



National Panasonic

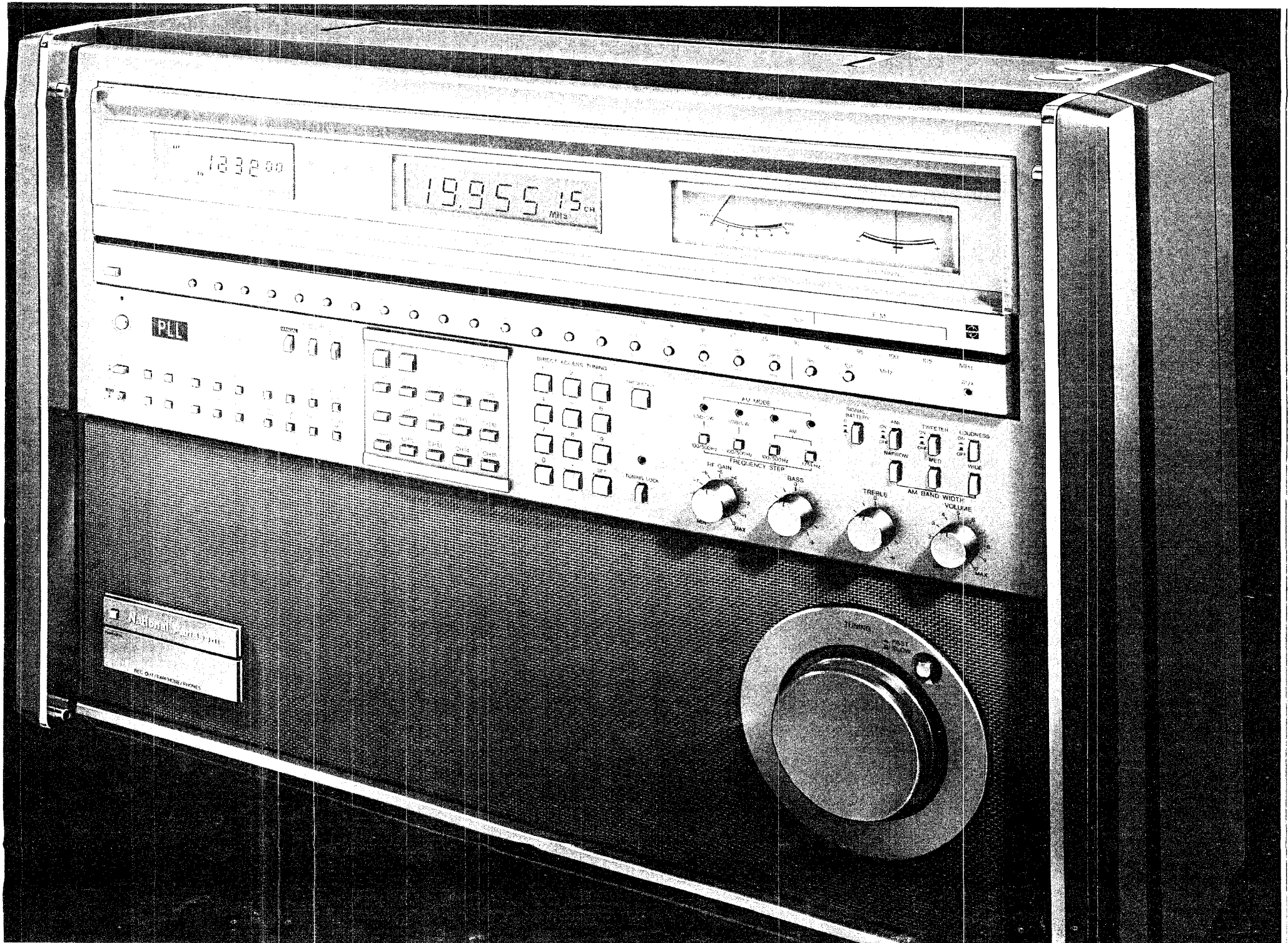
PANA-04465



FM/LW/MW/SW Worldwide Receiver
With Phase-Locked Loop Synthesizer

Model No. **RF-9000**

OPERATING INSTRUCTIONS

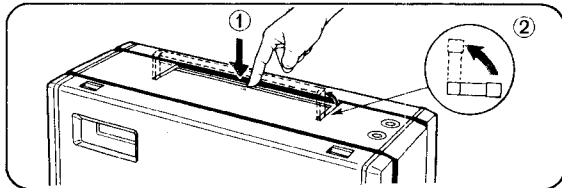


4 HANDLE AND FRONT COVER

■ Erecting and folding away the handle

Depress the handle in the direction indicated by arrow ① and erect it as indicated by arrow ②.

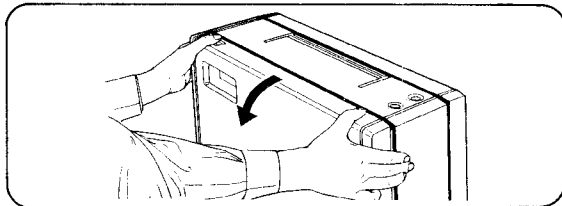
To fold the handle away, depress until lock.



■ Opening and replacing the front cover

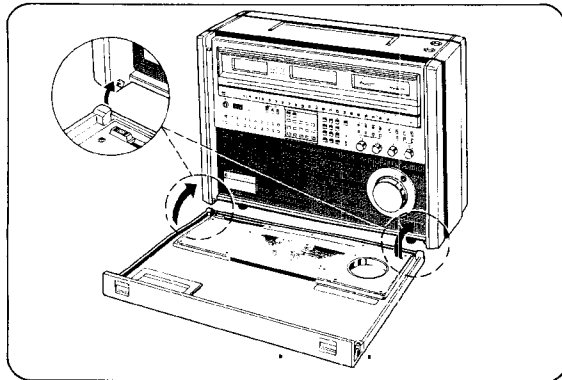
●Opening

Place your thumbs over the left and right catches on the top of the front cover, as illustrated in the figure, push and then pull the cover toward you.



●Replacing

Hook the front cover onto the metal anchors at the left and right of the front panel and raise the cover in the direction indicated by the arrows.



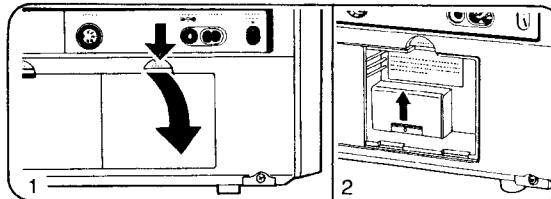
5 POWER SUPPLY

This unit operates from any of three sources: batteries, AC household power and DC power.

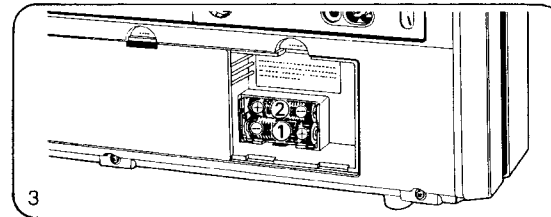
(Before use, make sure that the batteries for clock/memory back-up are loaded.)

■ Loading the clock/memory batteries

- 1) Remove the outside battery compartment cover.
- 2) Now remove the battery compartment cover for the clock/memory back-up by sliding it in the direction of the arrow.



- 3) Load two "AA" (UM-3) size batteries as shown in the figure taking care to align their polarities (+) (-) properly. The clock display will now start to flash "12:00."



- 4) Depress any of the clock control keys. The flashing will now stop and when clock adjust switch is in "LOCK", the clock starts counting.

[Cautions]

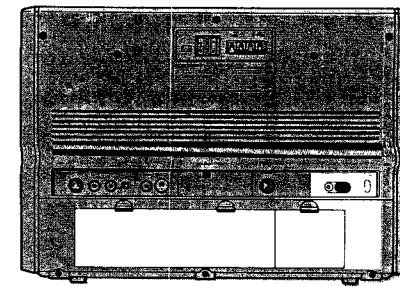
- When operating this unit, the Clock/Timer/Calendar Display or Frequency Display may happen to be abnormal (display with irregular shape, display which does not correspond to operation of controls). In this case, remove all the batteries and AC power cord for the radio, clock and timer and reinstall them after about 20 seconds.

- If anything else is displayed except the flashing "12:00" on the clock display when the batteries have been loaded, take the time to replace the batteries.

- Clock/memory back-up battery life
With continuous use, two "AA" (UM-3) size batteries will work for about a year.

- When replacing the clock/memory back-up batteries, either load 12 batteries or connect the power cord to an AC power outlet. Otherwise, the clock/memory function stops.

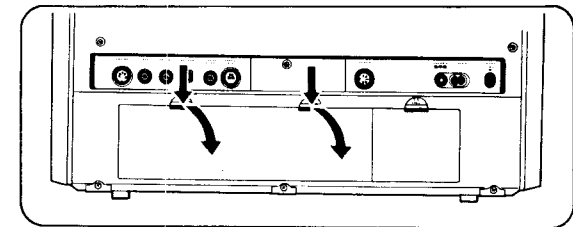
- When removing batteries, push the ⊖ side and raise the ⊕ side of the batteries.



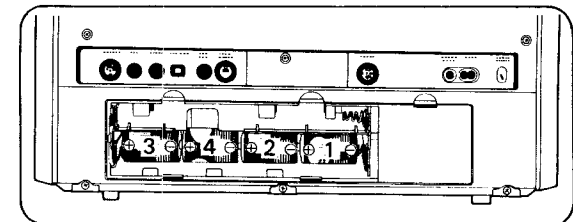
■ DC power for the radio

●Loading the batteries

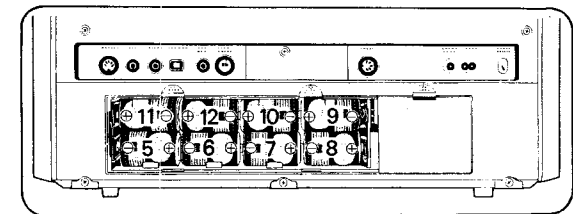
- 1) Push the two latches shown in the figure down and pull them toward you.



- 2) First load the four "D" (UM-1) size batteries shown in the figure in the specified order into the rear battery compartment, making sure that the polarities (+) (-) are aligned properly.



- 3) Next load the eight "D" (UM-1) size batteries shown in the figure in the specified order, making sure that the polarities (+) (-) are aligned properly.



[Caution]

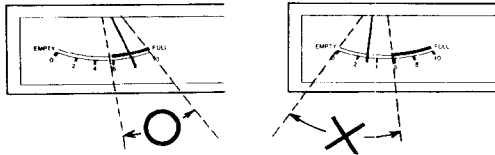
Remember to unplug the AC power cord from the AC power outlet and AC socket when using batteries to power the unit.

6 CONTROLS AND THEIR FUNCTIONS

■ To check the battery condition

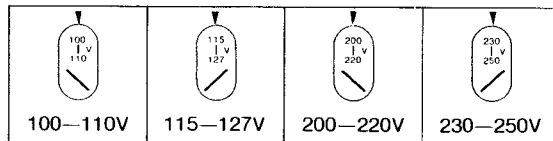
Depress the Meter Selector to BATTERY with the power on. The Signal/Battery Meter then shows the battery condition.

- When the meter reads in the "O" range as shown below the batteries are good.
- When the meter reads in the "X" range as shown below replace all the batteries with new ones.



■ AC power

- 1) Check that the voltage selector is set to the position corresponding to the voltage used in your area. If this switch is not set properly, rotate it to the correct position.



- 2) Connect one end of the accessory power cord to the AC power outlet and the other end to the AC socket. As soon as AC power is supplied to the AC socket, the batteries are cut off.

[Cautions]

- Use the plug adaptor if the power plug does not fit the AC power outlet.
- The model for Canada is 120 V only. It has no AC voltage selector.

IMPORTANT (only for England)

The wires in this mains lead are coloured in accordance with the following code:

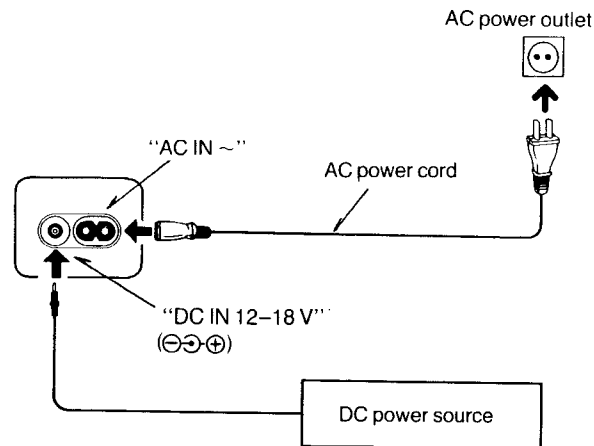
Blue: Neutral
Brown: Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

- The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
 - The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.
- If a 13-amp. (BS.1363) plug is used, a 3-amp. fuse must be fitted, or if any other type of plug is used, a 5-amp. fuse must be fitted either in the plug or adaptor or at the distribution board.

■ External DC power supply

- 1) Connect the DC power cord to the DC input jack.
- 2) Connect the other end to the external DC power source. This will automatically cut off the internal batteries so that the unit will now be powered by the external DC power source.



Radio section:

1 SW Telescopic Antenna

Used for receiving short-wave broadcasts. (For details, refer to "Receiving SW broadcasts.")

2 FM Telescopic Antenna

Used for receiving FM broadcasts. (For details, refer to "ANTENNAS.")

3 Handle

4 Frequency Display

Indicates the frequency of the LW, MW, SW or FM broadcasting station received.

5 Memory Key (MEMORY)

Use this key first when memorizing the frequency in the preset channels (CH1-CH15). (For details, refer to "Preset tuning.")

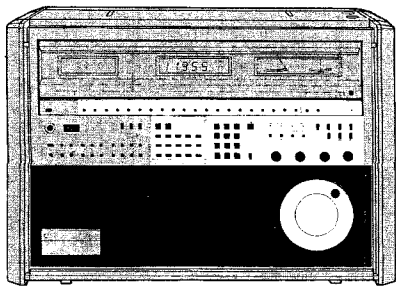
6 Scan/Stop Key (SCAN/STOP)

When this key is depressed, scanning is performed as CH1→CH2...CH15→CH1→CH2... and the frequency of each of the channels is indicated simultaneously on the frequency display. Scanning stops when this key is depressed again at the desired channel.


7 Direct Touch Keys (DIRECT TOUCH TUNING)

There are 1 LW key, 2 MW keys, 17 SW keys and 2 FM keys. Tuning is facilitated by depressing the key in the desired band or the key closest to the desired broadcasting station.

By using the direct touch keys in combination with the tuning control, manual tuning can be performed speedily.



8 Light Switch (LIGHT)

When this switch is depressed () and the Power switch **9** is at On, the clock/timer/calendar display, frequency display and meters are all illuminated. When it is difficult to see the display in the dark place, use this switch.

9 Power Switch/Power Indicator (POWER)

When this switch is depressed, the power comes (and the Power Indicator lights up) on and it goes off when depressed again.

10 Preset Tuning Keys (15-STATION PRESET TUNING)

Used for preset tuning.

11 Direct-Access Tuning Keys (DIRECT-ACCESS TUNING)

For details, refer to "Direct-Access Tuning".

12 Tuning Set Key (SET)

Depress this key after having tuned in the desired station with the Direct-Access Tuning keys.

13 Frequency Setting Key (FREQUENCY)

Depress this key before setting the frequency of a broadcasting station with a Direct-Access Tuning key. The indication on the frequency display is as below.



14 Signal/Battery Meter (SIGNAL/BATTERY)

Use the meter selector **19** to check the signal strength or the battery strength.

15 FM Center Tuning Meter (FM TUNING)

The meter pointer indicates the center of the scale at the optimum tuning point.

16 Tuning Lock Button (TUNING LOCK)

Depress this button when locking a broadcasting station during reception. The tuning lock indicator (LED) lights and there is no change even when any of the radio controls are touched. (But the program is executed.)

17 AM Mode Indicators (AM MODE)

The LED corresponding to the actual mode lights.

18 AM Mode Selector (AM MODE) [Frequency Step Selector (FREQUENCY STEP)]

An AM Mode and SSB is selected with the determined frequency step.


19 Signal/Battery Meter Selector (SIGNAL/BATTERY)

When depressing this selector, the Signal/Battery Meter indicates the battery condition: when releasing, the meter indicates the strength of the signal.



20 AUX Indicator (AUX)

This lights when the rear panel Radio/Aux selector has been set to the AUX.

21 ANL (Automatic Noise Limiter) Switch (ANL)

Used to reduce the level of automobile ignition noise and other pulse-like noise. If a great deal of noise makes the sound of a broadcasting station difficult to hear, set this switch to the "ON" ().

22 Tweeter Switch (TWEETER)

Sets the tweeter on and off. Set to "OFF ()" when there is a great deal of noise in the high-frequency range with SW broadcast reception and to "ON ()" when you want to listen to the hi-fi sound of an FM broadcast.

23 Loudness Switch (LOUDNESS)

Used when emphasizing the bass and treble under low volume listening conditions. This switch is effective only when the volume control is set between the left most position and the "5" position.

24 AM Band Width Selector (AM BAND WIDTH)

Set to "MED" or "NARROW" when there is a great deal of interference during LW, MW or SW reception. Normally, it is set to the WIDE.

25 Volume Control (VOLUME)

Used to adjust the volume.

26 Treble Control (TREBLE)

27 Bass Control (BASS)

These two controls are used to adjust the sound quality.

28 RF Gain Control (RF GAIN)

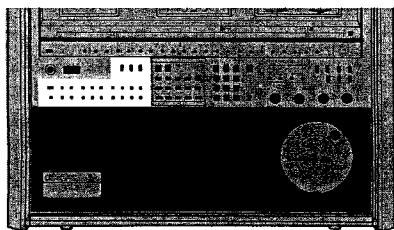
Used when receiving an LW, MW or SW broadcast. Normally, it is set to "MAX". However, when the signals are too strong and the sound is distorted or when there is interference, rotate the control in the direction of MIN and set to the position which yields the best reception.

29 Fast/Slow Tuning Speed Selector (FAST/SLOW)

Makes tuning even more effective with frequency step selector.

30 Tuning Control

Used for manual tuning.



Clock/Timer/calendar section

31 Clock/Timer/Calendar Display

Indicates the present time, sleep time, program setting time and the calendar.

32 Program Mode Selector (SELECTOR)

MANUAL: Manual mode, the program is not executed.
AUTO: Depress this button after program setting.
The program is then executed.
PROG. SET: Set the program with this button depressed.

33 Time Signal On/Off Switch (TIME SIGNAL)

When setting to "ON (■→■)", the alarm sounds every hour on the hour. (Two beeps signal when the hour is approaching and one beep sounds on the hour.)

34 Clock Adjust Switch (CLOCK ADJUST)

Set to "ADJUST (■→■)" when setting the present time. After setting, depress the button to "LOCK (■→■)" and the clock will then start.

35 Time Display Key (TIME DISPLAY)

Depress this key when setting the time and display the time on the clock/calendar display.

36 Month/Date Display Key (MO /DATE)

Depress when setting the month, date and day. The display of month and date is exchanged on the clock/timer/calendar display in the model for Europe.

37 Dual Time Display Key (DUAL TIME)

Depress when checking the time on the sub clock. The display changes to the sub clock and when the Time Display key is depressed, the present time is indicated again. If the display is left on the sub clock, a return will be made to the present time automatically after 7 or 8 seconds.

38 Sleep Set Key (SLEEP)

Depress when setting the sleep time and ascertaining it. The "SLEEP" is then indicated on the clock/timer/calendar display. (Refer to page 25.)

39 Day Up Key (DAY UP)

Used to set the day with a month, date and day setting or with a program setting.

40 12/24 HR Display Selector Key (12/24 HR)

Every time this key is depressed, the display alternates between AM/PM 12 hours and 24 hours.

41 Hour/Month Up, Down Keys (HR /MO UP, DOWN)

Use to adjust the hours and months. For details, refer to "SETTING THE MONTH, DATE, DAY AND TIME".

42 Minute/Date Up, Down Keys (MIN /DATE UP, DOWN)

Used to adjust the minutes and date. For details, refer to "SETTING THE MONTH, DATE, DAY AND TIME".

43 Channel Up, Down Keys (CH UP, DOWN)

Used for program setting. The set channel is displayed on the right of the program time display and so depress these keys until the desired channel is indicated.

44 Day Reciprocal Key (DAY RECIPR)

Used when setting a program for 6 days in a week with 1 day skipped or for 5 days with 2 days in the week (they do not have to follow on) skipped.

45 One Time Key (ONE TIME)

Depress with a one time program setting. The day display "☉" (repeat) mark is erased, the on/off program operation is performed once only at the designated time on the designated day, and the program is set off continuously thereafter.

46 Day Memory Key (DAY MEMORY)

Used with program setting to set two days and every day except two days (they do not have to follow on). (Refer to the section on programming.)

47 Program Clear Key (PROG CLR)

Used to clear a set program. When the program mode selector is set to "PROG. SET", the program review key is depressed and this key is depressed when the program to be erased is indicated on the display, the display will be erased and the program will be cleared.

48 Program Review Key (PROG REVIEW)

Used to check a set program. When the program mode selector is set to "PROG. SET", the first program is displayed. When this key is depressed, the programs are indicated in order (2nd→3rd→4th→1st). When setting programs, depress this key and load the programs in order.

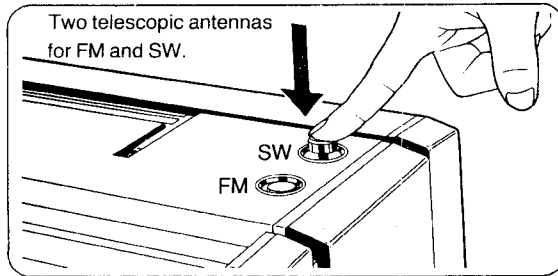
49 On/Off Time Set Key (ON/OFF TIME)

Used to select the program's on and off times. The key is used either when setting the program time or when checking the program time.

7 ANTENNAS

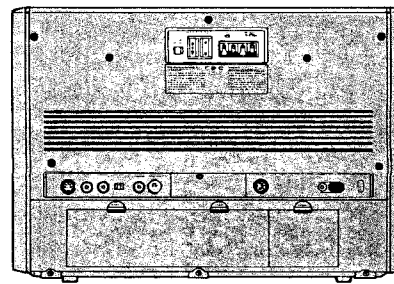
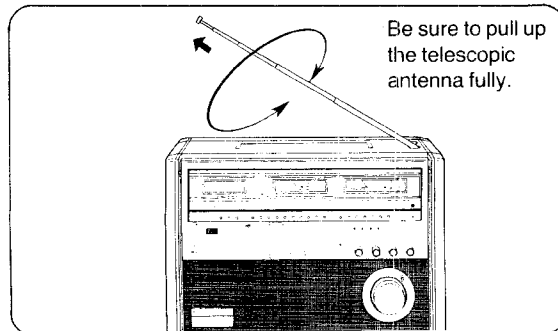
Telescopic Antenna

- When you push the head of the antenna firmly and then release it, the lock will be disengaged and the antenna will pop up.
- When putting the antenna away, push the sections of the antenna inside one another, starting with the thicker sections first, and push the antenna head with your fore-finger until it locks.
- The FM telescopic antenna is removed in the same way as the SW antenna.



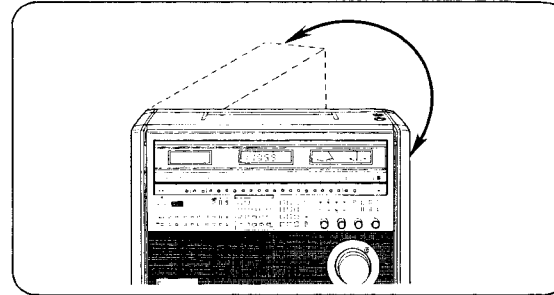
FM:

- Pull out the FM Telescopic Antenna and adjust its length and angle for optimum reception.
- To improve reception or receive very distant stations, connect a suitable FM antenna (FM dipole antenna, TV antenna) to the External Antenna Terminals, as shown in the figure.



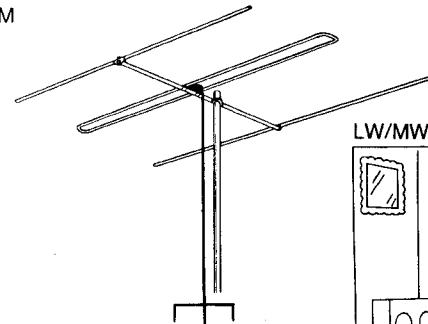
LW/MW/SW (1.6110–2.9009 MHz):

- The sensitive ferrite core antenna inside the set will provide excellent LW and MW reception in most areas. For optimum reception, you must turn the set in the direction which gives the best results since the ferrite core antenna is directional.



- To improve reception further

FM



LW/MW/SW

Antenna wire

12 m

8 m

[Only for USA and Canada]

The Coaxial-Cable Antenna Jack for LW, MW and SW reception may be used to connect an antenna with a coaxial cable.

INT ANT EXT ANT



FM ANT

AM ANT

FM ANT

AM ANT

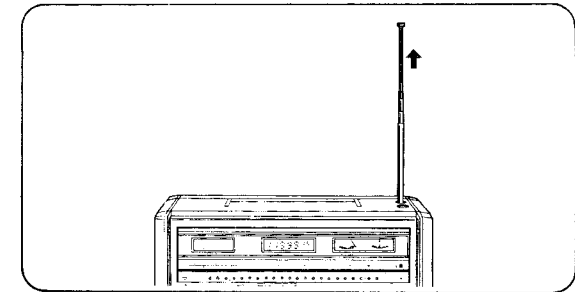


SW (2.9010–30.0000 MHz):

- Extend the SW Telescopic Antenna fully, keep it vertical.
- To improve reception, connect a length of wire, to serve as an antenna, to the External Antenna Jacks, as shown in the figure.

Note:

An antenna for SW bands can be constructed from a length of wire. A long length of wire will provide better results; however, a short length of wire is also suitable.



8 LISTENING TO THE RADIO

Before Operation

Be sure to ascertain the following points before operating this unit.

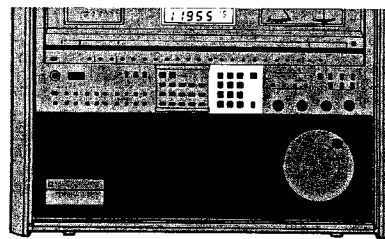
- 1) The Tuning Lock Key is released.
- 2) The Radio/Aux. selector is set to "RADIO" (rear)
- 3) The Internal/External Antenna Selector is set to "INT". (rear)
- 4) The RF Gain Control is set to max.
- 5) The Volume Control is set to the proper position.

Tuning

This receiver has four tuning modes: manual tuning, direct touch tuning, direct-access tuning and preset tuning.

Notes:

- When using with external antennas connected, set the Internal/External Antenna Selector to "EXT ANT".
- Set the Tuning Lock Button to "ON (▲→■)". If you happen to touch the Tuning Control carelessly, the frequency does not change.



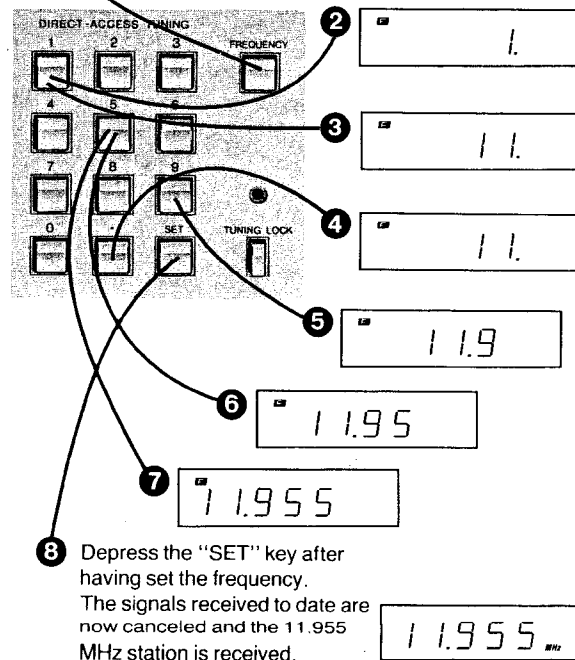
A Direct-access tuning

This tuning method is used when you already know the frequency of the station you want to pick up or when you are tuning and referring to the frequency such as that listed in a broadcast schedule.

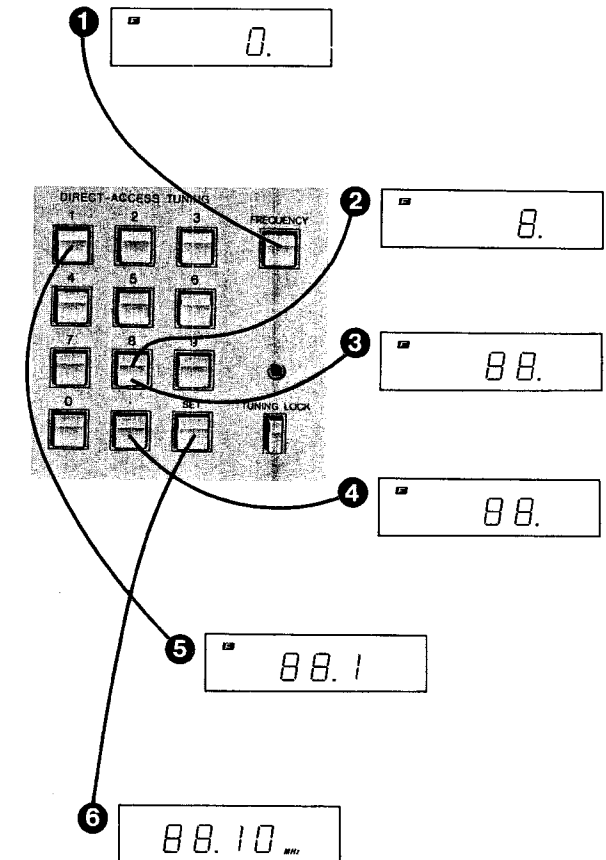
Example: To tune in a station on SW 11.955 MHz

Operation

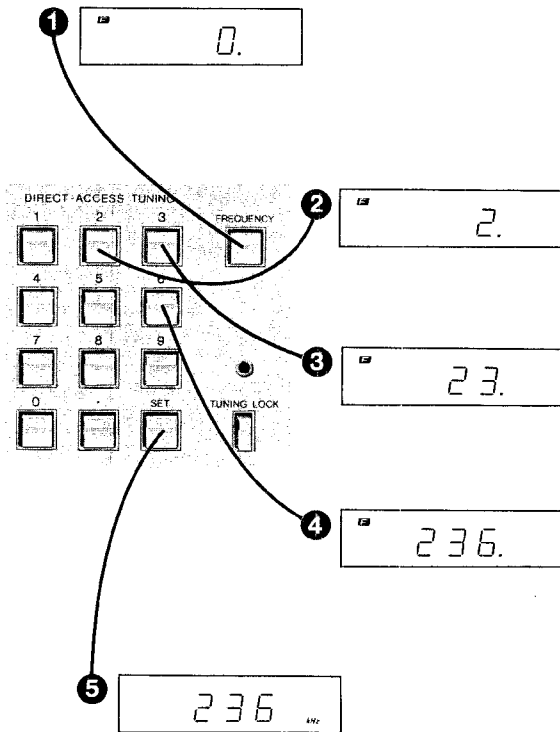
- 1 ●Depress the frequency setting key. (Depress again if this key has been depressed by mistake. The display is erased and the station received to date is received.)



Example: To tune in a station on FM 88.1 MHz (Frequency setting 88100kHz is also possible.)

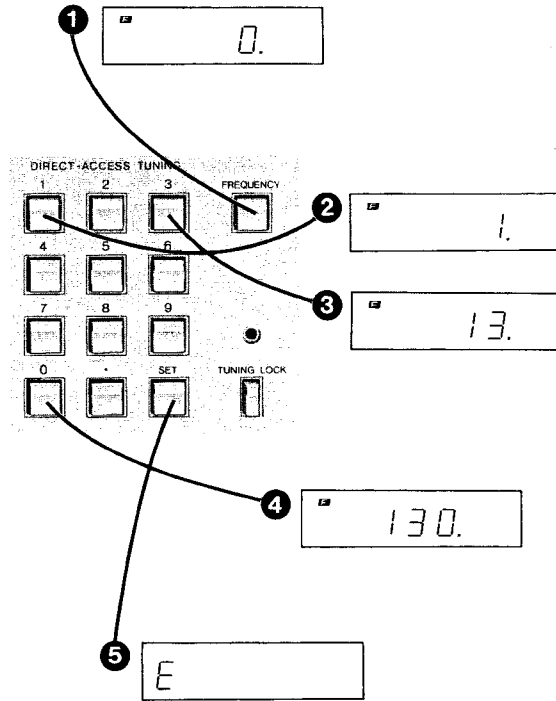


Example: To tune in a station on LW 236 kHz
 (Frequency setting at 0.236 MHz is also possible.)

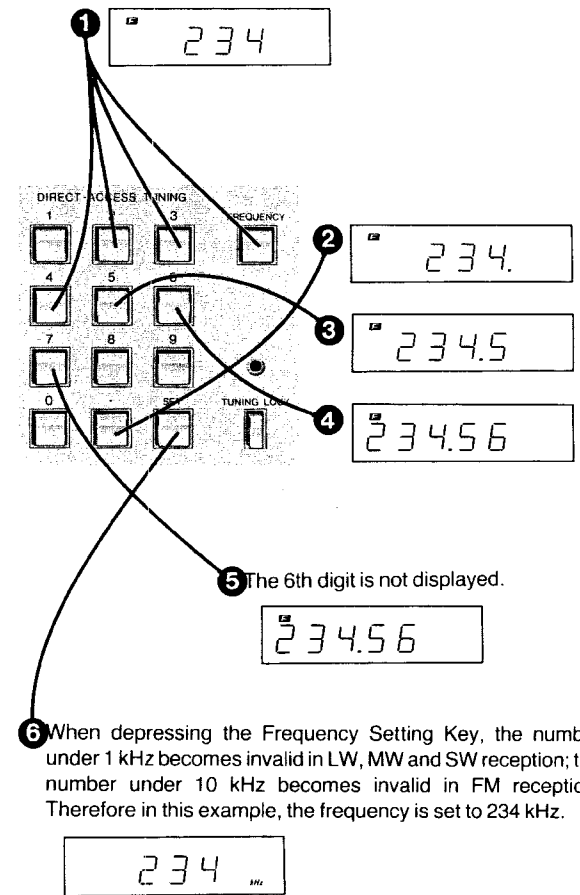


Notes:

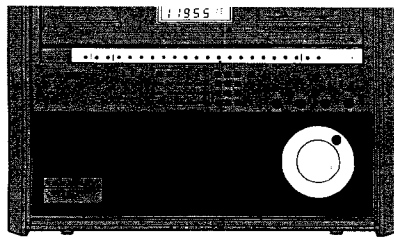
1) If the reception frequency band is set outside of the broadcasting band during direct-access tuning, a return is made to the display of the frequency which was received before, after a 2-second error display. (When 130 kHz has been entered.)



2) The frequency can be set up to 5 digits. A sixth digit will not be entered.



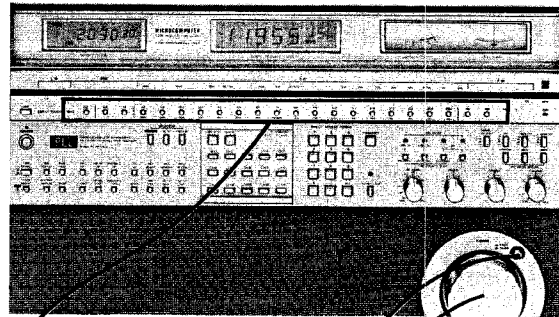
6) When depressing the Frequency Setting Key, the number under 1 kHz becomes invalid in LW, MW and SW reception; the number under 10 kHz becomes invalid in FM reception. Therefore in this example, the frequency is set to 234 kHz.



B Direct touch tuning

A total of 22 direct touch keys for LW, MW, SW and FM are used for easy tuning in each band. Direct touch is a handy way of tuning when coupled with manual tuning (using the tuning control).

● Operation



- 1 Based on the reception frequency table, depress the band select key closest to the desired frequency and select the band.
- 2 Set the tuning speed to SLOW.
- 3 Rotate the tuning control and tune in the desired station.

*Reception frequency table

Band	Keys Frequency	Frequency Range	Meter Band	
LW	0.2 MHz (200 kHz)			
MW	0.8 MHz (800 kHz) 1.3 MHz (1,300 kHz)			
SW	1.9 MHz	1.9075~1.9125 MHz	160	
	2.4 MHz	2.3~2.495 MHz	120	
	3.3 MHz	3.2~3.4 MHz	90	
	3.5 MHz	3.500~3.575 MHz	80	
	4.0 MHz	3.9~4.0 MHz	75	
	4.9 MHz	4.75~5.06 MHz	60	
	6.1 MHz	5.95~6.2 MHz	49	
	7.1 MHz	7.000~7.100 MHz	40	
		7.1~7.3 MHz	41	
		9.6 MHz	9.5~9.775 MHz	31
		11.8 MHz	11.7~11.975 MHz	25
		14.2 MHz	14.000~14.350 MHz	20
		15.3 MHz	15.1~15.45 MHz	19
		17.8 MHz	17.7~17.9 MHz	16
	21.2 MHz	21.000~21.450 MHz	15	
	21.6 MHz	21.45~21.75 MHz	13	
	25.9 MHz	25.6~26.1 MHz	11	
	28.5 MHz	28.000~29.700 MHz	10	
FM	95 MHz 101 MHz			

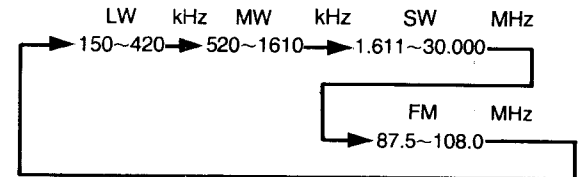
C Manual tuning

(Tuning using the tuning control)

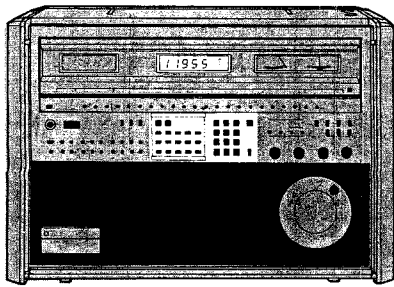
There are 60-step variations for every turn of the tuning control and the frequency changes per step are given in the table below.

MODE TUNING SPEED	LSB/CW	USB/CW	AM	AM	FM
	100/500 Hz	100/500 Hz	100/500 Hz	1/5 kHz	
SLOW	100 Hz	100 Hz	100 Hz	1 kHz	10 kHz
FAST	500 Hz	500 Hz	500 Hz	5 kHz	50 kHz

When the maximum or minimum frequency of each band is exceeded, the frequency is automatically selected to the next band.



*Depending on the country, the frequency between the stations on the MW band is either 9 kHz or 10 kHz. Set the tuning speed to SLOW and start tuning, if this frequency is 9 kHz.

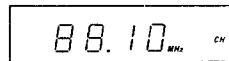


D Preset tuning

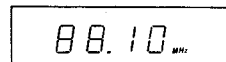
If desired broadcasting stations are preset into each of the channels (CH1~CH15), all you have to do to listen to the program of a station is to depress the corresponding preset tuning key. (SSB signals cannot be preset.)

■ Presetting procedure

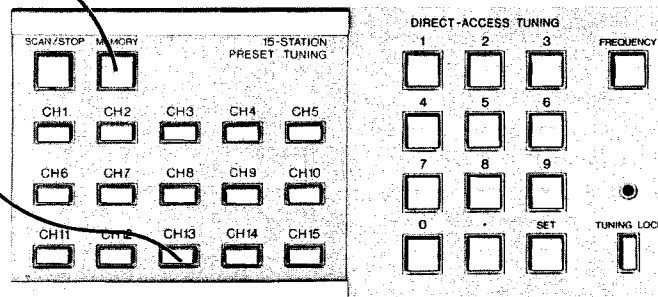
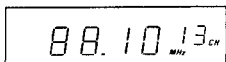
- 2 Depress the memory key. The "CH" display appears on the right of the frequency display. (To cancel the memory function, simply depress the key again.)



- 1 Tune in the frequency to be stored using the direct-access, direct touch and manual tuning method. (The frequency will now be displayed on the frequency display.)



- 3 Depress the preset tuning key corresponding to the channel in which the station's frequency is to be stored. The depressed channel number is indicated on the "CH" display. (In the example, the frequency is stored in CH13.)



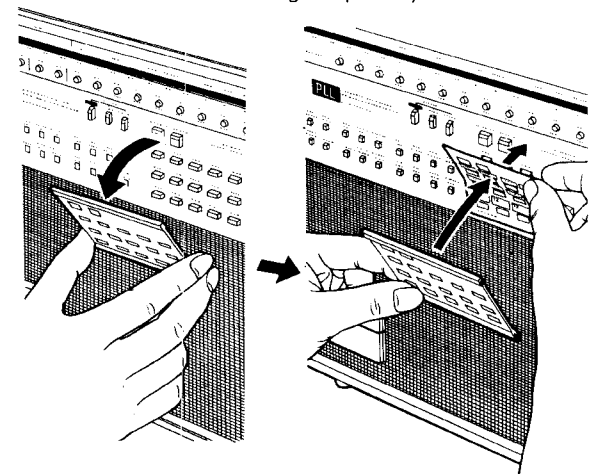
- 4 The frequency has now been preset in one channel memory. Repeat steps 1 through 3 for other preset channels.
- The preset channel before presetting is set automatically with MW 1000 kHz.
 - When setting another frequency in the same channel, the previous preset frequency is cleared.

■ Tuning

If the preset tuning key corresponding to the memorized frequency is depressed, the program of the station on that frequency is received immediately.

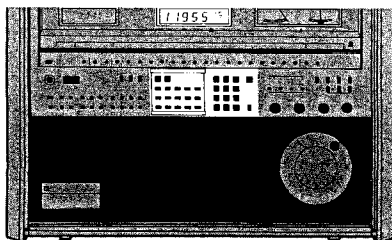
Memory channel cover

- This cover serves to hold the memory channel sheet in place. It can easily be removed, as shown in the figure, by applying the panel magnet to it.
- Write in the name of the broadcasting station which has been stored in the memory on the accessory memory channel sheet and adhere it to the preset tuning key. (The sheets are inside the front cover's kangaroo pocket.)



[Caution]

A magnet is attached to the unit's panel and so remember to keep cassette tapes and magnetic bank cards as well as all items adversely affected by magnetism away from it.

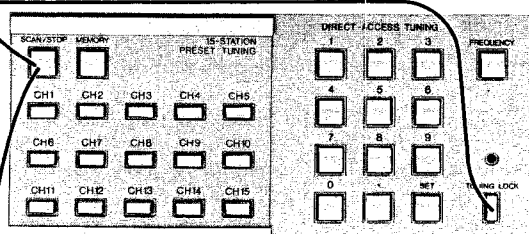


■ Scanning function

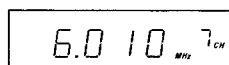
This function allows the sound of the preset channels' stations to be heard one at a time in sequence. It's handy for finding out exactly what's being broadcast.

Scanning

- Set the power switch to on, check that the tuning lock key is off.
- Depress the scan/stop key.

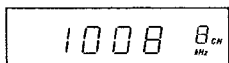


- 1 During reception the preset channels change in sequence at intervals of 1.5 seconds.

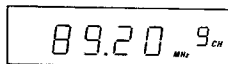


Channel 7 is now being received

- 2 During reception of another broadcast (not preset channel), the preset channels change from CH1→CH2→CH3... CH14→CH15→CH1→CH2... at 1.5 second intervals.



- 3 When the desired preset channel is displayed, depress the Scan/Stop Key to receive the preset channel.



A station on 1521 kHz is now being received	
SCAN/STOP <input type="checkbox"/>	
1.5 sec. later	
3.0 sec. later	
4.5 sec. later	
6.0 sec. later	
SCAN/STOP <input type="checkbox"/>	

■ SSB/CW Reception

SSB:

Set up the receiver in the same manner as SW (AM) reception, and then follow the procedure below.

- Depress the AM Mode Selector to LSB/CW or USB/CW.
- Tune to the desired signal.
- Rotate the Manual Tuning Control until the receiving signal becomes clear.

CW:

■ Set up the receiver in the same manner as SSB signal reception.

● When the receiving signal is strong . . .

Rotate the Manual Tuning Control until you reach "Zero Beat". When the tuning point nears correct receiving frequency, the tone signal from the speaker will gradually decrease to zero. Further tuning past this point will cause the tone to increase in frequency. The point where the tone was zero is called "Zero Beat".

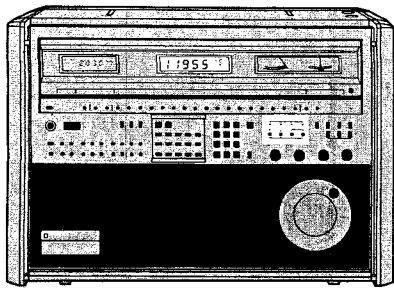
- The frequency displayed when "Zero Beat" indicates the signal frequency.

● When the CW receiving signal is weak . . .

Exchange the AM Mode selector alternately to LSB/CW and USB/CW, and turn the Manual Tuning Control that the tone signal from speaker when setting at each position is the same. Plus the number of the display when setting at each position and halve it. This indicates the signal frequency.

Notes:

- If the receiving signals are too strong to clearly be heard, rotate the RF Gain Control counterclockwise until distinct, pleasant sound is obtained.
- The SSB signal can not be preset.



■ Selecting the AM reception mode

Depressing the AM mode selectors sets the unit to the corresponding reception mode.

- This unit cannot operate during preset channel scanning, FM reception and tuning lock.
- Receiving FM broadcast changes this unit in FM mode and touching the direct access tuning key or preset tuning key changes this unit in AM mode, even if setting in the SSB mode (LSB/CW, USB/CW). When setting in SSB mode again under 30 MHz, select LSB/CW or USB/CW.
- Mode selection is not possible during preset channel scanning, FM reception and tuning lock.

(This indicates the operation when setting the Tuning Speed Selector to "SLOW".)

- 1 A station on 12.345 MHz is now being received.

2 12.3465 MHz

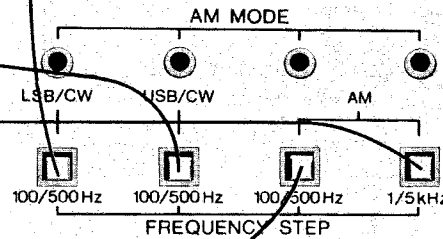
The display moves up by 1.5 kHz.

12.345 MHz CW

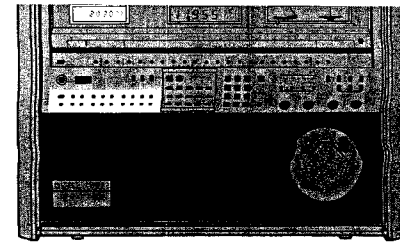
3 12.3435 MHz

4 12.345 MHz

5 12.3450 MHz

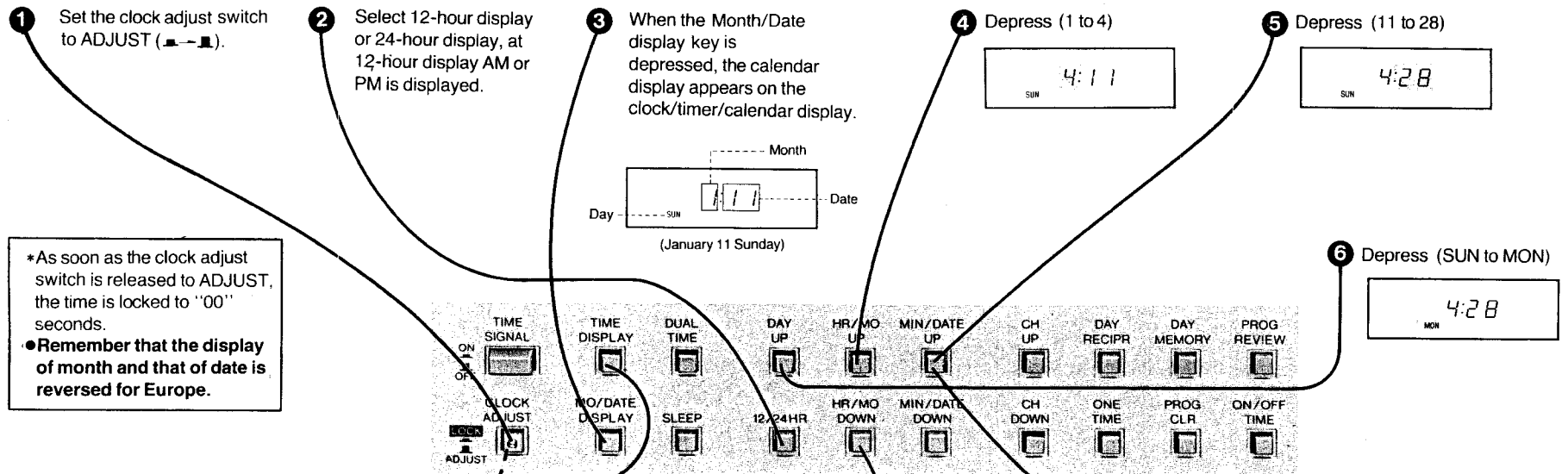


9 SETTING THE MONTH, DATE, DAY AND TIME



A Setting the month, date and day

Example: April 28 (428) Monday AM 7:30



B Setting the time



- Notes:**
- The 12/24 time display selector key selects both the memory time and indicated time together.
 - March 1 will be indicated on the next day of February 28. So on February 29 in the leap year, adjust the display. Then depress the Month/Date Display Key and adjust the "month" display to "2" with the Hour/Month Down Key and the "day" display to "29" with the Minute/Date Down Key.

10 PROGRAMMING

By making effective use of the microcomputer's function, any of the following six programs can be set:

1. Receiver is switched on at the designated time every day (for the designated broadcast) and switched off at the designated time.
2. Receiver is switched on and off at the designated times on one day of the week.
3. Receiver is switched on and off at the designated times on two days of the week.
4. Receiver is switched on and off at the designated times on six days of the week.
5. Receiver is switched on and off at the designated times on five days of the week.
6. Receiver is switched on and off for one day of the week only and it is thereafter switched off.

	SUN	MON	TUE	WED	THU	FRI	SAT	REPEAT
Example 1 (page 19)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Example 2 (page 20)		<input type="radio"/>						<input type="radio"/>
Example 3 (page 21)		<input type="radio"/>				<input type="radio"/>		<input type="radio"/>
Example 4 (page 22)	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Example 5 (page 23)	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>
Example 6 (page 24)	<input type="radio"/>							—

Notes:

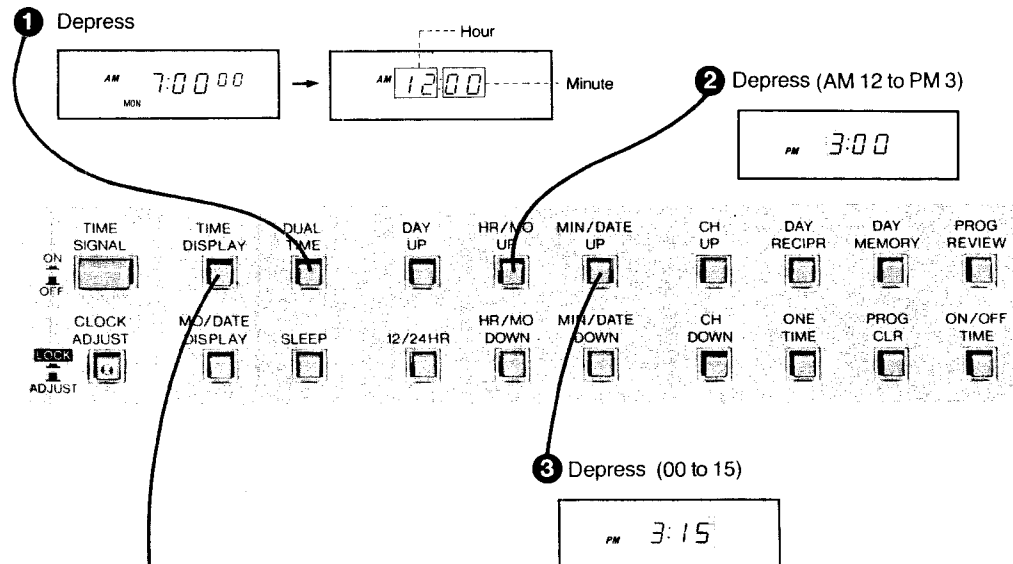
- Apart from the program where operation is to be repeated every day, the day(s) which are to be dropped from the program can be selected at will.
- If one program is taken to include the mode of execution, the day, the program ON time, the program OFF time and the tuner channel (examples 1 through 6), then up to 4 programs can be stored in the microcomputer's memory.
- After the blank display during programming, the ON/OFF repeat program is set automatically every day at AM 12:00 with the Hour/Month, Minute/Date Up and Down and the Channel Up and Down keys. Even if the On time is changed, the OFF time remains set automatically.
- Keep the Program Mode Selector to "MANUAL" if you are absent from home for a long time.

C Adjusting the sub clock's time

This clock function allows the local time or, if so required, the time of any city in the world to be set. Find out the local time in the city to be set and then set the time.

Operation:

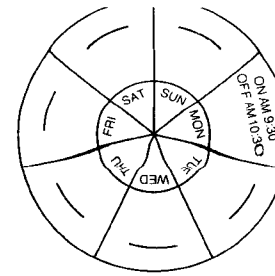
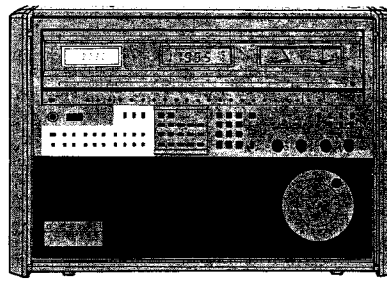
Example: Setting at PM 3:15



4. Depress (If this is not depressed, a return will be made to the present time display automatically after 7 or 8 seconds.)
 - This completes the time setting on the sub clock.

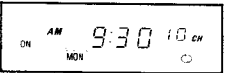


[Caution]

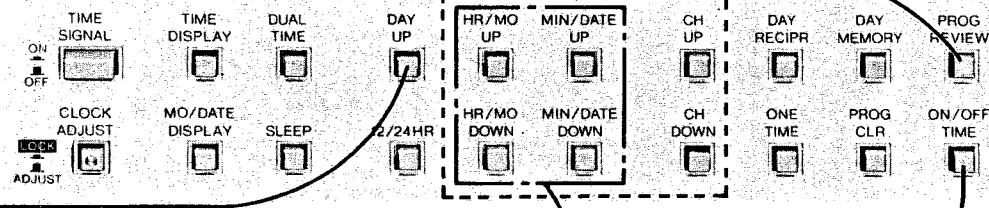
Even when the dual time button is set, the display will not change for 7 or 8 seconds. During this interval do not touch the Hour/Month or Minute/Date keys.

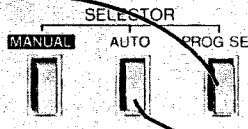


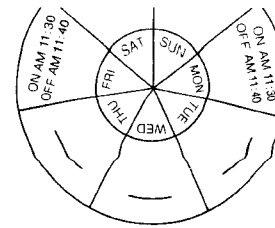
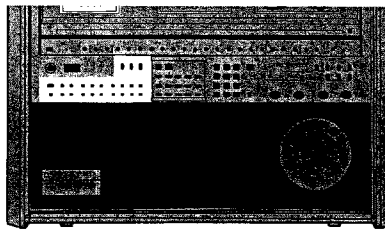
Example 2 Once a week program

Programming for reception every Monday on CH10 from AM 9:30 to AM 10:30.

- Depress the Program Mode Selector to PROG SET.
The program which was set first is displayed.
- Recall the next program with the program review key.
Nothing is displayed when no programs have been set.
*When programs have been preset, clear the unnecessary programs with the Program Clear Key, if any.
That program is now cleared and a new program can be set in its place. (The other steps in the operation are the same up to example 6.)
- Follow steps 2 through 4 in example 1 with the operation of the Hour/Month Up or Down, Minute/Date Up or Down and Channel Up or Down keys, set the ON time to AM 9:30 and the receiving channel to CH10.
- Depress

- Depress (Automatic setting to AM 12:00.)

- As with steps 7 and 8 of example 1, use the Hour/Month Up or Down and the Minute/Date Up to Down keys to set the off time to AM 10:30.

- Depress.
Set the Program Mode Selector to AUTO.



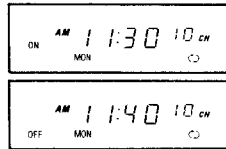




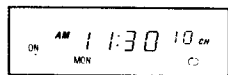
Example 3 Twice a week program

Programming for reception every Monday and Friday on CH10 from AM 11:30 to AM 11:40.

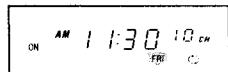
- 3 As with example 2, set the program ON time to AM 11:30 and the OFF time to AM 11:40 in CH10 (Monday).



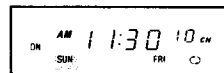
- 4 Depress



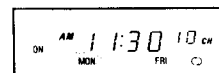
- 5 Depress



- 6 Depress.
"FRI" is memorized
"SUN" will be displayed.

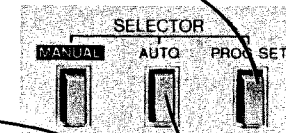


- 7 Depress
This sets the
ON time on Monday
and Friday.

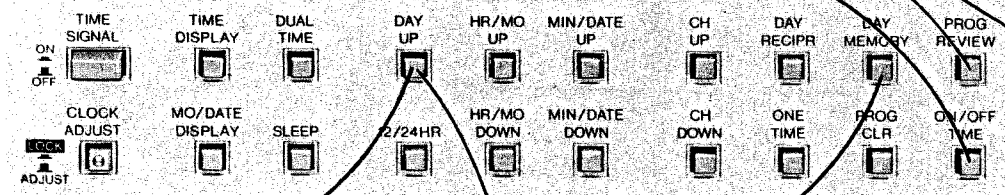


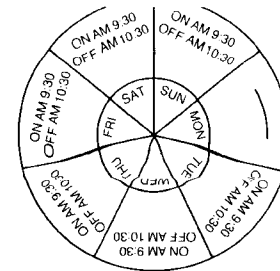
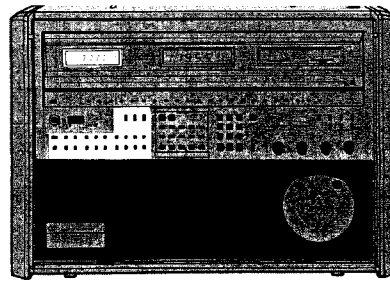
- 2 Depress the Program Review Key and locate a blank display.

- 1 Depress the Program Mode Selector to PROG SET.



- 8 Depress the Program Mode Selector to AUTO.





Example 4 Six days a week program

Programming for reception for 6 days a week on CH10 from AM 9:30 to AM 10:30 (not on Mondays, for instance)

[Set the forth program by using the examples (Ex. 1-3) as follows:]

3 Depress

2 set the ON time to AM 9:30 and the OFF time to AM 10:30 in CH10 (Monday)

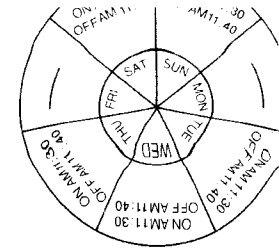
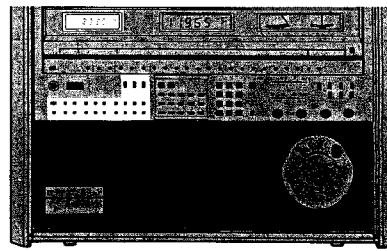
4 Depress

1 Depress the Program Mode Selector to PROG SET.

5 Set the program Mode Selector to AUTO.

SELECTOR

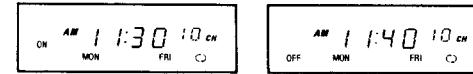
MANUAL AUTO PROG SET



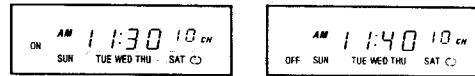
[Example 5] Five days a week program

Programming for reception for 5 days a week (not Mondays and Fridays) on CH10 from AM 11:30 to AM 11:40.

- 2 As in example 3, set the reception on CH10 from AM 11:30 to AM 11:40 for Monday and Friday.

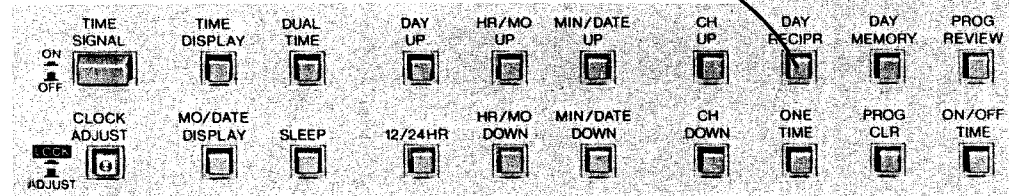
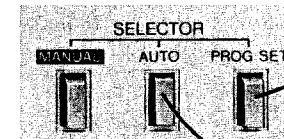


- 3 Depress the DAY RECIPR Key. All the days except Monday and Friday are displayed and the program is now set.



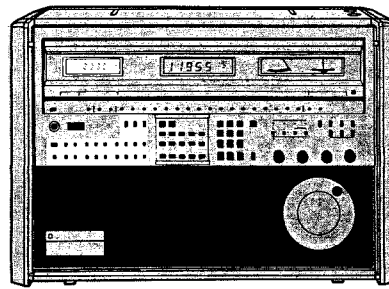
- 1 Depress the Program Mode Selector to PROG SET.

- 4 Depress the Program Mode Selector to AUTO.



Note:

Before setting this program, ascertain the four programs (Ex. 1-4) with the Program Review Key. Display the unnecessary program, clear it with the Program Clear Key and then set the fifth program.

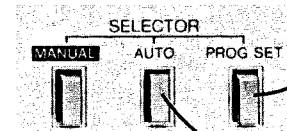
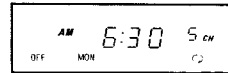
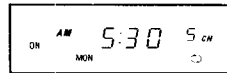


[Example 6] One time only program

Programming for reception on one day only in the week at the designated time and then terminating the reception.

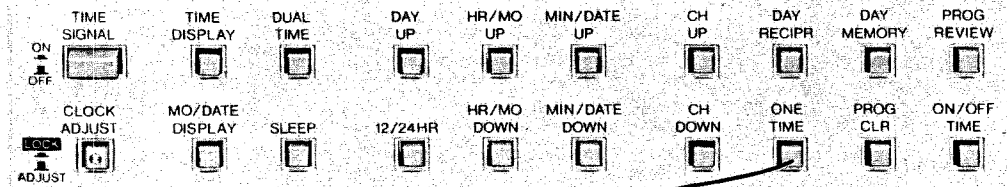
Example: CH5 on Monday from AM 5:30 to AM 6:30.

- 2 As in example 2, set the day to Monday, the ON time to AM 5:30, the OFF time to AM 6:30 and the channel to CH5.

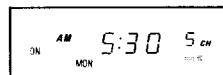


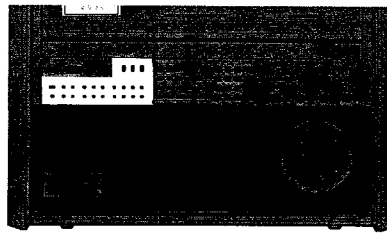
- 1 Depress the Program Mode Selector to PROG SET.

- 4 Depress the Program Mode Selector to AUTO.



- 3 Depress the one time key. The repeat function is erased and the program is now set.





Caution

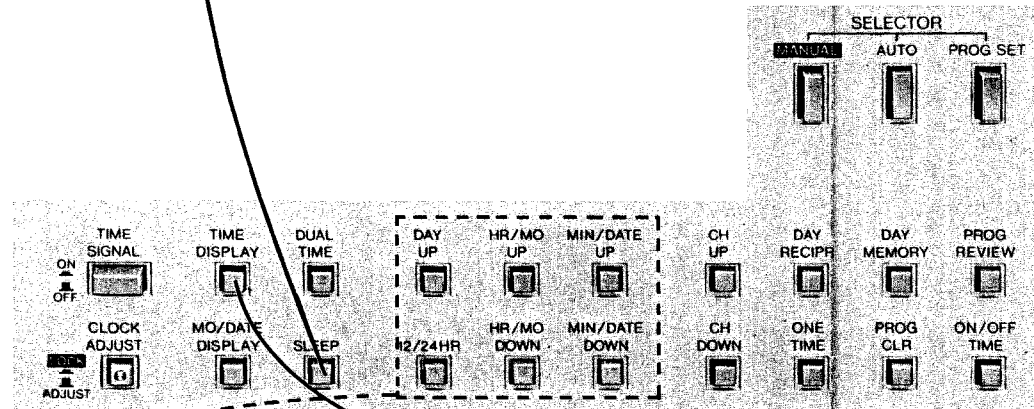
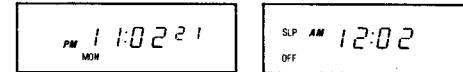
- If you wish to know which program is in operation when the programs have been set, follow the procedure. Push the Program Review Key with the Program Mode Selector to "AUTO" to indicate the programs in order (1ch-4ch). Then the display which is illuminating continuously tells you the program in operation.
- The operation of the program takes priority of the program which has the closest "ON" time to the real time, in spite of the order of the memory channel.
- If you preset the overlapped programs, the latter preset program takes priority to operate.
- When keeping the preset programs but they are unnecessary to operate, set the Program Mode Selector to "MANUAL".
- You can preset various programs by combining EX 1 to EX 6. (EX)
- A program operating in three days a week with EX 2 and EX 3. (no operation in four days)
- A program operating in four days a week (no operation in three days) by changing the day of a week with EX 3 and keeping in the two memories.

Sleep function

The sleep function can be set in minute units from the present time up to a maximum of 24 hours.

Operation

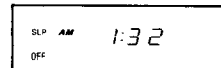
- 1 Depress the Sleep Set key, "SLP" Indicator will light up, the Clock/Timer/Calendar Display changes from the present time to the sleep time (1 hour is added automatically to the present time). If you need a different sleep time, adjust the OFF time.



- 2 Set the sleep OFF time using the HR /MO UP or DOWN, MIN /DATE UP or DOWN buttons.

[Example]

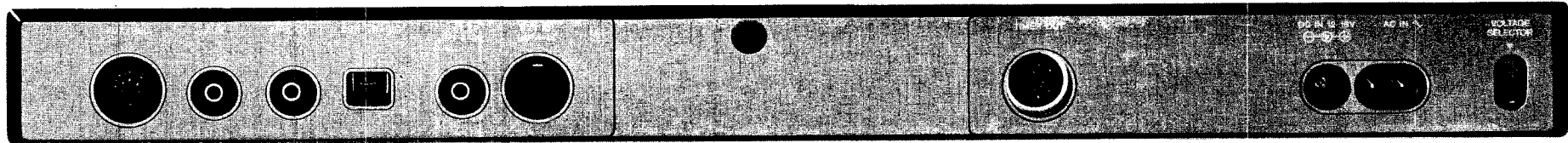
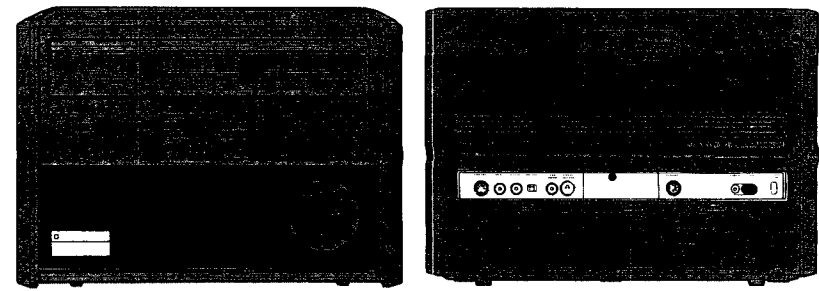
The sleep setting is now completed with a sleep OFF time setting at AM 1:32.



- 3 Depress the time display button and the display returns to the present time. Even if this switch is not depressed, the setting under 2 will be completed, and even if the switch is left as it is, the present time will be displayed automatically after about 7 or 8 seconds.

- Depress the sleep button to check the sleep OFF time.
- Simply switch off the power to cancel the sleep function.

11 CONNECTIONS



Usage	Accessories	Connection method	Connection jack	Usage	Accessories	Connection method	Connection jack
For using AC current	Power source cord (Supplied)	Insert into the AC outlet 	AC IN ~ 	To record	Tape recorder		REC OUT
For using DC power source	External DC power cord	DC power source 	DC IN 12-18V (1.2 A) 	To playback	Tape recorder	 Set the RADIO/AUX Selector to AUX.	AUX
For listening through earphone	Earphone (Supplied)	When the plug is inserted, the built-in speaker is automatically shut off. Listening with headphones at the same time is also possible. 	EARPHONE 	To record or playback through DIN jack	Tape recorder	 When playback set the RADIO/AUX Selector to AUX.	AUX-REC
For listening through headphone	Headphone	When the plug is inserted, the built-in speaker is automatically shut off. Listening with earphone at the same time is also possible. 	PHONES 	<p>Note 1: During recording, the volume control has no effect since the output level of the unit is fixed.</p> <p>Note 2: During recording, the unit functions as a monitor.</p>			
To use external speaker	External speaker	Inserting the plug will automatically shut off the built-in speaker. 	EXT SP (MP4-B1) EXT SP (MP4-B2) 	To listen to records	Record player	 Set the RADIO/AUX Selector to AUX.	AUX

12 TIMER OUT CONNECTOR

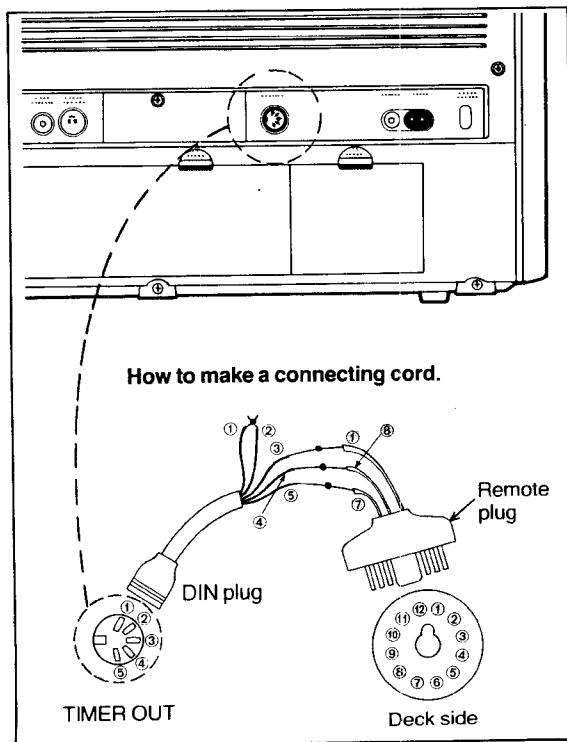
(The model for USA and Canada doesn't have this function.)

This connector serves to feed out to a tape recorder the signals for automatic recording or automatic playback at the program's ON and OFF times. It is handy for unattended recording of radio programs, for instance.

Timer recording

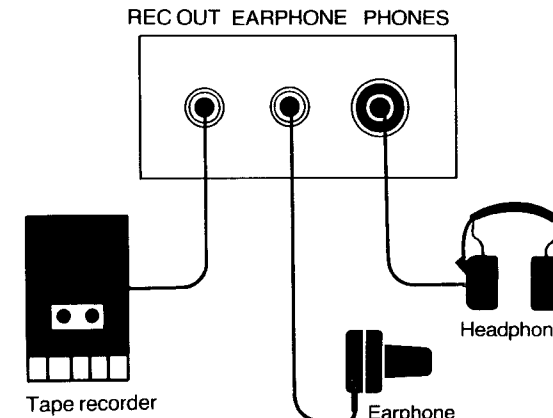
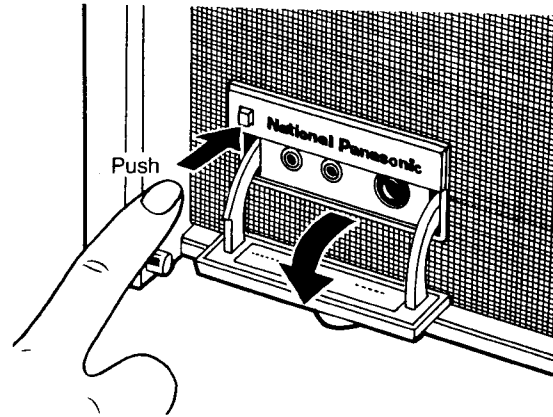
For timer recording, connect the timer recording jack on the tape recorder with the unit's TIMER OUT connector. A connecting cord is not available with this unit and so ask your dealer to supply you with one.

- Only the equipment with DC circuit can be connected to this connector and controlled.



13 FRONT PANEL JACK COVER

Depress the button shown in the figure and lower the cover to use the REC OUT jack, EARPHONE jack or, Headphones jack.



14 INVITATION TO SW (SHORT WAVE) DXING

Perhaps more than anything else the pleasure of listening to short wave broadcasts lies in tuning into news programs, music and enjoying other information broadcasts from stations around the world, and getting this information faster than from your local radio or television stations and from your newspaper. You don't need to go through any bothersome formalities—all you have to do is tune in, and you're off on a trip to countries on the other side of the world. Say you finish your work for the day and you lie down all by yourself. You switch on the radio. What kind of a sensation do you get when you suddenly hear an old familiar tune from way across the ocean? You can't feel anything like that with a TV or FM or AM broadcasts. It's a completely new sensation—something you have never felt before. You feel happy and excited all over.

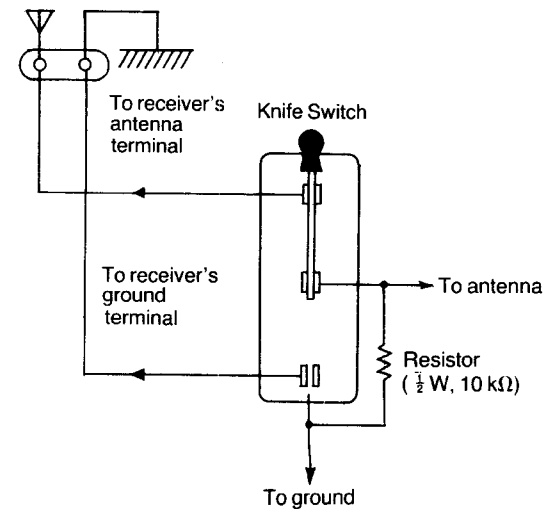
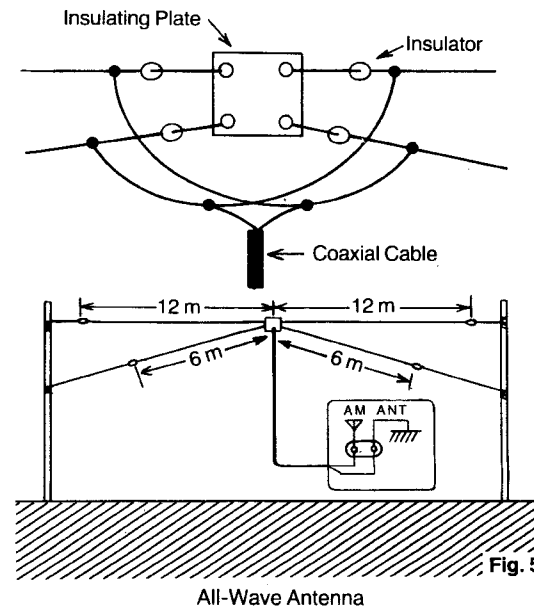
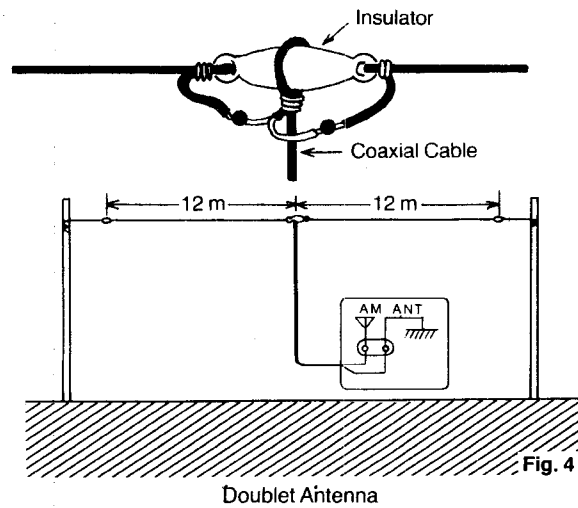
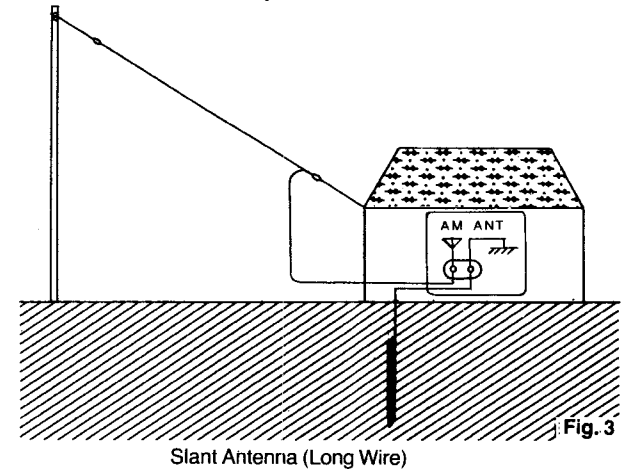
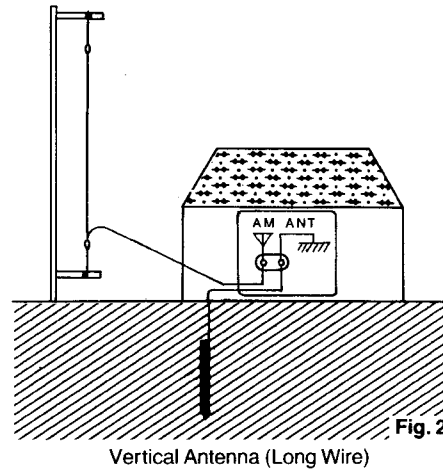
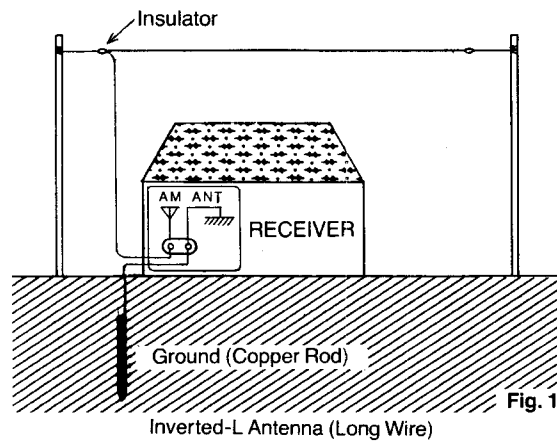
There's another pleasure in listening to short wave broadcasts besides just tuning into the stations. After you have finished listening to a program, write down the condition of the reception, the contents of the broadcasts and your impressions in as much detail as possible. You may get beautiful verification cards and pennants from the broadcasting stations if you send this information to them. You can build up a collection and watch your interests grow as each new card comes in. Listening to short wave broadcasts is full of other potential pleasures, too. Why don't you start getting tuned in to them with this National Panasonic radio receiver?

■ Antenna

The antenna serves to form a bridge between the countless radio waves that are being beamed into the atmosphere and the radio receiver. It goes without saying that the performance of the radio receiver must be good for excellent reception, but it is also important to connect an effective antenna for the best results. This is particularly the case with short wave (SW) broadcasts because many of the signals are weak and they have traveled a long way before they reach the receiver. The antenna greatly affects the quality of the reception. There are many kinds of antennas: inverted-L, long wire, short wire, doublet, Yagi, rod, etc. They all have different specifications and performances. It is not possible to say which is definitely the best since this depends on the radio receiver being used, the reception environment and the conditions affecting the location.

Figs. 1 to 5 illustrate typical examples of antennas. The effect of the antenna increases the higher it is installed and the further away it is placed from appliances and equipment that generate noise.

To avoid danger due to lightning, attach a safety device. As shown in Fig. 6, fix a knife switch as near to the service entrance of the antenna lead as possible. During thunder, make sure you connect the antenna directly to the ground by reversing the switch to the ground side.



■ Single-Sideband (SSB) and Continuous Waves (CW)

Single-Sideband (SSB)

In general, SSB corresponds to a modulated wave in the AM Double-Sideband (DSB) signal. It is used for business purposes and amateur radio, and it can be regarded as a special type of AM wave.

Features:

- 1) In case of transmitting: All information is transmitted with a little energy and bandwidth.
- 2) In case of receiving: Since there is no carrier, it is necessary to use a special detection method.

AM (DSB) waves can be illustrated in a spectrum as in Fig. 7.

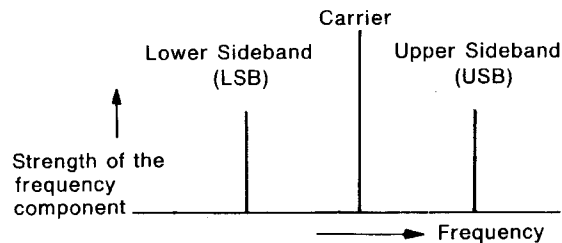


Fig. 7

Electromagnetic waves (carrier and both sidebands) are transmitted as a single group in an AM form. The sidebands are the Upper Sideband (USB), higher than the carrier frequency and the Lower Sideband (LSB), lower than the carrier frequency.

Voice and other information is contained in the sidebands but not in the carrier; thus the carrier is not always necessary, and so other methods for transmitting the information can be considered.

One of these methods is SSB. Either the USB signal or the LSB signal is transmitted and it depends upon individual circumstances. Usually for amateur communication, LSB is used under 10 MHz and USB used over 10 MHz. SSB waves are generated by passing the AM wave through a band-pass filter, then selecting either USB or LSB and sending the signal through the transmitting antenna. In receiving SSB (USB or LSB) waves on an ordinary AM receiver, it is not possible to

hear a transmitted voice unless a special alteration is made at the detection stage. It is possible either to construct the carrier and detect the AM after adding the SSB or to use the switching method (product and ring detection) on the frequency of the carrier for the SSB. The latter method has less distortion, and it is used in this unit.

Continuous Waves (CW)

In practice, these are used to transmit Morse code signals by intermitting the carrier, but it is difficult to hear the sound even after AM detection. Using the detection circuit of the SSB, the intermittent sound can be heard by ring-detecting the carrier and by varying the frequency a little.

■ Propagation of Electromagnetic Waves

Electromagnetic waves of a broadcast are separated into surface waves which are propagated along the surface of the earth and space waves which are propagated upwards. Low frequency waves (LW & MW) are surface waves, while high frequency waves (SW) are bounced off the ionosphere which is located 100~300 km above the earth's surface. This is charged and acts like a mirror toward electromagnetic waves. That is why high frequency waves can be received over great distances. On the other hand, the electromagnetic waves of higher frequencies (VHF) extend beyond the ionosphere and can only be used for short distances.

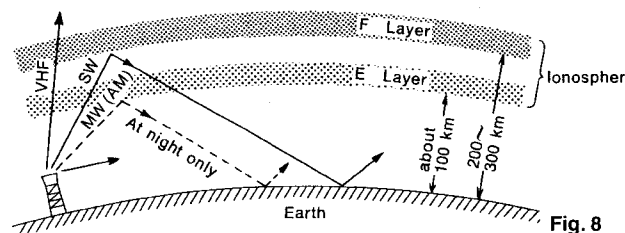


Fig. 8

The ionosphere is considered a product of the sun's ultra violet rays, and consequently, the conditions of the ionosphere change from time to time due to the position of the sun.

Seasonal variations also occur. Since it is multilayered, the path of propagation of electromagnetic waves is extremely complex.

In particular, the number of solar spots changes every 11 years, and this change affects the shape of the propagation. In receiving SW broadcast, all the foregoing must be kept in mind. Most best known SW stations take all these factors into consideration and change the frequency from season to season or broadcast with two or more different frequencies at the same time for optimum reception.

■ Features of the Meter Bands and Amateur Bands

■ Meter Bands

120 m (2.3~2.495 MHz) and 90 m (3.2~3.4 MHz) Bands

These two bands are used solely in tropical regions where unusual electrical activity and other types of noise make MW (AM) reception impractical. They are used mainly for local broadcasting. In comparison with MW (AM), they are rather difficult to receive because of noise or intermittent signals.

75 m Band (3.9~4.0 MHz)

This band is used for short-distance broadcasting in tropical regions.

60 m Band (4.75~5.06 MHz)

This band is like the 120 m and 90 m bands and is used chiefly for local broadcasts in tropical regions.

49 m Band (5.95~6.2 MHz)

This band is mainly used for short and medium-distance international broadcasts and local broadcasts. Depending on the season, and since international broadcasts use this frequency instead of high frequencies, it is possible to receive broadcasts from many countries.

41 m Band (7.1~7.3 MHz)

The propagation of this wave is similar to that of the 49 m band. It is chiefly used for medium to short-distance broadcasting.

31 m Band (9.5~9.775 MHz)

Heavily used for international as well as local broadcasts. Short Wave broadcasts of different countries are transmitted in this band, and if the receiving conditions are favorable, it is possible to receive many stations at every 5 kHz.

25 m Band (11.7~11.975 MHz)

The propagation of this wave is similar to that of the 31 m band, and follows the 31 m band in popularity because many international broadcasting stations with strong output signals use this band throughout the year.

19 m Band (15.1~15.45 MHz)

This is chiefly used by international broadcasting stations and is regarded as the "Main band." From this band to the higher frequency bands, reception becomes difficult as the number of solar spots decreases.

16 m Band (17.7~17.9 MHz)

This is used by international stations for purposes similar to the 19 m band, but because it is greatly affected by any slight change in the solar spots and in different seasons, reception is often impossible. If stations are received at all, they are surprisingly similar to strong signal stations.

13 m Band (21.45~21.75 MHz)

This band is used for long-distance international broadcasts. It is used regardless of the seasons when the solar spots are active. Condition of this band changes from time to time.

11 m Band (25.6~26.1 MHz)

This band is used for long-distance international broadcasts during heavy activity in the solar spots. Like the 13 m band, its condition changes from time to time. When the conditions are good, reception is easy as there is neither noise nor interfering signals.

■ Amateur Bands

160 m Band (1.9 MHz)

This band is also called the "Top band", and among amateur bands it has the longest wave length. Though it is good for short-distance transmissions, many ham fans prefer it for DX communication.

80 m Band (3.5 MHz)

This band is generally used for short-distance broadcast. However, depending on the season and time, it can be used for DX traffic communication.

40 m Band (7 MHz)

When the solar spots are least active, this band is most efficient for DX communications. However, its allotted bandwidth is narrow and it is susceptible to interfering signals.

20 m Band (14 MHz)

Also called the "Amateurs' main band". Its listening area changes with the time and the season. It can be used as a world-wide traffic communication band, and it is usually possible to receive broadcasts from every country.

15 m Band (21 MHz)

When the solar spots decrease, DX station and traffic communication signals are difficult to receive. When the spots are active, it is possible to receive low-power DX stations as surprisingly strong signals.

10 m Band (28 MHz)

Among amateur bands, this has one of the higher frequencies (HF). This band has both HF and VHF characteristics, and has more features than 15 m band; when the solar spots are active, you can tune into very distant DX stations.

■ Verification Card

Short wave broadcasting stations usually issue a verification card for listener's reception reports. At the same time, broadcasting timetables and various pamphlets are supplied to listeners, making it easy to plan a reception schedule and note changes in frequencies, etc.. To get a verification card, a correct reception report should be sent to the broadcasting station. The method of writing a reception report is as follows: Using the broadcast country's language is the most desirable, but English can usually be used, and the report should be written in simple sentences. Make sure you write all of the information useful to the station. When filing, the following items are the minimum requirement.

1. Name of the station.
2. Date and time of reception (GMT indication).
3. Frequency.
4. Signal receiving conditions. The conditions can be expressed in numbers by referring to the SINPO code shown on page 31.
However, it is also advisable to explain them in writing.
5. Reception area and your name and address.
6. Reception equipment: Type of radio, antennas, etc..

Send this information to the broadcasting station. If you send the report frequently to the same station, that station will return information regarding frequency and program changes to enable you to program your time for up-to-date reception. You may find that only the name of the country and the city of the station are announced over the air so if you don't receive the verification card, keep sending reports until you do. Of course, you can send to as many stations as you wish. The cards sent from various countries show local landscape and culture which enrich your knowledge of foreign lands, and will also increase your enjoyment of listening to the radio broadcasts.

GMT

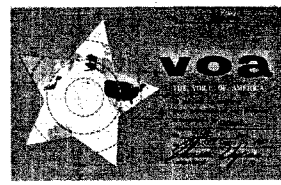
Is an abbreviation for Greenwich Mean Time. Almost all international broadcasts express time according to GMT.

(SAMPLE REPORT)

	Address Name Date
Radio Japan Tokyo Japan	
Gentlemen: I listened to you on Mar. 10th, 19xx, from 1500 until 1600 GMT on approximately 15255 kHz. Received programs and receiving conditions were as follows:	
TIME (GMT)	PROGRAMS
1500	Opening announcement in Japanese & English (by male announcer)
1502-1515	News in English (by male announcer)
1515-1530	News commentary (by male announcer)
1530-1558	Folk music
1558-1600	Closing announcement in Japanese (by female announcer)
SIGNAL STRENGTH:	(4) good
INTERFERENCE:	(4) slight (telegram)
NOISE:	(5) nil
PROPAGATION DISTURBANCE:	(5) nil
OVERALL RATING:	(4) good
RECEIVER:	National Panasonic Radio Model No. RF-9000 FM/LW/MW/SW Worldwide Receiver
ANTENNA:	Inverted-L type (8 meters high, 12 meters long)
REMARKS:	
Please send me your verification card if this report is correct.	
Yours truly, Name	

SINPO TABLE

	Signal Strength	Interference	Noise	Propagation Disturbance	Overall Rating
	S	I	N	P	O
5	Very strong	None	None	None	Excellent
4	Strong	Faint	Faint	Faint	Good
3	Medium	Medium	Medium	Medium	Fair
2	Weak	Strong	Strong	Strong	Poor
1	Faint	Very strong	Very strong	Very strong	Unusable



Verification Cards

■ Finding the Time in any Part of the World

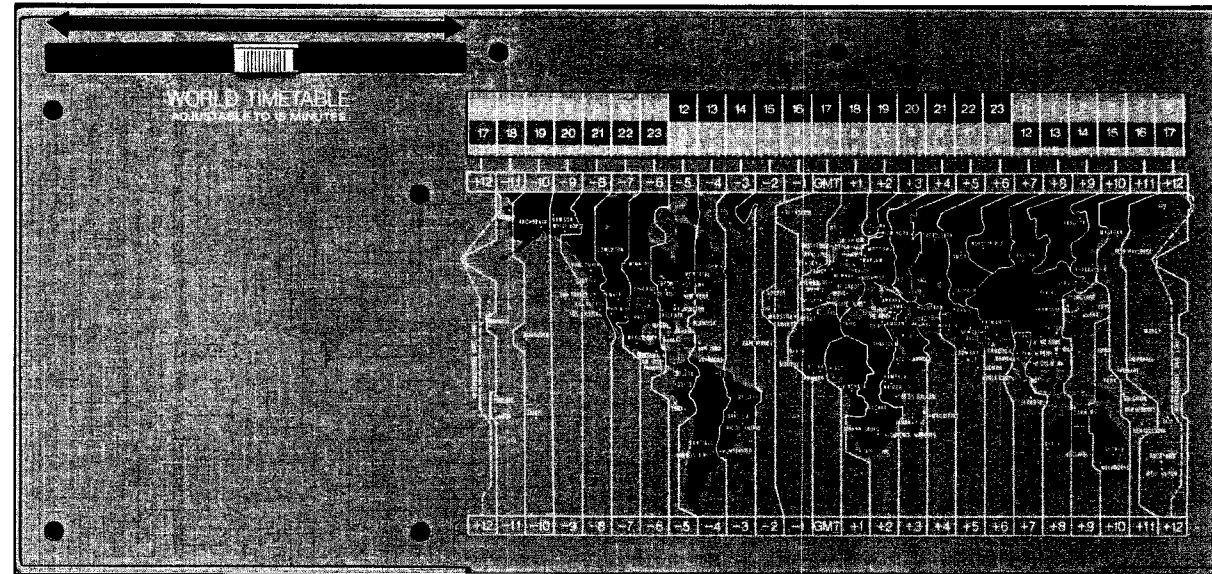
The front cover of this unit is equipped with the worldtime-difference map and the slide timetable (slidable to the right and left).

You can find the local time of the main cities with the world time-difference map and the world time conversion scale supplied with this unit. Use the following procedure.

- 1) Find the time difference of your city on the time-difference map.
- 2) Slide the circular scale of the world time conversion scale until the time in your city coincides with the time difference.
- 3) Read the time difference of the city which you want to know about on the time-difference map and find out the time which corresponds to the time difference on the world time conversion scale (limited to 12 hours). This time is the local time of the city whose time you want to know. In cases of cities which are not shown in the time-difference map, roughly determine their position on the map and then find out the time difference.

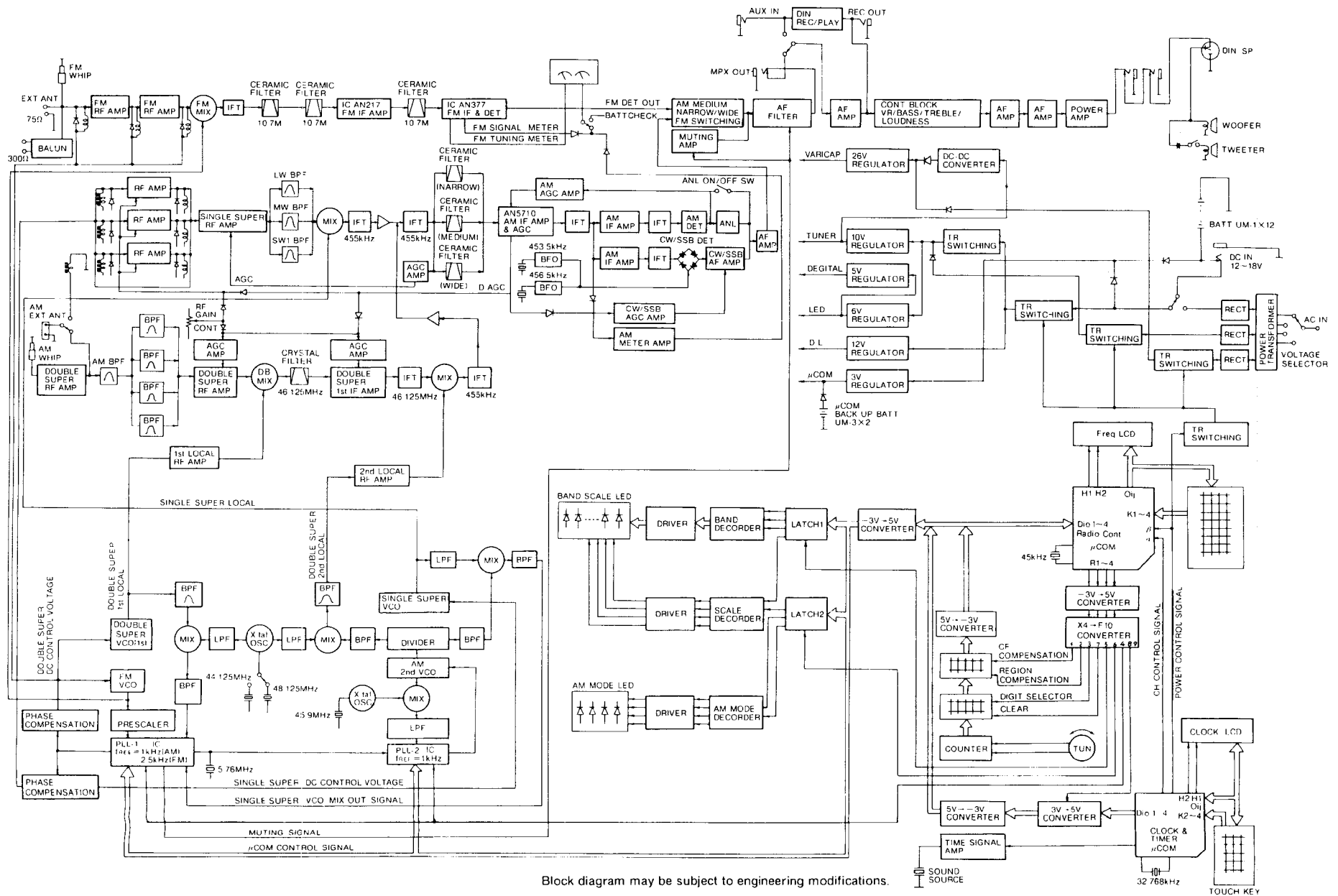
Note: In summer, take note of the countries which adopt a summer daylight savings time.

Your City	Time in Your City	Time in Other Cities
London (GMT)	10 A.M.	Tokyo . . . 7 P.M. New York . . . 5 A.M.
New York	10 A.M.	Vancouver . . . 7 A.M. Hong Kong . . . 11 P.M.
Tokyo	10 A.M.	Paris . . . 2 A.M. New York . . . 8 P.M. (previous day)



*The time-difference map is located in the front cover of the unit. It also contains a pocket for memos, . . . etc.

15 BLOCK DIAGRAM



Block diagram may be subject to engineering modifications.

16 SPECIFICATIONS

LW/MW/SW (1.6110~2.9009 MHz)

Frequency
Range: LW 150.0~420.0 kHz (2000~714.3 m)
MW 520.0~1610.9 kHz (576.9~186.2 m)
SW 1.6110~2.9009 MHz (186.2~103.4 m)

Type: Single Superheterodyne with Phase-Locked-Loop Synthesizer

IF: 455 kHz

Sensitivity: S/N 6 dB
LW 1 μ V (Modulation 400 Hz, 30%, for 50 mW)
MW 1 μ V
SW 1 μ V

Selectivity: WIDE ± 2.4 kHz (-6 dB)
 ± 5 kHz (-60 dB)
MED. ± 1.6 kHz (-6 dB)
 ± 3.2 kHz (-60 dB)
NARROW ± 1.2 kHz (-6 dB)
 ± 2.3 kHz (-60 dB)

Image
Interference Ratio: LW 120 dB (at 280 kHz)
MW 80 dB (at 1000 kHz)
SW 60 dB (at 2.3 MHz)

SW (2.9010~30.0000 MHz)

Frequency
Range: 2.9010~30.0000 MHz (103.4~10 m)

Type: Double Superheterodyne with Phase-Locked-Loop Synthesizer

IF: 1st IF 46.125 MHz
2nd IF 455 kHz

Sensitivity: SW 0.5~1 μ V (S/N 6 dB)
SSB/CW 0.2 μ V (S/N 6 dB)
(Modulation 400 Hz, 30%, for 50 mW)

Selectivity: WIDE ± 2.4 kHz (-6 dB)
 ± 5 kHz (-60 dB)
MED. ± 1.6 kHz (-6 dB)
 ± 3.2 kHz (-60 dB)
NARROW ± 1.2 kHz (-6 dB)
 ± 2.3 kHz (-60 dB)

Image
Interference Ratio: 1st 2nd
100 dB 70 dB

FM

Frequency
Range: 87.5~108 MHz

Type: Single Superheterodyne with Phase-Locked-Loop Synthesizer

IF: 10.7 MHz

Sensitivity: 1.5 μ V/75 Ω (-3 dB, Limit. Sens.)
2 μ V/75 Ω (S/N 26 dB)

Two-Signal
Selectivity: 70 dB (± 400 kHz)

Image
Interference Ratio: 60 dB (at 98 MHz)

Frequency Display

Display
Type: LCD (Liquid Crystal Display)

Precision: Direct Readout to 100 Hz for SSB/CW/AM
Direct Readout to 10 kHz for FM

Number of
Figures: 6 digits

Frequency
Stability: Within 100 Hz during any 60 minutes after warm-up time

Tuning

Frequency
Step: Fast Slow
SSB/CW 500 Hz 100 Hz
AM 100/500 Hz 500 Hz 100 Hz
1/5 kHz 5 kHz 1 kHz
FM 50 kHz 10 kHz

Tuning Speed
Ratio: Fast:Slow=5:1

Preset Memory

Number of
Preset: 15-Station Preset

Clock/Timer/Calendar

Type: LCD Quartz Clock/7-day Programmable Timer

Function: Real Time (Hour, Minute, Second)
Calendar (Month, Date, Day)
Dual Time
Time Signal
12/24 Hour Setting
Sleep
DC Timer out Control
6 Automatic Reception Mode
① Repeated weekly operation for daily
② Repeated weekly operation for once a week
③ Repeated weekly operation for every day but one
④ Repeated weekly operation for twice a week
⑤ Repeated weekly operation for every day but two
⑥ Single-time operation for one day of the week only
of the above 6 types of programs, up to 4 can be stored in memory.

Precision: Monthly Difference ± 15 seconds
(16°C temperature, 50% humidity)

General Specifications

Semi-

Conductors: IC 41
 Transistor 174
 FET 21

Output Power: 7 W (60%, MOD. 400 Hz)
 10 W (AC, MPO)

Speaker: 2 way Speaker System
 18×12 cm Oval Type (4Ω)
 6.5 cm (4Ω)

Power Source: AC 100~110/115~127/200~220/230~250 V,
 50/60 Hz
 (The model for Canada is 120 V only.)
 DC 18 V (12×UM-1, "D")
 3 V (2×UM-3, "AA") . . . Back-up
 for Memory & Clock
 DC in 12~18 V

Power consumption: 35 W

Jacks: Earphone out (3.5∅)
 Headphones out (6∅)
 Rec. out (3.5∅, 8 kΩ)
 Rec. out (DIN, 80 kΩ)
 AUX in (3.5∅, 570 kΩ)
 AUX in (DIN, 570 kΩ)
 MPX out (3.5∅, 5 kΩ)
 External Speaker out (3.5∅, 4~8Ω)
 External Speaker out (DIN, 4~8Ω)
 AC in
 DC in
 DC Timer out

Antenna: FM Whip Antenna 100 cm
 External Antenna (one-touch, 75Ω)
 External Antenna (DIN, 300Ω)
 LW Ferrite Core Antenna 12∅×200 mm
 MW/SW (1.6110~2.9009 MHz)
 Ferrite Core Antenna 12∅×200 mm
 SW (2.9010~30.0000 MHz)
 Whip Antenna 150 cm
 LW/MW/SW
 External Antenna (one-touch, 75Ω)
 External Antenna (DIN, 300Ω)

External Antenna (M-type, 75Ω)

(Only for USA and Canada.)

Dimensions: 520×362×206 mm
 (W×H×D) (20-1/2×14-1/4×8-1/8")
 Weight: 20.3 kg (44 lb. 14.1 oz)

without batteries

Specifications subject to change without notice.

- If the set is not used for a long time or is used only from an AC power source, remove all the radio batteries to prevent potential damage due to possible battery leakage.
- When the sound volume begins to lower, it is advisable to replace all the batteries with new ones before they are completely discharged.
- Do not subject the set to a temperature of over 60°C (140°F), because characteristics of the internal parts may be adversely affected by heat. Especially, never leave the set in a car exposed to direct sunlight for a long time with all the doors and windows closed. The cabinet may become deformed, and deterioration of the performance may result.
- Do not use benzien, thinner, or the like, or any abrasive powder to clean the cabinet. Wipe it with soft cloth moistened with a mild soap and water solution.

(Only for USA and Canada.)

PRODUCT SERVICE

Should your Panasonic product ever require service, refer to an Authorized Panasonic Servicentre in the enclosed Directory, or consult your authorized Panasonic dealer for detailed instructions.

WARRANTY

Two years parts and labour subject to the terms of the warranty. Read your warranty card completely.
SERIAL NUMBER: Located on the label affixed inside the battery compartment.