JHS-770S/780D

MARINE VHF RADIOTELEPHONE

INSTRUCTION MANUAL

JRC Japan Radio Co., Ltd.

CAUTIONS AGAINST HIGH VOLTAGE

Radio and radar devices are operated by high voltages of anywhere from a few hundred volts up to many hundreds of thousands of volts. Although there is no danger with normal use, it is very dangerous if contact is made with the internal parts of these devices. (Only specialists should attempt any maintenance, checking or adjusting.)
There is a very high risk of death by even a few thousand volts, in some cases you can be fatally electrocuted by just a few hundred volts. To prevent accidents, you should avoid contact with the internal parts of these devices at all costs. If contact is inevitable as in the case of an emergency, you must switch off the devices and ground a terminal in order to discharge the capacitors. After making certain that all the electricity is discharged, only then can you insert your hand into the device. Wearing cotton gloves and putting your left hand in your pocket, in order not to use both hands simultaneously, are also very good methods of shock prevention.
Quite often, an injury occurs by secondary factors, therefore it is necessary to choose a sturdy and level working surface. If someone is electrocuted it is necessary to thoroughly disinfect the affected area and seek medical attention as soon as possible.

Cautions concerning treatment of electrocution victims

When you find an electrocution victim, you must first switch off the machinery and ground all circuits. If you are unable to cut off the machinery, move the victim away from it using a non-conductive material such as dry boards or clothing.
When someone is electrocuted, and the electrical current reaches the breathing synapses of the central nervous system inside the brain, breathing stops. If the victim's condition is stable, he or she can be administered artificial respiration. An electrocution victim becomes very pale, and their pulse can be very weak or even stop, consequently losing consciousness and becoming stiff.
Administration of first aid is critical in this situation.

First aid

☆Note points for first aid

Unless there is impending danger leave the victim where he or she is, then begin artificial respiration. Once you begin artificial respiration, you must continue without losing rhythm.

(1) Make contact with the victim cautiously, there is a risk that you may get electrocuted.

(2) Switch off the machinery and then move the victim away slowly if you must.

(3) Inform someone immediately (a hospital or doctor, dial emergency numbers, etc.).

(4) Lay the victim on his or her back and loosen any constrictive clothing (a tie, or belt).

(5)
- (a) Check the victim's pulse.
- (b) Check for a heartbeat by pressing your ear against the victim's chest.
- (c) Check if the victim is breathing by putting the back of your hand or face near the victim's face.
- (d) Check the pupils of the eyes.

(6) Open the victim's mouth and remove any artificial teeth, cigarette or chewing gum. Leave the mouth opened and flatten the tongue with a towel or by putting something into the mouth to prevent the victim's tongue from obstructing the throat. (If he or she is clenching the teeth and it is difficult to open the mouth, use a spoon or the like to pry open the mouth.)

(7) Continually wipe the mouth to prevent the accumulation of saliva.

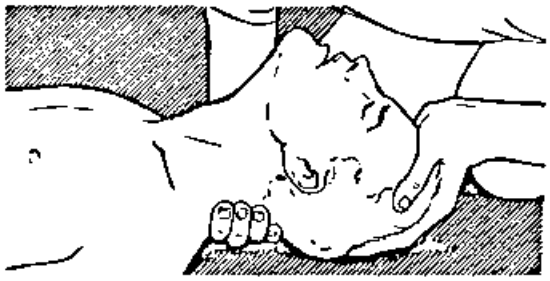
☆If the victim has a pulse but is not breathing

("Mouth to mouth" resuscitation)　Figure 1

(1) Place the victim's head facing backward (place something under the neck like a pillow).
(2) Point the chin upward to widen the trachea.
(3) Pinch the victim's nose, take a deep breath, then put your mouth over the victim's mouth and exhale completely, making sure that your mouth completely covers the victim's mouth. Then remove your mouth. Repeat this routine 10 to 15 times per minute (holding the nostrils).
(4) Pay attention to the victim to notice if he or she starts to breath. If breathing returns, stop resuscitation.
(5) If it is impossible to open the victim's mouth, put something like a plastic straw or vinyl tube into one of the nostrils then blow air in while covering the mouth and the other nostril.
(6) Occasionally, when the victim comes back to consciousness, they immediately try to stand up. Prevent this and keep them in a laying position. Give them something warm to drink and be sure that they rest (do not give them any alcohol).

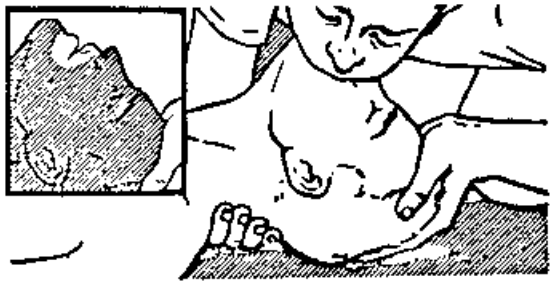
Administering artificial respiration by raising the head.

①



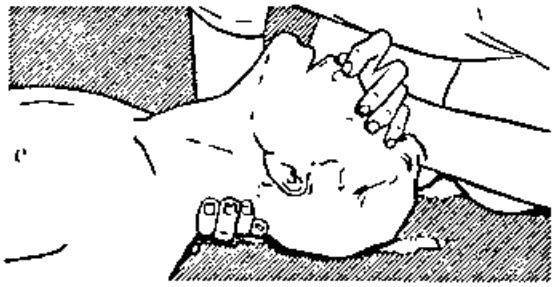
(1) Raise the back of head, then place one hand on the forehead and place the other hand under the neck. →①
Most victims open their mouth when this is done, making "mouth to mouth" resuscitation easier.

②



(2) Cover the victim's mouth by opening your mouth widely, then push your cheek against the victim's nose, →②
or pinch the victim's nose to prevent air from leaking out of it. →③

③



(3) Completely exhale into the lungs.
Exhale into the lungs until the chest inflates.
You have to blow as rapidly as possible for the first 10 times.

"Mouse to mouse" artificial respiration
Figure 1

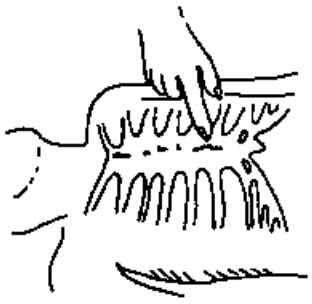
☆If the victim has no pulse and is not breathing

(Heart massage in combination with artificial respiration.)　Figure 2

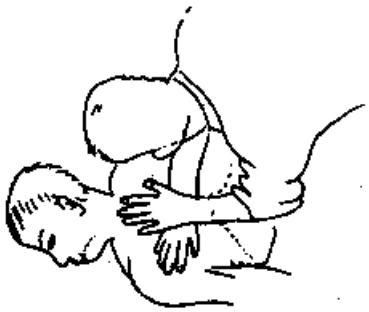
If the victim has no pulse, his or her pupils are dilated, and if you cannot detect a heartbeat, the heart may have stopped, beginning artificial respiration is critical.

(1) Put both hands on the diaphragm, with hands on top of each other keeping both arms straight (If your elbows are bent, you cannot push with as much power). Press the diaphragm with your body weight until the chest sinks about 2 cm (about 50 times per minute).
(2) If administering first aid when alone:
Perform the heart massage about 15 times then blow in twice. Repeat this routine.
If administering first aid with two people:
One person performs the heart massage 5 times, and the other person blows air in once. Repeat this routine (Heart massage and “mouth to mouth” resuscitation used together).
(3) Constantly check the pupils and the pulse, if the pupils become normal and the pulse steadies, keep them in a laying position and give them something warm to drink, be sure that they rest (do not give them any alcohol). In any case you have to entrust major decision making to a doctor. Having understanding people around is essential to the victim’s recovery from the mental shock of electrocution.

①



②



③

④

(Heart massage in combination with artificial respiration.)　Figure 2

Preface

Thank you for choosing the Model JRC JHS-770S/780D Marine VHF Radiotelephone. This radiotelephone can be used as a Global Maritime Distress and Safety System (GMDSS) radio device, compliant with international regulations, that provides emergency communications and standard communications capabilities for small and large ships.

- Please read this instruction manual thoroughly before using the JHS-770S/780D Marine VHF Radiotelephone, and use it in accordance with the instructions contained herein.
- Please keep this manual available for future reference. Please refer to it if any difficulties are encountered when using the equipment.

FCC Warning

Changes or modifications not expressly approved by JRC, could void your authority to operate this radiotelephone.

Radio Frequency Interference Statement

This radiotelephone has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This radiotelephone generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this radiotelephone in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

RF exposure compliance (MPE* compliance by FCC)

The antenna used for this transmitter must be installed to provide a separation distance of at least 0.9 meters (3 feet) from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. Users and installers must be provided with antenna installation instructions and transmitting operating conditions for satisfying RF exposure compliance.

* Maximum Permissible Exposure (MPE): The rms and peak electric and magnetic field strength, their squares, or the plane-wave equivalent power densities associated with these fields to which a person may be exposed without harmful effect and with an acceptable safety factor.

Before Operation

Concerning the symbols

This manual uses the following symbols to explain correct operation and to prevent injury or damage to property.

The symbols and descriptions are as follows. Understand them before proceeding with this manual.

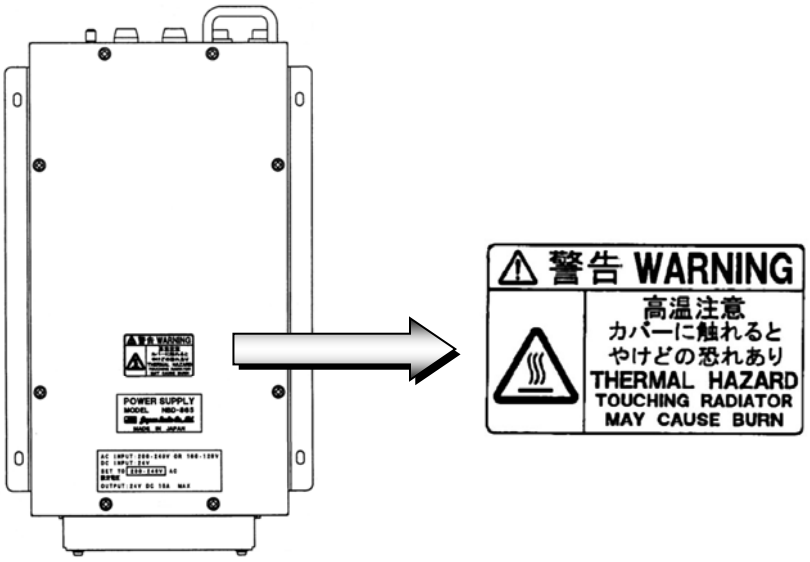
⚠ **WARNING**	Indicates a warning that, if ignored, may result in serious injury or even death.
⚠ **CAUTION**	Indicates a caution that, if ignored, may result in injury or damage to property.

Examples of symbols

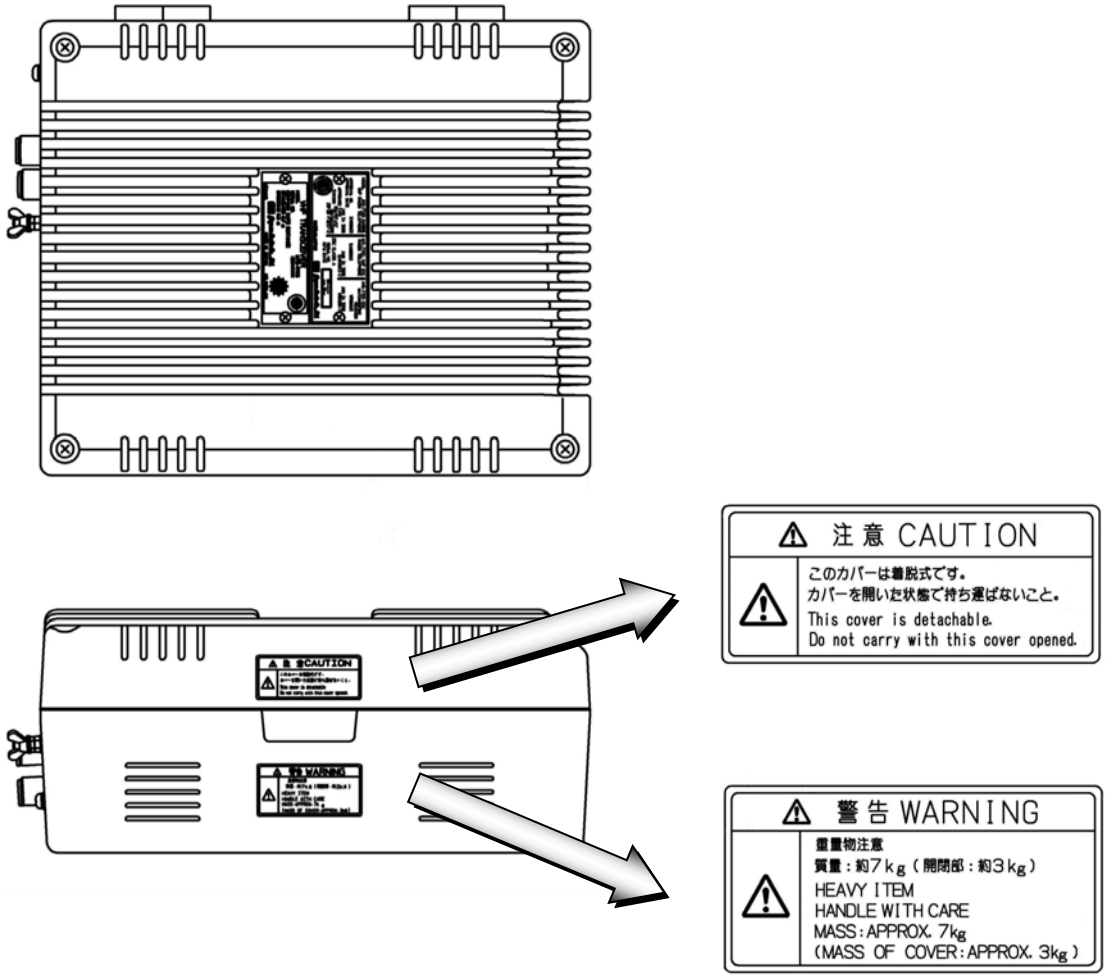
The Δ symbol indicates caution (including DANGER and WARNING). The illustration inside the Δ symbol specifies the content of the caution more accurately. (This example warns of possible electrical shock.)

The ⃠ symbol indicates that performing an action is prohibited. The illustration inside the ⃠ symbol specifies the contents of the prohibited operation. (in this example disassembly is prohibited.)

The ● symbol indicates operations that must be performed. The illustration inside the ● symbol specifies obligatory instructions. (In this example unplugging is the obligatory instruction.)



NBD-865 Power supply (Upper view)



NTE-770S/780D VHF Transceiver (Upper and side views)

Handling precaution

⚠ WARNING

Do not open the equipment to inspect or repair it. Inspection or repairs by anyone other than a specialized technician may result in fire, electrical shock, or malfunction.
If internal inspection or repair is necessary, contact our service center or agents.

Do not disassemble or customize this unit. Doing so may cause fire, electrical shock, or malfunction.

Do not get this equipment wet or spill any liquids on or near this equipment.
Doing so may cause electrical shock or equipment malfunction.

Do not touch any of the areas with warning labels.
Doing so may cause electrical shock.

Do not use a voltage other than specified.
Doing so may cause fire, electrical shock, or malfunction.

Do not remove protective covers on the high voltage terminals.
Doing so may cause electrical shock.

Do not insert anything flammable into the equipment.
Doing so may cause fire, electrical shock, or malfunction.

If a distress alert is received, make sure to inform the ship's captain or officer in charge.
Doing so may save the lives of the crews and passengers on the ship in distress.

This unit is also used for the distress communication, in addition to usual communication. Contact JRC or our agent if any problem is observed in this unit on usual operation or inspection. Do NOT ignore or leave any problems of this unit.

Always use the specified fuse when replacing a fuse. Using a different fuse may result in fire or malfunction.

Before replacing fuses of the POWER SUPPLY (NBD-865), always turn off the AC/DC power switch and power source output to this unit.

In addition to the AC fuse on the panel of the POWER SUPPLY (NBD-865), there are also DC fuses contained in the unit. Opening and working with the inside of the unit may result in fire or electrocution, so with the exception of qualified service personnel, do NOT attempt to replace the DC fuses. To replace the DC fuses, contact JRC or our agent.

⚠ CAUTION

Do not use this equipment for anything other than specified.
Doing so may cause failure or malfunction.

Do not turn the trimmer resistors or the trimmer capacitors on the PCB unit. Doing so may cause failure or malfunction. They are preset at the factory.

Do not install this equipment in a place near water or in one with excessive humidity, steam, dust or soot. Doing so may cause fire, electric shock, or malfunction.

Do not test the distress alert as doing so will inconvenience local shipping and Rescue Centers.

Do NOT turn off the power of the equipment when at sea because the SOLAS Convention requires keeping CH16 watch at all times.

Always listen to the CH16 except when talking on a specific channel.

To operate DSC and ATIS functions of this equipment, ID numbers must be registered respectively. If not been registered, contact our agent or service center.

Leave installation of this equipment to our service center or agents. Special knowledge on selecting the place where the antenna is to be mounted and setting the ID number (MMSI) assigned to the ship is required besides mounting operation.

When sending a distress alert, follow the instructions of the ship's captain or officer in charge.

If a false distress alert is transmitted accidentally, select the Cancel menu and transmit the distress cancel referring the guidance displayed on the controller. And then report the false distress alert to a nearby RCC (Rescue Coordination Center/ in Japan, inform the nearest Japan Coast Guard.)

Information to be reported:

Ship's name, type, nationality, and ID number, the date/time, location and reason why the false distress alert was transmitted. Also the unit model name and manufacture number/date, if possible.

To turn off an alarm or clear a display such as a received DSC message, do NOT press the DISTRESS key. Doing so may cause a false distress alert.
(Press the CANCEL key to turn off the alarm and delete the on screen message.)

⚠ CAUTION

When sending a drobose call, do NOT press the DISTRESS key. Doing so may cause a false distress alert.
(Drobose calls can be sent via [Call] button displayed on the screen.)

A distress acknowledgement or a distress relay call can be transmitted from a received distress message stored in the log, but when sending such a kind of call, follow the instructions of the ship's captain or officer in charge.

In order to avoid accidental distress message treating, received distress messages will be erased automatically after 48 hours elapsed since the reception. Accordingly, if such messages cannot be read out, it is NOT a malfunction.

The time in the menu 9.1.2 Present time is different from the time in the menu 9.2.2 UTC of position that means the time when the position information is valid.

The time in the menu 9.2.2 UTC of position means the time when the position information is valid, and is different from the present time mentioned above.

Close the water-resistant cap of the waterproof type handset box after use. Rain and sea breeze could cause connector malfunction. Also do not leave the handset above deck.

The thermal head of the printer may be very hot after printing. Do not touch it. Perform paper replacement and head cleaning only after waiting for the head to completely cool.

The printing paper used in this printer is a heat sensitive paper. Take the following precautions when using this paper.

- Store the paper away from heat, humidity, or heat sources.
- Do not rub the paper with any hard objects.
- Do not place the paper near organic solvents.
- Do not allow the paper to come in contact with polyvinyl chloride film, erasers, or adhesive tape for long periods of time.
- Keep away the paper from freshly copied diazo type or wet process copy paper.

For the CHANNEL SELECTOR (NCM-2000) installed above deck, close the water-resistant cap after use. Rain and sea breeze could cause connector malfunction. Also do not leave the handset above deck.

Always set the expanded MMSI in the bridge of the vessel to zero (0). If setting to another value other than zero, DSC calls may not be received.

DISTRESS ALERTS

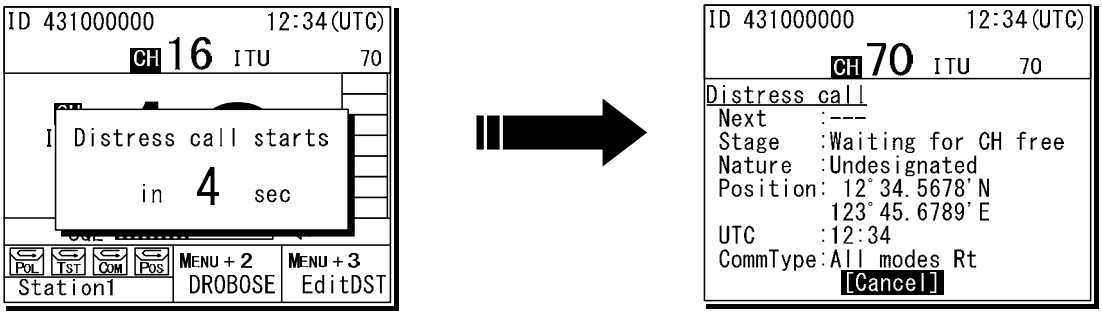
Sending a Distress Alert

⚠ CAUTION

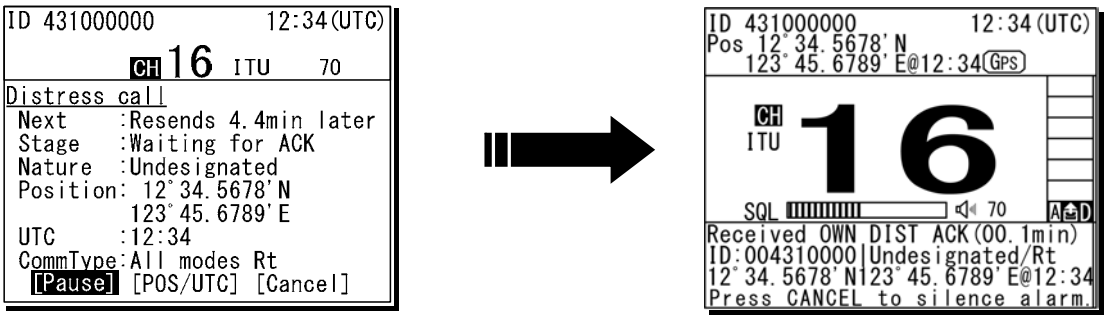
When sending a distress alert, follow the instructions of the ship's captain or officer in charge.

1. Open the DISTRESS key cover on the NCM-1770 CONTROLLER.

2. Press and hold the DISTRESS key for 4 seconds. (See the note below.)
When the countdown is finished, the screen below on the right is displayed and after confirmed that the channel is free or after 1 seconds, whichever occurs first, the distress alert is transmitted.



3. After sending the distress alert, wait for an acknowledgement.
The radiotelephone can be used to communicate even while waiting for an acknowledgement on the screen below left. When an acknowledgement is received, press the CANCEL key or ENT to cancel the alarm on the below right screen, and communicate with the station. Unless an acknowledgement is received or the distress alert is cancelled manually, the equipment repeats the distress alert every 3.5 to 4.5 minutes.

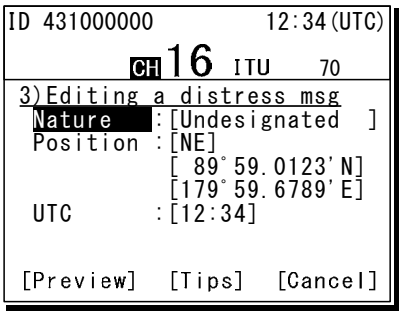


4. After receiving acknowledgement, lift the handset and request rescue using CH16 of the radiotelephone.
First, the responding station calls by radiotelephone. Communicate the following information to that station.

Say "MAYDAY", "This is (name of your ship)", Tell the ship's Maritime Mobile Service Identity number, call sign, ship's position, nature of distress, and rescue requests.

Note If time permits, enter the nature of the distress as follows, just before sending the distress alert. (For more details, see 4.4.5.2.)

1) **Open menu 3. Editing a distress msg.**
2) **Press ENT on the screen at right and select the nature of the distress.**
3) **Press ENT to confirm the selection.**
   The nature of the distress is set. If the position and time (UTC) are not displayed automatically for any reason, input them manually at this time.
4) **Press and hold the DISTRESS key for 4 seconds to send the distress alert.**
   The rest of the procedure is the same as described above.



Terminating a Distress Alert

⚠ CAUTION

If a false distress alert is transmitted accidentally, select the Cancel menu and transmit the distress cancel referring the guidance displayed on the controller. And then report the false distress alert to a nearby RCC (Rescue Coordination Center/ in Japan, inform the nearest Japan Coast Guard.)

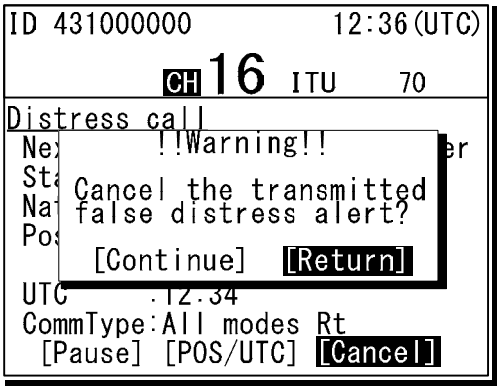
Information to be reported:

Ship's name, type, nationality, and ID number, the date/time, location and reason why the false distress alert was transmitted. Also the unit model name and manufacture number/date, if possible.

Select the Cancel menu and press ENT on the NCM-1770 VHF CONTROLLER.

The screen shown below is displayed. Then select Continue with the jog dial and press ENT to start the distress cancel procedure referring the guidance displayed on the controller.

Note) For more details, see the description in the 4.4.5.1 Quick distress alerts.



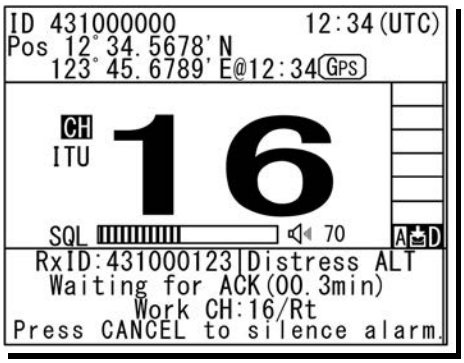
Receiving a Distress Alert

⚠ WARNING

If a distress alert is received, make sure to inform the ship's captain or officer in charge.
Doing so may save the lives of the crews and passengers on the ship in distress.

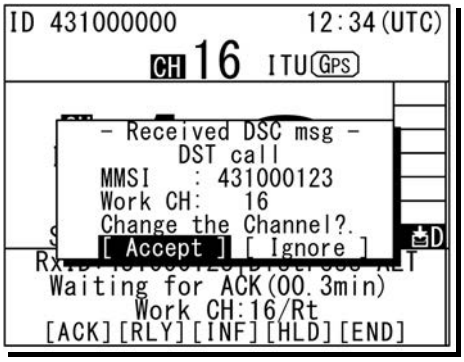
1. When a distress alert is received, the information such as the ID number of the ship in distress and the stage of the distress event are displayed.

If the equipment is not used, i.e. there is no active procedure at that time, the CH16 is set and the ALM lamp starts blinking, and an alarm gradually grows louder.

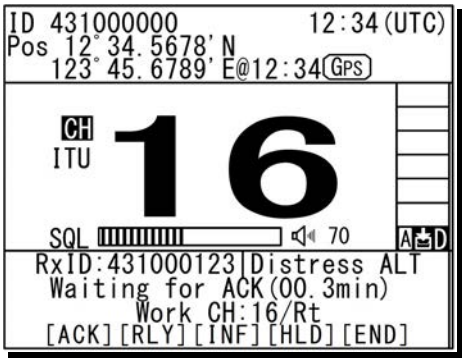


Note

Even If there is no active procedure as above, when the menu "9.5.8 Auto CH change" is OFF, the channel is not automatically changed to CH16.
In this case, after pressing the **CANCEL** key to stop the alarm, select the "Accept" on the popup screen to set the CH16 and skip to step 3.



2. Press the CANCEL key to stop the alarm.
Keep watch on CH16 for at least 5 minutes, and notify the coast station as appropriate.



3. To acknowledge to the distress alert after coordination with the coast station, from the above screen, press FUNC key to move the active screen to the message control area to select ACK and press ENT to send the acknowledgement.

After sending it, commence distress traffic via radiotelephony on CH16 as follows.

- Say "MAYDAY",
- Repeat the identity (MMSI) of the ship in distress 3 times,
- Say "This is",
- Repeat the identity (MMSI) of your ship 3 times,
- Say "RECEIVED MAYDAY".

Equipment exterior

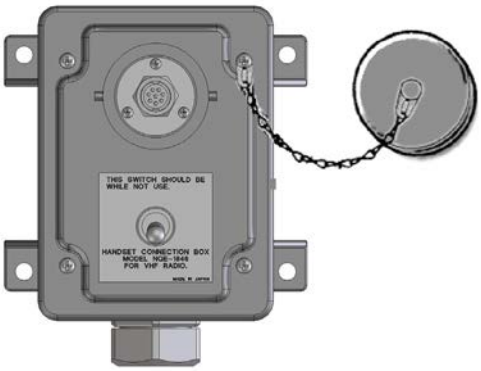
- JHS-770S/780D VHF Marine Radiotelephone

NTE-770S/780D　VHF Transceiver

NCM-1770　VHF Controller / NQW-261 Handset

- NQE-1845 Handset Connector Box
  Waterproofed flush mount type
  (for wing console)

- NQE-1846 Handset Connector Box
  Waterproofed wing installation type

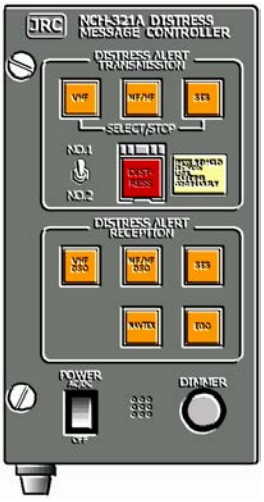


- NQE-1847 Handset Connector Box
  Indoor flush mount type

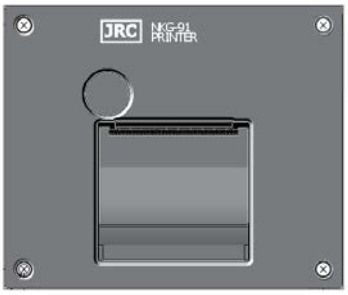
- NCM-2000 VHF Channel Selector

- NBD-865 AC/DC Power Unit

- NCH-321A Distress Message Controller



- NKG-91 Printer



- NKG-901 Printer

- DPU-414 Printer

- NVS-423R External Speaker

Contents

Glossary of terms

This section contains general and DSC terms related to this equipment.

● General terms

AIS（Automatic Identification System）
Equipment that transmits a ship's Maritime Mobile Service Identity number, ship name, ship position, speed, orientation, and other information to and from other ships. AIS equipment is required on some ships by the International Convention for the Safety of Life at Sea (SOLAS)

ATIS（Automatic Transmitter Identification System）
This is used for notification of the radio station ID to receivers when using European inland waterway (IWW) channels.

CCG（Canadian Coast Guard）
Canadian Coast Guard

DSC（Digital Selective Calling）
Used in routine calls, safety and urgency calls, and distress alerts for rescue request.

GMDSS（Global Maritime Distress and Safety System）
Global Maritime Distress and Safety System

GPS（Global Positioning System）
Global Positioning System

IMO（International Maritime Organization）
International Maritime Organization

Intercom
Wired communications equipment or functionality

ITU（International Telecommunication Union）
The leading United Nations agency for information and communication technologies. Establishes conventions and regulations for all electrical communications. It contains internal organizations such as ITU-R and ITU-T.

ITU-R
The International Telecommunication Union (ITU) radio communications department

IWW（Inland Waterway）
Inland Waterway

LT（Local Time）
Local Time

MMSI（Maritime Mobile Service Identity）
The 9-digit Maritime Mobile Service Identity number assigned to each ship and coast station.

NMEA（National Marine Electronics Association）
Maritime equipment transmission standard established by the National Marine Electronics Association

NNSS（Navy Navigation Satellite System）
Doppler based satellite positioning system operated by the United States Navy.

PA（Public Address）
Sound amplification equipment
In this radiotelephone equipment, it is a function for using an external public address.

PTT（Push To Talk）
Handset button pressed to talk

RCC（Rescue Co-ordinate Center）
In Japan, the Japan Coast Guard.

RMS（Remote Maintenance System）
Transmits ship equipment information temporarily stored in VDR via Inmarsat to land, for use in maintenance and management of radio equipment.

RR（Radio Regulations）
Intergovernmental treaty text of the ITU

SAR Convention（International Convention on Maritime Search and Rescue）
International Convention on Maritime Search and Rescue

SOLAS Convention（International Convention for Safety of Life at Sea）
The international convention applied to all ships engaged on international voyages. A safety certificate is issued if the conditions of this convention are satisfied.

SQL（Squelch）
A function that acts to suppress the audio output of a receiver in the absence of a sufficient radio strength signal.

Station
A radio station, or a control terminal for radio equipment

USCG（United States Coast Guard）
United States Coast Guard

UTC（Universal Time Coordinated）
Universal Time Coordinated

VDR（Voyage Data Recorder）
After a maritime accident, recovered to analyze the recorded data (speed, rudder, bridge conversation, VHF audio, etc.) to determine the cause of the accident.
It can also transmit navigation management data regularly via Inmarsat to land.

VHF（Very High Frequency）
Very High Frequency (30 - 300MHz)

VOL（Volume）
Internal speaker volume

WRC（World Radiocommunication Conference）
World Radiocommunication Conference

WMO（World Meteorological Organization）
World Meteorological Organization

WKR（Watch Keeping Receiver）
Dedicated receiver for CH70 to watch the DSC signals.

● DSC terms

Address
General term for Maritime Mobile Service Identity number (MMSI)
This equipment uses To/From to distinguish between the sender and receiver. It also means the Self-ID (own ship MMSI) and Dist-ID (MMSI of a ship in distress).

Category
Message code indicating priority of the call.
It contains types as below.
- Routine .....General calls for routine works
- Safety .....Safety communications call
- Urgency .....Urgent communications call
- Distress.....Distress alert

DROBOSE
Distress relay call (to individual or to area) on behalf of someone else who is in distress.

EOS（End Of Sequence）
Termination code appended to the call messages.
It contains types as below.
- EOS.....End of sequence
- ACK RQ.....Acknowledgement request
- ACK BQ.....Acknowledgement responding to the ACK RQ

ECC（Error Check Character）
Error check code appended to the end of call messages.
This is not normally displayed, but if an error occurs, one of the following will be displayed.
- ECC error ....Message error
- Ex ECC error....Expansion message error

Format
Message code indicating type of call.
It contains types as below.
- Individual call.....Individual call
- Individual ACK.....Acknowledgement response to individual call
- Individual NACK ....Negative acknowledgement response to individual call
- Semi/auto call.....PSTN connection call
- Semi/auto ACK.....PSTN call acknowledgement
- Semi/auto NACK ...PSTN call negative acknowledgement
- Group call.....Call to ships having common interest
- All ships call.....Call to all ships
- Distress .....Distress alert

Nature of Distress
Message code indicating type of distress when a distress call is issued.
It contains types as below.
- Fire .....Fire, explosion
- Flooding .....Flooding
- Collision.....Collision
- Grounding.....Grounding
- Listing.....Risk of ship capsizing
- Sinking .....Sinking
- Disabled .....Ship inoperable/adrift
- Undesignated .....Undesignated distress
- Abandoning .....Abandoning ship
- Piracy attack.....Piracy attack
- Man overboard .....Man overboard
- EPIRB emission ....DSC VHF EPIRB reception

Polling
Polling is a feature for routine calling.

It is used, for example, to confirm whether a ship is existing within radio range when a coast station requests navigational information to the ship.

PSTN（Public Switched Telephone Network）

General fixed landline telephone network.

Reason

Message code indicating reason for negative acknowledgement response.

- No reason ..... No reason
- Congestion..... Maritime information exchange center congested
- Busy..... Busy
- Queue..... Queued
- Barred..... Station barred
- No operator..... No operator
- Temp no oper..... Temporarily no operator
- EQP disabled..... Equipment disabled
- Unable channel..... Indicated channel cannot be used
- Unable mode…..... Indicated mode cannot be used

Subject

Message code clarifying communication contents when sending an urgency call to all ships.
When sailing dangerous waters, such as political instability, these call messages with the following information are used.

- Neutral ship..... In accordance with ITU resolution 18 (Mob-83), inform all ships that own ship is of neutral nationality.
- Medical TRNSP .... Inform all ships that own ship is performing medical transportation, and is protected under the 1949 Geneva Convention.

Type

Main contents of call message.
Normally, the 1st telecommand will be indicated, but for a distress related call, it may also take into account the Format and the EOS. Displayed when message is received, as well as in LOG.

- All modes RT .....All F3E/G3E radiotelephones
- Duplex RT.....Duplex F3E/G3E radiotelephones
- Polling.....Polling
- Data.....Data transmission
- Position RQ .....Ship position request
- Ship position.....Ship position notification
- Test.....Safety test call
- Unable to comply ....Negative acknowledgement
- Distress.....Distress message
- Distress ACK .....Acknowledgement of distress message
- Distress relay.....Distress relay message
- Dist-relay ACK .....Acknowledgement of distress relay message
- Drobose.....Distress relay message on behalf of someone else

Work CH

Message code indicating a work channel to communicate using radiotelephone.

1. EQUIPMENT OVERVIEW

1.1 Functions

This equipment includes VHF radiotelephone, Class-A DSC and DSC watchkeeping receiver required as the Global Maritime Distress and Safety System (GMDSS). It is designed as a separated transceiver and small, lightweight controller(s) for easy installation not only in international passenger ships and freight ships of 300 tons or more, but also conventional ships of less than 300 tons.
It has the radiotelephone, the DSC communication functions, received voice recording and playback function, and self-diagnosis function with simple operation using a dedicated key. Additionally, it offers such as public address function using an external speaker, intercom function for communication between controllers, and the DSC calling function using an automatic identification system (AIS) information.

1.2 Features

- Compliant with the ITU Radio Regulations (RR), the IMO performance standards, and the ITU-R recommendations.
- Contains all channels specified in the ITU Radio Regulations (RR).
- In addition to channels specified in the ITU Radio Regulations (RR), this equipment also provides USA, Canada, European inland waterway, and weather channels. It also allows the use of up to 200 private channels.
- Contains ATIS (Automatic Transmitter Identification System) function for the inland waterway channels.
- Separately designed transceiver and controller enable easy installation in limited or difficult spaces.
- A semi-transmissive LCD with a wide viewing angle features easily viewable even when with straight light or backlit and allows it to install variety positions.
- The backlights of the LCD and operation keys are fully adjustable, preventing interference with night watch keeping.
- The DSC has the automated procedure mentioned in the Recommendation ITU-R M.493 to supply the easy operation such as the suitable menu/indication for the ongoing procedure. And also a routine call can be sent quickly only by pressing the dedicated routine call key and selecting address.
- When in distress, the DSC can send the distress message with the expanded position data containing the digits up to 1/10000 of minutes for both latitude and longitude to make search and rescue operation by the RCC easier.
- The received voice recording and playback function enables later confirmation or temporary saving of communications.
- An advanced digital audio amplifier with a built-in loud speaker provides $5W_{max}$ of clear audio.
- A dedicated self-diagnosis key makes maintenance and inspection simple.
- Besides printers and GPS, other peripherals such as the AIS, the VDR, and/or remote maintenance systems (RMS) can be connected to this equipment.

1.3 Basic configuration

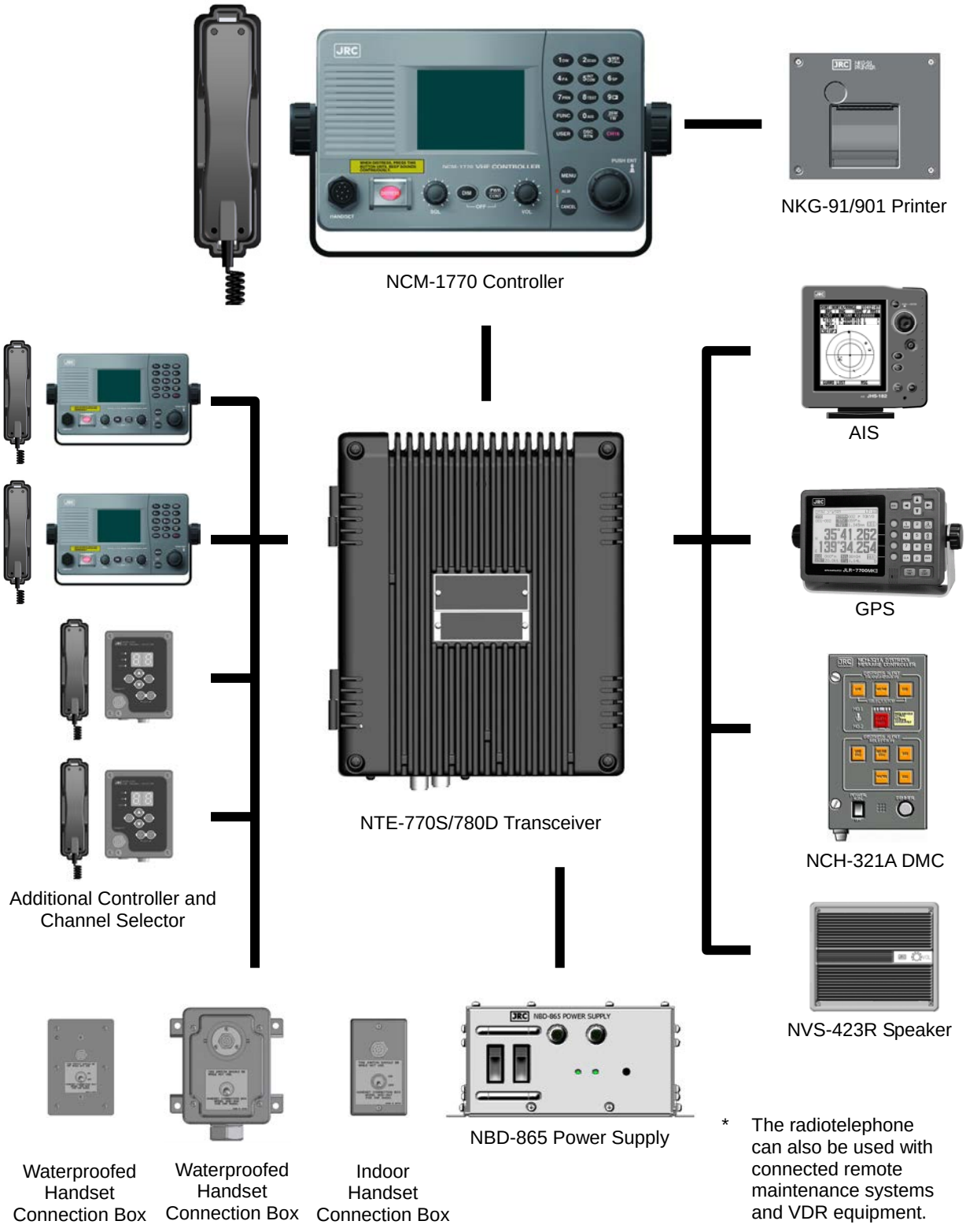
1.3.1 Basic configuration of the main unit

No.	Product Name	Model Name	Qty	Notes
1	VHF Transceiver	NTE-770S, or NTE-780D	1	NTE-770S: JHS-770S,Simplex NTE-780D: JHS-780D,Duplex
2	VHF Controller	NCM-1770	1	
3	Handset	NQW-261	1	Includes the cradle
4	Connection cable	7ZCJD0299A	1	
5	Instruction Manual	7ZPJD0632	1	This manual

1.3.2 Options

No.	Product Name	Model Name	Notes
1	TRX Antenna	7ABJD0004	1.29m Dipole type
2	WKR Antenna	7ABJD0004	1.29m Dipole type
3	Antenna mounting bracket	MPBX41928A	Used for each antenna
4	Coaxial connector	N-P-10U	
5	AC/DC Power supply	NBD-865	
6	VHF Controller	NCM-1770	NCM-1770 and NCM-2000 can add up to a total of four units
6-1	Flush mounting bracket	MPBC42957	
6-2	Mounting bracket	MPBX44354	
7	VHF Channel selector	NCM-2000	Waterproof type (IP66 equivalent)
7-1	Connection box	NQE-7720	For stand-alone installation above deck
8	Connection box	NQD-2770	For connecting additional controllers or channel selectors
9	Handset	NQW-261	Waterproof type (IP66 equivalent) For controllers and channel selectors
10	Handset connection box	NQE-1845	Wing console/ flush mount type (IP66 equivalent)
11	Handset connection box	NQE-1846	Wing installation type (IP66 equivalent)
12	Handset connection box	NQE-1847	Indoor flush mount type
13	Printer	NKG-91	Wall mount or flush mount type
13-1	Printer connection cable	7ZCJD0254A	
13-2	Printer paper	7ZPJD0384	
13-3	Wall mounting bracket	MPBP31446A	
14	Printer	NKG-901	Wall mount or flush mount type
14-1	Printer connection cable	7ZCJD0254A	
14-2	Printer paper	7ZPJD0384	
14-3	Wall mounting bracket	MPBP32159	
15	Printer	DPU-414	Desktop type
15-1	Printer connection cable	7ZCJD0254A	
15-2	Printer power cable	7ZCJD0257C	
15-3	Printer paper	6ZCAF00252A	
16	External speaker	NVS-423R	Wall mount type
17	Distress message controller	NCH-321A	
18	Handmic	NVT-140L	For JHS-770S only and unavailable for JHS-780D

1.3.3 System configuration

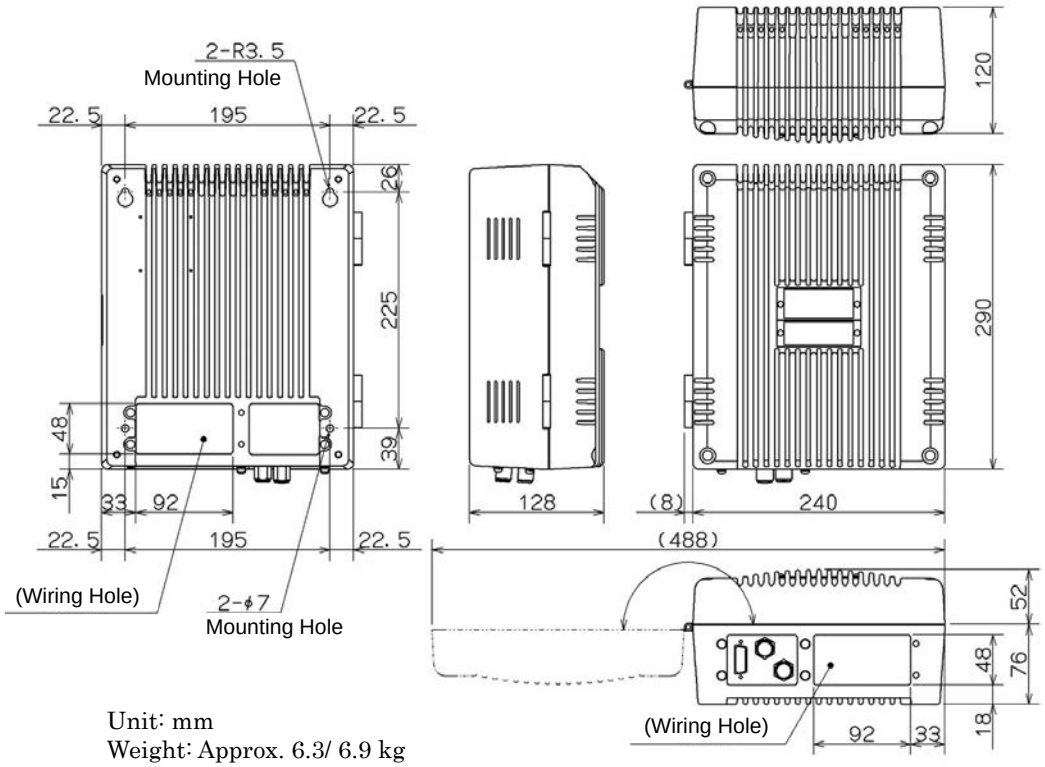


* The radiotelephone can also be used with connected remote maintenance systems and VDR equipment.

1.4 External dimensions

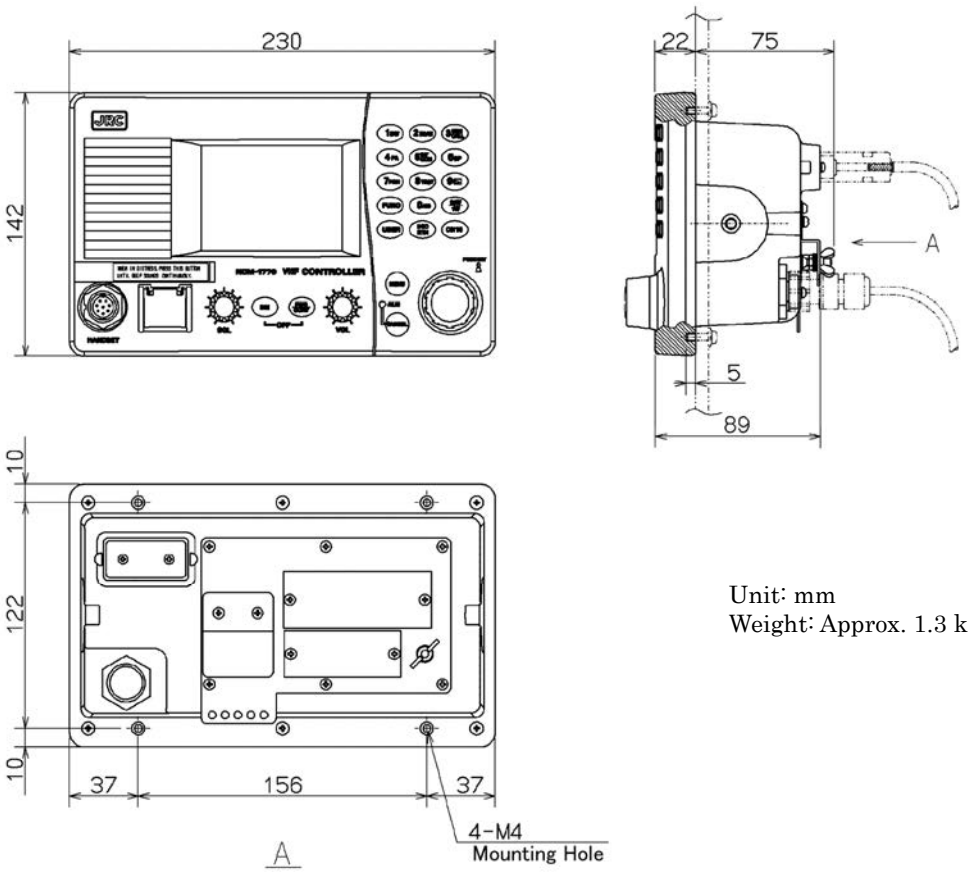
Below are the external dimensions of each unit.

(1) VHF Transceiver (NTE-770S/780D)



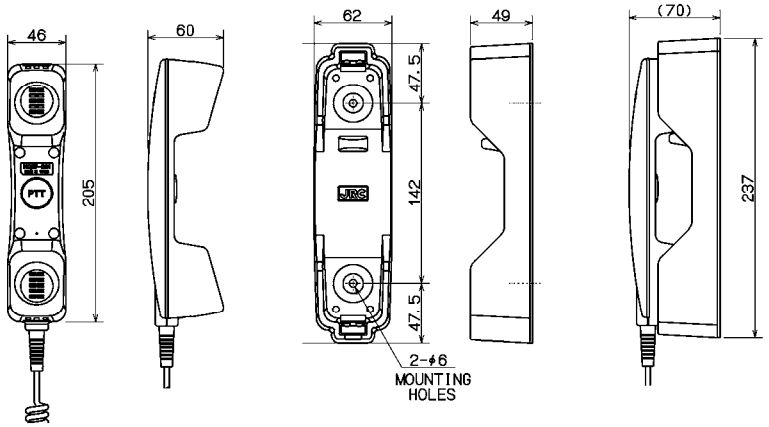
Unit: mm
Weight: Approx. 6.3/ 6.9 kg

(2) VHF Controller (NCM-1770)



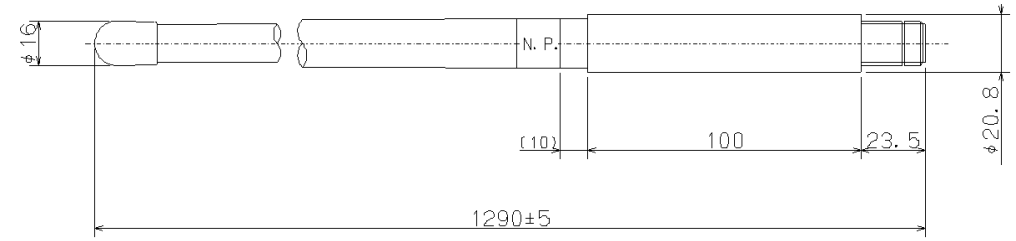
Unit: mm
Weight: Approx. 1.3 kg

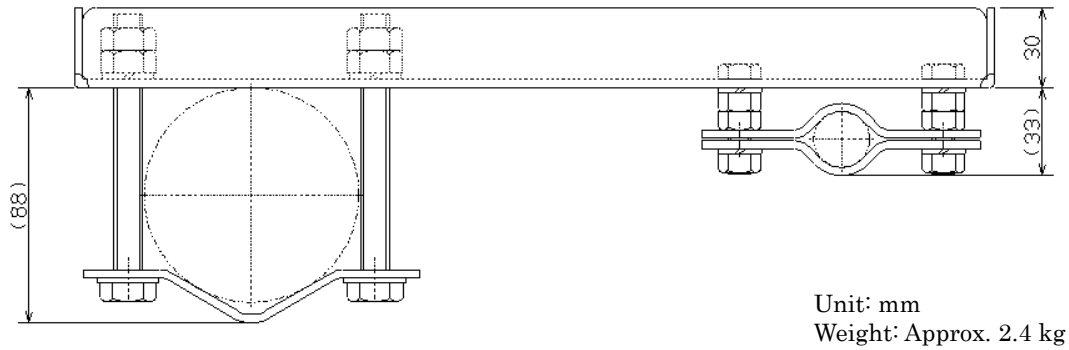
(3) Handset (NQW-261)



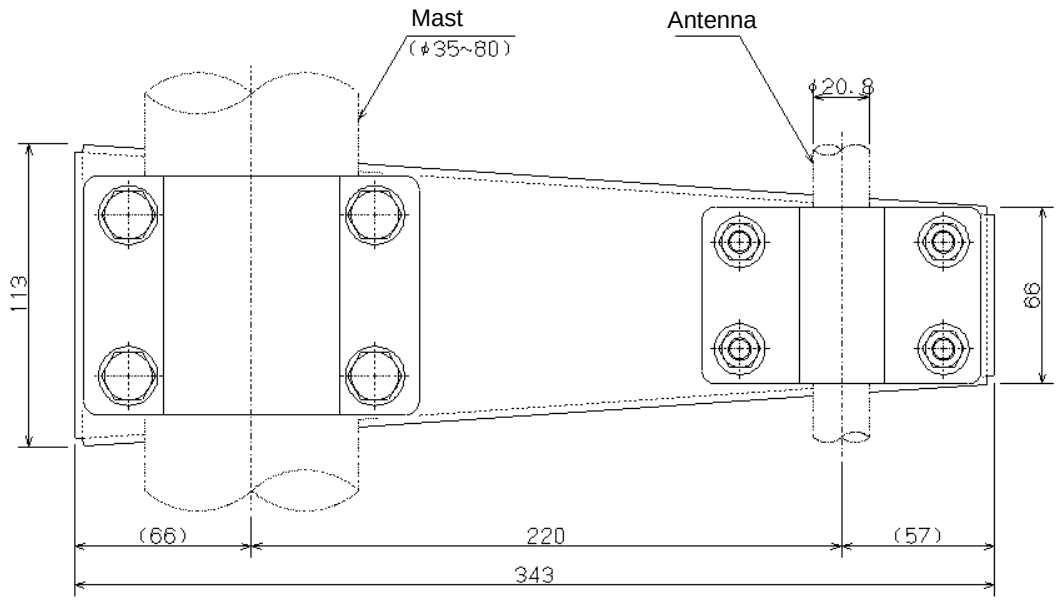
Unit: mm
Weight: Approx. 0.5 kg

(4) Antenna (7ABJD0004) and Mounting bracket (MPBX41928A)

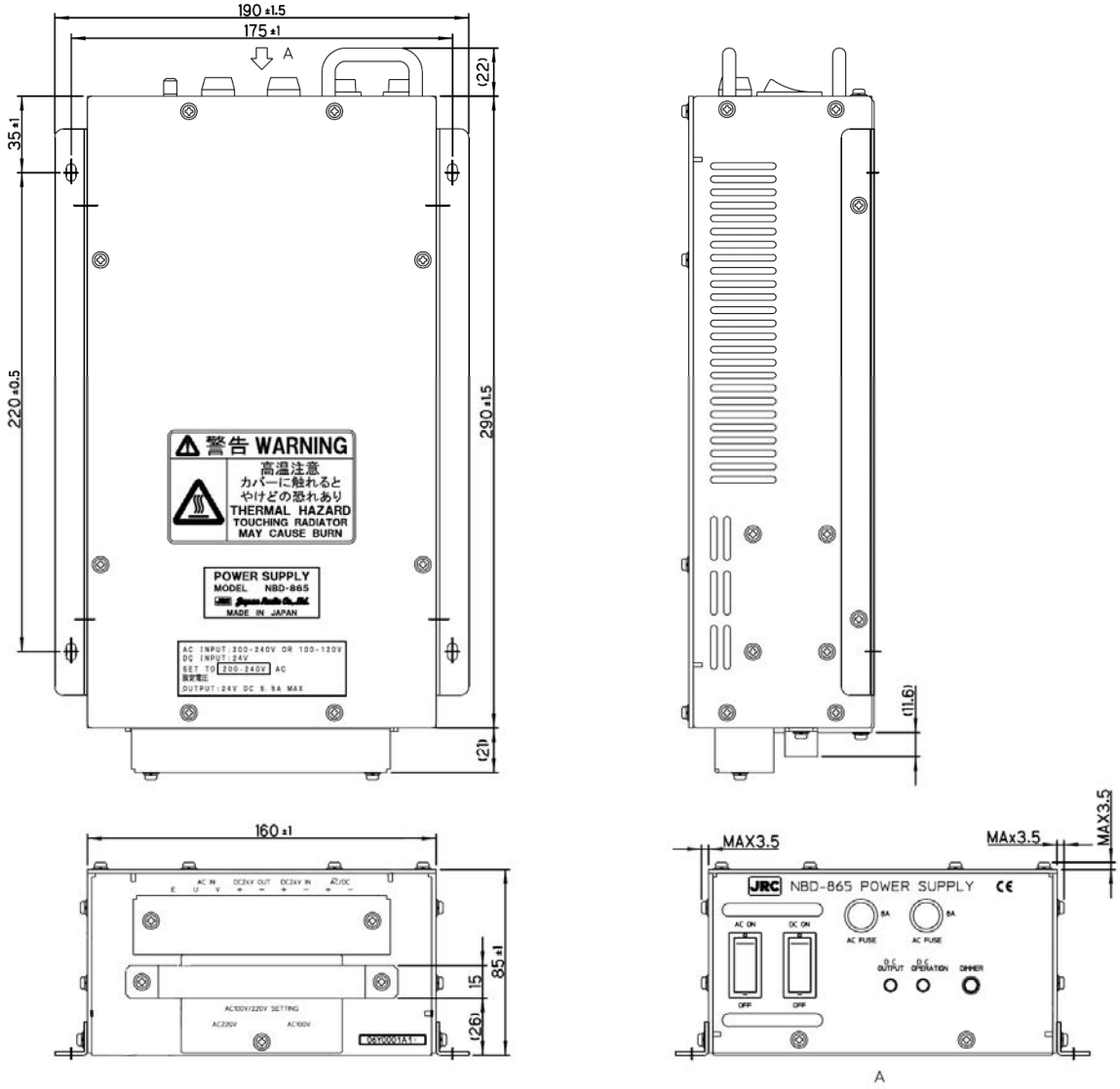




Unit: mm
Weight: Approx. 2.4 kg

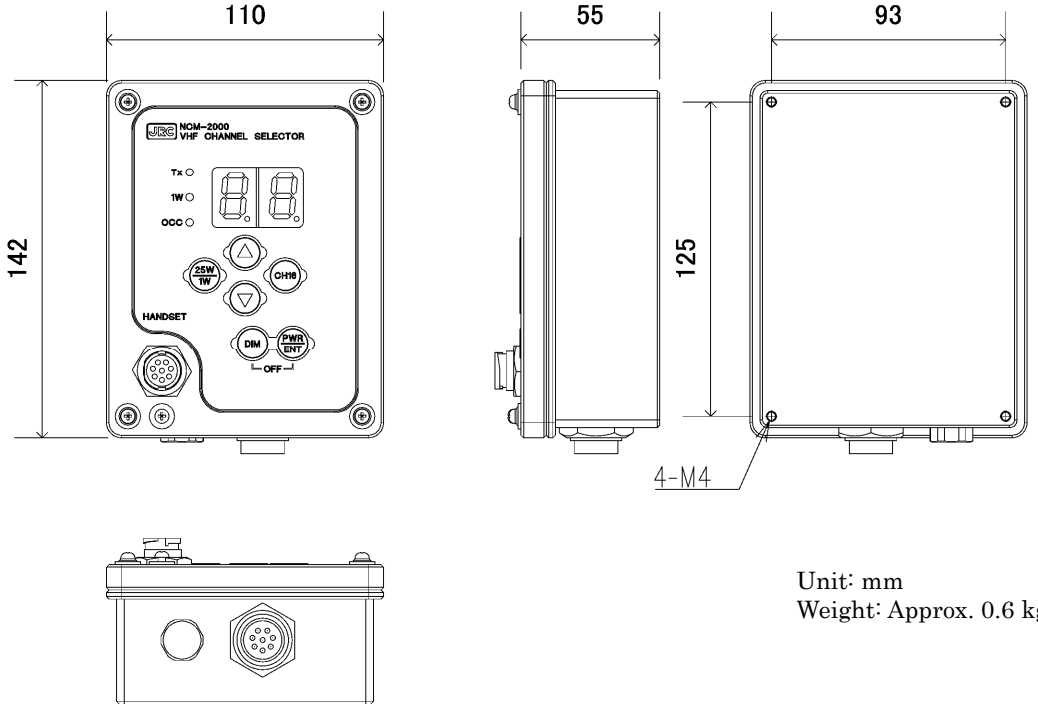


(5) AC/DC Power supply (NBD-865)



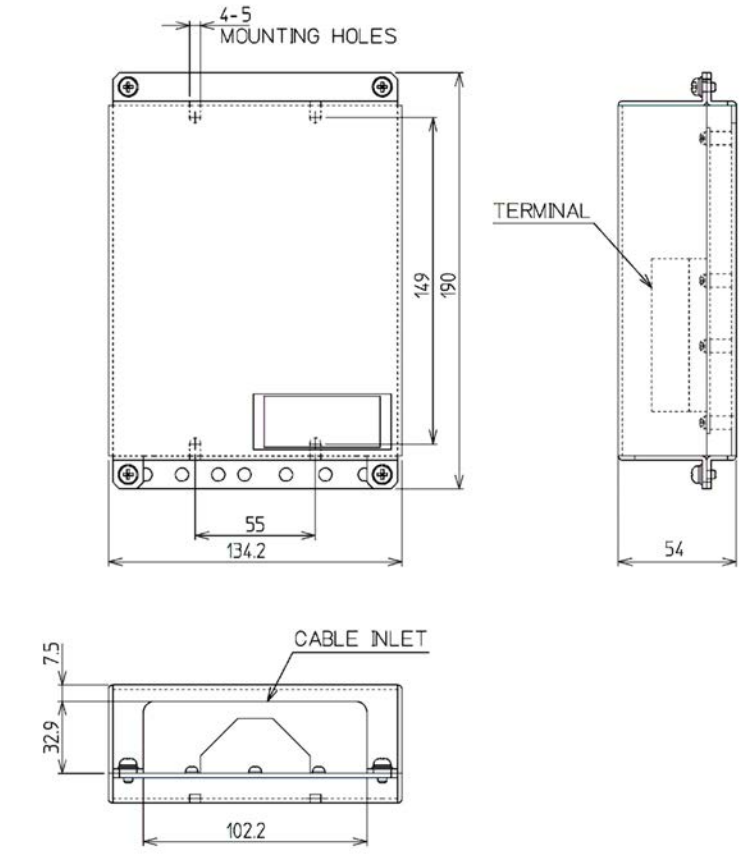
Unit: mm
Weight: Approx. 6.1 kg

(6) VHF Channel selector (NCM-2000)



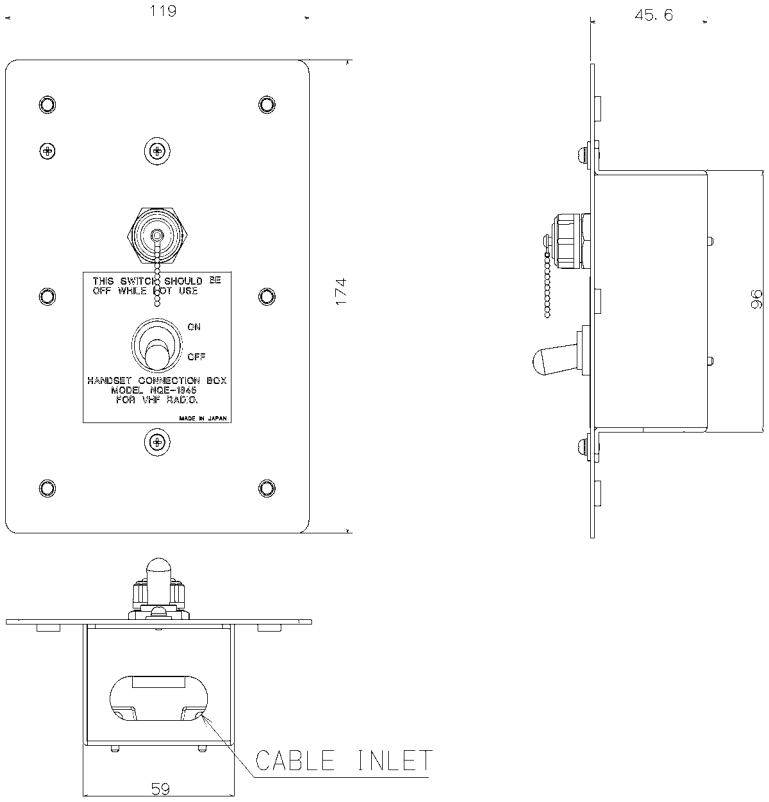
Unit: mm
Weight: Approx. 0.6 kg

(7) Controller connection box (NQD-2770)



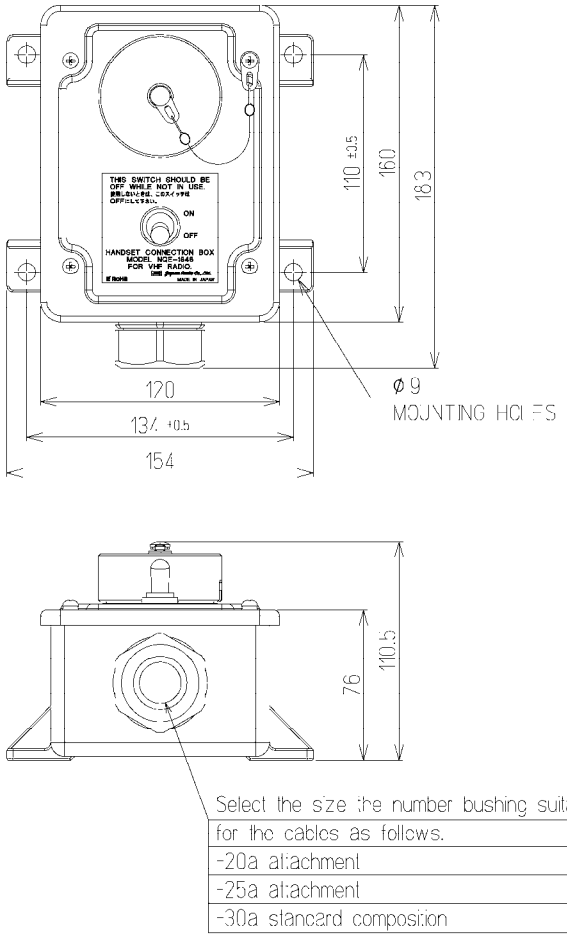
Unit: mm
Weight: Approx. 0.6 kg

(8) Handset connection box (NQE-1845)



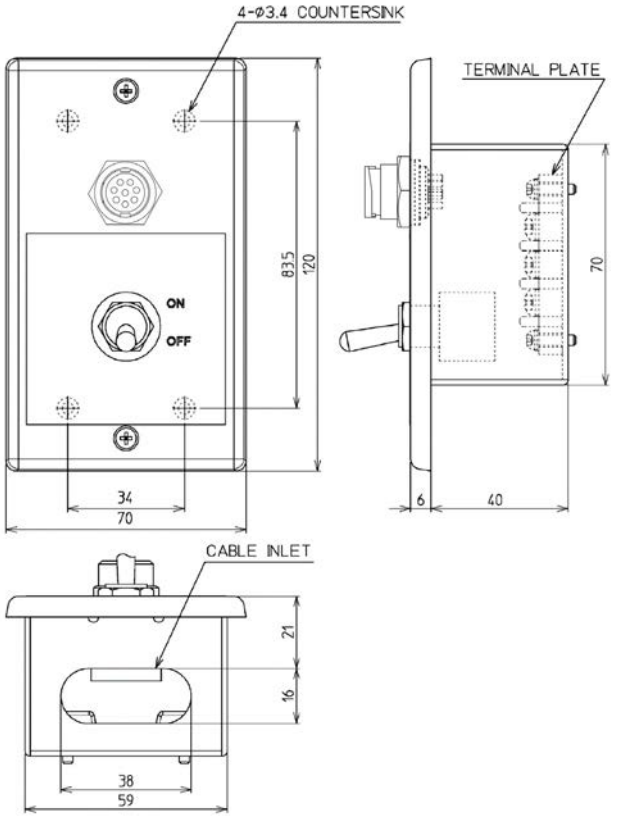
Unit: mm
Weight: Approx. 0.5 kg

(9) Handset connection box (NQE-1846)



Unit: mm
Weight: Approx. 1.1 kg

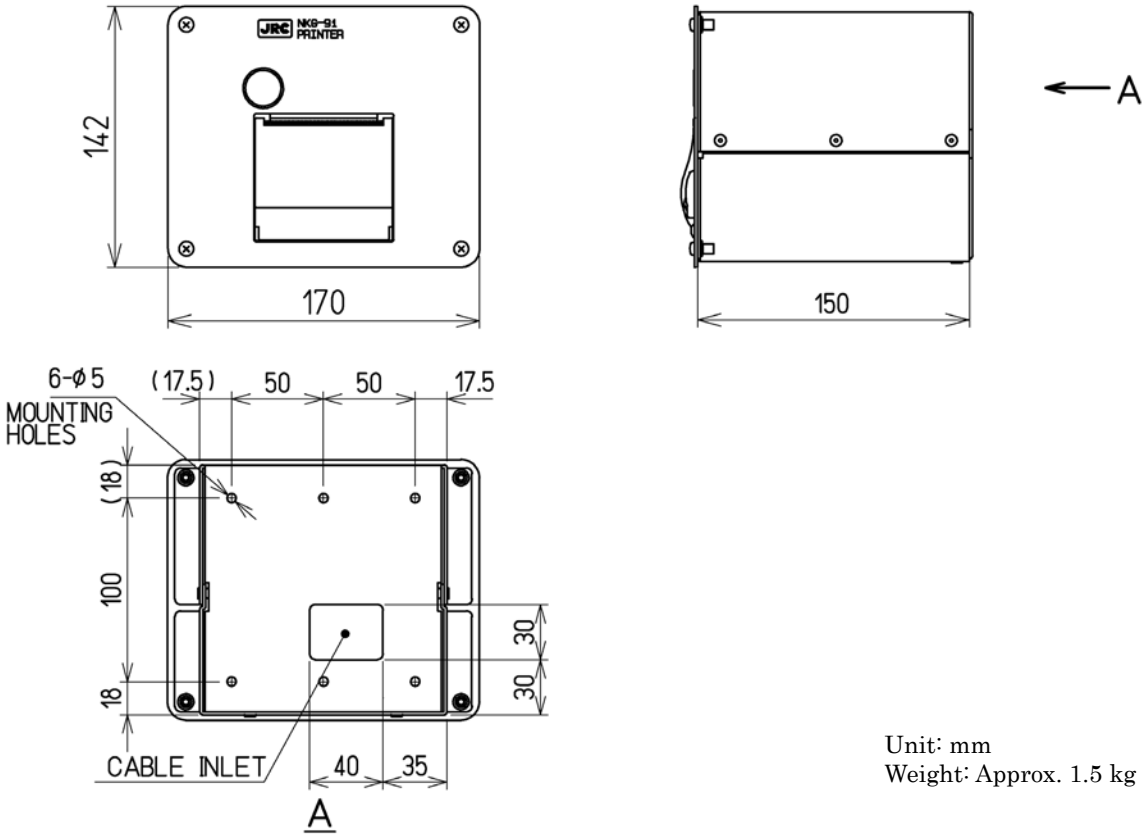
(10) Handset connection box (NQE-1847)



Unit: mm
Weight: Approx. 0.3 kg

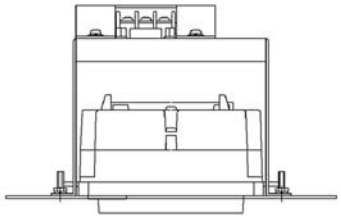
(11) Printer (NKG-91)

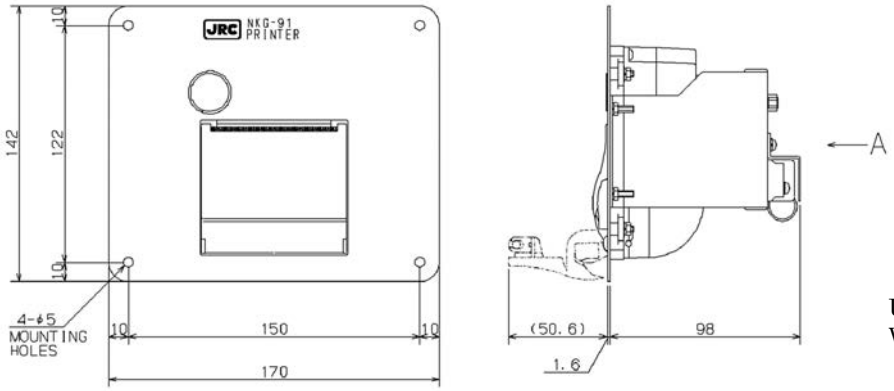
- Wall mount type



Unit: mm
Weight: Approx. 1.5 kg

● Flush mount type

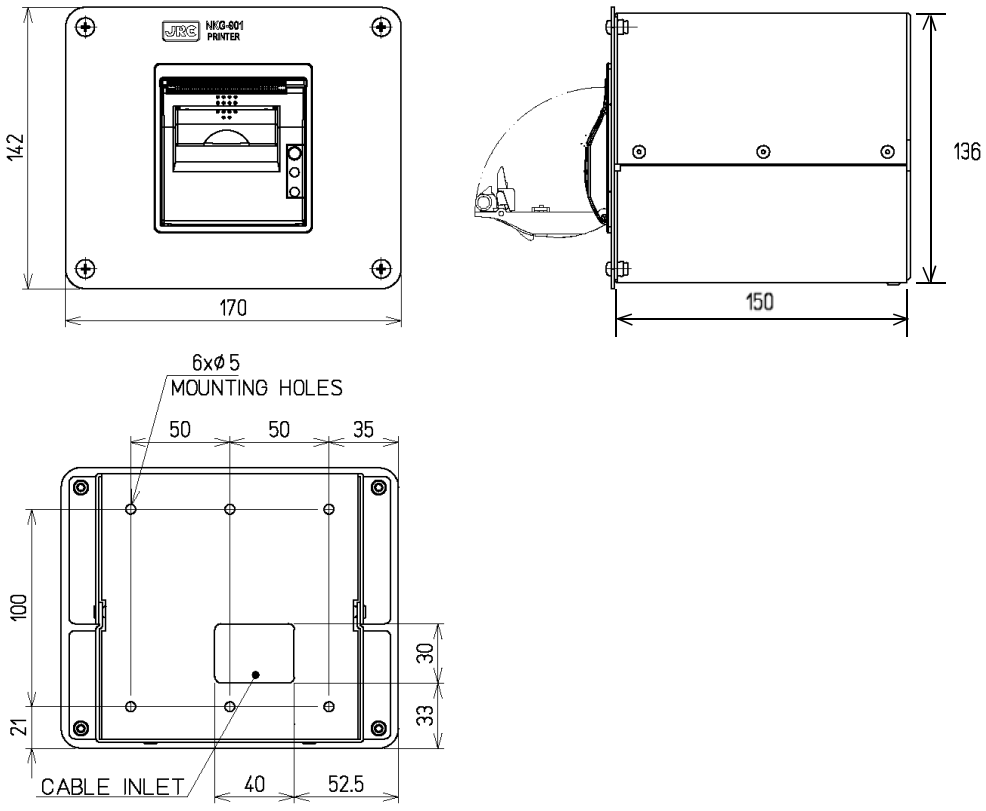




Unit: mm
Weight: Approx. 0.8 kg

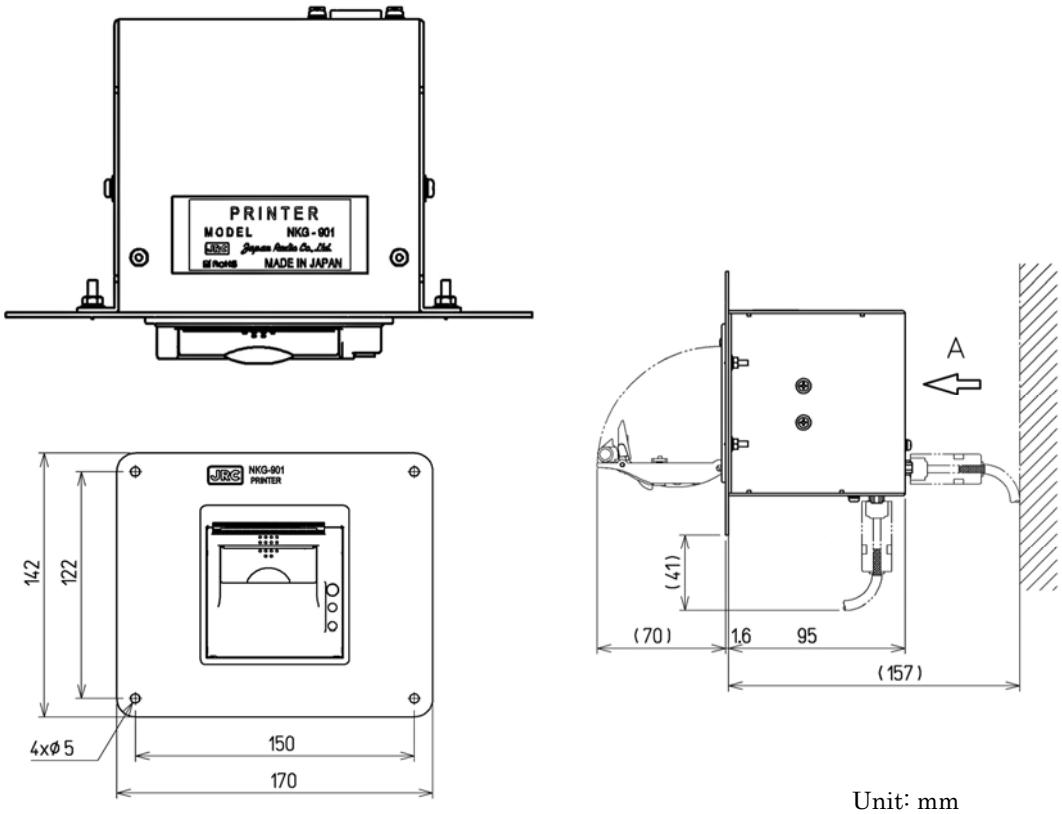
(12) Printer (NKG-901)

● Wall mount type



Unit: mm
Weight: Approx. 1.5 kg

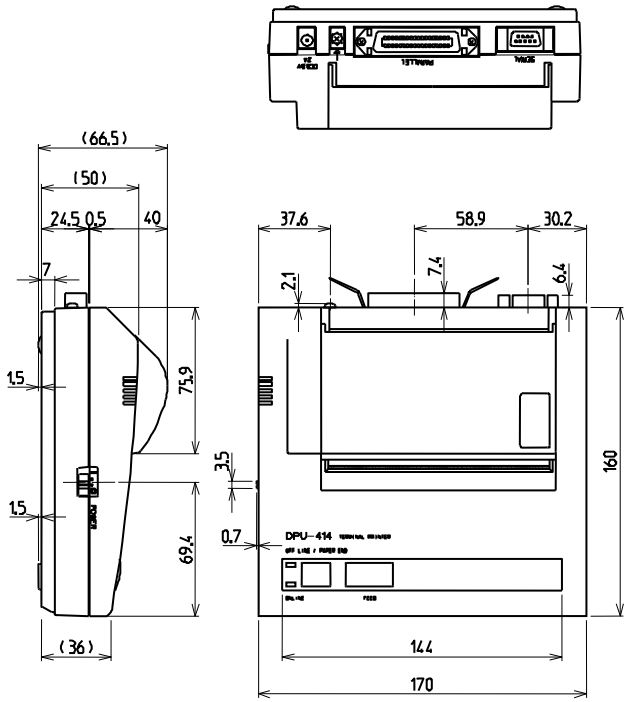
● Flush mount type



Unit: mm
Weight: Approx. 0.8 kg

(13) Printer (DPU-414)

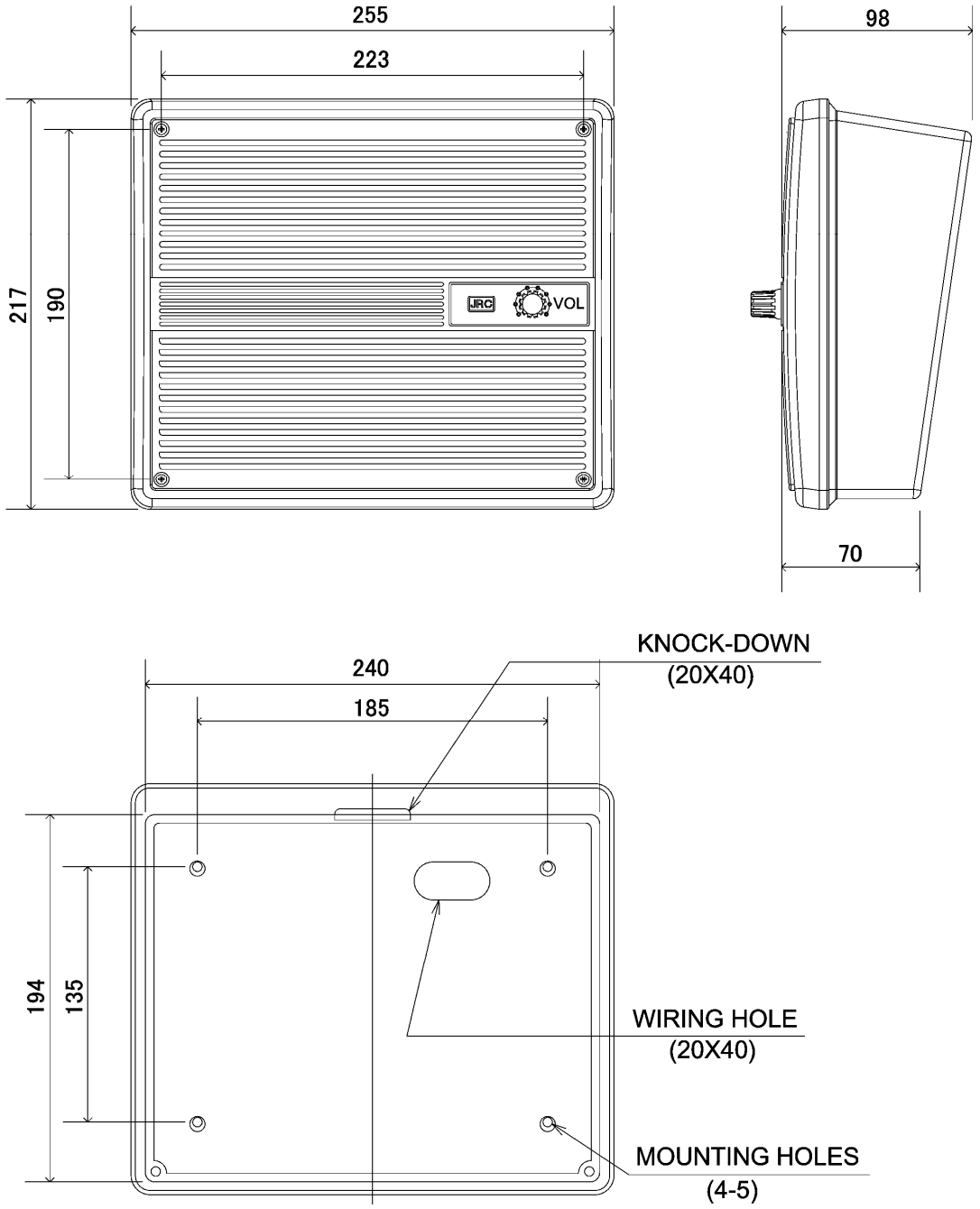
● Desktop type



Unit: mm
Weight: Approx. 0.6 kg

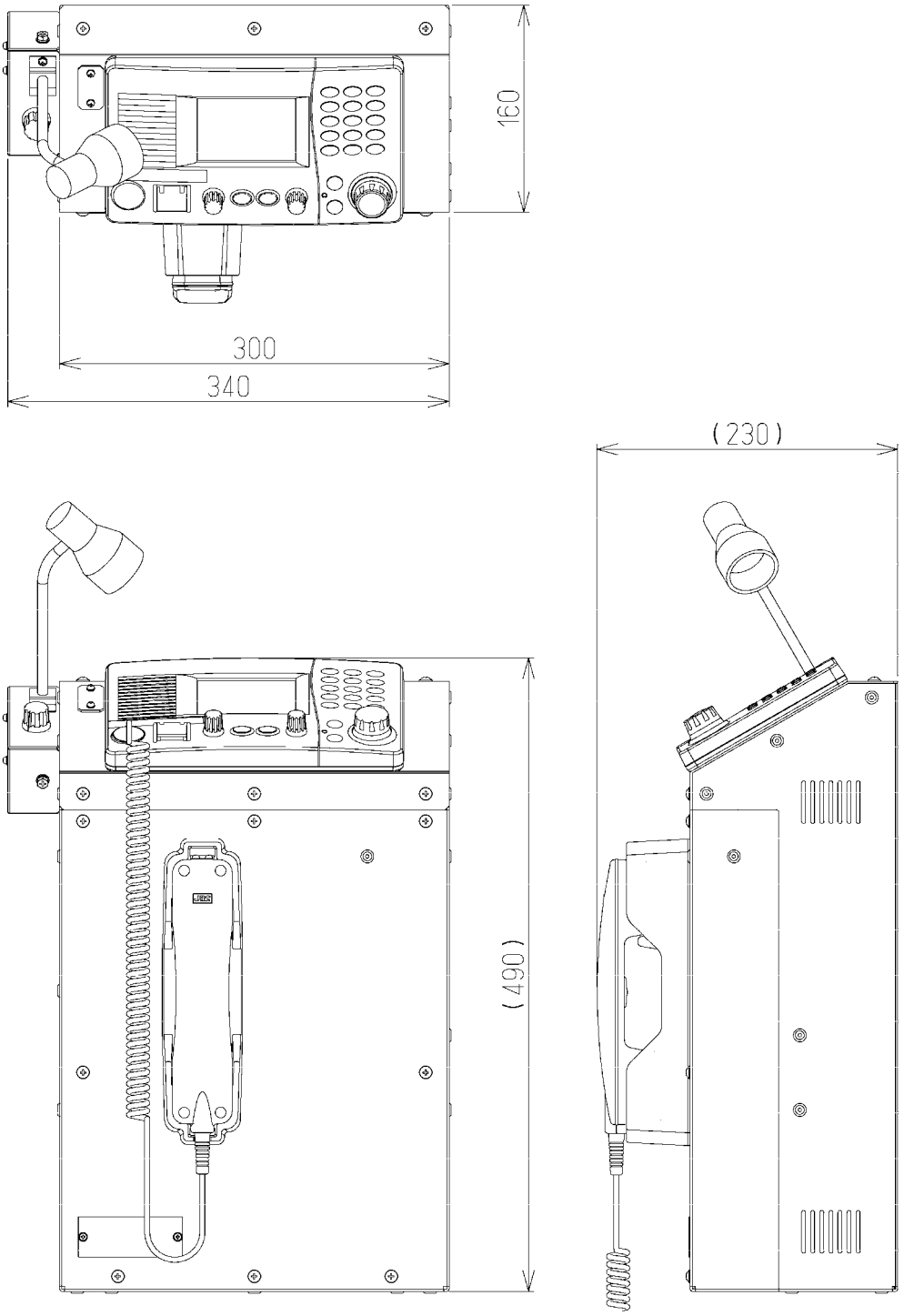
(14) External speaker (NVS-423R)

● Wall mount type



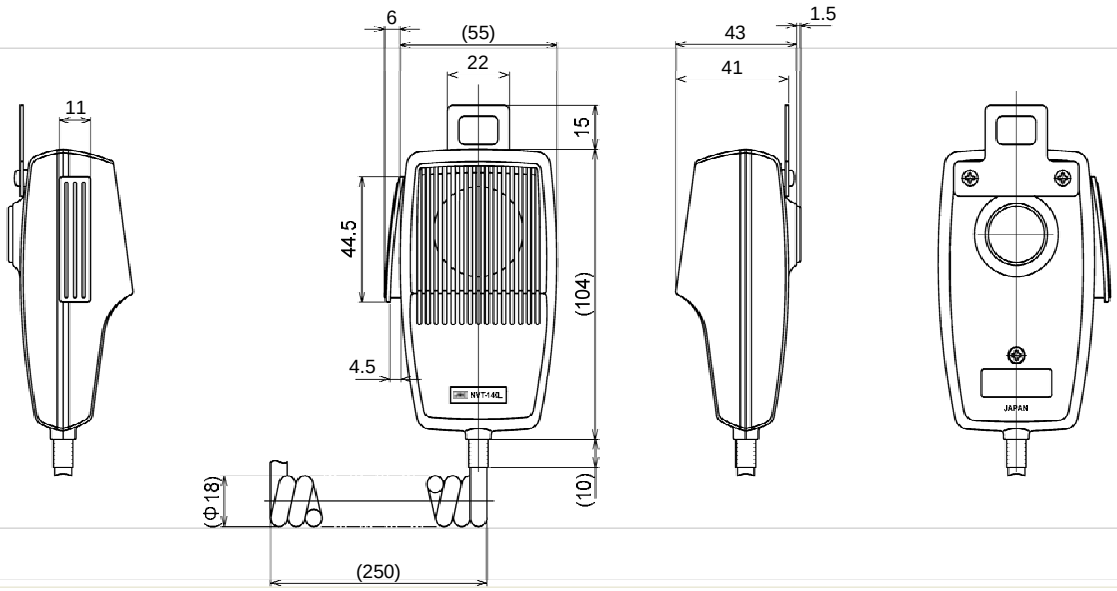
Unit: mm
Weight: Approx. 1.1 kg

(15) Integrated console (JHS-770S-CON/JHS-780D-CON)



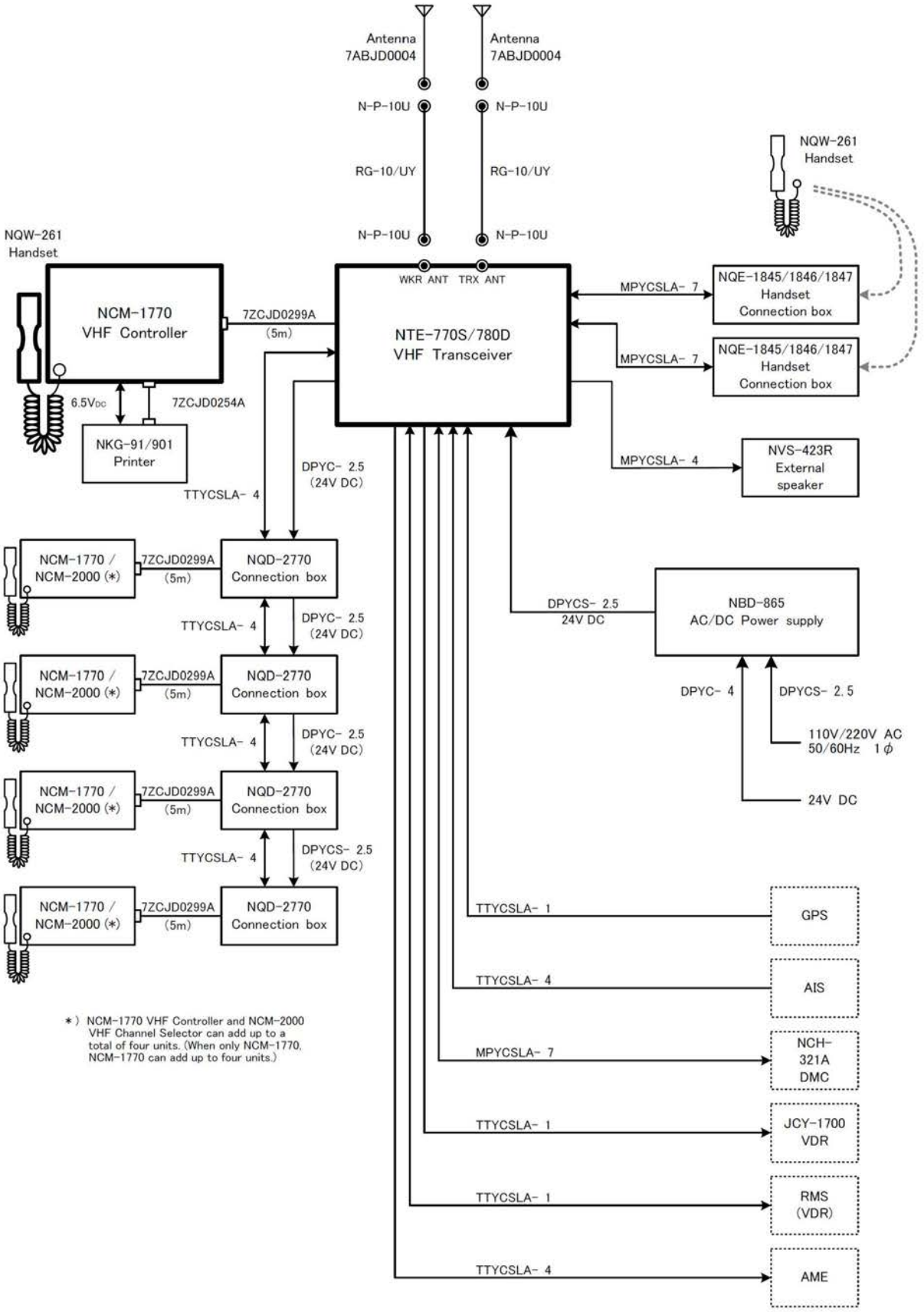
Unit: mm
Weight JHS-770S-CON: Approx. 15 kg (with NTE-770S, NCM-1770 and NQW-261)
JHS-780D-CON: Approx. 16 kg (with NTE-780D, NCM-1770 and NQW-261)
Emergency light NZL-1 is optional

(16) Hand mic (NVT-140L)



Unit: mm
Weight: Approx. 0.2 kg

1.5 Block diagram

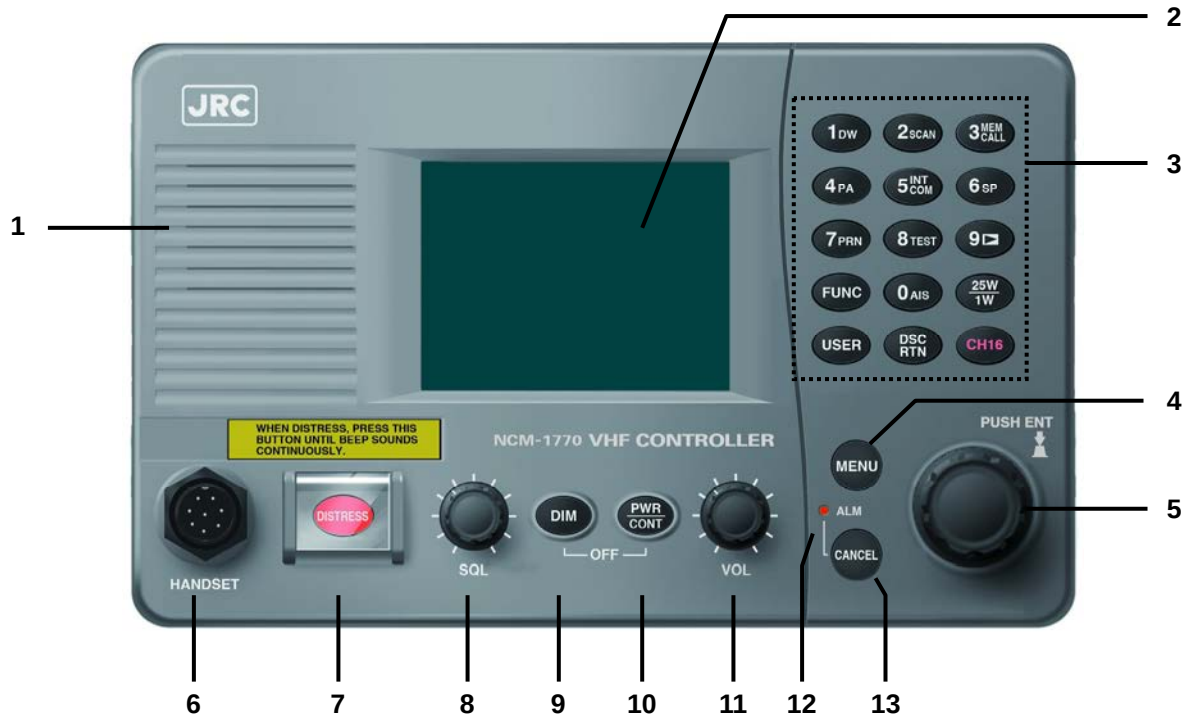


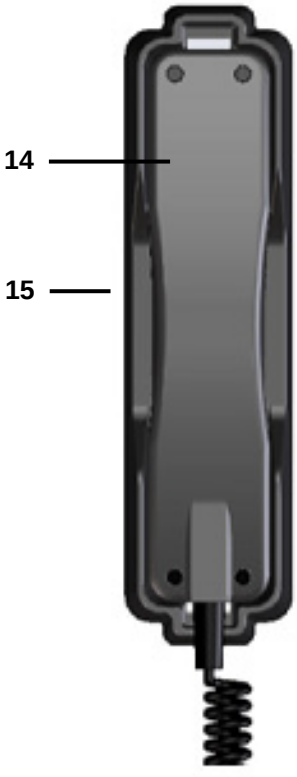
*) NCM-1770 VHF Controller and NCM-2000 VHF Channel Selector can add up to a total of four units. (When only NCM-1770, NCM-1770 can add up to four units.)

2. NAMES AND FUNCTIONS

2.1 Controller (NCM-1770)

The controller parts and their functions are described below.





1. **Internal loud speaker**
2. **Black and white liquid crystal display unit**
3. **Numeric keypad (10-key) and the each assigned function**

   In addition to enter numeric values, the function assigned of each keys can be used to perform the following.

- 1DW ····· Displays the dual watch menu
- 2SCAN ····· Displays the scan menu.
- 3MEM CALL ····· Displays the memory channel menu.
- 4PA ····· Runs the public address mode using an external speaker.
- 5INT COM ····· Displays intercom menu.
- 6SP ····· Turns speaker on or off.
- 7PRN ····· Prints the DSC messages or some displayed contents.
- 8TEST ····· Displays self-diagnosis menu.
- 9 ► ····· Replays the recorded receiving voice.
- 0AIS ····· Displays "Other ships list" of the AIS information.
- FUNC ····· Enables 10-key functions or changes an active screen.
- 25W 1W ····· Switches the Tx power between 25W and 1W.

- USER ……User defined key. Register a desired and assignable menu (e.g. frequently using) or a special function.
- DSC RTN ……A quick DSC routine call key. As well as this key, pressing MENU+1 keys are also available.
- CH16 ……Sets the radiotelephone to the priority channel (CH16) quickly.

4. MENU key

Displays menu list.

5. Jog dial

- On the status display, rotating the jog dial will change the channel.
- On a menu or popup screen, rotating the jog dial will move the cursor position or screen contents. When selecting a button or an item on the screen, rotate the jog dial until the cursor is on it and then press the jog dial.

Note Press the jog dial to obtain access rights from other controller.

6. Handset connector

7. DISTRESS key (Under a clear cover with spring)

When in distress, sends a DSC distress alert after pressing for 4 seconds.

8. SQL (Squelch) control

Adjusts squelch level.

9. DIM (Dimmer) key

Adjusts a dimmer level (Max → Typ → Min → off) of LCD display and key switch. Additionally, used to power off by pressing it with the PWR CONT key at the same time (a confirmation screen will be displayed).

Note The adjusted dimmer level is not saved. So when the controller is powered off and on again, the dimmer level is always set to the Typ (default).

10. PWR/CONT (Power/Contrast) key

Turns on the equipment or makes the controller standby from the sleep mode. And after turned on, this key is also used to adjust the LCD contrast .

11. VOL (Volume) control

Adjusts built-in loud speaker volume.

12. ALM (Alarm) lamp

Lights up red on any malfunction detected in the equipment or after sending a DSC distress alert, or blinks red on receiving a DSC call. Lights green while the controller is in the sleep mode.

13. CANCEL key

Cancels menus or processes, or stops alarms. Additionally, opens the squelch temporarily while pressing it on the status display. (Channel monitor function)

14. Handset

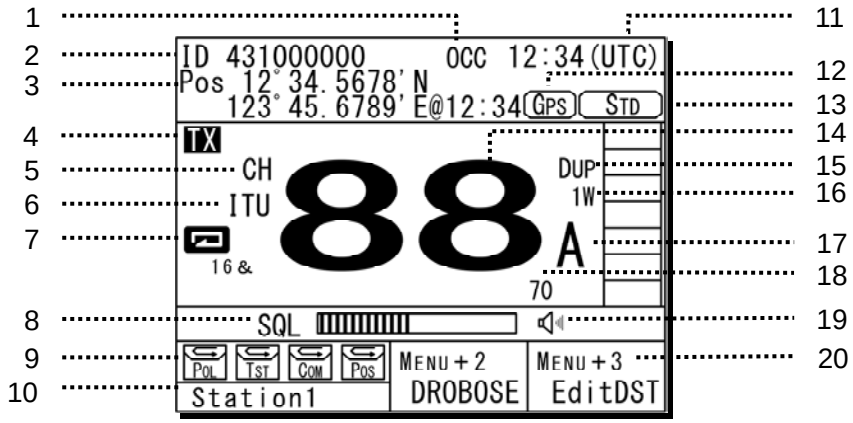
When using in radiotelephone mode, press and hold the PTT key to talk.

15. Cradle (for handset)

2.2 Main displays

The LCD screen on the controller changes according to current conditions. This section describes the status display, operating display, and main menu screens.

2.2.1 Status display



1. Occupied mark indicates when the other controller has the access rights.
2. Indicates the ship's MMSI.
3. Indicates own ship's position and that time.
4. Transmitting, VSWR err or PLL unlocking mark.
   - Transmitting.....TX
   - Bad VSWR at TX .....TXVSWR
   - PLL unlocking.....UNLOCK
5. Indicates the channel category as follows.
   - Priority channel, CH70....CH
   - Private channel .....CH P0/1/2
   - Other channel .....CH
6. Indicates the region type of a current channel.
   - [ITU] ....ITU channel
   - [USA] ....USA channel
   - [CAN] ....Canada channel
   - [IWW] ....European inland waterway channel
7. On scanning, indicates the current condition.
   - Scanning..... 16&
   - Dual Watch ..... DW 16&
8. Indicates the squelch status as follows.
   - Closed..... SQL
   - Opened.....SQL
   - Closed by Preset SQL .... p SQL
   - Opened by Preset SQL... p SQL

   Also, the actual squelch level is shown on this level indicator.
9. Indicates the DSC auto ACK conditions.
   - POL.....Polling call
   - TST .....Test call
   - COM.....TEL request call *
   - POS.....Position request call

   * Only send NACK for an invalid Work CH.
10. Controller name.
11. Indicates current time as follows.
    - Universal time coordinated .....UTC
    - Local time .....LT
12. Indicates the source of the ship's position.

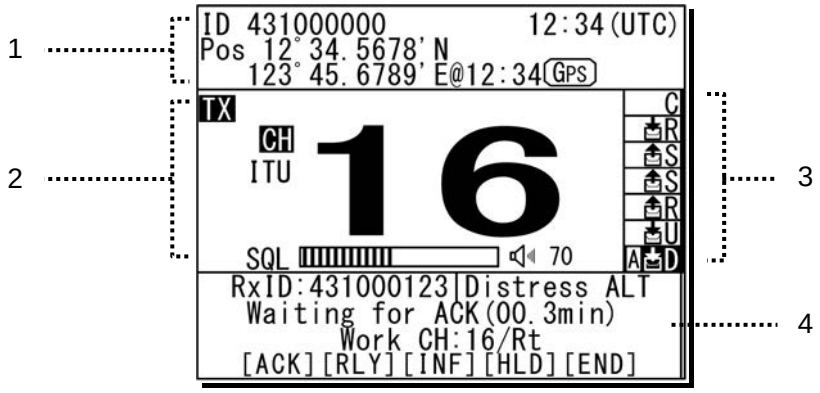
    For details, see 9.4 (1.3).
13. Indicates the quality of the ship's position.

    For details, see 9.4 (1.3).
14. Indicates the current channel.
15. Indicates if currently selected a duplex channel to communicae with a coast station.
16. Indicates TX power is set to 1W.
17. Indicates the channel letters (A or B) used for the USA or Canada region channel mode.
18. Indicates CH70 watching continuously by the DSC watchkeeping receiver.
19. Indicates the built-in loud speaker's ON/OFF. Note that incase of using a duplex channel at the JHS-780D, when taking a handset off-hook, the loud speaker is set to OFF automatically.
20. Indicates the guide to send a DSC call. That is,
    - To send a drobose call, holding down the MENU, press 2 key
    - To edit/send a distress alert, holding down the MENU, press 3 key.

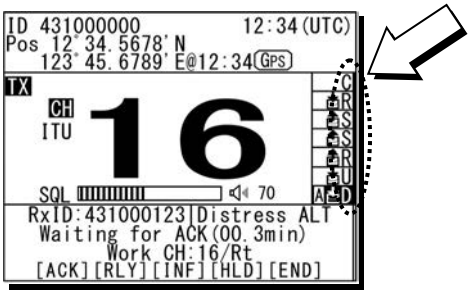
2.2.2 Operating display

(1) General

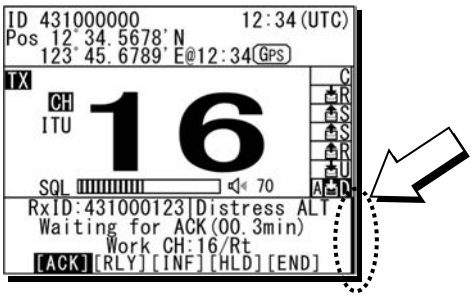
For example, after setting a channel, pressing PTT key, sending/receiving DSC messages, etc, the controller shows the operating display as follows.



1. Indicates the MMSI and the latest position and that time.
2. Indicates the transceiver setting screen similar to the status display.
3. Indicates the existing procedures. If the procedure is under operation (active), A mark is added in the box frame. Further, if there are other procedures, they are indicated in the other box frames and are selectable to operate at any time. And while this screen is focused, the thick line is indicated as below.

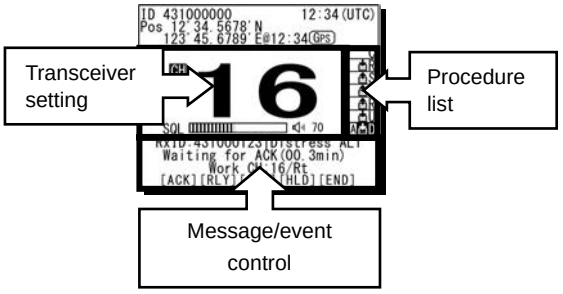


4. Indicates the content and the handling menus of the procedure of the highlighted box. And while this screen is focused, the thick line is indicated as below.



Note)

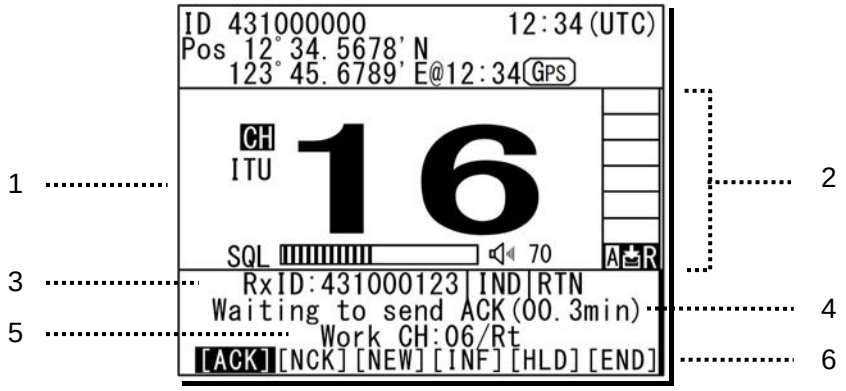
As described above, the operating display is divided into three screens as below, where the focused screen can be moved using the FUNC key for clockwise.



Note During operating an active procedure, any functions such like the DSC automatic acknowledgement become invalid to avoid the ongoing communication interruption.

(2) Operating display of DSC calls

When communicating using DSC messages, the controller shows as follows.



1. Indicates the transceiver setting screen similar to the status display mentioned above.

2. Indicates the active or on-hold procedures according to the following components.

   - Call direction : Calling event - ⬆
     Called event - ⬇
   - Category : R… routine
     S… safety
     U… urgency
     D… distress

   Additionally, indicates “C” for COMM if started radiotelephone communication without using the DSC calls.

3. Indicates the message info as follows;

   - Destination/source ID to comm with: TxTO/RxID
   - Address type: IND, GRP, All
   - Category or DST type: RTN, SAF, URG, DST DISTRESS ALT, DST RLY,
   - Other information: ACK, NACK

4. Indicates the DSC message status with the elapsed time of the selected frame procedure. Additionally the following special marks may be indicated on this line.

   E … Indicates when including the ECC error in the message.

   D … Indicates when the DSC procedure is started by receiving a delayed ACK without a calling message.

5. Indicates the subsequent channel/mode if exist.

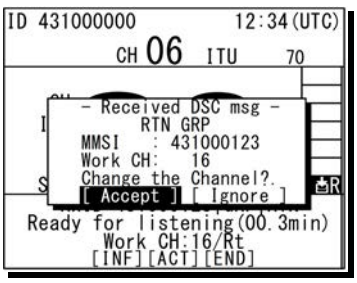
6. Indicates the handling menus. This figure shows the following menus.

   - ACK : Accepts the call and sends ACK
   - NCK : Sends “unable to comply”
   - NEW : Sends ACK with new work FRQ
   - INF : Indicates the message content
   - HLD : Makes the active proc on hold
   - END : Terminates the procedure

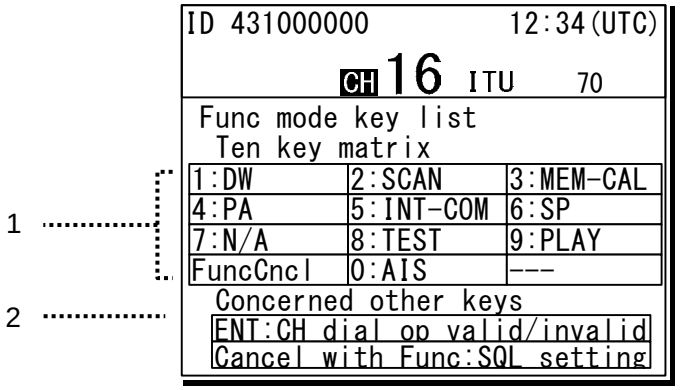
Note

- When sending the “able to comply” acknowledgement against the received message requesting the radiotelephone communication, lifting handset is also available as a substitute for selecting the ACK handling menu.
- When selecting the NEW or NCK menu, the dedicated popup screen is appeared.
- When sending an acknowledgement automatically to the receiving calls such as position request, safety test, polling, or the call requesting communication with an invalid channel, the above screen is shown and starts sending automatically. After finishing it, that screen is closed automatically.
- When receiving the DSC message, the popup will be displayed on the screen as shown below. (For detail, see 4.3.4 and 5.5.7)

Accept : Accepts the message and changes the work channel.
Ignore: Deletes the popup and return to the previous screen without changing the work channel.



2.2.3 Function screen and key operations

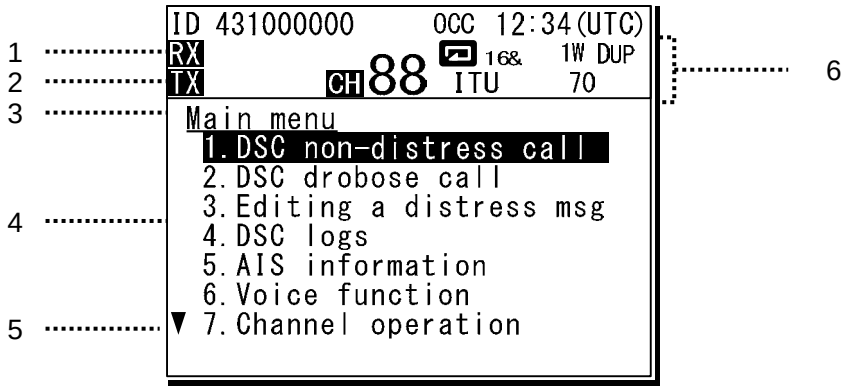


1. Indicates the enabled number key and its function when the FUNC key is pressed in the status display. Pressing the number keys here operates the function for that key as shown at the right.

1 DW	:	Starts the dual watch.
2 SCAN	:	Displays the scan menu.
3 MEM-CAL	:	Displays the memory CH list.
4 PA	:	Starts the public address mode.
5 INT-COM	:	Displays the intercom menu
6 SP	:	Turns the built-in loud speaker on or off
7 N/A	:	(PRN is valid only on specific menus.)
8 TEST	:	Displays the self-diagnosis menu
9 PLAY	:	Starts playback the recorded data.
0 AIS	:	Displays the Other ships list.
FuncCncl	:	Closes this screen.

2. During displaying the Func mode key list, pressing ENT makes the jog dial valid or invalid to change the channel. And also, pressing the FUNC + CANCEL keys displays the CH SQL setting menu.

2.2.4 Menu screen



1. Indicates if opened the squelch while performing one of the 6. Voice function menus.
2. Transmitting mark as mentioned above.
3. Indicates the current menu name.
4. Indicates the menu content. The cursor line or position is highlighted.
5. Indicates that the menu content is continued below.
6. Indicates the main radiotelephone information as with the status display.

3. INSTALLATION

⚠ CAUTION

Leave installation of this equipment to our service center or agents. Special knowledge on selecting the place where the antenna is to be mounted and setting the ID number (MMSI) assigned to the ship is required in addition to mounting the equipment.

4. OPERATION

This chapter describes basic controller operation, radiotelephone communication, DSC calling procedures, and other radiotelephone functions.

4.1 Controller operation overview

Basically, the controller is operated with the numeric keypad (10key), the MENU key, and the jog dial. The following is an overview of their operation.

- When two or more controllers are connected, only one controller having the access right can operate the radiotelephone, except for sending a distress alert, changing audio volume, and changing display conditions. (Unless otherwise mentioned, the instructions below are for the controller with the access right.)
- To obtain the access right at a controller without access rights, press the jog dial or take the handset off-hook under such condition that the controller with the access rights is not in use (such as taking a handset off-hook, pressing the PTT ON, or operating menu). However note that a controller installed as a high priority can always obtain the access right if only at the PTT OFF condition.
- The DISTRESS key is always available even if the controller does not have the access right. (The DISTRESS key has the highest priority.)
- On the status display or on the operating display, the VHF channel number can be set by using the numeric keys directly or by rotating the jog dial.
- On the status display, pressing the CANCEL key opens the squelch temporally to listen to the receiving audio (or noise).
- Replacing the handset on-hook returns the channel to CH16 (factory default value). Also, the on-hook detection can be disabled at the menu 9.3.6 Hook switch.
- All functions can be accessed using the MENU key, jog dial, and the dedicated keys/controls. (See the menu tree of the equipment on the next page.)
- Pressing the FUNC (function) key and a numeric key allows rapid access to that function.
- There are two ways to access main menu items. After pressing the MENU key to display the main menu, use either the jog dial to move the cursor to the desired item and press ENT to select it, or select the item by pressing the respective numeric key.. (e.g. To select the self diagnosis menu for the Transceiver (8.1.1 Transceiver), press MENU→8TEST→1DW→1DW.)
- Any menu can be assigned to the USER key to quickly open it with a single touch of a key.
- Pressing the CANCEL key in any menu moves the display up one level in the hierarchy (or to the status display). The same results can be achieved by selecting "0. Back" when available on-screen. Furthermore, pressing the CANCEL key on an input line cancels the entered data.
- Pressing the MENU key in any menu opens the main menu. Also, pressing the MENU key while in the main menu returns to the status or operating display.
- If left without operating after opening a menu screen for a while (the time length is variable), the screen automatically returns to the status display.
- Dialog boxes (pop-up screens) are opened when necessary and operations can be done in the dialog box.
- Screens in the menu tree on the following page indicated by "Printable" can be printed from a printer connected to the controller by pressing and holding the FUNC key and then pressing the 7PRN key.
  Additionally, if not connected to the controller but the transceiver, the screen or contents is printed out from the printer of the transceiver.

Menu tree

Main Menu	Hierarchical Menu 1	Hierarchical Menu 2	Shortcut Key	Note
1. DSC non-distress call			DSC RTN	Also, MENU+1
2. DSC drobose call			MENU+2	
3. Editing a distress msg			MENU+3	
4. DSC logs	4.1) Received distress	(Received distress list)		Printable
	4.2) Received others	(Received others list)		Printable
	4.3) Transmitted calls	(Transmitted calls list)		Printable
5. AIS information - Other ships list - Proximity check - Proximity range	5.1) Other ships list		FUNC+0	DSC linking enable
6. Voice function	6.1) Playback		FUNC+9	
	6.2) Public address		FUNC+4	
	6.3) Intercom (station list)		FUNC+5	
7. Channel operation	7.1) Scan - All CH scan - Memory CH scan - Select CH scan		FUNC+2	
	7.2) Dual watch		FUNC+1	
	7.3) Memory channel	7.3.1) Memory CH list	FUNC+3	Printable
		7.3.2) Registration		
	7.4) Private channel			Printable
	7.5) Weather channel			Printable
	7.6) Region(ITU/USA/...)	(ITU/USA/CAN/IWW)		
	7.7) CH SQL setting - Preset - All clear		CANCEL pressing FUNC	
8. Maintenance	8.1) Self diagnosis	8.1.1) Transceiver	FUNC+8	Printable
		8.1.2) Controller		Printable
		8.1.3) Transceiver log		Printable
		8.1.4) Controller log		Printable
		8.1.5) DSC loop		Printable
	8.2) Alarm information	Alarm history		Printable
	8.3) System information			Printable
	8.4) Software version			Printable
	8.5) DSC AF inspection	(inspection screen)		
9. Setup	9.1) Date & time			Clock setting
	9.2) POS/TIME	9.2.1) Own position		
		9.2.2) UTC of position		
		9.2.3) State display		
		9.2.4) Position source set		
	9.3) My controller	9.3.1) LCD adjustment		
		9.3.2) Sound	FUNC+6 (SP)	
		9.3.3) User key assign		
		9.3.4) Name		
		9.3.5) Menu shutdown		
		9.3.6) Hook switch		
		9.3.7) Off-hook notice		
	9.4) Contact list	9.4.1) Coast station list		Printable
		9.4.2) Ship station list		Printable
		9.4.3) Calling group list		Printable
		9.4.4) PSTN number list		Printable
	9.5) DSC operation	9.5.1) Automatic ACK - Test call - Position RQ call - Polling call - Individual call		Printable
		9.5.2) Safety/Routine ALM		
		9.5.3) Medical use		
		9.5.4) Neutral use		
		9.5.5) Expanded MMSI		
		9.5.6) Group ID		
		9.5.7) Inactivity timeout		
		9.5.8) Auto CH change		
	9.6) AIS function			
	9.7) Printer property	9.7.1) Controller printer		Printable
		9.7.2) Transceiver printer		Printable

4.2 Basic communication procedure

The following describes basic radio communication procedures.

4.2.1 Turning ON the power

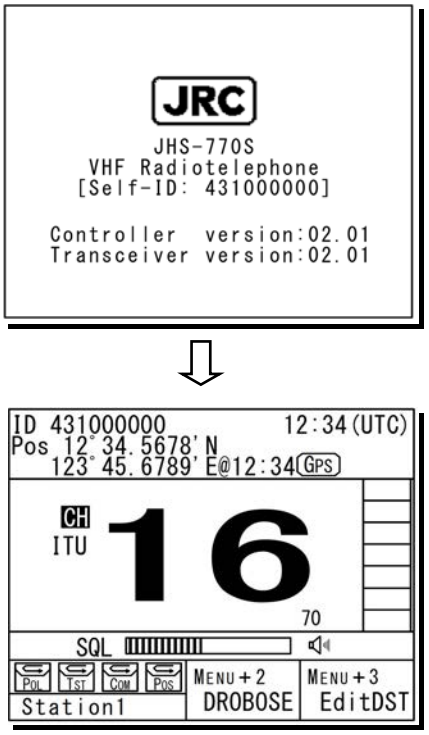
⚠ CAUTION

Do NOT turn off the power of the equipment when at sea because the SOLAS Convention requires keeping CH16 watch at all times.

■ Procedure ■

1. Press the PWR CONT key for one second.

   The controller and transceiver start the internal check. (The screen at right shows the case of the JHS-770S Model.) After finished it correctly, the status display is appeared.



Note
- When the controller is turned on from sleep mode, the status display is displayed immediately without cheking the memory.
- If detected errors during the memory check, displays the message below. Please inform JRC or our agent of the error contents.

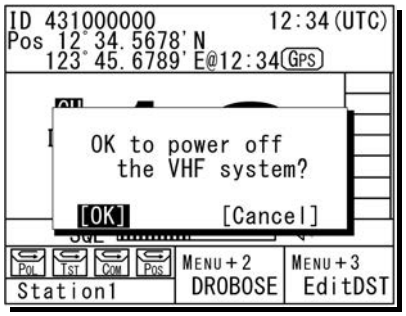
Message	Contents
Detected memory error! So cleared the area of transceiver memory.	Detected a memory error when starting the transceiver.
Detected memory error! So cleared the area of controller memory.	Detected a memory error when starting controller.
Detected this controller's address setting error! So required initial set after restarting as the maintenance mode	Detected this controller's address error when starting the controller.
Detected SIO error! So required initial set after restarting as the maintenance mode.	Detected a serial error when starting controller.
Detected MMSI lost! So concerned functions (DSC/ATIS) no longer available now.	Unregistered MMSI yet, or lost the MMSI. So required to install MMSI for DSC/ATIS.
Detected the transceiver's PCB combination error! So required to replace that incorrect PCB with the correct one.	Detected the improper transceiver's PCB combination.

4.2.2 Turning OFF the power

■ Procedure ■

1. Press the PWR CONT key and the DIM key simultaneously.

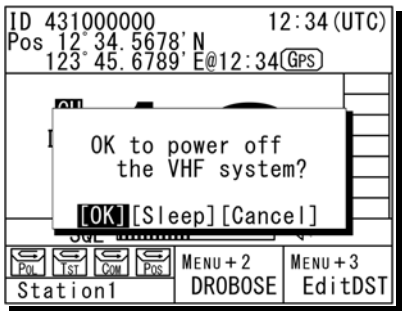
After that, the power-off process is activated according to the controllers' situation.



When using only one controller

Select the desired item below on the displayed popup screen at right.

- [OK]: Turns off the power.
- [Cancel]: Returns to the previous screen.



When using two or more controllers

Select the desired item below on the displayed popup screen at right.

- [OK]: Turns off the power.
- [Sleep]: Sets the controller to sleep mode.
- [Cancel]: Returns to the previous screen.

Note In sleep mode, the controller becomes the following conditions.

- Only the controller is powered off.
- The ALM lamp turns green to indicate that the controller is in sleep mode,
- When receiving a distress alert, the controller is automatically turned on and activate the alarm if the Wake-up setting in an installation menu is ON,.
- If setting the controller with access right to the sleep mode, the access right does not move to another one.

4.2.3 Communicating with the radiotelephone

The VHF radiotelephone is operated by means of a handset.

■ Procedure ■

1. When operating on a controller without the access rights (OCC is displayed), press the jog dial to obtain the access right.

After obtaining the access right, disappears OCC mark on the screen and the controller becomes accessible to the VHF transceiver. Also, just lifting a handset from the cradle enables to obtain the access right.

Note When hook-switch setting is invalid, the access right cannot be acquired by lifting handset from the cradle.

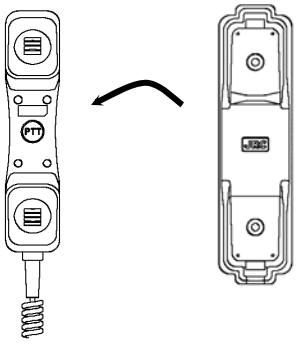
2. Adjust the volume on the loudspeaker by turning the volume control.

When receiving no signal, make a noise as a guide by turning the squelch control counterclockwise until opened.

3. Turn the squelch control to an appropriate position.

Normally, the squelch control would be adjusted to where rotated the squelch control clockwise one additional tick from the squelch closing position.

4. Lift the handset from the cradle.



5. Press the PTT key to talk.

- The TX mark is appeared on the screen to show the equipment is transmitting. Releasing the PTT key returns to the receiving condition.
- On duplex channels, enabled to listen to the receiving audio with handset even during the PTT ON. However, internal speaker does not sound on duplex channel.
  (In the case of the JHS-780D model.)

6. If necessary, change the channel using the numeric keypad or jog dial.

Channels can be changed during showing the status display or the operating display in the receiving condition. For details, see “Changing the channel” below.

7. When finished the communication, return the handset to the cradle.

Note Replacing the handset back on-hook returns the channel to CH16. But if hook-switch setting is invalid, the channel is not returned by replacing the handset to the cradle.

■ Changing the channel ■

(1) Setting a 2-digits channel (Incase of the CH18)

1. On the status display or the operating display, press 1DW.

   "1" is appeared. Then if left for more than 2 seconds, the hyphen is appeared and starts flashing as shown at right.

2. Press 8TEST.

   Setting of the CH18 is finished.

(2) Setting a 2-digits channel with a letter A/B (Incase of the USA CH20A)

1. While in the USA mode of the region, on the status display or the operating display, press 2SCAN.

   "2" is appeared. Then if left for more than 2 seconds, the hyphen is appeared and starts flashing as shown at right.

2. Press 0AIS.

   CH20 is set, first.

3. Turn the jog dial clockwise.

   Letter A is appeared and setting of the CH20A is finished.

(3) Setting a 4-digits channel (Incase of the CH1020)

1. On the status display or the operating display, press 1DW.

   "1" is appeared. Then if left for more than 2 seconds, the hyphen is appeared and starts flashing as shown at right.

2. Press 0AIS.

   CH10 is set, first.

3. Press 2SCAN within 1 second after step 2 above.

   The 4-digits display form at right is appeared. Then if left for more than 2 seconds, the hyphen is appeared and starts flashing as shown at right.

4. Press 0AIS.

   Setting of the CH1020 is finished.

Note When the hyphen is flashing, if left without inputting a figure for 2 seconds, the channel returns to the previous value. Additionally in the above example, if the 3 digits are input and the hyphen is flashing at the ones place digit for 2 seconds, then the channel returns to the CH10 which is temporarily set in this procedure.

■ Making a radiotelephone call ■

1. Select CH16 or other agreed channel.
2. Lift the handset from the cradle.
3. Press the PTT key, and make a call as described below.
   - Say the calling station name ... Repeat 3 times.
   - "this is"
   - Say own ship name ... Repeat 3 times.
   - "over"
4. Release the PTT key to listen.
5. When answered and agree on a working channel, change to that channel.
6. After checking that no station uses the working channel, begin conversation.

Note
- When transmitting from own station, always press the PTT key while talking.
- On a simplex channel, always say "over" just before releasing the PTT key.
- Always say "out" when terminating communications.

■ Receiving a call on CH16 ■

1. Lift the handset from the cradle.
2. Press the PTT key, and respond to the call as described below.
   - Say the caller station name.
   - "this is"
   - Say own ship name.
3. Propose a channel other than 16 as described below.
   - "channel"
   - Working channel number
4. Allow the caller station to transmit.
   - "over"
5. Release the PTT key, wait a moment, and then switch to the proposed working channel.
6. After checking that no station uses the working channel, begin conversation.

Note
- When transmitting from own station, always press the PTT key while talking.
- On a simplex channel, always say "over" just before releasing the PTT key.
- Always say "out" when terminating communications.

4.2.4 Receiving with scanning

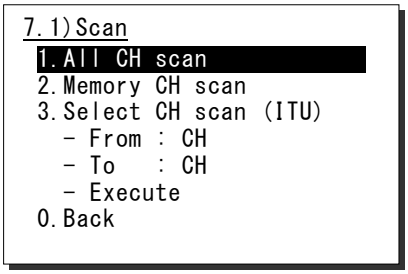
Scanning function enables to watch multiple channels (additional channels) with the priority channel (CH16). If found receiving signal on the additional channels, the dwell time on that channel will be longer, but continued to watch the CH16 alternatively. The scan mode can be selected from the following modes.

- All CH scan Mode: Scans all channels in the current channel mode.
- Memory CH scan Mode: Scans all memory channels.
- Select CH scan Mode: Scans the specified range of channels.

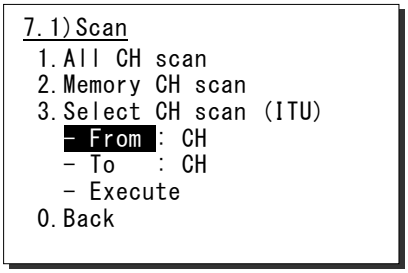
■ Procedure ■

1. Press FUNC ➔ 2SCAN.

The menu is displayed as shown at right.

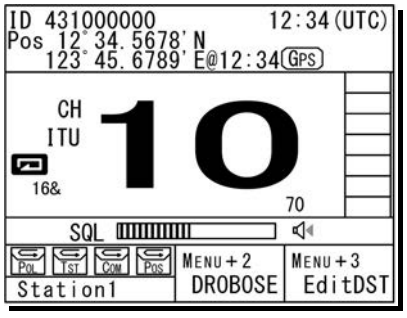


2. Move the cursor to the desired item and press ENT using the jog dial, or press the item number by a numeric key directly.



- If selected "1. All CH scan" or "2. Memory CH scan", scanning starts immediately.
- If selected "3. Select CH scan", specify the channel range as described below.

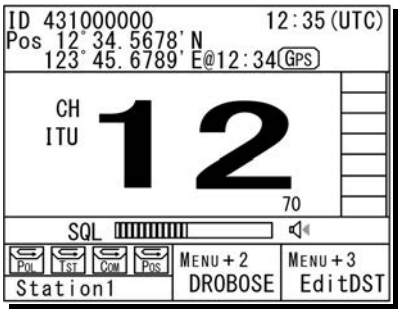
1) To set the start channel (From):
Press ENT and after entering the channel number, press ENT again.
2) To set the stop channel (To):
Press ENT and after entering the channel number, press ENT again.
3) To start the scanning:
Select Execute and press ENT. Then starts the scanning as shown at right.



Note
- Disabled to scan when the channel region is Inland Waterways (IWW).
- CH70 is skipped, even if contained in the scanning range.

3. To terminate scanning, press the CANCEL key.

- After terminated, the radiotelephone is set on the last additional channel. (The example at right shows when stopped on CH12.)
- Scanning is also terminated when detected off-hook, PTT ON, or pressing the CH16 key.



Note
- While scanning, the radiotelephone scans CH16 and the additional channels alternatively in a cycle of 0.14/0.86 seconds.
- If the squelch is opened on the CH16, paused scanning and continues to watch on the CH16. If squelch is closed again, the scanning will resume 2 seconds later.

- If the squelch is opened on an additional channel, remains on that channel and CH16 alternatively (in a cycle of 0.14/1.86 seconds). If squelch is then continuously closed (until the end of the scan cycle), the scanning will resume. Furthermore, added to the additional channel, if the squelch is also opened on the CH16, paused scanning and continues to watch on the CH16 as described above.

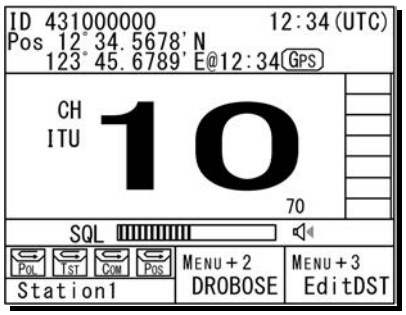
4.2.5 Receiving with dual watch

Dual watch function enables to watch an additional channel with the priority channel (CH16). If found receiving signal on the additional channel, the dwell time on that channel will be longer, but continued to watch the CH16 alternatively.

■ Procedure ■

1. Select an additional channel to be watched with CH16.

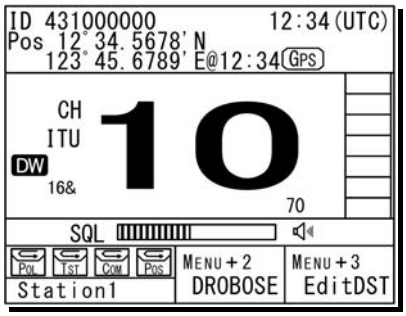
The example at right shows the case of CH10 selected.



2. Press FUNC ➔ 1DW

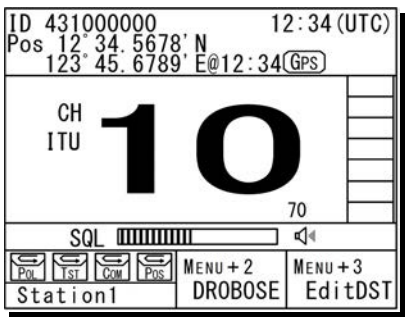
The dual watch starts immediately.

Note Disabled the dual watch either when the channel region is Inland waterways (IWW) or when CH70 has been selected.



3. To terminate the dual watch, press the CANCEL key.

- After terminated, the radiotelephone is set on the additional channel. (The example at right shows when stopped on CH10.)
- The dual watch is also terminated when detected off-hook, PTT ON, or press the CH16 key.



Note
- During the dual watch, the radiotelephone watches CH16 and the additional channel alternatively in a cycle of 0.14/0.86 seconds.
- If the squelch is opened on the CH16, pauses the dual watch and continues to watch on the CH16. If squelch is closed again, the dual watch will resume 2 seconds later.
- If the squelch is opened on the additional channel, the dwell time on that channel will be longer, but continues to watch the CH16 alternatively (in a cycle of 0.14/1.86 seconds). If squelch is then continuously closed (until the end of the dwell time), the dual watch will resume. Furthermore, added to the additional channel, if the squelch is also opened on the CH16, pauses the dual watch and continues to watch on the CH16 as described above.
- This function is also available from the menu 7.2 Dual watch.

4.2.6 Using memory channels

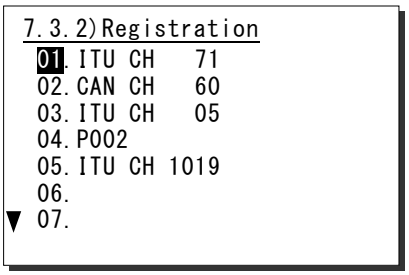
Memory channels are the original channel list. The desired channels (e.g. frequently using channel) can be registered and used for easy access.

(1) Registering memory channels

■ Procedure ■

1. Press the MENU key and, through hierarchical menus, select 7.3.2 Registration.

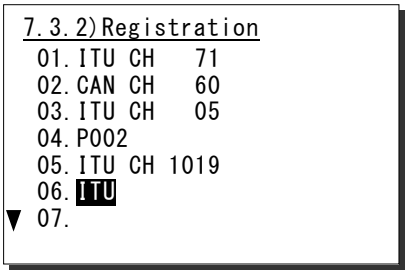
The registration menu of the 7.3 Memory channel is displayed as shown at right.



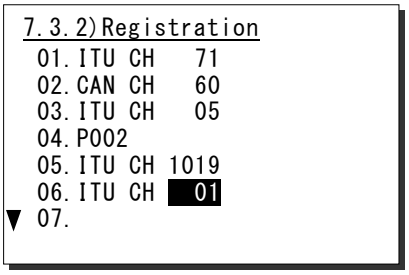
2. Move the cursor to the desired list number and press ENT using the jog dial, or press the memory channel number (two digits) by numeric keys directly. Then select a channel type.

First, ITU is displayed. Select the channel type by turning the jog dial (ITU → USA → CAN → IWW → P0 → P1 → P2 → W), or clear (CL). The content of each type is as described below.

- ITU/USA/CAN/IWW : Region channel
- P0/1/2 : Private channel (with a hundred digit)
- W : Weather channel

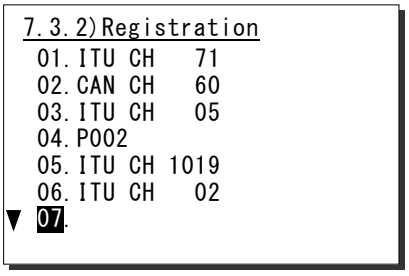


3. Press ENT after selecting a channel type. Then input the channel number using the jog dial or numeric keys.



4. After inputting the channel, press ENT.

The channel number is registered and the cursor moves to the next number. If continuing the registration of the other channels or revising existing lines, repeat the steps above.



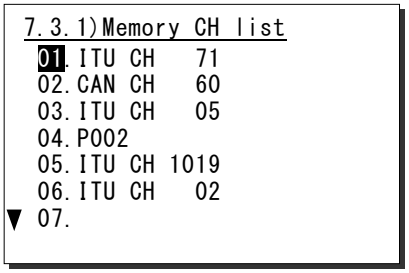
(2) Communicating on a memory channel

Memory channels is available e.g. when setting a working channel for subsequent communication after initial contact on CH16.

■ Procedure ■

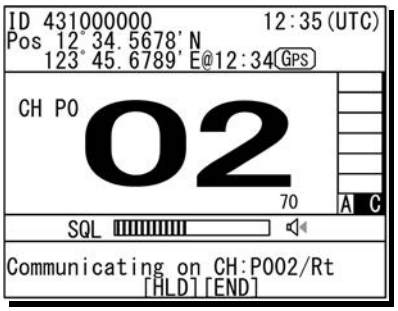
1. Press FUNC ➔ 3 MEM CALL.

The 7.3.1 Memory CH list is displayed as shown at right.



2. Move the cursor to the desired list number and press ENT using the jog dial, or press the memory channel number (two digits) by numeric keys directly.

If the memory channel number 04 on the screen above is selected, the CH P002 is set and the communicating procedure is started in active.



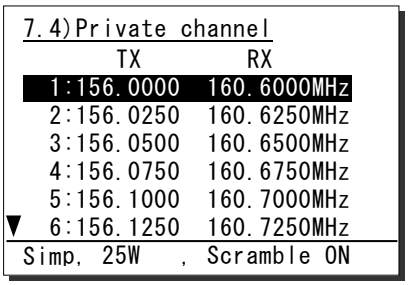
4.2.7 Communicating on a private channel

Private channels for assigned frequencies of fishing ship or other specially assigned frequencies are registered at the installation of equipment. Up to 200 channels are available for radiotelephone communications. (If required to add channels after installation, please contact JRC or our agent.)

■ Procedure ■

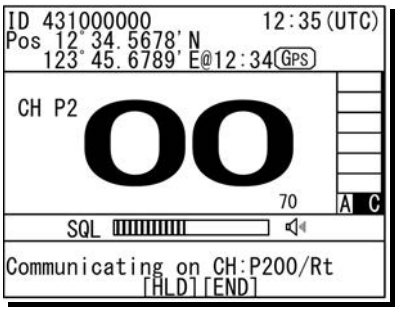
1. Press the MENU key, and through hierarchical menus, select the 7.4 Private channel.

   Indicates the information of the highlighted line by the cursor on the bottom of the screen.



2. Move the cursor to the desired channel number and press ENT using the jog dial, or press the private channel number (three digits) by numeric keys directly.

   In this example, if selected the CH P200, the screen becomes as shown at right.

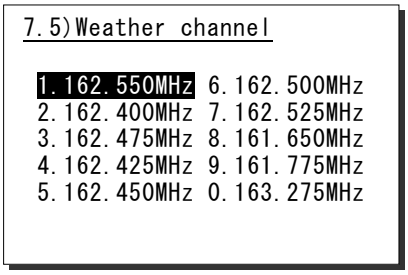


4.2.8 Receiving a weather channel

Weather channels are available to receive weather information on the North American coast.

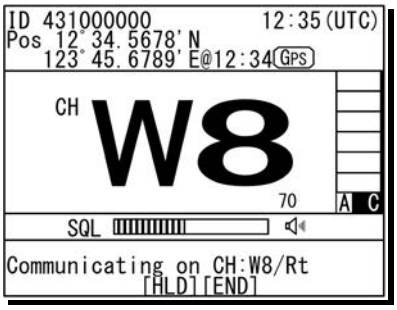
■ Procedure ■

1. Press the MENU key, and through hierarchical menus, select the 7.5 Weather channel.



2. Move the cursor to the desired line and press ENT using the jog dial, or press a numeric key directly.

   When selected the channel 8, the screen becomes as shown at right.



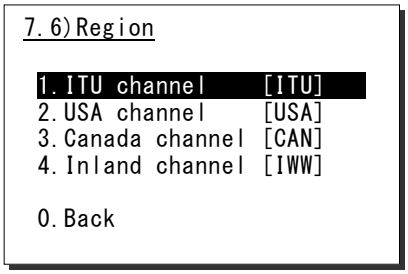
Note Disabled to transmit on weather channels.

4.2.9 Changing the channel region

This menu sets the channel region to ITU, USA, Canada, or Inland Waterway.

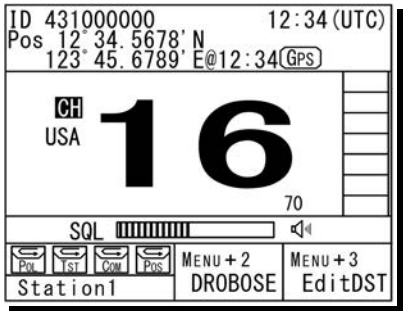
■ Procedure ■

1. Press the MENU key, and through hierarchical menus, select the 7.6 Region.



2. Move the cursor to the desired line and press ENT using the jog dial, or press a numeric key directly.

   When selected the USA channel, the screen becomes as shown at right.



Note When set to the Inland Waterway (IWW), changed a few functions as follows.

- Enabled the ATIS function automatically and sends the ATIS code over the voice channel when releasing the PTT key. Also, if pressed the PTT key continuously, sends the ATIS code every five minutes automatically.
- Disabled the scan or dual watch functions.
- When operating the DSC menus, a popup screen is displayed to notice that the DSC usage is not allowed on Inland Waterways.

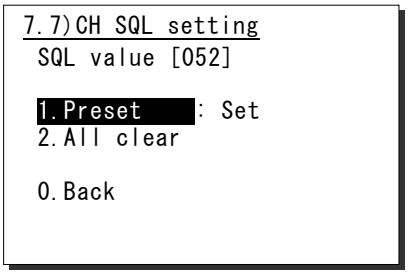
4.2.10 Squelch settings of each channel (preset squelch)

The adjusted squelch value can be stored with respect to each channel as a preset squelch. The handling of the preset squelch is as follows.

- If stored the squelch value, the preset squelch is always set just after the channel selection.
- While the preset squelch has been set, "p SQL" is indicated on the status display.
- If turned the SQL control after setting the preset channel, the preset value is canceled immediately and the SQL control is available.
- The preset squelch value can be cleared with respect to each channel or each channel region.

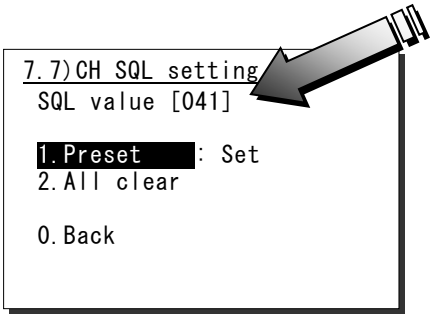
■ Procedure ■

1. After selecting the desired channel, press the MENU key and through hierarchical menus, select the 7.7 CH SQL setting.



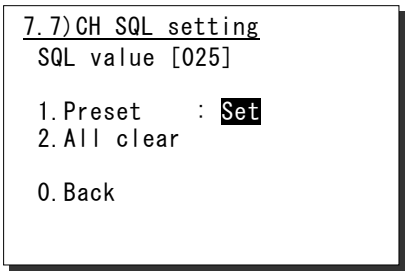
2. Turn the SQL control to the appropriate position.

The SQL value as shown at right is changed corresponding to the SQL control position.

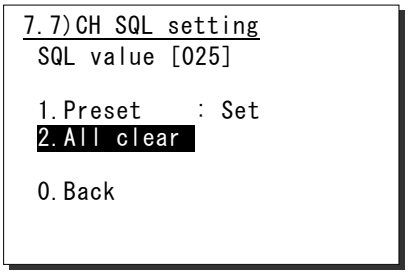


3. Press ENT.

The cursor moves to the right.



4. To complete the squelch setting for the channel, select "Set" and press ENT.



Note
- To clear the preset squelch values with respect to each channel, after selecting the channel, select Erase and press ENT at the step 3 above.
- To clear the preset squelch values with respect to each channel region, in the condition of that channel region, move the cursor to the 2. All clear and press ENT.
- The above operation is also available on a popup menu displayed when holding down the FUNC key and pressing the CANCEL key on the “Func mode key list” screen.

4.3 Basic DSC operations

When calling stations, the DSC is also available for a routine/ safety/ urgency or a distress call in addition to the calling by radiotelephone described above. This section describes the procedures for basic DSC routine calls and for the AIS-linked DSC calls.

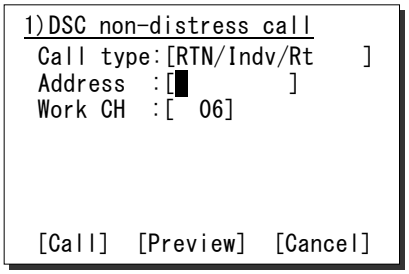
4.3.1 Routine calls to an individual station

A DSC routine call to the station to be called is initiated as follows.

■ Procedure ■

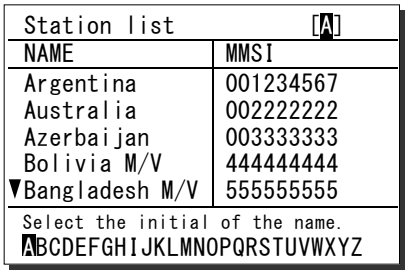
1. Press the DSC RTN key.

The screen as shown at right is displayed.



2. Press ENT to display the alphabetically sorted station list. After selecting the initial letter and pressing ENT, select the desired station with the jog dial.

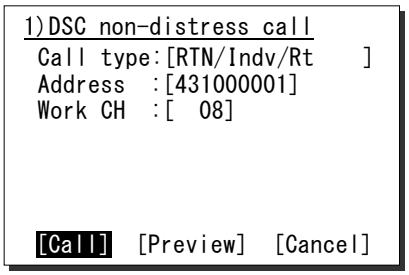
When inputting the MMSI manually, press the CANCEL key to return to the previous screen and input it using the numeric keypad.

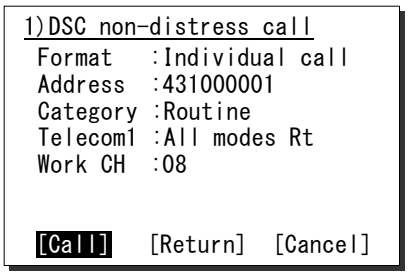


Note This list can be registered in the menu 9.4 Contact list.

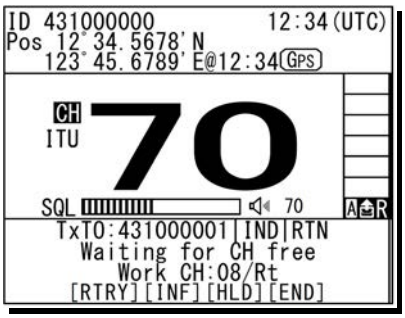
3. After inputting the address, the cursor is focused on the Call. To make a call, press ENT.

- If inputting the ship's address, the Work CH is selected automatically. Furthermore, in the case of the coast station call, the message does not include the working channel because the working channel is decided by the coast station.
- To check the details of the message, press ENT on the handling menu of the Preview to open the screen as shown at lower right.





4. The operating display is appeared and initiates the DSC call



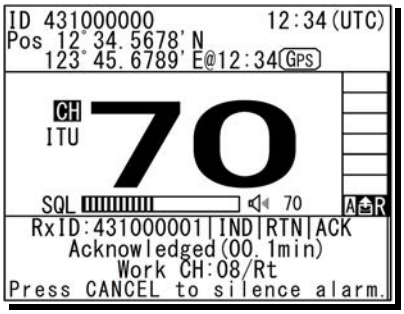
After checking the channel free condition, sends the message and waits for the acknowledgement.

Note

During waiting for the acknowledgement, the handling menus are available for the following purposes.
Note) To focus the cursor on it, use FUNC key to move the active screen area.

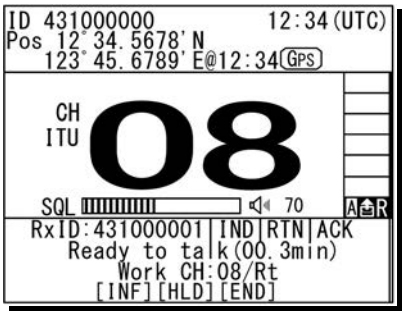
- RTRY .....Resends the message.
- INF.....Indicates the message contents.
- HLD .....Makes the event on hold.
- END .....Terminates the event.

5. When receiving the acknowledgement the ALM lamp starts blinking and the receiving alarm starts sounding.



- To silence alarm, press the CANCEL key or ENT.
- The working channel is set automatically.

6. After setting the working channel, start communications using the handset.



- The screen as shown at right is displayed.
- When completed the communications, return the handset to the cradle.

Note

If the station is unable to comply with the call, own station (caller) may receive one of the following responses may be received. In these cases, if possible according to the message, wait and retry the calling again later. (* is for the coast station only.)

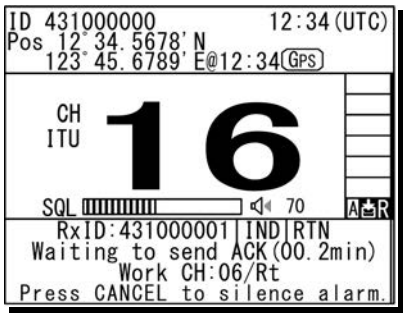
Message	Content
No reason	No reason.
Congestion*	The marine exchange center is congested.
Busy	Busy.
Queue	The call has been queued.
Barred	The station is closed.
No operator	Existing no operator.
Temp no oper	The operator is temporarily away.
EQP disabled	The equipment has been disabled.
Unable channel	The proposed channel cannot be used.
Unable mode	The proposed mode cannot be used.

4.3.2 Receiving routine individual calls

When receiving an individual DSC call from a coast or ship station, perform the following procedures as appropriate according to the message.

■ Procedure ■

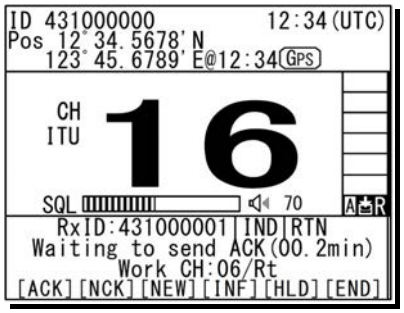
1. The screen at right is displayed, and the ALM lamp blinks and the alarm grows louder gradually.



This example message contains the following information.

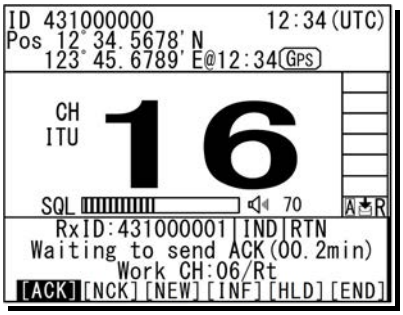
- Message type: Routine individual call
- Caller's MMSI: 431000001
- Object: All modes RT on CH06

2. Press the CANCEL key to stop the alarm and display the screen at right.



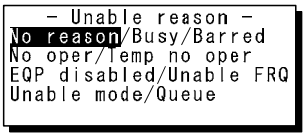
Option handling menus are displayed.

3. Press FUNC key or ENT to move the focused screen to the operation control screen and select the option to handle the procedure.

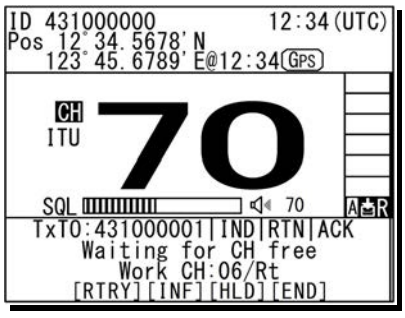


The options are provided as below.

ACK .. Sends the acknowledgement.
NCK .. Sends a reply as “unable to comply”.
Note) Select the unable reason on the popup screen at right.
NEW . Sends an acknowledgement with a new channel.
INF.... Indicates the receiving message.
HLD .. Makes the procedure on hold.
END .. Terminates the procedure.



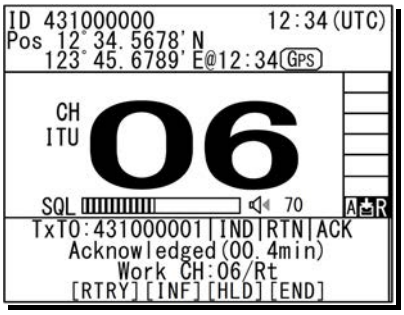
4. If possible to communicate, select ACK and press ENT to start sending the acknowledgement.



- Lifting the handset operation also starts sending the acknowledgement as well.
- The equipment waits for the channel free condition as shown at right. And after that, the acknowledgement is sent immediately.

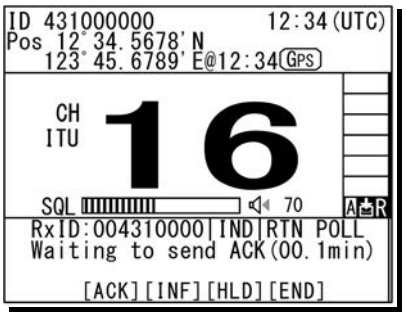
5. After sending an acknowledgement, the working channel is set to communicate.

   Start communicating using the handset.



Note

If the receiving call is not the above mentioned call requesting the communication but a polling call, the screen as follows is shown and, the ALM lamp blinks and the alarm grows louder gradually. In this case, after silencing the alarm, select ACK to acknowledge it.



Additionally note that if it is received while the 9.5.1.3 Polling call of the Automatic ACK menu is set to ON, and there is no active procedure, this call can be acknowledged automatically.

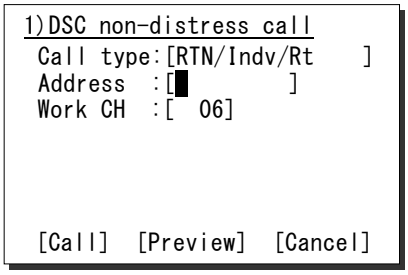
4.3.3 Routine group calls

For radiotelephone broadcasting, a DSC routine call to a group of stations is available.

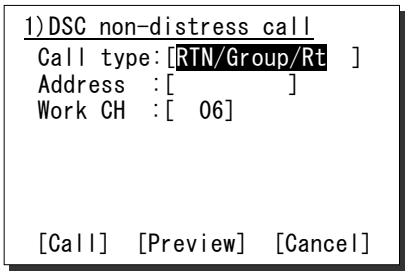
■ Procedure ■

1. Press the DSC RTN key.

The screen as shown at right is displayed.

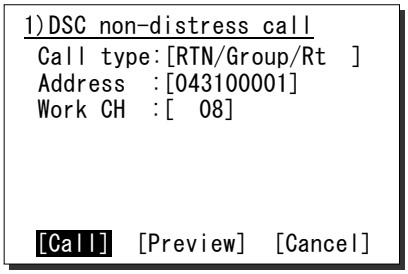


2. Press CANCEL key once, and change the Call type to RTN/Group/Rt as shown at right.



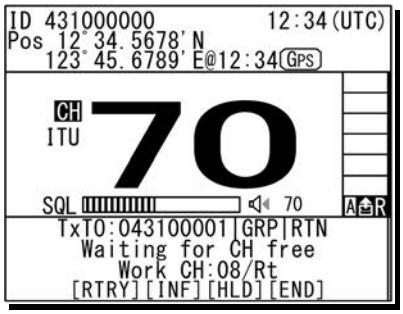
3. Input the Address and press ENT.

The Work CH is set automatically and the cursor moves to the Call.



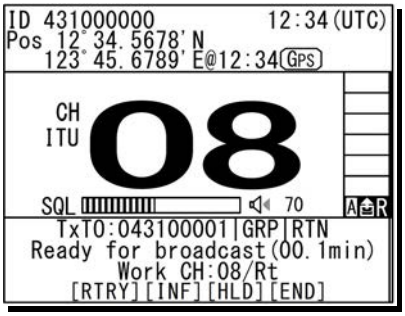
4. Press ENT to start sending the group call.

After checking the channel free condition, sends the message.



5. After sending the message, the working channel is set and the DSC calling procedure is finished.

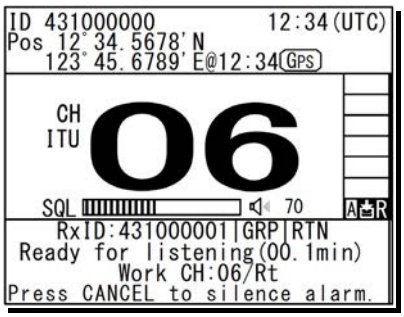
Start broadcasting using the handset.



4.3.4 Receiving routine group calls

■ Procedure ■

The screen at right is displayed, and the ALM lamp blinks and the alarm grows louder gradually.

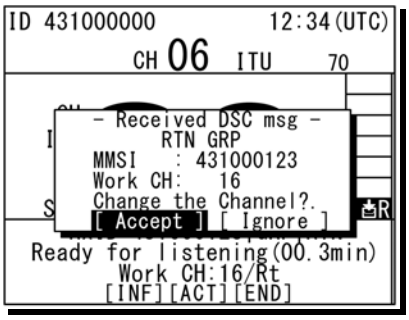


If there is no procedure when receiving the call, the specified working channel is set automatically.

Additionally, this receiving alarm is to be stopped in 10 seconds automatically. But if silencing alarm manually, press CANCEL .

Note If the menu "9.5.8 Auto CH change" is setting to OFF, when pressing the CANCEL key, the popup is displayed on the screen. In this case, select either one handling menu.

Accept : Accepts the message and changes the work channel.
Ignore : Deletes the popup and return to the previous screen without changing the work channel.



4.3.5 Communicating with a PSTN subscriber

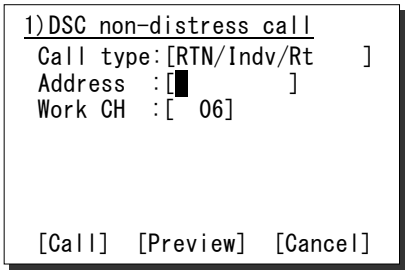
The semi/auto mode is available to connect with a public telephone network (PSTN) via a coast station.

(1) Make a call to a PSTN subscriber

■ Procedure ■

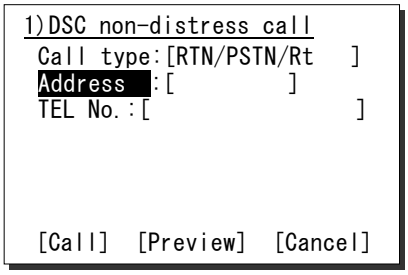
1. Press the DSC RTN key.

The screen as shown at right is displayed.



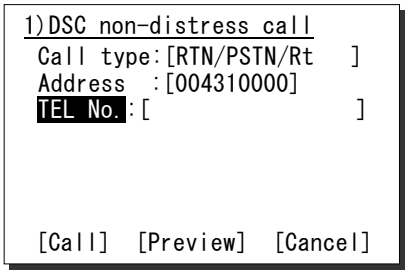
2. Press CANCEL once, and change the Call type to RTN/PSTN/Rt as shown at right.

The menu shown at right is displayed.
In the case of the JHS-780D, the DupRt is selectable as the Call type for the duplex radiotelephone mode



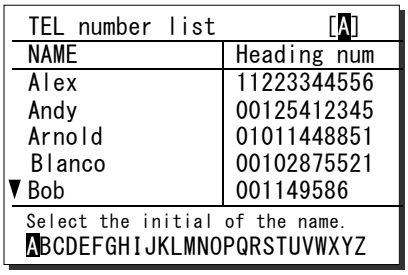
3. As with the routine calls mentioned above, enter the coast station address and press ENT.

The cursor moves to the TEL No.

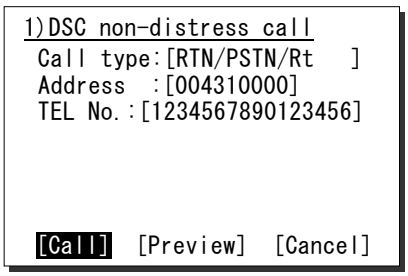


4. Press ENT to display the alphabetically sorted TEL number list. After selecting the initial letter and pressing ENT, select the recipient of the call with the jog dial.

Note
- This list can be registered in the menu 9.4.4 PSTN number list.
- When inputting the TEL number manually, press the CANCEL key to return to the previous screen, and input it using the numeric keypad.



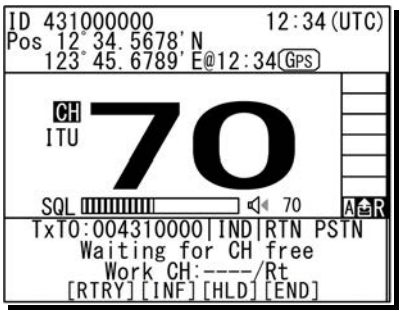
5. After inputting the every field, move the cursor to the Call.



6. Press ENT to start sending the call.

After checking the channel free condition, sends the message. After sending the call, waits for the acknowledgement for 5 sec.

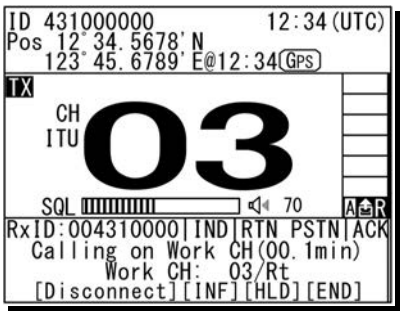
Note If received no response within 5sec, sends the call again. If there is still no response, this call is ceased.



7. After received the acknowledgement, the specified working channel is set.

After the channel changing, a start of call is sent.

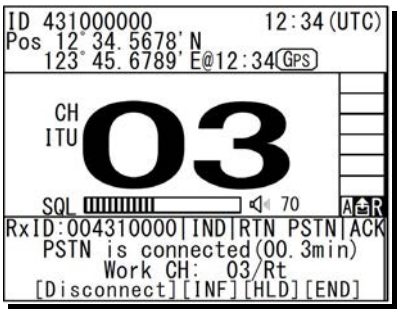
Note If the channel engaged signal is lost, this call is terminated.



8. The PSTN connection is completed.

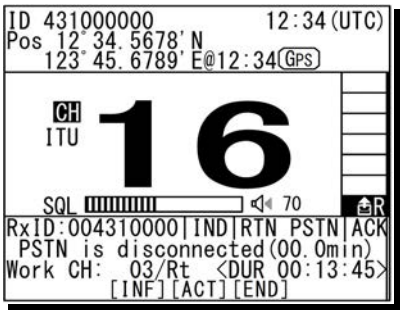
Lift the handset from the cradle and wait for the recipient answering the phone (the PSTN dial tone and ring tone from the handset is heard at this time). After answered the phone, the phone call charge is started.

Note If not answered within 1 minute, this call is terminated. (It may be similar in the case of bad radio link condition during communication.)



9. To finish the phone call, return the handset to the cradle.

The PSTN call is disconnected and the channel is returned to the priority channel such CH16. Additionally, the duration is received from the coast station and is displayed as the DUR. The example at right shows 13 minutes and 45 seconds.

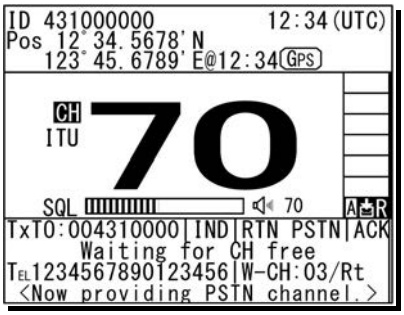


Note
- In the case of the duplex mode of the JHS-780D, the radiotelephone is always in sending condition. Nevertheless, pressing PTT key is needed to talk.
- According to the coast station, the “unable to comply” acknowledgement mentioned above may be received at step 7.
- If the “unable to comply” acknowledgement indicates "Queue" reason, the wait mode can be selected. This mode enables to continue the above procedure from step 7 after receiving the ring back call. (However, if receiving no call within 15 minutes after receiving "Queue", the ring back mode is canceled.)

(2) Receiving a call from a PSTN subscriber

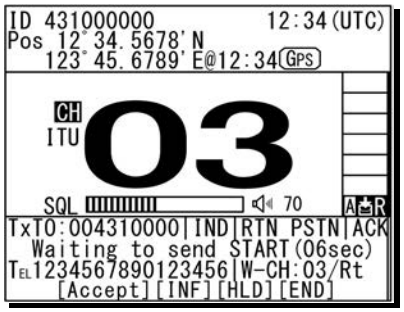
■ Procedure ■

1. When receiving a PSTN call from a coast station, if there is no active procedure, the screen at right is displayed and the equipment starts sending the acknowledgement immediately.



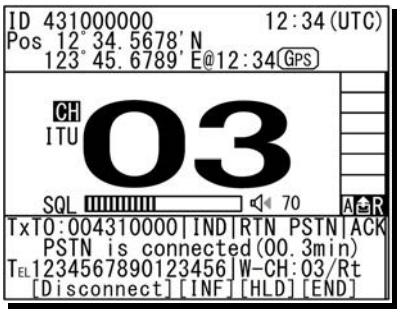
2. After sending the acknowledgement, the screen at right is displayed.

- The ALM lamp blinks and the alarm grows louder gradually.
- The message at right shows the following information.
  - Coast station ID: 004310000
  - Work Channel: CH03
  - Caller TEL No: 1234567890123456



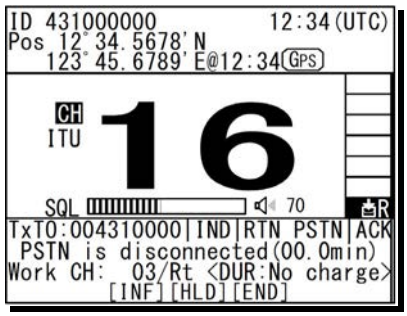
3. If able to comply, lift the handset from the cradle to send the start of call message to start the PSTN communication.

- Pressing ENT on the Accept also sends the start of call. If lost the channel engaged signal, the PSTN call is terminated.
- If not answered within 1 minute, the PSTN call is cancelled automatically.
- If interrupted the receiving signal for 5 seconds during communication, the PSTN call is terminated.



4. When finished the phone call, return the handset to the cradle.

Then an end of call is received from the coast station and the PSTN call is disconnected. However, the duration of the call will not be displayed for free of charge.



Note In the case of the duplex mode of the JHS-780D, the radiotelephone is always in sending condition. Nevertheless, pressing PTT key is needed to talk.

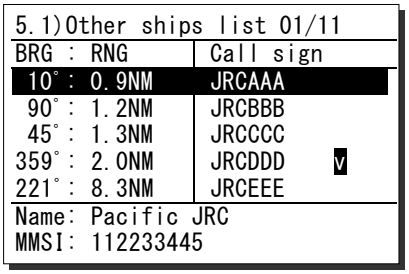
4.3.6 AIS-linked DSC calls

The AIS information (nearby ships call signs, names and identification numbers) is displayed as "Other ships list", and are available to call a listed ship via the DSC directly.

NOTE: To use this function, set the import condition to ON in the menu 9.6 AIS function.

■ Procedure ■

1. Press FUNC ➔ 0AIS

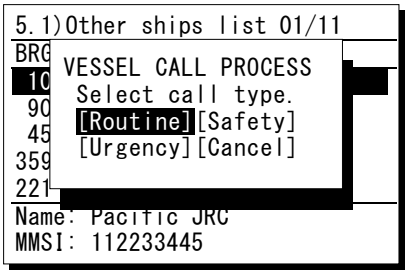


- 5.1 Other ships list at right is displayed.
- On the bottom line, the name and MMSI of the ship highlighted by the cursor is displayed.
- The bearings (BRG) are based on the North-up.
- If 5.2 Proximity check is ON, and the registered ship on the 9.4.2 Ship station list is displayed, V mark is added on the ship's line.
- If existing no ships in the vicinity, "No data" is displayed on the middle of the screen.

Note The column(s) of the call sign, name or MMSI is blank when any of these has not been entered to the ship's AIS, or when not receiving the static information at the AIS of own ship.

2. Select the ship to be called and press ENT using the jog dial.

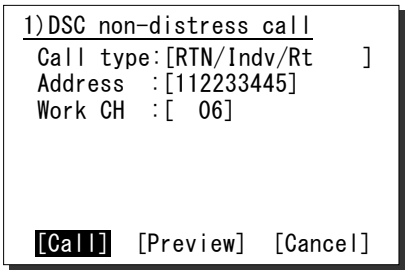
The popup screen at right is displayed.



Note If the ship's MMSI has not been displayed, this function is disabled.

3. Select the call type (category) and press ENT using the jog dial.

The DSC non-distress call menu as shown at right is displayed.



Note The rest of the procedure is the same with “4.3.1 Routine calls to an individual station” described above. And also, it is similar in the case of the safety or urgency category.

4.4 Emergency calls (DSC safety/ urgency/ distress calls)

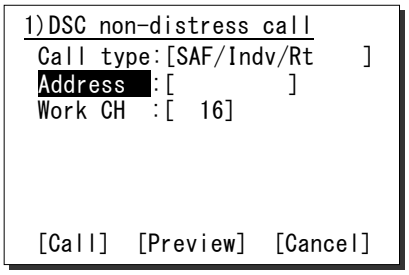
In emergency, the DSC is available for safety/ urgency/ distress calls. For safety and urgency calls, either individual or all ships is selectable for the type of call. For distress calls (alerts), enabled to send either after selecting the nature of distress or without selecting it. In both cases, the dedicated DISTRESS key is used to send the distress alerts.

4.4.1 Safety or urgency calls to an individual station

■ Procedure ■

The procedure to send the safety or urgency individual call is similar to the routine call except selecting the call type to SAF/Indv/Rt or URG/Indv/Rt.

Note Both calls of the safety test and the safety position request are described later.



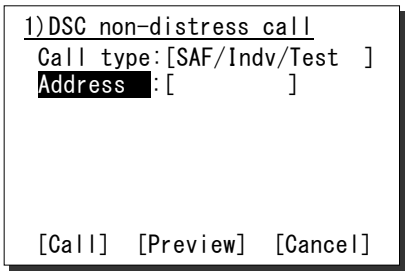
4.4.1.1 Special safety individual calls

As features of safety call, the DSC test cal and the ship position request call are available. In these cases, there is no voice communication and not needed to set a working channel.

(1) Safety test calls

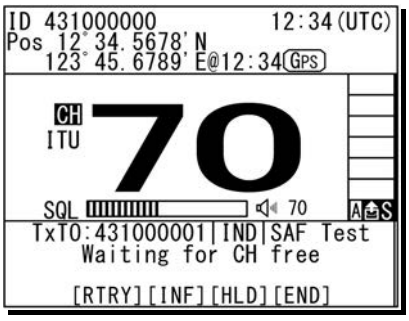
■ Procedure ■

1. On the menu 1.DSC non-distress call, select SAF/Indv/Test in the Call type field and input address.



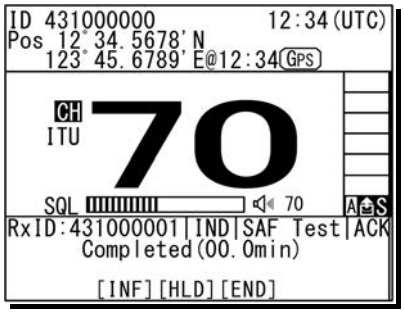
2. Press ENT on the Call to start sending the safety test call.

   The screen at right is displayed to check the channel free, and then the safety test call is sent.



3. When the acknowledgement is received, the ALM lamp blinks and the alarm starts sounding. After silencing it with CANCEL key, the screen becomes as shown at right.

   The safety test call process is now complete. However note that even though the call is sent normally, the acknowledgement may not be received from the called station for some reason.

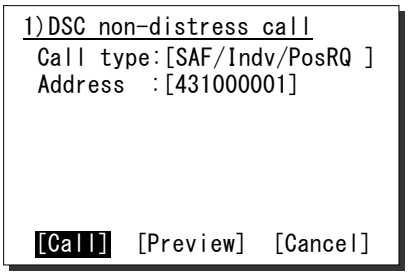


(2) Safety position request calls

■ Procedure ■

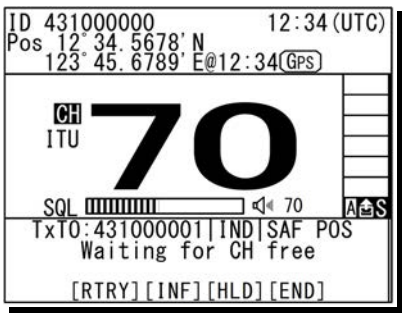
1. Select SAF/Indv/PosRQ in the Call type field and input address.

The cursor is focused on the Call.



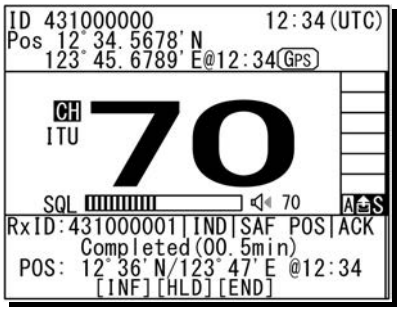
2. Press ENT to start sending the call.

After checking the channel free, the safety position request call is sent and the screen at right is displayed.



3. When the acknowledgement is received, the ALM lamp blinks and the alarm starts sounding. After silencing it with CANCEL key, the screen becomes as shown at right.

The position data of the station is indicated in the Position field usually, and this procedure is complete. However note that even though the call is sent normally, the acknowledgement may not be received from the called station for some reason.



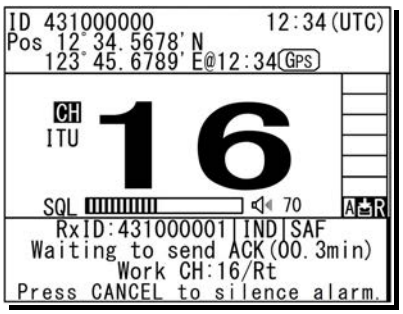
4.4.2 Receiving safety or urgency individual calls

When receiving an individual DSC call from a coast or ship station, according to the message, perform the following procedures as appropriate.

■ Procedure ■

The screen at right is displayed, and the ALM lamp blinks and the alarm grows louder gradually.

- If no procedure exists, starts operating the received message as the active procedure automatically.
- In the case of the urgency category, the receiving alarm is stopped only by pressing CANCEL key.
- After that, similar as the routine individual calls mentioned above except to use CH16 basically.

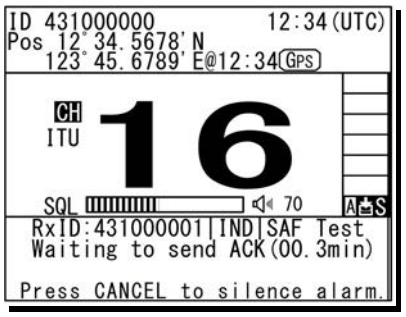


4.4.2.1 Receiving special safety individual calls

(1) Receiving safety test calls

■ Procedure ■

The screen at right is displayed, and the ALM lamp blinks and the alarm grows louder gradually.

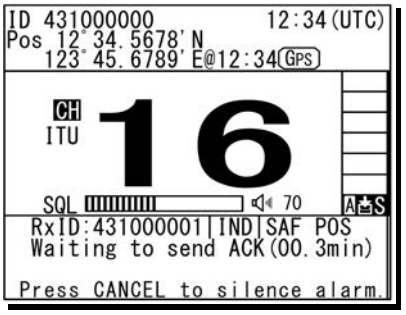


- If received while the 9.5.1.1 Test call of the Automatic ACK menu is set to ON and there is no active procedure, this call can be acknowledged automatically.
- To acknowledge manually, after silencing the alarm with CANCEL key, select ACK to start sending procedure.

(2) Receiving safety position request calls

■ Procedure ■

The screen at right is displayed, and the ALM lamp blinks and the alarm grows louder gradually.



- If received while the 9.5.1.2 Position RQ call of the Automatic ACK menu is set to ON and there is no active procedure, this call can be acknowledged automatically.
- To acknowledge manually, after silencing the alarm with CANCEL key, select ACK to start sending procedure.
- When sending a reply as “unable to comply”, select NCK to send the acknowledgement with no position data.

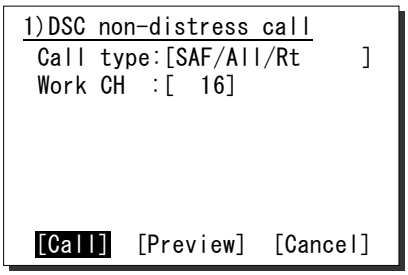
4.4.3 Safety or urgency all ships calls

The DSC safety all ships calls can be made as follows.

■ Procedure ■

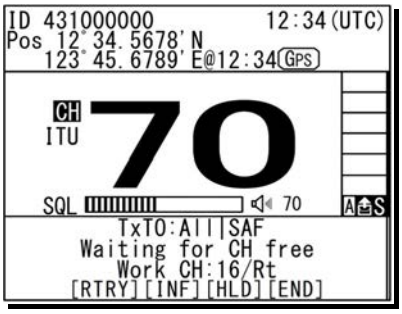
1. On the menu 1.DSC non-distress call, select SAF/All/Rt or URG/All/Rt in the Call type field and press ENT.

The cursor moves to the Call. Additionally, change the working channel, if required.



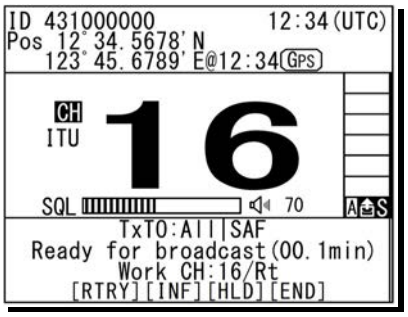
2. Press ENT to start sending the call.

After checking the channel free condition, sends the message.



3. After sending the message, the working channel is set and the DSC calling procedure is finished.

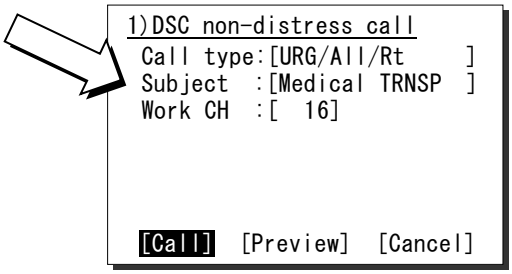
- Start broadcasting using the handset.
- When completed the communications, return the handset to the cradle.



Note

Incase of the urgency call, to inform receivers of the following particular topics, the additional setting using the Subject field is available.

- Medical TRNSP (medical transport ship): Own ship is performing the medical transportation and protected under the 1949 Geneva Convention.
- Neutral ship (neutral nationality): Own ship is of neutral nationality.

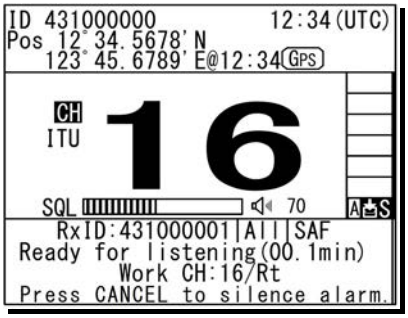


However to use this function, it is needed to set the menu 9.5.3 Medical use or 9.5.4 Neutral use to ON once after powering on the equipment.

4.4.4 Receiving safety or urgency all ships calls

■ Procedure ■

The screen at right is displayed, and the ALM lamp blinks and the alarm grows louder gradually.



Then press CANCEL to silence alarm and listen to the broadcasting.

- If no procedure exists, starts operating the received message as the active procedure automatically.
- When the working channel is changed, the popup screen is displayed to notice it.
- In the case of the urgency category, the receiving alarm is stopped only by pressing CANCEL key.

Note

- To check the topic for Medical transport or Neutral ship when receiving an urgency all ships call, select INF menu to view the detail of the message.
- If the menu "9.5.8 Auto CH change" is setting to OFF, the popup is displayed on the screen after pressing the CANCEL key. Then perform the same processing as "4.3.4 Receiving routine group calls".

4.4.5 Distress alerts

When in distress, distress alerts are always transmitted by pressing the dedicated DISTRESS key. The distress alerts transmit own MMSI, ships position, time of the position, and the nature of distress.

⚠ CAUTION

Do not test the distress alert as doing so may inconvenience local shipping and Rescue Centers.

When sending a distress alert, follow the instructions of the ship's captain or officer in charge.

If a false distress alert is transmitted accidentally, select the Cancel menu and transmit the distress cancel referring the guidance displayed on the controller. And then report the false distress alert to a nearby RCC (Rescue Coordination Center/ in Japan, inform the nearest Japan Coast Guard.)

Information to be reported:
Ship's name, type, nationality, and ID number, the date/time, location and reason why the false distress alert was transmitted. Also the unit model name and manufacture number/date, if possible.

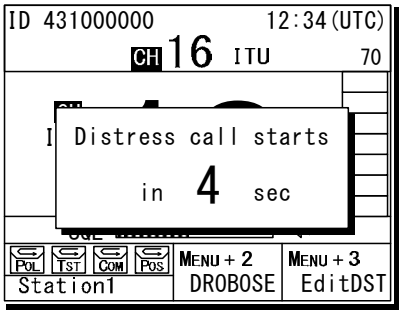
4.4.5.1 Quick distress alerts

The following describes the procedure to send a distress alert immediately without using menus. In this case, the nature of distress in the message is sent as "Undesignated" by default. Further, if no information for the position and the time of position obtained within 23.5 hours, these information is composed automatically as "9999999999" and "8888" respectively.

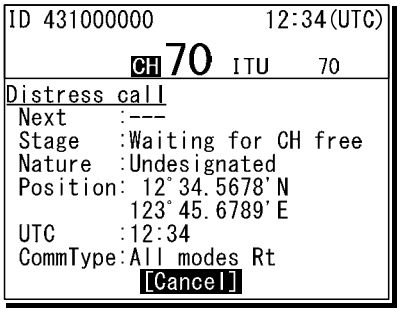
■ Procedure ■

1. Open the DISTRESS key cover.

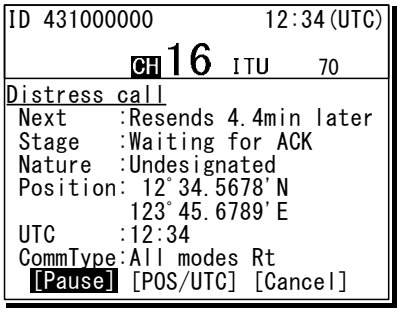
2. Press and hold the DISTRESS key for 4 seconds until the countdown is completed.



3. The distress alert is sent.



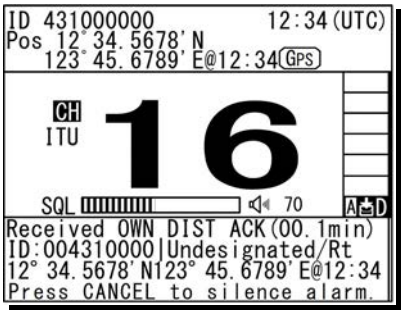
4. After sending the distress alert, wait for the acknowledgement in the condition of the activated distress transmission procedure.



- Unless an acknowledgement is received or the distress alert is cancelled manually, the distress alert repeats automatically in a variable interval every 3.5 to 4.5 minutes. (The time until next sending is shown at Next.)
- While waiting for the acknowledgement, the radiotelephone communication and resending the distress alert by pressing DISTRESS key are available.
- Option menus are available as follows.

  Pause.....Makes the distress mode pause.
  POS/UTC ....Opens the position input menu
  Cancel.....Starts the distress alert cancelling procedure, which is needed to send the DSC acknowledgement and to broadcast from the own ship

5. When acknowledged, the screen at right is displayed.



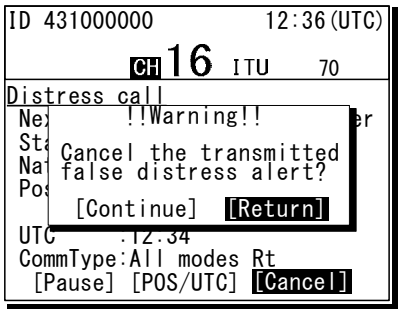
- The ALM lamp starts blinking and the receiving alarm starts sounding.
- Press the CANCEL key to silence the alarm and then call for help with the handset.
- First, the responding station will call on the CH16. Then acknowledge the receipt as follows.
  - Say "MAYDAY",
  - Say "this is",
  - Own ship's MMSI and call sign, position, nature of distress, and rescue requests

Note

If cancelling the distress alert since a false distress alert is transmitted accidentally, perform the distress alert cancelling procedure as follows.

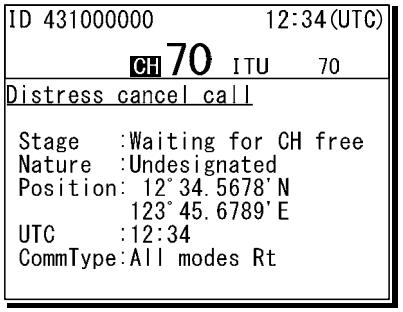
1. Press the CANCEL key.

   Selecting the Cancel option menu is as well.

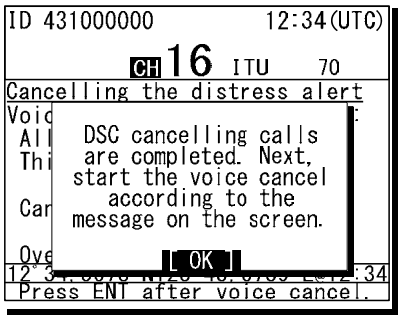


2. On the popup screen, select Continue with the jog dial, and press ENT.

   Starts the distress alert cancelling procedure and sends the DSC acknowledgements to own ship.

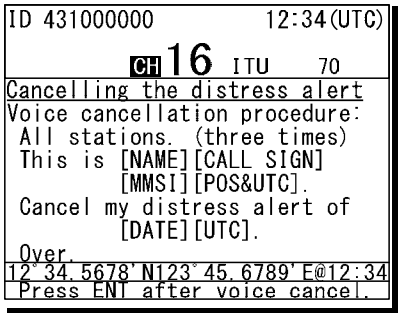


3. After DSC acknowledgements are complete, the popup screen is displayed as shown at right.

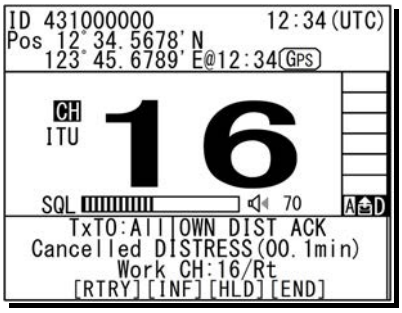


4. According to the guidance on the screen, broadcast to cancel the distress alert.

   When finishing the broadcast, press ENT to finish this procedure.



5. When the cancelling procedure is completed, displays the operating screen as shown at right and finishes the distress mode.



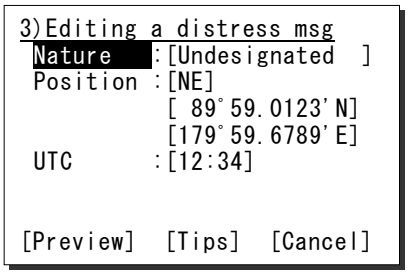
4.4.5.2 Distress alerts from the menu

The following describes the procedure to send a distress alert with the nature of distress selected in the menu. Also, if there is no valid information regarding the position and the time of position, the manual input is available in that menu.

■ Procedure ■

1. On the status display or operation display, while pressing and holding MENU key, press 3 MEM CALL key to open 3. Editing a distress msg.

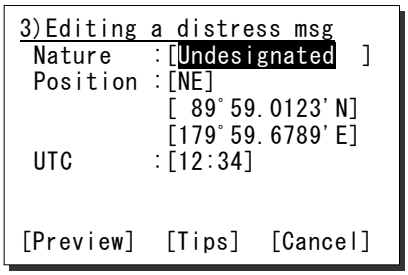
The distress type is displayed as Undesignated as a default value. If the position information is input automatically by a GPS type device, or has already input manually, that information is also displayed.



2. Press ENT and select the nature of distress.

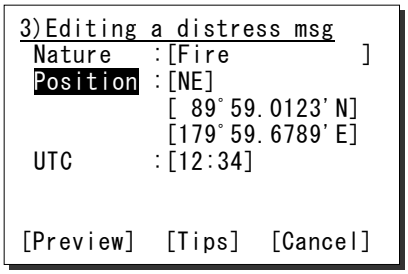
The nature of distress is selectable from below.

Nature of distress	Contents
Fire	Fire, explosion
Flooding	Flooding
Collision	Collision
Grounding	Grounding
Listing	Listing, in danger of capsizing
Sinking	Sinking
Disabled	Disabled and adrift
Undesignated	Undesignated distress
Abandoning	Abandoning ship
Piracy attack	Piracy/armed robbery attack
Man overboard	Man overboard



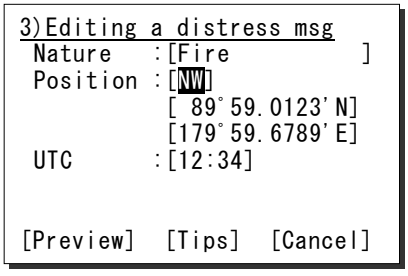
3. Press ENT.

The cursor moves to the Position. If the valid position and time of the position are already displayed, skip to step 7 because no entry is needed.



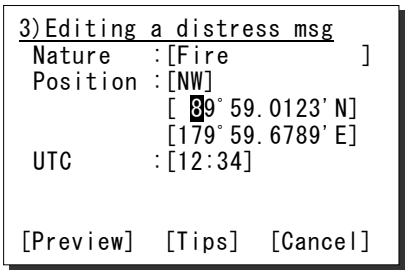
4. Press ENT and select the quadrant of the position with the jog dial.

The quadrant changes as NE→ NW→ SE→ SW→ CL. Select CL to delete the input information.



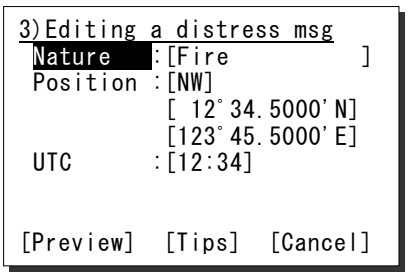
5. After pressing ENT, input the latitude and longitude using the numeric keypad.

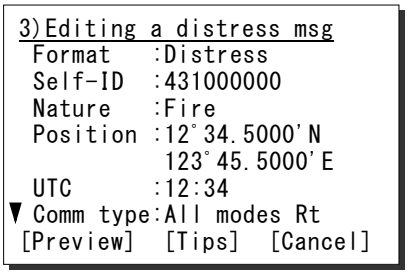
After registered the every digit, input the UTC.



6. After completing the registrations, the cursor returns to the Nature.

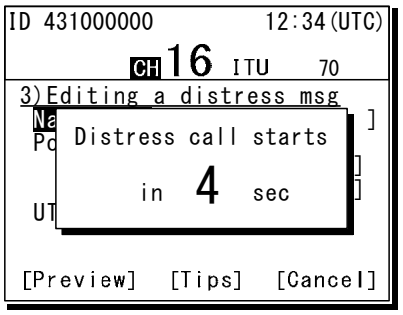
To display the detail of the message as shown at lower right, select Preview and press ENT.





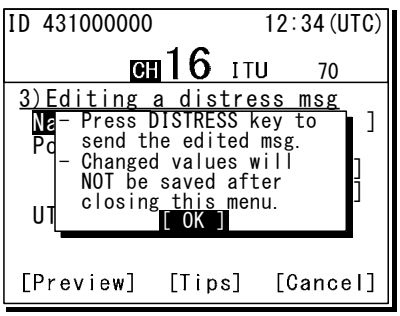
7. Open the DISTRESS key cover.

8. Press and hold the DISTRESS key for 4 seconds until the countdown is completed.



Note

- The rest of the procedure is the same as described in the "Quick distress alert".
- Tips menu shows the precautions about operations of this screen as follows.



4.4.5.3 Receiving distress alerts

When a distress alert is received from another ship, displays the event immediately with the specific two-tone alarm sound.

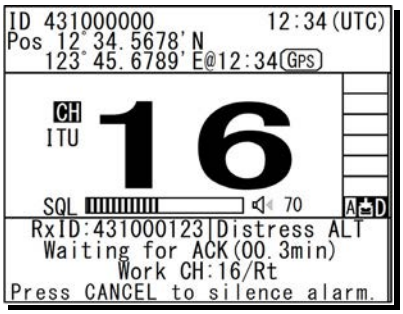
⚠ WARNING

If a distress alert is received, make sure to inform the ship's captain or officer in charge. Doing so may save the lives of the crews and passengers on the ship in distress.

■ Procedure ■

1. When a distress alert is received, the distress message is displayed.

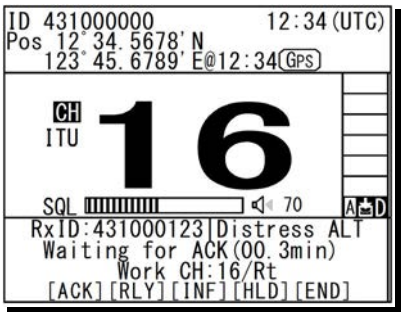
- The ALM lamp starts blinking, and the receiving alarm gradually grows louder.
- If no procedure exists, starts operating the received message automatically.



2. Press the CANCEL key or ENT to stop the alarm.

- The screen at right is displayed. Keep watch for at least 5 minutes, and then notify the coast station as appropriate.
- Press FUNC key or ENT* to move the focused screen to the operation control screen and select the following options to handle the procedure.
  * If the A mark is not displayed, press ENT to activate this procedure.

  ACK.....Sends the acknowledgement to the distress alert.
  RLY .....Sends the distress relay.
  INF .....Indicates the received distress message.
  HLD .....Makes the procedure on hold.
  END.....Terminates the procedure.



Note

- The distress acknowledgement is normally sent from a coast station. However after consulting with the RCC or a coast station and being directed, it is possible to acknowledge the ship in distress from your own ship.
- After sending the acknowledgement, start communicating with the ship in distress according to the following procedure.
  - Say "MAYDAY".
  - Repeat the identity (MMSI) of the ship in distress 3 times
  - Say "This is..."
  - Repeat the identity (MMSI) of your ship 3 times
  - Say "RECEIVED MAYDAY".
- The distress relay calls may be received without receiving the distress alert. In this case, keep watch the CH16 and handle the message using the displayed options as appropriate.
- If the menu "9.5.8 Auto CH change" is setting to OFF, the popup is displayed on the screen after pressing the CANCEL key. Then perform the same processing as "4.3.4 Receiving routine group calls".
- If the case of receiving the distress alerts of the nature of distress “Man overboard (MOB)”, then multiple alerts from different MOB devices is handled as one DSC call event.

4.4.6 Distress relay calls on behalf of someone else (DROBOSE)

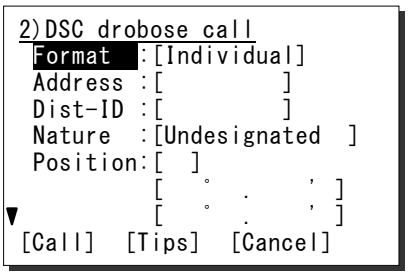
If another ship is in distress but is itself unable to make a distress alert, and the master of the ship considers that further help is necessary, the distress relay call on behalf of the ship can be transmitted using "DSC drobose call" menu. In this case, compose a distress relay call format by inputting the MMSI (if known), the ship's position and the time of position (if known), and the nature of distress to send to all ships or a coast station.

⚠ CAUTION

When sending a drobose call, do NOT press the DISTRESS key. Doing so may cause a false distress alert.
(Drobose calls can be sent via [Call] button displayed on the screen.)

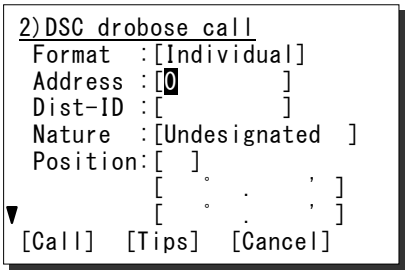
■ Procedure ■

1. On the status display or operation display, while pressing and holding MENU key, press 2SCAN key to open “2. DSC drobose call”.



2. When sending the individual call, select Address and press ENT, and then input the MMSI of the station.

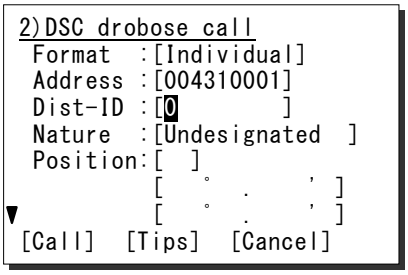
If sending the all ships call, select “All ships” in the Format inputting field. In this case, the Address field is disappeared.



3. Input the Distress ID (MMSI) of the ship in distress, Nature, Position and/or UTC, if known.

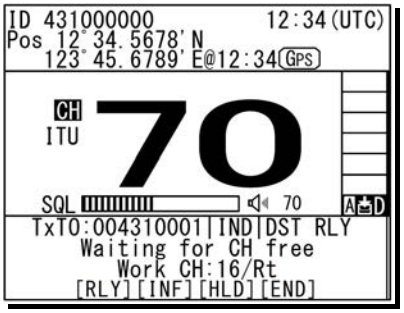
The nature of distress is selectable from below.

Nature of distress	Contents
Fire	Fire, explosion
Flooding	Flooding
Collision	Collision
Grounding	Grounding
Listing	Listing, in danger of capsizing
Sinking	Sinking
Disabled	Disabled and adrift
Undesignated	Undesignated distress
Abandoning	Abandoning ship
Piracy attack	Piracy/armed robbery attack
Man overboard	Man overboard
EPIRB emission	Received DSC VHF EPIRB signal



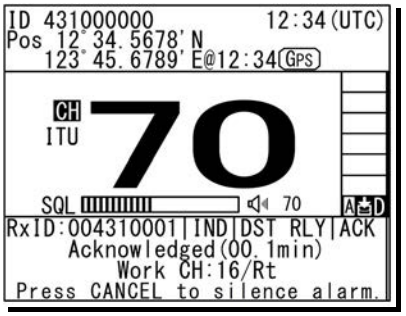
4. After inputting the every information, select Call and press ENT to make a drobose call.

   After checking the channel free, starts sending the drobose call and the procedure displaying the screen as shown at right.



5. When receiving the acknowledgement from the coast station, the screen shows as shown at right.

   - The ALM lamp starts blinking, and the receiving alarm starts sounding.
   - Press the CANCEL key or ENT to silence the alarm, then start the distress traffic.



Note In the case of receiving the drobose call, the call is handled as the distress relay call because the message form of the drobose is just the distress relay message.

4.5 DSC call log

Received DSC messages are classified as distress messages and as other messages. The 20 most recent messages for both types of received and transmitted are saved in the log.

⚠ CAUTION

In order to avoid accidental distress message treating, received distress messages will be erased automatically after 48 hours elapsed since the reception.
Accordingly, if such messages cannot be read out, it is NOT a malfunction.

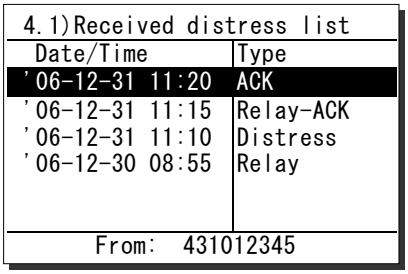
4.5.1 Received distress messages

Received messages regarding distress alerts and the acknowledgements, distress relay calls and the acknowledgements are displayed in this received distress message log. However when receiving a distress alert containing the same 5 messages, only one of those is stored.

■ Procedure ■

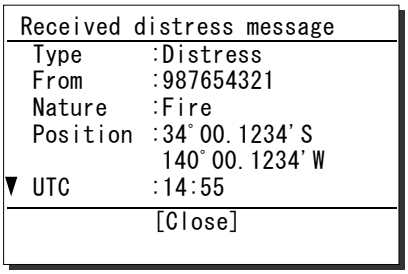
1. Press the MENU key, and through hierarchical menus, select the 4.1 Received distress list.

   - On the bottom line, the MMSI of the ship highlighted by the cursor is displayed.
   - In the event of a receiving error (ECC error), "ECC error" is indicated in the Type field.



2. To view a message, select a line by timestamp and/or message type, and press ENT.

   The selected message is displayed.



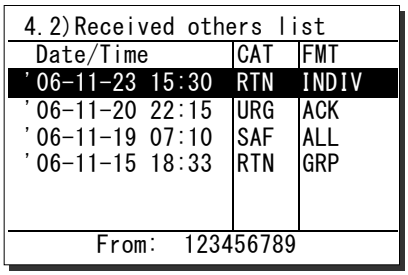
4.5.2 Received other messages

Received messages regarding routine, safety, and urgency calls or the acknowledgements is displayed in this received other message log.

■ Procedure ■

1. Press the MENU key, and through hierarchical menus, select the 4.2 Received others list.

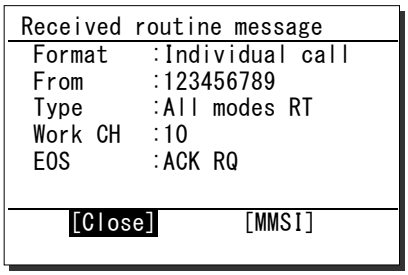
   - On the bottom line, the MMSI of the ship highlighted by the cursor is displayed.
   - In the event of a receiving error (ECC error), "ERR" is indicated in the CAT field.
     (Note: CAT: category, FMT: format)



2. To view a message, select a line by timestamp, category and/or format, and press ENT.

   The selected message is displayed.

   Also the screen shows MMSI menu at the bottom. This MMSI menu is used for the registration of the caller's ID on the station list.



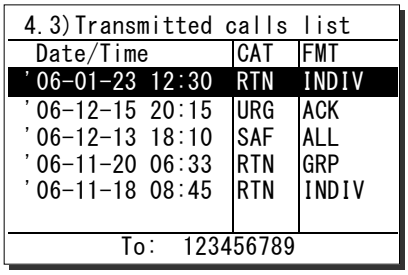
4.5.3 Transmitted messages

Every transmitted message is displayed in this transmitted message log.

■ Procedure ■

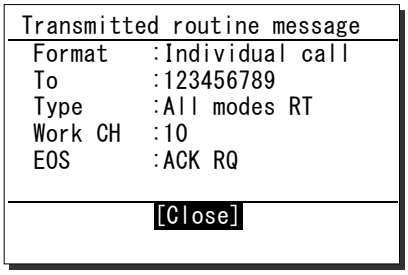
1. Press the MENU key, and through hierarchical menus, select the 4.3 Transmitted calls list.

   On the bottom line, the address information (such as MMSI) of the line highlighted by the cursor is displayed.



2. To view a message, select a line by timestamp, category and/or format, and press ENT.

   The selected message is displayed.



4.6 Other features

In addition to the features described above, the equipment contains useful some features as below.

4.6.1 Notification of registered ships by the AIS

If the AIS have been installed and set to available by the following procedure (and the menu 9.6 AIS function), when ships registered in the contact list falls within the specified range, a popup screen is displayed immediately and notifies the ship's information by the name or 9-digit identity (MMSI).

■ Procedure ■

1. Press the MENU key, and through hierarchical menus, select the 5. AIS information.

   Note: The example at right shows the factory default setting.

```
5)AIS information
 1.Other ships list
 2.Proximity check :OFF
   Tip)Notify of when
       listed-ship fall
       within the range.
 3.Proximity range :20.0NM
 0.Back
```

2. To activate this function, select 2. Proximity check and set to ON with the jog dial.

```
5)AIS information
 1.Other ships list
 2.Proximity check :ON
   Tip)Notify of when
       listed-ship fall
       within the range.
 3.Proximity range :20.0NM
 0.Back
```

3. Press ENT.

   If changing the proximity range, after pressing ENT again, input the appropriate value within the range of 0.1 to 99.9NM with the numeric keypad or jog dial.

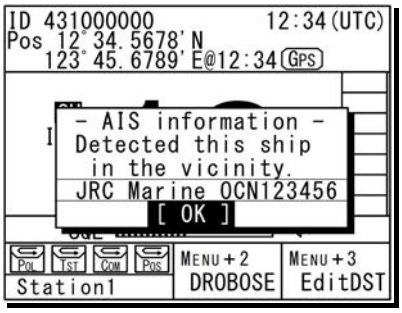
```
5)AIS information
 1.Other ships list
 2.Proximity check :OFF
   Tip)Notify of when
       listed-ship fall
       within the range.
 3.Proximity range :20.0NM
 0.Back
```

4. After completed the proximity range setting, the cursor moves to the 0. Back.

```
5)AIS information
 1.Other ships list
 2.Proximity check :OFF
   Tip)Notify of when
       listed-ship fall
       within the range.
 3.Proximity range :20.0NM
 0.Back
```

Note: When detected the registered ship within the specified proximity range, the popup screen as shown at right is appeared immediately.

However, if the AIS information does not contain the ship's name, the name line is replaced by the MMSI number.



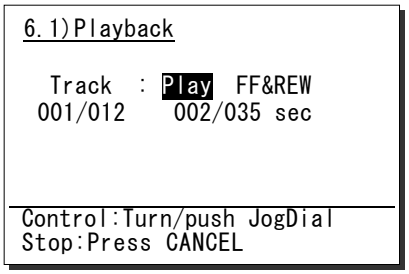
4.6.2 Playback of received voice

When opened the squelch, incoming voice is automatically recorded (up to 120 seconds), and can be replayed to confirm voice communications. Recorded voice is divided into multiple tracks depending on the time for the squelch open/close, and stored until power off. If the total recorded time of all tracks reaches 120 seconds, the oldest recorded track is overwritten.

(1) Replay and stop operations

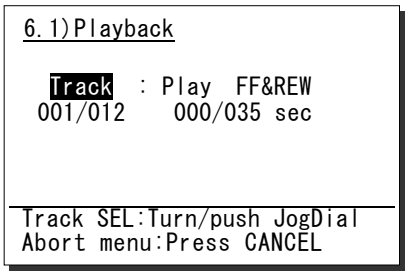
■ Procedure ■

1. Press FUNC ➔ 9 ►.



- If existing any recorded tracks, replays the latest track immediately.
- Pressing ENT resets the counter and restarts the playback of the track.
- The example at right shows the following.
  - Replaying track number: 001
  - Total track numbers: 012
  - Counter value (elapsed time): 002 seconds
  - Recorded time of the track: 035 seconds

2. After finishing the playback of the latest track, the cursor automatically moves to Track and the function is stopped.



- To stop the playback manually, press the CANCEL key.
- If existing other tracks recorded, enabled to select a track number with the jog dial in stop mode.
- To replay from the displayed track to the latest one, press ENT in stop mode.
- To finish this menu, press the CANCEL key in stop mode.

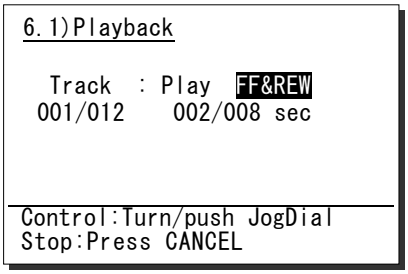
(2) Fast forward and rewind operations

During playback, the fast forward or rewind is available by the following procedure.

■ Procedure ■

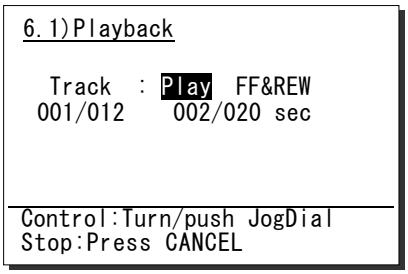
1. Rotate the jog dial during playback to move the cursor to FF&REW.

- Rotating the jog dial right performs the fast forward by increasing the counter value.
- Rotating the jog dial left performs the rewind by decreasing the counter value.
- Pressing the CANCEL key during the FF&REW operation, starts the playback again from that counter.



2. After FF&REW operation, press ENT to continue to replay from the counter position.

Also, after 1sec elapsed since the FF&REW operation, starts the playback automatically without pressing ENT.



(3) Temporary track saving

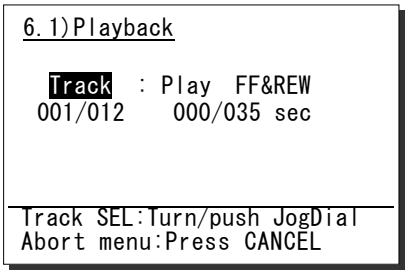
Normally, when the total recorded time of all tracks reaches 120 seconds, the oldest track is overwritten by the new voice track. However the track can be saved temporarily as below until power off.

■ Procedure ■

1. When the cursor is on Track (stop mode), select the desired track with the jog dial.

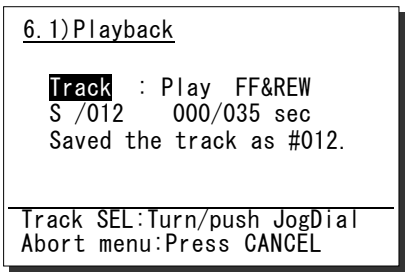
The example at right shows the case of track 1 selected.

Note Only 1 track can be saved.



2. Press ENT for more than 1 second.

- When completed the saving, a beep sounds and the track number is changed from “001” to "S", as is shown at right.
- The saved track is registered as the last number. In the example at right, the track is saved as No.12.



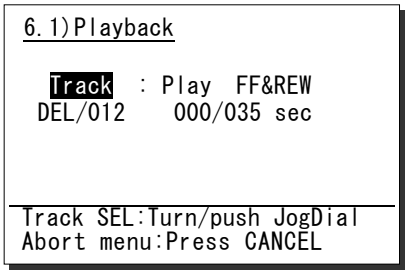
Note When completed the saving, the subsequent track numbers is shifted down by 1.

(4) The saved track deletion

To delete a saved track, perform the following procedure. (Powering off deletes all tracks.)

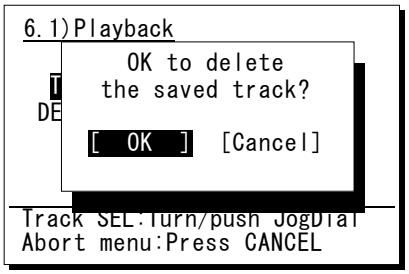
■ Procedure ■

1. When the cursor is on Track (stop mode), select DEL with the jog dial.



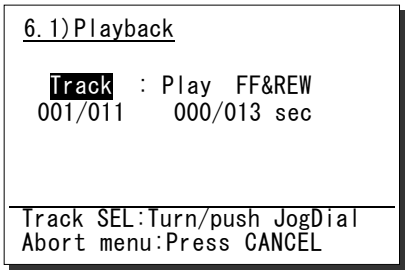
2. Press ENT.

   The confirmation message is appeared.



3. After confirmed the popup message, select "OK" and press ENT.

   After completed the deletion, track 1 is selected, as shown at right.

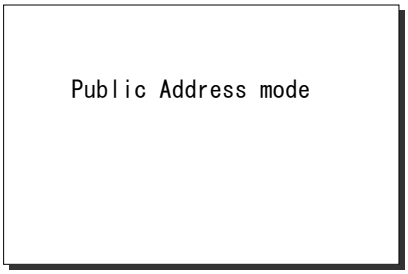


4.6.3 Public Address function with an external speaker (option)

If an external speaker (NVS-423R) is connected, the Public Address function is available to make an announcement over the external speaker.

■ Procedure ■

1. Lift the handset from the cradle, and press FUNC ➔ 4PA.



- The PA mode is started and enabled to make an announcement over the external speaker.
- Press PTT key to talk.
- To finish the public address function to display the regular screen, replace the handset on hook. (Also, pressing the CANCEL key is as well.)

Note In this mode, radio wave is not transmitted by PTT.

4.6.4 Intercom

If multiple controllers (NCM-1770) are connected, the intercom is available between two of them.

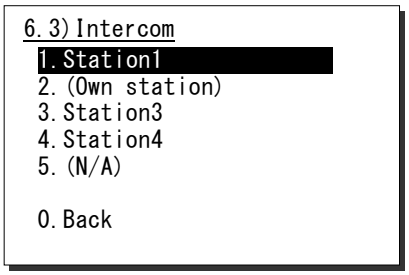
(1) Calling another controller

■ Procedure ■

1. Lift the handset from the cradle, and press FUNC ➔ 5 INT COM .

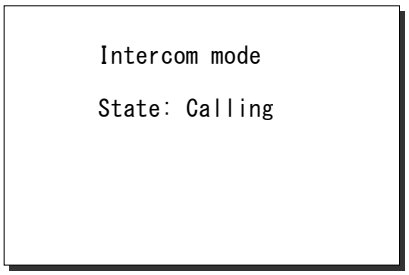
- The controller list is displayed.
- The example at right shows that the following controllers are connected.
  - Address 1: Station1
  - Address 2: Calling controller
  - Address 3: Station3
  - Address 4: Station4

  (Address 5 controller is not connected.)



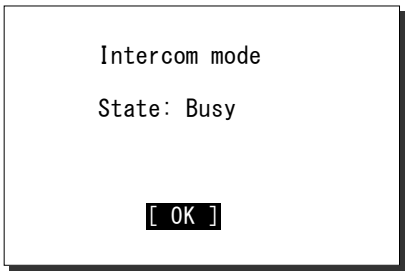
2. Select the recipient with the jog dial and press ENT.

- The screen at right is displayed and the intercom call is started.
- To cancel the calling, press the CANCEL key or hang up the handset while calling.

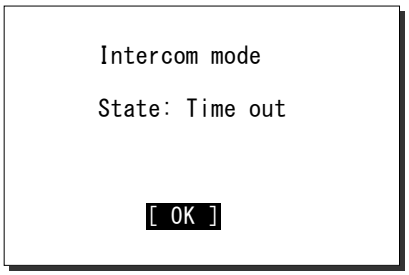


Note

- When starting the call, if the handset of the recipient is left off-hook, the call is not started and the screen at right is displayed.
  Then press ENT to return to the step 1.

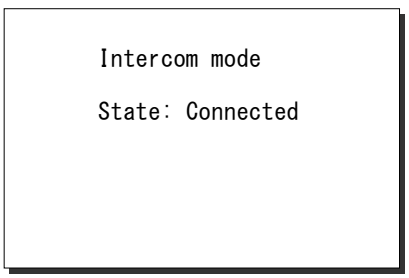


- If not answered within 30 seconds, the screen at right is displayed. Then press ENT to return to the step 1.



3. After answered the phone, the screen shown at right is displayed and enabled to start the communication.

- Press PTT key to talk.
- To finish the intercom, replace the handset on hook.

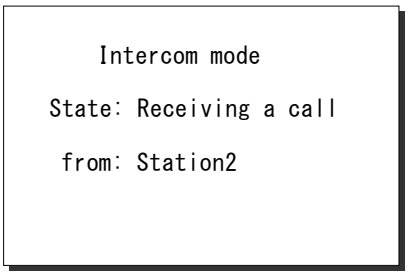


(2) Receiving a call from another controller

■ Procedure ■

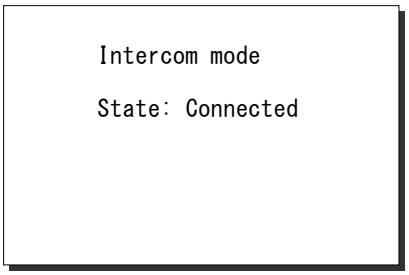
1. If received an intercom call, the screen at right is displayed and the ringing is started.

If not answer within 30 seconds, the screen returns to the previous screen.



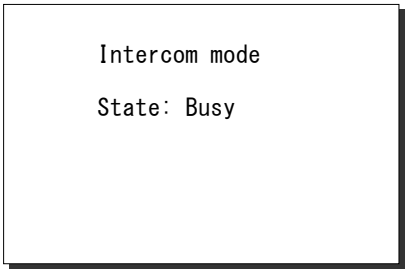
2. When answering to the call, lift the handset and start the communication.

- Press PTT key to talk.
- To finish the intercom, replace the handset on hook.



Note

- The OCC mark remains displayed even while talking, because the called controller (recipient) is in monitor mode.
- While using the intercom function between two of controllers, if the other controllers are connected, those screens display as shown at right.



5. SETTINGS & REGISTRATIONS

This chapter describes the procedure for settings and registrations for the date and time manually, the contact lists for DSC calls, advanced DSC settings, and other settings for the equipment.

5.1 Date and time setting

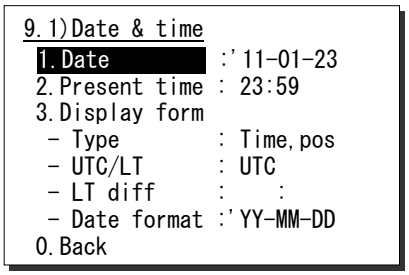
Normally, the date and time are updated automatically if importing GPS information. But if necessary, input these parameters manually as follows.

⚠ CAUTION

The time described below means the present time, and is different from the time in the menu 9.2 POS/TIME that means the time when the position information is valid.

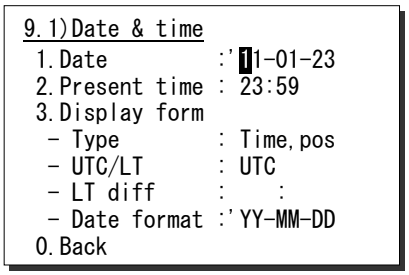
■ Procedure ■

1. Press the MENU key, and through hierarchical menus, select the 9.1 Date & time.

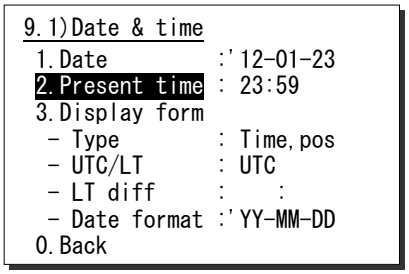


2. To input the date, press ENT.

   Input the year, month, and date with the numeric keypad or jog dial. (When using the jog dial, select the value and press ENT for each digit.)

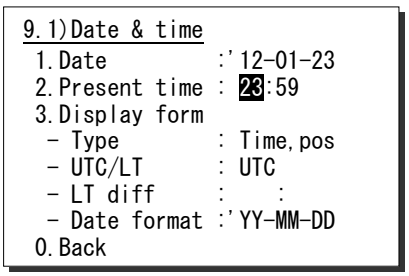


3. After completed the above steps, the cursor moves to 2. Present time.



4. To input the present time (UTC), press ENT.

   - Input the hours and minutes with the numeric keypad or jog dial. (When using the jog dial, select the value and press ENT for each digit.)
   - To finish this menu, place the cursor on the any one of the selective items and press the CANCEL key.



Note In addition to the above, the following items can be set in this menu.

- Type: Select a type shown on the status display from below.
  - "Time,pos" : Displays both of the present time and position.
  - "Time" : Displays only the present time.
  - "Pos" : Displays only the present position.
- UTC/LT: Select a type of time shown on the screen.
- LT diff: Set the local time difference to display the local time.
- Date format: Select a type of date shown on the DSC message lists or the alarm history from below.
  - " 'YY-MM-DD" : Displays January 23, 2012 as '12-01-23.
  - " MMM DD,'YY" : Displays January 23, 2012 as Jan 23,'12.
  - " DD MMM,'YY" : Displays January 23, 2012 as 23 Jan,'12.

5.2 Own ship position and time setting

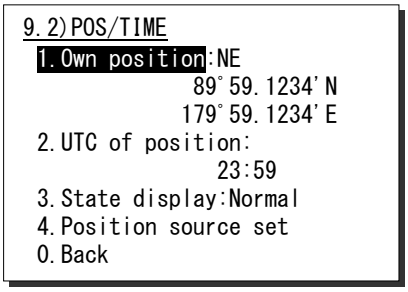
Normally, the ship's position and the time are updated automatically if importing GPS information.
But if necessary, input these parameters manually as follows.

⚠ CAUTION

The time described below means the time when the position information is valid, and is different from the present time mentioned above.

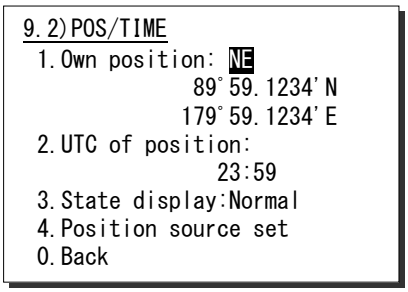
■ Procedure ■

1. Press the MENU key, and through hierarchical menus, select the 9.2 POS/TIME.



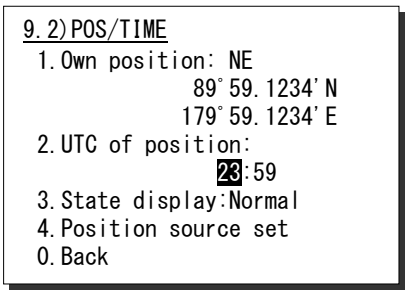
2. To input own ship's position, press ENT.

Select the position quadrant with the jog dial, and press ENT. Then input the latitude and longitude, and press ENT with the numeric keypad or jog dial.



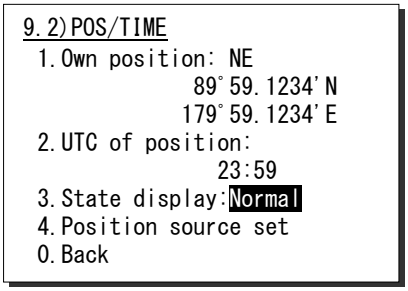
3. When inputting the own ship's position is complete, the cursor moves to the time column of the 2. UTC of position.

- Just after inputting the position, the present time is input to this column automatically.
- Input the hours and minutes, and press ENT.



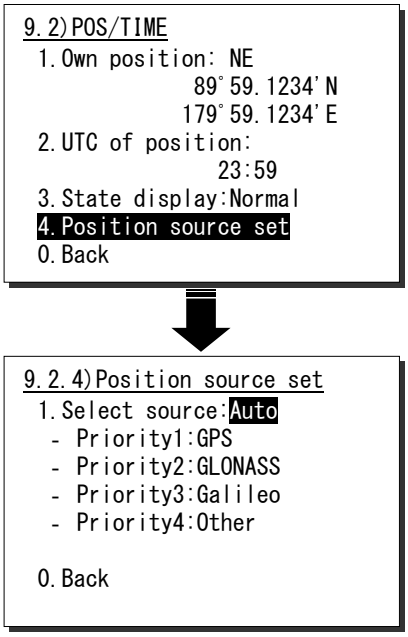
4. When inputting the UTC of position is complete, the cursor moves to the 3. State display.

- To indicate the positioning system and the type of quality, press ENT and select Quality.
- For more details, see "9.4 Peripheral interface (1.3) Indication about the positioning system and the quality type".



5. Move the cursor to 4. Position source set and press ENT.

- The screen at lower right is displayed. If changing the priority of the position sources, set “1. Select source” to Manual and then edit the Priority1 to 3.
- About this priority settings, “Other” (other than the GPS/ GLONASS/ Galileo) is fixed as the 4th priority.



Note

- After the position and the time information are input manually, that information is not overwritten with an external device, such as a GPS, automatically.
- If using the GPS information after manually inputting data, set the quadrant field mentioned above to “GPS”.
- If the position and the time information are not received within 10 minutes after powering on, or after 10 minutes elapsed since interrupted, the alarm screen may appear. Further, regardless of either manually or automatically if not updated the position and the time within 4 hours after the last entry, the alarm screen also appears.
- For the input port from the positioning system such as GPS, the equipment has fixed one serial port (NMEA 0183 compliant).

5.3 Settings for each Controller

The following describes the procedure regarding individual settings for controller such as LCD adjustment.

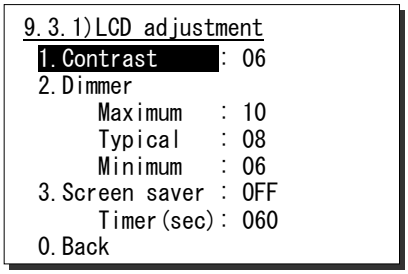
5.3.1 LCD adjustment

The LCD conditions for viewability are adjustable as follows.

■ Procedure ■

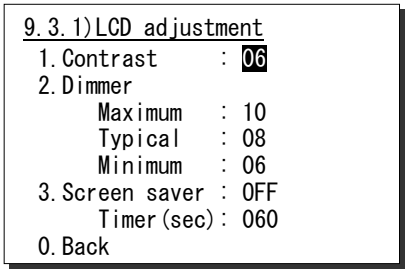
1. Press the MENU key, and through hierarchical menus, select the 9.3.1 LCD adjustment.

   The screen as shown at right is displayed.



2. Move the cursor to the desired item and press ENT. Then alter the settings as appropriate with the numeric keypad or jog dial and press ENT again.

   Set each item within the ranges given below.
   - Contrast: 1 - 11
   - Dimmer: 1 - 10
   - Screen saver: ON/OFF
   - Timer: 1 - 999 seconds



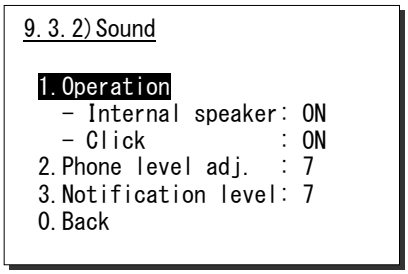
5.3.2 Sound settings

The sound settings such as the click beep are adjustable as follows.

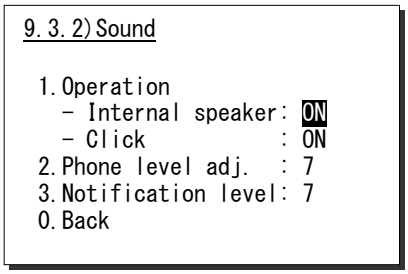
■ Procedure ■

1. Press the MENU key, and through hierarchical menus, select the 9.3.2 Sound.

   The screen as shown at right is displayed.



2. Move the cursor to the desired item and press ENT. Then set the conditions as appropriate with the numeric keypad or jog dial and press ENT again.
   - The phone level can be set within 1 - 8.
   - The notification level for such as a tone of the popup screen can be set within 1 - 7.



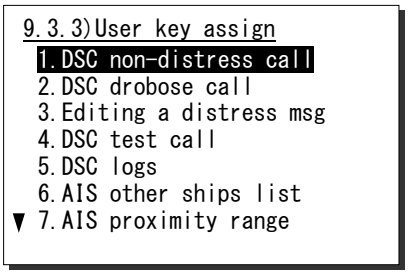
5.3.3 User key assignment

The User key can be used as the programmable key for the shortcut menu key of the desired hierarchical menus, or for the key of the special functions (see the following * marked descriptions).

■ Procedure ■

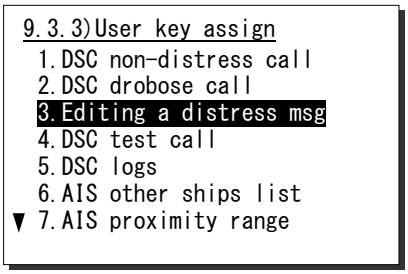
1. Press the MENU key, and through hierarchical menus, select the 9.3.3 User key assign.

The screen at right is displayed. If already been registered, the cursor is placed on that menu.



2. Move the cursor to the desired menu to be registered with the jog dial.

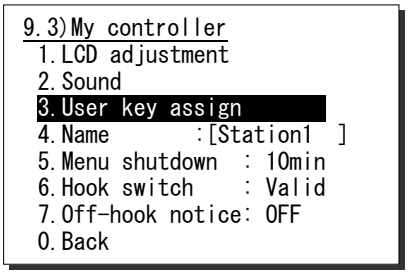
The assignable menus and functions are as follows.



1.	DSC non-distress call	(Menu1)
2.	DSC drobose call	(Menu2)
3.	Editing a distress msg	(Menu3)
4.	DSC test call	(Menu1)
5.	DSC logs	(Menu4)
6.	AIS other ships list	(Menu5.1)
7.	AIS proximity range	(Menu5.3)
8.	Playback	(Menu6.1)
9.	Public address	(Menu6.2)
10.	Intercom	(Menu6.3)
11.	Scan	(Menu7.1)
12.	Dual watch	(Menu7.2)
13.	Memory channel list	(Menu7.3.1)
14.	Private channel	(Menu7.4)
15.	Weather channel	(Menu7.5)
16.	Region	(Menu7.6)
17.	CH SQL setting	(Menu7.7)
18.	Self diagnosis	(Menu8.1)
19.	DSC loop	(Menu8.1.5)
20.	Alarm information	(Menu8.2)
21.	System information	(Menu8.3)
22.	DSC AF inspection	(Menu8.5)
23.	Date & time	(Menu9.1)
24.	POS/TIME	(Menu9.2)
25.	My controller	(Menu9.3)
26.	Contact list	(Menu9.4)
27.	DSC operation	(Menu9.5)
28.	Automatic ACK	(Menu9.5.1)
29.	Group ID	(Menu9.5.6)
30.	Inactivity timeout	(Menu9.5.7)
31.	Printer property	(Menu9.7)
32.	Dedicated ENT key	* Use User key as Enter
33.	CH dial lock ON/OFF	* Use Jog dial for channel setting or not
34.	TRCVR setting screen	* Focus Transceiver setting area on Ope display
35.	Channel monitor	* Open the squelch temporarily
36.	FUNC rotation order	* Move focus in counterclockwise on Ope display
37.	FUNC with CH end	* Move but stop at TRCVR set area on Ope disp
38.	Night screen	* Reverse black and white dots on LCD
39.	Font change	* Select normal or fine font on regular screen

3. Press ENT to complete registration.

After registration, the screen returns to the previous hierarchical menu as shown at right.



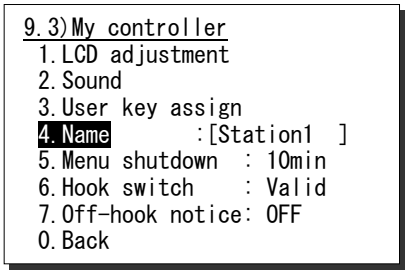
Note When the USER key is pressed in the factory default setting, this menu is immediately displayed.

5.3.4 Name a controller

When connecting multiple controllers, each controller can be named respectively to make identification easier. The name of each controller is always displayed on the top left of the screen.

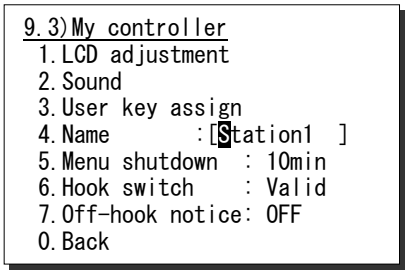
■ Procedure ■

1. Press the MENU key and through hierarchical menus, select the 9.3.4 Name.



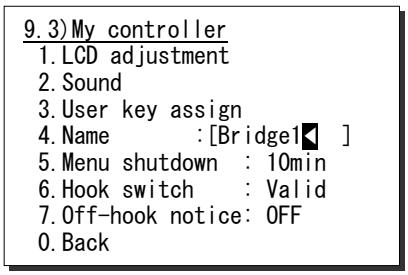
2. Press ENT to name the controller.

   - Up to 10 alphanumeric characters available.
   - Assigned "StationX (X: address No.)" by default.
   - The following characters are available.
     - Alphabet (capital and small letters)
     - Numbers 0 - 9
     - The following signs, space and determination(◀).
       [ ] _ " # % & ' ( ) ? @ + - / = : ; < >



3. Select a character and press ENT one by one.

   - To change the character at the cursor position, rotate the jog dial to select the character, and press ENT to move the cursor to the right. Further, when using the numeric keypad to input numbers, pressing ENT is not needed.
   - Only to move the cursor to the right, press ENT.
   - To return to the previous letter, press the CANCEL key.
   - To complete the name entry of 10 characters long, press ENT after selecting the last character by the jog dial. Or if less than 10 characters long, following the name, select the determination as shown at right, and press ENT.



Note The characters sequence shown by turning the jog dial is as follows.

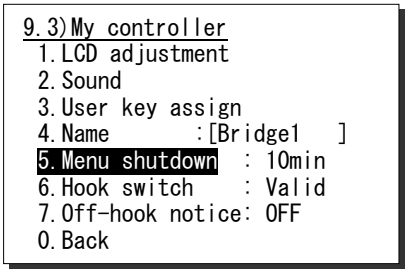
◀ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z a b c d e f g h i j k l m n o p q r s t u v w x y z [ ] _ " # % & ' ( ) ? @ + - / = : ; < > 0 1 2 3 4 5 6 7 8 9 (space)

5.3.5 Menu shutdown timer setting

If the menu screen is displayed and left without closing, the screen is closed automatically after the specified time, which can be set as follows.

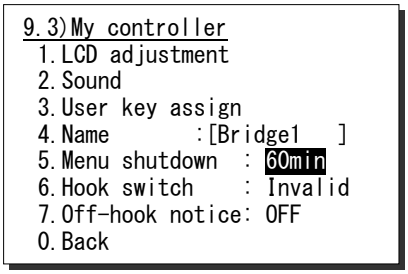
■ Procedure ■

1. Press the MENU key, and through hierarchical menus, select the 9.3.5 Menu shutdown.



2. Press ENT and input the time. And then press ENT again to finish it.

   The timer can be set within 00 (OFF) - 60.

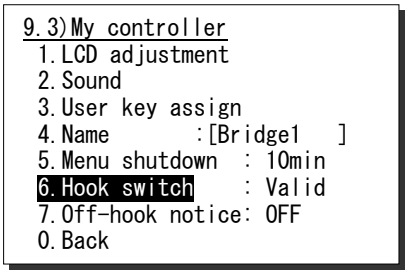


5.3.6 Disabling the hook switch

The hook switch for the handset can be disabled not to set to CH16 by returning the handset to the cradle. (As a factory default setting, the hook switch is set to “Valid”.)

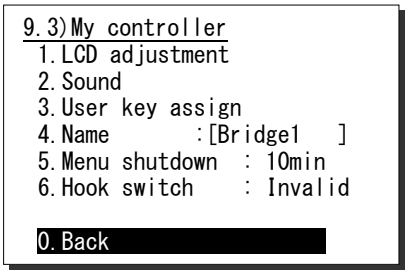
■ Procedure ■

1. Press the MENU key, and through hierarchical menus, select the 9.3.6 Hook switch.



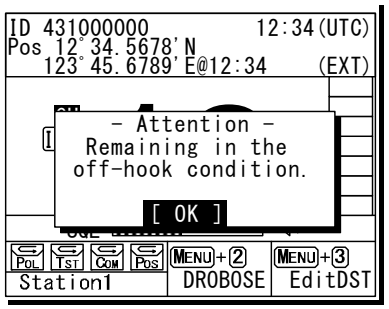
2. Press ENT and select the condition. And then press ENT again to finish it.

   When selecting “Invalid”, deletes the line of “7. Off-hook notice” and the cursor moves to 0. Back.



Note

While setting this menu to Valid and also setting 7. Off-hook notice to ON, if the handset is left in the off-hook condition, the popup screen as shown at right is displayed.



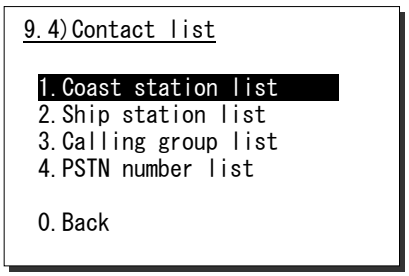
5.4 Creating contact lists

The following describes the procedure to create the contact lists for a coast station or ship station call, or for a group call via DSC. Additionally, the PSTN number list can be created using the similar procedure.

(1) Making a new list

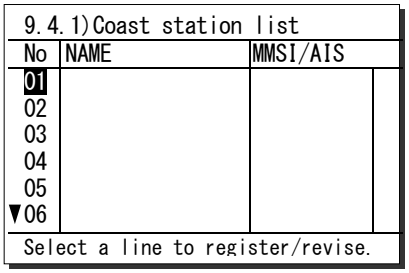
■ Procedure ■

1. Press the MENU key, and through hierarchical menus, select the 9.4 Contact list.



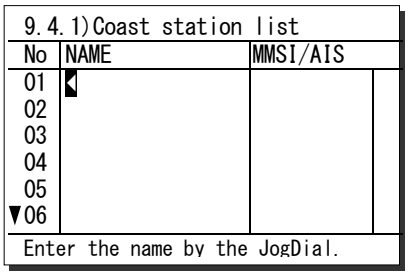
2. Select the desired list to be created with the numeric keypad or jog dial.

The example at right shows the coast station list.
The following is the procedure in the case of the coast station list, but is essentially the same with the case of the ship station list, the group list, or the PSTN number list.



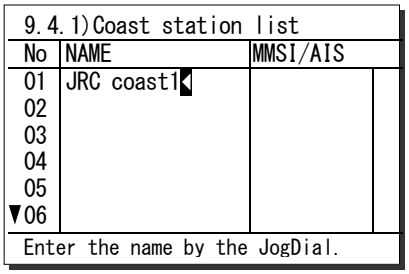
3. Select a line number and press ENT.

The screen becomes the name entry mode.
If the name is left blank and "◄"is pressed, "Unknown" is displayed and the cursor is moved to MMSI column.



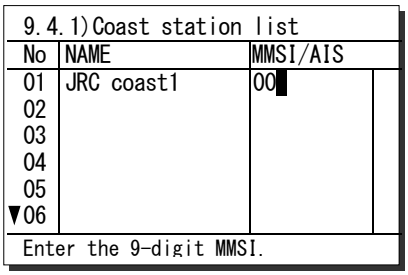
4. Input characters of a name by selecting a character with the jog dial and ENT one by one.

- Up to 14 alphanumeric characters available.
- Other procedure are essentially the same with the name entry procedure in the 9.3 My controller.



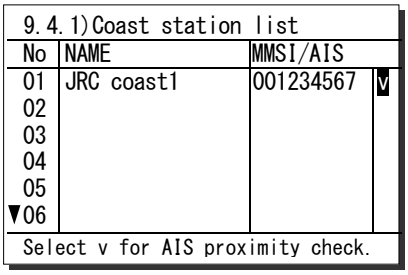
5. After completed the name entry, the cursor moves to the MMSI column.

- Input the MMSI with the numeric keypad or jog dial.
- For coast stations, "00" is inserted automatically at the starting digit and the field is ready to enter the rest of the MMSI numbers. (In the case of the group list, "0" is added as well.)
- When using the numeric keypad, input all digits consecutively.
- When using the jog dial, select a number and press ENT for each digit repeatedly.



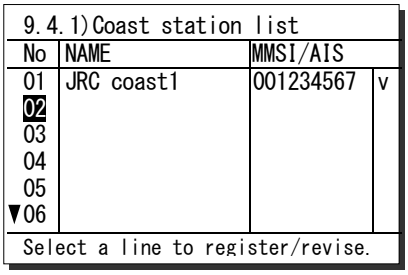
6. After completed the MMSI entry, the cursor moves to the AIS column.

To activate the AIS proximity check function for the station, check "v" sign with the jog dial.



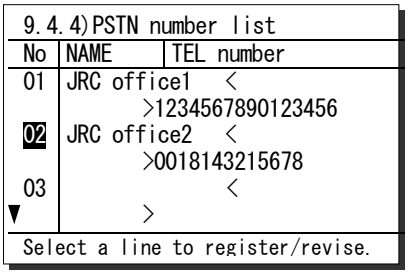
7. After completed the entry of the station, press ENT to move the cursor to the next line number.

- Follow the same procedure above to create the radio station list.
- To finish this menu, place the cursor on any one of the registration numbers and press the CANCEL key.



Note

- The maximum registerable number is 80 for each of the coast station list, the ship station list, and the PSTN number list, and is 20 for the calling group list.
- The registerable telephone number digits are 1 to 16 and the registration screen is displayed as shown below.

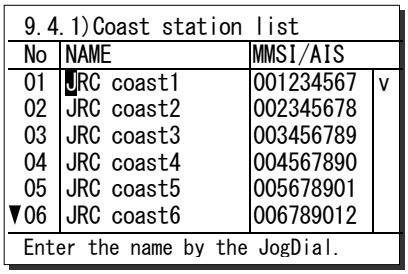


(2) Revising a list

■ Procedure ■

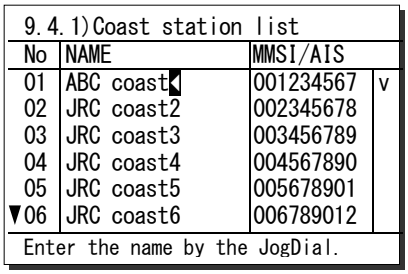
1. Select the registration number to be revised at step3 above, and press ENT.

The example at right shows the case of the No.1 selected to revise the content.



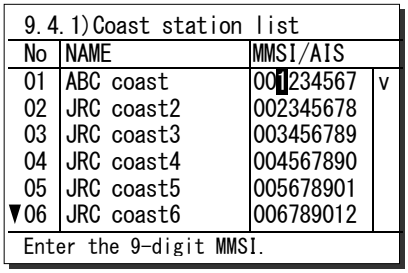
2. To change the name, change the characters with the jog dial and ENT one by one.

- The procedure is basically similar with the step4 mentioned above.
- Only to move the cursor to the right, press ENT. Additionally, when moving the cursor without changing the name, enter the determination character at the end of the name.



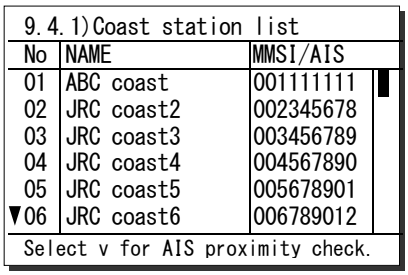
3. After completed the name revising, the cursor moves to the MMSI column.

- Change the digits of the MMSI with the numeric keypad or jog dial.
- Only to move the cursor to the right, press ENT.

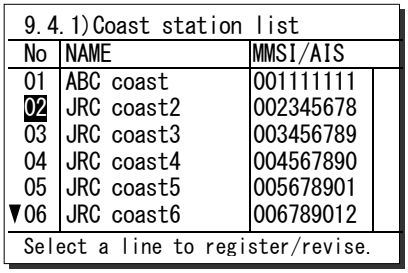


4. After completed the MMSI revising, the cursor moves to the AIS column.

- If required, change the status with the jog dial and press ENT.
- If not required to change the status, press ENT.



5. After completed, the cursor moves to the next line number.



Note
- When the cursor is placed on the line number, pressing two digits of the number enables to move the cursor to the specified number.
- To erase a registered line, select a space at the beginning of the name and press ENT.
- To erase all data of the currently displaying list, select "00. ALL CLEAR function" button and press ENT.

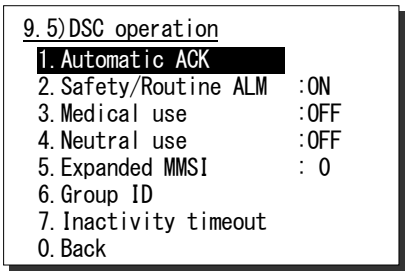
5.5 Advanced settings for DSC

The following describes the procedure for the advanced DSC settings such as automatic acknowledgement, as well as creating a PSTN number list.

■ Menu screen ■

Press the MENU key, and through hierarchical menus, select the 9.5 DSC operation.

The following describes the procedures from this screen.
Note that the screen at right shows factory default settings.



5.5.1 Automatic acknowledgement

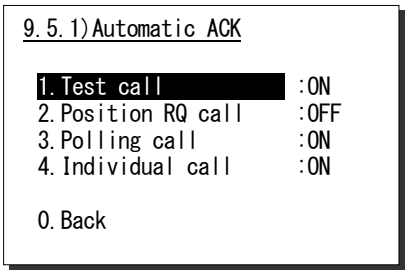
While the automatic acknowledgement is set to ON, and no menu is displayed and there is no active procedure, if either one of the individual calls below is received, the acknowledgement is sent automatically.

- Safety test call
- Safety position request call
- Routine polling call
- Individual call requesting communication without valid frequency (*)
  (*) In this case, the “unable to comply” acknowledgement is sent.

■ Procedure ■

1. Move the cursor to 1. Automatic ACK, and press ENT.

   The screen as shown at right is displayed.



2. Set the desired calls to be acknowledged automatically to ON.

5.5.2 Disabling receiving alarms for routine and safety calls

The aural alarm for routine and safety calls can be disabled as follows.

■ Procedure■

To disable the receiving alarms for routine and safety calls, set 2. Safety/Routine ALM to OFF with the jog dial.

5.5.3 Medical/Neutral use setting for urgency calls

The following describes the procedure to set the condition so that an urgency all ships call containing the additional subject of either "Medical transportation" or "Neutral nationality" can be sent. It is useful for the situation when sailing dangerous waters such as in areas of political instability, and needed to inform receivers of the additional information if any of the following apply.

- Own ship is performing medical transportation and protected under the 1949 Geneva Convention.
- Own ship is of neutral nationality in accordance with ITU resolution 18 (Mob-83).

Additionally, note that this setting returns to the default setting (OFF) if the power is turned off.

■ Procedure ■

To use these functions, set 3. Medical use or 4.Neutral use to ON with the jog dial.

5.5.4 Expanded MMSI registration

⚠ CAUTION

Always set the expanded MMSI in the bridge of the vessel to zero (0). If setting to another value other than zero, DSC calls may not be received.

If there are multiple DSC devices having the same 9-digit MMSI on board a ship, setting the 10th digit of the MMSI number to a non-zero value is available to distinguish them in the case of routine individual calls.
The handling of 10-digit MMSI is as follows.

- When sending a routine individual call, the caller ID (own ship station's MMSI) is 10-digit MMSI.
- When receiving a routine individual call, the DSC having the identical address only treats the message, i.e. mainly the DSC having "0" as the 10th digit of MMSI receives an individual call addressed to the own station.
- When sending an acknowledgement to a received individual call, the address of the call is entered the caller's ID of the individual call as it is, i.e. if the 10th digit of the caller's ID is not "0", the address is 10-digit MMSI automatically.

■ Procedure ■

To register the 10th digit of own MMSI, set the number to the 5. Expanded MMSI condition with the numeric keypad or the jog dial.

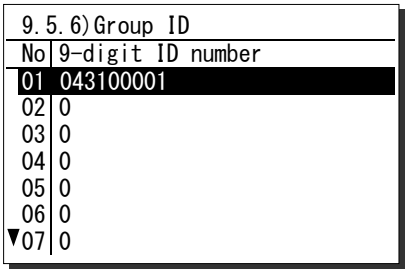
5.5.5 Registering the ship's group ID

Register the group ID (group ship ID number) for receiving group calls.

■ Procedure ■

1. Move the cursor to 6. Group ID, and press ENT.

   The screen as shown at right is displayed.



2. Move the cursor to register the ID number and press ENT, then input the 9 digits ID (leftmost digit fixed to 0).

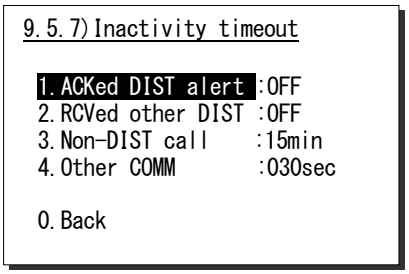
   - Upto 20 groups can be registered.
   - To delete all data, “00.ALL CLEAR function” located at the bottom line is available.
   - When finished, press CANCEL key.

5.5.6 Setting the inactivity timeout timer

If a call event is left without operation for a while, the call event is automatically ended after the setting time is elapsed. The inactivity timeout timer can be set as follows.

■ Procedure ■

Move the cursor to 7. Inactivity timeout, and press ENT.



The screen as shown at right is displayed.
Change the settings as appropriate.

1. ACKed distress alert

   The acknowledged distress alert events sent from the own ship:
   - The range is 00 (OFF) to 60 minutes.

2. RCVed other distress

   The distress events of other ships
   - The range is 00 (OFF) to 60 minutes.

3. Non-distress call

   Routine, safety and urgency events
   - The range is 00 (OFF) to 60 minutes.

4. Other communications

   Communications without using DSC
   - The range is 010 to 600 seconds.

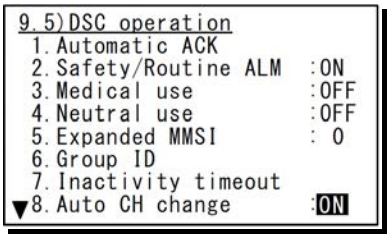
   (This timer cannot be set to OFF.)

5.5.7 Setting the Auto channel change

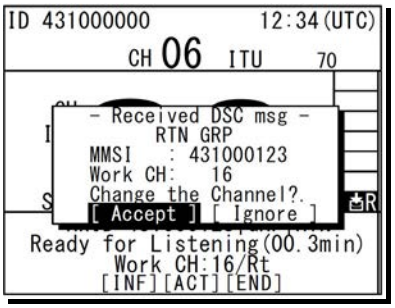
This menu sets the channel changing method when receiving DSC calls.

■ Procedure ■

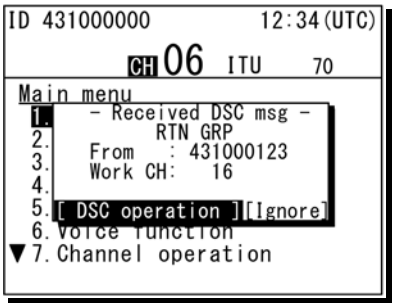
Move the cursor to “8. Auto CH change”, and press ENT.
Not to change the channel automatically when receiving DSC calls, set to OFF.
(factory default setting: ON)



Note - After “8. Auto CH change” is set to OFF, the popup at right is displayed when receiving DSC calls including work channel. Then if Accept is selected, the specified work channel is set.



- When receiving DSC calls on the menu screen, the popup at right is displayed. In this case, the specified work channel is set by selecting “DSC operation”.



5.6 Other settings

The following describes the procedure to set the conditions regarding the AIS information import, the printer property, and preset squelch with respect to each channel.

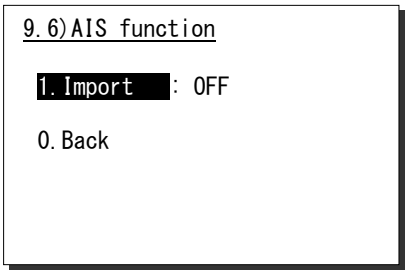
5.6.1 Enabling the AIS function

When connecting the AIS to use the information for such as a DSC call, set the import condition to ON as follows.

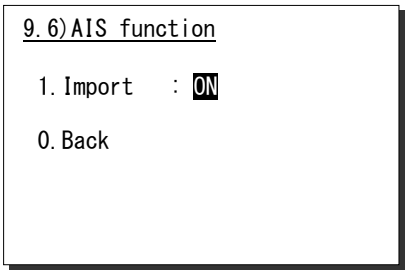
■ Procedure ■

1. Press the MENU key, and through hierarchical menus, select the 9.6 AIS function.

   Note The factory setting is default “ON”.

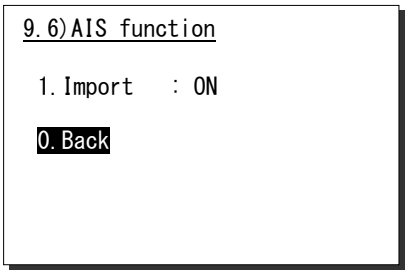


2. Press ENT. Then set the import condition to ON with the jog dial.



3. Press ENT to complete the setting.

   The cursor moves to the 0. Back.

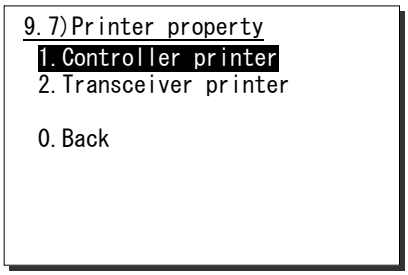


5.6.2 Printer property

When connecting the printers, configure the conditions as appropriate according to the printer type, as follows.

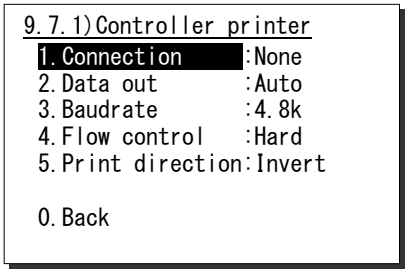
■ Procedure ■

1. Press the MENU key, and through hierarchical menus, select the 9.7 Printer property.

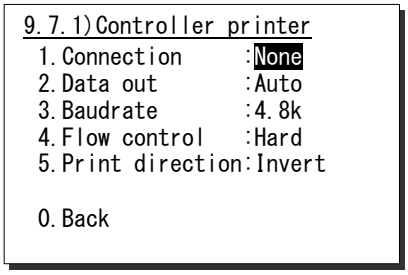


2. Select the printer and press ENT.

   If selecting 1. Controller printer, the screen is displayed as shown at right.



3. Set the desired items conditions as appropriate.



Note The content and the concerned information of each item are as follows.

Printer type	Selective item	Content	Selective conditions (: Factory default)	Settings for each printer		
				NKG-91	DPU-414	NKG-52
Controller printer	Connection	Connection status and the printer type	None/ Serial	Serial	Serial	---
	Data out	Printing method for the DSC message	Auto/ Manual	Auto	Auto	---
	Baudrate	Transmission speed to the printer	4.8k/ 9.6k/ 38.4kbps	4.8k	4.8k	---
	Flow control	Handshake setting with the printer	Hard/ None	Hard	Hard	---
	Print direction	Printing sequence of the lines	Invert/ Upright	Invert	Upright	---
Transceiver printer	Connection	Connection status and the printer type	None/NKG-52/ Centronics	---	---	NKG-52
	Data out	Printing method for the DSC message	Auto/ Manual	---	---	Auto
	Print direction	Printing sequence of the lines	Invert/ Upright (NKG-52: “Invert” only)	---	---	Invert

6. MAINTENANCE & INSPECTION

The performance and lifetime of the equipment depend on the appropriate maintenance.
This chapter describes the maintenance and inspection, self diagnosis, and outline of adjustment.

6.1 General maintenance & inspection

In order to operate the equipment under optimum conditions, it is vital to perform regular inspections and also, to keep accurate records. Inspections enable problems to be identified before they become major malfunctions.
The following inspections should be made regularly.

Inspection sequence	Inspection items	Procedure
1	Antenna system	Check that antennas and the connectors are secure.
2	Squelch operation	Lift the handset of the controller with the access rights, and turn the SQL control fully counterclockwise. Check for noise from the speaker. Check noise to be suppressed by turning the SQL control clockwise.
3	Receiver condition checked by speaker output.	Check that the voice level and noise level are not abnormally loud or soft.
4	Handset PTT switch	Press PTT and check that the TX mark is displayed on the screen and the unit transmits immediately.
5	Transmission and reception checked by performing radio communication.	Check that normal conversation is possible.

6.2 Self diagnosis inspection

The following describes the procedure to perform the self diagnosis with the menu 8.1 Self diagnosis.

■ Procedure ■

1. Press FUNC ➔ 8TEST .

The menu shown at right is displayed.

```
8.1)Self diagnosis
 1.Transceiver
 2.Controller
 3.Transceiver log
 4.Controller log
 5.DSC loop
 0.Back
```

2. Select 1. Transceiver or 2. Controller with the numeric keypad or the jog dial.

If selected "1. Transceiver", the screen at right is displayed.

```
8.1.1)Transceiver
 Start checking of ALL
  - ROM       : --
  - RAM       : --
  - SIO       : --
  - MODEM     : --
  - Loop      : --
  - PS(DC/DC) : --
  - Printer   : --
```

3. Select a test type with the jog dial and press ENT.

- The self diagnosis is performed.
- The following test modes are available.

8.1.1) Transceiver ..... ALL (All modes)
DGT CKT (ROM/RAM/SIO)
MODEM (MODEM only)
Loop (Loop only)
PS (PS(DC/DC) only)
Printer (Printer only)

8.1.2) Controller ..... ALL (All modes)
DGT CKT (ROM/RAM/SIO)
LCD&LED (LCD&LED only)
Printer (Printer only)
Speaker (Speaker only)

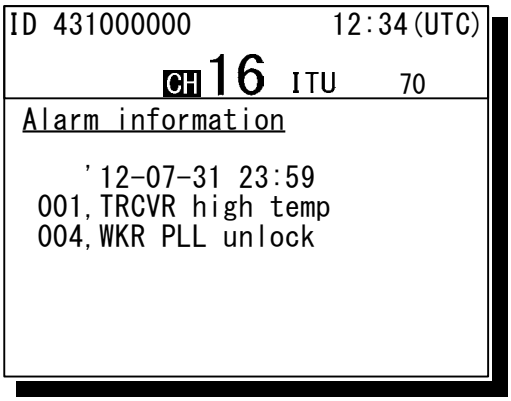
```
8.1.1)Transceiver
 Start checking of ALL
  - ROM       : OK
  - RAM       : OK
  - SIO       : OK
  - MODEM     : OK
  - Loop      : OK
  - PS(DC/DC) : OK
  - Printer   : DONE
```

Note
- Only the case where printer setup is ON can choose Printer in test mode.
- To break off the self diagnosis, press the CANCEL key.
- The results of the self diagnosis are stored and the latest up to 10 logs can be confirmed from the menu 8.1.3 Transceiver log or 8.1.4 Controller log.
- The self-diagnosis test contents and results are as shown below.

Unit Name	Test Item	Contents	Results
Transceiver	ROM	・ ROM1 (Flash) read/write ・ ROM2 (EEP) read/write	OK :Normal ROM1 NG :ROM1 error ROM2 NG :ROM2 error ROM12 NG :ROM1 & 2 error
	RAM	・ RAM (SDRAM) read/write	OK :Normal NG :Error
	SIO	・ RS-485 line loop-back test	OK :Normal NG :Error
	MODEM	・ MODEM1 (M0-M1) loop-back test ・ MODEM2 (M1-M0) loop-back test	OK :Normal MODEM1 NG :MODEM1 error MODEM2 NG :MODEM2 error MODEM12 NG :MODEM1 & 2 error
	Loop	・ Loop1 (TX-RX) loop-back test ・ Loop2 (TX-WKR) loop-back test	OK :Normal Loop1 NG :Loop1 error Loop2 NG :Loop2 error Loop12 NG :Loop1 & 2 error
	PS(DC/DC)	・ DC/DC PWR output voltage check	OK :Normal NG :Error
	Printer	・ Print out test	- Check visually if printed out correctly. - After performed, this line on the screen shows "DONE".
Controller	ROM	・ ROM1(Flash) read/write ・ ROM2(EEP) read/write	OK :Normal ROM1 NG :ROM1 Error ROM2 NG :ROM2 Error ROM12 NG :Error in both
	RAM	・ RAM(SDRAM) read/write	OK :Normal NG :Error
	SIO	・ RS-485 line loop-back test	OK :Normal NG :Error
	LCD&LED	・ Every pixel (dot) of the LCD and ALM lamp display test	- Check visually if every dot and the red and green ALM lamp alternately work normally for 3 seconds. - After performed, this line on the screen shows "DONE".
	Printer	・ Print out test	- Check visually if printed out correctly. - After performed, this line on the screen shows "DONE".
	Speaker	・ Sound test	- Check aurally if the 1500Hz tone sounds correctly. After that, press ENT on the popup screen to finish this process. - After performed, this line on the screen shows "DONE".

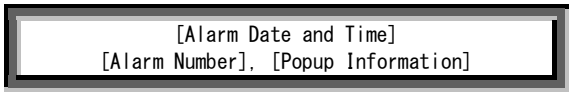
6.3 System alarm indication

If errors regarding the equipment are detected, the screen immediately shows the alarm information as follows.

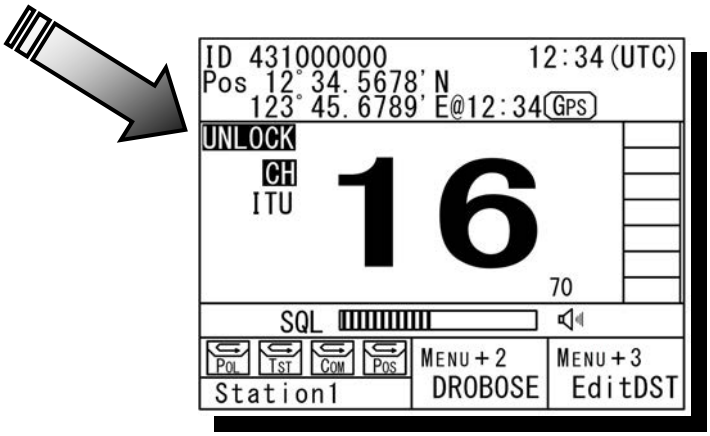


Note

- According to the alarm type, some features and functions may be automatically restricted. The alarm information is formatted as follows.



- To return to the previous screen, press the CANCEL key.
- When occurring 002.TX PLL unlock alarm or 003.RX PLL unlock alarm, a blinking UNLOCK mark is additionally indicated. In this case, that mark is remained as shown below until restored to the normal condition.



6.3.1 Alarm list

The following list shows the types of system alarm and contents.

Alarm Number	Display	Contents	Troubleshooting Procedure
001	TRCVR high temp	Detected the abnormally high temperature in the transceiver.	Stop transmission, or reduce the power to 1W
002	TX PLL unlock	Detected PLL Unlock in the transmitter.	*Please contact JRC or our agency.*
003	RX PLL unlock	Detected PLL Unlock in the receiver.	*Please contact JRC or our agency.*
004	WKR PLL unlock	Detected PLL Unlock in the watch-keeping receiver.	*Please contact JRC or our agency.*
005	TRCVR memory	Detected the transceiver memory error.	*Please contact JRC or our agency.*
006	CTLR1 memory	Detected the memory error in controller 1.	*Please contact JRC or our agency.*
007	CTLR2 memory	Detected the memory error in controller 2 or channel selector 2.	*Please contact JRC or our agency.*
008	CTLR3 memory	Detected the memory error in controller 3 or channel selector 3.	*Please contact JRC or our agency.*
009	CTLR4 memory	Detected the memory error in controller 4 or channel selector 4.	*Please contact JRC or our agency.*
010	CTLR5 memory	Detected the memory error in controller 5 or channel selector 5.	*Please contact JRC or our agency.*
011	CTLR1 SIO	Detected the serial communication error in controller 1.	*Please contact JRC or our agency.*
012	CTLR2 SIO	Detected the serial communication error in controller 2 or channel selector 2.	*Please contact JRC or our agency.*
013	CTLR3 SIO	Detected the serial communication error in controller 3 or channel selector 3.	*Please contact JRC or our agency.*
014	CTLR4 SIO	Detected the serial communication error in controller 4 or channel selector 4.	*Please contact JRC or our agency.*
015	CTLR5 SIO	Detected the serial communication error in controller 5 or channel selector 5.	*Please contact JRC or our agency.*
016	GPS SIO	Detected the GPS communication error	*Please contact JRC or our agency.*
017	Serial printer1	Detected an alarm of the printer 1.	Check the printer power or the paper empty.
018	Serial printer2	Detected an alarm of the printer 2.	Check the printer power or the paper empty.
019	Parallel printer	Detected an alarm of the Centronics type printer connected to the transceiver.	Check the printer power or the paper empty.
020	MMSI lost	The MMSI has not been registered yet, or has been lost.	*Please contact JRC or our agency.*
021	Own CTLR ID	Detected the ID error in the controller displaying this message. It is recorded on the alarm history as alarm of No. 011-015.	*Please contact JRC or our agency.*
022	Own CTLR SIO	Detected the loss of communication with the transceiver via RS-485 lines. It is recorded on the alarm history as alarm of No. 011-015. However, it may not be recorded on the alarm history.	*Please contact JRC or our agency.*
023	PTT line	Detected malfunction regarding PTT line.	*Please contact JRC or our agency.*
024	TRCVR PS (DC/DC)	Detected DC/DC power supply error.	*Please contact JRC or our agency.*
025	TRCVR PS (FUSE)	Detected PS error at the RF circuit, e.g. the fuse blown.	Check or replace the fuse (F3) on the CBD-7701 T/B.
026	Abnormal RF power	Detected malfunction in the transmission circuit or the duplexer connection.	*Please contact JRC or our agency.*
027	POWER-OFF failure	Detected malfunction regarding power supply control circuit.	*Turn OFF the power switch in the transceiver or of the external power source, and then please contact JRC or our agency.*

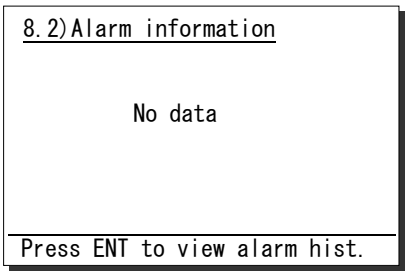
6.3.2 Viewing the alarm history

The following describes the procedure to confirm the current alarm condition or the alarms occurred in past time.

■ Procedure ■

1. Press the MENU key, and through hierarchical menus, select the 8.2 Alarm information.

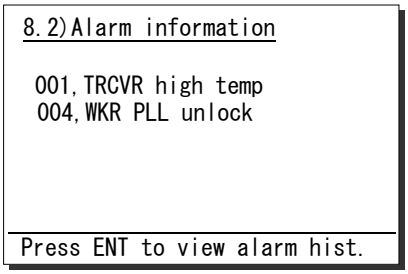
According to the alarm occurring condition, the screen is displayed as shown at right.



(In the case of no current alarm)

Note The displayed alarm information is formatted as follows.

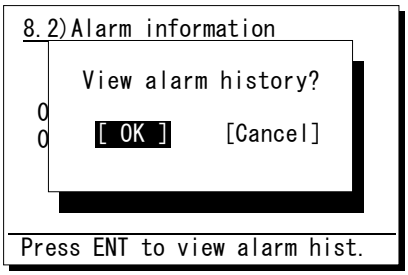
[Alarm Number], [Popup Information]



(In the case of alarms occurring)

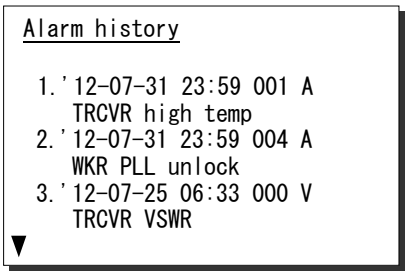
2. To check the alarm history, press ENT.

After the popup screen at right is displayed, select OK.



3. The alarm history is displayed.

The latest up to 10 histories are stored.
If necessary, scroll with the jog dial.



Note The displayed alarm history is formatted as follows.

[Number] [Alarm and Recovery Date and Time] [Alarm Number]
[A: Alarm/V: Recovery] [Popup Information]

6.4 Checking the setup condition

The system information can be confirmed for use in maintenance and inspection.

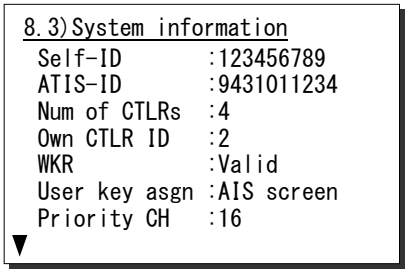
6.4.1 System information

The following describes the procedure to display such as the ID numbers or peripheral connection conditions.

■ Procedure ■

1. Press the MENU key, and through hierarchical menus, select the 8.3 System information.

   The screen as shown at right is displayed.
   If necessary, scroll with the jog dial.



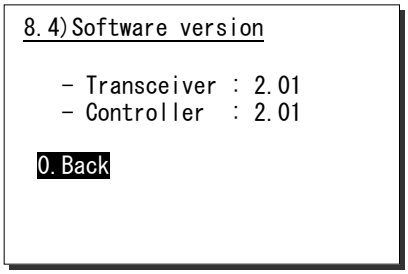
Note The confirmable information is described below.

Item Name	Contents	Notes
Self-ID	Own ship's identification number (MMSI)	
ATIS-ID	The ATIS number for European inland waterways	
Num of CTLRs	The number of connected controllers	
Own CTLR ID	The address number of this controller	
WKR	The setting status to use the watch-keeping receiver	Default setting: Valid
User key asgn	The menu assigned to the user defined key	
Priority CH	The registered priority channel number	Default setting: CH16
Hook switch	The setting status to use the handset hook detection	Default setting: Valid
TX monitor	The setting status to monitor communications of a controller at the other controllers and the external speaker	Default setting: ON
Alarm wake-up	The setting status to use the automatic startup function in sleep mode if receiving a distress signal	Default setting: ON
AIS info	The AIS connection status (Receiving/ Disrupted/ Invalid)	
AME info	The AME connection status (Normal/ CS error/ Invalid)	
Serial number	The serial product number of the JHS-770S/780D	
Group-ID xx	The identification number of the group own ship belongs to	xx: 01 - 20

6.4.2 Software version

To confirm the software version, press the MENU key and through hierarchical menus, select the 8.4 Software version.

The software version number of the transceiver and controller is displayed as shown at right.

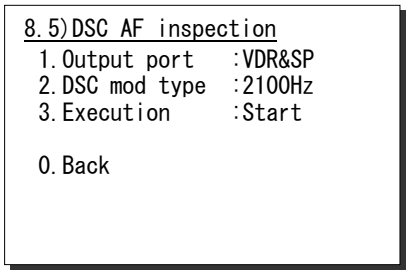


6.5 DSC AF inspection

DSC AF modulation frequencies can be checked for periodic inspections etc.

■ Procedure ■

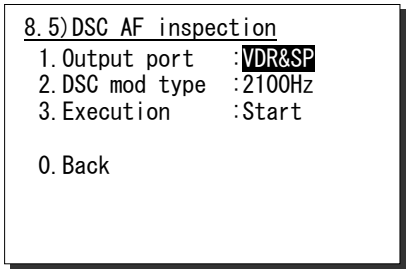
1. Press the MENU key and through hierarchical menus, select the 8.5 DSC AF inspection.



2. Select the output port on the “1. Output port” with the numeric keypad or the jog dial.

   The following output ports are selectable.

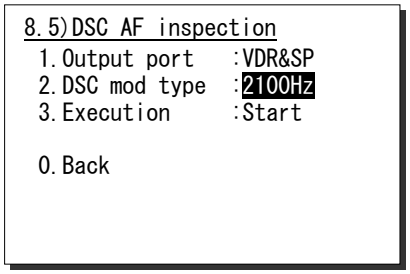
   - VDR&SP : VDR output and internal speaker
   - VDR&ExHS : VDR output and external handset
   - VDR&ExSP : VDR output and external sp terminal



3. Select the DSC modulation type on the “2. DSC mod type” with the numeric keypad or the jog dial.

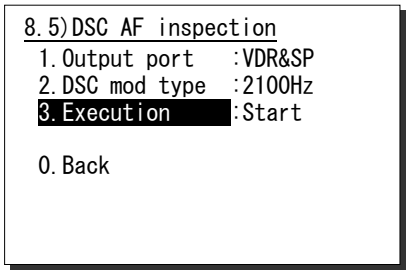
   The following types are selectable.

   - 2100Hz : Space frequency (B)
   - 1300Hz : Mark frequency (Y)
   - Dot : Dot pattern



4. Select Start of the “3. Execution” and press ENT to output the signal.

   During the signal output, the indication becomes “Stop”. To stop it, press ENT on the Stop or press the CANCEL key.



6.6 Troubleshooting

⚠ WARNING

This unit is also used for the distress communication, in addition to usual communication. Contact JRC or our agent if any problem is observed in this unit on usual operation or inspection. Do NOT ignore or leave any problems of this unit.

Always use the specified fuse when replacing a fuse. Using a different fuse may result in fire or malfunction.

Do not open the equipment to inspect or repair it. Inspection or repairs by anyone other than a specialized technician may result in fire, electrical shock, or malfunction. If internal inspection or repair is necessary, contact our service center or agents.

6.6.1 Procedures for locating malfunctions

1) First, check the power supply voltage, fuses, and connectors.

2) If there are no problems with the above, use a tester to check for errors.

The following table shows the instruments required for effect repairs and the severity of the malfunctions. If required to locate the malfunction, with the exception of qualified service personnel, perform the following No. 1 and 2 only.

No.	Type of Malfunction	Examples
1	Faults requiring no instrument to locate	- Blown power supply fuse - Faulty contacts - Broken antenna cables - Defective switches, volume, etc. - Other problems that can be visually detected
2	Malfunctions that can be fixed with a tester and repaired	- Power supply voltage confirmation - Breaks in internal wiring
3	Malfunctions requiring special instrument	- Crystal oscillator frequency error - Decrease in transmitting power and reception sensitivity - Decrease in transmitter modulation level - Malfunctions in semiconductors, ICs, and similar equipment

6.6.2 Guide to locating faults

Use the following table as a guide to locating the causes of malfunctions in the equipment. Additionally when contacting JRC or our agency, please provide the malfunction condition.

No.	Symptom	Typical causes
1	Displays nothing on the screen.	- Malfunction in the controller cable - Abnormal power supply voltage - Power supply fuse is blown - Malfunction in the power switch - Malfunction in the display circuit - Malfunction in the control circuit
2	TX is displayed but no voice is transmitted.	- Malfunction in the handset - Malfunction in the controller cable - Malfunction in the AF signal transmission circuit
3	TX is not displayed, and transmission is not possible.	- Malfunction in the handset PTT switch - Malfunction in the hook detection circuit - Malfunction in the transmission circuit
4	Reception sensitivity is poor.	- Antenna damage - Break or short circuit of antenna cable - Faulty contact in antenna connectors
5	No sound from the speaker even when squelch is opened without reception.	- Malfunction in the speaker - Malfunction in the SQL control - Malfunction in the receiver circuit
6	Noise is output from the speaker, but own ship cannot receive any calls.	- Antenna damage - Break or short circuit in antenna cable - Faulty contact in antenna connectors - Malfunction in the receiver
7	Turning SQL does not suppress noise.	- Malfunction in the SQL control - Malfunction in the receiver

Note The following are not faults.

Symptom	Possible causes	Handling
No response from other station via radiotelephone or DSC call.	No operator in that station, or unavailable to respond due to other duties.	Wait and retry later.
Unable to control the radiotelephone or DSC, but the VOL control, the dimmer, and PWR key.	That controller is in the monitor mode.	Press ENT to obtain the access right and after that, retry the operation.
Even if pressing ENT at the monitor controller, the access right cannot be obtained.	Another controller with higher priority is in use for communicating or performing menu operations.	After finished at another controller, retry the operation.
If the system is left on a screen other than the status display for a while, returns to the status display.	After leaving the specified period, the inactivity timer would be activated and returned to the status display.	Regulated specification by ITU-R M.493-14. (Do not leave the equipment during menu operation.)
The received distress call log have erased without operating.	Received distress calls are automatically deleted after 48 hours.	Regulated specification by IMO A.803(19).
When a portable transceiver is brought close to a controller, noise comes out from a portable transceiver.	It is based on the influence of the radio frequency noise slightly generated from the lighting circuit of a controller display.	Controller screen lighting is switched off or a portable transceiver is kept away 1m or more.

6.6.3 Consumables

The following shows consumables. Please contact JRC or our agency to order parts.

Location	Description	Model (Part number)	Replacement guide
NKG-91/901 PRINTER	Printer paper	7ZPJD0384	Indicating red mark on the paper edge
DPU-414 PRINTER	Printer paper	6ZCAF00252A	

6.6.4 Repair units/parts

The repair units and replacement part units are as follows.

● NTE-770S/780D VHF TRANSCEIVER

Name	Unit/Part Name	Notes
CONTROL & AF UNIT	CDJ-7701S/ 7701D	Suffix S: for 770S, D: for 780D
TRX UNIT	CMN-7701S/ 7701D	Suffix S: for 770S, D: for 780D
TERMINAL BOARD	CBD-7701	
DUPLEXER	CFF-851	For the NTE-780D only
EXTENSION BOARD	CQD-7701	
TRX ANT CABLE	7ZCJD0291	1.5D coaxial (350mm)
WKR ANT CABLE	7ZCJD0292	1.5D coaxial (300mm)
FUSE	MF61NR 250V 15	15A, for F1 *
FUSE	MF61NR 250V 15	15A, for F2 *
FUSE	MF61NR 250V 10	10A, for F3 *

* Containing to the spare parts kit (7ZXJD0096)

● NCM-1770 VHF CONTROLLER

Name	Unit/Part Name	Notes
CONTROL UNIT	CDJ-3770	
AF CONT UNIT	CMV-3770	
LCD UNIT	CDE-3770	
MAIN PANEL UNIT	CCK-3771	
SUB PANEL UNIT	CCK-3772	
SPEAKER	7USJD0002	
CONTROLLER CABLE	7ZCJD0299A	Control cable (5m)

● NBD-865 AC/DC POWER SUPPLY (Option)

Name	Unit/Part Name	Notes
FUSE	MQ4 250V 8A	8A, for AC FUSE *
FUSE	MQ4 250V 8A	8A, for AC FUSE *
FUSE	FGB1 250V 15A	15A, for F1 *
FUSE	FGB1 250V 15A	15A, for F2 *
FUSE	CES14 250V 15A	15A, for F3 *

* Containing to the spare parts kit (7ZXJD0098)

6.6.5 Regular replacement parts

The following shows the part to be replaced regularly. Please contact JRC or our agency to order it.

Part Name	Model Name	Replacement Period
LCD unit	CDE-3770	Approx 20,000 hours of continued use at maximum brightness

7. AFTER-SALES SERVICE

★ Warranty

The warranty period is determined by JRC's warranty regulations, but is normally 1 year from the date of purchase. Additionally, the warranty except for the body text is submitted to contractual agreements.

★ Repair Part Inventory Period

Parts necessary for proper functioning of this equipment will be kept available for 10 years after product discontinuation.

★ When Requesting Repairs

If what appears to be a defect is detected, refer to "6.5 Troubleshooting" to check if the equipment is actually defective.

If the problem is due to a defect, immediately stop use of the system and contact the store at which you purchased the system, or one of our branches.

- During the warranty period, if a malfunction occurs with the equipment while in standard usage in accordance with this instruction manual, we or our agencies will repair the malfunction at no charge at the store where the equipment was purchased or another location specified by JRC. If the malfunction occurs due to improper usage, fault, or any external abnormal condition such as fire, pollution, abnormal voltage, natural disaster (ex. thunder storms, earthquake) etc., JRC will repair the equipment for a fee. Furthermore, regardless of the warranty period, orders of consumables will be charged.
- After the warranty expires, we will repair the malfunction for a fee, if repair is possible.
- Please inform us of the following :
  - ☆ Product name, model name, manufactured date, serial number
  - ☆ As much information as you can provide about the malfunction. (Alarm number, whether transmission is possible or not, etc.)
  - ☆ Your company or organization name, address, and phone number

★ Periodical Maintenance Recommendation

Depending on usage conditions, with extended use, the performance of this equipment may degrade over time, and externally installed parts such as the antenna may degrade due to vibration, so we recommend periodical maintenance in addition to the standard maintenance. Please contact the store where you purchased the equipment, or one of our branches, to request periodical maintenance. Periodical maintenance requires a service charge.

If you have any questions regarding after-sales service, please contact the store where you purchased the equipment, or one of our branches.

Refer to the inside of the back cover for contact numbers and locations.

8. DISPOSAL

Observe all rules and regulations of the local authorities when disposing of this equipment.

9. SPECIFICATIONS

9.1 JHS-770S/780D Marine VHF Radiotelephone

● General Specifications

Transmission frequency	Simplex/ semi-duplex: 155.000 - 163.500MHz Duplex (JHS-780D) : 156.025 - 157.425MHz
Reception frequency	Simplex/ semi-duplex: 155.000 - 163.500MHz Duplex (JHS-780D) : 160.625 - 162.025MHz
Number of channels	ITU/USA/Canada/IWW channels: Maximum 65 ch Weather channels: 10ch Private channels: Maximum 200ch Memory channels: Maximum 10ch
Channel spacing	25kHz
Communication modes	Simplex , semi-duplex and duplex (JHS-780D) / press talk
Type of emission	Radiotelephone communications: F3E (G3E) DSC/ATIS: F2B (G2B)
Antenna impedance	50Ω unbalanced
Transmission/reception switching interval	300 ms or less
Channel switching interval	5 sec or less
Interface	IEC61162-1 (GPS/AME/RMS), IEC61162-2 (AIS) 600Ω balanced (VDR), 600Ω unbalanced (Ext SP)
Main controls	DSC call transmission (sending and receiving), communication channel settings, transmission power settings, squelch adjustment, volume adjustment, screen adjustment
Performance criteria	IMO A.803(19), A.694(17), MSC68(68), MSC/Circ.862 IEC 60945 Ed.4 2002-08
Power supply voltage	24VDC (21.6VDC - 31.2VDC)
Current consumption	25W transmission: Maximum 8.0A Reception: Maximum 5.0A
Operating temperature range	-15°C - +55°C
Storage temperature range	-15°C - +55°C
Humidity resistance	No abnormality after standing 10 hours in +40ºC, 93% RH
Vibration resistance (3 Axis)	2 Hz - 5 Hz to 13.2 Hz: : Full amplitude ±1 mm±10% 13.2 Hz to 100 Hz: : Maximum acceleration 7 m/s^2 fixed No abnormality after testing resonance points or at 30 Hz for more than 2 hours
Continuous operation (Phone)	No abnormality after operating continuously for 8 hours
Continuous operation (DSC, WKR)	No abnormality after operating continuously for 24 hours
Category type of the weather resistance	Channel selector and Waterproofed handset connection box : Exposed Other units : Protected
Protection rating	IP22 equivalent (Controller panel)
Dimensions and mass	Transceiver unit 240mm(W)x290mm(H)x128mm(D) [excluding projections] Approximately 6.3kg(NTE-770S) / 6.9kg(NTE-780D) Controller unit 230mm(W)x142mm(H)x89mm(D) [excluding projections] Approximately 1.3kg

Specifications

● Transmitter

Antenna output power	8W - 25W (Reduced output: 0.5W - 1W) +20%, -50%
Oscillation method	Frequency synthesizer
Modulation method	Frequency modulation
Carrier frequency error	±1.5kHz or less
Maximum frequency deviation	±5kHz or less
Occupied bandwidth	16kHz or less
Pre-emphasis characteristics	6dB/oct within +1dB, -3dB
Overall distortion	10% or less
Adjacent channel power	-70 dB or 0.2 µW or less
Unwanted emissions in the out-of-band domain	3.125µW or less
Unwanted emissions in the spurious domain	3.125µW or less
Spurious emissions (EN300 338, EN301 925)	9kHz-2GHz: 0.25µW or less 2GHz-4GHz: 1µW or less
Residual modulation	-40dB or less

● Receiver

Receiving system	Double superheterodyne
1st IF	21.4MHz
2nd IF	455kHz
Local oscillation frequency	Reception frequency - 21.4 MHz
Local oscillation method	Frequency synthesizer
Frequency accuracy	$\pm 10 \times 10^{-6}$ or less
Sensitivity (phone)	6dB µV or less (SINAD=20dB)
Sensitivity (DSC)	1% or lower symbol error rate at 0dB µV
Selectivity	6dB bandwidth: 12kHz or more, 70dB selectivity: 25kHz or less
Signal-to-Noise ratio	40dB or more
Audio output variance	3dB or less
De-emphasis characteristics	6dB/oct, within +1dB, -3dB
Co-channel selectivity	-10 - 0dB
Adjacent channel selectivity	Sensitivity ratio 80dB or more
Desensitization effect (phone)	80dBµV or more
Desensitization effect (DSC)	Symbol error rate of 1% or better at a wanted signal level of 3dB µV and an unwanted signal level of 73dB µV
Spurious response (phone)	Sensitivity ratio 70dB or more
Spurious response (DSC)	Symbol error rate of 1% or better at a wanted signal level of 3dB µV and an unwanted signal level of 73dB µV
Intermodulation characteristics (phone)	65dBµV or more
Intermodulation characteristics (DSC)	Symbol error rate of 1% or better at a wanted signal level of 3dB µV and an unwanted signal level of 73dB µV
Blocking characteristics	90dBµV or more
Radiation	9kHz - 2GHz: 2nW or less 2GHz - 4GHz: 20nW or less
Squelch mute	-40dB or less
Squelch open level	+6dBµV or less
Overall distortion	10% or less

● CH70 Watch Keeping Receiver

Receiving frequency	156.525MHz (CH70)
Receiving system	Double superheterodyne
1st IF	58.1MHz
2nd IF	455kHz
Local oscillation frequency	Receiving frequency + 58.1MHz
Local oscillation method	Frequency synthesizer
Local oscillation frequency variance	±10 x 10^{-6} or less
Sensitivity	1% or lower symbol error rate at 0dB μV
Selectivity	6dB bandwidth: 12kHz or more, 70dB selectivity: 25kHz or less
De-emphasis characteristics	6dB/oct, within +1dB, -3dB
Co-channel selectivity	Symbol error rate of 1% or better at a wanted signal level of 3dB μV and an unwanted signal level of -5dB μV
Adjacent channel selectivity	Symbol error rate of 1% or better at a wanted signal level of 3dB μV and an unwanted signal level of 73dB μV
Desensitization effect	Symbol error rate of 1% or better at a wanted signal level of 3dB μV and an unwanted signal level of 73dB μV
Spurious response	Symbol error rate of 1% or better at a wanted signal level of 3dB μV and an unwanted signal level of 73dB μV
Intermodulation characteristics	Symbol error rate of 1% or better at a wanted signal level of 3dB μV and an unwanted signal level of 68dB μV
Blocking characteristics	Symbol error rate of 1% or better at a wanted signal level of 3dB μV and an unwanted signal level of 93dB μV
Radiation	9kHz - 2GHz: 2nW or less

● DSC/ATIS Modem

Modulation rate	1200baud ±30 x 10^{-6} or less
Modulation method	FSK
Modulation index	DSC: 2.0 ±10% or less ATIS: 1.0 ±10% or less
Mark frequency (Y)	1300Hz ±10Hz or less
Space frequency (B)	2100Hz ±10Hz or less
DSC protocol	ITU-R Recommendation M.493-14 (Class A)
DSC operation standards	ITU-R Recommendation M.541-9, M.689-2, M.821-1, M.1080-0
ATIS protocol, operation standards	EN 300 698-1 V1.4.1

● Controller

Communication speed	9600bps or 57.6kbps
Communication interface	RS-485 and RS-232C
Microphone input impedance	150Ω balanced
Standard modulation input	-54dBm
Rated audio output	Internal speaker (4Ω): 2W or more Handset phone (150Ω): 1mW or more
LCD display	3.8 inch FSTN monochrome, 320 x 240 dot, LED backlight

9.2 Channel assignment tables

(1) ITU Channels (ITU-RR Appendix18)

CH	TX (MHz)	RX (MHz)	Simplex	Semi-duplex	Notes
01	156.050	160.650		●	
02	156.100	160.700		●	
03	156.150	160.750		●	
04	156.200	160.800		●	
05	156.250	160.850		●	
06	156.300	156.300	●		For inter-ship communications
07	156.350	160.950		●	
08	156.400	156.400	●		For inter-ship communications
09	156.450	156.450	●		For inter-ship communications
10	156.500	156.500	●		For inter-ship communications
11	156.550	156.550	●		
12	156.600	156.600	●		
13	156.650	156.650	●		For inter-ship communications
14	156.700	156.700	●		
15	156.750	156.750	●		For inter-ship communications
16	156.800	156.800	●		Distress, Safety and Calling
17	156.850	156.850	●		For inter-ship communications
18	156.900	161.500		●	
19	156.950	161.550		●	
1019	156.950	156.950	●		
2019		161.550	●		Transmission prohibited
20	157.000	161.600		●	
1020	157.000	157.000	●		
2020		161.600	●		Transmission prohibited
21	157.050	161.650		●	Digital data comm has priority.
22	157.100	161.700		●	Digital data comm has priority.
23	157.150	161.750		●	Digital data comm has priority.
24	157.200	161.800		●	Digital data comm has priority.
25	157.250	161.850		●	Digital data comm has priority.
26	157.300	161.900		●	Digital data comm has priority.
1027	157.350	157.350	●		
1028	157.400	157.400	●		
60	156.025	160.625		●	
61	156.075	160.675		●	
62	156.125	160.725		●	
63	156.175	160.775		●	
64	156.225	160.825		●	
65	156.275	160.875		●	
66	156.325	160.925		●	
67	156.375	156.375	●		
68	156.425	156.425	●		
69	156.475	156.475	●		For inter-ship communications
70	156.525	156.525	●		For DSC operation only
71	156.575	156.575	●		
72	156.625	156.625	●		For inter-ship communications
73	156.675	156.675	●		
74	156.725	156.725	●		
75	156.775	156.775	●		Fixed at 1W
76	156.825	156.825	●		Fixed at 1W
77	156.875	156.875	●		For inter-ship communications
78	156.925	161.525		●	
1078	156.925	156.925	●		
2078		161.525	●		Transmission prohibited
79	156.975	161.575		●	
1079	156.975	156.975	●		
2079		161.575	●		Transmission prohibited
80	157.025	161.625		●	Digital data comm has priority.
81	157.075	161.675		●	Digital data comm has priority.
82	157.125	161.725		●	Digital data comm has priority.
83	157.175	161.775		●	Digital data comm has priority.
84	157.225	161.825		●	Digital data comm has priority.
85	157.275	161.875		●	Digital data comm has priority.
86	157.325	161.925		●	Digital data comm has priority.
87	157.375	157.375	●		
88	157.425	157.425	●		

(2) USA Channels (FCC 47 CFR Part 80: 80.215, 80.371 and 80.373)

CH	TX (MHz)	RX (MHz)	Simplex	Semi-duplex/ Duplex	Notes
01A	156.050	156.050	●		
02					Unused
03					Unused
04					Unused
05A	156.250	156.250	●		
06	156.300	156.300	●		For inter-ship communications
07A	156.350	156.350	●		
08	156.400	156.400	●		For inter-ship communications
09	156.450	156.450	●		
10	156.500	156.500	●		
11	156.550	156.550	●		
12	156.600	156.600	●		
13	156.650	156.650	●		1W default (momentary 25W)
14	156.700	156.700	●		
15		156.750			Transmission prohibited
16	156.800	156.800	●		Distress, Safety and Calling
17	156.850	156.850	●		
18A	156.900	156.900	●		
19A	156.950	156.950	●		
20	157.000	161.600		●	
20A	157.000	157.000	●		For inter-ship communications
21A	157.050	157.050	●		For USCG (General use prohibited)
22A	157.100	157.100	●		
23A	157.150	157.150	●		For USCG (General use prohibited)
24	157.200	161.800		●	
25	157.250	161.850		●	
26	157.300	161.900		●	
27	157.350	161.950		●	
28	157.400	162.000		●	
60					Unused
61					Unused
62					Unused
63A	156.175	156.175	●		
64					Unused
65A	156.275	156.275	●		
66A	156.325	156.325	●		
67	156.375	156.375	●		1W default (momentary 25W)
68	156.425	156.425	●		
69	156.475	156.475	●		
70	156.525	156.525	●		For DSC operation only
71	156.575	156.575	●		
72	156.625	156.625	●		For inter-ship communications
73	156.675	156.675	●		
74	156.725	156.725	●		
75	156.775	156.775	●		Fixed at 1W
76	156.825	156.825	●		Fixed at 1W
77	156.875	156.875	●		For inter-ship communications, fixed at 1W
78A	156.925	156.925	●		
79A	156.975	156.975	●		
80A	157.025	157.025	●		
81A	157.075	157.075	●		General use prohibited
82A	157.125	157.125	●		General use prohibited
83A	157.175	157.175	●		For USCG (General use prohibited)
84	157.225	161.825		●	
85	157.275	161.875		●	
86	157.325	161.925		●	
87	157.375	161.975		●	
88	157.425	157.425	●		For inter-ship communications

Note The "Unused" channels listed above cannot be set while in the USA channel mode.

(3) Canada Channels (INDUSTRY CANADA RBR-2)

CH	TX (MHz)	RX (MHz)	Simplex	Semi-duplex/ Duplex	Notes
01	156.050	160.650		●	
02	156.100	160.700		●	
03	156.150	160.750		●	
04A	156.200	156.200	●		For CCG (General use prohibited)
05A	156.250	156.250	●		
06	156.300	156.300	●		
07A	156.350	156.350	●		
08	156.400	156.400	●		
09	156.450	156.450	●		
10	156.500	156.500	●		
11	156.550	156.550	●		
12	156.600	156.600	●		
13	156.650	156.650	●		
14	156.700	156.700	●		
15	156.750	156.750	●		Fixed at 1W
16	156.800	156.800	●		Distress, Safety and Calling
17	156.850	156.850	●		Fixed at 1W
18A	156.900	156.900	●		
19A	156.950	156.950	●		For CCG (General use prohibited)
20	157.000	161.600		●	Fixed at 1W
21A	157.050	157.050	●		For CCG (General use prohibited)
21B		161.650	●		
22A	157.100	157.100	●		General use prohibited
23	157.150	161.750		●	
23B		161.750	●		
24	157.200	161.800		●	
25	157.250	161.850		●	
25B		161.850	●		
26	157.300	161.900		●	
27	157.350	161.950		●	
28	157.400	162.000		●	
28B		162.000	●		
60	156.025	160.625		●	
61A	156.075	156.075	●		For CCG (General use prohibited)
62A	156.125	156.125	●		For CCG (General use prohibited)
63A	156.175	156.175	●		
64	156.225	160.825		●	
64A	156.225	156.225	●		
65A	156.275	156.275	●		
66A	156.325	156.325	●		
67	156.375	156.375	●		
68	156.425	156.425	●		
69	156.475	156.475	●		
70	156.525	156.525	●		For DSC operation only
71	156.575	156.575	●		
72	156.625	156.625	●		
73	156.675	156.675	●		
74	156.725	156.725	●		
75	156.775	156.775	●		Fixed at 1W
76	156.825	156.825	●		Fixed at 1W
77	156.875	156.875	●		
78A	156.925	156.925	●		
79A	156.975	156.975	●		
80A	157.025	157.025	●		
81A	157.075	157.075	●		For CCG (General use prohibited)
82A	157.125	157.125	●		For CCG (General use prohibited)
83A	157.175	157.175	●		For CCG (General use prohibited)
83B		161.775	●		
84	157.225	161.825		●	
85	157.275	161.875		●	
86	157.325	161.925		●	
87	157.375	157.375	●		
88	157.425	157.425	●		

(4) IWW Channels (ETSI EN 300 698-1 V1.4.1)

CH	TX (MHz)	RX (MHz)	Simplex	Semi-duplex	Notes
01	156.050	160.650		●	
02	156.100	160.700		●	
03	156.150	160.750		●	
04	156.200	160.800		●	
05	156.250	160.850		●	
06	156.300	156.300	●		For inter-ship communications, fixed at 1W
07	156.350	160.950		●	
08	156.400	156.400	●		For inter-ship communications, fixed at 1W
09	156.450	156.450	●		
10	156.500	156.500	●		Fixed at 1W
11	156.550	156.550	●		Fixed at 1W
12	156.600	156.600	●		Fixed at 1W
13	156.650	156.650	●		Fixed at 1W
14	156.700	156.700	●		Fixed at 1W
15	156.750	156.750	●		Fixed at 1W
16	156.800	156.800	●		Distress, Safety and Calling
17	156.850	156.850	●		Fixed at 1W
18	156.900	161.500		●	
19	156.950	161.550		●	
1019	156.950	156.950	●		
2019		161.550	●		Transmission prohibited
20	157.000	161.600		●	
1020	157.000	157.000	●		
2020		161.600	●		Transmission prohibited
21	157.050	161.650		●	Digital data comm has priority.
22	157.100	161.700		●	Digital data comm has priority.
23	157.150	161.750		●	Digital data comm has priority.
24	157.200	161.800		●	Digital data comm has priority.
25	157.250	161.850		●	Digital data comm has priority.
26	157.300	161.900		●	Digital data comm has priority.
1027	157.350	157.350	●		
1028	157.400	157.400	●		
60	156.025	160.625		●	
61	156.075	160.675		●	
62	156.125	160.725		●	
63	156.175	160.775		●	
64	156.225	160.825		●	
65	156.275	160.875		●	
66	156.325	160.925		●	
67	156.375	156.375	●		
68	156.425	156.425	●		
69	156.475	156.475	●		
70	156.525	156.525	●		
71	156.575	156.575	●		Fixed at 1W
72	156.625	156.625	●		For inter-ship communications, fixed at 1W
73	156.675	156.675	●		
74	156.725	156.725	●		Fixed at 1W
75	156.775	156.775	●		Fixed at 1W
76	156.825	156.825	●		Fixed at 1W
77	156.875	156.875	●		For inter-ship communications, fixed at 1W
78	156.925	161.525		●	
1078	156.925	156.925	●		
2078		161.525	●		Transmission prohibited
79	156.975	161.575		●	
1079	156.975	156.975	●		
2079		161.575	●		Transmission prohibited
80	157.025	161.625		●	Digital data comm has priority.
81	157.075	161.675		●	Digital data comm has priority.
82	157.125	161.725		●	Digital data comm has priority.
83	157.175	161.775		●	Digital data comm has priority.
84	157.225	161.825		●	Digital data comm has priority.
85	157.275	161.875		●	Digital data comm has priority.
86	157.325	161.925		●	Digital data comm has priority.

(5) Weather Channels (FCC Rule 47CER80.371(c) and 80.373(f))

CH	RX (MHz)	Notes
WX1	162.550	NOAA weather channel
WX2	162.400	NOAA weather channel
WX3	162.475	NOAA weather channel
WX4	162.425	NOAA weather channel
WX5	162.450	NOAA weather channel
WX6	162.500	NOAA weather channel
WX7	162.525	NOAA weather channel
WX8	161.650	CANADA CMB service
WX9	161.775	CANADA CMB service
WX0	163.275	NOAA weather channel (Assigned only)

(6) Private Channels (For fishing or specially assigned channels)

CH	Simplex/Semi-duplex	Frequency (MHz)
P001 - P200	Common to both simplex and semi-duplex	155.0000 - 163.5000

Note

- Register the frequencies in 10kHz, 12.5kHz or 25kHz steps.
- If TX and RX frequencies are different, the equipment is in semi-duplex mode.
- Private channels are registered at the installation of the equipment. If desired to add the other private channels after installation, contact JRC or our agency.

9.3 Options

(1) AC/DC Power supply (NBD-865)

Source voltage	100VAC - 120VAC or 200VAC - 240VAC (50/60Hz) and 24VDC (21.6VDC - 31.2VDC)
Output voltage	24VDC (19.0VDC - 34.0VDC)
Maximum output current	10.5A
Source switching function	Automatic switching to DC power when AC power is cut off (uninterrupted output) Automatic switching from DC to AC when AC power is restored
Temperature range for full performance	-15°C - +55°C
Operating temperature range	-15°C - +55°C
Storage temperature	-25°C - +65°C
Humidity resistance	No abnormality after standing 10 hours in +40 ºC, 93% RH
Vibration resistance (3 Axis)	2 Hz - 5 Hz to 13.2 Hz: : Full amplitude ±1 mm±10% 13.2 Hz to 100 Hz: : Maximum acceleration 7 m/s^2 fixed No abnormality after testing resonance points or at 30 Hz for more than 2 hours
Continuous operation	No abnormality after operating continuously for 8 hours

(2) VHF Channel selector (NCM-2000)

Main controls	Communication channel settings, transmission power switching settings, volume adjustment, screen adjustment
Communication speed	9600bps or 57.6kbps
Communication interface	RS-485 and RS-232C
Microphone input impedance	150 Ω balanced
Standard modulation input	-54dBm
Audio output	Handset phone (150Ω): 1mW or more
Display	7 segment red LED
Power voltage	15VDC (11.7VDC - 15.0VDC)
Maximum Current consumption	0.6A

(3) Printer (NKG-91/901)

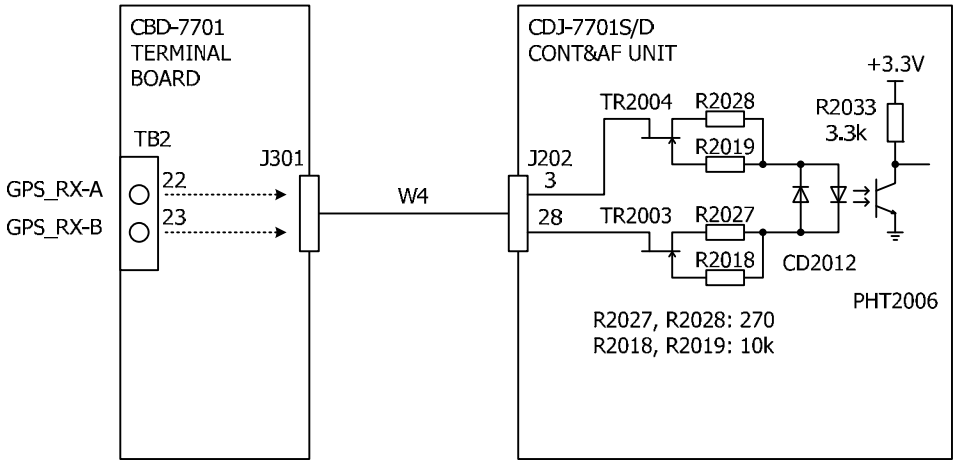
Printing system	Thermal line dot
Communication interface	RS-232C, 4.8k/9.6k/38.4kbps
Data control	RTS/CTS
Data buffer	4096byte
Print speed	20mm/sec or more
Roll paper width	58mm
Power voltage	6.5VDC
Maximum Current consumption	2A (In case character printing)

9.4 Peripheral interfaces

(1) GPS or other navigation aids interface

Interface standard	NMEA0183/ IEC61162-1 Ed.5 (2016-8) compliant		
Protocol	4800bps, start 1bit, data 8bit, stop 1bit Non parity		
Input sentence	NMEA0183	V1.5:	GGA/GLL/RMC
		V2.0:	GGA/GLL/RMC/ZDA
		V2.3:	GGA/GLL/RMC/GNS/ZDA
	(Talker = "GP" or other)		
Data type	Ship position & time information:		GGA/ GNS/ GLL/ RMC
	Date information:		ZDA/ RMC
	Equipment time information:		ZDA/ GGA/ GNS/ GLL/ RMC

(1.1) Electrical description



■ Load requirements

Current consumption : 2mA at 2V or less

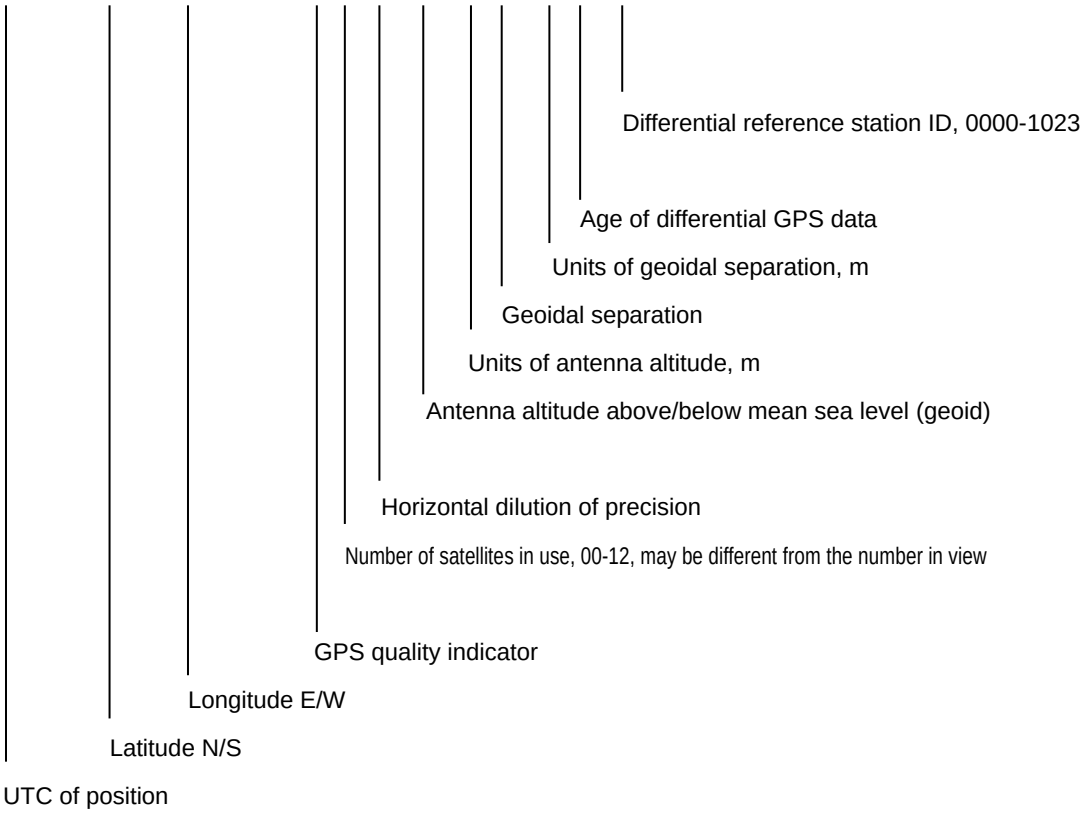
Maximum input voltage : ±15V or more

Recommended operating current : 2mA or more

(1.2) List of sentences and associated data fields

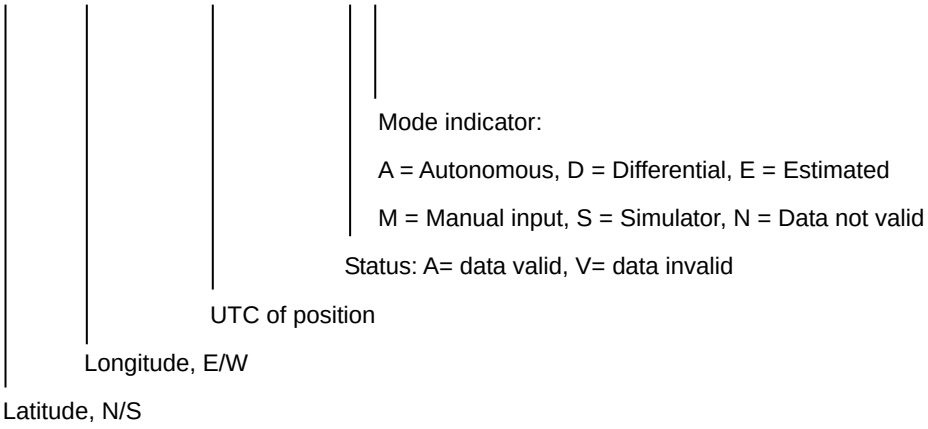
(1.2.1) GGA – Global positioning system (GPS) fix data

$--GGA, hhmmss, llll.ll, a, yyyyy.yy, a, x, xx, x.x, x.x, M, x.x, M, x.x, xxxx *hh<CR><LF>



(1.2.2) GLL – Geographic position – Latitude/longitude

$--GLL, llll.ll, a, yyyyy.yy, a, hhmmss.ss, A, a *hh<CR><LF>



(1.2.3) RMC – Recommended minimum specific GNSS data

$--RMC, hhmmss.ss, A, llll.ll, a, yyyyy.yy, a, x.x, x.x, xxxxxx, x.x, a, a, a *hh<CR><LF>

- Navigational status
- Mode indicator:
  A = Autonomous, D = Differential,
  E = Estimated, F = Float RTK,
  M = Manual input, N = Data not valid
  P = Precise, R = Real Time Kinematic
  S = Simulator,
- Magnetic variation, degrees, E/W
- Date: dd/mm/yy
- Course over ground, degrees true
- Speed over ground, knots
- Longitude, E/W
- Latitude, N/S
- Status: A = data valid, V = navigation receiver warning
- UTC of position fix

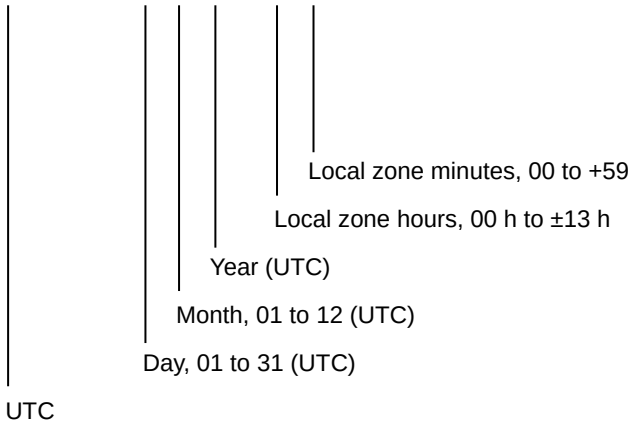
(1.2.4) GNS – GNSS fix data

$--GNS, hhmmss.ss, llll.ll, a, yyyyy.yy, a, c---c, xx, x.x, x.x, x.x, x.x, x.x, a *hh<CR><LF>

- Navigational status
- Differential reference station ID
- Age of differential data
- Geoidal separation, m
- Antenna altitude, m, re:mean-sea-level (geoid)
- HDOP
- Total number of satellites in use, 00-99
- Mode indicator:
  N = No fix, A = Autonomous, D = Differential,
  P = Precise, R = Real Time Kinematic, F = Float RTK,
  E = Estimated, M = Manual input, S = Simulator
- Longitude, E/W
- Latitude, N/S
- UTC of position

(1.2.5) ZDA – Time and date

$--ZDA, hhmmss.ss, xx, xx, xxxx, xx, xx *hh<CR><LF>



(1.3) Indication about the positioning system and the quality type

1) Indication GGA sentence

QI	Description	Device	Operating state		Quality	
			Positioning	Quality	Valid	Invalid
0	Fix not available or invalid	GPS	GPS	INVALID		●
		GLONASS	GL	INVALID		●
		Galileo	GA	INVALID		●
		Other	OTH	INVALID		●
1	SPS (Standard Positioning Service) mode	GPS	GPS	STD	●	
		GLONASS	GL	STD	●	
		Galileo	GA	STD	●	
		Other	OTH	STD	●	
2	Differential mode	GPS	GPS	DGPS	●	
		GLONASS	GL	DGL	●	
		Galileo	GA	DGA	●	
		Other	OTH	DOTH	●	
3	PPS (Precise Positioning Service) mode	GPS	GPS	PREC	●	
		GLONASS	GL	PREC	●	
		Galileo	GA	PREC	●	
		Other	OTH	PREC	●	
4	RTK (Real Time Kinematic) mode	GPS	GPS	RTK	●	
		GLONASS	GL	RTK	●	
		Galileo	GA	RTK	●	
		Other	OTH	RTK	●	
5	FRTK (Float Real Time Kinematic) mode	GPS	GPS	FRTK	●	
		GLONASS	GL	FRTK	●	
		Galileo	GA	FRTK	●	
		Other	OTH	FRTK	●	
6	Estimated (dead reckoning) mode	GPS	GPS	EST		●
		GLONASS	GL	EST		●
		Galileo	GA	EST		●
		Other	OTH	EST		●
7	Manual input mode	GPS	GPS	MAN		●
		GLONASS	GL	MAN		●
		Galileo	GA	MAN		●
		Other	OTH	MAN		●
8	Simulator mode	GPS	GPS	SIM		●
		GLONASS	GL	SIM		●
		Galileo	GA	SIM		●
		Other	OTH	SIM		●

Note When receiving the GGA sentence, the quality type is checked using the Quality Indicator (QI) as mentioned in the table above.

- If the quality is valid, the operating state is indicated with the position and time information.
- If the quality is invalid, the next GNS sentence is referred.

2) Indication for GNS sentence

Device	MI	Description	Operating state		Quality	
			Positioning	Quality	Valid	Invalid
GPS	A	Autonomous mode	GPS	STD	●	
	D	Differential mode	GPS	DGPS	●	
	E	Estimated (dead reckoning) mode	GPS	EST		●
	F	FRTK (Float Real Time Kinematic) mode	GPS	FRTK	●	
	M	Manual input mode	GPS	MAN		●
	N	No Fix	GPS	INVALID		●
	P	PPS (Precise Positioning Service) mode	GPS	PREC	●	
	R	RTK (Real Time Kinematic) mode	GPS	RTK	●	
	S	Simulator mode	GPS	SIM		●
GLONASS	A	Autonomous mode	GL	STD	●	
	D	Differential mode	GL	DGL	●	
	E	Estimated (dead reckoning) mode	GL	EST		●
	F	FRTK (Float Real Time Kinematic) mode	GL	FRTK	●	
	M	Manual input mode	GL	MAN		●
	N	No Fix	GL	INVALID		●
	P	PPS (Precise Positioning Service) mode	GL	PREC	●	
	R	RTK (Real Time Kinematic) mode	GL	RTK	●	
	S	Simulator mode	GL	SIM		●
Galileo	A	Autonomous mode	GA	STD	●	
	D	Differential mode	GA	DGA	●	
	E	Estimated (dead reckoning) mode	GA	EST		●
	F	FRTK (Float Real Time Kinematic) mode	GA	FRTK	●	
	M	Manual input mode	GA	MAN		●
	N	No Fix	GA	INVALID		●
	P	PPS (Precise Positioning Service) mode	GA	PREC	●	
	R	RTK (Real Time Kinematic) mode	GA	RTK	●	
	S	Simulator mode	GA	SIM		●
上記以外	A	Autonomous mode	OTH	STD	●	
	D	Differential mode	OTH	DOTH	●	
	E	Estimated (dead reckoning) mode	OTH	EST		●
	F	FRTK (Float Real Time Kinematic) mode	OTH	FRTK	●	
	M	Manual input mode	OTH	MAN		●
	N	No Fix	OTH	INVALID		●
	P	PPS (Precise Positioning Service) mode	OTH	PREC	●	
	R	RTK (Real Time Kinematic) mode	OTH	RTK	●	
	S	Simulator mode	OTH	SIM		●

Note When receiving the GNS sentence, and if the Navigational status in that sentence is S (Safe), the quality type is checked using the Mode Indicator (MI) as mentioned in the table above.

- If the quality is valid, the operating state is indicated with the position and time information.
- If the quality is invalid, or the Navigational status is C (Caution), U (Unsafe) or V (Not valid), the next GLL sentence is referred.

3) Indication for GLL sentence

MI	Description	Device	Operating state		Quality	
			Positioning	Quality	Valid	Invalid
A	Autonomous mode	GPS	GPS	STD	●	
		GLONASS	GL	STD	●	
		Galileo	GA	STD	●	
		Other	OTH	STD	●	
D	Differential mode	GPS	GPS	DGPS	●	
		GLONASS	GL	DGL	●	
		Galileo	GA	DGA	●	
		Other	OTH	DOTH	●	
E	Estimated (dead reckoning) mode	GPS	GPS	EST		●
		GLONASS	GL	EST		●
		Galileo	GA	EST		●
		Other	OTH	EST		●
M	Manual input mode	GPS	GPS	MAN		●
		GLONASS	GL	MAN		●
		Galileo	GA	MAN		●
		Other	OTH	MAN		●
S	Simulator mode	GPS	GPS	SIM		●
		GLONASS	GL	SIM		●
		Galileo	GA	SIM		●
		Other	OTH	SIM		●
N	No Fix	GPS	GPS	INVALID		●
		GLONASS	GL	INVALID		●
		Galileo	GA	INVALID		●
		Other	OTH	INVALID		●

Note When receiving the GLL sentence, and if the Status in that sentence is A (Data valid), the quality type is checked using the Mode Indicator (MI) as mentioned in the table above.

- If the quality is valid, the operating state is indicated with the position and time information.
- If the quality is invalid, or the Status is V (Data invalid), the next RMC sentence is referred.

4) Indication for RMC sentence

MI	Description	Device	Operating state		Quality	
			Positioning	Quality	Valid	Invalid
A	Autonomous mode	GPS	GPS	STD	●	
		GLONASS	GL	STD	●	
		Galileo	GA	STD	●	
		Other	OTH	STD	●	
D	Differential mode	GPS	GPS	DGPS	●	
		GLONASS	GL	DGL	●	
		Galileo	GA	DGA	●	
		Other	OTH	DOTH	●	
E	Estimated (dead reckoning) mode	GPS	GPS	EST		●
		GLONASS	GL	EST		●
		Galileo	GA	EST		●
		Other	OTH	EST		●
F	FRTK (Float Real Time Kinematic) mode	GPS	GPS	FRTK	●	
		GLONASS	GL	FRTK	●	
		Galileo	GA	FRTK	●	
		Other	OTH	FRTK	●	
M	Manual input mode	GPS	GPS	MAN		●
		GLONASS	GL	MAN		●
		Galileo	GA	MAN		●
		Other	OTH	MAN		●
N	No Fix	GPS	GPS	INVALID		●
		GLONASS	GL	INVALID		●
		Galileo	GA	INVALID		●
		Other	OTH	INVALID		●
P	PPS (Precise Positioning Service) mode	GPS	GPS	PREC	●	
		GLONASS	GL	PREC	●	
		Galileo	GA	PREC	●	
		Other	OTH	PREC	●	
R	RTK (Real Time Kinematic) mode	GPS	GPS	RTK	●	
		GLONASS	GL	RTK	●	
		Galileo	GA	RTK	●	
		Other	OTH	RTK	●	
S	Simulator mode	GPS	GPS	SIM		●
		GLONASS	GL	SIM		●
		Galileo	GA	SIM		●
		Other	OTH	SIM		●

Note When receiving the RMC sentence, and if the Status in that sentence is A (Data valid) and the Navigational status is S (Safe), the quality type is checked using the Mode Indicator (MI) as mentioned in the table above.

- If the quality is valid, the operating state is indicated with the position and time information.
- If the quality is invalid, or if the Status is V (Data invalid) or the Navigational status is C (Caution), U (Unsafe) or V (Not valid), the operating state decided by the Quality Indicator, Status or Mode indicator of the receiving highest priority sentence (GGA > GNS >GLL > RMC) is displayed on the screen.

(2) AIS interface

Interface standard	IEC61162-2 compliant
Protocol	38.4kbps, start 1bit, data 8bit, stop 1bit No parity
Input sentence/message	VDM sentence: VDL1-5, 9, 18, 19 VDO sentence: VDL1-3, 18 ALR sentence: 003, 004, 026, 062, 065 (Talker = "AI" only)
Data type	Name and identification number of other ship Position information of other ship AIS type (Class A/B/Base station, SAR) Position data for own ship

(3) RMS interface

Interface standard	IEC61162-1 compliant
Protocol	4800bps, start 1bit, data 8bit, stop 1bit No parity
Output message	IEC61162-1 compliant proprietary sentence $PJRCL sentence (for RMS log saving) $PJRCM sentence (Device ID = "CV")
Data type	Device model name, serial number, self-diagnosis information, etc.

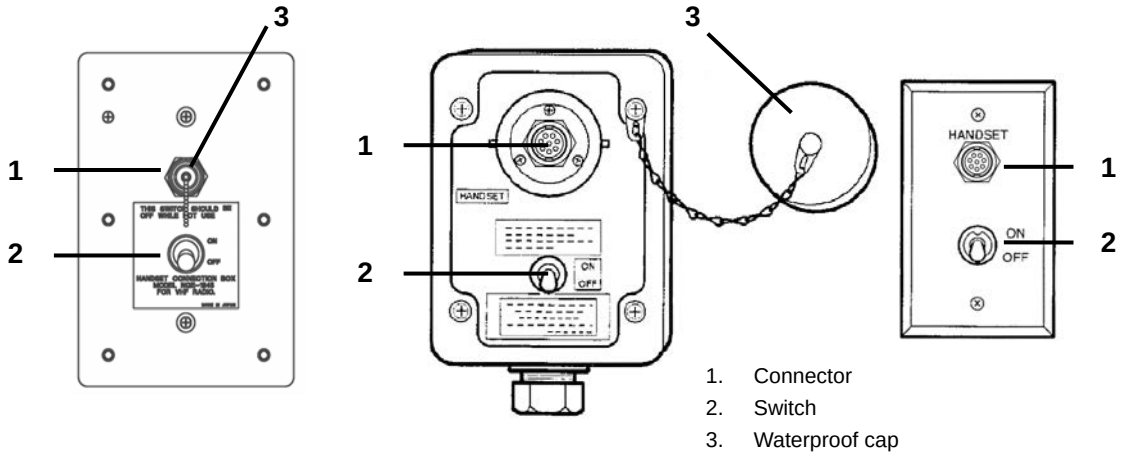
10. OPTIONS OPERATION

10.1 Handset connection box (NQE-1845/ 1846/ 1847)

There are three types of handset connection boxes: a waterproofed flush mount type for a wing console (NQE-1845), a waterproofed wing installation type (NQE-1846) and an indoor flush mount type (NQE-1847).

⚠ CAUTION

Close the water-resistant cap of the waterproof type handset box after use. Rain and sea breeze could cause connector malfunction. Also do not leave the handset above deck.



Waterproofed flush mount type for wing console (NQE-1845)

Waterproofed wing installation type (NQE-1846)

Indoor flush mount type (NQE-1847)

■ Procedure ■

1. In the case of the waterproof type, remove the water-resistant cap.
2. Connect the handset (NQW-261) to the connector.
3. Turn ON the switch to start communications.

   The access right is obtained by turning on this switch.
   (This switch is equivalent to hook switch of the handset.)

Note
- Always turn off the switch when not in use.
- Even if the switch is turned on, while another controller with higher priority is in use, the access right will not be obtained.

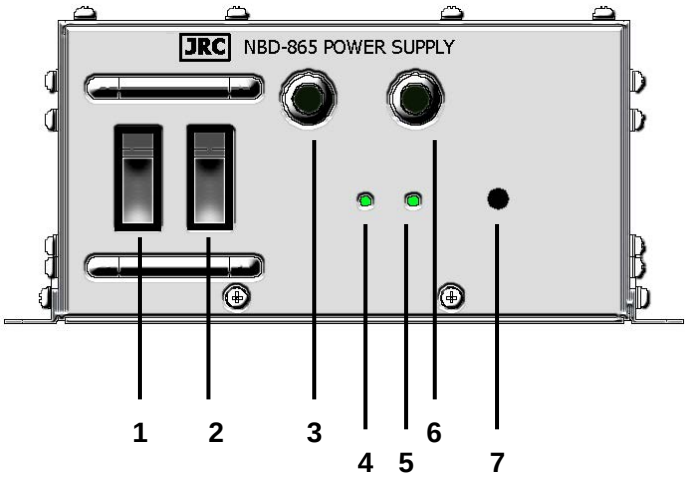
10.2 AC/DC Power supply (NBD-865)

⚠ WARNING

Before replacing fuses of this unit, always turn off this AC/DC power switch and power source output to this unit.

Always use the specified fuse when replacing a fuse. Using a different fuse may result in fire or malfunction.

In addition to the AC fuse on the panel, there are also DC fuses contained in the inside of unit. Opening and working with the inside of the unit may result in fire or electrocution, so with the exception of qualified service personnel, do NOT attempt to replace the DC fuses.
To replace the DC fuses, contact JRC or our agent.



1. AC Switch
2. DC Switch
3. AC Fuse (u)
4. DC OUTPUT Lamp
5. DC OPERATION Lamp
6. AC Fuse (v)
7. Dimmer control

■ Procedure ■

1. Turn on both of the AC and DC switches.

   If there is no AC power connected, only turn on the DC power switch.

2. Confirm that the DC OUTPUT lamp is lit.

   If this lamp is lit, 24VDC power is being output properly.

Note
- If the switch is turned on but the DC OUTPUT lamp does not light, except for the dimmer control position, there may be a malfunction with the AC/DC input power voltage, or a fuse may have been blown.
- If only DC power is used, the DC OPERATION lamp will light. Be careful not to over discharge the battery.

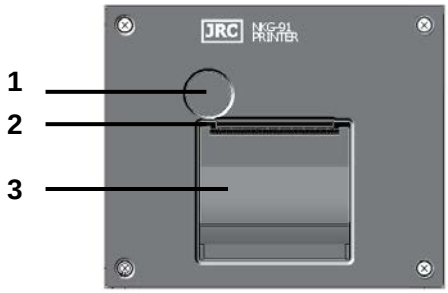
10.3 Printer (NKG-91)

⚠ CAUTION

The thermal head of the printer may be very hot after printing. Do not touch it. Perform paper replacement and head cleaning only after waiting for the head to completely cool.

The printing paper used in this printer is a heat sensitive paper. Take the following precautions when using this paper.

- Store the paper away from heat, humidity, or heat sources.
- Do not rub the paper with any hard objects.
- Do not place the paper near organic solvents.
- Do not allow the paper to come in contact with polyvinyl chloride film, erasers, or adhesive tape for long periods of time.
- Keep away the paper from freshly copied diazo type or wet process copy paper.



1. Paper cover open button
2. Paper cutter
3. Paper cover

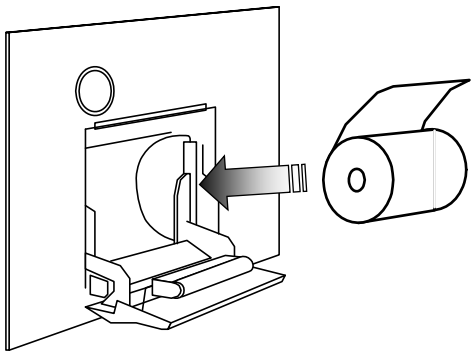
■ Loading the printer paper ■

1. Press the paper cover open button.

   The paper cover will open.

2. Insert the paper as shown at right.

   Position the paper such that the edge extends outside the printer, and press the both sides of the paper cover to close it.



Note The printer is turned on and off simultaneously with the radiotelephone.

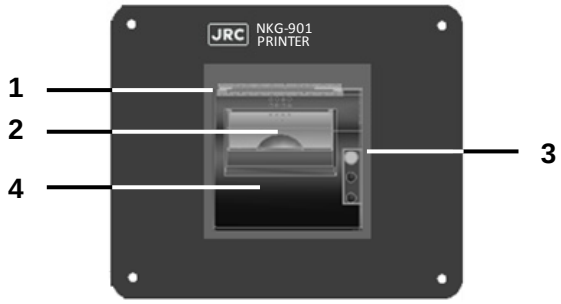
10.4 Printer (NKG-901)

⚠ CAUTION

The thermal head of the printer may be very hot after printing. Do not touch it. Perform paper replacement and head cleaning only after waiting for the head to completely cool.

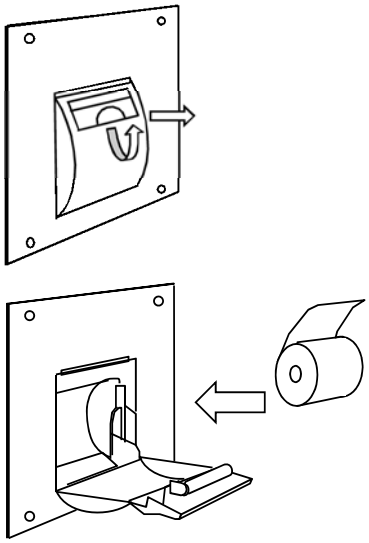
The printing paper used in this printer is a heat sensitive paper. Take the following precautions when using this paper.

- Store the paper away from heat, humidity, or heat sources.
- Do not rub the paper with any hard objects.
- Do not place the paper near organic solvents.
- Do not allow the paper to come in contact with polyvinyl chloride film, erasers, or adhesive tape for long periods of time.
- Keep away the paper from freshly copied diazo type or wet process copy paper.



1. Paper cutter
2. Opening lever
3. Feed button
4. Paper cover

■ Loading the printer paper ■



1. Raise up the opening lever until it sound, and pull it.

   The paper cover will open.

2. Insert the paper as shown in the diagram at right.

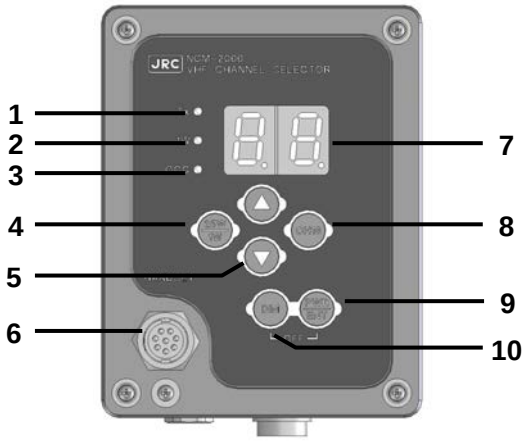
   Position the paper such that the leading edge extends outside the printer, and press center of top of the paper cover to close it until it sounds.

Note The printer is turned on and off simultaneously with the radiotelephone.

10.5 VHF Channel selector (NCM-2000)

⚠ CAUTION

For channel selectors installed above deck, close the water-resistant cap after use. Rain and sea breeze could cause connector malfunction. Also do not leave the handset above deck.



1. TX Lamp
Lights when transmitting.

2. 1W Lamp
Lights when transmitting power is 1W.

3. OCC Lamp
Lights when not having the access right.

4. 25W/1W Switch
Switches transmitting power between 25W and 1W. If pressed and held for two seconds, this unit becomes to the menu mode. In this mode, select the desired item with the ▲ or ▼ key and press ENT, then perform the procedure in the table below. When finishing this menu mode, press and hold for two seconds again.

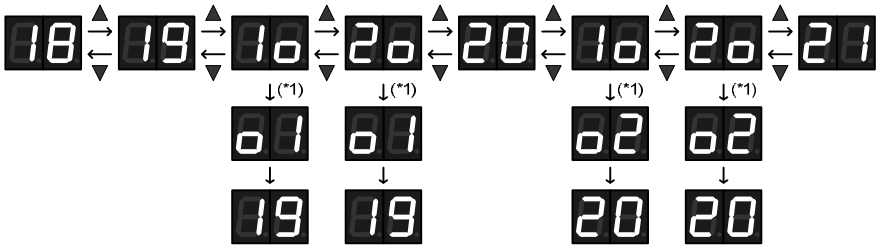
Display	Setting	Setting Method
S.1	Squelch level	Select 01 (open) - 32 with the ▲ or ▼ key, and press ENT.
S.2	PHONE level	Select 01 - 08 with the ▲ or ▼ key, and press ENT.
S.3	Hook switch detection function	Select ON/OFF with the ▲ or ▼ key, and press ENT.
S.4	Fine brightness	1) Select a brightness level from bright (d.1), medium (d.2), or dark (d.3) with the ▲ or ▼ key, and press ENT. 2) Select the fine brightness value (01-10) for the brightness level selected in 1) with the ▲ or ▼ key, and press ENT.
S.5	Software version	Display a software version.
S.0	(Ends the menu mode.)	-----

5. UP/DOWN arrow keys

These keys are used for the channel selection, or menu settings. Additionally, note that when selecting the channel, the channel numbers are displayed as follows.

- Case of pressing ▲ or ▼ key shortly and repeatedly:

  - Example of ITU channels



  - Example of Canada channels (Note: USA mode is similar.)

*1) If left the ▲ or ▼ key on the channel, the digits of the channel start scrolling. For more details, see 7.Display below.

- Case of holding down ▲ or ▼ key:

*2) While holding down, channel number is increasing at the same interval of time (0.5sec). Additionally, if left the ▲ or ▼ key, the digits of the channel start scrolling as mentioned above.

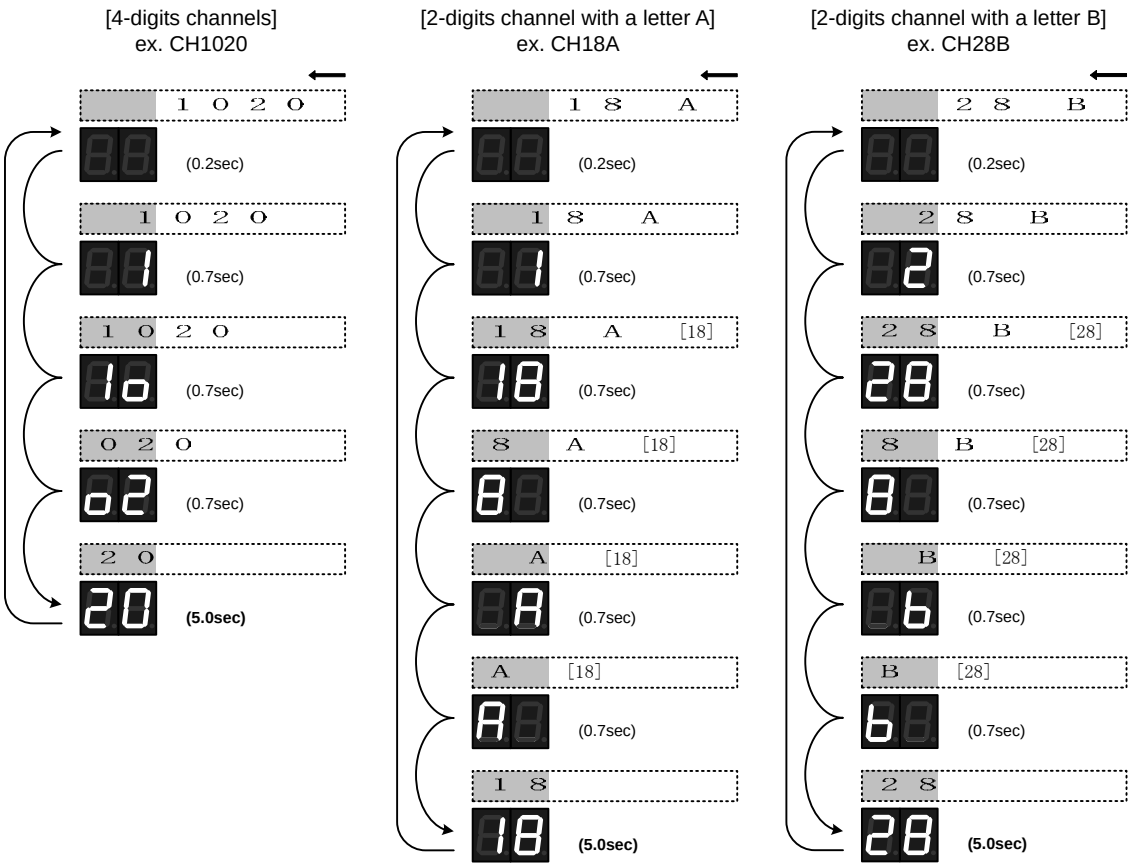
6. Waterproof connector cap

When using this unit, remove this cap and connect the handset to the internal connector.

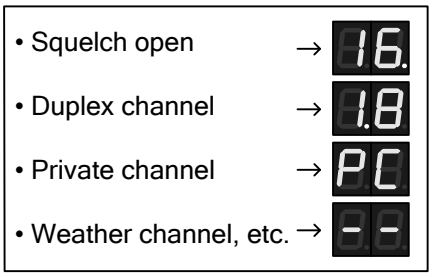
7. Display

Displays the current channel, menus, etc.

Note - When a more than 2-digits channel is selected, the channel is displayed scrolling as follows.



- A lower right dot lights up at the time of squelch opened.
- A lower middle dot lights up at the time of selection of duplex-channel.
- Private channel and weather channel cannot be changed.
- When weather channel, PA use, intercom use and such as unlock alarm occurred, “- -” is displayed.



8. CH16 key
Sets the radiotelephone channel to CH16.

9. PWR/ENT key
In addition to turning on the power, this key is used to determine the menu items, or to obtain the access right.

10. DIM (brightness control) key
This key cycles the display brightness between bright, medium, dark, and off. If pressed at the same time as the PWR/ENT key, it activates sleep mode.

Note

- The brightness level is not saved. So when powering off and on later, this level is set to the medium as the factory default setting.
- The channel selector cannot change the channel region mode (ITU/USA/Canada/Inland Waterway). When changing the channel region mode, use the controller (NCM-1770).
- Either one of the following alarms is displayed if an error is detected in the channel selector. When the alarm is displayed, contact JRC or our agency.

Alarm Number	Contents
E1	Detected the memory (ROM1) error.
E2	Detected the memory (ROM2) error.
E3	Detected the serial communication test error at powering on.
E4	Detected the serial communication error.

JRC Japan Radio Co., Ltd.

电子信息产品有害物资申明
日本无线株式会社

Declaration on toxic & hazardous substances or elements
of Electronic Information Products
Japan Radio Company Limited

有毒有害物质或元素的名称及含量
(Names & Content of toxic and hazardous substances or elements)

形式名(Type): JHS-770S / 780D　　名称(Name): Marine VHF Radiotelephone

部件名称 (Part name)	有毒有害物质或元素 (Toxic and Hazardous Substances and Elements)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr^{6+})	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
天线 (Antenna)	×	○	×	×	×	×
船内装置 (Inboard Unit)	×	○	×	×	×	×
外部设备(Peripherals) ・选择(Options) ・打印机(Printer) ・电线类(Cables) ・手册(Documennts)	×	○	×	×	×	×

○:表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11306-2006 标准规定的限量要求以下。
(Indicates that this toxic, or hazardous substance contained in all of the homogeneous materials for this part is below the requirement in SJ/T11363-2006.)

×:表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006 标准规定的限量要求。
(Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T 11363-2006.)

RE: 中华人民共和国电子信息产品污染控制管理办法
Management Methods on Control of Pollution from Electronics Information Products of the People's Republic of China

Marking with market circulation mark

According to the requirements of clause 20 of Technical Regulations about safety of Maritime transport objetcs, approved by Resolution of the Russian Federation Goverment #620 dated August 12, 2010 and requirements Technical Regulation of the Russian Federation Goverment #623 dated August 12, 2010 navigation & radiotelephone equipment should be marked by company – manufacturer with market-circulation mark the way it is determined by Legislation of the Russia federation on technical regulation.

According to the airticle 27 PZ No184 –FZ of Federal Law about Technical Regulation dated December 12, 2002 and Resolution of the Russian Federation Goverment dated 19.11.03 No0696 navigation equipment has an appropriate marking. The marking can be perfomed by one of four variants, depending on surface colour of equipment.

The images should be grey scale and should contrast against the surface colour (ref. to the Resolution of the Russian Federation Goverment No696 <<About market circulation mark>> dated November 19, 2003).

The marking of Radio and navigational equipment should be done by the manufacturer (supplier) according to the clause 2 of the article 27 of the Federal Law No.184 –FZ << About technical Regulation>> and should be applied right to device surface.

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For further information,contact:

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