

X-60

INSTALLATION AND OPERATION INSTRUCTIONS

LITHO IN U.S.A.

988-0119-17

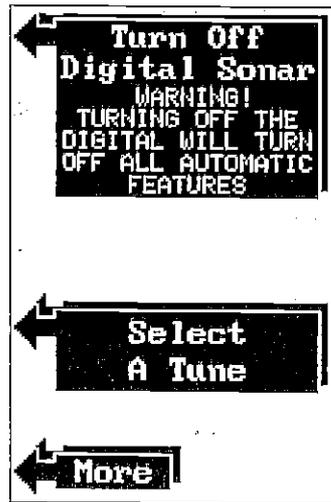
LOWRANCE ELECTRONICS, INC.
12000 E. SKELLY DR., TULSA, OK 74128

Copyright ©1990, Lowrance Electronics, Inc. All rights reserved.

All features and specifications subject to change without notice.

DIGITAL SONAR

When the X-60 is turned on for the first time, the digital depth display shows at the screen's top left corner. This display comes from a separate digital sonar built into the X-60. It displays only the bottom depth. If it loses the bottom, the last known depth will flash on the display. When the digital finds the bottom, it will automatically display the bottom depth again.



You can turn the digital sonar off, however this also turns all automatic features off also, such as auto sensitivity, auto ranging, and Fish I.D.

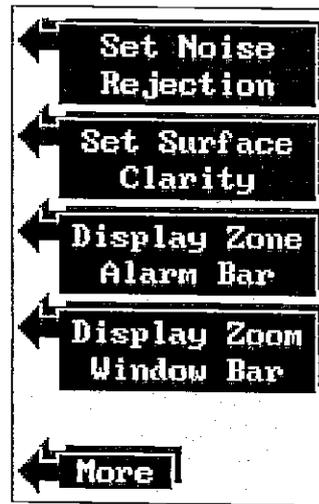
To turn the digital sonar off, press the MENU key, then the key adjacent to the "More" label four times. Now press the key adjacent to the "TURN OFF DIGITAL SONAR" label. To turn it back on again, repeat the same steps.

TUNES

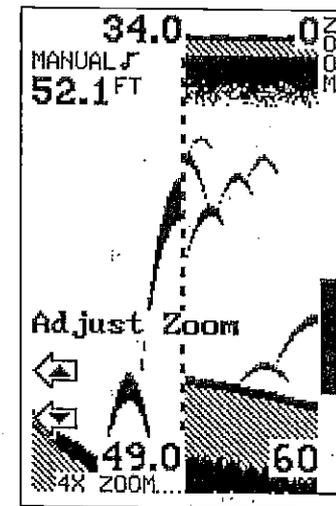
The X-60 has several songs pre-recorded. To play them, press the MENU key, then the key adjacent to the "More" label four times. Now press the key adjacent to the "Select A Tune" label. Finally, press a key adjacent to the desired tune label.

TABLE OF CONTENTS

INTRODUCTION 1
 MOUNTING 1
 POWER CONNECTIONS 2
 TRANSDUCER 3
 KEYBOARD 4
 DISPLAY 5
 AUTOMATIC 6
 SENSITIVITY 6
 GRAYLINE® 8
 RANGE - Automatic 9
 RANGE - Manual 9
 ZOOM 11
 ZOOM - Automatic 11
 ZOOM - Manual 12
 ALARMS 13
 DEPTH ALARMS 14
 SHALLOW ALARM 14
 DEEP ALARM 15
 ZONE ALARM 16
 FISH ALARM 17
 AUDIO ALARM ON/OFF 17
 MENUS 18
 MENU - PAGE 1 18
 CHART SPEED 18
 FISH I.D. 19
 CHART CURSOR 20
 BACKLIGHTS 21
 MENU - PAGE 2 21
 CONSTRUCT DIGITAL BLOCK 21
 SELECT DIGITAL SIZES 22
 FASTRAK 23
 DISPLAY CONTRAST 24
 MENU - PAGE 3 25
 SELECT UNIT OF MEASURE 25
 CLEAR DISTANCE LOG 26
 SPEAKER VOLUME 26
 MENU - PAGE 4 26
 NOISE REJECTION 26
 SET SURFACE CLARITY (SCC) 27
 DISPLAY ZONE BAR 28
 DISPLAY ZOOM WINDOW BAR 29
 MENU - PAGE 5 30
 DIGITAL SONAR 30
 TUNES 30



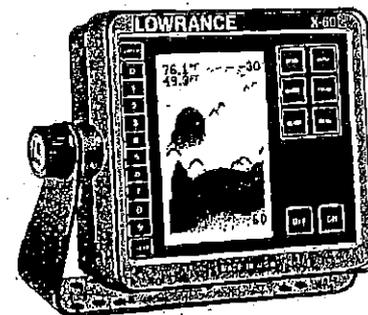
MENU - 4th PAGE
(AUTOMATIC OFF)



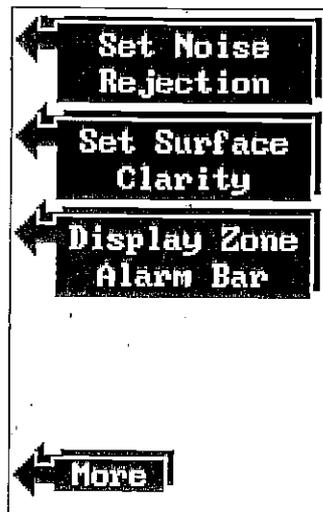
ZOOM ADJUST MENU
(MANUAL MODE)

DISPLAY ZOOM WINDOW BAR

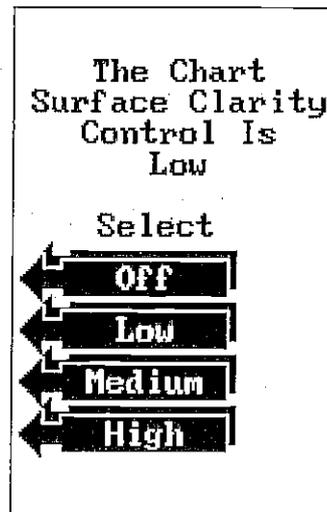
The bar used to adjust the zoom window in the manual mode normally disappears after setting the zoom window. You can turn it on continuously, which keeps the unit in the split screen zoom mode. To turn the zoom window bar on, first make certain the X-60 is in the manual mode. Next, press the MENU key, then the key adjacent to the "More" label three times. Now press the key adjacent to the "DISPLAY ZOOM WINDOW BAR" label. The menu screen disappears and the zoom window bar displays on the right side of the screen. This will also place the X-60 in the split screen zoom mode. Repeat these steps to turn the zoom window bar off.



The menu shown below appears. Simply press the key adjacent to the desired SCC level, either Off, Low, Medium, or High. The X-60 will clear the display, return to the chart mode using the SCC level you entered.



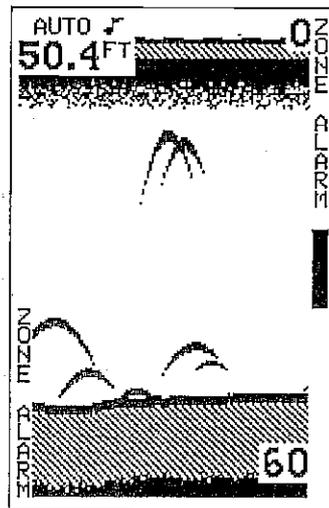
MENU - 4th PAGE
(AUTOMATIC ON)



SCC ADJUST
MENU

DISPLAY ZONE BAR

The bar used in the zone alarm normally disappears after setting the alarm. You can turn it on continuously, if desired. To turn the zone alarm bar on, press the MENU key, then the key adjacent to the "More" label three times. Now press the key adjacent to the "DISPLAY ZONE BAR" label. The menu screen disappears and the zone alarm bar displays on the right side of the screen. This will also turn the zone alarm on if it wasn't already on. Repeat these steps to turn the zone alarm bar off or use the ALARM menus. Turning the Zone Alarm bar off also turns the zone alarm off.



ZONE ALARM
ON

INTRODUCTION

The X-60 represents one of the best values in sportfishing sonar today. It rivals other sonar units costing much more in features and performance. With its menus, the X-60 offers easy-to-use operation at the touch of a button. The wide screen shows the underwater world with high resolution and detail. With the optional combination speed and temperature sensor, the X-60 also displays boat speed, surface water temperature, and distance travelled (distance log).

Although the X-60 has many features and functions, the "soft key" menu system makes it easy to use. Above all, don't be afraid to try different features and functions on the unit. You can't hurt it by pressing buttons!

Read this manual and take it with you the first few times you use your unit. It makes a great reference should you need it. The more you know when you get to the water, the more your X-60 can do for you!

MOUNTING

You can install the X-60 in any convenient location, provided there is clearance behind the unit. Place it in position first and tilt it for the best viewing angle. Then mark the holes in the bracket base. You can use wood screws or through-bolts to attach the bracket to the boat. You may need to place a piece of plywood on the back of thin fiberglass panels to secure the mounting hardware. Make certain there is enough room behind the unit to attach the power and transducer cables.

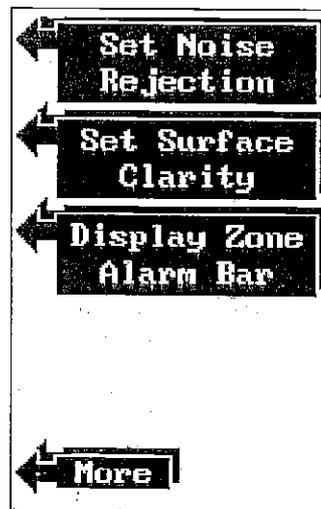
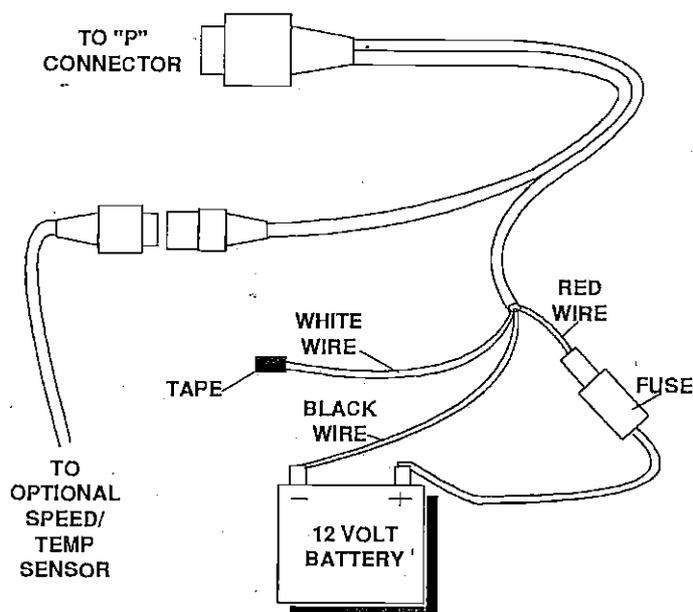
The smallest hole that will pass one power or transducer plug is one inch. After drilling the hole, pass the transducer connector up through the hole first, then pass the power cable down through it.

After routing the cables, fill the hole with a good marine sealing compound. Offset the bracket to cover the hole

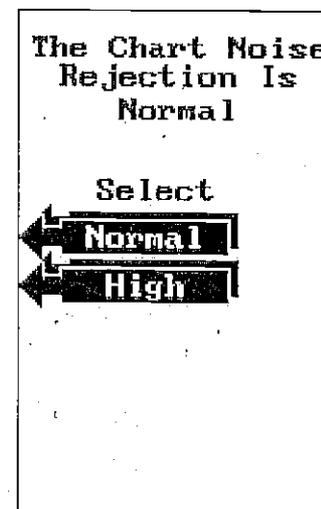
POWER CONNECTIONS

The X-60 works from a twelve-volt battery system only. You can attach the power cable to an accessory or power buss, however you may have problems with electrical interference. If so, attach the power cable directly to the battery. If the cable is not long enough, splice #18 gauge wire onto it.

The power cable has three wires, red, white, and black. Red is the positive lead, black is negative or ground. The white wire is not used. Cut and tape the end to prevent a short. Attach the in-line fuse holder as close to the power source as possible. In other words, attach one end of the fuse holder directly to the battery or power buss. This will protect both the unit and the power cable in the event of a short. Splice the other end of the fuse holder to the red wire on the power cable.



MENU - 4th PAGE
(AUTOMATIC ON)



NOISE REJECTION
MENU

SET SURFACE CLARITY (SCC)

The markings extending downwards from the zero line can extend many feet below the surface. These markings are called surface clutter and are caused by wave action, boat wakes, temperature inversions, and other activity.

Surface Clarity Control (SCC) reduces or eliminates undesired signals from the display. SCC varies the sensitivity of the receiver, decreasing it near the surface and gradually increasing it as the range increases. Typically, the maximum depth that SCC affects is 75% of the range. For example, on a 0-60 foot range with maximum SCC, surface clutter is reduced from the surface to about 45 feet.

There are three levels of SCC; low, medium, and high. Note that SCC is not available when the Fish I.D. feature is on. The SCC menu doesn't show until the Fish I.D. feature is turned off.

To adjust the SCC level, first make certain that the Fish I.D. feature is off. Now press the MENU key, then the key adjacent to the "More" label three times. Now press the key adjacent to the "Set Surface Clarity" label.

CLEAR DISTANCE LOG

To reset the distance log to zero, press the MENU key, then press the key adjacent to the "More" label two times. Now press the key adjacent to the "Clear Distance Log" label. This resets the distance log and returns to the chart display.

SPEAKER VOLUME

The speaker volume has two steps - low and high. The speaker volume is high when the unit is first turned on. To change it, first press the MENU key, then press the key adjacent to the "More" label two times. Now press the key adjacent to the "Set Speaker Volume Low" label. To switch back to the high volume, repeat the above steps.

MENU - PAGE 4

NOISE REJECTION

The X-60's noise rejection feature is an effective tool in combating noise. In sonar terms, noise is any undesired signal. It is caused by electrical and mechanical sources such as bilge pumps, engine ignition systems and wiring, air bubbles passing over the face of the transducer, even vibration from the engine. In all cases, noise produces unwanted marks on the display.

The X-60 has a two step noise rejection system. When the unit is turned on, the noise-rejection is normal. If you have noise problems (identified by random lines or dots on the display), try changing the noise rejection level to high.

To do this, first press the MENU key, then the key adjacent to the "More" label three times. Now press the key adjacent to the "Set Noise Rejection" label. The screen below appears. Now press the key adjacent to the "High" label. The screen will clear and return to the chart screen. The noise should clear from the display as new echoes scroll across the screen. If it isn't, you may have a problem with electrical wiring, engine, or transducer installation. Check with your local dealer, Lowrance service center, or the Lowrance factory customer service department for help.

The X-60 has reverse polarity protection. No damage will occur to the unit if the power wires are hooked up backwards. However, the unit will not work until you connect the wiring properly.

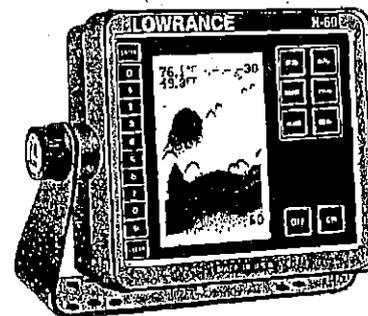
Minimize electrical noise by routing the power cable away from other possible sources of electrical interference. One of the largest noise generators is the engine's wiring harness. For best results, keep the power and transducer cables away from the engine wiring. Bilge pumps and their wiring can also radiate noise, so keep the cables away from them, if possible.

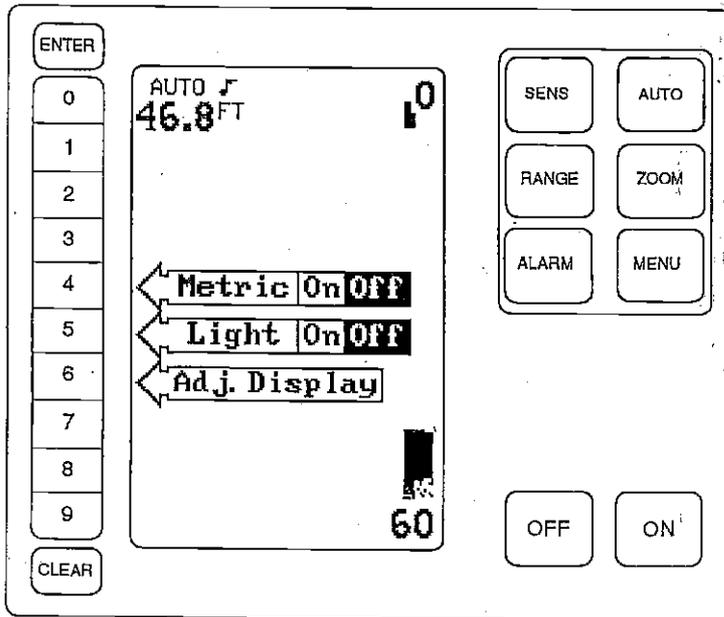
VHF radio antennas and cables radiate RF energy at high power levels. It is important to keep the power and transducer cables away from them, also.

If interference begins at slow boat speeds and gets worse as the speed increases, then the probable cause is cavitation. This noise is caused by air bubbles passing over the face of the transducer. It's easy to determine if this noise is electrical or cavitation. Stop the boat, put the engine in neutral, and increase the Rpm. If the noise increases, then it's electrical. If it doesn't show on the display, then the problem is cavitation. To solve this problem, move the transducer out of the turbulent water flow. Adjust the bracket so smooth water flows over the transducer's face at all boat speeds.

TRANSDUCER CONNECTIONS

See the transducer owner's manual included with the unit for transducer installation instructions.





KEYBOARD

The keyboard has keys arranged in two vertical columns. The keys in the left column are used for menu selections and numeric entry. The keys in the right column are for the basic sonar functions. The menu key activates the first menu page.

SENS - Press this key to adjust the unit's sensitivity and GRAYLINE.

RANGE - This key lets you adjust the range when the unit is in the manual mode.

ZOOM - The X-60 gives you 2X and 4X zoom capability with this key.

AUTO - This turns the automatic feature off and on.

ALARM - Activate and adjust the alarms through this key.

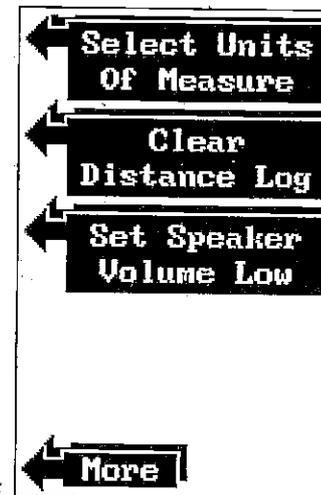
MENU - Press this key to show the menus and gain access to most functions.

ENTER - This key is used to enter selections from menus.

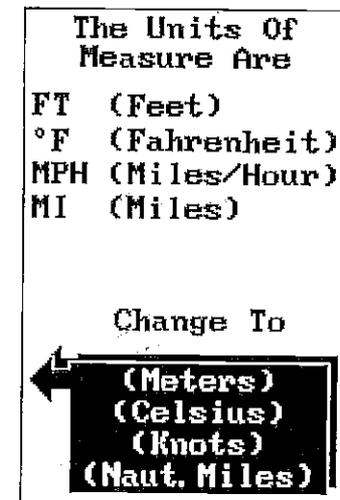
MENU - PAGE 3

SELECT UNIT OF MEASURE

The X-60 can display the water depth in feet or meters, and surface water temperature in degrees Fahrenheit or Celsius. It also shows speed in miles per hour or knots and distance (log) in miles or nautical miles. This menu switches all displays to the metric/nautical versions and back again. You cannot switch each display individually.



MENU - 3rd PAGE



METRIC / FEET SELECTION MENU

To change the units of measure, first press the MENU key, then press the key adjacent to the "More" label two times. Next, press the key adjacent to the "SELECT UNITS OF MEASURE" label. Now press the key adjacent to the "Change To Meters, Celsius, Knots, Naut. Miles" label. The unit of measure will change to the metric equivalent. Repeat the same steps to switch the units of measure again.

To turn FASTRAK on, press the menu key, then press the key adjacent to the "More" label. Now press the key adjacent to the "Turn On Fastrak" label. To turn it off, repeat the same steps. The "Turn Off Fastrak" label appears instead of the "Turn On Fastrak" label.



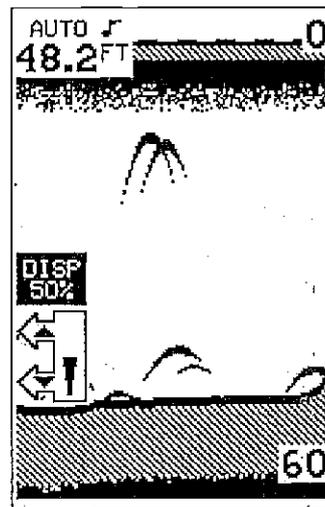
MENU -2nd PAGE



FASTRAK ON

DISPLAY CONTRAST

The unit's display contrast is adjustable to suit different lighting conditions. To adjust it, first press the MENU key, then press the key adjacent to the "More" label. Now press the key adjacent to the "Adjust Display Contrast." The display contrast arrows appear on the left side of the screen. To increase the contrast, press the key adjacent to the up arrow. To decrease it, press the key next to the down arrow. Press the Clear key to erase the menu, or wait about ten seconds and it automatically clears.



CONTRAST ADJUST MENU

CLEAR - Use this key to erase a previous keystroke or menu.

ON - The ON key turns the X-60 on.

OFF - The Off key turns the X-60 off.

"Soft Keys" - Use these keys to select menu items and turn other features on or off. They're called this because the same keys are used for many different features.

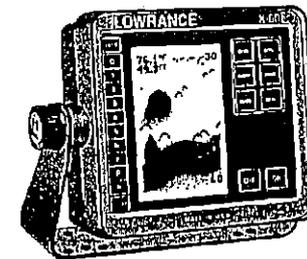
DISPLAY - General

The lights are on for about ten seconds when you first turn the X-60 on. Menus appear at the same time. To keep the lights on, press the key adjacent to the Light label. It controls the backlighting used on the display and keyboard. If you don't want the lights on, wait ten seconds and the lights automatically turn off. The menus also disappear after ten seconds. You can turn them off at any time by pressing the CLEAR key.

The Metric menu works the same way. Press the key adjacent to the Metric label to change the depth from feet to meters. This also changes the temperature display to degrees Celsius, speed to knots, and log to kilometers.

The ADJ Display label lets you adjust the display's contrast for the best viewing angle. Pressing this key gives you the contrast adjust menu. See the Display Contrast section for more information on this feature.

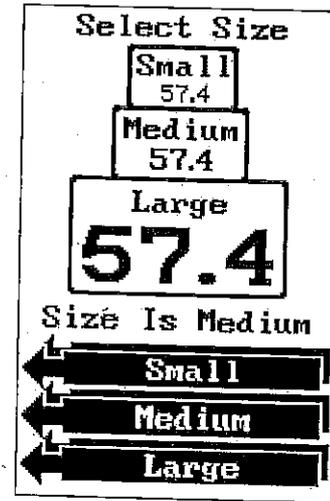
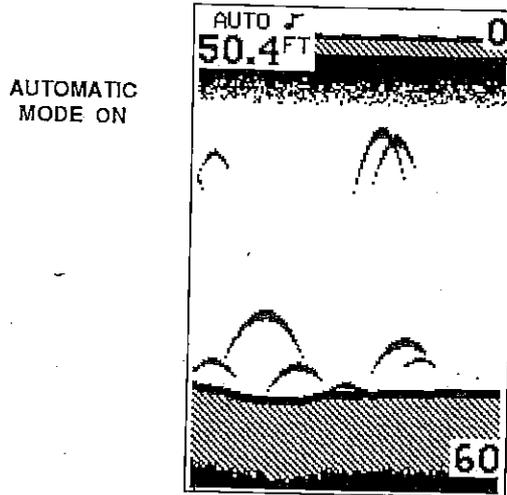
After the menus clear, the display appears similar to the one on the next page. The word "AUTO" in the display's upper left corner indicates the automatic feature is on. A small note symbol next to the "AUTO" indicator means the alarm speaker is enabled. The digital bottom depth displays immediately beneath the AUTO indicator.



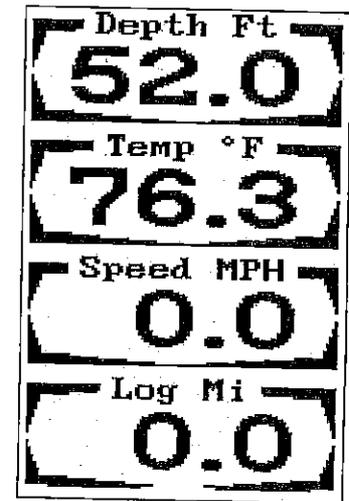
AUTOMATIC

When the X-60 is first turned on, the Automatic feature is on. This is shown by the word "AUTO" at the top of the screen. The Automatic feature adjusts the sensitivity and range so the bottom signal always shows in the lower half of the screen.

To turn Automatic off, simply press the AUTO key. The word "MANUAL" appears, showing the unit is in the manual mode. To turn Automatic on, press the AUTO key again.



DIGITAL SIZE MENU



ALL DIGITAL DISPLAY
(LARGE DIGITAL SIZE)

The large digital selection erases the chart and shows the digital displays in large numbers. Pressing the menu key gives only one menu page which is different from other menus. This menu lets you go back to chart information, placing the digital display back in the medium size. It also lets you select digital displays and adjust the depth alarm. Returning to the chart restores the normal menu operation.

SENSITIVITY

The sensitivity key on the X-60 controls the ability of the unit to pick up echoes. A low sensitivity level excludes much of the bottom information, fish signals, and other target information. High sensitivity levels enables you to see this detail, but it can also clutter the screen with noise. Typically, the best sensitivity level shows a good solid bottom signal with GRAYLINE and some surface clutter.

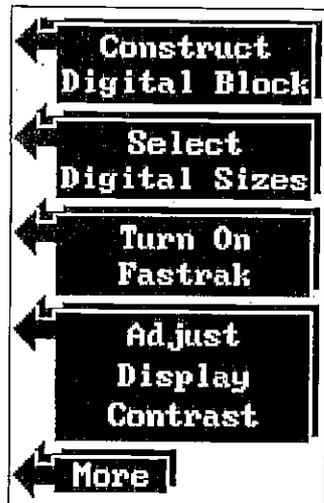
The X-60 adjusts the sensitivity when it's in the automatic mode. This keeps a solid bottom signal displayed, plus the capability to show fish and other detail.

However, situations occur where it becomes necessary to increase or decrease the sensitivity. This typically happens when you wish to see more detail. The procedure to adjust it is the same whether the unit is

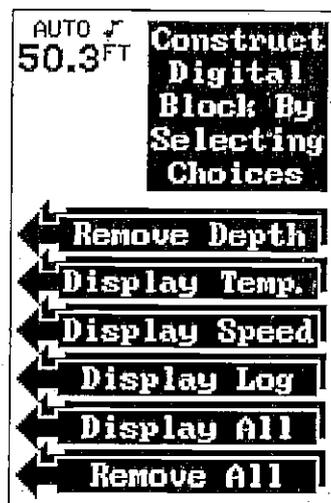
FASTRAK

This feature converts all echoes to short horizontal lines on the display's far right side. The graph continues to operate normally. FASTRAK gives you a rapid update of conditions directly under the boat. This makes it useful for ice fishing, or when you're fishing at anchor. Since the boat is not moving, fish signals are long, drawn out lines on a normal chart display. FASTRAK converts the graph to a vertical bar graph that, with practice, makes a useful addition to fishing at a stationary location.

NOTE: Fish I.D. is automatically turned off when FASTRAK is turned on.



MENU - 2nd PAGE



DIGITAL BLOCK MENU

Now press the key adjacent to the desired display. For example, to turn the temperature display on, press the key adjacent to the "Display Temp." label. Once you do this, the display will show the temperature and read "TEMP. IS ON." You can turn each display on or off individually.

You can easily switch all of the displays on or off. Simply press the key adjacent to the "Display All" or "Remove All" label.

Press the CLEAR key to exit from this menu or wait about ten seconds and the menus will automatically clear.

SELECT DIGITAL SIZES

The digital displays can show in three different sizes - small, medium, or large. When the X-60 is turned on, the digital depth shows in the medium digital size. To change the size of the digital display, first press the MENU key. Next, press the key adjacent to the "More" label. Now press the key adjacent to the "Select Digital Sizes" menu. The screen shown below appears.

A sample of the digital sizes appears at the top of the display.

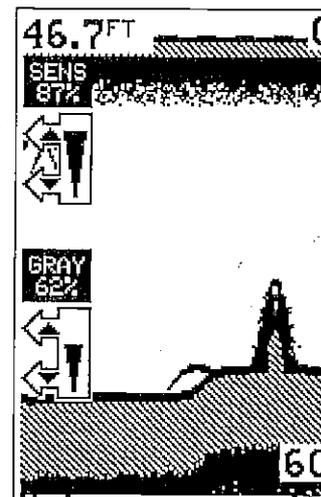
Now simply press the key adjacent to the desired label. For example, if you press the key adjacent to the "SMALL" label, the digital displays show in small numbers.

in the automatic or manual mode.

To adjust the sensitivity, press the SENS key. The sensitivity adjust menu appears on the left side of the screen. The GRAYLINE adjust menu is immediately beneath it.

The sensitivity menu has up and down arrows, plus a vertical bar graph. The graph gives a visual indication of the sensitivity level. The number above the up arrow also shows the percentage of sensitivity in use.

SENSITIVITY
ADJUST
MENU



To increase the sensitivity level, press the key adjacent to the menu's up arrow on the left side of the unit. As you press the key, the menu's bar graph will grow taller and the percentage will increase in value. You can also see the difference on the chart record as it scrolls. When the sensitivity is at the desired level, release the key.

To decrease the sensitivity level, press the key adjacent to the down arrow. The bar graph and percentage will decrease. When the sensitivity is at the desired level, release the key.

When you reach either the maximum or minimum limit, the speaker will sound an alert tone.

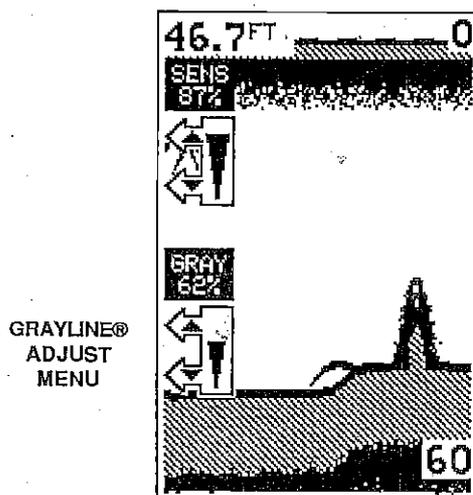
To turn the menus off, press the key adjacent to the CLEAR key at the bottom left side of the unit.

GRAYLINE®

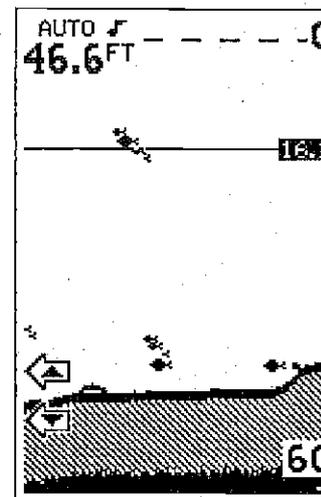
GRAYLINE® lets you distinguish between strong and weak echoes. It "paints" gray on targets that are stronger than a preset value. This allows you to tell the difference between a hard and soft bottom. For example, a soft, muddy or weedy bottom returns a weaker signal which displays with a narrow or no gray line. A hard bottom returns a strong signal which causes a wide gray line.

If you have two signals of equal size, one with gray and the other without, the target with gray is the stronger signal. This helps distinguish weeds from trees on the bottom, or fish from structure.

GRAYLINE® is adjustable. Since GRAYLINE® shows the difference between strong and weak signals, adjusting the sensitivity may require a different GRAYLINE® level, also. The level chosen by the X-60 at power on is usually adequate for most conditions. Experiment with your unit to find the GRAYLINE setting that's best for you.



To adjust GRAYLINE®, press the SENS key. The sensitivity menu appears in the upper left side of the display, while the GRAYLINE® label appears immediately beneath it. Now press the key adjacent to the GRAY up arrow to increase the gray level. Press the key adjacent to the down arrow to decrease it. The percentage of GRAYLINE® in use changes as you press the arrow keys. The bar chart also gives a graphical indication of the GRAYLINE® level.



BACKLIGHTS

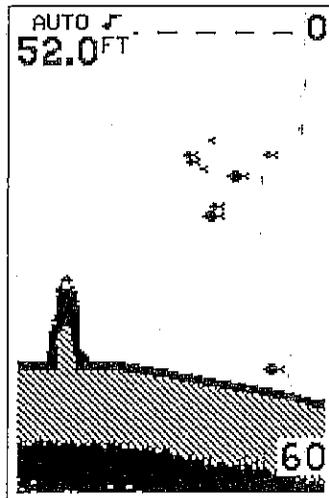
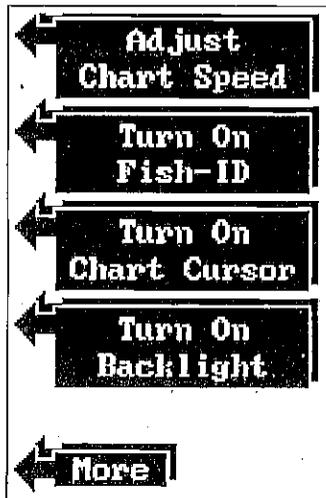
The X-60 has internal lights for the display and keyboard. To turn these on, first press the menu key. Now press the key adjacent to the "TURN ON BACKLIGHT" label. To turn the backlights off, repeat the same steps.

MENU - PAGE 2

CONSTRUCT DIGITAL BLOCK

The X-60 can display the depth, speed, surface water temperature, and distance log on the upper left portion of the screen. (The speed, surface temperature, and log requires the optional speed/temperature sensor.) When the X-60 is first turned on, only the digital depth shows. You can turn each digital display on or off as desired.

To select the digital displays, first press the menu key, then press the key adjacent to the "More" label. Next, press the key adjacent to the "CONSTRUCT DIGITAL BLOCK" menu at the top of the screen. A screen similar to the one at the top of the next page appears.



FISH I.D. ON

Remember, you can't use the Fish I.D. feature when the X-60 is in the manual mode. If you turn the Fish I.D. feature on when the X-60 is in manual, the micro-computer will turn the automatic feature on. If you turn automatic off when the Fish I.D. feature is on, the Fish I.D. feature will be turned off also.

CHART CURSOR

The X-60 has a chart cursor that allows you to pinpoint a target's depth. The cursor is simply a horizontal line that extends across the display from left to right. A depth box at the end of the line on the right side shows the line's depth. In the example at the top of the next page, the cursor (line) is at 16.1 feet.

To display the chart cursor, press the MENU key. Now press the key adjacent to the "Turn On Chart Cursor" label. A screen similar to the one below appears.

Use the keys adjacent to the up and down arrow to move the cursor up or down to the desired depth.

To turn the chart cursor off, press the MENU key. Now press the key adjacent to the "Turn Off Chart Cursor" label. The X-60 returns to the sonar screen without the chart cursor.

NOTE: You can't use the Chart Cursor when FASTRAK is on.

You can see the change on the screen (both on the menu and on the chart record) as you press the keys. After you've made the adjustment, press the key adjacent to the CLEAR key to erase the menu.

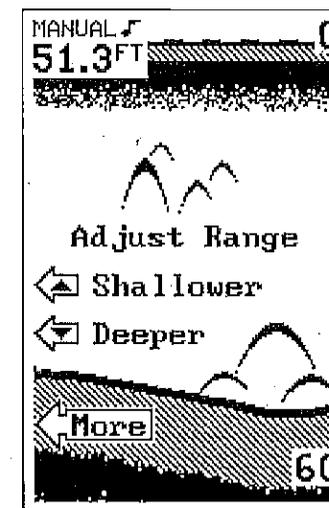
RANGE - Automatic

When first turned on, the X-60 automatically places the bottom signal in the lower half of the screen. This is called Auto Ranging and is part of the automatic function. You cannot change the range while the unit is in automatic.

RANGE - Manual

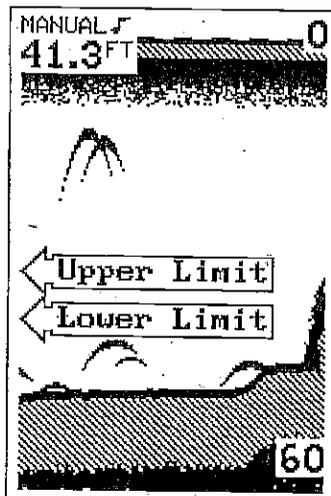
The X-60 gives you control over the range when it's in the manual mode. Both the lower and the upper limit are adjustable.

To change the range, first make certain the X-60 is in the manual mode. If necessary, press the AUTO key to switch to the manual mode. Next, press the RANGE key. Two arrows appear in the lower left corner of the display. These are the range adjust arrows. Press the key corresponding to the Shallower or Deeper arrow to decrease or increase the range. The available ranges are 0-5, 10, 20, 40, 60, 100, 150, 200, 300, 500, 800, 1000, 1500, 2000, 3000, and 5000 feet. (Metric ranges are 3, 5, 10, 15, 20, 30, 40, 60, 100, 150, 250, 300, 400, 600, 1000, and 1500 meters.) After you've set the desired range, press the CLEAR key to erase the range arrows.



RANGE
ADJUST
MENU
(MANUAL
MODE
ONLY)

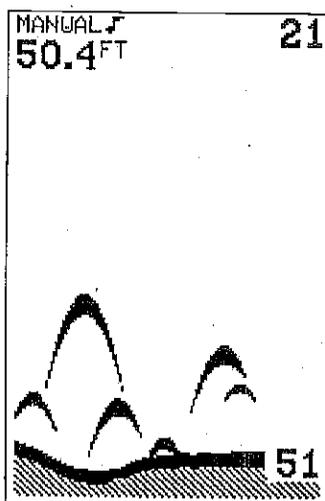
To adjust the upper or lower limit, press the key adjacent to the "More" label. The menus shown below appear. To adjust the upper limit, press the key adjacent to the "Upper Limit" arrow. A new menu appears: "Enter Upper Limit." Using the number keys at the display's left side, enter the desired upper limit. In this example, we used 21 feet. If you make an error, press the CLEAR key and start again. Now press the ENTER key. The X-60 changes the upper limit to the value you entered.



UPPER/LOWER LIMIT MENU



UPPER LIMIT ENTRY MENU



30 FOOT
WINDOW
(21 FEET
TO
51 FEET)

The chart speed is preset to maximum when the X-60 is first turned on.

To stop the chart, press the key adjacent to the "START/STOP" label. Repeat this step to start the chart again. If desired, the chart can be stopped, then the CLEAR key pressed to erase the menus from the screen. This gives a clear view of the display.

FISH I.D.

The Fish I.D. feature identifies targets that meet certain conditions as fish. The micro-computer analyses all echoes and eliminates surface clutter, thermoclines, and other signals that are undesirable. In most instances, remaining targets are fish. The Fish I.D. feature displays symbols on the screen in place of the actual fish echoes. There are four fish symbol sizes: tiny, small, medium, and large. These show the relative size between targets. In other words, it displays a small fish symbol when it thinks a target is a small fish, a medium fish symbol on a larger target, etc.

The micro-computer is sophisticated, but it can be fooled. It can't distinguish between fish and other suspended objects such as trotlines, turtles, submerged floats, air bubbles, etc. Individual tree limbs extending outwards from a group of limbs is the hardest object for the Fish I.D. feature to distinguish from fish. You may see Fish I.D. symbols on the screen when actually, there are no fish. Practice with the unit in both the Fish I.D. mode and without to become more familiar with the Fish I.D. feature.

When the X-60 is turned on, the Fish I.D. feature is off. To turn the Fish I.D. feature on, first press the MENU key. Now press the key adjacent to the "Turn On Fish-ID" label. The menu immediately disappears and the sonar screen returns. Echoes will continue to scroll across the screen, however, the surface clutter no longer shows. Any targets the micro-computer determines are fish show as fish symbols. To turn the Fish I.D. feature off again, first press the menu key. Next, press the key adjacent to the "Turn Off Fish-ID" label. Or press the AUTO key. This turns the Fish I.D. feature and automatic off at the same time.

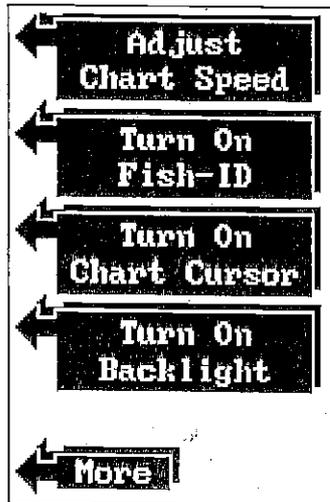
MENUS

The X-60 uses menus extensively to guide you through the functions and features of the unit. The menu key accesses many of these features, allowing you to customize the unit to your particular needs and water conditions. If you ever get lost in a menu, simply press CLEAR key. This returns the X-60 to the sonar screen. There are five menus, total. All of the following features are available through the menu key.

MENU - PAGE 1

CHART SPEED

Chart speed is the rate echoes scroll across the screen. It's adjustable by first pressing the menu key, then pressing the key adjacent to the "ADJUST CHART SPEED" label. The chart speed menu appears on the left side of the screen. Increase the chart speed by pressing the key adjacent to the up arrow. Decrease it by pressing the key adjacent to the down arrow. The percentage of chart speed in use changes as the arrow keys are pressed. The bar chart also gives a graphical indication of the chart speed. You can see the change on the screen (both on the menu and on the chart record) as you press the keys. After you've made the adjustment, press the key adjacent to the CLEAR key to erase the menu.



.MENU-1st PAGE



CHART SPEED ADJUST MENU

The lower limit is adjustable in the same manner. You can choose any upper limit between zero and 4995 feet. The lower limit can be any range between 5 and 5000 feet.

The smallest "window" or distance between the upper and lower limit is five feet. For example, an upper limit of 21 feet and a lower limit of 51 feet gives a window of 30 feet. Upper and lower limits can be set in various combinations to show windows from the surface to the bottom and anywhere in between.

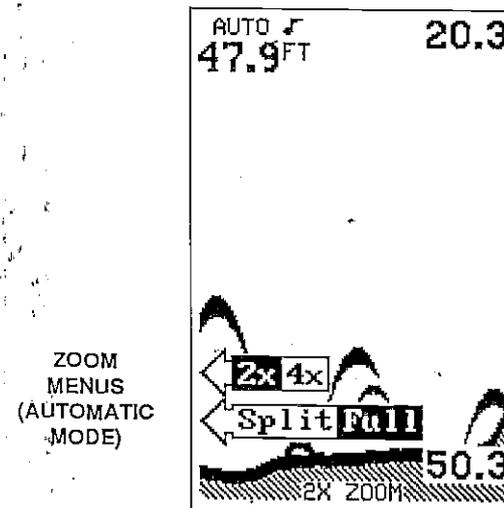
NOTE: The depth capability of the X-60 depends on the transducer installation, water and bottom conditions, and other factors. You can expect to read depths more than 350 feet in both fresh and salt water.

ZOOM

Enlarging or "zooming" the picture is a common method used to show small detail and fish signals. The X-60 gives you two different zoom sizes, plus a split screen zoom option. The zoom operation and adjustment is different in the automatic and manual modes.

ZOOM - AUTOMATIC MODE

To zoom the display in the automatic mode, first press the ZOOM key. All targets on the display are enlarged four times normal size automatically. The menus shown below also appear.

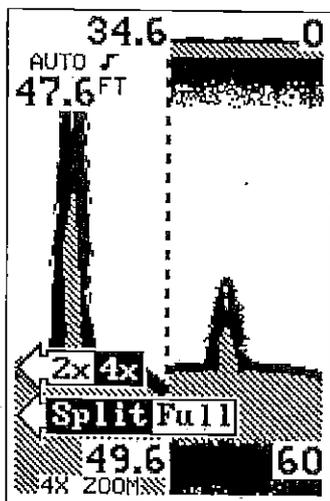


ZOOM
MENU
(AUTOMATIC
MODE)

To switch targets between twice their normal size and four times normal, press the key adjacent to the "2X/4X" label.

To switch between the split screen zoom and full screen zoom, press the key adjacent to the "SPLIT/FULL" label. The screen instantly splits into two sections. All targets on the left are shown at four times the size of the ones on the right. If you switch to the 2X zoom mode, echoes on the left side of the screen are shown at twice the size as the ones on the right. The echoes that scroll across the screen are the exact same echoes on both sides of the screen. They're simply enlarged on the left side. This feature tracks the bottom, always keeping it on the display while the automatic feature is on. Once you've set the zoom as desired, press the CLEAR key to erase the menus.

SPLIT-SCREEN
ZOOM
(AUTOMATIC
MODE)



To turn the Zoom feature off, press the RANGE key.

ZOOM - MANUAL MODE

When you press the zoom key while the unit is in the manual mode, the screen shown below appears. The 4X zoom mode automatically appears. For a 2X zoom, simply press the key adjacent to the 2X/4X label. For a split screen zoom, press the key adjacent to the SPLIT/FULL label. Remember, the X-60 won't track the bottom signal while it's in the manual mode.

Fish Alarm

Use the fish alarm for a distinctive audible alarm when the Fish ID feature detects fish or other suspended objects. To use the Fish Alarm feature, first press the ALARM key. Now press the key adjacent to the "Turn On" label in the Fish Alarm section. The screen will clear. Each time a fish symbol displays on the screen, a tone will sound. This will also turn the Fish I.D. feature on if it was off.

To turn the Fish Alarm off, again press the ALARM key. Now press the key adjacent to the "Turn Off" label. The alarm is now disabled.

Audio Alarm On/Off

When the X-60 is first turned on, a note symbol at the top of the screen shows the audio alarm is enabled.

To turn the audio alarm on or off, press the ALARM key. Next, press the key adjacent to the "Turn Off" label in the "All Alarms" section. To turn the audio alarm on, press the ALARM key again. The label that was used to turn the sound off now reads "Turn On." Press the key adjacent to this label to turn the sound on.

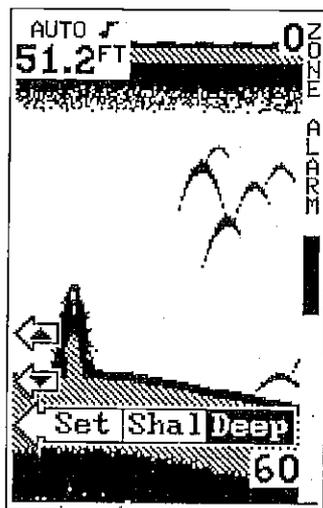


NOTE: The words corresponding to the alarm in use will still flash at the display's side when the alarm is triggered even if the speaker is turned off. For example, the words "ZONE ALARM" flash when the zone alarm trips.

Zone Alarm

To activate the Zone Alarm, first press the ALARM key. Next, press the key next to the Zone Alarm's ADJUST label. The words "ZONE ALARM" show at the screens top right side, signifying the Zone Alarm is active. The zone bar shows immediately beneath it. Any echo that appears between the top and bottom of this bar will trigger the alarm. This alarm will sound on fish, structure, bottom echoes, etc.

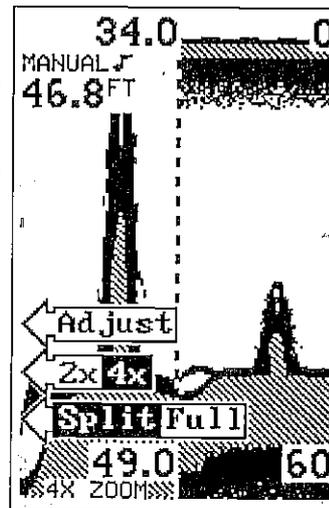
ZONE
ALARM
MENU



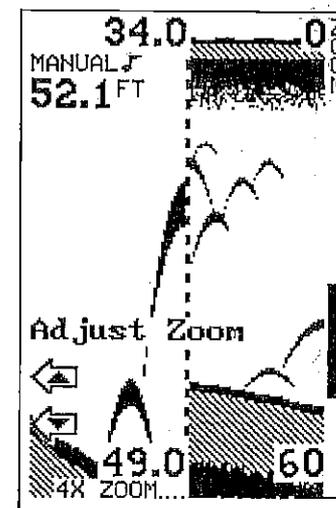
To adjust the zone alarm bar press the key adjacent to the up or down arrows. To adjust the top of the bar shallower or deeper, press the key adjacent to the Set Shal/Deep label until the word Shal is highlighted. To adjust the bottom of the zone alarm bar, press the key adjacent until the Deep label is highlighted. Now simply press the key adjacent to the up arrow to move the end of the bar up. Press the key adjacent to the down arrow to move it down.

Once you've made the adjustments, press the key adjacent to the CLEAR label to erase the menus.

To turn the Zone Alarm off, first press the ALARM key. Then press the key adjacent to the "Turn Off" label in the Zone Alarm section.



SPLIT-SCREEN ZOOM
(MANUAL MODE)



ZOOM ADJUST MENU
(MANUAL MODE)

To adjust the zoom, press the key adjacent to the ADJUST label. A screen similar to the one at the right appears. A zoom bar appears at the top right side of the screen and adjust arrows appear at the bottom left. The echoes on the left side of the screen are the same ones that appear between top and bottom of the zoom bar. Press the keys adjacent to the arrows to move the zoom bar up or down. As you adjust the zoom bar, the echoes move on the left side of the screen at the same time. The zoom adjust menus and zoom bar automatically erase a few seconds after you've pressed the last key.

To keep the zoom bar on the screen, press the MENU key while the unit is in the manual mode. Next, press the key adjacent to the "More" label three times. The "Display Zoom Window Bar" menu appears at the bottom of the screen. This menu only appears when the X-60 is in the manual mode. Press the key adjacent to this menu to display the zoom bar. To erase the bar, press the RANGE key.

ALARMS

The X-60 has three different types of alarms. The first is the Fish Alarm. It sounds when the Fish I.D. feature determines a group of echoes is a fish. Another alarm is the Zone Alarm which consists of a bar. Any echo that appears inside this bar triggers the alarm. The last alarm is the Bottom Alarm. Only the bottom signal will "trip" this

alarm. This is useful as an anchor watch, a shallow water alert, or for navigation.

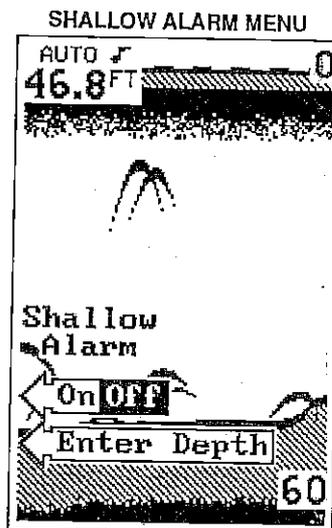
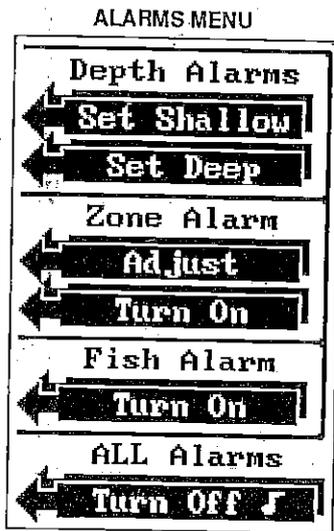
All of the alarms have a visual and audio signal. If desired, the audio signal can be turned off through the ALARM menu.

Depth Alarms

The Depth Alarms are only triggered from the bottom signal. No other echo will "trip" this alarm. The shallow alarm sounds a warning tone when the bottom signal goes shallower than the alarm set point. The deep alarm sounds when the bottom signal goes deeper than the alarm set point. Use the shallow alarm to warn you of shallow water. Use the deep alarm to alert you to deeper water, such as a drop-off.

Shallow Alarm

To use the Shallow Alarm, first press the ALARM key. The Shallow and Deep Alarm menus are at the top of this screen. Now press the key adjacent to the "Set Shallow" label. The screen similar to the one at the lower right appears.



SHALLOW
ALARM
ENTRY
MENU



Now press the key adjacent to the "Enter Depth" arrow. A new menu appears "Enter Shal Alarm", as shown above. Now simply enter the desired shallow alarm depth using the keys on the left side of the screen. This example uses a shallow alarm setting of ten feet. If the bottom depth goes shallower than ten feet, the alarm will sound. Now press the Enter key. The menu automatically erases and the words "SHAL ALARM" appear in the screen's lower left corner. This automatically turns the shallow alarm on. When the bottom signal triggers this alarm, a tone sounds and the words "SHAL ALARM" flash on the display. An arrow appears with the word "MUTE" inside. Pressing the key adjacent to this arrow temporarily turns the alarm's sound off. The next time the alarm trips, the tone will sound again.

To turn the shallow alarm off, first press the ALARM key. Then press the key adjacent to the "Set Shallow" label. Now press the key adjacent to the ON/OFF label. Another way to turn the shallow alarm off is to simply set the shallow alarm depth to zero.

Deep Alarm

The deep alarm adjusts and activates exactly like the shallow alarm except the initial setting. When you first set the deep alarm, the initial setting is 5000 feet. Setting the deep alarm to 5000 feet turns it off. The only other difference is the sound the deep alarm makes when the bottom goes deeper than the alarm depth. This tone is different so you can tell by the sound which alarm was triggered.