

SUZUKI

10 INCH ECHO SOUNDER

HIGH POWER

ES-1050

OPERATION MANUAL

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CONTENTS

CONTENTS	1	CONTROL DIALS	
PRECAUTIONS		【1】 MAIN RANGE DIAL	15
【1】 INSTALLATION POSITION	2	【2】 EXPANSION RANGE DIAL	15
【2】 HIGH VOLTAGE	2	【3】 MODE SELECTION DIAL	
【3】 TRANSDUCER MAINTENANCE	2	(1)NORMAL MODE	16
COMPOSITION	3	(2)BOTTOM EXPANSION MODE	16
DIMENSIONS	3	(3)PARTIAL EXPANSION MODE	17
INSTALLATION		(4)NAVIGATION(DATA) DISPLAY MODE	17
【1】 TRANSCIVER UNIT INSTALLATION	4	(5)MENU1:RANGE SET MENU	18
【2】 MAIN UNIT MOUNTING	5	(6)MENU2:FUNCTION SET MENU	19
【3】 CONNECTION	6	【4】 MENU MODES (1 & 2)	
FUNCTION EXPLANATION		(1)DEPTH UNIT	20
【1】 SOUNDER DISPLAY	7	(2)DYNAMIC RANGE	20
【2】 CONTROL PANEL	8	(3)TVG ADJUST	21
【3】 REAR PANEL CONNECTORS	9	(4)GAIN ADJUST	22
INITIAL FUNCTION SETTINGS		(5)NOISE REDUCTION	23
【1】 FACTORY SETTING	10	(6)WHITE LINE	23
【2】 RETURN TO FACTORY SETTING	10	(7)SCREEN DIVISION	24
【3】 USER SETTING		(8)SCALE POSITION	24
(1)MEMORIZE USER SETTINGS	11	(9)ECHO SIGNAL/TRIGGER SIGNAL	25
(2)RETURN TO USER SETTING	11	(10)TEMP. DISPLAY	25
(3)REVISE USER SETTING	11	(11)TEMP. GRAPH	26
KEYBOARD OPERATION		(12)POWER REDUCTION	26
【1】 EXPANSION START KEYS	12	(13)COLOUR SELECT	27
【2】 MEMORY WRITE/READ KEYS	12	(14)DRAFT	28
【3】 PHASED RANGE KEYS	13	【5】 GAIN DIAL	29
【4】 THRESHOLD KEY	13	【6】 FAR GAIN DIAL	30
【5】 MARK KEY	14	【7】 ON/OFF BRIGHTNESS DIAL	30
【6】 PICTURE SPEED KEY	14	【8】 NOISE SUPPRESSION DIAL	31
		AUTO RANGE/AUTO SHIFT FUNCTION	
		【1】 AUTO RANGE FUNCTION	31
		【2】 AUTO SHIFT FUNCTION	32
		SPECIFICATION	33

PRECAUTIONS

【 1 】 INSTALLATION POSITION

This equipment should be installed in a place away from the following.

- * EQUIPMENT WHICH TRANSMITS OR IS EFFECTED BY MAGNETIC FIELD.**
- * HIGH TEMPERATURES. EG DIRECT SUNLIGHT.**
- * MOISTURE. EG RAIN, SEA SPRAY OR HEAVY CONDENSATION.**
- * HEAVY VIBRATION.**

【 2 】 HIGH VOLTAGE

When opening the case cover beware of the high voltage components inside.

【 3 】 TRANSDUCER MAINTENANCE

The transducer must be kept free at all times from barnacles and dirt. Failure to ensure this will result in reduced performance of the equipment. Periodic inspections should be carried out if possible.

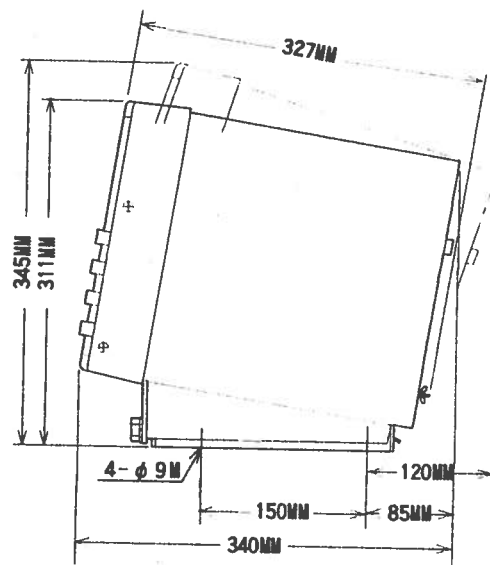
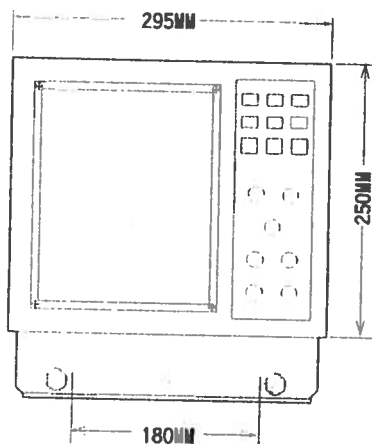
Under no circumstances should the transducer face be painted.

COMPOSITION

ITEM	CODE	PARTS NUMBER	QTY	NOTES
MAIN UNIT			1	
OPERATION MANUAL	**EJ121		1	
MAIN UNIT COVER			1	
POWER CABLE SET	**EJ010			
POWER CABLE		31524D	1	
ACCESSORIES	**EJ001		3 EACH	
FUSE: 3A, 5A, 8A				
5P PIN CONNECTOR		FM14-5P	1	EXTERNAL EQUIPMENT
HEXAGONAL BOLT		30054D	2	
SPRING WASHER		φ 8	2	
FLAT WASHER		φ 8 × 18 × 1.6	2	
BOLT SET	**EJ002			
BOLT		8 × 80	4	
NUT		M8	8	
WASHER		30588D	8	
3P METAL CONNECTOR		HS21P-3	1	TRANSDUCER
MOUNTING BRACKET	**EJ110	33299B	1	W RUBBER PLATE
TRANSCIEVER PCB UNIT			1	

NOTE, the code number is shown on the packaging. However, two asterisks ** indicates the lot management number.

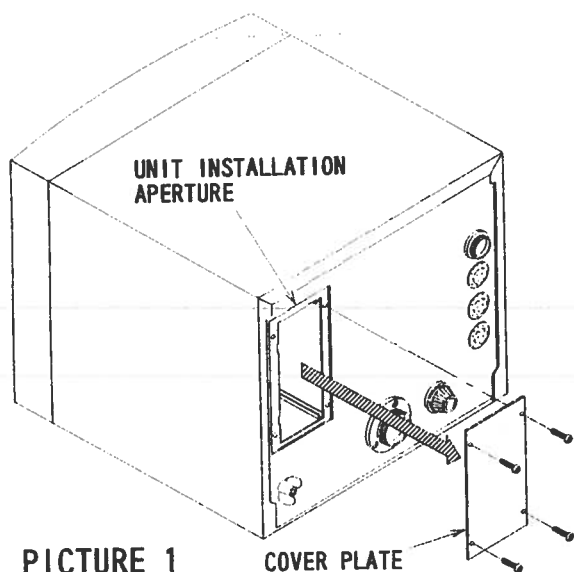
DIMENSIONS



WEIGHT: 14.3Kg

INSTALLATION

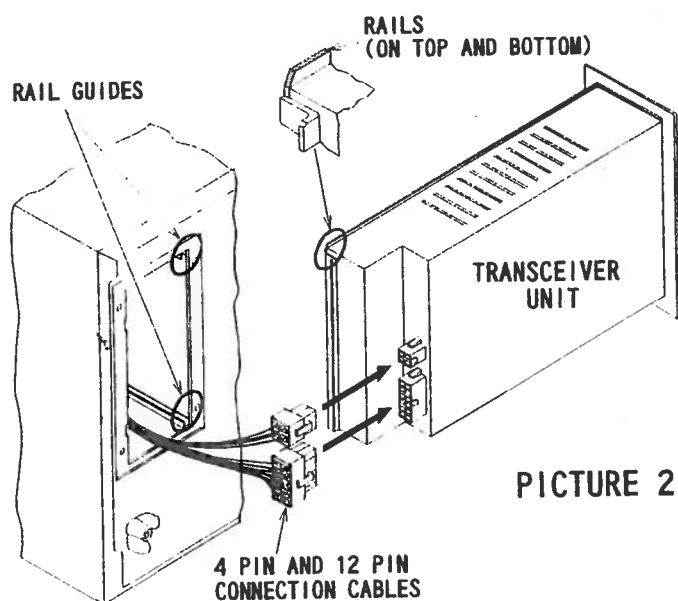
【 1 】 TRANSCEIVER UNIT INSTALLATION



PICTURE 1

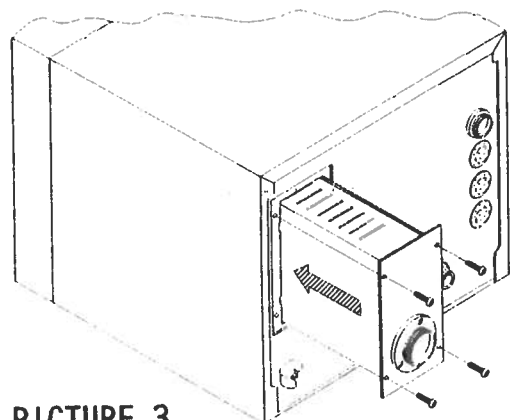
- ⊙ Before installing the main unit, install the transceiver unit in the main unit.
The transceiver unit is enclosed in the accessories box.

- ① Remove the cover plate from the unit installation aperture. (Picture 1)
- ② Take the transceiver unit out of the accessories box.



PICTURE 2

- ③ Pull the two connection cables (4 pin and 12 pin) out from the installation aperture.
- ④ Connect the cables to the plugs on the transceiver unit. (Picture 2)
Ensure they are connected properly.

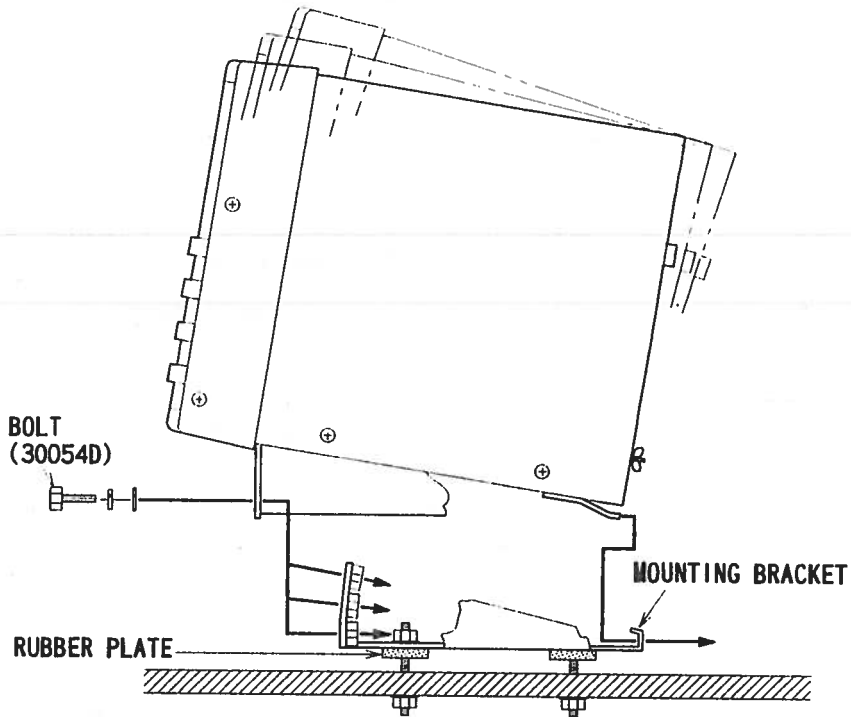


PICTURE 3

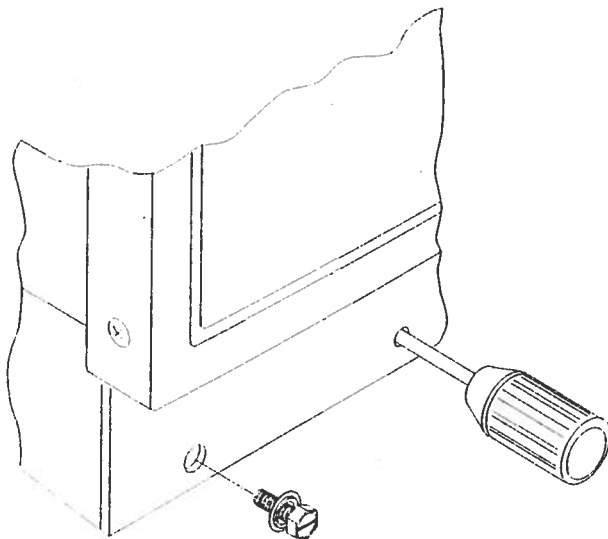
- ⑤ Insert the rails (on top and bottom) to the rail guides of main unit, and push the transceiver unit into the main unit. If the unit is hard to insert because the connection cables are twisted, pull the transceiver unit out and insert it again.
- ⑥ After completing transceiver unit installation, fix it in place with the bolts which fastened the cover plate. (Picture 3)

【 2 】 MAIN UNIT MOUNTING

☉ This equipment should be installed in a place away from direct sunlight, sea spray and heavy vibration.

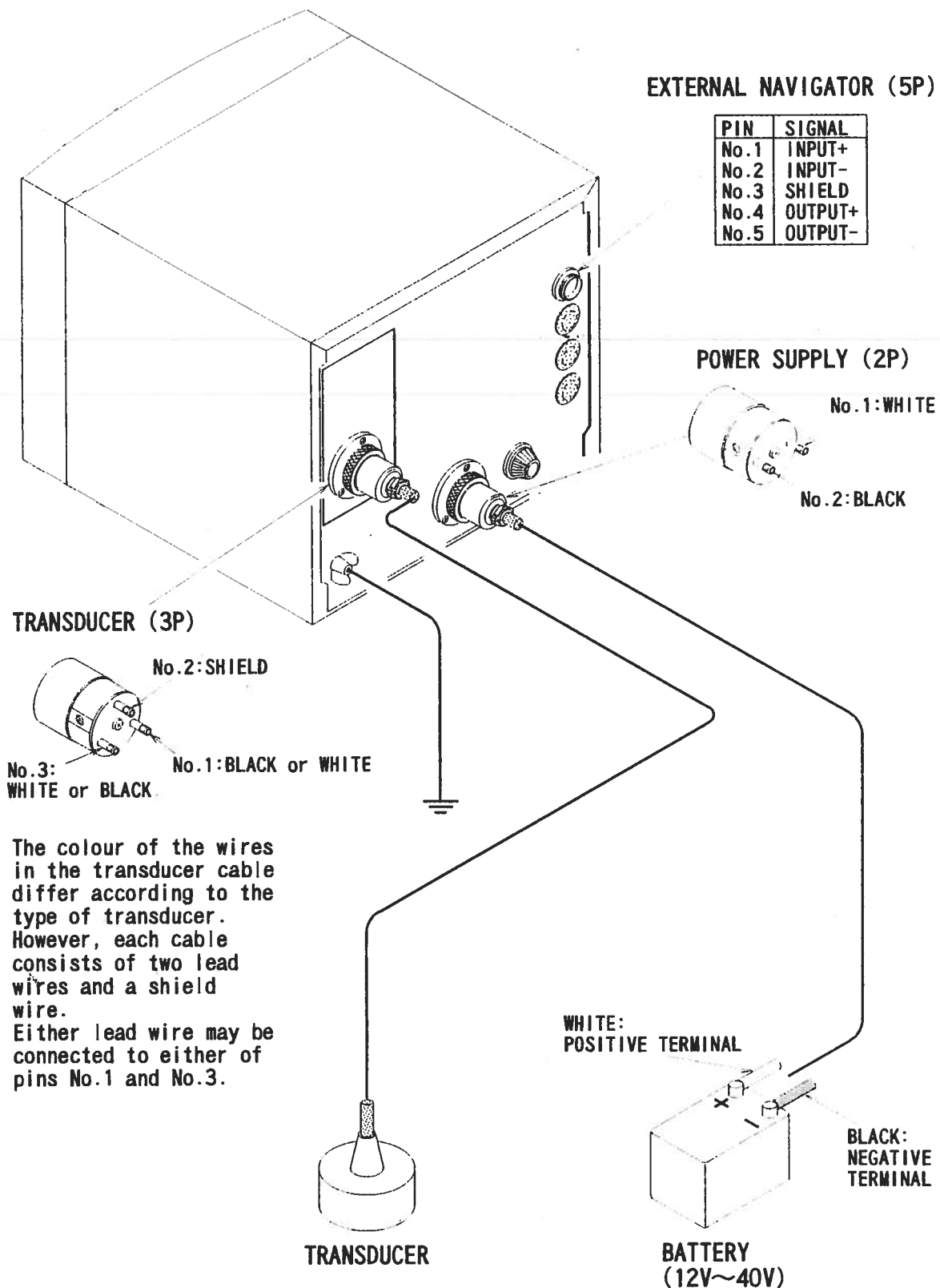


- Fix the mounting bracket in place.
Insert the main unit into the mounting bracket and tighten it with the bolts (36054D).



- When installing the mounting bracket to the main unit, tilt adjustment is available in three steps.
- After locating the tilt adjustment level for easiest viewing, insert a screw driver through the center hole of the bracket to hold the unit in place and tighten the bolts. (See picture left.)

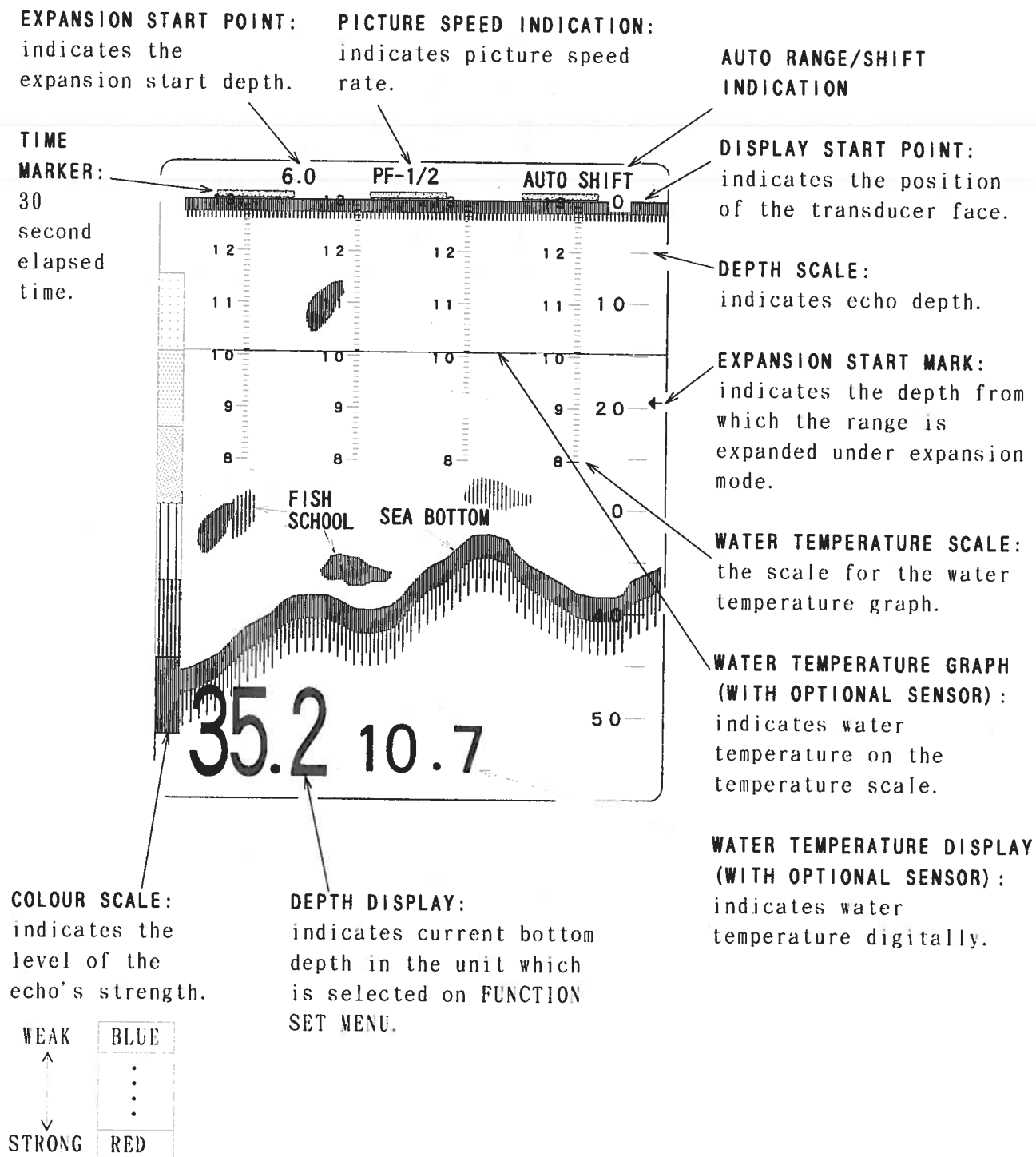
【 3 】 CONNECTION



FUNCTION EXPLANATION

【 1 】 SOUNDER DISPLAY

©This display example is for Normal mode. Bottom expansion mode and Partial expansion mode are different from this display.



[2] CONTROL PANEL

MEMORY WRITE KEY:

to memorize the right half of the screen.

EXPANSION START KEYS:

to select the upper expansion start point for Partial expansion mode.

MARK KEY:

to enter a vertical mark on the display.

THRESHOLD KEY:

to display and erase colors from the color threshold.

MAIN RANGE DIAL:

to select the main range for Normal mode.

FAR GAIN DIAL:

to control the level of sensitivity of the received deep echo signal

NOISE SUPPRESSION DIAL:

to suppress echoes in the case of light interference on the full screen.

MEMORY READ KEY:

to display the memorized data on the left side of the screen.

PHASED RANGE KEYS:

to select the depth that the display starts from at the top of the screen.

PICTURE SPEED KEY:

to select the picture speed rate.

EXPANSION RANGE DIAL:

to select the expansion ranges for Partial and Bottom expansion modes.

MODE SELECTION DIAL:

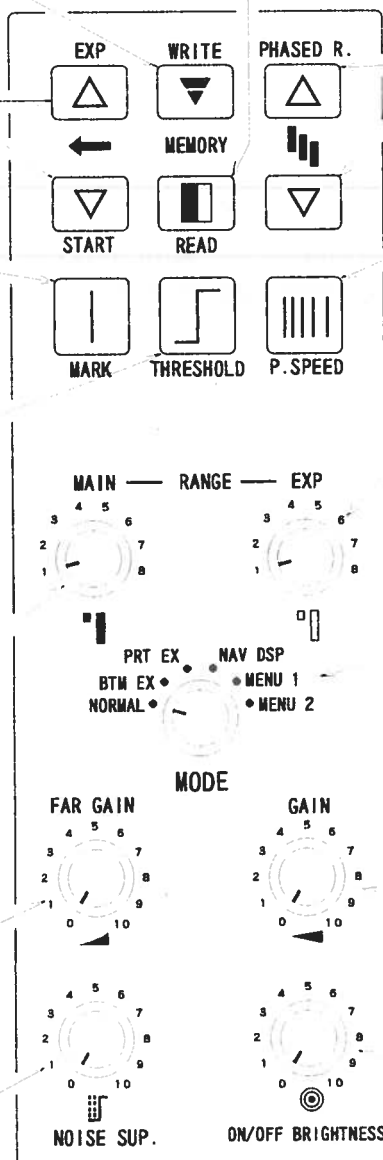
to select the display mode.

GAIN DIAL:

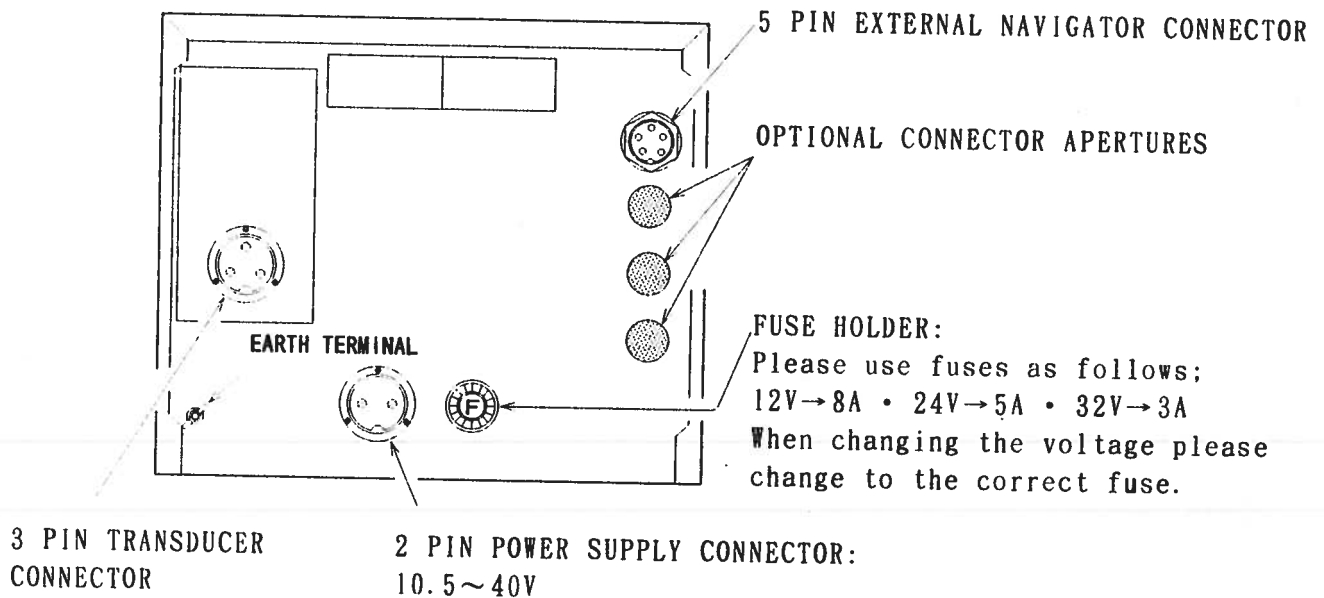
to control the level of sensitivity of the received echo signal.

ON/OFF BRIGHTNESS DIAL:

to turn the power off and on and to select the level of brightness



【 3 】 REAR PANEL CONNECTORS



OPTIONAL CONNECTOR CABLE KIT

NAME	U S E	DETAILS	CONNECTION	
OP-223	DC12V OUTPUT	MAX 12V 200mA	No. 1:12V OUTPUT No. 2:SHIELD	No. 3:GND
OP-204	WATER TEMPERATURE SENSOR	FOR OP-102 TEMP. SENSOR	No. 1:WHITE No. 3:SHIELD	No. 2:SHIELD No. 4:BLACK
OP-226	NMEA OUTPUT	NMEA-0183	No. 1:NC No. 3:SHIELD No. 5:OUTPUT-(GND)	No. 2:NC No. 4:OUTPUT+ No. 6:SHIELD
OP-228	SIGNAL IN/OUT	RECEIVED SIGNAL TRIGGER SIGNAL	No. 1:TRIG IN No. 3:SIG IN No. 5:GND No. 7:NC	No. 2:TRIG OUT No. 4:SIG OUT No. 6:NC No. 8:SHIELD

CAUTION: Do not connect anything to the NC cables.

These cable kits are intended for connection of the ES-1050's internal PCB to the rear panel and for carrying the signal from external equipment's connection point to the ES-1050's PCB. The cable kit options are not intended to act as connections from ES-1050 to external equipment.

INITIAL FUNCTION SETTINGS

【 1 】 FACTORY SETTING

◎The equipment is shipped from the factory with the functions under the following settings.

The user is able to reset these functions to the most convenient settings with the user setting operation.

FUNCTION	FACTORY SETTING	SETTING MENU
DEPTH UNIT	METERS	MENU 2 (FUNCTION SET MENU)
DYNAMIC RANGE	6dB	
TVG ADJUST	3	
GAIN ADJUST	OFF	
NOISE REDUCTION	OFF	
WHITE LINE	OFF	
SCREEN DIVISION	HORIZONTAL	
SCALE POSITION	RIGHT	
ECHO SIGNAL	INTERNAL	
TRIGGER SIGNAL	INTERNAL	
TEMPERATURE DISPLAY	OFF	
TEMPERATURE GRAPH	OFF	
POWER REDUCTION	D	
COLOUR SELECT	A-1	
DRAFT	0.0	
MAIN RANGE DIAL	1(0~25)	CONTROL PANEL
EXPANSION RANGE DIAL	1(0~1)	
PHASED RANGE	0	
AUTO RANGE	OFF	
AUTO SHIFT	OFF	
THRESHOLD	7 COLOURS	
PICTURE SPEED	1/1	
GAIN DIAL	OFF	
FAR GAIN DIAL	OFF	
NOISE SUPPRESSION DIAL	OFF	

【 2 】 RETURN TO FACTORY SETTING

◎To return to factory setting, first turn the on/off brightness dial "off" then turn it back "on" while pressing key. Keep pressing key until the "beep" noise stops. All functions will return to the above settings. (Note that returning to factory settings will over-write "User settings" described in next section.)

【 3 】 USER SETTING

☺ In addition to the factory setting function this model may also be set to functions selected by the user. This function is called User setting.


- The user may easily set the desired function settings, display numerals etc., by operating as explained below.

With this function the user may return to the desired function settings if the unit should become inoperable due to mistaken use of the controls. Please be sure to memorize user settings at the time the unit is first operated.

(1) MEMORIZE USER SETTINGS


- Set all functions and display units to the desired setting.

Once all functions have been changed, turn the on off brightness dial "off".

Then, while pressing  key, turn the power back "on" again. Keep pressing this key until the "beep" noise stops.

After this operation all functions will be memorized under user setting.

(2) RETURN TO USER SETTING

- Turn the on off brightness dial "off", then while pressing  key turn the on off brightness dial back "on" again. Keep pressing this key until the "beep" noise stops.

After this operation, all functions will return to the user setting.

(3) REVISE USER SETTING

- First operate the return to factory setting function as outlined above 【 2 】 .
Reset all functions as required, then memorize the setting using the MEMORIZE USER SETTING procedure as outlined above in 【 3 】 -(1).

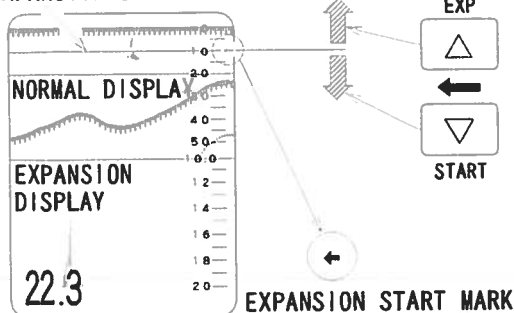
CAUTION

~~~~~  
If the key is released before the "beep" noise stops, the settings will not be memorized.  
~~~~~

KEYBOARD OPERATION

【 1 】 EXPANSION START KEYS

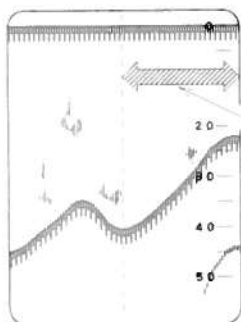
EXPANSION START LINE



- To set the expansion start point for Partial expansion mode.


- The numeral expansion start depth will be displayed on the upper left corner of the screen.

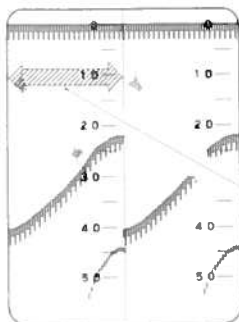
【 2 】 MEMORY WRITE/READ KEYS



Press this key to memorize this half of the screen.





- Each press of  key will memorize the right half of the screen, erasing the previously memorized data.



When this key is pressed the memorized data will be displayed here.



- Pressing  key will display the memorized data on the left half of the screen.

When  key is pressed again the data will be erased from the screen.

CAUTION

The memorized data will be erased when the power supply is turned off.

【 3 】 PHASED RANGE KEYS

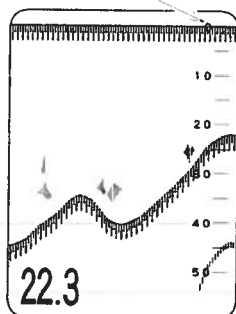
When this key is pressed the display will become shallower.



Changes the depth here.



When this key is pressed the display start depth will become deeper.



Changes this distance.

This distance is selected with the main range dial.

© For the selection of the depth start point at the top of the screen.

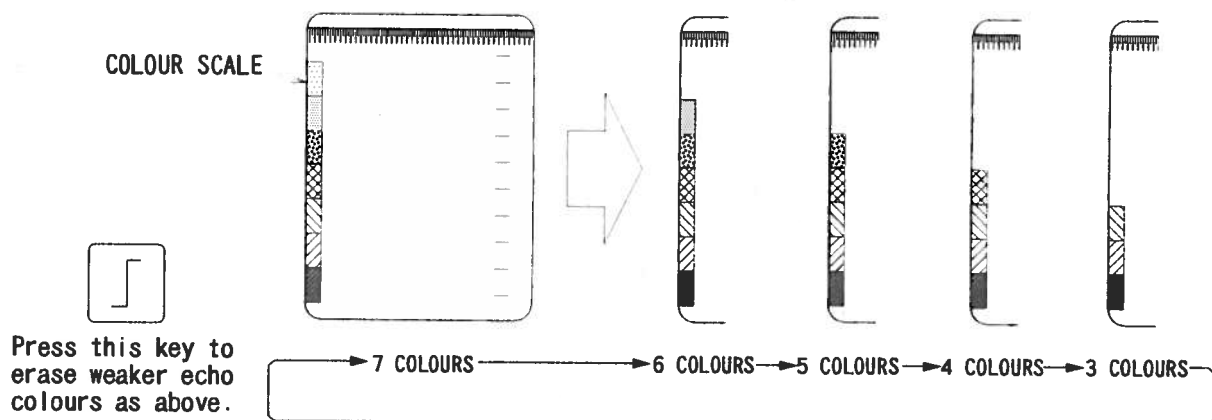
- Phased range is available in 1 unit steps (0 to 999). This function may be used to show the desired area expanded on the screen.

- See Pg 32 for Automatic shift function.

【 4 】 THRESHOLD KEY

© To erase and recall weaker echoes from the colour scale.

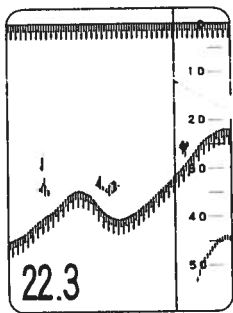
- Unwanted echoes, such as noise and plankton, may be erased for clearer definition of the target echoes.
- Each time this key is pressed the weakest colour will be erased. On the fifth press all colours will be recalled.



WHAT IS "THRESHOLD" ?


The equipment may pick up and display unwanted echoes from small objects in the water. With the threshold function it is possible to eliminate these unwanted echoes.

【 5 】 MARK KEY




Press this key to display
a line at the right hand
edge of the screen.

©To mark a point on the screen.

- Pressing  key will set a yellow vertical line at the right hand edge of the screen.

【 6 】 PICTURE SPEED KEY

©Picture speed rate may be selected from 1/1, 1/2, 1/4, 1/8, 1/12, STOP.

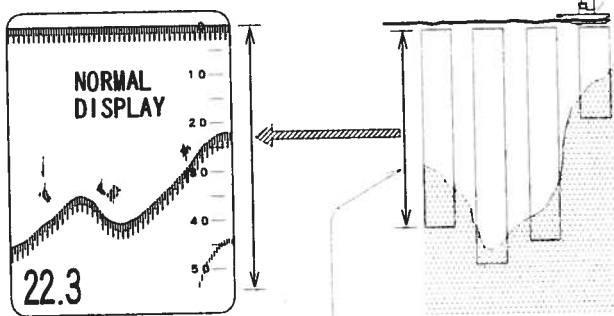
Each press of  key changes the setting.

WHAT IS "PICTURE SPEED" ?

Picture speed rate refers to the speed the picture travels from right to left on the screen. 1/1 refers to 1 vertical line of picture per 1 sound transmission, 1/2 refers to 1 line of picture per 2 sound transmissions etc.
There is no relation to ship speed.

CONTROL DIALS

【 1 】 MAIN RANGE DIAL



Use this dial to set the main range 1 ~ 7.

◎ For selection of the main range.

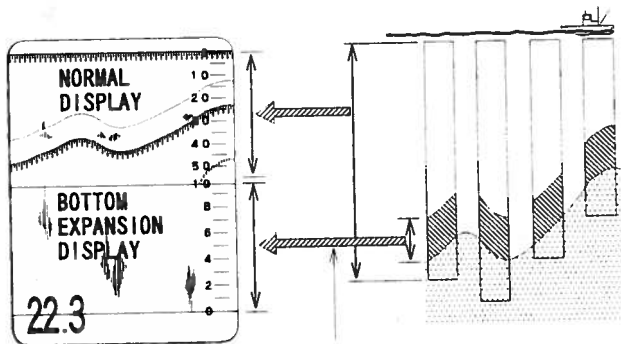
- 7 main ranges may be freely set by the menu 1 display (RANGE SET MENU ...see Pg 18) and then the desired range specified with the main range dial.

• Example, Factory setting ranges:

1:	25 MT•FM•BR	50 FT
2:	50 "	100 "
3:	100 "	150 "
4:	150 "	300 "
5:	200 "	500 "
6:	300 "	1000 "
7:	500 "	2000 "
8:	AUTOMATIC	

(AUTO RANGE....see Pg 31)

【 2 】 EXPANSION RANGE DIAL



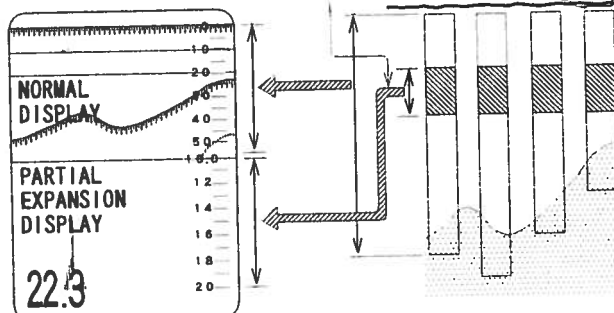
Use this dial to set the partial expansion range.

◎ For selection of the expansion range for Partial and Bottom expansion modes.

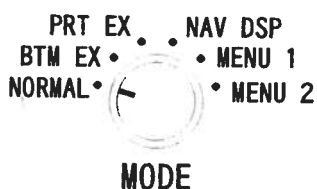
- 8 expansion ranges may be selected with the expansion range dial as follows.

1:	1	MT•FM•BR	5 FT
2:	2.5	"	10 "
3:	5	"	20 "
4:	10	"	50 "
5:	20	"	100 "
6:	50	"	250 "
7:	100	"	500 "
8:	250	"	1000 "

These settings can not be freely changed.



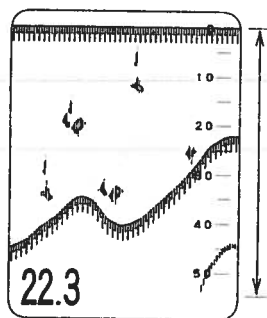
【 3 】 MODE SELECTION DIAL




◎For selection of the display modes:

- 1: NORMAL DISPLAY MODE
- 2: BOTTOM EXPANSION MODE
- 3: PARTIAL EXPANSION MODE
- 4: NAVIGATION DATA DISPLAY MODE
- 5: MENU 1 RANGE SET MENU
- 6: MENU 2 FUNCTION SET MENU

(1) NORMAL MODE



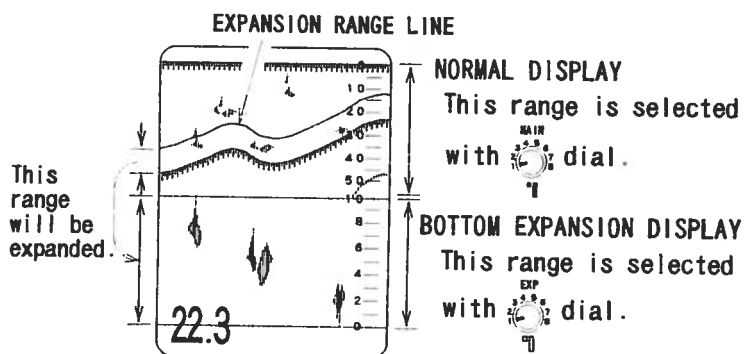
NORMAL DISPLAY

This range is selected with  dial.


◎Displays Normal sonar display mode on the full screen.

(2) BOTTOM EXPANSION MODE


SCREEN DIVISION: HORIZONTAL



NORMAL DISPLAY

This range is selected with  dial.

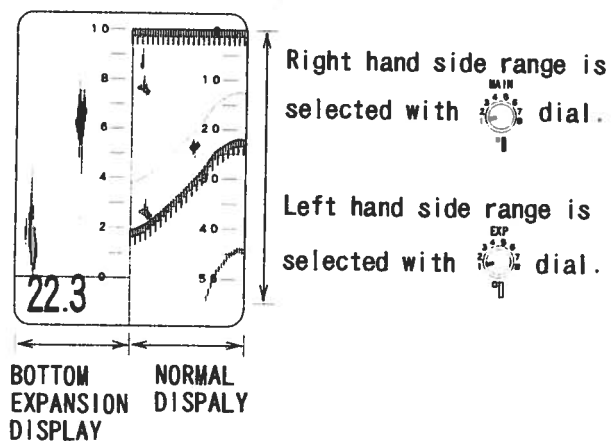
BOTTOM EXPANSION DISPLAY


This range is selected with  dial.


◎Under screen division VERTICAL setting Normal mode is displayed on the right side of the screen. Bottom expansion mode is displayed on the left side.

◎Under screen division HORIZONTAL setting Normal mode is displayed on the upper half of the screen. Bottom expansion mode is displayed on the lower half.

SCREEN DIVISION: VERTICAL



Right hand side range is selected with  dial.

Left hand side range is selected with  dial.

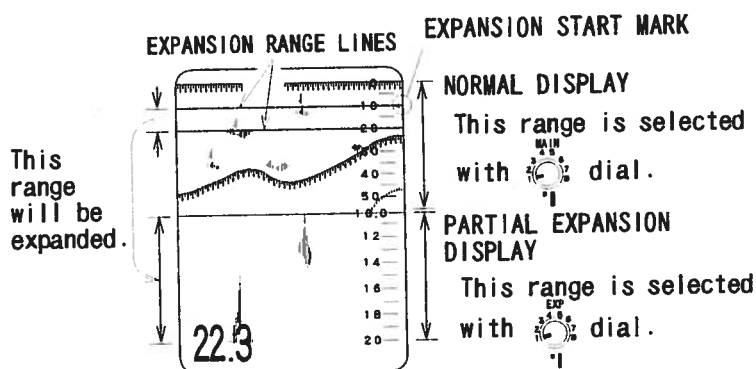
• Screen division may be set on the Menu 2 function setting menu display.

• The expansion range is indicated by a yellow line on the Normal mode.

• The expansion range may be selected with the expansion dial.

(3) PARTIAL EXPANSION MODE

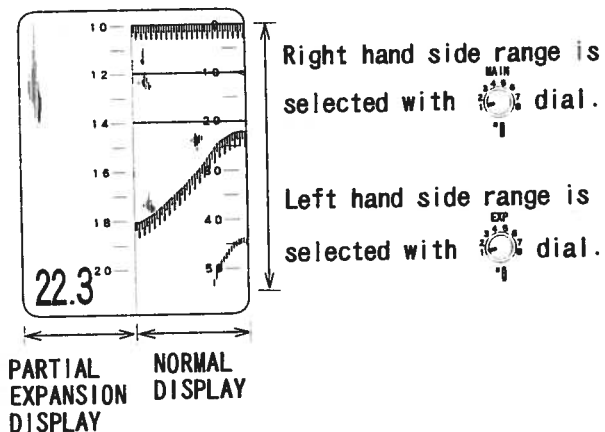
SCREEN DIVISION: VERTICAL



⊙ Under screen division VERTICAL setting Normal mode is displayed on the right side of the screen. Partial expansion mode is displayed on the left side.

⊙ Under screen division HORIZONTAL setting Normal mode is displayed on the upper half of the screen. Partial expansion mode is displayed on the lower half.

SCREEN DIVISION: HORIZONTAL



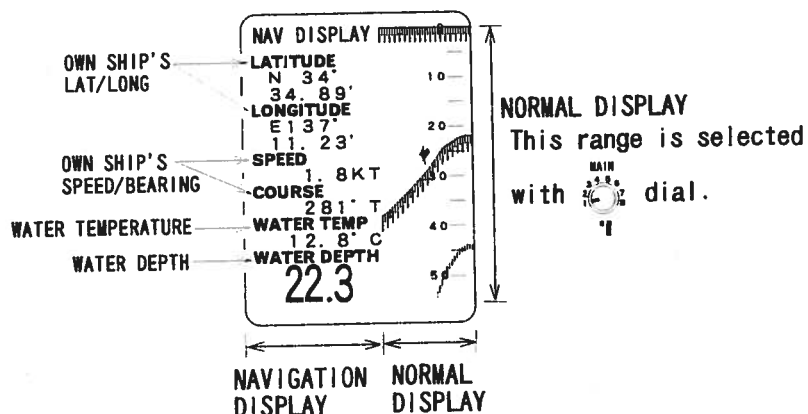
• Screen division may be set on the Menu 2 function setting menu display.

• The expansion range is indicated by two yellow lines on the Normal mode display.

• The upper line shows the expansion start point and may be set with the expansion start keys. (See Pg 12)

• The expansion range may be selected with the expansion range dial.

(4) NAVIGATION(DATA) DISPLAY MODE



⊙ Sounder normal mode is displayed on the right hand side 1/3 of the screen.

Navigation data is displayed on the left hand side 2/3.

CAUTION

Navigation data is only available when ES-1050 is connected to an optional navigation equipment.

Water temperature data is only available when the unit is connected to an optional water temperature sensor.

(5) MENU 1: RANGE SET MENU

☉ To freely set the ranges of the main range dial.

• Example, Factory setting ranges:

[MT•FM•BR]	RANGE	NUMBER
	1	25
	2	50
	3	100
	4	150
	5	200
	6	300
	7	500

[FT]	RANGE	NUMBER
	1	50
	2	100
	3	150
	4	300
	5	500
	6	1000
	7	2000



• Turn the mode selection dial to "MENU 1" to display the menu below.

• Use and keys to move the yellow indicator to the range to be set.

• Use and keys to set the desired range.

To make the range larger: key. To make the range smaller: key.

• Continuous pressing of and keys will change the range continuously.

[MT•FM•BR]

RANGE SET MENU	
RANGE	NUMBER
1	25
2	50
3	100
4	150
5	200
6	300
7	500
8	AUTOMATIC

Maximum range: 2000

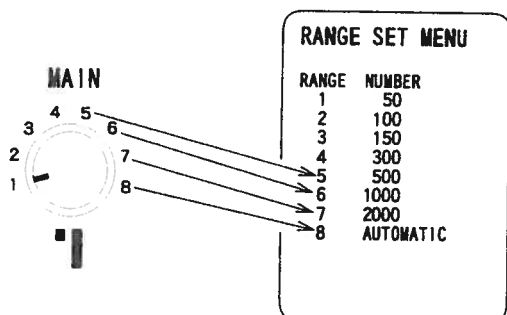
[FT]

RANGE SET MENU	
RANGE	NUMBER
1	50
2	100
3	150
4	300
5	500
6	1000
7	2000
8	AUTOMATIC

Maximum range: 6000








• When the display is changed back to sounder display mode, the range may be selected with the main range dial.







• The numbers on the range set menu correspond to the numbers on the main range dial.

(6) MENU 2: FUNCTION SET MENU

- Before first using the equipment, set each function on the function set menu.
- After setting each function, memorize the setting using the MEMORIZE USER SETTING procedure 【3】 -1 in Pg 11.
- Turn the mode selection dial  to "MENU 2" to display the menu below.
- Use  and  keys to move the yellow indicator to the function to be set.
- Use  and  keys to select the function setting.

FUNCTION SET MENU	
DEPTH UNIT	MT
DYNAMIC RANGE	6dB
TVG ADJUST	3
GAIN ADJUST	OFF
NOISE REDUCTION	OFF
WHITE LINE	OFF
SCREEN DIVISION	HORIZONTAL
SCALE POSITION	RIGHT
ECHO SIGNAL	INTERNAL
TRIGGER SIGNAL	INTERNAL
TEMP. DISPLAY	OFF
TEMP. GRAPH	OFF
POWER REDUCTION	D
COLOUR SELECT	A-1
DRAFT	0.0





Select the function settings with  and  keys.

Move the yellow indicator to the function to be set with  and  keys.

【 4 】 MENU MODES (1 & 2)

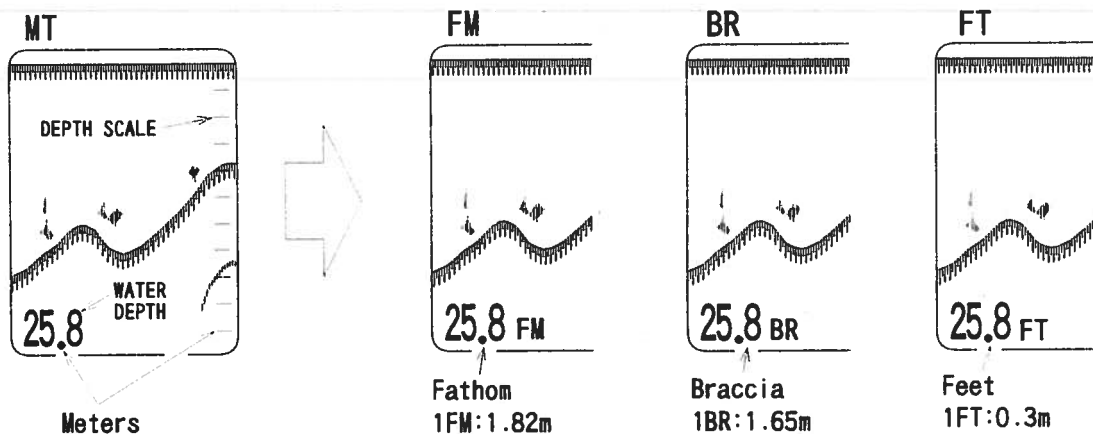
(1) DEPTH UNIT

©The unit of depth measurement may be selected from MT(meters), FM(fathoms), BR(braccia), and FT(feet).

- Use  and  keys to move the yellow indicator to DEPTH UNIT.
- Use  and  keys to select the depth unit.





DEPTH UNIT

MT



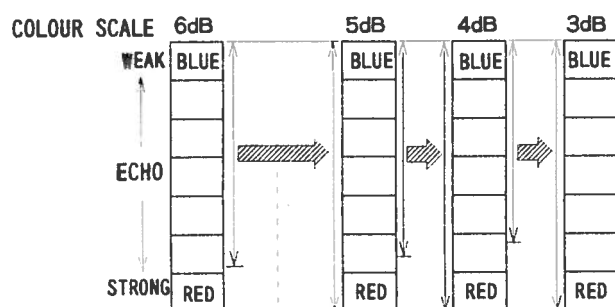
(2) DYNAMIC RANGE

©By shifting the dynamic range from 6dB, 5dB, 4dB, 3dB, the operator is able to discriminate more precisely the size, depth and density of the fish school.

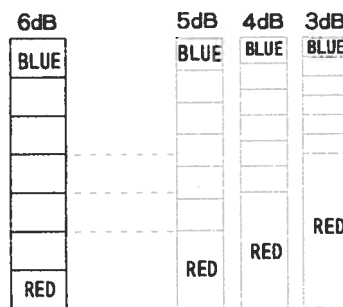
- Use  and  keys to move the yellow indicator to DYNAMIC RANGE.
- Use  and  keys to select the dynamic range level.
- Experimenting with this function will teach the user the best setting for various fishing operations.

DYNAMIC RANGE

6dB







When the dynamic range is changed from 6dB to 5dB this range will be displayed in 7 colours.



This diagram shows the comparative signal threshold levels for the dynamic ranges.

(3) TVG ADJUST

- ◎ The TVG function may be adjusted according to the strength of the target echo.
 - Because the sound wave loses power the deeper it goes, echoes from deep fish schools will be weaker than echoes from schools of the same size which are at a shallower depth.
 - As a general rule, without TVG, shallower targets show a stronger echo signal, deeper targets show a weaker echo signal.
- The TVG function allows adjustment of the echo signal to show deep echoes at a more accurate size and density.
- Use  and  keys to move the yellow indicator to TVG ADJUST.
- Use  and  keys to select the TVG adjust level.

TVG ADJUST

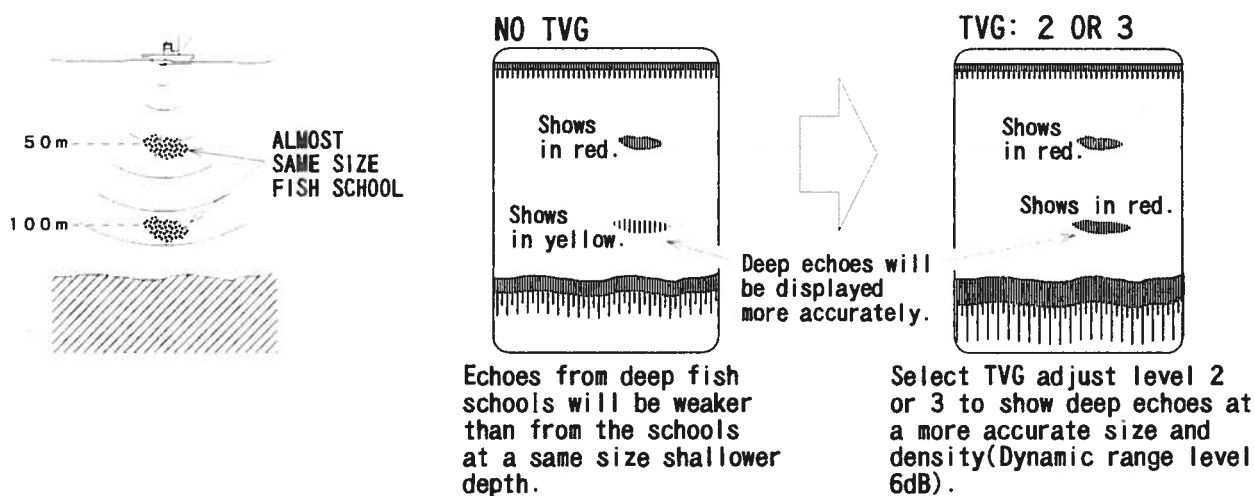
3

※ TVG function will operate according to the following settings.

STANDARD ADJUSTMENT (WHEN DYNAMIC RANGE IS SET AT 6dB)

1. Lowest level of TVG: when the echo is at twice the depth sensitivity will be increased a half a step on the threshold colour scale.
2. When the target is sea bottom or large fish schools: when the echo is at twice the depth sensitivity will be increased one full step on the threshold colour scale.
3. When the target is small fish schools: when the echo is at twice the depth sensitivity will be increased one and a half (1.5) steps on the threshold colour scale. This setting is half way in sensitivity between settings 2 and 4. The equipment is shipped from the factory with TVG under this setting.
4. When the target is single fish: when the echo is at twice the depth sensitivity will be increased two full steps on the threshold colour scale. TVG effect is increased abruptly as depth increases.

IN SUMMARY: At a deep range, when sensitivity is low select setting 4 to increase sensitivity. When sensitivity is high select setting 1 to decrease sensitivity.







CAUTION

The TVG function setting influences the far gain adjust and gain adjust functions.

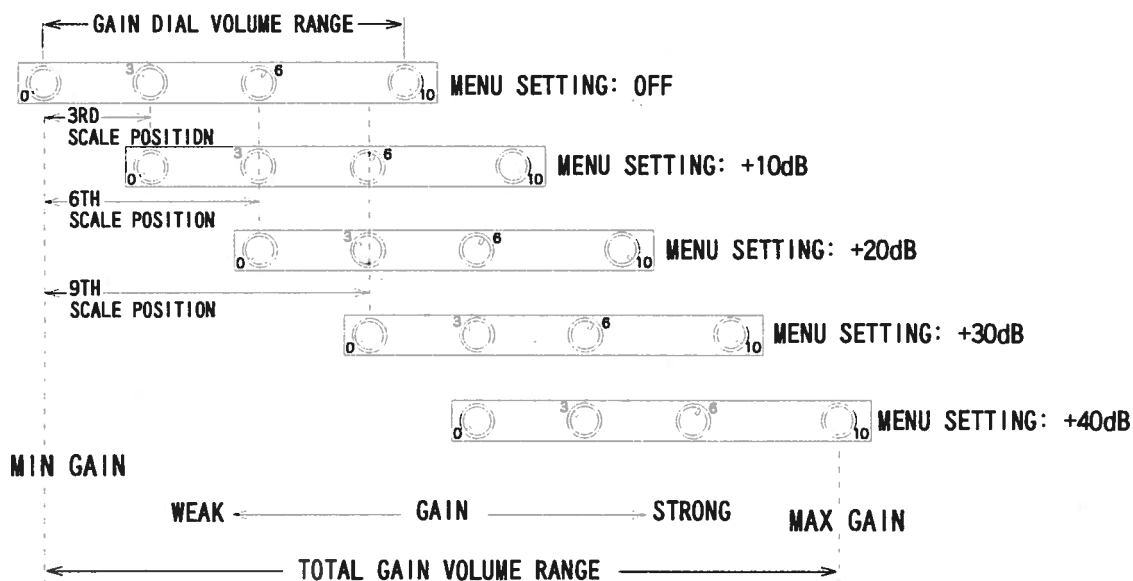
(4) GAIN ADJUST

◎ To finely adjust sensitivity in order to display a clearer picture of the full range, from transducer face to sea bottom.

- Use  and  keys to move the yellow indicator to GAIN ADJUST.
- Use  and  keys to select the gain adjust level.

GAIN ADJUST OFF

- The relationship between the control panel gain dial and the menu gain adjust setting is explained below.







- When the menu gain adjust setting is changed from OFF to +10dB, the gain dial volume increases 3 points on the scale.
- When the menu gain adjust setting is OFF and the front panel dial is on 3, it has the same result as when the menu gain adjust setting is on +10dB and the gain dial is on 0.

(5) NOISE REDUCTION

◎ To reduce noise interference from nearby fishing vessels.

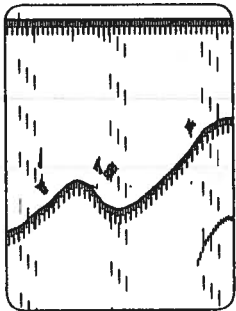
- The noise reduction level may be selected from OFF, LOW, MID, HIGH.

• Use  and  keys to move the yellow indicator to NOISE REDUCTION.

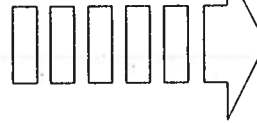
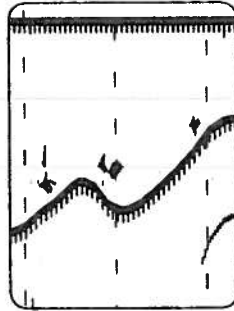
• Use  and  keys to select the noise reduction level.

NOISE REDUCTION OFF

NOISE REDUCTION: OFF

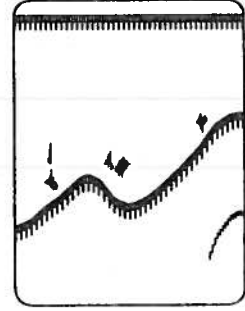


NOISE REDUCTION: LOW



: MID

NOISE REDUCTION: HIGH



WHAT IS "NOISE" ?

Noise appears like rain on the screen, as shown above, when the sounder receives sound waves from a neighboring ship's equipment.



CAUTION



Some type of noise interference may not be reduced.

(6) WHITE LINE

◎ To display the sea bottom highlighted against the display background making it easier to see fish on, or just above, the bottom.

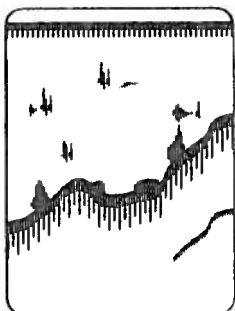
- The white line level may be selected from OFF, LOW, MID1, MID2, HIGH.

• Use  and  keys to move the yellow indicator to WHITE LINE.

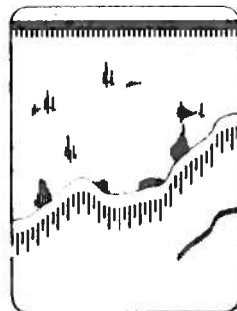
• Use  and  keys to select the white line level.

WHITE LINE OFF

WHITE LINE: OFF



WHITE LINE: LOW







: MID1 : MID 2

WHITE LINE: HIGH



(7) SCREEN DIVISION

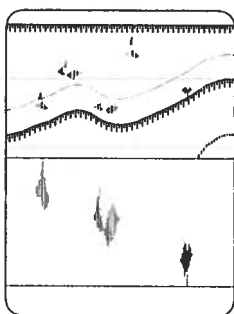
⊙ To select the screen division either VERTICAL or HORIZONTAL.

- Use  and  keys to move the yellow indicator to SCREEN DIVISION.
- Use  and  keys to select the screen division.

SCREEN DIVISION

HORIZONTAL

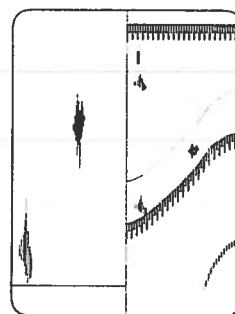
HORIZONTAL



NORMAL
DISPLAY

EXPANSION
DISPLAY

VERTICAL







EXPANSION
DISPLAY

NORMAL
DISPLAY

(8) SCALE POSITION

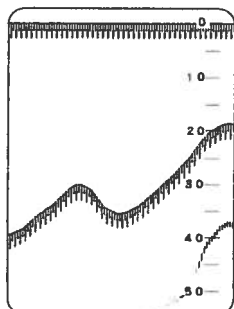
⊙ To select the depth scale position either RIGHT or CENTER.

- Use  and  keys to move the yellow indicator to SCALE POSITION.
- Use  and  keys to select the scale position.

SCALE POSITION

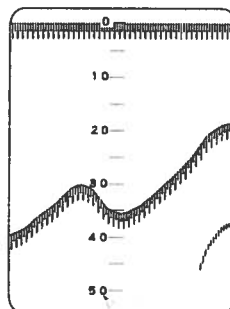
RIGHT

RIGHT



Displays on the right
side of the screen.





CENTER



Displays on the center
of the screen.

(9) ECHO SIGNAL/TRIGGER SIGNAL

© To select the echo signal/trigger signal either INTERNAL or EXTERNAL.

- Use  and  keys to move the yellow indicator to ECHO SIGNAL/ TRIGGER SIGNAL.
- Use  and  keys to select the echo signal/trigger signal.





ECHO SIGNAL	INTERNAL
TRIGGER SIGNAL	INTERNAL

INTERNAL: Select this when using only the ES-1050 main unit.

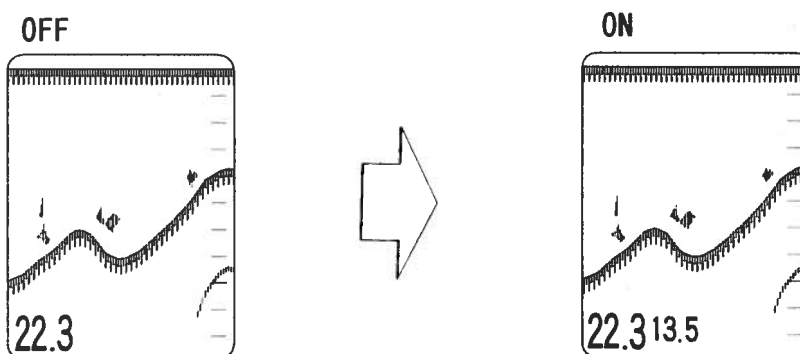
EXTERNAL: Select this when using an additional unit.

(10) TEMP. DISPLAY

© To select water temperature display either ON(°C=Celsius) or OFF.

- Use  and  keys to move the yellow indicator to TEMP. DISPLAY.
- Use  and  keys to select the temperature display ON or OFF.

TEMP. DISPLAY	OFF
---------------	-----







CAUTION

Temperature display is available only when the unit is connected to an optional temperature sensor.

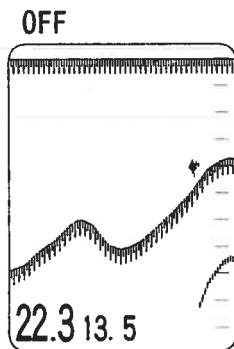
(11) TEMP. GRAPH

☉ To select water temperature graph display either ON or OFF.

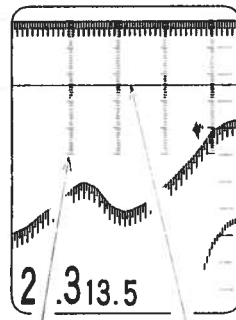
- Use  and  keys to move the yellow indicator to TEMP. GRAPH.
- Use  and  keys to select the temperature graph ON or OFF.

TEMP. GRAPH

OFF



ON



TEMPERATURE
SCALE

TEMPERATURE
GRAPH

CAUTION


Temperature graph display is available only when the unit is connected to an optional temperature sensor.

Specify temperature graph OFF when the unit is not connected to an optional temperature sensor.

(12) POWER REDUCTION

☉ To avoid interference to other echo sounders.

- Transmission power may be reduced in 4 steps. D(maximum), C, B, A(minimum).

- Use  and  keys to move the yellow indicator to POWER REDUCTION.

- Use  and  keys to select the power reduction level.

POWER REDUCTION

D





(13) COLOUR SELECT

© The following settings are available on colour select function.

A-1 • A-2 } Pre-set colour options

B-1 • B-2






C-1 • C-2 } Colours may be freely set. The factory adjusted colour tone of C-1 is the same as A-1, and C-2 is the same as A-2.

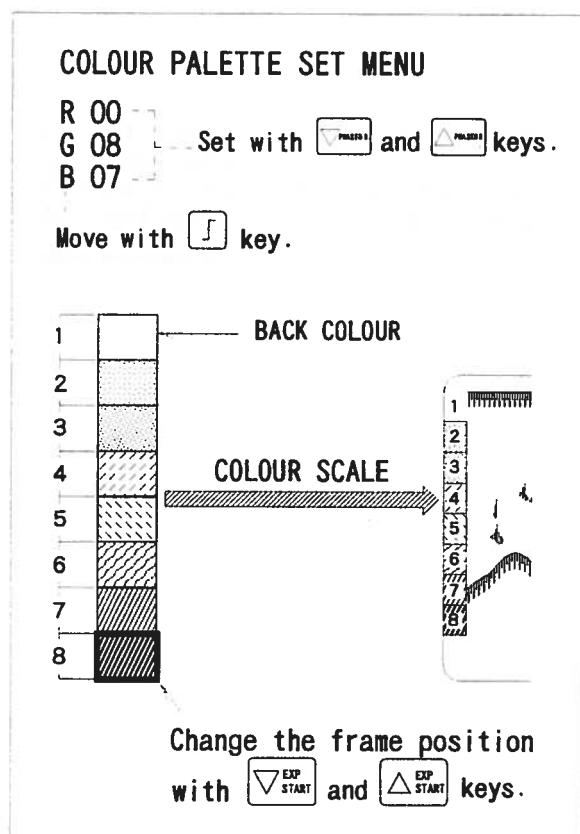
- Use  and  keys to move the yellow indicator to COLOUR SELECT.
- Use  and  keys to select the colour setting.






COLOUR SELECT

A-1

USER DEFINED COLOUR SCALES

© To freely set the colours for C-1 and C-2, first use  and  keys to move the yellow indicator to COLOUR SELECT and specify C-1 or C-2 with  and  keys, then press  key to display the menu below.



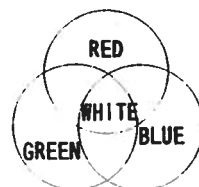
- Use  and  keys to move the frame to the level to be set. Each numeral colour intensity (R:red, G:green, B:blue) will be displayed on the menu.
- Use  key to move the yellow indicator to the colour to be changed and select the colour intensity (1:weakest~15:strongest) with  and  keys.
- Once the colour palette has been set, return to the sounder display by using the mode dial. The colours selected will be displayed on the screen. The colours set under C-1 and C-2 may be returned to when needed.

WHAT IS "COLOUR PALETTE" ?

There are three basic colours (red, green and blue).

Each colour has 15 intensity levels.





By mixing the different colours and intensity levels the desired colour tones may be created for the display.



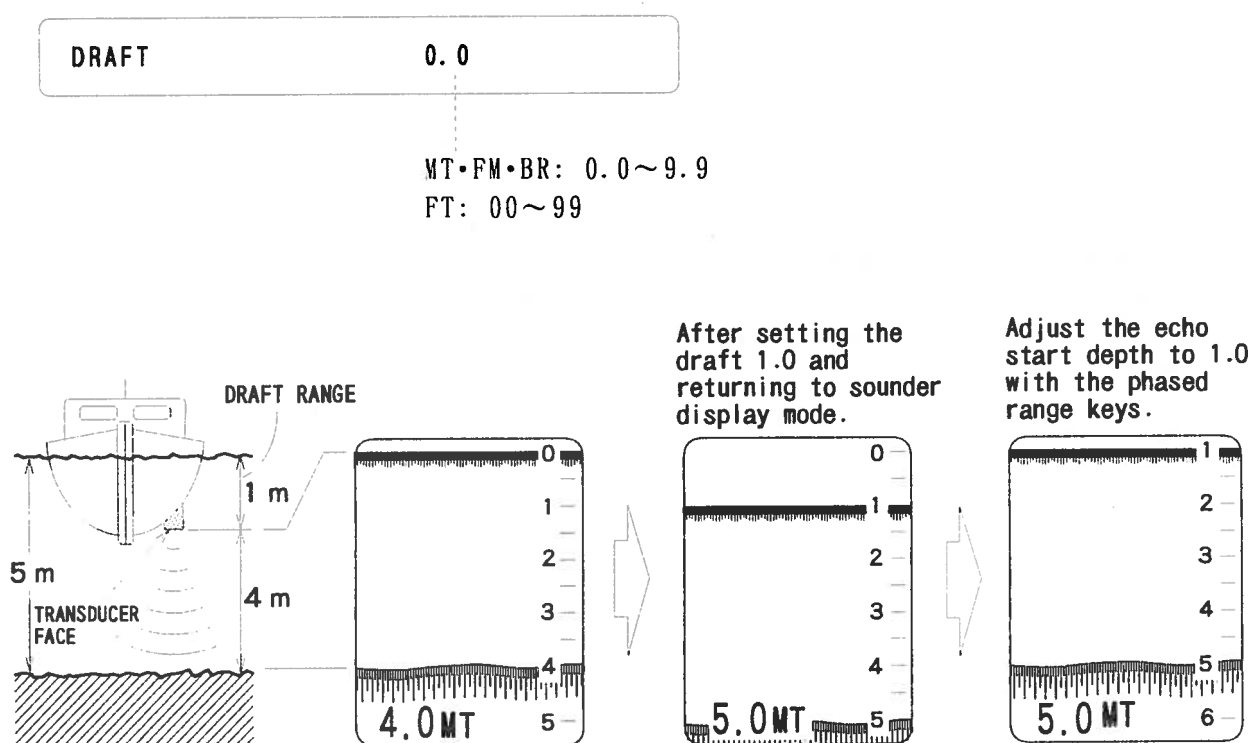
(14) DRAFT

© Because the echo sounder measures the depth from the transducer face down, the draft (the range from the sea surface to the transducer face) is not measured.



- For example, if the transducer is installed 1 meter below the sea surface (at hull bottom) and the true depth of the sea bottom is 5 meters then, before draft adjustment, the depth will be displayed as 4 meters (giving a 1 meter error). See diagram.

- Use  and  keys to move the yellow indicator to DRAFT.
- Use  and  keys to select the draft range.

The draft range unit corresponds to the depth unit on the function set menu.



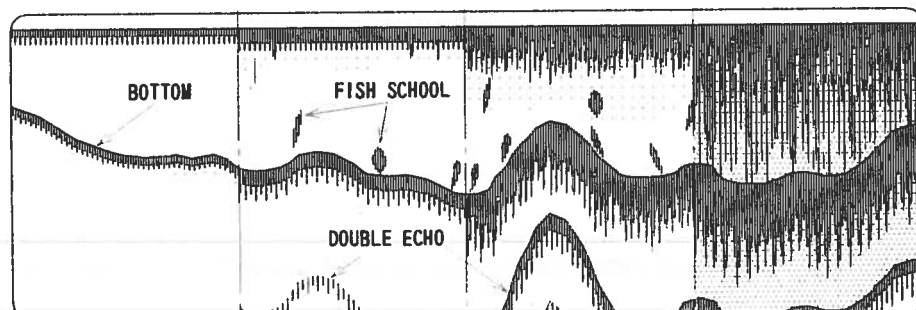
© After setting the desired draft range return to sounder display mode and use

-  and  keys to adjust the echo start depth as indicated.

【 5 】 GAIN DIAL

◎ To adjust the level of sensitivity of the received echo signal.

- Turning the dial clockwise increases the gain level. keep turning the dial until the sea bottom is shown in red.



The gain level is too low.

This picture shows the correct gain level.

This picture is at the correct gain level but the water is full of unwanted echoes(dirt).

The level of gain is too high.

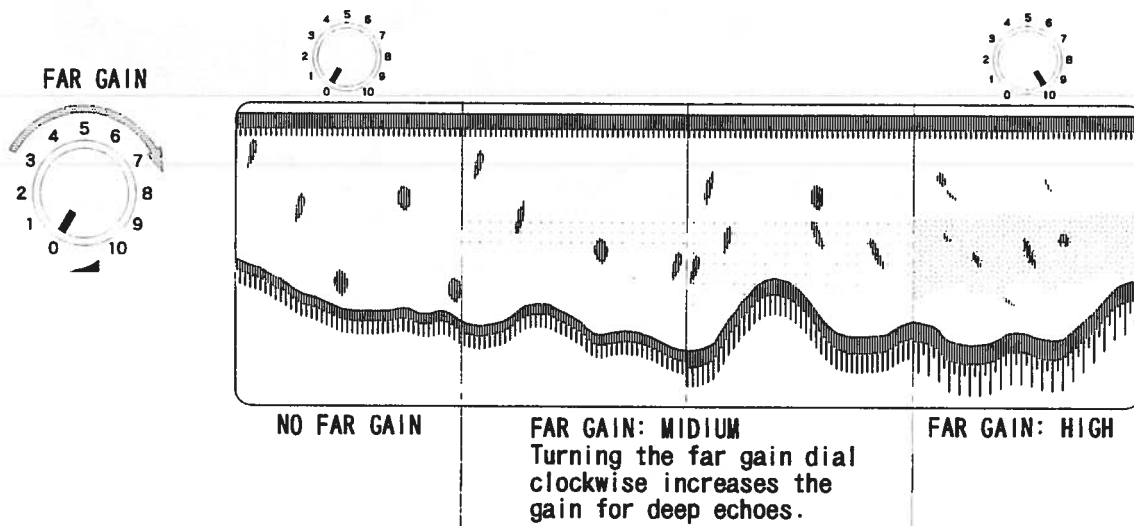
- The strongest echoes are displayed in red and as the received echoes get weaker they are indicated as follows; red→orange→yellow→green→light green→blue→light blue (when colour scale A-1 or A-2 is selected).
- When the target is the sea bottom the gain level setting can be low because the echo from the sea bottom is very strong. However, when the target is fish the level of gain must be increased to pick up the weaker echo.
- Increasing the gain too much will display unwanted echoes from bubbles and plankton etc.
- If the sea bottom echo is weak due to seaweed, mud etc. adjust the gain level to pick up the weaker echo.

CAUTION

Combining the use of the gain control dial and the GAIN ADJUST function on the menu mode gives variable gain ranges. (See Pg 22)

【 6 】 FAR GAIN DIAL

- ⊙ To control the level of the sensitivity of the received deep echo signal.
- Turning the dial clockwise does not increase the gain level close to the transducer but increases the gain level as the depth increases.
- The sensitivity achieved using the far gain dial influences the sensitivity achieved using the gain dial and TVG ADJUST function on the menu mode. See Pg 21 and 29.



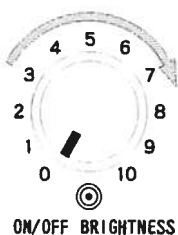
WHAT IS "FAR GAIN FUNCTION" ?

The power of the sound wave is absorbed at a certain rate when travelling through the water.

The higher the frequency, the higher the rate of absorption. For example after travelling 1 kilometer the power of a 50KHz sound wave will decrease to 1/8 of it's original strength. The power of a 200KHz sound wave will decrease to 1/300 of it's original strength.

Use the far gain function to counteract the absorption effect by increasing the received echo signal of deep echoes.

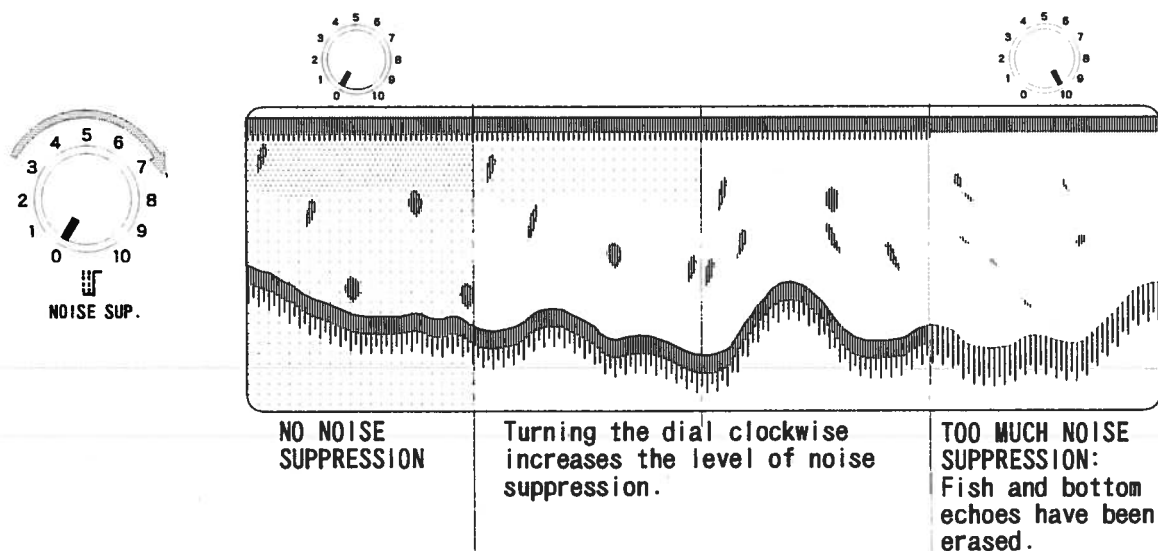
【 7 】 ON/OFF BRIGHTNESS DIAL



- Turn the power on by turning the dial clockwise.
- Further turning in a clockwise direction increases screen brightness.

【 8 】 NOISE SUPPRESSION DIAL

©To suppress mild interference covering the whole screen.

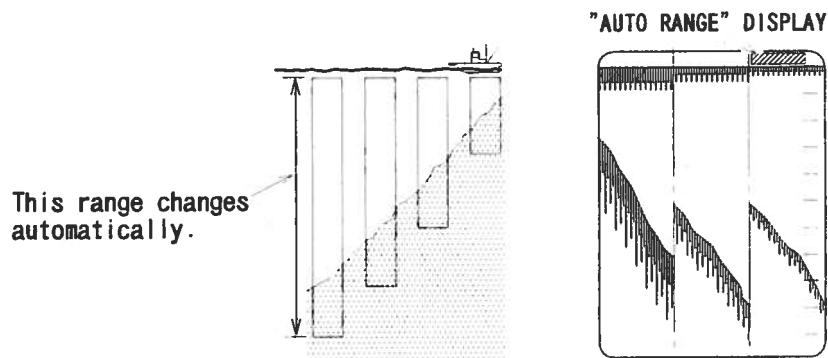


AUTO RANGE/AUTO SHIFT FUNCTION

【 1 】 AUTO RANGE FUNCTION





©The main range will change automatically to always show the full depth from transducer face to sea bottom regardless of changes in depth.

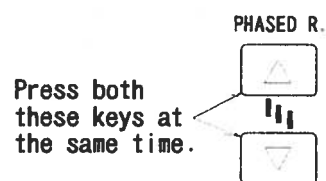
- Select 8 on the main range dial to start the auto range function.
- When this function is activated, "AUTO RANGE" will be displayed in upper right corner of the screen.



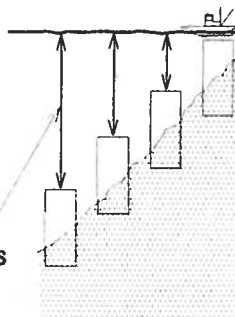
【 2 】 AUTO SHIFT FUNCTION

◎ The phased range will change automatically to always track the bottom in the specified range.

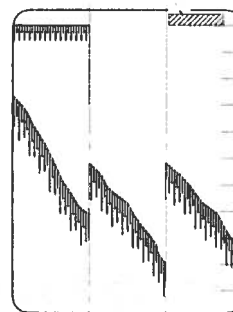
- Press both  and  keys at the same time to start the auto shift function.
- When this function is activated, "AUTO SHIT" will be displayed in upper right corner of the screen.
- Pressing either one of  and  keys cancels this function.



This range changes automatically.



"AUTO SHIT" DISPLAY



CAUTION

- 1: For Auto range and Auto shift functions to work successfully, the sea bottom echo must be in red or orange. (The two strongest scale colours.)
- 2: Even when the sea bottom echo is in red or orange, if there is interference due to bubbles etc. the function may not be able to track the bottom. In this case, if the bottom is not located after 16 transmissions, the depth scale will return to 0 and start searching again. If the function is unable to locate the bottom the scale will continue to fluctuate.

SPECIFICATION

1: PHASED RANGE	May be set 0~999 MT, FM, BR. 0~2999 FT.
2: MAIN RANGE	May be freely set 1~2000 MT, FM, BR. 1~6000 FT. Factory setting: 25•50•100•150•200•300•500 MT, FM, BR. 50•100•150•300•500•1000•2000 FT.
3: BOTTOM EXPANSION PARTIAL EXPANSION	0~1•2.5•5•10•20•50•100•250 MT, FM, BR. 0~5•10•20•50•100•250•500•1000 FT.
4: FREQUENCY	28, 50, 38 or 200KHz, single frequency.
5: DISPLAY MODES	① Normal sounder ② Bottom expansion Normal mode dual display ③ Partial expansion Normal mode dual display ④ Navigation mode Sounder dual display ⑤ Menu 1(RANGE SET MENU) ⑥ MENU 2(FUNCTION SET MENU)
6: DISPLAY DATA	① Depth scale ② Depth ③ *Water temp. scale ④ *Water temp. ⑤ *Lat/Lon ⑥ *Ship's speed ⑦ *Bearing
7: FUNCTION SET DISPLAY	Auto shift•Auto range
8: ADDITIONAL DISPLAY	30 sec. time marker•Color scale•*Temperature graph
9: ADDITIONAL FUNCTION	Threshold•Far gain adjust•Gain adjust•TVG adjust• Clutter reduction•Noise suppression•White line• Dynamic range•Colour palette•Colour tone select(6 types) Free range•Scale position select(2 types)•Draft adjust• Screen memory•Auto range•Auto shift•Power reduction• Picture speed(6 levels)•Auto degaussing•Keyboard backup
10: INPUT DATA	*External sounder•*Temperature sensor•*SUZUKI GPS• Navigation data NMEA-0183
11: OUTPUT DATA	*Trigger and detected echo signal• Depth NMEA-0183
12: SCREEN	10 inch high resolution CRT(400×256 pixels)
13: POWER REQUIREMENT	Input voltage DC10.5~40V Power consumption 45W
14: OPTIONAL EQUIPMENT	Water temperature sensor•SUZUKI GPS

NOTE, the function with an asterisk * requires the optional equipment.

