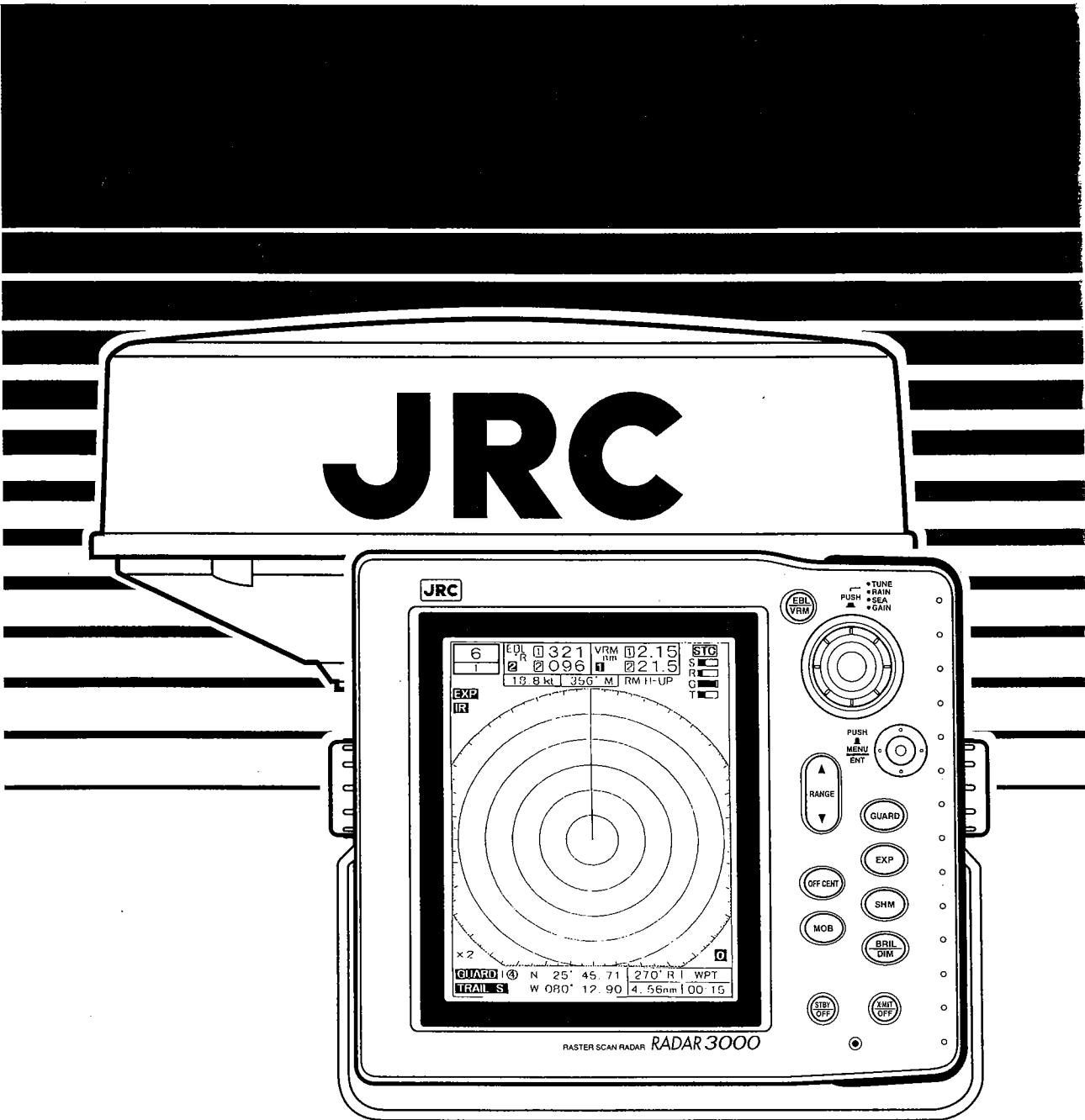




INSTRUCTION MANUAL



RASTER SCAN RADAR RADAR 3000

**Thank you for purchasing the RADAR 3000 radar.
It will provide many years of trouble free use when operated properly.**

To use your RADAR 3000 properly, please observe the following precautions:

- Read this manual thoroughly to gain a good understanding of the capabilities and requirements of this equipment.
- Store the manual in a safe location so that it does not become lost or damaged.
- Observe standard storage and handling procedures for electronic equipment.
- If after proper installation RADAR 3000 appears to be defective, please contact your JRC sales or service representative for assistance.

Symbols Used In This Manual

The following symbols are used in this instruction manual and on the product itself to ensure correct handling of the product and to protect your safety. Their meanings are explained below. Please take note of these symbols as you read the manual.



WARNING

A safety warning to alert you of possible physical harm to you or the equipment.



CAUTION

Equipment damage precaution to alert you of possible harm and/or failure of equipment.



Electric shocks

This symbol is intended to alert the user to the presence of dangerous items to be handled with every possible cation. For safe operation, read the instructions carefully.



Prohibition

These symbols are intended to alert the user to the presence of prohibited items that must never be performed. Read the instructions carefully and do not attempt things prohibited.



Prohibits disassembly




Instruction


This symbol is intended to alert the user to the presence of instructions whose performance is absolutely necessary. Read the instructions carefully and be sure they are executed.

Operating Precautions


Warning


-  To avoid electrical shock, never touch the inside of the scanner or display unit. Leave protective cover on.

High voltage present inside of these units could cause personal injury. Refer equipment servicing to authorized JRC personnel.


-  Avoid routinely entering the nearby vicinity of the scanner unit.

The scanner unit rotates quickly and could cause personal injury. The scanner should be installed in a high place such as the cabin roof, flying bridge, radar mast, or the top base frame of your ship. If the scanner cannot be located out of normal human reach, it should be surrounded with a fence. Prolonged human exposure to radar signals at close range is not recommended.


-  Before approaching or removing the scanner unit, turn off the STBY/OFF and X-MIT/OFF keys on the display unit. Cable connector P1 on the display unit should be disconnected before removing the scanner unit from its installed position.

-  Never sit on the scanner unit.
The radome and/or the parts in the scanner unit may be damaged.

Caution

-  Use your RADAR 3000 system properly by following the instructions in this manual.

Incorrect operation can detract from optimum system performance.

-  This radar unit is only an aid to navigation. Its accuracy can be affected by many factors including equipment failure or defects, environmental conditions, and improper handling or use. It is the user's responsibility to exercise common prudence and navigational judgment. This radar unit should not be relied upon as a substitute for such prudence and judgment.

Equipment Photograph



SCANNER UNIT NKE-1046



DISPLAY UNIT NCD-3744

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RADAR GLOSSARY OF TERMS

The following is a list of abbreviations and acronyms which maybe used in the text of the manual.

A/D	Analog to Digital Conversion
ALM	Alarm In, also known as the approach alarm. For targets set zone. approaching a preset zone.
CPU	Central Processing Unit
EBL	Electronic Bearing Line
EXP	Expansion
FTC	Fast Time Constant also known as Rain Clutter
GPS	Global Positioning System
IR	Interference Rejection
KM	Kilometer
LL	Latitude/Longitude
MH	Modulator High voltage
NM	Nautical Mile
PCB	Printed Circuit Board
PPI	Plan Position Indicator
PW	Pulse Width
RR	Range Rings (Fixed)
SHM	Ship's Heading Marker
STBY	Standby
STC	Sensitivity Time Constant, also known as Anti-Clutter Sea
TD	Time Difference
TI	Trigger
VD	Video
VOM	Volt-ohm Meter
VRM	Variable Range Marker
WPT	Waypoint
X-MIT	Transmit

SECTION 1

INTRODUCTION

1.1 FUNCTION

The JRC RADAR 3000 Radar is compact raster scan radar with a 4 KW transmitter and a 7-inch cathode ray tube. Except for special tubes, they are all made up of solid state device for improved reliability.

1.2 FEATURES

- Improved anti-sea clutter and anti-rain clutter suppression
- Easy control for VRM, EBL, GAIN, anti-sea, and anti-rain, using J-DIAL
- Approach and departure guard zone with audible alarm
- Use of robust material, aluminum die cast
- Easy to understanding other target information for range, bearing and Lat/Long by using cursor
- Destination mark can be displayed
- 2/3 radius off-centering for any direction
- Trail indication
- Man overboard indication
- Intermittent transmission

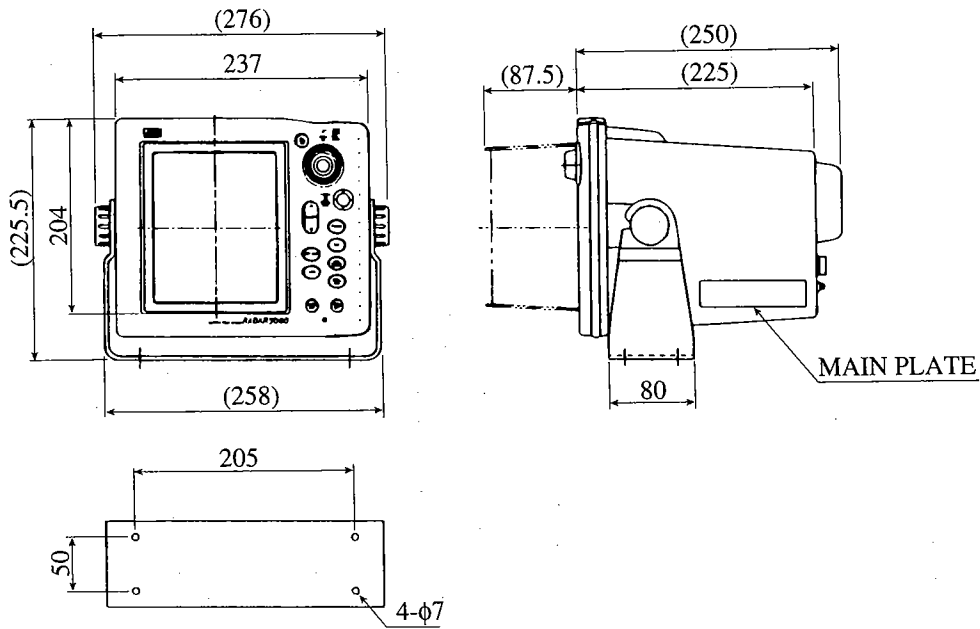
1.3 COMPONENTS

Table 1-1 indicates a listing of items that are included with your new radar system.

Description	Model No. or Code No.
Radar 3000 system	JMA-1541
Scanner Unit	NKE-1046
Display Unit	NCD-3744
Sun Shield	MTV301854
Inter-unit Cable (10m)	CFQ8026-10
Power Cable (2m)	CFQ2646
Instruction Manual	7ZPRD0414
Standard Spares	6ZXRD00192
Sun Cover	MTV301855
Scanner Mounting Hardware	
Display Mounting Hardware	MPTG02024

Table 1-1 EQUIPMENT SUPPLIED

1.4 CONSTRUCTION



MOUNTING DIMENSIONS

FIG. 1-1 DISPLAY MOUNTING DIMENSIONS

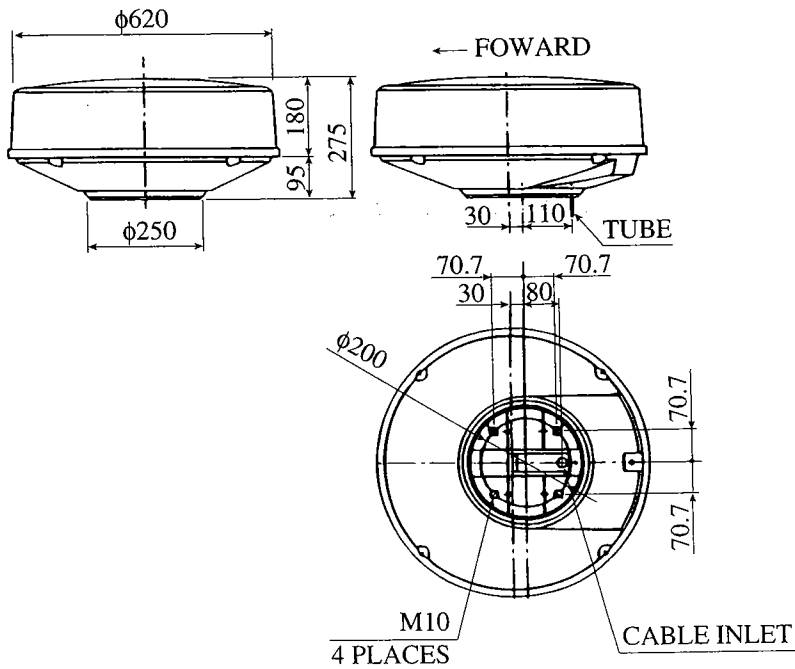


FIG. 1-2 SCANNER MOUNTING DIMENSION

SECTION 2

OPERATING CONTROLS AND FUNCTIONS

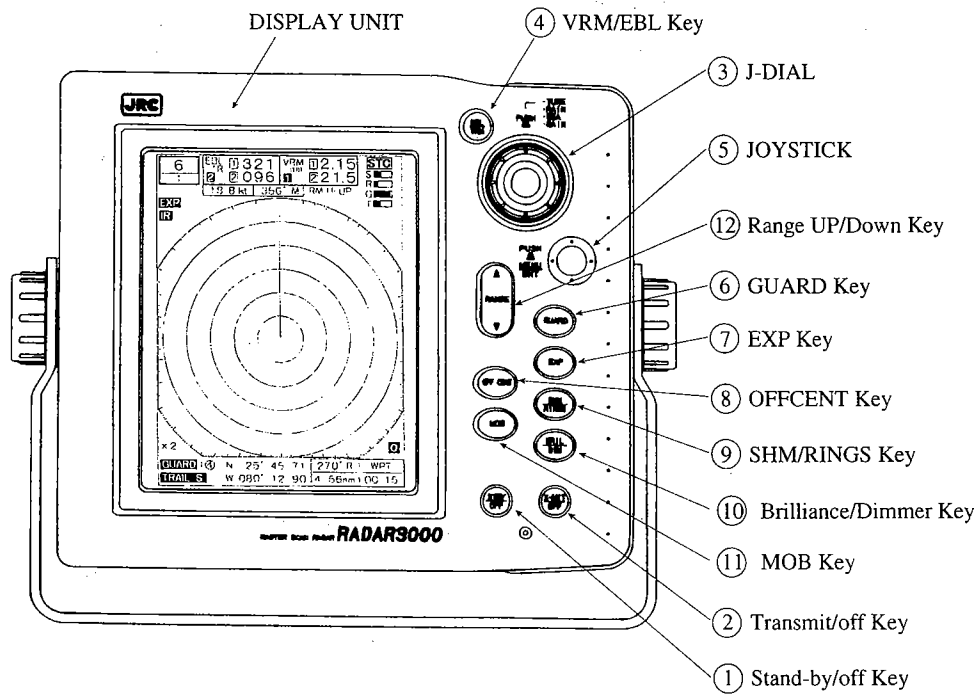


FIG. 2-1 OPERATING CONTROLS

2.1 CONTROL PANEL

① Stand-by/off Key

- Turn ON power to Display and Scanner and activates 90 second countdown timer.
- Press ST-BY/OFF key to Stand-by mode while in the Transmitting mode.
- Press STBY/OFF and X-MIT/OFF keys simultaneously to shut off.

② Transmit/off Key

- Turn ON transmitter which activates Radome.
- Press STBY/OFF and X-MIT/OFF keys simultaneously to shut off.

③ J-DIAL

- Push to select SEA, RAIN, GAIN and TUNE for control.
 - SEA Reduces sea returns.
 - RAIN Reduces rain or snow returns.
 - GAIN Controls strength of target returns.
 - TUNE Manually fine tunes receiver by peaking tuning bar (No tuning bar in AUTO tune).
- Control the SEA, RAIN, GAIN, TUNE, VRM, EBL, Contrast for desire setting.

④ VRM/EBL key

- Enable a VRM or EBL for display. A short press to turn on or off selected VRM or EBL. Press and hold, selects VRM or EBL for control by using J-DIAL.

⑤ JOYSTICK

- Position cursor setting.
- Enables MENU for setups and selection.

⑥ GUARD Key

- Enables or disables Guard Zone alarm as set with the JOYSTICK and I or O operation

I = In mode alarm O = Out mode alarm Blank = OFF

- ⑦ EXP Key
 - Target Expander ON/OFF.
- ⑧ OFFSET Key
 - Places origin at any point on screen up to 2/3 radius. Inop on 24 nm range.
- ⑨ SHM/RINGS Key
 - Enables or disables the fixed range rings alternately.
 - Momentarily disables the Heading Flash while key is held depressed.
- ⑩ Brilliance/Dimmer Key
 - Brilliance level for video, characters, rings, and EBL.
 - Setting panel illumination.
- ⑪ MOB Key
 - Marks the point where the incident occurred.
- ⑫ Range UP/Down key
 - Increases or de decreases the range scale in use.

SECTION 3

INSTALLATION

This section provides practical guidelines to assist in the planning and installation of the RADAR 3000 aboard your vessel.

3.1 UNPACKING AND INSPECTION

Use care when unpacking the RADAR 3000 radar from the shipping carton to prevent damage to the contents. It is also good practice to save the carton and the interior packing material until the radar has been satisfactorily installed on the vessel. The original packing material should be used in the unlikely event that it is necessary to return the unit for service.

3.2 PLANNING THE INSTALLATION

The layout for installing the RADAR 3000 should be planned to give the best operation and service aboard your particular vessel. In general, the scanner unit should be mounted as high as possible above the waterline. The display unit should be installed in a convenient viewing position near the helm. Keep in mind the optimum viewing angle when installing the display. You may want to apply power in advance of installing the unit as that you can determine a satisfactory viewing angle.

A 10 meter length of inter-unit cable is furnished for interconnecting the two main units (scanner and display). This length of inter-unit cable should be sufficient to complete the cable run required on most small vessels. It is recommended that the maximum length of inter-unit cable not exceed 20 meters.

A general system diagram for the RADAR 3000 is shown on the following page.

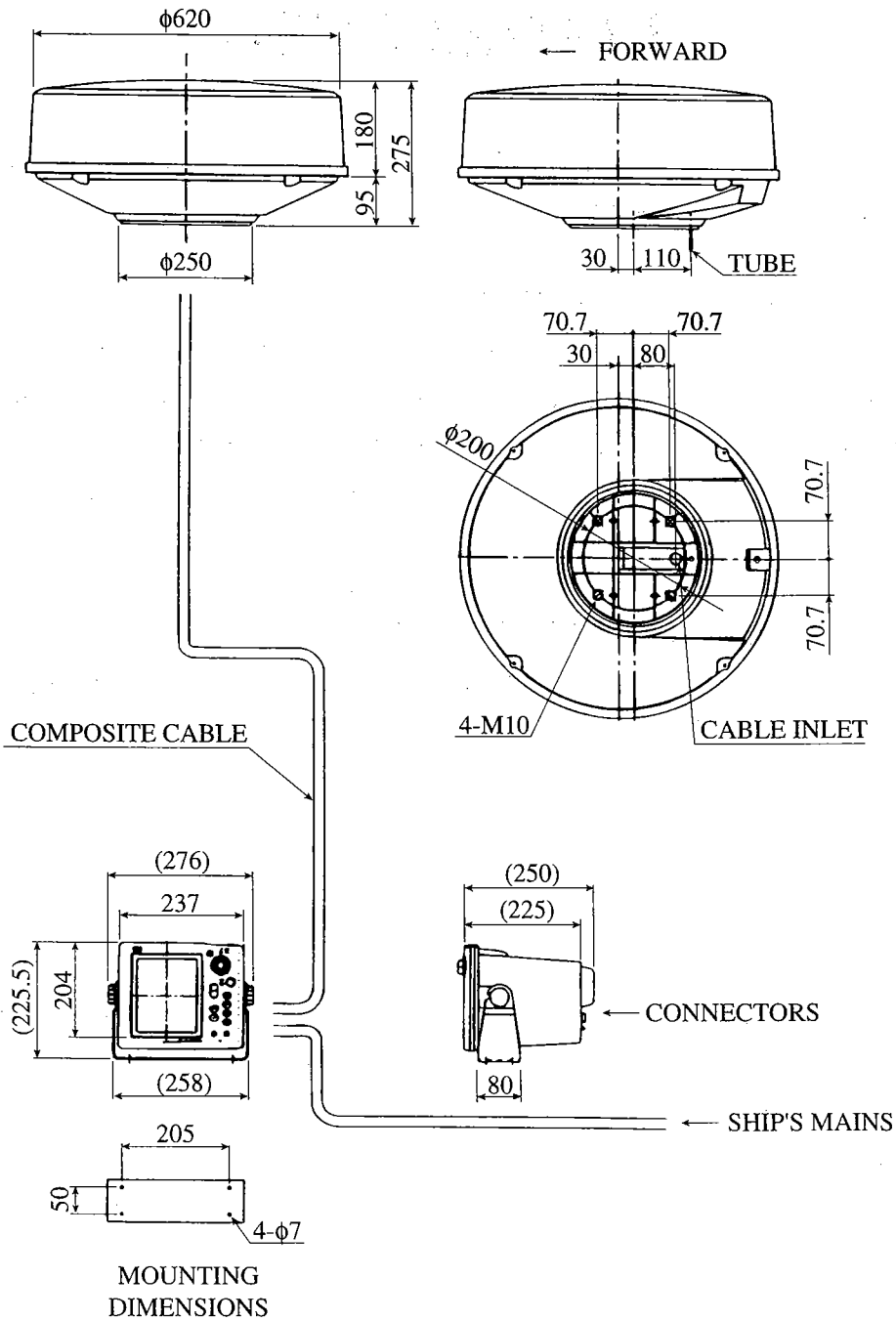


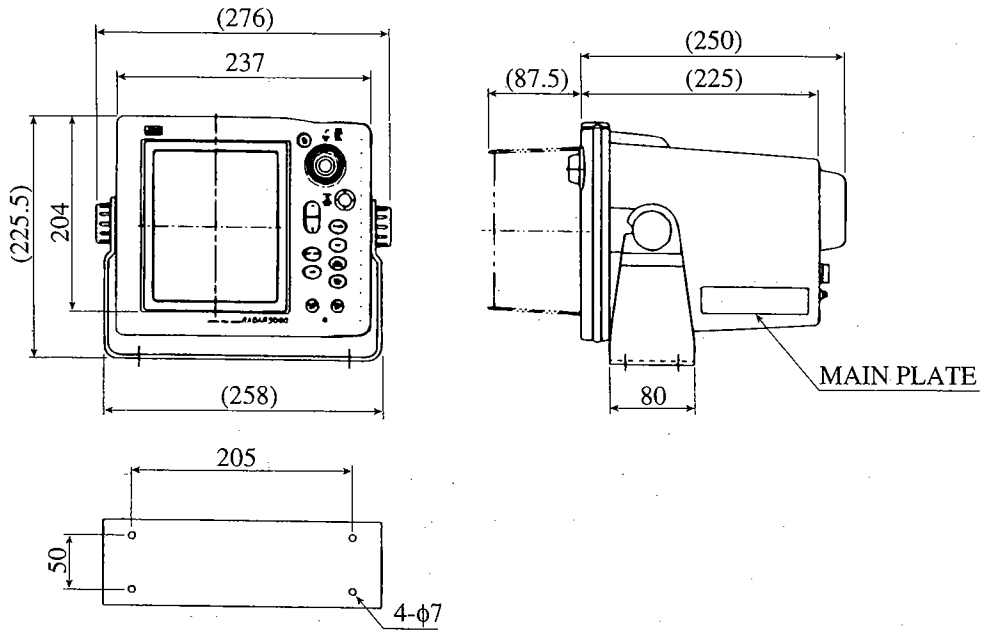
FIG. 3-1 GENERAL SYSTEM DIAGRAM

3.3 MOUNTING THE DISPLAY UNIT

When planning the installation for your display unit , the following conditions should be considered to ensure dependable and trouble free operation.

- 1) The mounting location should be easily accessible to allow operation of the front panel controls.
- 2) There should be adequate ventilation.
- 3) There should be sufficient space behind the display unit to allow cable connections to the rear panel connectors.
- 4) The display unit should be located near a DC power source.
- 5) The selected location should be far enough away from device that may cause interference, such as motors and generators.
- 6) Generally, the display unit should be located in a protected area away from prolonged direct exposure to rain and salt spray. It is good practice to protect your valuable electronic equipment as much as possible.

The display unit can be conveniently mounted on a chart table, or bulkhead mounted in a desired location. Using the outline of FIG 3-1 and 3-3 as a guide, install the display unit and secure to the mounting surface.



MOUNTING DIMENSIONS

FIG. 3-3 DISPLAY MOUNTING DIMENSIONS

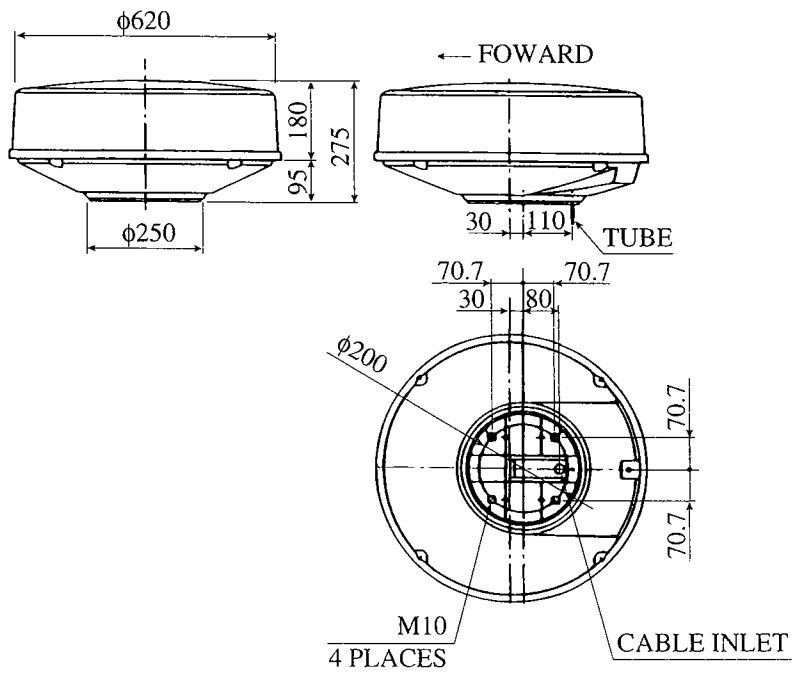


FIG. 3-4 SCANNER MOUNTING DIMENSION

3.4 MOUNTING THE SCANNER UNIT

Selecting an adequate location for the scanner unit requires careful consideration. On many small vessels, the unit can be installed on a mast platform, on an arch, or on a bridge structure near the ship's centerline.

The radiator beam should not be obstructed by nearby large objects. Locate the unit where large structures such as superstructures, searchlight, horns, or masts are not in the same horizontal plane, otherwise, blind areas and false targets can appear on the radar screen.

Using the outline drawing of FIG 3-4 or template in the front of the manual as a guide, install the scanner unit and secure it to a solid mounting surface.

Usually the mounting surface for the scanner unit should be parallel with the ship's waterline. Some vessels, however, may adopt a higher bow angle when the vessel is at its cruising speed. This substantially alters and raises the radar's radiation plain. In this case nearby target detection might be poor. It may be helpful to lower the radar beam towards the parallel by shimming the radar pedestal so as to tilt the beam angle slightly downward with respect to the waterline.

3.5 CONNECTING THE SCANNER UNIT CABLE

- ① Route the scanner unit cable from bottom of the mounting base and connect them to connectors J1 and J2 of the CME-229 modulator printed circuit board.
- ② Tighten the ground terminal and securing the clamping plate with the rubber grommet.

