

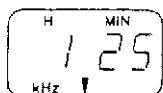
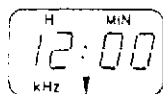
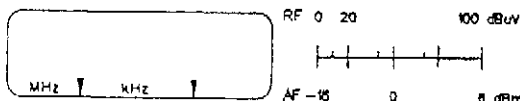
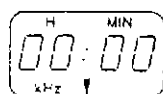
2 OPERATIONS

2.1 Operating Instructions RX 1001 M / RX 5001

2.1.1 Controls and Displays

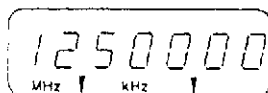
Loudspeaker The incorporated loudspeaker is positioned behind the cover

Display

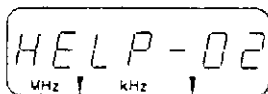


1. Indication of actual time by flashing colon.
2. Indication of channel times colon off-off time, colon on-on time.
3. Indication of BFO-frequency offset in CW mode.

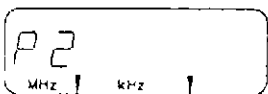
Indication of channel number, while programming or recalling channels.



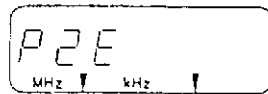
Indication of the set frequency



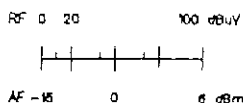
Failure localisation of the built-in test equipment BITE.



Programming indication during the programming process, normal receiver setting respectively.

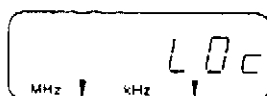


Failure indication after inadmissible entries (ERROR).

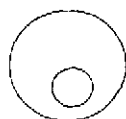


Upper line: Indication of RF-input level.
Lower line: Indication of audio output level.

Keyboard	Normal keyboard (telephone keyboard 0-9) with special function * and #. * Frequency entry, error reset and special functions. # Channel selection, filling display with trailing zeros.
DIMMER	The light intensity of the LED display can be varied in order to match the brightness to the environmental light conditions.
RF	If the automatic gain control AGC is switched OFF (enter 60 on keyboard), this control can be used to control the RF gain manually. NOTE (RX 5001 only) If AGC is on, the RF gain control is used as a threshold control for a squelch gate. Fully CW means squelch gate open (optional).
10 Hz/100 Hz -STEPS-	Selecting frequency increment during manual tuning with the knob.
BFO	In the mode A1A, the BFO frequency may be shifted by +/- 5 kHz in 10 Hz increments. Offset will be indicated in the time display window.
TUNING KNOB	Is used for frequency setting, resolution of the change depends on position of switch 10 Hz/100 Hz STEPS. The knob is provided with an electrical locking device. If locked during tuning, the frequency display shows for a short time.



(Locked)



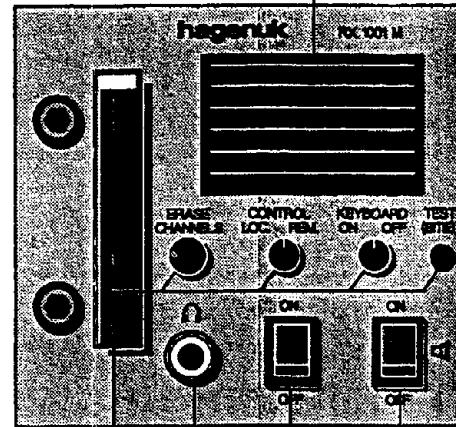
LOCK FLYWHEEL - Entry 70
UNLOCK FLYWHEEL - Entry 71

LED indications	Indication of the operational mode, AGC mode, filter band width etc.
AF	This control is used to set the audio volume for the earphone and the loudspeaker.
Loudspeaker ON/OFF	The built-in loudspeaker can be switched-off; it additionally can be switched-off electronically in the duplex mode by means of a signal from the transmitter, if the receiver is muted, and if the squelch gate is closed.
Mains switch ON/OFF	Switches the receiver on; automatic change-over to battery when the power supply breaks down (LED indication BATTERY).
Headphones	Connection for a 600 ohms headphones
TEST -(BITE)-	Activates the auto test.
Keyboard ON/OFF	(RX 1001 M only) In position ON, all operating elements are released. In position OFF, the following positions are looked: - Entries via keyboard - Frequency adjustment with tuning knob - BFO-adjustment - Auto Test tripping
LSB/USB Speaker Switch	(RX 5001 only)
ISB-SPEAKER	Selects the audio for the speaker in mode ISB.
LSB	LSB is monitored on the speaker.
USB	USB is monitored on the speaker.
LSB+USB	Both sidebands are monitored on the speaker.
CONTROL LOCAL/REMOTE	In position "REM" remote control of the receiver RX 1001 M / RX 5001 is possible.

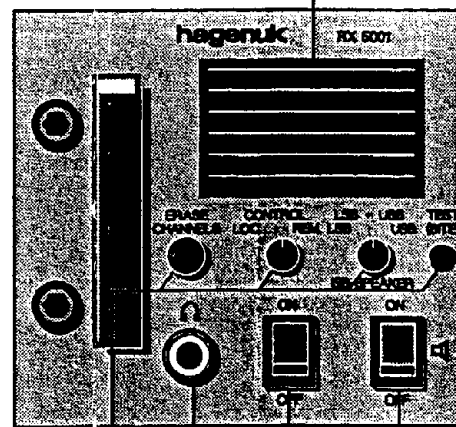
ERASE CHANNELS By pressing the key ERASE CHANNELS all stored channels and also the frequency just entered are being cleared and the indication field filled-up with zeros. The mode will be set to DSB and the ACG time constant is set to short. Preselection and antenna attenuation are switched off.

If the key is being pressed during the auto test, this test will be stopped and then the receiver is cleared as above. In order to reset the receiver to its basic conditions (emergency frequency 2182 kHz), the key ERASE CHANNELS must be kept pressed during switching-on the receiver (RESET-Function)

- 1 Loudspeaker
- 2 Display
- 3 Keyboard
- 4 Dimmer
- 5 RF-Gain Control/Squelch Control
- 6 Selector 10 Hz / 100 Hz STEPS
- 7 BFO Control
- 8 Tuning Knob
- 9 LED Display
- 10 AF-Gain Control
- 11 Loudspeaker Switch
- 12 Mains Switch
- 13 Headphones
- 14 Test - Key
- 15 ISB Speaker (RX 5001) - or Keyboard ON/OFF (RX 1001 M) Switch
- 16 Local/Remote Control Switch
- 17 Erase Channel Switch



14
15
16
17



14
15
16
17

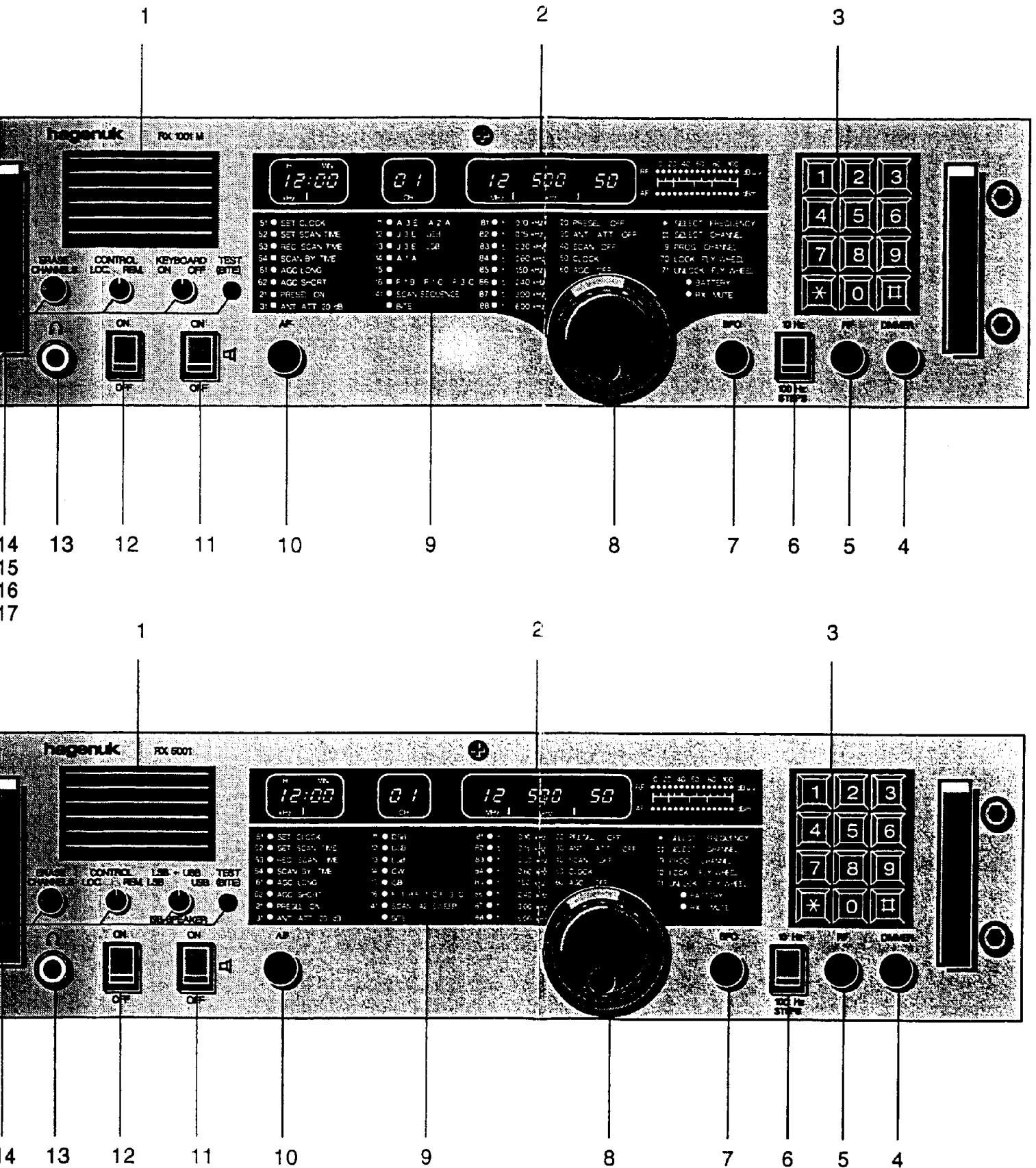


Fig. 2-1
Frontpanel RX 1001 M
Frontpanel RX 5001

2.1.2 Menu Selection of the Display

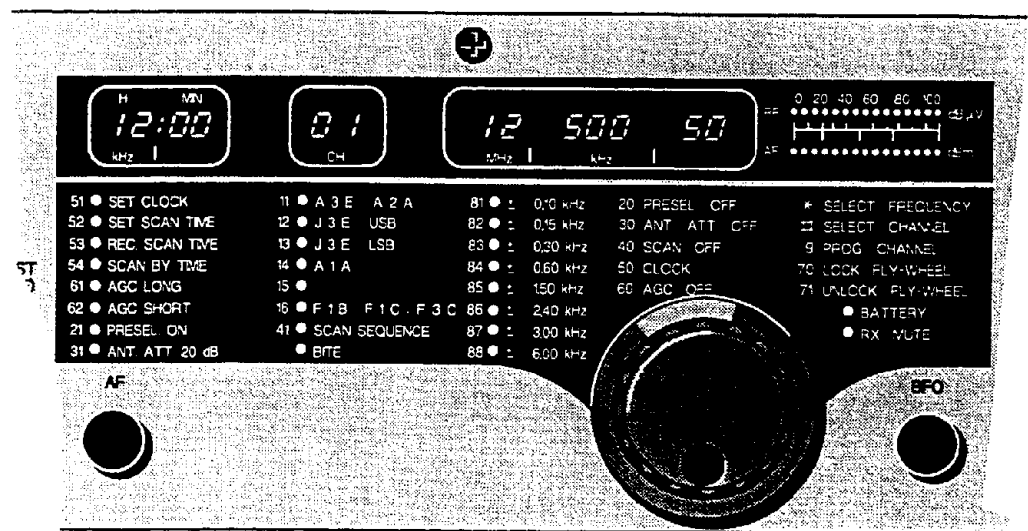


Fig. 2-2 Menu Selection RX 1001 M / RX 5001

The selection of menus is to be shown in the following orders:

Example:

51 0 Set Clock

entry code LEDbrief description of the entry command

With the brief description of the entry command the operator can select what the receiver is supposed to do. Then he enters the entry code via keyboard. When the receiver has recognized this entry as correct and performed it accordingly, the corresponding LED goes ON.

An annulled entry makes the corresponding LED turn "OFF" as for example:

20 PRESEL OFF

After this entry, the LED 21 PRESEL. ON extinguishes. Furthermore, there are also information-LEDs on the menu selection:

BITE, BATTERY and RX-MUTE.

2.1.3 Operation and Programming

As a general principle, continue a started operating process to the end, although you might have recognized in the meantime that you have committed an error.

A faulty entry may be partially corrected immediately and digit-wise with * key. Frequency-inputs can only be corrected as a whole. Start this by operating * twice. The * key has several special functions in some operations, refer to chapters for scanning and sweeping.

ATTENTION

The receiver RX 1001 M/RX 5001 is provided with a fail safe memory:

1. In case of a power supply failure - mains or battery - the actual status and the content of the channels are being stored for 12 days.
2. In case the mains connector on the receiver is being disconnected, all memory contents such as channels, frequencies, etc. will be cleared (as a matter of secrecy regarding operating frequencies and operating channels in case the receiver is being serviced).

2.1.4 Switching-ON the Receiver

The following pre-settings must be checked:

- * CONTROL in position LOCAL

Push mains switch to ON, with the DIMMER knob control the intensity of indication LEDs.

When the LED BATTERY lights up, automatic switching-over in the power pack of the receiver to battery supply has taken place because of the non-availability of the mains.

When the LED BITE lights up, the receiver can be operated normally, if a failure in the monitoring system is the only reason .

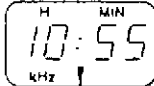
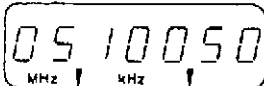

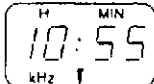
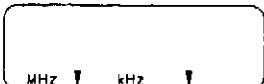
RX-MUTE is being entered by an external signal, as for example on simplex mode by the transmitter and on auto test.

In case of overvoltage at the antenna input the protective circuit also causes muting of the receiver and makes the LED RX-MUTE illuminate (only if option PRESELECTOR is installed).

2.2 Programming

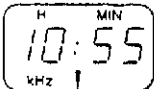
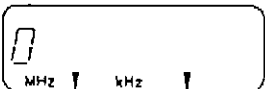
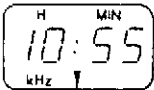
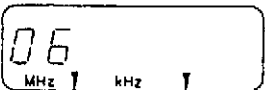

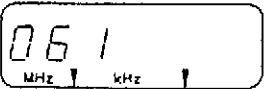

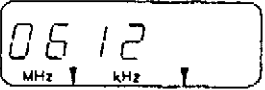
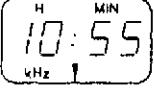
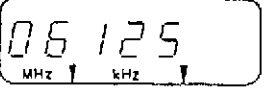
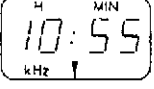
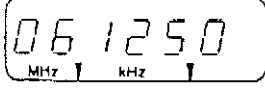
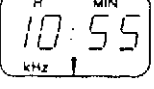
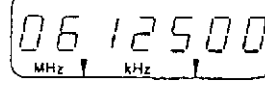
2.2.1 Entering a Frequency

An entry of a new frequency is initiated by pressing the * key. The double function (blanking function) of this key has to be taken into account, i.e.: a previous entry must have been finished until a new frequency is being entered.

Entry	Display	
actual indication		
		

NOTE

The indication on the frequency-display has been blanked, the receiver remains with the momentary frequency and is receiving normally until the new frequency is being entered completely.
New frequency is e.g. 06.125.00 MHz

Entry	Display	
0		
6		
1		
2		
5		
0		
0		

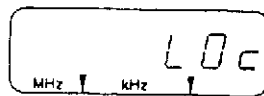
When entering the last digit the receiver switches-over to the new receiving frequency and is ready for further entries. After the digit 5 is being entered, the key # may be also pressed in order to fill-up with zeros.

2.2.2 Varying the frequency with the fly wheel knob

NOTE

For this operation, the knob must be switched-on which is done by entering the code 71 UNLOCK FLY-WHEEL.

In case the knob is locked, code 70 LOCK FLY-WHEEL, the display shows briefly



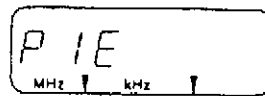
while operating the knob.

Entry codes 7 and 7E may be interrupted by means of the key * in case the entries have been incorrectly entered. The tuning speed may be changed by means of the switch STEPS 10 Hz/100 Hz.

Entry	Display	Switch
7		
1		

2.2.3 Setting the operating mode

From the menu, the required mode may be selected. A faulty entry, as for example, code 10 will be indicated by the receiver with the following ERROR indication:



By pressing the key *, the entry is being interrupted, whereas the previous mode is maintained.

Example: set operating mode J3E LSB -code 13-

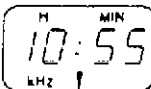
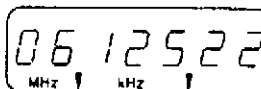
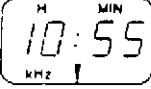

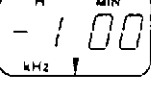
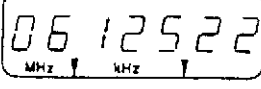
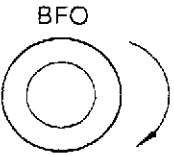
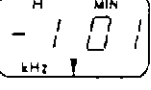
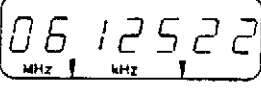
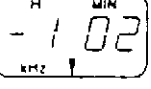
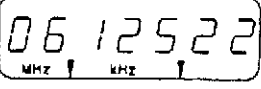
Entry	Display	LED (*)
actual indication		14 • CW
1		14 ○ CW
3		13 • J3E LSB

- * • LED lights
- LED does not light

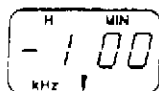
2.2.4 Operational mode CW and setting the BFO frequency

When the mode CW is switched-on, the BFO frequency offset appears on the CLOCK indication field. In 10 Hz increments, this offset can be adjusted by the BFO control knob.

Example: set operating mode CW code -14-

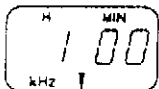
Entry	Display	LED (*)
actual indication	 	13 • J3E LSB
1	 	13 o J3E LSB
4	 	14 • A1A
	 	14 • A1A
	 	14 • A1A

indication with "-"



means that the BFO-frequency is 1.00 kHz lower than the IF frequency.

indication without "-"



means that the BFO-frequency is 1.00 kHz above the IF frequency. The tuning range of the BFO is ± 5 kHz related to the IF frequency.

- LED lights
- o LED does not light

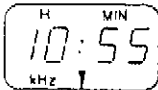
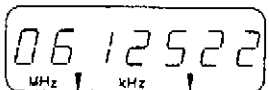
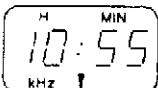
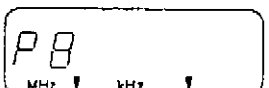
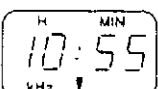
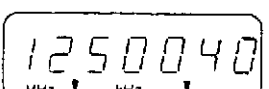
2.2.5 Setting the filter bandwidth

The filter bandwidth is being preset automatically on mode selection. From menu code 81 0.10 kHz to 88 6.00 kHz any other filter may be selected after this.

Entry errors may be corrected again by key *.

Op. mode	Preset filter bandwidth
DSB	6.0 kHz
USB/LSB	2.4 kHz
CW	0.3 kHz
F1B	0.6 kHz at $f_{RX} \leq 3$ MHz 1.5 kHz at $f_{RX} \geq 3$ MHz

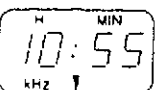
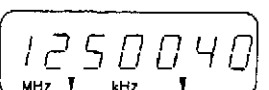
Example: entry code 85 "1.5 kHz"

Entry	Display	LED (*)
actual indication	 	12 • J3E USB 86 • 2.40 kHz
8	 	12 • J3E USB 86 o 2.40 kHz
5	 	12 • J3E USB 85 • 1.50 kHz

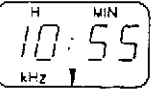
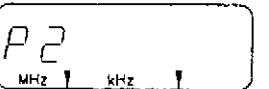
2.2.6 Switching - ON/OFF the preselector

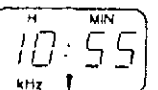
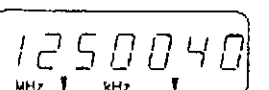
Switching ON the preselector code -21-

Switching OFF the preselector code -20-

Entry	Display	LED (*)
actual indication	 	12 • J3E USB 86 • 2.40 kHz 21 • PRESEL. ON

Preselector to be switched off code -20-

2	 	12 • J3E USB 86 • 2.40 kHz 21 o PRESEL. ON
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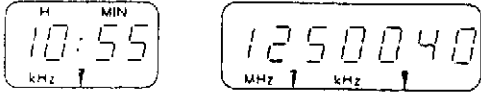


0	 	12 • J3E USB 86 • 2.40 kHz 21 o PRESEL. ON
---	--	--

- * • LED lights
- o LED does not light

2.2.7 Switching - ON/OFF the antenna attenuation

Entry errors may be corrected via key * again.

Example: ANT. ATT. is switched ON code -31-
ANT. ATT. is switched OFF code -30-

Entry	Display	LED (*)
actual indication		12 • J3E USB 86 • 2.40 kHz 31 • ANT.ATT 20 dB ON
Antenna attenuation to be switched-off code -30-		
3		12 • J3E USB 86 • 2.40 kHz 31 ○ ANT.ATT 20 dB ON
0		12 • J3E USB 86 • 2.40 kHz 31 ○ ANT.ATT 20 dB ON

- * • LED lights
- LED does not light

2.2.8 Change from AGC to RF-manual control and vice versa

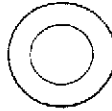

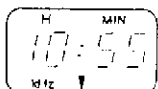
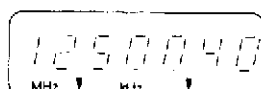
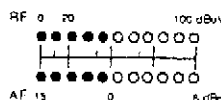
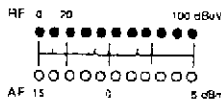
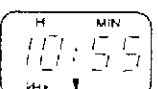
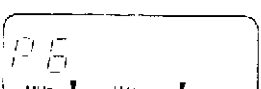
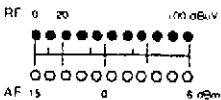
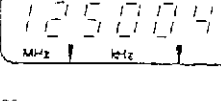
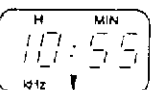
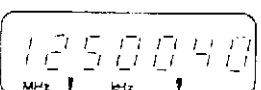

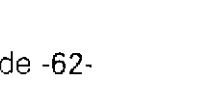
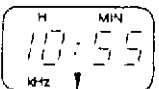
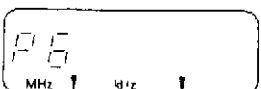
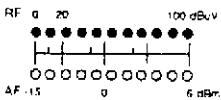
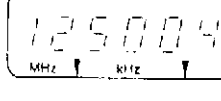
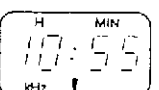
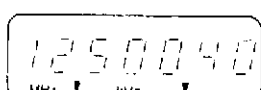
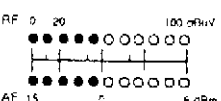

Entry errors may be corrected again by key *.

The RF-manual control is set by the entry code -60-

In AGC - modes 61 and 62 the manual control potentiometer (RF-control) sets a threshold for an internal Audio gate (requires settings on AUDIO II printed circuit board; squelch option; RX 5001 only)

NOTE

If AGC modes AGC-SHORT or/and AGC-LONG are changed or switched off, the receiver is set to manual gain control MGC after the digit 6 is keyed in. Receiver gain is now determined by setting of RF gain control knob. After entering the second digit the receiver settles in the desired gain control mode.

Entry	Display	LED (*)
actual indication  	   	12 • J3E USB 86 • 2.40 kHz 61 ○ AGC LONG 62 ○ AGC SHORT
Switching over to AGC Long code -61- 6	   	12 • J3E USB 86 • 2.40 kHz 61 ○ AGC LONG 62 ○ AGC SHORT
1	   	12 • J3E USB 86 • 2.40 kHz 61 • AGC LONG 62 ○ AGC SHORT
switching over to AGC SHORT code -62- 6	   	12 • J3E USB 86 • 2.40 kHz 61 ○ AGC LONG 62 ○ AGC SHORT
2	   	12 • J3E USB 86 • 2.40 kHz 61 ○ AGC LONG 62 • AGC SHORT

* • LED lights
 ○ LED does not light

2.2.9 Setting the clock

The function - SET CLOCK - is ordered by the digits 51. The actual time indication extinguishes and the new time may be entered. After entering the last digit the clock is started with the new set time (full minute).

Via the * -key corrections may also be done. Each pressing of the key erases one entry step. By this, an incorrectly entered digit can be corrected. Pressing the key * -key repeatedly makes that the complete entry process can be annulled; the clock keeps on going with the old setting, without any change.

Example: set the actual time 12:00

Entry	Display	LED (*)
actual indication time = 12:00		
5		
1		
1		
2		
0		
0		

- * • LED lights
- o LED does not light

2.2.10 Programming of channels

Storing of the momentarily set receiver data into one channel is preceded via entering digit 9. After this, a 2-digit channel number must be entered. Permissible channel numbers are 01... 99. With the key * corrections may also be done here. Each key pressing erases one entry step. By this operation, an incorrectly entered digit can be corrected. By pressing the key * repeatedly the complete entry process can be cancelled.

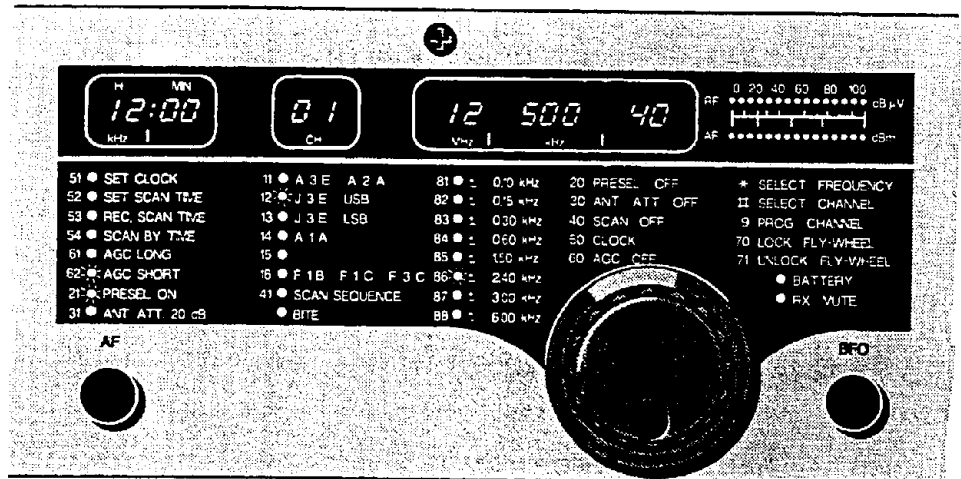


Fig. 2-3 RX 1001 M, Operational Parameters

The current operational parameters shall be stored under channel No. 01.

operational frequency	12.500.40 MHz
mode	J3E USB
pre-selection	PRESEL. ON
IF-bandwidth	2.40 kHz
AGC	AGC SHORT

Entry	Display	LED (*)
-------	---------	---------

actual indication see drawing Fig. No. 2-3

9		12 • J3E USB 21 • PRESEL. ON 31 o 86 • 2.4 kHz o BITE
0		62 • AGC SHORT
1		

- * • LED lights
- o LED does not light

2.2.11 Recalling stored data

Already programmed channels can be recalled as follows:

1. Programmed recall:

Scan time The programmed channel will be switched on when the scan time is reached.

Scan CH + CH The programmed channels will be switched on in a required sequence. The channel will be switched on for a period of 2 seconds. (RX 1001 M only. For RX 5001 refer to chapter 2.3.2)

2. Manual recall In order to recall receiver data stored on one channel the key # must be pressed. After this, the 2-digit channel number (01...99) has to be entered. When recalling a channel not programmed before, the frequency indication will be filled with zeros and the receiver is muted. The receiver can be released only after entering a new frequency or by recalling a programmed channel. By turning the knob, the frequency is being set to 10 kHz and the receiver is also unmuted.

Indication P- : A channel shall be recalled.

Indication P- E : Entry error at channel number (example: 00). With the key * correcting may also be done. By each key press one entry step will be released. In this way, an incorrectly entered digit can be corrected.

2.3 RX 1001 M / RX 5001 SCAN Programs

2.3.1 Program SCAN BY TIME






2.3.1.1 Programming SCAN BY TIME program (daily)

NOTE

This program can only be carried out with channels which are already stored.

The channel is switched on at a certain time (starting time) and switched off at a certain time (finishing time) every 24 hours. (Once a day).

Example: check SCAN TIME, start with code -53-

Entry	Display	LED (*)
		
5		53 o SCAN TIME
3		53 • SCAN TIME
		
		













- LED lights
- o LED does not light

Check, whether a CHANNEL TIME is already programmed on this channel. For example the 10:05 appears as starting time in change with 10 10 as finishing time *. If a change or programming is required this can be achieved by pressing the key *. The time display is now reset to 0.

* If you like to leave the program, just turn the frequency knob.

Example: The channel No. 01 shall be switched on every 24 hours at 11:22 and switched off at 11:47.

Set new SCAN TIME, start with code -52-

Entry	Display	LED (*)
		53 • SCAN TIME
5		
2		52 • SET SCAN TIME
1		52 •
1		52 •
2		52 •
2		52 •
1		52 •
1		52 •
4		52 •
7		52 •
		52 o

- LED lights
- o LED does not light

2.3.1.2 Programming SCAN BY TIME (hourly)

Recall channel to be programmed for example channel 02.

Entry	Display	LED (*)
#		
0		
2		
5		
3		

53 •

- * • LED lights
- LED does not light

Check whether a channel time is already programmed on this channel. If a change of programming is required, operate * key. The time display will be reset to zero.

Entry	Display	LED (*)
*	 	53 •
5	 	
2	 	52 •
2	 	52 •
4	 	52 •
0	 	52 •
0	 	52 •
0	 	52 •
2	 	52 •
	 	52 o


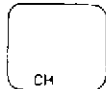
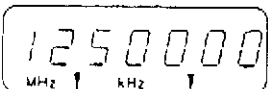


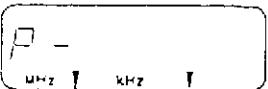
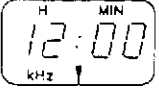
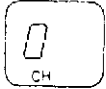
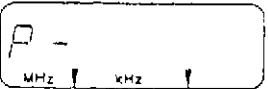
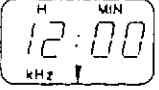

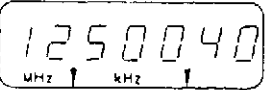
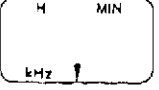
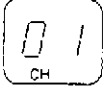
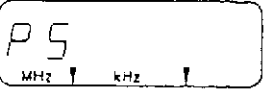
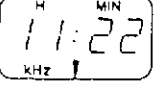
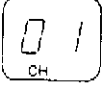
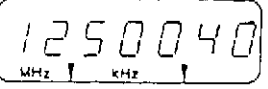
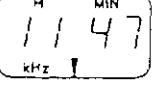
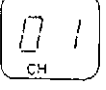

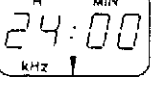
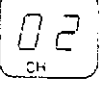
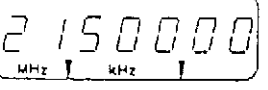
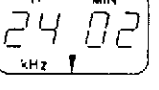
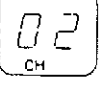

- LED lights
- o LED does not light

In above example, after activating SCAN BY TIME, channel 02 will be recalled on the hour and switched off 2 minutes past every hour.

2.3.1.3 Display of all CHANNELS with SCAN times

Interrogation can be terminated by entering any number or by turning the FLY-WHEEL.



Example: display of channel No. 01, 02 etc.

Entry	Display	LED/remarks
	  	
#	  	
0	  	
1	  	
5	  	
3	  	starting-time
	  	* finishing-time
#	  	
	  	
#		
etc.		

* Finishing-time is indicated without the ':' in the display.

With above procedure it is conveniently possible to scroll (upwards only) through the channels and investigate its contents.

2.3.1.4 Activating SCAN BY TIME

Entry	Display	LED/remarks
5		
4		54 •

- LED lights
- o LED does not light

The SCAN BY TIME mode can only be switched off by entering 40. If after SCAN BY TIME is activated an entry starts with 5, a P 5 E error is displayed. This error can be reset by entering 5 again or entering *. The error is to remind the operator, that SCAN BY TIME is active, and by changing scan times and the clock setting (beginning with 5) the operator might upset the timing of activated channels. During activated SCAN BY TIME mode, the program is searching through all channels for switch on- and off times. If a channel is activated, the respective channel No. is flashing in the channel display, and the content of this channel is controlling the receiver. No controls except AF volume control is possible. The only command excepted via the keyboard is 40. Upon switching "off" time, the receiver switches back to its previous status.

If no channel has allocated scan times, error P 5 E will be displayed after activating SCAN BY TIME mode. This error can be reset by entering *. For simultaneous activation of SCAN BY TIME and channel scan, scan ch + ch or frequency sweep modes, SCAN BY TIME has to be activated first, and then the respective sweep program.

2.3.2 Programm CHANNEL SCAN (RX5001 and RX1001 M with Audio II PCB)

2.3.2.1 Programming and checking of CHANNEL SCAN-ranges

General:

A CHANNEL can be programmed with a frequency, AGC, IF-bandwidth and other status data. Refer to chapter 2.2.10. 99 different channels are possible.

Following parameters can be stored in 20 CH-SCAN range memories: (These memories are numbered from 01 to 20).

-1 starting channel	min. 01 max. 99 (00 followed by # erases the SCAN-range)
-2 end channel	min. starting channel 01, max. 99
-3 STEP-incrementation	STEP-increment is always 1, nevertheless an interruption of the CH-SCAN programming is possible by entering 40.
-4 STEP-time	0.1s - 0.9s in 0.1s-steps
-5 Dwell-time	0s - 9s, in 1s-steps (0 = CH-SCAN STOP until # is entered)
-6 Threshold value	05 - 95 dB μ V in 5 dB μ V-steps

NOTE

When entering the parameters -1 and -2 it is not possible to stop programming by code 40, because all digit combinations are covered with CHANNEL-No.. Interruption is possible at parameter -3 only.

Entry of all parameter is performed on the frequency-display. As an orientation aid, on programming, each position not used is marked by '-' with the effect that the number of digits to be entered can be recognized easier. (However, the 10 Hz-position cannot be marked due to the hardware configuration). When the programming of CH-SCAN ranges and channel scan-sequences is in progress the previously set receiving frequency is not changed, i.e. one may keep on listening on the 'old' frequency.

Special functions of keys * and # on programmig

- * On entering the range number the entries subsequently step back, i.e. the entry of the tens-position of the range number and also the entry of 45 can be reset.

After entering the range number the following functions are given:

- * On first position of an entry sets an entry step back. # is followed by the next entry step.
- * On entering a multi-digit parameter what erases the 'new' set position and indicates again the prevailing parameter value. # fills zero-digits to the remaining positions, it however does not yet lead to the next entry stop.

After complete entry of a new parameter, this is stored by # (ENTER-key). Simultaneously a transition to the next entry step is established.

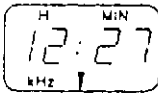
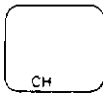

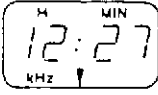


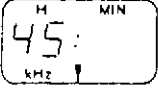

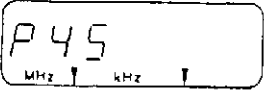
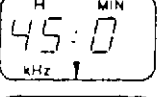
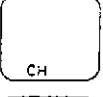
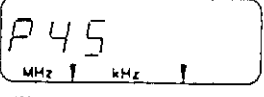
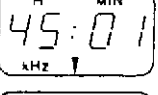

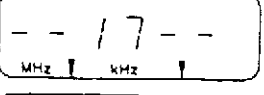
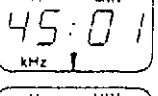
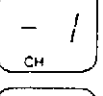
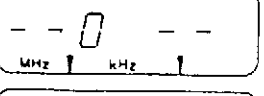
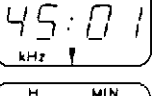
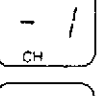
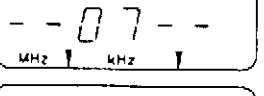
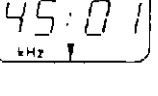
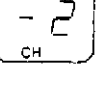
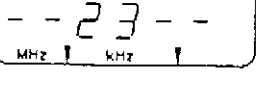
Example with the following parameters:

starting channel 07
 end channel 15
 STEP-time 0.4 sec
 Dwell-time 5 sec
 Threshold value 50 dBµV

NOTE

The CH-SCAN programming can be done with stored CHANNELS only

The programming starts with the entry -45-

Entry	CLOCK	CH	FREQUENCY	Remarks
				condition prior to entry
4				
5				LED 41 •
0				1 st position of range number
1				previous starting channel -17-
0				Enter new starting channel
7				
#				ENTER starting channel
				In the display previous end channel

- LED lights
- o LED does not light

Entry	CLOCK	CH	FREQUENCY	Remarks
1				Enter new end channel
5				
#				ENTER end channel, no step incrementation can be entered (only *, # or 4)
#				ENTER in Display previous step time
0				New Step-time 0.4 s
4				
#				ENTER new septime
#				ENTER, Dwell-time remains unchanged In display previous threshold.
7				New threshold-value
*				Correct entry error
5				New threshold-value
0				
#				ENTER new threshold, *

* Next CH-SCAN range memory starts, which can be programmed in a similar fashion. In display previous start channel of CH-Scan range memory 02

Exit channel scan range memory programming

Entry	CLOCK	CH	FREQUENCY	Remarks
*				Check threshold-value memory 01
*				Dwell-time memory 01
*				Step-time memory 01
*				
4				Finish CH-SCAN memory programming
0				Previous condition displayed again, LED 41 o.

NOTE

When on the first position of the ENTRY -Step for the starting channel number in memory range 01, the entry of * does not reset to range 20. Instead, a reset to the entry of the range number takes place and, by entering another *, there is an escape from the programming of the CH-SCAN range memories.

Entry	CLOCK	CH	FREQUENCY	Remarks
				Starting memory
*				LED 41 •
*				LED 41 o
*				Old state

- * • LED lights
- o LED does not light

2.3.2.2 Error reports

Errors are shown on the corresponding position on the display, by the indication 'E' (for ERROR).

Entry	CLOCK	CH	FREQUENCY	Remarks
4				
5				LED 41 •
0				1 st position of memory number
1				Previous starting channel
3				Enter new starting channel
3				
#				ENTER starting channel

- * • LED lights
- o LED does not light

If the now displayed end channel of 23 is entered, the memory No. 01 in subsequent programming will be treated as incompletely programmed, because the start channel is higher than the end channel.

Entry	CLOCK	CH	FREQUENCY	Remarks
5				
0				New end channel
#				ENTER new end channel
#				previous step time
0				New Step-time
0				Error: Step-time 0.0 s
4				Step-time 0.4 s
#				ENTER step time, previous dwell time
#				ENTER dwell time, previous threshold
0				New threshold
0				Error threshold 0
5				Correct ERROR
#				ENTER threshold

2.3.2.3 Erasing the CH-SCAN ranges

Entry	CLOCK	CH	FREQUENCY	Remarks
4				
5				
1				
5				
0				
0				Range 15 to be erased
0				Range 15 to be cleared now.

When looking through the CH-SCAN range memories only the starting channel - - 0 0 - - is displayed. After this, the next memory follows immediately.

Entry	CLOCK	CH	FREQUENCY	Remarks
				Dwell-time memory 14
#				Threshold value memory 14
#				Memory 15 is erased!
#				Starting channel memory 16 etc.

2.3.2.4 Entry and start of the CH-SCAN sequence

In order to start a CH-SCAN sequence, 41 is followed by the memories to be scanned and # to be entered for start. All entries, until start of sequence, can be stepped back by *.

After entering the memory number the starting channel of this memory, respectively '- -00- -' for an erased memory, or '-0-0-' for an incompletely programmed memory is displayed.

A CH-SCAN memory sequence already entered before can be started again by 41, followed by #.

Erased and incompletely programmed CH-SCAN memories are skipped when they are included in the sequence. A sequence consisting of only erased and incompletely programmed memories cannot be started.

The error report P 41 E is then given. This report is also given if no sequence is stored previously.

Example: Scanning the programmed memories 02, 03 and 08:

Entry	CLOCK	CH	FREQUENCY	Remarks
4				
1				LED 41/42 •
1				Entry error, should be 0
*				Error reset
0				
2				Starting channel, memory 02
0				next memory
2				Error, should be 3
*				Error reset
3				Memory 03 incompletely prog.
0				next memory
8				Starting channel, memory 08
#				CH-SCAN starts with memory 02
				etc.

NOTE

In contrast to the SWEEP-mode, the channel number is displayed during the CH-SCAN sequence.

The above SCAN program linked together with the 41- command is not lost after scanning is stopped by command 40.

Above program can simply be started again by the program sequence 41 #.

2.3.2.5 Manual interruption and CH-SCAN operation

The CH-SCAN sequence can be interrupted by any key and finished then by 0, or continued by another entry.

If SCAN BY TIME is active during CH-SCAN mode, the first 40 entered will stop CHANNEL SCAN, and the next 40 entered will reset SCAN BY TIME.

If in above configuration, a channel is switched on by SCAN BY TIME, the first 40 entered will reset SCAN BY TIME, and the next 40 entered will stop channel scanning.

Entry	CLOCK	CH	FREQUENCY	Remarks
X				CH-SCAN stop by any key
X				CH-SCAN continuation by any entry except 0
X				Another interruption
0				CH-SCAN finished LED 41/42 o

- * • LED lights
- o LED does not light

After finishing the CH-SCAN (Entry X0), the sequence can be continued by entering 49 with the next following channel. However, no other entries of the 4-digit group must be performed in the meantime. Other entries are allowed.

2.3.2.6 External CH-SCAN interruption

If, during the CH-SCAN sequence, the input "Scan-stop extern" gets active (=low) the scanning run is interrupted until the input becomes inactive again. This condition is displayed by P on the 'tens' position of the minutes display, whereby P 4 is on the hours-display.

NOTE

The manual CH-SCAN-stop is displayed by P4: P on the time display. Should both interruptions simultaneously take place this will be displayed by P4: PP and CH-SCAN continuation starts only after cancelling of both stop parameters.

2.3.2.7 Internal CH-SCAN interruption by monitoring of AGC-Voltage

Internal level monitoring is done by comparing the AGC - voltage with the preset threshold.

The AGC-voltage value is scanned for the first time 200 ms after setting a new channel (respectively after 100 ms at a step-time of 0.1 s), and again after another 200 ms each with the matching long step-time, with the result that 4 scanning values are formed of which - for interpretation - the mean value is taken.

In case the taken mean value exceeds the set threshold-value, the set channel is kept for the programmed Dwell-time period. This state is displayed by ' - ' on the time display. In case the Dwell-time was programmed with 0, a P4 : P is displayed in the same way as on manual interruption and, for CH-SCAN continuation, any key except 0 must be pressed.

2.3.2.8 Checking the programmed CH-SCAN sequence

The CH-SCAN sequence already programmed can be reviewed by entering 46. Now, the first range memory number appears on the channel display. By entering # the next range memory number is displayed and, by entering * the previous one. By entering # when the last range memory number is displayed, and by entering * when the first range memory number is displayed, the CH-SCAN sequence check is finished. By 40, the CH-SCAN sequence check can be stopped, and it is reset to the previous frequency and operational mode.

Entry	CLOCK	CH	FREQUENCY	Remarks
4				
6				First CH-SCAN range displayed
#				Next range
#				Next range
*				Previous range
#				Next range
#				Check finished

2.3.2.9 Indication of CH-SCAN-STOP by AGC-evaluation to outside peripherals

In case an allocated channel is detected during CH-SCAN, and the sequence interrupted due to exceeding the set threshold value, this state could be transmitted to a connected computer by the activation of the DTR connection of the serial interface if the remote control internally is set to the operational mode "Computer control" (S 2/3 on I/O PCB ON). This external computer could now scan the frequency and the RF-level, via the interface.

2.3.2.10 Scan CH + CH

If the above mentioned channel scan procedure should be too difficult and laborious for the customer to perform, a very simple channel scan feature can be introduced, by simply setting switch S 1.1 on the AUDIO II- PCB to OFF. The channel scan mode now in operation is called SCAN CH + CH. After entering 41 the operator has to enter all channels he wants to be scanned in sequence. The entering procedure has to be finished by the # key.

Immediately after entering # the scanning of the channel sequence starts with the first channel and with a fixed SCAN TIME of 2 seconds. Scanning can be interrupted by entering any key and started again by entering any key but 0. Entering zero will cancel the command 41. If the same channel sequence has to be scanned again, simply entering 41 # will start the sequence.

NOTE

During all channel scan modes the preselector (if fitted) will be switched off and AGC - mode will be on "AGC - short", only.

Upon stopping the channel scanning temporarily (during dwell time period), or permanently, the state of preselector and automatic gain control will be set as programmed in the respective channel.

The manual gain control will be switched on during the scanning of a channel, if programmed for that channel.

When the scan CH + CH mode is temporarily halted by keyboard entry, the frequency display shows P 4 P. Scan CH + CH can be stopped as well by grounding pin 1 on the external connector and will continue when this connection is disconnected. The display does not give any indication when scanning has been stopped externally, so combination with spare LED (Pin 7 on external connector) during external scan stop is recommended.

2.3.3 Program SWEEP

2.3.3.1 Programming and reviewing of the SWEEP-ranges

General:

During SWEEP the receiver always uses the actual settings of AGC, IF-bandwidth, etc.

Following parameters can be stored individually in 20 SWEEP-range memories: (These memories are numbered from 01 to 20)

- | | | |
|----|--------------------|---|
| -1 | Starting frequency | min. 10 kHz, max. 29.999.99 MHz
(0000 followed by # erases the SWEEP-range memory) |
| -2 | End frequency | min. starting frequency,
max. 29.999.99 MHz |
| -3 | Step width | max. 10 kHz, min. 10 Hz |
| -4 | STEP-time | 0.1 sec. to 0.9 sec. in 0.1 sec.-steps |
| -5 | Dwell-time | 0 sec. to 9 sec. in 1 sec.-steps
Entry 0 =SWEEP-STOP; to continue, enter # |
| -6 | Threshold value | 05 to 95 dB μ V in 5 dB μ V-steps |

The indication of all entry parameters appears on the Frequency-Display. As to facilitate the entry, the momentarily not used spaces on programming the values -3 to -6 are filled up with a ' ' sign with the aim of easily recognizing the number of entered digits. Only the 10 Hz-position cannot be marked in this way, due to the hardware configuration. With the programming of SWEEP-range memories and/or SWEEP-sequences in progress, the previously set receiving frequency is not being altered, i. e. one may keep on receiving with the 'old' frequency.

Special functions of keys * and # on programming

- * On entering the range number backspaces the entry step by step

After entering the memory No. the following functions result:

- * In first position of an entry step backspaces one step (# goes to the next entry step)
- * During the entry of multi-digits parameters clears the just entered positions and shows again the former value parameter. # fills the remaining positions of the parameter with zeros but does not yet lead to the next entry step.

After complete entry of a new parameter this is stored by # (ENTER-key).
Simultaneously a transit to the next entry step is performed.

Example:

Frequency range 7.5 MHz to 8.0 MHz
Step width 5 kHz
STEP-TIME 0.4 sec.
Dwell time 5 sec.
Threshold 50 dB μ V

Starting the programming with entry 43.

Entry	CLOCK	CH	FREQUENCY	Remarks
				Condition before entry
4				
3				LED 41 •
0				1 st position of range memory number
1				Previous starting frequency
0				Entry of new starting frequency
7				
5				
#				Starting frequency filled up with zeros
#				ENTER starting frequency previous end frequency

- LED lights
- o LED does not light

Entry	CLOCK	CH	FREQUENCY	Remarks
0				Entry of new end frequency
8				
#				End frequency filled up with zeroes
#				ENTER end frequency display of previous step width
0				Entry of new step width
5				
#				
#				ENTER step width display of previous step time
0				New STEP-time 0.4 sec.
4				
#				ENTER step time display of previous dwell-time
#				Dwell-time remains unchanged ENTER dwell-time display of previous threshold
5				New threshold value 50 μ V
0				
#				ENTER new threshold

In this position the programming of the SWEEP-range is finished and the programming can be closed by entering -40.

In case -40- is not entered, the programming of the next SWEEP-range memory starts which can be programmed in a similar fashion.

If a programmed parameter of a SWEEP-range memory is required to be checked again, this can be done when the entry of the last parameter is finished (i.e.: before closing the programming by entry of -40-).

Entry	CLOCK	CH	FREQUENCY	Remarks
*				Check threshold value range-memory 01
*				Dwell-time range-memory 01
*				Step-time range-memory 01
*				Step width
*				End frequency
*				Starting frequency
4				Finish SWEEP-programming
0				Old condition is displayed again LED 41 o

Being in the first position of the entry step for the starting frequency in the range memory 01, the entry of * does not step back to the range 20. Instead, there is a return to the entry of the range number and, on entering a further *, the operator leaves programming of the SWEEP - range memories.

Entry	CLOCK	CH	FREQUENCY	Remarks
				Starting frequency
*				LED 41 •
*				LED 41 o
*				Old condition

- LED lights
- o LED does not light

Error display

Error display appears on the corresponding position of the display by an 'E'. In case an error takes place on the entry of the 10 Hz-position, the error is written on the 100 Hz-position, and the data must be also entered again. A display on the 10 Hz-position is not possible, for hardware reasons.

Entry	CLOCK	CH	FREQUENCY	Remarks
3				Frequency too high
2				
#				
#				
1				End frequency < starting frequency
2				
2				
#				
#				
0				
0				
0				
0				Step width too low
0				
5				
#				etc.

2.3.3.3 Clearing of SWEEP-ranges

Entry	CLOCK	CH	FREQUENCY	Remarks
4				
3				
1				
5				
0				
0				
0				
0				Range memory 15 to be cleared Continue with #, With * the previous starting frequency can be recalled
#				Range memory 15 is cleared now. Range memory 16 is displayed

NOTE

An entry of less than 4 zeroes followed by # does not lead to clearing of the range but to an error display indicating that the frequency is too low.
When looking up the SWEEP-ranges only the starting frequency 00.000.00 of cleared ranges is displayed which immediately is followed by the next range.

Entry	CLOCK	CH	FREQUENCY	Remarks
				Dwell-time range-memory 14
#				Threshold value range memory 14
#				Range memory 15 cleared
#				Starting frequency range memory 16 etc.

2.3.3.4 Entry and start of the SWEEP-sequence

For starting a SWEEP-sequence, 42 is followed by a sequence of range memories to be searched and # entered for start. All entries until start of sequence can be stepped and reset by *.

After entry of the range memory number, the starting frequency, resp. 00.000.00 with a cleared range memory or '0-0-0-0' with an incompletely programmed range memory, is displayed. A SWEEP-sequence being already entered previously can be recalled by 42 and started again with #.

Cleared, or incompletely programmed SWEEP-range memories are skipped if they are included in the sequence.

A sequence consisting only of cleared, or incompletely programmed range memories, cannot be started. An error is displayed by P 42 E. This indication also appears if no sequence has been stored.

Example: Sweeping through the programmed range memories 02, 03 and 08:

NOTE

In contrast to the CH-SCAN-mode, the channel display remains blank during the SWEEP-sequence.

Entry	CLOCK	CH	FREQUENCY	Remarks
4				
2				LED 41/42 •
1				Entry error, should be 0
*				Error eliminated
0				
2				Starting frequency range memory 02
0				Next range memory
2				Error, should be 3
*				Error eliminated
3				Range memory 03 incompletely programmed
0				Next range memory
8				Starting frequency range memory 08
#				SWEEP starts with range memory 02

etc.

- LED lights
- o LED does not light

2.3.3.5 Manual interruption and stopping the SWEEP-sequence

Similar to CH-SCAN the SWEEP is being interrupted by any key and stopped with 0, or continued with another key entry

Entry	CLOCK	CH	FREQUENCY	Remarks
X				SWEEP-break by any key
X				SWEEP-continued by any entry except 0
X				Repeated interruption
0				SWEEP stopped, LED 41/42 o

- * • LED lights
- o LED does not light

2.3.3.6 External SWEEP-interruption

IF, during the SWEEP-sequence, the input "SCAN -Stop extern" is active (=low) the searching sequence will be interrupted until it changes to inactive. This state is indicated by P in the tens place of the channel display.

NOTE

A manual SWEEP-interruption is indicated by P in the unit place of the channel display. Should both interruptions happen simultaneously this state will be indicated by PP, and the SWEEP run can be continued only after cancelling both break parameters.

2.3.3.7 Internal SWEEP-interruption by AGC-evaluation

Internal level monitoring is done by comparing the AGC-voltage with a preset threshold.

The AGC-voltage value is scanned for the first time after 200 ms after setting of a new frequency (and after 100 ms related to a STEP-time of 0.1 sec.) and again after 200 ms, with a correspondingly longer STEP-time, resulting up to 4 scanning values of which the mean value is formed for evaluation. In case the formed average value is above the chosen threshold value, the set frequency is held during the programmed Dwell-time. This state is being indicated by ' - ' on the channel display. If the Dwell-time was programmed with 0, a P is displayed in the same way as for manual interruption, and any key - except 0 - has to be pressed for SWEEP continuation. The 0-entry stops the SWEEP-sequence.

NOTE

The correct AGC-operational mode must be selected manually!
In the DSB-mode (11) the interruption is done only when the detected level of the received station drops again and the level is then above the threshold. This is to make sure that the received station is tuned near its correct frequency (in actual fact, one sweep step beyond).

Remarks concerning all stated time values

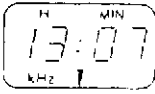

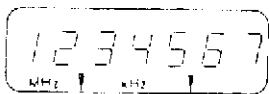
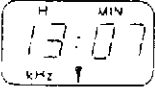
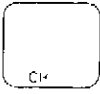
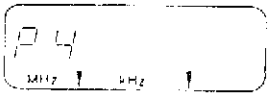
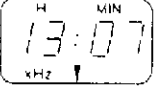

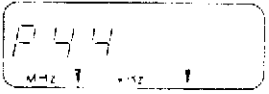
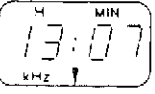


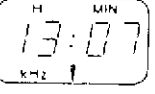

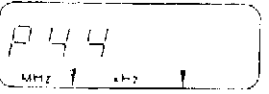
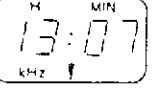

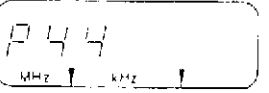
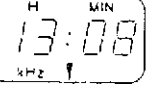

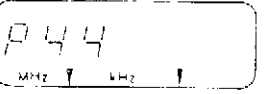
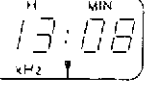
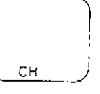

All stated time values have tolerances of about $\pm 20\%$.

2.3.3.8 Indication of a SWEEP-STOP by AGC-evaluation to outside peripherals

If during SWEEP, a busy channel is found and the sequence interrupted due to exceeding the chosen threshold value, this state could be transmitted to a connected computer by activating the DTR line of the serial interface if the remote control is internally set to the operational mode Computer control (S 2/3 on I/O PCB ON). This external computer could now scan frequency and RF-level via the interface.

2.3.3.9 Checking the programmed SWEEP-sequence of range memories

A SWEEP-sequence being already programmed can be reviewed with the entry 44. The first range memory number is indicated on the channel display. By pressing # the next range memory number is displayed, and by pressing *, the previous one. If # is entered during the indication of the last number, and * during the indication of the first number, the SWEEP-sequence check is finished.

Entry	CLOCK	CH	Frequency	Remarks
				
4				
4				1 st SWEEP-range memory displayed
#				Next range memory
#				Next range memory
*				Previous range memory
#				Next range memory
#				Review finished

With 40, the SWEEP-sequence check can be stopped and the receiver is set to the last frequency and operational mode.

2.3.4 Special Commands used in Conjunction with CHANNEL-SCAN and Frequency-SWEEP

CHANNEL-SCAN

- 45 Range memory programming
- 41...# Linking of channel range memories into a scan sequence
- 46 Reviewing scan sequence
- 49 Resume scanning after exit out of channel scan (40)

Frequency-SWEEP

- 43 Range memory programming
- 42...# Linking of frequency range memories into a SWEEP-sequence
- 44 Review of SWEEP-sequence
- 49 Resume Frequency-SWEEP after exit out of sweeping (40).

2.3.5 Scan CH + CH Refer to chapter 2.3.2.10 on page 2-35

2.3.6 RESET Function

If the receiver RX 1001 M / RX 5001 is not able to accept further entries via the keyboard any more this indicates that the program is hung up. The receiver has to be reset by the following operation:

1. Switch OFF the receiver.
2. While pressing the key ERASE CHANNELS.
3. Switch ON the receiver again.

The receiver defaults to its basic setting.

- Frequency 02,182,00 MHz
- Mode: 11 "A3E/A2A"
- AGC: 61 "AGC LONG"
- IF-bandwidth 88 6.00 kHz

By R E S E T, all program memories will be cleared.