

Amerrec CoolFlush™ Auto Drain

The following text is taken from Amerrec's AI Boiler installation manual (4211-1631), pages 23 and 24.

BLOWDOWN/CoolFlush™ Auto Drain The generator is supplied with a manual drain valve and may be equipped with an (optional) electronic Auto Drain valve. An Auto Drain valve is always a good idea to easily schedule frequent draining. Rinsing or other cleaning of the tank is a manual operation. Draining the tank, particularly while under pressure, is often referred to as "blowdown." To avoid confusion, we will refer to emptying the generator's tank as "draining" here.

When water is changed to steam, solids may be left behind, eventually interfering with the water level sensing and possibly causing premature element failure. Frequent draining and periodic cleaning of the tank is necessary to help reduce the build-up of these solids (scale and sludge). Every installation is unique in its water quality and maintenance requirements. Symptoms of excessive build up include faulty water level sensing, gauge glass stained or water level not changing, plugged/slow running drains and early element failure. Draining the boiler tank at least once a day is recommended even with good water, much more often could be necessary as water quality drops. For reliable operation, your site may require water treatment.

CAUTION: draining a hot boiler may release dangerously hot water or steam, risking personal injury and damage to plumbing! Your local code may require that boiler pressure be limited to under 5 psi and require a special drain system to drain a hot boiler while under pressure!

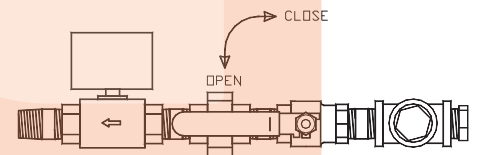
Local water conditions and the amount of time per day that the generator operates will determine the necessary draining and cleaning intervals. We recommend draining daily or after every use and inspecting for properly flowing drain at least monthly. If you drain it shortly before starting the generator, you will start your bath with clean, fresh water, too. A slow running drain or mineral build up in the gauge glass may indicate excessive build up in the tank and a more thorough cleaning should be done immediately.

We recommend inspecting for a clear water gauge glass at least monthly. Also, the gauge glass should be drained at least monthly, more often with poor water quality: while the generator is pressured, use a wrench to open the drain cock on the bottom gauge valve for a couple seconds. A safety device is included in each gauge valve to prevent loss of steam and water should the gauge glass be broken. The gauge glass drain procedure will reduce the risk of plugging up the valve or its pressure stop. Use CAUTION when performing this routine to protect yourself from the hot water and steam released from the gauge drain!

Failure to properly maintain the generator can cause equipment failure and may void the warranty.

Using the CoolFlush™ Auto Drain requires setting its clock or using the manual **ELECTRONIC DRAIN** switch on the generator's switch panel. Set the Drain Clock's for the time you wish the generator to drain (see attached clock instructions). If the generator also uses a Run Clock, a good time to drain the generator is shortly before the Run Clock is scheduled to start the generator for the day. **CAUTION** If draining a hot generator, care must be taken to ensure it may drain safely while unattended.

Note: The manual drain valve must be left open for the electronic drain to work properly and the tank select jumper on the generator's circuit board must be positioned correctly to provide proper drain cycle timing for the CoolFlush™ system.



The **CoolFlush™ Auto Drain** system uses a computer controlled drain cycle to add and drain water in steps, rinsing the tank and draining water at or below 140°F. This may also eliminate the need for special drain systems or blowdown tanks in most jurisdictions. **For safety and reliability always plumb the drain with piping suitable for 240°F minimum.**

The drain cycle begins when started by the Drain Clock, first releasing any stored steam to the steam room then adding, mixing and draining water a few times. Once the cycle is complete, the generator returns to its normal operation. If the steam bath is operating when the CoolFlush™ cycle is started, the computer will wait until the room is up to temperature before beginning the drain cycle in order to reduce the effects felt by the bathers. If the room does not come up to temperature within 20 minutes, the drain cycle will begin anyway.

During the drain cycle, the upper Room Status LEDs will remain lit on the generator and, if the steam bath is in use, the thermostat and I60 LEDs will remain lit. The lower Room Status LEDs and the Refresh control power icon will be off.

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These LEDs will also blink to indicate slow draining and possible scale build up. This indicates that the generator requires maintenance. **The blinking will continue until power to the boiler is reset.**

Note: If the water drains too slowly, the upper Room Status LEDs and the thermostat and I60 LEDs will blink off once then light 3 seconds to indicate that the tank and drain may need cleaning. The drain cycle will continue to operate normally. If the drain is nearly plugged, the upper Room Status LEDs and the thermostat and I60 LEDs will blink off/on/off then light 3 seconds to indicate that the drain is not functioning and servicing is necessary. The drain cycle will not operate again until power has been reset. If the water level is below maximum, the drain cycle will stop and the boiler will return to normal operation. If the water level cannot drain below the high water level, the boiler operation will be shut down until power is cycled. This is to prevent steam from starting with an overfilled tank.

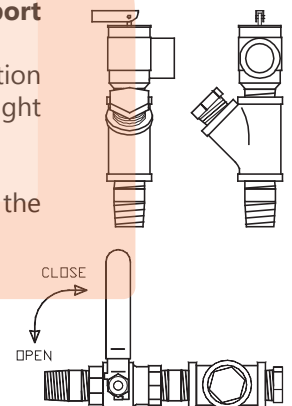
To manually drain the generator (with a CoolFlush™ Auto Drain installed) set the ELECTRONIC DRAIN switch to the MANUAL OPEN position. When an electronic drain is installed, make sure that the manual drain ball valve is always left in the open position. Do not touch the safety valve when the generator is hot: the valve will be dangerously hot! Open a steam valve or the safety valve to relieve the vacuum caused by draining. A more effective drain and rinse procedure is to:

- First set the **HEAT** switch to OFF then set the **BOILER OPERATION** switch to MANUAL RUN to start the generator.
- Turn on the steam bath and verify the room's steam valve is open (this will help the generator drain more quickly in the following steps). Adjust the thermostat if needed to open the steam valve.
- Check the water level showing in the gauge glass: when the level rises above the middle of the gauge, the water valve should close.
- Set the **ELECTRONIC DRAIN** switch to the MANUAL OPEN position and set the **FEEDWATER** switch to STOP FILL to keep the water valve closed.
- Watch the water level in the gauge glass: allow the generator to drain for at least 30 seconds after the level drops below the gauge glass for the generator to drain completely when clean. The water level should drop quickly and smoothly in a clean generator.
- Toggle the **ELECTRONIC DRAIN** and **FEEDWATER** switches on and off as needed to add and drain water until it drains smoothly and quickly and the water in the gauge glass is clear. A drain is provided on the bottom water gauge valve to allow draining the gauge glass assembly if needed.
- Reset all switches and the thermostat to their normal positions when done.

If the water drains slowly or sporadically, it may be necessary to remove the element assembly and clean the tank by hand. If this condition is seen, stop using the generator and call Amerrec Technical Support for assistance.

A plugged port is provided next to the safety relief valve. This port is used to add cleaning solution to the generator without affecting other plumbing. The safety valve must be installed in the upright position as shown.

To manually drain the generator (without a CoolFlush™ Auto Drain installed), simply use the switches to turn off the heating and the water valve then open the manual drain valve. The water draining from the generator may cause a vacuum, increasing the time needed to empty the generator. To speed up the drain time, a room steam valve should be opened or the lever on the pop-off safety valve may be raised to allow air into the generator to eliminate the vacuum. Do not touch the safety valve when the generator is hot: the valve will be dangerously hot! When the generator has finished draining, close the valves.



To rinse and drain the generator, follow the procedure above, opening and closing the water valve and the manual valve as needed.