TFX160

Operations Manual

THANK YOU

Thank you for choosing Teleflex Sonar, manufactured by Techsonic Industries, for your sonar fishfinder and depthsounder. Techsonic has built its reputation by designing and manufacturing top-quality, thoroughly reliable marine equipment. Techsonic has designed your Teleflex Sonar unit to be trouble free even in the harshest marine environments.

In the unlikely event that your Teleflex Sonar product does require repairs, Techsonic offers an exclusive Service Guarantee - free of charge during the first year after purchase, and available at a reasonable rate after the one-year period. Complete details are included at the end of this manual.

We encourage you to read this operations manual carefully in order to get full benefit from all the features and uses of your Teleflex Sonar product. Also, to register your purchase and help us learn more about you, please fill out the included warranty registration card

WARNING! This device should not be used as a navigational aid to prevent collision, grounding, boat damage, or personal injury. When the boat is moving, water depth may change too quickly to allow time for you to react. Always operate the boat at very slow speeds if you suspect shallow water or submerged objects.

WARNING: Dis-assembly and repair of this electronic unit should only be performed by authorized service personnel. Any modification of the serial number or attempt to repair the original equipment or accessories by unauthorized individuals will void the warranty. Handling and/or opening this unit may result in exposure to lead, in the form of solder.

WARNING: This product contains lead, a chemical known to the State of California to cause cancer and birth defects and other reproductive harm.

TABLE OF CONTENTS

INSTALLATION PREPARATION

PARTS SUPPLIED

Before installing your *160*, please ensure the following parts are included in the box:

• *160* fishfinder
• Transducer with 20' (6m) of cable and mounting hardware kit
• Mounting system and mounting hardware kit
• 6' (2m) power cable
• Speed/Temperature Sensor and mounting hardware
• Collector Plug
• Publications kit

If any of these items are missing, call our Customer Support Hotline listed in the end of this manual.

ACCESSORIES

Techsonic offers a wide assortment of accessories that complement and expand the capability of your new *160*. These accessories are designed with the same high standards and are backed by the same one-year warranty. All sonar accessories are available through your full-service dealer or factory direct through our number listed in the Customer Support section.

INSTALLATION OVERVIEW

All *160 Series* consists of three primary components to install: the control head, the transducer and the speed/temp sensor.

The control head contains the sonar transmit and receive circuitry, as well as the user controls and display. It should be installed in a location that provides access to the controls and visibility while in use. The control head mounts on a gimbal mounting system that tilts and swivels providing flexibility for viewing from different locations on the boat. In addition, the *160* can be mounted in the boat console.

2

INSTALLATION PREPARATION
INSTALLATION OVERVIEW

The speed/temperature sensor takes readings from the water at the surface. It should be installed in contact with the surface of the water in an area that has smooth water flow - usually on the transom of the boat. Refer to the speed/temperature installation sheet included.
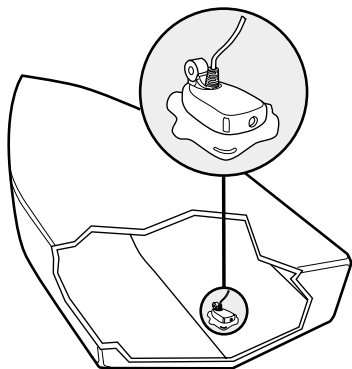
The transducer converts electrical energy from the transmitter into mechanical pulses or sound waves. The transducer also receives the reflected sound waves and converts them back into electrical signals for display on the control head. It should be installed in contact with the surface of the water in an area that has smooth water flow - usually on the transom of the boat. There are several mounting options for the transducer. Review the following section to determine the method that works for you and your boat.

Determining How to Mount the Transducer

The *160* includes a model TZ160H transducer. This transducer can be mounted on the transom of the boat, or bonded to the inside of a fiberglass hull boat.
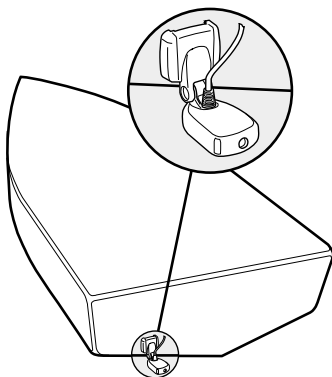
Transom Mounted Transducer

The transom installation, which is the most widely used, places the transducer on the outside of the boat hull. This technique produces the least signal loss, and provides a way to adjust the transducer after installation. The mounting hardware included is designed to protect both the boat and the transducer should the boat strike debris in the water or when trailering.

Inside the Hull Mounted Transducer

3

INSTALLATION PREPARATION
ALTERNATE TRANSDUCERS AND MOUNTING METHODS

As an alternative to transom mounting, it is possible on many fiberglass-hulled boats to glue the transducer on the inside of the boat hull. Since fiberglass has similar sonar characteristics as water, the sonar signal can pass through the boat hull with minimal loss. The hull of the boat must be single layer construction (not double-hulled). Also, any air trapped in the lamination of the fiberglass would prevent the sonar signal from passing through.

Inside the hull installations require no holes to be drilled into the boat and through experimentation, high-speed operation comparable to transom mounting can be achieved. Two part, slow cure epoxy is required to glue the transducer in place.

ALTERNATE TRANSDUCERS AND MOUNTING METHODS

The *160* comes with everything necessary for installation and operation on most boats. However, there are several situations which may require a different type of transducer. Inboard boats, wood or metal hulls, and sail boats create unique transducer mounting needs. Alternate transducers and mounting methods are detailed below.

Trolling Motor Mounting

The standard high-speed transducer can also be adapted to mount on most trolling motors using part number AD-STM-7. This accessory includes a bracket and hose clamp that allows mounting the transducer to the body of most trolling motors.

BEGINNING INSTALLATION

Now that you have determined the transducer mounting method, you can begin installation of the *160*. The fold out installation guide included provides detailed step by step instructions for installation of the control head, transducer and speed/temp sensor. For transom mount transducer installations, you will need the mounting template at the front of this manual.

In addition to the parts included you need the following for installation and operation:

- A powered hand drill and various drill bits
- Phillips and flat-head screw drivers
- A ruler or measuring tape
- Pen or pencil
- 12 volt power source (your boat's battery)
- Silicone sealant (for sealing drilled holes)
- 2-part, slow-cure epoxy (for inside the hull transducer installations)

USING THE 160

160 Performance

The *160 Series* represents a new way of thinking about fishing electronics. Combining state of the art electronics and paper chart recorder sonar performance, it offers the best of the present and the past. Minimal, easy to understand knob controls provide access to the most important features. The *160* eliminates confusion created by too many buttons and menus. High technology, high performance, with "back to basics" operation makes the *160* the ideal choice of the serious angler.

The *160* uses sonar to locate and define underwater objects. Sonar technology is based on sound waves sent into the water in a controlled "beam" from the transducer. Objects within this beam reflect the sonar signal back. The *160* very accurately measures the distance to these objects based on the time it takes for the sonar to return. Each object (bottom, fish or structure) reflects the sonar uniquely, providing information about its makeup. The *160* draws this returned information on the display.

The *160* operates in a wide variety of water conditions, from 2' to 600'. Actual depth capability depends on many factors such as bottom hardness, water conditions, and transducer installation. All sonar units typically read to deeper depths in fresh water than saltwater.

USING THE 160

SIMULATOR AND FEATURE MEMORY

POWERING UP THE 160

After installation, turn the *160* on by momentarily pressing the Gain knob. An audible chirp sounds as the unit turns on. If the unit detects that the transducer is connected and is in water, the *160* begins to show sonar information on the display. If the transducer is not detected, the unit starts up in simulator mode.

To power the unit off at any time, press and hold the Gain knob for several seconds until the *160* turns off.

Simulator and Feature Memory

The *160* contains a simulator that allows you to use the unit as though you are on the water. The Simulator is an invaluable aid to learning the features and functions of the *160*. All controls are operational and settings can be changed to experiment with various features. When operating in Simulator an indicator appears at the bottom left of the display.

There are two ways to start the simulator. The method to use depends on whether a transducer is connected:

If the *160* is powered on with no transducer connected, it starts up in simulator mode. No other steps are needed. In this mode the *160* does not remember any setting changes that are made.

If the *160* is powered on with the transducer connected, the Simulator must be manually turned on.

To manually turn the simulator on:

1. Press the Control Panel knob to display the list of options.

2. Rotate the Control Panel knob to scroll through the list until Simulator is visible and is highlighted on the display.

3. Turn the Range knob to turn Simulator from OFF to ON.

4. Press the Control Panel knob to clear the screen.

When operating with the Simulator on and the transducer connected changes made to Chart Speed, RTS Window, Surface Clutter, Contrast, White Line, (language in international models,) and the Units Control Panels are permanently remembered. When a transducer is not connected, changes are not remembered.
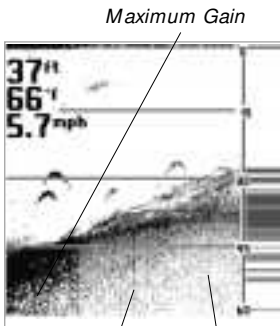
CONTROL FUNCTIONS

Three knobs on the *160* control all user settings: Gain, Control Panel and Range.

GAIN KNOB

The GAIN knob controls the gain (sometimes called sensitivity) of the sonar receiver. GAIN also powers the unit on or off. When the *160* is off, press GAIN to turn the unit on. Press and hold GAIN to turn the unit off.
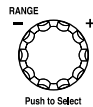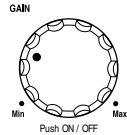
Increasing the gain shows faint sonar returns from small bait fish and suspended debris in the water, however the display may become too cluttered in some water conditions. Increased gain is also beneficial at deeper depths to maintain a good bottom image and adequately show sonar returns from deep objects. Decreasing the gain eliminates the clutter from the display, however if adjusted too low may not show many faint sonar returns that could be fish.

Maximum Gain

Medium Gain   *Low Gain*

Turn the GAIN knob clockwise to increase the gain; turn counterclockwise to decrease the gain. As you turn the knob, only new sonar information being graphed shows the affect of the gain change.

USING THE 160
CONTROL FUNCTIONS

CONTROL PANEL KNOB

The CONTROL PANEL KNOB accesses features used to adjust some 160 settings. Push the knob to display the CONTROL PANEL list, then rotate the knob to select a feature for adjustment. A light colored background indicates the selected feature. Turn the Range knob to adjust the selected feature. Remove the CONTROL PANEL list from the display by pushing the CONTROL PANEL knob. If no adjustments are made after a few seconds, the CONTROL PANEL list is removed automatically.

RANGE± KNOB

The RANGE± knob adjusts the depth ranges used on the display. The Range± knob has slightly different capabilities in each mode of operation. See Modes of Operation for specific information. In all cases turning the knob clockwise increases the range, while turning it counterclockwise decreases the range. Turning the knob slowly increases the adjustment in small increments, while turning it quickly makes large changes to the adjustment.

Depth, Temp and Speed readouts   *Chart Window*

Depth Range Scale   *Real TIme Sonar Window*
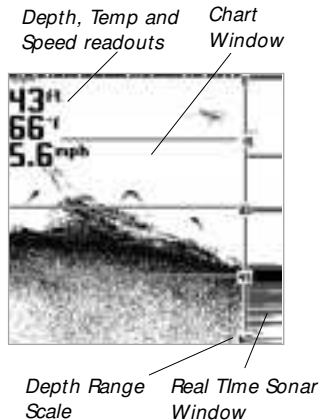
THE 160 DISPLAY

The 160 uses a high resolution LCD display to show sonar information, digital depth, temperature, speed and other readouts.

A digital depth readout ranging from 2 to 600 feet is always displayed in the upper left corner of the LCD. When the speed/temp accessory is connected, additional digital readouts are shown below the depth. A voltage readout appears in the bottom left when the input voltage to the 160 is less than 10 volts or greater than 16 volts.

A depth range scale appears close to the right side of the LCD display. This scale indicates the distance from the surface of the water to a depth range sufficient to show the bottom. For example, in 18 feet of water a 20 foot depth range is selected. The depth range scale can be controlled automatically or manually depending on the mode of operation. In automatic and bottom lock mode, the *160* selects the depth range. In manual mode the depth range is selected by the user.

The sonar returns received by the *160* are displayed along the depth range scale in a Real Time Sonar (RTS) Window and Chart Window. The RTS Window displays new sonar information within the transducer cone in an expanded easy to see format; the Chart Window logs old RTS Window information to show a contour view of the bottom and structure.

Real Time Sonar Window

The Real Time Sonar (RTS) window shows instantaneous sonar returns from the bottom, structure and fish that are within the transducer beam. The RTS window updates with new sonar information much more quickly than the chart window - up to 20 times per second in shallow water. The RTS window responds to quickly changing depths similar to a flasher. Interpreting the RTS information requires some skill; however comparing the RTS presentation with the information on the chart window makes it easy to understand.

Intense returns

Less intense returns

Structure

Bottom
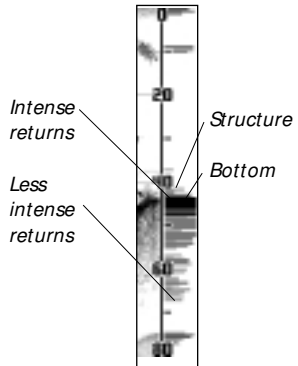
The RTS window plots the depth and intensity of a sonar return. Sonar intensity is indicated by the length of the horizontal lines, while depth is indicated by the vertical placement of the lines next to the depth range scale. The intensity of the sonar return is divided into 4 levels of grayscale. The most intense returns are shown in black; less intense sonar returns are shown in progressively lighter shades of gray.

The combination of the length of the lines and the gray scale level helps to identify the bottom composition and structure. The bottom is the largest

grouping of black horizontal lines, typically having gray lines underneath. A harder bottom shows less gray below; a soft bottom shows more gray below. Structure appears above the bottom as a cluster of lines with varying lengths and gray shades.

Fish appear as smaller groupings of sonar returns between the bottom and surface. Often, large fish within structure will show as a strong return within a grouping of smaller returns. When the boat is stationary or drifting very slowly, the RTS window can show the movement of the fish through the transducer beam. Moving fish appear as smaller groups of lines progressively become larger lines, or vice versa. A grouping of lines moving vertically indicates a fish changing depth.

Fish

Soft Bottom

Hard Bottom

The width of the RTS window can be adjusted to your preference. Selecting a wider RTS window shows greater differences between the strength of the sonar returns; however it reduces the amount of history on the display. See CONTROL PANELS for details of adjusting the RTS Window.
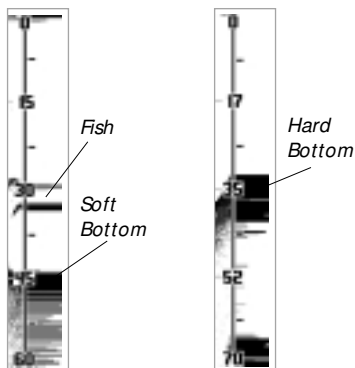
The Chart Window

Chart Window

The chart window creates a historical log of sonar returns from the RTS window. As the boat moves, variations in the depth and sonar return change and are charted to form an image of the bottom contour. The most recent sonar returns are charted on the right side of the window; as new information is received the older information is moved across the display.

The chart window also indicates the composition of the bottom. A hard bottom such as compacted sediment or flat rock appears as a dark, thin line across the

Hard Bottom

Soft Bottom

Rocky Bottom
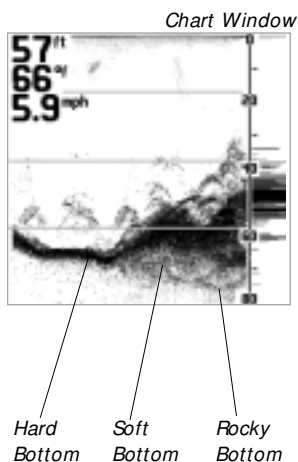
display. Soft bottoms such as mud or sand appear as a thicker line having a transition from dark to light grays. Bottoms made up of many rocks have a broken, random appearance.

Thermocline

Slope

Second Return

Bottoms having a large degree of slope also present a unique picture. These generally have a thicker black band representing the bottom directly under the boat. Equal areas of gray above and below the black band represent sonar returns from around the boat.
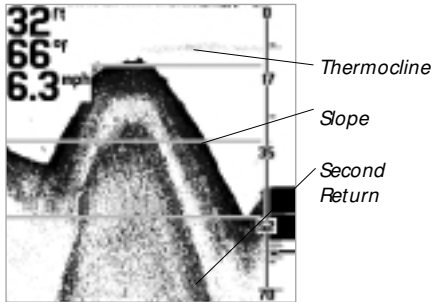
A second sonar return may be visible if the appropriate depth range is selected. This appears as a depth contour below the main bottom contour, at twice the depth. The second return occurs when the sonar signal bounces between the bottom and surface of the water and back again. Some anglers use the appearance of the second return to determine bottom hardness. With a lower gain setting the second return will be more faint, except in areas with hard bottom. The *160* has a unique depth range feature which permits the second return to be visible in any depth range. See Modes of Operation for details.

The *160* displays structure such as submerged grass, brush, trees and wrecks on the bottom. Structure can be distinguished by comparing the area just above and below the main bottom return. Usually structure shows as areas of dark to light gray on top of a dark bottom contour. The appearance of structure is greatly affected by boat speed and direction; to repeat the same image it is often necessary to travel the same speed and direction over the location where the structure was originally located.

The *160* is also capable of showing layers of water having different temperatures. These temperature differences, called thermoclines, appear at different depths, depending on current conditions. A thermocline typically appears as a continuous band of many gray levels moving across the display at the same depth. Thermoclines always appear above the bottom.

Schools of bait fish as well as individual fish are clearly visible on the *160* display. Bait fish appear as "clouds" having different shapes and sizes

11

depending on the number of fish and boat speed. Individual fish appear as smaller black and gray lines often appearing as a "fish arch." A fish arch forms as the fish moves through the sonar beam. Due to the transducer beam angle the distance to the fish decreases as it moves into the beam, and then increases as it moves out. When the chart window graphs
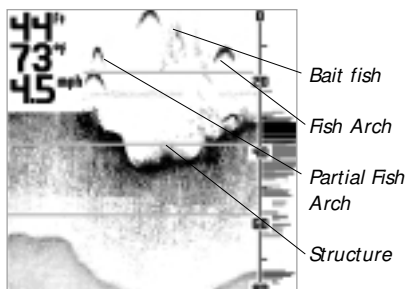
Bait fish

Fish Arch

Partial Fish Arch

Structure

this distance change, an arch appears. Boat speed, the Chart Speed setting and movement of the fish greatly affect the shape of the arch. When moving slowly, a fish creates an elongated arch. With the boat moving fast the arch appears shorter. A partial arch forms when the fish does not move through the entire cone angle.

Fish Arch Diagram

It is important to remember that sonar cannot distinguish between a fish and some other object suspended in the water. Regardless of the object the sonar detects, each has the possibility of being drawn as an arch.

MODES OF OPERATION

Three modes of operation control the method the *160* uses to track the bottom and select depth ranges. The Mode is selected by changing the CONTROL PANEL setting to AUTO, MANUAL, or BTM LOCK (Bottom Lock).

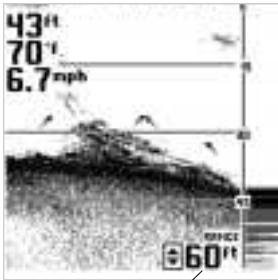### AUTOMATIC MODE

Automatic Mode follows the bottom contour, changing depth ranges as needed to keep the most recent sonar returns visible on the display. Automatic Mode keeps the bottom visible at all times, showing sonar returns from the surface to the bottom and just beyond. This is useful when traveling across the water in areas where the depth constantly changes requiring frequent range changes.

Adjustment Indicator

The *160* selects the depth range best suited to keep recent sonar returns visible, however, the depth range can be adjusted to optimize the display for viewing the second return. The display can also be optimized for maximum display resolution, making it possible to distinguish fish very close together or close to the bottom.

When the image of the bottom does not appear close to the bottom of the LCD display, the *160* is not fully optimizing the display to show sonar targets, such as fish, that are very close together. To enhance the *160's* ability to separate sonar targets and optimize the display for maximum resolution follow these steps.

1. Make sure the *160* is operating in Automatic Mode.

2. Push the Range± Knob. An adjustment indicator appears at the lower right corner of the chart window.

3. Turn the Range± Knob counterclockwise until the image of bottom is close to the bottom of the LCD display but still shows the area you are interested in.

Note: As the depth of the water increases, the 160 changes the depth range to keep the bottom on-screen. The 160 uses a depth range to keep the bottom contour close to the bottom of the display.

To return the depth range to normal viewing, turn the unit 'Off and back On again'. This is the only way to 'reset' the depth range to normal viewing.

To optimize the depth range for viewing the second return follow these steps.

1. Make sure the *160* is operating in Automatic.

Optimized Display
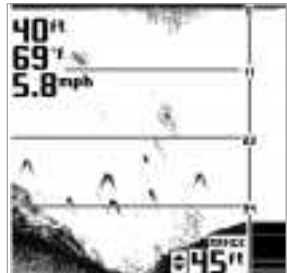
USING THE 160
MODES OF OPERATION

2. Push the Range± Knob. An adjustment indicator appears at the lower right corner of the chart window.

Optimized Display showing second return

3. Turn the Range± Knob clockwise until the second return is visible on the display.
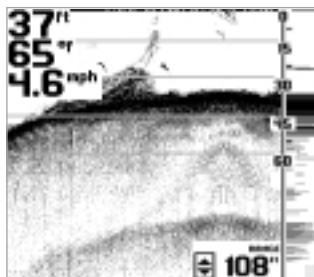
4. To return the depth range to normal viewing, rotate the depth range counterclockwise until the depth range stops updating.

Note: The second return does not appear at many of the deeper depth ranges. The appearance of the second return depends on depth of the water, water conditions, bottom hardness and the gain setting.

The *160* operates with this offset depth range until it is returned to the original settings or the unit is turned off.

BOTTOM LOCK ZOOM MODE

Bottom Lock Mode tracks the bottom similar to

Automatic Mode, however the display shows a full range view on right and a zoomed window on the left. The zoomed window provides added display resolution for separating sonar returns that are very close together, such as fish suspended close to the bottom.

As the depth changes the *160* automatically keeps the bottom visible in the zoomed window and the full range view. In the full range view, horizontal zoom preview bars define the area of bottom being enlarged. The default setting varies based on the depth range. However, this setting can be changed to show more area around the bottom, or the bottom in greater detail.

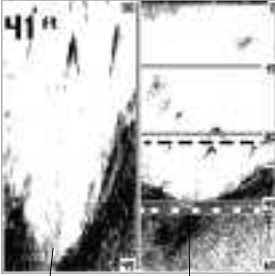To change the area of the bottom being zoomed, follow these steps:

1. Make sure the *160* is operating in Bottom Lock mode.

2. Push the Range± Knob. An adjustment indicator appears by the lower zoom preview bar indicating this is the selected depth limit for adjustment.

Bottom Lock Zoom Mode

Zoom Window

Zoom Preview Bars

Note: Pushing the RANGE± KNOB toggles between the upper and lower zoom preview bar adjustment. If the lower zoom preview bar is to be adjusted, push the Range± Knob until it is selected.

3. Rotate the Range Knob to adjust the zoom preview bar. Moving the zoom preview bars closer together increases the display resolution in the zoomed window; moving them further apart decreases display resolution, but allows more area around the bottom to be viewed.

The indicators disappear after several seconds with no adjustment. The *160* continues to follow the bottom using the new range. Any change made to the zoom preview bars is remembered until the *160* is powered off.

MANUAL MODE

Manual Mode turns off the automatic bottom tracking leaving control of the depth range to the

user. Both the upper and lower depth ranges can be adjusted to show the bottom in great detail or any other desired depth. When first switched to manual mode, the *160* defaults to the current automatic depth range; however, after the manual depth ranges have been set, the *160* uses the new settings until it is powered off.

Manual Mode works best in areas of relatively flat bottom or if you are trolling slowly. It is also ideal for displaying a small area of the overall depth range in great detail if you are looking for fish at a specific depth.
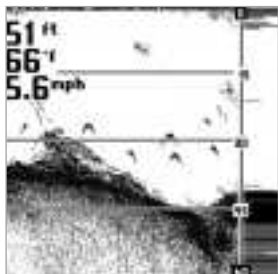
To manually adjust the depth ranges follow these steps:

1. Make sure the *160* is operating in Manual Mode.

2. Push the Range Knob. An adjustment indicator appears at the location of the lower Depth Range indicating it is ready for adjustment.

USING THE 160
CONTROL PANELS

Manual Mode

Lower Depth Range Adjustment Indicator

3. Rotate the Range Knob to adjust the Depth Range. Clockwise rotation increases the depth; counterclockwise rotation decreases the depth. The display updates as the changes are made.

After several seconds without pressing or turning the knob the depth range adjustment indicator disappears from the screen. The *160* does not make adjustments to keep the bottom information on-screen. If the depth is deeper or shallower than the ranges on the display, the bottom contour will not be visible.

The manual range settings made to the *160* are remembered until the unit is turned off.

CONTROL PANELS

CONTROL PANELS provide access to important, but infrequently adjusted features, such as Chart Speed, Mode, Light, Contrast, RTS Window, Surface Clutter, White Line, Depth Alarm, Units, Simulator, Language.

Upper Depth Range Adjustment Indicator

16

Note: The Language and Units menus only appears on special international versions of the 160.

CONTROL PANELS are displayed by using the CONTROL PANEL knob and adjusted by using the Range knob. The active CONTROL PANEL consists of three parts: The CONTROL PANEL Name indicates the feature, the Setting Indicator shows the current setting within the complete range of adjustment, and the Setting Readout shows the status when CONTROL PANEL is not selected.

Active Control Panel

```
  TURN CONTROL TO SELECT
▲
Mode              Auto

Light              Off

Contrast             8
 0 ▐IIIIIIII    16

RTS Window      Nrw

Surface Clutter      4
▼
  TURN RANGE TO ADJUST
```
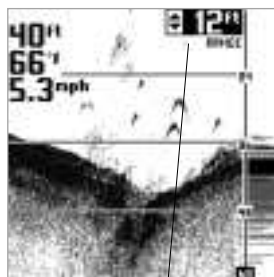
To select a CONTROL PANEL for adjustment follow these steps:

1. Press the CONTROL PANEL knob. A list of options appears on the display. The option currently selected for adjustment is indicated by a white background color.

2. Rotate the CONTROL PANEL knob to select the desired option for adjustment. Clockwise rotation selects options higher in the list; counterclockwise rotation selects options lower in the list.

CONTROL PANEL Name   *Setting Readout*

```
Light              3
Off ▐███     8
```

Setting Indicator

Note: Not all options in the list can be viewed on the display at one time. When the selected option is at the bottom of the list, continue turning the knob to display other options.

3. Once the desired option is selected, turn the Range knob to adjust. Adjustments are made immediately and are shown by an indicator on the selected CONTROL PANEL.

4. Remove the CONTROL PANELS by pushing the CONTROL PANEL knob. Or, after a few seconds with no knob press/turn the CONTROL PANELS automatically are removed from the display.
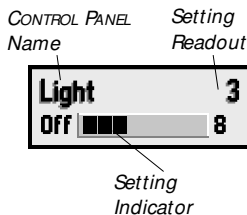
USING THE 160
CONTROL PANELS

CHART SPEED selects the speed at which the bottom information moves across the display. Options available range from 1 (very slow) to eight (very fast). Selecting a faster rate shows more information in the chart window; however it

| Chart Speed | 6 |
| 1 ▮▮▮▮▮▮ | 8 |

moves across the display very quickly. Selecting a slower rate keeps the information on the display longer, but the chart information becomes compressed and may be more difficult to interpret. Setting Chart Speed in proportion to boat speed is often preferred.

The Chart Speed setting is retained in memory when the *160* is turned off. The factory setting is 6.

MODE selects how the *160* locates the bottom and graphs the information on the display. Refer to page 12 for a description of the Modes of Operation.

| Mode |
| ◄ **BtmLock** ► |

LIGHT activates the display back light and selects the brightness level. The light is manually controlled except when the *160* first powers up. During start up, the back light turns on at full

| Light | 3 |
| Off ▮▮▮ | 8 |

brightness so the display will be visible at night. However, the back light automatically decreases in intensity until it is off. Selecting the CONTROL PANEL during the automatic off process keeps the back light on at the last intensity level.

Light setting is not retained in memory when the *160* is turned off.

CONTRAST enhances the viewability of the LCD by making it darker or lighter. Selecting a higher number darkens the display; selecting a lower number lightens the display. The *160* uses

| Contrast | 8 |
| 0 ▮▮▮▮▮▮▮ | 16 |

sophisticated electronics to automatically adjust the contrast level; however at times of extreme heat or cold manually adjusting the contrast for best display may be needed.

The Contrast setting is retained in memory if it falls between 6 and 10. The factory setting is 8.

18

RTS WINDOW selects the width of the window dedicated to Real Time Sonar. Selecting Narrow decreases the width of the RTS window leaving more space for the chart window, however some

sonar returns will not be visible. Selecting Wide makes the RTS window wider and shows more of the sonar intensity information, however less space on the LCD is available for sonar history. Selecting Off turns off the RTS window and the entire LCD shows sonar history.

Note: When the RTS window is adjusted to Wide, no grayscale information is shown.

RTS Window setting is retained in memory when the *160* is turned off. The factory setting is Narrow.

SURFACE CLUTTER eliminates most sonar returns near the water surface caused by trapped air, boat wakes and temperature inversions. Most surface clutter appears on the display because the

strongest sonar return comes from the shallowest objects. The *160* uses a sophisticated feature called TVG (Time Variable Gain) to overcome surface clutter and counteract the affect of depth on sonar return strength. The level 1 setting is optimal for making sonar information from all depths appear the same. However, many users prefer to see more surface clutter than this setting shows. Selecting a higher number shows more surface clutter, but sonar returns nearest the surface will appear more intense than they actually are.

The Surface Clutter setting is retained in memory when the *160* is turned off. The factory setting is 4.

WHITE LINE activates and adjusts a feature which changes how the 160 draws the bottom contour and structure, as well as show fainter sonar returns more clearly. When a White Line setting
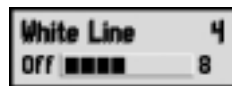
of 1 to 8 is selected, a light gray band highlights the strongest sonar returns within the sonar image and makes a distinctive outline along the bottom contour, structure and fish. Selecting a larger numeric setting increases the width of the band and makes fainter sonar returns more noticeable; however the 160's ability to show subtle differences in bottom composition

19

and structure is reduced. Selecting a smaller numeric setting narrows the band, and shows greater variation in bottom composition. Selecting "OFF" turns the White Line feature off.

Note: The White Line setting is retained in memory when the 160 is turned off. The factory setting is "OFF".
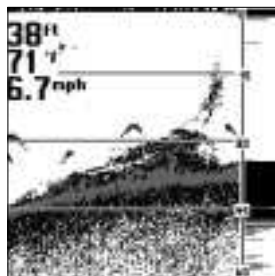
White Line Screen

DEPTH ALARM activates a shallow water depth alarm. The alarm will sound when the digital depth becomes equal to or less than the setting. The tone sounds at a rapid rate for several

seconds and then sounds intermittently until the boat moves to deeper water. The Depth Alarm can be muted by pressing the CONTROL PANEL knob; once muted the alarm will not sound again until the boat moves to water greater than the Depth Alarm setting. Remember, depth is measured from the transducer, not the surface of the water.

The Depth Alarm setting is not retained in memory when the *160* is turned off.

SIMULATOR allows the *160* to operate in simulated sonar mode. This is useful for learning the features and functionality of the *160* when not on the water. When operating with the simulator on and without a transducer connected the *160* does not remember any changes to settings.

The Simulator setting is not retained in memory when the *160* is turned off.

MAINTENANCE

Your *160* is designed to provide years of trouble free operation with virtually no maintenance. Follow these simple procedures to ensure your *160* continues to deliver top performance.

If the unit comes into contact with salt spray, simply wipe the affected surfaces with a cloth dampened in fresh water. Do not use a chemical glass cleaner on the lens. Chemicals in the solution may cause cracking in the lens of the unit.

When cleaning the LCD protective lens, use a chamois and non-abrasive, mild cleaner. Do not wipe while dirt or grease is on the lens. Be careful to avoid scratching the lens.

If your boat remains in the water for long periods of time, algae and other marine growth can reduce the effectiveness of the transducer. Periodically clean the face of the transducer with liquid detergent. Pivoting the transducer up in the bracket may allow better access for inspection or cleaning.

If your boat remains out of the water for a long period of time, it may take some time to wet the transducer when returned to the water. Small air bubbles can cling to the surface of the transducer and interfere with proper operation. These bubbles dissipate with time, or you can wipe the face of the transducer with your fingers after the transducer is in the water.

Never leave the *160* in a closed car or trunk—the extremely high temperatures generated in hot weather can damage the electronics.

TROUBLESHOOTING

Do not attempt to repair the *160* yourself. There are no user serviceable parts inside, and special tools and techniques are required for reassembly to ensure the waterproof integrity of the housing. Repairs should be performed only by authorized Techsonic technicians.

Many requests for repair received by Techsonic involve units that do not actually need repair. These units are returned "no problem found." If you have a problem with your *160*, use the following troubleshooting guide before calling Customer Support or sending your unit in for repair. The *160* contains several tools that can aid in determining if there is a problem and how to isolate and repair the problem in many cases.

MAINTENANCE AND WARRANTY
TROUBLESHOOTING

1. Nothing happens when I turn the unit on.

Check the power cable connection at both ends. Be sure the cable is connected correctly to a reliable power source—red lead to positive, black lead to negative or ground. Ensure the power available at the mount is between 10 and 20 VDC. If the unit is wired through a fuse panel, ensure the panel is powered. Often accessory fuse panels are controlled by a separate switch or the ignition switch. Also, often a fuse can appear to be good when in fact it is not. Check the fuse with a tester or replace it with a fuse known to be good.

Check the power connection to the *160*. It is possible to force the power cable connector into the collector plug incorrectly. If the connector is reversed, the unit will not work. Examine the contacts on the back of the unit to ensure there is no corrosion.

Ensure the cables are properly installed into the collector plug and the collector plug is properly seated into the *160*.

2. The Unit Starts up in simulator mode.

The *160* has the ability to detect that a transducer is connected. If, at power up, a transducer is not connected, the unit starts up in simulator mode.

Ensure that an appropriate transducer connector is used and the connector is positioned correctly in the collector plug. Also be sure that the collector

plug is fully seated into the unit. Second, inspect the transducer cable from end to end for breaks, kinks, or cuts in the outer casing of the cable. Also ensure the transducer is fully submerged in water. If the transducer is connected to the unit through a switch, temporarily connect it directly to the unit and try again. If none of these items identifies an obvious problem, the transducer itself is probably the problem. Be sure to include the transducer if returning the unit for repair.

To manually override the simulator, select the Simulator CONTROL PANEL and turn to off. See CONTROL PANELS for more information.

3. There is no bottom reading visible on the display.

There are a number of possible causes for this condition. If the loss of bottom information occurs only at high boat speeds, the transducer needs

adjusting. If the digital depth readout is working but there is no bottom visible on-screen, it is possible the depth range has been adjusted manually to a range lower than what is needed to display the bottom. Also, in very deep water, it may be necessary to manually increase the GAIN setting to maintain a graphic depiction of the bottom.

If you are using a transducer switch to connect two transducers to the *160*, ensure the switch is in the correct position to connect a transducer that is in water. (If a trolling motor transducer is selected and the trolling motor is out of water, no sonar information appears.)

If none of the above solve the problem, inspect the transducer cable from end to end for breaks, kinks, or cuts in the outer casing of the cable. If the transducer is connected to the unit through a switch, temporarily connect it directly to the unit and try again. If none of these items identifies an obvious problem, the transducer itself may be the problem. Be sure to include the transducer if returning the unit for repair.

4. When in very shallow water, I get gaps in the bottom reading and inconsistent digital depth indication.

The *160* will work reliably in water 2' (.6m) or deeper. The depth is measured from the transducer, not necessarily from the surface.

5. The unit comes on before I press POWER, and won't turn off.

Check the transducer cable—if the outer jacket of the cable has been cut and the cable is in contact with bare metal, you need to repair the cut with electrical tape. If there is no problem with the cable, disconnect the transducer from the unit and see if the problem is corrected, to confirm the source of the problem.

6. I get gaps in the reading at high speeds.

Your transducer needs adjusting. If the transducer is transom-mounted, there are two adjustments available to you—height, and running angle. Make small adjustments and run the boat at high speeds to determine the effect. It may take several tries to optimize high speed operation. This can also be a result of air or turbulence in the transducer location caused by rivets, ribs, etc.

MAINTENANCE AND WARRANTY
WARRANTY

7. My unit loses power at high speeds.

Your *160* has over-voltage protection that turns the unit off when input voltage exceeds 20 VDC. Some outboard motors do not effectively regulate the power output of the engine's alternator and can produce voltage in excess of 20 volts when running at high RPMs. The *160* displays input voltage in the lower left corner of the display when it exceeds 15 VDC. Use this readout to determine if the voltage exceeds 20 VDC.

8. The screen begins to fade out. Images are not as sharp as normal.

Check the input voltage. The *160* will display the current voltage on-screen if it is greater than 16 or less than 10 VDC. The voltage readout will appear in the bottom left corner of the screen.

9. The display shows many black dots at high speeds and high sensitivity settings.

You are seeing noise or interference caused by one of several sources. Noise can be caused by other electronic devices. Turn off any nearby electronics and see if the problem goes away. Noise can also be caused by the engine. If engine noise is causing the interference, the problem will intensify at higher RPMs. Increase the engine speed with the boat stationary to isolate this cause. Propeller cavitation can appear as noise on-screen. If the transducer is mounted too close to the propeller, the turbulence generated can interfere with the sonar signal. Ensure that the transducer is mounted at least 15" (38cm) from the prop.

10. The screen does not display a full fish arch.

Check the running angle of the transducer. If the running angle is too great, a full fish arch may not appear. Reduce the running angle of the transducer. Several incremental adjustments may be necessary.

TECHSONIC INDUSTRIES, INC. ONE YEAR FULL WARRANTY

First year repairs (from original date of purchase) on your *160* are absolutely free. This does not include physical damage to the unit or its accessory items. Any modification or attempt to repair the original equipment or

accessories by unauthorized individuals will void the warranty. Return the warranty registration card and retain your bill of sale for warranty verification. Accessories not manufactured under the Teleflex Sonar (TFX) trade name are not covered by our warranty. **The customer is responsible for shipping charges to Techsonic.** Techsonic will provide ground UPS or Parcel Post shipping back to the customer free of charge. This warranty applies to the original purchaser only.

This warranty is in lieu of all other warranties expressed or implied and no representatives or persons are authorized to provide for any other liability in connection with the sale of our products. Techsonic reserves the right to perform modifications or improvements on its products without incurring the obligation to install the changes on units previously manufactured, sold, delivered, or serviced.

THIS IS A FULL WARRANTY AS DEFINED BY THE FEDERAL WARRANTY ACT, EFFECTIVE JULY 4, 1975.

SERVICE POLICY

This Service Policy is valid in the United States only. This applies to Teleflex Sonar units returned to our factory in Eufaula, Alabama, and is subject to change without notice.

All repair work is performed by factory-trained technicians to meet exacting factory specifications. Factory serviced units go through the same rigorous testing and quality control inspection as new production units.

Even though you'll probably never need to take advantage of our incredible service guarantee, it's good to know that we back our units this well. We do it because you deserve the best. We will make every effort to repair your unit within three working days from the receipt of your unit. This does not include shipping time to and from our factory. Units received on Friday are usually shipped by Wednesday, units received Monday are usually shipped by Thursday, etc.

We reserve the right to deem any product unserviceable when replacement parts are no longer reasonably available or impossible to obtain.

After the original warranty period, a standard flat rate service charge will be assessed for each repair (physical damage and missing parts are not included). Please call our Customer Support Department to verify the service charge for your unit.

MAINTENANCE AND WARRANTY
CUSTOMER SUPPORT

If shipping and service charges are not prepaid, the unit will be returned C.O.D. If you are experiencing problems related to bottom or depth readings, please send your transducer along with your unit when sending for repair.

CUSTOMER SUPPORT

If you have any questions, call our Customer Support Hotline:

1-800-747-9329

Throughout the U.S. and Canada, hours are Monday-Friday, 8:15 a.m. to 5:00 p.m. Central time.

If after reading "Troubleshooting" you determine your unit needs factory service, please attach a description of the problem and send it with the unit to the address below.

If you are including a check, please attach it to the unit.

Techsonic Industries, Inc.
Service Department
108 Maple Lane
Eufaula, AL 36027
USA

SPECIFICATIONS

Operating Frequency . . . . 200 kHz

Power Output . . . . 400 Watts (RMS)

3200 Watts (Peak to Peak)

Area of Coverage . . . . 20° at -3 db

Power Requirement . . . . 10 - 20 VDC

Display . . . . 8 level FSTN Grayscale LCD

LCD Matrix . . . . 160 H x 160 V

Viewing Area . . . . $3^3/_5$" H x $3^3/_5$" V

Mounting . . . . In-dash or Gimbal

Unit Size . . . . $4^{13}/_{16}$" V x $6^3/_{16}$" W x $2^3/_4$" D

Transducer . . . . Single beam

Transducer Cable Length . . . . 20' (6 meters)

Techsonic
INDUSTRIES, INC.
A Division of Teleflex Marine