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TB05: Routine Service & Maintenance Requirements

1 OBJECTIVE OF THIS TECHNICAL BULLETIN

The purpose of this technical bulletin is to provide an overview of basic service & maintenance requirements which must be carried out by field and service technicians attending sites with in-scope equipment installed. These obligations remain valid even where a system has been decommissioned if the refrigerant is still in the system circuitry or pumped down to the condensers.

It is recommended that members with multiple engineers/technicians visiting sites make them aware by distributing this bulletin and preferably delivering as a toolbox talk session to ensure that all personnel are aware of their obligations.

2 LABELLING

EC517/2014 Article 12 “Labelling and product and equipment information” covers the requirement for all systems containing fluorinated greenhouse gases to be labelled in a uniform manner, and that they must be clearly readable and should be placed adjacent to the system’s service ports so as to be easily noted by any personnel working on the system.

Existing labels on systems installed prior to 1st January 2017 do not need to have a new style label attached – the old style in use since 2006 are sufficient. It is not recommended to attach a new style label on systems you take responsibility for which had previously been installed or maintained by others unless you are fully aware of the actual refrigerant charge in the system to avoid misleading information being attributed to you and to avoid misleading data which may lead you to believe a leak exists and cause you to spend time looking for a leak which does not exist.

Where major repair or remedial works have been carried out involving the decanting of the entire refrigerant charge, or after catastrophic leakage where the entire refrigerant charge has been lost, it is good practice to replace the label at that time as you will be aware of the actual charge, but this is not a legal requirement.

The labels under the current standard must include the following information:

- Reference to the fact this system contains fluorinated greenhouse gases;
- The accepted industry designated refrigerant name (the ASHRAE classification is normal here – e.g. R404A, R134a, etc.);
- The quantity charged (the total of base and field trim charge for systems supplied pre-charged or partially pre-charged) expressed in kg and in CO₂ tonnes equivalent;
- Reference to the refrigerant being contained in a hermetically sealed system (where applicable).

3 LEAK CHECK FREQUENCY

The frequency of mandatory leak checks is dependent on the total charge weight in CO₂ tonnes equivalent and whether or not there is fixed leak detection equipment fitted:

Total refrigerant charge in system (in CO ₂ tonnes Eq)	Frequency of leak checks	Frequency of leak checks if fixed leak detection is fitted
At least 5 tonnes but less than 50 tonnes	Annually	Annually
50 tonnes or more but less than 500 tonnes	6 monthly	Annually
500 tonnes or more*	3 monthly	6 monthly

***NOTE:**
Article 5 of the F-Gas Regulation mandates fixed leak detection to be fitted where a system contains 500 tonnes CO₂ or equivalent or more.
Where leak detection equipment is fitted then the leak check frequency is halved, so there should never be the requirement, technically, for 3 monthly visits by mandate. The leak detection equipment itself must alert the operator or a service company of the leakage, and the leak detection equipment must be checked for operational functionality at least annually.

If the system is hermetically sealed then the lower tier starts at 10 tonnes CO₂ eq instead of 5 tonnes CO₂ eq.

To calculate the CO₂ tonnes eq: take the GWP figure for the refrigerant (according to the IPCC 4th Assessment report figures used in the f-gas regulations) and multiply by the weighed charge in kg, then divide by 1000:

e.g., 3kg of R410A would be 3×2088 (GWP of R410A) = 6,264 / 1000 = 6.264 tonnes CO₂ eq

4 WHAT ACTIONS MUST I TAKE ON SUSPECTING / DISCOVERING A LEAK?

If there is a suspected leak on a system then this must be investigated, and if a leak is identified then the operator shall ensure the leak is repaired without undue delay according to Article 4 of the F-Gas Regulations.

Operators and contractors have an obligation to take precautions to prevent unintentional release of f-gases and shall take all measures technically and economically feasible to minimise leakage or release of f-gases.

The legal terminology “without undue delay” has caused confusion about timescales allowable before action is taken. It is not to be taken as an excuse not to repair as soon as practically possible. It is a term used to allow the operator and the contractor the time necessary to make alternative arrangements with critical plant to allow it to be shut down for the repair work to be carried out if it cannot be done immediately. For example, the plant access may involve an asbestos risk assessment be carried out, or access must be delayed to protect the contractor’s or public safety, or shutting down immediately would incur disproportionate cost to the operator.

There are no hard and fast rules on the timescale applied here but it should always be remembered that it is down to the discretion of the officer investigating on behalf of the Environment Agency, or devolved equivalent authorised body, whether to accept any lengthy delay as acceptable and so it is always in the operator’s best interests to get any leak repaired as soon as is practically possible.

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5 WHEN MUST A LEAK BE REPORTED AND TO WHOM?

The requirement for a leak to be reported comes under RIDDOR¹ requirements rather than the F-Gas Regulations.

The incident of the leak should be considered along with the risk assessment carried out prior to the works being carried out. The location of the equipment which leaked (*accessibility to the immediate vicinity is important*), charge size - including an estimate of how much of the charge actually leaked out and the manner of the leak (*instantaneous catastrophic loss or a few grammes at a time over a period of days or weeks, for example*), the refrigerant type (*its flammability and/or toxicity level is crucial to consider here*) – all of these factors need to be considered and assessed to determine if the leak created a dangerous occurrence or near miss incident.

For example, if a chiller lost its entire 200kg charge of R134a on the rooftop of a 20 storey building over a period of hours or days and the area around the chiller is a restricted zone area, then the likelihood would be that no person would have been likely to have been overcome by the leaking charge as it will have dissipated into the air over those hours of the leak occurring and never building up to any dangerous levels. It would, therefore, not be a reportable incident under RIDDOR.

If that same chiller is located in an underground public car park with little or no forced ventilation, however, then there would have been the possibility of a build up of leaked refrigerant displacing the air and potentially creating a dangerous occurrence which would require reporting under RIDDOR.

Our advice in the event of any leak being found is to always write up a full incident report as soon as practically possible after the event and insert a copy of the report in the logbook so that, in the event of any investigation, you have demonstrated that you have done what you could to repair any leaks and tried to prevent any future leaks.

6 LOGBOOKS AND RECORD KEEPING

The logbook itself does not have to be a physical book or folder kept on site. An electronic logbook is allowable, as long as the contents are available on demand by an inspector requesting them.

Any system which requires a mandatory leak check must have a logbook made available on demand which includes the system details, unique identifier (serial number or asset code are acceptable), plant location, refrigerant type and total charge in kg and CO₂ eq (this must match that on the system label), and any refrigerant transactions over the intervening period since installation – any recovery, charging, leakage, and identify the engineer and business entity carrying out the work (this may differ from the maintenance company if they use sub-contractors of course, but it is important to be able to identify the actual engineer performing the work).

Any refrigerant recovered must also state where that recovered refrigerant is going: recycling on-site, sent for destruction or reclaim, etc. Where a system has been decanted – for example to enable a compressor change – and that refrigerant is simply charged back in after the work is complete and pressure test and evacuation has been performed, then this must be recorded in the logbook, including an identifier for the recovery / reclaim cylinder used.

The company performing this work must keep these records for at least 5 years, and the owner operator must also keep the logbook records for at least 5 years.

¹ <http://www.hse.gov.uk/riddor>