

150MHz, 1W TWO-WAY RADIOTELEPHONE APPARATUS
ON-BOARD COMMUNICATION EQUIPMENT

JHS-7

INSTRUCTION MANUAL

TWO-WAY RADIOTELEPHONE APPARATUS (Six Operating Channels)

MPT JAPAN APPROVED TYPE LPS5NM150-0.8-6-1

APPROVED NO. L90003

MOT JAPAN APPROVED NO. 3463

TWO-WAY RADIOTELEPHONE APPARATUS (Thirteen Operating Channels)

MPT JAPAN APPROVED TYPE LPS5NM150-0.8-13-1

APPROVED NO. L91001

MOT JAPAN APPROVED NO. 3463

ON-BOARD COMMUNICATION EQUIPMENT

MPT JAPAN APPROVED TYPE FFM3NM156.3 156.9-0.8F3E13-1

APPROVED NO. F91016



Japan Radio Co., Ltd.

Cautions for Use



Warning

- Refrain from any of the actions below in handling the Ni-Cd battery (NBB-248) and the primary battery (NBB-389) for this transceiver. Mishandling will cause the risk of heat generation, burst or electrolyte leakage.
 - DO NOT heat or dispose of in fire.
 - DO NOT disassemble or modify.
 - DO NOT short-circuit the "+" and "-" terminals.
 - DO NOT charge the primary battery NBB-389.
- DO NOT use this transceiver in hazardous areas subject to the presence of explosive gases.



Cautions

- Charge the Ni-Cd battery (NBB-248) before using the transceiver at the first time to revive the reduced capacity during transportation.
- To charge the battery, use the dedicated battery charger (NBA-4141).
- Charge the battery only in the normal temperature range (0 to 40°C). Avoid charging it especially at the temperatures below 0°C, as this may cause gases development in the battery to operate safety vent.
- To ensure long-life performance of the battery, follow the instructions below:
 - When have finished charging, disconnect the battery from the charger to store. Recharge the battery at approximately three month interval even if not used.
 - Keep the battery in a dry place with little temperature change. Storage in a place with high temperature, high humid and/or direct sunlight will cause serious deterioration of the battery performance.
 - Do not leave the battery in the charger for storage (trickle charging). Trickle charging will not cause overcharging, however, will cause deterioration of the battery performance.
 - Turn off the power switch of the transceiver after using. Overdischarge of the battery (6V or lower) will cause serious deterioration of the battery performance.
- Return the dead or unusable Ni-cd battery to a nearest JRC branch, sales office or dealer.
- Do not try to disconnect the antenna. If antenna disconnection is under necessity, consult a nearest JRC branch, sales office or dealer. Antenna disconnection without using dedicated tool will cause damage of the antenna and/or the transceiver.

Handling of NBB-389 Lithium Primary Battery

WARNING

- Follow the instructions below:
 - DO NOT short-circuit the terminals.
 - DO NOT heat or dispose of in fire.
 - DO NOT disassemble or DO NOT modify.
 - DO NOT puncture or DO NOT deform.
- Mishandling can cause explosion, overheating or leakage of strong alkaline electrolyte solution.

CAUTION

- Since the battery is equipped with a non-replaceable seal to indicate that it has not been used, do not detach the seal excluding emergency situation.
- Check the expiry date regularly.
The shelf life of this battery is five years.
- Contact to nearest JRC branch office or JRC agent to transport, replace and dispose.

1. General

Two-way radiotelephone apparatus, JHS-7/7E/14, installed on or after 23 Nov. 1996 must be provided with NBB-389 Lithium Primary Battery for use in the event of a distress situation in accordance with "IMO Res. A809 (19)".

2. Handling

NBB-389 is the primary battery for the emergency use only. Therefore, usually keep this battery without mounting it on the radiotelephone.

For using the primary battery NBB-389 in an emergency situation, detach the non-replaceable seal and mount the primary battery on the radiotelephone.

The mounting method for the primary battery is the same as NBB-248 Ni-Cd battery. (Refer to instruction manual, subclause 3.3)

3. Expiry date and Maintenance

The shelf life of the primary battery is five years.

Check the expiry date regularly and be careful not become invalid. The expiry date is indicated on the side of the primary battery.

When exchanging the primary battery, contact to nearest JRC branch office or JRC agent.

4. Specifications

Nominal voltage:	9V
Nominal capacity:	5000mAh
Battery type:	Lithium-Manganese Dioxide Battery
Shelf life:	5 years or more
Battery case colour:	Yellow
Non-replaceable seal:	Equipped (Orange colour)
Weight:	Approx. 200g

CAUTION

1. Fully charge the Ni-Cd Battery pack before the use of the equipment. Upon shipment, the battery is charged, but self discharge may occur before the radiotelephone is delivered.
The charging method is described in Chapter 4.
2. The ambient temperature should be between 0°C and 40°C when the Ni-Cd battery is charged. Avoid charging it especially at an ambient temperature below 0°C.
3. When the Ni-Cd battery is out of use, bring it to a nearby JRC sales office, branch, or dealer.
4. The antenna is firmly assembled with the radiotelephone. Any attempt to forcibly remove the antenna will cause damage to the antenna or the equipment. When it is necessary to remove it, ask a nearest JRC dealer or branch.
5. Usable channels of the JHS-7 for JG Flag are restricted to three channels, i.e, CH15, CH16 and CH17.
6. When any non-programmed channel is selected, internal speaker makes buzz for prevention of misoperation.

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Appended Drawings

Block Diagram

Outline Drawing

Circuit Diagram

Assembly Drawing

Appended Drawing (Optional)

NBA-4141 Battery Charger Outline Drawing

NBA-4141 Battery Charger Circuit Diagram

6UMJD00004 Earphone Outline Drawing

6UMJD00029 External Speaker/Microphone Outline Drawing

1. GENERAL

1.1 General

This equipment is designed and manufactured for two-way communication between survival crafts, between survival craft and main ship, and between main ship and a rescue boat in accordance with the Safety of Life at Sea convention (SOLAS). This is 150MHz/1W portable radiotelephone which is capable of installing 13(thirteen) operating channels for international marine mobile service, also can be used as on-board communication equipment.

1.2 Features

(1) Watertightness

This radiotelephone is of the watertight structure to a depth of one meter.

(2) Thirteen operating channels

13(Thirteen) single-frequency voice channels are provided including channel 16 for safety which can also be selected easily by an independent switch.

How ever, usable channels of the JHS-7 for JG Flag are restricted to CH15, CH16, and CH17.

(3) Easy handling

Controls and switches are designed and located for easy operation, and can be manipulated even when thick gloves are worn.

(4) Small size and light weight

This radiotelephone is designed in compact with dimensions of 62mm (width) × 165mm (height) × 45.5mm (depth), and weight approximately 600g, including Battery Pack. And its shape is designed to facilitate carrying by hand for a long period of time. Moreover, carrying strap and a belt clip come with it for easy carrying.

(5) Low power consumption

Since its power consumption is extremely low, this radiotelephone can operate for a long time (more than 8 hours with transmission reception and stand-by in the ratio of 1 to 1 to 8) once the battery is charged.

(6) Frequency synthesizer

The use of a frequency synthesizer assures high frequency stability for all the channels.

(7) Display of transmitting condition

The Tx lamp indicates whether transmitting output is on or off.

During press-to-talk operation, the Tx lamp lights up by monitoring carrier level to indicate that signals are being transmitted.

(8) Charge lamp

When the battery energy is almost consumed, the BUSY lamp blinks for indicating necessity of the battery charging.

(9) High reliability

Surface-mounting type ICs, transistors, resistors, and capacitors, which are suitable for automatic mounting, assure homogeneous quality and high stability.

(10) Removable battery pack (Ni-Cd battery)

The battery pack can be easily replaced because of its easy removal from the radiotelephone. The battery pack mounting assembly is protected so that battery pack can be replaced even under a rain fall.

Quick charging (within three hours) can be done by inserting the battery pack into the optional battery charger NBA-4141.

1.3 Composition

1.3.1 Standard Components

Item	Model	Q'ty	Remarks
Radio telephone	JHS-7	1	Includes the battery pack (NBB-248) and the antenna.
Carrying strap	MPXP02384	1	
Instruction manual		1	
Test data		1	
Primary battery pack	NBB-389	1	FOR EMERGENCY USE ONLY

1.3.2 Optional Accessories

Item	Model
Battery charger	NBA-4141
Primary battery pack	NBB-389
Ni-Cd battery pack	NBB-248
Earphone	6UMJD00004
External speaker/ microphone	6UMJD00029
Carrying case	MPXP02368

1.3.3 Optional channel programming (max, 7channels)

According to your separate order, your JHS-7 with optional channel(s) will be shipped from JRC factory. Please designate required channel No(s) from simplex voice channels specified in Appendix 18 of the Radio Regulation.

Note : The JHS-7 for JG Flag is equipped with no optional channel.

2. SPECIFICATIONS

2.1 General

- (1) Operating channels: CH16 (156.800MHz)
CH6 (156.300MHz)
CH13 (156.650MHz)
CH15 (156.750MHz)
CH17 (156.850MHz)
CH67 (156.375MHz)

Note : Usable channels of the JHS-7 for JG Flag are restricted to CH15, CH16, and CH17.

- (2) Optional channels: Seven simplex channels selectable from a range of 156.300 to 156.875MHz
- (3) Communication mode: Simplex
- (4) Type of emission: G3E/F3E
- (5) Antenna: Vertical, non-directional type (nominal 50Ω)
Gain -3dB
- (6) Continuous operation time: More than 8 hours in a duty cycle of 6 seconds of transmission, 6 seconds of reception and 48 seconds of stand-by.
- (7) Power source: Lithium Primary battery (9.0VDC, 5000mAH)
Nickel-cadmium battery (7.2VDC, 1000mAH)
- (8) Warm-up time: Less than 5 seconds
- (9) CH switching period: Less than 5 seconds
- (10) Transmission/reception switching period: Within 0.3 second
- (11) Operating temperature range: -20°C to +55°C
- (12) Storage temperature range: -30°C to +70°C

- (13) Humidity: 93% at 40°C
- (14) Safety distance from standard magnetic compass: 0.4m
- (15) Safety distance from steering magnetic compass: 0.4m
- (16) Shock resistance: No troubles after a fall on the hard wood floor from a height of 1m.
- (17) Vibration resistance: No troubles after vibrations, up and down, right and left, and back and forth for 15 min. under each of the following conditions:
60 to 750 times/min., full amplitude of 3.2mm; 750 to 1500 times/min., full amplitude of 0.76mm; and 1500 to 3000 times/min., full amplitude of 0.2mm.
- (18) Water-tightness: Operates normally after it is immersed in water to the depth of one meter for 5 minutes.
- (19) Overall dimensions: 64(W) × 165(H) × 45.5(D)mm (excluding projections)
- (20) Weight: Approx. 600g

2.2 Transmitter

- (1) Carrier output power: 0.8W
- (2) Effective radiated power: More than 0.25W
- (3) Oscillation: Frequency synthesizer
- (4) Modulation: Variable reactance frequency modulation
- (5) Frequency stability: Within 10×10^{-6}
- (6) Pre-emphasis: 6dB per octave

- (7) Modulation frequency: 300 to 3000Hz
- (8) Splatter filter characteristic: $40 \log(f/3)$, $f = 3$ to 15kHz
- (9) Occupied bandwidth: Within 16kHz
- (10) Maximum frequency deviation: Within ± 5 kHz
- (11) Distortion: 10% or less, standard modulation
- (12) Modulation input impedance: 600Ω

2.3 Receiver

- (1) Receiving system: Double superheterodyne
1st intermediate frequency: 21.7MHz
2nd intermediate frequency: 455kHz
- (2) Maximum usable sensitivity: 6dB μ or less, S+N+D/N ratio of 20dB
- (3) Selectivity: 6dB bandwidth: 12kHz or more
70dB bandwidth: 25kHz or less
- (4) Spurious response: 70dB or more
- (5) Local frequency variation: 0.001% or less
- (6) Blocking: 90dB μ or more
- (7) Intermodulation: 70dB or more
- (8) De-emphasis: 6dB per octave
- (9) Rated AF output power: 200mW or more (with distortion rate of 10%)
- (10) Distortion: 10% or less
- (11) Squelch sensitivity: Not more than maximum usable sensitivity level, and not exceeds +30dB μ .
- (12) Speaker impedance: 8Ω

3. OPERATION

3.1 Description

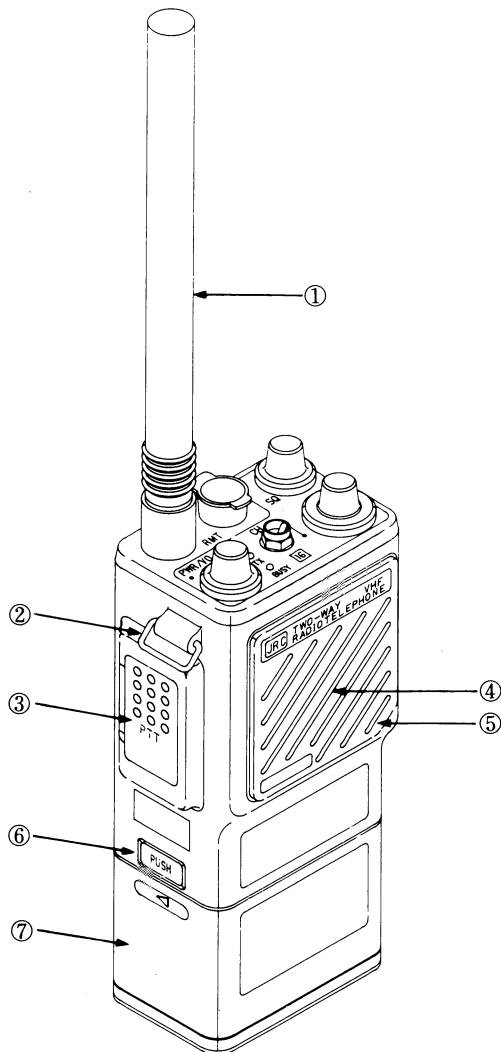


Figure 3-1 Appearance

- (1) Helical antenna
The flexible helical antenna is firmly assembled with this radiotelephone. To remove the antenna, exclusive wrench is required.
- (2) Shoulder belt fittings
Fasten the attached shoulder belt to these fittings before using the belt to carry Radiotelephone.
- (3) PTT (press-to-talk) button
Depressing the switch enables transmission, and releasing it enables reception.
- (4) Speaker
Produces received sounds.
- (5) MIC (microphone)
Talk to the microphone during calling.
- (6) PUSH button
Press this button to unlock the battery pack ⑦ when removing it.
- (7) Battery pack NBB-248 or NBB-389
Supplies power to the radiotelephone. Section 3.3 describes how to replace the battery pack.
- (8) Belt clip
Use this clip to hold the radiotelephone with a belt.

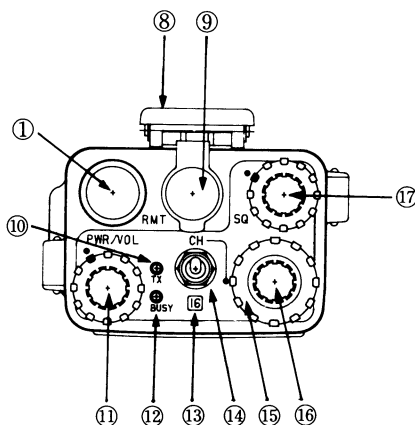


Figure 3-2 Operation Panel

(9) RMT (remote terminal) connector
 For connecting the optional earphone 6UMJD00004 or external speaker/microphone 6UMJD00029 to the radiotelephone. When the earphone is connected, the internal speaker is automatically turned off. When the external speaker/microphone is connected, both the internal speaker and internal microphone are turned off.
 The output terminals have the following functions:

Pin No.	Description	Function
1	E	Ground of the radiotelephone.
2	EXT PTT	Control line for external control of PTT. Grounding it enables transmission.
3	EXT MIC	Input terminal for the external microphone. It also outputs a bias voltage for Electret Condenser microphone.
4	EAR	AF output (8Ω) for the earphone and external speaker.
5	MIC CONT	Control line for control of the external microphone. Grounding this terminal turns off the internal microphone.
6	SP CONT	Control line for control of the internal speaker output. Grounding this terminal turns off the internal speaker.

(10) Tx lamp
 Lights red during press-to-talk operation. It monitors the transmission output. If the Tx lamp does not light even when the PTT button is depressed, the transmission circuit may be faulty.

(11) PWR/VOL (power switch/volume) control
 Works as power switch and volume control. Turning the PWR/VOL control fully counterclockwise turns off the power. Turning it clockwise turns on the power.

Sound volume increases as it is turned clockwise.

(12) BUSY lamp
 Lights green while the squelch is open. It also monitors the battery condition. When the battery energy is almost consumed, the BUSY lamp blinks for warning.

(13) 16 (CH16 indicator)
 Lights orange when CH16 is selected. This lamp also monitors the condition of the internal frequency synthesizer. The 16 indicator blinks if the frequency synthesizer has any trouble (unlocking).

(14) CH16 switch
 A toggle switch for CH16. Setting it to the 16 position selects CH16. Setting it to the CH position selects the channel number specified in the following subparagraph (16).

(15) Background illumination for a channel number
 Illuminates to enable easy reading of the channel number selected the following subparagraph (16).

(16) Channel setting switch
 Use this switch to select other CHs when the CH16 switch is set to the CH position. The speaker makes alarm buzz when no preprogrammed channel is selected.

(17) SQ (squelch) control
 Turning it fully counterclockwise opens the squelch. As it is turned clockwise, higher input level is required to open the squelch.

3.2 Operating Procedure

3.2.1 Preparation

- (1) Set a desired channel number.
- (2) Turn the squelch control fully counterclockwise.
- (3) Turn the PWR/VOL control clockwise. Just after the power is turned on, noise is heard from the speaker. Adjust sound volume properly by turning the PWR/VOL control.
- (4) Turn the SQ control until noise from the speaker is suppressed. Turn the SQ control a little clockwise from that position. Do not turn it too much, because the squelch will not open when a weak signal is received. Thus, radiotelephone is in stand-by mode, and ready for reception.

3.2.2 Call

- (1) While holding down the PTT button on the left side of the radiotelephone, call up the partner station (called Station A for now). (Depressing the PTT button lights up the Tx lamp.)

Calling is performed as described below.

Example: "Station A, Station A, this Station B. How do you read please."
Release the PTT button to set the equipment ready for reception as soon as this call is over, and wait for an answer from Station A.
Station A may reply in such a manner as shown below.
"Station B, Station B, this is Station A. I've gotten you, please." Since this radiotelephone employs the press-to-talk communication system, only one-way message is available. Therefore, with the aim of smooth conversation, it is preferable to insert a word "please" or "over" at

the end of each speech as shown in the above examples before releasing the PTT button.

- (2) As soon as you get an answer from the partner station, inform it of the receiving conditions using numbers shown in Table 3-1 below.

Example: "The sensitivity and clarity of your talk is 4. How much is our sensitivity and clarity? Please."

Table 3-1

Sensitivity /clarity	Receiving condition
1	Extremely poor
2	Poor
3	Normal
4	Good
5	Excellent

3.2.3 Closing down

Turn the PWR/VOL control fully counterclockwise to turn off the power. If you leave the power on, the Ni-Cd battery will have excessive discharge and deteriorated greatly.

3.3 Replacement of Battery Pack NBB-248 and NBB-389

(1) Removal

While holding down the PUSH button on the left side of the radiotelephone, twist Battery Pack counterclockwise. (See Figure 3-3.)

(2) Mounting

Align the concave on the top of the battery pack with the convex on the bottom of radiotelephone. Twist the battery pack clockwise until you feel a click. It is not necessary to press the PUSH button.

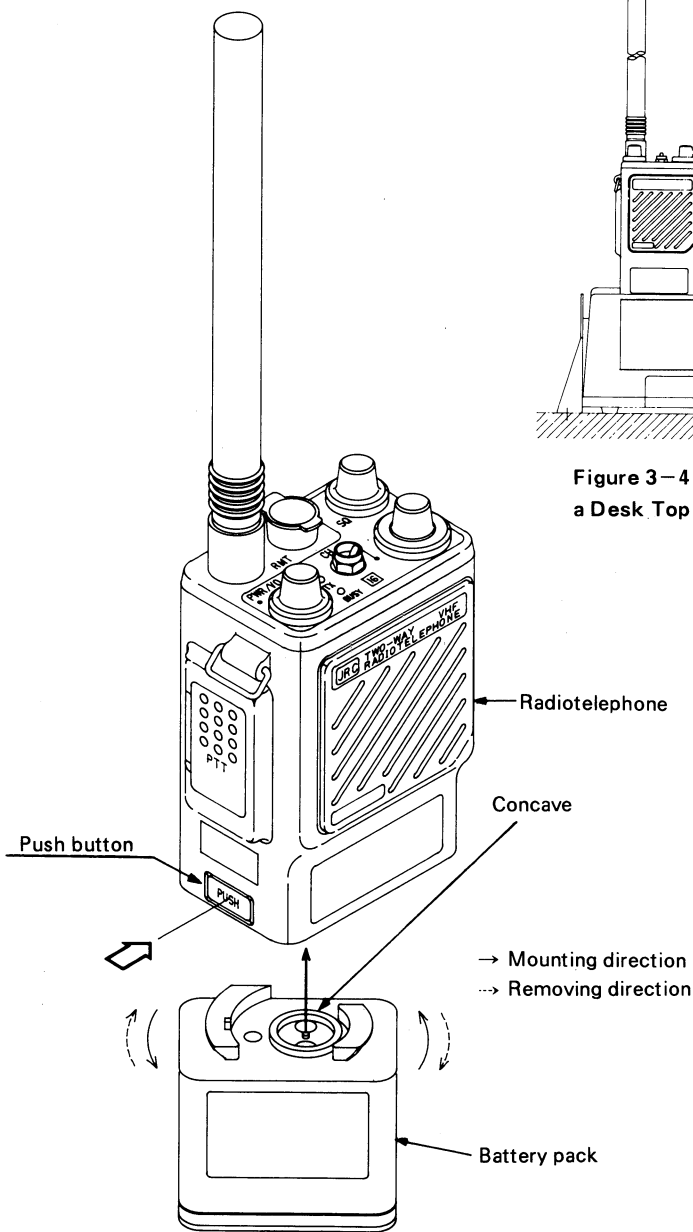


Figure 3-3

3.4 Handling of Battery Charger NBA-4141 (Optional)

3.4.1 Installation

The battery charger can be installed on a desk top or on a wall. Figures 3-4, 3-5, and 3-6 illustrate how to install it.

When it is installed on a wall, the fixing angle A may be 0°, 30°, or 45°. If its location needs to be changed from a desk top to a wall, change the position of the fittings as shown in Figure 3-7.

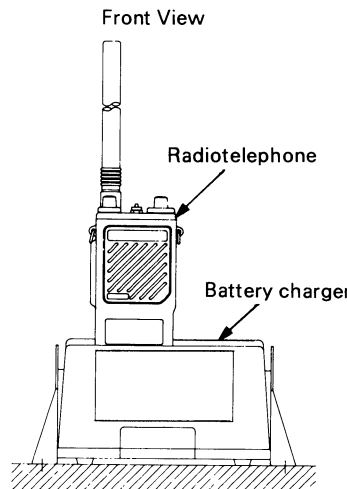


Figure 3-4 Example of a Desk Top mounting

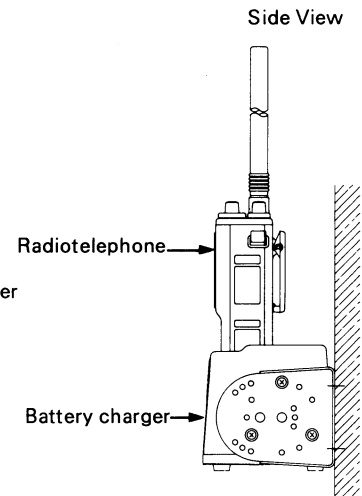


Figure 3-5 Example of a bulkhead mounting: Example 1 (Fixing angle: 0°)

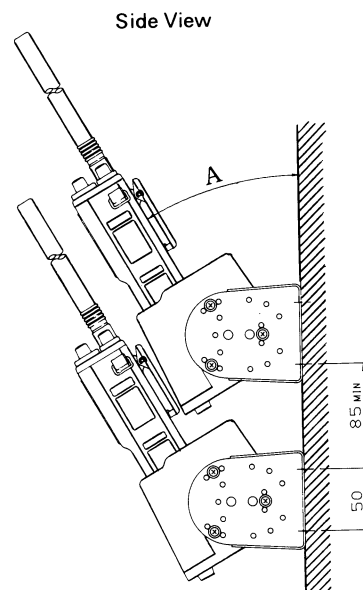
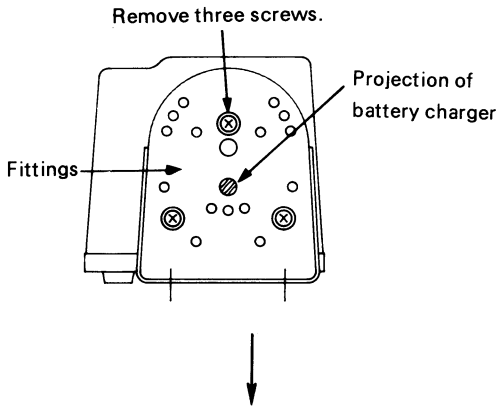


Figure 3-6 Example of a bulkhead mounting: Example 2 (Fixing angle: 30°)



If the fixing angle is 30° or 45° , locate in place so that the projection of the battery charger will engage in this hole.

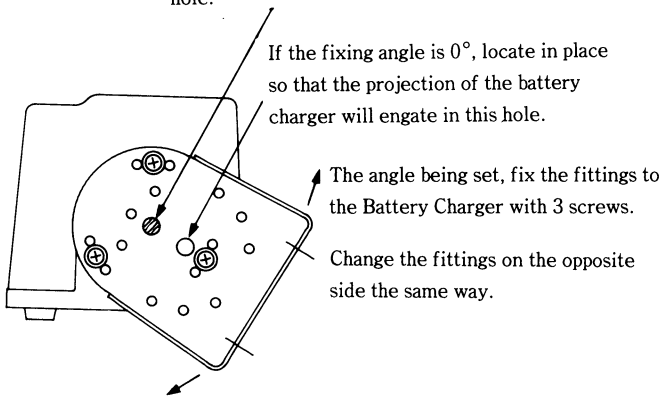


Figure 3-7 Changing the Position of Fittings

3.4.2 Replacement of Fuse

- (1) Remove the plug of the AC power cable for the battery charger from the convenience outlet.
- (2) Remove the power supply terminal protecting cover on the front of the battery charger as shown in Figure 3-8.
- (3) Remove the fuse from the fuse holder, and mount a new fuse. Use a 250V, 0.5A, $5.2 \times 20L$ fuse.
- (4) Put back the cover.

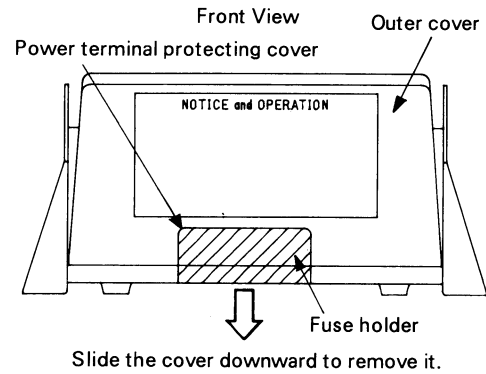


Figure 3-8

3.4.3 Change of Power Supply Voltage

AC105, 115, 210, or 230 V can be selected by changing among the taps on the internal transformer. A soldering iron is needed for the change.

- (1) Remove the plug for the AC power supply cable for the battery charger.
- (2) Remove the power supply terminal protecting cover as shown in Figure 3-8.
- (3) Remove five screws from the bottom of Battery Charger. (See Figure 3-9.)
- (4) Remove the outer cover. (See Figure 3-8.)
- (5) Solder the cable to any desired voltage terminal of the power transformer. (See Figure 3-10.)
- (6) Assemble the battery charger properly.

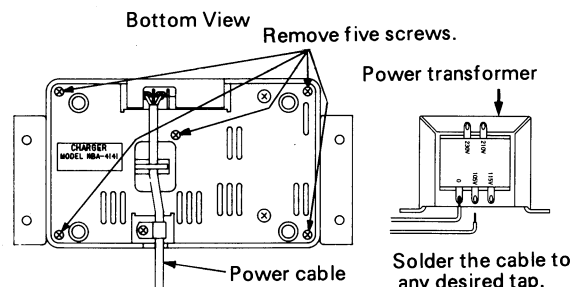


Figure 3-9

Figure 3-10

3.4.4 Parallel Wiring of Power Cables

It is advisable to put the power cables in parallel when several battery chargers are used.

In the following example, three battery chargers are used. No wiring materials are necessary because the attached cables are used after cutting it.

- (1) Determine the locations of battery chargers and the suitable length of cables for wiring.
- (2) Remove the power supply terminal protecting covers. (See Figure 3-8.)
- (3) It is not necessary to remove the attached power cables from the terminal boards.
- (4) According to the wiring diagram shown in Figure 3-11, cut and connect the attached power cables for the first two battery chargers. For easy work, the attached crimp-style terminals may be used. It is not necessary to cut the power cable of the remaining battery charger.
- (5) Put back the power terminal protecting cover.
- (6) Insert the plug of the power cable of the last battery charger into the AC convenience outlet.

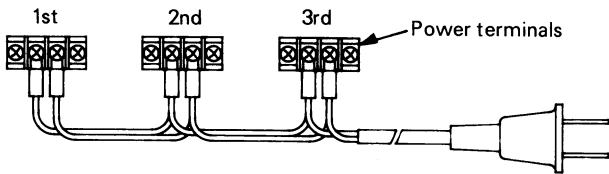


Figure 3-11

3.5 Handling of the Accessories

3.5.1 Carrying Strap

The attached carrying strap facilitates carrying the radiotelephone on shoulder.

To fasten the strap, use the two fittings on the upper part of the radiotelephone as shown in Figures 3-12 and 3-13.

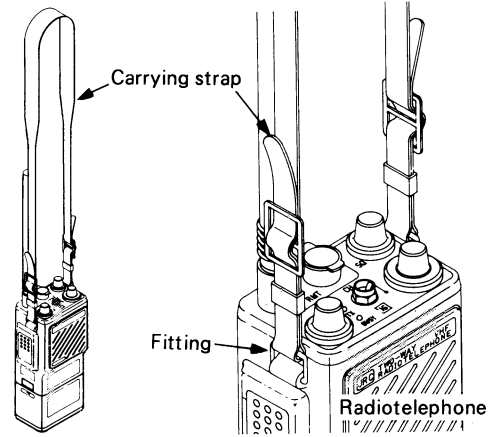


Figure 3-12
Radiotelephone with
Carrying Strap Fastened

Figure 3-13
Fastening of
the Carrying Strap

3.5.2 Belt Clip

The belt clip allows the radiotelephone to be attached to one's belt or breast pocket. Press the top of the belt clip to open its lower part as shown in Figure 3-14, and hook it to your belt.

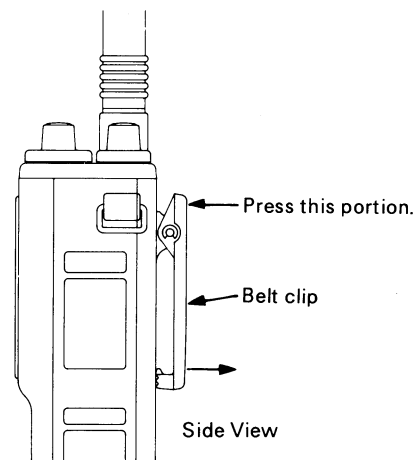


Figure 3-14

3.5.3 Connecting of the Earphone and External Speaker/Microphone

Connect the optional earphone 6UMJD00004 and external speaker/microphone 6UMJD00029 to the RMT (remote terminal) connector on the radiotelephone as shown in Figure 3-15. Either the earphone or the speaker/microphone can be connected and used.

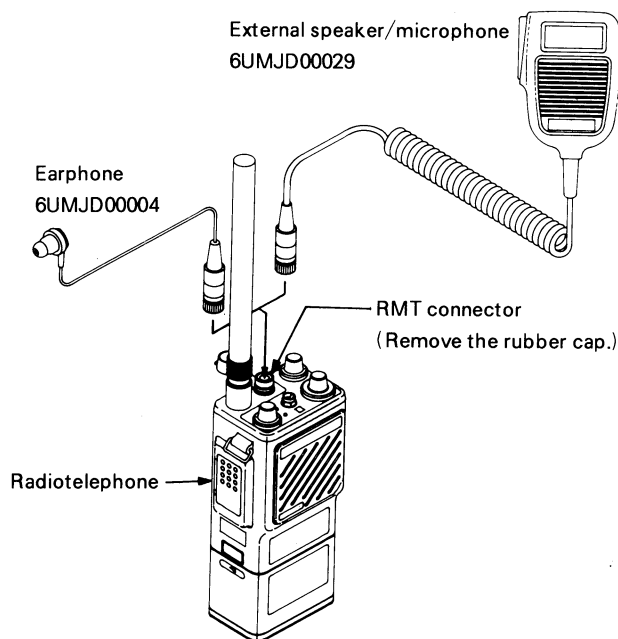


Figure 3-15

3.5.4 Lithium Primary Battery

NBB-389 is the primary battery for the emergency use only. Do not charge this battery.

Since this battery is equipped with a non-replaceable seal to indicate that it has not been used, do not detach the seal excluding the emergency.

Check the expiry date regularly and be careful not to become invalid. The shelf life of this battery is five years.

4. BATTERY CHARGING

The rechargeable battery is only NBB-248 Ni-Cd battery. Do not charge the NBB-389 primary battery.

4.1 Period of time to charge

When the battery energy is almost consumed, the BUSY lamp blinks to indicate it. Charge the battery whenever the BUSY lamp begins to blink.

4.2 Precautions on Charging

- (1) Charging should never be done at a temperature below the freezing point.
- (2) For charging, always use the attached battery charger NBA-4141.
- (3) Even when the radiotelephone is not used for a long period, it is requested to charge the battery every three months.
- (4) If the battery charger is not fixed on a desk or bulkhead, put it in a stable position.
- (5) Never touch the charging terminals with a metallic bar or bare hand. When the plug is inserted to the AC convenience outlet, an output immediately appears at the charging terminals.
- (6) Do not perform transmission during charging.
- (7) Detach the carrying case from the radiotelephone.

4.3 Charging Procedure

- (1) Attach the AC plug of the battery charger NBA-4141 to the convenience outlet.
- (2) Turn off the JHS-7, and insert the battery pack into the battery charger, as shown in Figure 4-1, with or without the radiotelephone mounted on the pack. It is not possible to insert the pack in a direction different from that shown in the figure because of a preventing mechanism. When the battery pack is inserted correctly, the QUICK lamp lights up red, and quick charging begins.
- (3) When quick charging is complete, the QUICK lamp goes out. Then, the TRICKLE lamp lights green, indicating that trickle charging begins.

With the charger in this condition, the battery pack is fully charged, and charging is complete. Since trickle charge makes up for the natural discharging of the battery pack, the battery pack is always charged fully as long as in the trickle charge condition after quick charge.

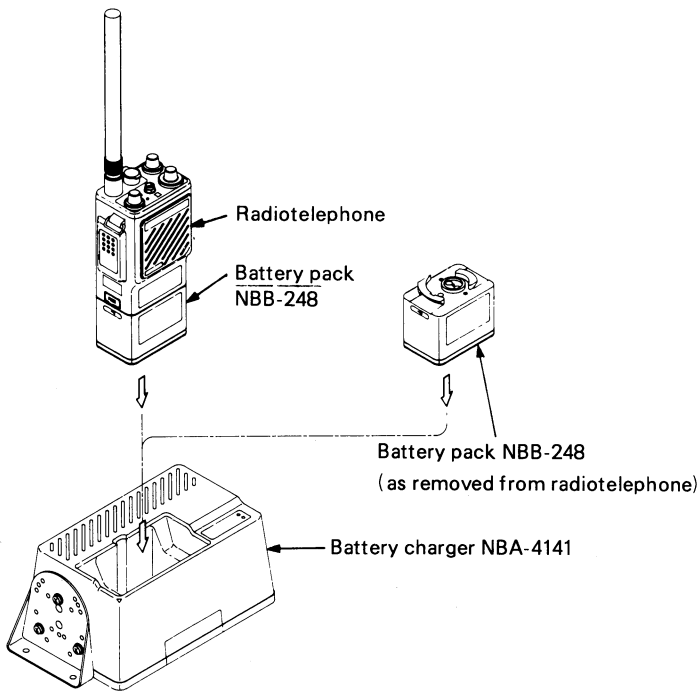


Figure 4-1 Inserting of Battery Pack

5. MAINTENANCE AND INSPECTION

5.1 Daily Maintenance

The life of an equipment like the radiotelephone largely depends on the quality of maintenance. It is very important to check the radiotelephone regularly to keep it in its best condition. Regular inspection helps to find a symptom of trouble or prevent trouble before it occurs. It is quite desirable to perform routine inspection and maintenance every day according to Table 5-1 below.

Table 5-1 Routine Checking

Step	Checking item	Description
1	Battery	The BUSY lamp on the panel should not be blinking. If it blinks, charge the battery.
2	PWR/VOL control	As you turn the control, the power should be turned on, and sound volume should be increased gradually.
3	SQ control	Noise should be eliminated quickly when the SQ control is turned clockwise.
4	Transmit output	The Tx lamp should be turned on during transmission.
5	Transmitting and receiving condition	Normal communication should be performed with partner stations.

5.2 Regular Inspection

Conduct talking test once a month at least to check functions of the radiotelephone. Check the expiry date regularly and be careful not to become invalid.

6. TROUBLESHOOTING

6.1 Precautions

- (1) Exclusive wrench is needed to remove the antenna from the radiotelephone. If the removal is forced by any other means, the antenna or the radiotelephone will be damaged. Ask a nearest JRC dealer or branch if the removal is necessary.
- (2) Before making repairs or asking for repairs, check fundamental matters such as operating procedures and battery conditions.
- (3) Unless having suitable measuring instruments or qualification to make repair, never disassemble this equipment.
- (4) When disassembling this equipment, refer to Figure 6-1.

6.2 Troubleshooting Guide

No.	Trouble	Possible cause	Remedy
1	Channel indicator does not light when power switch is turned on.	(1) Battery discharged (2) Failure in power supply circuit	(1) Charge battery (2) Check voltages
2	No sound comes out although BUSY lamp is on.	(1) Wire disconnection in speaker (2) Loose contact in connector (3) Failure in AF amplifier	(1) Replace speaker (2) Check connector and speaker cable (3) Check the AF amplifier
3	BUSY lamp off and no voice heard.	(1) Squelch closed (2) Failure in IF amplifier	(1) Turn SQ control fully counter-clockwise (2) Check IF amplifier
4	CH16 lamp blinks but no voice heard.	(1) Failure in synthesizer	(1) Check synthesizer
5	Tx lamp not lit during transmission.	(1) Failure in transmitter	(1) Check transmitter
6	Tx lamp lit during transmission but communication impossible.	(1) Use of different channel number	(1) Make sure of channel number

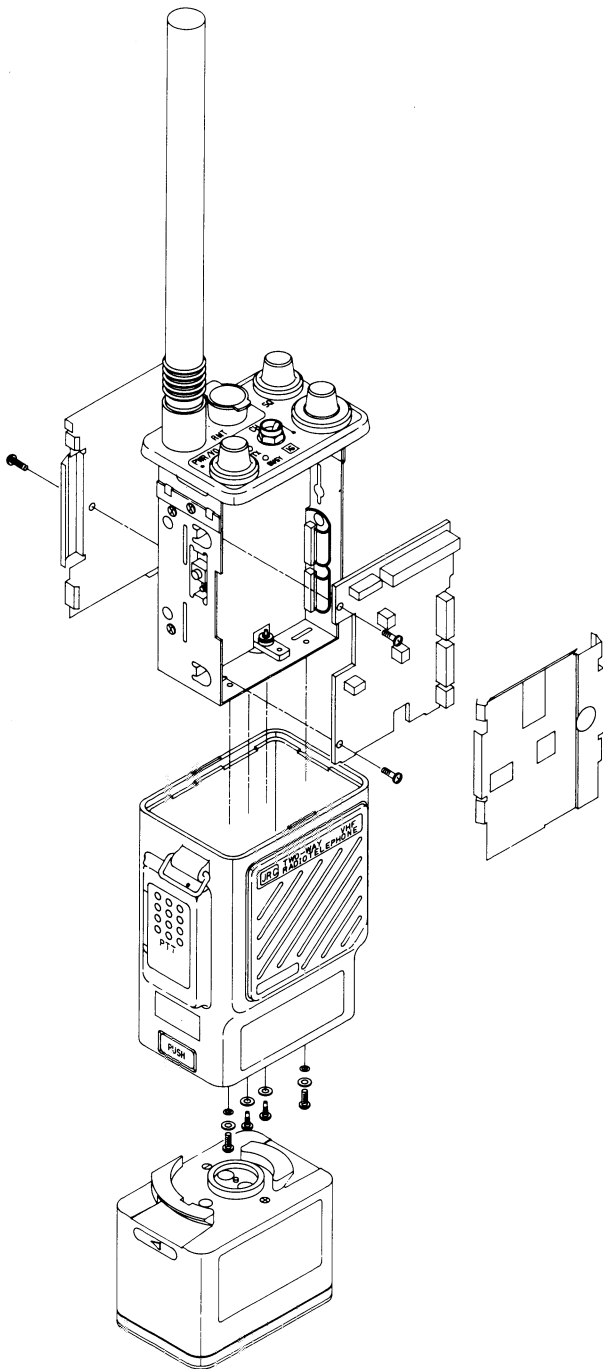


Figure 6-1 Assembly Drawing of the Radiotelephone

6.3 Simple Adjustment

This subparagraph describes simple adjustment procedure that can be followed without use of special measuring instruments.

Before simple adjustment, perform the following initial settings:

- (1) SQ control: Turned fully counter clockwise
- (2) Channel number: CH16
- (3) PWR/VOL switch: Upon adjustment, turned clockwise to switch on the power.

6.3.1 Checking of Voltages

The power supply voltage should be 7.2V.

Step	Signal	Check point	Measuring equipment	Measurement (standard)
1	7.2V	J201 pin 8	Circuit tester or digital voltmeter	7.2V
2	5V	J202 pin 8	"	5V
3	R5	J201 pin 1	"	5V during reception 0V during transmission
4	S5	J202 pin 10	"	5V
5	T7	J202 pin 1	"	0V during reception 7V during transmission

6.3.2 Adjustment of the Synthesizer

Connect a digital voltmeter to the check point ③ on the CMN-241 main unit.

Step	Control	Check point	Procedure
1	CV2	CMN-241 ③	Set the voltage at 2.5V DC $\pm 0.2V$ for reception.
2	CV3	''	Set the voltage at 2.5V DC $\pm 0.2V$ for transmission.

6.3.3 Frequency Adjustment

- (1) Connect a simple whip antenna to the input terminal of the frequency counter.
- (2) Bring the antenna of the radiotelephone near the antenna of the frequency counter, and put the radiotelephone in transmission mode.
- (3) Adjust CV4 on the CMN-241 main unit so that the frequency may be set at $156.8\text{MHz} \pm 100\text{Hz}$.

6.3.4 Transmit Output Adjustment

- (1) Remove the antenna using the exclusive wrench.
- (2) Connect a power meter (50Ω) to the antenna terminal.
- (3) Adjust RV1 on the CMN-241 main unit so that the transmit output may be $0.8\text{W} \pm 20\%$.

6.3.5 Tuning of the Receiver

- (1) Connect a standard signal generator (50Ω) to the antenna terminal.
- (2) Set the frequency and output level of the standard signal generator at 156.8MHz and $0\text{dB}\mu$, respectively.
- (3) Adjust L5 through L8, T1, and T2 on the CMN-214 main unit so that the noise from the speaker may be minimized.

7. OPTIONS

The following options are available to make the best use of the JHS-7.

7.1 Battery Charger NBA-4141

The battery charger is used to charge the battery pack. The charging is possible with or without the radiotelephone mounted on the pack. The battery charger can be fixed to a desk top or a wall.

Attachments: Fuse (0.5A , $5.2 \times 20\text{L}$) $\times 1$, crimp style terminal (R1 25-3) $\times 3$, wood screw $\times 4$

Power supply voltage: $100/120/220/240\text{V}$ AC selected using a tap (standard: 100V AC)

Applicable battery pack:

NBB-248

Charging time:

Not more than 3 hours

Overall dimensions:

$210(\text{W}) \times 100(\text{H}) \times 105(\text{D})$

Weight:

Approx. 1.5kg

7.2 Primary Battery Pack NBB-389

Battery :

Lithium-Manganese Dioxide Battery

Capacity:

9.0V , 5000mAh

Dimensions:

$62(\text{W}) \times 64.5(\text{H}) \times 55(\text{D})$

Weight:

Approx. 200g

7.3 Battery Pack NBB-248

Battery:

Ni-Cd battery

Capacity:

7.2V , 1000mAh

Dimensions:

$62(\text{W}) \times 54(\text{H}) \times 41(\text{D})$

Weight

Approx. 200g

7.4 Earphone 6UMJD00004

The earphone is helpful when voices from the speaker are not clear due to noisy surroundings.

Impedance:

8Ω

Cable length:

1m

Weight: Approx. 20g

7.5 External Speaker/Microphone

The external speaker/microphone is helpful when the radiotelephone is carried around one's waist.

Microphone sensitivity: $-66\text{dB} \pm 4\text{dB}$ at
1kHz(0dB = 1V/ μ bar)

Speaker output: 0.5W (8 Ω)

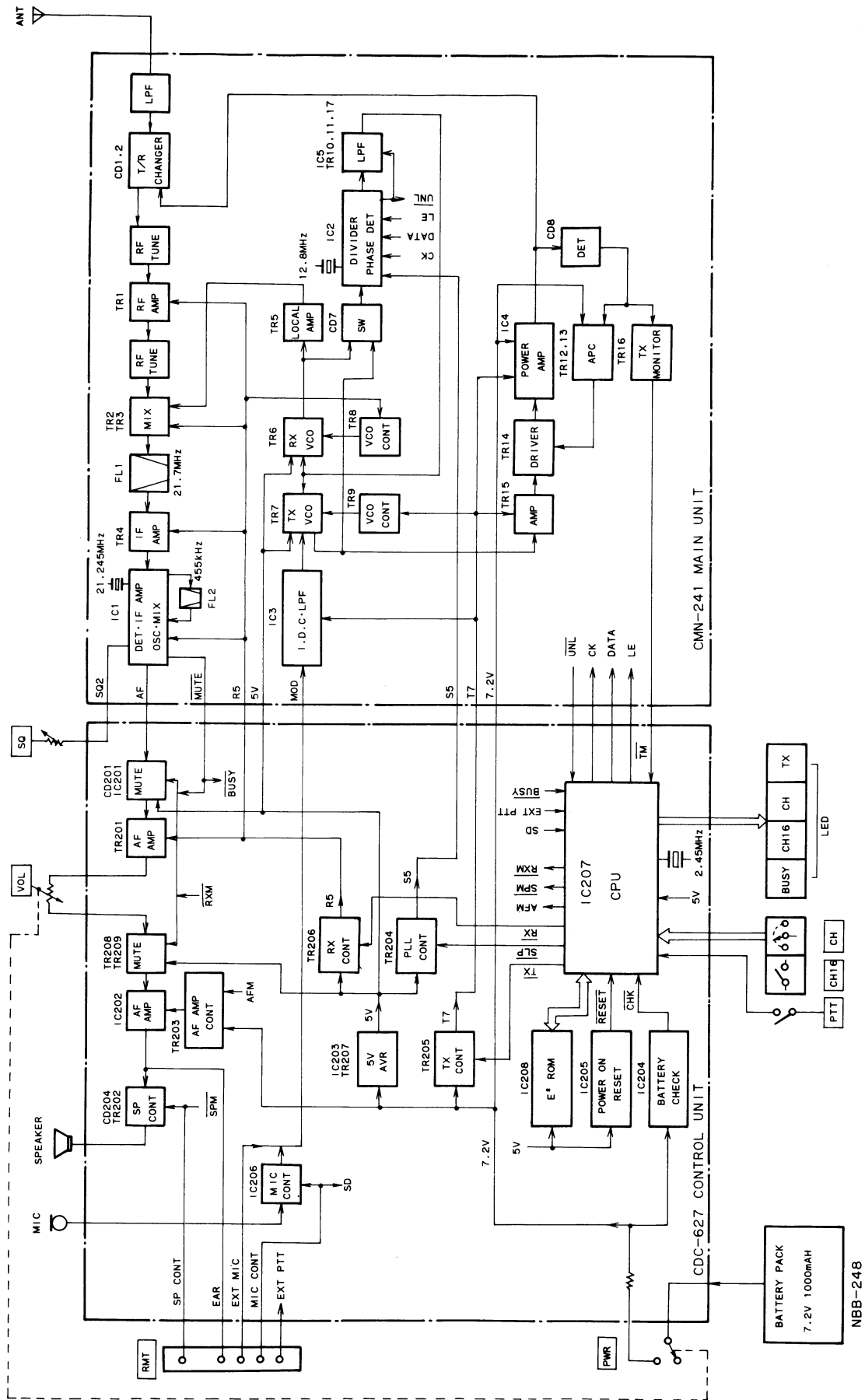
Cable: Curled cord

Overall dimensions: 64(W) \times 94 (H) \times
35(D)

Weight: Approx. 280g

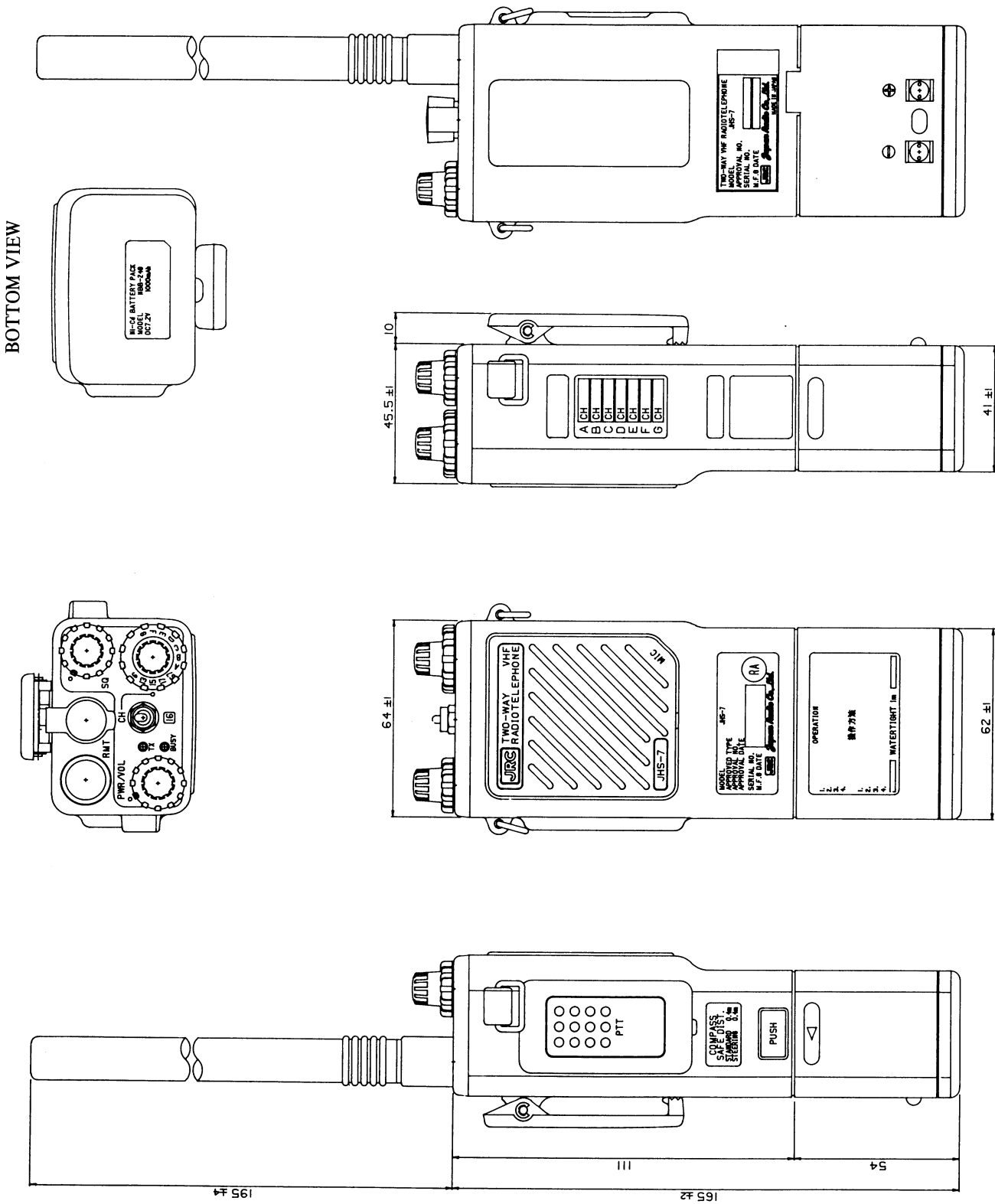
7.6 Carrying Case MPXP02368

The carrying case protects the surface of the radiotelephone against damage.

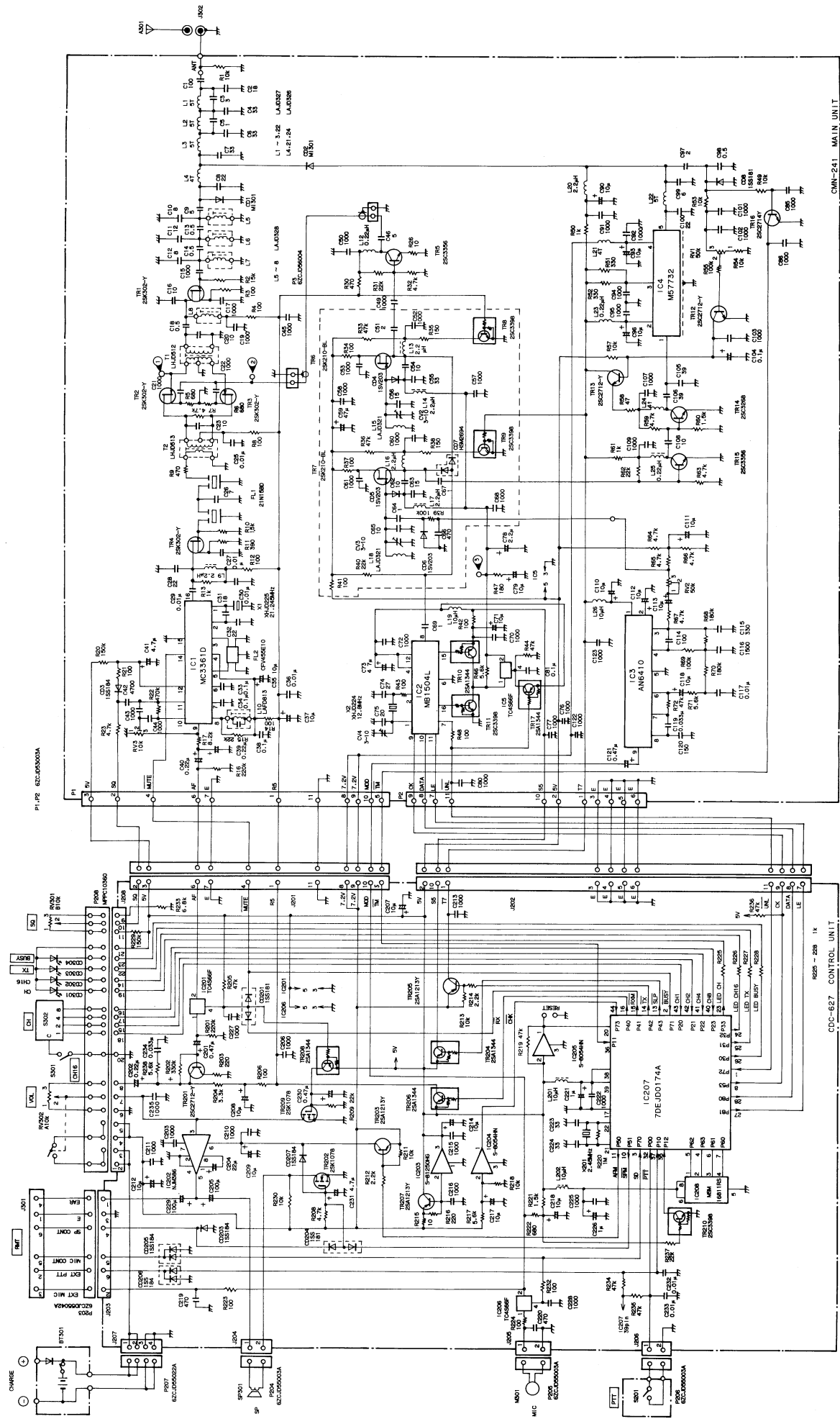


JHS-7 TWO-WAY VHF RADIOTELEPHONE
BLOCK DIAGRAM

JHS-7 TWO-WAY VHF RADIOTELEPHONE
OUTLINE DRAWING



BOTTOM VIEW

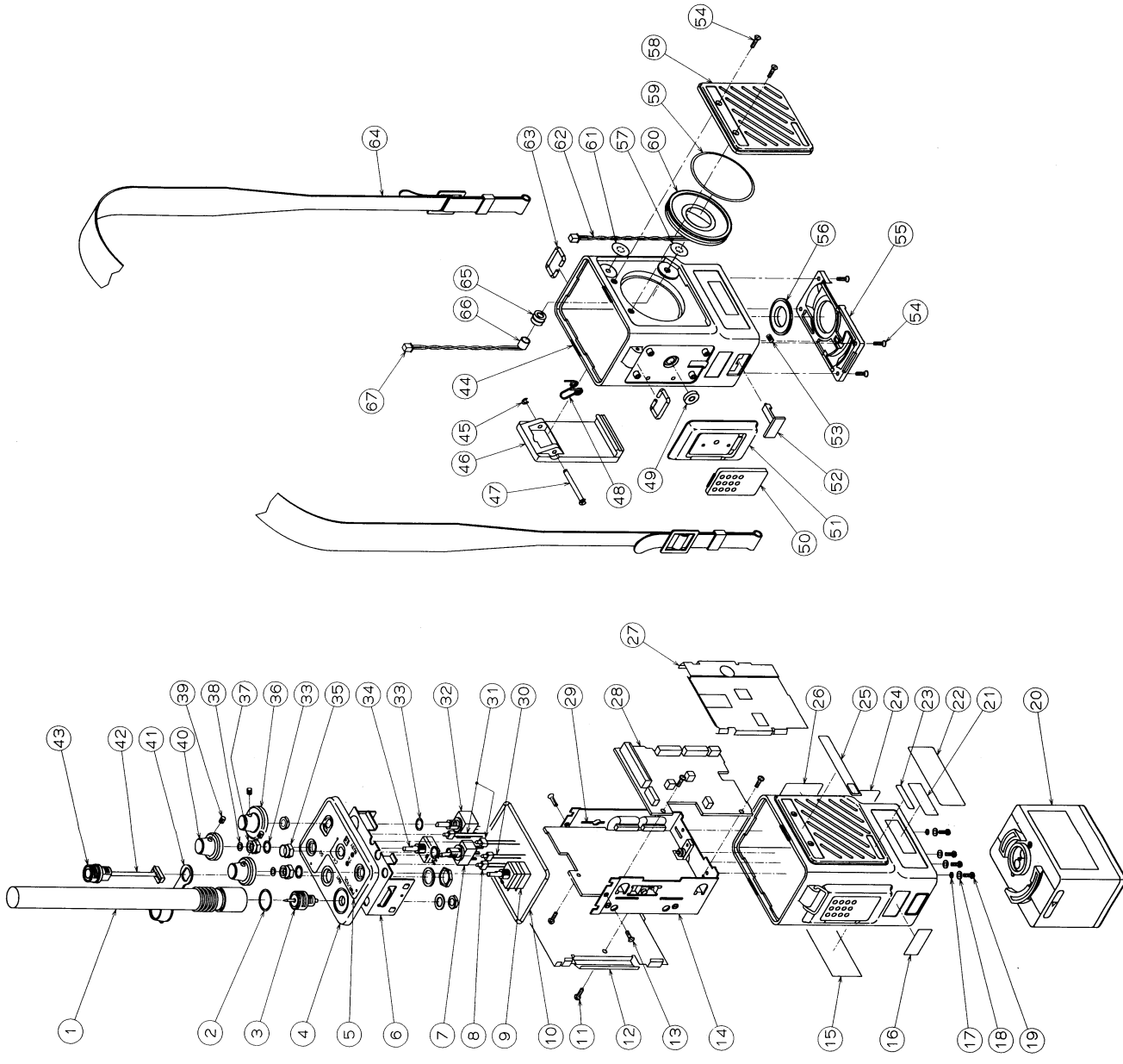


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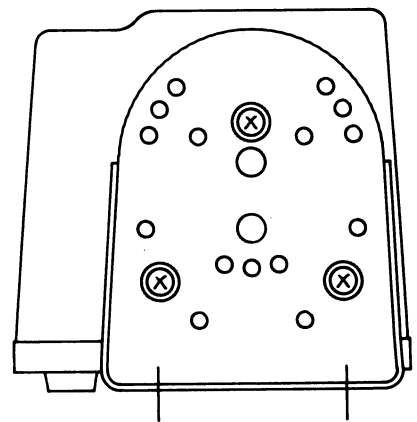
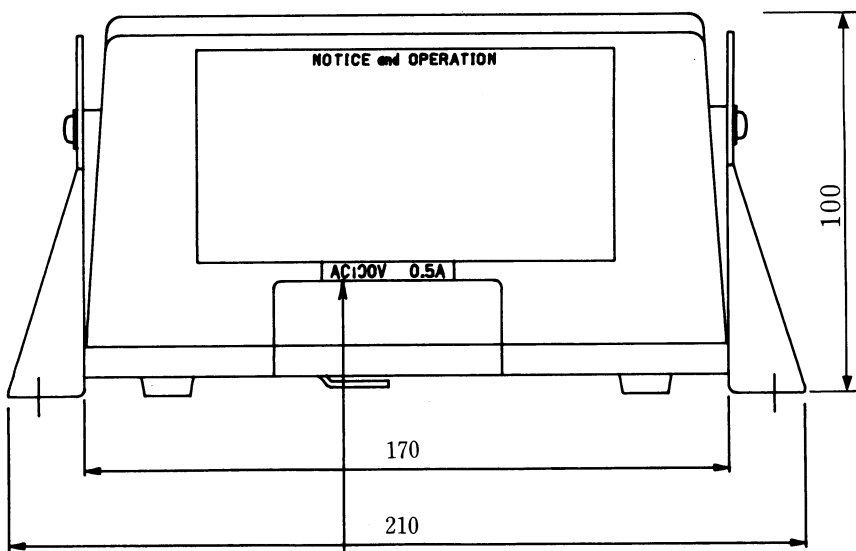
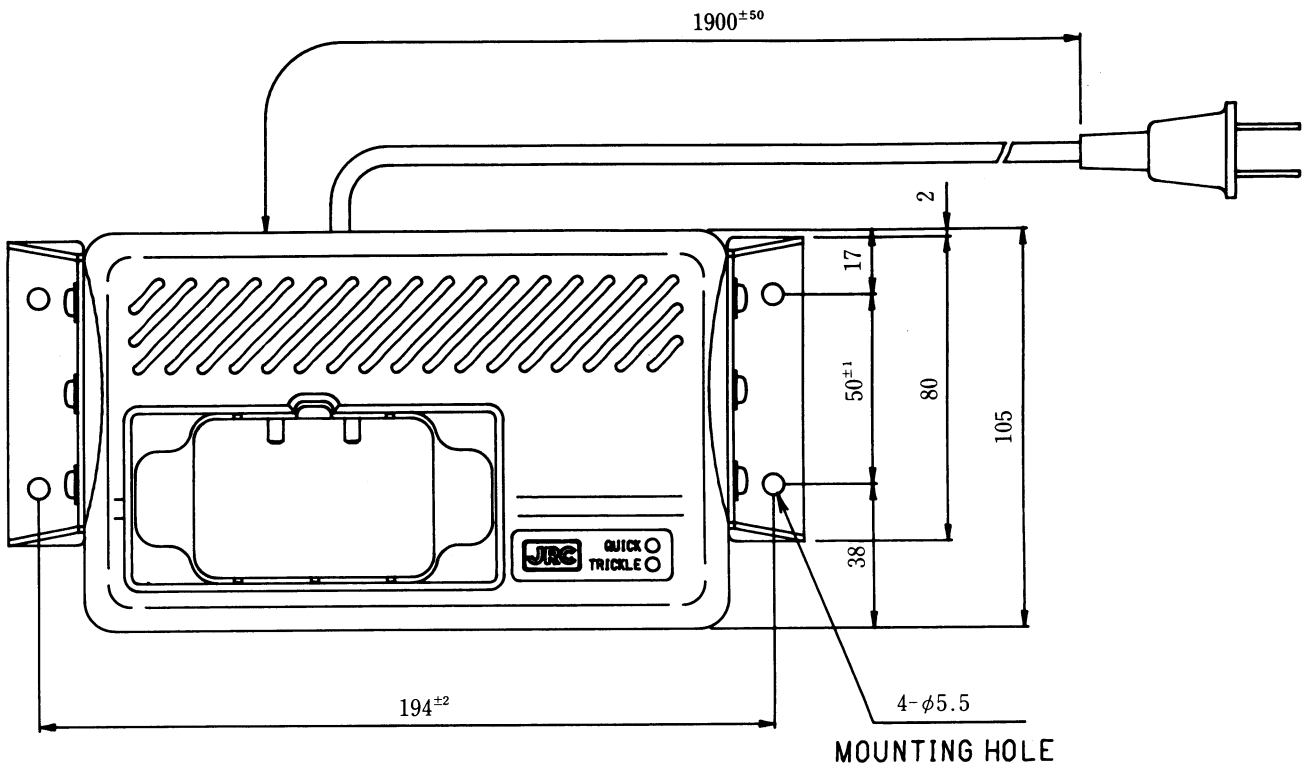
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JHS-7 TWO-WAY VHF RADIOTELEPHONE
CIRCUIT DIAGRAM

LOCATION	DESCRIPTION	PART NUMBER	Q'TY	REMARKS
1	ANTENNA	6AAJ000102	1	
2	O-RING	BRPK00630	1	
3	RF CONNECTOR	6JAJ000007	1	
4	PANEL	MTV004031A	1	
5	FACE LABEL	MPNM14434B	1	
6	SUB PANEL	MTD004566	1	
7	TOGGLE SWITCH	5SCB000006	1	MTMPY7101G1
8	LED (RED)	5TZA000153	1	SEL4117R
9	ROTARY POTENTIOMETER	6RYJ000015B	1	
10	O-RING	MPPK01957B	1	
11	SCREW	BSNK02004B	4	NK2X4
12	SHIELDING BOARD	MTD004567A	1	
13	SCREW	BSSK02004B	2	S2X4
14	CHASSIS	MTD004565	1	
15	JAPAN MPT LABEL	MPNL20310	1	JHS-7
16	CAUTION LABEL	MPNL20351B	1	JHS-14
17	O-RING	MPNM15254	2	
18	PLAIN WASHER	BRPK00650	4	LW2
19	SCREW	BSLW02000B	4	NK2X6
20	Ni-Cd BATTERY PACK	BSNK02006B	1	
21	SNO. LABEL	NBB-24B	1	
22	JAPAN MPT LABEL	MPNM15700	1	JHS-7
23	NAME LABEL	MPNM14664A	1	JHS-14
24	NAME LABEL	MPNM14436	1	JHS-7
25	NAME LABEL	MPNM14651	1	JHS-14
26	NAME LABEL	MPNM15536	1	JHS-7
27	NAME LABEL	MPNM15378	1	JHS-14
28	CHANNEL LABEL	MPNM14435	1	
29	SHIELDING BOARD	MPNN23738	1	
30	CONTROL UNIT	MTD004568	1	MDLW04536
31	MAIN UNIT	CDC-627	1	MDHW00980
32	LED (GREEN)	CMN-241	1	SEL44176
33	LED (YELLOW)	5TZA000154	2	SEL4917D
34	ROTARY SWITCH	5TZA000152	1	KEC16-0B-02
35	O-RING	5SCRV000002	4	
36	ROTARY POTENTIOMETER	BRPK00634	1	
37	GUARD NUT	6RYJ000014A	1	JHS-7
38	KNOB	MTL041031	1	JHS-14
39	NUT	MPH001443	2	
40	O-RING	MTL041030A	2	
41	SET SCREW	BRPK00628	3	3T3X3 SUS
42	KNOB	BRT604435	2	
43	RUBBER CAP	MTV0040953	1	
44	CABLE	MPPK01695A	1	
45	CONNECTOR	6ZCJ055042A	1	SR30-10R-6S
46	CASE	5JCAA00054	1	(E TYPE)
47	RETAINING RING	MPBC09054	2	
48	CLIP	BRT604435	1	
49	SHAFT	MTV0040956	1	
50	SPRING	MTH004853	1	
51	RUBBER PACKING	MPSR02545	1	
52	KEYTOP	MTT025410B	1	
53	RIGID METAL	MPHD30021	1	
54	COIL SPRING	MTC002472A	1	
55	SCREW	MPSR02527	6	S2X6
56	CONNECTION METAL	BSSK02006B	1	
57	RUBBER PACKING	MPPK01558A	1	
58	GRILLE	BRPK00689	1	
59	O-RING	MPBC09055	1	
60	SPEAKER	6USJ000010	1	
61	WATERPROOF MEMBRANE	BRPK00688	1	
62	CABLE	6ZCJ055003A	2	
63	FIXTURE	MTL028844	1	
64	STRAP	MPXP02384	1	
65	RUBBER PACKING	MTV002963	1	
66	MICROPHONE	5JMAK00010	1	MM-063-X
67	CABLE	6ZCJ055003A	1	



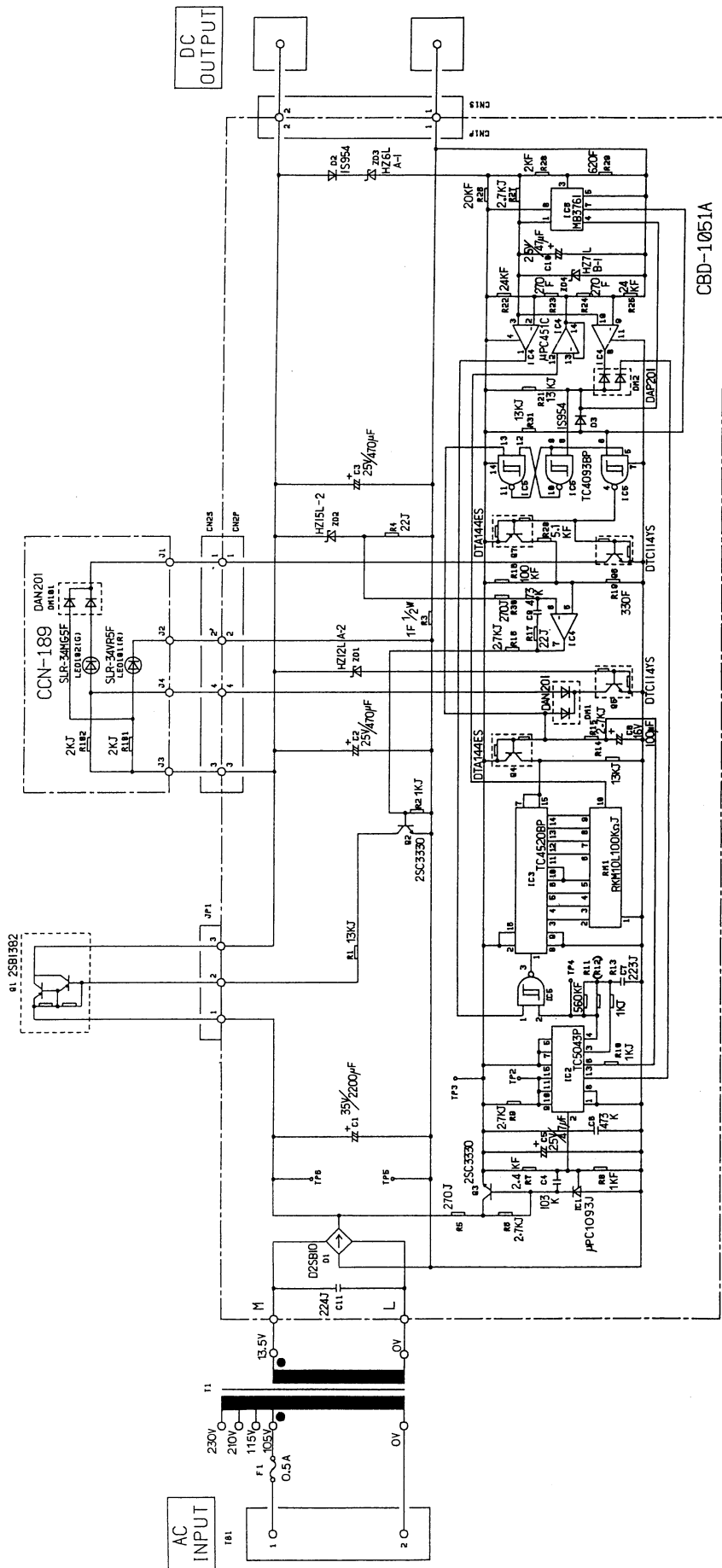
JHS-7 TWO-WAY VHF RADIOTELEPHONE
ASSEMBLY DRAWING



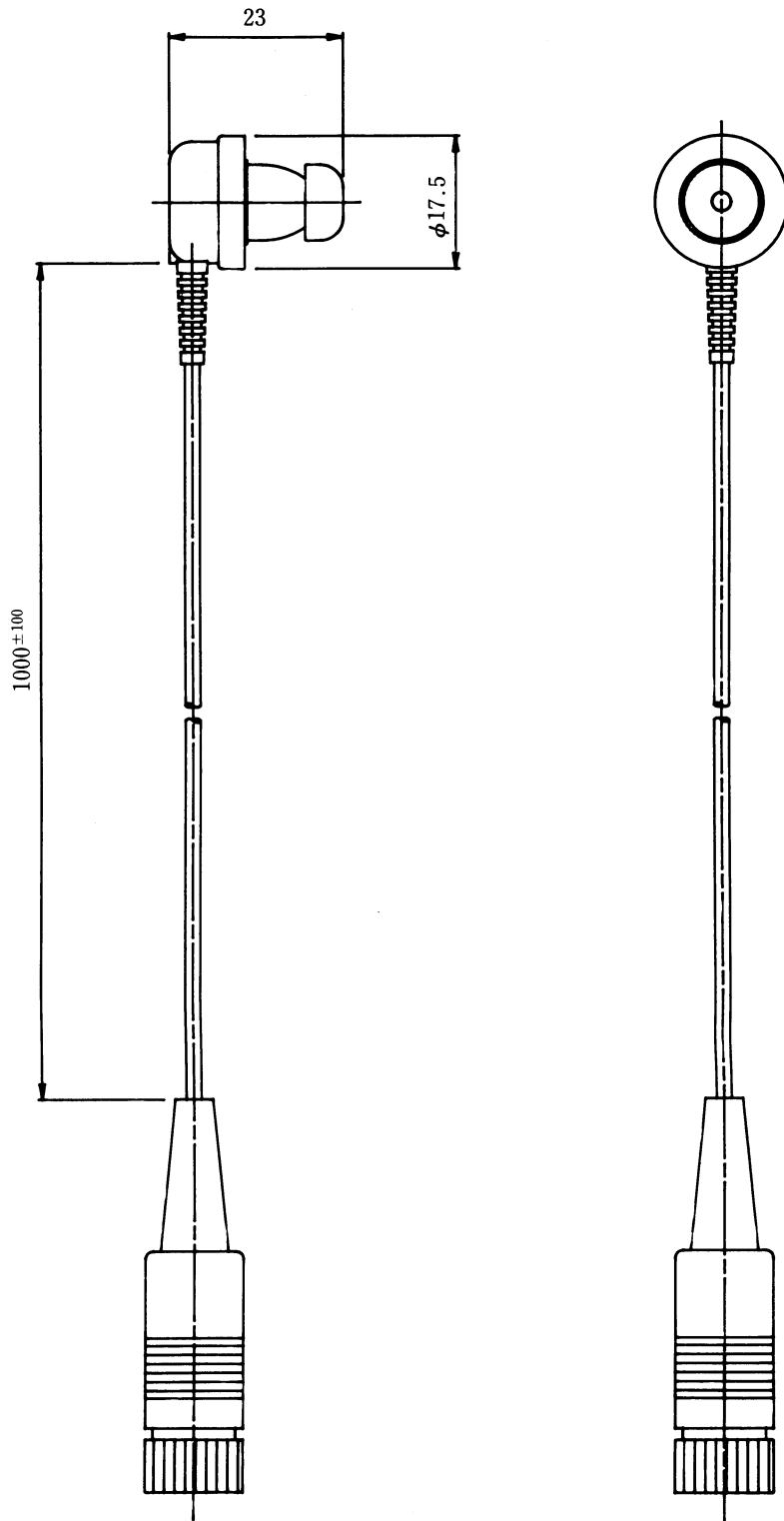
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AC110V 0.5A
AC115V 0.5A
AC120V 0.5A
AC200V 0.5A
AC220V 0.5A
AC230V 0.5A
AC240V 0.5A

WEIGHT 1.5kg

NBA-4141 BATTERY CHARGER
OUTLINE DRAWING

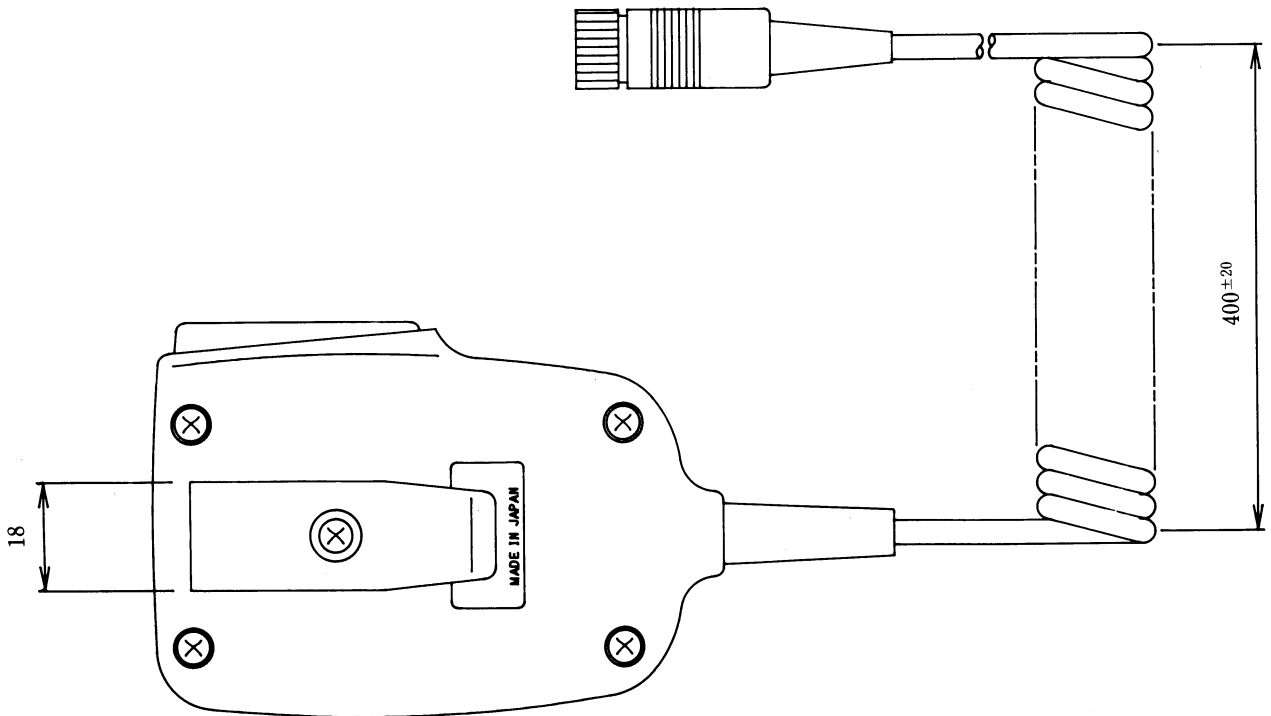
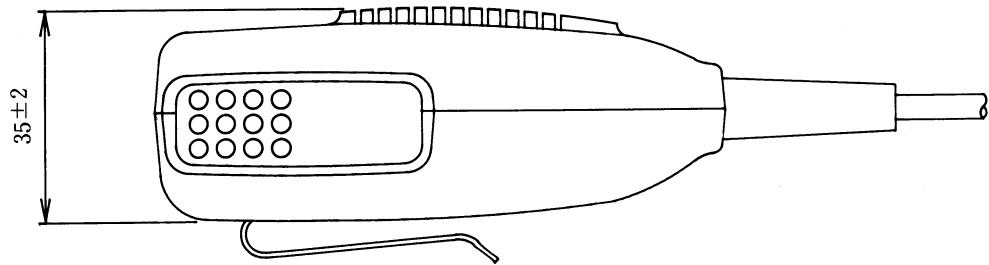
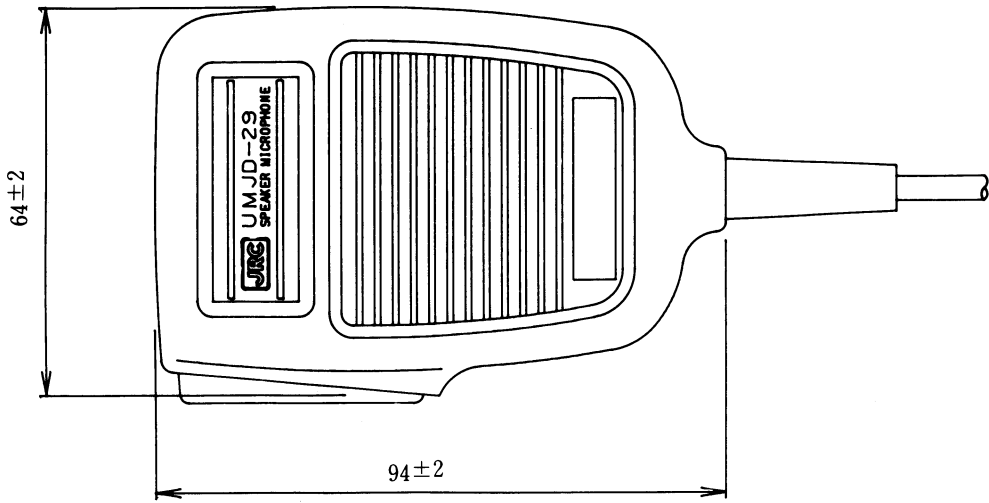


NBA-4141 BATTERY CHARGER
CIRCUIT DIAGRAM



6UMJD00004 EARPHONE
OUTLINE DRAWING

WEIGHT : Approx. 20g



6UMJD00029 EXTERNAL SPEAKER/MICROPHONE
OUTLINE DRAWING

WEIGHT : Approx. 280g

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Since 1915

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