FURUNO®

INSTALLATION MANUAL
VHF RADIOTELEPHONE FM-8500

This manual provides the information necessary for the installation of the FURUNO FM-8500 VHF Radiotelephone. For best performance please follow the recommended procedures.

Table of Contents **Page**

FURUNO ELECTRIC CO., LTD.

9-52, Ashihara-cho,
Nishinomiya, Japan

Telephone: 0798-65-2111
Telefax: 0798-65-4200

•Your Local Agent/Dealer

FIRST EDITION : MAR. 2000
M : JUL. 4, 2001

PUB. No. IME-56030-M
FM-8500

(TENI)

00080763300

SAFETY INSTRUCTIONS

"NOTICE", "**CAUTION**" and "**WARNING**" 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.

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.

NOTICE

This notice indicates an unsafe practice which, if not avoided, could result in property damage or equipment malfunction.

⚠ WARNING

Hazardous voltage.
Can shock, burn or cause serious injury.

Do not work inside the equipment unless totally familiar with electrical circuits.

Turn off the power at the mains switchboard before beginning the installation. Post a warning sign near the switchboard to indicate that power should not be applied while the equipment is being installed.

Electrical shock, serious injury or fire can result if the power is not turned off or is applied while the equipment is being installed.

⚠ CAUTION

Ground the equipment to prevent electrical shock and mutual interference.

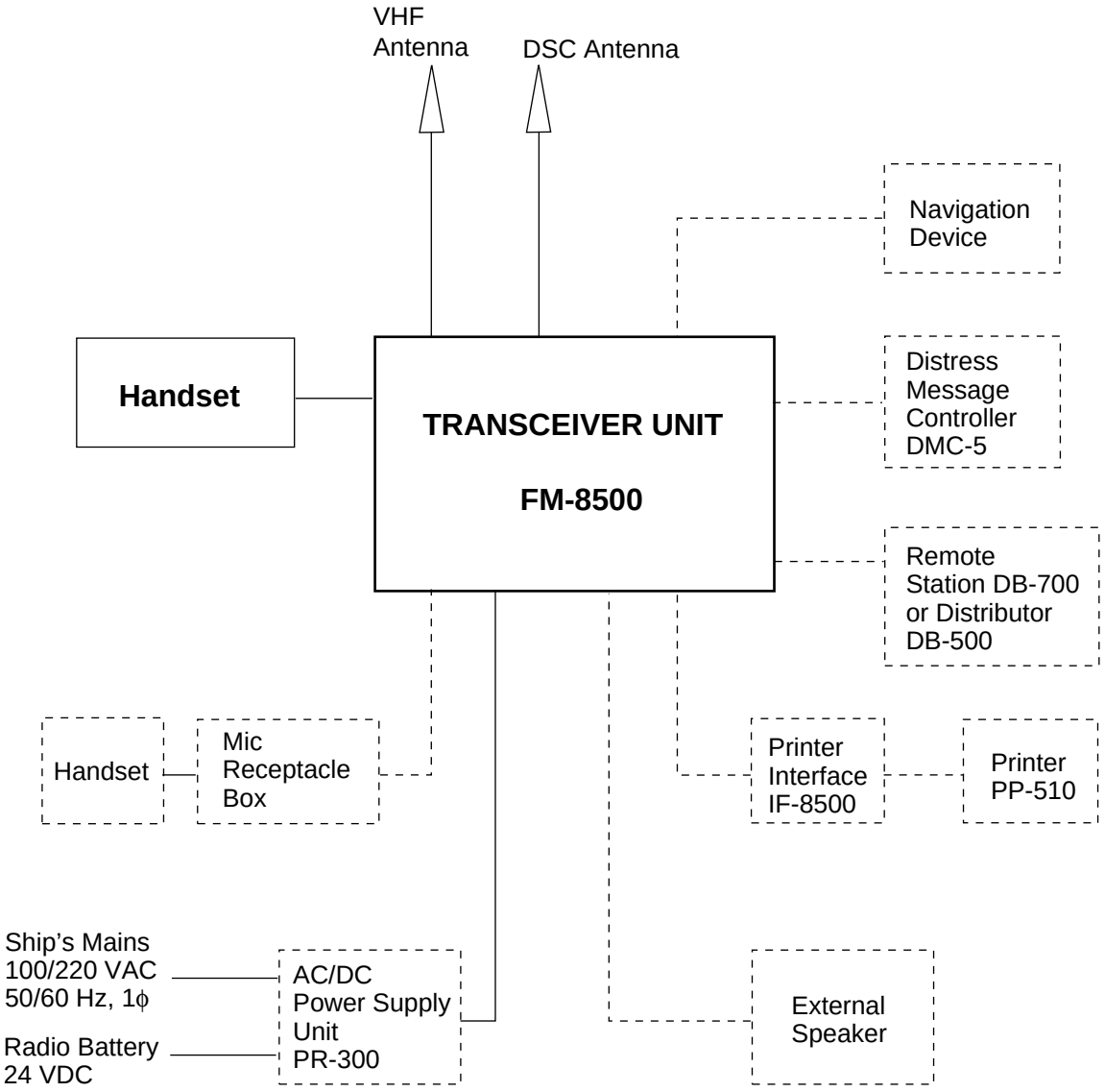
Confirm that the power supply voltage is compatible with the voltage rating of the equipment.

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.

Observe the compass safe distance to prevent deviation of a magnetic compass.

	Standard compass	Steering compass
Transceiver Unit	1.6 m	1.2 m
Power Supply (option)	0.9 m	0.7 m

1. System Configuration



Standard Supply

	Name	Type	Qty	Mass (kg)	Remarks/Code No.
1	Transceiver Unit	FM-8500-USA	1	6	For USA
		FM-8500-S			Except USA
2	Accessories	FP05-04410	1 Set		005-389-140
3	Installation Materials	CP05-06800	1 Set		005-386-000
4	Document	OME-56030-*	1		000-807-629
		OSE-56030-*	1		000-807-631
		IME-56030-*	1		000-807-633
		E5-96001-0*	1		000-807-789
		E5-92001-0*	1		000-805-799

*: Version number

Optional Equipment

	Name	Type	Code No.	Remarks
1	AC-DC Power Supply	PR-300	000-130-431	
2	VHF Antenna	RA-106	000-134-763	
3	Whip Antenna	150M-W2VN	000-113-498	
4	Antenna Fixing Plate	4-310071	000-572-184	
5	Cable Assembly	05S9104	000-135-011	RG-58/U
6	Coaxial Cable	5D-2V *10M*	000-111-063	
7	Coaxial Cable	5D-2V *20M*	000-111-064	
8	Connector	M-P-5	000-503-678	
9	Dynamic Mic Set	OP05-57	000-045-775	HS-6000FZ5(Handset)
10	Carbon Mic Set	OP05-58	000-045-776	HS-6000FZ6(Handset)
11	Flush Mount Kit	OP05-73	005-386-010	
12	Remote Station	RB-700		
13	Distributor	DB-500		
14	Twisted Cable	CO-SPEVV-SB-C 0.2x2P	000-111-680	5 m for DMC/NMEA/IF-8500
		CO-SPEVV-SB-C 0.2x2P	000-120-792	10 m for DMC/NMEA/IF-8500
		CO-SPEVV-SB-C 0.2x2P	000-120-793	15 m for DMC/NMEA/IF-8500
		CO-SPEVV-SB-C 0.2x2P	000-120-794	20 m for DMC/NMEA/IF-8500
		CO-SPEVV-SB-C 0.2x2P	000-120-214	30 m for DMC/NMEA/IF-8500
15	Printer	PP-510		
16	Distress Message Controler	DMC-5		
17	Printer Interface	IF-8500		
18	External Loudspeaker	SEM-21Q	000-144-917	
19	Connector	SRCN6A21-16P	000-508-664	

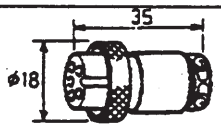
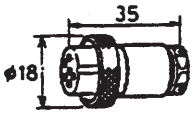
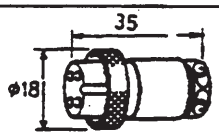
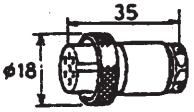
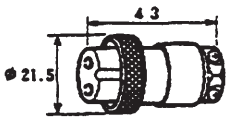
FURUNO

CODE NO.	
TYPE	

工事材料表
INSTALLATION MATERIALS

FM-8500

国際VHF無線電話装置
MARINE VHF RADIOTELEPHONE

番号 No.	名称 NAME	略図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	コネクタ CONNECTOR		FM-14-5P CODE NO. 000-111-537	1	NMEA用 FOR NMEA
2	コネクタ CONNECTOR		FM-14-6P CODE NO. 000-116-185	1	DMC用 FOR DMC
3	コネクタ CONNECTOR		FM14-4P CODE NO. 000-108-368	1	プリンタ用 FOR PRINTER
4	コネクタ CONNECTOR		FM14-7P CODE NO. 000-113-345	1	ハンドセット用 FOR HANDSET
5	コネクタ CONNECTOR		HS16P-2 CODE NO. 000-503-281	1	電源用 FOR POWER
			CODE NO.		
			CODE NO.		
			CODE NO.		
			CODE NO.		
			CODE NO.		

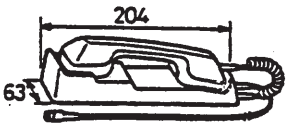
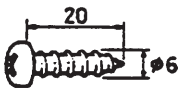
（略図の寸法は、参考値です。）

図番 (1/1)
DWG. NO. C5603-M01-A

FURUNO

CODE NO.	005-386-440	
TYPE	FP05-04410	

付属品表 ACCESSORIES	FM-8500	国際VHF無線電話装置 MARINE VHF RADIOTELEPHONE	

番号 No.	名称 NAME	略図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	ﾊﾝﾄﾞｾｯﾄ/ﾌﾞﾗｹｯﾄ HANDSET/BRACKET		HSC701K-BX21 CODE NO. 000-138-000	1	
2	+ﾅﾍﾞﾀｯﾋﾟﾝｸﾞUIﾈｼﾞ +TAPPING SCREW		6X20 1ｼｭ SUS304 CODE NO. 000-800-414	6	
3	ﾐｶﾞｷ平座金 FLAT WASHER		M6 SUS304 CODE NO. 000-864-129	6	
			CODE NO.		
			CODE NO.		
			CODE NO.		
			CODE NO.		
			CODE NO.		
			CODE NO.		
			CODE NO.		

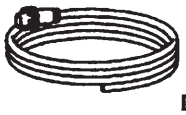
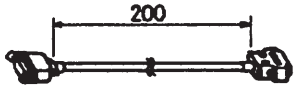
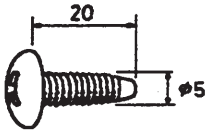
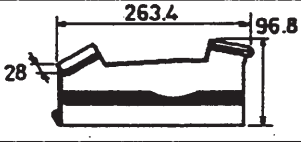
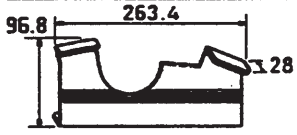
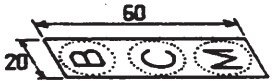
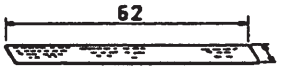
(略図の寸法は、参考値です。)

図番 (1/1)
DWG. NO. C5603-F01-C

FURUNO

CODE NO.	000-043-257	16AC-X-9404-2
TYPE	CP16-00500	

工事材料表 INSTALLATION MATERIALS	PP-510 プリンター PRINTER	

番号 No.	名称 NAME	略図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	電源ケーブル組品 POWER CABLE ASSY.	 L=5m	16S0084 (VCTF-0.75X3C *5M*) CODE NO. 000-132-249	1	
2	変換ケーブル COUPLING CABLE	 L=0.2m	16S0083 UL2464 IFVV-SB 10PXAWG28 *0.2M* CODE NO. 000-132-614	1	36P-25P ノートパソコン用 FOR NOTEBOOK PC
3	ケーブル組品 CABLE ASSY.	 L=5m	10S1197 UL2464IFVV-SB 10XAWG28 *5M* CODE NO. 000-566-966	1	36P-36P (57FE-336-205W)
4	+トラスタッピングネジ TAPPING SCREW		5X20 1シュ SUS304 CODE NO. 000-802-081	4	
5	プリンタ取付板(1) 組品 PRINTER FIXTURE		CP16-00501 SPCC 2.5GY5/1.5 #5-N CODE NO. 004-434-400	1	
6	プリンタ取付板(2) 組品 PRINTER FIXTURE		CP16-00502 SPCC 2.5GY5/1.5 #5-N CODE NO. 004-434-410	1	
7	ハリマーク (INMAR) LABEL		16-007-6919-0 CODE NO. 100-217-010	1	"B"マークを貼る STICK "B" LABEL
8	ハリマーク LABEL		16-007-6927-0 CODE NO. 100-222-480	1	COMPASS SAFE DISTANCE
			CODE NO.		
			CODE NO.		

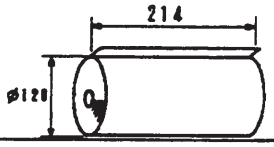
図番 DWG. NO. C5589-M01-D	(1/1)

FURUNO ELECTRIC CO., LTD

FURUNO

CODE NO.	000-043-258	16AC-X-9501-1
TYPE	FP16-00100	

付属品表 ACCESSORIES	PP-510 プリンター PRINTER	

番号 No.	名称 NAME	略図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	プリンタ用紙 RECORDING PAPER		A2 1PLY W CODE NO. 000-134-903	1	
			CODE NO.		
			CODE NO.		
			CODE NO.		
			CODE NO.		
			CODE NO.		
			CODE NO.		
			CODE NO.		
			CODE NO.		
			CODE NO.		

図番 DWG. NO. C5589-F01-C (1/1)

Transceiver Unit

General mounting considerations

Determine the mounting location for the transceiver unit considering operator convenience, proximity to the power source and the ground location. Keep these and the following points in mind when selecting a mounting location.

- Locate the unit in a place free of water spray and water splash.
- Keep the unit out of direct sunlight because of heat that can build up inside the unit.
- Leave a little slack in cables to allow a service technician to move the radio from its usual location with the cables connected. This lets him make tuning and other adjustments on a “live” set.
- Do not install the unit where flammable gases are stored.
- Select a well ventilated area.
- Ensure the mounting location is strong enough to support the weight of the unit (6 kg) under the condition of continued vibration normally encountered aboard the vessel. If necessary, reinforce the mounting area with a doubling plate or lining block.
- Leave sufficient space at the sides and rear of the unit for maintenance and service purposes and to provide for circulation of cooling air. The minimum service clearance appears in Figure 2.
- **For flush mounting**, select a location where the LCD can be easily viewed.
- The transceiver unit will affect a magnetic compass if placed too near the compass. Observe the compass safe distance to prevent deviation of a magnetic compass;

  Standard compass: 1.6 m

  Steering compass: 1.2 m

Note:
Take great care not to press the DISTRESS switch during the installation. If you accidentally press the switch, immediately turn off the equipment and contact appropriate authority by telephone.

Overview of mounting methods

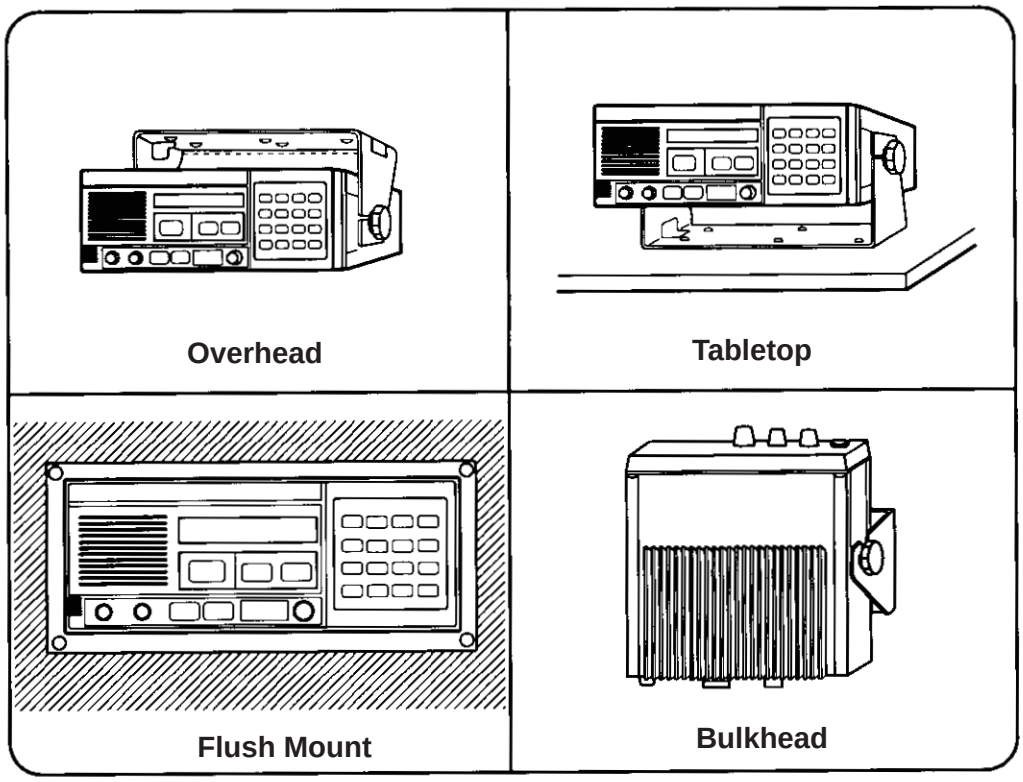
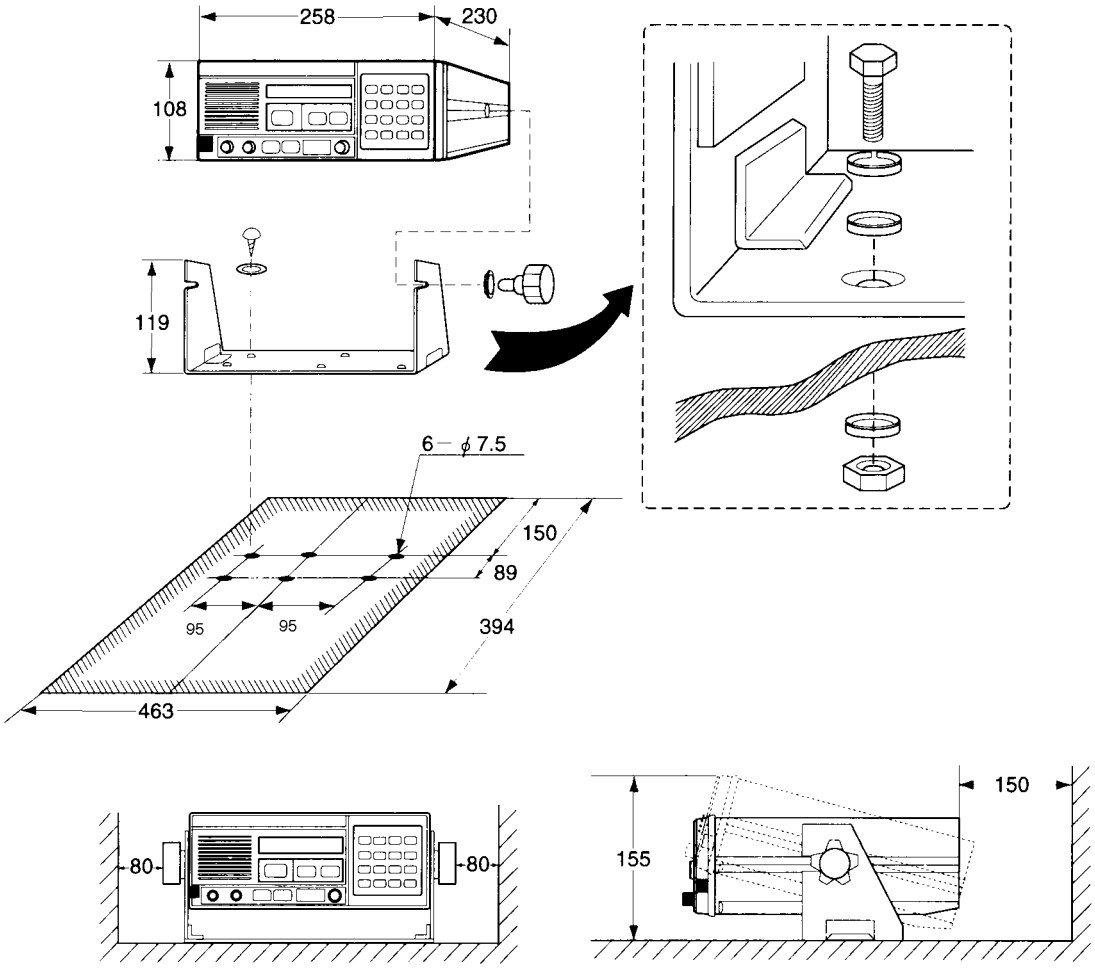


Figure 1 Overview of mounting methods

Mounting procedure for tabletop, overhead and bulkhead mounting

1. Using the hanger as a template, mark fixing holes in the mounting location.
2. Fix the hanger to the mounting location with wood screws and washers (supplied). (For added support, use nuts, bolts and washers instead of wood screws.)
3. Screw the knob bolts with washers into the transceiver unit.
4. Set the transceiver unit to the hanger and tighten knob bolts.



- All dimensions in millimeters.
- For added support, fasten hanger with nuts, bolts and washers (local supply) instead of wood screws.
- Leave sufficient space at the sides and rear of the unit to provide easy access for maintenance and service. The minimum service clearance is shown in the figure.

Figure 2 Mounting dimensions for tabletop, overhead and bulkhead mounting

The mounting procedure for flush mount (option)

Requires flush mount kit OP05-73 (optional supply). Prepare a cut-out in the mounting location whose dimensions are as shown in the Figure 3.

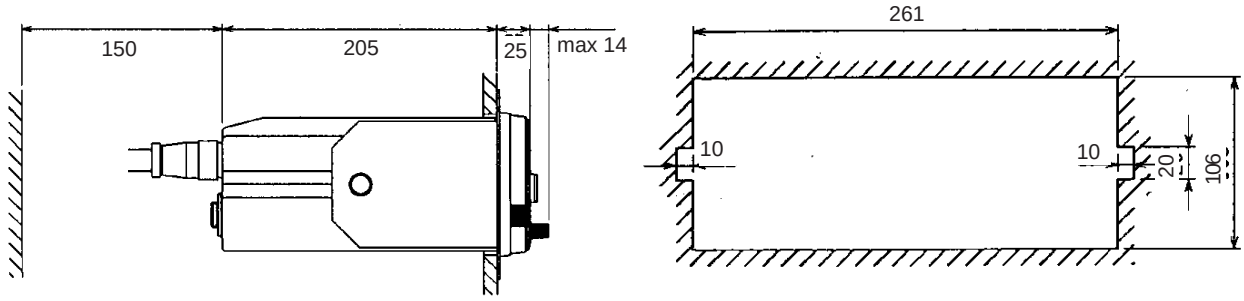


Figure 3 Mounting dimensions for flush mount

VHF Antenna

The antenna requirements

Any good quality antenna meeting the requirements shown below may be used. A high-gain antenna is preferable.

- Frequency range: 155 to 164 MHz
- Impedance: 50 ohms
- Polarization: Vertical
- Handling power: 30 W/ min
- Quality: Able to withstand marine environment

Mounting considerations

- The antenna should be well separated from nearby antennas, masts, and other interfering objects.
- The higher the antenna is mounted above the horizon, the further the communications range.

Mounting procedure

The basic mounting procedure for antennas supplied by FURUNO is as follows, however consult appropriate outline drawing for details.

1. Fasten the antenna bracket to the stanchion.
2. Set the antenna to the antenna bracket and tighten bolts.
3. Screw the coaxial cable plug into the antenna.

DSC Antenna

The antenna should be well separated from nearby antennas, masts, and other interfering objects.

The mounting procedure is the same as that for the VHF antenna, however consult appropriate outline drawing for details.

Handset Hanger

The handset hanger can be mounted at the front or rear of the transceiver unit. To mount the hanger at the rear of the unit, a connector and connector assembly are required (option). The mounting location should provide easy access to front panel controls while operating the handset. Also, the length of the standard handset cable is 50 cm, so locate the handset hanger within 50 cm of the unit. (Longer cables are available optionally.)

Power Supply (option)

For Convention vessels, both AC and DC power must be fed to the FM-8500, via an AC/DC power supply. When AC input fails, DC power is supplied. FURUNO can supply an AC/DC power supply unit, the PR-300.

Mounting considerations

When selecting a mounting location, keep in mind the following points.

- Select a location which provides adequate ventilation.
- The location must be clean and dry.
- The mounting location must be able to support the weight of the unit (14.5 kg) under the continued conditions of vibration normally encountered aboard the vessel. If necessary, reinforce the mounting location.
- The PR-300 will affect a magnetic compass if it is placed to near the compass. Observe the compass safe distance to prevent deviation of a magnetic compass;

  Standard compass: 0.9 m

  Steering compass: 0.7 m

Mounting

Refer to outline drawing.

Printer Interface (option)

Printer Interface IF-8500 is connected between the printer PP-510 and the transceiver unit. See outline drawing on page D-11.

Printer (option)

Refer to the printer outline drawing on page D-12 for mounting dimensions.

1. Select a flat surface.
2. Fix the mounting base to the mounting location with four screws (supplied).
3. Lay the printer on the top of the mounting base and fasten it with the mounting fixtures (two at each side and one at rear).

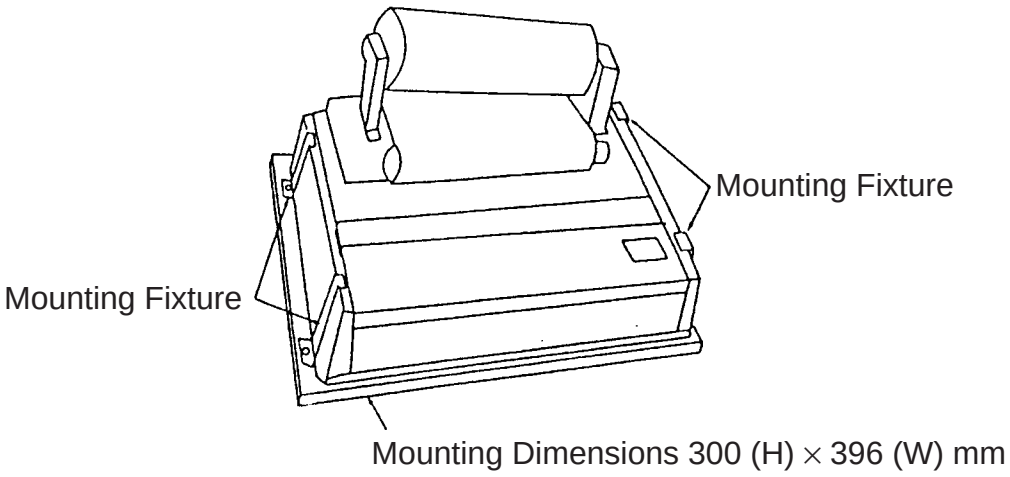


Figure 4 Mounting of Printer PP-510

External Loudspeaker (option)

The external loudspeaker can be installed on a tabletop, the overhead or a bulkhead. Fasten the loudspeaker to the mounting location with tapping screw, or nuts, bolts and washers. For mounting dimensions, see the outline drawing on page D-8.

Overview

Figure 5 shows where to connect various equipment at the rear of the transceiver unit.

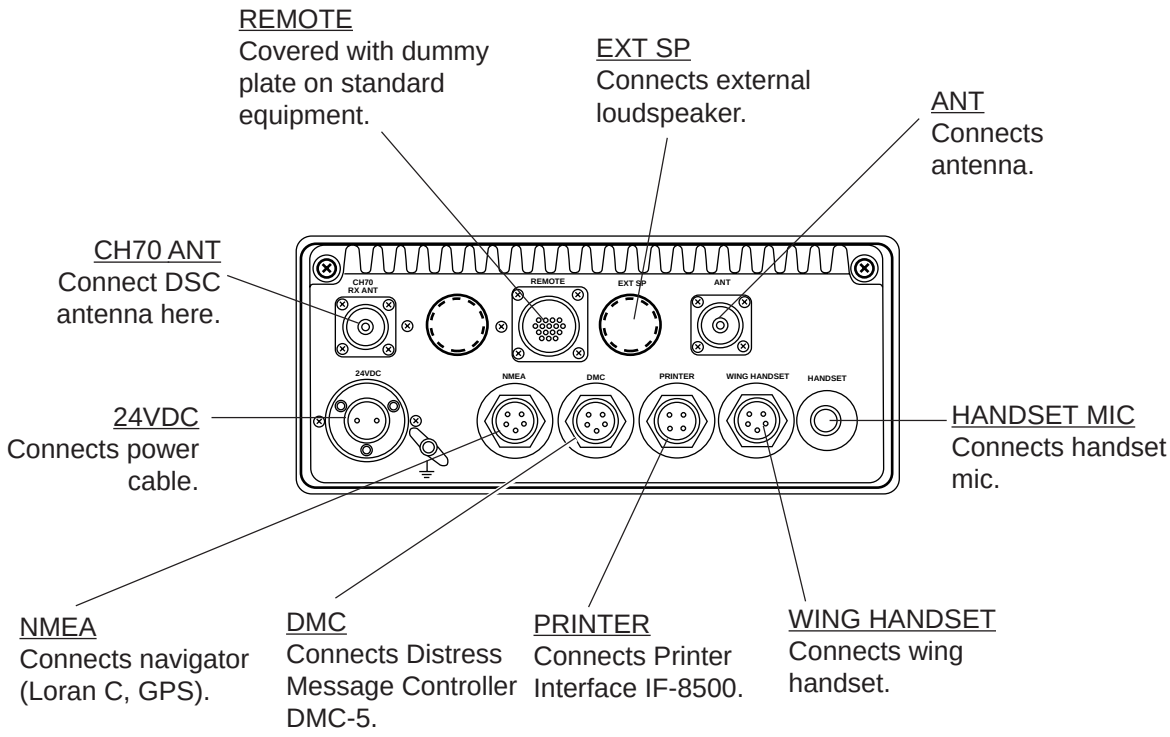


Figure 5 FM-8500, rear view

Connection of Power Supply

Convention vessels, 100/220 VAC ship's mains

Convention vessels must supply both AC and DC power to the FM-8500, via an AC/DC power supply unit. Both AC and DC are supplied by the AC/DC power supply unit, and when AC input fails DC power is activated.

Connect the radio battery to the DC IN terminal on the PR-300. Connect the AC ship's mains to the AC IN terminal on the PR-300.

Radio battery (24 VDC)

Attach the connector supplied to the power cable and plug it into the 24VDC connector at the rear of the transceiver unit. Connect the wire ends to the radio battery line.

Connection of VHF Antenna

The VHF antenna is connected to the transceiver unit with a 50 ohm coaxial cable, type 5D-2V. Be sure to leave some slack in the cable for future service and maintenance.

Lay the coaxial cable and attach an M-type plug to the cable (if necessary) as follows.

1. Remove the sheath by 20 mm.
2. Bare 13 mm of the center conductor. Trim braided shield by 5 mm and tin.
3. Slide coupling ring onto cable.
4. Screw the plug assembly on the cable.
5. Solder plug assembly to braided shield through solder holes. Solder contact sleeve to conductor.
6. Screw coupling ring into plug assembly.

Screw the plug into the ANT connector at the rear of the transceiver unit.

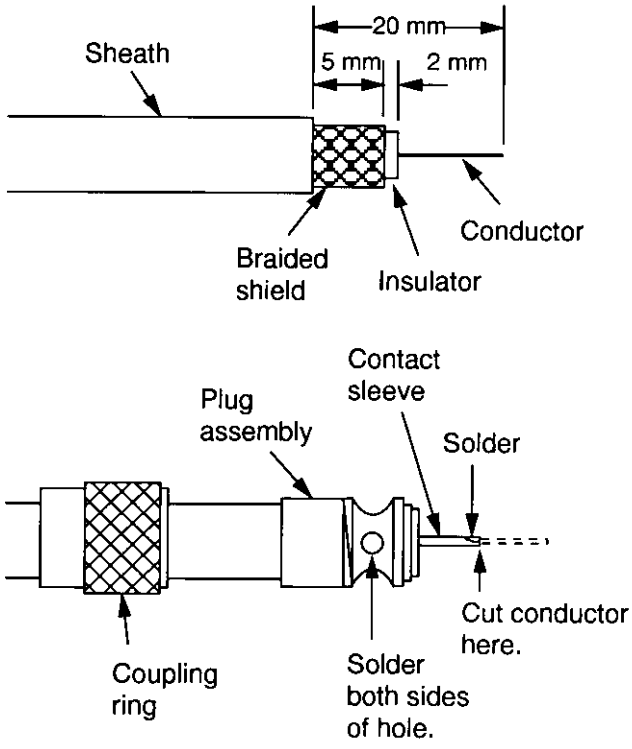


Figure 6 How to attach the M-type plug to the coaxial cable

Connection of DSC Antenna

The DSC antenna is connected to the transceiver unit with a 50 ohm coaxial cable, type 5D-2V. Attach an M-type plug to the cable (if necessary) as shown in Figure 6. Screw the plug into the CH70 ANT connector at the rear of the transceiver unit.

Connection of Handset

Connect the handset cable to the HANDSET connector on the rear panel.

Grounding the Transceiver Unit

Fasten a ground wire (local supply) between the GND terminal at the rear of the transceiver unit and ship's hull (or ground bus).

⚠ CAUTION

Ground the equipment to prevent electrical shock and mutual interference.

Connection of AC/DC Power Supply Unit PR-300 (option)

Changing tap connections

Change the tap connections of the transformer according to input voltage.

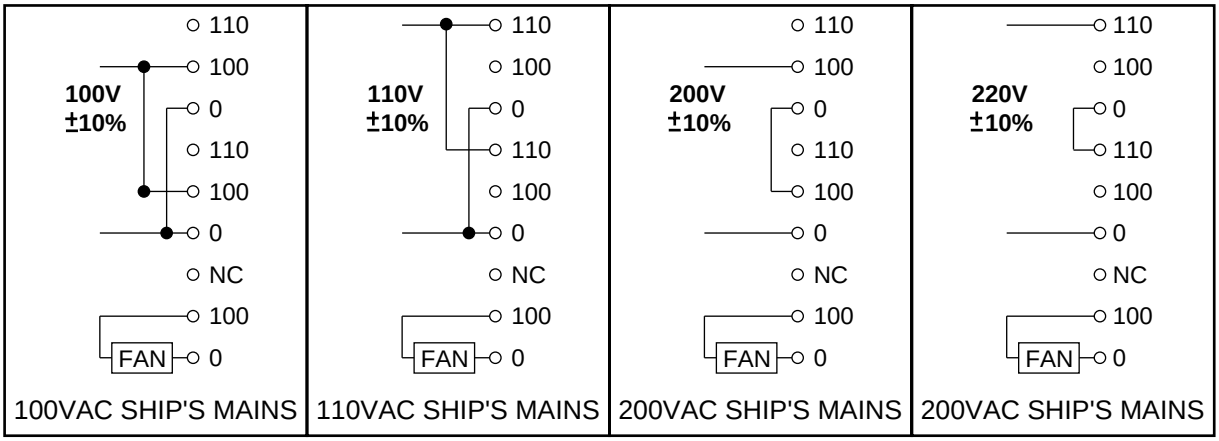


Figure 7 Tap connections in the PR-300

Changing the power fuse

Change the power fuse according to input voltage as follows.

Input	Fuse
100/110 VAC	10A
200/220 VAC	5A

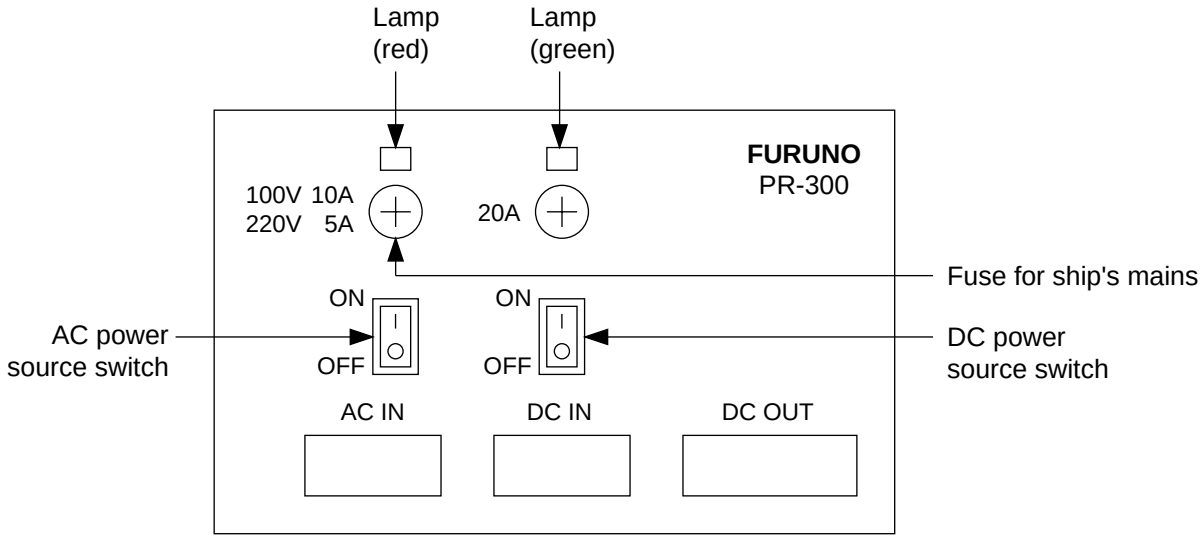


Figure 8 AC-DC power supply unit PR-300, rear view

Ground

Connect a ground wire between ship’s superstructure and a fixing screw on the PR-300.

⚠ CAUTION

Ground the equipment to prevent electrical shock and mutual interference.

Connection of External Equipment (options)

Equipment available

The following equipment can be connected to the FM-8500:

- Distress Message Controller DMC-5
- Remote Station RB-700 (or Distributor DB-500)
- Navigator : the FM-8500 can receive the following data sentences in NMEA format (Ver. 1.5).

Talker	**Sentence**
GP, LC, DE, TR, LA, OM	GLL
GP, TR	RMC
LC	RMA

GLL: Latitude and longitude

RMC: Generic navigation information

RMA: Loran C data (L/L, LOPs, etc.)

Note:

For RMC, data (month an day) are entered in the log and for GLL, time (hour/min/sec) is entered in the log.

- MIC Receptacle Box and Wing Handset
- External Loudspeaker
- Printer Interface IF-8500

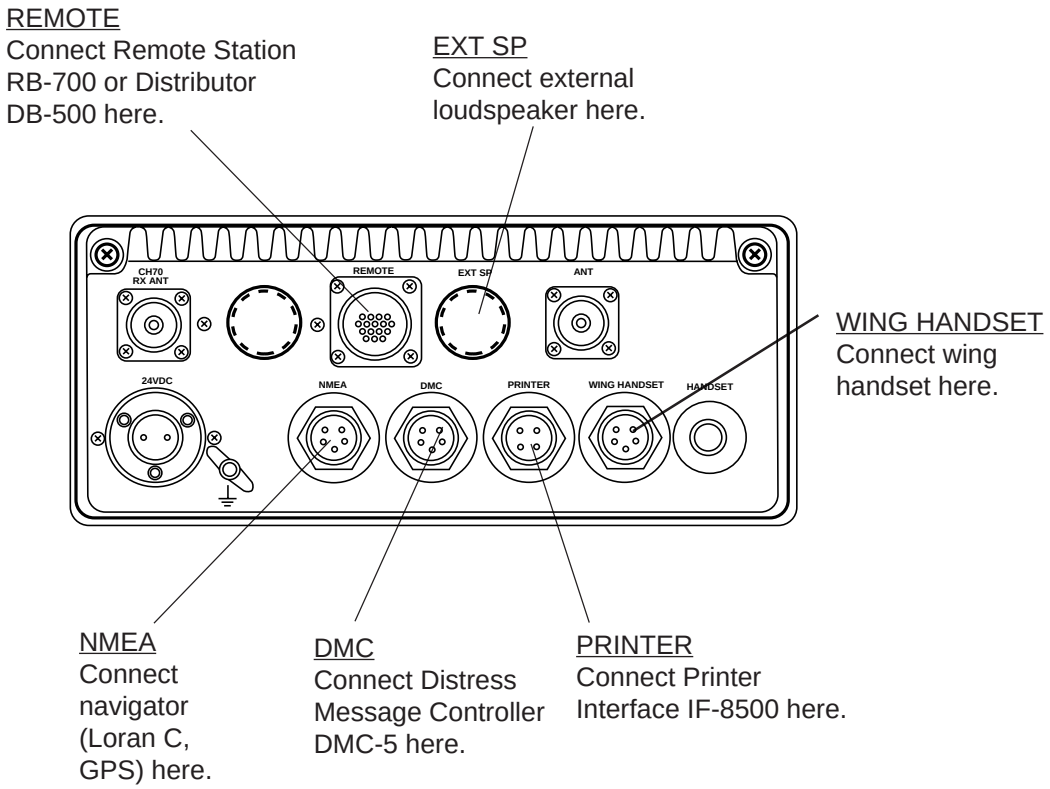


Figure 9 FM-8500, rear view, showing location of external equipment connectors

Cables required

Equipment	Cable required
Remote Station RB-700 or Distributor DB-500	CO-SPEVV-SB-C 0.2x10P(10P cable w/armor, no connectors) or 05S0721(w/connectors)
Distress Message Controller DMC-5	CO-SPEVV-SB-C 0.2x2P
Navigator	CO-SPEVV-SB-C 0.2x2P

Wing handset

Two types of wing handsets are available: HS-6000FZ6 (carbon MIC) and HS-6000FZ5 (dynamic MIC). Change jumper connections on the CONTROLLER Board as shown in Figure 9 according to handset connected.

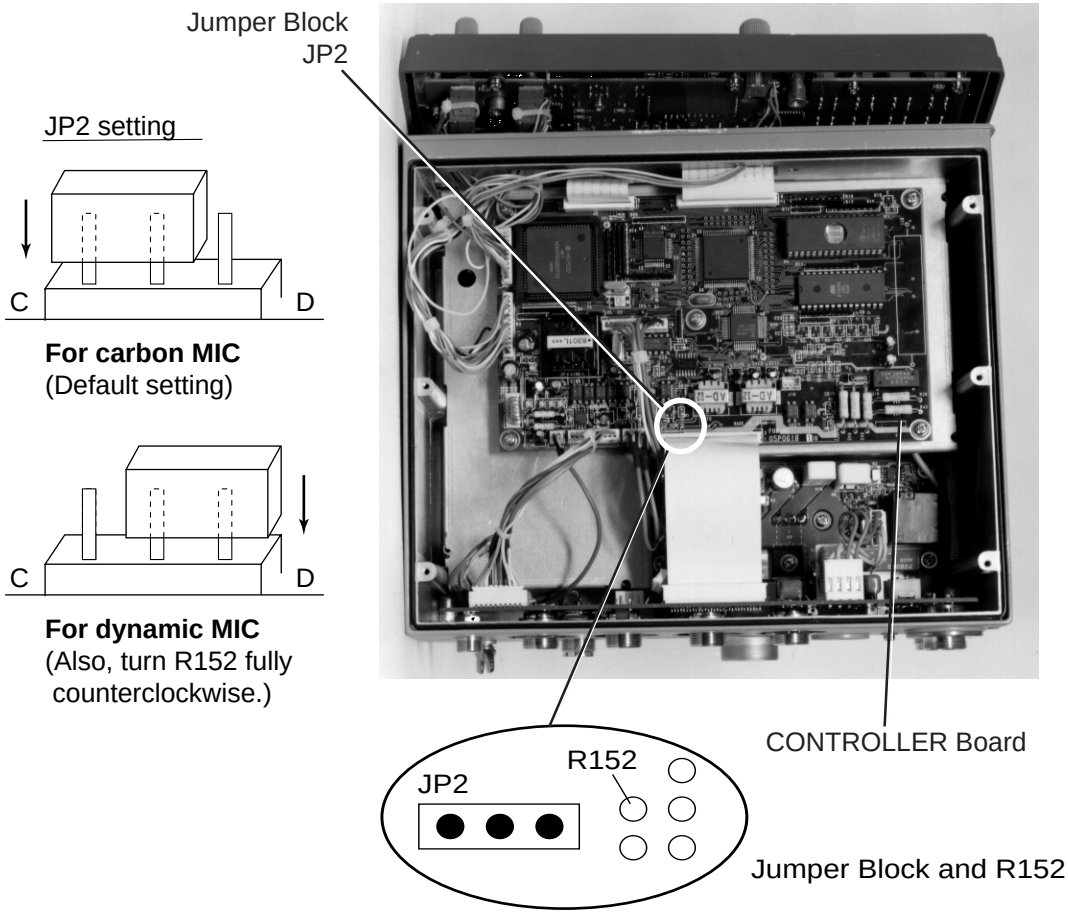


Figure 10 Transceiver unit, top view, showing CONTROLLER Board

Procedure

1. Release write protection, referring to service manual for the procedure.
   TEST display appears.

```
TEST VHF ch70

manual
```

Figure 10a Test display

2. Press **SELECT** key, **9** key, **RT** key, and then press **ENT** key four times.

```
RT4-TxAF MONITOR

             OFF[1] ON[2]
```

Figure 10b TxAF monitor screen

3. Select ON and press **ENT** key.
4. Press **CANCEL** key nine times to return to the TEST display.

```
TEST VHF ch70

manual
```

Figure 10c test screen

5. Rotate VR152 clockwise so that the volume of the dynamic MIC is maximum.

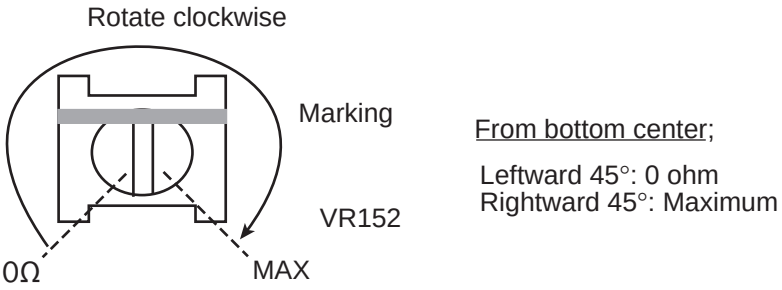


Figure 10d VR152 setting

6. Select “OFF” on the “RT-4-TxAF MONITOR” screen and press **ENT** key.
7. Re-write protect settings.

Printer Interface

Refer to page S-1.

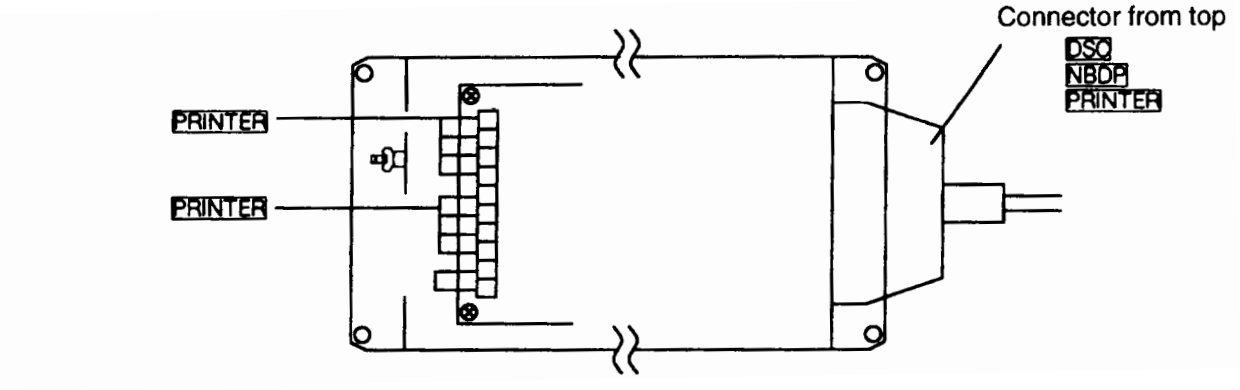


Figure 10e

Overview

This chapter provides the information necessary for setting up the following:

1) Ship's ID number
2) DSC block
3) VHF block
4) Channel system
5) Protection (Lock initial settings)

Entering Ship's ID

Procedure

1. Rotate the **VOLUME** knob clockwise to turn on the equipment. “TEST” blinks.

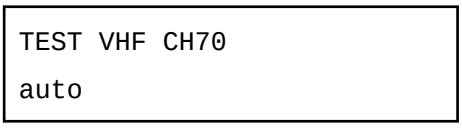


Figure 11 Test screen

2. Press the **SELECT** key. The Setup menu appears.

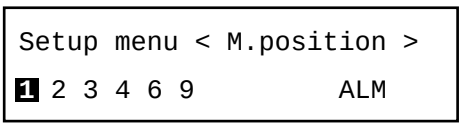


Figure 12 Setup menu

3. Press the **9** key to display the system menu.

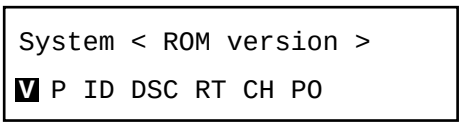


Figure 13 System menu

4. Press the right arrow key to select ID.
5. Press the **ENT** key.

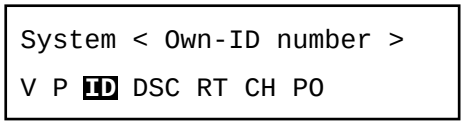


Figure 14

6. Enter ship's ID (nine digits). To correct the data entered, press the **CANCEL** key and reenter ID number.
7. Press the **ENT** key.

Setting up DSC Block

When two FM-8500s are installed, designate one as Main (CH70) and the other as Sub (VHF). The default setting is “CH70” as main unit. For sub unit, do the following.

Procedure

1. Rotate the VOLUME knob on the sub FM-8500 clockwise to turn it on.
2. Press the **SELECT** and **9** keys to display the System menu.
3. Press right arrow key to select DSC.
4. Press the **ENT** key.

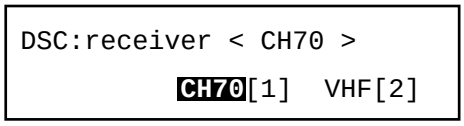


Figure 15

5. Press the **2** key to select VHF[2].
6. Press the **ENT** key. The System menu appears.

Setting up the VHF Block

Procedure

Highlighted items in this section are default settings.

1. Press right arrow key to select RT at the System menu.
2. Press the **ENT** key.

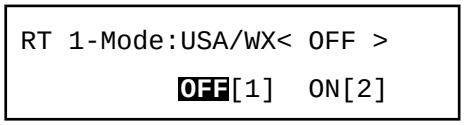


Figure 16

3. Disable or enable the USA/WX mode.
4. Press the **ENT** key. The following menu appears.

```
RT 1-Mode:private< OFF >
          OFF[1]  ON[2]
```

Figure 17

5. Disable or enable the PRIVATE channel mode.
6. Press the **ENT** key.

```
RT 2-Hook work:CH16< ON >
           ON[1]  OFF[2]
```

Figure 18

7. Disable or enable watch on CH16 when handset is on hook.
8. Press the **ENT** key.

```
RT 2-Hook work:SP< ON >
           ON[1]  OFF[2]
```

Figure 19

9. Disable or enable speaker when handset is on hook.
10. Press the **ENT** key.

```
RT 3-Time out timer< OFF >
           OFF[1]  ON[2]
```

Figure 20

11. Disable or continue after a long transmission. For USA, set to ON. Not effective unless USA mode is enabled.
12. Press the **ENT** key.

```
RT 4-Tx AF monitor< OFF >
           OFF[1]  ON[2]
```

Figure 21

13. Disable or enable monitoring of external equipment; for example, Remote Station RB-700.
14. Press the **ENT** key.

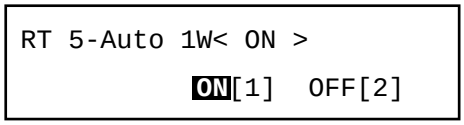


Figure 22

15. Disable or enable automatic power reduction (to 1 W) after a long transmission.
16. Press the **ENT** key.

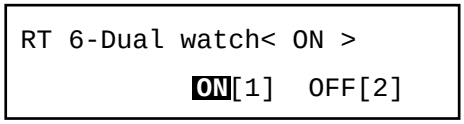


Figure 23

17. Disable or enable dual watch.
18. Press the **ENT** key.

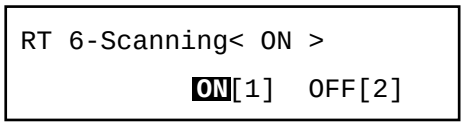


Figure 24

19. Disable or enable channel scanning.
20. Press the **ENT** key.

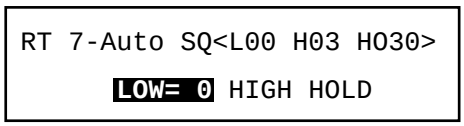


Figure 25

21. Enter lowest limit of voice frequency (average) which opens automatic squelch. Enter value by the following formula

    Setting value x 50 = Low Frequency (Hz)

    For example, if the lowest average frequency which opens the automatic squelch is 50 Hz, enter 1 (1 x 50 = 50 Hz).

22. Press the **ENT** key to select HIGH.
23. Enter highest frequency which opens automatic squelch.

    Setting value x 50 = High Frequency (Hz)

    Default setting is 3 so that when the average frequency of received signal is higher than 150 Hz, audio signal is muted.

24. Press the **ENT** key to select HOLD.

25. Enter squelch hold time in two digits, by following the formula below.

    Setting value x 20 (msec) = Time desired

26. Press the **ENT** key. The display changes to the System menu.

Setting Channel System

Procedure

1. Press the right arrow key to select CH.
2. Press the **ENT** key. The international channel setting display appears.

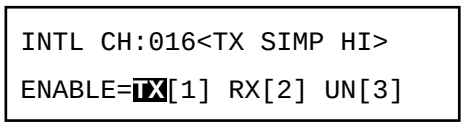


Figure 26

3. Rotate **CHANNEL** Knob to select channel to set.

   TX: Transmission and reception available

   RX: Reception only

   UN: Transmission and reception prohibited

4. Press **1** (TX), **2** (RX) or **3** (UN) key depending on channel. Figure 27 shows screen appearance when TX is selected.

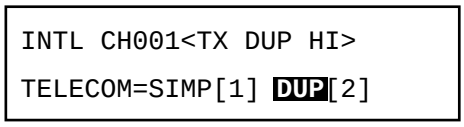


Figure 27

5. Select communication mode; press **1** for simplex, or **2** for duplex.

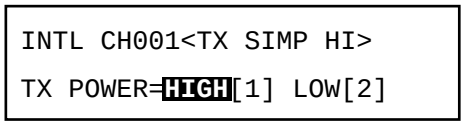


Figure 28

6. Select TX power; press **1** for high output power, or **2** for low output power.
7. Repeat steps 3 to 6 to set other channels.
8. To select other mode (USA, WX or Private), press the **CHANNEL** knob.
9. Repeat steps 3 to 6 for USA or WX channel.

For private channels mode

10. Press the **CHANNEL** knob to select private channel mode.

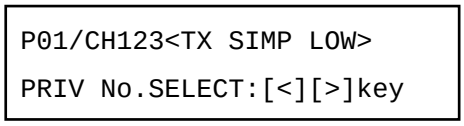


Figure 29

11. Press the arrow keys to select private channel (P01 to P20) to set.

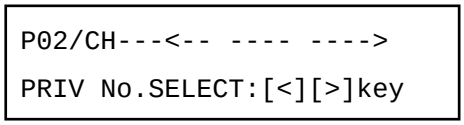


Figure 30

12. Press the **ENT** key.

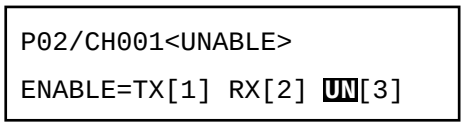


Figure 31

13. Rotate the **CHANNEL** knob to select a channel.

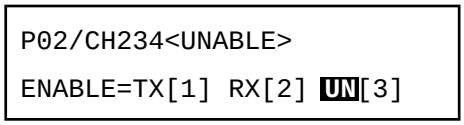


Figure 32

14. Select telecom mode; **1** for simplex or **2** for duplex.

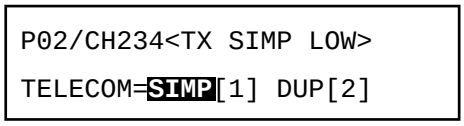


Figure 33

15. Select communication mode; **1** for simplex, or **2** for duplex.

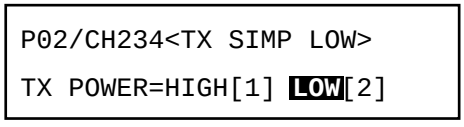


Figure 34

16. Select TX power; **1** for high output power, or **2** for low output power.
17. To set other private channels, repeat steps 11 to 16.
18. Finally, press the **CANCEL** key. The System menu display appears.

Locking Initial Settings

Do the following to lock initial settings and enable normal operation.

1. Press the right arrow key to select P.
2. Press the **ENT** key. The following appears.

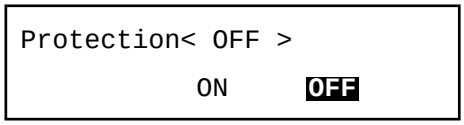


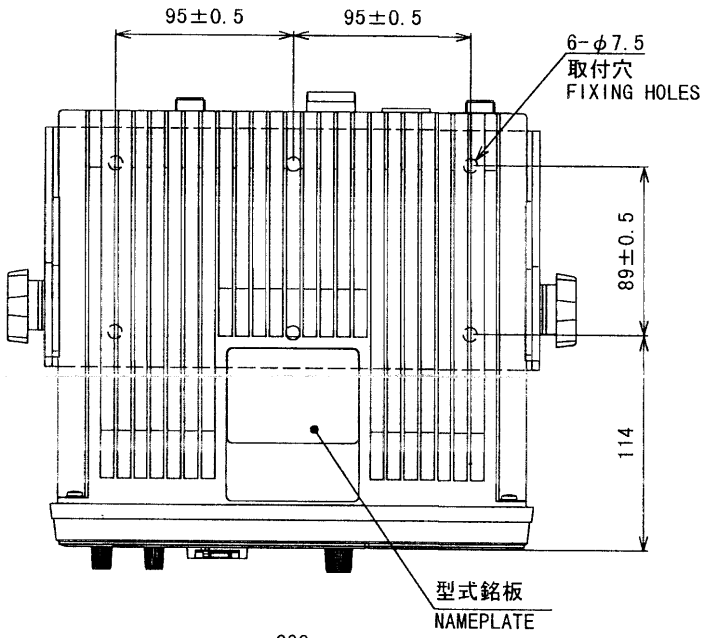
Figure 35

3. Press the left arrow key to select ON.

4. Press the **ENT** key.

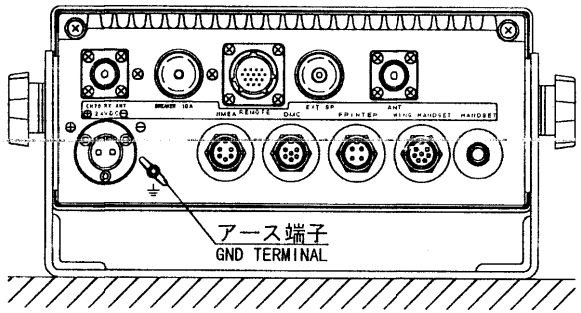
All initial settings are locked and the equipment is ready for operation.

FURUNO

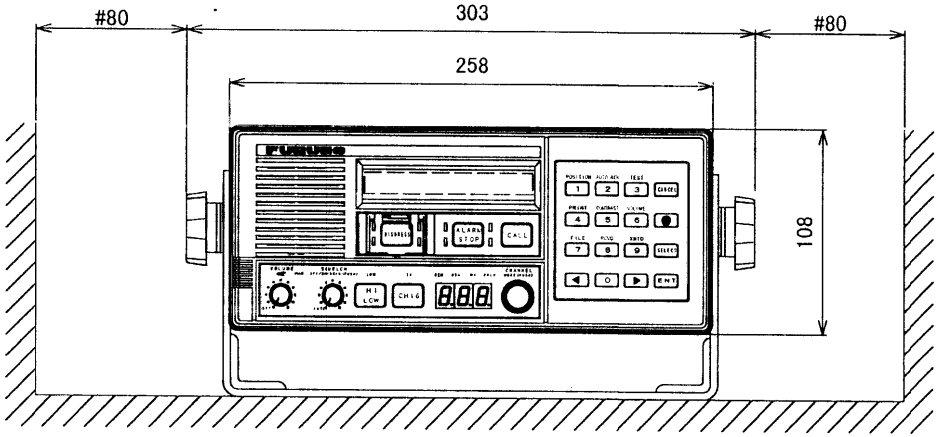


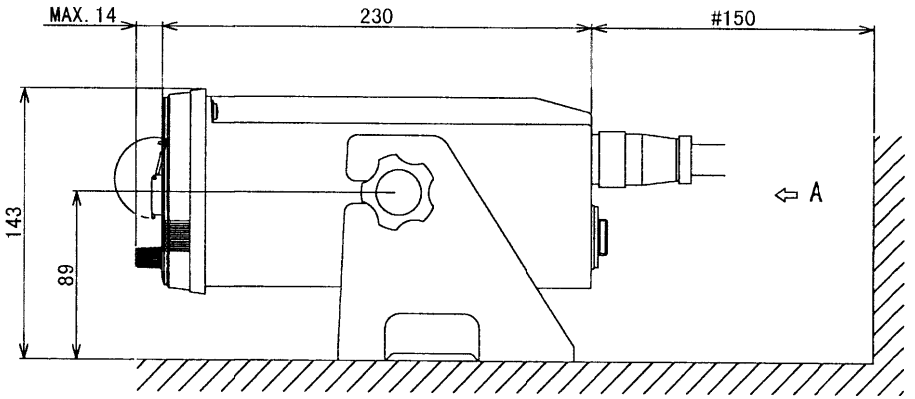
寸法区分（mm）DIMENSION	公差（mm）TOLERANCE
L≦50	±1.5
50<L≦100	±2.5
100<L≦500	±3

表 1
TABLE 1



矢視 A
VIEW A





注 記

1）指定外の寸法公差は表１による。
2）#印寸法は最小サービス空間寸法とする。

NOTE

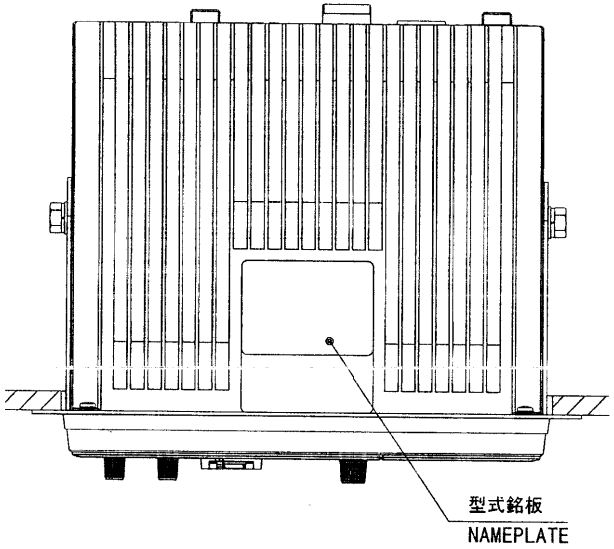
1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.
2. #: RECOMMENDED SERVICE CLEARANCE.

DRAWN Jun 9'99 T.Yamasaki		TITLE	FM-8500/8700
CHECKED Jun 10'99 K.Kusunoki		名称	国際VHF無線電話装置
APPROVED Jun 10'99 K.Kusunoki			外寸図
SCALE 1/4 MASS 6 kg		NAME	VHF RADIOTELEPHONE
DWG. No. C5603-601- E	05-073-1100-G6		OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

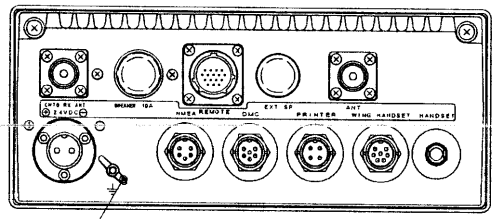
D-1

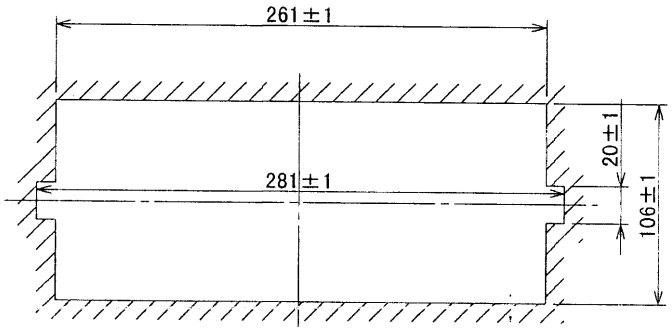
FURUNO



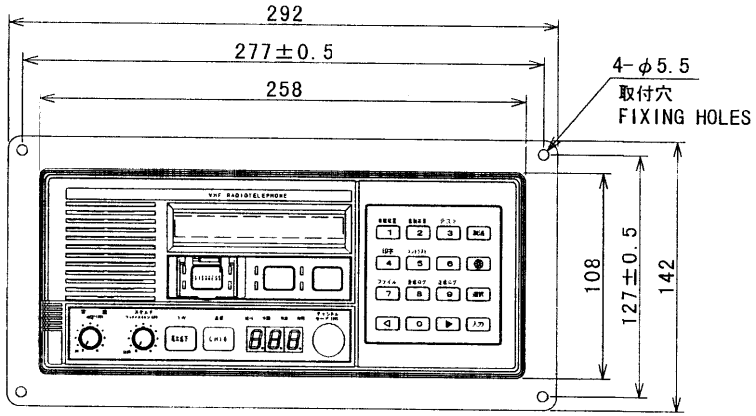
寸法区分（mm）DIMENSION	公差（mm）TOLERANCE
L≦50	±1．5
50<L≦100	±2．5
100<L≦500	±3

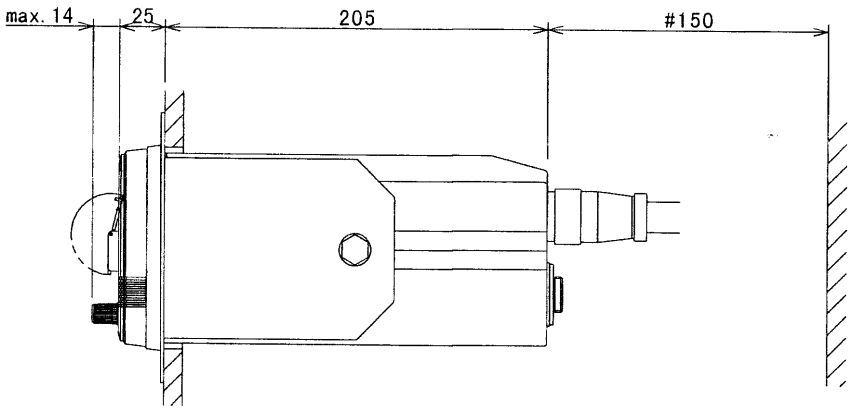
表 1
TABLE 1





取付穴寸法（参考図）
CUTTING DIMENSIONS





注　記

1）指定外の寸法公差は表１による。
2）#印寸法は最小サービス空間寸法とする。

NOTE

1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.
2. #: RECOMMENDED SERVICE CLEARANCE.

DRAWN June 2 '99 T.Yamasaki		TITLE	FM-8500/8700
CHECKED Jun 9 '99 K.Kusunoki		名称	国際VHF無線電話装置（埋込型）
APPROVED Jun 9 '99 K.Kusunoki			外寸図
SCALE 1/4 MASS 5.0 kg		NAME	VHF RADIOTELEPHONE (FLUSH MOUNT)
DWG. No. C5603-G04- E	05-073-1600-G1		OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

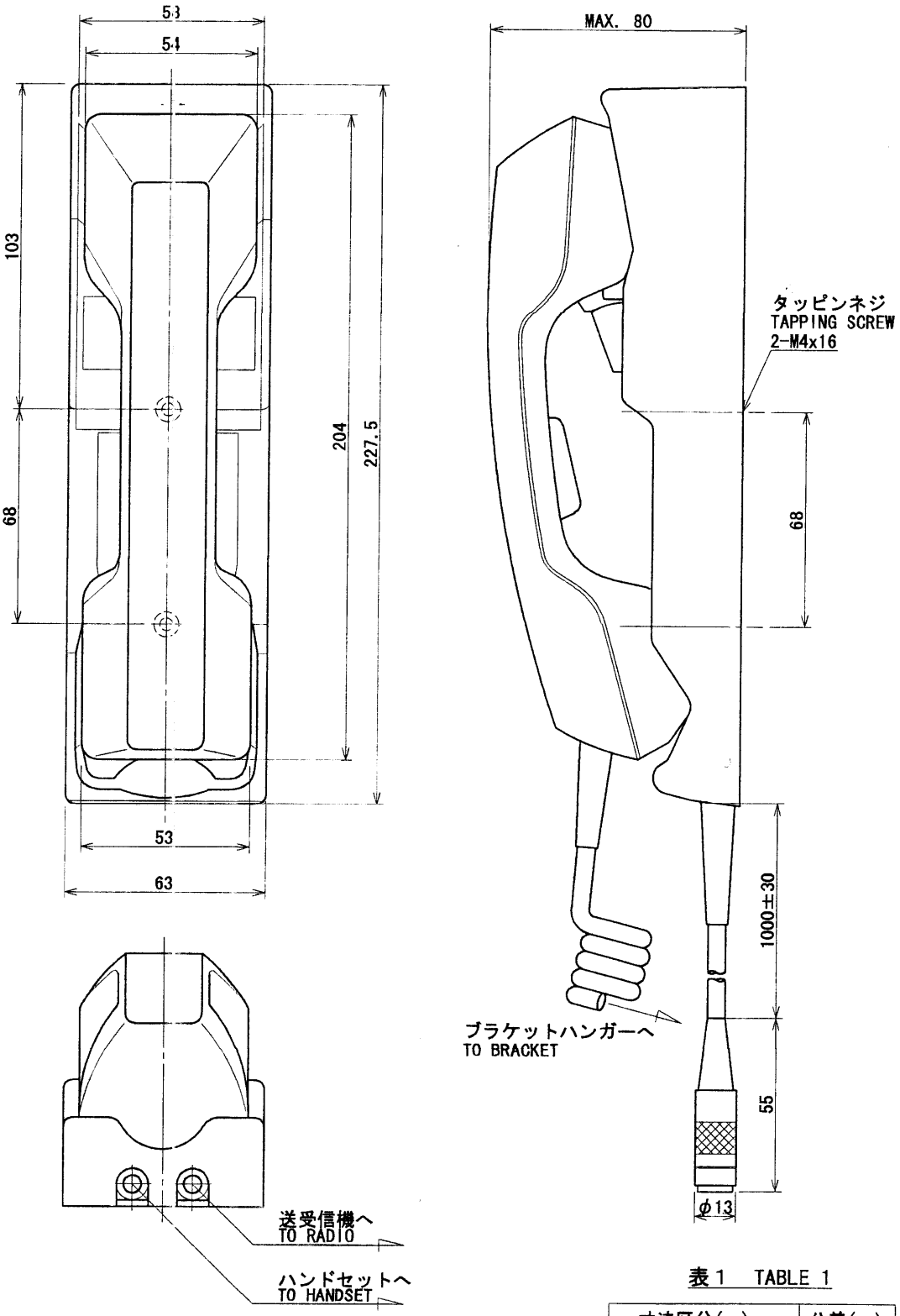


表1　TABLE 1

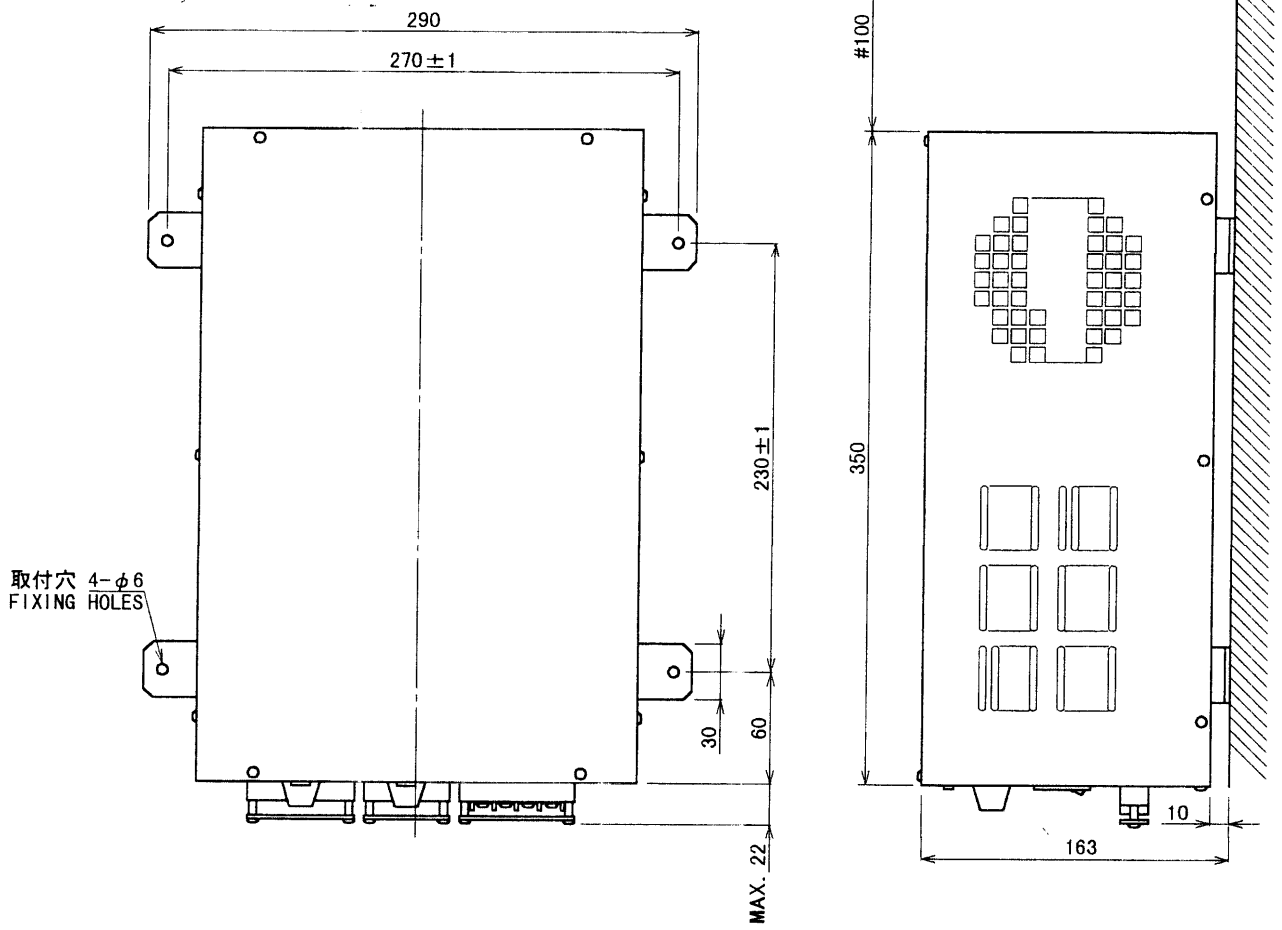
寸法区分(mm) DIMENSION	公差(mm) TOLERANCE
0 ＜ L ≦ 50	±1.5
50 ＜ L ≦ 100	±2.5
100 ＜ L ≦ 500	±3

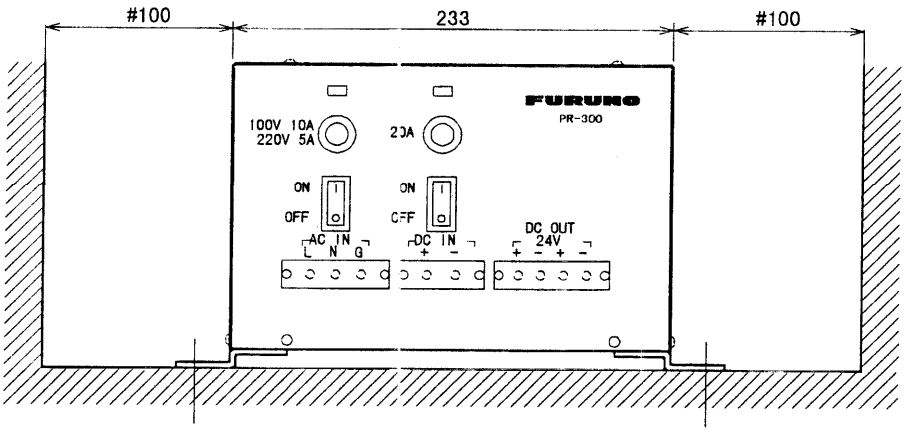
注記
1）指定なき寸法公差は表1による。

NOTE
1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.

DRAWN Nov/16'99 T.YAMASAKI	TITLE	HSC701K-B20
CHECKED Nov/16'99 K.Kusunoki	名称	ハンドセット（ブラケット付）
APPROVED Nov/16'99 K.Kusunoki		外寸図
SCALE 1/2 MASS 0.65 kg ±10%	NAME	HANDSET W/ BLACKET
DWG. No. C5603-G06- D		OUTLINE DRAWING

FURUNO





注記

1）#：推奨する最小サービス空間寸法。

2）指定なき寸法公差は表1による。

NOTE:

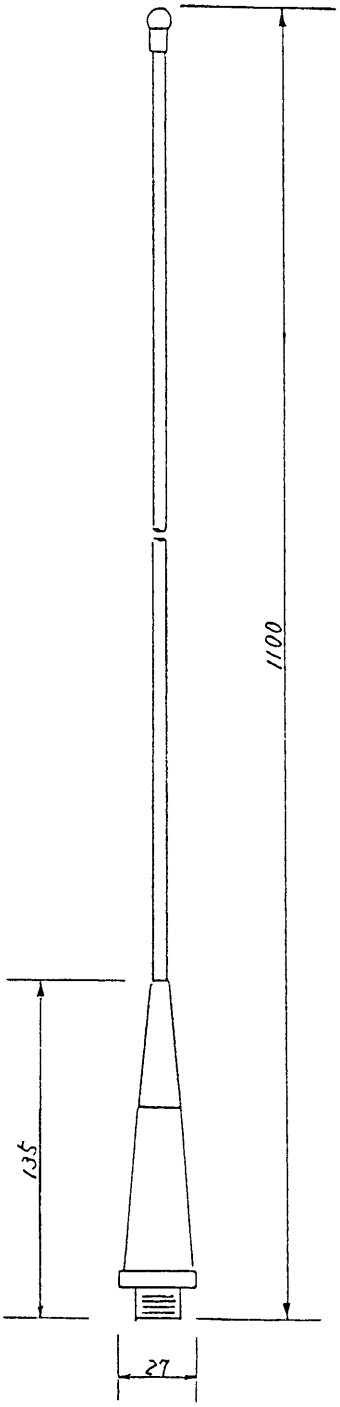
1. #: RECOMMENDED SERVICE CLEARANCE.
2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.

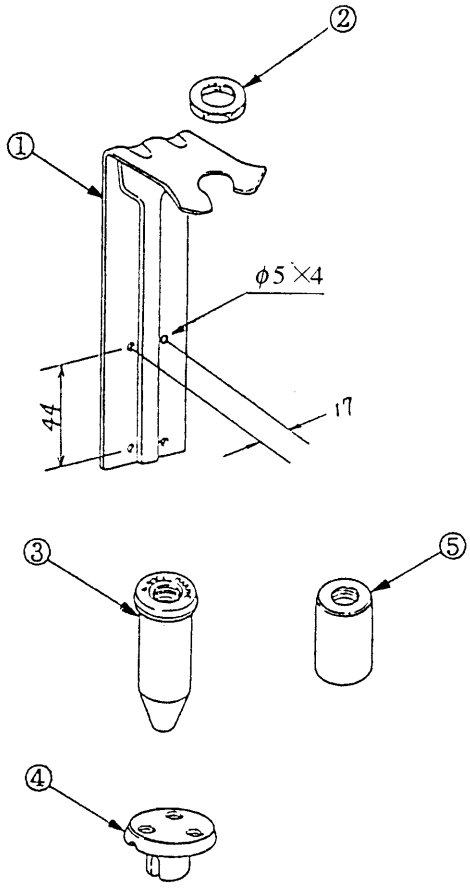
表1 TABLE 1

寸法範囲 (mm) DIMENSION	公差 (mm) TOLERANCE
0 ＜ L ≦ 50	±1.5 mm
50 ＜ L ≦ 100	±2.5 mm
100 ＜ L ≦ 500	±3 mm

DRAWN	June. 19'00 T.YAMASAKI	TITLE	PR-300
CHECKED	June 19'00 T. Kuno	名称	AC-DC電源ユニット
APPROVED	June 19'00 T. Kuno		外寸図
SCALE	1/4	MASS ±10% 14.5 kg	NAME AC-DC POWER SUPPLY UNIT
DWG. No.	C5003-G02- D		OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.





	品名 NAME	数量 Q'TY
1	アンテナ取付組品 ANTENNA BRACKET	1
2	固定ナット NUT	1
3	防滴カバー WATERPROOFING COVER	1
4	グランド GLAND	1
5	アダプタ ADAPTER	1

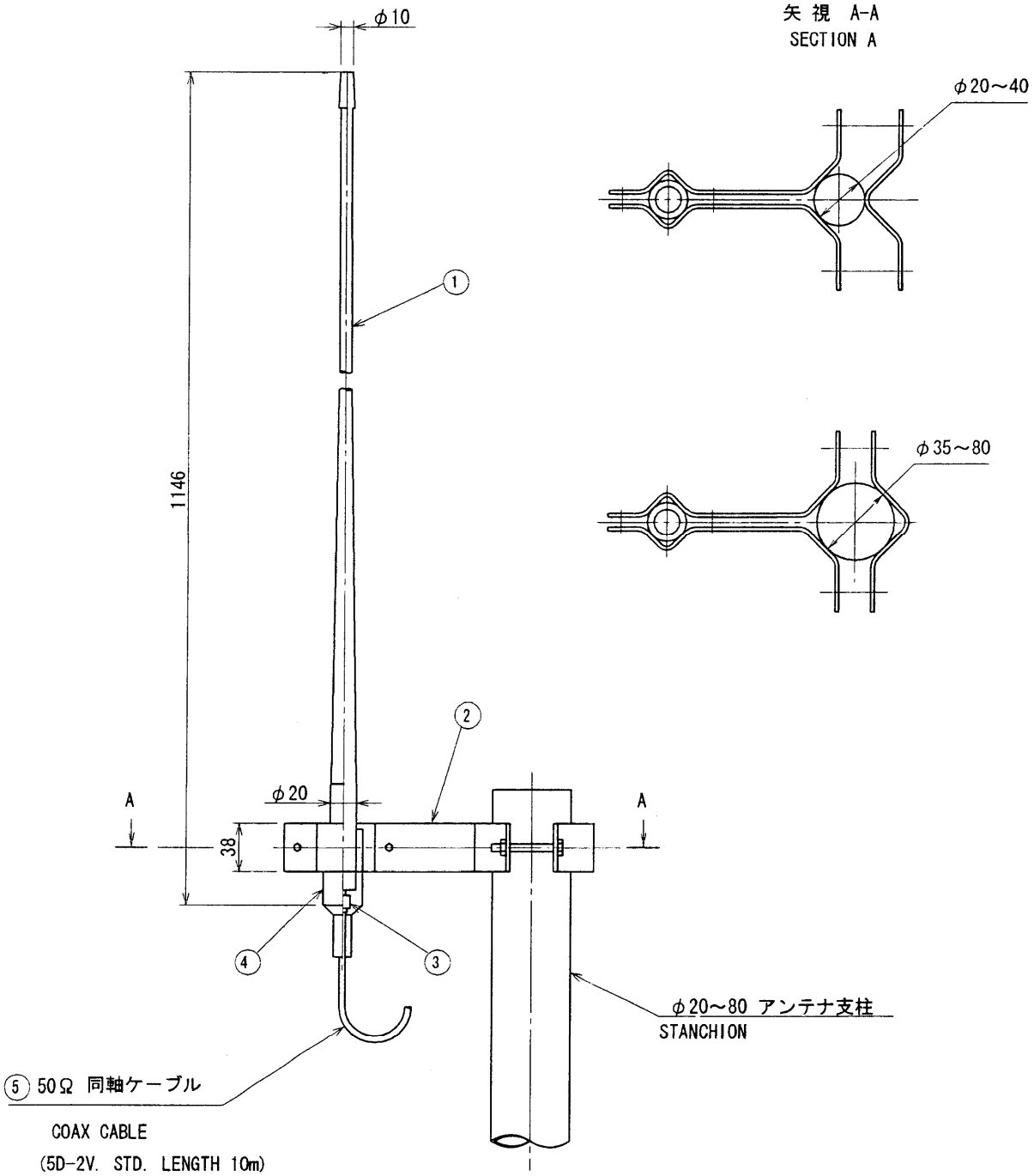
付属品；M型コネクタ付同軸ケーブル組品(05S9014, 5 m)

Antenna RA106 comes with a coax cable assembly (05S9014, 5 m) which has an M-type connector attached.

DRAWN Nov.13.'95 T.NISHIZUO			TYPE RA106
CHECKED Nov.13'95 K.Okamoto			名称 150MHzアンテナ外観図
APPROVED Nov.13'95 K.Okamoto		FM-2678 FM-8500	外寸図
SCALE ∝	MASS — kg	APPLICABLE TO: (MODEL)	BLOCK NO.	NAME VHF MARINE ANTENNA
DWG NO. C5603-G02- A		05-001-4354- 0		OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

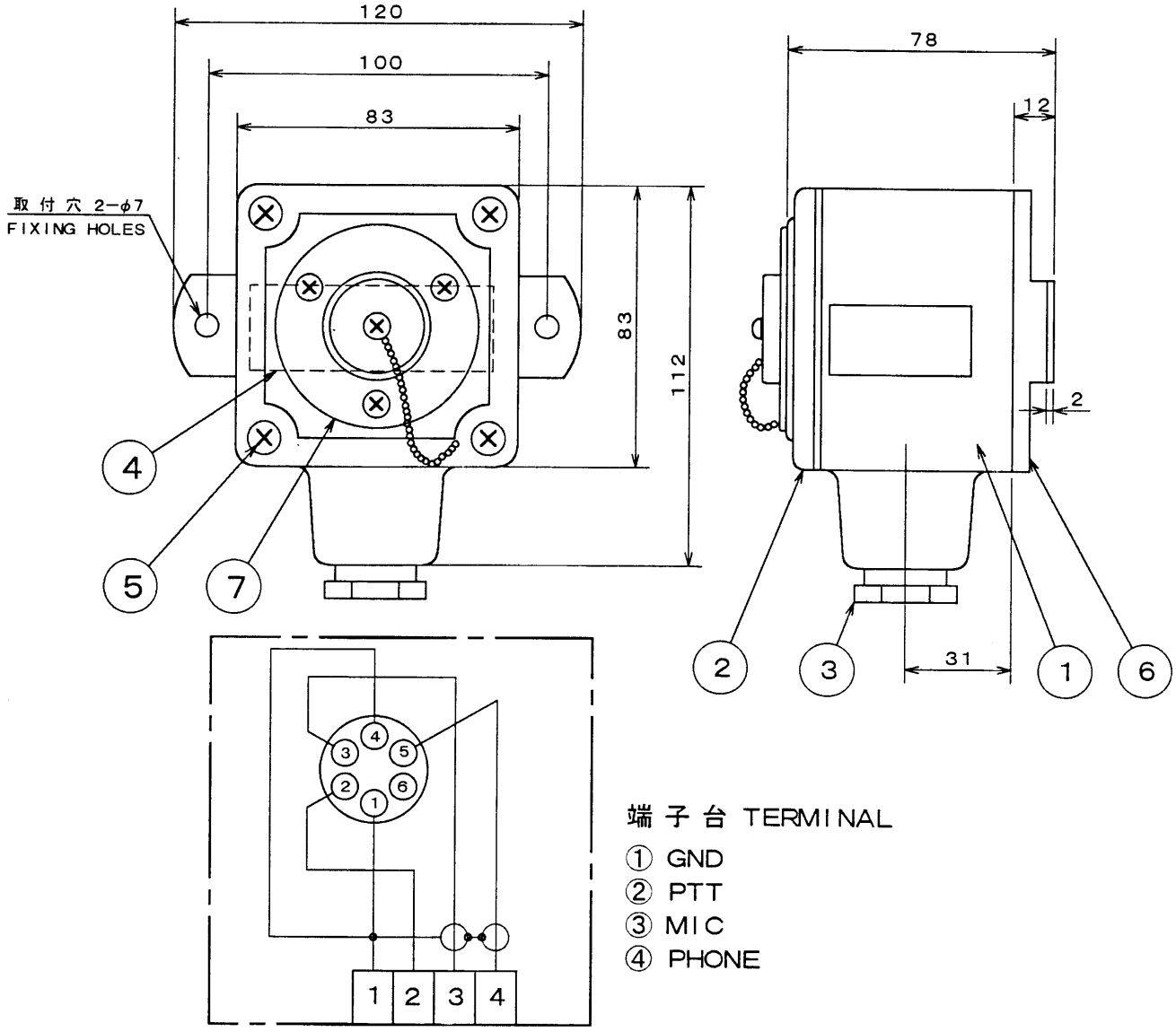
FURUNO



ITEM	NAME	MATERIAL	Q'TY	DWG No.	REMARKS
5	同軸ケーブル 50Ω COAX. CABLE		10m	5D-2V	
4	塩ビキャップ CONNECTOR CAP		1		
3	同軸コネクタ COAX. CONNECTOR		2	M-P-5	
2	アンテナ取付金具 ANTENNA BRACKET		1 式 SET		t2
1	アンテナ棒 ANTENNA ELEMENT	FRP	1	150M-W2VN	0.25kg

DRAWN	Sep.27'00 T.YAMASAKI	TITLE	150M-W2VN
CHECKED	Sep.27'00 Y.K	名称	150MHzアンテナ
APPROVED	Sep.27'00 Y.K		外寸図
SCALE	1/5	MASS ±10% 0.7 kg	NAME VHF MARINE ANTENNA
DWG. No.	C5011-042- B		OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.



端子台 TERMINAL

① GND
② PTT
③ MIC
④ PHONE

塗装色
COATING COLOR

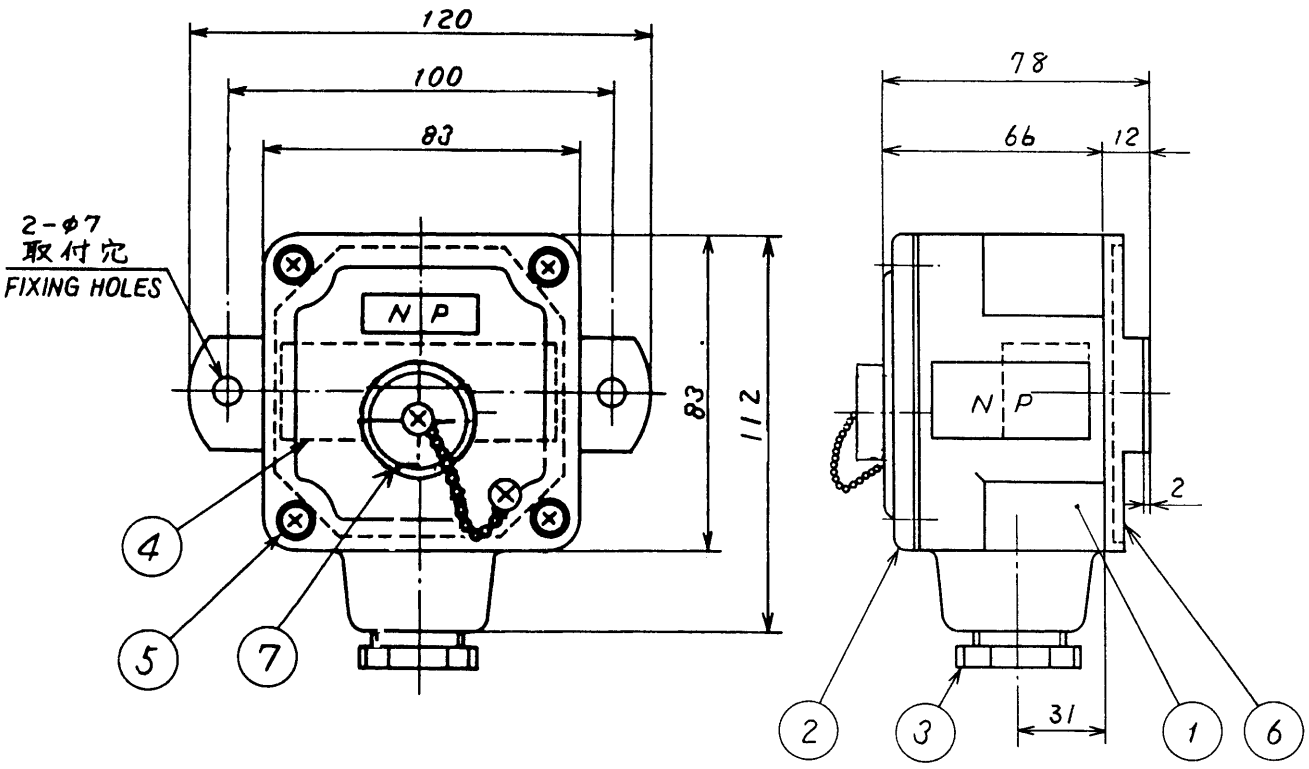
MUNSELL 2.5G7/2

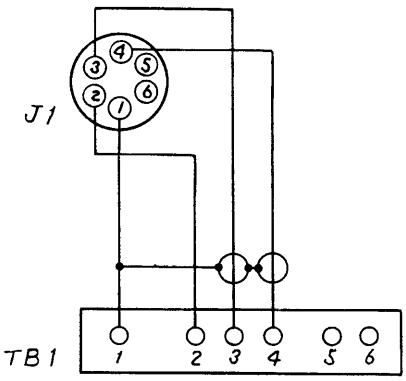
指定 SPECIFIED

ITEM 品番	NAME 品名	MATERIAL 材質	Q'TY 数量	DWG NO. 図番	REMARKS 摘要
7	レセプタクル用 RECEPTACLE		1	FM−10RS (1) −6HA	
6	取付板 MOUNTING PLATE	鉄 SS	1		
5	固定ネジ SCREW	真鍮 BS	4		
4	端子台 TERMINAL		1		JIS F8813 C20−4
3	ケーブルグランド CABLE GLAND	真鍮 BS	1		JIS F8801 B25
2	蓋 COVER	ステンレス SUS	1		
1	ケース BODY	FRP (DMC)	1		

DRAWN Dec. 25 '96 K.Kusunoki	TITLE	RBD−VHF−B (FOR HS−6000−FZ5/11)
CHECKED Dec 25 '96 T.Shishido	名称	マイクレセプタクルボックス
APPROVED Dec 25 '96 K.OTA		外寸図
SCALE 1/2 MASS 0.6 kg	NAME	MIC RECEPTACLE BOX
DWG No. C5517−G08−D		OUTLINE DRAWING

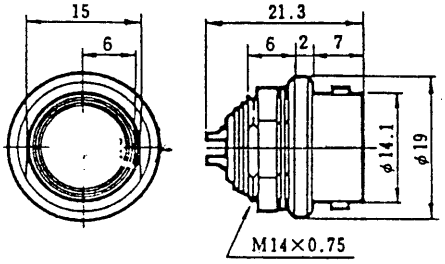
FURUNO ELECTRIC CO., LTD.





1. 適合ハンドセット　HANDSET CONNECTABLE:
HS-6000FZ6 (40Ω　CARBON TYPE, 2W/CURL CORD)
HS-6000FZ8 (40Ω　CARBON TYPE, W/10m CABLE)
(FM-7500やラックコンソール主送信機に使用する
ハンドセットと特性、コネクタが同じ)

2. 使用コネクタ　RECEPTACLE USED.
RM12WBR-6S CODE No. 000-103-477



塗装色
COATING COLOR

MUNSELL 2.5G 7/2

指定 SPECIFIED

ITEM	NAME	MATERIAL	Q'TY	DWG.NO.	REMARKS
7	レセプタクル用 RECEPTACLE		1	RM12WBR-6S	
6	取付板 MOUNTING PLATE	鉄 SS	1		
5	固定ネジ SCREW	真鍮 BS	4		
4	端子台 TERMINAL		1		JIS F8813 C20-4
3	ケーブルグランド CABLE GLAND	真鍮 BS	1		JIS F8801 B25
2	蓋 COVER	ステンレス SUS	1		
1	ケース BODY	FRP(DMC)	1		

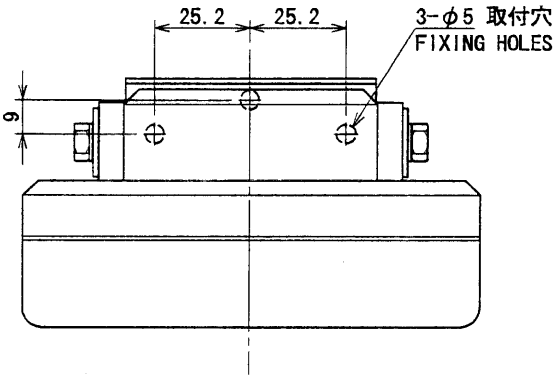
RBD-VHF-A	HS-6000FZ6
RBD-VHF-B	HS-6000FZ5

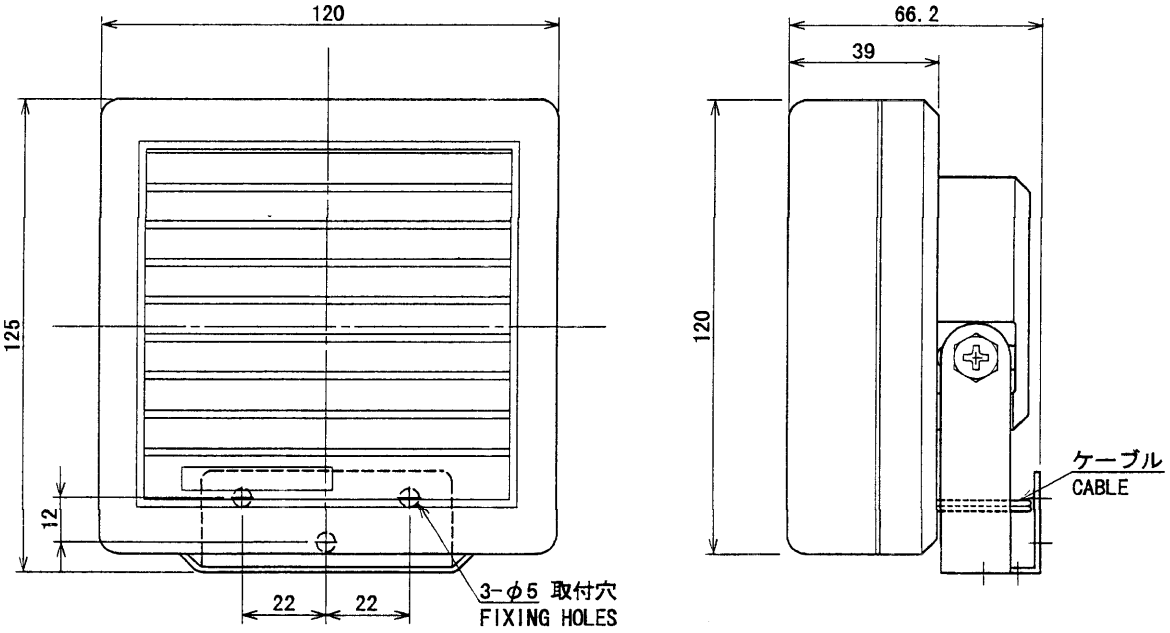
承認 APPROVED	OCT.28.'85	三角法 THIRD ANGLE PROJECTION		名称 TITLE	マイクレセプタクルボックス
検図 CHECKED	Oct.24.'85	尺度 SCALE	1/2	RBD-VHF-A	MIC RECEPTACLE BOX (FOR HS-6000FZ6/8)
製図 DRAWN	Oct.24.'85	重量 WEIGHT	0.6 kg	図番 DWG.NO.	C5450 − 006 − E

FURUNO ELECTRIC CO., LTD.

表1　TABLE 1

寸法区分(mm) DIMENSION	公差(mm) TOLERANCE
0 ＜ L ≦ 50	±1.5
50 ＜ L ≦ 100	±2.5
100 ＜ L ≦ 500	±3





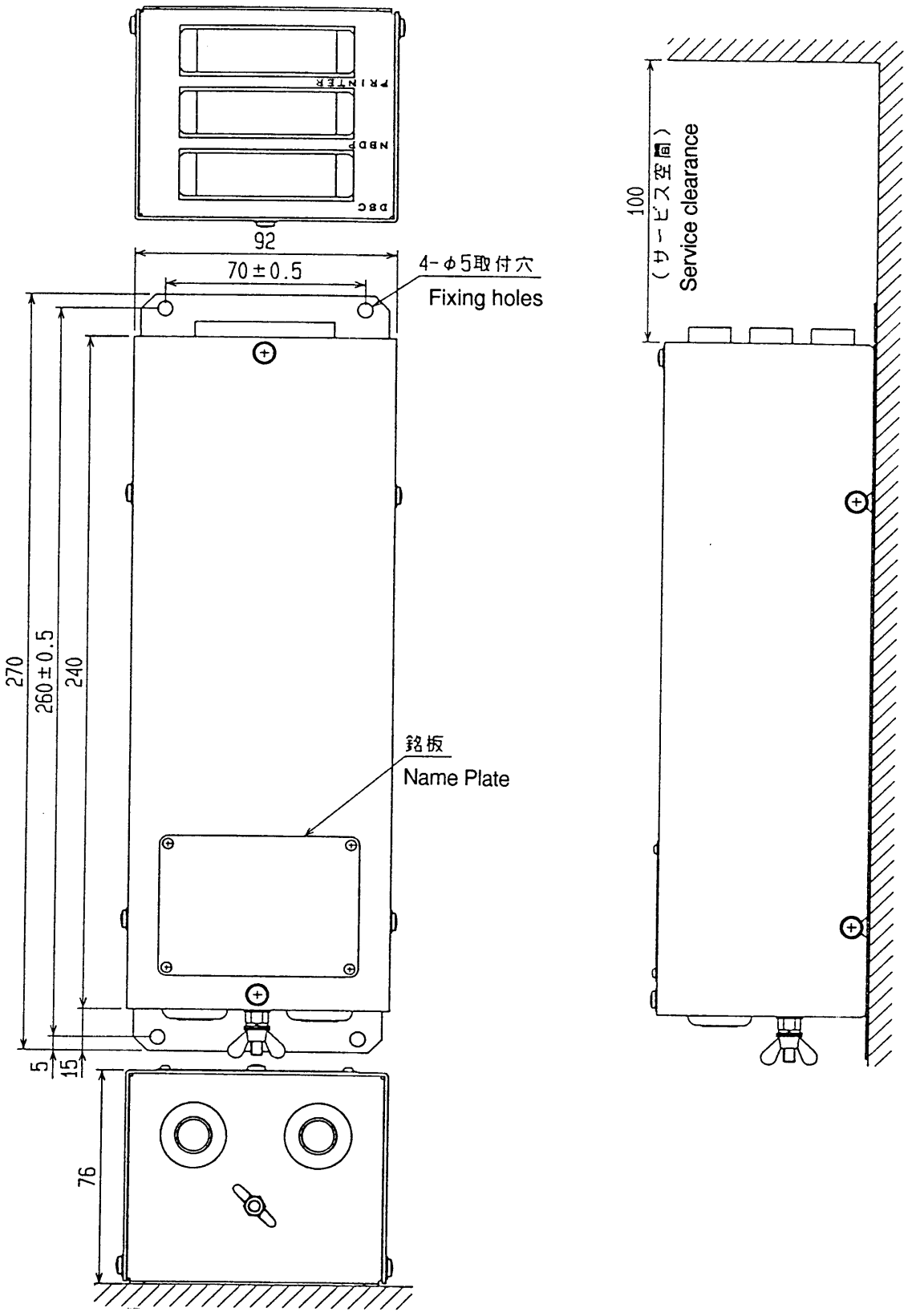
注記

1）指定なき寸法公差は表1による。

NOTE

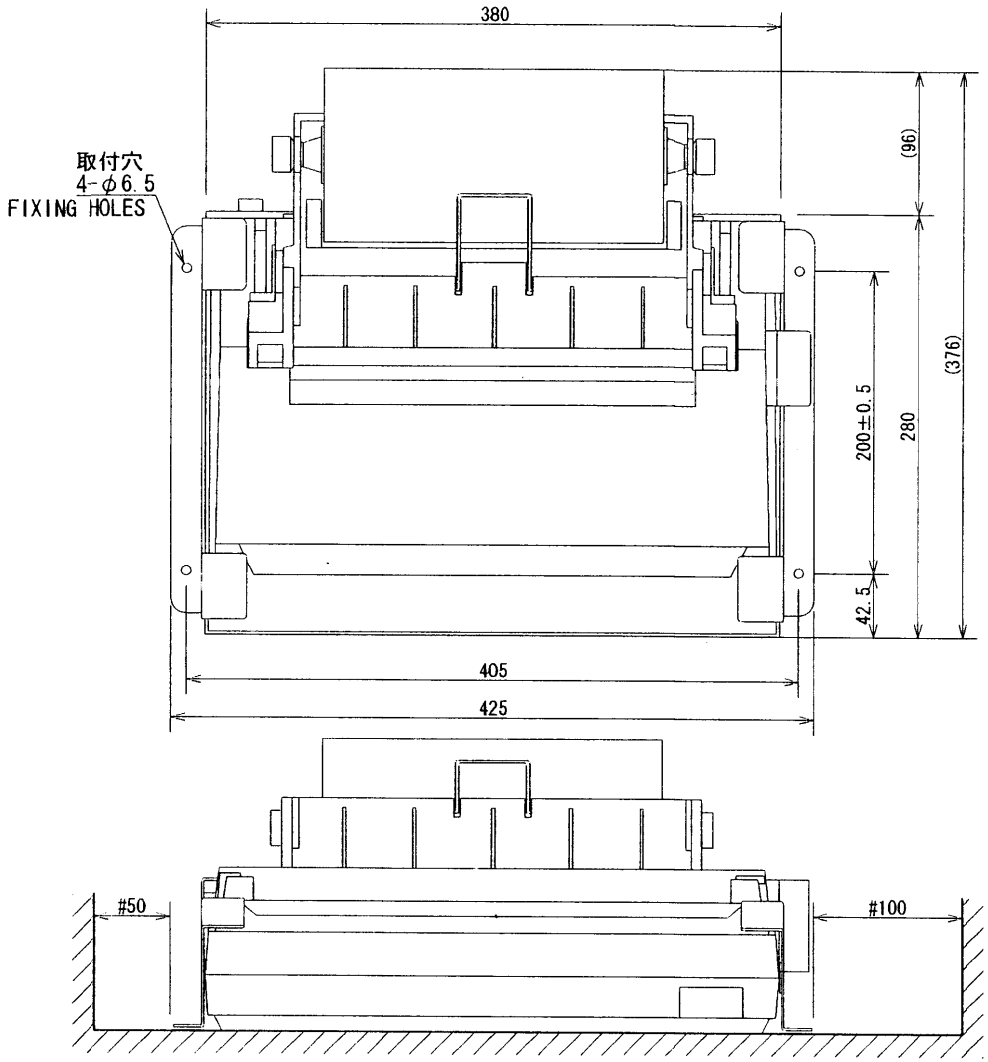
1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.

DRAWN May 23 '01 T. YAMASAKI			TITLE SEM-21Q
CHECKED			名称 スピーカ
APPROVED			外寸図
SCALE 1/2	MASS 0.54 kg ±10%	質量は2.8mケーブルを含む MASS W/ 2.8m CABLE	NAME LOUDSPEAKER
DWG. No. C5016-G07- A			OUTLINE DRAWING



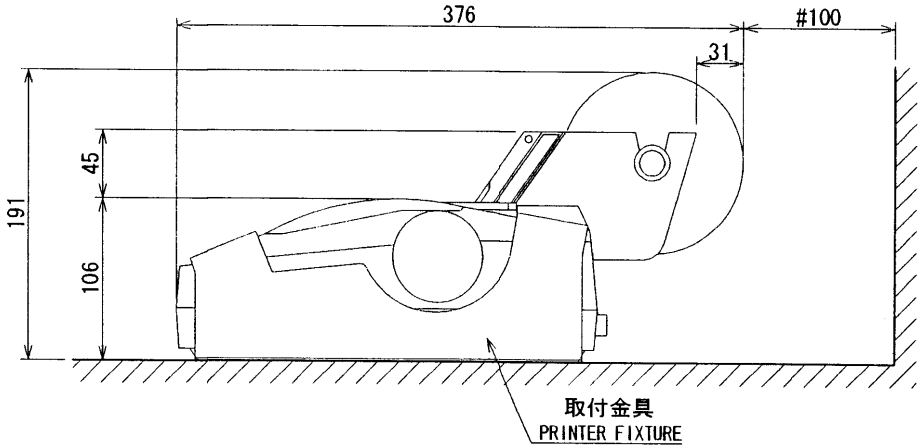
DRAWN Feb.16.'96 T.NISHINO			TYPE IF-8500
CHECKED FEB.16.'96 TAKAHASHI			名称 プリンターインターフェース
APPROVED Feb 26 '96 K.OTA	FM-8500		外寸図
SCALE 1/2 / MASS kg	APPLICABLE TO; (MODEL)	BLOCK NO.	NAME PRINTER INTERFACE
DWG NO. C5603-G05- A	05-073-2100- G1		OUTLINE DRAWING

FURUNO



寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
0 ＜ L ≦ 50	±1．5
50 ＜ L ≦ 100	±2．5
100 ＜ L ≦ 500	±3

表 1
TABLE 1



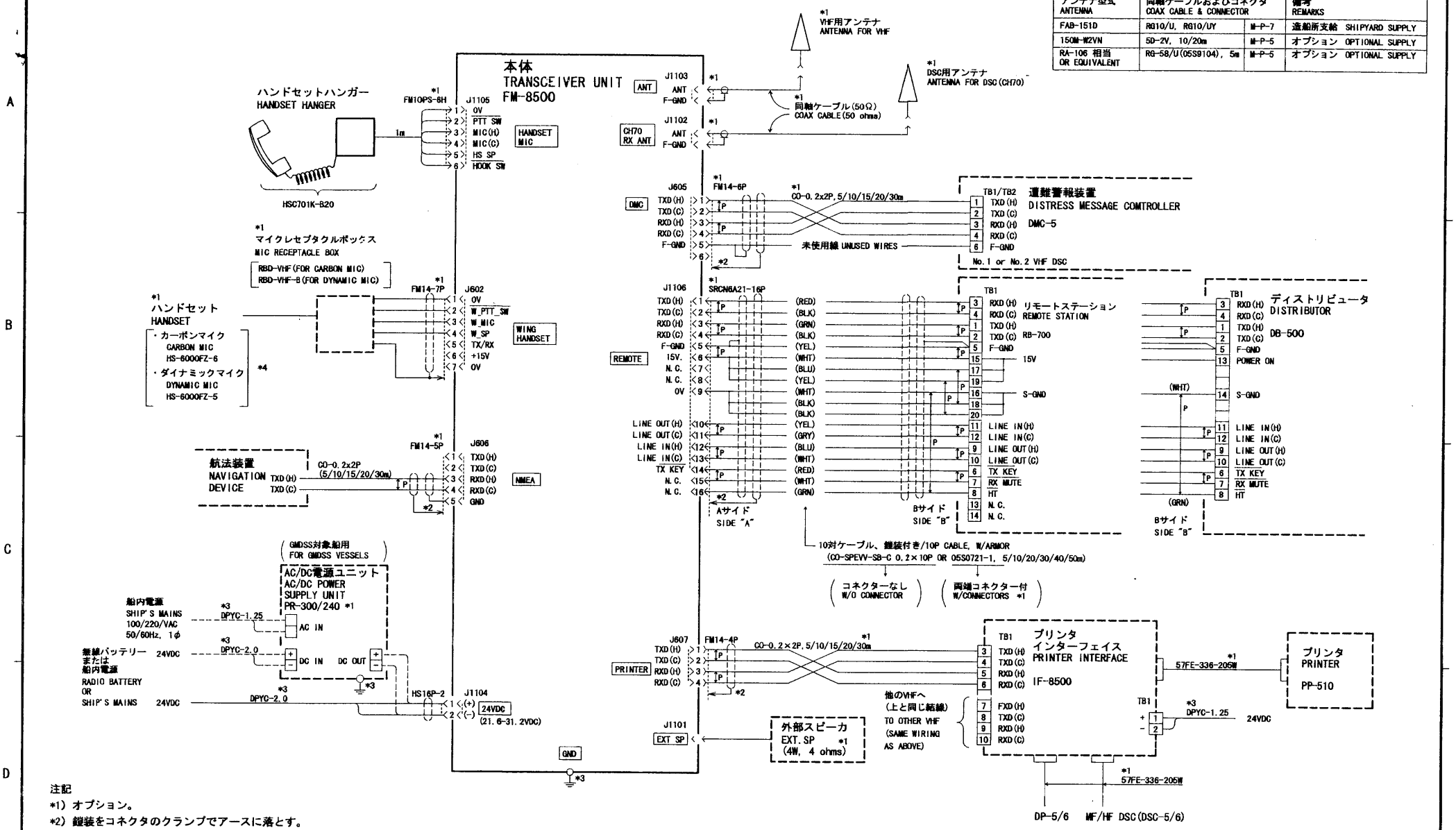
注 記 1） #印寸法は最小サービス空間寸法とする。
2） 指定外の寸法公差は表１による。
3） 取付用ネジはＭ６ボルトまたはコーチボルト呼び径６を使用のこと。

NOTE 1. #: RECOMMENDED SERVICE CLEARANCE.
2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.
3. USE M6 BOLTS OR COACH BOLTS φ6 FOR FIXING UNIT.

DRAWN July 26'00 T.YAMASAKI			TITLE PP-510
CHECKED July 27'00 T.Kimura			名称 プリンタ
APPROVED July 27'00 T.Kimura			外寸図
SCALE 1/5	MASS ±10% 3.8 kg		NAME PRINTER
DWG. No. C5589-G08- H		16-007-660G- 2	OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

FURUNO



アンテナ型式 ANTENNA	同軸ケーブルおよびコネクタ COAX CABLE & CONNECTOR		備考 REMARKS
FAB-151D	RG10/U, RG10/UY	M-P-7	造船所支給 SHIPYARD SUPPLY
150M-M2VN	5D-2V, 10/20m	M-P-5	オプション OPTIONAL SUPPLY
RA-106 相当 OR EQUIVALENT	RG-58/U(05S9104), 5m	M-P-5	オプション OPTIONAL SUPPLY

注記
*1) オプション。
*2) 鎧装をコネクタのクランプでアースに落とす。
*3) 造船所手配。
*4) マイクタイプに応じてFM-8500コントローラ基盤上のジャンパ設定を変更。

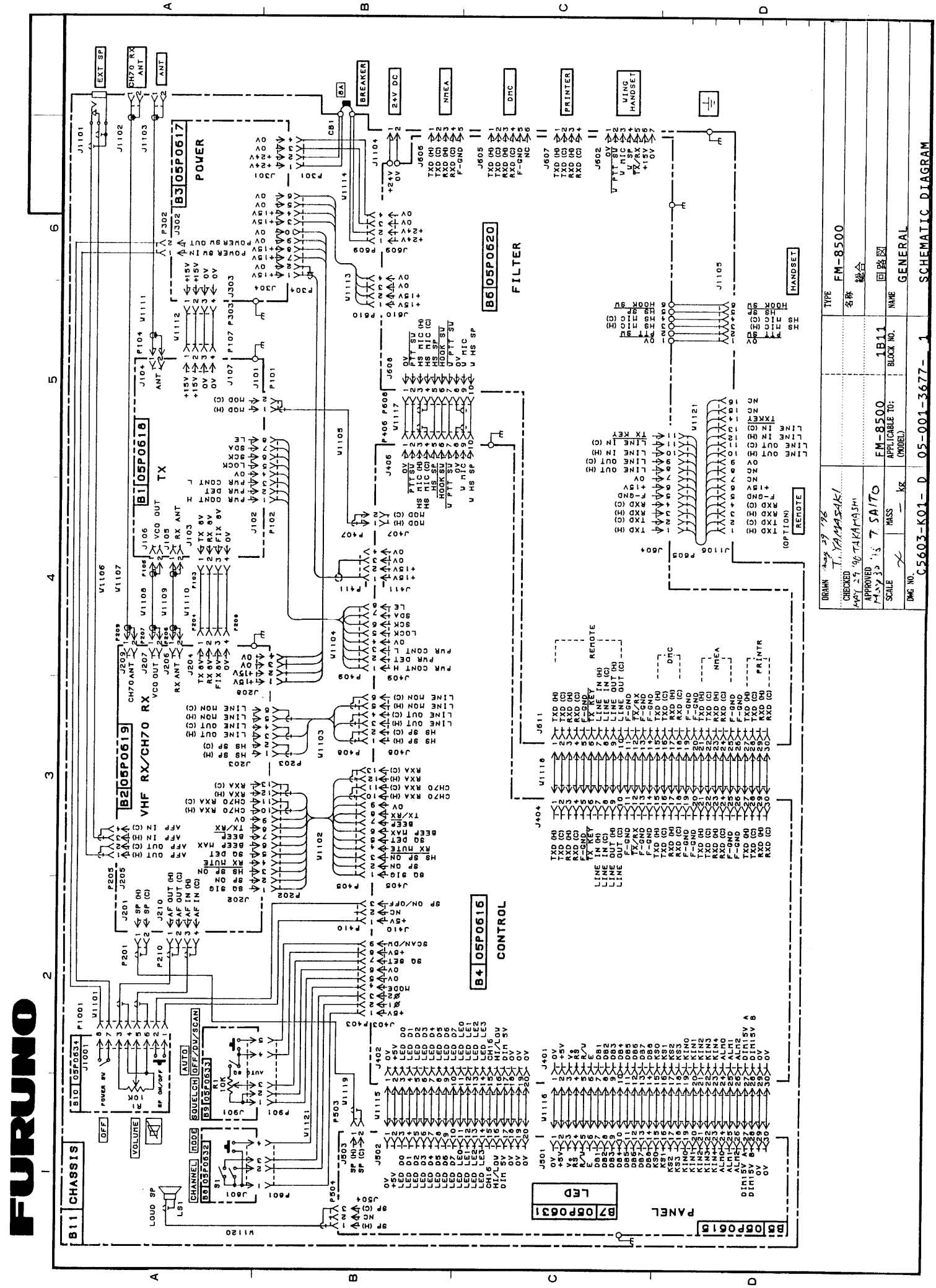
NOTE
*1. OPTION.
*2. GROUND CABLE ARMOR TURU CONNECTOR CLAMP.
*3. SHIPYARD SUPPLY.
*4. CHANGE JUMPER CONNECTIONS ON CONTROLLER PCB OF FM-8500 DEPENDING ON MIC TYPE.

CO-0.2x2P: CO-SPEVV-SB-C 0.2x2P, φ10.5
CO-0.2x5P: CO-SPEVV-SB-C 0.2x5P, φ13.5
CO-0.2x10P: CO-SPEVV-SB-C 0.2x10P, φ16.5

DRAWN Jun. 13 '01 T.YAMASAKI			TITLE FM-8500
CHECKED June 14 '01 Y.K			名称 国際VHF無線電話装置
APPROVED June 16 '01 T.K			相互結線図
SCALE	MASS kg		NAME VHF RADIOTELEPHONE
DWG No. C5603-C01- J			INTERCONNECTION DIAGRAM

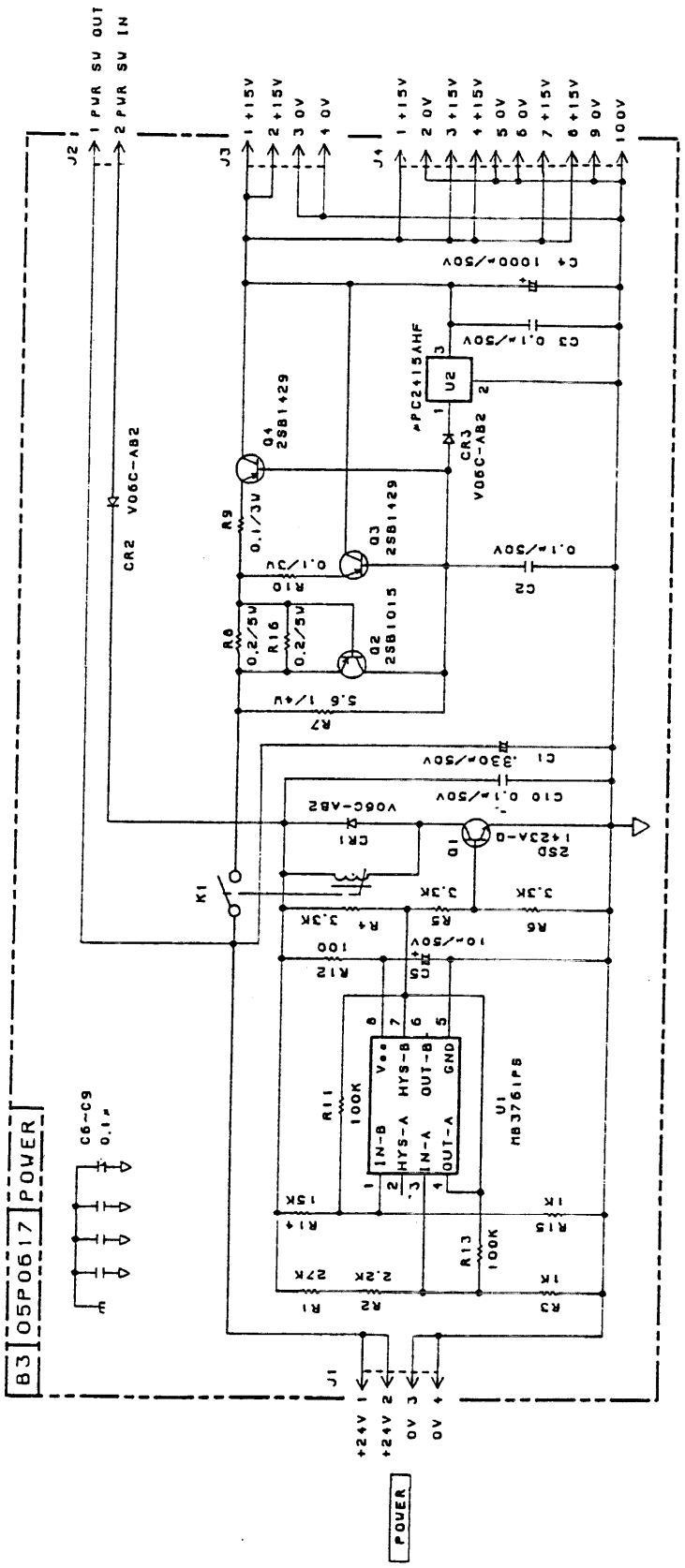
FURUNO ELECTRIC CO., LTD.

S-1



FURUNO ELECTRIC CO., LTD.

FURUNO



注意1：単位記入なき抵抗はΩ，コンデンサはF，
コイルはHとする。

DRAWN N. Yokoyama Jan. 22 '98			TYPE 05P0617
CHECKED Jan 22 '98 K. Okamoto			名称 電源基板
APPROVED Jan 22 '98 T. Yamaguchi	FM8500	1B 3	回路図
SCALE / MASS kg	APPLICABLE TO; (MODEL)	BLOCK NO.	NAME POWER BOARD
DWG NO. C5603-K07- D	05-001-3681- 02		SCHEMATIC DIAGRAM

FURUNO ELECTRIC CO., LTD.