
MODULE 1 - Equipment For Your Business

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Congratulations on adding graffiti removal to your company's list of services. The technical side of removing graffiti is what will set you apart as a professional in this field, so your equipment setup is a key part of being able to perform jobs as they need to be. This Module will cover all of the equipment you'll need, as well as instruct you on how it should be setup.

1.1 Equipment

This Module will cover what you'll need to remove graffiti as well as what pitfalls to avoid. You'll also learn how to go about purchasing these items, which can save a lot of money at the critical time of investing more money into your business. By the end of this Module, you will know what equipment you will need to purchase, what you might be able to prolong purchasing for economic reasons, what can happen if you don't have the right equipment, and how to use the equipment.

Vehicles

As a company adding graffiti removal services you will have to purchase equipment to perform the work required, unless you already offer pressure washing services. The primary field equipment needed will be a pressure washer (hot water) and water holding tank. This can be in a trailer, back of a truck, or inside a van.

Since you already have a company you might already have a truck that you use to provide your existing services. If this is the case, then a pressure washer in a trailer would be the best option, as it is in most scenarios. If you want to dedicate a vehicle to graffiti removal and you operate in a large city centre, then a van would be a good option as well because a trailer in a large city area will be more difficult to maneuver and park in the various areas that you'll find graffiti.

If you plan on purchasing a van be sure of its limitations on weight as water and a hot water pressure washer are very heavy.

Trailer

Some larger 1 ton trucks with long boxes can be used for your equipment, but you'll be using 100% of the truck box all of the time because a pressure washer and water holding tank take a while to set up and secure each time. The pressure washer will also weigh over 200 kilograms (440 pounds), so it might be better to go with a van or trailer if you were planning on removing the pressure washer when it's not being used.

A trailer purchase/lease isn't extremely expensive, but there are some costs to factor in, such as legal storage of a work trailer. A 10 - 14 foot dual axel trailer is what is recommended. A common axel weight capacity is 3,500 lbs (1,588 kg), so a tandem axel trailer could hold a total

of 7,000 lbs (this includes the weight of the trailer). Make sure your truck payload or towing capacity is rated accordingly for the amount of weight you plan to tow.

A trailer with dual axels typically provide enough weight capacity for a large pressure washer and 1,000 litres (250 gallons) of water. You must research this before purchasing any vehicle and/or trailer. Not all axels have the same capacity, so learn about a trailer's specific load limits at a dealership or online before buying.

The advantages of trailers are that they give you a giant billboard for your company that is rolling around town. When you disconnect a trailer and you're now only driving around in a truck, you still have truck decals to rely on for advertising purposes, but a van is only seen when it's working. The other main advantage of a truck and trailer combo is that you can store your products and other small equipment needed for graffiti removal in the trailer because there will be a lot of extra space. Everything in a van will be more compact.

NOTE: Trailers referred to in this section are enclosed trailers, which means the machine and all other equipment are protected from rain, snow, dust, and theft much easier than open air/flat bed trailers. Flat bed trailers may be better in warm areas of your country that don't get snow, as there are fewer natural elements to worry about. There are none of these areas in Canada!

Pressure Washer

Your pressure washer is the machine you're going to make your money from. This machine is what will differentiate you from your competitors and do-it-yourselfers. When purchasing a hot water pressure washer be prepared for it to cost as much, or much more, than your trailer. A hot water pressure washer is different than a steamer, so you'll need to know what the local (provincial/state) regulations are for operating them. For example, some provinces in Canada require a person to have a boiler ticket to operate a steamer and some don't. Hot water pressure washers don't technically steam something.



This is because they are blowing out the same volume of water no matter what the settings are. A hot water pressure washer looks like it's steaming, but its water that is trying to be boiled at an even higher temperature than what water boils at (100C or 212F). Water cannot get hotter than this temperature, so even though the thermostat says it is, it's not the water that's getting hotter, it's the flame that is heating up the coils to make water steam. The volume your hot water pressure washer says it pumps is exactly what it's going to pump out, whether it looks like steam or not.

Steamers have pressure build up inside of them and they can release the steam, so heating something up (commonly used in the oil fields for thawing out pipes or other equipment) is different than what someone would use to clean a driveway. Hot water is going to steam up a driveway, but also push the dirt, mildew, moss, etc. off of the driveway. A steamer will steam everything to death, but then it'll remain on top of the driveway still.

It's best to know if you plan on using a pressure washer for anything other than graffiti removal (such as pressure washing) now rather than later because you don't want to buy a machine and have it not be useful on all job-sites.

Hot water is mandatory for a graffiti removal company to perform at a professional level. It will decrease the dwell time needed by products on graffiti and it will help melt away small pieces of paint that the product may not have touched long enough. If there wasn't enough product dwell time given to the graffiti removal, the hot water and high pressure can often still get the graffiti off since the product has removed enough of the binding agent in the paint. Cold water will not perform nearly as well as hot water, even at a higher pressure. Think about the difference warm and cold water have when washing dishes. This applies to almost everything when cleaning.

Again, know what your plans are for your pressure washer and try to forecast what they could be in a few years. This may sound like a hard task or off topic, but many attachments and jobs for pressure washing services will require a certain GPM (gallons per minute) to work. For example, if you plan on using a rotating surface cleaner to clean driveways or sidewalks because you offer pressure washing services too, you would most likely need a machine with a minimum of 4.5 GPM. Even if you're only doing graffiti removal, it is recommended to have a machine with a minimum of 4 GPM and a minimum of 3,500 PSI (pounds per square inch). 5 GPM and 3,500 PSI is a good machine for pressure washing as well, but look at the accessories offered for the brand of machine you're buying and what their requirements are.

Gallons Per Minute is an extremely important number to know about your machine. Many people will have a 3,500 PSI pressure washer for their home use, but it'll be a cold water machine with under a 2 GPM rating. This machine is not even half as powerful as a 4 GPM and will be a disappointment for the entire lifespan of the machine on an industrial level. The gallons per minute is the measurement of exactly how many gallons of water the pump on the machine will pump out. The difference between 1 GPM and 6 GPM, both at 3,500 PSI, is that the 6 GPM is pumping 6 times the volume of water, which means it has that much more cleaning power. The high GPM pressure washer is an aggressive tool, so make sure to read about the machines safety, maintenance, and usage before starting it.

Water Holding Tank

Having the capability to carrying water to a job-site is the difference between many pressure washing companies and all graffiti removal companies. Graffiti is usually on a commercial building or property and most won't offer access to water. A water key, found at plumbing or hardware stores, is a small socket that will open the water faucet cover and turn on the water on most buildings. However, they more often than not have the water turned off from the inside of the buildings, so people cannot take water from their buildings without having access to the inside as well. Carrying water is an important feature you'll need to be ready for.

When buying a tank for your trailer or van, you'll need to know how much room you have and where it's going be on the floor. You'll want to balance your load between the pressure washer (400-800 lbs) and water tank (0-2,200 lbs) over your trailer axels. The pressure washer and holding tank should share the amount of surface over the axels. If each can take 50%, with the machine at the back end of the trailer, your load should be balanced if you're carrying 1,000 litres (approximately 250 gallons) of water or none at all. Placing the weight too far back or too far forward won't allow your trailer to tow well behind your truck. Once you hit a certain speed it can start to wobble and is more likely to cause an accident. Make sure to put as much balance from front to back and side to side as possible inside a van and especially inside a trailer. You should know the size of your holding tank for the purchase of your trailer and you should also know it for the purchase of your pressure washer.

A 3.5 GPM pressure washer will require less water for 30 minutes of run time than a 6 GPM machine will. If you're absolutely sure you won't offer pressure washing services, then a 4-4.5

GPM machine would be ideal. If you have a 6 GPM machine, or higher, you should consider having a larger tank as you'll need to go out for water more often. You should always show up to a job-site with a minimum of 300 litres of water no matter how small the job is. Cooling down the hot water in a machine is mandatory before shutting it off to prevent pressure build up, so don't fall on the small side of a water holding tank. A 500 - 1,500 litre tank is the range you should have for a graffiti removal company. There are a lot of large tote style liquid holding tanks that work extremely well in trailers. They have a metal cage around them for strapping them in and if you find some that had food grade material inside of them, they can be purchased at an extremely good price. Normally they are 1,000 litres (approximately 3.5'x4'x4'). Larger and more specifically shaped holding tanks work great as well and they can be bought in many sizes or footprints to work within your trailer or van space. Try to find a tank that is higher than width or length as you'll find you have more void space in the upper portion of your trailer than the floor footprint.

When mounting the tank into the van or trailer, make sure to have it securely bolted and strapped in to support it at maximum capacity, but only fasten it down once you have the actual tank, pressure washer, and hose reels in place. Plumbing the machine is the very last step.

Hose Reels

Hoses reels will need to be placed in areas that are easy to access and coil up at the end of a job. You'll want to strategically place them close to a door (side or back). You'll need one high pressure hose reel, used for the pressure washer, and a second for low pressure such as garden hose. This is less commonly used, so it can be placed further into the trailer or be detachable and taken out of the van or trailer only when needed. If you don't have access to bulk water, then this will have to be your main water intake, so place the hose reel in an easy to access location.



Ideally your main fill up of your water holding tank should be done at your local municipality bulk water station. Many city yard works departments have bulk water available for contractors, street sweepers, or any other private companies that require large amounts of water. Before purchasing and plumbing in the tanks be sure to talk to them and find out the requirements for purchasing it and what plumbing fittings are required.

Hoses

The high pressure hoses you'll be using with the pressure washer need to be rated to the temperature and pressure that your machine will be putting through the hose. They will be marked along the hose so there isn't any confusion.



A hot water machine that pumps 3,500 PSI will require a hose that can take 100 degrees Celsius (212F) water at the same PSI; however, it is better to have a stronger hose than the minimum or exact same requirements. A 4,000 PSI hose rated for steam at 121C (250F) is a better option as it won't burst or break as quickly as a lower rated one would. If there is an issue with the pressure washer and there is a surge of pressure build up, the machine should have a rupture disc built into it which is a sacrificial disc (about a half inch wide) that will burst and the water will pour out near the heat coils on the machine instead of close to you at the end of the hose. Hoses can still burst on

occasion and can become weak over time, so changing hoses when they're fraying and showing the metal wrap around them is a good practice to get into.

Hoses will have high pressure in them, so avoid letting them be driven over by anyone, especially when they are loaded with high pressure while the machine is running.

The different colours of hoses can have different prices as well different uses. Blue and grey hoses are commonly non-marking hoses and are ideal for pressure washing houses because they don't leave marks on driveways or decks that black hoses do. This means that if you're running hot water and you're dragging (or even leaving it still) a black hose on a surface, it can leave black marks. They will rinse off, but they can happen on any surface, typically on concrete. For graffiti removal, this is rarely an issue because of the small amount of time that you'll be at a job-site, but if you're going to be offering pressure washing services in your business, then coloured hoses is something to consider.

To summarize, when purchasing hoses, ask about marking versus non-marking and make sure to have the correct minimum temperature and PSI rating for your machine.

Wand/Lance

The wand (also called a lance) you chose should be a variable wand. The wand is broken down into a few sections that can be replaced separately.

The trigger gun is the back end of the wand where your hose will connect to and allow water to go through the whole wand. When starting or turning off a machine, make sure to have this line of flow open (trigger pulled) to prevent extra pressure on the starter and pump. The trigger gun can be replaced and there are some good options available such as anti-fatigue triggers which are easier to grip and fully pull back. These are designed more specifically for pressure washing companies because of the prolonged hours you would be squeezing the trigger, but for graffiti removal they don't seem necessary as a typical graffiti removal job is under 20 minutes of pressure washing time.

The second portion after the gun is the wand itself. There are 2 different types of wands.



Single Wand: A single tube that goes straight to the tip of the wand from the gun. This wand is common on all small personal use pressure washers that you would see in any hardware store. This wand doesn't allow you to change the amount of pressure coming through the end

of the wand. If the trigger is pulled, you're getting the full PSI at the end of the wand. For a larger commercial machine, like most hot water pressure washers with higher GPM, you'll want a variable wand.

Variable Wand: Variable wands are much easier and safer to use for many reasons. They are made up similar to single wands, except there is a handle on the side of it (normally 12-18" past the trigger on the left side) that controls the direction of flow down the 2 parallel tubes going to the tip of the wand. Twisting this handle dictates which tube the water is going to go down from there. If 100% of the water is going down the tube that has the high pressure tip on it, you'll have a similar wand as a single wand, except you'll have a more conformable stance because your left hand will have a handle to hold onto. If you turn that handle (like a motorbike grip throttle) it will divert water to the other tube that does not have a high pressure tip on the end. This now limits the amount of water going through the high pressure tip. The remaining water will come out the end of the second tube, which will have a large orifice to dump water out with no pressure. You will always have the same amount of water coming out of the end of your wand, because your pump will always pump the GPM that it is rated for. You aren't saving water by lowering your PSI on the pressure side of the wand, but it is much safer than having to handle a wand at full pressure and GPM all the time.

You'll also want to adjust your volume of water on the high pressure side of the wand because every surface has a different breaking point. At high pressure and volume you'll be able to etch into concrete very easily. Every brick, stone, or piece of concrete is slightly different and the paint that you'll encounter on each surface will have it's own level of pressure required for the removal process. As you learn about these variables and watch the substrates along with the paint as it's coming off of the substrate you'll be able to adjust the pressure as needed as you're working. A single wand would be full pressure at full GPM all the time, so you would need to move further away from the surface to lower the pressure hitting it, but then you'd also be lowering the actual pressure and volume of water touching the wall because of how it fans out.

Wand Tips

Your pressure washer and wand will come with a range of coloured tips for the end of the wand. Each colour represents a degree at which the water will flow out of the tip. For example, a white tip will have the same pressure as the other tips (except black) but it will fan out the widest at 40 degrees. As you move up one colour to green, you will be at a 25 degree tip. Yellow is even more narrower of a spray at 15 degrees and red is a straight line at 0 degrees.

Black would only be used if you were a pressure washing company and were running soap through the hose. It's called a soaping tip as it works similar to the second parallel tube on the wand and just lets water run through it at 65 degrees, but with a larger orifice that we'll discuss next.



The orifice of the tip is very important for all of your equipment to perform at its best. The gallons per minute is going to have to come out of the wand in order for the pump to run smoothly.

If you have the wand turned up to full volume and pressure coming out of the tip side of the wand only, then you need to make sure that the tip is capable of allowing the volume through. This has nothing to do with the degree of spray (tip colour), it has to do with how wide the opening is. Imagine that you have a machine that pumps 1 gallon per minute and a tip that is rated for 10 gallons per minute. In order for the 10 GPM tip to work, it must have a lot of volume pushing through it or else there wouldn't be any pressure. Similar to placing your thumb over a garden hose, the tighter you enclose the end of the hose, the higher the pressure is because it's backing up. Now imagine changing those around to a 10 GPM pump and you place a 1 GPM tip on the end. There isn't enough of an opening for the water to flow as designed and the pump is going to build up pressure and cause damage at the weakest point between it and the tip.

When purchasing new tips, which will have to happen every once in a while because the orifices on them will wear out and become larger than when you bought them, you'll have to look at the colour you want, as well as the size of the tip. This is often found engraved very small on the side of the tip as well as on the package. There will be a number, such as 2, 3, 4,

Pressure Washer Nozzle Chart | Match Your Machine's PSI to the GPM Below It To Find The Correct Nozzle Size.

Nozzle Size	Nozzle Hole Size mm	1500 PSI	2000 PSI	2500 PSI	3000 PSI	3500 PSI	4000 PSI	4500 PSI	5000 PSI	5500 PSI	6000 PSI
2.5	1.07	1.6 GPM	1.8 GPM	2.0 GPM	2.2 GPM	2.3 GPM	2.5 GPM	2.7 GPM	2.8 GPM	2.9 GPM	3.1 GPM
3	1.09	1.8	2.1	2.4	2.6	2.8	3	3.2	3.4	3.5	3.7
3.5	1.22	2.2	2.5	2.8	3.1	3.3	3.5	3.7	3.9	4.1	4.3
4	1.32	2.5	2.8	3.2	3.5	3.7	4	4.2	4.5	4.7	4.9
4.5	1.4	2.8	3.2	3.6	3.9	4.2	4.5	4.8	5	5.3	5.5
5	1.45	3.1	3.5	4	4.3	4.7	5	5.3	5.6	5.9	6.1
5.5	1.52	3.4	3.9	4.3	4.8	5.1	5.5	5.8	6.2	6.4	6.7
6	1.57	3.7	4.2	4.7	5.2	5.6	6	6.4	6.7	7	7.3
6.5	1.36	4	4.6	5.1	5.6	6.1	6.5	6.9	7.3	7.6	8
7	1.7	4.3	4.9	5.5	6.1	6.5	7	7.4	7.8	8.2	8.6
7.5	1.78	4.6	5.3	5.9	6.5	7	7.5	8	8.4	8.8	9.2
8	1.83	4.9	5.7	6.3	6.9	7.5	8	8.5	8.9	9.4	9.8
8.5	1.88	5.21	6.01	6.72	7.36	7.95	8.5	9.02	9.5	-	-
9	1.93	5.5	6.4	7.1	7.8	8.4	9	9.6	10.1	10.6	11
9.5	1.98	5.82	6.72	7.51	8.23	8.89	9.5	10.08	10.62	-	-
10	2.03	6.1	7.1	7.9	8.7	9.4	10	10.6	11.2	11.7	12.2
11	2.11	6.74	7.78	8.7	9.53	10.29	11	11.67	12.3	-	-
12	2.21	7.3	8.5	9.5	10.4	11.2	12	12.7	13.4	14.1	14.7
12.5	2.26	7.65	8.84	9.88	10.83	11.69	12.5	13.26	13.98	-	-
13	2.31	7.96	9.19	10.28	11.26	12.16	13	13.79	14.53	-	-

Pressure Washer Nozzle Chart

5, 6, etc.. The number you'll want should match the following chart. A nozzle too small can damage your machine by congesting water flow. Too big can limit your machine's capabilities.

For the majority of all graffiti removal work, you'll be using green or yellow tips, depending on the placement of graffiti (yellow tips allow you to be further away from the graffiti) and what the substrate can stand without being damaged (green is less aggressive than yellow and doesn't damage as easily when up close).

Turbo nozzles are another option you'll see available. They can work well in some pressure washing situations, but they're basically a red tip that rotates in a circular motion. They aren't found to be as useful for graffiti removal and their costs are extremely high versus using a coloured tip. They also have bearings inside of them to make them rotate, so they can break down at a costly rate.

O-Rings

O-rings aren't a tip, but they are something you'll be able to buy along with tips. They seal off the connections between all hoses, wands, and tips. Hoses and tips require different sizes, so make sure you have the right sizes on hand and that the hose o-rings are rated for hot water. They will break often, which will result in water flowing out of the connection. When you see this, cool down the water going through the machine, turn it off, and simply replace the o-ring.



Tools

There are a variety of tools you'll need to perform graffiti removal jobs. It is a better idea to take the time and be sure your equipment is stocked and ready before leaving to a job-site than it is to show up unprepared and have to leave with unfinished work. A strong medium sized tote box is a good idea to have. It can contain these items and be locked up if needed.

The following list will refer to a tool and how it relates to our line of products. You will learn more about these procedures and how products work in later Modules.

Products: Vamoose, Beaver Bite, & Graffiti Syrup.



Vamoose - Non-porous surface graffiti remover



Beaver Bite - Non-porous surface graffiti remover *Extra Strength*



Graffiti Syrup - Porous surface graffiti remover (requires pressure washer)

www.removemygraffiti.com



Straight Blade: Used for removing stickers on glass and most metal surfaces.



Scouring Pads & Steel Wool: For applying and agitating Vamoose or Beaver Bite. There are a variety of different pads on the market, so find one that works best for you. Things to look for are how absorbent it is with product, do you like having a sponge on one side of it?, do you like the density of it? There are a lot of options,



but they all have a certain amount of colour added to them too. Graffiti removal products will likely remove some of this colouring after prolonged use, so be sure to not let the products dry with this added die in the mix. Steel wool is sometimes used with Beaver Bite on synthetic materials and is further explained in Module 3.



Clean Rags: For wiping off graffiti that has been liquified with Vamoose or Beaver Bite.



Water: Used for wiping off surfaces after graffiti has been removed with Vamoose or Beaver Bite. It is also used for cleaning your hands or skin if you get products on yourself.



Wire Brush: When Graffiti Syrup is working on multiple layers of paint, a wire brush can scratch the paint and get product to the substrate quicker. This can prevent having to apply a second time because the product dwell time can be hard to judge if you have areas of a tag that needs 3 times longer dwell time than the rest of it because of an inconsistency of paint thickness.



Medium Bristle Scrub Brush: Used for applying Graffiti Syrup.



Broom: Used to prepare a surface before painting, or any other graffiti removal. Graffiti will sometime have been on a surface for a long time before it's removal date, so cobwebs or dirt can often be on the surface. Working with a clean surface will make a removal require less product and prevent dirt from discolouring the final result when painting.



Paint Brush: Used for applying Graffiti Syrup or painting.



Painting Sundries: Sundries are the extra tools and items used to paint. A variety of sundries in your tool kit will be needed, such as an extension ladder, extension poles, rollers, roller sleeves (10mm - 30mm), mini roller, mini roller sleeves, drop sheets, trays, stir sticks, and other items that your paint store will be able to advise you on as you come across unique jobs.



Over time there will be more tools you'll find work well for your company, so this list is not a complete list, but will provide all of the tools you'll need to begin removing graffiti.

Other miscellaneous tools that you will most likely find valuable (depending on your mechanical capabilities) are wrenches, pliers, screw drivers, plumbing tape, and o-ring picks. These can all be found at any hardware store, so having them in a small toolbox is a good idea. Connections to the hoses can be damaged over time, so having some spare male and female high pressure hose fittings is also a good idea. Pressure washing companies are more likely to need these as they will be putting more hours on their equipment, but dropping, dragging, or running over them can cause them to damage on occasion.

Jerry cans for extra gas and diesel is a good idea to have as well. You never know if a job might take longer than expected, or if you lose track of how much fuel you have, so being prepared is much less stressful. Never mix up the colours of these cans. Yellow is for diesel and red is for gas.