

GSW

**JW John
Wood**

FLAME GUARD® SAFETY SYSTEM POCKET GUIDE

Proven Technology. Exceptional Reliability.

*Flammable
Vapor Ignition
Resistant
technology
you can trust.*

- **Unique safety feature - burns off vapors from the immediate area**
- **Proven in close to 800,000 installations in homes across North America**
- **Five years and more than 4 billion hours of incident-free operation**



AWARD WINNING DESIGN

"The Best of What's New" Popular Science, 1999



The Flame Guard® Safety System was selected by Popular Science in 1999, as one of 100 products rated, "The Best of What's New" because it greatly reduces the risk of flammable vapor fires - Keeping families safer than ever before.

"Best New Products", Today's Homeowner, 1999

The Flame Guard® Safety System was selected as one of 99 "Best New Products" by Today's Homeowner in 1999 because of its unique safety features.

"Chairman's Commendation", U.S. Consumer Product Safety Commission

*"What was once considered an unsolvable safety hazard has now been solved, and we encourage consumers to look for this technology when purchasing a gas water heater."
Ann Brown, Chairman*

With a manufacturing history that dates back more than 150 years, GSW is a North American leader in the design and manufacture of residential and commercial water heaters. GSW supplies a full range of electric, gas, propane and oil-fired products to customers in the wholesale, retail and energy services channels throughout North America and internationally. GSW leading brands include John Wood Pro Series, SuperFlue and SpaceSaver.

GSW Flame Guard® water heaters are manufactured in a facility whose Quality Management System is certified as being in conformity with ISO 9001:2000.

ISO 9001:2000



Certificate No. 000802

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THE FLAME GUARD® SAFETY SYSTEM

The Flame Guard® Safety System is a recognized and proven technology, exclusive to GSW and John Wood residential gas water heaters. The award-winning Flame Guard® safety system reduces the risk of accidental fires caused by the ignition of flammable vapors from products such as gasoline, paint thinner, and solvents. Flame Guard® protects the consumer by trapping burning vapors within the water heater combustion chamber through the patented "Flame-Trap".

Unlike other flammable vapor ignition-resistant (FVIR) systems, the Flame Guard® design draws in flammable vapors from the immediate area, and, as long as these vapors are present and within the flammability range, it will continue to burn them until they “burn themselves out.” Other technologies that shut off the combustion air supply, could increase the propensity for a more volatile situation—large amounts of flammable vapors mixed with room air.



THE FLAME GUARD® SAFETY SYSTEM

The failure of these competitive technologies to consume as many flammable vapors as possible could create a potentially dangerous situation in which remaining vapors are ignited by another device.

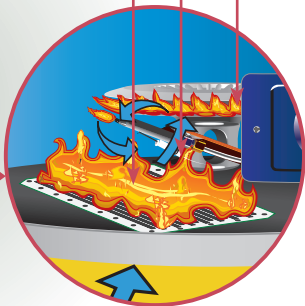
In the event of a flammable vapor incident or should the combustion air be restricted, Flame Guard®'s combustion safety shut-off switch shuts off the gas supply to the water heater's burner and pilot, permanently disabling the main burner and pilot preventing re-ignition of flammable vapors at a later time.

Subjected to over 1,000 tests and with five years of field experience in installations in homes across North America, the Flame Guard® system is the most proven technology available today. History has already proven the system as robust, reliable and dependable.

Air and flammable vapors can only enter through the flame trap.

Once ignited, the Flame Guard® system is designed so that burning vapors remain inside the water heater's sealed combustion chamber until the flammable vapors burn out.

A thermal sensor inside the combustion chamber senses the flammable vapor incident and shuts off gas flow to the burner and pilot.



A NEW STANDARD IN SAFETY AND RELIABILITY

GSW, as a member of the Joint Research and Development Consortium (JRDC), helped develop the new CSA International and ANSI Z21.10.1a-2002/CSA4.1a-2002 standard that required manufacturers to design technologies that prevent the ignition of flammable vapors around gas-fired water heaters, resulting from the mishandling or spillage of gasoline and other flammable products.

Residential gas water heaters that comply with the new standard are known as Flammable Vapor Ignition Resistant (FVIR) and herald a new standard in safety and reliability.

At present, this new standard applies only to 30, 40 and 50 US gallon standard gas water heaters. Eventually, manufacturers will have to build all residential gas water heaters to the new standard. Compliance with the new standard will be phased in by size and type of water heater over the next two years, to include larger capacity standard, power vented and direct vent water heaters.

TESTS AND CERTIFICATION

Flame Guard® water heaters are certified to both CSA and ANSI standards and have met or exceeded the requirements of over 1,000 tests including:

GASOLINE SPILL TEST

- The test is conducted with two blends of gasoline, a summer and winter blend, which is spilled both toward and away from the water heater.
- To pass the test, the water heater must not allow flames from ignited vapors to escape into the room during any of the spill scenarios.

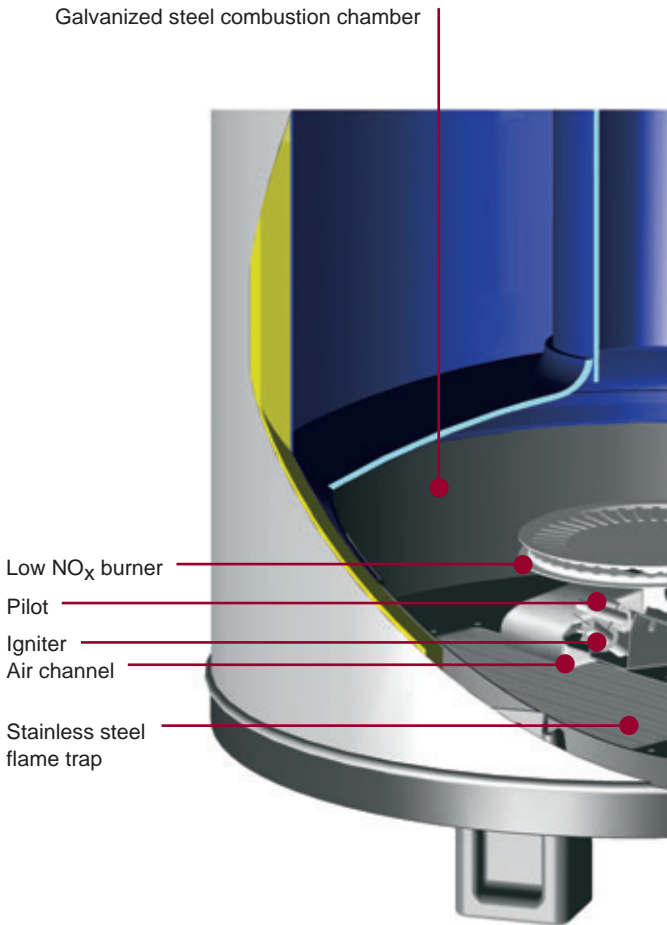
LINT DUST OIL TEST (LDO)

- The purpose of the LDO test is to ensure that lint does not build up on the flame trap openings of the combustion chamber or burner and cause poor combustion, soot or other dangerous conditions. The LDO test mimics the possible long-term buildup of lint on the water heater's flame trap. Lint buildup can cause sour combustion, which is unsafe.
- The Flame Guard® System is a self-cleaning system. A high pressure zone is created within the sealed combustion chamber when the burner ignites, thus cleaning any lint or debris on the outer surface of the flame trap. The flue tube and bottom of the tank are glass-lined preventing scale formation that might obstruct the flame trap.

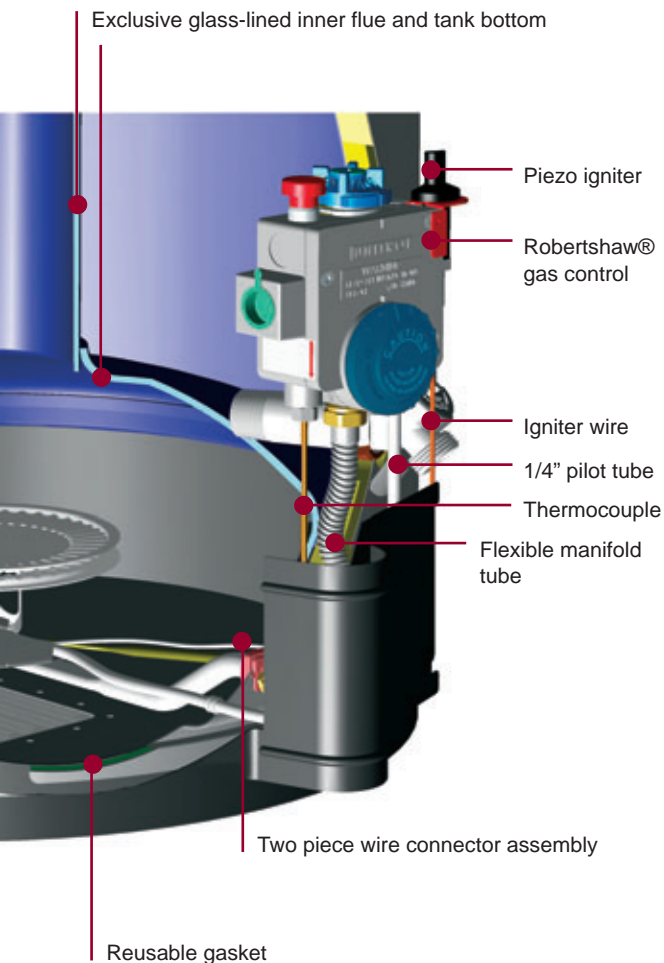
ADDITIONAL FVIR TESTS

- Butane Test
- Glues/Solvents/Other Flammable Vapors
- Endurance Burn Test/Multi-Burn Test
- Modified AG 102 Test (50 x smaller)

EXCLUSIVE FEATURE FLAME GUARD®

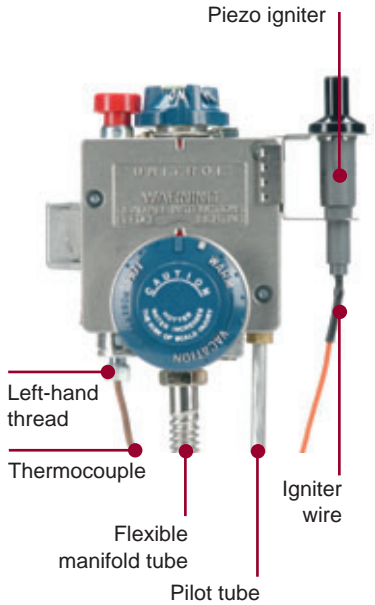


FEATURES OF THE SAFETY SYSTEM



GAS CONTROL

- Our FVIR water heaters are supplied with a reliable Robertshaw® R110RATSPL (Natural Gas), R110RLPTSPL (Liquid Propane) Unitrol.
- This control has a **left-hand thread** on the thermocouple to prevent replacement with a standard, non FVIR, thermocouple.
- It features a right-hand thread on the natural gas manifold connection and left-hand thread on the liquid propane control.
- The igniter is conveniently mounted on the side of the control.
- An Energy Cut Off (ECO) is included for protection from overheating.
- The manifold pressure is 5" W.C. on natural gas models, 10" W.C. on liquid propane models.



IGNITER

- The unit has a piezoelectric igniter for lighting the pilot without matches.

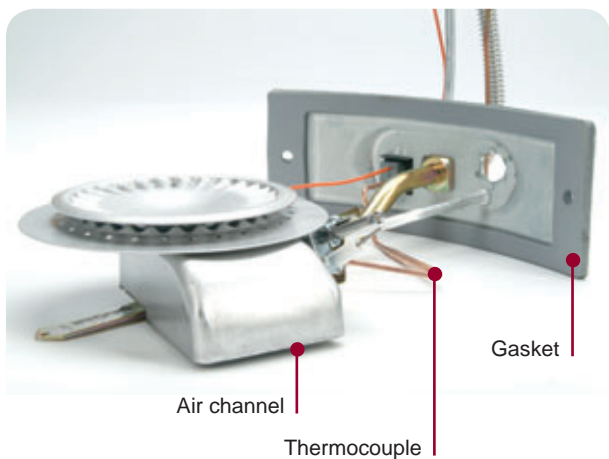
THERMOCOUPLE

- Contains a thermal fuse that shuts off the gas supply to the water heater, permanently disabling the unit in the event of a flammable vapor incident.
- Left-hand threads prevent replacement with a standard thermocouple.

FEATURES OF THE SAFETY SYSTEM

MANIFOLD DOOR ASSEMBLY

- Seals the combustion chamber with a reusable gasket.



AIR CHANNEL

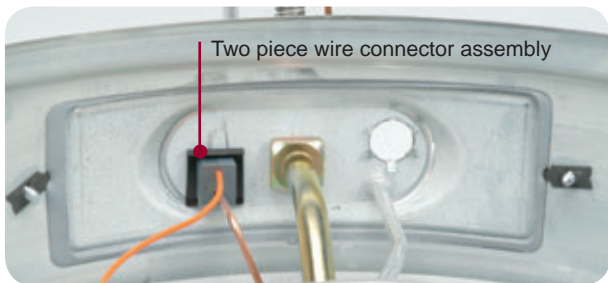
- Directs air entering through the flame trap to the burner.

EXCLUSIVE GLASS-LINED INNER FLUE AND TANK BOTTOM

- Prevents scale from forming in the flue and on the bottom of the tank, eliminating the need for a shield over the flame trap.
- Inhibits corrosion of the inner tank due to possible condensation.

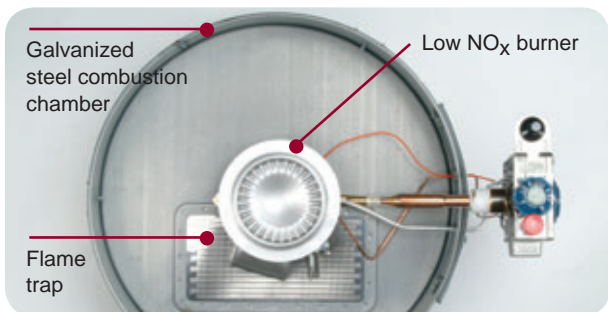
TWO PIECE WIRE CONNECTOR ASSEMBLY

- Allows easy removal and reinstallation of the thermocouple and igniter wire.



FLAME TRAP

- Air for combustion can only enter through the specially designed stainless steel flame trap. Should flammable vapors enter the combustion chamber, they are ignited by the main burner or pilot. The burning vapors become trapped inside the sealed combustion chamber and consumed through combustion above the flame trap.
- The burning vapors activate the thermal fuse on the thermocouple disabling the main burner and pilot to prevent re-ignition of flammable vapors.



- The mixture of flammable vapor and air will eventually become too rich or lean to support combustion and will self-extinguish.

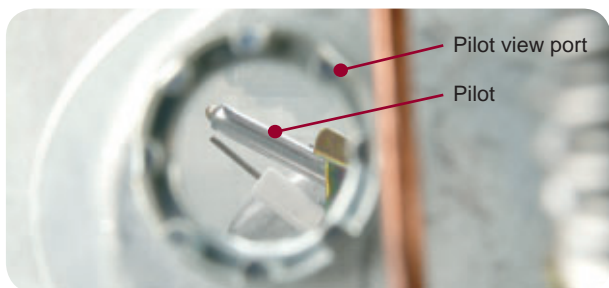
FEATURES OF THE SAFETY SYSTEM

LOW NO_x BURNER

- Reduces nitrous oxide emissions that contribute to the formation of smog and acid rain.

GALVANIZED STEEL COMBUSTION CHAMBER

- Resists corrosion, extending the life of the water heater.



PILOT VIEW PORT

- The easily accessible view port allows a technician or the homeowner to confirm pilot ignition without opening the combustion chamber.

SERVICING A FLAME GUARD® WATER HEATER

The basic operation of the Flame Guard® water heater is similar to a conventional gas water heater in that both are atmospherically vented (equipped with a draft hood). Both have a continuous pilot that ignites the main burner when an immersion type gas control calls for heat. Therefore no new skills are required to troubleshoot a Flame Guard® unit.

All replacement parts for GSW Flame Guard® water heaters can be found in the new GSW Parts Catalog. Thermocouples, pilots, igniters and gaskets are available individually or in complete manifold assemblies for ease of service.

ADVANTAGES OF CHOOSING FLAME GUARD®

With over 4 billion hours of incident-free performance in the field and close to 800,000 installations, Flame Guard® system gas water heaters are the only Flammable Vapor Ignition Resistant (FVIR)- compliant water heaters on the market with proven technology that you can trust.

BENEFITS

With Flame Guard®, consumers take advantage of:



- The safety and peace-of-mind of knowing that a flammable vapor incident will be contained.
- A piezoelectric ignition system for easy, safe lighting - no matches required.
- Flame Guard® flame trap that is self-cleaning requiring no filters.
- Better energy efficiency and reduced operating costs.
- Glass-lined inner flue and tank bottom to increase the life of your water heater and prevent scale from falling on the flame trap.
- Conveniently located view port, allowing observation of the pilot and main burner.
- Reliable Robertshaw® unitrol for years of trouble-free operation.

Installers, homebuilders, and re-modelers benefit from:



- Rough-in dimensions within 1/2" of former design.
- Easy burner access with reusable gasket.
- Robust 1/4" pilot tubing for reliability.
- Manufacturer-facilitated training programs.
- GSW Technical Support, 8 am to 8 pm, 7 days per week, (eastern time).

FLAME GUARD® MODELS AND SPECIFICATIONS

Choose the Flame Guard® model that suits your water heating needs:

	Previous Model Numbers	New Model Numbers	Capacity	BTU
GSW				
Natural Gas	SS30SNA G640SNA	6G30S27FV	30 USG	27,000
		G640S38FV	40 USG	38,000
		G640T40FV	40 USG	40,000
	G650ENA	G940T40FV	40 USG	40,000
		G650S40FV	50 USG	40,000
		G650T40FV	50 USG	40,000
		G950T40FV	50 USG	40,000
Propane	SS30SPC 6G40EPC	GP30S27FV	30 USG	27,000
		GP640S38FV	40 USG	38,000
		GP640T40FV	40 USG	40,000
	6G50PC	GP650S40FV	50 USG	40,000
		GP650T40FV	50 USG	40,000
John Wood				
Natural Gas	SS30SNA JW402NA	JW30S27FV	30 USG	27,000
		JW40S38FV	40 USG	38,000
		JW40T40FV	40 USG	40,000
	JW502NA	JW50S40FV	50 USG	40,000
		JW50T40FV	50 USG	40,000

*Note: High altitude models are de-rated by 10% at sea level as per CSA
S - Standard Model
T - Tall Model*



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