

JFC-130
JFC-130HP

COLOR ECHO SOUNDER

**INSTRUCTION
MANUAL**

Preface

Thank you for purchasing our JRC JFC-130/130HP color echo sounder .
This unit displays schools of fish by color video.

- This unit is for detecting schools of fish. Before attempting to operate it, read this instruction manual thoroughly to correctly and safely operate this unit in accordance with the warning instructions and operation procedures in this manual.
- Storing this instruction manual carefully for future reference is highly recommended. In the event that you have an operational problem or malfunction, this manual will provide useful instructions.
- Please write down the type of the connected transducer the following first. It is necessary for maintaining this unit.

	Frequency	Transducer
High frequency	kHz	CFT-
Low frequency	kHz	CFT-

Before Operations

Pictorial Indication

Various pictorial indications are included in this manual and are shown on these equipment so that you can operate them safely and correctly and prevent any danger to you and/or to other persons and any damage to your property during operation. Such indications and their meanings are as follows.

Please understand them before you read this manual:



WARNING

This indication is shown where any person is supposed to be in danger of being killed or seriously injured if this indication is neglected and these equipment are not operated correctly.



CAUTION

This indication is shown where any person is supposed to be injured if this indication is neglected and these equipment are not operated correctly.

Examples of pictorial indication



The $\triangle$ mark represents CAUTION (including DANGER and WARNING).

Detailed contents of CAUTION ("Electric Shock" in the example on the left) is shown in the mark.



The $\otimes$ mark represents prohibition.

Detailed contents of the prohibited action ("Disassembling Prohibited" in the example on the left) is shown in the mark.



The $\bullet$ mark represents instructions.

Detailed contents of the instruction ("Disconnect the power plug" in the example on the left) is shown in the mark.

About Warning Label

There is a warning label on the top of cover of the equipment.

Do not try to remove, break, or modify the labels.

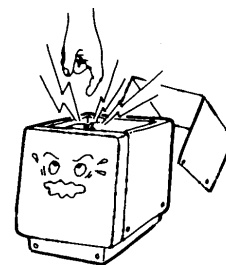
Precautions Upon Equipment Operation



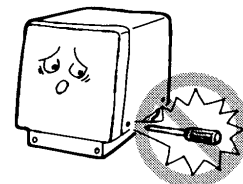
WARNING



Do not remove the cover of this set. Otherwise, you may touch a high-voltage part and suffer from an electrical shock.



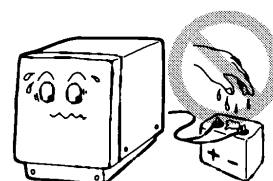
Do not disassemble or modify this set. Otherwise, a fire, an electrical shock, or a failure may occur.



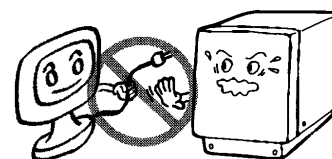
Do not place a vessel containing water, etc. or a metallic object on this set. When water spills or when water or the object enters the set, a fire, an electrical shock, or a failure may occur.



Do not insert or remove the power cord or operate switches with a wet hand. Otherwise, you may suffer from an electrical shock.



Do not supply the power from this equipment or the NBA-3263 rectifier when you use a monitor on the market. Otherwise, a fire or a failure may occur.

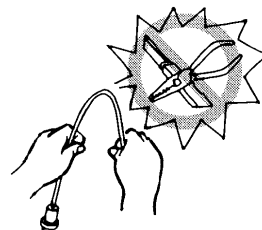




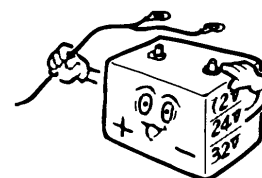
WARNING



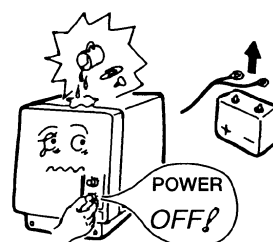
Do not damage, break or modify the power cord. When a heavy object is placed on the cord or the cord is heated, pulled, or forcibly bent, the cord will be broken resulting in a fire or an electrical shock.



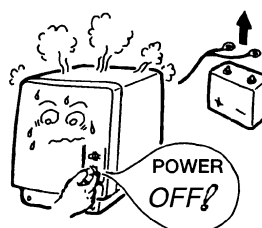
Do not use this set at a voltage other than the supply voltage stated on the set. Otherwise, a fire, an electrical shock, or a failure may occur.



In the event that you spill or drop any liquids or metals etc., turn off the main unit, unplug the power supply terminal, and contact our company, branch, or local office. Continuing operation as is may cause a fire, electric shock or malfunction.



In the event that smoking or burning odors are detected, immediately terminate operation of the set and contact your dealer. Continuing operation as is may cause a fire or electrical shock. Never attempt to service the interior of this set.



There are no customer-serviceable parts inside. Unauthorized inspections and repairs could cause fires and electrical shock hazards. Please call our field representative or your nearest JRC office for inspection and repair services.

CAUTION

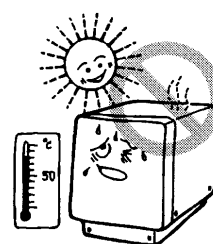


Please assign the electrical work for the set to our sales department, our branch or marketing office that is nearest to you.

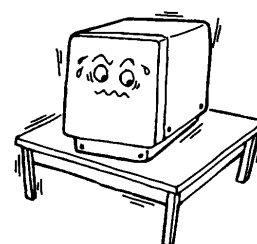
Any electrical work by any person other than our specialized maintenance persons may cause malfunction of this set.



Do not use or leave alone this set at any place where the LCD monitor is exposed to direct sunlight for a long time or the temperature rises above 50°C. Otherwise, a malfunction or defect may occur.

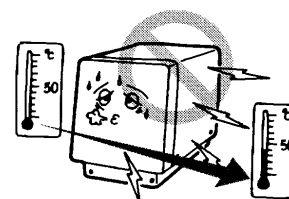


Do not place the set in an unstable position such as on a shaking stand or tilting place. Otherwise, this set may drop or turn over resulting in an injury.



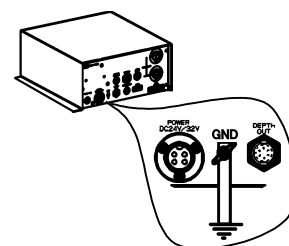
Do not bring the set in a cooled state abruptly into a warm room.

A high voltage may leak due to dew condensation resulting a failure. In this case, use the set after leaving it alone for 30 minutes.



When installing this set, be sure to connect the grounding wire to the grounding terminal of the set.

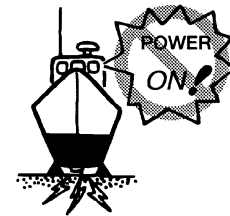
Otherwise, you may suffer an electrical shock during a failure or leak.



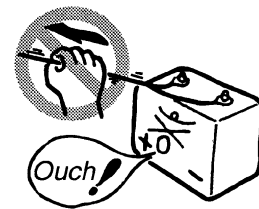
CAUTION



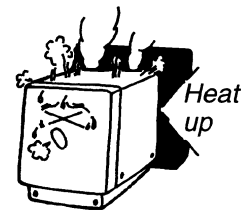
Do not turn on the power switch of the set while the ship is on the shore. Otherwise, the transducer may be broken.



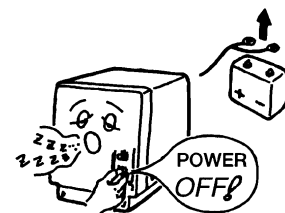
When removing the power cord, be sure to remove the power cord terminal correctly. If the power cord is pulled, the cord may be damaged resulting in a fire or an electrical shock.



Do not install the units on the place being poor ventilation. Otherwise, the set that is heated may cause a fire or failure.



When the set is unused for a long period, be sure to turn off the power switch of the set and then remove the power code to assure safety.



When turning on the power, be sure not to press any operator panel key at the same time. Alternates to the hardware configuration of the until could cause the unit to malfunction.

EMC Installation & Service Guidelines

IMPORTANT NOTE

All JRC equipment and accessories are designed to the highest industry standards for use in a leisure marine environment. Their design and manufacture conforms to the appropriate Electromagnetic Compatibility (EMC) standards, but good installation is required to ensure that performance is not compromised. Although every effort has been taken to ensure that the equipment will perform under all conditions, it is important to understand what factors could affect operation of the product. Complete installation instructions are provided in the installation manual (option). Some preliminary suggestions are made below.

Installation

To avoid the risk of operating problems, all JRC equipment and cables connected to it should be:

- At least 1m (3feet) from any equipment transmitting or cables carrying radio signals e.g. VHF radios, cables and antennas. In the case of SSB radio the distance should be increased 2 m (7ft).
- More than 2 m (7ft) from the path of a radar beam. A radar beam can normally assume to spread 20 degrees above and below the radiating element.
- The equipment should be supplied from a different battery than the one used for engine start. Voltage drops below 10.8V in the power supply to our products can cause the equipment to reset. This will not damage the equipment, but will cause some loss of information and this can also change the operating mode.
- Genuine JRC cables should be used at all times. Cutting and rejoining these cables can compromise EMC performance and should therefore be avoided unless doing so is suggested in the installation manual (option).

Check Before Going to Sea

- Always check the installation before going to sea to make sure that it is not affected by radio transmissions, engine starting, low battery voltage, or other problems.
- In some, installations, it may not be possible to prevent the equipment from being affected by external influences. In general this will not damage the equipment but it can lead to it resetting, or momentarily may result in faulty operation.

Servicing

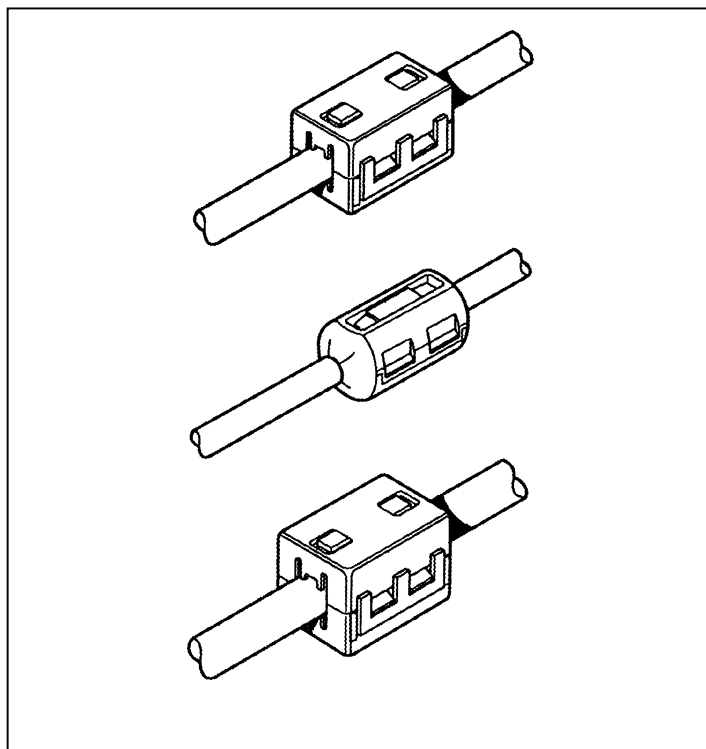
- JRC equipment should be serviced only by authorized JRC service engineers. They will ensure that service procedures and replacement parts used will not affect performance. There are not user serviceable parts in any JRC product.
- Always report any EMC related problem to your nearest JRC dealer. We will use any such information to improve our quality standards.

Safety

- Some products generate high voltages, and so never handle the cables/connectors when power is being supplied to the equipment.

Suppression Ferrites

The following illustration shows the range of suppression ferrites fitted to JRC equipment.

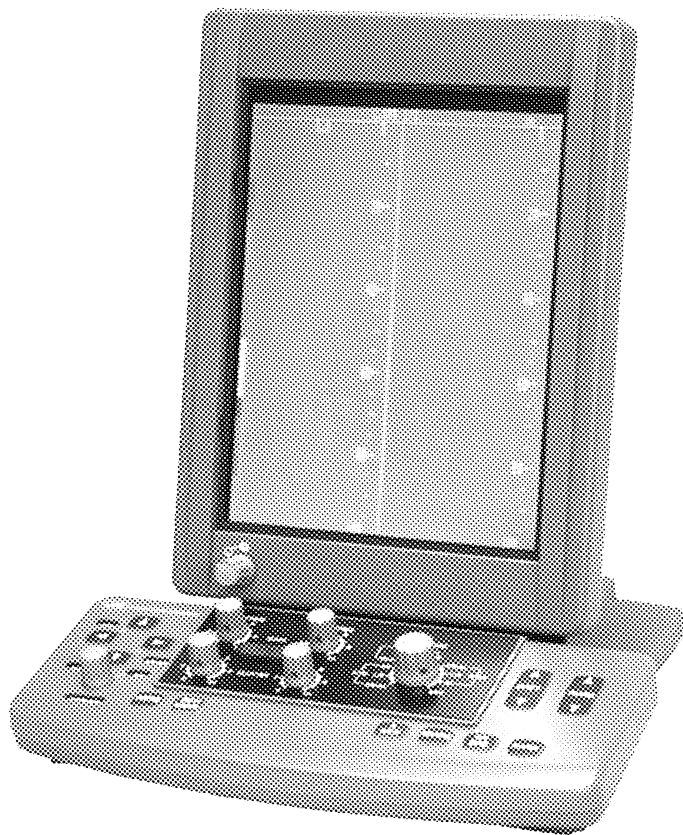


If your JRC equipment is going to be connected to other equipment using a cable not supplied by JRC, a suppression ferrite **MUST** always be fitted to the cable close to the JRC unit.

Notes for Using the Echo Sounder

- The life of the echo sounder depends on the hours of use. Put the device on the rest even during a short time by turning off the power switch every time the set is unused.
- The use of the echo sounder with a large output produces noises that interfere itself.
It is recommendable that the echo sounder is used after reducing the output with the output decreasing unit instead of lowering the sensitivity by the sensitivity controller of the receiving amplifier.
- In the case of a echo sounder that can emit two or more frequencies, use it by selecting the frequency that will minimize the noises to itself using the frequency selector.
- A long transmission pulse may impair the range resolution of the image.
In the case of a echo sounder with a pulse selector, be sure to use it by selecting a shortest possible pulse.
- A wide angle of directivity of the oscillator may cause the set to catch noises, locate the fish erroneously, or decrease the power of the ultrasonic wave to be emitted in the required direction. In the case of a echo sounder with a frequency selector, be sure to select a higher frequency so as to set the narrowest possible angle of directivity.
- Fishing grounds are common assets for every fisher. Each ship must refrain from emitting any ultrasonic wave in the direction that may give trouble to other ships. Be sure to use a horizontal echo sounder, in particular, so that it does not disturb the operation of the echo sounders of other ships.

Outside View



Outside View of the JFC-130/130HP
(Vertical mount)



Outside View of the JFC-130/130HP
(Horizontal mount)

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Glossary of Terms

Bow	The front of a vessel (nautical term).
Cavitation	Air bubbles in the water which affect the echo level measured by a transducer normally caused by mounting the transducer at an incorrect angle or location.
Chart speed	The rate at which echoes scroll across the display. The higher the chart speed, the clearer the picture. The slower the chart speed, the more detailed the picture.
Gain	The ability of a receiver to receive echoes of different strengths. You should use more sensitivity for deep water, and less sensitivity for shallow water.
Hull	The exterior surface of a ship.
Keel	The center of the hull, running from the bow to the stern.
Port	Left (nautical term)
Range	The depth scale which you can set to either automatic or manual. The range value appears at the bottom right of your display.
Starboard	Right (nautical term).
Stern	The rear of a vessel (nautical term).
Transducer	A device mounted on the transom of a vessel or through the hull. It sends and receives ultrasonic signals which determine seabed conditions and the presence of marine life.
White Line	A function used to separate fish from bottom structure shown on the display.
Zoom	This refers to the magnification of the display to better identify objects or structure.

SECTION 1

Introduction

1.1 Function

The color echo sounder JFC-130/130HP is a device, where the transducer mounted on the bottom or side of the hull emits ultrasonic waves toward the sea bottom and catches the waves reflected from the fish under the ship so as to find fish.

The schools of fish are displayed on the 10.4-inch color LCD screen in various color according to the intensity of the response from the fish. Display modes include the three ordinary display modes of the low-frequency display, high-frequency display, and parallel display of low- and high-frequency images as well as such functions as the partially enlarged display mode, sea-bottom enlarged display mode, and mixed display mode. Further, the function of parallel display of A-scopes, where the intensity of the response from the fish is displayed in both color tone and width, is provided. In addition, the water-temperature^{*1} and water-depth graph display functions, that enables to display the graphs showing the variations of water temperature and water depth as superimposed on the image of the schools of fish.

^{*1}: A water temperature sensor is required for the display of water temperatures.

1.2 Features

The JFC-130/130HP color echo sounder provides these features:

■ Clear, High-brightness Display Pictures

- A 10.4-inch high-brightness, high-definition color TFT-LCD monitor provides clear, close pictures with dramatically improved resolutions of 640 by 480 pixels.
- Four kinds of 16-color gradations and background colors are selectable. Day/night brightness selection is available for all these kinds to support nighttime operations.
- A favorably received large fishfinder feature of user color creation is available to suit fishing grounds and fish species.

■ Ease of Operation

- A minimum set of keys are concentrated on the operator panel, with independent controls for gain control and clutter control to fine-tune pictures according to waters, seasons, fishing methods, and so on.
- All functional settings are accomplished by easy menu selections. Settings may also be prerecorded to suit fishing grounds and fish species. If a setting has been altered by mistake, a single key click can reset it to its original value.

■ Positive Monitoring of Surface Layer and Bottom Fish Schools

- A narrow zero line feature, coupled with a new transducer, narrows oscillation lines, to clearly monitor small fish schools near the sea surface through high-speed transmissions at a rate of up to 600(JFC-130)/300(JFC-130HP) cycles per minute. The BOTTOM LOCK EXPAND mode with 16-halftone colors precisely discriminates between the sea bottom and bottom fish schools.

■ More Numerous Features

- Simultaneous drawing
When the screen display mode is changed, the picture displayed so far appears momentarily to ease picture comparison.
- A-scope display
An A-scope can be displayed in a split screen in which a single key click displays fish school echoes in varying color tones and widths according to their intensity.
- Mixed display
A mixed three-display mode, consisting of a dual-frequency split display plus a mixed display makes it easier to discriminate more fish species than before.
- Water temperature and depth change graphs (with alarms) ^{*1} ^{*2}
Fishfinding displays can be superimposed with graphs of water temperature and depth changes.
There is no need to keep the graphs on display at all times, since the water temperature and depth data is stored in memory even while the graphs are hidden. Rather, a single key click manipulates the hidden graphs into view.

^{*1}: A water temperature sensor is needed to provide water temperature readings.

^{*2}: A remote controller (optional accessory) is needed to enable the alarm function.

1.3 Components

When unpacking your JFC-130/130HP, you should find the following standard equipment in the carton.

If any items are missing, please notify your JRC dealer immediately.

(1) Standard Equipment

JFC-130

Description	Model No.	Qty	Remarks	packing
Display unit	NWZ-146	1		Display unit NWZ-146
Video cable	CFQ-6901	1	5 m with connectors	
Power cable	CFQ-6900	1	5 m with connectors	
Tapping screws	BRTG07127	4	M6.2×25	
Washer	BRTG00642	4	M8	
Keyboard unit	NCH-562	1	with 5m cable	Color echo sounder JFC-130 Control unit NCM-774
Processing unit	NJA-1130	1		
Spares	7ZXBS0004	1	Fuse = 2 pieces	
Power cable	CFQ-8383-3	1	3 m with 4P connectors	
Instruction manual	7ZPBS2506	1		
Tapping screws	BRTG03052	4	M5×20	
Velcro	MTZ302573	2		
Transducer	Depends on the frequency and mounting method	1 or 2		

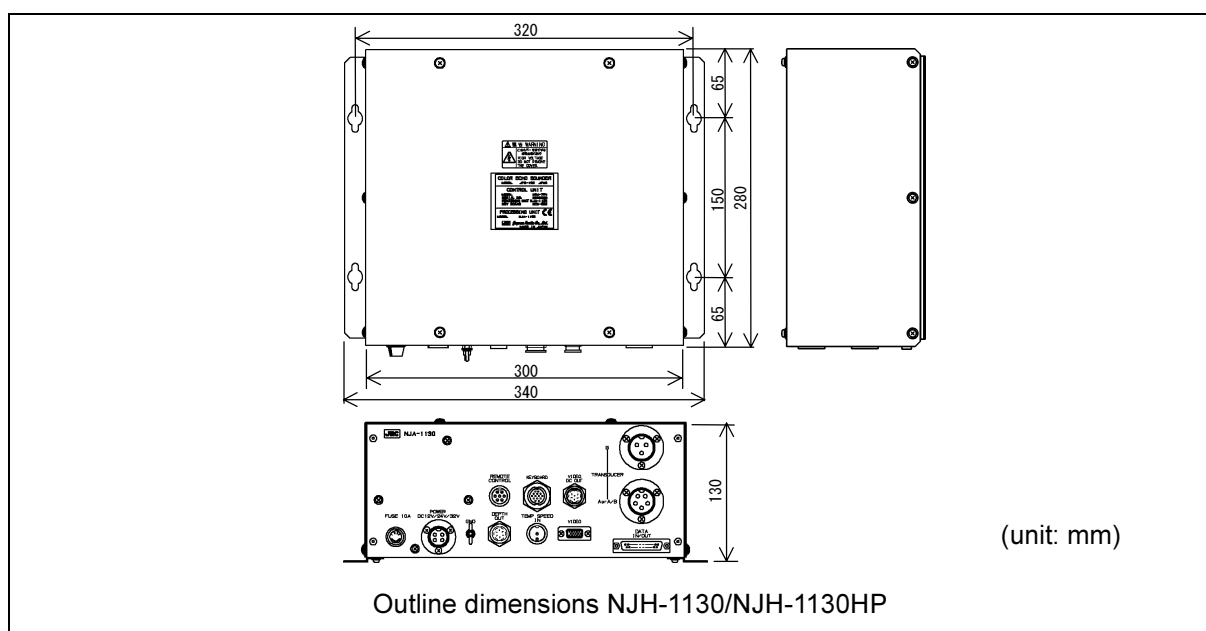
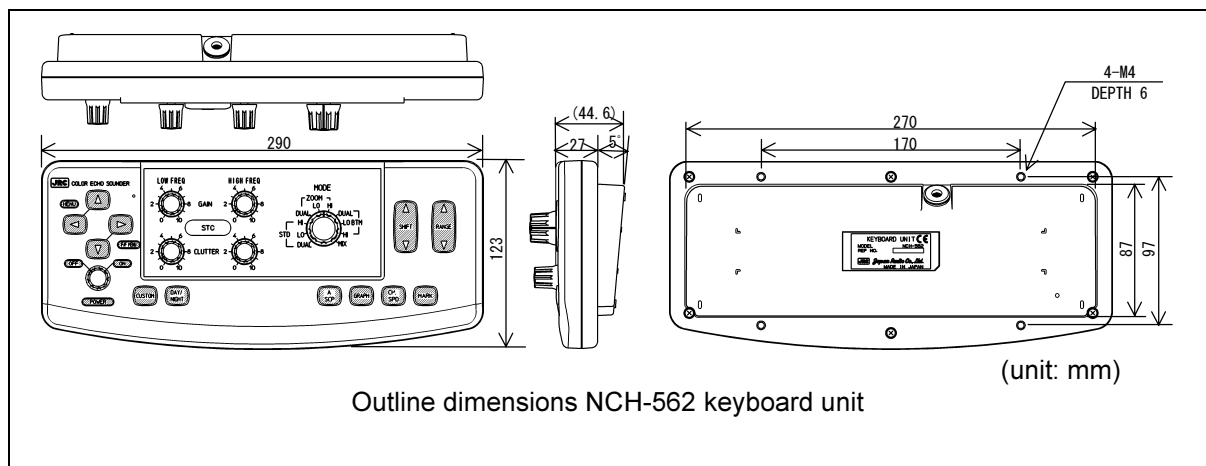
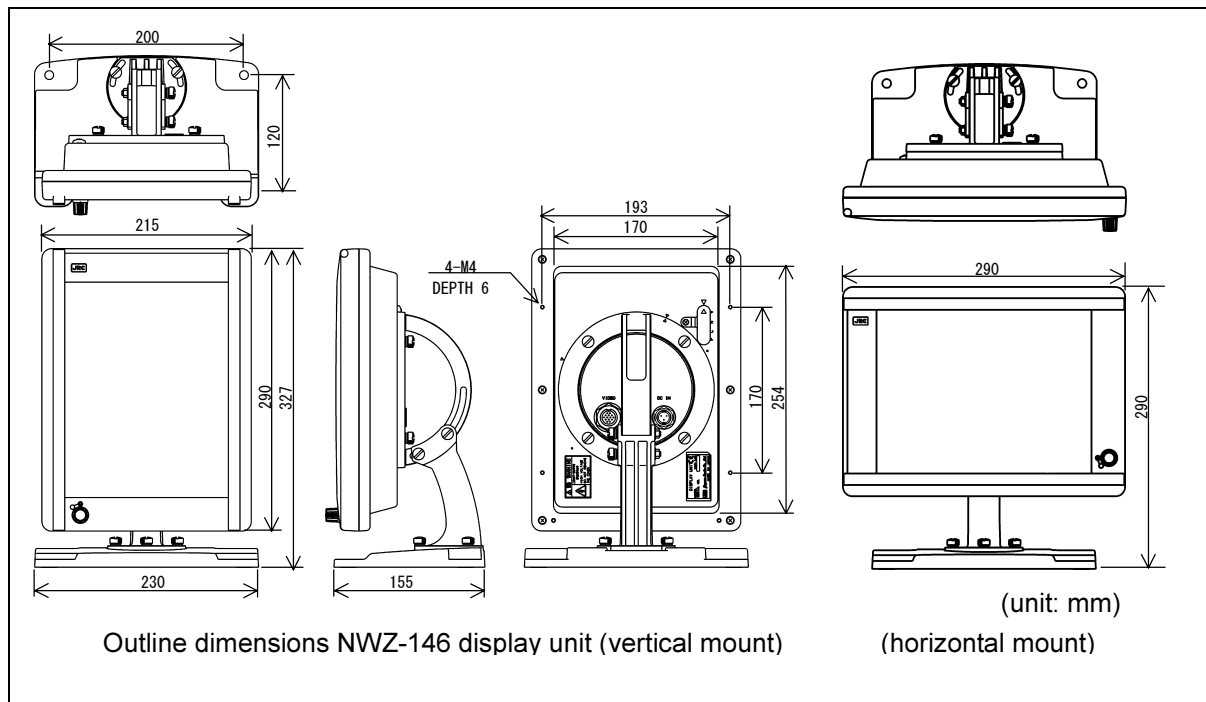
JFC-130HP

Description	Model No.	Qty	Remarks	packing
Display unit	NWZ-146	1		Display unit NWZ-146
Video cable	CFQ-6901	1	5 m with connectors	
Power cable	CFQ-6900	1	5 m with connectors	
Tapping screws	BRTG07127	4	M6.2×25	
Washer	BRTG00642	4	M8	
Keyboard unit	NCH-562	1	with 5m cable	Color echo sounder JFC-130HP Control unit NCM-774HP
Processing unit	NJA-1130HP	1		
Spares	7ZXBS0004	1	Fuse = 2 pieces	
Power cable	CFQ-8383-3	1	3 m with 4P connectors	
Instruction manual	7ZPBS2506	1		
Tapping screws	BRTG03052	4	M5×20	
Velcro	MTZ302573	2		
Transducer	Depends on the frequency and mounting method	1 or 2		

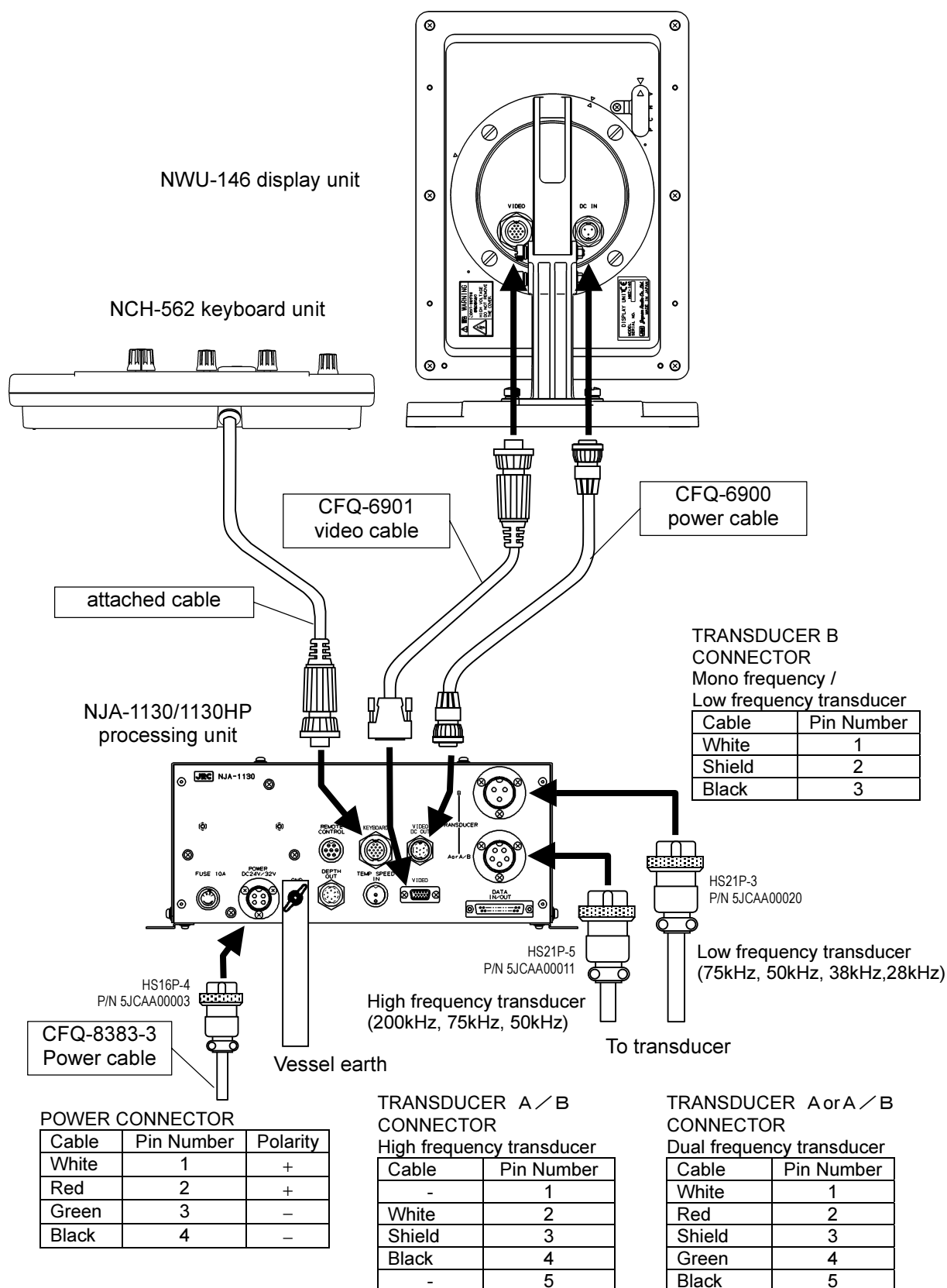
(2) Optional Accessories

Description	Model No.	Qty	Remarks
Interface mounting parts	7ZZBS0006	1	Two connectors, etc.
Remote control switch	NCH-466E	1	With 4m cables
Rectifier	NBA-3263	1	Input: 100/220VAC, output: 24VDC
Video output unit	CAD-239	1	For remote display

1.4 Structure

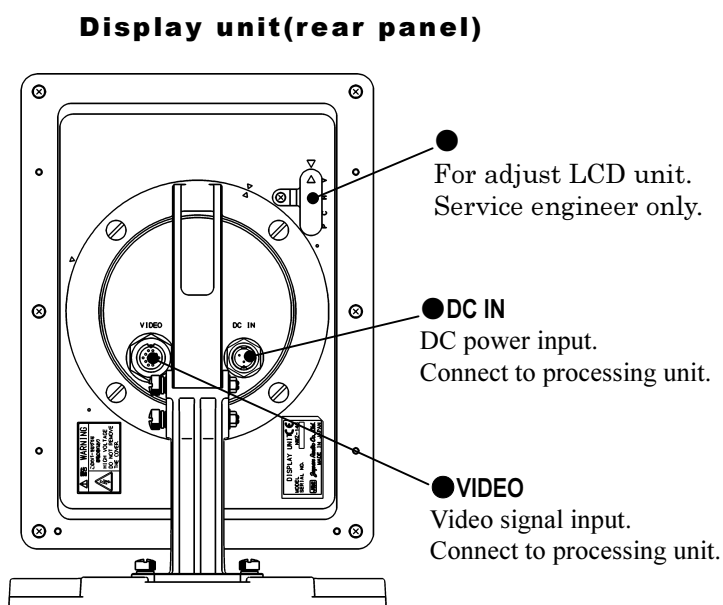
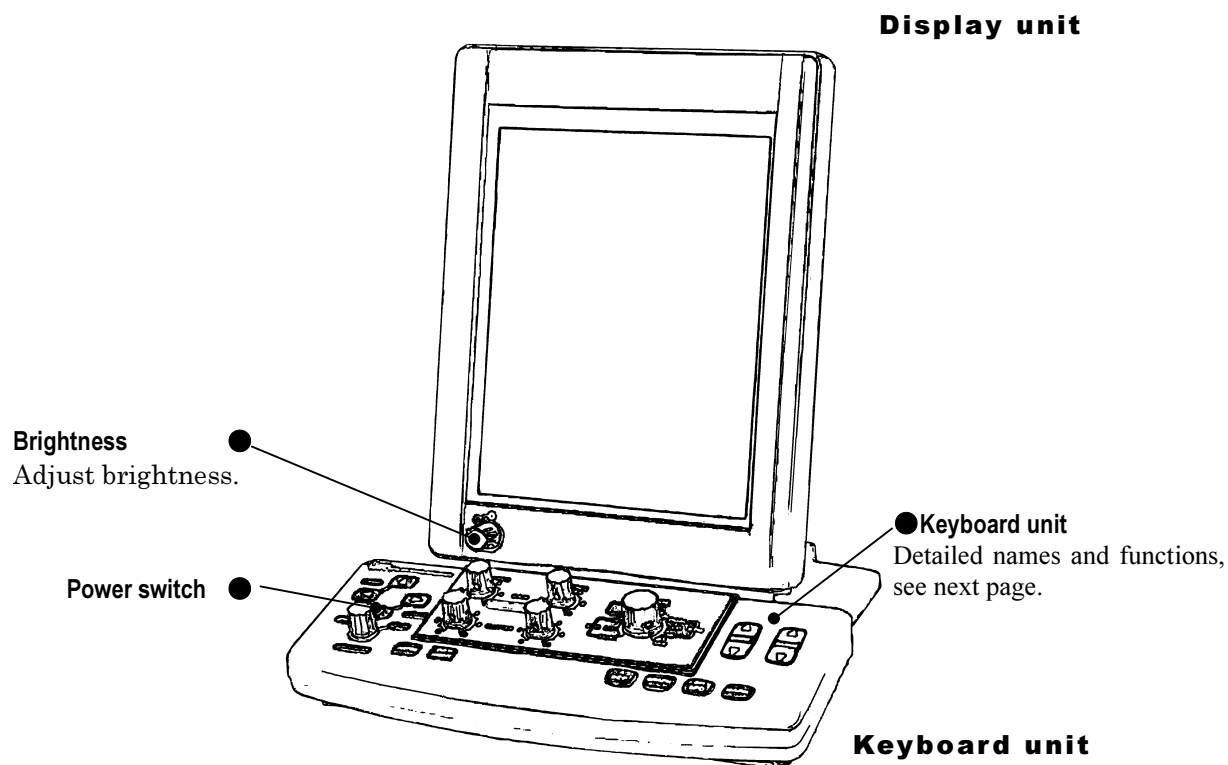


1.5 Power and Transducer Connection

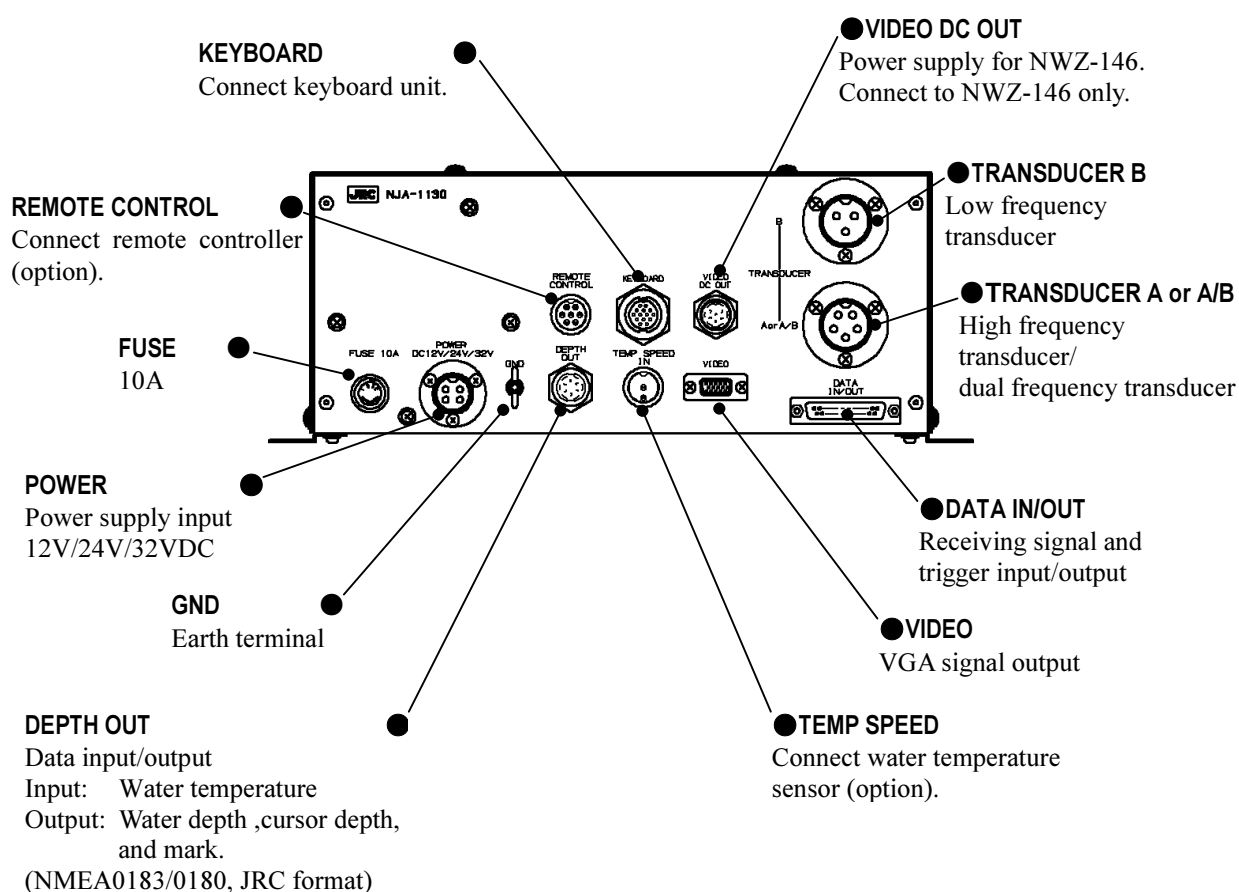


SECTION 2 Names and Functions of Components

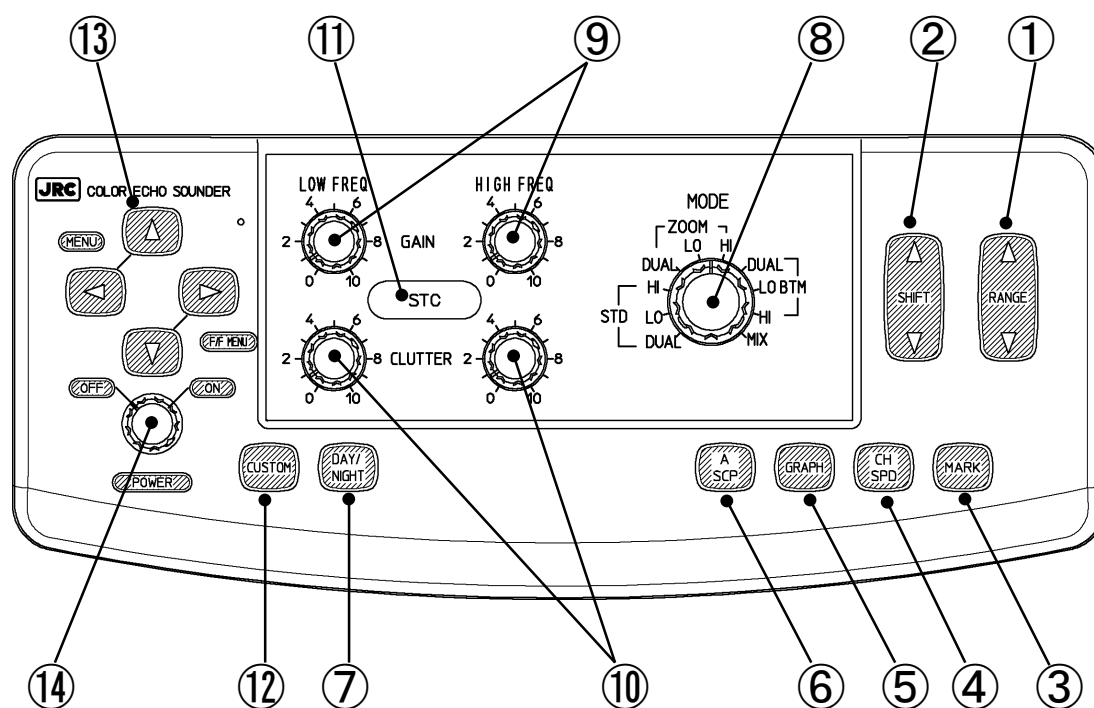
The names and functions of the components of the JFC-130/130HP color echo sounder are shown below.



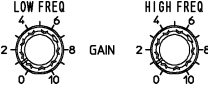
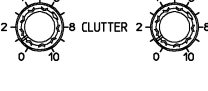
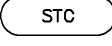
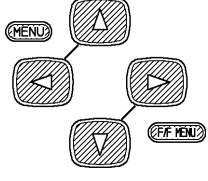
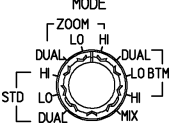
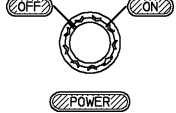
Processing unit



■ Keyboard unit keys



■ Keyboard unit keys and functions

No	Keys	Functions	No	Keys	Functions
①	RANGE 	Change a display range one level at a time	⑨	GAIN 	Adjusts the gains for both high and low frequencies.
②	SHIFT 	Move the shift (upper-most depth in the picture) one level at time.	⑩	CLUTTER 	Suppress the noise across the screen for both high and low frequencies.
③	MARK 	Writes a fishfinding display event mark(line), or calls up a submenu from a menu display.	⑪	STC 	Controls the STC rate to remove noise near the surface layer and adjusts the gains for the surface through middle layers for both high and low frequencies.
④	CH SPD 	Changes the chart feed speed.	⑫	CUSTOM 	Records settings, or resets to the prerecorded settings.
⑤	GRAPH 	Displays a graph, or exits the menu to a fishfinding display.	⑬	MENU F/F MENU 	Calls up the main menu. Calls up the fishfinding menu. Move the water depth cursor up and down, on move from one item to another or vary a setting on a menu screen.
⑥	A SCP 	Displays the A-scope.			
⑦	DAY/NIGHT 	Switches brightness and color tone between day and night.			
⑧	MODE 	Selects display modes.	⑭	PWR 	Turns the power on and off.

SECTION 3

Operation

3.1 Screen layout

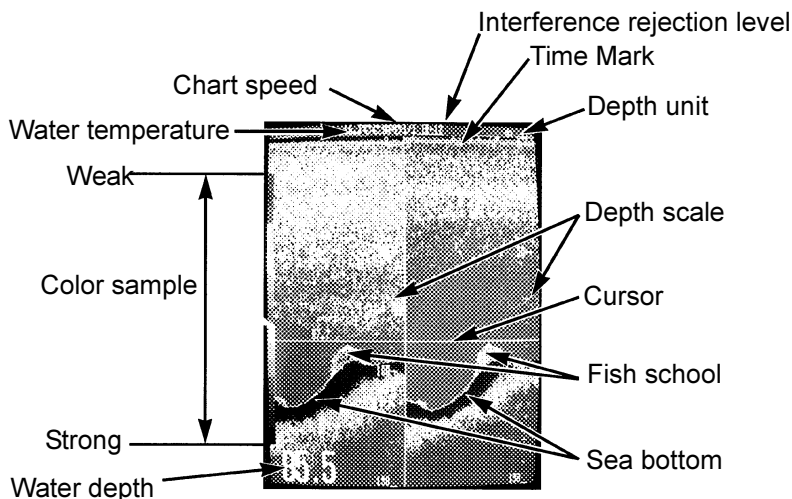
Fishfinding Displays

Ultrasonic signals transmitted from the transmitter/receiver at the bottom of the boat are reflected upon the underwater plankton, fish schools, and sea bottom and are received by the transmitter/receiver. The sounder monitor screen displays underwater responses in varying color tones (from light blue to reddish brown) according to their intensity level.

Responses from small fish schools are

dimly displayed in light blue, while those from larger, denser fish schools are clearly marked in orange. The sea bottom appears in red or reddish brown.

The sounder monitor can be switched to the STANDARD mode, the VRM EXPAND mode, the BOTTOM LOCK EXPAND mode, or the MIXED mode. Each corresponding mode display can be mixed by an A-scope view to display fish school responses in varying color tones and widths according to their intensity.

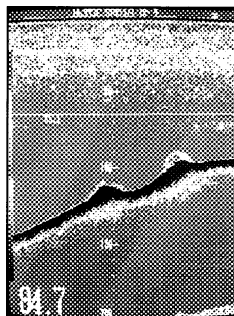


■ STANDARD mode

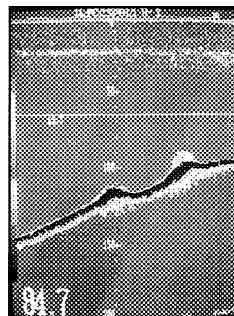
(Keyboard unit⑧, see page 8)

Three kinds of display are selectable: a low-frequency display, a high-frequency display, and a low- and high-frequency split display. (Among these, the split display depends on the setting of the mode of split display in the display submenu.)

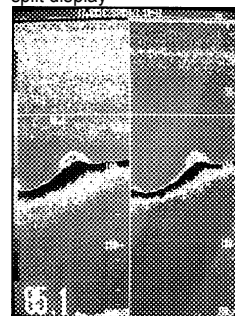
Low-frequency display



High-frequency display



Low- and high-frequency split display

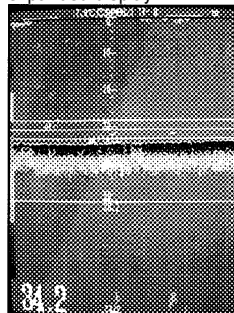


■ VRM EXPAND mode

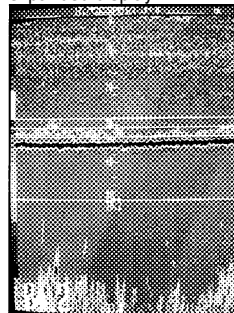
(Keyboard unit⑧, see page 8)

Three kinds of display are selectable: a split display of a standard display and a low- or high-frequency display, a low- and high-frequency split display, and a frequency-specific partially expanded display. (Among these, the split display depends on the setting of the mode of split display in the display submenu.)

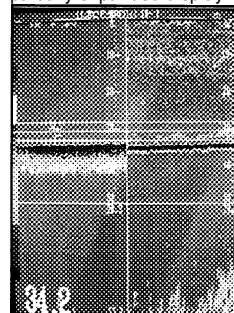
Low-frequency partially expanded display



High-frequency partially expanded display



Low- and high-frequency partially expanded display



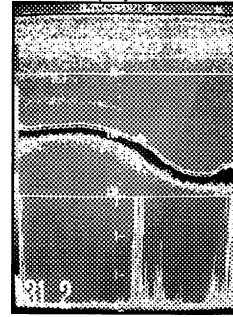
■ BOTTOM LOCK EXPAND mode

(Keyboard unit⑧, see page 8)

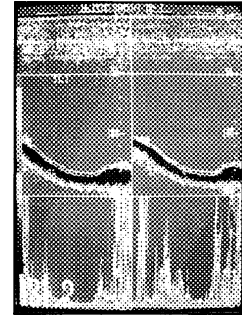
Three kinds of display are selectable: a split display of a standard display and a expanded bottom display, a low- and high-frequency split display, and a frequency specific expanded bottom display.

(Among these, the split display depends on the setting of the mode of split display in the display sub-menu.)

Split display of a standard display and a expanded bottom display



Low- and high-frequency split display

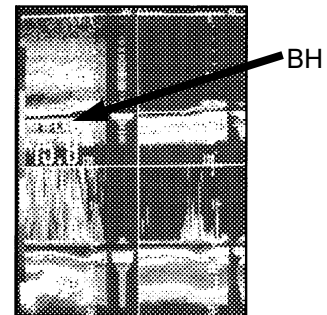


■ Bottom discrimination mode

(Keyboard unit⑧, see page 8 and page 30)

Generally, the bottom tail width varies as shown below depending on the bottom material.

Type of bottom material	Tail width	BH
Rock	Long	8.0
Gravel	↑	}
Sand	↑	
Mud	Short	1.0



Thus, the variations of bottom discrimination can be found from the variations of bottom tail width on a sea bottom image.

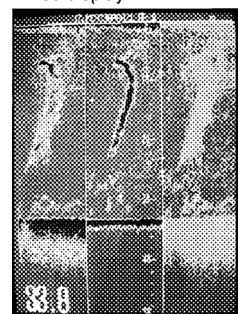
In the bottom discrimination display mode, by displaying the image of bottom tail portion of the sea bottom just below the ordinary sea bottom enlarged view, the variations of bottom tail width can be seen more clearly than those on conventional echo sounders.

■ MIXED mode

(Keyboard unit⑧, see page 8)

A low- and high-frequency split display, plus a mixed display. A mixed display is a view of those signal levels that can be picked up at low frequencies, but not at high frequencies, and of those responses, in white (which can be picked by a user color setup procedure), that can be picked up at both low and high frequencies.

Mixed display

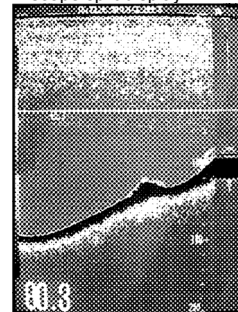


■ A-scope display

(Keyboard unit⑥, see page 8)

The A-scope can be displayed in a split screen in which a single key click displays fish school reflection level in varying color tones and widths according to their intensity. The A-scope is not available while the sounder is in the MIXED display mode.

A-scope split display



Menu Displays

The four menu displays available are the main menu, the fishfinding menu, the record/replay menu, and the custom menu.

The main menu and the fishfinding menu are used to make operational and screen display settings. Submenus are available from some setup items in these two menus. The record/replay menu is used to record current settings. The custom menu permits you to reset the current settings to their prerecorded values.

Main Menu	see page 15
Fishfinding Menu	see page 16
Record Menu	see page 17
Custom Menu	see page 17

1. PRESET STD RANGE >>		1	2	3	4	5	
		10	20	30	40	50	
		6	7	8	9	10	
RANGE		60	80	100	150	200	
		11	12	13	14	15	
		250	300	400	500	800	
STEP		10					
▲ 2. BTM EXP. RANGE >>	2	3	4	5	10		
▼ 3. B. DISCRIM RANGE >>	10	20	30	40	50		
4. VRM EXP. RANGE >>	5	10	15	20	50		
5. STD RANGE MODE	PRESET	STEP	AUTO				
6. BACK COLOR	NORMAL	1	2	3			
7. COLOR MODE	NORMAL	1	2	3			
8. USER COLOR >>							
9. DISPLAY >>							
10. SET GRAPH >>	DEPTH/	DEPTH/					
	TEMP	BH					
11. UNIT >>							
GRAPH : RETURN TO F/F							
MARK : GOTO SUB MENU							

Main Menu

1. COLOR REJ >>							
2. WHITE LINE >>		LO FRQ	OFF	HI FRQ	OFF		
3. ADJUST FREQ. >>		LO FRQ	50.0	HI FRQ	200.0		
4. TX PULSE WIDTH		LONG	SHORT				
5. TX CYCLE MODE		SYNC.	ASYNC.				
▲ 6. ADJUST TX CYCLE	0						
▼ 7. PDC HI FRQ	A	B	C	D			
	LO FRQ	A	B	C	D		
8. ADC MODE	BLU	1	2	3	4	5	STD 7 8 RED
9. STC MODE	50	100	150	200	(m)		
10. EXT INPUT	DISP OFF	DISP ON					
11. SIG. PROCESS	OFF	1	2				
12. SCROLL STEP	1	2	3				
GRAPH : RETURN TO F/F							
MARK : GOTO SUB MENU>							

Fishfinding Menu

RECORD MENU		
1	2	3
◀▶		
MARK : RECORD CUSTOM SETTINGS		
CUSTOM : RETURN TO F/F		

Record Menu

CUSTOM MENU		
1	2	3
◀▶		
MARK : RETURN TO CUSTOM SETTINGS		
CUSTOM : GO TO RECORD MENU		

Custom Menu

3.2 Basic Operations

Turning the Power On and Off ([POWER] switch)

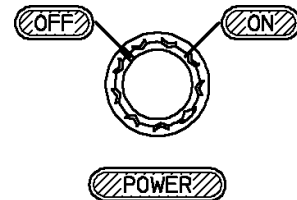


CAUTION



When turning on the power, be sure not to press any operator panel key at the same time. Alternates to the hardware configuration of the unit could cause the unit to malfunction.

Turn the [POWER] control clockwise to turn on the power. Turn it counterclockwise to the OFF position to turn off the power.



Adjusting Brightness ([Brightness] control)

Turn the [BRIGHTNESS] control on the display unit to adjust brightness. Brightness can be raised from level 0 up to level 10.

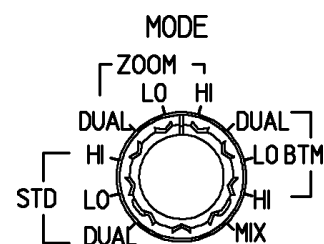


Switching Brightness between Day and Night (DAY/NIGHT key)

Press the  key to switch brightness between day and night. The key toggles each time you press it.

Selecting Display Modes([MODE] switch)

Set the [MODE] switch to the mode of your choosing.



Changing the Chart Feed Speed (CH SPD key)

Each time you press the CH SPD key, the chart feed speed changes from 1/1 to 1/2, to 1/3, to 1/4, to 1/5, to 1/6, to 1/7, to 1/8, to 1/9, and to -/- (off).

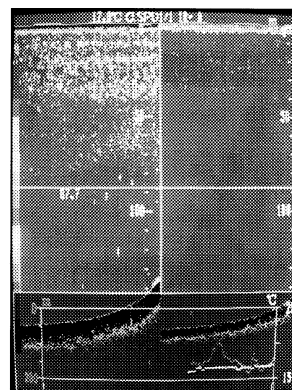
Continue pressing the CH SPD key and the feed will stop at the stop position once. Release the CH SPD key to switch the chart feed.

Displaying/Hiding Graphs (GRAPH key)

Press the GRAPH key to display graphs of water temperature and depth changes.

- ◆ The water temperature is marked by a white line, the water depth by a red line. BH (Bottom Hardness) represents the sea bottom material with one of the numerals 1 through 8.

Press once again to hide the graphs.



water temperature and depth graph

Writing an Event (MARK key)

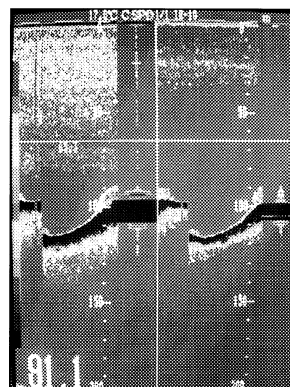
The MARK key is used to write event (fishing grounds and fish school location). This key is operable only if an external plotter or similar device is available.

Press the MARK key where you want events written. A marker line will appear at the position where the MARK key was pressed.

Displaying/Hiding an A-scope Picture (A SCP key)

You can display an A scope view in the right-hand side of the screen to show fish school responses in varying color tones and widths according to their intensity. Press the A SCP key to display an A-scope view.

- ◆ The A-scope is not available while the sounder is in the MIXED display mode.



A-scope view

Calling up the Main Menu (▲+◀ key)

To call up the main menu, press the ▲ and ◀ keys at the same time.

The main menu provides a listing of 11 setup items. Press the ▲ or ▼ key to move from one item to the next.

▲ key: Moves to the item right above.

▼ key: Moves to the item right below.

To move from one value to the next within an item, press the ◀ or ▶ key.

Item names followed by » have a submenu to call up further setup.

1. PRESET STD RANGE »	1	2	3	4	5
	10	20	30	40	50
	6	7	8	9	10
RANGE	60	80	100	150	200
	11	12	13	14	15
	250	300	400	500	800
STEP	10				
▲ 2. BTM EXP. RANGE »	2	3	4	5	10
▼ 3. B. DISCRIM RANGE »	10	20	30	40	50
4. VRM EXP. RANGE »	5	10	15	20	50
5. STD RANGE MODE	PRESET	STEP	AUTO		
6. BACK COLOR	NORMAL	1	2	3	
7. COLOR MODE	NORMAL	1	2	3	
8. USER COLOR	»				
9. DISPLAY	»				
10. SET GRAPH	»	DEPTH/	DEPTH/		
		TEMP	BH		
11. UNIT	»				

GRAPH : RETURN TO F/F
MARK : GOTO SUB MENU

Main Menu

Calling up a Submenu (MARK key)

To call up a submenu from the main menu, follow these steps:

- Using the ▲ or ▼ key, move to the item from which to call up a submenu.
- Press the MARK key.

USER COLOR					
	LEVEL	R	G	B	PRESENT
▲	0	0	2	7	G 2
▼				B 7	

MARK : RETURN TO MENU

Submenu Display Example (USER COLOR)

Returning to the Main Menu (MARK key)

To return from a submenu to the main menu, press the MARK key.

- Press the GRAPH key to exit the SET GRAPH submenu to the main menu.

Exiting the Main Menu (to a fishfinding display)(GRAPH key)

To exit the main menu to a fishfinding display, press the GRAPH key.

- To exit any menu, press the CUSTOM key to display CUSTOM menu and then press the CUSTOM key twice.

Calling up the fishfinding menu (▼+► key)

Calling up the fishfinding menu, press the ▼ and ► keys at the same time.

The fishfinding will then appear onscreen, proving a listing of 12 setup items.

Press the ▲ or ▼ key to move from one item to the next.

▲ key: Moves to the item right above.

▼ key: Moves to the item right below.

Item names followed by » have a submenu to call up further setup.

To move from one value to the next within an item, press the ◀ or ▶ key.

1. COLOR REJ.	»										
2. WHITE LINE	»	LO FRQ OFF	HI FRQ OFF								
3. ADJUST FREQ.	»	LO FRQ 50.0	HI FRQ 200.0								
4. TX PULSE WIDTH		LONG	SHORT								
5. TX CYCLE MODE		SYNC.	ASYNC.								
▲ 6. ADJUST TX CYCLE		0									
▼ 7. PDC HI FRQ		A B C D									
		LO FRQ	A B C D								
8. ADC MODE		BLU 1 2 3 4 5	STD 7 8	RED							
9. STC MODE		50 100 150 200	(m)								
10. EXT INPUT		DISP OFF	DISP ON								
11. SIG. PROCESS		OFF	1 2								
12. SCROLL STEP		1 2 3									

GRAPH : RETURN TO F/F
MARK : GOTO SUB MENU»

Fishfinding Menu

Calling up a Submenu (MARK key)

To call up a submenu from the fishfinding menu, follow these steps:

- Using the ▲ or ▼ key, move to the item from which to call up a submenu.
- Press the MARK key.

COLOR REJECTION	
▲	SELECT LEVEL
▼	
◀ ▶	DISP. ON/OFF
MARK : RETURN TO F/F MENU	

Submenu Display Example (COLOR REJECTION)

Returning to the Fishfinding Menu (MARK key)

To return from a submenu to the fishfinding menu, press the MARK key.

- ◆ Press the GRAPH key to exit the WHITE LINE submenu to the fishfinding menu.

Exiting the Fishfinding Menu to a fishfinding display (GRAPH key)

To exit the fishfinding menu to a fishfinding display, press the GRAPH key.

- ◆ To exit any menu, press the CUSTOM key to display CUSTOM menu and then press the CUSTOM key twice.

Call up and Exiting the STC ADJUST Menu (MARK+GRAPH key)

To call up the STC ADJUST menu, press the MARK and GRAPH keys at the same time.

To return from the STC ADJUST menu to the fishfinding display, press the MARK and GRAPH keys at the same time.

STC ADJUST	
	◀ ▶
LO FRQ	HI FRQ
▲ 40	40 ▼

STC ADJUST Menu

Resetting to Prerecorded Settings (CUSTOM key)

When you have inadvertently performed an incorrect operation or made an invalid setting, you can easily reset them to their original status (prerecorded setting).

To reset to prerecorded settings, follow these steps:

1. Press the **CUSTOM** key to call up the CUSTOM MENU.
2. Using the **◀** or **▶** key, move to the number to reset.
3. Press the **MARK** key to reset the operating status of the sounder (control settings, and all setup values, except for the **A SCP**, **DAY/NIGHT**, and **GRAPH** keys) to its prerecorded settings. Then, the CUSTOM MENU will exit automatically to the fishfinding display.

◆ If you have not yet pressed the **MARK** key, you can press the **CUSTOM** key to cancel the custom operation and return to the fishfinding display.

CUSTOM MENU		
1	2	3
◀▶		
MARK : RETURN TO CUSTOM SETTINGS CUSTOM : GO TO RECORD MENU		

CUSTOM MENU

Recording Settings (CUSTOM key)

You can have up to three patterns of the current operating status of the sounder (control settings, and all setup values, except for the **A SCP**, **DAY/NIGHT**, and **GRAPH** keys) recorded. With settings prerecorded, you can easily reset the operating status of the sounder to its prerecorded values at any time.

To record settings, follow these steps:

1. Set the range, shift, and menu values as desired beforehand.
2. Press the **CUSTOM** key twice to call up the RECORD MENU.
3. Using the **◀** or **▶** key, move to the number to record.
4. Press the **MARK** key to complete storage. Then, the RECORD MENU will exit automatically to the fishfinding display.

◆ If three patterns of the current operating status of the sounder have already been recorded, choose any of the numbers 1 to 3 to overwrite the existing settings.

When the regular settings have been established after the completion of a test run, etc., store them under number 2.

Whenever you have made alterations to any of the main menu or fishfinding menu settings, be sure to record the alterations.

The A-scope, day/night, graphs, STC, gain and interference rejection are not restored.

RECORD MENU		
1	2	3
◀▶		
MARK : RECORD CUSTOM SETTINGS CUSTOM : RETURN TO F/F		

RECORD MENU

Key lock function (MARK + DAY/NIGHT key)

The key input for displaying the menu may be made invalid. (This function is called “Key lock.”)

To set/release a key lock, operate as follows:

1. When the  key and  key are pressed simultaneously, a key lock is set and a “key hole”  mark is displayed in red in the upper left corner of the screen.
2. After few seconds the “key hole”  mark disappears. But Keys are still locked. When you operate the menu key, the “key hole”  mark appears and the menu operation cannot be accepted.
3. When the  key and  key are pressed simultaneously again, the “key hole”  mark turns white to indicate that the key lock has been released.
4. After few seconds the “key hole”  mark disappears.

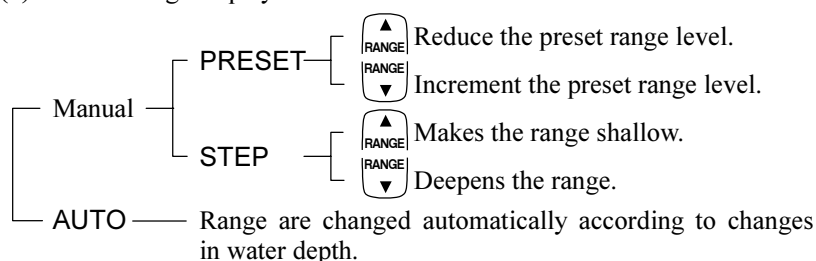
◆ The key lock applies to the main menu and fish finder setting menu. Ordinary operations of the CUSTOM/RECORD menu as well as the  key and  key.

3.3 Function Key Operations

Range Operations

■ Changing a Range (key)

(1) Standard range display



(2)VRM EXPAND display, BOTTOM EXPAND display, and BOTTOM DISCRIMINATION display ranges

All these ranges can be changed only from the main menu. For more details, see the following pages:

VRM EXPAND display range	page 21
BOTTOM EXPAND display range	page 22
BOTTOM DISCRIMINATION display ranges	page 23

■ Varying a Range (PRESET STD RANGE)

While each range value is preset, it may be varied. To vary a range value in the STANDARD mode, follow these steps:

1. Press the  and  keys at the same time to call up the main menu.
2. If the cursor is at any position other than “1.PRESET STD RANGE,” use the  or  key to move to “1.PRESET STD RANGE” and press the  key.
3. Using the  or  key, move to the range to vary.
4. Using the  or  key, increase or decrease the range value.
5. Repeat steps **3** and **4** to vary other ranges as needed.
6. Press the  key to return to the main menu.
7. Press the  key to return to the fishfinding display.

1. PRESET STD RANGE >>		1	2	3	4	5
		10	20	30	40	50
		6	7	8	9	10
	RANGE	60	80	100	150	200
		11	12	13	14	15
		250	300	400	500	800
	STEP	10				
▲ 2. BTM EXP. RANGE >>		2	3	4	5	10
▼ 3. B. DISCRIM RANGE >>		10	20	30	40	50
4. VRM EXP. RANGE >>		5	10	15	20	50
5. STD RANGE MODE	PRESET	STEP	AUTO			
6. BACK COLOR	NORMAL	1	2	3		
7. COLOR MODE	NORMAL	1	2	3		
8. USER COLOR >>						
9. DISPLAY >>						
10. SET GRAPH >>	DEPTH/	DEPTH/				
	TEMP	BH				
11. UNIT >>						

GRAPH : RETURN TO F/F
MARK : GOTO SUB MENU

Main Menu

PRESET STD RANGE		1	2	3	4	5
		10	20	30	40	50
		6	7	8	9	10
▲ RANGE		60	80	100	150	200
		11	12	13	14	15
		250	300	400	500	800
	STEP	10				

MARK : RETURN TO MENU

PRESET STD RANGE

■ Varying a Range Automatically (AUTO)

You can have a range varied automatically to display the sea bottom at all times, without having to manually press the  and  keys.

To let a range vary itself automatically, follow these steps:

1. Press the  and  keys at the same time to call up the main menu.
2. Using the  or  key, move to “5.STD RANGE MODE.”
3. Using the  or  key, move to “AUTO.”
4. Press the  key to return to the fishfinding display.

1. PRESET STD RANGE	»	1	2	3	4	5
		10	20	30	40	50
		6	7	8	9	10
RANGE		60	80	100	150	200
		11	12	13	14	15
		250	300	400	500	800
STEP		10				
▲ 2. BTM EXP. RANGE	»	2	3	4	5	10
▼ 3. B. DISCRIM RANGE	»	10	20	30	40	50
4. VRM EXP. RANGE	»	5	10	15	20	50
5. STD RANGE MODE		PRESET	STEP	AUTO		
6. BACK COLOR		NORMAL	1	2	3	
7. COLOR MODE		NORMAL	1	2	3	
8. USER COLOR	»					
9. DISPLAY	»					
10. SET GRAPH	»	DEPTH/	DEPTH/			
		TEMP	BH			
11. UNIT	»					
GRAPH : RETURN TO F/F						
MARK : GOTO SUB MENU						

Main Menu

■ Varying a Range in Steps (STEP Range)

Each time you press the  or  key, the display range is varied in units of a preset step value (see next item).

To use a step range, follow these steps:

1. Press the  and  keys at the same time to call up the main menu.
2. Using the  or  key, move to “5.STD RANGE MODE.”
3. Using the  or  key, move to “STEP.”
4. Press the  key to return to the fishfinding display.

1. PRESET STD RANGE	»	1	2	3	4	5
		10	20	30	40	50
		6	7	8	9	10
RANGE		60	80	100	150	200
		11	12	13	14	15
		250	300	400	500	800
STEP		10				
▲ 2. BTM EXP. RANGE	»	2	3	4	5	10
▼ 3. B. DISCRIM RANGE	»	10	20	30	40	50
4. VRM EXP. RANGE	»	5	10	15	20	50
5. STD RANGE MODE		PRESET	STEP	AUTO		
6. BACK COLOR		NORMAL	1	2	3	
7. COLOR MODE		NORMAL	1	2	3	
8. USER COLOR	»					
9. DISPLAY	»					
10. SET GRAPH	»	DEPTH/	DEPTH/			
		TEMP	BH			
11. UNIT	»					
GRAPH : RETURN TO F/F						
MARK : GOTO SUB MENU						

Main Menu 5.STD RANGE MODE

■ Varying a Step Value (STEP Setting)

While each step value is preset, it may be varied.

To vary a step value, follow these steps:

1. Press the  and  keys at the same time to call up the main menu.
2. If the cursor is at any position other than “1.PRESET STD RANGE,” use the  or  key to move to “1.PRESET STD RANGE” and press the  key.
3. Using the  or  key, move to “STEP.”
4. Using the  or  key, increase or decrease the step value.
5. Press the  key to return to the main menu.
6. Press the  key to return to the fishfinding display.

This step value serves also as a shift step (see page 24).

PRESET STD RANGE						
		1	2	3	4	5
		10	20	30	40	50
		6	7	8	9	10
▲ RANGE		60	80	100	150	200
		11	12	13	14	15
		250	300	400	500	800
STEP		10				
MARK : RETURN TO MENU						

PRESET STD RANGE

■ Varying the VRM EXPAND Mode Range (VRM EXP. RANGE)

The VRM EXPAND mode range is selectable from five preset choices. These five presets may be varied as desired (in range of 1 to 100).

To vary the VRM EXPAND mode range, follow these steps:

● Choosing from among five VRM EXPAND mode ranges

1. Press the  and  keys at the same time to call up the main menu.
2. Using the  or  key, move to "4.VRM EXP. RANGE."
3. Using the  or  key, move to the range to choose.
4. Press the  key to return to the fishfinding display.

● Varying a preset VRM EXPAND mode range

1. Press the  and  keys at the same time to call up the main menu.
2. Using the  or  key, move to "4.VRM EXP. RANGE" and press the  key.
3. Using the  or  key, move to the range to vary.
4. Using the  or  key, increase or decrease the range value.
5. Repeat steps 3 and 4 to vary other ranges as needed.
6. Press the  key to return to the main menu.
7. Press the  key to return to the fishfinding display.

1. PRESET STD RANGE >>					
	10	20	30	40	50
					
RANGE	60	80	100	150	200
					
	250	300	400	500	800
STEP	10				
▲ 2. BTM EXP. RANGE >>	2	3	4	5	10
▼ 3. B. DISCRIM RANGE >>	10	20	30	40	50
4. VRM EXP. RANGE >>	5	10	15	20	50
5. STD RANGE MODE	PRESET	STEP	AUTO		
6. BACK COLOR	NORMAL	1	2	3	
7. COLOR MODE	NORMAL	1	2	3	
8. USER COLOR >>					
9. DISPLAY >>					
10. SET GRAPH >>	DEPTH/	DEPTH/			
	TEMP	BH			
11. UNIT >>					

GRAPH : RETURN TO F/F
MARK : GOTO SUB MENU

Main Menu 4.VRM EXP.RANGE

	VRM EXP. RANGE				
	 				
	A	B	C	D	E
▲	5	10	15	20	50
▼					
MARK : RETURN TO MENU					

VRM EXP.RANGE

■ Varying the BOTTOM LOCK EXPAND Mode Range (BTM EXP.RANGE)

The BOTTOM LOCK EXPAND mode range is selectable from five preset choices. These five presets may be varied as desired (in a range of 1 to 50).

To vary the BOTTOM LOCK EXPAND mode range, follow these steps:

● Choosing from among five BOTTOM LOCK EXPAND mode range

1. Press the  and  keys at the same time to call up the main menu.
2. Using the  or  key, move to “2.BTM EXP. RANGE.”
3. Using the  or  key, move to the range to choose.
4. Press the  key to return to the fishfinding display.

● Varying a preset BOTTOM LOCK EXPAND mode range

1. Press the  and  keys at the same time to call up the main menu.
2. Using the  or  key, move to “2.BTM EXP. RANGE” and press the  key.
3. Using the  or  key, move to the range to vary.
4. Using the  or  key, increase or decrease the range value.
5. Repeat steps **3** and **4** to vary other ranges as needed.
6. Press the  key to return to the main menu.
7. Press the  key to return to the fishfinding display.

1. PRESET STD RANGE	»					
		10	20	30	40	50
						
RANGE		60	80	100	150	200
						
		250	300	400	500	800
STEP		10				
▲ 2. BTM EXP. RANGE	»	2	3	4	5	10
▼ 3. B. DISCRIM RANGE	»	10	20	30	40	50
4. VRM EXP. RANGE	»	5	10	15	20	50
5. STD RANGE MODE		PRESET	STEP	AUTO		
6. BACK COLOR		NORMAL	1	2	3	
7. COLOR MODE		NORMAL	1	2	3	
8. USER COLOR	»					
9. DISPLAY	»					
10. SET GRAPH	»	DEPTH/	DEPTH/			
		TEMP	BH			
11. UNIT	»					

GRAPH : RETURN TO F/F
MARK : GOTO SUB MENU

Main Menu 2.BTM EXP RANGE

BTM EXP. RANGE					
					
	A	B	C	D	E
▲	5	10	15	20	50
▼					
MARK : RETURN TO MENU					

BTM EXP.RANGE

■ To change the display range of the sea-bottom image portion (B.DISCrim RANGE)

Changing of the display range of the sea-bottom image portion is performed by selecting “bottom discrimination range” on the main menu.

There are two methods for changing: one is to select one of the five preset values on the main menu and the other is to change the present value by opening the bottom discrimination mode range sub-menu.

To vary the bottom discrimination mode range, follow these steps:

● Choosing from among five bottom discrimination range

1. Press the and keys at the same time to call up the main menu.
2. Using the or key, move to “3.B.DISCrim RANGE.”
3. Using the or key, move to the range to choose.
4. Press the key to return to the fishfinding display.

● Varying a preset bottom discrimination mode range

1. Press the and keys at the same time to call up the main menu.
2. Using the or key, move to “3.B.DISCrim RANGE” and press the key.
3. Using the or key, move to the range to vary.
4. Using the or key, increase or decrease the range value.
5. Repeat steps **3** and **4** to vary other ranges as needed.
6. Press the key to return to the main menu.
7. Press the key to return to the fishfinding display.

1. PRESET STD RANGE >>					
	10	20	30	40	50
RANGE	60	80	100	150	200
	250	300	400	500	800
STEP	10				
▲ 2. BTM EXP. RANGE >>	2	3	4	5	10
▼ 3. B. DISCRIM RANGE >>	10	20	30	40	50
4. VRM EXP. RANGE >>	5	10	15	20	50
5. STD RANGE MODE	PRESET	STEP	AUTO		
6. BACK COLOR	NORMAL	1	2	3	
7. COLOR MODE	NORMAL	1	2	3	
8. USER COLOR	>>				
9. DISPLAY	>>				
10. SET GRAPH >>	DEPTH/	DEPTH/			
	TEMP	BH			
11. UNIT	>>				
GRAPH : RETURN TO F/F					
MARK : GOTO SUB MENU					

Main Menu 3. B.DISCrim RANGE

B. DISCRIM RANGE					
	A	B	C	D	E
▲	5	10	15	20	50
▼					
MARK : RETURN TO MENU					

B.DISCrim RANGE

Shift Operations

■ Shifting a Range (key)

Press the  and  keys to shift display range up and down. Each time you press the  or  key, the range is shifted, one level at a time.

Press the  key to shift up or the  key to shift down.

The display range is shifted at intervals of the preset step value. (See page 20 “Varying a Step Value.”)

◆ This step value serves as a shift step when a step range is selected.

Screen Display Operations

■ Repositioning/Hiding the Water Temperature Display (TEMP.POSITION)

The water temperature display appears onscreen (option). If its position interferes with the sight of the display image, you can reposition or hide its display.

To reposition or hide the water temperature display, follow these steps:

1. Press the  and  keys at the same time to call up the main menu.
2. Using the  or  key, move to “9.DISPALY” and press the  key.
3. Using the  or  key, move to “1.TEMP.POSITION.”
4. Press the  or  key to move “DISP OFF” (hide),  (upper left), or  (above depth position).
5. Press the  key to return to the main menu.
6. Press the  key to return to the fishfinding display.

1. PRESET STD RANGE	»					
		10	20	30	40	50
						
RANGE		60	80	100	150	200
						
		250	300	400	500	800
STEP		10				
▲ 2. BTM EXP. RANGE	»	2	3	4	5	10
▼ 3. B. DISCRIM RANGE	»	10	20	30	40	50
4. VRM EXP. RANGE	»	5	10	15	20	50
5. STD RANGE MODE		PRESET	STEP	AUTO		
6. BACK COLOR		NORMAL	1	2	3	
7. COLOR MODE		NORMAL	1	2	3	
8. USER COLOR	»					
9. DISPLAY	»					
10. SET GRAPH	»	DEPTH/	DEPTH/			
		TEMP	BH			
11. UNIT	»					

GRAPH : RETURN TO F/F
MARK : GOTO SUB MENU

Main Menu

9. DISPALY

DISPLAY	
1. TEMP. POSITION	DISP OFF  
2. INTERFERENCE	OFF 1 2 AUTO
3. SCALE POSITION	DISP OFF    
4. FINE SCALE	AUTO 1 2 5 10 20 50 100
▲ 5. VRM	DISP OFF DISP ON
▼ 6. COLOR SAMP.	DISP OFF DISP ON
7. DEPTH POSITION	DISP OFF  
8. SPLIT DISP. MODE	   
9. BTM/VRM EXP. AREA	1/3 1/2 ALL
10. A-SCP MODE	LOG LINEAR

MARK : RETURN TO MENU

DISPLAY

1.TEMP.POSITION

■ Canceling Interfering Signal (INTERFERENCE)

An interference canceler is available to cancel interfering signals coming from fishfinders mounted on other boats. The interference canceler has four settings: OFF, 1, 2, and AUTO. Choose “1” to cancel weak interfering signals, “2” to cancel strong interfering signals. “AUTO” will activate the canceler to suit the strength of the interfering signals. “OFF” disables the canceler.

Normally, interference canceler is used at the OFF position. Switch it to 1 if interferences are observed. The interference value can be monitored from the fishfinding display (see page 10).

To choose the interference canceler, follow these steps:

1. Press the and keys at the same time to call up the main menu.
2. Using the or key, move to “9.DISPALY” and press the key.
3. Press the key to move to “2.INTERFERENCE.”
4. Press the or key to move to “OFF,” “1,” “2,” or “AUTO.”
5. Press the key to return to the main menu.
6. Press the key to return to the fishfinding display.

1. PRESET STD RANGE >>	1	2	3	4	5
	10	20	30	40	50
	6	7	8	9	10
RANGE >>	60	80	100	150	200
	1	1	1	1	1
	250	300	400	500	800
STEP >>	10				
▲ 2. BTM EXP. RANGE >>	2	3	4	5	10
▼ 3. B. DISCRIM RANGE >>	10	20	30	40	50
4. VRM EXP. RANGE >>	5	10	15	20	50
5. STD RANGE MODE	PRESET	STEP	AUTO		
6. BACK COLOR	NORMAL	1	2	3	
7. COLOR MODE	NORMAL	1	2	3	
8. USER COLOR >>					
9. DISPLAY >>					
10. SET GRAPH >>	DEPTH/	DEPTH/			
	TEMP	BH			
11. UNIT >>					

GRAPH : RETURN TO F/F

MARK : GOTO SUB MENU

Main Menu

9.DISPLAY

DISPLAY	
1. TEMP. POSITON	DISP OFF
2. INTERFERENCE	OFF 1 2 AUTO
3. SCALE POSITION	DISP OFF
4. FINE SCALE	AUTO 1 2 5 10 20 50 100
▲ 5. VRM	DISP OFF DISP ON
▼ 6. COLOR SAMP.	DISP OFF DISP ON
7. DEPTH POSITION	DISP OFF
8. SPLIT DISP. MODE	
9. BTM/VRM EXP. AREA	1 / 3 1 / 2 ALL
10. A-SCP MODE	LOG LINEAR

MARK : RETURN TO MENU

DISPLAY

2. INTERFERENCE

■ Repositioning/Hiding the Depth Scale Display (SCALE POSITION)

The depth scale display appears onscreen. If its position interferes with the sight of the display image, you can reposition or hide its display.

To reposition or hide the depth scale display, follow these steps:

1. Press the and keys at the same time to call up the main menu.
2. Using the or key, move to “9.DISPALY” and press the key.
3. Press the or key to move to “3.SCALE POSITION.”
4. Press the or key to move to “DISP OFF”(hide) or any one of five positions.
5. Press the key to return to the main menu.
6. Press the key to return to the fishfinding display.

DISPLAY	
1. TEMP. POSITON	DISP OFF
2. INTERFERENCE	OFF 1 2 AUTO
3. SCALE POSITION	DISP OFF
4. FINE SCALE	AUTO 1 2 5 10 20 50 100
▲ 5. VRM	DISP OFF DISP ON
▼ 6. COLOR SAMP.	DISP OFF DISP ON
7. DEPTH POSITION	DISP OFF
8. SPLIT DISP. MODE	
9. BTM/VRM EXP. AREA	1 / 3 1 / 2 ALL
10. A-SCP MODE	LOG LINEAR

MARK : RETURN TO MENU

DISPLAY

3. SCALE POSITION

■ Changing Depth Scale Divisions (FINE SCALE)

You can change the divisions of the depth scale appearing onscreen.

Normally, set the divisions to AUTO.

To change depth scale divisions, follow these steps:

1. Press the  and  keys at the same time to call up the main menu.
2. Using the  or  key, move to “9.DISPALY” and press the  key.
3. Press the  or  key to move to “4.FINE SCALE.”
4. Press the  or  key to move to desired division value.

Select	unit
AUTO	The division matched to the working range is selected automatically.
1	One-unit division
2	Two-unit division
5	Five-unit division
10	10-unit division
20	20-unit division
50	50-unit division
100	100-unit division

◆ The unit is determined by the depth unit setting (see page 36).
Example: With the depth unit m, one unit equals 1 m.

5. Press the  key to return to the main menu.
6. Press the  key to return to the fishfinding display.

1. PRESET STD RANGE	>>	1	2	3	4	5
		10	20	30	40	50
		6	7	8	9	10
RANGE		60	80	100	150	200
		11	12	13	14	15
		250	300	400	500	800
STEP		10				
▲ 2. BTM EXP. RANGE	>>	2	3	4	5	10
▼ 3. B. DISCRIM RANGE	>>	10	20	30	40	50
4. VRM EXP. RANGE	>>	5	10	15	20	50
5. STD RANGE MODE		PRESET	STEP	AUTO		
6. BACK COLOR		NORMAL	1	2	3	
7. COLOR MODE		NORMAL	1	2	3	
8. USER COLOR	>>					
9. DISPLAY	>>					
10. SET GRAPH	>>	DEPTH/	DEPTH/			
		TEMP	BH			
11. UNIT	>>					

GRAPH : RETURN TO F/F
MARK : GOTO SUB MENU

Main Menu

9. DISPLAY

DISPLAY	
1. TEMP. POSITION	DISP OFF  
2. INTERFERENCE	OFF 1 2 AUTO
3. SCALE POSITION	DISP OFF    
4. FINE SCALE	AUTO 1 2 5 10 20 50 100
▲ 5. VRM	DISP OFF DISP ON
▼ 6. COLOR SAMP.	DISP OFF DISP ON
7. DEPTH POSITION	DISP OFF  
8. SPLIT DISP. MODE	   
9. BTM/VRM EXP. AREA	1/3 1/2 ALL
10. A-SCP. MODE	LOG LINEAR

MARK : RETURN TO MENU

DISPLAY

4. FINE SCALE

■ Displaying/Hiding the Cursor (VRM)

The cursor appearing onscreen can be hidden as needed.

To display or hide the cursor, follow these steps:

1. Press the and keys at the same time to call up the main menu.
2. Using the or key, move to “9.DISPALY” and press the key.
3. Press the or key to move to “5.VRM.”
4. Press the or key to move to “DISP OFF” (hide) or “DISP ON” (display).
5. Press the key to return to the main menu.
6. Press the key to return to the fishfinding display.

◆ To narrow the range (for example, to 100 m) when the cursor is at a deeper position (for example, 1000 m), the cursor will take time to move. To move the cursor to a deep position to a shallow position, widen the range first.

■ Displaying/Hiding the Color sample (COLOR SAMP.)

A sample of colors used in the display picture appears at the left-most end of the screen. The color sample can be hidden as needed.

To display or hide the color sample, follow these steps:

1. Press the and keys at the same time to call up the main menu.
2. Using the or key, move to “9.DISPALY” and press the key.
3. Press the or key to move to “6.COLOR SAMP.”
4. Press the or key to move to “DISP OFF” (hide) or “DISP ON” (display).
5. Press the key to return to the main menu.
6. Press the key to return to the fishfinding display.

1. PRESET STD RANGE >>	1	2	3	4	5
	10	20	30	40	50
	6	7	8	9	10
RANGE	60	80	100	150	200
	11	12	13	14	15
	250	300	400	500	800
STEP	10				
▲ 2. BTM EXP. RANGE >>	2	3	4	5	10
▼ 3. B. DISCRIM RANGE >>	10	20	30	40	50
4. VRM EXP. RANGE >>	5	10	15	20	50
5. STD RANGE MODE	PRESET	STEP	AUTO		
6. BACK COLOR	NORMAL	1	2	3	
7. COLOR MODE	NORMAL	1	2	3	
8. USER COLOR >>					
9. DISPLAY >>					
10. SET GRAPH >>	DEPTH/	DEPTH/			
	TEMP	BH			
11. UNIT >>					
GRAPH : RETURN TO F/F					
MARK : GOTO SUB MENU					

Main Menu

9. DISPLAY

DISPLAY			
1. TEMP. POSITON	DISP OFF		
2. INTERFERENCE	OFF 1 2 AUTO		
3. SCALE POSITION	DISP OFF		
4. FINE SCALE	AUTO 1 2 5 10 20 50 100		
▲ 5. VRM	DISP OFF	DISP ON	
▼ 6. COLOR SAMP.	DISP OFF	DISP ON	
7. DEPTH POSITION	DISP OFF		
8. SPLIT DISP. MODE			
9. BTM/VRM EXP. AREA	1/3	1/2	ALL
10. A-SCP MODE	LOG	LINEAR	
MARK : RETURN TO MENU			

DISPLAY

5. VRM

DISPLAY			
1. TEMP. POSITON	DISP OFF		
2. INTERFERENCE	OFF 1 2 AUTO		
3. SCALE POSITION	DISP OFF		
4. FINE SCALE	AUTO 1 2 5 10 20 50 100		
▲ 5. VRM	DISP OFF	DISP ON	
▼ 6. COLOR SAMP.	DISP OFF	DISP ON	
7. DEPTH POSITION	DISP OFF		
8. SPLIT DISP. MODE			
9. BTM/VRM EXP. AREA	1/3	1/2	ALL
10. A-SCP MODE	LOG	LINEAR	
MARK : RETURN TO MENU			

DISPLAY

6.COLOR SAMP.

■ Repositioning/Hiding the Bottom Depth Display (DEPTH POSITION)

The depth display appears onscreen. If its position interferes with the sight of the display image, you can reposition or hide its display.

To reposition or hide the depth display, follow these steps:

1. Press the  and  keys at the same time to call up the main menu.
2. Using the  or  key, move to “9.DISPALY” and press the  key.
3. Press the  or  key to move to “7.DEPTH POSITION.”
4. Press the  or  key to move to “DISP OFF” (hide) or any one of the two display positions.
5. Press the  key to return to the main menu.
6. Press the  key to return to the fishfinding display.

■ Changing the mode of Split Display

(Vertical/Horizontal/Expanded split Display)(SPLIT DISP.MODE)

You can change the mode of split display to produce a vertically or horizontally split display.

To change the mode of split display, follow these steps:

1. Press the  and  keys at the same time to call up the main menu.
2. Using the  or  key, move to “9.DISPALY” and press the  key.
3. Press the  or  key to move to “8.SPLIT DISP.MODE.”
4. Press the  or  key to move to any one of the five split modes (see table on the next page).
5. Press the  key to return to the main menu.
6. Press the  key to return to the fishfinding display.

  denotes a standard vertically split display,  or , a standard horizontally split display, and  or , an expanded vertically split display (only single frequency).

A dual-frequency expanded split display appears in a vertically split format, regardless of the position setting.

 and  denotes expanded sea bottom display overlaid with a bottom discrimination display.

1. PRESET STD RANGE	>>	    
		10 20 30 40 50
		    
RANGE		60 80 100 150 200
		    
		250 300 400 500 800
	STEP	10
2. BTM EXP. RANGE	>>	2 3 4 5 10
3. B. DISCRIM RANGE	>>	10 20 30 40 50
4. VRM EXP. RANGE	>>	5 10 15 20 50
5. STD RANGE MODE		PRESET STEP AUTO
6. BACK COLOR		NORMAL 1 2 3
7. COLOR MODE		NORMAL 1 2 3
8. USER COLOR	>>	
9. DISPLAY	>>	
10. SET GRAPH	>>	DEPTH/ DEPTH/ TEMP BH
11. UNIT	>>	

GRAPH : RETURN TO F/F
MARK : GOTO SUB MENU

Main Menu

9. DISPLAY

DISPLAY	
1. TEMP. POSITON	DISP OFF  
2. INTERFERENCE	OFF 1 2 AUTO
3. SCALE POSITION	DISP OFF    
4. FINE SCALE	AUTO 1 2 5 10 20 50 100
5. VRM	DISP OFF DISP ON
6. COLOR SAMP.	DISP OFF DISP ON
7. DEPTH POSITION	DISP OFF  
8. SPLIT DISP. MODE	    
9. BTM/VRM EXP. AREA	1/3 1/2 ALL
10. A-SCP MODE	LOG LINEAR

MARK : RETURN TO MENU

DISPLAY

7. DEPTH POSITION

DISPLAY	
1. TEMP. POSITON	DISP OFF  
2. INTERFERENCE	OFF 1 2 AUTO
3. SCALE POSITION	DISP OFF    
4. FINE SCALE	AUTO 1 2 5 10 20 50 100
5. VRM	DISP OFF DISP ON
6. COLOR SAMP.	DISP OFF DISP ON
7. DEPTH POSITION	DISP OFF  
8. SPLIT DISP. MODE	    
9. BTM/VRM EXP. AREA	1/3 1/2 ALL
10. A-SCP MODE	LOG LINEAR

MARK : RETURN TO MENU

DISPLAY

8.SPLIT DISP.MODE

Split display mode

MODE		SPLIT DISP.MODE				
						
STD	DUAL	High-Freq. Low-Freq.	Low-Freq. High-Freq.			
	LO	1-Freq.				
	HI					
ZOOM	DUAL	Low-Freq. Exp.	High-Freq. Exp.			
	LO	1-Freq.		Exp. 1-Freq.	1-Freq. Expanded	Exp. 1-Freq.
	HI	Expanded				
BTM	DUAL	Low-Freq. Exp.	High-Freq. Exp.		Low-Freq. Btm.-Disc.	High-Freq. Btm.-Disc.
	LO	1-Freq.		Exp. 1-Freq.	1-Freq. Bottom-Disc.	Btm.-Disc. 1-Freq.
	HI	Expanded				
MIX		Low-Freq. High-Freq.	Mixed			

■ Bottom discrimination display mode

Generally speaking, the sweep width varies as shown below depending on the Bottom discrimination.

Type of bottom material	Tail width	BH
Rock	Long	8.0
Gravel	↑	)
Sand	↑	
Mud	Short	1.0

Thus, the variations of bottom discrimination can be found from the variations of bottom tail width on a sea bottom image.

In the bottom discrimination display mode, by displaying the image of bottom tail portion of the sea bottom just below the ordinary sea bottom enlarged view, the variations of bottom tail width can be seen more clearly than those on conventional echo sounders.

To select bottom discrimination display mode, set split display mode to  or  and set [MODE] switch to “BTM”

■ Changing the Expanded Display Area (BTM/VRM EXP.AREA)

In the VRM EXPAND or BOTTOM LOCK EXPAND mode, you can change the area of expanded display.

To change the area of expanded display, follow these steps:

1. Press the  and  keys at the same time to call up the main menu.
2. Using the  or  key, move to “9.DISPALY” and press the  key.
3. Press the  or  key to move to “9.BTM/VRM EXP.AREA.”
4. Press the  or  key to move to any one of the three split modes.

1/3: Display an expanded display in an area from the bottom of the screen to one third.

1/2: Display an expanded display in the lower half of the screen.

ALL: Display an expanded display across the entire screen.

◆ “ALL” can be set only in the BOTTOM LOCK EXPAND mode.

If the VRM EXPAND mode is selected when “ALL” has been set, an expanded display will appear in the lower half of the screen.

In the BOTTOM LOCK EXPAND mode, one half of the bottom of the screen appears expanded, regardless of the menu setting.

5. Press the  key to return to the main menu.
6. Press the  key to return to the fishfinding display.

1. PRESET STD RANGE >>						
		10	20	30	40	50
						
RANGE		60	80	100	150	200
						
		250	300	400	500	800
STEP		10				
▲ 2. BTM EXP. RANGE >>		2	3	4	5	10
▼ 3. B. DISCRIM RANGE >>		10	20	30	40	50
4. VRM EXP. RANGE >>		5	10	15	20	50
5. STD RANGE MODE	PRESET STEP AUTO					
6. BACK COLOR	NORMAL 1 2 3					
7. COLOR MODE	NORMAL 1 2 3					
8. USER COLOR >>						
9. DISPLAY >>						
10. SET GRAPH >>	DEPTH/ DEPTH/ TEMP BH					
11. UNIT >>						

GRAPH: RETURN TO F/F
MARK: GOTO SUB MENU

Main Menu

9. DISPLAY

DISPLAY	
1. TEMP. POSITON	DISP OFF  
2. INTERFERENCE	OFF 1 2 AUTO
3. SCALE POSITION	DISP OFF    
4. FINE SCALE	AUTO 1 2 5 10 20 50 100
▲ 5. VRM	DISP OFF DISP ON
▼ 6. COLOR SAMP.	DISP OFF DISP ON
7. DEPTH POSITION	DISP OFF  
8. SPLIT DISP. MODE	   
9. BTM/VRM EXP. AREA	1/3 1/2 ALL
10. A-SCP MODE	LOG LINEAR

MARK: RETURN TO MENU

DISPLAY

8.SPLIT DISP.MODE

DISPLAY	
1. TEMP. POSITON	DISP OFF  
2. INTERFERENCE	OFF 1 2 AUTO
3. SCALE POSITION	DISP OFF    
4. FINE SCALE	AUTO 1 2 5 10 20 50 100
▲ 5. VRM	DISP OFF DISP ON
▼ 6. COLOR SAMP.	DISP OFF DISP ON
7. DEPTH POSITION	DISP OFF  
8. SPLIT DISP. MODE	   
9. BTM/VRM EXP. AREA	1/3 1/2 ALL
10. A-SCP MODE	LOG LINEAR

MARK: RETURN TO MENU

DISPLAY

9.BTM/VRM EXP.AREA

■ Changing the Mode of A-Scope Display(A-SCP MODE)

You can choose from two alternative modes of A-scope display: log and linear to suit specific needs.

Log display: Signals are displayed at 15 levels, allowing small fish schools to appear in a somewhat larger view of ready fish identification.

Linear display: Traditional A-scope display, allowing the identification of the kinds of fish from an envelope display. Small fish schools will appear in a smaller image when compared with a log display.

To change the mode of A-scope display, follow these steps:

1. Press the and keys at the same time to call up the main menu.
2. Using the or key, move to "9.DISPALY" and press the key.
3. Press the or key to move to "10.A-SCP MODE."
4. Press the or key to move to "LOG" or "LINEAR."
5. Press the key to return to the main menu.
6. Press the key to return to the fishfinding display.

1. PRESET STD RANGE >>					
	10	20	30	40	50
RANGE	60	80	100	150	200
	250	300	400	500	800
STEP	10				
▲ 2. BTM EXP. RANGE >>	2	3	4	5	10
▼ 3. B. DISCRIM RANGE >>	10	20	30	40	50
4. VRM EXP. RANGE >>	5	10	15	20	50
5. STD RANGE MODE	PRESET	STEP	AUTO		
6. BACK COLOR	NORMAL	1	2	3	
7. COLOR MODE	NORMAL	1	2	3	
8. USER COLOR	>>				
9. DISPLAY	>>				
10. SET GRAPH >>	DEPTH/	DEPTH/			
	TEMP	BH			
11. UNIT	>>				
GRAPH : RETURN TO F/F					
MARK : GOTO SUB MENU					

Main Menu

9. DISPLAY

DISPLAY			
1. TEMP. POSITON	DISP OFF		
2. INTERFERENCE	OFF 1 2 AUTO		
3. SCALE POSITION	DISP OFF		
4. FINE SCALE	AUTO 1 2 5 10 20 50 100		
▲ 5. VRM	DISP OFF	DISP ON	
▼ 6. COLOR SAMP.	DISP OFF	DISP ON	
7. DEPTH POSITION	DISP OFF		
8. SPLIT DISP. MODE			
9. BTM/VRM EXP. AREA	1/3	1/2	ALL
10. A-SCP MODE	LOG	LINEAR	
MARK : RETURN TO MENU			

DISPLAY

10.A-SCP MODE

Color Operations

■ Changing the Background Color (BACK COLOR)

You can choose the background color of your fishfinding display from four choices.

To change the background color, follow these steps:

1. Press the  and  keys at the same time to call up the main menu.
2. Using the  or  key, move to “6.BACK COLOR.”
 NORMAL: Standard JRC color
 - 1: Blue
 - 2: Black
 - 3: Gray
3. Press the  key to return to the fishfinding display.

1. PRESET STD RANGE >>					
	10	20	30	40	50
					
RANGE	60	80	100	150	200
					
	250	300	400	500	800
STEP	10				
▲ 2. BTM EXP. RANGE >>	2	3	4	5	10
▼ 3. B. DISCRIM RANGE >>	10	20	30	40	50
4. VRM EXP. RANGE >>	5	10	15	20	50
5. STD RANGE MODE	PRESET	STEP	AUTO		
6. BACK COLOR	NORMAL	1	2	3	
7. COLOR MODE	NORMAL	1	2	3	
8. USER COLOR	>>				
9. DISPLAY	>>				
10. SET GRAPH	>>	DEPTH/	DEPTH/		
		TEMP	BH		
11. UNIT	>>				
GRAPH : RETURN TO F/F					
MARK : GOTO SUB MENU					

Main Menu

6.BACK COLOR

■ Changing the Fishfinding Display Colors (COLOR MODE)

You can choose the signal level color of your fishfinding display from four patterns.

Choose colors for optimal visibility along with the background color, or use the USER COLOR function to customize the selected color (see next item).

To change the fishfinding display colors, follow these steps:

1. Press the  and  keys at the same time to call up the main menu.
2. Using the  or  key, move to “7.COLOR MODE.”
3. Press the  or  key to move to any one of the four patterns.
 NORMAL: Standard 16 JRC colors
 - 1: 16 colors
 - 2: 16 colors
 - 3: Eight colors
4. Press the  key to return to the fishfinding display.

1. PRESET STD RANGE >>					
	10	20	30	40	50
					
RANGE	60	80	100	150	200
					
	250	300	400	500	800
STEP	10				
▲ 2. BTM EXP. RANGE >>	2	3	4	5	10
▼ 3. B. DISCRIM RANGE >>	10	20	30	40	50
4. VRM EXP. RANGE >>	5	10	15	20	50
5. STD RANGE MODE	PRESET	STEP	AUTO		
6. BACK COLOR	NORMAL	1	2	3	
7. COLOR MODE	NORMAL	1	2	3	
8. USER COLOR	>>				
9. DISPLAY	>>				
10. SET GRAPH	>>	DEPTH/	DEPTH/		
		TEMP	BH		
11. UNIT	>>				
GRAPH : RETURN TO F/F					
MARK : GOTO SUB MENU					

Main Menu

7.COLOR MODE

■ Customizing Colors to be Used (USER COLOR)

While the signal level colors and the background color of your fishfinding display are selectable from four choices, you may customize these colors at your option. Colors are composed of a mixture of R, G, B, or red, green, and blue. You can customize colors by varying the percentage ratios of R, G, and B.

To customize colors, follow these steps:

1. Press the  and  keys at the same time to call up the main menu.
 ◆ Only the display color that been set with “6.BACK COLOR” or “7.COLOR MODE” is varied. To change other colors, select the background color of fishfinding display color with “6.BACK COLOR” or “7.COLOR MODE” before performing the operation described here.
2. Using the  or  key, move to “8.USER COLOR” and press the  key.
3. Press the  or  key to choose the signal level (0 to 15) of the color to change.
 ◆ Signal level 0 denotes the background color. The current percentage ratio of R, G, and B display in the right-hand side of the submenu. Determine new ratio with reference to these values.
4. Press the  or  key to move R, G, or B.
5. Using the  or  key to alter the ratio.
6. Repeat steps 4 and 5 to alter other ratios as needed.
7. Repeat steps 3 through 6 to alter the colors of other signal levels as needed.
8. Press the  key to return to the main menu.
9. Press the  key to return to the fishfinding display.

1. PRESET STD RANGE >>	1	2	3	4	5
	10	20	30	40	50
	6	7	8	9	10
RANGE	60	80	100	150	200
	11	12	13	14	15
	250	300	400	500	800
STEP	10				
▲ 2. BTM EXP. RANGE >>	2	3	4	5	10
▼ 3. B. DISCRIM RANGE >>	10	20	30	40	50
4. VRM EXP. RANGE >>	5	10	15	20	50
5. STD RANGE MODE	PRESET	STEP	AUTO		
6. BACK COLOR	NORMAL	1	2	3	
7. COLOR MODE	NORMAL	1	2	3	
8. USER COLOR	>>				
9. DISPLAY	>>				
10. SET GRAPH	>>	DEPTH/	DEPTH/		
		TEMP	BH		
11. UNIT	>>				
GRAPH : RETURN TO F/F					
MARK : GOTO SUB MENU					

Main Menu

8.USER COLOR

USER COLOR					
					PRESENT
LEVEL	R	G	B	R	0
▲ 0	0	2	7	G	2
▼			B		7
MARK : RETURN TO MENU					

USER COLOR Submenu

Graph Operations (SET GRAPH)

■ Changing the Display Time

The graph display time is selectable from among 1 hour, 2 hours, and 3 hours.

- ◆ Water temperature and depth data is stored in memory even while the graphs are hidden. A display time graph will appear instantly as soon as it is selected.

To change the display time, follow these steps:

1. Press the  and  keys at the same time to call up the main menu.
2. Using the  or  key, move to "10.SET GRAPH."
3. Press  key to call up submenu.
4. Press  key to move to "TIME."
5. Press the  or  key to choose the display time.
6. Press the  key to return to the main menu.
7. Press the  key to return to the fishfinding display.

■ Changing the Water Temperature Range

you can change the water temperature range (upper and lower limits) for display in a graph. Water temperatures can be set in a range of 14 to 122°F (-10 to +50°C).

To change the water temperature range, follow these steps:

1. Press the  and  keys at the same time to call up the main menu.
2. Using the  or  key, move to "10.SET GRAPH."
3. Press  key to call up submenu.
4. Since the cursor is already at "TEMP," press the  or  key to move to "UPPER" or "LOWER."

- ◆ If the cursor is at "TIME," use the  key to move to "TEMP" or "DEPTH," then press the  or  key.

- ◆ If the cursor is at "DEPTH," use the  key to move "TEMP."

5. Press the  or  key to change the temperature.
6. Repeat steps 4 and 5 to alter the other water temperature (upper or lower limit).
7. Press the  key to return to the main menu.
8. Press the  key to return to the fishfinding display.

- ◆ An option is needed to display water temperatures.

1. PRESET STD RANGE >>		1	2	3	4	5
		10	20	30	40	50
		6	7	8	9	10
RANGE		60	80	100	150	200
		11	12	13	14	15
		250	300	400	500	800
STEP		10				
▲ 2. BTM EXP. RANGE >>		2	3	4	5	10
▼ 3. B. DISCRIM RANGE >>		10	20	30	40	50
4. VRM EXP. RANGE >>		5	10	15	20	50
5. STD RANGE MODE	PRESET	STEP	AUTO			
6. BACK COLOR	NORMAL	1	2	3		
7. COLOR MODE	NORMAL	1	2	3		
8. USER COLOR	>>					
9. DISPLAY	>>					
10. SET GRAPH	>>		DEPTH/	DEPTH/		
			TEMP	BH		
11. UNIT	>>					

GRAPH : RETURN TO F/F

MARK : GOTO SUB MENU

Main Menu

10.SET GRAPH

SET GRAPH			
	LOWER	UPPER	
	TEMP	15F	25F ▲
	DEPTH	0m	200m ▼
↑ MARK ↓	TIME 1 2 3 HOUR		

GRAPH : RETURN TO MENU

SET GRAPH Submenu

SET GRAPH			
	LOWER	UPPER	
	TEMP	15F	25F ▲
	DEPTH	0m	200m ▼
↑ MARK ↓	TIME 1 2 3 HOUR		

GRAPH : RETURN TO MENU

SET GRAPH Submenu

■ Changing the Depth Range

You can change the water depth range (upper and lower limits) for display in a graph. Water depths can be set in a range of 0 to 2,000m.

To change the water depth range, follow these steps:

- 1.** Press the  and  keys at the same time to call up the main menu.
- 2.** Using the  or  key, move to “10.SET GRAPH.”
- 3.** Press  key to call up submenu.
- 4.** Press the  key to move “DEPTH.”
 If the cursor is at “TIME,” use the  key to move to “TEMP” or “DEPTH,” then press the  key.
- 5.** Press the  or  key to move to “UPPER” or “LOWER.”
- 6.** Press the  or  key to change the depth.
- 7.** Repeat steps **5** and **6** to alter the other water depth (upper or lower limit).
- 8.** Press the  key to return to the main menu.
- 9.** Press the  key to return to the fishfinding display

■ To display the hardness of the sea bottom (BH value) on a graph (DEPTH/BH)

The relationship between the hardness of the sea bottom and water depth can be displayed on a graph.

The hardness of the sea bottom (BH)(see page 30) is displayed in “white” and the water depth, in “red.”

To display this graph, operate as follows:

- 1.** Press the  and  keys at the same time to call up the main menu.
- 2.** Using the  or  key, move to “10.SET GRAPH.”
- 3.** Press the  or  key to move to “DEPTH/BH.”
- 4.** Press the  key to return to the fishfinding display
- 5.** If graph is not displayed, press the  key to display the graph.

1. PRESET STD RANGE	1	2	3	4	5
	10	20	30	40	50
	6	7	8	9	10
RANGE	60	80	100	150	200
	11	12	13	14	15
	250	300	400	500	800
STEP	10				
▲ 2. BTM EXP. RANGE	2	3	4	5	10
▼ 3. B. DISCRIM RANGE	10	20	30	40	50
4. VRM EXP. RANGE	5	10	15	20	50
5. STD RANGE MODE	PRESET	STEP	AUTO		
6. BACK COLOR	NORMAL	1	2	3	
7. COLOR MODE	NORMAL	1	2	3	
8. USER COLOR	>>				
9. DISPLAY	>>				
10. SET GRAPH	>>	DEPTH/	DEPTH/		
		TEMP	BH		
11. UNIT	>>				

GRAPH : RETURN TO F/F
MARK : GOTO SUB MENU

[Main Menu](#)

10.SET GRAPH

SET GRAPH			
↑ MARK ↓	◀▶ LOWER UPPER TEMP 15f 25f ▲ DEPTH 0m 200m ▼		
	▶▶ TIME 1 2 3 HOUR		
	GRAPH : RETURN TO MENU		

SET GRAPH Submenu

1. PRESET STD RANGE	1	2	3	4	5
	10	20	30	40	50
	6	7	8	9	10
RANGE	60	80	100	150	200
	11	12	13	14	15
	250	300	400	500	800
STEP	10				
▲ 2. BTM EXP. RANGE	2	3	4	5	10
▼ 3. B. DISCRIM RANGE	10	20	30	40	50
4. VRM EXP. RANGE	5	10	20	50	
5. STD RANGE MODE	PRESET	STEP	AUTO		
6. BACK COLOR	NORMAL	1	2	3	
7. COLOR MODE	NORMAL	1	2	3	
8. USER COLOR	»				
9. DISPLAY	»				
10. SET GRAPH	»	DEPTH/ TEMP	DEPTH/ BH		
11. UNIT	»				

GRAPH : RETURN TO F/F
MARK : GOTO SUB MENU

[Main Menu](#)

10.SET GRAPH

Unit Set up Operations (UNIT)

■ Changing the Depth Unit (DEPTH UNIT)

Three depth units are available for selection: the meter, feet, fathom, and special. The special unit is a user-defined unit.

To change the depth unit, follow these steps:

1. Press the  and  keys at the same time to call up the main menu.
2. Using the  or  key, move to "11.UNIT" and press the  key.
3. Press the  or  key, move to "1.DEPTH UNIT."
4. Press the  or  key to move to the unit of your choosing.
5. Press the  key to return to the main menu.
6. Press the  key to return to the fishfinding display.

■ Customizing the Depth Unit (SPECIAL UNIT)

You can customize the water depth unit. Units can be set in range of 0.3 to 1.999m. A user-customized depth unit is called a special unit.

To customize the depth unit, follow these steps:

1. Press the  and  keys at the same time to call up the main menu.
2. Using the  or  key, move to "11.UNIT" and press the  key.
3. Press the  or  key to move to "2.SPECIAL UNIT."
4. Press the  or  key to set a value.
5. Press the  key to return to the main menu.
6. Press the  key to return to the fishfinding display.

■ Setting a Draft (DRAFT)

To measure the water depth in terms of its distance from the water surface, set a draftvalue. Draftvalue can be set in a range of 0 to 20.0 units.

To set a draftvalue, follow these steps:

1. Press the  and  keys at the same time to call up the main menu.
2. Using the  or  key, move to "11.UNIT" and press the  key.
3. Press the  or  key to move to "3.DRAFT."
4. Press the  or  key to set a value.
5. Press the  key to return to the main menu.
6. Press the  key to return to the fishfinding display.

1. PRESET STD RANGE	>>	1	2	3	4	5
		10	20	30	40	50
		6	7	8	9	10
RANGE		60	80	100	150	200
		11	12	13	14	15
		250	300	400	500	800
STEP		10				
▲ 2. BTM EXP. RANGE	>>	2	3	4	5	10
▼ 3. B. DISCRIM RANGE	>>	10	20	30	40	50
4. VRM EXP. RANGE	>>	5	10	15	20	50
5. STD RANGE MODE		PRESET	STEP	AUTO		
6. BACK COLOR		NORMAL	1	2	3	
7. COLOR MODE		NORMAL	1	2	3	
8. USER COLOR	>>					
9. DISPLAY	>>					
10. SET GRAPH	>>	DEPTH/	DEPTH/			
		TEMP	BH			
11. UNIT	>>					

GRAPH : RETURN TO F/F
MARK : GOTO SUB MENU

Main Menu

11.UNIT

UNIT					
1. DEPTH UNIT	m	FT	FA	SP	
2. SPECIAL UNIT	1.000	m/UNIT			
▲ 3. DRAFT	0.0	m			
▼ 4. BELOW KEEL	0.0	m			
5. TEMP. UNIT	°C	°F			
6. AVERAGE	OFF	ON			

MARK : RETURN TO MENU

UNIT

1.DEPTH UNIT

UNIT					
1. DEPTH UNIT	m	FT	FA	SP	
2. SPECIAL UNIT	1.000	m/UNIT			
▲ 3. DRAFT	0.0	m			
▼ 4. BELOW KEEL	0.0	m			
5. TEMP. UNIT	°C	°F			
6. AVERAGE	OFF	ON			

MARK : RETURN TO MENU

UNIT

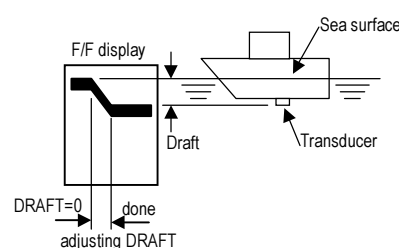
2.SPECIAL UNIT

UNIT					
1. DEPTH UNIT	m	FT	FA	SP	
2. SPECIAL UNIT	1.000	m/UNIT			
▲ 3. DRAFT	0.0	m			
▼ 4. BELOW KEEL	0.0	m			
5. TEMP. UNIT	°C	°F			
6. AVERAGE	OFF	ON			

MARK : RETURN TO MENU

UNIT

3.DRAFT



■ Displaying the depth from the keel (BELOW KEEL)

If you set the keel height of your boat as a keel height correction value, you can display the depth from the keel to the sea bottom as a water depth.

To set a below-keel distance, follow these steps:

1. Press the and keys at the same time to call up the main menu.
2. Using the or key, move to “11.UNIT” and press the key.
3. Press the or key to move to “4.BELOW KEEL.”
4. Press the or key to set a value.
5. Press the key to return to the main menu.
6. Press the key to return to the fishfinding display.

■ Changing the Water Temperature Unit (TEMP.UNIT)

Either “°C”(Degree Centigrade) or “°F”(Degree Fahrenheit) is available as the water temperature unit.

The water temperature unit can be changed using the following steps:

1. Press the and keys at the same time to call up the main menu.
2. Using the or key, move to “11.UNIT” and press the key.
3. Press the or key to move to “5.TEMP.UNIT.”
4. Press the or key to move the unit of your choosing.
5. Press the key to return to the main menu.
6. Press the key to return to the fishfinding display.

■ Smooth the Picture (AVERAGE)

The “AVERAGE” smoothes the picture and reduces the flicker of the screen.

The “AVERAGE” is normally set “ON.”

Select “OFF” when you would like to see more detail of the echo.

To change the average time, follow these steps:

1. Press the and keys at the same time to call up the main menu.
2. Using the or key, move to “11.UNIT” and press the key.
3. Press the or key to move to “6.AVERAGE.”
4. Press the or key to move to “OFF” or “ON.”
5. Press the key to return to the main menu.
6. Press the key to return to the fishfinding display.

1. PRESET STD RANGE >>	1	2	3	4	5
	10	20	30	40	50
	6	7	8	9	10
RANGE >>	60	80	100	150	200
	11	12	13	14	15
	250	300	400	500	800
STEP >>	10				
▲ 2. BTM EXP. RANGE >>	2	3	4	5	10
▼ 3. B. DISCRIM RANGE >>	10	20	30	40	50
4. VRM EXP. RANGE >>	5	10	15	20	50
5. STD RANGE MODE >>	PRESET	STEP	AUTO		
6. BACK COLOR >>	NORMAL	1	2	3	
7. COLOR MODE >>	NORMAL	1	2	3	
8. USER COLOR >>					
9. DISPLAY >>					
10. SET GRAPH >>	DEPTH/	DEPTH/			
	TEMP	BH			
11.UNIT >>					

GRAPH : RETURN TO F/F

MARK : GOTO SUB MENU

Main Menu

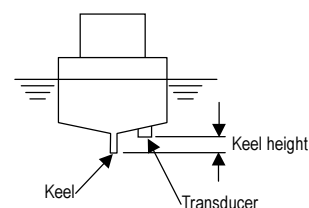
11.UNIT

UNIT				
1. DEPTH UNIT	m	FT	FA	SP
2. SPECIAL UNIT	1.000 m/UNIT			
▲ 3. DRAFT	0.0 m			
▼ 4. BELOW KEEL	0.0 m			
5. TEMP. UNIT	°C		°F	
6. AVERAGE	OFF		ON	

MARK : RETURN TO MENU

UNIT

4.BELOW KEEL



UNIT				
1. DEPTH UNIT	m	FT	FA	SP
2. SPECIAL UNIT	1.000 m/UNIT			
▲ 3. DRAFT	0.0 m			
▼ 4. BELOW KEEL	0.0 m			
5. TEMP. UNIT	°C		°F	
6. AVERAGE	OFF		ON	

MARK : RETURN TO MENU

UNIT

5.TEMP.UNIT

UNIT				
1. DEPTH UNIT	m	FT	FA	SP
2. SPECIAL UNIT	1.000 m/UNIT			
▲ 3. DRAFT	0.0 m			
▼ 4. BELOW KEEL	0.0 m			
5. TEMP. UNIT	°C		°F	
6. AVERAGE	OFF		ON	

MARK : RETURN TO MENU

UNIT

5.AVERAGE

Fishfinding Display Operations

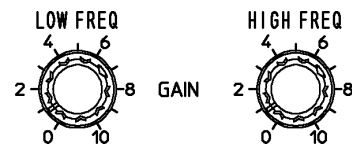
■ Adjusting Gains

● Adjusting Gains with the [GAIN] Control

Two [GAIN] controls are available, one for adjusting the high-frequency receiver gain and the other for adjusting the low-frequency receiver gain.

Turn the [GAIN] controls to adjust the display screen gains for the corresponding group of frequencies. Turning the [GAIN] controls clockwise (in the direction of increasing values) increases the gains.

Normally, use the [GAIN] control between positions 3 and 4.



● Adjusting Gains by Setting the STC Mode

Gains can be adjusted by changing STC modes. Four STC modes available are 50 m, 100 m, 150 m, and 200 m. Set 150 m in most situations. The 200 m setting is suited for displaying larger fish schools.

Lower settings help display smaller fish schools with clarity.

To change STC modes, follow these steps:

1. Press the and keys at the same time to call up the fishfinding menu.
2. Using the or key, move to “9. STC MODE.”
3. Press the or key to move to the range of your choosing.
4. Press the key to return to the fishfinding display.

1. COLOR REJ.	>>	
2. WHITE LINE	>>	LO FRQ OFF HI FRQ OFF
3. ADJUST FREQ.	>>	LO FRQ 50.0 HI FRQ 200.0
4. TX PULSE WIDTH		LONG SHORT
5. TX CYCLE MODE		SYNC. ASYNC.
▲ 6. ADJUST TX CYCLE		0
▼ 7. PDC HI FRQ	A B C D	
	LO FRQ	A B C D
8. ADC MODE	BLU 1 2 3 4 5 STD 7 8 RED	
9. STC MODE	50 100 150 200 (m)	
10. EXT INPUT	DISP OFF DISP ON	
11. SIG. PROCESS	OFF 1 2	
12. SCROLL STEP	1 2 3	

GRAPH : RETURN TO F/F
MARK : GOTO SUB MENU>>

Fishfinding Menu

9.STC MODE

● Adjusting Gains with the [STC] Control

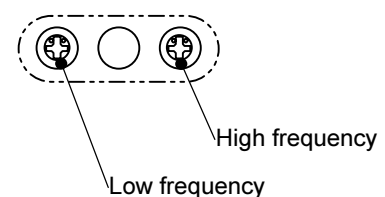
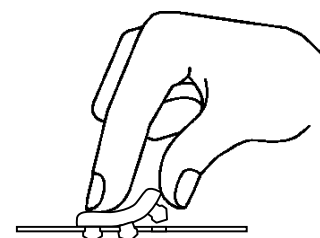
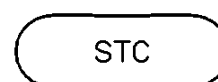
Two [STC] controls are available, one for adjusting the high-frequency receiver gain and the other for adjusting the low-frequency receiver gain.

They serve to suppress noise associated with fine dusts and bubbles drifting near the sea surface. Turn the [STC] controls to adjust the display screen gains for the corresponding group of frequencies. Turning the [STC] controls clockwise suppresses noise with greater power.

Normally, use the [STC] control center position.

To adjust [STC], follow these steps:

1. Remove the rubber cap marked “STC.”
2. Turn the trimmer control in the hole with a small screwdriver: right hand hole for high frequency, left hand hole for low frequency.
3. Put back the rubber cap.

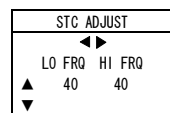


● Adjusting Nearby Gains by Setting the STC ADJUST

The STC ADJUST menu control the gains of 3 feet (1 meter) below the transducer. This is effective with the transducer type CFT-2505KD. With other transducer, normally set the value to 0.

To change the STC ADJUST, follow these steps:

1. Press the **MARK** and **GRAPH** keys at the same time to call up the STC ADJUST menu.
2. Press the **◀** or **▶** key to move to “HI FRQ” (high frequency) or “LO FRQ”(low frequency).
3. Using the **▲** or **▼** key to alter the value.
4. Repeat steps **2** and **3** to alter the other frequency as needed.
5. Press the **MARK** and **GRAPH** keys at the same time to return to the fishfinding display.



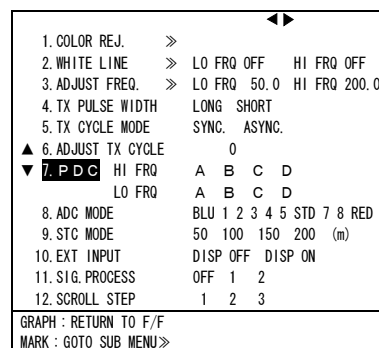
STC ADJUST Menu

● Adjusting Gains by Setting the PDC (Transmitter Output)

If satisfactory gains are not attained by adjusting the [GAIN] or [STC] controls, try to change the PDC (transmitter output). Four PDC settings are selectable, A being lowest output and D being highest output. Normally, use the PDC at position D.

To change the PDC, follow these steps:

1. Press the **▶** and **▼** keys at the same time to call up the fishfinding menu.
2. Using the **▲** or **▼** key, move to “7.PDC.”
3. Press the **▲** or **▼** key to move to “HI FRQ” (high frequency) or “LO FRQ”(low frequency).
4. Press the **◀** or **▶** key to move to the output of your choosing.
5. Press the **GRAPH** key to return to the fishfinding display.



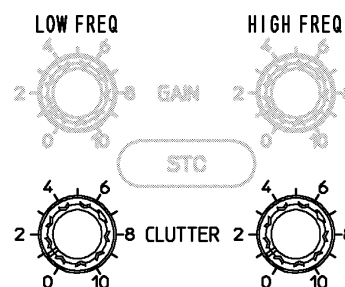
Fishfinding Menu

7.PDC MODE

■ Suppressing Noise ([CLUTTER] control)

Use the [CLUTTER] controls to remove fine noise across the screen that cannot be removed by adjusting the STC. Two [CLUTTER] controls are available, one for suppressing high-frequency noise and the other for suppressing low-frequency noise. Turn the [CLUTTER] controls as appropriate to suppress screen noise.

The setting “0” disables noise suppression. Normally, use the [CLUTTER] controls at position 3.



■ Rejecting Particular Colors (COLOR REJ.)

You can reject particular colors regardless of the gain, clutter, and STC settings. Using this function, you can reject colors that represent weak signals to suppress noise or unwanted fish school views from the screen.

To reject particular colors, follow these steps:

1. Press the  and  keys at the same time to call up the fishfinding menu.

2. Since the cursor is already at “1.COLOR REJ.,” press the  key to call up a submenu.

◆ If the cursor is at any position other than “1.COLOR REJ.,” use the  or  key to move to “1.COLOR REJ.” and press the  key.

3. Press the  or  key to move the frame on the color sample to the color (echo level) to reject.

4. Press the  key to suppress or hide the display of that color.

◆ To resume or enable the display of a color, move the frame to the color and press the  key.

5. To reject more colors, repeat steps 3 and 4.

6. Press the  key to return to the fishfinding menu.

7. Press the  key to return to the fishfinding display.

◆ Do not change display modes while a color rejection procedure is in progress. The boundary on the color sample could be hidden.

◆ If the boundary overlaps the cursor, the cursor (line) on the color sample would be hidden.

◆ If the rejection of the eighth color from the bottom of the color sample is specified, the time mark would be hidden as well.

◆ If the rejection of the sixth color from the bottom of the color sample is specified, the event mark would be hidden as well.

1. COLOR REJ.	>>	
2. WHITE LINE	>>	LO FRQ OFF HI FRQ OFF
3. ADJUST FREQ.	>>	LO FRQ 50.0 HI FRQ 200.0
4. TX PULSE WIDTH		LONG SHORT
5. TX CYCLE MODE		SYNC. ASYNC.
▲ 6. ADJUST TX CYCLE		0
▼ 7. P D C HI FRQ	A B C D	
	LO FRQ	A B C D
8. ADC MODE	BLU 1 2 3 4 5 STD 7 8 RED	
9. STC MODE	50 100 150 200 (m)	
10. EXT INPUT	DISP OFF DISP ON	
11. SIG. PROCESS	OFF 1 2	
12. SCROLL STEP	1 2 3	
GRAPH : RETURN TO F/F		
MARK : GOTO SUB MENU>>		

Fishfinding Menu

1.COLOR REJECTION

COLOR REJECTION
▲
SELECT LEVEL
▼
◀ ▶ DISP. ON/OFF
MARK : RETURN TO F/F MENU

COLOR REJECTION Submenu

■ Discriminating between the Sea Bottom and Fish Schools (WHITE LINE)

You can reject signals (colors) in the order of descending signal intensity to discriminate between the sea bottom and fish schools or determine the volume of a fish school. To monitor fish groups on and around the sea bottom, set the white line to erase the strongest signal that represents the sea bottom (reddish brown).

◆ If a single color is scattered in signal strength, you can erase signals in descending signal strength order.

To discriminate between the sea bottom and fish groups, follow these steps:

- 1.** Press the  and  keys at the same time to call up the fishfinding menu.
- 2.** Using the  or  key, move to “2.WHITE LINE” and press the  key.
- 3.** Press the  key to select between high and low frequency groups.
- 4.** Press the  key to choose “ON” to enable the discrimination function.

 Pressing the  key to choose “OFF” disables the discrimination function.
- 5.** Press the  or  key to set the level of the signal to reject. Levels can be set in increments of 0.1 in a range of 0 to 10.
- 6.** Repeat steps **4** through **5** to set a white line for the other group of frequencies as needed.
- 7.** Press the  key to return to the fishfinding menu.
- 8.** Press the  key to return to the fishfinding display.

1. COLOR REJ.	»								
2. WHITE LINE	»	LO FRQ OFF		HI FRQ OFF					
3. ADJUST FREQ.	»	LO FRQ 50.0		HI FRQ 200.0					
4. TX PULSE WIDTH		LONG		SHORT					
5. TX CYCLE MODE		SYNC.		ASYNC.					
▲ 6. ADJUST TX CYCLE		0							
▼ 7. P D C		A	B	C	D				
		LO FRQ	A	B	C	D			
8. ADC MODE		BLU	1	2	3	4	5	STD	7 8 RED
9. STC MODE		50	100	150	200			(m)	
10. EXT INPUT		DISP OFF		DISP ON					
11. SIG. PROCESS		OFF	1	2					
12. SCROLL STEP		1	2	3					
GRAPH : RETURN TO F/F									
MARK : GOTO SUB MENU»									

Fishfinding Menu

2. WHITE LINE

WHITE LINE LEVEL	
HI FRQ	OFF 5.0 0 2 4 6 8 10
↑	ON 5.0 0 2 4 6 8 10
MARK	
↓	OFF 5.0 0 2 4 6 8 10
LO FRQ	ON 5.0 0 2 4 6 8 10
GRAPH : RETURN TO F/F MENU	

WHITE LINE LEVEL Submenu

■ Suppressing Interference (ADJUST FREQ.)

When the approach of other boats or the engine noise from your own boat gives interference to the screen beyond correction by the technique introduced earlier, they can be suppressed by fine-tuning the transmitter frequency. See page 25 “Canceling Interfering Signals (INTERFERENCE).” Adjust frequency in a range of $\pm 10\text{kHz}$ at 200kHz and 75kHz, or a range of $\pm 5\text{kHz}$ at 50kHz, 38kHz, and 28kHz.

To suppress interference, follow these steps:

1. Press the and keys at the same time to call up the fishfinding menu.
2. Using the or key, move to “3.ADJUST FREQ.” and press the key.
3. Press the or key to select between high and low frequency groups.
4. Press the or key to adjust the frequencies.
5. Repeat steps 3 and 4 to adjust the other group of frequencies as needed.
6. Press the key to return to the fishfinding menu.
7. Press the key to return to the fishfinding display.

1. COLOR REJ.	>>	
2. WHITE LINE	>>	LO FRQ OFF HI FRQ OFF
3. ADJUST FREQ.	>>	LO FRQ 50.0 HI FRQ 200.0
4. TX PULSE WIDTH		LONG SHORT
5. TX CYCLE MODE		SYNC. ASYNC.
▲ 6. ADJUST TX CYCLE		0
▼ 7. P D C HI FRQ	A B C D	
	LO FRQ	A B C D
8. ADC MODE	BLU 1 2 3 4 5 STD 7 8 RED	
9. STC MODE	50 100 150 200 (m)	
10. EXT INPUT	DISP OFF DISP ON	
11. SIG. PROCESS	OFF 1 2	
12. SCROLL STEP	1 2 3	

GRAPH : RETURN TO F/F
MARK : GOTO SUB MENU>>

Fishfinding Menu 3.ADJUST FREQ.

ADJUST TX FREQUENCY	
HI FRQ	◀▶
▲	-80 ±0 +80
▼	
LO FRQ	FREQ. 200.0kHz

MARK : RETURN TO F/F MENU

ADJUST TX FREQUENCY Submenu

■ Getting Sharper Display Pictures (TX PULSE WIDTH)

You can get more accentuated or sharper display pictures by varying the transmitted pulse width. The transmitted pulse width is selectable from two choices: long and short. A longer (wider) pulse width could provide a more crisp picture of smaller fish schools.

To change the transmitted pulse width, follow these steps:

1. Press the and keys at the same time to call up the fishfinding menu.
2. Using the or key, move to “4.TX PULSE WIDTH.”
3. Press the or key to move to “LONG” or “SHORT.”
4. Press the key to return to the fishfinding display.

◆ With a narrow range setting, a long transmitted pulse width could prolong the zero line, detracting from the distance resolution of the pictures.

1. COLOR REJ.	>>	
2. WHITE LINE	>>	LO FRQ OFF HI FRQ OFF
3. ADJUST FREQ.	>>	LO FRQ 50.0 HI FRQ 200.0
4. TX PULSE WIDTH		LONG SHORT
5. TX CYCLE MODE		SYNC. ASYNC.
▲ 6. ADJUST TX CYCLE		0
▼ 7. P D C HI FRQ	A B C D	
	LO FRQ	A B C D
8. ADC MODE	BLU 1 2 3 4 5 STD 7 8 RED	
9. STC MODE	50 100 150 200 (m)	
10. EXT INPUT	DISP OFF DISP ON	
11. SIG. PROCESS	OFF 1 2	
12. SCROLL STEP	1 2 3	

GRAPH : RETURN TO F/F
MARK : GOTO SUB MENU>>

Fishfinding Menu

4.TX PULSE WIDTH

■ Preventing interruption by Bubble (TX CYCLE MODE)

The transmission cycle and the chart feed timing are normally synchronized with each other, but they can be unsynchronized to make the sounder more resistant to the interruption by bubble. Remember, however that in shallow seas this setting is prone to pick quasi sea-bottom echo.

To switch the transmission cycle and the chart feed timing, follow these steps:

1. Press the and keys at the same time to call up the fishfinding menu.
2. Using the or key, move to "5.TX CYCLE MODE."
3. Press the or key to move to "SYNC" (synchronous) or "ASYNC" (asynchronous).
4. Press the key to return to the fishfinding display.



"ASYNC" is useful when the chart feed speed is reduced to 1/3 or lower.

1. COLOR REJ.	>>										
2. WHITE LINE	>>	LO FRQ	OFF	HI FRQ	OFF						
3. ADJUST FREQ.	>>	LO FRQ	50.0	HI FRQ	200.0						
4. TX PULSE WIDTH		LONG	SHORT								
5. TX CYCLE MODE		SYNC.	ASYNC.								
▲ 6. ADJUST TX CYCLE			0								
▼ 7. PDC		HI FRQ	A	B	C	D					
		LO FRQ	A	B	C	D					
8. ADC MODE		BLU	1	2	3	4	5	STD	7	8	RED
9. STC MODE			50	100	150	200		(m)			
10. EXT INPUT		DISP	OFF	DISP	ON						
11. SIG. PROCESS		OFF	1	2							
12. SCROLL STEP			1	2	3						
GRAPH : RETURN TO F/F											
MARK : GOTO SUB MENU>>											

Fishfinding Menu

5.TX CYCLE MODE

■ To inhibit the display of the quasi sea-bottom image (ADJUST TX CYCLE)

When the echo sounder is used with a shallow range, a quasi sea-bottom image may be displayed at an intermediate depth between the zero line and the sea bottom with a response that is weaker than that of the real sea bottom.

If this quasi sea-bottom image is obstructive for looking at the echo sounder image, adjust the transmission period on item "6.ADJUST TX CYCLE" of the fishfinding menu.

To adjust the transmission period, operate as follows:

1. Press the and keys at the same time to call up the fishfinding menu.
2. Using the or key, move to "6.ADJUST TX CYCLE."
3. Press or key to adjust the transmission period. The set value for transmission period adjustment varies from 0 to 100, where the quasi-echo of the sea bottom is more largely inhibited as the set value increases.
4. Press the key to return to the fishfinding display.

1. COLOR REJ.	>>										
2. WHITE LINE	>>	LO FRQ	OFF	HI FRQ	OFF						
3. ADJUST FREQ.	>>	LO FRQ	50.0	HI FRQ	200.0						
4. TX PULSE WIDTH		LONG	SHORT								
5. TX CYCLE MODE		SYNC.	ASYNC.								
▲ 6. ADJUST TX CYCLE			0								
▼ 7. PDC		HI FRQ	A	B	C	D					
		LO FRQ	A	B	C	D					
8. ADC MODE		BLU	1	2	3	4	5	STD	7	8	RED
9. STC MODE			50	100	150	200		(m)			
10. EXT INPUT		DISP	OFF	DISP	ON						
11. SIG. PROCESS		OFF	1	2							
12. SCROLL STEP			1	2	3						
GRAPH : RETURN TO F/F											
MARK : GOTO SUB MENU>>											

Fishfinding Menu

6.ADJUST TX CYCLE

■ Darkening/Lightening General Colors (ADC MODE)

Changing the ADC mode makes the entire fishfinding display colors look darker or lighter.

To change the ADC mode, follow these steps:

1. Press the  and  keys at the same time to call up the fishfinding menu.
2. Using the  or  key, move to “8.ADC MODE.”
3. Press the  or  key to choose an ADC mode value. The closer to “BLUE,” the weaker appear the signal colors; the closer to “RED,” the stronger appear the signal colors.

◆ Normally, use the ADC mode at STANDARD. Switch to 7 to find small fish schools or isolated fish.

4. Press the  key to return to the fishfinding display.

1. COLOR REJ.	>>	
2. WHITE LINE	>>	LO FRQ OFF HI FRQ OFF
3. ADJUST FREQ.	>>	LO FRQ 50.0 HI FRQ 200.0
4. TX PULSE WIDTH		LONG SHORT
5. TX CYCLE MODE		SYNC. ASYNC.
▲ 6. ADJUST TX CYCLE		0
▼ 7. PDC HI FRQ	A B C D	
	LO FRQ	A B C D
8. ADC MODE		BLU 1 2 3 4 5 STD 7 8 RED
9. STC MODE		50 100 150 200 (m)
10. EXT INPUT		DISP OFF DISP ON
11. SIG. PROCESS		OFF 1 2
12. SCROLL STEP		1 2 3

GRAPH : RETURN TO F/F
MARK : GOTO SUB MENU>>

Fishfinding Menu

8.ADC MODE

■ Displaying an Externally Input Fishfinding Display (EXT INPUT) (Option)

Connecting the trigger and the fishfinder signal of other echo sounder can monitor its onscreen in a split display.

And to display an externally input fishfinding display in a split display, follow these steps:

1. Press the  and  keys at the same time to call up the fishfinding menu.
2. Using the  or  key, move to “10.EXTINPUT.”
3. Press the  or  key move to “DISP OFF” (no split display) or “DISP ON” (split display).
4. Press the  key to return to the fishfinding display.

◆ External input is operable only in the standard high- or low-frequency mode.

1. COLOR REJ.	>>	
2. WHITE LINE	>>	LO FRQ OFF HI FRQ OFF
3. ADJUST FREQ.	>>	LO FRQ 50.0 HI FRQ 200.0
4. TX PULSE WIDTH		LONG SHORT
5. TX CYCLE MODE		SYNC. ASYNC.
▲ 6. ADJUST TX CYCLE		0
▼ 7. PDC HI FRQ	A B C D	
	LO FRQ	A B C D
8. ADC MODE		BLU 1 2 3 4 5 STD 7 8 RED
9. STC MODE		50 100 150 200 (m)
10. EXT INPUT		DISP OFF DISP ON
11. SIG. PROCESS		OFF 1 2
12. SCROLL STEP		1 2 3

GRAPH : RETURN TO F/F
MARK : GOTO SUB MENU>>

Fishfinding Menu

10.EXT INPUT

■ Emphasizing little Echoes Onscreen 1 (SIG.PROCESS)

When a response is so little that it is hardly distinguishable, use the signal processing feature to display the echoes emphasized in the vertical direction. The signal processing has three settings: OFF, 1, and 2. “1” provides the lowest degree of emphasis, while “2” provides the highest. “OFF” disables the signal processor. (The factory setting is “OFF.”)

To choose the signal processor, follow these steps:

- 1.** Press the  and  keys at the same time to call up the fishfinding menu.
- 2.** Using the  or  key, move to “11. SIG. PROCESS.”
- 3.** Press the  or  key to move to “OFF,” “1,” or “2.”
- 4.** Press the  key to return to the fishfinding display.

1. COLOR REJ.	»	LO FRQ OFF	HI FRQ OFF
2. WHITE LINE		LO FRQ 50.0	HI FRQ 200.0
3. ADJUST FREQ.	»	LONG	SHORT
4. TX PULSE WIDTH		SYNG.	ASYNG.
5. TX CYCLE MODE		0	
▲ 6. ADJUST TX CYCLE		A B C D	
▼ 7. P D C HI FRQ		A B C D	
	LO FRQ		
8. ADC MODE		BLU 1 2 3 4 5 STD 7 8 RED	
9. STC MODE		50 100 150 200 (m)	
10. EXT INPUT		DISP OFF DISP ON	
11. SIG. PROCESS		OFF 1 2	
12. SCROLL STEP		1 2 3	
GRAPH : RETURN TO F/F			
MARK : GOTO SUB MENU»			

Fishfinding Menu

11.SIG.PROCESS

■ Emphasizing little Echoes Onscreen 2 (SCROLL STEP)

You can display fishfinding displays with responses expanded horizontally in an extra wider chart feed width. Three scroll step available are “1” (standard), “2,” and “3.” The larger the value, the larger becomes the chart feed width.

Normally, use the scroll step at 1.

To change the scroll step, follow these steps:

- 1.** Press the  and  keys at the same time to call up the fishfinding menu.
- 2.** Using the  or  key, move to “12. SCROLL STEP.”
- 3.** Press the  or  key to “1,” “2,” or “3.”
- 4.** Press the  key to return to the fishfinding display.

Fishfinding Menu

12. SCROLL STEP

Error Messages

When the following error messages are displayed, take corrective action as suggested.

■ CAN'T BACK UP

The current settings could not be recorded for some reason.

● Action

Turn off the echo sounder, and turn on again after several seconds. If the echo sounder still works no good, call the distributor, office, or dealer from whom the instrument was purchased.

■ CAN'T READ DATA

The instrument was turned on, but the previous settings in memory had been corrupted and could not be loaded.

● Action

Turn off the echo sounder, and turn on again after several seconds. If the echo sounder still works no-good, please call the distributor, office, or dealer from whom the instrument was purchased.

■ LANGUAGE TYPE

The case of appearing “LANGUAGE TYPE” menu.

The previous settings in memory had been corrupted and could not be loaded or the master reset operation was executed.

● Action

Turn off the echo sounder, and turn on again after several seconds. If the echo sounder still works no-good, please try to execute a master reset.

Never execute a master reset if you do not know the installed transducer type, and call the distributor, office, or dealer from whom the instrument was purchased.

To execute a master reset, see next item.

正常にバックアップ出来ません！

CAN'T BACK UP !

Error message

バックアップデータが不良です！

CAN'T READ DATA !

Error message

LANGUAGE TYPE	
1. JAPANESE	
2. ENGLISH	
▲ 3. NORWEGIAN	
▼ 4. SPANISH	
5. CHINESE	
6. KOREAN	
GRAPH : FIX LANGUAGE	

表示言語選択	
1. 日本語	
2. ENGLISH	
▲ 3. NORSE	
▼ 4. SPANISH	
5. 中文	
6. 韓国語	
グラフ : 言語選択の終了	

LANGUAGE TYPE Menu

■ Executing a Master Reset

A master reset initialize the data memory in processor. And the transducer setting is needed. Never execute a master reset if you do not know the installed transducer type.

To execute master reset, follow these steps:

1. Turn the [POWER] off.
2. Turn the [POWER] on while pressing the **MARK** key.
3. The “LANGUAGE TYPE” menu is displayed after the master reset has been executed.

◆ Don't turn the power off as long as master reset is continued.

4. Select a language using the **▲** or **▼** key and press the **GRAPH** key.
5. The “SELECT TRANSDUCER” menu is displayed. Press the **▲** or **▼** key to select the frequency of the transducer connected your echo sounder.

◆ Improper selection of transducer cause a damage of transducer or a failure of echo sounder.

◆ If you would like to change the transducer type, some hardware modifications are needed, and only this menu cannot change the transducer type.

6. Press the **▶** key, move to “TRANSDUCER PAIR”.
7. Using the **▲** or **▼** key, select the transducer.
8. Press the **GRAPH** key to fix the transducer type. And initial screen is displayed. Confirm the transducer type displayed on the screen.

LANGUAGE TYPE	
1. JAPANESE	
2. ENGLISH	
▲ 3. NORWEGIAN	
▼ 4. SPANISH	
5. CHINESE	
6. KOREAN	
GRAPH : FIX LANGUAGE	

LANGUAGE TYPE Menu

SELECT TRANSDUCER	
	◀ ▶
FREQUENCY PAIR	TRANSDUCER PAIR
200-75	CFT-2505KD
200-50	CFT-2505
200-38	CFT-220/CFT-520
200-28	CFT-210/CFT-510
▲ 75-50	
▼ 75-38	
75-28	
50-38	
50-28	
GRAPH : FIX TRANSDUCER	

SELECT TRANSDUCER Menu

3.4 Remote Controller Functions

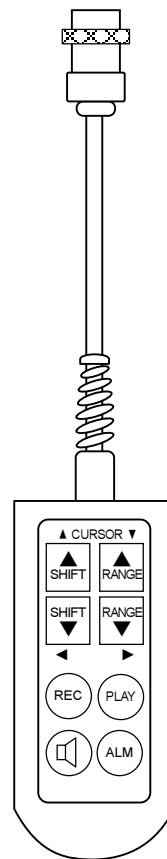
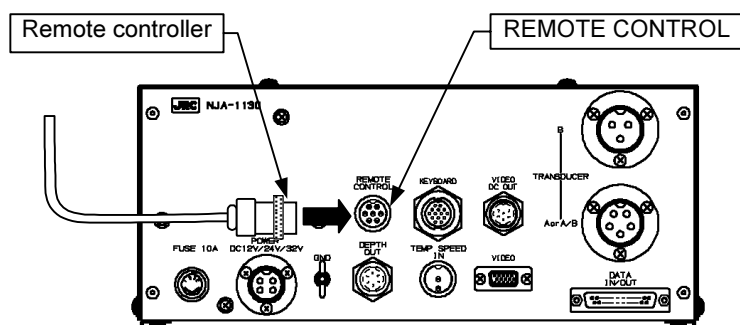
A remote controller NCH-466E is optionally available with the echo sounder.

What You Can Do with the Remote Controller

The remote controller enables you to operate the sounder about 4 meters apart. The record/replay function and the alarm function of the remote controller allow you to record and reproduce fishfinding images and to sound an audible alarm.

Connecting the Remote Controller

To connect the remote controller to the sounder, insert the cable extending from the remote controller into the sounder's rear-panel "REMOTE CONTROL" connector.



Remote controller front view

Remote Controller Buttons and Functions

The remote controller buttons provide the following functions:

 and  keys

Work the same way as the sounder's  and  keys. (For directions for use, refer to the Range Operations section of the instruction manual.) These keys are also used to set the record/replay function and the alarm function of the remote controller.

 and  keys

If you are a JFC-130/130HP user, use these keys to shift a display range up and down. Each time you press the  or  key, the range is shifted, one level at a time. These keys work the same way as the sounder's  and  keys.

These keys are also used to set the record/replay function and the alarm function of the remote controller.



This key stops an audible alarm when it sounds.

It is also used to set the record/replay function and the alarm function of the remote controller.



This key calls up the ALARM menu for enabling or disabling the audible alarm. It also exits the ALARM menu to the fishfinding display.



This key calls up the RECORD PICTURE menu for recording display images. It also exits the RECORD PICTURE menu to the fishfinding display.



This key calls up the REPLAY PICTURE menu for reproducing or displaying recorded images. It also exits the REPLAY PICTURE menu to the fishfinding display.

3.5 Remote Controller Operation

Record/Replay Function

Using the record/replay function, you can record up to two of the images appearing in the right-hand side of the screen. You can replay the recorded images anytime.

◆ The recorded images are lost when the power is turned off

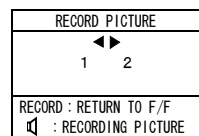
■ Recording an Image

To record an image, follow these steps:

1. Press the  key on the image you want recorded, to call up the RECORD PICTURE menu.
2. Press the  or  key to move to the number of your choosing.
3. Press the  key. The image has now been recorded. The RECORD PICTURE menu disappears automatically and exits to the fishfinding display.

Next time the RECORD PICTURE menu is called up, it comes up with an asterisk(*) appearing under the number recorded.

◆ If you record an image for a number already recorded, the existing image would be overwritten and updated with the new image.



RECORD PICTURE Menu

■ Replaying a Recorded Image

You can display a recorded image, which appears in the right-hand side of the screen. No menus and graphs can be displayed while a recorded image is being replayed.

To replay a recorded image, follow these steps:

1. Press the  key to call up the REPLAY PICTURE menu.
2. An image has been recorded at the number marked by an asterisk (*).
Press the  or  key to move to the number of your choosing.
3. Press the  key to replay the image. For about 7 seconds immediately after the display, various information displays at the lower left corner to represent the status of the image replayed.

REPLAY PICTURE	
1	2
*	
PLAY : RETURN TO F/F	
 : PLAY BACK PICTURE	

REPLAY PICTURE Menu

Data Window

STD/STD	...Display mode
IR-1	...Interference suppression level
60.2m	...Depth Unit
15.0°C	...Water temperature
SPD1/2	...Scroll speed
N 35° 48.000'	...Latitude (displays as "0" if external input is not used)
E134° 51.000'	...Longitude (displays as "0" if external input is not used)
AUTO	..." AUTO" appears only if auto-ranging is used.

4. Press the  key to cancel the replay and return to the regular fishfinding display.

Alarm Function

Using the alarm function makes it possible to sound an alarm tone (fish school alarm) when a preset range of fish school responses is encountered or sound an alarm tone (water-temperature alarm) when a preset range of water temperatures is reached.

◆ See page 53 for the fish group alarm setup procedure and page 54 for the water temperature alarm setup procedure.

■ Enabling and Disabling the Audible Alarm

You can enable or disable the audible alarm at your option.

When the audible alarm is enabled, a fish school/water temperature indicator appears at the upper left corner of the screen.

Alarm type characters appear to the right of the buzzer symbol.

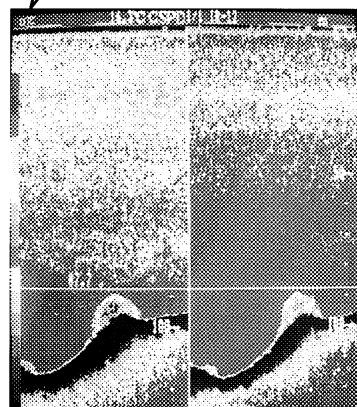
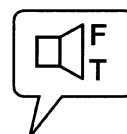
F: Fish school alarm

T: Water temperature alarm

When the audible alarm sounds, the alarm indicator turns to red. The audible alarm can be stopped by pressing the  key, but the red indicator does not change back to white until the fish school signal being monitored is lost or until the water temperature gets out of the preset range.

To enable or disable the audible alarm, follow these steps:

1. Press the  key to call up the ALARM menu.
2. Press the  or  key to move to the kind of alarm (fish school alarm or water temperature alarm) that you want enabled or disabled.
3. Press the  or  key to move to "OFF" or "ON."
4. Press the  key to return to the fishfinding display.



Fish school/water temperature alarm indicator

ALARM			
▲ FISH ALARM	»	OFF	ON
▼ TEMP ALARM	»	OFF	ON
ALARM : RETURN TO F/F			
[Q] : GO TO SUB MENU			

ALARM Menu

■ Setting the Fish School Alarm

You can sound an alarm tone when a fish school response having a signal level higher than specified is encountered within a specified range. Use the FISH ALARM menu to set a fish school alarm range and a signal level.

◆ A fish school alarm range up to 2000 (in meter terms) from the zero line can be set.

◆ A fish school alarm would also sound when the sea bottom is located in its range.

To set the fish school alarm, follow these steps:

1. Press the  key to call up the ALARM menu.
2. Press the  or  key to move to "FISH ALARM."
3. Press the  key to call up the FISH ALARM menu.
4. Press the  or  key to move to "UPPER LIM."
5. Press the  or  key to set a range upper limit.
6. Press the  key to move to "RANGE."
7. Press the  or  key to set a range (distance from the upper limit).
8. Press the  key to move to "LEVEL."
9. Press the  or  key to set the signal level for activating the audible alarm. The audible alarm sounds when a signal higher than this level setting is encountered.
10. Press the  key to return to the ALARM menu.
11. Press the  key to return to the fishfinding display.

Back on the fishfinding display, red lines appear on the depth scale to designate the specified range. If a fish school echo signal higher than this signal level setting is encountered while the audible alarm is "ON," the audible alarm sounds. It continues to sound until a corresponding fish school echo signal is lost.

To stop the audible alarm before that, press  key.

◆ The fish school/water temperature mark remains red even after the audible alarm has stopped.

ALARM			
▲ FISH ALARM	»	OFF	ON
▼ TEMP ALARM	»	OFF	ON
ALARM : RETURN TO F/F			
🔊 : GO TO SUB MENU			

ALARM Menu

FISH ALARM		
◀▶		
UPPER LIM	RANGE	LEVEL
▲ 10m	20m	7
▼		
🔊 : RETURN TO ALARM MENU		

FISH ALARM

■ Setting the Water Temperature Alarm

You can sound an alarm tone when a preset range of water temperature is reached. Use the TEMP ALARM menu to set a water temperature alarm range.

◆ Water temperature within a range of 14°F(-10°C) to 122°F(+50°C) can be set.

To set the water temperature alarm, follow these steps:

1. Press the  key to call up the ALARM menu.
2. Press the  or  key to move to "TEMP ALARM."
3. Press the  key to call up the TEMP. ALARM menu.
4. Press the  or  key to move to "UPPER LIM."
5. Press the  or  key to set an upper limit temperature.
6. Press the  key to move to "LOWER LIMIT."
7. Press the  or  key to set a lower limit temperature.
8. Press the  key to return to the ALARM menu.
9. Press the  key to return to the fishfinding display.

ALARM			
▲ FISH ALARM	»	OFF	ON
▼ TEMP ALARM	»	OFF	ON
ALARM : RETURN TO F/F			
⏏ : GO TO SUB MENU			

ALARM Menu

TEMP ALARM			
UPPER LIM. LOWER LIM.			
▲	77F	59F	
▼			
⏏ : RETURN TO ALARM MENU			

TEMP ALARM

If a water temperature within the specified range is reached, the audible alarm sounds. It continues to sound until the water temperature gets out of the preset range.

To stop the audible alarm before that, press the  key.

◆ The fish school/water temperature mark remains red even after the audible alarm has stopped.

SECTION 4

Maintenance



WARNING



There are no customer-serviceable parts inside. Unauthorized inspections and repairs could cause fires and electrical shock hazards. Please call our field representative or your nearest JRC office for inspection and repair services.

CAUTION

- When cleaning the surface, do not use any organic solvent such as thinner or benzene. Otherwise, the painting on the surface may be damaged.
For cleaning the surface, remove the dust and refuse and wipe with clean dry cloth.
- Be sure to turn off power before starting inspection of the device.

4.1 Daily maintenance

The life of the device depends on how daily maintenance and inspection are performed carefully. To keep the device in the best condition at all times, it is recommendable to perform periodical inspections constantly. Any failure in the device can be prevented before it occurs through such inspections.

Please perform the inspections shown in the table below periodically.

Maintenance and inspection methods

No.	Item	Maintenance and inspection
1	Cleaning	Remove stains from the panel face, controls, switches, top cover, and bottom cover by wiping them lightly with dry cloth.
2	Loosening of parts	Check screws, nuts, controls, switches, volume knobs, connectors, etc. for any looseness to prevent them from dropping off and retighten them correctly.
3	Cable Unit	Inspect the state of connection of cables between units as well as connectors so that they are connected correctly.
4	Fuses	When the power fuse has blown, replace it after finding the cause. Use a fuse sealed in a glass tube (included in the spare parts).

4.2 Measures to be taken when an abnormality or failure has been found

When one of the following symptoms appears, stop operation and contact the dealer or agent from Which you purchased the device or one of our branches, marketing offices, and representative offices.

(1)The screen does not become bright. Power cannot be turned on.

A state where no color is displayed on the screen.

(2)No echo sounder screen appears though the screen can be scrolled.

A state where no echo sounder screen (echo) is displayed though the screen is scrolling.

(3)Low sensitivity.

A state where the fish finding image is weaker than the normal state.

(4)The external associated screen is not displayed.

(5)No external data is displayed.

SECTION 5

Consider Installation

Avoid the installation of this set in one of the following places.

Otherwise, a failure will occur or the life of the set will be shortened.

1. A place exposed to direct sunlight

The LCD will deteriorate promptly.

2. A place exposed to water splash

3. A place with poor ventilation

Particular care should be taken when this set is used in a water-proof box. The rear panel that is heated too much may damage the power unit and/or transmitter.

SECTION 6

After-Sales Service

When ordering a repair

When a failure has been detected, stop operation and contact the dealer or agent from which you purchased the device or one of our branches, marketing offices, and representative offices.

- Any repair during the warranty period will be performed by the dealer or our company without any charge according to the provisions in the specific action.
- Any repair after the warranty period will be performed with charge provided that the original function can be recovered through such repair.
- Please inform us of the following items when ordering a repair:
 - Product name, model name, date of purchase, serial number.
 - State of the abnormality (as in detail as possible).
 - Office name or organization name, address, telephone number.

Recommendation of overhaul

The performances of the set may deteriorate due to the aging of parts, and so on through the rate varies depending on the conditions of use. So it is recommendable to contact the dealer from which you purchased the device or one of our marketing offices for overhaul apart from daily services.

Incidentally, such overhaul will be performed with charge.

Please contact the dealer from which you purchased the device or our marketing office that is nearest to you for any question as to the after-sales service.

SECTION 7

Disposal

When disposing of this set, process it in accordance with the rules of the pertinent local government. For details, please contact the dealer from which you purchased the device, our marketing office that is nearest to you, or the pertinent local government.

SECTION 8

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This section of the manual gives a listing of the topics and the numbers of the pages to consult when you want to know more about particular aspects of the JFC-130/130HP color echo sounder operation.

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SECTION 9

Specifications

Display	10.4-inch color LCD (horizontal or vertical mount)
Resolution	640×480 pixels
Presentation	16-color gradations (4 display colors and 4 background colors); all user-selectable.
Shift	0 to 1500 unit, in 1 steps (m, feet, fathom, special)
Display ranging Manual	Panel key setting/15-range presets (usually, every 5 to 2000 m), step mode
Auto	ON/OFF
Depth unit	Meter, feet, fathom, and special unit(0.3 to 1.999 m) selectable
Display mode	Mode select rotary switch, graph key, A-scope key
Standard	High-/low-/dual-frequency
Standard and VRM expand	High-/low-/dual-frequency
Standard and bottom lock expand	High-/low-/dual-frequency
Mixed	Three display mode(vertical)
A-scope	A-scope displayed on all displays ^{*1} .
Graph function	Graphs displayed on all displays (sensor options required).
Cursor	Variable range marker with depth indication; one decimal place displayed for depths less than 100 m.
Depth scale	Line and numeral displayed in the right-hand side of the screen, or displayed in the middle.
Bottom depth	Numerically indicated at the lower left corner of the display screen.
Alarm function ^{*2}	(Set with the remote control)
Fish school alarm	Can be set in a range of 2000 (m, feet, or fathoms) from the zero line.
Water temperature alarm ^{*3}	Can be set in a range of 14°F (-10°C) to 122°F (+50°C).
Picture recording	Up to two right half screens recorded ^{*2}
Color sample	Displayed all the left-most end of the screen (ON/OFF).
Timing mark	30-second (drawing for 15 second, non-drawing for 15 seconds)
Interference control	Manual/automatic

Draft adjustment	Menu-selectable from 0 to 20 in units of 0.1.
Chart scroll	1/1, 1/2, ..., 1/9, and stop
Marker	Vertical line (with marker output terminal)
Backup	EEPROM
Brightness	Knob
Panel illumination	Fixed
Gain control	Knob
STC (Bubble noise rejection)	Menu-selectable curves, with intensity set by a panel semi-fixed variable resistor.
Clutter (Noise suppression)	Knob
Color rejection	Set on menu displays.
Frequencies	200, 75, 50, 38, and 28kHz
Transmitter output	JFC-130: 1kW JFC-130HP: 3kW
FM transmission	200kHz
Output reducer	Built-in
Transmitted pulse width	0.2 to 3.0 ms: selectable between long and short (depends on range)
Sounding rate	JFC-130: 600 cycles/minute (0-40m) JFC-130HP: 300 cycles/minute(0-40m)
Depth data output	JRC and NMEA0183 output
Custom presetting	Three Kinds
Water temperature input	JRC and NMEA0183 water temperature sensor
Power supply	12/24/32VDC(10.8 to 42VDC)
External dimensions	NWZ-146: 230(W)×327(H)×155(D) NCH-562: 290(W)×45(H)×123(D) NJA-1130: 340(W)×130(H)×280(D)
Mass	NWZ-146: 2.8kg NCH-562: 1kg NJA-1130: 6kg

*1: Excluding mixed displays.

*2: An optional remote controller is needed.

*3: A water temperature sensor is needed to indicate water temperatures.



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