

Adveco GLE, GLC, GLT

Glass Lined Hot Water Tanks

Installation, Operation, and Maintenance Manual



Warnings

This manual should be read and understood prior to installation or operation of any Adveco GLE, GLC or GLT hot water tank. Failure to read this manual or follow its printed instructions may lead to personal injury, damage to the vessel and damage to the water heating installation. These instructions should be kept in a safe and accessible place near the vessel.

Vessels should be stored in a safe place prior to installation to prevent damage.

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Adveco Ltd. reserves the right to modify specifications in this manual at any time and without notification.

Adveco Ltd. accepts no liability for third party claims arising from unauthorised use and/or use other than as directed within this manual.

How to Use This Manual

All general information, instructions and specifications listed within this manual applies to the full range of GLE, GLC and GLT tanks. Any information relevant to only specific GLC or GLT tanks is contained within dedicated sections and is clearly identifiable by section titles.

All information unless otherwise stated is applicable to installations in any country. Any information that is relevant to a particular country only is separated and located within clearly marked sections.

For any queries or issues not covered by the scope of this manual, please contact the Adveco Technical Department using the contact details provided on page 21.



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Product Description

Adveco Glass Lined Hot Water Tanks: GLE, GLC, GLT

The Adveco GLE, GLC, and GLT glass lined hot water tanks are versatile ranges of domestic hot water storage vessels and calorifiers that can be supplied with up to two indirect heating coils as required by the application. The range is divided into three types of vessel depending on the number of heat exchange coils included:

GLE tanks are supplied as hot water storage tanks, and do not include internal heat exchange coils, to serve as buffer vessels only.

GLC tanks are supplied with a single internal heat exchange coil fitted into the lower half of the tank, designed to serve as an indirect water heater in conjunction with an external heat source.

GLT tanks are supplied with two internal heat exchange coils that can either operate independently or be connected together to serve a single high-capacity heat source.

The Adveco GLE, GLC, and GLT ranges are designed, manufactured, and tested in the EU to the requirements of:

The Pressure Equipment Directive EN 12897:2016

The scope of EN 12897:2016 covers indirectly heated, mains pressure storage water heaters, with or without immersion heater backup, up to 1000 litres and 10 bar. The GLE, GLC and GLT ranges up to 1000 litres have been produced to the requirements of this standard.

Vessels with storage capacities of 1000 litres and greater have been designed and manufactured within the spirit of this standard, and have been type tested in accordance with section 6.2. Production units in this category are tested to section 6.3. This supports the requirement for sound engineering as prescribed by the Pressure Equipment Directive for vessels covered by Article 3, Paragraph 3.

Vessels with storage capacities of 1000 litres and lower are WRAS approved with approval number: 2110326



Installation Instructions

1. Responsibilities of the User

Hot water systems pose a potential risk for building occupants regarding temperature and biological risks. It is the responsibility of the building controller to assess the risk to the occupants of scalding or Legionella and put in place suitable steps to protect the occupants.

The risk assessment must be carried out by someone suitably qualified. The following documents offer guidance and assistance on responsibilities:

ACOP L8, 2014
HSG274 Part 2
Health and Safety at Work Act
Workplace (Health, Safety and Welfare) Regulations
HTM 04 01 Part A and B
Building Regulations Part G
BS EN 806 All parts
CEN/TR 16355

And any other standards, laws, guidelines, or rules in force in the location of the installation, past or future, that are current at the time of installation. This installation manual complements these rules and must not be considered to override them in any way.

Following the commissioning of a system and in compliance with the procedures and advice contained within this manual, responsibility lies with the building controller to maintain a safe standard of operation and regular maintenance procedures as required by the risk assessment. This includes ensuring that the unit is not operated at temperatures or pressures in excess of those stated on the vessel data plate. Nor should the vessel be exposed to a full or partial vacuum, such as can be present during draw-off or drainage of the unit while the cold feed or vent are closed or obstructed.

Failure to maintain a minimum of annual maintenance may void any and all warranties. Full maintenance procedures should only be carried out by a suitably qualified person. Basic maintenance regimes, as determined through risk assessment, should be carried out by the user as directed on pages 17–18.

Adveco Ltd. advise that heating systems in unoccupied premises, or that are subjected to long periods of shutdown, should be drained down according to the procedure on page 18, to remove the risk of failure and/or damage occurring while the system is not being monitored.

Installation Instructions

2. Responsibilities of the Installer / Designer

In compliance with the procedures and advice contained within this manual, responsibility lies with the installer to ensure that the vessels are correctly and safely installed in line with all local regulations and laws. In all cases, the relevant laws and regulations take precedence over the instructions contained within this manual.

3. Requirements of the Installation

Any unvented cylinder installation should be notified to Building Control. This is best done through a Competent Persons Scheme by installers holding a valid unvented domestic hot water ticket.

The following documents set out the standards of installation that must be adhered to:

EN 806 All Parts
EN 8558:2015

The GLE, GLC, and GLT ranges of hot water tanks from are suitable for use with storage or heating of potable water in installations up to a maximum pressure of 10 bar (GLE, GLC, GLT 200-1000L) or 6 bar (GLC, GLT 1500-3000L).

4. Location & Handling

Suitable methods of moving a vessel include the use of a forklift truck where the vessel is securely fixed to a pallet capable of supporting its weight, or by boom crane using adequate textile slings of suitable capacity to lift the weight of the tank. Vessels should not be lifted using the insulation, by chains, or by straps that may damage the insulation, connections, or walls of the tank. Care should be taken when moving or lifting to minimise the risk of damage to the vessel.

The vessel must be located inside the building and positioned on a level base capable of supporting the unit when full. Floor loading calculations should include the total filled weight, being equivalent to the sum of the empty weight of the vessel and the weight of any installed pipework or fittings, plus the water volume in litres (where 1 litre of water weighs 1 kg). For tank dry masses, please consult pages 19–20.

The vessel should be positioned to provide suitable clearances to permit access for visual inspection and maintenance of all connections and fittings. Advenco recommend a clearance of at least 500mm on all sides of the vessel, and 1m in front of the vessel clean-out flange. Consideration should be given to the inspection, removal and replacement of any flanges, ancillaries, thermostats, and safety valves present, as well as replacement of the entire vessel.

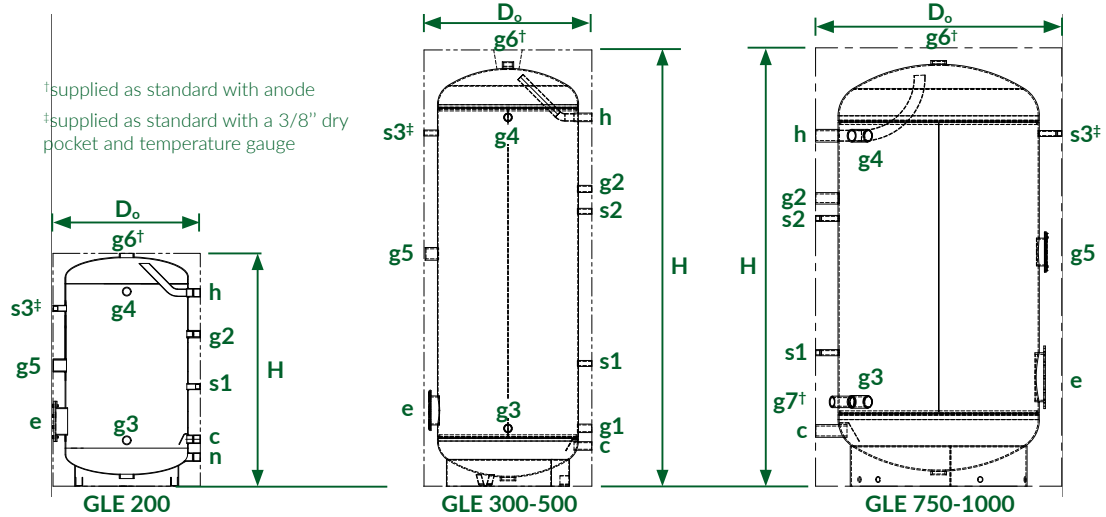
Any water storage vessel requires some provision against damage to surrounding infrastructure, electronics, and equipment in the event of a leak, damage, or vessel failure. Acceptable methods of protection include suitable bunding, gully, drainage, or a leak detection and warning system.

Tanks up to 1000 litres are supplied with the insulation jackets of rigid high density polyurethane foam. Tanks from 1500L and above are supplied with removable jackets of polyester fibre, which can be removed if necessary to move the vessel into location, but must be replaced before the cylinder is piped up.



Installation Instructions

5. Dimensions and Connections: GLE 200-1000



Connections

Label	Description	200	300	500	750	1000
c, h	Water inlet and outlet	1"	1"	1"	1½"	1½"
g1	Additional connection	--	--	1"	--	--
g2	Additional connection	¾"	¾"	1"	1¼"	1¼"
g3, g4	Additional connections	1"	1"	1"	1½"	1½"
g5	Additional connection / flange	1½"	1½"	1½"	Ø180/120	Ø180/115
g6	Anode connection	1¼"	1¼"	1¼"	2"	2"
g7	Anode connection	--	--	--	1¼"	1¼"
s1, s2, s3	Sensor pocket	½"	½"	½"	½"	½"
e	Clean-out / additional flange (mm)	Ø180/115	Ø180/120	Ø180/120	Ø280/205	Ø280/205
n	Drain	1"	--	--	--	--

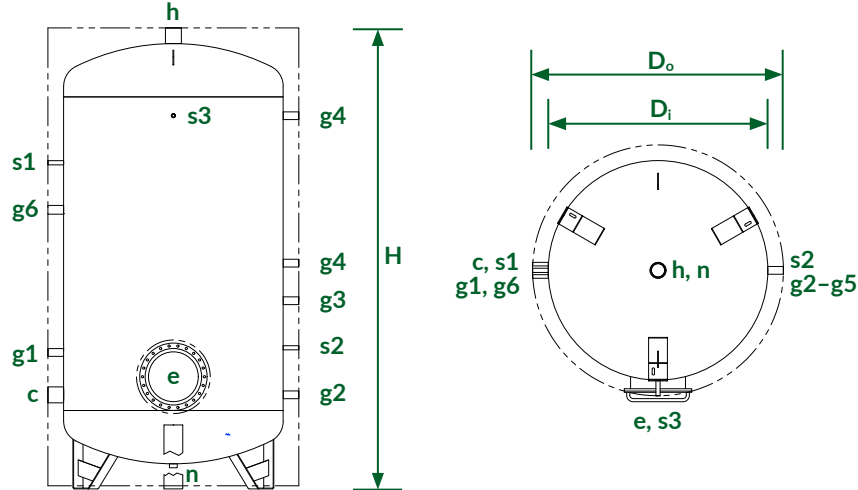
All threaded connections are BSPP female unless otherwise stated. All dimensions in mm.

Dimensions

Label	Description	200	300	500	750	1000
H	Height	1100	1600	1950	2050	1960
-	Tilted height	1305	1515	2065	2190	2470
Do	Outer diameter with insulation	670	670	750	860	1055
c	Cold water inlet	210	180	180	225	247
h	Hot water outlet	865	1354	1649	1715	1567
g1	Additional connection	--	--	259	--	--
g2	Additional connection	680	972	1229	1435	1287
g3	Additional connection	210	267	259	325	377
g4	Additional connection	865	1267	1649	1715	1567
g5	Additional connection / flange	540	840	1039	1080	1047
g6	Additional connection / anode	1100	1600	1950	2050	1960
g7	Additional connection / anode	--	--	--	325	377
e	Clean-out / additional flange	290	337	339	435	487
s1	Sensor pocket	445	492	549	615	597
s2	Sensor pocket	--	872	1329	1295	1197
s3	Sensor pocket	795	1207	1579	1725	1577
n	Drain connection	130	--	--	--	--
-	Shipping Dimensions (H×W×D)	1250 × 750 × 750	1650 × 750 × 750	2090 × 850 × 850	1990 × 990 × 990	2300 × 1150 × 1150

Installation Instructions

5. Dimensions and Connections: GLE 1500-5000



Connections

Label	Description	1500	2000	2500	3000	4000	5000
c, h	Cold inlet and hot outlet	2"	2"	2½"	3"	3"	3"
g1, g2, g3, g4, g5	Additional connections	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"
g6	Additional connection	1½"	1½"	1½"	1½"	1½"	1½"
s1, s2, s3	Sensor pockets	½"	½"	½"	½"	½"	½"
e	Clean-out flange (mm)	Ø380/300	Ø430/350	Ø430/350	Ø430/350	Ø430/350	Ø430/350
n	Drain	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"

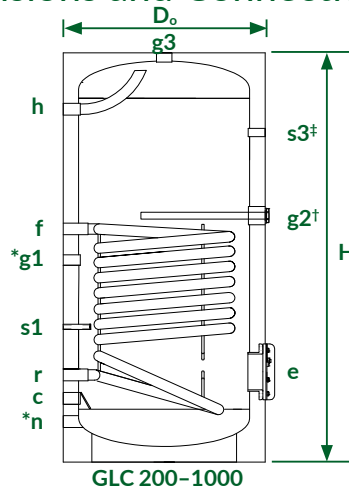
All threaded connections are BSPP female unless otherwise stated. All dimensions in mm.

Dimensions

Label	Description	1500	2000	2500	3000	4000	5000
H	Height	2280	2600	2655	2870	2940	2980
-	Tilted height	2600	2930	3000	3215	3350	3480
D _o	Outer diameter with insulation	1250	1350	1400	1450	1600	1800
D _i	Inner diameter without insulation	1000	1100	1200	1250	1400	1600
c	Cold water inlet	500	505	565	575	600	610
h	Hot water outlet	2280	2600	2655	2870	2940	2980
e	Flange centre point	600	620	680	690	715	925
g1	Additional connection	805	805	850	850	870	885
g2	Additional connection	500	505	565	575	600	610
g3	Additional connection	1100	1105	1165	1050	1200	1210
g4	Additional connection	1340	1345	1405	1415	1440	1450
g5	Additional connection	1810	2115	2150	2350	2380	2385
g6	Additional connection	1215	1505	1550	1750	1780	1785
s1	Sensor pocket	1515	1805	1850	2050	2080	2085
s2	Sensor pocket	805	805	865	800	900	910
s3	Sensor pocket	1810	2115	2150	2350	2380	2385
n	Drain	165	155	175	180	160	140
-	Shipping Dimensions (H×W×D)	2400 × 1320 × 1320	2750 × 1450 × 1450	2800 × 1470 × 1470	2990 × 1550 × 1550	3060 × 1650 × 1650	3100 × 1850 × 1850

Installation Instructions

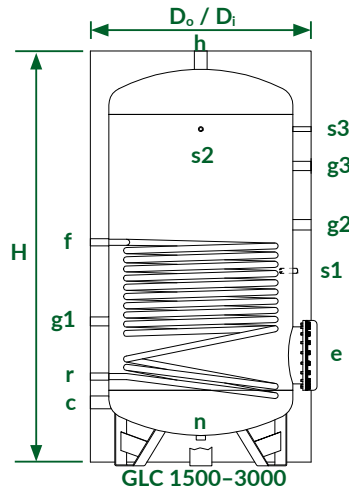
6. Dimensions and Connections: GLC



*connection position varies by model. Please consult dimensions below.

†supplied as standard with anode. Can be relocated to 'e' using ancillary flange. Contact Adveco for details.

‡supplied as standard with a 3/8" dry pocket and temperature gauge



Connections

Label	Description	200	300	500	750	1000	1500	2000	3000
c, h	Water inlet and outlet	1"	1"	1"	1½"	1½"	2"	2"	3"
g1	Additional connection	¾"	¾"	¾"	1¼"	1¼"	1¼"	1¼"	1¼"
g2	Additional connection	1½"	1½"	1½"	1½"	1½"	1½"	1½"	1½"
g3	Additional connection	1¼"	1¼"	1¼"	2"	2"	1¼"	1¼"	1¼"
f, r	Heat exchanger flow and return	1"	1"	1"	1"	1"	1"	1"	1"
s1, s2, s3	Sensor pocket	3/8"	3/8"	3/8"	3/8"	3/8"	½"	½"	½"
e	Clean-out / additional flange (mm)	Ø180/120	Ø180/120	Ø180/120	Ø280/205	Ø280/205	Ø380/300	Ø380/300	Ø380/300
n	Drain	1"	--	--	--	--	1¼"	1¼"	1¼"

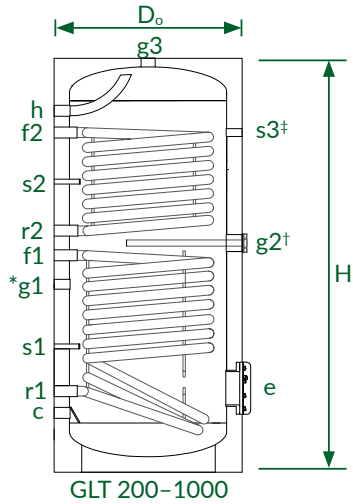
All threaded connections are BSPP female unless otherwise stated. All dimensions in mm.

Dimensions

Label	Description	200	300	500	750	1000	1500	2000	3000
H	Height	1100	1615	1950	2080	1990	2280	2600	2870
D _o	Outer diameter with insulation	670	670	750	860	1060	1250	1350	1450
D _i	Inner diameter without insulation	--	--	--	700	900	1000	1100	1250
c	Cold water inlet	210	130	180	215	250	345	345	400
h	Hot water outlet	865	1355	1649	1715	1570	2280	2600	2870
f	Flow to primary coil	790	750	969	1045	1000	1215	1325	1540
r	Return from primary coil	290	280	319	375	450	485	480	550
e	Clean-out / additional flange (mm)	290	290	339	445	500	600	605	665
g1	Additional connection	680	650	1320	925	875	785	815	875
g2	Additional connection	540	805	1030	1110	1045	1310	1495	1625
g3	Additional connection	1100	1615	1950	2050	1970	1630	1965	2120
s1	Sensor pocket	445	435	530	575	590	1060	1165	1375
s2, s3	Sensor pocket	795	1295	1570	1725	1580	1830	2150	2410
n	Drain	130	--	--	--	--	165	155	180
-	Shipping Dimensions (H×W×D)	1200 × 750 × 750	1680 × 750 × 750	2040 × 850 × 850	2070 × 900 × 900	1980 × 1100 × 1100	2380 × 1320 × 1320	2700 × 1450 × 1450	2990 × 1470 × 1470

Installation Instructions

7. Dimensions and Connections: GLT

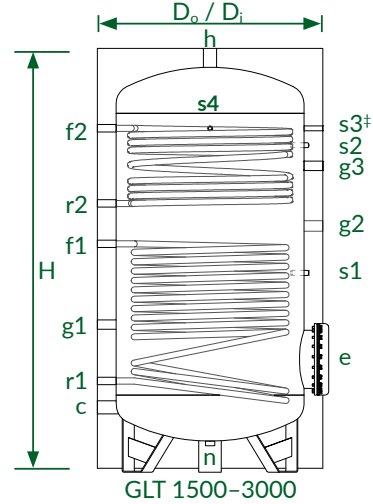


GLT 200-1000

*connection position varies by model. Please consult dimensions below.

†supplied as standard with anode. Can be relocated to 'e' using ancillary flange. Contact Adveco for details.

‡supplied as standard with a 3/8" dry pocket and temperature gauge



GLT 1500-3000

Connections

Label	Description	200	300	500	750	1000	1500	2000	3000
c, h	Water inlet and outlet	1"	1"	1"	1½"	1½"	2"	2"	3"
g1	Additional connection	¾"	¾"	¾"	1¼"	1¼"	1¼"	1¼"	1¼"
g2	Additional connection	1½"	1½"	1½"	1½"	1½"	1½"	1½"	1½"
g3	Additional connection	1¼"	1¼"	1¼"	2"	2"	1¼"	1¼"	1¼"
f1, r1, f2, r2	Heat exchangers flow and return	1"	1"	1"	1"	1"	1"	1"	1"
s1, s2, s3, s4	Sensor pocket	3/8"	3/8"	3/8"	3/8"	3/8"	½"	½"	½"
e	Clean-out / additional flange (mm)	Ø180/120	Ø180/120	Ø180/120	Ø280/205	Ø280/205	Ø380/300	Ø380/300	Ø380/300
n	Drain	--	--	--	--	--	1¼"	1¼"	1¼"

All threaded connections are BSPP female unless otherwise stated. All dimensions in mm.

Dimensions

Label	Description	200	300	500	750	1000	1500	2000	3000
H	Height	1140	1615	1950	2080	1990	2280	2600	2870
D _o	Outer diameter with insulation	670	670	755	860	1060	1250	1350	1450
D _i	Inner diameter without insulation	--	--	--	700	900	1000	1100	1250
c	Cold water inlet	130	130	180	215	250	345	345	400
h	Hot water outlet	975	1355	1650	1715	1570	2280	2600	2870
f1	Flow to primary lower coil	550	750	970	1045	1000	1215	1325	1540
r1	Return from lower coil	210	280	320	375	450	485	480	550
f2	Flow to primary upper coil	895	1200	1440	1555	1440	1830	2150	2410
r2	Return from upper coil	635	860	1090	1175	1100	1430	1690	1680
g1	Additional connection	450	650	1320	925	880	785	815	875
g2	Additional connection	630	805	1030	1110	1047	1310	1495	1625
g3	Additional connection	1130	1615	1950	2050	1960	1630	1965	2120
e	Clean-out / additional flange (mm)	290	290	329	445	477	600	605	665
s1	Sensor pocket	355	435	530	525	600	1060	1165	1375
s2	Sensor pocket	765	1030	1200	1365	1270	1740	2065	2225
s3, s4	Sensor pocket	825	1295	1570	1725	1577	1830	2150	2410
n	Drain connection	--	--	--	--	--	165	155	180
-	Shipping Dimensions (HxWxD)	1200 x 750 x 750	1680 x 750 x 750	2040 x 850 x 850	2070 x 900 x 900	1980 x 1100 x 1100	2380 x 1320 x 1320	2700 x 1450 x 1450	2990 x 1470 x 1470

Installation Instructions

8. Primary Pipework

The GLE, GLC and GLT ranges of hot water tanks are supplied with zero (GLE), one (GLC), or two (GLT) internal heat exchange coils, leading to three distinct product ranges depending on the number of coils installed. As a result, the tanks can cater for most hot water applications. The coils fitted within the GLT can be used individually for two different heat sources, or can be combined by external, additional pipework (not supplied) to give a larger capacity system. With these combinations the vessel can be used as a preheater, afterheater, or buffer vessel within a water heating system.

Connections to the vessel should be made according to the locations and sizes denoted on pages 7-10. All pipework should be of an appropriate, non-corrosive material, and should be supported outside of the vessel to prevent excessive load bearing upon the tank connection points. Pipework should be arranged to facilitate suitable access to system components. Any flanged connections to the vessel must be tightened in a diametrically opposed sequence to prevent uneven loads across the connection.

While installing pipework, consideration should be given to removal of the coils for maintenance and cleaning of the tank. Valves and union type fittings are required. A drainage connection should be included downstream of the union fittings.

GLT Combined Coils

For larger capacity systems with one heat source, the two heating coils can be combined. The standard way to do this is in series so that the primary flows through the top coil and then through the bottom coil. To estimate the total kW capacity with both coils, based on an 80°C primary temperature, add the kW capacity for the top coil at 80°C to the kW capacity for the bottom coil at 70°C. For technical details on kW capacities at 70°C, on different temperatures, or if a more accurate calculation is required, please contact the Advenco Design Department.

GLT Separate Coils

In the case of two heat sources, the lower grade heat or less costly energy source should go into the bottom coil to act as a preheat. The more reliable or higher grade heat source (usually a boiler) should be piped into the top coil to ensure that water drawn from the top of the tank is sufficiently heated for use. Note that in such an application, where the lower coil may not reliably achieve sufficient temperatures for Legionella prevention, alternative anti-legionella measures must be included as per the site risk assessment and guidance on page 5.

Installation Instructions

9. Secondary Pipework

General

A standard installation will include the hot water storage tanks or calorifiers as part of a mains-fed system. The pipework should be correctly sized to carry the maximum simultaneous demand of hot water for the building. This may or may not be the same size as the cold feed connection.

When filling the installation, only potable water of suitable water quality should be used. Filling water must have a water hardness of no less than 50 ppm (CaCO₃).

Cold Feed

All cold feed pipework must be fitted with safety equipment to prevent overpressure and allow for the expansion of hot water in the system. This must include a check valve and a pressure relief valve set normally to the maximum working pressure of the tank, but no more than 1.5 bar higher than the maximum working pressure in line with the regulations set out in EN 8558 section 4.3.29.1.

All mains-fed systems should additionally include a pressure reducing valve and strainer. The standard kit supplied by Adveco has a variable pressure reducing valve with settings available between 1 bar and 5.5 bar. The domestic hot water pressure must exceed the primary system pressure at all times to protect against contamination of the DHW in the unlikely event of a leak from the coil.

There must not be any type of isolation between the pressure relief valve and the vessel. Safety equipment should be installed at the cold inlet unless otherwise specified.

The cold feed equipment should be supplied as part of an unvented kit by Adveco Ltd., inclusive of an expansion vessel and temperature and pressure relief valve with a pressure setting at least 0.5 bar above the pressure relief valve setting but no more than 1.5 bar higher than the maximum working pressure of the tank, in line with EN 8558 section 4.3.29.1. A 3/4" inch valve is suitable for use with most indirect systems.

The expansion vessel should be calculated to be roughly 5% of the total hot water system volume for systems operating at around 3 bar. Please contact the Adveco Design Department to obtain a full calculation if required, or for high pressure applications. The expansion vessel pressure must be set equal to the cold fill pressure of the system, and must be set with no pressure on the wet side of the membrane. The expansion vessel must be situated on the cold feed pipe. For tanks arranged in series, only one expansion vessel should be used at the beginning of the system. Consideration may be given to flow-through type expansion vessels for systems identified as high risk.

The expansion vessel branch can have a lock shield valve so long as the relief valve is not on the same branch.

Drain

The cold feed is located at the lowest part of the cylinder to meet anti-Legionella requirements. A drain should be installed in the cold feed at the lowest point, before the connection to the cylinder. The drain valve shall be of suitable size to allow draining of the tank in a reasonable amount of time. It is recommended that a 1/4 turn lever valve and plug or cap are used and that the valve size be one size smaller than the cold feed connection size. A suitable drain or gulley should be provided to allow draining of the tank.

Vented Installations:

In case of a vented system the unvented kit can be omitted. From the hot flow there must be an uninterrupted open vent with no valves, of at least 19mm internal diameter, reaching above the water level of the cold water tank and discharging to a safe place (not into the cold tank). It is considered good practice to fit a temperature and pressure relief valve even on a vented system.



Installation Instructions

10. Discharge Pipework

Discharge from relief valves

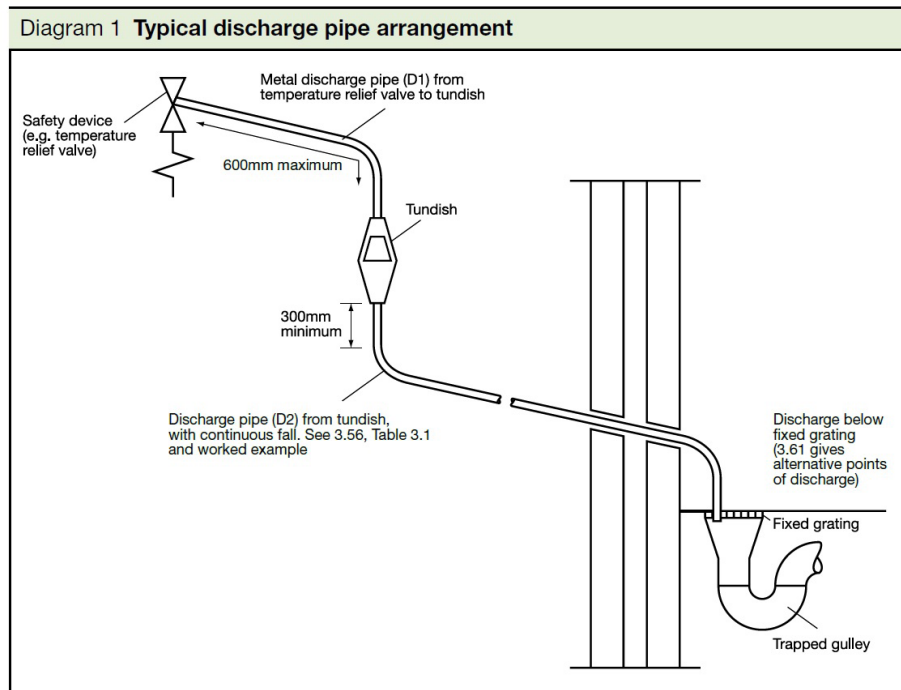


Figure 3: Discharge pipework diagram (as found in Building Regulations Part G).

Discharge pipework requirements for the UK are found in Building Regulation Part G. They are summarised here but it is recommended to read the regulations in full at <http://www.planningportal.gov.uk/buildingregulations/approveddocuments/partg/approved>

D1, the pipe from the relief valve to the air break, must have the same diameter as the valve, must be metal, and must be no longer than 600mm. An airbreak, such as a tundish or a funnel, must be installed at the end of D1.

D2, the pipe from the air break to termination, must be at least one size larger than D1, must have at least 300mm vertical drop before a bend, and must have a continuous fall. It should typically be metal, but PP is acceptable (note: PP is push-fit plastic. ABS and PVC solvent welded plastics are not suitable).

If D2 is longer than 9m total equivalent length (based on 1.4m per bend), then its diameter must be increased. Please refer to Building Regulation G3 at <http://www.planningportal.gov.uk/buildingregulations/>. If a number of D2 pipes are combined, the diameter of the common pipe should be one size larger than the biggest D2 pipe.

D2 should be terminated in one of the following ways:

- Into a soil stack, suitable for the temperature, with a mechanical seal, and with no sanitary appliances on it and a warning not to use the pipe for sanitary appliances.
- Into a trapped gulley with the pipe end below the grate but above the water seal.
- Terminating at low level to a suitable external ground level surface with a guard around the pipe end and that end within 100mm of the ground
- At high level into a suitable hopper or onto a roof that can withstand the temperature and does not have plastic guttering within 3m of the discharge and does not create a risk to people below.

Installation Instructions

11. Secondary Return Pipework

A secondary return is the best way to ensure that there is hot water at the outlets in a short amount of time. In some cases this could be done with trace heating, but the amount of electricity necessary to do this must be considered. In some small systems it is not necessary to use either, and the hot water can flow directly to the taps. The water at the furthest outlet must be 50°C within one minute (55°C in healthcare premises), although this may not be acceptable to all users and a secondary return arrangement should be considered for waiting times of longer than 20 seconds. In all cases, site legionella protection policy takes precedence over this document.

The secondary return pump should be sized to give a suitable flow of hot water around the system to ensure the returning temperature is at least 50°C. The pipework must be insulated. The pump must have a check valve on the positive side of the return pump to prevent cold flow to the hot outlets.

For GLE and GLC tank applications, the secondary should return into the cold feed of the water heater.

For the GLT twin coil range, the secondary should enter the hot water system above any low grade heat sources, just before the final high grade heat source. For a standard indirect water heater installation where both coils are connected together from one heat source, the return should go into the cold feed downstream of the unvented kit / inlet combination safety group. In cases where two heat sources are used, the secondary return should be piped into the centre of the tank.

12. Shunt / Destratification Pump

In installations where the secondary return is piped into the cold feed, it may be considered that all requirements for destratification or purging are met. This must be confirmed by site Legionella risk assessment.

In installations without secondary returns, or when it is piped into the centre of the tank, it is advised that the tank is entirely heated to 60°C for at least one hour per day. This should be done with a destratification pump piped from the outlet to the inlet. It should be timed with a clock to run at a low demand period of the day, while the heat source is on, for long enough that the bottom of the tank will achieve 60°C for one hour. In installations with multiple heat sources, a destratification pump should not run permanently.

For buffer vessel applications, the shunt pump between the buffer outlet and the water heater inlet should be timed to be the same as the water heater.



Installation Instructions

13. Multiple Tanks

In case of a multiple tank system the following must be adhered to:

Series Tanks

Series tanks are used in installations as preheaters and afterheaters. A low grade or renewable heat source is used to heat the preheat and the water is transferred to the afterheater, where the additional energy required will top up the temperature. The afterheater is designed to be able to supply the entire load if necessary, and it is always kept up to temperature while the building is occupied.

1. The unvented kit (with an expansion vessel sized for the entire system) or inlet combination group should be installed on the cold feed side of the preheat vessel.
2. The secondary return should be piped into the inlet of the afterheater.
3. A purge pump should be installed from the afterheater outlet to the preheater inlet to allow for thermal disinfection of the preheat. This can be on a timer or on a controls system to heat the preheat to 60°C as often as required by the risk assessment as referenced on page 5.
4. The afterheater must have a temperature and pressure relief valve.
If it is desirable to be able to drain one tank without affecting the others, an isolation valve can be installed between the two tanks only if another pressure relief valve is installed on the afterheater side of the valve. No check valve or expansion vessel should be installed between the preheater and afterheater.

Parallel Tanks

1. All pipework including the secondary return to parallel tanks should be balanced either by pyramid or by reverse return.
2. It is best if each tank has its own unvented kit / inlet combination group to allow for easy servicing of each unit. Consideration should be given to one common pressure reducing valve to ensure equal pressure and flow through each tank.
3. The secondary return should connect into each cold feed.

GLE as a Buffer Vessel

1. Where a buffer vessel is present, all hot water flow into the building must come from the buffer.
2. The cold feed should connect into the water heater.
3. The output from the water heater should connect into the bottom of the buffer vessel.
4. It is advised to include a shunt pump, from the buffer outlet to the inlet of the water heater.
5. An unvented kit / inlet combination group should be installed on the water heater, with a temperature and pressure relief or inlet combination security group valve on the buffer vessel.
6. The secondary return from the building should pass into the cold feed of the water heater.

Installation Instructions

14. Controls

Every hot water vessel must be fitted with a method of temperature control. This can either be a control thermostat in the tank, a sensor, or a differential control between the tank temperature and the heat source. This must be set to ensure a water temperature of at least 60°C throughout the vessel. The temperature control setting should be subject to a risk assessment in accordance with local building regulations. In most cases, it is recommended to fit thermostatic mixing valves on all outlets for personal use.

The temperature control method should be set to provide a water temperature at outlets of at least 50°C (55°C in healthcare premises) within one minute, and a minimum return temperature of 50°C.

Every vessel that contains a heat source must additionally be fitted with a non-self-resetting overheat thermostat capable of preventing heat entering the tank from all sources, by either stopping the primary flow or by turning off the heat source. Stopping the primary flow may be achieved by a spring-loaded zone valve, or by turning off the pump, providing that thermosiphoning cannot occur.

Time control

It is acceptable to shut off the hot water system if the building is unoccupied for a short period over night or on the weekends. Following a short shutdown, the hot water system must come on long enough before occupation so that it has been up to temperature for at least one hour.

Longer shutdowns must be risk assessed and may require complete flushing and disinfection of the system before startup.

Frost protection

In normal working operation, the tank is protected against frost because it will be maintained at temperature. In situations where it will be shut down because the building is unoccupied, consideration must be given to freezing of the water within the tank and pipework. This is best dealt with by a frost thermostat (not supplied as standard) in the room to bring on the heat source and secondary pump at 5°C.



Maintenance Operations

Hot water system maintenance should be determined by the building's risk assessment and legionella protection policy. While full maintenance and cleaning of tanks should be carried out by a trained operative, there are regular hot water system maintenance checks that must be carried out more frequently and can be done by the building controller's nominated person. These include monthly checks of the hot water temperature and regular flushing of low use outlets.

The more involved maintenance regime of a tank will vary from site to site depending on water conditions and use. Maintenance must take place at least yearly, but more frequent visits may be required depending on the condition of the unit after one year. The main reason for frequent maintenance is due to scale formation in the tank. Consideration should be given to scale control in hard water areas to reduce descale frequency.

The maintenance of a tank involves checking the system and cleaning the tank.

Checks to carry out:

- Temperature is correct and above 60°C.
- Return temperature is above 50°C and in line with relevant local regulations.
- Furthest outlet temperature is above 50°C (55°C for healthcare) in 60 seconds.
- All control thermostats are calibrated and correctly shuts off heat source.
- All overheat thermostats are functional and stop heat input to the tank.
- Relief valves operate and discharge correctly.
- All valves travel free.
- The system has no leaks.
- The pressure of any expansion vessel on the cold feed pipework is equal to the cold feed pressure (checked when there is no pressure on the water side of the diaphragm).

Anode replacement:

Periodic checking and replacement of sacrificial anodes is essential for the continued longevity of the hot water tank.

- Loosen and examine each anode rod
- Check the length and diameter of each rod in several places.
- Anodes must be replaced when 60% or less of the original anode material remains
- Reinstall or replace the anodes as required
- Ensure that anodes make good contact with the mounting plug. For anodes with a screwed thread connection, the screw thread should be cut down until the magnesium body of the anode makes contact with the adjoining anode plug when tightly screwed together
- Some tank types or installations, such as those in plantrooms with limited clearance above the hot water tanks, may be compatible with a flexible chain type anode that hangs vertically down inside the vessel from the topmost connection. This type of anode chain can be cut to a suitable length to suit the particular tank and system within which it is installed. It is important in such cases to ensure that such anodes do not make contact with any installed electrical immersion heaters within the tank vessel. With reference to Figure 4:
 - When no immersion heaters are installed, the full length of the anode can be installed in the top of the tank and hang down inside the vessel (length X).
 - If an immersion heater is installed in the inspection flange near the bottom of the tank, the anode chain must be cut to length Y.
 - If an immersion heater is installed half way down the tank, the anode chain must be cut to length Z.

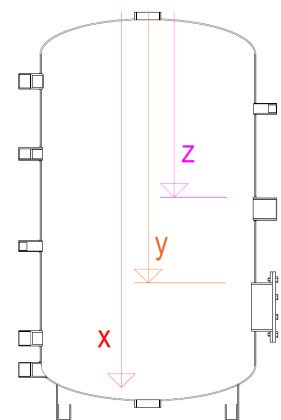


Figure 4: Representative drawing of GLE 200 showing suitable anode lengths based on installed immersion components.

Maintenance Operations

Cleaning:

- All filters should be cleaned.
- The tank should be drained down, cleaned and descaled.

Drainage Procedure:

Turn off all direct or indirect heat sources connected to the vessel.

Turn off any system pumps and isolate all connections to and from the vessel.

Ensure that the vessel drain connection is connected to, or positioned over, a drain or gully. For pressurised systems, open the drain valve connection to release the pressure within the vessel.

Open a safety valve on the tank to allow air into the unit and prevent negative pressure build-up during drainage.

Alternatively, ensure there is no isolation between the DHW outlet of the tank and a draw-off point, and open the tap.

Allow the water in the pipework to drain, and leave the tap open to allow ingress of air to the vessel.

Allow the vessel to fully drain via the drain valve connection.

Note that for GLC and GLT vessels, the indirect heating coils may also need to be drained. This should be done via a drainage point included on the primary pipework.



Technical Specifications

Model GLE	200	300	500	750	1000
Water volume (L)	210	278	464	705	1019
Standing losses (W) / energy efficiency class	60 / B	65 / B	98 / C	106 / C	131 / C
Maximum tank working pressure (bar)	10	10	10	10	10
Maximum tank working temperature (°C)	85	85	85	85	85
Insulation type	Rigid high density polyurethane foam				
Dry mass (kg)	91	100	134	260	296

Model GLE	1500	2000	2500	3000	4000	5000
Storage volume (L)	1500	2000	2504	2966	3827	5063
Standing losses (W) / Energy efficiency class	148 / C	191 / C	269 / E	303 / E	255 / E	420 / E
Maximum tank working pressure (bar)	6	6	6	6	6	6
Maximum tank working temperature (°C)	80	80	80	80	80	80
Insulation type	Removeable polyester fibre jacket					
Dry mass (kg)	229	280	316	349	508	597

Model GLC	200	300	500	750	1000	1500	2000	3000
Storage volume (L)	197	265	447	694	1005	1460	2065	2966
Standing losses (W) / Energy efficiency class	60 / B	65 / B	98 / C	106 / C	131 / C	151 / C	192 / C	303 / --
Maximum working pressure tank / coil (bar)	10 / 16	10 / 16	10 / 16	10 / 16	10 / 16	6 / 12	6 / 12	6 / 12
Maximum working temperature tank / coil (°C)	85 / 110	85 / 110	85 / 110	85 / 110	85 / 110	85 / 110	85 / 110	85 / 110
Coil surface area (m ²)	1.4	1.4	2.0	2.4	2.7	3.7	4.3	5.2
Output capacity (kW)	31.5	31.5	48.1	58.1	67.6	93.0	110.9	126.4
Nominal primary flow rate (L/s)	0.38	0.38	0.57	0.69	0.81	1.11	1.32	1.01
Nominal coil pressure drop (kPa)	3.0	3.0	9.5	16.2	24.0	59.8	95.8	69.9
Continuous DHW flow rate (L/h)	542	542	827	1000	1163	1600	1907	2174
Peak draw off capacity (L)	30 min.	429	483	771	1056	1424	1968	3460
	60 min.	700	754	1185	1556	2005	2768	4547
	120 min.	1242	1296	2012	2556	3168	4368	6721
Insulation type	Rigid high density polyurethane foam				Removeable polyester fibre jacket			
Dry mass (kg)	84	122	195	242	347	255	325	411

Model GLT		200	300	500	750	1000	1500	2000	3000	
Storage volume (L)		197	299	496	683	992	1460	2065	2966	
Standing losses (W) / Energy efficiency class		60 / B	65 / B	98 / B	106 / C	131 / C	150 / C	191 / C	303 / --	
Maximum working pressure tank / coil (bar)		10 / 16	10 / 16	10 / 16	10 / 16	10 / 16	6 / 12	6 / 12	6 / 12	
Maximum working temperature tank / coil (°C)		85 / 110	85 / 110	85 / 110	85 / 110	85 / 110	85 / 110	85 / 110	85 / 110	
Coil surface area (m ²)	Lower coil	1.0	1.4	2.0	2.4	2.7	3.7	4.3	5.2	
	Upper coil	0.7	1.1	1.1	1.2	1.5	2.3	3.0	3.8	
Coil output capacity (kW)	Lower coil	21.9	31.5	48.1	58.1	67.6	93.0	110.9	126.4	
	Upper coil	14.6	24.7	24.7	26.6	34.5	54.7	71.8	95.5	
Nominal primary flow rate (L/s)	Lower coil	0.17	0.25	0.38	0.46	0.54	0.74	0.88	1.01	
	Upper coil	0.12	0.20	0.20	0.21	0.27	0.44	0.57	0.76	
Nominal coil pressure drop (kPa)	Lower coil	13.4	18.8	26.9	32.3	36.3	49.7	57.8	69.9	
	Upper coil	9.4	14.8	14.8	16.1	20.2	30.9	40.3	51.1	
Continuous DHW flow rate (L/h)	Lower coil	376	541	825	997	1160	1596	1903	2169	
	Upper coil	251	424	424	457	592	939	1232	1639	
	Combined coils	626	964	1249	1454	1752	2535	3135	3808	
Peak draw off capacity (L)	30 min.	Lower coil	314	437	701	971	1326	1833	2445	3276
		Upper coil	203	309	400	538	773	1121	1546	2166
		Combined coils	419	614	878	1161	1572	2224	2954	3959
	60 min.	Lower coil	504	711	1119	1476	1913	2641	3409	4375
		Upper coil	330	524	615	769	1073	1596	2170	2996
		Combined coils	736	1102	1510	1897	2460	3507	4546	5888
	120 min.	Lower coil	878	1248	1939	2467	3066	4226	5300	6530
		Upper coil	579	945	1036	1222	1661	2529	3394	4624
		Combined coils	1358	2060	2752	3342	4200	6026	7661	9671
Insulation type		Rigid high density polyurethane foam				Removeable polyester fibre jacket				
Dry mass (kg)		88	122	178	267	374	281	366	454	



Contact Details & Warranty Information

The Adveco GLE, GLC, GLT range, this manual, and all information contained within, are supplied by Adveco Ltd.

UK

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The Adveco GLE, GLC, GLT ranges are provided with a 2 year vessel warranty reliant upon the following conditions:

- The vessel is correctly and safely stored, installed, and used as instructed by this manual.
- The vessel is filled exclusively with potable water.
- The domestic hot water system is kept in a good condition and is suitably maintained, inclusive of maintenance of the vessel as directed on pages 17–18 of this manual.
- The vessel has not been altered, tampered with, and has not been subjected to damage from frost, vacuum, or external influence.
- The vessel is operated solely using potable water of suitable quality, with a hardness level of no less than 50ppm (CaCO₃).

Exclusions to warranty conditions include:

- Consequential damage arising from malfunction, failure, or leaks associated with the vessel.
- Failure or damage of the vessel or domestic hot water system arising from the build up of excessive scale.
- Any parts and labour charges associated with maintenance, repair, or replacement of the vessel.

For further information and warranty claims, please contact Adveco Ltd. through the address listed above.

Adveco Sales Department
T: 01252 551 540 Option 1
E: Sales@adveco.co

Adveco Spares Department
T: 01252 551 540 Option 3
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Adveco Technical Support Department
T: 01252 551 540 Option 4
E: Technical@adveco.co

Adveco Design Department
T: 01252 551 540 Option 5
E: Technical@adveco.co

Adveco Service & Commissioning Department
T: 01252 551 540 Option 6
E: Service@adveco.co

Notes

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Adveco also offer the following products and services:

- Indirect and direct hot water systems
 - Electric hot water systems
 - Air Source Heat Pumps
 - Solar thermal systems
 - Hybrid hot water systems
 - Gas fired heating systems
 - Bespoke system design
 - Buffer tanks
 - Controls Systems
 - Off-site manufacturing of skids and plant rooms
 - Maintenance and service packages
-



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HOT WATER SPECIALISTS

Appendix A: Product Fiche

In accordance with regulations EU 812/2013 and 814/2013 - Volgens verordeningen EU 812/2013 en 814/2013 - Selon règlements EU 812/2013 et 814/2013.

Category	Trademark	Model identifier	Energy efficiency class	Standing Losses	Storage Volume	Assembly, installation, or maintenance precautions
Categorie	Handelsmerk	Typeaanduiding	Energie-efficiëntieklasse	Staande verliezen	Opslagvolume	Voorzorgsmaatregelen tijdens montage, installatie of onderhoud
Catégorie	Marque commerciale	Modèle	Classe d'efficacité énergétique	Pertes debout	Volume de stockage	Précautions à prendre pendant l'assemblage, l'installation ou l'entretien
Unit Eenheid / Unité	-	-	-	W	Litres	-
Appliance Information Omschrijving Informations	Adveco Ltd.	GLE 200	B	60	210	Consult product installation, operation, and maintenance manual Zie Installatie, Gebruikers en Service handleiding van het product Voir Manuel d'installation, d'emploi et d'entretien du produit
		GLE 300	B	65	278	
		GLE 500	C	98	464	
		GLE 750	C	106	705	
		GLE 1000	C	131	1019	
		GLC 200	B	60.0	197	
		GLC 300	B	65.0	265	
		GLC 500	C	98.0	446	
		GLC 750	C	106.3	694	
		GLC 1000	C	131.3	1005	
		GLC 1500	C	150.8	1459	
		GLC 2000	C	192.2	2065	
		GLC 3000	C	303.4	2966	
		GLT 200	B	60.0	197	
		GLT 300	B	65.0	299	
		GLT 500	C	98.0	496	
		GLT 750	C	106.3	683	
		GLT 1000	C	131.3	992	
		GLT 1500	C	150.3	1459	
GLT 2000	C	192.2	2065			
GLT 3000	C	303.4	2966			



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