GV/G500/G550/G350/G450
Water System Checkout and Troubleshooting Procedure

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<td>Corrected fill/overflow valve position indication information in section 6.1.2 and figure 14.</td>
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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>Aft</td>
<td>Towards the tail of the aircraft</td>
</tr>
<tr>
<td>AMM</td>
<td>Aircraft Maintenance Manual</td>
</tr>
<tr>
<td>AOA</td>
<td>Angle of Attack</td>
</tr>
<tr>
<td>BEER</td>
<td>Baggage Electronic Equipment Rack</td>
</tr>
<tr>
<td>CB</td>
<td>Circuit Breaker</td>
</tr>
<tr>
<td>CMM</td>
<td>Cabin Management Module</td>
</tr>
<tr>
<td>Fwd</td>
<td>Forward, or towards the nose of the aircraft</td>
</tr>
<tr>
<td>GIV-X</td>
<td>G350 and G450 aircraft</td>
</tr>
<tr>
<td>GV</td>
<td>GV Classic aircraft</td>
</tr>
<tr>
<td>GV-SP</td>
<td>G500 and G550 aircraft</td>
</tr>
<tr>
<td>LED</td>
<td>Light Emitting Diode</td>
</tr>
<tr>
<td>Mod</td>
<td>Modification Level</td>
</tr>
<tr>
<td>PIMOH</td>
<td>Position Indicator / Manual Override Handle</td>
</tr>
<tr>
<td>P/N</td>
<td>Part Number</td>
</tr>
<tr>
<td>PSC</td>
<td>Power Switching Controller</td>
</tr>
<tr>
<td>S/F/P</td>
<td>Supply / Fill / Purge</td>
</tr>
<tr>
<td>S/N</td>
<td>Serial Number (aircraft, or part)</td>
</tr>
<tr>
<td>TAT</td>
<td>Total Air Temperature</td>
</tr>
<tr>
<td>V1</td>
<td>Fill / Overflow Valve</td>
</tr>
<tr>
<td>V2</td>
<td>Supply / Fill / Purge (S/F/P) Valve</td>
</tr>
<tr>
<td>V3</td>
<td>Air Valve</td>
</tr>
<tr>
<td>V4</td>
<td>Forward Drain Valve</td>
</tr>
<tr>
<td>V5</td>
<td>Forward Supply Valve</td>
</tr>
<tr>
<td>V6</td>
<td>Manual Shutoff Valve</td>
</tr>
<tr>
<td>V10</td>
<td>Sterilizer Drain Valve</td>
</tr>
<tr>
<td>WDM</td>
<td>Wiring Diagram Manual</td>
</tr>
<tr>
<td>WOW</td>
<td>Weight On Wheels</td>
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</table>
1.0 Purpose

The purpose of this document is to supply a water system checkout and troubleshooting procedure for GV (S/N 0675-0999), GV-SP and GIV-X aircraft. This procedure is based on the Final Phase Water and Waste System Ground Test (GC52718G000), with troubleshooting actions added.

2.0 Reference Documents & Applicable Drawings

The following documents are related to the water system and are included here for reference.

GC52718G000..........................................................Final Phase Ground Test
AMM Chapter 20....................................................Standard Maintenance Practices
AMM Chapter 38....................................................Water / Waste Systems Maintenance

3.0 Required Tools and Equipment

A water supply capable of delivering water under pressure to the external fill port is required. Up to 80 gallons of water may be required for the two water tank fills in this procedure. If the aircraft is hangared, containers sufficient to catch and hold each 40 gallon purge will be required. Containers are not required if the test is performed on the ramp.

Headsets will be needed for communications between the external witness and on-board witnesses, so that all parties know what step of the procedure is being performed, when the combined Weight On Wheels (WOW) circuit breaker (CB) has been pulled, and how the water system components are being commanded. A minute timer will be required to keep track of water system computer logic reset times, and air compressor running time. A mirror and flashlight will be required for observations in the baggage compartment and under the floor.

4.0 Test Configuration Setup

4.1 Motorized Valve Accessibility

This test requires visual verification of various water system motor driven valve positions. See Figures 1 through 3 for water system component locations in the GV, GV-SP, and GIV-X aircraft, respectively. The valves that need visual access are the Supply/Fill/Purge (S/F/P) Valve, Air Valve, aft lavatory water shutoff valve, and (in aircraft with the water sterilizer option) Sterilizer Drain Valve. Line of sight access will have to be established before beginning this test. See Table 1 for valve position indications.
Figure 1  GV Water System Components Overview
Figure 2  GV-SP Water System Components Overview
Figure 3  GIV-X Water System Components Overview
Valve Accessibility:
S/F/P Valve
GV and GV-SP

Accessed by a blowout (station 709) in the baggage compartment floor.

Figure 4  S/F/P Valve – GV, GV-SP

S/F/P Valve
GIV-X

Accessed under the floor (station 526). It may be necessary to use a mirror to observe the valve arm position underneath the ECS ducting.

Figure 5  S/F/P Valve – GIV-X
Air Valve GV-SP
Accessed near the bottom of the Baggage Electronic Equipment Rack (BEER) station 691.

Figure 6  Air Valve – GV-SP

Air Valve GV
Accessed at the bottom of the Baggage Electronic Equipment Rack (BEER) station 694.

Figure 7  Air Valve - GV
Air Valve GIV-X
Accessed at the bottom of the Baggage Electronic Equipment Rack (BEER) station 585.

Figure 8  Air Valve – GIV-X

Sterilizer Drain Valve
Accessed through the removable water tank panel, under the water tank compartment at station 706 for the GV and GV-SP, station 572 for the GIV-X.

Figure 9  Sterilizer Drain Valve – GIV-X, GV, GV-SP
**Left Aft Lav Supply Valve**

Accessed behind the Aft lav vanity trash drawer, behind the cabinet backboard. May not be readily accessible in right side lavatories.

![Diagram of valve positions](image)

**Figure 10** Left Aft Lav Supply Valve – GV, GV-SP, GIV-X

<table>
<thead>
<tr>
<th>Component</th>
<th>Status</th>
<th>Position Indicator/Manual Override Handle (PIMOH) Visual Verification Positions</th>
</tr>
</thead>
<tbody>
<tr>
<td>S/F/P Valve</td>
<td>SUPPLY</td>
<td>Up</td>
</tr>
<tr>
<td></td>
<td>DRAIN</td>
<td>Forward</td>
</tr>
<tr>
<td></td>
<td>PURGE</td>
<td>Aft</td>
</tr>
<tr>
<td>GV-SP, and GIV-X</td>
<td>OPEN</td>
<td>Aft</td>
</tr>
<tr>
<td>Air Valve</td>
<td>CLOSED</td>
<td>Forward</td>
</tr>
<tr>
<td>GV Air Valve</td>
<td>OPEN</td>
<td>Down</td>
</tr>
<tr>
<td></td>
<td>CLOSED</td>
<td>Aft</td>
</tr>
<tr>
<td>Left Aft Lav Supply Valve</td>
<td>OPEN</td>
<td>Aft</td>
</tr>
<tr>
<td></td>
<td>CLOSED</td>
<td>Down</td>
</tr>
<tr>
<td>Sterilizer Drain Valve</td>
<td>NORMAL</td>
<td>Forward</td>
</tr>
<tr>
<td></td>
<td>DRAIN</td>
<td>Aft</td>
</tr>
</tbody>
</table>

**Table 1** Valve arm position indication
4.2 Electronic and Heating Component Accessibility

Access to some of the water system electronic and heating components may be necessary. The electronic components are the Cabin Management Module (CMM) and Power Switching Controller (PSC). The heating components are the Drain Innerline Heater Thermostat, Drain and Supply Innerline Heater Connectors, and the Tank Supply Innerline Heater Thermostat. Below are the descriptions of the component locations.

**CMM**
BEER, station 691 for the GV (ref. AMM 38-12-07) and GV-SP (see Fig. 1), station 585 for the GIV-X (see Fig. 3).

**PSC**
BEER station 691 for the GV and GV-SP, station 585 for the GIV-X (ref. AMM 38-15-01).

**Water Tank Supply Innerline Heater Thermostat**
Accessed by a blowout in the baggage compartment floor, near the S/F/P Valve (station 709 for the GV-SP and GV, and station 526 for the GIV-X).

**Supply and Drain Innerline Heater Thermostat**
Accessed by a blowout in the baggage compartment floor, near the S/F/P Valve (station 709 for the GV-SP and GV, and station 526 for the GIV-X).

![Diagram](image)

**Figure 11** Innerline Heater Thermostats – GV, GV-SP
**Figure 12** Innerline Heater Thermostats — GIV-X

**Innerline Heater Connectors** Accessed through wall panels at the back of the Aft fuselage left and right closets, just above the floor (station 637 for the GV and GV-SP, and station 498B for the GIV-X).

**Figure 13** Supply and Drain Innerline Heaters (Left Closet) — GIV-X, GV, GV-SP
4.3 Aircraft and Test Configuration

In order to duplicate normal operational practices on the aircraft, the initial water system fill will be performed with only the ground service bus powered, and then the remainder of the test will be performed using an external power source.

Prior to the test, ensure the water system is empty, and all faucets are closed in the cabin. A minimum of three people will be required for simultaneous interior and exterior witnessing. One person stationed at the fill port will perform the fills, catch and remove the water, and witness water drainage from the aft drain mast and forward fuselage drain ports. One person stationed at the galley switch panel will witness the galley panel lights, select water system functions on and off, set cockpit circuit breaker configuration, and perform Fwd lavatory test items. One person stationed at the aft floor blowout panel and BEER will witness S/F/P Valve, Air Valve, Sterilizer Drain Valve, and Aft Lavatory Supply Valve movement. That person will also be responsible for Aft lavatory test items. This configuration will allow for minimal movement through the aircraft, and witnessing of simultaneous multi-station test items. Each test item will be communicated aloud by the responsible witness. There should be a flashlight available on the wall of the baggage compartment to observe the valve Position Indicator/Manual Override Handle (PIMOH) positions. If hangared, position water catching containers at the Aft drain mast and Fwd drain ports (approximate station 712 and 235 respectively for GV/GV-SP, and 536 and 193B respectively for GIV -X).

This test contains procedures which occasionally require an in-flight water system configuration. To achieve this, the Combined WOW CB will be pulled and reset at various times throughout the testing. The following safety items should be set prior to and maintained throughout the test, so that the Combined WOW CB can be pulled safely.

- Verify all landing gear safety ground pins are in.
- Verify that the landing gear handle is down.
- Remove all pitot tube, total air temperature (TAT) probe, and angle of attack (AOA) vane covers.
- Pull the following circuit breakers:
  - #1 AOA Heater
  - #2 AOA Heater
  - Left Lower Pitot Heater
  - Right Lower Pitot Heater
  - Left Upper Pitot Heater
  - Right Upper Pitot Heater
  - #1 TAT Probe Heater
  - #2 TAT Probe Heater
  - Pilot panel A4
  - Copilot panel A4
  - Pilot panel A5
  - Copilot panel A5
  - Pilot panel A6
  - Copilot panel A6
  - Left EER E2
  - Right EER E15
5.0 **Component Identification**

Identify the following components:

- **Water Tank Size** 30 Gallons ________ 40 Gallons ________
- **CMM Hardware Level** ______ Software Level ______
- **S/F/P Valve** P/N________ Mod______ S/N __________

- Locate the Supply and Drain Innerline Heater Thermostats (see Fig. 11 and 12). Verify that the thermostats are on the water lines pictured. If the Supply Innerline Heater Thermostat is located on the Tank Overflow Drain Line instead of the Supply Line, see section 8.1.

- Locate left cabin and right cabin Supply and Drain Innerline Heater connectors (see Fig. 13). Verify that the reference designator on the wire bundle for the heater matches the reference designator for its connector. Do this for each of the four (4) Innerline Heaters. See Table 2 for reference designator numbers.

<table>
<thead>
<tr>
<th>Innerline Heater</th>
<th>Heater Reference Designator</th>
<th>Connector Reference Designator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right Supply</td>
<td>174HR4</td>
<td>174HR4P1</td>
</tr>
<tr>
<td>Left Supply</td>
<td>174HR5</td>
<td>174HR5P1</td>
</tr>
<tr>
<td>Right Drain</td>
<td>174HR6</td>
<td>174HR6P1</td>
</tr>
<tr>
<td>Left Drain</td>
<td>174HR7</td>
<td>174HR7P1</td>
</tr>
</tbody>
</table>

**Table 2** Innerline Heater Reference Designators

6.0 **Test Procedures**

6.1 **Water Tank Fill and Water Quantity Level Operation Procedure – Ground Service Bus Power (Reference AMM 20-20-20)**

Service the water system using the following procedure. Fill the water slowly enough to verify the water level sensors are operating properly (see 6.1.9).

6.1.1 Open the external water service panel.

6.1.2 Turn and pull the (yellow) control handle to OPEN the Fill Valve. There will be a detent reached at full extension. Once the handle is fully extended, turn the handle again to lock the Fill Valve in place. Visually verify the Fill Valve is OPEN. _____ (√)

The Fill Valve is located above the water tank. This valve does not have a PIMOH, however, it has a line in the top face of the valve. When the line is positioned Fwd and Aft the valve is
CLOSED. When the line is positioned Inboard and Outboard the valve is OPEN. See Fig. 14.

NOTE: For aircraft S/N 5085 & Subq and 4027 & Subq, the valve should have Open/Closed labels, and the line orientation will be reversed (closed when positioned Fwd and Aft)

Figure 14 Water Tank Fill Valve – GIV-X, GV, GV-SP

6.1.3 Remove the external fill cap.
6.1.4 Connect the service hose to the fill port.
6.1.5 Turn on the ground service bus.
6.1.6 Verify that the S/F/P Valve moves to the FILL position. This isolates the tank from the supply lines, so that only the tank is filled. If the valve does not move see section 8.2
   FILL (PIMOH Fwd) (✓)

6.1.7 There should be no movement of the Air Valve, which should be in the CLOSED position.
   CLOSED (PIMOH Fwd) (✓)

   The Air Compressor should be OFF
   (✓)

If installed, the Sterilizer Drain Valve should be the NORMAL position.
   NORMAL (PIMOH Fwd) (✓)

NOTE: If the system had been previously purged the Sterilizer Drain Valve will be in the ‘drain’ position (PIMOH aft). Valve should move to normal position when the system is turned on.
6.1.8 Verify that there are no water quantity lights illuminated on the external service panel, or the galley panel. [ ] (✓)
If there are any lights illuminated, see section 8.3.

6.1.9 Begin to fill the tank with water and observe water quantity indications (see 6.1.10) until the tank is full and water runs out of the drain mast. If water comes out of the drain mast before the water tank is full, check to make sure that the (yellow) control handle is fully extended and locked (see 6.1.2).

6.1.10 Verify Water Tank Quantity Sensor Operation
While filling the water tank verify the water level Light Emitting Diodes (LEDs) at the galley switch panel (see Fig. 15) and external water service panel (see Fig. 16 and 17) illuminate.

![Galley Switch Panel Diagram]

**Figure 15** Typical Galley Switch Panel

<table>
<thead>
<tr>
<th>EXTERNAL WATER QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED 5</td>
</tr>
<tr>
<td>LED 4</td>
</tr>
<tr>
<td>LED 3</td>
</tr>
<tr>
<td>LED 2</td>
</tr>
<tr>
<td>LED 1</td>
</tr>
</tbody>
</table>
Figure 16  GV / GV-SP External Service Panel Water Quantity

Figure 17  GIV-X External Service Panel Water Quantity
The LEDs on both panels should start illuminating from the bottom. They should illuminate in order, and none should illuminate simultaneously. There should be adequate time for approximately 7.5 gallons of water to be added between LED illuminations. The galley switch panel indications are slow to respond to changes. This is per design to keep the LEDs from flickering during flight.

If any one of the external service panel lights do not illuminate see section 8.4.

If any one of the galley panel lights do not illuminate see section 8.5.

6.1.11 Once the water tank is full, stop the water supply flow and remove the service hose from the fill port.

6.1.12 Turn the control handle to unlock, push in to close the Fill Valve and turn again to lock it in place. The handle should be turned completely. This will allow the water fill lines to vent, and drain any water in the lines. The Fill Valve CLOSED position can be verified by the lines on the upper face of the valve (see 6.1.2).

6.1.13 Allow at least one minute to drain excess water from the fill port and drain mast.

6.1.14 Secure the fill cap.

6.1.15 Close the external water service panel.

6.1.16 Turn off the ground service bus.

6.2 Airplane and Water System Power Up

Once the tank fill and quantity sensor check procedures are complete (procedure 6.1), external power can be applied to the aircraft (Reference AMM 20-20-10). Before applying power to the aircraft, it should be verified that there has been no power to the aircraft water system for at least 11 minutes. This ensures that the CMM logic is cleared and in the same mode as in the first operations for a normal flight. If the CMM has not had time to reset its logic the water system will not go through its start-up diagnostics, and system problems may not be identified properly.

6.2.1 Apply power to the cabin and galley with the appropriate cockpit master switches.
6.2.2 In the galley, select the Galley Master, and Water System, switch to ON.
Note: The Water System switch must be held for 3 seconds in order to turn on the system.

6.2.3 The LEDs on the galley panel should illuminate GREEN.

6.2.4 Verify that the Air Compressor is RUNNING. (✓)

The Air Compressor will stop running when the tank is fully pressurized, and start again when water is used in the aircraft.

If the Air Compressor does not operate at all, see section 8.6.

6.2.5 The Air Valve should move to the OPEN position and stay there.
OPEN (PIMOH Aft) (✓)

If the Air Valve moves back to the CLOSED position, and the Water System automatically shuts down, see section 8.7.

If the Air Valve does not operate at all, see section 8.8.

6.2.6 If the aircraft does not have an optional water sterilizer installed skip to procedure 6.2.10.

6.2.7 Open the Aft vanity faucet to bleed air from the Sterilizer. This prevents the lamps from overheating water sterilizer components.

6.2.8 Verify that the sterilizer “FUNCTIONAL” light is illuminated GREEN (see Figure 18). (✓)

Note: At start up the water treatment monitor (Fig. 18) indicator lights will all light up in sequence, and then a red “Lamp” light will remain on until the lamps have warmed up. It may take up to 10 minutes for the sterilizer to complete its startup cycle and fully warm up, after which only the GREEN “FUNCTIONAL” LED remains illuminated. If after 10 minutes any lights other than the “FUNCTIONAL” light are illuminated, refer to the manufacturer’s maintenance manual to identify the fault.

6.2.9 Verify the Sterilizer Drain Valve is in the NORMAL position.
NORMAL (PIMOH Fwd) (✓)

If the Sterilizer Drain Valve moves continuously between the NORMAL and DRAIN positions, or the valve makes a hissing noise as it moves, or the valve does not completely engage in either position, see section 8.9.
6.2.10 Verify that the S/F/P Valve is in the SUPPLY position. SUPPLY (PIMOH Up) [✓] 

**Figure 18** Water Sterilizer Monitor

6.3 Water System Purge – In-Flight

An In-Flight configuration will be simulated by pulling the Combined Weight On Wheels (WOW) circuit breaker (CB). Execute the following safety measures before pulling the Combined WOW CB.

- Verify all landing gear safety ground pins are in.
- Verify that the landing gear handle is down.
- Remove all pitot tube, total air temperature (TAT) probe, and angle of attack (AOA) vane covers.
- Pull the following circuit breakers:
  - #1 AOA Heater
  - #2 AOA Heater
  - Left Lower Pitot Heater
  - Right Lower Pitot Heater
  - Left Upper Pitot Heater
  - Right Upper Pitot Heater
  - #1 TAT Probe Heater
  - #2 TAT Probe Heater
  - Pilot panel A4
  - Copilot panel A4
  - Pilot panel A5
  - Copilot panel A5
  - Pilot panel A6
  - Copilot panel A6
  - Left EER E2
  - Right EER E15
The Drain Mast Heater circuit breaker will not be pulled, because its functionality will be tested below. Be aware that the Drain Mast will become hot during this procedure.

6.3.1 Pull the Combined WOW CB in the pilot’s CB panel to simulate an in-flight water system configuration.

6.3.2 In flight the Water System commands the System Heat ON. Verify the System Heat Button on the Galley Switch Panel changes from amber to GREEN. (√)

System Heat also includes the Supply and Drain Innerline Heaters (triggered below 60 deg. F and 95 deg. F, respectively). Verify that the Supply and Drain Innerline Heater indicator lights are lit, or not lit as appropriate for current ambient temperatures. (√)

Verify that the circuit breaker under the indicator lights (next to the press to test button) is not popped out. (√)
If the circuit breaker is out, see section 8.10.

6.3.3 Press and hold the System Purge switch in the galley panel for approximately 3 seconds. Verify the System Purge LED turns GREEN. (√)

6.3.4 Verify water is draining out of the Aft drain mast and not out of either of the forward fuselage drain ports (see Fig. 19 and 20). (√)

The water level LEDs in the switch panels should be indicating water loss. (√)

If water is draining from the either of the forward fuselage drain port, see section 8.11.

---

Figure 19  GV / GV-SP Forward Fuselage Drain Valves
6.3.5 If the aircraft does not have an optional water sterilizer installed skip to procedure 6.3.8.

6.3.6 Visually verify the Sterilizer Drain Valve is in the DRAIN position. DRAIN (PIMOH Aft) (✓)

6.3.7 Visually verify that the sterilizer turns OFF. The green "FUNCTIONAL" light will turn OFF (see Fig. 18). (✓)

6.3.8 The air compressor will continue to run until it receives a water tank empty signal. Verify the air compressor has STOPPED RUNNING. (✓)

If the air compressor does not stop running, see section 8.12.

6.3.9 Visually verify the S/F/P valve is in the SUPPLY position. SUPPLY (PIMOH Up) (✓)

6.3.10 Visually verify the Air Valve is in the CLOSED position. CLOSED (PIMOH Fwd) (✓)

6.3.11 The water system status will not change until the aircraft is back on the ground, or has WOW. Reset the Combined WOW CB in the pilot's CB panel to simulate a normal landing.

6.3.12 The Water System and System Purge LEDs will change back to AMBER (indicating OFF). (✓)
6.3.13 If installed, visually verify the Sterilizer Drain Valve is in the DRAIN position.

DRAIN (PIMOH Aft) √

6.3.14 Visually verify the S/F/P valve is in the PURGE position.

PURGE (PIMOH Aft) √

6.3.15 Once on the ground, any residual water left in the lines should drain from the forward drain ports.

√

6.3.16 Select the Cabin and Galley Master switches in the cockpit to OFF, and remove power from the aircraft for 11 minutes. This will allow the water system logic to be reset within the CMM.

6.4 Water Tank Fill and System Functionality – Ground and Air

6.4.1 After at least 11 minutes without aircraft power, re-apply power to the aircraft, and select the Cabin and Galley Master switches to ON.

6.4.2 Verify the S/F/P Valve moves to the SUPPLY position.

SUPPLY (PIMOH Up) √

6.4.3 If installed, verify the Sterilizer Drain Valve is in the NORMAL position.

NORMAL (PIMOH Fwd) √

6.4.4 The next steps are to refill the water tank (as in 6.1) except this fill will be done with external power and not the ground service bus and no water quantity verification is required.

6.4.5 Open the external water service panel.

6.4.6 Verify the movement of the S/F/P valve to the FILL position.

FILL (PIMOH Fwd) √

NOTE: This will not happen if the aircraft is on Ground Service Bus power only. In order for the valve to go to the fill position, the aircraft must be on external or APU/Engine power. If valve does not move with external power, see section 8.2

6.4.7 Turn and pull the (yellow) control handle to OPEN the Fill Valve. There will be a detent reached at full extension. Turn the handle again to lock in the open position.

6.4.8 Remove the external fill cap.

6.4.9 Connect the service hose to the fill port.
6.4.10 Fill with water until the tank is full and water runs out of the drain mast. If water comes out of the drain mast before the water tank is full, check to make sure that the (yellow) control handle is fully extended, and the face of the Fill Valve indicates OPEN (see Figure 14).

6.4.11 Remove the service hose from the fill port.

6.4.12 Push and turn the control handle to close the Fill Valve. The handle should be turned completely. This will allow the water fill lines to vent, and drain any water in the lines. The Fill Valve CLOSED position can be verified by the lines on the upper face of the valve (see Fig. 14).

6.4.13 Allow at least one minute to drain excess water from the fill port and drain mast.

6.4.14 Secure the fill cap.

6.4.15 Close the external water service panel.

6.4.16 At the Galley switch panel, select the Galley Master to ON and verify the water system indicates FULL, and select the Water System switch to ON (LED changes to GREEN).

6.4.17 Verify the S/F/P Valve moves to the SUPPLY position. SUPPLY (PIMOH Up) (√)

6.4.18 Verify that the Air Compressor is RUNNING. (√) The Air Compressor will stop running when the tank is fully pressurized, and start again when water is used in the aircraft cabin.

6.4.19 Verify the Air Valve is in the OPEN position. Its PIMOH should be positioned Aft, or away from the bulkhead. OPEN (PIMOH Aft) (√)

6.4.20 If the optional Water Sterilizer is not installed, skip to section 6.4.23.

6.4.21 Open the Aft vanity faucet to bleed air from the Sterilizer. This prevents the lamps from overheating water sterilizer components.

6.4.22 Visually verify the Sterilizer Drain Valve is in the NORMAL position. NORMAL (PIMOH Fwd) (√)
6.4.23 Open the Hot water faucets in the lavatories (Fwd & Aft), galleys (Fwd or Aft) to bleed air from the water heaters, and then close faucets when water flows steadily.

6.4.24 At the Galley switch panel, select the Water Heaters (all) ON (LED changes to GREEN).

6.4.25 Pull the Combined WOW CB in the pilot’s circuit breaker panel. Verify the System Heaters LED in the Galley switch panel changes from amber to GREEN (indicating ON).

6.4.26 Using a temperature measurement device verify the Aft drain mast is getting HOT.

6.4.27 Visually verify the LED’s (8, excluding 115V IN) are lit on the Innerline Heater Controllers. There are four (4) Controllers. Three (3) Supply Innerline Heater Controllers (stacked vertically) in the BEER (see Figures 1 through 3),

- Supply 3
- Supply 2
- Supply 1

and one (1) Drain Innerline Heater Controller in the BEER (see Figures 1 through 3).

6.4.28 The innerline heaters are thermostatically controlled. The Supply thermostat set point is 60 deg. F, and the Drain thermostat set point is 95 deg. F. If the LED’s are not illuminated due to current ambient temperatures press the test switch on the drain controller to verify heater operation. See notes below for proper illumination based on aircraft type.

GV / GV-SP  Note: On 675 and sub, and including all GV-SP, lights H1 and H2 are not used on the drain controller (see Fig. 1 and 2) and will not illuminate. H3, H4 and H5 should illuminate when pressing the test switch.

GIV-X  Note: On all GIV-X aircraft numbers, H1 and H2 are used on the drain controller (see Fig. 3) and will illuminate along with H3, H4 and H5 when pressing the test switch.

H1 □(✓)  H2 □(✓)  H3 □(✓)  H4 □(✓)  H5 □(✓)
If H1 or H2 do not illuminate on a GIV-X aircraft while pressing the test switch, see section 8.13.

6.4.29 Reset the Combined WOW CB. Verify the Galley System Heaters remain ON. ☑

6.4.30 Press the System Heaters switch in the Galley switch panel to turn them OFF (LED AMBER). ☑

6.4.31 Operate the faucets, in the Aft lavatory (lav) and verify hot and cold water are available. To operate the faucet you must stand on the mat switch which is located under the carpet. Verify mat switch provides easy operation of the valve. ☑

6.4.32 Leave both faucets open with water flowing. Step off the mat (out of the lav). After approximately 5 seconds the valve should close shutting off the water supply. ☑

6.4.33 Re-enter the lav stepping on the mat switch. Verify water flows again. Then turn off the faucet. ☑

6.4.34 In the Aft lav lift the toilet lid, and flush the toilet. Verify a small amount of water is injected into the toilet bowl. ☑

6.4.35 After the flush cycle is complete in the Aft lav, flush the toilet in the Fwd lav lifting the toilet lid, and verify a small amount of water is injected into the toilet bowl. ☑

6.4.36 Lower the side facing fold down sink in the Fwd lavatory. If the aircraft has a Fwd or Aft facing Fwd lav skip to step 6.4.42.

6.4.37 Operate each (hot & cold) spring loaded faucet paddle in the side facing sink. Verify hot and cold water are available. ☑

6.4.38 Verify that water is draining out of the Fwd drain ports. ☑

If water does not drain from the forward fuselage drain port (see Fig. 19 and 20) within 30 seconds the valve may be closed.

6.4.39 Pull the Combined WOW CB in the pilot's CB panel to simulate an in-flight condition (refer to section 4.0 for safety procedures). Verify that water stops draining from the Fwd drain ports. ☑

If water drains from either of the forward drain ports see section 8.11.
6.4.40 Reset the Combined WOW CB. Verify that water resumes draining from the Fwd drain ports. 

6.4.41 Once the water has drained out of the sink, stow it. The sink may need to be lifted up in order to drain the last bit of water from the sink. Listen for its valve to close. 

6.4.42 If the aircraft has a Fwd or Aft facing Fwd lavatory, operate the faucets and verify hot and cold water are available. To operate the faucet you must stand on the mat switch which is located under the carpet. Verify that the location of the mat switch provides easy operation of the valve. 

6.4.43 Leave both faucets open with water flowing. Step off the mat (out of the lavatory). After approximately 5 seconds the valve should close shutting off the water supply. 

6.4.44 Re-enter the lavatory stepping on the mat switch. Verify water flows again. Then turn off the faucet. 

6.4.45 Verify that water is draining out of the Fwd drain ports. 

6.4.46 Pull the Combined WOW CB in the pilot's circuit breaker panel (refer to section 4.0 for safety procedures). Verify that water stops draining from the Fwd drain ports. 

6.4.47 Reset the Combined WOW CB. Verify that water resumes draining from the Fwd drain ports. 

6.4.48 Run water in the Galley sink(s). Verify that water is draining out of the Fwd drain ports, or Aft drain mast (dependent on Fwd, or Aft galley). 

6.4.49 Operate all coffee makers, espressos, and any manual fill valves located in the Galley (main and crew) as required. Verify water flow is correct (may need to hold water supply open to bleed all air from the lines). 

6.4.50 Pour water into each Ice Drawer (main and crew galley), verify each drawer holds water when its manual valve is shut, and allows water to drain out the Fwd drain ports when its valve is open. 

6.4.51 Slowly pour water into the overflow drain of the espresso/cappuccino machine (if installed), and verify water drains out of the Fwd drain ports.
6.5 Water System Purge – Ground

6.5.1 Verify that the side facing sink is stowed and remains stowed for this procedure. (√)

6.5.2 Press and hold the System Purge switch in the galley panel for approximately 3 seconds. Verify it’s LED turns GREEN. (√)

6.5.3 Verify the Water Heaters (all) turn OFF (LED’s change to AMBER). (√)

6.5.4 Verify the S/F/P Valve moves to the PURGE position. PURGE (PIMOH Aft) (√)

6.5.5 Verify water is draining out of the drain mast (√) and the water level LEDs in the switch panels are indicating water loss. (√)

6.5.6 If the optional water sterilizer is installed, visually verify the Sterilizer Drain Valve is in the DRAIN position. DRAIN (PIMOH Aft) (√)

6.5.7 If the aircraft has a Sterilizer installed, visually verify it turns OFF. The GREEN status light will go OFF. (√)

6.5.8 Visually verify the Air Valve is in the OPEN position. The PIMOH should be positioned Aft or away from the bulkhead. OPEN (PIMOH Aft) (√)

6.5.9 Verify the Air Compressor is RUNNING. (√) The air compressor will continue to run until the tank empty signal is received. Once the water tank is empty, then the following should occur:

6.5.10 Verify the air compressor has shut OFF. (√)

6.5.11 Visually verify the Air Valve is in the CLOSED position. CLOSED (PIMOH Fwd) (√)

6.5.12 Verify water begins to drain from the Fwd drain ports. (√)

6.5.13 In the Aft lav vanity verify the water supply valve is OPEN. The PIMOH should be positioned perpendicular to the valve body. (√)
6.5.14 If possible without removing any interior cabinets verify the fold down sink motorized valve is in the OPEN position (PIMOH should be positioned away from the mount flange). □ (✓)

6.5.15 If the aircraft has a Fwd or Aft facing Fwd lav, verify the water supply valve is OPEN. The PIMOH should be positioned perpendicular to the valve body. □ (✓)

6.5.16 Per normal water system purging procedure, open (operate) coffee makers, espressos, or manual fill valves to purge their lines. □ (✓)

6.5.17 Per normal water system purging procedure, flush all toilets to remove any residual water. □ (✓)

6.5.18 Verify the Water System, and Purge LED's are turned off (LEDs AMBER). □ (✓)

6.5.19 Press the System Heater switch in the galley switch panel to turn them OFF (LED AMBER). □ (✓)

6.5.20 Press the Tank Heater Blanket switch (located in the BEER) for a minimum of 3 seconds.

6.5.21 Verify Tank Heater status light illuminates in the upper left corner of the switch. □ (✓)

6.5.22 Press the Tank Heater Blanket switch located in the BEER for 3 seconds.

6.5.23 Verify the Tank Heater status light extinguishes. □ (✓)
7.0 Additional Notes and Observations
8.0 Troubleshooting Procedures

8.1 If the Supply Innerline Heater Thermostat is located on the Tank Overflow Drain Line instead of the Supply Line, relocate the thermostat to the Supply Line per drawing number 1159SB50829.

8.2 If the S/F/P Valve does not move to the FILL position when the service panel is opened, perform the following:

Verify that the ground service bus is supplying power to the aircraft.
Open and close service panel to try to actuate the S/F/P valve.
Repeat the action with external power to the aircraft.
If the valve moves to the FILL position with the service panel open with external power, but not ground service bus power, perform electrical modifications per drawing number 1159SB59038 for the GV-SP, 1159SB52000 for the GV, and 1159SB49004 for the GIV-X.

If the S/F/P Valve does not move with external power applied, perform the following:

Check service panel switch for continuity. Press the switch by hand and verify the panel light comes on.
If the service panel switch if functioning properly, refer to the aircraft Wiring Diagram Manual (WDM) to ring out the wiring to the CMM and S/F/P valve.
If the CMM and S/F/P valve are receiving power, remove and replace S/F/P valve according to AMM 38-13-09.

8.3 If there are any water quantity lights illuminated with an empty water tank, perform the following:

Remove and replace the water tank quantity sensor harness according to AMM 38-12-02.
Send the faulty harness back to Gulfstream for inspection.

8.4 If any one of the external service panel lights do not illuminate, perform the following:

Referring to the WDM, ring out the wires from tank quantity sensors to the external service panel. If the wiring rings remove and replace the water quantity panel per AMM 38-12-02.

8.5 If any one of the galley panel lights do not illuminate, perform the following:

Referring to the WDM, ring out water quantity wires for any lights not indicating properly.
If the tank water quantity sensor is bad and not the light, remove and replace the water tank harness according to AMM 38-12-02.
Send the faulty harness back to Gulfstream for inspection.
8.6 If the Air Compressor does not operate at all, perform the following:

Referring to the WDM, ring out the wiring from the PSC to the Air Compressor to check that the Air Compressor is getting power. If it is not a power issue, remove and replace the Air Compressor according to AMM38-41-01.

8.7 If the Air Valve moves from the OPEN position back to the CLOSED position, and the Water System automatically shuts down, perform the following:

Remove production grounds for the CMM according to drawing number 1159SB59033.

8.8 If the Air Valve does not operate at all, perform the following:

Referring to the WDM, ring out the wiring from the CMM to the Air Valve to check that the Air Valve is getting power. If it is not a power issue, remove and replace the Air Valve.

8.9 If the Sterilizer Drain Valve moves continuously between the CLOSED and OPEN positions, or the valve makes a hissing noise as it moves, or the valve does not completely engage in either position, perform the following:

Using a mirror, look at the CMM case to verify the CMM is loaded with software level D. If not, it will need to be updated. Remove the CMM according to drawing number 1159SB59037 (ref. AMM 38-12-07). Send CMM back to Airshow for software upgrade. Install CMM with software level D according to AMM 38-12-07. Remove and replace the Sterilizer Drain Valve (only after CMM software level D is installed) according to AMM 38-12-01.

8.10 If the circuit breaker has popped out, the Drain and Supply connectors could be swapped. See section 5.0 of this document to verify the correct reference designator for each connector. If the reference designators are correct, then an over-temperature condition exists. This could indicate a failed innerline heater thermostat. Refer to AMM 38-15-11.

8.11 If water is draining from either of the forward fuselage drain ports that means the Fwd Drain Valve and/or the Fwd Supply Valve is open while in flight. This is a reversed configuration, and must be corrected. The Fwd drain valve is designed to be closed during flight and open with WOW. The Fwd Supply Valve is designed to be open in a ground purge configuration only. If the Fwd Drain Valve, or Fwd Supply Valve is operating in reverse, perform the following:
Verify that WOW CBs are in and set.
Verify the electrical wiring to the Valves are per the aircraft WDM (ref. AMM 38-13-07).
Verify the Fwd Drain Valve position indicator is in the correct position.
Remove and replace the faulty valve per AMM 38-13-07.
Send the faulty valve back to Gulfstream for inspection.

8.12 If the air compressor does not stop running, perform the following:
Remove production grounds for the air valve according to drawing number 1159SB59033.

8.13 If H1 or H2 do not illuminate on a GIV-X aircraft while pressing the test switch, perform the following:
Referring to the WDM, verify the tape heaters are not wired in series with the innerline heaters.
If they are:
Rewire the tape heaters per drawing number 1159SB49004 to receive power independently from the innerline heater wiring.

If they are not:
Then two or more tape heaters are faulty.
Remove and replace faulty tape heaters.
Refer to AMM 38-15-00.