AWEIS Troubleshooting Guide

Table of Contents

Title	Page #
Start Up Problems	
Turn the Feature ON…	
1. But nothing happens	2
No Power	2
Wrong Power	2
Defective Controller	2
2. Glow plug does not glow	2
Pilot Burner connector NOT plugged in correctly	2
Igniter Pins not secure in Pilot Burner connector	2
Defective Igniter	2
3. Glow plug glows but does not ignite the gas	2
Power Deficiency	2
No Gas	3
Wrong Pilot Burner orifice	3
Oxygen starvation	3
Weak Igniter	4
4. Pilot Burner ignites but NO flame on the Main Burner	4
AWEIS Ignition Control Box installed backwards	4
Thermopile Pins not secure in Pilot Burner connector	4
Defective Thermopile	4
Debris on Outlet Screen of AWEIS	5
Defective Controller or Defective Main Valve	5
5. Feature lights but then turns OFF with a few seconds	5
Gas Volume Insufficient	5
Main Burner orifice not installed	5
Oxygen Starvation	5
Defective Thermopile	5
Defective Controller	5
Performance Problems after Start Up	5
6. Fire Feature Cycles (Turns On and Off) every few minutes	5
Polarity between features in daisy chain not the same	5
Gas Volume Insufficient	6
Oxygen Starvation	6
Defective Thermopile	6
Defective Controller	6
7. Main Burner Flame Lazy/Small or NOT spread over entire burner	6
Gas Volume Insufficient	6
Debris on Inlet Screen of AWEIS	6
Debris on Outlet Screen of AWEIS	6
Obstruction in Plumbing between AWEIS and Main Burner	6
8. Main Burner “Flares Up” every few minutes	6
Fireglass layer too thick	6
Gas Leak	6
Shutdown Problems	6
Turn Feature Off…	6
9. But a small flame continues to burn in the Pilot Burner	6
10. But small flames continue to burn on the Main Burner	6

Start Up Problems

Turn the Feature ON…

1. …but nothing happens.

Typical Causes:

No Power – check power at the feature. If no power check all electrical upstream of the feature INCLUDING the reset button on the low voltage power supply until the source of the power issue has been found.

Wrong Power – Check the label on the AWEIS to confirm power required. Check power to ensure the PROPER power is being supplied to the AWEIS. Many times we have seen the wrong power source being used.

Defective Controller – if the proper power is being supplied to the AWEIS and nothing happens the AWEIS may have accidentally been connected to 120 vac at some point in time which would have damaged the controller. If this has happened there will typically be a strong "Burned Electrical" smell emanating from the AWEIS Control Box. If this has happened the controller has to be replaced. This is a quick and relatively inexpensive fix.

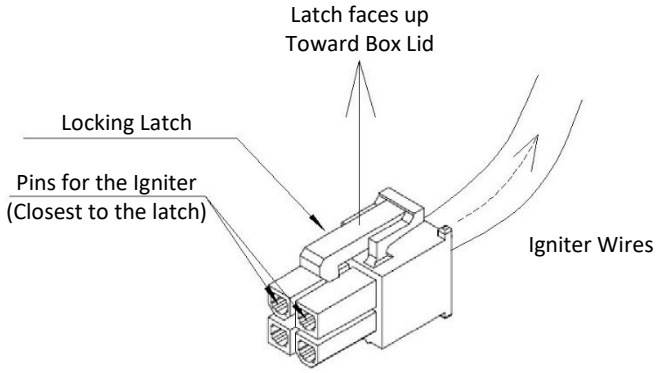
2. …Glow Plug does not glow.

Typical Causes:

Pilot Burner Connector NOT plugged in correctly – the Pilot Burner Connector should be plugged into AWEIS Control Box with the Locking Latch facing toward the Box Lid as shown below.

Igniter Pins not secure in Pilot Burner Connector – the pins inside the Pilot Burner Connector are supposed to "lock" into place when inserted however sometimes they come loose. Check the pins for security by pulling back the black sleeve covering the wires and gently tugging on the wires in the direction of the curved arrow below. If not secure, push the pins into the connector until they are secure.

Defective Igniter – the easiest way to check an igniter is using a multimeter to check the igniter's resistance. Using a multimeter measure the resistance of the igniter by measuring the resistance across the two pins closest to the Locking Latch (see below). No Resistance OR resistance greater than 8 ohms indicates a defective igniter.



Pilot Burner Connector

3. …Glow Plug glows but does not Ignite the Gas.

Typical Causes:

Power Deficiency – If the glow plug is not getting enough power it will not get hot enough to ignite the gas. Several factors could cause a power deficiency:

Thin wire installed. Recommended wire gauge for all Installs is 12 AWG (solid or stranded). If thinner wire is installed the power (amps) needed to make the igniter hot enough will not be delivered.

Insufficient Watts. The recommended watts per AWEIS is 50W and for Tiki Torches 35W. If you are powering more than one AWEIS or Tiki Torch you need to select the Power Source capable of delivering this amount of watts to each of the fire features being supplied power.

Too many features on a Daisy Chain – the maximum recommended number of AWEIS on a single home run is 4 features on a pair of wires no longer than 150 feet. More than 4 features OR a wire run longer than 150 feet could result in insufficient power to ignite all 4 features.

Wrong Power Source – if you have 24 vac fire features make sure you are powering them with a 24 vac transformer. We have had customers try to use DC power sources for 24 vac features.

No Gas – This may seem obvious however this issue is often misdiagnosed in the field as a defective AWEIS
Forgot to Purge the New Gas Line - New gas lines have air in them. Prior to installing an AWEIS on a new gas line it is recommended the air be purged from the line. Easiest way to do this is open the manual gas shutoff at the feature and when you smell gas you have successfully purged the gas line.

Forgot to Open the Manual Gas Shutoff Valve - Another cause for "No Gas" is forgetting to open the manual gas shutoff valve. A quick test to determine whether you have gas or not is to turn the AWEIS on and try to ignite the gas with a handheld lighter. If it doesn't ignite you don't have gas.

Debris on Inlet Screen of AWEIS – There is a fine mesh screen in the Inlet of the AWEIS to try to prevent debris from entering the AWEIS by way of the gas line. If excessive amounts of pipe dope or Teflon tape is used during installation the excess amount could end up clogging the Inlet Screen. If that happens flow will be restricted.

Debris in the Pilot Burner Gas Valve – New gas lines not only have air in them they usually also have debris in them as well. In the document "Auto Fire 101" we cover purging new gas lines of air and debris however it does not always get done. Debris that enters the AWEIS from a gas line is typically stopped by the fine mesh screen installed in the Inlet of the AWEIS. However fine dust can get by the screen. If enough fine dust passes through the screen it could clog the ports inside the Pilot Burner Gas Valve.
Here is a quick test you can do to determine if this might be the problem.
Confirm the gas is flowing at the feature by temporarily removing the AWEIS from the gas line to check for gas flow. Reinstall the AWEIS and turn it ON. Four seconds after turning the AWEIS ON you should hear a single "click". This is the sound of the Pilot Burner Gas Valve opening. If you hear the click and no gas is flowing debris is in the Pilot Burner Gas Valve. To fix this use a source of compressed air (compressor or compressed air in a can) and blow backwards through Pilot Burner Gas Valve through the brass fittings on the side of the box (see below).

Pilot Burner Gas Valve Outlets (Brass)
(Blow Compressed Air in through Outlets)

Wrong Pilot Burner Orifice (Gas Pressure issue) – both Natural Gas and Propane are available in different pressures. Natural Gas is available in Low Pressure (1/4 psi) or Medium Pressure (2 psi). Propane is available in Low Pressure (1/3 psi) or High Pressure (10 psi). For the Pilot Burner to ignite the gas it MUST have the correct size orifice installed. If the wrong orifice is installed it WILL NOT ignite the gas. Pilot Burner orifices are easy to replace. If you are having Ignition issues and you suspect your gas pressure is too high turn the AWEIS ON and then turn off the manual gas shutoff valve. This will cause the pressure to drop as the gas flows and then if it ignites after the pressure has dropped slightly you have a gas pressure issue and the Pilot Burner orifice needs to be replaced.

Oxygen Starvation (Pilot Burner) – to ignite gas we need an ignition source and the right mix of fuel and oxygen. If any of the 3 ingredients are missing OR if we don't have the right fuel/oxygen mix we won't get ignition. Fireglass is the number one cause of oxygen starvation in fire features. If you pile too much fireglass on top of the Pilot Burner you can inhibit combustion. Below is a photo of a Pilot Burner with Fireglass on top of it. Notice some of the perforated holes in the Pilot Burner cage are visible through the fireglass.

Close-Up Photo of a
Pilot Burner in Fireglass

Weak Igniter – though they may appear the same not all Glow Plug Igniters are the same. Slight differences in the assembly of the Igniter during manufacturing causes some Igniters to burn hotter than others. In each batch of Igniters 20% burn very hot, 70% are average and the remaining 10% burn cooler than average. During testing we are on the lookout specifically for the 20% that burn very hot and more importantly the 10% that don't. For the 10% that don't burn hot we try to reserve those for "LP" powered fire features. Propane has a lower combustion temperature than Natural Gas and the weaker igniters have no problem igniting propane. For the 20% that burn very hot we reserve these for Pilot Burners that will ultimately get shipped to customers who have experienced a "Weak Igniter". Though we test every Igniter before it goes out the door every once in awhile one of the 10% "cooler than average" Igniters gets shipped for a feature using Natural Gas. When this happens the symptom is always the same – Inconsistent or No Ignition at all. In this case the only remedy is to replace the Pilot Burner with one with a Stronger (Hotter) Igniter.

4. …Pilot Burner Ignites but NO flame on the Main Burner

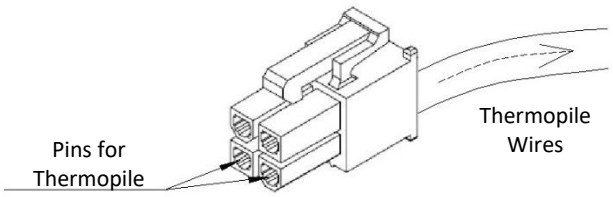
Typical Causes:

AWEIS Ignition Control Box installed Backwards – though this may seem impossible we have seen this more than once. Next to the AWEIS Outlet there is a label with "OUT" on it. Make sure the burner is connected to the outlet side of the AWEIS.

Thermopile Pins not secure in Pilot Burner Connector – there are 4 pins in the Pilot Burner Connector. Two of the pins are associated with the Igniter (See #2 above) and two are associated with the Thermopile (see illustration below). If the pins are not "locked" in place in the connector this could disrupt the signal from the thermopile to the controller and cause the main valve not to open. When this happens you will also notice the Glow Plug will stay on for up to 30 seconds before turning off. The Glow Plug should go off within 5 seconds of ignition so if stays on longer this usually means there is a loose Thermopile pin in the Pilot Burner Connector.

Check the pins for security by pulling back the black sleeve covering the wires and gently tugging on the wires in the direction of the curved arrow below. If not secure, push the pins into the connector until they are secure.

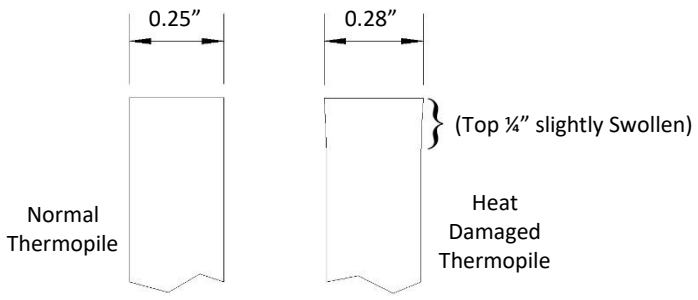
Pilot Burner Connector



Defective Thermopile – it rarely happens but occasionally the Thermopile is damaged by the flame. When we see this it is usually due to the fact the Pilot Burner orifice is too large for the gas pressure being supplied to the feature. When the orifice is too large the resulting flame on the Thermopile is like a "blow torch" which over time will damage it. When the Thermopile has been damaged by the flame the last ¼" of the Thermopile will appear slightly swollen as shown in the illustration below. A defective Thermopile will cause the Main Valve to not open OR cause it to Cycle On and Off.

A quick test to determine if the Thermopile is damaged is to loosen the fitting holding the Thermopile in place in the Pilot Burner and then try to slide the Thermopile out. If it is swollen you will not be able to slide it out.

Top of Thermopile



Debris on Outlet Screen of AWEIS – there is fine mesh stainless steel screen on both the Inlet and Outlet of the AWEIS. These screens are added to the main valve to try and prevent debris from entering the valve. Debris from the gas line can enter by way of the valve Inlet. Debris from the plumbing and/or burner connected to the Outlet can enter the valve through the Outlet. Over time rust and other debris can accumulate on the Outlet screen such that it will partially and sometimes completely stop the flow of gas. If you inspect the screen and see debris simply remove the screen, clean it with a wire brush or compressed air and replace the screen.

Defective Controller or Defective Main Valve – If the AWEIS is installed correctly, the Thermopile Pins are secure, the Thermopile is not defective and there is no debris on the Outlet screen then either the Controller or the Main Valve is defective. We rarely see defective Main Valves therefore the most likely cause is a Defective Controller. If either of these parts are defective it is best to either replace the Ignition Control Box or have yours repaired.

5. …Feature lights but then turns OFF within a few seconds and restarts again (repeats this sequence).

Typical Causes:

Gas Volume Insufficient – if the amount of gas being supplied to a fire feature is not enough for proper operation one of the symptoms is the feature will not stay lit. Initially when the feature is turned on ALL the gas is going to the Pilot Burner during Start Up. Once the Pilot Burner flame is lit then the Main Valve is opened to allow gas to flow to the Main Burner. When this happens most of the gas is then flowing to the Main Burner with only a small amount of gas flowing to the Pilot Burner. If a feature is not provided with enough gas, when the Main Valve opens ALL the gas flows to the Main Burner and the Pilot Burner flame gets too small to heat the Thermopile or it goes out completely. In either case, if the Thermopile does not have a flame on it the AWEIS will interpret this to mean the fire has gone out and it needs to shut down and relight itself again.
Insufficient Gas Volume can be caused by installing gas pipe too small to deliver the proper amount of gas OR by installing a Manual Gas Shutoff (Ball valve or Key Valve) with a capacity that is too small to allow enough gas to pass through to the feature.

Main Burner Orifice NOT Installed – When operating with an AWEIS EVERY burner should have an orifice installed in the gas inlet. For Natural Gas features a Natural Gas Orifice is installed. For Propane features the LP Air Mixer is installed. The two types of orifices look similar however the LP Air Mixer has 6 holes in the side of the fitting to allow air to flow into the Air Mixer. The Natural Gas orifice has no holes in the side of it. When installed, the orifice/air mixer restricts the amount of gas flowing to the Main Burner. This restriction ensures that not ALL the gas will flow to the Main Burner so that there is still some gas left for the Pilot Burner. When the main burner orifice/air mixer is NOT installed the same situation can occur is described in the paragraph immediately above.

Oxygen Starvation (Pilot Burner) – typically seen when Fireglass or very small lava rock used as the media in the feature. Too much "small" media on top of the Pilot Burner can cause the feature to cycle on and off. Try removing some of the media covering the Pilot Burner to see if Oxygen Starvation is causing the problem.
(See photo under "Oxygen Starvation" on page 3 for proper media coverage on Pilot Burner)

Defective Thermopile – See #4 above "Defective Thermopile" for detailed explanation

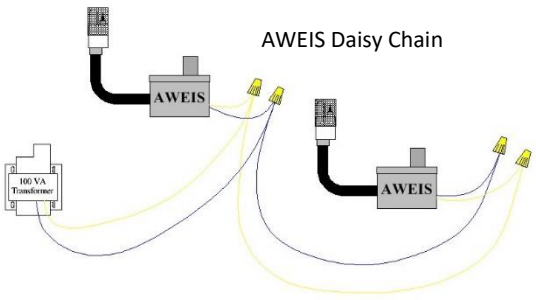
Defective Controller – If your plumbing is supplying enough gas, the Main Burner orifice is installed, the Pilot Burner is getting plenty of air and the Thermopile is not defective the only thing left is a Defective Controller. If you have a Defective Controller the only way to fix it is to replace it.

Performance Problems after Start Up

6. Fire Feature Cycles (Turns On and Off) every few minutes.

Typical Causes:

Polarity between features in a daisy chain – when daisy chaining multiple features together on one pair of wire the polarity BETWEEN the features MUST be the same.



Gas Volume Insufficient – See #5 above "Gas Volume Insufficient" for detailed explanation

Oxygen Starvation (Pilot Burner) – See #5 above "Oxygen Starvation" for detailed explanation

Defective Thermopile – See #4 above "Defective Thermopile" for detailed explanation

Defective Controller – See #5 above "Defective Controller" for detailed explanation

7. Main Burner Flame Lazy/Small OR Flame NOT spread out over entire burner.

Typical Causes:

Gas Volume Insufficient – See #5 above "Gas Volume Insufficient" for detailed explanation

Debris on Inlet Screen of AWEIS – See #3 above "Debris on Inlet Screen of AWEIS" for detailed explanation

Debris on Outlet Screen of AWEIS – See #4 above "Debris on Outlet Screen of AWEIS" for detailed explanation.

Obstruction in Plumbing between AWEIS Outlet and Main Burner – If your plumbing was sized correctly to deliver the proper amount of gas and the Screens in the AWEIS are clean inspect the plumbing between the AWEIS and the burner for obstructions. Also inspect inside the burner inlet to ensure no obstructions in there as well.

8. Main Burner Flame "Flares Up" every few minutes.

Typical Causes:

Fireglass layer too thick – Fireglass comes in different sizes with the smallest size being ¼" in diameter. If you put a thick layer of fireglass over the burner (> 1" in depth) there is a good chance some of the gas will get "trapped" within the fireglass while the feature is on. When this trapped gas encounters the flame in the feature it ignites and you see the "Flare Up" Effect. If you have fireglass in your feature and are experiencing this remove some of the fireglass directly above the burner to see if this fixes the problem.

Gas Leak – Natural Gas is lighter than air therefore when released into the atmosphere it rises. If you have a Natural Gas fire feature and there is a gas leak the Natural Gas will rise to the top of the feature. Once it encounters the flame a flare up will occur. Propane is heavier than air so if there is a gas leak when using propane the gas will fall into the bottom of the feature. That is why it is REQUIRED drainage/ventilation be installed at the bottom of the feature when using Propane. You do NOT want Propane accumulating inside the fire feature.

Shutdown Problems

Turn the Feature OFF…

9. …but a small flame continues to burn in the Pilot Burner

Typical Cause:

Leak in the Pilot Burner Gas Valve – when debris enters the AWEIS by way of either the Inlet or Outlet there is a chance some of that debris will enter the Pilot Burner Gas Valve and contaminate the seal inside the valve. If this occurs the possibility exists the valve will not seal properly when turned off thereby allowing a small amount of gas to flow even after turned off. Often this will result in a small flame that continues to burn in the Pilot Burner after the feature has been turned Off.

10. …but small flames continue to burn on the Main Burner

Typical Cause:

Leak in the Main Burner Gas Valve - when debris enters the AWEIS by way of either the Inlet or Outlet there is a chance some of that debris will enter the Main Burner Gas Valve and contaminate the seal inside the valve. If this occurs the possibility exists the valve will not seal properly when turned off thereby allowing a small amount of gas to flow even after turned off. Often this will result in a small flame that continues to burn on the Main Burner after the feature has been turned Off.