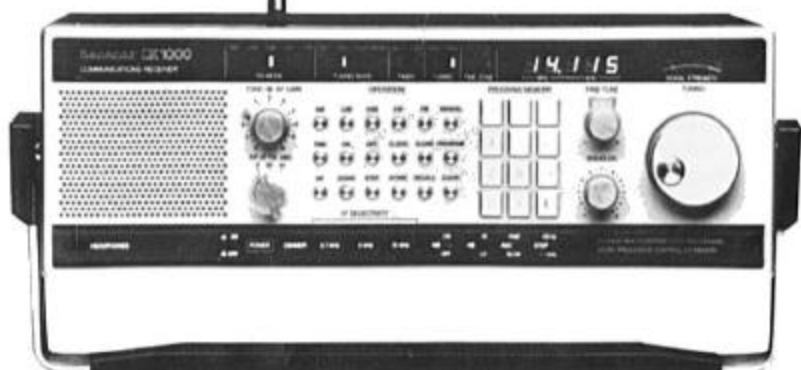


# OWNERS MANUAL



## **Bearcat**<sup>®</sup> DX-1000

### DIRECT ACCESS COMMUNICATIONS RECEIVER

10 KHz - 30 MHz coverage with 10 channel microprocessor controlled memory

### MONITORS SHORTWAVE BROADCAST

Hams	Citizens Band	Government
Military	Search & Rescue	Press
Marine	Aircraft	Aircraft Nav Beacons*
AM Broadcast	Overseas Telephone	Coast Guard



Electra Company  
Division of Masco Corp. of Indiana  
300 East County Line Road  
Cumberland, Indiana 46229

## INTRODUCTION

Your new Bearcat DX-1000 will bring new excitement and fun to shortwave listening.

Advanced micro-processor based circuitry provides a host of never-before features in short wave radio—direct access keyboard and precision knob tuning, digital, 24 hour/two time zone quartz clock, ten channel memory, five timer memories with two remote control jacks.

The DX-1000 is a totally new design and has been engineered from the ground up for operating ease and efficiency. For the beginner or the sophisticated shortwave "DXer," the Bearcat DX-1000 is the ultimate communications receiver.

Although the DX-1000 is simple to operate, it will take some time in order to learn to use all of its features. For this reason, we strongly suggest that you read the owner's manual carefully before attempting installation and operation of your DX-1000.

### SAFETY PRECAUTIONS

The following safety precautions should be observed:

- The radio must have a good ground.
- Never allow the radio to become wet.
- Never set liquids on or near the radio.
- Do not tamper with the internal circuitry.
- Do not operate the radio near water.
- The radio should be operated only by the power sources described in this manual.
- If the unit is to be unused for a long period of time, the AC adaptor and antenna lead-in should be disconnected along with removal of the memory and portable batteries.

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For future reference, write the model number and serial number below. You will find them printed on the back of your receiver.

MODEL \_\_\_\_\_ SERIAL NO. \_\_\_\_\_

## TECHNICAL SPECIFICATIONS

<b>Size:</b>	370(w) x 130(h) x 240(d) mm. (14½ x 5 x 9½ in.)		
<b>Weight:</b>	8 kg (17.6 lbs.)		
<b>Receiving Frequency:</b>	10 KHz - 30 MHz		
<b>Receiving Mode:</b>	AM, LSB, USB, CW and FM		
<b>Intermediate Frequency:</b>	1st 40.455 MHz—2nd 455 KHz		
<b>Sensitivity:</b> (50 ohm Terminal)	(S + N)/N = 10 dB @ 500 mW		
	<b>Tuning Range</b>	<b>AM Nominal</b>	<b>SSB/FM Nominal</b>
	10- 150 KHz	not specified	not specified
	150- 359 KHz	2.0 $\mu$ V	0.5 $\mu$ V
	360- 878 KHz	1.5 $\mu$ V	0.5 $\mu$ V
	879- 2.143 KHz	1.0 $\mu$ V	0.3 $\mu$ V
	2.144- 5.229 MHz	1.0 $\mu$ V	0.3 $\mu$ V
	5.230-12.756 MHz	1.0 $\mu$ V	0.3 $\mu$ V
	12.757-30.000 MHz	1.0 $\mu$ V	0.3 $\mu$ V
<b>Frequency Stability:</b>	$\pm$ 100 Hz Limit at room temperature		
	<b>Frequency</b>	<b>Nominal</b>	
<b>Image Ratio:</b>	10 KHz-150 KHz	not specified	
	150 KHz- 30 MHz	70dB	
<b>Spurious Rejection:</b> (7.0 MHz)		60dB	
<b>Birdies (S + N)/N = 10dB:</b>		5 $\mu$ V	
<b>Input Attenuator:</b> (At 7 MHz)		20dB	
<b>Selectivity:</b>		40dB	
<b>12 KHz</b>	- 6dB	12 KHz	
	- 50dB	20KHz	
<b>6 KHz</b>	- 6dB	6 KHz	
	- 50dB	12 KHz	
<b>2.7 KHz</b>	- 6dB	2.7 KHz	
	- 50dB	4.5 KHz	
<b>Antenna Impedance: LO-Z</b>		50 ohm	
<b>HI-Z</b>		500 ohm	
<b>Audio Output:</b> (8 $\Omega$ Load, 12.0 V DC)	10% THD	2.0W	
<b>Phone Jack Output:</b> (8 $\Omega$ Load, 12.0 V DC)		250 mV	
<b>Tape Out (600 <math>\Omega</math> Load):</b>		100 mV	
<b>Signal to Noise Ratio:</b> (At 7 MHz 1 mV)		40dB	
<b>Meter Sensitivity:</b> (S 9 at 7 MHz)		50 $\mu$ V	
<b>Audio Response:</b> (Tone center 6 KHz)	200 Hz	- 6dB	
	3 KHz	- 6dB	
<b>Tone Control:</b> (Counter clockwise)	150 Hz	- 6dB	
<b>(Clockwise)</b>	3.5 KHz	- 6dB	
<b>Noise Blanker:</b>	Fast	30uSec	
	Slow	20mSec	
<b>Operation Voltage:</b>		12.0V	
<b>Current, Max Volume:</b> (12.0 V DC) min volume		700mA	
<b>Power Consumption:</b> (12.0 V DC)		10W	
<b>Battery Memory:</b>		3 AA cell (alkaline)	
<b>Battery Portable:</b>		8 D cell (alkaline)	

Specifications are nominal and may change without notice.

## PREPARATION FOR USE

### UNPACKING

Carefully remove all items from the shipping carton. If there is any visible damage, DO NOT attempt to operate the equipment. Notify your dealer or shipping carrier immediately.

Keep the shipping carton and packing materials, as well as all printed material. The carton serves as an excellent method to transport the Bearcat DX-1000 to other locations.

The following are included in this carton:

- DX-1000
- AC Adaptor
- Telescopic Antenna
- Long Wire Antenna
- Owner's Manual
- Fused DC Cord

Before selecting a permanent location for your receiver a few things should be considered. The unit should be placed where an antenna lead-in, ground wire and 117V AC wall outlet are easily accessible.

### TO POWER UP RECEIVER

The frequencies in the DX-1000 memory are protected from erasure during power interruptions by a battery back-up. These batteries are used only if there is an interruption in power to the unit and should last approximately one year. These batteries should be installed prior to using the DX-1000. To install batteries remove the battery cover located on the rear panel of the receiver (Fig. 1). Insert 3 AA batteries (type UM-3 or equivalent) being careful to observe the polarity of each cell (Fig. 2). Replace the battery cover. These batteries should be replaced at least once each year and immediately if corrosion is visible. If the receiver is to be unused for a long period of time remove these batteries.

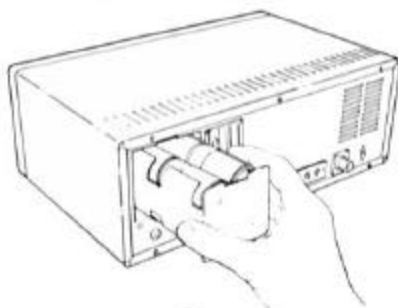


Figure 1

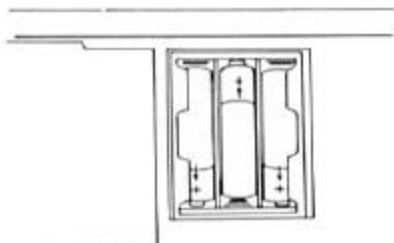


Figure 2

Connect the telescopic antenna to the HI-Z screw terminal and make sure the antenna switch is in the HI-Z position. Connect the AC adaptor to the receiver and plug the adaptor into a 117V AC wall outlet. You are now ready to begin programming the DX-1000.

### CONTROLS—DISPLAY (Figure 3)

#### RX Mode

1. AM
2. LSB (Lower Side Band)
3. USB (Upper Side Band)
4. CW (Continuous Wave)
5. FM

#### Tuning Mode

6. KEY (keyboard entry)
7. DIAL (knob tuning)

- 8. STEP (Step Search Mode)
- 9. MEMO (Memory Mode)
- 10. SET (enter time for program mode)
- 11. PGM (Program running)

**Tuning**

- 12. 1 KHz (tuning rate for knob)
- 13. 100 Hz (tuning rate for knob)

**Time Zone**

- 14. 1 (Time Display—Zone 1)
- 15. 2 (Time Display—Zone 2)

**Digital Display**

- 16. Tuning/Clock/Program Display
- 17. Signal Strength Meter

**CONTROLS—TUNING (Figure 3)**

- 18. Tuning Knob
- 19. Fine Tuning
- 20. Squelch
- 21. Keyboard
- 22. STEP (Knob Tuning Rate 1 KHz/100 Hz)
- 23. AGC (Automatic Gain Control)
- 24. NB (Noise Blanker)
- 25. NB (Noise Blanker)

**Filters**

- 26. 12 KHz (Filter—use on FM reception)
- 27. 6 KHz (Filter—use on AM reception)
- 28. 2.7 KHz (Filter—use on SSB/CW reception)
- 29. Dimmer (Display, indicator LEDS and S Meter)
- 30. Power (Master power switch)
- 31. RF ATT (Selects RF attenuation to minimize front-end overload)
- 32. AFGain (Volume)
- 33. Tone (Tone Control/Listening Preference)
- 34. Headphone (Headphone Jack)

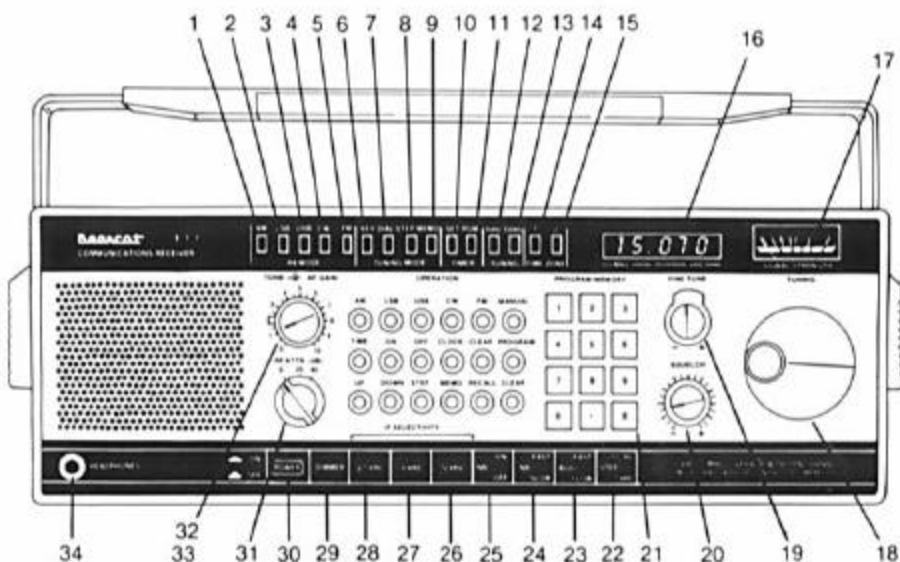


Figure 3

## CONTROLS—MODE/PROGRAMMING (Figure 4)

### Frequency Mode Selection

- 35. AM
- 36. LSB (Lower Side Band)
- 37. USB (Upper Side Band)
- 38. CW (Continuous Wave)
- 39. FM
- 40. Manual (Select Key or Knob Tuning)
- 41. Time (Select Time Programming)
- 42. On (Time Programming—On)
- 43. Off (Time Programming—Off)
- 44. Clock (Clock Display)
- 45. Clear (Timer Programming/Clear)
- 46. Program (Activate Time Program)

### Step Search/Memory Selections

- 47. Step (Step Search Select)
- 48. Up (Step Search—increase frequencies)
- 49. Down (Step Search—decrease frequencies)
- 50. Memo (Memory Select)
- 51. Recall (Memory Channel, Step, Timer Recall)
- 52. Clear (Step/Memory clear)

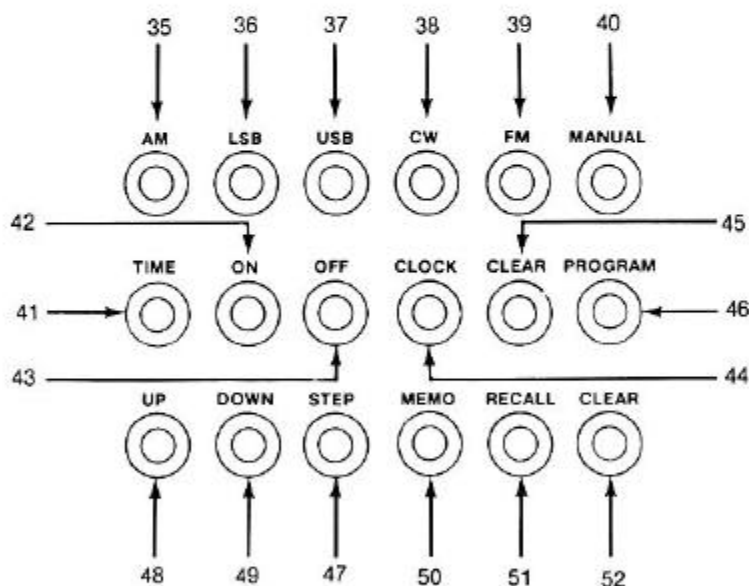


Figure 4

## CONTROLS—BACK PANEL (Figure 5)

1. EXT SPKR (External Speaker Jack)
2. Power (AC adaptor connector)
3. Battery compartment

### Tape Controls

4. Tape Jack
5. Tape Control Switch Jack (This switch normally open)
6. Tape Control Switch Jack (This switch normally closed)
7. Mute (Mute receiver volume to avoid noise when used with a transmitter)
8. HI-Z (Antenna-long wire or Antenna-telescoping)
9. GND (Ground)
10. LO-Z (Antenna-screw terminal)
11. LO-Z (Antenna coax)
12. Antenna switch LO-Z or HI-Z
13. Reset Button

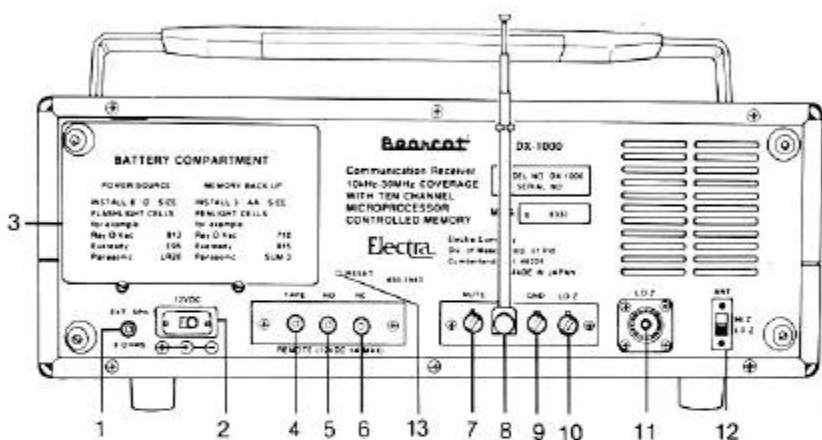


Figure 5

## FEATURES

The DX-1000 has many features that affect the reception. For maximum performance below is an explanation and suggested usage of each feature:

- AF Gain (volume):** The AF Gain controls the volume output of the receiver.
- Tone:** The outer knob of the Tone/AF Gain Control controls the bass and treble output of the receiver. Turning the control clockwise will increase the treble. Turning the control counterclockwise will increase the bass.
- Squelch:** The squelch control is used to control or eliminate the background "rushing" sound that is present between transmissions when no signal is being sent. Primarily it will be used for SSB, CW and FM transmissions only. Turn the control knob clockwise until the "rushing" sound just disappears. To receive some weak signals, the control may require adjusting to the point that some "rushing" sound is present between transmissions. For AM transmissions (except CB), turn the squelch completely to the left, counterclockwise.
- RF ATT:** Select RF attenuation to minimize front-end overload. The RF attenuator switch provides three positions. These are 0, 20 dB, and 40 dB. Strong local stations will sometimes tend to overload the receiver, causing distorted reception. Switching to 20 or 40 dB will reduce this overload condition, allowing good reception. Use the "0" setting for normal listening.
- Fine Tune:** Varies the frequency slightly to fine tune stations. In the 1 KHz step it varies  $\pm 2$  KHz and in the 100 Hz step it varies  $\pm 150$  Hz.

- F. **Dimmer:** The dimmer switch provides two levels of display brightness. Always use the lower setting when using battery operation. Otherwise select the desired brightness.
- G. **IF Selectivity:** The IF selectivity switch provides 2.7 KHz, 6 KHz and 12 KHz signal filters. These filters narrow the bandwidth to minimize adjacent channel interference. Use 2.7 KHz for SSB, and CW. Use 6 KHz for AM. Use 12 KHz for FM.
- H. **NB (Noise Blanker):** The noise blanking circuits, when activated, will synchronize with pulse noise and block the audio output to eliminate the noise. The NB on-off switch activates the circuit. (Switch "in" for on, "out" for off.) The NB fast-slow switch in the slow position provides noise blanking for fast rate of pulse noise, such as AC motors, fluorescent lights, etc. The slow position provides blanking of "over the horizon radar" (the woodpecker).
- I. **AGC (Auto Gain Control):** The DX-1000 has a unique adjustable automatic gain control circuit. In its normal setting (switch in "out" position) "slow" rate, the output volume of the receiver will remain constant for most signals. For signals which fluctuate rapidly, placing the switch in the "fast" rate will provide better control of the volume.
- J. **Signal Strength Meter:** Allows user to measure signal strength of station on the top scale. The bottom scale is calibrated to comply with the international SINPO code.
- K. **Headphone Jack:** Any standard mono headphone will give satisfactory results, plugging in headphone will disconnect the internal speaker for private listening.
- L. **EXT SPK (External Speaker):** This jack accepts the standard 3.5mm miniature speaker plug. The external speaker should be approximately 4-8 ohms. When the speaker is plugged in, it will automatically disconnect the internal speaker.
- M. **Power Jack:** This is where power enters the unit with either the AC adaptor or DC power cord.
- N. **Tape:** Audio is present anytime unit is receiving. Should be connected to the Auxiliary input on tape recorder for recording purposes.
- O. **Remote Control:** Two jacks are provided to control tape recorder or other equipment. One is a normally open (NO) and one is a normally closed (NC) set of contacts. The contacts are rated at 12VDC 1AMP.
- P. **Mute:** When this terminal is grounded it will mute the receiver to allow the use of a transmitter. After the DX-1000 has been un-muted there is a 50 millisecond delay before it will receive.
- Q. **Antenna Terminals:** Screw terminals are provided for both Hi and Lo impedance antennas along with an SO-239 coax connector for a Lo impedance antenna.
- R. **Antenna Switch:** Switches between the Hi and Lo impedance antenna terminals.
- S. **Reset:** This button resets the DX-1000's microcomputer. When this is depressed all memory and clock times are also reset.

## CLOCK

The DX-1000 is equipped with a two time zone, 24 hour clock. The clock will keep time as long as the receiver is connected to power. In the event of a long power interruption the clock will "freeze" at the exact moment of power failure and will need to be reset when power is restored. For short power interruptions of a few seconds, the clock does not require resetting. The 24 hour clock is used for all international broadcast communications and the clock in the DX-1000 must be set using the 24 hour format. If you are unfamiliar with 24 hour time designations see "Listening Notes" for more details.



To enter the time turn the unit on by pressing the power button. The RX mode should have the AM LED lit, the KEY LED should be lit in the tuning mode, the time zone should have the number 1 LED lit and digital display should show 10.

Using the key pad enter the correct time GMT: (Example 12:34)

PRESS:

Note that a chirp was heard; this chirp is an audible confirmation that a function has been engaged or completed.

The clock does not begin to count until the enter button is depressed. The hyphen between the hours and minutes will begin to flash to confirm that the clock is running. The first time zone is now set. To select the second time zone:

PRESS:

The time zone should have the number 2 LED lit. Enter the correct local time using the keyboard. Because the minutes were set in the first time zone, only the hours need be entered now. (Example 6:34)

PRESS:

The digital display should read 6-34. To display the frequency of the receiver:

PRESS:

By repeatedly pressing the clock button the digital display will alternate between the two time zones and the receive frequency. When the power button is off, pressing the clock button will alternate time zones but instead of displaying the receive frequency the display will be blank.

## TUNING

The DX-1000 offers two tuning modes: direct access keyboard and conventional knob tuning. Press the power button to turn on the receiver. The RX mode AM LED will be lit, the Tuning Mode KEY LED will be lit and the digital display will read 10 KHz. Press the Manual button several times, note that the Tuning Mode KEY and DIAL indicators will alternately be lit. This is your indication of which tuning mode will be in effect. In the KEY mode the frequency of the receiver is entered with the keyboard and in the DIAL mode the frequency is changed by simply rotating the large tuning knob.

### KEYBOARD TUNING

With tuning in the KEY mode and the RX mode in AM, and IF selectivity switch in the 6 KHz position, enter the frequency of a local AM radio station. (Example AM 1140)

PRESS:

Enter several local AM frequencies and note that the receiver immediately accessed the new frequencies when E was pressed.

## TUNING (Cont'd.)

Now enter the frequency of another local AM station but don't press the E button. In approximately 10 seconds the entry will automatically clear. If you make a mistake when entering a frequency, before pressing E, you can wait for it to automatically clear or you can immediately clear the entry by pressing the bottom clear button.

Enter the following frequencies:

PRESS:

(When using the decimal point to enter MHz frequencies, it is not necessary to enter trailing zeroes.)

Note the display reads ERROR. 31.000 MHz is beyond the frequency range of the receiver. To clear the ERROR, press the bottom CLEAR button. A frequency lower than 10 KHz will also indicate an ERROR.

Press →  →  →  →  →  →

Display

Press →  →

Display

### KNOB TUNING

Press the manual button so tuning will be in the DIAL mode. Notice that the 1 KHz indicator in the tuning section of the display is lit. Press the STEP 100 Hz / 1 KHz button several times. The 1 KHz and 100 Hz indicators will alternately light. Turn the tuning knob with the step button in both 1 KHz and 100 Hz. In 1 KHz, you can quickly move through frequencies (24 KHz per revolution); in the 100 Hz position you move slower (3 KHz per revolution) but with excellent tuning ability.

### FINE TUNING

The fine tuning knob varies the frequency approximately  $\pm 2$  KHz. It can be used with both the KEY and DIAL tuning modes. It is especially helpful for tuning USB/LSB and CW transmissions. Directly above the dial is an analog scale which is calibrated in 500 Hz increments for a visual indication of frequency.

## MEMORY

The DX-1000 has a 10 channel memory function. One frequency and its RX mode can be programmed into each channel. Once stored, frequencies will be maintained in memory as long as the receiver is connected to the power supply. If the receiver is disconnected from the power supply or in the event of a power failure, the memory batteries will maintain memory for the life of the batteries (approximately one year).

To enter a frequency into memory, select the RX mode and the desired frequency by using the KEY or DIAL modes. Press the MEMO button. The KEY and MEMO indicators in the tuning mode display will light. Press the channel number 1 to 10 (channel 10 is selected by pressing 0 or 10) to select the channel. Press E to enter the frequency into memory. Any of the ten channels can be selected. They need not be selected in sequence. (Example 10.000 MHz entered into channel 5)

PRESS: **1** **0** **.** **E**

PRESS: **MEMO** **5** **E**

To recall a frequency from memory, press MEMO, channel number and RECALL.

PRESS: **MEMO** **5** **RECALL**

Now enter several frequencies into memory. Change the RX mode for one of the frequencies. Recall the frequencies and note that the RX mode will be correct for each.

To clear old frequencies from memory and add new ones, simply follow the programming steps. The frequency presently in a channel will be cleared and the new one will be entered. The reset button located on the rear panel of the unit will also clear all memory channels.

## SEARCH

The DX-1000 includes a programmable step search function for convenient scanning of the frequency spectrum. The step is programmable, from 1 KHz to 100 KHz. To use the step search, first enter a starting frequency, a local AM frequency will work. Press the STEP button.

PRESS: **9** **7** **0** **E** **STEP**

The KEY and STEP indicators in the tuning mode display will light. Press the desired step increment (try 1 KHz), press 1. Note that you do not need to press E.

PRESS: **1**

If you make a mistake, press the bottom CLEAR button and start over.

Press and release the UP button. The displayed frequency will indicate an increase of 1 KHz. Now press and hold the UP button while noting the display. Press and hold the DOWN button.

Try a new step. To program a new step, simply press the desired step. The old step will be cleared and the new step entered. The last step programmed will be maintained in memory. To check the step increment in memory, press STEP and RECALL.

## TIMER PROGRAMMING

The DX-1000 has a unique timer and record feature which provides five time programs for ON-OFF time sequencing and switching control of an external tape recorder (or other device). A frequency already in a memory channel (1 to 10) along with an ON time and OFF time can be programmed into the timer programs. When the receiver is in the program mode and the clock for time zone one reaches the programmed ON time, the receiver will switch on and receive the frequency programmed into that channel. If a tape recorder (or other device) is connected to the receiver, it will also switch on. Both the receiver and recorder will remain on until the OFF time is reached. The receiver will then revert back to the Program Mode and wait for another program ON time. This unique feature can wake you up in the morning or record a broadcast while you are asleep or at work.

The frequency you wish to use in a Timer program must already exist in one of the ten normal memory channels. The timer will simply access one of these ten frequencies to use in its program.

To program the timer press MEMO, the memory channel desired (1 to 10) and RECALL. (Example memory channel 1 in timer's program number 4 to begin recording at 3:00 a.m. and end at 3:30 a.m.)

PRESS: **MEMO** **1** **RECALL**

Press TIME and the timer program number (1 to 5). The SET LED in the TIMER display will light when you press TIME.

PRESS: **TIME** **4**

Now enter the time you want the program to begin and press the ON button.

PRESS: **3** **0** **0** **ON**

Now enter the OFF time (when you want the programming to end), press the OFF button and enter the sequence by pressing the E.

If you make a mistake during this sequence, press the top clear button and start over.

PRESS: **3** **3** **0** **OFF** **E**

### CHECKING TIMER PROGRAMS

The following procedure will display the frequency, ON time and OFF time of any of the five time programs. Press TIME, the timer program number (1-5) and RECALL, RECALL, RECALL.

PRESS: **TIME** **4** **RECALL** **RECALL** **RECALL** **TIME**

### TIME/MEMORY CLEAR

To clear a time program, press TIME, the timer program number (1-5) and the top CLEAR button.

PRESS: **TIME** **4** **CLEAR**

**Note:** When a timer program or function is no longer desired, be sure to press **TIME** and turn off the set LED and timer function.

## TIMER PROGRAMMING (Cont'd.)

When you are ready to use the timer programs simply touch the program button. The unit will then have only the program LED, the number one time zone LED and the clock displayed. When the clock reaches the correct time it will automatically turn itself on and any equipment (tape recorder, etc.) plugged into the remote jacks in the rear of the unit.

There are two remote jacks provided for your convenience. One is normally open contacts (labeled NO) and the other is normally closed contacts (labeled NC). These relay contacts are rated at 12VDC and 1AMP. Do not exceed these ratings.

## PORTABLE OPERATION

The DX-1000 is equipped with a battery pack for portable operation. When the power supply is disconnected from the receiver, the battery pack will supply operating power. A new set (8 alkaline D cells) of batteries will provide approximately 15 hours of operation. Note that the memory batteries will also be in use as long as the receiver is disconnected from the AC adaptor. While using batteries it is recommended that the display functions be dimmed with the dimmer switch to minimize current drain.

### INSTALLING PORTABLE BATTERIES

The battery pack is located behind the battery cover in the rear of the unit. Remove the battery holder and install 8 alkaline D cells (Fig. 6). We recommend that only alkaline cells be used and not rechargeable ni-cads as they will not supply enough voltage. NOTE: should display become irregular immediately after inserting batteries, simply reset unit with reset switch located on the rear panel.

In addition to operating from portable batteries, the DX-1000 will operate from any 12VDC negative ground automotive electrical system. The fused DC cord should be plugged into the jack marked 12VDC (where AC adaptor also plugs in). The red wire should be connected to the positive battery terminal and the black wire connected to ground. Should fuse replacement be necessary, replace only with a 2 amp 125 volt fuse.

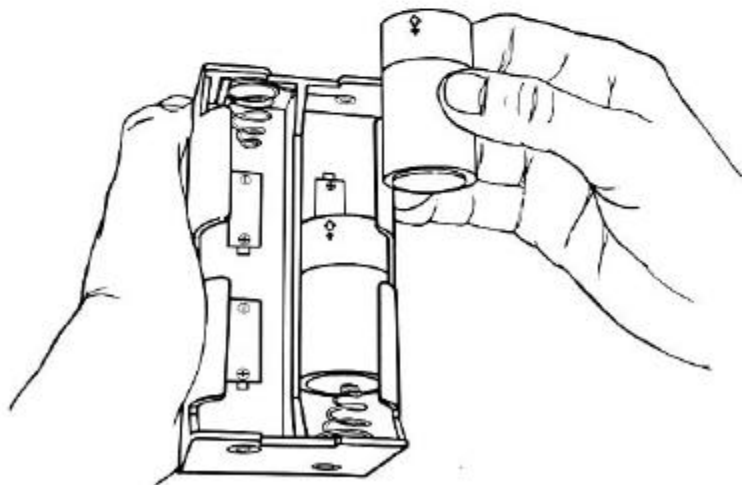


Figure 6

## ANTENNAS

The antenna you use is one of the most important aspects of shortwave listening. A good antenna is essential for maximum performance. We have included only a brief discussion of two basic types of antennas. For more detailed information we suggest you consult the references listed under suggested reading.

### ANTENNA (TELESCOPIC)

Your DX-1000 includes a telescopic antenna. The telescopic antenna will work satisfactorily for portable use and strong local signals, but will not provide maximum reception.

To install the telescopic antenna attach the antenna to the HI-Z antenna connecting screw and snap the antenna into the plastic support clip. Place the antenna switch to the HI-Z position. (See Fig. 5, page 6)

To avoid damage to the antenna always remove it before transporting the unit.

### ANTENNA (LONG WIRE)

Your DX-1000 includes a long wire antenna. The long wire antenna, 33 feet (10m), will provide good reception through the 10 KHz-30 MHz range. Mount the wire as shown in diagram below. It should be as high off the ground as possible. The wire must be insulated at each end. The counterweight and pulley shown will be necessary if one end of the wire is attached to a tree or other movable object.

Even if both mounting points are secure, the counterweight will keep the wire taut and save maintenance. Use a weight that is only heavy enough to keep the wire taut, not stretch it.

If you are unable to use this type of installation, try one of the following:

- Mount the wire in an attic space.
- Mount the wire several feet above the roof line of your house.
- Mount the wire between two windows in an apartment.

The above alternate methods will usually not produce maximum performance, but may be better than the telescopic antenna.

Connect the antenna lead-in to a static discharge unit (lightning arrester) where the wire comes into the house. The static discharge unit must be grounded (see Grounding). It will afford the receiver some protection from lightning but it will not prevent damage from a direct lightning strike.

#### CAUTION:

- Never locate the antenna close to electric power lines.
- Always use a static discharge unit that is securely grounded.
- Always ground the receiver.

### GROUNDING

For maximum reception the receiver must be grounded. Usually the best ground in the home is a metal cold water pipe. Attach the ground wire close to where the pipe enters the structure. If an indoor water meter is used, attach the ground before the meter (that is, between the meter and where it enters). If a suitable ground is not available, purchase a metal ground rod and drive it completely into the ground 2 feet away from the structure foundation. Use at least #14 gauge copper wire leading to the ground screw on the unit.

CAUTION: Never use a gas or hot water pipe or the ground wire of your home electrical wiring for a ground.

## ANTENNAS (Cont'd.)

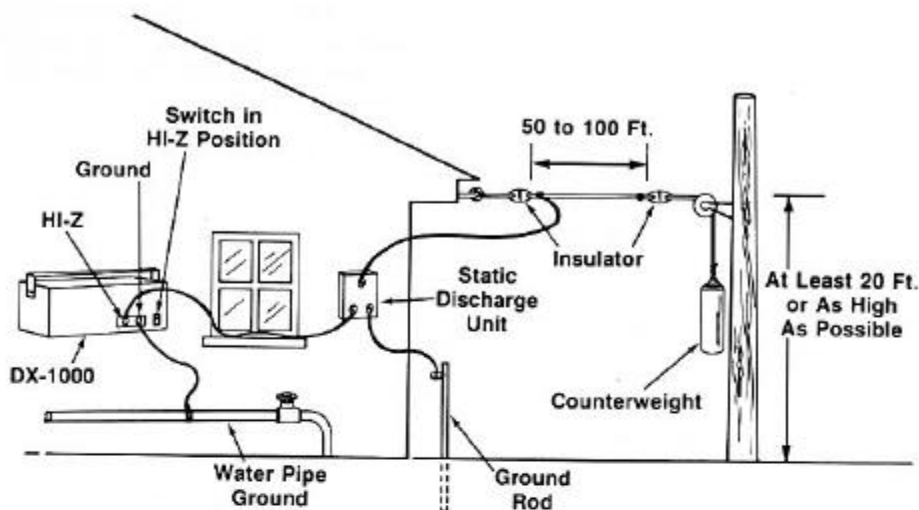


Figure 7

## LISTENING NOTES

This is a very brief introduction to some of the major aspects of shortwave listening. For more detailed information we suggest the reference materials listed under "suggested reading."

### 24 HOUR CLOCK

The DX-1000 has a two time zone/24 hour quartz clock. The 24 hour clock is used for International Communications. It eliminates the confusion of a.m. and p.m. when converting time. This clock begins at 1:00 a.m., this being 0100 hours. This continues to 12:00 midnight which is 2400 hours. See the illustration of the 24 hour clock for complete time designations.

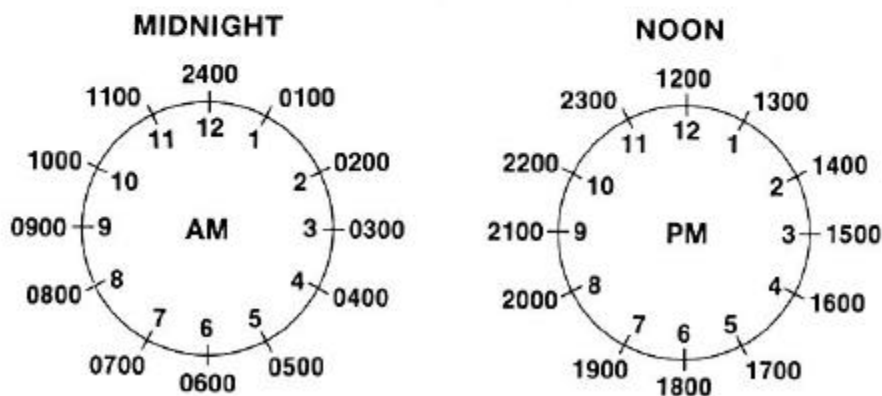
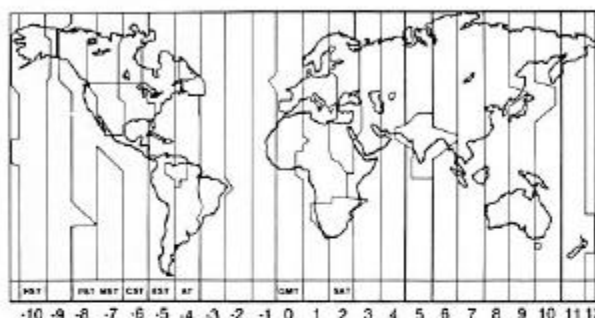


Figure 8

## LISTENING NOTES (Cont'd.)

### GMT

In International Communications, Greenwich Mean Time (GMT) is the basis for telling time. Other times are calculated by adding or subtracting hours from GMT. To convert GMT to your local time see the conversion chart below.



To convert GMT to local zone times add or subtract number of hours shown above  
For Daylight Saving, subtract 1 hour

Figure 9

### MORSE CODE

Many of the conversations that you will find when tuning through various frequencies will be in morse code. Most of these conversations will be amateur radio (HAM) operators. Morse code (or CW as it is commonly referred to) is not difficult to learn, if you put your mind to it and practice. Take a few characters at a time and learn them thoroughly before going on. You may want to connect a tape recorder to the DX-1000 to record code transmissions. Playing the transmissions back several times will allow easier decoding at first.

If you don't know code, you are missing a lot of the fun of DX-ing. The following is an International Morse Code table:

A	didah	N	dahit	1	didahdahdah
B	dahdidit	O	dahdahdah	2	dididahdah
C	dahdidahdit	P	didahdahdit	3	didididahdah
D	dahdidit	Q	dahdahdidah	4	dididididah
E	dit	R	didahdit	5	dididididit
F	dididahdit	S	dididit	6	dahdidididit
G	dahdahdit	T	dah	7	dahdahdididit
H	didididit	U	dididah	8	dahdahdahdit
I	didit	V	didididah	9	dahdahdahdahdit
J	didahdahdah	W	didahdah	0	dahdahdahdahdah
K	dahdidah	X	dahdididah		
L	didahdidit	Y	dahdidahdah		
M	dahdah	Z	dahdahdit		

Period: didahdidahdidah. Comma: dahdahdididahdah. Question mark: dididahdahdit. Error: dididididididit. Double dash: dahdididah. Colon: dahdahdahdididit. Semicolon: dahdidahdidahdit. Parenthesis: dahdidahdahdidah. Fraction bar: dandididahdit. Wait: didahdididit. End of message: didahdidahdit. Invitation to transmit: dahdidah. End of work: didididahdidah.



## LISTENING NOTES (Cont'd.)

### FREQUENCIES AND BANDS

Most communications are transmitted in the 10 KHz or 30 MHz frequency range. The Bearcat DX-1000 provides complete coverage of this range. These frequencies are arranged in groups (called bands) which set aside frequencies for a given purpose. Below is a listing of some of the most common bands. All frequencies are listed in Kilohertz.

1,800-2,000	160 Meter Amateur Band
3,500-3,950	80 Meter Amateur Band
5,950-6,200	International Broadcast Band
7,000-7,300	40 Meter Amateur Band
7,100-7,300	International Broadcast Band
9,200-9,700	International Broadcast Band
11,700-11,975	International Broadcast Band
14,000-14,350	20 Meter Amateur Band
15,100-15,450	International Broadcast Band
17,700-17,900	International Broadcast Band
21,000-21,450	15 Meter Amateur Band
21,450-21,750	International Broadcast Band
26,965-27,405	Citizens Band
28,000-29,700	10 Meter Amateur Band

The following listing contains some of the more powerful and frequently heard stations in North America, but International Broadcasters are free to move from band to band and various frequencies within a band. Because of this many times current periodicals must be consulted for exact frequencies and broadcast times. Most foreign stations are government controlled and any changes in that government may result in changes for the broadcast station.

Frequency MHz	Station	Frequency MHz	Station
5.950	Guyana Broadcasting Service Georgetown, Guyana	9.800	Radio Kiev Kiev, USSR
5.954	Radio Casino Puerto Limon, Costa Rica	9.835	Radio Budapest Budapest, Hungary
5.960	Radio Canada International Montreal, Canada	10.040	Voice of Vietnam Hanoi, Vietnam
5.980	Radio R6A Johannesburg, South Africa	11.655	Israel Radio Jerusalem, Israel
6.005	CFCX Montreal, Canada	11.690	Radio Kuwait Kuwait, Kuwait
6.025	Radio Malaysia Kuala Lumpur, Malaysia	11.705	Radio Sweden Stockholm, Sweden
7.300	Radio Tirana Tirana, Albania	11.720	Radio Moscow Moscow, USSR
9.475	Radio Cairo Cairo, Egypt	11.835	4VEH Cap Haitien, Haiti
9.515	Voice of Greece Athens, Greece	11.845	Radio Canada International Montreal, Canada
9.525	Radio Korea Seoul, South Korea	11.850	Deutsche Welle Cologne, West Germany
9.530	Spanish Foreign Radio Madrid, Spain	11.890	Voice of Chile Santiago, Chile
9.535	Swiss Radio International Berne, Switzerland	11.900	Radio RSA Johannesburg, South Africa
9.540	Radio Prague Prague, Czechoslovakia	11.910	BBC London, England
9.570	Radio Bucharest Bucharest, Rumania	11.930	Radio Havana Cuba Havana, Cuba
9.575	Italian Radio and Television Service Rome, Italy	11.935	Radio Portugal Lisbon, Portugal
9.610	Radio-TV Algeria Algiers, Algeria	11.945	Radio Peking Peking, China
9.745	HCJB Quito, Ecuador	15.135	Radio Moscow Moscow, USSR
9.770	Austrian Radio Vienna, Austria	15.165	HCJB Quito, Ecuador
		15.190	ORU Brussels, Belgium

## ABBREVIATIONS (Cont'd.)

Frequency MHz	Station	Frequency MHz	Station
15.205	All India Radio New Delhi, India	17.720	Radio France International Paris, France
15.260	BBC London, England	17.825	Vatican Radio Vatican City
15.265	Finnish Radio Helsinki, Finland	17.860	Austrian Radio Vienna, Austria
15.275	Radio Sweden Stockholm, Sweden	21.495	Israel Radio Jerusalem, Israel
15.305	Swiss Radio International Berne, Switzerland	21.525	Radio Australia Melbourne, Australia
15.310	Radio Japan Tokyo, Japan	21.625	Israel Radio Jerusalem, Israel
15.320	Radio Australia Melbourne, Australia	21.645	Radio France International Paris, France
15.400	BBC London, England	21.735	Radio-TV Morocco Rabat, Morocco

## SERVICE

Damage requiring service—The radio should be serviced by qualified service personnel when:

1. Objects have fallen on, or liquid has been spilled into the radio.
2. The radio has been exposed to rain.
3. The radio is not operating normally or exhibits a marked change in performance.
4. The radio has been dropped, or the enclosure damaged.

**CLEANING:** Clean the exterior only, using a damp cloth. Always disconnect the AC adaptor when cleaning.

If you determine your DX-1000 requires service, return it directly to Electra or one of the authorized service centers. Pack the unit securely and include a brief concise description of the problem along with your name, address, phone number, and a copy of your purchase receipt.

## SUGGESTED READING

*The Radio Amateur's Handbook*, 15th revised edition, A. Frederick Collins, Harper and Row Publishers.

*The Beginner's Guide to Amateur Radio*, the staff of the American Radio Relay League, Inc., Prentice-Hall, Inc.

*World Radio & TV Handbook*, Billboard A. G.

## NOTES

1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____
5	_____	_____
6	_____	_____
7	_____	_____
8	_____	_____
9	_____	_____
10	_____	_____
11	_____	_____
12	_____	_____
13	_____	_____
14	_____	_____
15	_____	_____
16	_____	_____
17	_____	_____
18	_____	_____
19	_____	_____
20	_____	_____
21	_____	_____
22	_____	_____
23	_____	_____
24	_____	_____
25	_____	_____

## LIMITED WARRANTY

This Bearcat® communications receiver is warranted to the original consumer purchaser to be free from defects in material and workmanship for a period of one (1) year from the date of purchase as shown on purchaser's receipt.

Electra will repair or replace, AT ITS OPTION AND FREE OF CHARGE, during the warranty period, any part which proves defective in material or workmanship under normal installation, use, and service, provided the receiver is returned to our factory (address below) or to one of our authorized Service Centers (list enclosed), TRANSPORTATION CHARGES PREPAID. Receivers returned to our factory or authorized Service Center must be accompanied by a copy of purchase receipt. In the absence of such purchase receipt, the warranty period shall be one (1) year from the date of manufacture as indicated by the serial number on your unit.

Any damage to this receiver as a result of misuse, abuse, neglect, accident, improper installation, destruction or alteration of the serial number, repair or alteration outside our factory or Service Center, or any use violative of instructions furnished by us WILL VOID THE WARRANTY. THIS WARRANTY IS LIMITED TO DEFECTIVE PARTS REPAIR AND/OR REPLACEMENT ONLY AND EXCLUDES ANY INCIDENTAL AND CONSEQUENTIAL DAMAGES CONNECTED THEREWITH.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. In the event of a problem with warranty service or performance, you may be able to go to a small claims court, a state court, or a federal district court.



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