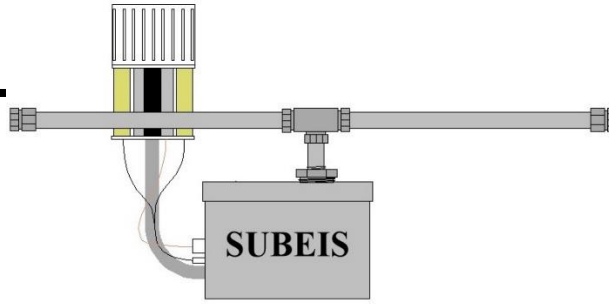




Submersible Electronic Ignition
Field Serviceable System
Owner's Manual
Installation and Operation



⚠ WARNING ⚠

Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

⚠ WARNING ⚠

Do not store or use gasoline or other flammable vapors and liquids in vicinity of this or any other appliance.

An LP-cylinder not connected for use shall not be stored in the vicinity of this or any other appliance.

⚠ WARNING ⚠

**FOR OUTDOOR
USE ONLY**

⚠ DANGER



CARBON MONOXIDE HAZARD

This appliance can produce carbon monoxide which has no odor.

Using it in an enclosed space can kill you.

Never use this appliance in an enclosed space such as a camper, tent car or home.

⚠ WARNING ⚠

For Use with NATURAL or LP GAS Only

NO SOLID FUELS TO BE USED WITH THIS SYSTEM

⚠ DANGER ⚠

If you smell gas:

1. Shut off gas to the appliance.
2. Extinguish any open flame.
3. If odor continues, keep away from appliance and immediately call your gas supplier or fire department.

Installation must conform with local codes or, in the absence of local codes, with the *National Fuel Gas Code, ANSI Z223.1 / NFPA 54, or International Fuel Gas Code.*

The appliance, when installed, must be electrically grounded in accordance with local codes or, in the absence of local codes, with the *National Electric Code, ANSI/NFPA 70, if applicable.*

INSTALLER: Leave this manual with the appliance.
CONSUMER: Retain this manual for future reference.

▲ Proposition 65 Warning ▲

Operating, servicing and maintaining this appliance can expose you to chemicals including Carbon Monoxide and Lead which are known to the State of California to cause cancer, birth defects or other reproductive harm. For more information go to www.Prop65Warnings.ca.gov

▲ AVERTISSEMENT ▲

Une installation, un ajustement, une modification, une réparation ou un entretien inapproprié peuvent être la cause de blessures ou de dommages. Veuillez lire attentivement les instructions d'installation, d'utilisation et d'entretien avant d'installer ou de réparer ce matériel.

▲ AVERTISSEMENT ▲

Ne pas entreposer ni utiliser de l'essence ni d'autres vapeurs ou liquides inflammables dans le voisinage de l'appareil, ni de tout autre appareil.

Une bouteille de propane qui n'est pas raccordée en vue de son utilisation, ne doit pas être entreposée dans le voisinage de cet appareil ou de tout autre appareil.

▲ AVERTISSEMENT ▲

Pour utilisation
à l'extérieur seulement.

▲ DANGER ▲



MONOXYDE DE CARBONE
Cet appareil peut produire du monoxyde de carbone, un gaz inodore.

L'utilisation de cet appareil dans des espaces clos peut entraîner la mort.

Ne jamais utiliser cet appareil dans un espace clos comme un véhicule de camping, une tente, une automobile ou une maison.

▲ AVERTISSEMENT ▲

Pour utilisation avec naturel ou propane ne gaz seulement
Aucun combustibles solides pour être utilisés avec ce système

▲ DANGER ▲

S'il y a une odeur de gaz:

1. Coupez l'admission de gaz de l'appareil.
2. Éteindre toute flamme nue.
3. Si l'odeur persiste, éloignez-vous de l'appareil et appelez immédiatement le fournisseur de gaz ou le service d'incendie.

▲ AVERTISSEMENT ▲

Ne pas utiliser cet appareil s'il a été plongé, même partiellement, dans l'eau. Appeler un technicien qualifié pour inspecter l'appareil et remplacer toute partie du système de commande et toute commande qui a été plongée dans l'eau.

Table of Contents

Gas and Electrical Requirements	Page 4
Clearance from Combustibles	Page 4
Installation Overview	Page 5
Installation Instructions	Page 6
Gas Plumbing Transition	Page 8
Operation	Page 9
Maintenance	Page 10
Troubleshooting	Page 11
Attachment 1: Sequence of Operation	

Gas Requirements

Fuel Type – Before making gas connections ensure appliance being installed is compatible with the available gas type. Check the label on the appliance to confirm appliance gas type requirement.

Gas Pressure – Proper input gas pressures are required for optimum appliance performance.

Gas Pressure Requirements

	Natural Gas	Propane
Minimum	1/4 psi / 4" WC	1/4 psi / 7" WC
Nominal	2 psi / 56" WC	2 psi / 56" WC
Maximum	4 psi / 112" WC	4 psi / 112" WC

Electrical Requirements

▲ WARNING ▲

The Submersible Electronic Ignition System operates on 24 Volts AC power ONLY
DO NOT Attempt to Power using 110 Volts AC Power – Damage WILL RESULT

Acceptable Input Voltages to Supplied 24 Volt AC Transformer

110 / 210 / 220 / 240 / 480 Volt AC

(Supplied 24 Volt AC Transformer compatible with all voltages listed above)

(Read label on supplied transformer for proper connection information)

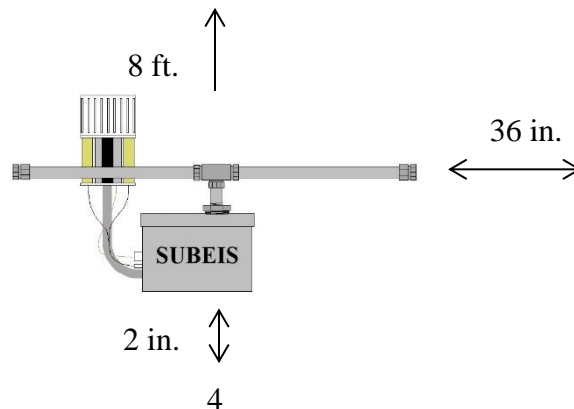
Recommended Wire Size

12 gauge wire for all installations

Clearance from Combustibles

▲ WARNING – FIRE RISK ▲

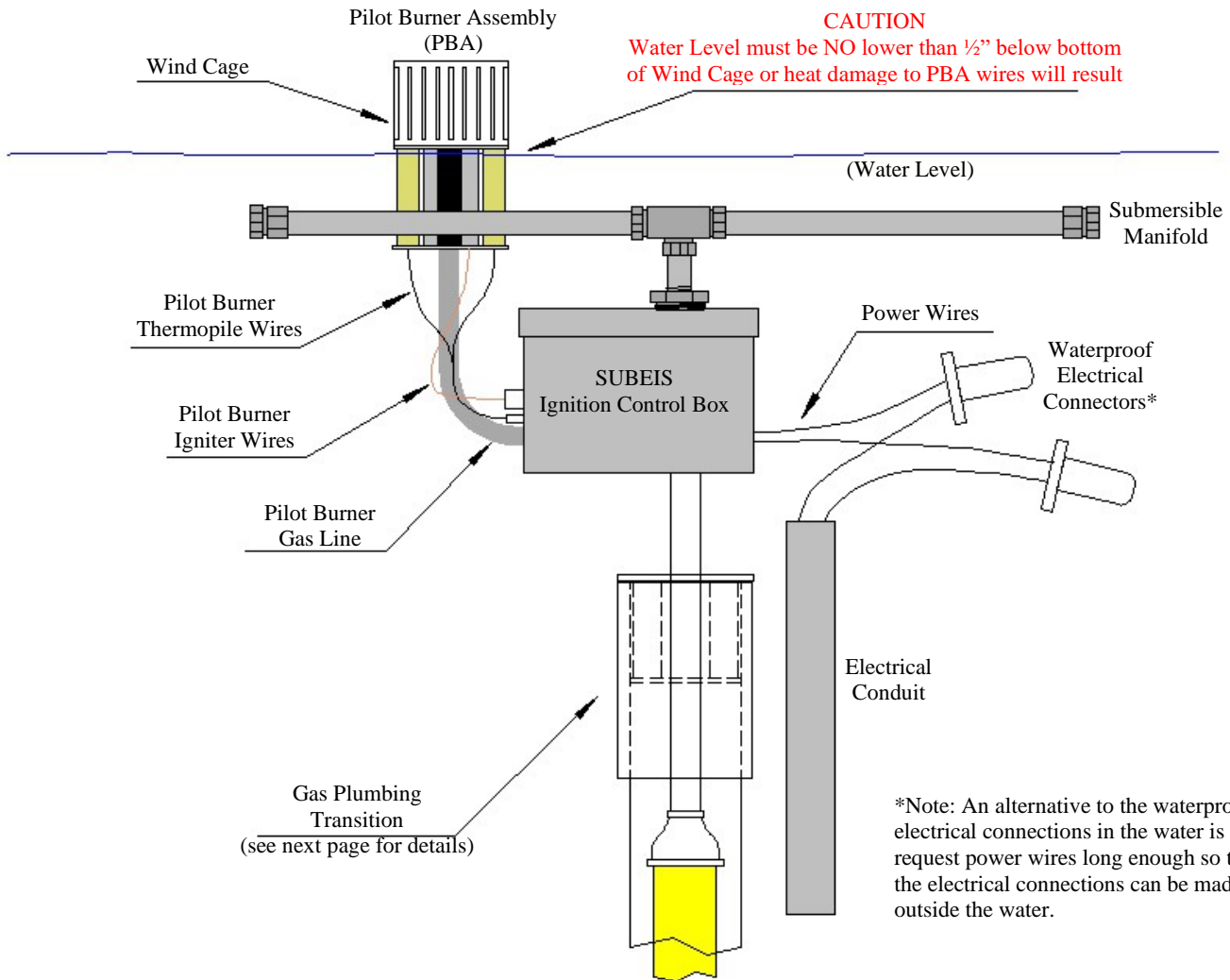
Provide Adequate Clearance from Combustibles as shown below



Installation Overview

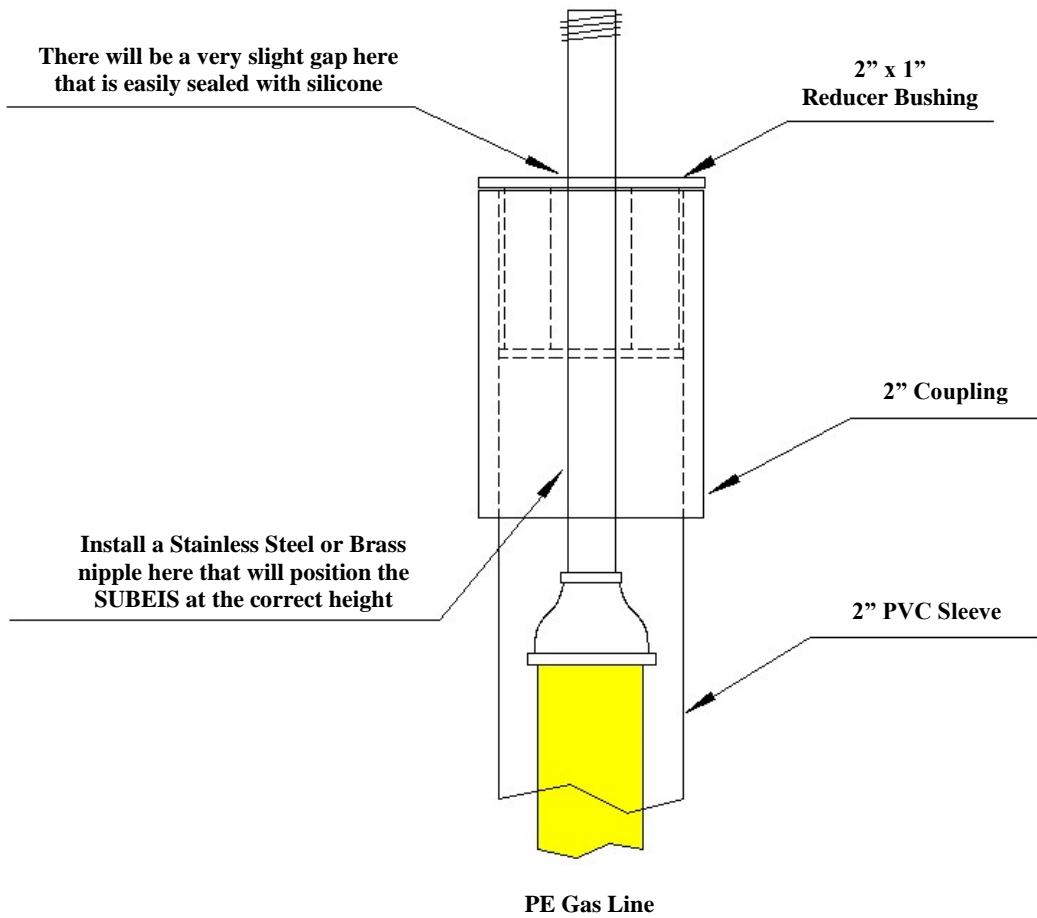
Note: Installation should be done by a qualified service technician that is locally licensed.

Below is an illustration showing what the install of the SUBEIS will look like when complete.



Gas Plumbing Transition (Underwater)

Below is an illustration showing the preferred method for transitioning from a gas line (housed inside a PVC sleeve) to the submerged SUBEIS system. This is by no means the only method of transitioning.



Installation Instructions



Pictured at left is the SUBEIS Ignition Control Box and Pilot Burner Assembly (PBA). These come as two separate parts when shipped. In this photo the Pilot Burner Assembly gas line has been connected to the Ignition Control Box.

In the next few steps we will show you how to complete the installation of the Pilot Burner Assembly and the Submersible Manifold to the Ignition Control Box.

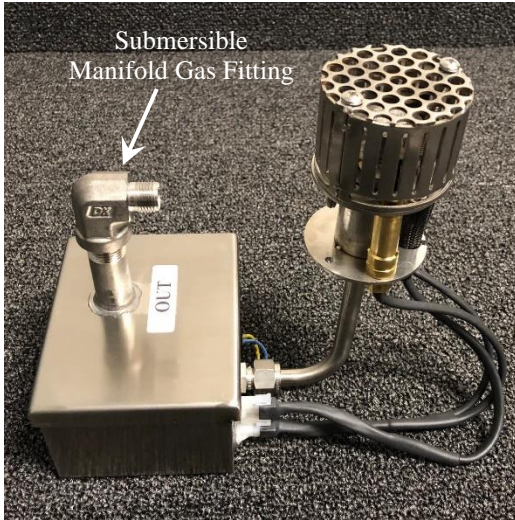


There are two white electrical connectors coming from the Pilot Burner Assembly. These connectors are different from one another to ensure they are connected to the correct port on the side of the box.

Included with the SUBEIS was a small tube of Silicone Grease. Squeeze some of this grease into the two white connectors on the side of the Ignition Control Box and then plug the connectors into their respective ports.



The SUBEIS will look like the photo at left when you have finished installing the Pilot Burner Assembly.



The first step to installing the Submersible Manifold is to install the Submersible Manifold Gas Fitting onto the outlet of the SUBEIS Ignition Control Box as shown in photo at left.

The direction the fitting should face is predicated on which style manifold you have purchased.

For a Linear Manifold, the fitting faces the Pilot Burner.
For a Round Manifold the fitting faces away from the Pilot Burner.

See photos below of the completed install for both a Linear and Round Submersible Manifold.



The photo at left shows two styles of Electrical “Grease” Wire Nuts (black wire nuts) and two “Grease Caps”. These should have been included in with your SUBEIS order.

After installing the SUBEIS with manifold onto the gas line in your feature you will need to make the electrical connection to the Ignition Control Box.

Connect the wires from your power source to the wires from the Ignition Control Box and twist them as you would normally do when connecting wires. Then install the Black “Grease” Wire Nuts onto the twisted wires. Next open up the hinged lid of the “Grease Caps” and insert the Black Wire Nut down into the grease in the cap as far down as it will go. Then close the hinged lid until it locks into place.

Operation

⚠ WARNING ⚠

HOT – DO NOT TOUCH - SEVERE BURNS MAY RESULT - CLOTHING IGNITION MAY RESULT

- CAREFULLY SUPERVISE children in same area as the appliance.
- Alert children and adults to hazards of high temperatures.
- Clothing or other flammable materials should not be hung from the appliance or placed on or near the appliance.

⚠ WARNING ⚠

The appliance should be inspected before use and at least annually by a qualified service technician.

Any guard or protective device removed for servicing must be replaced prior to operation.

Keep the appliance area clear and free from combustible materials, gasoline and other flammable vapors and liquids.

Fire Feature Start Up

1. Prior to turning appliance on visually inspect fire feature to ensure debris such as leaves or other combustible material has not collected inside the feature which could burn and emit embers once the fire feature is turned on. Also ensure any person standing close to the fire feature is aware you will be turning the fire feature on prior to actually turning it on.
2. Turn fire feature on by turning on the electrical device used to power the fire feature.

Sequence of Operation during Ignition

- Power is applied
- Hot Surface Igniter (Glow Plug) becomes hot and 4 seconds later the Pilot Gas Valve opens
- Within 10 seconds of power application Pilot Flame should be visible (at night only)
- Within 10 seconds of Pilot Flame Ignition burner (fire ring/burner bar) should ignite

Fire Feature Shutdown

1. Turn fire feature off by turning off the electrical device used to power the fire feature.

⚠ WARNING ⚠

If fire feature fails to turn off completely (small flames still visible)
Turn off gas supply using the manual gas shutoff.

Maintenance

▲ WARNING ▲

Maintenance should be done by a qualified service technician.
The appliance should be inspected before use and at least annually by a qualified service technician.

▲ WARNING ▲

Ensure gas and power are shut off and appliance is cool before servicing.

▲ WARNING ▲

Any guard or protective device removed for servicing must be replaced prior to operation.

Prior to Each Use

1. Inspect for debris in Fire Feature – remove debris prior to use

Semi-Annually

1. Visually inspect Pilot Burner for debris/insect infestation (spider webs)
2. Visually inspect burner holes for debris/insect infestation
3. Clean either of the above as necessary using compressed air.

Annually

1. Visually inspect Pilot Burner for excess corrosion due to heat and moisture.
2. Turn fire feature on to ensure proper operation.

Troubleshooting

I installed the Electronic Ignition System, turned it on and nothing happened

When this occurs it is usually due to an electrical wiring / power issue. Check all your electrical connections thoroughly to ensure all wires at the transformer and inside the fire feature are connected properly. If it appears all wiring is connected properly, disconnect the wires at the fire feature, attach a Multimeter to the wires to confirm a minimum of 24 volts when the fire feature is turned on. If you determine that you do not have a minimum of 24 volts at the fire feature conduct the same test at the transformer to ensure the transformer is in fact producing a minimum of 24 volts. If you do have a minimum of 24 volts at the fire feature contact us for further assistance.

I installed the Electronic Ignition System, turned it on and I can see the glow plug glowing orange and I can hear gas flowing but it will not ignite.

There are two possible causes to this problem; **Air in the Gas Line** or not enough **Electrical Current** to the fire feature.

Air in the Gas Line. If a new gas line was installed and the air was never purged from it prior to installing the Electronic Ignition System then it may take several times of turning the fire feature on and off before the air is purged from the gas line. Here is how our system works; after you turn it on the glow plug will come on first followed by the Pilot Gas Valve opening 4 seconds later. For the next 180 seconds (3 minutes) the glow plug will cycle on and off every 30 seconds while the Pilot Gas Valve will remain on the entire time. Therefore if you are attempting to purge air from the gas line, turn the system on and leave it on for approximately 3 minutes. Then turn it off and then back on (no need to wait to turn it back on). Let the system run for another 3 minutes. Usually when purging air from a new gas line you will need to cycle the power several times as described above before gas begins to flow. If at any point you smell gas but still don't have ignition, attempt to light the Pilot flame with a handheld lighter. If the flame ignites when you light it by hand, go to the section below, "Electrical Current".

Electrical Current. If you have determined that air in the gas line is not the problem then most likely the failure to ignite is due to the fact the glow plug is not getting hot enough to ignite the gas. The reason a glow plug will not get hot enough is due to the fact it is not getting enough 'amps'. Often times when troubleshooting electricians will check the electrical power and when they see they have a minimum of 24 volts they think everything is fine electrically so there must be a problem with the Electronic Ignition System. The problem is not due to the volts but rather the amps. The number of amps reaching the fire feature is heavily dependent on the gauge wire used between the transformer and the fire feature. Our Install Instructions require no less than 12 gauge wire be run for all fire features. Often times we learn that in many cases less than 12 gauge wire has been used and herein lies the cause of the problem.

Here is how you check to determine if enough Electrical Current (amps) are getting to the fire feature:

1. CAUTION: Turn off the gas supply prior to the next step.
2. Using a clamp on ammeter, clamp the ammeter around one of the wires providing power to the Electronic Ignition System.
3. Turn the fire feature on.
4. The amps you should see will range between 1.4 to 1.6 amps initially. Four seconds after being turned on the amps will jump to approximately 2.0 amps.

If you do not see the amps listed above AND the wire gauge used was less than 12 gauge wire – change the wiring. Otherwise contact us for further assistance.

I turned the Fire Feature off but I still see small flames emanating from the fire feature.

Turn the fire feature on, let the main fire ring light and then turn it off again – do this several times. Small pieces of debris from the gas line can get caught in the main or pilot valve thereby preventing it from closing all the way. This will sometimes happen with a new gas line. By cycling power you can often times dislodge the debris. If cycling power does not rectify the problem, turn the gas off using the manual gas shutoff and contact us for further assistance.

Attachment 1

Sequence of Operation

Start Up (Normal Operation)

Power On (ON)

0 seconds after ON: Hot Surface Igniter - On

4 seconds after ON: Primary Pilot Gas Valve – On
(Assuming Pilot Flame Ignites)

6 seconds after ON: Main Gas Valve – On / Secondary Pilot Gas Valve – On / Hot Surface Igniter – Off

15 seconds after ON: Primary Pilot Gas Valve - Off

* Secondary Pilot Gas Valve and Main Gas Valve remain on throughout operation

Power Off – within 0.1 seconds after Power Off, Pilot Gas Valve and Main Gas Valve Off

Start Up (Pilot Flame Fails to Light)

Power On (ON)

0 seconds after ON: Hot Surface Igniter - On

4 seconds after ON: Primary Pilot Gas Valve – On
(Assuming Pilot Flame Does Not Ignite)

30 seconds after ON: Hot Surface Igniter – Off

60 seconds after ON: Hot Surface Igniter – On

90 seconds after ON: Hot Surface Igniter – Off

120 seconds after ON: Hot Surface Igniter – On

180 seconds after ON: Hot Surface Igniter and Primary Pilot Gas Valve – Off

* The SUBEIS will only attempt ignition 3 times as shown above and then turn off.

** Main Valve will not turn on if Pilot Flame fails to light so Main Valve is off during entire 180 sec. above

Flame Out Response

SUBEIS Systems

When flameout occurs the Flame Failure Response time is between 8 to 12 seconds after flame loss. Once flame failure is detected the AWEIS will shut down and initiate startup as per “Start Up” sequence above.