

Detailed Method Statement for Cleaning Domestic Heating Systems

The method and procedure described below is a belt and braces procedure. We have tried to give as detailed steps as practical so that the novice and professional can gain useful knowledge from our many years of experience. Please do not be put off by the length of the procedure. Most systems are quite straightforward to clean. This procedure can be used with power flushers. The necessary modifications to the procedure for power flushing should be fairly obvious and have not been explicitly listed out.

A) Preparation Check List

a) Does system or boiler have strainers? Before cleaning, these should be removed and cleaned. It may be advisable to remove strainers prior to the clean if the system is very dirty as it may clog completely and make cleaning and flushing difficult. Generally, most domestic systems do NOT have strainers installed.

b) Is all pipework completed? Are all open ends capped? Has system been pressure checked and found to be without leaks? This is particularly important for new construction or for systems that have been recently modified.

c) Are there any valves that need to remain open or need to be kept closed? There are some plumbers and installers who have been known to modify a system and leave open pipe ends that are simply isolated by just closing a valve. No warning notices and a ready sprung trap awaiting a victim who opens the valves unsuspectingly. We strongly advise checking for this.

d) Determine a water supply to flush the system out with during the cleaning. If there is a feed and expansion tank, the water supply to the tank can be used. In many instances, the supply to the water tank may be quite poor. Checking is recommended. The kitchen cold water tap is supposed to be a mains water supply (as per the water bye-laws) and will generally offer a good pressurised flow of water. The tap can be connected to a hose using Hose Lock tap connector fittings which are widely available. An equally good water supply is often the outside tap.

e) Determine where you are going to fill the system. If you have a feed and expansion tank, this is likely to be the expansion tank. If the system is pressurised, this is likely to be the filling loop. Determine where you will drain the system from during the system flushing. Typically, it is best to use the lowest point of the system. It may prove necessary to drain from more than one point. Avoid the situation where you inject water into the system and immediately flush out. Ideally clean water should be injected just after the recirculation pump, circulated all around the system and be flushed to drain just before returning to the pump.

f) Figure out where you are going to drain the system water to. It is not recommended that the water is flushed from the bottom of a radiator to a higher level sink. It is recommended that the water be flushed to a drain connected to a sewage system. This can be a storm drain in the road or alternatively the toilet (push hose pipe beyond the u-bend to help keep in place during the flushing). It is best to directly pipe the flushing water to the drain with a hose as dirty rusty water can stain.

- g) Insure that you have access to the flow valves of the radiators so that they can be opened and closed during the cleaning.
- h) Determine where the pressure relief valve on the boiler releases to (if pressurized system) or where the tank overflow goes (if a feed and expansion system). Ensure that the overflow does not go to a cold water storage tank. Trace where the overflow goes. Be sure that it can overflow safely even if it has isolation valves.
- i) If system has a feed and expansion tank, look at the level of muck in the tank. If the tank has rust and dirt in it, then it is recommended that it be cleaned out. The rust and muck in the tank, if left, will consume the cleaning chemical and reduce the effectiveness of the clean.
- j) Insure that you have a radiator bleed valve key and that you can get to all the radiator air bleeds.

Method

It is generally much less effective to drain a system verses filling and flushing the system continuously. Draining is more time consuming and leaves much more dirt and contamination behind. We therefore do not recommend draining systems as a means of cleaning.

1) Take a sample of system water. If it is dirty and/or has a significant amount of precipitate in it, raw water flush the system until the level of “muck” reduces. This is done by filling or injecting water into the system while draining off from the system. This should be done so that the system remains full at all times and the pressure does not increase such that the pressure relief valve is caused to release pressure.

2) Inject cleaning chemical into the system. **In virtually all systems, it is MUCH easier to use our Rapid-Dose system which can be added to most systems in under two minutes, start to finish. Please see Rapid-Dose section for details on dosing options and procedures.**

If adding chemical using a feed and expansion tank, insure that all of the chemical is drawn out of the tank into the system. This is done by first turning off the make-up water valve to the tank (some systems will lack this and only have a ball valve. If this is the case, carefully tie up the float ball so that it does not release water when it drops.) and drawing water out of the system such that the tank empties. Pour the chemical into the tank and draw into the system. Flush some water into the tank and draw this into the system. Refill tank.

If adding liquid chemical into a sealed system, drain a radiator and set up a tube and funnel. This can be a messy job and we recommend putting down a tarpaulin or plastic sheet around the working area.

3) a) **Aqueous Logic Precommissioning Cleaner Procedure**

Turn the boiler on and circulated system at maximum temperature. Once system has heated up, bleed air from radiators. Insure that all parts of the radiators and system get hot. If a radiator or part of a radiator does not get hot, it is important to investigate the cause and find a means of correcting it. All areas must get good flow or they will not clean properly.

b) **Aqueous Logic Sludge Dissolver Procedure**

Turn the boiler on and circulated system at maximum temperature. Once system has heated up, bleed air from radiators. Insure that all parts of the radiators and system get hot. If a radiator or part of a radiator does not get hot, it is recommended that all the flow valves of the radiators that get hot are closed to help force the flow of the system and cleaner to the radiator that is not heating properly. In a few

minutes to hours, the poor area should become unblocked. When this happens, reopen the closed valves and continue circulating. All areas must get good flow or they will not clean properly.

c) Aqueous Logic Descaler Procedure

There are two options for cleaning with Aqueous Logic Descaler. The first is to follow the Aqueous Logic Sludge Dissolver (b) notes and clean the entire system or to preferentially clean the boiler. Focusing on the boiler can be particularly helpful if you are seeking to clean a noisy boiler. If this option is desired, close all the flow valves on the radiators except for one radiator. Turn the boiler on and circulate system at maximum temperature. Gas is generated by the dissolving of water hardness by Aqueous Logic Descaler. Regularly venting of gas from the radiator as it accumulates is recommended.

4) Systems can be cleaned without heat but they will take significantly longer. Equally, it is impossible to tell if flow is occurring to all areas without a heat check. Typically in a hot system, good cleaning results will occur in only a few hours. We recommend that cleaning chemicals have the following contact times to give good cleaning results:

Aqueous Logic Precommission Cleaner and Super Cleaner: approximately 2 -4 hours
Aqueous Logic Descaler: approximately 2 hours cleaning
Aqueous Logic Sludge Dissolver: 2 hours to 7 days.

5) Monitor fouling that the cleaning releases. It is useful to take and retain a sample. Test sample if appropriate for conductivity rise. When it is felt that sufficient cleaning has occurred, proceed to step 6.

6) Begin flushing the system by injecting water into the system and removing at the same time. The system should remain full at all times. Set up water fill and drain as per the check list notes at the beginning of the procedure. Continue flush until the water leaving the system is clean. If you have closed the flow valves as described in 3(c) Aqueous Logic Descaler, it is recommended that you initially flush the system with the valves closed until the water runs clear and then open the radiator flow valves and follow the described procedure to remove any further chemical traces.

7) If any strainers are in system at this point, remove, clean and replace. Inspect feed and expansion tank, if there is muck in tank, drain and clean.

8) Close all the flow valves on the system except for one and force all the system flow through one radiator for approximately five minutes. Open another radiator valve and close the flow valve on the clean radiator. Repeat process until all the radiators and sections of pipe work have been sequentially flushed.

9) Open all the radiator flow valves and flush until the system water is clean. The water conductivity should be within 10% of mains water conductivity.

10) Treat system with **Aqueous Logic Rapid-Dose Protector** or **Aqueous Logic Central Heating Inhibitor** to preserve the investment that has been made in the system.

11) Attach labels that states the system has been chemically cleaned and protected with Aqueous Logic Inhibitor or Protector to boiler. If available, fill in the Benchmark log book for the boiler.

Some very dirty systems may require cleaning more than once due to the high levels of corrosion and contaminates in the system. Equally, very dirty systems may require more chemical addition to fully remove all the corrosion deposits. Generally the dirtier the system, the more cleaning chemicals are required to clean it.