

**GRAND
BANKS**

OWNERS' MANUAL

American Marine Ltd.

GRAND BANKS 32

HULL NO. 389

BUILT BY
American Marine Ltd.

Introduction

INTRODUCTION

It gives us great pleasure to welcome you into the ever growing fleet of Grand Banks diesel cruisers. Since their introduction, these boats have made extensive cruises along the inland waters and in open seas around the world and we are sure that your Grand Banks will give you many hours of pleasurable cruising.

We have a genuine interest in following the history of all our boats and we would ask you to keep in touch with our office in California so that we may learn of the experiences that you have had with the boat and so that you, in turn, may receive the Owners' newsletter which gives news of interest concerning the boats and their owners.

AMERICAN MARINE LTD.

HONG KONG

Contents

LIST OF CONTENTS

List of Illustrations

Useful Information

Operating Procedures

Electrical System and Accessories

Manual Equipment

Engines and Transmission Line

Fuel System

Water System

Maintenance

**List of
Illustrations**

LIST OF ILLUSTRATIONS

D. C. Schematic for Engine system.

D. C. Schematic for Service system.

A. C. Schematic.

Fuel system Schematic.

Water system Schematic.

Seacock location diagram.

Shaft arrangement drawing.

Graving Plan.

Flying Bridge removal drawing.

**Useful
Information**

USEFUL INFORMATION

PORT OR SINGLE ENGINE

Manufacturer Ford Motor Company
Type No. 2714E
Serial No. 842177

STARBOARD ENGINE

Manufacturer Ford Motor Company
Type No. 2714E
Serial No.

PORT OR SINGLE TRANSMISSION

Manufacturer Warner Gear
Type No. AS3-71CR
Serial No. 15345
Ratio 2.1:1

STARBOARD TRANSMISSION

Manufacturer Warner Gear
Type No. AS7-71C
Serial No.
Ratio 1.91:1

PROPELLER SHAFTS

Material Aluminium Bronze
Diameter 1.5 inches
Length GB32-11'0½" GB36 Single-15'0" GB36 Twin-14'3¾" GB42-14'6"
Taper Small end diameter-1.234": Taper length 4¼"
Threads 1½" Dia. x 7 T.P.I.

CUTLESS BEARINGS

Inside Diameter 1.5 inches
Outside Diameter 2.0 inches
Length 6.0 inches

STUFFING BOX PACKING

Diameter 1/4 inches

PORT OR SINGLE PROPELLER

Number of Blades Three
Diameter 24 inches
Pitch 18 inches
Hand Left

STARBOARD PROPELLER

Number of Blades Three
Diameter 24 inches
Pitch 17 inches
Hand Right

RAW WATER PUMP IMPELLER

Manufacturer Jabsco
Port Number 1212

GENERATOR (OPTIONAL)

Manufacturer
Model Number
Serial Number

Operating Procedures

OPERATING PROCEDURES

ENGINE

STARTING

To start the engines proceed as follows:—

- (1) Ensure that the battery disconnect switches are on. (For full details of these switches see under the electrical section of this manual).
- (2) Switch on ignition circuit breaker.
- (3) Depress starter button.

COLD STARTING

In cold weather it may be necessary to use the knob marked "cold start" located on top of the steering console. It should be pulled out and then immediately pushed in again before operating the starter. This will activate the excess fuel device on the fuel pump which will be deactivated automatically as soon engine starts.

Water Temperature

The normal operating water temperature should be 190°—200° F. An engine should be allowed to warm up gradually and should not be run at full cruising r.p.m. until normal operating temperature has been reached.

Hourmeter

This instrument reads engine operating hours.

FLYING BRIDGE

At the upper station the hourmeter and ammeter are replaced by a voltmeter.

CONTROLS

GEAR & THROTTLE CONTROLS

Separate controls are provided for throttle and transmission. In twin engined installations, the gear controls are on one pedestal and the throttle controls are on the other. Throttle controls can be readily identified by the red knobs fitted to the operating levers.

STEERING

The sprocket on the shaft of the steerer at the steering console is connected to the rudder quadrant by means of a chain and cable system. A second steerer on the flying bridge is connected to the first by means of a stainless steel cable.

It is extremely unlikely that trouble will be experienced with this system but if steering failure should occur at the upper station be sure to check at the lower station before proceeding further.

be fitted through

INSTRUMENTATION

STEERING CONSOLE

Tachometer

This instrument shows engine speed in revolutions per minute. Cruising r.p.m. varies with the conditions and type of engine fitted. Please check with your dealer for his recommendations.

Ammeter

This instrument shows the charge rate of the alternators.

Oil Pressure

The oil pressure gauge reads in pounds per square inch. The cause should be checked if the oil pressure drops below 15 p.s.i.

Water Temperature

The normal operating water temperature should be 190° – 200° F. An engine should be allowed to warm up gradually and should not be run at full cruising r.p.m. until normal operating temperature has been reached.

Hourmeter

This instrument reads engine operating hours.

FLYING BRIDGE

At the upper station the hourmeter and ammeter are replaced by a voltmeter.

Voltmeter

For full details regarding the use of this instrument please refer to the manufacturer's instructions included with this manual.

ALARM SYSTEM

The alarm buzzer sounds when the water temperature approaches 212 °F or when the pressure drops too low. The oil pressure switch is the component which causes the alarm to sound when an engine is switched on but not running.

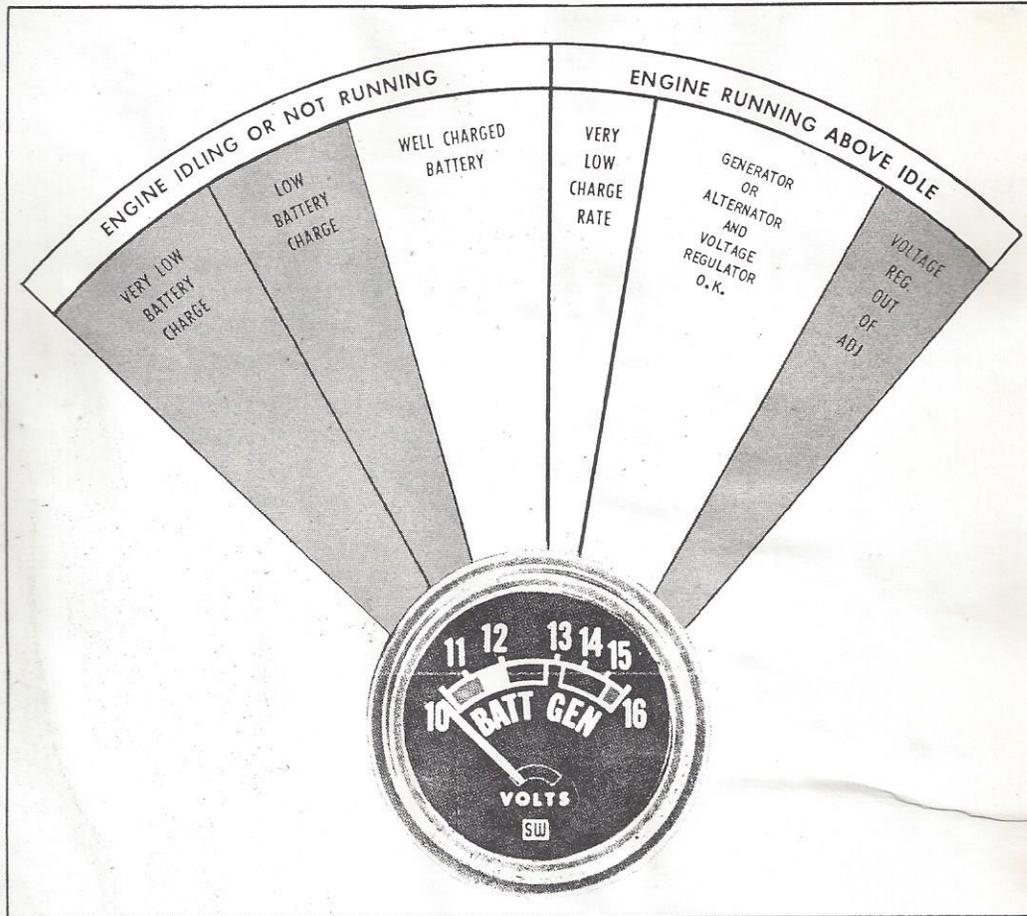
If the alarm sounds when an engine is running, the engine should be stopped at once and the cause investigated.



INSTALLATION INSTRUCTIONS

Stewart
SER-SW
4609
Warner

VOLTMETER



GENERAL

Voltmeters can be used on engines having an electrical system with a generator, alternator or battery only. Voltage rating of Voltmeter must be same as voltage rating of battery in electrical system.

The primary purpose of a Voltmeter is to show the condition of the battery. It also shows the level of regulated voltage being produced by the generator or alternator while engine is running.

Voltmeters are known by several names such as Volt-Guard, "Batt-Gen Gauge", etc.. Actually, there are two basic types of Voltmeters:

The 348- Series have heat actuated mechanisms and require a few minutes "warm-up" time before obtaining a true reading.

The 375- Series have magnetic type mechanisms and readings vary instantly with changes in voltage. No "warm-up" time is necessary.

Both types of gauges serve the same purpose as far as the operator is concerned.

OPERATION

Actual battery voltage is read before or after operating engine. A constant reading in red segments on face dial indicates a need for a complete check of either battery or generating system.

NOTE: The voltage regulator is compensated to permit the generating system (generator or alternator) to produce more charging voltage during cold weather. Therefore, the Voltmeter will show higher readings during cold weather than it will in warm weather.

**Electrical
Systems
and
Accessories**

ELECTRICAL SYSTEMS AND ACCESSORIES

SINGLE ENGINE INSTALLATION

D.C. SYSTEM

The main electrical system is 12 volt D.C. with negative ground. Two batteries are used and both are charged by the alternator whenever the engine is running.

For trouble-free starting, both batteries are automatically paralleled together whenever the ignition switch is on. The paralleling solenoid for the starters is mounted on a panel in the engine room together with the emergency disconnect switch for each battery. All D.C. electrical circuits will be dead including the automatic bilge pump, alternator, ammeter, and battery charger (if installed) when these switches are "off". Therefore it is recommended they not be shut off, except in the event of a starter failing to disengage when starting the engine. They must not be turned off while the engine is running, as damage may occur in the alternator.

Battery Selector Switch

At the main switchboard will be found the Battery Selector Switch for the service system. This switch is used to connect either battery or both batteries to the service circuits. Except in an emergency, the service switch should not be used in the 'all' position as this could result in both batteries becoming discharged. In the "off" position the Battery Selector Switch disconnects the entire service system from the batteries and prevents an unintentional discharge of any batteries.

Connections to Battery

It is considered bad electrical practice for multiple connections to be made to the battery terminals. When extra equipment is installed, it should be connected through the switch panel and not direct on to the battery or disconnect switches.

Complete details of the electrical circuits can be found in the attached Schematic Drawing.

Bonding

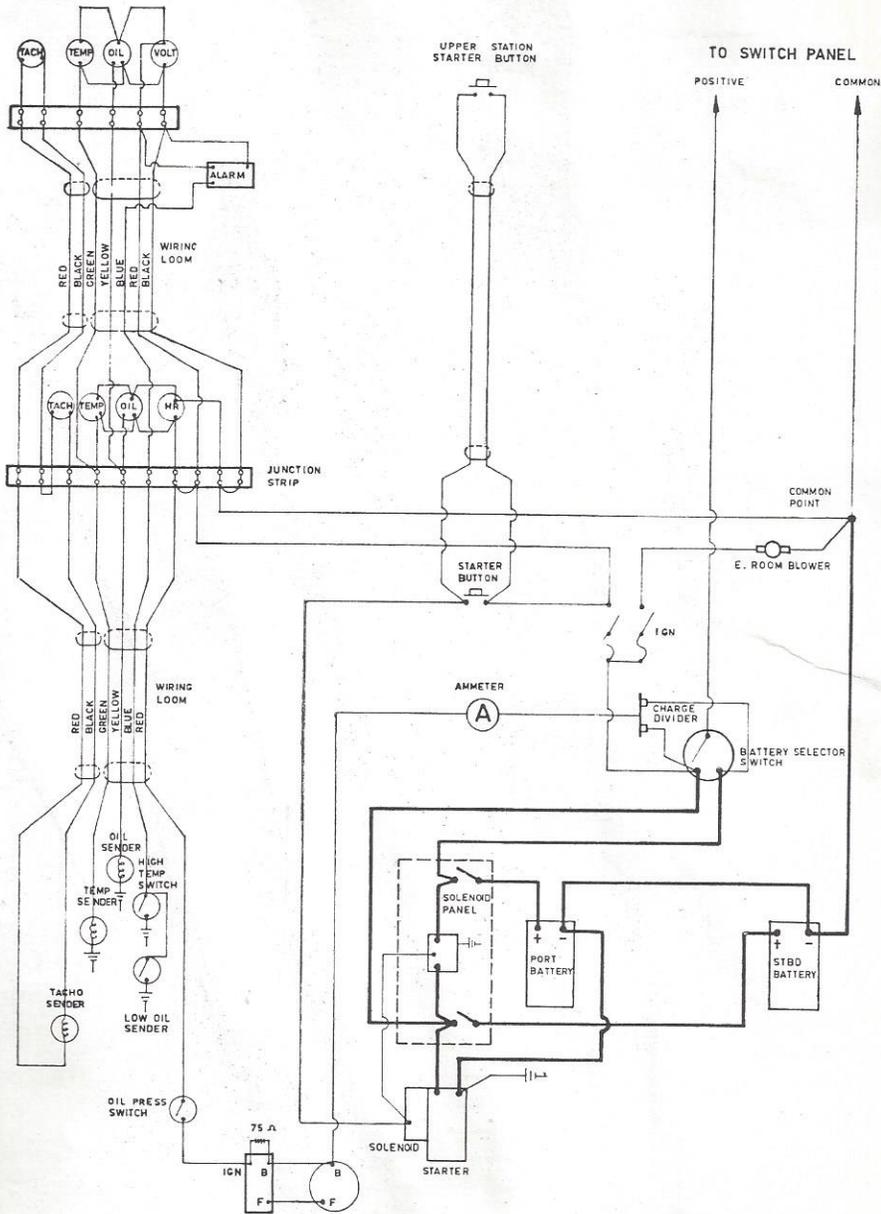
All through-hull fittings are interconnected on the inside of the hull by means of a copper strip. This strip is also connected to the engine frame and the negative battery ter-

minals. Its purpose is to prevent electrolysis by eliminating any electrical potential which may exist between various metal fittings in contact with the water. As an added safety precaution, the fuel fills are also grounded through this system.

A.C. ELECTRICAL SYSTEM

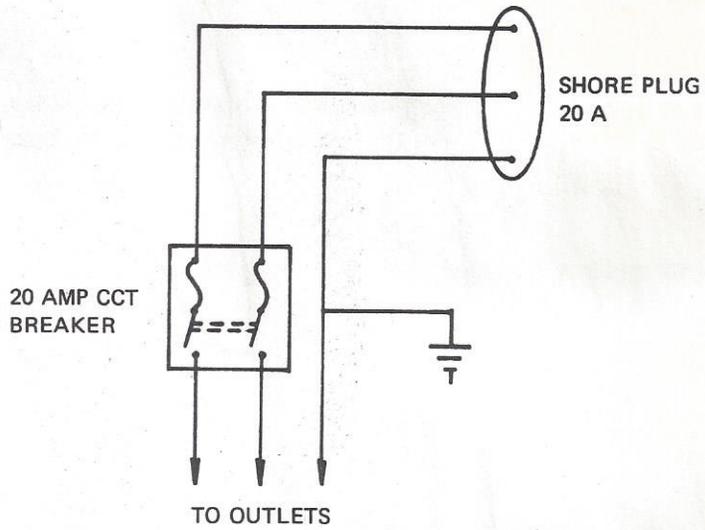
A 3 pin shore power connector is connected to the live side of the 110V master circuit breaker at the steering console. The 110V outlets throughout the boat are connected to the secondary side of this circuit breaker. Additional circuits, when required, should be connected through their individual circuit breakers before being connected to the secondary side of the master circuit breaker.

D. C. SCHEMATIC FOR SINGLE ENGINE

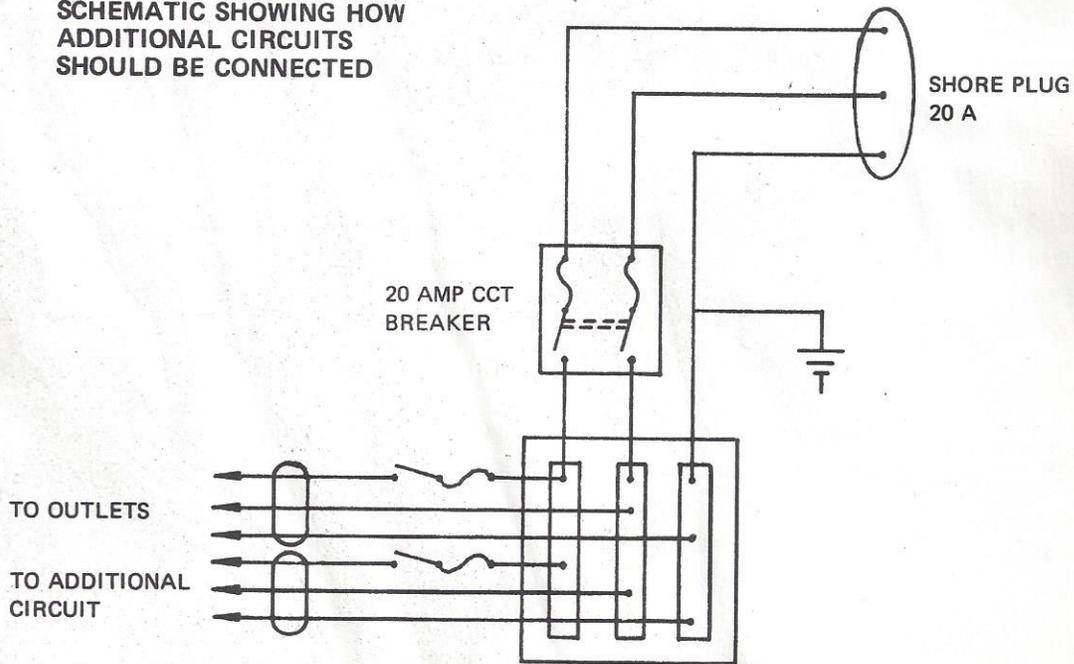


GB 32 A.C. SCHEMATIC

STANDARD BOAT



SCHEMATIC SHOWING HOW
ADDITIONAL CIRCUITS
SHOULD BE CONNECTED



ELECTRICAL EQUIPMENT

HORN

Buttons at both steering Stations are connected via a relay to a small electrically driven air compressor. The compressor should receive a few drops of oil periodically.

ENGINE ROOM BLOWER

The unit installed is a Wilcox Crittenden 'Hi-Cap' type. It is installed as an extraction blower to aid ventilation and to expel heat from the engine room.

GALLEY BLOWER (GB42 only)

The unit installed is a Wilcox Crittenden 'Hi-Cap' type.

WATER PRESSURE PUMP

The unit installed is a Peters and Russell, model 6850. When first used, or whenever the pressure drops below 2 psi, the pump must be started by manually depressing the red button on top of the dry tank switch. This button should be held down until enough internal pressure is developed to hold the switch contacts in. This should take approximately one minute. For further information see manufacturers instructions.

SHOWER DRAIN PUMP

The unit installed is a Wilcox Crittenden model 7000. A switch at each shower location is used to control the pump but the circuit breaker on the panel must also be on. The pump should be switched on as necessary but allowing it to run dry for long periods will damage it.

BILGE PUMP

The electric bilge pump is the only item on the service panel which is not connected through the Battery Selector Switch. With this switch off, the pump will operate automatically provided that the bilge pump circuit breaker and the emergency disconnect switches are on and that the bilge pump function switch is set to "auto". It is, therefore, recommended that these switches normally be left in these positions. The pump can, however, be started at any time by setting the function switch to "manual".

CABIN LIGHTS

Cabin Lights are controlled through circuit breakers on the panel with individual switches on each light.

WINDSHIELD WIPERS

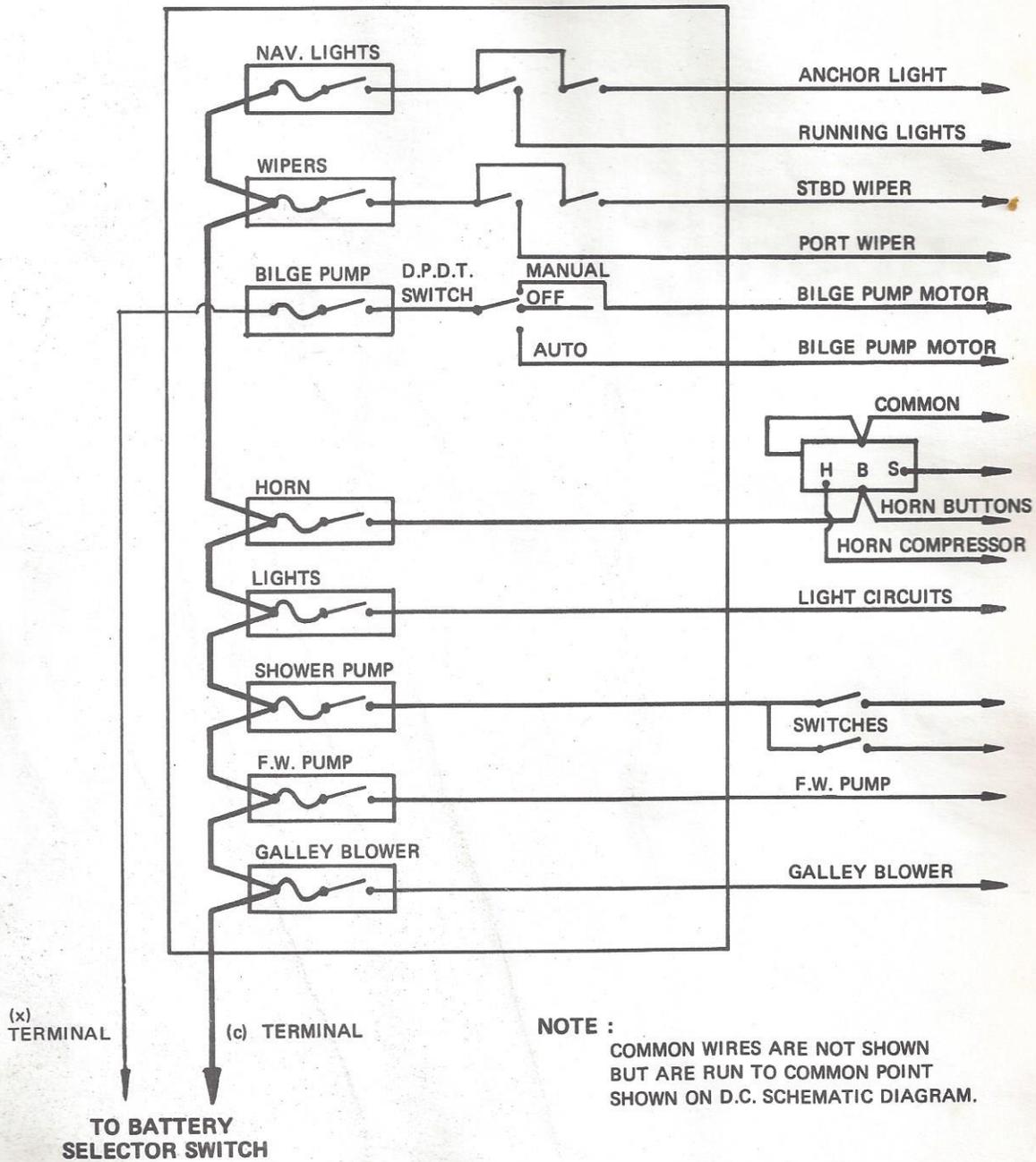
The units installed are American Bosch model WWF. 12 C1-220.

STEREO SYSTEM (Optional on GB 32)

An Aiwa Model TP1004 Cassette tape recorder supplies stereo sound to the saloon and to the owner's stateroom. The output to each channel can be regulated at the recorder, but each speaker also has its individual volume control. This enables the sound in one cabin to be adjusted, or cut-out, independently of the other.

Internal batteries enable the recorder to be played with its own power supply. The internal batteries are automatically cut-out when the A.C. plug is inserted into the recorder. Full instructions can be found in the manufacturer's instruction booklet.

SERVICE SYSTEM



**Miscellaneous
Equipment**

MISCELLANEOUS EQUIPMENT

Toilets

The toilets are manufactured by Groco. The models used are as follows:—

- Grand Banks 32 — Model HCC
- Grand Banks 36 — Model HCC forward;
Model EB aft.
- Grand Banks 42 — Model EB forward and aft.

The intake and discharge sea-cocks must be open for the toilets to operate. The discharge sea-cock is connected to the toilet by a looped pipe which has a vent at the top of the loop. This vent is to prevent syphoning. For location of the sea-cocks, please refer to the drawing included in this manual.

Hand Bilge Pump

The units installed are manufactured by Peters and Russell. The Grand Banks 32 uses a model No. 3745 installed under the galley counter while the Grand Banks 36 and 42 use a model 3695 pump installed under the starboard salon steps.

Instructions regarding the cleaning of these pumps are included with this manual.

Butane Stove

The cylinders for the stove are situated under the seats on the flying bridge. A shut-off valve for the gas supply is mounted in the galley over the stove. This valve should be closed at all times except when the stove is in use.

**Engines
and
Transmission
Line**

ENGINES AND TRANSMISSION LINE

FORD ENGINES

Detailed information on the basic engines can be found in the engine manufacturers instruction book. The information given here concerns only those components required for a marine installation.

Cooling System

The engines are cooled by fresh water which is, in turn, cooled by salt water. The salt water used for this purpose is drawn in by the Jabsco raw water pump and is pumped through a series of three heat exchangers before it passes through the exhaust line water jacket and into the exhaust hose at the standpipe muffler.

The three heat exchangers are used for cooling the engine lubricating oil, engine fresh water and the transmission fluid. The salt water passes through them in that order. The heat exchanger for the engine fresh water contains a zinc pencil to protect it against electrolytic action. This component should be checked for condition every 100 hours. The hexagon head of the zinc pencil is located on the top of the port side of the heat exchanger.

So that the normal operating temperature may be reached as soon as possible, the internal flow of the engine fresh water is controlled by a thermostat. This is located in the cylinder-head immediately beneath the mounting flange of the header tank.

Under freezing conditions, the fresh water system must contain an anti-freeze solution.

When the boat is to be laid up or left unattended for long periods of time, the engine water should be drained and the drain plugs removed from the exhaust line. The drain points are marked in the illustrations.

Fuel System

A mechanical fuel lift pump supplies fuel through a filter to the injector pump. If a diesel engine should run out of fuel it is necessary to bleed the air from the system in order to re-start the engine. In order to carry out this simple operation proceed as follows:—

- (1) Ensure that the shut-off valves on all empty tanks are closed. Open the shut-off valve on the tank that is to be used.
- (2) Open the bleed screws on the top of any filters which have been installed in the fuel lines ahead of the fuel lift pump.
- (3) The fuel will enter the filters under gravity and will drive the air out of the top. When bubble-free fuel begins to run out of the bleed screw, close the screws.
- (4) Loosen the bleed screws on the top of the engine filter and also on the fuel injection pump.
- (5) Work the lever on the fuel lift pump until bubble-free fuel runs from the bleed screws. These should then be tightened and the engine started.

Note

If the engine happens to have stopped with the fuel pump on top of the lobe of its cam, it will be found that the pump cannot be operated by hand. In this situation the engine should be cranked $\frac{1}{4}$ turn.

Step 5 can also be accomplished by turning the engine over on the starter until it starts to run. The bleed screws should then be closed at that time.

All fuel bleed points referred to are illustrated in the accompanying illustrations. Full details of the boats fuel system can be found in the relevant section of this manual.

TRANSMISSIONS

Warner Gear Velvet Drive transmissions are standard equipment. These units have a hydraulically actuated clutch. The oil used for this purpose is Type "A" automatic transmission fluid oil and is cooled by a heat exchanger as mentioned above.

The transmission fitted to the Port engine has a reduction ratio of 2.1:1. That fitted to the starboard engine has a reduction ratio of 1.91:1 and also reverses the direction of rotation of the propeller shaft. This is because both engines rotate left hand, or counter clockwise when viewed from aft, and for twin engined boats, it is desirable to have contra-rotating propellers.

PROPELLER SHAFTS

Dimensions are given in the list of Useful Information. The shafts are supported by cutless bearings in the struts and shaft logs of twin engined boats and in the shaft tube of boats with one engine.

Details are shown in the accompanying diagram and the cutless bearing dimensions are given in the list of Useful Information.

SHAFT ALIGNMENT

To check the shaft alignment, first remove the bolts from the shaft coupling situated at the aft end of the transmission. Using a feeler gauge of about 0.003" thickness slide the coupling faces together by hand and, while supporting the weight of the shaft and coupling, check that the gap between the faces of the two halves of the coupling is the same all the way round. If it is not, move the engine by adjusting the engine mountings until proper alignment is obtained.

It is impossible to line up a bent shaft. If it is aligned in one position and then rotated through 180 degrees, it will again show misalignment. The vibration caused by misaligned shafts will not physically damage the boat but, if not corrected, it will, over a long period of time, accelerate wear on the shaft bearings.

SHAFT LOGS & STUFFING BOXES

Attached to the shaft logs are the stuffing boxes. The attachment is made using a short length of flexible hose which allows a small amount of misalignment without excessive wearing of the stuffing box packing. The stuffing box is packed with braided flax packing which is held in place with the packing nut. Should it be found that the stuffing box is leaking excessively this does not indicate that it needs repairing. It should only be necessary to loosen the lock nut, tighten the packing nut by hand, and then retighten the lock nut. Do not tighten the packing nut excessively or the shaft may become scored. The stuffing box should drip slowly as the packing material is water lubricated.

REPACKING THE STUFFING BOX

If the stuffing box still leaks after tightening down on the packing nut, the packing should

be replaced. To repack, unscrew the packing nut and remove the old packing. New packing should be wound around the shaft in separate rings with enough rings installed to nearly fill the stuffing box packing nut. The ends of each ring should touch and the joints should be staggered. The packing nut is then moved toward the stuffing box over the packing and screwed on the stuffing box gland. Tighten the packing nut sufficiently so that water is just dripping from the gland then tighten the lock nut.

PROPELLERS

Information on the propellers installed is given in the list of Useful Information. The portside propeller is left-handed and the starboard is right-handed.

BEARING REMOVAL

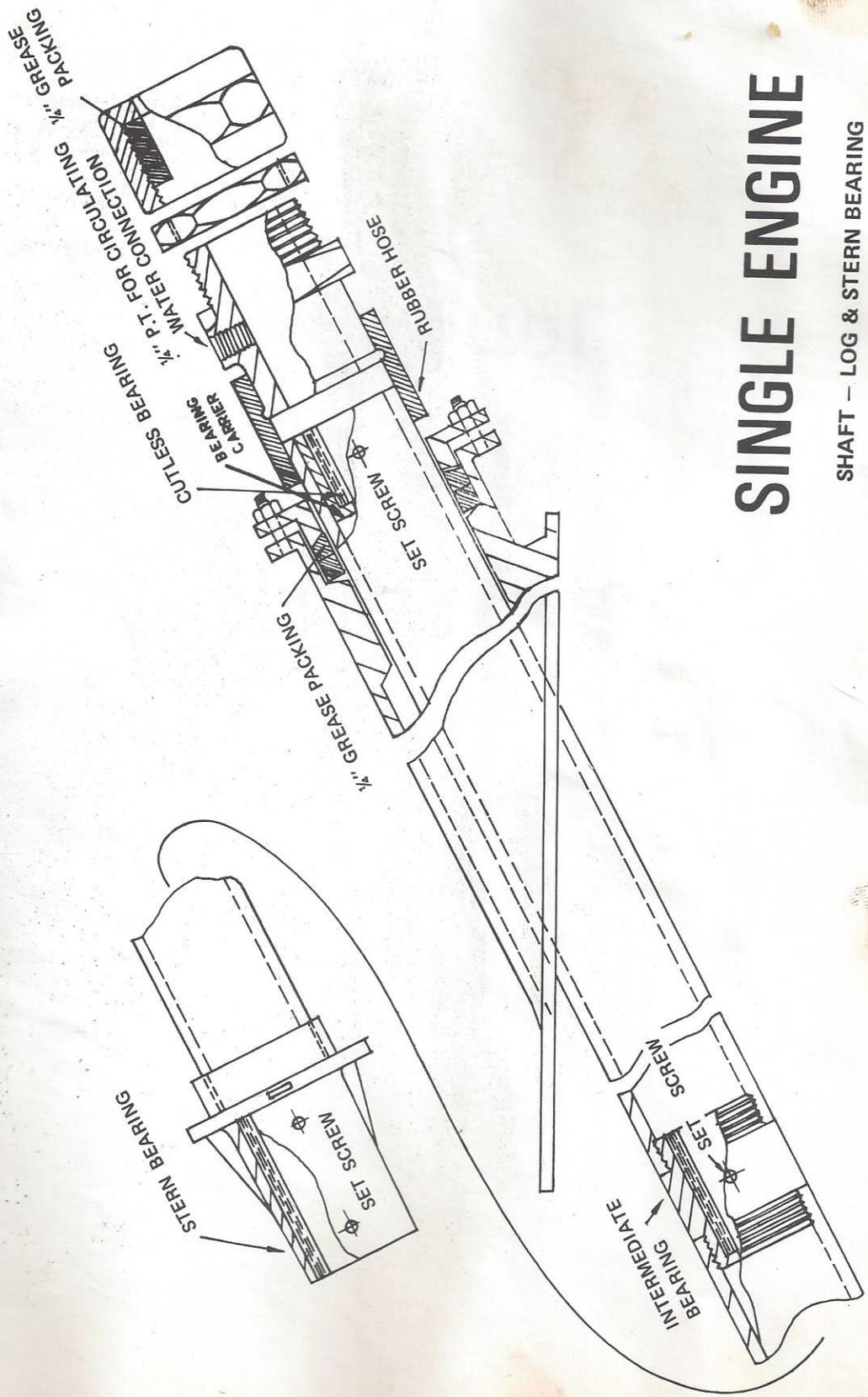
To remove the shaft bearings proceed as follows:—

- (1) To remove the stern bearing (aft end), unscrew the set screw on the casting which holds the cutless bearing in place; then use the bearing puller to withdraw the cutless bearing aft out of the tube.
- (2) To remove the shaft log bearing, disconnect the stuffing box; then unscrew the set screw and use the bearing puller to withdraw the cutless bearing forward out of the tube.
- (3) To remove the intermediate bearing, remove the stern bearing casting and remove the stern tube; then unscrew the two halves of the tube to change the bearing.

For more details please refer to the accompanying diagram.

SINGLE ENGINE

SHAFT - LOG & STERN BEARING



**Fuel
and
Water
Systems**

FUEL SYSTEM

TANKS

Each black iron fuel tank has a deck fill, a hand-hole clean-out plate, an overboard vent, and supply and drain fittings. The tank drain plugs are lower than the fuel supply fitting and should be taken out periodically to prevent accumulation of sludge or water.

Each tank has a diaphragm valve which connects it to the remainder of the fuel system. This valve must be closed when its tank is empty.

FUEL SUPPLY SYSTEM

On twin engined boats each engine is piped to run off its own set of tanks. With this system, should fuel trouble be experienced with one engine, it is extremely unlikely that the other engine would be affected. A valve or valves are provided to cross connect the two systems. These should normally be kept closed.

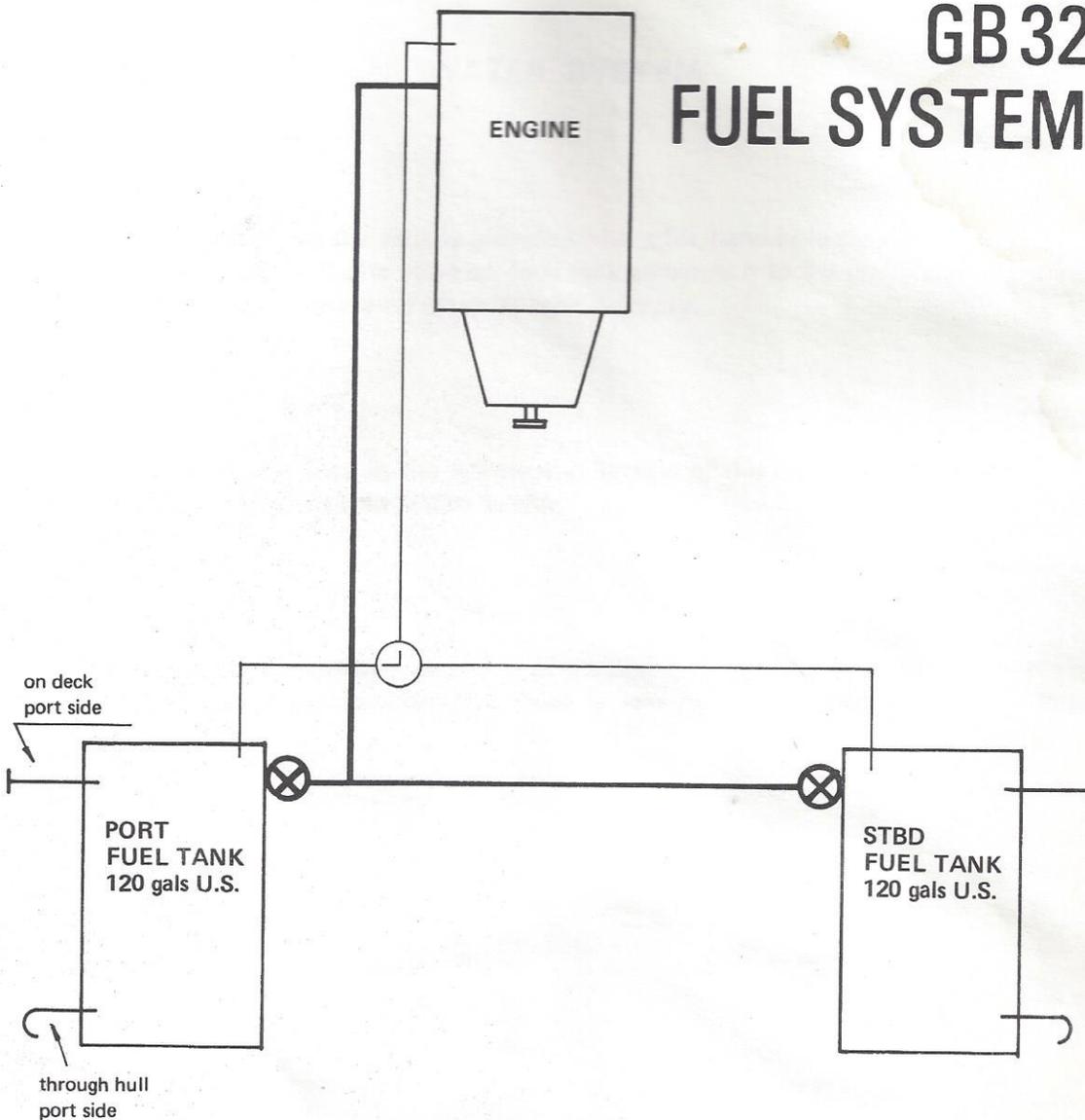
The attached schematic drawing shows quite clearly the layout of the fuel system.

If a diesel engine should run out of fuel, it is necessary to bleed the air from the fuel system before the engine can be restarted. Instructions on how to do this can be found both in the engine manufacturers instruction book and under the engine description in this manual.

FUEL RETURN SYSTEM

The fuel pump on a diesel engine supplies more fuel than is actually required for combustion. The excess is returned to the fuel tanks through the fuel return provided. The fuel return should always be valved to the same tank from which the supply is being drawn, unless it is intended to transfer fuel from one tank to another.

GB32 FUEL SYSTEM



⊥ 3 way valve on return line

⊗ angle valve on supply line

WATER SYSTEM

TANK

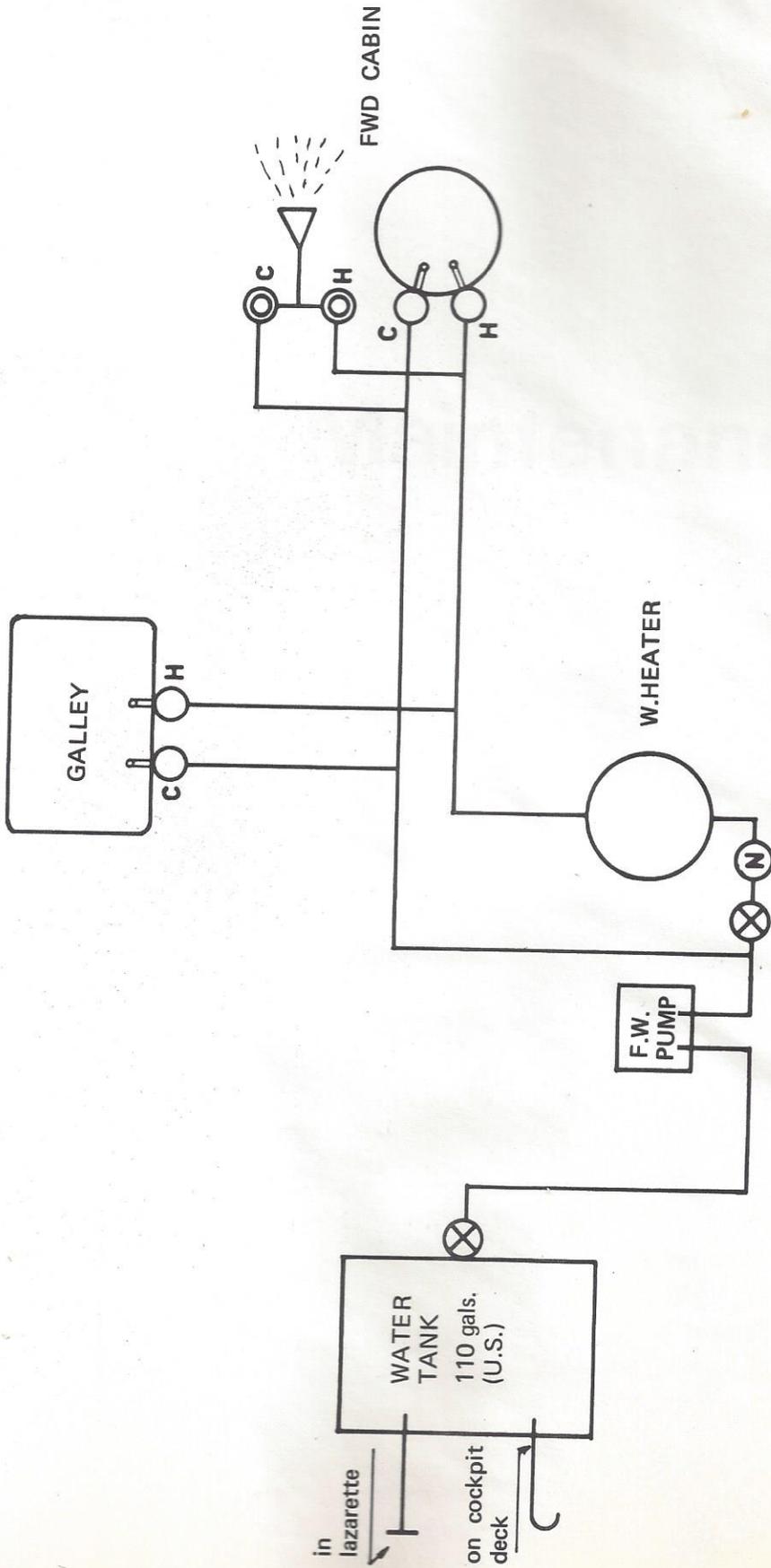
Each stainless steel water tank is provided with a fill, hand-hole clean-out plate, inboard vent and supply fitting. A gate valve on each tank connects it to the remainder of the water system. This valve must be closed when its tank is empty.

WATER PRESSURE PUMP

This pump is described in the Accessories Section of this manual. Complete details are given in the Manufacturers Instruction Leaflet.

DRAINING

Drains are provided at the low points of the piping system. All water should be drained from the tanks and piping when the boat is laid up in below-freezing temperatures.



GB32

WATER SYSTEM

⊗ GATE VALVE

Ⓝ NON-RETURN VALVE

Maintenance

PREVENTIVE MAINTENANCE

With its sturdy construction and dependable diesel power, maintenance on the Grand Banks cruisers is cut to a minimum. However, to ensure trouble-free running, a certain amount of preventive maintenance is necessary and it is suggested that the information listed below be used as a guide. This list should be used in conjunction with the manufacturer's instruction books for engines, generator (if installed), and any other equipment for which instructions have been supplied.

On each occasion that the boat is used and daily if necessary, the following items should be checked before starting:--

- (1) Check the oil level in the engine and transmission. Note that the dipstick assembly need not be threaded into the case of the transmission to determine the oil level. It need only be inserted into the case until the cap or plug rests on the surface surrounding the oil filler hole.
- (2) Check the water level. This should be about 1" below the top of the header tank when the engine is cold. Do not fill the tank full as the water will expand as it is heated and the excess will be expelled through the overflow pipe.
- (3) Check alternator belt for tension.
- (4) Be sure water is being discharged with the exhaust.

AFTER 25 HOURS

- (1) Change engine oil and oil filters.
- (2) Check shaft stuffing boxes for leaks. Note that water should drip slowly from the gland. However if the water is coming through at a faster rate, the locking nut should be backed off and the packing nut tightened by hand until the gland is just dripping slowly. The lock nut should then be retightened. Check the condition of the hoses and clamps connecting the stuffing boxes to the logs.

- (3) Check rudder stuffing boxes with same procedure for tightening as the shaft stuffing boxes.
- (4) Check all batteries for water level and condition of terminals. If necessary, top up with distilled water and clean, scrape and coat terminals with Vaseline.
- (5) Check all engine hanger bolts and engine alignment.
- (6) Check steering cables for tension. If found to be slack, they should be tightened by adjusting the eyebolts on the quadrant. Note that they should not be overtightened or the steering will become stiff. Check also that all sheave and shaft bearings have ample grease.
- (7) Check all fuel and water piping and be sure hose clamps are tight.
- (8) Drain off bottom of fuel tanks and change fuel filter cartridges.

AFTER 100 HOURS

(We strongly recommend having this first 100 hour check done by your dealer.)

Perform all items of service included in the 25 hour check plus the following:—

- (1) Torque cylinder head bolts.
- (2) Check valve adjustment.
- (3) Check pump timing.
- (4) Check exhaust system for condition and leaks.
- (5) Clean air filter.
- (6) Tighten all external engine bolts, clamps, etc., including manifolds and engine pans.
- (7) Check heat exchanger zinc pencils and be sure there is no clogging of the saltwater tubes.

- (8) Check crankcase venting systems to be sure it is free and operating correctly.
- (9) Check reverse and reduction gears for oil leaks, and linkage adjustments and lubrication.
- (10) Check diesel return lines for internal and external leaks.
- (11) Check raw water pump for heavy wear and check condition of rubber impellers and seals.
- (12) Check the condition of the alternator drive belt.
Note: If an alternator drive belt is replaced, it will require a check for tension, within the first 10 to 15 hours of running, as most stretch occurs during his period.
- (13) Change the transmission oil. The oil is drained through the large plug at the bottom, starboard side of the transmission. After draining, the removable oil screen, located inside the drain hole, should be thoroughly cleaned before refilling the transmission with Type "A", suffix "A" automatic transmission fluid. To refill the transmission pour in fluid until it reaches the 'full' mark on the dipstick. The engine should then be started and run slowly for a few minutes in order to pump the oil through the oil passages and cooler. Add sufficient oil to bring the level up to the 'full' mark again. Note that the dipstick assembly need not be threaded into the case to determine the oil level. It need only be inserted into the case until the cap or plug rests on the surface surrounding the oil filler hole.

HAULING

How often a boat has to be hauled out depends a great deal on the waters in which it is kept and the frequency with which it is used. To facilitate hauling, a Graving Plan is included in this manual.

A round head screw will be found at the bottom of the boot-stripe on each side of the boat a few feet forward of the transom. This screw is opposite the end of the keel and should be used as a reference point for locating the chocks. The screw is also marked on the Graving Plan.

When a boat is on the ways to be painted, be sure that the supports are moved so that no areas of the hull or under the keel are forgotten.

Make sure also, that the basket strainers covering the intake through-hull fittings are removed, cleaned and painted on the inside before being replaced. All through-hull fittings should be cleaned out.

While the boat is out of the water, in addition to checking the general condition of all underwater fittings, the opportunity should be taken to examine the following specific items:—

- (1) Check for wear in the cutless bearings.
- (2) Check the operation of all seacocks. If found to be stiff, remove the cone for cleaning and coat with Vaseline before replacing.
- (3) Examine propellers, propeller keys and nuts for tightness and condition.

After the boat has been replaced in the water, be sure to check the circulation of the raw cooling water, by ensuring that it is flowing from the exhausts when the engines are running. The raw water pump impellers are sometimes prone to failure if they have been in service for some time and then allowed to dry out. As these impellers are so vital to the operation of the boat it is strongly recommended that at least one be carried on board as a spare. Details of the impeller are given in the list of Useful Information and full instructions on their replacement are given in the manufacturers instruction leaflet included with this manual.

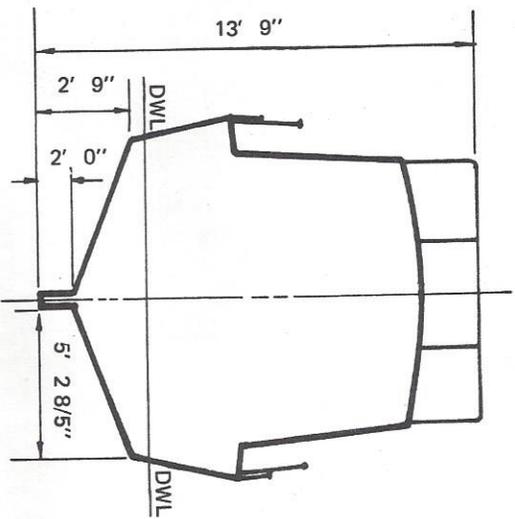
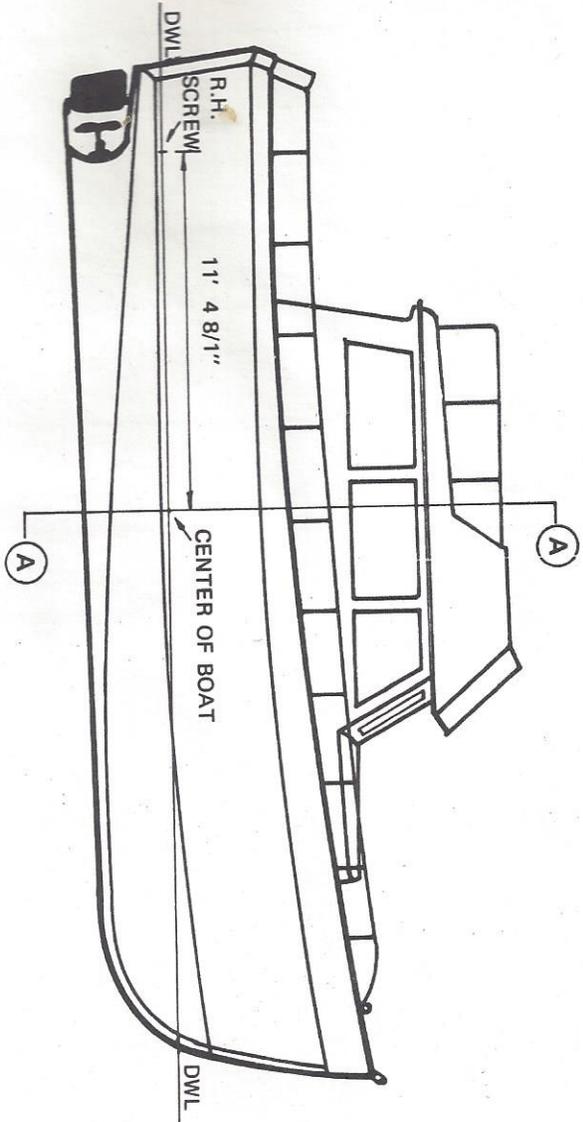
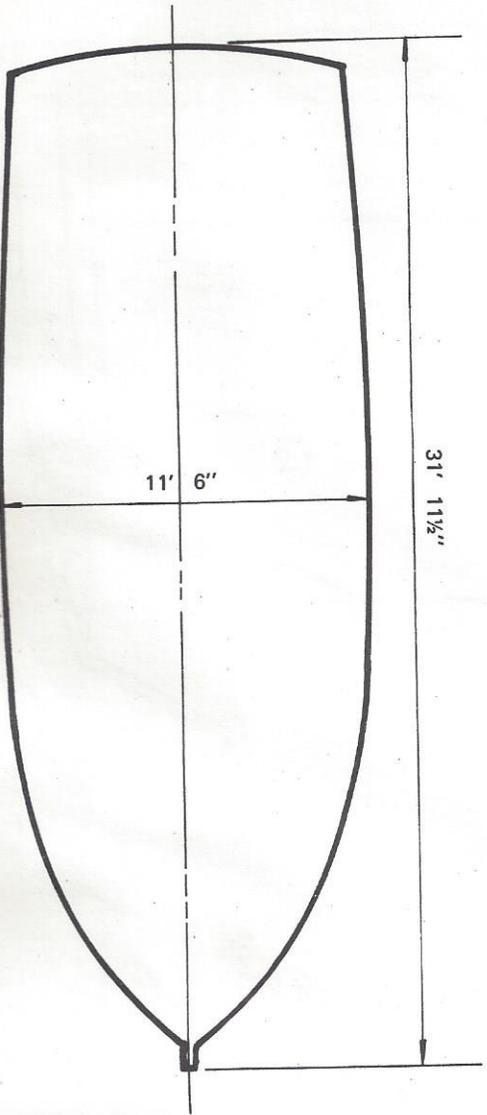
REMOVING THE FLYING BRIDGE

If the boat has to be hauled by road or pass beneath a low bridge or tunnel when being moved from one area to another, it may be desirable for the flying bridge to be removed.

All boats are now built so that this is possible. To remove the flying bridge proceed as follows:—

- (1) Remove all teak mouldings from the base of flying bridge sides and flying bridge seats.
- (2) Flat head screws will now be revealed. Remove these screws. Do not take out any vertical screws.
- (3) Remove stainless steel handrails. The flanges on the base of the handrails are screwed into metal plates which have holes tapped into them. These metal plates are screwed in place so there is no fear that irretrievable nuts will be lost when the screws are removed.
- (4) Disconnect control cables, steering cables and electric wiring.
- (5) Fit a brace across the backs of the flying bridge seats in order to give them support.
- (6) Remove flying bridge by lifting off.

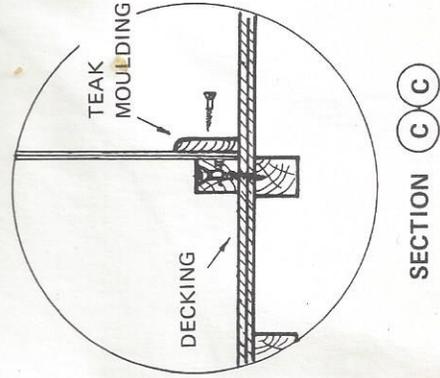
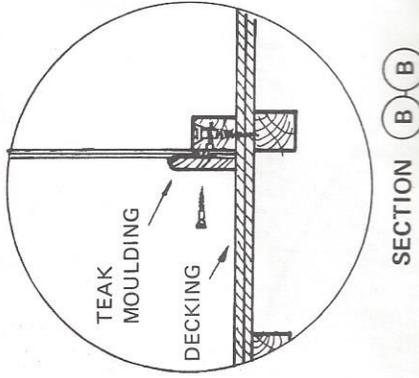
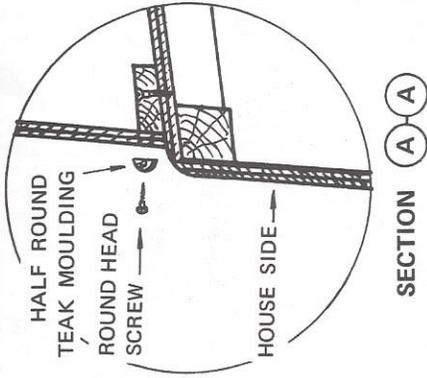
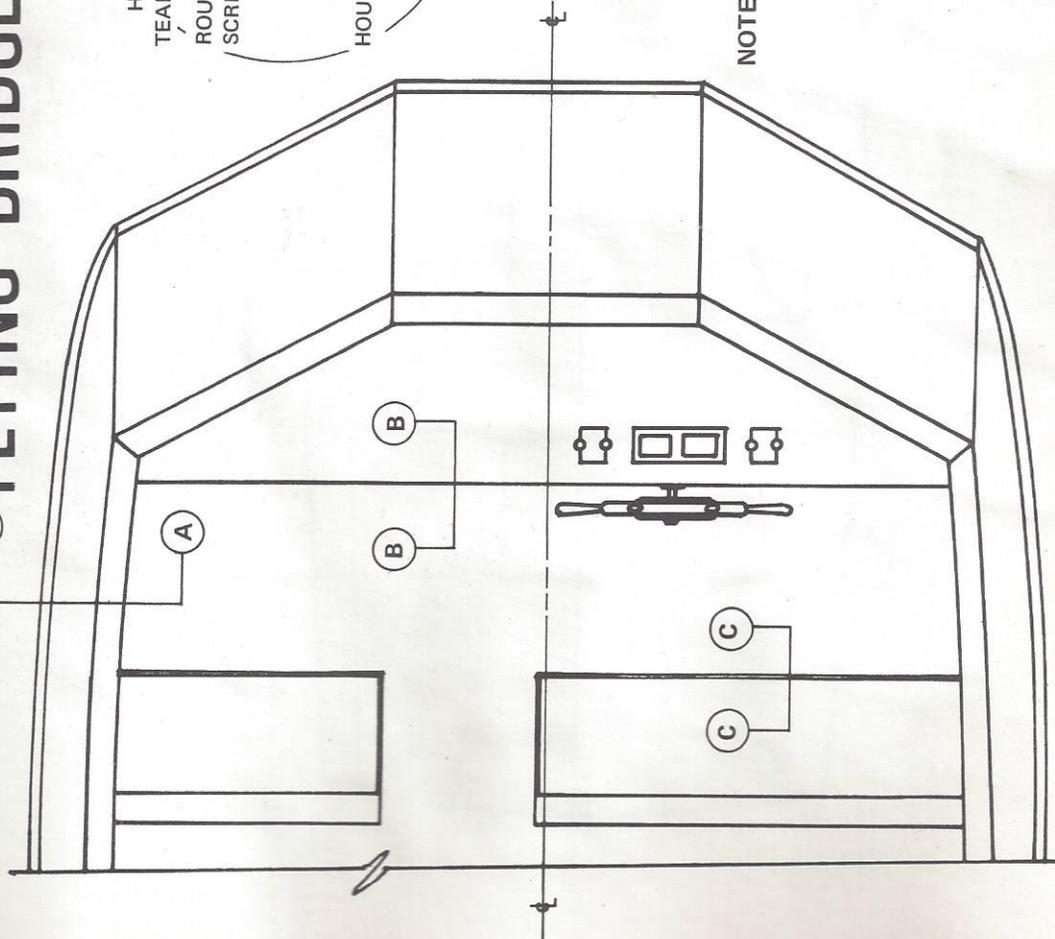
A drawing showing the method of attachment is included in this manual.



SECTION (A)-(A)

GB 32
GRAVING PLAN

FLYING BRIDGE ATTACHMENT DETAILS

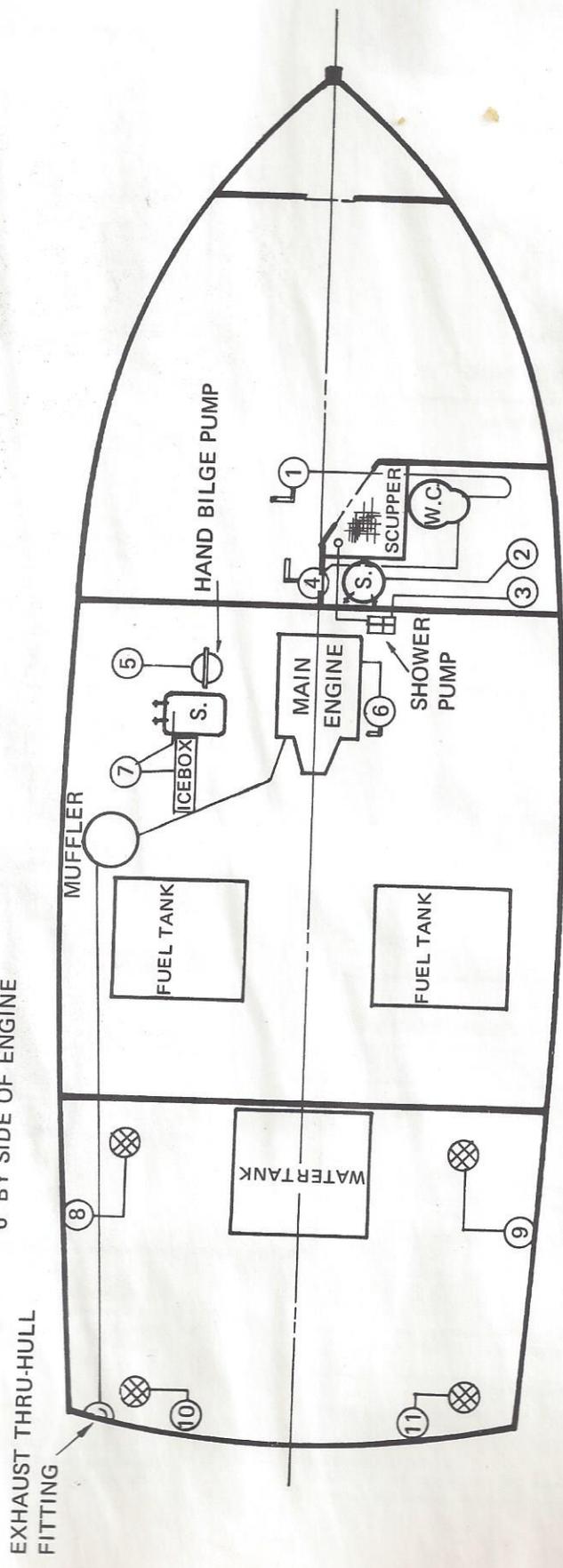


NOTE :
FOR REMOVAL, TAKE OFF
MOULDINGS AND REMOVE
HORIZONTAL SCREWS ONLY.

GB 32 THRU HULL LOCATION

- 1 UNDER SOLE
- 2 INSIDE LOCKER
- 3 INSIDE LOCKER
- 4 UNDER COUNTER
- 5 IN E.R. UNDER GALLEY
- 6 BY SIDE OF ENGINE

- 7 IN E.R. UNDER GALLEY
- 8 IN LAZARETTE
- 9 IN LAZARETTE
- 10 AT TRANSOM
- 11 AT TRANSOM



-  SHOWER
-  THRU-HULL FITTING
-  SEA-COX

HEAD CAPACITY TABLE

MODEL 5850

TOTAL HEAD		500 RPM	870 RPM	1750 RPM	2400 RPM	3600 RPM
Lbs. per Sq. In.	Ft. of Water	GPM	GPM	GPM	GPM	GPM
4.3	10	3.0	5.5	11.2	14.6	18.0
8.7	20	2.8	5.2	10.8	14.3	17.7
13.0	30	2.4	4.7	10.4	13.7	17.3
17.3	40	1.9	4.0	9.6	12.8	16.7
21.6	50	1.2	3.1	8.4	11.6	15.5

OPERATING INSTRUCTIONS

- INSTALLATION**—Pump may be mounted at any angle without loss of efficiency. The rotation of the motor shaft determines the location of the pump's intake and discharge ports. Before installing, turn pump shaft in direction of operating rotation.
- DRIVE**—Direct.
- SPEEDS**—100 RPM to the maximum shown in the performance table. For longer pump life, operate at lowest speeds permissible.
- SELF-PRIMING**—Unit will operate satisfactorily at low as well as high speeds. For vertical suction lift requirements at maximum of 15 ft., a minimum of 800 RPM is required. Pump will produce suction lift up to 24 ft. when primed. Be sure suction lines are air tight.
- RUNNING DRY**—Unit depends on liquid pumped for lubrication. **DO NOT RUN DRY** for more than 30 seconds. Lack of liquid may burn the impeller.
- CAUTION**—Do not pump petroleum derivatives, solvents, thinners, highly concentrated or organic acids. If corrosive fluids other than water must be handled, pump life will be prolonged if flushed with water after each use or after each work day.
- PRESSURES**—For continuous operation, pressure should not exceed 30 pounds for the standard Model 5850.
- TEMPERATURES**—45-120°F. Use standard impeller. 45-180°F. Use special .08 impeller. 32-45°F. Use special .09 impeller. (Generally not recommended for Marine use.)
- FREEZING WEATHER**—Drain unit by loosening end cover plate. For closed systems, use only Atlas "Permaguard" or Du Pont "Zerex" anti-freeze compounds. Do not use petroleum based anti-freeze compounds.
- IMPELLER REPLACEMENT**—Remove end cover. Withdraw impeller by grasping impeller hub with pliers.
- GASKET REPLACEMENT**—Always use standard pump part. A thicker gasket will reduce priming ability. A thinner gasket will cause impeller binding.
- CAM REPLACEMENT**—Coat top surface of new cam and cam screw threads with Permatex #1 or equivalent sealing compound before installing.
- SPARE PARTS**—Avoid costly shut downs by always having a JABSCO Repair Kit on hand.

WARRANTY: All products of the company are sold and all services of the company are offered subject to the company's warranty and terms and conditions of sale, copies of which will be furnished upon request.

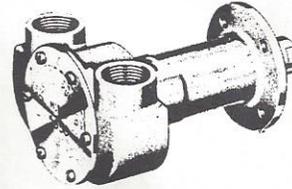
JABSCO® PUMP COMPANY

1485 DALE WAY • COSTA MESA, CALIF.

MODEL 5850

Special Flange-Mounted Model
for High Speed Marine Engines

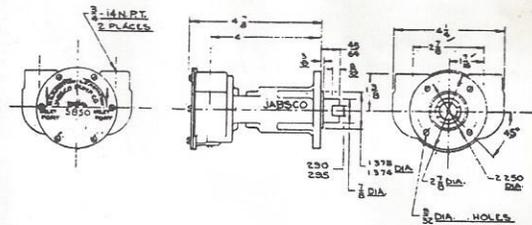
(Supersedes Former Models 3370 — 3970)



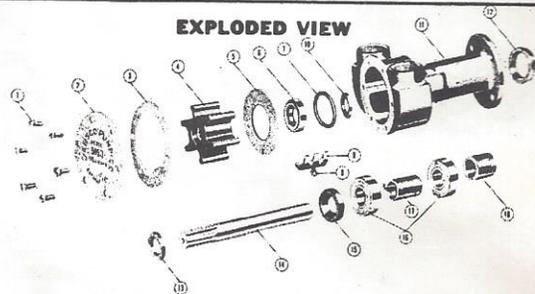
3/4" Port Size

Approx. Wt. 6 lbs.

INSTALLATION DRAWING



EXPLODED VIEW



PARTS and PRICE LIST

STANDARD MODEL 5850 — 3/4" — LIST PRICE \$38.00

KEY	DESCRIPTION	QTY.	PART NO.	UNIT PRICE
1	SCREW (End Cover)	6	SP-1002-02	
2	END COVER	1	5855	
3	GASKET	1	3298	
4	IMPELLER	1	1212	
5	WEAR PLATE	1	5887	
6	SEAL (Shaft)	1	SP-2700-06	
7	"O" RING	1	SP-2000-21	
8	SCREW (Cam)	1	SP-1003-09	
9	CAM ASSEMBLY	1	4848	
10	SEAL SPACER	1	3166	
11	BODY	1	5854	
12	ADAPTOR RING	1	3376	
13	SLINGER	1	3286	
14	SHAFT	1	5857	
15	BEARING SEAL	1	SP-2700-18	
16	BALL BEARING	2	SP-2600-13	
17	BEARING SPACER	1	3383	
18	COUPLING	1	3278	

Prices F.O.B. Factory. Subject to change without notice.

ENGINE NAME AND MODEL

CHRIS CRAFT - M Series
(131 to 158 HP)

PALMER - DH 120

KERMATH - Sea Rover

LATHROP - LH Master-LH6-LH - Atom

OSCO—Hercules Diesel 685

UNIVERSAL—Super 6—Model Z

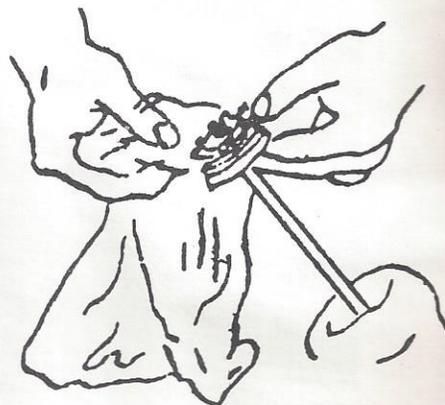
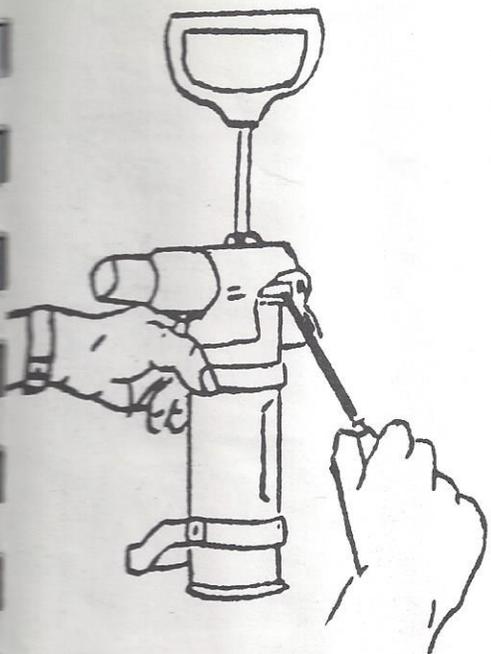
HERCULES - JX

(AND OTHERS)

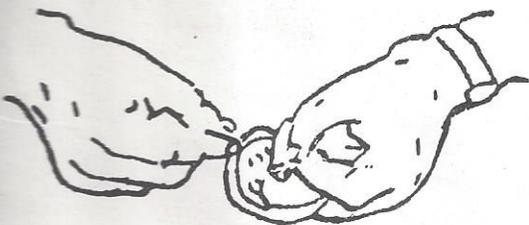
HAND BILGE PUMP

To Disassemble and Clean Pump

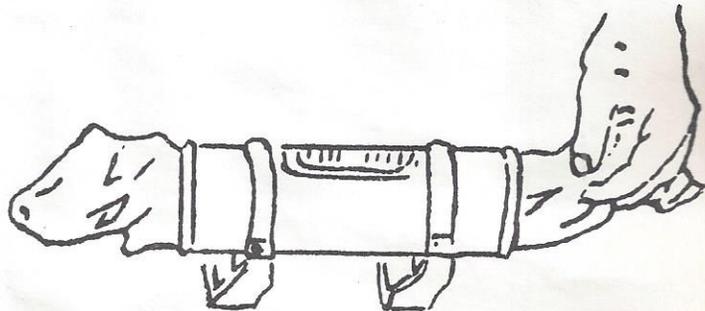
Pull piston rod out approximately 4" and place screwdriver carefully under bottom of top cap and over outside of cylinder roll. Lift up on screwdriver and remove top cap.



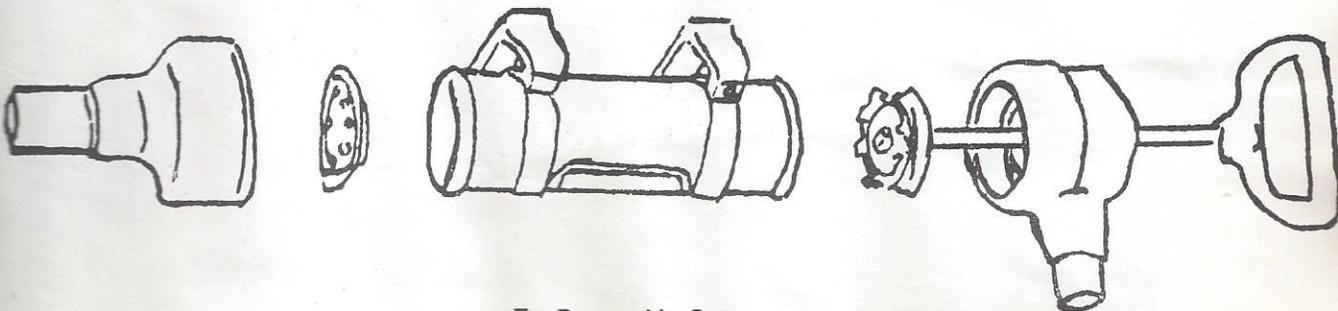
Pull out piston assembly. Lift piston cup off seat and clean between cup and seat.



Remove bottom cap in same manner as top cap. Take valve cage from cylinder and clean under rubber flapper.

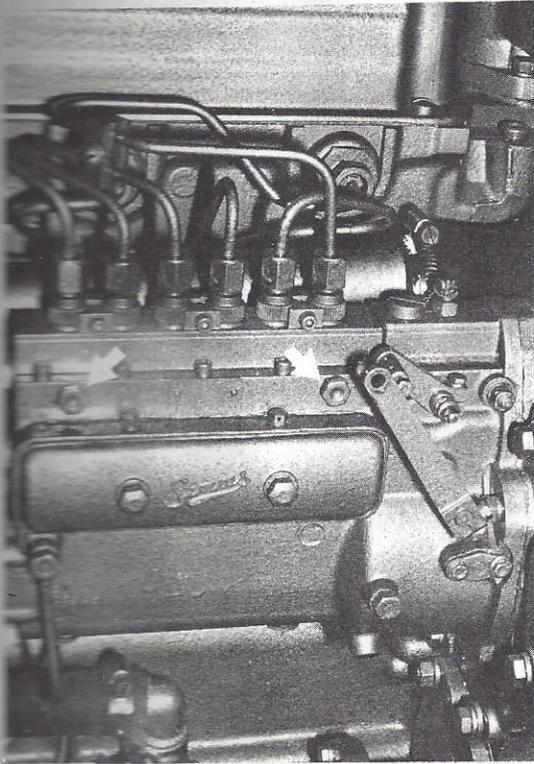


Run rag through cylinder for cleaning.

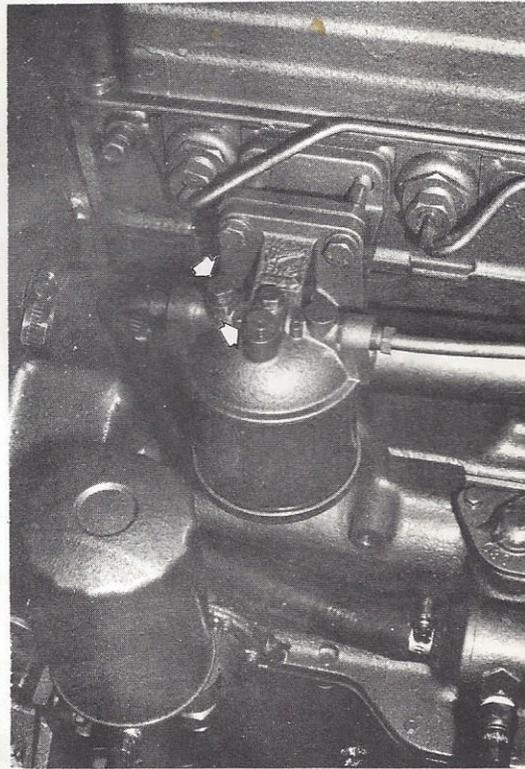


To Reassemble Pump

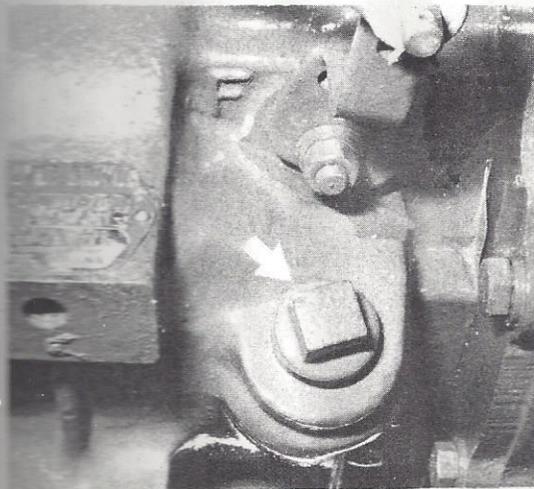
Place valve back into cylinder.
Snap bottom cap back onto cylinder being sure undercut in cap is over cylinder roll.
Enter piston assembly into cylinder.
Snap top cap back onto cylinder making sure undercut in cap is over cylinder roll.
Pour oil into pump at end of season to prevent corrosion during storage.



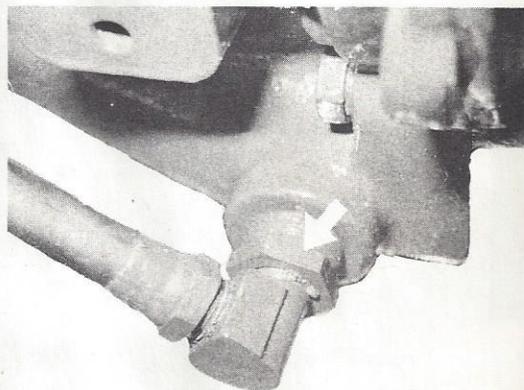
Injector Pump bleed screws



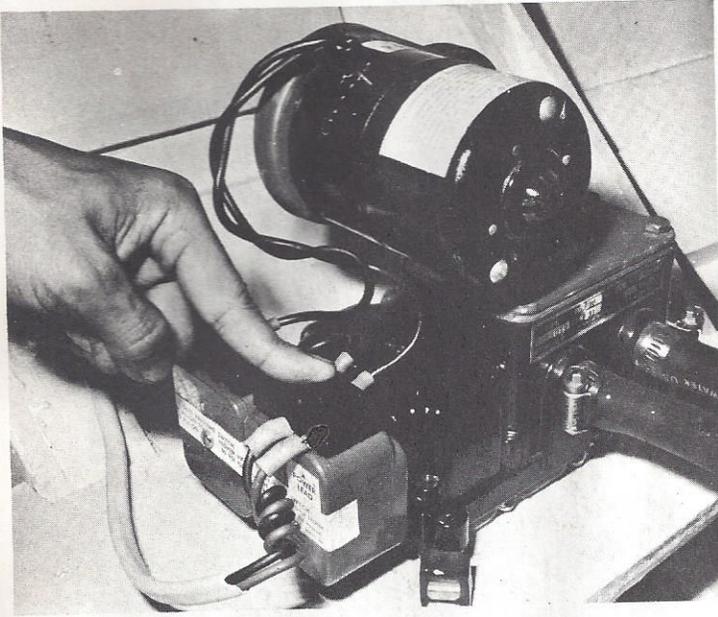
Fuel Filter bleed screws



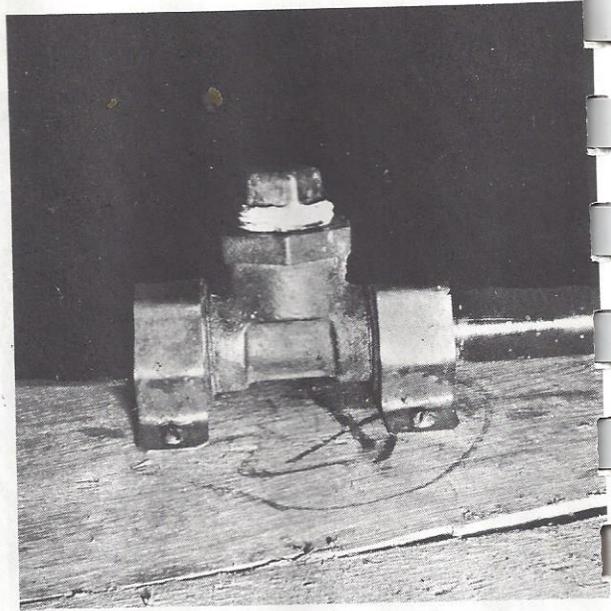
Transmission fill plug



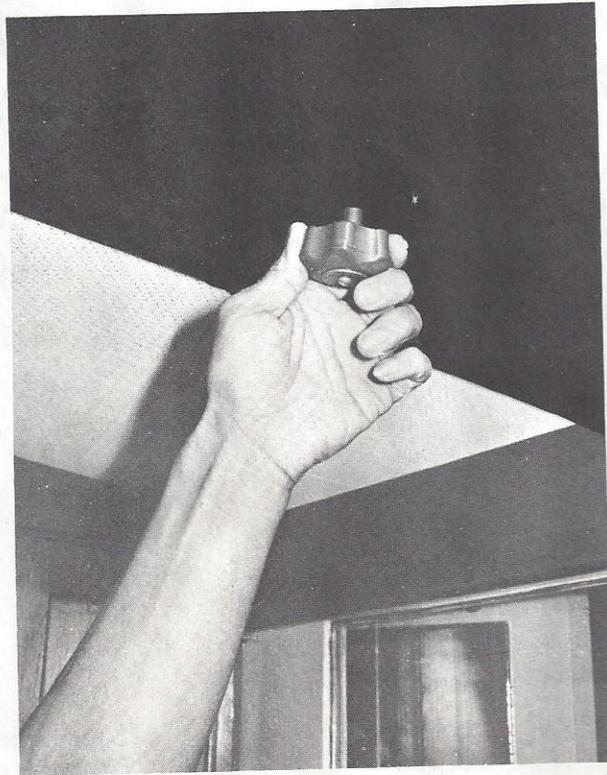
Transmission drain plug.
Removable screen is inside.



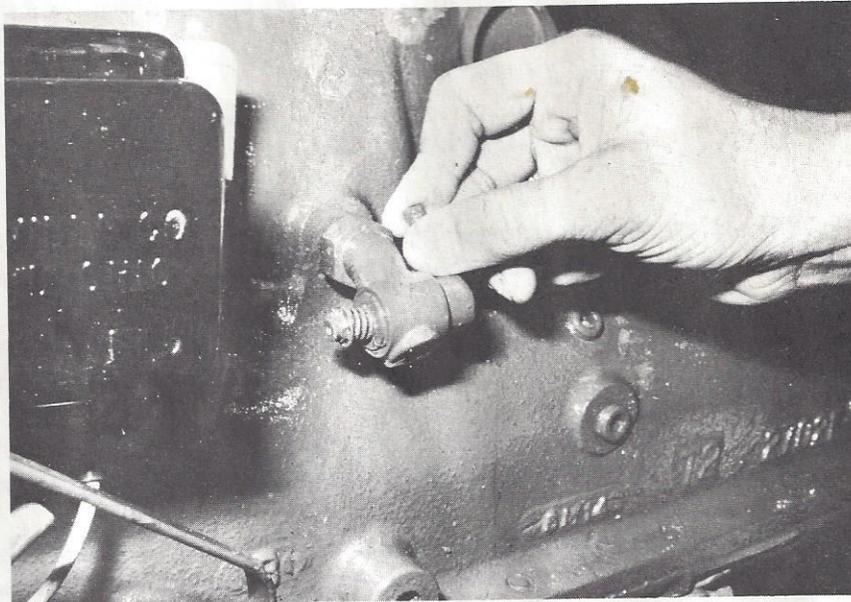
Operating starting button on Fresh Water Pump.



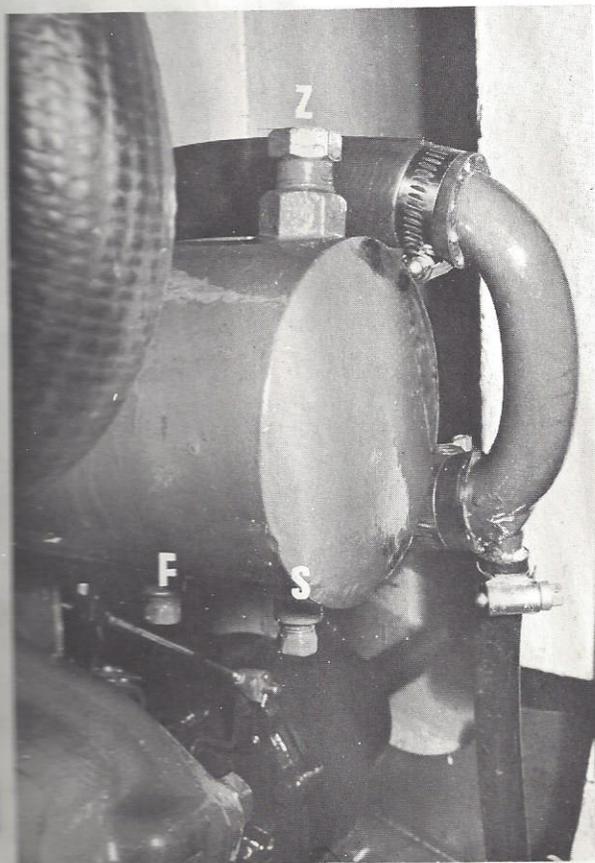
Typical drain fitting in Fresh Water system. Drains are fitted in Cold, Hot and Suction lines.



Butane Shut-off valve



Engine fresh water drain cock



Engine heat-exchanger showing:—

- S — Salt water drain
- F — Fresh water drain
- Z — Zinc pencil

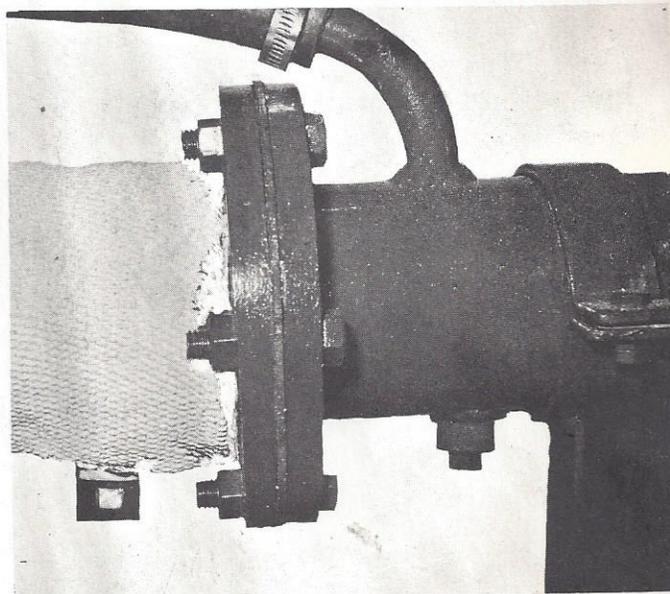


Illustration shows engine Exhaust condensate drain in asbestos covered section and salt water drain in water jacket section. An additional condensate drain is fitted where the exhaust joins the manifold.

CONCLUSION

We wish to take this opportunity to again welcome you aboard as a Grand Banks owner and to thank you for reading this manual through from cover to cover.

We know that pride of ownership and the enhancement of an investment are also important for happy boating.

We, therefore, strongly recommend that, in addition to the specific items of maintenance listed above, a watch be kept on the general condition of the boat and its equipment.

A minor defect if allowed to go unchecked, could eventually lead to a major and costly repair. Your dealer will be glad to answer any questions that may arise and to supply instructions on any other equipment installed in the boat.

AMERICAN MARINE LTD.



.....
W. G. NEWTON
Managing Director