

How to Choose a High-Pressure Washer

By Paul Peacock

When you're ready to get serious about cleaning, you make your day with a pressure washer.

These lean, mean cleaning machines pack so much punch they're now being used to clean everything from jumbo jets and auto engines to cathedrals under restoration and the gutters on your home.

Pressure washers, with their hot- and cold-water blasting capability, are growing in popularity at the industrial, commercial and now even homeowner level largely because they're "money machines." They:

- ∞ **SAVE TIME:** Pressure washers put water under pressure so they clean 4 to 5 times faster than a garden hose or other traditional methods.
- ∞ **SAVE LABOR:** Less cleaning time means less labor. Less labor means more productivity and less overtime by employees. It all translates to more bang for the buck.
- ∞ **SAVE WATER:** Surprisingly a pressure washer uses much less water than other cleaning methods. For instance, the typical garden hose puts out between 6 to 10 GPM (gallons per minute). The typical pressure washer uses between 2 and 5 GPM --a 50% to 70% savings in water usage.
- ∞ **PROTECT YOUR INVESTMENT:** Clean equipment lasts longer. That means a pressure washer helps protect and extend your investment in machinery, trucks, and other equipment, to say nothing of how a company's public image is enhanced when shiny rigs—or "rolling billboards"—go down the highways.

So how do you make sure you get the right pressure washer for your cleaning job?

By asking three simple questions you'll ensure you make the right choice: (1) What are you cleaning? (2) Where are you cleaning? and (3) How long will you be cleaning?

What are you cleaning?

All pressure washers fall into one of two categories: hot water or cold water. If you're cleaning engines, automotive parts, or anything else with oil or grease, your best option is a pressure washer that generates hot water. Like the dishes in your sink, hot water cuts grease and grime; cold water only pushes it around.

(It's not unusual to hear hot water pressure washers referred to as steam cleaners or steam jennies. While there are a few applications--such as detailing an automobile engine--that

require steam, it has been proven over the years that hot water under pressure is a much more effective method of cleaning than steam. Some pressure washers still have a “steam combination” option where the hot-water flow is restricted in order to create a “wet steam” effect.)

On the other hand, if you’re simply blasting away soil, caked-on mud, or even stripping paint, a cold-water pressure washer will work just fine. In fact, an estimated 80% or more of all pressure washers purchased today are of the cold-water variety. A cold-water pressure washer with the right detergent often can solve most cleaning problems.

Once you’ve decided whether you need hot- or cold-water, now you need to ask...

Where are you washing?

That may seem to be a silly question, but whether you’re cleaning indoors or outdoors can make a huge difference in your cleaning options, many of which can dramatically impact your wallet.

Two related questions will further help your decision-making:

- ∞ Do you need portability? In other words, do you need a pressure washer with wheels so you can move it around or are you cleaning equipment and vehicles that can be moved up close to your pressure washer?
- ∞ Are you cleaning on a job site or do you have easy access to electricity?

Here’s why those questions are so important:

If you’re cleaning indoors, you’re limited on your energy sources. For instance, indoors you’re confined to using an electric motor to drive the high-pressure pump. The electric motor limits your portability because you’re constantly “tethered” to an electrical outlet.

If you need hot water indoors, you’re further restricted to the type of heating fuel you can use because of fumes from fossil fuels. You can use electricity (expensive), natural gas (requires hard plumbing and must be vented to the outdoors) or LP gas (liquid propane—a popular source but there is a very limited selection of LP-heated models on the market).

If you’re cleaning outdoors, you now have many more options. You can operate a pressure washer powered by electricity or gasoline, the two most popular power sources. Typically, the electric-powered models are more economical, but the gasoline-powered pressure washers are a lot more portable (no electric cord).

For outdoor cleaning with hot water, you can heat the water with diesel (the most popular), kerosene and fuel oil in addition to the “indoor energy sources” of electricity, natural gas and LP gas. The most popular outdoor hot water pressure washers are powered by electricity (economical) and heated by diesel (economical and plentiful). However, another outdoor hot water model that is quickly gaining in popularity is one that is powered by

gasoline (economical and plentiful) and heated by diesel. It is extremely portable and self-contained. All you need is water and you can clean most anywhere.

Speaking of water, pressure washers typically are fed by a garden hose from a spigot. However, most pressure washers are also capable of drawing water from a large tank or bladder, which makes on-site cleaning possible and eliminates the need to be “tethered” to a faucet.

Finally, how long will you be cleaning?

This question reaches the heart of how much quality you need in your pressure washer, which also effects the price tag. You get what you pay for or, as some say, you only pay once for quality.

If you are operating a pressure washer for less than five hours per week, you will probably be satisfied with a less expensive model available in catalogs and do-it-yourself stores. But don't count on much service or warranty support.

If you are operating a pressure washer from 5 to 20 hours per week, you will find some mid-range models that are typically identified by a direct-drive pump and a bare-bones design.

For those who are serious users--washing for more than 20 hours per week--you will be dollars ahead to invest in quality.

So how do you identify quality?

Most pressure washers, regardless of brand, have similar components. They have an engine or motor that turns a high-pressure pump. Hot-water models also have a burner that heats the water as it races through a coil made of pipe or tubing.

The quality differences are not always obvious, but significant nonetheless. Here are the questions to ask in order to identify quality in a pressure washer:

Is it belt-drive or direct-drive? A high-pressure pump does not turn on its own; rather it is driven by an engine or motor. Pumps generally turn at 1100-1500 RPM while gasoline engines turn at a rate of 3000-3600 RPM (1450-3450 RPM for electric motors). There are two predominant ways to connect the pump to an engine or motor: directly (direct-drive) or with a pulley and belt (belt-drive).

Direct-drive pumps are more compact, helping to keep the weight and cost down. Today's direct-drive pumps have been engineered to hold up very well, even under constant use. The weakness, of course, is that a pump turning at 3600 RPM will wear out faster than a pump that turns at 1500 RPM.

On the other hand, a belt-drive pump, configured with a pulley and belt, allows the pump to turn at the slower rate (usually 1500 RPM). The belt also dissipates the build up of heat and absorbs vibration from the engine. The ultimate benefit, of course, is that downtime is minimized and the pump's life is extended saving you money in the long run.

There are other features that say “quality” in the engine-pump connection. Dual belts and V-groove belts, which are notched and cogged, run cooler and provide a better grip for a more efficient performance. Some models mount the pump on a two-bolt adjustment rail so it is easy to tighten the belt tension and keep the pump operating at peak levels.

Is the pump tri-plunger or axial? All quality pressure washers will have a tri-plunger pump, or a pump that is turned by a crankshaft, connecting rods and three ceramic plungers. The rotary design of the axial pump is known for being low cost, high maintenance and its life is typically rated for no more than 800 hours. On the other hand, quality tri-plunger pumps usually have warranties of up to five and seven years.

Does it have high pressure or high volume? A little known secret is that there is more cleaning power in a pressure washer’s volume (gallons per minute) than in its pressure (pounds per square inch or PSI). A pressure washer with 2 GPM and 3000 PSI won’t clean as fast as a pressure washer with 4 GPM and 2000 PSI. The first pressure washer delivers 6,000 cleaning units (2 x 3000) as compared to the second pressure washer’s 8,000 cleaning units (4 x 2000). Despite what you see in advertisements or on a product label, volume is the deciding factor and a quality pressure washer will provide the proper balance of volume and pressure.

Is the engine or motor size correct? As mentioned above, it is not uncommon for a manufacturer to sell the “sizzle” of high pressure over the more important water volume. A reliable rule of thumb is to review the flow rate along with the size of engine or motor. For industrial cleaning, you will want a pressure washer with at least 4 GPM and is driven by an engine with a minimum of 11 HP (5 HP for an electric motor). For a quality hobby pressure washer, you’ll want a minimum of 2 GPM driven by at least a 5 HP engine (2 HP electric motor).

Is the frame or chassis solid? Steel is steel, so most frames or chassis will hold up fine over the life of a pressure washer. However, there are questions you can ask that will determine just how much quality is in a pressure washer frame or chassis. Such as:

- ∞ Is the frame made of the heavier 10-gauge steel?
- ∞ Does it carry a long-term warranty? (Some frames are guaranteed for life.)
- ∞ Are the seams reinforced with a weld?
- ∞ Is the paint an epoxy powder coat for long-lasting, all-weather protection?
- ∞ Does the chassis have shock-absorbing feet to cushion the vibration and to prevent the pressure washer from “walking” while in operation?

Is it safety and quality certified? UL-1776 is a regulation specifically established in 1995 to address high-pressure cleaning equipment safety issues. It describes in detail a variety of features that pressure washers should have to avoid injury, including safety relief valve, hose guard for burst protection, warning labels, ground fault circuit interrupter, rupture disk and specified lengths for the wand and electrical cord. It is believed that less than half of all pressure washers are certified to UL-1776. Manufacturers who care about quality have certified their equipment to this standard. Make sure the certifying agency is a Nationally Recognized Testing Laboratory (NRTL).

There are three other telltale signs of safety quality. A pressure washer will:

- ∞ Be manufactured in a factory certified to the internationally recognized ISO-9001 standards for quality manufacturing procedures;
- ∞ Meet the Cleaning Equipment Trade Association Performance Certification; and
- ∞ Carry UV-resistant, tri-lingual (English, Spanish, French) labels with operating instructions and warnings for liability protection.

Is it backed by a solid warranty? Quality pressure washers will have at least a one-year warranty on the pump and frame (the more rugged brands have up to a 7-year warranty on the pump and a lifetime warranty on the frame) and a two-year warranty on the gasoline engine. Possibly, a more important question to ask is how many trained, warranty service centers are there and is one close to you?

Is the hose of high quality? Of all the critical components on a pressure washer, manufacturers will often scrimp here to save a few dollars. Shiny, thermoplastic hoses are the lowest quality. High quality hoses are made of a rubber compound reinforced with steel wire. A hose rating should be imprinted on the hose itself. A single-wire hose (R1) is typically rated for up to 3000 PSI while a double-wire hose (R2) is usually rated for 4500 PSI or higher.

Despite their simplistic design, be assured that not all pressure washers are created equal. Nonetheless, you can have confidence in making the right choice when you ask the right questions.

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