



## Introduction

Pressure washers have come a long way. Over the last ten years the quality has increased as prices have become more affordable. The cleaning ability of a pressure washer is great, removing dirt, grime, and algae quickly, efficiently and effectively. A pressure washer can greatly increase your ability to maintain and clean your property and equipment giving it greater value. If your time is valuable, this equipment could be a good investment, but if you get the wrong machine, you will be frustrated and you could waste a lot of time and money. The goal of this Buying Guide is to help you understand what a pressure washer does and what you need to look for when deciding to purchase one.

A pressure washer is actually a fairly simple piece of equipment. A motor or engine turns a pump, pushing water through an orifice (tip). The water accelerates as it goes through the small hole, much like a river flows faster in a narrow gorge, and that fast moving water is very useful for blasting dirt and grime. The math is quite simple. Each time the pump turns over, a specific volume of water is pushed through the tip. The more water you push through the tip, the more pressure is developed, and therefore more power is required. The higher the pressure, the faster the water moves, and the harder it hits the dirt, removing it from the surface you want to clean.

The two most important considerations when buying a pressure washer are;

**The Size:** which will determine how long it will take to do the job or how many jobs you can do in a day.

**The Life Expectancy:** which will determine how many hours of work you can do per dollar spent during the life of the machine.

Here are some basic ratings;

**HP (Horse Power)** – This is how much power the engine or motor produces. This rating is important because it directly relates to how much pressure and volume the pump can produce.

**PSI (Pounds Per Square Inch)** – The pressure generated which contributes to the cleaning force.

**GPM (Gallons Per Minute)** – The volume of water which also contributes to the cleaning force.

**CPU (Cleaning Power Units)** – To determine the CPU rating of a pressure washer, you simply multiply the GPM x the PSI. The greater the CPU, the greater the ability the machine has for cleaning deeply and effectively. Often a consumer is so focused on the PSI rating of the machine, that they do not consider the CPU.

For example, a pressure washer may have a rating of 2800 PSI, and 2 GPM giving it a CPU of 5600. Another pressure washer is rated for 2400 PSI and 4 GPM giving it a CPU rating of 9600. In this example the lower PSI machine has more than 40% greater cleaning power than the higher PSI machine. The result is that the 2400 PSI machine will be able to clean an area 40% faster than the 2800 PSI machine.

Now consider this, a garden hose will typically provide 6 GPM at 10 PSI giving it 60 CPU. With a standard spray nozzle attached to the garden hose you can get around 5 GPM at about 40 PSI generating 200 CPU. We all have seen the difference of how much more effective a simple spray nozzle is at cleaning dirt off surfaces. Trying to clean your driveway with your garden hose spray nozzle generating 200 CPU is fairly ineffective. However, if we take a midrange pressure washer rated at 2.0 GPM and 2500 PSI (5000 CPU), the CPU rating represents a staggering 25 times increase over a typical garden hose spray nozzle.

A commercial pressure washer rated at 4 GPM and 4000 PSI is an incredible 16,000 CPU. It is not difficult to see the difference in efficiency. However, this is all true within a range. If you have extremely high pressure and low volume, you can cut steel or concrete (water jet cutter), and if you have extremely high volume and low pressure, you have a river. Neither of those examples are very good for cleaning your house or driveway.

## Pumps

This is the part of the pressure washer that receives water from your hose, and pumps it through a tip at high pressure. There are several common types of pumps that you will see in commercial and home owner type machines.

All pressure washer pumps have pistons and valves similar to a gas engine or air compressor. On some pumps the pistons are driven by a plate on an angle (wobble plate), and in other cases the pistons are driven by a crankshaft. These pumps are generally built better and will last longer. There will also be a bypass valve so that when you let go of the trigger, or when the tip gets plugged, the water will bypass and go back to the inlet side of the pump. If left in this mode for longer than the manufacturer recommends, the water will get hot and cause damage to the pump. The pump on the gas drive pressure washers includes a thermal relief valve that dumps hot water into the bypass loop.

Most bypass valves are adjustable so you can dial down the pressure when cleaning sensitive materials.

Low cost pressure washers have very low life expectancies (some as low as 60 – 100 hours). When buying a pressure washer, make sure you find out the life expectancy of the pump. If the information is unavailable, stay clear because it is very likely that the manufacturer does not want you to know how low it is. Another very important factor to consider is parts availability.



KMS Tools was a warranty/service centre for some low end brands, however lack of parts availability and unreliability of these machines were such a problem that we decided to no longer provide this service. Before buying your machine, ask where you can get parts if you need them. KMS is often referred to by other retailers as a source for parts and repairs for numerous brands that are pretty much disposable.

If you are buying a new machine for \$200.00 or less, expect it to be a disposable machine that might only last you one season, and be prepared to spend a lot of time to get the job done.

## Drives

The “Drive” describes how the motor is connected to the pump.

Direct drive systems are most common. The pump is bolted directly to the motor or engine with a shaft coupler. Compared to a belt drive system, this is a much simpler method needing fewer parts and space resulting in a more compact design. Direct drive is also considerably more economical than an equivalent rated belt drive machine.

Belt drive systems are typically seen on more industrial platforms. The pump on a belt drive unit turns at a much slower speed.

The belt absorbs vibration which would wear out a unit faster. Since the pump turns at a lower speed all the pistons and valves in the pump are larger. All this adds up to a cooler running machine that will last considerably longer than an equivalent direct drive version. However, there is slightly more maintenance and considerably more dollars involved (10 – 30% more). If you are using your pressure washer on the job, then this is what you want. However, an equivalent direct drive machine will have the same performance for a lot less money.

## Engine /Motor

The engine or motor is the part that powers the pump. The more powerful the engine or motor (rated in HP), the greater the PSI and GPM that can be produced. Gas engines are typically designed to last between 300 and 3,000 hours. The motors on electric pressure washers usually last longer than the pumps.

Electric motors are very low maintenance and fairly quiet. There is also no exhaust so they can be operated indoors or in poorly ventilated areas. Your typical electric pressure washer that is 115 Volt and 15A will be fairly light duty because they are built for the low price market. The motor is not strong enough to generate much pressure or volume. You will find that any job takes longer with the electric driven pressure washer.

HP is rated differently on electric motors compared to gas engines. A typical low price electric pressure washer would be about 1 to 1-1/2 HP and would be equivalent to a 3 HP gas pressure washer. (Electric motor HP has to be doubled to equal gas engine HP).

Heavy duty electric pressure washers are available for applications where power is available and portability isn't a factor, and exhaust from a gas engine would be a problem. Electric pressure washers are compact and usually portable. Gas pressure washers are larger and heavier and mounted on a cart with wheels. Some are better balanced and easier to maneuver.

Gas Engines can produce more power and are a lot more mobile as they do not need to be plugged in to an electric power source. Since gas engines can be more powerful, the pump can generate considerably more PSI and GPM so that they can clean faster and deeper than any 115 Volt rated electric pressure washer could. However they do take a little more maintenance and cost more to operate. They must be used in well ventilated areas because of the emission of carbon-monoxide fumes.

## Accessories

Without these, your pressure washer is fairly useless. It would be like having a drill without any drill bits.

**Pressure Washer Hose:** You probably want a 50 ft length hose. If you go shorter, you will have to keep moving your machine. Make sure you get a quality hose with the proper PSI rating to match your machine. A poor quality hose will break down faster, is more susceptible to leaks, kinks, and will usually be less flexible and harder to work with.



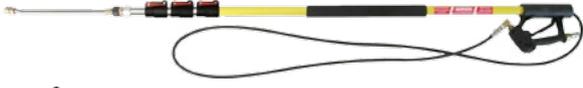
**The Wand:** The wand will include a handle with a trigger valve. There are different lengths and angles available for different applications. You can change the spray pattern with the different tips at the end depending on the application. From very narrow spray to generate higher force at the tip for deeper cleaning, to a wider spray that has less force but covers more area. There is usually a low pressure tip for applying cleaning solutions.



Some very useful attachments include;

**Dirt Blaster:** This is a nozzle that goes on the end of your wand. It has a very narrow spray that spins in a circular motion very rapidly. This attachment is great because it can quickly clean hard surfaces very well and when used properly avoids the “tiger striping” effect on your driveway that happens with conventional spray tips.

**Extension/Telescoping Wands:** A wand that's adjustable up to 24 ft in some cases for cleaning out of reach areas. This is a great benefit if you need to reach up high so that you can avoid trying to pressure wash while standing on a ladder.



**Gutter Cleaners:** This is a simple hooked extension that goes on the end of your wand. It lets you get into your gutters to clean them out.



**Whirl-A-Way:** This is a great attachment to add to your package. The Whirl-A-Way looks a little like a lawn mower and has two rotating nozzles inside. The range available is from 12" to 24". They greatly speed up the cleaning of large flat areas.



## Hot Water Pressure Washers

Hot water pressure washers are commercial machines with built-in water heaters. The cleaning effect of the machines is considerably better than a cold water machine with comparable PSI and GPM because hot water simply cleans more effectively than cold water.

Hot water pressure washers break down and remove dirt and grime faster than cold water pressure washers, and often eliminate the need for expensive chemicals. Do not feed hot water into a normal cold water pressure washer pump. The heat will damage seals and O-rings.

## Detergents

Detergents can greatly increase the speed of cleaning and help remove tough stains. Most pressure washers come equipped with a venturi tube that will draw in the detergent from a bottle or pail and add it to the water stream.

The detergent should be first applied with a low pressure spray, given some time to do its work to break down the dirt, and then washed off with a normal high pressure spray.



## What Should I Buy?

When it comes right down to it, you need to buy a pressure washer that fits your application. There are many different types of pressure washers from very low end machines to extremely powerful industrial machines. Before you buy a machine you need to sit down and determine what you plan to use it for. One of the most important questions is "How much will I be using a pressure washer"? If you are a home owner, you will probably use it less than 50 hours per year. In this case getting a machine rated for 500 hours will last you up to 10 years if properly maintained. However, if you are using it on the job, you will want something rated for 2000 hours or more.

If time is important to you, buy as big a pressure washer as you can justify. A 13 HP gas pressure washer will clean your driveway about 10 times as fast as a small electric unit. It will also last longer because it doesn't have to run nearly as long to do the job.

Finally, plan in advance what attachments you will want in the future and make sure that the pressure washer you buy has enough power to support them.

Written and compiled by Stan Pridham ©2017



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