CHAPTER IV: OPERATING PROCEDURES

A. Sailing the Tayana Vancouver 42

Most people have learned to sail on sloops, and they don't realize that sailing a cutter is somewhat different. Let's look at how one sets the sails on the Tayana 42 cutter. As the sails fill and you are on or near the proper course, set the jib or Yankee so that it fills and is almost, but not quite, on the point of luffing. You will note that the set of the jib affects the flow of air to the staysail. Once the jib has the proper shape and set, set the staysail in essentially the same manner – that is, let it out until it just starts to luff, and then pull it in until it stops. Finally set the mainsail again set it at the point where it just stops luffing. The rules for sail shape apply to your cutter just as they do to a sloop. Generally speaking, the higher the wind the flatter the sails. Shaping your sails for wind conditions and getting the most from your yacht is one of the peculiar pleasures which sailors find in the sport.

As the wind rises to about 18 knots, you are likely to get better performance if you take a reef in the main. Your yacht has been set up for jiffy or slab reefing. When you reef, it is best to loose your sheet somewhat to get pressure off the sail (do not simply let it fly), raise the end of the boom with the topping lift, pull the clew reefing line tight until the first reefpoint at the leech becomes the clew. Then loose the halyard and pull the reef point on the luff down to the reefing hook.

When the wind gets between 22 and 25 knots, you will probably feel the need for a second reef in the main. Remember, if you think you should reef – then reef! A third reef point is a good modification to any cruising main. Note: On many of the Tayana 42 mains, the sail was made too long, and the boom will hit on the gallows when sheeted hard on the wind. This usually needs reduction of the foot. Cut up approximately 4” at the leach, tapering to 0” at the tack. As the wind increases, if you are sailing relatively close to the wind, it is better to remove the staysail first and leave the jib flying; if, on the other hand, you are on a broad reach, it is better to remove the jib and proceed under main and staysail. Remember, you cannot sail a cutter well under mainsail alone. The position of the mast generally prevents good balance and weather helm can make the yacht unmanageable. The Tayana 42 will balance, however, under staysail alone, and the yacht will do very well in 40 knots or so of wind with the staysail alone drawing.

Generally a sail inventory includes a light weather sail such as a three-quarter ounce cruising spinnaker, spanker, or whatever name you prefer for such a sail. This sail will add greatly to your pleasure and boat speed in light winds – say up to 12 knots. At greater wind speeds, working sails do fine. A Genoa is great for close wind work, but it is very bulky and difficult to stow. You will find that the Tayana 42 has an amazing turn of speed under almost any wind conditions. You are going to surprise a lot of people out there when you go sailing by them. You will find that tacking is easy, and there is really no excuse for getting into irons even in light breezes. When you tack allow the yacht to go well through the wind – get her going off the wind and gradually bring her up close. You will find that you will tack through 90 degrees with working sails in breezes of eight knots or more.

B. Tuning the Spars and Rigging

Tuning is probably the most difficult yet perhaps a more enjoyable part of sailing. Remember, just as a car runs badly with a poorly tuned engine, your yacht will never perform to her potential unless you learn to tune her rigging and spars. Forget all of those rules of thumb which say that the mast must be raked so much, the boom should be horizontal, the shrouds should sound a perfect G when snapped with the thumb and forefinger, or any of the dozens of others which are still current. Tuning is correct when the yacht sails up to her full performance and is comfortable and easy to handle. There are no other criteria.

Let us presume that your yacht is commissioned and essentially ready for sailing. The first task is to set up your rigging and mast. Using the forestay and the backstay, take all of the rake out of the mast; it should be vertical. With that accomplished, make sure the mast is not leaning to port or starboard. Use the upper shrouds to correct this, if necessary. Now tighten the upper shrouds and the fore and back stays until looking up the mast sail slot you see the first hint of an '"S" bend. Loosen the upper shrouds until the "S" bend just disappears--there will still be a simple bend. Using the intermediates and lowers, make the mast perfectly straight. The side to side alignment may be accomplished by a halyard to the deck at each side at equal length to the same spot. Check to see that the mastt is perpendicular to the deck. The shrouds and stays then will be properly tensioned and your rigging and spars are now ready for a sail.

NOTE: Most Tayana 42s do not come with intermediate aft shrouds and they are a good addition for offshore work. Another good addition is a hydraulic backstay to reduce sag going to weather, and it gives you the ability to release tension easily off wind or in the slip.

C. Tuning Under Sail

Try to make your first tuning sail in a breeze of ten to twelve knots. Put the yacht hard on the wind with sails sheeted hard in. Look up the mast and see if there are any bends or curves – there shouldn't be. If you see a lateral bend, use the shrouds to straighten the mast. After a few tacks your mast will remain straight. Next put the yacht on a close reach, say 60 degrees from the apparent wind and test your helm for weather helm. You should have either a neutral helm or a very light weather helm. Remember, if you have anything other than a light helm in light to medium weather, helm can get out of hand when the wind really freshens. If you find "excessive" weather helm, rake your mast more forward using the forestay and backstay. When the feel of the helm is satisfactory, your mast is probably at or close to its optimum raked position; you should not worry if the mast rake is actually forward rather than aft.

It is important to note that weather helm is essentially a function of the position of the center of effort relative to the position of the center of lateral resistance. While the position of the center of effort can be moved by raking the mast, it is also moved by the set and shape of the sails. As you tune your yacht, you will come to "feel" the differences your adjustments make, and with patience, you will get to know when you have hit that combination of mast position

and sail set that makes her perform best. There are several good books on the market that describe tuning in great detail; they are well worth the investment.

Once your yacht has been tuned close to the wind and on a few reaches, you are pretty well finished. You will find that she goes well down wind and should have an acceptable helm on all points of sail. As you gain experience, you will find yourself doing more and more fine tuning. It will pay off in fast passages and bets at the yacht club bar.

NOTE: You may find that when heeling hard to starboard on a port tack, water comes into the aft locker (on some configurations) through the locker drain and into the forward anchor locker through drain, possibly getting the berth wet. The fix is one-way check valves at both locations.

D. Handling Under Power

The Tayana 42 is a fast yacht under power. Given a clean bottom and propeller, reasonable loading and no big seas, the yacht will go over seven knots with its standard Yanmar 4JHE diesel. You will find she has little tendency to "hobby horse" and your engine will take her out of those difficult rough inlets that can actually stop lesser yachts.

Backing under power is a challenge and takes practice. The yacht tends to back to port, and one must take this tendency into account. Foremost, always start backing with the rudder amidships. One way to back, if there is room, is to get some backing way on her, put the transmission into neutral and steer back with the rudder. In closer quarters be prepared to "kick" the stern by putting the yacht into forward, putting the rudder hard to port, and throttling the engine to full speed. You will find that this tends to push the stern to starboard; when you are headed properly again go back into reverse. It is a good idea to take your yacht out around a buoy and practice maneuvering. The buoy gives you a reference to measure what your yacht is doing, and the open water insures that you don't run into anything.

NOTE: A feathering prop is a good addition to your 42. Although expensive, it gives faster sailing speeds while feathered and more stopping power in reverse.

1. Pre-Starting Check-Off

It is advisable to use a pre-start checklist, as even the most experienced skipper can overlook an important detail that may evolve into an unpleasant or costly mishap. The checklist will vary, as each owner may have optional equipment that will require attention at this time. The following items are offered to help you develop your own checklist:

a. Check fuel level.
b. Open fuel shut-off valve.
c. Check engine and transmission oil.
d. Check for signs of fuel or oil leakage.
e. Check engine coolant level.
f. Open seawater intake to engine.
g. Check bilge, shaft log area.

h. Check battery switch ON.
i. Turn on "blower".

2. Starting Procedures

a. Release shaft lock, if so equipped.
b. Set controls in neutral.
c. Advance throttle slightly – approximately 1/4.
d. Turn ignition switch to ON and operate "starter".
***NOTE*:** Some engines are equipped with "pre-heat". Check engine manual for instructions.
e. Operate engine about 1000 rpm. Check immediately for oil pressure reading.
f. Check for water discharge.
g. Check ammeter for "charge" indication.
h. Allow engine to reach normal operating temperature and observe any tendency to continue to rise.
i. A final visual check of the engine room is recommended, as the engine is warming up.
j. Check forward and reverse operation at idle speed before casting off lines.

3. Engine Operation

a. Run engine at speeds as recommended in engine manual. Always reduce engine rpm to "idle" before shifting, and make throttle adjustments gradually.
b. Observe engine instruments periodically.
c. Avoid long periods of maximum rpm, as well as extended "idle" periods. Always run engine long enough to reach normal operating temperature, as short runs cause excess engine deposits and sludge formation in oil.
d. Become familiar with the sound of your engine at its cruising speeds, and note any vibration characteristics. When an abnormal sound or vibration occurs, reduce rpm and make a quick check of instruments and conditions. Have problem checked as soon as possible.
e. Observe ammeter readings periodically; and as battery becomes charged (low charge rate), you may switch over to the alternate or house battery.

CAUTION: Do not turn battery switch to OFF position while engine is running. To do so may damage voltage regulators and possibly destroy diode rectifier in the alternator. It is advisable to reduce rpm to idle if possible while switching batteries to prevent an unnecessary surge on the system. The alternator should not be charging at maximum for long periods of time. If this occurs, it is advisable to allow a cooling off period at 10-minute intervals, switching to the "charged" battery or operating at lower rpm's.

4. Engine Shut-Down

a. Allow the engine to idle for a few minutes before stopping, and check instruments for proper readings.
b. Push STOP control and hold until engine stops.
c. Turn ignition switch and blower switch OFF.
d. Close fuel valve and seacock if boat is to be left unattended.

e. Visually check engine room and bilges for leakage.

NOTE: Check engine "hours" for maintenance scheduling. Read and use your engine manual. Maintain an engine /maintenance log.

E. Fuel System

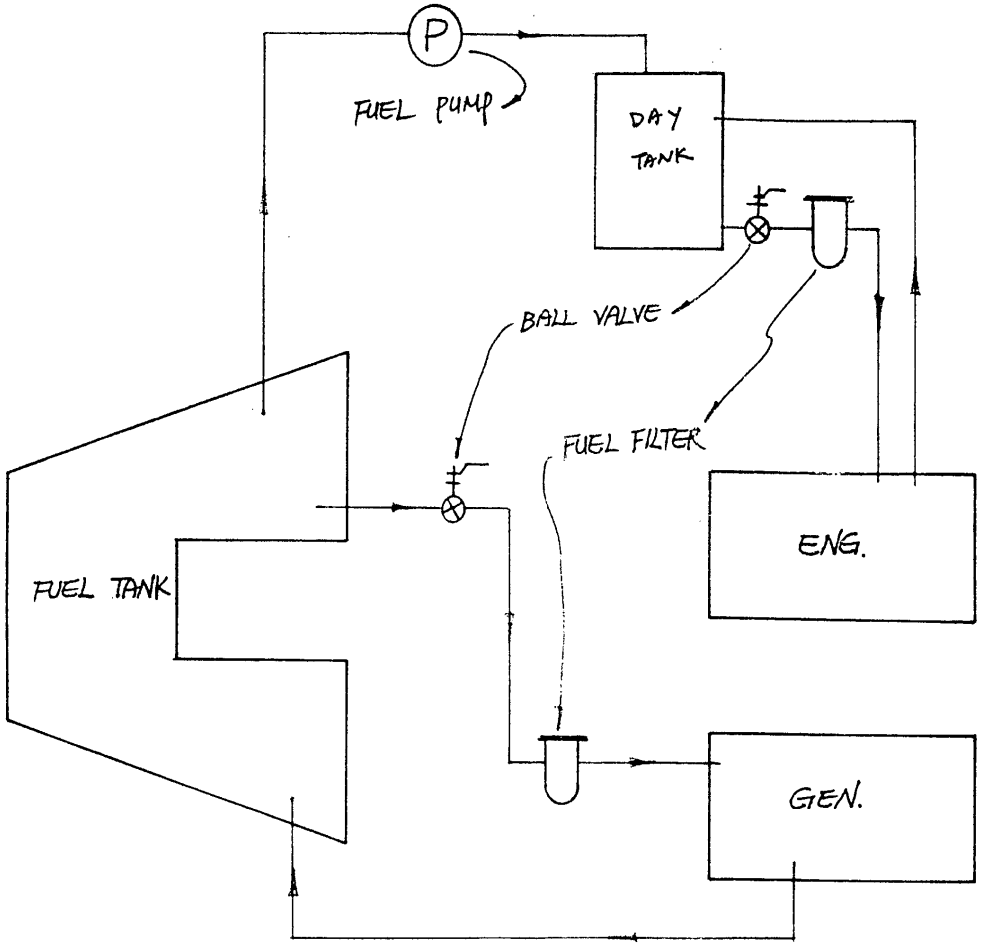
Tankage consists of two 60-gallon carbon steel tanks located beneath the cabin sole just aft of the water tanks. Valves are located above the port tank to control the fuel supply to the engine. Some center cockpit models have a "U" shaped tank around the mast/compression post. Figure IV - 1 shows a representative fuel supply plumbing diagram.. Figure IV - 2 is a plumbing diagram for all fluids, and Figure IV - 3 is a representative tankage diagram.

NOTE: Valve handles parallel to the line are ON, and at right angles are OFF.) A primary fuel filter/water separator (such as the Racor 500) should be placed in the fuel line between the tanks and the secondary fuel filter at the engine. Later engines may have this as a standard installation. Installation of a vacuum gauge at the primary filter can be useful to determine when to replace the filter element. Check periodically for water accumulation at this point by removing bottom plug and draining into a container. Replace the element at least once each season, or as required by manufacturer's recommendations. There is also a final fuel filter in the engine itself, and it should be changed at intervals specified in your engine manual.

A biocide (such as Biobor) to prevent the growth of algae should be added to the fuel whenever fuel is added to the tanks. An 8-inch port in the top of each tank provides access for cleaning or repair/replacement of the fuel gauge sending units if installed. A dipstick is also located in each tank, but they are not calibrated. Access to the port dipstick may not be available due to the floorboards in some configurations, but a deck plate can be installed to allow access.

The fuel tank and fill deck-plate are electrically bonded to the main ground at the engine. Although diesel fuel is considered relatively safe, safe fueling practices are always recommended:

1. Turn off heaters and galley equipment.
2. Extinguish all cigarettes, pipes, etc.
3. Stop engine and turn battery switch to OFF.
4 Close all hatches and ports to prevent entry of fumes.
5 Do not attempt to take on fuel in rough water or inclement weather, as water might enter through the deck plate.
6. Avoid fueling after dark or in poorly lit areas.
7. Maintain continuous contact between the nozzle and the deck plate fitting to eliminate the possibility of static electric discharge while filling.
8. Take on only gallonage anticipated by the fuel gauge. Do not overfill to point where fuel remains in fill hose.



TAYANA-42 NO.185 FUEL SPLY PLUMBING

FIGURE 1V - 1
FUEL SUPPLY PLUMBING
DIAGRAM

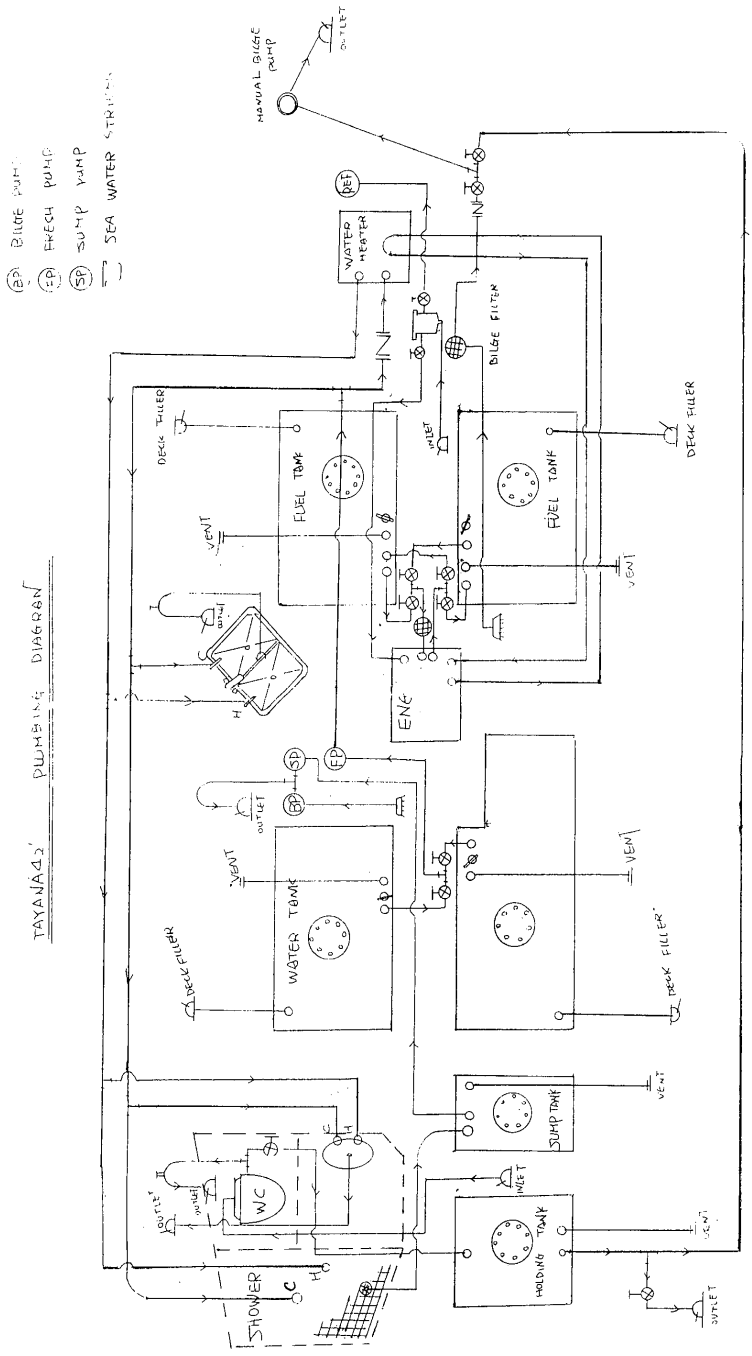


FIGURE IV - 2
FLUID PLUMBING SYSTEM

1982 Tayana V42CC
Hull #52

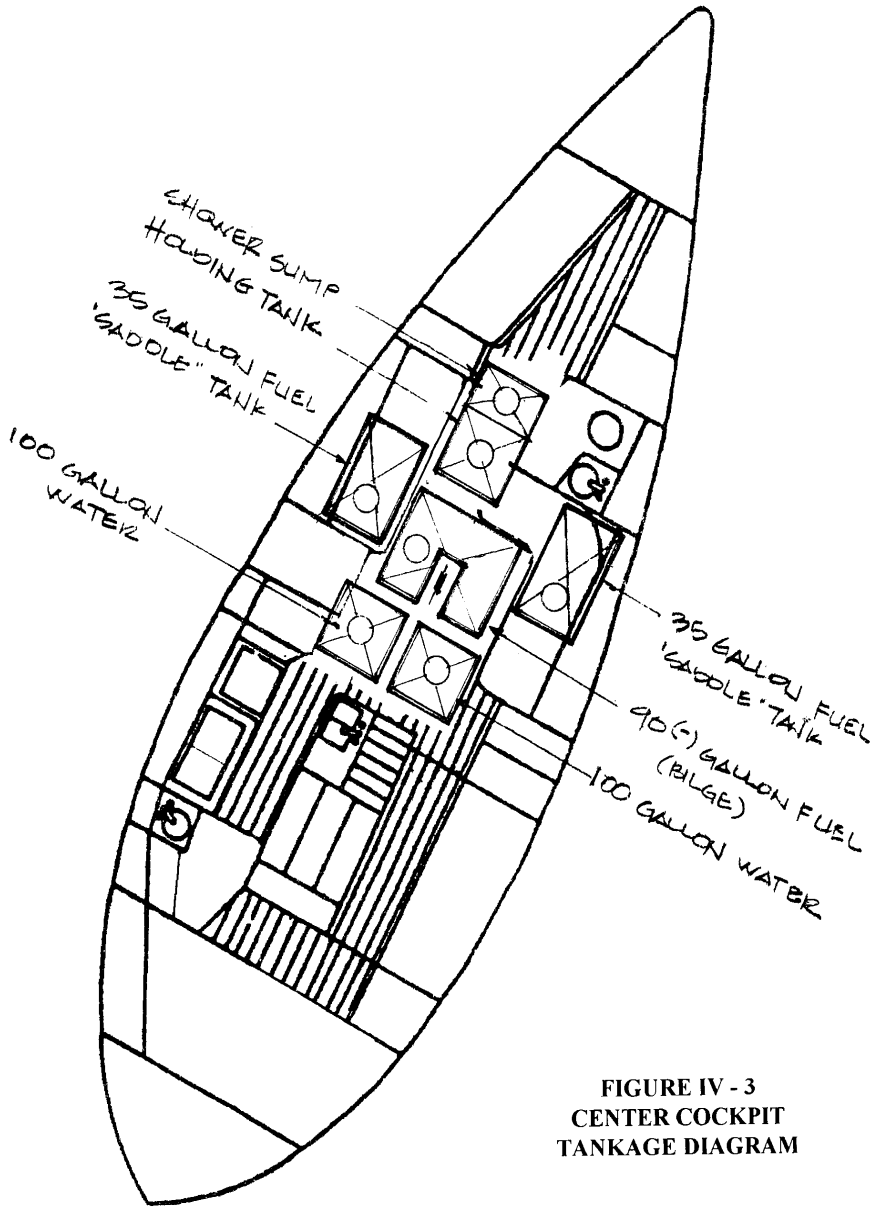


FIGURE IV - 3
CENTER COCKPIT
TANKAGE DIAGRAM

9. Wipe up or wash down spills after replacing and tightening deck plate cap.
10. Open all hatches, air bilges, and operate blower before starting engine or re-lighting galley stove. Turn batteries ON.
11. See engine manual for "bleeding" procedures.

NOTE: Acquire your fuel from a reliable source. A diesel engine requires clean fuel; water and dirt are the engine's worst enemy. Keep a clean and tight fuel system, and you will have a most reliable engine.

F. Electrical System

You will operate two different electrical systems on your Tayana 42 – a direct current (DC) system which is the primary electrical system and an alternating current system (AC) which is used primarily at a dock. Neither of the systems is difficult to use, but certain important rules must be followed.

1. The DC Electrical System

The primary source of electrical DC power is the storage battery(s). It is important to remember that storage batteries are not the unlimited source of power to which one is accustomed in the home. While a battery is rechargeable, one can only take out of it what one has put into it. Thus, it is important to keep track of how much charging is done and how much current is drawn by the various DC accessories. When the engine is running, accessories are not likely to draw enough to run down a battery; the engine charge will maintain battery charge level. Under sail, however, lights, instruments, autopilots, and other such wonderful devices can bring a battery to its knees in relatively quick time. This is especially true with the refrigeration system if yours is run off the battery. Figure IV - 4 shows a typical electrical power system.

a. The Energy Audit System

The best system which we know to help you use your power wisely is the DC energy audit. Make a list of every DC electrical device, which you have on board. Determine from markings on the equipment or from equipment handbooks how many amperes each device draws in normal operation. Add al1 of the amperes together and you wi11 see how much total current would be drawn if al1 devices were operated at one time. Table IV-1 on page 41 will help you make such an audit for your yacht.

Your battery(s) are rated by ampere-hours. For example, a standard battery, which comes with the Tayana 42 is rated at 120 ampere-hours. Theoretically, this means that the battery will provide one ampere 120 hours or 120 amperes for one hour. As with most things the theoretical capacity and the actual usable capacity are quite different. In the case of a wet cel1 battery one should plan on a maximum capacity of 50 percent of the rated capacity. Thus, your standard battery wi11 provide you with about 60 ampere-hours.

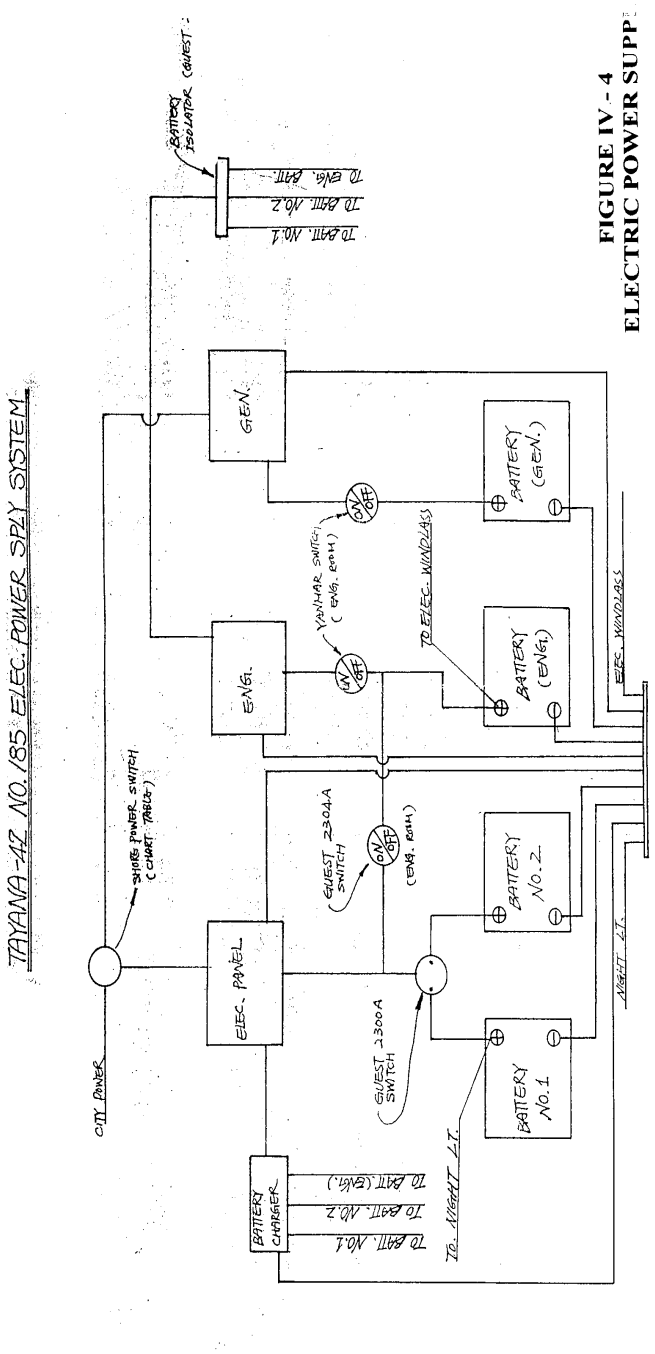


FIGURE IV - 4
ELECTRIC POWER SUPP

On your electrical control board you wi11 find a DC ammeter which shows the number of amperes which are being drawn from the battery at any particular time. It is easy to see that if your ammeter shows 10 amperes for one hour, you will have drawn a total of 10 ampere-hours from your battery(s).

Let's look at a practical example of how you can use your electrical audit and ammeter to know when recharge is going to be required. Let us say that you are sailing overnight and that you have just turned on your running lights and compass lights. The battery(s) are fully charged. You note that the ammeter shows 5 ampere draw. It is 2000 hours. At 0600 the next morning the sun rises and you shut off the running lights. The draw is now zero--nothing else is running. You have drawn the amazing total of 50 ampere-hours (5 amps x 10 hours). If you had a single battery with 60 ampere-hours usable capacity could you now start your engine? Yes, you could. A starter requires about 60 amperes to turn over a diesel engine. If it takes one minute to turn over the engine before start (an unusual situation), you can see that starting would, in effect, require one ampere-hour. You must remember that much more than your running lights are apt to come on during the night. The electric bilge pump may come on; the pressure water pump may come on; you may be using an electric autopilot; you may require deck floodlights; somebody may play the stereo. All of these devices may require so much power that you end up with insufficient charge to turn your engine over.

When charging gel batteries, ensure that your charging rate is within the parameters of the battery manufacturer. The charging rate for at least one make is no more than 14 amps.

NOTE: Do not switch battery switch to the OFF position with engine running

The BOTH position is intended for emergency or extended engine cranking ability. Ordinarily, one should charge one battery at a time while the engine is running. Continuous running in the BOTH position when the batteries are in a low state of charge, can cause an overload and possible damage to the engine alternator.

b. Electrical Panel

The AC-DC breaker panel is generally located in the navigator's station. This panel is equipped with high quality circuit breakers. On most panels, the DC circuit breaker is wired to an indicator light to show at a glance if the circuit is on. The DC indicator lights are solid state light emitting diodes, which require very little current draw.

The DC ammeter monitors the amount of current being drawn from the battery, and the DC voltmeter gives an indication of the battery’s condition. You must operate the battery test switch to get a battery condition reading. These voltage readings may be interpreted as follows:

	BATTERY READING	BATTERY CONDITION
Engine OFF and electrical system under minimal or no load	below 11 volts	Very Low
	11-12 volts	Low
	12-13 volts	Well Charged
Engine Running Fast Idle or above	13 – 13.5 volts	Low Charge Rate
	13.5 – 15.5 volts	Normal Charge Rate
	15.5 or higher	Excessive voltage (Voltage regulator defective. Replace or adjust)

The voltage readings should be taken in either battery position, not in BOTH position.

Start your engine using the battery with highest charge and allow time for the battery to return to its full charge state before putting it on reserve. When switching over to the other battery, be sure not to switch through the OFF position. This would damage the regulator and possibly the alternator diodes. The BOTH position is for emergency or extended cranking periods and should not be used to charge two batteries at the same time. This could overload the charging circuit if the batteries are low.

NOTE: Recommended additions would be larger capacity alternator and regulator as well as a larger bank of deep cycle batteries to handle anticipated needs. Remember you must adjust regulator charging voltage to the proper level, depending on battery type. Also you should have a monitor to keep track of amp hours used or put back in bank. It is preferable to separate the start and the house batteries, with the start battery not of the deep cycle type.

c. Engine Control Panel

The engine control panel incorporates a visual warning system, which is activated by the engine oil pressure, electrical charge and temperature sensor switches. The oil pressure light will operate each time the engine is started until oil pressure builds up. It gives a constant check on the operation of the system. The other lights will light when the engine key is turned on, and they will go off as soon as the engine starts.

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2. The Alternating Current System

The alternating current system is essentially an auxiliary power system, which is activated through a shore power cord attached to a dockside power source. Some yachts also have an on-board 110-volt AC generator that provides power while underway. The AC system that comes with the yacht is a three-wire shore grounded. The shore power inlet is rated at 30 amperes and is generally mounted on the aft, outer face of the coaming. For operating procedures for installed AC generators, consult your owners manual.

TABLE IV – 1

Direct Current Energy Audit

DEVICE	VOLTAGE	CURRENT DRAW
TOTAL DC CURRENT DRAW		

a. The AC Electrical Control Panel

The AC electrical control panel is a part of the ships electrical panel partly described on the previous page. On it is located the main circuit breaker for the AC system. Each AC circuit is protected by a double pole breaker, which breaks both sides of the circuit when it is tripped. For reasons of safety, it is recommended that all appliances used aboard be equipped with a three-wire grounded cord.

b. Hot Water Heater

The hot water heater is connected to a breaker on this panel. Some heaters have a high temperature re-set button built into the heater. Before applying power to the water heater, always be sure the heater has been filled by turning on one of the hot water faucets long enough to get a steady flow. An empty hot water heater may burn out the heating element before the temperature re-set button can break the circuit.

c. Shore Power Connecting Procedure

The proper-procedure for connecting shore power to the boat safely is as follows:

1. Turn ship's main breaker to OFF
2. Turn receptacle on dock to OFF, if possible
3. Connect cable to power inlet on boat first, (to prevent handling a “live” powerline and possibly coming in contact with water)
4. Route the cable in such a way as to prevent strain on either connector, allowing for the rise and fall of the tide, and to prevent chafing
5. Connect to dockside receptacle and turn shore switch on
6. Turn on ship's main breaker

d. Disconnect Procedure

1. Turn off ship's main breaker.
2. Turn off dockside power and disconnect cord.
3. Replace all weather-tight caps on receptacles.

CAUTION: The owner must be aware of the hazards of using high voltage AC aboard ship, and should maintain this system in safe condition. (See Section V). Don't take chances handling AC equipment in wet weather or while washing down topsides. Caution guests and children about hazards, and do not use any equipment that does not function properly or is suspected of being defective.

e. Battery Charger Option

The battery charger, or converter as it is also referred to, is connected to the feed or "output" side of the main battery switch. This allows you to select either or both batteries to be put "on the line" for charging when the engine is at rest. It also insures that, when the battery switch is OFF, all circuits are positively disconnected from the batteries during an emergency shutdown. Do not turn the battery charger on when the

battery switch is in the OFF position. This could possibly feed the ship's circuits without the back-up support of the batteries. It could also cause premature failure of electrical equipment in the boat and if the regulator section of the charger should fail, allow high voltage into the system.

The battery charger has an automatic cut-off circuit, which is wired to the engine electrical system. Whenever the engine is started, the charger will shut off and allow the engine-driven alternator to take over, returning to service when the engine is stopped (if the charger is powered by either a generator or shore power) . The charger is protected by internally mounted fuses on the AC and DC circuits, as well as the main circuit breaker on the AC panel. Be sure all the related circuits are OFF when opening the charger cabinet for service. The charger is an air-cooled unit with louvers on top and bottom. Care must be taken not to restrict the ventilation provided, nor allow small tools or hardware to fall into the charger while performing maintenance work. If left on at the pier, the battery charger should cut off automatically when the batteries are fully charged, but many do not.

G. The Plumbing Systems

Your yacht has several plumbing and sanitation systems which, while easy to operate, require some care to avoid spills or the pumping of waste overboard when that is not the intention. Figure IV - 5 shows a V-42 fresh water system. Figures IV - 2 and 3 are also pertinent. Figure IV - 6 shows a typical waste water plumbing system and Figure IV - 7 shows a partial plumbing system for a V-42 CC two head system..

1. The Fresh Water System

Tankage consists of two 70-gallon stainless steel tanks located beneath the cabin sole in the main cabin. Valves are located above the port tank to control the water supply to the electric water pump and the foot pump for the galley sink. Dipsticks are also located in each tank. As the electric fresh water pump generally gets a lot of usage and will eventually fail, a spare can save the day when you must have that hot shower. Installation of an accumulator tank (perhaps beneath the galley sink) can reduce cycling of the pump to prolong its life. One to two ounces of unscented chlorine bleach (such as Clorox) can be added to every 60 gallons of water to prevent the growth of algae.

Your yacht is equipped with a full pressure fresh water system for both hot and cold water. It allows you to draw fresh water in the same way and with the same convenience you have become used to in the home. But there is a disadvantage to this – you will have a tendency to use your water as you do in the home and this is generally wasteful. At home this waste translates into bigger water bills. In a yacht at sea such waste can lead to real trouble. Training yourself and your crew to conserve water is absolutely essential. If you

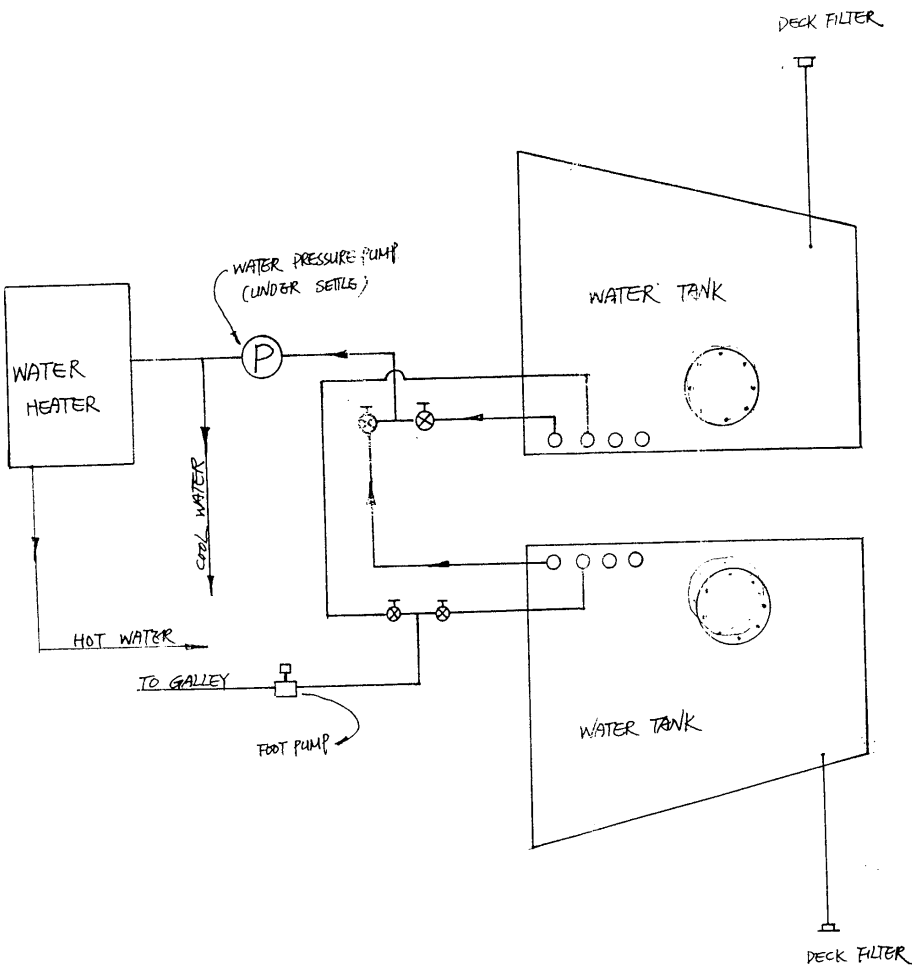


FIGURE IV - 5
FRESH WATER SYSTEM

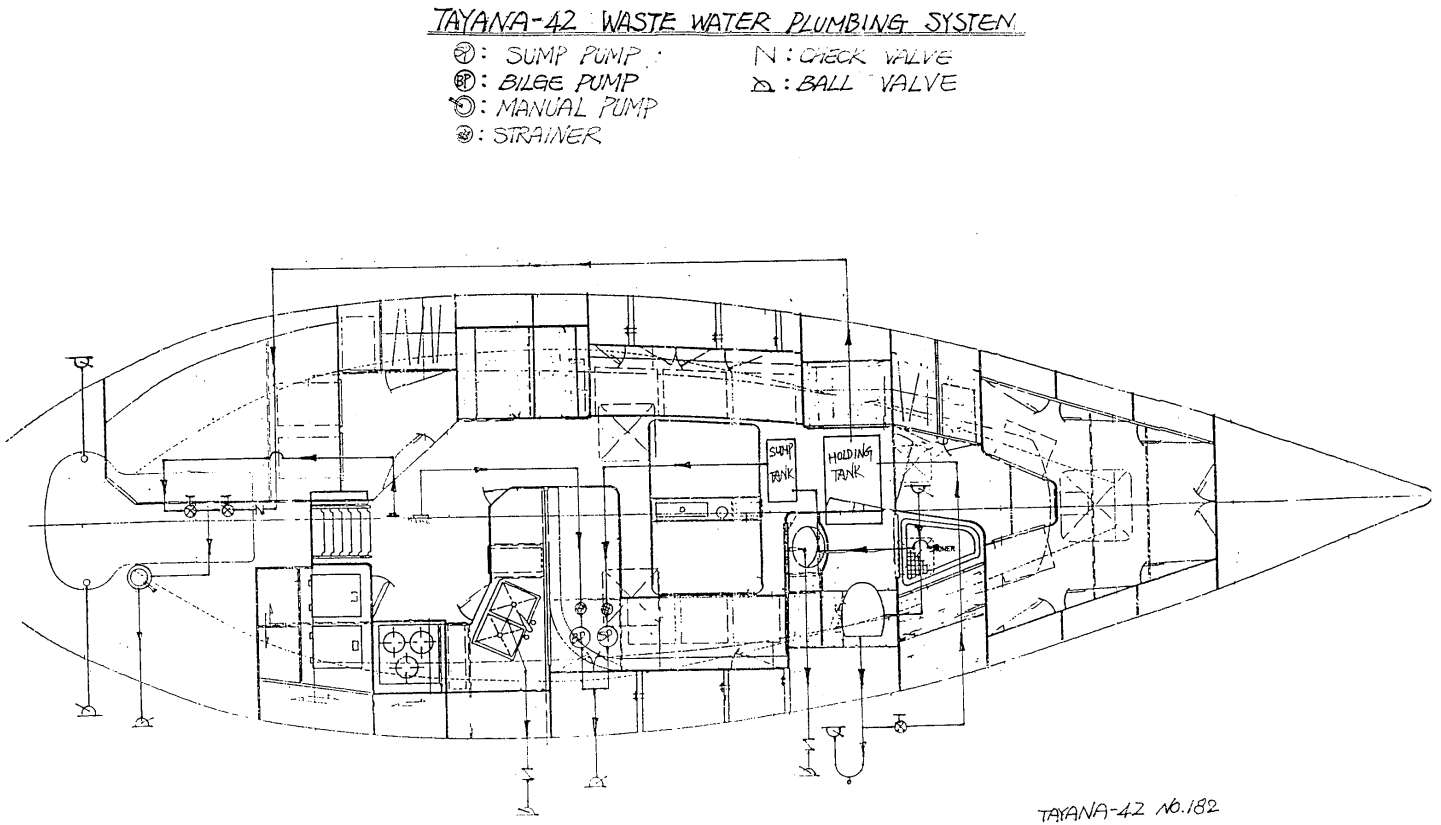
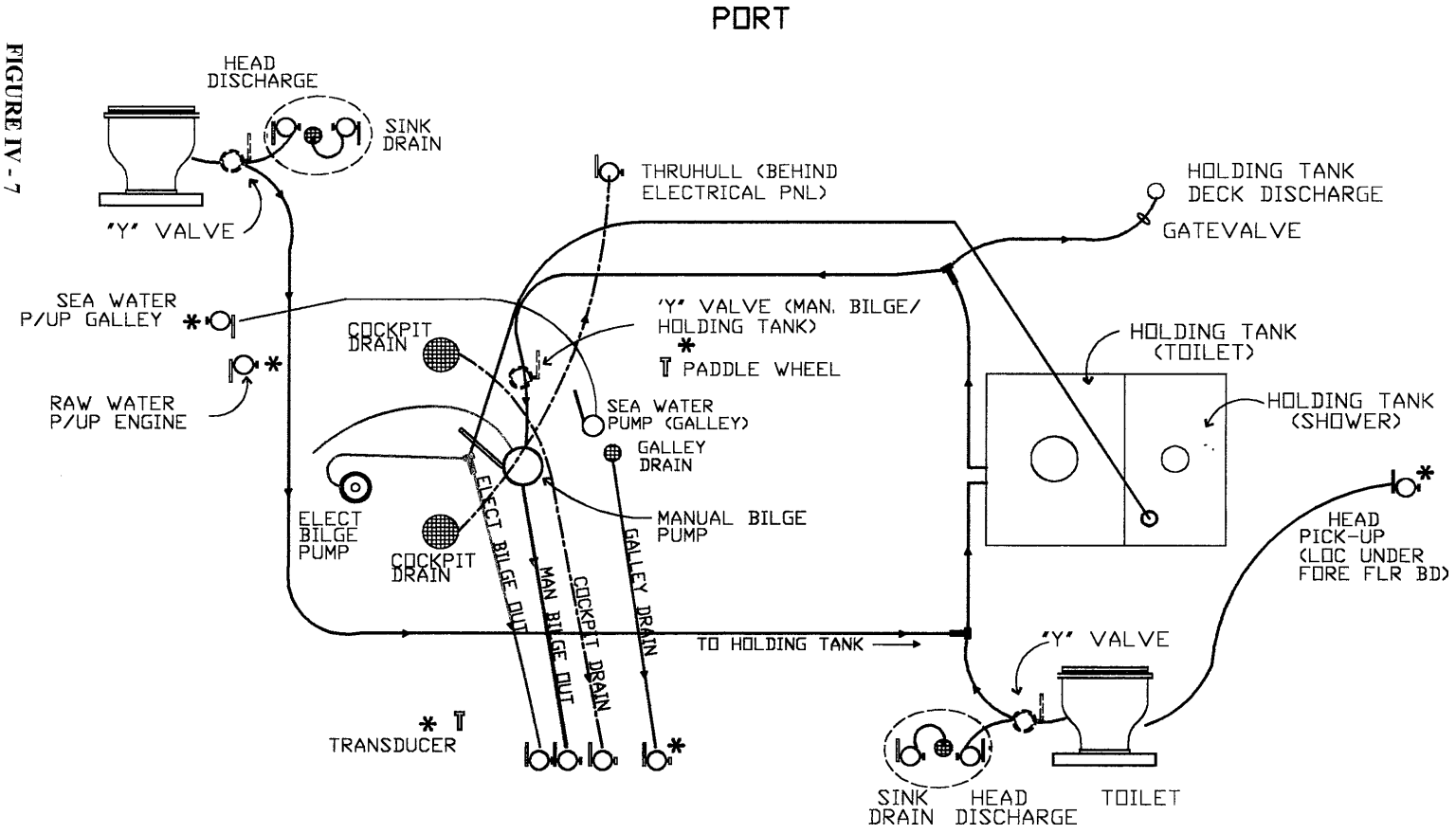


FIGURE IV - 6
WASTE WATER PLUMBING
SYSTEM

FIGURE IV - 7



* BELOW WATERLINE

"|o|" DESIGNATES THRU-HULL

"T" DESIGNATES FIXED TEE

PARTIAL PLUMBING LAYOUT

1982 TAYANA V42 (CC)

find you have trouble doing so, you may find it worth while installing, if you have not already done so, a manual water system. The manual system requires hand or foot pumping, and it invariably results in better water conservation.

2. Bilge Pumps

The Tayana 42 is equipped with two bilge pumps – one electrical and one hand operated. Both of these pumps should be checked every day that the yacht is sailed. The electrical bilge pump is by PAR and is located in the same compartment as the fresh water pump. The intake hose goes down past the engine and into the bilge sump below the engine. The pump outlet is just above the water line on the side of the yacht. The most common failure is a dirty pick-up screen. This may be cleaned simply by pulling the intake hose up from the sump and removing the dirt. A few failures because of dirt in the bilge will probably result in a greater effort to keep the bilges clean and sweet. There may be an in-line filter close to the pump that should also be cleaned.

The hand bilge pump is generally located in the cockpit. The hand bilge pump serves two purposes – it pumps the bilge and it pumps the holding tank. By following the intake line from the pump, one will come to a set of two valves. With one valve closed and the other open, you can see that the pump clears the bilge. By reversing the closure of the valves the pump clears the holding tank. A little experimenting will show you the proper valve operation.

NOTE: A second electric bilge pump is a wise addition.

3. Holding Tank

Your 42 has a holding tank system which is legal anywhere. The toilet may be pumped either into the holding tank or overboard directly. The waste holding tank is a 35-gallon fiberglass tank located beneath the cabin sole in the vicinity of the head. The 1 ½ inch outlet hose from the tank tees to the deck pump-out fitting, and the manual bilge pump is located in the cockpit. A valve beneath the cockpit switches the intake to the manual bilge pump from the bilge water to the holding tank. A small diameter vent hose leads to an outlet on the port side of the hull just below the toe rail. This vent line must be open (not clogged) in order to pump waste into, or out of, the tank. An 8 inch port in the top of the tank provides access should you need to work on the tank (e.g., to replace the stainless steel outlet fitting). When winterizing the holding tank, after pumping out the waste, pump ethylene glycol antifreeze (not the pink or blue propylene glycol antifreeze, as this type of antifreeze can damage the flexible valves and seal in the head) into the tank through the head.

4. Toilet

The toilet is one of the standard U.S. makes which uses seawater for flushing. The intake and discharge are both below the water line. The intake is well forward of the discharge opening. Each opening is protected by a through-hull fitting. The discharget line has a loop, and its through-hull seacock is kept open, except when the boat is unattended. By opening/closing valves located on either side of a "TEE" commonly referred to as the "Y valve" in the discharge line, effluent can be sent overboard or to the holding tank. Ensure that you are complying with the Coast Guard requirements for your area.

NOTE: Before shifting to the holding tank, close the overboard discharge valve and then open the holding tank line valve.

The sequence for operating the toilet is as follows:

1. Pump, slowly, until bowl is nearly exhausted. Normally this will require three to six pumps.
2. Open the intake through-hull fitting located just outboard beside the seat.
3. Flush completely by pumping at least thirty times.
4. Close the intake through-hull fitting.
5. Pump to nearly exhaust the bowl. This will take about five or six full strokes.

CAUTION: Do not leave the intake valve open. The valves in the pump may have a slight leak-through, and the bowl may overflow with seawater.

H. The Propane System

A normal propane system on your Tayana 42 consists of two 20-pound tanks located in the propane locker in the cockpit that has an overboard drain for fumes, A regulator for pressure regulation, a manifold to switch between tanks, and a solenoid to remotely shut off the gas flow to the galley are also located in the locker. The gas line to the stove in the galley should be inspected regularly and chafe protection should be used where the line runs through the bulkheads. Make sure there is a proper flexible hose from the solid gas line to the stove to allow the stove to gimbal freely.

A typical propane system diagram is shown in Figure IV - 8

To light the stove:

1. Check that burners are OFF.
2. Open the tank valve.
3. Switch solenoid to ON to allow the flow of propane to the stove.
4. Light the stove

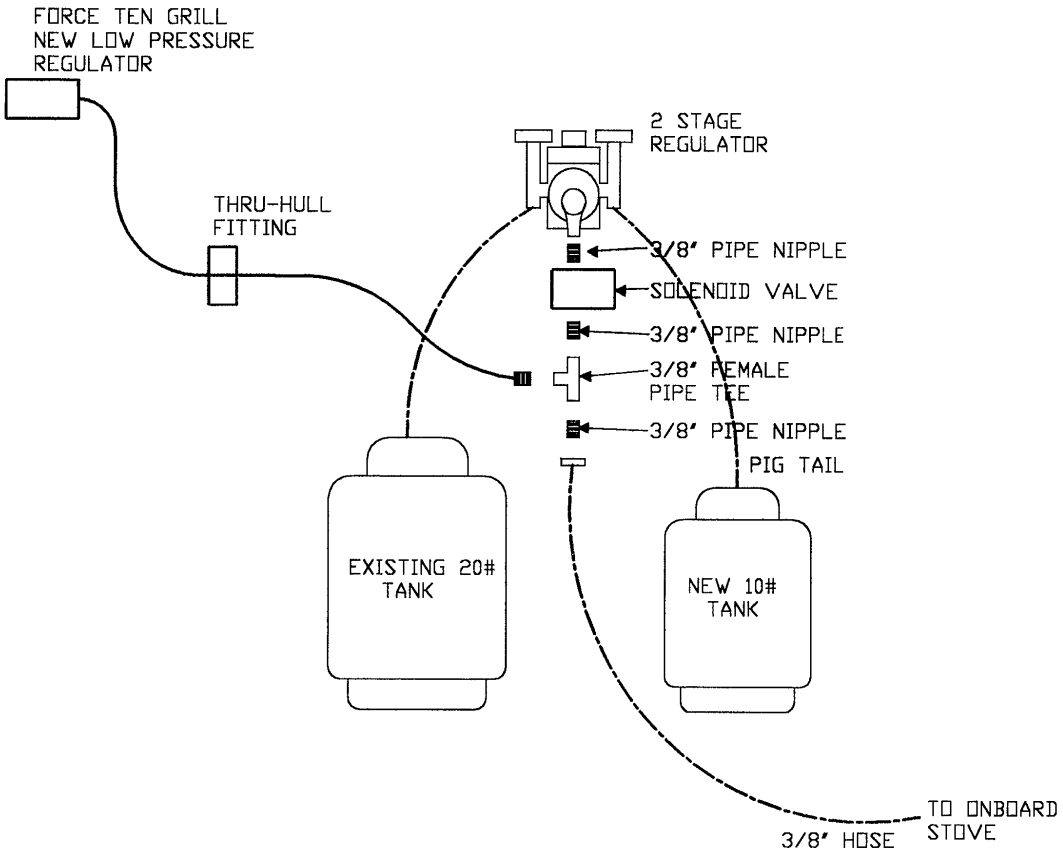


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FIGURE IV - 8
TYPICAL PROPANE SYSTEM

To shut off the stove:

1. **Always first shut off solenoid** to allow gas in line to burn out.
2. When flame on burner goes out, shut burners off.
3. Close tank valves.

CAUTION: Propane is heavier than air and will settle in the bilge in the event of a leak, so maintain the system carefully, as a fire or explosion at sea would be a bad day. The purchase of a propane alarm to place in the bilge may be a wise investment.