

# What type of commercial dishwasher should I choose.

If you are looking at purchasing a new or replacement commercial dishwasher, there are a variety of types, models and systems to choose from. Unlike cars, where the decision is based on available budget, intended use of vehicle and design or looks preference as well as comfort and “must have” criteria, a commercial dishwasher is a low interest product. On the face of it a commercial dishwasher does not add any value or taste to your end product which is food.

The critical approach by both government and consumer to implement effective control measures to ensure safer and improved products has an ever tightening grip on the food industry. Safe work practices not only include the safety of employees, but steps must be taken to assure that the end product, food, is guaranteed to be safe for consumers.

The Hazard Analysis Critical Control Points (HACCP) based blueprint for food safety is an undeniable part of the food service industry. Hygiene risk factors do not only apply to transportation, storage, preparation and serving of food. Cleaning up and storage of kitchen utensils and dishware is a vital element.

It is a fact that manual washing cannot reach the same (constant) level of cleanliness as a commercial dishwasher. Brushes, pad, cloths (even tea towels) are all a potential source of infection. When manually washing, items would have to be immersed in CLEAN water at 70 degree Centigrade minimum, to achieve any possible level of sanitation. The average person cannot put their hands in water over 50°C. Obviously there could be a potential hazard in poor sanitation practices.

Drying dishware with a cloth is long known to be a safety concern. It is also a potential hazard to put away wet items and store them in such a manner that lack of circulation can cause mould growth.

The choice of commercial dishwasher depends on the intended use and the required outcome. For example a domestic dishwasher would not require the same level of process control as an industrial washer in a high risk pharmaceutical environment.

There are however some basic common facts that we think will give you some insight when inquiring about your next commercial dishwasher.

## *Commercial dishwasher types.*

Commercial dishwashing machines vary in size and function, depending on what they have to wash. However they all share one basic function and that is to provide the mechanical action required to clean an item.

Rhima’s washing philosophy is to use a high volume of water at (a relatively) low pressure for its washing action. We use this technology for all our washing machines to clean cups, saucers, plates, glasses, tray, pots, pans, cutlery etc. We also use this technology in our medical washing machines and our general purpose industrial washing machines.

What is the advantage of using our method of washing?

- » **Safe**
- » **Versatile**
- » **Efficient**
- » **Cost effective**

Interestingly this method of washing has basically not changed since the first commercial dishwashing machine was patented by Josephine Cochran of Shelbyville, Illinois way back in 1886. The basic principle of commercial glass and dishwashers is that a tank is filled with water. The water is heated to at least 65°C and a (non-foaming) detergent is added. This is recirculated for the wash cycle. In a separate tank fresh water is heated to a minimum of 82°C and sprayed over the glasses and dishes after the wash cycle through a separate set of nozzles. There are some variations to this but for the sake of explaining the various types it is not relevant.

The combination of hot (82°C) final rinse and a rinse aid allows the dishes to flash dry as soon as they are removed from the machine. China dries quicker than plastic due to better heat retention.

#### **Glass washers:**

Generally speaking benchtop or underbench washers that are dedicated in their set up to wash glasses. In many cases these machines are connected to specially treated water (Reverse Osmosis or RO water) which has all minerals removed to allow for spotfree results. It is recommended that glass washers are only used for washing glasses because the setup of detergent and rinse aid is suited for glass washing. An exception is Rhima's Optima 400 and 500 series that have a special clean cycle to allow the machine to be used for more than one purpose.

Since many glass washers are front of house it is important that they are quiet and have a gentle washing action.

Most smaller commercial glass washers use wire racks that are suited for use in refrigerators or bar storage racks. Large glass washers use plastic 50 x 50 cm racks with dividers and heightening frames. These racks also act as a storage system to reduce breakage. Glass washers can be conveyor type but this is mainly for very large operations.

Rhima Models GS-35 and GS-40 are ideal for most restaurants and bars. The Optima 400 is perfect if you want to improve your results and connect the machine to RO water. The Optima 400 is also a perfect finishing machine for cutlery as it eliminates the need for polishing.

Despite what many manufacturers claim, the practical capacity of a commercial glass washer is about 15 racks per hour. Standard wash cycle is 2 minutes. Standard connection is hot water and 10A or 15A single phase (240V). For our RO machines we recommend 3-phase and cold water.

#### **Bar washers:**

Bar washers are machines that fit in between a glass washer and a under counter dishwasher. The GS-40 and Optima 400 are typical machines that can be used as a bar washer. Ideally suited for coffee shops and the like to wash glasses, cups, saucers and light lunch (sandwich) plates. Wash cycle is about 2 minutes.

#### **Under bench or under counter dishwashers:**

In physical size these machines are similar to a domestic dishwasher. They are built to suit an opening 600mm wide and to fit under a 900mm high benchtop.

Under bench commercial dishwashers have a minimum cycle time of 2 minutes but some models have choice of longer cycles for cutlery and more heavily soiled items. Most under bench commercial dishwashers use 50 x 50 cm plastic racks, although Rhima does have a special compact dishwasher model GS-45 using 45 x 45 cm racks.

There is no need to pre-wash soiled items, although in some cases pre-rinsing in cold water speeds up production and keeps wash water clean, although this system is mainly used on larger pass through commercial dishwashers.

Commercial under bench dishwashers use the same wash and final rinse principle as our glass washers but with more powerful pumps.

Despite what many manufacturers claim, the practical capacity of a commercial dishwasher is about 15 to 20 racks per hour. Standard wash cycle is 2 minutes. Standard connection is hot water and 15A single phase (240V). For machines connected to cold water we recommend 3-phase power connection.

Models are the GS-50 and Optima 500. All Rhima's under bench machines have a pump out drain as well as thermostop, which is a safety system that ensures the machine has reached the correct temperatures before completing the cycle in order to comply with HACCP guidelines.

### **Pass through commercial dishwashers:**

A pass through or hood type commercial dishwasher is a machine whereby the washing racks are manually pushed at bench height into the wash chamber. The hood or on some older machines the side doors are opened manually or automatically. The process can be either straight or corner operation.

Due to the smooth operation of no bending or lifting, hood type machines are more efficient than under bench machines. Racks can be loaded while the machine is in process, then the clean rack pushed out as a soiled one enters the wash chamber.

Hygiene is also improved as there is now a clear separation between soiled and clean dishes. A sink can be fitted on the dirty side and fitted with an overhead spray nozzle to pre-rinse dishes before they enter the machine. This also increase productivity.

Rhima models are the HT-11 which is a budget price pass through commercial dishwasher. It has the same washing power as the GS-50 underbench commercial dishwasher, but due to pass through concept it has a higher capacity.

Other models are the Optima HT 14 with or without condenser and automatic hood.

In most situations in Australia commercial dishwashers with a power rating over 6kW and above bench (pass through or stand-alone) configuration require an exhaust hood, however due to modern heat recovery technology, steam condensers in many cases eliminate the need for separate extraction hoods (always ask your local council though). The hot air caused by the final rinse is passed through a heat exchanger. This is cooled down and condensed using incoming cold water that in turn is pre-heated for the final rinse. Energy savings can be as high as 6kWh.

Thanks to their ease of loading and unloading as well as additional pre-rinse units pass through machines can wash about 20 to 25 racks per hour.

Most pass through machines are connected to three phase power.

### **Commercial utensilwashers :**

Washing pots, pans and utensils requires a machine with a more powerful wash pattern as well as a larger wash chamber. Utensil washers come in many different sizes and configurations. The construction in many cases is stronger because they have to deal with heavy pots and pans being loaded.

Rhima has two kinds of pan and utensil washer. The LP-series are stand-alone front loading machines with single or dual pumps and chamber sizes ranging from a foot print of 500 x 610 mm x 450 mm high to 1,350 x 725 mm x 820mm high.

The other system is the granule style machine. These machines use plastic pellets to add to the washing power. Ideal for heavily baked on GN-containers as they eliminate totally the need to pre-soak or scrub and scour pots and pans. These machines come in various sizes depending on the size of your operation.

### **Conveyor dishwashers:**

When capacities increase and a pass through commercial dishwasher is too small, you may require a conveyor type commercial dishwasher. There a basically three types of commercial conveyor dishwashers:

- Rack conveyor
- Continuous belt conveyor (or flight type)
- Special purpose (tray, cutlery, trolley etc)

To increase speed a number of tanks are placed in a row, for example a pre-wash followed by a main wash followed by a final rinse. This means no time is wasted opening and closing a hood, or manually pre-rinsing. Dishes are loaded into rack and conveyed through the various stages onto a clean dish exit bench. To increase capacity the speed is increased which means extra tanks to ensure a minimum contact time to comply with HACCP guidelines. Dryer sections can also be added.

*Rack conveyor dishwashers* use an internal ratchet system to move 50 x 50 cm plastic dish racks through the various wash zones. The advantage of rack conveyor dishwashers is that they can be adapted to suit any space and any operation. If you have space constraints, then a rack conveyor machine is a good proposition. Rack conveyor machines can be fitted with pre-sorting and segregating tables and conveyors giving a very efficient and versatile operation. Ideal for operations with many varied items of which many need to be placed into racks.

Purchasing this type of system requires specialised advice.

*Continuous belt conveyor dishwashers* are exactly that, a continuous conveyor belt runs through the various stages of dishwasher. The tank configuration is similar to a rack conveyor machine, based on contact time and speed: the quicker the speed the more tanks are required. The belts configuration can be made to suit the type of washing up. This type of machine is ideally suited to wash many of the same items. They originated from the airline industry (hence the name flight type) where they had to process many similar items.

Dishes are placed directly onto the moving conveyor by operators and pass through the various stages to be unloaded from the belt at the clean side.

Washing racks can be loaded onto the conveyor but it is not very efficient if you have too many. Another issue with continuous conveyor machines is that they are not flexible – they need straight line length and cannot go around corners like a rack conveyor system.

They can give enormous capacities though. A rack conveyor machine running at 500 racks per hour is probably as large as you would want it. However an equivalent continuous conveyor machine, such as we use in industrial applications, can process in excess of the equivalent of 8,000 racks per hour.

This type of machine also requires specialised advice.

*Special purpose dishwashers* include machines specifically to wash a particular component. For example when washing large quantities of food service trays it could be more efficient and practical to use a dishwasher dedicated to washing trays. The same applies for washing cutlery or glasses. There are special machines to wash serving trolleys. This type of equipment is seldom stand-alone; it is used in a complete dishwashing operation for hospitals, airlines and other large catering facilities.

**Twin Star** is a revolutionary dishwasher which is in a field of its own. It combines the ease of use of a domestic type dishwasher (load and leave) with the capacity and cleaning power of a commercial dishwasher. This machine is ideal for nursing homes, single setting restaurants, board rooms and other situations where 15 to 25 people gather and a commercial dishwasher would be required.