Kamco

Central Heating Power Flushing Pumps
CF40 Evolution & CF90 Quantum

GENERAL SAFETY AND GUIDANCE

Do not commence using this power flushing pump until you have read these instructions fully. Ask for clarification if you do not fully understand its use and application.

It is the user's responsibility to ensure that this pump is suitable for the work to be carried out, and to wear suitable personal protective equipment.

This pump weighs more than 10kg and should only be lifted by the handle when empty.

Do not move or drag the pump by its power cable or the hoses.

ELECTRICAL SAFETY GUIDANCE

230 volt models are fitted with a 13 ampere plug and may be operated from a standard 230 volt 13 ampere power supply.

110 volt models must only be operated through a 110 volt transformer of the correct rating to avoid damage to the motor.

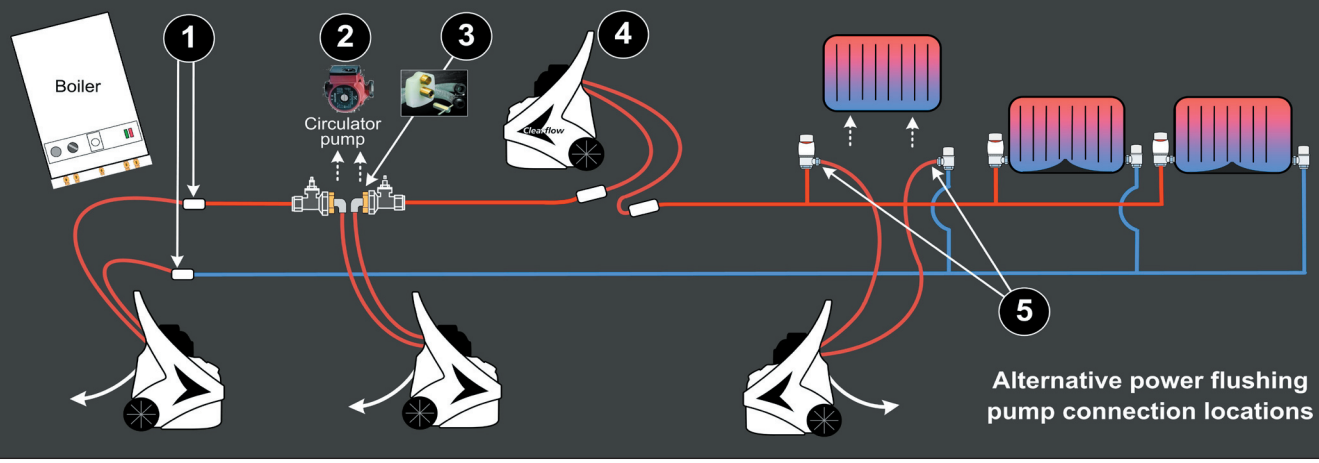
Always use an RCD or plug the pump into a mains socket protected with a built in RCD.

Switch the power flushing pump and the power supply off before plugging into the mains electricity supply.

Always switch off the power flushing pump and isolate it from the power supply when leaving it unattended.

OVERVIEW OF PUMP LAYOUT

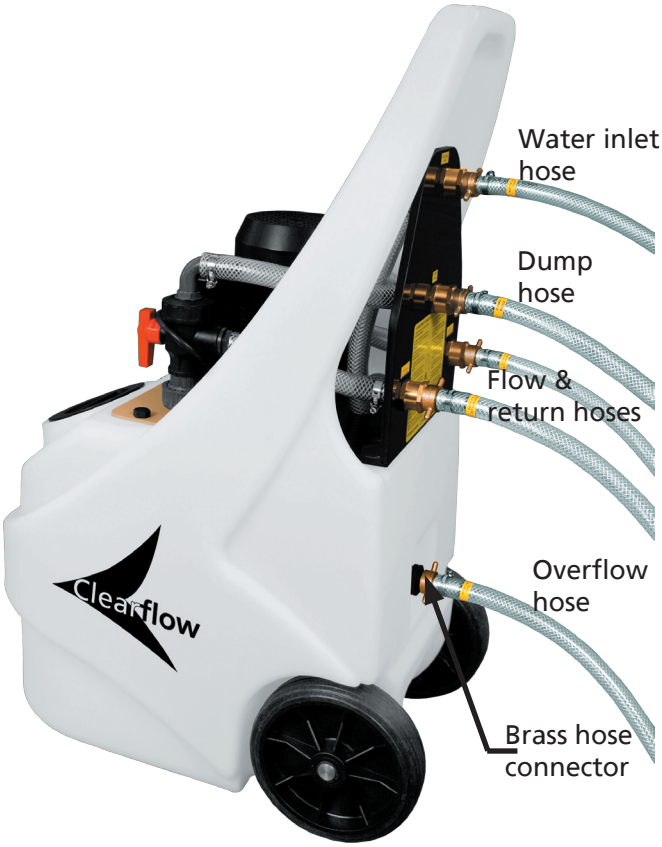
1. Connect across the flow and return pipe work after removing the boiler.
2. Remove the complete circulator pump, and connect onto the BSP threaded pump fittings using adapter leads supplied with the power flushing pump.
3. Use a CP2 circulator pump head adapter fastened on to the pump body after removal of the circulator pump motor.
4. Break in to a length of copper pipe and use push-fit connections.
5. Remove one radiator only, and connect power flushing pump flow and return hoses onto the valve bodies.



Alternative power flushing pump connection locations

GETTING STARTED

A power flush should only be carried out by a suitably trained person familiar with all aspects of heating systems.
This pump may be used with any commercially available flushing and descaling chemical.
Connect each hose to its connection point (see diagram), ensuring that there is a seal in each brass hose connector. Turn the brass connectors clockwise until hand tight.



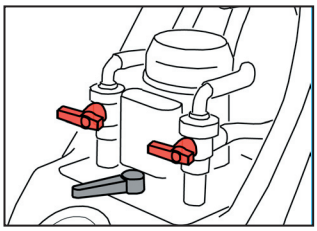
Preparation of heating system

The following is a brief guide to the procedure and may NOT be correct for all systems.
Turn on the heating system and identify problem flow areas, cold radiators, or those with cold spots, then switch the system off. Make a note of the location of each radiator and its condition.
Carefully record how many turns are required to shut off the radiator and lock shield valves. This will enable you to 'balance' the system quickly once you have finished. Open all valves fully (both ends of radiator).
Thermostatic radiator valves must be set to the fully open position. Remove the heads and check that the plunger pin moves freely. Check that diverter or zone valves are in the fully open position, setting manually if necessary.
If an anti-gravity / check valve is present, this must be by-passed or bridged to allow the flow reversing action to be used. Tie up the ball cock or turn of the mains water supply by another means.
Drain enough water from the system to empty the F&E tank. This can be drained into the Clearflow tank once the pump is connected.

Vented systems

You will need to either cap off, or loop together, the expansion and cold feed pipes to avoid filling and overflowing the expansion tank. Looping the feed and expansion pipes together may enable them to be flushed during the cleansing process if they are not close coupled in the heating system, or connected via an air separator.
The hose between the two pipes should incorporate a valve so that the circuit can be closed off when flushing individual radiators and should be removed after the power flush.

Pump location and preparatory work



Position the unit in a room with a suitable drain point and a mains water supply.
Set both isolation valves to the closed position.
Run the drain hose and overflow hose to a suitable drain.
Connect the mains water supply hose to a suitable fresh water supply. Open the orange valve and fill the tank with water to a level between the Minimum and Maximum marks.
The normal precautions during work on any heating system should be taken, place a drip tray or waterproof groundsheet underneath the pump and surrounding area.

Connecting the pump to heating system

Connect the flow and return hoses to the heating system at the selected point.

Alternative options are:

Connection to the circulator pump fittings.....

Close the circulator pump isolating valves. Remove the complete pump. Screw the two 1.1/2" BSP male ended hose adaptors on to the end of the standard flow and return hoses, and connect on to the circulator pump isolating valves. Only open the isolating valves once the unit is connected.

Connection onto radiator pipe 'tails'...
Across the "tails" to a radiator (having drained and disconnected this radiator) using appropriate 1/2" or 3/4" BSP female adaptors to connect to the valve bodies. The radiator valves should be closed to isolate the flushing pump from the system until power flushing is commenced.

Combination Boiler Systems.....
The above connection method is generally used when power flushing a system with a combination boiler, when the system circulator pump is located in the boiler casing, and is difficult to access. Alternatively, use a Kamco CP2 pump head adaptor.

Additional advice relating to combination boiler systems.....
During power flushing, there is no circulation through the secondary heat exchanger of combination boilers.
To minimise the possibility of debris being pushed into the secondary heat exchanger circuit, close the boiler isolation valves during this first stage of the power flushing process.

Connection to flow and return pipework to boiler...
Across the flow and return connections at the boiler isolating the boiler itself.
Connection across cold feed and expansion pipes...
By connecting across the cold feed and expansion pipes when not adjacent to each other in the same pipe run. Isolate the water supply to the F&E tank prior to fitting.

Power flushing procedure

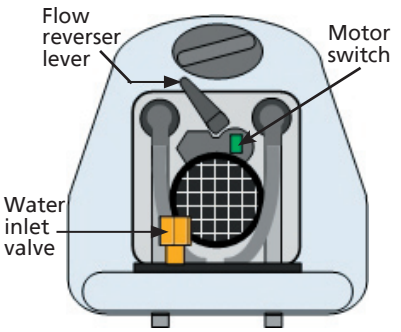
First use the Clearflow pump alone to loosen and mobilise sludge and debris into the fast moving system water, and discharge the worst of the loose debris to waste. Only after

this stage is the chemical added so that it can then work specifically to disturb, loosen and dissolve more stubborn accumulations of debris.The chemical can then work specifically to disturb, loosen, and dissolve more stubborn accumulations of debris.

Commencing the power flush

Either remove the tank filler cap or leave it loosely on the tank neck if there is some splashing whilst flushing.

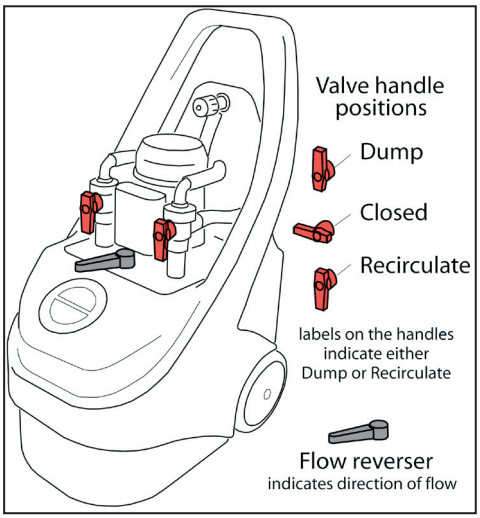
Set both valves in the closed position.
Plug the pump into a power supply and switch supply on.



The flow reverser lever has two positions, LEFT, and RIGHT.
If the lever is to the left, water will flow into the heating system through the left hand side hose, and water will return to the tank along the right hand hose. Pushing the lever to the right reverses the direction of flow and return.
The exact direction of flow is not of any great importance until you wish to 'dump' the system water.

Switch the pump on and make sure that the water level in the tank remains at least 10 cm above the minimum mark, adding more water if necessary.
Check all hoses and connections for leaks, and repair before continuing.
Run the pump for ten minutes, reversing the direction of flow regularly by moving the lever from left to right, and vice versa.

What happens when dumping



When 'dumping', the water level in the tank will fall as dirty water is diverted down the drain, and does not return into the pump tank.

Switch the pump on and operate the correct dump valve depending upon the direction of flow. If the flow reverser lever is to the left, twist the right-hand dump valve through 180° to show the word 'dump', ensuring that the left-hand valve remains in the 'circulation' position.

If the flow reverser lever is to the right, twist the left-hand dump valve through 180° to show the word 'dump', ensuring that the right-hand valve remains in the 'circulation' position.

Open the orange water inlet valve and adjust to allow fresh water to enter the tank at the same rate as water is exiting the dump hose. Make sure that the tank water level remains at least 10 cm above the minimum mark, and continue dumping until the waste water runs relatively clear.

Turn the valve which is in 'dump' mode through 180° to restore full circulation through the pump and the system. Close the water supply inlet valve once the water level in the tank has stabilised between minimum and maximum marks.
Bleed all radiators to expel any air.

Addition of power flushing chemicals

This stage is carried out once the initial brief circulation and discharge of the worst of the debris has been carried out.
Switch the pump on so that water is re-circulating through the heating system. Remove the tank filler cap and carefully pour either PowerFlush FX2 or Hyper-Flush liquid into the tank.

Keep the pump running for 15 minutes, regularly reversing the direction of flow.

With the Clearflow pump still running, close all radiator valves to enable the cylinder coil (if present) to be thoroughly flushed, reversing the flow regularly.
Next close any diverter / zone valves to direct the flow through the heating circuit, in preparation to flush each radiator.

Starting on the ground floor radiators, fully open both radiator valves on the nearest radiator. Alternatively, start with the worst radiator first, so that the strongest concentration of chemical is directed at the worst areas of the system.
Flush the radiator, reversing the flow regularly until it is cleared.
Once cleared close both valves and move to the next radiator.
Open both radiator valves, and repeat the procedure.
Work through the remaining radiators in turn, until every radiator in the system has been flushed individually.

Dumping the heating system water

Having flushed each radiator individually, then closed their valves, set the pump into dumping mode. With only the last radiator valves open, operate the pump until the water leaving the dump hose is completely clear. Reverse the direction of flow and the isolating / dump valves accordingly so that dumping is performed in both directions.
Once the dumped water from both directions is clear, close both radiator valves.
Repeat this process on each individual radiator until all have been cleared.
If the system has a hot water cylinder, open the diverter valve and flush the coil, dumping in both directions.
Finally, flush the boiler, dumping in both directions.

Use of stronger power flushing chemicals

If you have used PowerFlush FX2 flushing liquid, which is acidic, it must be neutralised to prevent long term corrosion.
Set the Clearflow pump to normal recirculation mode then open all radiator and diverter valves. With the pump running, add 100gm of Neutralising Crystals to the tank. If the water foams, add a few drops of Foambreaker antifoam chemical.

Continue circulating in both directions for fifteen minutes, then set to dump mode and dump for at least ten minutes to clear all chemicals. Check the water leaving the dump hose with pH paper. Continue dumping until the paper shows a pH of 7 or the same pH reading as the property's main water supply.
Set the Clearflow to normal re-circulation mode.

On completion of the power flush

The heating system has now been fully flushed and is full of fresh clean water. You should now add a good quality corrosion inhibitor, such as SystemSafe-DM. First open the dump valve to reduce the water level in the tank to 5cm (2") above the minimum line.

Set the pump to normal re-circulation mode, then with the unit running, add the corrosion inhibitor to the reservoir. Allow the chemical to circulate through the system for about 10 minutes, reversing direction occasionally.

Before you leave

Switch the pump off and unplug it from the power supply.

Disconnect all hoses from the pump and the heating system. Empty the pump tank of any remaining water. If the system is vented, the residual water (which may contain some corrosion inhibitor) may be poured into a bucket and added to the F&E tank after this has been cleaned.

Re-instating the system

Reconnect any removed radiator or disconnected boiler or pump. Reset radiator valves to original settings. Remove any temporary isolating valves or caps on expansion and cold feed pipes, and restore non return valves to normal operation if necessary. The feed and expansion tank should be thoroughly cleaned and disinfected before placing into service again.

Quick guide to the power flushing procedure