

# 3. MAINTENANCE, TROUBLE-SHOOTING

 <b>WARNING</b>	
	<b>ELECTRICAL SHOCK HAZARD</b> Do not open the equipment.
	Only qualified personnel should work inside the equipment.

<b>NOTICE</b>
<b>Do not apply paint, anti-corrosive sealant or contact spray to coating or plastic parts of the equipment.</b>
Those items contain organic solvents that can damage coating and plastic parts, especially plastic connectors.

## 3.1 Maintenance


Regular maintenance is necessary to maintain performance. A monthly maintenance program should be established and should at least include the items listed in the table below.

Item	Check point
Connectors	Check that all connectors on the rear panel of the transponder unit and monitor unit are firmly connected.
Cabling	Check cabling for damage. Replace if damaged.
Ground terminal	Check the ground terminal on the monitor unit and transponder unit for rust. Clean if necessary.
Ground wire	Check that the ground wire on the monitor unit and transponder unit is firmly fastened.
Monitor unit, Transponder unit.	Dirt and dust should be removed from units with a soft, dry cloth. For the LCD, wipe it carefully to prevent scratching, using tissue paper and an LCD cleaner. To remove dirt or salt deposits, use an LCD cleaner, wiping slowly with tissue paper so as to dissolve the dirt or salt. Change paper frequently so the salt or dirt will not scratch the LCD. Do not use solvents such as thinner, acetone or benzene for cleaning any unit; they can remove paint and marks and deform the equipment.

## 3.2 Replacement of Fuse

The transponder unit contains a 8A fuse which protects the equipment from overvoltage, reverse polarity and equipment fault. If the power cannot be turned on, the fuse may be blown. Contact your local dealer for advice.

Unit	Fuse type	Specification	Code No.
Transponder unit FA-1701	FGMB-S 125V 8A PBF	12 to 24 VDC	000-191-004-10

 **WARNING**

**Use the proper fuse.**

Use of a wrong fuse can cause fire or result in damage to the equipment.

## 3.3 Troubleshooting

The troubleshooting table below provides common symptoms of trouble and the means to rectify them. If you cannot restore normal operation, do not attempt to check inside the equipment. Refer any repair work to a qualified technician.

Symptom	Remedy
<b>Power</b>	
Cannot turn on the power.	<ul style="list-style-type: none"> <li>• Check that the power cable between the transponder and monitor units for damage.</li> <li>• Check the power supply.</li> </ul>
<b>Transmitting, receiving messages</b>	
Cannot transmit or receiver.	<ul style="list-style-type: none"> <li>• Check that the VHF antenna cable is firmly fastened.</li> <li>• Check the VHF antenna for damage.</li> <li>• For TX messages, try a different TX channel. CLASS A: See section 1.9.1. INLAND: See section 2.6.1.</li> </ul>
Can transmit but message is sent to wrong party.	Check that the [MSG TYPE] is set to [ADDRESSED] and the MMSI entered at [TO] is correct. For CLASS-A, see section 1.9.1. For INLAND: See section 2.6.1.
<b>Position data</b>	
No position data.	<ul style="list-style-type: none"> <li>• Check the GNSS antenna for damage.</li> <li>• Check the GNSS antenna cable and its connectors.</li> </ul>

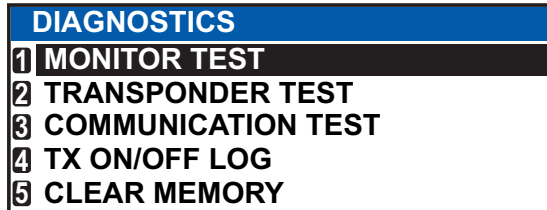
## 3.4 Diagnostics

The FA-170 provides diagnostic tests to check the monitor unit and transponder unit for proper operation.

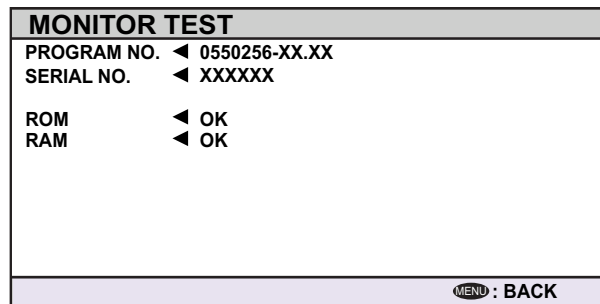
### 3.4.1 Monitor unit test

The monitor unit test shows program no., and checks the ROM, RAM, LCD and controls.

1. Press the **MENU/ESC** key to open the main menu.
2. Select [DIAGNOSTICS] then press the **ENT/ACK** key.



3. [MONITOR TEST] is already selected; press the **ENT/ACK** key.



“XX.XX” indicates software version number.

- a) The screen in the test displays the monitor unit's program number and serial number.
- b) The ROM and RAM are checked. The results of the ROM/RAM check are shown as "OK" or "NG" (No Good). If "NG" appears, try the test again. If "NG" still appears, contact your dealer for advice.

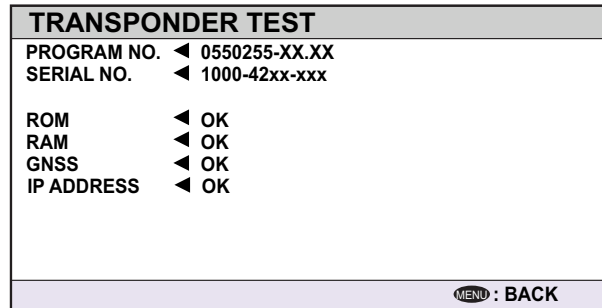
### 3.4.2 Transponder test

The transponder tests two aspects of the transponder: transponder memory and internal GNSS receiver.

The [IP ADDRESS] checks if the LAN connection has duplicate IP addresses in the same network. When there are duplicate IP addresses, the [IP ADDRESS] is "NG". When there is no LAN connection to the FA-170, "--" will be shown as a result.

To run this test, do the following:

1. Press the **MENU/ESC** key to open the main menu.
2. Select [DIAGNOSTICS] then press the **ENT/ACK** key.
3. Select [TRANSPONDER TEST] then press the **ENT/ACK** key.
4. The transponder program number and serial number are displayed and the ROM and RAM are checked. The results of the ROM and RAM check are displayed as "OK" or "NG" (No Good). The result of [IP ADDRESS] is displayed as "OK", "NG" or "--". For any "NG", contact your dealer for advice.



The GNSS test results are displayed the format shown below.

OK: Normal

NG: No Good - Appears along with reason for NG.

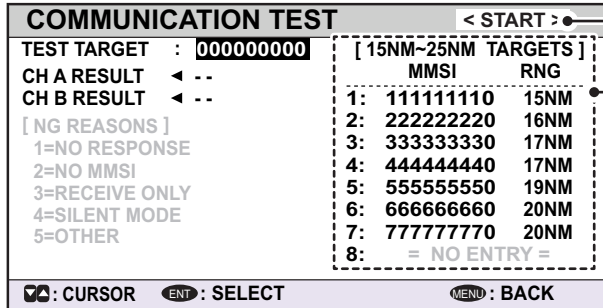
- ROM ERROR
- RAM ERROR
- MEMORY ERROR
- ANTENNA ERROR
- COM ERROR

5. Press the **MENU/ESC** key to return to the [DIAGNOSTICS] sub-menu.

### 3.4.3 VHF communication test

The VHF communication test checks for proper transmission and reception over the VHF channel.

1. Press the **MENU/ESC** key to open the main menu.
2. Select [DIAGNOSTICS] then press the **ENT/ACK** key.
3. Select [COMMUNICATION TEST] then press the **ENT/ACK** key.



Select [START], then press the **ENT/ACK** key to begin the communications test.

Available test targets list showing the MMSI of each target and range to target.

The FA-170 automatically selects targets with a range of 15 NM to 25 NM for this list with CLASS A type targets listed above other types.

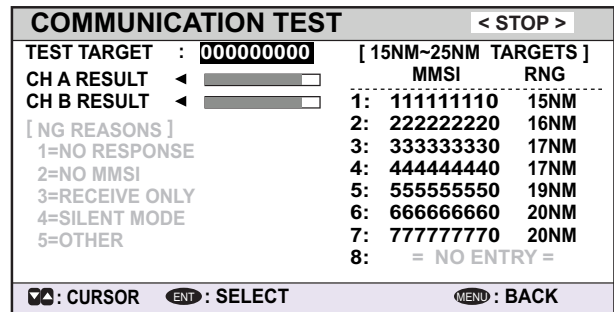
4. Input the required MMSI, referring to the list at the right of the screen. You can also select the test target from the list at the right of the screen using the arrow keys, then press the **ENT/ACK** key.
5. Select [START] then press the **ENT/ACK** key.

When the test is complete, the results are displayed for both channel A and B, along with a reason for test failure where applicable.

"OK": Normal

"NG": No Good. Unable to communicate with specified vessel's (MMSI) channel.

The result "NG" appears with a number explaining the failure. The number and meanings are listed in the table below.



Number	Reason	Measures
1	No response. The message was not acknowledged by the test target.	Change targets, then repeat the test.
2	Own ship MMSI is not set.	Refer to the installation manual for this equipment and input the MMSI.
3	The FA-170 is set to "receive only" and cannot send a test message.	Change the setting for [CH INFO] to [TX/RX AorB] from the [REGION LIST]. See section 1.10.2. <b>Note:</b> The system automatically transmits when the setting is changed to [TX/RX AorB].
4	The FA-170 is in silent mode and cannot send a test message.	Disable silent mode.
5	Less than one minute interval between messages sent.	Wait for more than one minute, then repeat the test.
6	Failed for an unknown reason. (Other than those above.)	There may be an obstacle (land mass, etc.) between your vessel and the test vessel. Manually input a different test target MMSI then repeat the test.

6. Press the **MENU/ESC** key to return to the [DIAGNOSTICS] sub-menu.

### 3.4.4 TX on/off log

The [TX ON/OFF LOG] shows the date and time at which transmissions were started or stopped. The time and date at which unit was turned off is also displayed.

1. Press the **MENU/ESC** key to open the main menu.
2. Select [DIAGNOSTICS] then press the **ENT/ACK** key.
3. Select [TX ON/OFF LOG] then press the **ENT/ACK** key.

TX ON/OFF LOG		
↑ TX-OFF	TIME [UTC]	REASON
↓ TX-ON		008 / 020
-- / -- / --	-- : -- : --	EQUIPMENT MALFUNCTION
30/APL/2015	8:35:00	
29/APL/2015	17:20:00	CH MANAGEMENT COMMAND
29/APL/2015	8:35:00	
28/APL/2015	17:20:00	CH MANAGEMENT COMMAND
38/APL/2015	8:35:00	
27/APL/2015	17:20:00	CH MANAGEMENT COMMAND
37/APL/2015	8:35:00	
☒ : CURSOR		ENT : BACK

The reasons which may be displayed are listed in the table below, along with their meaning.

Reason	Meaning
POWER OFF	Transmission disabled due to unit power off.
SILENT MODE	Transmission disabled due to unit operating in SILENT mode.
CH MANAGEMENT COMMAND	Transmission disabled due to CH INFO receive mode.
EQUIPMENT MALFUNCTION	Transmission disabled due to equipment malfunction.
INVALID CONFIGURATION	Transmission disabled due to invalid settings.

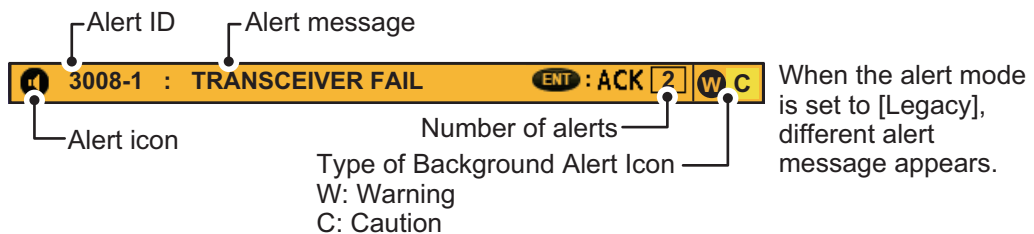
4. Press ▲ or ▼ to move the cursor and display other log entries.  
The cursor selects two lines, as shown in reverse video in the figure above. The contents of each log entry are:
  - Top line: Date and time at which transmission was turned off and reason transmission was turned off.  
**Note:** If transmission is turned off for more than 15 minutes, one of the reasons listed below is displayed.

Reason	Meaning
"POWER OFF"	Transmission ceased as the power was turned off.
"SILENT MODE"	Transmission ceased due to activation of [SILENT] mode.
"CH MANAGEMENT COMMAND"	Transmission ceased due to current channel settings.
"EQUIPMENT MALFUNCTION"	Transmission ceased due to equipment fault.
"INVALID CONFIGURATION"	Transmission ceased due to invalid settings.

- Bottom line: Date and time at which transmission was turned on.
5. Press the **MENU/ESC** key to return to the [DIAGNOSTICS] sub-menu.

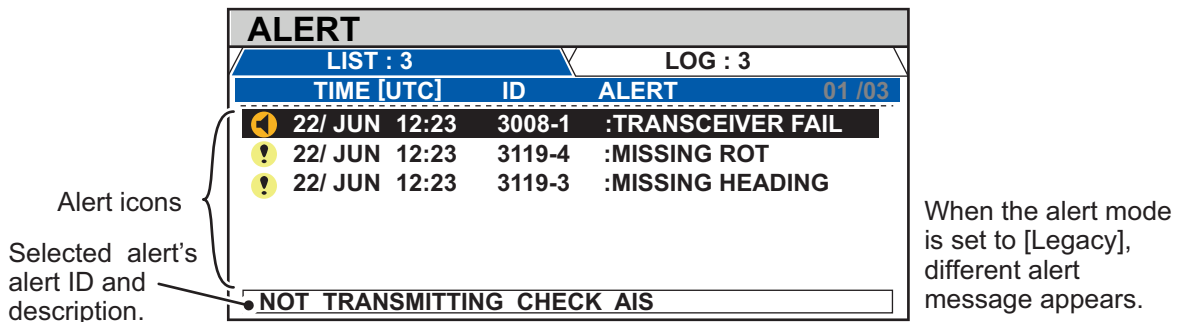
### 3.5 Alerts

The buzzer sounds for equipment errors and is accompanied by a flashing indication at the bottom of the screen. Press the **ENT/ACK** key to silence the buzzer and acknowledge the alert. If there are multiple alerts, each alert must be acknowledged individually. The indication at the bottom of the screen remains until the alert cause is removed or rectified. Alert ID and alert messages differ according to the alert mode set during the installation. Refer to "ALERTS, IDS, MEANINGS AND MEASURES" on page AP-7 about the alerts shown in each alert mode.



To see which alert(s) has been violated, display the [ALERT] list as shown in the procedure below.

1. Press the **DISP** key or long press **MENU/ESC** key to show the [ALERT] log.



2. Use ▲ or ▼ to select an alert. Each alert is displayed with the date and time at which it was generated. Where there is no date/time data available, the date/time indication appears as "- -/ - - - - - -: - -".  
 Select an alert to display brief description in the box at the bottom of the screen, as shown in the example above.
3. Press ◀ or ▶ to change the displayed tab.  
 The [LIST] tab shows active alerts only.  
 The [LOG] tab shows the latest 20 alerts which have been acknowledged and rectified.

Each active alert entry is accompanied by an alert icon, indicating the state of the alert. The alert icons displayed on the FA-170 are listed in the table below with a brief description.

Icon	Priority	Meaning	Icon	Priority	Meaning
	Warning	Active-unacknowledged notification, icon is flashing.*		Warning	Active-responsibility transferred notification, icon is lit steadily.
	Warning	Active-silenced notification, icon is flashing.*		Warning	Active-acknowledged notification, icon is lit steadily.
	Warning	Rectified-unacknowledged notification, icon is flashing.*		Caution	Active, icon is lit steadily.

\*: Flashing at 0.5 second intervals.

### 3. MAINTENANCE, TROUBLESHOOTING

See "ALERTS, IDS, MEANINGS AND MEASURES" on page AP-7 for a full list of alerts, alert IDs, their meanings and possible countermeasures.

## 3.6 GNSS Monitor

The GNSS monitor display shows information about the built-in GNSS receiver, including position, speed over ground, course over ground, date, time, mode position accuracy, position-fixing status and RAIM status.

1. Press the **MENU/ESC** key to open the menu.
2. Select [STATUS], then press the **ENT/ACK** key.
3. Select [INTERNAL GNSS], then press the **ENT/ACK** key.

INTERNAL GNSS	
UTC	◀ 28/NOV/2014 16:26:15
LAT	◀ 34°44.5000'N
LON	◀ 135°21.3000'E
SOG	◀ 110.9kn
COG	◀ 350.0°
MODE	◀ DGNSS
STATUS	◀ NO FIX
PA	◀ HIGH
RAIM	◀ UNUSED
MENU : BACK	

Indication	Description	Indication	Description
UTC	Date and time	MODE	Selected GNSS mode <ul style="list-style-type: none"> <li>• [GNSS]: GNSS is used for position fix.</li> <li>• [DGNSS]: DGNSS is used for position fix.</li> <li>• [NO FIX]: The system is unable to calculate a position fix.</li> </ul>
LAT	Latitude of current position	STATUS	GNSS status <ul style="list-style-type: none"> <li>• [2D]: Two dimensional GNSS fix.</li> <li>• [3D]: Three dimensional GNSS fix.</li> <li>• [D2D]: Two dimensional DGNSS fix.</li> <li>• [D3D]: Three dimensional DGNSS fix.</li> <li>• [DOP]: Dilution of precision fix.</li> <li>• [NO FIX]: The system is unable to calculate a position fix.</li> </ul>
LON	Longitude of current position	PA	Position accuracy (HIGH = Less than 10 m, LOW = more than 10 m)
SOG	Speed Over Ground	RAIM	Current RAIM status (USED or UNUSED)
COG	Course Over Ground		

4. Press the **DISP** key to close the display.

