Ultra 3D

INSTALLATION AND OPERATION MANUAL

EAGLE™

Features and specifications subject to change without notice.

All display screens in this manual are simulated.

NOTES:

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INTRODUCTION

The Ultra 3D boasts a 3-element transducer that shows three dimensional views (depth, distance, and direction) of the underwater world. The 3D transducer gives you an effective 60 degree cone angle. The Ultra 3D is also a full-featured 2D sonar. You can view echoes from any of the three elements when the Ultra 3D is in this mode.

With its menus, the Ultra 3D offers easy-to-use operation at the touch of a button. The screen shows the underwater world with high resolution and detail. Although the Ultra 3D has many features and functions, the "soft key" menu system makes it easy to use.

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.
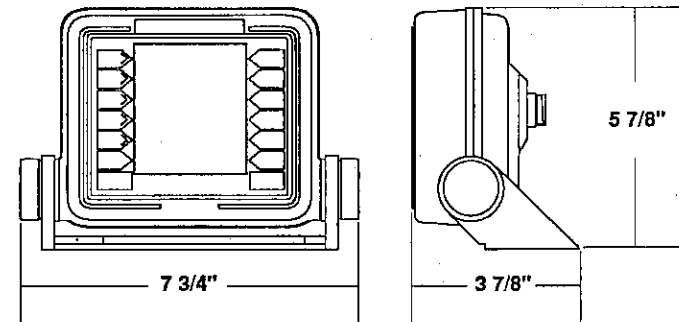
MOUNTING

Install the Ultra 3D 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.

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 power and transducer cables through the slot in the bracket. (See the drawing at the top of the next page.)

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SLOT
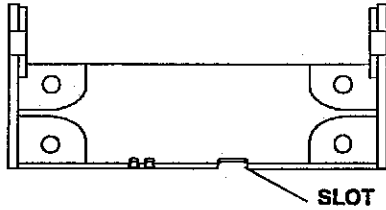
POWER CONNECTIONS

The Ultra 3D works from a twelve-volt battery system only. For the best results, attach the power cable directly to the battery. You can attach the power cable to an accessory or power buss, however you may have problems with electrical interference. Therefore, it's safer to go ahead and attach the power cable directly to the battery. If the cable is not long enough, splice #18 gauge wire onto it.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.

The power cable has two wires, red and black. Red is the positive lead, black is negative or ground.

TO
ULTRA 3D's
POWER
CONNECTOR

RED
WIRE

BLACK
WIRE

3 AMP
FUSE
HOLDER

12 VOLT
BATTERY
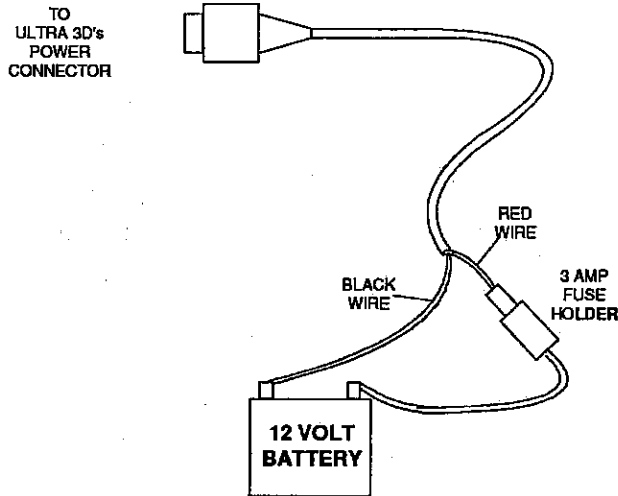
The Ultra 3D has reverse polarity protection. No damage will occur to the unit if the power wires are hooked up backwards. However, it won't work until the wiring is connected properly.

NOTES:

KEYBOARD

The keyboard has keys arranged in two vertical columns. 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.
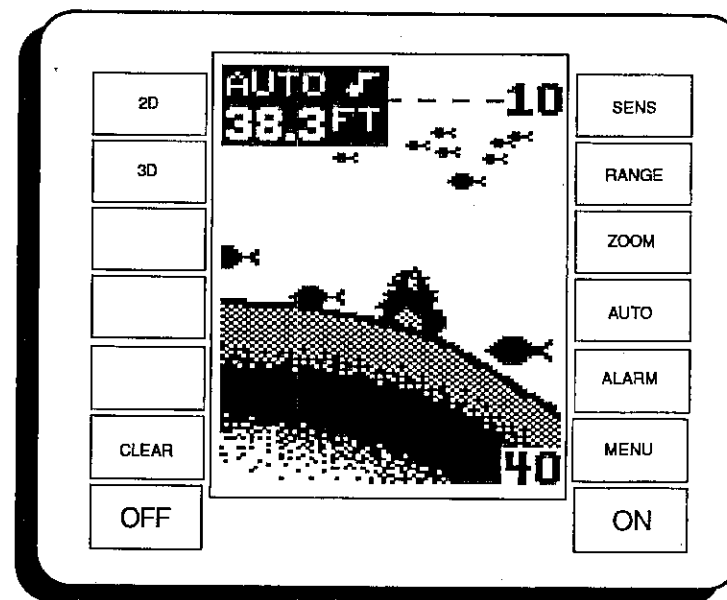
SENS - Press this key to adjust the unit's sensitivity and Grayline.

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

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.

MENU - Press this key to show the menus.

ON - The ON key turns the Ultra on.

OFF - Press and **HOLD** the Off key to turn the Ultra 3D off.

2D - Switches the Ultra 3D into the 2D mode.

3D - Switches the Ultra 3D into the 3D mode.

DISPLAY - General

The lights are turned on for approximately ten seconds when the Ultra 3D 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 menus 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.
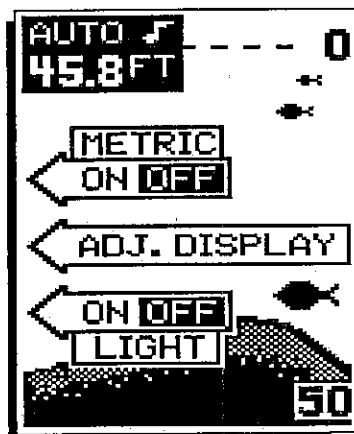
The Metric label at the top of the screen works the same way. Press the key adjacent to the Metric label to change the depth from feet to meters. This also changes the temperature display to degrees Celsius, speed to knots, and log to kilometers on the Ultra 3D.

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 3D is first turned on, the display will appear similar to the one above. 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.

2D and 3D Modes

The Ultra 3D shows echoes in either 2D or 3D modes. The 2D mode is the normal "depth sounder" or "fish finder" mode. This uses only one element from the transducer, usually the center one. A display similar to the one on the opposite page appears. When the unit is in the 3D mode, echoes from all three elements are displayed at the same time as shown at right. The bottom contour grid scrolls across the display from right to left.

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To eliminate or minimize the effects of electrical noise, first try to determine the cause. With the boat at rest in the water, the first thing you should do is turn all electrical equipment on the boat off. Make certain the engine is off, also. Turn your Ultra 3D on, then turn off ASP (Advanced Signal Processing). There should be a steady bottom signal on the display. Now turn on each piece of electrical equipment on the boat and view the effect on the sonar's display. For example, turn on the bilge pump and view the sonar display for noise. If no noise is present, turn the pump off, then turn on the VHF radio and transmit. Keep doing this until all electrical equipment has been turned on, their effect on the sonar display noted, then turned off.

If you find noise interference from an electrical instrument, trolling motor, pump, or radio, try to isolate the problem. You can usually re-route the sonar unit's power cable and transducer cable away from the wiring that is causing the interference. VHF radio antenna cables radiate noise when transmitting, so be certain to keep the sonar's wires away from it. You may need to route the sonar unit's power cable directly to the battery to isolate it from other wiring on the boat.

If no noise displays on the sonar unit from electrical equipment, then make certain everything except the sonar unit is turned off, then start the engine. Increase the RPM with the gearshift in neutral. If noise appears on the display, the problem could be one of three things; spark plugs, alternator, or tachometer wiring. Try using resistor spark plugs, alternator filters, or routing the sonar unit's power cable away from engine wiring. Again, routing the power cable directly to the battery helps eliminate noise problems. Make certain to use the in-line fuse supplied with the unit when wiring the power cable to the battery.

When no noise appears on the sonar unit after all of the above tests, then the noise source is probably cavitation. Many novices or persons with limited experience make hasty sonar installations which function perfectly in shallow water, or when the boat is at rest. In nearly all cases, the cause of the malfunction will be the location and/or angle of the transducer. The face of the transducer must be placed in a location that has a smooth flow of water at all boat speeds. Read your transducer owner's manual for the best mounting position.

Echoes from the right transducer element show on the left side of the screen, echoes from the left transducer element show on the right side. The "X" to the left of the "0" is your present position. When the 3D feature is first turned on, guide lines appear on the display. These help you visualize the three transducer beams and the boat's direction of travel. If you wish to turn these lines off, simply press the CLEAR key, or wait a few seconds and they will automatically be erased.

For greater clarity, this manual is divided into two sections: 2D and 3D operation. This is due to the differences in operation between the two modes. Menu selections are different when you're in the 3D mode versus the 2D. Some features are not available in 3D modes. For more information, see the 3D operation section.

OPERATION -2D

AUTOMATIC
When the Ultra 3D is first turned on, the 2D mode and the Automatic feature are enabled. The automatic featrue is indicated by the word "AUTO" at the top of the screen. This 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.
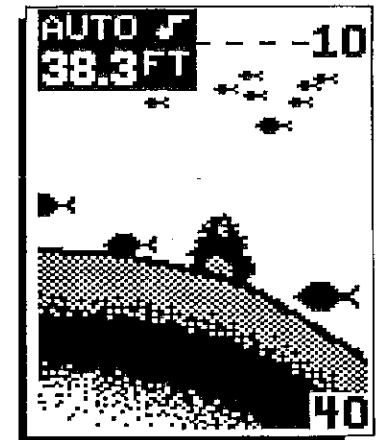
SENSITIVITY
The sensitivity key on the Ultra 3D controls the ability of the unit to pick up echoes. A low sensitivity level excludes much of the bottom information, fish signals, and other target information. High sensitivity levels enables you to see this detail, but it can also clutter the screen with noise. Typically, the best sensitivity level shows a good solid bottom signal with Grayline and some surface clutter.

When the Ultra 3D 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.

SENS
53%

SENS GRAY

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.

4. Check the battery voltage. If the voltage drops, the unit's transmitter power also drops, reducing its ability to find the bottom or targets.

Bottom echo disappears at high speeds or erratic digital reading or weak bottom echo while boat is moving
1. The transducer may be in turbulent water. It must be mounted in a smooth flow of water in order for the sonar to work at all boat speeds. Air bubbles in the water disrupt the sonar signals, interfering with its ability to find the bottom or other targets. The technical term for this is 'Cavitation'.

2. Electrical noise from the boat's motor can interfere with the sonar. This causes the sonar to automatically increase its Discrimination or noise rejection feature. This can cause the unit to eliminate weaker signals such as fish or even structure from the display. Try using resistor spark plugs or routing the sonar unit's power and transducer cables away from other electrical wiring on the boat.

No fish arches when the Fish ID feature is off:
1. Make certain transducer is pointing straight down. This is the most common problem if a partial arch is displayed. See the Fish Arch section in your owner's manual for more information.

2. The sensitivity may not be high enough. In order for the unit to display a fish arch, it has to be able to receive the fish's echo from the time it enters the cone until it leaves. If the sensitivity is not high enough, the unit displays the fish only when it is in the center of the cone.

3. Use the Zoom feature. It is much easier to display fish arches when zoomed in on a small range of water than a large one. For example, you will have much better luck seeing fish arches with a 30 to 60 foot range than a 0 to 60 foot range. This enlarges the targets, allowing the display to show much more detail.

4. The boat must be moving at a slow trolling speed to see fish arches. If the boat is motionless, fish stay in the cone, showing on the display as straight horizontal lines.

ELECTRICAL NOISE
A major cause of sonar problems is electrical noise. This usually appears on the sonar's display as random patterns of dots or lines. In severe cases, it can completely cover the screen with black dots, or cause the unit operate erraticly, or not at all.

2. Make certain the power cable is wired properly. The red wire connects to the positive battery terminal, black to negative or ground.

3. Check the fuse.

4. Measure the battery voltage at the unit's power connector. It should be at least 11 volts. If it isn't, the wiring to the unit is defective, the battery terminals or wiring on the terminals are corroded, or the battery needs charging.

Unit freezes, locks up, or operates erratically:
1. Electrical noise from the boat's motor, trolling motor, or an accessory may be interfering with the sonar unit. Re-routing the power and transducer cables away from other electrical wiring on the boat may help. Route the sonar unit's power cable directly to the battery instead of through a fuse block or ignition switch

2. Inspect the transducer cable for breaks, cuts, or pinched wires.

3. Check both the transducer and power connectors. Make certain both are securely plugged in to the unit.

**Weak bottom echo, digital readings erratic, or no fish signals:**
1. Make certain transducer is pointing straight down. Clean the face of the transducer. Oil, dirt, and fuel can cause a film to form on the transducer, reducing its effectiveness. If the transducer is mounted inside the hull, be sure it is shooting through only one layer of fiberglass and that it is securely bonded to the hull. Do NOT use RTV silicone rubber adhesive or Marinetex™.

2. Electrical noise from the boat's motor can interfere with the sonar. This causes the sonar to automatically increase its Discrimination or noise rejection feature. This can cause the unit to eliminate weaker signals such as fish or even structure from the display.

3. The water may be deeper than the sonar's ability to find the bottom. If the sonar can't find the bottom signal while it's in the automatic mode, the digital will flash continuously. It may change the range to limits far greater than the water you are in. If this happens, place the unit in the manual mode, then change the range to a realistic one, (for example, 0-100 feet) and increase the sensitivity. As you move into shallower water, a bottom signal should appear.

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 the sensitivity may require a different GRAYLINE® level, also. The level chosen by the Ultra 3D at power on is usually adequate for most conditions. Experiment with your unit to find the GRAYLINE® setting that's best for you.
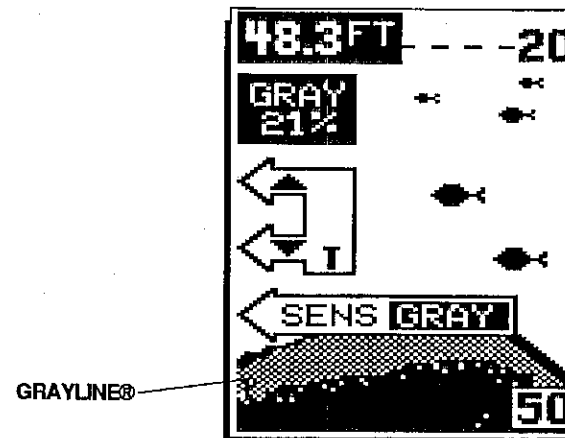
GRAYLINE®

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

RANGE - Automatic

When turned on for the first time, the Ultra 3D 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 3D 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 3D 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, and 900 feet. After the desired range is displayed, press the CLEAR key to erase the range arrows.

MANUAL RANGE ADJUSTMENT MENU
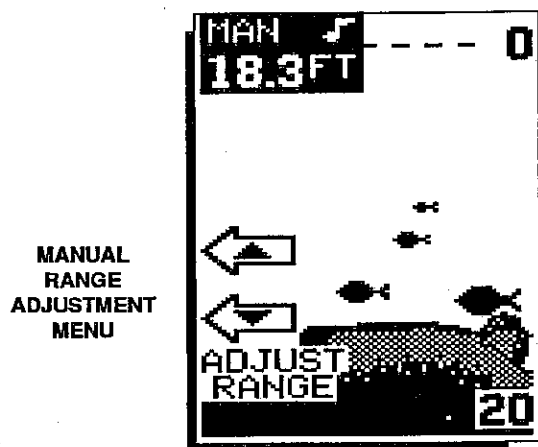
NOTE: The depth capability of the Ultra 3D depends on the transducer installation, water and bottom conditions, and other factors. You can expect to read depths in excess of 350 feet in both fresh and salt water.

3D MENU - PAGES 3 and 4

3-BEAM FASTRAK
SELECT UNIT OF MEASURE
TURN BACKLIGHT ON
ADJUST DISPLAY CONTRAST

These features are explained in the 2D section in this manual. All of them work identically in the 3D mode as they do in the 2D mode.

DIGITAL SONAR

The Ultra 3D transmits and receives on all three transducer elements when it's in the 3D mode. The unit, in essance, has three digital sonars built inside - one for each transducer element. If any digital sonar loses the bottom signal, a message appears at the top of the screen - "LEFT" , "CENTER", or 'RIGHT", depending on which digital has lost the bottom signal. In the example at right , the right digital has lost the bottom signal. If one digital sonar out of three still has the bottom, the chart will continue to scroll across the screen. However, if all three digitals lose the bottom, then the digital depth display will flash the last known water depth and the chart will stop scrolling.

IMPORTANT SERVICE INFORMATION!

If your unit is not working, or if you need technical help, please use the following troubleshooting section before contacting a service center or the factory customer service department. It may save you the trouble of returning your unit

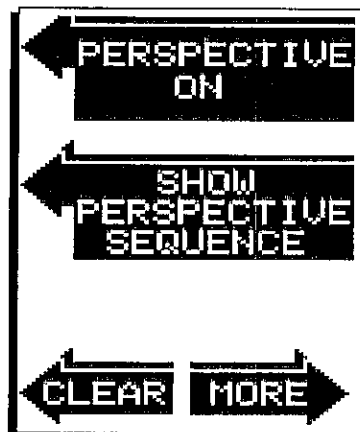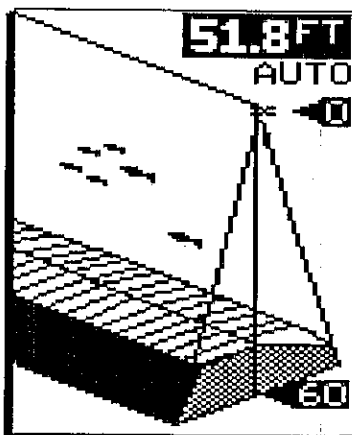## SONAR TROUBLESHOOTING

Unit won't turn on:

1. Check the power cable's connection at the unit. Also check the wiring.

3D MENU - PAGE 2

PERSPECTIVE ON
The "Perspective" feature is an aid to help you visualize the 3D picture. The screen below left is a 3D view with the perspective on. This shows the center of each cone from each transducer element to the bottom.

To turn perspective on, press the MENU key twice. The menu shown at right appears. Now press the key next to the "TURN PERSPECTIVE ON" label. The unit will return to the 3D screen with the perspective on. To turn it off, repeat the above steps. The label on the second menu page now reads "TURN PERSPECTIVE OFF". Press the key next to that label.

3D MENU - PAGE 2

SHOW PERSPECTIVE SEQUENCE
The "Show Perspective Sequence" is a small tutorial showing the perspective features of the 3D display. Once you turn this feature on, no other input is required. Simply watch the display as it runs through the different screens. When the tutorial finishes, the Ultra 3D returns to the 3D display. If you wish to stop the show, simply press the CLEAR key to exit and return to the 3D display.

To start the perspective tutorial, press the MENU key twice, then press the key next to the "SHOW PERSPECTIVE SEQUENCE".
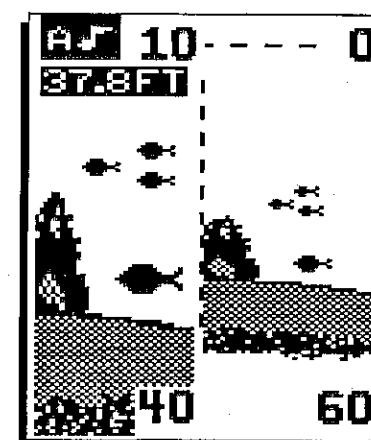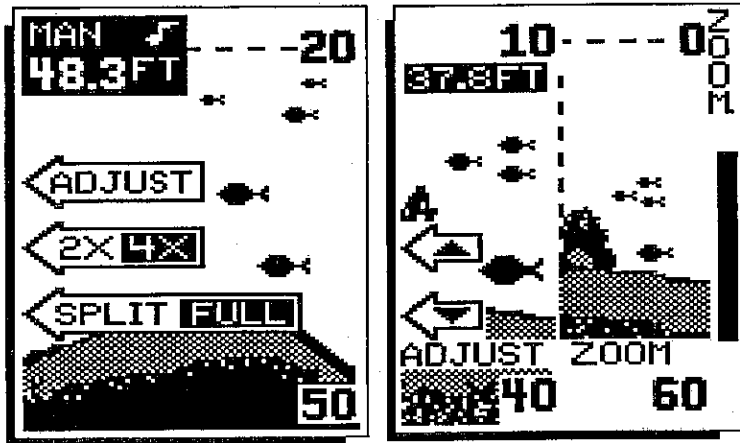
ZOOM
Enlarging or "zooming" the picture is a common method used to show small detail and fish signals. The Ultra 3D gives you two different zoom sizes, plus a split screen zoom option. The zoom operation and adjustment is different in the automatic and manual modes.

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.
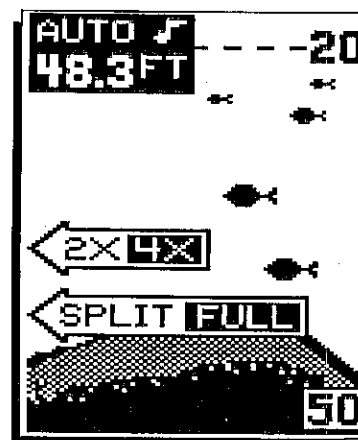
FULL SCREEN ZOOM   SPLIT SCREEN ZOOM

Pressing the key adjacent to the "2X/4X" label switches echoes between two times and four times their normal size.

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.

Press the RANGE key to turn the zoom feature off.

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 3D 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 3D 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 called the Depth Alarm. Only the bottom signal will trigger 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.

3D MENU - PAGE 1

REVERSE TRANSDUCER BEAMS

Occasionally, echoes received by the right transducer element block the view of echoes from the other elements as shown in the screen at right. To correct this, use the reverse feature. Press the MENU key once. The menus shown below appear. Now press the key next to the "REVERSE BEAMS LEFT AND RIGHT" label. This swaps the echoes from the left and right transducer elements. A screen similar to the one below right appears. Now features that were previously hidden can easily be seen.
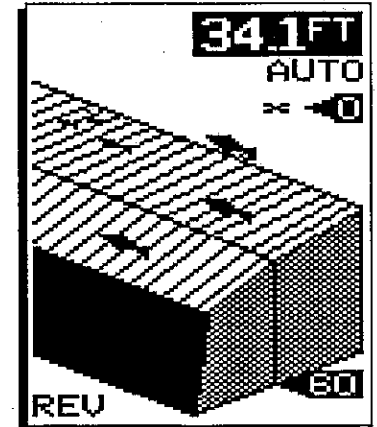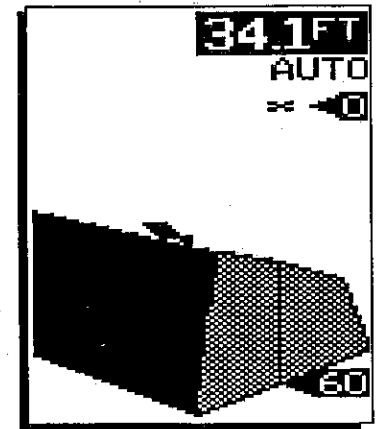
ADJUST CHART SPEED

The chart speed adjustment in the 3D mode works identically to the chart speed adjustment in the 2D mode. See page 15 for details.

ZOOM - Manual Mode

When you press the zoom key while the unit is in the manual mode, the screen shown at right appears. The range is divided in half. This gives a 2X zoom. In the example at right, the range was 0 to 60 feet when the zoom key was pressed. The range is now 30 to 60 feet. This gives a zoom size of 30 feet, which is shown in the upper left corner of the display. To change the size of the zoom, press the key next to the up or down arrows at the bottom of the screen. Pressing the key next to the up arrow makes the zoom size smaller which increases the size of the targets on the screen. Pressing the key next to the down arrown makes the zoom size larger which decreases the size of the targets on the display.
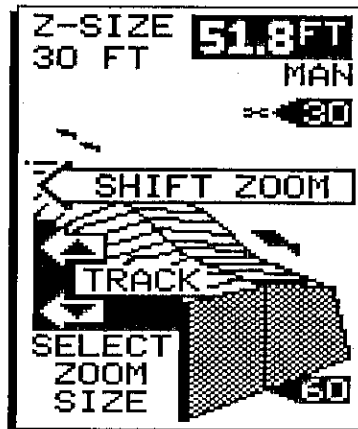
The Ultra 3D gives you the option of shifting the zoom up or down in one foot increments. To do this, press the key next to the "SHIFT ZOOM" label. The screen shown at right appears. Now if you press the keys next to the up or down arrows, the zoom range will charnge in one foot increments. For example, if you press the key next to the up arrow on the example at right once, the range will change from 30 - 60 feet to 29 -59 feet. This shifted the display up one foot. By pressing the keys next to the these arrows, you can move the zoom "window" anywhere you desire. To change the zoom size, press the key next to the "SELECT SIZE" arrow. The arrows will remain on the display for a few seconds after you press the ZOOM key, then they will automatically be erased. To turn the zoom feature off, press the RANGE key.
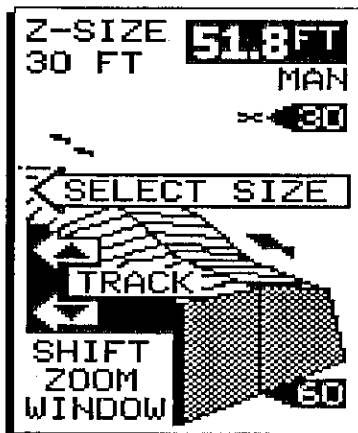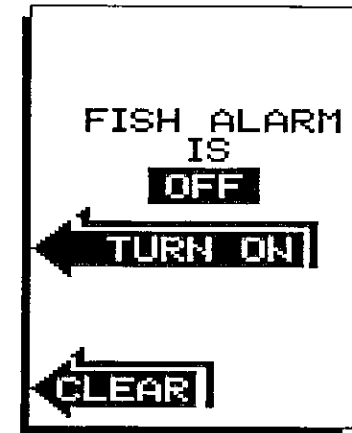
ALARMS

The shallow and deep alarms are the only alarms availabel when the Ultra 3D is in the 3D mode. See the "Depth Alarm" section in the 2D Operation for information on adjusting and using these alarms.

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. The screen shown below left appears. Now press the key adjacent to the "FISH" label. The menu shown below right appears.

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 word "FISH" also shows in the lower left corner of the screen. The symbols flash when the alarm sounds.

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

ZONE ALARM

To activate the Zone Alarm, first press the ALARM key. Next, press the key next to the "ZONE ALARM" label. A screen similar to the one at the top of the next page appears. The words "ZONE ALARM" show on the screen's right side, 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.

ZONE ALARM ADJUSTMENT MENUS
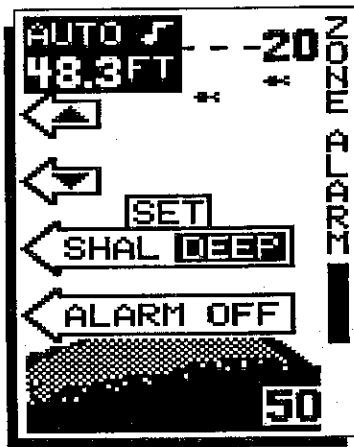
To adjust the top of the zone alarm bar, first press the key next to the SET SHAL/DEEP label. The SHAL letters appear in reverse. Now press the key adjacent to the top arrow to move the top of the bar shallower. To adjust the top of the bar deeper, press the key adjacent to the down arrow. To adjust the bottom of the zone alarm bar, again press the key adjacent to the SET SHAL/DEEP label. You can now adjust the bottom of the zone alarm bar using the keys adjacent to the up and down arrows.

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

To turn the Zone Alarm off, return to the Zone Alarm menu, then press the key adjacent to the "ALARM 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, first press the ALARM key. Now press the key next to the "DEPTH" label. The screen shown at the top of the next page appears.

3D OPERATION

(NOTE: This section covers only the features that operate differently in 3D than 2D or are only used in the 3D mode. Not all features are available in the 3D mode. See the chart in the back of this manual for a feature listing.)

AUTOMATIC

The Automatic feature works slightly different when the Ultra 3D is in the 3D mode. The automatic sensitivity and range features are disabled when the unit is in the manual mode, just like the 2D. However, the Fish ID feature remains on. Also, while in the manual mode, if the bottom goes deeper than the lower limit, the wire frame remains on the display at the lower limit. For example, if the lower limit is 40 feet, and the actual bottom depth is 60 feet, (as shown by the digital display), the bottom signal on the Ultra 3D will reamain at 40 feet. Note this only happens in the manual mode. When the unit is in automatic, the ranges change automatically to keep the bottom signal on the display 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.

ZOOM - Automatic Feature On

To enlarge (zoom) the targets and the bottom signal on the display, simply press the ZOOM key. A screen similar to the one below appears. The range is divided in half. This gives a 2X zoom. In the example below, the range was 0 to 60 feet when the zoom key was pressed. The range is now 30 to 60 feet. This gives a zoom size of 30 feet, which is shown in the upper left corner of the display. To change the size of the zoom, press the key next to the up or down arrows at the bottom of the screen. Pressing the key next to the up arrow makes the zoom size smaller which increases the size of the targets on the screen. Pressing the key next to the down arrown makes the zoom size larger which decreases the size of the targets on the display. The arrows will remain on the display for a few seconds after you press the ZOOM key, then they will automatically be erased. To change the zoom size, simply press the ZOOM key. The arrows will return. To turn the zoom feature off, press the RANGE key.
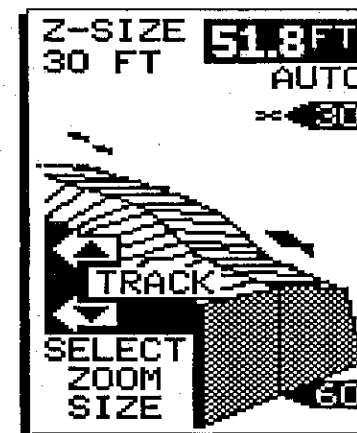
To use the 3D feature, press the "3D" key. When the 3D feature is first turned on, guide lines show on the display as shown at right. These help you visualize the three transducer beams and the boat's direction of travel. If you wih to turn these lines off, simply press the CLEAR key, or wait a few seconds and they will automatically be erased. The wire-frame (TrueTrak) mode appears next which shows a 3D perspective view of the underwater world as shown in the example below.
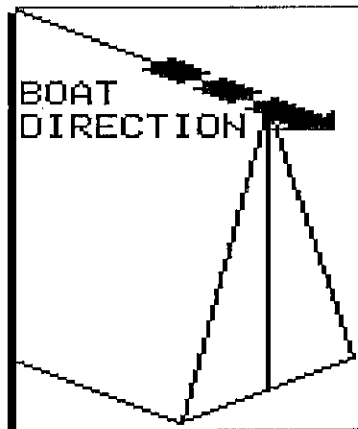

Your present position is indicated by the "X" next to the zero mark. Echoes from the left transducer element are displayed on the right side of the screen. Echoes from the right transducer element are shown on the left side of the screen. The surface of the water is depicted by the diagonal line at the top of the screen. Targets that the computer inside the Ultra 3D determine are fish are shown as fish symbols.

As the bottom contour changes, the wire-frame display will change as shown at right. The unit is in the automatic mode as indicated by the word "AUTO" on the display. The depth from the center transducer element to the bottom is shown in the upper right corner of the screen. Depth is not shown for the other elements.

Sensitivity, range, zoom, and alarms are all adjustable when the 3D feature is on. There is no difference when adjusting the sensitivity or range between the 2D and 3D modes. These features will help you get the most out of your unit. There's even a reverse feature that lets you see what's hidden on the other side of a drop-off.

With practice, the TrueTrak feature should help you to visualize the bottom contour, fish, and other targets.
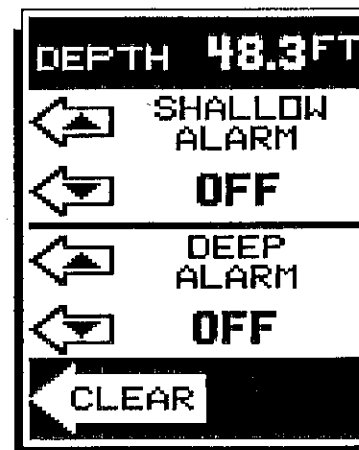
DEPTH ALARM MENU

The bottom depth shows at the top of the display. The shallow and deep alarm adjustment arrows are beneath the digital depth. Now simply 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 (see below), 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.
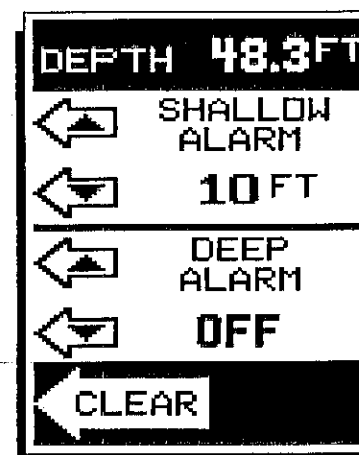

SHALLOW ALARM SET TO 10 FEET

AUDIO ALARM ON/OFF

When the Ultra 3D is first turned on, the audio alarm (speaker) 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, repeat the above steps. The label that was used to turn the speaker off now reads "TURN ALARM SOUND ON." Press the key adjacent to this label to turn the speaker on.

SPEAKER SYMBOL
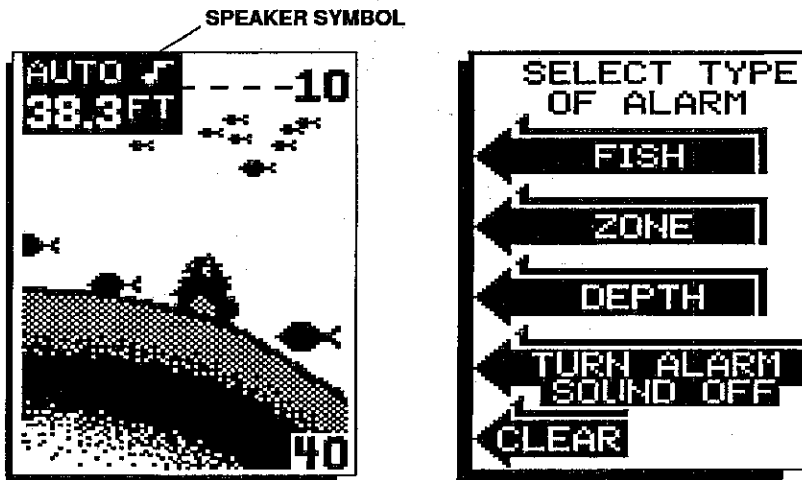
NOTE: The words corresponding to the alarm in use will still flash on the display when the alarm is triggered even if the speaker is turned off. For example, the word "ZONE" flashes when the zone alarm is triggered.

MENUS

The Ultra 3D 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. There are nine menu pages accessible with the menu key in the 2D mode. The menu key shows different menus, depending on which mode the unit is in.
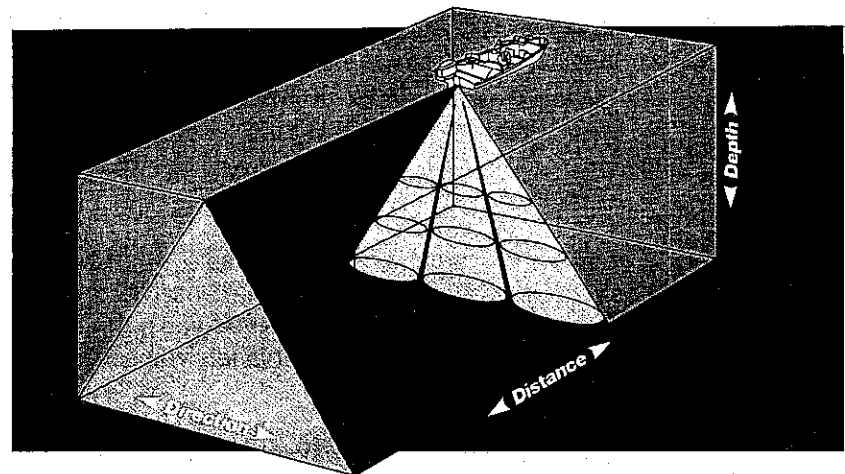
2D MENU - PAGE 9
DISPLAY ZOOM BAR

When the Ultra 3D is in the manual mode, the Zoom Bar can be turned on continuously. To do so, first make certain the Ultra 3D is in the manual mode, then press the MENU key eight times. Now press the key adjacent to the "Display Zoom Bar" label. (Note: The Zoom bar only shows in the zoom split-screen mode.)
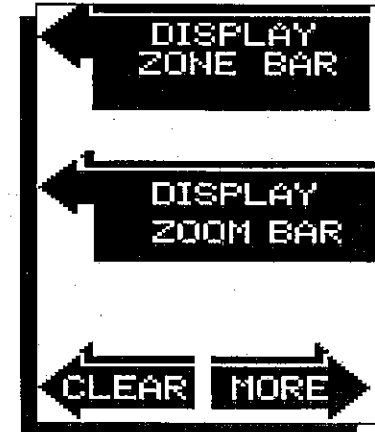
3D INTRODUCTION

The Ultra 3D can display information from three dimensions: depth, distance, and direction. This is accomplished by taking advantage of its special transducer. Inside this transducer are three elements - three transducer crystals. In the 2D mode, each one can be turned on or off by the user. When the unit is in the 3D mode, all elements are used for an effective cone angle of 60 degrees. This advantage is especially useful in shallow water. The ultra-wide cone lets you see much more of the underwater world than with a conventional depth sounder.

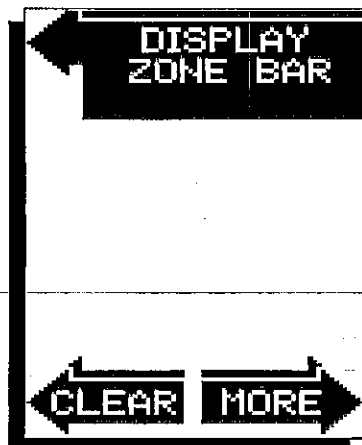## 2D MENU -PAGE 8
ASP (Advanced Signal Processing)

ASP is a program embedded in the Ultra 3D's computer that continually monitors the signals from the receiver. It determines which echoes are noise, rejects them, allowing target echoes to be displayed with a minimum of screen clutter. This feature is especially useful, since it typically allows you to operate the boat at all speeds without adjusting the sensitivity. When the Ultra 3D is first turned on, ASP is enabled. To turn ASP off, press the menu key eight times. The menu shown at right appears. Now press the key adjacent to the "Turn Off ASP" label. The unit will return to the sonar screen with ASP off. To turn ASP on again, repeat the above steps.
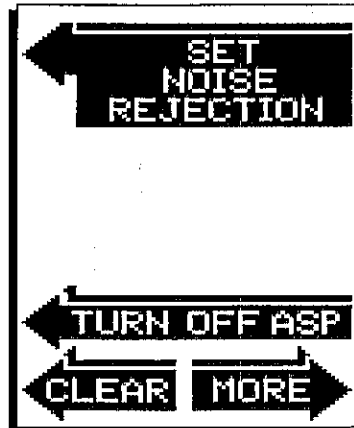

2D MENU - PAGE 9
DISPLAY ZONE BAR

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.

2D 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.
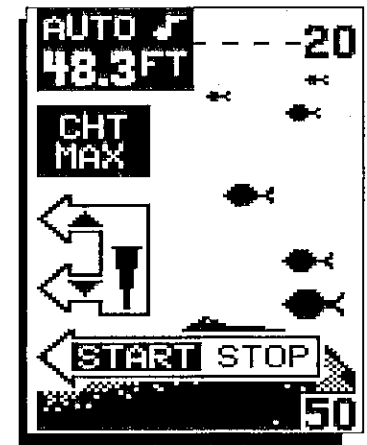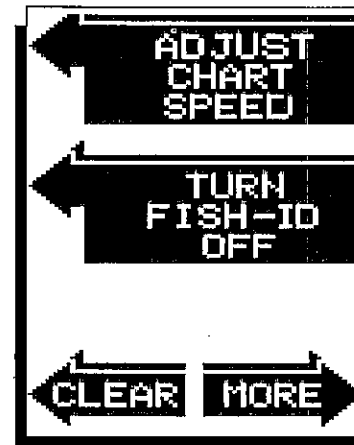
To stop the chart, press the key adjacent to the "START STOP" label. Repeat this step to start the chart again.
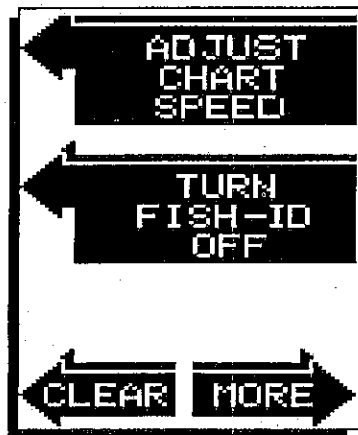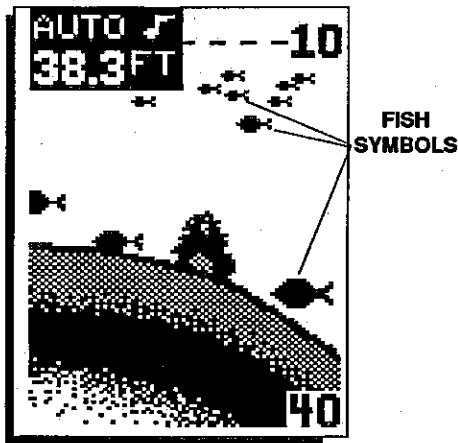
FISH I.D.

The Fish I.D. feature identifies targets that meet certain conditions as fish. The micro-computer analyzes 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 or a medium fish symbol on a larger target.

The micro-computer is sophisticated, but it can be fooled. It cannot 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 Ultra 3D 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 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 can't be used when the Ultra 3D is in the manual mode. If you turn the Fish I.D. feature on when the Ultra 3D 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.

2D MENU - PAGE 8
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.
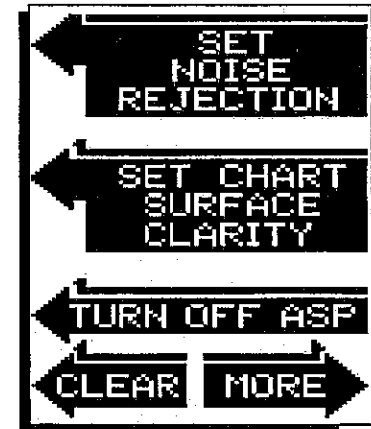
Surface Clarity Control, or SCC reduces or eliminates undesired signals from the display. SCC varies the sensitivity of the receiver, decreasing it near the surface and gradually increasing it as the range increases. Typically, the maximum depth that SCC affects is 75% of the range. For example, on a 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 eight times. Now press the key adjacent to the "SET CHART SURFACE CLARITY" label. The screen at right appears. Finally, press the key adjacent to the desired SCC level. The unit will return to the chart, using the level of SCC you chose.

FISH SYMBOLS
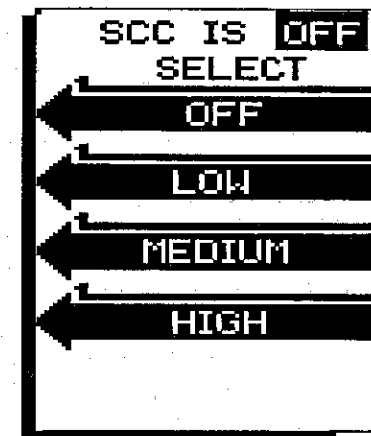
NOISE REJECTION

The Ultra 3D'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 3D 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.

The screen at right 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.
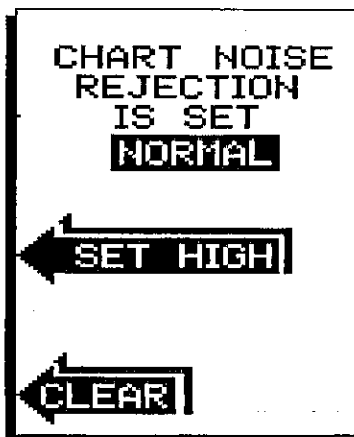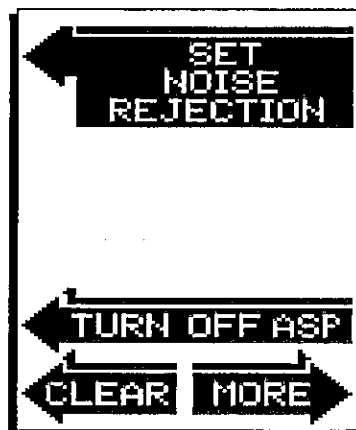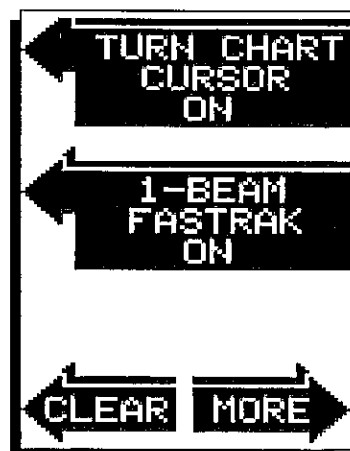
CHART CURSOR

The Ultra 3D 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 3D returns to the sonar screen without the chart cursor.
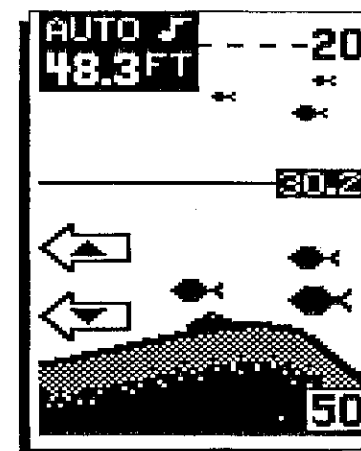
SONAR MENU PAGE 2

CHART CURSOR

NOTE: The Chart Cursor won't work when FASTRAK is on or if the Zone Alarm or Zoom Window bars are activated.

2D MENU - PAGE 2

1-BEAM FASTRAK

This feature converts all echoes from one transducer element 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 1-BEAM FASTRAK ON" label. To turn it off, repeat the same steps. The "TURN 1-BEAM FASTRAK OFF" label appears instead of the "TURN 1-BEAM FASTRAK ON" label.
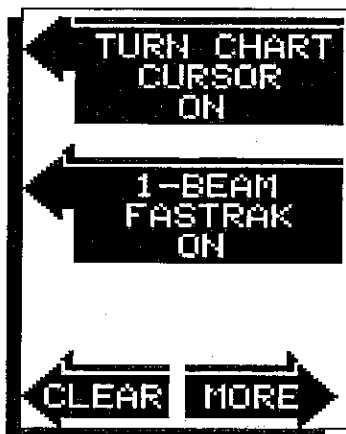
NOTE: You can use the 1-beam FASTRAK on any of the three transducer elements; either the left, center, or right. FASTRAK uses the current transducer element in use when it's turned on. To change transducer elements, see the "CURRENT BEAM" section on page 21.

DISPLAY CONTRAST

The unit's display contrast is adjustable to suit different lighting conditions. To adjust it, first press the menu key six times. The menu shown at the bottom of the previous page appears. Press the key next to the "ADJUST DISPLAY CONTRAST" label. The screen shown at right appears. 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 it automatically clears.
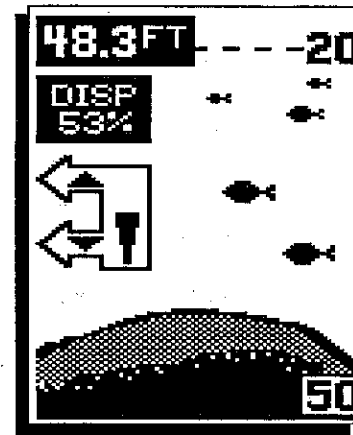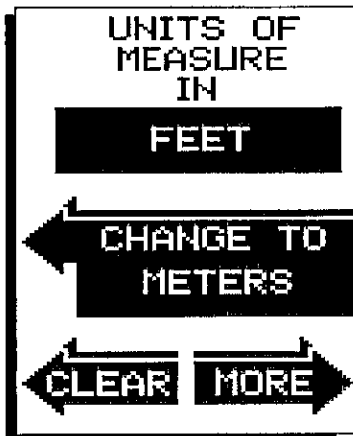

2D MENU - PAGE 7

DIGITAL SONAR

When the Ultra 3D 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 unit. 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 the Fish I.D. feature.
To turn the digital sonar off, press the MENU key seven times. Now press the key adjacent to the "TURN DIGITAL SONAR OFF" label. To turn it back on again, repeat the same steps.
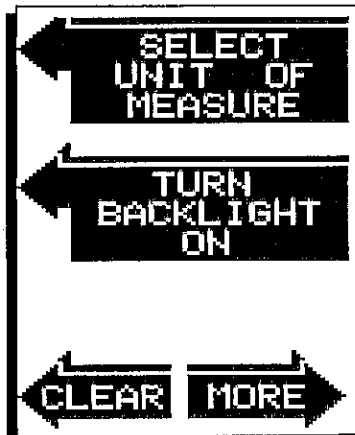
2D MENU - PAGE 3

SELECT DEPTH SIZE

The digital 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 left appears.

```
SELECT DIG.
    SIZES
  SMALL
 MEDIUM
 LARGE
CLEAR   MORE
```

```
A♪    - - - -20
48.3FT

                    50
```
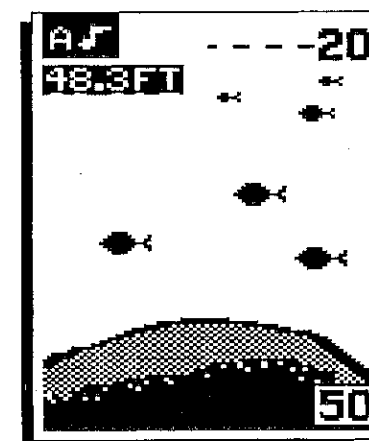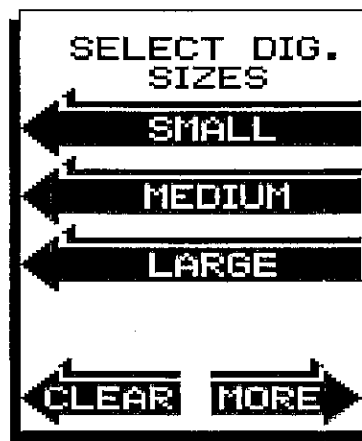
SMALL DIGITAL DISPLAY

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 are shown in small numbers.

The large digital selection erases the chart and shows the digital depth display 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 and adjust the depth alarm. Returning to the chart restores the normal menu operation.

```
DIGITAL
SONAR ONLY
DEPTH FT
32.8
SHALLOW ALM
OFT
DEEP ALM
OFF
```

LARGE DIGITAL DISPLAY

2D MENU - PAGE 5
UNIT OF MEASURE MENU

```
UNITS OF
MEASURE
IN
FEET
CHANGE TO
METERS
CLEAR  MORE
```
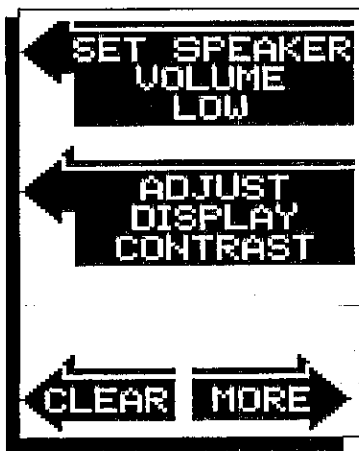
2D MENU - PAGE 5
BACKLIGHTS

The Ultra 3D has internal lights for the display and keyboard. To turn these on, press the MENU key five times, then press the key adjacent to the "TURN BACKLIGHT ON" label. To turn the backlights off, repeat the same steps.

```
SELECT
UNIT  OF
MEASURE
TURN
BACKLIGHT
ON
CLEAR  MORE
```
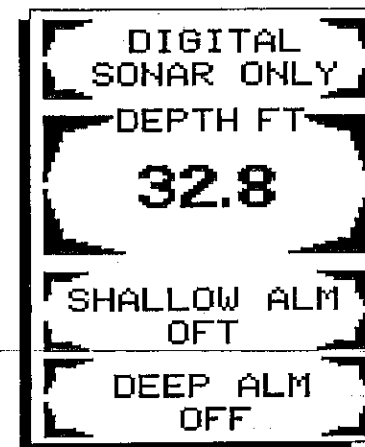
2D MENU - PAGE 6

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 six times. The screen shown at right appears. Now press the key adjacent to the "SET SPEAKER VOLUME LOW" label. To switch back to the high volume, repeat the above steps.

```
SET SPEAKER
VOLUME
LOW
ADJUST
DISPLAY
CONTRAST
CLEAR  MORE
```
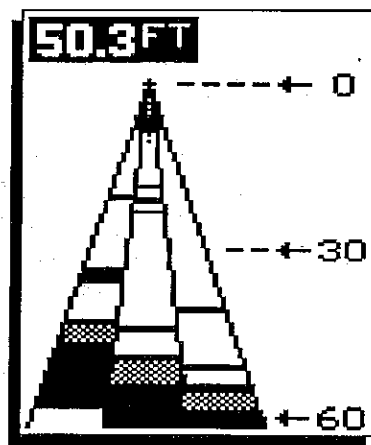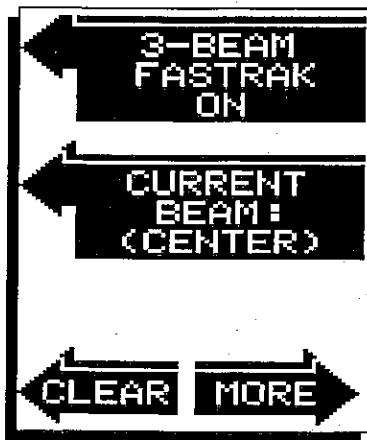
2D MENU - PAGE 3

SYSTEM INFORMATION

This feature shows the version number and the copyright information for the software inside the Ultra 3D. To view this data, press the MENU key three times, then press the key next to the "SYSTEM INFO." label. A screen similar to the one shown at right appears. It automatically erases after about ten seconds, or you can press the CLEAR key to erase it.

```
EAGLE
ELECTRONICS
ULTRA 3D
COPYRIGHT '92
VERSION
1.02
FEB. 20,1992
```

2D MENU - PAGE 4

3-BEAM FASTRAK

The Ultra 3D can display echoes from all three transducer elements at the same time in the FasTrak mode. To do this, first press the MENU key four times. The menus shown below left appear. Now press the key next to the "3-BEAM FASTRAK ON" label. The screen shown below right appears. Echoes from the left, center, and right elements show across the screen. Suspended targets show as horizontal lines. The bigger the target, the thicker the lines. These lines are called signal strength indicator bars. The bottom signal has GRAYLINE to show the relative hardness of the bottom. The 3-BEAM FASTRAK mode is especially useful when the boat is stationary. Fish moving through the cones show up as horizontal

```
3-BEAM
FASTRAK
ON

CURRENT
BEAM:
(CENTER)

CLEAR   MORE
```

```
50.3FT
----+ 0
--+30
+60
```

bars. As the bar appears in a cone, you can tell which direction the fish is, and react accordingly. NOTE: Only a few menus are available when the Ultra 3D is in the 3-BEAM FasTrak mode.

2D MENU - PAGE 4

TRANSDUCER BEAM SWITCH

The Ultra 3D can display echoes from any of the three transducer elements at one time while it's in the 2D mode. In other words, it can display echoes from the left, center, or right element. When the Ultra 3D is first turned on, echoes from the center element are displayed. To switch to the right or left element, press the MENU key four times. The screen shown at right appears. Now press the key adjacent to the "CURRENT BEAM: CENTER" label. This switches the unit from the center to the

```
3-BEAM
FASTRAK
ON

CURRENT
BEAM:
(CENTER)

CLEAR   MORE
```

right transducer element. Press it again and the Ultra 3D switches to the left transducer element. To change back to the center element, simply press the key again. When the label shows the desired transducer element, press the CLEAR key to exit this screen or wait a few seconds and it will automatically clear.
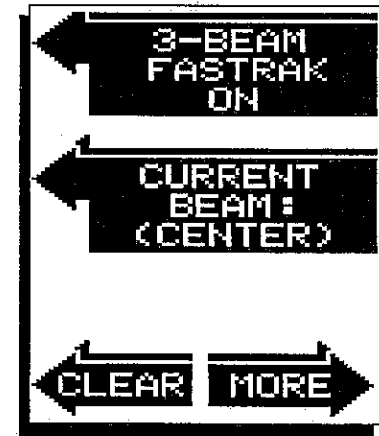
2D MENU - PAGE 5

SELECT UNIT OF MEASURE

The Ultra 3D can display the water depth in feet or meters while it's in the 2D mode. To change the unit of measure, first press the menu key five times. The screen shown at right appears. Next, press the key adjacent to the "SELECT UNIT OF MEASURE" label. The screen at the top of the next page appears. Now press the key adjacent to the "CHANGE TO METERS" label. The unit of measure changes to the metric equivalent. Repeat these steps to switch the units of measure again.

```
SELECT
UNITS OF
MEASURE

TURN
BACKLIGHT
ON

CLEAR   MORE
```