

10 SANITARY SYSTEM & BILGE

Your MS 390 PT has a sanitary system similar to the one in your home. Figure 10-1 shows a typical system.

HEAD

The HEAD circuit breaker switch at the DC Control Center in the salon controls the power supply to the electric head and to the shower sump. Depressing a push switch near the toilet starts a water pump which brings sea water into the toilet and pumps out the waste to the holding tank. The sea water is taken in through the intake seacock in the bilge.

Important: Do not deposit any foreign objects into the toilet. Even a cigarette or paper towel could damage this system.

Before using the head, make sure the appropriate head circuit breaker switch is ON and the head seacock is open. The valve is in the bilge. The valve is open when the handle is in line with the hose.

To operate the toilet, push the button near the toilet.

Use the inline valve on the toilet to monitor the flow of water entering the bowl. The bowl can overflow if not properly monitored. MAINSHIP recommends the use of only biodegradable toilet tissue sold for marine use.

Using marine sanitary system chemicals at the beginning of the boating season and after every pumpout can control odor in the head and the holding tank. However, excessive use of chemicals may cause premature deterioration of the hoses. Use the chemicals recommended by your MAINSHIP dealer.

NOTE: It is highly recommended that bleach or alcohol never be used in the sanitary system, using bleach or alcohol will cause premature wear to the system.

The head lid should always be down when the yacht is underway to prevent slamming and possible damage.

HOLDING TANK AND MACERATOR

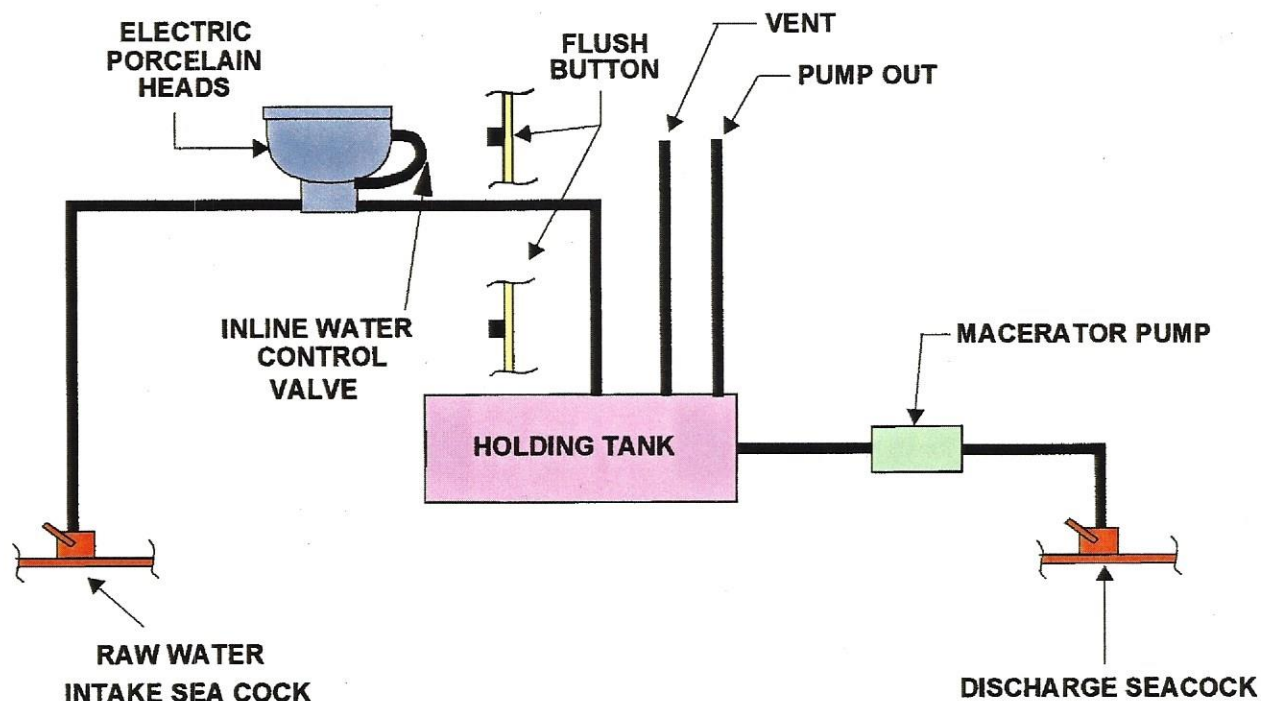


FIG 10-1 Typical Marine Sanitary System

Important: U.S. Coast Guard regulations require that boats have a sanitation system on board to control pollution. Waste is to be stored in a holding tank or other device so it can be properly disposed of at a shore facility. **Discharging this waste overboard in U.S. lakes, rivers, bays and sounds and within 3 miles of shore in International waters is prohibited.** Check with the Coast Guard regarding regulations in your area.

Holding Tank

Waste from the toilet is pumped to the holding tank located forward of the engine room. Access is through the hatch at the lower helm station. The holding tank is 35 gallons. You can empty the holding tank using a dockside pumpout, located next to the fuel fill on the starboard side (figure # 1), or when permitted, through a macerator through hull fitting in the hull bottom (figure # 2).

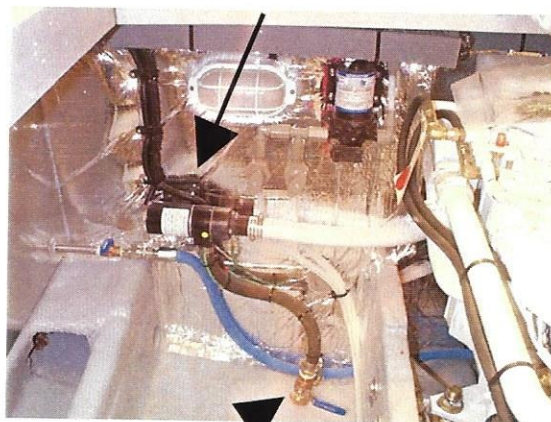
Figure # 1



WARNING: Waste in the holding tank can form methane, an explosive gas. Use suitable precautions when any maintenance is done to the sanitary system.

Figure # 2

MACERATOR



MACERATOR SEACOCK

The macerator and seacock are located on the engine room bulkhead portside.

Check the tank regularly to see how full it is. When the tank is full, do not use the head. If the tank is overfilled, waste can plug the vent or, worse yet, the tank can rupture, allowing its contents to empty into the bilge. Checking the level regularly is time well spent.

To empty the holding tank, MAINSHIP recommends using a dockside pumpout facility. Connect the hose from the pumpout facility.

When pumping out the holding tank, place the waste cap in a secure place. If you drop it into the water or it falls overboard, you will probably not be able to retrieve it. Consider keeping an extra cap on board in case of an accident. Flush sea water through the head several times to clean waste buildup out of the lines and rinse out the tank.

Flushing sea water through the head is also a good idea if you will be leaving the boat for two or more days. Doing so will clear all waste from the lines into the holding tank. Waste in the lines tends to dry out. These hardened wastes may affect future operation because they make the inside diameter of the hose smaller.

Macerator

If regulations permit, the macerator can be used to pump waste from the holding tank overboard. The MACERATOR circuit breaker switch at the DC Control Center controls the power supply to the macerator. The macerator pulls the waste from the holding tank, grinds the waste into small particles, and pumps the waste overboard through the seacock.

1. Open the seacock valve located in the forward section of the engine room portside.
2. Switch the MACERATOR breaker switch at the DC main electrical control panel to ON.
3. Allow the macerator to run until the holding tank is empty, but no longer. Running the macerator when the tank is empty will damage the pump.
4. When you hear the pump speed up (indicates tank is empty), immediately switch the MACERATOR breaker to OFF.
5. Close the seacock.

Important: If the seacock is not closed, the holding tank will fill with sea water and could possibly flood the boat.

SHOWER

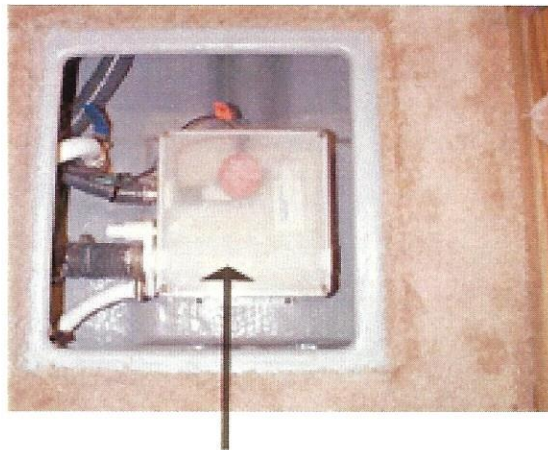
Both hot and cold water is supplied to the shower. To shower using hot water, either shore or generator power must be available. The FRESH WATER PUMP BREAKER (DC) and the WATER HEATER BREAKER (AC) must be ON.

The shower has an automatic sump pump. The HEAD switch at the DC panel controls the operation of this pump. Make sure the circuit breaker is ON when using the shower.

Use your yacht's shower as you would use a shower at home. Adjust the cold and hot water mix to the desired temperature. You can turn off the shower at the shower head without readjusting the temperature setting.

The water from the shower drains into enclosed plastic sumps (figure # 3). Inside the sump is a pump and an automatic float switch. When the water reaches a preset level in the sump, the pump starts and pumps water from the sump overboard through a through hull side fitting.

Figure # 3



SHOWER SUMP PUMP

BILGE PUMPS

Your MS 390 PT has three bilge pumps: one forward, one amidships in the engine compartment bilge, and one aft in the generator compartment. The pumps, which operate automatically, have separate circuit breakers at the DC Control Center.

The forward bilge pump is located beneath the steps into the master state room. Lift up steps to expose the bilge pump compartment. See figure # 4. The amidships bilge pump is located in the engine room (figure # 5). The aft bilge pump is located in the generator compartment in the keel.

Figure # 4

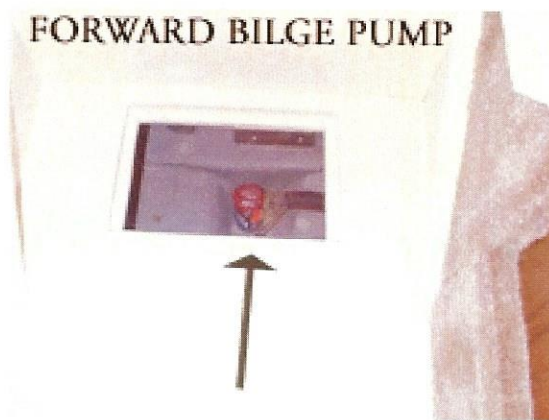


Figure # 5



When the water in the bilge rises to a preset level, a float switch at the bilge pump turns the pump on automatically. The pump runs until the water level reaches a preset low level. When a pump is running its indicator light at the DC Control Center comes on. The bilge pumps can also be operated manually.

Note: Power is always available to the bilge pumps. When a pump's breaker switch is switched to OFF (or AUTO mode), the pumps operate automatically. When it is switched to ON (or MANUAL mode), the pump runs until the breaker is switched to AUTO.

Some water will collect in the bilge, especially in the mid bilge because of water dripping from the shaft log. However, there may not be enough water to activate the pump(s). While underway and on plane, turn on the bilge pumps manually and let them run for a time. A minute should be long enough.

TROUBLESHOOTING

Problem	Cause	Solution
Head not flushing	HEAD breaker OFF	Switch breaker to ON. If breaker is tripped, determine cause and correct.
	Head seacock closed	Open seacock.
	Battery charge low	Charge batteries
Head not emptying	Blocked line to holding tank	Remove material from line.
Shower sump overflowing	HEAD breaker OFF	Switch breaker to ON. If breaker is tripped, determine cause and correct.
	Discharge line blocked	Clear material from line
	Pinched line	Straighten line.
	Defective float switch	Replace switch. See your dealer for service.
	Defective pump	Replace pump; see your dealer for service.