DOC'S RADIO REPAIR

PRESIDENT

HR2510 / HR2600 / LINCOLN

10 Meter Amateur Transceiver

CHIPSWITCH

OWNERS MANUAL

Revised August 28th, 2000

http://hr2510.freeservers.com/

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FIRST TIME INSTALL / POWER UP

The first time the **HR2510/HR2600/LINCOLN** is powered up, after the ***CHIPSWITCH*** has been installed, you will be required to enter the type of **radio** you are using. The **radio** will display **"HR2510"** as the first choice, **"HR2600"** as the second choice and **"LINCOLN"** as the third. Press the **Span** button until the type of radio you have is displayed on the readout. Then press the **Band** button to enter that selection into the **microcomputer's** memory. You are only required to do this when the ***CHIPSWITCH*** is installed into your **radio** for the first time, or if you issue a **MASTER RESET** command.

Note: If your radio is turned off for an extended period of time, or if a severe electrical disturbance (sparking wires, shorts, etc.) Is caused on the power supply to the radio, the internal memory inside the microcomputer chip may 'forget' what you have programmed into it. If this should happen, your radio will display '**HR2510**' and you will need to re-program it just as you did when the chip was first installed. Also, a severe electrical disturbance may cause your radio's memory to become 'confused', causing improper frequencies or strange characters to be displayed on the readout. If this should happen, invoke a **MASTER RESET** function and then re-program the radio.

ENABLE/DISABLE FUNCTIONS

While the **HR2510 / HR2600 / LINCOLN** is in **OPERATE MODE**, you can **enable** or **disable** any of the **radio**'s major functions from the front panel. Some of these functions are not operational in specific **"BANDS."** The display segment before the frequency readout indicates which function is enabled.

FUNCTION	BAND	INDICATION	KEYS PRESSED
Program Mode En/Disable	0,1,2,3	P (Band pos)	F.lock/Meter(3)/Chan Up
Memory Chan Temp. Lockout	1,2,3	Top Bar	F.lock/Span/Chan DN
Scan Limits ON/OFF	0	Bottom Bar	F.lock/Band/Span
Split Freq. OPNS. ON/OFF	0	H/L	F.lock/Band/Chan DN
Split Freq OFFSET change(1)	0	H/L	F.lock/Scan/Chan UP
Priority Channel ON/OFF(2)	0,1,2,3	Flashing Band	F.lock/Scan/Chan UP
Go to PRIORITY CHANNEL	0,1,2,3	P	F.lock/Scan/Meter(3)
MASTER RESET	0,1,2,3	Hr2510	F.lock/Scan/Meter(3)/Pwr ON

NOTE:

(1) This function will only work if **PRIORITY CHANNEL** frequency is not programmed.
(2) This function will only work if **PRIORITY CHANNEL** frequency is programmed.
(3) On the **LINCOLN** radio, use **INDICATOR** instead of **METER**

PROGRAM MODE

This function enables you to program the new CHIPSWITCH features on the **HR2510 / HR2600 / LINCOLN**.

Step 1. Press the **F.lock** button in.

Step 2. Press the **Meter** (**INDICATOR** for the **LINCOLN**) and **Channel up** buttons simultaneously

The **radio** notifies you that you are in **PROGRAM MODE** with **"**4 beeps", and a "**P**" is displayed in the **Band** indicator. At this point, you are able to program any of the **46 FEATURES** outlined in the **PROGRAMMING** section of this manual.

MEMORY CHANNEL TEMPORARY LOCKOUT

This enables you to temporarily lockout any user-programmed frequency(s) for **SCAN** and **SEEK** functions. To enable or disable this toggle function:

Step 1. Assuming frequencies were programmed into any **memory group**, go to any **MEMORY BAND** *(Band 1, 2 or 3)* where you wish to **scan** or **seek.**

Step 2. Choose the frequency(s) you wish to lockout temporarily using the **CHAN UP** or **CHAN DN** buttons.

Step 3. Press the **F.lock** button in.

Step 4. Press **Span** and **CHAN DN** buttons simultaneously. (Top bar indicator comes on)

Step 5. Release the **F.lock** button.

Step 6. Start the **SCAN** or **SEEK** function.

At this point the frequency(s) that were ***"locked-out"*** will not be included when you perform the **SCAN** or **SEEK** function on that particular **MEMORY GROUP**.

SCAN LIMITS ON/OFF

This toggle function allows you to enable or disable the **SCAN** and **SEEK** frequency limits for **Band 0**. If this toggle function is enabled, and a lower and an upper frequency limit is programmed in **FEATURE 3 and 4**, the radio will scan or seek only between these frequencies. To enable and use this feature:

Step 1. You must be in Band 0, and have **FEATURE 3 and 4** programmed with the limits
Step 2. Press the **F.lock** button in
Step 3. Press the **Band** and **Span** buttons simultaneously (Bottom bar indicator comes on)
Step 4. Release the **F.lock**
Step 5. Press the **Scan** button

At this point the **radio** will either **SCAN** or **SEEK** depending on the value programmed in **FEATURE 5**. If a **scan** value (0-3) is programmed in **FEATURE 5**, the **scan** hold time rate will be determined by **FEATURE 6**. **Squelch** has to be closed for the **SCAN** function to work properly. If a **seek** value (4-7) is programmed in **FEATURE 5**, the **seek** hold time will be determined by **FEATURE 7**.

SCAN and **SEEK** also functions in **BAND 1, 2 and 3**. The difference being that in these **memory bands**, you either **scan** or **seek** through the **MEMORY CHANNELS** previously programmed in these **MEMORY BANDS**.

SPLIT FREQUENCY OPERATIONS ON/OFF

This toggle function allows you to transmit on one frequency while receiving on another. The **Split Frequency** feature is **only available in Band 0.** To enable and use this function:

Step 1. Go into **PROGRAM MODE**

Step 2. Go to **FEATURE 1** and enter a value for your **TX/RX** offset (000.1 - 999.9)

Step 3. Go to **FEATURE 2** and choose whether the offset will be **positive (1) or negative (0)**

Step 4. Exit **PROGRAM MODE** Now you must be in **Band 0**

Step 5. Press the **F.lock** button in.

Step 6. Press **BAND** and **CHAN DN** buttons simultaneously. Either an ***"H" or "L"*** indicator will come up depending on the value programmed in **FEATURE 2**.

Step 7. Release the **F.lock** button.

Step 8. Choose a ***receive frequency***

At this point you are ready to communicate in **SPLIT FREQUENCY** mode.

OPERATING IN SPLIT FREQUENCY MODE

To use this function reliably, the two parties involved in the **QSO** must be versed on operating split channels. Two users are mentioned in the explanation below, **OPERATOR A** and **OPERATOR B**, to better understand the procedures.

Step 1. **Operator A** and **Operator B** must have the **SAME** offset programmed in **Feature 1.**

Step 2. **Operator A** and **Operator B** must have **OPPOSITE** polarity programmed in **Feature 2**.

Step 3. **Operator A** chooses his **receive** frequency using the **VFO, CHAN UP/DN or MIC UP/DN** buttons.

Step 4. **Operator B** moves to his **receive** frequency, which is **Operator A's** transmit frequency, using the **VFO, CHAN UP / DN or MIC UP / DN** buttons.
Note: Operator B's **receive frequency = (**Operator A's **receive frequency)** + **or** - **(**offset **in** Feature 1**) The** + **or** - **is determined by** Operator A's **polarity in** Feature 2**.**

Step 5. **Operator A** and **Operator B** enables **SPLIT FREQUENCY OPERATIONS**

Step 6. Start Communicating

SPLIT FREQUENCY POLARITY CHANGE

The **SPLIT FREQUENCY POLARITY** is initially programmed in the **PROGRAM MODE**. In some instances, you may wish to change polarity without having to go into Program mode. To use this feature:

Step 1. Press **F.lock** button in.

Step 2. Press **Scan** and **CHAN UP** buttons simultaneously.

Step 3. Release the **F.lock** button

****Note:*** This toggle function will only work if **PRIORITY CHANNEL** frequency is not programmed. This is because the same buttons are used for both, and the **PRIORITY CHANNEL ON / OFF** function has precedence.

PRIORITY CHANNEL ON/OFF ***REQUIRES ADDITIONAL HARDWARE***

When enabled, this function allows you to continuously monitor one frequency while operating on another. To enable this function:

Step 1. Go into **PROGRAM MODE.**

Step 2. Enter a frequency in **FEATURE 44.**

Step 3. Exit **PROGRAM MODE.**

Step 4. Press the **F.lock** button in.

Step 5. Press the **Scan** and **CHAN UP** buttons simultaneously.

Step 6. Release the **F.lock** button.

*****Note:*** This function requires the **Priority Channel PC Board** to be installed in your radio. This is an option in addition to the ***CHIPSWITCH*** IC. For inquiries about this feature you can visit our site on the internet.

PRIORITY CHANNEL CHECK & LOCK

FEATURE 45 allows you to select **PRIORITY CHANNEL** functionality. If you choose a value between **0 and 3**, the **priority channel** selected in **FEATURE 44** will be checked and the **radio *"beeps"*** to notify you of any activity on that channel. This **feature** only notifies you of activity on the **priority channel**. To lock on to the **priority channel**, you will have to perform the steps below.

Step 1. Press the **F.lock** button in.

Step 2. Press **Scan** and **METER** (**INDICATOR** for the **LINCOLN**)

Step 3. Release the **F.lock** button

If you choose a value between **4 and 7**, the **priority channel** will be checked for activity. If the **squelch** is broken, the **radio** will ***"lock"*** on to the priority channel and remain there until the activity ceases. To keep the radio from returning to the original operating frequency when activity ceases on the priority channel, press the **F.lock** button in.

MASTER RESET

Step 1. Power off the radio.

Step 2. Press the **F.lock** button in.

Step 3. Press and hold the **SCAN** and **METER** (**INDICATOR** for the **LINCOLN**) and turn the radio on all at the same time.

This **FUNCTION** erases all user programmed values and installs the **factory default values.** This **FUNCTION** also brings the radio to a **"First-Time Install"** state.

USING SPLIT CHANNEL with PRIORITY CHANNEL FUNCTION

If both the **SPLIT FREQUENCY OPERATIONS** and **PRIORITY CHANNEL** functions are enabled, the **SPLIT FREQUENCY OFFSET CHANGE** function is disabled because the same set of keys is used to enable the **PRIORITY CHANNEL** function.

With the **squelch** closed, the **SPLIT FREQUENCY OPERATIONS** will function as it should. As soon as the **priority channel squelch** is broken, the **radio** will switch to the **priority channel**.

If you lock on to the **priority channel** and transmit at this time, both the **SPLIT FREQUENCY OPERATIONS** and **PRIORITY CHANNEL** functions will be disabled and you will be transmitting on the **priority channel**.

OPERATE MODE

While in the **OPERATE MODE**, all original **radio** functions and buttons work as they did before **EXCEPT** for the following:

BANDS: (Selected by pushing the BAND Button)

BAND	NAME
0	Frequency Band
1	Memory group 1
2	Memory group 2
3	Memory group 3
4	Citizens' Band

Note: This is not a Citizens Band radio, although the **HR2510 / HR2600 / Lincoln** amateur transceivers will transmit in this band it is a violation of US Federal Law to do so unless you've adjusted your radio to comply with FCC Regulations for transmit power and modulation. If you aren't in the United States check your local rules and regulations regarding operations in the 11 meter band.

FREQUENCY BAND (0)

This is the entire tuning range of the **HR2510 / HR2600 / LINCOLN**. Some user defined functions in **PROGRAM MODE** are available only on this band (i.e., **SCAN/SEEK LIMITS, SPLIT FREQUENCY OPERATION)**. The radio's **Channel UP/ DN** and the **Microphone UP/DN** buttons control any frequency change as selected in the **PROGRAM MODE** features 8 and 9. The radio's **VFO** knob works as before.

MEMORY GROUP 1 (1)

A maximum of **10 frequencies** can be stored in this memory group. In this band, channel numbers **(0 - 9)** appear on the display with the user-programmed frequencies. A **minus (-) 100 kHz REPEATER OFFSET** can be selected on a channel-by-channel basis in the **PROGRAM MODE**. This is indicated by the blinking **10MHz segment** of the front panel display. Frequencies/channels previously programmed can be temporarily **locked-out** from the **SCAN/SEEK** function using the **MEMORY LOCKOUT FUNCTION**.

MEMORY GROUP 2 (2)

This is the second group of memory channels and is operationally identical to **MEMORY GROUP 1 (1)**.

MEMORY GROUP 3 (3)

This is the third group of memory channels and is operationally identical to **MEMORY GROUP 1 (1)** and **MEMORY GROUP 2 (2)** ***EXCEPT*** this band operates on a **PLUS (+) 100 KHZ REPEATER OFFSET** if this option is chosen in the **PROGRAM MODE**.

SCAN, CHANNEL UP/DN, AND MIC UP/DN

These functions are user-programmable in the **PROGRAM MODE**.

LOCAL BEEP TONE

The local beep tone can now be disabled or programmed from 1/20th second **"click"** to a one second long tone.

PROGRAM MODE

Most of the features have been pre-programmed from the factory and will have default values stored in memory. You will have to determine which features (detailed in the next section) you wish to change.

To enter **PROGRAM MODE**:

Step 1. Press the **F.lock** button in.

Step 2. Press the **CHANNEL UP** and **METER** buttons simultaneously.

When the **HR2510 / HR2600 / LINCOLN** goes into **PROGRAM MODE** you are notified by ***"4 - beeps"*** and the **BAND** indicator will display a ***"P"*** indicating the **radio** is in **PROGRAM MODE**. In this mode, the **METER** display (**RF**, **MOD**, **^**, **SWR**) will be blank. The **CHANNEL NUMBER** display will show ***"0"*** indicating the first enhanced **FEATURE** (**BEEP ON-TIME**) programmable by you. The **FREQUENCY** display will have the right-most digit (**100Hz**) illuminated with the default value for this **FEATURE**.
You can review / change the values of any of the **46 FEATURES** using the **CHANNEL UP/DN** buttons and **VFO** knob of the **radio**. The **Channel Up/Dn** buttons select which **FEATURE**, and the **VFO KNOB** changes the **VALUE** of that feature.

CAUTION: **Leave the** F.lock **button depressed to prevent accidental programming if you are just going to view the programmable features. If you plan to change the value for a particular** FEATURE**, the** F.lock **button must be in the** *"out"* **position for the** VFO **knob to work.**

To exit the **PROGRAM MODE**:

Step 1. Press the **F.lock** button in.

Step 2. Press the **CHANNEL UP** and **METER** buttons simultaneously. The **radio** will ***"beep"*** once and return to the **OPERATE MODE**.

PROGRAMMING

The following is a detailed explanation of all the **PROGRAMMABLE FEATURES** and how you can program each individual **FEATURE**:

FEATURE	NAME	DESCRIPTION	VALUE
0	Beep On Time	Duration of the beep tone whenever certain buttons are pressed	0 = Off 1 = 1/20th second 2 = 1/10th second *default 3 = 1/5th second 4 = 1/2 second
1	Split Frequency Offset	Transmit Offset	Offset can be set at; 000.1Khz - 999.9Khz
2	Split Frequency Offset Polarity	Transmit Offset Polarity positive / negative	0 = Negative (L)*default 1 = Positive (H)
3	Scan / Seek Lower Frequency Limit	Lower limit used during scan / seek operations in band 0	Frequency
4**	Scan / Seek Upper Frequency Limit	Lower limit used during scan / seek operations in band 0	Frequency
5	Scan / Seek function select Seek is identical to scan except seek will resume after [*seek hold time] delay regardless of activity or frequency. ZLD = Zero lower digit(s) SLD = Skip lower digit(s)		
6	Scan hold time	The delay from when a remote station quits transmitting and the scan sequence continues on your HR2510 / HR2600 / LINCOLN	0 = .5 seconds 1 = 1 second 2 = 2 seconds 3 = 3 seconds*default 4 = 4 seconds 5 = 5 seconds 6 = 6 seconds 7 = 7 seconds

	VALUE	BAND 0	BANDS 1, 2, 3
SCAN	0	10Khz ZLD	Scan Memory Channels
	1	10Khz SLD	
	2	5Khz ZLD	
	3	5Khz SLD	
SEEK	4	10Khz ZLD	Seek Memory Channels
	5	10Khz SLD	
	6	5Khz ZLD	
	7	5Khz SLD	

****NOTE: SCAN/SEEK** by these limits is only functional in **Band 0**. If no values are entered in **feature 3** and **feature 4**, the radio's lowest and highest operational limits are used as defaults during **SCAN / SEEK**.

PROGRAMMING *(continued)*

FEATURE	NAME	DESCRIPTION	VALUE
7	Seek hold time	When in seek mode, the delay from when the radio begins receiving a signal and the seek sequence continues	0 = .5 seconds 1 = 1 second 2 = 2 seconds*default 3 = 3 seconds 4 = 4 seconds 5 = 5 seconds 6 = 6 seconds 7 = 7 seconds
8	Channel Up/Down button function	Defines what the Channel up and Channel down buttons will do in Band 0	0 = 10Khz ZLD*default 1 = 10KHz SLD 2 = 5KHz,ZLD 3 = 5KHz,SLD 4 = 100Hz 5 = Underlined digit
9	Microphone Up / Down button function	Defines what the Channel up and Channel down buttons on the microphone will do	0 = 10Khz ZLD*default 1 = 10KHz SLD 2 = 5KHz,ZLD 3 = 5KHz,SLD 4 = 100Hz 5 = Underlined digit 6 = In band 0 do as in feature 8(above). In band 1, 2, 3, or 4, change channel number. 7 = In band 0 do as in feature 8(above). In band 4 change channel number.
10 - 19	Memory group 1 (channel 0 - 9)	10 channels can be defined under this memory group	Frequency
20 - 29**	Memory group 2 (channel 0 - 9)	10 channels can be defined under this memory group	Frequency

****NOTE:** To use the automatic **minus (-) 100KHz repeater offset** under **MEMORY GROUP 1 and 2**, press the **SCAN** button after entering the frequency. The **10MHz** digit will blink to indicate that this channel has been programmed to use the **OFFSET** option. To disable, press the **SCAN** button again.

PROGRAMMING *(continued)*

FEATURE	NAME	DESCRIPTION	VALUE
30 - 39 **	Memory group 3 (channel 0 - 9)	10 channels can be defined under this memory group	Frequency
40	TX lower frequency limit	Defines the lowest operational transmit frequency for the HR2510 / HR2600 / LINCOLN	Frequency
41	TX upper frequency limit	Defines the highest operational transmit frequency for the HR2510 / HR2600 / LINCOLN	Frequency
42	TX time out	When enabled, the timer starts as soon as the HR2510 / HR2600 / LINCOLN starts transmitting and counts up the user specified length of time. The radio will stop transmitting and display "Err 0" when the timer has expired.	0 = Disabled *default 1 = 25 seconds 2 = 42 seconds 3 = 58 seconds 4 = 75 seconds 5 = 92 seconds 6 = 109 seconds 7 = 126 seconds
43	Repeat key speed	This allows you to change the repeat key rate of the channel up/down and microphone up/down buttons.	0 = fast 2 = default 9 = slow
44	Priority channel function select	use priority frequency *IE, home frequency*	Frequency

****NOTE:** To use the automatic **plus (+) 100KHz repeater offset** under **MEMORY GROUP 3**, press the **SCAN** button after entering the frequency. The **10MHz** digit will blink to indicate that this channel has been programmed to use the **OFFSET** option. To disable, press the **SCAN** button again. **Any memory channel with a frequency of** 00.000.0 **is un-programmed and will be skipped during the** OPERATE MODE**. To erase a frequency from any** MEMORY GROUP**, ensure the** F.lock **button is out, then press the** BAND **button to set the frequency to** 00.000.0**.**

FEATURE	NAME	DESCRIPTION	VALUE
45	Priority channel function select	allows you to select which type of priority channel checking will be used. The first four choices check the priority channel and "beeps" you for any activity.	**Check & Beep** 0 = 2 seconds *default 1 = 4 seconds 2 = 6 seconds 3 = 8 seconds **Check & Lock** 4 = 2 seconds 5 = 4 seconds 6 = 6 seconds 7 = 8 seconds

GENERAL PROGRAMMING NOTES:

default = The first time the ***CHIPSWITCH*** is installed on the **HR2510 / HR2600 / LINCOLN**, these are the values that will be displayed upon entering **PROGRAM MODE**.

Any **frequency** type **feature** may be **erased** in program mode by pressing the **BAND** button with the **F.Lock** button out.

SERIAL NUMBER DISPLAY

To display the **SERIAL NUMBER** of the ***CHIPSWITCH*** **IC**, perform the following:

Step 1. Prepare to enter **PROGRAM MODE**. Hold the microphone in one hand and prepare the other hand to press the buttons necessary to enter the **PROGRAM** mode.

Step 2. Press the buttons necessary to enter **PROGRAM MODE**. **AFTER** the first of the 4 'beep', but **BEFORE** the end of the 4th 'beep', press in the microphone's **PTT** (transmit) button.

The chip's **serial number** will now be displayed for as long as you keep holding in the microphone's **PTT** button.

Note: This is useful in case you ever need to know the chip's serial number, but didn't write it down.

ERROR MESSAGES

If the **HR2510 / HR2600 / LINCOLN** detects an error with any of the programmed data, or during **OPERATE MODE**, an **ERROR CODE** will be displayed on the frequency display. The format of the **ERROR CODE** is as follows:

"Err X" where X **is:**

0 = Transmitter Timeout timer has timed-out

1 = Transmit Frequency is lower than TX Lockout Lower Limit (programmed)

2 = Transmit Frequency is greater than TX Lockout Higher Limit

3 = Phase-locked-loop (PLL) won't lock at this transmit frequency

4 = PLL is intermittently coming out of lock during transmit

If your radio displays error 3 or 4, don't keep trying to transmit on this frequency. The cause of the problem could be low power supply voltage to the radio or the radio's **VCO** loop needs adjustment. Refer to a qualified technician for service. Contact the installer of the chip first. If, however, you installed the chip yourself, contact Tom at (716) 893-2505. Tom is a dealer and installer of ***CHIPSWITCH*** products and will be happy to assist you.

MANUFACTURER INFORMATION

Dan Valentine (left) and Derrell Adams (right)

Dan programmed the Chipswitch IC and created the Priority PCB. Derrell kept him filled with suggestions for new features.

Derrell, being almost 80 years old decided to retire. He did most of the service and installations for the ***CHIPSWITCH*** IC. Since Derrell retired, the main point of contact for installations and availability of the CHIPSWITCH IC is Tom Bridge.

You can contact Tom Bridge at:

Internet: http://hr2510.freeservers.com/

Phone: (716) 893-2505 Monday - Friday 9AM - 5PM *Eastern Time.*

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