

FURUNO

OPERATOR'S MANUAL

2182kHz DISTRESS FREQUENCY
WATCH RECEIVER

MODEL AA-45B



FURUNO ELECTRIC CO., LTD.
NISHINOMIYA, JAPAN

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AA-45B

·Your Local Agent/Dealer

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SAFETY INSTRUCTIONS

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



DANGER

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



WARNING

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



CAUTION

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

WARNING



Do not open the cover of the equipment.

This equipment uses high voltage electricity which can shock, burn, or cause death. Only qualified personnel should work inside the equipment.

Do not disassemble or modify the equipment.

Fire, electrical shock or serious injury can result.

Immediately turn off the power at the ship's mains switchboard if water or foreign object falls into the equipment or the equipment is emitting smoke or fire.

Continued use of the equipment can cause fire, electrical shock or serious injury.

CAUTION

Do not place liquid-filled containers on the top of the equipment.

Fire or electrical shock can result if a liquid spills into the equipment.

Do not place heater near the equipment.

Heat can melt the power cord, which can result in fire or electrical shock.

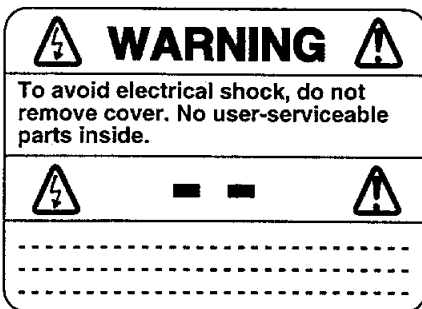
Do not operate the unit with wet hands.

Electrical shock can result.

Use the correct fuse.

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

WARNING Label attached



Name : Warning Label (1)
Type : 86-003-1011-0
Code No. : 100-236-230

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SPECIFICATIONS

GENERAL

- | | |
|-----------------------------|--|
| 1. Power Requirement | 100/110/220VAC, 50/60Hz, 1 ϕ
Approx. 10VA at st-by |
| 2. Environmental Conditions | Temp.: -10°C to +50°C, Humidity: 95% at +35°C |
| 3. Dimensions and Weight | 180(W) x 320(H) x 140(D) mm, approx. 5kg |

RECEIVER & ALARM SIGNAL DETECTOR

- | | |
|-----------------------------|--|
| 1. Receiving Frequency | 2182kHz international distress frequency |
| 2. Mode of Reception | A2A, H2A, A3E, H3E |
| 3. Sensitivity | 30uV input, 30% modulated at 1kHz, will produce 50mW output with a SINAD of at least 20dB. Normal reception for 10uV-100mV, 30-90% modulated alarm signal. |
| 4. Selectivity | Bandwidth <u>+3.5kHz</u> at 6dB,
Attenuation greater than 66dB at <u>+12kHz</u> |
| 5. Spurious Response | Better than 60dB |
| 6. Audio Output(to Speaker) | Greater than 500mW |
| 7. Response of AF Mute | In the muted condition, the receiver will react to:
1) International radiotelephone distress signal, 1300Hz and 2200Hz alternating tones
2) EPIRB (Emergency Position Indicating Radio Beacon) signal
3) Navigation warning message, 2200Hz tone

Mute will react within 4-6 sec. upon receipt of a signal whose duration is 250 <u>+50ms</u> . |
| 8. Trouble Alarm | Speaker releases a 1000Hz alarm at 1sec. intermittent intervals when:
1) Output level of 15V volt. regulator drops below +15V
2) Reference oscillator (2200Hz) malfunctions |

TEST OSCILLATOR

- | | |
|---------------|--|
| 1. Output | 2182kHz, A2A, 15uV or less, 75ohms |
| 2. Modulation | 1300Hz/2200Hz alarm signal, modulation depth of 30-90% |

Complete Set

No.	Name	Type	Weight(kg)	Q'ty	Remark
1	Main unit	AA-45B	5	1	
2	Antenna Coupler	AL-32	1.3	1	Splash Proof Type
		AL-33	2.3		Non-splash Proof Type
3	Ext. Speaker(*)	AL-55B	1.5	1	Bulkhead Mount
		AL-55BF	0.8		Flush Mount
4	Spare Parts			1 Set	

* Required only when the main unit is installed in the radio room.

Spare Parts

No.	Name	Type	Q'ty	Remark
1	Glass Tube Fuse	1A	3	
2	Relay	G2V-282P DC24V	1	

1 OPERATION

1-1. Controls and Indications

POWER Switch

With the POWER switch in the "ON" position, power is supplied to the circuit, and the POWER lamp will light (as long as the DIMMER control is not in the fully counterclockwise position).

DIMMER Control

This control adjusts the LED illumination of the front panel. Turn the control to the right to increase illumination and to the left to decrease it.

VOLUME Control

This control adjusts the volume of the built-in speaker. Turn the control to left/right to increase/decrease volume.

Note; The sound emitted from the speaker, however, cannot be silenced completely.

TROUBLE Lamp

When trouble is detected in either the power supply circuit or oscillator circuit, the TROUBLE lamp lights, and the alarm sounds to indicate trouble within the unit.

PHONE Jack

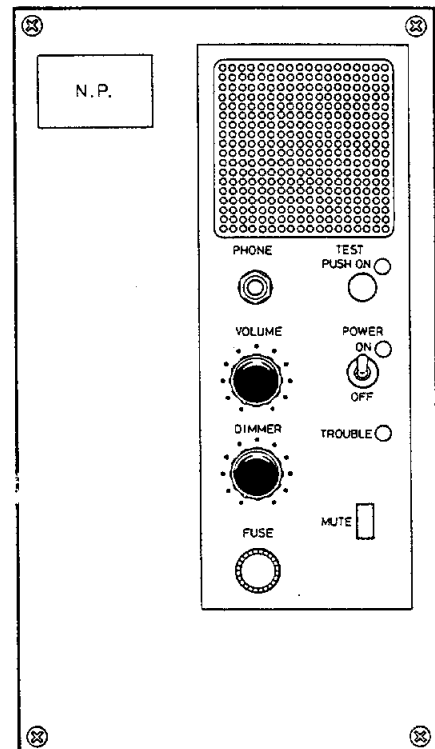
A headphone with impedance between 8 to 600 ohms may be connected.

TEST Button

With this button depressed, a test signal is applied to the receiver input for a test of the equipment.

MUTE Button

This is an ON-OFF switch for the receiving signal. In the depressed position, sound other than a receiving signal is cut off and in the "OUT" position, the signal is released.



1-2. Power Application

Turn the POWER switch to "ON", rotate the DIMMER control clockwise toward "BRIGHT", and confirm that the POWER lamp is lit. If desired, dim the POWER lamp by turning the DIMMER control counterclockwise.

1-3. Standby Mode

The equipment is in the standby condition with the POWER switch turned on. To set standby condition, first, adjust the volume to the desired level (ensure the MUTE button is "out", or no sound can be heard from the speakers). Then depress the MUTE button for mute condition. Now the equipment is in standby condition and speakers are automatically connected upon receiving two-tone alarm or navigation warning signal.

1-4. Reception of Signals

With two-tone alarm or navigation warning signal received, the built-in speaker and the external speaker are automatically connected for normal receiving mode, and any message can be heard from the speakers.

When the navigation warning message is over, the equipment can be restored to standby mode by pressing the MUTE button either on main unit or speaker box.

For clear reception of distress message (or call sign from EPIRB), ensure that the VOLUME control is advanced sufficiently. The volume of the external speaker can be adjusted only by the VOLUME control on each speaker. To restore the equipment to standby condition, push the MUTE button on the main unit or the MUTE button on bridge speaker.

1-5. Manual Reception

In the standby condition, all speakers are muted, i.e., speakers are disconnected from the receiver. If required, the speakers can be operated manually by depressing the MUTE button.

1-6. Trouble Alarm

When the TROUBLE lamp lights, an alarm will sound in the main unit and the bridge speakers, signifying trouble in the power supply circuit or oscillator circuit.

The alarm continues to sound until the trouble is eliminated.

2. MANDATORY CHECK

The performance of the equipment can be checked with a synthesized signal which is produced in the test oscillator incorporated in the main unit. A daily test of the auto alarm is usually obliged by the regulations concerned.

2-1. Testing The Alarm

Press the TEST button, and the alarm signal (two-tone signal) is released from all speakers after 4 to 6 seconds. With the MUTE button depressed, the equipment is restored to standby mode.

3. TROUBLESHOOTING (For technician only)


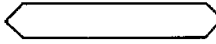
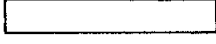
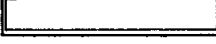
Since there are numerous kinds of trouble, it is almost impossible to predict the occurrence and location of trouble. As a reference for quick location of the possible source of trouble, a troubleshooting chart is given in the following pages.

3-1. Points of Caution in making Internal Checks

- a) Components inside the unit should be serviced only by qualified personnel.
- b) Be sure to switch OFF the power supply before beginning any work.
- c) The components inside the unit must not be touched carelessly.
- d) Keep in mind that the internal wiring is insulated from the chassis.
- e) Since transistors and ICs are easily damaged by electric shock, great care should be taken not to short-circuit ICs pins and wiring through carelessness.
- f) When measuring the resistance of a circuit with a multimeter, attention should be paid to the polarity of the tester leads. In general, the (+) side lead bears a negative voltage, and the (-) side lead bears a positive voltage. The voltage of the battery used in the multimeter should be 4.5V or less. A multimeter containing a battery more than 5V might damage the transistors or ICs.
- g) To gain access to the printed circuit board, remove the cover by loosening fixing screws. The three printed circuit boards (RF unit, Alarm unit, and Selector unit) are fixed to the chassis with two M3 screws.
The connector used for making the connection between the printed circuit board and the chassis cannot be pulled out unless the lock spring at the center of the connector is pressed against the side of the circuit board.

After completing checking, the connector should be inserted as before, and the screws holding the cover be tightened firmly.

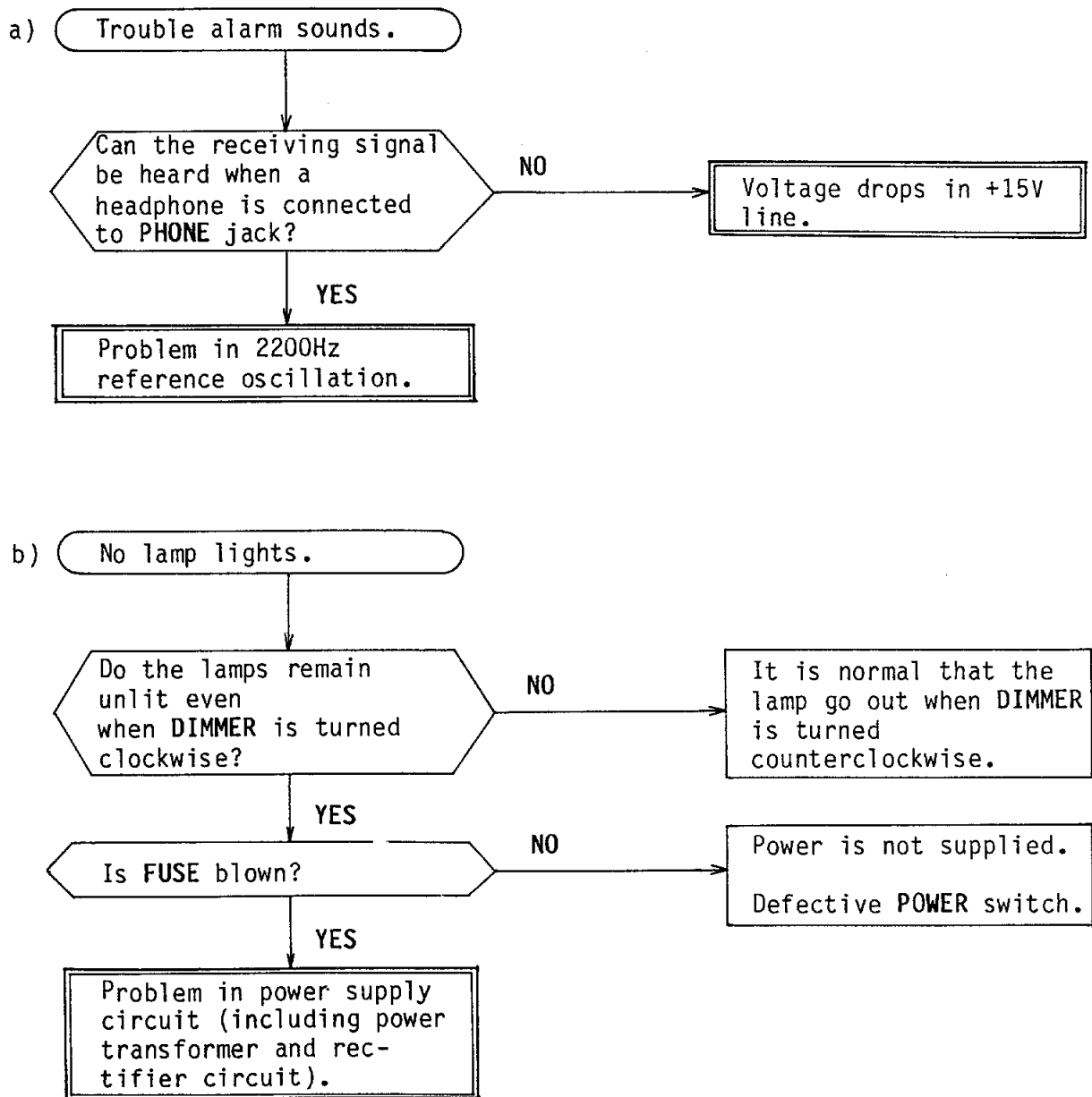
3-2. Troubleshooting Chart

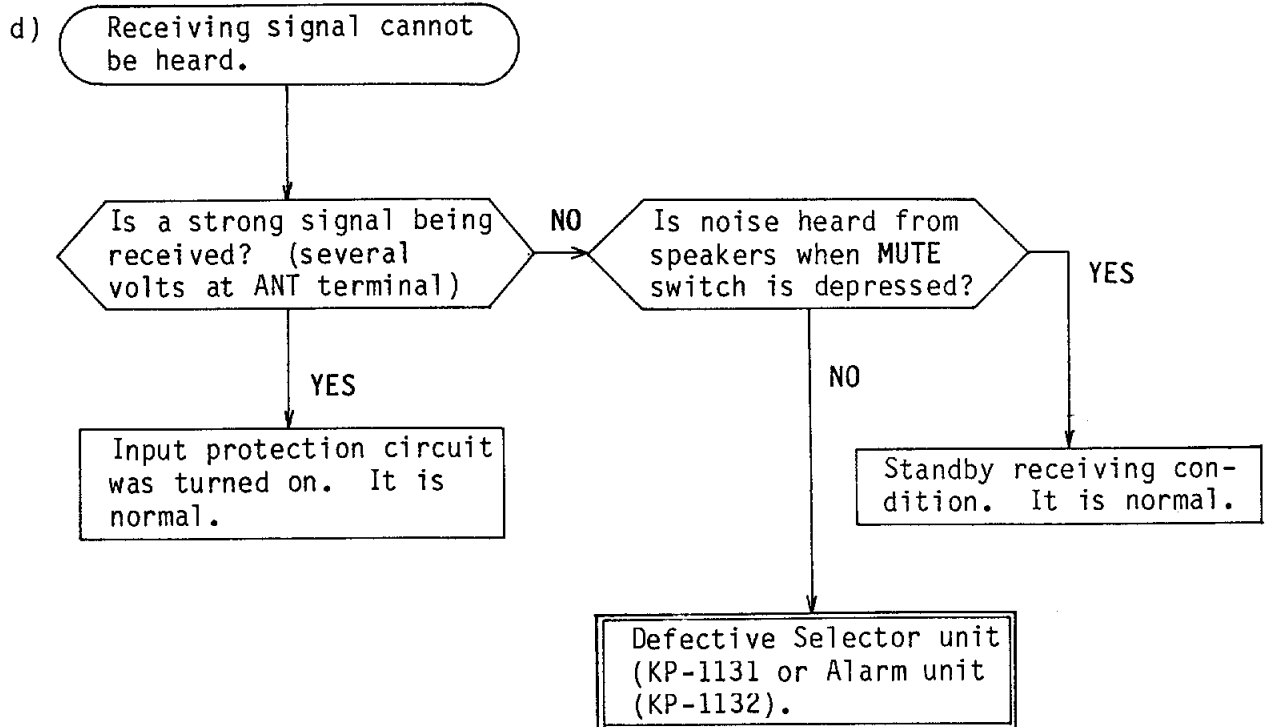
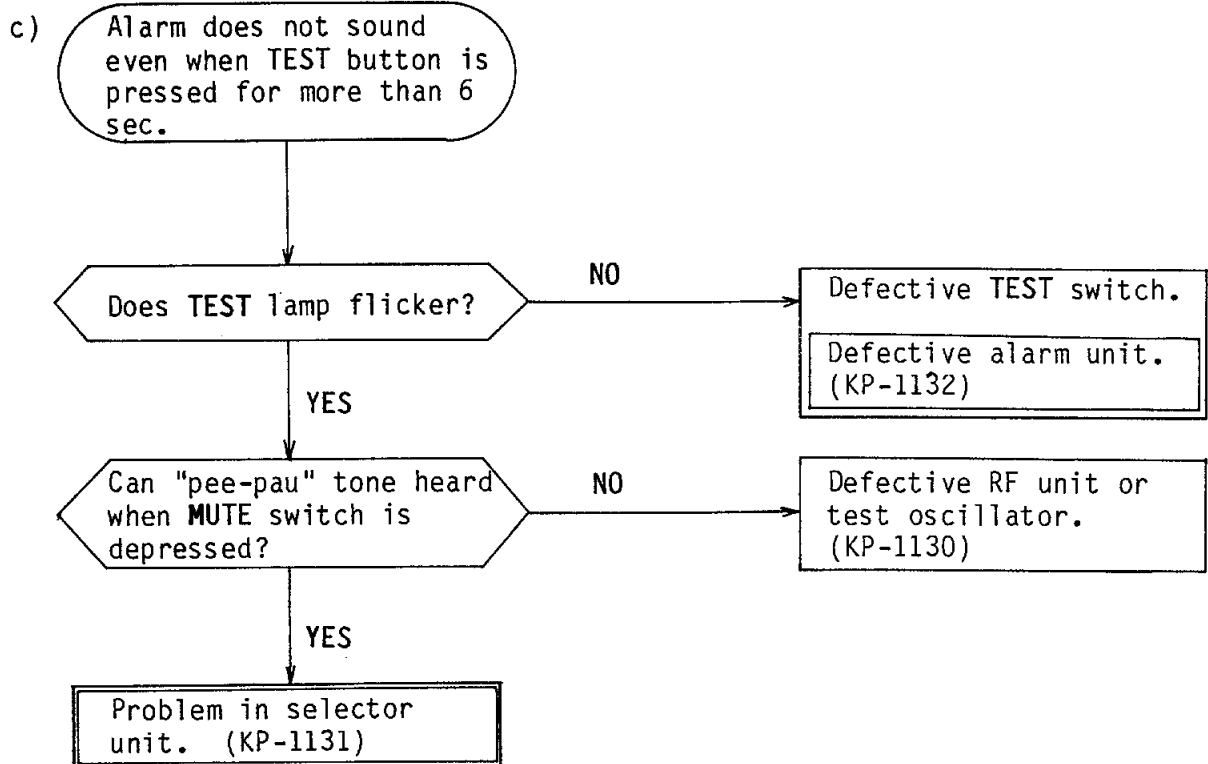
-  Trouble
-  Check or confirmation
-  Probable cause
-  A matter to be treated by FURUNO Co. or local dealer.

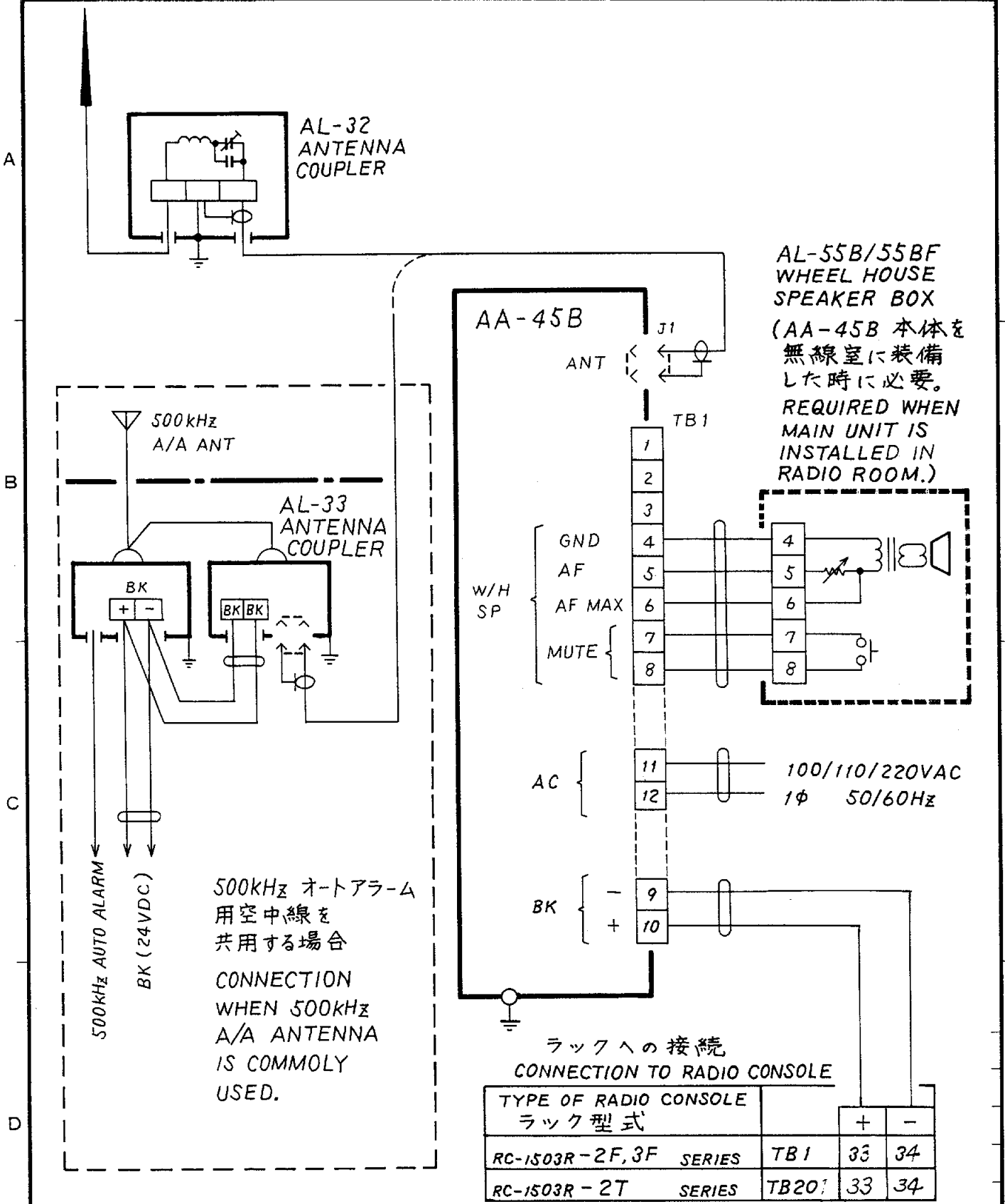
⚠ WARNING

Do not open the cover of the equipment.

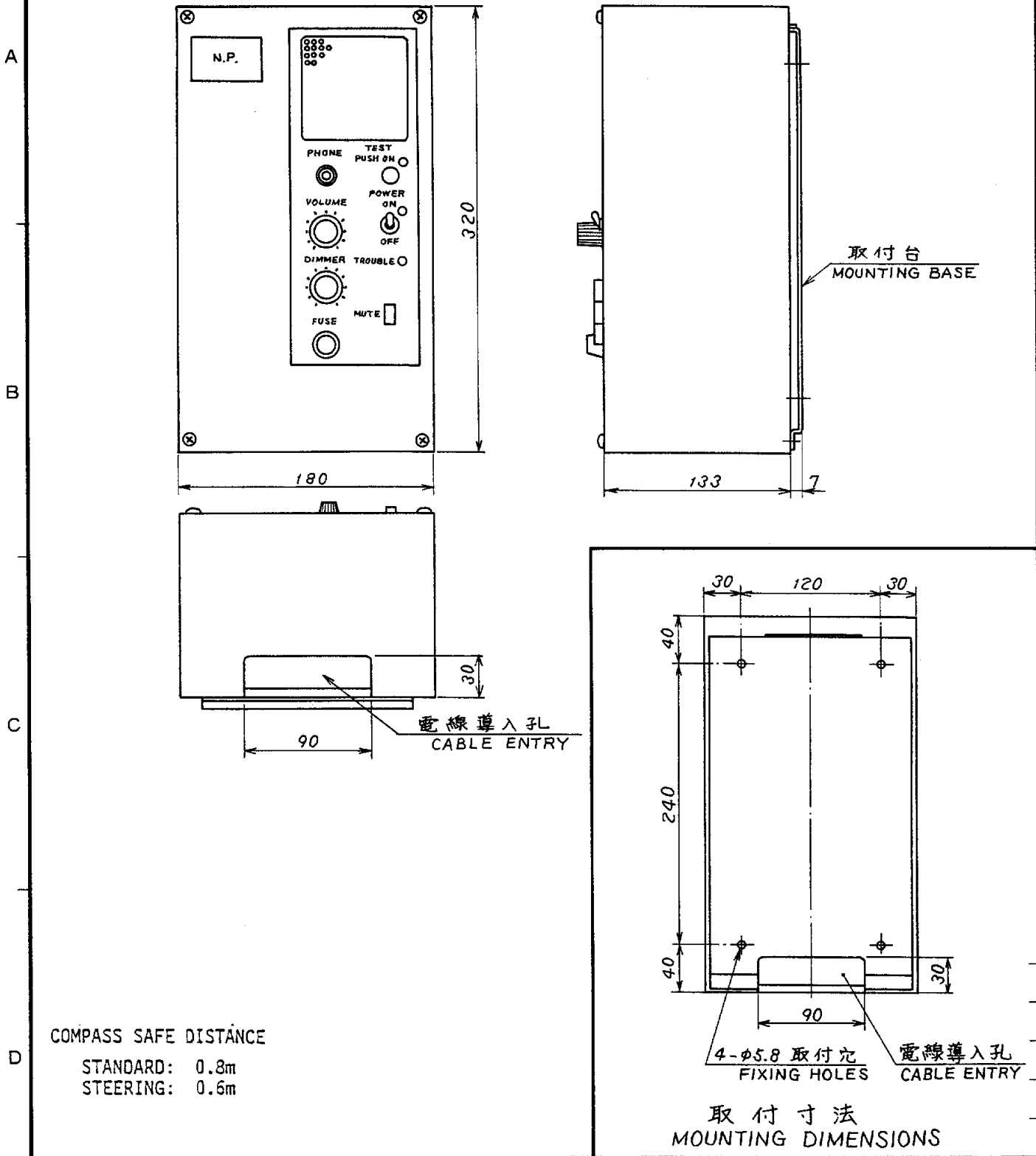
This equipment uses high voltage electricity which can shock, burn, or cause death. Only qualified personnel should work inside the equipment.







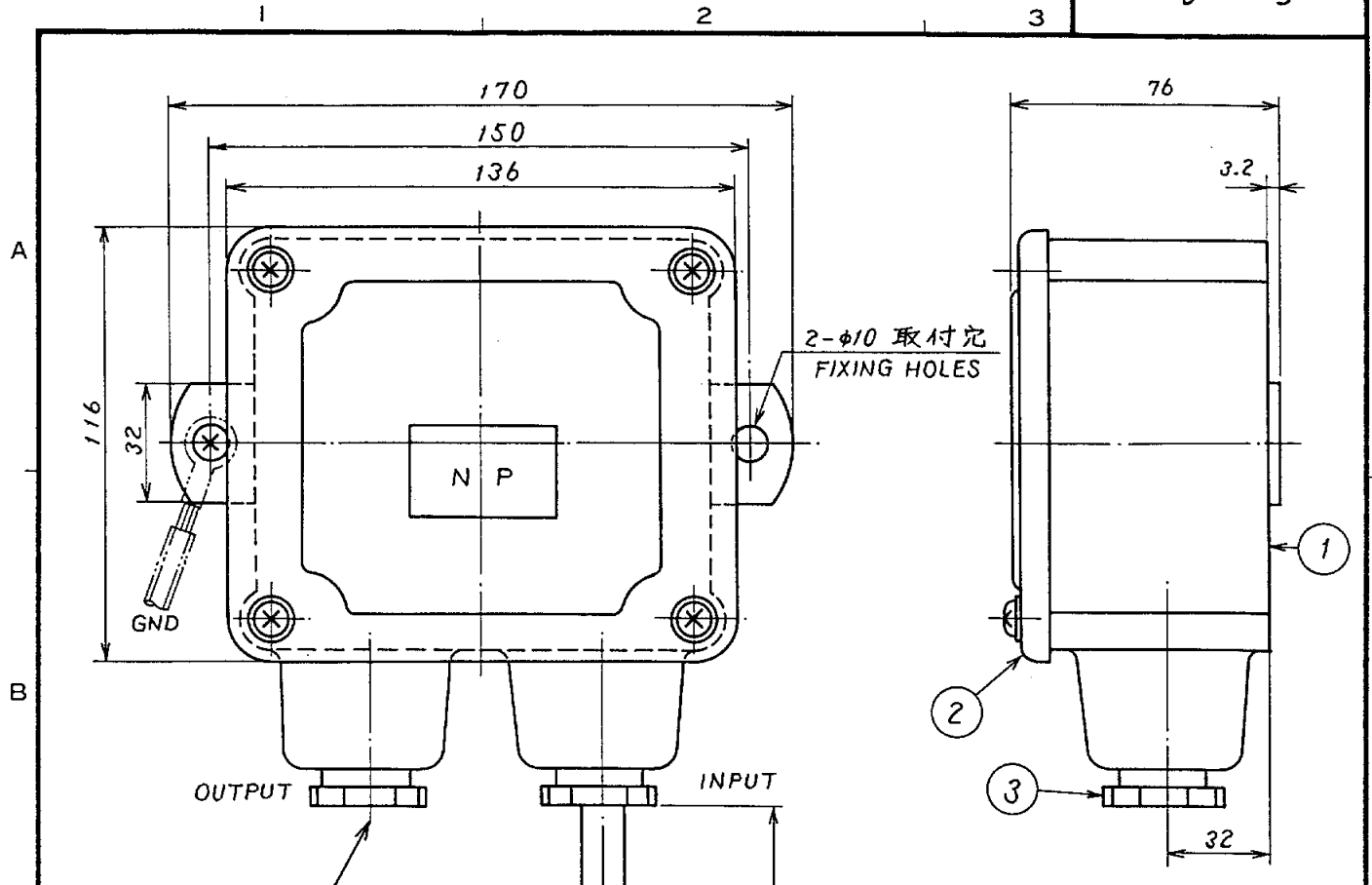
品番 ITEM	品名 NAME	材質 MATERIAL	数量 Q'TY	図番 DWG.NO.	摘要 REMARKS
承認 APPROVED	三角法 THIRD ANGLE PROJECTION	名称 TITLE	2182kHz WATCH RECEIVER WIRING DIAGRAM ワッチレシーバ結線図		
検図 CHECKED	尺度 SCALE	AA-45B			
製図 DRAWN	重量 WEIGHT	kg	図番 DWG.NO.	C5430-011-C	



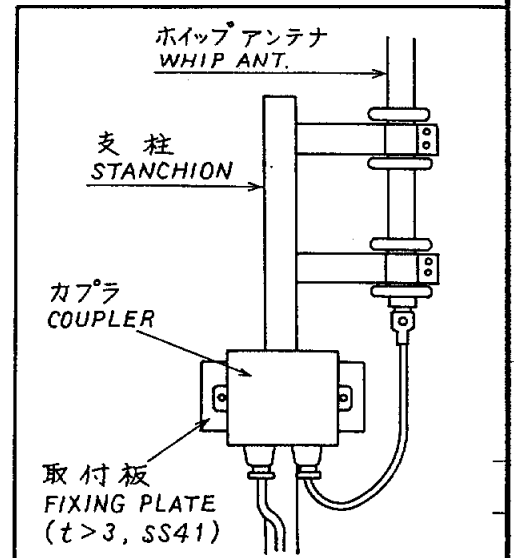
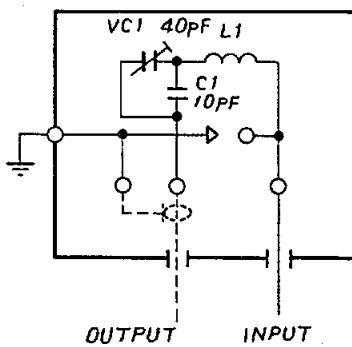
COMPASS SAFE DISTANCE
 STANDARD: 0.8m
 STEERING: 0.6m

取付寸法
 MOUNTING DIMENSIONS

品番 ITEM	品名 NAME	材質 MATERIAL	数量 Q'TY	図番 DWG.NO.	摘要 REMARKS
承認 APPROVED	三角法 THIRD ANGLE PROJECTION				名称 TITLE 2182kHz AA-45B フッチレシーバー WATCH RECEIVER
検図 CHECKED	尺度 SCALE				
製図 DRAWN	重量 WEIGHT				
			5 kg	図番 DWG.NO.	C5430-002-D

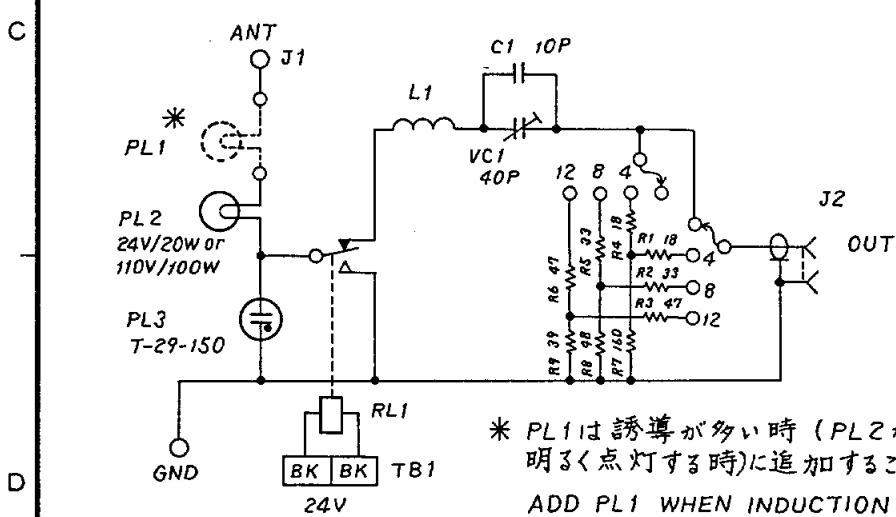
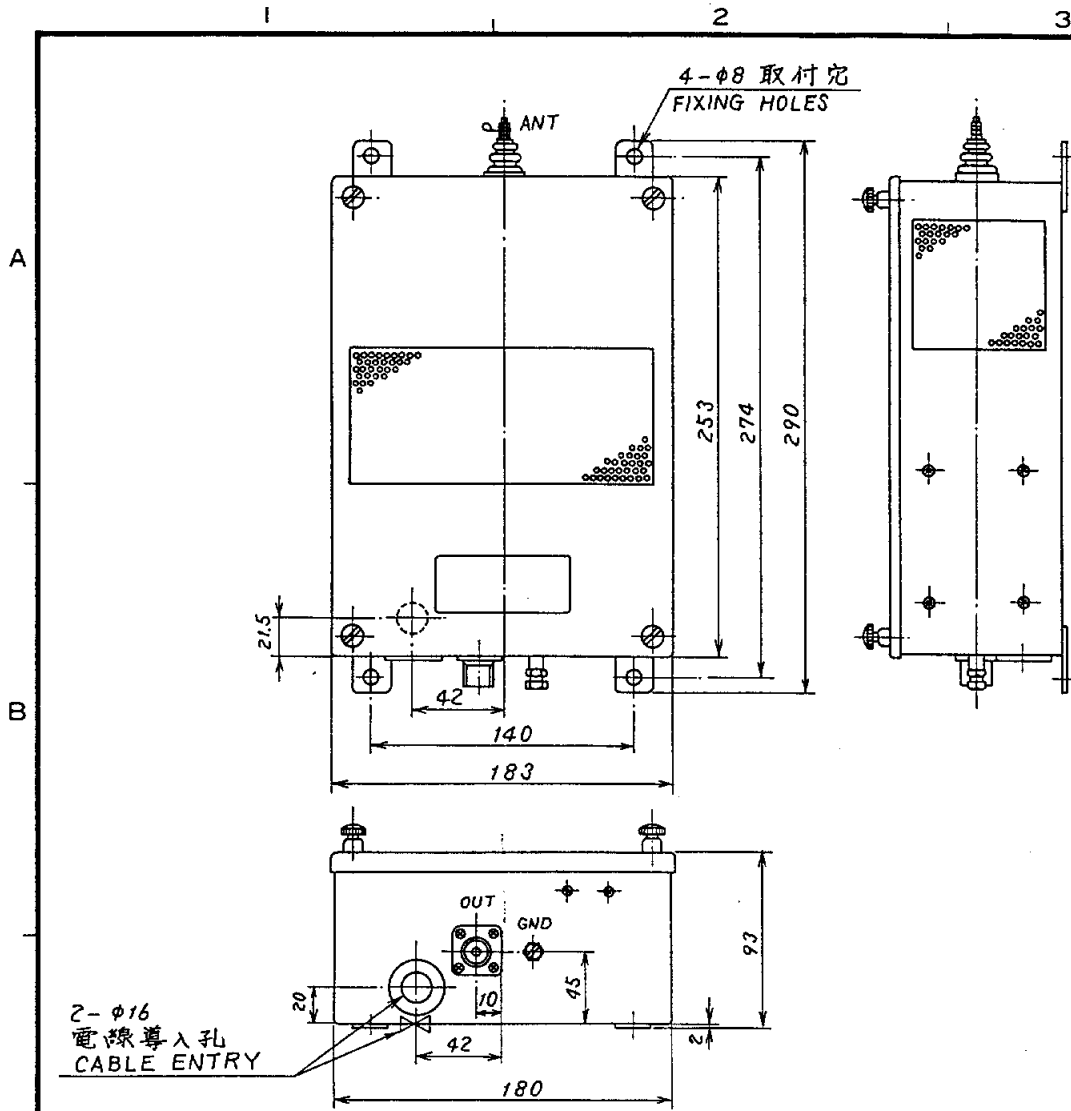


CABLE	GLAND SIZE
RG-10/U	15C
RG-12/U	15C
RG-10/U.Y.	25a (STANDARD)
RG-12/U.Y.	25a (STANDARD)
RG-10/U.C.C.Y.C.Y.	25b
RG-12/U.C.C.Y.C.Y.	25b



3	電線貫通金物 CABLE GLAND	BRASS	2		
2	カバー COVER	STAINLESS STEEL	1		
1	本体 BODY	FRP	1		
品番 ITEM	品名 NAME	材質 MATERIAL	数量 Q'TY	図番 DWG. NO.	摘要 REMARKS

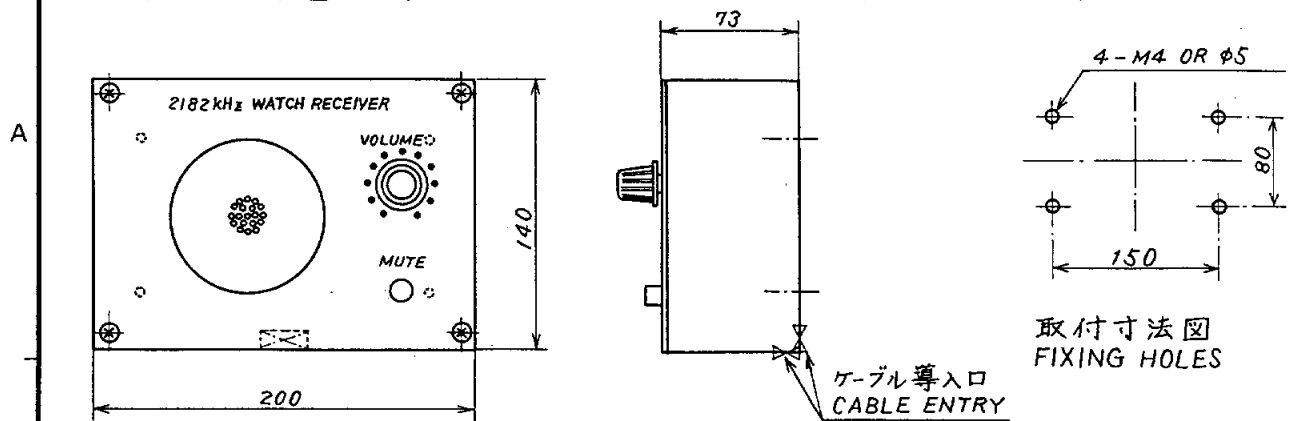
承認 APPROVED	<i>APR 11 1985</i>	三角法 THIRD ANGLE PROJECTION		名称 TITLE	2182kHz A/A (W/R) 用 カプラー (防滴型) ANTENNA COUPLER (SPLASH PROOF)
検図 CHECKED	<i>April 10 1985</i>	尺度 SCALE	1/2	AL-32	
製図 DRAWN	<i>APR 10 1985</i> <i>N. Nishida</i>	重量 WEIGHT	1.3 kg	図番 DWG. NO.	C5063-013-C (4BA01904)



* PL1は誘導が多い時 (PL2が明るく点灯する時)に追加すること。
 ADD PL1 WHEN INDUCTION IS STRONG (WHEN PL2 LIGHTS BRIGHTLY).

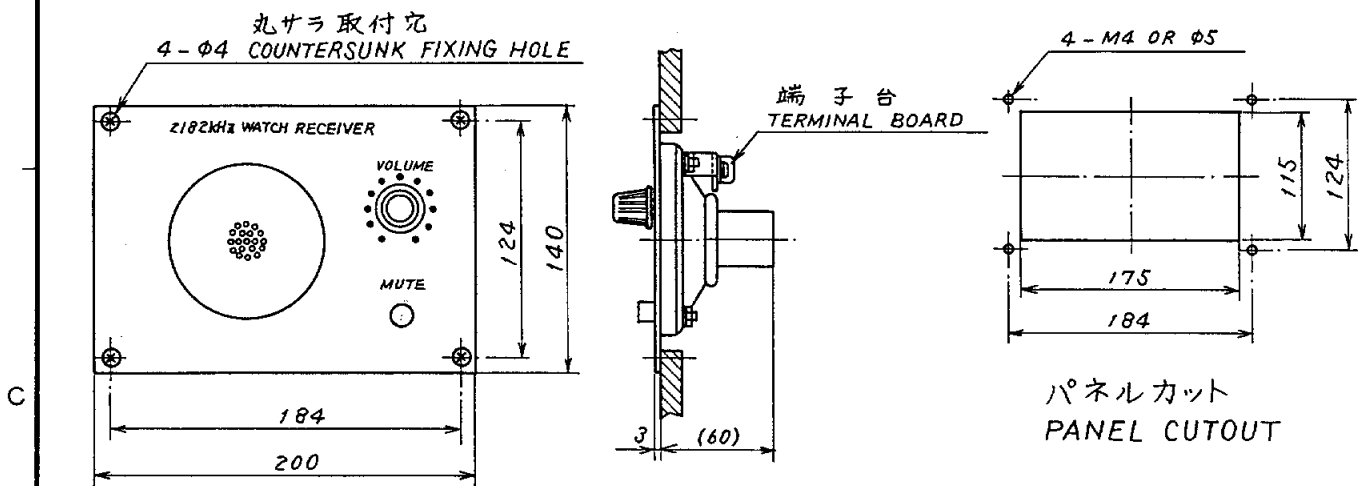
承認 APPROVED	品番 ITEM	品名 NAME	材質 MATERIAL	数量 Q'TY	図番 DWG.NO.	摘要 REMARKS
APR. 15 '85 <i>[Signature]</i>		三角法 THIRD ANGLE PROJECTION				名称 TITLE 2182kHz A/A (W/R) 用 AL-33 カプラー (非防滴型) ANTENNA COUPLER
検図 CHECKED APR. 15 '85 <i>[Signature]</i>		尺度 SCALE 1/4				
製図 DRAWN APR. 15 '85 <i>[Signature]</i>		重量 WEIGHT 2.3 kg			図番 DWG.NO. G5063-014-C (3BA01365/4AA02408)	

AL-55B (壁掛型 BULKHEAD MOUNT)



WEIGHT: 1.5 kg

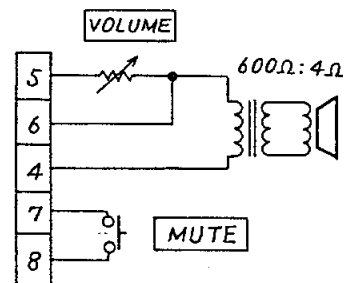
AL-55BF (埋込型 FLUSH MOUNT)



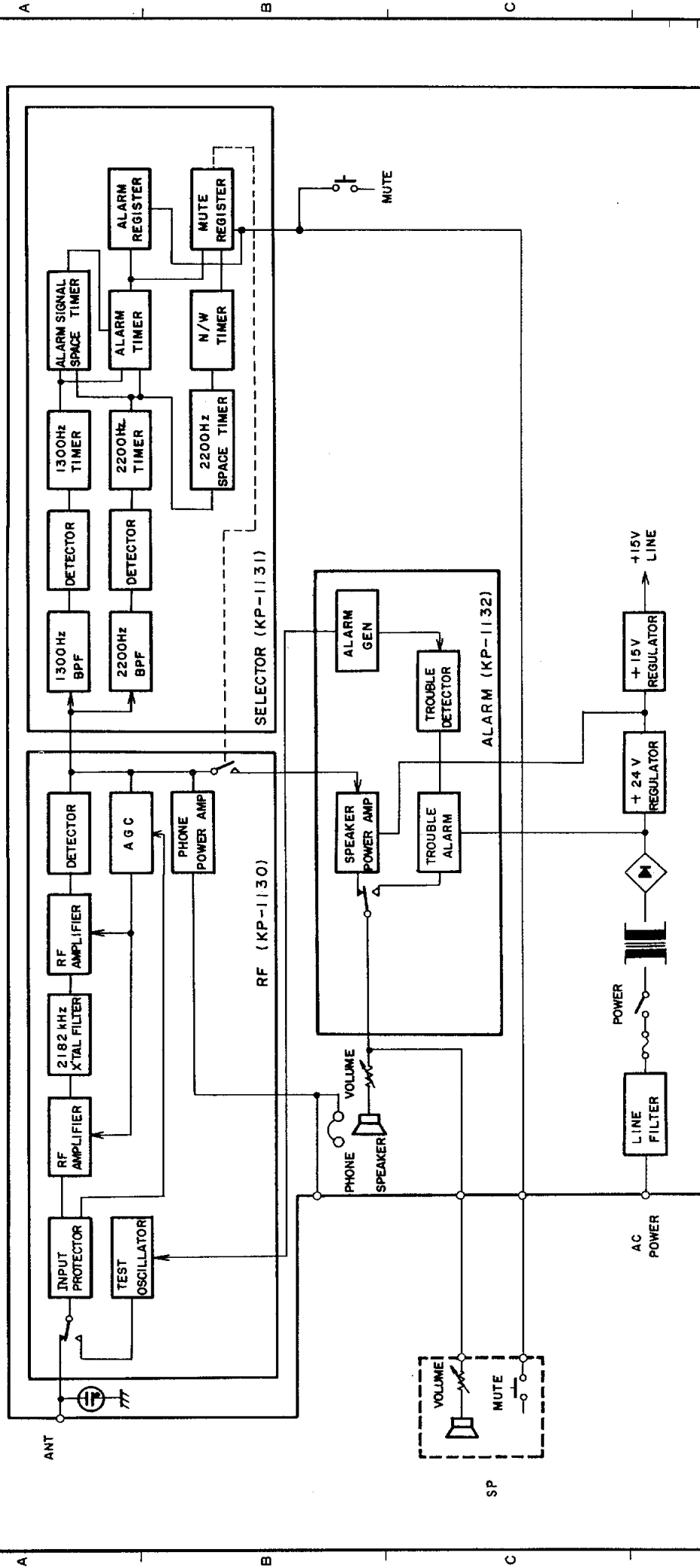
WEIGHT: 0.8 kg

COMPASS SAFE DISTANCE

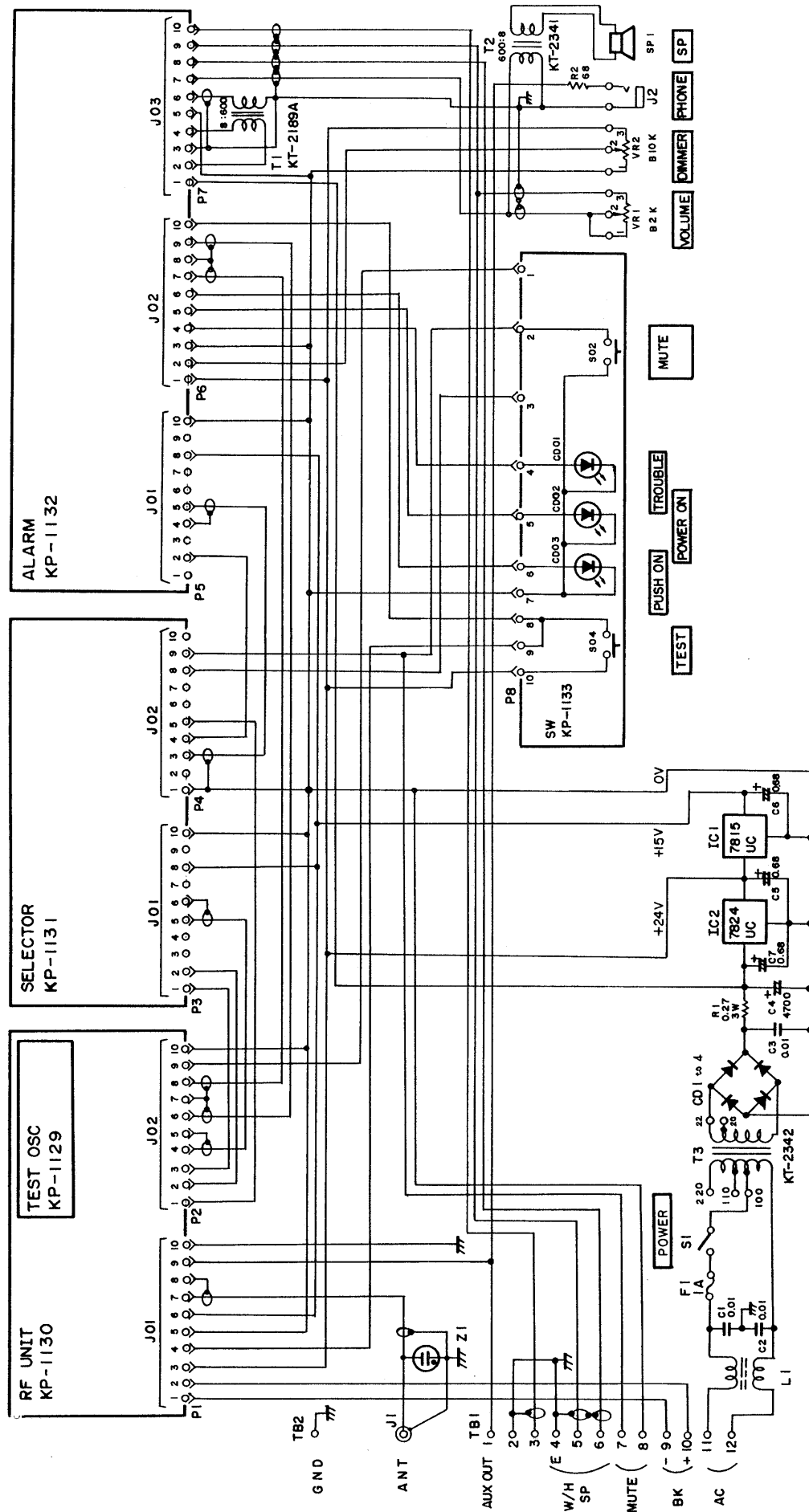
STANDARD: 0.8m
STEERING: 0.6m



承認 APPROVED	品番 ITEM	品名 NAME	材質 MATERIAL	数量 Q'TY	図番 DWG.NO.	摘要 REMARKS
APR. 11. '85 <i>[Signature]</i>		三角法 THIRD ANGLE PROJECTION				名称 TITLE 2182kHz W/R
検図 CHECKED APR. 10. '85 <i>[Signature]</i>		尺度 SCALE 1/4				AL-55B スピーカボックス (FOR W/H) AL-55BF SPEAKER BOX
製図 DRAWN APR. 10. '85 <i>[Signature]</i>		重量 WEIGHT	kg		図番 DWG.NO. C5016-079-E (4BA02354/5)	

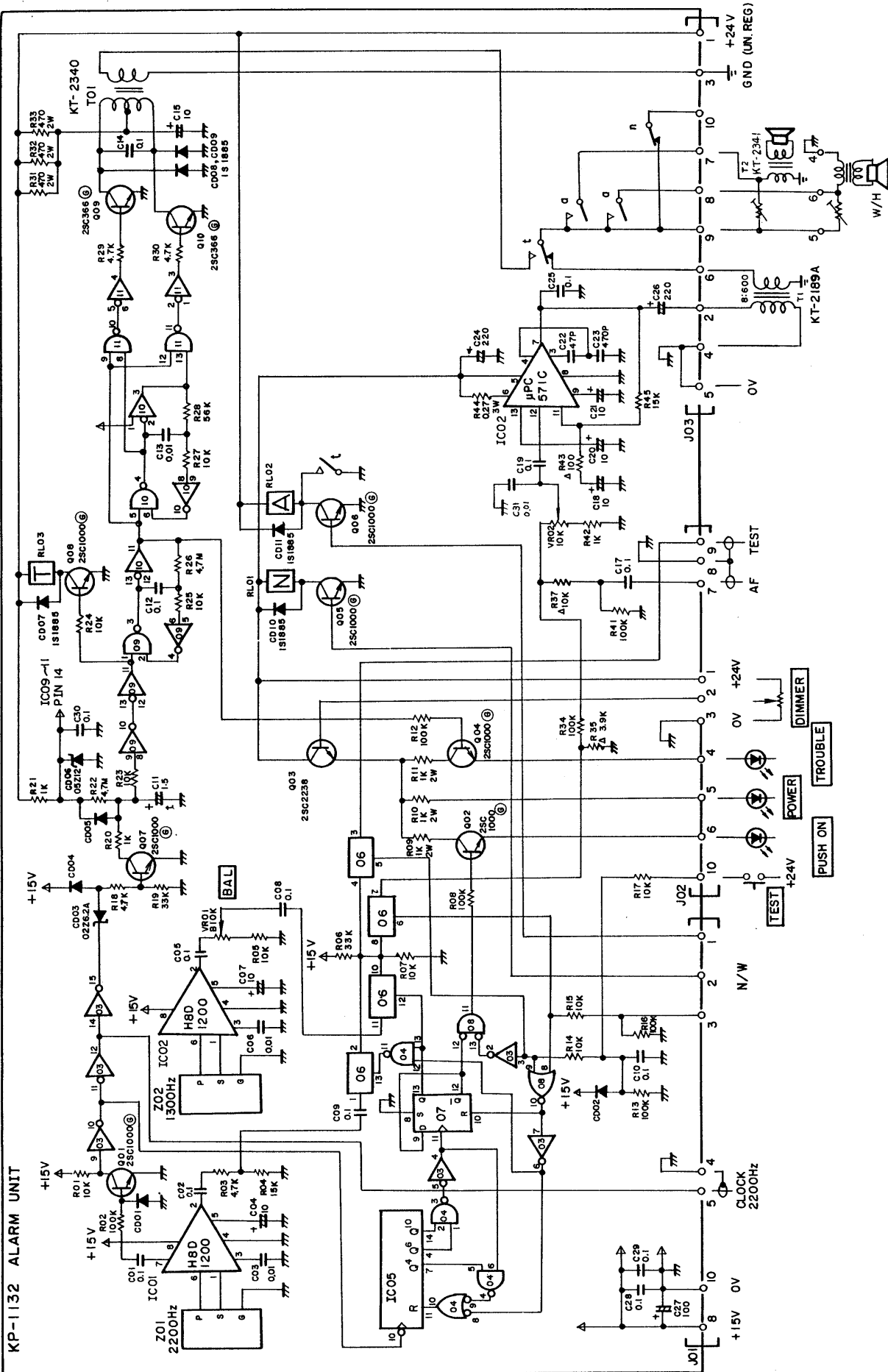


承認 APPROVED	DEC. 9 '85	名称 TITLE	ブロック BLOCK DIAGRAM
検 CHECKED	DEC. 9 '85	図番 DWG. NO.	AA-45B
製 DRAWN	DEC. 9 '85		C5430-013-A



承認 APPROVED	REC. 9. 1. 85	名称 TITLE	総合回路図
検図 CHECKED	Dec. 9. 1. 85	AA-45B	GENERAL SCHEMATIC DIAGRAM
製図 DRAWN	DEC. 9. 1. 85	番 DWG. NO.	C5430-012-A

FURUNO ELECTRIC CO., LTD.



承認 APPROVED	検査 CHECKED	製図 DRAWN	名称 TITLE
Nov. 25 '85	Nov. 25 '85	M. Bando	アラーム基板 ALARM
			KP-1132
			図番 DWG. NO.
			C5430-008-A

AA-45B/46B

