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For the correct operation and the maximum operational-effect available from "ES-1040", please read this manual before install/operate the equipment.
PRECAUTIONS

MAGNETICS!
* As the magnet causes colour-fading on the screen, do not install this equipment near the magnetized items (such as speaker/transformer/etc.). Also, keep away magnetic-compass/tape/etc. from this equipment.

HIGH-VOLTAGE!
* When opening the case, be careful about the high-voltage components inside the equipment.

HIGH-TEMPERATURE!
* Refrain from the operation of the equipment under the direct sun or near-by the heater.

MAINTENANCE!
* In order to keep the performance of the transducer, please mind to keep the transducer-face clean and remove barnacles/oysters/etc. from the transducer-face at the time of dry-docking. Also, do not paint on the transducer-face.

* Please wipe and clean the display-unit with a soft-cloth (but, it does not stand use of thinner/benzine). Also, for the protection from sea-breeze and for a longer life of the display-unit, put the protective-cover on it when it is not in use.
**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>(1) PHASED-RANGE DEPTH</th>
<th>0～999 meter, fathom, braccia, feet.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2) MAIN-RANGE</td>
<td>0～5/10/15/20/30/40/50/60/80/100/150/200/300/500/1000/2000/3000/6000 feet.</td>
</tr>
<tr>
<td></td>
<td>0～15/20/30/40/50/60/80/100/150/200/300/500/1000/2000/3000/6000 feet.</td>
</tr>
<tr>
<td>(3) PARTIAL-EXPANSION</td>
<td>Available in the combination of the above (1)&amp;(2)</td>
</tr>
<tr>
<td>(4) EXPANSION-RANGE IN THE COMBINATIONAL MODE</td>
<td>0～1/2.5/5/10/20/50/100/250/500m or fathom, braccia.</td>
</tr>
<tr>
<td></td>
<td>0～5/10/20/50/100/250/500/1000/2000 feet.</td>
</tr>
<tr>
<td>(5) FREQUENCY</td>
<td>28/38/50/200KHz.</td>
</tr>
<tr>
<td>(6) DISPLAY MODE</td>
<td>Normal, Partial-expansion, Combination of Normal and Partial-expansion, Combination of Normal and Bottom-expansion.</td>
</tr>
<tr>
<td>(7) DIGITAL DISPLAYS</td>
<td>Depth-scale, Water-depth, Expansion start depth, Water-temperature (Available with optional sensor).</td>
</tr>
<tr>
<td>(9) OTHER DISPLAYS</td>
<td>Time-mark (every 30 seconds), Colour-scale and Expansion-range line(s).</td>
</tr>
<tr>
<td>(10) OTHER FUNCTIONS</td>
<td>Dynamic-range selection, TVG, Threshold, Colour-tone selection (4 steps), Demagnetization, Power-reduction, Noise-reduction, Automatic bottom-track, Automatic range-shift, Temporal-memory, Picture-speed (stop &amp; 6 speeds), White-line, Draft-adjustment, Depth-scale display (Center or right), Keyboard backlighting and Key-entry memory at power-off.</td>
</tr>
<tr>
<td>(11) INPUT</td>
<td>External echo-sounder/temperature-sensor.</td>
</tr>
<tr>
<td>(12) OUTPUT</td>
<td>Detected video-signals and trigger.</td>
</tr>
<tr>
<td>(13) CRT</td>
<td>10&quot; Colour-CRT</td>
</tr>
<tr>
<td>(14) POWER SOURCE</td>
<td>DC10.5～40V/40W</td>
</tr>
<tr>
<td>(15) DIMENSIONS</td>
<td>319mm(W) × 330mm(H) × 386mm(D) (With Mounting-bracket)</td>
</tr>
<tr>
<td>(16) WEIGHT</td>
<td>Approx. 13kg. (Incl. Mounting-bracket)</td>
</tr>
</tbody>
</table>

※ Specifications are subject to change without notice.
### Dimensions

**Front-view**

- Width: 180 mm
- Height: 319 mm
- Depth: 360 mm

**Side-view**

- Height: 330 mm
- Width: 386 mm
- Depth: 151 mm

### Composition

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITY</th>
<th>DESCRIPTION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display</td>
<td>1</td>
<td>319×270×335 mm</td>
<td></td>
</tr>
<tr>
<td>Display-mount</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bolts</td>
<td>1 set</td>
<td>300×540 (2 pairs)</td>
<td>For display-mount</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8×80 (4 pairs)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rubber-plate (4 pcs)</td>
<td></td>
</tr>
<tr>
<td>Power cable</td>
<td>1</td>
<td>2 m-long (with 2P metal-connector)</td>
<td></td>
</tr>
<tr>
<td>Fuse</td>
<td>3 each</td>
<td>10A and 6A</td>
<td>For transducer</td>
</tr>
<tr>
<td>3P metal-connector</td>
<td>1</td>
<td></td>
<td>For speed-sensor</td>
</tr>
<tr>
<td>2P metal-connector</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8P metal-connector</td>
<td>1</td>
<td></td>
<td>For Input-Output</td>
</tr>
<tr>
<td>Protective-cover</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation manual</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

※ Transducer-unit of a specified type shall be included.
1. Mount installation

For the installation of display-unit, select mounting-position of being free from sun-ray, water-spray and vibration.

After fixing the mounting-bracket, insert the display-unit to the bracket then fix with the bolt (30054D) as shown hereunder.
3. Inter-unit connection

- External INPUT/OUTPUT (8P metal-connector) terminal.
  - No8
  - No5
  - No4
  - No3
  - No2
  - No1

- Water-temperature sensor (4P metal-connector) terminal.
  - No3 NC
  - No2 SHIELD
  - No1 WHITE

- Speed-sensor (2P metal-connector) terminal.
  - No2 Speed-signal
  - No1 GND

- Transducer (3P metal-connector) terminal.
  - No2 SHIELD
  - No3 WHITE
  - No1 BLACK

- Power-supply (2P metal-connector) terminal.
  - No2 BLACK
  - No1 WHITE

- Battery (DC12/24V)
  - White: "+" terminal
  - Black: "-" terminal
# Introduction

1. Displays on the screen

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>① TIME MARK</strong></td>
<td><strong>③ “AUTO” MARK</strong></td>
</tr>
<tr>
<td>An yellow-bar appears in every 30-sec. to show the time-ellipse.</td>
<td>Appears when Automatic bottom-track (“S-AUTO”) or Automatic range-shift (“R-AUTO”) is in use.</td>
</tr>
</tbody>
</table>

| **② EXPANSION-START DEPTH** | **④ EXPANSION-START MARK** |
| Digitally shows the depth at Expansion-start mark (←). | For starting the Partial-expansion, shift this mark to the depth so as to expand the specified range therefrom. Also, by shifting this mark, operator can read in digital the exact depth at the mark. |

**⑥ COLOUR-SCALE**
Helps the operator to judge the echo-strength comparing with the scale.
BLUE: Weakest
RED: Strongest

**⑧ DYNAMIC-RANGE**
Shows the dynamic-range being selected.

**⑨ WATER DEPTH**
Shows the depth from the transducer face to the sea-bottom in digital.

**⑩ NOISE REDUCTION**
Displays the noise-reduction level.

**⑪ WATER TEMPERATURE**
Displays the water-surface temperature (Available with optional temperature-sensor.)

**⑫ PICTURE-SPEED**
Displays the picture-speed rate.

**⑬ SHIP’S SPEED**
Shows the ship’s speed (Available with optional speed-sensor).
2. Rear-panel

**EXTERNAL INPUT/OUT terminal**

For connection with an external equipment.
(For example: As a monitor of an external-fish finder, or, connect with a data-recorder.)

<table>
<thead>
<tr>
<th>PINno</th>
<th>EXT SIG</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TRG IN</td>
</tr>
<tr>
<td>2</td>
<td>TRG OUT</td>
</tr>
<tr>
<td>3</td>
<td>SIG IN</td>
</tr>
<tr>
<td>4</td>
<td>SIG OUT</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
</tr>
<tr>
<td>6</td>
<td>NC</td>
</tr>
<tr>
<td>7</td>
<td>NC</td>
</tr>
<tr>
<td>8</td>
<td>GND</td>
</tr>
</tbody>
</table>

**TEMPERATURE-SENSOR terminal**

For optional water-temperature sensor.

**SPEED-SENSOR terminal**

For external speed-sensor.

**EARTH terminal**

Connect the earth-line here.

**TRANSDUCER-receptacle**

For connection with the transducer-unit.

**POWER-SUPPLY receptacle**

For the power-source (DC10.5~40V).

**FUSE-holder**

10A-fuse for DC12V.
6A-fuse for DC24V.

**POWER-REDUCTION knob**

In order to avoid interference to other sounders, reduce the output power.
The output-power can be changed in 4 steps from "D" (Maximum) to "A" (Minimum).
1. "FACTORY SETTING"

This equipment is shipped from the factory with the following functions under "FACTORY SETTING". However, for the most convenient settings available to individual users, each user can specify and reset these functions into the most suitable settings to his operation ("USER-SETTING").

<table>
<thead>
<tr>
<th>Functions</th>
<th>&quot;FACTORY-SETTING&quot;</th>
<th>&quot;USER-SETTING&quot; (*): Specify range in &quot;METER&quot; or &quot;FATHOM&quot;, &quot;BRACCIA&quot;, &quot;FEET&quot;.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAIN-RANGE</td>
<td>0～5m</td>
<td></td>
</tr>
<tr>
<td>EXPANSION-RANGE</td>
<td>0～1m</td>
<td></td>
</tr>
<tr>
<td>DISPLAY MODE</td>
<td>Normal-mode</td>
<td></td>
</tr>
<tr>
<td>PHASED-RANGE</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>AUTO BOTTOM-TRACK</td>
<td>Off</td>
<td></td>
</tr>
<tr>
<td>AUTO RANGE-SHIFT</td>
<td>Off</td>
<td></td>
</tr>
<tr>
<td>PICTURE SPEED</td>
<td>1/1</td>
<td></td>
</tr>
<tr>
<td>DEMAGNETIZATION</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>THRESHOLD</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>NOISE-REDUCTION</td>
<td>Off</td>
<td></td>
</tr>
<tr>
<td>DRAFT-ADJUSTMENT</td>
<td>0</td>
<td>Specify 0～99m or fathom, braccia, feet.</td>
</tr>
<tr>
<td>DEPTH-SCALE</td>
<td>Right</td>
<td>Select CENTER or RIGHT.</td>
</tr>
<tr>
<td>COLOUR-TONE</td>
<td>A-1</td>
<td>Select among A-1/A-2/B-1/B-2</td>
</tr>
<tr>
<td>WATER-TEMPERATURE</td>
<td>°C</td>
<td>Specify °C or °F.</td>
</tr>
<tr>
<td>DYNAMIC-RANGE</td>
<td>6 dB</td>
<td>Select among 3/4/5/6dB.</td>
</tr>
<tr>
<td>SPEED-SENSOR</td>
<td>100-pulse/NM</td>
<td>Specify 100 or 200-pulse/NM.</td>
</tr>
<tr>
<td>OPERATION MODE</td>
<td>Internal</td>
<td>Select INTERNAL/EXTERNAL/SYNCHRO</td>
</tr>
</tbody>
</table>

These functions can be changed from the keyboard during operation.

2. Change into "USER-SETTING" (*)

In order to change the above functions into User-Settings, turn off the power, then turn it on as pressing the respective functional-key till it buzzes "Pi".

CAUTION: Keep press each functional-key till the buzzer stops. Otherwise, it will not change the setting.
(1) "DEPTH-UNIT" setting (FOOT, BRACCIA)

(2) "DRAFT-ADJUST" setting

(3) "OPERATION MODE" setting

(4) "COLOUR-TONE" setting

(5) "DEPTH-SCALE" setting

(6) "°C"/"°F" setting

(7) "100/200-PULSE" setting

(8) "DYNAMIC-RANGE" setting

WHITE LINE

GAIN

VR201

VR202

VR203

VR204

TVG

ON/OFF BRIGHTNESS
(1) "DEPTH-UNIT" METER/FATHOM/BRACCIA/FEET setting

- Select the depth-reading unit among in "METER", "FATHOM", "BRACCIA", "FEET".
- Turn-on the power as pressing respective key.

(2) "DRAFT-ADJUST" setting

- Hence the echo-sounder detects the depth below the transducer-face, it has an error for the draft (the depth between the sea-surface and the transducer-face).

- For an example, even if the actual depth is "8m" from the surface, if the transducer is installed at hull-bottom (3m deep from the surface), it will be displayed as "5m" (giving a 3m-error for the draft).

- The above draft-error can be adjusted as follows:-
  ①Turn-on the power and specify the draft-depth by "PHASED RANGE" keys (see page 15).
  ②Turn-off the power, then, turn it on again as pressing ↓ key. The DEPTH-SCALE will move up-ward to adjust the draft-depth.
(3) "OPERATION MODE" setting

- Select OPERATION MODE for the equipment among the followings:

**ECHO-SOUNDER MODE**

Turn-on the power as pressing this key to operate the equipment from internal echo-sounder signals. Turn-on the power as pressing this key to operate the equipment from external trigger-signals.

**MONITOR MODE**

Turn-on the power as pressing this key to operate the equipment from external signals.

(4) "COLOUR TONE" setting

- Select the colour-tone among the following 4 modes by turning-on the power as pressing respective key.

<table>
<thead>
<tr>
<th>BACK-COLOUR</th>
<th>A-1</th>
<th>A-2</th>
<th>B-1</th>
<th>B-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRONGEST-ECHO</td>
<td>Red</td>
<td>Red</td>
<td>Dark-red</td>
<td>Dark-red</td>
</tr>
<tr>
<td>NEXT STRONGEST-ECHO</td>
<td>Orange</td>
<td>Orange</td>
<td>Red</td>
<td>Red</td>
</tr>
</tbody>
</table>

(5) "DEPTH-SCALE" setting

- Specify the DEPTH-SCALE position in either Center or Right-edge of the screen.

**Center**

Turn-on the power as pressing this key.

**Right-edge**

Turn-on the power as pressing this key.
(6) "WATER-TEMPERATURE" (Optional-function) setting

- Specify the water temperature-unit either in "\(^\circ C\)" or "\(^\circ F\)".

**"F"** setting

"Displayed in \(^\circ F\)."

"Turn-on the power as pressing this key."

**"C" setting**

"Displayed in \(^\circ C\)."

(7) "SPEED-SENSOR" (Optional-function) setting

- Specify the input-signal from the sensor as follows:

**"100-pulse/NM"**

"Turn-on the power as pressing this key."

**"200-pulse/NM"**

"Turn-on the power as pressing this key."

(8) "DYNAMIC-RANGE" setting

- By shifting down the DYNAMIC-RANGE from 6dB to 5dB, 4dB then 3dB, it enables the operator to discriminate the fish-school more precisely.
- Turn-on the power as pressing respective key.
3. Return to "FACTORY-SETTING"

By the operation as follows, it returns to "FACTORY-SETTING" condition (see page 9).

4. "USER-SETTING"

For the maximum efficiency and the most convenient operation available to each individual user, besides "FACTORY-SETTING", after resetting each function (Paragraph 2. CHANGE INTO "USER-SETTING" in page 9), such User-setting can be also memorized.

For an example, in the case of inoperatable due to messy/erroneous operation of the key-board, it can be instantly returned to User-setting condition.

Please memorize User-setting before operation.

(1) MEMORIZE "USER-SETTING"

1. Reset each function (see Paragraph 2. in page 9).

2. Turn-off the power, then, turn it on again as pressing those 2 keys at a time (as in the left) till it buzzes "Pl".

3. Keep press these keys till it buzzes "Pl" so that it will complete the memorization of USER-SETTING.

CAUTION

USER-SETTING memory shall be cleared in the case when RETURN TO "FACTORY-SETTING" is performed.

(2) RETURN TO "USER-SETTING"

Turn-off the power, then, turn it on again as pressing those 2 keys as in the above (1)-(2).

(3) REVISE "USER-SETTING"

Perform RETURN TO "FACTORY-SETTING" as per Paragraph 3. in page 13, then, repeat User-setting procedure as in the above (1).
THE EQUIPMENT BUZZES "PI" FOR EACH KEY-ENTRY. (BUT, IN THE CASE OF 2-BUZZES "PIPI", THAT KEY-ENTRY IS NULL AND NOT ACCEPTED.)

1. PHASED RANGE-key

These keys change the depth at the display-top so as to show the range therefrom on the screen. This phased-range depth can be set from 0 to 999 in 1m/fathom/braccia/feet step.

CAUTION These keys will increase/decrease the figure by 100/10/1m (or, fathom, braccia, feet) respectively.

Press 2 keys at a time to return to "0".

Upward-key 100/10/1m (or, fathom, braccia, feet).
Downward-key 100/10/1m (or, fathom, braccia, feet).

Changes this range.

This "DEPTH-RANGE" is specified by "MAIN-RANGE" key.

CAUTION For "DEPTH-UNIT" setting, see Paragraph (1) in page 10.

2. DISPLAY MODE-key

Three kinds of display-modes are available as follows:
(In the case when a combinational-mode is selected, yellow-line(s) appears on the NORMAL-MODE to indicate the expanded range.)

"NORMAL" BTM EXP MID EXP Combination of "NORMAL" and "PARTIAL-EXPANSION"

Combination of "NORMAL" and "BOTTOM-EXPANSION"
(1) "NORMAL MODE"

- Displays NORMAL-MODE on the screen.

This range is specified by "MAIN-RANGE" key.

(2) "NORMAL/BOTTOM-EXPANSION MODE"

- Displays combinational-display of "NORMAL MODE" (upper 2/3) and "BOTTOM-EXPANSION MODE" (lower 1/3 in flat) on the screen.

This range is specified by "MAIN-RANGE" key.

This range is specified by "EXPANSION-RANGE" key.

(3) "NORMAL/PARTIAL-EXPANSION MODE"

- Displays combinational-display of "NORMAL MODE" (upper 1/3) and "PARTIAL-EXPANSION MODE" (lower 2/3) on the screen.

This range is specified by "EXPANSION-RANGE" key below this mark is shown expanded in the lower 1/3 of the screen.

This range is specified by "MAIN-RANGE" key.

This range is specified by "EXPANSION-RANGE" key.
3. MAIN RANGE-key

- This key changes the range for "NORMAL MODE" picture in the above 3 display modes.

Changes this range.

Variable range:

5 ~ 10 ~ 15 ~ 20 ~ 30 ~ 40 ~ 50 ~ 60 ~ 80 ~ 100 ~ 150 ~
200 ~ 300 ~ 500 ~ 1000 ~ 2000m / fathom / braccia
15 ~ 20 ~ 30 ~ 40 ~ 50 ~ 60 ~ 80 ~ 100 ~ 150 ~ 200 ~
300 ~ 500 ~ 1000 ~ 2000 ~ 3000 ~ 6000 feet

4. EXPANSION RANGE-key

- This key changes the range for "BOTTOM-EXPANSION" or "PARTIAL-EXPANSION" in the following 2 combinational display modes.

Changes this range "BOTTOM-EXPANSION" "PARTIAL-EXPANSION" This range is changed by "EXPANSION-START" key.

Variable range:

1 ~ 2.5 ~ 5 ~ 10 ~ 20 ~ 50 ~ 100 ~ 250 ~ 500m /
fathom / braccia
5 ~ 10 ~ 20 ~ 50 ~ 100 ~ 250 ~ 500 ~ 1000 ~ 2000 feet
5. EXPANSION START - key

In the "NORMAL/PARTIAL-EXPANSION MODE", shift this mark "←" to the depth so as to expand the range therefrom and show it in the lower 1/3 of the screen.

"NORMAL/PARTIAL-EXPANSION"  "NORMAL" and "NORMAL/BOTTOM-EXPANSION"

This part is shown expanded in the lower 1/3 of the screen. This depth corresponds to "EXPANSION-START" Mark depth

Also, by shifting this mark "←", the exact depth at the mark can be read in digit as above.

6. THRESHOLD - key

This key eliminates (or, displays) weaker-echo colours gradually from the "COLOUR-SCALE".

As the picture-colour is in accordance with the "COLOUR-SCALE", it allows clearer picture by eliminating weaker-echoes (such as noises, planktons or unnecessary fish-echoes) from the screen.

2 weaker-colours were eliminated from "COLOUR-SCALE".
7. PICTURE SPEED-KEY

- This key changes the picture-speed rate.

(1) Faster

Variable rate:

STOP, \( \sim 1/1 \sim 1/2 \sim 1/4 \sim 1/8 \sim 1/12 \sim AUTO \)

Picture stop  (Available when optional speed-sensor is connected.)

- As in the above example (1), in the case when ship sails from point "A" to "B", example (2) and (3) are showing 1/1-rate and 1/2-rate respectively.

8. NOISE REDUCTION-KEY

- This key suppresses the interference-noises from other sounders in 3 grades as follows:

NOISE R.

Changes the step by each key-press.

\[ \text{OFF} \rightarrow \text{LOW} \rightarrow \text{MID} \rightarrow \text{HIGH} \]

CAUTION

Certain noises may not be suppressed.
9. MARKER-key

When this key is pressed, a vertical yellow line is shown on the right-end of the screen to mark that position. In order to mark a responsive-echo on the screen, please utilize this function.

10. TEMPORAL-MEMORY/DISPLAY-key

- The equipment is able to memorize the right-half of the screen temporarily till the power is turned off.
- Press MEMORY-key to memorize the right-half of the screen.
- Press DISPLAY-key to show the above memory on the left-half of the screen. Also, another press of DISPLAY-key returns to a former display condition.
- The above memory is replaced by a new memory-entry, or, it shall be cleared by turning off the power.

11. DEMAGNETIZE-key

- In the case when colouring on a certain part of the picture is abnormal, press this key to amend the condition. (If no effect, try it again about 30-sec. interval.)
12. **AUTOMATIC RANGE-SHIFT**

- As the ship navigates on an water of different depth, it automatically shifts the main-range to show always the full-range (from the transducer-face through the sea-bottom) on the screen irrespective of the change of the water-depth. Under AUTOMATIC RANGE-SHIFT, it shifts the main-range in accordance with the water-depth to show the sea-bottom in the lower-half of the screen.
- Press the following 2 keys at a time to start AUTOMATIC RANGE-SHIFT.
- Press either $\Delta$ or $\nabla$ key to clear AUTOMATIC RANGE-SHIFT.

13. **AUTOMATIC BOTTOM-TRACK**

- As the ship navigates on an water of different depth, it automatically shifts the phased-range depth so as to track the sea-bottom on the screen irrespective of the change of the water-depth. Under AUTOMATIC BOTTOM-TRACK, it shifts the phased-range depth in order to track the sea-bottom in the lower half of the screen in the specified depth-range.
- Press $\Delta$ and $\nabla$ of "PHASED-RANGE×1" key at a time to start "AUTOMATIC BOTTOM-TRACK".
- When either the above $\Delta$ or $\nabla$ key is pressed, "AUTOMATIC BOTTOM-TRACK" is cleared.

This range is specified by "MAIN-RANGE" key.
1. For "AUTOMATIC RANGE-SHIFT" and "AUTOMATIC BOTTOM-TRACK", the sea-bottom must be in the strongest (RED) or the next strongest (ORANGE) colour. If the above function is set when the sea-bottom is in another weaker-colour, it keeps fluctuating "DEPTH-SCALE" and is unable to track the sea-bottom.

2. Also, even if the sea-bottom is in RED or ORANGE colour, in the case of intermittent echoes due to an interference by bubbles or bad sea-condition, it returns to "0" m/fathom/braccia/feet after 16 intermittents and starts searching again for the sea-bottom. (But, in the case when unable to catch the sea-bottom, it may fluctuate "DEPTH-SCALE").

14. POWER/BRIGHTNESS CONTROL

- Turn the knob from "OFF" position in clockwise. It turns on the power at "CLICK" sound, and, further turning increases the brightness of the screen.

ON/OFF BRIGHTNESS

15. TVG

- TVG suppresses unnecessary echoes nearby the water-surface such as bubbles/floating matters.

CAUTION It increases the suppression-level by turning counter-clockwise the knob.
16. WHITE-LINE

- It displays the sea-bottom in a white-line so as to discriminate the bottom-fish easily on the screen.

Without WHITE-LINE

With WHITE-LINE

17. GAIN CONTROL

- Control the gain so as to show the picture at correct receiving-level

The GAIN is too low. Increase the level by turning the knob in clockwise.

This picture (with slight double-echo from the sea-bottom) is showing correct receiving-level.

This picture may be alright. But, the mid-water is full of planktons and other unnecessary echoes.

The GAIN is too high. Decrease the level by turning the knob in counter-clockwise.