What Parts are Being Cleaned?
Ultrasonic cleaning has proved a very effective and economical way to remove all types of contaminants from nearly anything that can be safely immersed in an aqueous biodegradable cleaning solution. Applications include medical and surgical instruments, plastic injection molds, diesel engine components and aircraft engine components.

The volume and placement of the parts being cleaned will determine the volume of cleaning solution required to immerse them completely. The amount of solution needed to fill the tank to its capacity – generally the fill line or other designation indicated in the operations manual – is called the maximum volume. The service volume is the amount of solution needed to accommodate displacement by parts being cleaned while allowing full immersion.

Ultrasonic Cleaning Tank Dimensions
An important point to keep in mind when selecting your ultrasonic cleaner size is that parts must be fully immersed in the cleaning solution. Dipping one end in for a cleaning cycle then the other end is a no-go.

Fortunately, off-the-shelf ultrasonic cleaners are manufactured in a variety of cleaning tank dimensions whether you are cleaning printed circuit boards or rifles. Custom designs can be fabricated to accommodate large or oddly shaped parts.

The Role of Cleaning Baskets
Most ultrasonic cleaning cycles are accomplished in baskets that allow parts to be easily immersed in and removed from the cleaning bath. They are essential because they keep parts from contact with the bottom of the cleaning tank where vibration will eventually wear holes in the tank, rendering it unfit for further service.

What is important here is that cleaning basket dimensions are smaller than cleaning tank dimensions. This allows easy placing and removing baskets using handles that rest over the side of the tank.

It is obvious then, when you select the size of your ultrasonic cleaner you take into full account the cleaning basket dimensions. Makes sense, right?

This information should be readily available from your ultrasonic cleaner tank supplier. The correct basket size will allow you to accommodate the dimensions of the parts you are cleaning. Keep in mind that they should not be stacked in the basket for reasons noted above.

The Importance of “Working Depth”
So, what the heck is working depth?

Ultrasonic cleaner baskets are designed to suspend products being cleaned at an ideal distance from the tank bottom to maximize the efficiency of the cleaning process. Without going into too much detail, ultrasonic transducers are bonded to the underside of the tank bottom, causing it to vibrate, thus creating the cavitation bubbles that do the cleaning.

As with cleaning basket length and width being somewhat less than tank length and width, so too the depth of the cleaning basket will be less than the depth of the tank. Hence the term working depth. It is the distance between the bottom of the basket and the surface of the cleaning solution when the tank is filled to the proper working capacity.

From this one might surmise that to select the correct ultrasonic cleaner size based on what you are cleaning an early point to determine is the working depth of the equipment. Perhaps a case can be made that the working depth point should be number one in the selection criteria.

We invite you to check out our short video on ultrasonic cleaner size in our learning center here.

Solution Volume and Service Volume
Last on our list for ultrasonic cleaner size is what is called displacement. You experience this when you add ice cubes to a glass filled with water. The same applies to ultrasonic cleaners. And here’s why:

Ultrasonic cleaners have a maximum solution volume and service solution volume. These statistics are provided in product detail sheets and user manuals. For purposes of discussion we define maximum volume as the amount of cleaning solution needed to fill the tank to its capacity – generally the fill line or other designation indicated in the operations manual.

The service volume is the amount of solution needed to accommodate displacement by parts being cleaned while allowing full immersion.

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