

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
--------------------------	-------------

1. System Configuration	1
--------------------------------------	----------

2. Equipment Lists	2
---------------------------------	----------

3. Mounting	8
--------------------------	----------

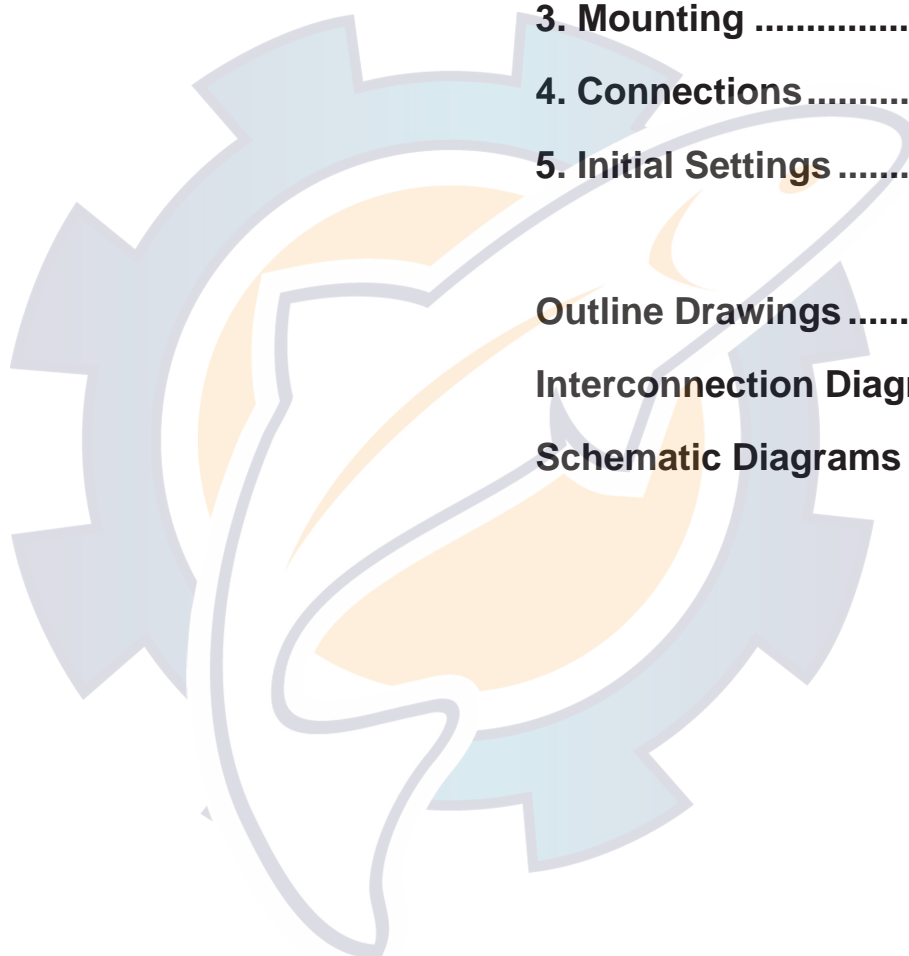
4. Connections	14
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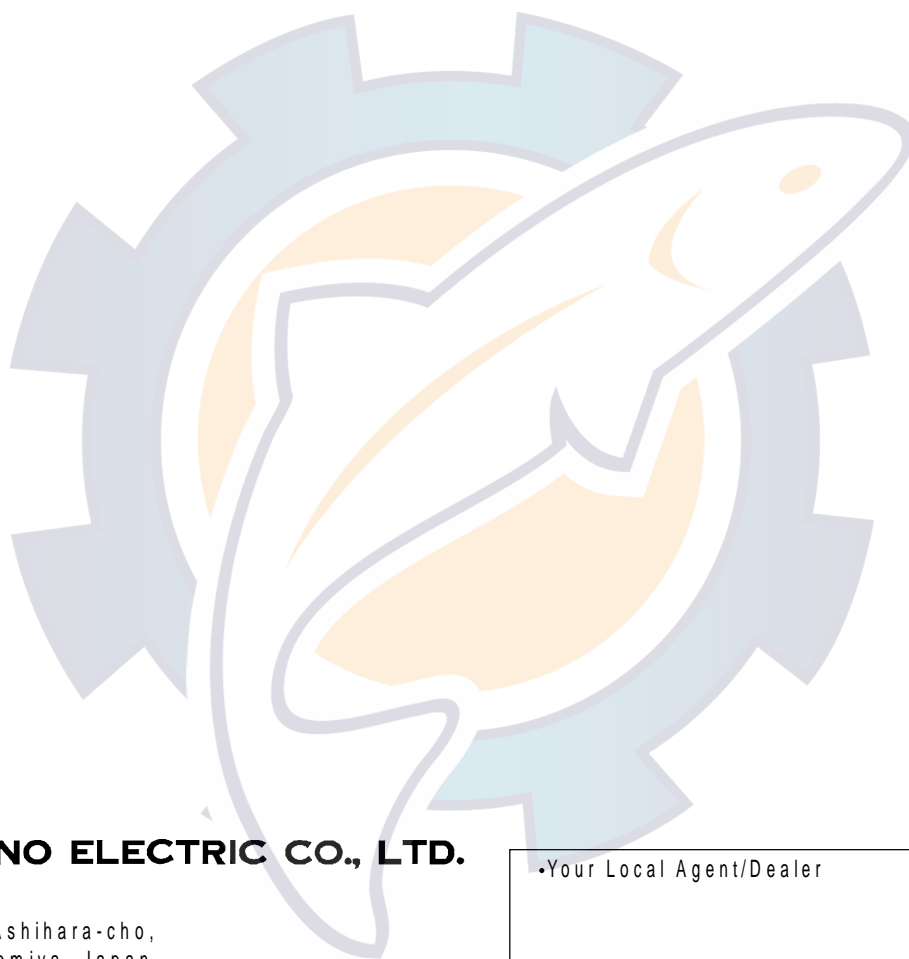
5. Initial Settings	21
----------------------------------	-----------

Outline Drawings	D-1
-------------------------------	------------

Interconnection Diagram	S-1
--------------------------------------	------------

Schematic Diagrams	S-2
---------------------------------	------------





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•Your Local Agent/Dealer

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(TENI)

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



* 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.

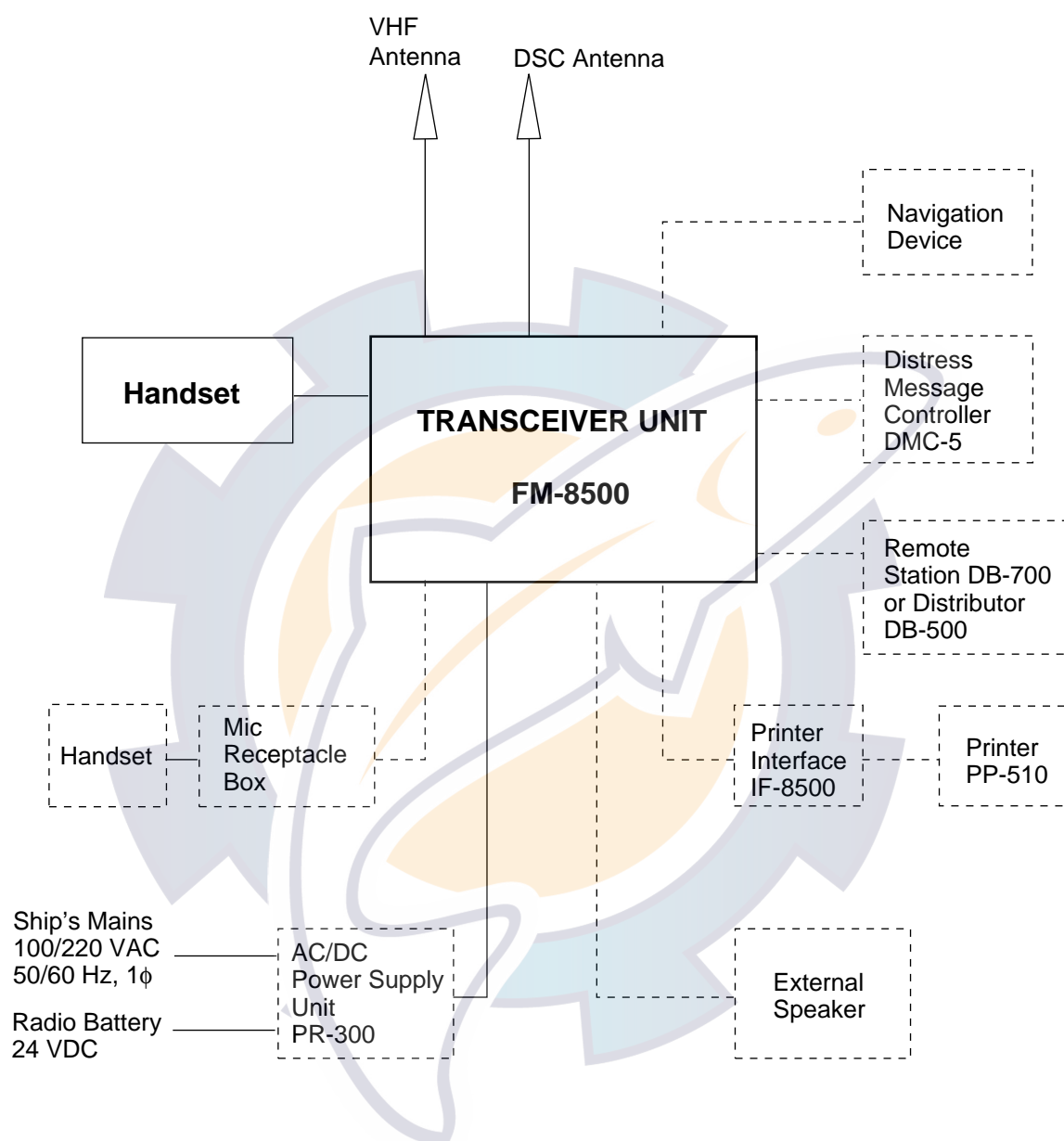
Confirm that the power supply voltage is compatible with the voltage rating of the equipment.

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



2. Equipment Lists

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

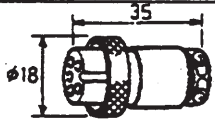
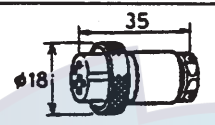
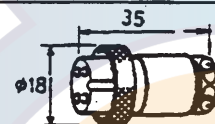
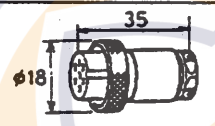
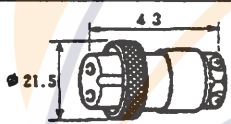
*: Version number

Optional Equipment

	Name	Type	Code No.	Remarks
1	AC-DC Power Supply	PR-300	000-130-431	RG-58/U
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	
6	Coaxial Cable	5D-2V *10M*	000-111-063	HS-6000FZ5(Handset)
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	
10	Carbon Mic Set	OP05-58	000-045-776	
11	Flush Mount Kit	OP05-73	005-386-010	HS-6000FZ6(Handset)
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 Controller	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	フリンタ用 FOR PRINTER
4	コネクタ CONNECTOR		FM14-7P CODE NO. 000-113-345	1	ハンセット用 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.		
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			CODE NO.		
			CODE NO.		

(略図の寸法は、参考値です。)

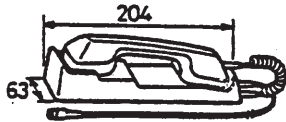
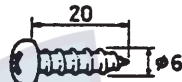

図 番 (1/1)
DWG. NO. C5603-M01-A

FURUNO ELECTRIC CO., LTD

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 N A M E	略 図 O U T L I N E	型 名 / 規 格 D E S C R I P T I O N S	数量 Q'TY	用途 / 備考 R E M A R K S
1	ハンドセット/ブラケット HANDSET/BRACKET		HSC701K-BX21	1	
			CODE NO. 000-138-000		
2	+ナハタツビ〇ンク*UIネジ* +TAPPING SCREW		6X20 13 $\frac{1}{2}$ SUS304	6	
			CODE NO. 000-800-414		
3	ミカ*キ平座金 FLAT WASHER		M6 SUS304	6	
			CODE NO. 000-864-129		
			CODE NO.		
			CODE NO.		
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(略図の寸法は、参考値です。)

図 番 (1/1)
DWG. NO. C5603-F01-C

FURUNO ELECTRIC CO., LTD

FURUNO

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

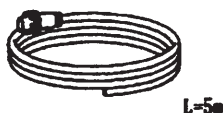
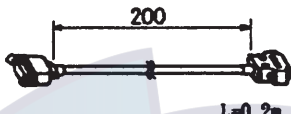

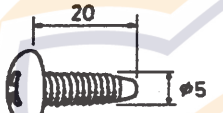
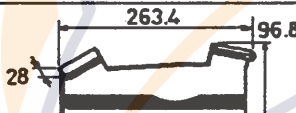
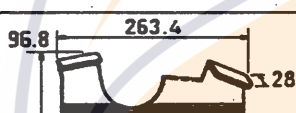

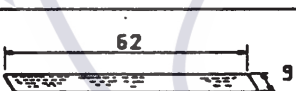
工事材料表 INSTALLATION MATERIALS		PP-510 プリンター PRINTER			
番号 No	名 称 N A M E	略 図 OUTLINE	型 名 / 規 格 DESCRIPTIONS	数量 Q'TY	用途 / 備考 REMARKS
1	電源ケーブル組品 POWER CABLE ASSY.	 L=5m	16S0084 (VCTF-0.75X3C *5M*) CODE NO 000-132-249	1	
2	変換ケーブル COUPLING CABLE	 L=0.2m	16S0083 UL2464 IFVV-SB 10PXA WG28 *0.2M* CODE NO 000-132-614	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 UL2464 IFVV-SB 10XA WG28 *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	 20 5	5X20 1/2 SUS304 CODE NO 000-802-081	4	
5	プリンタ取付板 (1) 組品 PRINTER FIXTURE	 263.4 96.8 28	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	 263.4 96.8 28	CP16-00502 SPCC 2.5GY5/1.5 #5-N CODE NO 004-434-410	1	
7	ハリマーク (INMAR) LABEL	 60 20	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	 62 9	16-007-6927-0 CODE NO 100-222-480	1	COMPASS SAFE DISTANCE
			CODE NO		
			CODE NO		

図 番 (1/1)
DWG. NO C5589-M01-D

FURUNO ELECTRIC CO., LTD

FURUNO

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

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3. Mounting

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

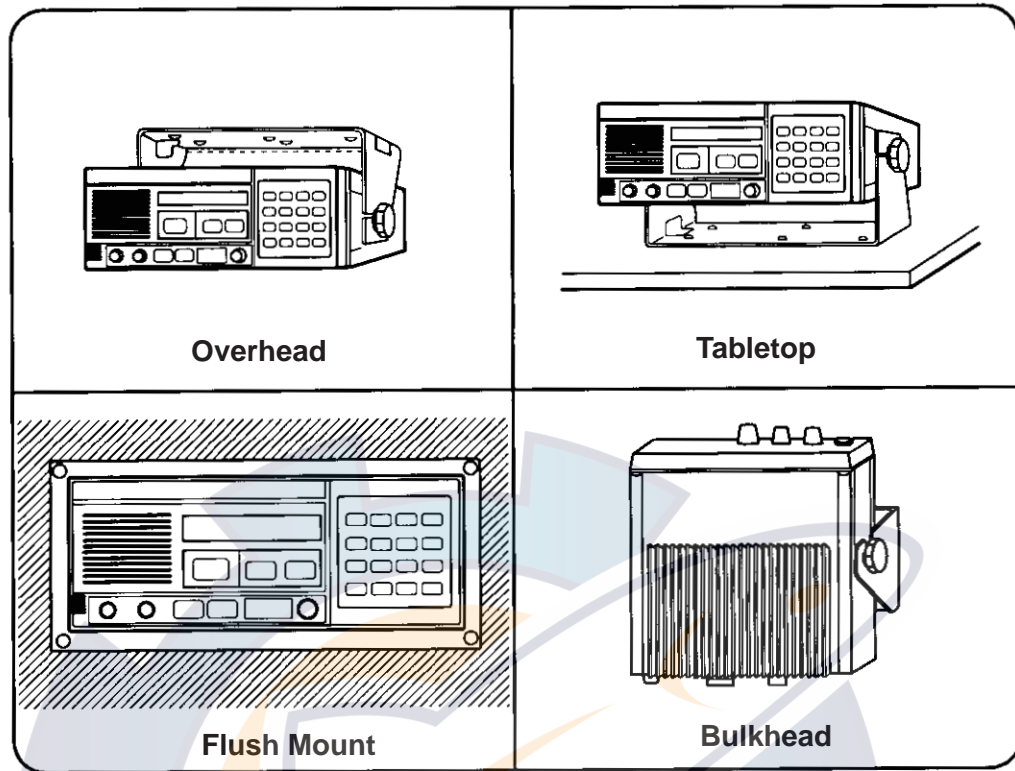
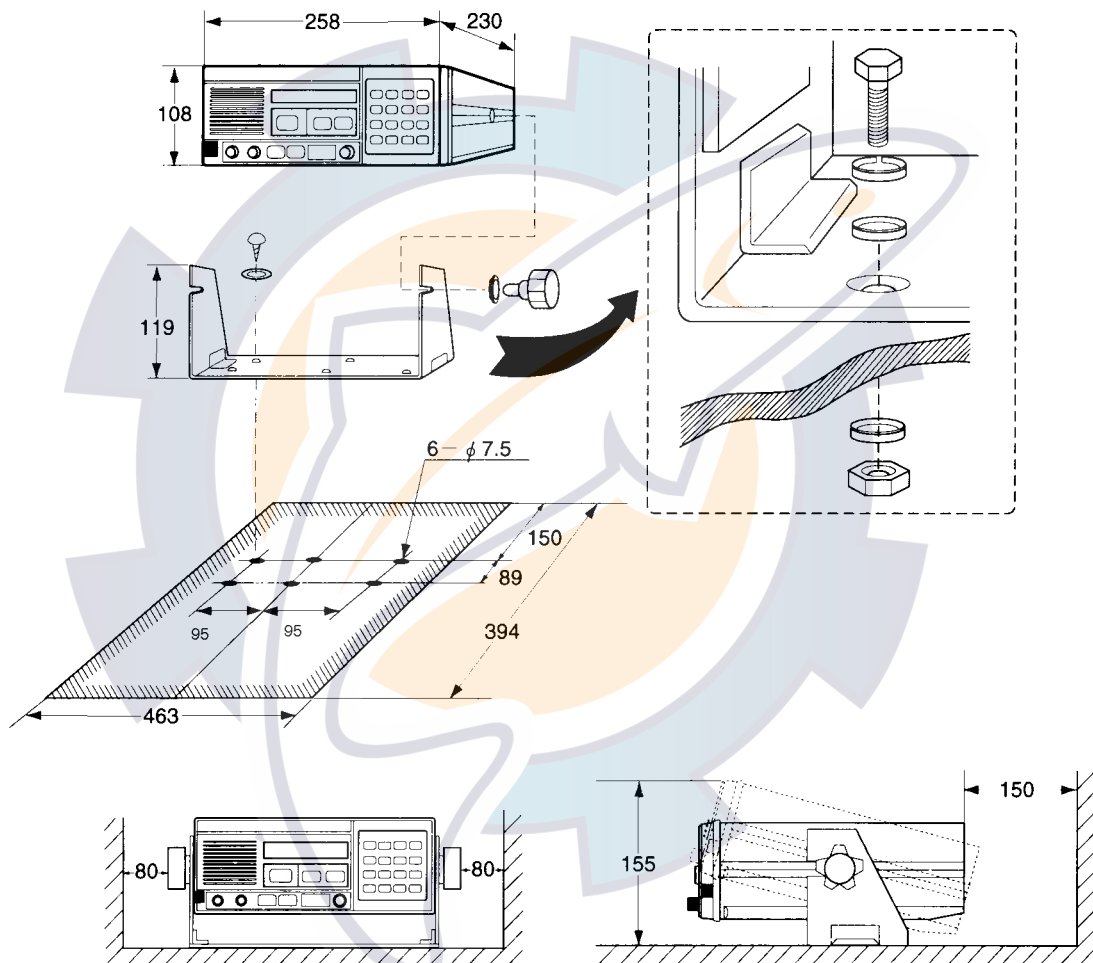


Figure 1 Overview of mounting methods

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.

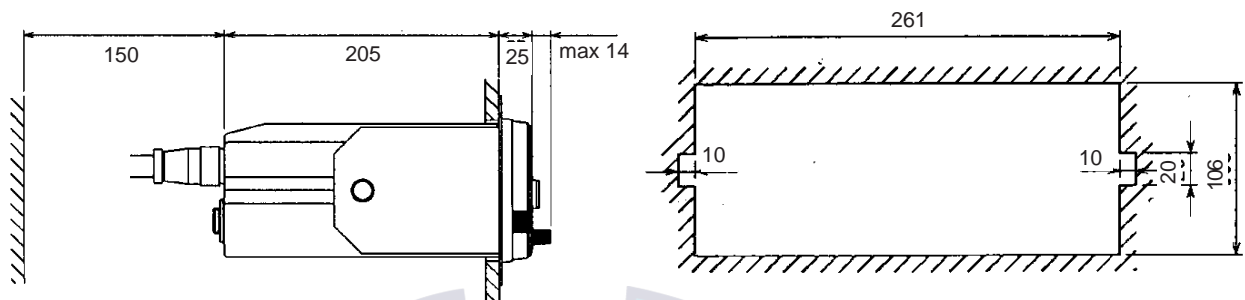


Figure 3 Mounting dimensions for flush mount

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 too 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).

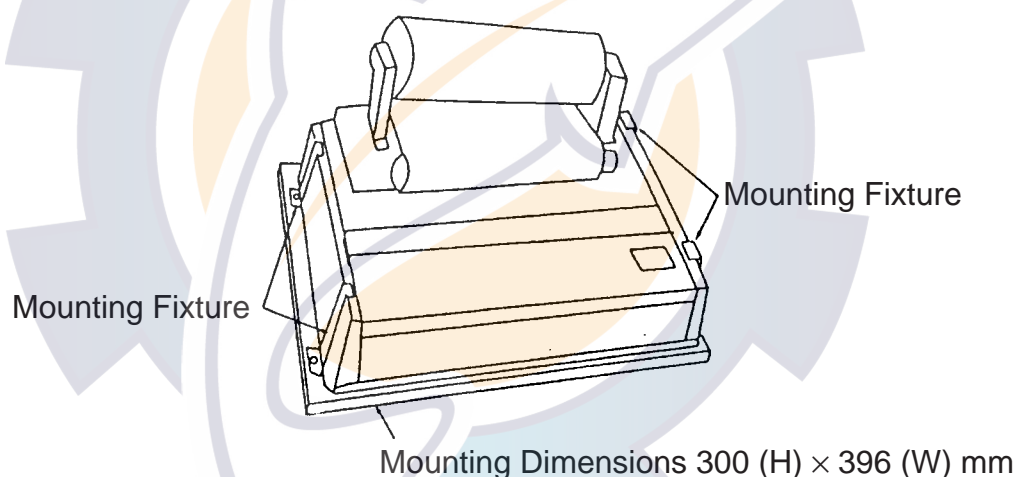


Figure 4 Mounting of Printer PP-510

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.

4. Connections

Overview

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

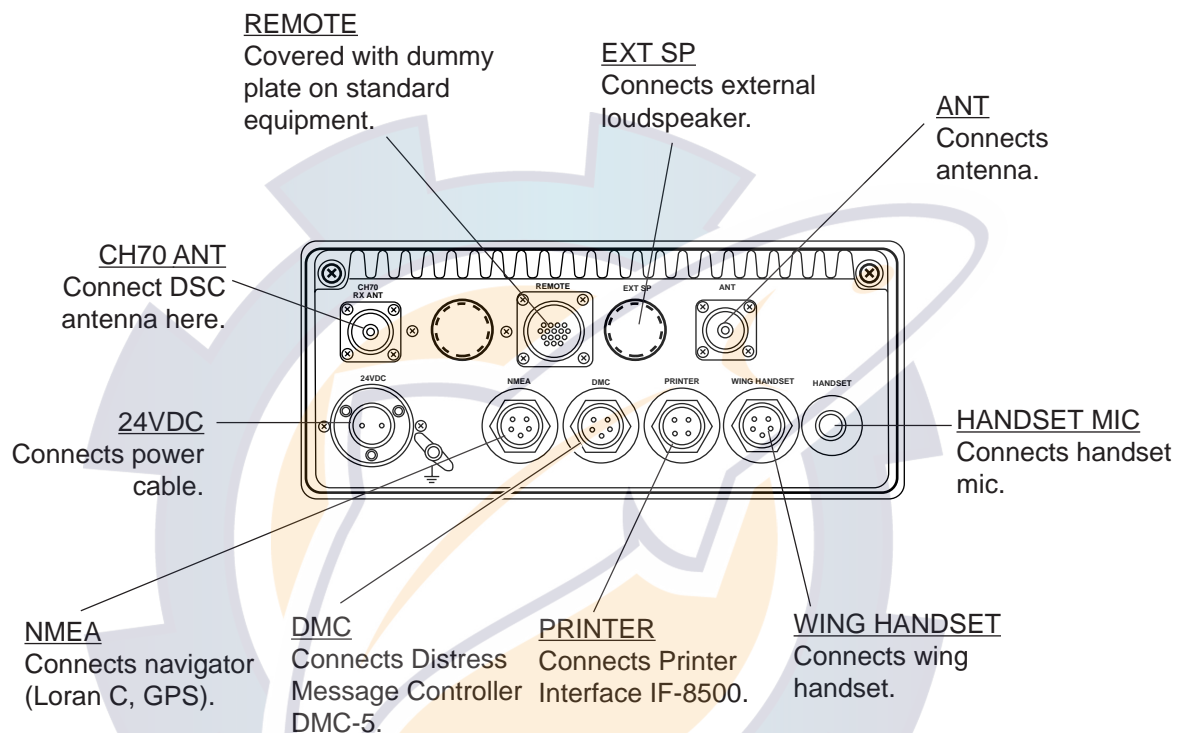


Figure 5 FM-8500, rear view

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.

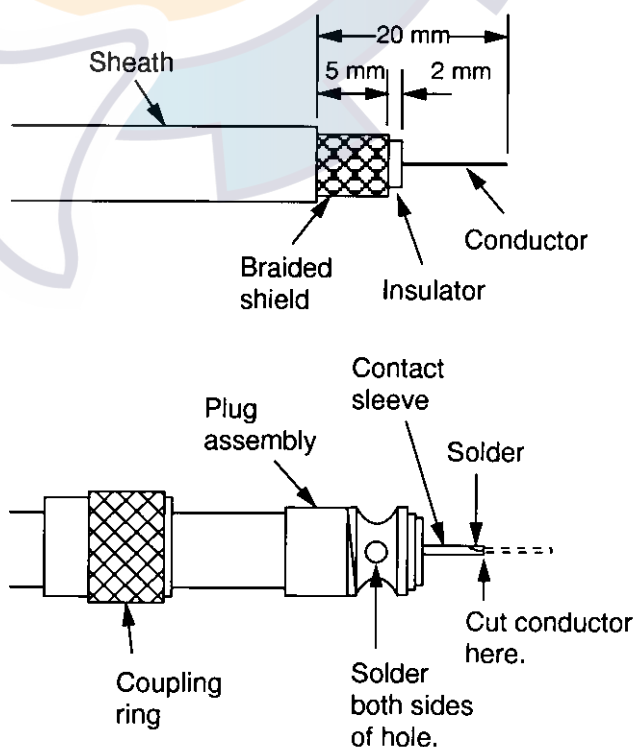


Figure 6 How to attach the M-type plug to the coaxial cable

Connection of DSC Antenna

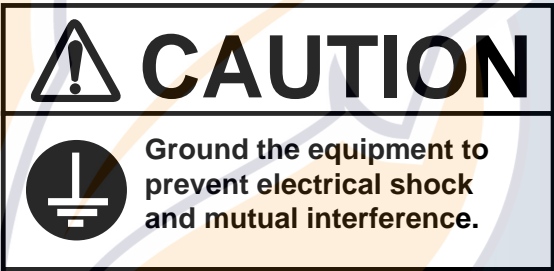
The DSC antenna is connected to the transceiver unit with a 50 ohm coaxial cable, type 5D-2V. Attach an M-type plug to the cable (if necessary) as shown in Figure 6. Screw the plug into the CH70 ANT connector at the rear of the transceiver unit.

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).



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

Changing tap connections

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

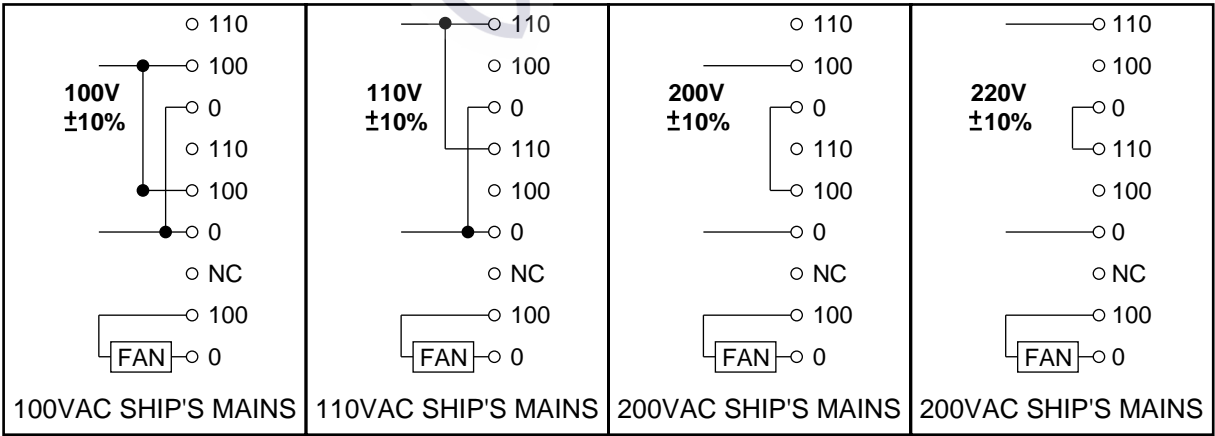


Figure 7 Tap connections in the PR-300

Changing the power fuse

Change the power fuse according to input voltage as follows.

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

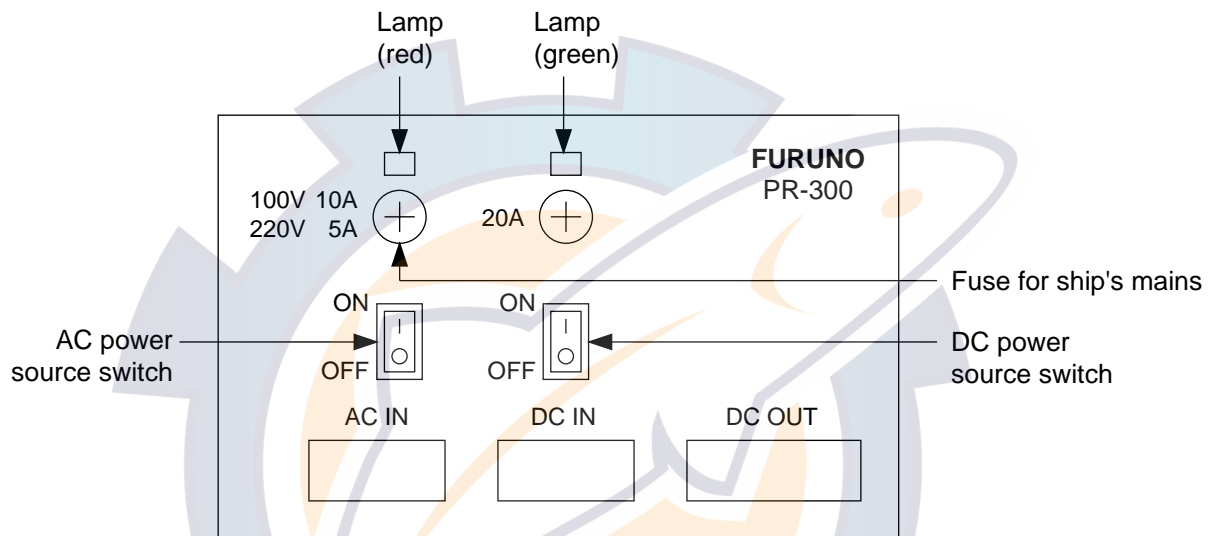


Figure 8 AC-DC power supply unit PR-300, rear view

Ground

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



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

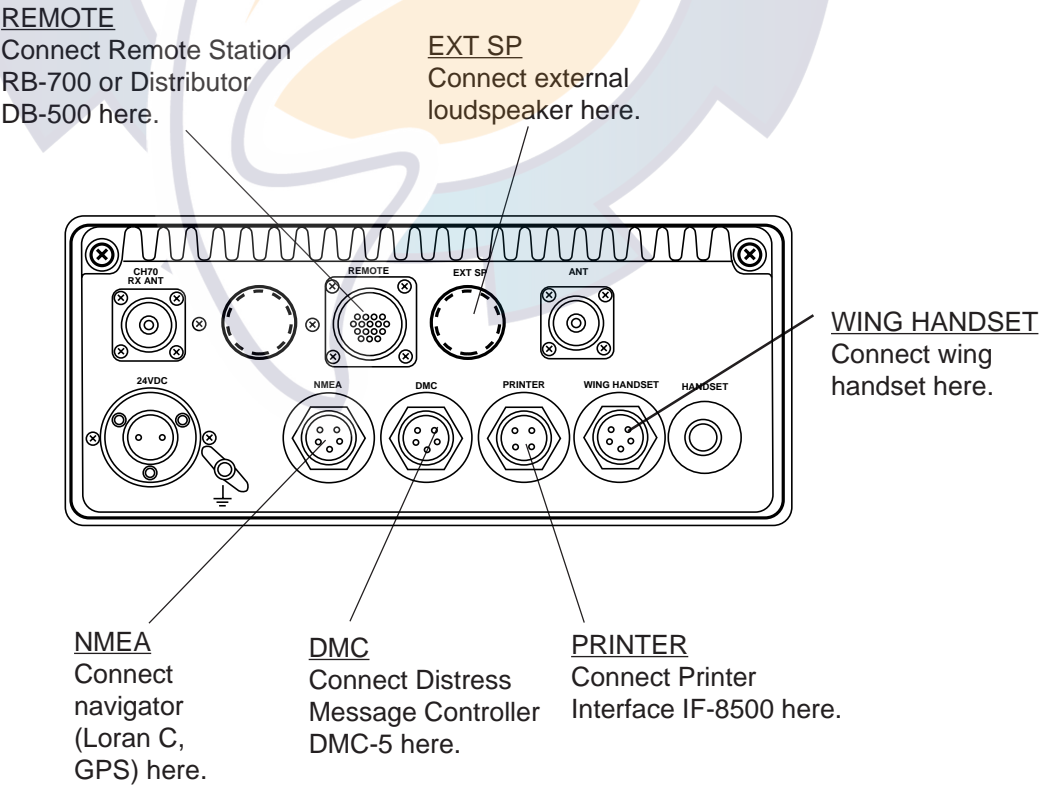


Figure 9 FM-8500, rear view, showing location of external equipment connectors

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.

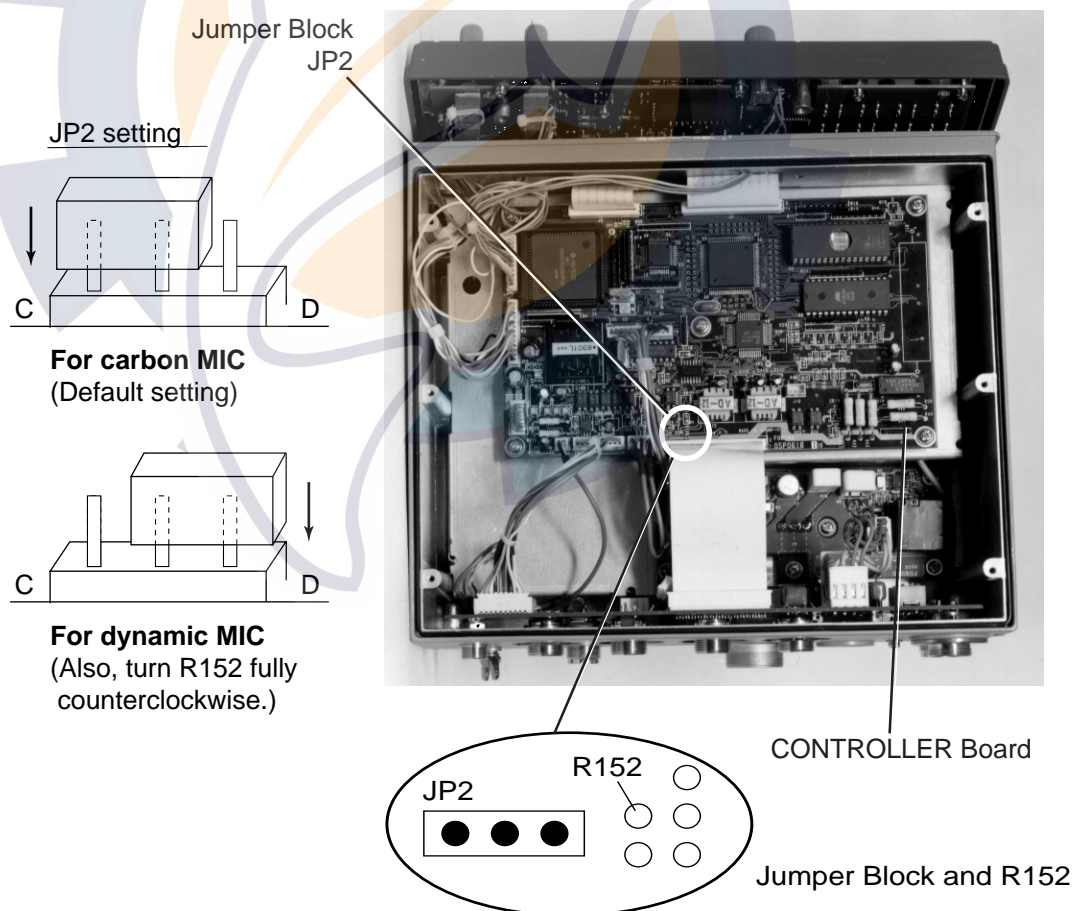


Figure 10 Transceiver unit, top view, showing CONTROLLER Board

Procedure

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

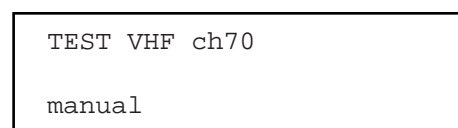


Figure 10a Test display

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

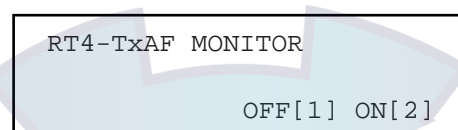


Figure 10b TxAf monitor screen

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

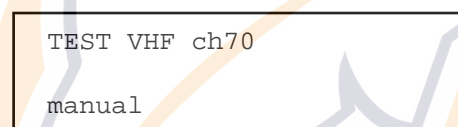


Figure 10c test screen

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

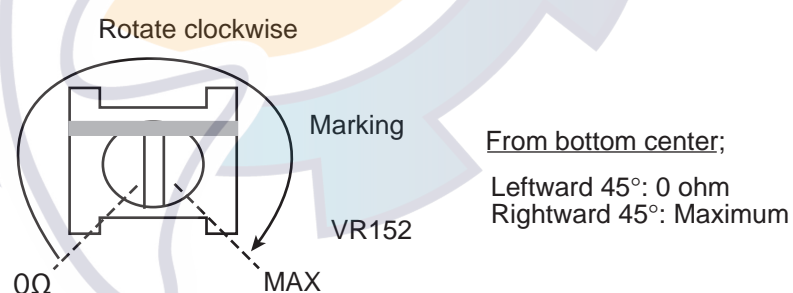


Figure 10d VR152 setting

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.

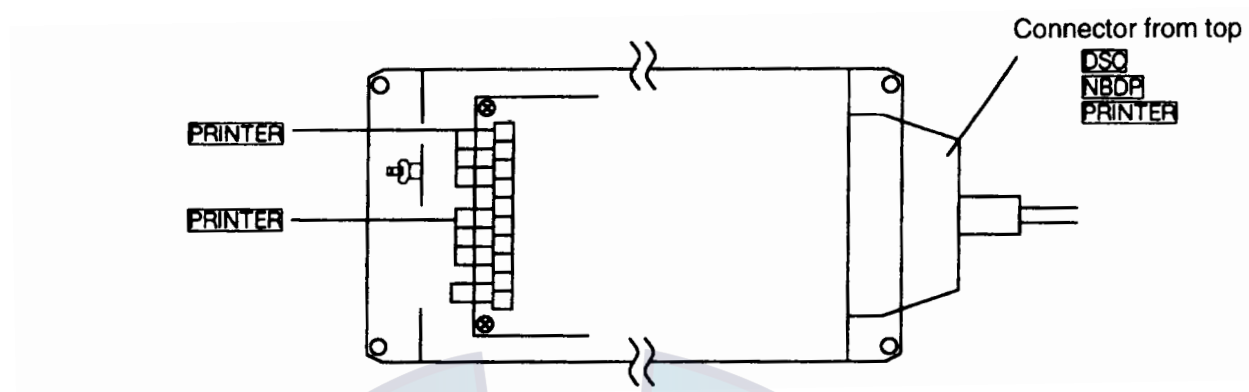
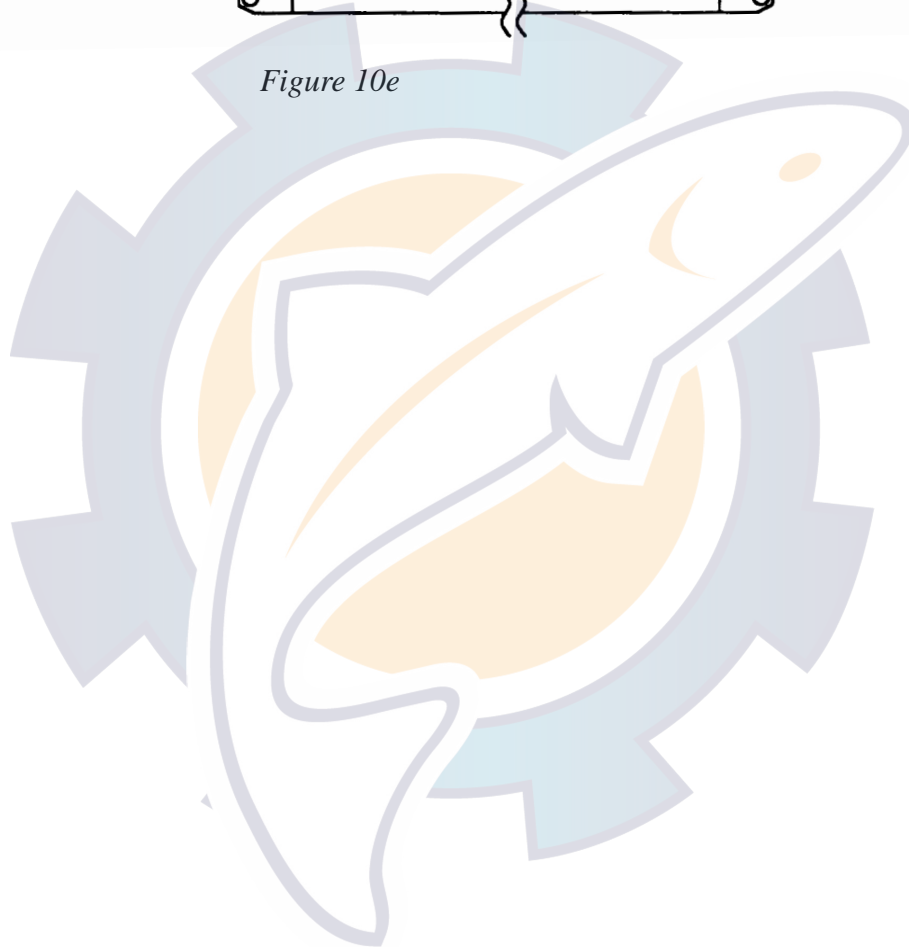


Figure 10e



5. Initial Settings

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

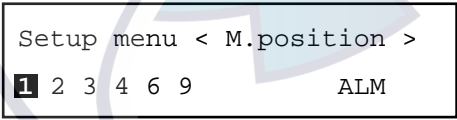
1. Rotate the **VOLUME** knob clockwise to turn on the equipment. "TEST" blinks.



TEST VHF CH70
auto

Figure 11 Test screen

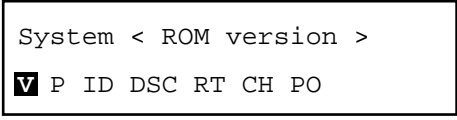
2. Press the **SELECT** key. The Setup menu appears.



Setup menu < M.position >
1 2 3 4 6 9 ALM

Figure 12 Setup menu

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



System < ROM version >
P ID DSC RT CH PO

Figure 13 System menu

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

```
System < Own-ID number >
V P ID DSC RT CH PO
```

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.

```
DSC:receiver < CH70 >
CH70[1] VHF[2]
```

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.

```
RT 1-Mode:USA/WX< OFF >
OFF[1] ON[2]
```

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.

```
RT 5-Auto 1W< ON >
      ON[1] OFF[2]
```

Figure 22

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

```
RT 6-Dual watch< ON >
      ON[1] OFF[2]
```

Figure 23

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

```
RT 6-Scanning< ON >
      ON[1] OFF[2]
```

Figure 24

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

```
RT 7-Auto SQ<L00 H03 HO30>
      LOW= 0 HIGH HOLD
```

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.

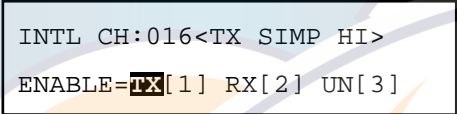
Setting value x 20 (msec) = Time desired

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

Setting Channel System

Procedure

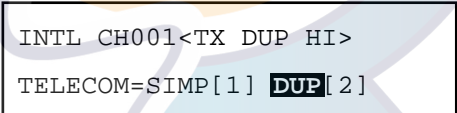
1. Press the right arrow key to select CH.
2. Press the **ENT** key. The international channel setting display appears.



```
INTL CH:016<TX SIMP HI>
ENABLE=TX[1] RX[2] UN[3]
```

Figure 26

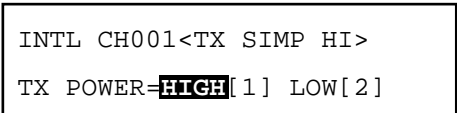
3. Rotate **CHANNEL** Knob to select channel to set.
TX: Transmission and reception available
RX: Reception only
UN: Transmission and reception prohibited
4. Press **1** (TX), **2** (RX) or **3** (UN) key depending on channel. Figure 27 shows screen appearance when TX is selected.



```
INTL CH001<TX DUP HI>
TELECOM=SIMP[1] DUP[2]
```

Figure 27

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



```
INTL CH001<TX SIMP HI>
TX POWER=HIGH[1] LOW[2]
```

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.

```
P01/CH123<TX SIMP LOW>
PRIV No.SELECT:[<][>]key
```

Figure 29

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

```
P02/CH---<-- ---- -->
PRIV No.SELECT:[<][>]key
```

Figure 30

12. Press the **ENT** key.

```
P02/CH001<UNABLE>
ENABLE=TX[1] RX[2] UN[3]
```

Figure 31

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

```
P02/CH234<UNABLE>
ENABLE=TX[1] RX[2] UN[3]
```

Figure 32

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

```
P02/CH234<TX SIMP LOW>
TELECOM=SIMP[1] DUP[2]
```

Figure 33

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

```
P02/CH234<TX SIMP LOW>
TX POWER=HIGH[1] LOW[2]
```

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.

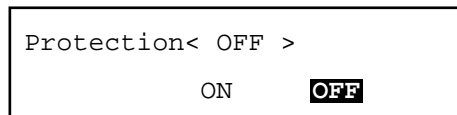
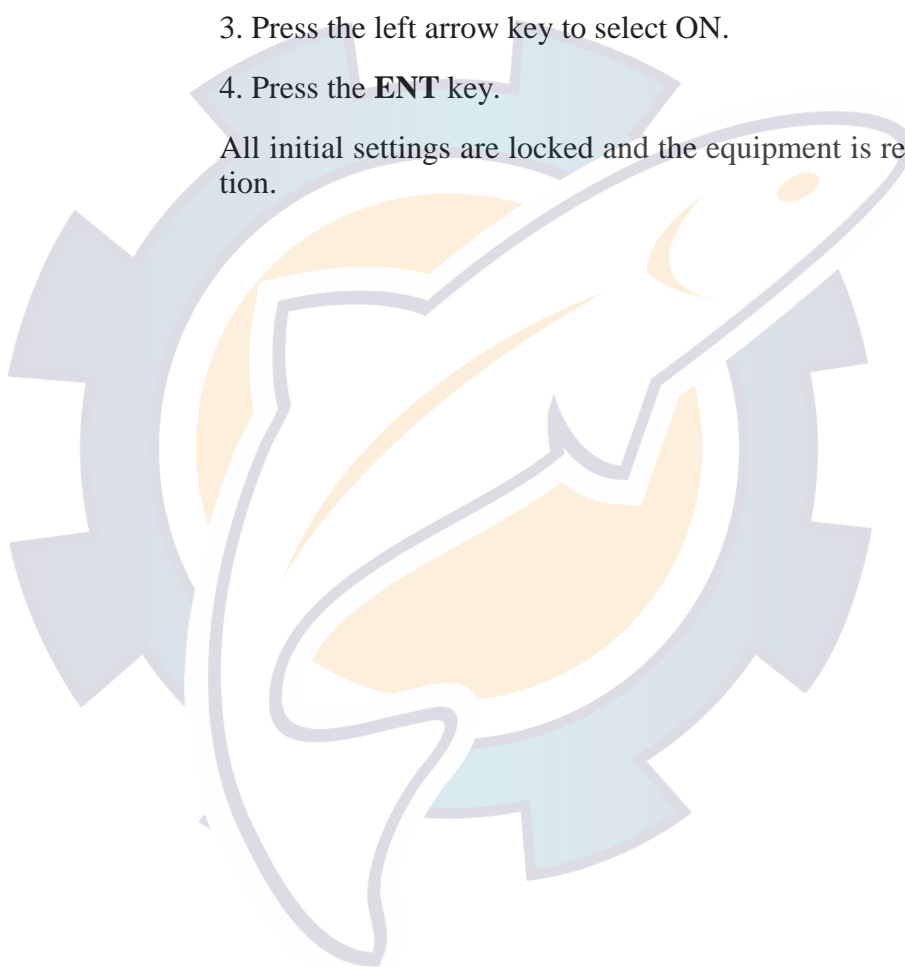
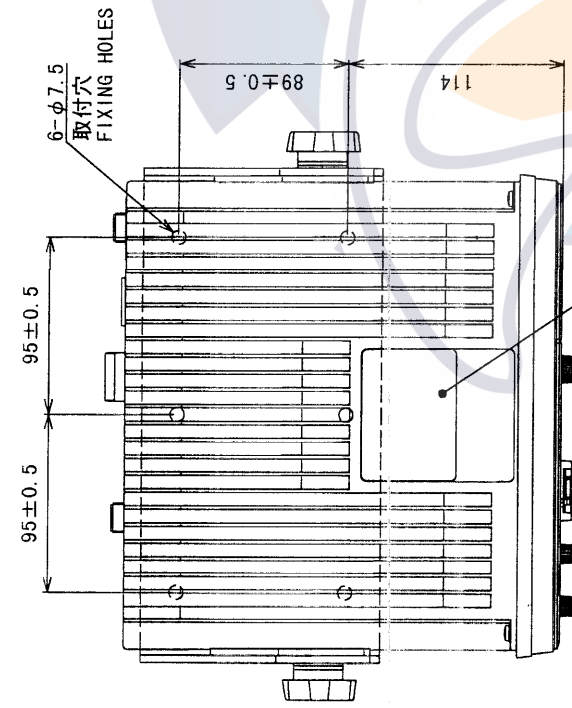


Figure 35

3. Press the left arrow key to select ON.
4. Press the **ENT** key.

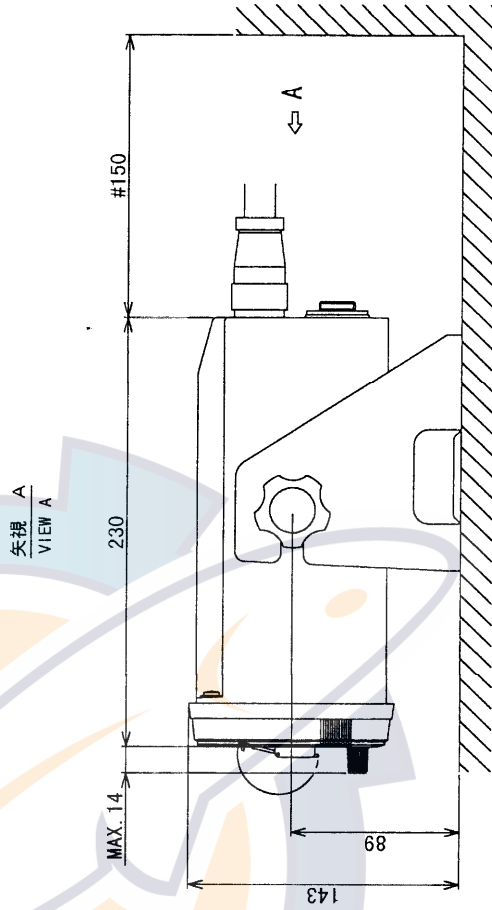
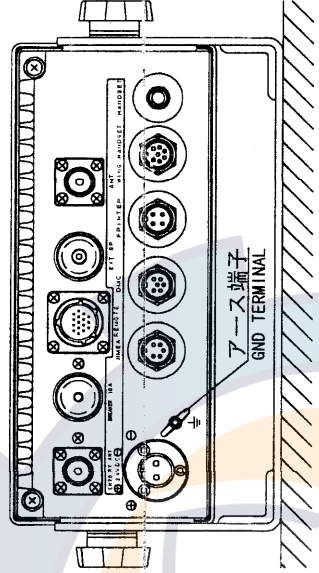
All initial settings are locked and the equipment is ready for operation.





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



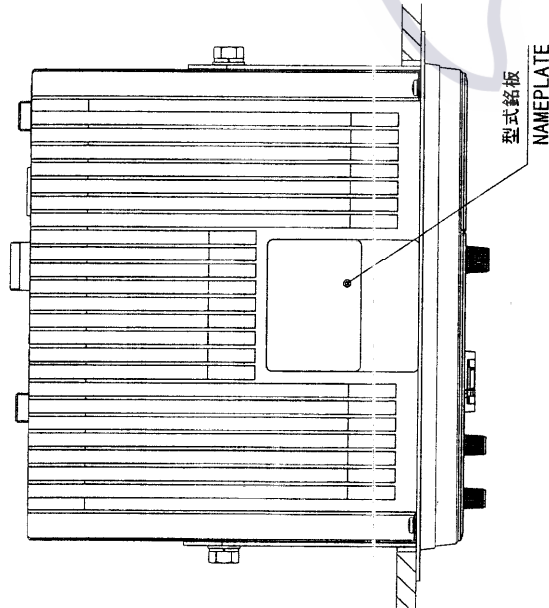
注 記

- 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インスペイス空間寸法とする。

NOTE

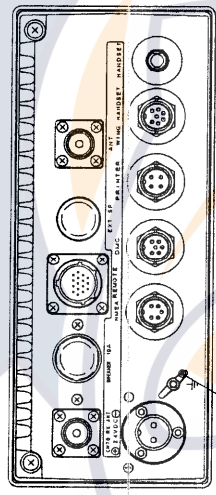
- 1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.
- 2. # : RECOMMENDED SERVICE CLEARANCE.

DRAWN Jun 9 '99 T. Matsuyama	TITLE FM-8500/8700
CHECKED Jun 10 '99 K. Kusumoto	名称 国際VHF無線電話装置
APPROVED Jun 18 '99 K. Kusumoto	外寸図
SCALE 1/4 MASS 6 kg	NAME VHF RADIO TELEPHONE
DWG. No. 05603-601-E	OUTLINE DRAWING

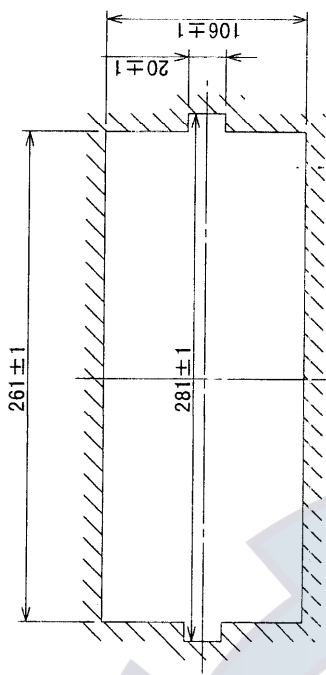


寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
L ≤ 50	± 1. 5
50 < L ≤ 100	± 2. 5
100 < L ≤ 500	± 3

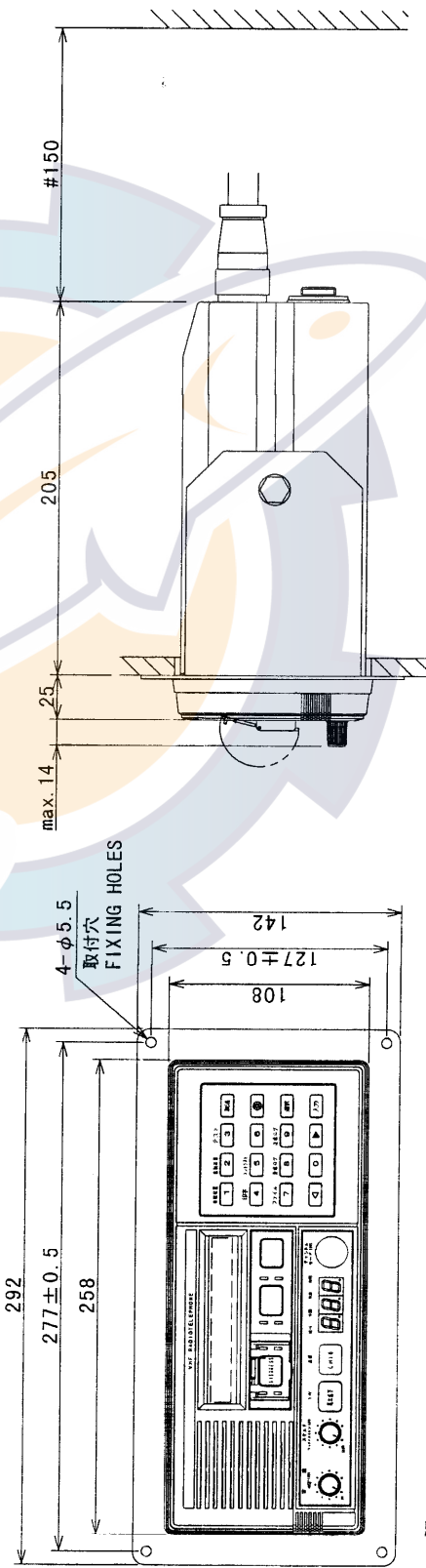
表 1
TABLE 1



背面図
REAR VIEW



取付穴法 (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. Kuwasaki	TITLE FM-8500/8700	
CHECKED Jun 7 99 K. Kusumaki	名称 国際VHF無線電話装置 (埋込型)	
APPROVED Jun 9 99 K. Kusumaki	外寸図	
SCALE 1/4	NAME VHF RADIOTELEPHONE (FLUSH MOUNT)	
MASS 5.0 kg		
DWG. No. C5603-G04-E		
	05-073-1600-G1	OUTLINE DRAWING

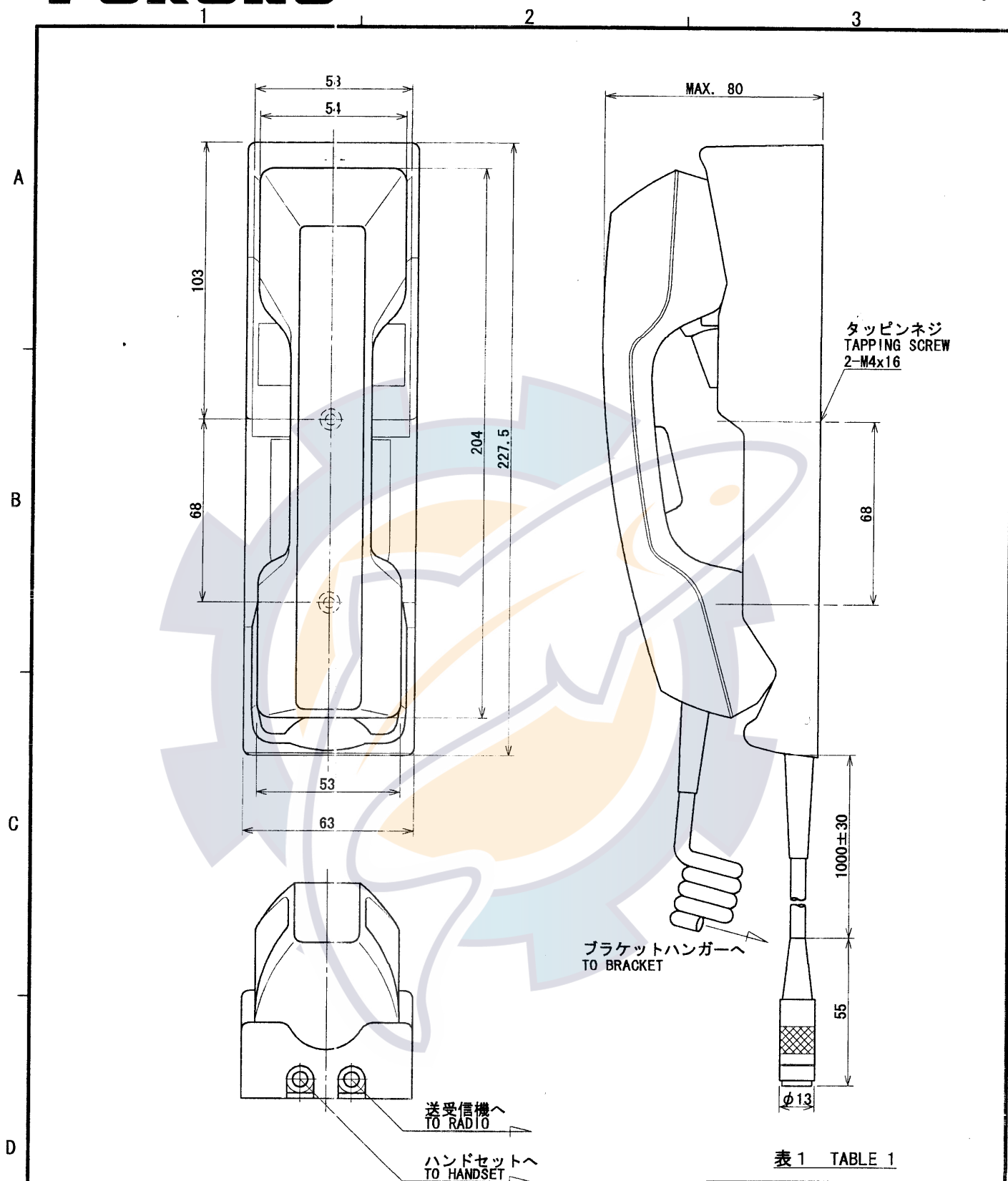


表 1 TABLE 1

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

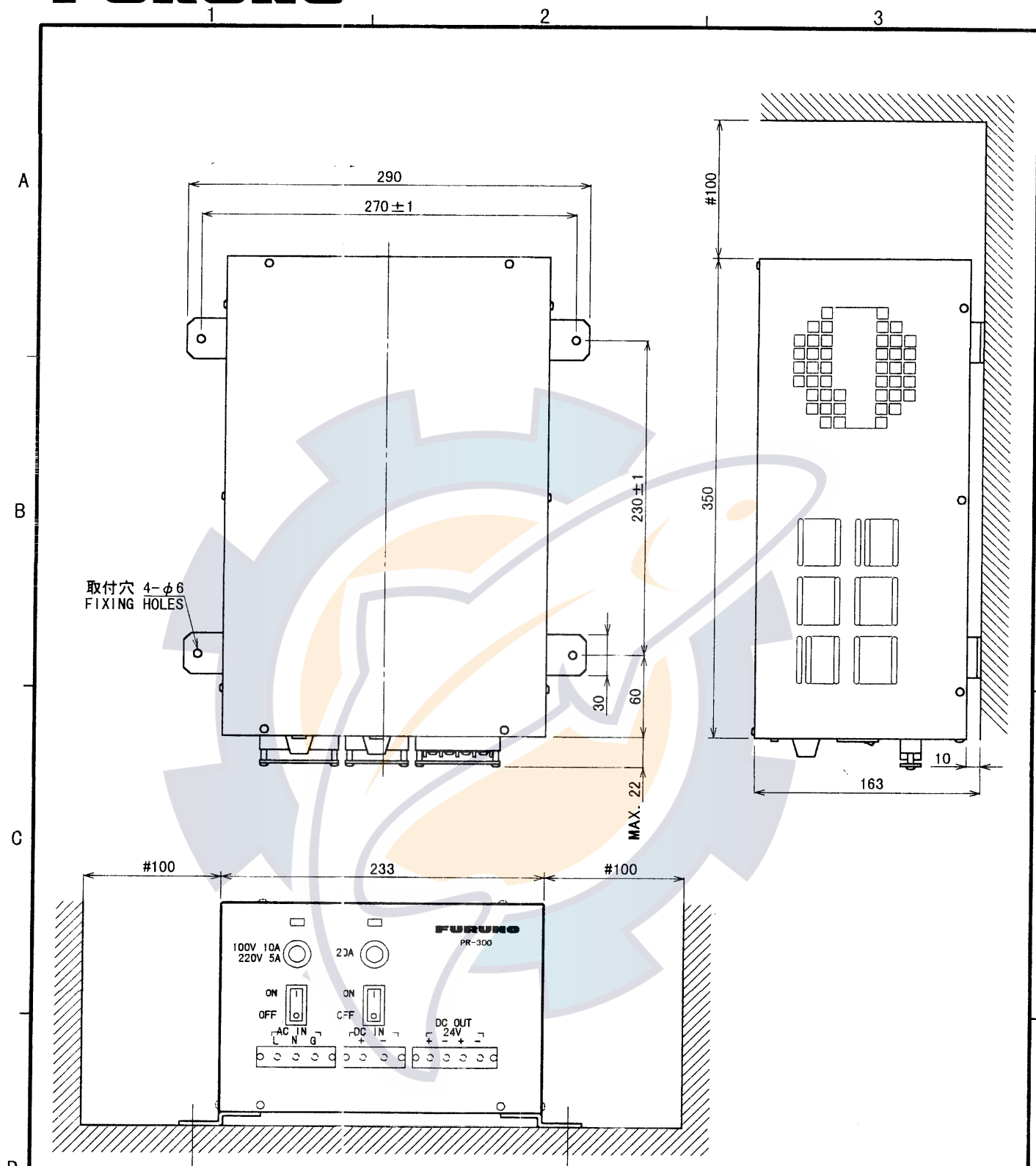
注記

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 TYAMASAKI	TITLE HSC701K-B20
CHECKED Nov 16 '99 K. Kusumoku	名称 ハンドセット (ブラケット付)
APPROVED Nov 16 '99 K. Kusumoku	外寸図
SCALE 1/2	NAME HANDSET W/ BLACKET
MASS 0.65 kg	OUTLINE DRAWING
DWG. No. C5603-G06- D	



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。

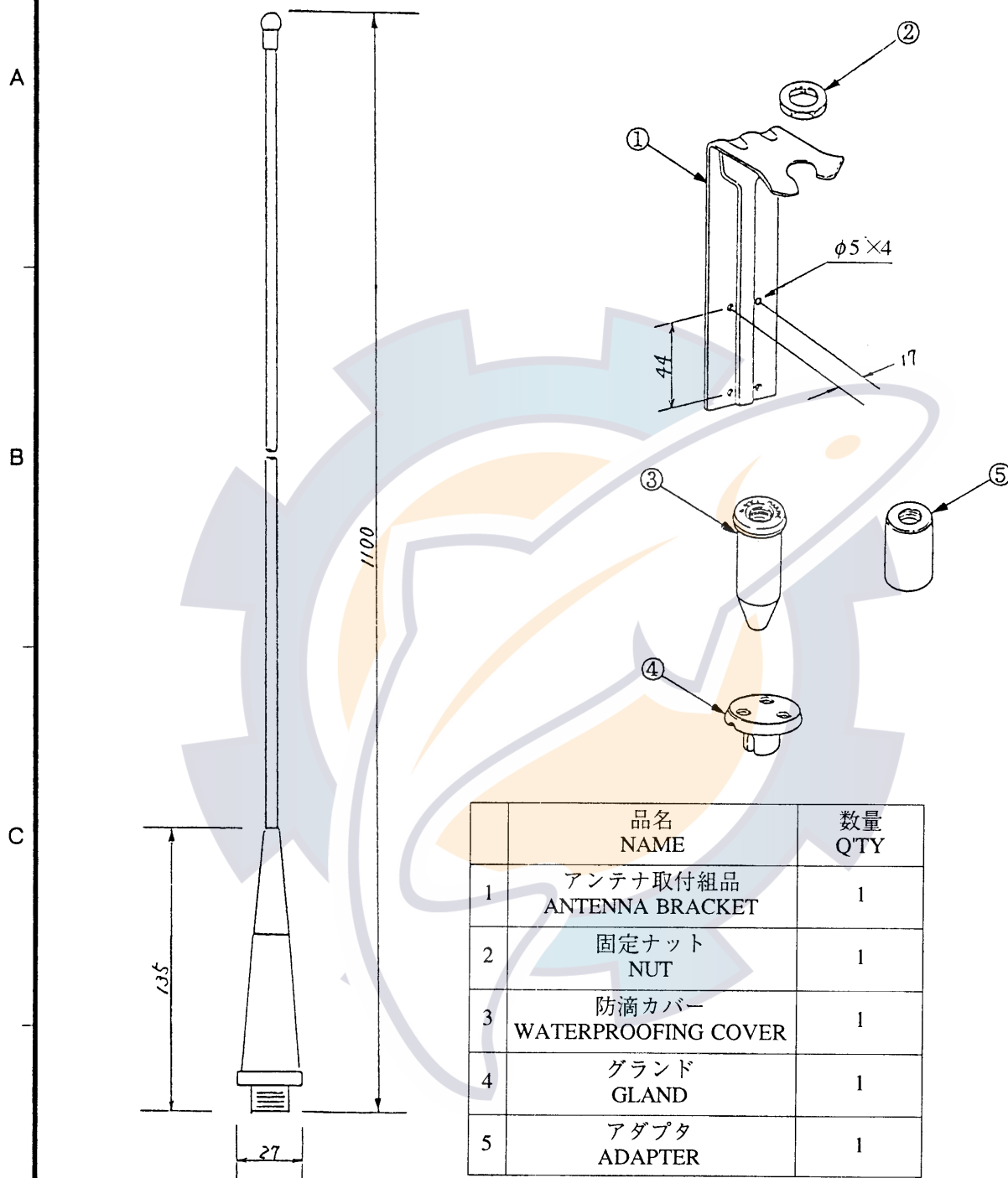
NOTE:

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

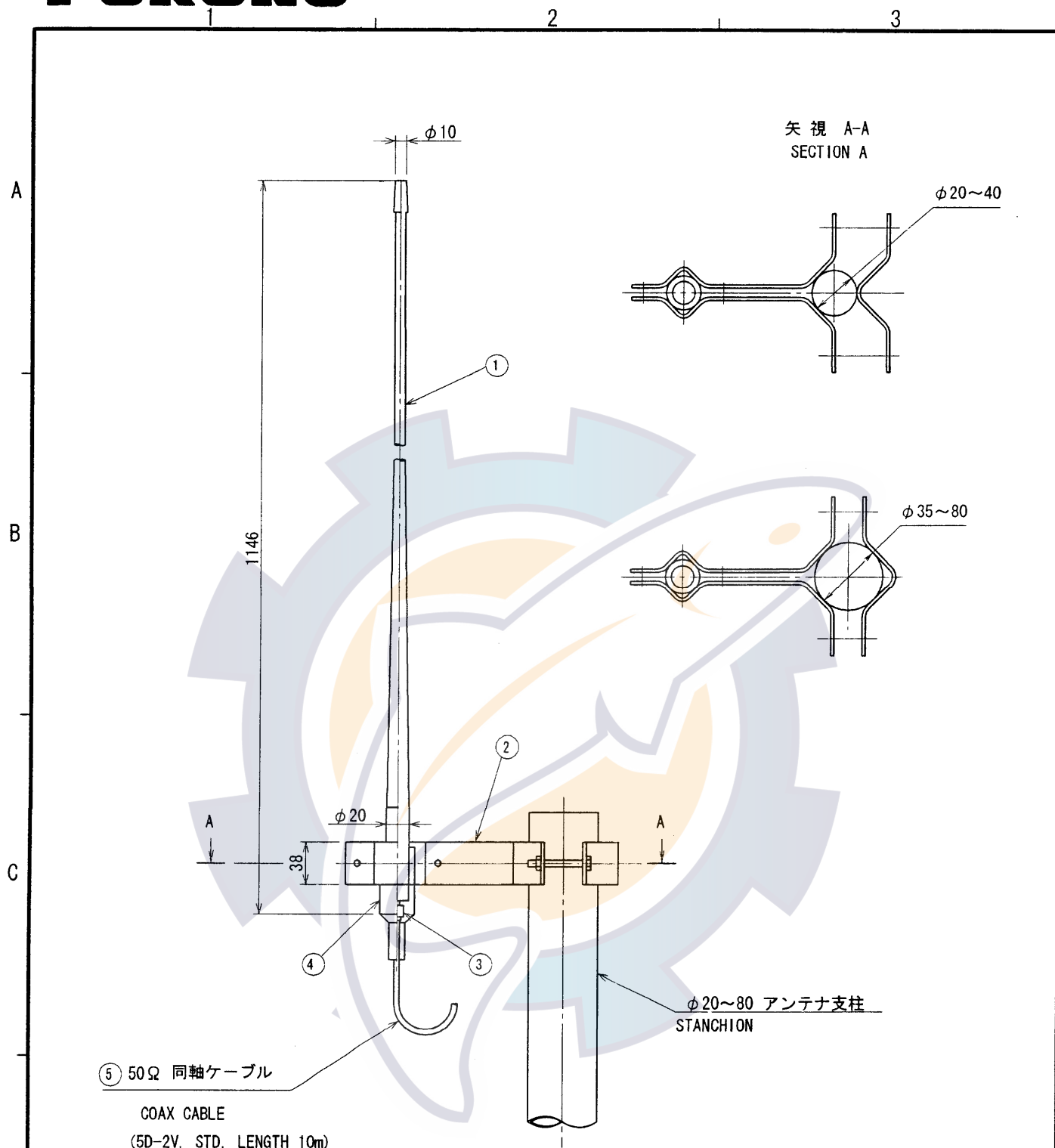
DRAWN June 19 '60 T. YAMASAKI	TITLE PR-300
CHECKED June 19 '60 T. Kuni	名称 AC-DC電源ユニット
APPROVED June 19 '60 T. Kuni	外寸図
SCALE 1/4	NAME AC-DC POWER SUPPLY UNIT
MASS 14.5 kg	OUTLINE DRAWING
DWG. No. C5003-G02- D	



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. V. I. H. U. O.			TYPE RA106
CHECKED Nov. 13. '95 K. Okamoto			名称 150MHz アンテナ外觀図
APPROVED Nov. 13. '95 K. Okamoto	FM-2678 FM-8500		外寸図
SCALE \propto	MASS — kg	APPLICABLE TO: (MODEL)	BLOCK NO.
DWG NO. C5603-G02- A	05-001-4354- 0		NAME VHF MARINE ANTENNA
			OUTLINE DRAWING



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
品番 ITEM	品名 NAME	材質 MATERIAL	数量 Q'TY	図番 DWG No.	備 考 REMARKS

DRAWN
Sep 27 '00 T. YAMASAKI

CHECKED
Sep 27 '00 Y. K.

APPROVED
Sep 27 '00 Y. K.

SCALE
1/5

MASS
0.7 kg

DWG. No.
C5011-042- B

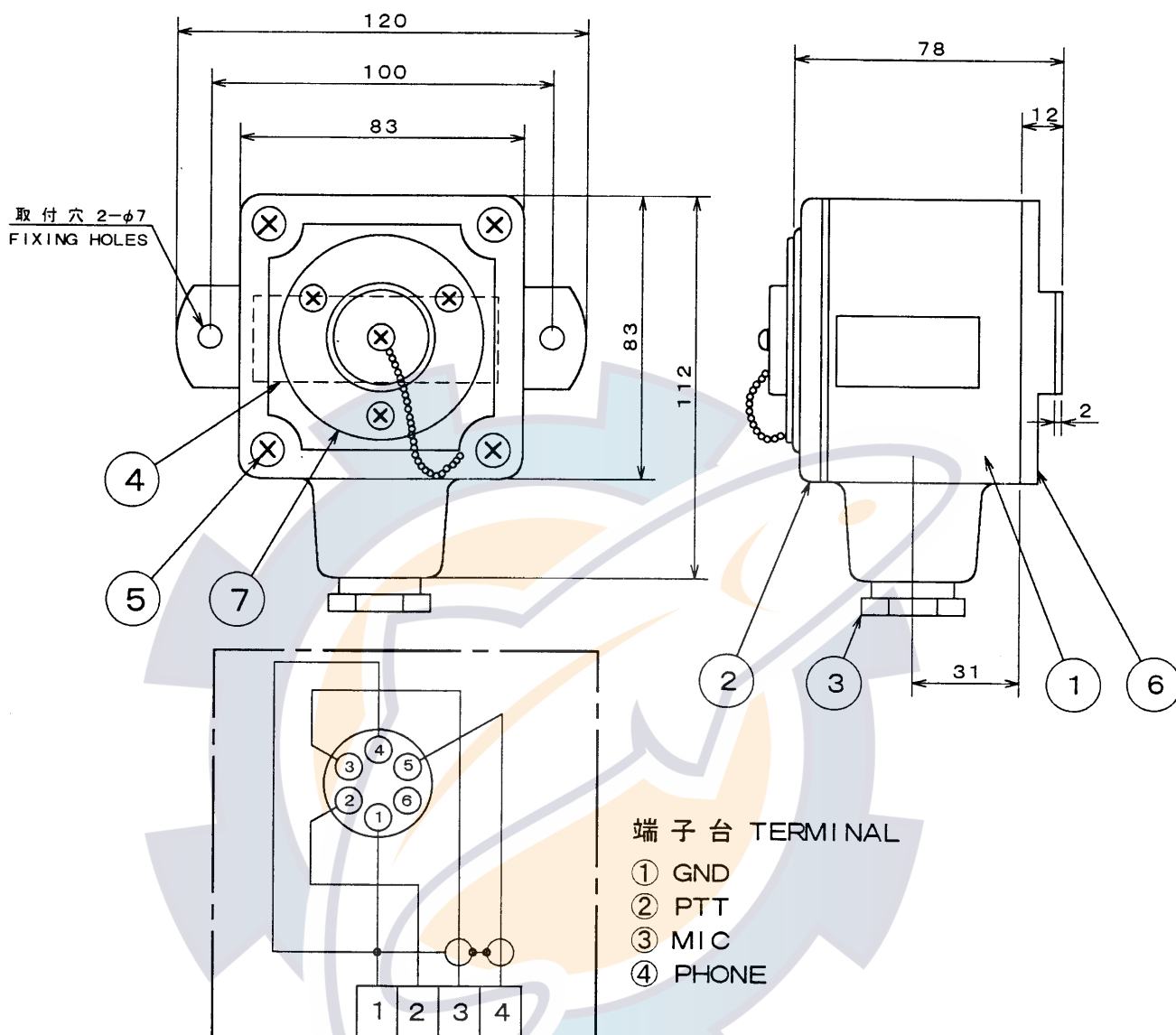
TITLE
150M-W2VN

名称
150MHzアンテナ

外寸図

NAME
VHF MARINE ANTENNA

OUTLINE DRAWING



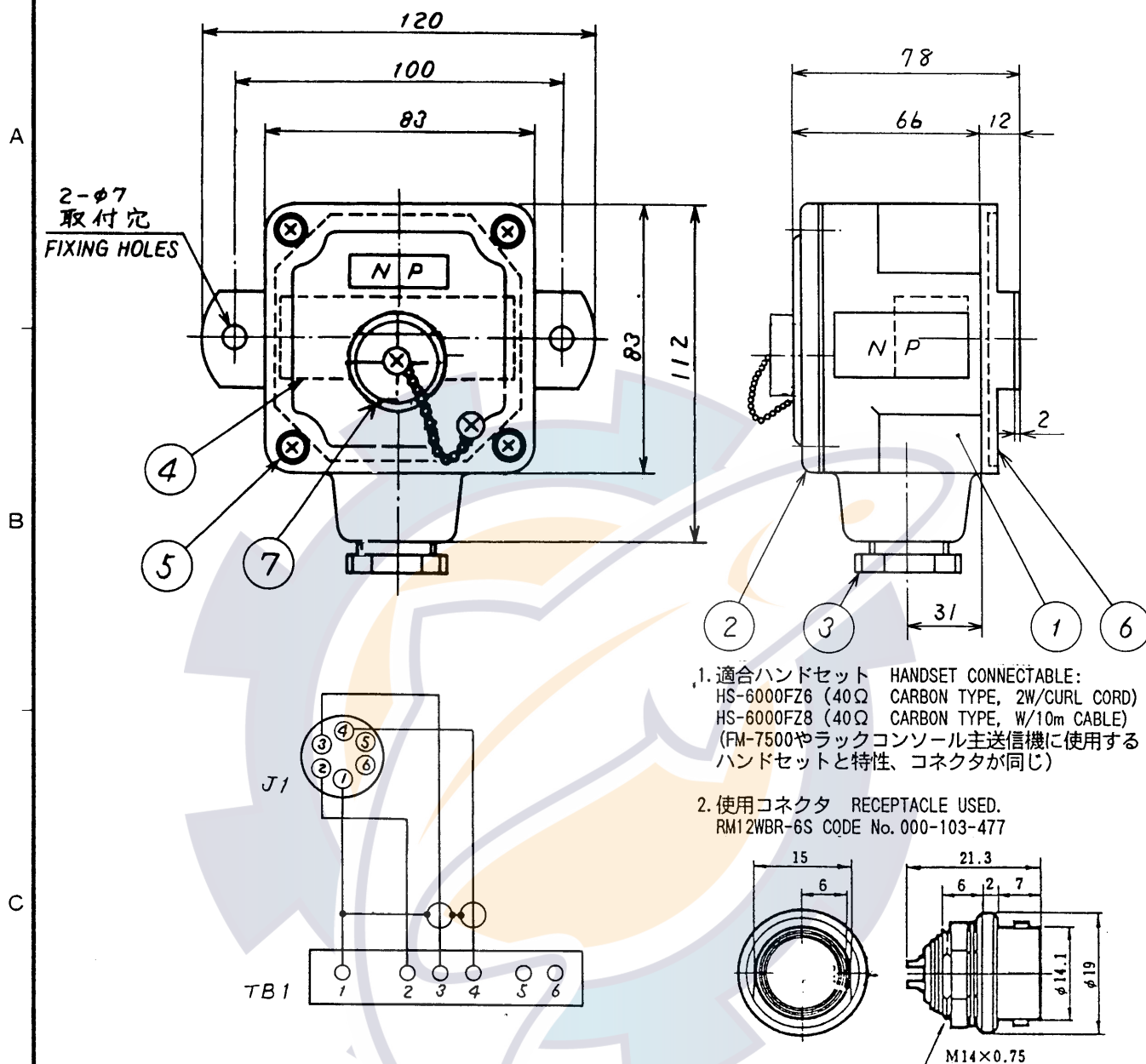
塗装色
COATING COLOR

MUNSELL 25G7/2

指定 SPECIFIED

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		
品番 ITEM	品名 NAME	材質 MATERIAL	数量 Q'TY	図番 DWG NO	摘要 REMARKS
		TITLE RBD-VHF-B (FOR HS-6000-FZ5/11)			
		名称 マイクレセプタクルボックス			
		外寸図			
		NAME MIC RECEPTACLE BOX			
		OUTLINE DRAWING			

FURUNO ELECTRIC CO., LTD.

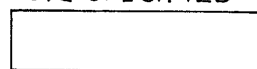


塗装色

COATING COLOR

MUNSELL 2.5G 7/2

指定 SPECIFIED



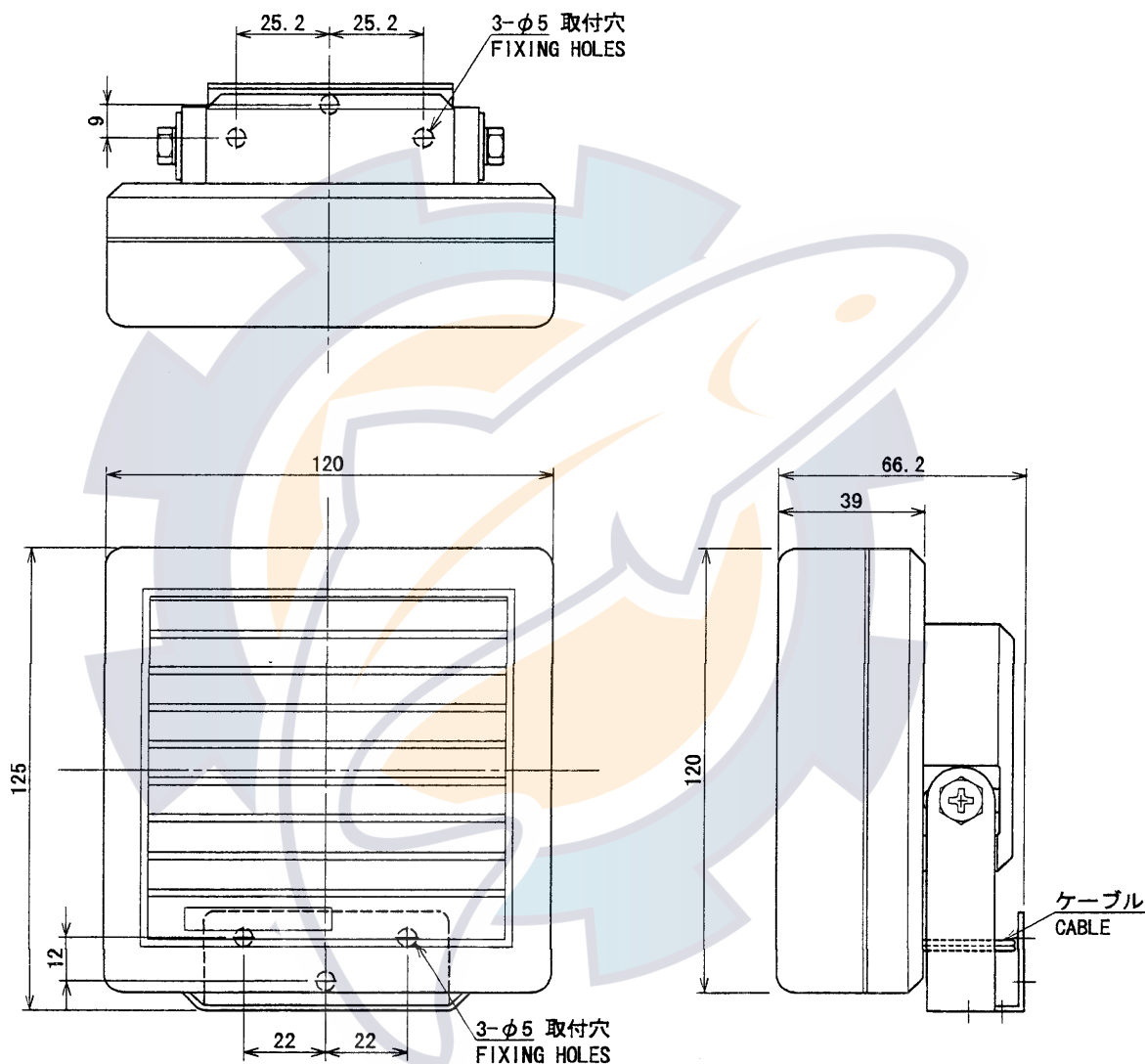
RBD-VHF-A	HS-6000FZ6
RBD-VHF-B	HS-6000FZ5

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		
品番 ITEM	品名 NAME	材質 MATERIAL	数量 Q'TY	図番 DWG. NO.	摘要 REMARKS

承認 APPROVED	Oct. 28 '85 <i>[Signature]</i>	三角法 THIRD ANGLE PROJECTION	名称 TITLE	マイクロセプラクルボックス RBD-VHF-A MIC RECEPTACLE BOX (FOR HS-6000FZ6/8)	
検図 CHECKED	Oct. 24 '85 <i>[Signature]</i>	尺度 SCALE	1/2		
製図 DRAWN	Oct. 24 '85 <i>[Signature]</i>	重量 WEIGHT	0.6 kg	図番 DWG. NO.	C5450 - 006 - E

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



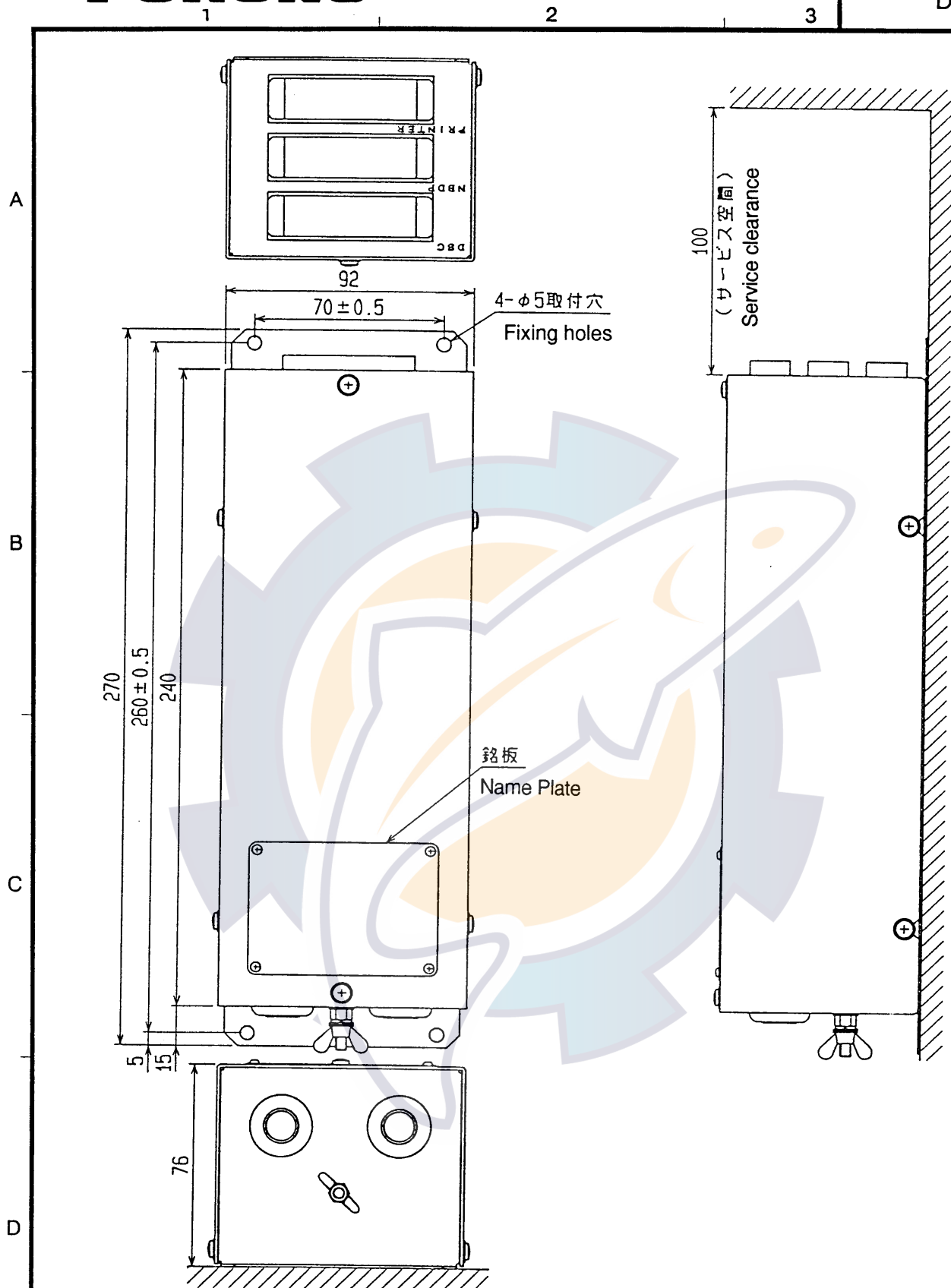
注記

1) 指定なき寸法公差は表 1 による。

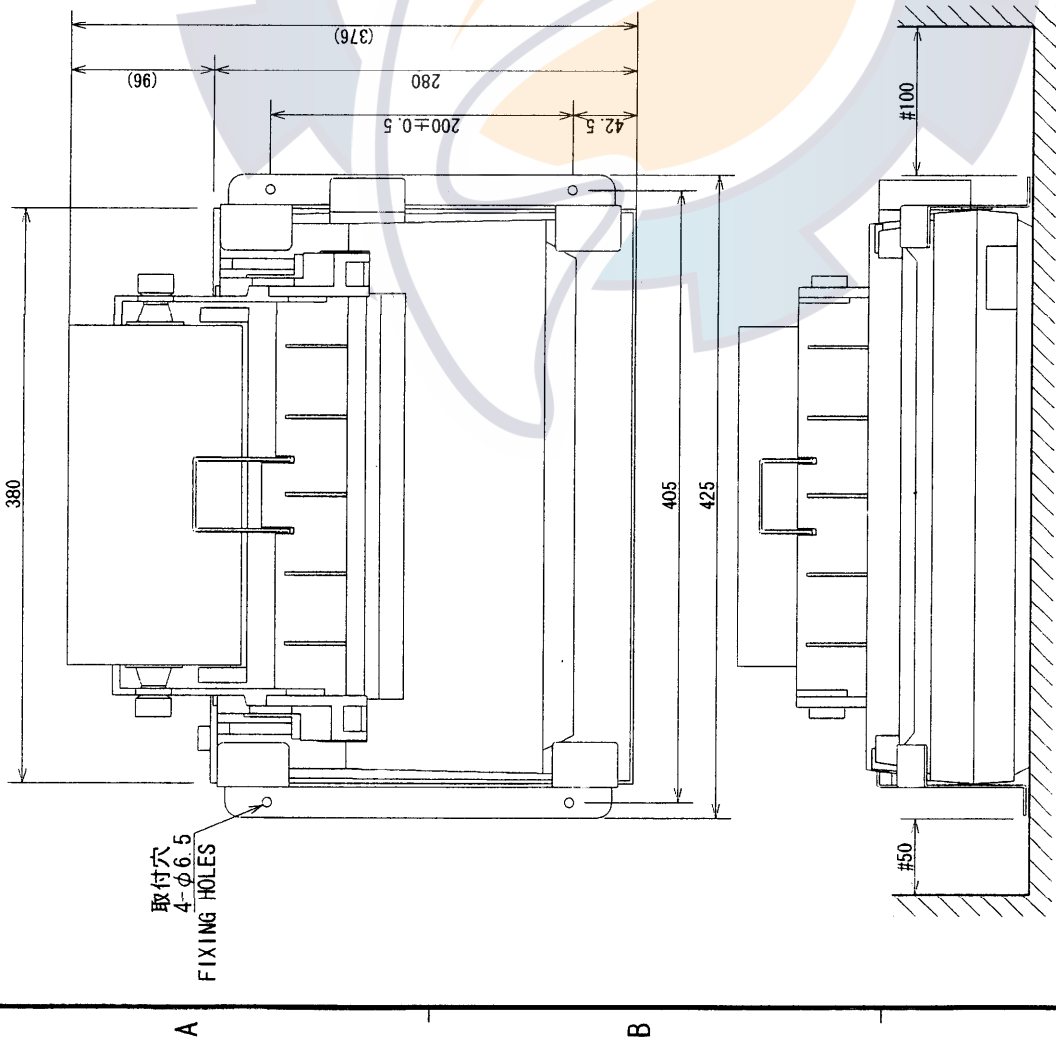
NOTE

1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.

DRAWN May 23 '01 T. YAMASAKI		TITLE SEM-21Q
CHECKED May 24 '01 T. Kiri		名称 スピーカ
APPROVED May 24 '01 T. Kiri		外寸図
SCALE 1/2	MASS ±10% 0.54 kg	NAME LOUDSPEAKER
DWG. No. C5016-G07- A	質量は2.8mケーブルを含む MASS W/ 2.8m CABLE	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.
DWG NO.	C5603-G05- A	05-073-2100- G1		NAME	PRINTER INTERFACE
					OUTLINE DRAWING



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ペース寸法とする。
2) 指定外の寸法公差は表 1 による。
3) 取付用ネジは M6 ボルトまたはコーナボルト呼び径 6 を使用のこと。

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

DRAWN July 26 00 Y. KAWAKI	TITLE PP-510
CHECKED V. 27 00 Y. KAWAKI	名称 プリンタ
APPROVED July 27 00 Y. KAWAKI	外寸図
SCALE 1/5 MASS ±10% 3.8 kg	NAME PRINTER
DWG. No. C5589-G08-H	16-007-660G-2
OUTLINE DRAWING	

2

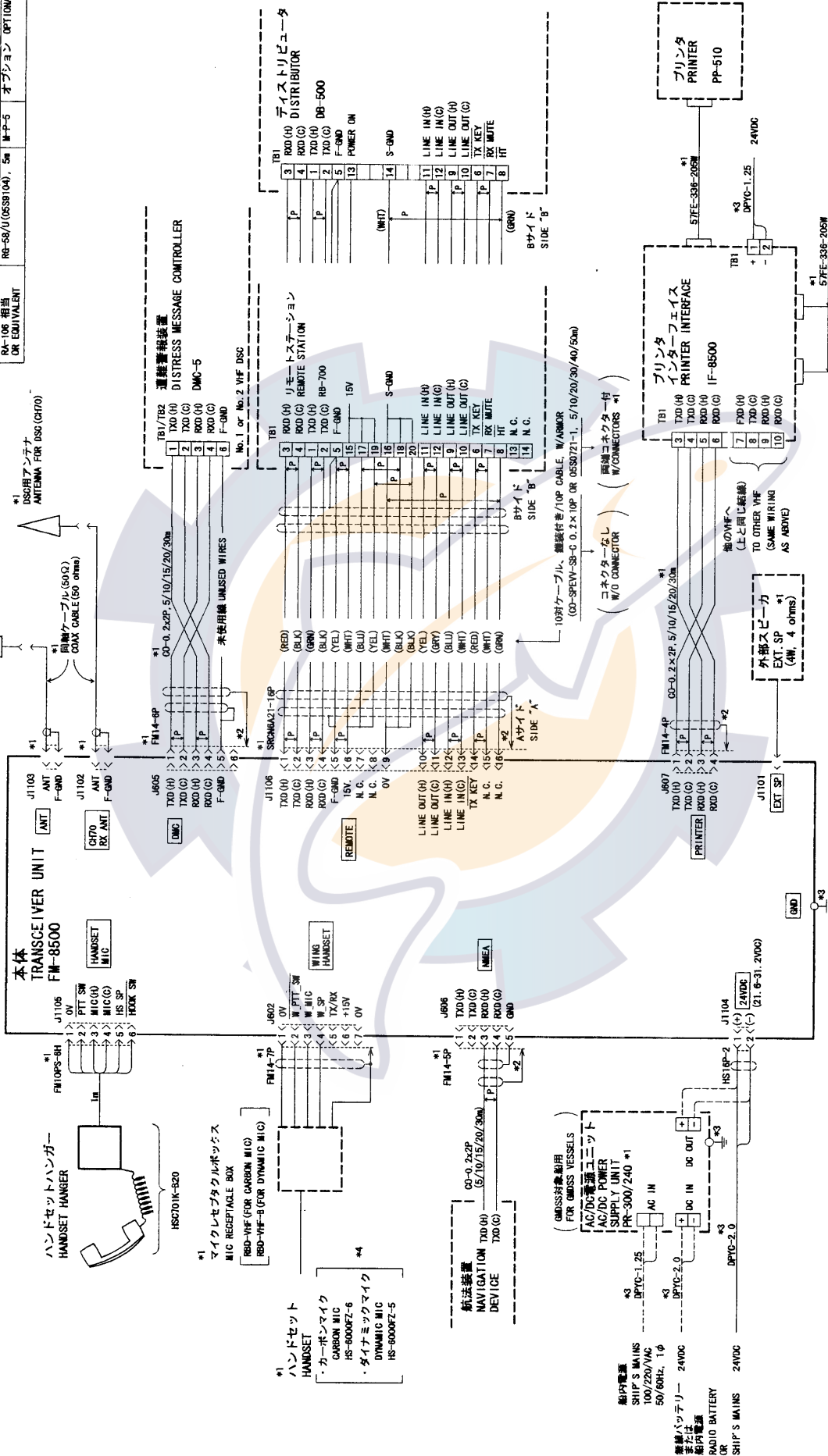
3

4

5

6

アンテナ型式	同軸ケーブルおよびコネクタ	備考
ANTENNA	COAX CABLE & CONNECTOR	REMARKS
FAB-152V	RF10/U, RF10/U	無線所接続 SHIPYARD SUPPLY
150M-H2VN	SD-2V, 10/20m	オプション OPT.IONAL SUPPLY
RA-106 相当	RG-58/U(0.635(0.4), 5m	オプション OPT.IONAL SUPPLY
OR EQUIVALENT		



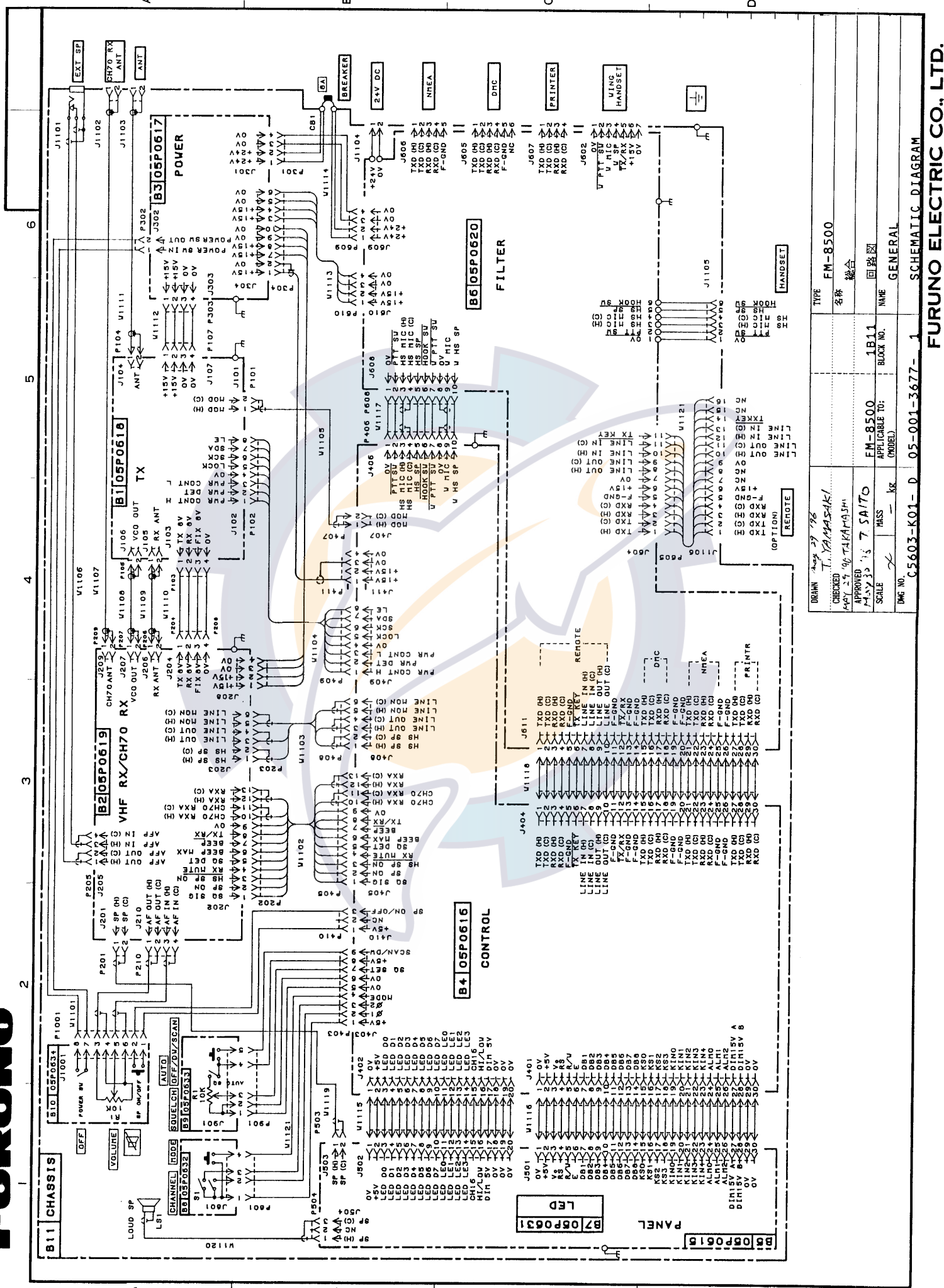
注記

- *1) オプション。
- *2) 接続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) マイクロタイプに応じて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 TUG CONNECTOR CLAMP.
- *3. SHIPYARD SUPPLY.
- *4. CHANGE JUMPER CONNECTIONS ON CONTROLLER PCB OF FM-8500 DEPENDING ON MIC TYPE.

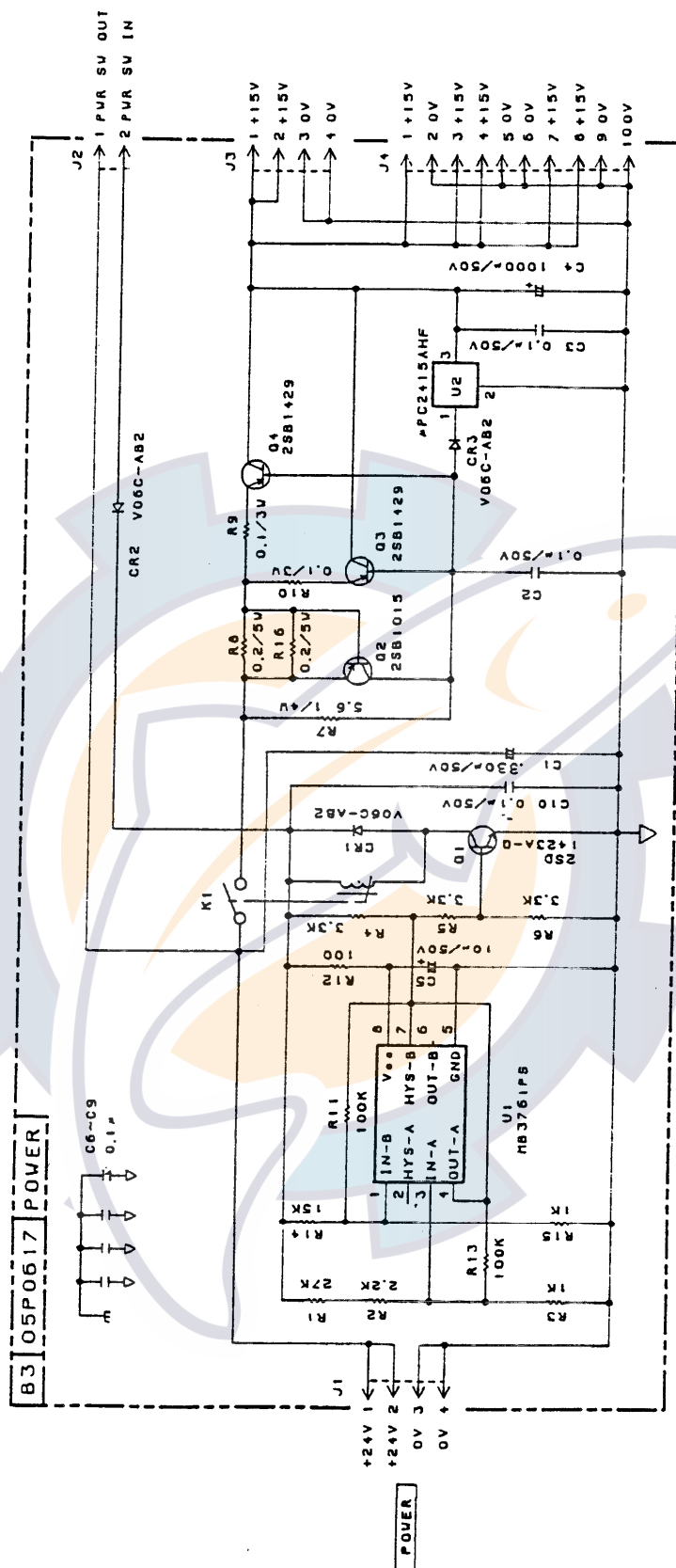
DRAWN	JUN. 13 '01	T. YAMASAKI	TITLE	FM-8500
CHECKED	Yone	Y. K.	名称	国際VHF無線電話装置
APPROVED	Yone	Y. K.	相互結線図	
SCALE	1/1	1/1	NAME	VHF RADIO TELEPHONE
DWG No.	C5603-C01-J	kg	INTERCONNECTION DIAGRAM	



A
B
C
D

2

3



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. Volzma Jan 22 '98		TYPE 05P0617
CHECKED Jan 22 '98 K. Okamoto		名称 電源基板
APPROVED Jan 22 '98 H. Yamaguchi	FM8500 1B 3	回路図
SCALE /	MASS kg	NAME POWER BOARD
DWG NO. C5603-K07- D	05-001-3681- 02	SCHEMATIC DIAGRAM