

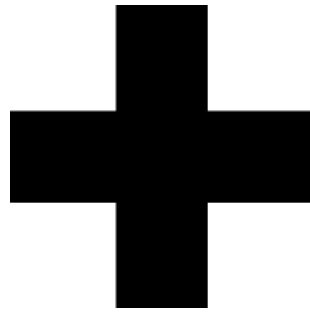
PREFACE

Thank you for purchasing the JRC Multi Function Display JMR-5400 Series.

This equipment meets the performance standards of the IMO (International Maritime Organisation), and serves to improve safety.

- For the best operation, read this manual thoroughly before use.
- Keep this manual in a convenient place for future reference.
Make use of this manual when experiencing operation difficulties.
- The LCD of this equipment uses thin film transistors (TFT). If some pixels on the screen are not clear, the colour is different, or the screen is brighter than usual, it is not because of defect, instead it is because of inherent characteristic of the TFT display technology.
- The information in this manual is subject to change without notice at any time.

● Safety Cautions ●



Cautions for High Voltage

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

High voltages on the order of tens of thousand volts are most likely to cause instant deaths from electrical shocks. At times, even voltages on the order of several hundred volts could lead to electrocution. To defend against electrical shock hazards, don't put your hand into the inside of apparatus.

When you put in a hand unavoidably in case of urgent, it is strongly suggested to turn off the power switch and allow the capacitors, etc. to discharge with a wire having its one end positively grounded to remove residual charges. Before you put your hand into the inside of apparatus, make sure that internal parts are no longer charged. Extra protection is ensured by wearing dry cotton gloves at this time. Another important precaution to observe is to keep one hand in your pocket at a time, instead of using both hands at the same time. It is also important to select a secure footing to work on, as the secondary effects of electrical shock hazards can be more serious. In the event of electrical shocks, disinfect the burnt site completely and obtain medical care immediately.

Precautions for Rescue of Victim of Electric Shock

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

It is necessary to perform first aid immediately.

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

● Emergency Measures ●

Method of First-Aid Treatment

☆ Precautions for First-Aid Treatments

Apply artificial respiration to the person who collapsed, minimising moving as much as possible avoiding risks. Once started, artificial respiration should be continued rhythmically.

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

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

* Performing mouth-to-mouth artificial respiration

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

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


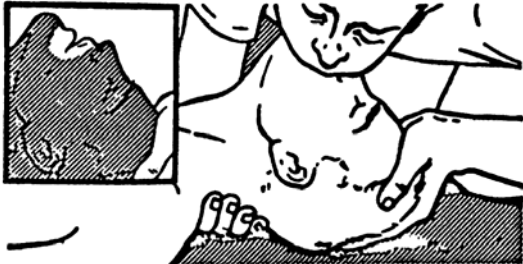

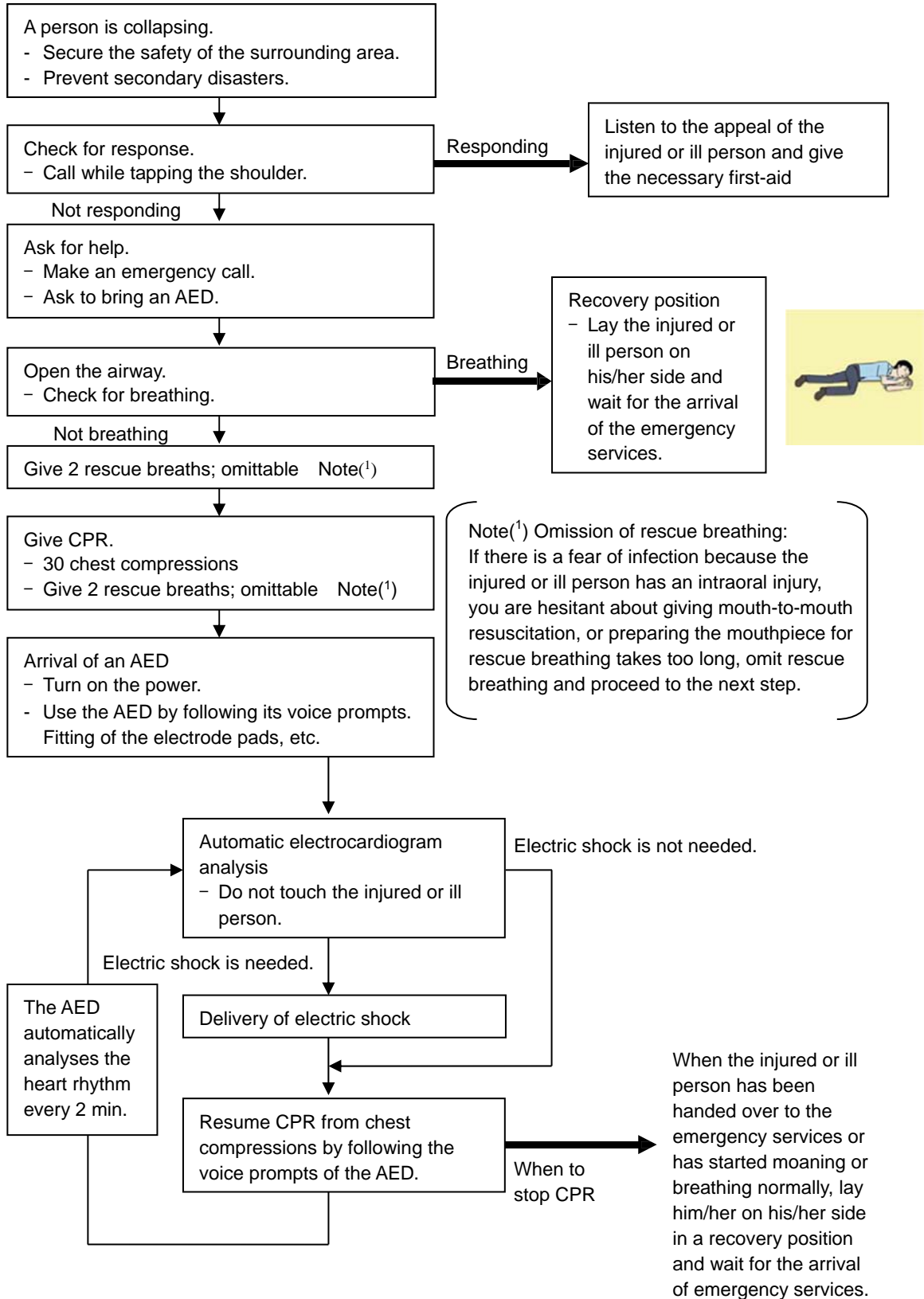
- [1]  (1) Lift the back part of the patient's head. Support the forehead with one of your hand and the neck with the other hand. → [1]. Many patients will have their airways opened by lifting their head in this way to ease mouth-to-mouth artificial respiration.
- [2]  (2) Closing the patient's mouth with your mouth, press your cheek against the patient's nose → [2]. Alternatively, hold the patient's nose with your finger to prevent air leak → [3].
- [3]  (3) Blowing air into the patient's lungs. Blow air into the patient's lungs until chest is seen to rise. The first 10 breaths must be blown as fast as possible.

Fig. 1 Mouth-to-mouth artificial respiration

Flow of Cardiopulmonary Resuscitation (CPR)



Specific Procedures for Cardiopulmonary Resuscitation (CPR)

1. Check the scene for safety to prevent secondary disasters

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



2. Check for responsiveness

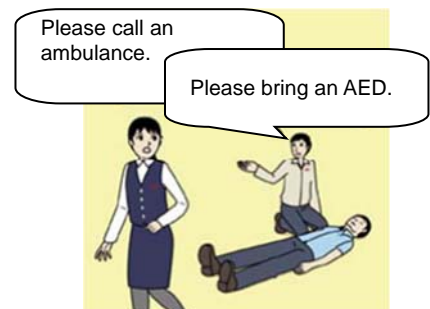
- a) Tap the shoulder of the injured or ill and shout in the ear saying, "Are you OK?"
- b) If the person opens his/her eyes or there is some response or gesture, determine it as "responding." But, if there is no response or gesture, determine it as "not responding."

3. If responding

- a) Give first-aid treatment.

4. If not responding

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



5. Open the airway

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

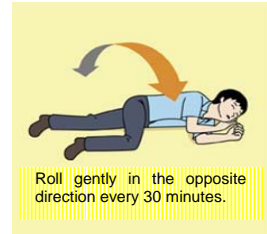


6. Check for breathing

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



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



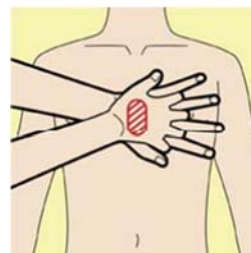
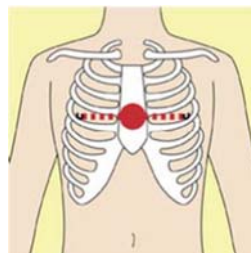
7. Give 2 rescue breaths (omittable)

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



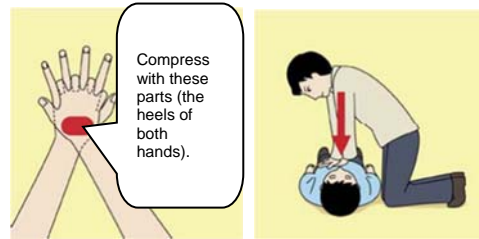
8. Cardiopulmonary resuscitation (CPR) (combination of chest compressions and rescue breaths)

- a) Chest compressions
- 1) Position of chest compressions
- Position the heel of one hand in the centre of the chest, approximately between the nipples, and place your other hand on top of the one that is in position.



2) Perform chest compressions

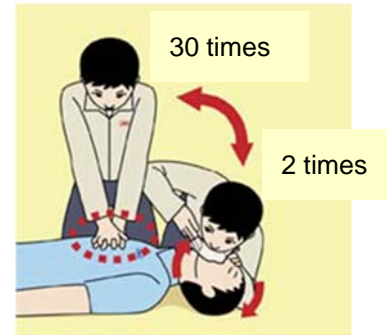
- Perform uninterrupted chest compressions of 30 at the rate of about 100 times per minute. While locking your elbows positioning yourself vertically above your hands.



- With each compression, depress the chest wall to a depth of approximately 4 to 5 cm.

b) Combination of 30 chest compressions and 2 rescue breaths

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



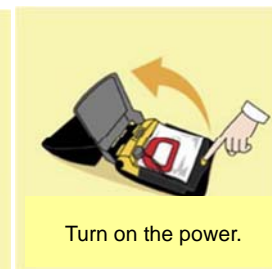
9. When to stop cardiopulmonary resuscitation (CPR)

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



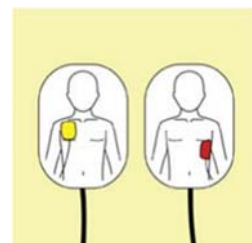
10. Arrival and preparation of an AED

- a) Place the AED at an easy-to-use position. If there are multiple first-aiders, continue CPR until the AED becomes ready.
- b) Turn on the power to the AED unit. Depending on the model of the AED, you may have to push the power on button, or the AED automatically turns on when you open the cover.
- c) Follow the voice prompts of the AED.



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

- a) Remove all clothing from the chest, abdomen, and arms.
- b) Open the package of electrode pads, peel the pads off and securely place them on the chest of the injured or ill person, with the adhesive side facing the chest. If the pads are not securely attached to the chest, the AED may not function. Paste the pads exactly at the positions



indicated on the pads, If the chest is wet with water, wipe dry with a dry towel and the like, and then paste the pads. If there is a pacemaker or implantable cardioverter defibrillator (ICD), paste the pads at least 3cm away from them. If a medical patch or plaster is present, peel it off and then paste the pads. If the injured or ill person's chest hair is thick, paste the pads on the chest hair once, peel them off to remove the chest hair, and then paste new pads.



- c) Some AED models require to connect a connector by following voice prompts.
- d) The electrode pads for small children should not be used for children over the age of 8 and for adults.

12. Electrocardiogram analysis

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



13. Electric shock (defibrillation)

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



14. Resume cardiopulmonary resuscitation (CPR).

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



15. Automatic electrocardiogram analysis

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

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

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






● Pictorial Indication ●

Meanings of Pictorial Indication

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

Please understand them before you read this manual:

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

Examples of Pictorial Indication



Electric Shock

The \triangle mark represents CAUTION (including DANGER and WARNING).

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



Disassembling
Prohibited



The \odot mark represents prohibition.

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



Disconnect
the power plug



The \bullet mark represents instruction.

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

Warning Label

There is a warning label on the top cover of the equipment. Do not try to remove, break or modify the label.

● Precautions upon Equipment Operation ●

DANGER



Never attempt to check or repair the inside of the equipment.
Checking or repair by an unqualified person may cause a fire or an electric shock.
Contact our head office, or a nearby branch or local office to request servicing.



Never remove the cover of this equipment.
Touching the high-voltage section inside will cause an electric shock.



Do not attempt to disassemble or tamper with this equipment.
Otherwise, a fire, an electric shock, or a malfunction may occur.



When conducting maintenance, make sure to turn the main power off.
Failure may result in electric shock.



Turn off all the main powers before cleaning the equipment. Make sure to turn it off since voltage is still outputted from the rectifier even after the indicator and the radar are turned off. Failure may result in equipment failure, or death or serious injury due to electric shock.



When conducting maintenance work on the radar antenna, make sure to turn all the main powers off.
Failure may result in electric shock or injuries.



Make sure to turn off the radar antenna safety switch. Failure may result in injuries caused by physical contact with the rotating radar antenna.

WARNING



When turning off the power supply, do not hold down the power button of the operation unit.
Otherwise, a trouble may occur due to termination failure.



Never directly touch the internal components of the radar antenna or indicator. Direct contact with these high-voltage components may cause electric shock. For maintenance, inspection, or adjustment of equipment components, consult with our branch office, branch shop, sales office, or our distributor in your district.



Do not get close to the radiant section of the radar antenna. It is a rotating part, and it may cause injuries if it suddenly starts rotating and consequently hits the body. The radiant section be installed at a high place such as on the roof of the wheelhouse, on the flying bridge, on the trestle, or on the radar mast so that no one can get close to it.



Microwave radiation level of the radar antenna
Keep away from the radar antenna during transmission.

Microwaves are generated from the front centre of the radiant section of the radar antenna at the levels indicated in the table below. Exposure to microwaves at close range can result in injury (especially damage to eyes).

| System | 50 W/m ² | 20 W/m ² | 2.5 W/m ² |
|----------|---------------------|---------------------|----------------------|
| NKE-2103 | n/a | 26cm | 123cm |
| NKE-2255 | 5cm | 81cm | 162cm |
| NKE-1130 | 11cm | 76cm | 181cm |
| NKE-2632 | 1.4cm | 3.1cm | 209.8cm |
| NKE-1632 | 1.5cm | 3.3cm | 128.4cm |



Make sure to install the radar antenna at a place higher than human height. Direct exposure to electromagnetic wave at close range will have adverse effects on the human body.



When it is necessary to get close to the radar antenna for maintenance or inspection purposes, make sure to turn the power switch of the display unit to "OFF" or "STBY".
Direct exposure to electromagnetic waves at close range will have adverse effects on the human body.



When conducting maintenance work, make sure to turn off the power so that the power supply to the equipment is completely cut off.
Some equipment components can carry electrical current even after the power switch is turned off, and conducting maintenance work may result in electric shock, equipment failure, or accidents.

WARNING



When cleaning the display screen, do not wipe it too strongly with a dry cloth. Also, do not use gasoline or thinner to clean the screen. Failure will result in damage to the screen surface.



Do not change Initial Level/Area Offset unless absolutely necessary. Incorrect adjustment will result in deletion of nearby target images and thus collisions may occur resulting in death or serious injuries.



Confirm computer virus does not exist in USB flash memory beforehand when reading and writing of the file by using USB flash memory. Influences other equipment when the display unit is infected with the virus, and it may cause a breakdown.



Do not remove USB flash memory while the access lamp (in USB flash drive) is flashing. Data may be damaged when the USB flash memory is inserted or removed while accessing it, and it may cause a breakdown.



Confirm computer virus does not exist in external storage media beforehand when reading and writing of the file by using external storage media. Influences other equipment when the display unit is infected with the virus, and it may cause a breakdown.



In case water or a metal object gets inside the equipment, turn off the power immediately, unplug the power supply cable from an electric outlet, and contact our head office, or a nearby branch or local office to request servicing. Keeping the equipment in operation under such condition may cause a fire, an electric shock or a malfunction.



In case you find smoke, unusual odor or extreme high heat coming from the equipment, turn off the power immediately, unplug the power supply cable from an electric outlet, and contact our head office, or a nearby branch or local office to request servicing. Keeping the equipment in operation under such condition may cause a fire or an electric shock.



Do not use the offset function during navigation. If the equipment is used with the offset value entered as the own ship position (deviated from the actual position), accidents may result.

WARNING



Change of the colour of the Day/Night button, particularly the use of the [Night] colour, may interfere with the recognition of display information. Confirm display information can be recognised.



When moving the dialogue box, move to the position that does not cover the operation area. If the dialogue box covers the operation area, it may interfere the recognition of the display information.



In the short distance range, do not set the sea clutter suppression function so that all reflections from the sea are suppressed. This suppresses not only the echo from waves, etc., but also the echo from floating objects such as ships or dangerous objects, etc., and obstructs their detection.

When using the sea clutter suppression function, always make the best suppression setting.



Do not set the rain/snow clutter suppression setting to an excessive level, because not only the echo from rain or snow but also the echo from floating objects such as ships or dangerous objects, etc., and obstructs their detection.

When using the rain/snow clutter suppression function, always make the best suppression setting.



When setting a guard zone, make sure to properly adjust gain, sea-surface reflection suppression level, and rain/snow reflection suppression level so that the optimal target images are always on the radar screen. The guard zone alarm will not be activated for targets undetected by the radar, and it may result in accidents such as collisions.



Since these alarms may include some errors depending on the target tracking conditions, the navigation officer himself should make the final decision for ship operations such as collision avoidance.

Making the final navigation decision based only on the alarm may cause accidents such as collisions.



Do not turn off the power during Backup/Restore. Otherwise, a function may fail, and an accident may occur.



Do not turn off the power supply during recovery of C drive image. Otherwise, a function fault occurs, causing an accident.



Specify the power source type, taking into account the ship's mains. In the case of using the ship's mains of 440VAC, it may be necessary as a step-down transformer. Improper order or using may result in a fire or accidents.

WARNING



The reference target function is to be used if the own ship's speed cannot be displayed normally due to trouble such as a speed sensor malfunction. Do not use the reference target function except in emergencies.



Do not set as a reference target a large radar echo such as a land target. The vectors of the speed and other tracking targets will not be displayed correctly and may cause an accident.



Do not set as a reference target a sailing ship. The vectors of the speed and other tracking targets will not be displayed correctly and may cause an accident.



Do not use own speed based on reference target tracking for relative speed and CPA/TCPA calculation of AIS targets because the response of own speed is slower than actual own ship's speed change and it may cause a big error on the collision judgement of AIS targets.

CAUTION



Use the radar only as a navigation aid.
The final navigation decision must always be made by the operator him/herself.
Making the final navigation decision based only on the radar display information may cause accidents such as collisions or running aground.



A malfunction as the screen is disordered or unshown may occur if the power in the ship is instantaneously interrupted during operation of the radar. In this case, the power should be turned on again.



The simulation function is used exclusively for deciding whether or not target tracking is properly operating. Therefore, never use this function unless you wish to check target tracking operations.
Note especially that, if this function is used during actual navigation, simulated targets are displayed and may become confused with other actual targets. Therefore, never use this function during actual navigation.



Optimal values have been set for VD Level and Constant; therefore, never change their values unless absolutely necessary. Failure may result in accidents that would lower target tracking performance.



When replacing magnetrons, make sure to shut off the main power and let the equipment stand for more than 5 minutes to discharge the high-voltage circuit.
Failure may result in electric shock.



Make sure to take off your watch when your hand must get close to the magnetron.
Failure may result in damage to the watch since the magnetron is a strong magnet.



Do not make any adjustments during navigation.
Failure may result in adverse effects on the radar function which may lead to accidents or equipment failure.



Do not change the quantization level settings unless absolutely necessary. If set at an inappropriate value, the acquisition of target tracking function and the tracking function deteriorate, and this may lead to accidents.



Do not use or leave the equipment under direct sunlight for a long time or in the temperatures above 55°C.
Otherwise, a fire or a malfunction may occur.



Do not place a glass or cup containing water, etc., or a small metal object on this equipment.
If water or such object gets inside, a fire, an electric shock, or a malfunction may occur.

CAUTION



Do not touch the equipment with hands or gloves wet with water. Otherwise, an electric shock or a malfunction may occur.



- Do not place any object on the operation panel. In particular, if a hot object is placed on the operation panel, it can cause deformation of the surface of the operation panel.
- Do not apply any undue shock on the operation panel, trackball and dials. Otherwise, a malfunction may result.



Make sure that the main power is turned off before inspection or replacement of parts. Otherwise, an electric shock, a fire, or a malfunction may occur.



Since the image within the previous observation range is displayed by expanding/contracting for the period from immediately after switching of the observation range from the next image updating, do not use this image for navigation. If this image is used for navigation, an accident may occur.



In the case of turning on the power under the condition of low temperature, do pre-heat more than 30 minutes. Otherwise, an operation failure may occur and an accident may occur.



Normally, use the automatic tuning mode. If you use the manual tuning mode, an accident may be caused by a transmission/reception problem. Use the manual tuning mode only when you cannot get the best tuning conditions in the automatic tuning mode.



Always keep the sensitivity adjusted to the best condition. If you raise the sensitivity excessively, the visibility of the target will be reduced by unwanted signals including receiver noise and pseudo image. This may cause an accident. If the sensitivity is reduced excessively, detection of a target such as a ship or hazardous material will be interrupted.



Adjust the preset of the observation scene according to the oceanographic condition, with the thorough understanding of the features of the radar signal processing setting. The optimum radar performance may not be able to be demonstrated due to the contents of the changed setting or the oceanographic condition at that time.



Information is displayed in addition to a warning or a caution in the alert status area. Information is used to report operation errors and so on to the users. Unlike other alerts, no detail display is provided for Information.

CAUTION

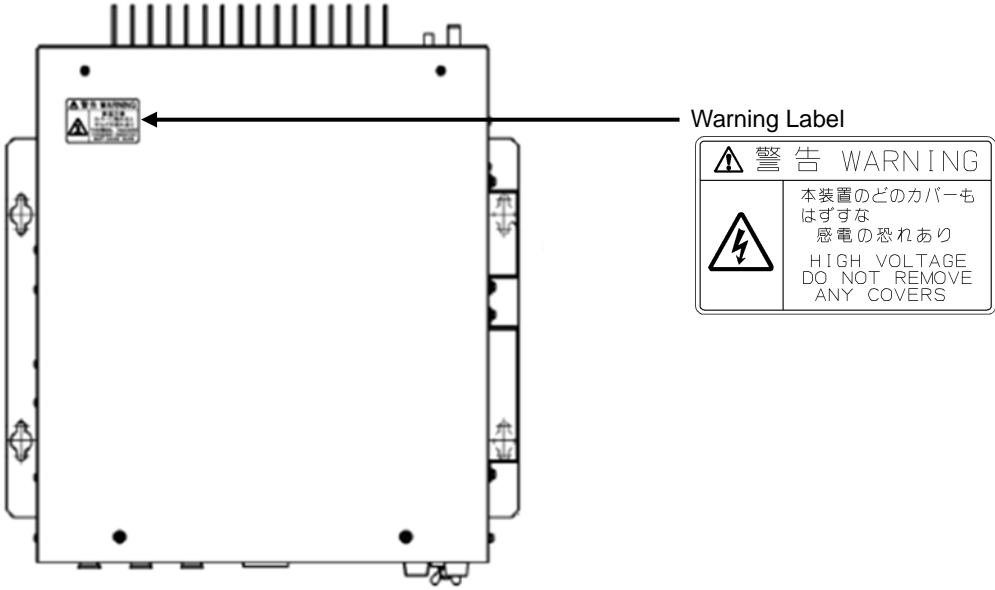


Never changes or modifications the equipment by user with not expressly approved method. Otherwise, the party responsible for compliance could void the user's authority to operate the equipment.



This equipment 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 equipment 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 equipment 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.

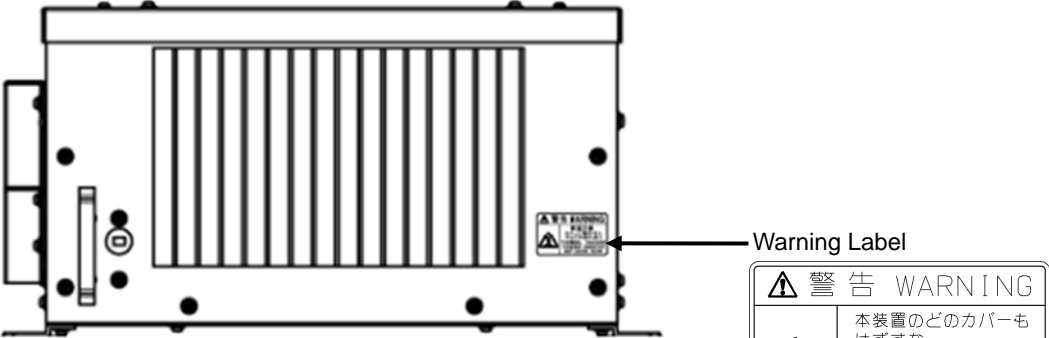
The Mounting Point of the Warning Label



NDC-1678 Processing Unit (top panel)

Warning Label

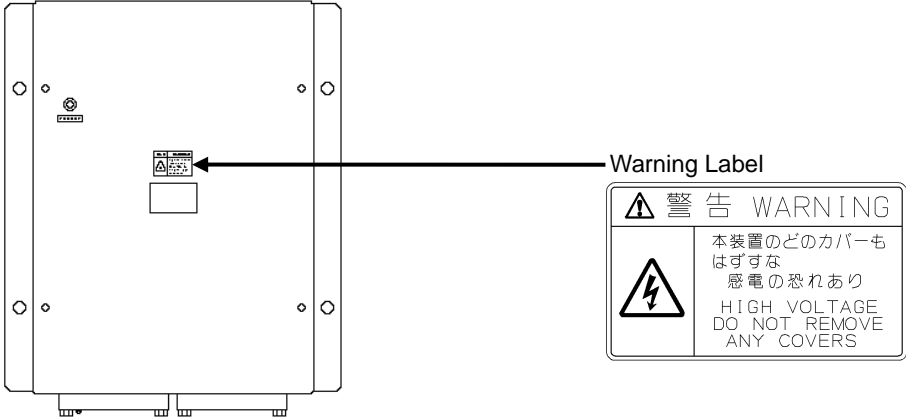
| | |
|--|--|
| | 警告 WARNING |
| | 本装置のどのカバーも はずすな 感電の恐れあり HIGH VOLTAGE DO NOT REMOVE ANY COVERS |



NDC-1678 Processing Unit (back)

Warning Label

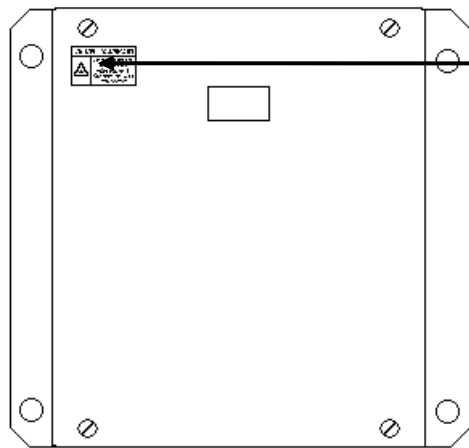
| | |
|--|--|
| | 警告 WARNING |
| | 本装置のどのカバーも はずすな 感電の恐れあり HIGH VOLTAGE DO NOT REMOVE ANY COVERS |



NQE-3141-4A/8A Interswitch Unit

Warning Label

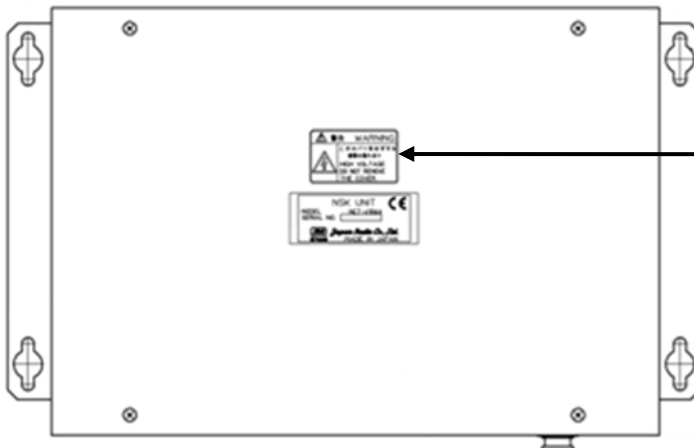
| | |
|--|--|
| | 警告 WARNING |
| | 本装置のどのカバーも はずすな 感電の恐れあり HIGH VOLTAGE DO NOT REMOVE ANY COVERS |



Warning Label



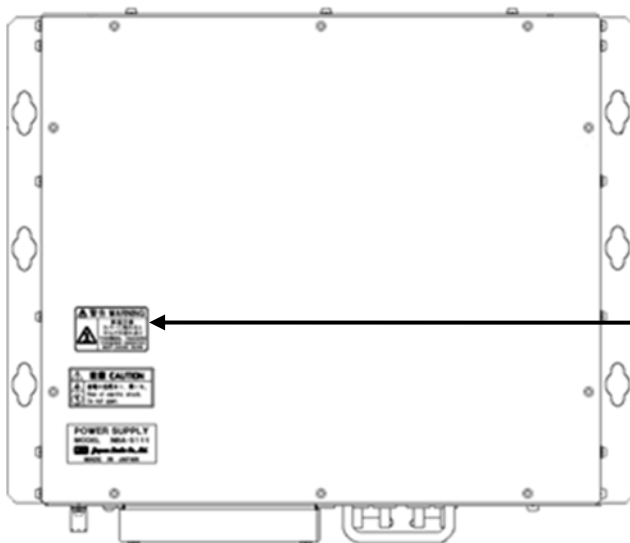
NQE-3167 Power Control Unit



Warning Label



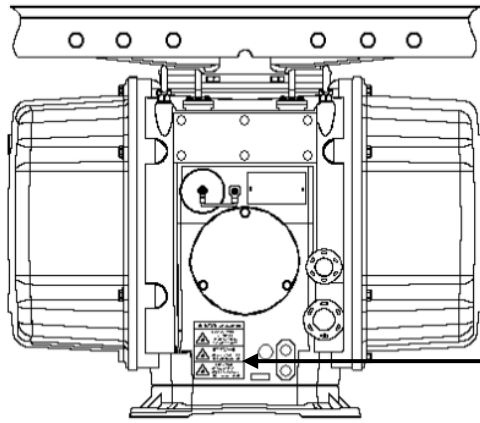
NCT-4106A NSK Unit



Warning Label



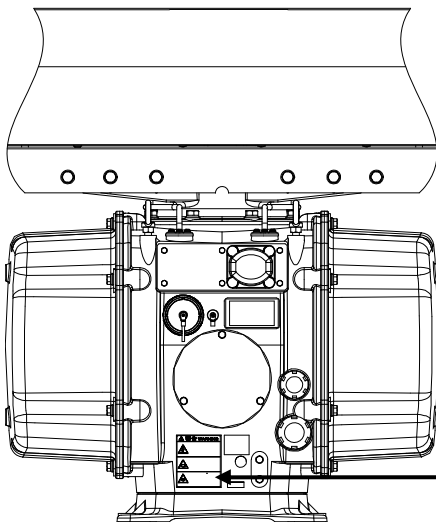
NBA-5111A Rectifier



NEK-1130 Scanner Unit

Warning Label

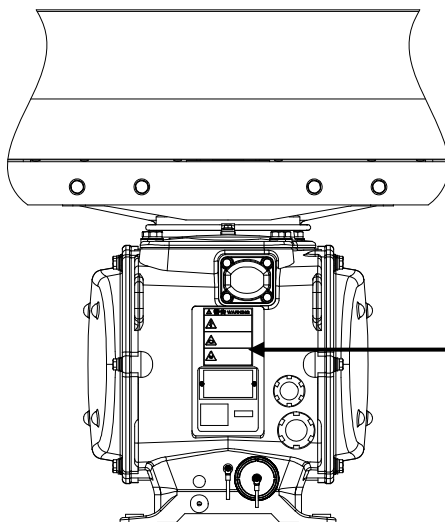
| | |
|--|---|
| | 警告 WARNING |
| | このカバーをはずすな 感電の恐れあり HIGH VOLTAGE DO NOT REMOVE THE COVER |
| | 空中線の回転に注意 負傷の恐れあり SCANNER ROTATION DO NOT APPROACH |
| | 送信中は近づくな 電磁波被害の恐れあり RADIATION HAZARD DO NOT APPROACH |



NKE-1632 Scanner Unit

Warning Label

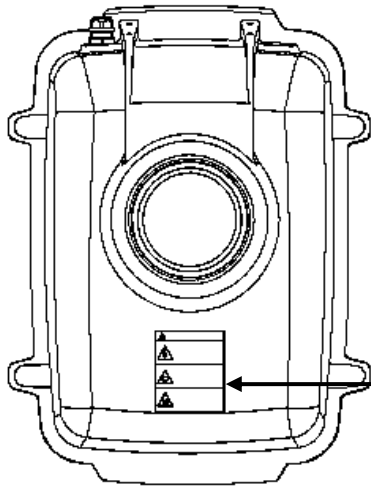
| | |
|--|---|
| | 警告 WARNING |
| | このカバーをはずすな 感電の恐れあり HIGH VOLTAGE DO NOT REMOVE THE COVER |
| | 空中線の回転に注意 負傷の恐れあり SCANNER ROTATION DO NOT APPROACH |
| | 送信中は近づくな 電磁波被害の恐れあり RADIATION HAZARD DO NOT APPROACH |



NKE-2632/2632-H Scanner Unit

Warning Label

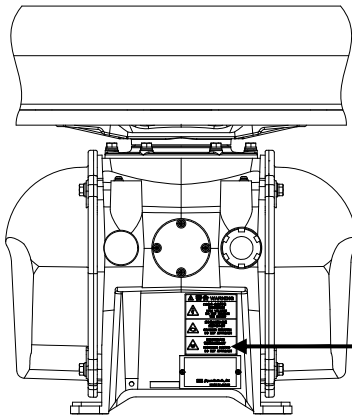
| | |
|--|---|
| | 警告 WARNING |
| | このカバーをはずすな 感電の恐れあり HIGH VOLTAGE DO NOT REMOVE THE COVER |
| | 空中線の回転に注意 負傷の恐れあり SCANNER ROTATION DO NOT APPROACH |
| | 送信中は近づくな 電磁波被害の恐れあり RADIATION HAZARD DO NOT APPROACH |



Warning Label

| | |
|--|---|
| | 警告 WARNING |
| | このカバーをはずすな 感電の恐れあり HIGH VOLTAGE DO NOT REMOVE THE COVER |
| | 空中線の回転に注意 負傷の恐れあり SCANNER ROTATION DO NOT APPROACH |
| | 送信中は近づくな 電磁波傷害の恐れあり RADIATION HAZARD DO NOT APPROACH |

NKE-2103-4/6/6HS Scanner Unit



Warning Label

| | |
|--|---|
| | 警告 WARNING |
| | このカバーをはずすな 感電の恐れあり HIGH VOLTAGE DO NOT REMOVE THE COVER |
| | 空中線の回転に注意 負傷の恐れあり SCANNER ROTATION DO NOT APPROACH |
| | 送信中は近づくな 電磁波傷害の恐れあり RADIATION HAZARD DO NOT APPROACH |

NKE-2255-7/9/6HS Scanner Unit

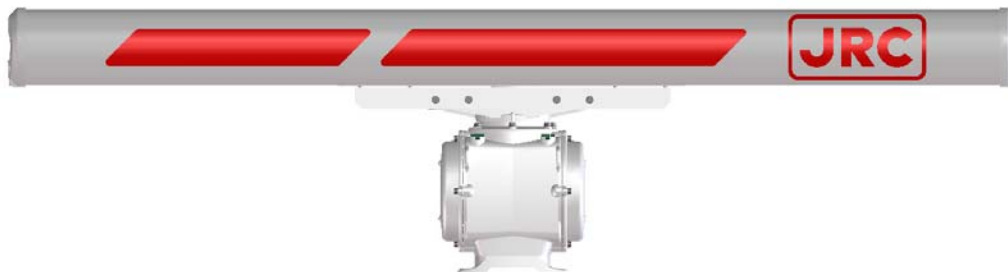
EQUIPMENT APPEARANCE



NKE-1130 Scanner Unit



NKE-1632 Scanner Unit



NKE-2632/2632-H Scanner Unit



NKE-2103-4 Scanner Unit



NKE-2103-6/6HS Scanner Unit



NKE-2255-7/9/6HS Scanner Unit



NCE-5794 Standard Operation Unit



NCE-5605 Trackball Operation Unit (Option)



NCE-5625 Keyboard Operation Unit (Option)



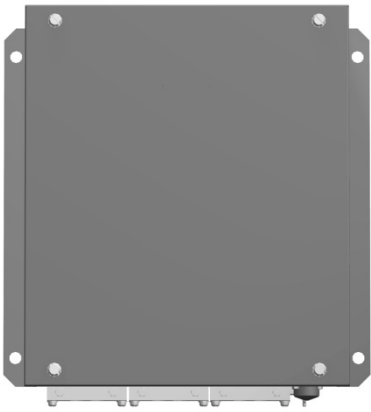
NDC-1678 Processing Unit



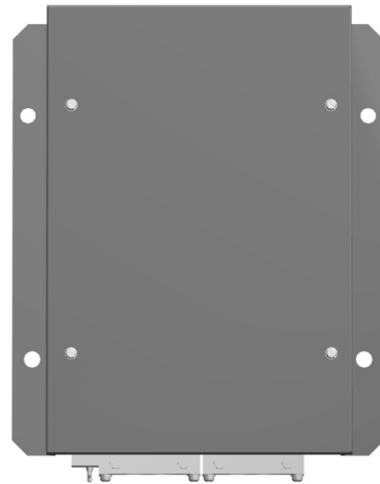
NWZ-214 19inch Display



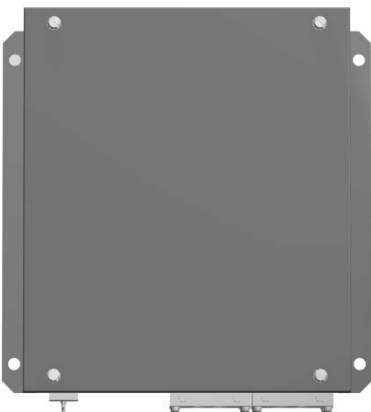
NWZ-208 26inch Display



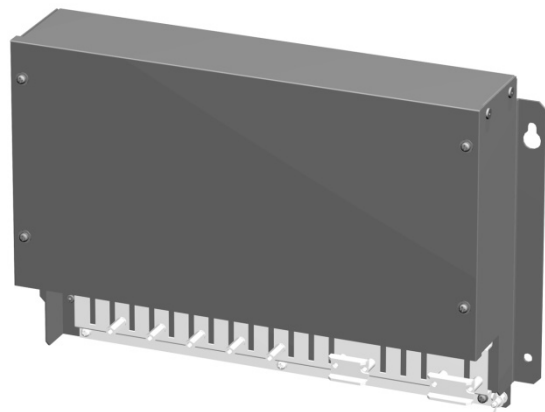
NQE-3167
Power Control Unit (Option)



NQE-3141-4A
Interswitch Unit (Option)



NQE-3141-8A
Interswitch Unit (Option)



NQE-1143 Junction Box

Glossary

| | |
|-------------------|--|
| AIO | : Admiralty Information Overlay published by United Kingdom Hydrographic Office (UKHO). |
| AIS | : Automatic Identification System |
| AZ | : Acquisition/Activation zone |
| Anti-clutter rain | : Rain/snow clutter suppression |
| Anti-clutter sea | : Sea clutter suppression |
| AZI | : AZimuth stabilisation mode |
| BCR/BCT | : Bow Crossing Range/Bow Crossing Time |
| Chart Maintenance | : Software to manage the charts. Imports and updates the charts. |
| C-MAP MAX*1 | : Digital chart data by C-MAP |
| CTS | : Course To Steer. Heading command. |
| COG | : Course Over the Ground |
| C UP | : Course up. Own ship's course is pointed to the top centre of the radar display. |
| CCRP | : Consistent Common Reference Point. The own ship position, to which all horizontal measurements such as target range, bearing, relative course, relative speed, CPA or TCPA are referenced, typically the conning position of the bridge. |
| CORREL | : CORRELation |
| CPA/TCPA | : Distance to the Closest Point of Approach/Time to the Closest Point of Approach. |
| CTW | : Course Through Water. The direction of the ship's movement through the water |
| DIST | : Distance |
| DNV | : Det Norske Veritas |
| DRIFT | : The current velocity for manual correction or the current speed on the horizontal axis of the 2-axis log is displayed. |
| EBL | : Electronic Bearing Line |
| ETA | : Estimated Time of Arrival |
| ENH | : Enhance |
| GPS | : Global Positioning System |
| HDG | : Heading. Ship's heading |
| HL | : Heading Line |
| HSC | : High Speed Craft. Vessels which comply with the definition in SOLAS for high speed craft |
| H UP | : Head up. Own ship's heading line is always pointed to the top centre of the radar display. |
| IHO | : International Hydrographic Office |
| IMO | : International Maritime Organisation |
| IR | : Radar Interference Rejecter |
| ISW | : InterSWitch unit |
| LMT | : Local Mean Time |
| LON | : Longitude |
| LAT | : Latitude |

| | |
|-----------------|---|
| LP | : Long Pulse |
| MED | : Marine Equipment Directive. Request standard for standardisation of marine equipment within the EU region |
| MFD | : The formal name is Multi Function Display. The navigation support functions such as RADAR, ECDIS, CID, and AMS can be executed by switching. |
| MMSI | : Maritime Mobile Service Identity |
| MOB | : Man Over Board |
| MON | : Performance MONitor |
| MP | : Medium Pulse |
| newpec | : Electronic navigational chart by Japan Hydrographic Association |
| NM | : Nautical Mile 1 nm=1852 m |
| N UP | : The north is always pointed to the top centre of the radar display. (North up) |
| P0N | : Unmodulated pulse, which is a type of transmission radio wave. While it is a type of radio wave usually used by radars equipped with magnetrons, radio waves with a short pulse length are used also by solid-state radars for short-range detection. |
| PI | : Parallel Index line |
| Past positions | : Equally time-spaced past position marks of a tracked or AIS target and the own ship. |
| POSN | : POSitioN |
| PRF | : Pulse Repetition Frequency. The number of radar pulses transmitted each second. |
| PROC | : PROCess. Radar signal processing function |
| Q0N | : A type of radio wave with intra-pulse frequency modulation. It is used for solid-state pulse compression radars. |
| RL | : Rhumb Line |
| RR | : Range Rings |
| Relative vector | : A predicted movement of a target relative to own ship's motion |
| RM | : Relative Motion. A display on which the position of own ship remains fixed, and all targets move relative to own ship. |
| RM(R) | : Relative Motion. Relative Trails |
| RM(T) | : Relative Motion. True Trails |
| ROT | : Rate Of Turn. Change of heading per time unit |
| Route | : A set of waypoints |
| RPU | : RADAR Processing Unit |
| SOG | : Speed Over the Ground |
| SART | : Search And Rescue Transponder |
| SET | : The current direction for manual correction or the current speed on the horizontal axis of the 2-axis log is displayed. |
| SLC | : Serial LAN Interface Circuit |
| SP | : Short Pulse |
| STAB | : STABilisation |
| STW | : Speed Through Water |
| TCPA | : Time to Closest Point of Approach to own ship |

| | | |
|---------------------------|---|---|
| TM | : | True Motion. A display across which the own ship and targets move with their own true motions. |
| To WPT | : | To Waypoint (To WPT) |
| Trails | : | Tracks displayed by the radar echoes of targets in the form of an afterglow |
| Trial manoeuvre | : | A graphical simulation facility used to assist the operator to perform a proposed manoeuvre for navigation and collision avoidance purposes |
| True vector | : | A vector representing the predicted true motion of a target, as a result of input of the course and speed of the own ship |
| TT | : | Target Tracking |
| TTG | : | Time To Go. Time to next waypoint. |
| TXRX | : | Transmitter-Receiver Unit |
| UTC | : | Universal Time, Coordinated |
| VRM | : | Variable Range Marker |
| VDR | : | Voyage Data Recorder |
| WOL | : | Wheel Over Line |
| WPT | : | Waypoint |
| XTD | : | Cross Track Distance |
| XTL | : | Cross Track Limit |
| Activated target | : | A target representing the automatic or manual activation of a sleeping AIS target for the display of additional information |
| Associated target | : | A target simultaneously representing a tracked target and a AIS target which are decided as the same |
| Chirp | : | A type of transmission waveform with intra-pulse frequency modulation used by solid-state radars. Its radio wave type is classified as Q0N. |
| Clutter | : | Unwanted reflections on a radar screen, from sea surface, rain or snow. |
| Display | : | Screen displayed on the LCD |
| Frequency deviation range | : | The range of variation of the Q0N frequency used for transmission waves of a solid-state radar. Generally, the greater the frequency deviation range, the higher the resolution in the range direction. |
| Interswitch Unit | : | A device to switch over two or more radar display units and two or more radar antennas |
| Leg | : | Line between two consecutive waypoints |
| Lost AIS target | : | A target symbol representing the last valid position of an AIS target before the reception of its data was lost, or its last dead-reckoned position. |
| Lost tracked target | : | One for which target information is no longer available due to poor, lost or obscured signals. |
| Power amplifier | : | A radio frequency amplifier circuit consisting of semiconductor elements used for solid-state radars. It employs a high frequency, high power FET. |
| Primary | : | Main positioning sensor |

| | | |
|------------------------|---|---|
| Pulse compression | : | Correlation processing performed when a transmitted chirp signal is received by a solid-state radar after reflecting off the target. This processing gain enables the radar to have necessary detection capability even when a transmission power is low. |
| Radar beacon | : | A navigation aid which responds to the radar transmission and generates radio wave |
| Range | : | An area of the chart displayed on the screen. Represented by one half of the length of the chart display screen. |
| Range side lobe | : | False image that is generated as a result of pulse compression processing in the solid-state radar when there is a large target such as a large ship in the vicinity. |
| Reference target | : | A fixed target specified to calculate the speed over the ground |
| Rubber band | : | Border that indicates the selected range. |
| Scale | : | The display scale |
| Sea state | : | The average height of the wave expressed by dividing into several classes. |
| Sleeping AIS target | : | A target indicating the presence and orientation of a vessel equipped with AIS |
| Spot depth | : | Numeric representation of depth |
| SSR: Solid State Radar | : | Radar that uses semiconductor elements instead of magnetron, which requires periodic replacement. It is built with a system that ensures necessary detection capability even when a transmission output is low, by using chirp signals with a long pulse length upon transmission and performing pulse compression upon reception |

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Notations



Operation notations

Trackball operations on the operation panel are expressed as follows.

| Operation | Notation |
|-------------------------------|---|
| Click the left button. | Click Example: Click on the object. |
| Double-click the left button. | Double-click Example: Determine the drawing by double-click. |
| Click the right button | Click the right mouse button Example: Display the context menu by clicking the right mouse button. |

Button notations

The buttons and dialogue boxes on the screen are expressed as follows.

| Button type | Notation |
|--|---|
| Button with button name indicated | Example:  → [AUTO] (automatic) button |
| Button with an indication other than the button name such as an icon | Shown as follows. Example:  → Day/Night button |

Menu notations

A series menus are expressed as follows.

| Type | Notation |
|-------------------|---|
| Operation of menu | [Menu] button → User Map → File Operation |
| Position of menu | [User Map] – [File Operation] |