



ROTO-JET OF AMERICA COMPANY, INC.

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Answers to Common Application Questions

The following *Questions and Answers* are typical of the real-world information our sales engineering staff discuss with each new customer.

- **What Types of Chemicals are used?**

The cleaning solution is usually 95% - 98% plain tap water with the remaining portion typically based on sodium metasilicate minerals (*alkaline* solutions) or potassium hydroxide/sodium hydroxide minerals (*caustic* solutions).

With proper chemical maintenance and use, this mixture works very well in standard carbon-steel units as the detergent will have built-in rust inhibitors to not only protect the unit, but leave a small amount of rust-inhibitor on each part as well. This “drag-out” of rust inhibitors does reduce the overall amount of R.I. in the unit.

If the unit is built of carbon or mild steel, the use of treated water (by de-ionization or reverse osmosis) is NOT recommended - just use standard tap water. “Soft” water can be used to help reduce mineral spotting, however, monitoring of proper solution strength then becomes even more necessary (*see Foaming*).

With stainless-steel construction, mildly acidic solutions can be used for 1-step cleaning and phosphotizing prior to subsequent painting or coating processes. In stainless-steel units, treated (D.I. “de-ionized” or R.O. “reverse osmosis”) water can be used with the benefit (especially during a Rinse Stage) of virtually eliminating “water spotting” due to elimination of the normal minerals found in standard tap water.

The *key points* of aqueous-based cleaning solutions are compliance with environmental regulations, chemical cost savings, and increased operator safety.

- **How long does the Cleaning Solution last?**

The Roto-Jet Parts Washer is a “closed-loop” or “self-recirculating” system in that there is NO continuous discharge of spent wash solution as is typical with a dishwasher. The cleaning solution is constantly screened or filtered and then re-circulated by the wash pump.

After the initial “charging” of the unit with water and the appropriate amount of chemical, only minimal additions of water and detergent are necessary to maintain a proper solution “mix”. In many cases, the solution can last for weeks, or even months, if additional steps (such as oil skimming and solution filtering) are employed.

Basically, you’ll use the same solution over and over until such time as you notice re-deposition of suspended contaminants back onto your parts, or the build-up of removed contaminants in the bottom of the wash tank is such that it starts to cover the components of the heating system.

- **Do I even *need* to use a Chemical or Detergent? Won't the water cause the unit to rust?**

The chemicals used in aqueous-based parts washers accomplish several purposes.

A) The surfactants in the chemical cause the contaminants on the parts to “release” and thus allow removal from the surface of the parts due to the spray and wash-down of hot water in the solution.

B) The anti-rust additives in the chemicals protect carbon-steel units from rusting, as well as give the finished parts – parts that have *just* had all their protective oils and greases removed, some rust protection as well

C) Contain anti-foam reagents so the cleaning solution doesn't “boil-over” as it becomes loaded up with broken-down oils, fats, and greases (*see Foaming*).

If your unit is made of stainless-steel, then water alone *could* be used for cleaning, but in the vast majority of applications, some kind of chemical is still required to speed up cleaning and/or protect the cleaned parts.

VERY IMPORTANT NOTE

When a unit is seen to rust, it is usually due to one or more of the following reasons.

- * **Using poor quality** or the wrong chemicals with inadequate rust-inhibitors.
- * **Improper monitoring of solution strength.** Testing with a PH strip will only indicate the PH of the cleaning solution - not it's actual solution strength. Obtain a Titration Kit from your chemical supplier, used much like a swimming pool test kit, to properly test solution strength.
- * **“Non-use” or idle-time.** Every time a Wash Cycle is done, fresh rust-inhibitor is deposited on the walls of the unit. If the unit sits “steaming” for a length of time, the water vapors inside the wash chamber will “wash down” the inside walls, effectively removing all the protective rust-inhibitors deposited during the last Wash Cycle. This “wash-down” effect is especially pronounced when a unit is left heating overnight or over a long weekend with the door closed.

The best steps an Operator can take to prolong the life a carbon steel parts washer are:

- * Use and maintain the proper chemical solution.
- * Run the machine periodically during the work period.
- * Turn off the heat when there are long periods of non-use.
- * When shut-down for extended periods of time, leave the door slightly open to allow the unit to “breathe”, especially over a long weekend.
- * If storing the unit, you **MUST** remove any cleaning solution in the tank and drain any horizontal pumps to prevent impeller lock-up due to rust.

- **The chemical says its “bio-degradable” and “non-hazardous”. Are the wastes hazardous?**

In most cases, the answer is YES. Although most modern cleaning compounds are bio-degradable and safe when mixed with water in proper concentrations, it's usually the contamination being removed that causes the solution to be classified as “hazardous”.

The first time you put an oily part in the unit for cleaning, the oil is removed and then becomes part of the cleaning solution. Your “safe” and “bio-degradable” water mix is now a hazardous mixture, not to mention if the parts you're cleaning have any heavy or toxic metal “dust” such as engine bearings, cadmium, etc. Always document your “waste stream” and use a reliable waste-hauling company when servicing the units.

- **Will I need a Rinse Stage?**

Most cleaning operations do not require the additional step of Rinsing as there is normally very little residue left on the freshly cleaned parts when using quality chemicals. Liquids usually leave less residue than powders.

In fact, if your parts are iron or steel (or even aluminum), rinsing can negatively impact your parts by removing the very rust-inhibitors just deposited on the parts during the Wash Stage.

However, a Rinse Stage can be set-up to *apply* additional rust-inhibitor during operation to increase the “shelf-life” of the part. This can be accomplished by use of a DEMA Injector Valve (which adds a bit of additional rust-inhibitor to the Rinse Water during each Rinse Cycle) or by adding additional Rust Inhibitor to the Rinse Water Tank (in the case of a full Recirculating Rinse Stage).

- **How long will it take to clean my parts?**

This depends entirely on what’s being removed, i.e., light oils, machining fluids, normal shop grim will typically take a 1-5 minute cleaning cycle. Heavy oils, stamping compounds and grease can take 5-10 minutes. Rust, paint, adhesives, decals and labels can take 15-20 minutes or more to clean.

CLEANING TIME DEPENDS ENTIRELY UPON THE DESIGN OF THE UNIT (addressing such factors as wash pump size, spray jets and manifold pressure, part configuration and spray access to the part, size and quantity of the parts, parts loading and unloading) AND WHAT THE CUSTOMER NEEDS TO MEET PRODUCTION REQUIREMENTS.

Units have been built with 75 HP pumps and 150 PSI (*and much higher!*) spray manifolds to entirely strip the carbon, dirt and automotive heads within 1 minute. However, custom racks and chain-downs are necessary to keep the parts from being thrown around inside the wash chamber.

Other parts are so large and heavy, the turntable is fixed inside the wash chamber and the Wash Manifold rotated around the part.

- **Will I need to vent the “steam vapor” to the outside?**

A quantity of “steam vapor” is generated during the wash cycle as the heated spray impacts the parts. At the start of the Wash Cycle, this “steam” will be seen escaping through various openings of the wash chamber (such as the Oil Skimmer Tank) as the inside of the wash chamber pressurizes from the spray manifold.

If the door is immediately opened at the end of the cleaning cycle(s), a large quantity of “steam vapor” will escape the wash chamber. If the parts are left inside the wash chamber for a period of time and the door left closed however, this vapor will re-condense inside the wash chamber.

A “vapor exhaust” stack is provided on the top of the unit. If the shop environment has a high ceiling, it may not be necessary to run the stack up through the roof. A short stack extension IS recommended, however, to mitigate any “splash-out” of condensed steam vapor into the immediate area when the unit initially starts up.

If additional humidity or possible chemical odor is objectionable in the shop area or if the vapor exhaust stack would have elbows or other restrictions, a Powered Exhaust Fan is recommended and almost a necessity. Some units can be equipped with a “Vapor Scrubber” which removes a majority of vapor without vent piping.

- **Will my parts be dry after washing?**

After washing, the parts are usually at the approximate temperature of the cleaning solution. In fact, where the parts have a lot of weight and mass, we usually recommend additional heating capacity for the unit.

With the cleaning solution running at a normal minimum of 140⁰ F, most parts have a tendency to air dry fairly rapidly once removed from the wash chamber. Often, “capture” areas on the parts will have to be either manually emptied or blown-out with shop air.

We do offer several options for addressing solution remaining on parts or if an additional Drying Stage is needed for the overall cleaning process.

- **Do you install your equipment and what about operator training?**

We do not typically offer installation, although we have worked with various mechanical contractors in the past where the customer wanted a “turn-key” operation. Like training, this would be an additional service.

The units do come with an Installation and Operators Manual, examples of which we can provide prior to any purchasing decision.

- **What about parts, repairs, and customer service?**

Roto-Jet Of America Company, Inc. is still supplying support and parts for units that are over 30 years old. You’ll find our “after-sales” support to be among the best in the industry. If you have an issue with a new unit still under Warranty, we simply ask to discuss the problem first and then, if not easily resolved, will authorize fast, local repair and re-imbusement if the problem is found to be covered by our Warranty Guarantee.

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