

INSTALLATION MANUAL

FAX-207 FACSIMILE RECEIVER

This manual provides the information necessary for the installation of the FURUNO facsimile receiver FAX-207. For best performance please follow the recommended procedures.

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offered by Busse-Yachtshop.com

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SAFETY INSTRUCTIONS

"**DANGER**", "**WARNING**" and "**CAUTION**" notices appear throughout this manual. It is the responsibility of the installer of the equipment to read, understand and follow these notices. If you have any questions regarding these safety instructions, please contact a FURUNO agent or dealer.



DANGER

This notice indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

This notice indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

This notice indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury or property damage.



CAUTION



Ground both the recorder unit and the antenna unit.

Ungrounded equipment can give off or receive interference or cause electrical shock.

Confirm that the power supply voltage is compatible with the voltage rating of the equipment.

Connection to the wrong power supply can cause fire or equipment damage. The voltage rating appears on the label at the rear of the display unit.

Use only the supplied power cable.

Use of other power cables (particularly cables whose diameter is smaller than the supplied cable) can cause fire or short circuit.

Use the correct fuse.

Use of a wrong fuse can cause fire or equipment damage.

1. Recorder Unit Mounting Considerations

The recorder unit can perform its intended functions only if it is installed properly. Please read the following mounting considerations before installing the unit.

Water spray

This unit is designed and constructed to be able to withstand the humidity and corrosive atmosphere common to small vessels, but it is not designed to be used outside, exposed to the environment. Salt water spray can damage the sensitive components inside the unit.

Mechanical shock and vibration

This unit is able to withstand minor shocks and engine vibrations, but excessive shock and vibration can shorten the life of the equipment, especially the printer mechanism. Shock can also degrade print quality due to uneven contact between the printing head and the recording paper.

Heat

This unit consumes very little power so there is no need for forced air ventilation. However, sufficient space should be left around the unit to permit circulation of cooling air.

Even though the LCD is quite legible even in direct sunlight, it is recommended to keep the recorder unit out of direct sunlight because of heat that can build up inside the cabinet. Excessive heat also can darken the recording paper.

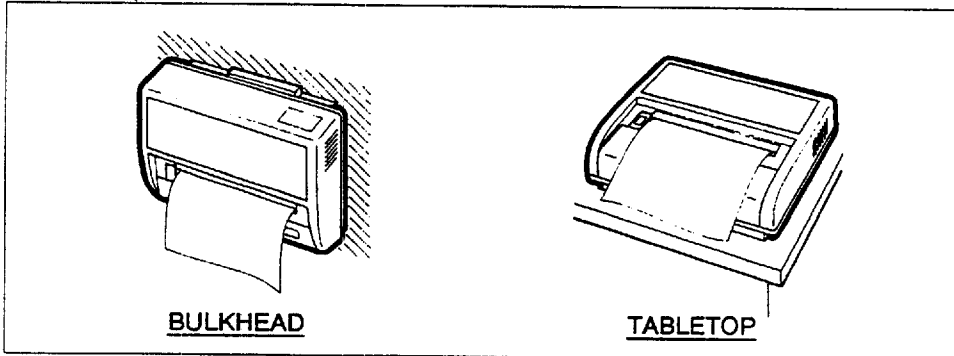
Shipboard interference

This unit contains a very sensitive receiver. To avoid mutual interference with other radio or navigational equipment, do not install the recorder near any radiotelephone, direction finder, or navigational receiver.

2. Mounting of Units

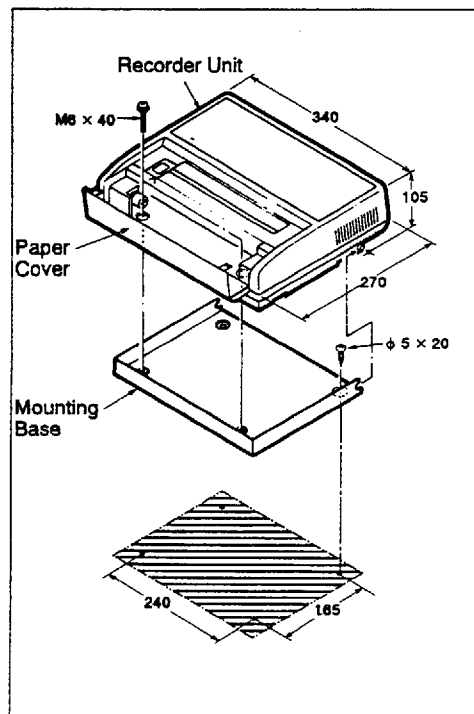
2. 1 Mounting of Recorder Unit

- The recorder unit can be mounted on either a tabletop or a bulkhead. Select a location where the unit can be easily operated and the display is legible.
- Be sure the mounting location is able to support the weight of the unit (7 kg) under the conditions of shock and vibration normally encountered on the vessel. If necessary, reinforce the mounting area with appropriate doubling block.
- During unattended operation of the equipment, a long recorded paper may hang down from the recorder. To prevent the paper from running sideways or being jammed on the way, level the recorder horizontally and keep the paper path clear so the paper can flow down smoothly. Also remember to leave some space below the paper cover so that it can be flipped down to open.



Procedure

1. Open the paper cover. Unfasten two screws to separate recorder unit from mounting base.
2. Fasten the mounting base to the mounting location with four tapping screws (supplied).
3. Lay the recorder unit on the mounting base. Fasten the recorder unit to the mounting base with two screws removed in step 1.

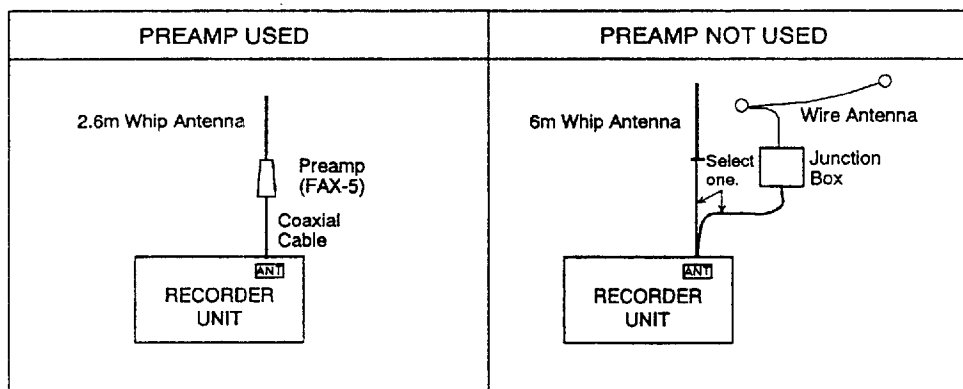


2.2 Mounting of Antenna

The performance of the FAX-207 is directly related to the antenna installation. In general, the antenna should be installed as high as possible on the vessel, free from the influence of nearby antennas, rigging and masts. Be sure to locate the antenna well away from Tx antennas and noise generating equipment. Pay particular attention to antennas of MF and HF radio equipment—they can damage the recorder unit through induction. (For better protection against induction, use the preamp unit.)

Antenna connection

Connect the antenna to the recorder unit as shown in the following figure. If the preamp unit is installed, set DIP switch S1 on the TB Board (see page 9 for location) in the recorder unit to the “ACTIVE” position.



Wire antenna or whip antenna

Either a long wire or whip antenna may be used. A wire antenna should be 15 meters or longer including the vertical section. A whip antenna should be 6 meters long.

The antenna can be shared with other receivers if the recorder unit is not equipped with the NAVTEX receiver. Use an antenna switch or multi-coupler.

Connect the antenna to the recorder unit with a coaxial cable (diameter should be larger than coaxial cable type 5D-2V).

If sensitivity of the wire antenna is low, use the preamp unit.

Installation of preamp unit (option)

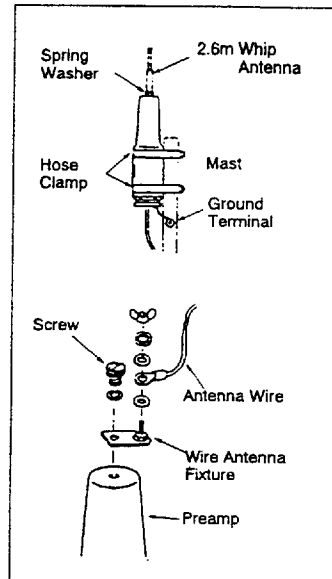
Small boats may not afford the space to install a long wire antenna. In this case it is recommended to install the preamp unit and 2.6 meter whip antenna. The preamp unit can be installed two ways:

- The base of the preamp unit is designed to accept a threaded extension of one inch diameter. The pitch of the thread should be 14 threads per inch. The mast itself should be no longer than 1.5 meters to prevent flexing in heavy winds.
- The preamp unit may be attached to a mast with stainless steel hose clamps (local supply).

Procedure

1. Fix the preamp unit to the mounting location.
2. Screw the whip antenna onto the preamp unit.
3. If the mast is metallic, run ground wire between mast and ground terminal on preamp unit.
4. Waterproof the junction and other exposed metallic parts with silicone rubber.

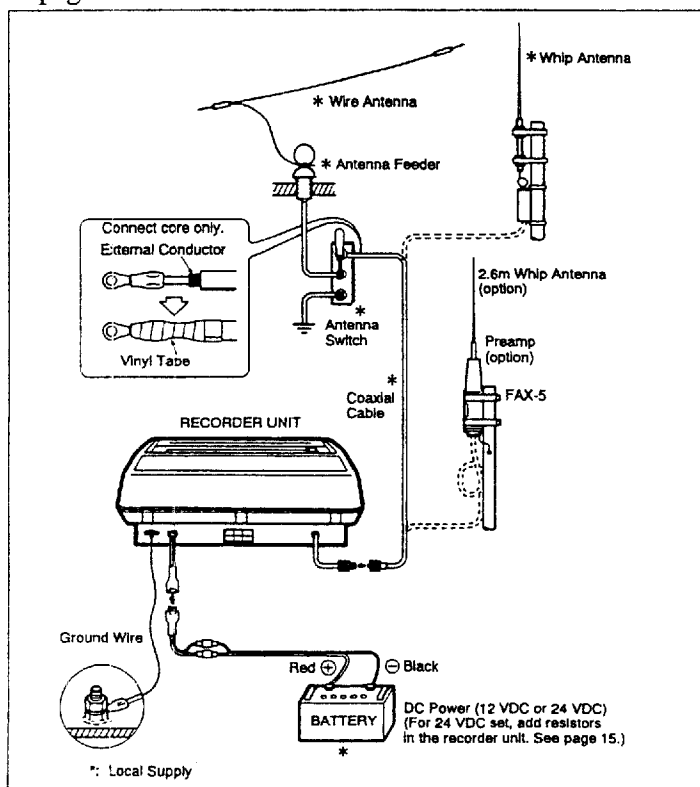
NOTE 1: An antenna wire several meters in length can be connected instead of the whip antenna. In this case, install the wire antenna fixture (supplied with preamp unit) between the antenna wire and the preamp unit.



NOTE 2: The preamp unit is powered by the recorder unit. To power the preamp unit, set DIP switch S1 on the TB Board (recorder unit) to the "ACTIVE" position. Further, if sensitivity is low when the preamp is used, see Appendix A for how to improve sensitivity.

3. Wiring

Three cables are connected to the recorder unit: antenna cable, power cable, and ground wire. Connect them as shown in the figure below. For detailed information, see the interconnection diagram on page S-1.

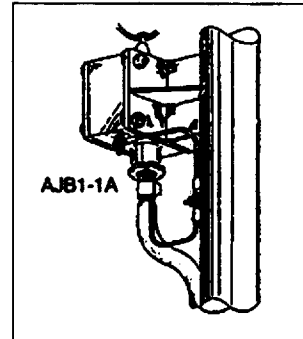


3.1 Power Cable

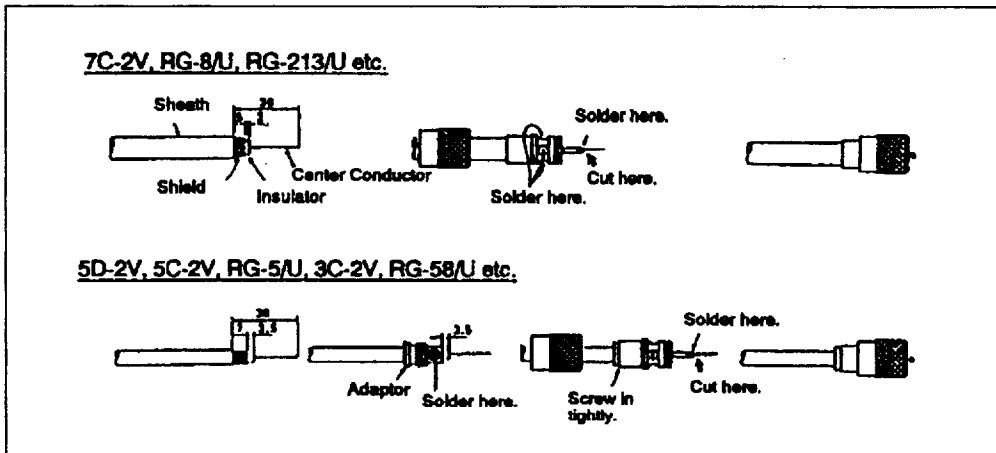
Connect the power cable (supplied) to the power source; red wire to positive [+] terminal and black wire to negative [-] terminal. If the cable is to be "anchored," be sure the fuses can be easily accessed. If extension of the cable is necessary, use thicker wire to prevent voltage drop. For the 12VDC set a 2 mm² cable is sufficient for a 10 meter extension. Make the connection by soldering - not by twist wrapping.

3.2 Antenna Cable

For wire antenna or 6 meter whip antenna, run a 50 ohm coaxial cable between the base of the antenna and the recorder unit. Fabricate the cable as shown below. The coaxial cable is usually connected to the antenna via an antenna junction box (FURUNO AJB1-1A, etc.)



Attach connector to cable as shown in the figure below. If connector does not fit cable, use an adaptor (supplied). Plug the connector in the coaxial connector on the rear of the recorder unit.



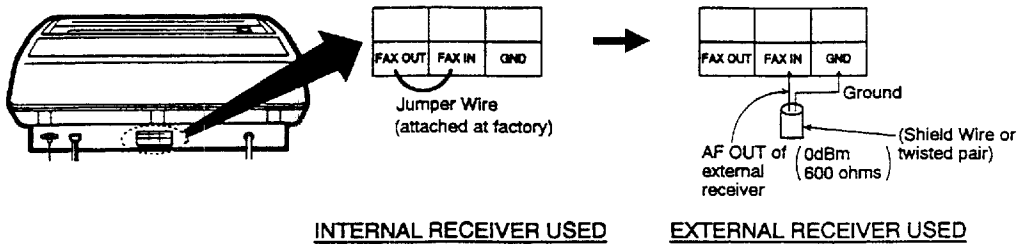
If the preamp unit is used, connect its coaxial cable to the female connector at the rear of the recorder unit. Note that extension cable kit (OP04-2: 10m/20/30/40/50m) is available, if the standard length antenna cable is not long enough.

3.3 Ground Wire

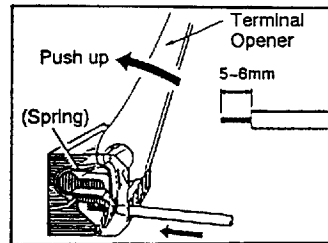
A good ground reduces noise and enables reception of weak signals. Run the ground wire (supplied) between the ground terminal on the recorder unit and the ship's grounding bus.

3.4 Connection of External Receiver

The FAX-207 contains a high performance receiver. However, an external receiver may be used. To connect an external receiver, first remove the jumper wire at the rear of the recorder unit. Run an appropriate cable between the terminal strip at the rear of the recorder unit and the external receiver as shown in the figure below.



The terminal strip is outfitted with spring-loaded terminals. Use the terminal opener (supplied) to open terminals.



4. Presetting the Recorder Unit

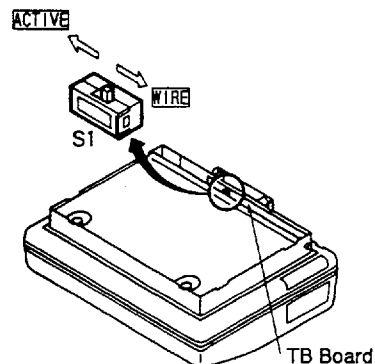
4.1 Supplying Power to the Preamp Unit

The preamp unit is powered by 9 VDC power from the recorder unit. To power the preamp unit, do the following. (No adjustment is necessary if the preamp unit is not used).

Procedure

1. Dismount the recorder unit from the mounting base. (See page 2.)
2. Turn the recorder unit upside down, and locate DIP switch S1 on the TB Board.
3. Set the switch in the “ACTIVE” position.

NOTE: The default setting of DIP switch S1 is “WIRE”; that is, no preamp unit is installed. Do not change the position of the switch if the preamp unit is not installed—short circuit may occur at connector, damaging the equipment.



Preamp	S1 Setting
Provided	ACTIVE
Not provided	WIRE (default setting)

5. Installation of the NAV RCV Board

General

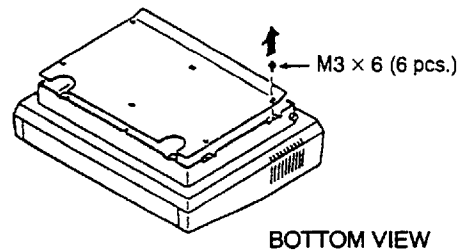
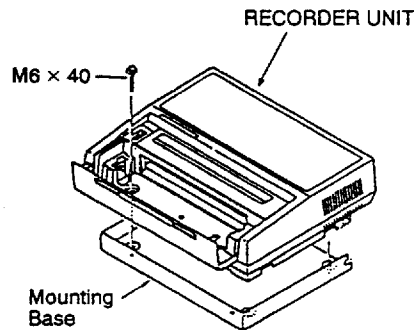
The NAV RCV Board is required for reception of NAVTEX messages. Install it in the recorder unit as shown in the procedure which follows.

Necessary Parts

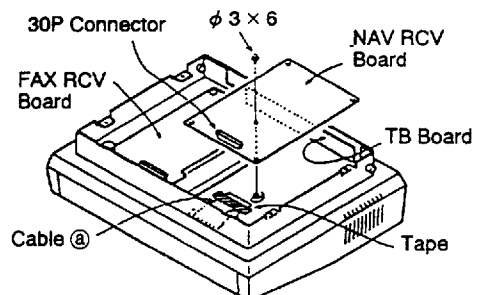
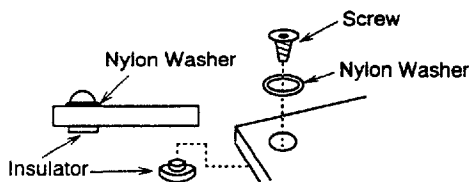
Part	Type	Code No.	Remarks
NAVTEX Kit	OP08-02	000-075-015	NAV RCV Board (08P3119) and five fixing screws (with nylon washer and insulator)

Procedure

1. Turn off the power. Disconnect the antenna and power cables.
2. Open the paper cover. Unfasten the screws fastening the recorder unit to the mounting base.
3. Turn the unit upside down. Unfasten six screws to dismount the base plate.
4. Remove the tape attached to cable "a" in the figure at right. Fasten the NAV RCV Board with five fixing screws and washers, orienting the board so the 30P connector is facing upward.

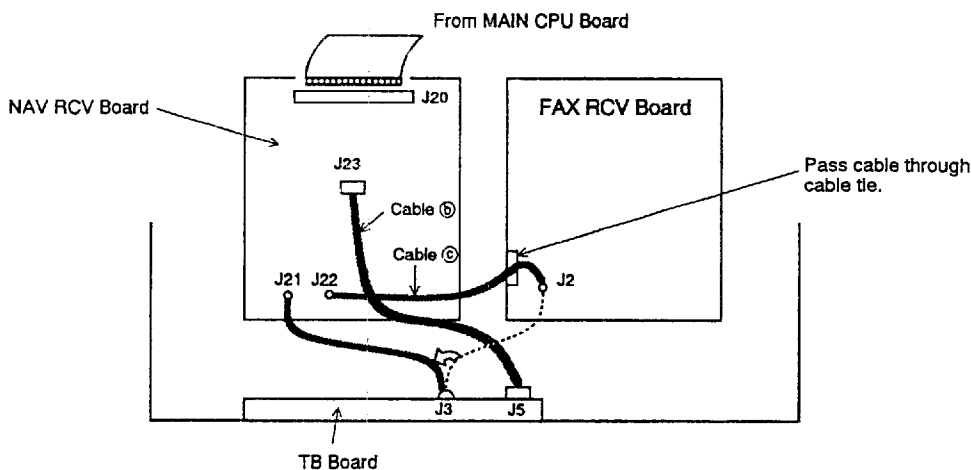


NOTE: When mounting the NAV RCV board, be sure to use a nylon washer and an insulator as shown below.



5. A cable runs between J2 on the FAX RCV Board and J3 on the TB Board. Disconnect the cable at J2 and connect it to J21 on the NAV RCV Board. Further, connect the flat cable from the MAIN CPU Board to J20 on the NAV RCV Board.

6. As shown in the figure below connect cables “b” and “c.”



RECORDER UNIT, Bottom View

7. Reassemble the unit. Conduct the self-test to check for proper operation.

Self-test

While pressing and holding down the [MODE] key, turn on the power. For how to interpret the results of the self-test, see Chapter 9 in the operator’s manual.

```

----- NAVTEX Self Test -----
ROM Test OK
RAM Test OK
ABCDEFGHIJKLMNOPQRSTUVWXYZ 0123456789
NAVTEX Signal Send and Receive (Local Loop Test)
ZCZC TE01
ABCDEFGHIJKLMNOPQRSTUVWXYZ 0123456789
NNNN
----- End NAVTEX Test -----

```

NAVTEX self-test printout example

6. Installation of I/F (InterFace) Board

General

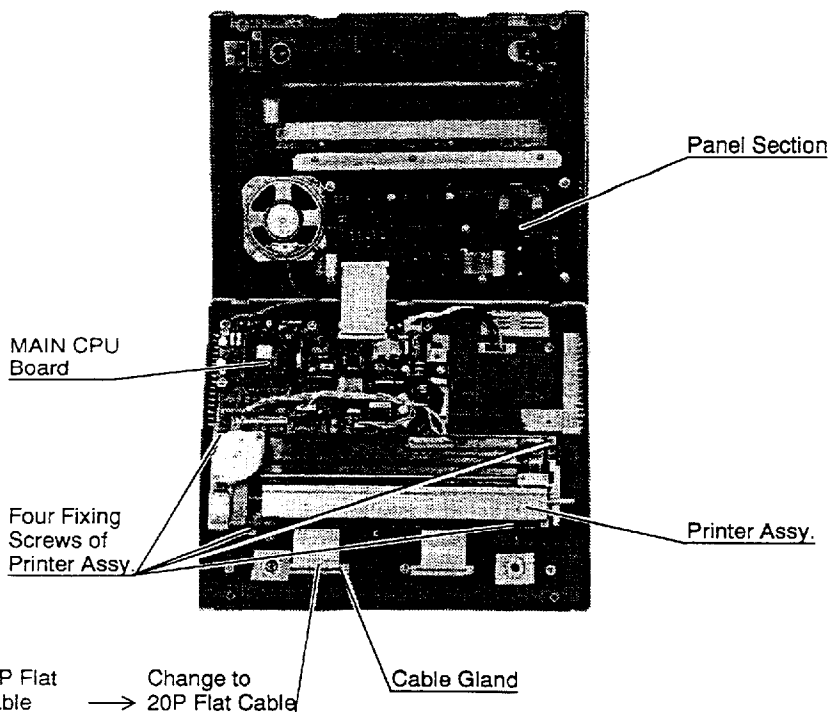
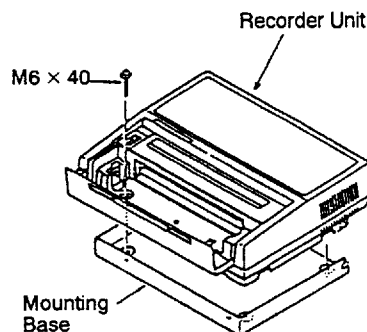
The INTERFACE Board enables use of the FAX-207 as a personal computer printer. Further it enables presetting of frequencies through a personal computer. This board cannot be installed together with the NAV RCV Board.

Necessary parts

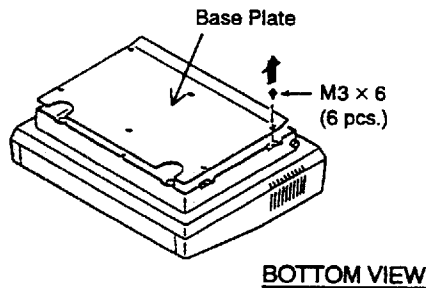
Part	Type	Remarks
Print I/F Assy.	OP08-10	I/F Board, computer cable (connector at both ends), 20P cable, five (5) fixing screws

Procedure

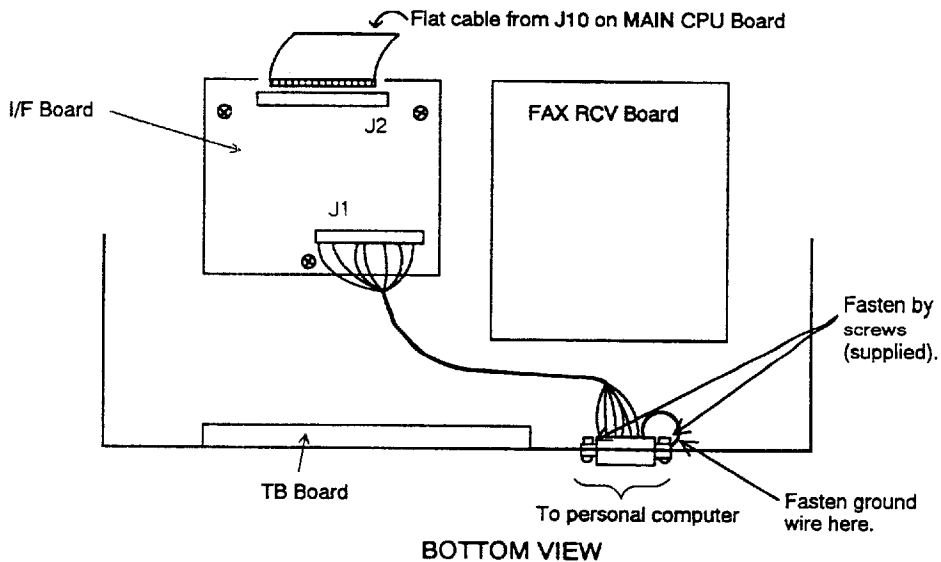
1. Turn off the FAX-207. Disconnect the power and antenna cables.
2. Detach the paper cover and remove the paper.
3. Unfasten two tapping screws inside the paper cover to dismount the recorder unit from the mounting base.
4. Unfasten three screws (M4 x 12) to open the panel section.



5. Unfasten the four screws fastening the printer assembly.
6. Remove the 30P flat cable connected at J8 on the MAIN CPU Board. This cable may be discarded. Connect the 20P cable (supplied) to J10 on the MAIN CPU Board. (As shown in the above figure, pass the 20P cable through the other cable gland.)
7. Mount the printer assembly and close the panel section.
8. Turn the recorder unit upside down. Unfasten six screws to dismount the base plate.



9. Fasten three screws (supplied) to the I/F Board.



10. Connect the flat cable from J10 on the MAIN CPU Board to J2 on the I/F Board
11. Connect the computer cable (supplied) between J1 on the I/F Board and the "PARALLEL IN" terminal at the back of the recorder unit.
12. Reassemble and mount the recorder unit.

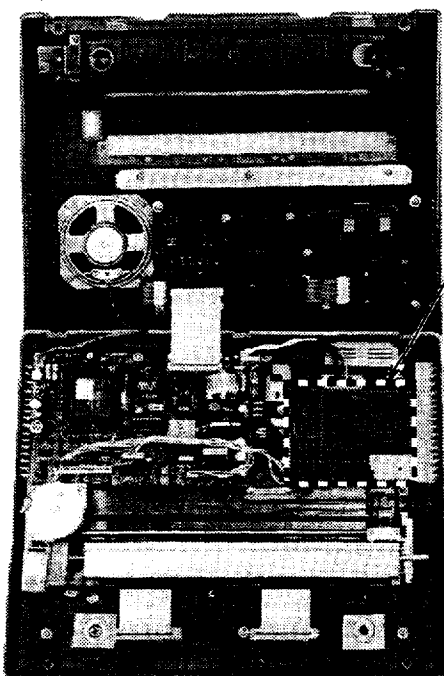
7. Changing Input Voltage

General

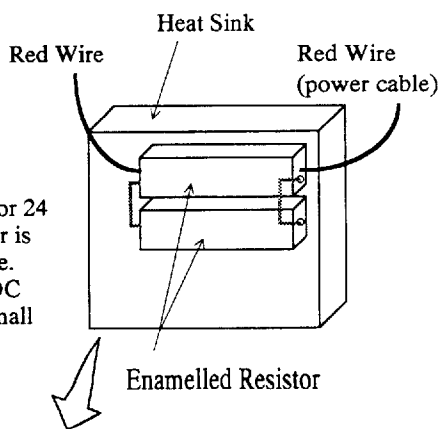
This unit can be powered by 12 VDC or 24 VDC power. To change input power from 24 VDC to 12 VDC, follow the procedure shown below. Note that the power input of initial production units cannot be changed from 12 VDC to 24 VDC in the field. Later productions will allow this.

Procedure

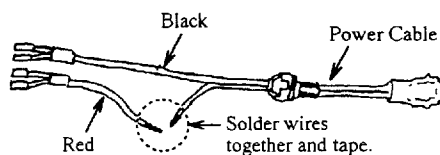
1. Turn off the power to the unit. Disconnect the power cable. Open the panel section as shown below. For further details on how to open the panel, see chapter 6.
2. Remove the enamelled resistors on top of the heat sink by de-soldering the red wires at both ends of the resistors.
3. Solder red wires. Cover red wires with vinyl tubing or tape to prevent short circuit.
4. Close the panel.



Heat sink for 24 VDC power is located here. (For 12 VDC power, a small heat sink is mounted.)



NOTE: The 12 VDC set also will have such a heat sink in the nearly future, but no resistors. Therefore, power input can be changed from 12 VDC to 24 VDC in the field.



8. Equipment Lists

Complete Set

No.	Name	Type	Mass (kg)	Qty	Remarks
1	Recorder Unit	FAX-207	7.0	1	
2	Installation Materials	CP08-00600		1 set	See Installation Materials.
3	Spare Parts	SP08-01500		1 set	See Spare Parts.

Installation Materials

No.	Name	Type	Code No.	Qty	Remarks
1	Coaxial Connector	FM-MP-7	000-108-859	1	For cable 7C2V, etc.
2	Adaptor	MP-M3A	000-108-860	1	For cable 3C2V, etc.
3	Adaptor	MP-M5A	000-108-861	1	For cable 5C2V, etc.
4	Tapping Screw	5 x 20 SUS304	000-802-081	4	For mounting recorder
5	Ground Wire	08S0087-0	000-108-138	1	For ground, 2m
6	Power Cable	P08-7-2 (2P)	007-003-290	1	With fuse, 5m

Spare Parts

No.	Name	Type	Code No.	Qty	Remarks
1	Fuse	FGBO 7A 125 VAC	000-549-013	4	
2	Recording Paper	TP-0820B	000-946-000	1	
3	Printing Head Cleaner	OWP-FD-6A1-01	000-115-199	1	
4	Terminal Opener	238-332	000-108-139	1	

Optional Equipment

No.	Name	Type	Code No.	Remarks
1	LF/HF Preamp	FAX-5	000-075-016	15m, w/cable
2	Whip Antenna	04S4176-0	000-112-845	2.6m
3	NAVTEX Kit	OP08-2	000-075-015	For NAVTEX reception
4	Extension Coax Cable Kit (w/connector)	OP04-2 10m	000-041-174	10m
		OP04-2 20m	000-041-175	20m
		OP04-2 30m	000-041-176	30m
		OP04-2 40m	000-041-177	40m
		OP04-2 50m	000-041-178	50m
5	Printer I/F	OP08-10		For connection of personal computer.
6	Clamp	SS7200N	000-570-239	Preamp Mounting Clamp (FAX-5/NX-5)

Appendix A

Improving Receiver Sensitivity

Reason

When the preamp unit is used and the coaxial cable connected between it and the recorder unit is extended, decreased sensitivity may result. This is because the outer conductor of the coaxial cable picks up noise, because of long cable.

Remedy

Connect a vinyl ground wire between the shield of the coaxial cable at the base of the preamp unit and the mast. Refer to Figures on next page.

Note that reduced sensitivity can also be caused if the coaxial cable is too close to a power cable or a control cable.

Modification Necessary/Unnecessary

Necessary

- If most of the standard supply coaxial cable is outside of the mast.
- Extension cable is used.
- Where RFI/noise is a problem.

Unnecessary

- Coaxial cable runs inside a steel mast or conduit.
- Where the original supply coaxial cable has been replaced (or can be replaced) with one having armor.
- For FRP ships and non-metallic masts where good ground cannot be made at the base of the preamp.
- If the coaxial cable can be shortened.

Modification

If the factory-added ground wire is not long enough, attach additional ground wire between ground terminal and mast.

