

## Service and Maintenance

The vaporizers, just like any other LP gas equipment, should be maintained periodically. The following maintenance schedule may be used as a guideline. This maintenance schedule includes items that must be serviced, the type of service to perform, and the frequency of service. However, this is only a suggested schedule. The conditions in your area and quality of the LP gas liquid may dictate a more stringent maintenance, but whatever your schedule, remember that maintenance is of paramount importance for trouble free operation of the vaporizer. See Appendix A for recommended spare parts and repair kits for proper maintenance.

### CAUTION



***The equipment described in this manual is designed to operate with LP gas, a flammable fuel under pressure. The nature of the application involves inherent hazards that could result in injury. ONLY a trained and fully qualified person should service this equipment.***

**Table 3 – Items to be Serviced Monthly**

Items to be Serviced Monthly	Service to Perform:
Strainer	Remove and clean screen. Replace as necessary. In some cases it may be necessary to use some type of cleaner to remove all contaminants.
Pilot Burner Assembly	Inspect pilot assembly. The flame should envelope 3/8" to 1/2" of the thermocouple tip.
Main Burner Assembly	Inspect for proper flame. Check that air supply openings are clear of debris, dirt or trash. If needed, clean each burner orifice.
Relief Valves	Check all relief valves on vaporizer, liquid and vapor lines for signs of corrosion in outlet. Check all rain caps. Replace if damaged or missing.
Enclosure	Check access door and inside enclosure for debris and combustible material. Check and, if needed, clean the inlet louvers and vent cap(s).

**NOTE**

**Before replacing thermostat, be sure the thermocouple (read while hot) is delivering the proper voltage to the thermostat (13 to 30 millivolts).**

**Table 4 – Items to be Serviced Annually**

Items to be Serviced Annually	Service to Perform:
Thermostat	Check thermostat for proper operation (see <i>Start-up Procedure</i> ). If the thermostat is not operating properly, it should be replaced (thermostat cannot be serviced).
Thermocouple	The electrical output of the thermocouple should be checked with a millivolt meter. The thermocouple (when hot) output should be between 13 and 30 millivolts. A lower than 13 millivolt reading indicates the thermocouple should be replaced. <b><u>NOTE: Do not over tighten thermocouple! First hand tighten and then turn 1/8 turn with wrench.</u></b>
Liquid Inlet Valve	Remove plug from inlet valve and wipe away debris. Use kit P/N: 3-0016 to replace valve seat, spring and O-ring on plug, o-ring on valve orifice, flange gasket and pin gasket. For proper pin gasket installation procedure and valve installation and test procedure please see Appendix A.
Capacity Control Valve	Disassemble and clean the valve assembly inside of the body. Use kit P/N: 3-0017 to replace the spring and the O-rings on the piston and plug. Use powdered graphite as lubricant around top of the piston. Use grease as lubricant for the O-ring on the valve plug.
Heat Exchanger(s)	<ol style="list-style-type: none"> <li>1. Check heat exchanger flue for holes or excessive scale. Remove obstructions and debris if needed. Check heat exchanger bottom head for pitting. Should pitting be in excess of 1/16" (nominal wall thickness 1/4"), remove heat exchanger from service. Ultrasonic thickness tester can be used to determine wall thickness.</li> <li>2. Check heat exchanger for possible heavy ends accumulation on the inside by tilting the vaporizer to its side after removing the liquid inlet valve. After draining heavy ends, re-install the liquid inlet valve and uniformly torque bolts to 30-35 ft lbs by using a cross pattern.</li> </ol> <p><b><u>NOTE: In areas where gas quality is poor it may be necessary for heat exchangers to be checked for heavy ends monthly. Once it is verified that no significant quantity of heavy ends are accumulating during vaporizer operation, this service can be performed on a yearly basis.</u></b></p>
Main Burner Assembly	Inspect for proper flame. Check that air supply openings are clear of debris, dirt or trash. If needed, clean each burner orifice. All Direct Fired vaporizers built after October 2002 use #66 orifice burner tips.

## **1. PILOT - TROUBLESHOOTING TREES #1 & #2**

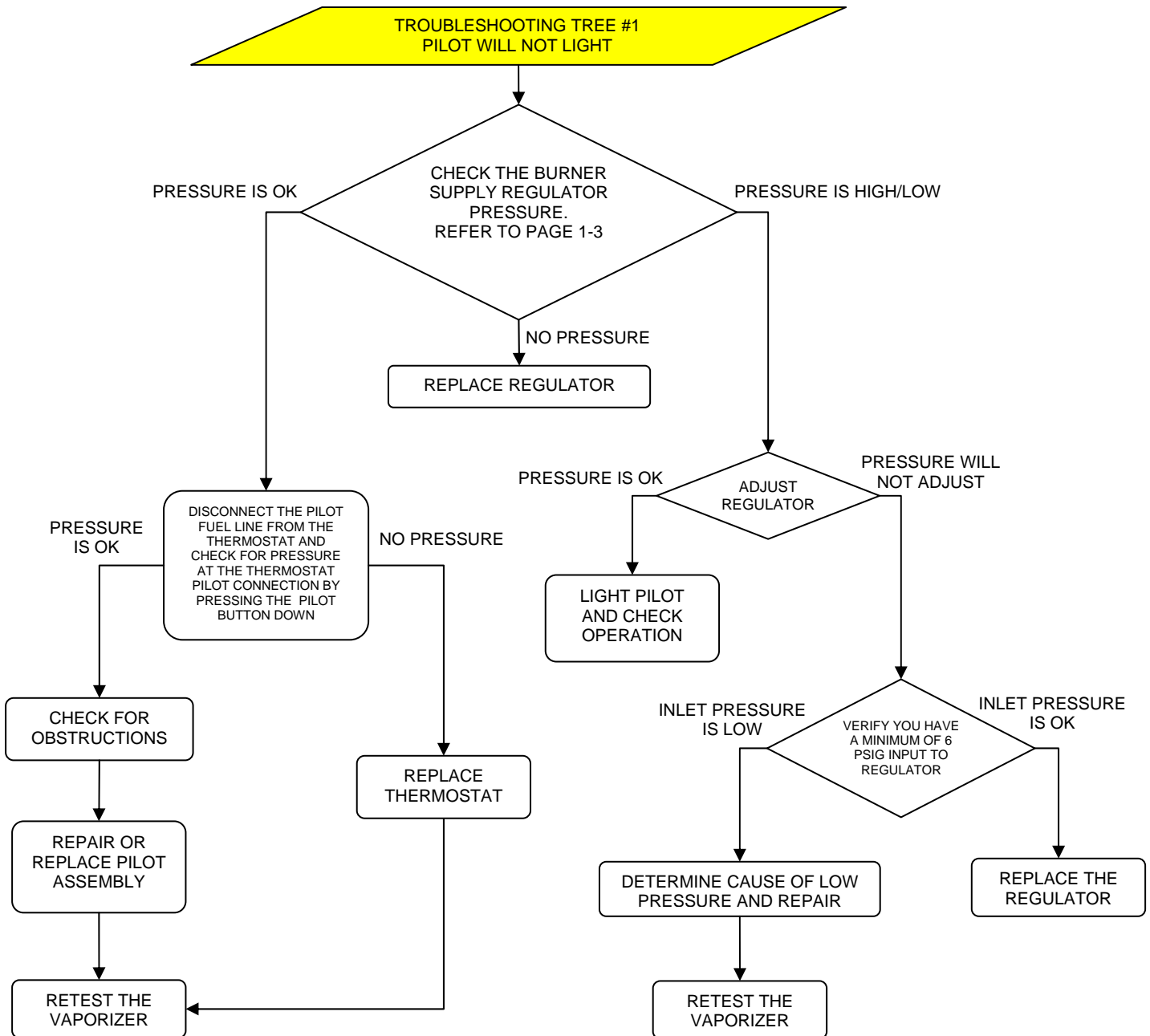
- The pilot flame is adjusted at the factory to provide a non-blowing blue flame. If the flame is not adequate or the pilot does not stay lit, check the pilot burner to see if it is clear of any obstructions.
- Flame should envelope 3/8" to 1/2" of the thermocouple tip. If the pilot flame is too low, the thermocouple will not generate sufficient voltage to hold the main burner's valve open. If the pilot flame is too small, clean the pilot burner orifice, or replace the pilot. The 40/40H vaporizers use #18 pilot orifices, while the 80/40H and 120/60H use #23 pilot orifices.

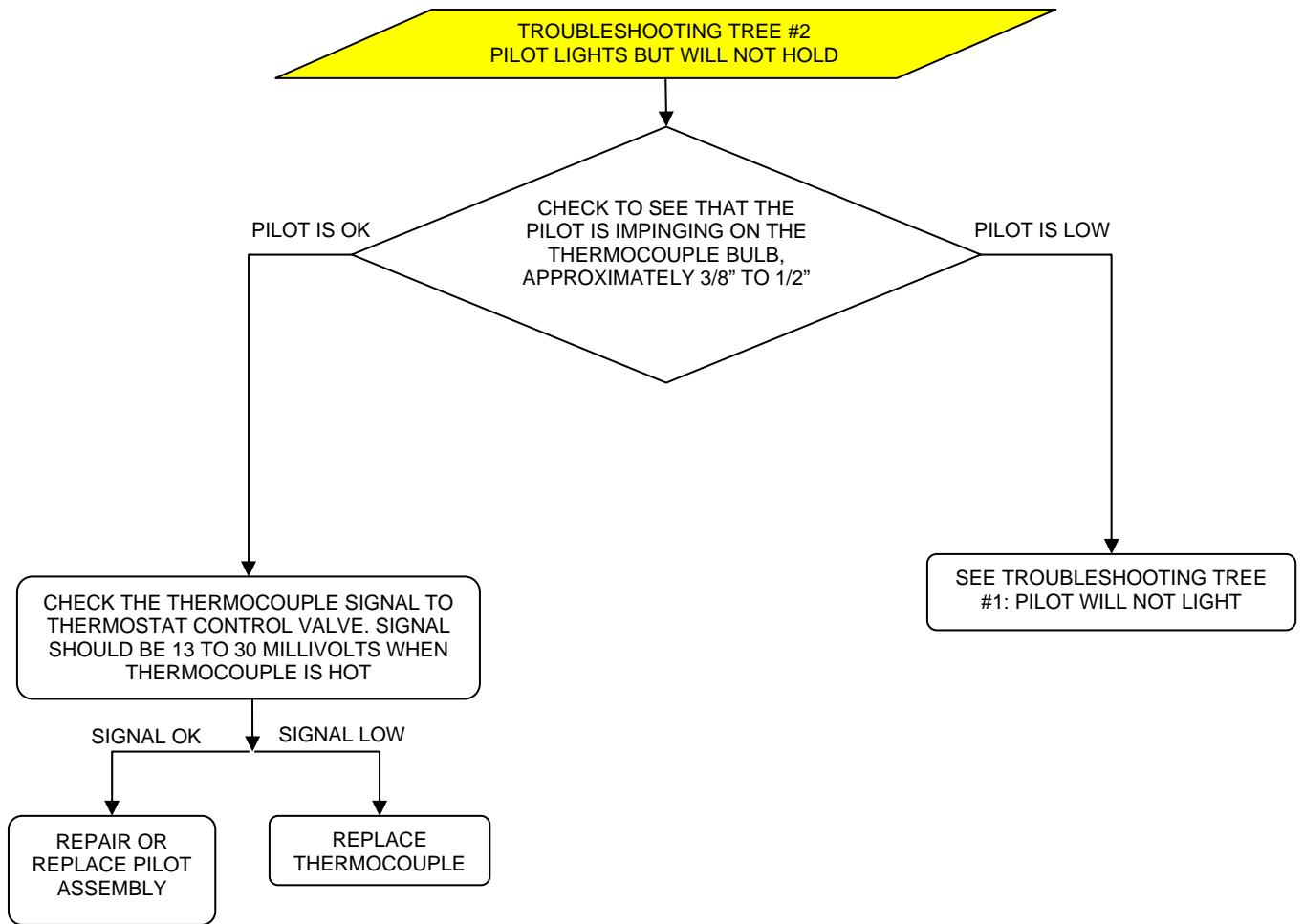
## **2. MAIN BURNER WILL NOT IGNITE - TROUBLESHOOTING TREE #3**

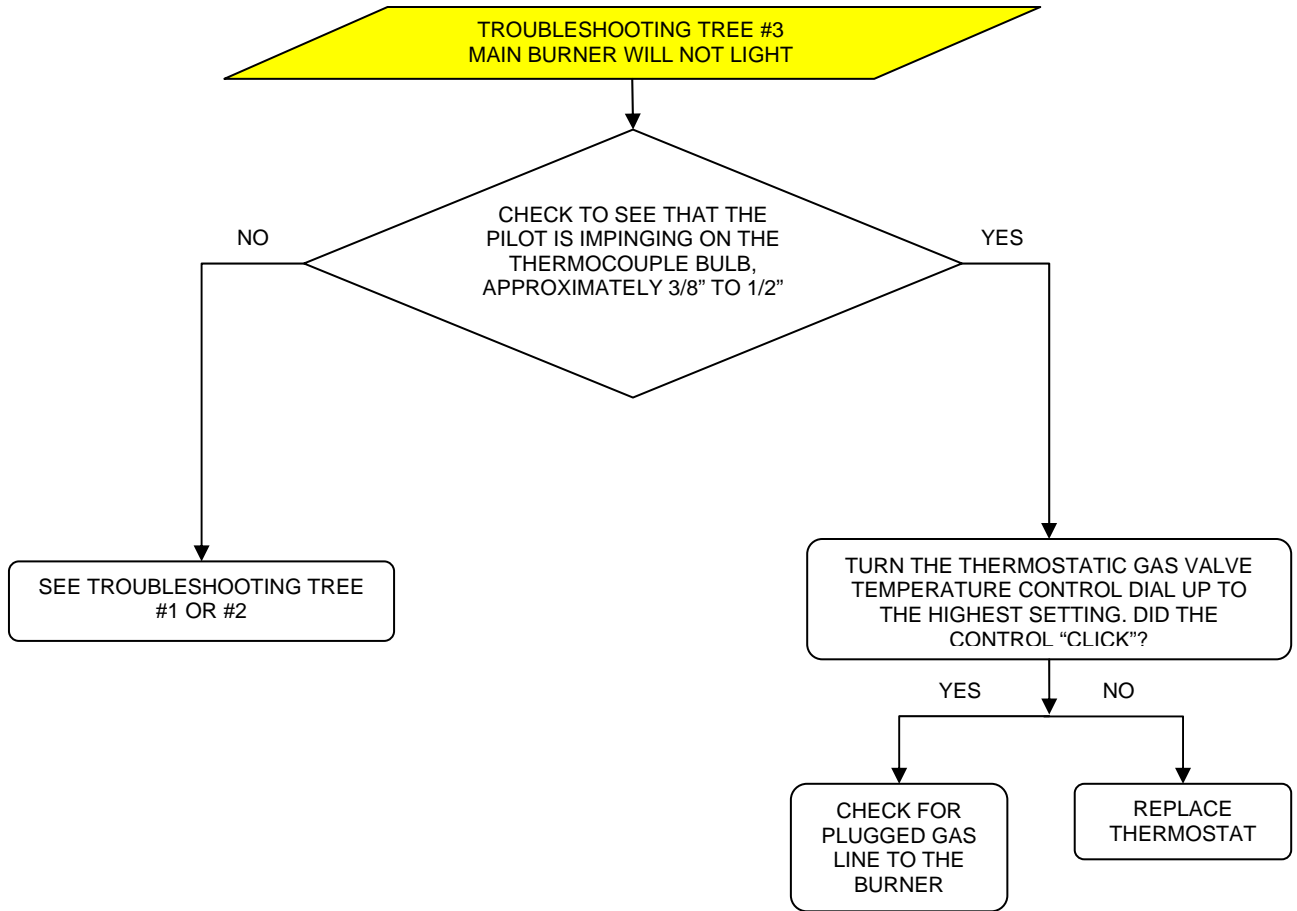
- Check the pilot burner as per 1. above.
- Check burner regulator. Disconnect tube from outlet side of regulator and check output pressure.
- If pilot burner and burner regulator check out OK, the problem is in the thermostat. Replace thermostat (the main burner will not come on unless the temperature in the heat exchanger drops).

## **3. IF VAPOR PRESSURE DROPS - TROUBLESHOOTING TREE #4**

- Check burner; check pilot as per 1. and 2. above.
- If vapor pressure drops, but main burner(s) is working, vapor demand exceeds vaporizer capacity.
- Check liquid excess flow valve and shut off valve; make sure they are open.
- Close liquid inlet valve upstream of strainer. Bleed down system and clean strainer filter.







**TROUBLESHOOTING TREE #4  
VAPOR SERVICE PRESSURE DROPS**

**NOTE:** SERVICE PRESSURE WILL DROP IF THE DEMAND EXCEEDS VAPORIZER'S CAPACITY: 40/40H 3.6 MBTU/hr, 80/40H 7.3 MBTU/hr, 120/60H 10.9 MBTU/hr. THE FOLLOWING TROUBLESHOOTING TREE ASSUMES THAT THE LOAD ON THE VAPORIZER IS LESS THAN ITS MAXIMUM CAPACITY.

