

### 4.3 Equipment Maintenance

Over the course of your time as a graffiti removal technician, you will come across equipment malfunctions, wear & tear, and damage that will need attending to.

The easiest way to keep your equipment operating properly is to be proactive and schedule maintenance checks and tasks.

The following is an outline of tasks to perform on a regular basis. The frequency will depend on manufacturers recommendations, hours of equipment usage, and the amount of wear and tear they see.

- Check oil (pressure washer engine)
- Change oil (pressure washer engine)
- Check oil (pressure washer pump)
- Change oil (pressure washer pump)
- Fuel filters are replaced bi-annually
- Pressure washer air filter
- Check hose & wand o-rings (+ extra o-rings stocked)
- Safety Data Sheets are up to date
- Check oil (vehicle)
- Change oil (vehicle)
- Regular vehicle inspections and maintenance upkeep

#### Winterizing Your Pressure Washer

Depending on where you live, winterizing your machine will be required when temperatures are going to drop below freezing at night, or daytime. Freezing water inside of your pump, hoses, unloader, or holding tank will cause problems that you will only realize when you try to use your equipment next.

There are 2 ways to winterize your pressure washer. One involves using antifreeze and the second is with an air compressor. A combination of both (in that order) is the best option, but might not be an option for your situation.

Once you have finished your last job of the day and the temperature is going to freeze the water left in your machine, you will need to flush out the water with antifreeze or air. To do so, you will need to drain your holding tank and disconnect the water intake hose for using antifreeze. If you are using air, then you should have a ball valve in place to turn off the water and allow air to be pushed through with a male air hose fitting. Since you have set up your tank with more than one ball valve, you should be able to winterize while the water is still being drained. Make sure there isn't a section of pipe that could trap water and freeze. The shorter the hose coming off of the pump back to towards the water holding tank the better, as it will require less antifreeze or air pressure.

**1. Antifreeze Winterization:** Once the hose from the pump is disconnected, place the hose into a bottle of antifreeze. The amount of antifreeze needed will depend on how much water your machine (and hoses) can hold. You don't want to run out of antifreeze half way through. Leaving your wand connected (on low pressure), as if you were starting a regular job, and run the machine so it is sucking out of the jug of antifreeze. Have a bucket ready to catch the antifreeze as it comes out of the end, don't let it pour on the ground. Once the coloured antifreeze is coming out of the end of your wand, let go of the trigger so that the antifreeze diverts through your unloader and pushes any water in it out as well.

Turn the machine off and you are finished.

Water and antifreeze mixing together won't raise the freezing point of the antifreeze and keep your machine safe. The antifreeze will stay separated and you may find pockets of water that will freeze inside your coils, hose, pump, or wherever the water ends up.

When starting your machine the next time, hook everything back as normal with water and place the hose into a bucket to recapture the antifreeze. You will know when water is coming out of the end of your hose because the fluid colour will turn clear. Do not reuse this antifreeze unless you are 100% sure you didn't get any water mixed in with it.

**Pros:** You know your unloader and wand have been winterized 100% as well. Can be done anywhere. Easy to do and doesn't require extra equipment.

**Cons:** Hoses can take gallons of antifreeze, so draining them and not including them on the antifreeze flush might be a better idea, but you risk getting ice chunks in pooled areas. Worse for environment. More expensive.

**2. Dry Winterizing:** This method will require purchasing a fitting that can be attached to your water intake before your pump. A fixed 3-way valve is a good feature to have on your machine's plumbing system with the male air valve fitting always ready for an air hose from an air compressor to be clicked in. Once your air compressor is full of air, hook it into the fitting on the water intake hose and allow it to blow out the water. You don't need to have your wand hooked up on this option, so make sure your wand is drained by placing it vertical, pulling the trigger and move the variable handle back and forth until water stops coming out of it.

Once the water has finished coming out of the end of your hose, disconnect the compressor and let it fill up with air again. Depending on the size of your compressor, it could take a few full air tanks to push all of the water out. You can also put the wand back on and release the trigger to force air through the unloader. The combination of this method with the antifreeze method is better for this particular reason because the air pressure may not be enough to engage the unloader and actually push air through it.

When all of the water and droplets have stopped spraying out of the end of your hose you are done; however, there is always a chance that water could be in areas of your machine, so refer to your owners manual for specific instructions on your particular machine as some may suggest one method over the other.

**Pros:** Less expensive than purchasing antifreeze. Better for environment. Hoses can easily be blown out.

**Cons:** Air compressor and electricity required. May not be able to winterize after your last job-site if power isn't available. Unloader and wand may not get fully blown out.

Lastly, another way to ensure your machine will be kept in top shape is to keep it heated and not let it get cold in the first place. For example, a pressure washer in an enclosed trailer can be heated or parked in a heated garage, but do not use an open flame heating system inside a trailer as you have fuel and other chemicals in an enclosed area. If these are options for you, this is the best option as your battery life will be longer and you can save the time on winterizing. However, it can still be a good idea to winterize with one of the methods if it isn't in a heated garage because a power failure at night could turn the temperature quickly, whereas a garage would take much more time before the freezing would occur. There are many variables, but you will know your local weather patterns and it's up to you to decide which methods will work in your situation. The lower the temperatures get, the more risk involved, so use more caution as winter progresses.

A combination of blowing out your pressure washer hoses and then pulling some antifreeze into them, the unloader, and your wand is the best option, but not always feasible. Be prepared for both methods if you can, so if you're a long drive away from where you will park the machine on a really cold day, you have the option to winterize the pump, unloader, and coils before you leave your last job-site. Play it safe because repairs can be costly and time consuming. You might also do damage that still allows your machine to work, but at lower PSI because of internal pump damage. Troubleshooting at this point can be the most difficult because there can be few visible and obvious issues.

No matter which method you use, it's always a good idea to completely drain your wand at the end of the day. Leaving water in it can freeze and start a chain reaction of troubleshooting because it might not be obvious where the frozen section is. The more systems you have in place, the less headaches you'll have the next day.

## **+ MODULE 4 EXERCISES**

1. Complete the Coworker Communications Attachment with the hand signals your company will be implementing.
2. Review and make sure to be able to check off all of the boxes in the Safety Equipment Checklist.
3. Find out what your equipment (truck, trailer, pressure washer, etcetera) requires for regular maintenance and add to/update the Equipment Maintenance Checklist.
4. Find your local Safety Supply store and find the additional safety equipment you and your staff will need.

## **+ ATTACHMENTS**

Equipment Maintenance Checklist  
Coworker Communications  
Pressure Washer Parts & Water Flow Diagram