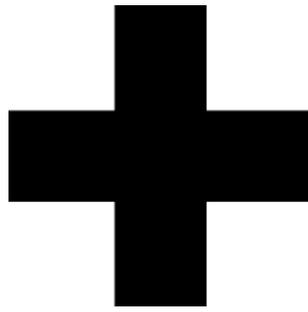


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JFP-185BB

Searchlight Sonar

Instruction Manual



Cautions for High Voltage

High voltages, ranging from several hundreds to tens of thousands of volts, are used in electronic apparatus, such as radio and radar instruments. These voltages are totally harmless in most operations. However, touching a component inside the unit is very dangerous. (Any person other than authorized service engineers should not maintain, inspect, or adjust the unit.)

High voltages on the order of tens of thousand volts are most likely to cause instant deaths from electrical shocks. At times, even voltages on the order of several hundred volts could lead to electrocution. To defend against electrical shock hazards, don't put your hand into the inside of apparatus. When you put in a hand unavoidably in case of urgent, it is strongly suggested to turn off the power switch and allow the capacitors, etc. to discharge with a wire having its one end positively grounded to remove residual charges. Before you put your hand into the inside of apparatus, make sure that internal parts are no longer charged. Extra protection is ensured by wearing dry cotton gloves at this time. Another important precaution to observe is to keep one hand in your pocket at a time, instead of using both hands at the same time.

It is also important to select a secure footing to work on, as the secondary effects of electrical shock hazards can be more serious. In the event of electrical shocks, disinfect the burnt site completely and obtain medical care immediately.

Precautions for Rescue of Victim of Electric Shock

When a victim of electric shock is found, turn off the power source and ground the circuit immediately. If this is impossible, move the victim away from the unit as quick as possible without touching him or her with bare hands. He or she can safely be moved if an insulating material such as dry wood plate or cloth is used.

Breathing may stop if current flows through the respiration center of brain due to electric shock. If the electric shock is not large, breathing can be restored by artificial respiration. A victim of electric shock looks pale and his or her pulse may become very weak or stop, resulting in unconsciousness and rigidity at worst. It is necessary to perform first aid immediately.

Method of First-Aid Treatment

☆Precautions for First-Aid Treatments

Whenever a person is struck by an electrical shock, give the patient artificial respiration immediately on the spot, unless it is absolutely necessary to move the patient for safety's sake. Once started, artificial respiration should be continued rhythmically.

- (1) Refrain from touching the patient carelessly as a result of the accident; the first-aider could suffer from electrical shocks by himself or herself.
- (2) Turn off the power calmly and certainly, and move the patient apart from the cable gently.
- (3) Call or send for a physician or ambulance immediately, or ask someone to call doctor.
- (4) Lay the patient on the back, loosening the necktie, clothes, belts and so on.
- (5)
 - (a) Feel the patient's pulse.
 - (b) Check the heartbeat by bringing your ear close to the patient's heart.
 - (c) Check for respiration by bringing your face or the back of your hand to the patient's face.
 - (d) Check the size of patient's pupils.
- (6) Opening the patient's mouth, remove artificial teeth, cigarettes, chewing gum, etc. if any. With the patient's mouth open, stretch the tongue and insert a towel or the like into the mouth to prevent the tongue from being withdrawn into the throat. (If the patient clenches the teeth so tight that the mouth won't open, use a screwdriver or the like to force the mouth open and then insert a towel or the like into the mouth.)
- (7) Wipe off the mouth to prevent foaming mucus and saliva from accumulating.

★ Treatment to Give When the Patient Has a Pulse Beating but Has Ceased to Breathe

* Performing mouth-to-mouth artificial respiration - Fig. 1

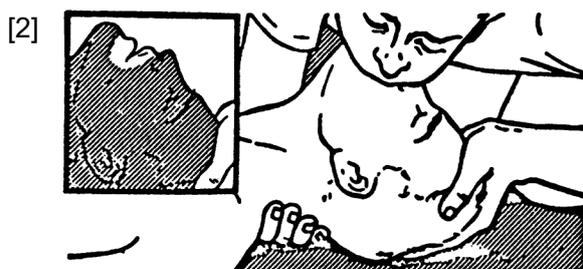
- (1) Bend the patient's face backward until it is directed to look back. (A pillow may be placed under the neck.)
- (2) Pull up the lower jaw to open up the airway. (To spread the airway)
- (3) Pinching the patient's nose, breathe deeply and blow your breath into the patient's mouth strongly, with care to close it completely. Then, move your mouth away and take a deep breath, and blow into his or her mouth. Repeat blowing at 10 to 15 times a minute (always with the patient's nostrils closed).
- (4) Continue artificial respiration until natural respiration is restored.
- (5) If the patient's mouth won't open easily, insert a pipe, such as one made of rubber or vinyl, into either nostril. Then, take a deep breath and blow into the nostril through the pipe, with the other nostril and the mouth completely closed.
- (6) The patient may stand up abruptly upon recovering consciousness. Keep the patient lying calmly, giving him or her coffee, tea or any other hot drink (but not alcoholic drink) to keep him or her warm.

Mouth-to-mouth artificial respiration with the patient's head lifted

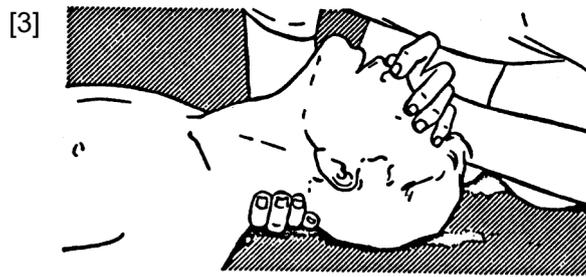


- (1) Lift the back part of the patient's head. Support the forehead with one of your hand and the neck with the other hand. → [1].

Many patients will have their airways opened by lifting their head in this way to ease mouth-to-mouth artificial respiration.



- (2) Closing the patient's mouth with your mouth, press your cheek against the patient's nose → [2]. Alternatively, hold the patient's nose with your finger to prevent air leak → [3].



- (3) Blowing air into the patient's lungs. Blow air into the patient's lungs until chest is seen to rise. The first 10 breaths must be blown as fast as possible.

Fig. 1 Mouth-to-mouth artificial respiration

★ Treatment to Give When the Patient Has No Pulse Beating and Has Ceased to Breathe

* Performing cardiac massage - Fig. 2

If the patient has no pulse beating, with the pupils open and no heartbeat being heard, the patient has a cardiac arrest and requires immediate artificial respiration. Continue this until a medical specialist arrives, and follow his or her directions after that.

- (1) Putting one hand on about the lower one third of the patient's ribs and the other hand over the back of the first, with your elbow fully stretched (with bended elbow, you can't press to the extent the patient's ribs are depressed), apply your body weight to the hands to press the patient's body until it is depressed about 2 cm (Repeat this about 50 times a minute). (Cardiac massage)
- (2) If only one first-aider is available, perform a cardiac massage about 15 times and then give mouth-to-mouth artificial respiration 2 times. Repeat this sequence.

If two first-aiders are available, while one person performs a cardiac massage 15 times, the other should give mouth-to-mouth artificial respiration 2 times. Repeat this sequence. (Combined cardiac massage and mouth-to-mouth artificial respiration method)

- (3) Check the patient's pupils and feel the pulse from time to time. When the pupils are restored to normal and the pulse begins to beat regularly, stop treating and keep the patient calm while giving him or her coffee, tea or any other hot drink to keep him or her warm while watching him or her carefully.

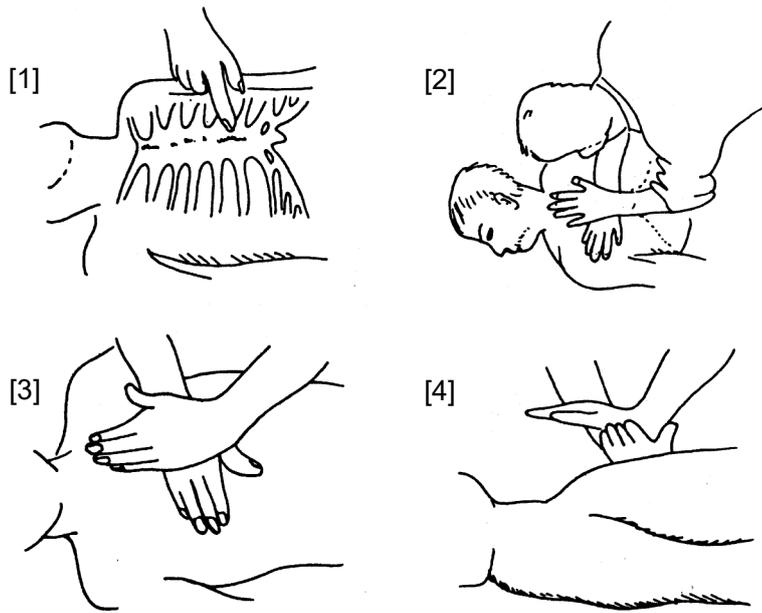
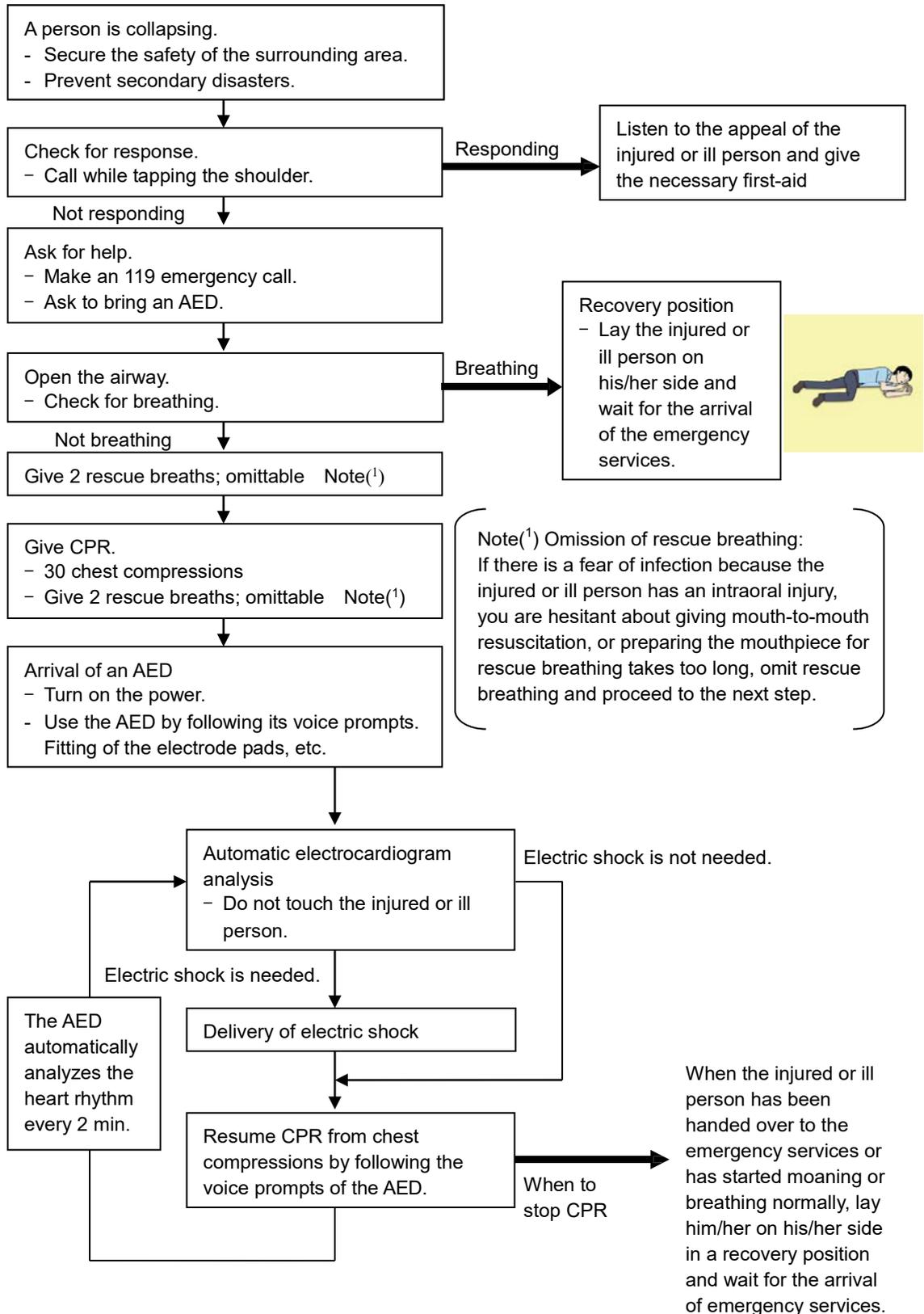


Fig. 2 Cardiac massage

Procedure for cardiopulmonary resuscitation (CPR) using the AED (Automated External Defibrillator)



Procedure for Cardiopulmonary Resuscitation (CPR) Using the AED (Automated External Defibrillator)

1. Check the scene for safety to prevent secondary disasters

- a) Do not touch the injured or ill person in panic when an accident has occurred. (Doing so may cause electric shock to the first-aiders.)
- b) Do not panic and be sure to turn off the power. Then, gently move the injured or ill person to a safe place away from the electrical circuit.

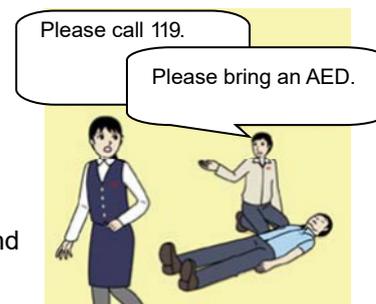


2. Check for responsiveness

- a) Tap the shoulder of the injured or ill and shout in the ear saying, "Are you OK?"
- b) If the person opens his/her eyes or there is some response or gesture, determine it as "responding." But, if there is no response or gesture, determine it as "not responding."

3. If responding

- a) Give first-aid treatment.



4. If not responding

- a) Ask for help loudly. Ask somebody to make an emergency 119 call and bring an AED.
 - Somebody has collapsed. Please help.
 - Please call **119**.
 - Please bring an **AED**.
 - If there is nobody to help, call 119 yourself.

5. Open the airway

- a) Touch the forehead with one hand. Lift the chin with the two fingers of the middle finger and forefinger of the other hand and push down on the forehead as you lift the jaw to bring the chin forward to open the airway. If neck injury is suspected, open the airway by lifting the lower jaw.



6. Check for breathing

- a) After opening the airway, check quickly for breathing for no more than 10 seconds. Put your cheek down by the mouth and nose area of the injured or ill person, look at his/her chest and abdomen, and check the following three points.
- Look to see if the chest and abdomen are rising and falling.
 - Listen for breathing.
 - Feel for breath against your cheek.



- b) If the injured or ill person is breathing, place him/her in the recovery position and wait for the arrival of the emergency services.
- Position the injured or ill person on his/her side, maintain a clear and open airway by pushing the head backward while positioning their mouth downward. To maintain proper blood circulation, roll him/her gently to position them in the recovery position in the opposite direction every 30 minutes.



7. Give 2 rescue breaths (omittable)

- a) If opening the airway does not cause the injured or ill person to begin to breathe normally, give rescue breaths.
- b) If there is a fear of infection because the injured or ill person has an intraoral injury, you are hesitant about giving mouth-to-mouth resuscitation, or getting and preparing the mouthpiece for rescue breathing takes too long, omit rescue breathing and perform chest compressions.
- c) When performing rescue breathing, it is recommended to use a mouthpiece for rescue breathing and other protective devices to prevent infections.
- d) While maintaining an open airway, pinch the person's nose shut with your thumb and forefinger of the hand used to push down the forehead.
- e) Open your mouth widely to completely cover the mouth of the injured or ill person so that no air will escape. Give rescue breathing twice in about 1 second and check if the chest rises.

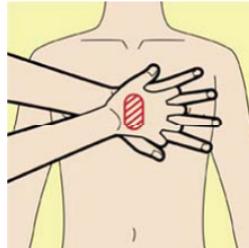
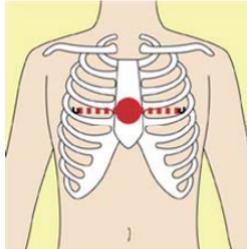


8. Cardiopulmonary resuscitation (CPR) (combination of chest compressions and rescue breaths)

a) Chest compressions

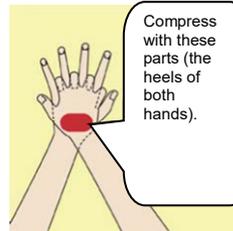
1) Position of chest compressions

- Position the heel of one hand in the center of the chest, approximately between the nipples, and place your other hand on top of the one that is in position.



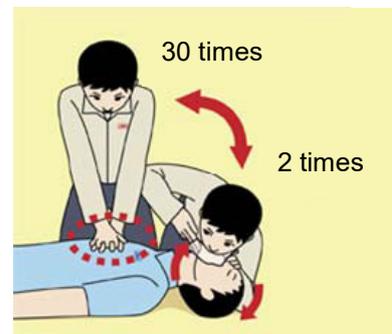
2) Perform chest compressions

- Perform uninterrupted chest compressions of 30 at the rate of about 100 times per minute
- While locking your elbows positioning yourself vertically above your hands.
- With each compression, depress the chest wall to a depth of approximately 4 to 5 cm.



b) Combination of 30 chest compressions and 2 rescue breaths

- 1) After performing 30 chest compressions, give 2 rescue breaths. If rescue breathing is omitted, perform only chest compressions.
- 2) Continuously perform the combination of 30 chest compressions and 2 rescue breaths without interruption.
- 3) If there are two or more first-aiders, alternate with each other approximately every two minutes (five cycles of compressions and ventilations at a ratio of 30:2) without interruption.



9. When to stop cardiopulmonary resuscitation (CPR)

- a) When the injured or ill person has been handed over to the emergency services
- b) When the injured or ill person has started moaning or breathing normally, lay him/her on his/her side in a recovery position and wait for the arrival of emergency services.

10. Arrival and preparation of an AED

- a) Place the AED at an easy-to-use position. If there are multiple first-aiders, continue CPR until the AED becomes ready.



- b) Turn on the power to the AED unit.

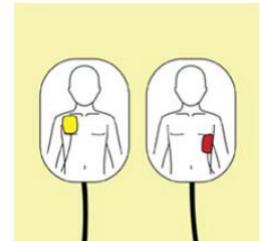
Depending on the model of the AED, you may have to push the power on button, or the AED automatically turns on when you open the cover.



- c) Follow the voice prompts of the AED.

11. Attach the electrode pads to the injured or ill person's bare chest

- a) Remove all clothing from the chest, abdomen, and arms (male or female).
- b) Open the package of electrode pads, peel the pads off and securely place them on the chest of the injured or ill person, with the adhesive side facing the chest. If the pads are not securely attached to the chest,



the AED may not function. Paste the pads exactly at the positions indicated on the pads. If the chest is wet with water, wipe dry with a dry towel and the like, and then paste the pads. If there is a pacemaker or implantable cardioverter defibrillator (ICD), paste the pads at least 3cm away from them. If a medical patch or plaster is present, peel it off and then paste the pads. If the injured or ill person's chest hair is thick, paste the pads on the chest hair once, peel them off to remove the chest hair, and then paste new pads.



- c) Some AED models require to connect a connector by following voice prompts.
- d) Do not put child pads on adults (older than 8 years).

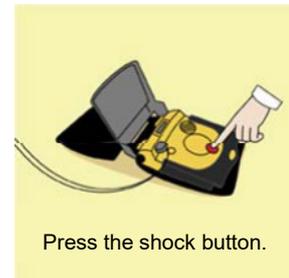
12. Electrocardiogram analysis

- a) The AED automatically analyzes electrocardiograms. Follow the voice prompts of the AED and ensure that nobody is touching the injured or ill person while you are operating the AED.
- b) On some AED models, you may need to push a button to analyze the heart rhythm.



13. Electric shock (defibrillation)

- a) If the AED determines that electric shock is needed, the voice prompt saying, "Shock is needed" is issued and charging starts automatically.
- b) When charging is completed, the voice prompt saying, "Push the shock button" is issued and the shock button flashes.
- c) The first-aider must get away from the injured or ill person, make sure that no one is touching him/her, and then press the shock button.
- d) When electric shock is delivered, the body of the injured or ill person may jerk.



14. Resume cardiopulmonary resuscitation (CPR).

Resume CPR consisting of 30 chest compressions and 2 rescue breaths by following the voice prompts of the AED.



15. Automatic electrocardiogram analysis

- a) When 2 minutes have elapsed since you resumed cardiopulmonary resuscitation (CPR), the AED automatically analyzes the electrocardiogram.
- b) If you suspended CPR by following voice prompts and AED voice prompt informs you that shock is needed, give electric shock again by following the voice prompts.
If AED voice prompt informs you that no shock is needed, immediately resume CPR.

16. When to stop CPR (Keep the electrode pads on.)

- a) When the injured or ill person has been handed over to the emergency services
- b) When the injured or ill person has started moaning or breathing normally, lay him/her on his/her side in a recovery position and wait for the arrival of emergency services.



PREFACE

- For copy and transcription of this Instruction Manual (hereinafter referred to as this manual), permission from JRC is needed. JRC prohibits the un-authorized copy and transcription of this manual.
- If this manual is lost or damaged, consult a dealer of JRC or JRC.
- The specification of the products and the contents in this manual are subject to change without notice.
- The contents displayed on the menu of product may be different from the expression of this manual. The fonts and shapes of the keys and menus in the illustration may differ from the actual ones, and some parts may be omitted.
- JRC is not liable for damages and troubles arisen from misunderstanding of the contents in this manual.
- JRC is not liable for any damages caused by earthquake, lightning, wind and flood damage and fire for which JRC is not responsible, and actions by third parties, other accidents, customer's unintended error/abuse and the use under other abnormal conditions.
- JRC is not liable for damages of accompaniment (change/loss of memorized content, loss of business profit, stop of business) arisen from use or failure of our products.
- If the stored data are changed or lost, irrespective of causes of troubles and damages, JRC is not liable for them.
- JRC is not liable for any damages arisen from malfunction caused by combination of software and connected equipment in which JRC is not engaged.

If there was an offer from the other ships for interference mitigation, in the order of the wideband sonar, the sonar using multiple frequency and the sonar using a single frequency, please take measures of change of use frequency and the reduction of the transmitting sound pressure level.

Before Operation

Pictorial Indication

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

Please understand them before you read this manual:

 DANGER	This indication is shown where incorrect equipment operation due to negligence may cause death or serious injuries.
 WARNING	This indication is shown where any person is supposed to be in danger of being killed or seriously injured if this indication is neglected and these equipment are not operated correctly.
 CAUTION	This indication is shown where any person is supposed to be injured or any property damage is supposed to occur if this indication is neglected and these equipment are not operated correctly.

Examples of Pictorial Indication



Electric Shock

The Δ mark represents CAUTION (including DANGER and WARNING).

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



Disassembling
Prohibited



The \odot mark represents prohibition.

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



Disconnect
the power plug



The \bullet mark represents instruction.

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

Warning Label

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

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

Precautions upon Equipment Operation

 **DANGER**

Caution Items on handling



In case of smoking or firing, switch off the power in the boat and of this equipment. It may lead to firing, electric shock or damages.



Electric Shock

Be careful of residual high voltage
High voltage may remain in capacitors for several minutes after switching off the power. Before inspection of the inside, please wait at least 5 minutes after switching off or discharge the residual electricity in an appropriate manner. Then, start the work.

 **WARNING**

Caution Items on handling



No disassembly or modification of this equipment is allowed. It may lead to failure, firing, smoking or electric shock. In case of failure, please contact JRC's dealers or JRC.

 **CAUTION****Caution Items on handling**

The information displayed on this equipment is not intended to use for your navigation. For your navigation, be sure to see the specified materials.



Please use the specified fuses. If un-specified fuses are used, they may cause firing, smoking or damages.



Be sure to submerge the Transducer unit in water before transmission. If not, it may be damaged.

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Chapter 1 Preparation

1.1 Functions

JFP-185BB is digital broadband sonar with broadband Transducer units.

This unit equipped with the latest digital process can accurately display circumstances in the water under all conditions.

JFP-185BB is the Black Box type without the display unit, for which customer can select the display monitor of preference. The external monitor and connecting cable are user supply.

The signal to an external monitor is analog VGA.

JRC has 17 inches LCD monitor as option.

1.2 Features

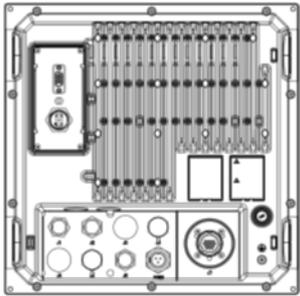
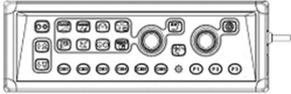
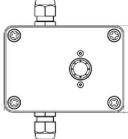
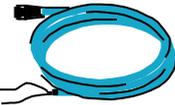
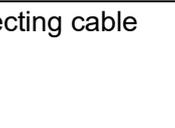
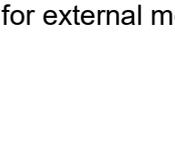
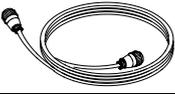
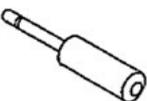
The main features of this unit are as follows:

- This unit is a digital broadband sonar with broadband Transducer units. It can be set in a range of 130 to 210 kHz.
- With a simple operation on a menu, frequencies can be optionally set within a wide range.
- Cope with both a high-resolution in shallow area and the noise removal capability in deep area, by the digital reception processing.
- The operation units can be easily installed from the front side by flush mounting.
- VGA analog output to an external monitor unit is provided as standard. The use of external monitor enables to observe the sonar images from the place distant from the main unit (External monitor is owner supply).
- The data for image, waypoint and setting data can be backed up to the USB memory, to be recalled.
- As the operation unit is separated, operation away from the processor unit is possible.
- Sonar sound function provides fish school status by sound.

1.3 Configuration of Equipment

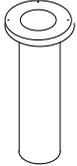
Standard Equipment Configuration List

a. NCM-1850 (Processor unit), NCH-1850 (Operation unit)

No	Name of item	Type	Remark	Weight/ Length	Qty
1	Processor unit 	NCM-1850	No display unit VGA output	5.1kg	1
2	Operation unit 	NCH-1850	With mounting bracket and 5m cable	1.1kg	1
3	TD position alarm / Ext. Sync. Box 	JB-36	With 5m cable (CW-413-5M/With 5 pin connector and one end plain)	5m	1
4	DC power cable 	CW-259-2M	With 3 pin connector and one end plain	2m	1
5	Connecting cable 	CW-376-5M	With 6 pin water resistant connector and one end plain/Cable for navigation equipment	5m	1
6	Cable for external monitor 	CW-576-0.5M	With 10 pin water resistant connector and D-Sub connector/Extension cable for monitor	0.5m	1
7	Transducer unit extension cable 	CW-590-15M	With a 18 pin connector and a 12 pin water resistant connector	15m	1
8	Audio system plug 	MP-105LC-RoHS			1

No	Name of item	Type	Remark	Weight/Length h	Qty
9	Fuse 	F-7161-10A/N30C-125V Cylinder (ø 6.4x30)	Normal fusion type for main power		3
10	Instruction Manual		English/Japanese		1
11	Quick Reference		English/Japanese		1
12	Installation manual		English/Japanese		1

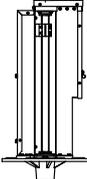
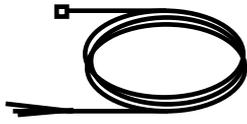
b. TD tank / TD shaft

No	Name of item	Type	Remark	Weight/Length	Qty
1	TD tank 	ESR-1506 (PVC) 1230mm 30927C-2 (PVC) 1500mm 30927C-3 (PVC) 1800mm ESR-1507 (FRP) 1500mm	Select according to equipment. *Refer to Option list.	9.0kg 11.0kg 13.0kg 12.0kg	1
2	TD shaft 	ESR-160_32679C-2 *Standard attached item	Select according to equipment. *Refer to Option list.	1681mm	1

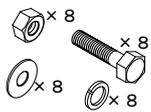


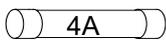
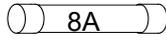
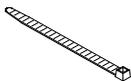
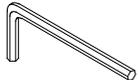
Caution: TD tank is options.

c. NKF-1850 (Hull unit)
Package 1-1

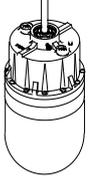
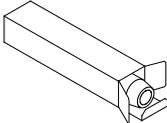
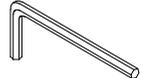
No	Name of item	Type	Remark	Weight/Length	Qty
1	Hull unit 	NKF-1850		17.0kg	1
2	DC power cable 	CW-275-10M	Cable is built into the Hull unit	10m	1
3	Hull unit control cable 	CW-593-20M	Cable is built into the Hull unit	20m	1

d. DHU-6302 (Transducer unit)
Package 2-1

No	Name of item	Type	Remark	Weight/Length	Qty
1	Shaft guide 	ESR-1510			3
2	Bolt set 	SUS-M16-55-Assy (M16x55L, 2W16U, SW16U, N16U)			EACH 8
3	Gum packing for flange 	ESR-1512	Gum		1

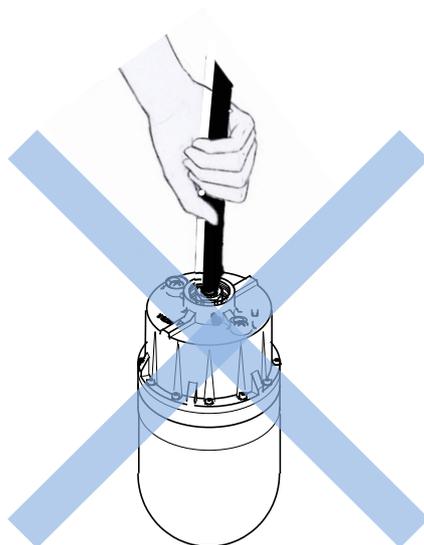
No	Name of item	Type	Remark	Weight/Length	Qty
4	Crank handle 	OB-63			1
	Grease 			100g	1
	Fuse  	F-7161-4A F-7161-8A	At input of 24 V At input of 12 V		EACH 3
	ANP base 	ANP-1			2
	Binding Band 	AB-100-1000			2
5	Damper 	34924D			1
	Fixing collar 	32681D			2
	Shaft cap  1SET	34378D			1
	Cap bolt 	CB4 X 10U			4
	HEX rod wrench 	1.5mm x 1 2.5mm x 1 3.0mm x 1			EACH 1

Package 2-2

No	Name of item	Type	Remark	Weight/Length	Qty
1	Transducer unit 	DHU-6302	With 10m cable (With 18 pin water resistant connector)	9.0kg	1
2	Bath cork 	Bath cork (White) 50g		50g	1
	HEX rod wrench 	3.0mm ×1 5.0mm ×1			EACH 1



Caution: Don't carry the Transducer unit (DHU-6302) by holding its cable. Such manner may cause breakage of the equipment.

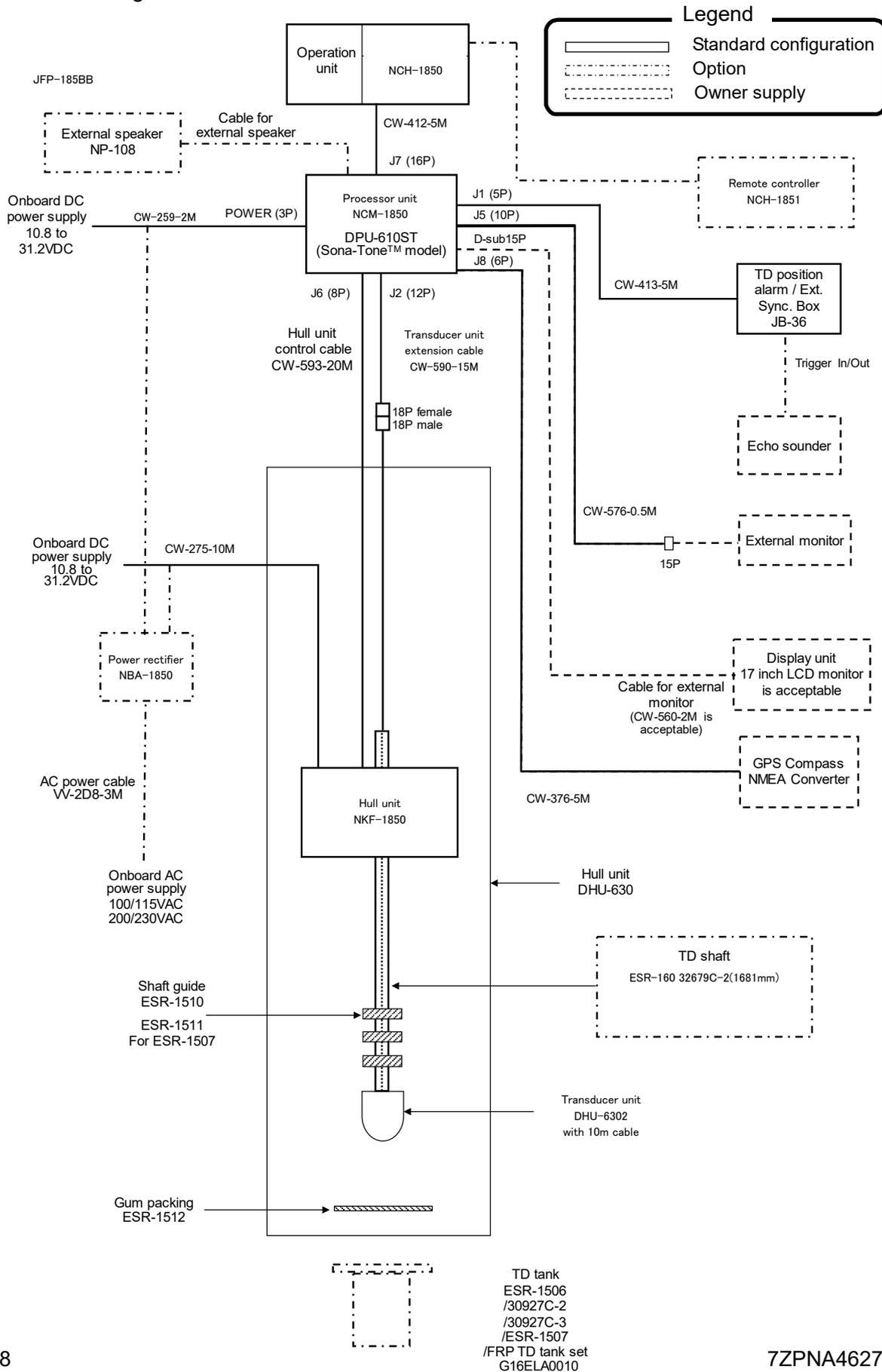


Option List

No	Name of item	Type		Remark
1	Remote controller	NCH-1851		With 5m cable, (Assembled the connection cable into the Operation unit)
2	TD tank (For *xxxx mm of TD shaft) *TD shaft length	ESR-1506		PVC, 1230mm (For 1411mm of TD shaft)
		30927C-2		PVC, 1500mm (For 1681mm of TD shaft)
		30927C-3		PVC, 1800mm (For 1981mm of TD shaft)
		ESR-1507		FRP, 1500mm
		FRP TD tank set (Including Shaft guide)		ESR-1507(1), ESR-1510(2), ESR-1511(2)
3	Shaft guide	ESR-1510		ESR-1506 / 1507
		ESR-1511		ESR-1507 (For FRP TD tank)
4	Power rectifier	NBA-1850		With 2 pieces of 5A fuse
5	AC power cable	VV-2D8-3M		Both ends plain
6	Connecting cable	CW-372-5M	5m	With 5 pin water resistant connector and one end plain/ Cable for external echo sounder
		CW-373-5M	5m	6 pin water resistant connectors at both ends/ Cable for navigation equipment
	Cable for external monitor	CW-576-0.5M	0.5m	With 10 pin water resistant connector and D-Sub connector/ Extension cable for monitor
7	Junction box	JB-35		1 input, 3 outputs with CW-376-5M
8	TD shaft	ESR-1504		1411mm
		32679C-2		ESR-160_1681mm
		32679C-3		ESR-160_1981mm
		40φ-4t-3000mm		ESR-160_3000mm
9	Monitor	17inch LCD Monitor		With power cable and signal cable
10	External speaker	NP-108		With 5m cable

1.4 System Configuration

Connection Diagram



1.5 In order to use the sonar more effectively

We suppose that you, the user of sonar, already know how to use sonar. In this section we will theorize your experience to improve your fishing.

1. Propagation of ultrasonic wave

(1) Propagation speed of ultrasonic wave

The propagation speed of ultrasonic waves in the sea water is said to be about 1,500m per second.

However it differs very much depending on the seasons and sea areas during a year.

The cause of the difference depends on the following 3 factors:

- Sea water temperature (°C)
- Salt concentration (%)
- Water pressure (water depth) (m)

Consequently, when thinking of the propagation speed at the surface layer zone, the speed differs according to the sea area and also, even in the same sea area, it becomes different on account of vertical propagation.

As a result of surveys conducted at various sea areas in the world, it has been made clear that the difference between maximum and minimum speeds is as much as 100 (m/sec). In a sea area having a fixed salt concentration, the propagation speed of ultrasonic wave increases on an average by the following:

- About 3m/sec every time sea water temperature rises 1°C
- About 1.7m/sec every time water depth increases 100M (about 10 atmospheric pressure)

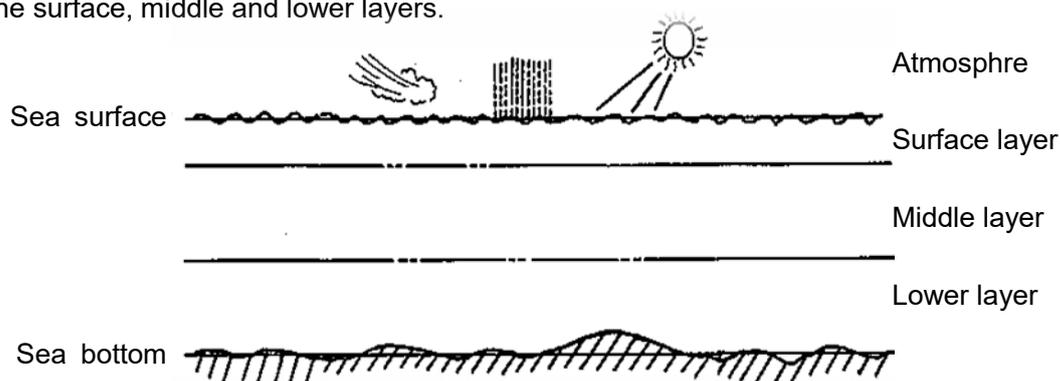
(2) Absorption and attenuation of ultrasonic wave

When an ultrasonic wave is emitted into the sea water, the energy attenuates progressively as the distance becomes farther. It indicates that the higher the frequency becomes, the greater the absorption and attenuation of ultrasonic wave become. The main causes are;

- Attenuation of ultrasonic wave caused by the decrease of the acoustic energy density due to the reflection, refraction and dispersion in water.
- Attenuation of ultrasonic wave caused by the conversion from the acoustic energy to other energy due to absorption by the viscosity of medium.

(3) Influence by marine conditions

The sea water temperature changes according to the three layers which are roughly classified into the surface, middle and lower layers.



Surface layer:

This layer is greatly affected by the natural phenomena (e.g., sun, wind, rain, etc.) since it is adjacent to the atmosphere. Besides, the propagation route of ultrasonic wave refracts on the boundary where the temperature variations in addition to the difference in temperature between daytime and night are the greatest depending on the temperature distribution.

Also, not only the temperature changes but much noise is produced. Noise at the sea surface having an effect on the sonar is seriously influenced by the wind and sometimes, the sea surface becomes rough. This phenomenon causes the irregular reflection of ultrasonic wave in the vicinity of the sea surface.

Middle layer:

This layer is not subjected to the same direct factors as the above surface layer and often presents a fixed temperature because the respective factors negate with each other, and as the water depth increases, the water temperature falls almost linearly. Thus, in this layer, the ultrasonic wave propagates relatively in a stable condition.

(4) Refraction of ultrasonic wave

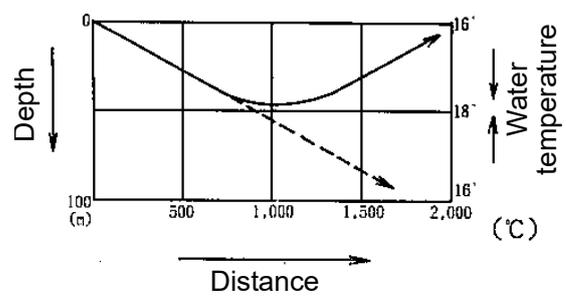
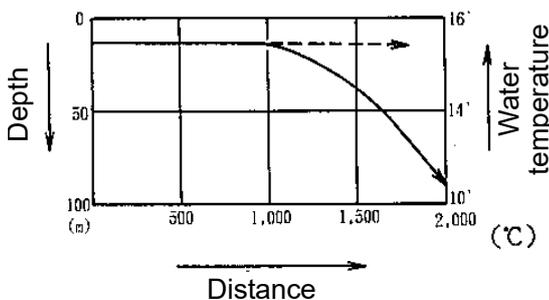
A phenomenon so called “Refraction of ultrasonic wave” is greatly affected by the propagation speed.

In case the temperature in the surface layer is high:

The propagation route bends down, therefore, it becomes very hard to detect the fish school in the surface layer in the distance.

In case the temperature in the surface layer is low:

The propagation route bends up, therefore, it becomes easier to detect the fish school in the surface layer in the distance.



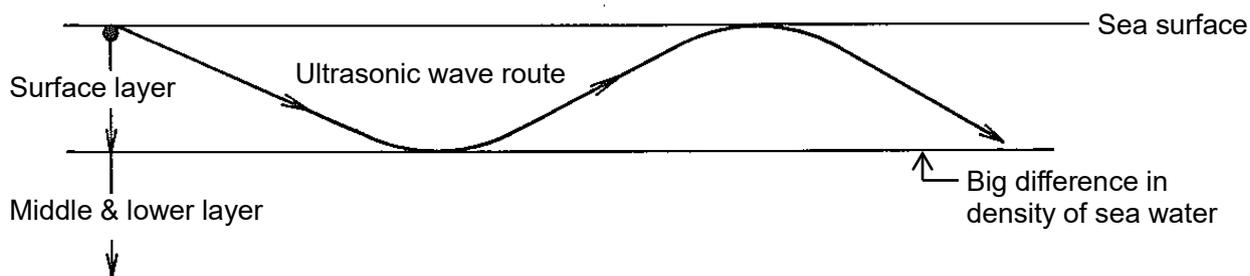
(As the temperature distribution always changes depending on the natural phenomena such as seasons, sea areas and current etc., some fish schools may not be detected according to the areas no matter how high you may turn up the Gain control. Keep this in mind when you use your sonar.)

(5) Reflection of ultrasonic wave

This is a phenomenon caused by the difference of the water temperature between surface and the middle or lower layers.

For instance, there is a big difference in density of sea water between the surface zone and middle zone whose boundary exists about 100m deep.

In this case the ultrasonic wave emitted in the underwater direction propagates in the water within 100m at the surface layer as shown in the next figure.



Therefore, even a small fish school may be detected from a long distance unexpectedly, on the other hand even a big fish school cannot be detected from a distance.

(6) Shadow zone

In the shallow sea area, reflected ultrasonic waves from the surface reflect on the boundary with a big difference in density or on the sea bottom and it appears on the surface. The area out of the propagation route becomes "SHADOW ZONE" and the echoes become weak. This zone differs according to the marine conditions and sea areas, therefore, be careful when you use your sonar in long-distance detection.

2. Difference of detectability according to transmitting frequencies

The intensity of sonar ultrasonic echoes returned back from a fish school is attenuated by the following causes as well as the curvature of ultrasonic waves due to a change of water temperature (See 1. "Propagation of ultrasonic wave"), and the fish school detection becomes difficult.

(1) Attenuation of ultrasonic waves due to the turbidity of sea water

If the sea water is not clear due to the mixing of very fine sand and mud, the ultrasonic echoes are weakened, and the detection distance become shorter as the transmitting frequency becomes higher.

(2) Deviation of ultrasonic beams due to the rolling and pitching of a ship

The transmitting direction of ultrasonic waves changes due to the rolling and pitching of the ship. As the transmitting frequency becomes higher, the ultrasonic beam width becomes narrower, and as a result, the missing of echoes increases due to the rolling and pitching of the ship.

(In order to reduce this failure, JFP-185BB provides a built-in stabilizer function.)

(3) Reduction of gain due to traveling noise

Noises produced by the engine rotation, propeller rotation, and the friction between the ship's hull and sea water are mixed into echoes to reduce the detecting gain of echoes.

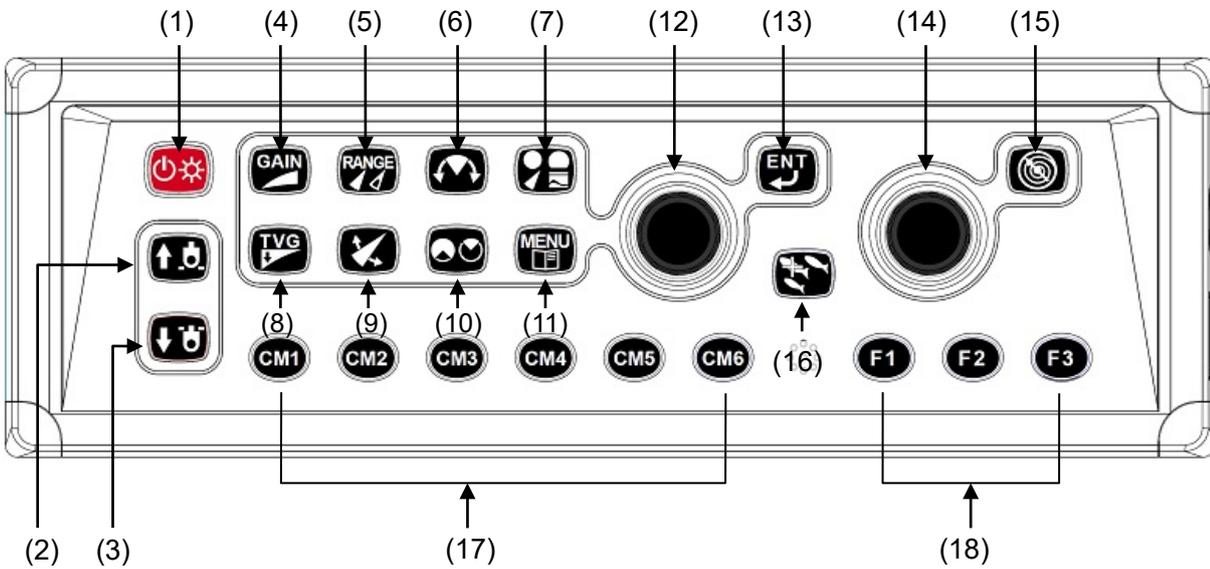
As the transmitting frequency becomes lower, the effect of traveling noises increases.

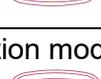
(4) Attenuation of ultrasonic waves by the bubbles produced in tracks

The vicinities near the tracks of your own ship and other ships are filled with bubbles produced by the rolling from the sea level into the sea, and the propagation of ultrasonic waves is interrupted by these bubbles. As the transmitting frequency becomes lower, the attenuation of ultrasonic waves due to bubbles increases.

1.6 To use keys

Operation unit NCH-1850



No.	Key Name	Description
1	[Power/Panel brightness] 	Press: Power on. Adjust brilliance of Operation unit (panel brightness). Long press: Power off.
2	[Hoist] 	Press: Upload the Transducer unit to the upper limit position and stop it automatically.
3	[Lower] 	Press: Download the Transducer unit to the lower limit position and stop it automatically.
4	[Gain] 	Press: Adjust gain
5	[Range] 	Press: Change the range setting Long press: Indicate the range setting menu
6	[Bearing center] 	Press: Change the angle of sector
7	[Presentation mode] 	Press: Select / Confirm of the presentation modes [Sonar] [Sonar (Off-center)] [Bottom-scan] [Echo sounder] [Sonar & One line] [Sonar x 2]

8	[TVG] 	Press: Change of TVG setting
9	[Tilt] 	Press: Change of the tilt angle
10	[Sector] 	Press: Change of the scan sector
11	[Menu] 	Press: Open/Switch the menu/Close
12	[Knob/left] 	Turn: Change the setting item of operation keys <ul style="list-style-type: none"> • GAIN • RANGE • Bearing center • TVG • Tilt • Sector • Menu • Presentation mode Press: Enter the setting of change
13	[Enter] 	Press: End input of setting value digits for Menu. Temporary erasing of displayed items on screen.
14	[Knob/right] 	Turn: Change the marker position (Ring/Bearing/Cross cursor). Press: Change the type of marker
15	[VRM] 	Press: Switch between the marker and the cursor. Close the menu
16	[Target lock] 	Press: Reverse the bearing direction or search a target automatically.
17	[CM1 to CM6] 	Press: Setting operation mode / Recall CM setting Long press: Start copy of CM
18	[F1 to F3] 	Press: Select the item to register/ Recall directly the item registered Long press: Select and save the item to register

There are two types of pressing of keys, which are Press and Long-press.

1. Press: Press the key and release immediately.
2. Long press: Keep pressed until the screen display responds.

Normal operation is done with [Press].

When the relevant key is long-pressed, the menu of the function defined for the key is displayed. Release the key immediately, once the menu is displayed.

Operation of the knobs (left/right)  are in two ways, [Turn] and [Press].

1. Turn: Turn the knob clockwise or anticlockwise
2. Press: Press the top of the knobs.

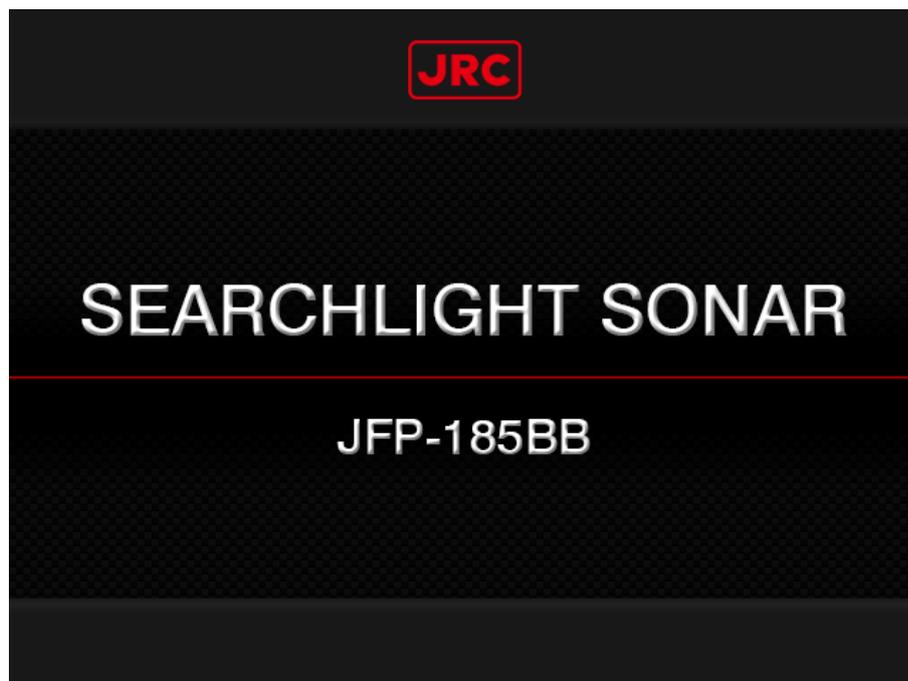
1.7 Power On/Off

1

1.7.1 Power On

Press  to power on.

The start-up screen is displayed. On start-up, the internal memory (ROM and RAM) is automatically checked. If no failures are found below message is displayed.

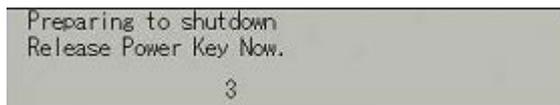


 **Caution:** If an error occurs during the memory check, the unit may have a failure, In this case please contact your JRC dealer or JRC directly.

 **Caution:** Please wait for the startup to complete, takes about 30 seconds to fully start.

1.7.2 Power Off

Keep pressing  (the power key) for 3 seconds to power off. After countdown for power shut down, when the message of [Preparing to shutdown] and the indication below is displayed, release  key immediately.



The indication below is displayed after the countdown of 3, 2, 1, and then a few moments, power is switched off automatically



1.7.3 Power Voltage Alarm

When nonstandard power voltage (out of 10.8 to 31.2V) is detected, the icon  **31.8V** starts blinking.

1.8 Selection of language to be displayed

When the power is switched on for the first time after installation, the following [Language] screen is displayed.



1. Turn  to select a language using.

 **Caution: There are the other languages than English and Japanese for selection.**

2. Press  .

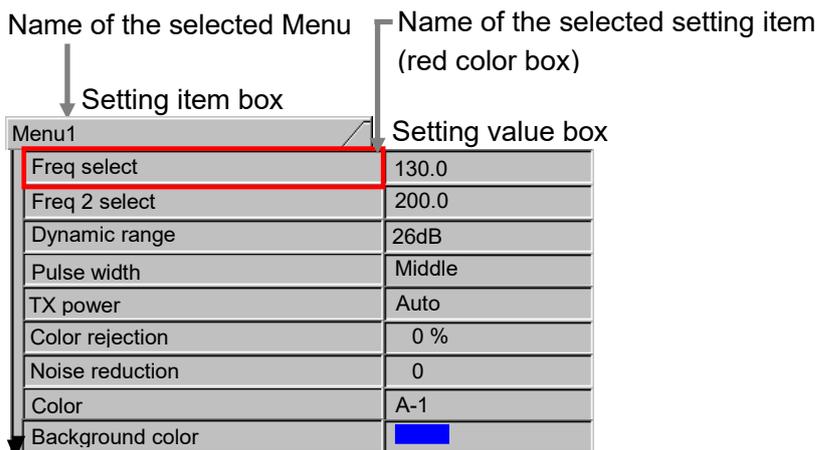
1.9 To use Menu

JFP-185BB has three sets of menu; [Menu1], [Menu2] and [Menu3].

1.9.1 Open/Close the Menu

To open the menu, press 

Each time  is pressed, [Menu1] / [Menu2] / [Menu3] are switched over.



To close the menu, press .

Each time  is pressed, [Menu1]=>[Menu2] =>[Menu3]=>[Off] are switched over, and the Menu on the screen close.

Or press , the Menu on the screen close directly.

1.9.2 Operation of the Menu

1. Turn  [knob/left] to select a menu item while Menu is displayed.
2. Press  (knob/left) or , to move setting value box.

Name of the selected setting item
in red color box

Setting value box

Setting item box

Menu1	
Freq select	130.0
Freq 2 select	200.0
Dynamic range	26 dB
Pulse width	Middle
TX power	Auto
Color rejection	0 %
Noise reduction	0
Color	A-1
Background color	

3. Turn  (knob/left) to change the setting.
4. Press  (knob/left) or  to confirm the setting value.
5. Press  to close the menu.

- When the above process 4 is not done, the setting value is changed.

When  is long-pressed, the Maintain menu is displayed.

Since the maintenance menu is a special menu for the wearers, setting Please do not change.

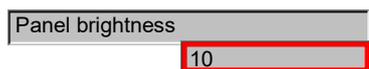
Press  to close the Maintain menu.

1.10 Adjustment of brilliance

1.10.1 Adjustment of panel brilliance

The brilliance of operation panel can be adjusted by pressing  .

1. When  is pressed, the [Panel brightness] box is displayed.



2. If  (knob/left) is turned to right, the brightness increases.

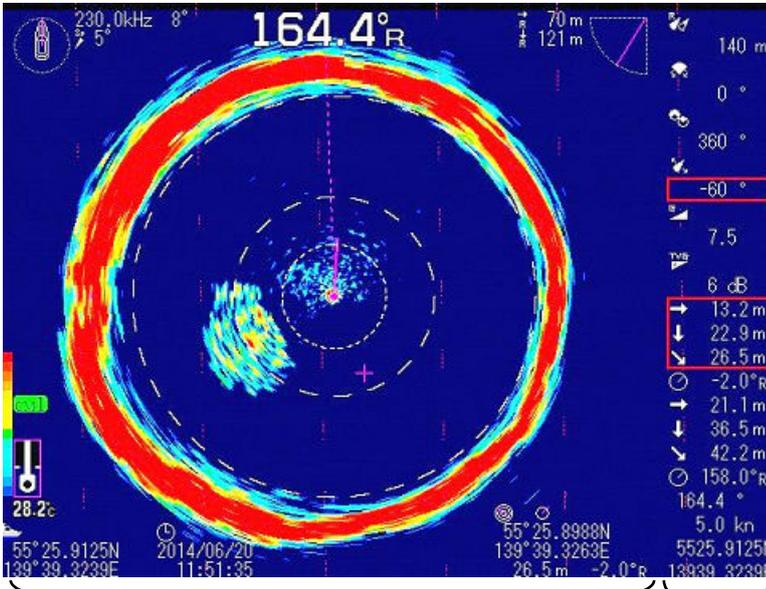
If turned to left, the brightness decreases.

3. Press  to close the menu.

1.11 Screen display

The screen data presentation system is as follows.

JFP-185BB offers a variety of display modes in split screen by combination of Mode dials and Menu.



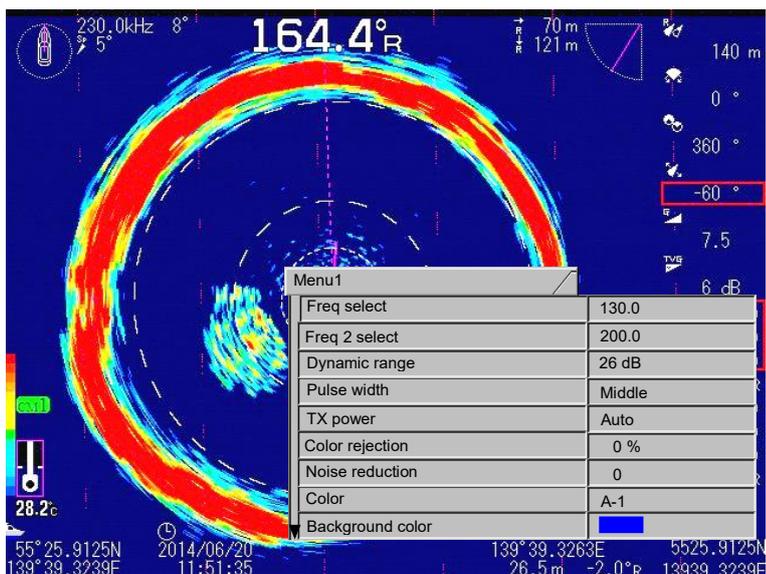
Split screen left

Split screen right

- [Sonar] [Sonar (Off-center)]
- [Bottom-scan] [Echo sounder]
- [Sonar & One line] [Sonar x 2]

[Information-Data display]

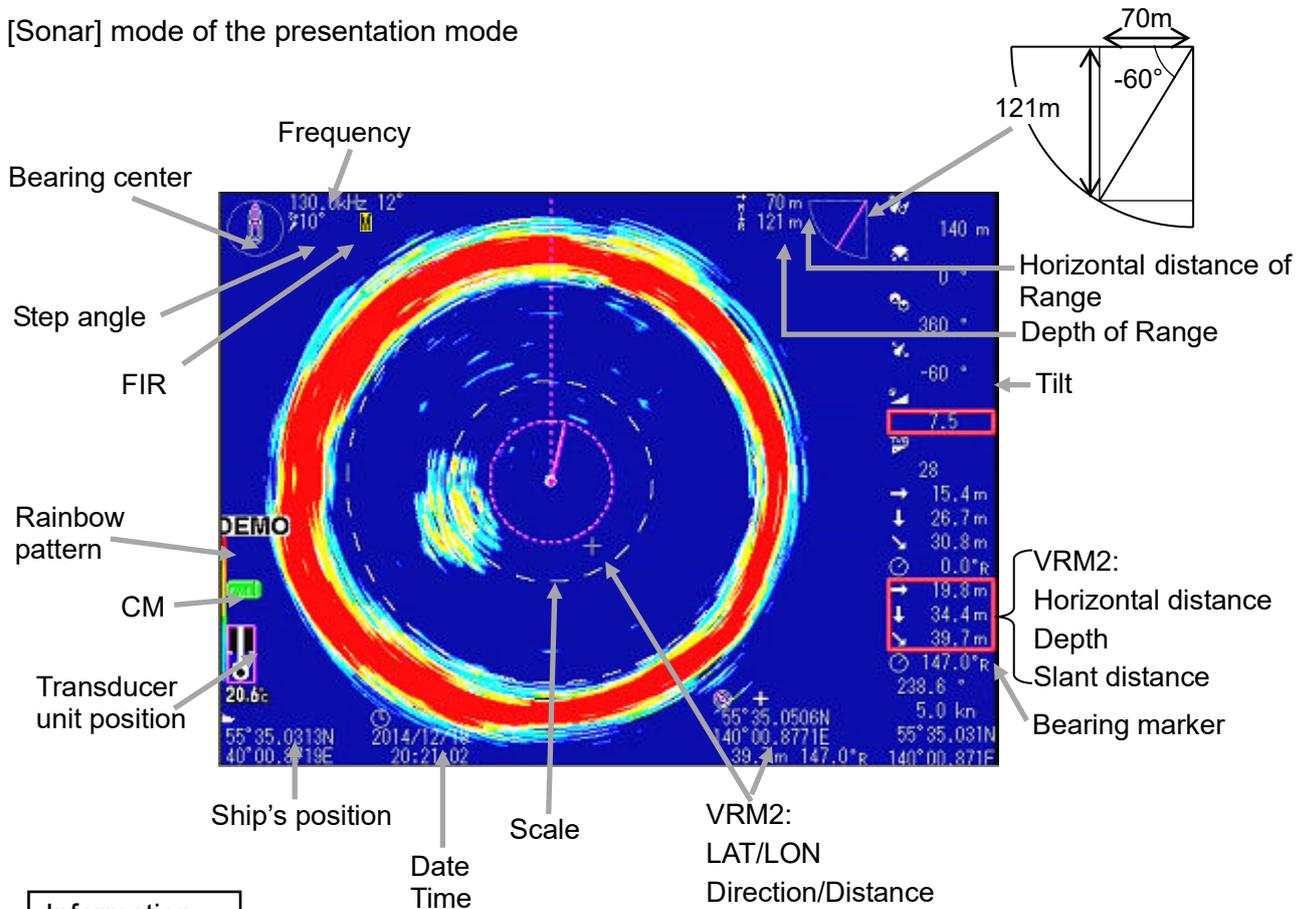
Select display mode of the presentation modes.



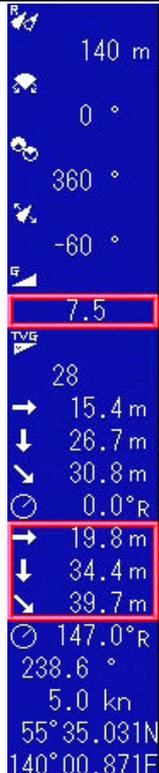
[Menu1] [Menu2] [Menu3]

1.11.1 Sonar mode display

[Sonar] mode of the presentation mode



Information-Data display



- ← Range
- ← Bearing center
- ← Sector
- ← Tilt
- ← Gain
- ← TVG
- VRM1 (Range marker, Bearing marker)
- VRM2 (Cross cursor)
- Bearing
- Speed
- Ship's position

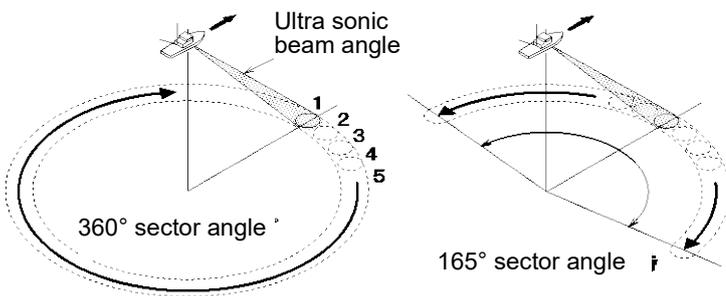
Caution: To present this info will require the JFP-185BB to be connected to an external navigator.

1.11.2 Sonar mode Operation

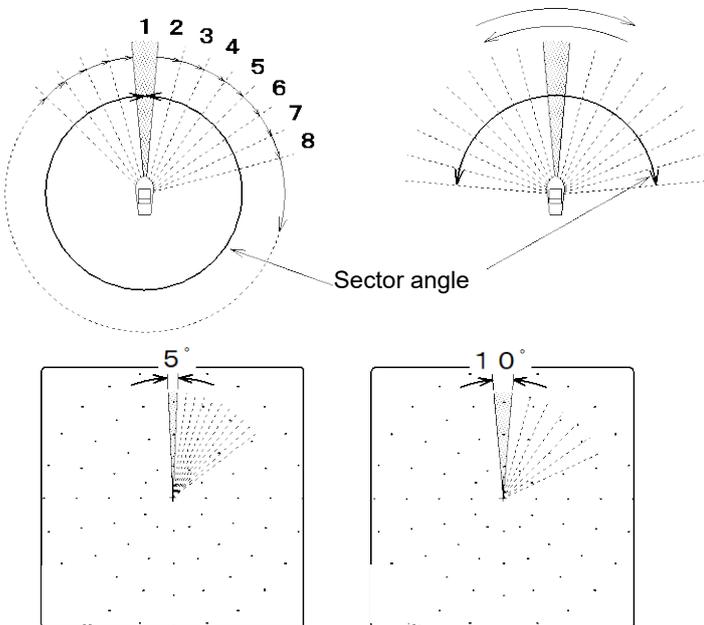
The Transducer unit sends out a beam of ultrasonic sound which sweeps in the specified sector and bearing.

The echoes of reflected sound waves are picked up by the Transducer unit and displayed like a radar in their respective range and direction on the Display unit screen.

By adjusting the tilt and bearing the sonar beam may be trained from the surface to the bottom.



- Send out a beam of ultrasonic sound which sweeps in the specified sector and bearing.
- Changing the sector angle makes it possible to detect in various ranges. (Refer to page 3-2)

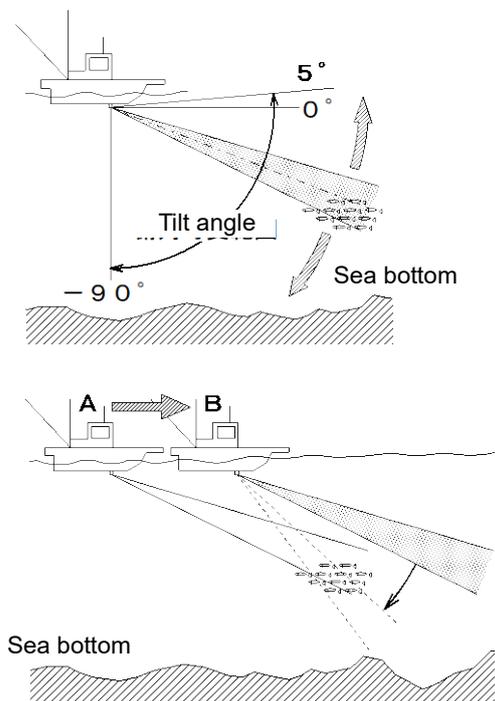


- The echoes received from the sound beam (1=>2=>3~) are displayed on the screen in that order.

- The sector is covered by the Sonar beam in the selected step.
- The reflected echo is displayed in order in the angle specified.
- The step angle can be selected in Menu2 [Step (sonar, Off-center)]. (Refer to page 2-26)

- A narrow step gives a more detailed image on the screen, however more sweep time is requested than a wide step.

The tilt angle can be changed from 5° above horizontal to -90° vertical in a 1° step.



- With this range all directions from extremely shallow waters to deep areas may be searched.

- When adjusting the tilt angle please consider the conditions such as boat speed and water depth.

- If the vessel should proceed with the sonar beam at the same angle at point A, the fish school echo will be displayed but when the vessel reaches point B. The beam will pass above the fish school and no echo will be displayed.

- In order to display the fish school at point B, adjust the tilt angle so that the sonar beam strikes the target.

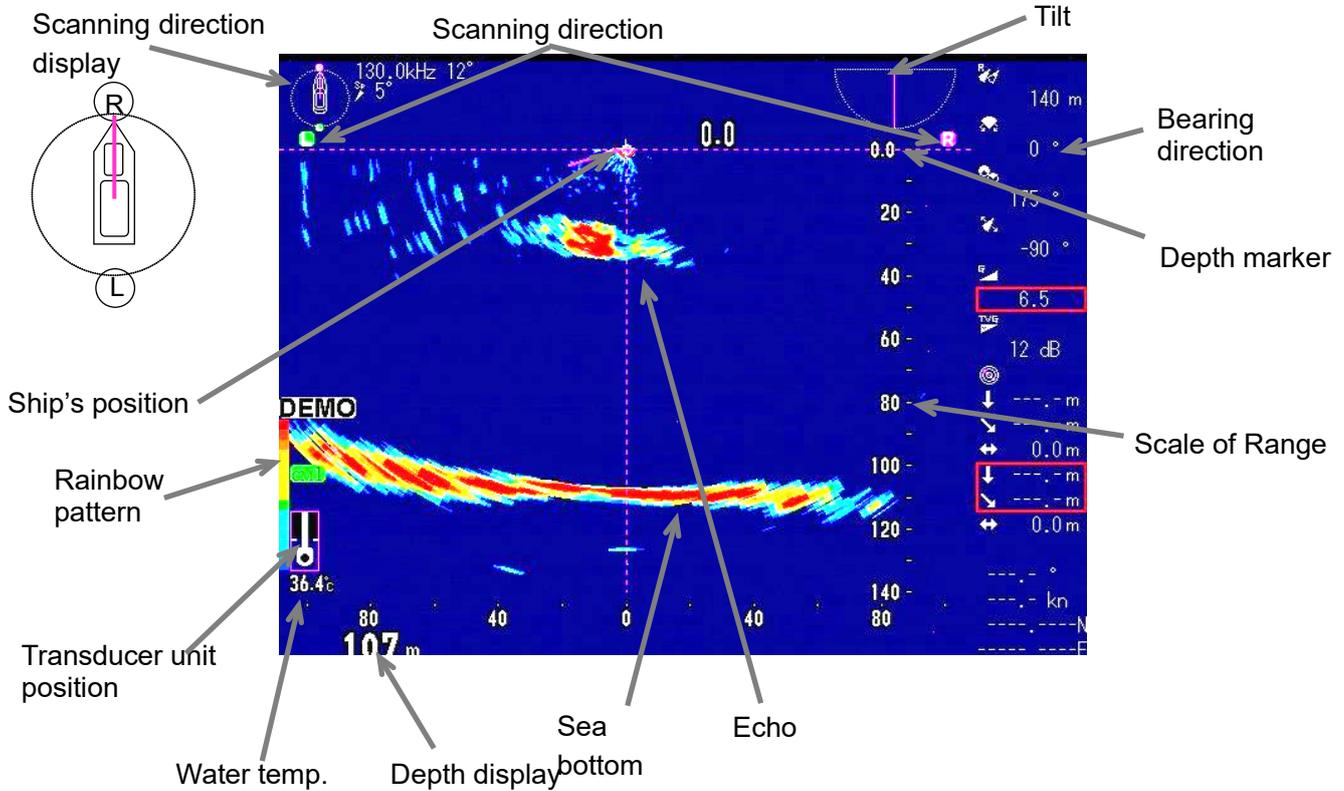
- The tilt angle of the sonar sound beam can only be changed when the sound beam is in [Sonar] mode, [Bottom-scan] mode and [Echo sounder] mode.

(Refer to page 3-10)

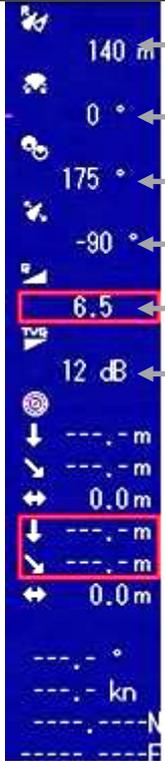
1.11.3 Bottom-scan mode display

[Bottom-scan] mode of the presentation mode

Indicate the Scanning direction as L (Left) in green and R (right) in pink.

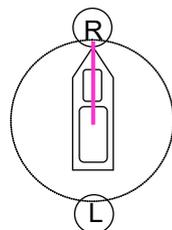


Information-Data display

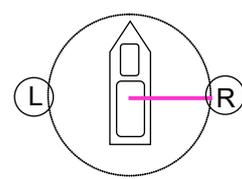


- Range
- Bearing center
- Sector
- Tilt
- Gain
- TVG
- VRM1 (Depth, Slant distance, Horizontal distance from the intersection of the Depth marker and the side marker.)
- VRM2 (Depth, Slant distance, Horizontal distance from the cross cursor)
- Bearing
- Speed
- Ship's position

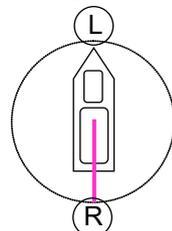
Bearing direction 0°



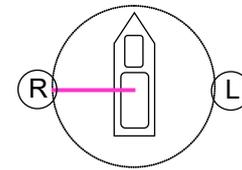
Bearing direction 90°



Bearing direction 180°



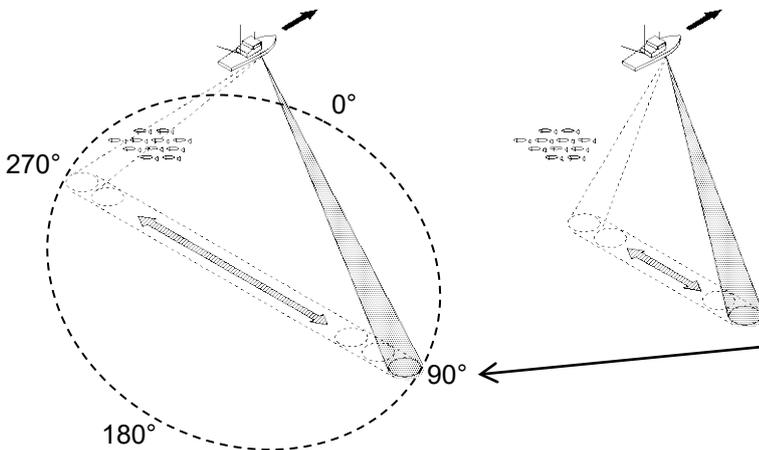
Bearing direction 270°



Caution: To present this info will require the JFP-185BB to be connected to an external navigator.

1.11.4 Bottom-scan mode operation

The sonar beam sweeps from side to side underneath the vessel.
The screen will clearly display echoes from the middle depth and sea-bottom contour.

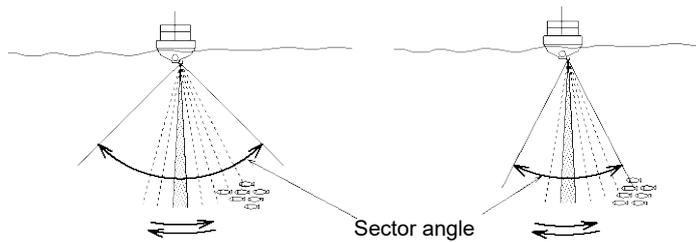


- The ultra sonic sound beams out as the beam sweeps from side to side.

- Sector angle can be changed at every 5 degree. The scan direction can be changed from front to back and from side to side.

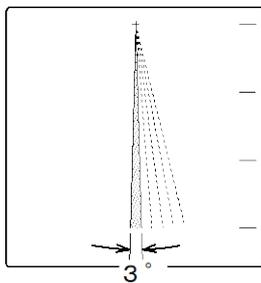
Sector angle: 95°

Sector angle: 45°

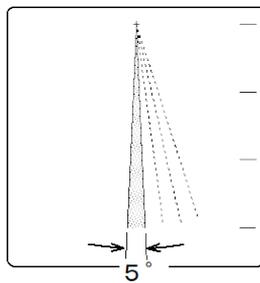


- Choose the size of the area to be scanned by changing sector angle. (Refer to page 3-2)

- The specified sector angle is centered on the bearing line. (Refer to page 3-9)



Bottom



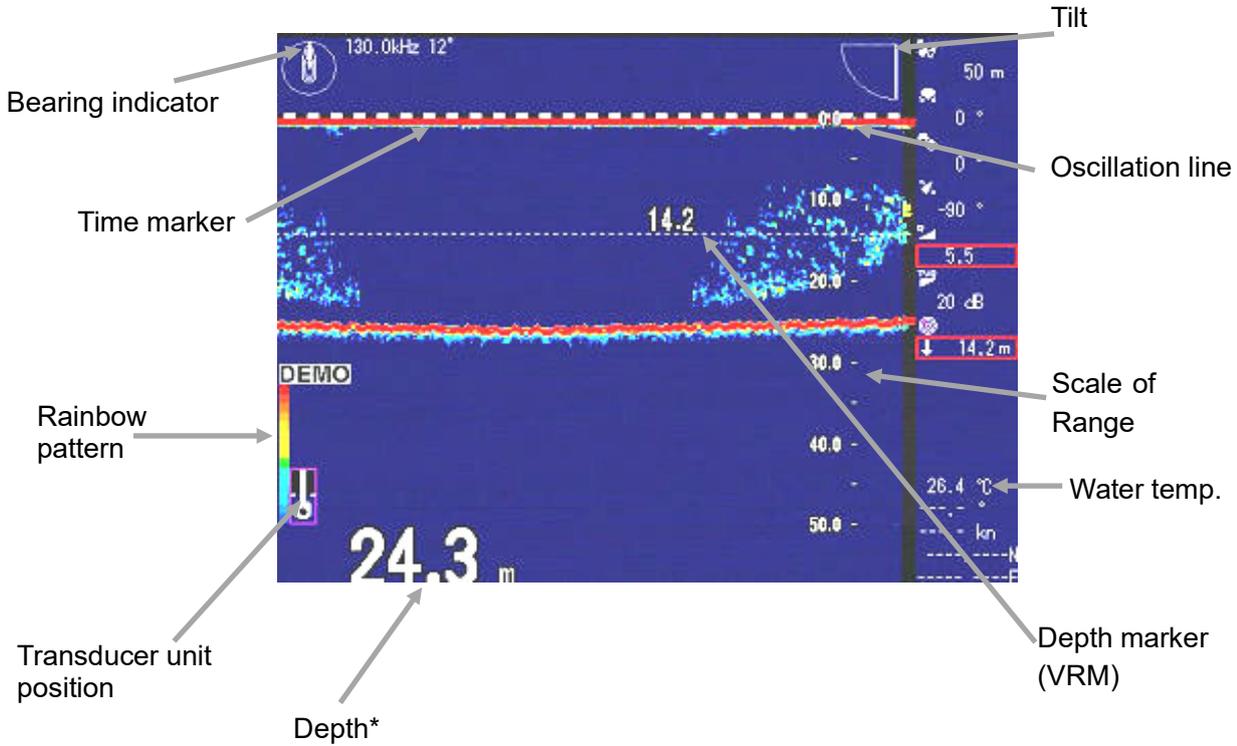
- The sector is covered by the sonar beam in steps of the specified angle.

- The reflected echo is displayed in order in the angle specified.

- The step angle may be selected in the Menu2 [STEP (Bottom-scan)]. (Refer to page 2-26/2-27)

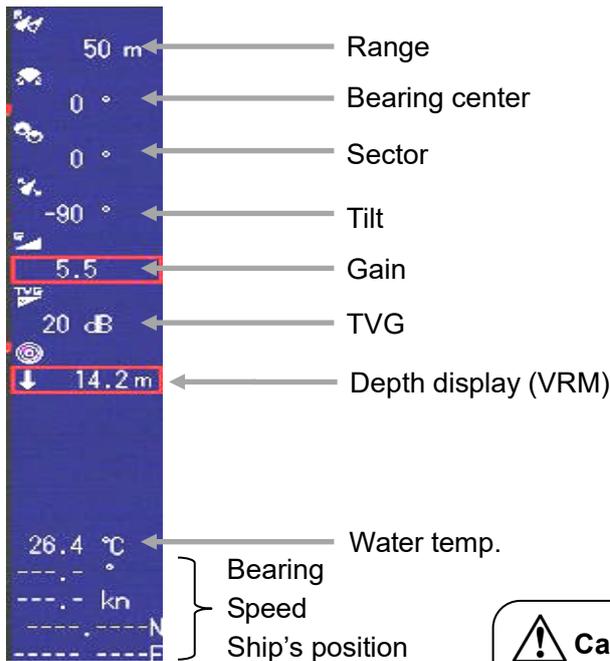
1.11.5 Echo sounder mode display

[Echo sounder] mode of the presentation mode



Depth*
 *The depth display can be appeared when the tilt angle is set to -90° only.

Information-Data display

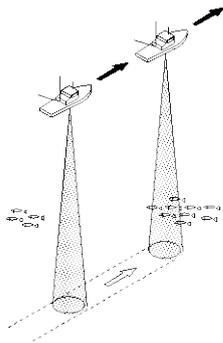


Caution: To present this info will require the JFP-185BB to be connected to an external navigator.

1.11.6 Echo sounder mode operation

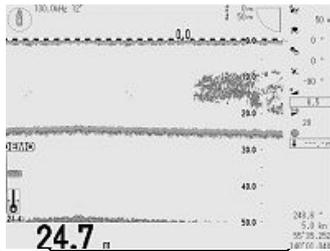
The sonar beam sweeps underneath the vessel and the JFP-185BB can be used as echo sounder mode by selecting of [Echo sounder] mode of the presentation mode.

The screen will clearly display echo sounder images from the middle depth and the sea-bottom contour.



detects underneath the vessel.

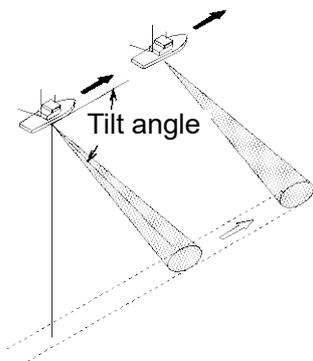
Echo sounder mode



- When operating in the [Echo sounder mode], the Transducer unit tilt 90° and stops rotating and the sounder image is displayed on the screen.

- The beam width is relative to the frequency.

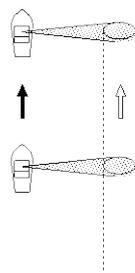
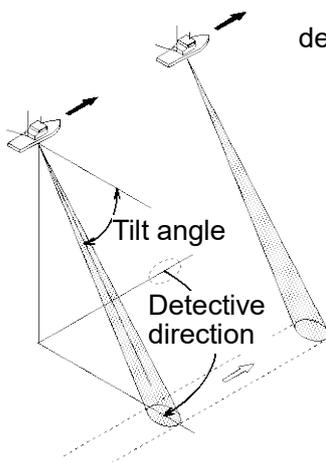
detects fore by changing tilt angle.



- The sounder image other than that of underneath the vessel can be displayed by changing tilt angle and detective direction.

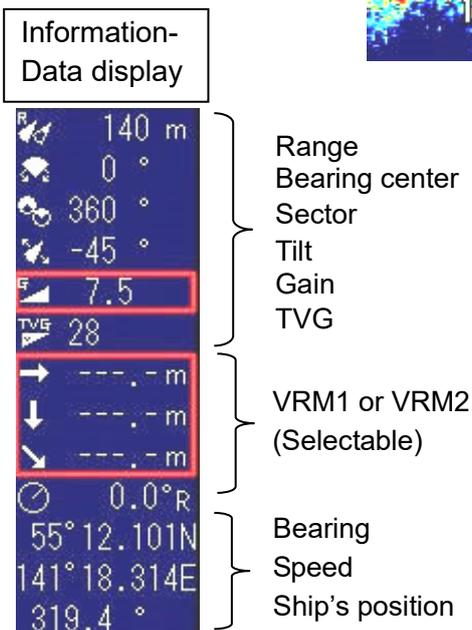
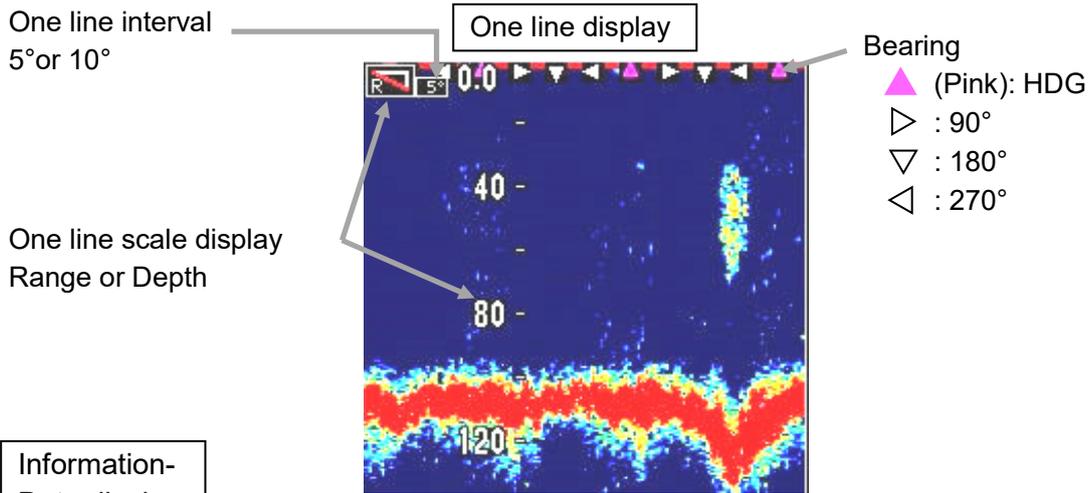
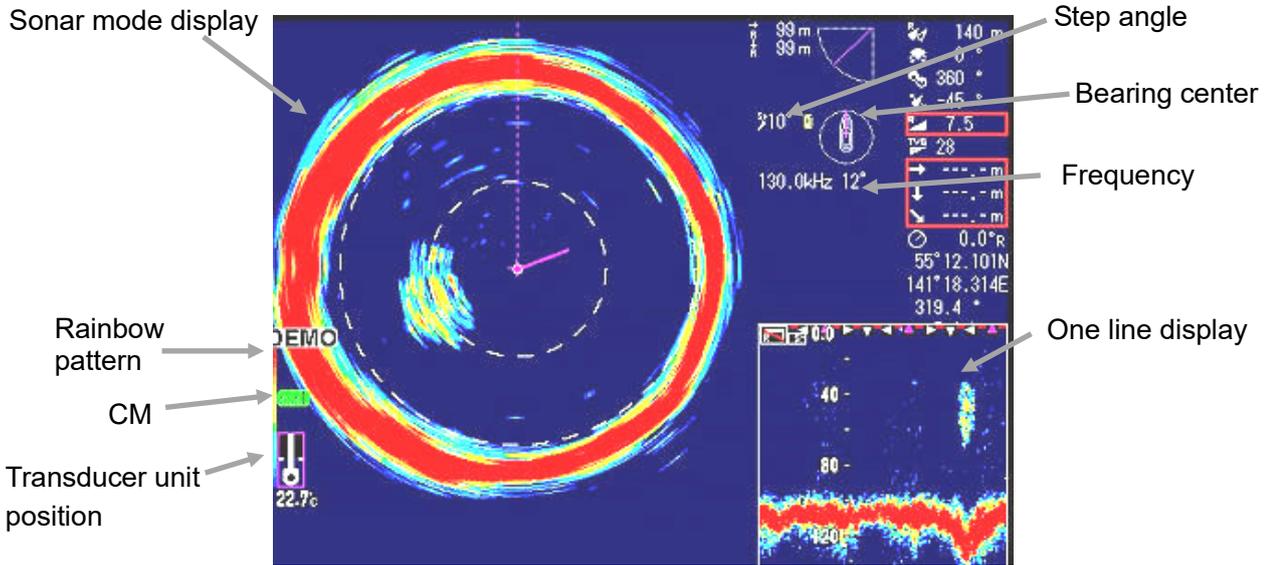
(Refer to page 3-9/3-10)

detects fore by changing tilt angle and bearing.



1.11.7 Sonar & One line mode display

[Sonar & One line] mode of the presentation mode

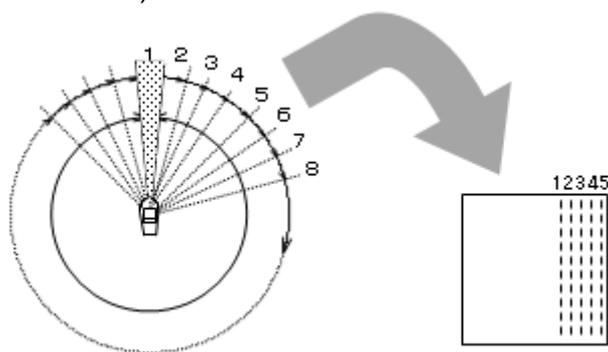


⚠ Caution: To present this info will require the JFP-185BB to be connected to an external navigator.

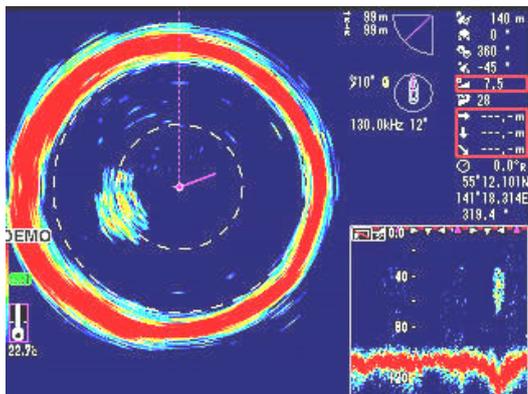
1.11.8 Sonar & One line mode operation

The vertical sonar image can be shown in the Sub-screen beside the main circular image. The vertical sonar image like an echo sounder image is called “One line”. The image setting can be changed by [Menu2] > [One line display] / [One line scale] / [One line shift] / [One line interval].

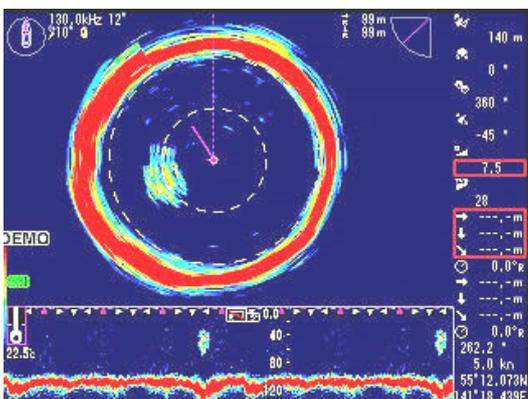
(Refer to “2.3.26 One line display”, “2.3.27 One line scale”, “2.3.28 One line shift” and “2.3.29 One line interval”)



- [One line display]: Small, [One line interval]: 5°
 > 3 laps (1080 degree) image can be shown in the Sub-screen



- [One line display]: Large, [One line interval]: 5°
 > 7.5 laps (2700 degree) image can be shown in the Sub-screen.



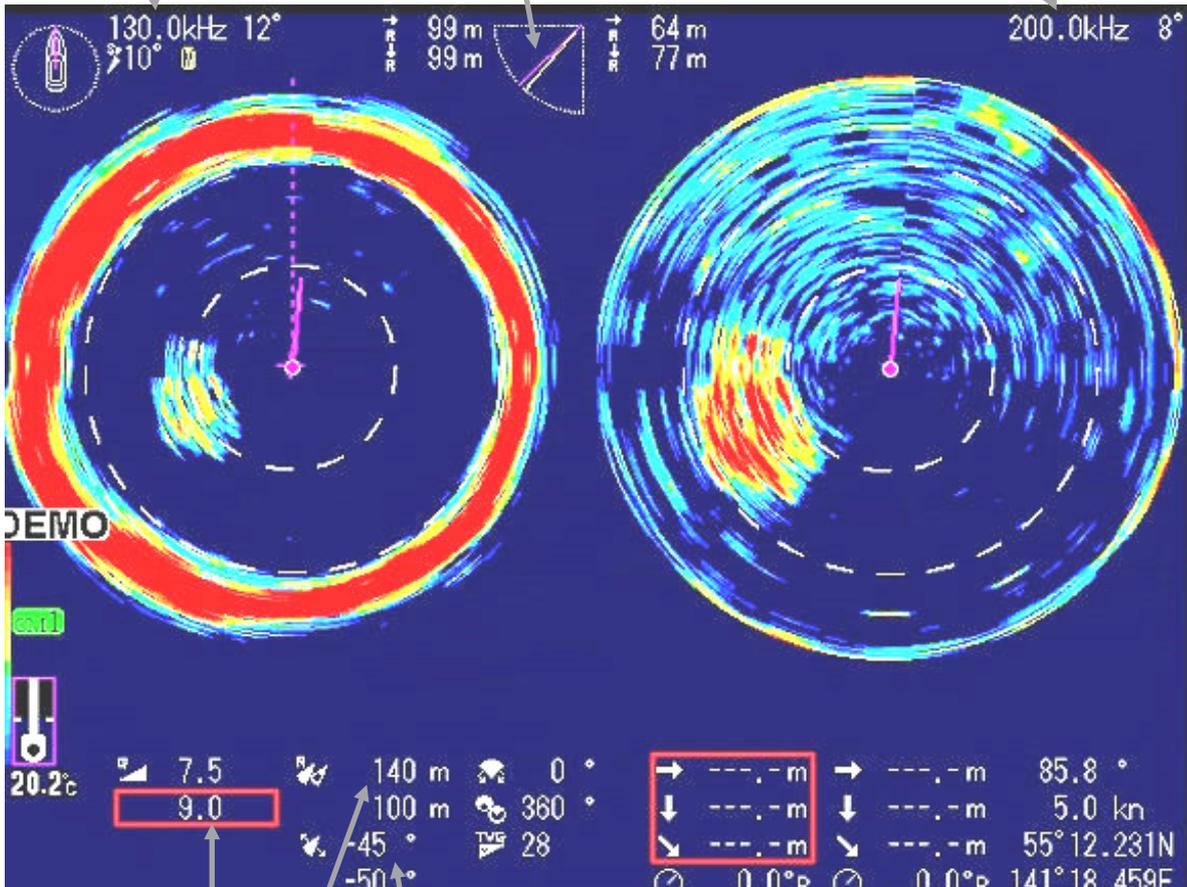
1.11.9 Sonar x2 mode display

[Sonar x 2] mode of the presentation mode

Left Sonar Freq.
 ([Menu1] =>
 [Freq select] menu)

Tilt angle
 (Pink line: Left Sonar)
 (Yellow line: Right Sonar)

Right Sonar Freq.
 ([Menu1] =>
 [Freq 2 select] menu)



Gain Range Tilt
 Upper: Left Sonar
 Lower: Right Sonar

VRM1
 (Depth, Slant distance,
 Horizontal distance from
 the intersection of the Depth
 marker and the side marker)

VRM2
 (Depth, Slant distance,
 Horizontal distance from
 the cross cursor)

Bearing
 Speed
 Ship's position

1.11.10 Sonar x2 mode operation

Two sonar images can be displayed side by side. Each image can be set to the frequency, range, tilt angle and gain individually.

The frequency of the left / right side image can be changed by [Menu1] => [Freq select] / [Freq 2 select]

[Range] / [Tilt] / [Gain] setting can be switched by pressing [Range] / [Tilt] / [Gain] keys.

[VRM1], [VRM2], [Wake] and [Compass] indicator can be shown in the left sonar image only.

Chapter 2 Function setting

2.1 Menu configuration

2.1.1 Initial setting

The factory default setting is shown in square.

Functions	Factory setting (in the item □)	Setting Menu
Menu1 Freq select Freq 2 select Dynamic range Pulse width TX power Color rejection Noise reduction Color Background color Image correct Gain (TD) FIR Interference rejection Range (Sonar, Off-center) Range (Bottom-scan) Range (Echo sounder) Remote key set Color palette Sub-screen selection Sub-screen display Wake range (Sub-screen) Language	□130, 130.1, 130.2 => 209.8, 209.9, 210 130 => □200, 200.1 => 209.8, 209.9, 210 12, 14, 16, 18, □20, 22, 24, 26, 28, 30, 32 Short, □Middle, 1•••100 □Auto, 20, 30, 40, 50, 60, 70, 80, 90, 100 □0, 5, 10, 15, 20, 25•••••70, 75, 80 □0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 □A-1, A-2, B-1, B-2, C-1, C-2, Z-1, Z-2 □Blue, Seven other colors Off, □1, 2, 3 -50••••□0••••+50 Auto, 1, 2, 3, 4, 5, 6, 7, Low speed, □Medium speed, High speed □Off, On □10, □20, □50, □80, □100, □140, □200, □300, □500 => 1000 □10, □20, □50, □80, □100, □140, □200, □300, □500 => 1000 □10, □20, □50, □80, □100, □140, □200, □300, □500 => 1000 □Refer to page 3-17 Color (Z-1, Z-2) □Wake disp (H up), Wake disp (N up), Wake disp (S up), Bottom-scan □Off, Small, Medium, Large 0.1•••□1.0••• 10.0 □English, Japanese, Korean, Traditional Chinese, Vietnamese, Spanish, Thai, Myanmar	Change at Menu1 Refer to page 2-4
Menu2 Step (Sonar, Off-center) Step (Bottom-scan) Off-center position Target lock A scope White line Scale Internal buzzer volume NMEA monitor Compass display Wake display Wake memory interval Sonic speed Power freq adjust	5°, □10°, 15°, 20° 3°, □5° □Fore, Back, Right, Left □Reverse, Mode1, Mode2, Marker Mode1, Marker Mode2 □Off, On □Off, 1, 2, 3, 4, 5 Off, □1, 2, 3, 4, 5, 6 0, 1, 2, 3, 4, 5 => 96, 97, 98, 99, □100 □Off, On □Off, On □Off, On □1, 5, 10, 30 (second) -7.0•••□0.0••• 2.0% (0.1%step) □250.0 => 300.0kHz (0.1step)	Change at Menu2 Refer to page 2-25

Functions	Factory setting (in the item <input type="checkbox"/>)	Setting Menu
Depth unit	<input checked="" type="checkbox"/> M, ft, fm, l.fm	
Range & Speed unit	<input checked="" type="checkbox"/> NM, <input checked="" type="checkbox"/> kn, km, km/h	
Temperature unit	<input checked="" type="checkbox"/> °C, °F	
Temperature adjustment	-9.9 ••• <input checked="" type="checkbox"/> 0.0 ••••• 9.9	
Train correct	-180.00 => <input checked="" type="checkbox"/> 0.00 => +180.00 (1.25°step)	
Ext synchronized	<input checked="" type="checkbox"/> Off, ↑, ↓	
Bearing display	<input checked="" type="checkbox"/> Off, Small, Large	
True / Relative bearing	<input checked="" type="checkbox"/> Relative, True	
Step (Bearing center)	1 •• <input checked="" type="checkbox"/> 5 ••••• 30	
Audio level	1 • <input checked="" type="checkbox"/> 3 ••••• 32	
Audio tune	1 •• <input checked="" type="checkbox"/> 5 •• 10	
One line display	<input checked="" type="checkbox"/> Small, Large	
One line scale	<input checked="" type="checkbox"/> Range, Depth	
One line shift	<input checked="" type="checkbox"/> 0-100%, 0-50%, 0-75%, 25-100%, 50-100%	
One line interval	<input checked="" type="checkbox"/> 5°, 10°	
Menu3		Change at Menu3 Refer to page 2-51
Baud rate	<input checked="" type="checkbox"/> 4800, 9600, 19200, 38400	
DBT output	<input checked="" type="checkbox"/> Off, On	
DPT output	<input checked="" type="checkbox"/> Off, On	
GGA output	<input checked="" type="checkbox"/> Off, On	
GLL output	<input checked="" type="checkbox"/> Off, On	
MTW output	<input checked="" type="checkbox"/> Off, On	
RMC output	<input checked="" type="checkbox"/> Off, On	
TLL output	Off, <input checked="" type="checkbox"/> On	
VTG output	<input checked="" type="checkbox"/> Off, On	
ZDA output	<input checked="" type="checkbox"/> Off, On	
Simulation	<input checked="" type="checkbox"/> Off, On	
Menu time-out period	Off, 5, 6 •• <input checked="" type="checkbox"/> 10 ••••• 58, 59, 60 (1sec/step)	
Hull unit auto up	Off, 1 •• 5 •• <input checked="" type="checkbox"/> 15 • 17 (1sec/step) kn Off, 1 •• <input checked="" type="checkbox"/> 15 •• 29 • 30 (1sec/step) km/h	
Hull unit operation at the start	<input checked="" type="checkbox"/> No, Yes	
Transducer unit baud rate	4800, 9600, <input checked="" type="checkbox"/> 19200	
Slow down the Bearing speed	<input checked="" type="checkbox"/> 0, 10, 20 •• 100, 200, 300, 400, 500	
Menu (transparent)	0 •• 10 •• <input checked="" type="checkbox"/> 15 •• 25	
Message (transparent)	0 •• <input checked="" type="checkbox"/> 10 •• 20	
Sub-screen (transparent)	<input checked="" type="checkbox"/> 0 •• 10 •• 20	
Information display	<input checked="" type="checkbox"/> Off, Lat/long, Date, Lat/long/Date	
Localtime offset	-11.0 •• -5.0 •• <input checked="" type="checkbox"/> 0.0 •• 5.0 •• 10.0 •• 14.0	
Dynamic range standard	<input checked="" type="checkbox"/> Top, Under	

CM keys, F1/F2/F3 key

Functions	Factory setting (in the item <input type="checkbox"/>)	Setting Menu
CM keys	Refer to “2.5.1 Initial setting of [CM] keys”	Change at CM menu Refer to page 2-63
F1 key Event (TLL)	<input type="checkbox"/> No data	Change at each F key by long-press Refer to page 2-68
F2 key Frequency	<input type="checkbox"/> 130.0 to 210.0	
F3 key Dynamic range	12 • 14 • 16 • 18 • <input type="checkbox"/> 20 • 22 • 24 • 26 • 32	

2.2 Menu1

To display the menu, press  and select [Menu1].

The selected menu item will be displayed in red color box.
There are 22 setting items in [Menu1] box.

Menu1	
Freq select	130.0
Freq 2 select	200.0
Dynamic range	26 dB
Pulse width	Middle
TX power	Auto
Color rejection	0 %
Noise reduction	0
Color	A-1
Background color	

Menu1	
Image correction	1
Gain (TD)	Auto
FIR	Off
Interference rejection	
Range (Sonar, Off-center)	
Range (Bottom-scan)	
Range (Echo sounder)	
Remote key set	
Color palette	

Menu1	
Range (Sonar, Off-center)	
Range (Bottom-scan)	
Range (Echo sounder)	
Remote key set	
Color palette	
Sub-screen selection	Wake disp (H up)
Sub-screen display	Off
Wake range (Sub-screen)	1. 0
Language	English

Basic Operation of the Menu

1. Turn  (knob/left) to select the setting item.
2. Press  (knob/left) or  to confirm of the setting item.

2.2.1 Frequency, Frequency 2

On JFP-185BB, the frequencies can be set in a range of 130 to 210 kHz.

[Freq select]: In Sonar x2 mode, the frequency of Left side Sonar image can be set.

[Freq 2 select]: In Sonar x2 mode, the frequency of Right side Sonar image can be set.

1. Press  to display [Menu1].
2. Turn  (knob/left) to select [Freq select]. (or [Freq 2 select])

Menu1	
Freq select	130.0
Freq 2 select	200.0
Dynamic range	26 dB
Pulse width	Middle
TX power	Auto
Color rejection	0 %
Noise reduction	0
Color	A-1
Background color	

3. Press  (knob/left) or  to move setting value box.
The setting value will be displayed in red color box.

4. Turn  (knob/left) to select frequency. (or [Freq 2 select])

Freq select	130.0
-------------	-------

5. Press  to close the menu.

2.2.2 Range (Sonar, Off-center) (Bottom-scan) (Echo sounder)

One of eight ranges can be quickly selected using this function and each of these ranges can be set by the user to meet his own requirements.

1. Press  to display [Menu1] and select [(Sonar, Off-center), (Bottom-scan) or (Echo sounder)].

Or Keep pressing  .

2. [Range setting box] will be displayed.

Range1	20 m
Range2	50 m
Range3	80 m
Range4	100 m
Range5	140 m
Range6	200 m
Range7	200 m
Range8	500 m

[Range setting value: 10 to 1000m]

3. Turn  (knob/left) to select [Range number].
4. Press  (knob/left) or  to move setting value box.

The setting value will be displayed in red color box.



5. Turn  (knob/left) to select [Range setting value].

Set as the same way [Range 2 to Range 8] as above setting.

6. Press  or  to close the menu.

The range initial setting of [Sonar, Off-center], [Bottom-scan], [Echo sounder] are different. Set the depth unit by setting box of [Menu2].

The range setting of all presentation modes (Sonar, Sonar (Off-center), Bottom-scan and Echo sounder) is same, but the range setting value should be set separately for each.

2.2.3 GAIN (TD)

The insufficient gain due to ultrasonic signal attenuation can be corrected. Accuracy of bottom detection is adjusted. Such false recognition can be corrected that a deeper position is recognized as sea bottom than actual, or large fish school is recognized as sea bottom. It is not necessary to do this gain correction, as the factory default setting is optimized.

1. Press  to display [Menu1].
2. Turn  (knob/left) to select [GAIN (TD)].

Menu1	
Dynamic range	26 dB
Pulse width	Middle
TX power	Auto
Color rejection	0 %
Noise reduction	0
Color	A-1
Background color	
Image correct	1
Gain (TD)	0

3. Press  (knob/left) or  to move setting value box.

The setting value will be displayed in red color box.



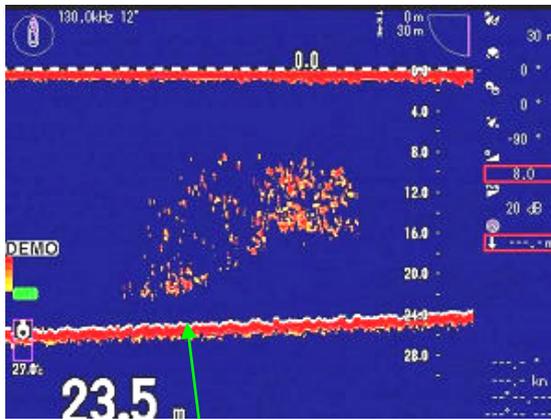
4. Turn  (knob/left) to select [GAIN (TD) setting value].

Gain (TD) adjustment

When the bottom cannot be detected or when the bottom is of mud pool or seaweed, [Gain (TD)] shall be turned up. When transfer to fish schools, etc. frequently occurs, [Gain (TD)] shall be turned down.

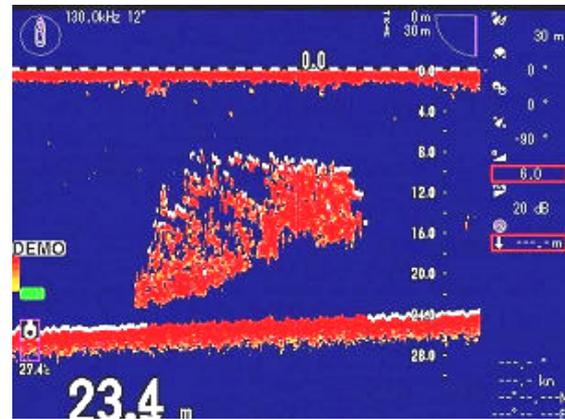
Adjustment shall be made under conditions where the white line is displayed. To display the white line, select [White line] in [Menu2].

The gain (TD) setting shall be adjusted in such a way that the white line in sea bottom has the same thickness as that of the strongest signal color area.



Optimum

The white line is displayed on the sea bottom.



Over-Gain

The white line moves to fish school.

White line should have the same thickness as the (darkest) color for the strongest signal.

5. Press  to close the menu.

2.2.4 Dynamic range

By shifting the dynamic range, the display to reflect the received echo more precisely or the display to discriminate their density is selected.

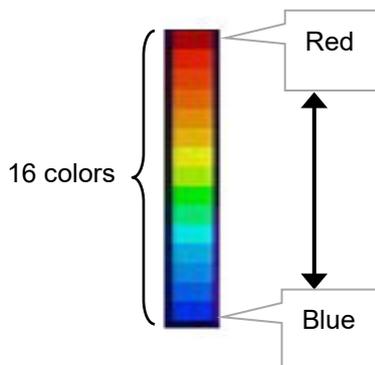
1. Press  to display [Menu1].
2. Turn  (knob/left) to select [Dynamic range].

Menu1	
Freq select	130.0
Freq 2 select	200.0
Dynamic range	26 dB
Pulse width	Middle
TX power	Auto
Color rejection	0 %
Noise reduction	0
Color	A-1
Background color	

3. Press  (knob/left) or  to move setting value box.

Dynamic range	26 dB
---------------	-------

4. Turn  (knob/left) to select the setting value from [12dB] to [32dB].



[Dynamic range standard] is set to [High]:
When the value is small, the target is easy to recognize because the weaker signal will become undistinguished.

[Dynamic range standard] is set to [Lower]:
When the value is small, the weaker signal is emphasized.

5. Press  to close the menu.

2.2.5 Pulse width

The transmitted pulse width can be set.

1. Press  to display [Menu1].

2. Turn  (knob/left) to select [Pulse width].

Menu1	
Freq select	130.0
Freq 2 select	200.0
Dynamic range	26 dB
Pulse width	Middle
TX power	Auto
Color rejection	0 %
Noise reduction	0
Color	A-1
Background color	

3. Press  (knob/left) or  to move setting value box.



4. Turn  (knob/left) to select the setting value from [Short], [Middle] or [1] to [100].

Short: automatically changes the transmit pulse width according to the range (defaults) listed below.

Middle: automatically the normal transmit pulse width x 1.5

A longer pulse width provides high sensitivity as increasing the detective ranges.

Range (m)	Pulse width (ms)
0 to 59	0.52
60 to 79	0.74
80 to 99	0.95
100 to 119	1.05
120 to 159	1.47

Range (m)	Pulse width (ms)
160 to 199	1.89
200 to 239	2.31
240 to 399	3.99
400 and more	4.20

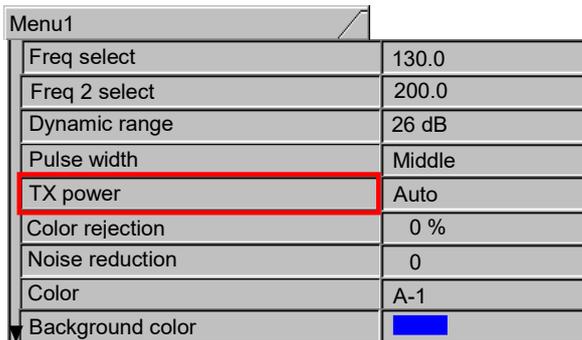
5. Press  to close the menu.

2.2.6 TX power

The output power of the ultrasonic sound wave may be selected.

1. Press  to display [Menu1].

2. Turn  (knob/left) to select [TX power].



3. Press  (knob/left) or  to move setting value box.



4. Turn  (knob/left) to select the setting value from [Auto] or [20] to [100].

In crowded fishing areas, this function may be used to reduce power and avoid interference to other fishing boat's sonars and echo sounders.

[100] indicates the maximum power and then gradually reduced by moving from [90]=>[80] => [70] =>=> => [20] that is the minimum power.

5. Press  to close the menu.

2.2.7 FIR (Bandwidth)

Change the frequency bandwidth. To avoid the noise, interference, etc., set the frequency bandwidth to narrow.

1. Press  to display [Menu1].

2. Turn  (knob/left) to select [FIR].

Menu1	
Gain (TD)	0
FIR	Auto
Interference rejection	Off
Range (Sonar, Off-center)	
Range (Bottom-scan)	
Range (Echo sounder)	
Remote key set	
Color palette	
Sub-screen selection	Wake disp (H up)

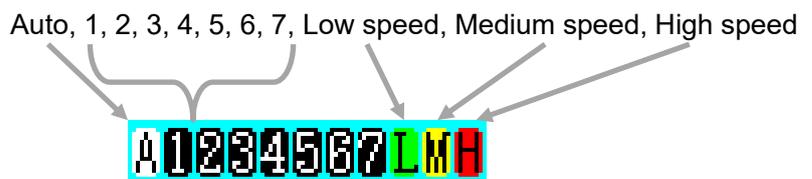
3. Press  (knob/left) or  to move setting value box.

FIR	Auto
-----	------

4. Turn  (knob/left) to select the setting value from [Auto] or from [1] to [7] or [High speed], [Medium speed] and [Low speed].

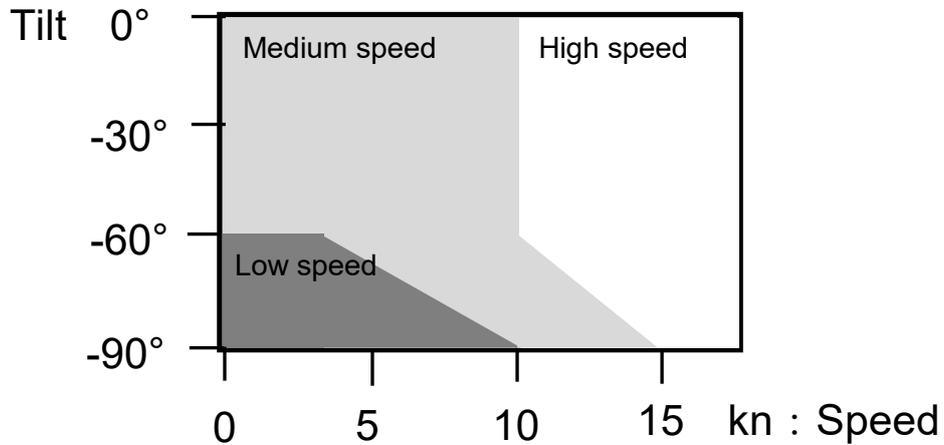
5. Press  to close the menu.

FIR display



Setting:

Set the value of [FIR] by “Tilt angle” and “Speed”. Refer to the figure as below.



Setting value	Description
[High speed]	Ship's speed: 10 knots or more. Tilt angle: -30° or upwards. S/N ratio is reduced compared with [Medium speed].
[Medium speed]	Ship's speed: From 5 to 10 knots. Tilt angle: -30° or upwards. S/N ratio is reduced compared with [Low speed].
[Low speed]	Ship's speed: 5 knots or less. Tilt angle: -60° or downwards. Sensitivity of the Bow-side and Stern-side are reduced when tilt angle is set to upwards or the ship's speed is 5 knots or more.
[1 to 7]	[7] is the widest bandwidth and then gradually reduced by moving from [6] => [5] => [4] => [3] => [2] => [1] that is the narrowest bandwidth.
[Auto]	[FIR] is set automatically according to the ship's speed and the tilt angle.

[High speed] is the widest bandwidth and then gradually reduced by moving from [Medium speed] => [Low speed] => [6] => [5] => [4] => [3] => [2] => [1] that is the narrowest bandwidth.

! Caution: If the frequency bandwidth is wide, the resolution becomes high. It is easy to find the small targets, but there is too much noise to make distinctions with signs of fish. If it is narrow, resolution becomes low, and the noise becomes reduced.

! Caution: Depending on the setting of the frequency bandwidth, the sensitivity of the bow-side or the stern-side may decrease under the influence of the “Doppler effect”. Please set a bandwidth widely when the ship's speed is fast or the tilt angle is upwards.

2.2.8 Interference rejection

The interference can be reduced, but the scanning speed is about two times slower.

1. Press  to display [Menu1].

2. Turn  (knob/left) to select [Interference rejection].

Menu1	
Gain (TD)	0
FIR	Auto
Interference rejection	Off
Range (Sonar, Off-center)	
Range (Bottom-scan)	
Range (Echo sounder)	
Remote key set	
Color palette	
Sub-screen selection	Wake disp (H up)

3. Press  (knob/left) or  to move setting value box.

Interference rejection	Off
------------------------	-----

4. Turn  (knob/left) to select the setting value from [Off] or [On].

[Off]: No rejection

[On]: Rejection

5. Press  to close the menu.

2.2.9 Noise reduction

When the response from dust and plankton is to be diminished regardless of water depth and echo, [Noise reduction] is effective.

For [Noise reduction] function, by narrowing the dynamic range and reducing tone gradation of colors, the color of weak response level becomes less visible.

1. Press  to display [Menu1].

2. Turn  (knob/left) to select [Noise reduction].

Menu1	
Dynamic range	26 dB
Pulse width	Middle
TX power	Auto
Color rejection	0 %
Noise reduction	0
Color	A-1
Background color	
Image correct	1
Gain (TD)	0

3. Press  (knob/left) or  to move setting value box.

Noise reduction	0
-----------------	---

4. Turn  (knob/left) to select the setting value from [0] to [10].

[0] is the minimum effect and the gradually increased by moving from [0]=>[1]=>[2]=>that is the maximum effect.

5. Press  to close the menu.

2.2.10 Image correction

The image of the sonar mode can be corrected smoothly.

1. Press  to display [Menu1].

2. Turn  (knob/left) to select [Image correct].

Menu1	
Freq 2 select	130.0
Dynamic range	26 dB
Pulse width	Middle
TX power	Auto
Color rejection	0 %
Noise reduction	0
Color	A-1
Background color	
Image correct	1

3. Press  (knob/left) or  to move setting value box.

Image correct	1
---------------	---

4. Turn  (knob/left) to select the setting value from [Off], [1], [2] or [3].

[Off]: No effect

[1]: Medium effect

[2]: Strong effect

[3]: Weak effect which is effected between [Off] to [1]

5. Press  to close the menu.

2.2.11 Color selection

Color table can be selected from [A-1, A-2], [B-1, B-2], [C-1, C-2] or [Z-1, Z- 2].

1. Press  to display [Menu1].

2. Turn  (knob/left) to select [Color].

Menu1	
Freq select	130.0
Freq 2 select	200.0
Dynamic range	26 dB
Pulse width	Middle
TX power	Auto
Color rejection	0 %
Noise reduction	0
Color	A-1
Background color	

3. Press  (knob/left) or  to move setting value box.

Color	A-1
-------	-----

4. Turn  (knob/left) to select the setting value from [A-1, A-2], [B-1, B-2], [C-1, C-2] or [Z-1, Z-2].

The color palette of [Z-1] and [Z-2] can be set by “Color palette” menu. Refer to “2.2.13 Color palette” (page 2-15).

5. Press  to close the menu.

2.2.12 Background color

Background color can be selected from 8 colors.

1. Press  to display [Menu1].

2. Turn  (knob/left) to select [Background color].

Menu1	
Freq select	130.0
Freq 2 select	200.0
Dynamic range	26 dB
Pulse width	Middle
TX power	Auto
Color rejection	0 %
Noise reduction	0
Color	A-1
Background color	

3. Press  (knob/left) or  to move setting value box.



4. Turn  (knob/left) to select the background color from the setting box.

Refer to “2.2.13 Color palette” (page 2-15).

5. Press  to close the menu.

2.2.13 Color palette

[Z-1] and [Z-2] of Color table menu ([Z-1], [Z-2]) and [Background color] can be edited.

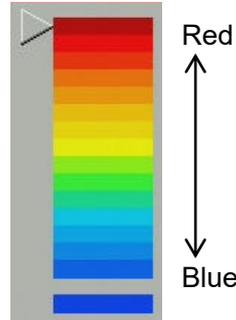
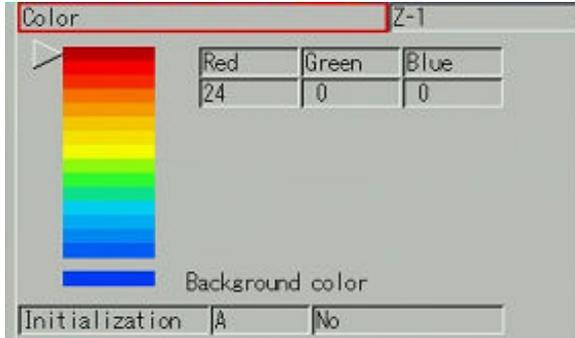
1. Press  to display [Menu1].

2. Turn  (knob/left) to select [Color palette].

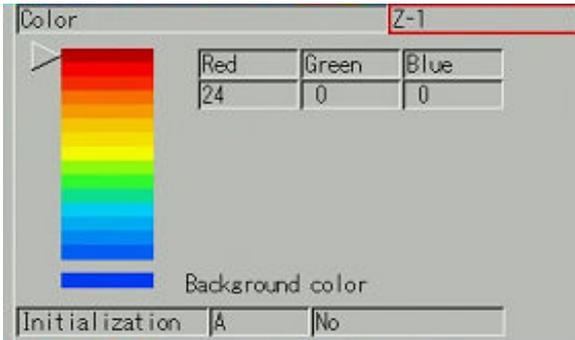
Menu1	
Gain (TD)	0
FIR	Auto
Interference rejection	Off
Range (Sonar, Off-center)	
Range (Bottom-scan)	
Range (Echo sounder)	
Remote key set	
Color palette	
Sub-screen selection	Wake disp (H up)

3. Press  (knob/left) or  to display Color palette menu.

If there is no need to change the color palette of “Z-1” and “Z-2”, go on to the below 7.



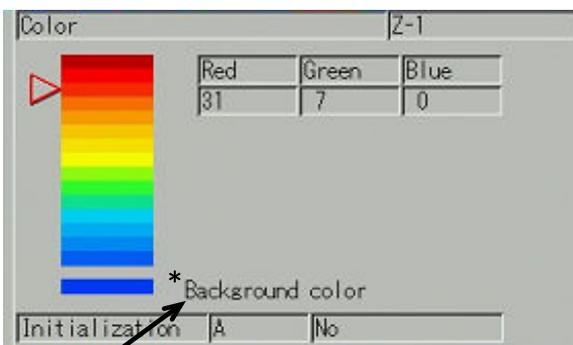
4. Press  (knob/left) or  to move setting value box.



5. Turn  (knob/left) to select the setting value from [Z-1] or [Z-2].

When [Z-1] is selected, 15 colors and one background color can be edited.
 When [Z-2] is selected, 7 colors and one background color can be edited.

6. Press  (knob/left) or  to move [Color].

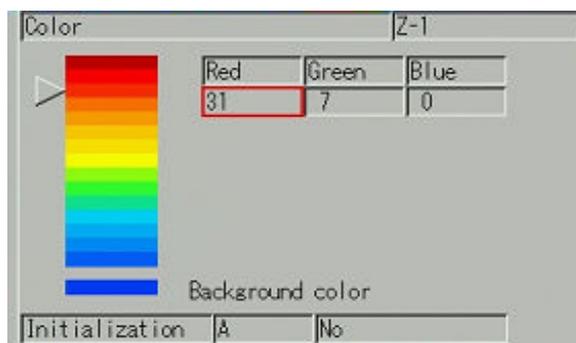


*For indicate the background color.

7. Turn  (knob/left) and move  to select appropriate color.

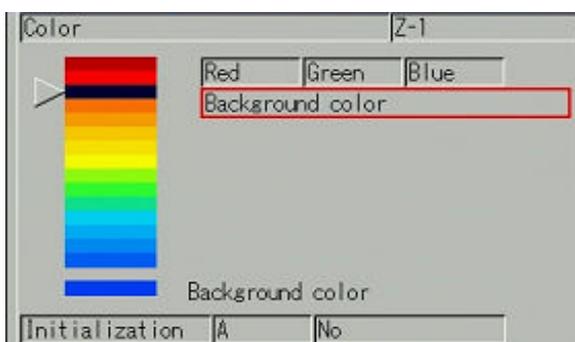
If you want to set the same color as the background color, select “Background color”.

8. Press  (knob/left) or  to move the setting value box of the “Red value”.



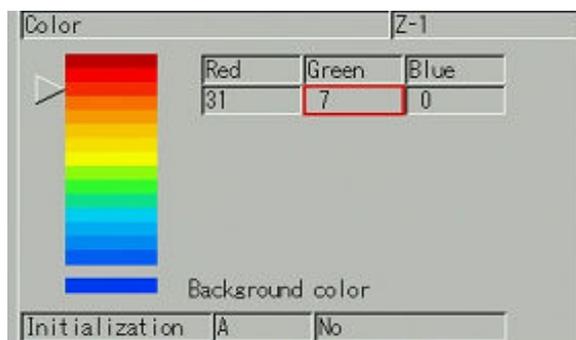
9. Turn  (knob/left) to select the setting value from [Background color] or [0] to [31].

When “Background color” is selected, the color is set to the same color as the background color. The “Background color” selection is effective for rejection of the echo because echo’s color and the background color are same.

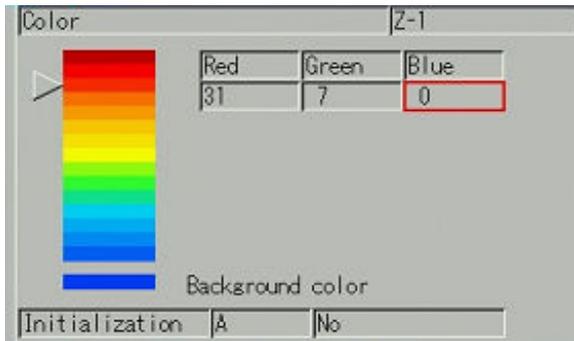


10. Press  (knob/left) or  to move the setting value box of the “Green value”.

When the “Background color” has been already set by the “Red value”, return to  .



11. Select the setting value of the green color value and the blue color value from [0] to [31] like a red color value.



12. Press (knob/left) or to move .
13. Press to close the menu.

Caution: To display the color by the color palette settings, select [Menu1] => [Color] => [Z-1] or [Z-2].

Caution: To display the background color by the color palette settings, select [Menu1] => [Background color].

2.2.14 Initialization of Color palette

Initialize the color palette of [Z-1] and [Z-2].

There are 3 types of the default value as [A], [B] and [Z].

[A] is set from the default value of [A-1] and [A-2] to the current [Z-1] and [Z-2].

[B] is set from the default value of [B-1] and [B-2] to the current [Z-1] and [Z-2].

[C] is set from the default value of [Z-1] and [Z-2] to the current [Z-1] and [Z-2].

1. Press to display [Menu1].
2. Turn (knob/left) to select [Color palette].
3. Press (knob/left) or to move [Color] box and to display Color palette menu.
4. Turn (knob/left) to select [Initialization].
5. Press (knob/left) or to move setting value box.

6. Turn  (knob/left) to select the setting value from [A], [B] or [Z].
7. Press  (knob/left) or  to move setting value box.
8. Turn  (knob/left) to select the setting value from [No] or [Yes].

[No]: No initialization.

[Yes]: Initialization.

9. Press  (knob/left) or  .
10. Press  to close the menu.

2.2.15 Color rejection

When the response from dust and plankton displayed in light bluish color is to be erased, it is effective to use [Color rejection] function.

The color of aimed fish images and appearance of expanding response are displayed as it is and unnecessary response from dust and plankton is erased.

1. Press  to display [Menu1].
2. Turn  (knob/left) to select [Color rejection].

Menu1	
Freq select	130.0
Freq 2 select	200.0
Dynamic range	26 dB
Pulse width	Middle
TX power	Auto
Color rejection	0 %
Noise reduction	0
Color	A-1
Background color	

3. Press  (knob/left) or  to move setting value box.

Color rejection	0 %
-----------------	-----

4. Turn  (knob/left) to select the setting value from [0%] to [80%].
5. Press  to close the menu.

2.2.16 Sub-screen selection

Select the Sub-screen to be displayed and display the multi information into the window.

1. Press  to display [Menu1].

2. Turn  (knob/left) to select [Sub-screen selection].

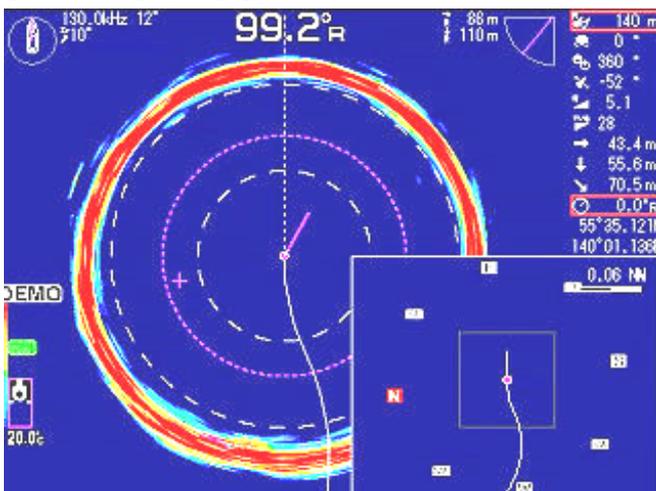
Menu1	
▲ Range (Sonar, Off-center)	
Range (Bottom-scan)	
Range (Echo sounder)	
Remote key set	
Color palette	
Sub-screen selection	Wake disp (H up)
Sub-screen display	Off
Wake range (Sub-screen)	1.0
▼ Language	English

3. Press  (knob/left) or  to move setting value box.

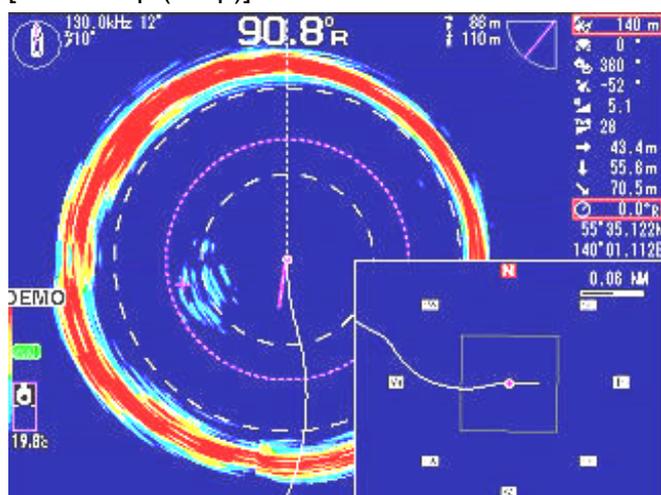
Sub-screen selection	Wake disp (H up)
----------------------	------------------

4. Turn  (knob/left) to select the setting value from [Wake disp (H up)], [Wake disp (N up)], [Wake disp (S up)] or [Bottom-scan].

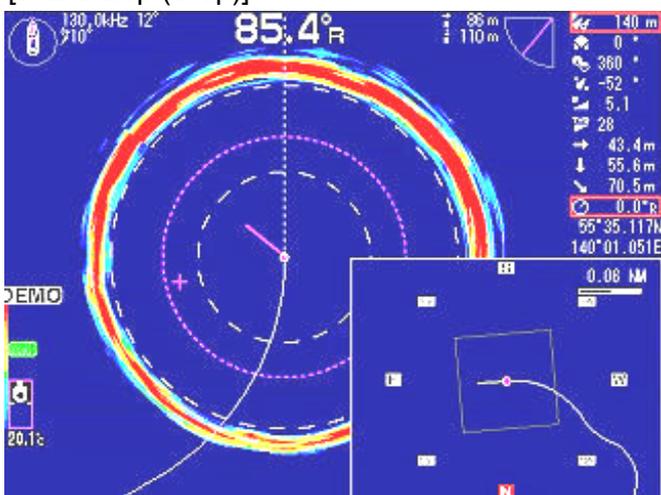
[Wake disp (H up)]



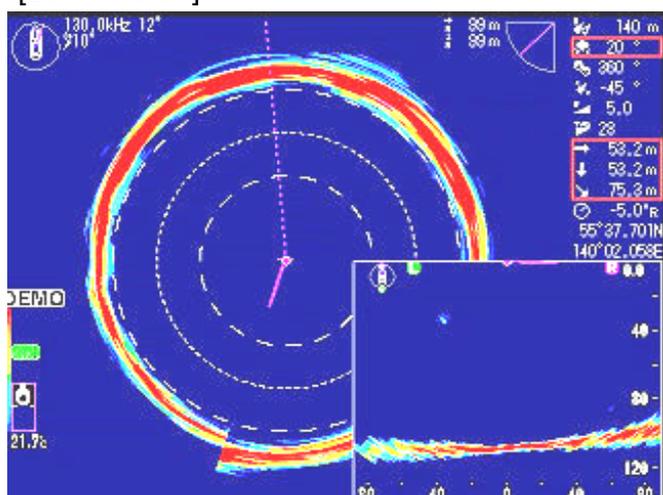
[Wake disp (N up)]



[Wake disp (S up)]



[Bottom-scan]



You can choose the combination of “Sonar / Bottom-scan”, “Sonar (offset) / Bottom scan”, “Bottom-scan / Bottom-scan” and “Echo sounder / Bottom-scan”

In this mode, the sonar scan alternately between a Sonar mode and a Bottom-scan mode.

The Bottom-scan settings for the Sub-screen come from the normal Bottom-scan settings. To change the settings, press  key and select “Bottom-scan” to move to the normal Bottom-scan mode.

5. Press  to close the menu.

2.2.17 Sub-screen display

Sub-screen display can be selected from [Off], [Small], [Middle] and [Large].

When [Bottom-scan] is selected, the Sub-screen size is same at [small] and [Middle].

1. Press  to display [Menu1].
2. Turn  (knob/left) to select [Sub-screen display].

Menu1	
Range (Sonar, Off-center)	
Range (Bottom-scan)	
Range (Echo sounder)	
Remote key set	
Color palette	
Sub-screen selection	Wake disp (H up)
Sub-screen display	Off
Wake range (Sub-screen)	1. 0
Language	English

3. Press  (knob/left) or  to move setting value box.

Sub-screen display	Off
--------------------	-----

4. Turn  (knob/left) to select the setting value from [Off], [Small], [Middle] or [Large].
5. Press  to close the menu.

2.2.18 Wake range (Sub-screen)

Set the range in the Sub-screen. The range unit can be set by [Menu2] => [Range & Speed unit]. Refer to “2.3.20 Range & Speed unit” (page 2-42).

1. Press  to display [Menu1].
2. Turn  (knob/left) to select [Wake range (Sub-screen)].

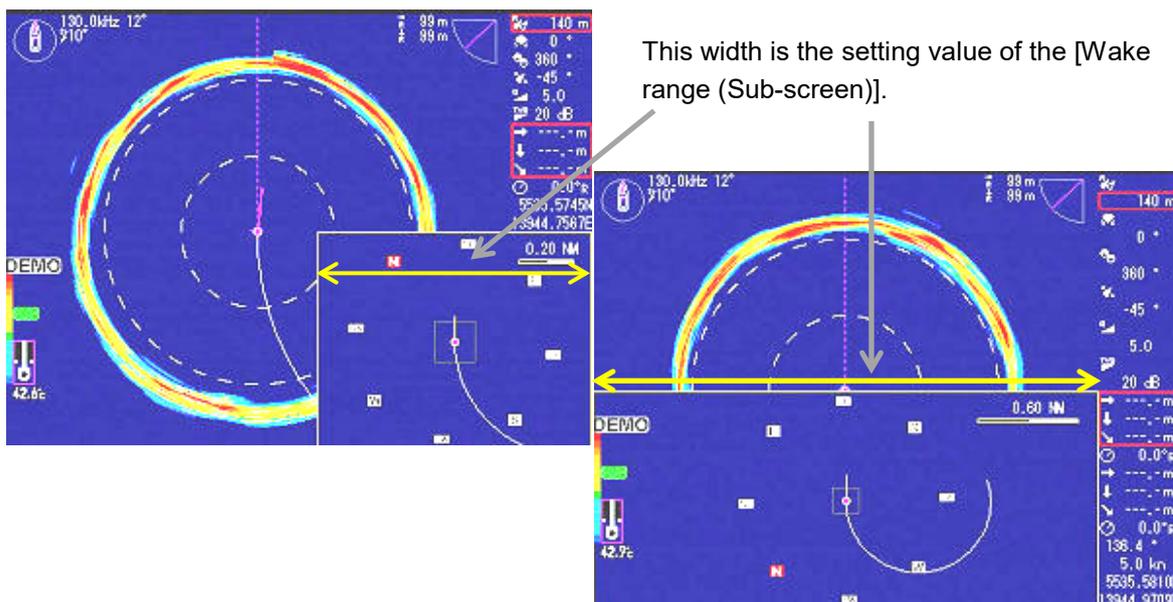
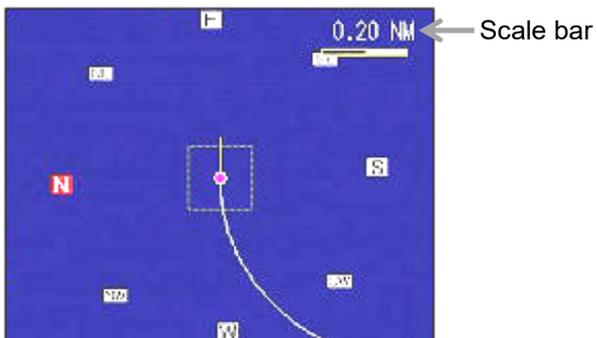
Menu1	
Range (Sonar, Off-center)	
Range (Bottom-scan)	
Range (Echo sounder)	
Remote key set	
Color palette	
Sub-screen selection	Wake disp (H up)
Sub-screen display	Off
Wake range (Sub-screen)	1. 0
Language	English

3. Press  (knob/left) or  to move setting value box.



4. Turn  (knob/left) to select the setting value from [0.1] to [10.0].

Wakes are shown within the range. Scale bar is indicated at the top right of the screen.



5. Press  to close the menu.

2.2.19 Language

Displayed language can be changed.

1. Press  to display [Menu1].
2. Turn  (knob/left) to select [Language].

Menu1	
Range (Sonar, Off-center)	
Range (Bottom-scan)	
Range (Echo sounder)	
Remote key set	
Color palette	
Sub-screen selection	Wake disp (H up)
Sub-screen display	Off
Wake range (Sub-screen)	1. 0
Language	English

3. Press  (knob/left) or  to move setting box.

Language	English
----------	---------

4. Turn  to select a language to be used.
5. Press  to close the menu.

2.3 Menu2

To display the menu, press  and select [Menu2].

The selected menu item will be displayed in red color box.
There are 29 setting items in [Menu2] box.

Menu2	
Step (Sonar, Off-center)	10°
Step (Bottom-scan)	5°
Off-center position	Fore
Target lock	Reverse
A scope	Off
White line	Off
Scale	1
Internal buzzer volume	100
NMEA monitor	Off

Menu2	
Compass display	Off
Wake display	Off
Wake memory interval	1 Second
Sonic speed	0.0%
Power freq adjust	250.0
Depth unit	m
Range & Speed unit	NM kn
Temperature unit	°C
Temperature adjustment	0.0

Menu2	
Train correct	0.00
Ext synchronized	Off
Bearing display	Off
True / Relative bearing	Relative
Step (Bearing center)	5
Audio level	2
Audio tune	5
One line display	Small
One line scale	Range

Menu2	
Bearing display	Off
True / Relative bearing	Relative
Step (Bearing center)	5
Audio level	2
Audio tune	5
One line display	Small
One line scale	Range
One line display	0-100%
One line interval	5°

Basic Operation of the Menu

1. Turn  (knob/left) to select the setting item.
2. Press  (knob/left) or  to confirm of the setting item.

2.3.1 Step (Sonar, Off-center)

The step angle (scanning angle) in the Sonar mode may be selected.

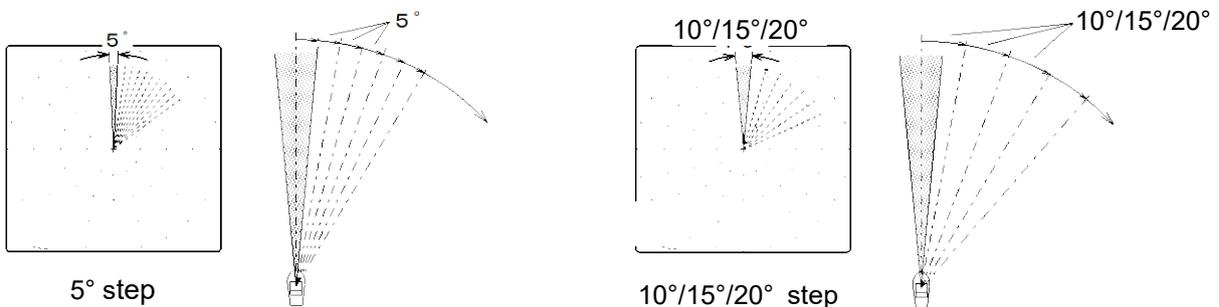
1. Press  to display [Menu2].
2. Turn  (knob/left) to select [Step (Sonar, Off-center)].

Menu2	
Step (Sonar, Off-center)	10°
Step (Bottom-scan)	5°
Off-center position	Fore
Target lock	Reverse
A scope	Off
White line	Off
Scale	1
Internal buzzer volume	100
NMEA monitor	Off

3. Press  (knob/left) or  to move setting value box.

Step (Sonar, Off-center)	5°
--------------------------	----

4. Turn  (knob/left) to select the setting value from [5°], [10°], [15°] or [20°].



5. Press  to close the menu.

2.3.2 Step (Bottom-scan)

The step angle (scanning angle) in the Bottom-scan mode may be selected.

1. Press  to display [Menu2].

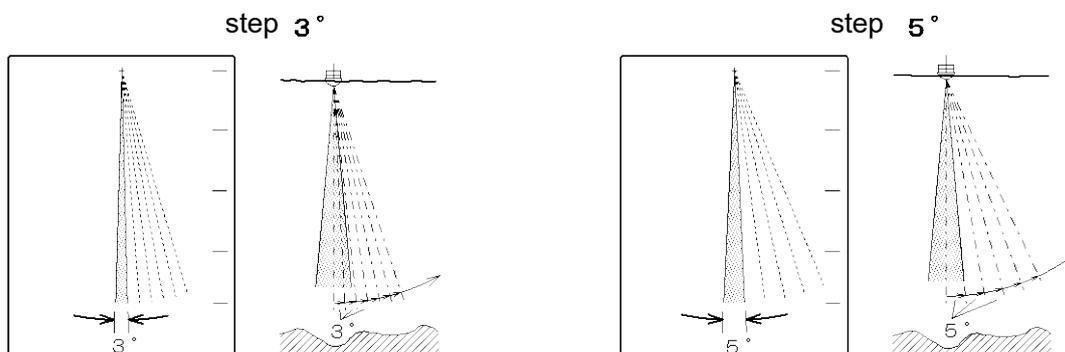
2. Turn  (knob/left) to select [Step (Bottom-scan)].

Menu2	
Step (Sonar, Off-center)	10°
Step (Bottom-scan)	5°
Off-center position	Fore
Target lock	Reverse
A scope	Off
White line	Off
Scale	1
Internal buzzer volume	100
NMEA monitor	Off

3. Press  (knob/left) or  to move setting value box.

Step (Bottom-scan)	5°
--------------------	----

4. Turn  (knob/left) to select the setting value from [3°] or [5°].



When a narrow step angle is selected, the image resolution becomes high, but the bearing speed becomes slow compared with a wide step angle.

5. Press  to close the menu.

2.3.3 Off-center position

The ship's position on the screen may be selected in the Off-center mode.

1. Press  to display [Menu2].

2. Turn  (knob/left) to select [Off-center position].

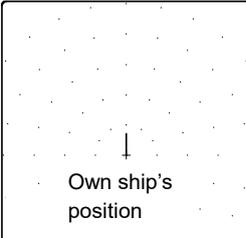
Menu2	
Step (Sonar, Off-center)	10°
Step (Bottom-scan)	5°
Off-center position	Fore
Target lock	Reverse
A scope	Off
White line	Off
Scale	1
Internal buzzer volume	100
NMEA monitor	Off

3. Press  (knob/left) or  to move setting value box.

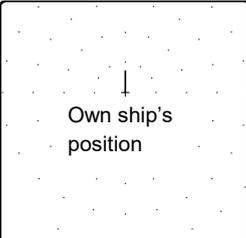
Off-center position	Fore
---------------------	------

4. Turn  (knob/left) to select the setting value from [Fore], [Back], [Left] or [Right].

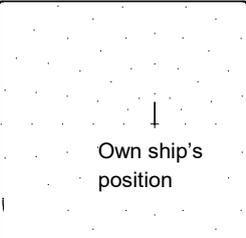
[Fore]



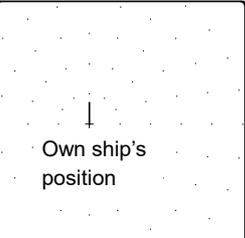
[Back]



[Left]



[Right]



The ship's position can be selected from [Fore], [Back], [Left] or [Right] in the Off-center mode.

5. Press  to close the menu.

2.3.4 A scope

A scope expresses the echo strength of fish image from one set of the latest transmitted/received signal as width, to provide better view by displaying stronger response wide and weaker response narrow.

A Scope will be displayed on the right side of the echo sounder's images.

1. Press  to display [Menu2].

2. Turn  (knob/left) to select [A scope].

Menu2	
Step (Sonar, Off-center)	10°
Step (Bottom-scan)	5°
Off-center position	Fore
Target lock	Reverse
A scope	Off
White line	Off
Scale	1
Internal buzzer volume	100
NMEA monitor	Off

3. Press  (knob/left) or  to move setting value box.

A scope	Off
---------	-----

4. Turn  (knob/left) to select the setting value from [Off] or [On].

[Off]: displays no A scope.

[On]: displays A scope.

5. Press  to close the menu.

2.3.5 White line

This mode can be enabled in Echo sounder mode.

[White line] is set to any value, the surface of sea bottom is marked with a white line of constant width to make the fish school at the bottom easily identified.

1. Press  to display [Menu2].

2. Turn  (knob/left) to select [White line].

Menu2	
Step (Sonar, Off-center)	10°
Step (Bottom-scan)	5°
Off-center position	Fore
Target lock	Reverse
A scope	Off
White line	Off
Scale	1
Internal buzzer volume	100
NMEA monitor	Off

3. Press  (knob/left) or  to move setting value box.

White line	Off
------------	-----

4. Turn  (knob/left) to select the setting value from [Off], [1], [2], [3], [4] or [5].

[Off] : displays no White line.

[1] to [5] : displays White line. Select from 5 types. [5] is a thick white line which gradually reduced by moving from [5]=>[4]=>[3]=>[2]=>[1] that is the narrow.

5. Press  to close the menu.

2.3.6 Scale

The scale dots display under Sonar mode can be selected [Off] or 6 types.

1. Press  to display [Menu2].

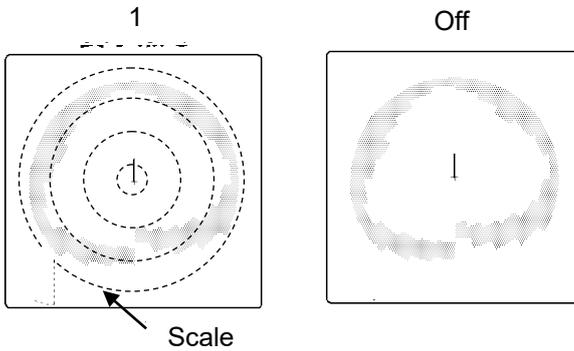
2. Turn  (knob/left) to select [Scale].

Menu2	
Step (Sonar, Off-center)	10°
Step (Bottom-scan)	5°
Off-center position	Fore
Target lock	Reverse
A scope	Off
White line	Off
Scale	1
Internal buzzer volume	100
NMEA monitor	Off

3. Press  (knob/left) or  to move setting value box.

Scale	1
-------	---

4. Turn  (knob/left) to select the setting value from [Off], [1], [2], [3], [4], [5] or [6].



[Off] : displays no scale.
 [1] to [6]: displays scale (dots). Select from 6 types.

When the scale display [Off] is selected, no scale appears on the screen in Sonar/Off-center modes. However the scale appears on the screen In Bottom-scan/Echo sounder modes.

5. Press  to close the menu.

2.3.7 Internal buzzer volume

Control the internal buzzer volume.

1. Press  to display [Menu2].
2. Turn  (knob/left) to select [Internal buzzer volume].

Menu2	
Step (Sonar, Off-center)	10°
Step (Bottom-scan)	5°
Off-center position	Fore
Target lock	Reverse
A scope	Off
White line	Off
Scale	1
Internal buzzer volume	100
NMEA monitor	Off

3. Press  (knob/left) or  to move setting value box.



4. Turn  (knob/left) to select the setting value from [0] to [100].

The minimum volume is [0]. (silence)

Turn the volume up as the setting value is increased from [0]=>[1]=>[2]=>[100].

The maximum volume is [100].

5. Press  to close the menu.

2.3.8 NMEA monitor

This is the function to confirm the data input/output from NMEA1 (J8) and Transducer unit (J2).

1. Press  to display [Menu2].

2. Turn  (knob/left) to select [NMEA monitor].

Menu2	
Step (Sonar, Off-center)	10°
Step (Bottom-scan)	5°
Off-center position	Fore
Target lock	Reverse
A scope	Off
White line	Off
Scale	1
Internal buzzer volume	100
NMEA monitor	Off

3. Press  (knob/left) or  to move setting value box.

NMEA monitor	Off
--------------	-----

4. Turn  (knob/left) to select the setting value from [Off] or [On].

[Off]: displays ordinary screen.

[On]: displays the input/output data.

Press  : Switch the NMEA1 (J8) or Transducer unit (J2).

Press  : Stop the data scroll temporality.

“NMEA1 Rx” shows the NMEA1 (J8) input sentence.

“NMEA1 Tx” shows the NMEA1 (J8) output sentence.

“SCANNER Rx” shows the Transducer unit (J2) input sentence.

“SCANNER Tx” shows the Transducer unit (J2) output sentence.

5. Press  to close the menu.

2.3.9 Compass display

The points of the compass can be shown on the screen in the Sonar mode by connecting the JFP-185BB to an external navigator.

1. Press  to display [Menu2].

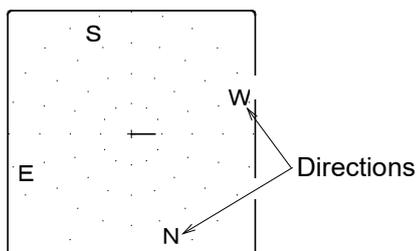
2. Turn  (knob/left) to select [Compass display].

Menu2	
Compass display	Off
Wake display	Off
Wake memory interval	1 Second
Sonic speed	0.0%
Power freq adjust	250.0
Depth unit	m
Range & Speed unit	NM kn
Temperature unit	°C
Temperature adjustment	0.0

3. Press  (knob/left) or  to move setting value box.

Compass display	Off
-----------------	-----

4. Turn  (knob/left) to select the setting value from [Off] or [On].



[Off]: displays no points of the compass.

[On]: displays the points of the compass.

5. Press  to close the menu.

2.3.10 Bearing display

The bearing display can be shown on the screen in the Sonar mode.

1. Press  to display [Menu2].

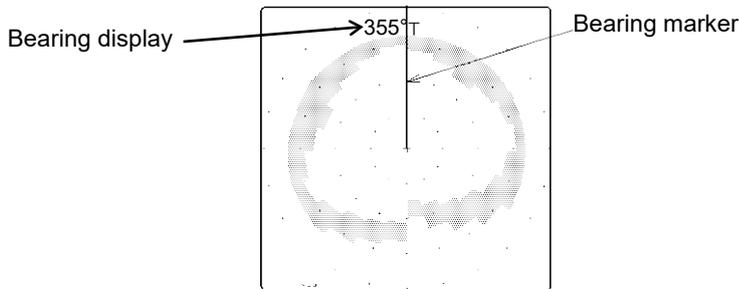
2. Turn  (knob/left) to select [Bearing display].

Menu2	
Depth unit	m
Range & Speed unit	NM kn
Temperature unit	°C
Temperature adjustment	0.0
Train correct	0.00
Ext synchronized	Off
Bearing display	Off
True / Relative bearing	Relative
Step (Bearing center)	1

3. Press  (knob/left) or  to move setting value box.

Bearing display	Off
-----------------	-----

4. Turn  (knob/left) to select the setting value from [Off], [Small] or [Large].



[Off] : displays no bearing.
 [Small] or [Large]: displays the bearing (in small characters or in large characters).

5. Press  to close the menu.

2.3.11 Wake display

The track line can be shown on the screen in the Sonar mode.

1. Press  to display [Menu2].

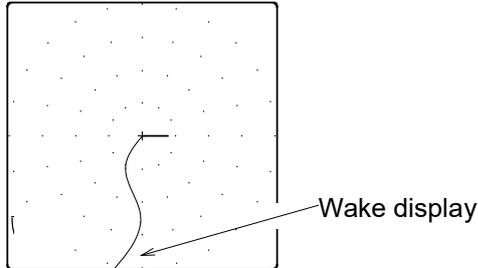
2. Turn  (knob/left) to select [Wake display].

Menu2	
Compass display	Off
Wake display	Off
Wake memory interval	1 Second
Sonic speed	0.0%
Power freq adjust	250.0
Depth unit	m
Range & Speed unit	NM kn
Temperature unit	°C
Temperature adjustment	0.0

3. Press  (knob/left) or  to move setting box.



4. Turn  (knob/left) to select the setting value from [Off] or [On].



[Off]: displays no wake (trackline).
 [On]: displays the wake (trackline).

5. Press  to close the menu.

2.3.12 Wake memory interval

The track is saved into memory and its interval can be selected.

1. Press  to display [Menu2].

2. Turn  (knob/left) to select [Wake memory interval].

Menu2	
Compass display	Off
Wake display	Off
Wake memory interval	1 Second
Sonic speed	0.0%
Power freq adjust	250.0
Depth unit	m
Range & Speed unit	NM kn
Temperature unit	°C
Temperature adjustment	0.0

3. Press  (knob/left) or  to move setting value box.



4. Turn  (knob/left) to select the setting value from [1 sec], [5 sec], [10 sec] or [30 sec].

When Wake memory interval is set to the short time, the smooth trail is displayed, but the trail length is short compared with setting to the long interval.

When Wake memory interval is set to the long time, the trail length is long, but the zigzag trail is displayed compared with setting to the short interval.

The trail position data can be stored up to 1000 points. When the additional position data is stored, the oldest position is deleted and the newest position is stored.

1 second: Recording interval 1sec., Storage time: 16m 40s

5 second: Recording interval 5sec., Storage time: 1h 23m 20s

10 second: Recording interval 10sec., Storage time: 2h 46m 20s

30 second: Recording interval 30sec., Storage time: 8h 20m 00s

5. Press  to close the menu.

2.3.13 Sonic speed

Ultra sonic speed varies according to the temperature, the salt levels and the depth level.

Ultra sonic speed is decreased when the temperature level or the salt level is decreased.

The depth error can be reduced by correcting the ultrasonic speed.

1. Press  to display [Menu2].

2. Turn  (knob/left) to select [Sonic speed].

Menu2	
Compass display	Off
Wake display	Off
Wake memory interval	1 Second
Sonic speed	0.0%
Power freq adjust	250.0
Depth unit	m
Range & Speed unit	NM kn
Temperature unit	°C
Temperature adjustment	0.0

3. Press  (knob/left) or  to move setting value box.

Sonic speed	0.0%
-------------	------

4. Turn  (knob/left) to select the setting value from [-7.0%] to [2.0%].

When the sonic speed is set to plus, the depth is increased.

When the sonic speed is set to minus, the depth is decreased.

In fresh water, set to around -4.0%.

5. Press  to close the menu.

2.3.14 True / Relative bearing

Select the cursor display mode when an external navigation equipment is connected.

1. Press  to display [Menu2].
2. Turn  (knob/left) to select [True / Relative bearing].

Menu2	
Depth unit	m
Range & Speed unit	NM kn
Temperature unit	°C
Temperature adjustment	0.0
Train correct	0.00
Ext synchronized	Off
Bearing display	Off
True / Relative bearing	Relative
Step (Bearing center)	1

3. Press  (knob/left) or  to move setting value box.

True / Relative bearing	Relative
-------------------------	----------

4. Turn  (knob/left) to select the setting value from [True] or [Relative].

True (with “T”): The settings available in the true bearing with the true north as 000 degree.

Relative (with “R”): The settings available in the relative bearing with the heading as 000 degree. Left side is indicated as the minus value. Right side is indicated as the plus value.

5. Press  to close the menu.

2.3.15 Target lock

To select the desired Target lock function when  is pressed during the operation in the Sonar mode.

This function changes the rotary direction or tracks the target automatically.

1. Press  to display [Menu2].
2. Turn  (knob/left) to select [Target lock].

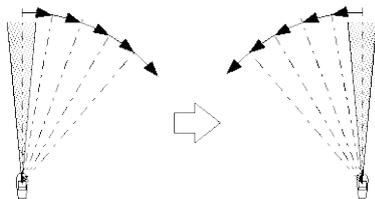
Menu2	
Step (Sonar, Off-center)	10°
Step (Bottom-scan)	5°
Off-center position	Fore
Target lock	Reverse
A scope	Off
White line	Off
Scale	1
Internal buzzer volume	100
NMEA monitor	Off

3. Press  (knob/left) or  to move setting value box.



4. Turn  (knob/left) to select the setting value from [Reverse], [Mode1], [Mode2], [Marker Mode1] or [Marker Mode2].

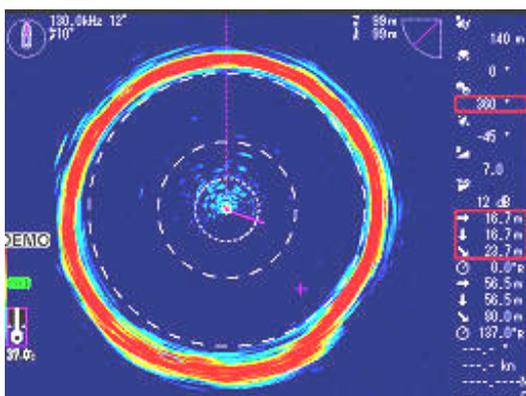
Reverse



The sector rotary direction is reversed by

pressing .

Mode1



- When Mode1 is selected as a target lock mode, move the cross cursor to the echo and press the  key.

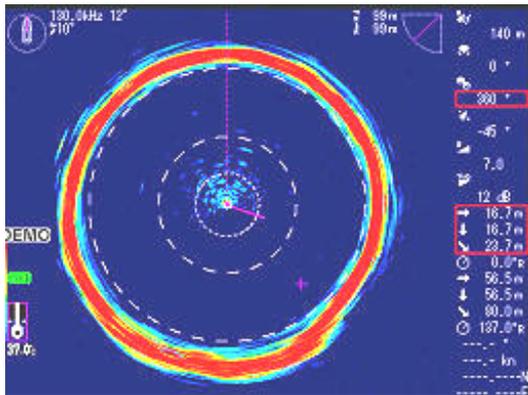
- The sonar beam will track the echo automatically left and right.

If the echo is lost and not picked up again after a 70° sweep, the Target lock function will be released.

Mode2

- When Mode2 is selected as a target lock mode, the sonar beam will track the echo automatically up and down in addition to the Mode1 functions.

Marker Mode1 / Marker Mode2



- The target mark is displayed and tracked automatically by pressing .

With the VRM movement, VRM position is worked as a target position.

When Target lock ceases Bearing and Sector angles will return to their original positions. Target lock function is not available in the Echo sounder mode. In Bottom scan mode only reverse is available.

5. Press  to close the menu.

2.3.16 Ext synchronized

To select where the trigger signal is taken from either Internal or External.

1. Press  to display [Menu2].
2. Turn  (knob/left) to select [Ext synchronized].

Menu2	
Depth unit	m
Range & Speed unit	NM kn
Temperature unit	°C
Temperature adjustment	0.0
Train correct	0.00
Ext synchronized	Off
Bearing display	Off
True / Relative bearing	Relative
Step (Bearing center)	1

3. Press  (knob/left) or  to move setting value box.



4. Turn  (knob/left) to select the setting value from [Off], [] or [].

Off : selects when the internal synchronized signal is used for external equipment.
 : selects when the rise synchronized signal is used from external equipment.
 : selects when the fall synchronized signal is used from external equipment.

When JFP-185BB is used with external equipment as synchronization movement, the bearing speed may be reduced depending on the range settings.

To avoid this, it is recommended to use with the internal synchronized signal of the JFP-185BB as synchronization movement.

5. Press  to close the menu.

2.3.17 Depth unit

The user may select the displayed depth unit to be one of the following.

1. Press  to display [Menu2].
2. Turn  (knob/left) to select [Depth unit].

Menu2	
Compass display	Off
Wake display	Off
Wake memory interval	1 Second
Sonic speed	0.0%
Power freq adjust	250.0
Depth unit	m
Range & Speed unit	NM kn
Temperature unit	°C
Temperature adjustment	0.0

3. Press  (knob/left) or  to move setting value box.

Depth unit	m
------------	---

4. Turn  (knob/left) to select the setting value from [m], [ft], [fm] or [l.fm].

- m : Displays the unit meters.
- ft : Displays the unit feet. (1ft: 0.305m)
- fm : Displays the unit fathoms. (1fm: 1.83m)
- l.fm : Displays the unit Italian fathoms. (1l.fm: 1.5m)

5. Press  to close the menu.

2.3.18 Temperature unit

Temperature unit can be set to °C or °F.

1. Press  to display [Menu2].

2. Turn  (knob/left) to select [Temperature unit].

Menu2	
Depth unit	m
Range & Speed unit	NM kn
Temperature unit	°C
Temperature adjustment	0.0
Train correct	0.00
Ext synchronized	Off
Bearing display	Off
True / Relative bearing	Relative
Step (Bearing center)	1

3. Press  (knob/left) or  to move setting value box.

Temperature unit	°C
------------------	----

4. Turn  (knob/left) to select the setting value from [°C] or [°F].

°C: Centigrade

°F: Fahrenheit

5. Press  to close the menu.

2.3.19 Temperature adjustment

To adjust the water temperature displayed on the screen.

1. Press  to display [Menu2].
2. Turn  (knob/left) to select [Temperature adjustment].

Menu2	
Depth unit	m
Range & Speed unit	NM kn
Temperature unit	°C
Temperature adjustment	0.0
Train correct	0.00
Ext synchronized	Off
Bearing display	Off
True / Relative bearing	Relative
Step (Bearing center)	1

3. Press  (knob/left) or  to move setting value box.

Temperature adjustment	0.0
------------------------	-----

4. Turn  (knob/left) to select the setting value from [-9.9] to [9.9]. (every 0.1 steps)

9.9° : maximized the value of the adjustment
 |
 ↑ increases the value
 0.0° : no adjustment
 |
 ↓ decreases the value
 -9.9° : minimized the value of the adjustment

5. Press  to close the menu.

2.3.20 Range & Speed unit

It can be shown in [NM (nautical miles), kn (knots)] or [km, km/h].

1. Press  to display [Menu2].

2. Turn  (knob/left) to select [Range & Speed unit].

Menu2	
Compass display	Off
Wake display	Off
Wake memory interval	1 Second
Sonic speed	0.0%
Power freq adjust	250.0
Depth unit	m
Range & Speed unit	NM kn
Temperature unit	°C
Temperature adjustment	0.0

3. Press  (knob/left) or  to move setting value box.

Range & Speed unit	NM kn
--------------------	-------

4. Turn  (knob/left) to select the setting value from [NM kn] or [km km/h].

NM : measured in nautical mile. (1NM: 1.852km)
 kn : measured in knot. (1knot: 1.852km/h)
 km/h : measured in kilometer.

5. Press  to close the menu.

2.3.21 Train correct

To adjust the deviation of the bow direction (0°).

In the Sonar mode use  to adjust the Bearing toward Bow direction.

1. Press  to display [Menu2].
2. Turn  (knob/left) to select [Train correct].

Menu2	
Depth unit	m
Range & Speed unit	NM kn
Temperature unit	°C
Temperature adjustment	0.0
Train correct	0.00
Ext synchronized	Off
Bearing display	Off
True / Relative bearing	Relative
Step (Bearing center)	1

3. Press  (knob/left) or  to move setting value box.

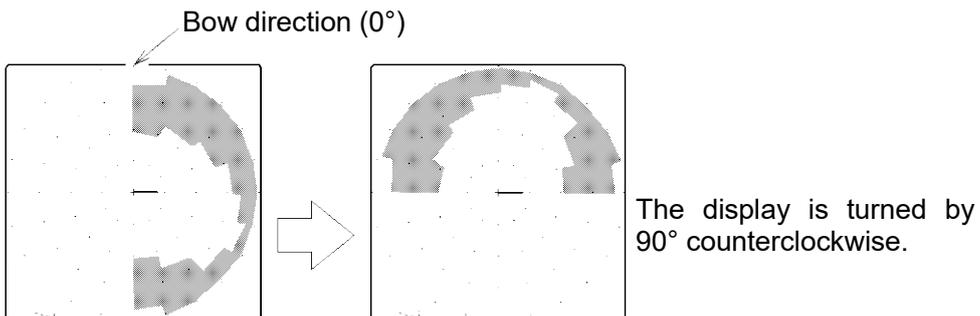
Train correct	0.00
---------------	------

4. Turn  (knob/left) to select the setting value from [-180.00] to [180.00].
5. Press  to close the menu.

Procedure of [Train correct] (90° setting)

1. Turn  (knob/left) to select the value of [90.00].
2. Press  to close the menu.

The screen display will be corrected 90° counterclockwise.



2.3.22 Power freq adjust

To adjust of switching frequency of power supply. The image may have noise due to the interference with the frequency of the internal power supply. Erase the noise by changing the transmit frequency or the frequency of the power supply.

1. Press  to display [Menu2].
2. Turn  (knob/left) to select [Power freq adjust].

Menu2	
Compass display	Off
Wake display	Off
Wake memory interval	1 Second
Sonic speed	0.0%
Power freq adjust	250.0
Depth unit	m
Range & Speed unit	NM kn
Temperature unit	°C
Temperature adjustment	0.0

3. Press  (knob/left) or  to move setting value box.

Power freq adjust	250.0
-------------------	-------

4. Turn  (knob/left) to select the setting value from [250.0] to [300.0].
(every 0.1kHz steps)

 **Caution: The setting value should be set to “250.0 kHz” in normal use.**

5. Press  to close the menu.

2.3.23 Step (Bearing center)

Set the step angle for changing the angle of sector.

1. Press  to display [Menu2].
2. Turn  (knob/left) to select [Step (Bearing center)].

Menu2	
Depth unit	m
Range & Speed unit	NM kn
Temperature unit	°C
Temperature adjustment	0.0
Train correct	0.00
Ext synchronized	Off
Bearing display	Off
True / Relative bearing	Relative
Step (Bearing center)	1

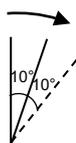
3. Press  (knob/left) or  to move setting value box.

Step (Bearing center)	5
-----------------------	---

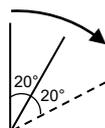
4. Turn  (knob/left) to select the setting step from [1] to [30].

The bearing direction is moved each settings step.

[Setting step: 10]



[Setting step: 20]



5. Press  to close the menu.

2.3.24 Audio level

Control the Audio level when an audio speaker is connected to the JFP-185BB.

1. Press  to display [Menu2].

2. Turn  (knob/left) to select [Audio level].

Menu2	
Bearing display	Off
True / Relative bearing	Relative
Step (Bearing center)	5
Audio level	2
Audio tune	5
One line display	Small
One line scale	Range
One line shift	0-100%
One line interval	5°

3. Press  (knob/left) or  to move setting value box.



4. Turn  (knob/left) to select the setting value from [1] to [32].

5. Press  to close the menu.

2.3.25 Audio tune

Control the Audio tune when an audio speaker is connected to the JFP-185BB.

1. Press  to display [Menu2].

2. Turn  (knob/left) to select [Audio tune].

Menu2	
Bearing display	Off
True / Relative bearing	Relative
Step (Bearing center)	5
Audio level	2
Audio tune	5
One line display	Small
One line scale	Range
One line shift	0-100%
One line interval	5°

3. Press  (knob/left) or  to move setting value box.



4. Turn  (knob/left) to select the setting value from [1] to [10].

5. Press  to close the menu.

2.3.26 One line display

One line display can be selected from [Small] and [Large].

1. Press  to display [Menu2].

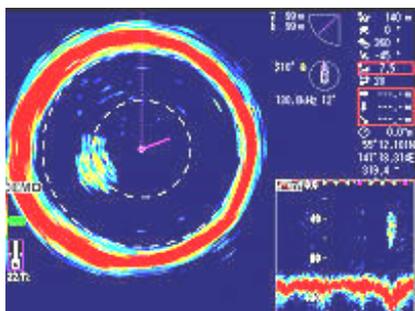
2. Turn  (knob/left) to select [One line display].

Menu2	
Bearing display	Off
True / Relative bearing	Relative
Step (Bearing center)	5
Audio level	2
Audio tune	5
One line display	Small
One line scale	Range
One line shift	0-100%
One line interval	5°

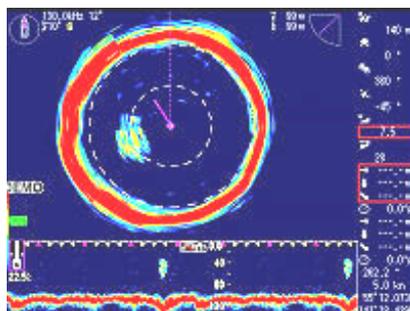
3. Press  (knob/left) or  to move setting value box.



4. Turn  (knob/left) to select the setting value from [Small] or [Large].



[Small]



[Large]

5. Press  to close the menu.

2.3.27 One line scale

One line scale can be selected from [Range] and [Depth].

[Depth]: The scale value is calculated by Range and Tilt angle.

1. Press  to display [Menu2].

2. Turn  (knob/left) to select [One line scale].

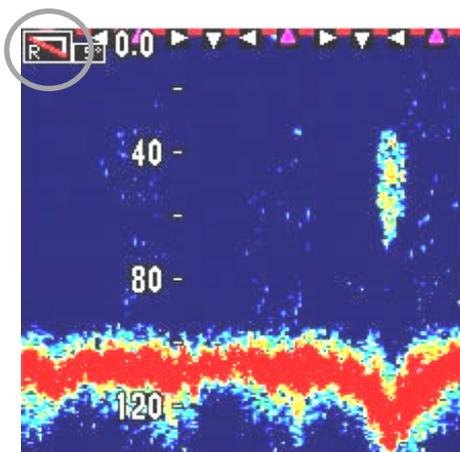
Menu2	
Bearing display	Off
True / Relative bearing	Relative
Step (Bearing center)	5
Audio level	2
Audio tune	5
One line display	Small
One line scale	Range
One line shift	0-100%
One line interval	5°

3. Press  (knob/left) or  to move setting value box.

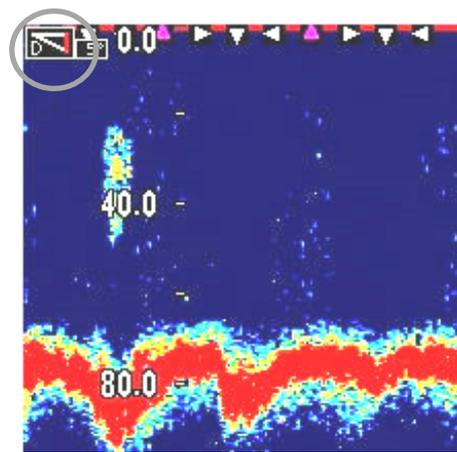
One line scale Range

4. Turn  (knob/left) to select the setting value from [Range] or [Depth].

[Range] scale / value



[Depth] scale / value



5. Press  to close the menu.

2.3.28 One line shift

The display range of [One line display] can be selected.

One line shift can be selected from [0-100%], [0-50%], [0-75%], [25-100%] and [50-100%].

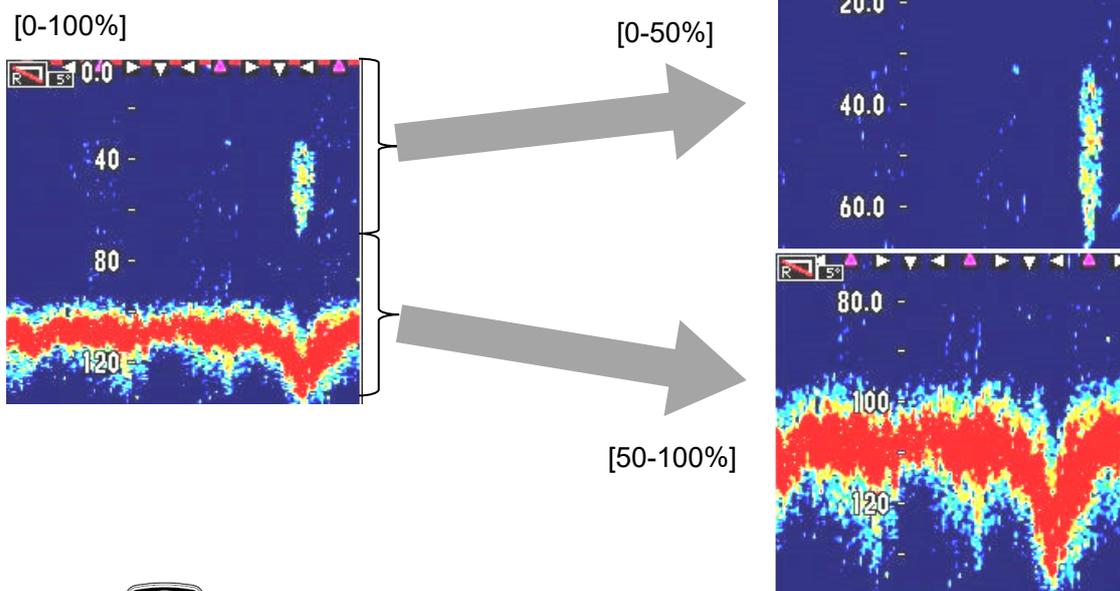
1. Press  to display [Menu2].
2. Turn  (knob/left) to select [One line shift].

Menu2	
Bearing display	Off
True / Relative bearing	Relative
Step (Bearing center)	5
Audio level	2
Audio tune	5
One line display	Small
One line scale	Range
One line shift	0-100%
One line interval	5°

3. Press  (knob/left) or  to move setting value box.



4. Turn  (knob/left) to select the setting value from [0-100%], [0-50%], [0-75%], [25-100%] or [50-100%].



5. Press  to close the menu.

2.3.29 One line interval

One line interval can be selected from [5°] and [10°].

[5°] : The image of the Sonar mode is displayed every 5° steps in [One line display].

[10°]: The image of the Sonar mode is displayed every 10° steps in [One line display].

1. Press  to display [Menu2].

2. Turn  (knob/left) to select [One line interval].

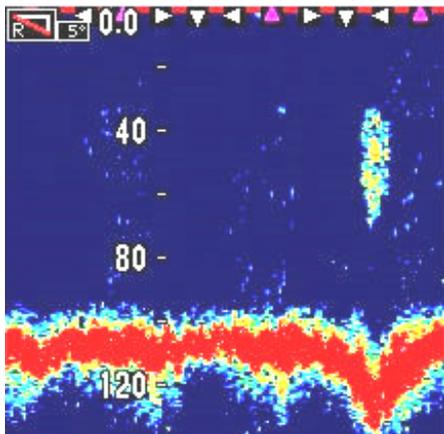
Menu2	
Bearing display	Off
True / Relative bearing	Relative
Step (Bearing center)	5
Audio level	2
Audio tune	5
One line display	Small
One line scale	Range
One line shift	0-100%
One line interval	5°

3. Press  (knob/left) or  to move setting value box.

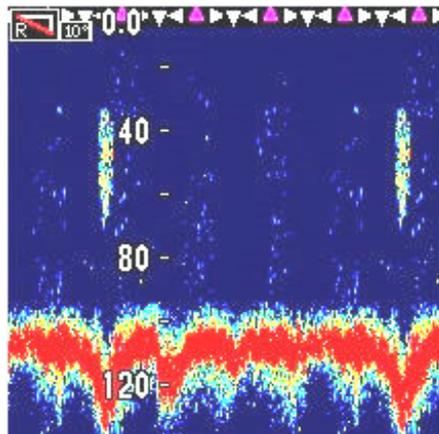
One line interval 5°

4. Turn  (knob/left) to select the setting value from [5°] or [10°].

One line interval: [5°]



One line interval: [10°]



5. Press  to close the menu.

2.4 Menu3

To display the menu, press  and select [Menu3].

The selected menu item will be displayed in red color box.
There are 22 setting items in [Menu3] box.

Menu3	
Baud rate	4800
DBT output	Off
DPT output	Off
GGA output	Off
GLL output	Off
MTW output	Off
RMC output	Off
TLL output	On
VTG output	Off

Menu3	
ZDA output	Off
Simulation	Off
Menu time-out period	Off
Hull unit auto up	15
Hull unit operation at the start	No
Transducer unit baud rate	19200
Slow down the Bearing speed	0
Menu (transparent)	15
Message (transparent)	10

Menu3	
Hull unit operation at the start	No
Transducer unit baud rate	19200
Slow down the Bearing speed	0
Menu (transparent)	15
Message (transparent)	10
Sub-screen (transparent)	0
Information display	Lat / long
Localtime offset	9.0
Dynamic range standard	Top

Basic Operation of the Menu

1. Turn  (knob/left) to select the setting item.
2. Press  (knob/left) or  to confirm of the setting item.

2.4.1 Baud rate

Select the baud rate of NMEA1 when external equipment is connected.

1. Press  to display [Menu3].
2. Turn  (knob/left) to select [Baud rate].

Menu3	
Baud rate	4800
DBT output	Off
DPT output	Off
GGA output	Off
GLL output	Off
MTW output	Off
RMC output	Off
TLL output	On
VTG output	Off

3. Press  (knob/left) or  to move setting value box.

Baud rate	4800
-----------	------

4. Turn  (knob/left) to select the setting value from [4800], [9600], [19200] or [38400].
5. Press  to close the menu.

2.4.2 Selection of NMEA output

Select to enable the output or to disable the output.
(DBT/DPT/GGA/GLL/MTW/RMC/TLL/VTG/ZDA output)

1. Press  to display [Menu3].
2. Turn  (knob/left) to select [Optional output].

Menu3	
Baud rate	4800
DBT output	Off
DPT output	Off
GGA output	Off
GLL output	Off
MTW output	Off
RMC output	Off
TLL output	On
VTG output	Off

3. Press  (knob/left) or  to move setting value box.



4. Turn  (knob/left) to select the setting value from [On] or [Off].

5. Press  to close the menu.

2.4.3 Simulation

The actual movie stored in the internal memory can be played for the operating instructions. (In order to distinguish from the current real image, “DEMO” is indicated during playing the Simulation movie.)

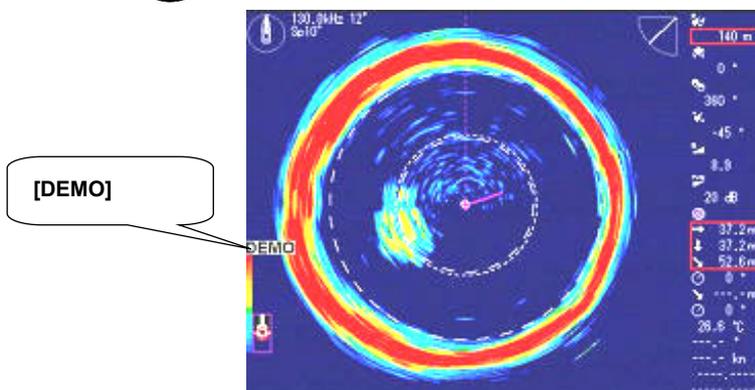
1. Press  to display [Menu3].
2. Turn  (knob/left) to select [Simulation].

Menu3	
ZDA output	Off
Simulation	Off
Menu time-out period	Off
Hull unit auto up	15
Hull unit operation at the start	No
Transducer unit baud rate	19200
Slow down the Bearing speed	0
Menu (transparent)	15
Message (transparent)	10

3. Press  (knob/left) or  to move setting value box.



4. Turn  (knob/left) to select the setting value from [On] or [Off].



5. Press  to close the menu.

2.4.4 Menu time-out period

You can set the Menu time-out period to close the menu automatically from the last menu operation.

1. Press  to display [Menu3].
2. Turn  (knob/left) to select [Menu time-out period].

Menu3	
ZDA output	Off
Simulation	Off
Menu time-out period	Off
Hull unit auto up	15
Hull unit operation at the start	No
Transducer unit baud rate	19200
Slow down the Bearing speed	0
Menu (transparent)	15
Message (transparent)	10

3. Press  (knob/left) or  to move setting value box.

Menu time-out period	Off
----------------------	-----

4. Turn  (knob/left) to select the setting value from [Off] or [5] to [60].

 **Caution: When [Off] is set, the menu is not closed automatically.**

5. Press  to close the menu.

2.4.5 Hull unit auto up

The Transducer unit can be retracted automatically when the ship speed is over a specified speed by connecting to an external equipment.

1. Press  to display [Menu3].
2. Turn  (knob/left) to select [Hull unit auto up].

Menu3	
ZDA output	Off
Simulation	Off
Menu time-out period	Off
Hull unit auto up	15
Hull unit operation at the start	No
Transducer unit baud rate	19200
Slow down the Bearing speed	0
Menu (transparent)	15
Message (transparent)	10

3. Press  (knob/left) or  to move setting value box.



4. Turn  (knob/left) to select the setting value from [Off] or [1] to [17] (Speed unit: kn).

Or select from [Off] or [1] to [30] (Speed unit: km/h).

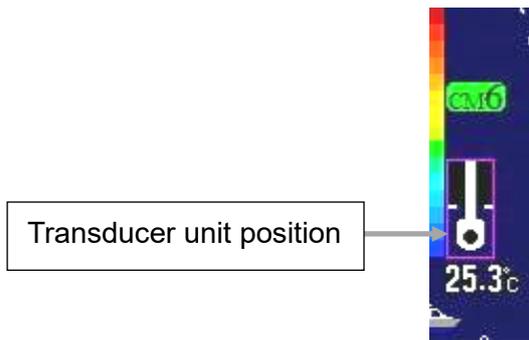
The setting range is changed when the speed unit is selected to kn or km/h.

The Transducer unit can be retracted automatically when the ship speed is over a specified speed.

This function is for safe operation when forgetting to hoist the Transducer unit at high speed.

The Transducer unit position mark shows  on the left bottom of the screen while the Transducer unit is lowering.

The Transducer unit position mark shows  on the left bottom of the screen when the Transducer unit is retracted automatically.



**⚠ Caution: The setting value can be set up to 17kn (30km/h), but the ship speed it should be kept up 15kn (27km/h) or less.
May not be able to hull unit auto up.**

**⚠ Caution: It is recommended to set to 12kn (22km/h) or less when you have forgotten to retract the Transducer unit in the high speed.
If more than 12kn, it may not be able to hull unit auto up.**

5. Press  to close the menu.

2.4.6 Hull unit operation at the start

Select the status of Hull unit after power on.

1. Press  to display [Menu3].

2. Turn  (knob/left) to select [Hull unit operation at the start].

Menu3	
ZDA output	Off
Simulation	Off
Menu time-out period	Off
Hull unit auto up	15
Hull unit operation at the start	No
Transducer unit baud rate	19200
Slow down the Bearing speed	0
Menu (transparent)	15
Message (transparent)	10

3. Press  (knob/left) or  to move setting value box.

Hull unit operation at the start	No
----------------------------------	----

4. Turn  (knob/left) to select the setting value from [Yes] or [No].

[Yes] : Transducer unit automatically will go down after initial screen is displayed.

[No] : Transducer unit will not go down after initial screen is displayed. Press  to lower.

 **Caution: Transducer unit does not go down soon after power on.**
When [Hull unit operation at the start] is set to “Yes”, Transducer unit will go down soon after power on.

5. Press  to close the menu.

2.4.7 Transducer unit baud rate

Set the baud rate between Processor unit and Transducer unit.

1. Press  to display [Menu3].

2. Turn  (knob/left) to select [Transducer unit baud rate].

Menu3	
ZDA output	Off
Simulation	Off
Menu time-out period	Off
Hull unit auto up	15
Hull unit operation at the start	No
Transducer unit baud rate	19200
Slow down the Bearing speed	0
Menu (transparent)	15
Message (transparent)	10

3. Press  (knob/left) or  to move setting value box.

Transducer unit baud rate 19200

4. Turn  (knob/left) to select the setting value from [4800], [9600] or [19200].

5. Press  to close the menu.

2.4.8 Slow down the Bearing speed

The bearing speed may be unstable depending on the range settings.

In this case, it can be stable by change the bearing speed to be slow. However the image update rate will be slow.

1. Press  to display [Menu3].
2. Turn  (knob/left) to select [Slow down the Bearing speed].

Menu3	
ZDA output	Off
Simulation	Off
Menu time-out period	Off
Hull unit auto up	15
Hull unit operation at the start	No
Transducer unit baud rate	19200
Slow down the Bearing speed	0
Menu (transparent)	15
Message (transparent)	10

3. Press  (knob/left) or  to move setting value box.

Slow down the Bearing speed 0

4. Turn  (knob/left) to select the setting value from [0] to [500].

5. Press  to close the menu.

2.4.9 Menu (transparent)

The background image can be easy to see by changing the transparent rate of the menu.

1. Press  to display [Menu3].
2. Turn  (knob/left) to select [Menu (transparent)].

Menu3	
ZDA output	Off
Simulation	Off
Menu time-out period	Off
Hull unit auto up	15
Hull unit operation at the start	No
Transducer unit baud rate	19200
Slow down the Bearing speed	0
Menu (transparent)	15
Message (transparent)	10

3. Press  (knob/left) or  to move setting value box.

Menu (transparent)	15
--------------------	----

4. Turn  (knob/left) to select the setting value from [0] to [25].

5. Press  to close the menu.

2.4.10 Message (transparent)

The background image can be easy to see by changing the transparent rate of the message box.

1. Press  to display [Menu3].

2. Turn  (knob/left) to select [Message (transparent)].

Menu3	
ZDA output	Off
Simulation	Off
Menu time-out period	Off
Hull unit auto up	15
Hull unit operation at the start	No
Transducer unit baud rate	19200
Slow down the Bearing speed	0
Menu (transparent)	15
Message (transparent)	10

3. Press  (knob/left) or  to move setting value box.

Message (transparent)	10
-----------------------	----

4. Turn  (knob/left) to select the setting value from [10] to [20].

5. Press  to close the menu.

2.4.11 Sub-screen (transparent)

The background image can be easy to see by changing the transparent rate of the sub-screen.

1. Press  to display [Menu3].
2. Turn  (knob/left) to select [Sub-screen (transparent)].

Menu3	
Hull unit operation at the start	No
Transducer unit baud rate	19200
Slow down the Bearing speed	0
Menu (transparent)	15
Message (transparent)	10
Sub-screen (transparent)	0
Information display	Lat / long
Localtime offset	9.0
Dynamic range standard	Top

3. Press  (knob/left) or  to move setting value box.

Sub-screen (transparent)	10
--------------------------	----

4. Turn  (knob/left) to select the setting value from [10] to [20].
5. Press  to close the menu.

2.4.12 Information display

Select the display of own ship's information from Lat/long or Date.

1. Press  to display [Menu3].
2. Turn  (knob/left) to select [Information display].

Menu3	
Hull unit operation at the start	No
Transducer unit baud rate	19200
Slow down the Bearing speed	0
Menu (transparent)	15
Message (transparent)	10
Sub-screen (transparent)	0
Information display	Lat / long
Localtime offset	9.0
Dynamic range standard	Top

3. Press  (knob/left) or  to move setting value box.

Information display Off

4. Turn  (knob/left) to select the setting value from [Off], [Lat/long], [Date], or [Lat/long/Date].

[Lat/long]: displays own position and VRM in numerical values of latitude and longitude.

[Date] : displays date.

5. Press  to close the menu.

2.4.13 Localtime offset

Set time difference to the world standard time.

1. Press  to display [Menu3].
2. Turn  (knob/left) to select [Localtime offset].

Menu3	
Hull unit operation at the start	No
Transducer unit baud rate	19200
Slow down the Bearing speed	0
Menu (transparent)	15
Message (transparent)	10
Sub-screen (transparent)	0
Information display	Lat / long
Localtime offset	9.0
Dynamic range standard	Top

3. Press  (knob/left) or  to move setting value box.

Localtime offset 0.0

4. Turn  (knob/left) to select the setting value from [-11.0] to [14.0].
5. Press  to close the menu.

2.4.14 Dynamic range standard

Set the base point of the Dynamic range.

1. Press  to display [Menu3].
2. Turn  (knob/left) to select [Dynamic range standard].

Menu3	
Hull unit operation at the start	No
Transducer unit baud rate	19200
Slow down the Bearing speed	0
Menu (transparent)	15
Message (transparent)	10
Sub-screen (transparent)	0
Information display	Lat / long
Localtime offset	9.0
Dynamic range standard	Top

3. Press  (knob/left) or  to move setting value box.

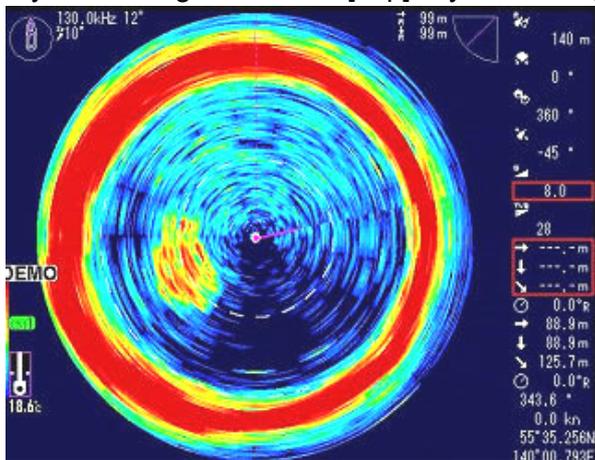


4. Turn  (knob/left) to select the setting value from [Top] or [Under].

[Top]: The echo is displayed based on the strong echo. The echo is changed depending on the [Dynamic range] settings in the “Menu1” (Refer to page 2-7).
 When [Dynamic range] is set to 32dB, the echo can be displayed from the strong echo to the weak echo.
 When [Dynamic range] is set to 12dB, the weak echo is disappeared and the strong echo (fish, bottom, etc.) can be emphasized.

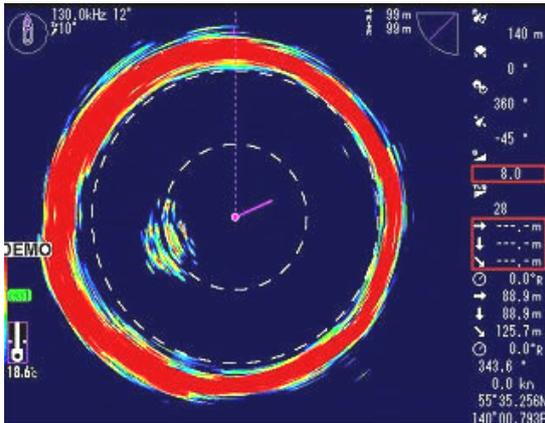
[Sample image]

Dynamic range standard: [Top], Dynamic range: [32dB]



[Sample image]

Dynamic range standard: [Top], Dynamic range: [12dB]



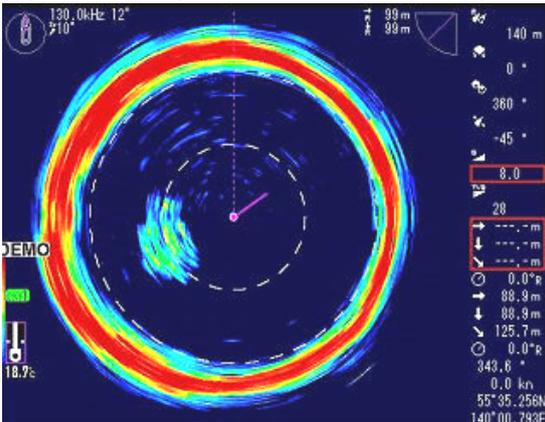
[Under]: the echo is displayed based on the strong echo. The echo is changed depending on the [Dynamic range] settings in the “Menu1” (Refer to page 2-7).

When [Dynamic range] is set to 32dB, the strong echo can be emphasized more strongly.

When [Dynamic range] is set to 12dB, the weak echo can be emphasized.

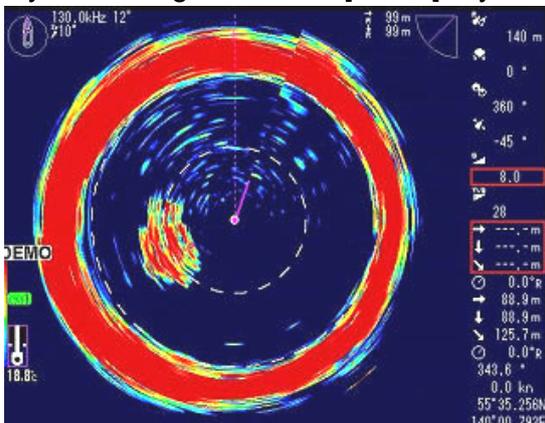
[Sample image]

Dynamic range standard: [Under], Dynamic range: [32dB]



[Sample image]

Dynamic range standard: [Under], Dynamic range: [12dB]



5. Press  to close the menu.

2.5 [CM] keys

[CM] (Condition Memory) key is used to memorize setting conditions of sonar and recall them with one touch of a key button. For example, it is possible to switch the setting for seine fishing to the setting of squid fishing with one touch of a key button. JFP-185BB is equipped with six [CM] keys, so can be used as if six units of sonars were used at a time.

2.5.1 Initial setting of [CM] keys

6 types of setting modes can be memorized with 6 keys of CM1 to CM6.

Initial setting of [CM] keys

	CM1	CM2	CM3	CM4	CM5	CM6
Presentation mode	Sonar	Sonar (Off-center)	Bottom-scan	Echo sounder	Sonar	Sonar
Panel brightness	10					
Gain	5.0					
TVG	20					
Range	140				80	200
Tilt	-45	-45	-90	-90	-50	-60
Bearing center	0					
Sector	360°	360°	175°	0°	360°	360°

Menu1	CM1	CM2	CM3	CM4	CM5	CM6
Freq select	130.0				210.0	150.0
Freq 2 select	200.0					
Dynamic range	20					
Pulse width	Middle					
TX power	Auto					
Color rejection	0%					
Noise reduction	0					
Color	A-1					
Background color	Blue					
Image correct	1					
Gain (TD)	0					
FIR	Auto					
Interference rejection	Off					
Sub-screen selection	Wake disp (H up)					
Sub-screen display	Off					
Wake range (Sub-screen)	1.0					

Menu2	CM1	CM2	CM3	CM4	CM5	CM6
Step (Sonar, Off-center)		10°			5°	10°
Step (Bottom-scan)		5°			3°	5°
Off-center position				Fore		
Target lock				Reverse		
A scope				Off		
White line				Off		
Scale				1		
Internal buzzer volume				100		
NMEA monitor				Off		
Compass display				Off		
Wake display				Off		
Wake memory display				1 Second		
Sonic speed				0.0%		
Power freq adjust				250.0		
Depth unit				m		
Range & Speed unit				NM kn		
Temperature unit				°C		
Temperature adjustment				0.0		
Train correct				0.00		
Ext synchronized				Off		
Bearing display				Off		
True / Relative bearing				Relative		
Step (Bearing center)				5		
Audio level				3		
Audio tune				5		
One line display				Small		
One line scale				Range		
One line shift				0 to 100%		
One line interval				5°		

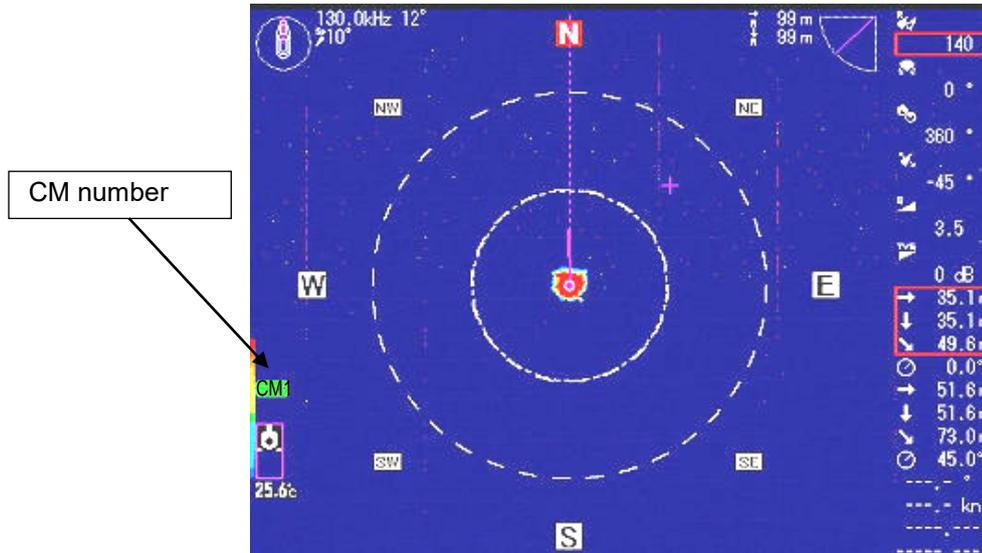
Menu3	CM1	CM2	CM3	CM4	CM5	CM6
Baud rate	4800					
DBT output	Off					
DPT output	Off					
GGA output	Off					
GLL output	Off					
MTW output	Off					
RMC output	Off					
TLL output	On					
VTG output	Off					
ZDA output	Off					
Simulation	Off					
Menu time-out period	Off					
Hull unit auto up	15					
Hull unit operation at the start	No					
Transducer unit baud rate	19200					
Slow down the Bearing speed	0					
Menu (transparent)	15					
Message (transparent)	10					
Sub-screen (transparent)	0					
Information display	Off					
Local time offset	9.0					
Dynamic range standard	Top					
Remote key set	CM1	CM2	CM3	CM4	CM5	CM6
A1	Hull unit U/D					
A2	Target lock			Marker up	Target lock	
A3	Tilt angle up					
B1	Event (TLL)					
B2	Marker up			Marker down	Marker up	
B3	Tilt angle down					
C1	Marker left			Range up	Marker left	
C2	Marker switching			F1	Marker switching	
C3	Marker right			Bearing left	Marker right	
D1	Bearing left			Range down	F1	
D2	Marker down			F2	Marker down	
D3	Bearing right			Bearing right	F1	

Setting values for each mode can be memorized, recalled and switched with one touch of a [CM] key.

2.5.2 Function of [CM] keys

By pressing each key of CM1 to CM6, and the screen mode, Range, Shift, Gain and Menu setting item turn to the setting mode (Color of light turns green).

Caution: setting [CM] number displays on screen, down left.



Usually, settings of range, shift and gain value position are changed depending on fishing conditions in shallow or deep water. Once settings are memorized in CM keys, settings can be recalled by one touch of a button.

CM key function enables such switching as required, after saving maximum 6 different settings.

The present screen of the [CM] key lights green.

2.5.3 Store in [CM] keys

The present settings are stored in the [CM] key currently lit green.

There is no special operation necessary for storage.

Each time screen mode, range, shift, gain or setup of Menu, etc. is operated, the changes are stored in the [CM] keys lit green.

2.5.4 Store a new setting in another [CM] key based on a particular setting in a [CM] key

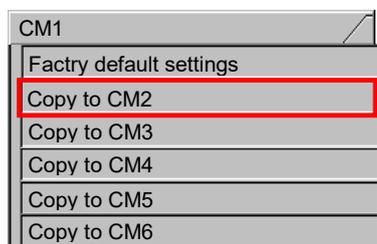
The setting can be stored easily by copying operation.

The setting in the present [CM] key is copied in the [CM] key to be stored.

When new setting is to be stored in [CM2] key, based on the present setting in [CM1] key

1. Keep pressed **CM1** to display the menu of [CM1].

2. Turn  (knob/left) to select [Copy to CM2].



3. Press  (knob/left) or  to move setting box.

4. Turn  (knob/left) to select [Cancel] or [Execute].



5. Select [Execute] and press  (knob/left) or  .

6. The pop-up message of [It has been executed.] is displayed and copy of the setup in [CM1] to [CM2] key is complete.

7. Press **CM2** . CM1 is switched over to CM2.

8. **CM2** lights green. The setting of CM2 is the same as CM1.

Each time screen mode, range, shift, gain or setup of Menu, etc. is operated, the changes

are stored in **CM2** lights green.

2.6 Function keys ([F] keys)

[F] keys can be assigned with the functions used frequently, to be operated with one touch operation.

2.6.1 Setting to function to [F] keys

The functions can be assigned to  /  / .

Function

- Freq select
- Event (TLL)
- Dynamic range
- Pulse width
- TX power
- Color rejection
- Noise reduction
- Color
- Image correct
- FIR
- Step (Sonar, Off-center)
- Step (Bottom-scan)
- Off-center position
- Target lock

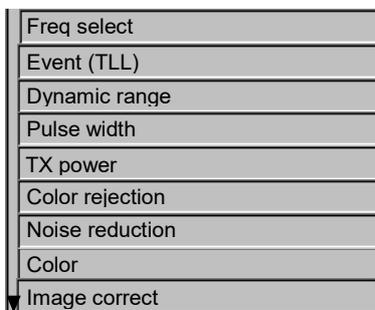
Function

- A scope
- White line
- Power freq adjust
- Train correct
- Bearing display
- Background color
- Wake erase
- Interference rejection
- Sub-screen selection
- Sub-screen display
- Wake range (Sub-screen)
- Freq 2 select
- Audio level
- Audio tune

2.6.2 Assign intended operation to function keys

1. Keep pressing  /  /  (you desire to change) to display function key setting box.

2. Turn  (knob/left) to select [assigned function].



3. Press  to close the menu.

2.6.3 Event (TLL)

The latitude and longitude at the VRM cursor position can be sent to external equipment. The applicable VRM is the selected VRM shown in white color.

⚠ Caution: Requires position data from a GPS sensor to perform the Event (TLL).

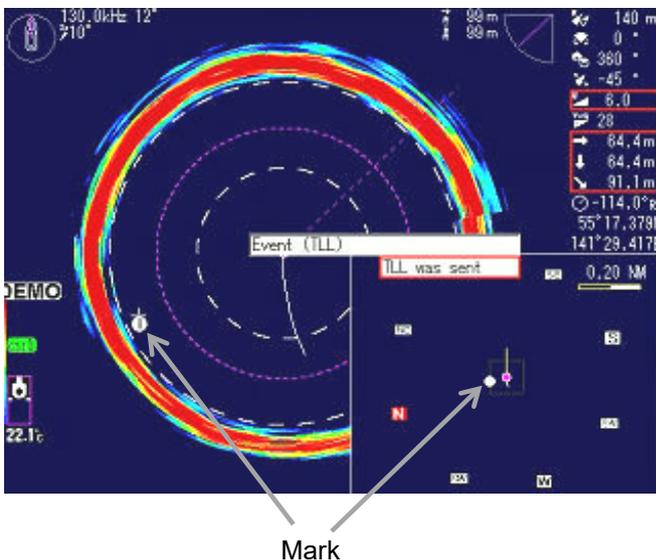
⚠ Caution: When [TLL output] is set to [Off], TLL sentence is not sent. Refer to “2.4.2 Selection of NMEA output” (page 2-52)

1. Assign [Event (TLL)] to function key. Refer to “2.6.2 Assign intended operation to function keys” (page 2-68).
If [Event (TLL)] is already assigned, go on to the next step.
2. Move to the VRM to be sent to the VRM cursor position.
3. Push [**F1**] / [**F2**] / [**F3**] (assigned [Event TLL] key).
4. “TLL was sent” message is displayed and the latitude and the longitude at the VRM cursor position is sent to external equipment.

Send the latitude and the longitude at the VRM cursor position.



When [Wake display] is set to on and [Event (TLL)] is performed, Marks labeled from ① to ⑩ are displayed.





**Caution: Requires position data from GPS sensor to display Marks and Wakes.
When turning power off, all Marks are erased.
When [Wake erase] is done, all wake data and the all marks are erased.**

5. Press  to close the menu.

2.7 Remote control set

Select the [Remote control set] function at Menu2.
Refer to Chapter 3 “3.2 Remote control” (page 3-9)

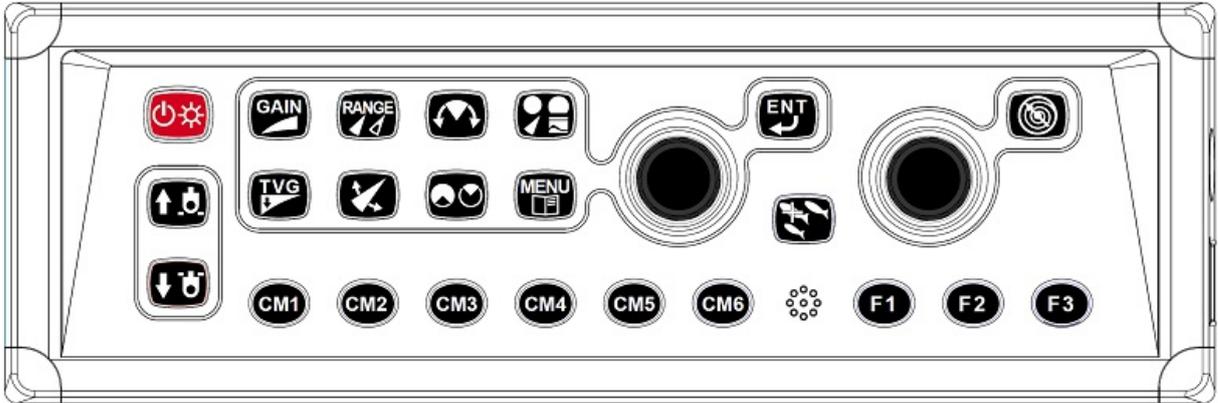
2.8 Maintenance

Refer to Installation Manual Chapter 3 “Maintenance”

Chapter 3 Operation keys

3.1 To use keys

Operation unit NCH-1850



3.1.1 Presentation mode key



Select one of the display mode, [Sonar], [Sonar (Off-center)], [Bottom-scan], [Echo sounder] [Sonar & One line] or [Sonar x 2].

Refer to Chapter 1 Preparation “1.11 Screen display” (page 1-20)

Own ship’s position on Off-center screen are accessed by using [Menu2]. (Refer to page 2-28)

3.1.2 Range key

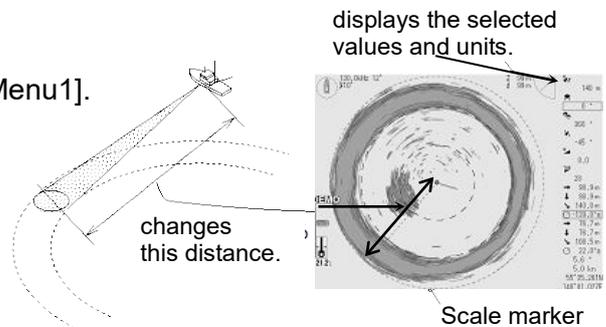


Change the range setting.

The setting for 8 ranges is accessed by using [Menu1]. (Refer to page 2-5)

The setting for the depth units is accessed by using [Menu2]. (Refer to page 2-40)

The scale display can be turned on or off by using [Menu2]. (Refer to page 2-30)

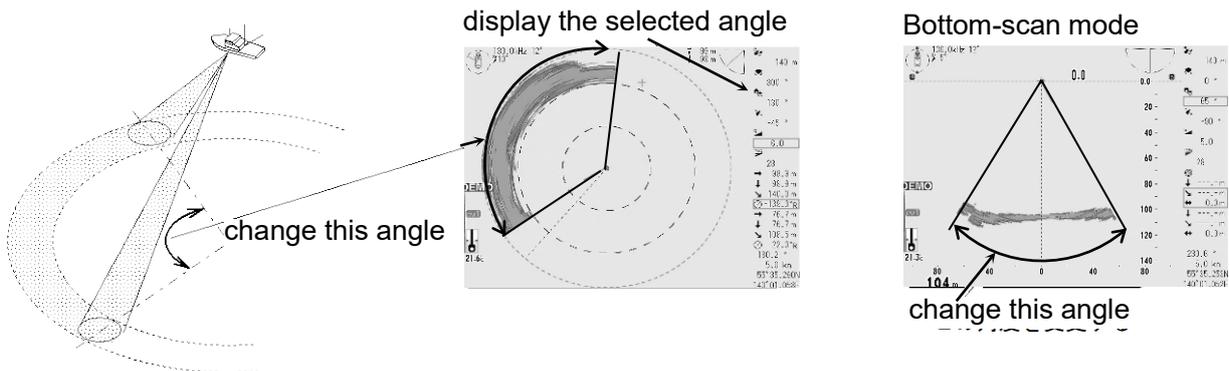


3.1.3 Sector key



Change the scanning historical angle (sector angle) in the Sonar mode.

Change the scanning sector angle (vertical angle) in the Bottom-scan mode.



Press  and turn  clockwise to widen the sector angle.

Turn counterclockwise to narrow the sector angle.

The setting for the step is accessed by using [Menu2].
(Refer to page 2-26/2-27)

Sonar mode operation

5° STEP	5°	25°	45°	85°	125°	165°	205°	360°
10° STEP	10°	30°	50°	90°	130°	170°	210°	360°
15° STEP	15°	45°	75°	105°	135°	165°	225°	360°
20° STEP	20°	60°	100°	140°	180°	220°	260°	360°

Bottom-scan operation

3° STEP	3°	27°	45°	63°	93°	117°	147°	177°
5° STEP	5°	25°	45°	65°	95°	115°	145°	175°

3.1.4 Gain key



Adjust gain.

The gain setting is changed with every 0.1 steps in 0.0 to 10.0

3.1.5 TVG key

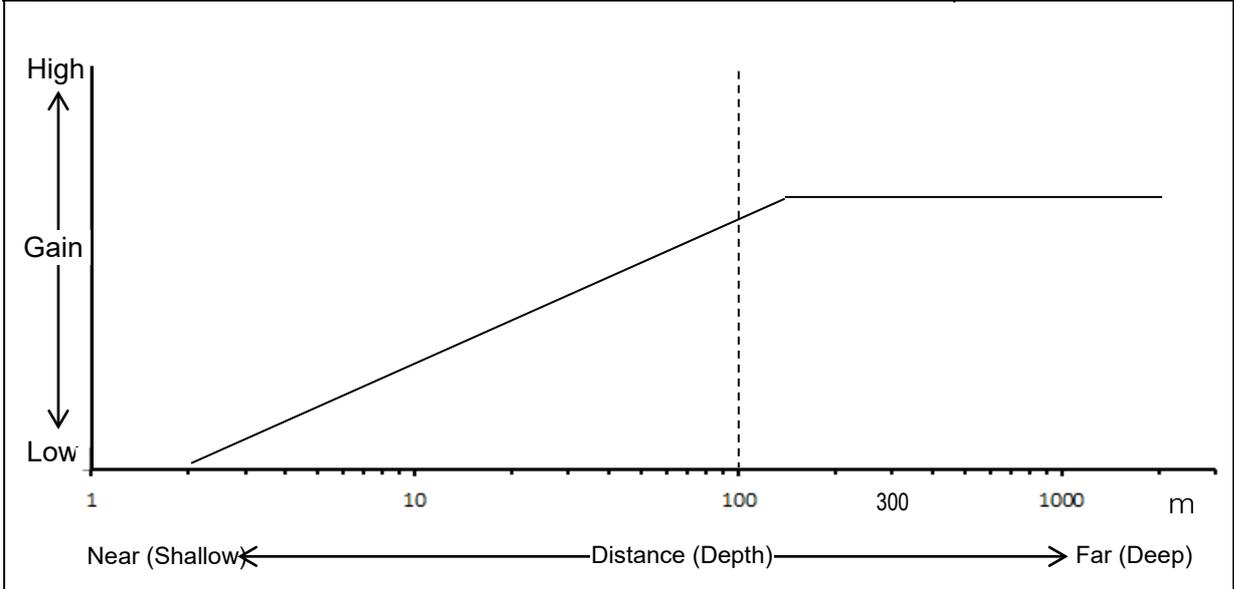


Set the TVG curve to correct the attenuation echo.

When the ultrasonic is sent into the sea, the reflection of the ultrasonic (echo) is decreased, as distance is long. To cover the attenuation, the gain is increased automatically in accordance with the distance.

1. Press  to display [TVG Menu] as below.

TVG	28
TVG adjustment	170
Emphasize	Off
Emphasize depth	100



The graph shows TVG curve. The gain is as the vertical axis and the distance is as the horizontal axis. The echo correction depends on the TVG curve.

2. Turn  (knob/left) to change the setting.

TVG

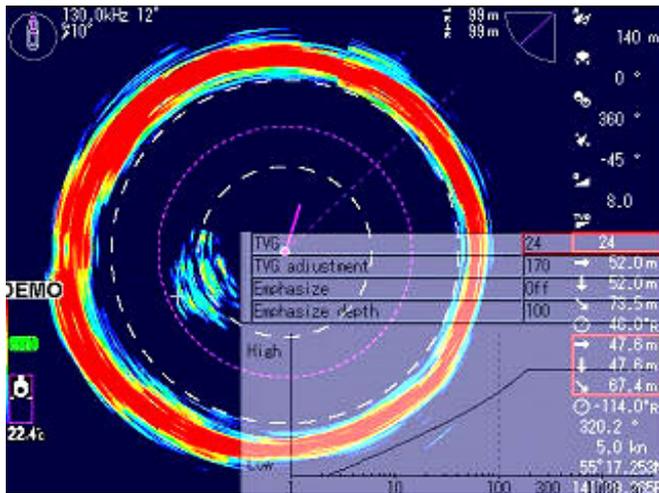
(Setting value: [0] to [40] or [- -], Initial setting: 28)

[TVG] is set to small, the correction rate is gradual from near to far.

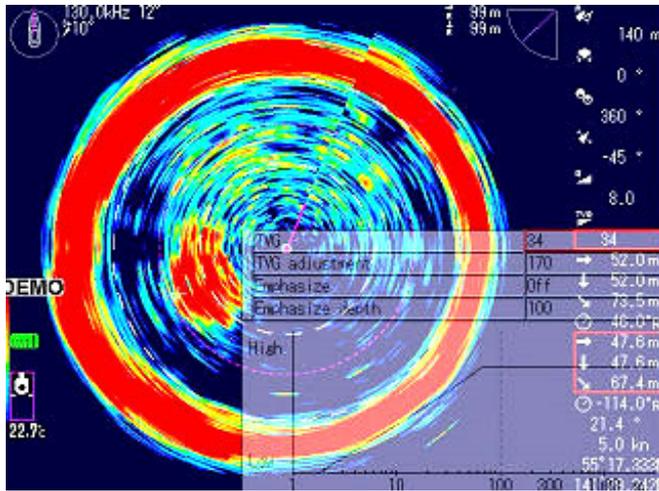
[TVG] is set to large, the correction rate becomes high from the near side.

[TVG] is set to “- -”, the correction rate becomes constant value.

When [TVG] is set to small, the TVG curve is gradually increased and the unnecessary reflection echo can be reduced.



When [TVG] is set to large, the TVG curve is radically increased and some weak echo can be shown.



TVG adjustment

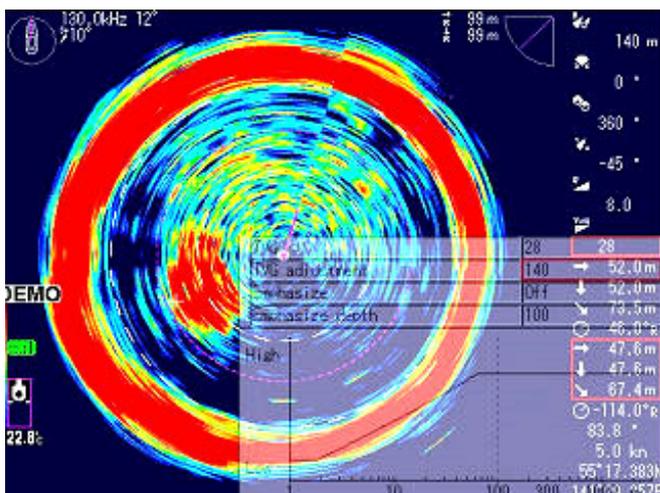
(Setting value: [50] to [300], Initial setting: 170)

[TVG adjustment] is the start depth of the TVG correction.

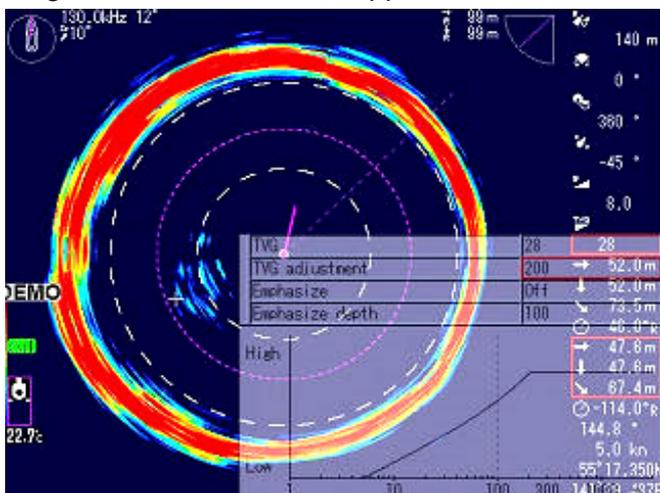
[TVG adjustment] is set to small, the start depth of the TVG correction becomes near.

[TVG adjustment] is set to large, the start depth of the TVG correction becomes far.

When [TVG adjustment] is set to small, the TVG curve is move to the near side and some weak echo can be shown.



When [TVG adjustment] is set to large, the TVG curve is move to the far side and the all range of the echo can be suppressed.

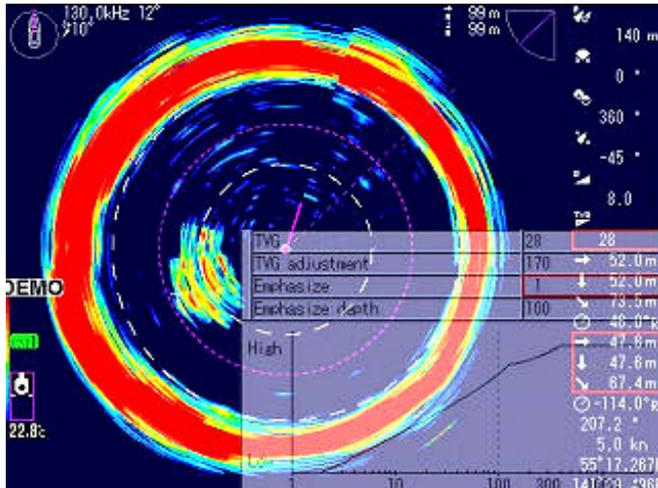


Emphasize

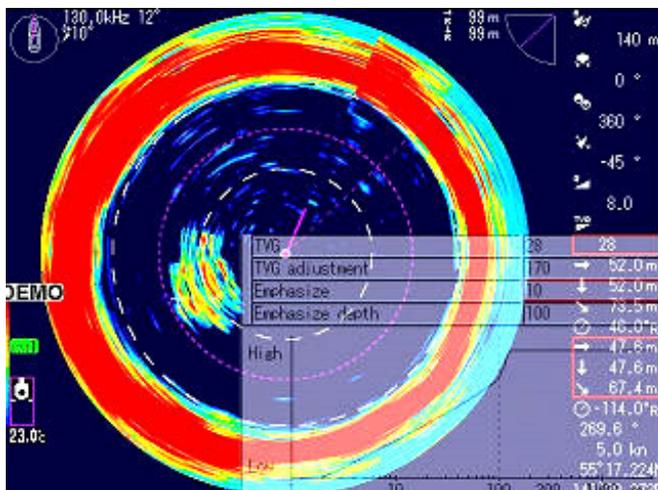
(Setting value: [Off] or [1] to [30], Initial setting: Off)

[Emphasize] is a function to emphasize the attenuation correction from the Emphasize depth. The larger setup becomes, the stronger effect becomes.

When [Emphasize] is set to small, the TVG curve is gradually increased from the Emphasize depth.



When [Emphasize] is set to large, the TVG curve is radically increased from the Emphasize depth.



Emphasize depth

(Setting value: [20] to [900], Initial setting: 100)

[Emphasize] is set to [OFF], the effect is disable.

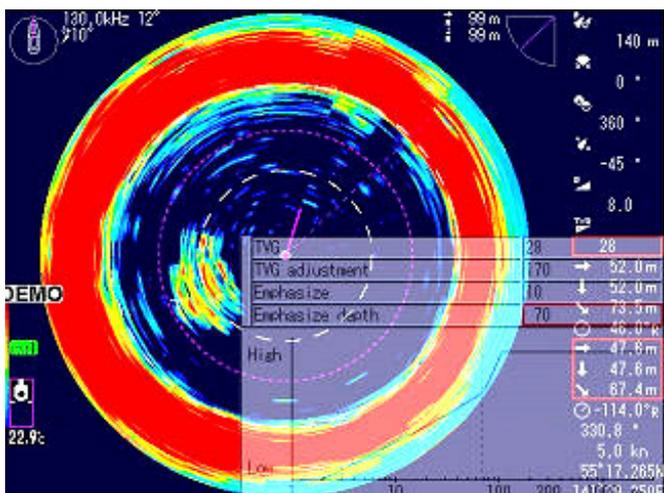
[Emphasize] is set to [OFF], the effect is disabled.

[Emphasize] is set from [1] to [30], the effect is enabled.

The emphasized effect is strong from the emphasize depth value.

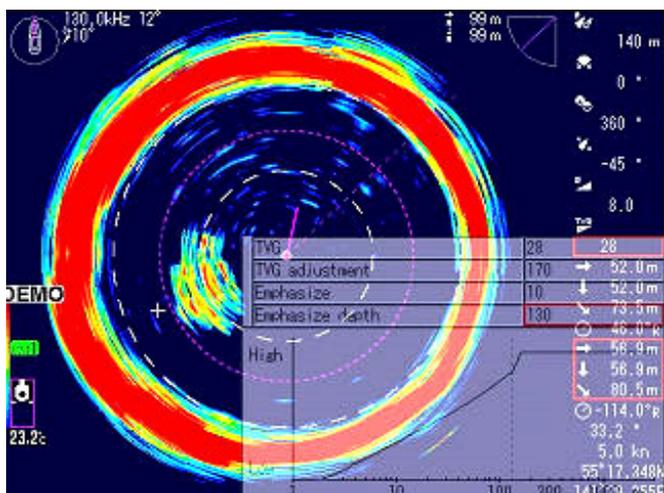
ex.) Emphasize depth: 70

The TVG curve is radically increased from 70 meters line in the graph.



ex.) Emphasize depth: 130

The TVG curve is radically increased from 130 meters line in the graph.



⚠ Caution: The TVG setting and gain setting have its affect mutually.

3.1.6 Power/Panel brightness key



Power On/Off.

Power On

Press  to power on.

On start-up, the internal memory (ROM and RAM) is automatically checked, if the checking completes normally, the start-up screen is displayed.

Power Off

Keep pressing  for 3 seconds to power off.

When the message of [Preparing to shutdown] and countdown for power shut down are displayed, release the power key immediately. The pop-up message of [Preparing to shutdown] is displayed. After a few moments, power is switched off automatically.

Refer to Chapter 1 "Preparation 1.7 Power On/Off" (page 1-15).

3.1.7 Hoist/Lower key



- The Transducer unit can hoist down/up during operation.
- When pressing  in operation, the Transducer unit is hoist up and the Transducer unit status indication at the left down side of the screen is changed as .
- When pressing  to hoist down the Transducer unit again. In this case the indication is changed as .
- When the Hull unit auto up function is done and the Transducer unit is retracted automatically, press  key to hoist down the Transducer unit after ship speed down.

※When the failure is occurred about the hoisting up/down of the Transducer unit, the

Transducer unit status indication at the left down side of the screen is changed as  and alarm sounds.

3.1.8 Bearing center key

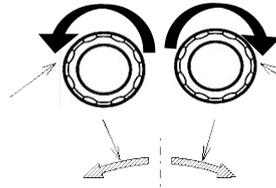


Use this key to define the center of current scanning sector **in Sonar mode.**

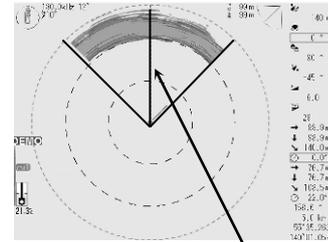
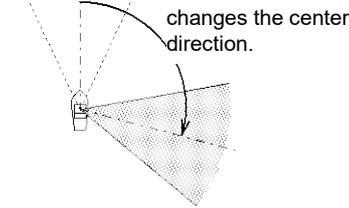
The bearing angle of the display is shifted by 5° steps.

Press .

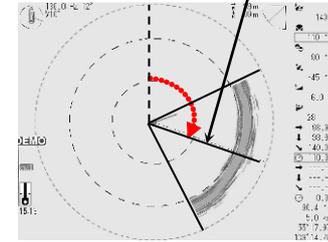
Turn the knob/left to left, the center of the sector rotates counterclockwise.



Turn the knob/left to right, the center of the sector rotates clockwise.



This arrow marks the center of the sector.

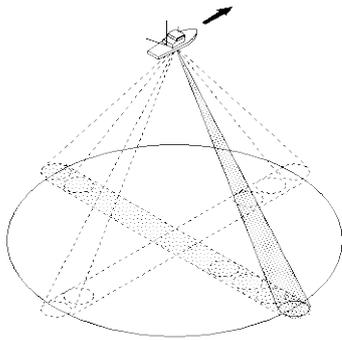


displays the values of the sector angle

Use this key to define the center of current scanning sector **in Bottom-scan mode.**

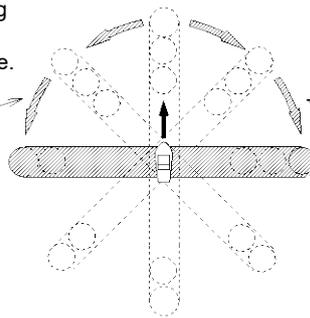
The bearing angle of the display is shifted with every 5° steps.

Press .

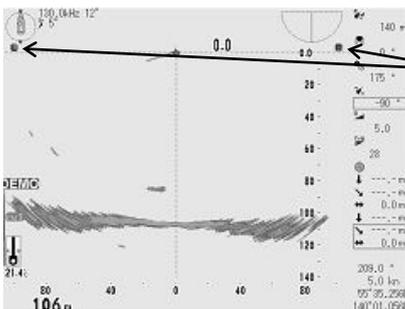


display of the scanning direction

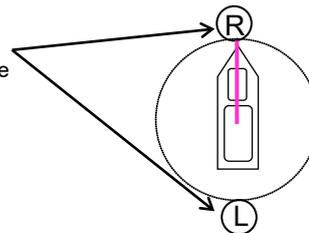
Turn the knob/left to left, the scanning direction rotates counterclockwise.



Turn the knob/left to right, the scanning direction rotates clockwise.



displays the scanning direction of the bow



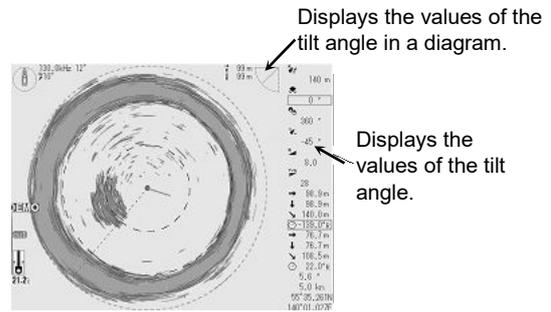
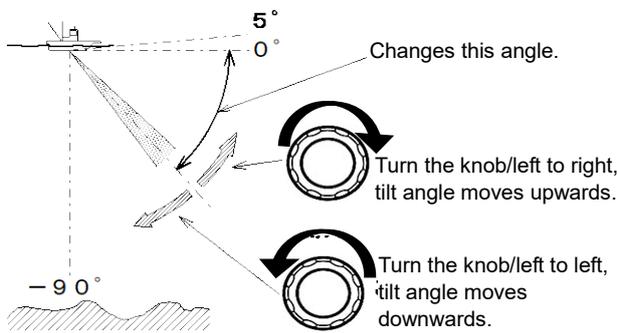
In case of Sonar mode [Tilt key] explained in the next section is collaborated with the bearing key. The shifted angles are the same as those of Bottom scan mode. (Refer to page 2-27)

3.1.9 Tilt key



Use this key to control the tilt angle **in the Sonar mode.**

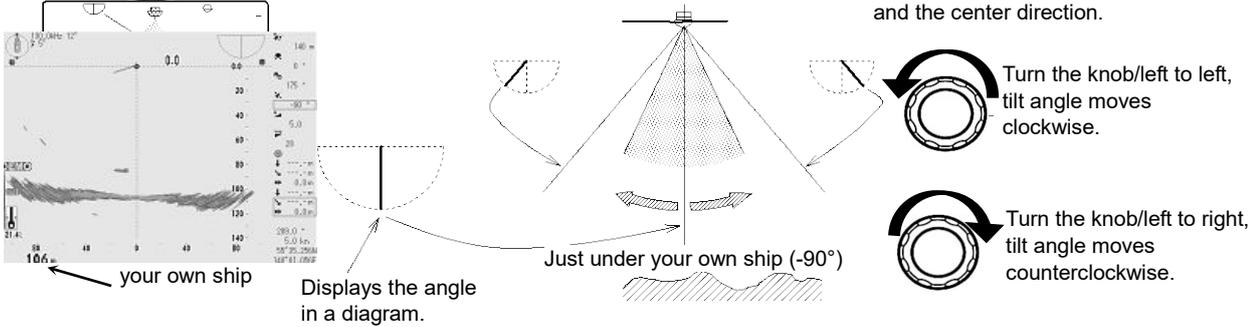
Press .



Variable tilt angle: 5° to 0° to -90° (every 1°)

Use this key to control the tilt angle **in the Bottom-scan mode.**

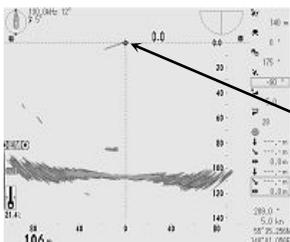
Press .



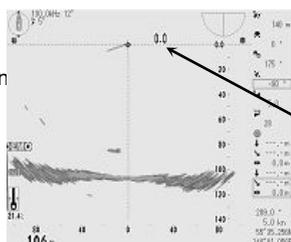
The angle center is just under your own ship.

Tilt angle is set from -91° to -177°

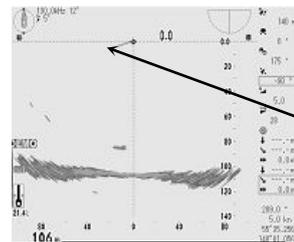
Tilt angle is set from -89° to -3°



Your own ship position (center)



Your own ship position (right)



Your own ship position (left)

Variable tilt angle:

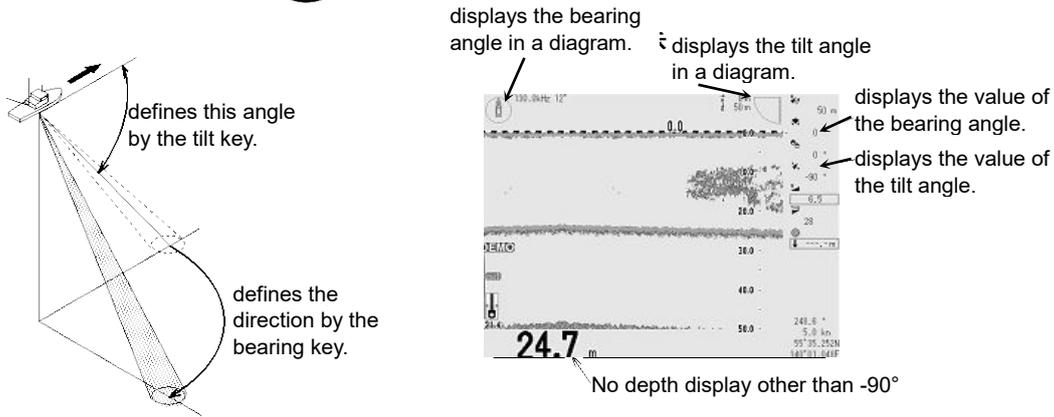
3° step: -3° to -90° (every 3°)

5° step: -5° to -90° (every 5°)

Refer to page 2-27 for step.

Use  and  to define the direction of the detection **in the Echo sounder mode.**

Press  and turn  (knob/left) to define the angle.



Variable tilt angle: 5° to 0° to -90° (every 1°)

Marker indicates the depth other than just below the ship (-90°). Refer to the following [VRM key] for the marker.

3.1.10 VRM key



There are two VRMs to measure the distance and the bearing from the target. In case of the echo sounder mode, there is one VRM.

The selected VRM is indicated as white color, and the unselected VRM is indicated as pink color. Measuring value of the distance and the bearing are indicated on [Information-Data display]. VRM1 is indicated on the upper side, VRM2 is indicated on the lower side. Selected VRM is indicated as red box.

Operation of the VRM

Turn  (knob/left) to move the direction or distance of the VRM.

Press  (knob/left) to switch the direction and the distance of the VRM.

Press  to switch two VRMs.

Keep pressed  to clear two VRMs.

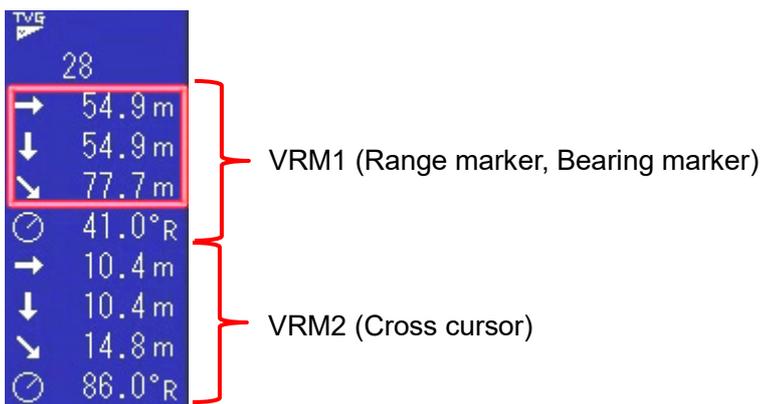
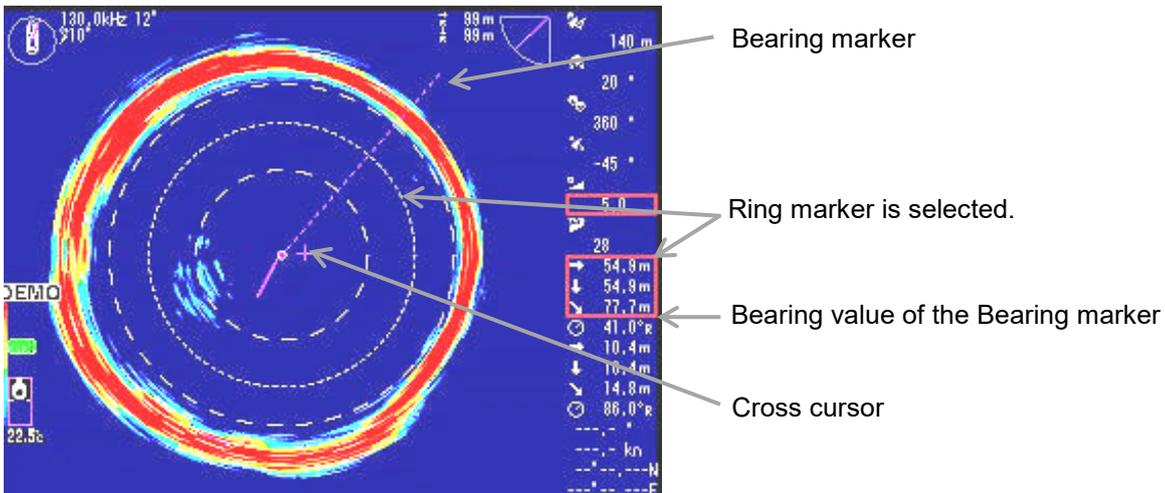
Sonar and Sonar (Off-center) mode operation

There are two VRMs.

VRM1 is the combination of Ring marker and the Bearing marker.

VRM2 is the cross cursor marker.

After the power on, the Ring marker is selected.



When the Ring marker is selected,

1. Turn  (knob/right) to change the distance of the Ring marker.
2. Press  (knob/ right) to select the bearing marker.

3. Turn  (knob/ right) to move the Bearing marker.

4. The direction and the distance of the target can be measured by the following method.

Turn or press  (knob/ right) repeatedly and set the intersection of the Ring marker and Bearing marker on the target.

The intersection position of the Ring marker and Bearing marker are displayed on the VRM of the [Information-Data display].

Horizontal distance, Depth, Slant distance and Direction are displayed in order.

5. Press  to select the cross cursor.

6. Check [Direction/Distance] from the target by the Cross cursor.

Turn or press  (knob/ right) repeatedly and set the Cross cursor on the target.

The center position of the cross cursor is displayed on the [Information-Data display] of the VRM2.

Horizontal distance, Depth, Slant distance and Direction are displayed in order from top to bottom.

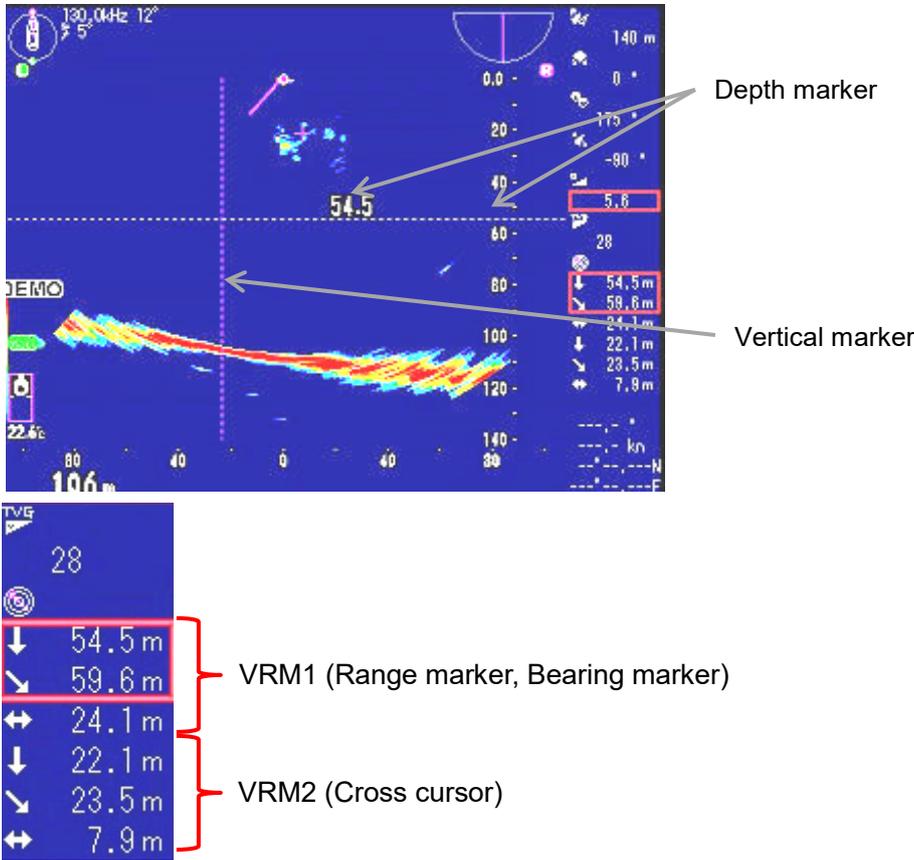
(When the distance of the Cross cursor is 0, the position of the Cross cursor is not changed even if the bearing of the Cross cursor is changed.)

Keep pressed  to clear the VRM.

Press  or turn  (knob/ right) to indicate the VRM.

Bottom-scan mode operation

There are two VRMs. VRM1 is the combination of the Depth marker and the Vertical marker. VRM2 is the Cross cursor marker. (After the power on, the Depth marker is selected.)



When “Depth marker” is selected,

1. Turn  (knob/right) to measure the depth of the Depth marker.
2. Press  (knob/ right) to select the Vertical marker.
3. Turn  (knob/ right) to move the vertical marker.
4. [Direction/Distance] of the target can be measured by the following method.

Turn of press  (knob/ right) repeatedly and set the intersection of the Depth marker and the vertical marker on the target.

The intersection position of the depth marker and the vertical marker are displayed on the [Information-Data display] of VRM1.

Depth, Slant distance and Horizontal distance are displayed in order from top to bottom on the [Information-Data display].

5. Press  to select the cross cursor.

6. Check [Direction/Distance] from the target by the Cross cursor.

Turn of press  (knob/ right) repeatedly and set the Cross cursor on the target.

The center position of the Cross cursor is displayed on the [Information-Data display] of VRM2.

Depth, Slant distance and Horizontal distance are displayed in order from top to bottom.

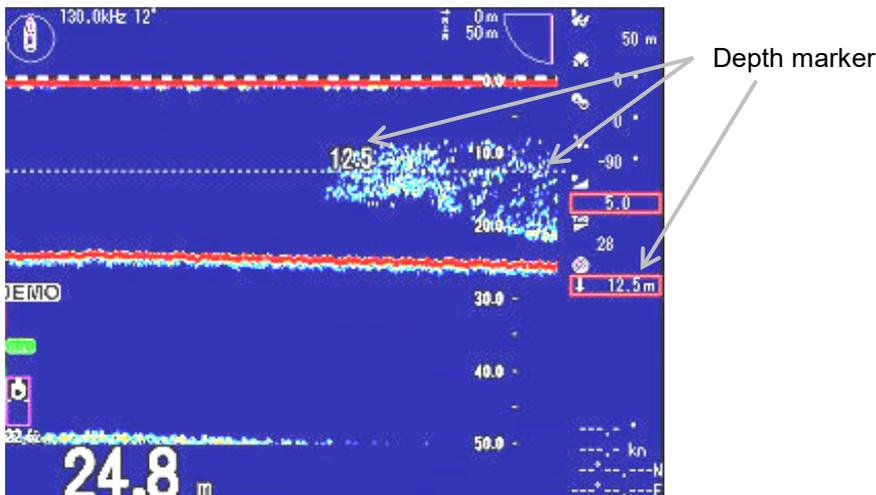
(When the distance of the Cross cursor is 0, the position of the Cross cursor is not changed even if the bearing of the Cross cursor is changed.)

Keep pressed  to clear the VRM.

Press  or turn  (knob/ right) to indicate VRM.

Echo sounder mode operation

There is a Depth marker.



When Depth marker is selected,

1. Turn  (knob/right) to measure the depth by the Depth marker position.

2. Turn  (knob/ right) to measure the target by moving the VRM on the target.

Keep pressed  to clear the VRM.

Press  or turn  (knob/ right) to indicate the VRM.

3.1.11 Target lock key



When Menu2/Target lock/[Reverse] is selected.

When pressing  in Sonar mode or Bottom-scan mode, the direction of sweep of the Sonar beam is reversed.

When Menu2/Target lock/[Mode1] or [Mode2] is selected.

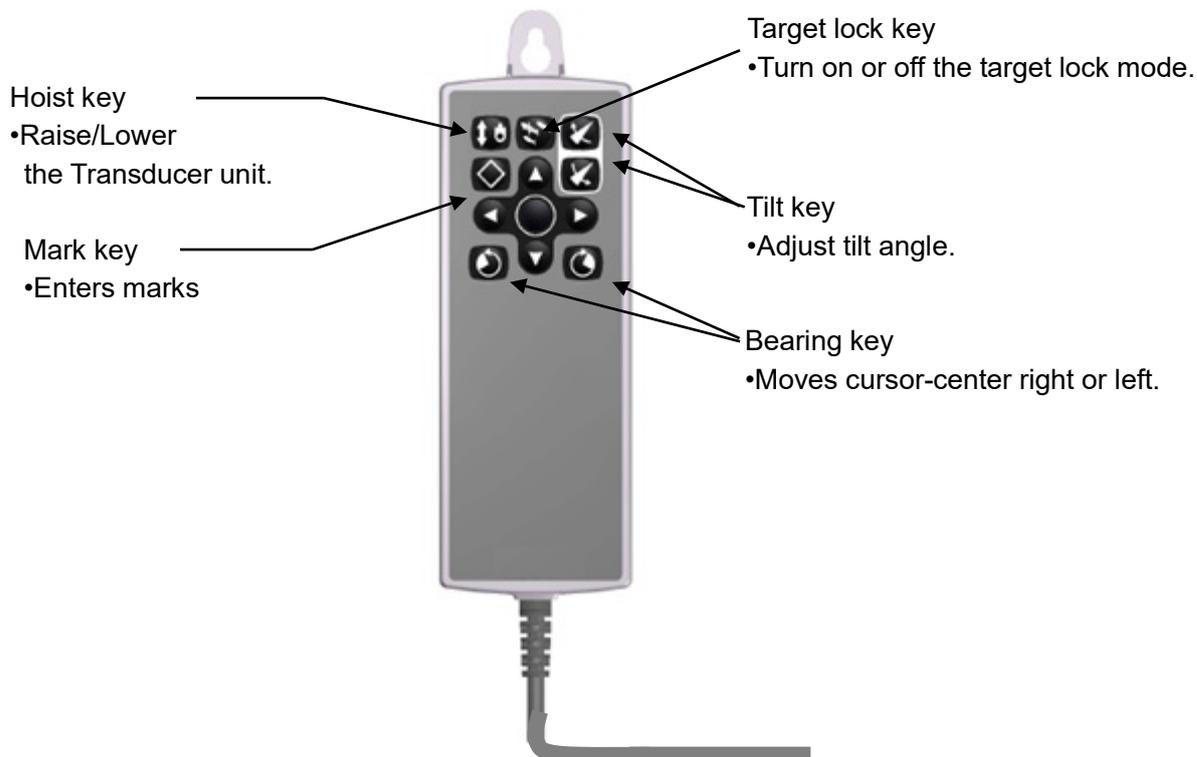
When pressing  in Sonar mode, the Sonar beam tracks the echo automatically.

When Menu2/Target lock/[Marker Mode1] or [Marker mode2] is selected by connected to an external navigator.

By pressing  on the target in Sonar mode the target mark is displayed and tracked automatically.

Refer to Chapter 2 “2.3.15Target lock” (page 2-37)

3.2 Remote controller (NCH-1851) (Optional)



3.2.1 Remote key set

Remote control key assignment can be changed as prefer setting.

1. Press to display [Menu1].

Or keep pressing to display [Remote control setting menu]. (This operation can omit item2 and 3 in the below.)

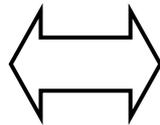
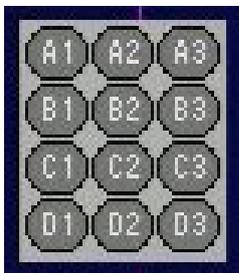
2. Turn (knob/left) to select [Remote key set].

Menu1	
Range (Sonar, Off-center)	
Range (Bottom-scan)	
Range (Echo sounder)	
Remote key set	
Color palette	
Sub-screen selection	Wake disp (H up)
Sub-screen display	Off
Wake range (Sub-screen)	1.0
Language	English

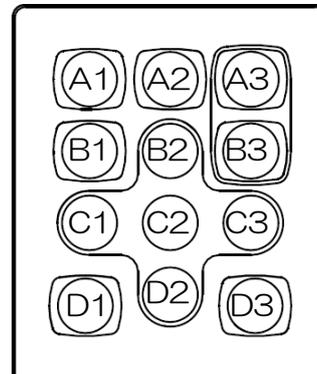
3. Press  (knob/left) or  to move Remote key setting box.

A1	Hull unit U/D
A2	Target lock
A3	Tilt angle up
B1	Event (TLL)
B2	Marker up
B3	Tilt angle down
C1	Marker left
C2	Marker switching
C3	Marker right

4. Turn  (knob/left) to select the setting number from [A1] to [D3]



The remote control key position and assignment.



5. Press  (knob/left) or  to move setting function box.

A1	Hull unit U/D
----	---------------

6. Turn  (knob/left) to select the setting function.

Setting function

- No entry
- Hull unit U/D
- Target lock
- Range up
- Range down
- Tilt angle up
- Tilt angle down
- Gain up
- Gain down
- Bearing right
- Bearing left
- Sector
- TVG
- Marker up
- Marker down
- Marker right
- Marker left
- Marker switching
- Event (TLL)
- F1
- F2
- F3
- CM1
- CM2
- CM3
- CM4
- CM5
- CM6
- Presentation mode
- Audio level up
- Audio level down
- Audio tune up
- Audio tune down

7. Press  (knob/left) or  to confirm setting function.

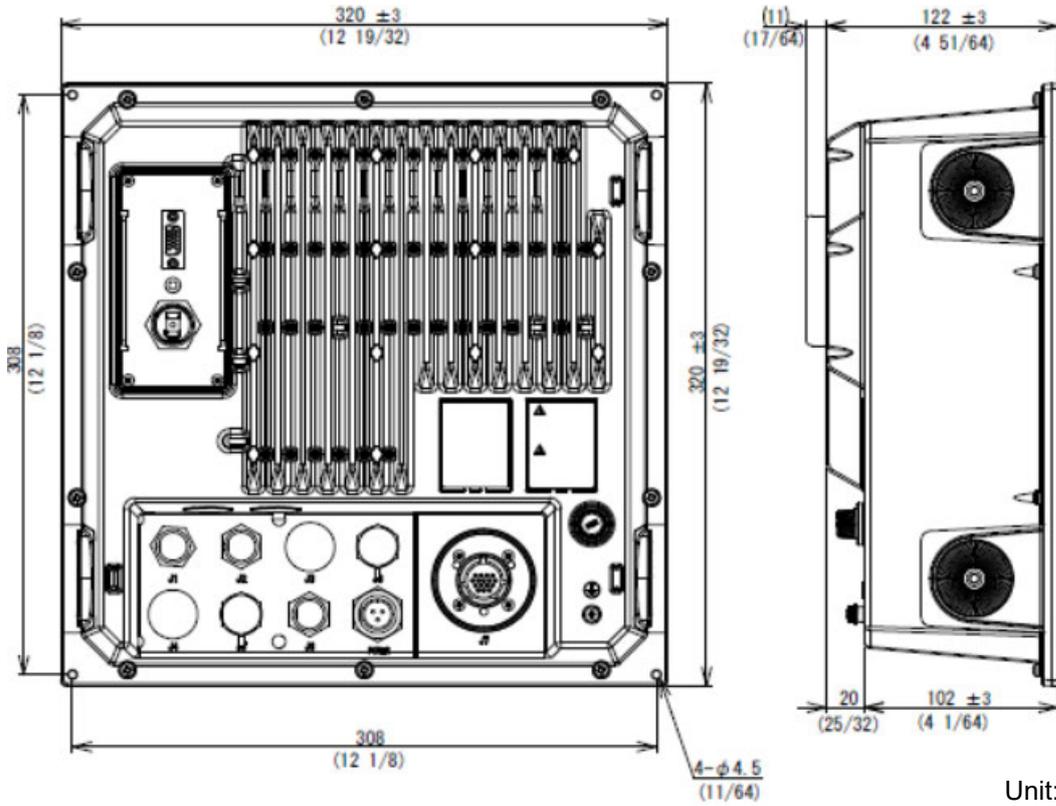
8. Press  to close the menu.

- Set as the same way as other Remote key setting.
- The sheet of remote control key shows the initial setting of the remote control keys.
- The range operation of Remote control key;
[Range up]: Move to shallow range.
[Rang down]: move to deep range.

Chapter 4 Appendix

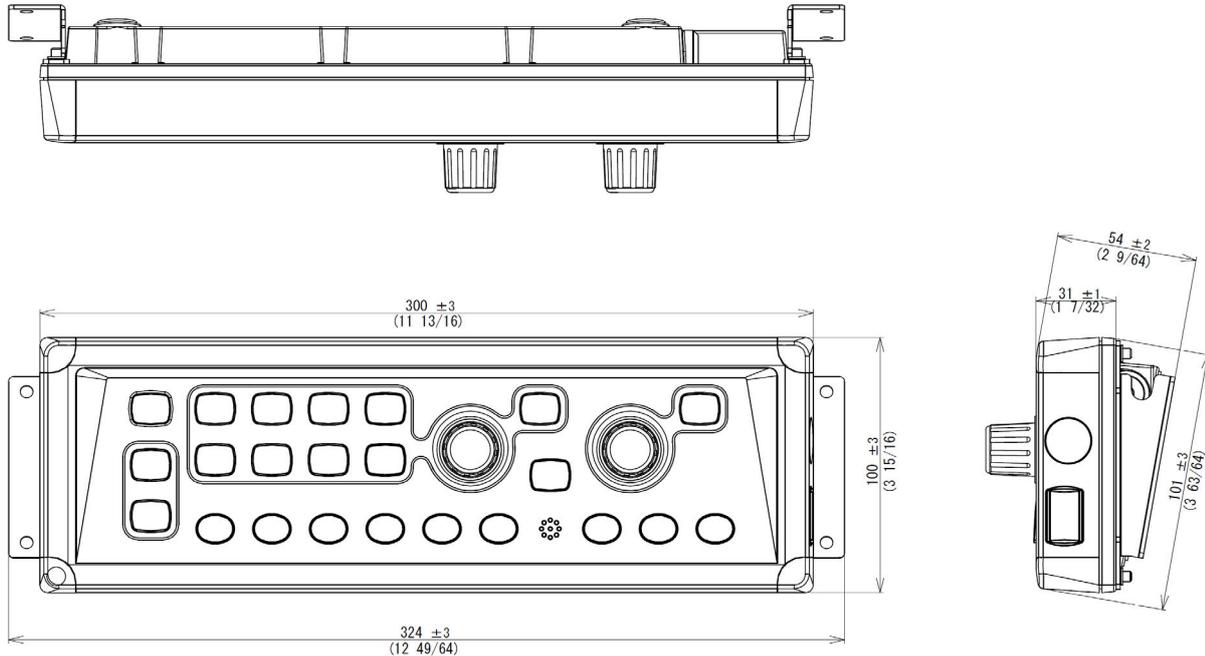
4.1 External view and dimensions

Processor unit (NCM-1850)



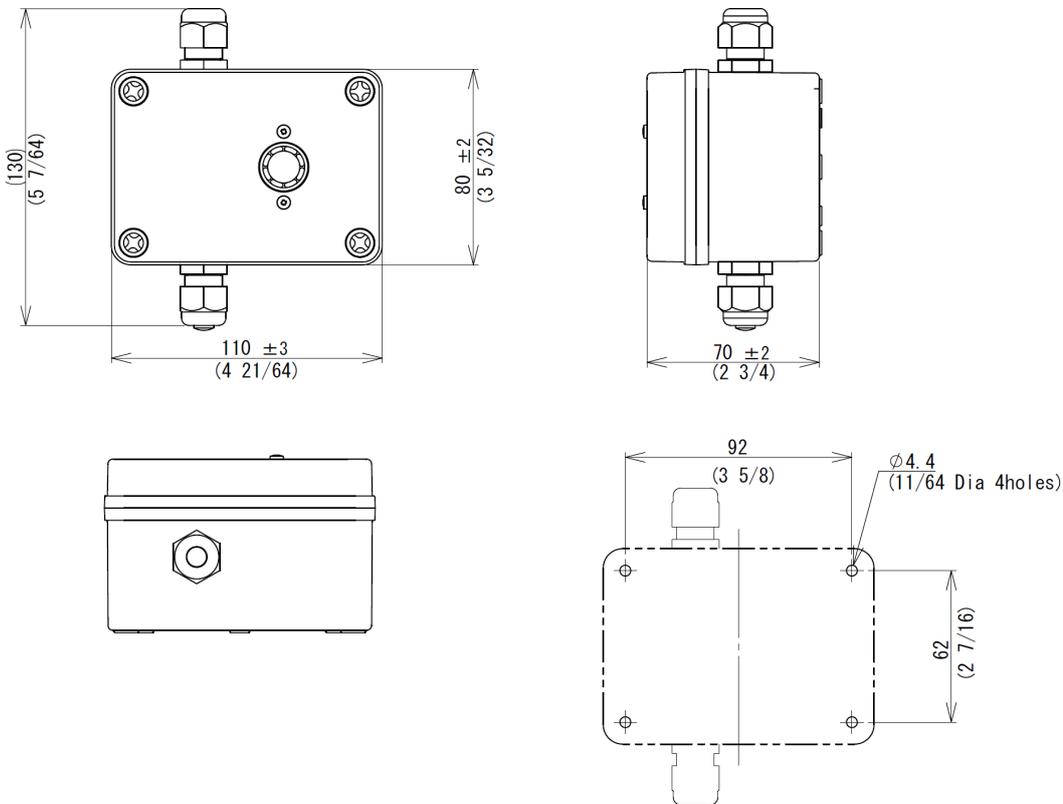
Unit: mm (inch)
Mass:5.1kg

Operation unit (NCH-1850)



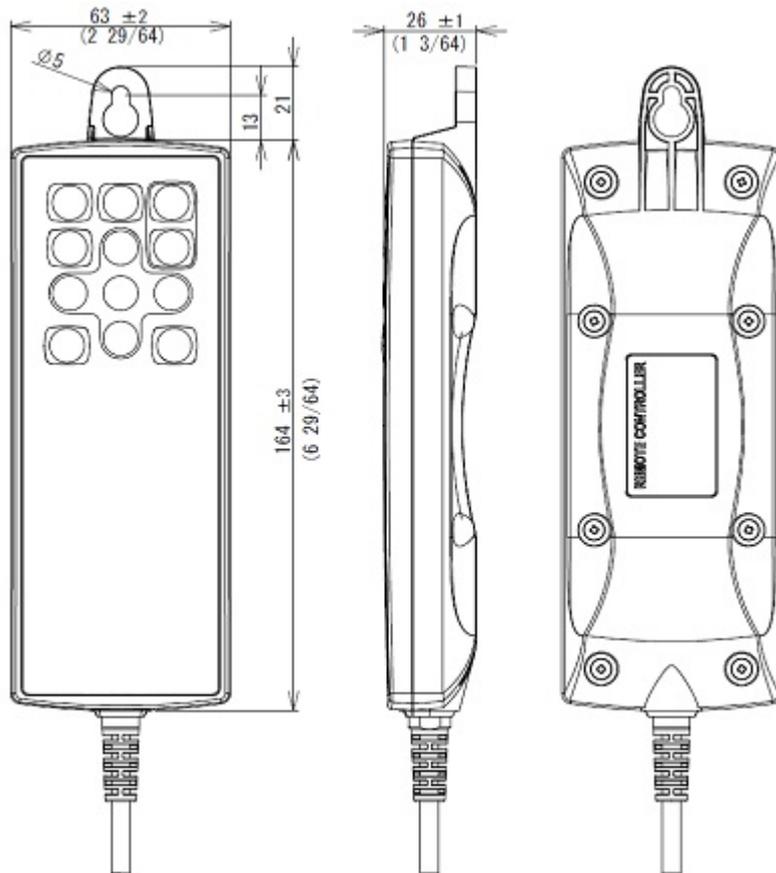
Unit: mm (inch)
Mass: 1.1kg

TD position alarm / Ext. Sync. Box (JB-36)



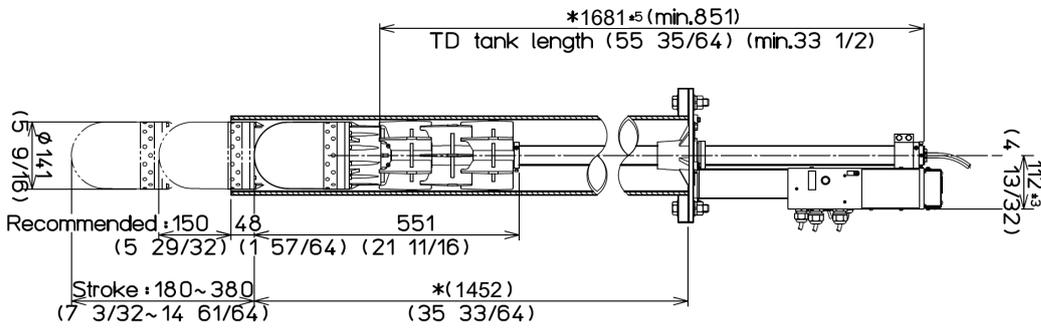
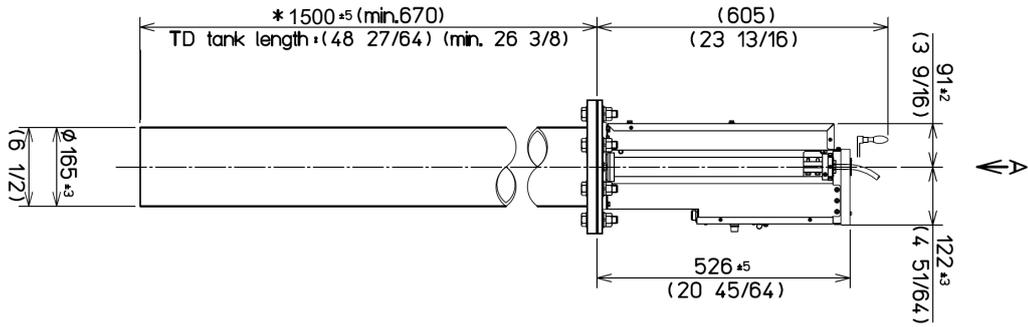
Installation dimensions

Unit: mm (inch)

Remote controller (NCH-1851) (Optional)

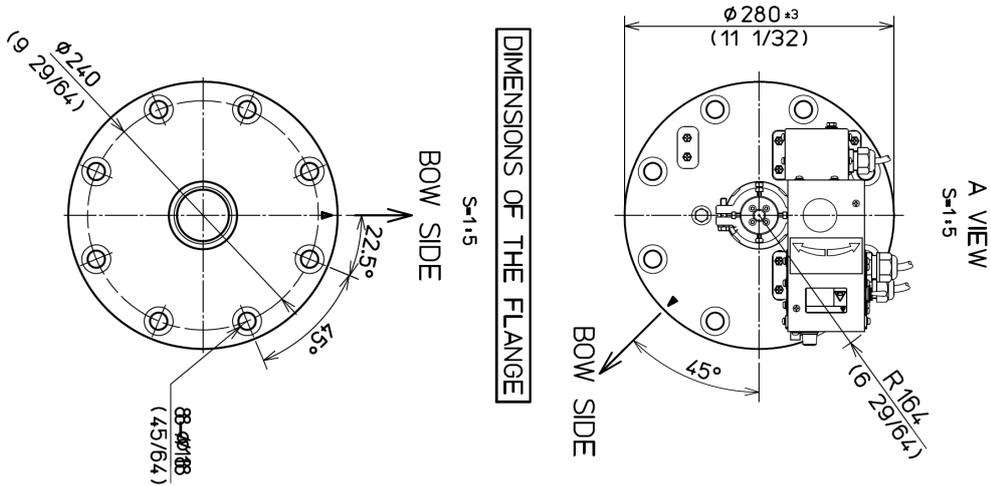
Unit: mm (inch)
Mass:0.31kg

Hull unit (NKF-1850)



TD shaft length : mm(inch)	TD tank length : mm(inch)	Weight : kg(lb)
1411 (55 35/64)	1230 (48 27/64)	41 (91)
*1681 (66 3/16)	*1500 (59 1/16)	44 (97)
1981 (77 63/64)	1800 (70 55/64)	47 (104)

*The seal dimensions show the case of going TD shaft 1.47mm in length specifications



Unit: mm (inch)

4.2 Disposal

Dispose of this equipment in accordance with local regulations.

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アスベストは使用していません
Not use the asbestos

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