

EQUIPMENT

Cooking equipment provides the backbone of any busy catering operation. It is the key to catering success and quality. In terms of food safety it controls the most critical step in the food production process. A mistake at the cooking stage by undercooking of raw food is likely to result in a mass food poisoning incident.

Kitchen equipment is expensive so initial selection is important, and the following points should be considered before each item is purchased or hired:

- Overall dimensions (in relation to available space).
- Weight - can the floor support the weight?
- Fuel supply - is the existing fuel supply sufficient to take the increase?
- Drainage - where necessary, are there adequate facilities?
- Water - where necessary, is it to hand?
- Use - does the food to be produced justify good use?
- Capacity - can it cook the quantities of food required efficiently?
- Time - can it cook the given quantities of food in the time available?
- Ease - is it easy for staff to handle, control and use properly?
- Maintenance - is it easy for staff to clean and maintain?
- Attachments - is it necessary to use additional equipment or attachments?
- Extraction - does it require extraction facilities for fumes or steam?
- Noise - does it have an acceptable noise level?
- Construction - is it well made, safe, hygienic and energy efficient, and are all handles, knobs and switches sturdy and heat resistant?
- Appearance - if equipment is to be on view to customers does it look good and fit in with the overall design?
- Spare parts - are they and replacement parts easily obtainable?

Further Information

Kitchen equipment may be divided into three categories:

- Large Equipment** - Ranges, Steamers, Boiling Pans, Fish Fryers, Sinks, Tables etc.
- Mechanical Equipment** - Peelers, Mincers, Mixers, Refrigerators, Dish-washers etc.
- Utensils & Small Equipment** - Pots, Pans, Whisks, Bowls, Spoons etc.

Manufacturers of all kitchen equipment issue instructions on how to clean and keep their apparatus in efficient working order, and it is the responsibility of everyone using the equipment to follow these instructions (which should be displayed in a prominent place near the machines).

Arrangements should be made with the local gas board for regular checks and servicing of gas operated equipments; similar arrangements should be made with the electricity supplier. It is a good plan to keep a log book of all equipment, showing where each item is located when servicing takes place, noting any defects that arise, and instructing the fitter to sign the log-book and to indicate exactly what has been done.

LARGE EQUIPMENT

Ranges & Ovens

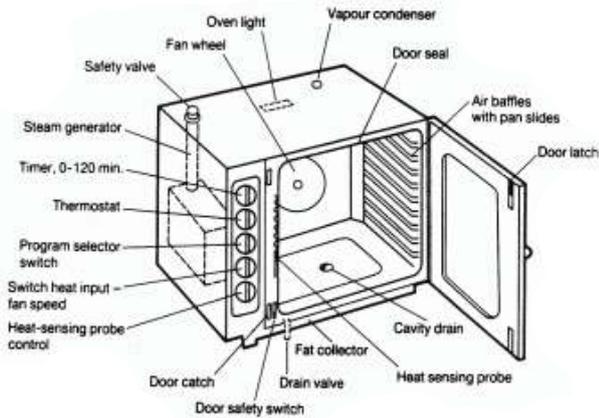
A large variety of ranges are available operated by gas, electricity, solid fuel, oil, microwave or microwave plus convection. Oven doors should not be slant as this is liable to cause damage. The unnecessary or premature lighting of ovens can cause wastage of fuel, which is needless expense. This is a bad habit, common in many kitchens.

When a solid-top gas range is lit, the center ring should be removed to reduce the risk of blow back, but it should be replaced after approximately 5 minutes, otherwise unnecessary heat is lost.

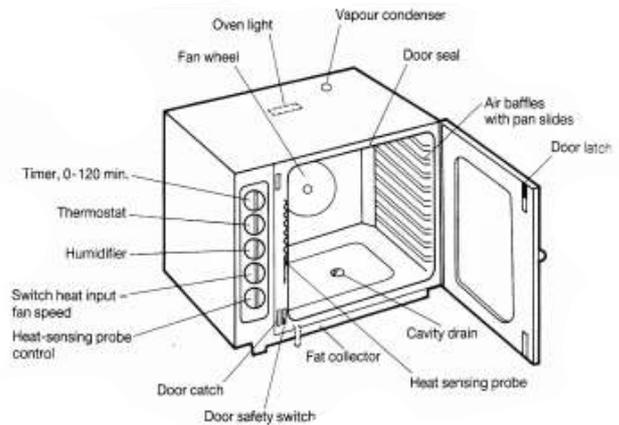
Convection Ovens

These are ovens in which a circulating current of hot air is rapidly forced around the inside of the oven by a motorised fan or blower. As a result, a more even and constant temperature is created which allows food to be cooked successfully in any part of the oven. This means that the heat is used more efficiently, cooking temperatures can be lower, cooking times shortened and overall fuel economy achieved.

Forced air convection can be described as fast conventional cooking; conventional in that heat is applied to the surface of the food, but fast since moving air transfers its heat, more rapidly than does static air. In a sealed oven, fast hot air circulation reduces evaporation loss, keeping shrinkage to a minimum, and gives the rapid change of surface texture and colour which are traditionally associated with certain cooking processes.



HOT AIR STEAMER OVEN



HOT AIR CONVECTION OVEN

There are four types of convection oven.

- Where forced air circulation within the oven is accomplished by means of motor-driven fan, the rapid air circulation ensures even temperature distribution to all parts of the oven.
- Where low velocity, high volume air movement is provided by a power blower and duct system.
- A combination of a standard oven and a forced convection oven designed to operate as either by the flick of a switch.
- A single roll-in rack convection oven with heating element and fan housed outside the cooking area. An 18 shelf mobile oven rack makes it possible to roll the filled rack directly from the preparation area into the oven.

Combination Oven

Combination ovens have brought about a revolution in baking, roasting and steaming. There are now many varieties of combination ovens available on the market. These ovens are now widely used in most sectors of the catering industry, fuelled by gas or electricity. They are especially used in large banqueting operations.

Ovens can be easily programmed to produce exact cooking times and the regeneration of chilled food, allowing chefs to produce consistent products every time.

The special features of combination ovens are:

- reduce cooking times;
- fully automatic - enable desired browning levels and exact core temperatures to be achieved;
- self cleaning;
- a combination oven system will allow more food to be produced in less space;
- energy efficiency;
- increased productivity.

A new type of combination oven of a different kind has been manufactured, it is a hybrid of fridge and oven. Designed for use in cook-chill food systems for banqueting or industrial catering. The chilled food is held in chill until the predetermined moment when the chilling unit switches off and the oven facility kicks in, bringing the food safely up to eating temperature.

The Cooking Process Management System

This links the combi-oven to a PC which monitors the cooking process to help with HACCP. The computer software monitors not just the combi-ovens, but other items of cooking equipment in the kitchen, such as pressure bratt pans, steamers and boiling kettles. The chef inputs into the software what the day's food production is to be, and the computer will work out the order in which the food should be cooked, and in what pieces of equipment, to deliver the food just in time for freshness.

The HACCP management part of this system can track food from the goods delivery to the plate by using probes - for example, a chilled or frozen chicken can be probed to monitor and record temperatures before the cooking process so that if a problem occurs in the food cycle, the kitchen manager can check to see if there were any discrepancies in the goods storage procedures.

During the cooking the probes will record any variations to the pre-set cooking programme. This means the software system can alert the kitchen management team not just that a problem has occurred during the cooking procedure, but where it occurred.

Smoking Ovens

Smoking certain foods is a means of cooking, injecting different flavours and preserving. Smoking ovens or cabinets are well insulated with controlled heating elements on which wood chips are placed (different types of wood chips give differing flavours). As the wood chips burn, the heated smoke permeates the food (fish, chicken, sausage etc.), which is suspended in the cabinet.

Microwave Ovens

Microwave is a method of cooking and heating food by using high frequency power. The energy used is the same as that which carries the television signal from the transmitter to the receiver, but is at a higher frequency.

The waves disturb the molecules or particles of food and agitate them, thus causing friction which has the effect of heating the food. In the conventional method of cooking, heat penetrates the food only by conduction from the outside. Food being cooked by microwave needs no fat or water, and is placed in a glass, earthenware, plastic or paper container before being put in the oven. Metal is not used as the microwaves are reflected by it.

All microwave ovens consist of a basic unit of various sizes with varying levels of power. Some feature additions to the standard model, such as automatic defrosting systems, browning elements, 'stay-hot' controls and revolving turntables.

The oven cavity has metallic walls, ceiling and floor which reflect the microwaves. The oven door is fitted with special seals to ensure that there is minimum microwave leakage. A cut-out device automatically switches off the microwave energy when the door is opened.

Combination, Convection and Microwave Cooker

This cooker combines forced air convection and microwave, either of which can be used separately but which are normally used simultaneously, thereby giving the advantages of both systems: speed, coloration and texture of food. Traditional metal cooking pans may also be used without fear of damage to the cooker.

Induction Cooking

The History

The principle of induction heating was discovered by Michael Faraday towards the end of the 19th century when he noticed a heating effect in iron cored transformers. This later became known as Faraday's iron loss laws for transformers.

The effect was recognised but was of pure academic interest until the 1930s when the British steel industry needing a fast way of heating steel, successfully exploited Faraday's iron loss laws by wrapping a copper coil around the steel rod and energising the coil with alternating current. This produced a strong magnetic field that in turn instantly heated the steel rod. Induction heating was born. Induction became popular for fast heating of large objects containing iron, but the equipment used to do this was expensive, bulky and by today's standards was fairly crude.

In the early 80s the advent of solid state power electronics persuaded a few companies to look at the principle for induction cooking, using a flat coil to react with the iron in the base of a pan and produce heat directly in the pan. Crude systems began to emerge which showed the promise of induction cooking but most were withdrawn from the market as it became apparent that neither the technology nor the electronic power devices were sufficiently developed to provide the market with the product it required;

special pans were needed and chefs were forced to adapt their cooking techniques. Some companies preserved with the original technology but it is only in the 1990s that electronic power technology advanced sufficiently to enable Induced Energy Limited to develop a comprehensive range of cooking hobs with the reliability, control and design flexibility to fully meet market needs.

Advantages of Induction Cooking Hobs

- Power Savings. The induction hob has a very high energy efficiency and only draws power when a pan is on the ring. Energy costs are substantially reduced.
- Safety. Only the pan gets hot therefore you cannot burn yourself on this type of hob.
- Cool Working Environment. As virtually all the energy is developed as heat directly in the pan very little heat escapes to the atmosphere therefore providing a cool working environment.
- Less Extraction. Because of the cool working environment the kitchen needs much less extraction, further reducing energy bills.
- Hygiene. The flat ceramic top provides a wipe clean hygienic surface which remains cool and therefore spillage will not burn onto the cooking surface.
- No Combustion Gases. Unlike gas hobs, induction hobs do not emit any combustion gases and are environmentally friendly.
- Speed of Cooking. Modern induction hob designs are faster than gas hobs.

What you need to know when purchasing an Induction Hob

Pans

Try to find an induction hob which works using normal pans. Beware of induction hobs which need special pans or do not give constant performance pan to pan.

Power Supply

The best hobs feature a near unity power factor which gives the ideal loading on the main supply and is preferred by the electricity suppliers. You will need to check if a particular induction hob will require the upgrading of the power supply.

Power Control

Most chefs are trained on gas hobs which have infinite power control i.e. heat which can be continuously varied from low to high without steps. Choose a hob with infinitely variable power control (0 to full power) and preferably one that has its power control set to mimic the power profile of the gas tap.

Repeatability

Choose a hob that is designed to take a range of pans without power variations pan to pan. In this way precise cooking to power settings can be achieved irrespective of pan type. This is particularly helpful to the chef who can quickly 'eyeball' a power setting and achieve consistent results.

Cooking Zone

Choose a hob with a high depth of field. This allows the pan to be moved about naturally during cooking, just like cooking over a gas flame.

Warranty

Check the warranty cover for the induction hob and the service backup. Plug in Plug out designs usually mean fast service units.

Energy Efficiency

This forms part of the commercial decision for a particular hob. The more energy efficient the hob the more you will save on running costs.

SAFETY FEATURES

Excess Temperature Control

It is important that the induction hob has an excess temperature control which will protect the hob, if for example the hob cooling air was blocked.

Boil Dry Protection

If a pan is inadvertently left to boil, dry on the hob there must be an automatic cut out which safely switches off - saving the pan, hob and the kitchen from damage.

CONVENIENCE

Digital Display

Unlike a gas hob, the induction hob does not have a physical indication of the power being developed (a flame), so some form of digital display is required to show, for example, the power.

Totally Flat Top

It is very convenient to have a flat unobstructed cooking surface. Not only is it easily cleaned but it allows the hob to be used front of house with the customer served directly from the back of the hob. Similarly hobs can be placed back to back on an island site giving access from all sides.

One Pan Over 2 Rings or 2 Pans over 1 Ring

Often it is necessary to put a large pan over 2 rings. Make sure that your prospective hob provides this feature. Additionally check that you can cook using 2 or more smaller pans from a single ring.

Griddle

For steaks etc. some hobs convert to a griddle using a cast iron or ferritic stainless steel griddle top.

Portable Trolley

Some chefs prefer to have their boiling table portable and use various sockets around the kitchen.

HALOGEN HOB

This runs on electricity, and comprises 5 individually controlled heat zones, each of which has 4 tungsten halogen lamps located under a smooth ceramic glass surface. The heat source glows red, when switched on, getting brighter as the temperature increases.

When the hob is switched on, 70% of the heat is transmitted as infrared light directly into the base of the cooking pan, the rest is from conducted heat via the ceramic glass. Ordinary pots and pans may be used on the halogen hob, but those with a flat, dark or black base absorb the heat most efficiently.

The halogen range includes a convection oven, and the halogen hob unit is also available mounted on a stand.

STEAMERS

There are basically three types of steaming ovens:

- atmospheric;
- pressure;
- pressureless.

There are also combination steaming ovens: pressure / convection steam; pressureless/fully pressurised; steaming / hot air cooking; combination of hot air and steam; combination of hot air and steam with 2 settings.

In addition, dual pressure steamers switchable between low pressure and high pressure, and two become more versatile. The modern combination steamers which can be used for steaming, stewing, poaching, braising, roasting, baking, vacuum cooking, gratinating, reconstituting, blanching and defrosting, have electronic controls for easier setting and more precise time/temperature control. The advantage of the electronic controls is that they assist in fuel efficiency. They are available in several sizes and there are many examples of their efficiency. For example, one large hotel quotes: 'using five electrically heated combi-steamers we served 500 English breakfast straight from the oven - no messing about with hot plates and cupboards'. With such a wide range of models available it is increasingly important to consider carefully which model is best suited to a particular kitchen's requirements.

Large Pans, Boilers & Fryers

BRATT PAN

The bratt pan is one of the most versatile pieces of cooking equipment in the kitchen because it is possible to use it for shallow frying, deep frying, stewing, braising and boiling. A bratt pan can cook many items of food at one time because of its large surface area. A further advantage is that it can be tilted so that the contents can be quickly and efficiently poured out on completion of the cooking process. Bratt pans are heated by gas or electricity and several models are available incorporating various features to meet differing catering requirements.

BOILING PANS

Many types are available in different metals - aluminium, stainless steel, etc. - in various sizes (10, 15, 20, 30 and 40ltr capacity) and they may be heated by gas or electricity. As they are used for boiling or stewing large quantities of food, it is important that they do not allow the food to burn; for this reason the steam-jacket type boiler is the most suitable. Many of these are fitted with a tilting device to facilitate the emptying of the contents.

After use, the boiling pan and lid should be thoroughly washed with mild detergent solution and then well rinsed. The tilting apparatus should be greased occasionally and checked to see that it tilts easily. If gas fired, the gas jets and pilot should be inspected to ensure correct working. If a pressure gauge and safety valve are fitted these should also be checked.

PASTA COOKER

This equipment is fitted with water delivery and drain taps and can be used for the cooking of several types of pasta simultaneously. It is electrically operated.

DEEP FAT-FRYERS

A deep fat fryer is one of the most extensively used items of equipment in many catering establishments. The careless worker who misuses a deep fat fryer and spills food or fat can cause accidents and waste money.

Fryers are heated by gas or electricity and incorporate a thermostatic control in order to save fuel and prevent overheating. There is a cool zone below the source of heat into which food particles can sink without burning, thus preventing spoiling of other foods being cooked. This form of heating also saves fat.

PRESSURE FRYERS

Food is cooked in an air-tight frying vat thus enabling food to be fried a lot faster and at a lower oil temperature.

HOT AIR ROTARY FRYERS

These are designed to cook batches of frozen blanched chips or battered foods without any oil in 4 - 6 minutes.

Computerised fryers are available which may be programmed to control automatically cooking temperatures and times, on and off switches, basket lifting and product holding times. Operational information is fed from a super-sensitive probe, which is immersed in the frying medium and passes information about temperature and rates of temperature change which may be caused by: the initial fat temperature, amount of food being fried, fryer efficiency and capacity, fryer recovery rate, quantity and condition of fat, product temperature and water content.

With all the above information the fryer computes exact cooking times and an automatic signalling device indicates the end of a cooking period.

Deep fat fryers should be cleaned daily after use by following the manufacturers instructions:

- turning off the heat and allow the fat or oil to cool;
- draining off and straining the fat or oil to cool;
- closing the stopcock, filling the fryer with hot water containing detergent and boiling for 10 - 15 minutes;
- draining off the water, drying the fryer, closing the stopcock and refilling with clean fat or oil.

HOT-CUPBOARDS (THE HOTPLATE)

Hot-cupboards are used for heating plates and serving dishes and for keeping food hot. Care should be taken to see that the amount of heat fed into the hot-cupboard is controlled at a reasonable temperature. This is important, otherwise the plates and food will either be too hot or too cold and this could obviously affect the efficiency of the service. A temperature of 60 - 76°C (140 - 169°F) is suitable for hot-cupboards and a thermostat is a help in maintaining this.

Hot-cupboards may be heated by steam, gas or electricity. The doors should slide easily, and occasional greasing may be necessary. The tops of most hot-cupboards are used as serving counters and should be heated to a higher temperature than the inside. These tops are usually made of stainless steel and should be cleaned thoroughly after each service.

BAINS-MARIE

Bains-marie are open wells of water used for keeping foods hot, and are available in many designs, some of which are incorporated into hot-cupboards, some in serving counters, and there is a type which is fitted at the end of a cooking range. They may be heated by steam, gas or electricity and sufficient heat to boil the water in the bain-marie should be available. Care should be taken to see that a bain-marie is never allowed to burn dry when the heat is turned on. After use the heat should be turned off, the water drained and the bain-marie cleaned inside and outside with hot detergent water, rinsed and dried. Any drain-off tap should then be closed.

FOOD DISTRIBUTION EQUIPMENT

In situations requiring mobile equipment e.g. Hospitals, banqueting, etc wheeled items are essential to facilitate service particularly of hot foods.

GRILLS & SALAMANDERS

The salamander or grill heated from above by gas or electricity probably causes more wastage of fuel than any other item of kitchen equipment through being allowed to burn unnecessarily for long unused periods. Most salamanders have more than one set of heating elements or jets and it is not always necessary to have them all turned on full.

Salamander bars and draining trays should be cleaned regularly with hot water containing a grease solvent such as soda. After rinsing they should be replaced and the salamander lit for a few minutes to dry the bars. For under fired grills to work efficiently they must be capable of cooking food quickly and should reach a high temperature 15 - 20 minutes after lighting, and the heat should be turned off immediately after use. When the bars are cool they should be removed and washed in hot water containing a grease solvent, rinsed, dried and replaced on the grill. Care should be taken with the fire bricks if they are used for lining the grill as they are easily broken.

CONTACT GRILLS

These are sometimes referred to as double-sided or infragrills and have 2 heating surfaces arranged facing each other. The food to be cooked is placed on one surface and is then covered by the second. These grills are electrically heated and are capable of cooking certain foods very quickly, so extra care is needed, particularly when cooks are using this type of grill for the first time.

FRY PLATES, GRIDDLE PLATES

These are solid metal plates heated from below, and are used for cooking individual portions of meat, hamburgers, eggs, bacon, etc. They can be heated quickly to a high temperature and are suitable for rapid and continuous cooking. Before cooking on griddle plates a light film of foil should be applied to the food and the griddle plate to prevent sticking. To clean griddle plates, warm them and scrape off loose food particles; rub the metal with pumice stone or griddle stone, following the grain of the metal; clean with hot detergent water, rinse with clean hot water and wipe dry. Finally reseason (prove) the surface by lightly oiling with vegetable oil.

Griddles with zone heating are useful when demand varies during the day. These reduce energy consumption in quiet periods while still allowing the service to be maintained.

Mirror chromed griddles have a polished surface which gives off less radiated heat which saves energy and makes for a more pleasant working environment.

BARBECUES

Barbecues are becoming increasingly popular because it is easy to cook and serve quickly tasty food on them and the outdoor location, smell and sizzle develop and atmosphere which many customers enjoy.

There are 3 main types of barbecue: traditional charcoal, gas (propane or butane) and electric. Remember that the charcoal-fired type takes about an hour before the surface is ready. With gas and electricity the barbecue is ready to cook almost immediately.

Gas is the more flexible and controllable. Propane gas is recommended because it can be used at any time of the year. Butane, does not work when it is cold. Propane is however, highly flammable and safety precautions are essential. Anyone connecting the gas container must be competent in the use of bottle gas. The supply pipe must be guarded to avoid accidental interference, and the cylinder must be placed away from the barbecue. The cylinder must be upright and stable with the valve uppermost and securely held in position. Connections must be checked for leaks.

SINKS

Stainless steel is generally used for all purposes.

TABLES

- Formica or stainless steel topped tables should be washed with hot detergent water then rinsed with hot water containing a sterilising agent - alternatively, some modern chemicals act as both detergent and sterilising agents. Wooden tables should not be used.
- Marble slabs should be scrubbed with hot water and rinsed. All excess moisture should be removed with a clean, dry cloth.

No cutting or chopping should be allowed on table tops; cutting boards should be used. Hot pans should not be put on tables; triangles must be used to protect the table surface. The legs and racks or shelves of tables are cleaned with hot detergent water and then dried. Wooden table legs require scrubbing.

BUTCHER'S OR CHOPPING BLOCK

A scrapper should be used to keep the block clean. After scrapping, the block should be sprinkled with a few handfuls of common salt in order to absorb any moisture which may have penetrated during the day.

Do not use water or liquids for cleaning unless absolutely necessary as water will be absorbed into the wood and cause swelling.

STORAGE RACKS

All types of racks should be emptied and scrubbed or washed periodically.

MECHANICAL EQUIPMENT

If a piece of mechanical equipment can save time and physical effort and still produce a good end result then it should be considered for purchase or hire. The performance of most machines can be closely controlled and is not subject to human variations, so it should be easier to obtain uniformity of production over a period of time.

The caterer is faced with two considerations:

- the cost of the machine: installation, maintenance, depreciation and running cost;
- the possibility of increased production and a saving of labor cost.

The mechanical performance must be carefully assessed and all the manufacturer's claims as to the machine's efficiency thoroughly checked. The design should be fool-proof, easy to clean and operated with minimum effort.

When a new item of equipment is installed it should be tested by a qualified fitter before being used by catering staff. The manufacturer's instruction must be displayed in a prominent place near the machine. The manufacturer's advice regarding servicing should be followed and a record book kept showing what kind of maintenance the machine is receiving, and when. The following list includes machines typically found in catering premises which are classified as dangerous under the Prescribed Dangerous Machines Order, 1964.

Warning: Before cleaning, all machines should be switched off and the plug removed from the socket.

☐ POWER-DRIVEN MACHINES

- Worm-type mincing machines.
- Rotary knife bowl-type chopping machines.
- Dough mixers.
- Food mixing machines when used with attachments for mincing, slicing, chipping and any other cutting operation, or for crumbling.
- Pie and tart making machines.
- Vegetable slicing machines.

☐ POTATO PEELERS

- Potatoes should be free of earth and stones before loading into the machine.
- Before any potatoes are loaded the water spray should be turned on and the abrasive plate set in Motion.
- The interior should be cleaned out daily and the abrasive plate removed to ensure that small particles are not lodged below.
- The peel trap should be emptied as frequently as required.
- The waste outlet should be kept free from obstruction.

☐ MACHINES WHETHER POWER-DRIVEN OR NOT

- Circular knife slicing machines used for cutting bacon and other foods (whether similar to bacon or not).
- Potato chipping machines.

FOOD PROCESSING EQUIPMENT

FOOD MIXER

This is an important labour-saving, electrically operated piece of equipment used for many purposes: mixing pastry, cakes, mashing potatoes, beating egg whites, mayonnaise, cream, mincing or chopping meat and vegetables.

LIQUIDISER OR BLENDER

This is a versatile, labor saving piece of kitchen machinery which uses a high-speed motor to drive specially designed stainless steel blades to chop, puree or blend foods efficiently and very quickly. They are also useful for making breadcrumbs. As a safety precaution food must be cooled before being liquidised.

FOOD SLICERS

Food slicers are obtainable both manually and electrically operated. They are labor-saving devices, but can be dangerous if not used with care so working instructions should be placed in a prominent position near the machine.

CHIPPER

The electric chipper should be thoroughly cleaned and dried after use, particular attention being paid to those parts which come into contact with food. Care should be taken that no obstruction prevents the motor from operating at its normal speed. Moving parts should be lubricated according to the maker's instructions.

MASHER (HAND OR ELECTRIC)

The hand type should be washed immediately after use, then rinsed and dried. The electric masher should have the removable sections and the main machine washed and dried after use, extra care being taken over those parts which come into contact with food. The same care should be taken as with electric chippers regarding obstruction and lubrication.

ICE CREAM MAKERS, JUICERS & MIXERS

Ice-cream and sorbet machines are available from 1 litre capacity and enable establishment to produce home made ice-cream and sorbets using fresh fruit in season or frozen and canned fruits at all times of the year. Juicers and mixers can provide freshly made fruit and vegetable juices, milk shakes & cocktail.

BOILERS

WATER BOILING APPLIANCES FOR TEA AND COFFEE MAKING

There are 2 main groups of water boilers: bulk boilers from which boiling water can only be drawn when all the contents have boiled, and automatic boilers which provide a continuous flow of boiling water.

BULK BOILERS

These are generally used when large quantities of boiling water are required at a given time. They should be kept scrupulously clean, covered with the correct lid to prevent anything falling in, and when not used for some time they should be left filled with clean cold water.

AUTOMATIC BOILERS

These boilers have automatic waterfeeds and can give freshly boiled water at intervals. It is important that the water supply is efficiently maintained, otherwise there is a danger of the boiler burning dry and being damaged.

PRESSURE BOILERS

This is the type that operates many still sets, consisting of steam heating milk boilers and a pressure boiler providing boiling water. Care should be taken with the pilot light to see that it is working efficiently. As with all gas-fired equipment it is essential that regular inspection and maintenance is carried out by gas company fitters.

COFFEE & MILK HEATERS

Water-jacket boilers are made for the storage of hot coffee and hot milk with draw-off taps from the storage chamber. Inner linings may be of glazed earthenware, stainless steel or heat resistant glass. It is very important that the storage chambers are thoroughly cleaned with hot water after each use and then cleaned regularly with a special brush.

REFRIGERATORS, COLD ROOMS, CHILL ROOMS, DEEP-FREEZE CABINETS & COMPARTMENTS

LOCATION

As adequate ventilation is vital, locate refrigeration equipment in a well-ventilated room away from:

- Sources of intense heat - cookers, ovens, radiators, boilers, etc.;
- Direct sunlight - from window or sky lights;
- Barriers to adequate air circulation.

HYGIENE PRECAUTIONS

Refrigeration cannot improve the quality of foodstuffs and can only retard the natural process of deterioration.

For maximum storage of food and minimum health risk:

- Select the appropriate refrigerator equipment for the temperature requirement of the food.
- Always ensure refrigerators maintain correct temperature for food stored.
- Keep unwrapped foods, vulnerable to contamination and flavour and odor transfer, in separate refrigerators or in air-tight containers and away from products such as cream, other dairy products, partly cooked pastry, cooked meat & delicatessen foods.
- Do not store foods for long periods in a good, general purpose refrigerator because a single temperature is not suitable for keeping all types of food safely and at peak condition.
- Never keep uncooked meat, poultry or fish in the same refrigerator, or any other food which is not in it's own sealed, air-tight container.

- Never refreeze foods that have been thawed out from frozen.
- Always rotate stock in refrigerator space.
- Clean equipment regularly and thoroughly, inside and out.

LOADING

- Ensure there is adequate capacity for maximum stock.
- Check that perishable goods are delivered in a refrigerated vehicle.
- Only fill frozen food storage cabinets with pre-frozen food.
- Never put hot or warm food in a refrigerator unless it is specially designed for rapid chilling.
- Ensure no damage is caused to inner linings and insulation by staples or nails, in packaging.
- Air must be allowed to circulate within a refrigerator to maintain the cooling effect - do not obstruct any airways.

CLEANING

Clean thoroughly inside and out at least every two months as blocked drain lines, drip trays and air ducts will eventually lead to a break down.

- Switch off power.
- If possible transfer stock to available alternative storage.
- Clean interior surfaces with lukewarm water and a mild detergent. Do not use abrasives or strongly scented cleaning agents.
- Clean exterior and dry all surfaces inside and out.
- Clear away any external dirt, dust or rubbish which might restrict the circulation of air around the condensor.
- Switch on power, check when the correct working temperature is reached, refill with stock.

DEFROSTING

This is important as it helps equipment perform efficiently and prevents a potentially damaging build up of ice. Presence of ice on the evaporator or internal surfaces indicates the need for urgent defrosting; if the equipment is designed to defrost automatically this also indicates a fault. Automatic defrosting may lead to a temporary rise in air temperature; this is normal and will not put food at risk. For manual defrosting of chest freezers always follow suppliers' instructions to obtain optimum performance. Never use a hammer or any sharp instrument which could perforate cabinet linings - a plastic spatula can be used to remove stubborn ice.

DISHWASHING MACHINES

Dishwashing machines take over an arduous job and save a lot of time and labor, ensuring that a good supply of clean, sterilised crockery is available. There are 3 main types

- Spray types pass through dish washers - the dishes are placed in racks which slide into the machines where they are subjected to a spray of hot detergent water at 48 - 60°C (118 - 140°F) from above and below. The racks move on to the next section where they are rinsed by a fresh hot shower at 82°C (180°F). At this temperature they are sterilised, and on passing out into the air they dry off quickly.
- Brush type machines - use revolving brushes for the scrubbing of each article in hot detergent water; the articles are then rinsed and sterilised in another compartment.
- Agitator water machines - baskets of dishes are immersed in deep tanks and the cleaning is performed by the mechanical agitation of the hot detergent water. The loaded baskets are then given a sterilising rinse in another compartment.

MISCELLANEOUS EQUIPMENT

Food Waste Disposers

Food waste disposers are operated by electricity and take all manner of rubbish, including bones, fat, scraps and vegetable refuse. Almost every type of rubbish and swirl, with the exception of rags and tins are finely ground, then rinsed down the drain. It is the most modern and hygienic method of waste disposal.

SMALL EQUIPMENT & UTENSILS

Small equipment and utensils are made from a variety of materials such as non-stick coated metal, iron, steel, copper, aluminium, wood.

IRON

- Omlette Pans
- Frying Pans
- Oval Fish Frying Pans
- Pancake Pans

TINNED STEEL

- Conical strainer (Chinois), used for passing sauces and gravies.
- Fine conical strainer, used for passing sauces and gravies.
- Colander, used for draining vegetables.
- Vegetable reheating container.
- Soup machine and mouli strainer, used for passing thick soups, sauces and potatoes for mash.
- Sieves.

COPPER

Tin lined copper pans are seldom used today because they are expensive, need periodic re-tinning which is also expensive, they also tarnish easily and look dirty.

ALUMINIUM

Saucepans, stock-pots, sauteuses, saute pans, braising pans, fish kettles and large, round deep pans and dishes of all sizes are made in cast aluminium. They are expensive but one advantage is that the pans do not tarnish; also because of their strong, heavy construction they are suitable for many cooking processes.

Water boiled in aluminium pans is unsuitable for tea making as it gives the tea an unpleasant color. Red cabbage and artichokes should not be cooked in aluminium pans as they will take on a dark color, caused by chemical reaction.

STAINLESS STEEL

Heavy duty stainless steel pans incorporating an extra thick aluminium base which gives excellent heat diffusion are available. They are suitable for all surfaces except induction hobs. Stainless Steel is also used for many items of small equipment.

NON STICK METALS

- Excessive heat should be avoided.
- Use plastic or wooden spatulas or spoons when using non-stick pans so that contact is not made to the surface with metal.
- Extra care is needed when cleaning non-stick surfaces, the use of cloth or paper is most suitable.