

PRESSURE WASHERS AND CLEANING EQUIPMENT CARE



Like your truck, chisels, drills, fishing rods and cleaning equipment, performance and longevity can be directly linked to product quality coupled with routine cleaning and maintenance. The workhorse in masonry cleaning is the ubiquitous pressure washer, and it's not such a big stretch to credit whisky for its invention. While working on the whisky still in his Pennsylvania garage in 1926 during Prohibition,

Frank W. Ofeldt II discovered, quite by accident, that steam forced through a small hose under high pressure successfully removed grease from the floor.

The following year, the Steam Jenny was introduced, and since then, dozens of companies have stepped into the marketplace with power washers — hot, cold, gas, electric, steam, big, little, on wheels, with truck mounts and more. Kem-O-Kleen®, a division of Unique Industries based in Denver, lays claim to the “World’s Best Masonry Cleaning and Restoration Systems” for having been designed by a stonemason in the early 1970s for stonemasons and professional masonry cleaners. In addition, sand blasters are occasionally used for preliminary cleaning, along with a variety of old-fashioned buckets and brushes.

The Pressure Washer Manufacturers’ Association (PWMA.org) issued standards for testing and rating performance in 2010, reaffirming them in 2016. This non-profit trade association based in Cleveland, was formed for developing standards and increasing understanding of pressure washers by manufacturers as well as consumers. It espouses the benefits of using pressure washers as these:

- **Savings.** Pressure washers save you lots of time, exhausting effort and labor costs by transforming tough cleaning jobs into easy tasks
- **Solutions.** A pressure washer is the ideal solution for cleaning exterior surfaces such as decks, driveways, siding, concrete floors, parking lots, boats and boat ramps, and much more
- **Conservation.** Using a pressure washer can actually reduce water consumption by maximizing the power of the water you use
- **Results.** When pressure washers are used and maintained according to the manufacturer’s instructions, you can enjoy long-term cost savings and visibly better results.

Cleaning in general includes four basic elements, neatly listed on steamjenny.com and followed up with a hand-washing analogy:

- *pressure*
- *water volume*
- *cleaning chemical or soap*
- *heat*

Washing one's hands is an example of the four "elements of cleaning" at work. When hands are simply coated with a dried non-greasy deposit, water alone will wash it away. A high volume of free-flowing water will speed the process because the impinging force loosens the dirt and the volume floats or flows it away. When dirt contains oil or grease, a chemical must be used. In hand-washing, the chemical is soap. Because soap is an emulsifier, the hands can be cleaned, to some degree, using cold water. After the soap is applied, the hands are rubbed briskly together. The friction creates heat plus an abrasive action, which helps to break down and loosen the dirt particles. Using hot free-flowing water will result in faster cleaning as the soap and heat will emulsify the dirt more effectively, while the impingement of the pressure loosens it and the volume carries it away. [steamjenny.com]

So, while you are cleaning buildings, walls, rocks, job sites and final masonry projects, bear in mind that you need to clean the cleaning equipment for optimum performance and minimum needless repairs or replacement expense. A cowboy takes great care of his horse; a professional golfer cleans his clubs; a lumberjack tends to his chain saw; and masons and masonry cleaners are conscientious about their cleaning equipment.

High Pressure Washers

Before moving to cleaning your equipment, a few thoughts on operating it effectively are noteworthy. Use only the approved cleaning liquids, correct gasoline and appropriate power sources for your power washer. Prior to inspecting and cleaning it, shut it down and let it cool. Be sure all moving parts have stopped, and it's prudent to use eye protection with side shields even when cleaning. Randy Weil, president of Unique Industries, advises reading the owner's manual for details about the machine, operation, maintenance schedules and troubleshooting advice.

Garrett Smith founded Hot Shot Pressure Washing, Inc., in Salem, Va., after serving in the Army's 10th Mountain Division and attending college. "I got a business degree at SUNY Plattsburgh in upstate New York after military service, then moved to Virginia," he relates. "I always wanted my own business, and I love working outside. I started pressure washing on weekends with one piece of equipment and a truck." Across more than 20 years, his business has grown, and today, Smith has positioned Hot Shot as a premier pressure washing company in Southwest Virginia. Some of his work includes emergency

hydraulic spills like vacuuming up oil, and he specializes in environmental compliance projects due to concerns about storm drainage and environmental impact.

Smith invests in truck-mounted power washers that can cost up to \$10,000, so taking care of them is imperative. He also prefers belt-driven models to direct drive. “We run them hard, often seven to eight hours straight day after day,” he says. “I can hear a pressure washer with a problem and know what’s wrong with it from the sound.” Three of the most important things he emphasizes to maintain good equipment and keep everyone safe are:

- Keeping a good water flow when running
- Avoiding freezing temperatures
- Training power washer operators

“If starved for a constant water flow, the unit will definitely overheat,” he explains. “If they freeze overnight, they’re done for, and you need to rebuild or replace the pump or, worst of all, buy new equipment. Inexperienced operators are a potential disaster, both for equipment and personnel. Once you take your finger off the trigger, for example, the pressure has to go somewhere, so you must know how to handle it correctly every minute.”

The flagship Kem-O-Kleen® K-3003 masonry cleaning machine from Unique Industries is a trailer mounted unit which optimizes pressure, heat and the ability to use muriatic acid or other chemicals in a high-pressure stream. Before putting leaving for a job site, Weil suggests checking tire air pressure, a firm and locked attachment to the tow vehicle, working lights and that everything is securely fastened. “Dragging a hose that unrolled, a wand falling off en route, losing a cap, cover or container is not the best way to start the day,” he declares. “Before starting the engine, check the fluid levels.”

According to Weil, the best way to think of checking fluid levels is as a *cheap insurance policy* for the machine. “Lack of a \$3 quart of oil can cause thousands of dollars of damage. Internal combustion engines need a daily oil level check; it is a small crankcase and a day’s use can materially affect the oil level. In addition,” he continues, “the engine may be water cooled, so check coolant level. Tri-plex high-pressure water pumps also have a crankcase and typically a site glass to make checking oil level easy. Some models may have other accessories, which need attention, for example, a Kem-O-Kleen® has an air

compressor, which also has an oil reservoir. Make sure the machine is level before checking fluids for an accurate reading and be sure to use the proper oil when topping-off, water pump oil is different than engine oil.”

Briggs and Stratton lists three main types of pressure washer nozzles:

- Adjustable for changing a spray between wide fan spray and single pinpoint
- Quick connect tips with set spray patterns for precise control
- Briggs & Stratton ProjectPro™ nozzle system, a unique set of nozzles with preset pressure and flow settings for different projects.

Nozzles can be cleaned with a brush or a straightened paper clip to remove debris from openings. Follow that with flushing the nozzle holes with running water, and all is good to go. Pressure washers may pulsate if dirt has compromised the inlet, discharge valve or plunger. Running out of fuel or out of oil are also common shut down reasons. Worn out seals, gaskets and O-rings can cause water or oil leaks at the connections. Checking them at least twice a year, depending on how much you use the equipment, can assure smooth operation on the job when you need it most.

Fluids keep things running smoothly, and consistent loss of fluid is a signal. “If the pump oil looks like coffee with a lot of cream in it, water may be entering the crankcase,” Weil explains. “Water reduces crankshaft and connecting rod lubrication. Catching that and fixing it early can avoid a far more expensive pump failure later.” Weil goes on with a quick checklist at the outset:

- Before connecting the water source, take a quick look at the screen filters to make sure there’s no obstruction to impede inbound water flow.
- Connect water source to the machine. Many water pressure washers have a ball valve on the pump head. The purpose of this valve is to insure air is purged from the pump head ensuring the pump is not running dry at start-up. A dry pump builds up heat quickly, which shortens the life of the seals.
- Start the machine and listen for any odd sounds.
- Squeeze the trigger and check for leaks. Certain types of unloaders (pressure relieving) are affected by leaks, causing them to cycle in and out of bypass.

- For hot water units, squeeze trigger a few times on and off to check proper burner operation. The burner should only be on when water is flowing. Otherwise, it can boil, build up pressure and result in a serious explosion.

At the end of the workday, Smith checks to be sure everything is properly secured, hoses are working, nozzles are clean, gaskets in place. Nozzles get clogged all the time with pieces of grit and airborne debris. When something goes wrong, he suggests starting at smallest opening and working backwards to unclog any obstruction. This is often the most common failure and an easy one to correct.

Both Weil and Smith stress the cold weather and never leaving a machine in freezing temps. Hot Shot has a climate-controlled building, so the equipment is never exposed to freezing temperatures. “We rock in winter time,” Smith says. Much of his business year-round is attributed to his environmental compliance knowledge for emergency work, and the fact that his trucks are always ready to roll. “Some washers have accommodations for purging water,” Weil explains. “The Kem-O-Kleen® system is displacing water with antifreeze, including a recovery system for antifreeze reuse. If freezing is a possibility, it is best not to gamble.”

Routine maintenance also includes changing out oil and oil filters and air filters. Pressure washers on wheels need their tires checked for tread, air, bearings and suspension attachments. “At Kem-O-Kleen®, we also recommend removing the pressure relief valve and inspecting for sediment deposits roughly every season. The pressure relief valve is located after the coil. The coil can have interior rust particles accumulate on the pressure relief valve and impede its effectiveness,” says Weil.

Replacement Parts

In the event that someone drives over your wand, cord, hoses or smashes into the entire unit and something gets damaged, replacement parts are available for almost every make and model. Universal pumps, wands, hoses, hose adapters, spray tips are available individually and as a little package deal, so you can have most of the replacement parts you might need handy. Unique Industries, parent company of Kem-O-Kleen®, stocks and ships parts including engines, coils, tanks, pumps and pumps, burners, hoses, unloader valves and everything else you need to keep its products in top condition.



Buckets and Brushes

Buckets and brushes should be cleaned and dried after every use to prevent scum buildup and reduce any transfer of dirt or cleaning solution to another surface or mix with another cleaning agent. You can't beat soap and clean water for cleaning and fresh air for drying. Liquid dishwashing soap or a solution of 50-50 vinegar water is good for soaking, then rinse and air dry. Exercise caution using chemicals in plastic buckets, reading all instructions and warnings prior to mixing and using.

Storage

Randy Weil's tips for storage are invaluable and provide another measure of what he dubs cheap insurance.

1. Diesel fuel and gasoline have a shelf life. Over time diesel fuel can become a little more viscous and eventually can plug fuel nozzles in burners. Gasoline can leave varnish deposits in carburetors. Additives are available that will help stabilize the fuel. Periodic starting can help avoid varnish build-up. Purging the fuel from the tanks and fuel systems can also work. Be careful if the fuel tank is untreated steel on the interior because it can rust, and then rust particles cause clogs next season.
2. Chemical systems also need to be purged for longer-term storage. The chemicals can dry out and clog hoses, fittings and nozzles. Very strong chemicals, such as those with hydrochloric acid as the active ingredient can out-gas and build up pressure in the chemical system or release corrosive gases into the atmosphere. Purge the system and rinse with water.
3. The high-pressure water system works best when it is used. When a pump sits for a long time, iron or other minerals in the water can deposit on the check valves and cause them to stick. A sticking check valve is not a crisis – they are easy to remove and “unstuck” and reinstall. That can be avoided by firing up the pressure washer once a month.
4. The issue of freezing has been mentioned, but it is worth repeating when thinking about storage. Purge or antifreeze!

Pressure washers have improved dramatically over the years. For example, in the last decade alone, Kem-O-Kleen® has made more than 70 improvements to its flagship model, all oriented toward greater reliability, durability and convenience. “That said, pressure washers are still a machine and as such need some TLC for best results,” Weil concludes. And Garrett Smith concurs: “Know your equipment, know your machines, and you'll know when something's not right and can fix it and go to work.”

Joanne M. Anderson is a long-time freelance writer and editor with 1,000 or more articles in print. As an avid DIY person, she might replace her 22-year-old pressure washer as a result of writing this article.

Something with wheels for sure. www.jmawriter.com

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