

Overview of servicing, maintenance and warranty for a Kensa shared ground loop GSHP system

1. Annual maintenance

Kensa designs its GSHP systems so that they can be easily maintained by local contractors. Kensa can provide full training to these contractors if required. Contractors can also contact Kensa using our technical help-line. It should be noted that any competent maintenance contractor who is looking after traditional gas boiler systems will be able to maintain the GSHP system.

As ever increasing numbers of heat pumps are installed (and the Government expects installations to increase from about 20,000 per year currently to 600,000 per year by 2028) engaging with local maintenance contractors from the outset will ensure sufficient skills and knowledge in the local supply chain to meet the increasing demand.

In respect of annual maintenance, it is probably helpful to consider the different requirements for the main parts of the system:

- Ground array: for a closed loop borehole system like that proposed for Branch Hill House, there is very little requirement for annual maintenance. This is a network of mainly HDPE (plastic) pipework (most of which is underground) that is filled with a mixture of water and glycol. Provided this array is installed and commissioned correctly, there is very little that can go wrong with it. To ensure continued good performance of the system, the system pressure must remain stable and the glycol content must ensure freeze protection down to at least -10°C. Best practice annual proactive maintenance would be to check system pressures, check the glycol content and quality (either on site using a refractometer or sending away for testing to the glycol manufacturer) and carry out a visual inspection of the subterranean manifolds to check for signs of leaks.
- GSHP: the Kensa Heat Pumps standard product warranty of 5 years is not dependent on carrying out an annual service (full warranty terms and conditions in Appendix A). Therefore, many customers consider this to be a 'fit and forget' product and do not carry out any annual servicing. Some customers have purchased an extended warranty of 10 years with Kensa Heat Pumps. If this is purchased, Kensa requires an annual service to be carried out. The annual service checklist that needs to be completed and sent to Kensa annually is given in Appendix B. This can be carried out by any competent plumber.

2. Product warranties

Warranty information as follows:

- The Kensa Heat Pumps product warranty for the GSHP is given in Appendix A.
- The complete GSHP system is covered by a one-year workmanship warranty.
- The design life warranty of the complete GSHP system including ground array is 20 years (any performance issues during this time would be resolved via Professional Indemnity Insurance).

It should be noted that GSHP systems are designed, installed and commissioned to exacting standards including those from the British Drilling Association (BDA), Microgeneration Certification Standard (MCS) and Ground Source Heat Pump Association (GSHPA). These standards are

considered to be more stringent than comparable standards for conventional systems and all help to ensure long-term reliable performance from the GSHP system.

3. Expected life times


The expected life of the main components in the system are:

- Closed Loop Boreholes: 100 years +
- Glycol antifreeze in the ground array: 20 to 25 years
- Subterranean manifolds: 30 years +
- GSHP: 20 to 25 years
- Ground side circulation pumps (within each GSHP): 7 to 10 years

The only component that is likely to need regular replacement i.e. less than every 10 years, is the ground side circulation pump. This is a standard off-the-shelf component that can be replaced by any competent plumber. No special qualifications e.g. F-Gas certification, are required to carry out this work.

After 20 to 25 years, it is likely that the GSHP would need replacing. The GSHP is designed to be simple to replace. Isolation valves at the appliance are closed to isolate the GSHP from both the ground array and the heating system. The electrics are disconnected and then the GSHP can be removed. This can be carried out by a competent plumber and no F-Gas qualifications are required. At the same time as replacing the GSHP, it is often typical to replace the glycol in the ground array. This is a simple drain down, flush and fill procedure not that different to replacing inhibitor in a central heating system and so again can be performed by a competent plumber.

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Appendix A: Kensa Heat Pumps Warranty

1. Warranty

The Kensa Shoebox Ground Source heat pump is designed and built to the highest standard and as such is guaranteed for 5 years for parts from the date of commissioning or 5 ½ years from the date of manufacture (excluding the internal water pumps and electrical components), whichever is shorter. Internal water pumps (ground side) and electrical components are guaranteed for 2 years for parts from the date of commissioning or 2 ½ years from the date of manufacturer, whichever is shorter.

1.1 Terms and Conditions.

1.1.1 Persons covered by the Warranty

The Warranty applies to the original purchaser and any subsequent owner of the item.

1.1.2 Validity period of the Warranty

The guarantee period (excluding the water pumps and electrical components) is five years calculated from the commissioning date stated on the commissioning certificate or 5 ½ years from the date of manufacture, whichever is shorter. For the water pumps and electrical components it is 2 years from the commissioning date stated on the commissioning certificate or 2 ½ years from the date of manufacture, whichever is shorter.

1.1.3 Scope

Kensa Heat Pumps Ltd warrants to the original purchaser and any subsequent owner of the it ("Buyer") that all parts ("Parts") of the Kensa Compact Ground Source Heat Pump, excluding accessories, shall be merchantable and free from defects in materials and workmanship appearing under normal working conditions.

Kensa Heat Pumps Ltd will, at its option and without charge to the Buyer, replace or repair any Parts which cause the Kensa Compact Ground Source Heat Pump to be inoperable; however, if Kensa Heat Pumps Ltd elects to provide replacement Parts, it shall not be obligated to install such replacement Parts and the Buyer shall be responsible for all other costs, including, but not limited to, shipping fees and expenses.

The warranty applies to faults originating inside the item.

1.1.4 General exceptions

Compensation is not provided for:

- consequential losses
- damage caused by normal wear and tear, inadequate maintenance or care
- damage caused by freezing
- damage of the unit due to non-approved or incorrect quantities of antifreeze being used in the ground side, incorrect flowrates or air in the system
- damage caused by power surges, incorrect supply voltage or lightning strikes



- cost of inspecting, adjusting or cleaning the item, unless this relates to damage that is eligible for compensation
- minor damage (e.g. scratches and marks) that does not affect the operation of the item
- damage covered by insurance
- indirect damage
- loss or damage caused by gross negligence or intent, misappropriation, fraud or similar crime against property, breach of trust or fraudulent conversion
- products that have been: altered; subject to misuse, negligence, accidental damage, abnormal use or service; operated or installed in a manner contrary to Kensa Heat Pumps Ltd published or written instructions
- products subjected to abrasion or corrosion
- products operated in connection with any liquid source that contains impurities which are corrosive to copper
- products operated in a temperature range inconsistent with Kensa Heat Pumps Ltd's published or written recommendations

1.1.5 Care of Duty

The product must be handled with normal care and attention to minimise the risk of damage or loss.

1.1.6 In the event of Damage

The installing contractor ("Contractor"), or, if the installing Contractor is not available, Kensa Heat Pumps Ltd must be notified of any damage immediately and no later than six months after you first became aware of the damage. The commissioning certificate received on installation should be appended to the claim. If a claim for compensation is made after the deadline specified above or if a commissioning certificate cannot be produced, the guarantee shall not apply.

1.1.7 Replacement Parts

Kensa Heat Pumps Ltd's warranty obligations with respect to replacement parts are identical to those with respect to original parts; provided, however, in no event shall the warranty term for such replacement parts extend beyond the term established by the commencement date (i.e. commissioning date) of the warranty under which Kensa Heat Pumps Ltd was obligated to provide such replacement parts. Kensa Heat Pumps Ltd shall have the right to retain possession or dispose of any parts replaced by it.



Appendix B: Annual Servicing Checklist (required for extended warranty)

All properties to be visited once/year and the service checklist below to be completed with copies sent to Kensa and the home owner.



Heat Pump Annual Service Checklist			
Address			
Post Code		Service Date	

Heat Pump			
Model		Serial Number	
Visual inspection signs of damage?	Yes/No	Damage detail	
Meters			
Heat Meter Serial Number		Heat Meter Reading	
Power Meter Serial Number		Power Meter Reading	
General Plumbing			
System pressure – signs of leaks	Yes/No	Heating system pressure	Bar
Filters cleaned	Yes/No	Check thermostat and timeclock operation	Yes/No
Inhibitor checked	Yes/No	Inhibitor level	%
Unvented cylinder fitted	Yes/No	G3 cylinder inspection completed	Yes/No
Ground Collectors			
System pressure checked	Yes/No	Pressure reading	Bar
Anti-freeze protection level – sample 1		°C Anti-freeze protection level – sample 2	°C
HP Testing			
Step 1 – Remove front cover, turn off two compressor fuses, turn on MCB in consumer unit, turn on rotary isolator, turn on 4 Amp MCB, CH timer & stat on, HW off			
Controller OK – flow temp displayed	Yes/No	If no - details	
Step 2 – Turn 4 Amp MCB off. Watch heating system pressure while turning on and off			
Notice drop in CH pressure	Yes/No	If no then bleed air vent and spin pump motor	
Step 3 – Turn 4 Amp MCB on. Watch ground loop pressure when ground pump kicks in (an audible click after 10 seconds)			
Notice increase in ground loop pressure	Yes/No	If no then bleed air vent and spin pump	
Step 4 – Check temperature set points			
Antifreeze setting (D03)		°C Return temperature setting (R03)	°C
Step 5 – Run compressor and take readings – turn off rotary isolator, turn on compressor fuses, turn on rotary isolator.			
Compressor excessively noisy	Yes/No	Error messages shown	Yes/No
Step 6 – Leave compressor to run for 5-10 minutes and take B-readings			
B01 – return from heating		B02 – flow from ground array	
B03 – return to ground array		B04 – refrigerant pressure (2.2 – 4.6 Bar)	
B03 drops quickly at first and then slows	Yes/No	Flow pipe to radiators starts warming up	Yes/No
Step 7 – Check HW Controls – turn HW timer on and cylinder stat to max (if installed)			
3-way valve opens, DHW LED on	Yes/No	Flow pipe to cylinder warms up	Yes/No
Documentation & Handover			
Householder happy with heat pump	Yes/No	Householder comfortable with controls & current settings	Yes/No
Additional Comments			
Engineer Comments		Date	
Engineer Name		Engineer Signature	