

A330-200
TECHNICAL TRAINING MANUAL
MECHANICS / ELECTRICS & AVIONICS COURSE
38 WATER AND WASTE
GE Metric

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■ FQW4200

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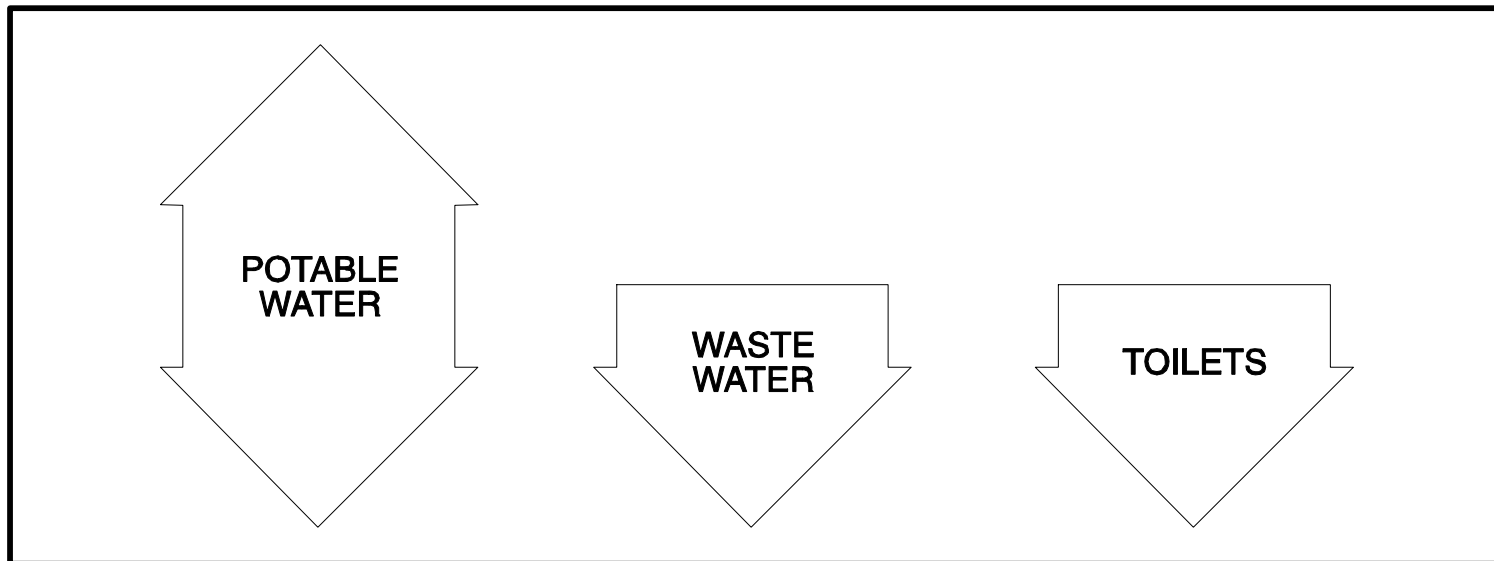
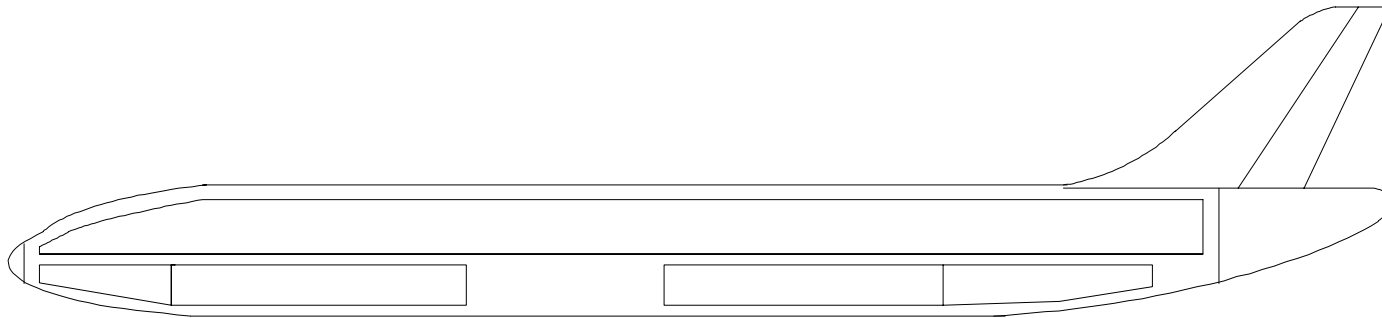
WATER AND WASTE SYSTEM PRESENTATION

General
Potable Water
Waste Water
Toilet System

GENERAL

The water and waste system includes the following sub-systems :

- potable water system,
- waste water system,
- toilet system.



POTABLE WATER

The purpose of the potable water system is to distribute fresh water to the lavatories, faucets and galleys.

Storage

The potable water is stored in two tanks having a capacity of 350 litres (92 U.S gallons) each.
A third tank is optional.

Pressurization

The water tanks are pressurized by filtered and pressure regulated air. In flight, the pressurized air comes from the bleed air system. On ground, the ground air pressure supply system is used when the engine or APU bleed air is not available.
If a compressor is installed (optional), the water tanks can also be pressurized on the ground.

Water distribution

Potable water is distributed to the lavatories and the galleys. In the lavatories, a part of the water supplied to the faucets is heated in water heaters.

Quantity indication

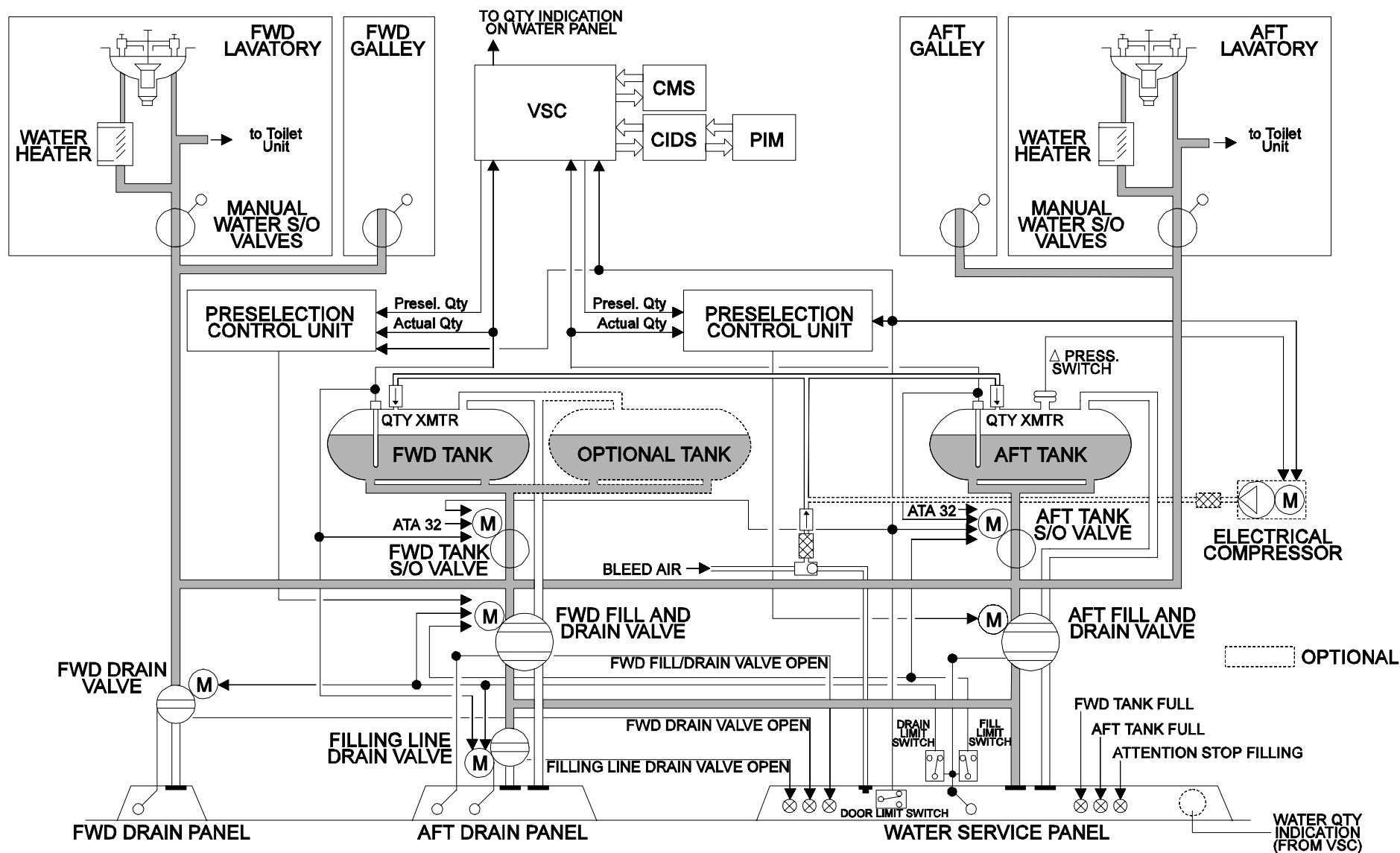
The quantity indicating system has two quantity transmitters. The potable water quantity is displayed on the Programming Indicating Module.
Optionally, the water quantity is also indicated on the water service panel.

Servicing

The potable water system can be serviced (filled or drained) from the service panels located at the bottom center line of the aircraft.

Servicing can be performed with or without electrical power. The refilling level can be preselected.

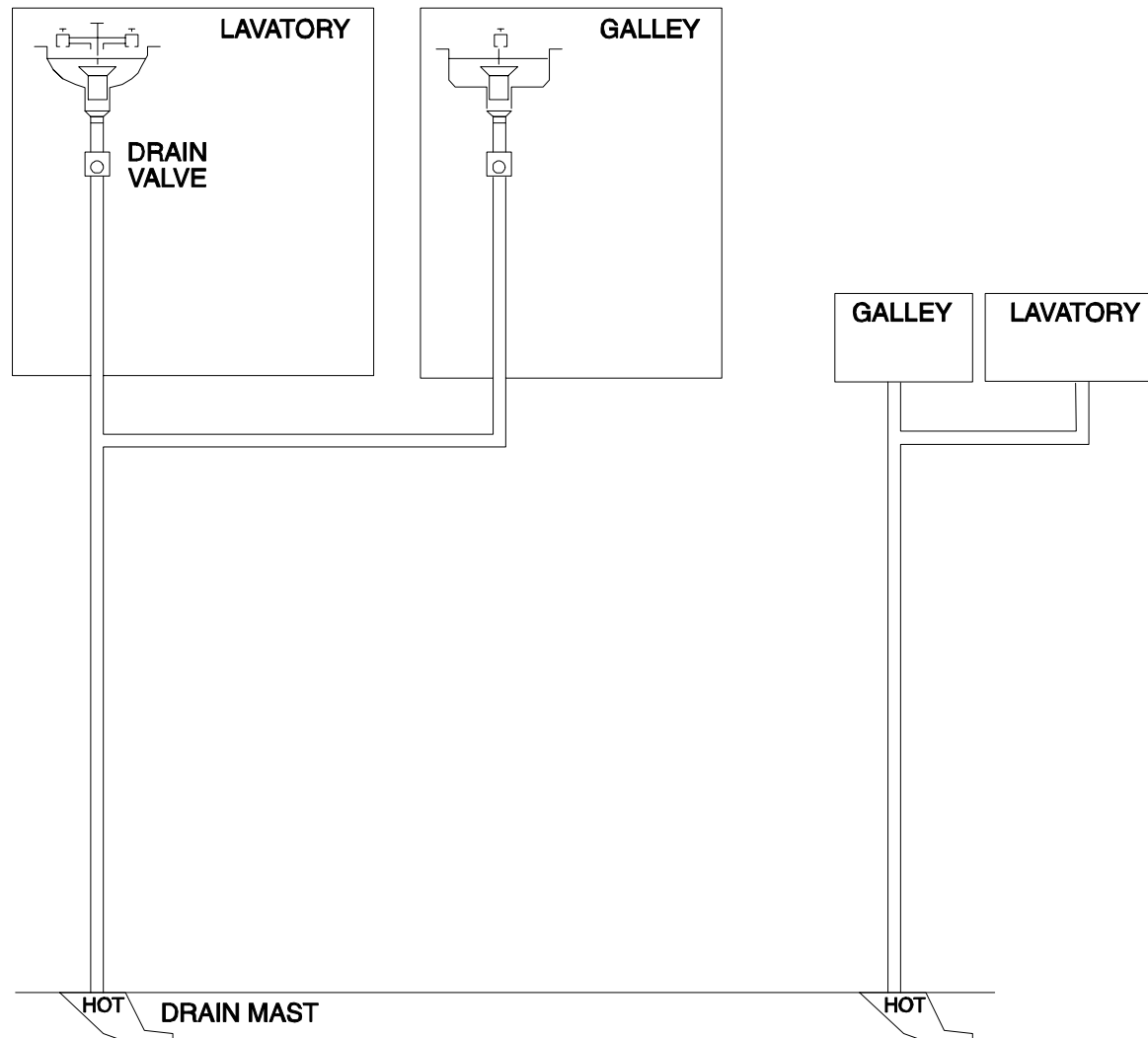
Parts of the filling and drain lines as well as the valves and the connections are electrically heated.



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WASTE WATER

Waste water from the lavatories and galleys is drained overboard via two heated drain masts.



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TOILET SYSTEM

The toilet system collects the waste material and the liquids from the toilets and stores them in the waste tanks.

Flushing

Toilet waste is removed from the toilet bowl to the waste tank under the effect of differential pressure.

When cabin differential pressure is insufficient, a vacuum generator reestablishes the necessary vacuum.

To help flushing of the toilet bowls, water from the potable water system is supplied during operation.

Vacuum System Controller

The complete toilet system is controlled and monitored by a Vacuum System Controller.

Each toilet operation is sequenced by a Flush Control Unit.

Waste tank

Waste is stored in two waste tanks having a capacity of 350 litres (92,459 U.S gallons) each.

The left tank collects waste from the left lavatories and the right tank collects waste from the right lavatories.

A third tank is optional.

Level balancing

To optimize toilet utilization, the level of the 2 or 3 waste tanks can be equalized by opening the balancing valve(s) mounted between the tanks.

The level balancing valve(s) is/are controlled by a handle located in the aft cabin.

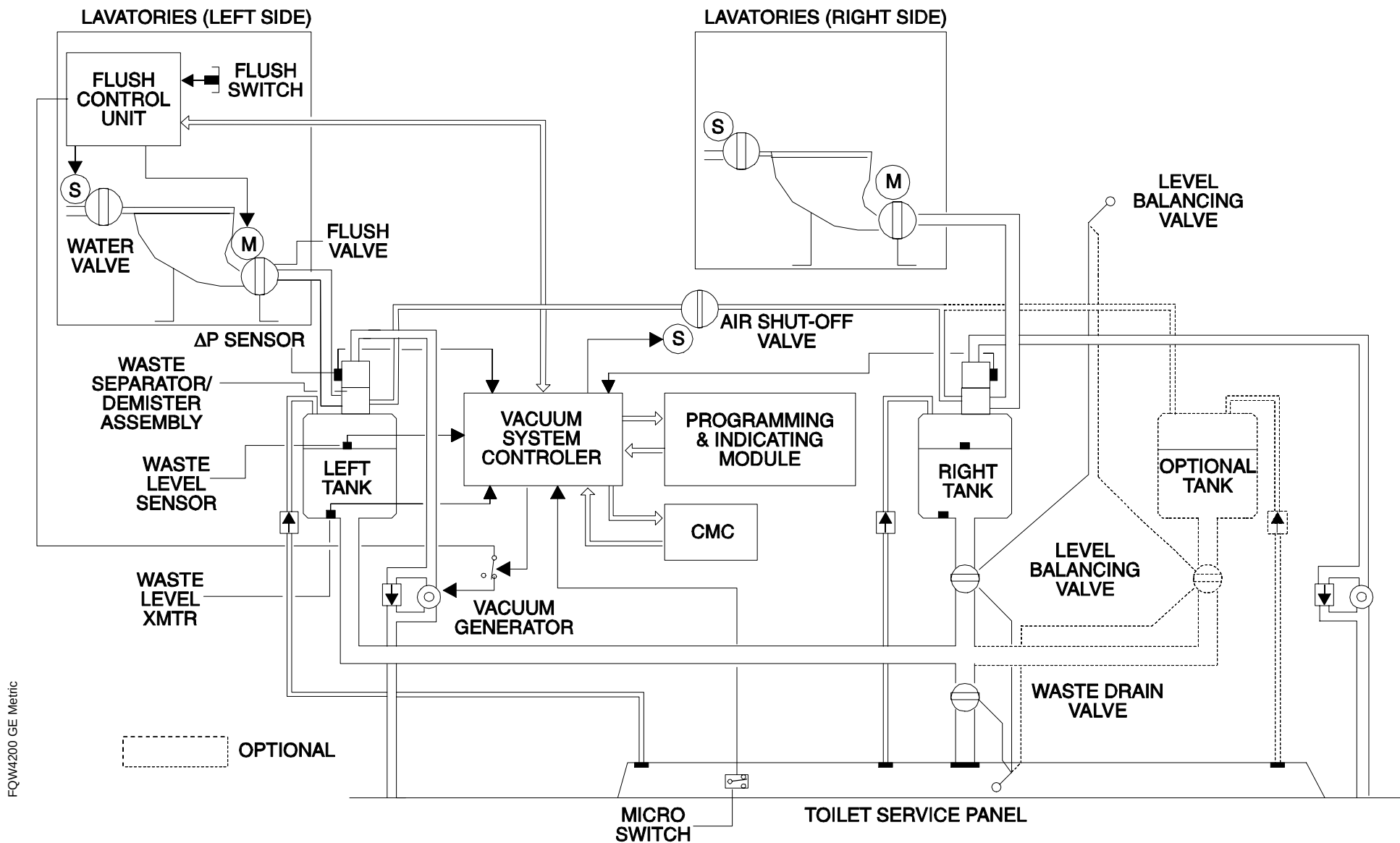
Quantity indication

The 2 waste level transmitters send an analog signal to indicate the waste quantity to the Programming and Indicating Module through the Vacuum System Controller.

Servicing

Toilet servicing is performed from a servicing panel located on the bottom center line of the aircraft. The toilet system is drained, rinsed and disinfected.

Parts of the drain and flush lines as well as the valves and the connections are heated.



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STUDENT NOTES:

POTABLE WATER SYSTEM DESCRIPTION

Storage
Pressurization
Distribution
Heating
Indication
Servicing

STORAGE

Two tanks of 350 litres (92 US gallons) each are located in the pressurized zone of the aircraft, in the right side wall of the aft cargo compartment.

A third tank is optional.

Each tank is equipped with a filling and distribution port and with an overflow and venting port.

Two tanks have an instrumentation port for a water quantity transmitter (not on the optional tank).

Any tank can supply water to any lavatory or galley.

The aft tank is insulated and electrically heated.

PRESSURIZATION

The water tanks are pressurized by compressed air from the pneumatic system, or optionally by a compressor.

Furthermore, on ground, the ground air pressure supply system can pressurize the water tanks.

DISTRIBUTION

The lavatory and galley distribution lines run below the passenger compartment floor.

They are shrouded, insulated or insulated and heated.

Manual water shut-off valve can be manually set to close to isolate a lavatory or a galley.

HEATING

The lavatories are equipped with water heaters.

They maintain the water temperature between 49°C (121°F) and 54°C (129°F). They are protected against overtemperature and in case of low water quantity, the water heaters are also protected against overpressure.

INDICATION

Two of three tanks are equipped with a quantity level transmitter.

The water quantity signal transits through the Vacuum System Controller and is displayed on the Programming and Indicating Module and optionally on the potable water service panel. The quantity of the optional tank is displayed together with the FWD tank.

During water tank filling, the Vacuum System Controller sends the water quantity signal to the preselection control units, which control the fill/drain valves during the filling operation.

SERVICING

A single handle mechanically operates the aft fill and drain valve and, by means of a switch on the handle, the forward fill and drain valve is electrically controlled.

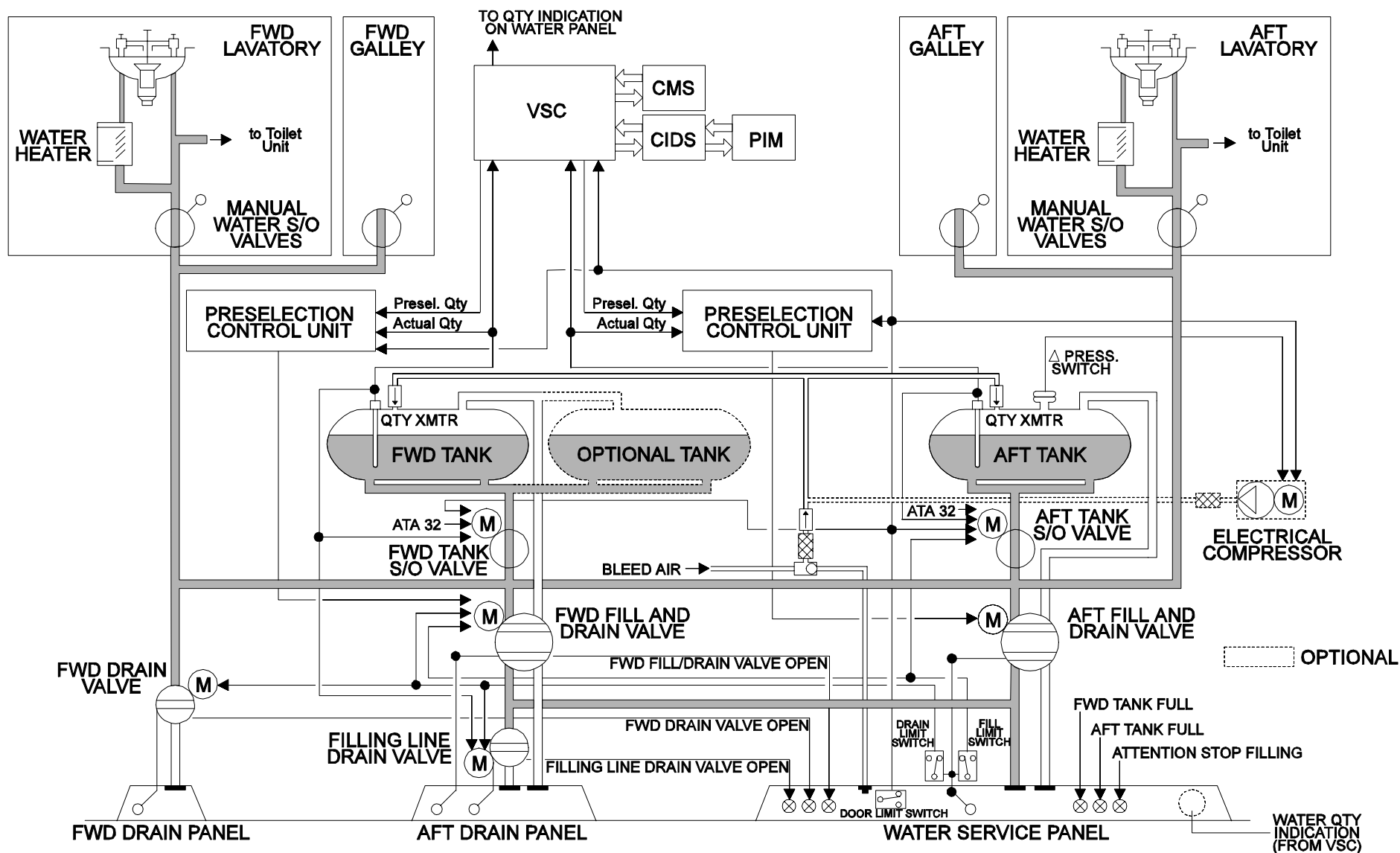
When electrical power is not available, the valves are individually operated by manual handles linked to the valves by cables.

During tank filling, the vent line is used as an overflow.

When the actual tank level reaches the preselected quantity, the preselection control units control the corresponding fill and drain valve to close.

There are four preselection levels available on the PIM :

- 25 %.
- 50 %.
- 75 %.
- 100 %.



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STUDENT NOTES:

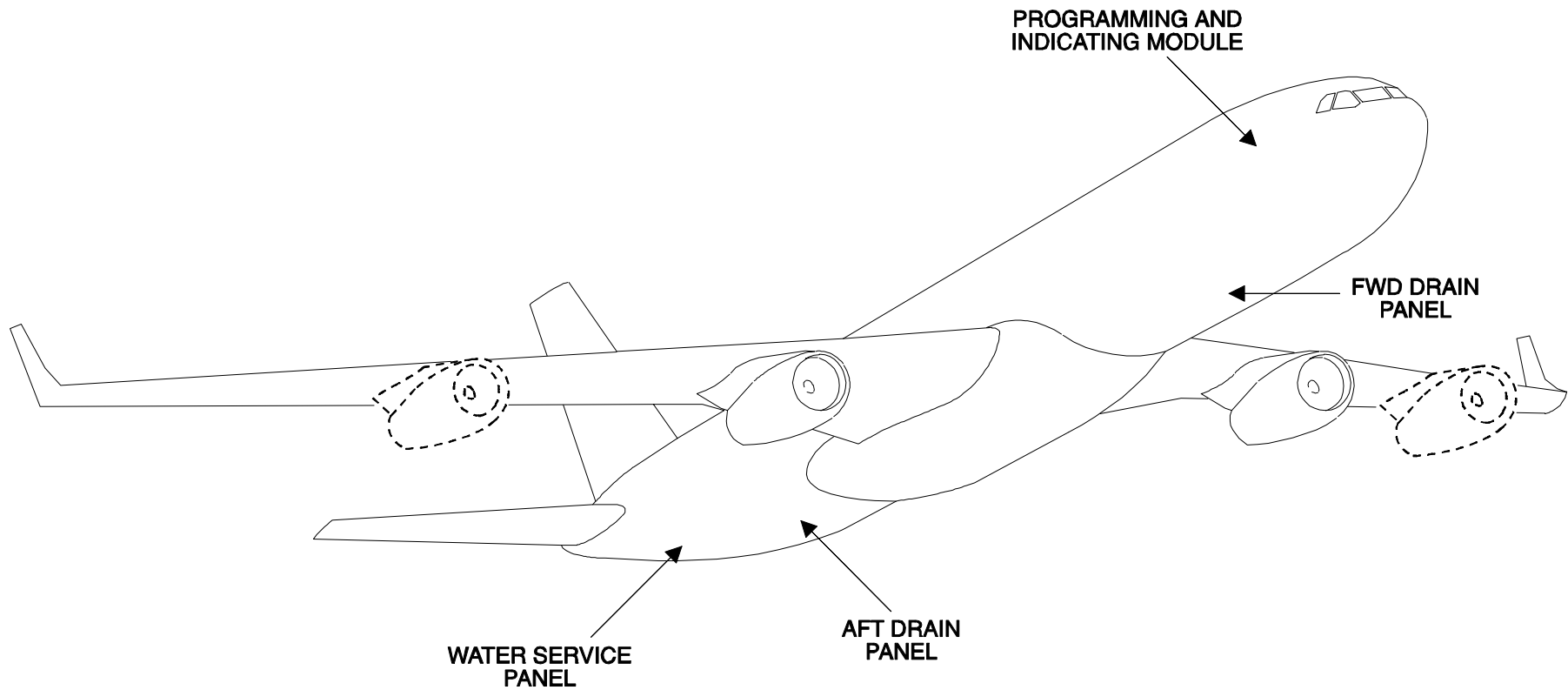
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POTABLE WATER CONTROL AND INDICATING

- General
- Programming and Indicating Module
- Forward Drain Panel
- Aft Drain Panel
- Water Service Panel

GENERAL

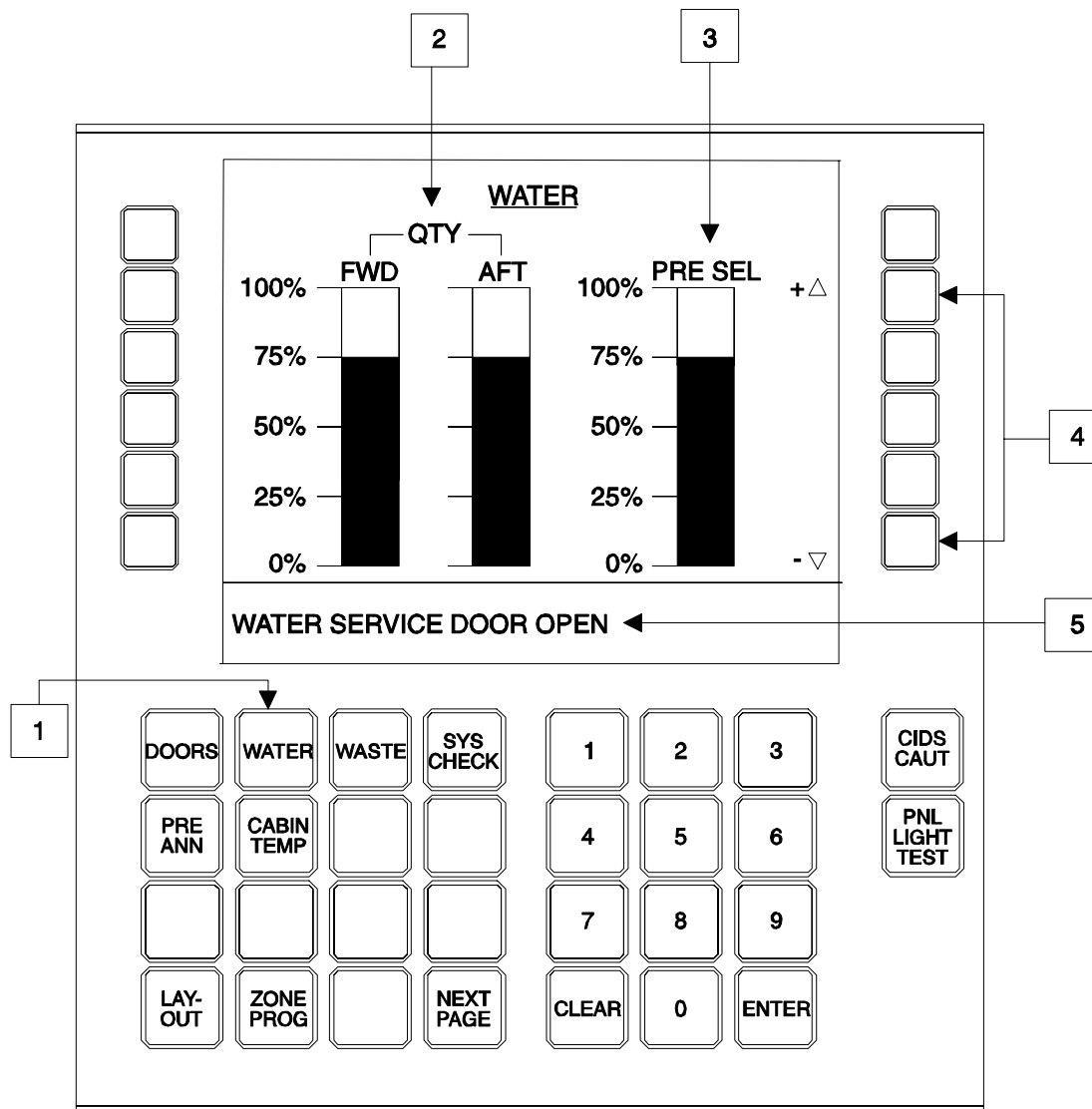
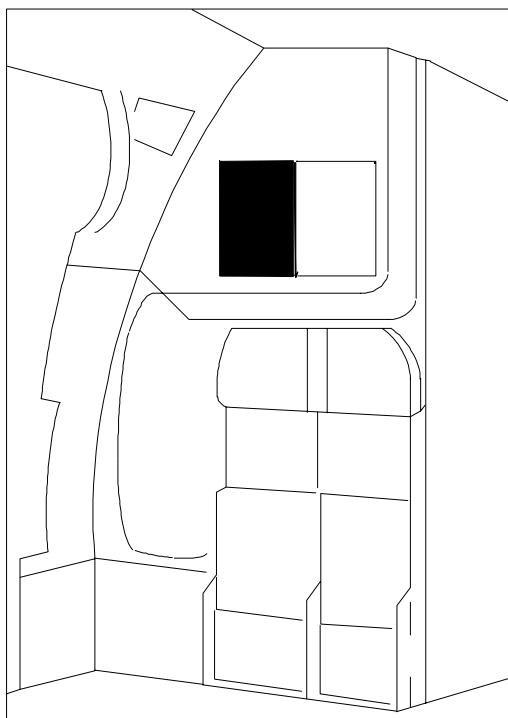
The potable water control and indicating system includes the display on the Programming and Indicating Module (PIM) and three servicing and drain panels located at the bottom of the aircraft fuselage.



PROGRAMMING AND INDICATING MODULE

The PIM is located in the forward section of the cabin.

- 1 : When the water push button is selected, or when the water service panel door is opened, the actual water quantity and the preselected water quantity are indicated.
- 2 : Potable water quantity is indicated in percentage. When the optional third tank is installed, its quantity is displayed with the forward tank. The previously selected quantity will remain when the a/c is on ground again, unless a failure occurs.
In this case 100% value will be displayed by default.
- 3 : On the water quantity preselection flowbar, there are four preselection levels : 25%, 50%, 75% and 100%.
- 4 : Preselection keys are used to preselect the water quantity before refilling (water service door closed).
Each tank will be refilled to the preselected value.
The arrows are only displayed when the potable water service door is closed. The upper arrow disappears when 100% is selected and the down arrow disappears as soon as 25% is selected.
- 5 : Status message is displayed on the potable water page.



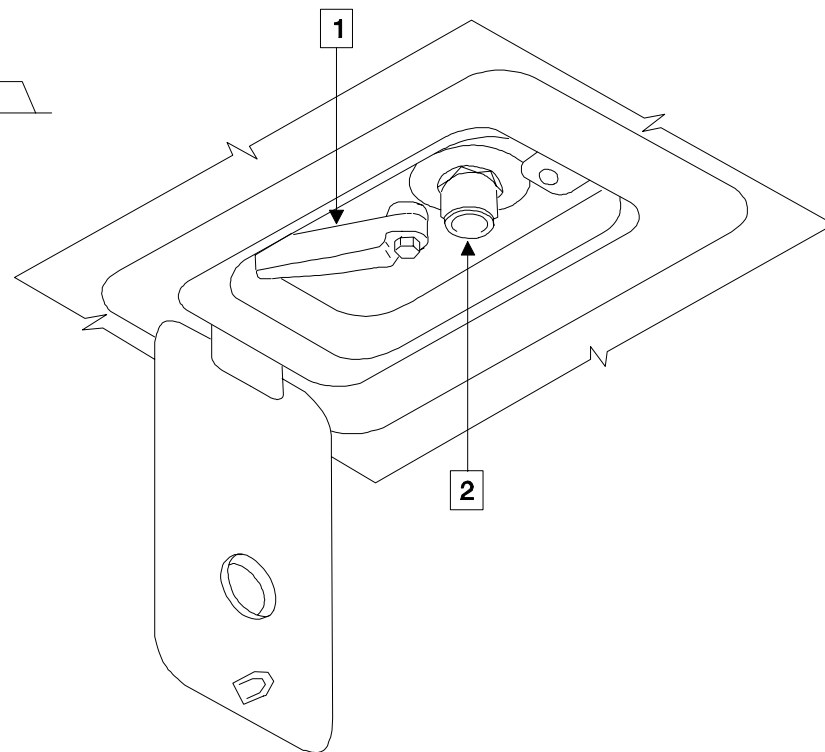
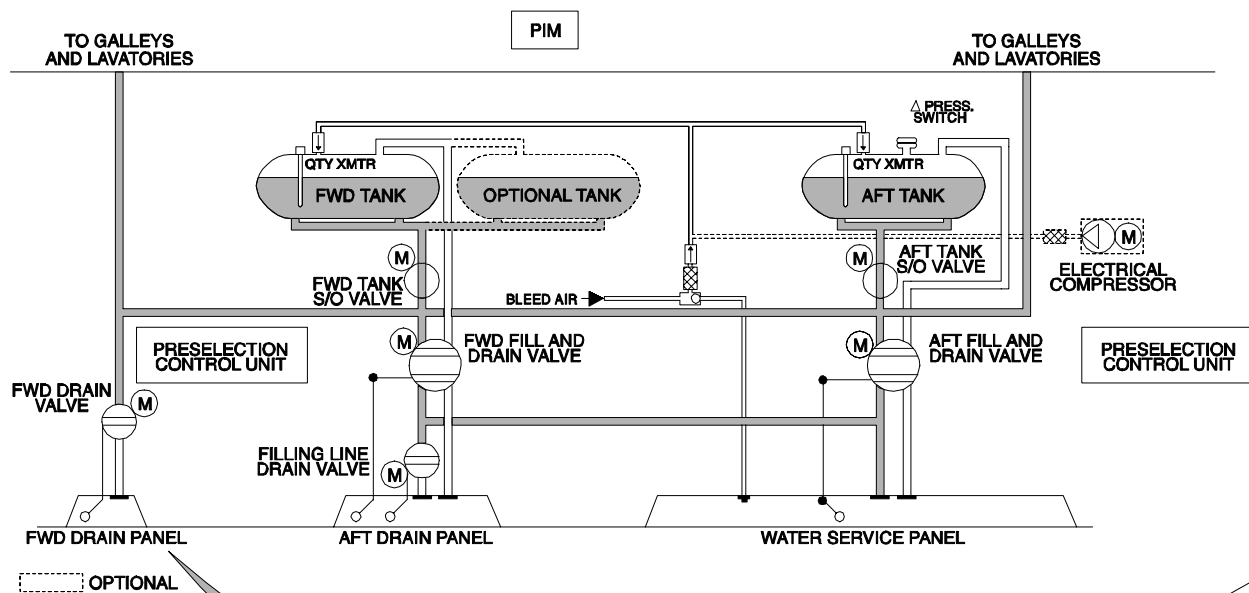
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FORWARD DRAIN PANEL

The forward water drain panel is installed in the forward left side lower fuselage.

1 : Potable water drain valve manual control handle operates the forward drain valve.

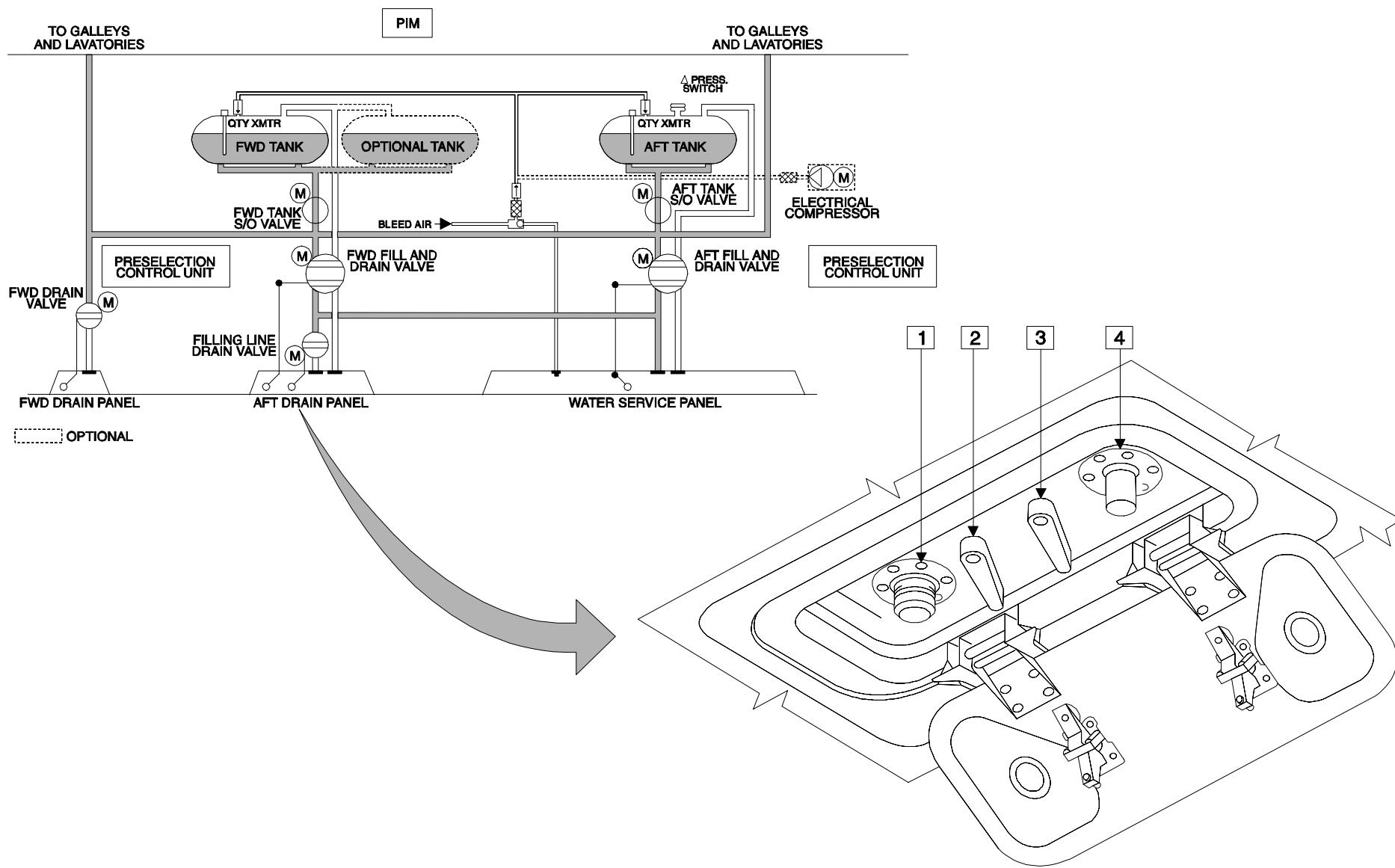
2 : Potable water drain port.



AFT DRAIN PANEL

The aft water drain panel is installed in the aft lower fuselage and comprises:

- 1 : Potable water drain port.
- 2 : Forward fill and drain valve manual control handle.
- 3 : Potable water filling line drain valve manual control handle.
- 4 : Potable water overflow port.



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WATER SERVICE PANEL

The water service panel is installed in the rear left side of the fuselage.

1 : Water tank service handle used to fill or drain the water tanks.

2 : Water fill and drain port.

3 : Ground air pressure connector (maximum 44 psi).

4 : Potable water tank overflow port.

5 : Optional water tank quantity indicator.

6 : Water service door microswitch supplies electrical power to the quantity preselection system. If the air compressor is installed, its electrical power is cut off as soon as the water service door is open.

7 : The forward tank full light comes on green when the forward tank has reached the preselected value.

8 : The aft tank full light comes on green when the aft water tank has reached the preselected value.

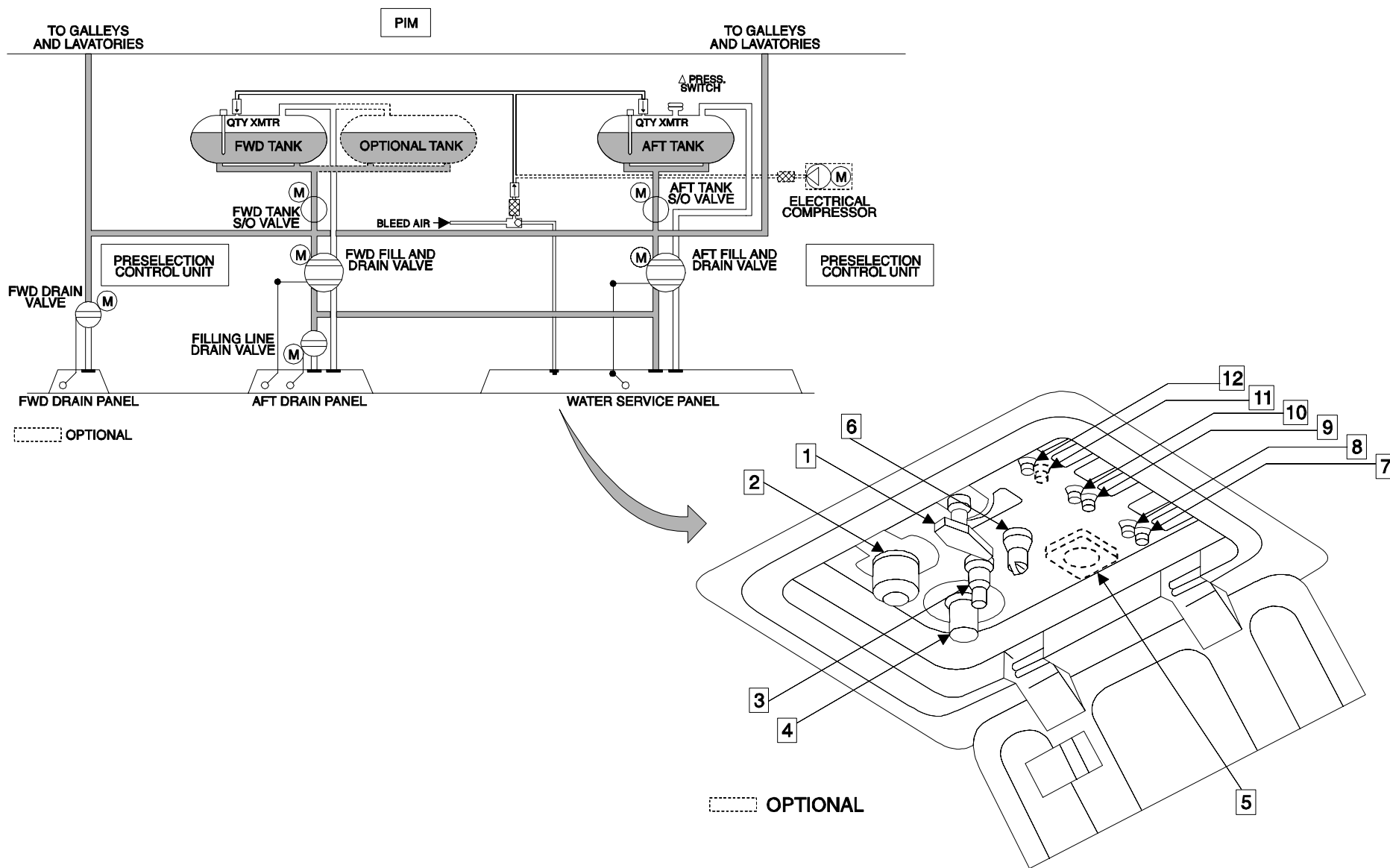
9 : The forward fill/drain valve light comes on green when the forward fill and drain valve is open.

10 : The forward drain valve light comes on green when the forward drain valve is open.

11 : The attention stop filling light comes on amber when either the FWD or AFT shut-off valve is closed and the aircraft is on ground.
When the light is amber, do not perform the filling procedure.

12 : The filling line drain valve light comes on green when the filling line drain valve is closed.

All the lights have a Press To Test facility.



STUDENT NOTES:

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POTABLE WATER COMPONENTS

- Safety Precautions
- Water Tank
- Water Quantity Transmitter
- Fill/Overflow/Drain Valve
- FWD Drain Valve
- Filling Line Drain Valve
- Shut-off Valve
- Water Service Door Switch
- Preselection Control Unit
- Manual Water Shut-off Valve
- Water Heater
- Water Faucet

SAFETY PRECAUTIONS

- Pull and tag the appropriate circuit breakers.
- Make sure that the water tank is depressurized.

STUDENT NOTES

WATER TANK

FIN : 5000MB 5001MB (5002MB option)

ZONE : 152 172 (152)

COMPONENT DESCRIPTION

The water tank is made of composite material.
Each tank has a capacity of 350l (92.5 US gal).
The water tank is equipped with :

- an overflow port,
- a quantity transmitter mounting pad,
- 2 connections to fill, drain and distribute,
- a connection for air pressurization.

The aft water tank is insulated and electrically heated.

WATER QUANTITY TRANSMITTER

FIN : 2MA 12MA

ZONE : 152 172

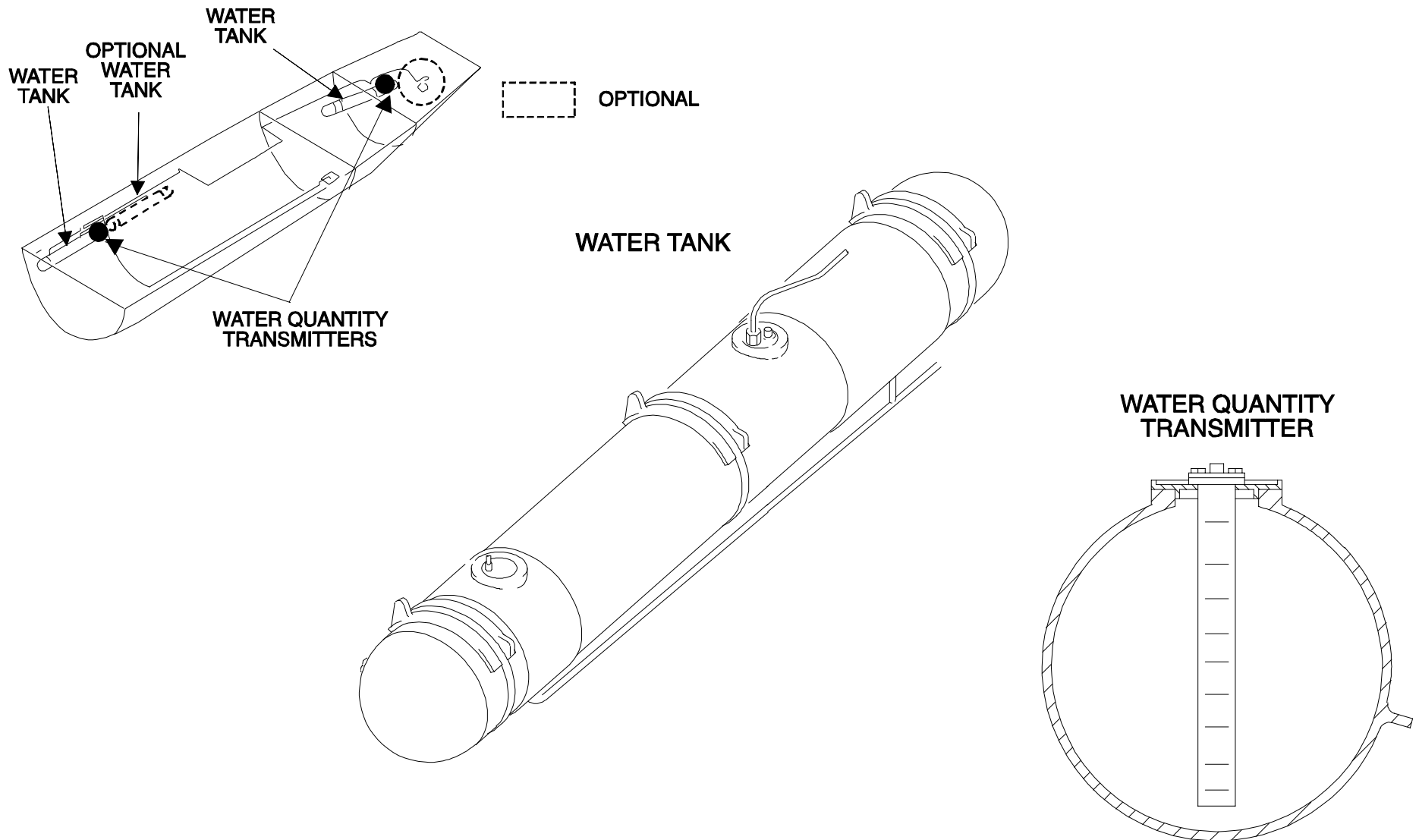
COMPONENT DESCRIPTION

The quantity transmitter has 2 sub assemblies :

- a tube housing assembly,
- an electrical assembly.

It supplies a constant signal of the contents of the tanks. When a third tank is installed, the quantity transmitters are installed in 2 of the 3 tanks. The transmitters monitor the quantity of the potable water and send the data through the Vacuum System Controller to the CIDS.

The quantity transmitters operate as a variable capacitor. They have a low level setting (5%) which cuts off the electrical supply to the water heaters and closes the FWD or AFT tank shut-off valve. The FWD transmitter 2MA also sends the 5% low level signal to control the filling line drain valve to open at the end of the draining sequence.



FILL/OVERFLOW/DRAIN VALVE

FIN : 9MA 22MA

ZONE : 172 154

COMPONENT DESCRIPTION

The fill/overflow/drain valve is a 4/2 way valve. This means that the valves have 4 connections and the water can flow in two directions through the valve.

The valve is either electrically operated by means of a motor or manually by means of a control lever and a cable.

FWD DRAIN VALVE

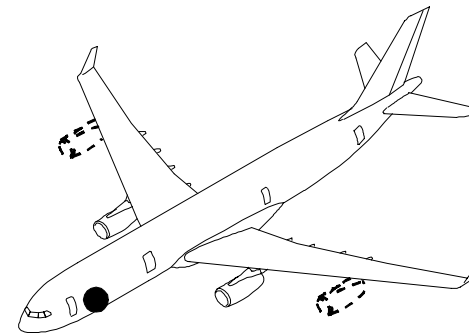
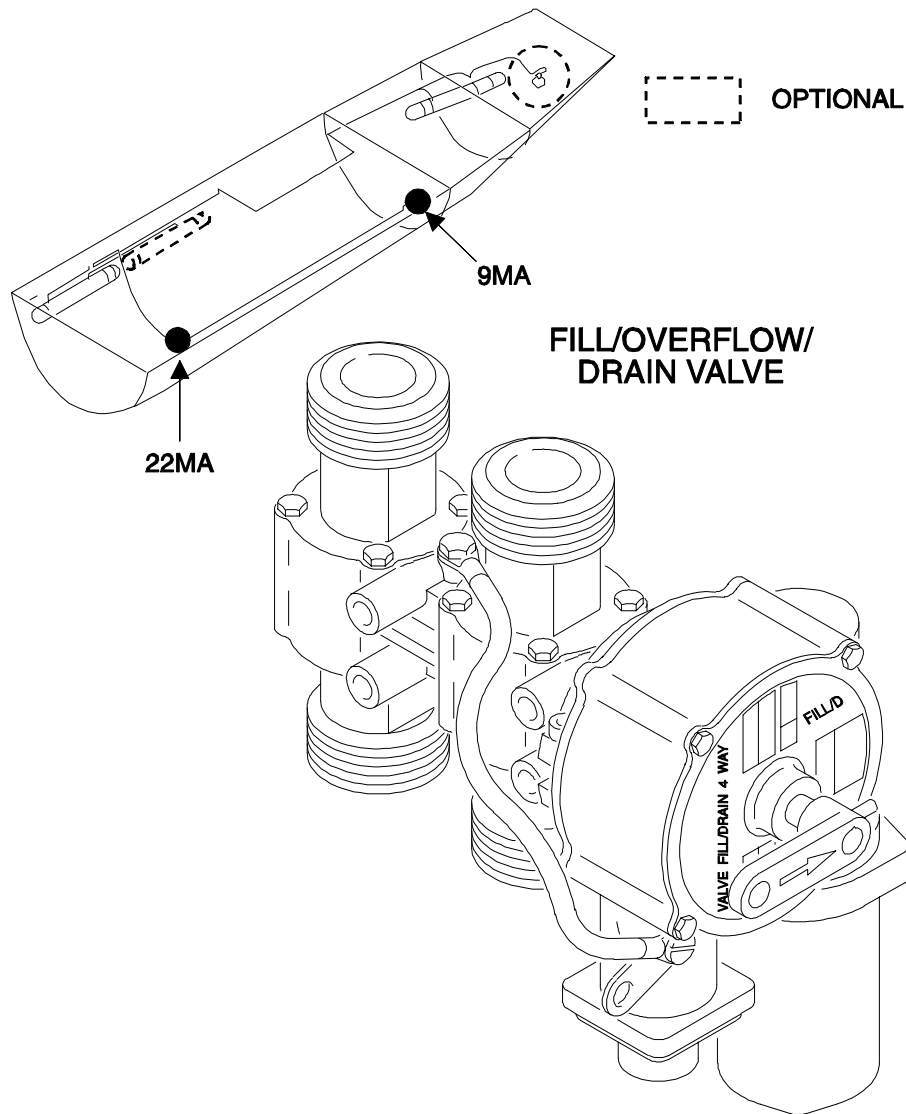
FIN : 2MP

ZONE : 133

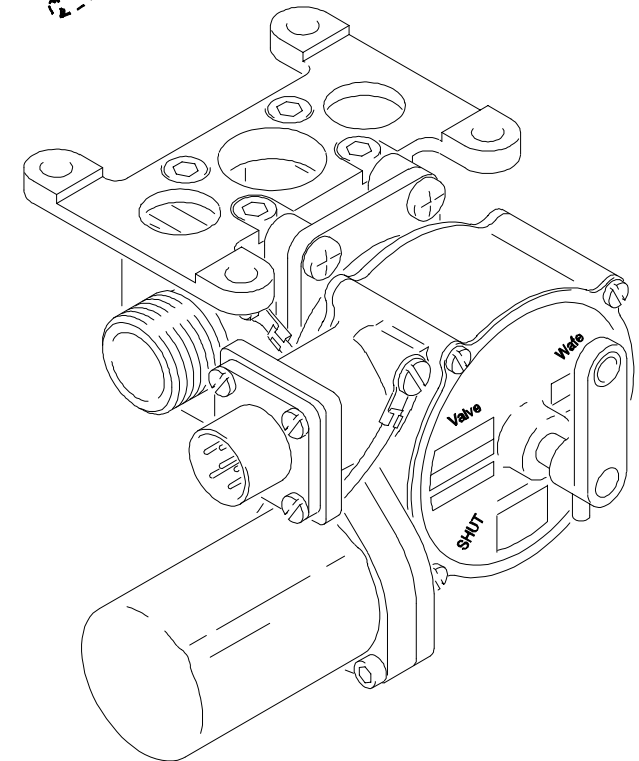
COMPONENT DESCRIPTION

The motorized drain valve operates electrically.

It also can be operated manually from the forward drain panel using a control handle.



FWD DRAIN VALVE



FILLING LINE DRAIN VALVE

FIN : 7MP

ZONE : 154

COMPONENT DESCRIPTION

The filling line drain valve is installed in the potable water filling line.
The motorized filling line drain valve operates electrically.
It can also be operated manually from the aft drain panel using a control handle.

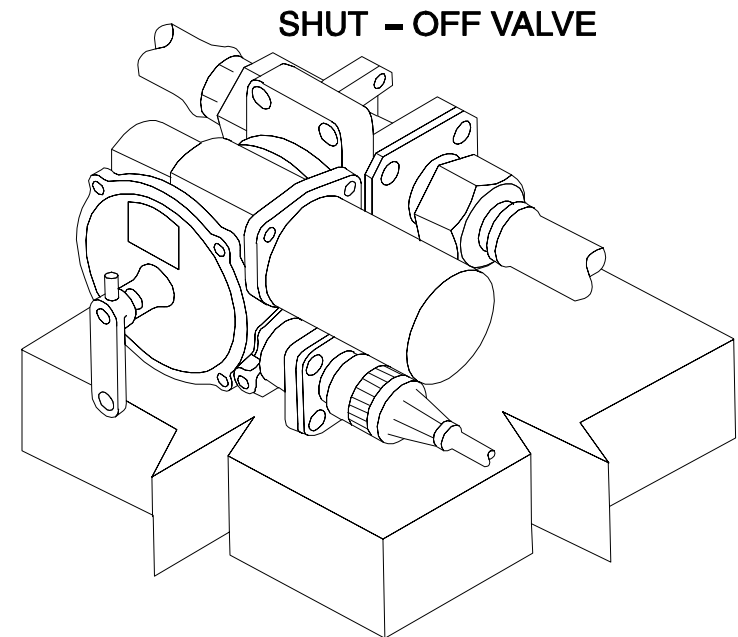
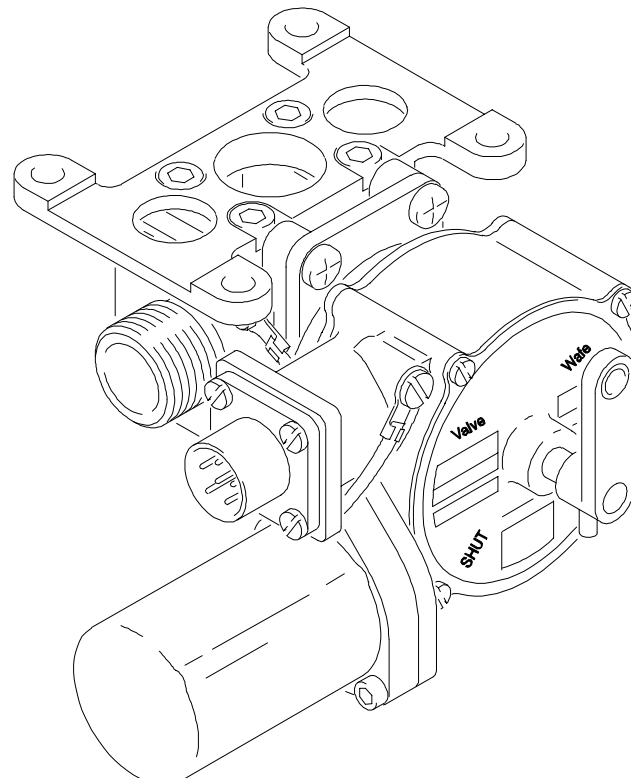
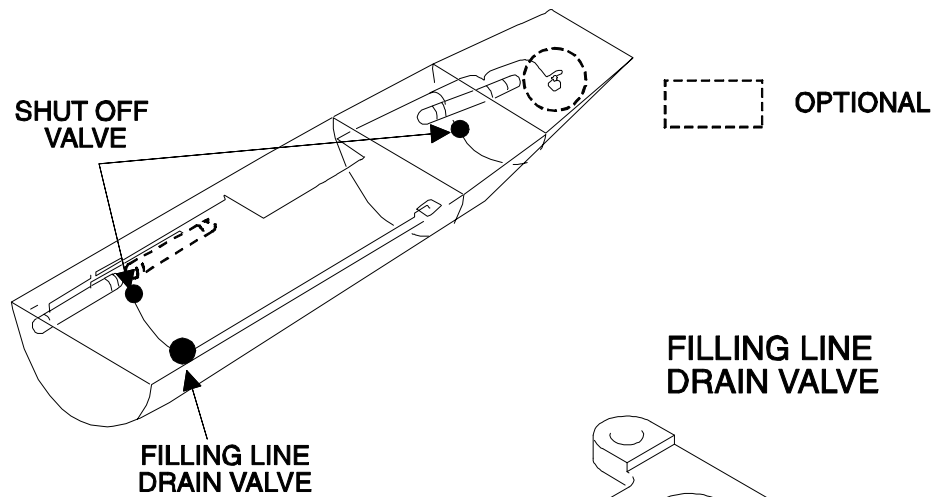
SHUT-OFF VALVE

FIN : 36MA 37MA

ZONE : 154 172

COMPONENT DESCRIPTION

The shut-off valves close automatically in flight when the water quantity in the related tank is 5% or less. This prevents air from getting into the distribution system. On ground, the valves are in the open position. During the fill/drain procedures, they allow the water to flow in both directions.



WATER SERVICE DOOR SWITCH

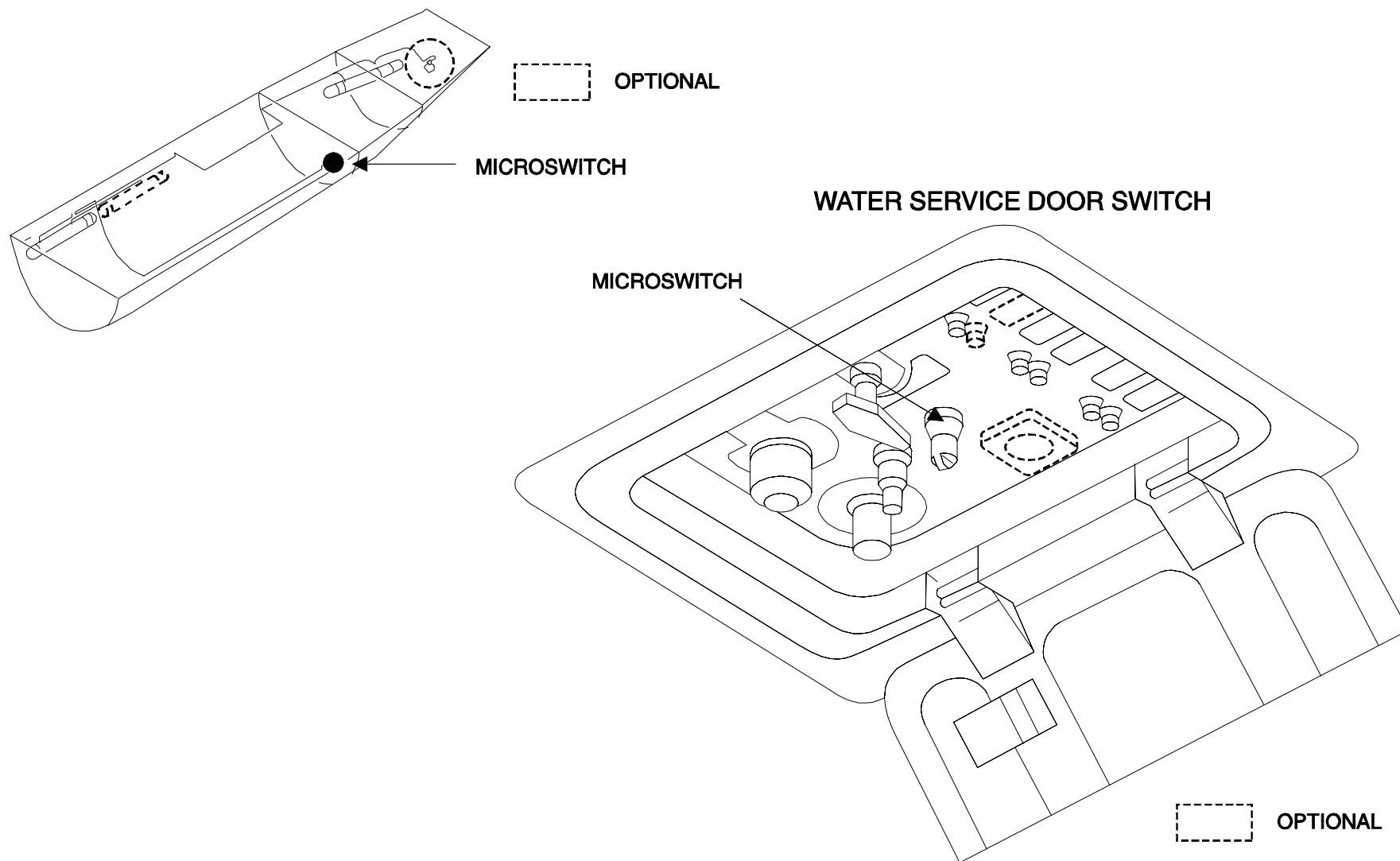
FIN : 6MA

ZONE : 172

COMPONENT DESCRIPTION

When the water service door is open:

- the quantity indication and the preselection system are energized,
- the electrical power to the air compressor (if installed) is cut off.



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PRESELECTION CONTROL UNIT

FIN : 3MA 13MA

ZONE : 172 172

COMPONENT DESCRIPTION

The preselection control unit is electrically supplied through the service door switch.

The preselection control unit closes the fill/drain/overflow valve when the water quantity in the corresponding tank has reached the preselected level.

MANUAL WATER SHUT-OFF VALVE

FIN : ZONE :

Example

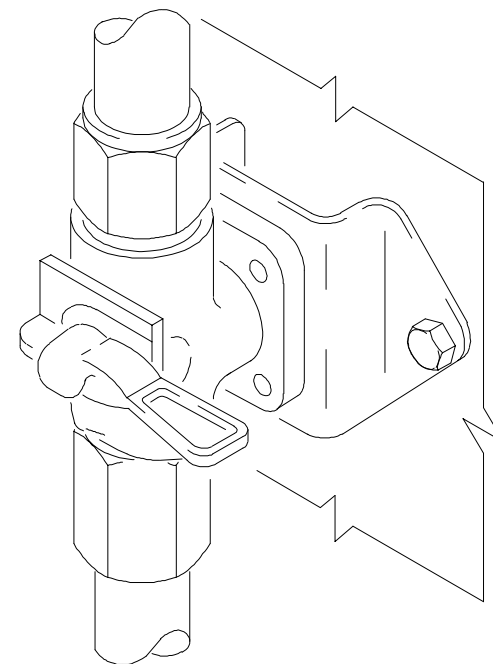
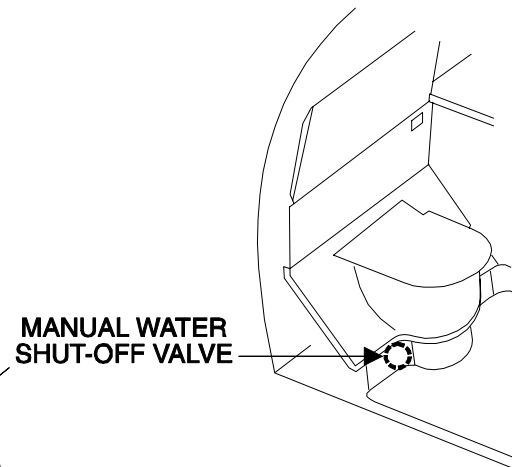
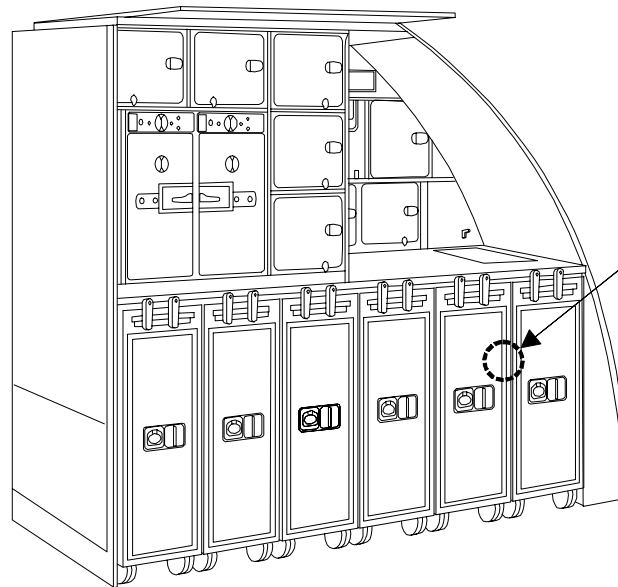
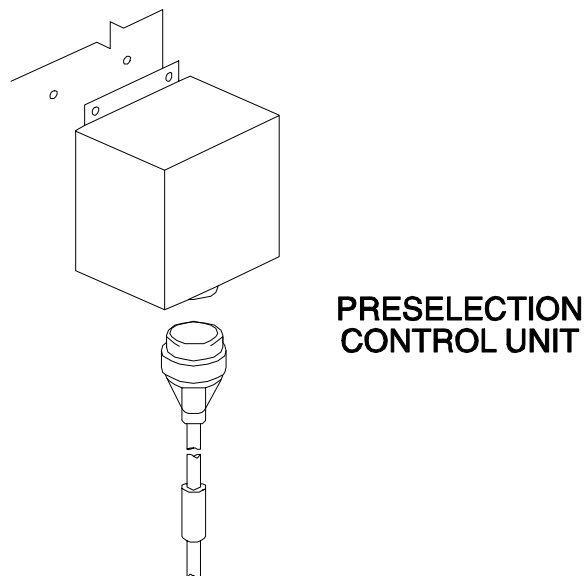
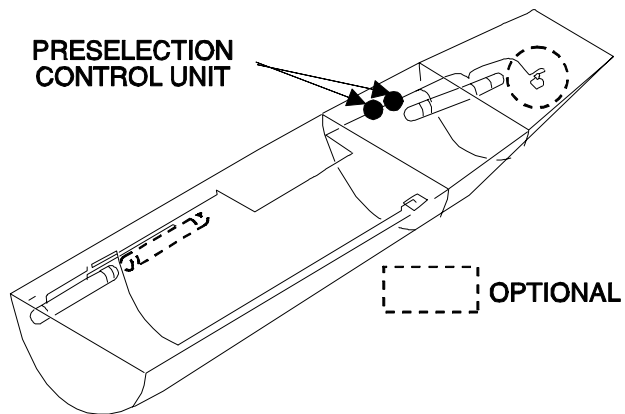
5501MB	221
5503MB	222
5508MB	231
5511MB	232
5521MB	271
5522MB	272
5525MB	271
5526MB	272

The exact FIN numbers and ZONES depend on the lavatory layout.

COMPONENT DESCRIPTION

The manual water shut-off valves are installed on the lavatory and galley units.

They isolate the water supply to the faucets, toilet bowls and/or the galleys.



WATER HEATER

FIN : ZONE :

Example

510MB	221
503MB	222
508MB	231
511MB	232
521MB	271
522MB	272
525MB	271
526MB	272

The exact FIN numbers and ZONES depend on the lavatory layout.

COMPONENT DESCRIPTION

The water heater contains 1.5 l and regulates the water temperature between 49 and 54°C (120.2 and 129.2°F)

OVERTEMPERATURE PROTECTION

An overtemperature switch opens when the temperature is $77 \pm 5^\circ\text{C}$ ($170.6 \pm 9^\circ\text{F}$).

The overtemperature switch can be reset through the ON/OFF switch when the temperature is below 35°C (95°F) and after a time delay of 9 minutes. This reset pushbutton is located under the top cover of the water heater.

PRESSURE PROTECTION

A pressure sensor cuts off the power to the heating element when the pressure is below 7.25 psi.

The pressure sensor is reset automatically when the pressure increases above 11 psi.

A pressure relief valve reduces the pressure when it is above 55 psi.

LOW LEVEL PROTECTION

A low level switch cuts off the electrical power to the heating element when the water level in the heater is below one liter.

It resets automatically above this level.

SAFETY PRECAUTIONS

Do not touch the water heater until it is sufficiently cool to prevent burns when doing the maintenance tasks.

WATER FAUCET

FIN : ZONE :

Example

5201MB	221
5203MB	222
5208MB	231
5211MB	232
5221MB	271
5222MB	272
5225MB	271
5226MB	272

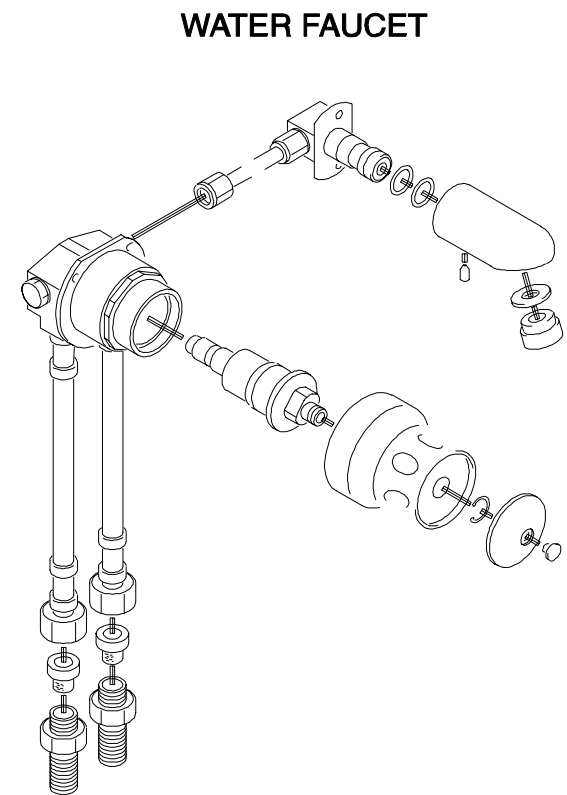
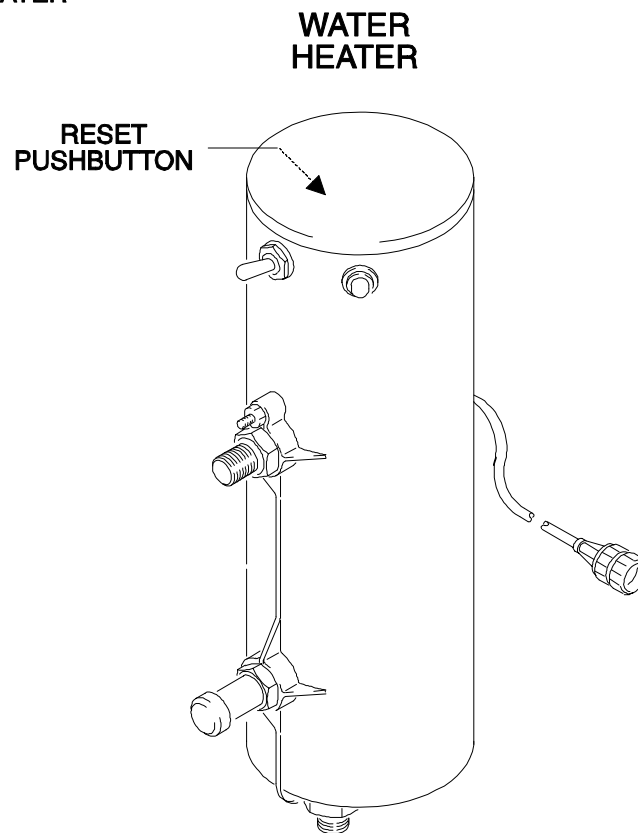
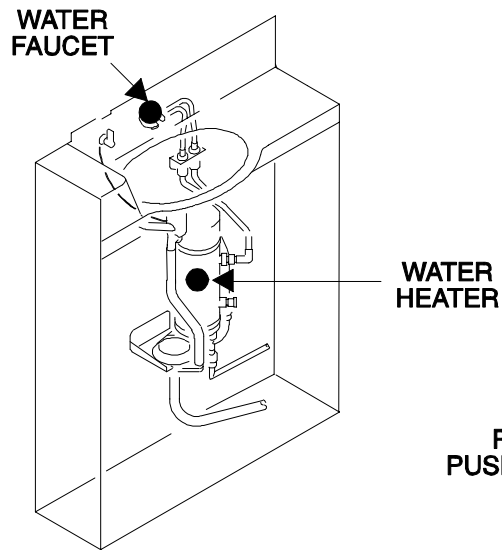
The exact FIN numbers and ZONES depend on the lavatory layout.

COMPONENT DESCRIPTION

The water faucets are equipped with a time delay mixing valve controlled by a push-knob.

The push-knob is rotated to mix hot and cold water.

When the push-knob is pushed, the water flows for 10 ± 2 seconds.



STUDENT NOTES

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POTABLE WATER SYSTEM SERVICING

GENERAL

WEATHER CONDITION

WATER TANK FILLING

- With Electrical Power
- Without Electrical Power

WATER TANK DRAINING

- With Electrical Power
- Without Electrical Power

GENERAL

When the water service door is open, the door switch sends a signal to the Vacuum System Controller to energize the preselection system and to supply the preselection control units.

The WATER SERVICE DOOR OPEN message is displayed on the Programming and Indicating Module.

WEATHER CONDITION

When the outside air temperature is as shown in the table:

- do not fill the potable water system,
- if there is water in the tanks, drain the potable water system.

CONFIGURATION			EXPOSURE TIME	WATER TANK DRAIN OR NOT FILL
AIR CONDITIONING	CABIN TEMPERATURE	OUTSIDE AIR TEMPERATURE		
ON	ABOVE 10 DEG.C	BETWEEN 0 AND -15 DEG.C 32 AND 5 DEG.F	ANY	NOT REQUIRED
	50 DEG.F	BELOW -15 DEG.C 5 DEG.F	1 H 15 MIN	
		BETWEEN 0 AND -7 DEG.C 32 AND 19.4 DEG.F	1 H 30 MIN	REQUIRED
OFF		BETWEEN -7 AND -15 DEG.C 19.4 AND 5 DEG.F	0 H 45 MIN	
		BELOW -15 DEG.C 5 DEG.F	NONE	
YOU MUST NOT FILL THE TANKS WITH WATER MORE THAN 30 MINUTES BEFORE YOU START THE ENGINES. IF THE TEMPERATURE IN THE AIRCRAFT IS BELOW 4 DEG.C (39.2 DEG.F), PRE-CONDITION THE AIRCRAFT (REF. 12-33-21 PAGE 2).				

The table shown above is taken from the Aircraft Maintenance Manual.

STUDENT NOTES

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WATER TANK FILLING

WITH ELECTRICAL POWER

First, set the necessary quantity on the Programming and Indicating Module, then open the door of the water service panel, remove the cap of the fill/drain port and connect the water service vehicle hose to the fill/drain port.

On the water service panel, turn the fill/drain valve control handle to the FILL position and pull it out to the mechanical stop.

- the FWD and aft fill/drain valves open,
- the control light "FWD fill/drain valve open" comes on.

Operate the water service vehicle at a pressure of 125 psi to fill the tanks.

Case 1: FWD tank(s) is (are) full before aft tank.

The signal of the FWD qty xmtr agrees with the signal of the corresponding preselection control unit.

- the FWD fill/drain valve closes,
- the control light "FWD fill/drain valve open" goes off,
- the control light "FWD tank full" comes on.

After further filling of the aft tank, the signal of the aft qty xmtr agrees with the signal of the corresponding preselection control unit.

- the aft fill/drain valve closes,
- the control light "aft tank full" comes on,
- the fill/drain valve control handle returns to the NORMAL position.

Case 2: aft tank is full before FWD tank(s).

The signal of the aft qty xmtr agrees with the signal of the corresponding preselection control unit.

- the aft tank shut-off valve closes (the attention stop filling light does not come on, as the valve opens again as soon as the FWD tank has reached the selected water level),
- the control light "aft tank full" comes on.

After further filling of the FWD tank(s), the signal of the FWD qty xmtr agrees with the signal of the corresponding preselection control unit.

- the FWD and aft fill/drain valves close and the fill/drain valve control handle returns to the NORMAL position,
- the control light "FWD fill/drain valve open" goes off,

- the control light "FWD tank full" comes on,
- the aft tank shut-off valve opens.

Note: In both cases, the filling procedure can be stopped before the preselected quantity has been reached by turning the control lever manually to the NORMAL position.

Switch off the water service vehicle and disconnect the filling hose.

Put a cap on the fill/drain port on the water service panel. Clean and dry the panel and make sure that no leaks are visible. Close the service panel door. Remove all equipment and ground support.

WITHOUT ELECTRICAL POWER

Open the doors of the water service panel and the aft drain panel. Remove the cap of the fill/drain port on the water service panel and connect the fill hose of the water service vehicle to the fill/drain port. Connect hoses to the overflow ports on the water service panel and on the aft drain panel and put containers in position.

On the aft drain panel, turn the fill/drain valve handle to the OPEN position.

- the FWD fill/drain valve opens.

On the water service panel, turn the fill/drain valve control handle to the FILL position and pull it out to the mechanical stop.

- the aft fill/drain valve opens.

Operate the water service vehicle at a pressure of 125 psi to fill the tanks.

When the water flows from the overflow port on the aft drain panel, the FWD tank(s) is (are) full. Turn the fill/drain valve handle to the CLOSE position.

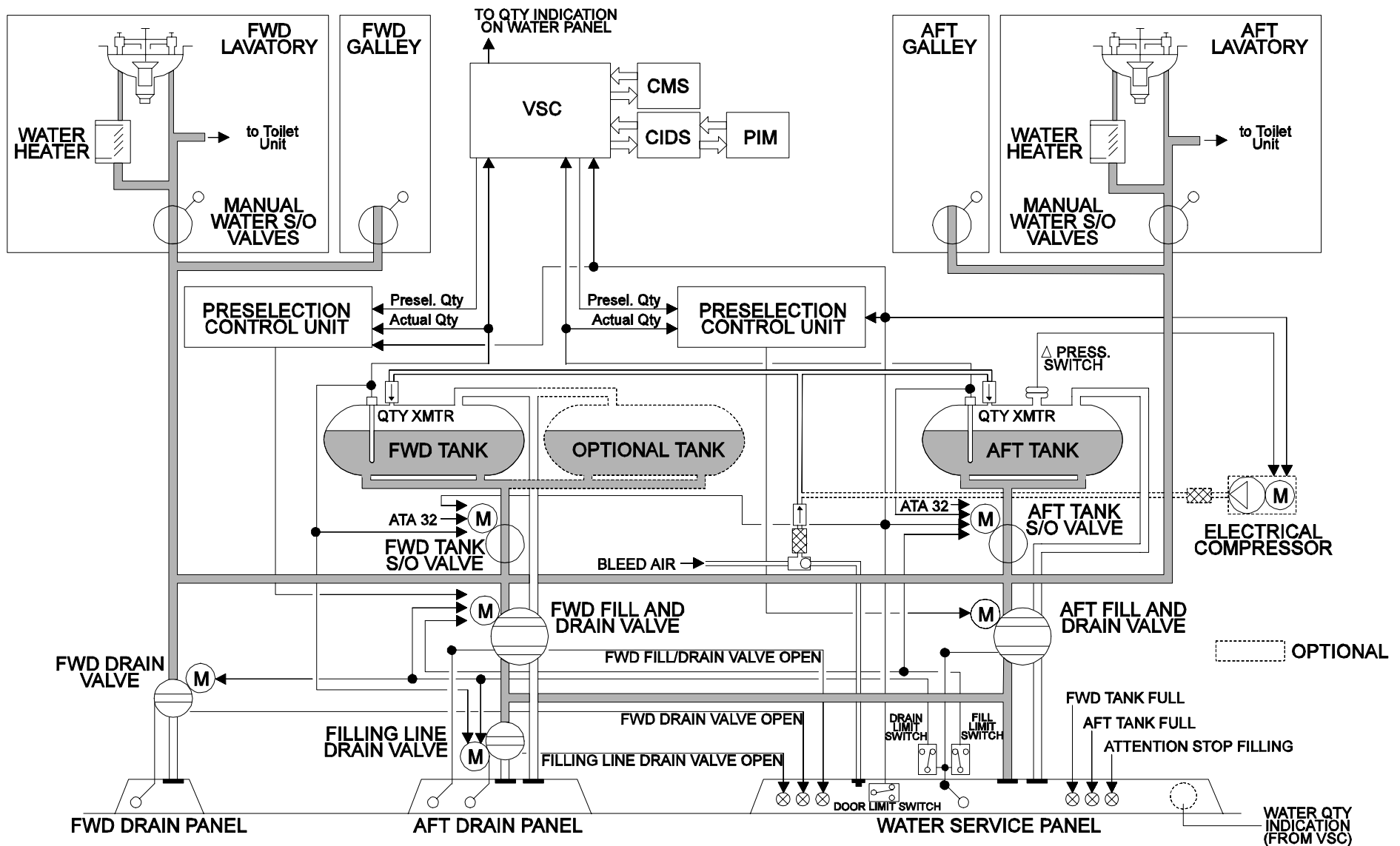
- the FWD fill/drain valve closes.

When the water flows from the overflow port on the water service panel, the aft tank is full. Turn the fill/drain valve control handle to the NORMAL position.

- the aft fill/drain valve closes.

Switch off the water service vehicle and disconnect the hoses.

Put a cap on the fill/drain port on the water service panel. Clean and dry the panels and make sure that no leaks are visible. Close the service panel doors. Remove all equipment and ground support.



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WATER TANK DRAINING

WITH ELECTRICAL POWER

Before draining the water tanks, make sure that all manual water shut-off valves of the lavatories and the galleys are open.

Open the three service panel doors. Remove the cap of the fill/drain port on the water service panel. Connect the drain hoses. Put the containers in position under each panel.

On the water service panel, turn the control handle to the DRAIN position and pull it out to the mechanical stop.

- the FWD and aft fill/drain valves open,
- the FWD drain valve opens,
- the control lights "FWD fill/drain valve open" and "FWD drain valve open" come on,
- water drains from the fill/drain port on the water service panel and from the drain port on the forward drain panel.

As soon as the water level in the forward tank(s) is 5%:

- the filling line drain valve opens,
- the control light "fill line drain valve open" comes on,
- water drains from the drain port on the aft drain panel.

When the system is drained, turn the control handle on the water service panel back to its NORMAL position.

- the FWD and aft fill/drain valves close,
- the FWD drain valve closes,
- the filling line drain valve closes,
- the control lights "FWD fill/drain valve open", "FWD drain valve open" and "fill line drain valve open" go off.

Note: If the outside temperature is less than 0 deg.C (32 deg. F), the valves must stay open.

Disconnect the drain hoses. Clean and dry the service panels. Install the cap on the fill/drain port on the water service panel. Close the doors of the service panels. Remove all equipment and ground support.

Note: In freezing conditions, do not close the service panel doors.

WITHOUT ELECTRICAL POWER

Before draining the water tanks, make sure that all manual water shut-off valves of the lavatories and the galleys are open.

Open the three service panel doors. Remove the cap of the fill/drain port on the water service panel. Connect the drain hoses. Put the containers in position under each panel.

On the water service panel, turn the control handle to the DRAIN position and pull it out to the mechanical stop, to open the aft fill/drain valve.

- water drains from the fill/drain port on the water service panel.

On the aft drain panel, turn the FWD fill/drain valve handle to the OPEN position.

- water drains from the fill/drain port on the water service panel.

On the aft drain panel also turn the filling line drain valve handle to the OPEN position.

- water drains from the filling line drain port on the aft drain panel.

On the FWD drain panel, turn the FWD drain valve handle to the OPEN position.

- water drains from the drain port on the FWD drain panel.

When the system is drained, turn the handles of the FWD drain valve, the FWD fill/drain valve and the filling line drain valve to the CLOSE position. Push the control handle of the aft fill/drain valve to the NORMAL position.

Note: If the outside temperature is less than 0 deg.C (32 deg. F), the valves must stay open.

Disconnect the drain hoses. Clean and dry the service panels. Install the cap on the fill/drain port on the water service panel. Close the doors of the service panels. Remove all equipment and ground support.

Note: In freezing conditions, do not close the service panel doors.

WATER TANK PRESSURIZATION SYSTEM DESCRIPTION AND OPERATION

General
Pneumatic System
Electrical Compressor (option)
Ground Air Supply System
Shuttle Valve

GENERAL

Water tank pressurization is required to deliver water under pressure to the lavatories and galley faucets.

The water tanks are pressurized between 25 psi and 30 psi (1.7 bar and 2.1 bar) using different sources:

- the aircraft pneumatic system,
- an optional electrical compressor or
- the ground air supply system

PNEUMATIC SYSTEM

The Aircraft Pneumatic System supplies air pressure which is maintained in a range of 25 to 30 psi by the pressure reducing and relief valve.

The pressure reducing and relief valve prevents overpressure in the water tank by opening when the pressure reaches 34 psi.

ELECTRICAL COMPRESSOR (OPTION)

When the aircraft Pneumatic System is not operational, the water tanks can be pressurized by the optional electrical compressor.

An additional pressure switch, mounted on the aft tank, starts the compressor when the air pressure is below 25 psi and stops when the pressure is above 28 psi.

The operation of the electrical compressor is inhibited by a limit switch when the water service door is open.

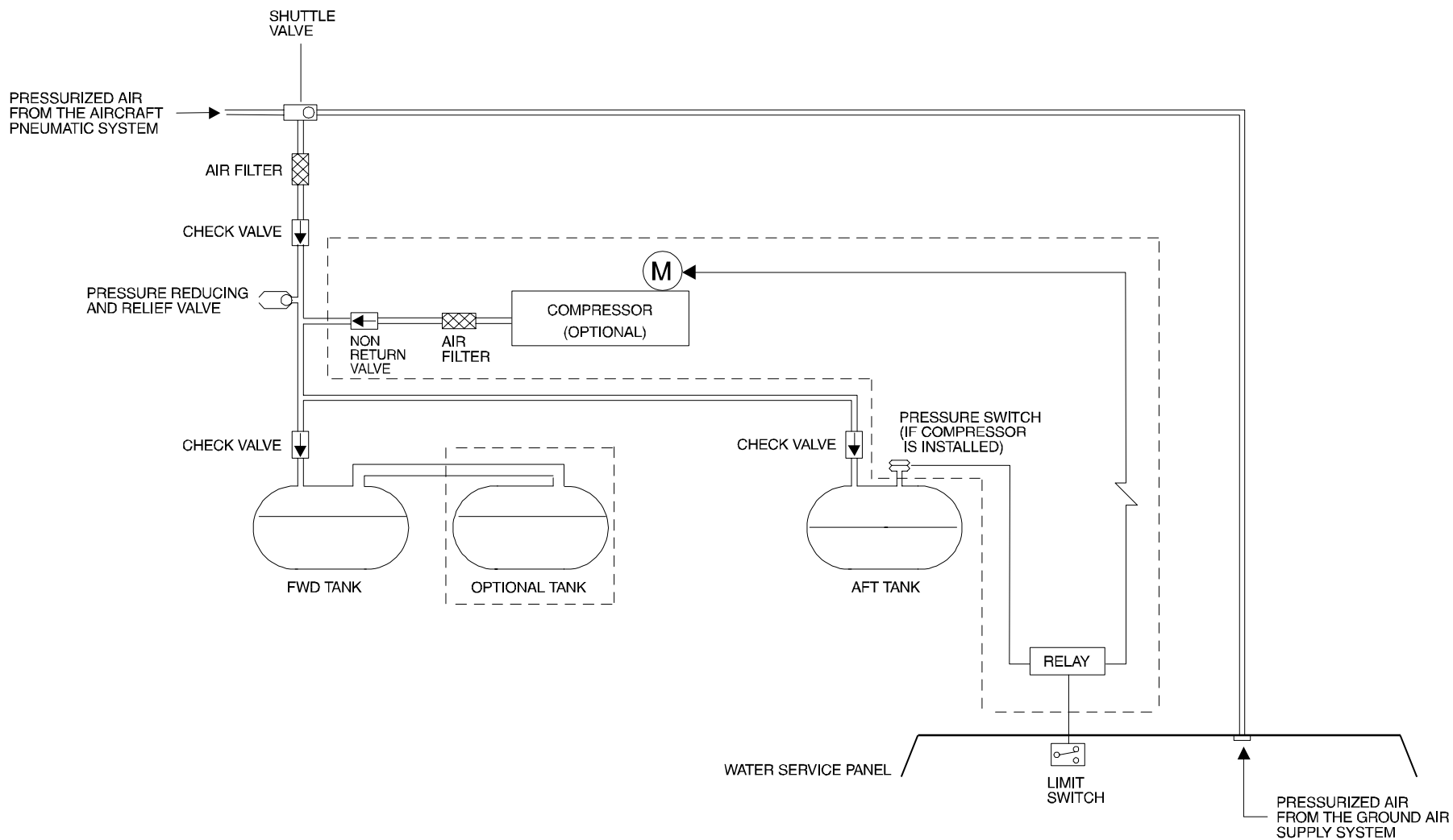
GROUND AIR SUPPLY SYSTEM

On ground, the water tanks can be pressurized from the water service panel via a ground connection by a ground air supply unit.

SHUTTLE VALVE

The shuttle valve is a reciprocating check valve. It allows the tanks to be pressurized either by the Pneumatic System or the Ground Air Supply System.

The valve lets the airflow go to the water tanks from one source only.



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STUDENT NOTES:

WATER TANK PRESSURIZATION SYSTEM COMPONENTS

- Shuttle Valve
- Air Filter
- Air Check Valve
- Pressure Reducing and Relief Valve
- Check Valves
- Electrical Compressor (option)
- Air Filter (if Compressor is installed)
- Pressure Switch (if Compressor is installed)
- Non-Return Valve (if Compressor is installed)

SAFETY PRECAUTIONS

Pull and tag the appropriate circuit breakers.
Make sure that the water tank is depressurized.

STUDENT NOTES

SHUTTLE VALVE

FIN : 5215MD

ZONE : 152

COMPONENT DESCRIPTION

The air shuttle valve is a reciprocating check valve. It lets the airflow to the potable water tanks come only from one source.

PRESSURE REDUCING AND RELIEF VALVE

FIN : 5200MD

ZONE : 152

COMPONENT DESCRIPTION

The pressure reducing and relief valve decreases the air pressure to between 25 and 30 psi (1.7 and 2.1 bar).
The valve has a relief function above 34 psi

AIR FILTER

FIN : 5210MD

ZONE : 152

COMPONENT DESCRIPTION

The air filter prevents any unwanted dirt from entering into the potable water tanks.

CHECK VALVES

FIN : 5205MD
5206MD

ZONE : 152
172

COMPONENT DESCRIPTION

The check valves are mounted on the air pressurization line of the water tanks.
They make sure that the compressed air flows only in the direction of the potable water tank. Water cannot flow in the direction of the air supply system.
They prevent a decrease of pressure in the tanks if the pressure from the supply source decreases.
They also prevent an air flow between the tanks.

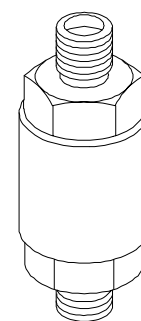
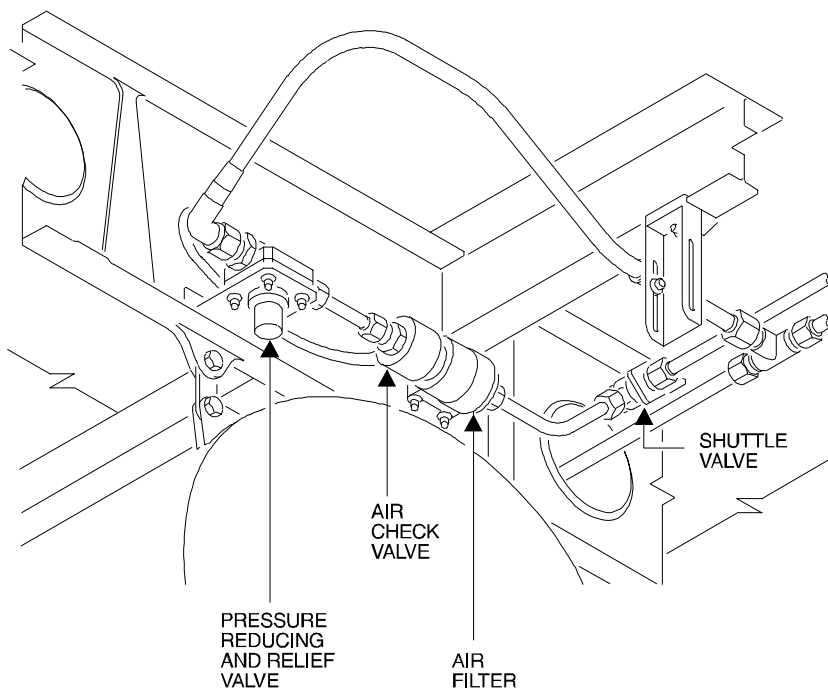
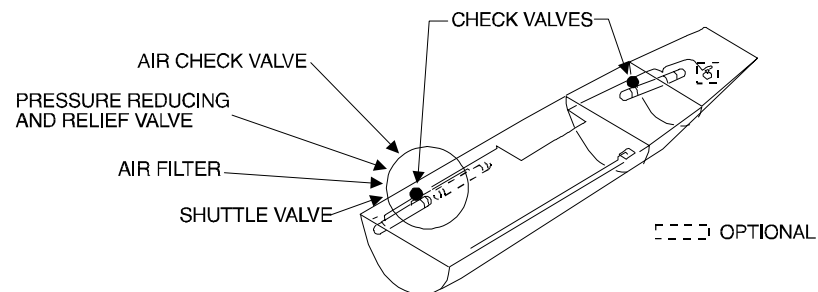
AIR CHECK VALVE

FIN : 5207MD

ZONE : 152

COMPONENT DESCRIPTION

The air check valve is mounted between the air filter and the pressure reducing and relief valve. The check valve lets the air flow only in one direction.



CHECK VALVE

FQW4200 GE Metric

ELECTRICAL COMPRESSOR (OPTION)

FIN : 8MD

ZONE : 172

COMPONENT DESCRIPTION

The piston type compressor is driven by a fan cooled electrical motor. The compressor supplies 3801 in3. (62297 cm3) clean compressed air at 30 psi (2.1 bar) per minute to the potable water tanks. The electrical motor has a thermal-overload protection which stops the motor when it is too hot. The motor starts again, when the temperature becomes normal again.

AIR FILTER (IF THE COMPRESSOR IS INSTALLED)

FIN : 5211MD

ZONE : 172

COMPONENT DESCRIPTION

An additional air filter is installed in the air supply line between the compressor and the water tanks. The air filter prevents contamination of the system by dirt from the compressed air supply.

PRESSURE SWITCH (IF THE COMPRESSOR IS INSTALLED)

FIN : 10MD

ZONE : 172

COMPONENT DESCRIPTION

The pressure switch is mounted on the aft water tank. The pressure switch starts the compressor when the air pressure is below 25 psi. It stops the compressor when the pressure is above 28 psi.

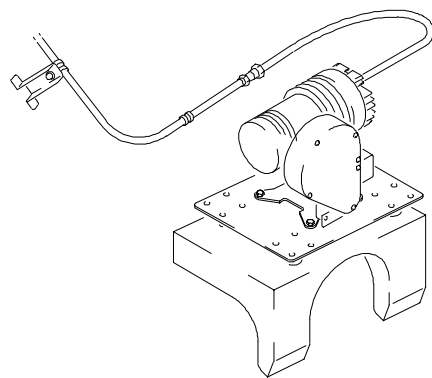
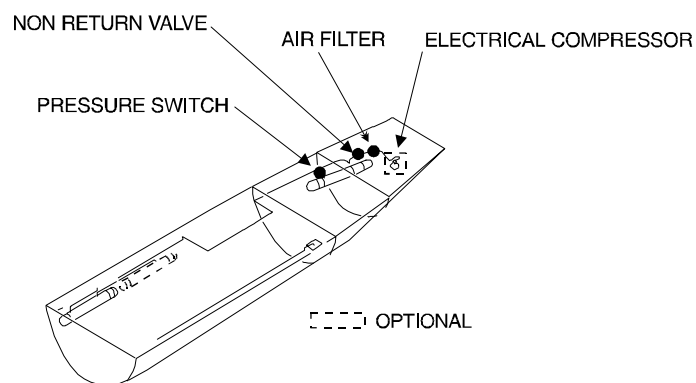
NON-RETURN VALVE (IF THE COMPRESSOR IS INSTALLED)

FIN : 5208MD

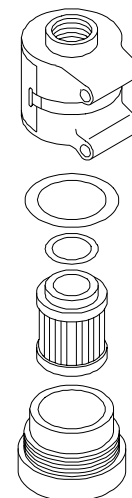
ZONE : 172

COMPONENT DESCRIPTION

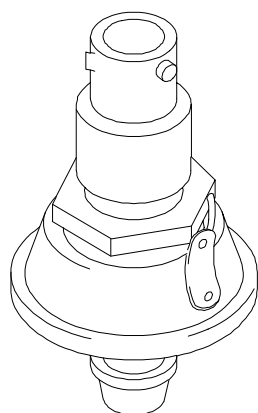
The non-return valve avoids an air flow in direction of the compressor and ensures equal pressurization of the water system if the compressor is switched off (when bleed air is available from the engines or APU).



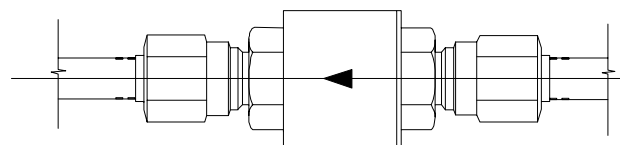
ELECTRICAL COMPRESSOR
(OPTION)



AIR FILTER
(IF THE COMPRESSOR
IS INSTALLED)



PRESSURE SWITCH
(IF THE COMPRESSOR
IS INSTALLED)



NON-RETURN VALVE

STUDENT NOTES

WASTE WATER SYSTEM DESCRIPTION AND OPERATION

Diaphragm Type Drain Valve
Drain Masts

DRAIN VALVE

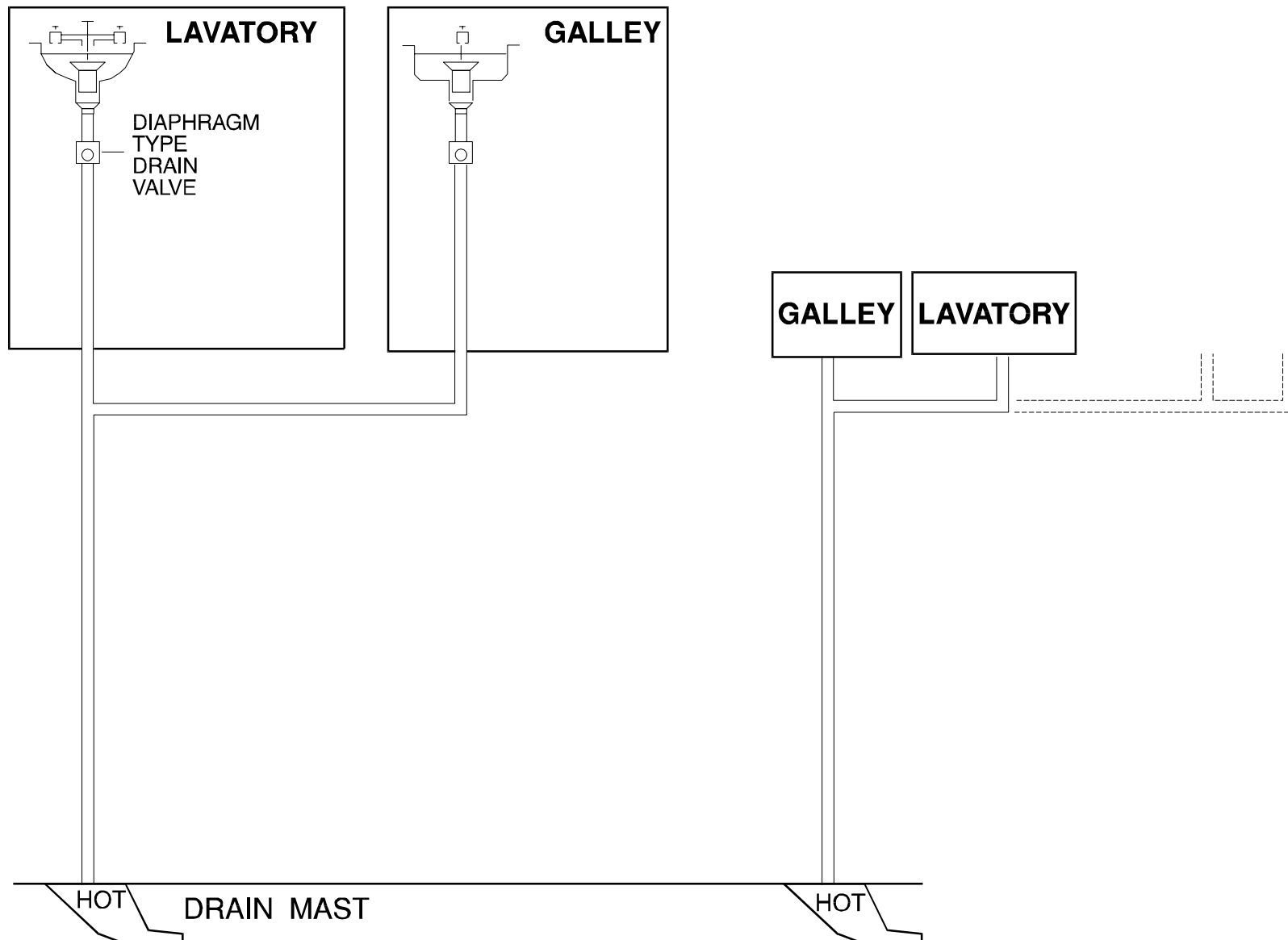
Waste water disposal is achieved by gravity on ground and by differential pressure and gravity action in flight.

The diaphragm type Drain Valve controls the flow of waste water and prevents permanent leakage of cabin air through the drain lines.

DRAIN MASTS

The waste water is discharged overboard through two Drain Masts.

To prevent ice formation, the Drain Masts are electrically heated on ground and in flight.



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STUDENT NOTES:

WASTE WATER SYSTEM COMPONENTS

Safety precautions
Drain Valve
Float Valve
Drain Mast

SAFETY PRECAUTIONS

Pull and tag the appropriate circuit breakers.

STUDENT NOTES

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DRAIN VALVE

EXAMPLE:

FIN: 5601MB	ZONE: 221
5603MB	222
5608MB	231
5611MB	232
5621MB	271
5622MB	272
5625MB	271
5626MB	272

The exact FIN numbers and ZONES depend on your cabin layout.

COMPONENT DESCRIPTION

The drain valve is installed in the washbasin.

The drain valve has an overflow outlet and a control lever to close the valve.

FLOAT VALVE

EXAMPLE:

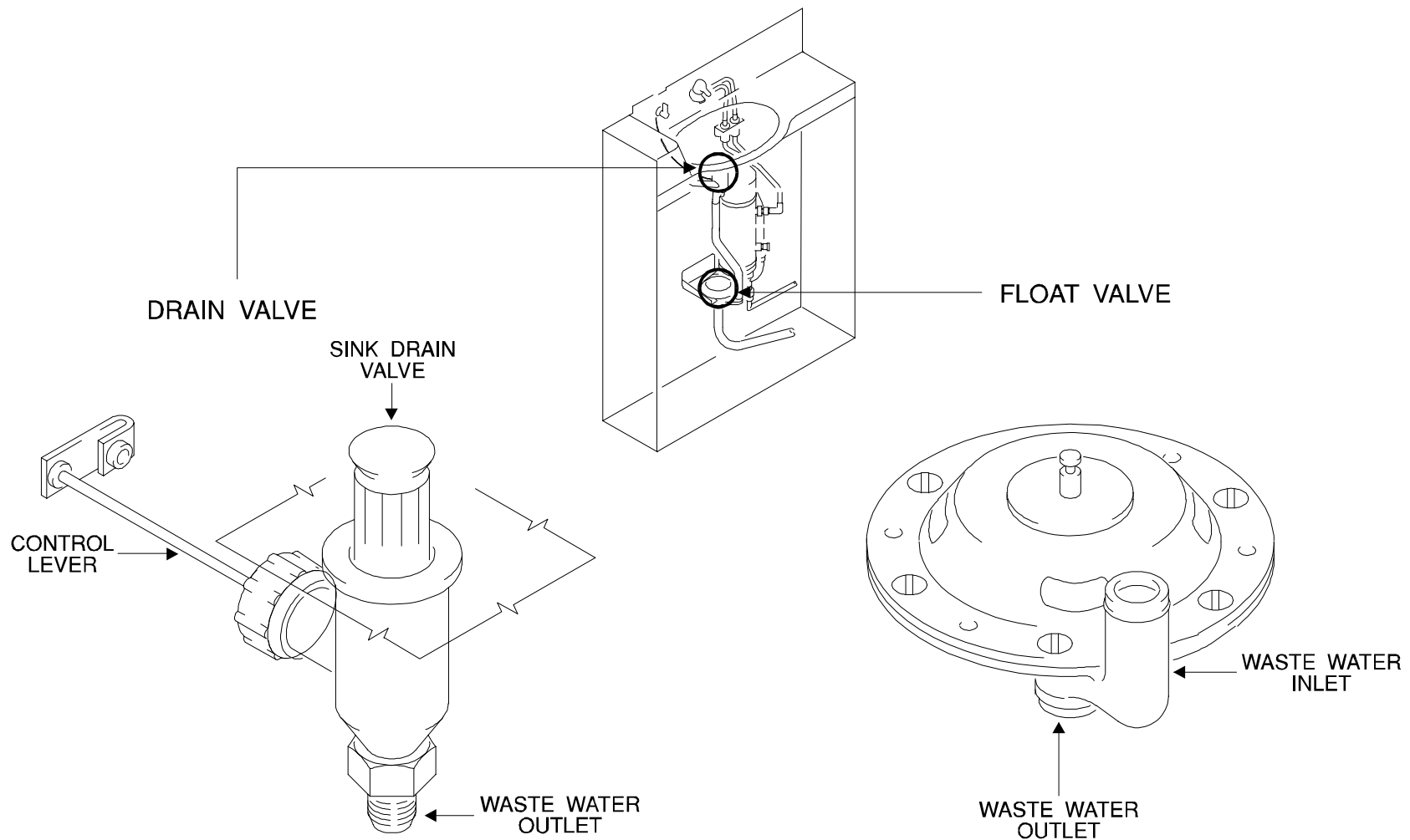
FIN: 5401MG	ZONE: 221
5403MG	222
5408MG	231
5411MG	232
5421MG	271
5422MG	272
5425MG	271
5426MG	272

The exact FIN numbers and ZONES depend on your cabin layout.

COMPONENT DESCRIPTION

The float valve is installed in the drain line.

It is of the diaphragm type and prevents any air leakage through the drain line.



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DRAIN MAST

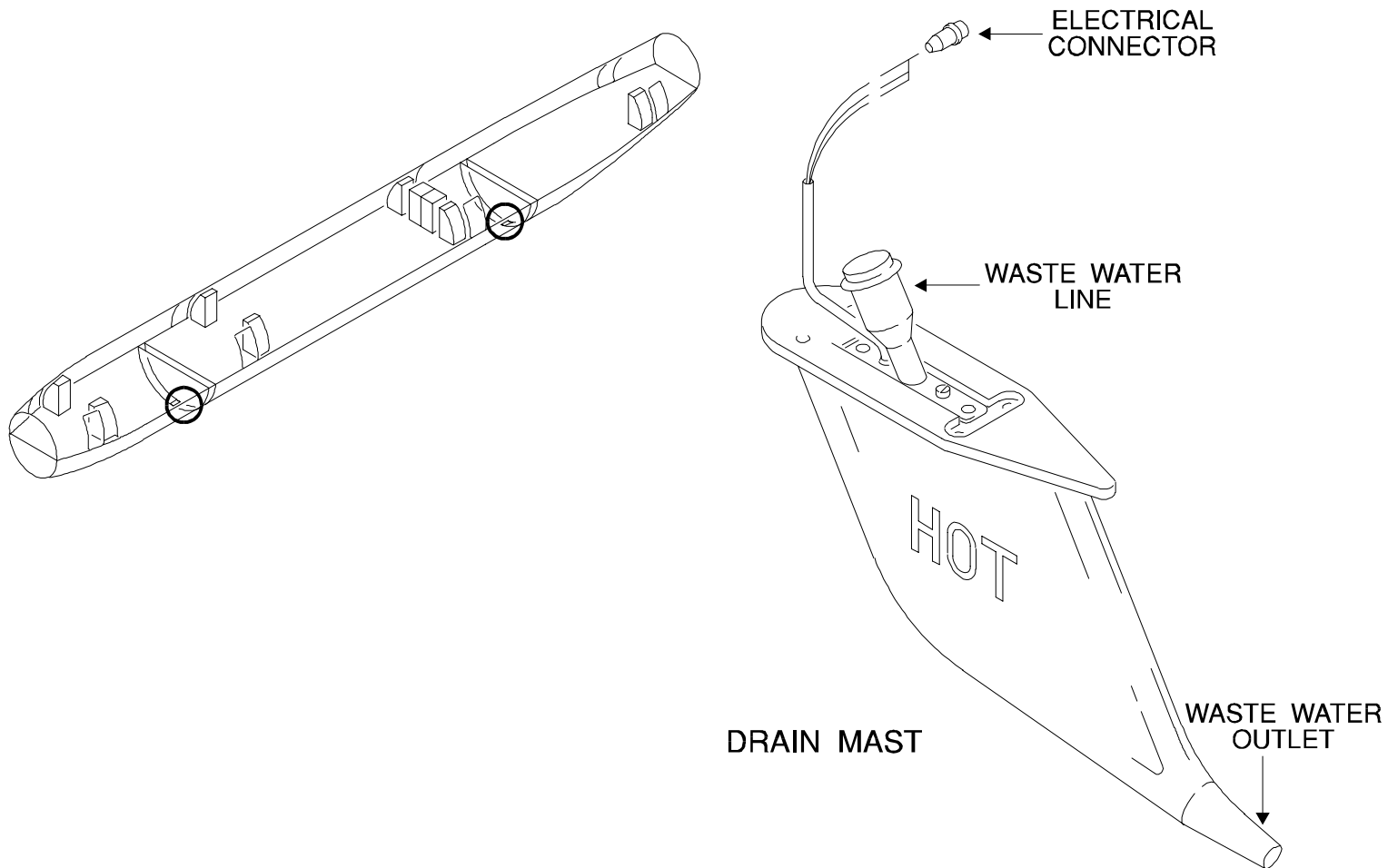
FIN: 40DU ZONE: 134
240 DU 172

COMPONENT DESCRIPTION

The drain mast has a flange for installation under the fuselage and an electrical connector for its heating element.

SAFETY PRECAUTIONS

The drain masts are heated in flight and on ground, so some precautions have to be taken before working on them.



STUDENT NOTES

VACUUM TOILET SYSTEM PRINCIPLE

General
Differential Pressure
Vacuum Generator
Vacuum System Controller
Flush Control Unit

GENERAL

The vacuum toilet system is based on removal of the waste material by suction into the waste holding tank.

DIFFERENTIAL PRESSURE

The suction in the waste holding tank is obtained by differential pressure between the cabin and the waste holding tank.

VACUUM GENERATOR

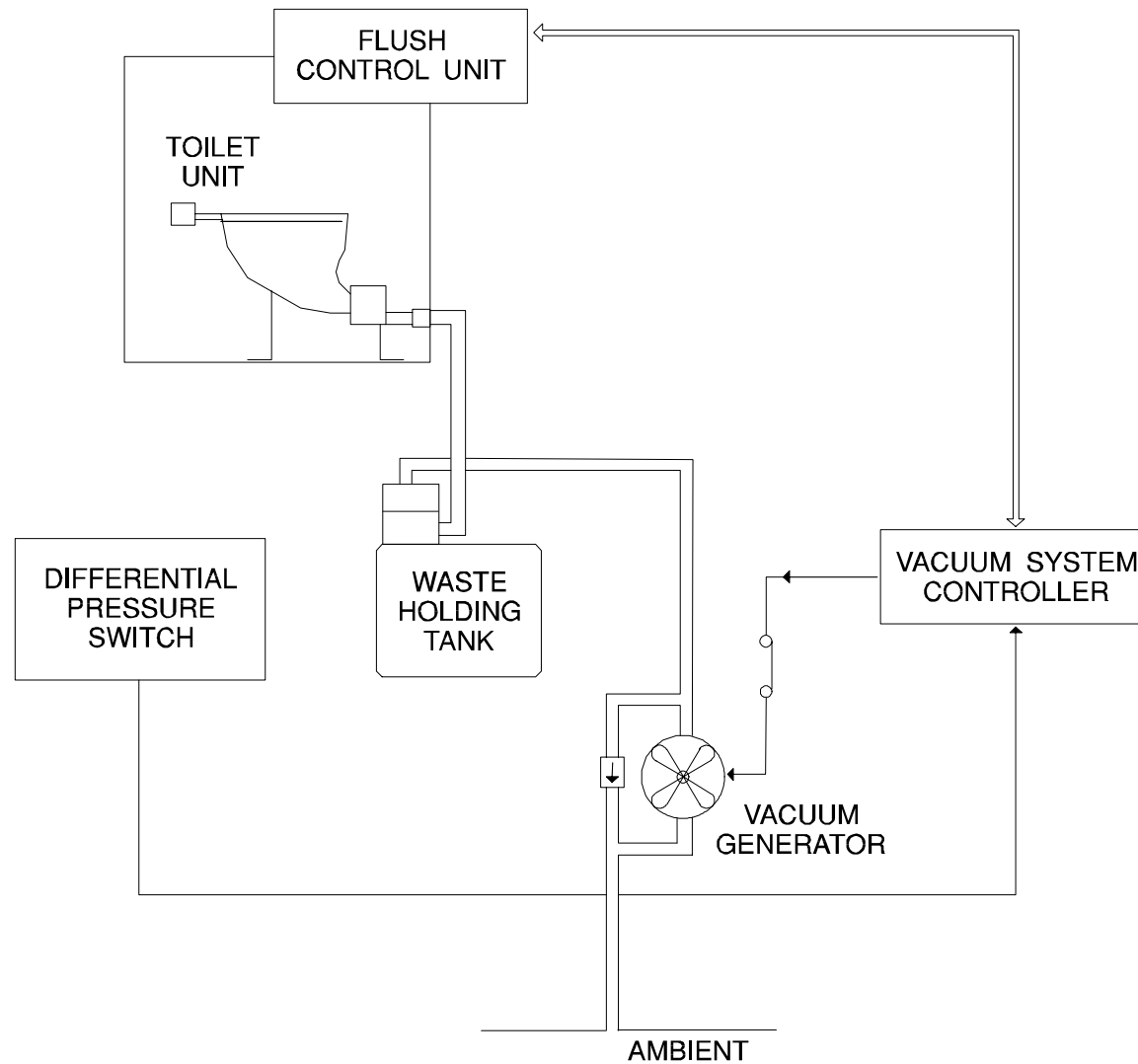
On ground or at low altitude, the differential pressure between the cabin and the waste holding tank is insufficient. In this case, a vacuum generator creates the necessary differential pressure.

VACUUM SYSTEM CONTROLLER

The Vacuum System Controller inhibits operation of the vacuum generator when differential pressure between the cabin and the waste holding tank is sufficient.

FLUSH CONTROL UNIT

One Flush Control Unit per lavatory controls the toilet flush cycle. It also sends signals to the Vacuum System Controller.
Failures in the flush cycle are transmitted to the VSC.



FQW4200 GE Metric

STUDENT NOTES:

TOILET SYSTEM DESCRIPTION

Flushing
Disposal
Waste Holding
Level Balancing
Control
Monitoring
Indication
Servicing

FLUSHING

The system uses fresh water from the potable water system to rinse the toilet bowl and facilitate evacuation of waste during the Flush Cycle.

The water valve is a solenoid type valve.
It supplies the spray ring.
The valve is equipped with an anti syphon device.

The Flush Valve is operated by an electrical motor.

The sequencing and monitoring of the valves are performed by the Flush Control Unit.

DISPOSAL

During toilet Flushing, the waste from the toilet bowl is transported under the effect of differential pressure to the waste tank.

A vacuum generator creates the necessary differential pressure in the waste holding tank to move the waste from the toilet bowl.
The vacuum generator operates on ground and when the altitude is below 16,000 feet.

The left waste tank and its vacuum generator collect the waste from the left lavatories. The right waste tank and its vacuum generator collect the waste from the right lavatories.

WASTE HOLDING

The waste tanks are located in the pressurized area of the aircraft, aft of the bulk cargo compartment.

Each tank has a capacity of 350 litres (92 US gallons).
A centrifugal waste separator mounted on top of the tank allows the waste to be separated from the air. The waste and water particles are discarded in the waste holding tanks.

The air goes through a demister filter to the overboard discharge lines.

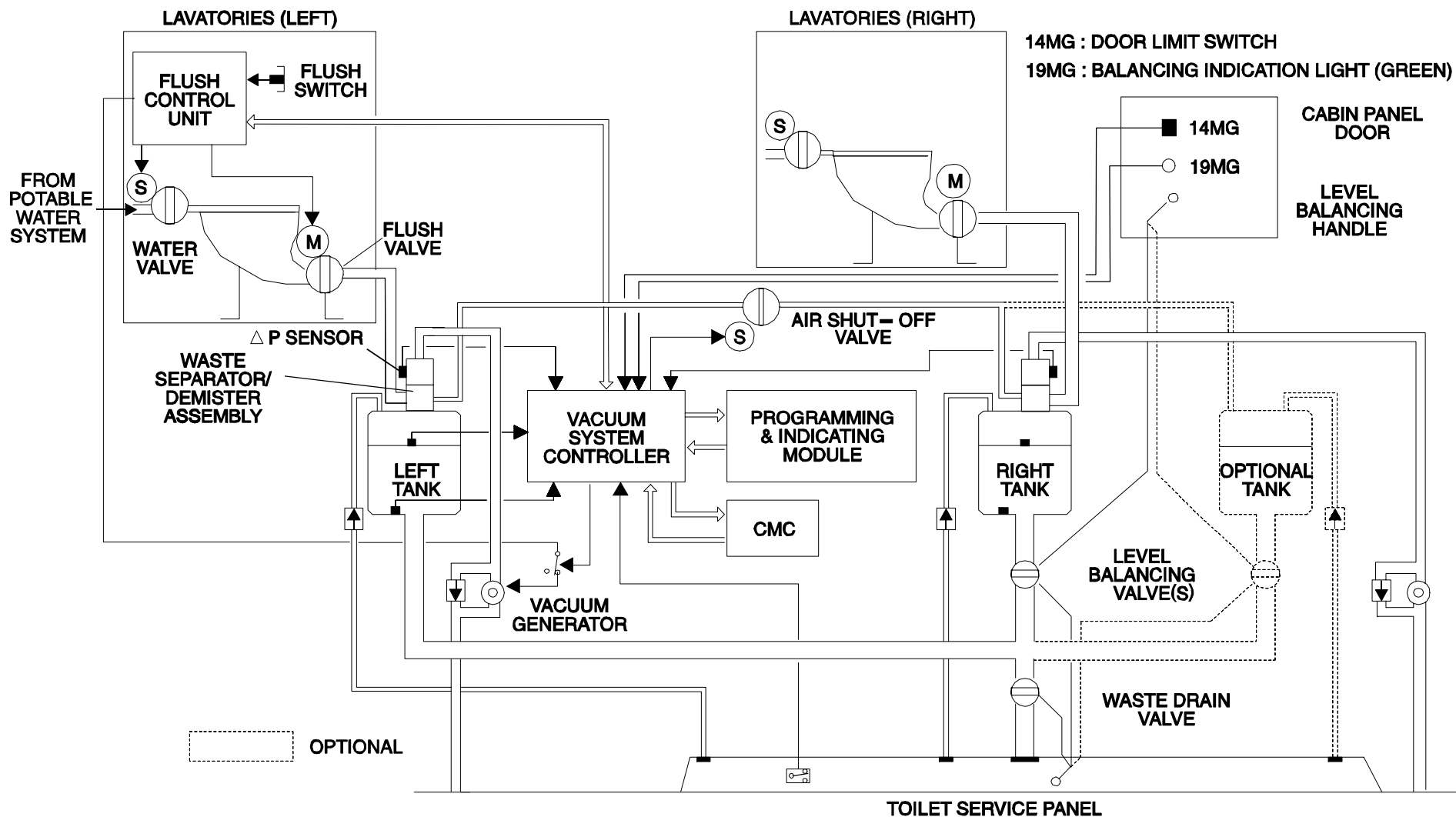
LEVEL BALANCING

To use the maximum tank capacity during the flight, Waste Level Balancing between the tanks can be performed.

Level balancing is required when the level in one tank is above 80 % and the level in the other tank(s) is below 70 %.
This will be indicated on the Programming and Indicating Module.

A control handle located in the aft cabin, mechanically operates the Level Balancing Valve(s).

An air shut-off valve between the tanks allows air pressure balancing during this operation.



FQW4200 GE Metric

CONTROL

Each toilet is Controlled by a Flush Control Unit.
When the flush pushbutton is pressed on the toilet, an electrical signal is sent to the Flush Control Unit which initiates the flush sequence.

The Flush Control Unit controls and monitors the water valve, the flush valve, the vacuum generator and interfaces with the Vacuum System Controller.

MONITORING

The Vacuum System Controller monitors toilet system operation.

The Vacuum System Controller inhibits vacuum generator operation when the altitude is above 16,000 ft.
It controls the air shut-off valve during level balancing and inhibits toilet use during balancing and ground servicing.

The Vacuum System Controller collects fault messages and sends them to the Programming and Indicating Module and to the Centralized Maintenance System.

INDICATION

Two of three tanks are equipped with a quantity level transmitter.

The liquid level transmitters send their output signal through the Vacuum System Controller to the Programming and Indicating Module.

The waste level sensor sends a "tank full" signal through the Vacuum System Controller to the Programming and Indicating Module. The "LAV INOP" warning is displayed.

SERVICING

The waste tanks are serviced from a single Servicing panel.

The drain handle operates the drain valve and the level balancing valve(s).
The valves are cable operated.

During servicing, toilet use is inhibited by automatic deactivation of the Flush Control Units and Vacuum Generators.

Two flush connections on the toilet service panel enable the tanks to be rinsed.

A third flush connection is available if the optional waste tank is installed.

STUDENT NOTES:

STUDENT NOTES

FQW4200 GE Metric

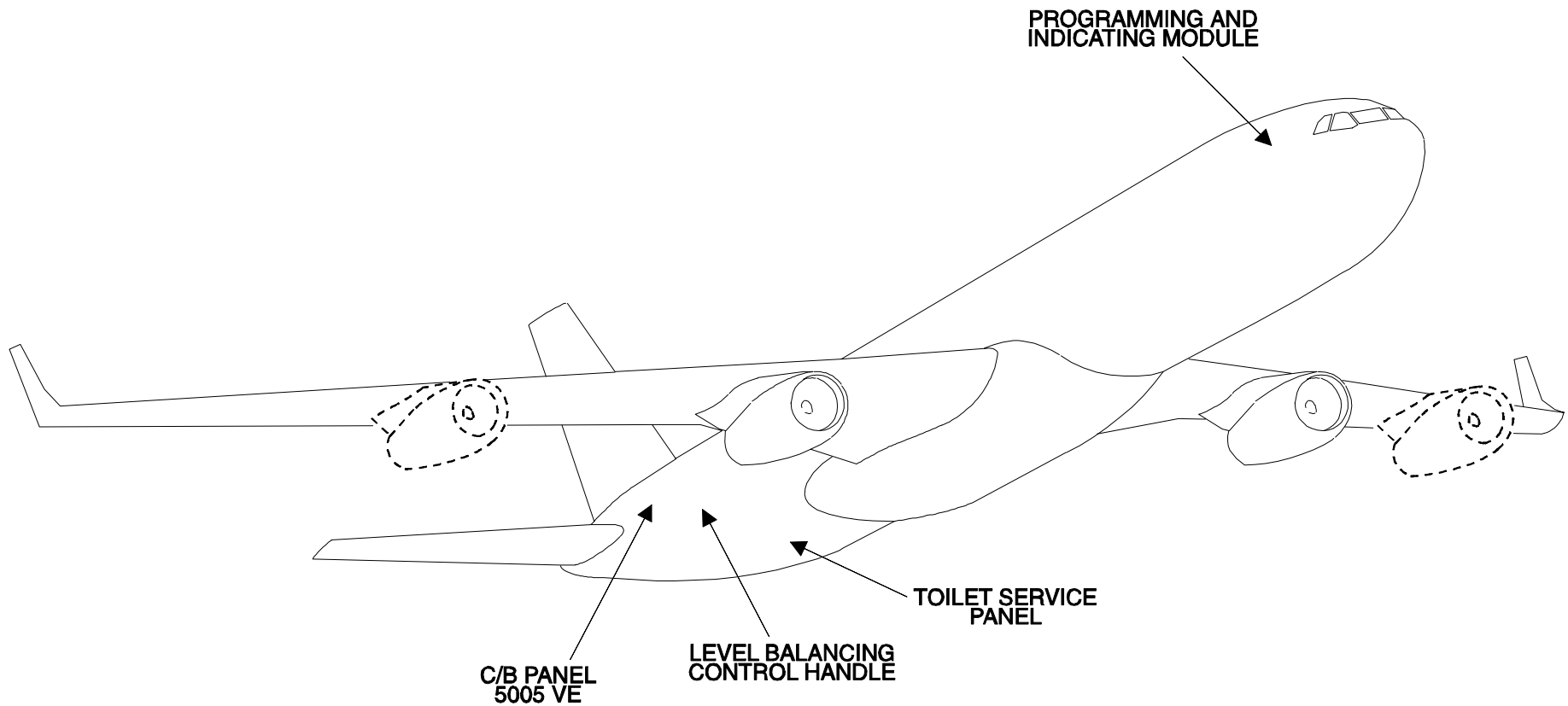
TOILET SYSTEM CONTROL AND INDICATING

General
Programming and Indicating Module (PIM)
Level Balancing Control
Toilet Service Panel

GENERAL

The toilet system control and indicating includes the display on the Programming and Indicating Module, the waste tank level balancing panel and the service panel located at the bottom of the aircraft fuselage.

The reset pushbutton switch on the circuit breaker panel 5005 VE, located in the ceiling in between the two aft passengers doors, is used to reset the Vacuum System Controller after a fault has occurred.

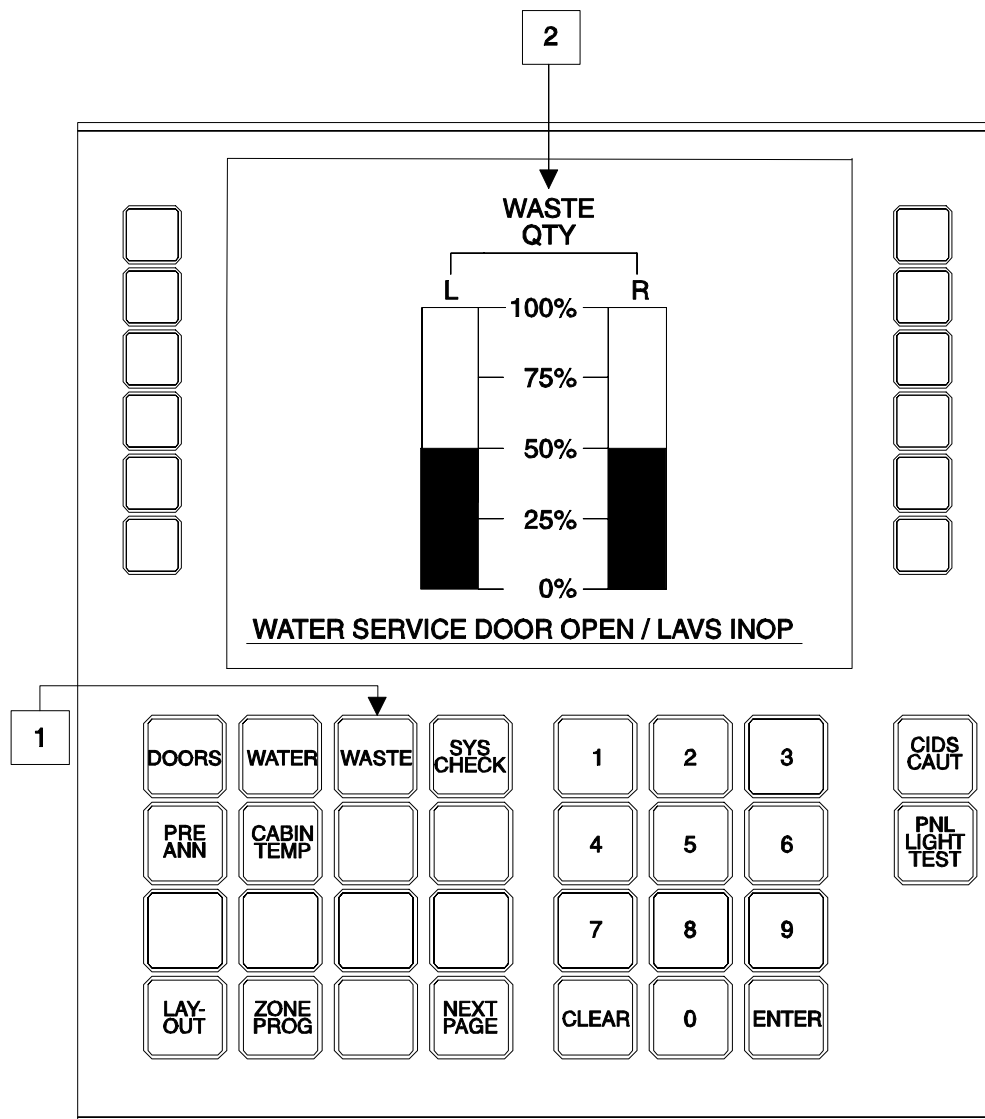
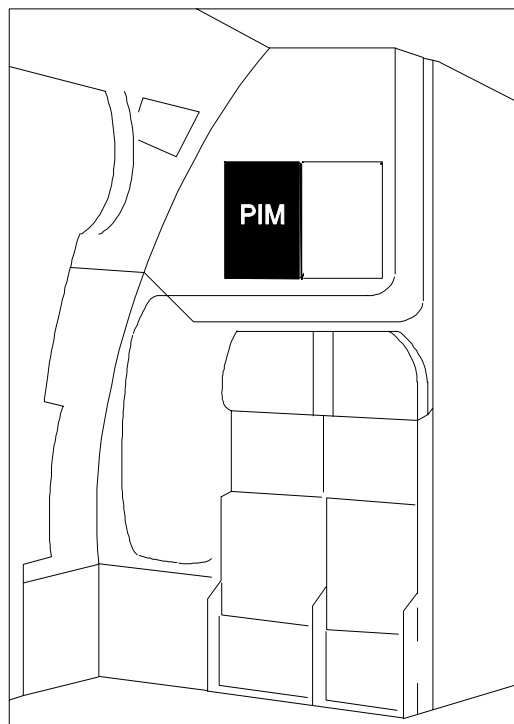


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PROGRAMMING AND INDICATING MODULE (PIM)

The PIM is located in the forward cabin.

- 1 : When the WASTE switch is selected on the PIM, the waste quantity is displayed on the screen. When the waste service door is open, the waste quantity is shown. Additionally the "WASTE SERVICE DOOR OPEN / LAVS INOP" message is indicated at the bottom of the page.
- 2 : Waste quantity is displayed in percentage. If the optional tank is installed, its quantity is not displayed.



FQW4200 GE Metric

LEVEL BALANCING CONTROL

Balancing is requested if one waste tank has reached 90% and the other waste tank level is below 60% or if one waste tank level is detected as full and the other waste tank level is below 80%.

When balancing is requested but not yet started, the message "PERFORM WASTE BALANCING" is shown on the PIM.

As soon as the level balancing panel door is opened, the door switch sends a signal to the Vacuum System Controller which in turn opens the air shut-off valve and switches off the vacuum generators. The air shut-off valve allows air pressure balancing during the waste balancing procedure.

Note: the toilets are disabled during waste level balancing.

To start waste balancing, pull out the control handle.

- The waste balancing valve(s) open(s). Its position (open/close) is monitored by the VSC through the electrical connection located on the balancing valve(s).
- The message "LAVS INOP BALANCING" is displayed on the PIM.
- The "lavatory caution" is set.
- The indication light comes on green.
- The waste is balanced and the waste level is monitored by the VSC through the liquid level transmitters.

When the levels are balanced, the indication light starts flashing and the control handle must be pushed in.

- The waste balancing valve(s) close(s).

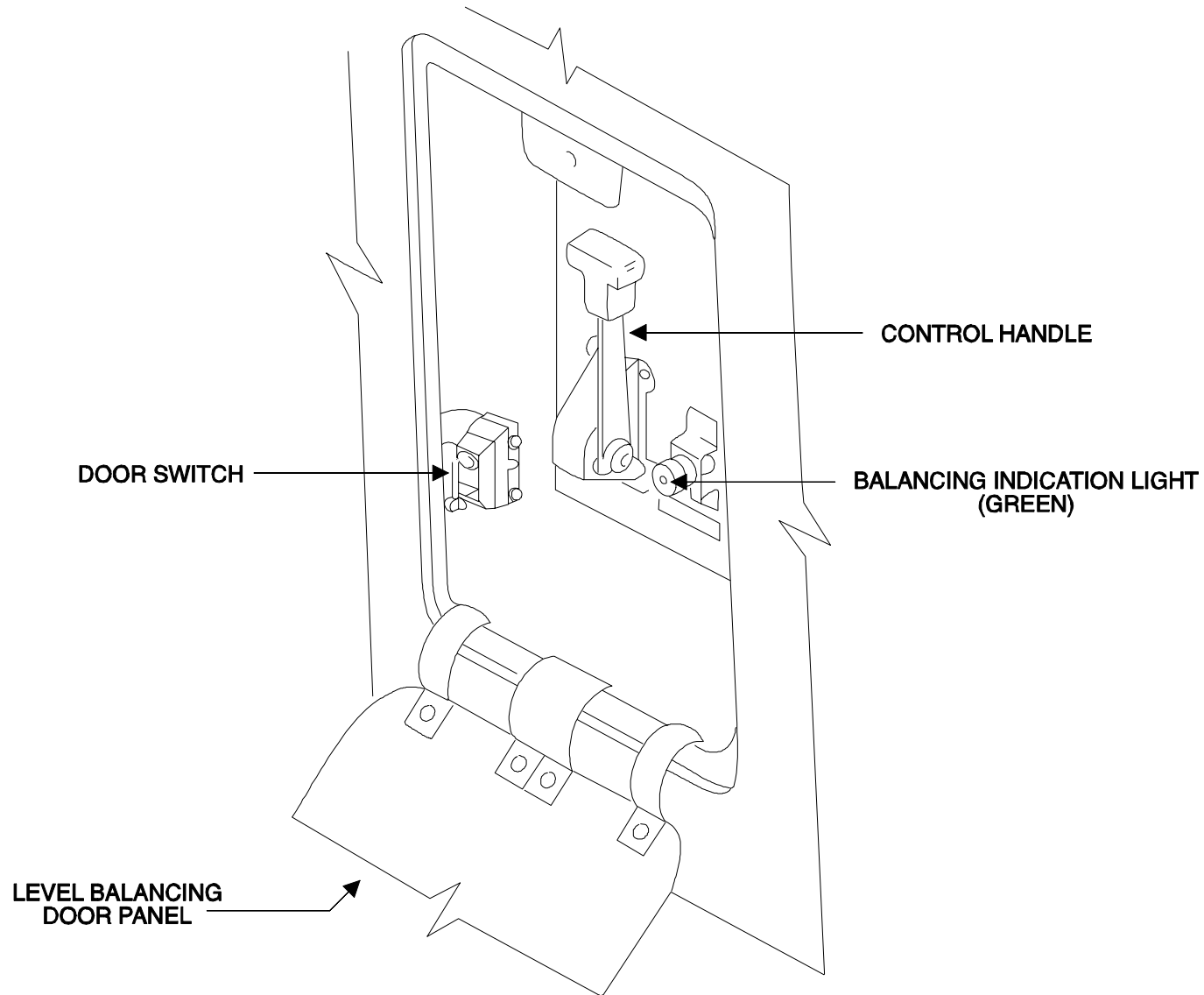
When the valve(s) is (are) fully closed (detected by the VSC), the air shut-off valve closes and the indication light goes off.

The level balancing panel door can be closed.

- The message "LAVS INOP BALANCING" disappears.
- The "lavatory caution" is reset.
- The toilets are enabled.

If after 4 minutes the waste level balancing valve(s) is (are) not fully closed (operation not completed or failure in the level balancing valve switch), the indication light starts flashing.

The VSC keeps the air shut-off valve open and sends a message to the CMC and illuminates the "lavatory caution" light.



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TOILET SERVICE PANEL

The toilet service panel is located at the bottom center line of the aircraft.

1 : The waste-panel limit switch sends a "WASTE SERVICE DOOR OPEN / LAVS INOP" signal to the PIM and to the Vacuum System Controller.

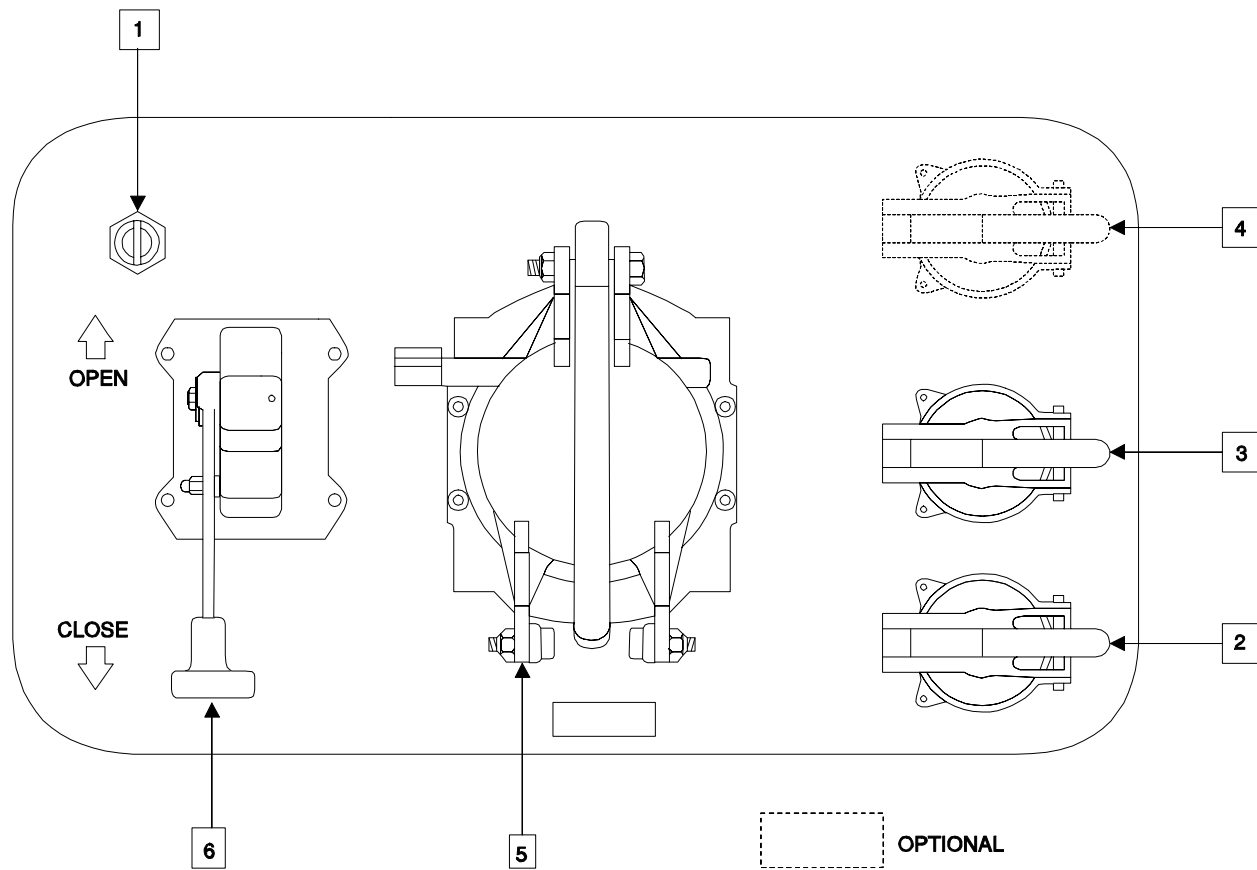
2 : Left waste tank flush line port.

3 : Right waste tank flush line port.

4 : Optional waste tank flush line port.

5 : Waste tank drain port.

6 : Waste tank drain valve control handle.



FQW4200 GE Metric

STUDENT NOTES:

TOILET ASSEMBLY COMPONENTS

Safety Precautions
Vacuum System Controller
Toilet Assembly
Anti-Syphon Valve

SAFETY PRECAUTIONS

Pull and tag the appropriate circuit breakers.

Always wear rubber gloves, goggles and protective clothes when working on the toilet system.

STUDENT NOTES

VACUUM SYSTEM CONTROLLER

FIN ZONE

FIN : 10MG
ZONE : 171

COMPONENT DESCRIPTION

The Vacuum System Controller is located in the aircraft pressurized zone in the bulk cargo compartment.

The VSC has 2 channels, one for the left hand lavatories and one for the right hand lavatories.

The VSC is equipped with BITE to monitor the system. The BITE operates in two modes:

- the power-up test.
- the continuous monitoring test.

In these tests the VSC checks:

- the VSC internal operation,
- the status/operation of the components in the system,
- the hardware and the software in the system,
- the toilet and tank configuration in the non-volatile memory of the VSC and compares it with the toilet and tank configuration in the aircraft,
- the status of the position sensors in the waste balancing valves.

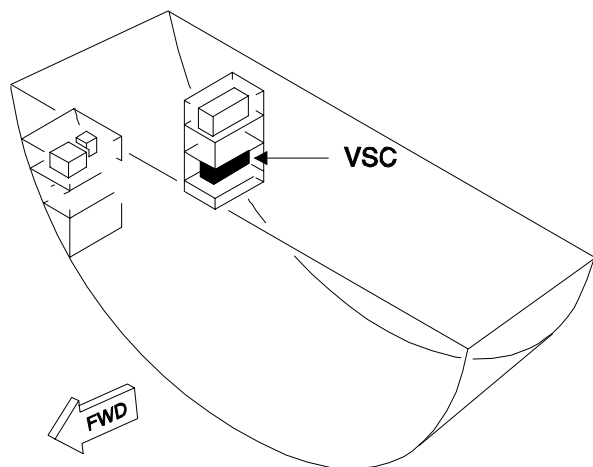
The VSC sends a message to the CMC if any failures are found.

VSC RESET PUSHBUTTON SWITCH 18MG

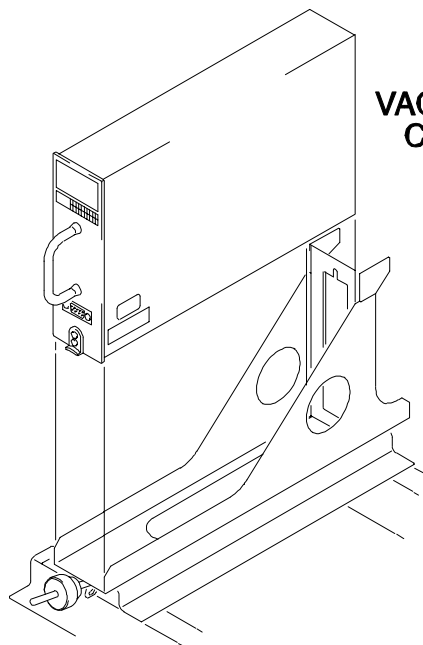
The reset pushbutton switch is installed on the circuit breaker panel 5005VE and is used to reset the VSC after a fault has occurred and during trouble shooting operations.

When the reset p/b switch is pressed in, the VSC will perform a power up test.

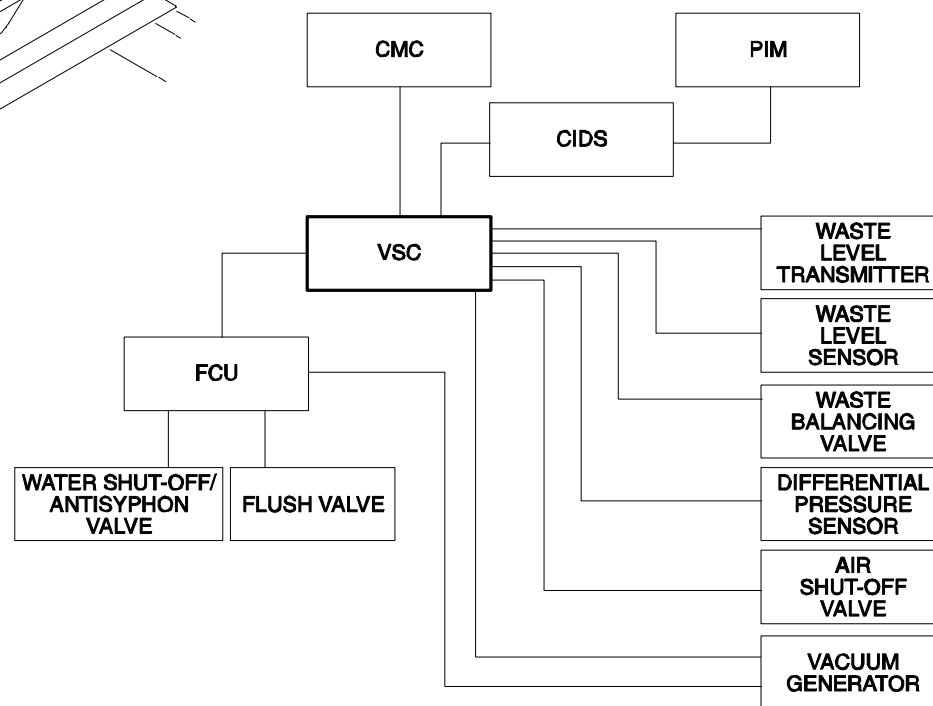
BULK CARGO COMPARTMENT



VACUUM SYSTEM CONTROLLER

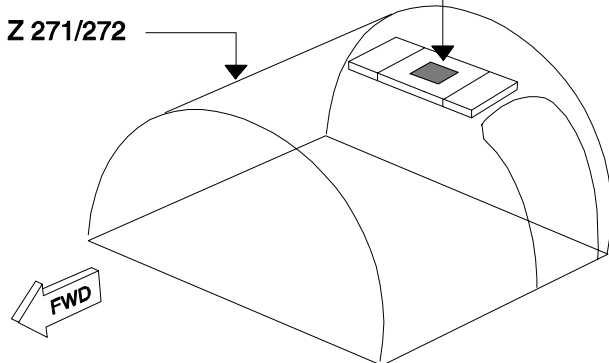


INTERFACES



C/B PANEL 5005 VE VSC RESET

Z 271/272



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TOILET ASSEMBLY

EXAMPLE:

FIN ZONE

FIN: 501MG	ZONE: 221
503MG	222
508MG	231
511MG	232
521MG	271
522MG	272
525MG	271
526MG	272

The exact FIN numbers and ZONES depend on your cabin layout.

COMPONENT DESCRIPTION

The toilet assembly comprises :

- a stainless steel toilet bowl and ring,
- a solenoid controlled water rinse valve,
- a motor operated flush valve,
- a Flush Control Unit.

FLUSH CONTROL UNIT

There is one Flush Control Unit (FCU) per lavatory. It controls and monitors the flushing operation.

The FCU BITE checks:

- the water shut-off / antisiphon valve,
- the flush valve motor,
- the flush valve,
- the FCU.

The messages are transmitted from the FCU to the VSC.

ANTI-SYPHON VALVE

EXAMPLE:

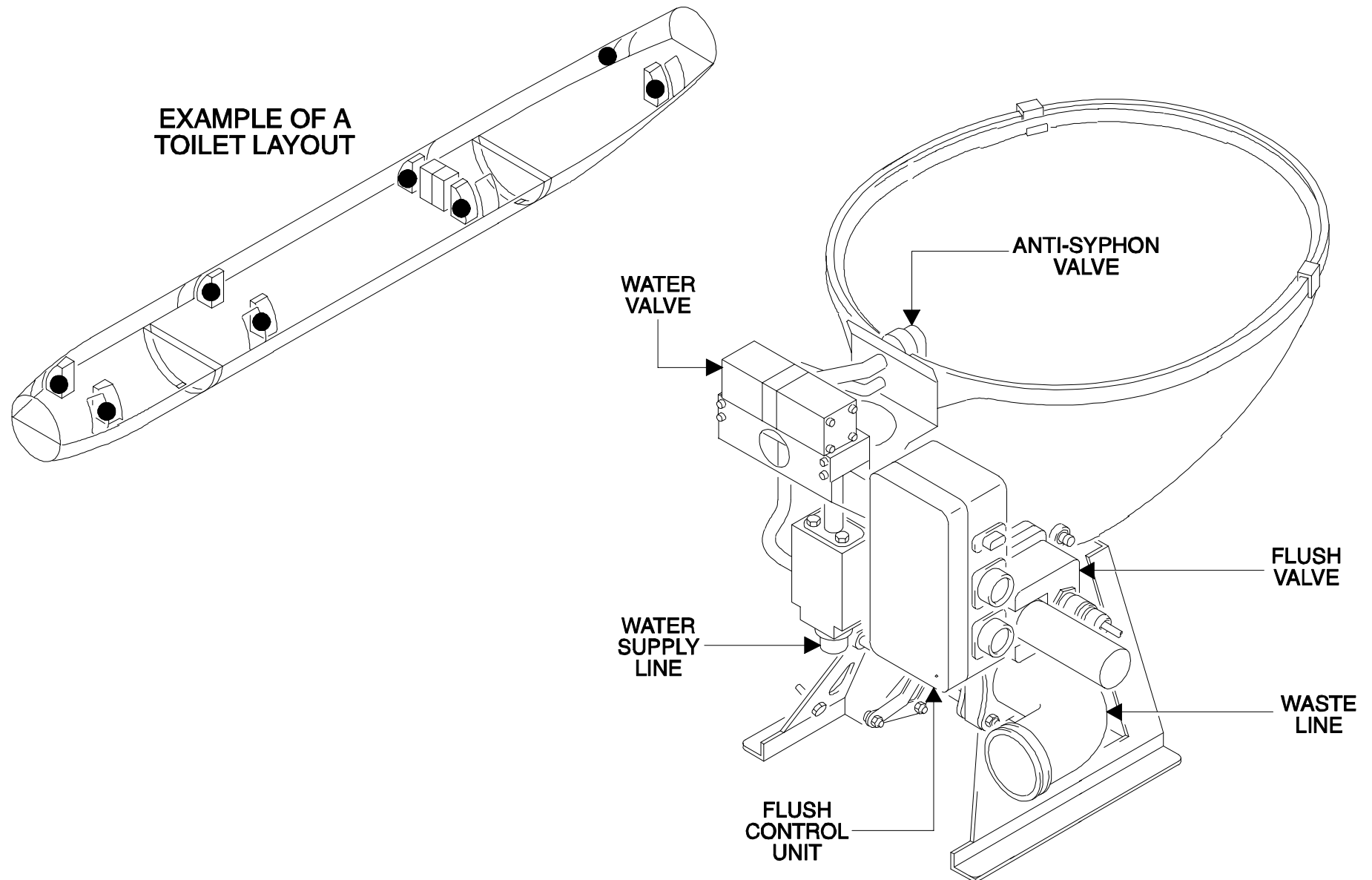
ZONE: 221

222
231
232
271
272
271
272

The exact FIN numbers and ZONES depend on your cabin layout.

COMPONENT DESCRIPTION

The anti-syphon valve is installed above the toilet bowl and lets the water flow in the direction of the spray ring only.



STUDENT NOTES

WASTE TANK COMPONENTS

- Safety Precautions
- Waste Tank
- Waste Level Transmitter
- Waste Level Sensor
- Vacuum Generator
- Differential Pressure Sensor
- Waste Separator / Demister Assembly
- By-Pass Check Valve

SAFETY PRECAUTIONS

Pull and tag the appropriate circuit breakers.

Always wear rubber gloves, goggles and protective clothes when working on the toilet system.

STUDENT NOTES

WASTE TANK

FIN : 5300MG
5301MG
5302MG (option)

ZONE : 171
171
(171)

COMPONENT DESCRIPTION

The waste holding tank is a cylindrical vessel with dome ends. It has a capacity of 350 L. (92.5 US gal.). The dome ends are made of graphite fiber wound over a stainless steel liner. The cylindrical part of the tank has a honeycomb core.

Each tank has : a waste separator/ demister assembly.
a waste level transmitter.
a waste level sensor.
2 rinse connections.

WASTE LEVEL TRANSMITTER

FIN : 11MG
111MG

ZONE : 171
171

COMPONENT DESCRIPTION

The waste level transmitter measures the hydrostatic pressure of the tank content.

It provides an analog signal to the Vacuum System Controller.

WASTE LEVEL SENSOR

FIN : 12MG
112MG

ZONE : 171
171

COMPONENT DESCRIPTION

The waste level sensor is a capacitive type sensor.

It provides the Vacuum System Controller with a full tank signal used to display a LAVS INOP message on the Programming and Indication Module.

VACUUM GENERATOR

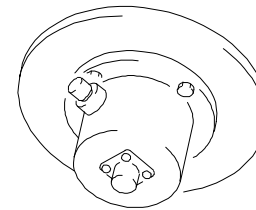
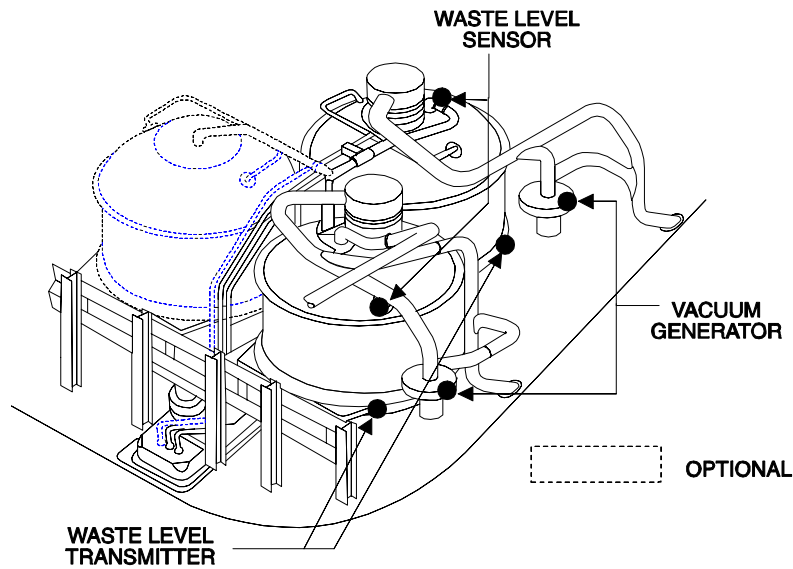
FIN : 9MG
109MG

ZONE : 171
171

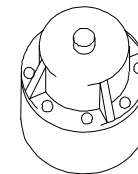
COMPONENT DESCRIPTION

The vacuum generator creates the necessary differential pressure between the waste holding tank and the cabin.

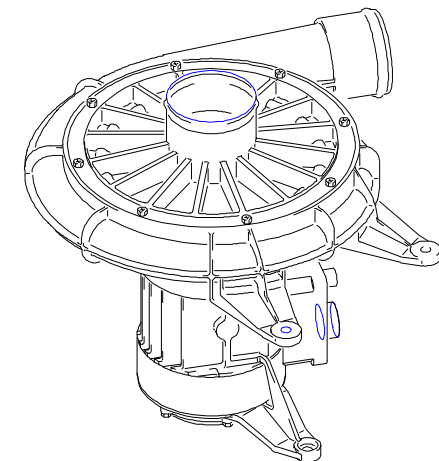
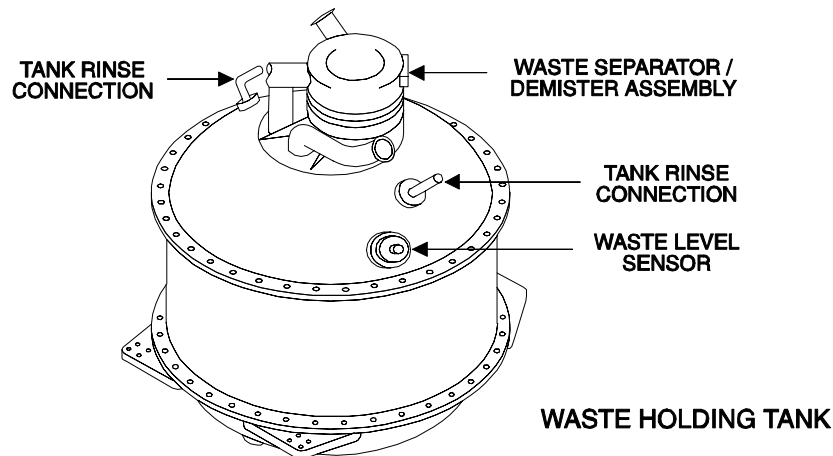
The vacuum generator is a centrifugal unit equipped with a thermal overload protection which causes the VSC to stop the vacuum generator.



WASTE LEVEL TRANSMITTER



WASTE LEVEL SENSOR



VACUUM GENERATOR

FQW4200 GE Metric

DIFFERENTIAL PRESSURE SENSOR

FIN : 17MG
117MG

ZONE : 171
171

COMPONENT DESCRIPTION

The differential pressure transducer sends an analog signal to the Vacuum System Controller used to inhibit vacuum generator operation when the differential pressure between the tank and the cabin is sufficient.

The ΔP switching point corresponds to an altitude of 16,000 feet.

BY-PASS CHECK VALVE

FIN : 5305MG
5306MG

ZONE : 171
171

COMPONENT DESCRIPTION

The by-pass check valve is installed in the air outlet line parallel to the vacuum generator.

WASTE SEPARATOR / DEMISTER ASSEMBLY

FIN : 5310MG
5311MG

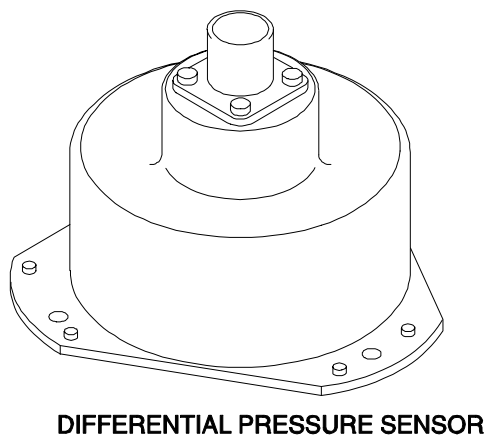
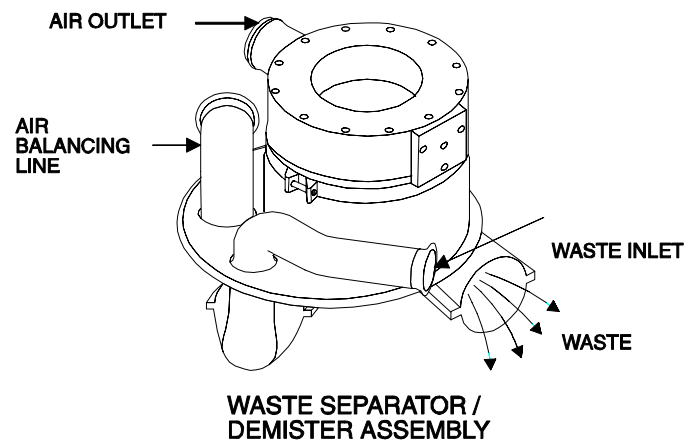
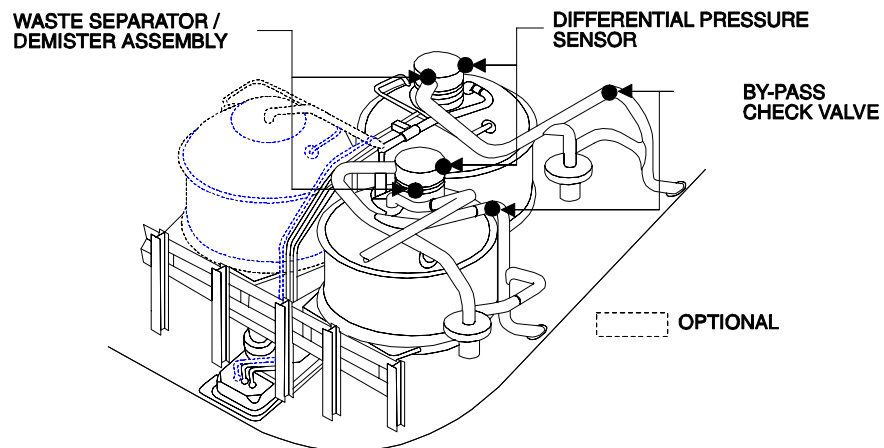
ZONE : 171
171

COMPONENT DESCRIPTION

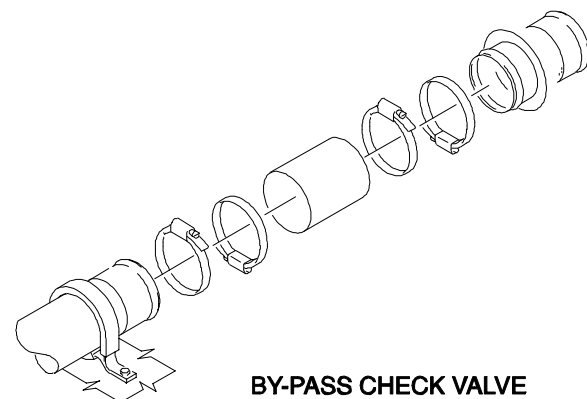
The waste separator is installed on top of the waste holding tank. It separates the waste and water particles from the air when a toilet is flushed. The waste and water particles are discarded in the waste holding tank. The air goes through the demister filter to the overboard discharge lines.

Each assembly has:

- a waste inlet.
- a waste outlet.
- an air outlet to the overboard vent lines.
- an air outlet to the balance lines.



DIFFERENTIAL PRESSURE SENSOR



BY-PASS CHECK VALVE

FQW4200 GE Metric

STUDENT NOTES

TOILET SERVICING AND LEVEL BALANCING COMPONENTS

- Safety Precautions
- Waste Drain Valve Control Lever
- Waste Drain Valve
- Toilet Service Door Microswitch
- TACO Valve
- Flush Line Check Valve
- Waste Level Balancing Valve
- Air Shut-Off Valve
- Waste Level Balancing Handle
- Flush Line Cap Assembly

SAFETY PRECAUTIONS

Pull and tag the appropriate circuit breakers.

Always wear rubber gloves, goggles and protective clothes when working on the toilet system.

STUDENT NOTES

FQW4200 GE Metric

WASTE DRAIN VALVE CONTROL LEVER

FIN : 5352MG

ZONE : 171

COMPONENT DESCRIPTION

The waste drain valve control lever includes an operating lever.

TOILET SERVICE DOOR MICROSWITCH

FIN : 13MG

ZONE : 172

COMPONENT DESCRIPTION

The door limit switch provides a signal to the Vacuum System Controller to inhibit toilet use on ground, when the service door is open.

WASTE DRAIN VALVE

FIN : 5321MG

ZONE : 171

COMPONENT DESCRIPTION

The waste drain valve is mounted on the waste tank drain line.
The valve is cable operated.

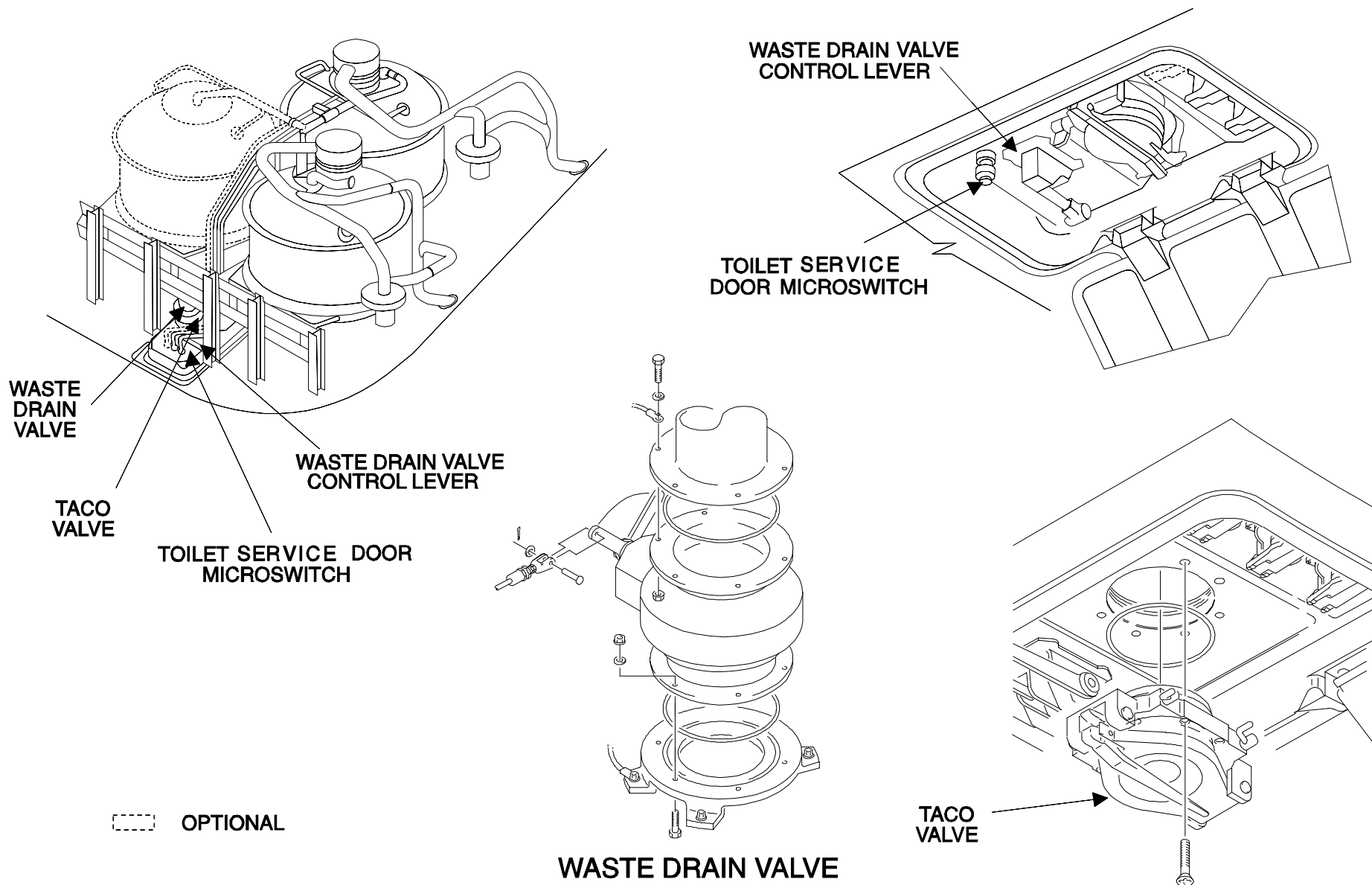
TACO VALVE

FIN : 5360MG

ZONE : 171

COMPONENT DESCRIPTION

The TACO valve is equipped with an open lever and a close lever.
The valve enables the servicing vehicle to be connected.
When the valve is closed, it seals the waste drain valve.



WASTE DRAIN VALVE

FLUSH LINE CHECK VALVE

FIN : 5355MG
5356MG
5365MG (option)

ZONE : 171

COMPONENT DESCRIPTION

A check valve is mounted on each flush line.
The check valve lets the water flow only in the waste tank direction.

AIR SHUT-OFF VALVE

FIN : 16MG

ZONE : 172

COMPONENT DESCRIPTION

The air shut-off valve is installed between the waste tanks.
The valve enables air pressure balancing between the tanks during waste level balancing.
It is a solenoid type valve.
The valve is equipped with an open limit switch used to monitor proper operation.

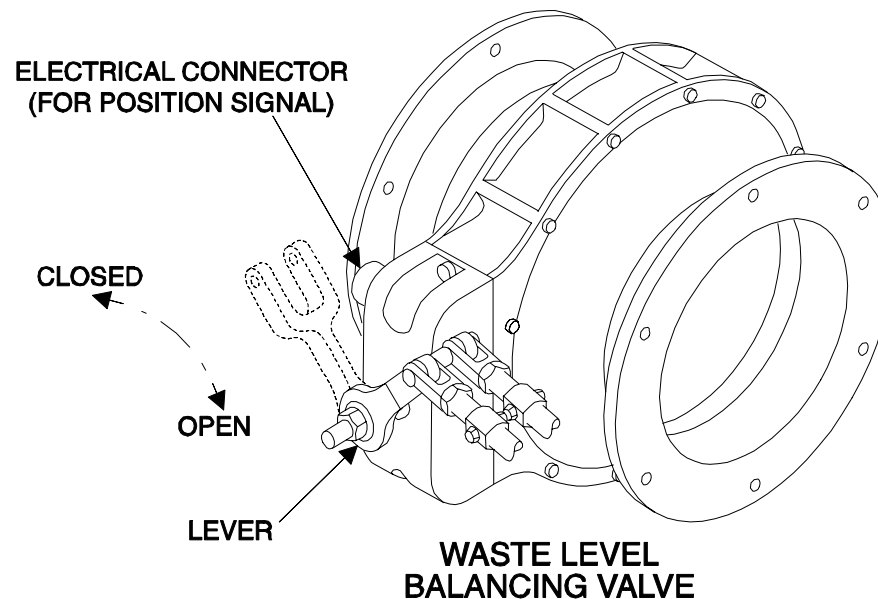
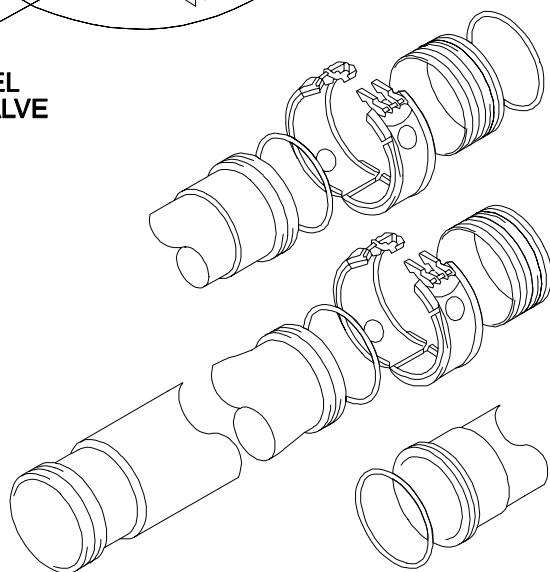
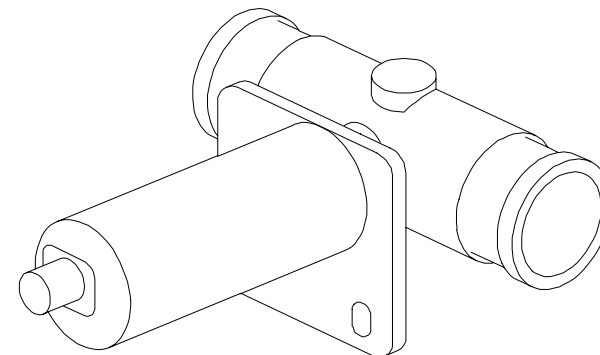
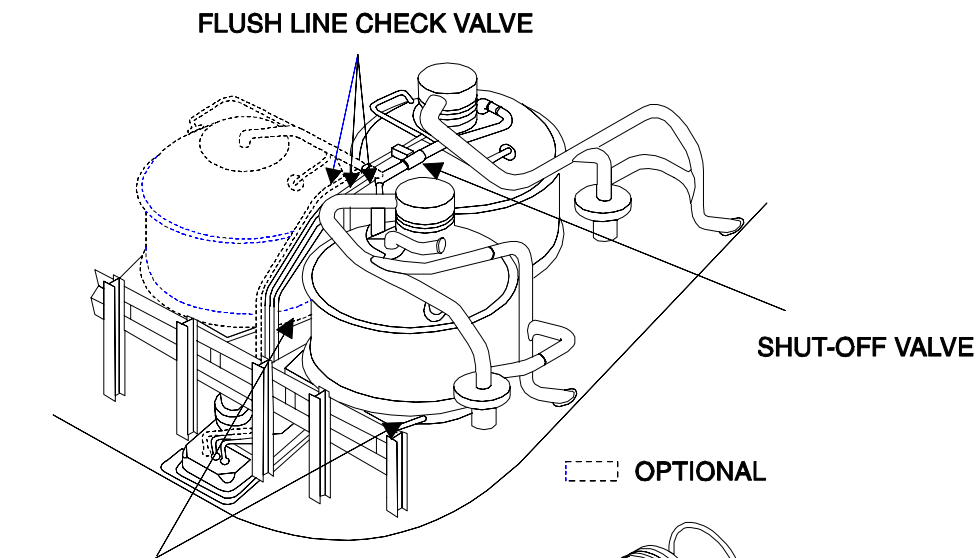
WASTE LEVEL BALANCING VALVE

FIN : 15MG
115MG (option)

ZONE : 171

COMPONENT DESCRIPTION

The waste level balancing valve is mounted on the waste drain line.
The valve is mechanically opened or closed. If the valve is activated from the cabin panel, the waste level balancing valve is opened to equalize the waste level.
If the valve is activated from the service panel, the waste drain valve is opened as well to ensure that the tanks can be drained.
The position limit switch sends a signal to the VSC to indicate the position (open/close) of the valve to monitor the system.



WASTE LEVEL BALANCING HANDLE

FIN : 5358MG

ZONE : 271

COMPONENT DESCRIPTION

The waste level balancing handle is located in the cabin, aft of the left N°4 passenger door.

The control handle is connected to two cables to operate the waste level balancing valves.

FLUSH LINE CAP ASSEMBLY

FIN : 5345MG

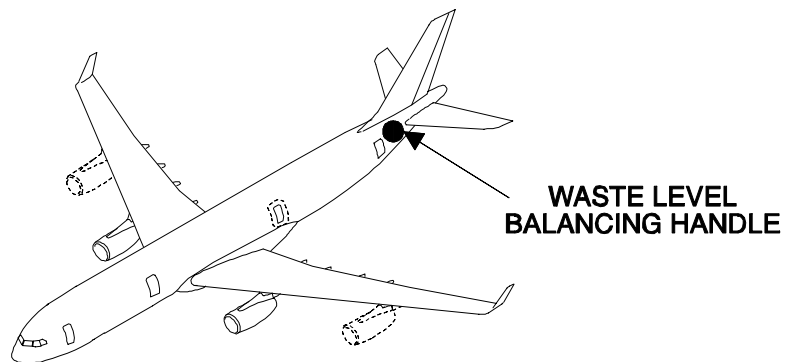
5346MG

5347MG (option)

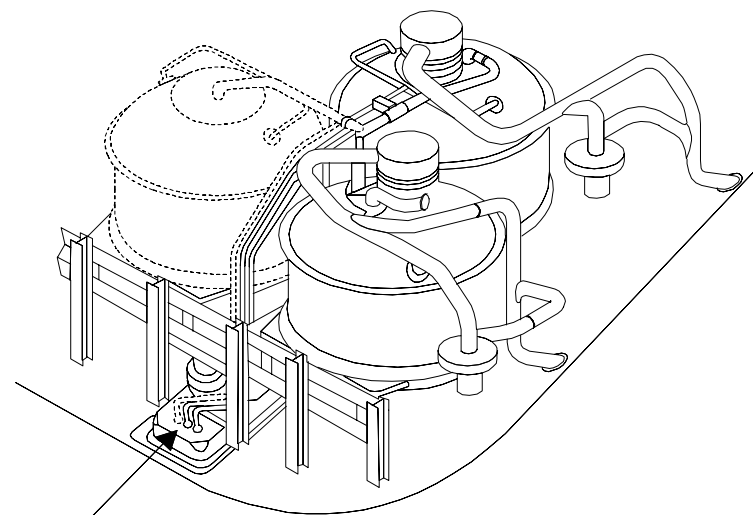
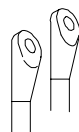
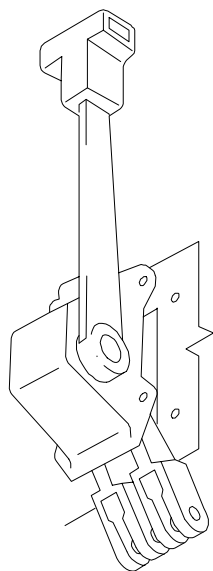
ZONE : 171

COMPONENT DESCRIPTION

Each flush nipple is equipped with a flush line cap assembly.

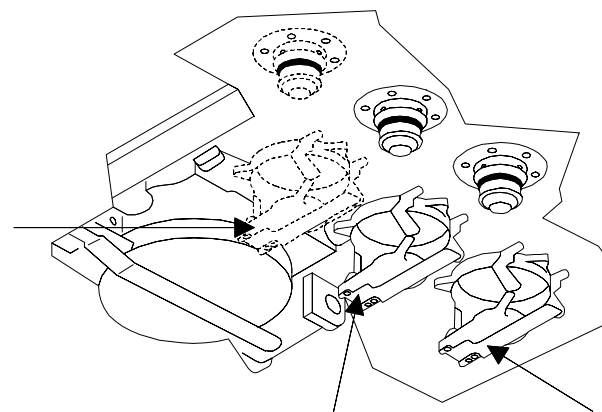


WASTE LEVEL
BALANCING HANDLE



FLUSH LINE
CAP ASSEMBLY

FLUSH LINE
CAP ASSEMBLY
(OPTION)



FLUSH LINE
CAP ASSEMBLY

FLUSH LINE
CAP ASSEMBLY

OPTIONAL

STUDENT NOTES

TOILET SYSTEM SERVICING

General
Weather Condition
Servicing (Drain / Rinse / Disinfect)

GENERAL

When the toilet service door is open, the door limit switch sends a signal to the Vacuum System Controller to inhibit use of the toilets.

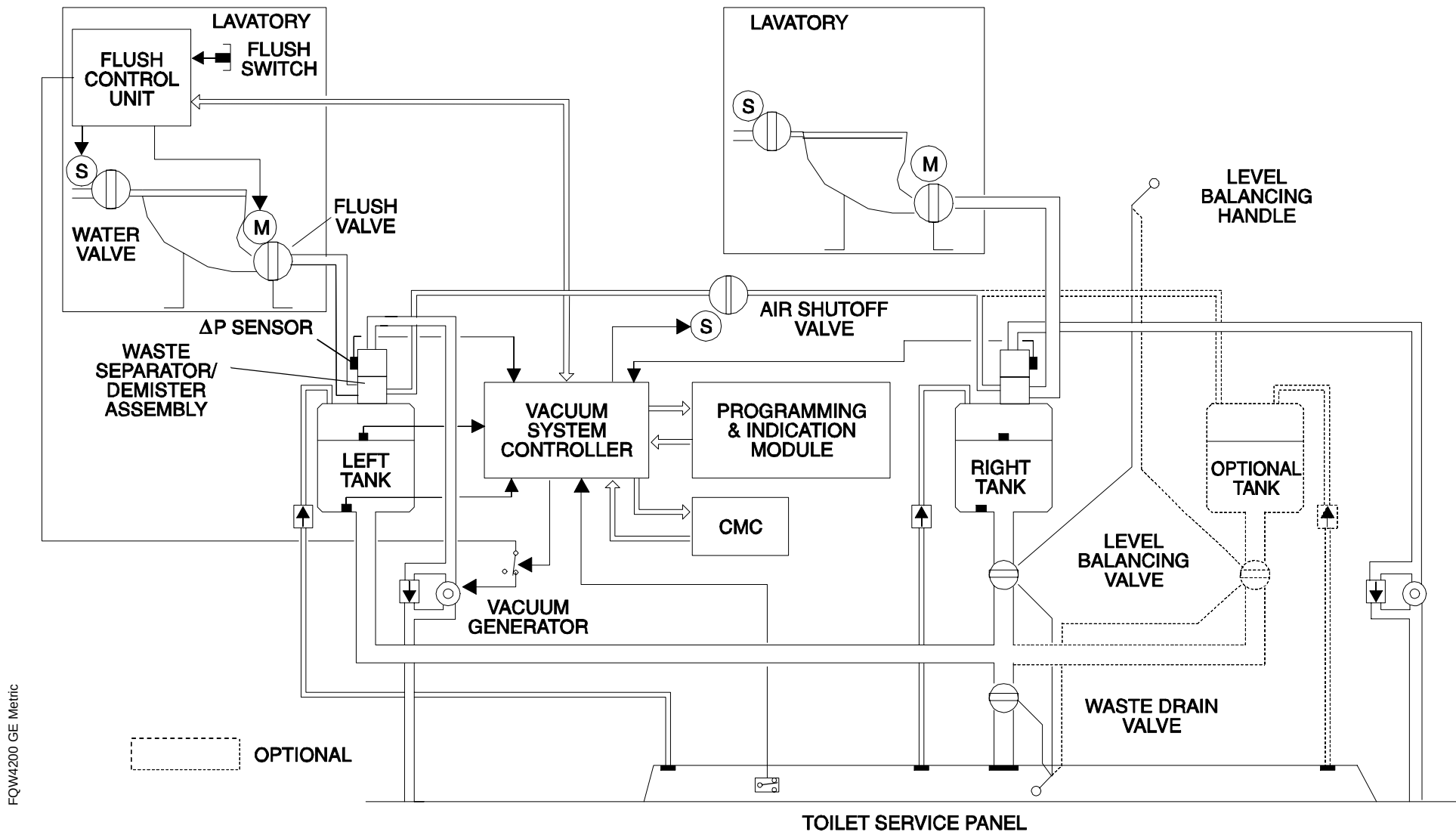
The WASTE SERVICE DOOR OPEN/LAVS INOP message is displayed on the Programming and Indication Module.

WEATHER CONDITION

CONFIGURATION			EXPOSURE TIME	TOILET WASTE TANK DRAIN
AIR CONDITIONNING	CABIN TEMPERATURE	OUTSIDE AIR TEMPERATURE		
ON	ABOVE 10 DEG.C 50 DEG.F	BETWEEN 0 AND -15 DEG.C 32 AND 5 DEG.F	ANY	NOT REQUIRED
		BELOW -15 DEG.C 5 DEG.F	1 H 15 MIN	REQUIRED
OFF		BETWEEN 0 AND -7 DEG.C 32 AND 19.4 DEG.F	1 H 30 MIN	
		BETWEEN -7 AND -15 DEG.C 19.4 AND 5 DEG.F	0 H 45 MIN	
		BELOW -15 DEG.C 5 DEG.F	ANY	
IF YOU HAVE DRAINED THE WASTE HOLDING TANKS YOU MUST PUT 10L (2.6416 USGAL) OF WARM DISINFECTANT AT 30 DEG.C (86 DEG.F) IN EACH WASTE HOLDING TANK 30 MINUTES BEFORE YOU START THE ENGINES.				

The waste holding tanks must be drained when the outside air temperature is below the values shown on the table.

The table shown above is taken from the Aircraft Maintenance Manual.



FQW4200 GE Metric

SERVICING (DRAIN / RINSE / DISINFECT)

DRAIN

- The toilet door is open, the toilet service vehicle is in position and the caps of the TACO valve and flush connections are open.
- Connect the 4-inch drain hose to the toilet service vehicle hose-adaptor.
- Set the lever of the waste drain-line valve to the OPEN position. The waste drain valve and the level balancing valve(s) will open and the waste is drained.

FLUSH

- After draining the tanks, each tank must be rinsed.
- Connect the 1-inch flush hose of the service vehicle to a rinse connection.
- Operate the toilet service vehicle. The pressure must be stable at 2.4 bar (34.8 psi) and the water flow rate must be stable at 38 litres (10 US gallons) per minute. The tank is flushed with 100 litres (26.4 US gallons) of water.
- Do this procedure for each waste holding tank.
- Turn off the toilet service vehicle.
- Put the drain valve control handle in the CLOSED position, to close the waste drain-line valve and the level balancing valve(s).
- Disconnect the drain hose.

DISINFECT

For the disinfection of the tanks, obey the manufacturer's instructions when you use the special material because it is dangerous.

- Operate the service vehicle to fill each waste holding tank with 18 litres (4.7 US gallons) of DISINFECTANTS.
- Make sure that there are no leaks visible from the drain or rinse connections.
- Turn off the service vehicle and disconnect the 1-inch hose.
- Close the caps of the waste drain-line valve and the flush connections.

SPECIFIC CMS PAGES PRESENTATION

Trouble Shooting Data
System Test
Configuration

TROUBLE SHOOTING DATA

When the "TROUBLE SHOOTING DATA" key is pressed, the screen shows the date and time when the failure occurred, the failure message and the related coded parameters.

The Trouble Shooting Data represents a system snapshot at failure occurrence.

The Trouble Shooting Data table or the floppy disk provided by the manufacturer will help you to decode the message.

0	1	2	3	4
7C60	1000	1004	3F01	004B
002B	06:40:	7 06/0	7/93	8
5	6	7	8	

Word

- 0 : failure definition
- 1 : hard unit internal fault
- 2 : soft unit internal fault
- 3 : operational modes
- 4 : error dependent data
- 5 : error dependent data
- 6 : universal time correlation
units of mn - tens of mn -
units of hours - tens of
hours
- 7 : universal time correlation
and date
tens of month - units of day -
tens of day - tenths of mn
- 8 : date and last entry flag
entry flag - units of year -
tens of year - units of
month

SYSTEM TEST

When the "TEST" key is pressed, the whole vacuum waste system is tested.

The system test includes:

- the rerun of the power up test,
- the cyclic tests,
- the continuous tests.

The " TEST OK " legend is displayed if no failure is detected.

CONFIGURATION

When the "CONFIGURATION" key is pressed, the lavatory configuration stored in the Vacuum System Controller memory is indicated: "CONFIG L:" (configuration lavatories).

"DET L:" (detected lavatories) are indicated through the Flush Control Unit Pin Programming.

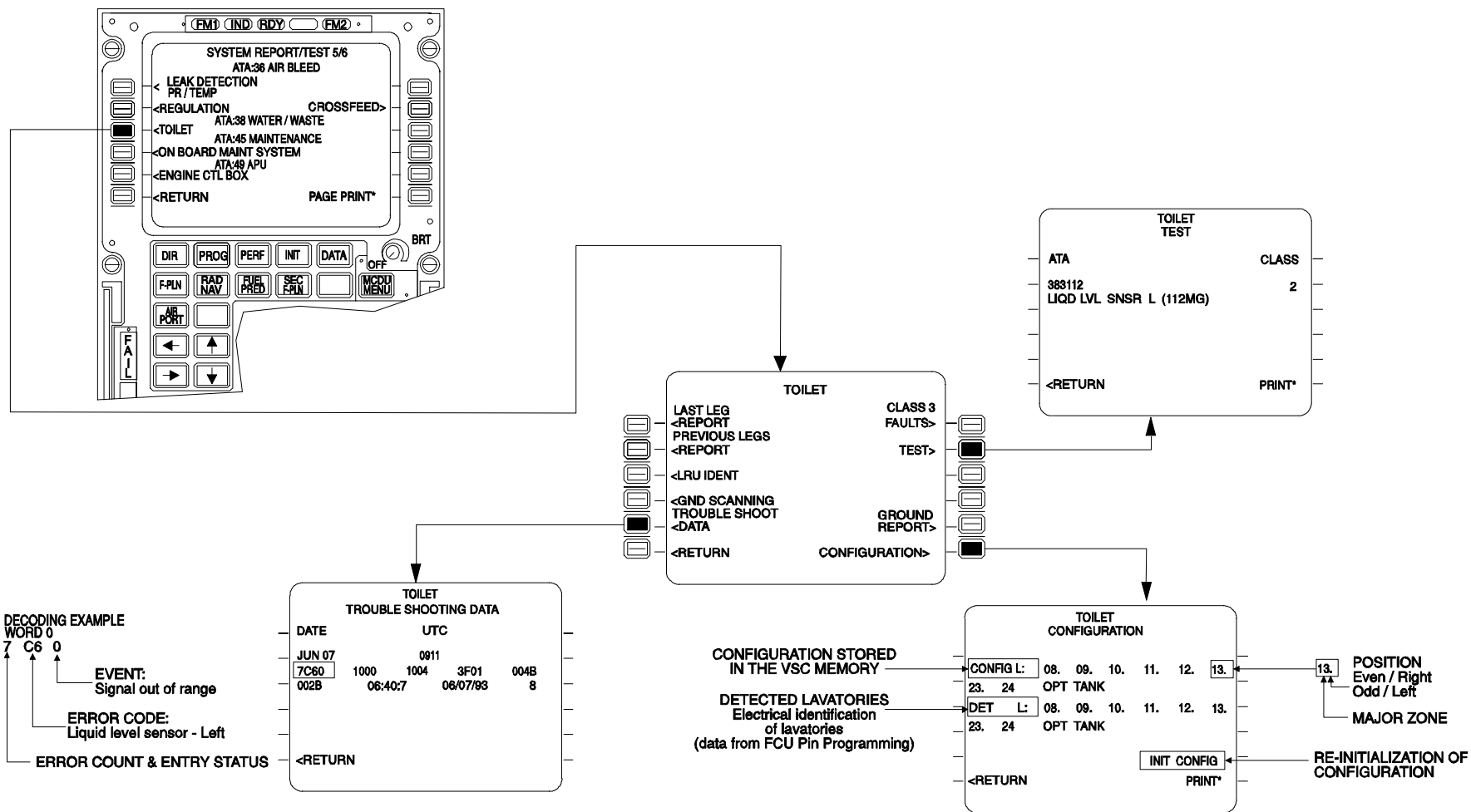
The re-initialization of the configuration has to be done:

- after installation of a new VSC,
- in case of the CMS fault message: "LAV CONFIGURATION",
- if "DET L:" and actual A/C configuration are the same but different from "CONFIG L:".

This will automatically modify the "CONFIG L:".

If the "DET L:" is not identical to the actual lavatory configuration, Pin Programming and/or wiring checks have to be performed according to the Trouble Shooting Manual.

If a third waste holding tank is installed, the "CONFIG L:" and the "DET L:" must show "OPT TANK".



STUDENT NOTES