3
Planning

Work sequence

The work sequence describes the order of activities from the unloading of food through storage, preparation, cooking and washing up, which can be described as follows:

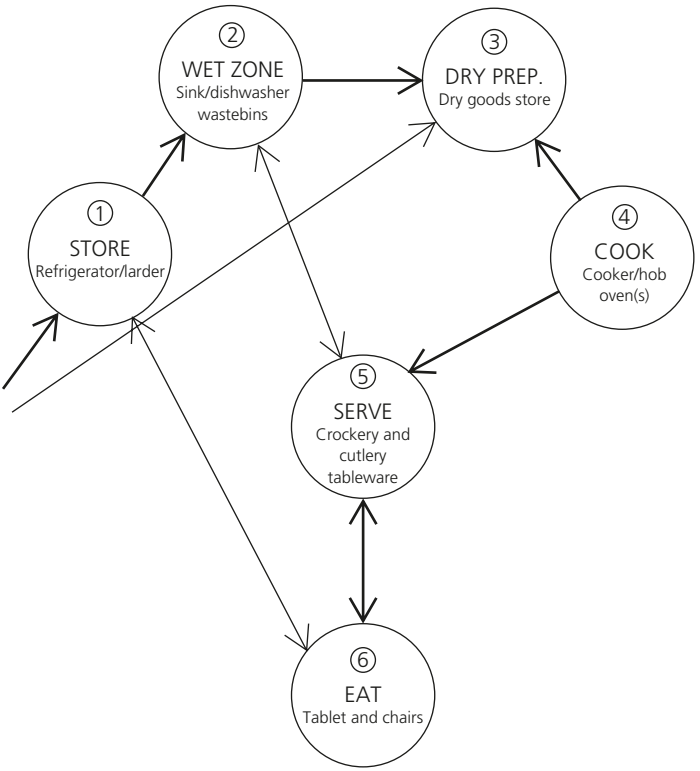
1 Store unloading and unwrapping of food, storing in refrigerator/freezer/larder/cupboards
2 Wash washing, peeling, chopping, sieving food, dishwashing
3 Prepare weighing, mixing, cake and pastry making
4 Cook hob for boiling and frying, grill for grilling and browning, oven for baking and roasting, microwave oven for defrosting, fast cooking and re-heating
5 Serve dishing up food, keeping food hot, toasting bread, storing cutlery, crockery and condiments
6 Eat table laying and eating

After this sequence is complete, there is the return sequence as follows:

Clear removing dirty dishes to sink and dishwasher, returning uneaten food to refrigerator and cupboards
Wash up waste disposal, loading dishwasher, hand washing, draining, putting away

One can see from the diagram that some cross-circulation is inevitable, as the sink is needed both for preparation and washing up. Likewise, storage of food will be in the refrigerator and in the dry goods cupboards.

The sequence preferred is normally planned from left to right or in a clockwise direction, but this is not essential and may be the prejudice of right-handed people. The left-hand cook may prefer a reverse order.

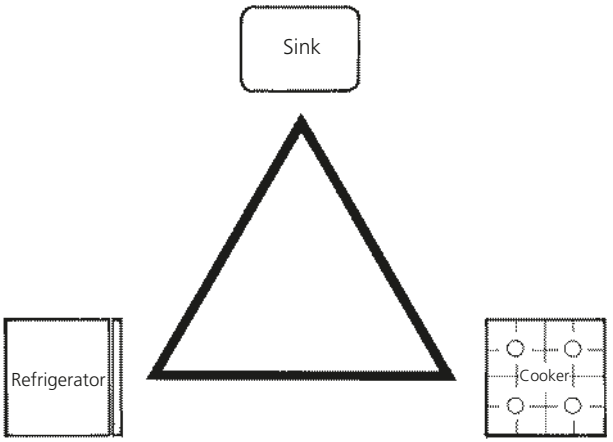


Work sequence

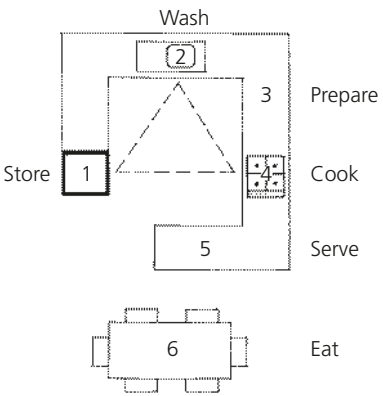
The heavier arrows indicate the main direction of activity. However quite a lot of cross circulation is inevitable – particularly when initially storing goods either in refrigerator or the dry store. Also the flow of crockery to and from the dishwasher and the table. The Wet Zone and the Dry Preparation area are interchangeable particularly as the worktop between the wet zone and cooking should be unbroken for ease of transfering heavy pans from sink to hob.

The work triangle

From the work sequences described above, it will be seen that there are three activities which relate to three main appliances – the refrigerator, the sink and the cooker. The relationship of these three fittings is commonly referred to as the *work triangle.*



Kitchen triangle
Optimum length between 3.6 m and 6.6 m.
Less than 3.6 m means worktop length too short.
More than 6.6 m is time consuming and hard on the feet



Plan demonstrating work sequence and kitchen triangle

The total length of the three sides of this triangle, measured from the centre front of each appliance, should not be less than 3.5 m or more than 6.5 m long. If the distance is shorter, then the work surface will be insufficient. If the distance is longer, then too much walking will be involved, making the whole process slow and exhausting.

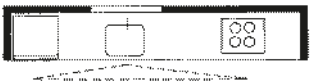
Avoid circulation through the triangle – especially between the sink and cooker. These should be connected with a continuous worktop not longer than 1.8 m so as to limit the distance of carrying heavy pots, filled with liquid, between the two.

From this will be seen that the small, relatively compact, kitchen is easier to work in than the traditional large farmhouse kitchen. It is also evident that the 'U'-shaped plan satisfies these requirements best where the cook, centrally placed, can swivel round with very little movement between the three appliances, with continuous worktops uninterrupted by circulation routes or tall cupboards.

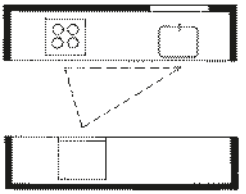
Where circulation does have to divide the kitchen, as in a two-sided or *galley* kitchen, then the sink and cooker should be kept to the same side.

The island kitchen, much loved by futuristic designers, often full of gleaming state-of-the-art gadgets, is the least satisfactory arrangement as it entails an excessive amount of walking, needs a large area of circulation space all round and has an insufficient amount of work surface and storage space.

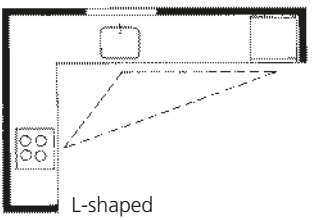
Never interrupt the triangle with tall units.
Group tall units together at the end of a worktop run.



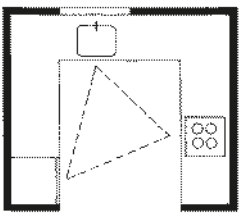
In-line



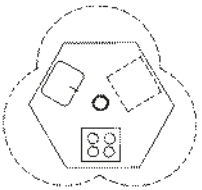
Two-sided or galley



L-shaped



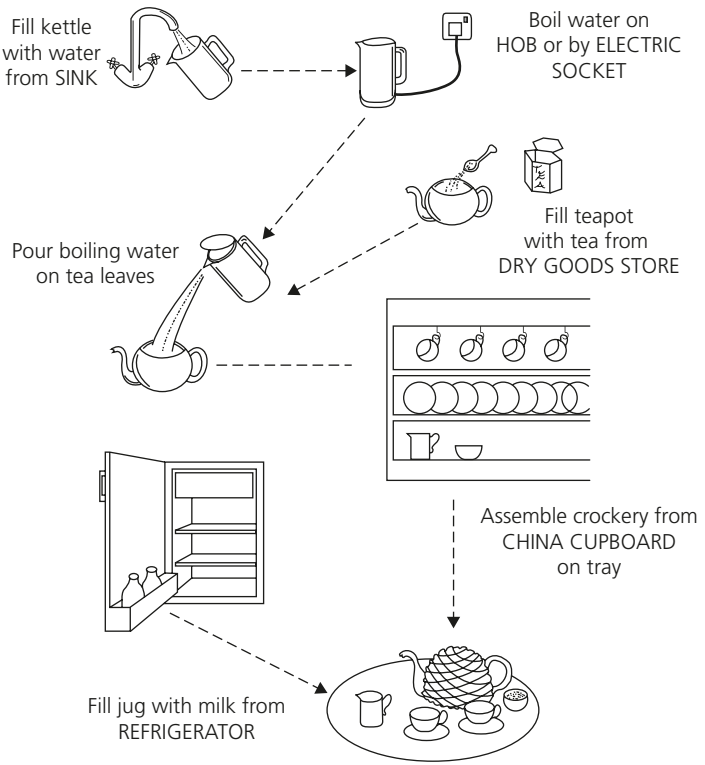
U-shaped



Island unit

Kitchen layout
These diagrams show different layouts with the kitchen *triangle* in a dotted line.
This links the three most used appliances: sink, cooker and refrigerator.
The *U-shaped* kitchen is the easiest to use as the appliances surround the cook and are set in worktops unbroken by circulation.
Conversely the *island unit* generates too much walking while having totally inadequate amount of worktop space.

A good test for checking the efficiency of a kitchen is to examine the steps needed to make a pot of tea. This seemingly simple task is in fact a complex manoeuvre which involves most parts of the kitchen as follows:



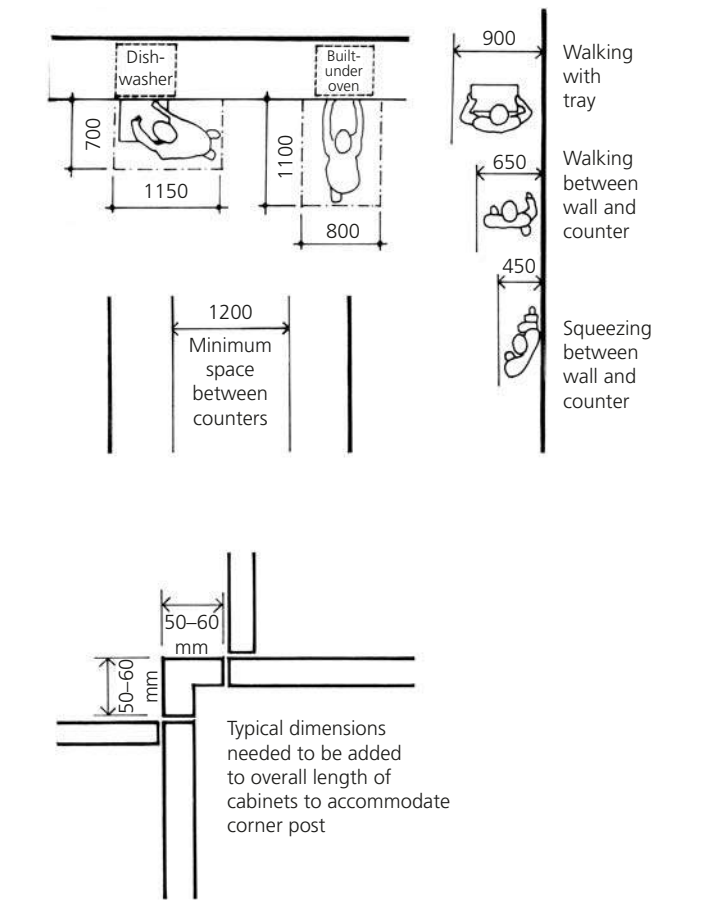
Making a pot of tea

- First, fill a kettle of water from the sink and turn it on, if electric, or take to the hob
- Fill teapot from tea caddy and fetch sugar bowl from dry goods cupboard
- Take cups, saucers and teapot out of cupboard, and teaspoons from cutlery drawer, and place on tray
- Fetch milk jug from refrigerator
- Pour boiling water into teapot, place on tray and carry to table.

Note that warming the teapot first, once a mandatory part of the ritual, is now no longer considered necessary in the properly heated kitchen.

Ergonomics

The dictionary definition of *ergonomics* is defined as 'the study of man in relation to the environment and the adaptation of machines and general conditions to fit individuals, so that they may work to maximum efficiency'. Nowhere is this more applicable than in the kitchen.



Key dimensions on plan

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Allow a minimum of 1200 mm between parallel countertops. This is needed for two people to pass one another and for access when kneeling down to base cupboards and under-counter appliances.

See the diagram for the minimum dimensions for space in front of low level ovens and dishwashers.

The minimum clear doorway dimension for carrying a tray so as not to graze knuckles is 850 mm, ideally 900 mm.

Minimum space for walking between a counter and a vertical surface is 650 mm. Squeezing between the two is 450 mm.

Key vertical dimensions

The height of cupboards, drawers and shelves should be set at levels to minimise bending down or stretching up too far. Heights between +750 mm and +1550 mm are comfortable to reach.

The maximum upward reach (for a woman) when standing in front of a counter to access shelves is +1950 mm increasing to +2000 where there is no worktop.

Average eye level for men and women is 1567 mm.

Worktop heights

There has been much controversy about the ideal height for the kitchen countertop – not least because it has to suit women (average height +1650 mm) and men (average height +1740 mm).

Recent studies suggest that the standard height of +900 mm is too low, and could be increased to +950 mm or even +975 mm. While it is true to say that it is more comfortable to work at a worktop that is too high rather than too low, worktops also have to suit elderly people whose height has shrunk, and not yet fully grown children. So in this respect the +900 mm height is not a bad compromise.

However, should tall clients want the worktops raised, this is simply done by increasing the plinth (toe recess) height. Conversely, lowering the height below +900 mm is now not really feasible as under-counter appliances have a more or less standard height at +850 mm. So, more important than the precise worktop height is the *underside* of the worktop which should not be less than +870 mm. The finished worktop height is then determined by the thickness of the worktop itself which, depending upon construction, is likely to be between 30 and 50 mm.

Worktops should project at least 20 mm in front of the base cupboard doors so as to allow hand or bin space to collect crumbs and to prevent drawer handles from pressing uncomfortably into the cook.

There is a school of thought that suggests the sink top should be some 50 mm higher than the surrounding worktops so as to raise the bottom of the sink bowl to a more comfortable height. But the resulting change in worktop levels can cause breakages, and does not allow heavy pans to be slid from sink to hob. Similarly, such tasks as hand whisking in a bowl are easier to do at table top height of +740 mm. But the advent of electric dishwashers, whisks and food processors has reduced considerably the amount of time needed to do these jobs, so the argument for higher sinks is less valid.

Having said that, there are still some occasional lengthy chores such as shelling peas or cutting up oranges for marmalade, which are more comfortable to do sitting down. So, in addition to the larger table, a small table outside the area of the kitchen 'triangle' would be an asset. An easier alternative is to use the adjacent dining table, covered with a protective cloth.

Cabinets: dimensions to note

A continuous toe recess at the bottom of all cabinets should be provided. This should not be less than +100 mm high and 75 mm deep.

Knee recesses under worktops should be at least 460 mm wide by 500 mm deep, and not lower than 150 mm below a worktop.

Wall cupboards should not be fixed lower than 400 mm above a counter, otherwise they will obscure the back of the counter.

Wall cupboard doors should not be too wide – 400 mm is the ideal maximum width to reduce the chance of banging one's head on a door if left open. Similarly in a narrow, two-sided kitchen, base cupboard doors should not be too wide.

Appliances: planning considerations

Waist-high mounted appliances, such as ovens and refrigerators, save backache and give a better view into the machines.

As these will be fitted into tall cabinets, they will reduce the amount of worktop surface, so may not be suitable for the smaller kitchen.

Free-standing under-counter appliances can be mounted on castored platforms. Note that this may mean a higher worktop height. This is to make them easier to pull out for servicing, particularly useful for laundry machines, which often require frequent attention.

Although 'fully integrated' under-counter appliances such as ovens, refrigerators and dishwashers, are always more expensive than free-standing equivalents, the aesthetic advantage of having matching door fronts on an unbroken plinth line cannot be over-emphasised. How many otherwise attractive kitchens has one seen ruined by the one white-fronted appliance looking like a bad tooth with dirt-catching gaps alongside, spoiling the whole effect.

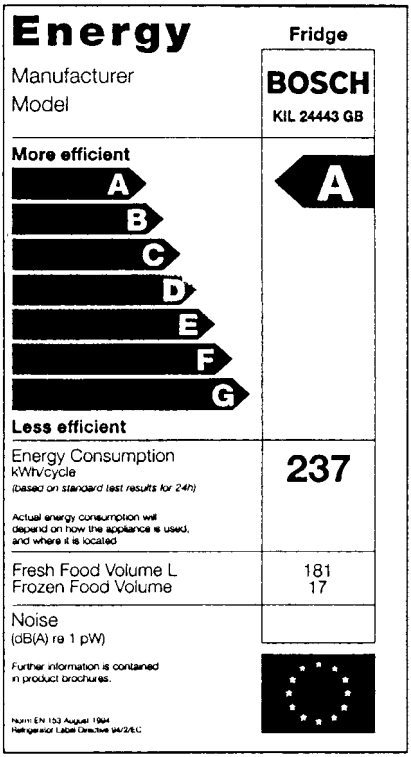
Energy labels

In 1994, the EU introduced *energy labels* which by law must be displayed on all electric ovens, dishwashers and cooling appliances (also washing machines, tumble driers, air conditioners and lamps). The virtue of this system is that it persuades the consumer to buy the most energy efficient appliances that will save running costs while at the same time protecting the environment.

In addition to this label, there is also the *Energy Star* which is primarily designed for office equipment. This shows that the product is capable of monitoring as to how often it is used, and, if not much activity is taking place, going into sleep mode thus keeping energy costs down.

There is also the *Energy Efficiency Recommended* label run by the Energy Saving Trust (EST) which is a quick way to identify energy efficient appliances. This logo indicates not only that the product is 'A' rated on the EU energy label but also that the EST conducts spot checks to ensure the classification is correct.

The *Eco-flower*, not yet very often found, may also be displayed. This means the product has been independently assessed and confirmed that it meets strict environmental criteria.



EU Energy label

Energy Efficiency Recommended label

Eco-flower

Sinks

More time is spent at the sink than anywhere else in the kitchen. Even with the advent of dishwashers, most food preparation is undertaken in, or next to, the sink.

If possible, position the sink under or near a window to get good daylight and a view. This is also useful as the gully for the waste pipes will be on an outside wall and therefore will minimise waste pipe runs.

If there is no window, or the light and view negligible, then there is no advantage (except for shorter waste runs) in positioning a sink in front of a window and, in fact, there can be an advantage in having wall space over a sink for plate racks and storing sink utensils.

Windows behind a sink should have a cill at least 100 mm higher than the sink top to provide an upstand behind the sink, and to stop splashes dirtying the window glass.

Sink bowls should be positioned at least 400 mm away from a tall unit or return wall for elbow room.

Do not position a draining board in the 'dead' corner of an 'L'-shaped worktop as this will be inaccessible if someone is working at the sink bowl.

The question of whether it is easier to wash up from left to right or vice versa is sometimes raised. In fact it is immaterial because, in either way, the object being washed has to be picked up and passed from one hand to the other to the draining area. It might only be applicable if the draining rack is positioned over the area where the dirty dishes are put for washing. In this case, the hand which holds the brush might dictate that the opposite side should be for parking and draining. Remember, however, that both right- and left-handed people will use the sink, and that it is surprising how quickly people adapt from washing up in the opposite way to which they were accustomed.

Sinks with integral drainers and tap holes are preferable to those without as they limit the amount of water splashed on to the adjoining work surfaces. A wall-mounted mixer is also preferable to a sink-mounted mixer as it avoids lime scale and dirt accumulating around the mixer base. However, this implies making a duct behind the counter for the supply pipes which may be difficult to achieve if space is limited.

There is a wide range of sinks available, which are discussed in greater detail on pp. 76–82.

Cookers

Cookers should not be placed in corners or adjacent to a doorway where the door could swing into the cook, and people may brush past pan handles and cause accidents.

Allow at least 400 mm both sides of a cooker or a hob for worktop and elbow space.

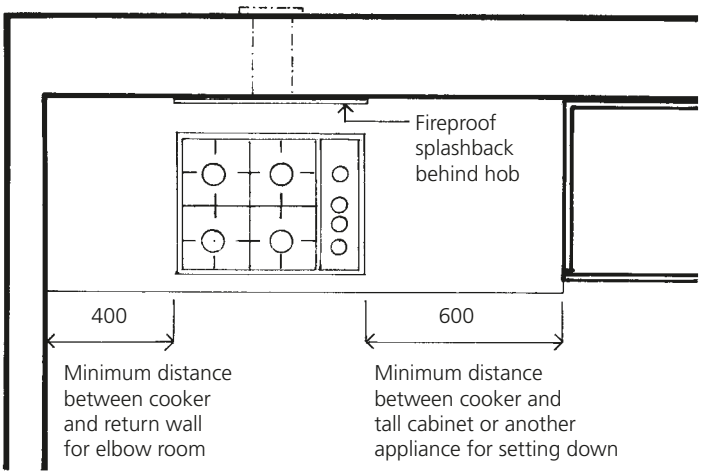
Never position a cooker under a window where draughts could extinguish gas flames, or near flapping curtains and blinds which could catch fire.

Ideally, place the cooker or hob on an outside wall so that the fan or cooker hood can be vented directly to the outside air.

Never place wall cupboards, other than fan casings, over a hob and make sure the distance of the underside of such casings and the hob is that recommended by the fan manufacturer.

Provide a fireproof finish to act as a splash-back behind the cooker, such as tile, metal or toughened glass.

See pp. 97–106 for details of different cooking appliances.



Positioning a cooker or a hob

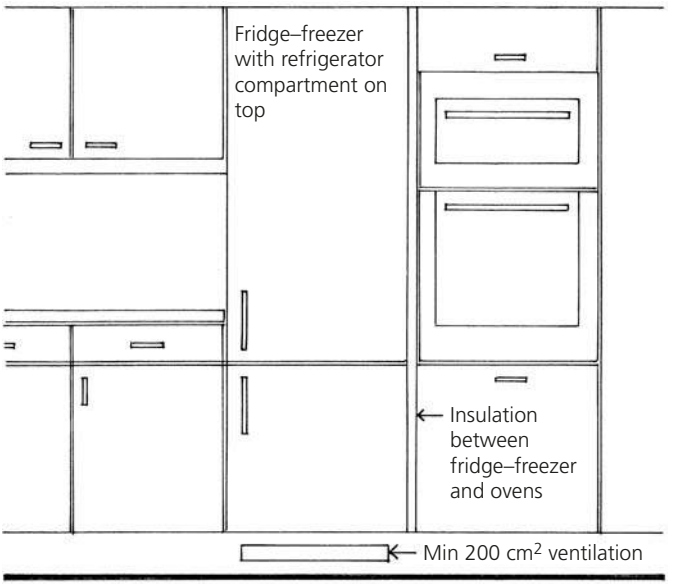
Refrigerators and freezers

Refrigerators, which form the third part of the kitchen triangle and are therefore frequently used, are more comfortable when positioned at waist-height in a tall unit if space will allow.

Freezers are used far less frequently so, when a combination fridge/freezer is used, choose one with the refrigerator compartment on top for easier access.

Where a refrigerator or freezer is placed next to an oven provide good insulation between the two to prevent scorching and to prevent the fridge working overtime.

See pp. 125–134 for details of refrigerators and freezers.



Insulation & ventilation for refrigerators & freezers