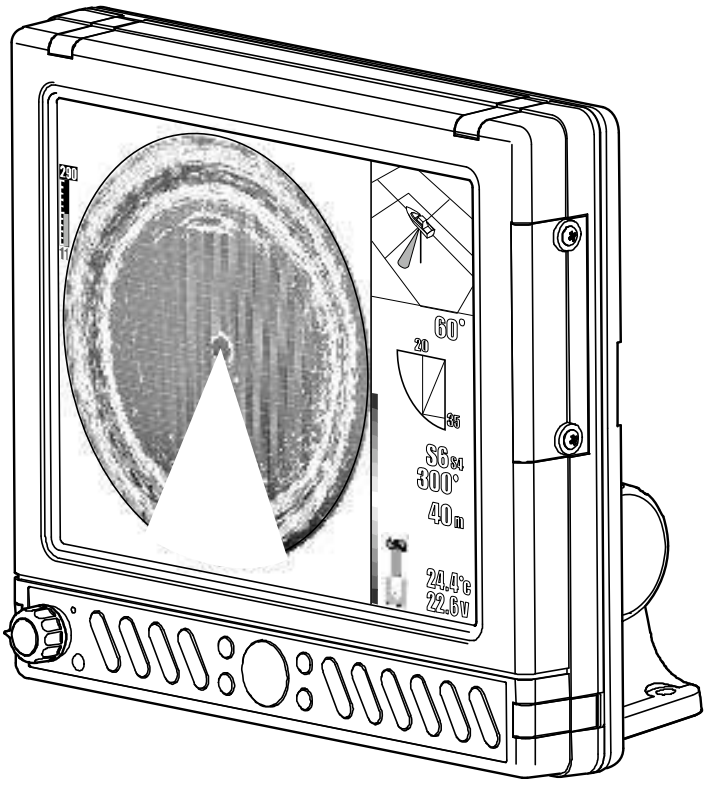
OPERATION MANUAL

HE-773



HONDEX
by HONDA ELECTRONICS

INTRODUCTION

Thank you very much for purchasing our product.

■Please be sure to read this operating manual carefully and understand the contents before the actual operation in order to keep your safety.

■Please store this manual safely at the convenient place so that you can read it when needed.

■Please pass this manual to new owner when you resell or give this unit to someone else.

■We are not responsible for any physical injuries and property damages under product liability (PL) law by wrong usage or any other operations not described in this manual.

DEFINITION OF SYMBOL MARK [CAUTION FOR SAFETY]

: Incur the accident resulting in the death or serious injuries unless you keep the descriptions.

: Be in danger of incurring the accident resulting in the death or serious wound unless you keep the descriptions.

: Be in danger or incurring the slight wound to human or damage to other physical property unless you keep the descriptions.

: Prohibited

: Must-follow

- Do not reproduce a part or all of contents described in this manual.
- Please understand that the unit may differ from the contents described in this manual due to the specification changes etc.
- Please inform us if you see errors and/or unclear descriptions in this manual.

TABLE OF CONTENTS

CAUTION ON SAFETY *(BE SURE TO READ THIS)*

This section explains the important cautions in order to prevent the users and surrounding people from physical injuries and property damages.

1. HANDLING OF MAIN UNIT

DANGER

●High voltage is used for the unit inside.
No one besides authorized personnel should disassemble or modify the unit. If not followed, it may result in electronic shock.
※Please be sure to consult with the local dealer for any repairs.

WARNING

●Install the unit firmly.
If not, it may cause the accidents such as human injuries.

●Do not use the information displayed on the screen for navigation.
It causes the marine accidents and incidents.
※Be sure to use the official marine charts for navigation.

●Do not operate the unit while piloting the vessel.
It causes the marine accidents and incidents.
※Be sure to confirm the surrounding safety before the usage.

●Do not put the power on in the presence of flammable materials.
It causes the fire.

●Do not use the power supply besides the specified one.
It causes the firing and heating.

●Do not disassemble and modify the unit.
It cause the firing, electronic shock, and injury.

●Do not operate the unit with wet hands.
It causes the electronic shock and damage.

●Disconnect the power cable in the case of problem, smoke, and fire.
It cause the firing and electronic shock.
Be sure to contact the local shop or customer support.

CAUTION

- ●Do not install the unit where rain or spray dashes hit directly.
  It causes firing and heating.
- ●Do not install the unit at heated places.
  It causes the firing from the increase of internal temperature, injury, and electronic shock.
- ●Use the earthing.
  Noise influence can be prevented by firm earthing.
- ●Away from direct sun light.
  It causes the difficulty of future vision and heat problem.

2. HANDLING OF CABLE

WARNING

- ●Be sure to use the specified power supply cable.
  It causes firing and heating.
- ●Do not leave the power plug after its removal.
  It causes firing and heating if the plug gets wet.
- ●Be sure to wire the cables for safety pilot.
  The improper wiring causes the accident.
  ※Do not put the heavy object on cables or bend cables excessively.
- ●Do not disassemble or modify the cables.
  It causes firing, heating, or electronic shock.
- ●Do not use damaged cables.
  It causes firing or electronic shock.

CAUTION

- ●Do not pull out the cable when disconnecting the plug.
  The cable damage causes firing and electronics shock.
  ※Be sure to hold and pull the plug itself for the removal.
- ●Do not put any pressure on cables when installing the unit.
  It causes line cut and shortage.

3. HANDLING OF TRANSDUCER AND WATER TEMP SENSOR

DANGER

●Any works on the vessel are very unstable and risky.
Installation/maintenance of transducer and water temp sensor should be handled after landing the vessel on ground or fixing the vessel at shipyard etc.

WARNING

●Water proof treatment is required for Thru-Hull installation.
If not, it causes the marine accident.

●Do not operate the electronic tools with wet hands.
It causes electronic shock.

●Do not remove the transducer plug when the power is ON.
It causes electronic shock.

4. HANDLING OF REMOTE

CAUTION

●Locate the remote to safe spot against vibration etc when not in use.
It may cause injury and accidents.

5. TFT LCD PANEL

●TFT LCD panel is made with high precision technology. Therefore, the effective pixel is over 99%, and pixel loss and continuous lighting pixel exist 0.01% or more. Please understand this specifications.

6. CAUTION OF OPERATION

Power OFF when Starting Engine

Battery voltage varies when the engine starts. It may cause some damage onto the unit. Set the power OFF when starting the engine.

Power Supply 11~30V

Operate the unit within the range of DC 11~30V.

Organic Solution is Prohibited

Do not clean the unit with organic solution like thinner or alcohol etc because most parts are made with plastic. For heavy dirt, soak the soft cloth in synthetic detergent and clean it after wring.

FEATURE

★Ultra-compact size sensor

Only 75mm diameter for sensor extended from the vessel bottom.

★All direction scanning

All around 360deg scanning is possible with the sonar sensor.

★High-speed scanning

High-speed scanning is achieved with precise & compact motor and digital processing.

★Digital sonar

Clear presentation with high sensitivity and reduced noise performance.

★4-Display Mode

Sonar Mode: Quad-screen for different tilt angle appears on the display.
Bottom Sonar Mode: Quad-screen for different scan direction.

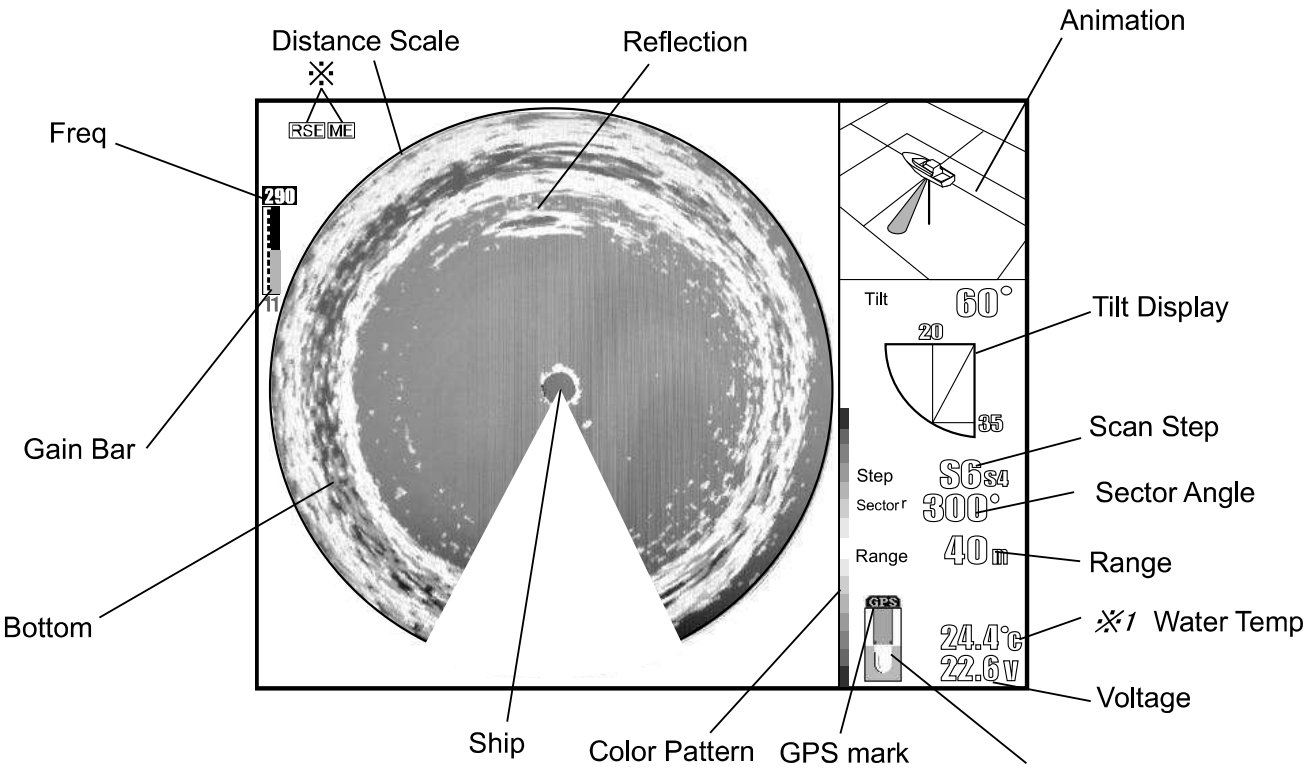
★Super Bright LED Display

Visibility has been improved by adopting clear and bright LED display.

BASIC FEATURE

Transducer	Frequency	Mode				Multi Scan Area
		Sonar	Vertical	Bottom Sonar	Sounder	
TD303	290kHz	○	○	○	○	180°Hemisphere Full swing
TD304	140～240kHz	○	○	○	○	180°Hemisphere Full swing

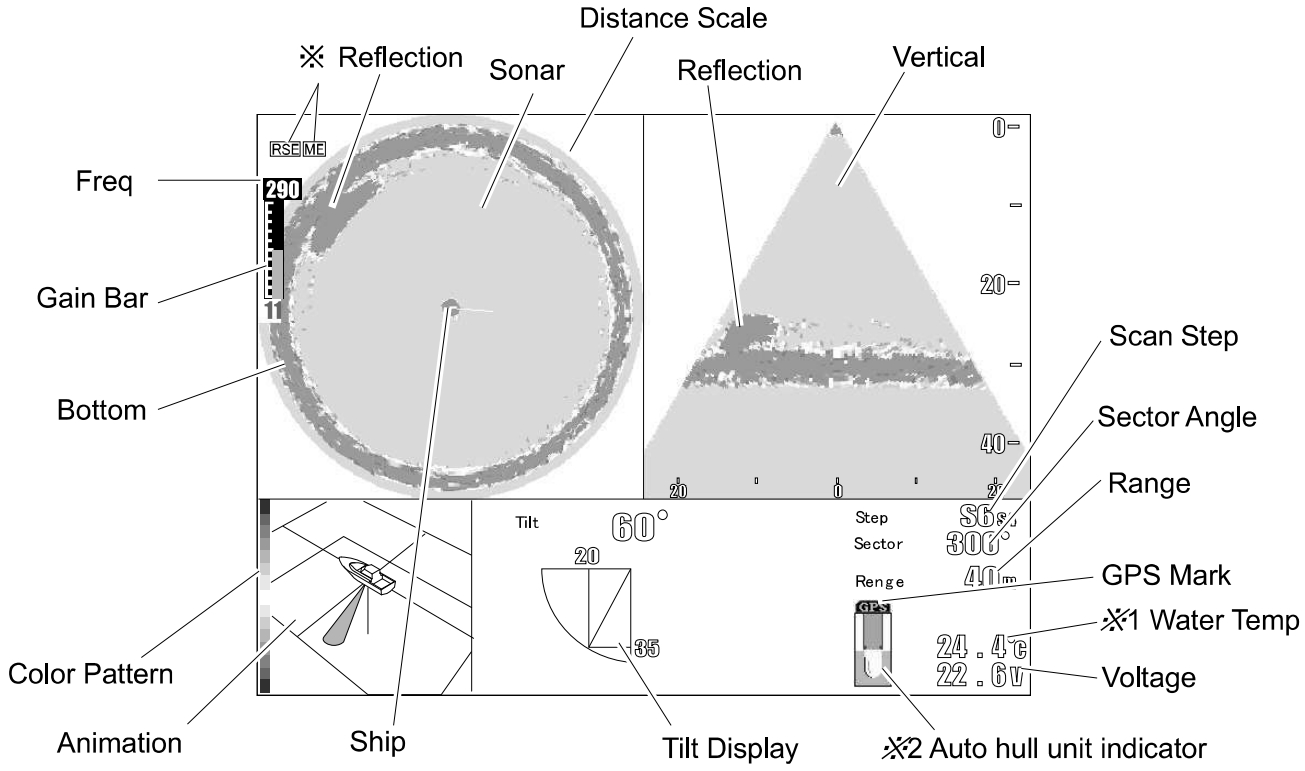
[Sonar Mode Example]



※1 When connecting to optional water temp sensor.

※2 Only when auto hull unit is selected.

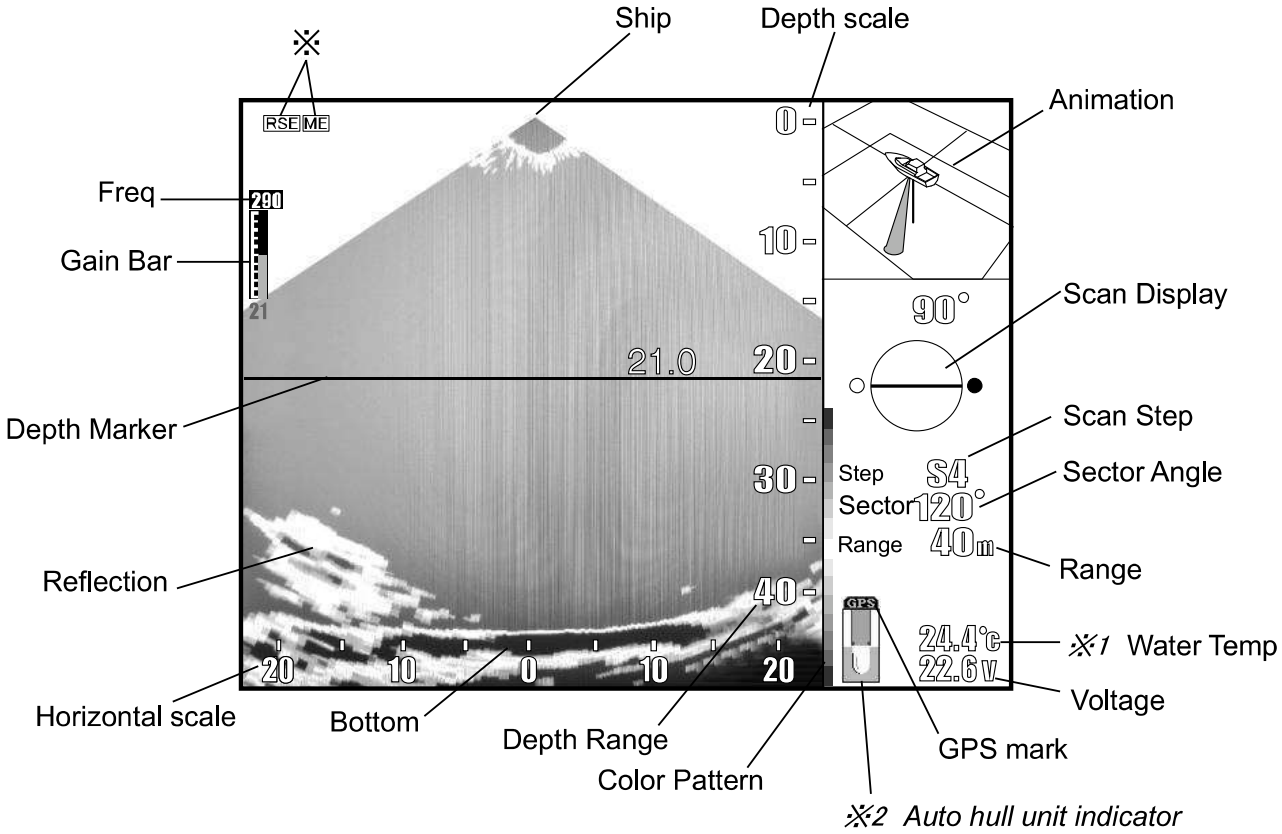
[Vertical Mode Example]



※1 When connecting to optional water temp sensor.

※2 Only when auto hull unit is selected.

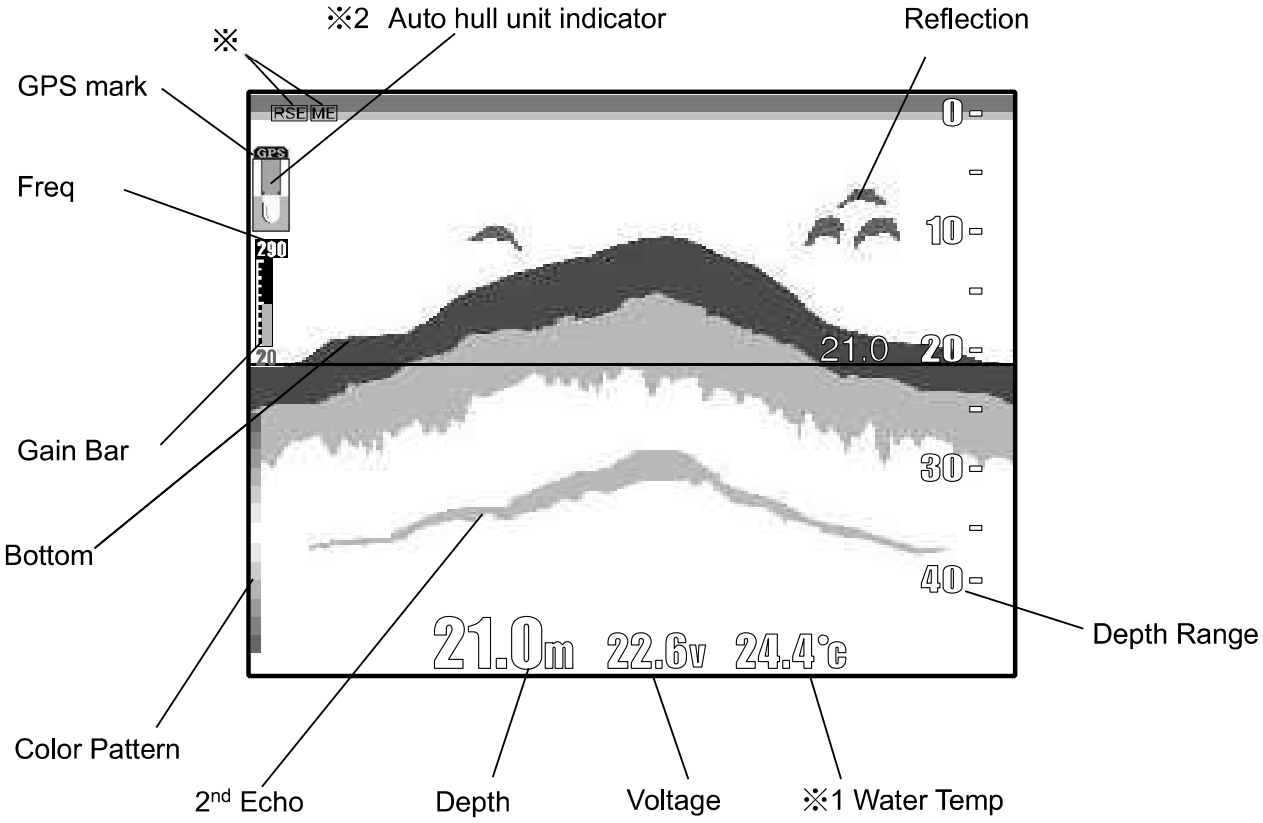
[Bottom Sonar Mode Example]



※1 When connecting to optional water temp sensor.

※2 Only when auto hull unit is selected.

[Sounder Mode Example]



※1 When connecting to optional water temp sensor.

※2 Only when auto hull unit is selected.

※[RSE]

"RSE" will appear when TD check is not completed correctly. TD check occurs right after turning ON the power. RSE also appears when not connected to any transducer.
When RSE show up often, please check the connection between display unit and transducer. Also, disconnect/reconnect it to make sure. Lastly, turn OFF the power and reboot the power with calm conditions such as less waves and no interference from engine vibration.
If "RSE" still continues to pop up, please consult with your dealer for the service.

※[ME]

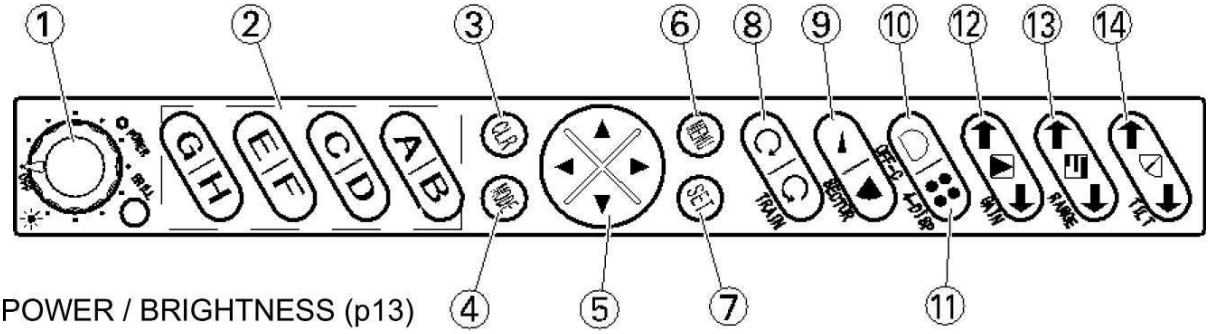
"ME" will appear when the transducer detects any shocks or damages and the calibration of motor location is in effect.
Please check "SCAN-PORT setup" and reboot the power under the calm conditions with little wave and no vibrations coming from engine. Please contact to your dealer for the service if "ME" still shows up on the screen.

※ 

"If this mark" continues to appear, it is possible that the fuse of the electric hoist is blown. Replace the fuse if that's the case.Please report to your dealer if the blown fuse is not the Cause of the problem.

DESCRIPTION

1. FRONT VIEW OF MAIN UNIT



①POWER / BRIGHTNESS (p13)

Power ON/OFF and adjustment of display brightness.

②USER KEY <A~H>

Set-up the tilt motor angle for 4-Display mode.(p28)

Set-up the scan direction for 4-Display mode.(p30)

Set-up the shift (display range shift). (p34)

Set-up the gain for sounder mode. (p37)

Set-up the sensitivity for each distance of Near/Far Gain.(p38)

Set-up the counter-rotating sensor.(p40)

Input the event mark.(p58)

Set-up the wake display range.(p60)

③CLR(p15)

Cancel the menu.

④MODE (p16)

Switch to Sonar, Bottom Sonar, or Sounder mode.

⑤DIRECTION (Up/Down/Left/Right)(p15)

When opening the menu, it moves the selected item and changes the set-up.

When not opening the menu, Up/Down keys, ▲/▼, moves the range of manual expansion, and Left/Right keys, ◄/►, moves the marker toward water surface or bottom direction.

⑥MENU (p15)

Display menu.

⑦SET (p15)

Execution button for selection.

⑧TRAIN (p17)

Rotate the guiding center toward clockwise or counter-clockwise.

⑨SECTOR (p21)

Switch the sector angle.

⑩OFF-CENTER (p23)

Display off-center picture.

⑪4-DISPLAY (p26)

Display quad-split screen.

⑫GAIN (p36)

Adjust the sensitivity.

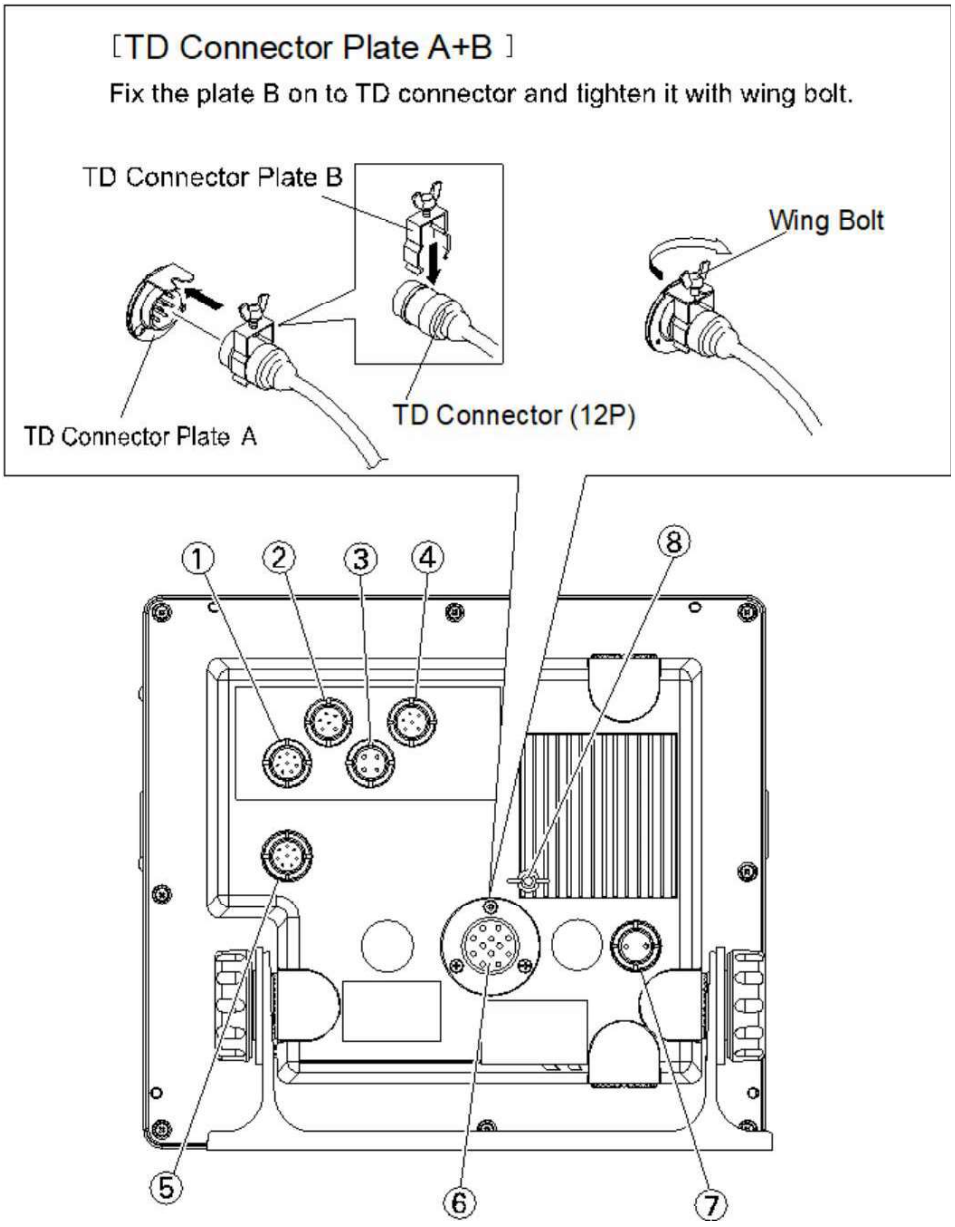
⑬RANGE (p36)

Set-up the display range of depth.

⑭TILT (p19)

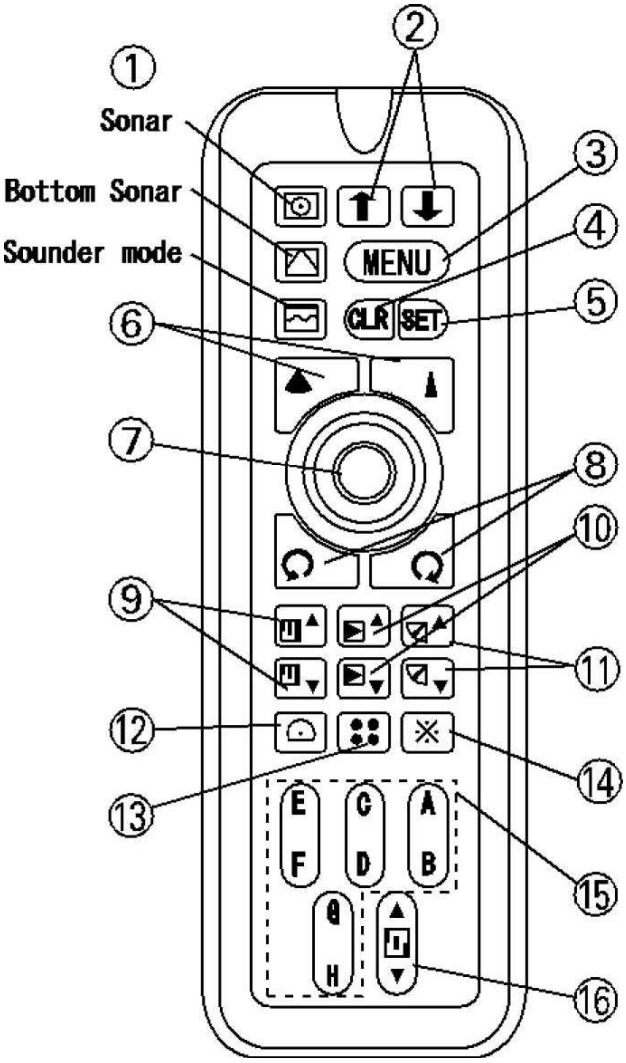
Set-up the tilt motor angle for single-display normal mode.

2. REAR VIEW OF MAIN UNIT



①Water temp sensor (8P) (optional)
Auto hull unit controller (8P) (optional)
②NMEA(GGA,VTG or RMC) output device (6P)
③Remote (4P) (optional)
④NMEA(GGA,VTG or RMC) output device (6P)
⑤Water temp sensor (8P) (optional)
⑥Transducer (12P)
⑦DC power supply (2P)
⑧Earthing

3. REMOTE (Optional)



①MODE (p16)

Switch to Sonar, Bottom Sonar, or Sounder mode.

②Auto hull unit controller UP/DOWN (p56)

※ Only effective for Auto-Hoist unit.

③MENU (p15)

Display menu.

④CLR (p15)

Cancel the menu.

⑤SET (p15)

Execution button for selection.

⑥SECTOR (p21)

Switch the sector angle.

⑦ DIRECTION (Up/Down/Left/Right) (p15)

When opening the menu, it moves the selected item and changes the set-up. When not opening the menu, Up/Down keys, ▲/▼, moves the range of manual expansion, and Left/Right keys, ◄/►, moves the marker toward water surface or bottom direction.

⑧TRAIN (p17)

Rotate the guiding center toward clockwise or counter-clockwise

⑨RANGE (p36)

Set-up the display range of depth.

⑩GAIN (p36)

Adjust the sensitivity.

⑪TILT (p19)

Set-up the tilt motor angle for single-display normal mode.

⑫OFF-CENTER (p23)

Display off-center picture.

⑬4-DISPLAY (p26)

Display quad-split screen.

⑭N/A

⑮USER KEY <A~H>

Set-up the tilt motor angle for 4-Display.(p28)
Set-up the scan direction for 4-Display mode. (p30)
Set-up the shift (display range shift). (p34)
Set-up the gain for sounder mode. (p37)
Set-up the sensitivity for each distance of Near/Far Gain.(p38)
Set-up the counter-rotating sensor.(p40)
Input the event mark.(p58)
Set-up the wake display range.(p60)

⑯SHIFT（p33）

Move the depth display range for Sounder mode.

About handling remote control (option)

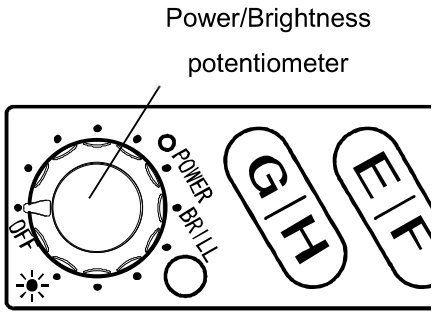
WARNING

● Locate the remote to safe spot against vibration etc when not in use.
It may cause injury and accidents.

· Remote (CR06) is the wired specs only. Wireless not supported.

POWER ON / OFF

Power



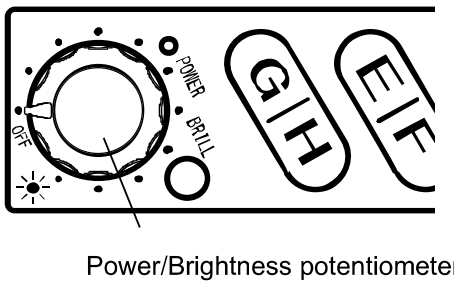
1 Turn the power/brightness potentiometer clockwise so that the power is set to ON.
The power lamp is lit, and display will activate.

2 Turn the power/brightness potentiometer counter-clockwise so that the power is set to OFF.

Caution : Set the power OFF when starting the engine because the unstable variation of battery voltage level may cause the problems into unit.

SCREEN BRIGHTNESS

Brightness Adjustment



1 Adjust the brightness.

Turn right for brighter.
Turn left for darker.

TRANSDUCER SET-UP

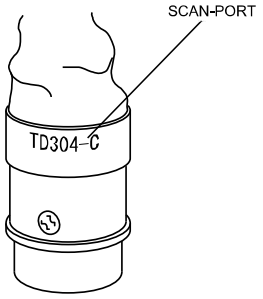
TD Set-up

1 The following display appears for factory set-up and initialized condition. Press SET button or ▶right direction button for set-up display.

```
Transducer is not selected.
Set Frequency.

<CAUTION>
Incorrect setting may damage
transducer and unit.

〔SET〕OR〔 ▶ 〕TO SELECT TD ▶
```



2 ●TD set-up

Select the frequency from 1. SELECT TD.

TD303：290kHz

TD304：140～240kHz

●Scan_Port Set-up

Be sure to set-up “SCAN_PORT” every time changing the transducer.

●To select hull unit

Select the hull unit to use.

Manual : Manual hull unit

Auto : Auto hull unit

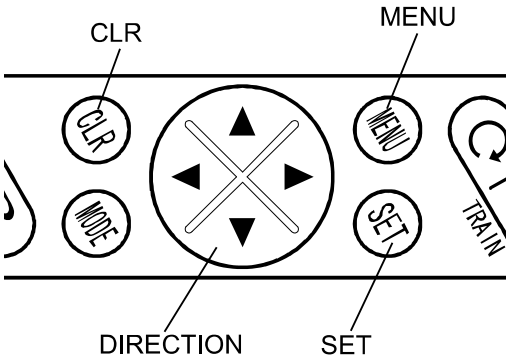
※Initially, “Not selected” is shown.

You should set all items (SELECT TD, SCAN_PORT, HOIST SYSTEM)

Otherwise, the unit cannot be operated.

Menu

Change the set-up with [MENU] / [DIRECTION] / [SET] / [CLR] keys.



1 [MENU] key

①Press MENU key to display Menu 1.
②Press MENU key again to display Menu 2.
③Press MENU key to come back to the previous menu.

2 [DIRECTION] key, ▲ / ▼

①To move the selected item.

3 [DIRECTION] key, ◄ / ►

①Change the value with Left/Right key.
Change the menu set-up.
New set-up value becomes effective right after the change.
②Water temp alarm/Depth alarm: Press Right key to move to set-up display.

4 [SET] key

①Press SET key to initialize. (p53)
②Press SET key to save the image. (p31)

5 [CLR] key

①Press CLR key to cancel any menu display.

※Set-up menu appears by pressing ► or SET key for the items having ► on the right side.

SONAR MODE SWITCH

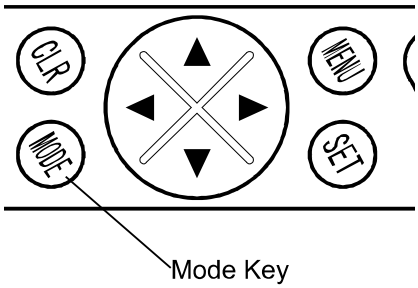
Switches to Sonar, Vertical, Bottom Sonar, or Sounder Mode.

※The transducer set-up will take a few seconds during mode change.

Mode Key

1 Press MODE key to change the mode. [Sonar Mode] – [Vertical Mode] – [Bottom Sonar Mode] – [Sounder Mode]

※This key does not work when menu is opened.



Menu Key

1 Go to Menu1 – MODE.

SONAR : Switch to Sonar mode
VERTICAL : Switch to Vertical mode
BTM SONAR : Switch to Bottom Sonar mode
SOUNDER : Switch to Sounder mode

SCAN DIRECTION
(SONAR / VERTICAL / BOTTOM SONAR MODES)

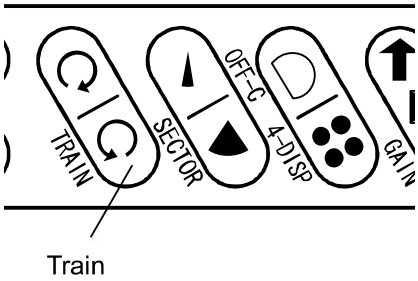
Rotate the detecting direction from ship location.

Sonar / Vertical Modes

Possible to change the scan direction in 1.8° steps.

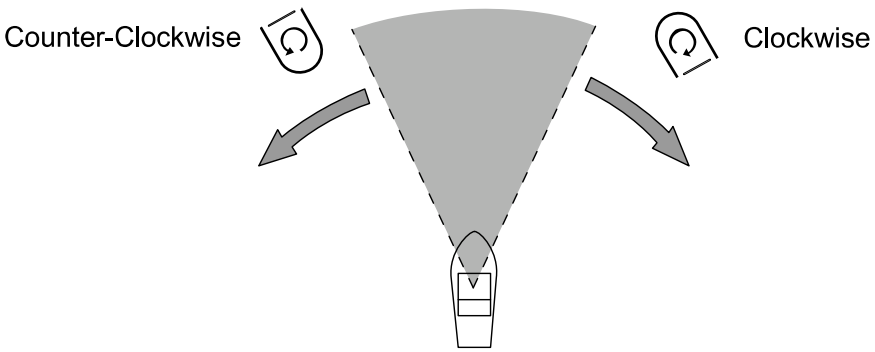
1 key to rotate clockwise.

key to rotate counter-clockwise.



Train

Search Area

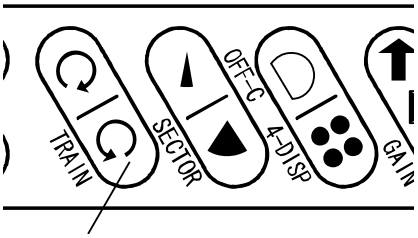


Bottom Sonar Mode

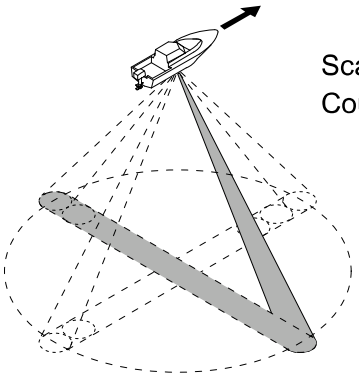
Range : 0°~180° in 1.8° steps.
90° : Basic mode (sideway-scan)
0° : The right side of sonar mode screen is the forward part of ship.
180° : The left side is the forward part of ship.

1 key to rotate clockwise

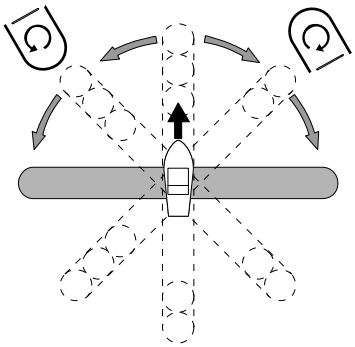
key to rotate counter-clockwise.



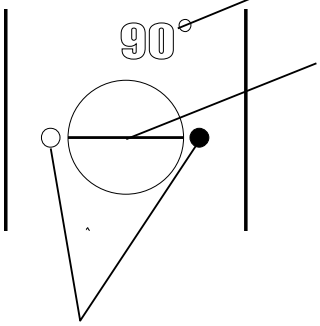
Train



Scan direction:
Counter-clockwise



Scan direction:
Clockwise



Angle for train center location

Train center is shown in red color.

Right : Black dot
Left : White dot

TILT ANGLE ***(SONAR / BOTTOM SONAR MODES)***

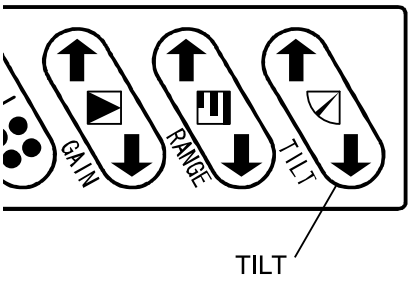
Change the tilt angle

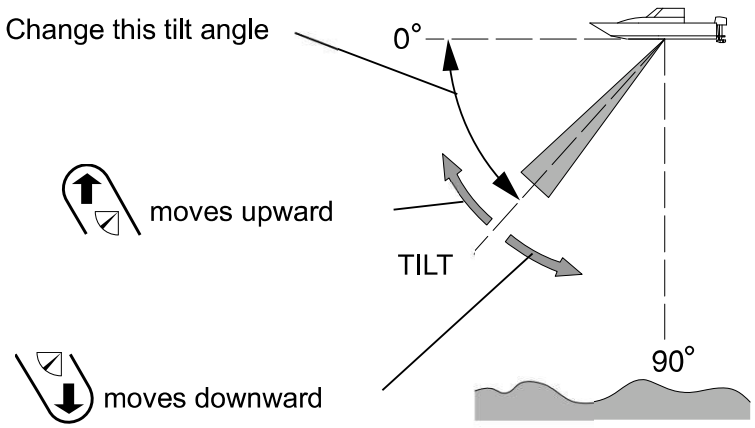
Sonar / Vertical Modes

[Sonar] Range: 0°~90° in 1° step.
[Vertical] Range: 10°~80° in 1° step.
(0°: horizontal (water surface) direction, 90°: vertical direction)

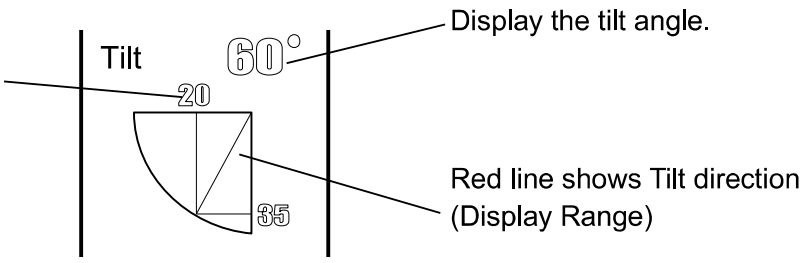
1 moves upward.

moves downward.





Display max. horizontal distance and max. vertical depth.
(Case of having display range of 40m:
Tilt angle : 60°
Max. horizontal : 20m
Max. vertical: 35m

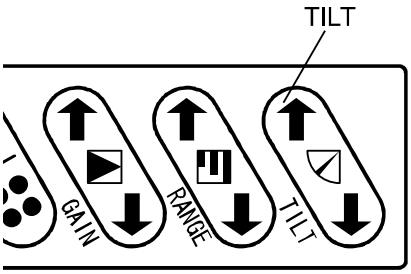


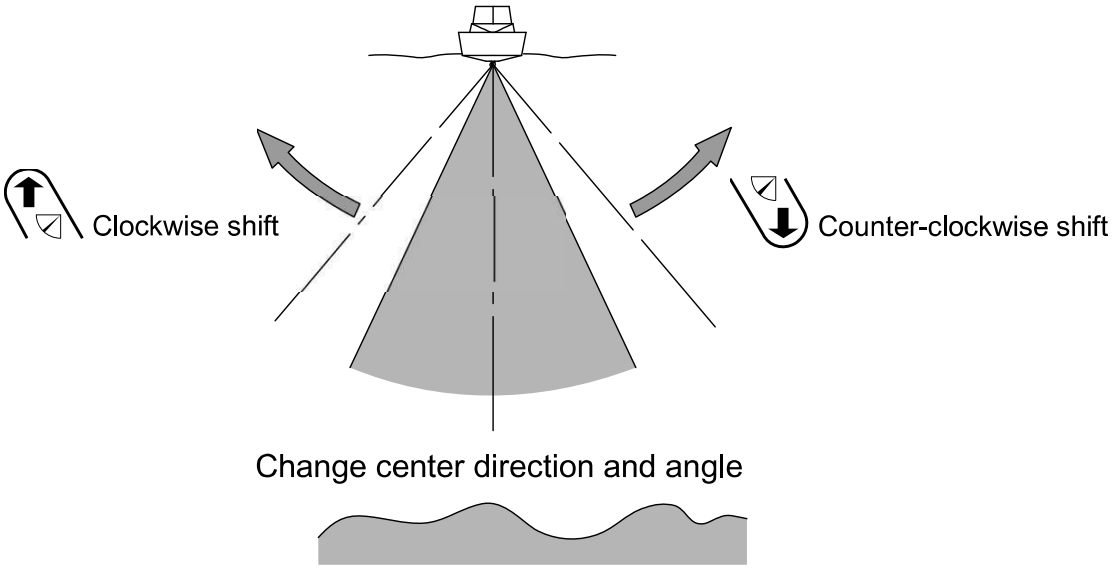
Range 40m

Possible to rotate in 1.8° steps.

1 moves the target area clockwise.

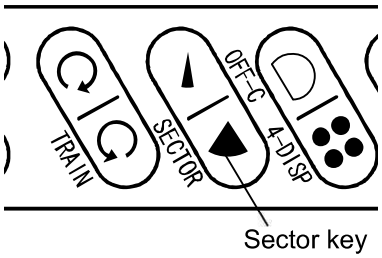
moves the target area counter-clockwise.





DETECTION RANGE
(SONAR / VERTICAL / BOTTOM SONAR MODES)

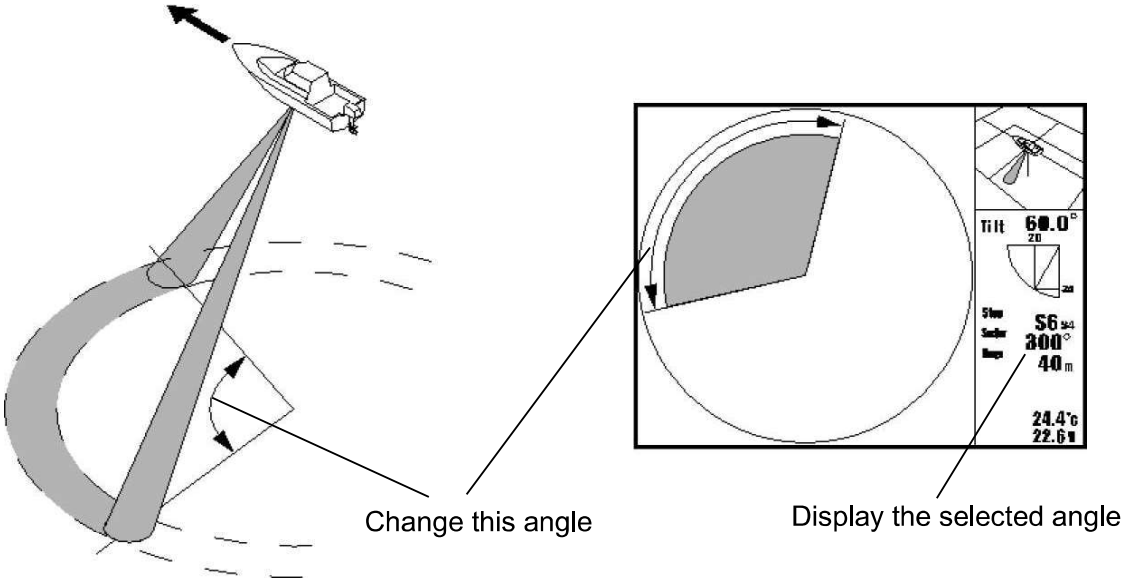
Switch the detecting range (angle).



for narrower angle, for wider angle.

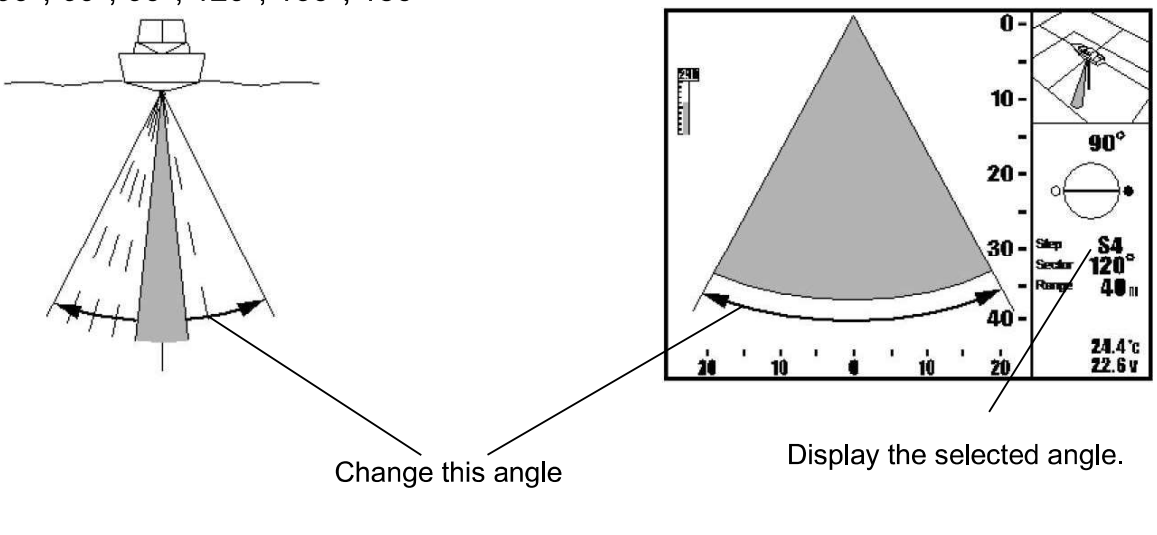
Sonar / Vertical Modes

Choose from 10 different sectors.
30°, 60°, 90°, 120°, 150°, 180°, 210°, 240°, 300°, 360°



Bottom Sonar Mode

Choose from 6 different sectors.
30°, 60°, 90°, 120°, 150°, 180°



SWEEPING STEP
(SONAR / VERTICAL / BOTTOM SONAR MODES)

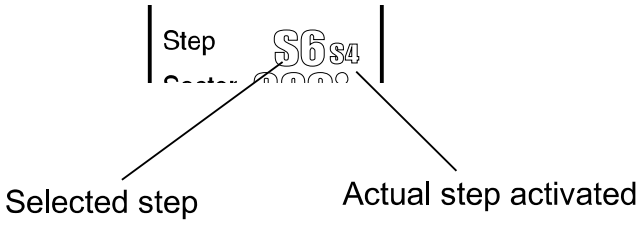
Sweeping Step

Select the sweeping step of scanning.

1 Go to MENU1 – STEP – [S1 ~ S6F].

S1 is for the finest image but slowest sweep speed than others.

※For some case, the selected step is not executed with sonar mode. Both selected and activated steps are shown on the screen.

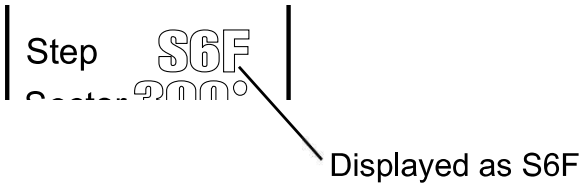


HIGH SPEED SCAN MODE(SONAR / VERTICAL MODES)

[High Speed Scan Mode]

Set-up

Go to MENU 1 – 1.STEP. Select “S6F”.



※ Vague image may be seen on the screen with High Speed Scan Mode.

SHIP MARK(SONAR / VERTICAL / BOTTOM SONAR MODES)

Ship Mark

Ship mark is displayed on the screen.
Ship mark tells you the direction of ship visually.

1 Go to MENU1 – 2. SHIP MARK.

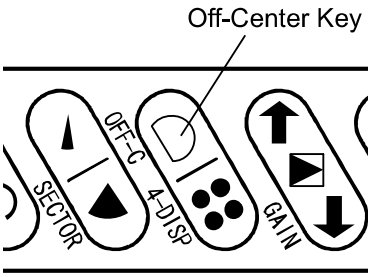
OFF : Mark OFF
ON : Mark ON
※No ship mark appears with 4-Display mode (p.26)

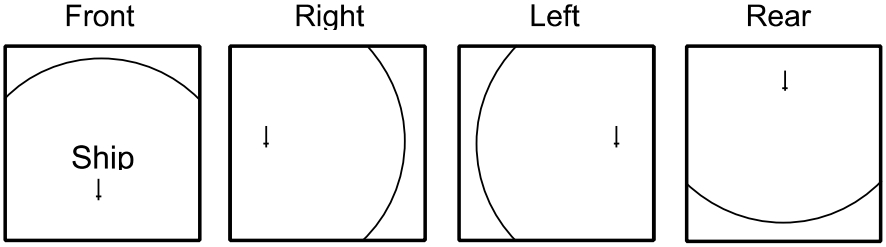
OFF-CENTER MODE ***(SONAR/BOTTOM SONAR MODES)***

Display Off-Center image to expand the target area.
Move the ship lower direction so that forward view is expanded. Shift the ship to left to expand the right area.

Off-Center Mode

1 Press D to change [Front]→[Right]→[Left]→[Rear]→[OFF].

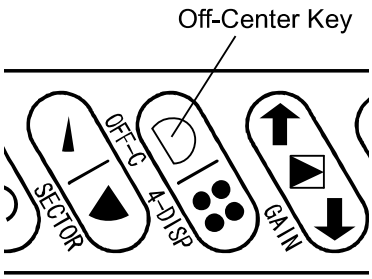


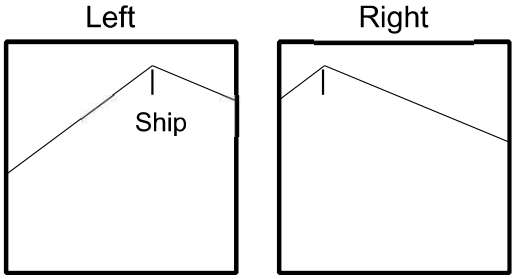


Off-Center Mode (Bottom Sonar Mode)

Possible to shift the screen left / right.

1 Press to change [Left]→[Right]→[OFF].





ANIMATION DISPLAY
(SONAR / VERTICAL / BOTTOM SONAR MODES)

Animation Display

3D-like animation appears on the upper-right display showing on-going searching direction.

1 [SONAR MODE] / [VERTICAL MODE]

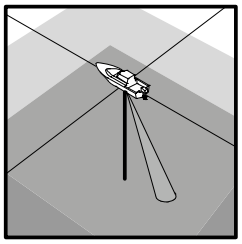
Select “4. ANIMATION”.

ON: Animation ON

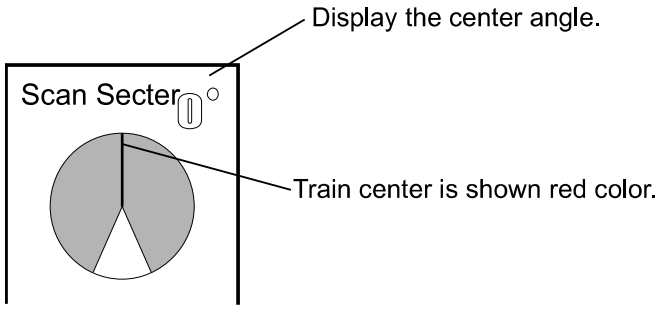
OFF: Animation OFF (Scan or Tilt display is shown instead.)

※ *Animation appears on the lower left of display.*

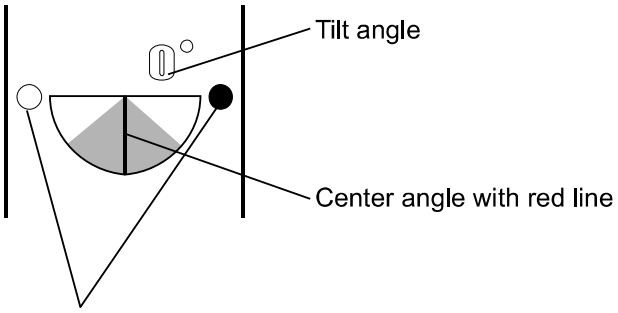
[Animation Display]



[Scan Display (Sonar Mode only)]



[Tilt Display (Bottom Sonar Mode only)]



White dot for left side. Black dot for right side.

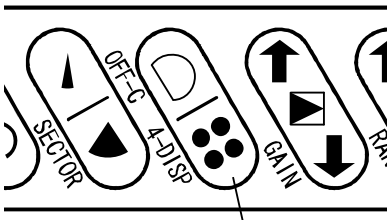
4-DISPLAY MODE (SONAR / BOTTOM SONAR MODES)

Set-up different tilt angles for quad-split display.

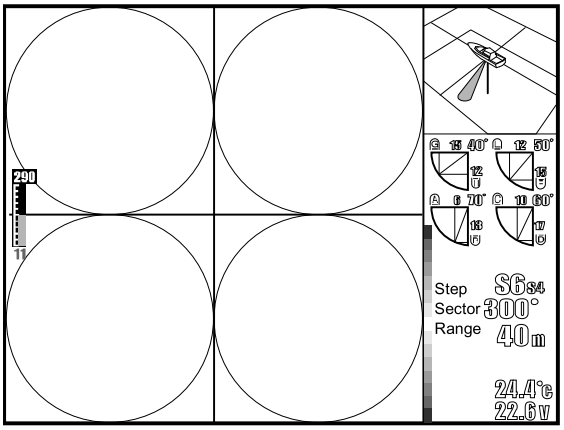
Refer to “Display Order (4-Display Mode)” (p27) for the details of display order.

4-Display Mode

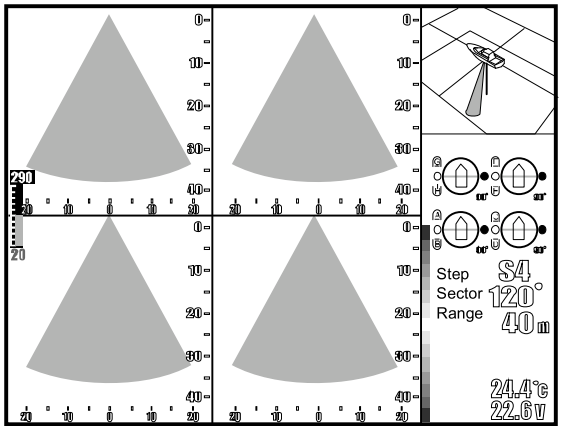
1 Press to enable/disable 4-Display.



Quad-Split Display



[Example display of sonar mode 4 screen mode]



[Example of display of bottom sonar mode 4 screen mode]

※This set-up will take a few seconds when switching to 4-Display mode.

※Bottom sonar mode: TILT is not available when using 4-Display mode.

DISPLAY ORDER ***(4-DISPLAY MODE)***

Display Order (4-Display Mode)

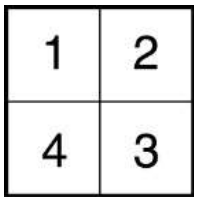
1 【SONAR MODE】

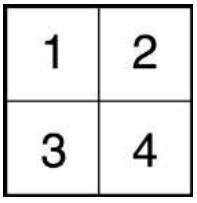
Go to MENU1 – 6.OTHER SONAR.

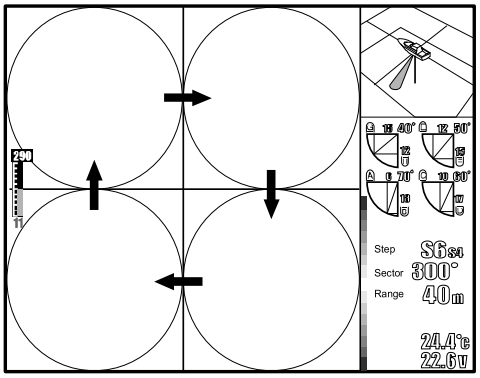
【BOTTOM SONAR MODE】

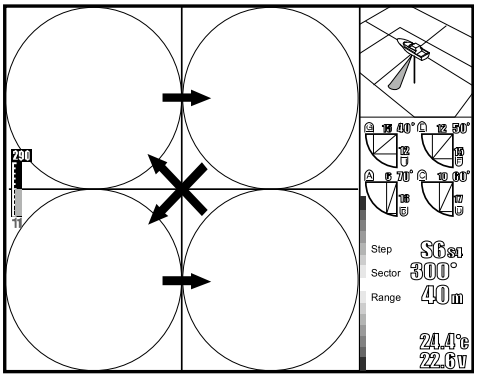
Go to MENU1 – 5.OTHER BOTTOM SONAR.

2 Select the display order for 4-Display mode.





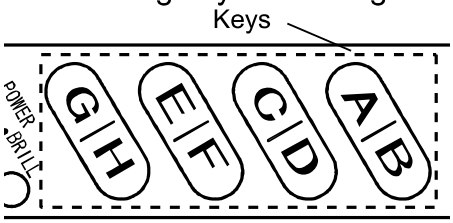




EACH TILT ANGLE (SONAR MODE)

Tilt Direction Change

1 The following keys are assigned for the set-up of each tilt angle.

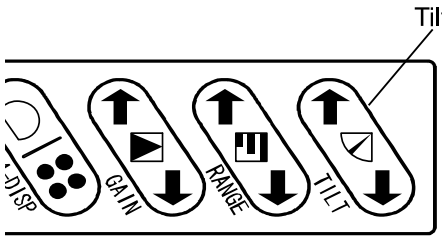


Upper Left : G/H

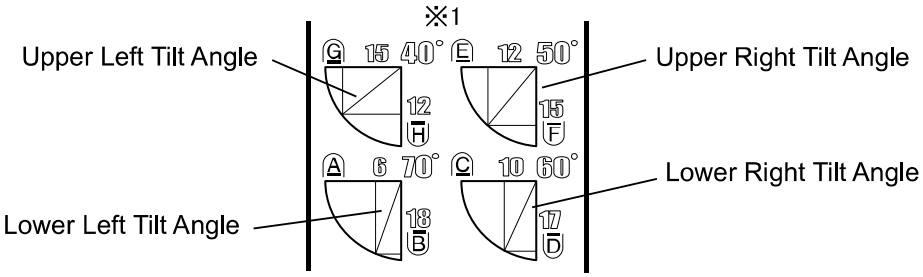
Upper Right : E/F

Lower Left : A/B

Lower Right : C/D



※Pressing TILT key changes all tilts simultaneously.



※1. Each tilt angle is shown at upper right.

※ Refer to p.19 TILT ANGLE for the detailed information.

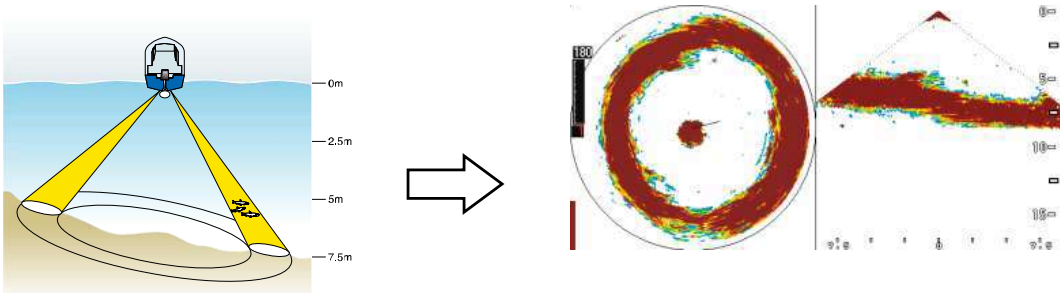
VERTICAL DISPLAY (VERTICAL MODE)

Vertical Display

This is a vertical display of sonar mode viewed from behind of ship.

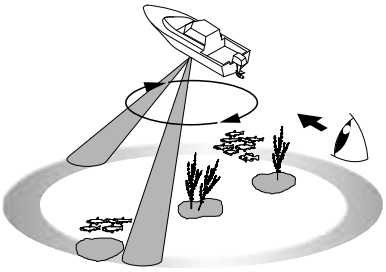
Advantages

- Easy to comprehend the depth of fish school immediately.
- Convenient to capture the image of seabed slope.
- Easy to understand the search area.

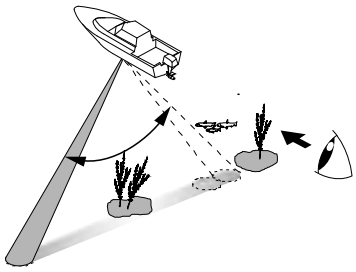


Sonar Mode Vertical Display

*Vertical display is different from bottom sonar mode showing the cross-sectional view.



Search Area of Vertical Display



Search Area of Bottom Sonar

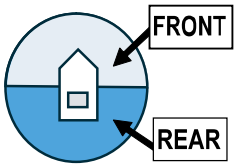
Contrast Target

Select the target direction of color contrast set-up. (bow or stern)

1 Go to MENU1 – 4.VERTICAL DISPLAY –1.CONTRAST TARGET.

2 Set-up 1.CONTRAST TARGET.

OFF : No effect of color contrast.
FRONT : Change the color contrast of bow direction.
REAR : Change the color contrast of stern direction.



Contrast Level

Set the color contrast level.

1 Go to MENU1 – 4.VERTICAL DISPLAY – 2.CONTRAST LEVEL.

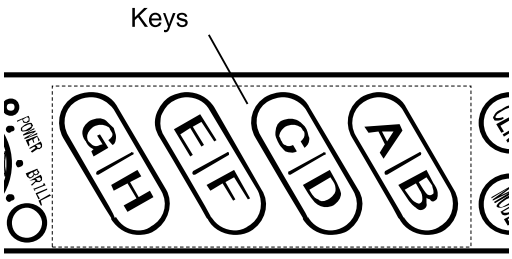
2 Set-up 2.CONTRAST LEVEL.

LOW : Low color contrast
MID : Middle color contrast
HIGH : High color contrast

EACH SCAN DIRECTION (BOTTOM SONAR MODE)

Scan Direction Change

1 The following keys are assigned for the set-up of each scanning direction.

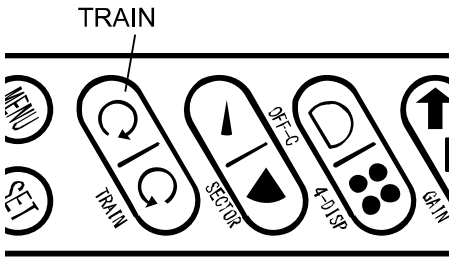


Upper Left : G|H

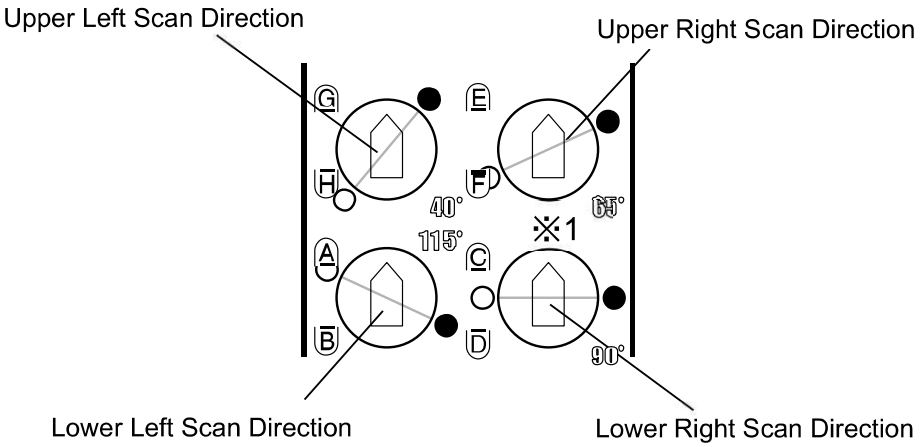
Upper Right : E|F

Lower Left : A|B

Lower Right : C|D



※Pressing TRAIN key changes all scan directions simultaneously.



※1 This figure is angle from the bow direction.

※ For details on the above display, refer to p18.

SAVE IMAGE TO MEMORY CARD

Possible to save the displayed image into memory card, KD05-C-P (optional).
The file format/size is BMP(bitmap)/640x480 which is easy to handle with PC.

Caution) Saved image cannot be displayed on the unit.

Save Image

1 Go to MENU2 –INITIALIZE – SAVE IMAGE W/ SET.

2 Set "Save image with SET key".
OFF : Disabled
ON : Press (SET) to save the image

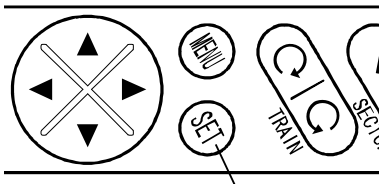
Memory Card

1 Remove the card-cover on card slot.

2 Insert a memory card, KD05-C-P, into the slot.

3 Press (SET) to save the image. “Saving” message will appear on the screen.
※ *This function does not work while MENU is opened.*

4 Possible to see the saved image on the memory card, KD05-C-P, with PC etc.



SET (Execution Key)

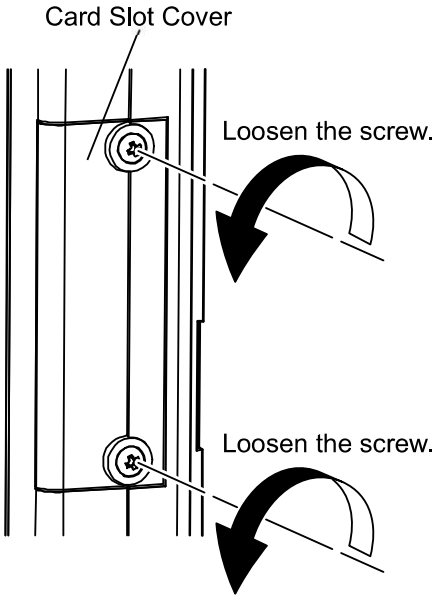
※ *Refer to the following page for handling of the card.*

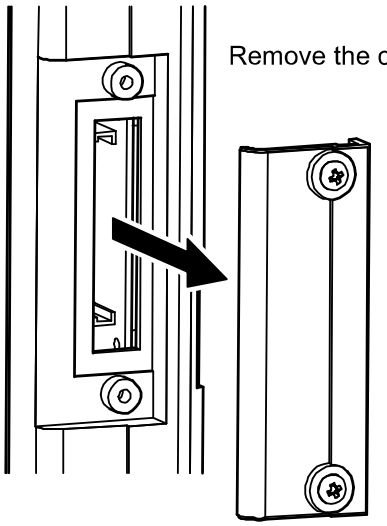
Memory Card

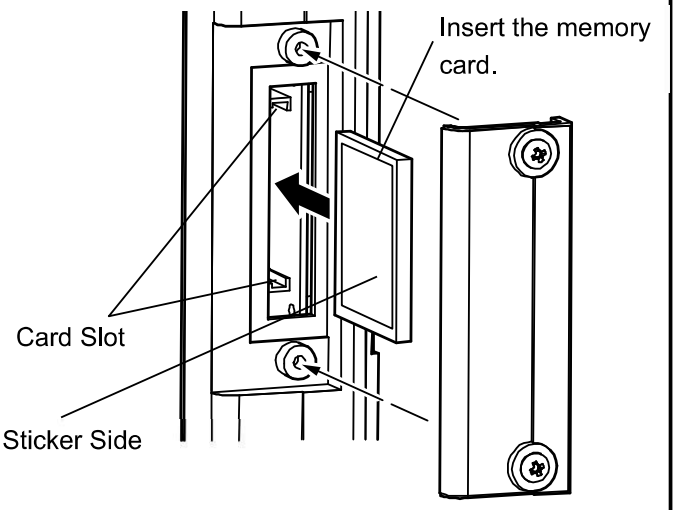
Possible to copy the data between unit and memory card.

1 Remove the cover on the card slot.

2 The KD05-C-P sticker on memory card should be facing the front side of the unit. Insert the memory card into the slot.







Caution1) Unit and memory card cannot store the data permanently. Therefore, important data need to be saved separately to an external storage as the back-up.

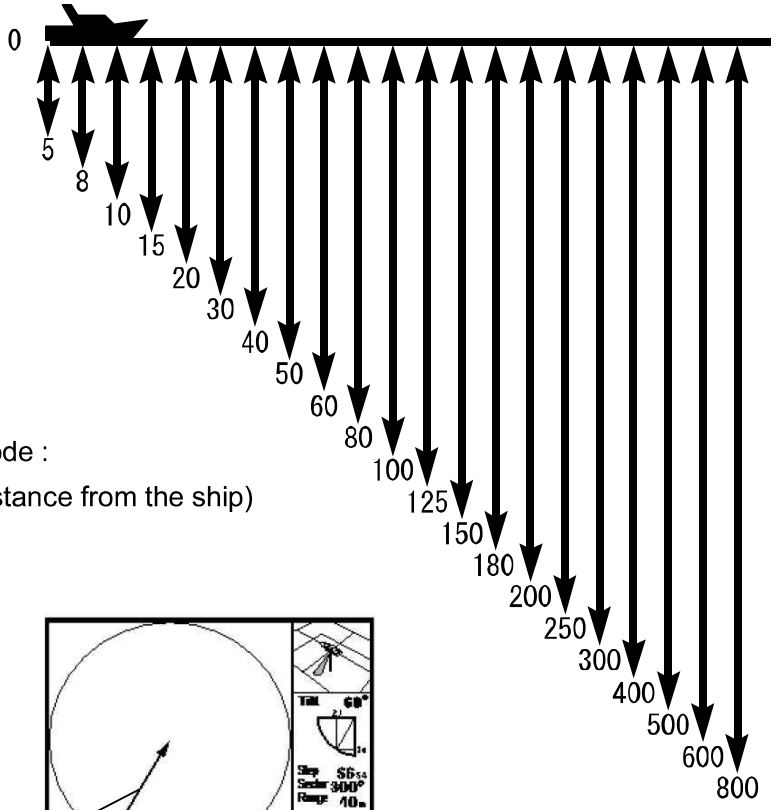
Caution2) Be sure to face the sticker side of memory card to the operator (front). Wrong insertion may damage on the unit.

※Keep the slot cover ON always except removing/inserting the memory card.

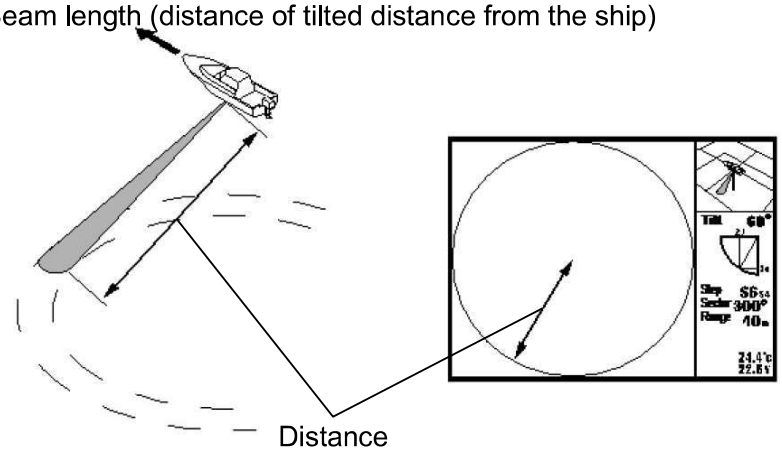
DISPLAY RANGE

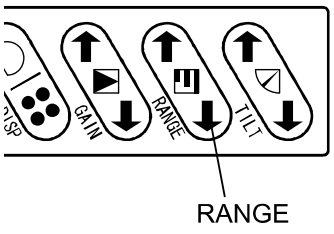
Display Range

Set-up the display range on the screen.



Case of Sonar Mode / Vertical Mode :
Beam length (distance of tilted distance from the ship)





1 **[Shallower Display Range]**

Press  to make it shallower.

[Deeper Display Range]

Press  to make it deeper.

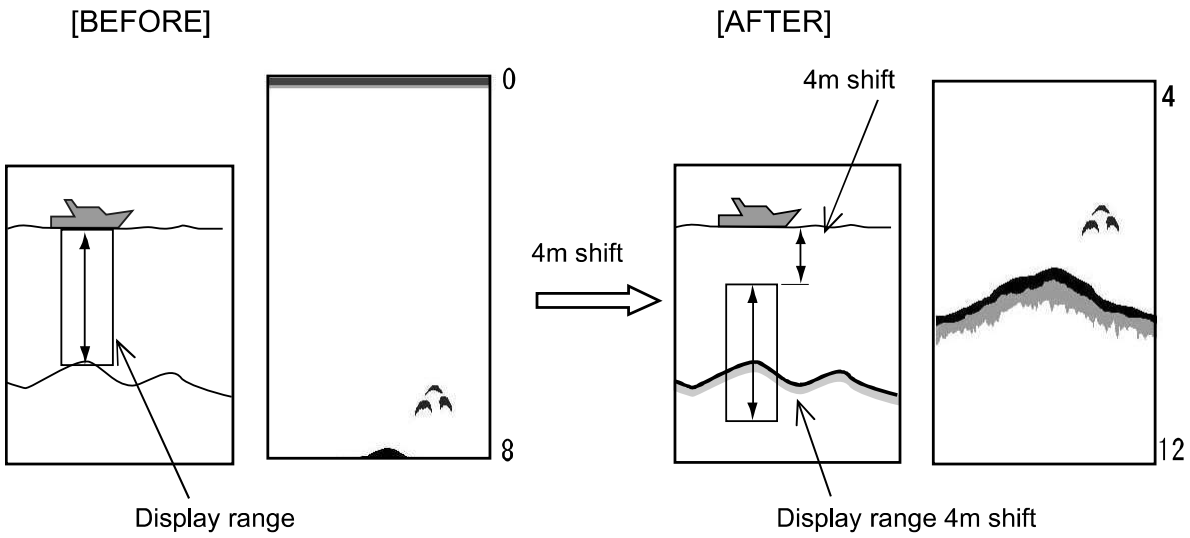
※Possible to set-up the individual range for sonar mode, vertical mode, bottom sonar mode, and sounder mode.

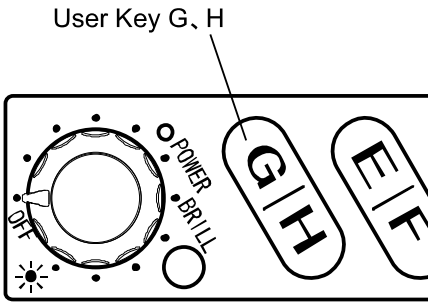
※Use the range showing the sea bottom depth. Otherwise, ghost image may appear from the reflected sea bottom. (p35)

SHIFT (DISPLAY RANGE SHIFT) ***(SOUNDER MODE)***

Shift (Shift of Display)

Possible to shift the display range. For example, initial displayed range becomes to 4m and display range becomes 4-12m when shifting 4m downward at 0-8m depth range. Also, using expand feature would help to enlarge the target area much bigger.





1 **【To shift to shallower depth】**

Press user key 〔 G/- 〕, to shift to shallower.

【To shift to deeper depth】

Press user key 〔 H/+ 〕, to shift to deeper.

SLOW SCAN SPEED ***(SONAR / VERTICAL MODES)***

The reflected echo from sea bottom might appear when using shallower range than the actual depth (distance). Slow the scan speed to decrease or eliminate the ghost image.

Scan Speed Set-up

1 Go to MENU1 – 7.OTHER SONAR.

2 Go to 2.SCAN SPEED.

STD : Normal

LOW : When you use shallower range (short range) than actual bottom depth (distance) , Select this low speed when ghost image appears.

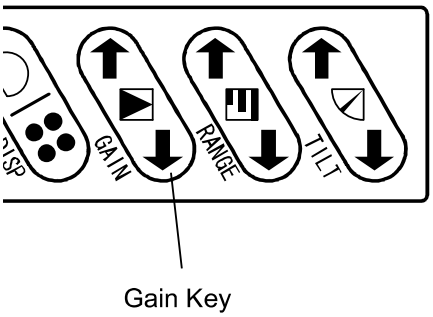
※This function is effective less than 60m range when using S1 or S2.

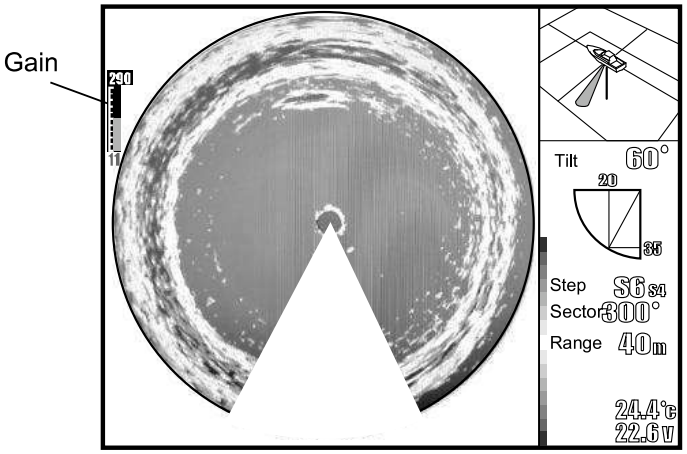
SENSITIVITY

Digital sounder is capable of changing the sensitivity for whole screen (past image) simultaneously. This feature makes easy manual setting possible by sensitivity adjustment while looking at the past image.

Independent sensitivity setting is possible in sonar mode, vertical mode, bottom sonar mode, sounder mode respectively.

Gain Adjustment (Sonar Mode, Vertical Mode, Bottom Sonar Mode)





1 **[Lower Sensitivity]**

Press  to decrease the sensitivity.

[Higher Sensitivity]

Press  to increase the sensitivity.

※ Select 1 screen display, 2 screen display by menu. (→ p41)

●Single Freq Display

1 **[Lower Sensitivity]**

Press , user key B , or user key D , to lower the sensitivity.

[Higher Sensitivity]

Press , user key A , or user key C , to increase the sensitivity.

●2 Split Displays

1 **[Lower Sensitivity]**

Press user key B to lower the sensitivity of right display.

Press user key D to lower the sensitivity of left display.

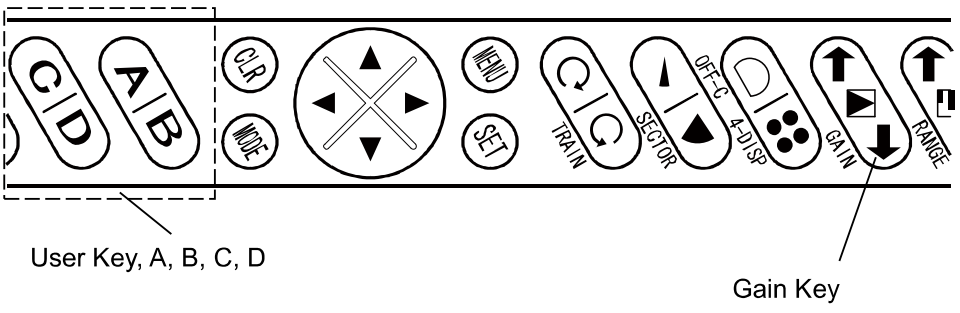
Press to lower the sensitivity of both displays.

[Higher Sensitivity]

Press user key A to increase the sensitivity of right display.

Press user key C to increase the sensitivity of left display.

Press to increase the sensitivity of both displays.



Near/Far Gain

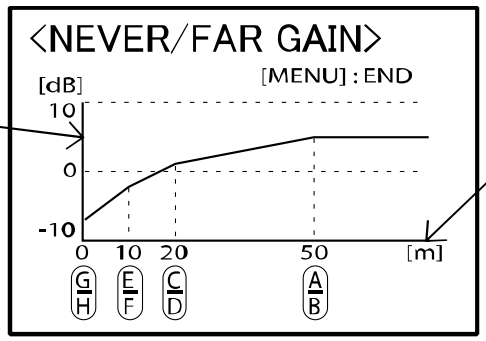
Change the individual gain set-up for near/far distance. Possible to increase the sensitivity only for far distance. Lowering the sensitivity for near distance reduces the reflections of plankton or water surface.

1 Go to MENU1 – 5. NEAR/FAR GAIN. Press (SET) key.

2 Set-up display appears at the lower left.

Sensitivity

±10dB (±10 level)



Distance from vessel

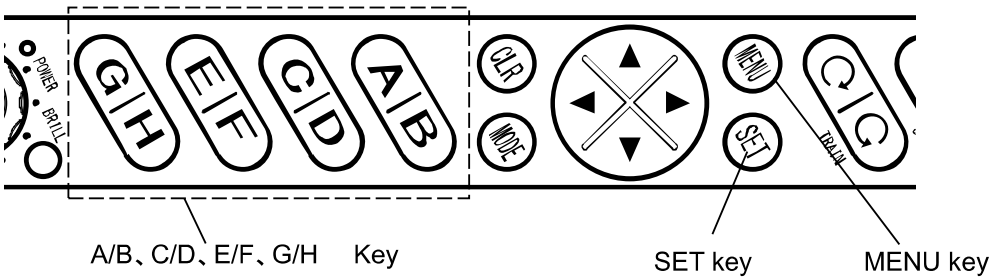
G|H : Vessel position

E|F : 10m distance from vessel

C|D : 20m distance from vessel

A|B : 50m(or more) distance from vessel

(MENU) : End the set-up



A/B、C/D、E/F、G/H Key

SET key

MENU key

※Refer to NEAR/FAR GAIN DISTANCE SET-UP(p39) for more details about the applied distance.

NEAR/FAR GAIN DISTANCE SET-UP
(SONAR / VERTICAL MODES)

Near/Far Gain Distance Set-up

Possible to change the distance applied for NEAR/FAR GAIN (p38)

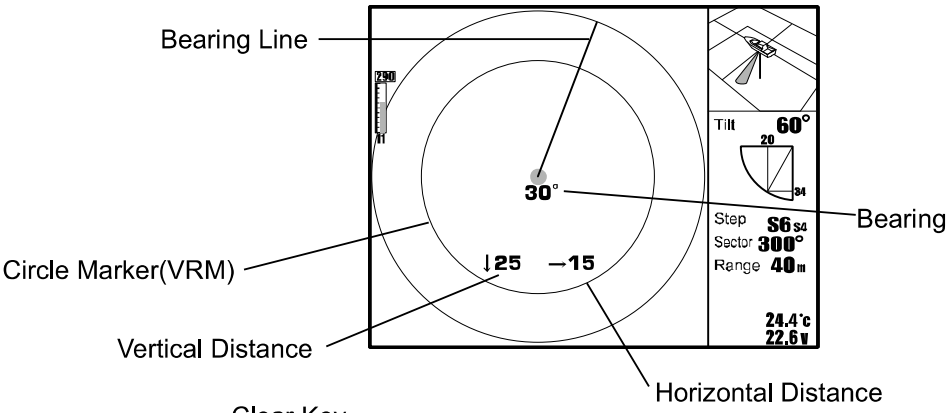
1 Go to MENU1 – 7.OTHER SONAR – 3.NEAR/FAR GAIN TYPE.

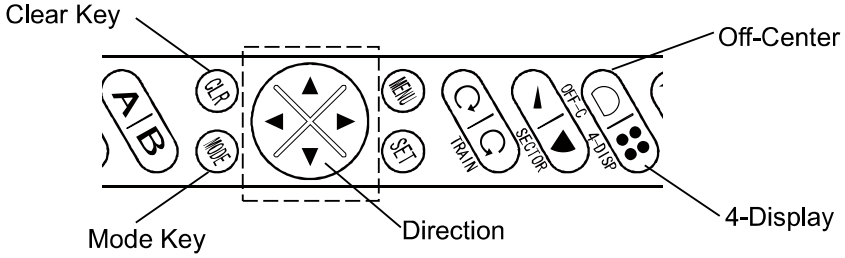
2 Select the type. S or L
Short: 0, 10, 20, 50m
Long: 0, 20, 40, 100m

MARKER (SONAR / VERTICAL MODES)

Marker

Press any keys ◄ ► to display light-blue line.
Press any keys ▲ ▼ to display yellow-circle marker.
The line shows the bearing direction. The bearing is shown in light-blue color digit at center position.
Press ► to rotate the line clockwise. Press ◄ to rotate the line counter-clockwise.
The circle marker shows the distance from ship. Vertical/Horizontal distance appears in yellow color on the display.
Press ▲ key to enlarge the circle marker. Press ▼ key to reduce the marker size
Press clear key (CLR), mode key (MODE), off-center mode key ,
or enable/disable 4-Display mode key to disable the ring marker.

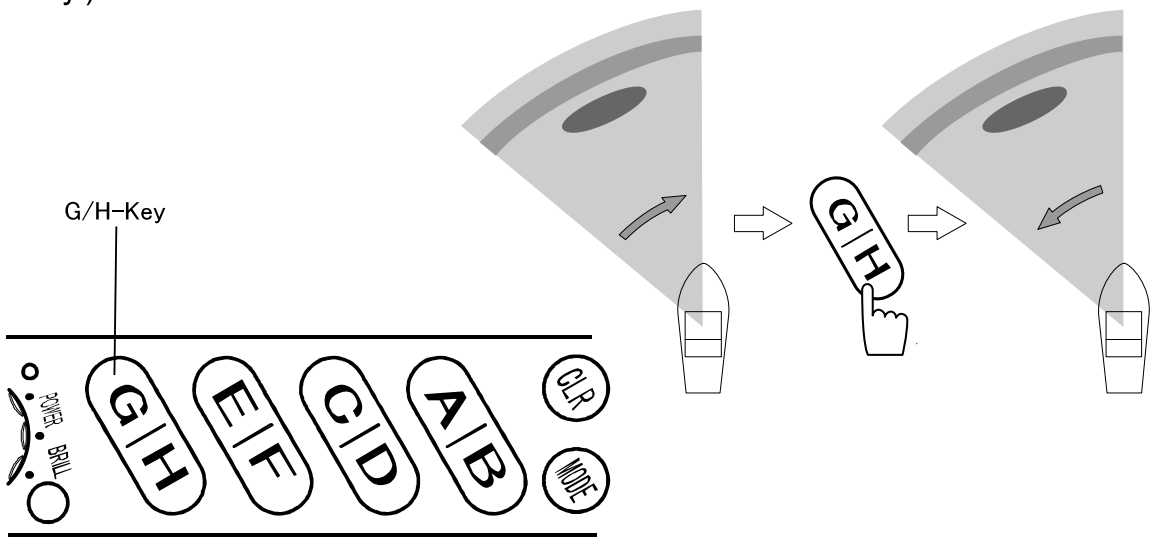




Counter-Rotating Sensor

This function enables the quick double-check on fish schools.

1 Possible to rotate the sensor in opposite direction by pressing G|H key. (Basically, the sensor is rotating clockwise. When the sensor is rotating counter clockwise, it will return to clockwise by reaching the left end or pushing G|H key.)

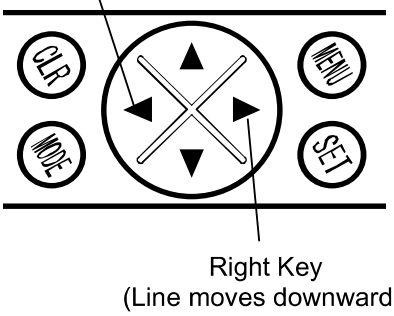


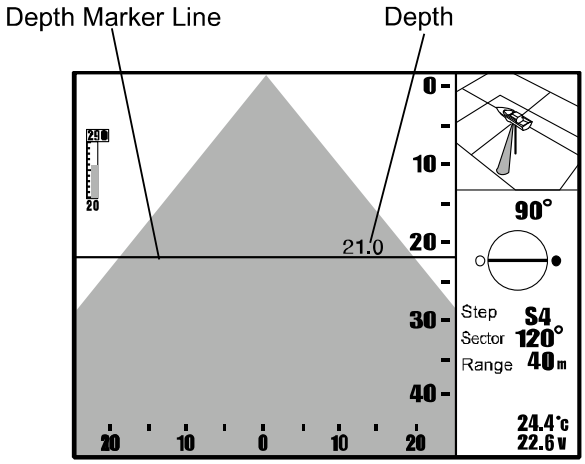
※This function is disabled in 4-Display mode.

DEPTH MARKER ***(BOTTOM SONAR / SOUNDER MODES)***

Depth Marker

Press ► to display the depth marker line moving downward.
Press ◄ to move the marker upward.
The marker depth figure appears on the line.





DISPLAY SWITCH *(SOUNDER MODE)*

Display Switch

1 Go to Menu1 – DISPLAY.

2 Freq : single Freq display
Freq-Freq : same Freq in 2 split screens
(You can adjust each sensitivity on left and right display when you show the same frequency's on both displays.→p37)

※Sonar/Bottom Sonar Mode: 2 split screens cannot be displayed.
※Sonar/Bottom Sonar Mode: No display switch feature.

SWEEPING SPEED ***(SOUNDER MODE)***

Sweeping Speed

【Sounder display consists of the consecutive latest image (image beneath the vessel) at the right edge and keep shifting the past image to the left side. Sweeping speed is the speed to shift the image. Whole display appears differently with this set-up value.

[Relation between Sweeping Speed and Sounding Rate]
Sweeping speed can be selected from 6 different types. The following is the reference of sounding rate for each set-up.

Sweep	Sounding
S	1／Max
4	1／1
3	1／2
2	1／4
1	1／8
STOP	

Fast ↑
Slow ↓

1 Select MENU1 – SOUNDER – 1. SWEEP

2 Select 1. SWEEP.
6-level： STOP, 1, 2, 3, 4, S

[High Speed Mode]

- High speed mode is selected with “S”.
- Max.1,800 times/min is possible for 5m range.

※ *Pulse length is shorter for S mode.*
※ *Detectable depth of S mode is shallower than normal mode.*
※ *Do not use this mode when having problems with low sensitivity due to short pulse length or strange reflection of 2nd echo.*
※ *No advantage of using this mode for the depth of 50m or deeper.*

A-MODE ***(SOUNDER MODE)***

A-Mode

A-mode appears between sounder image and depth indication. The thickness changes depending on the strength of reflected echo signal.

1 Select MENU1 – SOUNDER – 2. A-MODE.

2 Set 2. A-MODE.
ON : A-Mode ON
OFF : A-Mode OFF

EXPANSION RATIO ***(SOUNDER MODE)***

Expansion Mode

[Expansion Display]
Expanded display appears on the left side of screen.

1 Select MENU1 – SOUNDER – 3. EXP MODE.

2 Select from OFF, BOTTOM LOCK, AUTO-EXP, or MANUAL-EXP.

OFF : Clear the expansion mode.
Bottom Lock : Make sea bottom straight line, and expand the upper area from the bottom.
Auto-Exp : Expanded upper/lower directions from sea bottom as the center.
Manual-Exp : Expanded upper/lower directions from the selected position.
Use ▲,▼ to shift the location.

The display range varies depending on the expansion ratio selected.

Expansion Ratio

Expansion ratio can be selected from x2, x4, x8.

1 Select MENU1 – SOUNDER – 4. EXP RATE.

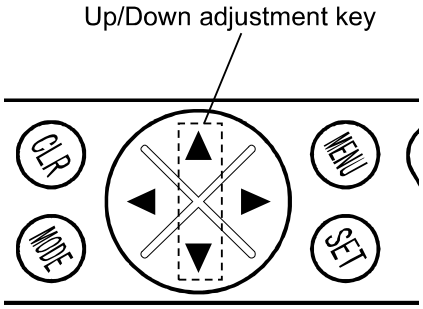
2 Set 4. EXP RATE.
×2, ×4, ×8

SHIFT EXPANSION POSITION (SOUNDER MODE)

Shift Expanded Area

Possible to move the expanded area toward water surface or bottom side.

※ *Select the expansion ratio from x2, x4, x8.*
※ *Default set-up: x4 for manual/auto expansion*



1 Select MENU1 – SOUNDER – 3.EXP MODE.

2 Select MANUAL IN 3.EXP MODE.

3 Use ▲,▼ to move the area.
Press ▲ to move upward.
Press ▼ to move downward.

CLEAN ECHO (SOUNDER MODE)

Clean Echo

Reduce the asynchronous noise such as other sounders, electronic noise, air bubble, and mechanical noise.

1 Select MENU1 – SOUNDER – 5.OTHER SOUNDER – 1.C- ECHO.

2 Set-up 1.C-ECHO.
OFF, L, M, H

WATER TEMP GRAPH ***(SOUNDER MODE)***

Water Temp Graph

Water temp graph appears. It's easy to see the fishing points by knowing the variation of water temperature and tide change.

1 Select MENU1 – SOUNDER – 5.OTHER SOUNDER – 2. TEMP GRAPH.

2 Select 2. TEMP GRAPH.

ON : Use

OFF : No Use

※ *Optional water temp sensor is required to show temp graph.*

FISH ALARM ***(SOUNDER MODE)***

Fish Alarm

Alarm is ON when the fish is detected.

1 Select MENU1 – SOUNDER – 5.OTHER SOUNDER – 3.FISH ALARM.

2 Select 3.FISH ALARM.

S : High sensitivity mode to detect small/big fish schools.

L : Low sensitivity mode to detect only big fish school.

OFF : Fish alarm is OFF.

Caution) Fish alarm may react to the objects other than fish.

DEPTH ALARM (SOUNDER MODE)

Depth Alarm

[Depth Alarm]

Alarm is ON within or exceeding the range of 2 different depths (Depth Set1, Depth Set2).

1 Select MENU1 – SOUNDER – 5.OTHER SOUNDER – 4.DEPTH ALARM – 1.ALARM SET.

2 Select 1.ALARM SET

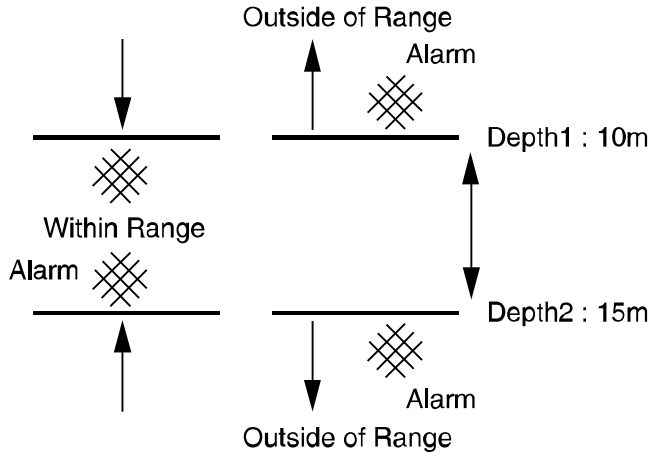
IN Range : Alarm is ON within the range of 2 selected depths.

OUT Range : Alarm is ON outside the range of 2 selected depths.

OFF : Depth alarm is OFF.

3 Set-up 2.DEPTH SET1 and 3.DEPTH SET2.

Ex.)



SUPER RANGE (SOUNDER MODE)

Super Range

Whole past image changes automatically according to the current depth (displayed depth range on screen) if changed any.

1 Select MENU1 – SOUNDER – 5.OTHER SOUNDER -5.SUPER RANGE

2 Select 5.SUPER RANGE.
ON : Use
OFF : No Use

DEPTH DISPLAY(SOUNDER MODE)

Depth Display

Select the display size of depth digit.

1 Select MENU1 – SOUNDER – 5.OTHER SOUNDER – 6.DEPTH DIGIT

2 S, M, L, OFF (No display)

SWEEPING STEP (SOUNDER MODE)

Sweeping Step

Select the sweeping step (line number) per each. (1, 2, 3)

1 Select MENU1 – SOUNDER – 5.OTHER SOUNDER – 7.SWEEPING STEP.

2 Select 7.SWEEPING STEP
1, 2, 3

※"2 lines" means that same echo picture appears for 2 lines at once.

BACKGROUND COLOR

Background Color

Visual image of display looks differently by surrounding brightness. It is easier to see the image by selecting the background color from 4 different colors.

1 Select MENU2 – 1.BACK GROUND .

2 Select 1.BACK GROUND .
(black, cyan, blue, white)

COLOR TONE

Color Tone

Set-up the color tone of display.
Day mode is for brighter display.
Night mode is for darker display.

1 Select MENU2 – 2.COLOR TONE.

2 Select 2.COLOR TONE.
(DAY / NIGHT)

COLOR CONFIGURATION

Color Configuration

Reflected signal of sound wave is converted into 17 ranks of digital signal according to the strength of reflection. Color configuration is the color set-up for 16 ranks except background color. Fishfinder image is shown by the color configuration. The displayed color shows the strength of reflection. Also, specific reflection can be emphasized by changing the color configuration.

1 Select MENU2 – 3.COLOR SETTING –
1.COLOR CONFIG.

2 Select 1.COLOR CONFIG.
3 patterns: 0~2

COLOR ERASE

Color Erase

Fish schools and sea bottom are displayed on screen according to the reflected echo and selected color pattern.
“Color Erase” function deletes the color of the weakest reflection one by one so that fish schools can be judged easier by erasing the colors of planktons or dirt inside the water.

1 Select MENU2 – 3.COLOR SETTING – 2.COLOR ERASE.

2 Select 2.COLOR ERASE.
13 levels: OFF~12

INTENSE LEVEL

Intense Level

This set-up shows more color of strong reflection (signal).

1 Select MENU2 – 3.COLOR SETTING – 3.INTENSE COL.

Low
Standard
High
↓ Stronger coloration

CLUTTER

Clutter

Remove unnecessary weak noise and distinguish the fish school clearly.

1 Select MENU2 – 3.COLOR SETTING – 4.CLUTTER.

-1
Standard
1
2
↓ Stronger noise reduction

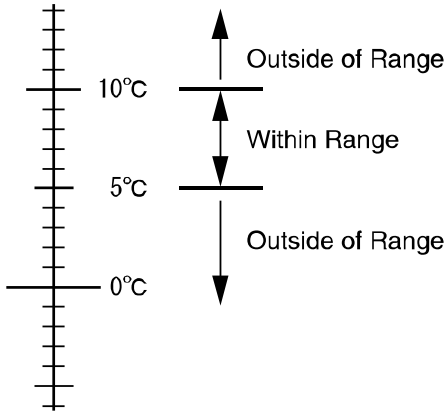
WATER TEMP ALARM

Water Temp Alarm

Alarm is ON within or exceeding the range of 2 different water temp.

※ *Optional water temp sensor is required for water temp alarm.*

Ex.) Temp1 : 5℃
Temp2 : 10℃



1 Select MENU2 – 4. TEMP ALARM – 1.ALARM SET.

2 Select 1.ALARM SET-UP.

IN RANGE : Alarm is ON within the range of 2 selected temp.

OUT RENGE : Alarm is ON outside the range of 2 selected temp.

OFF : Temp alarm is OFF.

3 Set-up Water temp1 and 2.

OUTPUT POWER

Output Power

Select the type of output power.

1 Select MENU2 – 5.OUTPUT POWER.

2 Select 5.OUTPUT POWER.
OFF, Low, High
(OFF: No transmit. Receiver is ON.)

※ *Factory set-up: "High". Lower the output power when needed.*

PULSE LENGTH

Pulse Length

Possible to select the pulse length from “ SHORT ” and “ NORMAL ”.

1 Select MENU2 – 6.PULSE LENGTH.

2 Select 6.PULSE LENGTH.

SHORT : Shorter detectable range, but higher resolution. Also, lower power consumption.

NORM : Normal mode

SENSITIVITY MODE

Sensitivity Mode

Select the receiver sensitivity. Choose “High” when fishing at very deep water etc.

1 Select MENU2 – 7.SENSITIVITY.

2 Select 7.SENSITIVITY .

STD : Normal

HIGH : Higher sensitivity

※ *Use GAIN key for normal sensitivity adjustment.(Refer to p.36 “SENSITIVITY)”*

*SCALE LINE (**BOTTOM SONAR / SOUNDER MODES**)*

Scale Line

Horizontal line (scale line) appears on the screen.

1 Select MENU2 – 8.SCALE LINE.

2 Select 8.SCALE LINE.
ON : Use
OFF : No Use

WATER TEMP CORRECTION

Water Temp Correction

Correct the water temperature.

1 Select MENU2 – 9.ADJUST -1. TEMP.CORRECT.

2 Select 1.TEMP.CORRECT.
-3.0℃~+3.0℃

VOLTAGE CORRECTION

Voltage Correction

Correct the voltage when indicated voltage differs from actual one.

1 Select MENU2 – 9. ADJUST – 2.VOLT.CORRECT.

2 Select 2.VOLT CORRECT.
-3.0V～+3.0V

INITIALIZATION

Initialization

Initialize all the set-up.

1 Select MENU2 – 0.INITIALIZE – 1.INITIAL ALL.

2 1.INITIAL ALL.
Press SET key to start the initialization.

RESET TRANSDUCER

TD Set-up

1 Select MENU2 – 0.INITIALIZE – 2.TD SET-UP.

2 Use direction key ▲ ▼ to select one transducer.

●TD Set-up

Select the frequency from 1.SELECT TD.

TD303:290kHz

TD304:140~240kHz

●SCAN_PORT Set-up

Be sure to set-up SCAN_PORT every time after changing the transducer.

●To select hull unit

Select the hull unit to use.

Manual : Manual hull unit

Auto : Auto hull unit

FREQUENCY CHANGE

Freq Set-up

Possible to change the freq when using TD304.

1 Go to MENU2-0.INITIALIZE-7.FREQ SET UP.
Press (SET) key.

2

◄ Key : Lower Freq

► Key : Higher Freq

(MENU) MENU key : close the box

※ *Close the freq. set-up box to complete.*

DEPTH UNIT

Depth Unit

Select from “Meter “ , ”Feet” , ”Fathom” or “Brazas”.

1 Select MENU2-0. INITIALIZE -3. DEPTH UNIT.

2 Select 3. DEPTH UNIT.
m, ft, fa, br

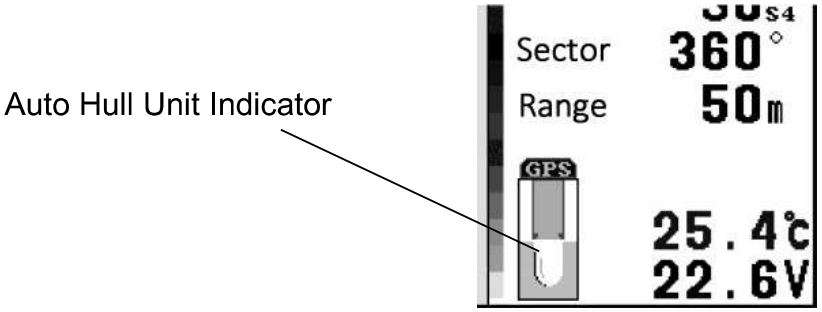
AUTO HULL UNIT

When you use auto hull unit, please select "AUTO" for HULL UNIT of TD SET-UP (p14, 54). "Auto Hull Unit Indicator" appears on the display. UP/DOWN of auto hull unit is enabled.

※ Please operate UP/DOWN of auto hull unit when the vessel is in still condition. (5 knots or less speed). Otherwise, it causes the damage or to the hoist system.

【Auto Hull Unit Indicator】

Display the location of sonardome.



※ Please consider auto hull unit indicator as the brief reference. The location status may vary from the actual location. (When buzzer of auto hull unit alerts, hull unit is being operated.)

※ When the transducer is projected under hull unit, it flashes in blue and red over 5 knots and lights in red over 11 knots. (It is effective when GPS mark is shown (→ p57).)

UP/DOWN of HULL UNIT

Controlled by MENU operation.

1 Set to [AUTO HULL UNIT] on menu 1.

UP : Store the transducer.

DOWN : Project the transducer.

※ UP/DOWN is disabled while sailing.
(It is effective when GPS mark is shown (→ p57).)

※ When buzzer of auto hull unit alerts, hull unit is being operated.

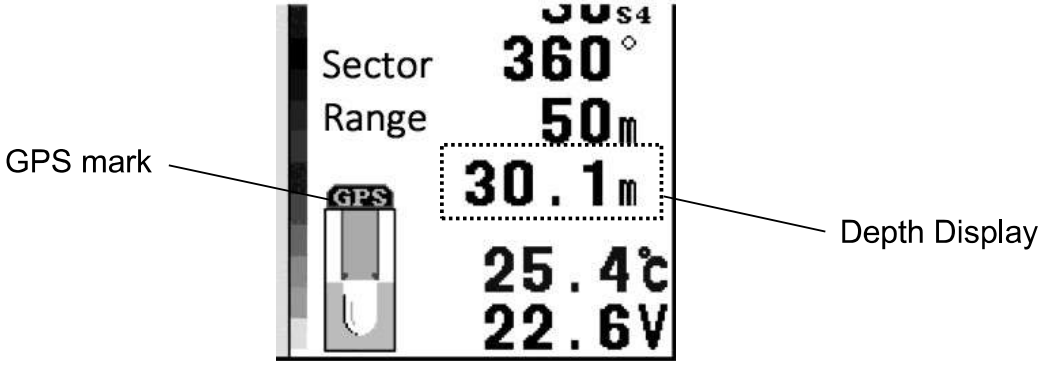
USAGE OF GPS DATA

When you input NMEA data (GGA, VTG or RMC) relating to positioning into the unit, GPS mark is shown. (※Unless positioning, GPS mark is not shown.)
When GPS mark is shown (when positioning), some functions of hoist unit become effective.

USAGE OF DEPTH DATA

When you input NMEA data (DBT) relating to depth into the unit, the depth is shown.

【Sonar Mode and Bottom Sonar Mode】



【Sounder Mode】

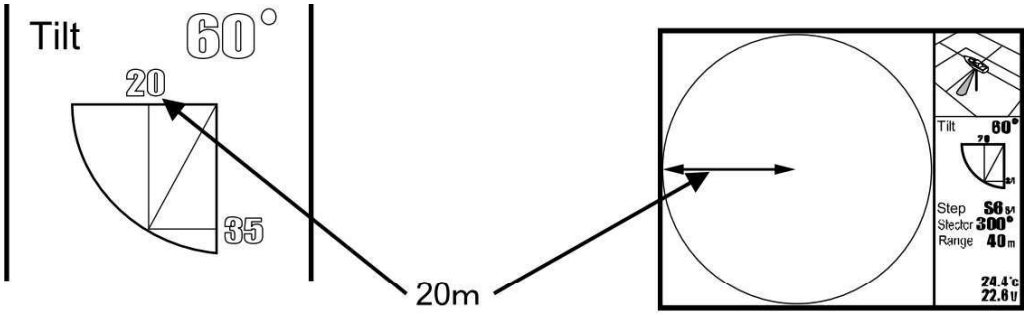
The depth can be shown even when sweep speed is selected "FREEZE".

WAKE DISPLAY

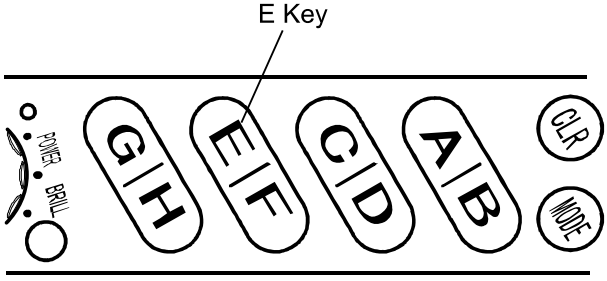
(SONAR/ VERTICAL MODES)

Enable to display the wake on the screen and input the event mark (fish mark) when inputting NMEA data, GGA, HDT (or HDG) and VTG (or RMC).

Display range of wake is linked to sonar range. Therefore, wake range changes according to sonar setup such as tilt and sonar range.
※This function does not work within 80°～ 90°tilt setting.
※Refer to the following sample picture of 20m range (horizontal distance).



Possible to input the event mark only when the wake display is activated
Press E key to input the event mark
is the only mark shape. The color is same as wake color.



Wake Memory : 1,000 points
Mark Memory : 100 points

※New wake/ event mark overwrites on older data when the memory limits are exceeded.
※Wake/ event mark will not be saved to both Multi-Scan Echo Sounder and GPS Plotter
Wake/ event mark will be erased after turning OFF the unit.
※This function does not work while using 4 display mode.

Wake Display

Display the wake.

1 【SONAR MODE】/【VERTICAL MODE】
Go to MENU1 - 6. OTHER SONAR - 5. WAKE
- 1. WAKE DISPLAY.

2 Set - up 1. WAKE DISPLAY.
ON : Wake Display ON
OFF : Wake Display OFF

Wake Memory Interval

Set the interval of wake memory per sec.
The longer wake memory interval is selected, the more data can be displayed.

1 【SONAR MODE】/【VERTICAL MODE】
Go to MENU1 - 6. OTHER SONAR - 5. WAKE
- 2. WAKE MEMORY INTERVAL

2 ◄► : Set the interval of wake memory
1sec : Wake Memory is 16 min. and 40 sec.
5sec : Wake Memory is 1 hr 23 min. and 20 sec.
10sec : Wake Memory is 2 hrs 46 min. and 40 sec.
20sec : Wake Memory is 5 hrs 33 min. and 20 sec.
30sec : Wake Memory is 8 hrs and 20 min.

※New wake/ event mark overwrites on older data when the memory limits are exceeded.

Wake / Mark Color

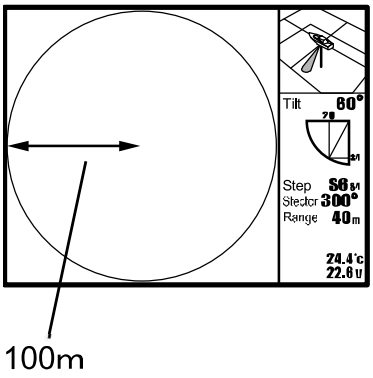
Set a wake and mark color.

1 【SONAR MODE】/【VERTICAL MODE】
Go to MENU1 - 6. OTHER SONAR - 5. WAKE
- 3. WAKE/ MARK COLOR

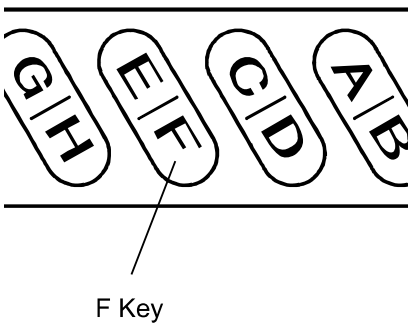
2 ◄► : Set a wake and mark color.

Wake Display Range

Set-up wake range display will be activated for 30 sec when F key is pressed.
(Press F key to restore to original display range instantly.)
100m will be shown on the lower right of the screen while activating this function.
※In this case, display range will be 100m regardless of the set-up tilt and range of sonar.



Possible to see the whole picture even in the shallow range set-up or zoom around the boat even in the deep range set-up.



1 【SONAR MODE】/【VERTICAL MODE】
Go to MENU1 - 6. OTHER SONAR - 5. WAKE
- 4. WAKE DISPLAY RANGE

2 ◄► : Set the wake display range.
10m、20m、30m、50m、80m、100m、150m、200m、300m、500m

※This function does not affect the original sonar setup.

NMEA SENTENCE

RX Sentence Monitor

Display the NMEA sentences.

1 Go to MENU2 - 0. INITIALIZE - 6. RX SENTENCE MONITOR

2 RX Sentence Monitor

MODE Key : Pause and play

MENU Key

OR : Close the menu

CLR Key

※NMEA1 = Green color, NMEA2 = Violet Color

IR (INTERFERENCE REJECTION : SONAR/BOTTOM SONAR MODES)

IR

IR may reduce the level of interference from other sounders.

1 [SONAR MODE]
Go to MENU1-Other Sonar Setup.
[Bottom Sonar Mode]
Go to MENU1-Other Bottom Sonar Setup.

2 IR
0. NORMAL : No IR
1. IR-1 : The same scan speed but lower sensitivity.
2. IR-2 : The same sensitivity but slower scan speed.

※ IR function cannot remove all the interference.

MENU LIST

<MENU 1>

※ Factory set-up: Items shown with underlined block letter

Sonar

1. STEP			[S1 , S2 , S4 ,**S6**, S6F]	→p22
2. SHIP MARK			[**OFF ,** ON]	→p23
3. MODE			[**SONAR**, VERTICAL, BTM SONAR, SOUNDER]	→p16
4.ANIMATION			[OFF , **ON**]	→p25
5.NEAR/FAR GAIN				→p38
6. OTHER SONAR	1.4-DISPLAY ORDER		[1 2 / 4 3 , 1 2 / 3 4]	→p27
	2. SCAN SPEED		[**STD** , LOW]	→p35
	3. NEAR/FAR GAIN TYPE		[**S** , L]	→p39
	4.IR		[**0.NORMAL**,1.IR-1,2.IR-2]	→p62
	5.FISH ALARM		[**OFF ,** ON]	
	6.WAKE	1.WAKE DISPLAY	[**OFF**,ON]	→p59
		2.WAKE MEMORY INTERVAL	[1sec,**5sec**,10sec,20sec,30sec]	→p59
		3.WAKE /MARK COLOR		→p60
		4.WAKE DISPLAY RANGE	[10m,20m,30m,50m,80m,**100m**, 150m,200m,300m,500m]	→p60
7. STABILIZER ※1			[**OFF ,** ON]	
AUTO HOIST SYSTEM ※2			[**UP** , DOWN]	→p56

※1 Only when heading sensor (option) is used. ※2 Only when hoist system is set "AUTO".

<MENU 1>

Vertical

1.STEP			[S1, S2, S4, **S6**, S6F]	→p22
2.SHIP MARK			[**OFF** , ON]	→p23
3.MODE			[SONAR,VERTICAL, BTM SONAR,SOUNDER]	→p16
4.VERTICAL DISPLAY	1.CONTRAST TARGET		[OFF , **FRONT**, REAR]	→p29
	2.CONTRAST LEVEL		[LOW , **MID**, HIGH]	→p29
5.NEAR / FAR GAIN				→p38
6.OTHER SONAR	1.SCAN SPEED		[**STD**, LOW]	→p35
	2.NEAR / FAR GAIN TYPE		[**S** , L]	→p39
	3.IR		[**0 NORMAL**, 1 IR-1, 2 IR-2]	→p62
	4.FISH ALARM		[**OFF**,ON]	
	5.WAKE	1.WAKE DISPLAY	[**OFF**,ON]	→p59
		2.WAKE MEMORY INTERVAL	[1sec,**5sec**,10sec,20sec,30sec]	→p59
		3.WAKE /MARK COLOR		→p60
		4.WAKE DISPLAY RANGE	[10m,20m,30m,50m,80m,**100m**, 150m,200m,300m,500m]	→p60
7.STABILIZER ※1			[**OFF,** ON]	
8.AOUT HOIST SYSTEM ※2			[**UP**, DOWN]	→p56

※1 Only when heading sensor (option) is used. ※2 Only when hoist system is set "AUTO".

<MENU 1>

Bottom Sonar

1. STEP		[S1 , S2 , S3 , **S4** , S5 , S6]	→p22
2. SHIP MARK		[**OFF** , ON]	→p23
3. MODE		[SONAR, VERTICAL, BTM SONAR, SOUNDER]	→p16
4.ANIMATION		[OFF , **ON**]	→p25
5.OTHER BTM SONAR	1. 4-DISPLAY ORDER	[1 2 / 4 3 , 1 2 / 3 4]	→p27
	2.IR	[**0.NORMAL**,1.IR-1,2.IR-2]	→p62
AUTO HOIST SYSTEM ※1		[**UP** , DOWN]	→p56

※1 Only when hoist system is set "AUTO".

<MENU 1>

Sounder

1. SWEEP			[STOP , 1 , 2 , 3 , **4** , S]	→p42
2. A-MODE			[**OFF** , ON]	→p43
3. EXP MODE			[**OFF** , BOTTOM LOCK , AUTO-EXP , MANUAL-EXP]	→p43
4. EXP RATE			[×2 , **×4** , ×8]	→p44
5. OTHER SOUNDER	1.C-ECHO		[OFF , **L** , M , H]	→p44
	2.TEMP GRAPH		[**OFF** , ON]	→p45
	3.FISH ALARM		[**OFF** , S , L]	→p45
	4.DEPTH ALARM	1.ALARM	[**OFF** , IN RANGE , OUT RANGE]	→p46
		2.DEPTH SET 1	[1m ～ 800m] **10m**	→p46
		3.DEPTH SET 2	[1m ～ 800m] **500m**	→p46
	5.SUPER RANGE		[**OFF** , ON]	→p47
	6.DEPTH DIGIT		[OFF , S , **M** , L]	→p47
	7.SWEEPING STEP		[**1** , 2 , 3]	→p47
6. MODE			[SONAR, VERTICAL, BTM SONAR, SOUNDER]	→p16
7. DISPLAY			[**FREQ** ,FREQ-FREQ]	→p41
AUTO HOIST SYSTEM ※1			[**UP** , DOWN]	→p56

※1 Only when hoist system is set "AUTO".

<MENU 2>

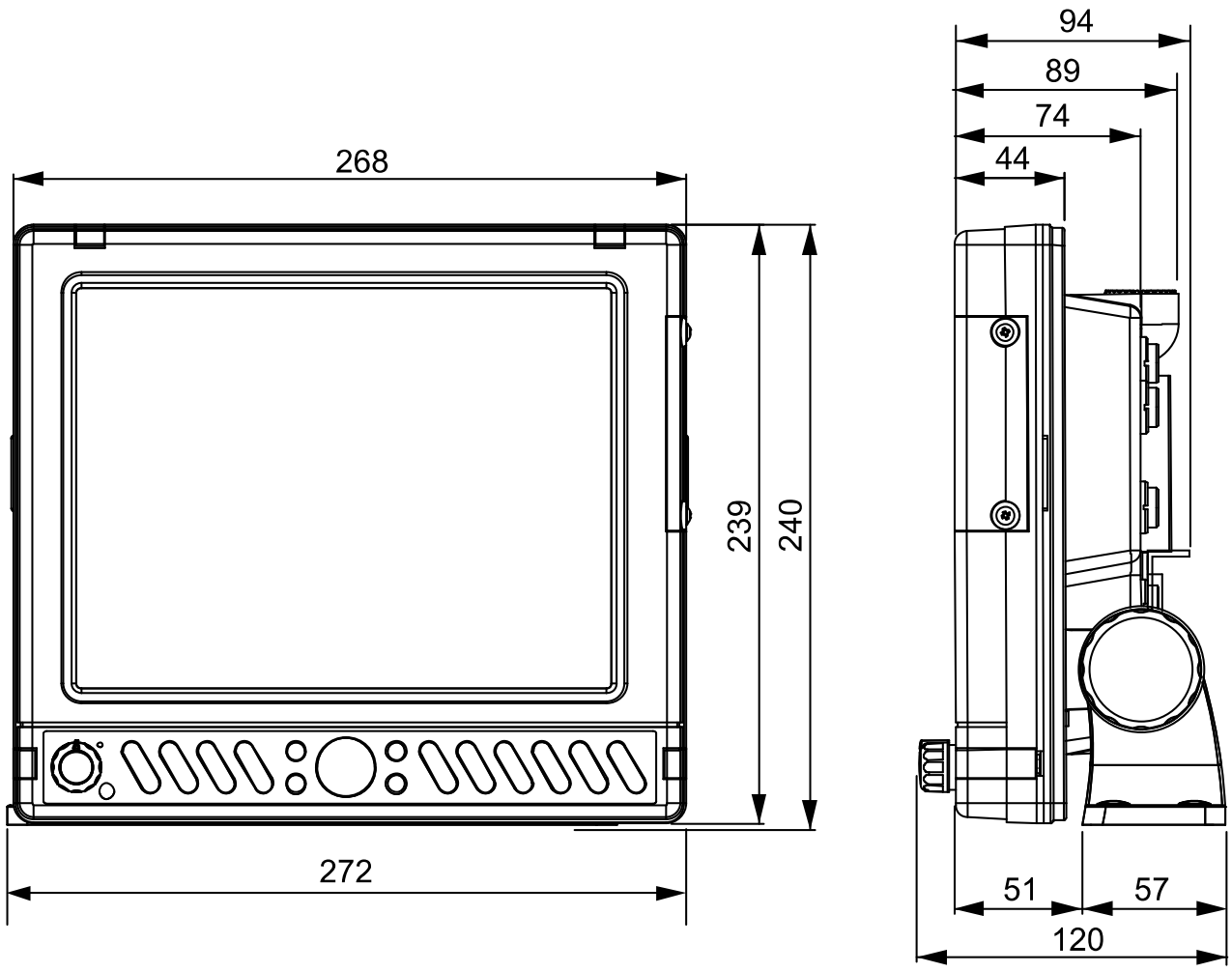
1.BACK GROUND			[BLACK , **CYAN** , BLUE , WHITE]	→p48
2.COLOR TONE			[**DAY** , NIGHT]	→p48
3.COLOR SETTING	1.COLOR CONFIG		[0 , 1 , **2**]	→p48
	2.COLOR ERASE		[**OFF** ～ 12]	→p49
	3.INTENSE COL		[Low , **STD** ,HI]	→p49
	4.CLUTTER		[-1 , **STD** , 1 , 2]	→p49
4.TEMP ALARM	1.ALARM SET		[**OFF** , IN RANGE , OUT RANGE]	→p50
	2.TEMP.SET1		0.0 ～ 50.0℃ **15.0℃**	→p50
	3.TEMP.SET2		0.0 ～ 50.0℃ **20.0℃**	→p50
5.OUTPUT POWER			[OFF , LOW , **HIGH**]	→p50
6.PULSE LENGTH			[SHORT , **NORM**]	→p51
7.SENSITIVITY			[**STD** , HIGH]	→p51
8.SCALE LINE			[**OFF** , ON]	→p52
9.ADJUST	1.TEMP.CORRECT		-3.0℃ ～ +3.0℃ **0.0℃**	→p52
	2.VOLT.CORRECT		-3.0V ～ +3.0V **0.0V**	→p53
0.INITIALIZE	1.INTIAL ALL			→p53
	2.TD SET-UP	1.TD SET-UP	[TD303,TD304]	→p54
		2.SCAN_PORT	[**A** , B , C , D]	→p54
		4.HOIST SYSTEM	[**MANUAL** , AUTO]	→p54
	3.DEPTH UNIT		[**m**, ft , fa , br]	→p55
	4.SAVE IMAGE W/ SET		[**OFF** , ON]	→p31
	5.BANDWIDTH		[WIDE, **STD**, NAR-1, NAR-2]	
	6.RX SENTENCE MONITOR			→p61
	7.FREQ SET *※1*			→p55

※1 Only when TD304 is used.

DIMENSIONAL DRAWING

<MAIN UNIT>

Unit : mm



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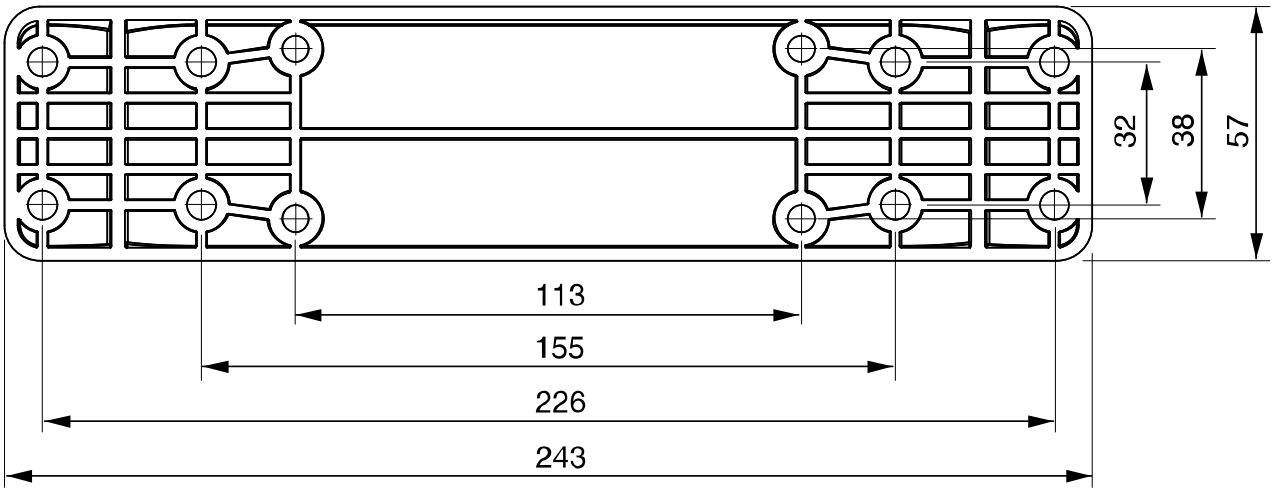
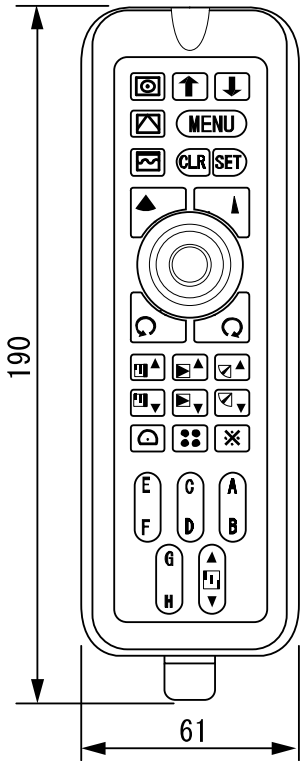
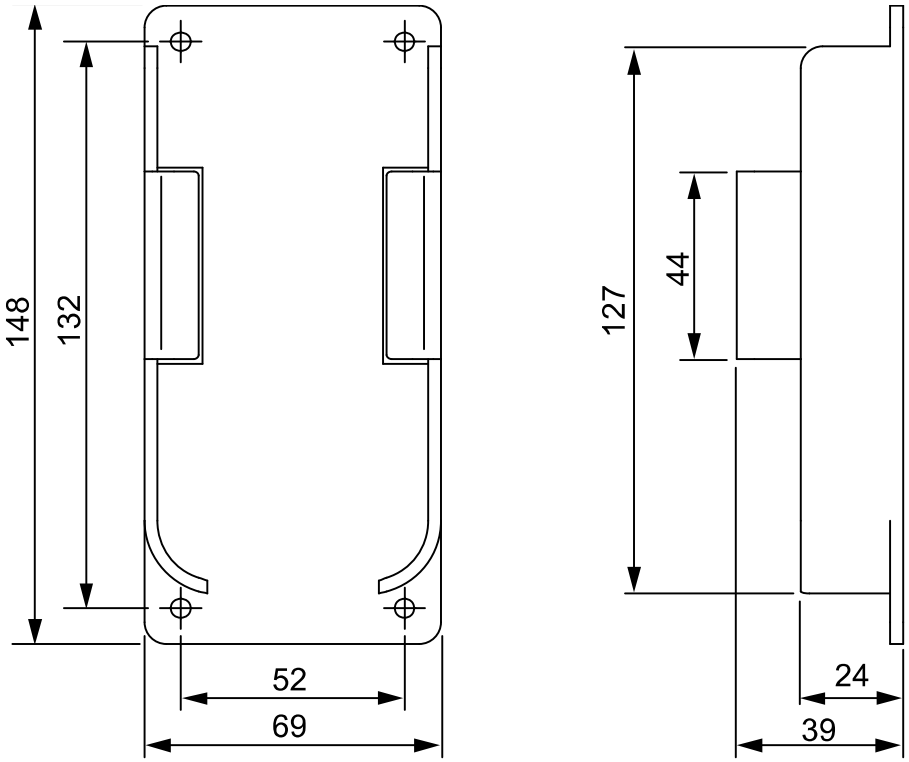


<Remote Dimensions> (option) Unit : mm



<Remote Holder Dimensions> (option)



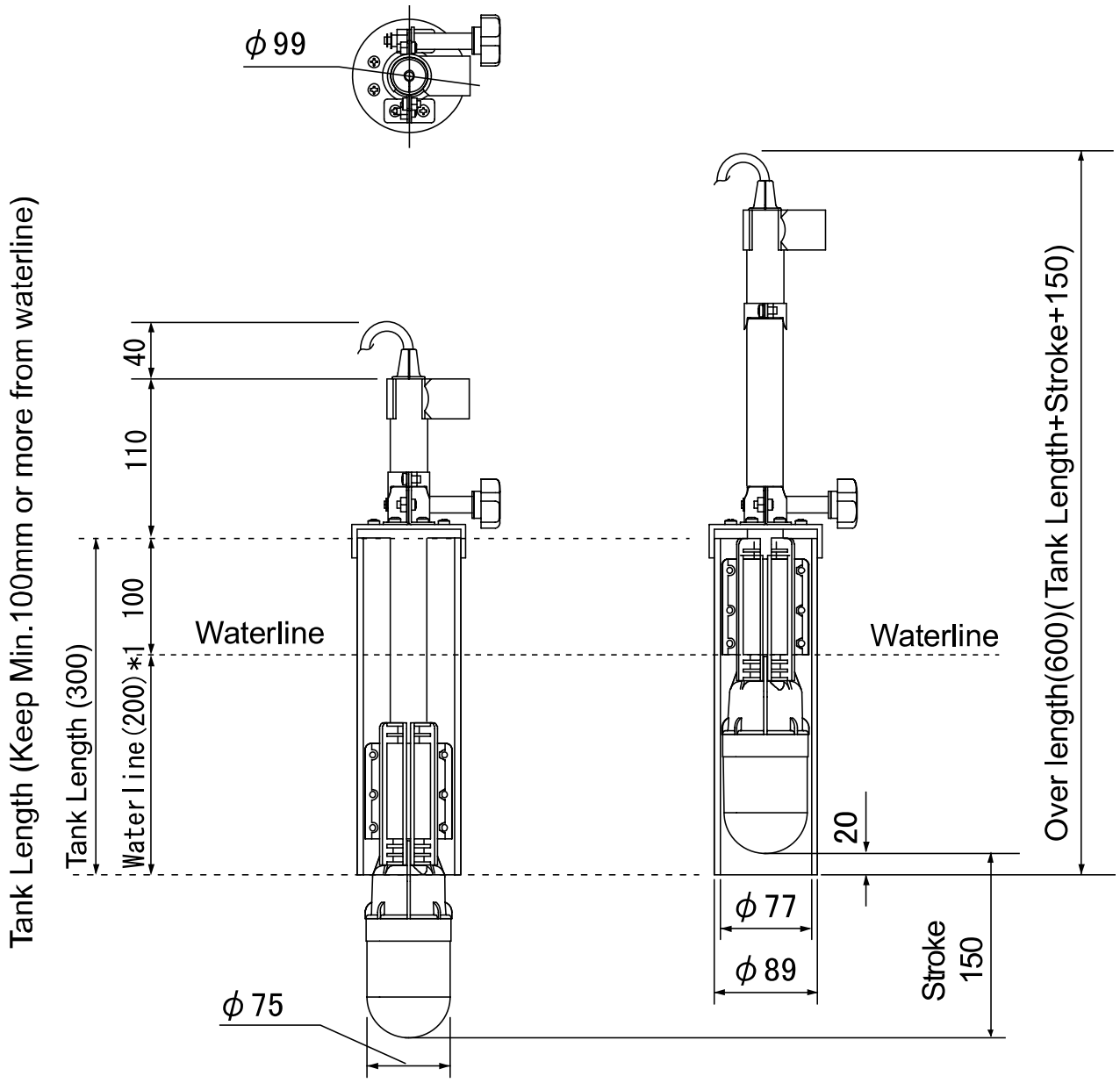
HULL UNIT DIMENSIONS

※Please refer to operation manual supplied with auto hull unit for auto hull unit.

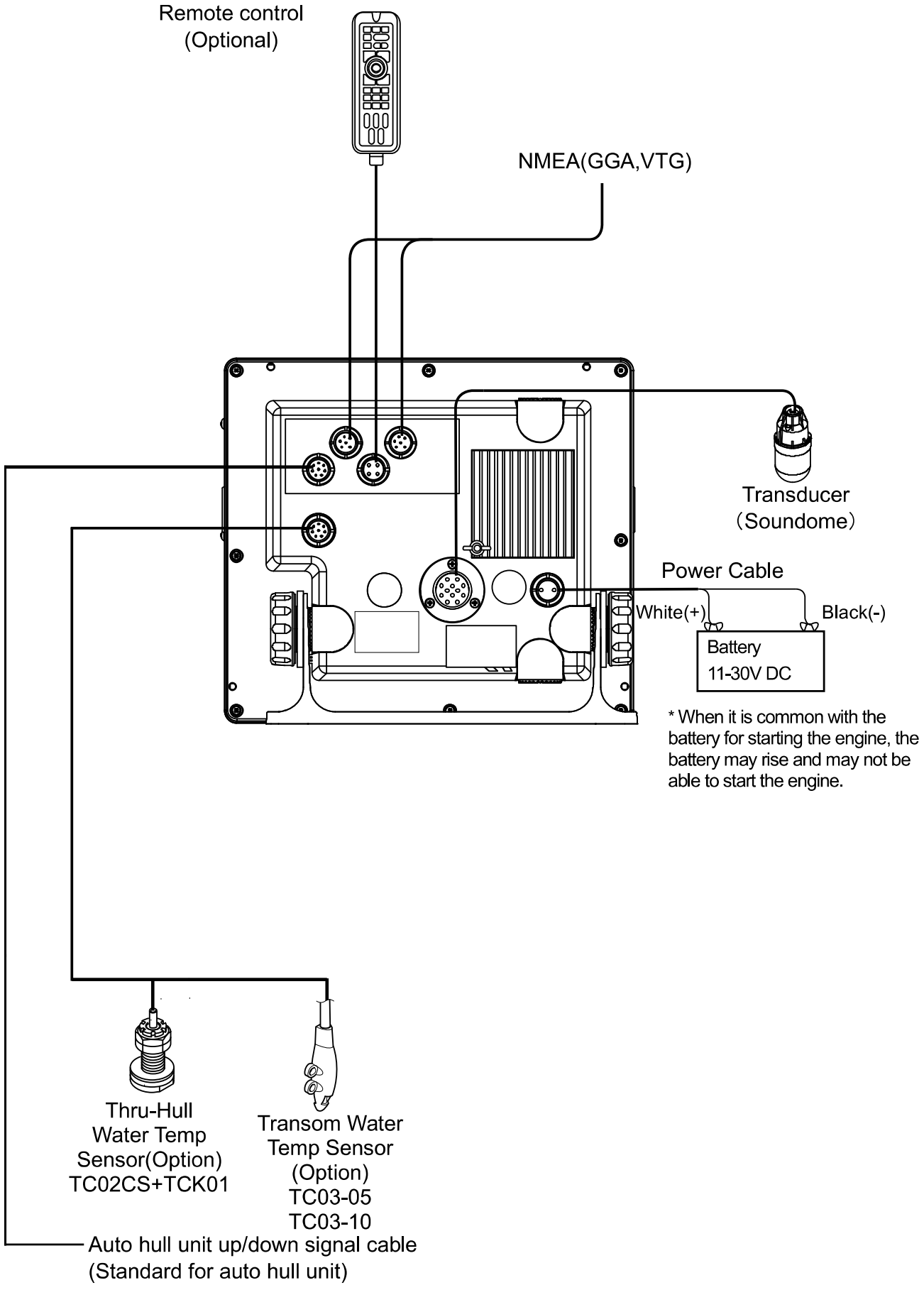
Unit : mm

Case of minimum-size drawing when the waterline is 200mm.

*1:Keep the tank length of 300mm or more even if waterline is below 200mm.

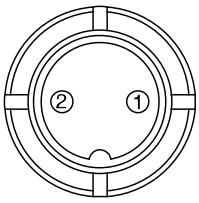


MAIN UNIT CONNECTION



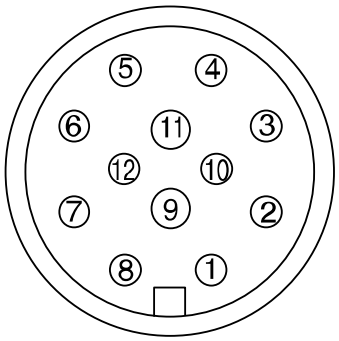
CONNECTOR INFO

Caution: Connector image when looking at the main unit.

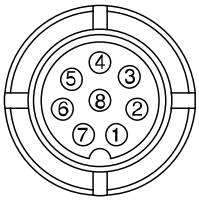


1. Connector for Power Supply
   1. Power Supply(＋) 11～30V
   2. Power Supply(－)

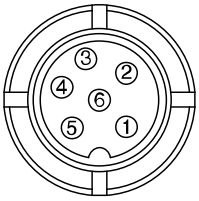
2. Tx/Rx Connector 12P



Pin#	Line	Description
1	White	TD
2	Orange	Scan Motor-$\overline{B}$
3	Yellow	Scan Motor -$\overline{A}$
4	Red	Scan Motor-A
5	Purple	Tilt Motor-$\overline{B}$
6	Cyan	Tilt Motor-B
7	Pink	Tilt Motor-A
8	Black	TD
9	Brown	Reed Switch
10	Blue	Scan Motor-B
11	Shield	
12	Green	Tilt Motor-$\overline{A}$



3. 8P Connector
   1. GND
   2. External synchronization output ※n/a for 2nd 8P connector below.
   3. Auto hull unit input (-) ※n/a for 2nd 8P connector below.
   4. Auto hull unit input (+) ※n/a for 2nd 8P connector below.
   5. Electric motor device control output ※n/a for 2nd 8P connector below.
   6. Water temperature sensor (+)
   7. Water temperature sensor (-)
   8. n/a



4. NMEA (GGA , VTG or RMC)
   1. GND
   2. Data input (-)
   3. Data input (+)
   4. n/a
   5. n/a
   6. DC10.5V (200mA) output

MAIN UNIT INSTALLATION

WARNING

●Install the unit firmly.
If not, it may cause the human injuries.
※Install the unit correctly according to the following instruction.

【Procedure】

<Mounting the main unit>

Using the holes (8 places) of the mounting base of the main unit, attach with the attached screws.

Attach the main unit referring to the figure.

1. <Positioning>

Determine the mounting position with the mounting base on the main unit, and attach a mark.

※ Please leave clearance enough to connect cords behind the main body.

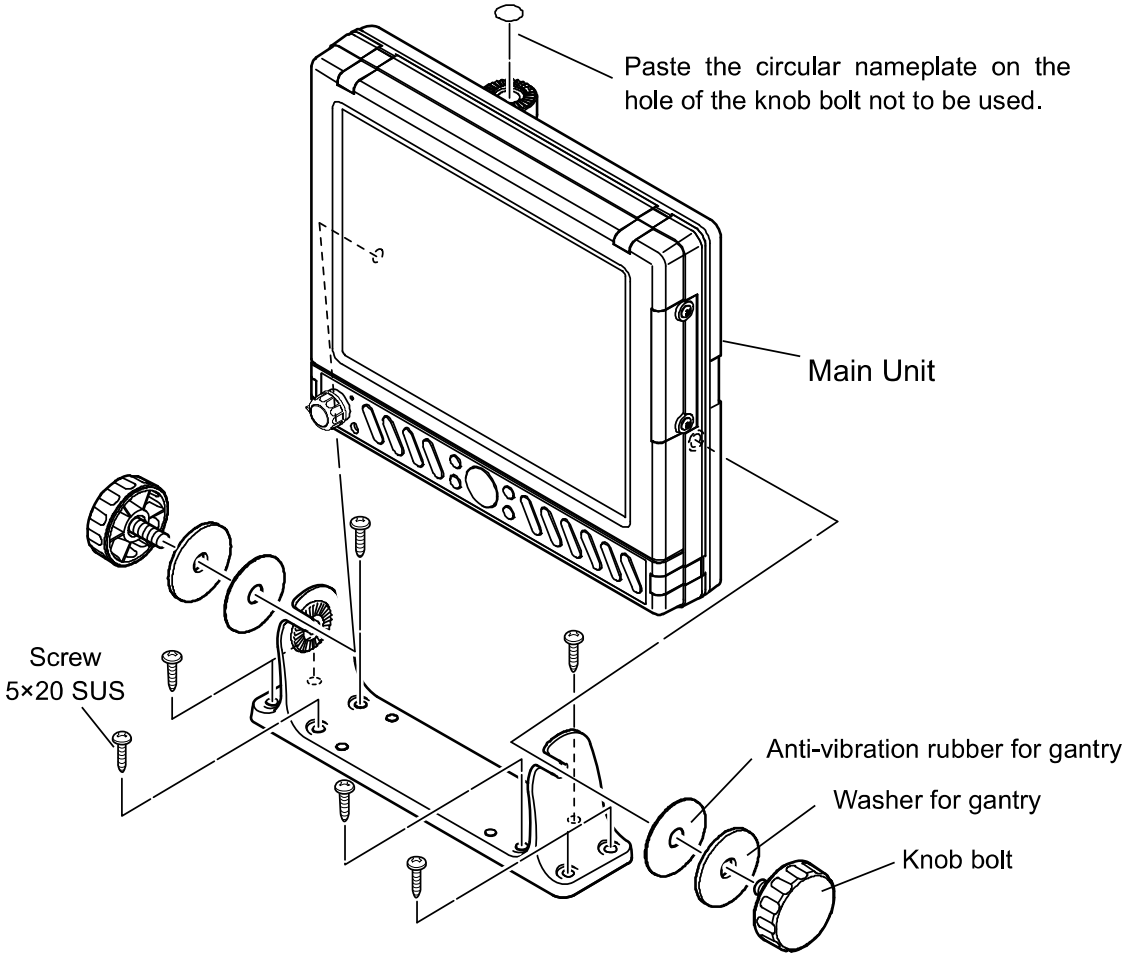
2. <Bracket>

Using the mounting holes (8 places), use the attached screws.

* Point the cutouts at both ends of the frame toward the front side of the main unit.

3. <Main unit>

Attach the main unit referring to the figure.

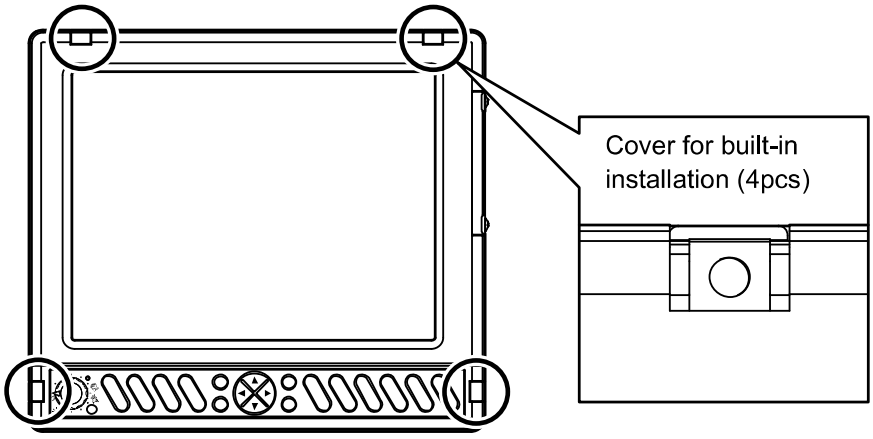


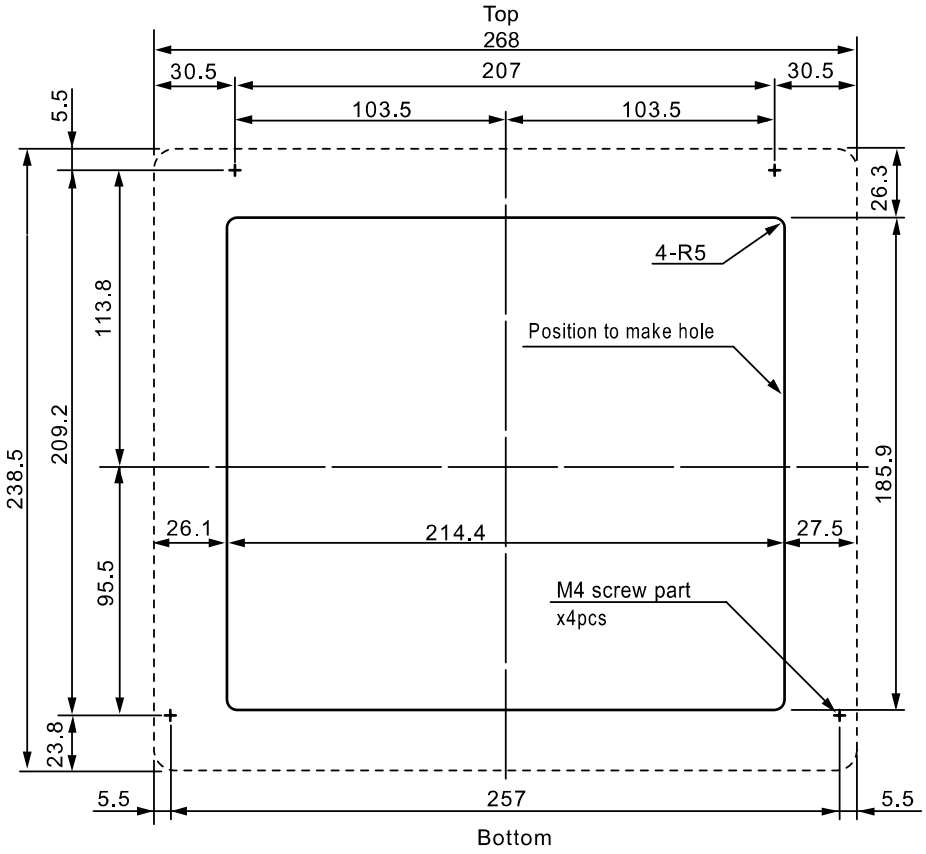
BUILT-IN INSTALLATION

WARNING

●Install the unit firmly.
If not, it may cause the human injuries.
※Be sure to follow the instruction below and official installation method.

[Procedure]
Fix the unit by using 4 holes on the front panel.

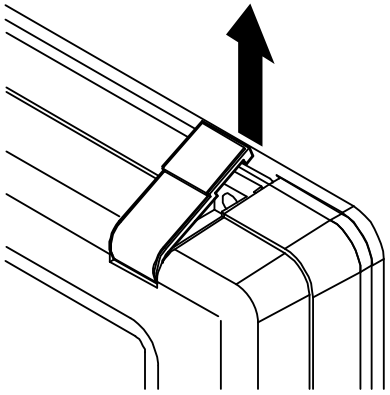




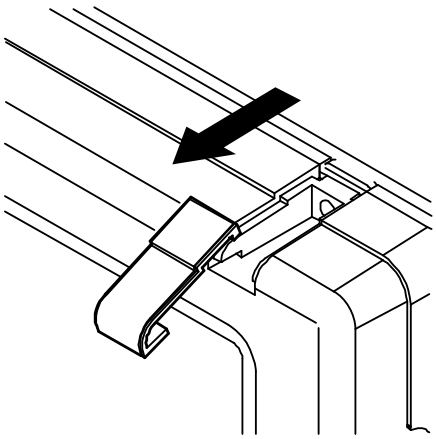
∗This is front view from display

Unit : mm

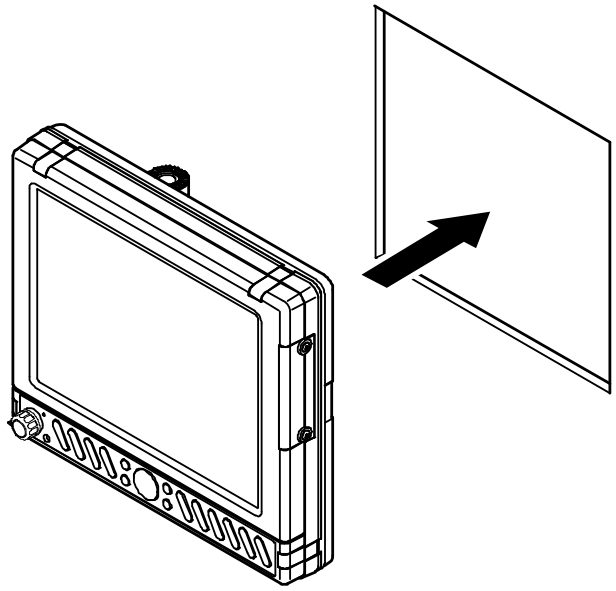
Remove 4pcs covers for built-in installation.



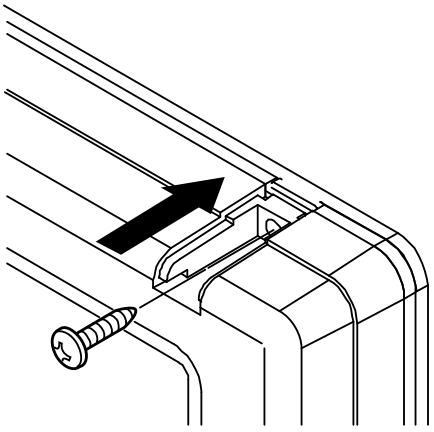
Pull the covers for removal.



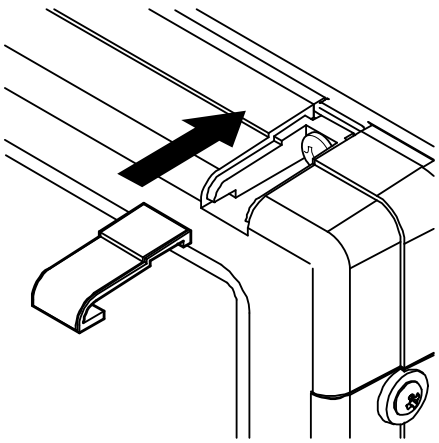
Install the unit into the space.



Use 4×30 screw for fixation.



Put the covers back (4pcs).



TRANSDUCER INSTALLATION

※Please refer to operation manual supplied with auto hull unit for auto hull unit.

DANGER

●Any works on the vessel are very unstable and risky.
Installation/maintenance of transducer should be handled after landing the vessel on ground or fixing the vessel at shipyard etc. If not, it may cause serious injuries.

WARNING

●Do not operate the electronic tools with wet hands.
It causes electronic shock.

1. Installation Location

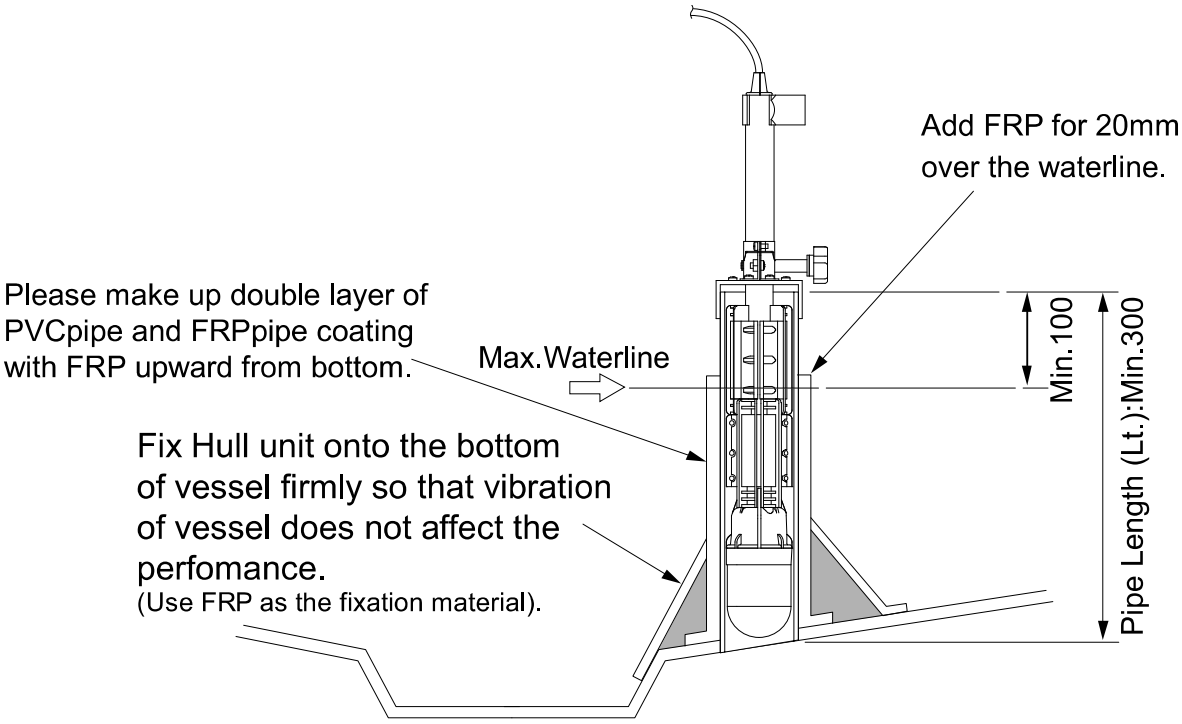
Please be cautious when deciding the installation location with the consideration of following points.

- **Choose the location where having less influence from air bubble, interference, and noise condition.**
- **Interference free condition.**
- **No obstacles near the hull unit. (especially for bow side)**

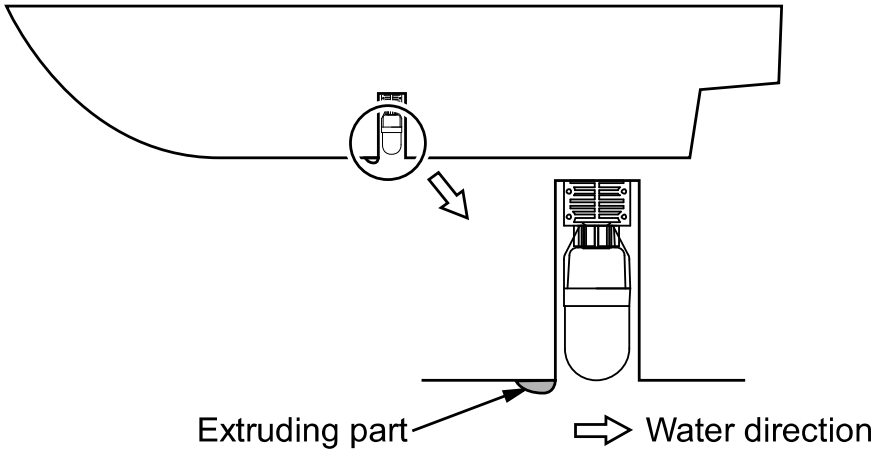
  The obstacles at bow side cause bubbling and detection problem in addition to the cut-off for ultrasonic beam.

2. Hull Unit

Please make sure to choose the proper location of hull unit to be installed. The important points to be concerned are safety (intensity and water tightness) and easy maintenance.



Add an extruding part of approx.5mm with FRP for the purpose of reducing the water pressure inside the pipe while sailing.



Pipe Length : Lt

The installation method defines the pipe length accordingly. Cut off the unnecessary parts. Also, take a note for the pipe length as the reference figure of adjusting upper/lower shafts.

Be sure to keep the room for the hull unit.

Pipe Length: Lt : Min.300mm (Stroke: 150mm)

(Full-loaded water line + Min.100mm at least)

※Min.300mm pipe length is required even when waterline is 200mm or less.

Remaining Length Yt: Min.70mm

Shaft Length: Pipe Length (Lt) + Stroke + Remaining Length (Yt) – 130mm

STORAGE OF TRANSDUCER

Please note the points below when installing and using the transducer.

1. Make sure that the transducer is always placed/stored straight-up. The transducer is filled with oil inside the case. Placing side-way has the risk of leaking oil to the cable. Do NOT place it side-way.

2. Transducer dome is consists of precise components. It may be damaged by strong shock and vibration without having clear appearances such as scratch or dent etc. Handle with care.

3. Do NOT exceed 10 knots when lowering the transducer. The transducer may become damaged or malfunctioned when exceeding 10 knots. Make sure to raise the transducer when you gain speed.

HULL UNIT INSTALLATION

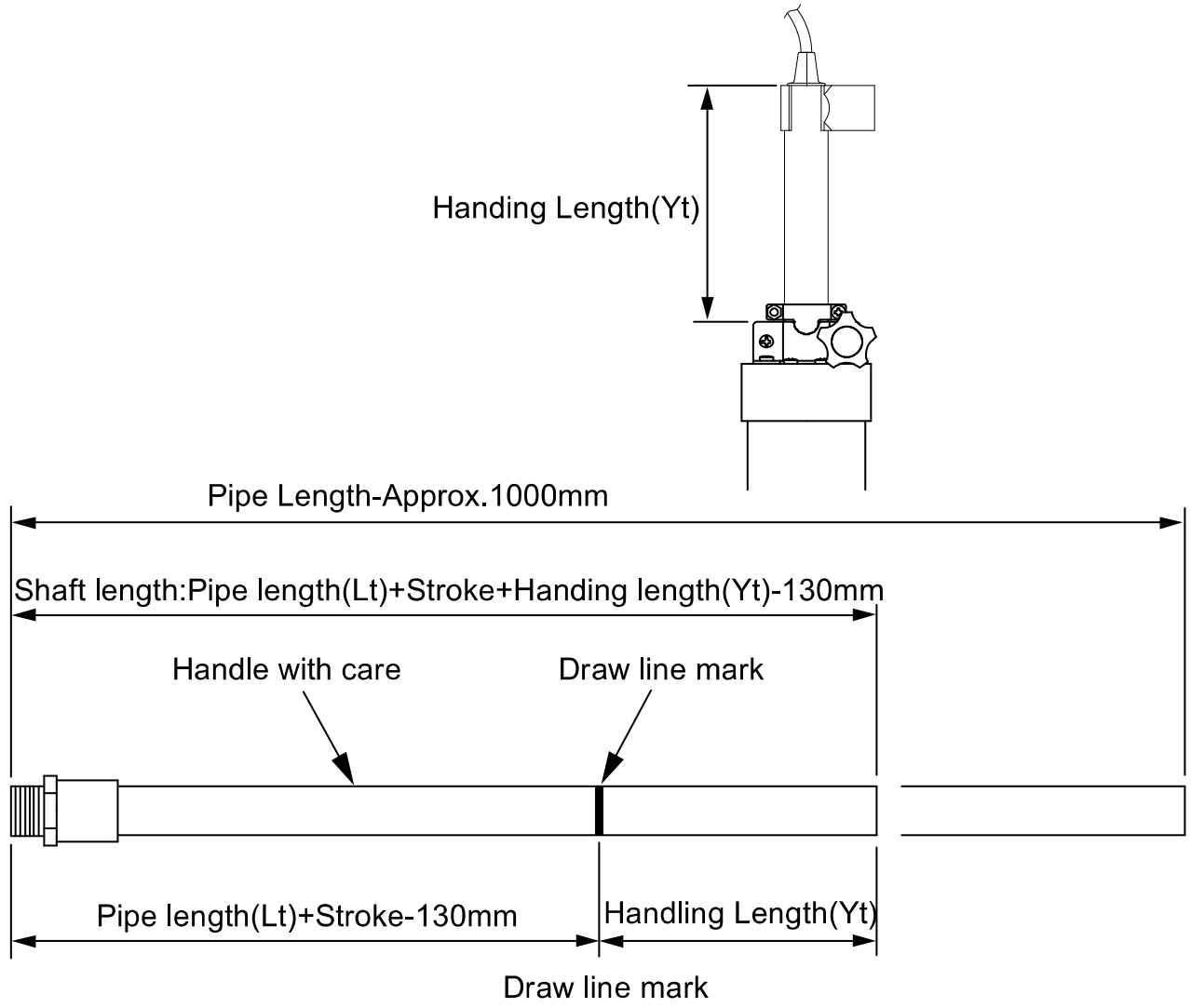
※Please refer to operation manual supplied with auto hull unit for auto hull unit.

1. Cut off Upper/Lower shafts according to pipe length Lt and remaining length Yt.

Shaft Length : Pipe Length (Lt) + Stroke + Handling Length (Yt) − 130mm
Standard Length : Approx.1000mm

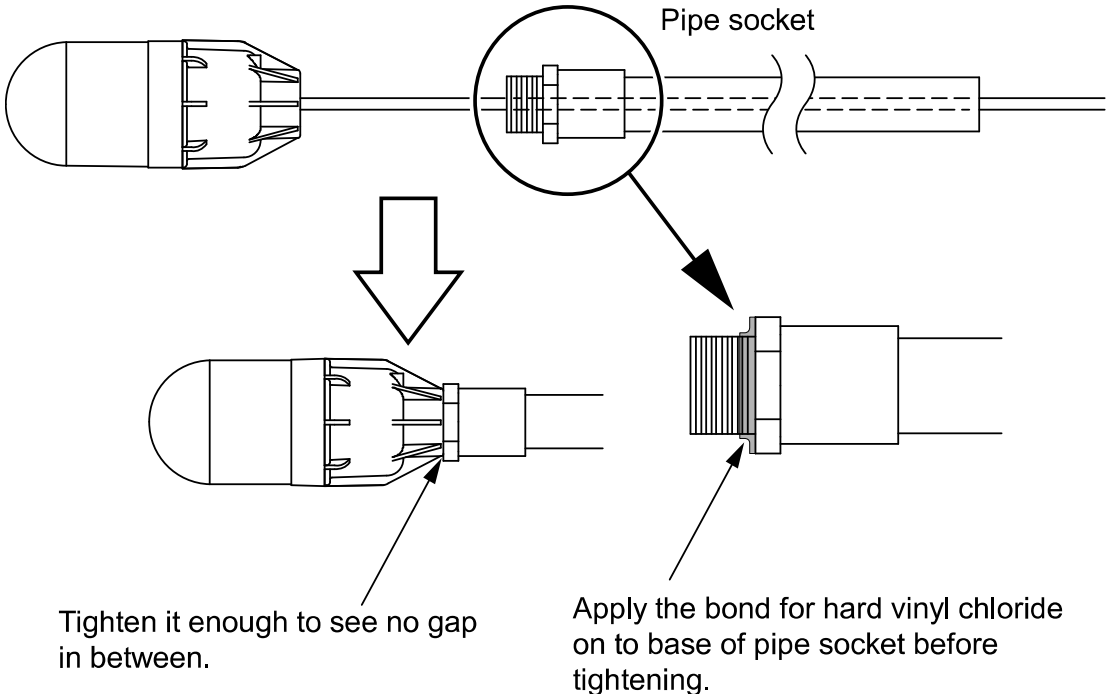
2. Put the marking at lowest position of Upper/Lower shaft
(excluding the remaining length).

Marking Position : Pipe Length (Lt) + Stroke – 130mm

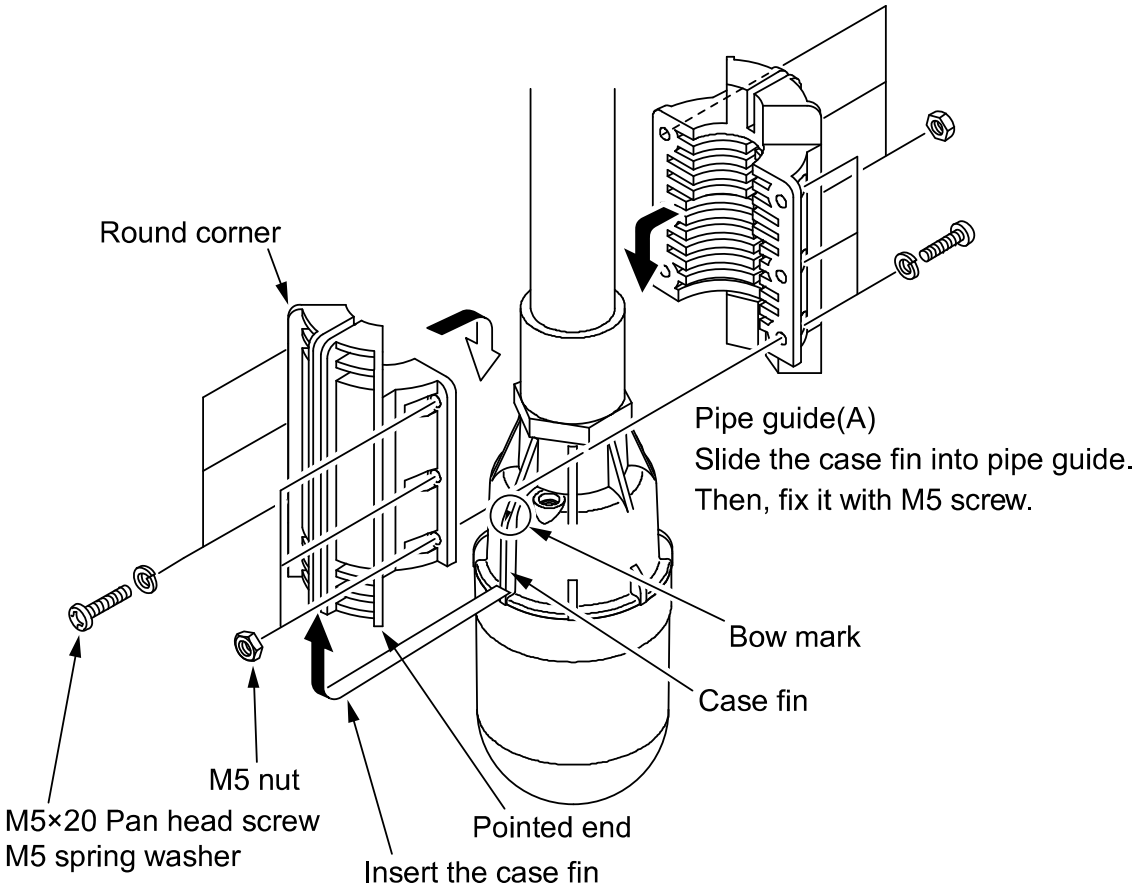


3. Let Tx/Rx cable through Upper/Lower shaft.

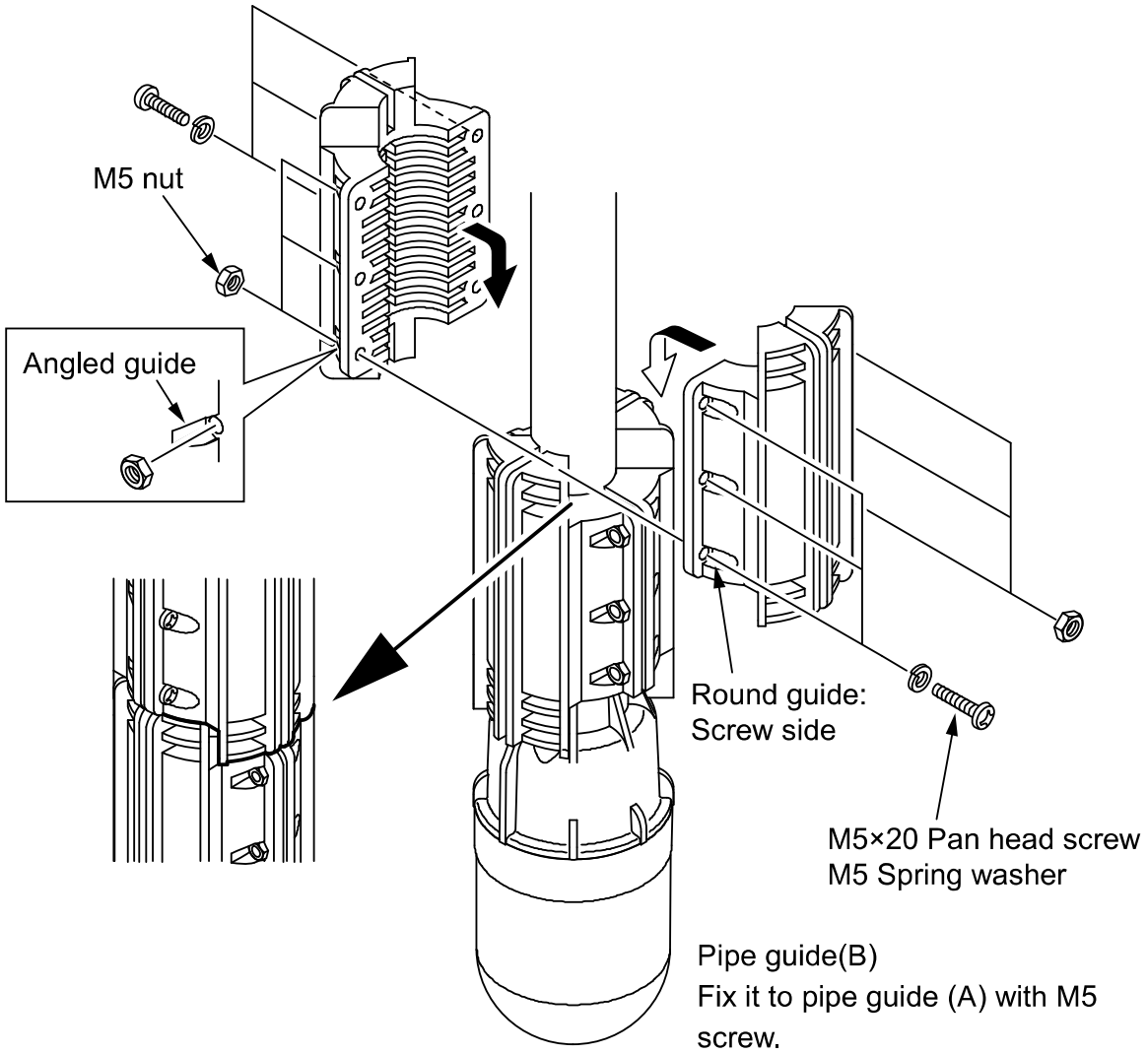
4. Apply the adhesive bond for polyvinyl-chloride pipe onto the slid of pipe socket for one rotation. Tighten the pipe socket and transducer.
(Proper level of clamping torque: 8~10kgf.m)
The pipe socket and transducer should not be loosened once tightened.
It may cause the liquid leakage.



5. Fix Upper/Lower shaft and transducer with pipe(tank) guide(A).

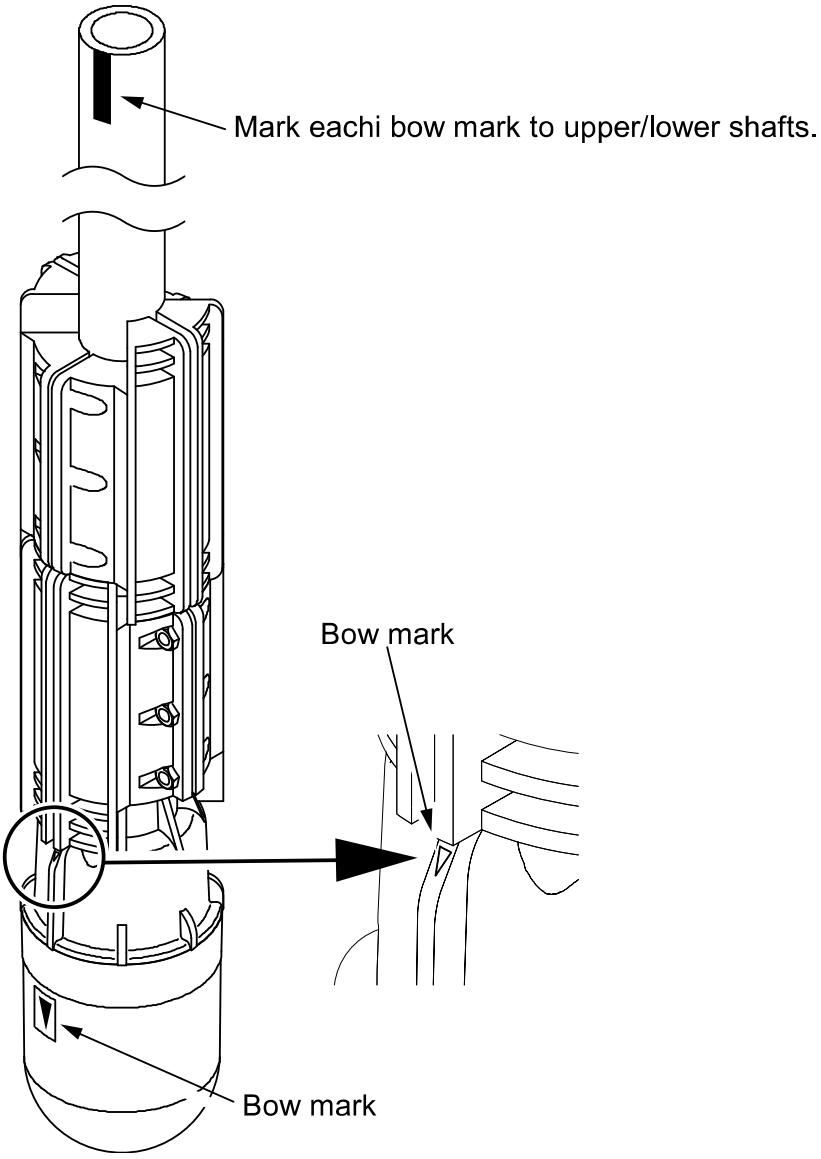


6. Use and fix it with Pipe(tank) guide (B) when pipe length is 410mm or more.

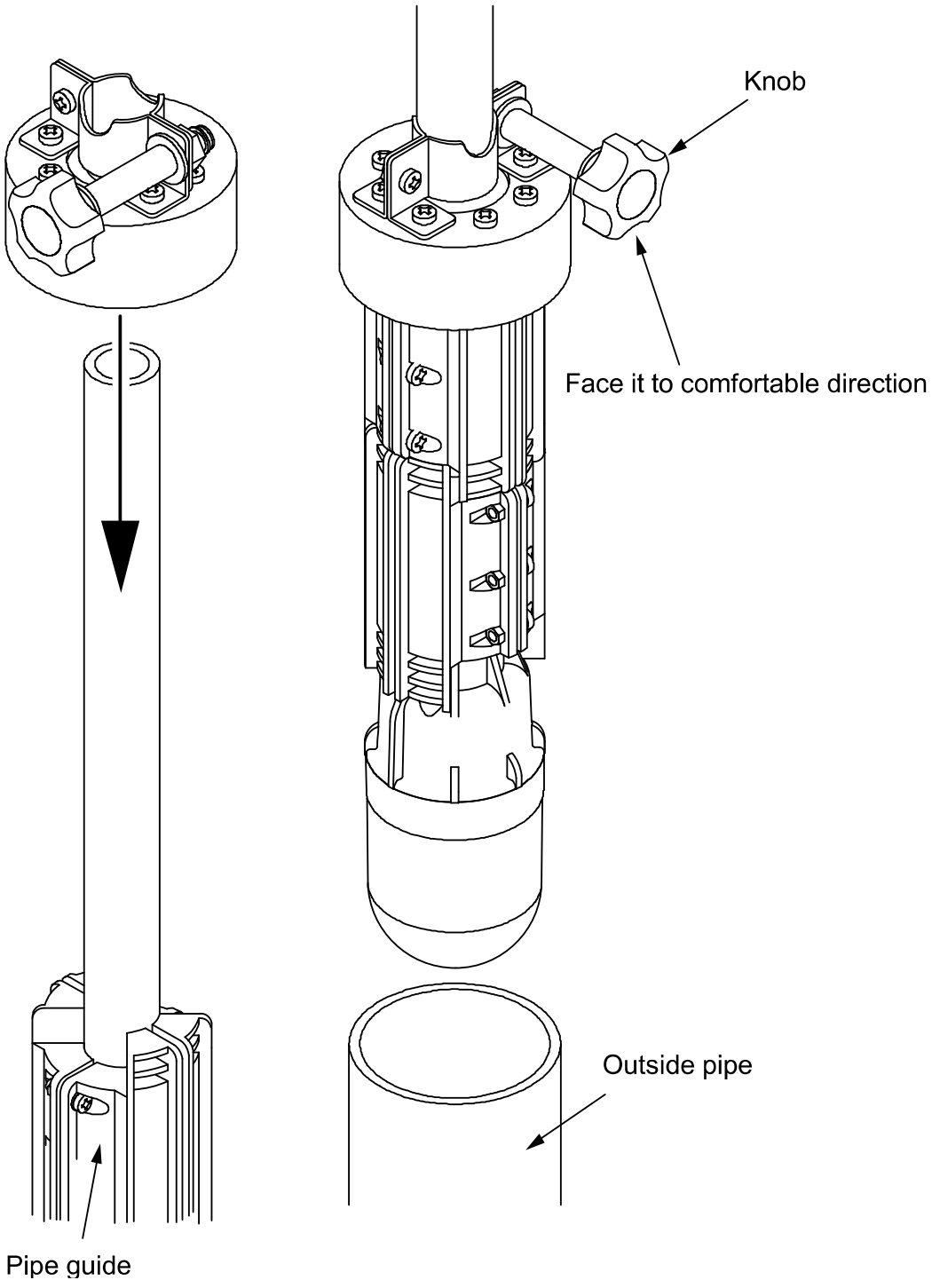


※No need to use pipe(tank) guide (B) if pipe length is less than 410mm.

7. Confirm the bow mark on transducer and put the marking onto Upper/Lower shaft.



8. Loosen the knob of storage pipe cover so that the shaft goes through it.

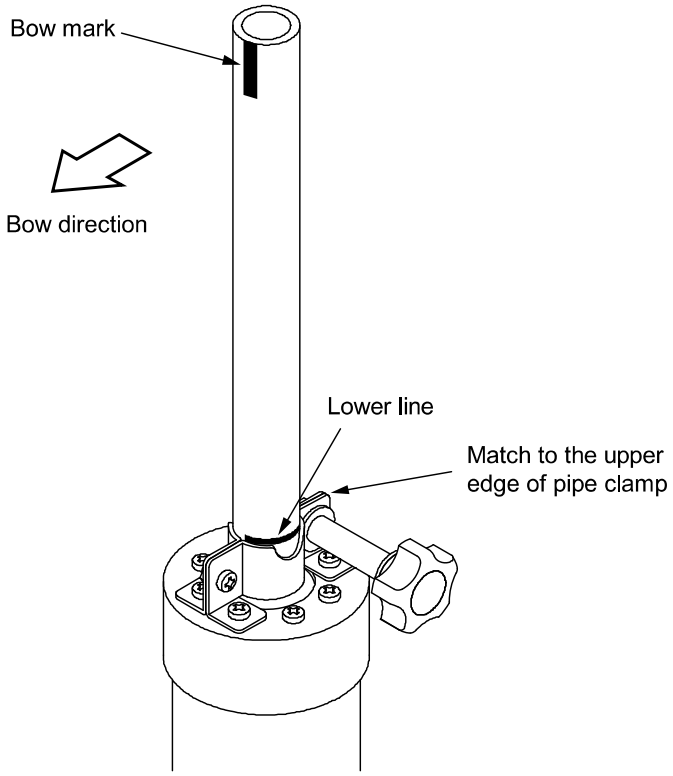


9. Lower the storage pipe cover until it hits the tank guide followed by tightening the knob.

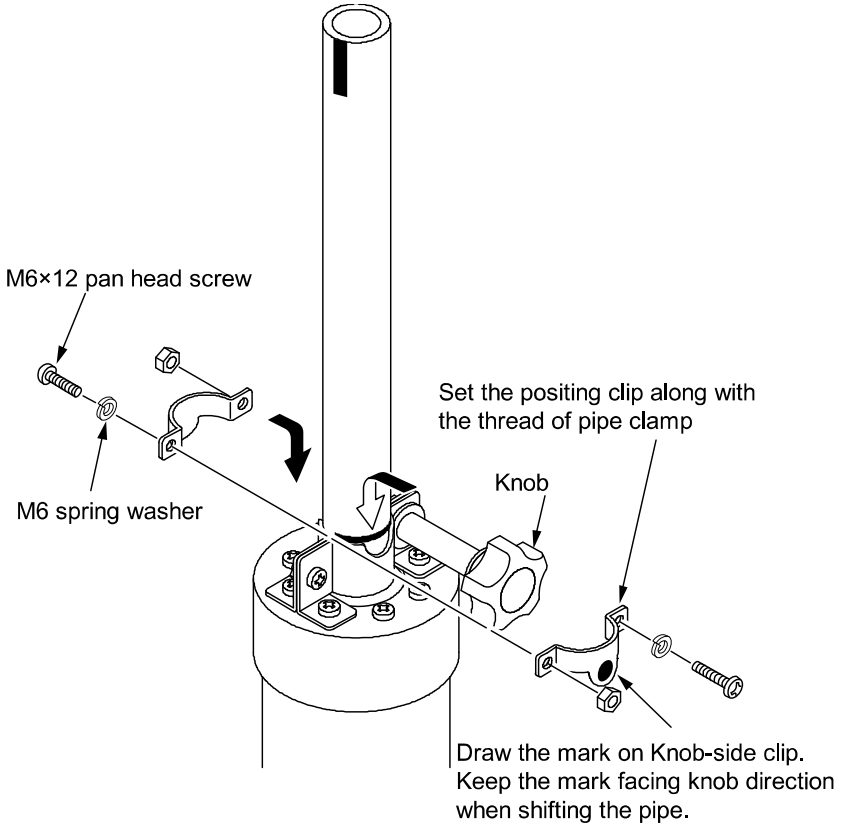
10. Make sure not to cause any scratches to transducer dome when shifting the Upper/Lower shaft into storage pipe.

11. Adjust the direction of knob of the pipe cover for easier operation before the fixation.

12. Lower Upper/Lower shaft slowly with holding the edge of the shaft. Make sure to match the levels of the lower line and pipe clamp's upper edge. Face the bow mark to bow direction. Lastly, tighten the knob to fix the shaft.



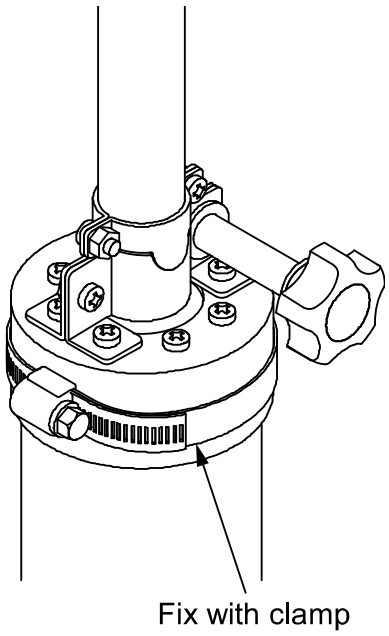
13. Fix the positioning clip.
    Put the marking on knob-side clip so that it always faces toward knob direction. If it faces the other way, sonar direction is 180deg opposite.



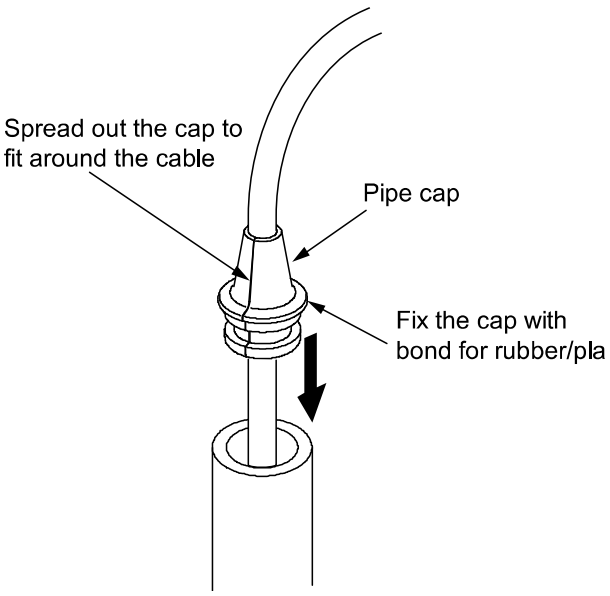
14. Sliding movement check.

Loosen the knob to confirm if the movement of Upper/Lower shaft is smooth from the top to the bottom. When stiff movement or locking occurs, remove the elements inside the pipe.

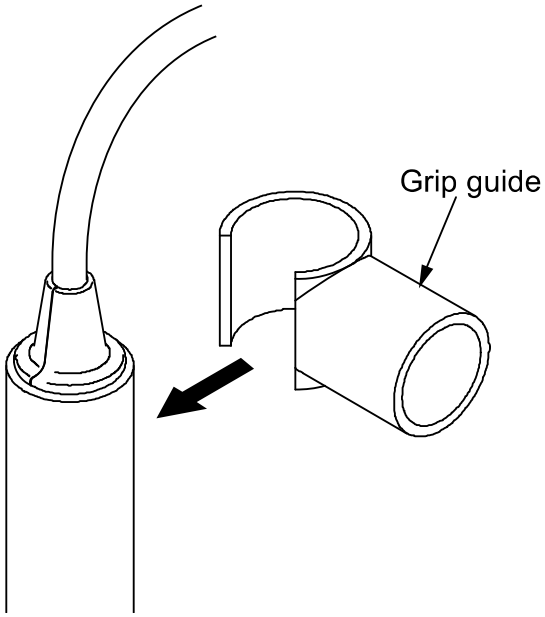
15. Fix the pipe cover with clamping.

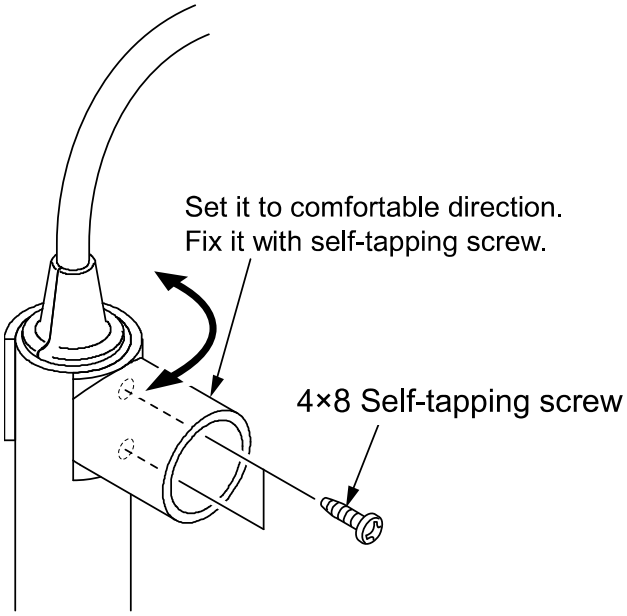


16. Seal with a pipe cap.



17. Fix the handling guide with 4x8 screw to comfortable direction.



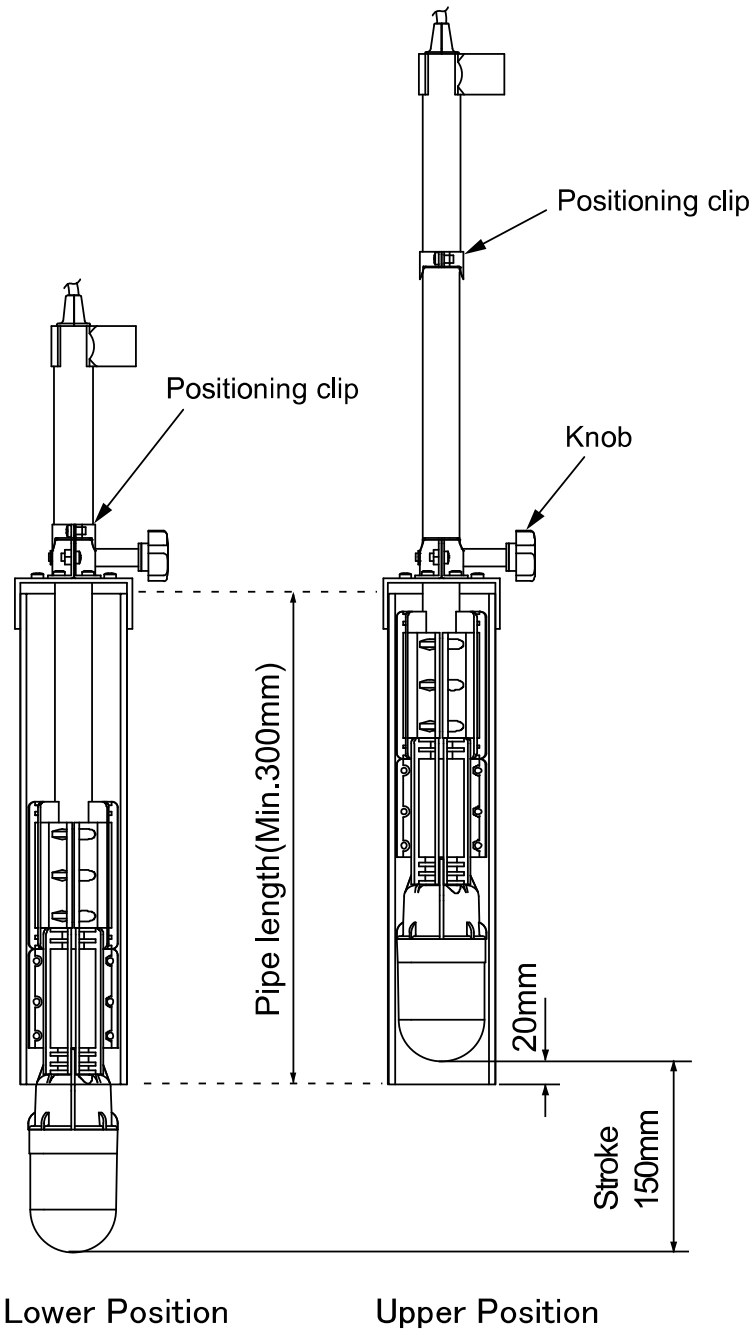


18. After the completion of installation, confirm the operating condition for the hull unit.

①Firstly, loosen the knob of storage pipe cover followed by moving the unit up and down.

②After deciding the unit location, tighten the knob and fix the pipe.
The positioning clip matches to the pipe clamp at the lower limit position.

③Like the drawing below, the hull unit location is within the specified range.
Lower position: Stroke 150mm
Upper position: Transducer is stored inside the pipe 20mm or more.



WATER TEMP SENSOR INSTALLATION

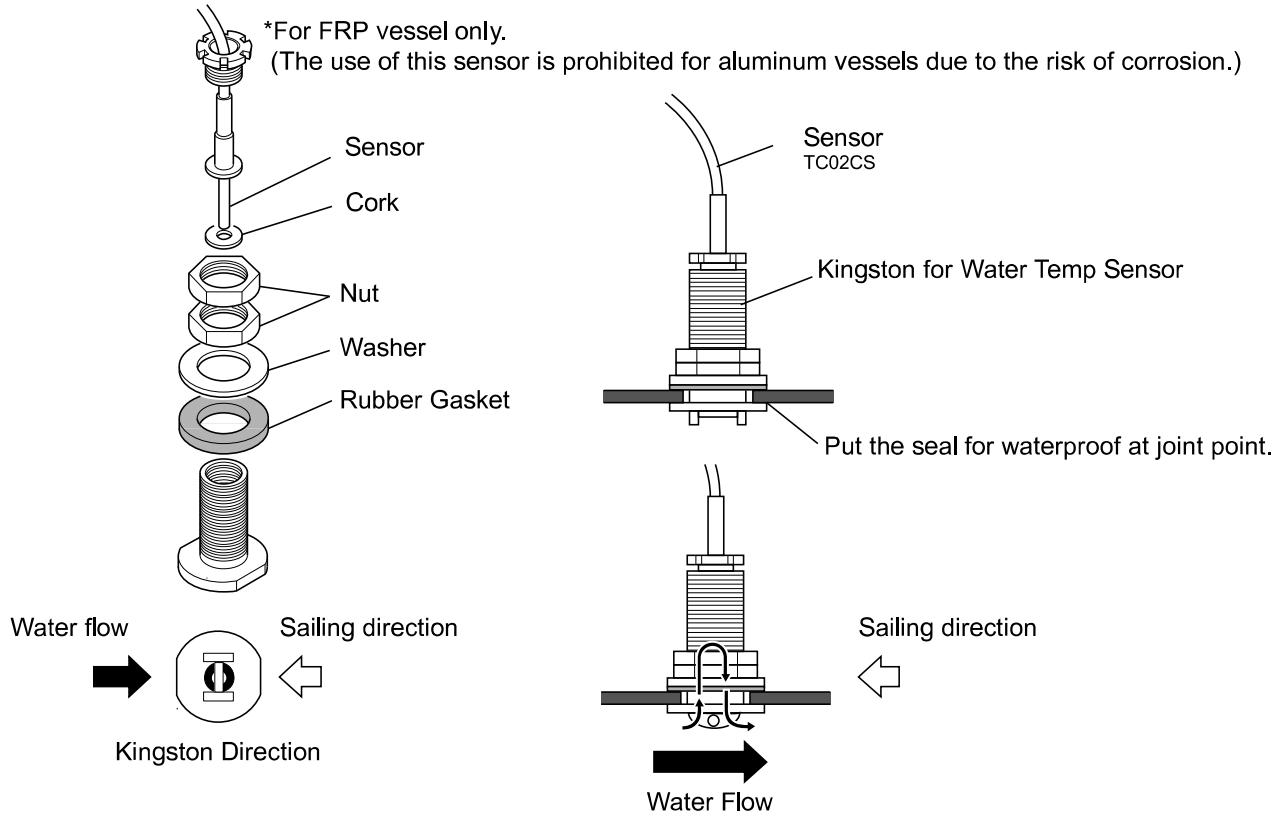
※Water temp sensor is optional.

DANGER

- Any works on the vessel are very unstable and risky.
  Installation/maintenance of water temp sensor should be handled after the vessel on ground or fixing the vessel at shipyard etc. If not, it may cause serious injuries.

- Do not operate the electronic tools with wet hands.
  It causes electronic shock.

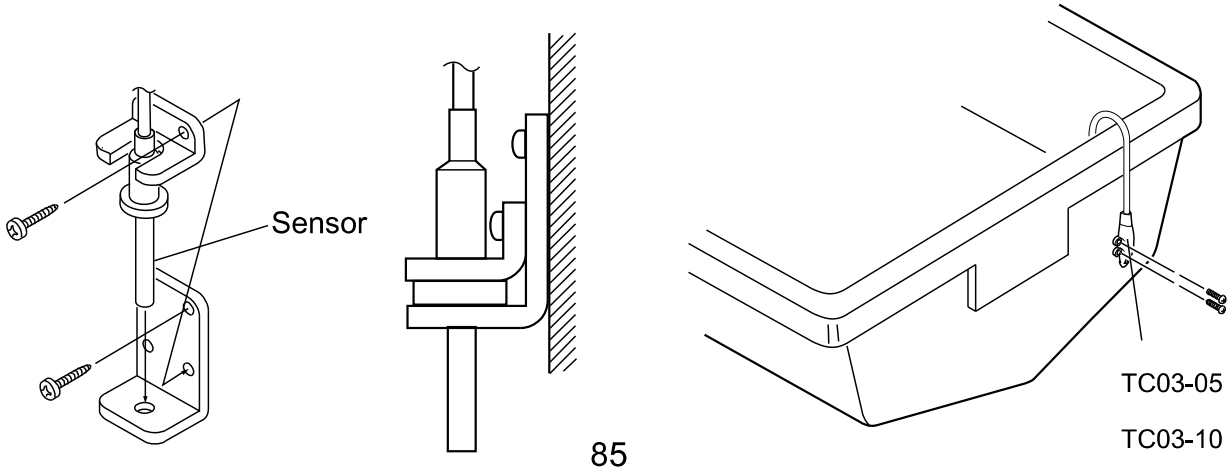
[Installation of Thru-Hull Water Temp Sensor (15m) TC02CS]



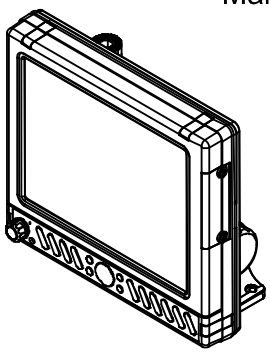
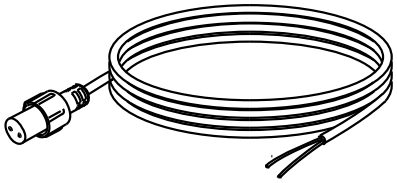
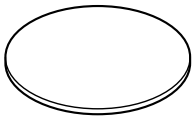
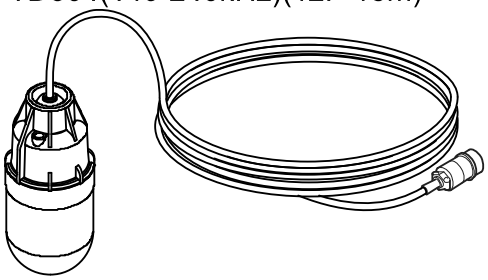
*Be sure to install the kingston with correct direction for steady display of water temp.

[Installation of Transom Water Temp Sensor] **TC03-05, TC03-10**

TC02ES



STANDARD CONFIGURATION

<table>
<tr>
<td>Main Unit
 
Bracket 1pc
Clamping Knob 2pcs
Rubber Washer 2pcs
Bracket Washer 2pcs</td>
<td>Power Supply Cable（DC07）2P 2m
  </td>
</tr>
<tr>
<td>Screws for Main Unit and Bracket
 
5x20 SUS　x8pcs</td>
<td>Screw for Built-in Installation
 
4x30 SUS　x4pcs</td>
</tr>
<tr>
<td>Disk Plate
 
×2</td>
<td>Transducer (Soundome)
TD303(290kHz)(12P 12m)
or
TD304(140-240kHz)(12P 15m)
  </td>
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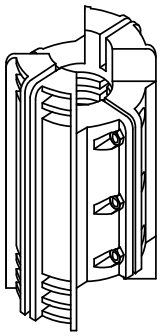
MANUAL HULL UNIT STANDARD COMPOSITIONS

※Please refer to operation manual supplied with auto hull unit for auto hull unit.

Pipe Guide-A x2

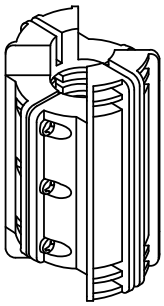


M5x20 SUS
Screw x6

M5 SUS
Spring Washer x6

M5 SUS
Nut x6

Pipe Guide-B x2

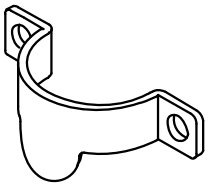


M5x20 SUS
Screw x6

M5 SUS
Spring Washer x6

M5 SUS
Nut x6

Positioning Clip x2

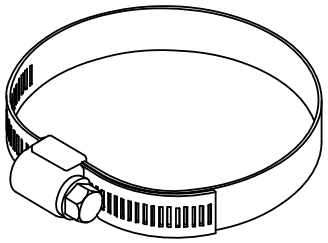


M6x12 SUS
Flat Screw x2

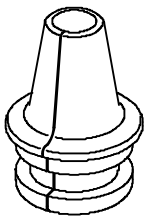
M6 SUS
Nut x2

M6 SUS
Spring Washer x2

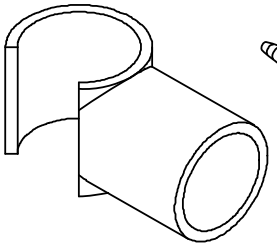
Clamp(PK01)



Pipe Cap

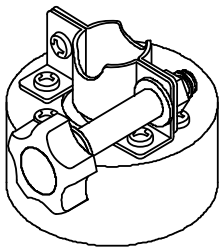


Handling Guide

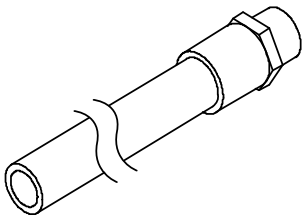


4x8 SUS x2

Storage Pipe Cover

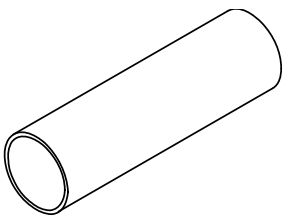


Joint pipe/with socket



Polyvinyl Chloride Pipe HI-VP VP25 1m
Pipe Socket HI-VS VP25 x1

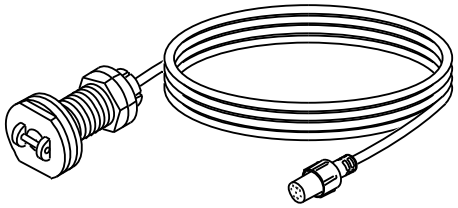
Outside Pipe



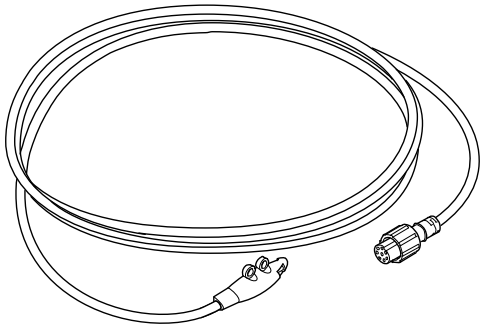
PVC-U VP75 1m

OPTIONS

Thru-Hull Water Temp Sensor
（TC02CS＋TCK01）(8P 15m)

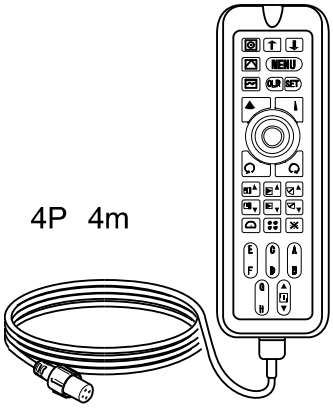


Transom Water Temp Sensor
（TC03-05）(8P 5m)
（TC03-10）(8P 10m)



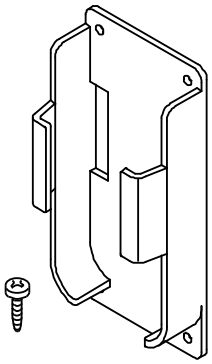
Remote controller（CR06）

4P 4m



Remote control holder（RH01）

4×16 SUS ×4



SPECIFICATIONS

Display	Display	10.4 TFT Color LCD
	Display Style	Landscape
	Number of Pixel	640 × 480
	Operating Voltage	DC11V ~ 30V
	Dimension (mm)	239.2(H) x 272(W) x 120(D)
	Weight	Approx. 2.4kg
Sonar Mode	Train (Scan)	0° ~ 360° / in 1.8° steps
	Tilt	0° ~ 90° / in 1° step
	Sweeping Step	S1(1.8°),S2(3.6°),S4(7.2°),S6(10.8°),S6F
	Off-Center Mode	OFF / Front / Right / Left / Rear
	4-Display Mode	OFF / ON
Vertical Mode	Train (Scan)	0° ~ 360° / in 1.8° steps
	Tilt	10° ~ 80° / in 1° step
	Sweeping Step	S1(1.8°),S2(3.6°),S4(7.2°),S6(10.8°),S6F
Bottom Sonar Mode	Train (Scan)	0° ~ 180° / in 1.8° steps
	Range Sector	30° 60° 90° 120° 150° 180°
	Sweeping Step	S1(1.8°),S2(3.6°),S3(5.4°),S4(7.2°), S5(9°),S6(10.8°)
	Off-Center Mode	OFF / Left / Right
Sounder Mode	Sweep Speed	5 speeds + Stop
	A-Mode	OFF / ON
	Expansion	OFF / Bottom Lock / Auto Exp / Manual Exp
	Expansion Ratio	x2 / x4 / x8
	Clean Echo	OFF / L / M / H
	Water Temp Graph	OFF /ON
	Fish Alarm	OFF / S / L
Common	Display Range	0 ~ 800m
	Background Color	4 Colors (Black, Cyan, Blue, White)
	Color Configuration	3 Patterns
	Water Temp Alarm	OFF / In Range / Out Range
	Output Power	OFF / Low / High
	Pulse Length	Short / Normal
	Sensitivity	Standard / High

* Water temperature graph, water temperature alarm requires water temperature sensor (option).

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http://www.honda-el.co.jp/

MAY2025 2nd Edition