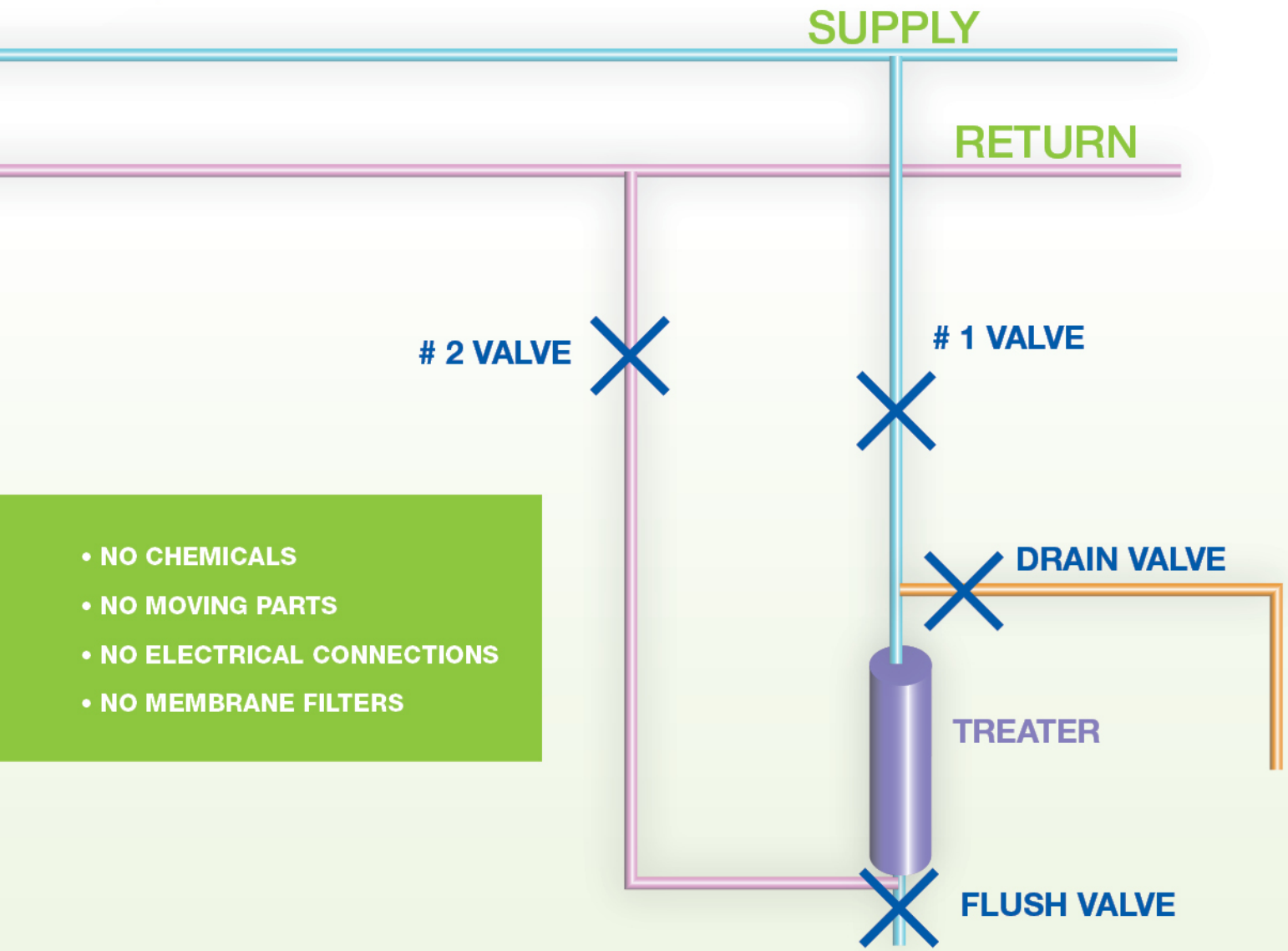
Nat-Flow Enterprises Inc.

INSTALLATION GUIDELINE



- NO CHEMICALS
- NO MOVING PARTS
- NO ELECTRICAL CONNECTIONS
- NO MEMBRANE FILTERS

Backwash Instructions

To backwash this system, close #1 valve and open drain valve. Let it run until water is clear. Then close drain valve and open #1 valve.

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SYSTEM DESCRIPTION

The Nat-Flow treater is a passive in-line device that removes dissolved oxygen from recirculating water heating and cooling systems, balances the PH of the system, removes scale and ferrous particles. The treater has no moving parts, no electrical connections, no membrane filters and no chemicals.
Today when environmental concerns are at an all- time high, the absence of chemicals is a desirable benefit which cannot be overstressed.

For owners who are conscientious about operating efficiencies and costs, the reduction of scale in heating systems provides much better heat transfer. The removal of ferrous oxide will also greatly reduce pump seal failure.

After original system cleanup with a large temporary cleaner (approximately a three day procedure) a permanent treater is installed. The treater is installed with a system of valves, couplings and piping so that it may be back flushed at regular intervals. Media replacement of the permanent treater is done by Nat-Flow or authorized installer.

Backwash scheduling of the permanent treater is adjusted by the maintenance supervisor using his knowledge of the system and the environment that it operates in. This is necessary to rid the treater of the iron oxide and other suspended solids.

Glycol systems may also be controlled using this technique with minor changes. This system also works adequately on a closed loop system that is used for heating and cooling.

Nat-Flow Treater Features and Benefits

- Removes dissolved oxygen
- Removes ferrous oxide particles
- Eliminates scale build-up
- Improves heat transfer
- Reduces system maintenance
- Prolongs the life of mechanical parts and heating elements
- Eliminates the cost of expensive chemicals

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SYSTEM CLEANING AND PERMANENT TREATER INSTALLATION GUIDELINES

1. Check PH and oxygen levels of the heating system. Record on the supplied record sheet.

2. Open the blow down valve to achieve a flow of approximately two (2) G.P.M. (9 L/M). It is not required that the system be shut down to accomplish this. The boiler make-up system will maintain the required pressure. This assumes the boiler make-up system is operating correctly. This flow rate should not cause the boiler outlet (supply) temperature to drop below an acceptable value.

3. Outside temperature (or system load) should not have any effect on the ability of the system to recover from this blow-down rate.

4. To establish the back-wash schedule the following guidelines are suggested:
a) Extremely dirty system – every four (4) hours.
b) Moderately dirty system – every twelve (12) hours.
c) Cloudy system – every twenty-four (24) hours.
As the cleaning process progresses from dirty to cloudy the backwash schedule should be adjusted to conform. In most common systems (under 2000 gallons or 9,000 litres) a twenty-four (24) hour cleaning period should bring the system to a condition whereby it is clean enough to install the permanent treater system.

5. When the permanent treater system is installed the back-wash schedule should be established by observing the amount of solids removed during the back-wash procedure.

6. It is not uncommon to observe an irregular oxygen count during the first twelve (12) months following the permanent treater installation. This is due to the likelihood of oxygen scavengers being used in the prior treatment method. As the iron oxide buildup is removed from the interior surfaces scavenged oxygen is released and returned to the treater for elimination. This is of course a desirable result but will cause erratic oxygen content readings.

7. Approximate oxygen levels should be in the range of 2 ppm. After the original system cleanup. After approximately thirty (30 days of permanent treater operation oxygen readings should fall in the range of 1.0 ppm. To .04 ppm). Local conditions will of course cause some deviation from the norms.

8. While observing the oxygen readings it should be kept in mind that the treatment process is on-going and as the treatment process progresses smaller particles are removed over a longer period of time. While the original observations may be quite dramatic the results over the longer term while less dramatic will still be improving system performance.

9. The importance of reducing oxygen levels and controlling PH cannot be over emphasized. Remember that in order for oxidation to occur oxygen must be present.

NO OXYGEN = NO OXIDATION

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MAINTENANCE

Any new installation of the treater will require maintenance consisting of back flushing and treater exchange until the system is clean and stabilized. The frequency of the back flushing will be reduced as the system approaches a stabilized state. Details of a custom maintenance program will be prescribed by your Nat-Flow authorized dealer.

Once a system is stabilized maintenance consists of a monthly test for oxygen including a visual inspection for scale formation.
The treater unit is exchanged yearly. This of course depends on the application and operating conditions.

Nat-Flow is pleased to offer an advisory service to assist you in designing a system to meet your specific needs. Your local authorized Nat-Flow dealer will gather the required information from you and supply a detailed cost estimate for all installations.

Limitations

Do not use the treater with volatile fluids.

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TREATER BENEFITS FOR BOILER SYSTEMS

Most boilers break down as a result of the buildup in the boiler tubes. When the popping in the boiler begins it is a warning that the cleaning process is overdue.

The Nat-Flow system has many advantages. One of the outstanding advantages of the system is that the colder the weather, the better the system works. It is no longer necessary to shut the system down in order to install the treater. The cold weather will only improve the efficiency of the system.

This process cuts down the fuel consumption by substantial amounts in many cases. It also reduces the maintenance cost of zone valves, regular valves, pumps, etc.
Another outstanding feature is that we do the work from the boiler room. We do not need to go to individual suites to blow the lines down.
Many times boilers have been replaced because of water hammer caused by plugged tubes in the boiler.

If we are called soon enough we can clean the boiler tubes without opening the boiler.

The other advantage of this system is the heat transfer: from boiler to water and from water to heating equipment.

It also removes all solids such as iron oxide, calcium and other suspended solids. Another problem this system will solve in many cases will be air locks. It also will be a great assistance in locating the source of the air locks. What this system provides is by removing the dissolved oxygen to two parts per million or less. This solves the oxidation problem.

Clean water = good heat transfer

Coating or painting pipes can be innocently construed. When coating pipes to protect them from corrosion the heat transfer is decreased, in some cases quite dramatically. There are chemicals out there that are used for this very purpose. Consequently anything that is added to the water will reduce the heat transfer in small to large amounts. The research that has been done by Nat-Flow has proven that the cleaner the water the better the heat transfer.

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GLYCOL

Many people believe by using glycol that water treatment is no longer necessary. Dissolved oxygen is one of the most damaging elements of the hot water system. Dissolved oxygen is added to the system in many ways such as: leaking pump seals, damaged valves, leaking gaskets, etc. This is the reason it is so important to do monthly water testing. Glycol or any substance added to the water for protective freezing purposes are subject to oxidation. That is why our system is the answer.

If something happens where you lose all the water or glycol from the system such as broken pipes etc. it is very costly to replace. Our system will bring everything to an acceptable level with no additional cost within twenty four hours after filling the system with water.