	1540
D	Diameter of water heater	mm	560	640
E	Depth	mm	690	790
M	Height of drain valve	mm	125	125
R	Height cold water supply	mm	125	125
S	Height T&P connection	mm	1230	1335
1	Cold water connection	-	1¼"-14NPT	1¼"-14NPT
2	Hot water connection	-	1¼"-14NPT	1¼"-14NPT
3	T&P connection	-	¾"-14NPT	¾"-14NPT
4	Drain plug connection	-	¾"-14NPT	¾"-14NPT

Water heater connections



Clearances



AA	1000mm
BB	500mm

Ancillary items

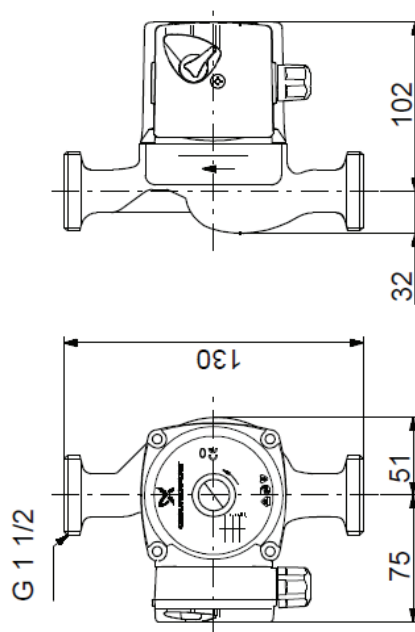
WH9 De-stratification kit

To improve stratification within the vessel it may be a site requirement to install a de-stratification pump, this is available from Lochinvar as an ancillary extra.

The WH9 de-stratification kit consists of:

- 1no LM900139A Bronze pump
- 2no 28mm gate valves
- 1no 28mm NRV

DRIVE		
Pump type		Potable
Motor		Electric with integrated motor protection
Electrical requirements		230V /1Ph/ 50hz
Enclosure rating		IP44
Thermal class		F
Temperature class		TF 110
Enclosure class		IP44
Bearings		Product lubricated special plain bearing
Operating modes		3 fixed speed levels
GENERAL DATA		
Pump housing		Stainless steel
Impellor		Composite PES/PP
Connection type		Screw end
Connection size	inch	R1½
Maximum pressure	bar	10
Maximum temperature	°C	110
Weight	kg	2,9
Power consumption speed 1/2/3	W	35/45/50
Current draw speed 1/2/3	A	0.16/0.2/0.23
Approvals		CE,WEEE,WRAS
DIMENSIONS		
Port to port length	mm	130

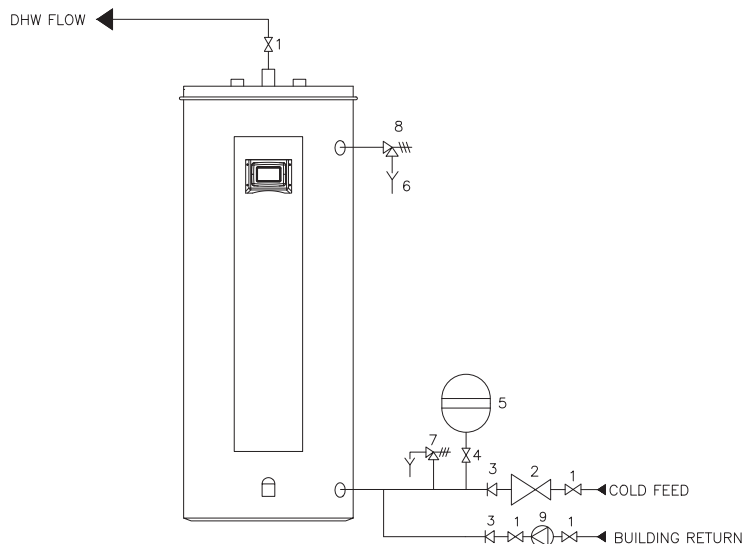


Un-vented installation

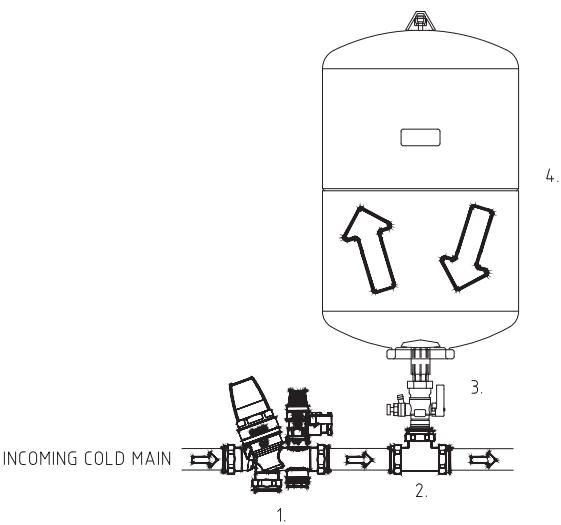
When installing Cavalier Eco on an unvented system a suitable kit of components is available from Lochinvar as an ancillary extra.

The WH17-A unvented kit includes all components required and includes:

- 28mm Monoblock incorporating a pressure reducing valve, non-return valve and 6 bar pressure relief valve
- 1" temperature and pressure relief valve
- 1" tundish
- ¼" pressure gauge
- 25 litre flow through expansion vessel



Flow through expansion vessel



Key	
1	Monobloc inlet group-includes non-return valve, pressure reducing valve and expansion valve
2	Tee for flow Jet valve-must be fitted horizontally for vessel to work as a flow through type
3	Flow Jet valve
4	Flow through expansion vessel

Sizing the expansion vessel

The standard WH17-A unvented kit features a 25litre expansion vessel which is large enough to cover the stored water within the Cavalier Eco plus up to 450 litres within the domestic hot water system, this may not be large enough depending upon the system pipework size and working pressure. The size should be checked using the calculation below and additional vessels ordered if required:

The following information is based on an inlet pressure of 3 bar and an expansion vessel efficiency of 0.5 using a standard 6 bar unvented kit. If the system has different parameters a more detailed calculation will need to be made.

$VV = SV * e$
0.45

Where:

VV = Vessel Volume

SV = System Volume

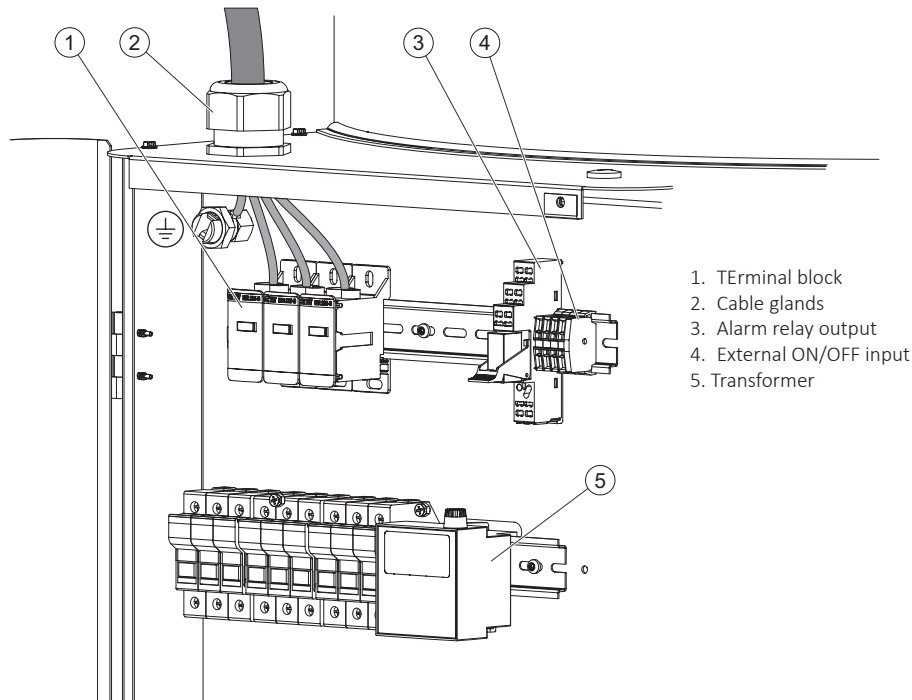
e = Coefficient of Expansion (See Table below)

Stored Temp °C	60	65
e	0.017	0.02

Electrical connections and BMS controls

Cavalier Eco has the following standard Electrical connections:

- 415Volts 50Hz 3 Phase supply
- Alarm signal output to BMS
- Remote on/off



Electrical connections

The electrical connection terminal points are located within the upper casing behind the door.

415 volt supply

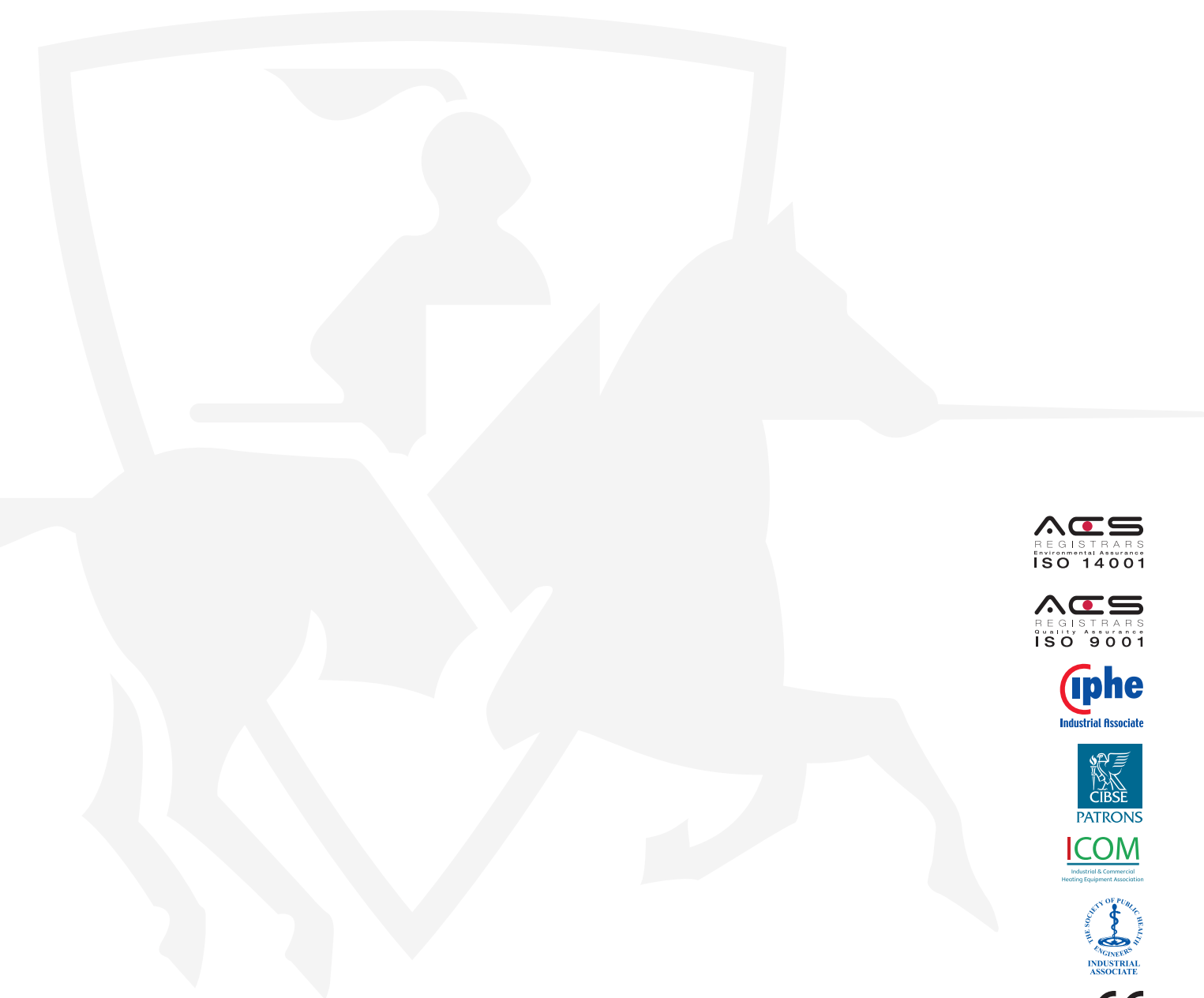
An independent isolator and fused electrical supply is required for each water heater. Supply 415 volt, 50Hz, three phase.

Alarm signal

In the event of the water heater developing a fault a common alarm signal is raised. this can either be NO or NC.

Remote on/off

The water heater can be remotely switched on and off using either a BMS or time clock using a volt free contact.



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Energy label, product fiche and ErP data table are available at www.lochinvar.ltd.uk
For further information on the Cavalier Eco water heaters, including ICM & user instructions and
our full warranty terms and conditions, please visit our website: www.lochinvar.ltd.uk



8 Lombard Way, The MXL Centre, Banbury, Oxon, OX16 4TJ
Tel: +44(0) 1295 269 981, Fax: +44(0) 1295 271 640, Email: info@lochinvar.ltd.uk
www.lochinvar.ltd.uk

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