

TECHNICAL INFORMATION COMMUNICATION



**United
Technologies**

Building & Industrial Systems

Quality and Continuous Improvement

Number: TIC2014-0009

Date: 7/11/2014

Title: Residential Condensing Furnace Operating in Wrong Gas Configuration

Product Category: Gas Furnaces

Products Affected

35" residential condensing gas furnaces

Situation

The factory has become aware of installations in which condensing gas furnaces were operating on propane when configured for natural gas. This resulted in significant soot buildup in the primary and secondary heat exchangers, collector box, inducer housing, trap and vent pipe. Soot was also visible in the exhaust at the vent termination.

Technical Information

Based on lab testing, a condensing furnace configured for natural gas and operating on propane can build significant soot after two (2) days of continuous operation (16 hours). If the furnace is then converted to natural gas, the existing soot layer is thick enough to restrict combustion air flow and continue to produce and build soot. Extensive cleaning of the furnace and vent passages will restore normal operation; however, the process is complex and time consuming.

Soot formation is typically accompanied by carbon monoxide (CO) and aldehyde production which can be harmful above certain concentrations.

In addition, if a furnace runs on propane when configured for natural gas, the first pass of the primary heat exchanger will overheat which can result in thermal stress cracks.

Field Corrective Action

Condensing gas furnaces are shipped configured for operation with natural gas. If the furnace will operate with propane, it must be converted using the conversion kit listed on the rating plate. Do not use conversion kits not listed on the rating plate since sooting may result. The Installation Instructions and product labels reinforce the propane conversion requirement. The current non-condensing and legacy condensing and non-condensing furnaces also require furnace conversion for operation on propane.

New Installations: Convert the furnace to the propane configuration using the conversion kit specified on the rating plate. Follow the instructions in the kit. The orifices must be changed, spoiler screws

Only trained and qualified personnel should design, install, repair and service HVAC systems and equipment. All national standards and safety codes must be followed when designing, installing, repairing and servicing HVAC systems and equipment. It is the responsibility of the Dealer to ensure local codes, standards, and ordinances are met.

TECHNICAL INFORMATION COMMUNICATION



**United
Technologies**

Building & Industrial Systems

added to the burners and gas valve adjusted to acquire the target line and manifold pressure per the propane kit instructions.

Existing Installations:

- 1) Clean the primary and secondary heat exchangers, collector box, inducer housing, condensate trap and vent pipe.
- 2) Inspect the first pass of PHX for open stress cracks. If an open stress crack is found, replace the primary heat exchanger.
- 3) Convert the furnace to the propane configuration using the conversion kit specified on the rating plate. Follow the instructions in the kit. The orifices must be changed, spoiler screws added to the burners and gas valve adjusted to acquire the target line and manifold pressure per the propane kit instructions.

Running a furnace configured for natural gas on propane is considered improper installation based on the warranty policy; therefore, parts and labor costs are not covered.

If a furnace was modified for operation with propane, then switched to natural gas; the furnace must be converted back to the natural gas configuration using the conversion kit listed for that furnace model number.

References

Condensing Gas Furnace Installation Instructions
Natural Gas to Propane Conversion Kit Instructions
Propane to Natural Gas Conversion Kit Instructions
Furnace Warranty Card

Only trained and qualified personnel should design, install, repair and service HVAC systems and equipment. All national standards and safety codes must be followed when designing, installing, repairing and servicing HVAC systems and equipment. It is the responsibility of the Dealer to ensure local codes, standards, and ordinances are met.