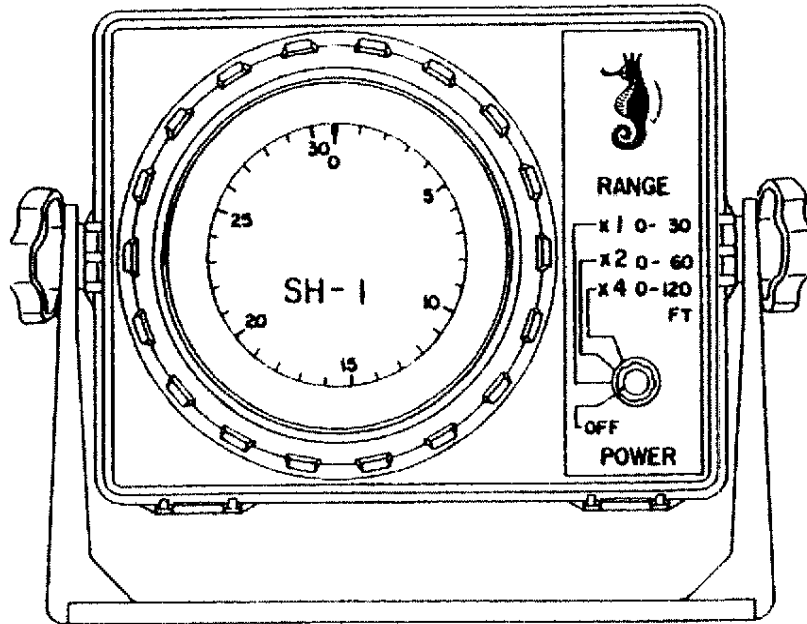


SH-1

FISH FINDER / DEPTH FINDER



BI-TEX MARINE ELECTRONICS, INC.

11001 Roosevelt Blvd., Suite 800
St. Petersburg, FL 33716
Tel: 727-576-5734

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GENERAL INFORMATION

The SH-1 Depth Sounder, Figure 1, is a small light-weight unit that is rugged and versatile enough for any size boat. The SH-1 will indicate water depth, bottom conditions, and intervening objects, such as fish, in red color.

The depth sounder transmits bursts of high frequency pulses (200 KHz) which are converted from electrical to mechanical energy by the transducer. These pulses radiate from the transducer to the bottom and are reflected back to the transducer. The transducer converts them from mechanical vibrations to electrical pulses which are displayed on the unit's face. These pulses travel at approximately 4800 feet per second to provide a constant update of water depth and location of intervening objects, such as fish.

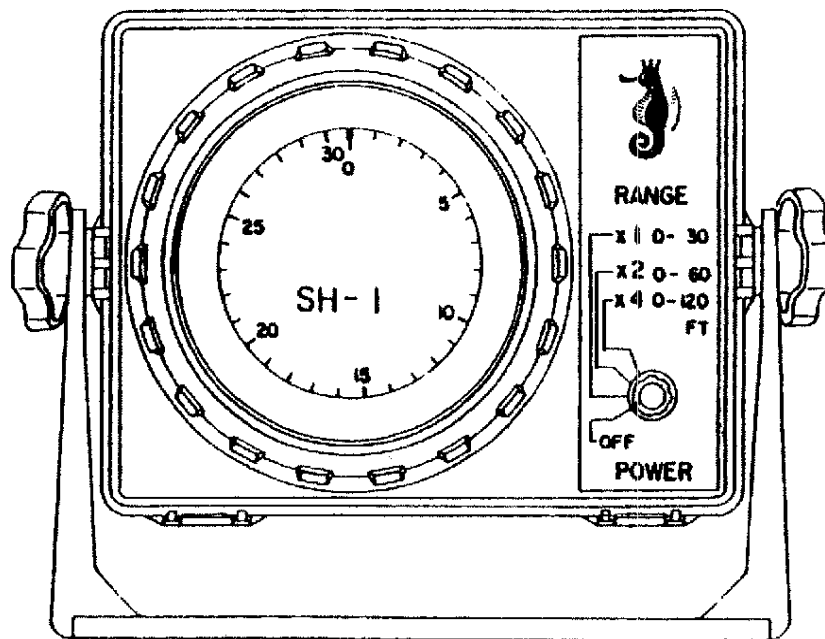
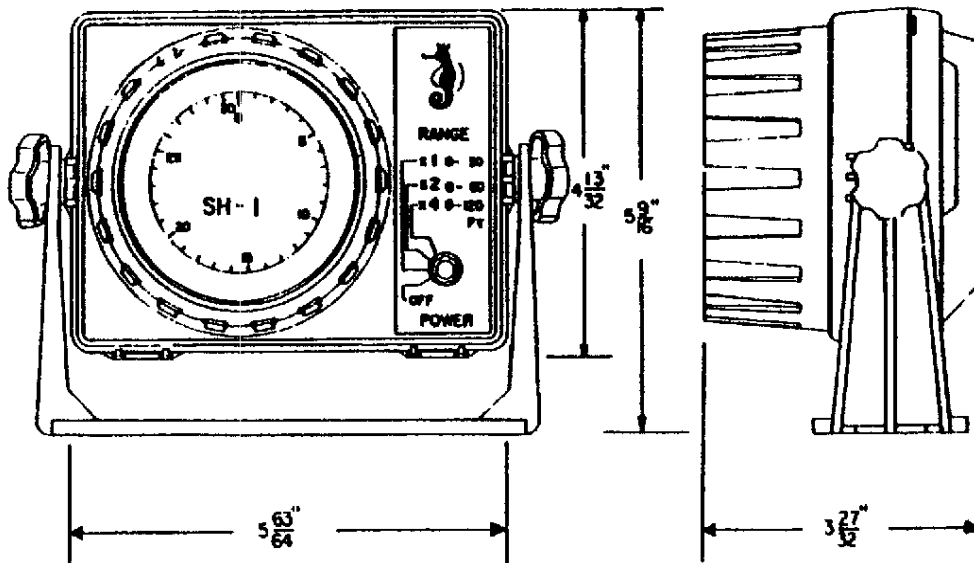


Figure 1. SH-1 Depth Sounder

SPECIFICATIONS

	SH-1
Range	Feet 1. 0 - 30 feet 2. 0 - 60 3. 0 - 120
Sounding Rate	1. 2392 pulses/minute 2. " 3. 1196
Frequency	200 KHz
Pulse Length	0.08 - 0.4 msec
Output Power	50 Watts effective
Voltage & Current	12 VDC @ 0.2 amps
Display Color	Red
Scale Diameter	3.14 inches
Sensitivity	Automatic for all ranges
Weight	500g/ 1.1 lbs.

DIMENSIONS:



INSTALLATION

INDICATOR MOUNTING

The indicator can be mounted in any convenient location that has a flat surface. The adjustable bracket, Figure 2, permits mounting on either a bottom or an overhead supporting surface or a bulkhead.

If the indicator is mounted near a magnetic compass, check that it does not affect the compass readings. If compass readings are affected, select an alternate mounting site.

Mount indicator where it can be easily viewed. However, it should be mounted out of direct sun light; otherwise, the sun shield may have to be used.

Although the unit is splash proof, it should be sheltered from the weather. (Warranty does not cover water or salt water damage.)

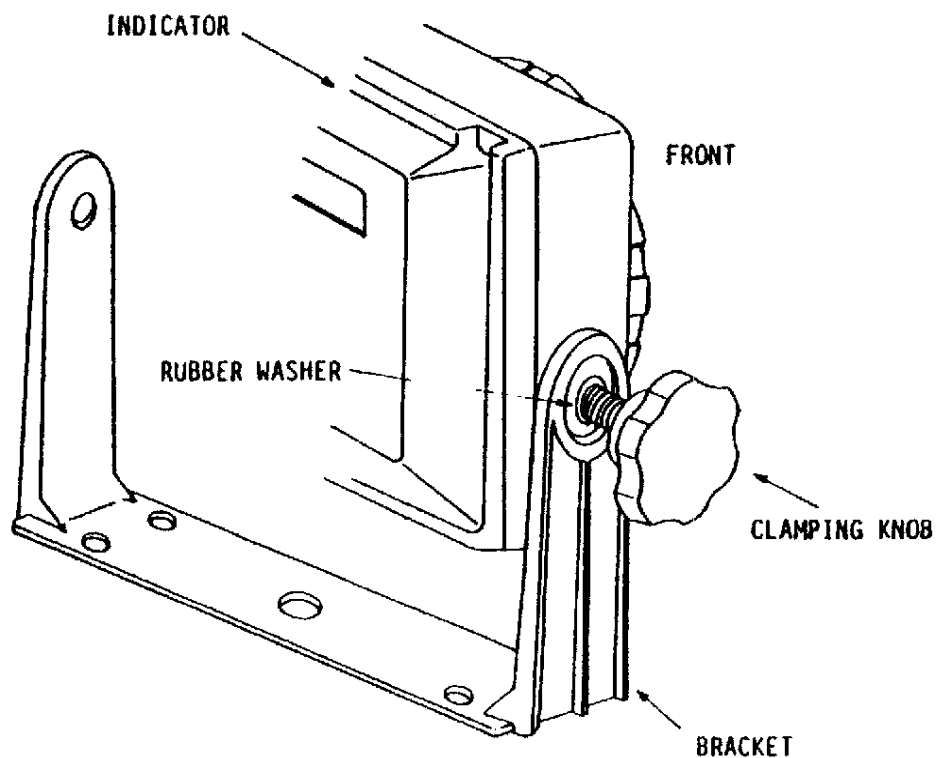


Figure 2. Indicator Mounting

POWER CONNECTION

Connect the plug of the power supply cord to the power supply socket located in the rear of the cabinet, Figure 3. Connect the red wire to the positive terminal and the black wire to the negative terminal of the external battery.

To minimize extraneous electrical interference, the power cord should be connected directly to the battery terminals, and it should not be routed in parallel with the transducer cable.

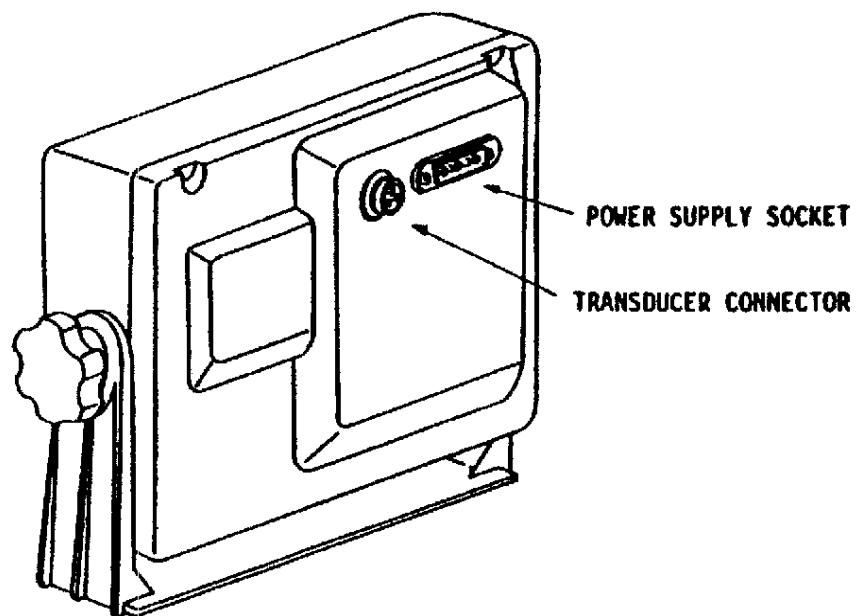


Figure 3. Power and Transducer Connections

TRANSDUCER INSTALLATION

For proper performance, the transducer mounting location must be chosen carefully. The transducer should be located in an area that is relatively free of white water. To determine the best location, run the boat at varying speeds and observe the water as it passes under the transom. Keep the transducer and its cable as far as possible from the boat's power cables, tachometer and other electrical cables.

After a suitable location is found, assemble the transducer, Figure 4, temporarily as outlined below:

1. Use a straight edge to align transducer with the bottom of the hull and mark the mounting hole location on the transom.
2. Drill four 1/8" holes and mount the brackets with the screws provided. Coat the screws with bedding compound to prevent leakage.
3. Position transducer per Figure 5 and tighten nuts and screws.

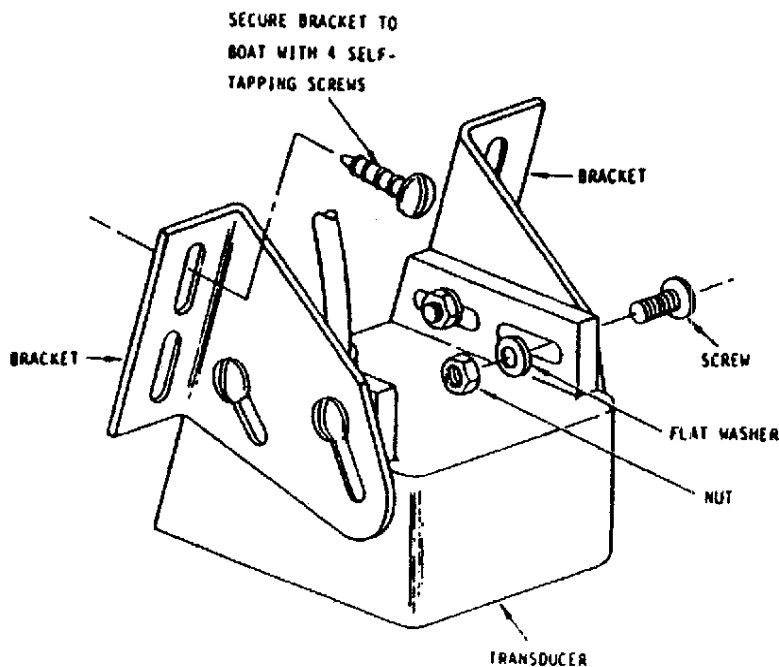


Figure 4. Transducer Installation

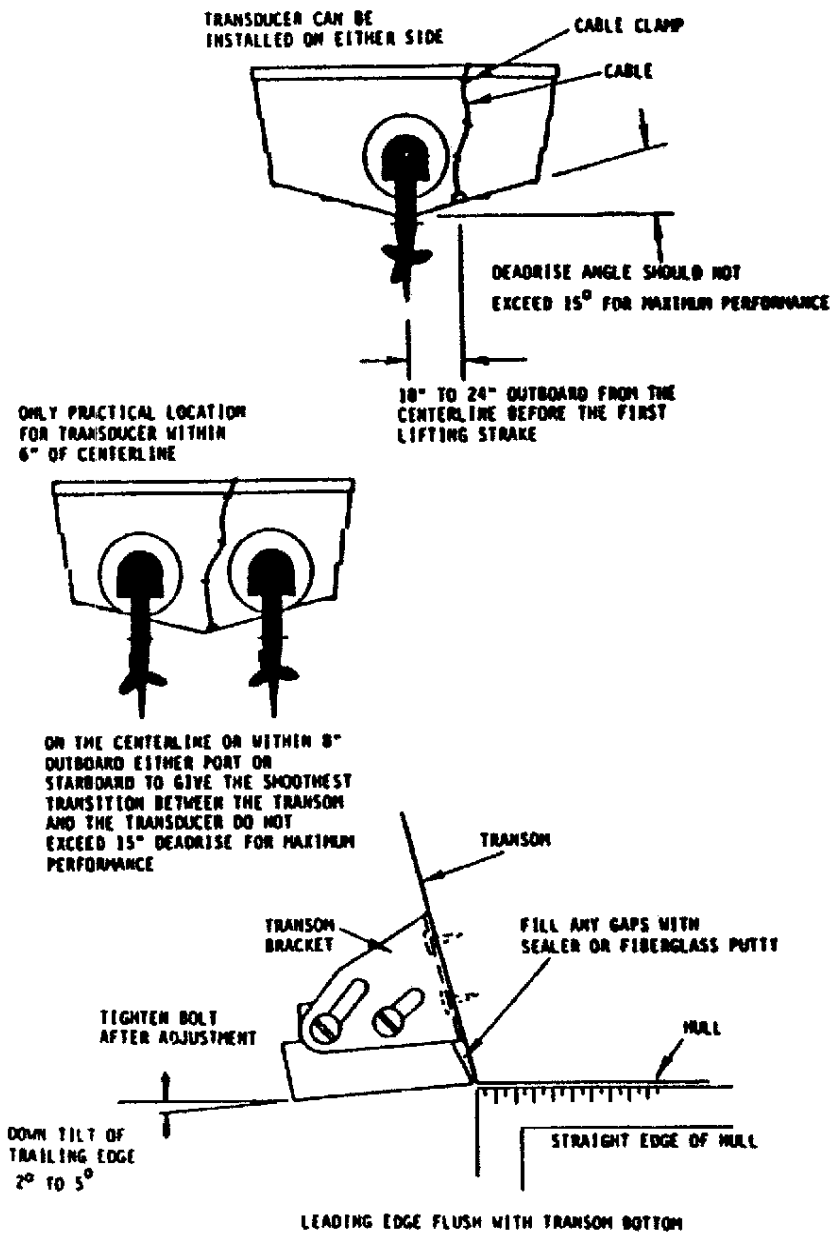


Figure 5. Transducer and Cable Mounting

Inside Hull Transducer Mounting In many cases, good results can be attained by mounting the transducer inside the hull, generally in the bilge area. It is important to ensure that the transducer is placed in an area that has a single-hull thickness. There must not be any air or flotation material, other than solid fiberglass, between the transducer's face and the water. Also, the transducer should not be placed over hull struts or ribs which generally run under the hull.

To determine the best position for the transducer, put some water in the bilge, wash the transducer face with a mild detergent and place the transducer in the bilge so that the transducer face is flush with the hull. Run the boat at various speeds and move the transducer to different locations to determine the best location for permanent installation.

To ensure a good transducer installation, drain all the water from the bilge, thoroughly clean the inside hull where the transducer is to be mounted, and clean the transducer face with the recommended detergent. Allow both to dry completely, then use a good two-part epoxy or fiberglass resin to bond the transducer face to the hull (coat the transducer face and hull with epoxy). Press the transducer firmly to the hull and gently twist back and forth to remove any air which may be trapped in the epoxy. Allow to dry per epoxy instructions.

The depth sounder will now operate with no water in the bilge. This type of mounting is preferred, as oily bilge water will tend to make sounding through the hull more difficult, and the transducer could move around if it were not secured in place.

This type of transducer mounting works best on fiberglass and aluminum boat, and in many cases, good-to-fair results can be obtained in wood boats providing the hull is not too thick and it is void of air.

On fiberglass flotation hulls, Figure 6, the inner hull can be removed and a reservoir made for transducer placement. After the reservoir is made, check depth-sounder operation before securing the transducer down.

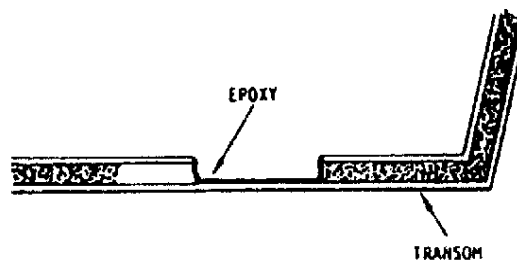


Figure 6. Inside Hull Transducer Mounting

Through-Hull Type Transducer Mounting (Recommended for Optimum Performance)
Install the transducer so that its working face will be parallel to the water line when the vessel is in its normal upright position and will remain submerged when the vessel is heeled and under way. The pointed end of the transducer must point forward. Since air bubbles will greatly decrease the efficiency of the transducer and sensitivity of the receiver, the mounting site should be as far from air bubble streams as possible.

In through-hull installation, Figure 7, use leveling blocks, as required, to ensure that the transducer face is parallel to the water line.

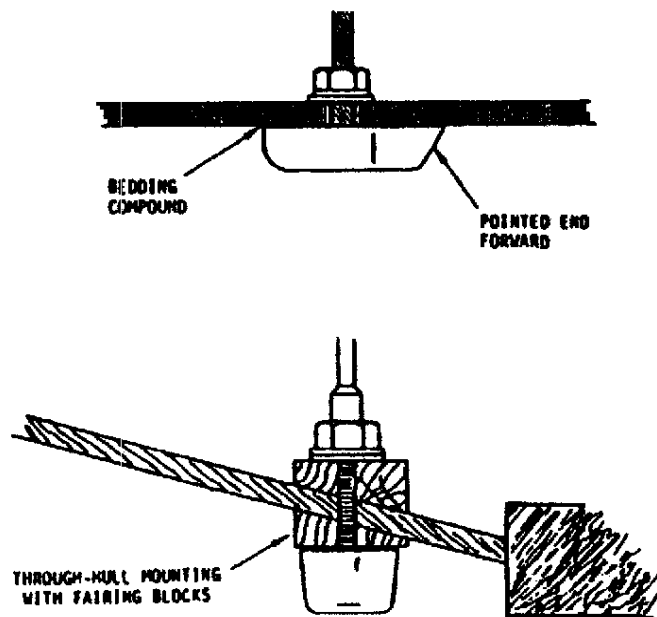


Figure 7. Through-Hull Type Transducer Mounting

Transducer Maintenance

If boating in salt water, paint the transducer with thin coat of antifouling. Allow time for the face of the transducer to become wet (coupled intimately to the water) after installation or after retuning to the water from storage.

Clean the face of the transducer with a mild detergent or soap pad if the transducer's "vision" becomes obstructed, which may happen through constant exposure to the oily waters of a marina. Oil will act as an insulator and cause the face to become decoupled from the water or unwetted. Cleaning will restore the signal transmitting and receiving.

If the instrument fails to function, check all transducer electrical connections before calling a serviceman.

Do not coat the face of the transducer with heavily-pigmented antifouling paints, especially those filled with cuprous oxide, because they reduce the sensitivity or "vision" of the transducer.

Transducer Connector

The Transducer cable is a two-wire (black and white) shielded cable. Using a proper stripping tool, prepare the end of the cable as shown in Figure 8.

Unscrew the cable clamping screws and plug-body securing screw of the connector and slide the shell and coupling ring on the cable. Solder the black lead to terminal No. 1, the white lead to terminal No. 3 and the shield to terminal No. 2. The terminal identification numbers are indicated on the plug-body face.

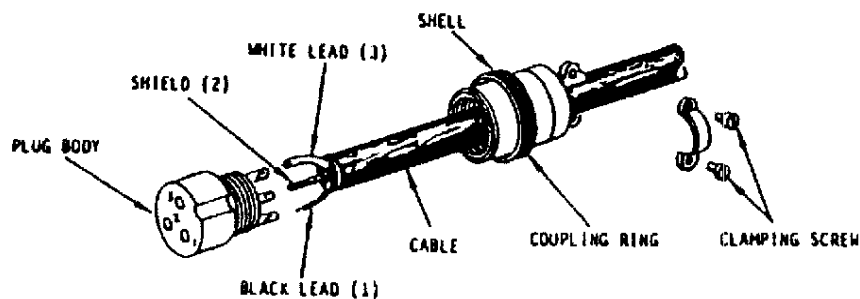


Figure 8. Transducer Connector Assembly

CONTROL AND INDICATORS

DEPTH RANGE CONTROL

This control enables you to select electrically one of three depth ranges in FEET. For the fresh water angler, depth range selection is from zero to 30 feet on the first range, down to 120 feet on the last range of the scale.

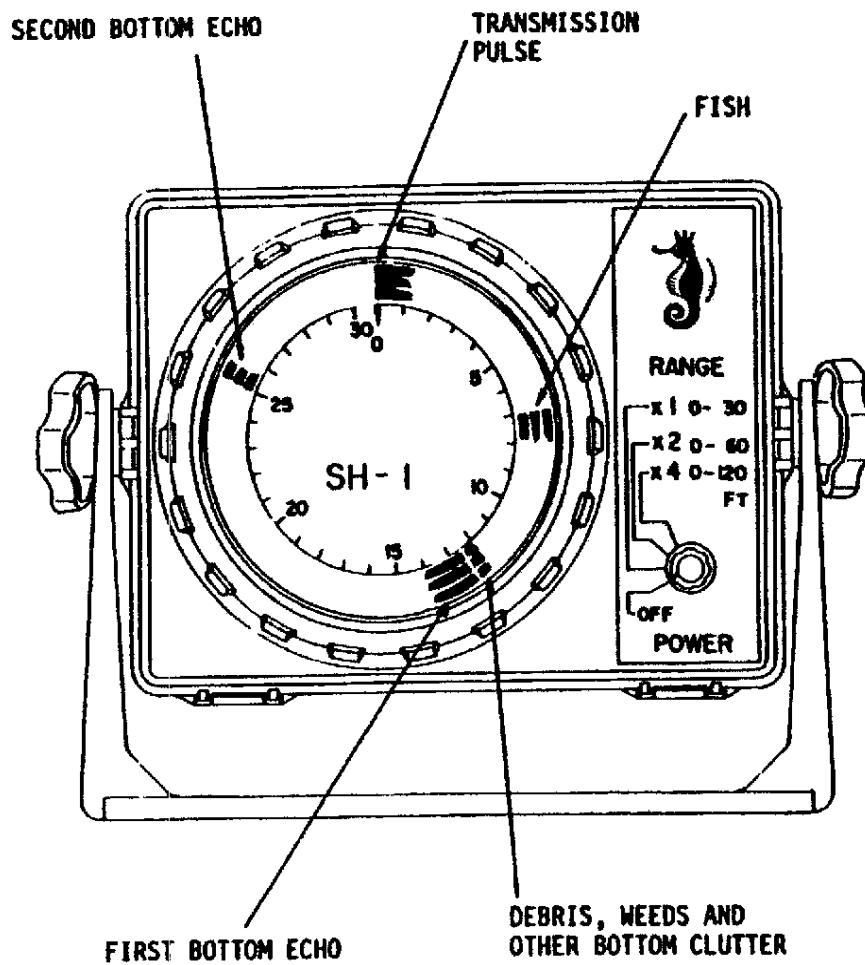
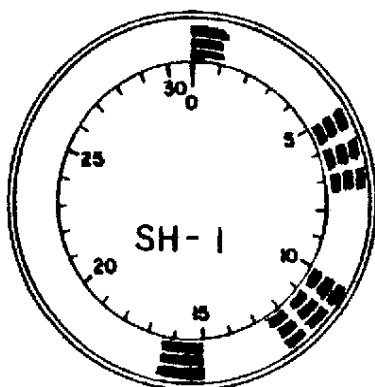
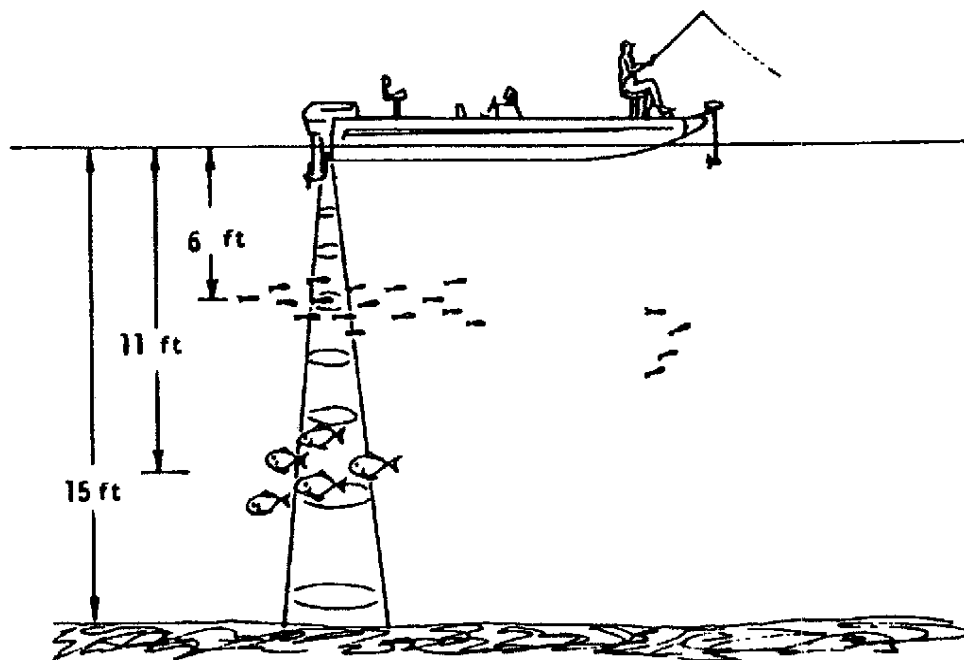


Figure 9. Controls and Indicators

TYPICAL INDICATIONS

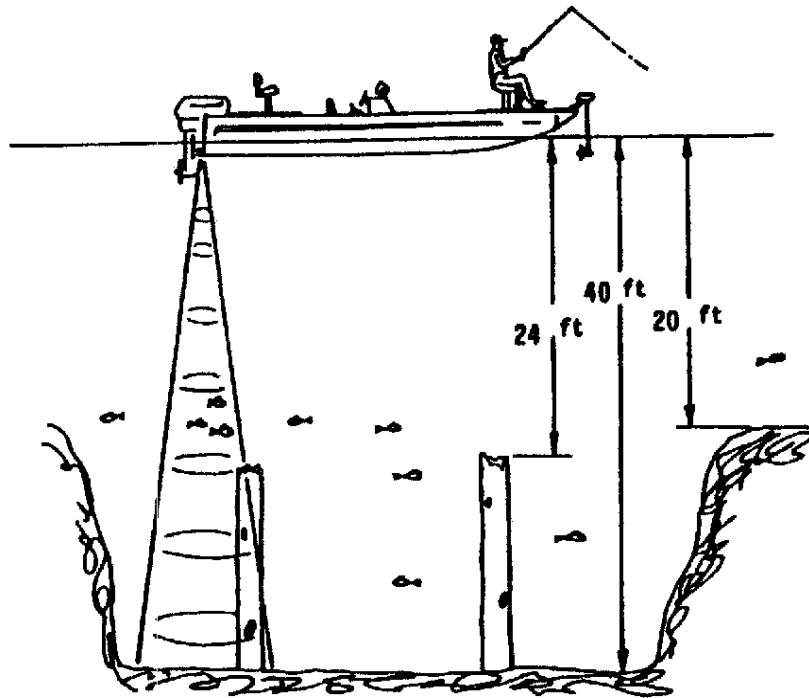


DEPTH RANGE: X1
0 to 30 feet

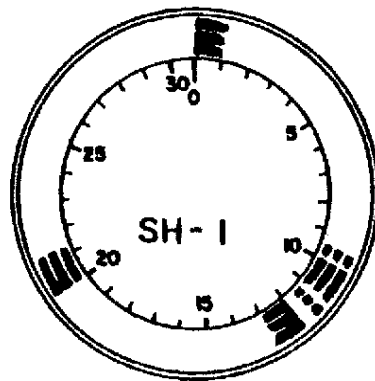
Depth is 15 feet and is displayed in red. Small bait fish are indicated at 5 to 7 feet. Large fish are indicated at 10 to 12 feet.

Figure 10. Controls and Indicators (cont)

TYPICAL INDICATIONS



DEPTH RANGE: X2
0 to 60 feet



Red strobe (bottom echo) indicates depth of 40 feet. Broken telephone pole at 24 feet is shown, which could be mistaken for fish. However, the 20 and 24 foot echoes do not move, indicating stationary objects.

Figure 11. Controls and Indicators (cont)

INTERFERENCE SUPPRESSION

Interference in sufficient magnitude will cause erratic performance of the depth finder and possibly cause multiple strobes around the dial.

Check installation for interference by stopping the engine in medium depth water and observing the depth finder. Then start the engine with the propeller disengaged; increase engine RPM and observe the indicator for interference.

If interference is present, one or more of the following remedies may affect a cure:

1. Install a suppressor on the center lead of the distributor. Install a coaxial condenser between the ignition coil and the ignition switch.
2. Install coaxial condensers on the electrical power line and the control leads which leave the engine compartment.
3. Bond engine, electrical accessories, propeller shaft, and rudder to each other and to the ground plate, if installed, with heavy copper grounding straps.
4. Resistor type spark plugs and/or copper screening on the inside of the engine compartment may be required in extreme cases.

On some engines, Champion "U" type spark plugs (such as UJ6) are specified. It is virtually impossible to eliminate noise caused by these plugs as they have an extra spark gap near the top of the plug which causes the leads to radiate noise. Replace these plugs with a resistor type plug such as the Champion XJ6, XJ8, etc. Check all high tension wires for continuity.

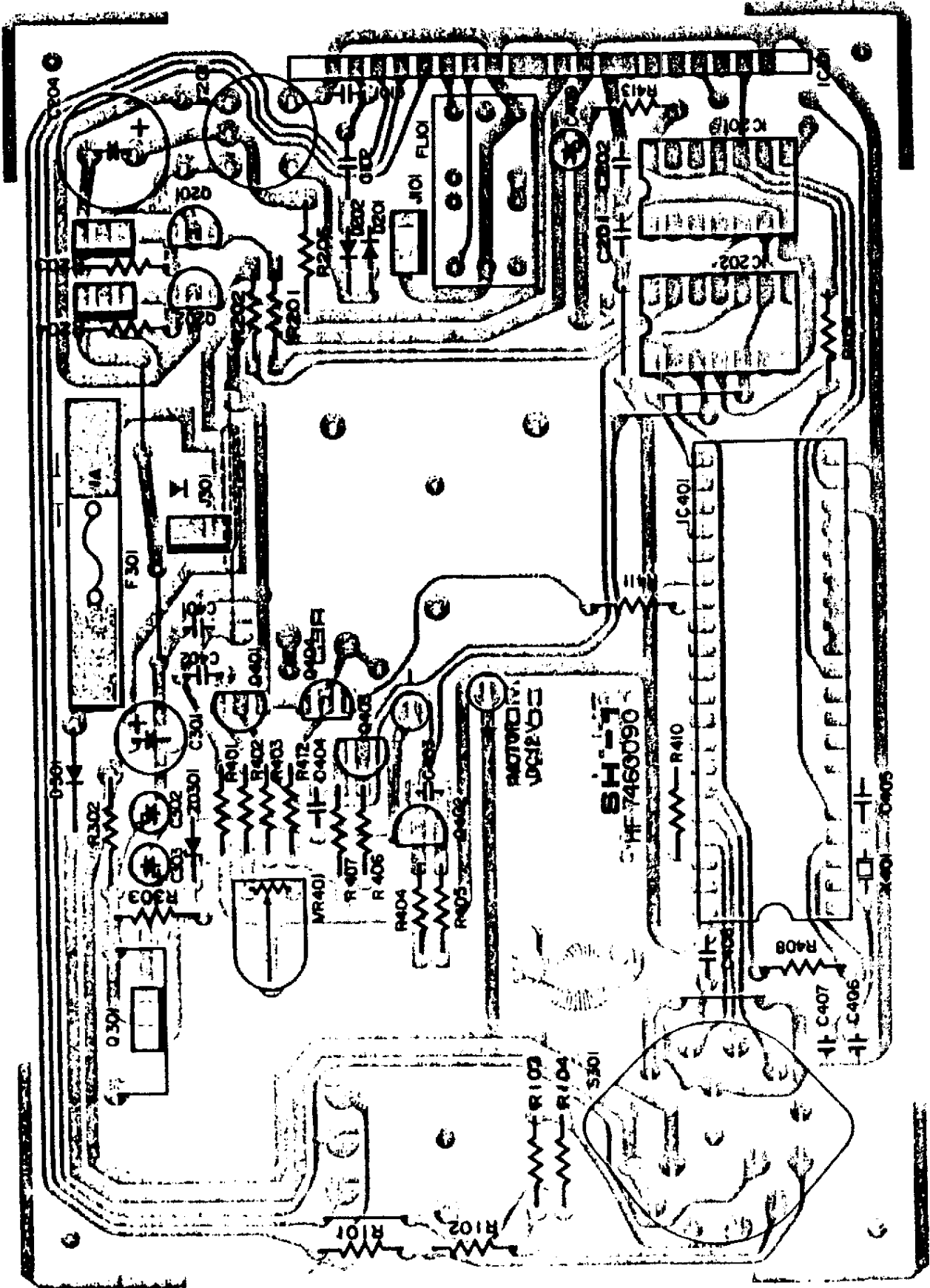
Ignition coil should be mounted on the engine. Clean away paint to ensure a good ground. Plastic-encased coils radiate excessive noise and should be replaced with a standard metal-cased unit.

Older types of voltage regulators contain a vibrating set of contacts to control voltage. If the usual capacitors eliminate the noise, replace with a solid-state regulator which has no moving parts.

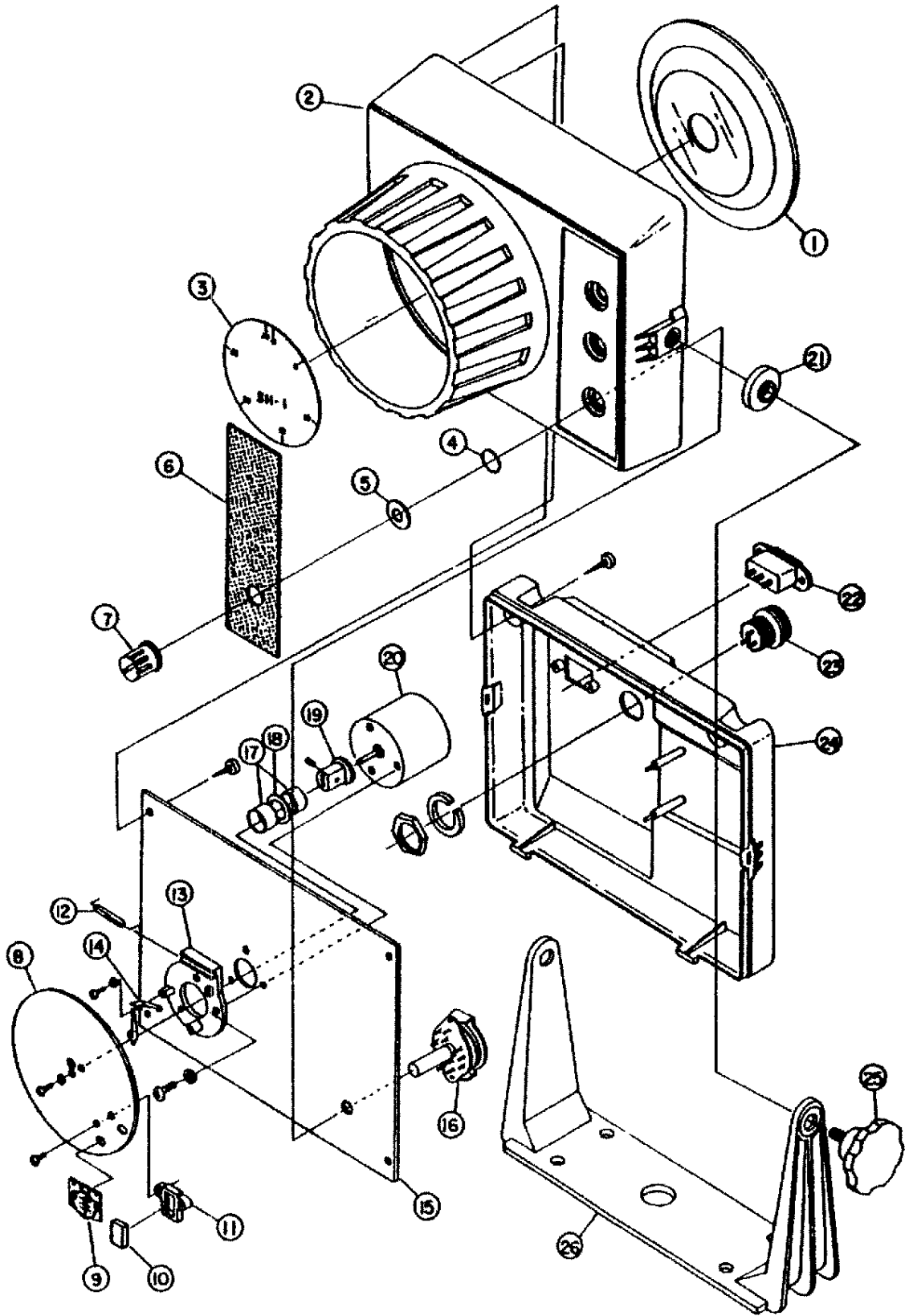
Some electrical tachometers cause considerable radiation of spark noise. This type of tach connects to the points of the distributor. Disconnect the tach wire at the distributor, and note the noise reduction. This lead could be shielded or a special tach filter installed. If SUN tachs are used, all wires must be shielded and the plastic-cased sender unit, which contains a vibrating set of contacts, should be completely shielded in a metal enclosure.

Your authorized marine electronic dealer will be familiar with the methods of reducing electrical interference and is qualified to assist you should a problem exist.

TROUBLESHOOTING CHART	
<u>SYMPTOM</u>	<u>POSSIBLE CAUSE</u>
Unit turned on, no display, and motor does not run.	<p>Check for power at 12 VDC connector at rear of unit.</p> <p>If power is O.K., check inside unit for blown fuse. To gain access, remove control knobs, then remove two Phillips screws from rear. Carefully separate case and replace fuse using 1 amp value only.</p>
Unit turned on, no display, and motor is running.	Display board or other problem that will require shop service.
Unit works fine when boat is sitting still or running at slow speed, but no bottom return is seen at higher speed.	Transducer is not in contact with water or too much white water is under the transducer face. Check or change transducer location. The pulse of sound emitted by the transducer travels at a speed of 4800 feet per second, so if the unit operates satisfactorily sitting still, it will work satisfactorily at any boat speed providing the transducer is properly located.
Unit works fine when boat's engine is off but has multiple strobes around the dial when engine is running.	Unit is picking up electrical interference from the boat's engine. Refer to section on engine interference.
Unit works fine but bottom light disappears when boat is in reverse or when passing over another boat's wake.	Unit cannot read through white water because most of the pulse is reflected.
Operation of unit is generally normal but occasionally zero light gets wider.	This is generally caused by heavy seas or wave action pushing tiny air bubbles down, as deep as 10-15 feet, and the unit is picking up these air bubbles and displaying them as target echoes.
Unit turned on and has zero mark, but no bottom return is displayed.	<p>Transducer is not in contact with water.</p> <p>Transducer connector is not in place.</p> <p>Bad transducer or broken wire at connector.</p>



MECHANICAL DRAWING



PARTS LIST			
DRAWING NO.	PART NO.	DESCRIPTION	
1	14-101	Plastic Window	HF-69F003
2	14-102	Front Case	
3	14-103	Scale Panel	HF-748007
4	14-084	Rubber O Ring	P-6
5	14-085	Plastic Plane Washer (M6)	
6	14-104	Control Panel	HF-748006
7	14-105	Control Knob	
8	14-009	Disc P.C.B.	HF-446029
9	14-106	LED Assembly	
10	14-011	Magnet	10x7x3
11	14-012	Magnet Cover	HF-44H023
12	14-008	Reed Switch	MRR-II
13	14-018	Reed Switch Holder	HF-44H020
14	14-017	Carbon Brush with Plate Spring	
15	14-107	Main P.C.B. T/R (Complete)	
16	14-108	POWER & RANGE Switch	
17	14-109	Slip Ring	HF-743011
18	14-020	Slip Ring Insulating Collar	HF-44H026
19	14-022	Slip Ring Boss	HF-443053
20	14-110	Motor	
21	14-111	Rubber Washer	HF-74A004
22	14-094	Receptacle (Power)	
23	14-035	Receptacle (Transducer)	
24	14-112	Rear Case	
25	14-113	Knob Bolt M6x12	HF-74H005
26	14-114	Bracket	
	14-115	SH-1 Manual	

PARTS LIST (Continued)

<u>SYMBOL NO.</u>	<u>DESCRIPTION</u>
T 201	Transformer (Transmitter Output) 2104
Q201-Q202	Transistor 2SC2120
Q203-Q204	Transistor 2SC3074
Q 301	Transistor 2SD549
Q401-Q403	Transistor 2SC1815V
Q 404	Transistor 2SC982TM
IC101	Integrated Circuit (IC) HD1-1804S or BX7073
IC201	IC LS107
IC202	IC LS02
IC401	IC M5L8049
D 301	Diode W03C
D 501	LED BV4352
ZD301	Zener Diode HZ6C3
FL101	Band Pass Filter No.5000
X 401	Ceramic Resonator KBR6.D
F 301	Fuse 1A

CERTIFICATE OF LIMITED WARRANTY

Providing you present a valid proof of purchase, SI-TEX Marine Electronics Inc. warrants all parts of each new product against defect in material and workmanship under normal use and will repair or exchange any parts proven to be defective at no charge for a period of two years for parts and one year for labor from the date of purchase, except as provided below under Limited Warranty Exceptions.

Defects will be corrected during normal working hours by an authorized SI-TEX Marine Electronics Inc. dealer, service center, or at the SI-TEX office in St. Petersburg, Florida. There will be no charge for labor for a period of one year from the date of purchase, except as provided below under Limited Warranty Exceptions.

This Warranty and Proof of Purchase must be made available to the authorized SI-TEX Marine Electronics Inc. service location or dealer at the time of service.

LIMITED WARRANTY EXCEPTIONS

SI-TEX Marine Electronics Inc. will not be responsible for equipment which has been subjected to water or lightning damage, accident, abuse, or misuse nor any equipment on which the serial number label has been removed, altered or mutilated.

SI-TEX Marine Electronics Inc. assumes no responsibility for damage incurred during installation.

This Limited Warranty is effective only with respect to the original purchaser.

Any cost associated with transducer replacement, other than the cost of the transducer itself, is specifically excluded from this Limited Warranty.

Travel cost incurred will not be accepted for SI-TEX Marine Electronics Inc. products.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION OF THE FACE HEREOF.

SPECIFIC EXCLUSIONS

Charges for overtime, stand-by, holiday, and per diem are specifically excluded from the Limited Warranty.

Chart paper, stylus, stylus belt, lamps, and fuses are consumable items and are not covered by this Limited Warranty.

Installation workmanship or materials except as provided directly by SI-TEX Marine Electronics Inc. are not covered by this Limited Warranty.

SI-TEX Marine Electronics Inc. equipment or parts thereof which have been repaired or altered except by an authorized SI-TEX Marine Electronics Inc. dealer or service center are not warranted in any respect.

Transducer, software update, battery, microphone, magnetron, and microwave components and water damage on water resistant VHF radio are items excluded from the two-year warranty and are covered by warranty for a period of one year for both parts and labor.

SI-TEX Marine Electronics Inc. will not, at any time, assume any costs or labor charges for checkout or external line fuse replacement or problems not found to be at fault in equipment itself.

THERE ARE NO WARRANTIES OR GUARANTEES EXPRESSED OR IMPLIED WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF, INCLUDING WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY. SI-TEX MARINE ELECTRONICS INC. HAS NO OTHER LIABILITY TO PURCHASE FOR DIRECT OR CONSEQUENTIAL DAMAGE OR ANY THEORY INCLUDING ABSOLUTE LIABILITY, TORT, OR CONTRACT. THIS LIMITED WARRANTY CANNOT BE ALTERED OR MODIFIED IN ANY WAY AND SHALL BE INTERPRETED IN ACCORDANCE WITH THE LAWS OF THE STATE OF FLORIDA. THIS WARRANTY IS LIMITED TO THE CONTINENTAL U.S.A., ALASKA, HAWAII, AND CANADA.

HOW TO OBTAIN SERVICE UNDER THIS WARRANTY

To provide better flexibility, SI-TEX Marine Electronics Inc. gives you the option of obtaining service under this warranty by either:

a) Contacting an authorized SI-TEX Marine Electronics Inc. service station (The closest service station may be found by contacting your dealer of purchase.)

or

b) Shipping your equipment prepaid via UPS or truck with insurance prepaid to SI-TEX Marine Electronics Inc. at the address provided below.

SI-TEX Marine Electronics Inc. will, whenever possible, make all repairs covered by Limited Warranty within two weeks of receiving the equipment in Florida and return same to you, freight prepaid.

c) You must present a copy of your Purchase Sales Slip at the time you request warranty service.

Shipping/Mailing Address:

SI-TEX Marine Electronics Inc.
11001 Roosevelt Blvd., Suite 800
St. Petersburg, FL 33716
727-576-5734

SI-TEX Marine Electronics Inc. offers a complete line of quality marine electronics including fishfinders, electronic charting systems, radars, autopilots, GPS/WAAS/Loran receivers, SSB receivers, direction finders, VHF radios, VHF marine & TV antennas, and integrated systems.

For more information, contact your SI-TEX dealer or the main office, located in St. Petersburg, Florida.