

# BERTRAM 38 SALON CRUISER

## A WORD OF WELCOME

We are pleased that you have chosen a Bertram, and know that her unique design will give you outstanding performance and many years of boating pleasure.

Your Bertram is built of the finest, most modern materials and is manufactured under rigid quality controls. Her hull is of high-impact, multi-laminate fiberglass. High pressure laminates and vinyl throughout further reduce maintenance. She comes to you as the most thoroughly tested and trouble-free boat on the market today.

As durable as her construction is, your Bertram will benefit by reasonable care. And, as is always true with things mechanical, maintenance, adjustments, or repairs may be required from time to time for certain components. Thus, this Owner's Manual, containing a wealth of detailed information, has been specially prepared for your particular model to guide you in keeping her in yacht condition.

To fully enjoy your Bertram, you should understand her completely. To this end, we suggest that you read this

manual thoroughly. If any points arise that you do not completely understand, your Bertram dealer will be glad to assist you.

Included are warranties, ours plus those of manufacturers of engines and accessories.

When your boat requires service, contact your Bertram dealer. He has been factory trained to help you and our factory service representatives are available to help him if need be.

We wish you many years of pleasurable yachting on your new Bertram.

**WATCH YOUR STEP**

DATA SHEET

\_\_\_\_\_  
NAME OF BOAT

\_\_\_\_\_  
OWNER'S NAME & ADDRESS

\_\_\_\_\_  
HAILING PORT

\_\_\_\_\_  
HULL NUMBER

\_\_\_\_\_  
REGISTRATION NUMBER

\_\_\_\_\_  
HEIGHT ABOVE  
WATERLINE

\_\_\_\_\_  
BEAM

\_\_\_\_\_  
DRAFT

\_\_\_\_\_  
LENGTH  
OVER ALL

\_\_\_\_\_  
FUEL CAPACITY

\_\_\_\_\_  
WATER CAPACITY

\_\_\_\_\_  
IGNITION KEY NUMBER

\_\_\_\_\_  
DOOR KEY NUMBER



TECHNICAL DATA

HULL NO. \_\_\_\_\_

E N G I N E S

Manufacturer:

Gear Manufacturer:

Model:

Gear Model:

Type Fuel Filter:

Gear Ratio:

- 1.
- 2.
- 3.

Type Oil Filter:

Type Spark Plugs:

P O R T E N G I N E

S T A R B O A R D E N G I N E

Serial No.:

Serial No.:

Gear Serial No.:

Gear Serial No.:

A U X I L I A R Y G E N E R A T O R

Model:

Manufacturer:

Serial No.:

B A T T E R I E S

Manufacturer:

Type:

P R O P E L L E R S H A F T S

Material:

Diameter:

Length:

P R O P E L L E R S

Manufacturer:

Style:

Diameter:

Pitch:

No. of Blades:

Material:

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# INITIAL CHECKLIST

Upon boarding his Bertram for the first time, the wise owner will want to familiarize himself with the total operation of the various systems.

- I. Location and function of all 12 volt electrical switches, fuses and circuit breakers.
  - a. Automatic Master Switches located on aft engine room bulkhead control the on-off operation of the 12 volt engine starting system.
  - b. Master Circuit Breakers protect the wiring between the batteries and the main distribution panel. The circuit breakers can be found on the distribution panel. The only 12 volt circuits excluded from the master circuit breaker control are the bilge pumps and converter. These circuits operate at all times and are protected by labeled circuit breakers on the distribution panel.
  - c. Distribution Panel - D. C. circuit breakers control and protect the individual electrical components such as lights, pumps, and instrumentation. The starboard and port engine breakers on this panel supplant ignition keys for locking starting circuits.
  - d. Optional D. C. Systems - radio, windlass, and automatic pilot are protected by labeled fuses found in the converter locker just below distribution panel.

- e. Volt Meter on the distribution panel monitors all 12 volt batteries.
- II. Location and function of 115 volt electrical switches and breakers.
- a. Master Breakers for shore, auxiliary generator, and air conditioner power are located on distribution panel. (See electrical block diagram and section on Air Conditioning operation.)
  - b. Ship-Shore Selector Switch is located on the A. C. portion of the distribution panel and determines the A. C. power source.
  - c. Input Voltage and Ammeter Gauges on the distribution panel monitor the A. C. system.
  - d. Branch Breakers include all A. C. equipment, i.e., range, refrigerator, converter outlets, lights, etc.
- III. Location, description and operation of mechanical systems such as valves, seacocks, fuel system, etc. are described in the sections which follow and their accompanying diagrams.

# CONTROLS AND INSTRUMENTS

## THE IMPORTANCE OF INSTRUMENTS

To avoid mechanical damage, become accustomed to checking your instruments frequently when running and particularly when first starting the engine.

## IGNITION AND STARTER SWITCH:

### GAS

After the corresponding engine circuit breaker is turned on, the engines are started by first turning the engine on-stop switch to the "on" position; thereby energizing the electrical system. Press engine start switch until the engine starts; as soon as the engine starts, release the starter. This starter should not be operated for prolonged periods which may result in draining the battery or overheating the starter motor or solenoid.

### DIESEL

Boats powered with diesel engines use the "on-stop" switch to energize the starter circuit. This toggle switch is used to energize other electrical components and should be left on at all times when the engine is operating. Press engine start switch until the engine starts. To stop the diesel engine, the "on-stop" switch should be pushed and held in the "stop" position until the engine is stopped. This shutdown cuts off the fuel supply to the engine. Diesel installations are also equipped with an "emergency air shutdown" handle for each engine located near the throttle controls.

These handles should be pulled only to stop engines in an emergency situation.

Before attempting to restart the engine, after an emergency shutdown, it is necessary to manually reset the air shut-off valve located at the aft end of the engine on the air silencer case. (See engine operating manual).

#### ACCESSORY SWITCHES:

Each of these toggle switches operates lights or electrical accessories as marked and usually they operate from the engine starting battery. Excessive use when engine is not charging the battery could make engine starting difficult.

#### BATTERY PARALLELING SWITCH:

In the event that engine starting becomes difficult due to a weak battery, the battery paralleling switch may be held in the starboard or port position simultaneous to operating the starter switch, e.g., if starboard is weak, throw paralleling toggle switch to port battery to assist the weaker starboard battery. Sufficient power should then be available to start the engine. (Always parallel batteries when starting diesel engines.)

#### GAUGES:

Gauges are as follows: Fuel, Oil Pressure, Gear Oil Pressure (Diesel Power), Tachometer, Ammeter, and Engine Cooling Water Temperature. All these instruments, with the exception of the tachometer, are on the boat's 12 v system. The tachometer is a mechanically operated direct cable drive from the engine. Fuel



gauge and engine hour meters (optional) are mounted on port side of console. During cruising speed the gauges should read:

Oil Pressure	-	G.M. 8V53 40-60 psi Mercruiser 325 40-65 psi
Gear Oil Pressure	-	G.M. 8V53 250-300 psi
Ammeter	-	0 or "charging"
Cooling Water Temperature	-	G.M. 8V53 160° - 185° F Mercruiser 325 130° - 140° F Mercruiser 325 160° - 180° F

#### AMMETER:

This is an indicator which measures the rate of electrical current charging the storage battery. The ability of the alternator to maintain a charge depends on the ratio of current generated and the rate of consumption by the electrical units. A low charging rate indicates the batteries are at full charge and the accessory demand is low.

#### FUEL GAUGE:

The electric fuel gauge is standard equipment and is located on the instrument console.

#### LUBE OIL PRESSURE GAUGE:

Almost all serious engine trouble will be reflected on the oil pressure gauge. Therefore, if any radical change in pressure should occur, turn the engine off immediately. During operation, there may be some slight fluctuation in gauge reading. This is normal due to the nature of the lubricating oil and the temperature variation. Consult your engine manual for operating pressure.

TEMPERATURE GAUGE:

The temperature gauge records the water temperature circulating through the engine. All engines are equipped with a thermostat that controls the water flow, thus determining the temperature. The Temperature and Oil Pressure Gauge should be observed simultaneously as most malfunctions will be reflected in both gauges. Consult engine manual for further information.

TACHOMETER:

This instrument registers the revolutions per minute of the engine. There is no direct correlation of RPM's to speed of the boat due to reduction gear and propeller slippage.

GEAR OIL PRESSURE (DIESEL):

This gauge records only transmission oil pressure applicable to the reverse gear in the transmission. Consult your engine manual for operating pressure.

## CONTROLS

### BRIDGE CONTROL:

The bridge control panel contains all controls, gauges, and switches necessary for the control of the boat. Included on the controls are engine control, marine gear control, blower switches, navigation light switches, fuel gauge, windshield wiper switch, compass and horn switch.

### ENGINE AND MARINE GEAR:

Throttles and clutches are installed on the control panel within easy reach of the helmsman. They are the Morse SR Twin Push-Pull Cable controls directly connected to the engine throttles and marine gear. The clutch control is marked Forward, Neutral, and Reverse.

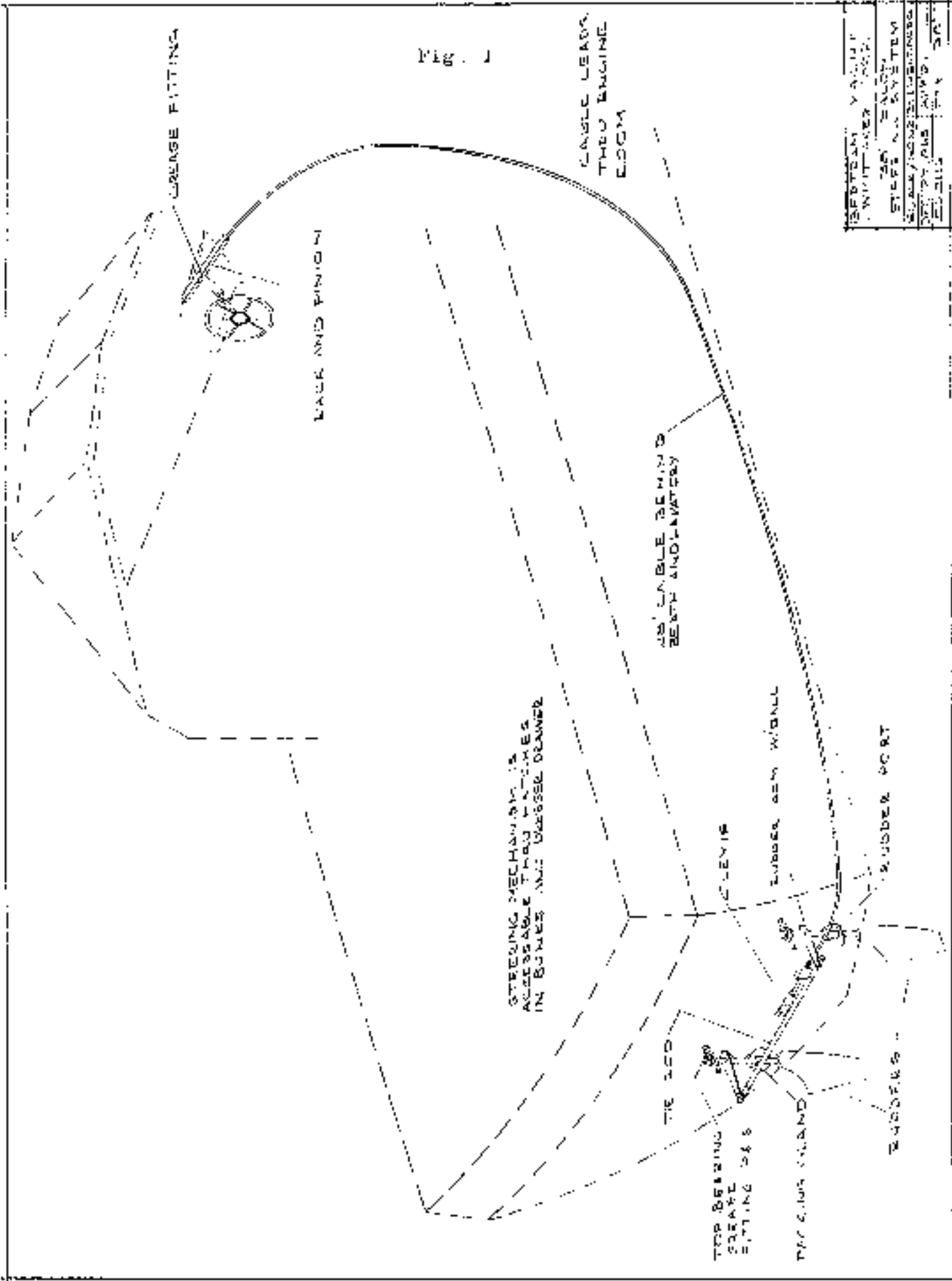
### THROTTLE CONTROL:

The throttle control determines engine speed and consists of a control lever for each engine at the helmsman position connected through cables and linkage to the engine carburetor.

### STEERING SYSTEM:

Steering system on the Bertram Salon Cruiser is a Morse "Push-Pull" type. This system transmits power from the hand wheel to the rudders through a cable which runs in a flexible, water tight conduit. The "Push-Pull" cable acts alternately in tension and compression.

Fig. 1



DESIGNED BY	V. A. G. L. J.
CONSTRUCTED BY	W. H. T. G. E. R.
DATE	1954
NO. OF COPIES	100
PRICE	\$1.00

# POWER PLANT AND TRANSMISSION OF POWER

## ENGINES:

All necessary data and information about the engines are contained in the enclosed engine operator's manual, so they are not repeated here. Just a reminder, the life and performance of the engines are dependent on the way they are cared for so follow the manufacturer's instructions, and watch the instruments carefully to obtain many hours of pleasurable boating.

## MARINE GEARS:

A gear unit, affixed to the after end of your engine is a hydraulically operated forward and reverse transmission with reduction gear. Information and maintenance procedure can be found in the Engine Manual.

## PROPELLER SHAFTS:

Information as to size, length and material of shaft will be found on the Ship's Information page at the front of this book.

## SHAFT ALIGNMENT:

Prior to water testing, your propeller shafts were aligned properly but it should be checked periodically to insure continued proper alignment and performance. To check alignment, first remove the bolts in the coupling flanges at the end of marine gear. Using

a .010 feeler gauge, press the flanges together by hand. The feeler gauge should be inserted at 90° intervals to assure equal clearance at all faces. If the alignment is correct, the .010 or .013 feeler gauge will be tightly gripped at all points around the edges of the coupling.

#### SHAFT LOG AND STUFFING BOX:

The shaft log is the tunnel that the propeller shaft turns in and is of fiberglass construction. On the inboard end of the shaft log, there is a stuffing box attached by a flexible rubber hose and held in place by hose clamps. This flexible hose allows for a misalignment of .010 inch without undue wear of the packing gland itself. The Stuffing Box Packing Gland is packed with braided flax packing and this is kept tight to keep it from leaking by the packing out. It is normal to have a slight drip of water from the stuffing box as this serves as a lubricant but if the leaking is excessive, the packing gland should be tightened. Be careful not to tighten too much as this will glaze the packing and score the shaft. If necessary to repack the gland, remove boat from water, back off both lock nuts and slide the packing gland forward on the shaft. Be sure that the old packing is removed and install four rings of new packing. Slide packing gland aft and tighten to a point where there is a slight drop of water. Tighten so shaft will not move. This will seal packing back off until shaft is free. Run shaft for awhile and reset. Always use tallow flax packing.

CAUTION: Always tighten packing gland evenly. One turn on each nut at a time will avoid any problems.

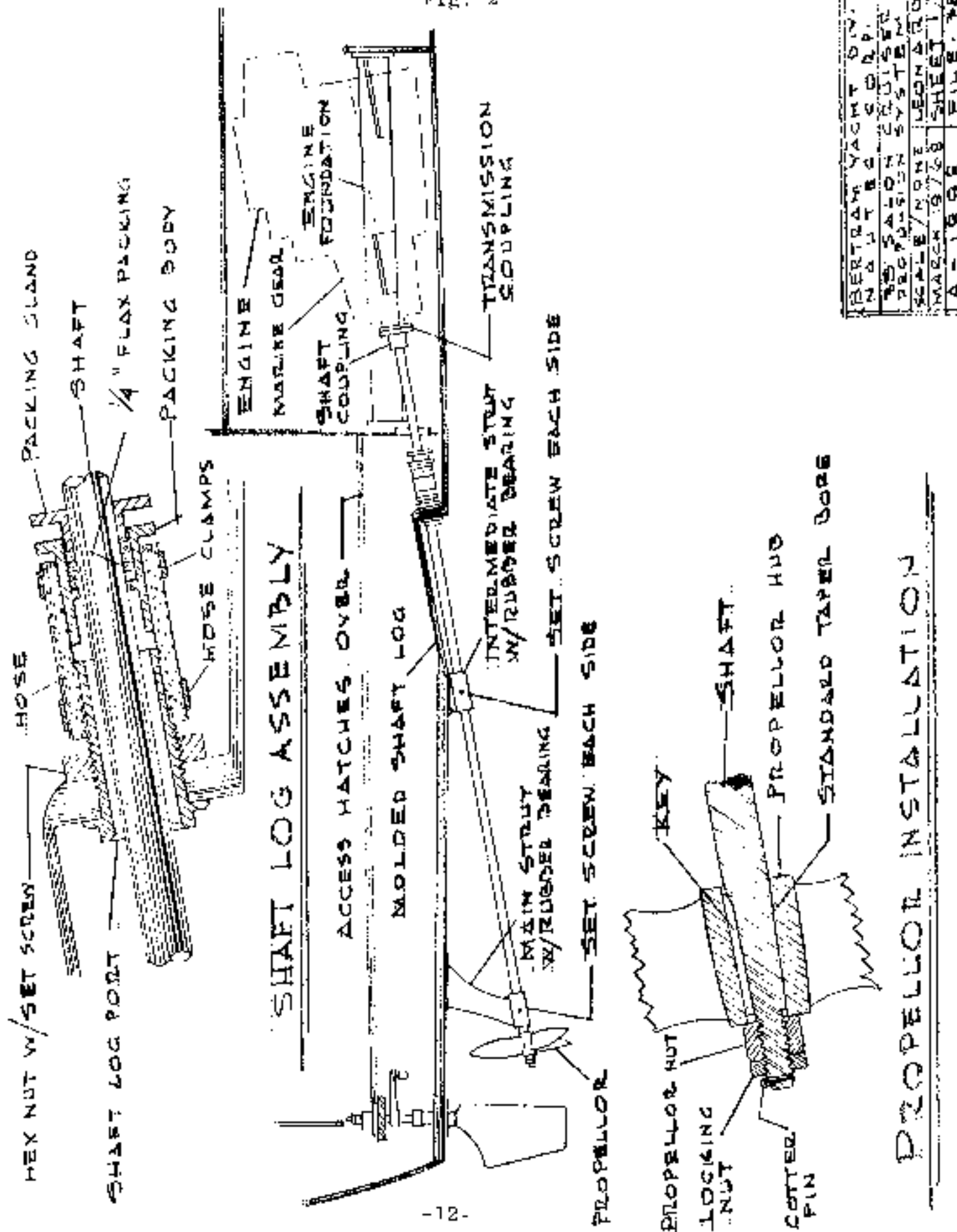
PROPELLERS:

Information on propellers will be found on the Ship's Information Page of this book. The propellers recommended are those that your boat was tested with. If weight has been added or the operating characteristics have been changed due to addition of special equipment, it may be necessary to change the pitch to suit existing conditions.

INSTALLATION OF PROPELLERS:

Propeller bore and the end taper of the shaft must be clean and free of any obstructions. In order that the propeller seat securely on the shaft, the keyway of both must be free from burrs and corrosion. Insert the key with its round end forward on the shaft then place the propeller on the shaft aligning the keyways. The key should fit snugly on each side of the keyway, but clearance at the top is essential so as not to pull the propeller off center and thereby cause vibration. After proper fitting, assemble the propeller nut, locking nut and cotter pin on the shaft. The key must go on the shaft first.

Fig. 2



BERTRAM YACHT DIV.
MANUFACTURING
785 SALMON CUISINE
PROPULSION SYSTEM
SCALE NONE
MARCH 1978
FILE #81



# BOAT SPEED

Boat speed is dependent on many variable factors, so no catalogue or advertised speed can be guaranteed. A short discussion of some of the more important factors affecting boat speed are presented below:

## ENGINE EFFICIENCY:

With normal care and maintenance the engines will maintain peak efficiency; however, if they are neglected, the power will fall off and expensive repairs could become necessary. Take care of the engines!

## ATMOSPHERIC CONDITIONS:

Engines will develop more power when the ambient air and water temperatures are cool, in fact the power variations due to temperature can be as much as ten percent. For this reason greater speeds are generally obtained in the spring and fall, rather than in the summer.

## PERSONAL EQUIPMENT AND ACCESSORIES:

All personal equipment and accessories added to the boat will tend to decrease the speed, just as adding passengers will. Often the effect of this added weight is not taken into consideration on the performance of the boat.

## MARINE GROWTH:

In order to obtain maximum speed, the bottom of the boat must be kept free of marine growth including moss. Any growth on the boat's bottom will increase the resistance of the boat as it moves through the water, thus decreasing speed.

#### WATER IN THE BILGE:

Since a barrel of water weighs over 400 lbs., the bilges must be kept pumped dry in order to keep excess weight down. As mentioned before, added weight will reduce boat speed.

#### DAMAGED UNDERWATER EQUIPMENT:

Loss of speed and excessive vibration can result from damaged propellers, shafts, or struts.

# ELECTRICAL

## GENERAL:

Your Bertram yacht has two circuit breaker protected electrical systems installed: a 120 volt A.C. Ship's Service System; a 12 volt D.C. System; and the optional 120 volt A.C. Air Conditioning System. The 120 volt A.C. systems obtain their power from separate topside shore power connections or from the A.C. generator whereas the 12 volt D.C. system obtains its power from the installed batteries. The batteries are kept charged by the engine alternators and the optional 120 volt A.C. powered converter. The electrical circuits are protected by circuit breakers on the electrical panel in the salon.

## BATTERIES:

Normal installation calls for (3) three batteries to be installed. There is a large heavy duty battery for starting each engine. These can be put in parallel by actuating the Paralleling Switch on the console when deemed necessary. The third battery (usually 2 - 6 volt batteries in series) is for starting the generating plant. Water in these batteries is to be kept at approximately 1/4" above the top of the plates to insure maximum service. The third battery may also be paralleled with the main battery.

## SHORE POWER:

Your Bertram has either (1) one or (2) two shore lines (30 amperes each) depending on whether it has air-conditioning or not. The shore-line connections are on the starboard side deck

at the step to the aft deck.

Bertram shore lines are wired in accordance with current industry standards, however, you may find some dock outlets improperly wired. Check the polarity lights for each shore circuit on the A.C. Supply section of the electrical panel. If the amber light is lit the polarity is correct and you may safely turn on the shore circuit breaker. If the red light is lit, the polarity is reversed and corrections must be made on the dock before turning on the circuit breakers.

Shore line No. 1 may be used to supply A.C. Distribution if it is desired to keep generator idle or it may be used to power air conditioner if generator is used for other A.C. equipment.

Shore line No. 2 may be used only to power the air conditioner. If dock outlets are less than 50 Amp. capacity, it will be necessary to plug each shore connector into separate dock outlets in order to avoid blowing dock fuses.

#### AUXILIARY GENERATOR:

The generator is used to supply all A.C. power when shore current is not available - or part of the requirements, if shore current is limited.

#### ELECTRICAL PANEL:

The panel is located in salon, is divided into (3) three sections, and includes air conditioning power control if such equipment is Bertram installed.

Circuit Breakers in all sections of the panel are used to protect main and branch circuits. These breakers may also be used as switches to turn power on or off. All breakers which are installed vertically are "off" when toggle lever is down. Breakers on D.C. Distribution section that are installed horizontally are "off" when toggles are away from the center of this section. Any breaker, in case of overload, will trip to "off" position and cannot be held "on" against a fault. Breaker can be reset when overloaded or "short" is corrected.

A.C. Supply section is that at your right hand side. All A.C. power goes through the circuit breakers in this section first. For normal operation all breakers should be set in "on" position. If you have air conditioning - see the separate instructions for A.C. power control. See "Generation Operation" in a following paragraph.

A.C. Distribution is the center section of the panel. The transfer switch at bottom is used to select either current from generator (ship) or from shore line No. 1 (SHORE). The A.C. meters at top will read the voltage and amperes of the power source being used (they are not connected to Shore Line No. 2). Current consumption should not exceed the following:

"SHORE"	30 Amperes
"SHIP"	
4KW Generator, gasoline	33 Amperes
6½ KW Generator, gasoline	54 Amperes
7KW Generator, diesel	58 Amperes

If shore power drops below 110 volts, it is recommended that generator be used.

D.C. Distribution is in the section at your left hand. The main breakers at bottom replace the "Master Switches" and fuses usually located in the engine room. They are used to shut off power from the port and starboard engine batteries. The bilge pump breakers are the only other breakers which are connected directly to the batteries. This permits automatic operation of pumps while main breakers are turned "off". Normally, all breakers are left "on" as separate switches are used to control the various equipment and lights. With either main or engine breakers turned "off" it is impossible to start either main engine.

The Battery Condition meter reads the condition of any battery by using selector switch directly beneath the meter. The meter consumes so little current that it can be left permanently connected. It can thus be used in conjunction with the optional converter, even though the main breakers may be "off".

#### STARTER - BATTERY CURRENT RELAYS:

On this boat, three contactors are used on the aft engine room bulkhead to completely isolate the positive starter cables from the batteries. These cables are "hot" only while the engines are being cranked.

#### GENERATOR OPERATION:

The remote controls for generator are located at bottom of A.C. Supply section of electrical panel.

- (1) Turn transfer switch (in center section) to "SHIP" position.
- (2) Place large Auxiliary Generator breakers in "on" position.

- (3) Place small Gen Batt. breaker in "on" position. It is recommended that this breaker be turned "off" whenever the boat is unattended.
- (4) The seacock supplying raw water to the water pump of the generator must be open.
- (5) All fuel valves must be open. There is a main valve (the smaller) on the top of each tank and a service valve at the generator. In addition, there is a 3-way selector valve in the engine room on the port side near the after access door. This valve is used to select from which tank the fuel is to be drawn.

#### MANUAL STARTING (STANDARD)

- (6) Gasoline - Hold starter toggle switch in "on" position until engine is running. If battery appears weak, it may be paralleled with a main engine battery by engaging the Battery Paralleling switch. To stop generator, hold starter switch in "stop" position until engine quits running.
- (7) Diesel - Operation for starting and stopping is identical to paragraph above (6). In addition, for "cold" starts hold the Warm-up switch in "on" position for about 20 seconds and prior to releasing this switch, engage the starter switch until the engine is running.

#### AUTOMATIC DEMAND STARTING (OPTIONAL)

- (8) Gasoline or Diesel - The switch on Auto Demand Control box (in engine room) must be in "Automatic" position.

Generator cannot be started from electrical panel if this switch is on "Manual", (it can be started at the control on the generator).

- (9) Gasoline or Diesel - The "on-stop" switch on electrical panel can be used to start generator manually by turning to "on" position. The engine will quit running when switched to "stop" only if there is no load on the generator.
- (10) Diesel only - With automatic demand or manual starts there is always a 20 second delay for warm-up.
- (11) Gasoline or Diesel - To shut down generator or to prevent automatic starts - place large Auxiliary Generator circuit breaker in "off" position. Automatic gasoline generator will stop if small Generator Battery breaker is turned "off".
- (12) Gasoline or Diesel - The "normal" automatic operation is to start when a 60 watt or greater load is applied and stop when all load is removed.

CONVERTER: (OPTIONAL)

The converter is installed in the locker below the electrical panel. It will automatically operate from either "Shore" or "Shlp" A.C. power if both its own switch and circuit breaker (on A.C. Distribution panel) are "on". The Bertram installed converter will turn itself off (and stay off) when either main engine is running.



#### OTHER EQUIPMENT: (OPTIONAL)

Fuses or circuit breakers for radiotelephone, automatic pilot and other accessories installed by Bertram will be located in the locker under electrical panel or on aft engine room bulkhead.

#### A.C. EQUIPMENT:

All A.C. circuit breakers on this boat are of the two-pole common trip type that disconnect both current carrying conductors (black wire and white wire) and the white wires (ground potential) are isolated from the boat ground. It is recommended that any future equipment of the A.C. type be installed in the same manner.

#### GROUND AND BONDING SYSTEM:

Your Bertram is fitted with a bonding system to minimize electrolysis. This system consists of copper strips running fore and aft through the bilge area. All under water fittings and hardware are connected with wire jumpers to these strips. They are also connected to negative battery terminals and "green" safety wires of all A.C. equipment. This is done to reduce danger of an electrical shock from high voltage equipment.

Fig. 3

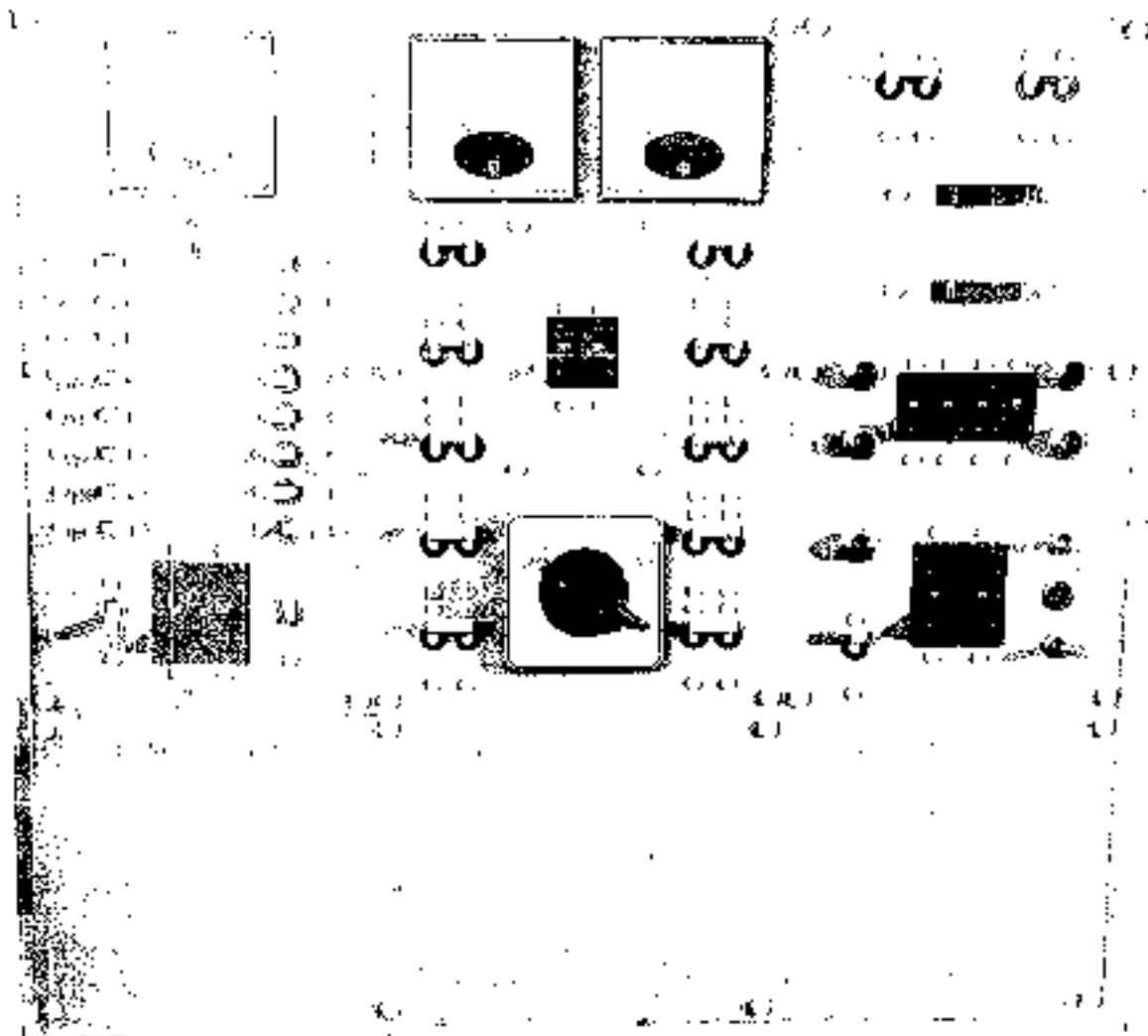
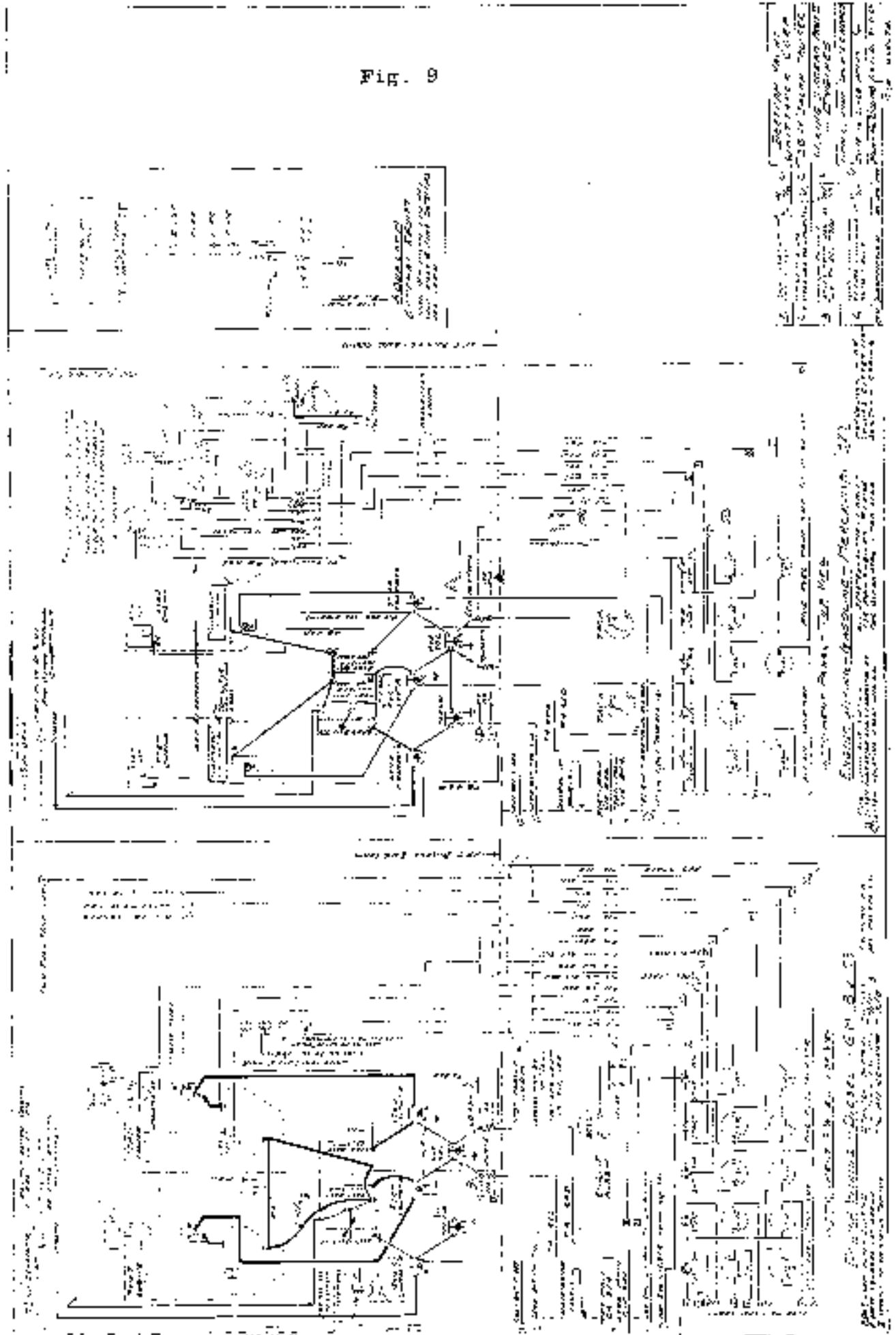




FIG. 9



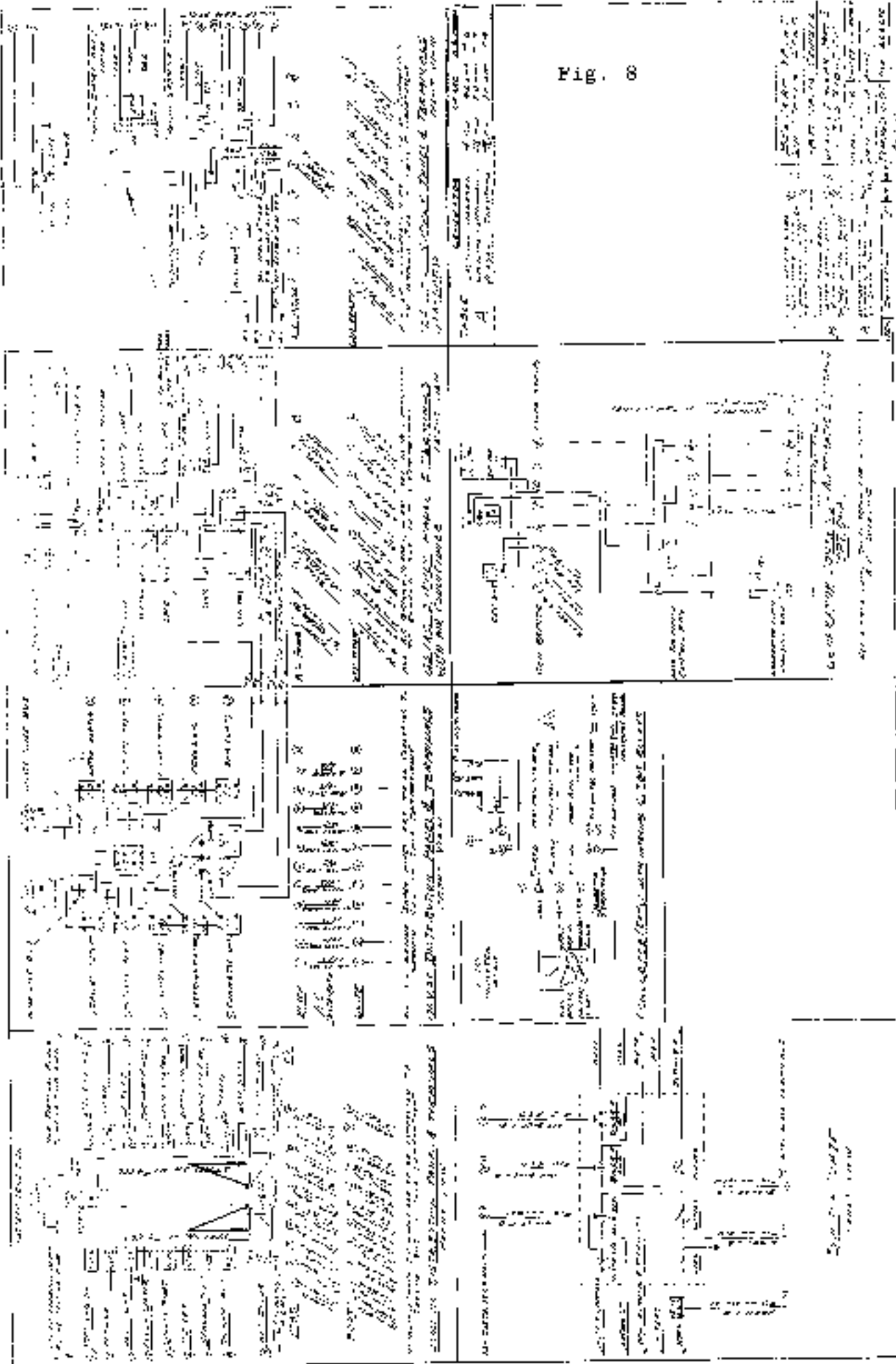


Fig. 60

# OPTIONAL AIR CONDITIONING SYSTEM

## 120 VOLT A.C. POWER SOURCES:

The air conditioner may be operated from either ship's generator or either of two shore connections.

- (1) Normally, No. 1 shoreline is used to supply all other A.C. equipment. No. 2 shoreline is used to supply air conditioner. Each should have at least 30 Amp. service available. If dock outlet is rated at less than 50 Amp. separate outlets should be used for each shore connection.
- (2) All A.C. power controls for the air conditioner are on the A.C. supply section of electrical panel.
  - (a) Turn on all circuit breakers - Shore No. 1, Shore No. 2, Air conditioner Forward, Air Conditioner Aft and also Auxiliary Generator, if you wish to use the ship supply.
  - (b) If you wish to use shore power for air conditioner, move upper switch to "shore" position and lower switch to either "Shore No. 1 or No. 2" position. No. 2 is recommended, if transfer switch (on center section) is left in "Shore" position.
  - (c) When suitable shore power is not available, set upper switch in "Aux. Gen." position (the position of lower shore selector switch is immaterial - even if both shore lines should be connected at dock.) The generator must be running, of course, or set for automatic operation.

## AIR CONDITIONER INSTRUCTIONS

When the air condition unit(s) is operated on shore power it should always be operated on the #2 Shore Line. If, for some reason, the unit(s) must be operated on #1 Shore Line no other piece of equipment should be operated on the #1 Shore Line at the same time. If this is done the circuits will be overloaded in most cases and will cause the breaker to kick out and interrupt power.

To put the air conditioner in operation the following steps must be followed and - In the Sequence Given.

(a) All switches and breakers on the distribution panel must be in OFF position; also, the Start-Run switch on the thermostat panel for the air conditioner must be in the OFF position. The fan switch should be in the middle or medium position. When this step has been complied with proceed to the next step. DO NOT PROCEED UNTIL THIS HAS BEEN COMPLIED WITH.

(b) Turn the thermostat control from right-to-left and listen very closely to the control by putting your ear close to it as you turn the knob. While turning the knob two clicks should be heard approximately midway through the travel of the knob, if this is heard the thermostat may be set for Heat or Cool according to the individuals own desire. If no clicks are heard, please contact your nearest service man for Crusair equipment. To set the air conditioner for Cooling, turn the thermostat knob all the way to the left.

If the boat is equipped with two units, both thermostat knobs should be set in the same position. When this step is completed you are ready to proceed to the next step.

(c) Connect the proper pig-tail on the shore end of the shore line to match the fittings available on shore, and lock the pig-tail on the shore line by turning a quarter turn to the right after the fittings have been pushed together properly. Insert the other end of the shore line into the receptacle on the boat marked "Shore #2", or "Shore Line #1". Then go ashore and connect the shore line to the outlet on the dock. Now return to the boat and check the polarity light marked "Shore #2", or "Shore Line #1" according to which receptacle you are using. If the AMBER light is lit the shore line is connected properly. If the RED light is lit, then the polarity is reversed and the Dock Master should be notified since all lines are checked before they leave the plant to accept standards of the industry. When the shoreline is properly connected you are ready to proceed with the start up of your air conditioning unit.

To use the air conditioner on the ships power the switch marked "Ship" "Off" "Shore" in the air condition section of the electrical panel is put in the "Ship" position, then follow the balance of this procedure leaving the shoreline breakers in the "Off" position.

With the Stop-Run knob on each air condition control panel in the "Stop" position, put the main breakers marked "Shore",



located on the main electrical control panel, in the "On" position. Then put the switch marked "Shore #1", "Off" "Shore #2" in the "Shore #2" position. Then put the switch marked "Shore" "Off" "Aux" in the "Shore" position. Then put the two (2) breakers marked "Fwd" and "Aft" in the "On" position. You are now ready to start the air conditioning system.

First you go to the engine room bilge and make sure the sea-cock is open to allow water to flow thru the air condition cooling coil on the compressor. Then you put the deckhouse "Stop" "Start" "Run" control knob on the thermostat panel in the "Start" position and check overboard to be sure that the pump is circulating the sea water thru the air condition compressor/condenser unit. When a good stream of water is coming out of the thru-hull put the "Stop" "Start" "Run" knob on the deckhouse unit back in the "Stop" position, then make the same check on the fwd unit. When a good stream of water is being discharged from the thru hull, turn the thermostat control on the fwd unit to the max. cool or heat as desired. Put the fan control knob in the medium position, a good amount of air should be coming out of the discharge grills for the fwd unit, if not, check to see that the louvers are open in the discharge grills and the intake grill when the blower is running--the unit is ready to operate. Now turn the "Stop" "Start" "Run" knob to the "Run" position, in approximately 3 to 5 minutes, according to the temperature, the unit should start discharging hot or cold air, depending on the thermostat knob setting.

Now to complete the start up of the deckhouse unit first set the thermostat control knob to the max. heat or cool, as desired. Then set the fan control knob in the center (medium) position and turn the "Stop" "Start" "Run" control knob to the "Start" position. Now check to see that a good amount of air is being discharged from the vent(s), if not, check the louvers to see if they are open properly and that the blower is running with the air being discharged then turn the "Stop" "Start" "Run" knob to the "Run" position and in approximately 3 to 5 minutes hot or cold air should be discharged, depending on the thermostat setting.

NEVER turn the thermostat control knob from Hot to Cold with a fast movement of the knob when the unit is in operation as this will cause the unit to malfunction and can damage the unit. The unit will, when the thermostat is set properly, automatically change from heat to cool and back. But if it is to be done manually, the unit should be turned Off for approximately 10 to 15 minutes when changing from heat to cool.

After the unit has been in operation for approximately 1 hour the thermostat control knob may be moved a little at a time until the desired temperature is obtained, then the unit will automatically maintain the temperature.

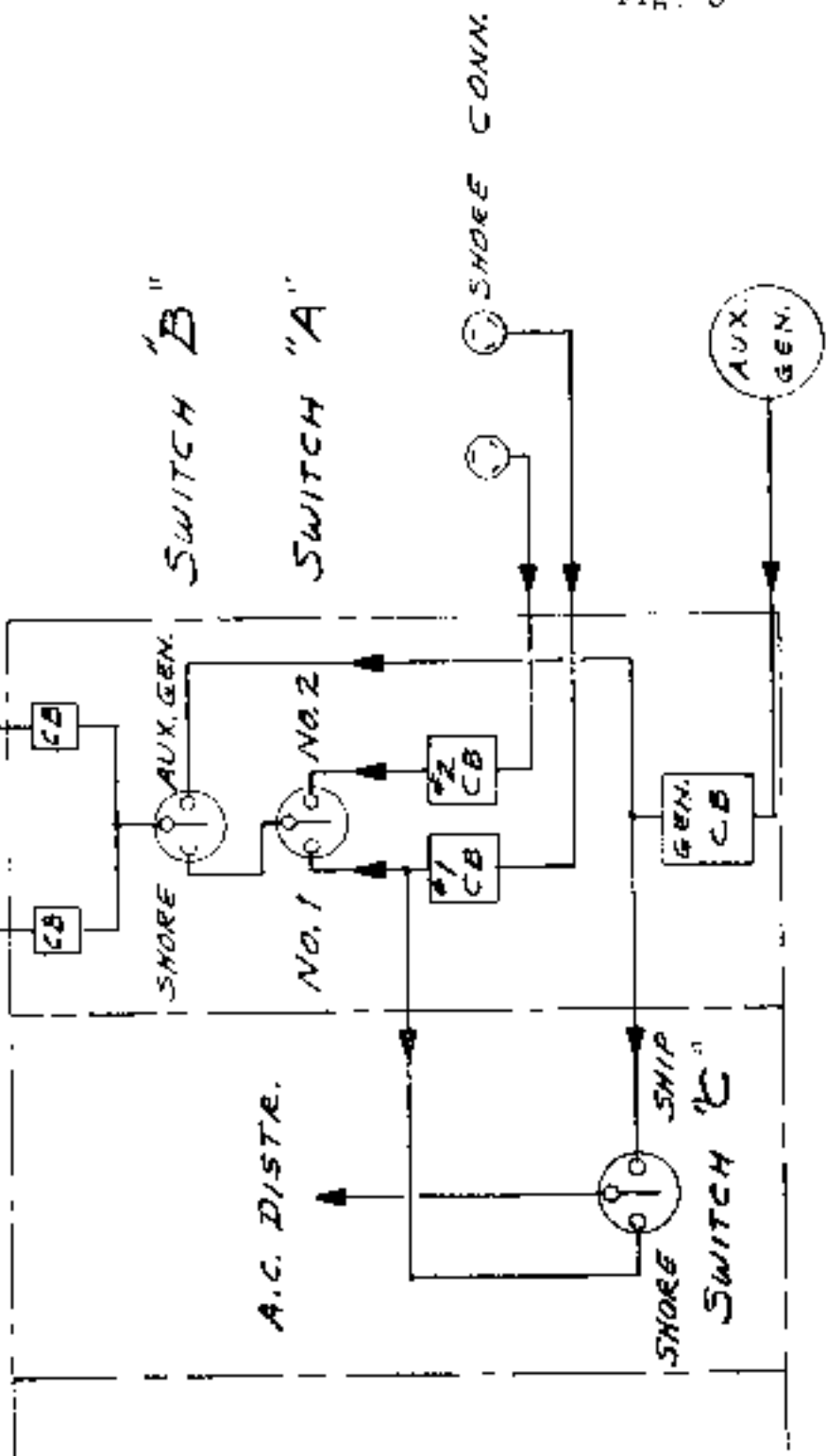
If, for any reason, the power is interrupted to the air conditioner momentarily the unit should be turned Off for approximately 10 to 15 minutes before it is put back in operation. It should be turned Off with the "Stop" "Start" "Run" control knob

and when the unit is re-started, the knob should be turned to "Start" and circulate the water for approximately 5 minutes. Then turn the knob to "Run" position.

When the air condition units are to be turned Off they should always be turned Off with the "Stop" "Start" "Run" knob by turning the knob slowly to the "Stop" position, then putting the two breakers marked "Air Condition Fwd and Aft" in the "Off" position; put the switch marked "Ship" "Off" "Shore" in the "Off" position, then put the breaker Shore #1 or Shore #2, whichever was in use, in the "Off" position.

FIG. 5

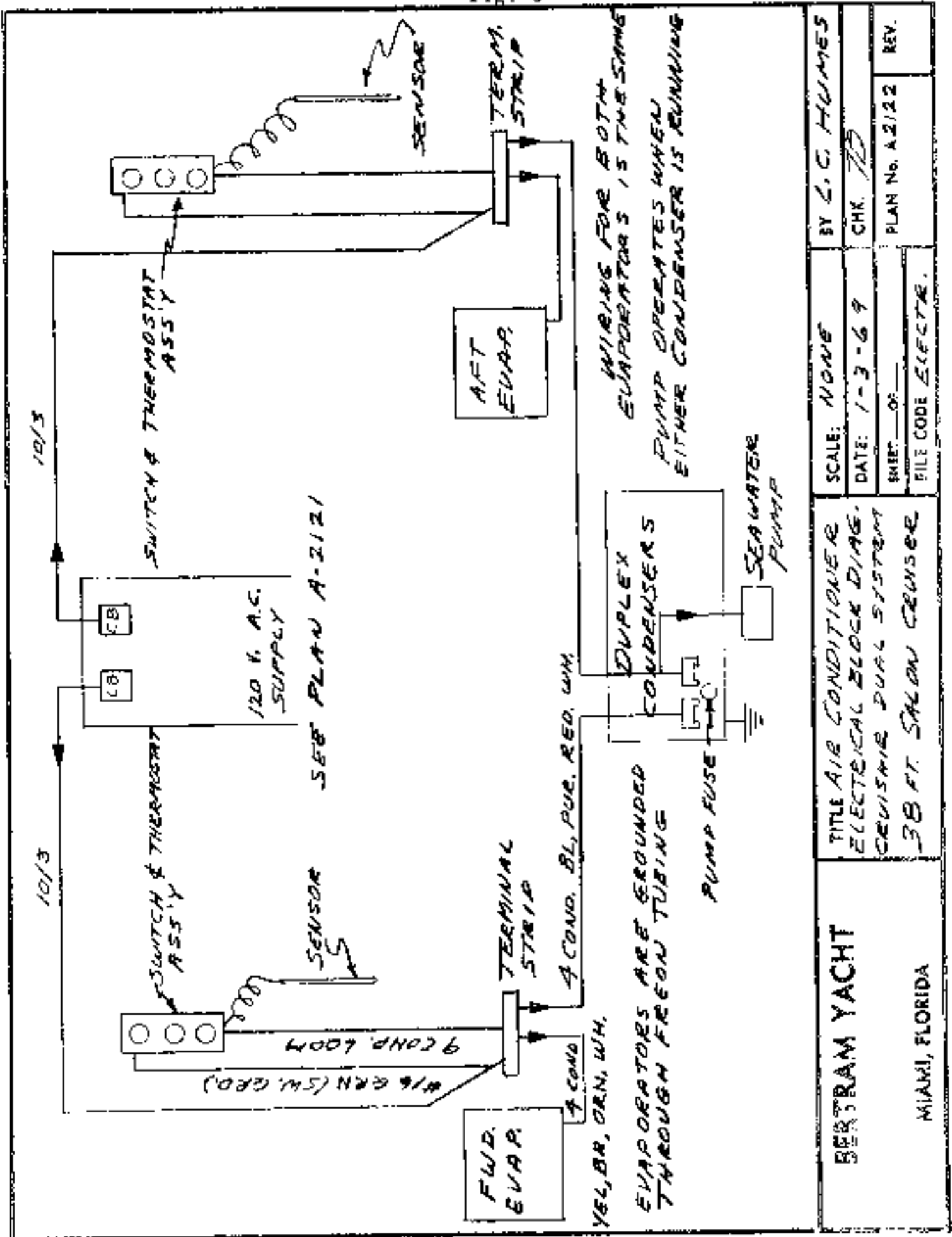
AIR CONDITIONER-FWD AFT-AIR CONDITIONER



OPERATION	SWITCH		
	A	B	C
AIR COND. & A.C. DISTR. ON SHORE NO. 1	No. 1	SHORE	SHORE
" " ON SHORE #2 & A.C. DISTR. ON #1	No. 2	SHORE	SHORE
" " ON GEN. & A.C. DISTR. ON #1	OFF	GEN.	SHORE
" " & A.C. DISTR. ON AUX. GEN.	OFF	GEN.	SHIP

<b>BERTRAM YACHT</b>  MIAMI, FLORIDA	TITLE AIR CONDITIONER POWER SUPPLY FOR CEVISAIR DUAL SYSTEM 33 FT. SALON CAB.		SCALE: NONE	BY G. C. HUMES
	DATE: 1-2-69		CHK. <i>[Signature]</i>	PLAN No. A 2121
	SHEET ___ OF ___		FILE CODE E.C.T.R.	REV.
	33 FT. SALON CAB.		REV.	REV.

FIG. 6



BERTRAM YACHT	TITLE AIR CONDITIONER ELECTRICAL BLOCK DIAG. CEVISAIR DUAL SYSTEM 38 FT. SALON CEILING	SCALE: NONE	BY L. C. HUMMES
MIAMI, FLORIDA		DATE: 1-3-69	CHK. TD
		SHEET: OF: _____	PLAN No. A-2122
		FILE CODE ELECTE.	REV.

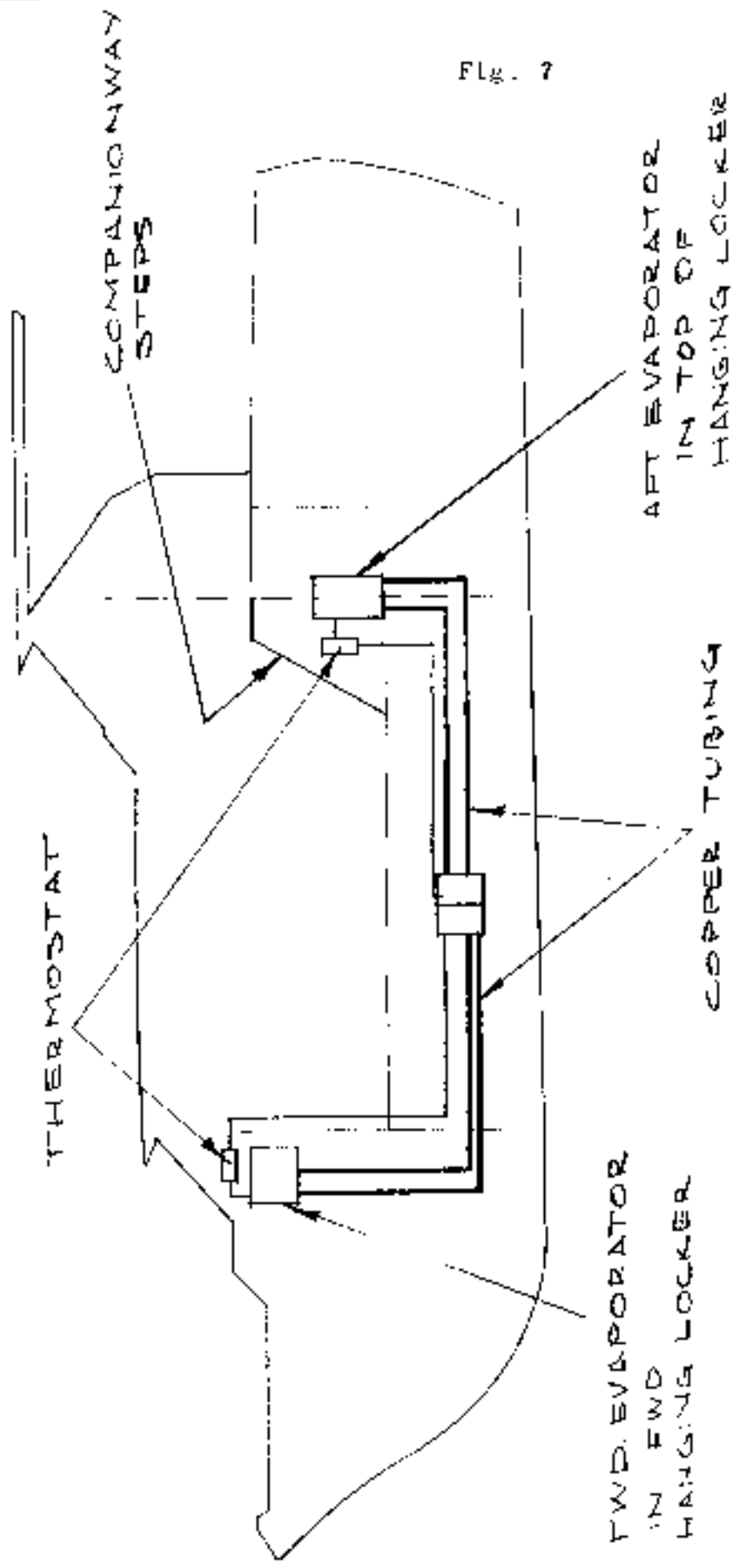


Fig. 7

BERTRAM YACHT  
 WHITTAKER CO. LD.  
 FIG. 50000  
 AIR COND. SYSTEM  
 SCALE/NONE BY B.A.M.  
 DEC 30/66 APCD:  
 A-2117 FILE: 25

# FUEL SYSTEM

## FUELING INSTRUCTIONS:

These steps should be followed in this order each time you fuel your Bertram:

1. Close windows, doors, hatches and engine hatch.
2. Do not operate any equipment: This means engines, power plant, galley stove, or bilge blower.
3. Make sure the filling hose nozzle is touching the yacht's fill pipe fitting before any fuel is pumped.
4. Top the tanks until fuel overflows through the vent fitting on hull side below fill pipe.
5. Open windows, hatches, and engine hatch. Then visually and by the smell check to make sure there are no fuel leaks or fuel fumes present. At the same time, open the fuel feed lines located close to the tank and inspect all fuel lines and fitting. (See fuel system diagram).
6. Operate the bilge blower and leave it running until you start the engines. Start engines after a minimum of five minutes of operating the blower.
7. Close engine hatch and other hatches after main engines and auxiliary generator have been running for some time.

## FUEL SYSTEM:

Bertram fuel tanks are molded fiberglass and are baffled in accordance with accepted standards. They are made of fire retardant resins. Their location is under the port berth in the

master stateroom and on the starboard side of the forward engine room. The port tank fuels the port engine and the starboard tank the starboard engine. Fuel for the auxiliary generator is provided by means of a selector valve which allows fuel to be drawn from either port or starboard fuel tank. Valve is located just inside hinged step to after engine room on port side.







# WATER SYSTEM

## FRESH WATER SYSTEM:

The fresh water storage tank is an internally baffled aluminum tank with a capacity of 94 gallons. (It is located under the aft stateroom sole with access for sounding through the sole in the centerline hanging locker. The filling connection is aft on the starboard side deck. The tank vent goes through the hull directly below it).

Caution: When filling water tank, do not use the full amount of city water pressure. In many cases, it is possible to use more pressure and volume than the vent line can discharge; thereby causing the tank to rupture. It is suggested that you do not leave the hose unattended while filling the water tank.

## WATER PRESSURE PUMP:

There is a water heater installed in the after part of the engine compartment. It has a 15 gallon capacity and takes a maximum of 1240 watts. The water is heated by an electric immersion type element. The thermostat, located on the end of the tank that has the fittings under a small circular cover, has been preset to 150°. It can be set to any desired temperature by removing the cover plate, parting the fiberglass insulation and repositioning the indicator to desired temperature. The thermostat also contains a reset button which must be reset if it has tripped due to high temperature. A relief valve is also attached to the end of the heater, set to relieve if the pressure in the heater tank reaches

50 psi or a temperature of 212° F. The 110 volt power for the calrod unit is obtained from the 110 volt section of the breaker panel marked "Water Heater".

#### OPERATION:

To START pump for the first time or after system has lost prime: Check storage tank for water. Be sure master switch and circuit breakers are on and open one or two faucets and one aft in the system. Depress lever on pressure switch and hold until pump picks up prime and water flows from faucet. If pump does not prime within 15 seconds, release lever and recheck supply line to be sure it is open to tank. Remove inlet line from pump and pour water into pump to lubricate impellers. Try again to restart. When pump is primed and water runs from open faucet, close faucet. Pressure should build up to 40 psi whereupon pump will shut off; see gauge on 10 gallon pressure tank (Hydrocell). When faucet is reopened, pressure will begin to drop however pump will not start until pressure falls to 20 psi. This provides a long pump cycle when only small amounts of water are used.

#### MAINTENANCE:

1. To adjust pressure switch:

Turning large acorn nut (located over spring) clockwise will increase both the cut-out and cut-in pressures. Never set above 60 psi "cut-out" or below 15 psi "cut-in". The small Phillips head screw located on the side opposite from the spring controls the differential between "cut-in" and "cut-out". To

decrease differential turn screw clockwise. Maximum differential is 20 psi. Minimum differential is 15 psi. Dry tank setting cannot be adjusted.

#### 2. Spring Launching:

Put two or three drops of light motor oil or machine oil in dome hole to lubricate shaft bushing wick. DO NOT over-lubricate. Turn flexible coupling between pump and motor by hand to be sure it is free. If shaft will not turn, pump may have been frozen and impellers and bushings are probably damaged. Do not attempt to run a tight pump in an effort to "free it up". Pump will only get tighter and more damage will be done. Remove pump and replace damaged parts. Reconnect water and electrical connections. Clean strainer as often as necessary. Keep motor well painted.

#### 3. Fall Lay-Up:

It is always best to store electrical equipment in a warm, dry place over the winter. If possible, remove the pump and motor assembly for such storage. If the pump is to be left on the boat through the winter, it must be thoroughly drained. Remove inlet and outlet connections from the pump. (Disconnect pressure tube to switch on pressure queen). Remove pump from motor and hold upside down while turning shaft. If possible, blow water out with compressed air. Dilute any water remaining in pump with alcohol. Galleymaid must be thoroughly drained to prevent damage from freezing.

#### 4. Trouble Shooting:

(a) Excessive current drain; Fuse blows—pump tight, probably due to damage from freezing. Replace damaged pump parts.

(b) Unit shuts off and must be restarted manually. Switch is shutting off because system pressure falls below 7 psi. Check supply line and strainer for restrictions.







## ELECTRICAL ACCESSORIES

### GENERAL:

The Bertram 38' is fitted out with the finest electrical accessories available. Most of the accessories are standard equipment such as: 3-burner electric stove with oven and rotisserie; electric refrigerator; one electric toilet; engine compartment blower; electric bilge pump, shower sump pump; windshield wiper; an electric horn; and stereo tape and radio.

### STOVE:

The Princess Electric Stove installed has three burners, an oven and a rotisserie all powered by 110 volts from the 110 volt section of the Bertram Distribution Panel. For the stove to operate, there must be 110 volt power to the panel and the "Master" and "Stove" switches must be on. The stove itself has been wired to provide satisfactory operation with a minimum amount of power, the maximum being 2950 watts. To accomplish this, the left front burner and the oven cannot be used simultaneously, the selection being made by the far left switch on the stove. There are pilot lights above and below the switch to indicate whether the oven or the left burner is energized. The two front burners are 110 watt burners, whereas the rear burner is a 550 watt burner. No combination of burners and/or oven that can be used at any one time will consume more than 2950 watts. It is recommended that the "Stove" switch on the electrical panel be kept off except when actually using the stove to prevent accidentally turning the

stove on with the possibility of causing a fire. (Later models have safety switch on the stove cover.)

#### REFRIGERATOR AND FREEZER, ICE MAKER:

The refrigerator is a standard Marvel Model MR1157, 110 volt wall mount unit with a capacity of 4.5 cubic feet. It is controlled by master and refrigerator breakers. The freezer ice maker is a standard Marvel Model MR1155, 110 volt wall mount unit with a capacity of 4.5 cubic feet. The ice maker operation is automatic. It is controlled by master and freezer breaker.

#### ELECTRIC TOILETS:

There is one marine electric toilet installed in aft head. This is powered by 12 volts from the 12 volt section of the Bertram Electrical Panel. The inlet and outlet hull valves for the aft toilet are located in the engine room on the starboard side. To operate, the hull valves must be open and the "Master" and individual toilet switches on the 12 volt section of the electrical panel must be on. Flush by stepping on pedal and pushing button adjacent to the head at the same time. After waste has been discharged, release pedal and button.

#### ENGINE COMPARTMENT BLOWER:

The engine compartment blower is located along the starboard side of the hull in the salon. The blower takes a suction from the lowest part of the engine compartment by means of a flexible hose. It is powered by the 12 volt section of the Bertram Electrical Panel. The switch to operate the blower is located at

the bridge control panel and the corresponding circuit breaker is on the Heriram Electrical Panel. The blower should be run for at least five minutes before starting the engines and after the engines have stopped until no more fumes are present in the engine compartment.

#### ELECTRIC BILGE PUMPS:

There are two electric Bilge Pumps installed: one under the aft stateroom sole near transom and one in the engine room forward of batteries. Both pumps are powered by the 12 volt system, and are controlled from the Bridge. The aft bilge pump discharges through hull side on the starboard side aft and the forward bilge pump discharges through the hull side on the starboard side midships.

#### SHOWER SUMP PUMP:

There are two shower sump pumps installed. One aft under centerline hanging locker sole in master stateroom. The discharge is in hull side midships on starboard side. The forward pump is under the forward cabin sole adjacent to toilet room door. The discharge is in the hull side forward on the port side.

#### WINDSHIELD WIPER:

There is a windshield wiper installed on the bridge windshield. It is powered from the 12 volt section of the Bertram Electrical Panel, where the "Ship Shore" and "Wiper" switches

must be on for operation. The wiper is turned on and off at the bridge control panel.

HORN:

The horn installed on the cabin top is located behind the bridge control panel which is electrically energized by 12 volt power from the battery. The horn is controlled by a switch on the bridge control panel and the 12 volt section of the circuit breaker panel.

RANGE HOOD:

This is a ductless hood with light and exhaust fan which use a reachable activated charcoal filter. Filter replacement instruction can be found on hood.

# COMMANDING YOUR BERTRAM

## PRE-STARTING INSTRUCTIONS

The following are routine procedures that should be followed each time you take your Bertram out.

- (1) Always check fuel supply.
- (2) Never start engines without first running bilge blower or checking the bilge by smell for gasoline vapor.
- (3) Make sure the seacock or valve for the engine cooling water is open. The rubber impellers in the pump will not last long when run dry.
- (4) Make sure the fuel valves at the tanks and at the engines are open.
- (5) Check engine and reverse gear oil. Make sure they are at the proper level.
- (6) Check water level in expansion tank of fresh water engine cooling.

## STARTING INSTRUCTIONS:

- (1) Be sure master switch near battery is in number one position, or both on parallel.
- (2) Circuit breaker marked ENGINE should be in ON position.
- (3) Check clutch control lever to insure that clutch is not engaged.

### MANEUVERING:

Your Bertram has twin propellers rotating in opposite directions in order to balance the torque. You can engage one engine in forward gear, and the other in reverse gear. This will turn the boat completely around in its own length if the rudder is left in the center position. You can, of course, make such a turn in either direction. Port engine forward and starboard engine in reverse spins you clockwise. Starboard engine forward and port engine in reverse spins you counter-clockwise. You can accentuate the spin by full rudder in the spin's direction.

In docking, approach at a slow speed, and at 30 degree angle. When your bow is about five (5) feet from the dock, put the dockside engine in neutral, and the far-side engine in reverse. This will reduce your forward movement and bring your stern alongside the dock. Usually docking can be accomplished with the clutches alone. No steering or use of throttle is required.

### STOPPING ENGINES:

Simply turn ON-STOP switch to STOP. If diesel powered, there is in addition, an emergency shut down system. In case of electric failure or other emergency, simply pull handle marked "Emergency Shut Down".

### CRUISING SPEEDS:

You'll find your Bertram handles easily and creates little wake at slow speeds. As you increase speed, the boat will increase her angle of trim. That is, the bow rises. Once at this maximum angle press trim tab rocker switch and lower the angle of

trim to approximately 5°. Take note of your engine RPM's at maximum angle of trim. Then cruise either under that speed or over it. As a rule, top cruising speed RPM should be 10% to 15% less than the top RPM for diesel and 15 to 25% for gas. Consult your engine manual included in the back.

Engine performance will be affected to a slight degree by atmospheric conditions. You will find your engines develop less power in warm air temperatures. Similarly, dry air reduces power, as will high altitudes. If you are cruising regularly in waters well above sea level, you will want to change carburetor adjustments to get a better air fuel mixture.

The famous Bertram V-Hull cushions pounding by slicing rather than slapping waves. You'll be able to go out in weather that keeps ordinary boats at their moorings. But even Bertrams can encounter extreme conditions that call for sensible seamanship. While your Bertram will withstand far greater punishment than you will probably ever subject her to, speed should be reduced under severe conditions in the interest of your comfort, and to reduce needless strain on the engines.

### CRUISING

In order to avoid going aground or damaging underwater gear, it is important to know the draft of your Bertram, or the amount of water you must have under you at all times. Draft will

vary depending on how many people and how much equipment or personal effects you are carrying. What's more your draft will be somewhat less in salt water than in fresh water.

You can determine maximum draft by measuring the freeboard from the sheer to the water line at the center of the transom. Subtract this freeboard from the hull depth at the transom (see docking plan in this manual) to get the hull draft at the transom. Add depth of underwater gear as indicated in Docking Plan, and you have the maximum draft. Record the figure where you can refer to it quickly.

If you plan to travel waterways crossed by bridges, you'll also want to know the height of your Bertram from the waterline. Take your measurement when your Bertram is lightened of its fuel, passengers and equipment. This will give you a small safety factor when boat is loaded.

Your Bertram has an inherent ability to carry comparatively high loads without appreciably reducing performance. But for the best results try to maintain the original trim of the boat. You can do this by noticing her trim carefully when she is first launched, before extra equipment has gone aboard. Of course, all gear and equipment should be properly stored while cruising.

#### CALLING AT PORTS AWAY FROM HOME

You are not likely to have trouble with shore current in the United States. However, you should be somewhat careful when



using 30 Amp. service with a pigtail adapter. This is a low capacity adapter and should not be used when demand exceeds 1700 - 2000 watts. When cruising abroad, check shore power for 115 volt single phase, A.C. 60 cycles. See section on Electrical Systems for specifics on connections for shore current.

Also, when cruising abroad, try to purchase fuel equal to American standards. (See fuel systems section for requirements in your engines). Carry extra fuel filters with you, since replacement may be necessary.

In some areas, it is advisable to use water purifying tablets of the iodine type. Be sure to take these with you when cruising to places where the water supply is suspect. When living dockside, be sure any water hookup bypasses your own system, unless you have fitted it with a pressure valve. (See section on Water System for your boat).

### LEAVING YOUR BERTRAM:

The following are procedures to follow when leaving your boat overnight, or for a short period of time:

- (1) Lock all ignition or engine circuits.
- (2) Lock all doors, windows and hatches.
- (3) Make sure mooring lines are well secured with adequate allowance for tide.
- (4) Bumper and spring lines set.

The following steps should be followed when leaving your boat for longer periods of time, such as a week or more:

- (1) Follow all of the above steps.
- (2) Turn master battery switch to OFF position.
- (3) Automatic bilge pump should be left on "auto" position. If for some reason your boat is taking on water, the batteries should be checked frequently.
- (4) Close all seacocks or valves.
- (5) Turn off all fuel valves.

# MAINTENANCE

## PERIODIC MAINTENANCE:

The maintenance the Bertram 38 requires during the boating season depends to a great extent on the conditions under which the boat is used. Adequate ventilation of the cabin during periods of non-use will reduce the interior maintenance, and keeping the exterior painted (and waxed) will minimize the exterior maintenance.

In this section a suggested preventive maintenance program is set forth for the boat under "average" conditions, and if this program is used it should be used in conjunction with the periodic maintenance recommended in the respective operating manuals for the engines and generator.

## DAILY:

- (1) Pump bilges as required.
- (2) Ventilate engine compartment.
- (3) Check engine lubricating oil levels.
- (4) Check engine coolant levels (if fresh water cooled).
- (5) Check generator lubricating oil level (if generator installed).
- (6) Check fuel, water, and oil systems for leaks.
- (7) Visually check raw water strainers for dirt accumulation. Clean as necessary.
- (8) With engines running, check engine circulating water by observing engine exhausts. Water should be exhausting along with the gases.

(9) Top off fuel tanks and water tanks at end of day's operation.

(10) Wash down boat with fresh water.

EVERY 100 HOURS OR 60 DAYS (WHICHEVER COMES FIRST):

EXTERIOR:

(1) Visually inspect exterior fiberglass finish; clean and wax.

(2) Inspect all hardware and apply protective polish. Tighten any loose fittings.

(3) Inspect condition of varnished areas. WARNING: Do not let varnished areas deteriorate, otherwise wood will turn dark requiring complete stripping and refinishing. To properly maintain, light sand and revarnish with good grade of marine varnish.

(4) Inspect all exterior seat cushions. If wet, remove covers and air dry in sunlight all polyfoam and covers. Clean covers with mild soap solution or light Clorox solution. Wash any cleaning materials off with fresh water.

INTERIOR:

(1) Completely air out the boat.

(2) Inspect all life jackets.

(3) If any mildew is found, thoroughly wash down area with Clorox solution.

(4) Inspect and operate all drawers and doors. Slight adjustment may be necessary on doors and drawers due to expansion from moisture. Drawers can be made to slide easier by using wax or a lubricant.

(5) Check all portlights. Lubricate dog threads with Vaseline.

(6) Check all fire extinguishers for full charge.

#### BOW STATEROOM:

- (1) Check operation of lights.
- (2) Check 110V duplex plug-ins for operation.
- (3) Check bow hatch for operation and watertight fit.

#### FORWARD HEAD:

- (1) Check operation of light.
- (2) Check 110V duplex plug-in for operation.
- (3) Inspect the toilet for proper operation.
- (4) Inspect hot and cold water faucets for leaks and operation. Check drains for pluggage or leaks.

#### GALLEY:

- (1) Check hot and cold water faucets for operation.
- (2) Inspect sink drain for pluggage and leaks.
- (3) Check lights and duplex plug-ins for operation.
- (4) Clean and check stove for operation including the three burners and oven.

(5) Check refrigerator for operation. Defrost and clean refrigerator with a solution of baking soda.

ENGINE COMPARTMENT:

(1) Follow periodic preventive maintenance for engines and marine gears as specified in engine manual.

(2) Inspect stuffing boxes.

(3) Inspect exhaust hoses and hose clamps.

(4) Check raw water pick-up gate valves. Lubricate with Vaseline.

(5) Clean raw water strainers.

(6) Check engine mounting bolts to see that they are tight. If bolts are found to be loose, realign engine. If coupling must be broken loose, lubricate coupling bolts with Vaseline.

(7) Check all hoses on engines, and hose clamps. Inspect for leaks.

(8) Check fuel lines, flare nuts, and valves for leaks.

(9) Check Morse control cable brackets for tightness.

(10) Check electrical connections and clean if corroded.

(11) Check exhaust blower for operation and hose for leaks.

(12) Check all wiring to see that it is not rubbing or insulation worn off.

(13) Check all gauge senders and alarm system make-break switches.

(14) Check all fresh water system lines and fittings for leaks.

- (15) Check fresh water pump for condition and operation.
- (16) Check hot water tank and all connections for leaks.
- (17) Check air conditioning condensing units for water leaks and operation (if installed).
- (18) Check all air conditioning hoses and hose clamps (if installed).
- (19) Clean out air conditioning raw water pump and raw water pick-up strainer. Check operation of pump (if installed).
- (20) Check lights in engine compartment.
- (21) Check studs for ground plates.
- (22) Check all battery cells with hydrometer. They should be between 1.250 and 1.265. Water cells as necessary.
- (23) Clean battery terminals, scrape and pack with Vaseline.
- (24) Follow periodic preventive maintenance for generator as specified in generator operator's manual.
- (25) Check generator mounting bolts for tightness.
- (26) Thoroughly check generator for oil leaks. If leaks are found, have generator manufacturer's service representative inspect and correct.
- (27) Clean out stringer limber holes.
- (28) Remove and clean screen on bilge pump pick up and check operation of pump.

SALON:

- (1) Check operation of stereo system. Check electrical connections for tightness and corrosion.

- (2) Check ice maker for operation (if installed).

Defrost and clean with a solution of baking soda.

- (3) Air conditioning evaporator (if installed).
  - a. Check for water leaks.
  - b. Check electrical connections for tightness and corrosion.
  - c. Remove return air screen and clean.

#### MASTER STATEROOM:

- (1) Check operation of lights.
- (2) Check 110 volt duplex plug-ins for operation.
- (3) Air conditioning evaporator (if installed):
  - a. Check for any water leaks.
  - b. Check electrical connections for tightness and corrosion.
  - c. Remove return air screen and clean.
- (4) Check overhead hatch for operation and watertight fit.
- (5) Check all fuel lines, flare nuts and valves for leaks.
- (6) Inspect rudder ports for leaks.
- (7) Check all fittings for steering system: clevis bolts, rudder arms, lock nuts, and lock bolts for tightness and smooth operation.
- (8) Remove and clean screen on bilge pump pick-up and check operation of pump.
- (9) Trim tab pump and hydraulic lines.

#### MASTER HEAD:

- (1) Check operation of lights.
- (2) Check 110 volt duplex plug-ins for operation.



(3) Inspect the toilet for operation.

(4) Inspect hot and cold water faucets for leaks and operation. Check drains for pluggage or leaks.

BRIDGE:

(1) Check operation of all switches, indicator, and controls.

(2) Check electrical connections for tightness and corrosion.

(3) Lubricate Morse control heads and cables with Vaseline.

AS REQUIRED:

(1) Pull boat out of water, scrub, if necessary.

NOTE: The mold release that is used to lay up the hull at the factory has a certain amount of wax which makes it difficult to get good adherence of the anti-fouling fiberglass bottom paint during the first several months of operation. By then, the wax is completely discharged and the paint will adhere.

## STORING YOUR BERTRAM

### DRY STORAGE:

(1) Indoor storage is generally preferred, if there is good ventilation, and if the location is otherwise safe and dry. However, outdoor storage may be all that is available, or economically practical.

(2) (For any special instructions for covering Bertram 38 for outdoor storage, refer to Docking Plan).

(3) To keep bilge dry, remove bilge drain plug and open all valves and/or seacocks.

(4) Drain all tanks, water lines and pumps of water to prevent damage from freezing. Add antifreeze to any low position lines that can't be drained. In warm climates draining will prevent water stagnation.

(5) Open windows, portlights and hatches sufficiently to allow air to circulate. Also leave locker doors and drawers open.

(6) Defrost and dry refrigerators, freezer and prop oven. Doors should remain open.

(7) If possible, remove mattresses and cushions, clean and store in a dry place. If they must be left aboard, prop up on one edge for maximum ventilation.

(8) Synthetic material lines need only proper handling and occasional cleaning. Natural fiber lines should be dried and kept in a well ventilated place.

(9) With all toilets, water delivery and discharge lines drained, apply a light coat of oil to all metal parts.

Caution: Do not oil any rubber or leather parts.

(10) To protect chrome, stainless or aluminum deck hardware, first remove any salt deposits with water. Then clean with a good quality nonabrasive type metal cleaner. Finally, give items a light coat of grease.

(11) Check propellers for nicks, dents and bent blades. Check struts and shafts also. Any replacement or repairs should be made at this time instead of during the spring rush.

(12) Be sure all linkages of steering, engine and other controls are free and well lubricated.

(13) Disconnect shafts from engines.

(14) Remove batteries and make arrangements for storage and periodic recharging.

#### WET STORAGE:

All the above applies, except of course, valves and seacocks should remain closed, and the electrical master switch placed in the off position.

#### FITTING OUT:

In order to ensure maximum pleasure and enjoyment from your Bertram after an extended lay up, a thorough check of the boat and equipment is necessary with maintenance being done as indicated. The following list should serve as a guide for the more important items to be accomplished (not necessary in order to be done).

PRE-LAUNCH:

- (1) Thru-hull strainers clear and secure. Bilge drain plug should be in place and secure.
- (2) Shafts should turn freely.
- (3) Secure propeller nut, jam nut, cotter pin.
- (4) Do rudders fit well in rudder port?
- (5) Are set screws on struts in place?

AFTER LAUNCH:

- (1) Are seacocks or valves free and operable?
- (2) Are supply and discharge lines secure?
- (3) Are fittings tight?
- (4) Make sure stuffing boxes are adjusted and locked.
- (5) Check shaft alignment.
- (6) Make sure packing glands are adjusted and locked.
- (7) Are bilge pumps working?
- (8) Is bilge blower working?

ELECTRICAL SYSTEM CHECK:

- (1) Batteries are properly charged at 1.260 sg. If below 1.220SG, have charged.
- (2) Engine wire looms secure, away from exhaust manifold, connections tight.
- (3) Check the following standard and optional electrically operated equipment to make sure each is working properly.

Navigation Lights	Radio
Ships Lighting	Auto Pilot
Auxiliary Generator	Depth Finder
Converter	Radar
Horn	Shore Line and Polarity Light
Wipers	Shore line Transfer Switch
Toilet	Air Conditioners
Water Pressure System	Stove and other electrically operated galley equipment

#### ENGINE CHECK:

- (1) Fuel lines and cooling lines secure and tight fitting.
- (2) Exhaust fittings secure and tight.
- (3) Engine coupling, lock wire, lock washer, key in place.
- (4) Engine mount fastening tight, locked.
- (5) See engine manual for service.

#### CONTROLS CHECK:

- (1) Clutch adjusted, fittings secured.
- (2) Throttle adjusted, fittings secured.
- (3) Emergency shut down, adjusted, fittings secured (diesel only).
- (4) Steering is positive, linkage secure, rudder moves freely.
- (5) All gauges, water temperature, oil pressure, tachometer, ammeter, and full operating (after starting engines).

# MAINTAINING YOUR BERTRAM

## CARE OF FIBERGLASS CONSTRUCTION:

The fiberglass construction which makes up the entire hull and most of the superstructure, consists of several parts. The exterior layer gelcoat is a special polyester resin into which coloring pigments have been incorporated to give built-in color. Just beneath the gelcoat is a series of glass fabric laminations bonded together with polyester resin. The complete lamination and gelcoat are bonded together by a chemical action, and the part is a one-piece unit. The outside gelcoat - approximately 0.016 inch depth -- gives the fiberglass part its glossy finish. The following recommendations will help you keep this unique material in the same condition it was in when it left the factory:

## SEASONAL CARE (AT FITTING OUT TIME):

- (1) Clean surface with soap and water.
- (2) Treat with an automotive type rubbing compound.

Use lightly.

- (3) Wax and polish the surface with an automotive type wax. Some modern products give you rubbing and waxing action in one. These are also acceptable.

## LOSS OF GLOSS:

To restore the glossy appearance of the gelcoat surfaces,

a light buffing may be advisable. For hand buffing, use a slightly abrasive rubbing compound similar to Dupont No. 7. If a powder buffer is used, Mirro-Glaze No. 1 or similar product is recommended. After buffing, the surface should be waxed and polished as described above for Seasonal Care.

#### STAINS:

The fiberglass gelcoat surface is non-porous and therefore highly resistant to stains. Most can be removed easily with household detergent. Crayon, lipstick or shoe polish can be removed with plain alcohol. Ink spots will come off with Ajax or a similar detergent. While penetrating stains are very uncommon, some products with unusual chemical contents may go too deep for ordinary methods of removal. In such cases, weak solutions of acids or alkalies, such as hydrochloric acid or ammonia can be tried. These may, however, produce a slight discoloration in the gelcoat. If none of the above methods are successful, it may be necessary to sand down through the gelcoat to remove the stain. This will require refinishing (see below).

#### SCRATCHES AND ABRASIONS:

Those that do not penetrate the full thickness of the gelcoat can be treated by lightly sanding and buffing the area. Larger scratches that penetrate the gelcoat, but do not go deeply into the fiberglass or weaken the structure, can also be repaired, as follows:

- (1) Clean damaged area, first with mineral spirits or turpentine to remove dirt and wax. Follow with detergent and rinse.

Allow to dry completely.

(2) Secure a small amount of pigmented gelcoat resin matching the color of the area to be repaired. This is available from your Bertram dealer.

(3) Add two drops of catalyst per cubic inch of gelcoat and mix thoroughly. The mixture will gel in 15 minutes.

(4) Fill scratch with the mixture before it hardens, and round off about 1/16" to 1/8" above surrounding surface.

(5) Lay a piece of wax paper or cellophane on top of the patch and press lightly to remove air. Take off wax paper after 20 minutes, and allow patch to cure overnight.

(6) Sand down patch with 600 grit wet sandpaper. Finish by running and buffing with regular buffing compound.

Any repairs to fiberglass that are more extensive than those described here should be made only with the help and advice of your Bertram dealer.

#### PAINTING FIBERGLASS SURFACES:

(1) Thoroughly clean fiberglass part to be painted, removing any wax with mineral spirits, turpentine or other commercial solvents. Then wash with detergent and rinse.

(2) After surface is dry, sand lightly with garnet paper, fine oxide paper or #220 sandpaper. Wipe clean of all dust.

(3) Apply two thin coats of primer as recommended by marine paint manufacturer.

(4) Apply regular of epoxy paint of good quality as



manufacturer directs. While the fiberglass bottom of your Bertram is inherently anti-fouling, you may find your cruising waters make an anti-fouling paint application worthwhile. Follow the above directions (and those of the manufacturer) in applying such a paint to your hull.