

Refrigeration – The Basics

A fridge is an insulated cabinet with an electric pump or a compressor which moves a refrigerant liquid around the cooling bars. When the door is opened, the cold air falls out to be replaced by warm air in the kitchen, which triggers the pump to circulate the refrigerant liquid and cool down the internal temperature and keep the food safe.

Domestic fridges and commercial fridge look similar, but are not. With a domestic fridge, the power of the compressor is designed around the few number of times a domestic fridge door is opened during the day. A quite modestly-powered compressor will be able to cope with the heat loss without food safety risks. The construction of both the cabinet and the motor is only robust enough for light domestic use, so used in a commercial environment, not only do they pose a food safety hazard, they need replacing far more often than commercial fridges, so are not even cost effective.

With a commercial specification fridge in a busy working kitchen, the door is going to be opened very regularly and probably be exposed to a far hotter kitchen. The compressor needs to be powerful enough to rapidly pull down the internal fridge temperature to replace heat loss.

Most commercial fridges also incorporate fans which evenly spread the cool air through the cabinet, a feature domestic fridges do not have. Commercial fridges are better insulated, designed for easy cleaning and some are able to electronically record temperatures which can be used as proof of due diligence in food safety procedures should a food poisoning claim be made. As well as freestanding fridges it is also possible to get walk-in fridges which can be built to fit a specific kitchen area.

Freezers

Commercial freezers share all the high specification features of commercial fridges and should always be used for the same performance, food safety and cost efficiency reasons.

Blast chillers and freezers

These are refrigeration cabinets which use fiercely-driven cold air to rapidly pull-down the temperature of hot food so it can be safely stored either in chilled or frozen form for future re-heating. Allowing foods to cool without refrigeration can be extremely dangerous as it will allow harmful bacteria to develop during the long cooling process.

Cooling hot foods in a fridge already containing chilled food is also very dangerous as it will raise the temperature of all the food in the fridge and pose a food safety risk. Any kitchen which wants to have pre-cooked, chilled food as a major part of the provision must have blast refrigeration.

How to choose the right fridge or freezer

Talk to a manufacturer who will look at the type of operation you are running, the mix of fresh, chilled and frozen food you serve, the volume of meals you are preparing. This will

identify the capacity of unit you need and the power of it. It is the same with ice cube needs – let someone else do the specification sums. The advice will be free.

Look After It!

The outward construction of a piece of refrigeration equipment appear simple, but while operation seem trouble free, miss-use can lead to under-performance and add unnecessary cost to maintenance bills as much as any other equipment in the kitchen.

Overloading shelves and above marked levels in a refrigeration cabinet will affect performance with the potential to interrupt the cold airflow. Commercial fridges should always be fitted with circulatory fans, but if food is pushed up against the fan, the cold air is not going to circulate properly. This is not just a food safety issue, but can cause the fridge fan to run faster than it needs to leading to the possibility or replacement earlier than should be.

The siting of any refrigeration equipment is important. Fridges designed for use in temperate climates such as the UK and most of Europe work on a maximum ambient temperature of 28 deg C. That means that while the atmosphere in the kitchen will always fluctuate according to he cooking going on and the outside temperature, the thermometer does not rise above 28 deg C.

If it does, then the compressor in the fridge, which is the motor that pumps the cooling fluid around the cooling bars, will be overworked. This could lead to premature burn out of the compressor and have a food safety risk. Where ever practical, refrigeration units should be sited away from direct cooking heat.

It is good working practice to regularly check the temperature of the fridge using a digital thermometer. A service engineer will do this as routine, but if the fridge is beginning to lose power, then the engineer will need to be called out quickly to prevent food from the risk of contamination. Many commercial fridges have digital temperature displays, but it is still useful to perform this occasional check.

As part of the regular thorough cleaning of the kitchen, include using an appropriate attachment to a vacuum cleaner to clean the area around the compressor if it is accessible. This will prevent excess dust and fluff from getting inside the compressor and being a damage risk.

Because of the constant opening and closing of fridge doors, door seals will wear out. A damaged door seal will force the compressor to work harder than its needs to, which apart from anything else will increase energy use. The service engineer will check them on a routine inspection, but it should be part of a fridge clean-down to inspect the seals for any sign of damage. It will also prolong the life of door seals if staff are encouraged to close doors and not slam them shut.

In brief

Do

- Check and clean door seals weekly

- Clean up spillages immediately
- Visually check compressor fins and vents monthly
- Defrost freezers to manufacturers' instructions
- Check working temperature monthly

Don't

- Overload the fridge
- Allow fans to be obstructed
- Leave the door open
- Put hot food in
- Slam doors

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