4 Maintenance and service

Warning: Always turn off the electrical power supply, turn off the manual gas valve and turn off the manual water control valves whenever servicing.

The unit should be checked once a year by a gas technician. If repairs are needed, the repairs should be done by a gas technician

To remove front cover

- ▸ Remove plastic decals on front panel (Page 5, Fig. 4).
- ▸ Loosen the two Philips head screws located behind decals.
- ▸ Lift front cover panel upward and remove.

Systems and parts that should be checked at least once a year

Reference diagrams on pages 29 and 30.

- Venting system
- Burners -see page 29 for observation window
- Manual operation of the pressure relief valve to insure correct operation
- Periodic cleaning of the water filter screen, see Fig. 24, chapter 2.13.
- Flushing the heat exchanger with a descaling solution if mineral build up is evident. Scale build up will shorten the life of the water heater, descale heat exchanger thoroughly and repeat annually depending on mineral content of ground water.

5 Troubleshooting

Introduction

The 250 SX burner is activated by a water flow valve. Numerous water related problems can cause this water valve to malfunction such as: Insufficient water flow volume to activate the burners at its minimum flow requirement; Dirt in the water flow valve causing it to malfunction; Sediment build-up in faucet aerators, or shower heads; Uneven pressures between cold and hot (with single lever mix valves); and Plumbing crossovers. These water flow related problems can cause the heater to deliver less than its full output, or to fail to ignite or to shut down completely.
Problems stated below in upper case and in bold face should be investigated when there is a problem with the performance of the water heater but there is NO error code on the heater's LCD display or wireless remote control.
Any failures that result in a displayed error code are referenced on page 26. A Functional Scheme of the 250 SX is detailed on page 28. If there is a problem with the installation, venting or operation of the unit, the heater will communicate the source by these error codes.

BURNERS DO NOT IGNITE WHEN HOT WATER IS TURNED ON

- **Cold incoming water connection made to wrong side of heater**
  Make sure cold water inlet connection is plumbed to the right side of heater when facing unit
- **Water flow rate at hot water tap is too low**
  A minimum of 0.8 gallon/minute (3 l/m) is required to activate the heater
- **Cold water inlet filter screen is dirty**
  Remove water inlet filter screen and clean. The screen is located at the inlet connection to the water heater, disconnecting the main cold supply line at the heater is required. Check and clean faucet aerator screens too.
- **Crossover in plumbing**
  The heater activates when there is sufficient water flow through its water valve, a minimum of 0.8 gallon/ minute (3 l/m) is required. If there is a crossover in the plumbing, the necessary hot water flow rate through the unit may not be reached, even though the flow at the hot water tap is sufficient. A plumbing crossover can be caused by a failed washer at a single lever faucet, incorrect plumbing or a faulty mixing valve in the piping. The crossover will create a back pressure on the water heater and prevent an adequate flow of water through it. To confirm there is no crossover in the plumbing, shut off the cold water supply feed to the water heater. Individually open each of the hot water taps. There should be no water flowing under a constant pressure. If there is a constant flow of water then the plumbing crossover must be corrected before the heater can operate properly.

WATER IS TOO HOT

- **Temperature selection too high**
  Lower temperature adjustment on heater or wireless remote control accessory, see chapter 3.2.

WATER IS NOT HOT ENOUGH

- **Temperature selection too low**
  Increase temperature adjustment on heater or wireless remote control accessory, see chapter 3.2
- **Btu input is too low due to inadequate gas line sizing**
  See specifications in chapter 2.10 - 2.12. The 250 SX requires adequate gas pressure to reach desired temperatures, to compensate for inadequate gas supply or lack of gas pressure the 250 SX will effectively reach the selected output temperature by reducing the hot water flow rate. Its motorized water valve makes this adjustment
- **Cold water is mixing with the hot water outlet (crossover)**

Test by following 4th bullet under BURNERS DO NOT IGNITE WHEN HOT WATER IS TURNED ON.

LOW WATER FLOW/PRESSURE

- **Too many hot water applications are being used simultaneously or too much flow is being demanded**
  The 250 SX will effectively support two 2.0-2.5 gpm shower heads simultaneously or multiple sink applications. Greater draws will result in increased pressure drop and reduced flow at taps. See flow/ temperature chart on page 22.
- **Btu input is too low due to inadequate gas line sizing**
  See specifications in chapter 2.10 - 2.12. The 250 SX requires adequate gas pressure to reach expected temperatures and flow rates, to compensate for inadequate gas supply or lack of gas pressure the 250 SX will effectively reach the selected output temperature, but only by reducing the hot water flow rate. Its motorized water valve makes this adjustment. Proper gas pressure will need to be delivered before the motorized water valve will allow greater flow rates through it. Lowering the set temperature will also allow increased water flow rate through the motorized water valve. See flow/temperature chart on page 22.
- **Cold water inlet filter screen is dirty**
  Remove water inlet filter screen and clean. The screen is located at the inlet connection to the water heater, disconnecting the main cold supply line at the heater is required. Check and clean faucet aerator screens too.

HOT WATER TEMPERATURE FLUCTUATES / UNIT DEACTIVATED

- **Unbalanced pressure in water lines**
  Any restriction caused by the water heater in the hot water system can result in uneven pressures between the cold and the hot. In such cases when mixing cold water at the tap (manually or automatically through a mix-type shower valve) the lower hot water pressure may be overpowered by the higher cold water pressure in the building and cause the hot water flow rate to fall below the minimum rate required. A pressure balance valve will help to resolve this symptom.
- **Temperature balance valves**
  If the outlet water temperature is set too high, the heater can produce temperatures that are too hot. A temperature balance shower valve can automatically mix in cold water to reduce such hot water temperature. In the event of any temperature instability with the use of a temperature balance shower valve, refer to shower valve manufacturer's instructions for internal adjustment setting. Adjustments should be made to the hottest setting in the shower valve. Additionally the temperature control of the heater can be lowered to produce a more comfortable hot water temperature.
- **Inlet water pressure is erratic due to fluctuating supply water pressure**
  For installation on a private well system with the use of a pressure tank, the lowest pressure range setting recommended is 30-50 psi (2.07-3.45 bar). The use of a pressure reducing valve after the pressure tank is also an effective way to maintain a constant water pressure to the water heater. Watts brand 25AUB-¾" or N35B-¾" pressure relief valves or equivalent are suggested.

NOISY BURNER / HEATER DURING OPERATION

- CO_2 range is out of adjustment. The cover must be in place to confirm CO_2 readings. Operating with the cover removed may cause a noisy or unstable burner. See Chapter 9, CO_2 adjustments can only be done by a certified gas technician with a calibrated CO_2 analyzer.

Display	Cause	Solution
E9	Temperature limiter opened circuit (overheat). Trips at 220F (104C).	Check connections.* Check heat exchanger condition.*
EA	No ionization during safety time (safety time out).	Check gas pressure.* Check that gas is not diluted with air, as a result from recent gas pipeline rework.*. Check if vent terminal is blocked (especially when the appliance starts up for some seconds and then looses ionization signal).* Check ionization electrode.* Check for a proper ground.*
EC	The ionization signal momentarily disappeared more then 3 times in less then 30 seconds.	
FA	Leakage error (gas valves do not close gas circuit).	Check gas valve and control unit.*
F7	Ionization error (flame sensing at stand-by).	Check control unit.*
E0	Internal software/hardware failure.	Check control unit.*
A7	Hot water temperature sensor/receiver defect (from control unit).	Check water temperature sensor/receiver and connections.* Check room area temperature where heater is located, it must be above 36°F (2°C)
A9	Hot water temperature sensor/receiver mis-assembled (from control unit).	Check that the water temperature sensor/receiver is properly assembled in the water pipe.* Check if vent terminal is blocked or if vent terminal is according with chapter 2.9.* In case of high altitude installation confirm that necessary adjustment steps have been taken.*
C1	FAN rotation too low at start-up (from control unit).	Check supply voltage.* Check fan and connections.* Check control unit.* Check if vent terminal is blocked or if vent terminal is according with chapter 2.9. * Check CO_2 levels (see chapter 9).*
C6	FAN rotation too low at operation (from control unit).	Check supply voltage.* Check fan and connections.* Check control unit.* Check if vent terminal is according with chapter 2.9.*
C7	No rotational speed sensor signal from FAN	Check fan and connections.* Check control unit.* Check CO_2 levels (see chapter 9).*
CA	Water flow signal over specified maximum value	Check water valve and flow sensor.*
E2	Inlet temperature sensor fault	Check water temperature sensor/receiver and connections.* Check room area temperature where heater is located, it must be above 36°F (2°C)
A2	Overheat protection fault	Check connections to the overheat protection.* Check sensor continuity.* Check heat exchanger sealings and walls.*

Table 5

** By installer or service technician only.*