

Re-nozzle your tunnel, a simple way to save on Chemical and Water

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An often-overlooked area in the world of car washing is the size and placement of nozzles used for water and chemical. With the rising cost of water and an increased focus on sustainability, saving money and operating a “greener” car wash are a win/win. More water and chemical are not always better and there is a point of diminishing returns in the application of water and chemical.

The goal is to find that line. I know, I know, the chemical representative is supposed to say “More Chemical” but it is our job to help you find that line! Let us take a look at a few areas for you to check.

Number and Placement of Nozzles:

It is not unusual for one to be able to reduce the number of nozzles on a given function by 20% or more. Start off by removing one set of nozzles and check the quality of the chemical or water offering. Keep reducing until you hit the point of diminishing returns, as mentioned above. This can save a significant amount of water and chemical and is typically the biggest area for improvement. Be creative and change the placement and angles to see if you can improve performance while reducing water and chemical!

Flowrate:

In addition, check the flow rate of each nozzle, and the angle/degree of the spray pattern. Reduce the size of the nozzle in areas where this will not cause issues or damage to the pumps or high-pressure units. Often, the end product will turn out even better when making this change because less water is going on the car, therefore it is easier to clean and dry.

This simple change can drastically reduce the water and/or chemical consumption and it is easily quantifiable by calculating the flowrates and gate time of your car wash.

When doing this, it is very important to adjust pump pressure or injector sizes accordingly. This, along with proper spray angles, will ensure complete coverage of the vehicle or equipment, while at the same time improving the efficiency of your car wash offering!

CSI provides, *The Nozzle Optimization Calculator:*

It is used with downstream injection applications that can help you determine the proper nozzle sizing for each application in your wash. The calculation is based off your input of the injector size required, number of nozzles on the arch, 35 PSI at nozzle and whether the product is foamed or just liquid.

Quantity of Nozzles	Value
Top Nozzles	3
Middle Nozzles	4
Lower Nozzles	4
Total	11

Orifice Size	Value
Top Orifice Size Required	0.017
Select Middle Orifice Size	0.018
Select Lower Orifice Size	0.018

<https://www.cleaningsystemsinc.com/calculators/nozzle/>

The calculator allows you to configure the location of arch with nozzles being on top, middle and bottom, so that you have the option of “washing top down”, larger on top and smaller as you move down the arch. Once it calculates your inputs it will give you the orifice size of each of the nozzles by location.

Another important note is that different nozzle manufacturers have different orifice sizes. If you look at most nozzle model or part numbers you’ll often find that one number represents the angle and the other is the orifice size.

For example, a 6504 would typically mean that the nozzle would have a spray angle of 65 deg while a standard 04 orifice size would represent .4 GPM at 40 PSI. It is the “04” that changes in actual diameter or orifice size of the nozzle from manufacturer to manufacturer.

Worn and Clogged Nozzles:

Inspection of nozzles should be a regular preventive maintenance measure. Scheduling this in a platform such as [WashKey®](#) is a great idea to ensure nozzles are regularly replaced and fixed as needed. Breaking your wash down into four sections and replacing one section every quarter is one way to spread out cost and labor and make certain that your nozzles are operating at their optimal capability.

A clogged or cracked nozzle can cause diminished performance and a worn nozzle can cause an increase in consumption. Both can be detrimental to your offering.

Poor water quality can clog and/or wear nozzles. The better your water quality is, the less issues you will have with your nozzles. These are just a few of the variables in this very simple area.

A complete review of your nozzles can be a huge savings, especially if you own or operate multiple sites. The cost of the labor and nozzles can often be saved in only a few months and often, your car wash experience is improved. Check your nozzles and get that clean, dry and shiny car while consuming less water and chemical!

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