

the same time. To turn the Fish I.D. feature on again, first press the menu key. Next, press the key adjacent to the "Turn Fish-I.D. On" label. The menu immediately disappears and the sonar screen returns. Echoes will continue to scroll across the screen, however, the surface clutter will no longer be displayed. Any targets the micro-computer determines are fish will be displayed as fish symbols.

Remember, the Fish I.D. feature cannot be used when the Ultra is in the manual mode. If you turn the Fish I.D. feature on when the Ultra 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.

MENU - PAGE 2

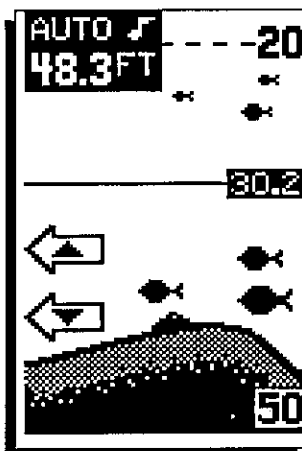
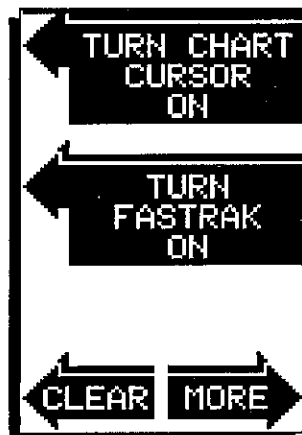
CHART CURSOR

The Ultra 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 below, the cursor (line) is at 30.2 feet.

To display the chart cursor, press the menu key twice. Now press the key adjacent to the "TURN CHART CURSOR ON" 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 twice. Now press the key adjacent to the "TURN CHART CURSOR OFF" label. The Ultra returns to the sonar screen without the chart cursor.

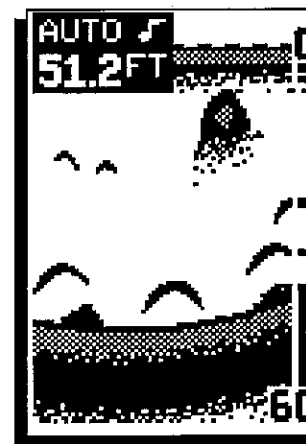


MENU - PAGE 2

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 unit 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.

To turn FASTRAK on, press the menu key twice, then press the key adjacent to the "TURN FASTER ON" label. To turn it off, repeat the same steps. The "TURN FASTER OFF" label appears instead of the "TURN FASTER ON" label.



MENU - PAGE 3 **ULTRA ONLY**

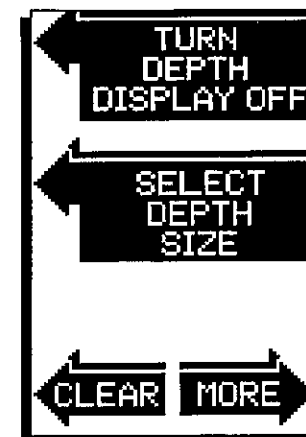
TURN DEPTH DISPLAY OFF

The Ultra displays the digital depth on the upper left portion of the screen when it's first turned on. This display can be turned off, if desired.

NOTE: Turning the display off does NOT turn the automatic features or Fish I.D. off.

To turn the digital bottom depth display off, first press the menu key three times. Next, press the key adjacent to the "TURN DEPTH DISPLAY OFF" label at the top of the screen. The menu screen clears and the chart screen appears with the digital depth display off.

To turn the depth display on, simply repeat the above steps.

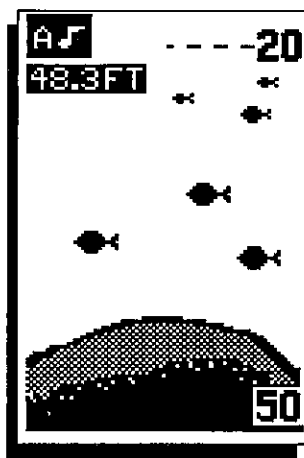
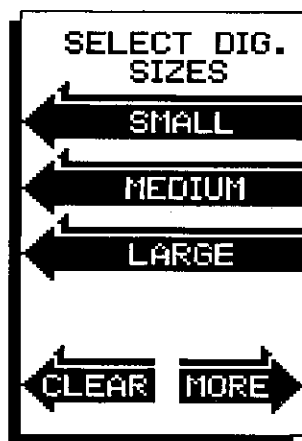
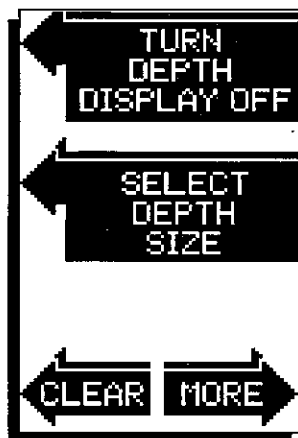


MENU - PAGE 3 **ULTRA ONLY**

SELECT DEPTH SIZE

The digital bottom depth display can be shown in three different sizes - small, medium, or large. To change the size of the digital display, first press the menu key three times. Now press the key adjacent to the "SELECT DEPTH SIZE" menu. The screen shown below appears.

Now simply press the key adjacent to the desired label. For example, if you press the key adjacent to the "SMALL" label, the digital bottom depth display is shown in small numbers.



SMALL DIGITAL DISPLAY
ULTRA

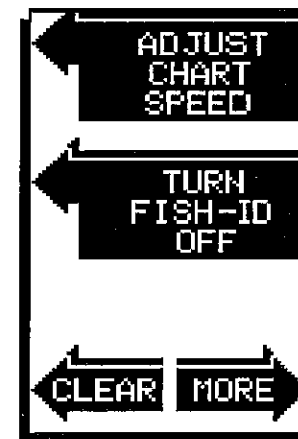
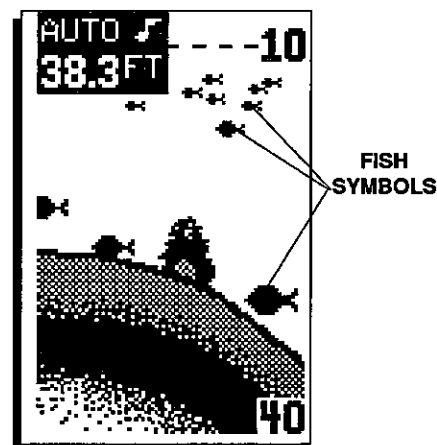
The large digital selection erases the chart and shows only the digital bottom depth in large digital numbers. Pressing the menu key gives only one menu page which is different from other menus. This menu lets you go back to chart information, returning the digital display to the medium size, or adjust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

MENU - PAGE 1

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 are used to designate 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 cannot distinguish between fish and other suspended objects such as trot-lines, 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 Ultra is turned on, the Fish I.D. feature is automatically turned on, also. To turn the Fish I.D. feature off, press the menu key, then press the key adjacent to the "Turn Fish-ID Off" label. Or press the AUTO key. This turns the Fish I.D. feature and automatic off at

MENUS

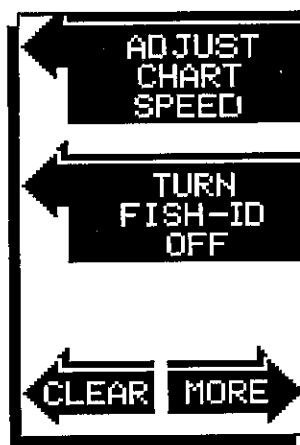
The Ultra uses menus extensively to guide you through the functions and features of the unit. The menu key accesses many of these features, allowing you to customize the unit to your particular needs and water conditions. Although you may have to leave one menu and enter another to reach the desired function, all you have to do is press the menu key to select the next menu. If you ever get lost in a menu, simply press the key adjacent to the CLEAR label to return to the sonar screen. There are eight menus accessible with the menu key. All of the following features are accessed through the menu key.

MENU - PAGE 1

CHART SPEED

The rate echoes scroll across the screen is called the chart speed. 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 or 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.

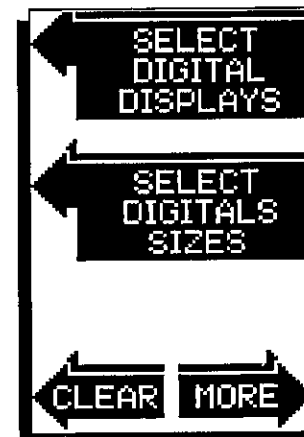
To stop the chart, press the key adjacent to the "START STOP" label. Repeat this step to start the chart again.



MENU - PAGE 3 **ULTRA PLUS ONLY**

SELECT DIGITAL DISPLAYS

The Ultra Plus can display the depth, speed, surface water temperature, and distance log on the upper left portion of the screen. The Ultra displays the depth only. When the Ultra Plus is first turned on, only the depth is displayed. Each digital display can be turned on or off as desired.



To select the digital displays, first press the menu key three times. Next, press the key adjacent to the "SELECT DIGITAL DISPLAYS" menu at the top of the screen. A screen similar to the one below appears.



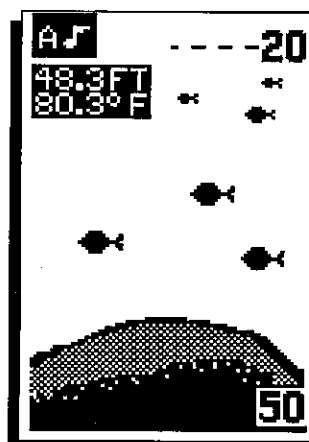
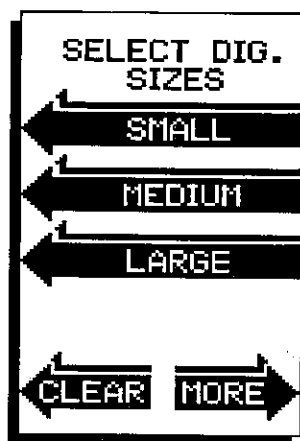
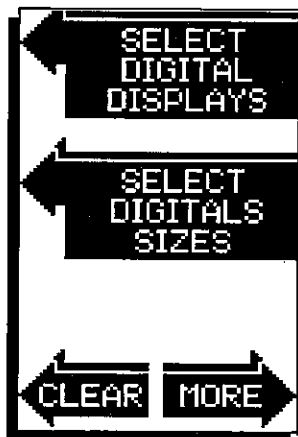
Now press the key adjacent to the desired display. For example, to turn the temperature display on, press the key adjacent to the "TEMP. IS OFF" label. Once you do this, the display will show the temperature and read "TEMP. IS ON". You can turn each display on or off individually.

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

MENU - PAGE 3 **ULTRA PLUS ONLY**

SELECT DIGITAL SIZES

The digital displays can be shown in three different sizes - small, medium, or large. To change the size of the digital display, first press the menu key three times. Now press the key adjacent to the "SELECT DIGITAL SIZES" menu. The screen shown below appears.



SMALL DIGITAL DISPLAY
ULTRA PLUS

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 are shown in small numbers.

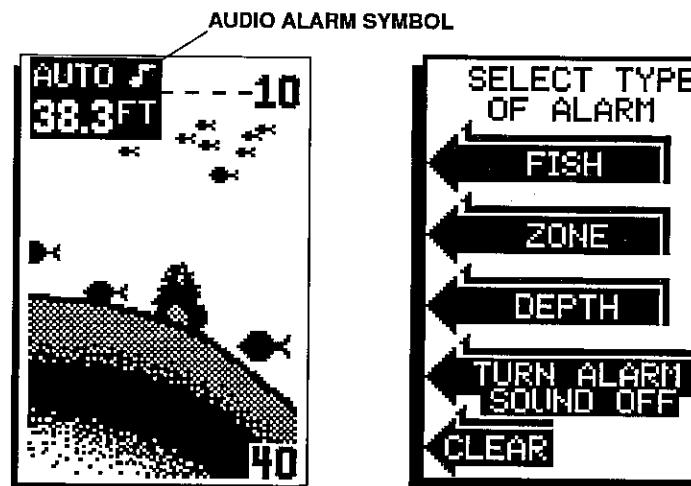
The large digital selection erases the chart and shows the digital displays in large. Pressing the menu key gives only one menu page which is different from other menus. This menu lets you go back to chart information, placing the digital display back in the medium size, select digital displays, and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

press the key adjacent to the up arrow to increase the depth or the down arrow to decrease it on the desired alarm. The shallow alarm was adjusted in this example, so the key adjacent to the up arrow on the Shallow Alarm was pressed.

The deep alarm adjusts and activates exactly like the shallow alarm. The only 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.

AUDIO ALARM ON/OFF

When the Ultra is first turned on, the audio alarm is automatically enabled. This is indicated by a note symbol at the top of the screen.



To turn the audio alarm on or off, press the ALARM key. Next, press the key adjacent to the "Turn Alarm Sound Off" label to turn the audio off. To turn the audio alarm on, press the ALARM key again. The label that was used to turn the sound off now reads "Turn Alarm Sound 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 on the display when the alarm is triggered even if the speaker is turned off. For example, the word "ZONE ALM" will flash when the zone alarm is triggered.

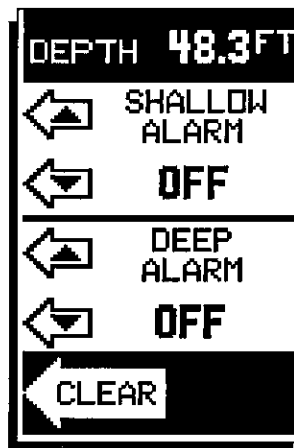
Once you've made the adjustments, press the key adjacent to the CLEAR label to erase the menus. The Zone Alarm bar will remain on the display. This lets you know the exact location of the Zone Alarm.

To turn the Zone Alarm off, return to the Zone Alarm menu, then press the key adjacent to the "OFF" label.

DEPTH ALARM

The Depth Alarm works off the bottom signal only. No other echo will trigger this alarm. The Depth Alarm is actually two different alarms. It consists of a shallow alarm and a deep 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.

To turn the Depth Alarm on, press the ALARM key. Next, press the key adjacent to the Depth Alarm label.



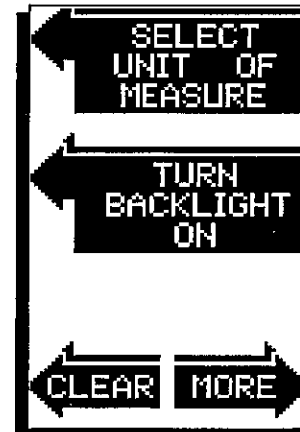
This brings you to the Shallow Alarm and Deep Alarm menu. The bottom depth is shown at the top of the display. The shallow and deep alarm adjustment arrows are beneath the digital depth. Now simply

MENU - PAGE 4 **ULTRA ONLY**

SELECT UNIT OF MEASURE

The Ultra can display the depth in feet or meters. This menu switches the bottom depth display from feet to meters and back again.

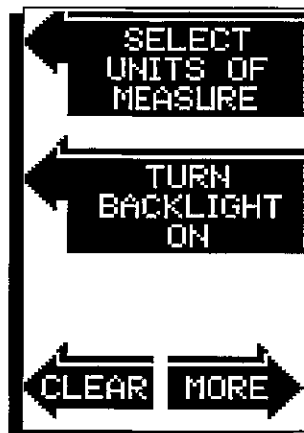
To change the units of measure, first press the menu key four times. Next, press the key adjacent to the "SELECT UNIT OF MEASURE" label. Now press the key adjacent to the "CHANGE TO METERS" label. The unit of measure will change to meters. Repeat the same steps to switch back to feet.



MENU - PAGE 4 **ULTRA PLUS ONLY**

SELECT UNITS OF MEASURE

The Ultra Plus can display the water depth in feet or meters, surface water temperature in degrees Fahrenheit or Celsius, speed in miles per hour or knots, and distance (log) in miles or nautical miles. This menu switches all displays and back again. NOTE: You cannot switch each display individually.



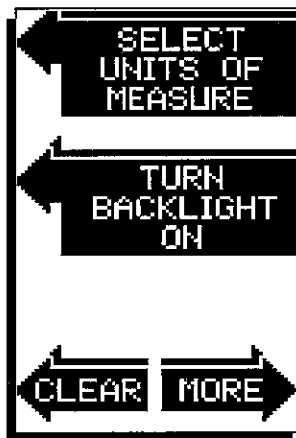
To change the units of measure, first press the menu key four times. The screen above left appears. Next, press the key adjacent to the "SELECT UNITS OF MEASURE" label. The screen at the above right appears. Now press the key adjacent to the "CHANGE TO METERS, °C, NAUT. MILES" label. The unit of measure will change immediately. Repeat the same steps to switch the units of measure again.



MENU - PAGE 4

BACKLIGHTS

The Ultra and Ultra Plus have internal lights for the display and keyboard. To turn these on, press the menu key four times, then press the key adjacent to the "TURN BACKLIGHT ON" label. To turn the backlights off, repeat the same steps.



To turn the fish alarm on, press the key adjacent to the "TURN ON" label. The screen will clear and return to the chart display. Each time a fish symbol displays on the screen, a tone will sound. The words "FISH ALM" show in the lower left corner of the screen. They will flash when the alarm sounds.

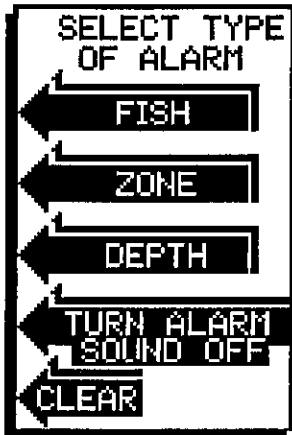
To turn the fish alarm off, again press the ALARM key, then the key adjacent to the "FISH" label. Now press the key adjacent to the "TURN OFF" label. The alarm is now disabled.

ZONE ALARM

To activate the Zone Alarm, first press the ALARM key. Next, press the key next to the Zone Alarm label. The word "ZONE" shows at the top of the screen, signifying the Zone Alarm is active. The adjustment label appears on the left side of the display, whereas the zone bar shows on the far right side. 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.



To adjust the zone alarm bar, first press the key next to the Adj. label. The menus shown below appear. To adjust the top of the bar shallower or deeper, press the key adjacent to the up or down arrow in the Upper menu. To adjust the bottom of the zone alarm bar, first press the key adjacent to the Lower label. Now the adjustment menu says "Lower". You can now adjust the bottom of the zone alarm bar using the keys adjacent to the up and down arrows.



ALARM MENU

bar. Any echo that appears inside this bar triggers the alarm. The last alarm is called 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.

You can also turn the alarm speaker off through the ALARM menu.

FISH ALARM

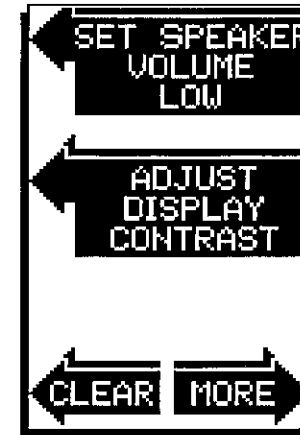
Use the fish alarm for a distinctive audible alarm when fish or other suspended objects are detected by the Fish I.D. feature. To use the fish alarm feature, first press the ALARM key. Now press the key adjacent to the "FISH" label. The menu shown below appears.



MENU - PAGE 5

SPEAKER VOLUME

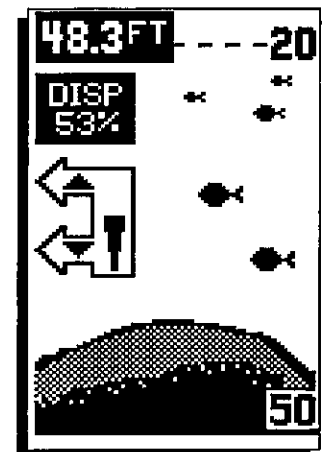
The speaker volume has two steps - low and high. The speaker volume is high when the unit is first turned on. To change it, first press the menu key five times. Now press the key adjacent to the "SET SPEAKER VOLUME LOW" label. To switch back to the high volume, repeat the above steps.



MENU - PAGE 5

DISPLAY CONTRAST

The unit's display contrast is adjustable to suit different lighting conditions. To adjust it, first press the menu key five times. The menu shown above appears. 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 approximately ten seconds and they'll automatically clear.



MENU - PAGE 6

DIGITAL SONAR

When the Ultra is turned on for the first time, the digital depth display is located at the top left corner of the screen. This display comes from a separate digital sonar built into the Ultra. 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.

The digital sonar can be turned 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 six times. Now press the key adjacent to the "TURN DIGITAL SONAR OFF" label. To turn it back on again, repeat the same steps.

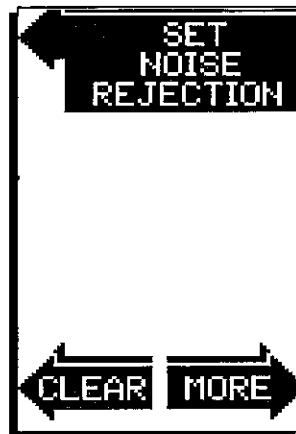
MENU - PAGE 7 - FISH I.D. ON

NOISE REJECTION

The Ultra'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 can produce unwanted marks on the display.

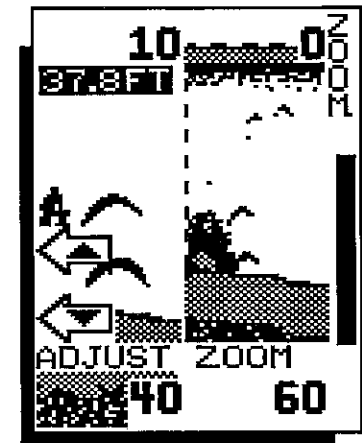
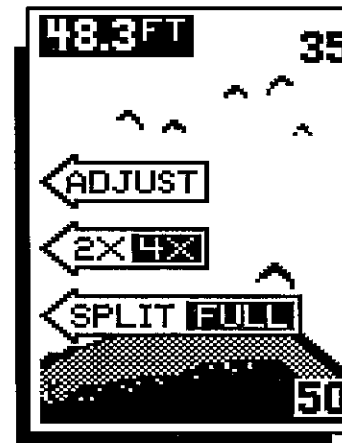
The Ultra has a two step noise rejection system. When the unit is turned on, the noise rejection is on normal. If you have noise problems (identified by random lines or dots on the display), try changing the noise rejection level to high.

To do this, first press the menu key seven times. Now press the key adjacent to the "SET NOISE REJECTION" label.



ZOOM - MANUAL MODE

When you press the zoom key while the unit is in the manual mode, the screen shown below appears. The unit is automatically placed in the 4X zoom mode. 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 ULTRA won't track the bottom signal while it's in the manual mode.



To adjust the zoom, press the key adjacent to the ADJUST label. A screen similar to the one on the right appears. A zoom bar and adjust arrows appear on the screen. The echoes on the left side of the screen are the ones that appear between the top and the 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 will automatically clear a few seconds after you've pressed the last key.

ALARMS

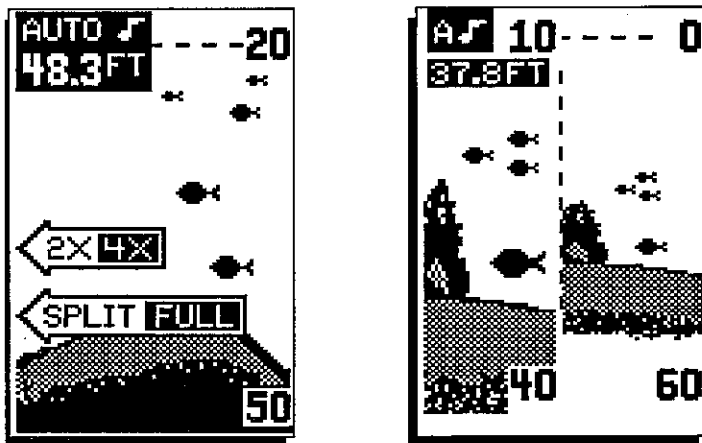
The Ultra has three different types of alarms. The first is the Fish Alarm. It sounds when the Fish I.D. feature determines a group of echoes is a fish. Another alarm is the Zone Alarm which consists of a

ZOOM

Enlarging or “zooming” the picture is a common method used to show small detail and fish signals. The Ultra 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.



SPLIT SCREEN ZOOM

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, keeping it on the display at all times, when the automatic feature is on. Once you’ve set the zoom as desired, press the CLEAR key to erase the menus.

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

This screen appears. Now press the key adjacent to the “SET HIGH” label. The screen will clear and return to the chart screen. The noise should be cleared 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, Eagle service center, or the Eagle factory customer service department for help.

MENU - PAGE 7 - FISH I.D. OFF

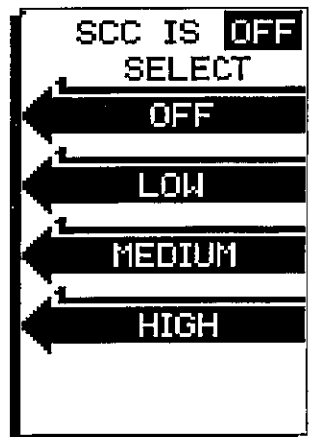
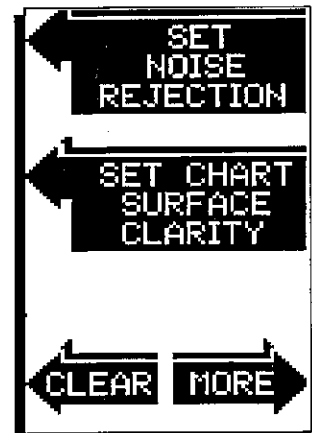
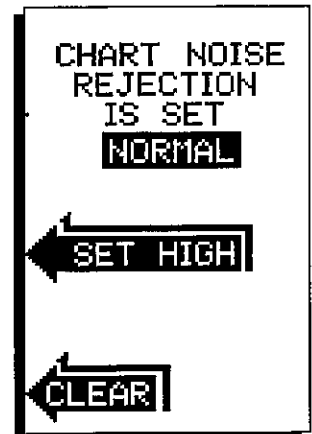
SURFACE CLARITY CONTROL - SCC

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 inversion, and more.

Surface Clarity Control, or 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 would be reduced to approximately 45 feet.

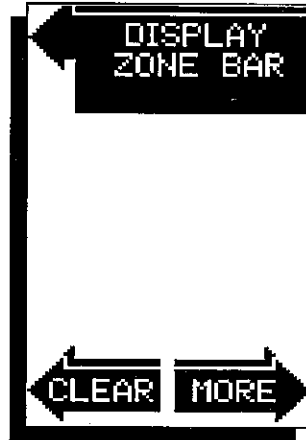
There are three levels of SCC available when the Fish I.D. feature is off: low, medium, and high. When the Fish I.D. feature is on, the SCC is not adjustable and this menu doesn’t shown on the display.

To adjust the SCC, make certain the Fish I.D. feature is off, then press the MENU key seven times. Now press the key adjacent to the “SET CHART SURFACE CLARITY” label. Finally, press the key adjacent to the desired SCC level. The unit will return to the chart, using the level of SCC you chose.



DISPLAY ZONE BAR

The bar used in the zone alarm normally disappears after the alarm is set. It can be turned on continuously, if desired. To turn the zone alarm bar on, press the menu key eight 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. Turning it off also turns the zone alarm off.



the keys. After you've made the adjustment, press the key adjacent to the CLEAR key to erase the menu.

RANGE - Automatic

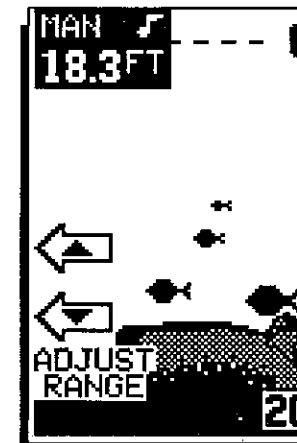
When turned on for the first time, the Ultra automatically places the bottom signal in the lower half of the screen. This is called Auto Ranging and is part of the automatic function. The range cannot be changed manually while the unit is in automatic.

RANGE - Manual

The Ultra 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 Ultra 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 upper or lower arrow to decrease or increase the range. The available ranges are 0-10, 20, 40, 60, 100, 150, 200, 300, 500, 900 feet. After the desired range is displayed, press the CLEAR key to erase the range arrows.

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

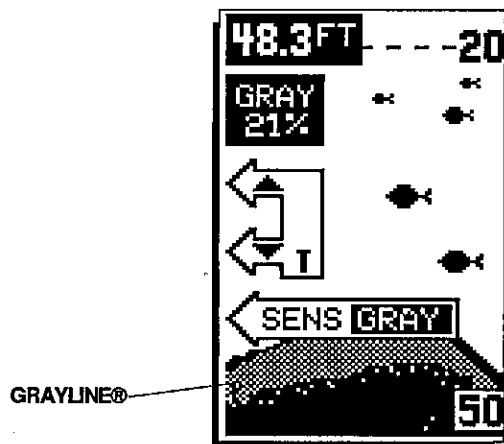


GRAYLINE®

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 is shown 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, then 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 Sensitivity may require a different GRAYLINE® level, also. The level chosen by the Ultra at power on is usually adequate for most conditions. Experiment with your unit to find the GRAYLINE® setting that's best for you.



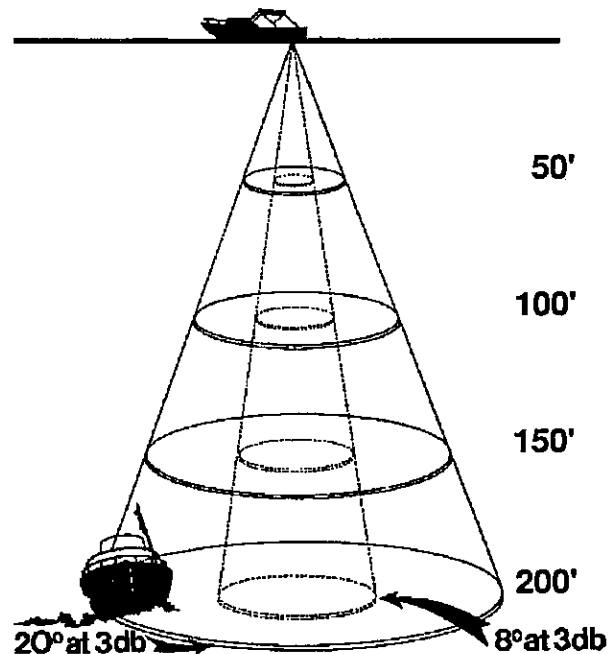
To adjust GRAYLINE®, press the SENS key. The sensitivity menu appears in the upper left side of the display, while the GRAYLINE® switch label appears immediately beneath it. First press the key adjacent to the "SENS GRAY" label. This changes the sensitivity adjust menu to GRAYLINE® adjust. Now press the key adjacent to the 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 the arrow keys are pressed. The bar chart also gives a graphical indication of the GRAYLINE® level. You can see the change on the screen (both on the menu and on the chart record) as you press

TRANSDUCER CONE ANGLES

The sound waves from the transducer spread out into the water in a cone shaped beam. This looks much like the beam from a flashlight. The angle between the outside edges of the cone is the cone angle.

Eagle offers a choice of transducers with either an 8 or 20 degree cone angle. The transducer supplied with the Ultra has a 20 degree cone angle. Typically, wide cone angle transducers (20 degrees) are ideal for operating in shallow to medium water depths. The 20 degree cone angle allows you to see more of the underwater world. In 15 feet of water the 20 degree cone covers an area about six feet across. The 8 degree transducer covers only about a two foot circle.

The 20 degree transducer is almost always the best to use in fresh water, the 8 degree mostly in salt water. In a deep water environment, (300 feet - fresh water, 100 feet - salt water) the narrow cone angle is more desirable. Since the sound energy is concentrated in a smaller area, it can penetrate to much deeper depths.



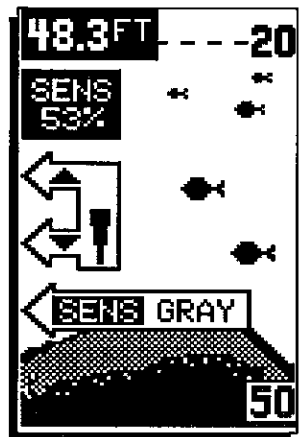
Both 8 degree and 20 degree transducers give accurate bottom readings, even though the bottom signal is much wider on the 20 degree model. This is because you are seeing more of the bottom. Remember, the shallow edge of the signal shows you the true depth. The rest of the signal tells you whether you are over rocks, mud, etc.

SIGNAL INTERPRETATION

Your Ultra gives an accurate picture of the bottom that your boat is passing. A bottom of firm sand, gravel, shell, or hard clay returns a fairly wide signal. If the automatic mode is off and the signal narrows down, then it means that you have moved over a mud bottom. Mud absorbs the sound wave and returns a weak signal. Turn up the sensitivity to see a better bottom signal.

Big rocks or stumps on a smooth bottom send back signals above the bottom level signal. The height of the signal depends on the target's height. As you pass over a post, it should be clearly visible as a short line extending above the bottom signal.

A steep slope returns a wide signal, the steeper the wider. Signals returned from a high underwater cliff are usually the widest of all.



However, situations occur where it becomes necessary to increase or decrease the sensitivity. This typically happens when you wish to see more detail, so an increase in sensitivity is indicated. The procedure to adjust it is the same whether the unit is 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 switch for the Grayline adjust menu is immediately beneath it.

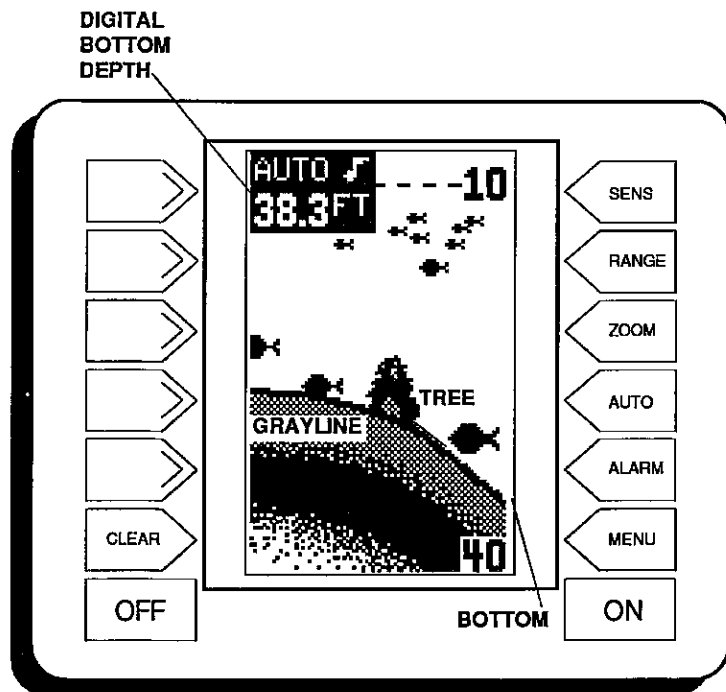
The sensitivity menu has up and down arrows, plus a vertical bar graph. The graph gives a visual indication of the sensitivity level. The number above the up arrow also shows the percentage of sensitivity in use.

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.

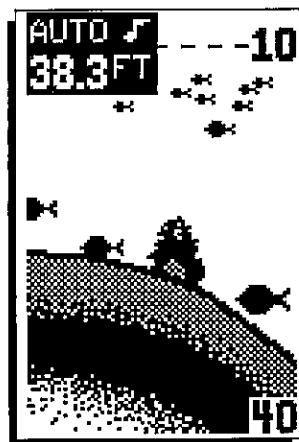


SONAR OPERATION

AUTOMATIC

When the Ultra is first turned on, the Automatic feature is enabled. This is indicated by the word "AUTO" at the top of the screen. The Automatic feature adjusts the sensitivity and range so the bottom signal is displayed in the lower half of the screen at all times.

To turn Automatic off, simply press the AUTO key. The letters "Man" appears, indicating the unit is in the manual mode. To turn Automatic on, press the AUTO key again.



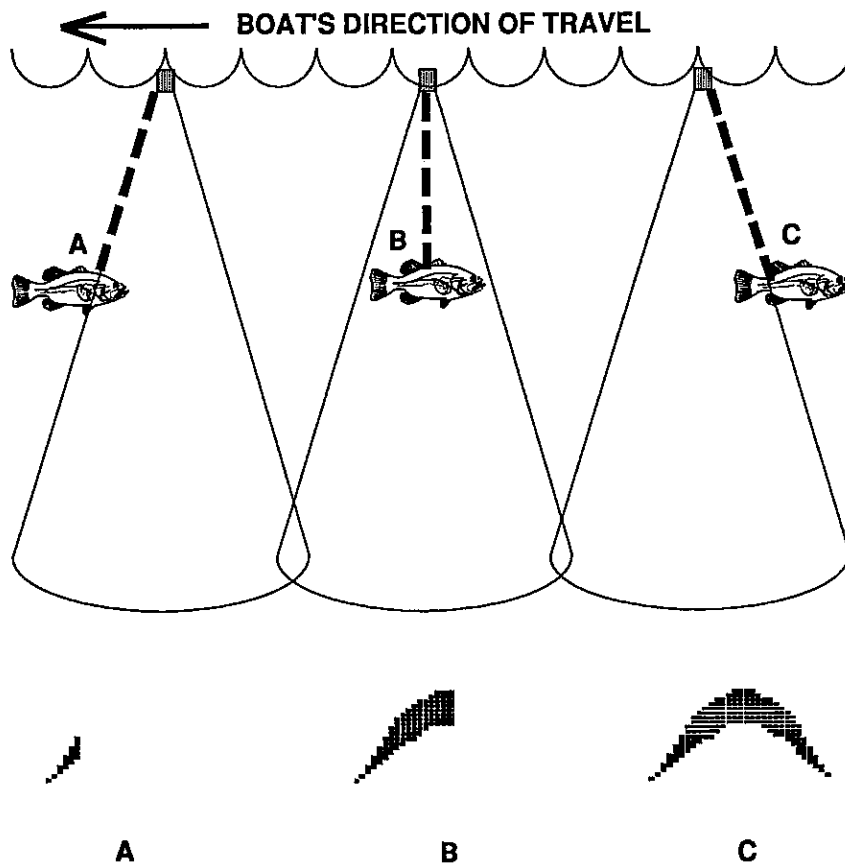
SENSITIVITY

The sensitivity key on the Ultra 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.

When the Ultra is in the Automatic mode, the sensitivity is automatically adjusted to keep a solid bottom signal displayed, plus a little more. This gives it the capability to show fish and other detail.

FISH ARCHES

Fish arches are created when the cone of sound passes over a fish. The distance to a fish when the cone first strikes it is shown as "A" below. When the center of the cone strikes the fish, the distance is shorter as shown "B". As the cone leaves the fish, the distance increases again as shown in "C".



When the Fish I.D. mode is off, the depth of the water will affect the size and shape of the fish arch due to the cone angle diameter. For example, if the cone passes over a fish in shallow water, the signal displayed on the Ultra may not arch at all. This is due to the narrow cone diameter and the resolution limitations of the display.

Very small fish probably will not arch at all. Medium sized fish will show a partial arch, or a shape similar to an arch if they're in deep water. Large fish will arch, but turn the sensitivity up in deeper water to see the arch. Because of water conditions, such as heavy surface clutter, thermoclines, etc., the sensitivity sometimes cannot be increased enough to get fish arches.

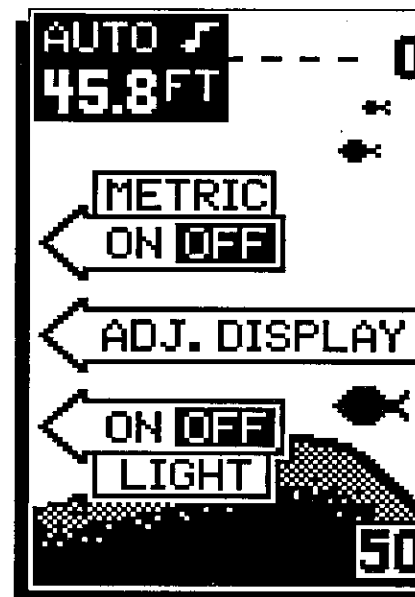
One of the best ways to get fish arches is to expand or "zoom" a segment of the water. For example, from 45 to 60 feet. The smaller the segment, the better the screen resolution will be. The easiest way to do this on the Ultra or Ultra Plus is with the Bottom Track feature. Use the 2x or 4x Bottom Track mode to expand the echoes, making it easier to see detail. For the best results, turn the sensitivity up as high as possible without getting too much noise on the screen. In medium to deep water, this method should work to display fish arches.

If you see fish signals when the unit is in the manual mode, but don't get fish symbols when the Fish I.D. feature is on, try increasing the sensitivity.

WATER TEMPERATURE AND THERMOCLINES

Water temperature has an important-if not controlling-influence upon the activities of all fish. Fish are cold blooded and their bodies are always the temperature of the surrounding water. During the winter, colder water slows down their metabolism. At this time, they need about a fourth as much food as they consume in the summer.

Most fish don't spawn unless the water temperature is within rather narrow limits. The surface temperature meter built into the Ultra Plus helps identify the desired surface water spawning temperatures for various species. Trout can't survive in streams that get too warm. Bass and other fish eventually die out when stocked in lakes that remain too cold during the summer. While some fish have a wider temperature tolerance than others, each has a certain range within which it tries to stay. Schooling fish suspended over deep water lie at the level that provides this temperature. We assume they are the most comfortable here.



The menu will also disappear after ten seconds, or you can turn them off by pressing the key adjacent to the CLEAR key at the bottom of the screen.

The Metric label at the top of the screen 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 on the Ultra Plus.

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.

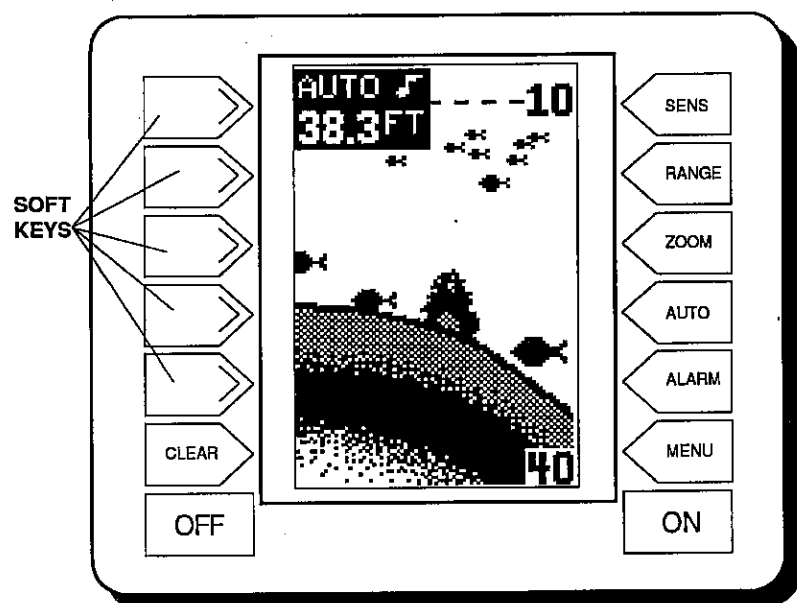
When the Ultra is first turned on, the display will appear similar to the one below. The word "AUTO" in the upper center of the display indicates the automatic feature is on. A small note symbol next to the "AUTO" indicator means the alarm speaker is enabled. The digital bottom depth is displayed immediately beneath the AUTO indicator.

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

ON - The ON key turns the Ultra on.

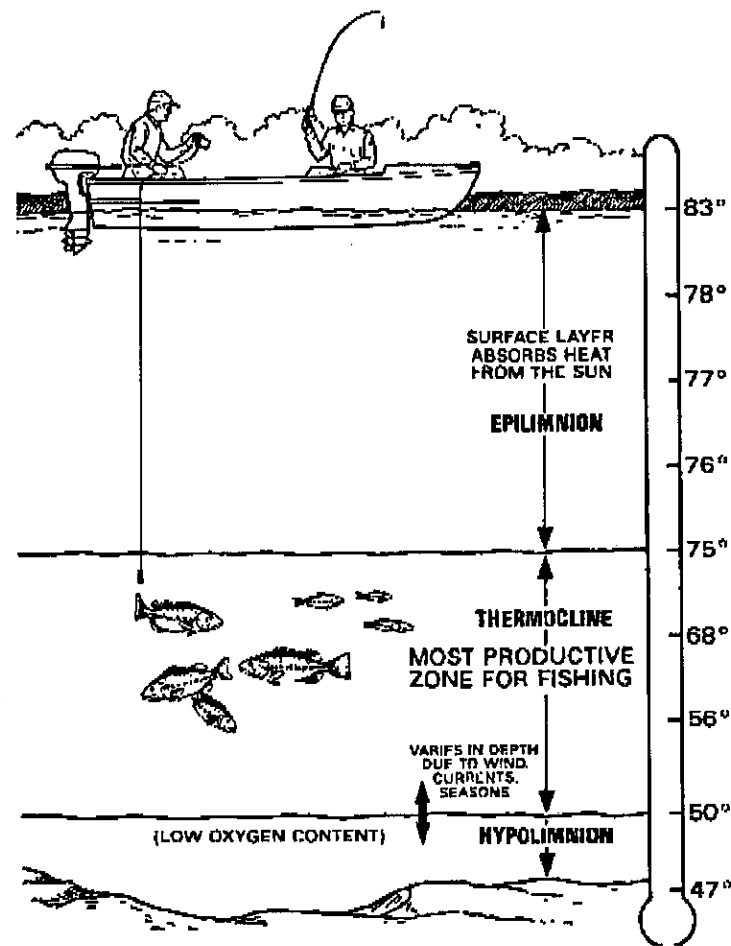
OFF - The Off key turns the Ultra off.

"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 turned on for approximately ten seconds when the Ultra is first turned 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 will automatically turn themselves off.



The temperature of water in the lake is seldom constant from top to bottom. Layers of different temperatures form, and the junction of a warm and cool layer of water is called a thermocline. The depth and thickness of the thermocline can vary with the season or time of day. In deep lakes there may be two or more at different depths. Thermoclines are important to fishermen because they are areas where fish are active. Many times bait fish will be above the thermocline while larger game fish will suspend in or just below it.

The Ultra can detect this invisible layer in the water, but the sensitivity will probably have to be turned up to see it.

SURVEYING A LAKE

The most successful anglers on any body of water are those who fish it day after day and year after year. Eventually, they learn the hot spots that produce fish consistently. They discover through experience where, and at what depth, they can expect to find the fish they want at any season. And they realize that these productive areas change throughout the year depending on water level, temperature, food, and other factors.

With the Ultra, anyone can eliminate guesswork and concentrate on the areas where fish are likely to be. Even if it's the first time on the lake!

The most efficient way to become acquainted with a body of water is to survey it with your Ultra. Start with a map of the lake, if possible, and indicate the promising spots in relation to landmarks on shore.

As you go about your survey, your Ultra will tell you the depth and type of bottom. It will also reveal suspended fish.

Keep a few marker buoys in the boat, ready to toss overboard. When the Ultra indicates a school of fish, throw the buoy out. With the school thus marked, you can make your turn and come back to fish in exactly the right spot. This is essential when you're far from shore on a big lake. Unless you mark the school of fish when you're over it, you may not be able to find it again.

BAIT FISH

The importance of bait fish to successful fishing can't be over-emphasized. They are the principle food of all game fish in most waters.

Bait fish are the plankton feeding forage fish, such as minnows and shad. Bait fish can also be the young of game fish, such as crappies, bluegill, and bass.

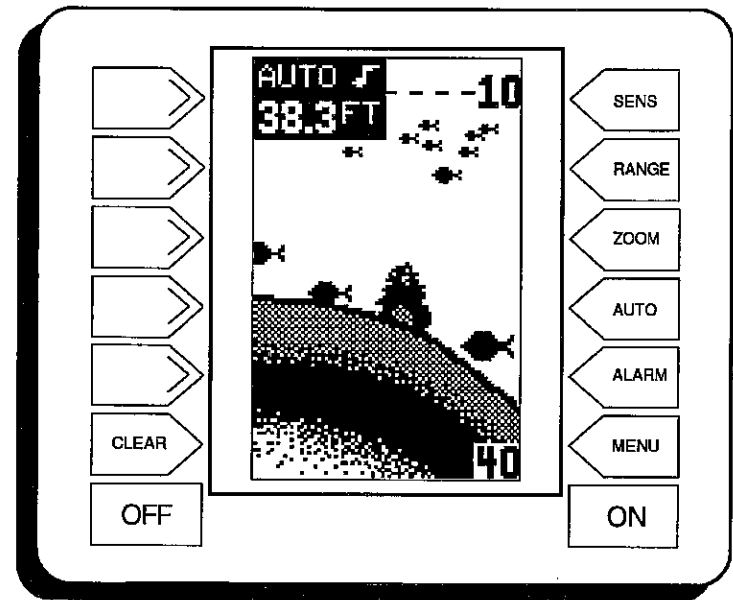
Most bait fish concentrate within five feet of the surface where sunlight promotes the growth of the plankton on which they feed. One method of fishing is to use the Ultra to find the bait fish first. A school of bait fish will look like a "cloud" on the display. Usually, game fish will be nearby, often directly beneath the school of bait fish.

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. The keys in the right column pertain to the basic sonar functions. The menu key in the bottom right corner of the keyboard 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 Ultra gives you 2X and 4X zoom capability with this key.

AUTO - This turns the automatic feature off and on.

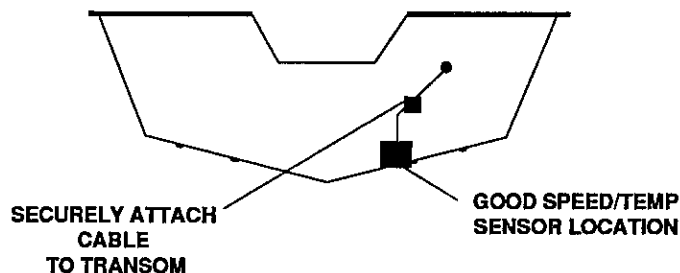
ALARM - Activate and adjust the alarms through this key.

SPEED/TEMPERATURE SENSOR INSTALLATION (ULTRA PLUS ONLY)

Mount the speed/temp sensor on the boat's transom in a location where the flow of water is smoothest. There should be a minimum flow of turbulence and air bubbles in the chosen location. The port (left) side of the transom is preferred, however the starboard (right) side can be used if necessary. Do not mount the speed sensor behind strakes, ribs, or thru-hull fittings that will disturb the flow of water to the speed sensor. In a typical installation, the speed sensor is mounted six to twelve inches from the centerline of the hull. The sensor must be in the water at all times to function properly. Make certain the chosen location is in the water even at high speed or when the boat is on plane.



Once the proper location is determined, place the sensor on the transom with the bottom of the sensor flush with the bottom of the hull. Mark the transom in the center of each slot and drill a 5/32" mounting hole. Mount the sensor to the hull with stainless steel #10 screws. Use a good quality caulking compound to seal the screws in the transom. Adjust the sensor so it is flush with the underside of the hull and tighten the screws.



GLOSSARY

ANCHOR WATCH - A setting of the sonar unit's alarm. The alarm activates when the boat drifts into shallower or deeper water than the alarm set points.

BACK-LIGHTED - A display or keyboard illuminated from behind by a light. Back-lighted displays are essential when night fishing or navigating.

CAVITATION - Air bubbles created by the high speed movement of a boat or transducer through water.

CHART SPEED - (1) The speed of the chart paper on a paper graph recorder. (2) The speed of an image across the screen of a liquid crystal graph. (Also called "scroll speed").

CONE ANGLE - Angle of the transducer's cone of sound. Eagle has transducers with cone angles from 8 to 45 degrees to suit the varying needs of fishermen.

CRT - Abbreviation for Cathode Ray Tube. See Video Graph.

DEFINITION - The ability of a sonar unit's display to show detail. A display with high definition can show more detail than a low resolution one.

DISCRIMINATION - A feature that allows the sonar to eliminate noise and display only true target information. Discrimination on Eagle products cuts out false signals from other sonar, noise, thermoclines, and more.

FISH ALARM - An alarm that activates when a fish or suspended object is detected.

FISH ARCH - A sonar with good resolution and definition can display fish signals as an upside down "V" or arch. This distinguishes fish signals from other targets.

FLUSH MOUNT - A transducer that is installed with the bottom of the transducer flush with the bottom of the hull.

GIMBAL BRACKET - A bracket used to install a sonar unit permanently. The sonar unit can rotate in the bracket for the best viewing angle.

GRAYLINE® - This function shows the relative strength of signals displayed on the screen. Signals weaker than the GRAYLINE® setting are displayed in black, stronger targets are gray. It also gives clues to the composition of the bottom. In other words, you can tell if the bottom is soft or hard. A hard bottom returns a strong signal causing a wide gray line. A soft, muddy or weedy bottom returns a weaker signal which is emphasized with a narrow gray line.

IN-DASH - A sonar unit installed through a hole in the boat's dash. Usually, the face of the sonar is flush or nearly so with the dash.

kHz - Kilohertz. A measurement of frequency. Your Eagle sonar operates at 192 Kilohertz. (192,000 cycles per second).

LCD - Liquid crystal display. The screen or display of a Liquid Crystal Graph sonar instrument.

LCG - Liquid Crystal Graph.

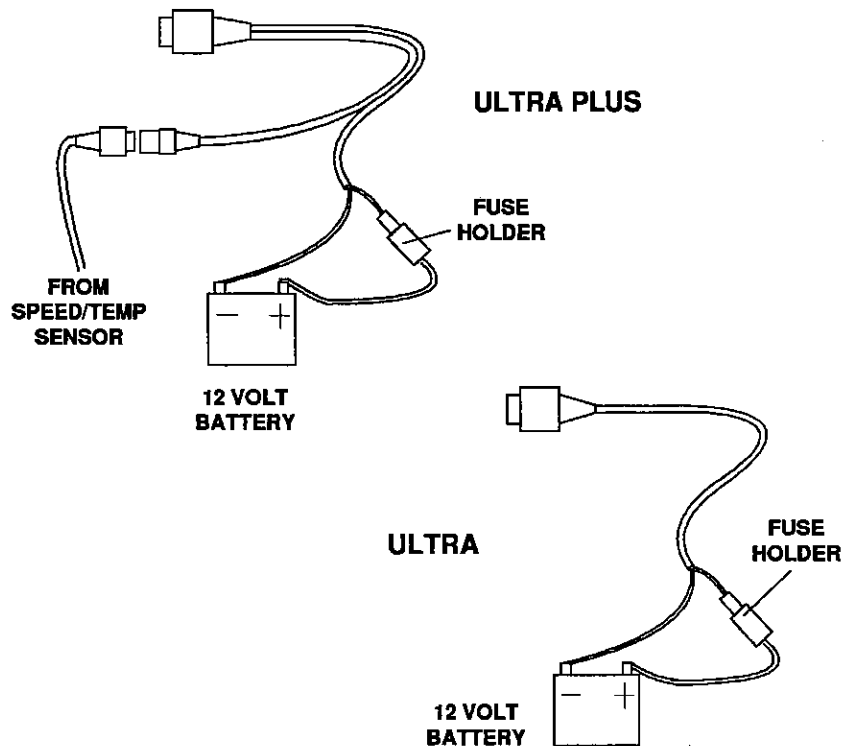
NOISE - Any undesired signal. Electrical noise is caused by engine ignitions systems, radios, etc. Acoustic noise is caused by the vibration of the engine or other mechanical sources. Noise appears on the display as random dots or lines.

OPERATING FREQUENCY - Frequency of a sonar unit's transmitter and receiver.

OUTPUT POWER - The amplitude of electrical energy transmitted from the sonar unit to the transducer. Measured in watts, the higher the output power, the deeper a sonar unit can read, and more detail can be displayed.

PIXEL - The small dots or squares on a liquid crystal display or CRT.

PIXEL DENSITY - The number of pixels per square inch on a liquid crystal display. The best resolution is obtained when a high number of pixels are vertical.



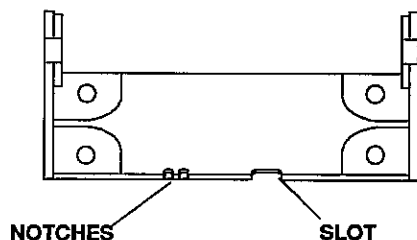
VHF radio antennas and cables radiate RF energy at high power levels. It is important to keep the power and transducer cables away from them, also.

If interference begins at slow boat speeds and gets worse as the speed increases, then the probable cause is acoustic noise or cavitation. This noise is not electrical, but 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, the transducer must be moved out of the turbulent water flow or adjusted so that smooth water flows over it at all boat speeds.

The Ultra and Ultra Plus have 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 the wiring is connected properly.

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

After the cables have been routed, fill the hole with a good marine sealing compound. Offset the bracket to cover the hole. Route the Ultra's power and transducer cables out the slot in the back of the bracket. Route the Ultra Plus' power cable through the slot and break out one of the other slots in the bracket for the transducer cable.



POWER CONNECTIONS

The Ultra works from a twelve-volt battery system only. You can attach the power cable to an accessory or power buss, however if you have problems with electrical interference, then 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 for either unit and should be cut and taped to prevent a short. Attach the in-line fuse holder to the red lead as close to the power source as possible. For example, if you have to extend the power cable to the battery or power buss, 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.

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.

PULSE LENGTH - The amount of time that the sonar transmits. This is measured in micro-seconds. The shorter the pulse length, the better the resolution. For example, a 30 micro-second pulse length is equal to a one inch resolution.

RANGE - The section of water shown on the sonar display. For example, a 60 foot range has zero for the upper limit and 60 for the lower limit.

REMOTE - An intelligent "repeater" unit that receives depth information from another sonar unit. A remote doesn't have a transmitter or receiver. However, it does have it's own features that are adjustable and operate separately from the master.

RESOLUTION - The ability of a sonar unit to separate targets from each other or the bottom.

SCALE - The markings on a sonar unit's display. To determine the depth of a target, simply compare the target's location to the location of the scale markers on the display.

SECOND ECHO - Another echo that registers at roughly twice the depth of a target echo. This is caused by the sound waves reflecting off the bottom, striking the surface of the water, travelling to the bottom again, and returning to the surface.

SECOND FUNCTION KEY - A button that converts the functions of the primary keys to other functions.

SENSITIVITY - The ability of a sonar unit's receiver to display targets. Increasing the sensitivity allows weaker targets to be displayed. Also called "gain".

SCROLL SPEED - See CHART SPEED.

SHOOT-THROUGH-HULL - A transducer installation which allows the sonar signals to pass through a fiberglass hull without cutting a hole in the hull.

SUPPRESSION - A method used in some sonar units to eliminate interference or noise.

SURFACE CLARITY CONTROL - Reduces or eliminates undesirable signals displayed near the water's surface. Also called "SCC".

THERMOCLINE - A layer of water caused by the meeting of warm and cool layers of water. The thermocline provides the temperature most fish prefer.

TRANSDUCER - The element of a sonar system that converts the electrical energy from the transmitter into ultrasonic sound waves. When a return echo strikes the transducer, it converts the sound waves into electrical energy which is received and displayed by the sonar unit.

TRANSOM MOUNT - A method of mounting transducers or other sensors on the transom of the boat.

UPPER/LOWER LIMIT - These are the range limits displayed on the sonar screen or paper. The upper limit is shown at the top of the display, while the lower limit is at the bottom. For example, a 20 to 30 foot range has 20 feet as the upper limit and 30 feet as the lower limit.

VIDEO GRAPH - A sonar unit that uses a CRT or television type display.

WINDOW - A segment of the depth range. For example, an upper limit of 20 feet and a lower limit of 50 feet creates a 30 foot window.

ZOOM - A feature that enlarges targets on the display.

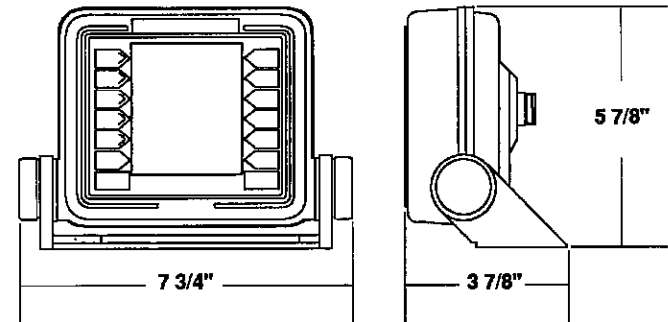
INTRODUCTION

The Ultra 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 Ultra offers easy-to-use operation at the touch of a button. The screen shows the underwater world with high resolution and detail. The Ultra Plus also displays digital depth, boat speed, surface water temperature, and distance travelled (distance log).

(Note: All operating instructions for the Ultra and Ultra Plus are the same except for the speed, log, and temperature. Only the Ultra Plus has these features. To simplify this manual, all references to the Ultra will also hold true for the Ultra Plus.)

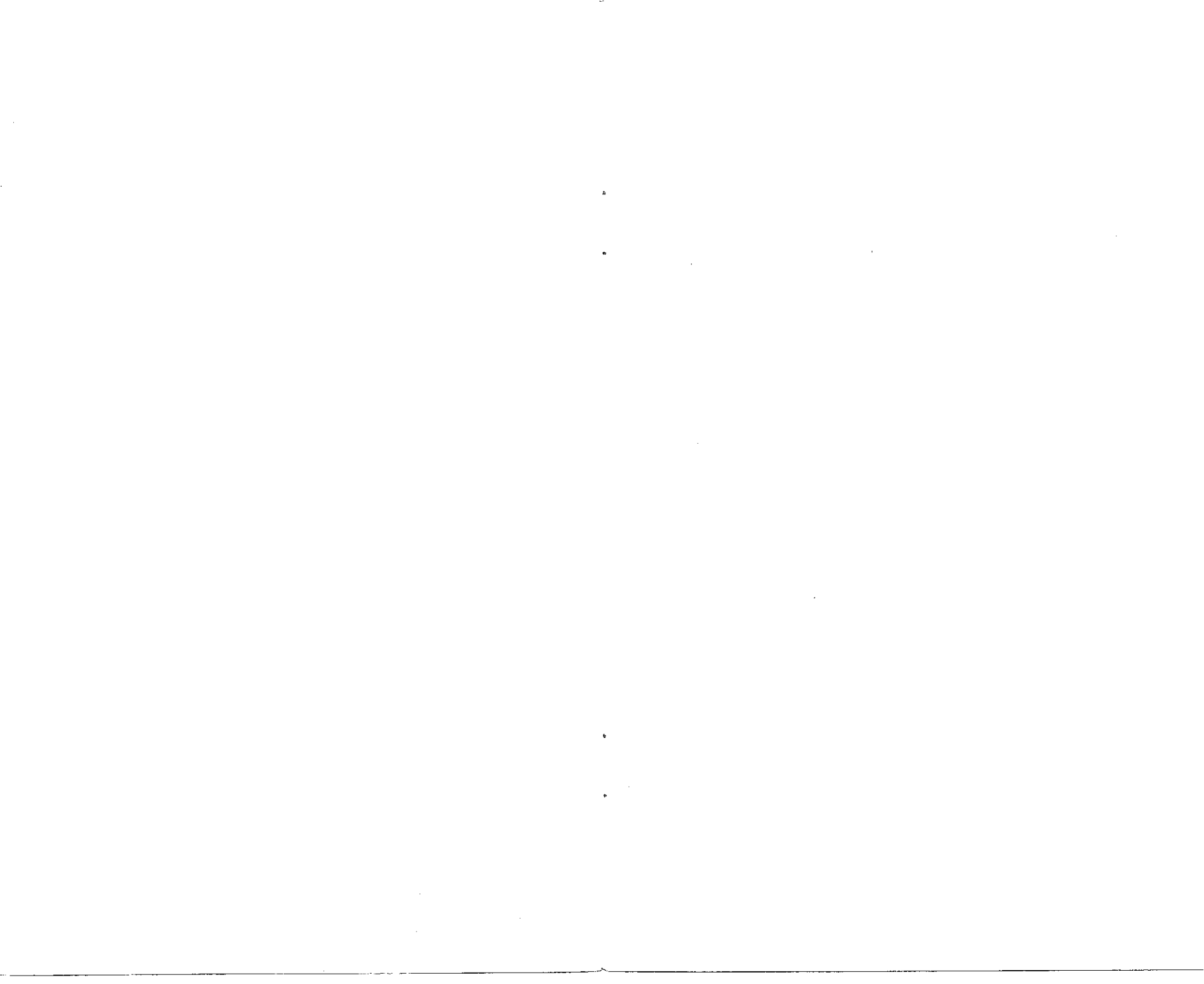
Although the Ultra has many features and functions, the "soft key" menu system makes it easy to use. Above all, don't be afraid to try different features and functions on the unit. You can't hurt it by pressing buttons!

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 Ultra can do for you!



MOUNTING

Install the Ultra in any convenient location, provided there is clearance behind the unit when it is tilted for the best viewing angle. Holes in the bracket base allow wood screw or through-bolt mounting. 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.



Notes:

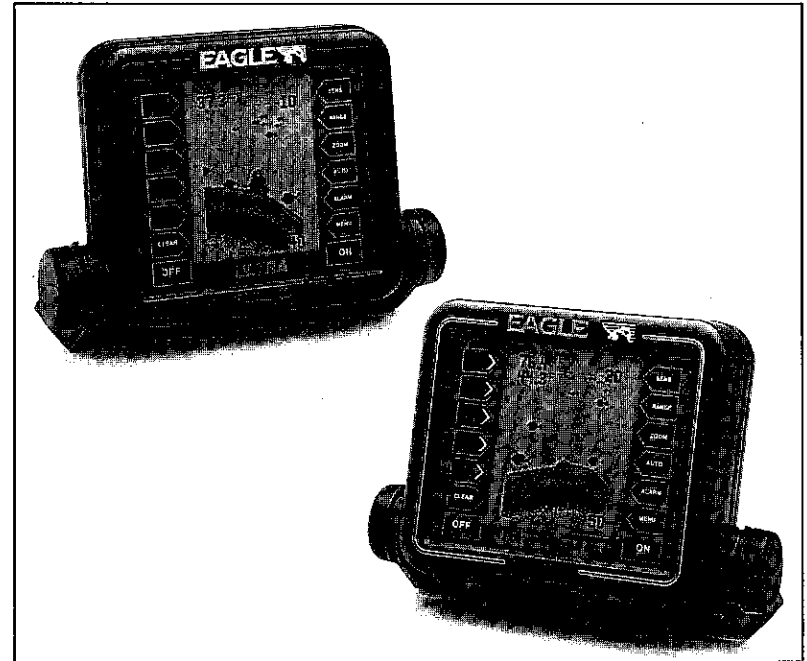
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All features and specifications subject to change without notice.

Notes:



ULTRA AND ULTRA PLUS

INSTALLATION AND OPERATION
INSTRUCTIONS

LITHO-IN U.S.A.

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EAGLE 

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