

WARRANTY



Panasonic – leading the way in Heating and Cooling. With more than 30 years of experience, selling to more than 120 countries around the world, Panasonic is unquestionably one of the leaders in the heating and cooling sector. Applying advanced technologies that truly make life better; we live by an unparalleled commitment to product quality. Panasonic is building on the Japanese tradition of uncompromising quality control worldwide, developing and manufacturing fine products and delivering them to customers everywhere.

Panasonic has developed a new warranty scheme that promotes the quality that the brand imbues. There are 3 levels of warranty,

- STANDARD - 3 YEARS
- EXTENDED - 5 YEARS
- EXTENDED+ - 7 YEARS



All of our warranties benefit from full parts and labour allowance, providing peace of mind to the End User. The aim is to develop the relationship between, End User, Installer and Distributor. The Installer will benefit from gaining training and understanding of Panasonic products. In turn the installer will be able to provide the End User a longer, more comprehensive warranty.

Working closely with our distribution partners we aim to provide a simple, effective and easy to use warranty scheme.

	Warranty period	Extension Option	Fgas (Required)	Registration Requirements		Training	Maintenance	Warranty Coverage
				Panasonic	Refcom			
STANDARD	3	Extended	Y ¹	N	/ N	N ⁴	Annually	Full
EXTENDED	5	Extended +	Y ¹	Y ²	/ Y ²	Y ⁵	Annually	Full
EXTENDED +	7	N	Y ¹	Y ²⁺³	/ Y ²	Y ⁵	Annually	Full

1) Relevant to A2A, not required for A2W (For Extended and Extended +, Installer should have relationship with local Fgas)

2) Installers must be registered with either Panasonic with Refcom or another affiliated refrigerant body

3) Projects must be registered with Panasonic

4) No training required (Basic knowledge of Heat Pumps Required for A2W)

5) Panasonic or Distributor training required (Panasonic approved training courses - content provided by Panasonic)*

* Training accreditation reference provide by Panasonic following completion of training course required for extended warranty claims

TERMS & CONDITIONS

Technical Helpline – 01344 853393

Email – uk-aircon-tech@eu.panasonic.com
Address – Panasonic UK, a branch of Panasonic Marketing Europe GmbH,
Panasonic House, Willoughby Road, Bracknell, Berkshire RG12
8FP, UK
Web address – www.aircon.panasonic.co.uk

GENERAL

The Heating & Cooling Solutions Warranty ("Warranty") is offered by Panasonic UK, a branch of Panasonic Marketing Europe GmbH, whose registered address is Panasonic House, Willoughby Road, Bracknell, Berkshire RG12 8FP, UK ("Panasonic").

The Warranty is offered to United Kingdom ("UK"), The Republic of Ireland ("IRE"), EEA, Bosnia and Herzegovina, Kosovo, Macedonia, Serbia, Norway, Switzerland and Turkey residents only. This Warranty is an addition to, and does not in any way affect, any statutory or other statutory rights.

The warranty periods detailed within this document apply to installation carried out within the UK, Channel Islands and the Isle of Man only. If the country of installation is different to the country of purchase, the Warranty will be provided in accordance with the terms and conditions applicable in the country of installation. By subscribing to this Warranty end users will be deemed to have read and accepted these Terms and Conditions. These terms and conditions are governed by and construed in accordance with English law.

CONDITIONS OF COVER

The Warranty covers the Panasonic Heat Pump system(s), cylinder(s) and ancillaries ("Product") when installed by a suitably competent, qualified and trained installer, contractor or engineer ("Installer"), in accordance with the Panasonic Heating & Cooling Solutions ("Panasonic") installation guidelines and recommendations.

Panasonic reserves the right to amend the warranty conditions and cover from time to time, subject to a minimum period of one month's notice, which will be published on the Panasonic website.

This warranty resides with the equipment and will remain with the equipment, but is limited to the original site of installation in which the Product is installed, and applies to the original site and positioning of installation ("Property"). This warranty may be transferred to a new Property owner, or users ("End User"), provided the equipment is not moved from the original site and positioning of installation, unless carried out by a Panasonic approved installer. This warranty is offered on the condition that the Product is properly maintained in accordance with Panasonic maintenance guidelines as published from time to time.

Panasonic offers three types of warranty coverage; 3 Year Standard Warranty ("Standard Warranty"), 5 Year Extended Warranty ("Extended Warranty") and 7 Year Extended+ Warranty ("Extended+ Warranty"), for Products purchased from an approved reseller ("Distributor"). (List available upon request, approved companies may be found at www.aircon.panasonic.co.uk) ("Website"). The Extended Warranty and Extended+ Warranty are only available to the installing engineer(s) ("Contractor"), who meets with the conditions detailed within the Warranty Type and Criteria section.

The warranty period, will commence within 3 months of the date of commissioning, or 6 months from sale by Panasonic and no later than 18 months from date of manufacture, whichever is sooner. For Extended+ the warranty documentation must be sent either to (a) Panasonic UK, a branch of Panasonic Marketing Europe GmbH, Panasonic House, Willoughby Road, Bracknell, Berkshire, RG12 8FP, UK or (b) submitted via Service section of the Panasonic website www.panasonicproclub.com ("PROclub") within 3 months of commissioning and no later than 6 months from sale by Panasonic.

WARRANTY TYPE AND CRITERIA

The Warranty is available for the Product(s), including, but not limited to the domestic room air conditioning range ("RAC"), Packaged splits air conditioning range ("PACi"), Electric VRF range ("ECOi") and Aquarea air to water heat pump range ("A2W") and all controls and ancillaries, but excludes the gas fired VRF condenser range (ECO-G), for which special conditions and periods apply (see Appendix A – Special Conditions).

For RAC, PACi and ECOi, the Standard Warranty is subject to the Product being installed by a suitably trained and qualified F-Gas engineer, with relevant accreditation from a UK or Irish recognised training body. For A2W, the Installer must have a relevant knowledge and understanding of the installation of air to water heat pump systems, and where applicable, be F-Gas qualified, to enable the installation of bi-bloc heat pump systems.

For RAC, PACi and ECOi, the Extended Warranty is subject to the Installer meeting all of the requirements of the Standard Warranty and must also be registered with Panasonic or be listed within the Refcom register. The Installer must complete a Panasonic certified training course for the relevant product range. The training may be provided by Panasonic directly or by a designated training Distributor. Upon successful completion of the training course, Panasonic will issue a Training Certification Code ("TCC"), which may be requested, for the purpose of verification, during a warranty claim. The TCC will be valid for a period of 36 months from the date of issue. Installations must be carried out by an Installer who has successfully completed the aforementioned training. Installer will be required to attend range specific training in order to qualify for Extended warranty for specific a Product range. The TCC will commence from the date of initial training. From time to time, additional training may be required in order to comply with warranty amendments and new Product introductions.

In order to obtain the Extended+ Warranty, the Installer must fulfil all requirements of the Standard and Extended Warranty and in addition, the relevant project(s) must be submitted to the PROclub via the warranty submission portal. Details of the installation must be provided including but not limited to; the installation address, Installer details, supplying Distributor, TCC and Panasonic approved commissioning sheet. The Extended+ Warranty registration documentation must be provided by the Installer. Incomplete and or incorrectly fulfilled documentation will be returned to the Installer for completion. The fully completed documentation must be resubmitted within 30 days of issue, or will be eligible for the Extended Warranty only. It is the responsibility of the Installer to ensure the documentation is completed and returned. Panasonic will provide guidance on any incomplete / incorrect details and reserves the right to provide clarification of the Product installation prior to acceptance. Please ensure full contact details are provided to allow contact to be made readily. Panasonic holds no responsibility for the failure to provide adequate contact details resulting in the late submission of a warranty registration.

For the avoidance of doubt, Panasonic reserves the right not to offer (or withdraw) any warranty in respect of submitted warranty documentation deemed incomplete, inaccurate, containing any misrepresentation or otherwise unsatisfactory.

To meet the requirements of the Standard warranty, the Product must be maintained annually by a suitably trained and qualified engineer. The Product must be maintained by an Installer with relevant TCC in order to meet the requirements of the Extended and Extended+ Warranty. If the Product is not maintained by an approved Installer the warranty will revert to a 3 year Standard Warranty. Records of maintenance must be kept, for inspection by Panasonic prior to any service / repair work. Failure to maintain the system or keep adequate records of maintenance will invalidate the warranty.

LIABILITY

What is covered

From expiration of the national statutory warranty, the Standard Warranty will cover the Product for a further two years (three years total), the Extended Warranty will cover the Product for an additional four years (total period five years), and the Extended+ Warranty will provide a total period of seven years (six years in addition to the statutory). The warranties cover breakdowns due to initial manufacturing defect of the Product. The Warranty covers the costs for spare parts and labour allowance up to a maximum amount of an equivalent replacement of the Product.

What is not covered

Panasonic accepts no liability for the workmanship of the Installer who is not a registered Panasonic Installer and is limited to the Product. Panasonic is not liable for any pipework, connections, ancillary equipment or controls that are connected to the Product that are not supplied by Panasonic.

Panasonic do not provide indemnified designs unless agreed in advance of installation, and any indemnified designs will be provided via a fully insured third party. Any design guidance provided is for general guidance only. It is the responsibility of the Installer or designer to ensure the Product meets with the requirements of the Property.

Panasonic is not liable for any consequential or economic loss, howsoever arising from any defects affecting the product or from any delay in repairing or replacing the Product. Any fault or costs of repair resulting from: incorrect selection and/or installation of the equipment, including defective design and/or application, inadequate commissioning, inappropriate maintenance or neglect, accidental and/or deliberate damage, misuse, normal wear and tear and any unauthorised alteration or repair; the costs of any ordinary or specified product maintenance, and costs and/or faults resulting from any other use but the purpose the products are intended.

Panasonic accepts no liability for and excludes from the warranty the following;

- a. Misrepresentation contained within submitted warranty documentation
- b. Parts subject to wear and tear (included but not limited to, filters, glycol, inhibitors, electrodes, anodes, batteries, fuses, gaskets and sealing materials), which are to be replaced during service work according to the details of the manufacturer guidelines;
- c. Damage or failure to the withdrawal of services by a third party;
- d. Failure due to excessive dirt, dust or materials affecting the normal operation of the system;
- e. Failure of third party equipment resulting in a defect or failure within the product;
- f. Element failure due to scale build-up;
- g. Environmental conditions or pollutants resulting in excessive degradation of the Product materials (including but not limited to; rust, coil failure, electrical sheathing);
- h. Incorrect selection or erection of equipment, incorrect fixtures and fittings, unsuitable electrical protective devices or wiring systems, unstable or unsuitable mounting locations and insufficient access for maintenance or repair;
- i. Repairs of purely visual faults, which does not affect the functionality of the devices (e.g. scratches and signs of wear), unless advised at the time of installation and where there is clear evidence of transport damage not identified at the time of delivery (additional proofs may be required);
- j. Damages caused by improper or deliberate action (including but not limited to filling of the respective Product with contaminated liquids or gases, or operating substances not considered by the manufacturer);
- k. Failure due to the incorrect or unstable electrical supply (including temporary supplies from generators);
- l. Faults resulting from an alteration to the original design of the Product;
- m. Faults due to misuse in conflict with the manufacturer's guidelines and recommendations;
- n. Damage due to deliberate destruction (e.g. vandalism) or animal bites;

- a. Natural hazards caused by storms, frost, corrosion, lightning, excess voltage, earthquakes, high water levels, hail, landslides, flooding, explosion, nuclear power accidents, fire, war events, terrorism or similar;
- o. Failures not related directly to the Product (wrong settings, wrong installation, due to non-Panasonic equipment, etc.);

MINIMUM INSTALLATION REQUIREMENTS

It is the responsibility of Installer to ensure flow rates, whether air or water, meet with the nominal levels detailed within the technical documentation. Failure to meet the minimum flow may result in poor performance, system errors, component failure and reduction in system longevity.

All electrical wiring, piping and ancillary installation, must be carried out in accordance with the local regulations. Failure to meet the minimum legislative requirements will invalidate the warranty.

Suitable isolation must be provided to allow safe working of the Product in the event of a failure. Panasonic will not be held responsible for a system that cannot be suitably and safely isolated in order to carry out and inspection or affect a repair. Panasonic reserves the right to refuse to carry out any reparations and/or works deemed unsafe due to lack of suitable isolation, and may recover costs for an aborted visit.

For A2W, in order to comply with the warranty conditions the following minimum conditions must be met;

- Strainer installed in return flow as close as possible to system inlet, with mesh weave no greater than 600 microns (30 mesh) - (pre-fitted within the H series A2W systems);
- Magnetic filter installed within the return flow, as close as possible to the system inlet;
- Primary volume must be at least 30l for a single fan unit,
- Primary volume must be at least 50l for a twin fan unit;
- Buffer vessel or low-loss header installed to create hydraulic separation. Intermediate vessel may be required to increase volume on primary side if buffer or low-loss header does not meet the primary volume requirements
- 13l/min primary volume flow for single fan unit
- 18l/min primary volume flow for twin fan unit

Water Quality

Panasonic air to water heat pump system must be fitted to a closed water system only. Failure to install to a closed water system may result in excessive corrosion and risk of introducing foreign materials into the system, which may cause damage and improper operation. The water quality for supply to hot water cylinders shall be in accordance with European Council Directive 98/83 EC, or revised version at the date of installation, and water provided to the closed system shall comply with water quality standard guidelines for A/C and refrigeration equipment (JRA-GL 02-1994) see Appendix C – Closed System Water Quality Criteria .

If fed with water from a private supply, then a test report is carried out to confirm the water is within the minimum parameters of the water quality as stated below.

- Chloride content: Max. 200 mg/l
- Sulphate content: Max. 200 mg/l
- Combination chloride/sulphate: Max. 300 mg/l (in total)

Glycol / Antifreeze

Where antifreeze is utilised, care must be taken to ensure the dilution meets with the minimum expected climatic conditions suitable to protect the system. Overdosing the system may cause premature pump failure. The anti-freeze within a properly maintained system, not subject to excessive temperatures, may last in excess of 7 years. However, the solution must be verified during a periodic maintenance to ensure degradation has not occurred.

PRECAUTIONS FOR RENEWAL INSTALLATION

Where applicable, Panasonic allows the installation of the Product to existing refrigerant pipework. However the pipework must meet the requirement of the

replacement system and must be suitable for use. For existing tubing to be reused, the condition of the tubing needs to satisfy the basic points of "Safety" and "Cleanliness". The following basic guidance gives details of what requirements must be met, but for further guidance please refer to the Renewal section found within the Product Technical Data documentation.

Safety

- The existing unit shall be an air conditioner for use with R22/R407C/R410A refrigerant. The reuse of existing tubing that has been used for an application other than air conditioning (refrigerating device, etc.) is prohibited.
- The tubing shall not be dented, cracked, corroded, etc. It is the responsibility of the Installer to check the integrity of the existing pipework and its suitability for use.
- The maximum working pressure of all branches shall be 3.3 MPa or more. Any branch that is not provided by Panasonic shall not be guaranteed for tubing strength.
- Thermal insulation must be provided and should not be degraded, peeling or showing signs of decay

Cleanliness

- The oil must be checked and verified by the Installer and may be any of the following.
 - Mineral oil : Suniso, Freol S and MS
 - Synthetic fluid : Alkyl benzene-type (HAB, Barrel-freeze), ester-type, ether-type (PVE only)
- The existing tubing shall be connected to the indoor unit and outdoor unit and be air tight. The use of tubing that is contaminated, contain foreign materials inside may cause failure of the new equipment, including but not limited to; Layer shorting within compressor, clogging due to moisture freezing and oxidised scale. In the event of such issues, appropriate measures shall have been taken within a timely manner.

MAINTENANCE

The Product is subject to a periodic maintenance regime (minimum 12 months), in accordance with the Manufacturer Maintenance Guidelines as defined below. It is the responsibility of the End User to demonstrate the regular maintenance and inspection of the system. Inspection and maintenance must be carried out by a suitably trained and qualified engineer. In accordance with the regulatory guidelines relating to the maintenance of refrigerant systems and the Manufacturer Guidelines, the periodic maintenance shall include, as a minimum, the following inspections points:

- a. Visual inspection of system integrity, cleanliness and general system condition, structure and support of the Product and where appropriate affect a repair;
- b. Verification of lagging / insulation materials
- c. Verification of electrical integrity, protective devices, integrity of wiring and earthing systems, cable connections, and where applicable tightening, reconnecting, re-terminating, or replacing accordingly.
- d. Leak detection test (refrigerant and water);
- e. Testing of components; including but not limited to fan motors (bearings and rotation), condensate systems (motor / pump operation, pipework and drain capability), outdoor unit evaporator condition (care must be taken when cleaning, so as to not damage fins), safety valve test (hydraulic), cleaning of filters and strainers (hydraulic), pressure vessels and pressure relief devices (hydraulic), external thermostatic controls (hydraulic), valves operation (hydraulic);
- f. Inspection and verification of glycol / inhibitor condition (hydraulic);
- g. Verification of system operation against original commissioning data, recording system operation (liquid, suction and discharge temperatures / pressures where applicable), thermistor readings for both internal and external units, verification of volume flow (air / hydraulic where applicable), control strategy, error history;

Upon completion of maintenance and inspection works, detailed and accurate documentation must be left with the End User, which may be required when making a warranty claim.

CLAIM PROCESS

In case of a functional disturbance of the Product the End User shall contact the Installer who originally installed the Product, or where this may not be possible, the servicing / maintenance company, or contact the Panasonic technical helpline in the country of installation. Details of Panasonic Installers and Panasonic technical helpline can be found at: www.aircon.panasonic.co.uk The Product model reference and serial number will be required and proof of purchase may also be requested. Where a serial number is not immediately available, a proof of purchase from a Distributor will be required in order to verify the serial. Panasonic reserves the right to verify the eligibility of all claims to protect itself against fraudulent, invalid or repetitive claims.

A warranty claim form must be fulfilled and returned to Panasonic by the End User or Installer. Failure to provide correctly completed documentation will delay the claim and Panasonic reserves the right to refuse any claim where incorrectly fulfilled documentation has been provided. Panasonic reserves the right to disqualify any claim that has been returned to the End User or Installer that has not been returned to Panasonic within 30 days of issue.

In the event that a dispute arises, Panasonic may require access to carry out an inspection of the Product to verify the claim. Should it be determined that the failure is as a result of incorrect installation and/or selection, etc., Panasonic reserves the right to claim costs for the visit at our standard daily rate (£500.00 ex VAT). This excludes any additional costs for travel / accommodation required to attend site. The standard day rate will cover attendance within a 100 mile radius of our head office location as detailed at the start of this document. A purchase order will be required in advance of attendance to cover such an event.

Panasonic accepts no cost for out-of-hours work, travel or accommodation, or specialist equipment relating to a claim, or loss or damage to any equipment used to affect a repair. Any invoices relating to successful claims must be submitted to Panasonic within 60 days of the issue. Panasonic reserves the right to reject any invoice that is received outside of this period.

REPAIR PROCESS

After inspection of the system Panasonic will determine (directly or through the intervention of an authorised third party) if the defect is subject to the Warranty. In case the defect is subject to the Extended Warranty, Panasonic (through the intervention of an authorised third party) will repair the defect.

When warranty service involves the exchange of a product or the replacement of a part, subject to applicable law, the item exchanged or replaced becomes the property of Panasonic. If, after repeated efforts, Panasonic is unable to restore the product to good working order, at Panasonic's discretion, Panasonic will replace the product with an identical or functionally equivalent product. The replacement may be a new or refurbished item.

Where Panasonic is required to carry out any reparation works, this will only be carried out if the environment is deemed safe to do so. Any relevant access permits, risk assessments and method statements are the responsibility of the claimant. Access equipment required must be provided by the claimant in advance of attendance. Panasonic accepts no liability for failure to provide access equipment resulting in an aborted visit. Panasonic reserves the right to refuse to carry out site works if the installation or environment is deemed unsafe. In the event of unsafe conditions Panasonic will only re-attend site once confirmation has been received that the conditions are deemed suitably safe and reserves the right to charge for an aborted visit.

PRIVACY AND DATA PROTECTION

Any personal data relating to End Users will be used by Panasonic solely for the purpose of provision and administration of the Warranty and is in accordance with applicable UK Data Protection Laws.

MODIFICATION OF THE TERMS AND CONDITIONS

Panasonic reserves the right, acting reasonably to modify or replace these Terms and Conditions in order to:

- a. Comply with law, regulations, industry guidance or codes of practice;
- b. Rectify errors or ambiguities;
- c. Introduce new Products or services; and
- d. Reflect any other changes in the scope or nature of the Warranty;

In that case Panasonic will provide thirty (30) days' notice of any change that could have a material effect on the End User's rights or obligations and will be published online. The new terms and conditions will take effect from the date stated in the notice.

LOGISTICS AND EQUIPMENT DAMAGE

Upon delivery, it is the responsibility of the installer to inspect the product for signs of damage. In the event that the product packaging is deemed excessively damaged, the installer has the right to refuse the product. Where there is clear packaging damage, but is not deemed excessive, it is the responsibility of the installer to carry out a more thorough inspection of the product. Any damage must be reported immediately by phone either directly with Panasonic or via the distributor. In the event it is deemed that the damage is minor or superficial, Panasonic reserves the right to provide replacement parts to affect a repair. Where the damage is excessive, Panasonic will provide a replacement. In the event a direct replacement cannot be provided in a timely manner, a suitable alternative will be provided.

When making a claim, the installer must take photos of the damage, which must be sent to Panasonic as evidence to support their claim. Claims must be submitted to Panasonic within 5 working days of delivery along with any relevant documentation and supporting information. Panasonic reserves the right to deny any claims made outside of this period.

From time to time a product may be supplied that shows no clear signs of damage to the exterior packaging, but has clear signs of damage to the product, which is discovered outside of the 5 working day period. In such an event, the installer must provide photographic evidence of the product and packaging for review, within a maximum 30 days of delivery. Panasonic reserves the right to refuse any claims made outside of this period.

DEAD ON ARRIVAL PROCEDURE

Definitions

- 'Dead on Arrival' (DOA); equipment deemed defective at the point of installation and commissioning.
- 'Distributor'; The distributor, wholesaler or reseller through which the product is purchased
- 'Installer'; The company carrying out the installation and/or commissioning of the product

DOA warranty claims will be processed in accordance with the following;

1. You must inform the Distributor as soon as it is believed a DOA issue has occurred and the Distributor must subsequently inform the Panasonic Technical Department either by telephone or email within 1 working day of the commissioning;
2. Full product name and serial number shall be provided at this first notification.

3. Following notification we may wish to attend site to inspect the system and carry out any repairs required. Should access be required, a representative of the Distributor and Installer will be required to attend site at the time of the visit. Panasonic reserves the right to refuse any claim where the parties fail to attend;
4. Should an inspection find any failure due to incorrect selection, installation and/or commissioning, no claim will be accepted and we reserve the right to invoice you for the visit and/or repairs carried out;
5. On acceptance of a valid DOA claim, a claim number will be issued to the distributor for completion. Completed forms must be received within 10 working days of issue. Documentary evidence may be required to support the claim, including but not limited to photos, commissioning documentation and service checker data;
6. We reserve the right to refuse claims where insufficient evidence is provided and DOA documentation is incomplete;
7. Where applicable, the product should be repaired on site with the relevant spare parts and components required to affect the repair. The parts will be supplied via the distributor or directly from Panasonic at the distributor's request;
8. Where a product is deemed irreparable on site or uneconomic to repair the product will be replaced. In this eventuality, the distributor must place an order for a replacement product. Once the defective product has been collected, the distributor will be credited accordingly. In the event a direct replacement cannot be provided in a timely manner, a suitable alternative will be provided of the same value or greater, but at equal cost to the original product;
9. Any product that is to be returned for replacement should be in good condition and show no signs of damage. The product, where possible, should be returned in its original packaging. In the event that the original packaging cannot be used, efforts should be made to pack the product securely for return. Where a product is delivered on a pallet, it must be secured to a pallet ready for collection;
10. It is the responsibility of the installer to make the product ready for collection. Panasonic accepts no liability for refusal of collection where the product has not been made available. Panasonic accepts no liability for any product lost or damaged prior to collection;
11. Payment for any site works required to affect a repair will be paid in accordance with the costs detailed within Appendix B – Warranty Repair Pricing, at the values detailed within 'Standard/Extended Warranty Repair Pricing'. All costs must be agreed in advance of any invoice submitted to Panasonic. DOA costs will be paid to the Distributor who will invoice Panasonic accordingly. Any DOA labour cost invoices and/or costs for spare parts supplied directly by the Distributor, must be submitted to Panasonic within 30 days of the approved warranty claim. We reserve the right to accept any costs submitted after this time;

APPENDIX A – SPECIAL CONDITIONS

The ECO-G gas fired heat pump (GHP) systems are powered by a gas fuelled engine and as such require a more stringent service and maintenance regime.

Periodic Inspections and Their Scheduling

1. Warranty Period

The equipment is covered by warranty for 3 years after completion of test run and delivery. However the engine itself and periodically replaceable parts are covered by warranty for 3 years year or 10,000 hours of operation (whichever is shorter) after completion of test run and delivery.

2. Inspection Menu for Periodic Inspection Contract

Since periodic inspections are necessary to ensure long-term trouble free use of the gas heat pump air conditioner (GHP) after the warranty term ends, Panasonic has prepared the menu of inspections shown below. Please note that any service contract that is provided, by Panasonic or others, for periodic inspections only includes the inspections shown in the table below. Service calls for malfunctions will be charged separately.

Note 1: "Periodic inspection" refers to 1 entire inspection of the items marked with in the table, including replacement of periodically replaceable parts. This inspection will be performed at either 10,000 hours of operation or at 5 years, whichever comes first.

Note 2: Periodic inspection will be valid as long as the parts necessary to use the equipment are available. If however, parts are required that are covered by a periodic maintenance, the cost of those parts and the expense of replacement will be charged separately.

Note 3: When the hours of operation reach 30,000 hours, it may be possible to carry out a 'Refresh Maintenance' (RM), for up to 13 years (if 13 years are exceeded, the equipment is to be replaced). The nature of the RM will be dependent on how well the system has been maintained prior to the 30,000 hours and what components are recommended to be replaced. A periodic inspection will be required at 10,000 hours of operation or 5 years after "refresh maintenance," whichever comes first. For details, contact the person responsible for inspecting the equipment.)

Panasonic will not warrant any system that has exceeded 10,000 hours if a periodic maintenance has not taken place. In the event of a warranty request, Panasonic reserves the right to request copies of all periodic maintenance documentation

Miscellaneous

Indoor and outdoor heat exchanger cleaning is generally required once every 3 - 4 years. However, this varies according to the level of contamination, type of industry, and installation conditions. If foreign matter or dust adheres to indoor or outdoor heat exchanger, it will degrade performance and cause malfunctions. Cleaning must be performed to ensure proper use of the air conditioner.

PLEASE NOTE:

All works carried out on a GHP engine or works that will affect, change or modify the gas supply, usage or in any way affect the engine operation, must be carried out by a suitably qualified and accredited engineer with recognised gas engine certification, deemed a Gas Safe Responsible person. Any failure to meet these requirements is considered to be an illegal act. Should you note anyone working on a system that is not qualified to do so, please report them immediately to Gas Safe via their Report an Illegal Gas Worker page.

Itemization and Schedule of Periodic Inspections and Periodic Parts Replacement				Remarks	
Number of years passed or total hours of operation		5 years or, 10,000 hours	10 years or, 20,000 hours		
Maintenance item		Periodic Inspection	Periodic Inspection		
1	E/G oil	Replace	<input type="radio"/>	<input type="radio"/>	
		Leak check	<input type="radio"/>	<input type="radio"/>	
2	E/G system inspection	Valve clearance adjustment	<input type="radio"/>	<input type="radio"/>	
		Start-up check	<input type="radio"/>	<input type="radio"/>	
		Abnormal noise, vibration check	<input type="radio"/>	<input type="radio"/>	
		Harness check	<input type="radio"/>	<input type="radio"/>	
3	Coolant	Check (condition, amount), replenish	<input type="radio"/>	<input type="radio"/>	
		Leak check	<input type="radio"/>	<input type="radio"/>	
4	Drain Filter	Replenish, clean, oil absorption sheets change	<input type="radio"/>	<input type="radio"/>	
5	Inspect fuel system	Check for gas leaks	<input type="radio"/>	<input type="radio"/>	
6	Inspect refrigeration system	Check for gas leaks	<input type="radio"/>	<input type="radio"/>	
7	Control program version check		<input type="radio"/>	<input type="radio"/>	
8	Collect and record operation data		<input type="radio"/>	<input type="radio"/>	Update as required
9	Periodic replacement parts	Oil filter	Replace	<input type="radio"/>	<input type="radio"/>
		Air cleaner element	Replace	<input type="radio"/>	<input type="radio"/>
		Spark plugs	Replace	<input type="radio"/>	<input type="radio"/>
		Compressor drive belt	Replace	<input type="radio"/>	<input type="radio"/>
		Oil absorbent mat	Replace	<input type="radio"/>	<input type="radio"/>
		Oil absorbent tube	Replace	<input type="radio"/>	<input type="radio"/>

APPENDIX B – WARRANTY REPAIR PRICING

Standard /Extended Warranty Repair Pricing	A2W	RAC	PACi	ECOi
PCB (indoor or outdoor unit)	£ 65.00	£ 65.00	£ 65.00	£ 65.00
Indoor Thermistor or sensor (per piece)	£ 25.00	£ 25.00	£ 30.00	£ 30.00
Outdoor Thermistor or sensor (per piece)	£ 40.00	£ 40.00	£ 40.00	£ 40.00
Fan motor, impellor or blade (indoor or outdoor unit)	£ 85.00	£ 85.00	£ 85.00	£ 85.00
Compressor or Heat Exchanger	£ 175.00	£ 175.00	£ 200.00	£ 500.00
Coil replacement (indoor unit) including removal of refrigerant	£ -	£ 120.00	£ 200.00	£ 200.00
Coil replacement (outdoor unit) including removal of refrigerant	£ 200.00	£ 120.00	£ 200.00	£ 400.00
Refrigerant component including pressure switch, solenoid valve, 4-way valve (including removal of refrigerant)	£ 125.00	£ 125.00	£ 185.00	£ 225.00
Water Pump	£ 100.00	£ -	£ -	£ 100.00
Flow switch	£ 40.00	£ -	£ -	£ 40.00
Pressure relief valve	£ 100.00	£ -	£ -	£ 100.00
Hydraulic component (including but not limited to isolation valve, 3-way or 2-way valve, pressure gauge)	£ 135.00	£ -	£ -	£ 135.00
Immersion heater	£ 80.00	£ -	£ -	£ -
Miscellaneous electrical item (indoor or outdoor unit, including solenoid, contactor etc.)	£ 50.00	£ 50.00	£ 50.00	£ 50.00
Panel or housing (indoor or outdoor unit)	£ 40.00	£ 40.00	£ 40.00	£ 40.00
Replace expansion vessel	£ 100.00	£ -	£ -	£ -
Replace hot water cylinder or buffer	£ 185.00	£ -	£ -	£ -
Replace indoor unit (including pump down recovery of refrigerant)	£ 225.00	£ 175.00	£ 180.00	£ 300.00
Replace Outdoor unit	£ 300.00	£ 200.00	£ 250.00	£ 425.00

Extended+ Warranty Repair Pricing	A2W	RAC	PACi	ECOi
PCB (indoor or outdoor unit)	£ 150.00	£ 150.00	£ 150.00	£ 150.00
Indoor Thermistor or sensor (per piece)	£ 60.00	£ 60.00	£ 70.00	£ 70.00
Outdoor Thermistor or sensor (per piece)	£ 90.00	£ 90.00	£ 90.00	£ 90.00
Fan motor, impellor or blade (indoor or outdoor unit)	£ 195.00	£ 195.00	£ 195.00	£ 195.00
Compressor or Heat Exchanger	£ 395.00	£ 395.00	£ 450.00	£ 900.00
Coil replacement (indoor unit) including removal of refrigerant	£ -	£ 270.00	£ 450.00	£ 450.00
Coil replacement (outdoor unit) including removal of refrigerant	£ 450.00	£ 270.00	£ 450.00	£ 900.00
Refrigerant component including pressure switch, solenoid valve, 4-way valve (including removal of refrigerant)	£ 285.00	£ 285.00	£ 420.00	£ 510.00
Water Pump	£ 225.00	£ -	£ -	£ 225.00
Flow switch	£ 90.00	£ -	£ -	£ 90.00
Pressure relief valve	£ 225.00	£ -	£ -	£ 225.00
Hydraulic component (including but not limited to isolation valve, 3-way or 2-way valve, pressure gauge)	£ 305.00	£ -	£ -	£ 305.00
Immersion heater	£ 180.00	£ -	£ -	£ -
Miscellaneous electrical item (indoor or outdoor unit, including solenoid, contactor etc.)	£ 115.00	£ 115.00	£ 115.00	£ 115.00
Panel or housing (indoor or outdoor unit)	£ 90.00	£ 90.00	£ 90.00	£ 90.00
Replace expansion vessel	£ 225.00	£ -	£ -	£ -
Replace hot water cylinder or buffer	£ 420.00	£ -	£ -	£ -
Replace indoor unit (including pump down recovery of refrigerant)	£ 510.00	£ 395.00	£ 405.00	£ 675.00
Replace Outdoor unit	£ 675.00	£ 450.00	£ 565.00	£ 960.00

APPENDIX C – CLOSED SYSTEM WATER QUALITY CRITERIA

Reference: Water quality standard guidelines for A/C and refrigeration equipment (JRA-GL 02-1994)									
Standard Items	Item ⁽¹⁾⁽⁶⁾	Cold water systems		Hot water systems ⁽³⁾				Tendency ⁽²⁾	
				Lower temp. hot water systems		High temp. hot water systems			
		Circulating 20°C or less	Supply	Circulating 20 to 60°C	Supply	Circulating 60 to 90°C	Supply	Corrosion	Scale build-up
Standard Items	pH (@25°C)	6.8 – 8.0	6.8 – 8.0	7.0 – 8.0	7.0 – 8.0	7.0 – 8.0	7.0 – 8.0	○	○
	Elect. conductivity (mS/m) (@25°C) { S/cm} (@25°C) ⁽¹⁾	40 or less {400 or less}	30 or less {300 or less}	30 or less {300 or less}	30 or less {300 or less}	30 or less {300 or less}	30 or less {300 or less}	○	○
	Chloride ions (mg/l Cl ⁻)	50 or less	50 or less	50 or less	50 or less	30 or less	30 or less	○	
	Sulphate ions (mg/l SO ₄ ²⁻)	50 or less	50 or less	50 or less	50 or less	30 or less	30 or less	○	
	Acid consumption (pH 4.8, mg/l CaCO ₃)	50 or less	50 or less	50 or less	50 or less	50 or less	50 or less		○
	Total hardness (mg/l CaCO ₃)	70 or less	70 or less	70 or less	70 or less	70 or less	70 or less		○
	Calcium hardness (mg/l CaCO ₃)	50 or less	50 or less	50 or less	50 or less	50 or less	50 or less		○
	Silica ions (mg/l SiO ₂)	30 or less	30 or less	30 or less	30 or less	30 or less	30 or less		○
Reference	Iron (mg/l Fe)	1.0 or less	0.3 or less	1.0 or less	0.3 or less	1.0 or less	0.3 or less	○	○
	Copper (mg/l Cu)	1.0 or less	0.1 or less	1.0 or less	0.1 or less	1.0 or less	0.1 or less	○	
	Sulphide ions (mg/l S ²⁻)	Undetectable	Undetectable	Undetectable	Undetectable	Undetectable	Undetectable	○	
	Ammonium ions (mg/l NH ₄ ⁺)	1.0 or less	0.1 or less	0.3 or less	0.1 or less	0.1 or less	0.1 or less	○	
	Residual chloride (mg/l Cl)	0.3 or less	0.3 or less	0.25 or less	0.3 or less	0.1 or less	0.3 or less	○	
	Free carbonate (mg/l CO ₂)	4.0 or less	4.0 or less	0.4 or less	4.0 or less	0.4 or less	4.0 or less	○	
	Ryznar stability index	-	-	-	-	-	-	○	○

Standard Items	Item ⁽¹⁾⁽⁶⁾	Coolant systems ⁽⁴⁾			Tendency ⁽²⁾	
		Circulating systems		Flow-thru systems		
		Circulating	Supply	Flow-thru water	Corrosion	Scale build-up
Standard Items	pH (@25°C)	6.5 – 8.2	6.0 – 8.0	6.0 – 8.0	○	○
	Elect. conductivity (mS/m) (@25°C) { S/cm} (@25°C) ⁽¹⁾	80 or less {800 or less}	30 or less {300 or less}	40 or less {400 or less}	○	○
	Chloride ions (mg/l Cl ⁻)	200 or less	50 or less	50 or less	○	
	Sulphate ions (mg/l SO ₄ ²⁻)	200 or less	50 or less	50 or less	○	
	Acid consumption (pH 4.8, mg/l CaCO ₃)	100 or less	50 or less	50 or less		○
	Total hardness (mg/l CaCO ₃)	200 or less	70 or less	70 or less		○
	Calcium hardness (mg/l CaCO ₃)	150 or less	50 or less	50 or less		○
	Silica ions (mg/l SiO ₂)	50 or less	30 or less	30 or less	○	○
Reference	Iron (mg/l Fe)	1.0 or less	0.3 or less	1.0 or less	○	
	Copper (mg/l Cu)	0.3 or less	0.1 or less	1.0 or less	○	
	Sulphide ions (mg/l S ²⁻)	Undetectable	Undetectable	Undetectable	○	
	Ammonium ions (mg/l NH ₄ ⁺)	1.0 or less	0.1 or less	1.0 or less	○	
	Residual chloride (mg/l Cl)	0.3 or less	0.3 or less	0.3 or less	○	
	Free carbonate (mg/l CO ₂)	4.0 or less	4.0 or less	4.0 or less	○	
	Ryznar stability index	6.0 – 7.0	-	-	○	○

Notes

(1) Item names, term definitions and units are based on the JIS K 0101 standard. However, units and values in brackets { } are common units included for reference.

(2) The '○' symbol indicates whether an item primarily affects corrosion or scale build-up.

(3) Higher temperatures (40°C+) accelerate corrosion, so that uncoated ferrous materials must be protected by countermeasures such as an anti-corroding agent or anti-oxidizing treatment.

(4) In coolant systems with a closed-loop cooling tower, circulating water and its replenishment supply, and evaporator water and its replenishment supply, depend on their respective water quality standards.

(5) The source of water and replenishment supply may be tap water, industrial water, artesian water and pure water. Recycled waste water and softening-processed water are accepted.

(6) The fifteen items in the above tables are typical factors affecting corrosion and scale build-up.