Actuator Fault 'ON'

Yes

Low fire limit switch made (PLC input 2)

Yes

Cycle power to PLC to clear (fuse holder on unit) (turn complete unit off/on) Check wiring and components for faults and/damage. Repeated failure?

No

Is this a modulating burner?

No

Yes

Controller output zero?

No

Reset controller

Yes

① Check switch placement
② Check linkage
③ Ensure actuator is operational

Yes

Start signal before actuator can reset

No

Check field wiring, check auxiliary components providing start/stop signal

Yes

Delay restart signal (recommended 5 minutes)
Yes

Yes

Yes

Yes

Yes

Open transfer pump throttling valve.
Ensure piping to tank and float switch correct.
Transfer pump by-pass cycling?
Valves to storage tank open?
Suction side correct?
Pump rotation correct?
Transfer pump operation.
Pumped system?
Tank Full Fault 'ON'

No

No

Check motor load and wiring.
- replace fuses
- check line voltage

Fuses ok?
Overload tripped?
Check float switches and 1-2 wiring.

No

No

No

No

Yes

Check by-pass valve operation and wiring.
Yes

Check wiring to contactor trigger.
Yes

Check for debris.

Check pump and wiring operation.

Yes

Check overload setting.
Check motor load setting.
Check line voltage.

Check isolation valves.
Check suction piping.
Check pump prime.

Yes

Check pump and wiring operation.

Yes

Check by-pass valve operation and wiring.

Yes

Check by-pass valve operation and wiring.

Yes

Check by-pass valve operation and wiring.

PLC = Programmable Logic Controller

*PLC input #5 on?
*PLC output #5 on?
*PLC output #2 on?
*PLC output #17 on?
**High Gas Pressure 'ON'**

- **Can the switch be reset?**
  - Yes
  - **Does unit operate normally?**
    - Yes
      - Happy face
    - No
      - Check to see if downstream valve is open.

- **No**
  - Check gas pressure and switch setting.
  - Check gas regulator setting and operation.

**High Temp Fault 'ON'**

- Investigate cause and contact Armstrong before attempting re-set!

- **Is water pressure switch operating?**
  - Yes
    - Correct water pressure switch.
      - - check setting
      - - check operation
      - - check wiring
  - **No**
    - Look for water line obstruction after switch and check spray nozzles.
Low Gas 'ON'

Can the switch be reset?

- Yes
  - Does unit operate normally?
    - Yes: 
    - No: Check gas pressure and switch setting.

- No: Check gas pressure and switch setting.

Look for upstream gas limitation.
Check:
- gas regulator
- confirm line size to specification
- other equipment using gas
Yes
Yes
Yes
Back away slowly and do not touch ANYTHING!

Is output water temperature correct?

Does heater start and run properly in automatic mode?

Does transfer pump run properly (no cycling when unit is on)?

Close transfer pump throttling valve so the bypass cycles.

Close inlet throttle valve.

Check float switches in tank for:
- orientation
- operation
- wiring

Temperature too high?

Is heater modulating?

Check relay signal (customer supplied control)

Auto control method from float switch?

Does transfer pump run properly (no cycling when unit is on)?

Is heater modulating?

Controller set point correct?

Replace fuses.

Close inlet throttling valve and ensure adequate water pressure.

Adjust inlet water flow.

Fuses burned out?

Temperature too high?

Is heater modulating?

Controller set point correct?

Check float switches in tank for:
- orientation
- operation
- wiring

Check relay signal (customer supplied control)

Auto control method from float switch?

Does transfer pump run properly (no cycling when unit is on)?

Is output water temperature correct?

Back away slowly and do not touch ANYTHING!

Replace fuses.

Close inlet throttling valve and ensure adequate water pressure.

Adjust inlet water flow.

Fuses burned out?

Temperature too high?

Is heater modulating?

Controller set point correct?

Check float switches in tank for:
- orientation
- operation
- wiring

Check relay signal (customer supplied control)

Auto control method from float switch?

Does transfer pump run properly (no cycling when unit is on)?

Is output water temperature correct?

Back away slowly and do not touch ANYTHING!
Water Pressure Fault 'ON'

Yes

Is PLC input 3 on?

No

Does inlet pressure fluctuate?

No

Restart heater.

Yes

Stabilize inlet water pressure.

With water flowing (inlet valve bypassed open - minimum 10 psi)

Yes

Adjust pressure switch until PLC input 3 is on. Do Not Adjust Below 10 psi.

No