



Why Have Planned Preventative Maintenance?

1. Introduction

We all know that we can pay a mechanic a little now for routine service or pay them a lot later for a major repair and that each year a car has to be tested to ensure it is in a usable and safe condition. The same is true for refrigeration and air conditioning (RAC) equipment. If regular maintenance is not carried out, its performance and efficiency will reduce, its operating costs will increase and it will not conform to the required legal regulations.

RAC equipment is engineered to withstand all sorts of abuse and keep on operating. This is great in most respects, but it can lead to complacency about maintenance. Like a car, RAC equipment needs regular maintenance to run properly and also conform to environmental regulations.

Without regular maintenance RAC equipment will lose a percentage of its original efficiency. The good news is that you can recover most of that lost efficiency through regular maintenance. This means that the cost of bi-annual maintenance can be recovered in savings on your monthly electric bill, reduced repair costs and increased operational lifespan. Correctly maintained RAC equipment will also do a better job of maintaining suitable temperatures and reduce the potential for failure.

2. Regulations for Servicing Personnel

All refrigerant handling operations on stationary air-conditioning and heat pump equipment containing HFC refrigerants must be carried out by suitably trained technicians holding an f-Gas handling certificate and working for an f-Gas Certificated company. This includes plant installation, leak testing, maintenance and end-of-life decommissioning.

3. PPM Schedule

LK Climate Control and Refrigeration Ltd offer annual planned preventative maintenance programs that insure RAC equipment will be in good working order for the cooling and heating seasons. The maintenance will include:

- a) Testing: Cooling (and heating where available) performance, evaporator fan operation, condenser fan operation, compressor operation, controls, condensate removal is being performed
- b) Cleaning: Return air filters, supply and return air grills, condenser heat exchanger
- c) Checking: Electrical terminals, electrical isolators, for unusual noise
- d) Inspecting: Accessible refrigerant pipe work for loss of refrigerant or oil, accessible refrigerant pipe work insulation, unit mounting points
- e) Compiling: Full asset list
- f) Providing: Report of findings
- g) Producing and maintaining a F-Gas log book



4. Refrigerants

One of the most important items to check is the refrigerant level. A system that is only 10% low on coolant can cost 20% more to operate. This is due to the additional operating period required to maintain temperature, increase in system operating temperatures and potential for a leak in the system, causing the release of substances harmful to the environment. There is also now a legal requirement for the refrigerant levels to be monitored regularly and documented.

If your system is low on refrigerant and more must be added, there are laws governing its use. Most refrigerants in use are hydrofluorocarbons (HFC's). These will damage the Earth's protective ozone layer if released into the atmosphere and are recognised greenhouse gases. The laws governing HFC's do not allow RAC equipment to have HFC's added to a leaky system, with f-Gas approved contractors first being required to find and fix the leak in the system. Failure to do this is a violation of the law and subject to loss of license and prosecution.

Size Thresholds for Mandatory Leak Checks

Leak Check Frequency*	2014 Regulation		
	tonnes CO2e threshold for all HFC refrigerants	kg threshold for HFC 410A	kg threshold for HFC 134a
Annual	5 tonnes CO2e**	2.4 kg	3.5 kg
Every 6 months	50 tonnes CO2e	24 kg	35 kg
Every 3 months	500 tonnes CO2e	240 kg	350 kg

* Leak check frequency is halved if automatic leak detection system is installed

** The threshold for annual leak checks of hermetically sealed equipment is 10 tonnes CO2e

Record keeping

Operators of stationary air-conditioning and heat pump equipment must keep records for each piece of equipment that is subject to a mandatory leak check (i.e. above the 5 tonnes CO2e threshold).

The records that must be kept are:

- a) Quantity and type of f-Gas installed
- b) Quantities of f-Gas added during installation, maintenance or when repairing a leak
- c) Whether the f-Gases used have been recycled or reclaimed (including the name and address of the recycling or reclamation facility and, where applicable, the certificate number).
- d) Quantity of any f-Gases recovered
- e) The identity of the undertaking that installed, serviced or decommissioned the equipment, including, where applicable, their certificate number
- f) Dates and results of all mandatory leak checks
- g) If the equipment was decommissioned, the measures taken to recover and dispose of the F-Gases.



5. Additional Actions

There are some things in addition to arranging maintenance that an end user can do to help ensure a high level of comfort and proper system operation. First, keep bushes and other materials away from the outside unit to prevent the restriction of air flow across its heat exchanger. Another good idea is to avoid closing/blocking air outlets. In almost all cases, closing supply outlets is harmful to the operation of the overall system and will have an effect on the performance and reliability.

6. Summery

All equipment, even the most reliable, needs routine maintenance. RAC equipment benefits in many ways from regular maintenance. They recover much of their lost efficiency, they are less likely to suffer a major break down, they have a longer life span, they increase temperature control and they operate for less money.