

# UNIMETRICS



## *Sea Hawk 78*

25 Watts VHF-FM  
Marine Radiotelephone

**Owner's Manual**

## INSTALLATION

**CAUTION:** The SEA HAWK 78 will operate only with nominal 12 volt negative ground battery systems.

It is important to carefully determine the most suitable location for your SEA HAWK 78 on your vessel. Electrical, mechanical, and environmental considerations must all be taken into account. You must select the optimum relationship among these considerations.

Keep in mind the flexibility designed into the SEA HAWK 78 so that you can most conveniently use your radio. Features which should be considered are:

1. Universal mounting bracket may be installed on either top or bottom for shelf, bulkhead, or overhead mounting.
2. The speaker and microphone connector face forward allowing convenient in-dash or "built-in" installations.
3. The channel indicator window can reverse fully to provide for optimum viewing and operating for any mounting position.
4. The EXTERNAL speaker jack may be used with an auxiliary speaker in lieu of the built-in speaker.

All connections are "plug-in" type for easy removal of the radio.

Some of the more important external factors to consider in selecting the location of your SEA HAWK 78 are:

1. Select a location that is free from spray and splash.
2. Keep the battery leads as short as possible. Connection directly to the battery is most desirable. If direct connection cannot be made with the supplied power lead, any extension should be made with #10 AWG wire. Long extensions should use large wire.
3. Keep the antenna lead as short as possible. Long antenna leads can cause substantial loss of performance for both receiving and transmitting.
4. Locate your antenna as high as possible and clear from metal objects. The reliable range of coverage is a direct function of antenna height.
5. Select a location that does not allow the radio to be subjected to direct sunlight (including that coming through windows).
6. Select a location that allows free air flow around the heat sink on the rear of the radio.
7. Select a location well away from the ship's compass. Auxiliary speakers also should be located away from the compass.

After you have carefully considered the various factors affecting your choice of location, position the radio (with the bracket, microphone, power plug, antenna plug, and any auxiliary plugs installed) into the selected location to assure there is no interference with surrounding items. Mark the location of the mounting bracket. Remove the bracket from the radio and use it as a template to mark the holes to be drilled for the mounting hardware. Drill the holes and mount the bracket with hardware compatible with the material of the mounting surface. Install the power cable (red is +, black is -), antenna and all other auxiliary cables and accessories. Install the radio into the mounting bracket and connect all cables and accessories to the appropriate jacks and connectors.

## ANTENNA

A variety of antennas are available from a number of quality suppliers. It is recommended you draw upon the advice of your UNIMETRICS Dealer in determining a suitable antenna for your vessel and range requirements.

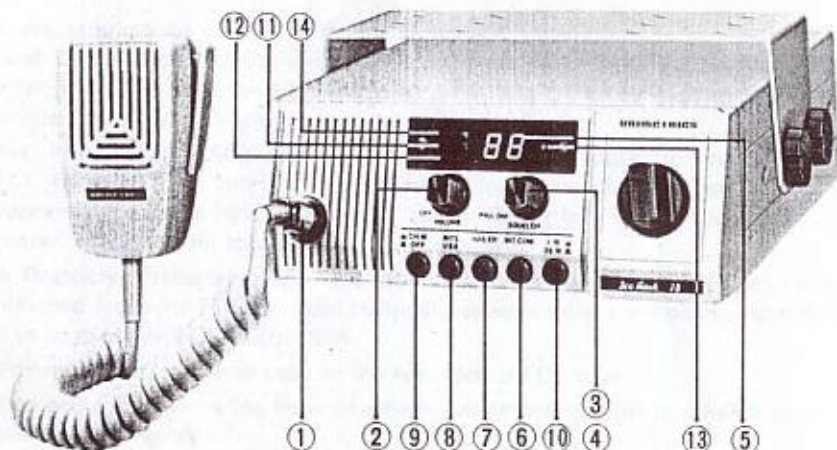
The general rules for antennas are: The more gain the greater the range and, the higher above the water line the greater the range. Antennas should be located so as not to be in proximity to metal objects. Antennas should not have excessively long coaxial feed cables.

## ENGINE NOISE SUPPRESSION

Interference from the impulse noise generated by the electrical systems of engines is sometimes a problem with radios. The SEA HAWK 78 has been designed to be essentially impervious to ignition impulse noise and alternator noise. However, in some installations it may be necessary to take measures to further reduce the effect of noise interference. All DC battery wires, antenna lead, and accessory cables should be routed away from the engine and engine compartment and from power cabling carrying particularly high currents.

In severe cases of impulse noise interference, it may be necessary to install a noise suppression kit that is available from your UNIMETRICS Dealer.

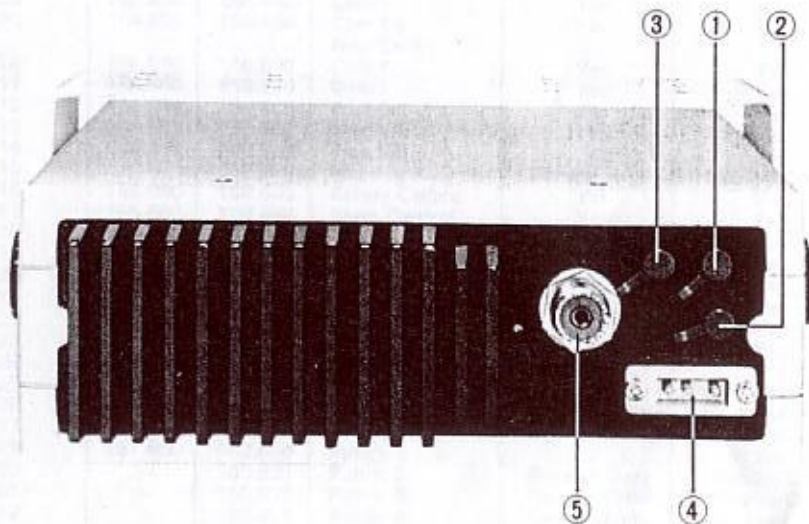
## FRONT PANEL CONTROLS AND INDICATORS



1. MICROPHONE CONNECTOR--Receptacle for microphone connection.
2. ON/OFF-VOLUME--Turns power on to radio and allows adjustment to the desired listening level with clockwise rotation.
3. SQUELCH--Used to quiet background noise when no signal is being received. Proper adjustment is such that the control is advanced only slightly beyond the point where the background noise is marginally quieted.
4. Pull DIM (on the SQUELCH)--This switch is used to adjust the brightness of front panel display. Pull the knob to dim.
5. NUMERICAL CHANNEL INDICATOR--Indicates selected channel. This indicator will flash if an illegal channel is entered.
6. INT'COM SELECTOR--Disables transceiver and turns on the intercom system. Operation of the intercom feature requires that a separate speaker be connected to the INTERCOM connector on the rear panel. Sounds coming from the vicinity of the intercom speaker will be heard on the radio speaker. Operating the push-to-talk lever on the microphone and speaking into the microphone enables you to speak to someone near the intercom speaker.
7. HAILER SELECTOR--Disables transmitter and turns on hailer speaker (when connected to rear panel jack). To operate on the hail function, depress the push-to-talk lever on the microphone and, while speaking into the microphone, set to the desired loudness using the VOLUME control.
8. INT'L-USA SELECTOR--Provides for USA frequency/channel system or for international channels.
9. CH16 SELECTOR--Provides instant Channel 16 selection by overriding the CHANNEL SELECTOR.
10. 1W/25W SELECTOR--Controls transmitter output power. The 1W (watt) position should be used whenever practical and should always be used for in-port or short range communications.

11. USA INDICATOR--Operates in conjunction with the USA/INT'L switch.
12. INT'L INDICATOR--Operates in conjunction with the USA/INT'L switch.
13. TX/RX INDICATOR--Grows green in the receiving mode. The transmit lamp glows red and is operated from the actual presence of power transmitted to the antenna.
14. CH16 INDICATOR--Operates in conjunction with the CH16 switch.

## REAR PANEL CONNECTORS



1. EXT CONNECTOR--If it is desired to use a speaker other than the one in the radio, a four or eight ohm speaker equipped with a miniature phone plug may be connected to this jack. The internal speaker is disabled when an external speaker is used.
2. INT'COM CONNECTOR--When using the intercom feature a four or eight ohm speaker with a miniature phone plug should be connected to this jack. Refer to the preceding section for intercom operation.
3. HAIL CONNECTOR--The speaker used for the hail function is plugged into this jack. The speaker may be either four or eight (4 or 8) ohms impedance and should be suitable for the environment in which it is located. The plug must be a 0.097 inch diameter miniature two conductor phone plug.
4. DC POWER CONNECTOR--Battery connections are to be made with the cable supplied to mate with this connector. Remember, red is +, black is -! The power cord is equipped with a fuse to protect the radio. Use only a six (6) AMPERE fast blow fuse for replacement.
5. ANT CONNECTOR--This connector is for connection of the antenna. A type PL259 connector is required to make proper connection.

## SPECIFICATIONS

### GENERAL

- Channels : USA: All  
International: All
- Frequency Control  
Method : PLL synthesizer
- Antenna Impedance : 50 ohms, nominal
- Speaker : 2 1/4 inch front mounted, 8 ohms
- Microphone : Rugged 600 ohm dynamic element with coiled cord and plug-in connector
- Channel Display : LED numerical readout
- FCC Approvals : Type accepted under parts 81 and 83 and certified under part 15 of the Rules, meets bridge-to-bridge requirements, Great Lakes Agreement and party boat requirements
- DOC Approval : Type approved under Canadian standard RS 182 class V
- Frequency Stability :  $\pm 0.0005\%$
- Operating Temperature Range :  $-20^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$
- Shock and Vibration : Meets or exceeds EIA standards, RS152A and RS204A
- Size : 2-3/4"H x 8"W x 10"D
- Weight : 4.4 lbs
- Controls : On-off/volume and squelch controls; Channel selector hailer, intercom, instant Channel 16 select, USA/International and 1W/25W power switches, Dimmer
- Connectors : Antenna, microphone, hailer speaker, intercom speaker, external speaker, DC power
- Frequency Range : 156 to 158 MHz transmit  
156 to 163 MHz receive
- Lights and Indicators : Red/Green transmit/receive LED, USA LED, Channel 16 LED, International LED, 7 segment LED Channel readout
- Standard Accessories: Plug-in microphone, mounting bracket and hardware, DC power cord, mike hanger, spare fuse, owner's manual, warranty card
- Supply Voltage : 13.8V DC negative ground

### TRANSMITTER

- Power Output : 25 or 1 watt (switch selectable)
- Power Requirement : 25 watts output: 4.5A @ 13.8V DC  
1 watt output: 1.0A @ 13.8V DC
- Modulation : FM,  $\pm 5$  kHz deviation (FCC designator 16F3)

Hum and Noise	
Attenuation	: 45 dB
Audio Distortion	: Less than 4% with 3 kHz deviation with 1000 Hz modulating frequency
Spurious	
Suppression	: -65 dB
Output Transistor	
Protection	: Built-in
Output Power	
Stabilization	: Built-in automatic level control (ALC)

## RECEIVER

Sensitivity	: 0.25 $\mu$ V for 12 dB SINAD 0.30 $\mu$ V for 20 dB quieting
Threshold Squelch	
Sensitivity	: 0.30 $\mu$ V (EIA method)
Tight Squelch	
Sensitivity	: 2 $\mu$ V (EIA method)
Spurious Response	
Attenuation	: 75 dB
Image Response	
Attenuation	: 75 dB
Inter Modulation	
Attenuation	: 70 dB @ 0.3 $\mu$ V desired 50 dB @ 30 $\mu$ V desired 35 dB @ 200 $\mu$ V desired
Modulation	
Acceptance	: $\pm$ 9.5 kHz (EIA method)
Adjacent Channel	
Rejection	: 70 dB (EIA method)
Selectivity	: $\pm$ 7.5 kHz @ 6 dB down $\pm$ 15 kHz @ 60 dB down
Audio Output Power:	3.5 watts minimum at 10% distortion at 1 kHz modulation and $\pm$ 3.5 kHz deviation (4 ohm speaker)
Power Requirements:	0.45A @ 13.8V DC, squelched 0.70A @ 13.8V DC at rated audio output
IF Frequencies	: 1st: 21.4 MHz 2nd: 455 kHz
Hum and Noise	
Level	: -50 dB (EIA method)

## HAILER/INTERCOM

Audio Output Power:	4 watts minimum
External Speaker	
Impedance	: 4 or 8 ohms
Power Requirements:	1.2A maximum at 13.8V DC

## MARITIME RADIO SERVICES OPERATION

You are required to comply with the Rules and Regulations as set forth by the Federal Communications Commission. A complete set of FCC Marine Radio Rules may be purchased from the US Government Printing Office by requesting "Volume IV of the FCC Rules." Among the more significant rules are:

1. You must obtain a Ship's Station License by making application to the FCC on FCC Form 502. An Interim Ship's Station License may be obtained by personal appearance at your local FCC Field Office. The Ship's Station License must be posted at the station location.
2. A Restricted Radiotelephone Operator Permit (or higher grade license) must be obtained from the FCC in order to legally operate your transmitter. Application is to be made on FCC Form 753A.
3. You must keep a current copy of the appropriate FCC rules.
4. You must maintain a log book in which you record all calls and full transmitter maintenance records.
5. Your transmitter must be verified, by an appropriately licensed technician, to be in compliance with FCC requirements. This has been done at the factory for your SEA HAWK 78. A signed Verification of Compliance card is included with your radio and should be kept with your log book.
6. You may not make transmitter tuning adjustments unless you are the holder of a valid first or second class commercial license issued by the FCC. Please request the assistance of your UNIMETRICS Marine Dealer and your nearest FCC Field Office if you need other than a Ship's Station License.

# VHF FM MARINE RADIOTELEPHONE CHANNELS AND FUNCTIONS

## (U.S.A. CHANNELS)

CHANNEL DESIG	FREQUENCY (MHz)		TYPE TRAFFIC	FUNCTION	
	SHIP	SHORE		SHIP TO SHIP	SHIP TO SHORE
WX1	—	162.550	ESSA Weth	Receive Only	Receive Only
WX2	—	162.400	ESSA Weth	Receive Only	Receive Only
WX3	—	162.475	ESSA Weth	Receive Only	Receive Only
WXC	—	161.650	Canadian Weth	Receive Only	Receive Only
05	156.250	156.250	Port Op	Yes	Yes
06	156.300	156.300	Safety	Yes	No
07	156.350	156.350	Com'l	Yes	Yes
08	156.400	156.400	Com'l	Yes	No
09	156.450	156.450	Com'l & Non Com'l	Yes	Yes
10	156.500	156.500	Com'l	Yes	Yes
11	156.550	156.550	Com'l	Yes	Yes
12	156.600	156.600	Port Op	Yes	Yes
13	156.650	156.650	Nav	Yes	Yes
14	156.700	156.700	Port Op	Yes	Yes
15	—	156.750	Weather P.	Receive Only	Receive Only
16	156.800	156.800	Safety Calling	Yes	Yes
17	156.850	156.850	State Control	Yes	Yes
18	156.900	156.900	Com'l	Yes	Yes
19	156.950	156.950	Com'l	Yes	Yes
20	157.000	161.600	Port Op	Yes	Yes
21	157.050	157.050	Coast Ga'd Only	Yes	Yes
22	157.100	157.100	Coast Ga'd Lais.	Yes	Yes
23	157.150	157.150	Coast Ga'd Only	Yes	Yes
24	157.200	161.800	Public Corresp.	No	Yes
25	157.250	161.850	Public C	No	Yes
26	157.300	161.900	Public C	No	Yes
27	157.350	161.950	Public C	No	Yes
28	157.400	162.000	Public C	No	Yes
60	—	160.625	Public S	Receive Only	Receive Only
61	—	160.675	Public S	Receive Only	Receive Only
62	—	160.725	Public S	Receive Only	Receive Only
63	—	160.775	Public S	Receive Only	Receive Only
64	—	160.825	Public S	Receive Only	Receive Only
65	156.275	156.275	Port Op	Yes	Yes
66	156.325	156.325	Port Op	Yes	Yes
67	156.375	156.375	Com'l	Yes	No
68	156.425	156.425	Non Com'l	Yes	Yes
69	156.475	156.475	Non Com'l	Yes	Yes
70	156.525	156.525	Non Com'l	Yes	No
71	156.575	156.575	Non Com'l	Yes	Yes
72	156.625	156.625	Non Com'l	Yes	No
73	156.675	156.675	Port Op	Yes	Yes
74	156.725	156.725	Port Op	Yes	Yes
77	156.875	156.875	Port Op	Yes	No
78	156.925	156.925	Non Com'l	Yes	Yes
79	156.975	156.975	Com'l	Yes	Yes
80	157.025	157.025	Com'l	Yes	Yes
81	157.075	157.075	Coast Ga'd Only	Yes	Yes
82	157.125	157.125	US Govn Only	Yes	Yes
83(CG)	157.175	157.175	Coast Ga'd Aux.	Yes	Yes
84	157.225	161.825	Public C	No	Yes
85	157.275	161.875	Public C	No	Yes
86	157.325	161.925	Public C	No	Yes
87	157.375	161.975	Public C	No	Yes
88	157.425	157.425	Com'l	Yes	No

CAUTION: OPERATION ON CHANNELS NOT DESIGNATED FOR USE BY YOUR CLASSIFICATION OF CRAFT OR ON INTERNATIONAL CHANNELS WHEN WITHIN UNITED STATES TERRITORIAL WATERS IS A VIOLATION OF FEDERAL COMMUNICATIONS COMMISSION RULES AND REGULATIONS AND MAY RESULT IN SEVERE PENALTIES.

# VHF FM MARINE RADIOTELEPHONE CHANNELS AND FUNCTIONS

## (INTERNATIONAL CHANNEL)

CHANNEL DESIG	FREQUENCY (MHz)		TYPE TRAFFIC	FUNCTION	
	SHIP	SHORE		SHIP TO SHIP	SHIP TO SHORE
1	156.050	160.650	Int'l Only	-	Yes
2	156.100	160.700	Int'l Only	-	Yes
3	156.150	160.750	Int'l Only	-	Yes
4	156.200	160.800	Int'l Only	-	Yes
5	156.250	160.850	Int'l Only	-	Yes
6	156.300	156.300	Safety	Yes	No
7	156.350	160.950	Int'l Only	Yes	Yes
8	156.400	156.400	Com'l	Yes	No
9	156.450	156.450	Com'l	Yes	Yes
10	156.500	156.500	Com'l	Yes	Yes
11	156.550	156.550	Com'l	Yes	Yes
12	156.600	156.600	Port Op.	Yes	Yes
13	156.650	156.650	Nav.	Yes	Yes
14	156.700	156.700	Port Op.	Yes	Yes
15	-	156.750	Weth P.	Receive Only	Receive Only
16	156.800	156.800	Safety C.	Yes	Yes
17	156.850	156.850	State Cont.	Yes	Yes
18	156.900	161.500	Int'l Only	Yes	Yes
19	156.950	161.550	Int'l Only	Yes	Yes
20	157.000	161.600	Port Op.	Yes	Yes
21	157.050	161.650	Int'l Only	-	Yes
22	157.100	161.700	Coast Ga'd	Yes	Yes
23	157.150	161.750	Int'l Only	-	Yes
24	157.200	161.800	Public C.	No	Yes
25	157.250	161.850	Public C.	No	Yes
26	157.300	161.900	Public C.	No	Yes
27	157.350	161.950	Public C.	No	Yes
28	157.400	162.000	Public C.	No	Yes
60	156.025	160.625	Int'l Only	Yes	Yes
61	156.075	160.675	Int'l Only	Yes	Yes
62	156.125	160.725	Int'l Only	Yes	Yes
63	156.175	160.775	Int'l Only	Yes	Yes
64	156.225	160.825	Int'l Only	Yes	Yes
65	156.275	160.875	Int'l Only	Yes	Yes
66	156.325	160.925	Int'l Only	Yes	Yes
67	156.375	156.375	Com'l	Yes	No
68	156.425	156.425	Non Com'l	No	Yes
69	156.475	156.475	Non Com'l	No	Yes
70	156.525	156.525	Non Com'l	Yes	No
71	156.575	156.575	Non Com'l	No	Yes
72	156.625	156.625	Non Com'l	Yes	No
73	156.675	156.675	Port Op.	Yes	Yes
74	156.725	156.725	Port Op.	Yes	Yes
77	156.875	156.875	Com'l	Yes	No
78	156.925	161.525	Int'l Only	Yes	Yes
79	156.975	161.575	Int'l Only	Yes	Yes
80	157.025	161.625	Int'l Only	Yes	Yes
81	157.075	161.675	Int'l Only	-	Yes
82	157.125	161.725	Int'l Only	-	Yes
83	157.175	161.775	Int'l Only	-	Yes
84	157.225	161.825	Public C.	No	Yes
85	157.275	161.875	Public C.	No	Yes
86	157.325	161.925	Public C.	No	Yes
87	157.375	161.975	Public C.	No	Yes
88	157.425	162.025	Int'l Only	Yes	Yes

## CARE AND MAINTENANCE

Your SEA HAWK 78 is a precision piece of electronic equipment and you should treat it accordingly. Due to the rugged design, very little maintenance is required, however, a few precautions should be observed.

If your radio has been accidentally subjected to spray or splash you should immediately wipe it down with a soft cloth dampened with fresh water.

If the antenna has been damaged, you should not transmit except in case of emergency. A defective antenna may cause damage to your radio.

You are responsible for the continued FCC technical compliance of your radio. You are urged to arrange for periodic performance checks with your UNIMETRICS Marine Dealer.

## SERVICE

Should you find it desirable or necessary to have service performed on your SEA HAWK 78, you are urged to contact the UNIMETRICS Dealer from whom you made your purchase. He, or any other UNIMETRICS Dealer, is able to provide you with complete service performed by well qualified personnel.

If you require service that is within the terms of your warranty you should present the validated WARRANTY SERVICARD to your dealer to authenticate your claim. Your WARRANTY SERVICARD is your passport to easy service! This card is to be completed by your dealer at the time of purchase. Other suitable documents which clearly establish ownership and date of purchase may be used in lieu of the WARRANTY SERVICARD.

If you find it inconvenient to have service performed by your local UNIMETRICS Marine Dealer, you may also obtain service from the Factory Service Station. If you require factory service, please pack your radio in a suitable container which will provide adequate protection, enclose a note describing the problem, and a copy of your validated WARRANTY SERVICARD or other proof-of-purchase document and return (transportation prepaid) to:

UNIMETRICS SERVICE CENTER  
118 SOUTH CHURCH ST  
LAKE CITY, S.C. 29560

If the service you require is not within the terms of the warranty, you should specifically include written authorization to proceed with service and to make appropriate changes.