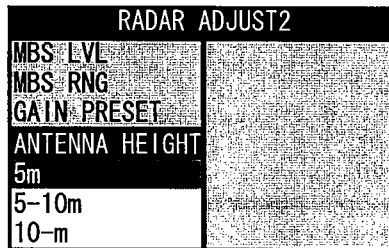


- (b) When the following menu is displayed, select a required setting value from **5m**, **5-10m**, **10-m** by turning **[JOG DIAL]** and end the operation by pressing **[ACQ/ENT]**.



9.7.6 Setting a gyro value **[MENU]** **[AZI MODE]**

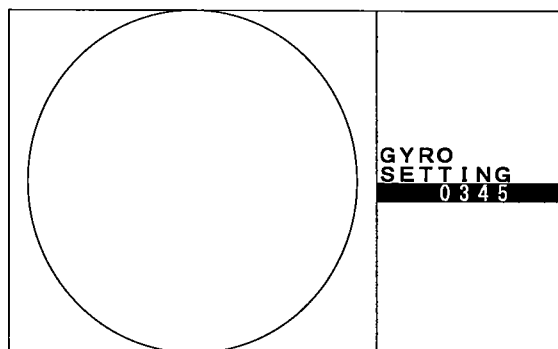
After connecting an optional NSK unit, set a master gyro value in the NSK unit.

! CAUTION

The GPS compass JLR-10 of JRC always can output absolute azimuth without gyro setting.
Therefore, do not set a gyro value when connecting JLR-10.

Use the following procedure to set a gyro value.

- (a) Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GYRO SETTING**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- (b) After setting the gyro value that was read from the master gyro by turning **[JOG DIAL]**, end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.



- (c) For operation (a), the menu can be opened directly from **[AZI MODE]**. When the **[AZI MODE]** key is pressed, the initial menu is displayed. Subsequent operation is the same as for (b).

9.8 Various Initial Settings

This section describes the various settings required to facilitate the use of radar such as setting of radar signal processing and setting at connection of various types of navigation equipment.

9.8.1 Sensitivity preset [AUTO-SEA] [AUTO-RAIN] [GAIN/PL] [MENU]

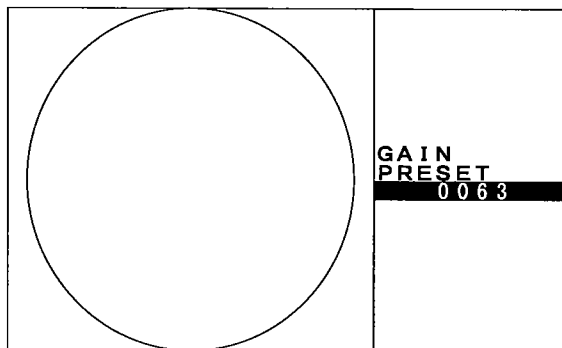
Set the maximum level indicated when the "Sensitivity" knob is used.

Do not change the adjustment unnecessarily. Normally, the level must be set to 255. In this case, no adjustment is necessary.

When adjustment is necessary, carry out the procedure described in 9.7.2, "Noise level adjustment [MENU]" before making further adjustments.

Use the following procedure to carry out sensitivity preset.

- Set the target expansion function to OFF.
- Turn the **[AUTO-SEA]** knob to the minimum position (anti-clockwise for one full rotation).
- Turn the **[AUTO-RAIN]** knob to the minimum position (anti-clockwise for one full rotation).
- Turn the **[GAIN/PL]** knob to the maximum position (clockwise for one full rotation).
(In this state, the echo is displayed at the highest level on this PPI screen.)
- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **RADAR**, **RADAR ADJUST2**, and **GAIN PRESET**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- Adjust the sensitivity level by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.



9.8.2 Sea clutter preset [+RANGE-] [AUTO-TUNE] [AUTO-SEA] [AUTO-RAIN] [GAIN/PL] [MENU]

Set the maximum control level that is indicated by turning the **[AUTO-SEA]** knob.

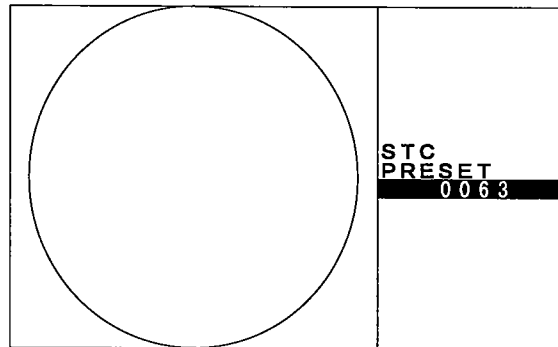
Do not change this setting unnecessarily.

Use the following procedure for executing sea clutter preset.

- Set range to 6NM by using the **[+RANGE-]** key.
- Adjust the tuning using the **[AUTO-TUNE]** knob.
- Set the target expansion function to OFF.
- Turn the **[AUTO-SEA]** knob to the maximum position (clockwise for one full rotation).
- Turn the **[AUTO-RAIN]** knob to the minimum position (anti-clockwise for one full rotation).
- Turn the **[GAIN/PL]** knob to the maximum position (clockwise for one full rotation).

(In this state, the echo is displayed at the highest level on this PPI screen.)

- (g) Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **RADAR**, **RADAR ADJUST2**, and **STC PRESET**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- (h) Adjust the control level to the level where noise near 6NM is slightly above by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.



9.8.3 Control of main bang [+RANGE-] [AUTO-TUNE] [AUTO-SEA] [AUTO-RAIN] [GAIN/PL] [MENU]

This adjustment is to suppress a main bang, which is a reflection signal from a microwave circuit of a waveguide that normally appears as a circular image at the center of the radar screen.

In the optimum adjustment, a faint image of a main bang remains on the screen.

⚠ WARNING

!

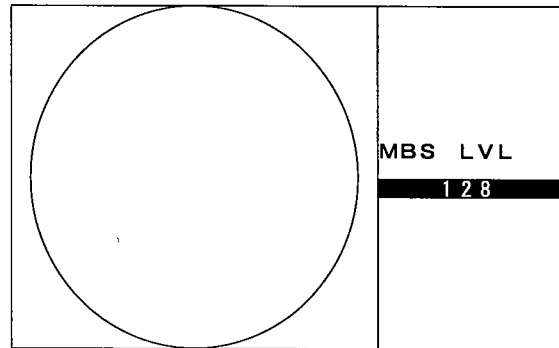
Do not change this adjustment unnecessarily.

An incorrect adjustment may erase the closest target and a collision occurs, this may cause death or a serious injury of any person.

Use the following procedure to set a main bang suppression level and its range.

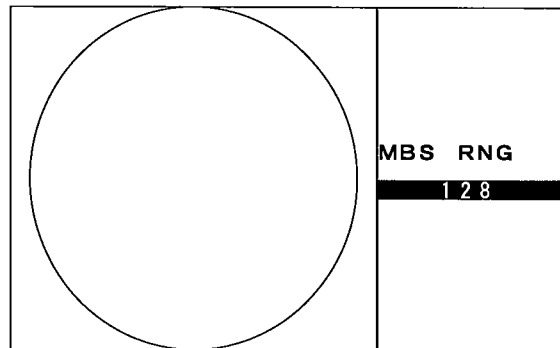
- (a) Set range to 0.125NM by using the **[+RANGE-]** key.
- (b) Adjust the tuning using the **[AUTO-TUNE]** knob.
- (c) Set the target expansion function to OFF.
- (d) Set the correlation processing function to OFF.
- (e) Turn the **[AUTO-SEA]** knob to the center position, and adjust the function strength to the extent that main bang can be identified.
- (f) Turn the **[AUTO-RAIN]** knob to the minimum position (anti-clockwise for one full rotation).
- (g) Turn the **[GAIN/PL]** knob to the maximum position (clockwise for one full rotation).
(In this state, the echo is displayed at the highest level on this PPI screen.)
- (h) Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **RADAR**, **RADAR ADJUST2**, and **MBS LVL**, and press **[JOG DIAL]** or **[ACQ/ENT]**.

- (i) Adjust the main bang suppression level by turning **[JOG DIAL]** and erase the main bang. After completion of adjustment of the suppression level, end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.



Consequently, the main bang suppression level has been adjusted.

- (j) Select **[MBS RNG]** by turning **[JOG DIAL]**, set the main bang erasing range and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.
- (k) Adjust and set the main bang suppression range by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.



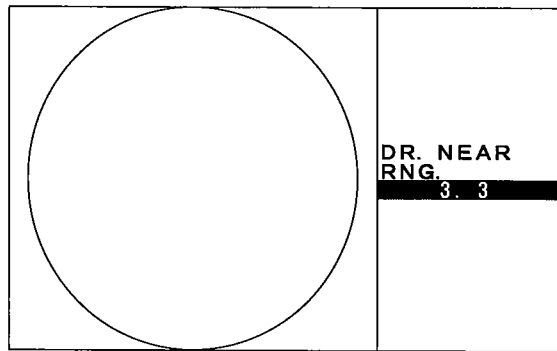
Consequently, the main bang suppression range has been adjusted.

9.8.4 Setting a close range dynamic range [MENU]

Set a range for changing a close range dynamic range. A range from 0.0 to 3.3 miles can be set.

Use the following procedure to set a close range dynamic range.

- (a) Display the **[INSTALLATION]** menu by pressing the **[MENU]** key in long mode, select **[RADAR]**, **[RADAR ADJUST2]**, and **[DR NEAR RNG.]**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- (b) Adjust the main bang suppression level by turning **[JOG DIAL]** and erase the main bang. After completion of adjustment of the suppression level, end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.



9.8.5 Setting a video gradation level [MENU]

Set a video gradation (dynamic range).

The following levels are available:

NARROW: Although the video gradation range becomes narrow, the sensitivity increases.
Suitable for long range.

NORMAL: Normal video gradation

WIDE: The video gradation range becomes wide, enabling checking of the targets such as sea clutter, rain, and snow more easily.

Use the following procedure to set a video gradation level.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **RADAR**, **RADAR SETTING**, and **VIDEO LATITUDE**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **NORMAL**, **NARROW**, or **WIDE** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

RADAR SETTING	
VIDEO LATITUDE	NARROW
NORMAL	LEVEL 1
NARROW	OFF
WIDE	OFF
IR SHIFT	OFF
DR RANGE CONT	OFF
TGT EXP LEVEL	LEVEL 1
TGT EXP PROC	OFF
GAIN OFFSET	0

9.8.6 Setting video noise suppression display [MENU]

This function enables removal of unnecessary noise such as noise and sea clutter at display of a radar image, by setting a threshold value to suppression of display of a low gradation section (noise components). Noise display suppression increases in the sequence of OFF → LEVEL 1 → LEVEL 2.

The following options are available:

- OFF:** Displays level 0 or higher of 16 levels (all the levels).
- LEVEL 1:** Displays level 4 or higher of 16 levels.
- LEVEL 2:** Displays level 8 or higher of 16 levels.

Use the following procedure to set a video gradation level.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **RADAR**, **RADAR SETTING**, and **VD NOISE REJ**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **OFF**, **LEVEL 1**, or **LEVEL 2** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

RADAR SETTING	
VIDEO LATITUDE	NARROW
VD NOISE REJ	LEVEL1
OFF	OFF
LEVEL1	OFF
LEVEL2	OFF
DR RANGE CONT	OFF
TGT EXP LEVEL	LEVEL1
TGT EXP PROC	OFF
GAIN OFFSET	0

9.8.7 Setting a small target detection mode [MENU]

This function detects a distant faint target on a radar image.

To detect a distant faint target, increase a detection probability by reducing the scanner unit rotation speed and focusing radio waves of the radar to a distant faint target.

Note

Since 4kw is a radome type and does not have a motor rotation control function, this function does not operate even if it is set to ON.

Use the following procedure to set a small target detection mode.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **RADAR**, **RADAR SETTING**, and **S-BUOY DETECT**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **ON** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

RADAR SETTING	
VIDEO LATITUDE	NARROW
VD NOISE REJ	LEVEL1
S-BUOY DETECT	OFF
OFF	OFF
ON	OFF
DR RANGE CONT	OFF
TGT EXP LEVEL	LEVEL1
TGT EXP PROC	OFF
GAIN OFFSET	0

9.8.8 Setting a float mode [MENU]

Use this function to change a start level of STC near your ship by adjusting the [AUTO-SEA] knob on the keyboard when buoys such as floats are to be displayed and the auto STC function is ON. In general, when buoys such as floats are to be observed by setting the auto STC/auto FTC function to ON, it is recommended to set a tolerant level for the STC near your ship.

Use the following procedure to set a video gradation level.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **RADAR**, **RADAR SETTING**, and **F-NET DETECT**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **ON** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

RADAR SETTING	
VIDEO LATITUDE	NARROW
VD NOISE REJ	LEVEL 1
S-BUOY DETECT	OFF
F-NET DETECT	OFF
OFF	OFF
ON	OFF
TGT EXP LEVEL	LEVEL 1
TGT EXP PROC	OFF
GAIN OFFSET	0

9.8.9 Setting an inference suppression function level [MENU]

This function weakens the normal interference suppression function by shifting all the values of IR1, IR2, and IR3.

When radar interference suppression has started strongly, set this function to ON.

When this function is set to ON, the interference suppression performance is decreased, however, a possibility of becoming easy to detect small targets and distant faint targets come out.

Use the following procedure to set a video gradation level.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **RADAR**, **RADAR SETTING**, and **IR SHIFT**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- Select **ON** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

RADAR SETTING	
VIDEO LATITUDE	NARROW
VD NOISE REJ	LEVEL 1
S-BUOY DETECT	OFF
F-NET DETECT	OFF
IR SHIFT	OFF
OFF	OFF
ON	LEVEL 1
TGT EXP PROC	OFF
GAIN OFFSET	0

9.8.10 Setting a short distance dynamic range [MENU]

Use this function to change a short distance dynamic range by using the [AUTO-SEA] knob.

Use the following procedure to set a video gradation level.

- (a) Display the [INSTALLATION] menu by pressing the [MENU] key in long mode, select [RADAR], [RADAR SETTING], and [DR RANGE CONT], and press [JOG DIAL] or [ACQ/ENT].
- (b) When the following menu is displayed, select [ON] by turning [JOG DIAL] and end the operation by pressing [JOG DIAL] or [ACQ/ENT].

RADAR SETTING	
VIDEO LATITUDE	NARROW
VD NOISE REJ	LEVEL1
S-BUOY DETECT	OFF
F-NET DETECT	OFF
IR SHIFT	OFF
DR RANGE CONT	OFF
OFF	LEVEL1
ON	OFF
GAIN OFFSET	0

9.8.11 Setting a value of the target expansion function [MENU]

This function sets the degree of effect when the target expansion function is ON. The values that can be set are LEVEL 1, LEVEL 2, LEVEL 3, and LEVEL 4 and the target expansion distance and the expansion rate in the azimuth direction increase in that sequence.

If the level is increased too much, the distance resolution deteriorate. Therefore, set an appropriate value.

Use the following procedure to set a video gradation level.

- (a) Display the [INSTALLATION] menu by pressing the [MENU] key in long mode, select [RADAR], [RADAR SETTING], and [TGT EXP LEVEL], and press [JOG DIAL] or [ACQ/ENT].
- (b) When the following menu is displayed, select one of the levels from [LEVEL 1] to [LEVEL 4] by turning [JOG DIAL] and end the operation by pressing [JOG DIAL] or [ACQ/ENT].

RADAR SETTING	
VIDEO LATITUDE	NARROW
VD NOISE REJ	LEVEL1
S-BUOY DETECT	OFF
F-NET DETECT	OFF
TGT EXP LEVEL	OFF
LEVEL1	OFF
LEVEL2	LEVEL1
LEVEL3	OFF
LEVEL4	0

9.8.12 Setting target expansion function control [MENU]

Use this function to set whether the target expansion function can be set to ON in the main menu.

Use the following procedure to set a video gradation level.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **[RADAR]**, **[RADAR SETTING]**, and **[TGT EXP PROC]**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **[ON]** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

RADAR SETTING	
VIDEO LATITUDE	NARROW
VD NOISE REJ	LEVEL1
S-BUOY DETECT	OFF
F-NET DETECT	OFF
IR SHIFT	OFF
DR RANGE CONT	OFF
TGT EXP PROC	LEVEL1
OFF	OFF
ON	0

9.8.13 Setting a sensitivity correction value [MENU]

Use this function to increase or reduce the sensitivity temporarily by increasing or reducing the noise level value when setting function key sensitivity correction to ON for distant targets.

A sensitivity correction value can be set within the range from -32 to +32.

Use the following procedure to set a sensitivity correction value.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **[RADAR]**, **[RADAR SETTING]**, and **[GAIN OFFSET]**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- Select value from **[-32]** to **[+32]** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

RADAR SETTING	
VIDEO LATITUDE	NARROW
VD NOISE REJ	LEVEL1
S-BUOY DETECT	OFF
F-NET DETECT	OFF
IR SHIFT	OFF
DR RANGE CONT	OFF
TGT EXP LEVEL	LEVEL1
GAIN OFFSET	OFF
0	0

9.8.14 Setting transmission power control [MENU]

This function sets transmission power.

The following options are available.

NORMAL : Normal power

HIGH POWER : Although the life span of the magnetron decreases, the sensitivity increases.

ECONOMY : Although the sensitivity decreases, the life span of the magnetron increases.

Use the following procedure to set a video gradation level.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **[RADAR]**, **[RADAR SETTING]**, and **[XMT REP. FREQ]**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- Select **[NORMAL]**, **[HIGH POWER]**, or **[ECONOMY]** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

RADAR SETTING	
VIDEO LATITUDE	NARROW
VD NOISE REJ	LEVEL 1
S-BUOY DETECT	OFF
F-NET DETECT	OFF
IR SHIFT	OFF
DR RANGE CONT	OFF
XMT REP. FREQ	LEVEL 1
NORMAL	OFF
HIGH POWER	0
ECONOMY	NORMAL

9.8.15 Setting a scanner unit rotation speed [MENU]

This function sets a transmission rotation speed.

This radar equipment has a function that automatically sets the scanner unit rotation speed to the pre-specified speed according to the change of the range/pulse width.

The pulse width and range differ according to 6/10KW. The operation is as follows.

Use the following procedure to set a video gradation level.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **[ROT SPEED]**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- Select one of **[HIGH]**, **[MIDDLE]**, and **[LOW]** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

ROT SPEED	
0.125NM	HIGH
0.25NM	HIGH
0.5NM	HIGH
0.75NM	HIGH
1.5NM-SP	HIGH
1.5NM-LP	HIGH
3NM-SP	HIGH
3NM-LP	HIGH
6NM-SP	HIGH
6NM-LP	HIGH
NEXT	

ROT SPEED	
0.125NM	HIGH
HIGH	HIGH
MIDDLE	HIGH
LOW	HIGH
1.5NM-SP	HIGH
1.5NM-LP	HIGH
3NM-SP	HIGH
3NM-LP	HIGH
6NM-SP	HIGH
6NM-LP	HIGH
NEXT	

In the menu shown above, a speed of 0.125 miles of 6KW is set. As shown in the menu on the left-hand side, each range/pulse width can be changed for each pulse width within the range.

Caution

- There is no scanner unit rotation speed function in 4KW.

9.8.16 Setting information in a GPS receiver

In this section, initial values are set in a GPS receiver (GPS receiver of JRC).

1. Setting the position of your own ship [MENU]

Transmit latitude and longitude information of the position of your own ship to a GPS receiver.

Use the following procedure to set a video gradation level to a GPS receiver.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **GPS SETTING**, and **POSITION**, **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, set the South and the North of the latitude, unit of the degree, unit of the minute, and the unit of the second sequentially. As the procedure for those settings, change the numbers by turning **[JOG DIAL]**, determine the entry of each item by pressing **[JOG DIAL]** or **[ACQ/ENT]**. When the information up to the second of the latitude is determined, the cursor moves to the longitude line. Change the settings of the East and the West of the longitude, the unit of the degree, the unit of the second in that sequence by turning **[JOG DIAL]**, determine the entry of each item by pressing **[JOG DIAL]** or **[ACQ/ENT]**, and end the operation.

GPS SETTING	
POSITION	N 36° 36.000'
N 36° 36.000'	E136° 36.000'
E136° 36.000'	10M
GEODETTIC DATUM	WGS-84
FIX MODE	AUTO
HDOP LEVEL	10
AVERAGE	MANUAL 2S
EXCLUDE SAT	00 00 00
	00 00 00
MASTER RESET	
TX COMMAND	

2. Setting a height of own ship [MENU]

Send a height of your own ship to a GPS receiver.

Use the following procedure to set a video gradation level to a GPS receiver.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **GPS SETTING**, and **ANTENNA HEIGHT**, and press **[JOG DIAL]** or **[ACQ/ENT]**.

- (b) When the following menu is displayed, change the numbers using **[JOG DIAL]**, and if a required value is set, end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

GPS SETTING	
POSITION	N 36° 36.000'
	E136° 36.000'
ANTENNA HEIGHT	10M
10M	WGS-84
FIX MODE	AUTO
HDOP LEVEL	10
AVERAGE	MANUAL 2S
EXCLUDE SAT	00 00 00
	00 00 00
MASTER RESET	
TX COMMAND	

3. Setting geodetic information [MENU]

This function sets geodetic information of the current position of own ship and sends the information to a GPS receiver.

Use the following procedure to set geodetic information to a GPS receiver.

- (a) Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **GPS SETTING**, and **GEODETTIC DATUM**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- (b) When the following menu is displayed, set the required geodetic information by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

GPS SETTING	
POSITION	N 36° 36.000'
	E136° 36.000'
ANTENNA HEIGHT	10M
GEODETTIC DATUM	WGS-84
WGS-84	AUTO
	10
AVERAGE	MANUAL 2S
EXCLUDE SAT	00 00 00
	00 00 00
MASTER RESET	
TX COMMAND	

List of geodetic information

No.	Name
0	WGS-84
1	WGS-72
2	Japan
3	North American 1927 (U.S)
4	North American 1927 (Canada & Alaska)
5	European 1950 (Europe)
6	Australian geodetic 1966 (Australia)
7	Ordance Survery of Great Britain (England)
8	NAD-83
9	— (no use)
10	— (no use)
11	ADINDAN (Etiopia & Sudan)
12	ARC 1950 (Botswana)
13	AUSTRALIAN GEODETIC 1984 (Australia)
14	BERMUDA 1957 (the Bermudas)
15	BOGOTA OBSERVATORY (Columbia)
16	CAMPO INCHAUSPE
17	CHATHAM 1971
18	CHUA ASTRO (Paraguay)
19	CORREGO ALEGRE (Brazil)
20	DJAKARTA (VATAVIA) (Sumata)
21	EUROPEAN 1979 (Europe)
22	GEODETIC DATUM 1949 (New Zealand)
23	GUAM 1963 (Guam)
24	HAYFORD 1910 (Finland)
25	HJORSEY 1955 (Ice land)
26	INDIAN (India & Nepal)
27	IRELAND
28	KERTAU 1948 (West Malaysia)
29	L.C.5 ASTRO (Cayman Black Island)
30	LIBERIA 1964 (Liberia)
31	LUZON (Philippines)
32	MERCHICH (Morocco)

No.	Name
33	MINNA (Cameroon)
34	NAHRWAN (Oman)
35	NAPARIMA, BWI (Trinidad and Tobago)
36	OLD EGYPTIAN (egypt)
37	OLD HAWAIIAN (the Hawaii Island)
38	PICO DE LAS NIEVES (the Canary Island)
39	PROVISIONAL SOUTH AMERICAN 1956 (South America)
40	PROVISIONAL SOUTH CHILEAN 1963 (Southern Chile)
41	PUETRO RICO (Puerto Rico and V irgin Island)
42	QORNOQ (South Greenland)
43	RT90 (Sweden)
44	SANTA BRAZ (Sao Maguel, Santa Maria Island)
45	SOUTH AMERICAN 1969 (South America)
46	SOUTHWEST BASE (Faial,Graciosa,Pico,Jorge and terceira Island)
47	TIMBALAI 1948 (Brunei and East Malaysia)

4. Setting a position fixing mode [MENU]

This function sets a position fixing mode of a GPS receiver and sends the information to a GPS receiver.

2D cannot obtain height information in two-dimensional position fixing.

3D cannot obtain height information in three-dimensional position fixing.

AUTO automatically selects the optimum of 2D and 3D position fixing.

Use the following procedure to set a position fixing mode to GPS receiver.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **GPS SETTING**, and **FIX MODE**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **2D**, **3D**, or **AUTO** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

GPS SETTING	
POSITION	N 36° 36.000' E136° 36.000'
ANTENNA HEIGHT	10M
GEODETIC DATUM	WGS-84
FIX MODE	AUTO
2D	10
3D	MANUAL 2S
AUTO	00 00 00 00 00 00
MASTER RESET	
TX COMMAND	

5. Setting a HDOP level [MENU]

This function sends a HDOP level of a GPS receiver to a GPS receiver.

Three HDOP levels, 4, 10, 20 are available. The lower the value, the higher is the precision. However, position fixing becomes more difficult.

Normally, customers need not set this information.

Use the following procedure to set a HDOP level to a GPS receiver.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **GPS SETTING**, and **HDOP LEVEL**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **4**, **10**, or **20** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

GPS SETTING	
POSITION	N 36° 36.000' E136° 36.000'
ANTENNA HEIGHT	10M
GEODETIC DATUM	WGS-84
FIX MODE	AUTO
HDOP LEVEL	10
4	MANUAL 2S
10	00 00 00
20	00 00 00
MASTER RESET	
TX COMMAND	

6. Setting an averaging level [MENU]

This function sends time data for averaging position information that is output from a GPS receiver to a GPS receiver. Three types of averaging levels, 2 seconds, 10 seconds, and 40 seconds, are available. A lower value represents faster data updating, however, the position information that is received is uneven.

Normally, customers need not set this information.

Use the following procedure to set a video gradation level to a GPS receiver.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **GPS SETTING**, and **AVERAGE** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **40S**, **10S**, or **2S** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

GPS SETTING	
POSITION	N 36° 36.000'
	E136° 36.000'
ANTENNA HEIGHT	10M
GEODETIC DATUM	WGS-84
FIX MODE	AUTO
HDOP LEVEL	10
AVERAGE	MANUAL 2S
40S	00 00 00
10S	00 00 00
2S	
TX COMMAND	

7. Setting a prohibited satellite number [MENU]

This function sends a satellite that is prohibited to a GPS receiver among the GPS satellites that have been launched.

Normally, customers need not set this information.

Use the following procedure to set a prohibited satellite number.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **GPS SETTING**, **EXCLUDE SAT** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, set a satellite number using **[JOG DIAL]**, determine the entry by pressing **[JOG DIAL]** or **[ACQ/ENT]**, repeat these steps until all the information items are entered, and end the operation by returning to the previous menu.

GPS SETTING	
POSITION	N 36° 36.000'
	E136° 36.000'
ANTENNA HEIGHT	10M
GEODETIC DATUM	WGS-84
EXCLUDE SAT	AUTO
00	10
00	MANUAL 2S
00	00 00 00
00	00 00 00
00	
00	

8. GPS receiver master reset [MENU]

This function sends master reset to a GPS receiver and initializes the GPS receiver.

Normally, customers need not set this information.

Use the following procedure to send Master Reset.

- (a) Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **GPS SETTING**, **MASTER RESET** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- (b) When the following menu is displayed, select **ON** using **[JOG DIAL]**. TX COMMAND described in Item 9 is automatically starts and the setting of master reset is sent to the GPS receiver. The procedure is completed when "COMPLETE!" is displayed. If transmission fails, "TX FAILED!" is displayed. In this case, start the procedure from (a) again.

Note

The setting that was set to ON in (b) is reset automatically to **OFF** after transmission of TX COMMAND.

GPS SETTING	
POSITION	N 36° 36' 00"
	E 136° 36' 00"
ANTENNA HEIGHT	10M
GEODETTIC DATUM	WGS-84
FIX MODE	AUTO
HDOP LEVEL	10
AVERAGE	MANUAL 2S
EXCLUDE SAT	00 00 00
MASTER RESET	00 00 00
OFF	
ON	

9. Sending updated set values [MENU]

This function sends the information from item 1 to item 8 that is set in GPS to a GPS receiver. The values set in items 1 to 8 are not set in the GPS receiver unless this transmission operation is performed even if the values are changed on the menu.

Use the following procedure to set a prohibited satellite number.

- (a) Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **GPS SETTING**, **TX COMMAND** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- (b) When the following menu is displayed and transmission starts, message "TRANSMIT ..." is displayed. When transmission is completed successfully, "COMPLETE!" is displayed. If transmission fails, "TX FAILED!" is displayed. In this case, start the procedure from (a) again.

GPS SETTING	
POSITION	N 36° 36' 00"
	E 136° 36' 00"
ANTENNA HEIGHT	10M
GEODETIC DATUM	WGS-84
FIX MODE	AUTO
HDOP LEVEL	10
AVERAGE	MANUAL 2S
EXCLUDE SAT	00 00 00
TX COMMAND	00 00 00
TRANSMIT...	
COMPLETE!	

10. Setting UTC time [MENU]

This function sends UTC (world time) to a GPS receiver.

Use the following procedure to set the UTC setting to a GPS receiver.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **[GPS]**, **[GPS SETTING2]**, **[UTC]** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, change the values set in the year, month, day, hour, minute, and second in that sequence using **[JOG DIAL]**, determine each change by pressing **[JOG DIAL]** or **[ACQ/ENT]** and end the operation.

GPS SETTING2	
UTC	2003/01/23
2003/01/23	23:59:59
23:59:59	+00:00
TX COMMAND	

11. Setting a UTC time difference [MENU]

This function sends a time difference with UTC (world time) to a GPS receiver.

Use the following procedure to set the time difference with UTC to a GPS receiver.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **[GPS]**, **[GPS SETTING2]**, **[TIME DIFF.]** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, set a time difference by changing the values by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

GPS SETTING2	
UTC	2003/01/23
	23:59:59
TIME DIFF.	+00:00
+00:00	

12. Sending updated setting values [MENU]

This function sends setting information of items 10 and 11 to GPS to a GPS receiver.

The setting values of items 10 and 11 are not set in the GPS receiver without this transmission operation, even if they are changed and set on the menu.

Use the following procedure to set updated setting values.

- (a) Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **GPS SETTING2**, **TX COMMAND** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- (b) When the following menu is displayed and transmission starts, message "TRANSMIT..." is displayed. If the transmission completes successfully, "COMPLETE!" is displayed. If the transmission fails, "TX FAILED" is displayed. In this case, starts the procedure from (a) again.

GPS SETTING2	
UTC	2003/01/23
TX COMMAND	23:59:59
TRANSMIT...	+00:00
COMPLETE!	

9.8.17 Setting information in a DGPS receiver

Set initial values in a DGPS receiver (differential GPS receiver of JRC).

1. Setting a DPGS mode [MENU]

This function sends the mode setting of a DGPS receiver to the DGPS receiver.

Use the following procedure to set the mode setting of a DGPS receiver to the DGPS receiver.

Normally, customers need not set this information.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **DGPS**, **DGPS SETTING**, **MODE** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select either **MANUAL** or **AUTO** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

DGPS SETTING	
MODE	AUTO
MANUAL	288.0KHZ
AUTO	200BPS
TX COMMAND	

2. Setting a frequency used by a beacon station [MENU]

This function sends the frequency set for a beacon station to a DGPS receiver.

A frequency of a beacon station can be set in 0.5kHz steps within the range from 283.5KHz to 325.5KHz.

Use the following procedure to set a frequency used for a beacon station to a DGPS receiver.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **DGPS SETTING**, **FREQUENCY** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, set a frequency by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

DGPS SETTING	
MODE	AUTO
FREQUENCY	288.0KHZ
288.0KHZ	200BPS
DGPS MODE	ON
TX COMMAND	

3. Setting a baud rate for communication with a beacon station [MENU]

This function sends the baud rate that is set for communication with a beacon station to a DGPS receiver.

Three baud rates are available for communication with a beacon station, 50, 100, and 200BPS.

Use the following procedure to set a baud rate for communication with a beacon station to a DGPS receiver.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **DGPS SETTING**, **BAUDRATE** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **50BPS**, **100BPS**, or **200BPS** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

DGPS SETTING	
MODE	AUTO
FREQUENCY	288.0KHZ
BAUDRATE	200BPS
200BPS	ON
TX COMMAND	

4. Setting a DPGS mode [MENU]

This function sends the DPGS ON/OFF (GPS mode) setting to a DGPS receiver.

When the DPGS mode is set to ON, high precision information can be obtained using the information from a beacon station.

When the DPGS mode is set to OFF, information can be obtained with the same precision as for GPS.

Use the following procedure to set the DPGS mode to ON/OFF.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **DGPS SETTING**, **DGPS MODE** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select either **OFF** or **ON** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

DGPS SETTING	
MODE	AUTO
FREQUENCY	288.0KHZ
DGPS MODE	200BPS
OFF	ON
ON	

5. Sending updated setting values [MENU]

This function sends the information of items 1 to 4 that was set to GPS to a GPS receiver.

The values sets in items 1 to 4 are not set in the GPS receiver without this transmission operation even if the values are changed and set on the menu.

Use the following procedure to send updated setting values to a GPS receiver.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **DGPS SETTING**, **TX COMMAND** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed and transmission starts, message "TRANSMIT..." is displayed. If the transmission completes successfully, "COMPLETE!" is displayed. If the transmission fails, "TX FAILED!" is displayed. In this case, start the procedure from (a) again.

DGPS SETTING	
MODE	AUTO
TX COMMAND	288.0KHZ
TRANSMIT...	200BPS
COMPLETE!	

9.8.18 Setting information in a WAAS receiver

Set initial values in WAAS receiver (WAAS receiver of JRC). A WAAS receiver demonstrates high precision position fixing from GPS by receiving, from satellites also, the same information as that received from the DGPS beacon station.

1. Setting a WAAS mode [MENU]

This function sends, to a DGPS receiver, the setting information as to whether differential information of a WAAS receiver is obtained from a beacon or a satellite.

Use the following procedure to set information as to whether differential information is received from a beacon or a satellite.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **WAAS SETTING**, **MODE** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **BEACON**, **WAAS**, or **AUTO** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

WAAS SETTING	
MODE	AUTO
BEACON	ON
WAAS	NO USE
AUTO	AUTO
TX COMMAND	

2. Setting a position fixing satellite [MENU]

This function sends, to a WAAS receiver, the setting information as to whether a WAAS satellite is used as a position fixing satellite. The function also sets information as to whether a WAAS satellite is used as a satellite for position fixing.

Use the following procedure to set information as to whether differential information is received from a beacon or a satellite.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **WAAS SETTING**, **RANGING** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **OFF** (not used) or **ON** (used) by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

WAAS SETTING	
MODE	AUTO
RANGING	ON
OFF	NO USE
ON	AUTO
TX COMMAND	

3. Setting information whether a prohibited satellite can be used [MENU]

This function sends, to a WAAS receiver, the setting information as to whether a prohibited WAAS satellite is used.

Use the following procedure to set information as to whether a prohibited WAAS satellite is used.

- (a) Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **WAAS SETTING**, **NG WAAS**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- (b) When the following menu is displayed, select **NO USE** or **USE** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

WAAS SETTING	
MODE	AUTO
RANGING	ON
NG WAAS	NO USE
NO USE	AUTO
USE	

4. Setting a satellite number [MENU]

This function sends the setting of a WAAS satellite that is used to a WAAS receiver.
A number between 120 and 138 can be selected automatically.

Use the following procedure to set a number of the WAAS satellite that is used.

- (a) Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **WAAS SETTING**, **WAAS NO.**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- (b) When the following menu is displayed, select either a number between **120** and **138** or **AUTO** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

WAAS SETTING	
MODE	AUTO
RANGING	ON
NG WAAS	NO USE
WAAS NO.	AUTO
AUTO	

5. Sending updated setting values [MENU]

This function sends the information of items 1 to 4 that was set to WAAS to a WAAS receiver.
The values that are set in items 1 to 4 are not set in the GPS receiver without this transmission operation even if the values are changed and set on the menu.

Use the following procedure to send updated setting values to a GPS receiver.

- (a) Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS**, **WAAS SETTING**, **TX COMMAND** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- (b) When the following menu is displayed and transmission starts, message "TRANSMIT..." is displayed. If the transmission completes successfully, "COMPLETE!" is displayed. If the transmission fails, "TX FAILED!" is displayed. In this case, start the procedure from (a) again.

WAAS SETTING	
MODE	AUTO
RANGING	ON
TX COMMAND	NO USE
TRANSMIT...	AUTO
COMPLETE!	

9.8.19 Displaying GPS receiving status

This function displays receiving status of the GPS receiver (GPS/DGPS/WAAS receiver) connected now.

Use the following procedure to display the GPS receiver status.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **GPS RECEIVING STATUS**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- Since the GPS receiving status is displayed as follows, grasp the situation of the satellites that are carried out positioning now.

GPS RECEIVING STATUS				
DGPS				
SAT NO.	24	25		
AZIMUTH	245.9°	123.5°	:	:
ELV.	81.0°	45.4°	:	:
SNR	43	45		
SAT NO.				
AZIMUTH	:	:	:	:
ELV.				
SNR				
SAT NO.				
AZIMUTH	:	:	:	:
ELV.				
SNR				
VERSION	R26.00			
DOP	1			
ALTITUDE	65M			
RSSI	0			
BEACON				
DATE/TIME	2003/01/01			
(UTC)	04:15:01			

9.8.20 Initializing ATA [MENU]

Set the ATA function to ON/OFF.

Caution

- Even if the ATA function is set to ON in the menu shown below, the ATA function does not run unless the optional MARPA unit is installed. Do not set the ATA function to ON unless a MARPA unit is installed.

Use the following procedure to set the ATA function to ON or OFF.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **ATA SETTING** and **ATA**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **ON** to use the ATA function and **OFF** not to use the ATA function and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

ATA SETTING	
ATA	OFF
OFF	64
ON	64
LEVEL G	64
VECTOR CONST	4
AUTO ACQ	OFF
TEST VIDEO	OFF
NUMBERING	AUTO
GATE DISP	OFF

Other items are available on the ATA menu of the second level. Other items and the operation method of ATA are included in the MARPA unit that is sold separately. See the instruction manual of the unit.

9.8.21 Setting a course data input type [MENU]

Select course data input.

As course data, manual input values, course information from GPS, and gyro or magnetic compass input data are available. For manual input, manual course information that is set in the next item can be used.

Use the following procedure to set the ATA function to ON or OFF.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **DATA/IN OUT** and **COURSE IN**, and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **MANUAL**, **GPS**, or **COMPASS GYRO** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

DATA/IN OUT	
COURSE IN	COMPASS GYRO
MANUAL	000°
GPS	GPS BT
COMPASS GYRO	00.0 KT
POSITION IN	GPS
MANUAL POS.	N 36° 36.000'
	E136° 36.000'
COMPASS PORT	JLR-10 (9600)
2ND PANEL	DISABLE
NMEA OUT	>
CALIBRATION	>

Note

COG can be input as the course information from GPS and HDM, HDT, HDG, and VHW can be input as the course information from a magnetic compass.

9.8.22 Setting manual course data [MENU]

When Manual is selected as course data input on the menu shown above, enter a manual course.

Use the following procedure to set manual course data input.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **DATA/IN OUT** and **MANUAL COURSE** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select a course by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

DATA/IN OUT	
COURSE IN	COMPASS GYRO
MANUAL COURSE	000°
000°	GPS BT
MANUAL SPEED	00.0 KT
POSITION IN	GPS
MANUAL POS.	N 36° 36.000'
	E136° 36.000'
COMPASS PORT	JLR-10 (9600)
2ND PANEL	DISABLE
NMEA OUT	>
CALIBRATION	>

9.8.23 Setting a speed data input type [MENU]

Select speed data input.

As speed data, a manual input value, a ground speed from GPS, and a sea speed from an optional NSK unit are available. For manual input, manual speed information that is set in the following item can be used.

Use the following procedure to set speed data input.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **DATA/IN OUT** and **SPEED IN** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **MANUAL**, **GPS BT**, or **COMPASS WT** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

DATA/IN OUT	
COURSE IN	COMPASS GYRO
MANUAL COURSE	000°
SPEED IN	GPS BT
MANUAL	00.0 KT
GPS BT	GPS
COMPASS WT	N 36° 36.000'
	E136° 36.000'
COMPASS PORT	JLR-10 (9600)
2ND PANEL	DISABLE
NMEA OUT	>
CALIBRATION	>

Note

COMPASS WT runs only when an optional NSK unit is connected and a signal is input to the NSK unit from electromagnetic log.

9.8.24 Setting manual speed data [MENU]

Input a manual course required when manual is selected as the speed data input on the menu shown above.

Use the following procedure to set speed data input.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **DATA/IN OUT** and **MANUAL SPEED** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select a course by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

DATA/IN OUT	
COURSE IN	COMPASS GYRO
MANUAL COURSE	000°
SPEED IN	GPS BT
MANUAL SPEED	00.0 KT
00.0 KT	GPS
MANUAL POS.	N 36° 36.000'
	E136° 36.000'
COMPASS PORT	JLR-10 (9600)
2ND PANEL	DISABLE
NMEA OUT	>
CALIBRATION	>

9.8.25 Setting own ship's position input selection [MENU]

This function enables selection of position information from GPS or manual input as the method for inputting an own ship's position. When GPS is selected, position information from GPS is used and when manual is selected, the position information that is set by manual input shown in the next item is used.

Use the following procedure to select own ship's position input selection.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **DATA/IN OUT** and **POSITION IN** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **MANUAL** or **GPS** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

DATA/IN OUT	
COURSE IN	COMPASS GYRO
MANUAL COURSE	000°
SPEED IN	GPS BT
MANUAL SPEED	00.0 KT
POSITION IN	GPS
MANUAL	N 36° 36.000'
GPS	E136° 36.000'
COMPASS PORT	JLR-10 (9600)
2ND PANEL	DISABLE
NMEA OUT	>
CALIBRATION	>

Note

The signals of NMEA0183 which can be received from J3 of GPS port are as follows.

GGA, GLL, VTG, RMB

9.8.26 Setting own ship's position input [MENU]

Set manual input of own ship's position that is required when manual is selected in the own ship's position input from the menu shown above.

Use the following procedure to set speed data input.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **DATA/IN OUT** and **MANUAL POS.** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, set the values of South and North of the latitude, the unit of degree, the unit of minute, and the unit of second in that sequence by changing the values using the **[JOG DIAL]** and determine each value by pressing **[JOG DIAL]** or **[ACQ/ENT]**. When the information up to the second of latitude has been confirmed, the cursor moves to the longitude line. Change the values of East and West of the longitude, the unit of degree, the unit of second in that sequence by turning **[JOG DIAL]** and determine each value by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

DATA/IN OUT	
COURSE IN	COMPASS GYRO
MANUAL COURSE	000°
SPEED IN	GPS BT
MANUAL SPEED	00.0 KT
POSITION IN	GPS
MANUAL POS.	N 36° 36.000'
N 36° 36.000'	E136° 36.000'
E136° 36.000'	JLR-10 (9600)
2ND PANEL	DISABLE
NMEA OUT	>
CALIBRATION	>

9.8.27 Setting a compass input baud rate [MENU]

Set a baud rate of a compass port.

Optional NSK unit : 9600BPS

GPS compass JLR-10 of JRC : 9600BPS

NEMA-0183 input equipment such as electronic compass : 4800BPS

Use the following procedure to set speed data input.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **DATA/IN OUT** and **COMPASS PORT** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **NSK (9600)**, **JLR-10 (9600)**, or **COMPASS (4800)** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

DATA/IN OUT	
COURSE IN	COMPASS GYRO
MANUAL COURSE	000°
SPEED IN	GPS BT
MANUAL SPEED	00.0 KT
POSITION IN	GPS
MANUAL POS.	N 36° 36.000'
	E136° 36.000'
COMPASS PORT	JLR-10 (9600)
NSK (9600)	DISABLE
JLR-10 (9600)	
COMPASS (4800)	

The signal formats which can be input from J5 of COMPSS port are as follows.

NSK (9600) : JRC original format

JLR-10 (9600) : JRC original format

COMPASS (4800) : MNEA0183 signal, HDT, HDG, VHW, VHW, HDM

9.8.28 Setting connection of the 2nd keyboard [MENU]

Set the presence or absence of an optional 2nd keyboard.

Set the following information when connecting an optional 2nd keyboard.

Use the following procedure to use the 2nd keyboard.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **DATA/IN OUT** and **2ND PANEL** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **DISABLE** or **ENABLE** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

DATA/IN OUT	
COURSE IN	COMPASS GYRO
MANUAL COURSE	000°
SPEED IN	GPS BT
MANUAL SPEED	00.0 KT
POSITION IN	GPS
MANUAL POS.	N 36° 36.000'
	E136° 36.000'
COMPASS PORT	JLR-10 (9600)
2ND PANEL	DISABLE
DISABLE	
ENABLE	

9.8.29 Setting a NMEA data output frequency [MENU]

When an output frequency of NMEA-0183 data that is output from a NMEA output port is set and the **[CSR POS]** key is pressed, set ON/OFF for the output of RSD data or OSD data.

An output frequency between 0 second to 99 seconds (0: output OFF) can be set.

Note

See 3, "NMEA0183 standard input/output sentences" of 9.3.9, "Connecting a GPS receiver and NMEA equipment".

Use the following procedure to set a NMEA data output frequency

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **DATA/IN OUT** and **NMEA OUT** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select the output times to be changed from **GGA**, **GLL**, **RMC**, **VTG**, **OSD**, **RSD**, and **TTM** by turning **[JOG DIAL]** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- Set an output frequency by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

NMEA OUT	
GGA	OSEC
OSEC	OSEC
RMC	OSEC
VTG	OSEC
OSD	OSEC
RSD	OSEC
TTM	OSEC
CURSOR POS.	OFF

Example : Changing GGA output time

Use the following procedure to set the **[CUR POS]** key output to ON or OFF.

- Select **CURSOR POS.** on the menu shown in (b) above and press **[JOG DIAL]** or **[ACQ/ENT]**.
- Select **OFF** or **ON** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

NMEA OUT	
GGA	OSEC
GLL	OSEC
RMC	OSEC
VTG	OSEC
OSD	OSEC
CURSOR POS.	OSEC
OFF	OSEC
ON	OFF

9.8.30 Setting selection of a magnetic azimuth sensor correction value **[MENU]**

Set whether correction values are set manually or RMC data is used when connecting a magnetic azimuth sensor.

Select whether correction values are set manually using a magnetic compass or RMC DATA is used.

Note

When RMC data is set in the following settings and RMC data is not set, 0 degree is assumed for the correction value.

Use the following procedure to set selection of a magnetic azimuth sensor correction value.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **DATA/IN OUT**, **CALIBRATION**, and **MAG CORR.** and press **[JOG DIAL]** or **[ACQ/ENT]**.

- (b) When the following menu is displayed, select **MANUAL** or **RMC** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

CALIBRATION	
MAG CORR.	MANUAL
MANUAL	0.0°
RMC	

9.8.31 Setting manual data for a compass correction value [MENU]

Input a manual correction value as the manual correction data input as shown above.

Use the following procedure to set selection of a magnetic azimuth sensor correction value.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **DATA/IN OUT**, **CALIBRATION**, and **MANUAL** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, set a correction value by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

CALIBRATION	
MAG CORR.	MANUAL
MANUAL	0.0°
0.0°	

9.8.32 Setting a PC output baud rate [MENU]

Set a baud rate of the output port for a NEMA data personal computer.

This setting becomes valid when the 2nd keyboard that was described above is not connected (OFF).

Four types of baud rates are available; 4800BPS, 9600BPS, 19200BPS, and 38400BPS.

Use the following procedure to set a PC output baud rate.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **BAUD RATE** and **PC** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **4800**, **9600**, **19200**, or **38400** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

BAUD RATE	
PC	4800
4800	4800

9.8.33 Setting a keyboard port baud rate [MENU]

Set a baud rate of a keyboard port.

When a 2nd keyboard is connected (ON), the same baud rate as the keyboard port is set for the PC port that was described above.

Four types of baud rates are available; 4800BPS, 9600BPS, 19200BPS, and 38400BPS.

Use the following procedure to set a keyboard port baud rate.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **BAUD RATE** and **PANEL** and press **[JOG DIAL]** or **[ACQ/ENT]**.

- (b) When the following menu is displayed, select **4800**, **9600**, **19200**, or **38400** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

BAUD RATE	
PANEL	4800
4800	4800

9.8.34 Setting a display direction of the indicator [MENU]

Set a display direction of the indicator.

Four indicator display direction are available, 0 degree: HORIZONTAL, 90 degrees: VERTICAL-RIGHT, 180 degrees: INVERSION, and 270 degrees: VERTICAL-LEFT.

Use the following procedure to set a display direction of the indicator.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **DISPLAY MOUNT** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **HORIZONTAL**, **VERTICAL-RIGHT**, **INVERSION**, or **VERTICAL-LEFT** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

Note

The above function is also set when the system is started by pressing one of the following keys at Power ON.

[AUTO-TUNE] : 0 degree : HORIZONTAL
[AUTO-RAIN] : 90 degrees : VERTICAL-RIGHT
[AUTO-SEA] : 180 degrees : INVERSION
[GAIN/PL] : 270 degrees : VERTICAL-LEFT

DISPLAY MOUNT	
GYRO SETTING	123.4°
SIMULATION	OFF
RADAR	>
GPS	>
ATA SETTING	>
DATA/IN. OUT	>
DISPLAY MOUNT	
HORIZONTAL	
VERTICAL-RIGHT	
INVERSION	
VERTICAL-LEFT	

9.8.35 Setting a display timing of the indicator [MENU]

Set a horizontal/vertical display timing of the indicator.

A value between 130 and 160 can be set for a horizontal timing and a value between 20 and 50 can be set for a vertical timing.

Use the following procedure to set horizontal display timing of the indicator.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **LCD SETTING** and **HS DISP SATART** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, set a required value by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.



Use the following procedure to set vertical display timing of the indicator.

- (a) Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **LCD SETTING** and **VS DISP SATART** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- (b) When the following menu is displayed, set a required value by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.



9.8.36 Setting reading/writing setting values to non-initialization memory **[MENU]**

Various setting values can be stored or read from the area where data is stored permanently even in non-initialization memory or the area is initialized.

Use the following procedure to write the setting into non-initialization memory.

- (a) Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **BACKUP MEMORY** and **STORE** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- (b) When the following menu is displayed, select **YES** to store data or **NO** not to store data by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

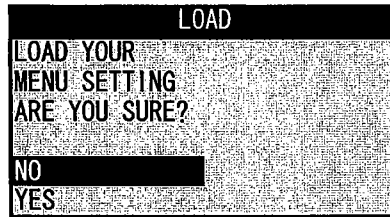


As a result of the operation, all the values that were set on the menu or by initialization are stored in a non-initialization memory and the non-initialization memory is not erased even if master reset operation is performed.

Therefore, before executing master reset, store the values in the non-initialization memory and after executing master reset, execute read processing that is described in the next item.

Use the following procedure to set read processing from non-initialization memory.

- (a) When the following menu is displayed after execution of (a) indicated above, select **YES** to load data or **NO** not to store data by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.



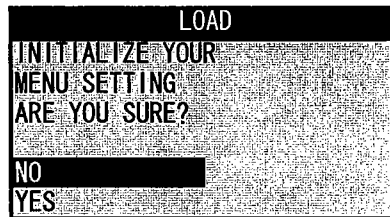
As a result of the operation indicated above, the data that was set by initialization is returned.

9.8.37 Initializing a menu storage area [MENU]

Initialize all the menu areas other than the initialization area (installation setting storage area).

Use the following procedure to initialize menu storage areas.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **INIT MENU** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- When the following menu is displayed, select **YES** to initialize the areas or **NO** not to initialize the areas by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.

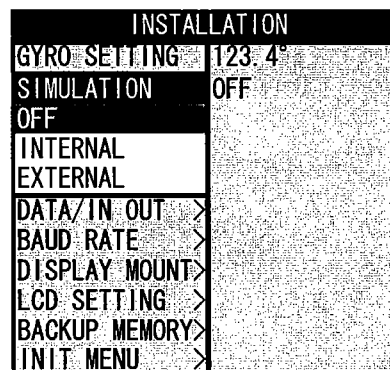


9.8.38 Displaying simulator images

Demonstration screens can be displayed on PPI by validating this function.

Use the following procedure to set a simulator mode.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **SIMULATION** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- Using **[JOG DIAL]**, invert characters **INTERNAL** when using a built-in simulator and **EXTERNAL** when using an external simulator (NDW-51 and so on) among **OFF**, **INTERNAL**, and **EXTERNAL**, and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.



Caution

- This function becomes effective only when the radar is in preparation state.

When an external simulator is connected, set a special mode of the item and select **ON**.

9.8.39 Special mode

Use this function to select a mode that allows transmission with the safety switch or the motor line disconnected.

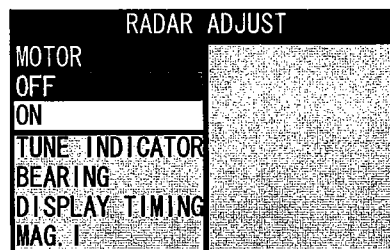
Set this mode for measuring a scanner unit power or transmitting signals by deactivating the scanner unit in external simulator mode.

Caution

- Since the following mode is used at maintenance or demonstration, this function can be used by service engineers only.

Use the following procedure to set horizontal display timing of the indicator.

- Display the **INSTALLATION** menu by pressing the **[MENU]** key in long mode, select **RADAR**, **RADAR ADJUST**, or **MOTOR** and press **[JOG DIAL]** or **[ACQ/ENT]**.
- Select **OFF** by turning **[JOG DIAL]** and end the operation by pressing **[JOG DIAL]** or **[ACQ/ENT]**.



DANGER



When the above setting is set to OFF, microwaves are radiated even if the scanner unit is not rotating, it may cause death or a serious injury of any person. Therefore, utmost care is necessary.
Make the setting is set ON after the required operation is completed.

9.9 *Resetting Adjustments to the Initial State*

When detecting any of the following problems, turn off the power once and then turn it on again.

Radar is busy.

The screen is unstable.

The keys are locked.

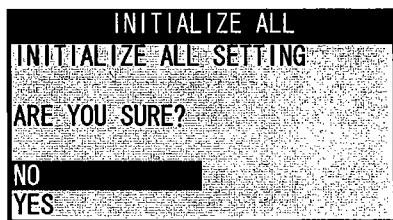
If the problem cannot be solved, initialize the equipment using the following procedure.

Caution

- When the equipment is initialized, the entire information is erased including the initialization menu.

- Press the **[STBY]** and **[TX/PRF]** keys together.
The power is turned off.
- Turn on the power by pressing **[STBY]** while pressing **[ACQ/ENT]** and **[MENU]**.

When the following menu is displayed, select **[YES]** by using **[JOG DIAL]** when initializing the equipment.



9.10 Maintenance

9.10.1 General maintenance

To operate radar equipment constantly in a good condition, the following maintenance is necessary. Maintain the equipment periodically. Periodic maintenance reduces failures.

The following common maintenance points are applied to each unit.

1. Cleaning the equipment

Remove dust, stains, and seawater from the cabinet as much as possible. Use a dry cloth for cleaning.

2. Checking the tightening of screws

Check the tightening of screws of assembly and component setting screws that are used for the equipment.

3. Checking connections

Check the cable connections between equipment units (scanner unit - processing unit, processing unit - power, processing unit - keyboard unit, processing unit - display unit, processing unit - optional equipment) if the equipment units are electrically connected.

DANGER



Make sure that the main power is turned off before maintaining the equipment. In particular, when a rectifier is used, a voltage is output from the rectifier even if the power of the display is turned off and the radar is stopped. This may cause failures of equipments, or death or a serious injury of any person by electric shock.

9.10.2 Scanner unit

DANGER



When checking a scanner unit for maintenance, make sure that the main power is turned off and the safety switch attached to the scanner unit is set to OFF. If the power is not turned off, failures of equipments may occur, and death or a serious injury of any person may occur by electric shock. And touching a rotating scanner unit may cause failures of equipments, or death or a serious injury of any person by electric shock.

CAUTION



Since the modulation section contains a magnetron with stored magnetism, do not place a lock or a magnetic card close to the modulation section. Otherwise, failures or data corruption may occur in such devices.

1. Radiation section

- (a) Radiation side of the radiation section (JMA-5104: All sides of the radome cover)

If JMA5106/JMA-5110 (entire area of the radiation section) is contaminated or damaged by smoke, dust, or paint, attenuation and reflection of waves occur, causing deterioration of radar performance. Check the radiation area occasionally and keep it clean by wiping with a soft cloth dipped with alcohol or moisturized cloth if it is dirty.

CAUTION



Do not use solvents such as thinner, gasoline, benzene, trichlene, and ketone. These solvents cause discoloration or deterioration.

2. Rotation driving section

(a) Greasing gears

Apply grease on the faces of the teeth of each gear using a spatula or brush. The more frequently greasing is applied, the longer the life span becomes, preventing the abrasion.

Greasing is necessary at least once in six months.

Use "Mobilux 2" of Mobile Oil or equipment product for the grease.

(b) Driving motor

i) Attenuator

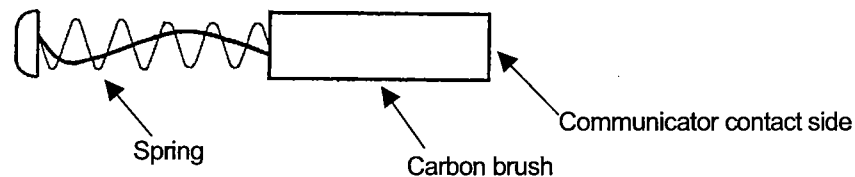
Greasing is not necessary unless there is oil leakage.

ii) Motor

The life span of the brush itself is 2000 hours. When the brush is worn out to a half of the entire length, replace it.

The communicator must be kept clean all the time. If carbon dust is stuck and cannot be removed with a dry cloth, polish the section with sand paper of No.150 to 400.

The carbon brush can be removed by removing the caps on both sides of the bottom of the motor.



List of replacement carbon brushes

Scanner unit model name	Item name	Model name	JRC code	Replacement quantity
JMA-5104	—	—	—	Cannot be replaced
JMA-5106	Carbon brush	54531-1	BRXP05247	2
JMA-5110	Carbon brush	S00152-5C-70	BRXP00918	2

* Since the brush of JMA-5104 cannot be replaced, it must be replaced by motor ASSY.

(c) Mounting stand

Check the scanner unit mounting bolts occasionally and paint them every six months to prevent corrosion.

9.10.3 Display

Cleaning display

Caution

- When dust is attached on the LCD display area, the clarity deteriorates and the image becomes dark. Clean the surface with soft cloth (flannel or cotton) gently. The cloth can be dipped with an antistatic agent; however, do not rub the surface strongly.