
# Water and Waste Presentation

REFERENCE ONLY

# SYSTEM INTRODUCTION

**•Water/waste subsystems:**

- **Potable water system**
- **Waste water system**
- **Toilet system**

The water and waste system has:
- a potable water system,
- a waste water system,
- a toilet system.

# POTABLE WATER SYSTEM

**•Water supplied:**

- **From water tank**
- **To water faucets and vacuum toilet units**

The potable water system supplies water from the water tank through a distribution system to the users. The users are the water faucets in the galleys and lavatories and the vacuum toilet units.

**•Heater under wash basin**

A water heater is installed under the washbasin in each toilet unit to supply hot water to the water tap.

**•Pressurized by bleed air**

**•Optional compressor used to pressurize the system with air on ground**

**•Shut off valves used to isolate lavatories and galleys**

**•Servicing - with or without electrical power available**

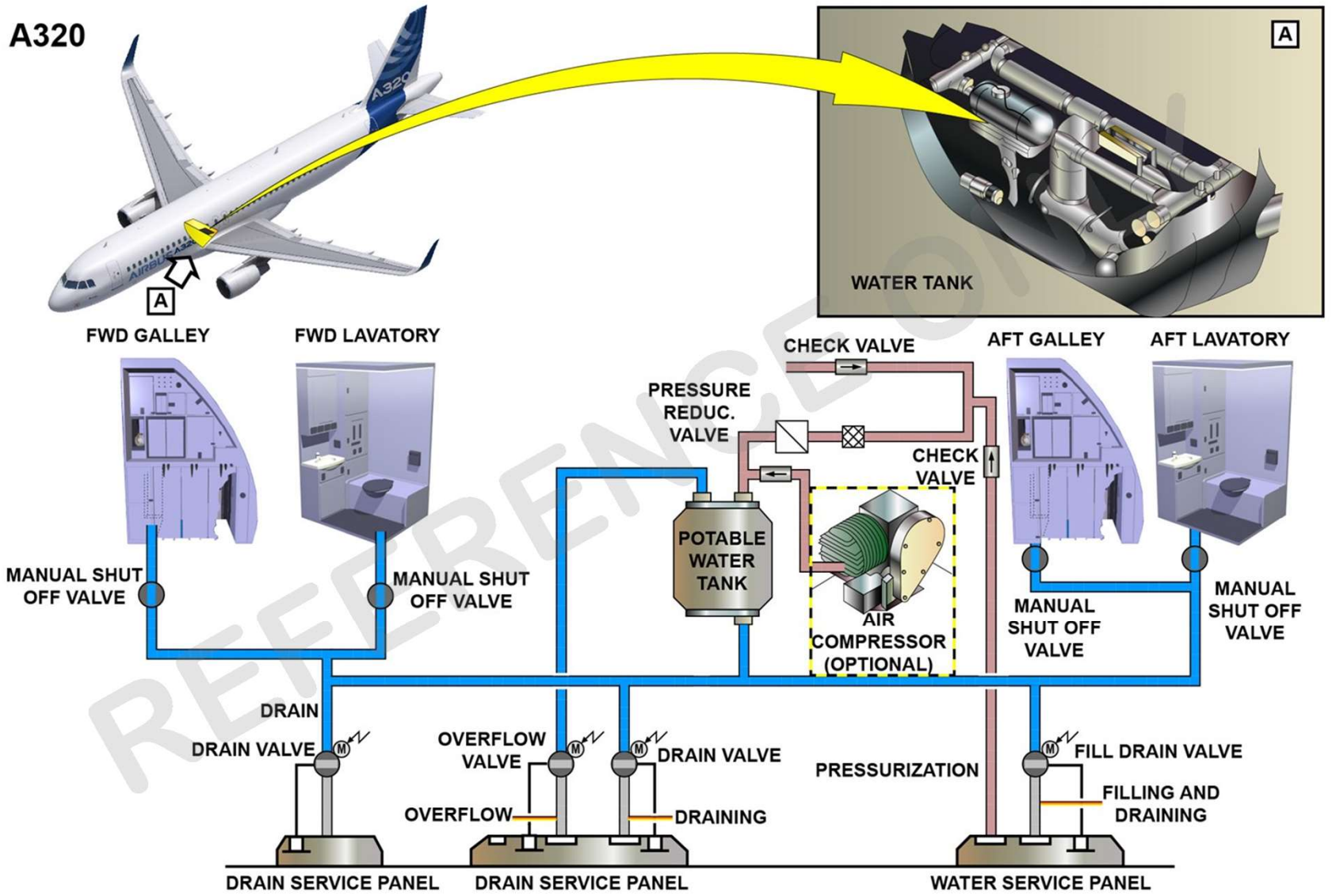
The potable water system is pressurized by the bleed air system.
A compressor (optional) can be installed to pressurize the water system with air on the ground.
Manual shut off valves are installed to isolate any galley or lavatory.

## A320

**•Filling and draining can be done from three panels on A320**

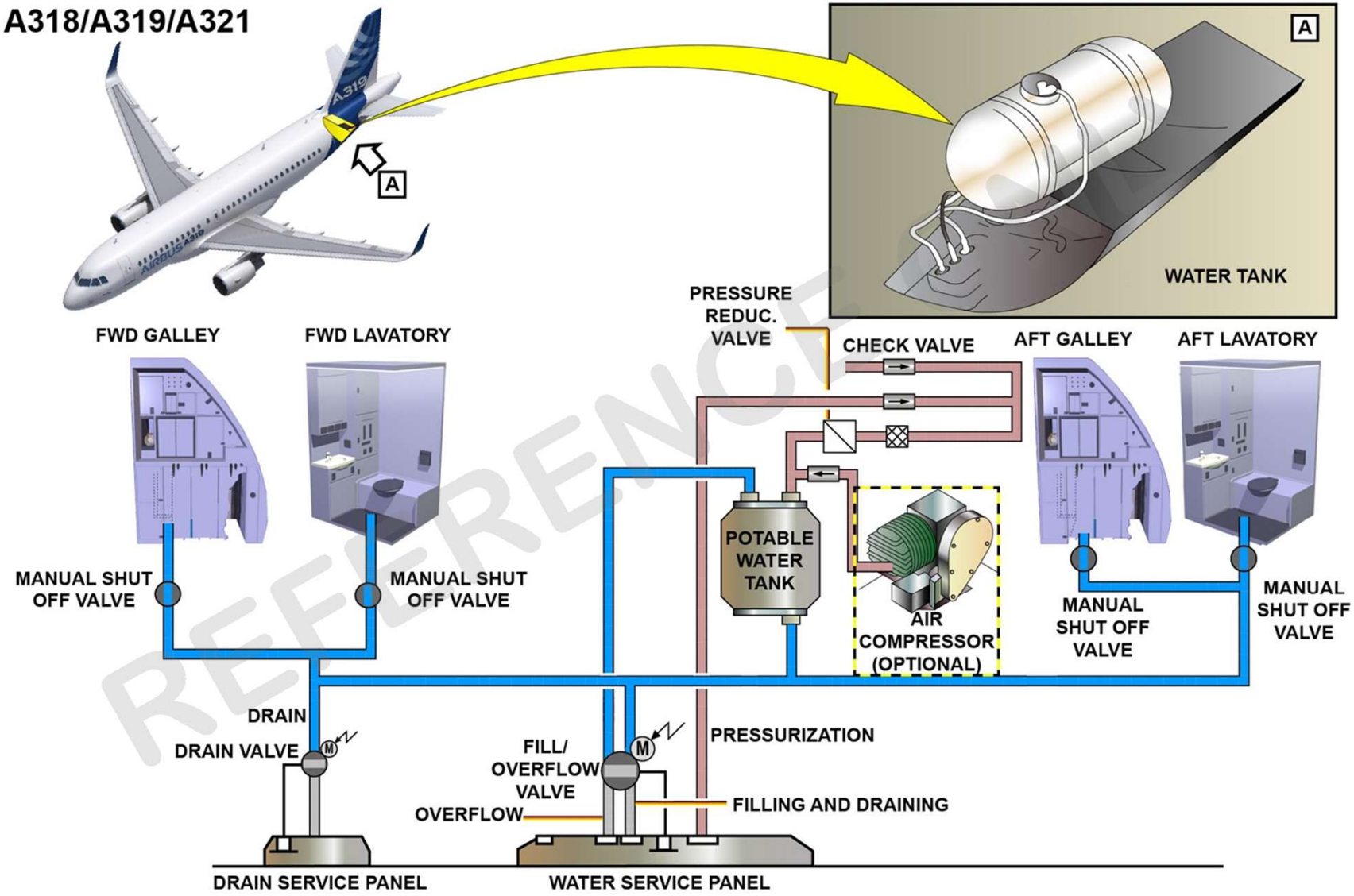
**•Servicing - with or without electrical power available**

The potable water system can be serviced with or without electrical power available.
The A320 has one water servicing panel and due to water tank position, two drain servicing panels.



## A318/A319/A321

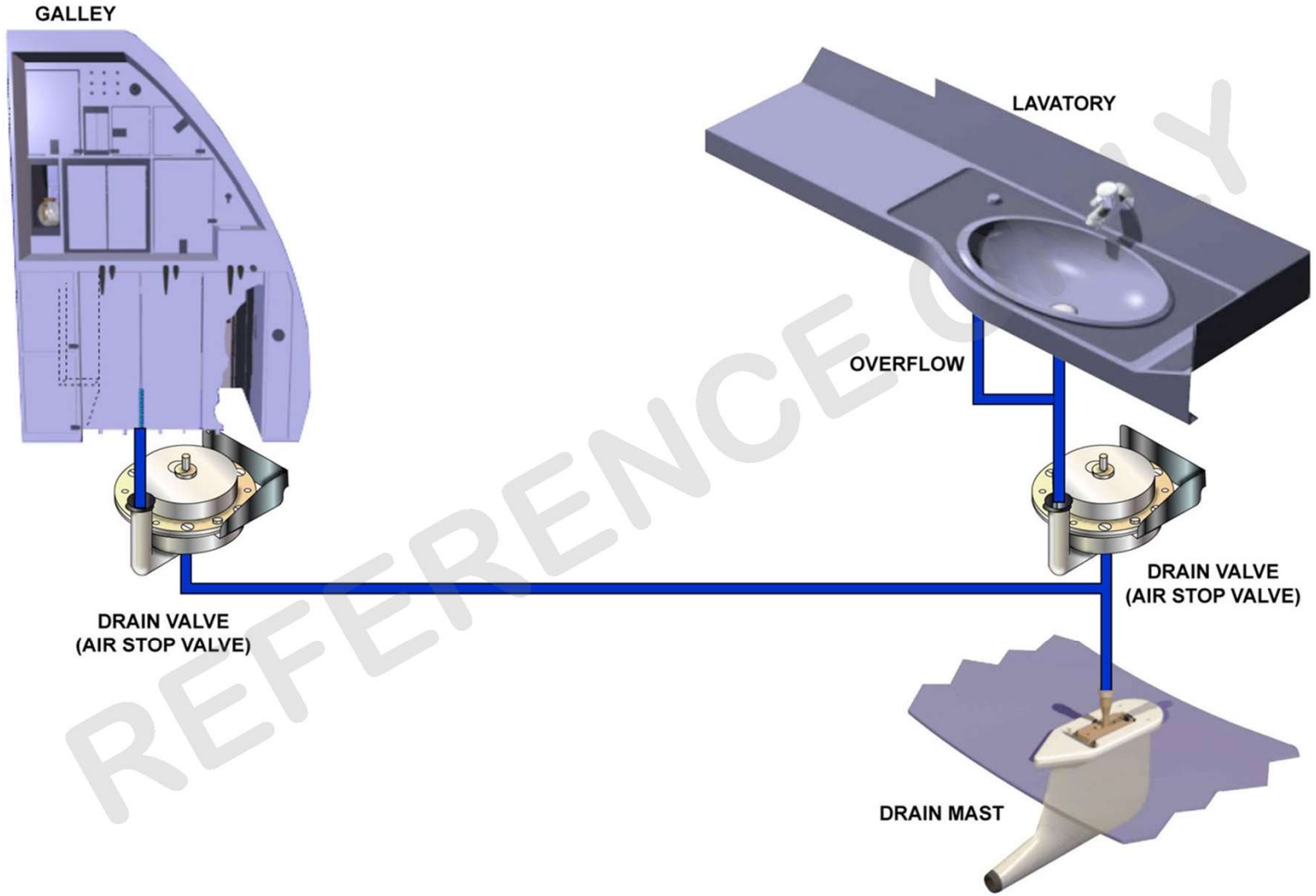
**•Filling and draining done from two panels on A318 / A319 / A321**
The A/C is serviced from a water servicing panel and a single drain servicing panel.


A318/A319/A321
A
A
WATER TANK
PRESSURE REDUC. VALVE
CHECK VALVE
FWD GALLEY
FWD LAVATORY
AFT GALLEY
AFT LAVATORY
POTABLE WATER TANK
AIR COMPRESSOR (OPTIONAL)
MANUAL SHUT OFF VALVE
MANUAL SHUT OFF VALVE
MANUAL SHUT OFF VALVE
MANUAL SHUT OFF VALVE
DRAIN
DRAIN VALVE
M
FILL/ OVERFLOW VALVE
M
PRESSURIZATION
OVERFLOW
FILLING AND DRAINING
DRAIN SERVICE PANEL
WATER SERVICE PANEL

# WASTE WATER SYSTEM

**•Waste water is drained overboard by heated drain masts via air stop valves**
**•Air stop valves avoid cabin depressurization**

The waste water drain system collects the waste water from the lavatory washbasins and the galley sinks.
The waste water is discarded outside through the drain valve (air stop valve) and the heated drain mast.
Air stop valves avoid constant cabin depressurization by opening only when a certain amount of water is collected.



# VACUUM TOILET SYSTEM

**•Waste from the toilet bowl sent to the under floor waste holding tank**

During toilet flushing, the waste from the toilet bowl is sent under the effect of cabin differential pressure to the under floor waste holding tank.

**•Waste holding tank servicing done from the toilet service panel**

**•Necessary delta pressure generated by a vacuum generator**

- **On ground**
- **In flight below 16,000 ft**

**•Overall toilet system operation controlled by VSCF**

Waste holding tank servicing is done from the toilet servicing panel.

On ground and in flight below 16,000 ft, a vacuum generator is used to generate the necessary delta pressure.

The overall toilet system operation, monitoring and fault indication are controlled by the Vacuum System Controller Function (VSCF) integrated in the Cabin Intercommunication Data System (CIDS).

## FLUSHING

**•With the Flush Switch pressed: FCU starts flush sequence**

**•Rinse Valve and Flush Valve controlled by the FCU**

- **Used to evacuate waste material**

**•Signals to operate vacuum generator sent from FCU to VSCF**

When the flush switch is pressed, the Flush Control Unit (FCU) starts the flush sequence.

The rinse valve and the flush valve open in sequence, controlled by the FCU, to evacuate the waste material.

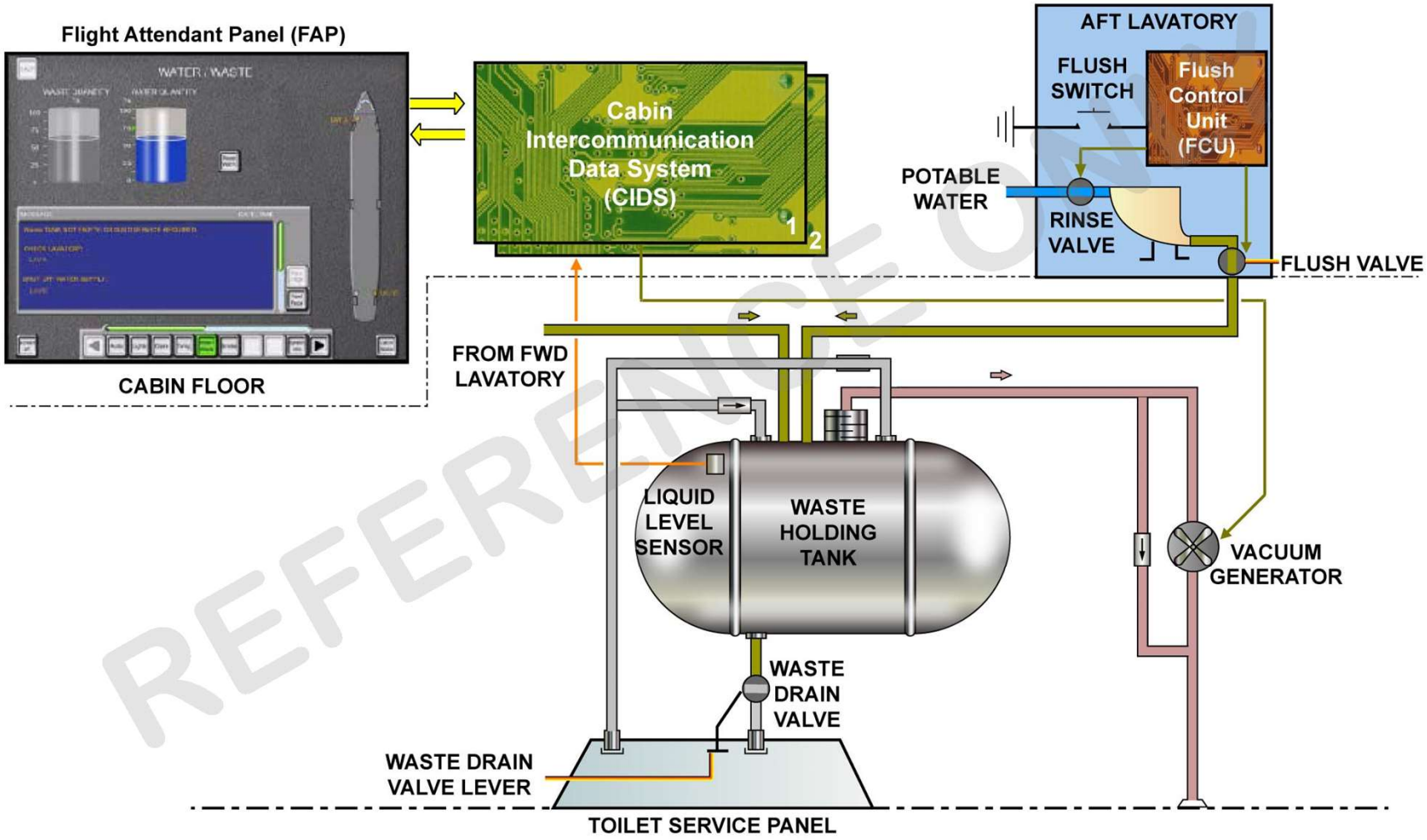
At the same time the FCU sends a signal to the VSCF, which will operate the vacuum generator.

**•Differential pressure created by the vacuum generator to move the waste from the toilet bowl**

**•Vacuum Generator not started above 16,000 ft by the VSCF**

The vacuum generator creates the necessary differential pressure between the cabin and the waste holding tank to move the waste from the toilet bowl.

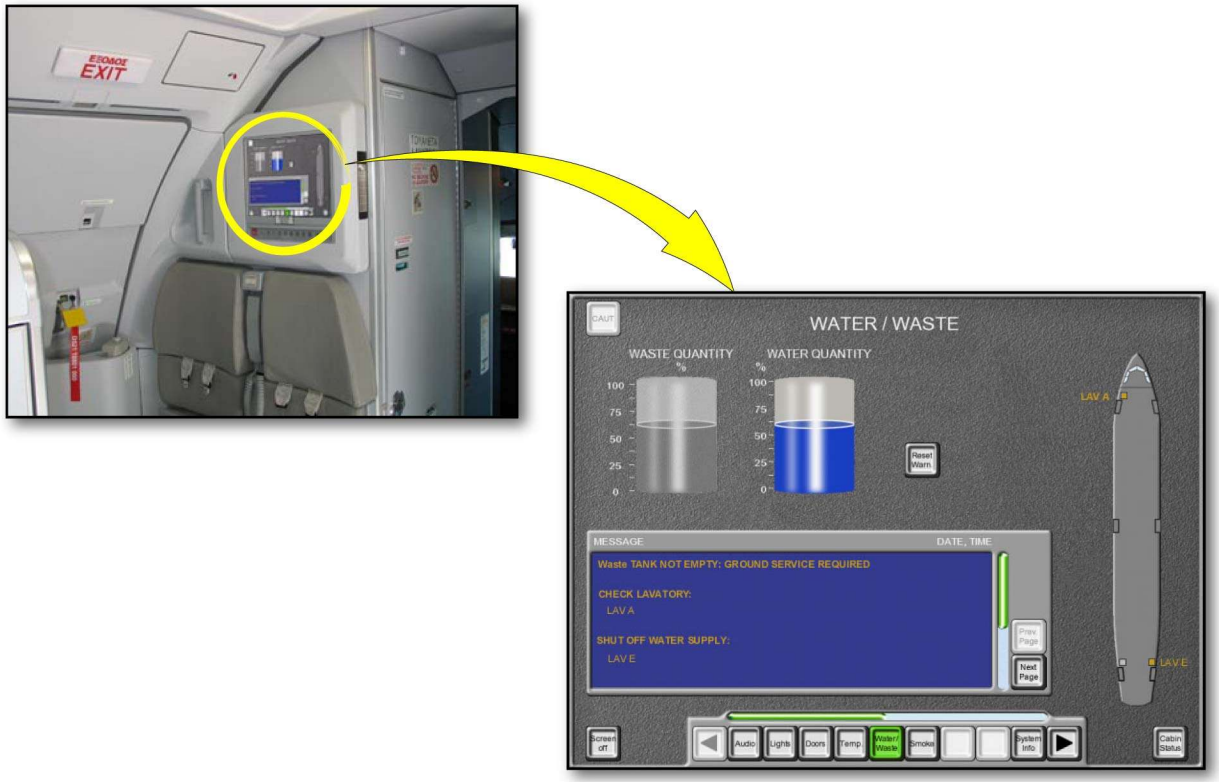
Above 16,000 ft, the vacuum generator will not be started by the VSCF as the differential pressure is sufficient.



# CONTROL AND INDICATING

**•Water and waste indications displayed on the FAP**

The water and waste indications are displayed on the Flight Attendant Panel (FAP).




**FLIGHT ATTENDANT PANEL WATER/WASTE PAGE**

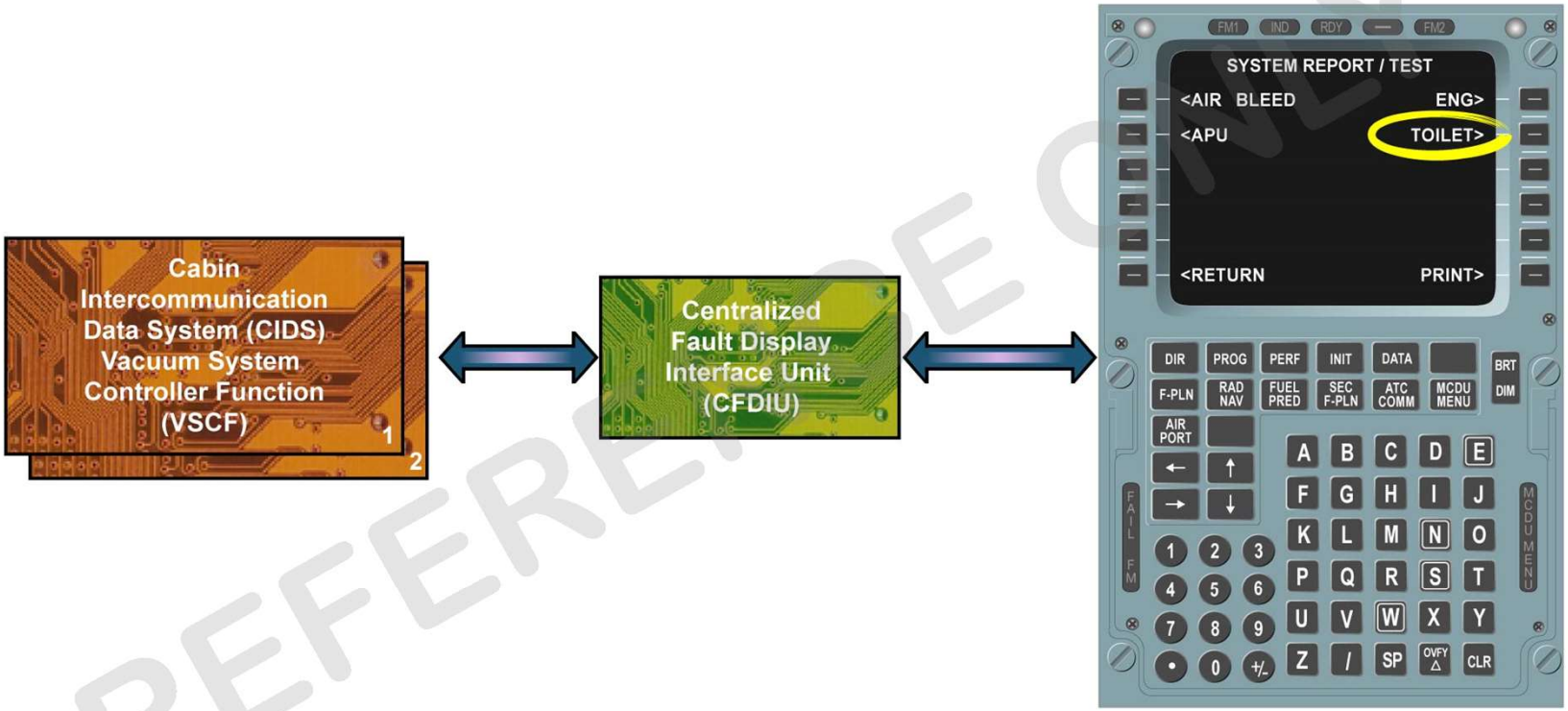
# MAINTENANCE/TEST FACILITIES

**•Toilet operation controlled by the FCU**
**•Faults sent to the VSCF and then to the CFDS**

Each FCU monitors the operation of a toilet and transmits any fault to the VSCF.
The VSCF sends the failure data, concerning the vacuum toilet system to the Centralized Fault Display System (CFDS).

**•Toilet system fault messages are accessible through the MCDU**

The CFDS fault messages of the toilet system are accessible by using the MCDU.



# SAFETY PRECAUTIONS

**•AMM safety procedures**
When you work on aircraft, make sure that you obey all the Aircraft Maintenance Manual (AMM) safety procedures.
This will prevent injury to persons and/or damage to the aircraft. Here is an overview of main safety precautions relative to the water and waste system.

**•Warning notices in position**
Before you start a task make sure that the warning notices are in position.

**•After you complete a procedure clean your hands with soap and water to prevent infections**
When you complete the work procedure, clean your hands with soap and water. This will prevent infection (toilet waste is dangerous for health).

**•Don't work on the waste and potable water systems at the same time**
Do not work on the waste system and the portable water system at the same time. This will prevent contamination of the potable water system.

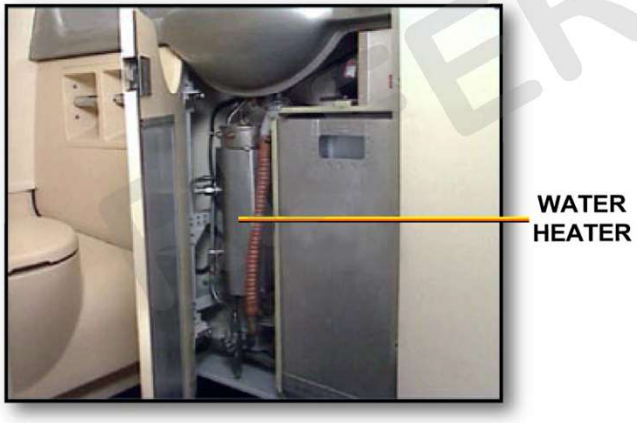
**•Components of toilet waste system must be put in a plastic sealed bag**
When you remove a component of the toilet waste system, always put it in a plastic bag, then seal the bag. Do not put documents into the plastic bag. Seal the bag first, then attach the document to it.

**•Working on the potable water system use a clean and approved equipment**
When you work on the potable water system make sure that the equipment you use for the procedure is clean and approved for this system. If not it can cause contamination.

**•Don't touch water heater until it is cool**
Do not touch the water heater until it is sufficiently cool to prevent burns when you do the maintenance tasks.









# Water/Waste System Component Location

# SYSTEM OVERVIEW

**Comp loc AFT Cargo Compartment**
**Waste Holding TK**
**•Three subsystems: Potable water, waste water and toilet system**

The water and waste system consist of three subsystems:
- potable water system,
- waste water system,
- toilet system.

## WATER FLUID STORAGE (A318 / A319 / A321)

**•Potable water: 1 tank**
**•Installed in pressurized LH underfloor area rear of aft cargo compartment**
**•Quantity monitored by an indication system**

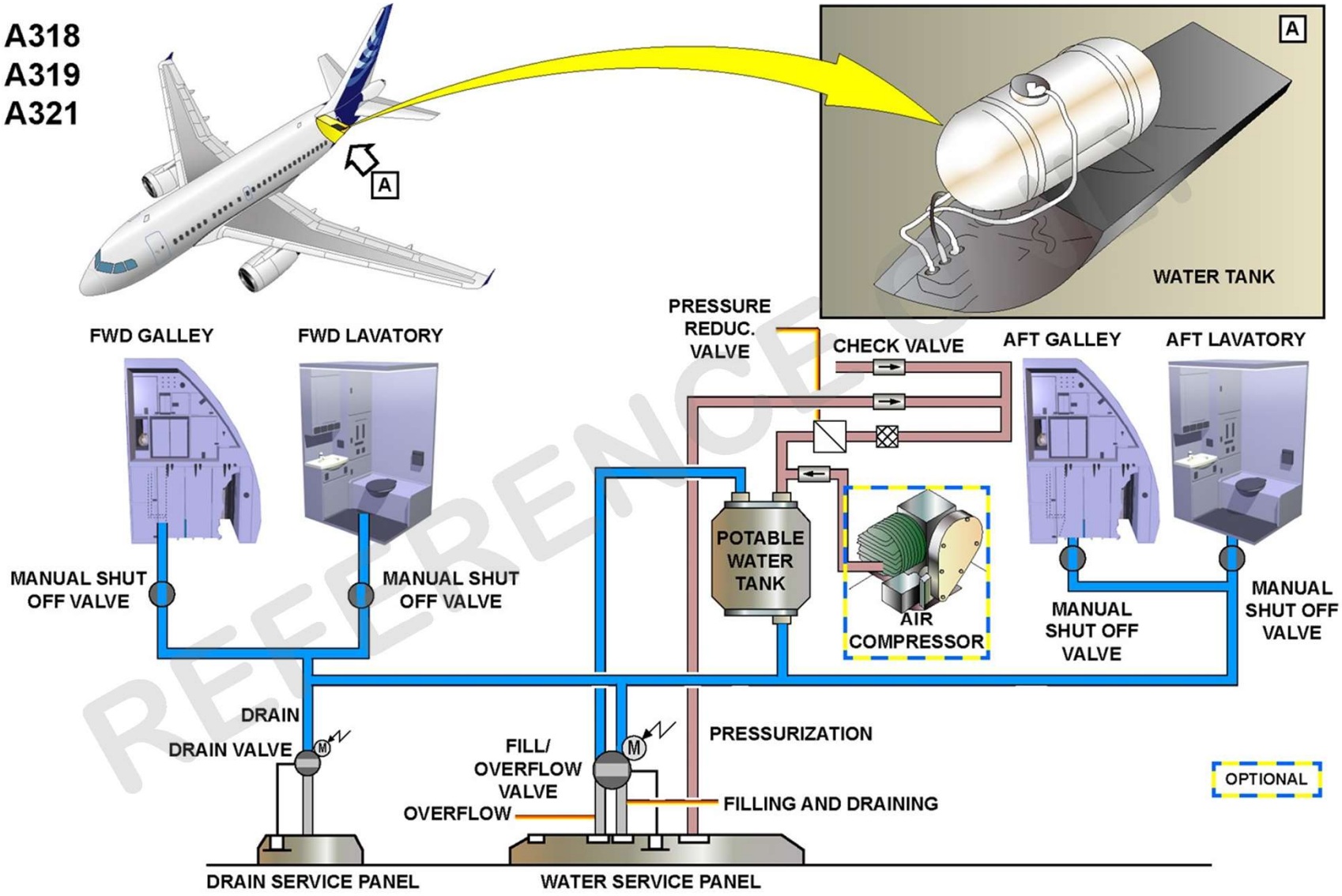
The potable water tank is installed in the pressurized LH underfloor area rear of the aft cargo compartment. An indication system monitors the water quantities.

## POTABLE WATER SYSTEM

**•Supplies water through a distribution system to the user:**
- **Galleys and lavatories**
- **Toilet system**

**•System controlled by manual or electrical operated valves**
**•Tank pressurized from bleed air or ground connection or air compressor (optional)**
**•Galley and lavatory isolation valve**

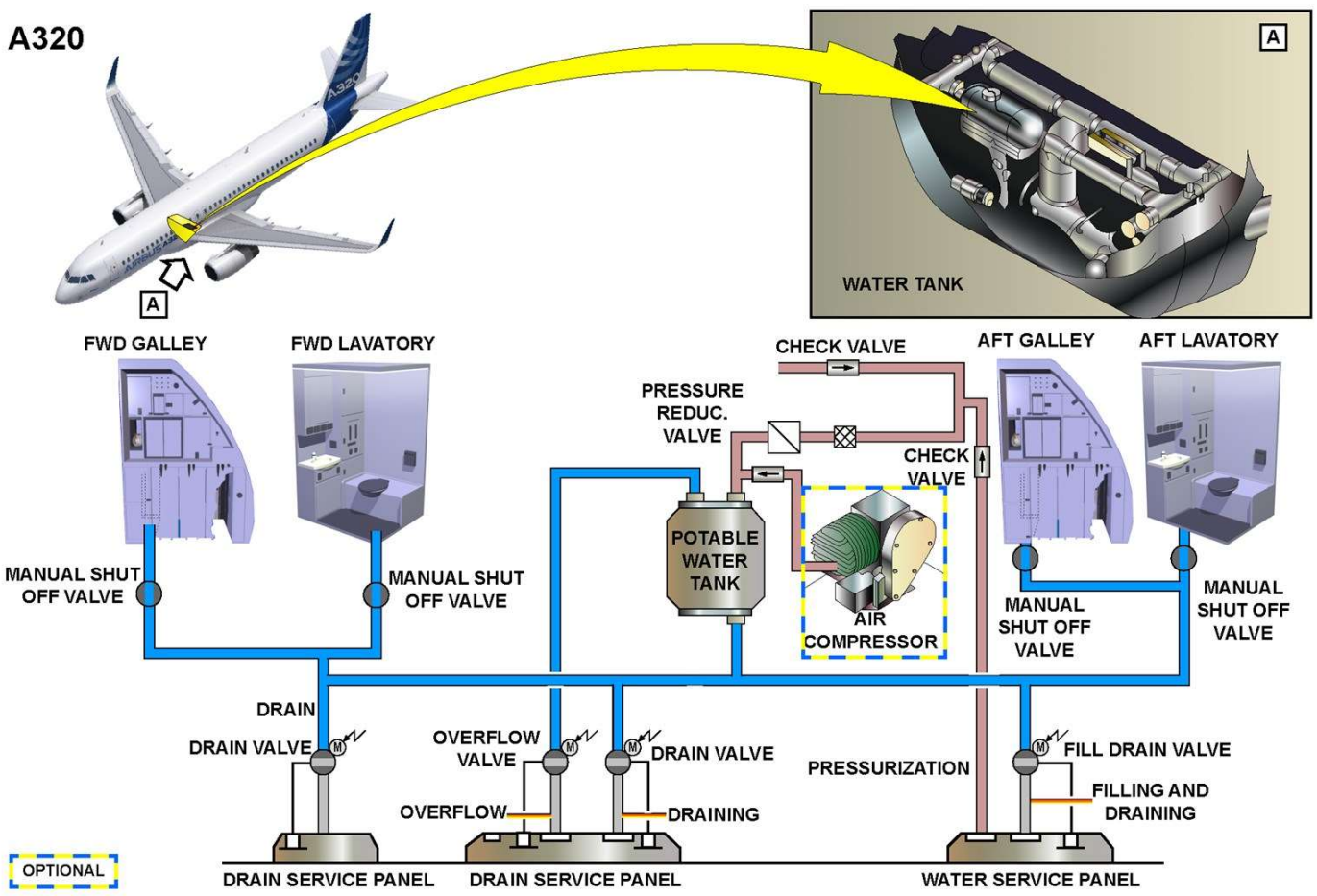
The potable water system supplies water from the water tank through a distribution system to the user. The water is supplied to water faucets in the galleys and lavatories. The system also supplies water to the water heaters and vacuum toilet units. Mechanically or electrically operated valves control the supply of the potable water system. Compressed air is used to pressurize the system to supply water from the tank to the necessary service locations. The air pressure is supplied from the bleed air system in normal configuration or a ground pressure connection for maintenance. An air compressor can be installed as an option. Each lavatory can be isolated from the potable water distribution system through a manual shut-off valve.


A318
A319
A321
A
A
WATER TANK
PRESSURE REDUC. VALVE
CHECK VALVE
FWD GALLEY
FWD LAVATORY
AFT GALLEY
AFT LAVATORY
POTABLE WATER TANK
AIR COMPRESSOR
MANUAL SHUT OFF VALVE
MANUAL SHUT OFF VALVE
MANUAL SHUT OFF VALVE
MANUAL SHUT OFF VALVE
DRAIN
DRAIN VALVE
FILL/ OVERFLOW VALVE
PRESSURIZATION
OVERFLOW
FILLING AND DRAINING
OPTIONAL
DRAIN SERVICE PANEL
WATER SERVICE PANEL

# WATER FLUID STORAGE (A320)

**•Tank is located aft of the FWD cargo compartment**

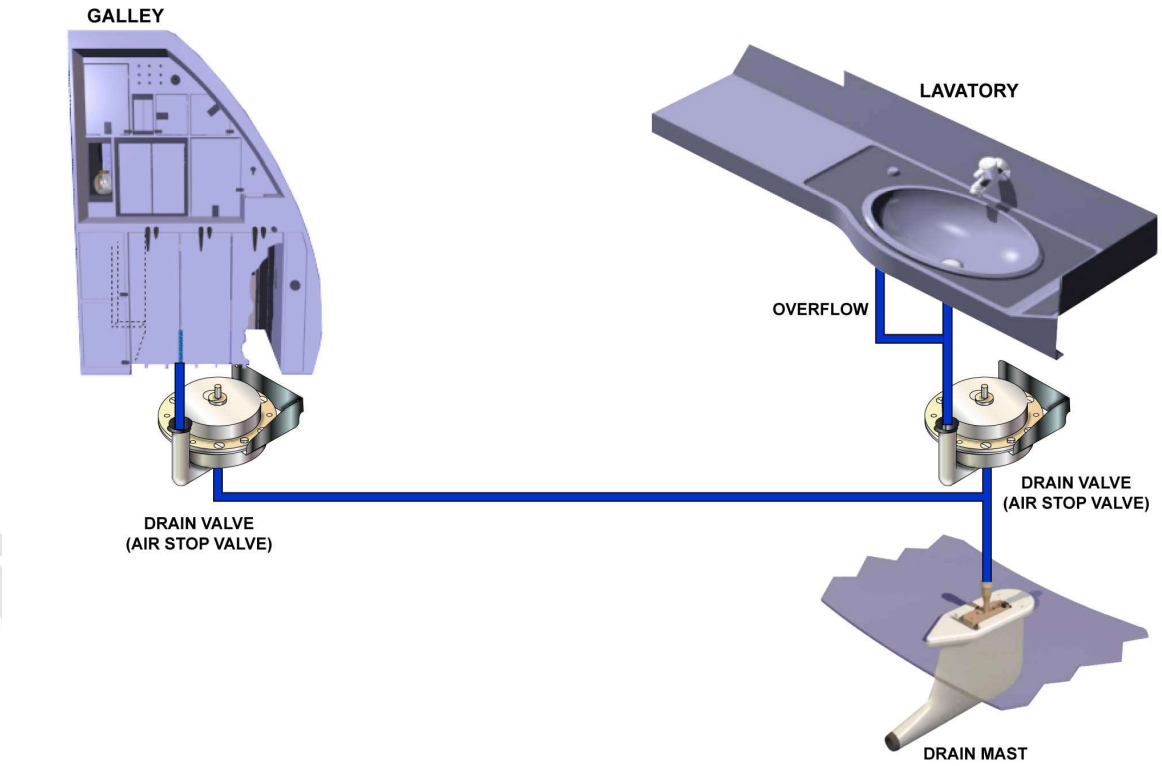
For the A320 only, the location of the potable water tank is aft of the forward cargo compartment.



## WASTE WATER SYSTEM

**•Draining of lavatory washbasins & galley sinks**
**•Drain valve (air stop valve) and heated drain mast**
**•Integrated electrical heating elements**

The waste water system drains the used water from the lavatory washbasins and the galley sinks. The waste water is discarded overboard outside through the drain valve and the drain mast. The two drain masts have integrated electrical heating elements to prevent ice formation in flight and during cold weather.



## TOILET SYSTEM

**•Differential pressure toilet system**
**•Potable water for flushing**

The toilet system gives sanitary facilities for the passengers and crews. The system is a differential pressure toilet system and uses potable water for flushing.

## TOILET SYSTEM FLUSHING OPERATION

**•Uses potable water from the aircraft pressurized water system**
**•At high altitude: ΔP between cabin & atmosphere sufficient to move waste**
**•At low altitude (or on ground): ΔP generated by vacuum generator**
**•VSCF controls & monitors the system**
**•System stops by LLT when tank is full**

The system uses potable water from the aircraft pressurized water system to flush the toilet. A flush valve opens to remove waste from the toilet bowl to an under floor waste holding tank. At high altitude, the differential pressure between the cabin and the atmospheres is sufficient to move the waste from the toilet bowl into the waste holding tank. At low altitude or on ground, a vacuum generator starts to give the necessary differential pressure in the waste system to move the waste from the bowl to the tank. The Vacuum System Controller Function (VSCF), integrated in the Cabin Intercommunication Data System (CIDS), controls the flushing system operation and stops the operation when the waste servicing panel is open. When the tank is full, the liquid level sensor stops the system operation.

## TOILET SYSTEM WASTE DISPOSAL

**•Tank installed:**
- **On the right of the A/C**
- **Under the floor**
- **Behind bulk cargo compartment**

**•Composed of:**
- **Water separator**
- **LLT & LLS**
- **Waste drain valve**
- **2 rinse/flush inlet nozzles**

The waste holding tank is installed on the right of the aircraft under the floor behind the bulk cargo compartment. The tank includes a water separator, a liquid level transmitter, a liquid level sensor, a waste drain valve and two rinse line connections.

## TOILET SYSTEM WASTE TANK HEATING (OPTIONAL)

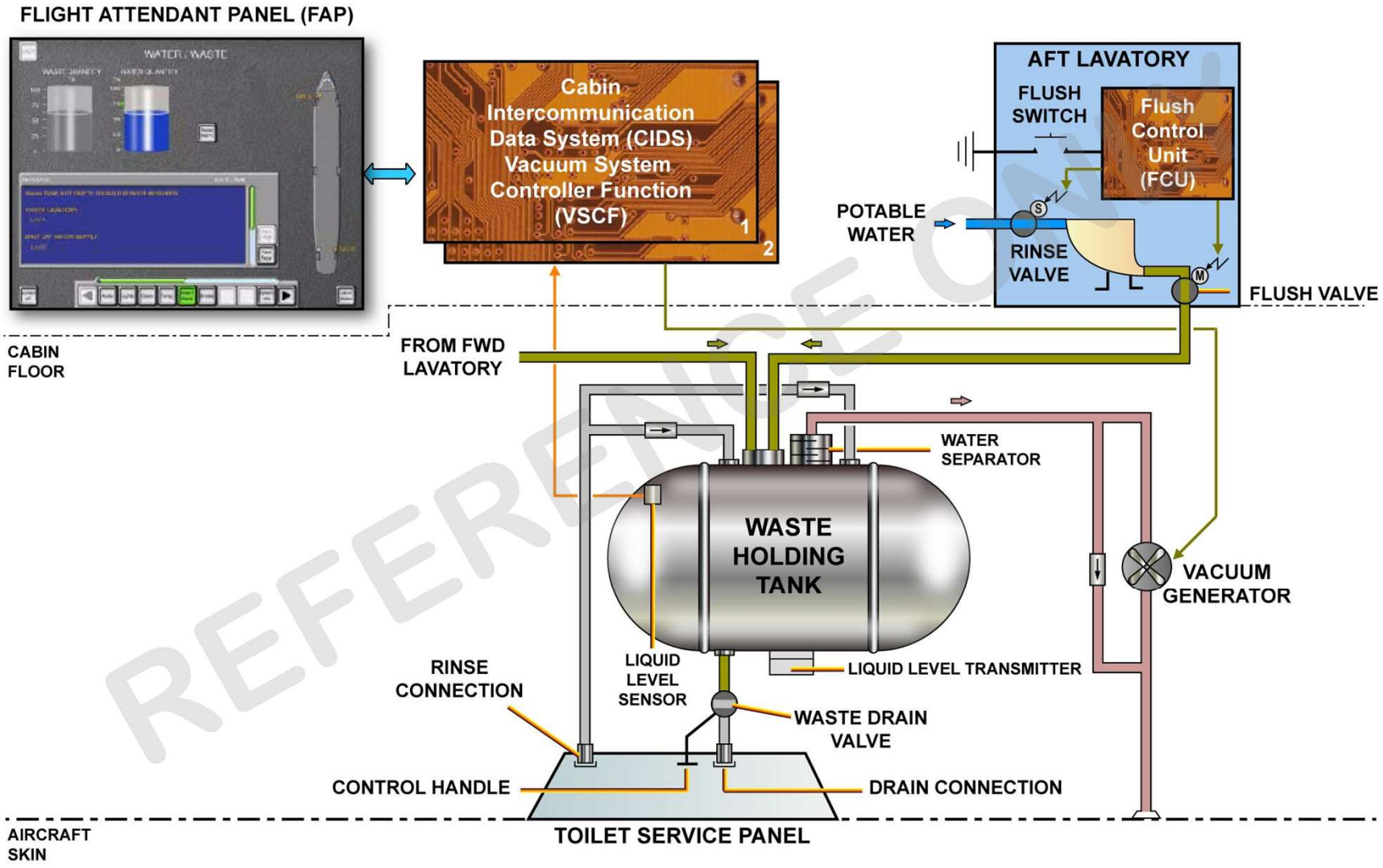
**•Waste holding tank can be insulated**
**•Distribution lines can be insulated and heated**

The waste holding tank can be insulated. The lines between the tank and the service panel with the waste drain valve can be insulated and heated.

## TOILET SYSTEM CONTROL AND INDICATING

**•CIDS controls & monitors system function + related components**
**•1 FCU/toilet: CTLs rinse & flush cycle when flush SW pressed**
**•CIDS stops the system when tank is full**
**•FAP: WATER QUANTITY displayed when Water/Waste key selected**

The vacuum toilet system is connected to the CIDS. The CIDS controls and monitors the system functions and the related electric components. A Flush Control Unit (FCU) per toilet controls the rinse and flush cycle as soon as the flush SW is pressed. The system uses potable water from the potable water system to rinse the toilet bowl. When the waste holding tank is full, a signal is sent to the CIDS, which shuts down the toilet systems. The Flight Attendant Panel (FAP) displays the waste tank quantity stored in the waste holding tank when the Water/Waste key on the FAP is selected.



# COMPONENT LOCATION

**•Waste holding tank installed in aft fuselage RH side**

The waste holding tank is installed in the aft fuselage on the RH side.

**•VSCF installed in the bulk cargo compartment**

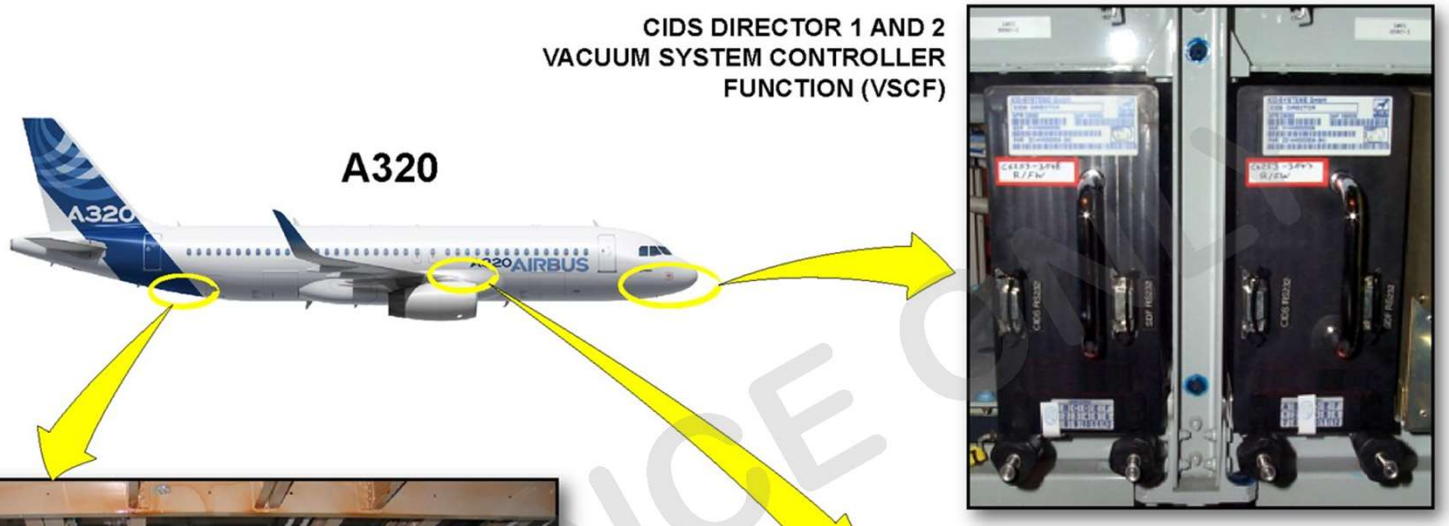
The VSCF integrated in the CIDS is installed in the avionics compartment.

## A320

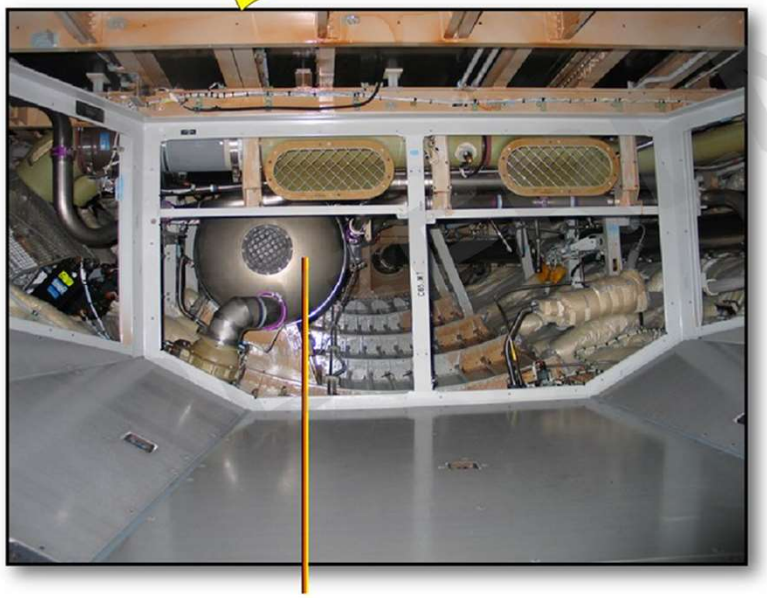
**•A320 water tank installed on RH side behind the forward cargo compartment**

The A320 potable water tank is installed in the lower RH fuselage behind the forward cargo compartment.

CIDS DIRECTOR 1 AND 2
VACUUM SYSTEM CONTROLLER
FUNCTION (VSCF)

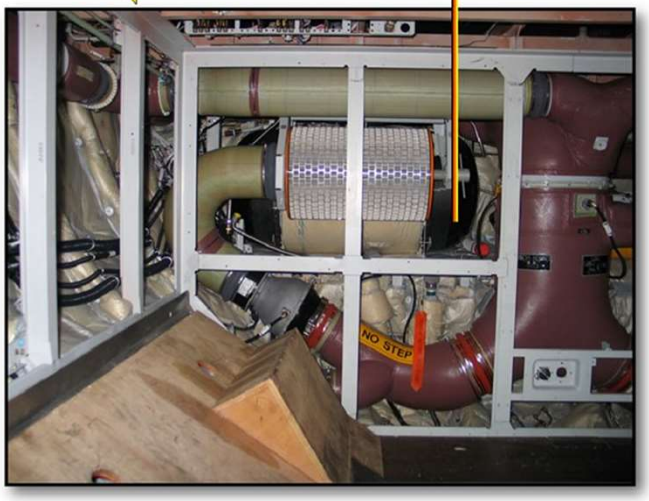


A320



WASTE HOLDING TANK

POTABLE WATER TANK



## A318/A319/A321

**•A318, A319, A321 potable water tank**

- **Installed on LH aft fuselage beside the waste holding tank**

The A318, A319 and A321 potable water tank is installed in the lower LH aft fuselage beside the waste holding tank.

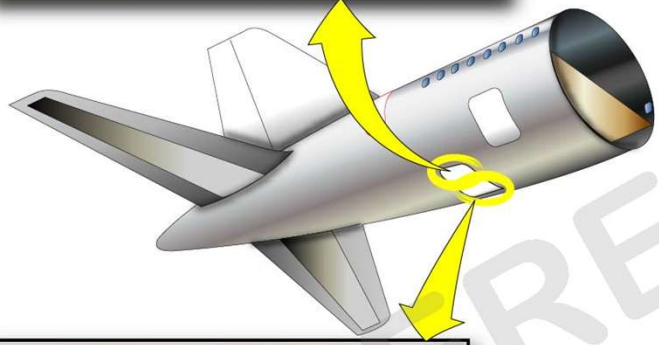
# SERVICE PANEL LOCATION

**•Potable water service panel installed on LH rear lower fuselage**
- **Fills and drains potable water tank**

**•A320: two water drain panels**
**•A318, A319, A321: one water drain panel**
The potable water service panel is installed in the rear lower fuselage on the LH side.
It is used to fill and drain the potable water tank.
The A320 has two drain panels, installed in the lower part of the fuselage.
The A318, A319 and A321 have one drain panel, installed in the lower part of the fuselage.

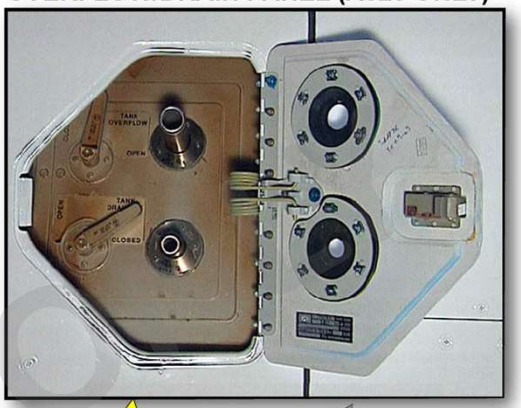
**•Toilet service panel installed on the RH rear lower fuselage**
The toilet service panel is installed in the rear lower fuselage on the RH side.

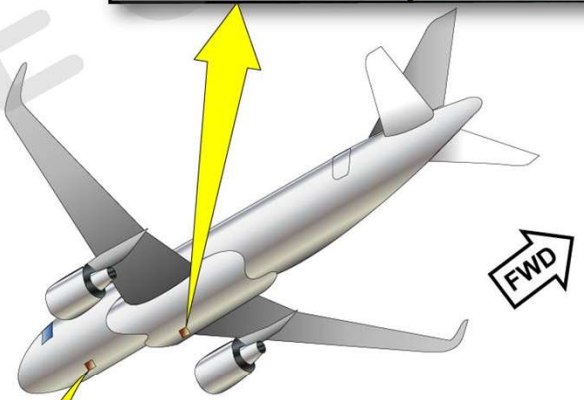
TOILET SERVICE PANEL



POTABLE WATER SERVICE PANEL

OVERFLOW/DRAIN PANEL (A320 ONLY)





FWD DRAIN PANEL


# Potable Water System Description and Operation

# STORAGE

**Comp loc Ext Rear**
**Potable water service PNL**
**•1 tank installed:**
- **In RH fuselage pressurized underfloor area**
- **Behind FWD cargo compartment**

**•Capacity: 200 l (53 US gal)**

The potable water is stored in one tank installed in the pressurized underfloor area of the right hand fuselage, aft of the forward cargo compartment. The potable water tank has a capacity of 200 l (53 US gal).

## PRESSURIZATION

**•Enables water supply from tank to service users**
**•Compressed air is tapped from:**
- **Engine bleed air**
- **Or APU**
- **Or ground pressure supply system**

**•By optional compressor**
**•Servicing: Depressurization via fill/overflow valve**

Pressurization of the system enables water supply from the tank to the necessary service location. Compressed air is tapped from the cross feed line of the engine or APU bleed air. On ground, when the bleed air system is not available, the ground air pressure supply system is used. If installed, the air compressor will supply air when bleed is not available. During servicing, the overflow valve is used to depressurize the potable water tank.

## DISTRIBUTION

**• Lines below pax compartment floor**
**•Shrouded and insulated lines**
**•Electrically heated lines**

Potable water from the water tank is supplied through a system of distribution lines, which are routed below the passenger compartment floor. A part of the forward distribution line goes through a hose for added protection of the avionics equipment. The potable water distribution lines are insulated and electrically heated to prevent ice formation in and around the lines. Each lavatory and each galley have an individual and manual shutoff valve.

## HEATING

**•Water heater installed under wash basin**
**•Heater not supplied if low level detected by QTY XMTR**
**•45 °C (113 °F) and 48 °C (118,4 °F)**
**•Protected by a resetable over temperature safety device**

A water heater is installed under the wash basin inside the sanitary unit cabinet. If the quantity transmitter detects a low level into the water tank, it cuts the electrical supply of the water heater. A thermostat allows the water temperature to be maintained between 45 °C (113 °F) and 48 °C (118,4 °F). An over temperature safety device protects the heating element.

# INDICATING

**•System gives available water quantity**
**•QTY XMTR signal sent to:**
- **Water service panel**
- **FAP**

**•TANK FULL light**

The quantity indication system indicates how much water is available in the potable water tank. The quantity transmitter transmits the signal to the indicator on the water service panel. It also sends the information to a Decoder/Encoder Unit (DEU) B, which in turn interfaces with the active Cabin Intercommunication Data System (CIDS) director to display on the Flight Attendant Panel (FAP) the water tank contents in percentage of volume. The TANK FULL light on the service panel comes on when the tank is full.

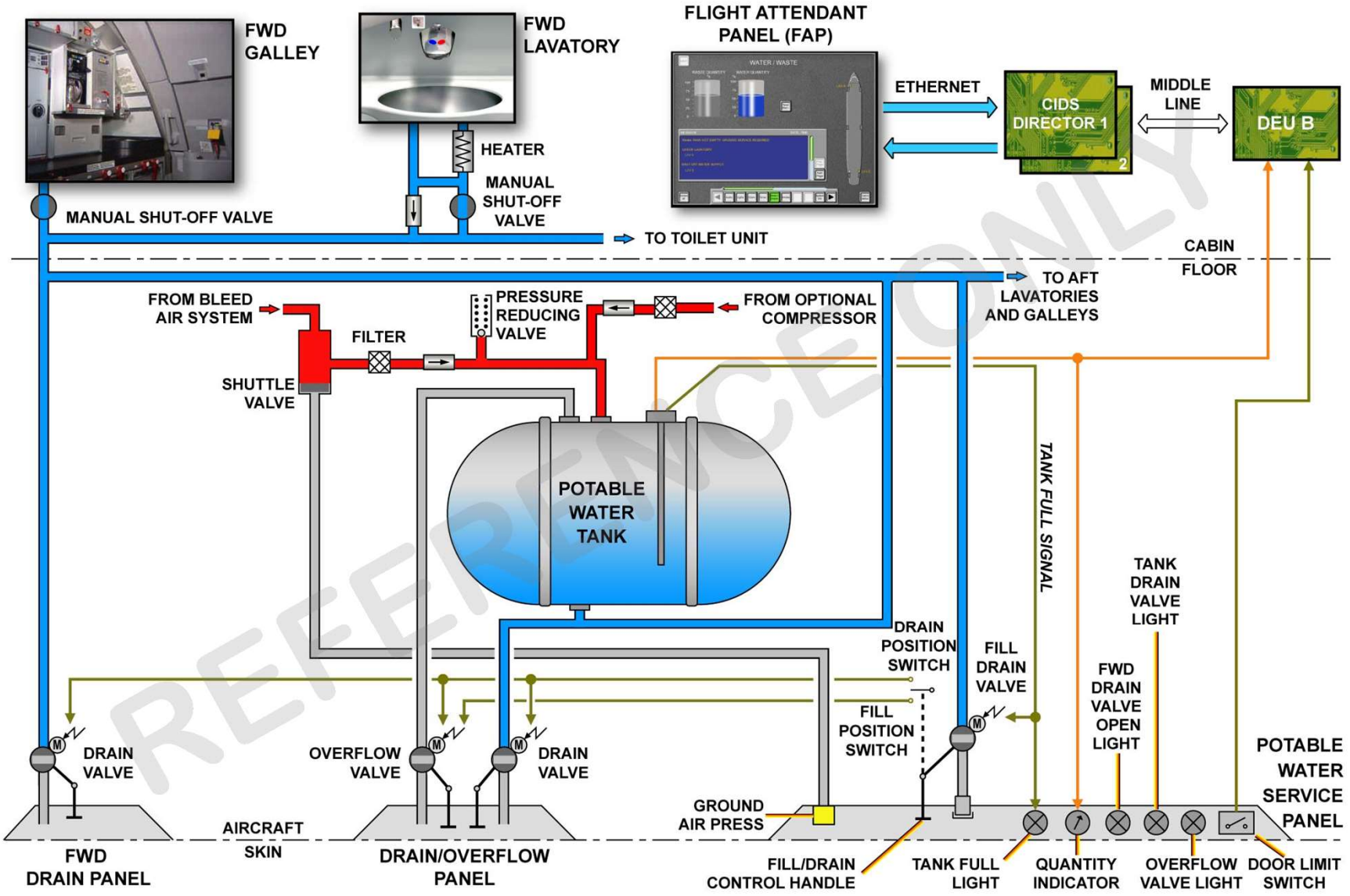
# FILLING

**•Fill/drain valve:**
- **Controlled by handle on service panel**
- **Automatically closed by tank-full signal from QTY XMTR**

**•Handle simultaneously opens overflow valve**
**•Possible manual operation**
**•Max filling pressure: 50 psi (3.4 bars)**

The Filling is achieved through a fill/drain valve operated by the fill/drain control handle on the potable water service panel. The fill/drain control handle simultaneously opens the electrically motorized overflow valve for venting. The quantity transmitter sends a tank-full signal to close the fill/drain valve automatically. Manual operation is possible via control handles dedicated to each valve. Maximum permissible pressure to fill the potable water tank is 50 psi (3.4 bars).

**CAUTION: WITHOUT ELECTRICAL POWER YOU MUST OPEN THE OVERFLOW VALVE MANUALLY PRIOR TO THE FILLING TO PREVENT WATER SPILLAGE IN THE CABIN.**

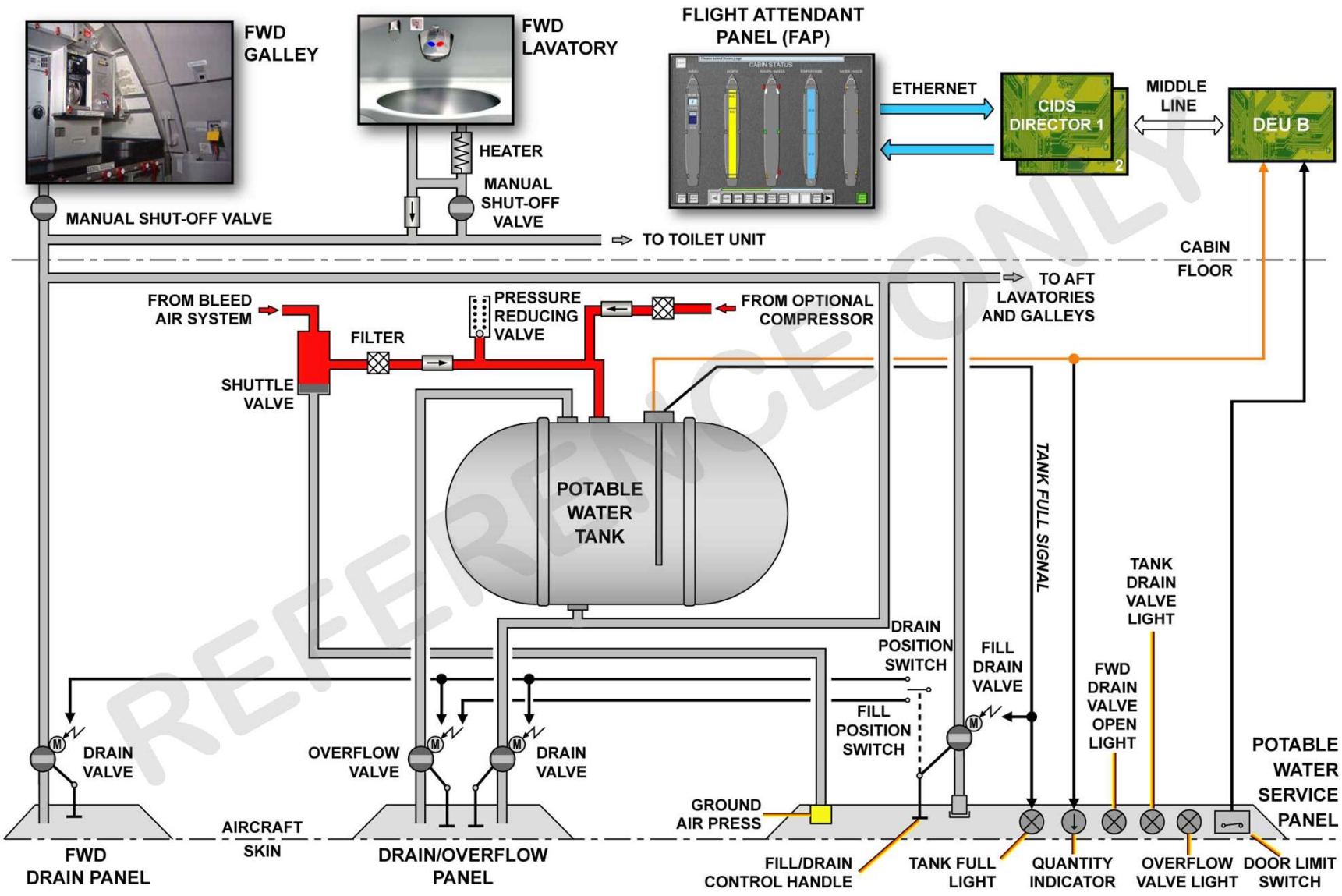


## OPERATION

**•Conditions:**

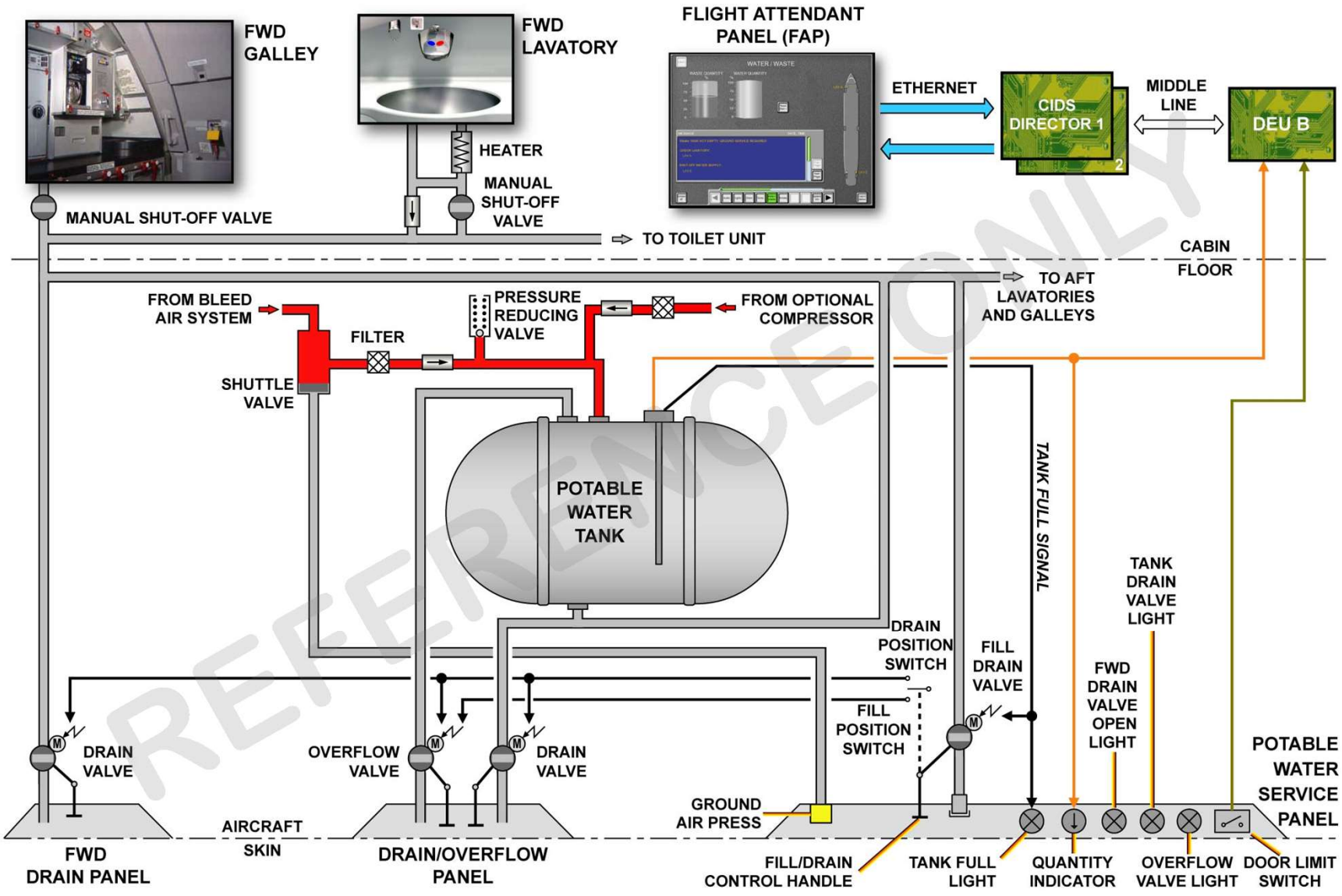
- **Tank empty**
- **All valves closed**

The tank is empty, all valves are closed and there are no indicator lights.



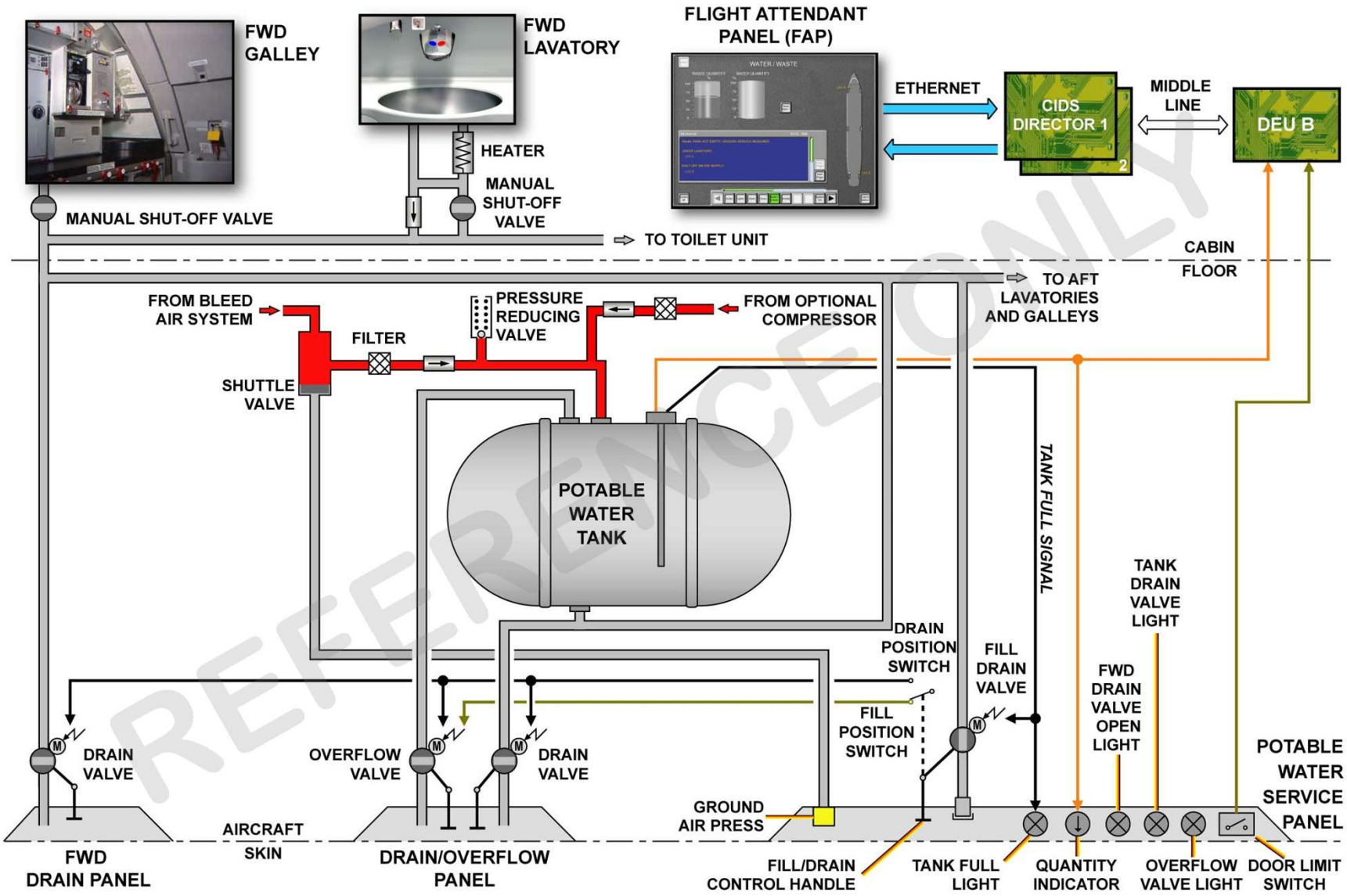
**•Panel door opens**
**•System electrically powered**
**•FAP water ind. Page automatically called**
**•If installed air compressor will be stopped**

The panel door opens, so the system is electrically powered and the FAP water indication page is automatically called. If installed the air compressor will be stopped.



**•Fill/Drain control handle to fill position & pulled out**
**•Fill/Drain valve mechanically opened**
**•Fill position active**

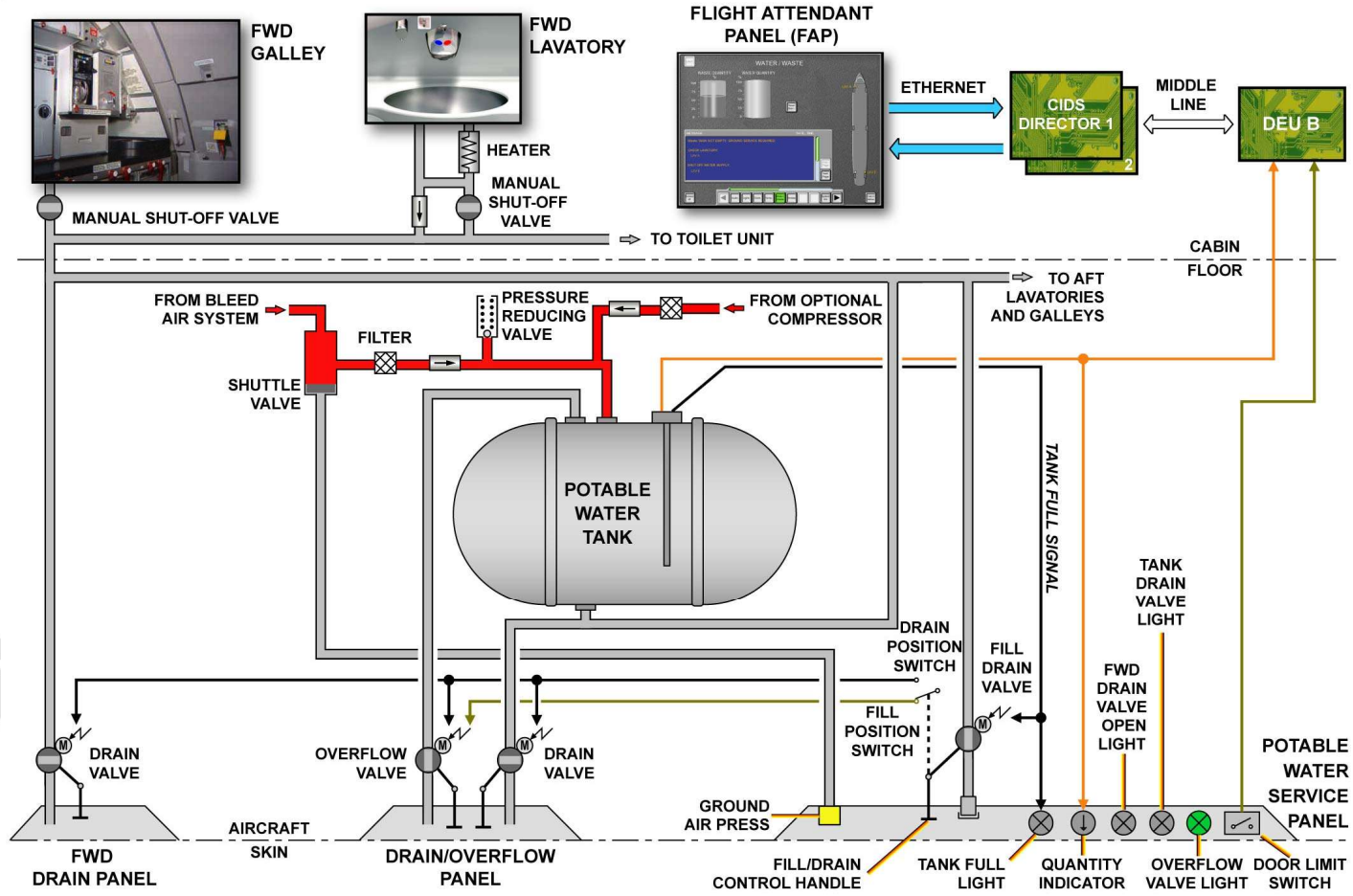
The Fill/Drain control handle is positioned to the fill position and pulled out.
The Fill/Drain valve is mechanically opened.
The Fill position switch is actived.



**•Fill position switch:**

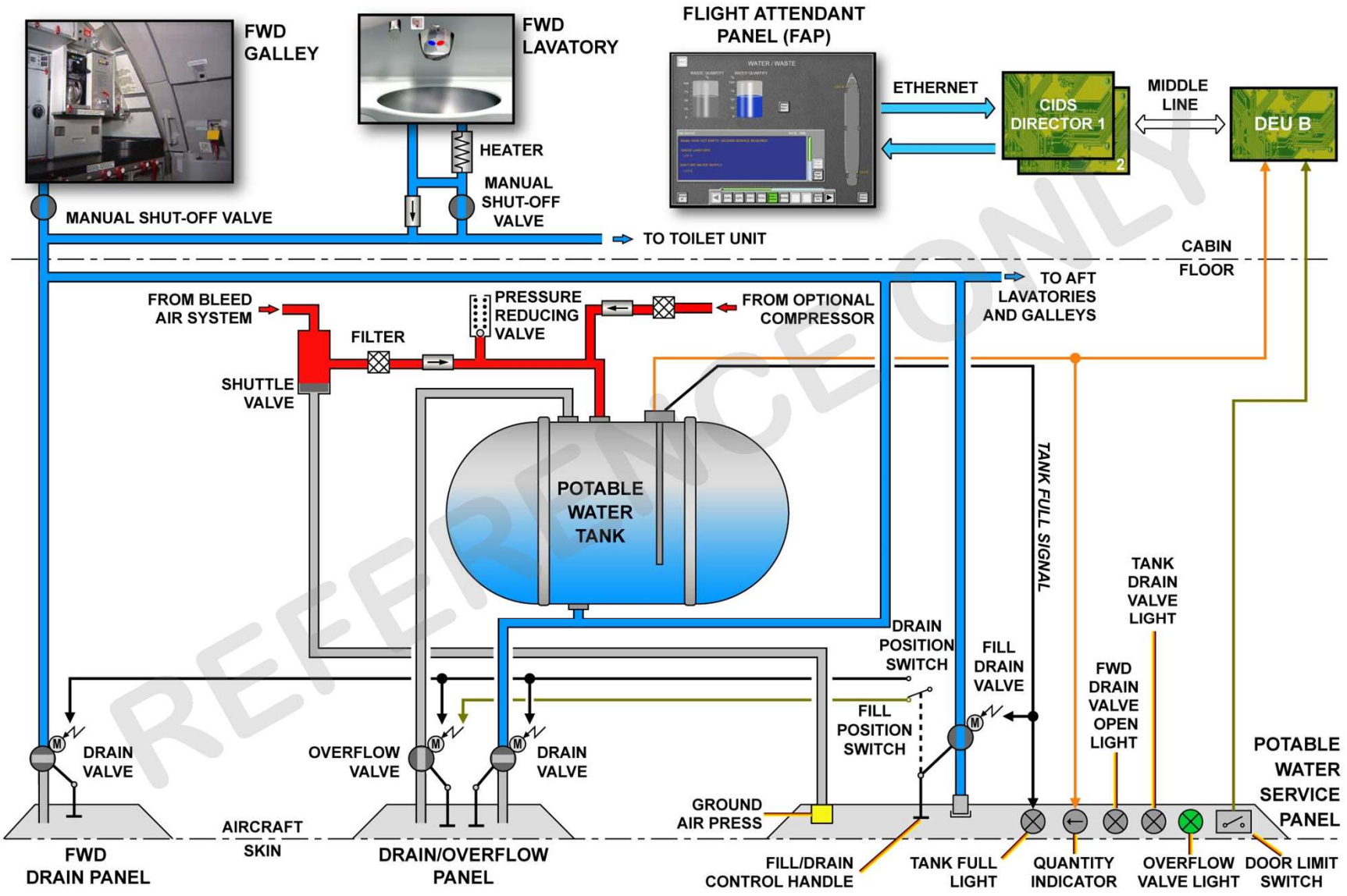
- **Overflow valve opened**
- **Overflow valve light is ON when valve is open**

The Fill position switch sends an electrical signal which will open the overflow valve. The overflow valve light comes ON when the valve is in the open position.



- **Ground service cart to fill water tank**
  - **Tank slowly fills up**
  - **Cabin water system supplied**
  - **FAP indication increases**

From a ground service cart we'll fill the water tank:
- the system takes on water and tank slowly fills up,
- also the cabin water system is supplied,
- FAP water indication increases.



**•Tank full**

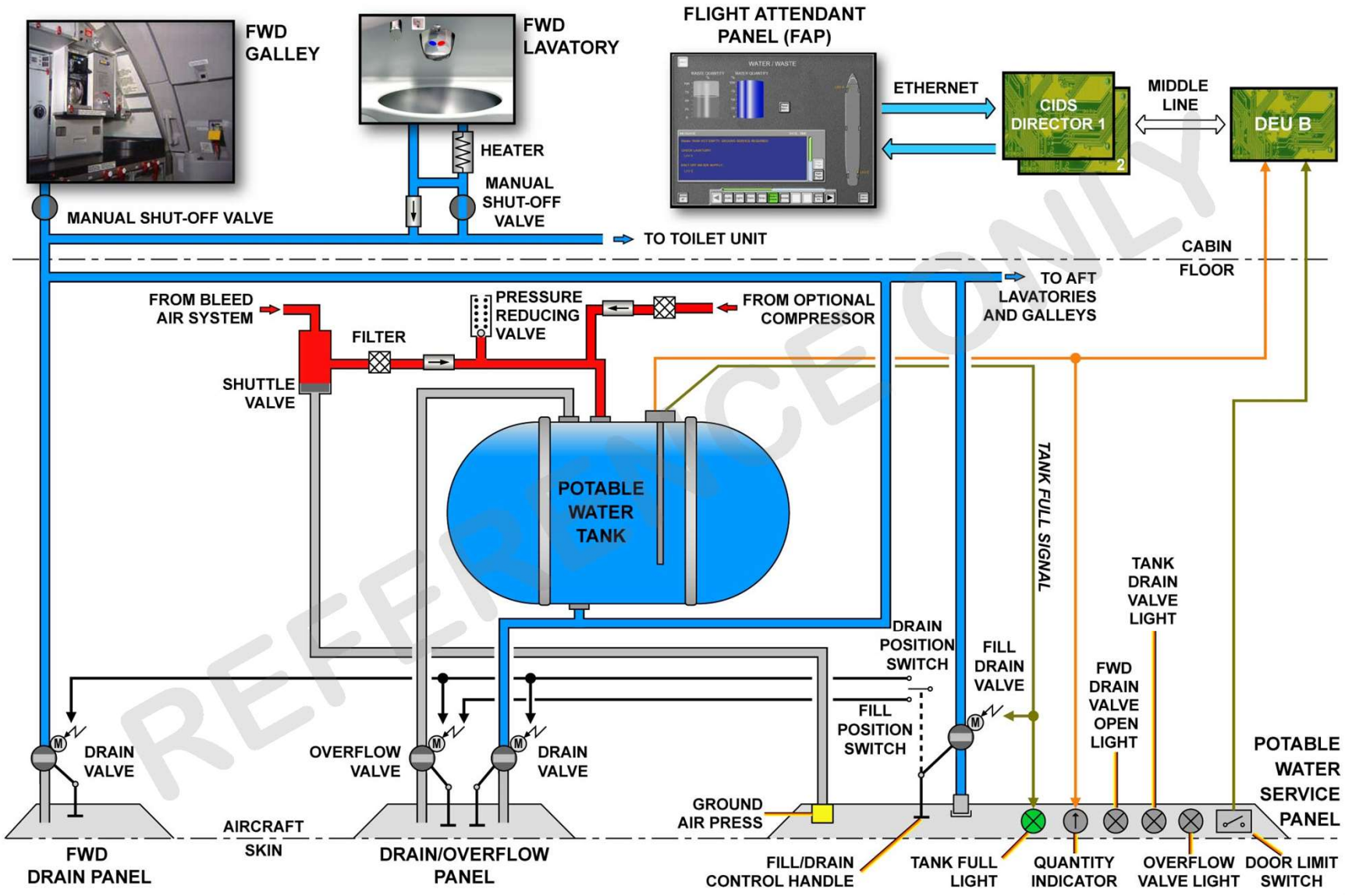
- **Green Tank Full Light in service panel comes ON**

**•Fill/Drain valve closed**

**•Overflow valve close**

- **Green Overflow Valve Light goes OFF**

The tank is full now so the tank sensor will trigger the "Green Tank Full Light" in service panel, the Fill/Drain valve returns to closed, also the overflow valve will close and the overflow valve light will go OFF when the valve is closed again.

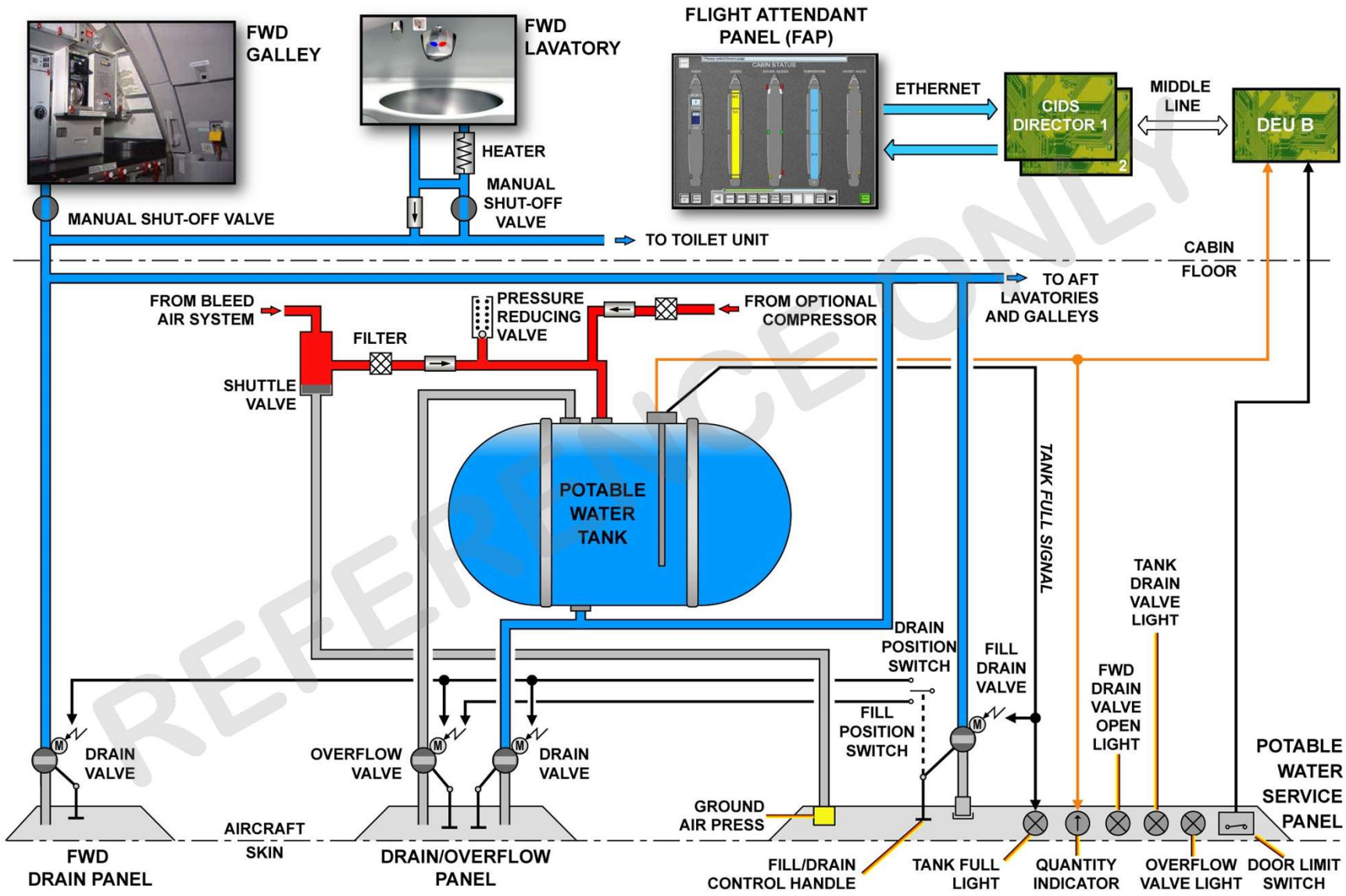


# DRAINING

**•Operation through:**
- **Fill/drain valve**
- **3 motorized valves**

**•Controlled by:**
- **Electrical signals from manual operated control handle**
- **If no electrical power, valves can be operated via related control handle**

The draining operation is achieved through the fill/drain valve and three motorized valves, two drain valves and the overflow valve. Their opening and closing is controlled via electrical signals from the manual operated control handle. All valves can also be operated via their related control handle, if no electrical power is available.



## OPERATION

**•Conditions in this case:**

- **Tank full**
- **A/C electrically supplied**

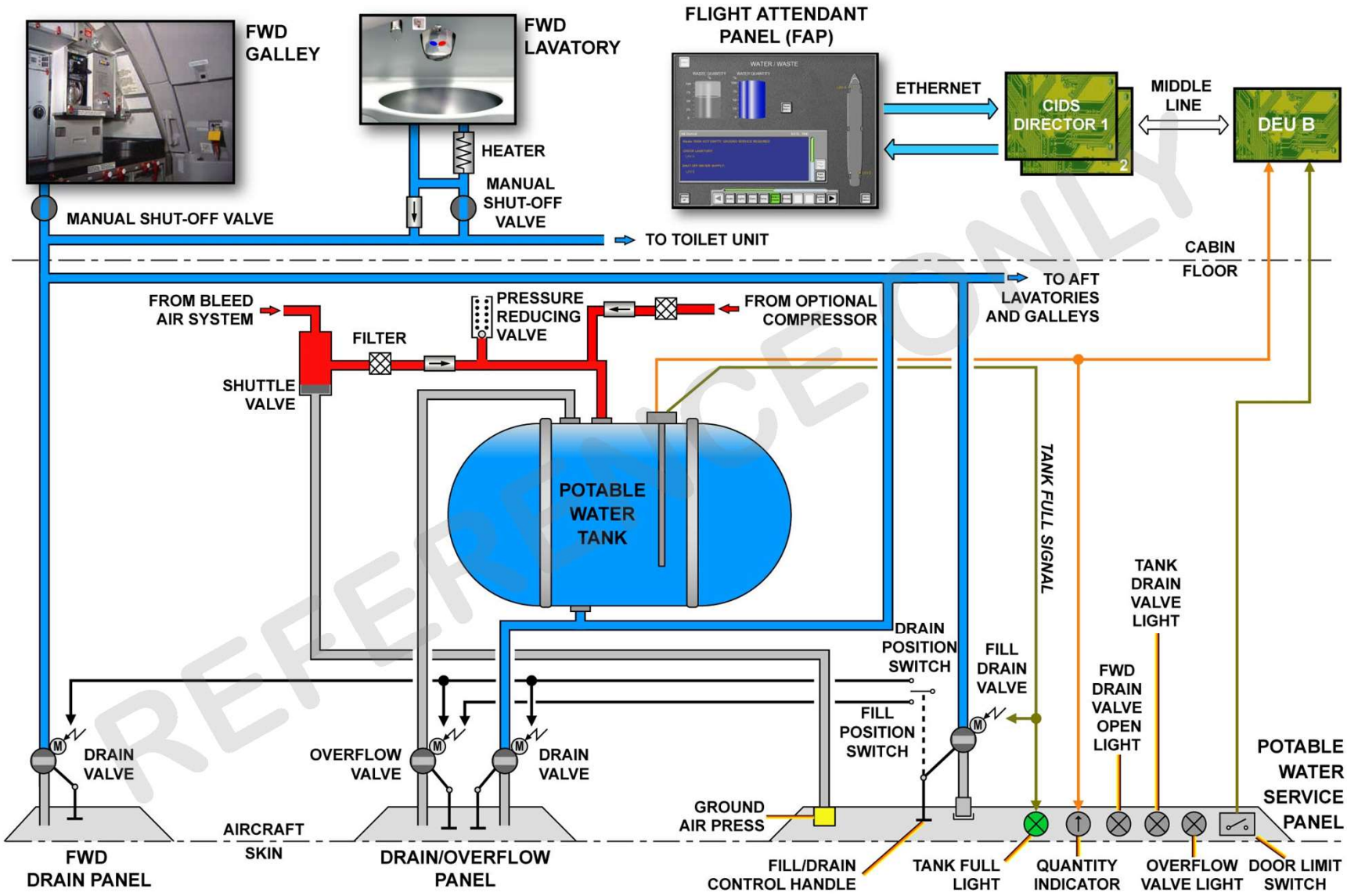
**•Draining can be done from every level**

For the draining of the potable water tank in this case:
- the tank is full,
- the aircraft is electrically supplied.
But the draining can be done from every level.

**•Panel door opens**

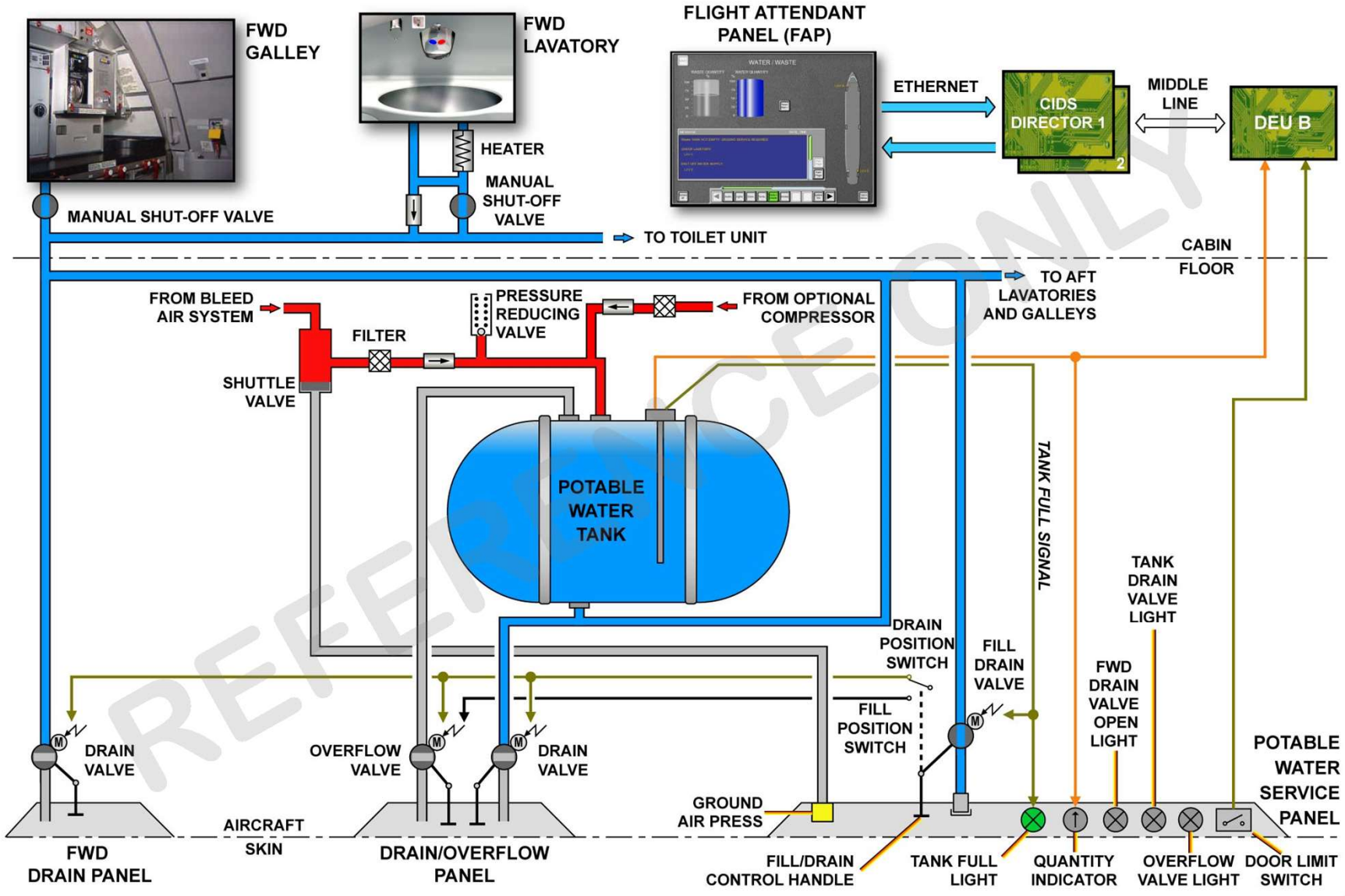
- **System electrically powered**
- **FAP water ind. Page automatically called**

The panel door opens, so the system is electrically powered and the FAP water indication page is automatically called.



**•Fill/Drain control handle to drain position & pulled out**
**•Fill/Drain valve mechanically opened**
**•Drain Position Switch activated**

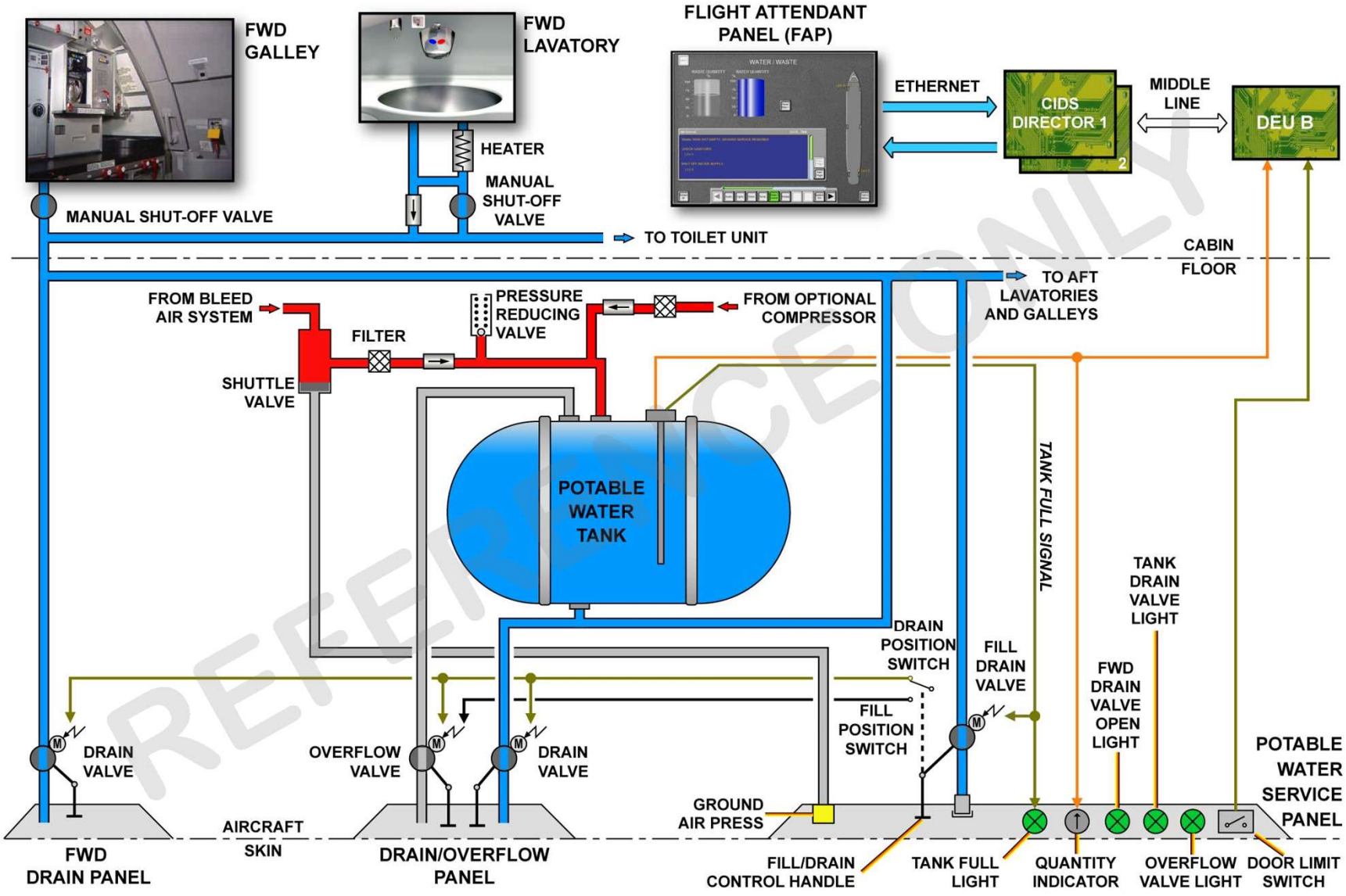
The Fill/Drain control handle is positioned to the drain position and pulled out.
The Fill/Drain valve is mechanically opened.
The drain position switch is activated.



**•Drain position switch:**

- **Overflow valve opened**
- **Tank drain valve opened**
- **FWD drain valve opened**
- **FWD drain valve light is ON**
- **Tank drain valve light is ON**
- **Overflow valve light is ON**

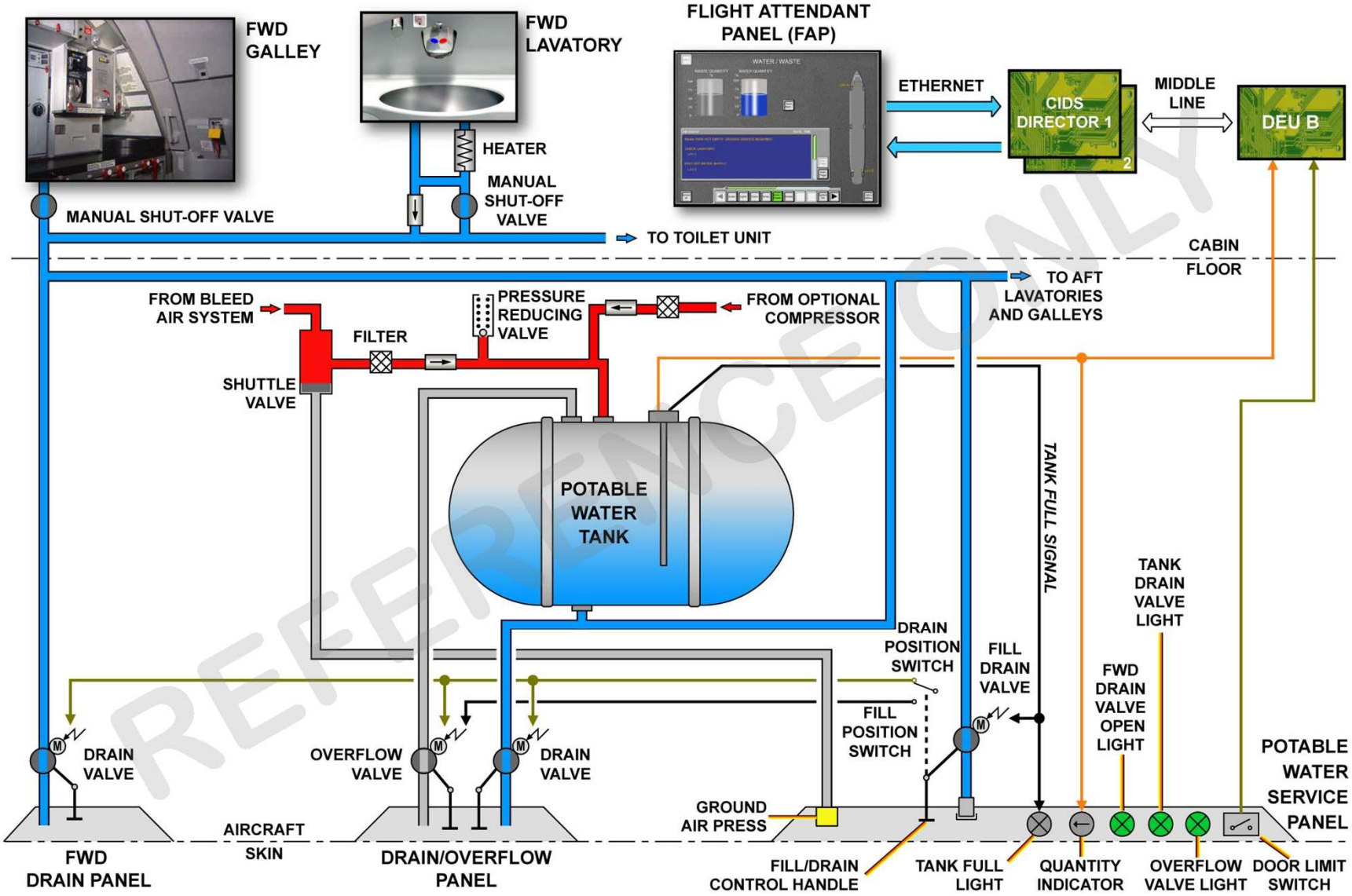
From the drain position switch an electrical signal will open the overflow valve, the tank drain valve and the FWD drain valve.
In the service panel the "Green FWD Drain Valve Open Light", the "Tank Drain Valve Light", and the "Green Overflow Valve Light" come on.



**•All valves opened**
- **Most of water from tank drain**
- **A small amount from FWD Drain valve**

**•Tank full light goes off**
**•Water quantity decreases**
**•FAP water indication decreases**

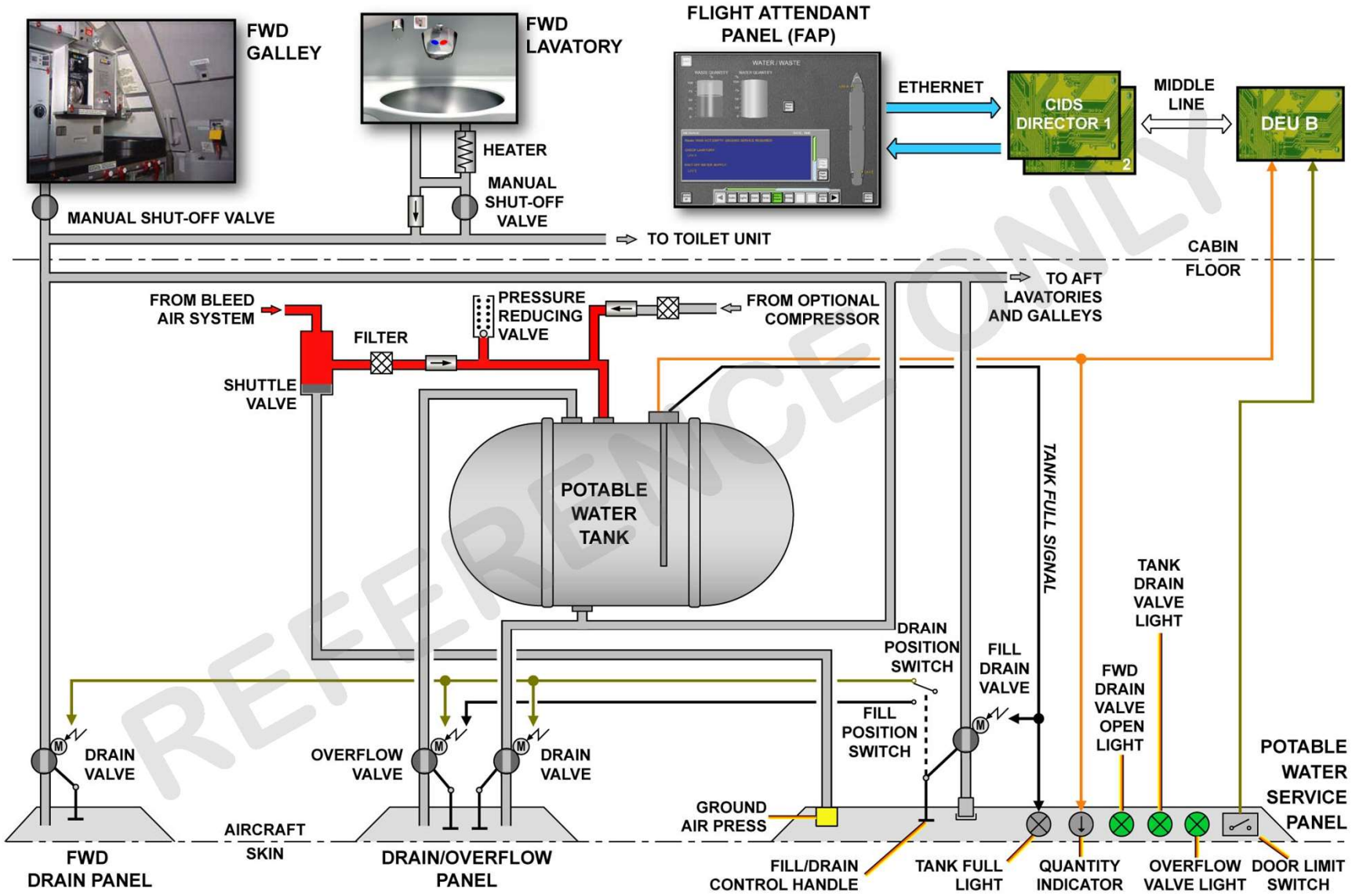
Due to the opening of all valves, the system will be drained. Most of the water will come from the tank drain and only a small amount from fill/drain and FWD drain valve.
In the service panel the "Tank Full Light" goes off.
The water quantity in the tank and the FAP water indication decrease.



•**Tank is empty:**

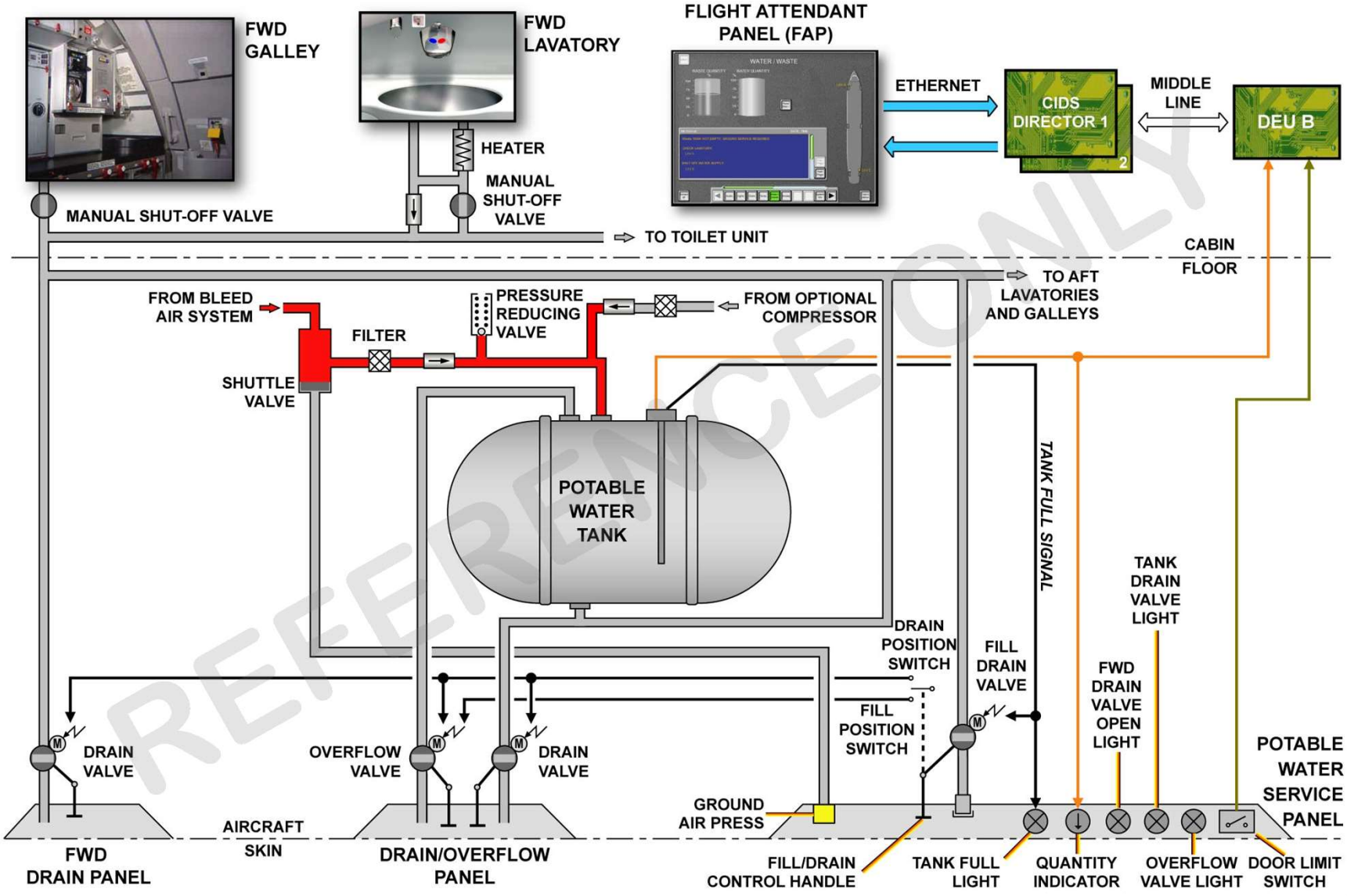
- **Water heater to off**

The tank is empty now, the tank sensor will trigger, so the water heater goes to off.



**•Fill/Drain control handle to valve closed**
**•All valves will close**
**•All lights in service panel off when valves closed**

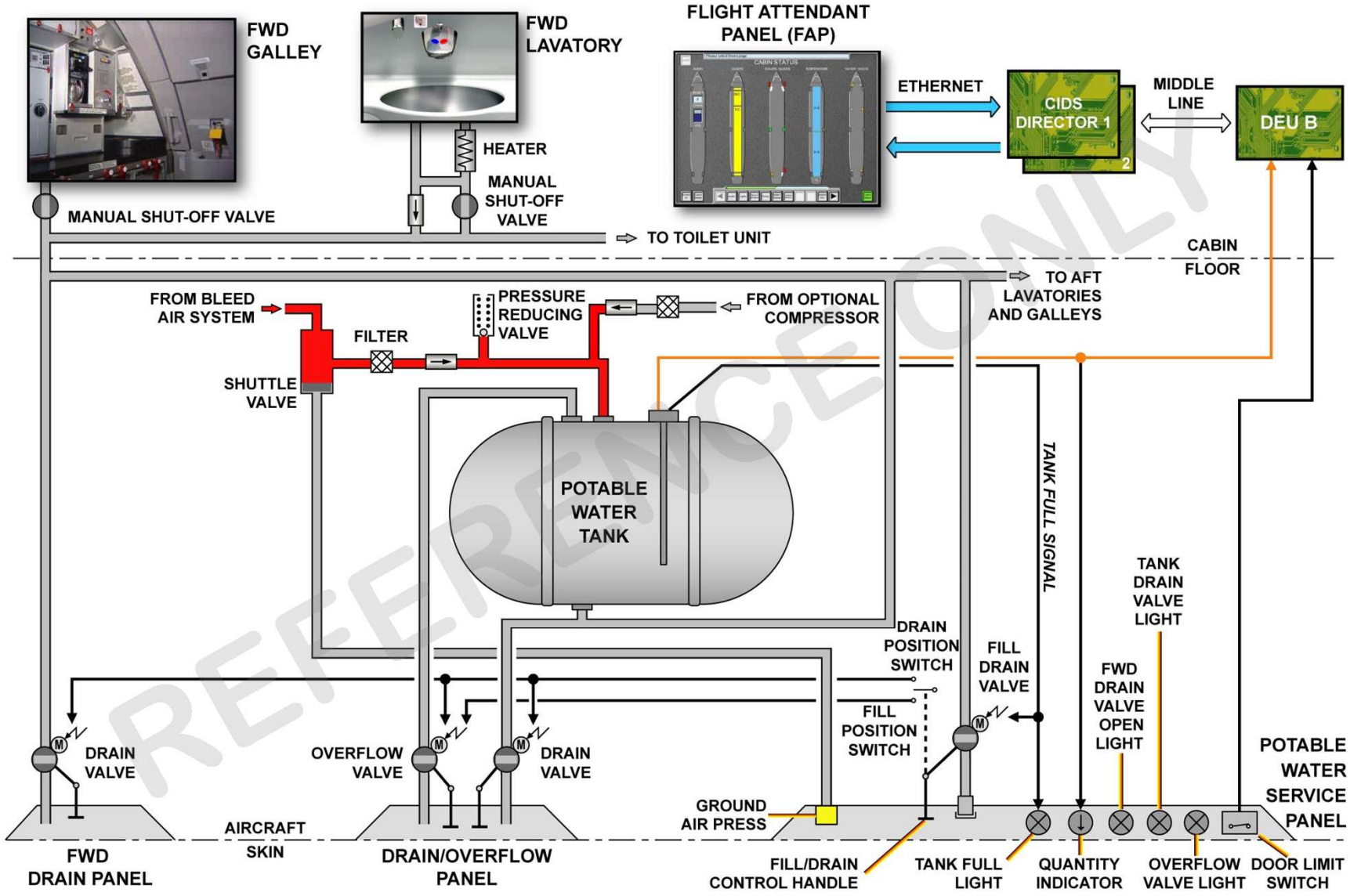
The Fill/Drain control handle is pushed to valve closed position.
All valves will close and all lights in the service panel will go off when the valves are closed again.



**•Potable Water Service Panel closed**
- **No more electrical power**

**•FAP water indication disappears**
**•If installed, air compressor starts**

The potable water service panel is closed so the door limit switch will cut the power.
The FAP water indication page disappears and if installed, the air compressor starts again.




Potable Water System
Controls and Indicating
REFERENCE ONLY
HYD
GREEN
BLUE
YELLOW
PTU
RAT
ELEC
1
2
AUTO EXTING
TEST
RESET
1 FADEC GND PWR 2
A/SKID &
N/W STRG
ON
OFF

# GENERAL

**Comp loc Ext FWD LH**
**Forward drain panel and the drain/overflow panel**
**•FAP display**
**•3 panels lower fuselage**

The potable water controls and indicating includes the display on the Flight Attendant Panel (FAP) and three panels located at the bottom of the aircraft fuselage.

**POTABLE WATER SERVICE PANEL**
**•In rear left side of lower fuselage**
The potable water service panel is installed in the rear left hand side of the fuselage.

**DOOR MICROSWITCH**
**•Activates the indication on FAP if the panel is open**
The door microswitch isolates the indicating system when the potable water service panel is closed. When the door is open, the electric motor of the compressor is stopped (if installed). The water and waste page on the FAP will be shown automatically as soon as the service panel door opened.

**QUANTITY INDICATOR**
**•Gives water level in tank**
The quantity indicator gives the level of the water in the potable water tank.

**FILL/DRAIN CONTROL HANDLE**
**•Filling or draining selection**
The fill/drain control handle is used to select a filling or draining operation.

**FORWARD DRAIN VALVE OPEN LIGHT**
**•Comes on when valve open**
**•Lamp press to test facility**
The forward drain valve open light comes on when the forward drain valve is open. The light has a lamp press to test facility.

## TANK FULL LIGHT

**•Comes on when tank full**
**•Lamp press to test facility**

The tank full light comes on when the water tank is full. The light has a lamp press to test facility.

## TANK DRAIN VALVE LIGHT

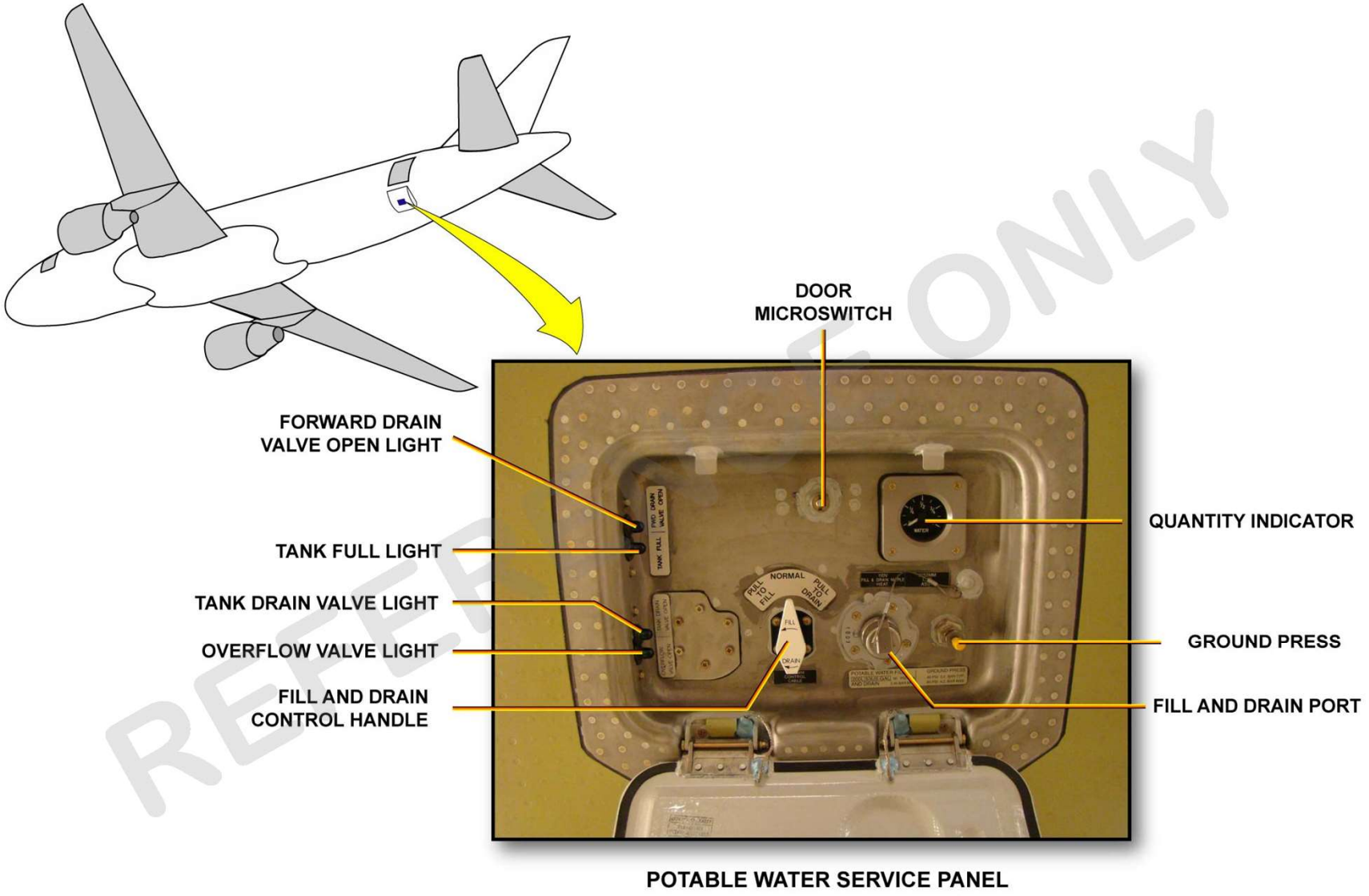
**•Comes on when valve open**
**•Lamp press to test facility**

The tank drain valve light comes on when the tank drain valve is open. The light has a lamp press to test facility.

## OVERFLOW VALVE LIGHT

**•Comes on when valve open**
**•Lamp press to test facility**

The overflow valve light comes on when the overflow valve is open. The light has a lamp press to test facility.

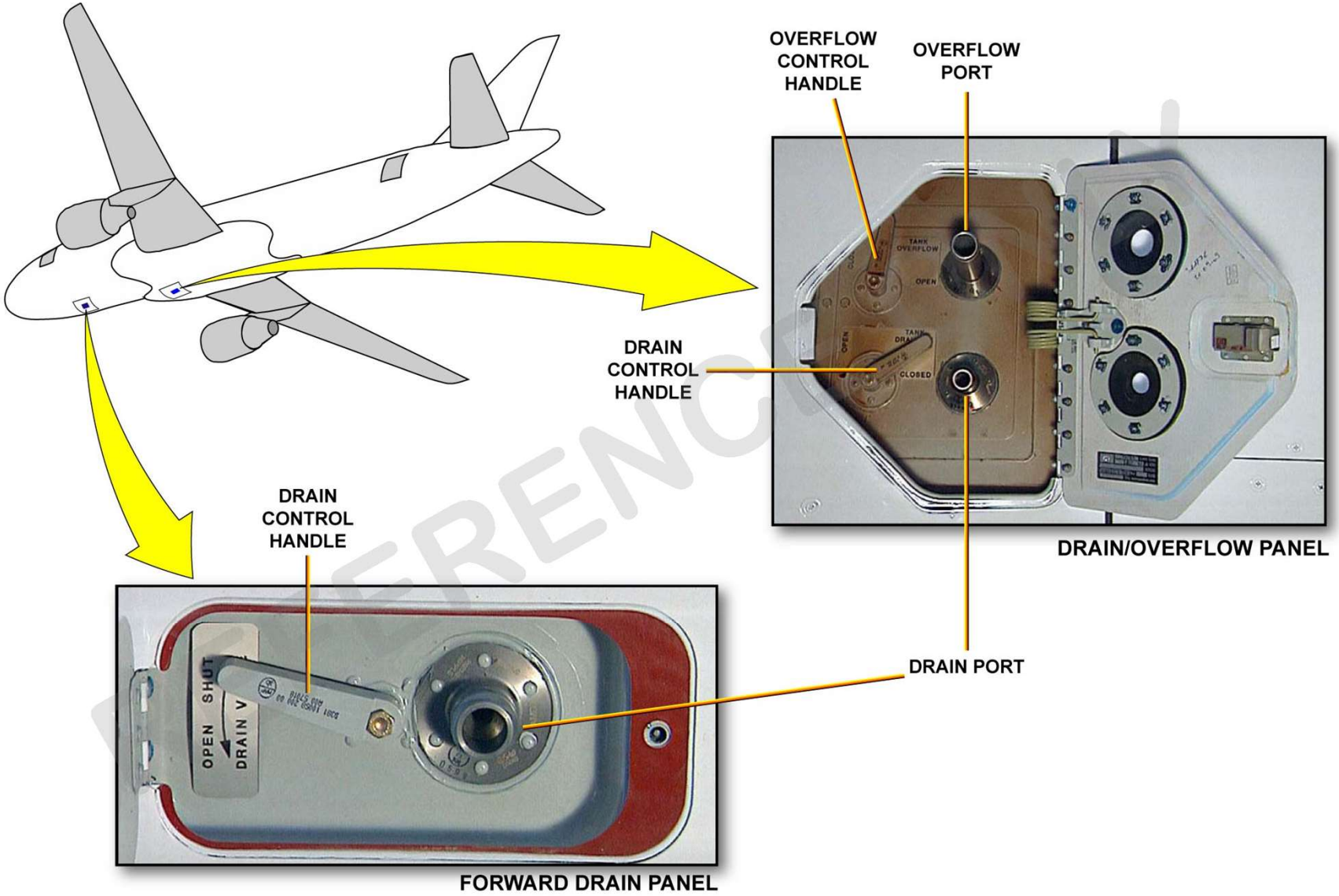



POTABLE WATER SERVICE PANEL

# WATER DRAIN PANELS

**•FWD drain panel + drain/overflow panel**
**•Located in FWD fuselage lower part**
**•Handles used for valves manual operation**

The forward drain panel and the drain/overflow panel are located in the lower part of the forward fuselage. The drain control handles are used to manually operate the drain valves.


OVERFLOW CONTROL HANDLE
OVERFLOW PORT
DRAIN CONTROL HANDLE
DRAIN/OVERFLOW PANEL
DRAIN CONTROL HANDLE
DRAIN PORT
OPEN SHUT
DRAIN V
FORWARD DRAIN PANEL

# FAP

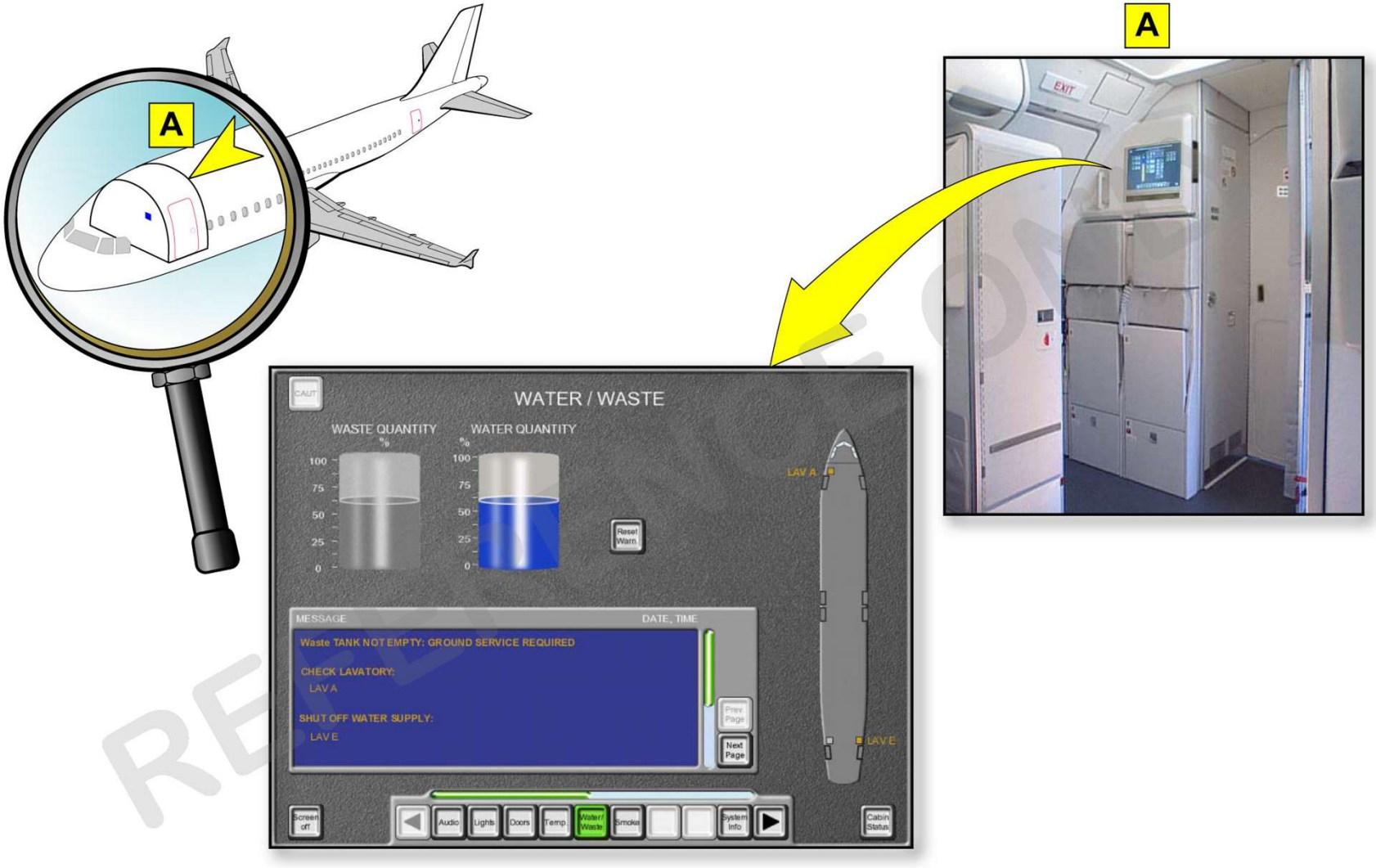
**•In cabin FWD section**

**•WATER QTY displayed if:**

- **Potable water service door open**
- **Or WATER/WASTE page selected on FAP**

**•Option: Preselection of filling quantity**

The FAP is located in the forward section of the cabin. The FAP displays the potable WATER QUANTITY stored in the potable water tank when the potable water service door is open or the WATER/WASTE page is selected on the FAP. As an option, the filling quantity can be selected (25%, 50%, 75% and 100%).




**FLIGHT ATTENDANT PANEL (FAP)**


# Potable Water System Description and Operation

# SERVICING

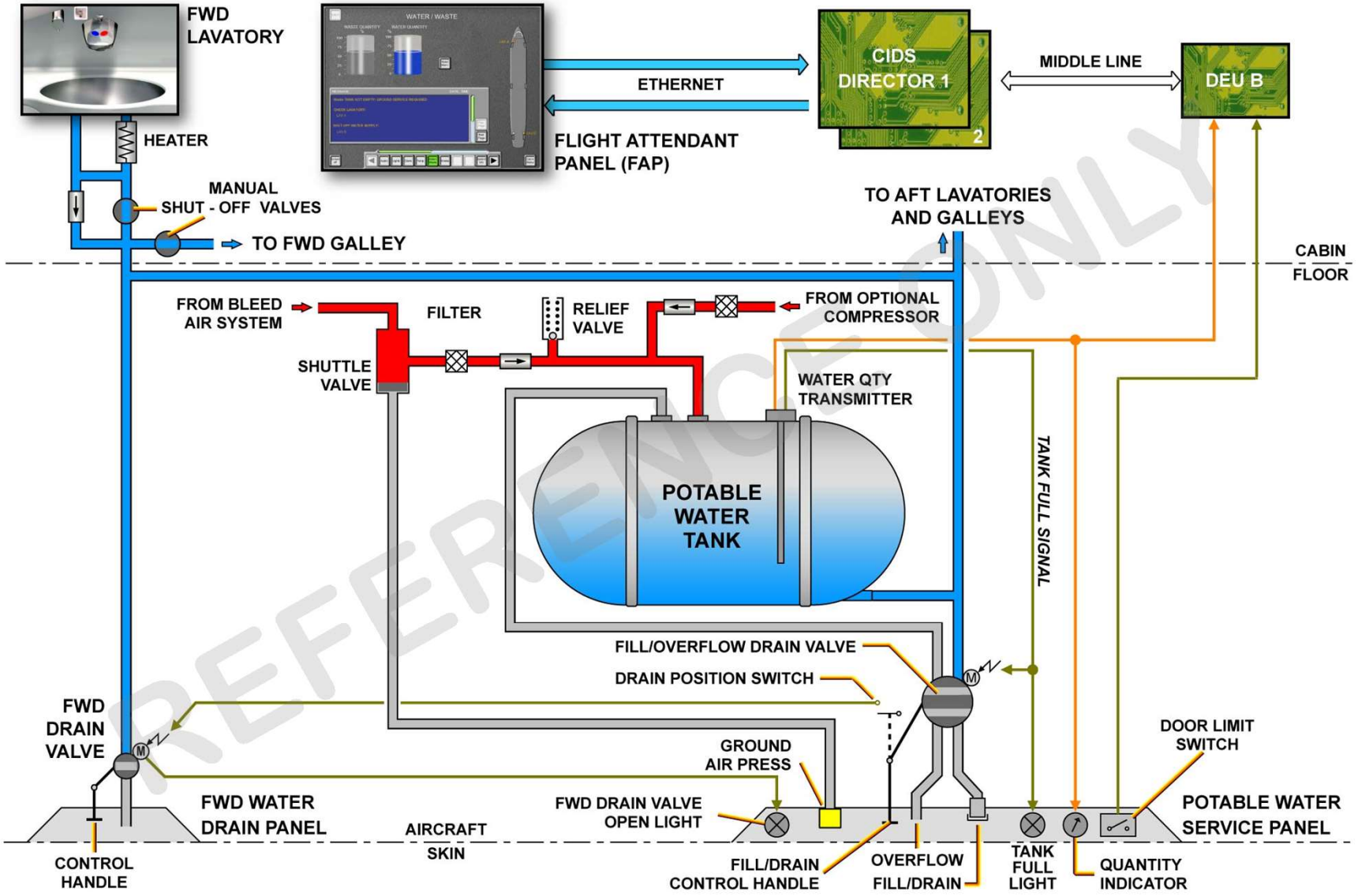
**•With or without electrical power**
**•With electrical power; fill drain handle:**
- **Operates fill/overflow valve mechanically**
- **Controls FWD drain valve electrically**

**•When tank is full:**
- **Signal sent by QTY XMTR**
- **Fill/overflow drain valve automatically closed**

**•Without electrical power: Valves must be operated manually by handles**
**•Draining: Manually open fill/overflow + FWD drain valves**
**•Filling:**
- **Manually open fill/overflow drain valve**
- **Manually close FWD drain valve**

**•Tank full:**
- **Water will spill out overflow pipe end**
- **Manually close fill/overflow drain valve**

The Servicing of the potable water system can be done with or without electrical power. With electrical power, the single fill/drain control handle mechanically operates the fill/overflow drain valve and electrically controls the forward drain valve. Without electrical power, the valves are individually operated by cables. The draining operation is accomplished by opening the fill/overflow drain valve and the forward drain valve. The filling operation is accomplished by opening the fill/overflow drain valve and closing the forward drain valve. When the tank is full, the quantity transmitter sends a signal to close the fill/overflow drain valve automatically.

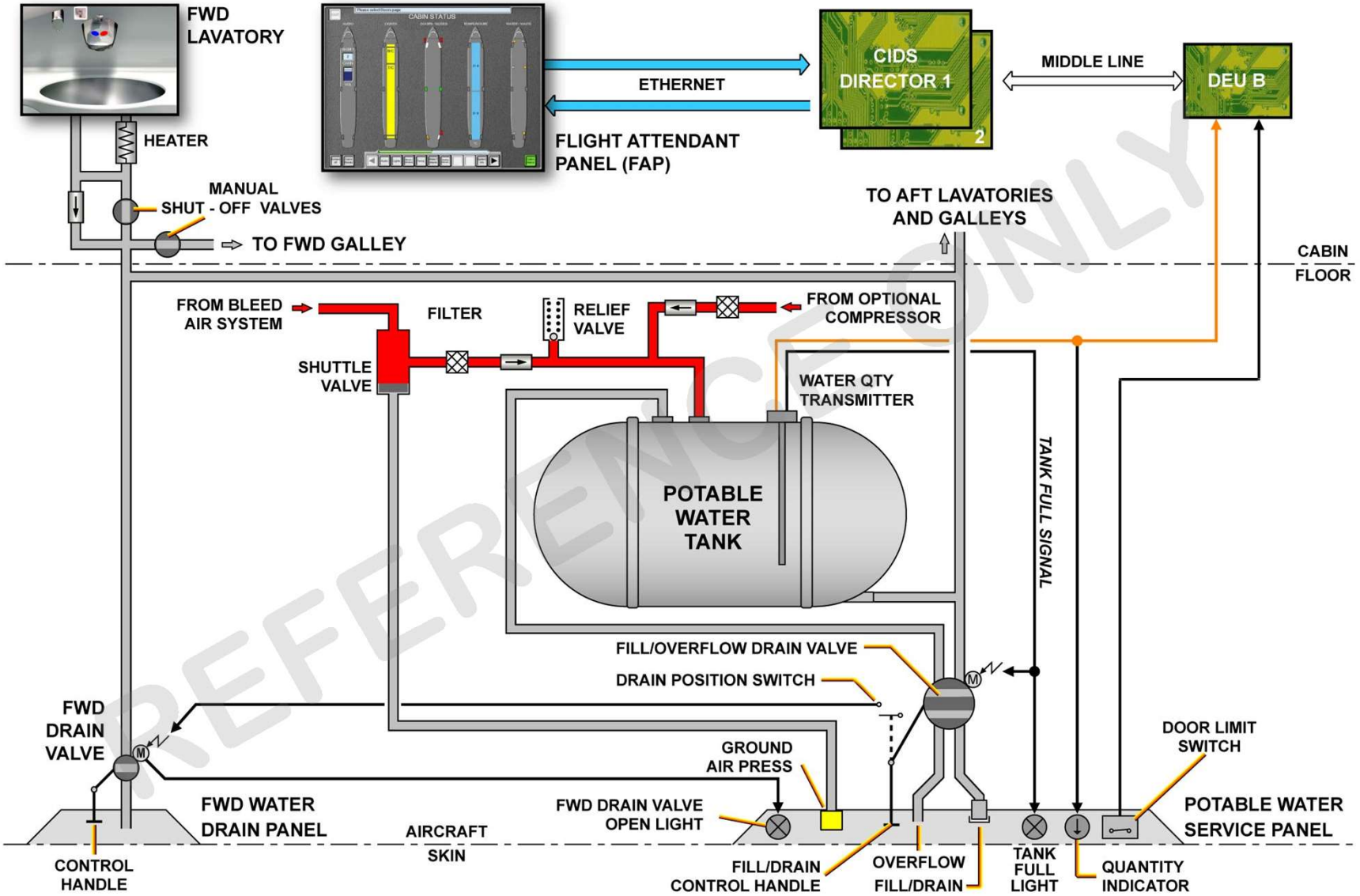


## SYSTEM FILLING

**•Conditions:**

- **Tank empty**
- **All valves closed**

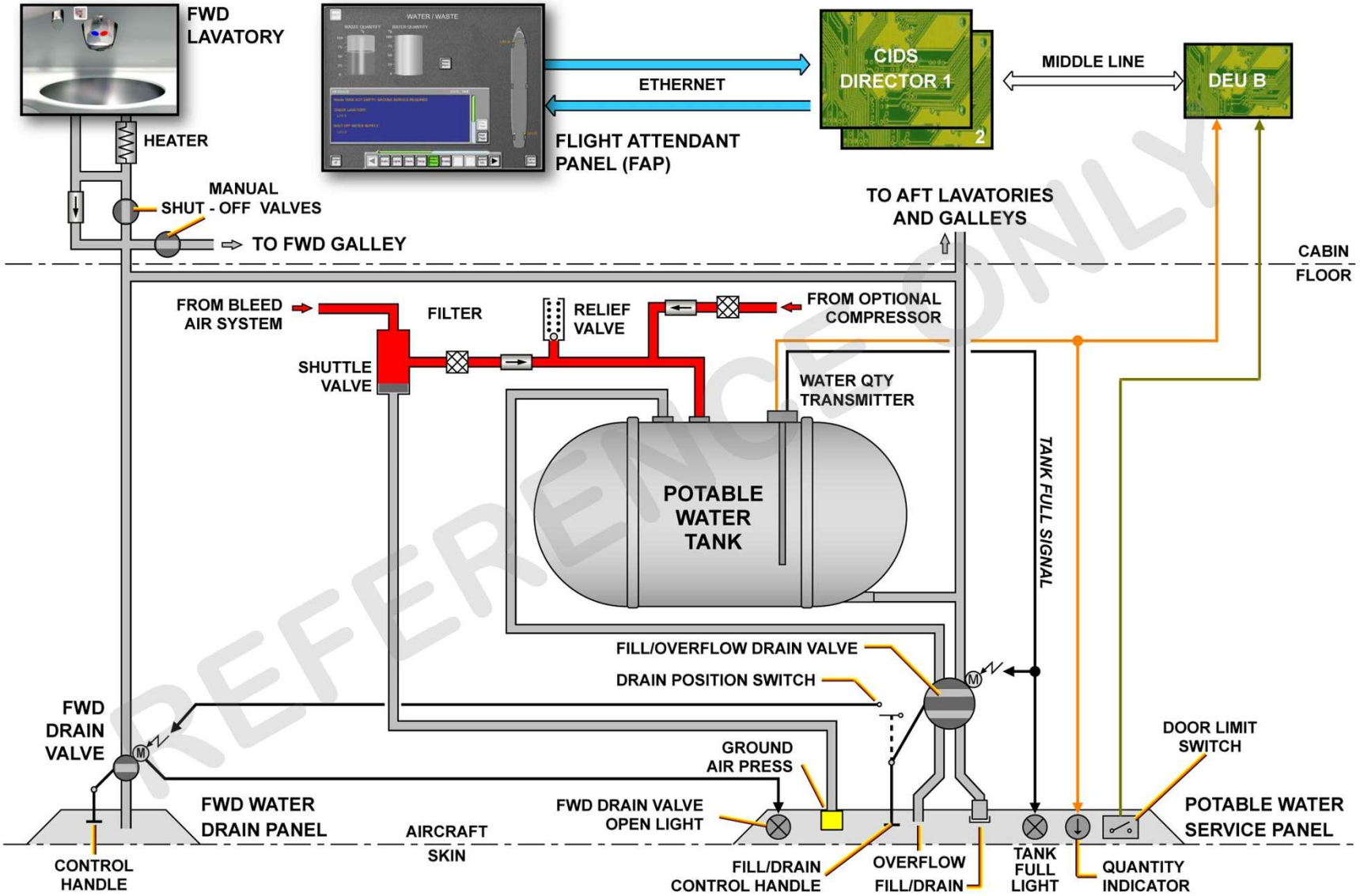
The tank is empty, all valves are closed and there are no indicator lights.



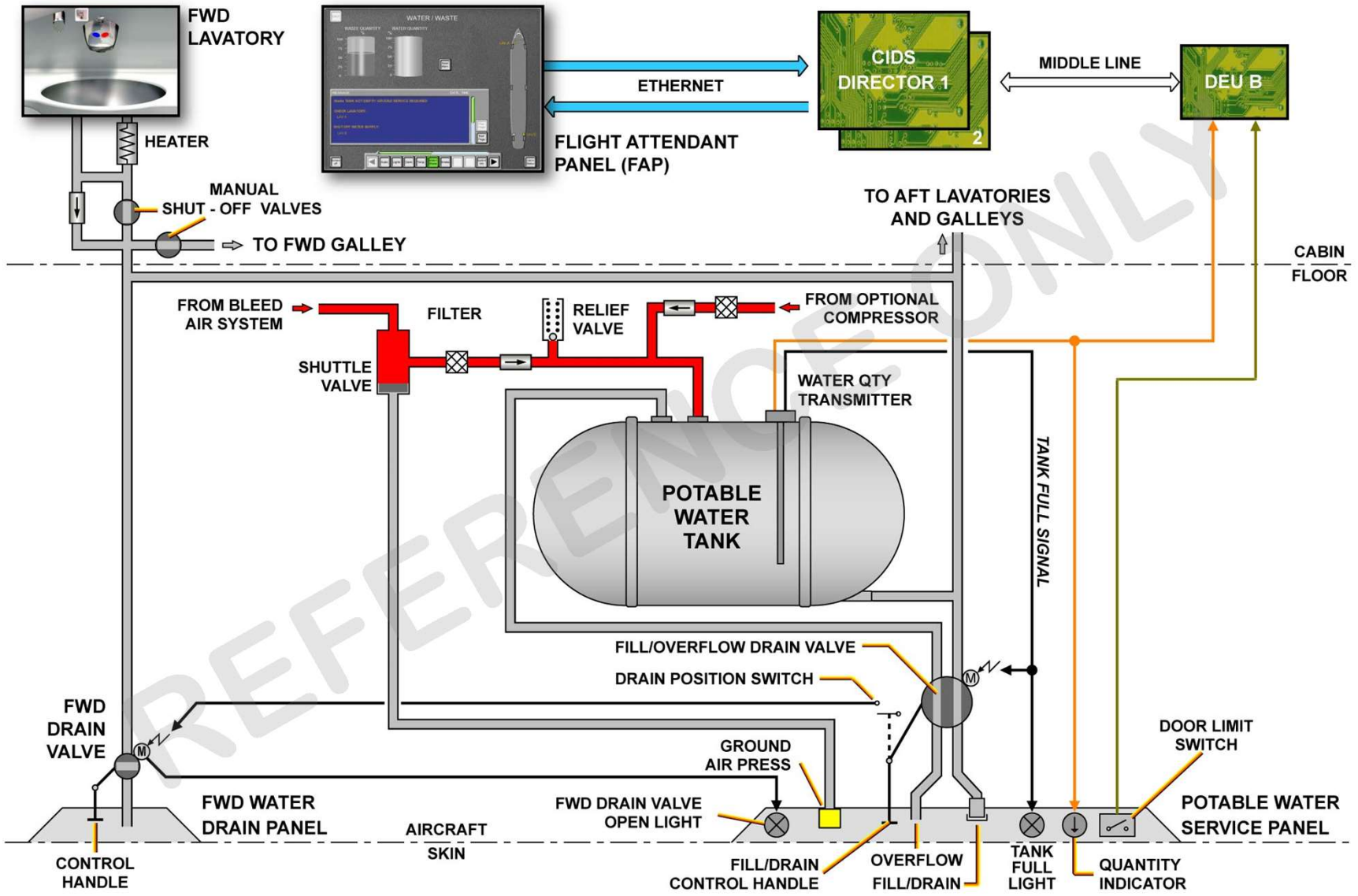
**•Panel door opens**

- **System electrically powered**
- **FAP water ind. Page automatically called**

The panel door opens, so the system is electrically powered and the Flight Attendant Panel (FAP) water indication page is automatically called.



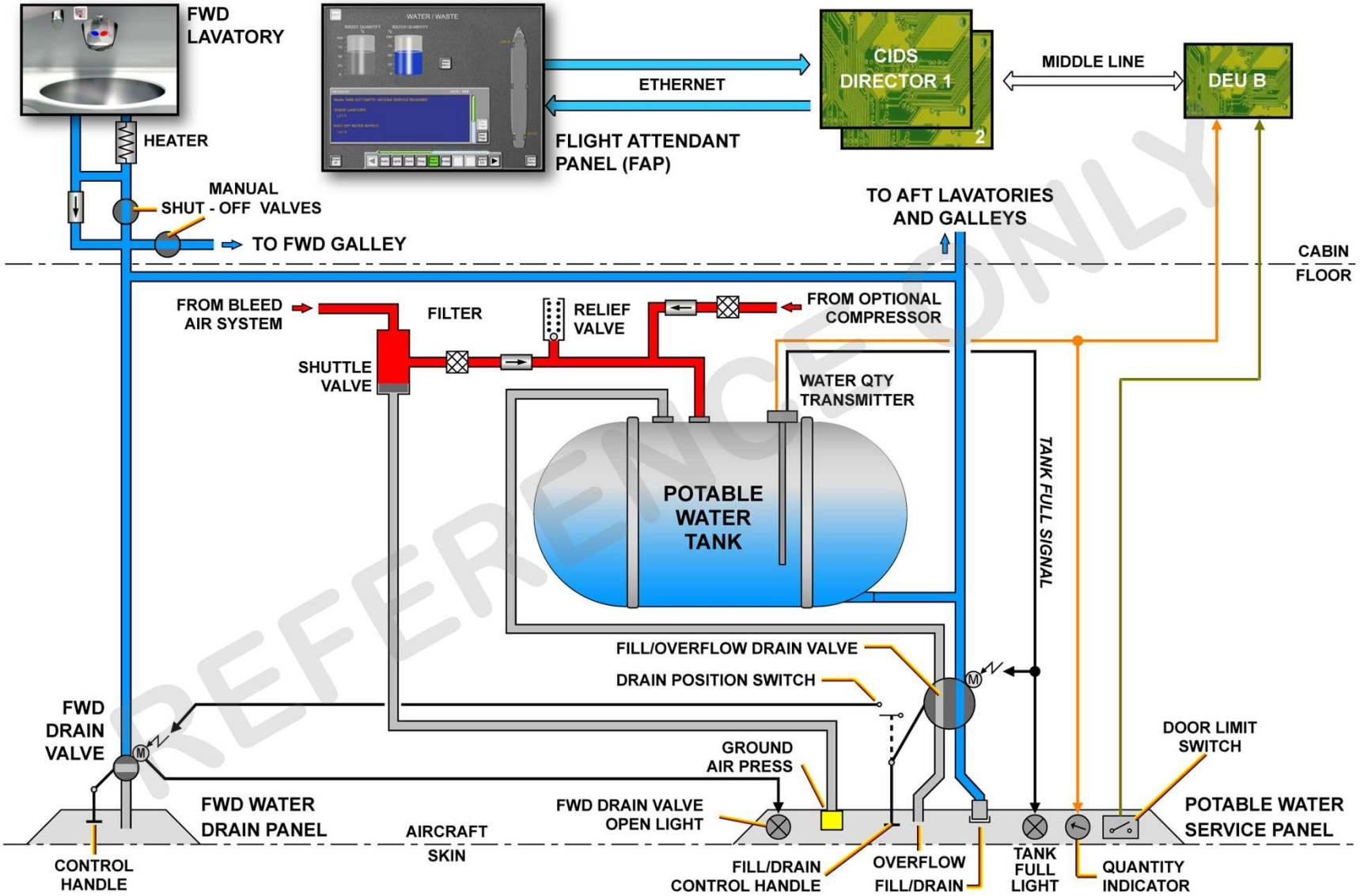
**•Fill/Drain/Overflow control handle to fill position & pulled out**
**•Fill/Drain/Overflow valve mechanically opened**
The Fill/Drain/Overflow control handle is positioned to the fill position and pulled out.
The Fill/Drain/Overflow valve is mechanically opened.



•**Ground service cart to fill water tank**

- **Tank slowly fills up**
- **Cabin water system supplied**
- **FAP indication increases**

From a ground service cart we'll fill the water tank:
- the system takes on water and tank slowly fills up,
- also the cabin water system is supplied,
- FAP water indication increases.

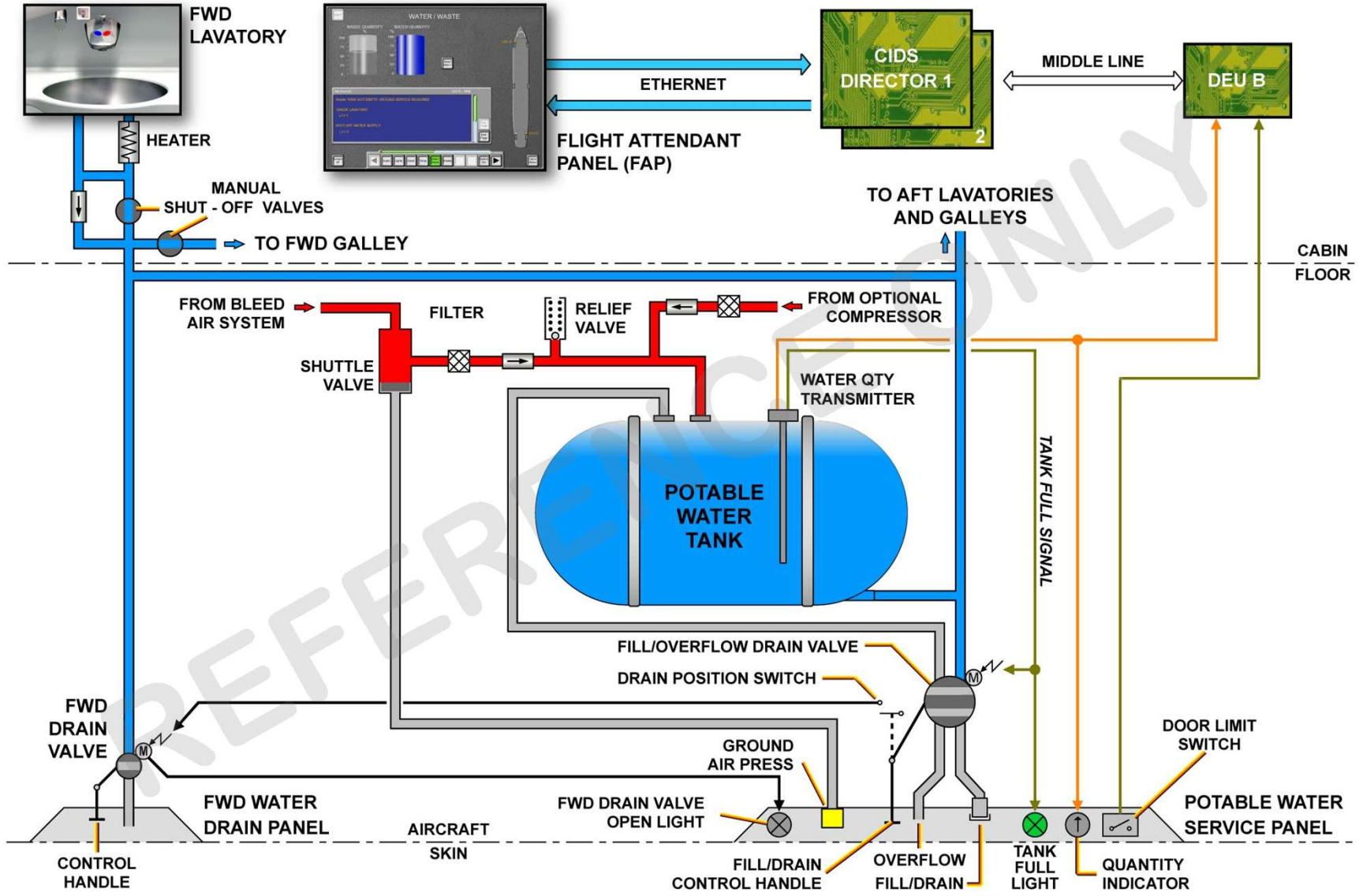


**•Tank full**

- **Green Tank Full Light in service panel comes ON**

**•Fill/Drain/Overflow valve closed**

The tank is full now so the tank sensor will trigger the "Green Tank Full Light" in service panel and the Fill/Drain/Overflow valve returns to closed.



## SYSTEM DRAINING

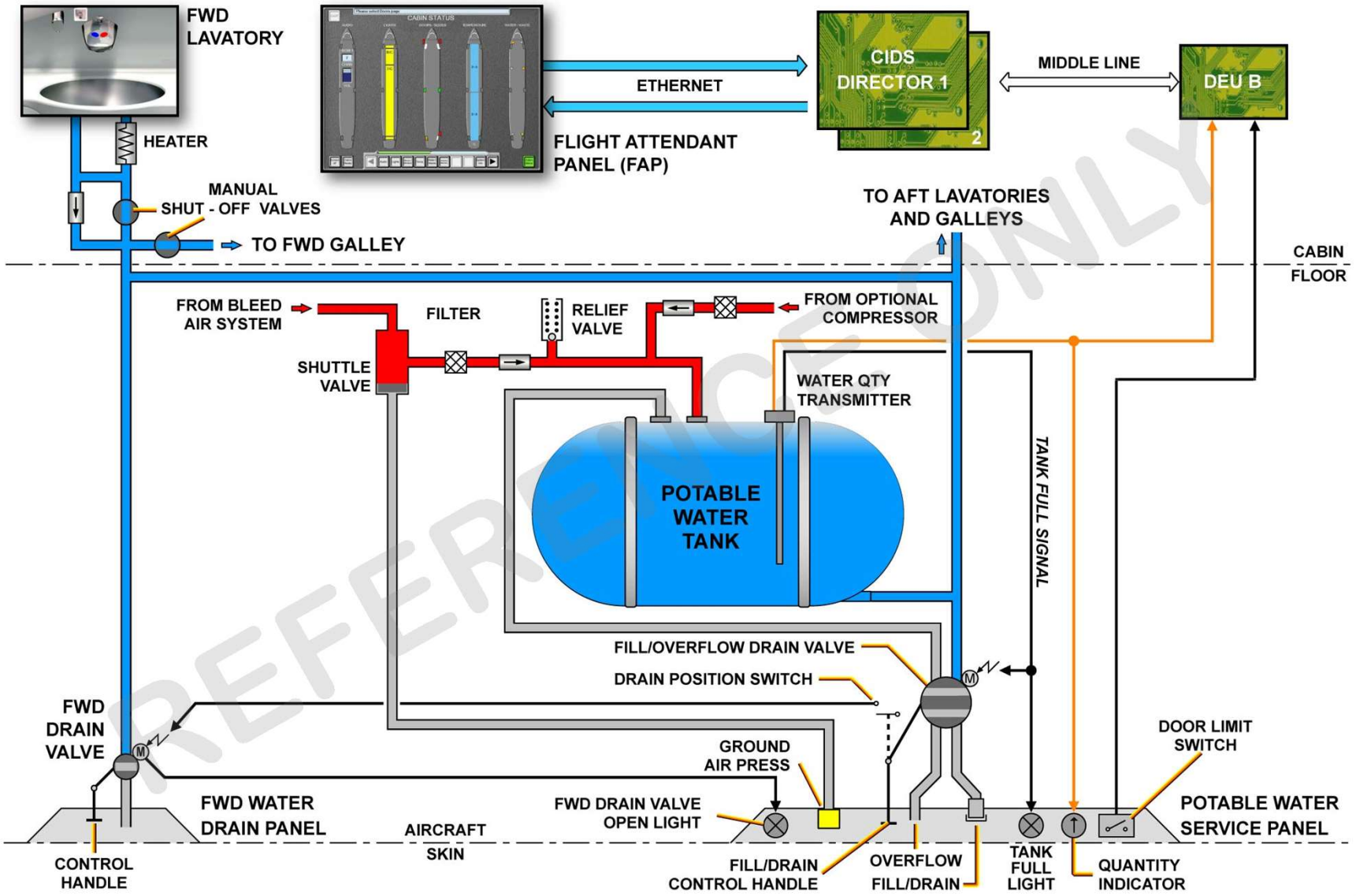
**•Conditions in this case:**

- **Tank full**
- **A/C electrically supplied**

**•Draining can be done from every level**

For the draining of the potable water tank in this case:
- the tank is full,
- the aircraft is electrically supplied.

But the draining can be done from every level.

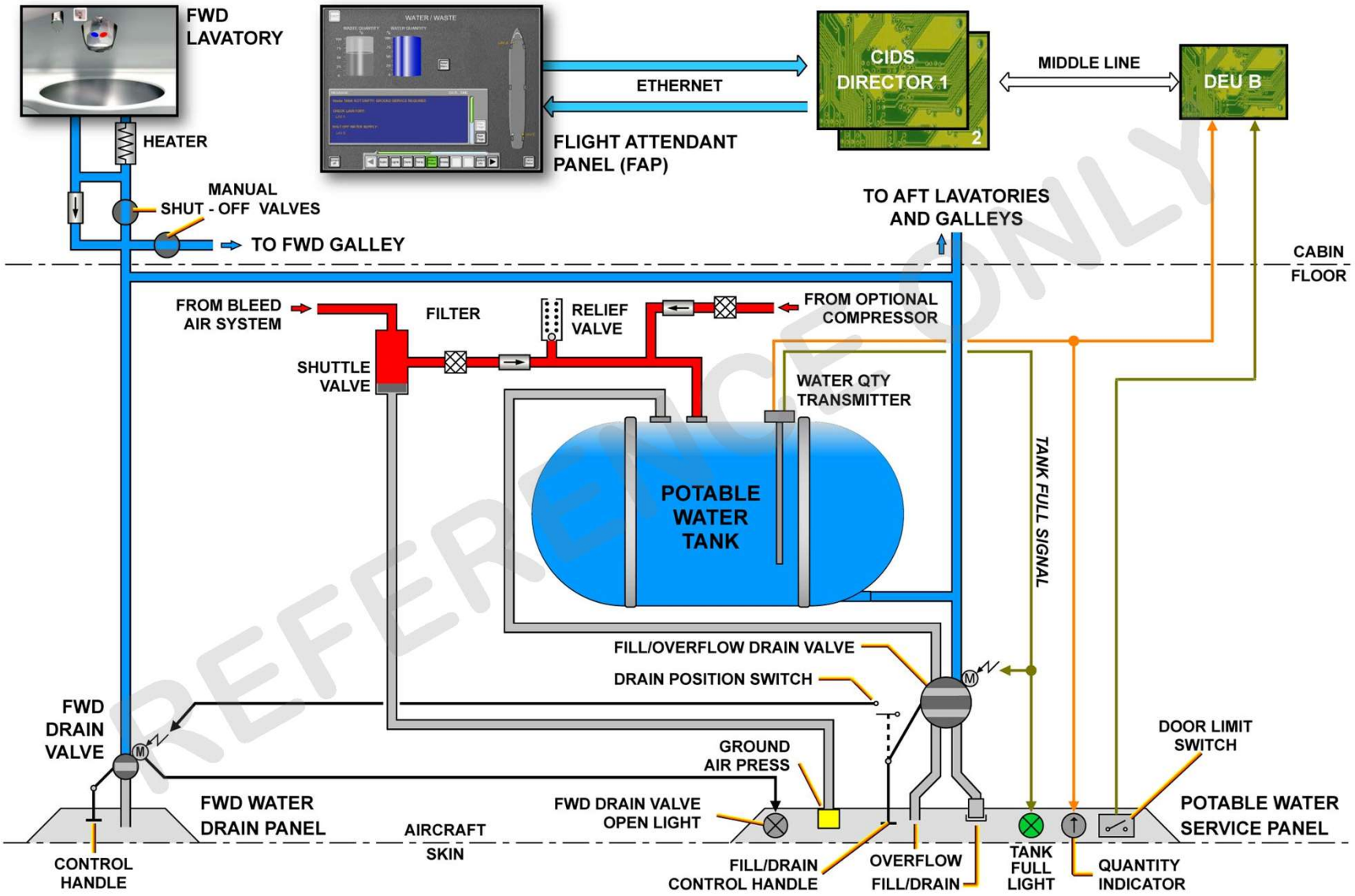


**•Panel door opens**

- **System electrically powered**
- **FAP water ind. Page automatically called**

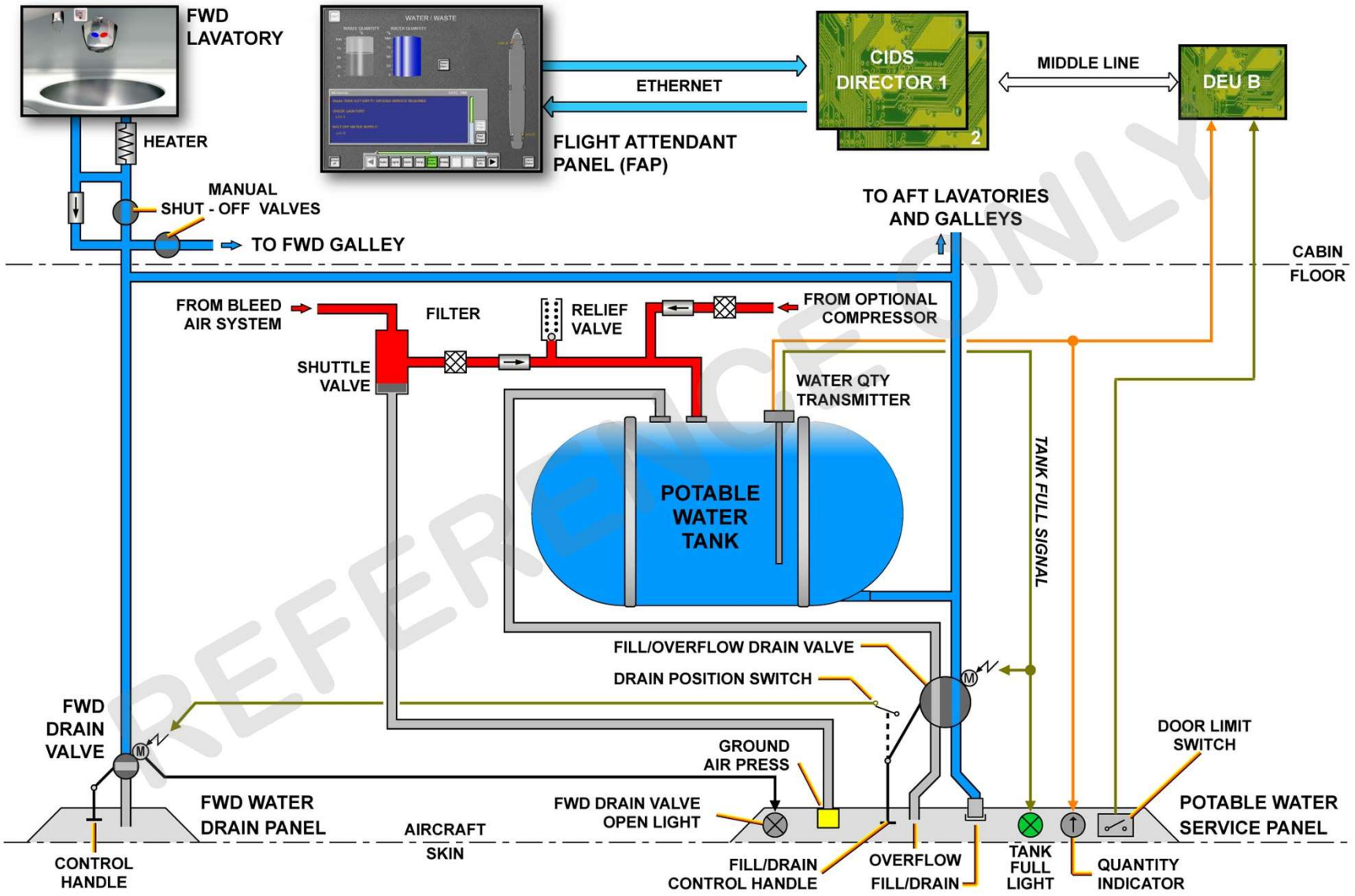
**•Fill/Drain/Overflow valve mechanically opened**

The panel door opens, so the system is electrically powered and the FAP water indication page is automatically called.
The tank full light comes on.



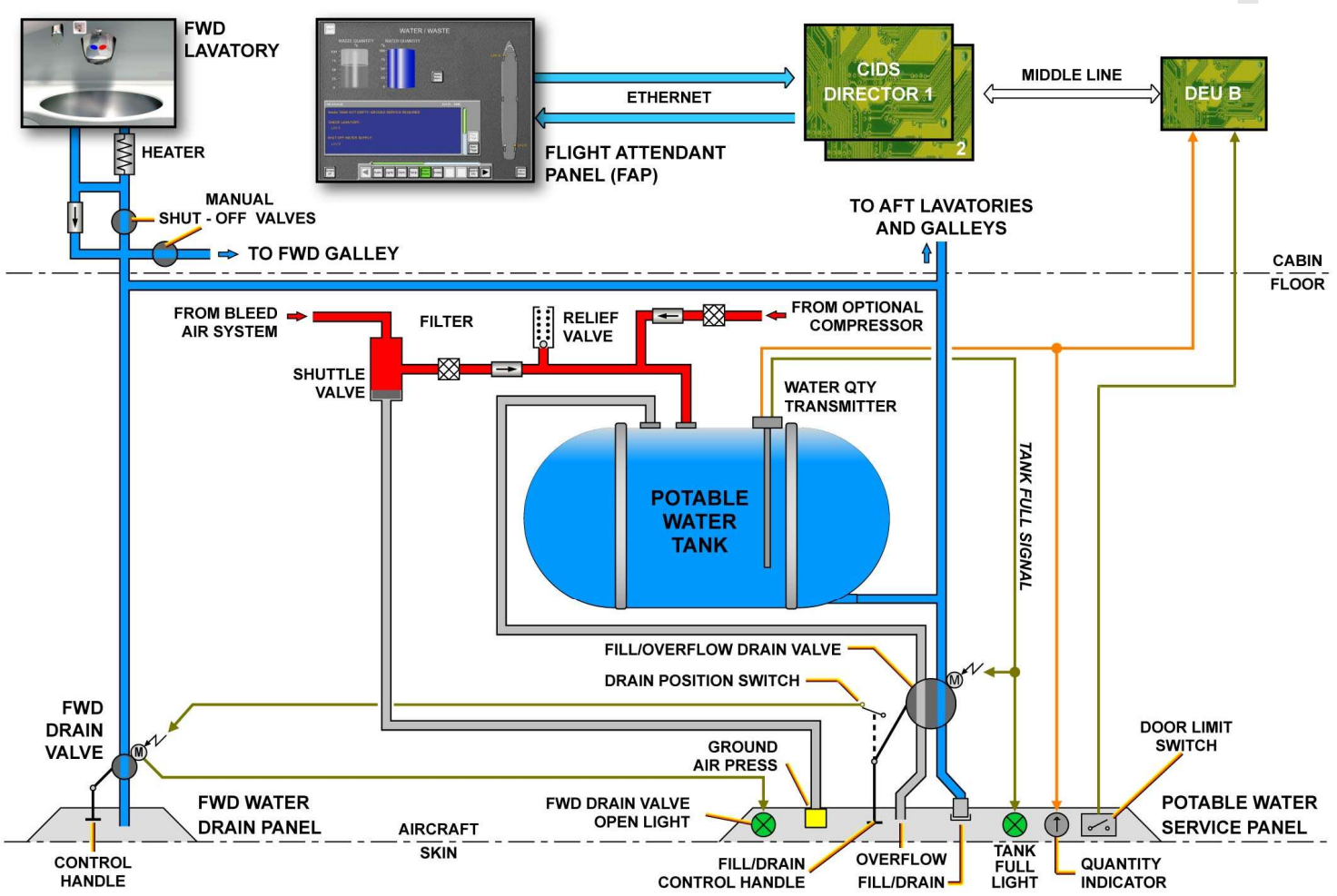
**•Fill/Drain/Overflow control handle to drain position & pulled out**
**•Fill/Drain/Overflow valve mechanically opened**
**•Drain Position Switch activated**

The Fill/Drain/Overflow control handle is positioned to the drain position and pulled out.
The Fill/Drain/Overflow valve is mechanically opened.
The drain position switch is activated.



**•FWD Drain Valve opened electrically**
**•FWD Drain Valve light comes on**

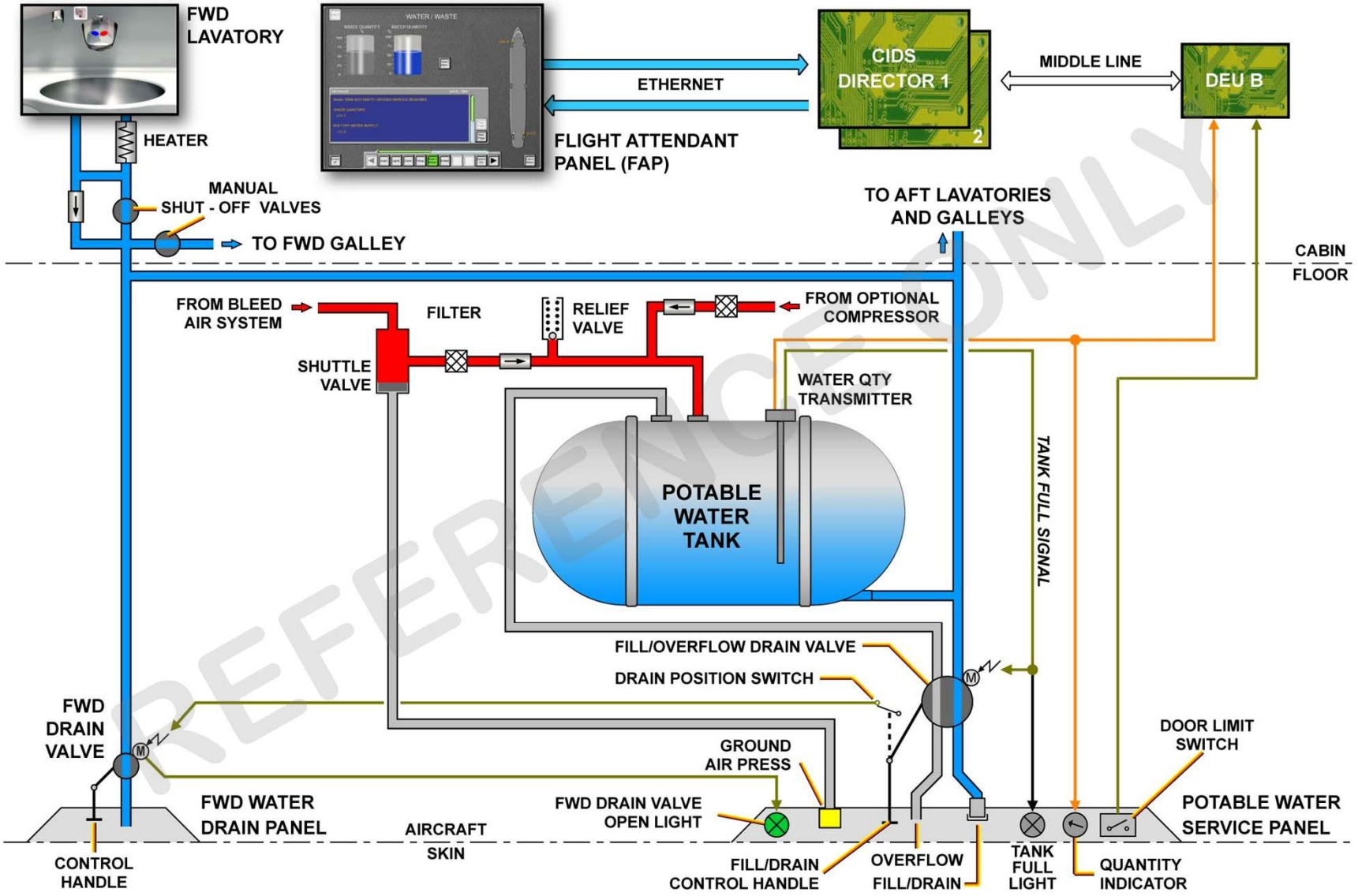
From the drain position switch an electrical signal will open the FWD drain valve.
In the service panel the "Green FWD Drain Valve Open Light" comes on.



**•All valves opened**
- **Most of water from tank drain**
- **Small amount from the FWD Drain valve**

**•Tank full light goes off**
**•Water quantity decreases**
**•FAP water indication decreases**

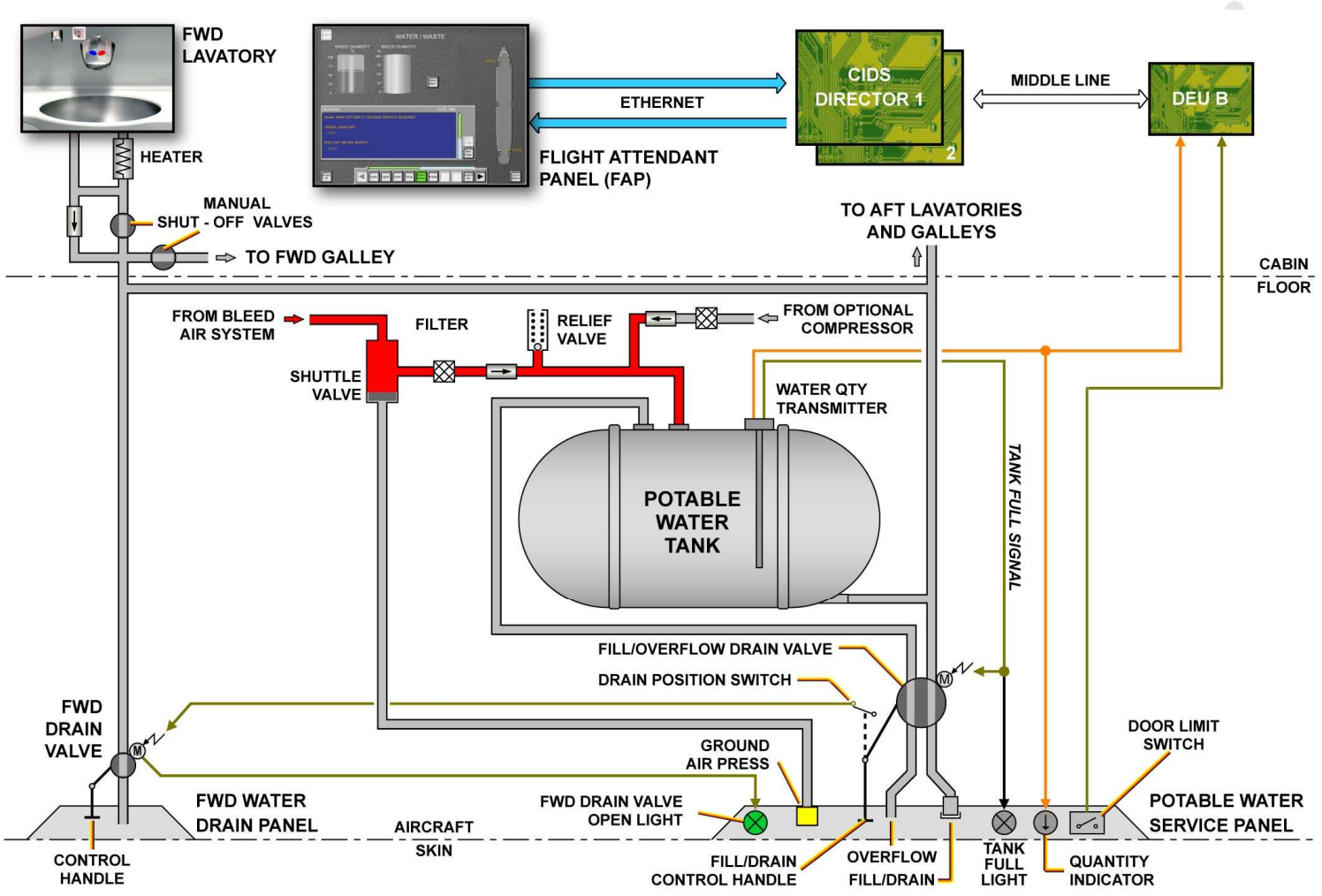
Due to the opening of all valves, the system will be drained. Most of the water will come from the tank drain and only a small amount from the FWD drain valve.
In the service panel the "Tank Full Light" goes off.
The water quantity in the tank and in the FAP water indication decreases.



•**Tank is empty:**

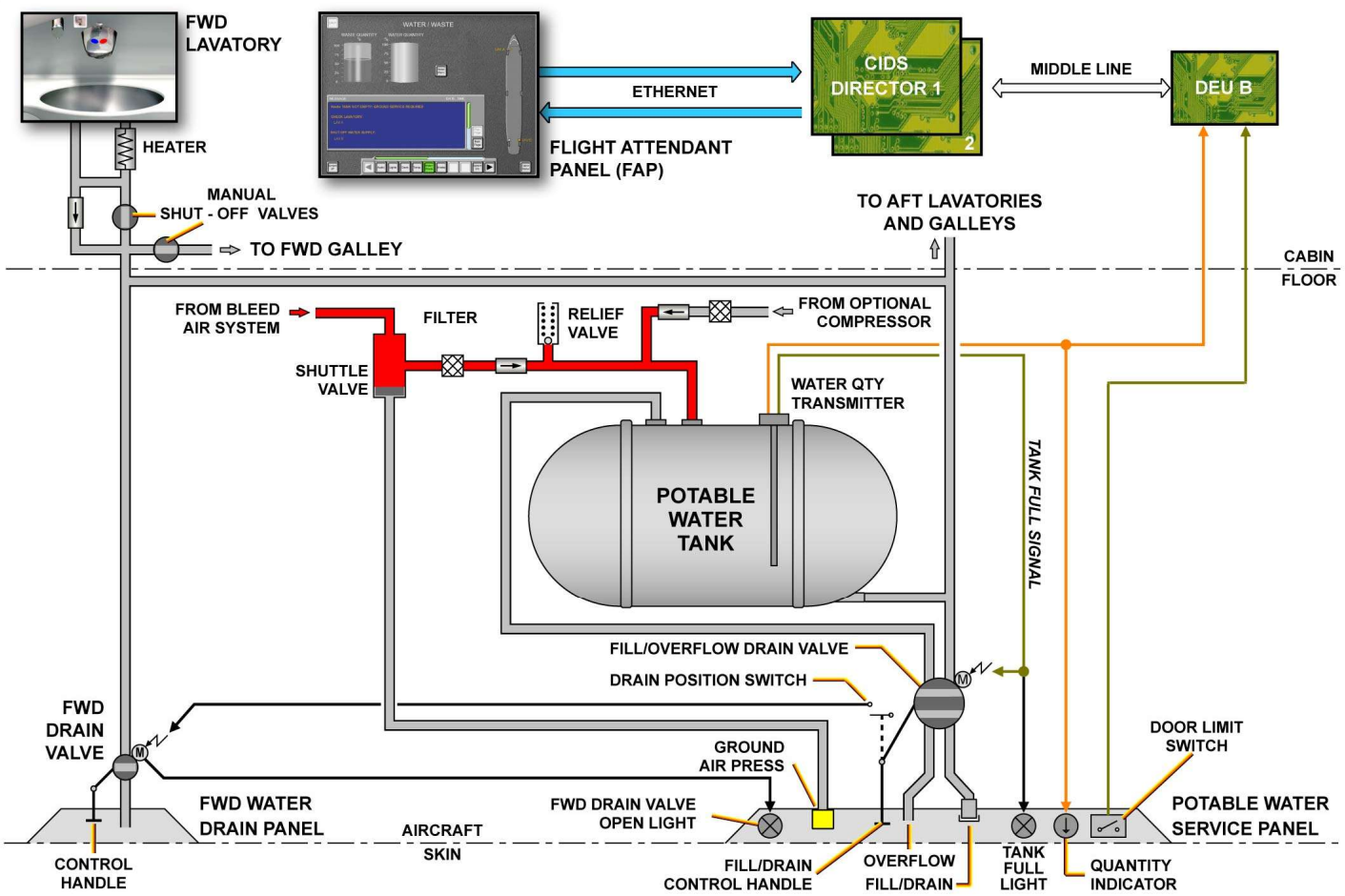
- **Water heater to off**

The tank is empty now, the tank sensor will trigger, so the water heater goes to off.



**•Fill/Drain/Overflow control handle to valve closed**
**•FWD Drain Valve will close**
**•All lights in service panel off**

The Fill/Drain/Overflow control handle is pushed to valve closed position.
The FWD drain valve will close and all lights in the service panel will be off.



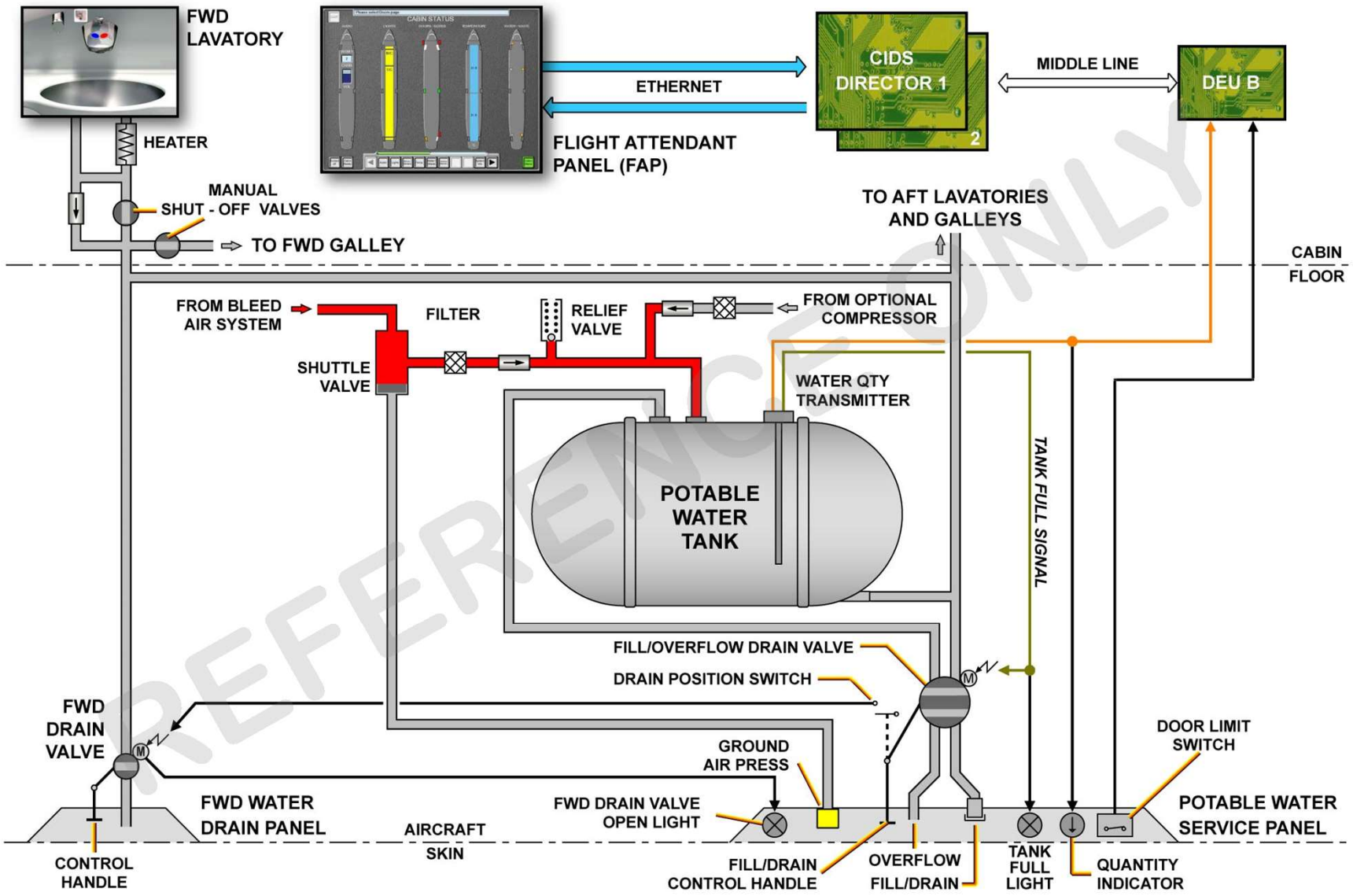
**•Potable Water Service Panel closed**

- **No more electrical power**

**•FAP water indication disappears**

**•Air compressor starts when panel door closed**

The potable water service panel is closed so the door limit switch will cut the power.
The FAP water indication page disappears and the air compressor will start as soon as the panel door is closed again.




Potable Water System
Controls and Indicating
REFERENCE ONLY
HYD
GREEN
BLUE
YELLOW
PTU
RAT
ELEC
1
2
AUTO EXTING
TEST
RESET
1 FADEC GND PWR 2
A/SKID &
N/W STRG
ON
OFF

**GENERAL**
**•FAP display**
**•2 panels lower fuselage**
The potable water controls and indicating includes the display on the Flight Attendant Panel (FAP) and two panels located at the bottom of the aircraft fuselage.

**POTABLE WATER SERVICE PANEL**
**•In rear left side of lower fuselage**
The potable water service panel is installed in the rear left hand side of the fuselage.

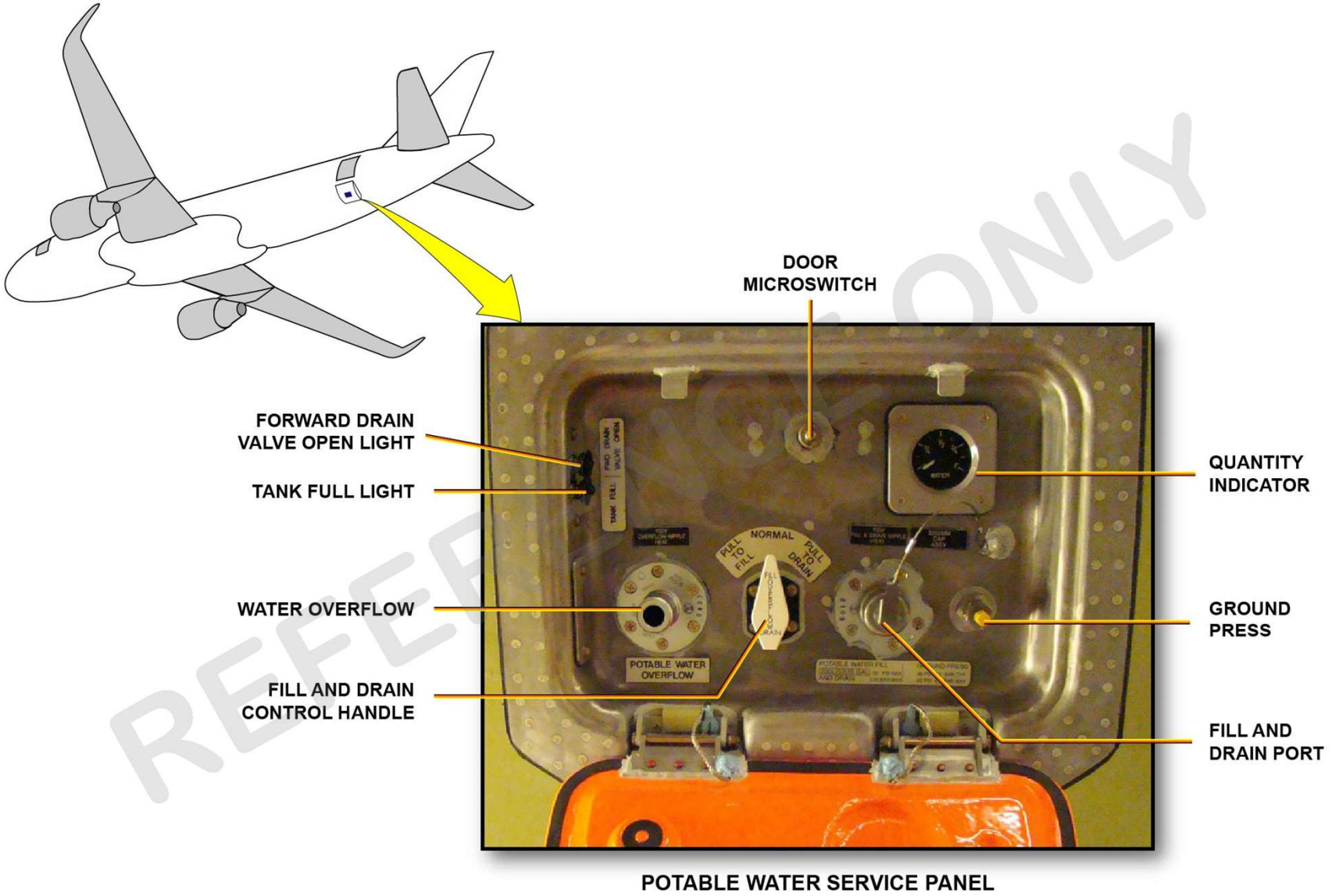
**DOOR MICROSWITCH**
**•Activates the indication on FAP if the panel is open**
The door microswitch isolates the indicating system when the potable water service panel is closed. When the door is open, the electric motor of the compressor is stopped (if installed). The water and waste page comes on automatically on the FAP when the service panel door is opened.

**QUANTITY INDICATOR**
**•Gives level of water in tank**
The quantity indicator gives the level of the water in the potable water tank.

**FILL/DRAIN CONTROL HANDLE**
**•Filling or draining selection**
The fill/drain control handle is used to select a filling or draining operation.

**FORWARD DRAIN VALVE OPEN LIGHT**
**•Comes on when valve open**
**•Lamp press to test facility**
The forward drain valve open light comes on when the forward drain valve is open. The light has a lamp press to test facility.

**TANK FULL LIGHT**
**•Comes on when tank full**
**•Lamp press to test facility**
The tank full light comes on when the water tank is full. The light has a press to test facility.



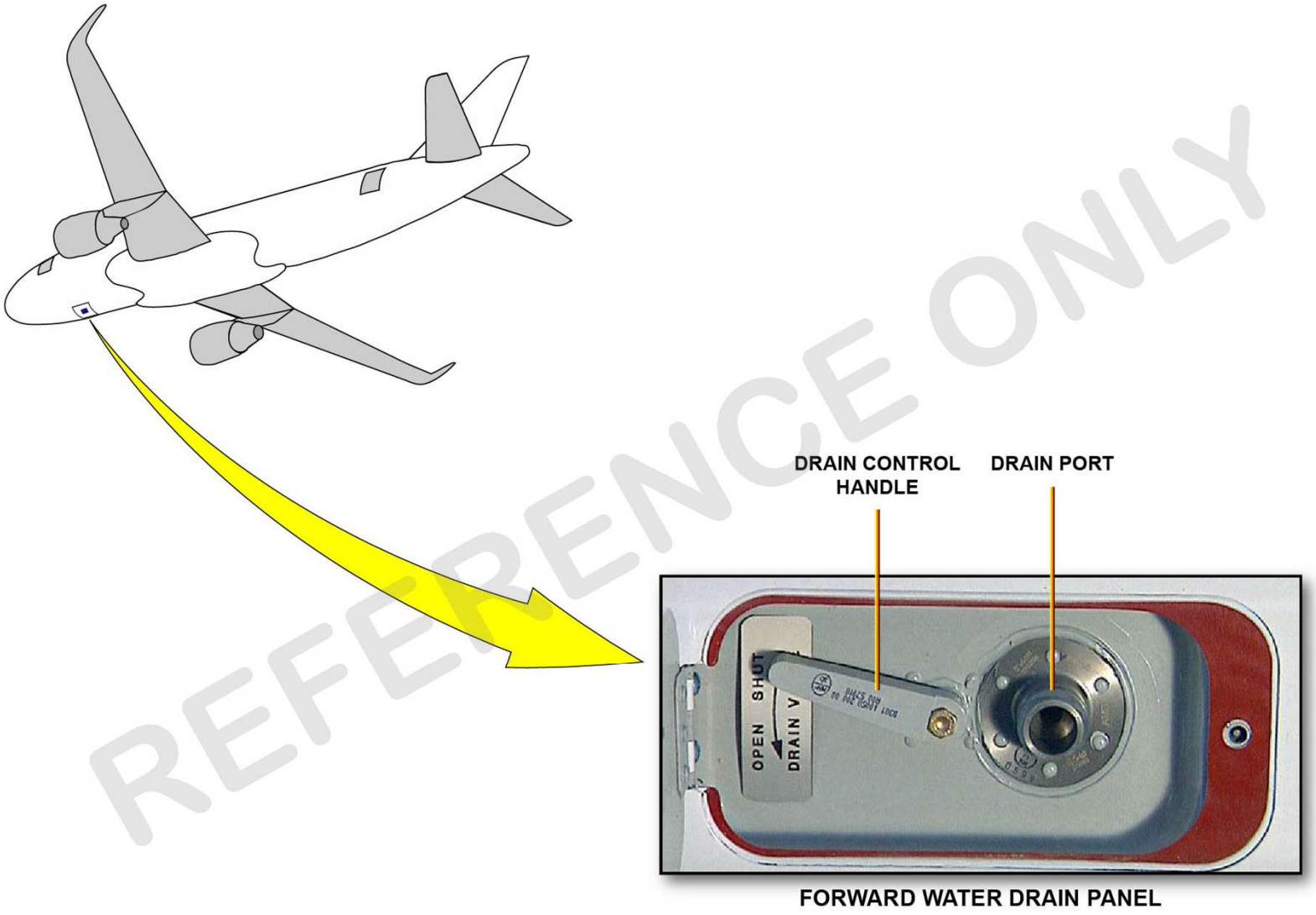

POTABLE WATER SERVICE PANEL

# FORWARD WATER DRAIN PANEL

**•Located in FWD center line lower fuselage**

**•Handle used for valve manual operation**

The forward water drain panel is located on the A/C center line of the lower fuselage. The drain control handle is used to manually operate the forward drain valve.



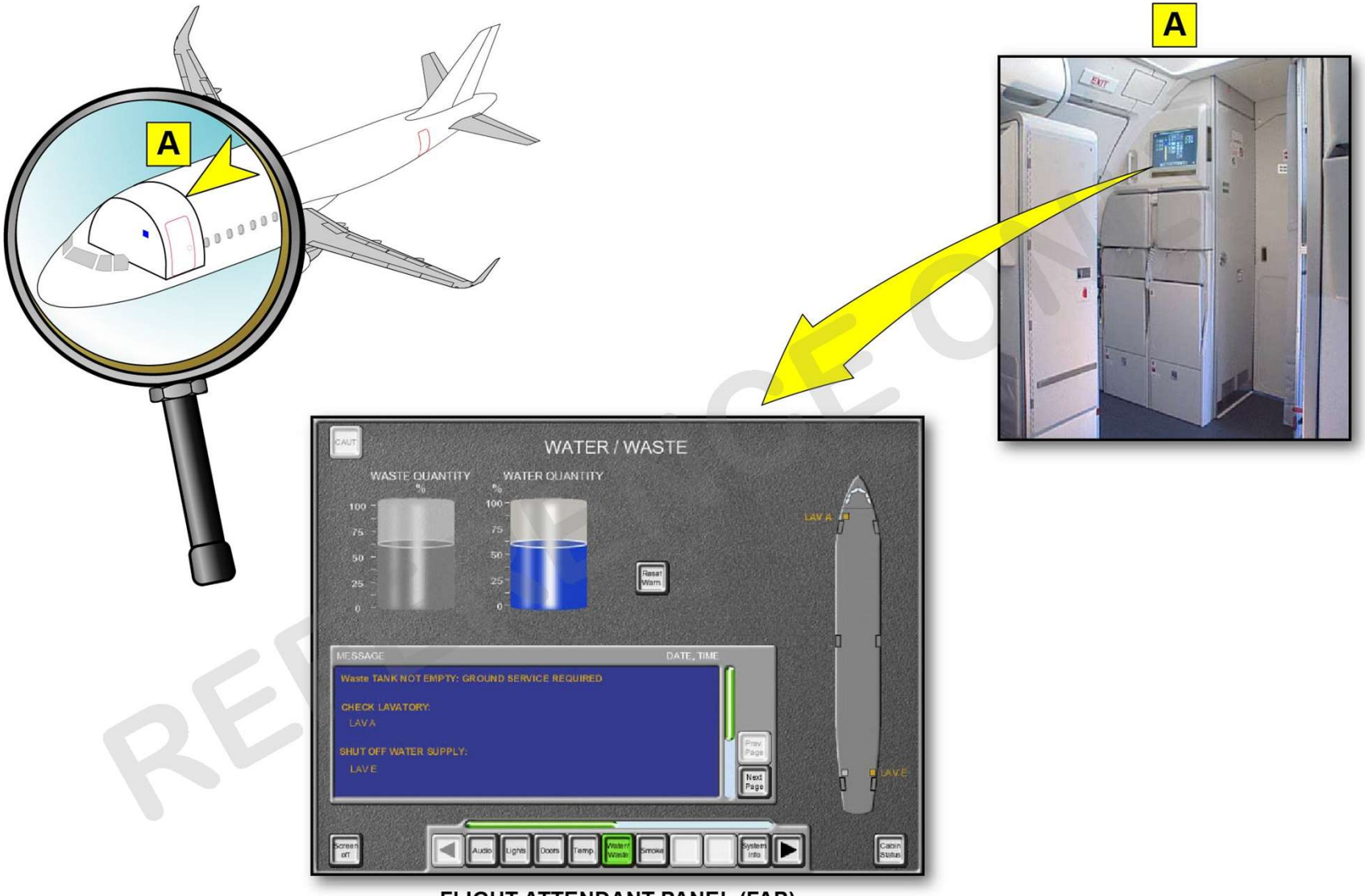

FORWARD WATER DRAIN PANEL

# FAP

**•In cabin FWD section**
**•Potable water QTY indication:**
- **Tank symbol**
- **Quantity scale in percentage**

**•Service door OPEN info received via DEU B and CIDS DIR**
**•Option: Preselection of filling quantity**

The FAP is located in the forward section of the cabin. The FAP displays the potable WATER QUANTITY stored in the potable water tank when the Water/Waste key on the FAP is selected. A tank symbol with a scale shows the liquid level as a percentage. The service door OPEN information, delivered by the door microswitch located on the potable water service panel, is sent to the FAP through a Decoder/Encoder Unit (DEU) B and the active Cabin Intercommunication Data System (CIDS) director to energize the water quantity indicating system. As an option, the filling quantity can be selected (25%, 50%, 75% and 100%).




**FLIGHT ATTENDANT PANEL (FAP)**


# Toilet System Description

**GENERAL**

**•Waste removed from toilet to waste tank**

**•CIDS controls and monitors:**

- **Whole system**
- **Electric components**

**•Potable water used to flush toilet**

The toilet system removes waste from the toilet bowl through a vacuum drain to an underfloor waste holding tank. The vacuum toilet system is connected to the Cabin Intercommunication Data System (CIDS), which controls and monitors the system function and the related electric components. The system uses potable water from the potable water system to flush the toilet.

**FLUSHING**

**•When FLUSH SW pressed:**

- **FCU initiates flush sequence**
- **Vacuum GEN starts**
- **Water valve opens 1.6 s later for 1.7 s**
- **Then, flush valve opens for 4 s**

**•Waste material evacuated by ΔP**

When the FLUSH switch is pressed, the flush control unit initiates the flush sequence. The vacuum generator starts to operate and after 1.6 seconds the water valve opens for 1.7 seconds. Then, the flush valve, controlled by the flush control unit, opens for 4 seconds to evacuate the waste material through differential pressure.

**VACUUM**

**•FLUSH SW pressed:**

- **Electrical signal from FCU to CIDS via DEU B**
- **CIDS activates vacuum generator for 15 s**

**•Creation of necessary ΔP**

**•Vacuum generator activated:**

- **On ground**
- **During climb if ΔP < 246 mbar (3.6 psi)**
- **During descent if ΔP < 203 mbar (2.94 psi)**

**•Altitude data supplied by CPC via SDAC**

As soon as the FLUSH switch is pressed, the flush control unit sends an electrical signal to the CIDS (via the connected Decoder/Encoder Unit (DEU) B), which operates the vacuum generator for approximately 15 seconds. The vacuum generator creates the necessary differential pressure between the cabin and the waste holding tank to move the waste from the toilet bowl. The vacuum generator is activated:

- on ground,
- during climb when the differential pressure is less than 246 mbar,
- during descent when the differential pressure is less than 203 mbar.

The different pressure information is supplied by the Cabin Pressure Controller (CPC) via the System Data Acquisition Concentrator (SDAC).

**NOTE: The landing gear signal is used as a back- up in case the SDAC can not deliver altitude/ diff. press information. It overrides the door limit switch signal in flight to keep the system operational if the service panel door is open in flight.**

**STORAGE**

**•Tank installed:**

- **Under the floor**
- **Between FR 65 & 68**

**•Tank capacity: 170 l (44.9 US gal)**

**•Composed of:**

- **Water separator**
- **LLT & LLS**
- **Waste inlets & outlet**
- **2 rinse nozzles**

The waste holding tank is installed on the right hand side of the aircraft under the floor between FRame 65 and FR 68. The tank has a capacity of 170 l (44.9 US gal). The tank has:
- a water separator,
- a liquid level transmitter (hydrostatic pressure),
- a liquid level sensor (ultrasonic type),
- waste inlets,
- a waste outlet,
- two rinse nozzles.

**CONTROL/MONITORING**

**•Data received by CIDS DIRs via DEUs B**

**•CIDS DIRs:**

- **Integrate VSC function**
- **Control waste system**

**•System interfaces:**

- **CFDS**

The waste system data is received by DEUs B and sent to the CIDS directors (DIRs). This system is controlled and monitored by the Vacuum System Controller (VSC) function, which is integrated inside the CIDS DIRs. The CIDS DIRs also report the vacuum toilet system failures to the Centralized Fault Display System (CFDS).

**INDICATING**

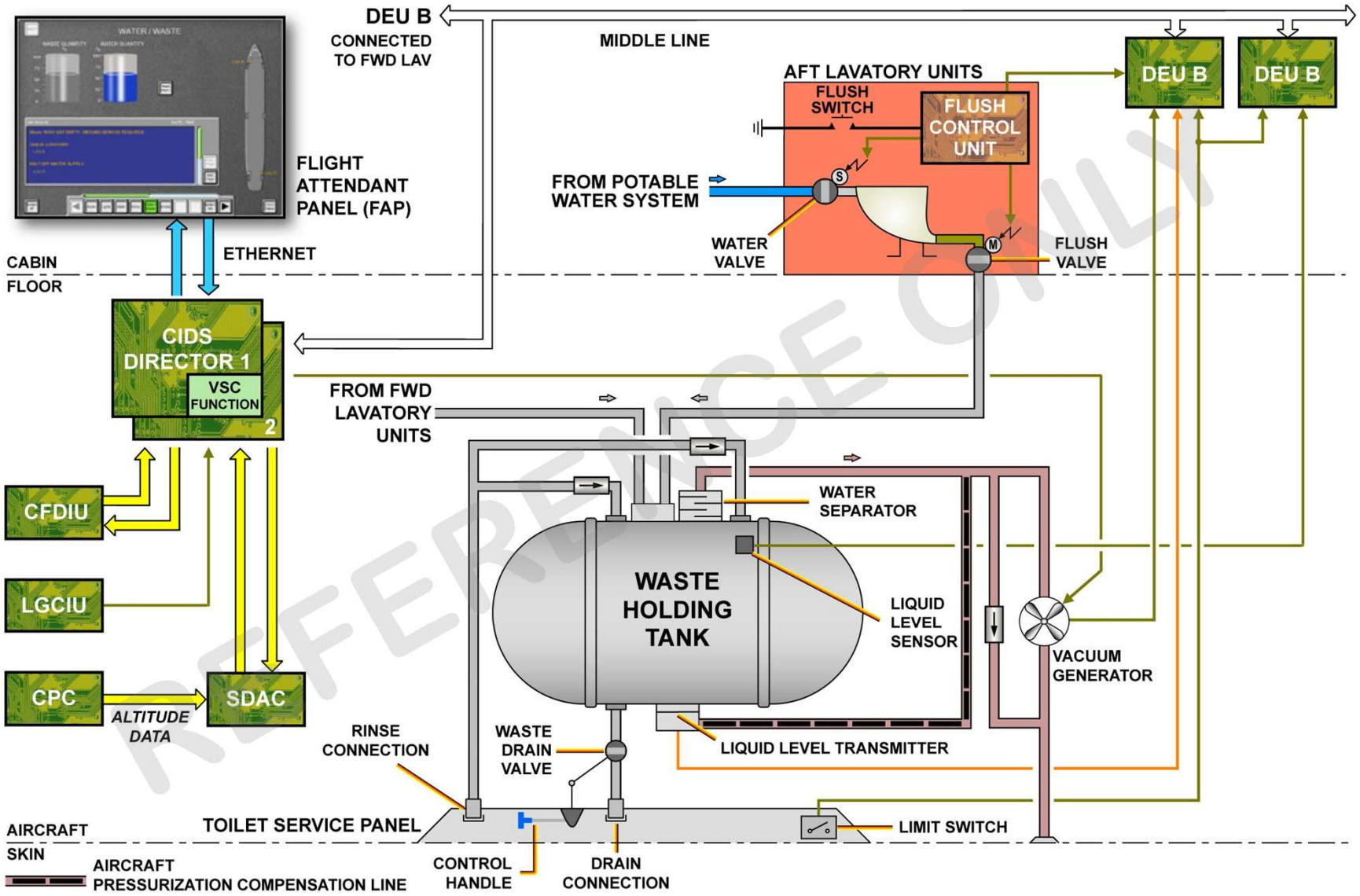
**•Tank equipped with:**

- **LLT**
- **LLS**

**•When tank full:**

- **Signal sent to CIDS DIRs via DEU B**
- **Toilet system shuts down**
- **"WASTE TANK NOT EMPTY-CHECK LEVEL GROUND SERVICE REQUIRED" FAP message**

The waste holding tank is equipped with a liquid level transmitter and a liquid level sensor. When the tank is full, a signal is sent to the CIDS DIRs through the DEU B, which shuts down the toilet systems. The signal is also sent to the Flight Attendant Panel (FAP) through the DIRs and a "WASTE TANK NOT EMPTY-CHECK LEVEL GROUND SERVICE REQUIRED" message is displayed.




# Toilet System Controls and Indicating

REFERENCE ONLY

# GENERAL

**Comp loc Ext Rear**
**Waste service PNL**
**•System includes:**

- **FAP display**
- **Toilet service panel**

The toilet system controls and indicating include the waste quantity indication on the Flight Attendant Panel (FAP).

# TOILET SERVICE PANEL

**•Installed in lower fuselage rear right hand side**
The toilet service panel is installed in the rear right hand side of the fuselage between FRame 65 and FR66.

## DOOR LIMIT SWITCH

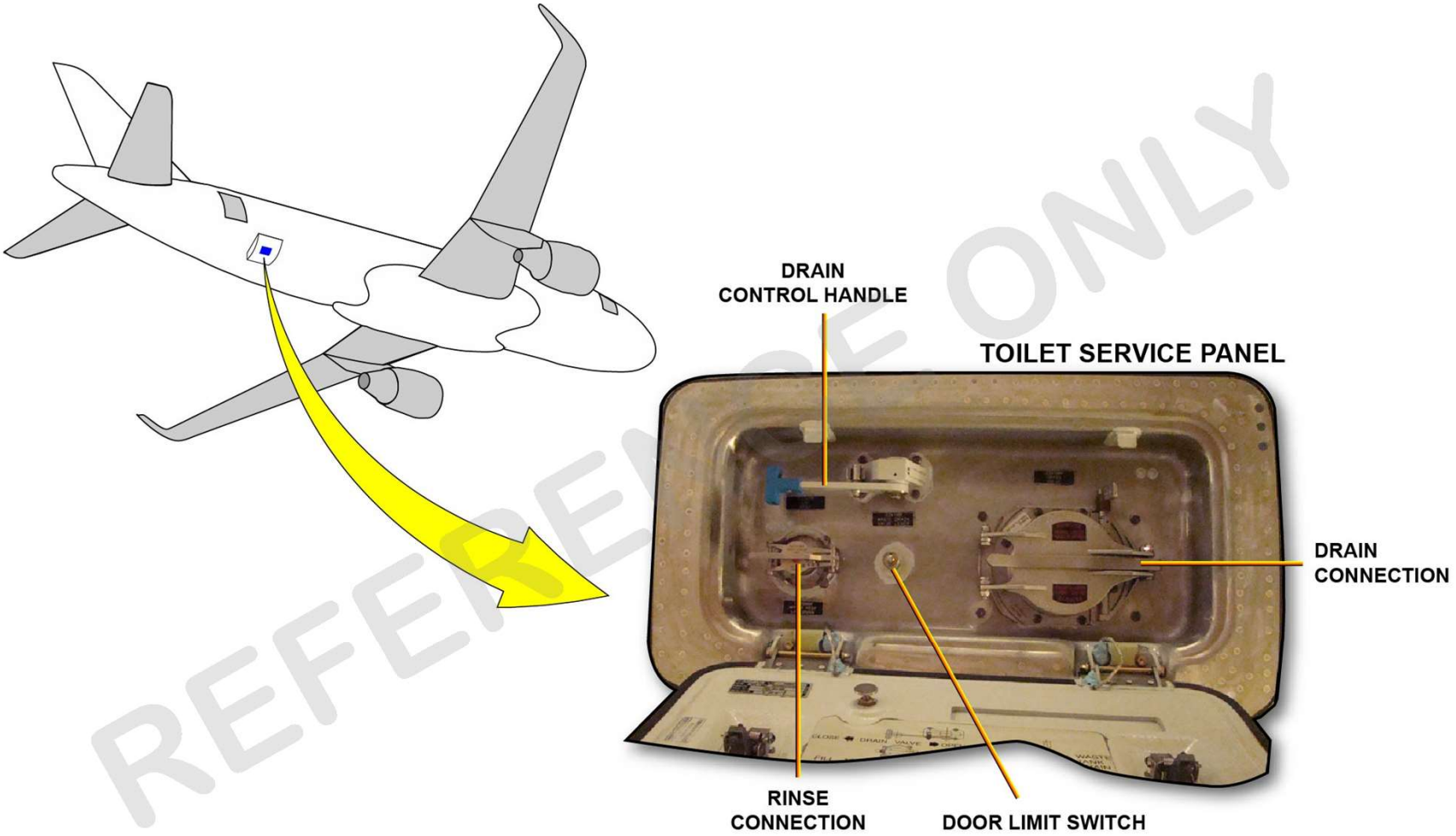
**•When door open (on ground):**

- **Toilet operations stopped by CIDS via DEU B**
- **Flush signals inhibited**

On ground, when the toilet service panel door is open, the Cabin Intercommunication Data System (CIDS) stops all toilet operations through the Decoder/Encoder Unit (DEU) B and flush signals are inhibited.

## DRAIN CONTROL HANDLE

**•To drain waste holding tank**
During ground service, the drain control handle located at the service panel is used for the waste holding tank draining.



**FAP WATER/WASTE PAGE**
**•Located in FWD section of cabin**
**•Manual or automatic page selection**
**•Manually by selecting WATER/WASTE key**
**•Automatically when:**
- **Service door open**
- **Fault in the system**

**•Fault, system and inoperative messages**
**•Option: Preselection of filling quantity**
The FAP is located in the forward section of the cabin. The FAP WATER/WASTE page appears by selecting the dedicated key on the tool bar. It can also appear automatically when the service door is open or when there is a fault in the system. This page gives information about the water and waste system. Fault, system and inoperative messages for the vacuum lavatories are also indicated on the FAP. As an option, the filling quantity can be selected (25%, 50%, 75% and 100%).

**WASTE QUANTITY**
**•Displayed on FAP:**
- **By tank symbol**
- **As a level indication in %**

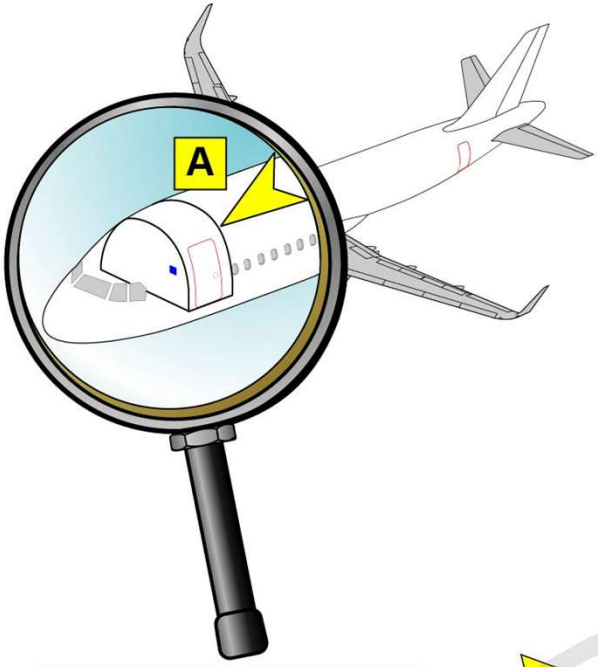
The FAP displays the waste quantity stored in the waste holding tank. A waste tank symbol displays the filling level in percentage.

**LAVATORY**
**•Location displayed on A/C symbol**
**•Activated: Grey square**
**•De-activated: Amber square + associated name**
**•Lavatory de-activated when FCU inoperative**
**•Amber cross on square when no communication with FCU**
On the aircraft symbol, the location of the lavatory is shown either activated with a grey square or de-activated with an amber square and its associated name. A lavatory is de-activated when the flush control unit is inoperative. An amber cross is displayed on the square in case of no communication with the flush control unit.

**STATUS AND FAULT MESSAGES**
**•Displayed on dedicated window**
Status and fault messages of the water and waste system are displayed on a dedicated window.
**NOTE: On ground, when the toilet service panel is open the "VACUUM SYSTEM DISABLED-GROUND SERVICING" message comes on.**

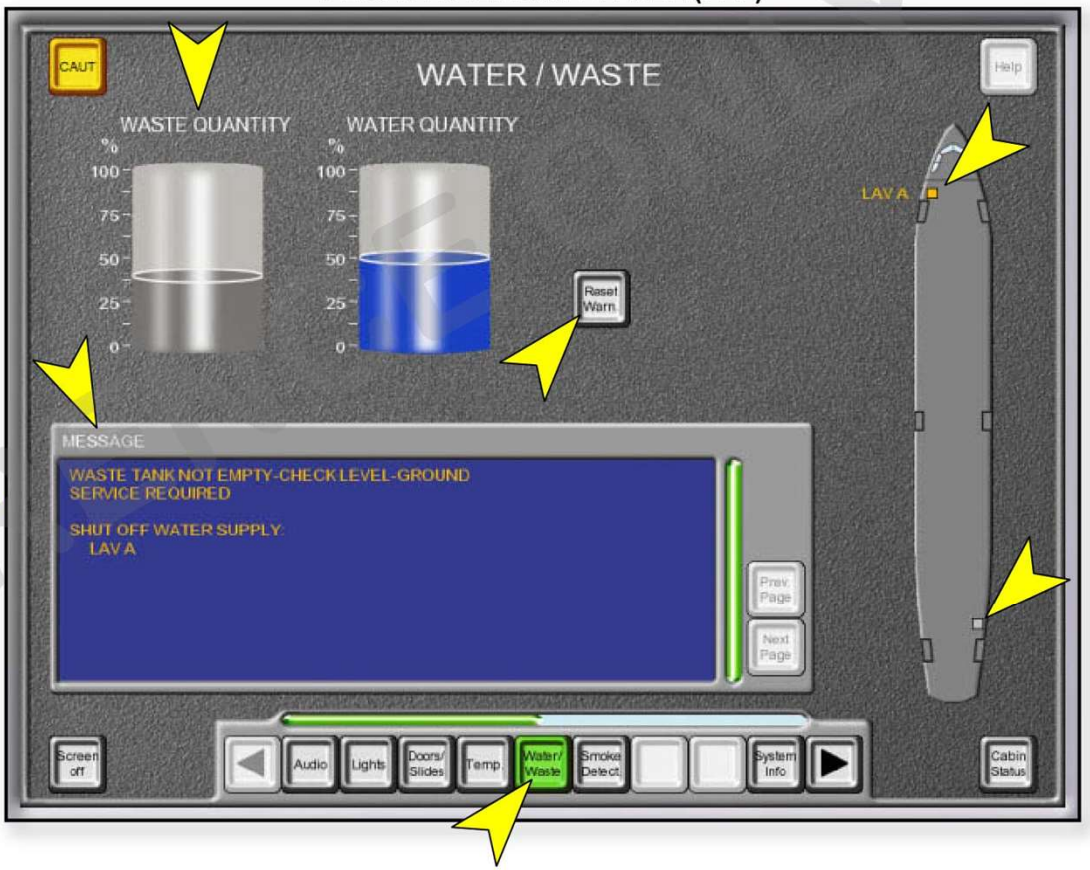
**RESET WARNING**
**•Button used:**
- **When flush valve failed**
- **To reset all visual warnings (ACP, AIP & LAV call light)**

A RESET WARNing button is used in case of flush valve failure. All visual warnings are reset by this same button (Area Call Panel, Attendant Indication Panel and lavatory call light).





**FLIGHT ATTENDANT PANEL (FAP)**




Toilet System
Monitoring
REFERENCE ONLY
OVRD
G
B
Y
APU
AUTO EXTING
TEST
RESET
1 FADEC GND PWR 2
HYD
BLUE
YELLOW
PSI
3000
PSI
3000
PTU
RAT
ELEC
1
ELEC
2
A/SKID &
N/W STRG
ON
OFF

# GENERAL

**•VSC Function:**

- **Integrated inside CIDS DIR**
- **Toilet system monitoring**
- **System external circuit continuous monitoring**

The toilet system is monitored by the Vacuum System Controller (VSC) function, which is integrated inside the Cabin Intercommunication Data System (CIDS) director (DIR). During aircraft power-up on ground and during flight, the system external circuits of the vacuum toilet system are monitored continuously.

# FLUSH CONTROL UNIT

**•Each FCU BITE monitors:**

- **Water valve**
- **Flush valve**
- **Internal control circuitry**

**•Fault transmitted to DIRs via DEU B**

The BITE in each flush control unit monitors the water valve, the flush valve and the internal control circuitry. If a fault is detected, it is transmitted through the Decoder/Encoder Unit (DEU) B to DIR 1 and 2 of the CIDS.

# VSC FUNCTION

**•Inside CIDS DIRs:**

- **System control and monitoring**
- **Fault reporting**

**•Waste tank level indication on:**

- **FAP**

**•DEU B sends system defects to:**

- **CIDS DIR (middle line)**

The VSC functions integrated inside the CIDS DIRs are:
- system control and monitoring,
- fault reporting.

The DIR calculates and transmits signals to the Flight Attendant Panel (FAP) to indicate the waste tank level and to report system defects. The DEU B transmits system defects to the DIR through the middle line data bus. The DIR memorizes the defect signals and send them to the Centralized Fault Display System (CFDS) for ground maintenance and inspection.

**NOTE: Each toilet assembly is connected to a DEU B.**

# FAP WATER/WASTE PAGE INDICATING

**•Shows:**

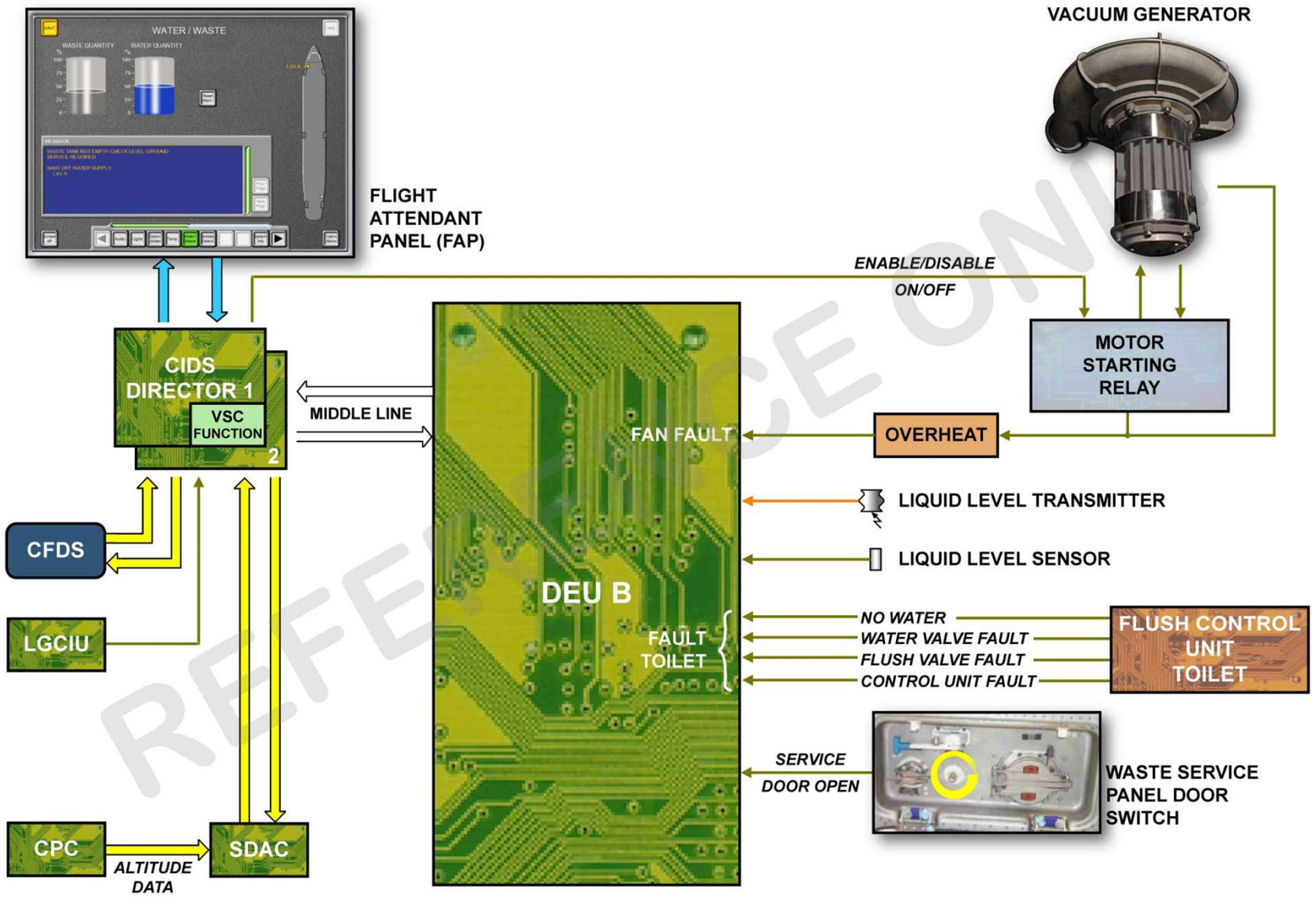
- **Waste tank level**
- **Fault, system and inoperative messages**

**•Messages list box used in case of:**

- **LAV X FCU water valve failure**
- **115V AC failure**
- **LLT or LLS failure**
- **Service door open & L/G down**

**•CAUT amber button.**

The FAP WATER/WASTE page gives information about water and waste. The waste tank level is displayed on this page. Fault, system and inoperative messages can also be displayed in the list box and on the A/C symbol to indicate if a lavatory is inoperative or if the whole toilet system is inoperative.
Examples of messages list box:
- VACUUM SYSTEM DISABLED-WASTE TANK FULL: If the LLS and the LLT do not operate, the system will not operate,
- VACUUM SYSTEM DISABLED-GROUND SERVICING: When the limit switch on the waste service panel indicates OPEN panel and the aircraft is on ground:
A CAUTion amber button, located in the upper left corner of the touchscreen, comes on and flashes when CIDS receives a message which cannot be shown immediately.




Potable Water System
Servicing (A320)
REFERENCE ONLY
APU
AUTO EXTING
TEST
RESET
1 FADEC GND PWR 2
HYD
GREEN
BLUE
YELLOW
PTU
RAT
ELEC
1
2
A/SKID &
N/W STRG
ON
OFF

# FILLING WITH ELECTRICAL POWER

**•FILM: Potable Water System Filling with electrical power (A320)**

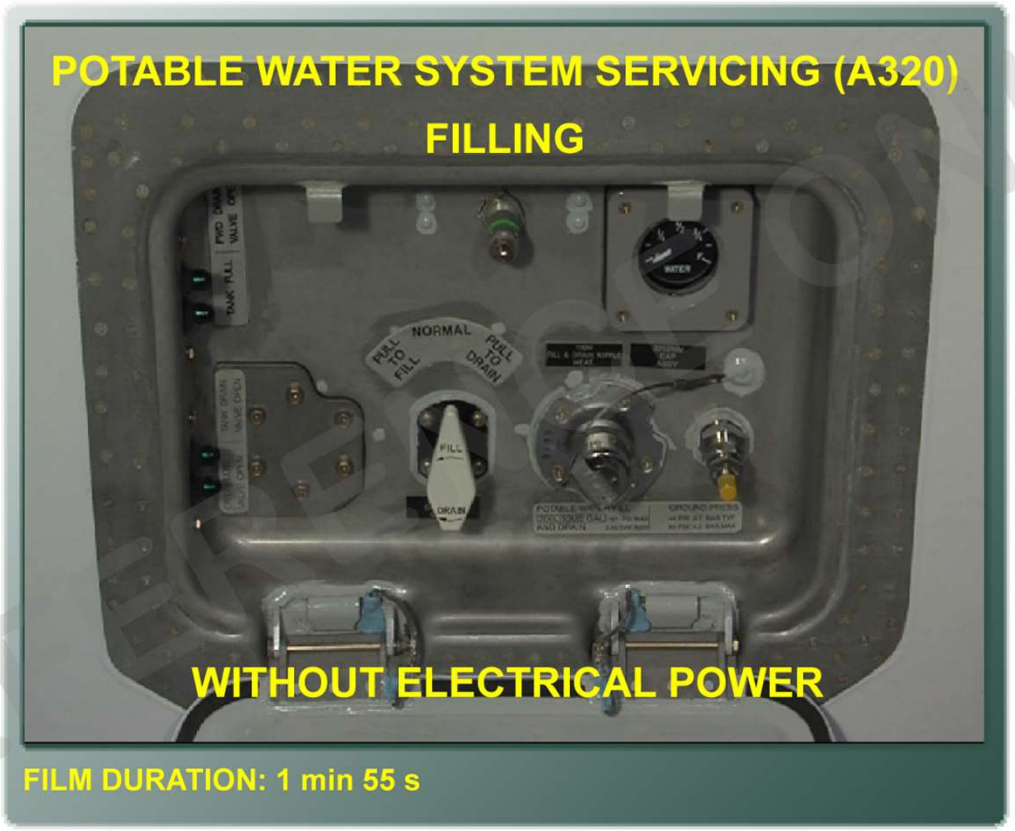
First open the Potable Water Service Panel and the light from the quantity indicator comes on.
On the Flight Attendant Panel you will see the text "GROUND SERVICE DOOR OPEN" is shown.
Remove the potable water fill and drain port cap.
Connect the fill hose to the potable water fill and drain port.
Turn the fill and drain control handle to the " FILL" position and pull it out.
Check that the "OVERFLOW VALVE OPEN" light comes on. If it doesn't illuminate, check the light and the overflow valve function.
Start the pump on the service vehicle.
The quantity indicator shows that the system is taking on water.
When the tank is full, the "FULL LIGHT" comes on and the handle returns automatically to its NORMAL position.
Check that the "OVERFLOW VALVE OPEN" light goes off.
Disconnect the fill hose from the potable water fill and drain port.
Clean and dry the fill and drain port. Put the cap on the potable fill and drain port.
Clean and dry the service panel and the adjacent area.
Close the service panel and clean it.
On the Flight Attendant Panel (WATER AND WASTE PAGE) you can check the water quantity, make sure that text message: "WATER SERVICE DOOR OPEN" is not shown any more.

# FILLING WITHOUT ELECTRICAL POWER

**•FILM: Potable Water System Filling without electrical power (A320)**

Open the Potable Water Service Panel, there is no light and no indication on the gage.
Open the potable water fill and drain port.
Open the tank drain access panel and open the overflow valve handle to the open position.
Connect the fill hose to the potable water fill and drain port.
Turn the fill and drain control handle to the fill position and pull it out.
Start the pump on the service vehicle.
The quantity indicator will show no change in water quantity.
When the tank is full, water will flow out from the tank overflow port.
Stop the pump on the service vehicle and push the fill and drain control handle in and turn it to the normal position.

NOTE: The Handle does not return to the normal position automatically.
Disconnect the fill hose from the potable water fill and drain port.
Close the tank overflow valve with the handle.
Clean and dry the fill and drain port. Put the cap on the potable water fill and drain port.
Clean and dry the service panel area and the tank drain panel area.
Close the tank drain and the service panel and check for leaks, because leaks are not permitted.



# DRAINING WITH ELECTRICAL POWER

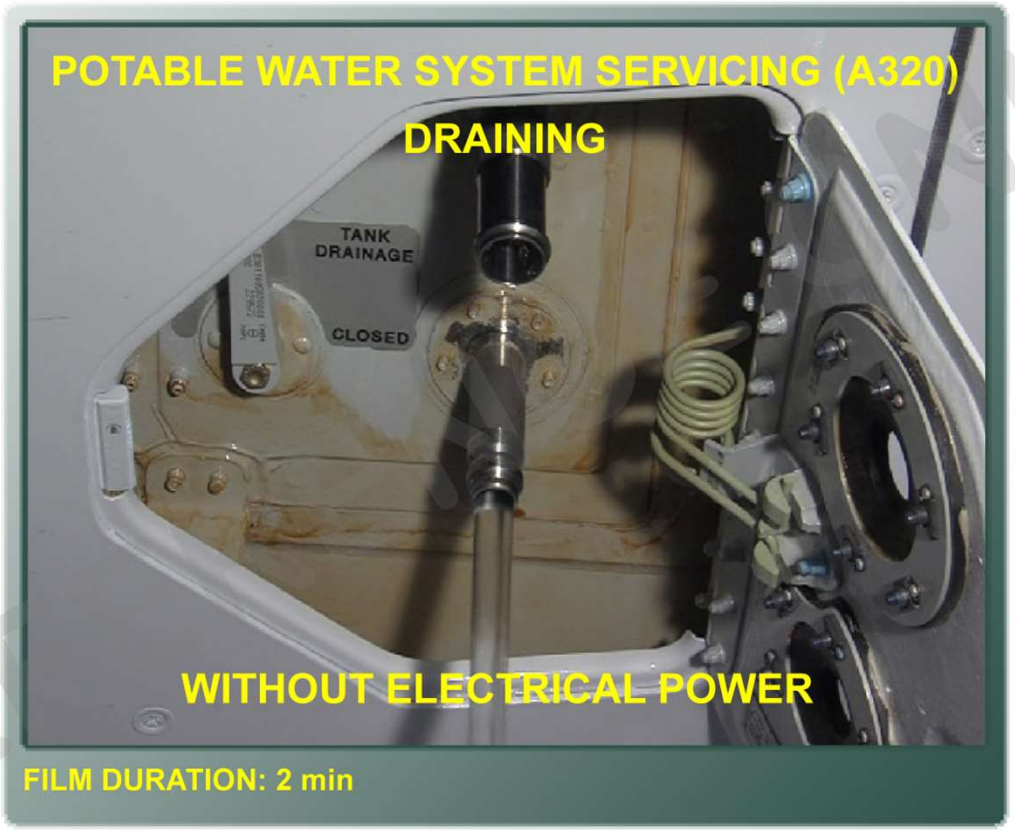
•FILM: Potable Water system draining with electrical power (A320)
Open the Potable Water Service Panel, the indication on the gage is illuminated.
On the Flight Attendant Panel you will see the text "GROUND SERVICE DOOR OPEN" is shown.
Remove the cap of the potable water fill and drain port.
Turn the fill and drain control handle to the drain position and pull it out.
Check that the following control lights come on:
The forward drain valve, tank drain valve, and the overflow valve.
Water will flow from all three ports, but the main quantity will come from the tank drain port.
The water should be collected in a container.
The quantity indicator will show the decreasing water level. When the tank is completely empty, push the control handle in and turn it to the normal position.

**NOTE: The handle does not return to the normal position automatically.**
All three indicators lights go off again.
Clean and dry the fill and drain port. Put the cap on the potable water fill and drain port.
Clean and dry the panel areas.
Close the Potable Water Service Panel and clean it.
On the Flight Attendant Panel (WATER AND WASTE PAGE) you can check the water quantity, make sure that text message: "WATER SERVICE DOOR OPEN" is not shown any more.

# DRAINING WITHOUT ELECTRICAL POWER

**•FILM: Potable Water system draining without electrical power (A320)**

Open the Potable Water Service Panel, no indication will be shown on the gage.
Remove the cap of the potable water fill and drain port.
Turn the fill and drain control handle to the drain position and pull it out.
Open the tank drain panel, to operate the tank overflow valve handle, and the tank drain valve control handle to the open position.
Open the forward drain panel and operate the drain valve control handle to the open position.
Water will flow from all three ports, but the main quantity will come from the tank drain port.
The water should be collected in a container.
The quantity indicator will not show the decreasing water level. When the tank is completely empty, push the fill drain control handle in and turn it to the normal position.
NOTE: The handle does not return to the normal position automatically.
Clean and dry the fill and drain port. Put the cap on the potable water fill drain port.
Clean and dry the panel areas.
Close all three panels and clean them.




Potable Water System
Servicing
(A318/A319/A321)
REFERENCE ONLY

# FILLING WITH ELECTRICAL POWER

**•FILM: Potable water system servicing (A318/A319/A321) Filling with electrical power**

First open the potable water panel and the light from the quantity indicator comes on.

**NOTE: On the Flight Attendant Panel you will see the text "GROUND SERVICE DOOR OPEN" is shown.**

Remove the potable water fill and drain port cap. Connect the fill hose to the potable water fill and drain port. Turn the fill and drain control handle to the " FILL" position and pull it out. The quantity indicator shows that the system is taking on water. When the "TANK FULL LIGHT" comes on the fill and drain control handle will automatically return to the NORMAL Position. Disconnect the fill hose from the potable water fill and drain port. Clean and dry the fill and drain port. Put the cap on the potable fill and drain port. Clean and dry the service panel and the adjacent area. Close the service panel and clean it. On the Flight Attendant Panel (WATER AND WASTE PAGE) you can check the water quantity, make sure that text message: "WATER SERVICE DOOR OPEN" is not shown any more.

# FILLING WITHOUT ELECTRICAL POWER

**•FILM: Potable water system servicing (A318/A319/A321) Filling without electrical power**

Open the potable water panel, there is no light and no indication on the gage. Open the potable water fill and drain port. Connect the fill hose to the potable water fill and drain port. Turn the fill and drain control handle to the fill position and pull it out. The quantity indicator will show no change in water quantity. When the tank is full, water will flow out from the potable water overflow port. Push the control handle in and turn it to the normal position.

**NOTE: The handle does not return to the normal position automatically.**

Disconnect the fill hose from the potable water fill and drain port. Clean and dry the fill and drain port. Put the cap on the potable water fill and drain port. Clean and dry the service panel area. Close the service panel and clean it.

# DRAINING WITH ELECTRICAL POWER

**•FILM: Potable water system servicing (A318/A319/A321) Draining with electrical power**

First open the potable water panel and the light from the quantity indicator comes on.

**NOTE: On the FAP the water and waste page will be shown with the text message: WATER SERVICE DOOR OPEN.**

Remove the cap from the potable water fill and drain port. Turn the Fill and Drain Handle to the drain position and pull it out. The forward drain valve light comes on and the water flows out of the potable water fill and drain port as well as from the forward drain panel. When the water is completely drained, you have to manually close the drain valve. By pushing in the handle and turn it back to the normal position. The forward drain valve light goes off again. Clean and dry the fill and drain port. Put the cap on the potable water fill and drain port. In cold weather conditions, the drain valves should remain open to prevent damage to the potable water system. Clean and dry the service panel and the adjacent area. Close the service panel and clean it.

# DRAINING WITHOUT ELECTRICAL POWER

**•FILM: Potable water system servicing (A318/A319/A321) Draining without electrical power**

Open the Potable Water Service Panel, no indication will be shown on the gage.
Remove the cap of the potable water fill and drain port.
Turn the fill and drain control handle to the drain position and pull it out.
Open the forward drain panel and operate the drain valve control handle to the open position.
Water will flow from the two ports, but the main quantity will come from the potable water service panel.
The water should be collected in a container.
The quantity indicator will not show the decreasing water level. When the tank is completely empty, push the fill drain control handle in and turn it to the normal position.

**NOTE: The handle does not return to the normal position automatically.**

Clean and dry the fill and drain port. Put the cap on the potable water fill and drain port.
Clean and dry the panel areas.
Close both panels and clean them.


Toilet System Servicing
APU
AUTO EXTING
TEST
RESET
ENG
1 FADEC GND PWR 2
HYD
3000 PSI
3000 PSI
3000
PTU
RAT
ELEC
1
ELEC
2
A/SKID &
N/W STRG
ON
OFF
REFERENCE ONLY

# SERVICING

**•FILM: A320 Waste Servicing**

Open the Waste Service Panel Door, and on the FAP the Water/ Waste page will be shown, with the text message: "Vacuum System Disabled- Ground Servicing". Open the cap of the waste drain connection. Connect the toilet service vehicle drain hose to the waste drain connection. Push the inner flap lever to "open". Move the drain valve control-handle to the open position and empty the waste tank completely. Close the waste drain valve and connect the flush/ fill hose of the toilet service vehicle to the rinse and fill connection. Flush the waste tank with approximately 57 L (15.06 Us gal). Then open the drain valve and make sure that the fluid has drained completely and close the waste drain valve again. Use the toilet service vehicle and fill the waste tank with 10L (2.46Usgal) of disinfectant solution or water. Switch off the toilet vehicle pump. Remove the flush and the drain hose and close the drain cap.

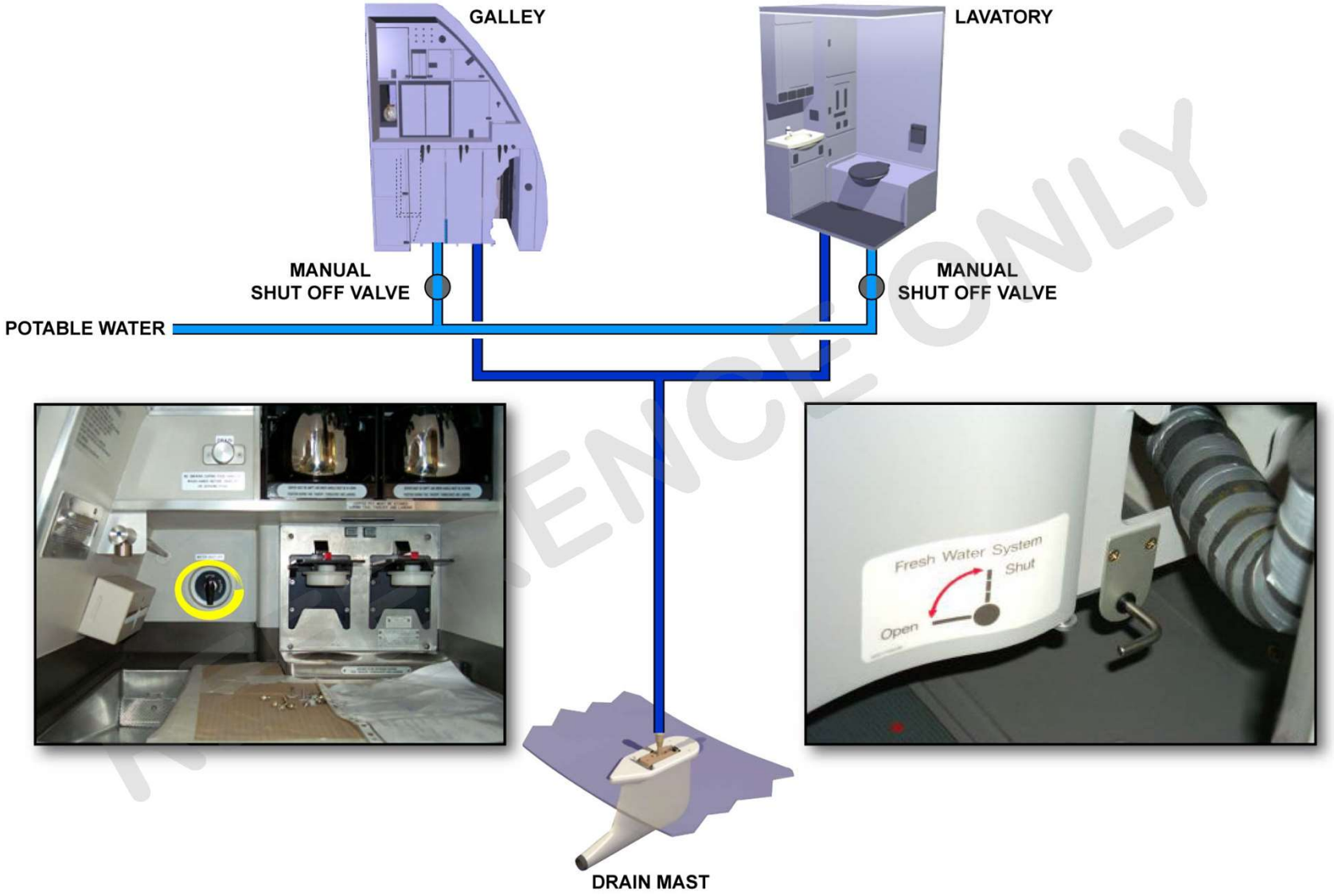
**NOTE: The inner flap will close and lock automatically when you close the outer drain cap. Make sure there are no leaks from the waste drain connection, leaks are not permitted.**

Disconnect the flush/ fill hose and let the connection drain completely. Close the cap of the fill and rinse connection. Clean and dry the service panel area. Close the Waste Service Door. On the Flight Attendant Panel make sure that the message box " Vacuum System Disabled - Ground Servicing" disappears.

# Water/Waste System Line Maintenance

# MEL/DEACTIVATION

**Comp loc AFT Cargo Compartment**
**Waste Holding TK**
**•Drain mast heating is a MEL item (water shut off valves closed)**
**•A/C dispatched if galley or toilet not used**
If the drain mast is not heated, the aircraft can be dispatched provided that the associated galleys or toilets are not used (toilet door locked and placarded "Inoperative") and their water shut off valves are closed.



# MAINTENANCE TIPS

## POTABLE WATER SYSTEM DRAINING IN COLD WEATHER CONDITIONS

**•Potable water system must be drained to prevent damage**

**•Refer to AMM table 12-24-38 for draining conditions**

**•Cold weather maintenance practices: AMM 12-31-38**

In cold weather conditions, the potable water system must be drained to prevent damage to the system by ice. To know if it is necessary to drain the potable water system, refer to the water system drain configuration table in the AMM 12-24-38. If the bleed air system is off and the external air temperature is below 0 °C (32°F),the drain valves must remain open after the potable water system is drained to prevent damage to the potable water system. The cold weather maintenance procedures for the potable water system are given in the AMM 12-31-38.

## WATER SYSTEM DRAIN CONFIGURATION

| CONFIGURATION | | | | EXPOSURE TIME IN (Hours:Min) | DEPRESSURIZATION REQUIRED | WATER TANK DRAIN REQUIRED | PURGE OF SYSTEM REQUIRED |
|---|---|---|---|---|---|---|---|
| AIR CONDITIONNING | HEATING WATER WASTE SYS | CABIN TEMPERATURE | OUTSIDE AIR TEMPERATURE | | | | |
| ON | ON/OFF | ABOVE 10°C (50°F) | BETWEEN 0 and -15°C (32 and 5°F) | ANY | NO | NO | NO |
| | ON | ABOVE 10°C (50°F) | BELOW -15°C (5°F) | 1:15 | YES | | |
| OFF | ON | | BETWEEN 0 and -7°C (32 and 19.4°F) | 1:30 | | | |
| | | | BETWEEN -7 and -15°C (19.4 and 5°F) | 0:30 | | | |
| | | | BELOW -15°C (5°F) | ANY | | | |
| OFF | OFF | | BETWEEN 0 and -7°C (32 and 19.4°F) | 1:30 | | YES | YES |
| | | | BETWEEN -7 and -15°C (19.4 and 5°F) | 0:30 | | | |
| | | | BELOW -15°C (5°F) | ANY | | | |

You must refill the tank with water not more than 30 min before you start the engines. If the temperature in the aircraft is below 4°C (39.2°F), pre-condition the aircraft.

END