



**Guardian System Frequently Asked Questions  
Flammable Vapor Ignition Resistant Water Heater  
Revision 2**

- 1. What is FVIR?** It means Flammable Vapor Ignition Resistant. A new ANSI (American National Standards Institute) standard will go into effect that will prevent a water heater from igniting flammable vapors outside the combustion chamber.
- 2. When does the new ANSI standard go into effect?** The new ANSI standard Z21.10.1-2001 will go into effect July 1, 2003.
- 3. When will the new product be available?** If it goes into effect July 1, 2003, will we be able to get product before the July date? Rheem will start production of the new FVIR compliant product on July 1, 2003. All units manufactured prior to that date are protected by a grandfather clause in the ANSI standard.
- 4. What products are being affected?** All 30, 40 and 50 gallon gas water heaters, both propane and natural gas, PowerVent models and direct vent will have to meet the FVIR standard in the future.
- 5. What is the major change to an FVIR compliant gas water heater?** To meet the new ANSI standard, the water heater must not allow flammable vapors from gasoline to be ignited outside the water heater.
- 6. Why are FVIR water heaters being built?** For several years, Rheem has helped underwrite a program sponsored by the Gas Appliance Manufacturers Association to educate millions of consumers about the hazards of flammable vapors. Plumbing professionals have played a vital role in the success of these programs. Even though current water heaters are safe, the American National Standards Institute (ANSI), the technical committee combined resources and a consortium of water heater producers was formed to address the problem caused by improper storage or use of gasoline or other flammable liquids. The new ANSI standard says, in part, that the design of water heaters shall be such that they shall not ignite flammable vapors outside the water heater caused by spilling gasoline on a floor.
- 7. Can you buy the old style (non-FVIR) water heater after July 1st, 2003?** Answer: Yes, you can. The new ANSI standard prevents a manufacturer from producing the non-compliant water heater. Any product manufactured prior to the implementation date is grandfathered.
- 8. How is FVIR water heater compliance regulated?** ANSI is the organization responsible for defining the manufacturing standards. Water heater compliance is tested by a certification agency called CSA (Canadian Standards Association).
- 9. Are all FVIR water heaters the same?** No, they are not. The consortium of manufactures agreed on flame arrestor plate technology to create the new generation of FVIR water heaters. Early in the development, Rheem researchers at their Montgomery labs discovered that flame arrestor plate designs might be vulnerable to the effects of lint, dust and oil - LDO. Rheem urged the ANSI standards be reviewed. As a result, the ANSI standard now includes testing for reliability in LDO environments. Throughout development, Rheem engineers have been highly attentive to the role LDO robustness will play on product reliability and consumer satisfaction.
- 10. What is meant by the LDO test?** LDO stands for lint, dust and oil. It is a test protocol that analyzes how well the water heater will operate under simulated use conditions. It replicates a water heater installed in a home where lint, dust and oil bound particles may enter the combustion chamber. The LDO test is principally a safety test to insure the FVIR properties of the water heater work - even when clogged up with lint, dust and oil.



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- 11. How has Rheem's FVIR development program differed from other manufacturers?** The major difference between Rheem and other manufacturers has been in the areas of research, resources, and testing. Several years ago, Rheem built FVIR testing facilities to assist in our product development process. These facilities include a spill test chamber, an LDO test room and a special testing facility known as a butane chamber. The Flammable Vapor spill test unit and the Lint, Dust & Oil facility are CSA (Canadian Standards Association) compliant and have greatly enhanced the depth and scope of Rheem's design testing program.
- 12. How much FVIR testing have you done?** Rheem has over 200 products in ongoing life cycle test at an independent testing facility. These product tests, conducted by a third party testing agency, are providing Rheem with extremely detailed and vital information and understanding of the performance characteristics of FVIR designs. Rheem also has hundreds of water heaters in field test across the country.
- 13. Will the dimensions of the new FVIR change?** Answer: Not much. The current family of FVIR products will have the same dimensions as current models. It may be a little taller.
- 14. Do you have to put an FVIR water heater on an 18-inch stand?** Answer: No, however until the local building officials change their codes, you must always put a gas water heater on an 18-inch stand if the local codes tell you to. In accordance with paragraph 8.1.10.1 of the 2002 National Fuel Gas Code and paragraph 305.3 of the 2003 International Fuel Gas Code, this product does not have to be placed on an 18-inch stand if installed in a residential garage. Local (city, state, county) codes may override or apply. Please check them.
- 15. Under what conditions does the TRD react (trip)?** The thermal release device (TRD) will activate when the temperatures inside the combustion chamber reach or exceed what we consider to be normal operating temperatures. Normal combustion chamber temperatures are about 350 - 375 degrees.
- 16. Is thermal release device activation a warranty replacement?** Answer: No. The TRD is a component part. If it fails due to improper workmanship, it will be covered under warranty. The warranty will also cover the tank leak not the activation of the component thermal release device. The warranty also covers parts replacement; but not the activation of the TRD due to misuse. The thermal release device is NOT a consumable part like a thermocouple or gas valve.
- 17. Can the thermal release device be replaced or reset?** Answer: No. If the unit trips the thermal release device for any reason we want to be aware of it. It means combustion chamber temperatures exceeded what we consider to be normal. The water heater must be replaced.
- 18. Will the thermal release device activate in transit?** What about rough handling? We have conducted shake tests to insure the TRD is secure in the combustion chamber assembly. We have thoroughly tested these products and the new technology components. They will not break due to normal shipments and delivery.
- 19. What about a replacement thermocouples or gas valves, can they be changed?** Yes, they can. The Rheem Guardian System provides for a full 6-year parts replacement policy. Labor to replace these parts is not included in the warranty.
- 20. What are the maintenance requirements for this product?** Current Use and Care manuals call for monthly and annual maintenance by the homeowner. It says: "Properly maintained, your water heater will provide years of dependable trouble free service. It is suggested that a regular routine maintenance program be established and followed by the user. It is further recommended that a periodic inspection of the

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thermostat, burner, relief valve, internal flue way and venting system should be made by service personnel qualified in gas appliance repair." The Rheem Guardian System is maintenance free.

- 21. Where is the T & P valve located on the new design?** Will there be increased thermal expansion issues? The T&P discharge is located on the side of the unit. T&P valves will be factory installed. Thermal expansion issues will be no greater or less than existing units. Remember, thermal expansion is not caused by the water heater; it is caused by a closed plumbing system inside the application.
- 22. What are the major features of the Rheem FVIR product designs?** Rheem has done more than to create an ANSI compliant FVIR water heater. Rheem has created an entirely new class of water heaters featuring the Rheem Guardian System. The Rheem Guardian System contains:
- a. Flammable Vapor Resistant Design** - Our design is loaded with exclusive features for unmatched performance and reliability. The Rheem Guardian System completely shuts off the combustion chamber when a flammable vapor incident occurs. Shutting off the gas supply, which all designs do, will not stop combustion inside the chamber. The Rheem air shut off system does, eliminating the possibility of a sustained vapor burn.
  - b. LDO Robustness for Efficient and Reliable Operation** - The Rheem Guardian System also has a unique design to resist the detrimental effects of LDO (lint dust and oil build up). The key to long and efficient product life is to limit the amount of LDO that can reach the flame arrestor plate. The result of this Rheem design is a water heater that is effective in preventing LDO contamination and a more dependable water heater.
  - c. Proprietary Extra-Strength Steel Formulation** - One more reason why contractors say, "With Rheem, you install it and forget it."
  - d. Standard Replacement Parts** - You won't have to worry about exotic, hard to find replacement parts to keep your customers in hot water.
  - e. Low NOx** - Proprietary Low NOx offers a better design better for the environment.
  - f. R-Tech Anode Rod** - The Rheem exclusive resourced anode rod is the secret to long, reliable tank life. Only Rheem has it!
  - g. Simple Push Button Pilot Light Ignition** - Reliable, clean and easy. You will never have to fumble with matches again.
  - h. Tamper Resistant Drain Valve and Combustion Chamber** - Helps keep curious, little fingers from getting into trouble.
- 23. May the Flammable Vapor Ignition Resistant water heaters be converted from LP to Natural gas?** Unfortunately not. Due to the design characteristics of the systems, none of the FVIR units may be converted from LP to Natural or Natural to LP.