WJ-8718A/MFP

OPERATOR'S MANUAL

WARNING

This equipment employs dangerous voltages which may be fatal if contacted. Exercise extreme caution in working with this equipment with any of the protective covers removed.

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Figure 1-1. WJ-8718A/MFP Equipped WJ-8718A HF Receiver

INTRODUCTION

The WJ-8718A/MFP (Microprocessor Front Panel), when installed on a WJ-8718A HF Receiver, incorporates the following features:

- Local receiver control through momentary-contact pushbutton switches located on the MFP.

- Ninety-nine discrete (and one implicitly addressed) programmable memory channels. The memory channels are utilized to store front panel data. They may be accessed individually or scanned.

- A memory scan mode in which the receiver scans a selected group of channels.

- An f_1 to f_2 frequency sector scan mode in which the receiver scans a pre-programmed frequency sector.

- Remote control and monitor capability through utilization of an optional I/O Interface (WJ-8718A/232M or WJ-8718A/488M).

- A Master/Slave Hand Off feature which allows a WJ-8718A/232M or WJ-8718A/488M equipped MFP to hand off front panel data to one or more slave receivers.

- Flexibility designed into the front panel and firmware, allowing implementation of enhancements and modifications to the front panel and I/O interface.

A WORD TO THE OPERATOR

Figure 1-1 shows an MFP equipped WJ-8718A HF Receiver. All receiver parameters except RF GAIN level and AUDIO output levels can be controlled by utilizing one or more of the MFP's forty-eight momentary-contact pushbutton switches. The microprocessor circuitry translates the commands entered on these switches and updates the receiver parameters accordingly. The type of command entered dictates whether the parameters will be updated directly (desired parameters selected at the front panel), or indirectly (desired parameters set to those stored in one of the memory channels).

The front panel switches, LED indicators, and displays are used to control or monitor the storage of data into the memory channels, and the manipulation of the stored data during receiver operation.

The information contained in this manual is presented in two sections. **Section I** (Front Panel Description) briefly describes the general functions of the various controls, switches, indicators and displays. **Section II** (Operator Guide) provides detailed operation instructions and is intended for use as a reference.

SECTION I

FRONT PANEL DESCRIPTION

This section briefly describes the WJ-8718A/MFP features. In the interest of clarity, the various devices (controls, switches, LED indicators and displays) are discussed by functional group. Each description is accompanied by an illustration showing the front panel location of the devices in that group.

While many of the devices in a particular group have only one function, some are utilized in conjunction with the switches of other groups. The group descriptions are therefore of a general nature; for detailed operation instructions, see **Section II** of this manual.

1.1   POWER PUSH ON/OFF, CONTROL MODE GROUP
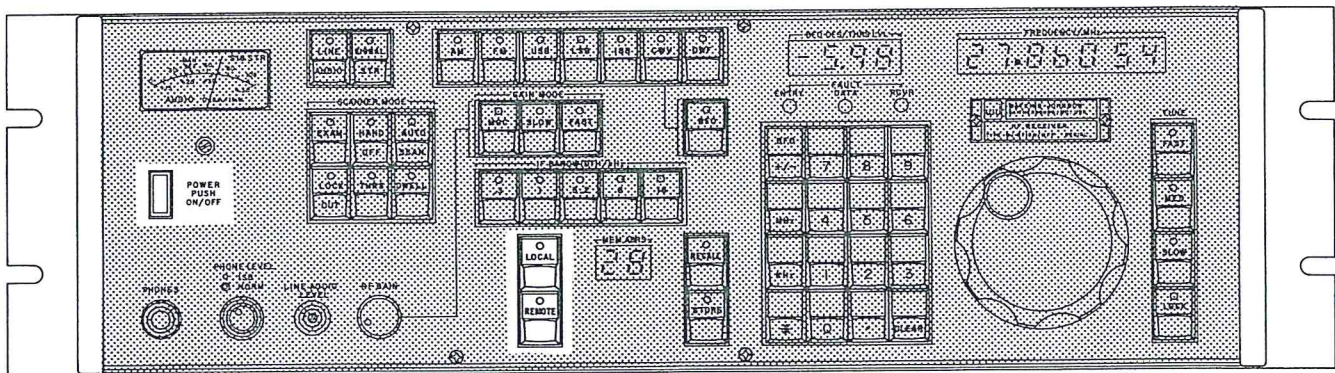
When power is applied to the receiver by depressing the POWER PUSH ON/OFF switch, the microprocessor control circuitry performs a RESET sequence. The sequence leaves the receiver in the local control mode.

The LOCAL and REMOTE switches are used to select the control mode (local or remote) of the receiver. The LED indicators on these switches indicate the present control mode.

1.2   HEADPHONE OUTPUT & VOLUME CONTROL GROUP
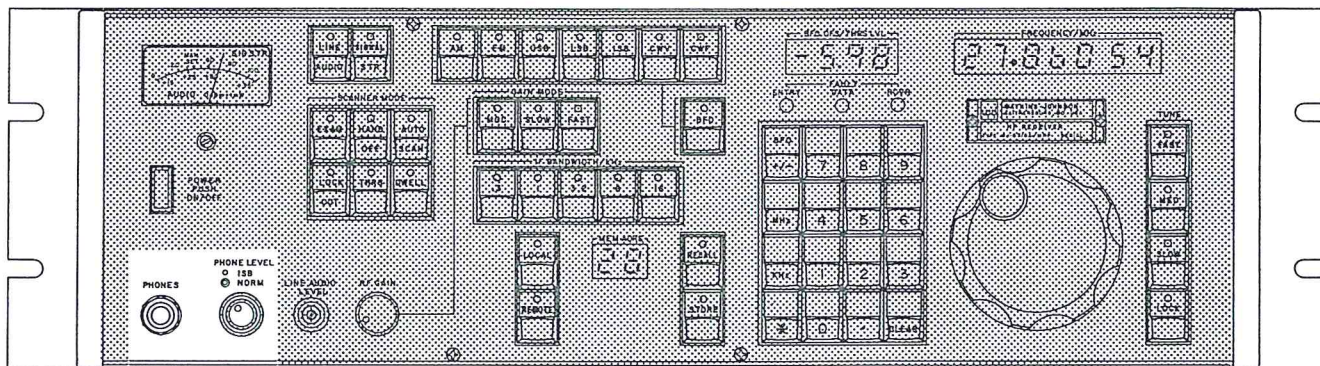
Audio signals from the receiver may be monitored at the front panel PHONES jack. This jack is designed to drive a 600 ohm stereo headphone set. When ISB detection mode is selected, both USB and LSB audio can be monitored simultaneously (USB audio at the tip contact and LSB audio at the ring contact). When detection modes other than ISB are selected, the line audio signal is present at both the tip and ring contacts, and can be monitored with either mono or stereo headphones.

The PHONE LEVEL control is a dual-concentric potentiometer. Rotating the outer ring of the control varies the level at the tip contact of the PHONES jack. Rotating the inner shaft varies the level at the ring contact of the PHONES jack. When a mono headset is utilized to monitor the audio signal(s), rotating the inner shaft will have no effect on the audio level.

1.3   FRONT PANEL METER, METER CONTROL GROUP
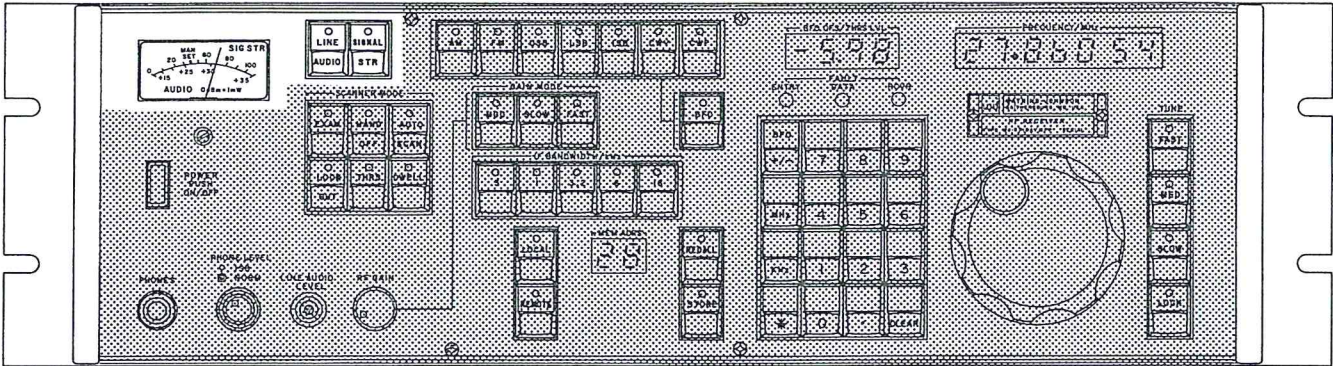
        The LINE AUDIO and SIGNAL STR switches are utilized to select the operational mode of the front panel meter. Selecting LINE AUDIO causes the LINE AUDIO LED indicator to light, and the meter to indicate the line audio level in dBm. Selecting SIGNAL STR causes the SIGNAL STR LED indicator to light, and the meter to indicate either a logarithmic indication of signal strength (AGC mode) or a near linear indication of signal strength (manual gain mode).

1.4   NUMERICAL DISPLAY, FAULT INDICATOR GROUP
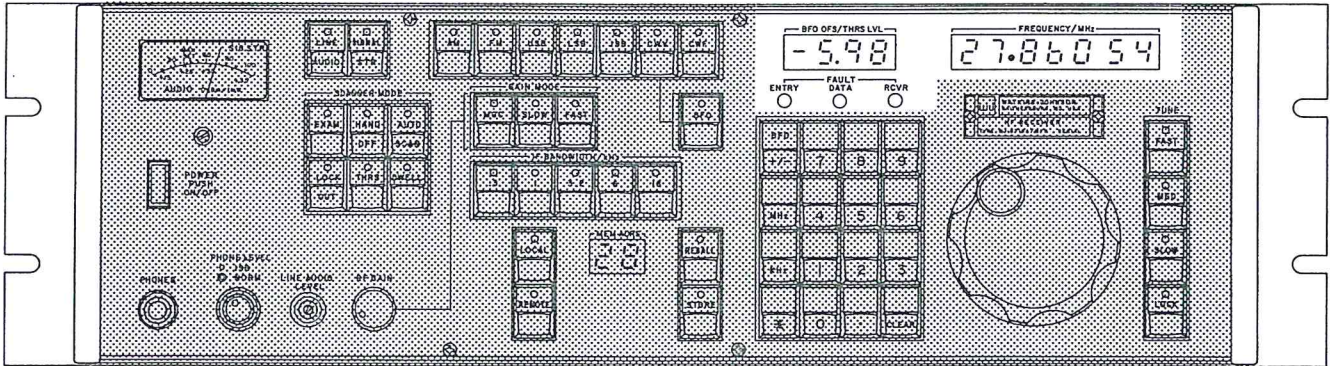
The three-digit and seven-digit numerical displays are primarily utilized to display BFO offset and RF tuned frequency respectively. The BFO offset and RF frequencies displayed may reflect the present receiver operating parameters or the BFO and RF tuned frequency data stored in one of the memory channels.

The BFO OFS/THRS LVL display is also utilized to display threshold level and dwell time. The FREQUENCY/MHz display is also utilized to temporarily display numerical entries made on the general purpose keypad (see paragraph 1.7).

The Microprocessor Front Panel contains three FAULT indicator LEDs. The DATA indicator will light during remote operation when invalid data is transferred in the remote data stream. The ENTRY indicator will light when an invalid entry is attempted during local or remote control operation. Once illuminated, the ENTRY indicator will remain on until a numeric switch entry occurs. The RCVR fault indicator glows red during normal operation if a power supply fault or LO unlocked signal is detected.

1.5   DETECTION MODE, GAIN MODE, IF BANDWIDTH GROUP
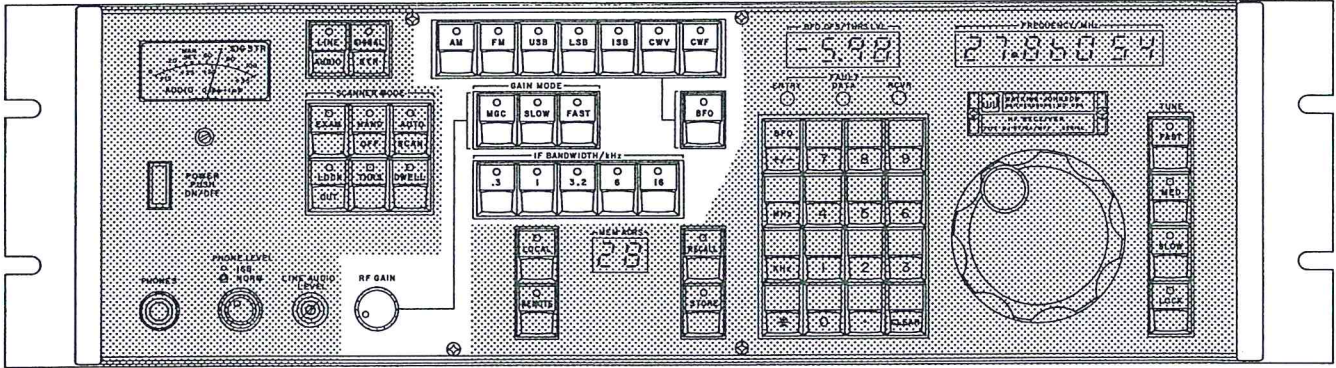
The switches in this group are utilized to select the desired detection mode, gain mode, and IF bandwidth. The available detection modes are (top row, left to right) AM, FM, USB, LSB, ISB, CWV (Variable) and CWF (Fixed). When the CWV mode is selected the BFO switch is utilized to enable the manual tuning of the BFO offset with the tuning wheel (see **paragraph 1.6**).

The available gain control modes are (second row, left to right) MGC (Manual), SLOW (AGC) and FAST (AGC). When MGC is selected, the RF Gain potentiometer is utilized to adjust the gain level.

The available IF BANDWITHS (third row, left to right) are .3, 1, 3.2, 6, and 16 kHz. They are selected at the IF BANDWIDTH/kHz switch block.

1.6   TUNING WHEEL, TUNING RESOLUTION GROUP
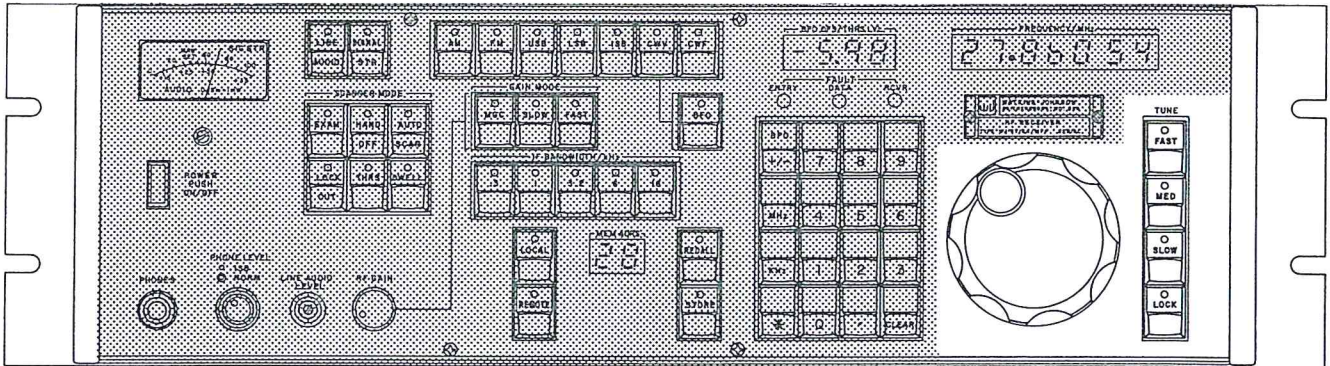
The manual tuning wheel and the switches in the TUNE switch block are utilized to adjust the receiver RF tuned frequency. Tuning steps of 1 kHz or 100 Hz are selected by depressing the FAST or MED TUNE switch respectively. Depressing the SLOW TUNE switch selects 10 Hz tuning steps on standard receivers, or 1 Hz tuning steps on receivers equipped with the 1 Hz Tuning Option (WJ-8718A/1 Hz).

In addition to tuning the receiver, the tuning wheel and tuning resolution switches are utilized to adjust BFO offset. When CWV detection mode is selected and the BFO enabled (see paragraph 2.2.7) the tuning wheel will adjust the BFO in the -8.00 kHz to +8.00 kHz range. On receivers equipped with optional 10 Hz BFO resolution, tuning steps of 100 Hz (FAST) or 10 Hz (SLOW) can be selected. The standard receiver BFO increments in only 100 Hz steps.

Pressing the LOCK switch disables the tuning wheel.

1.7   GENERAL PURPOSE KEYPAD GROUP
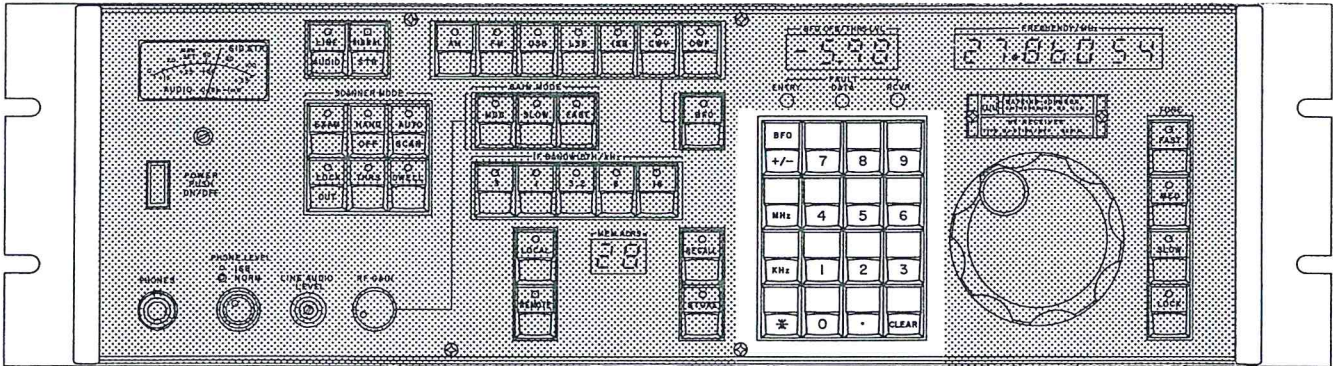
The general purpose keypad is similar in design and function to the type generally found on a hand-held calculator. The keypad allows the direct entering of a desired RF tuned frequency or BFO offset. It is also utilized to enter numerical data during other control operations.

General operating instructions for the general purpose keypad are contained in **paragraph 2.1.**

1.8   MEMORY OPERATIONS GROUP
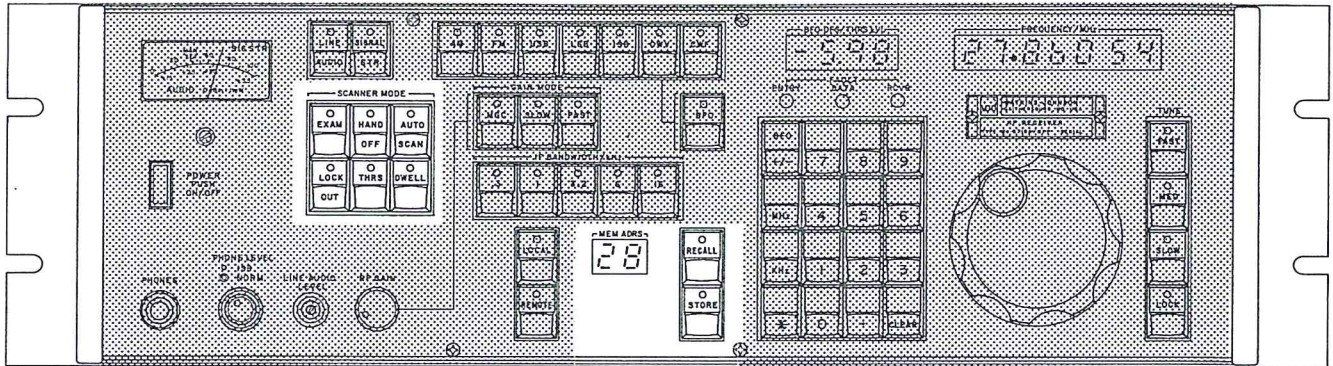
The switches, LED indicators, and MEM ADRS (Memory Address) display which make up this group are utilized during storage or recall of the data stored in the 100 memory channels, as well as during programming of memory scan and frequency sector scan operations. They are often utilized in conjunction with the general purpose keypad.

The Scanner Mode switches and LED indicators are used in various memory operations. The EXAM switch is used to display the parameters stored in memory without changing them. The HAND OFF switch is for Master/Slave hand off operations between receivers equipped with the WJ-8718A/232M or WJ-8718A/488M Remote Control I/O Option (see paragraph 2.6.5). The AUTO SCAN switch is used to initiate a sequential scan of the memory channels. The LOCK OUT switch is used to lock out a channel or group of channels from a memory scan. The THRS switch is used for entering a threshold level to be subsequently compared to a received signal strength. The DWELL switch is used during AUTO SCAN mode, when a dwell time must be selected. These switches are often utilized in conjunction with the general purpose keypad.

SECTION II

OPERATOR GUIDE

2.1   **GENERAL**

Local control of the receiver is accomplished through momentary-contact push-button switches arranged in functional blocks on the MFP. Some control operations require only a single keystroke. Others require entry of specific data on the general purpose keypad.

2.1.1   **GENERAL PURPOSE KEYPAD**

In **Section I** the general purpose keypad was said to be similar to the type found on a hand-held calculator. Numerical data entered on the numerical portion of the keypad (0-9 and decimal point), like entries on a calculator, must be followed by a termination command telling the microprocessor how to utilize the data. **Table 2-1** lists and briefly describes the MFP termination switches.

Numerical data entered on the general purpose keypad is displayed in calculator fashion in the FREQUENCY/MHz display window. Receiver operation is unchanged until a termination key is pressed. At that time the receiver's operating parameters are updated in accordance with the entered command. If an error is made when entering the data portion of the command, pressing the CLEAR key will clear the error and enable the data to be re-entered.

Table 2-1. Termination Switches

Switch	Function
MHz	RF frequency
kHz	BFO or RF frequency
RECALL	Memory address
STORE	Memory address
AUTO SCAN	Initiate scan mode
EXAM	Memory address
DWELL	Scan pause, in seconds
THRS	Signal level threshold
LOCK OUT	Memory address
Special Function (*)	See **paragraph 2.6**
CLEAR	Terminate BITE, Receiver BITE Tests and EXAM escape.
HAND OFF	Hand off MFP parameters to ad-dressed 232M or 488M receiver.

2.1.2   COMMAND PROCEDURES AND EXAMPLES

The command procedures and examples given in the remainder of **Section II** are intended as a reference guide. The procedures, shown in boldface type, are followed by one or more example commands illustrating a typical application of the procedure. Each example includes a brief description of the control operation performed. Each keystroke or group of keystrokes in the example commands are numbered to correspond to the numbered steps of the procedure being illustrated.

2.2   RECEIVER CONTROL

2.2.1   LOCAL/REMOTE CONTROL MODE

Pressing the LOCAL switch places the receiver in local control mode. Pressing the REMOTE switch places the receiver in remote control mode. The LOCAL and REMOTE LED indicators display the present receiver control mode.

Applying power to the receiver automatically places it under local control. After power-up, remote control mode may be selected manually at the front panel, or by an I/O instruction from the remote control device. If the LOCAL switch is depressed after power-up, the receiver will ignore instructions from the remote controller until remote control operation is selected by pressing the REMOTE switch.

2.2.2   DETECTION MODE

Selecting the desired detection mode is accomplished by pressing one of seven detection mode switches. LEDs on the detection mode switches indicate the selected detection mode. The available detection modes are AM, FM, USB, LSB, ISB, CWF, and CWV. The WJ-8718A/ISB Option must be installed in order to use the USB, LSB, and ISB detection modes.

2.2.3   GAIN MODE

Selecting the desired gain mode is accomplished by pressing one of the three GAIN MODE switches. LEDs on the gain mode switches indicate the selected gain mode. The available gain modes are fast AGC (FAST), slow AGC (SLOW), and manual gain control (MGC). When manual gain control is selected, the RF GAIN control potentiometer is utilized to adjust receiver gain to the desired level.

2.2.4   IF BANDWIDTH

Selection of the desired IF bandwidth is accomplished by pressing one of five IF BANDWIDTH/kHz switches. LEDs on the IF BANDWIDTH/kHz switches indicate the selected bandwidth.

When the receiver is operating in USB, LSB, or ISB detection mode, the sideband filter is automatically selected and the IF bandwidth is approximately 3 kHz. To indicate this, the 3.2 kHz IF bandwidth is automatically displayed. Pressing any other IF BANDWIDTH/kHz switch has no effect.

2.2.5   AUDIO/SIGNAL STRENGTH METER MODE

Selection of the desired front panel meter mode is accomplished by pressing one of the two meter mode switches. When LINE AUDIO is selected, the meter indicates the line audio level in dBm. When SIGNAL STR is selected, the meter indicates either a logarithmic indication signal strength (AGC Mode) or a near linear indication of signal strength (manual gain mode). LEDs on the LINE AUDIO and SIGNAL STR switches indicate the selected meter mode.

2.2.6   **RF TUNED FREQUENCY**

Adjusting the receiver tuned frequency is accomplished either by utilization of the tuning wheel and TUNE switches or by entering the desired tuned frequency on the general purpose keypad. The RF tuned frequency is displayed in the FREQUENCY/MHz display window.

When the tuning wheel is utilized to tune the receiver, turning the wheel clockwise or counterclockwise causes the receiver's tuned frequency to increase or decrease respectively. Selection of tuning step size is accomplished by pressing one of the TUNE switches. In standard MFP-equipped receivers, the selectable tuning step sizes are as follows: FAST (1 kHz steps), MED (100 Hz steps), SLOW (10 Hz steps). In receivers equipped with optional 1 Hz tuning resolution, pressing the SLOW switch selects 1 Hz tuning steps.

The RF-tuned frequency can also be adjusted by entering the desired frequency, in kHz or MHz, on the general purpose keypad. The following procedure enters an RF-tuned frequency. **Examples 1** and **2** show two typical RF tuned frequency commands.

●   **RF Tuned Frequency – Procedure**

   1)   **Enter numerical frequency data on keypad.**

   2)   **Terminate command by pressing MHz or kHz termination switch.**

Example 1:	Tune the receiver to 5.5 MHz.
[5] [.] [5] . . . .(1)	Data entry; "5c5" displayed in FREQUENCY/MHz display window.
[MHz] . . . .(2)	Termination command; receiver tuned frequency set to 5.5 MHz; "05.50000" displayed in FRE-QUENCY/MHz display window.

Example 2:	Tune the receiver to 5.5 MHz (Alternate Method).
[5] [5] [0] [0] . . . . .(1)	Data entry; "5500" displayed in FREQUENCY/MHz display window.
[KHz] . . . .(2)	Termination command; receiver tuned frequency set to 5.5 MHz; "05.50000" displayed in FRE-QUENCY/MHz display window.

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2.2.7   **BFO OFFSET**

Adjusting the BFO offset is accomplished by either utilizing the tuning wheel and TUNE switches or by entering the desired offset on the general purpose keypad. The BFO offset is manually adjustable only when the CWV detection mode is selected.

When CWV detection mode is selected, the tuning wheel is enabled for BFO adjustment by pressing the BFO enable switch located directly below the CWF detection mode switch. Alternately, depressing the BFO enable switch forces the receiver to the CWV detection mode. When the BFO switch LED indicator is illuminated, the BFO offset is adjusted by rotating the tuning wheel.

In receivers equipped with optional 10 Hz BFO tuning resolution, the BFO tunes in 100 Hz steps when FAST TUNE is selected and in 10 Hz steps when SLOW TUNE is selected. In standard receivers only 100 Hz tuning steps are available.

The BFO offset can also be adjusted by entering the desired offset in kHz on the general purpose keypad. When CWV detection mode is selected, the following procedure is used to enter a BFO offset. **Example 3** shows a typical BFO offset entry for changing the offset frequency while leaving the direction, with respect to zero offset, unchanged. **Example 4** shows a typical BFO offset entry for changing the offset frequency and direction.

● **BFO Offset Frequency – Procedure**

1)   **Press BFO +/– keypad switch.**

2)   **Repeat step (1) if direction change is desired.**

3)   **Enter numerical BFO offset data.**

4)   **Terminate command by pressing kHz termination switch.**

Example 3:	Change BFO offset from +1.00 kHz to +2.50 kHz.
[BFO +/−] . . . .(1)	Identifies following data entry as BFO offset data.
[2] [.] [5] . . . .(3)	Data entry
[KHz] . . . .(4)	Termination command; BFO offset set to +2.5 kHz; "2.50" displayed in BFO OFS/THRS LVL display window.

Example 4:	Change BFO offset from +2.50 kHz to -3.60 kHz.
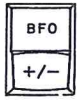
BFO +/- ....(1) Identifies following data entry as BFO offset data

BFO +/- ....(2) Changes direction of BFO offset; "-2.50" displayed in BFO OFS/THRS LVL display window.

3 . 6 ....(3) Data entry

KHz ....(4) Termination command; BFO offset set to -3.6 kHz; "-3.60" displayed in BFO OFS/THRS LVL display window.

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2.3   MEMORY STORAGE & RECALL OPERATIONS

2.3.1   GENERAL

There are 100 available memory locations (99 discrete and one implicitly addressed) for storage of receiver parameter data. Each memory channel is utilized to store one set of receiver parameters. Storable parameters are RF tuned frequency, detection mode, gain mode, IF bandwidth, BFO offset, and threshold level. Non-storable parameters are tuning resolution, front panel meter mode, and dwell time.

2.3.2   QUICK ACCESS MEMORY CHANNEL

The implicitly addressed memory channel is a quick access memory location. Pressing the STORE switch without entering data beforehand loads the present receiver parameters into the quick access channel. Pressing the RECALL switch without entering data beforehand sets the receiver to the parameters stored in the quick access channel. In either case, the MEM ADRS display goes blank to indicate access to the quick access channel.
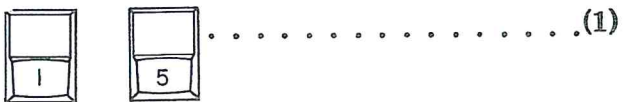
2.3.3   ACCESSING NUMBERED MEMORY CHANNELS

The following procedure loads the present receiver parameters into one of the numbered memory channels. **Example 5** shows a typical memory loading command.

- ●   **Loading Numbered Memory - Procedure**

   1)   **Enter destination channel number on keypad.**

   2)   **Terminate command by pressing STORE termination switch.**

Example 5:   Store present receiver parameters in memory channel 15.

[1] [5] · · · · · · · · · · · · · · · (1)	Data entry; "15" displayed in FRE-QUENCY/MHz display window.
[STORE] · · · · · · · · · · · · · · · · · (2)	Termination command; present receiver parameters stored in channel 15; "15" displayed in MEM ADRS display window.

The following procedure recalls the parameters stored in one of the numbered memory channels and sets the receiver to those parameters. **Example 6** shows a typical memory recall command.

● **Recall Memory – Procedure**

1)   Enter designated channel number on keypad.

2)   Terminate command by pressing RECALL termination switch.

Example 6:   Set receiver to the parameters stored in memory channel 49.

[4] [9] . . . .(1)   Data entry; "49" displayed in FREQUENCY/MHz display window.

[RECALL] . . . .(2)   Termination command; receiver parameters set to those stored in memory channel 49; front panel indicators and displays reflect updated parameters; "49" displayed in MEM ADRS display window.

To change individual stored parameters, the memory channel to be updated must first be recalled. After the desired parameters(s) are changed, the updated parameter(s) must then be re-stored in the designated memory channel.
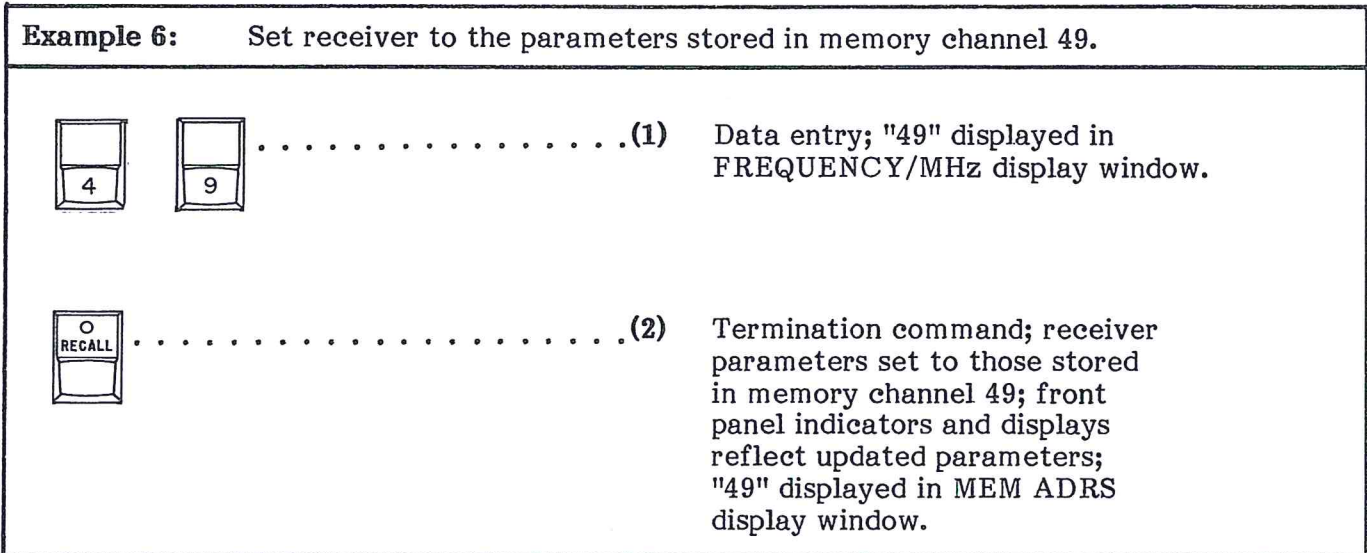
The following procedure updates one or more individual parameters in a designated numbered memory channel. **Example 7** shows a typical memory update command sequence.

● **Update Memory – Procedure**

1)   Enter designated channel number on keypad.

2)   Terminate recall command by pressing RECALL termination switch.

3)   Update desired individual parameters.

4)   Enter designated channel number on keypad.

5)   Terminate command by pressing STORE termination switch.

Example 7: Change IF bandwidth stored in memory channel 55 from 16 kHz to 6 kHz.

[5] [5] . . . .(1)   Data entry; "55" displayed in
                                                 FREQUENCY/MHz display window.

[RECALL] . . . .(2)   Termination command; receiver
                                                 parameters set to those stored in
                                                 memory channel 55; front panel
                                                 indicators and displays reflect
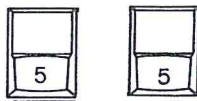   channel 55 parameters; "55" dis-
                                                 played in MEM ADRS display window.

[6] . . . .(3)   6 kHz IF bandwidth selected.

[5] [5] . . . .(4)   Data entry; "55" displayed in
                                                 FREQUENCY/MHz display window.

[STORE] . . . .(5)   Termination command; updated
                                                 parameters stored in memory
                                                 channel 55; "55" displayed in
                                                 MEM ADRS display window.

2.3.4   MEMORY EXAMINATION

The memory EXAM switch displays the parameters stored in memory without disturbing the operating parameters of the receiver. Pressing the EXAM switch without entering data beforehand causes the front panel indicators and displays to display the stored parameters of the next sequential memory channel after the one displayed in the MEM ADRS display window. For example, if "15" is displayed in the MEM ADRS display window, pressing EXAM results in a flashing "16" in the MEM ADRS display window, indicating that the parameters displayed on the front panel indicators and displays are those stored in memory channel 16. Pressing EXAM again causes channel 17's parameters to be displayed, and so on until channel 99 is reached. At that time, pressing EXAM displays channel 1's parameters. Pressing the CLEAR switch, located in the lower right-hand corner of the keypad, terminates the memory examination mode and causes the front panel displays and indicators to reflect the present receiver operating parameters. The address of the last channel examined will be displayed in the MEM ADRS display window.

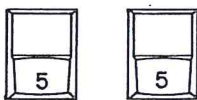The following procedure examines a specific memory channel. **Example 8** shows a typical memory examination command.

- Memory Examination (Specific Channel) – Procedure

    1) Enter designated channel number on keypad.

    2) Terminate examination command by pressing EXAM termination switch.

    3) Terminate memory examination mode by pressing CLEAR keypad switch.

Example 8:	Examine the contents of memory channel 15.
[I] [5] ....(1)	Data entry; "15" displayed in FREQUENCY/MHz display window.
[EXAM] ....(2)	Termination command; flashing "15" displayed in MEM ADRS display window; front panel indicators and displays reflect parameters stored in memory channel 15.
[CLEAR] ....(3)	Termination command; "15" displayed in MEM ADRS display window; front panel indicators and displays reflect receiver operating parameters.

The following procedure examines the contents of a sequential group of memory channels. **Example 9** shows a typical sequential channel memory examination command.

⊚   **Memory Examination (Sequential Group) - Procedure**

1)   Enter first channel number on keypad.

2)   Terminate examination command by pressing EXAM termination switch.

3)   Press EXAM switch again for each channel to be examined.

4)   Terminate memory examination mode by pressing CLEAR keypad switch.

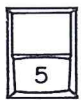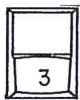
Example 9: Examine the contents of memory channels 35 and 36.

[3] [5] . . . .(1)   Data entry; "35" displayed in FREQUENCY/MHz display window.

[EXAM] . . . .(2)   Termination command; flashing "35" displayed in MEM ADRS display window; front panel indicators and displays reflect parameters stored in memory channel 35.

[EXAM] . . . .(3)   Termination command; flashing "36" displayed in MEM ADRS display window; front panel indicators and displays reflect parameters stored in memory channel 36.

[CLEAR] . . . .(4)   Termination command; "36" displayed in MEM ADRS display window; front panel indicators and displays reflect receiver operating parameters.

TABLE 2-2   WJ-8718A/MFP

2.4   MEMORY SCAN OPERATION

The MFP memory scan capability allows the receiver to sequentially scan a selected group of memory channels. During scan operation the stored parameters of each memory channel are automatically recalled and transferred to the receiver. As each channel is recalled, the received signal strength is compared to a selected threshold level stored in that channel. When a channel is located where signal strength equals or exceeds the threshold level, the scanning operation stops for a selected dwell time, and then restarts automatically.

2.4.1   SPECIAL PURPOSE MEMORY CHANNELS

Numbered memory channels 87 through 99 are utilized to store sector scan data. These special purpose channels are passed over during memory channel scanning operations. They can be accessed individually as described in paragraph 2.3. Paragraph 2.5 describes how memory channels 87 through 99 are utililized during sector scan operations.

2.4.2   THRESHOLD LEVEL

During all MFP scan operations, the received signal strength is compared to a selected threshold level. The threshold levels are entered as single digit codes which are stored, along with the receiver parameters, in the memory channels. Table 2-2 lists the single digit threshold level codes and their corresponding signal strength levels in dBm.

| Table 2-2. Threshold Data Codes	
Keypad Entry Code	Threshold Level
0	* See Note 1
1	-110 dBm
2	-100 dBm
3	-90 dBm
4	-80 dBm
5	-70 dBm
6	-60 dBm
7	-50 dBm
8	-30 dBm
9	* See Note 2

* NOTE: 1.   An entered threshold data code of 0 causes the SCAN to stop, regardless of signal strength, at the channel where the 0 is stored.

2.   An entered threshold data code of 9 causes the SCAN to continue regardless of signal strength.

The following procedure loads threshold data, along with the present receiver operating parameters, into a memory channel. **Example 10** show a typical threshold command.

- **Threshold Entry – Procedure**

    1)   Enter desired threshold code on keypad.

    2)   Terminate threshold command by pressing THRS termination switch.

    3)   Enter designated channel number on keypad.

    4)   Terminate command by pressing STORE termination switch.

Example 10:   Store present receiver operating parameters and threshold level of 5 (-80 dBm) in memory channel 62.
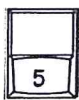
[5] ....(1)	Threshold data entry; "5" displayed in FREQUENCY/MHz display window.
[O THRS] ....(2)	Termination command; "5" displayed in BFO OFS/THRS LVL display window.
[6] [2] ....(3)	Channel number data entry; "62" displayed in FREQUENCY/MHz display window.
[O STORE] ....(4)	Termination command; "62" displayed in MEM ADRS display window; all front panel data, including threshold level, stored in memory channel 62.
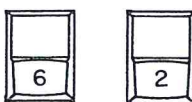
The following procedure adds or changes the threshold level data in a previously loaded memory channel. Note that steps 1 and 2 recall the previously stored data. **Example 11** shows a typical threshold update command.

⊛   **Updating Stored Threshold Data – Procedure**

1)   Enter designated channel number on keypad.

2)   Terminate recall command by pressing RECALL   termination switch.

3)   Enter desired threshold code on keypad.

4)   Terminate threshold command by pressing THRS termination switch.

5)   Repeat step (1).

6)   Terminate command sequence by pressing STORE termination switch.

Example 11:   Change the threshold level stored in memory channel 62 from 5 to 8.

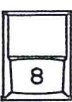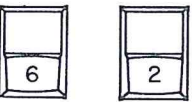| Keys		Description
[6] [2] . . . . (1)		Channel number data entry; "62" displayed in FREQUENCY/MHz display window.
[○ RECALL] . . . . (2)		Termination command; receiver parameters set to those stored in channel 62; front panel displays and indicators reflects receiver operating parameters; "62" displayed in MEM ADRS display window.
[8] . . . . (3)		Threshold data entry; "8" displayed in FREQUENCY/MHz display window.
[○ THRS] . . . . (4)		Termination command; "8" displayed in BFO OFS/THRS LVL display window.
[6] [2] . . . . (5)		Channel number data entry; "62" displayed in FREQUENCY/MHz display window.
[○ STORE] . . . . (6)		Termination command; "62" displayed in MEM ADRS display window; Previously recalled data and new threshold level are stored in memory channel 62.

Threshold Level Display Mode: Pressing THRS, without entering keypad data beforehand, causes the threshold data to be displayed in the BFO OFS/THRS LVL display window. Pressing THRS, without entering keypad data beforehand, during AUTO SCAN or EXAM operations, causes the stored threshold level for each channel accessed to be displayed.

2.4.3 COR THRESHOLD

The COR threshold is set by first entering a single digit threshold code on the general purpose keypad, and then terminating the command by pressing the THRS switch once. The single digit code entered with the instruction represents a corresponding signal strength level in dBm. **Table 2-3** lists the possible keypad entries (0 through 9) and their respective threshold levels.

Table 2-3. COR Threshold Codes	
Keypad Entry Code	**Threshold Level**
0	* COR ON
1	-110 dBm
2	-100 dBm
3	-90 dBm
4	-80 dBm
5	-70 dBm
6	-60 dBm
7	-50 dBm
8	-30 dBm
9	* COR OFF

* NOTE: When a threshold code of 0 is entered the COR will remain ON regardless of signal strength. When a threshold code of 9 is entered the COR will remain OFF.

Once the threshold has been established, the relay will turn ON when an incoming signal of signal strength greater than the threshold is detected by the receiver's AGC circuitry. Entering a threshold level causes the selected threshold code number to be displayed on the BFO OFS/THRS LVL display. If a threshold code in the range of 1 through 8 has been entered, the COR relay will be activated when the signal strength exceeds the threshold level. The THRS switch LED indicates COR activity by blinking when the COR is ON.

If a CORM equipped receiver is also equipped with the WJ-8718A/232M Option, the COR threshold can be controlled remotely.

2.4.4 DWELL TIME

When AUTO SCAN mode is utilized, a dwell time must be selected. The dwell time is used when signal strength exceeds threshold. Entering a dwell time of "0" selects 0.1 seconds. Entering a dwell time of "1" through "8" selects 1 through 8 seconds respectively. If a dwell time of "9" is entered the scan stops until restarted by pressing AUTO SCAN.

The following procedure enters a desired dwell time. **Example 12** shows a typical dwell time command.

- **Dwell Time - Procedure**

    1) Enter desired dwell time code on keypad.

    2) Terminate command by pressing DWELL termination switch.

Example 12: Establish a dwell time of 3 seconds.	
[3] . . . .(1)	Data entry; "3" displayed in FREQUENCY/MHz display window.
[O DWELL] . . . .(2)	Termination command; dwell time established at 3 seconds; DWELL LED illuminated; "3" displayed in BFO OFS/THRS LVL display window.

Dwell Time Display Mode: Pressing DWELL, without entering keypad data beforehand, causes the present dwell time code to be displayed in the BFO OFS/THRS LVL display window.

SIGNAL DWELL MODE: When signal dwell mode is utilized during scan operation, the receiver will dwell on an active channel until the received signal strength decreases below threshold for a pre-defined dwell time. For example, if an 8 second dwell time has been selected, the scan will restart automatically when the signal strength drops below threshold for 8 seconds.

Signal dwell mode is enabled by entering 21* on the keypad, and disabled by entering 22* on the keypad. Enable is indicated by the presence of a number between 20 and 29 (inclusive) in the BFO OFS/THRS LVL display window. This number represents the signal dwell display code (20) + the operator selected dwell time (0 through 9).

2.4.5   MEMORY SCAN CONTROL

Pressing AUTO SCAN initiates a sequential scan of the memory channels. If none of the memory channels are locked out of the scan, the receiver will scan through all channels except those reserved for frequency sector scan data storage (channels 87 through 99).

Once started, the scan will continue until stopped by again pressing the AUTO SCAN switch. The AUTO SCAN LED indicator illuminates whenever the receiver is scanning.

The following procedure locks out an individual channel. **Example 13** shows a typical single channel lockout command.

- **Single Channel Lockout - Procedure**

    1)   **Enter designated channel number on keypad.**

    2)   **Terminate command by pressing LOCK OUT termination switch.**

| **Example 13:**	Lockout memory channel 3.
 [3] . . . .**(1)**	**Data entry; "3" displayed in FREQUENCY/MHz display window.**
 [O LOCK / OUT] . . . .**(2)**	**Termination command; channel 3 locked out of scan; LOCK OUT LED indicator illuminates.**

NOTE

When the LOCK OUT switch is pressed, the LOCK OUT LED indicator illuminates. Pressing LOCK OUT again, without entering keypad data beforehand, causes the previously locked out channel or group of channels to be returned to the scan.

The following procedure locks out a sequential group of memory channels. Example 14 shows a typical channel group lockout command.

- **Channel Group Lockout – Procedure**

    1) Enter first and last channel numbers of the group on the keypad, separated by a decimal point.

    2) Terminate command by pressing LOCK OUT termination switch.

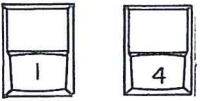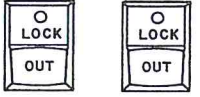**Example 14:**   Lockout channels 2 through 4.

[2] [.] [4] . . . . (1)	Data entry; "2c4" displayed in FREQUENCY/MHz display window.
[LOCK OUT] . . . .(2)	Termination command; channels 2, 3 and 4 locked out of scan.

The following procedure adds or returns a channel or group of channels to the scan. The procedure is similar to the previously discussed lockout commands. **Examples 15** and **16** show typical commands for adding channels to the scan.

- **Add Memory Channel(s) to Scan – Procedure**

    1) Enter designated channel or group of channels on keypad.

    2) Terminate command by pressing LOCK OUT termination switch <u>twice</u>.

Example 15:   Add channel 14 to previously established scan of channels 1 through 3.

[1] [4] . . . .(1)	Data entry; "14" displayed in FREQUENCY/MHz display window.
[LOCK OUT] [LOCK OUT] . . . .(2)	Termination command; pressing AUTO SCAN results in receiver scanning channels 1, 2, 3 and 14.

Example 16:	Add channels 4 through 9 to previously established scan of channels 1 through 3.	

[4] [.] [9] . . . .**(1)** — Data entry; "4c9" displayed in FREQUENCY/MHz display window.
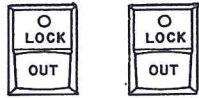
[LOCK OUT] [LOCK OUT] . . . .**(2)** — Termination command; pressing AUTO SCAN results in receiver scanning channels 1 through 9.

The following procedure returns all locked out channels to the scan.

● **All Channel Scan - Procedure**

1) Enter 0 on keypad.

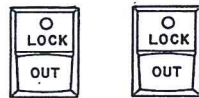2) Terminate command by pressing LOCK OUT termination switch <u>twice</u>.

Example 17 shows how the above procedure can be utilized to establish a scan of all but a few memory channels.

Example 17:	Establish a scan of all memory channels except 5 and 6.	

[0] . . . .**(1)** — Data entry; "0" displayed in FREQUENCY/MHz display window.

[LOCK OUT] [LOCK OUT] . . . .**(2)** — Termination command; all locked out channels are returned to the scan.
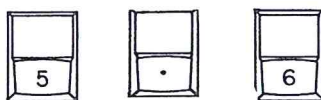
[5] [.] [6] . . . .**(3)** — Data entry; "5c6" displayed in FREQUENCY/MHz display window.

[LOCK OUT] . . . .**(4)** — Termination command; channels 5 and 6 are locked out of scan.

TABLE 2-4   WJ-8718A/MFP

2.5   SECTOR SCAN OPERATION

The MFP sector scan feature allows the operator to establish two scan sectors. Memory channels 87 through 99 are reserved for storage of sector scan data. The tuned frequency data stored in these channels, as shown in Table 2-4, represents the start and stop frequencies (f_1 and f_2) for the two programmable sectors, the frequency step size (Sector B only), and designated lockout frequencies (four per sector).

The receiver can be commanded to scan Sector A or Sector B individually or to scan both sectors. During a Sector A scan the receiver scans from f_1 to f_2 in steps equal to one-half of the selected IF bandwidth. During a Sector B scan the receiver scans from f_1 to f_2 in steps equal to the tuned frequency data stored in memory channel 91.

Table 2-4. Sector Scan Frequency Data Storage	
Channel Number	Frequency Data
87	f_1 - Sector A
88	f_2 - Sector A
89	f_1 - Sector B
90	f_2 - Sector B
91	Frequency Step Size - Sector B
92 thru 95	Lockout Frequencies - Sector A
96 thru 99	Lockout Frequencies - Sector B

2.5.1   SECTOR SCAN FREQUENCY DATA

The RF tuned frequency data stored in channel 87 represents the start frequency (f_1) of the first sector (Sector A). The RF tuned frequency data stored in channel 88 represents the stop frequency (f_2) of Sector A. During a Sector A scan the receiver scans between f_1 and f_2. The frequency step size during a Sector A scan is equal to one-half the selected IF bandwidth.
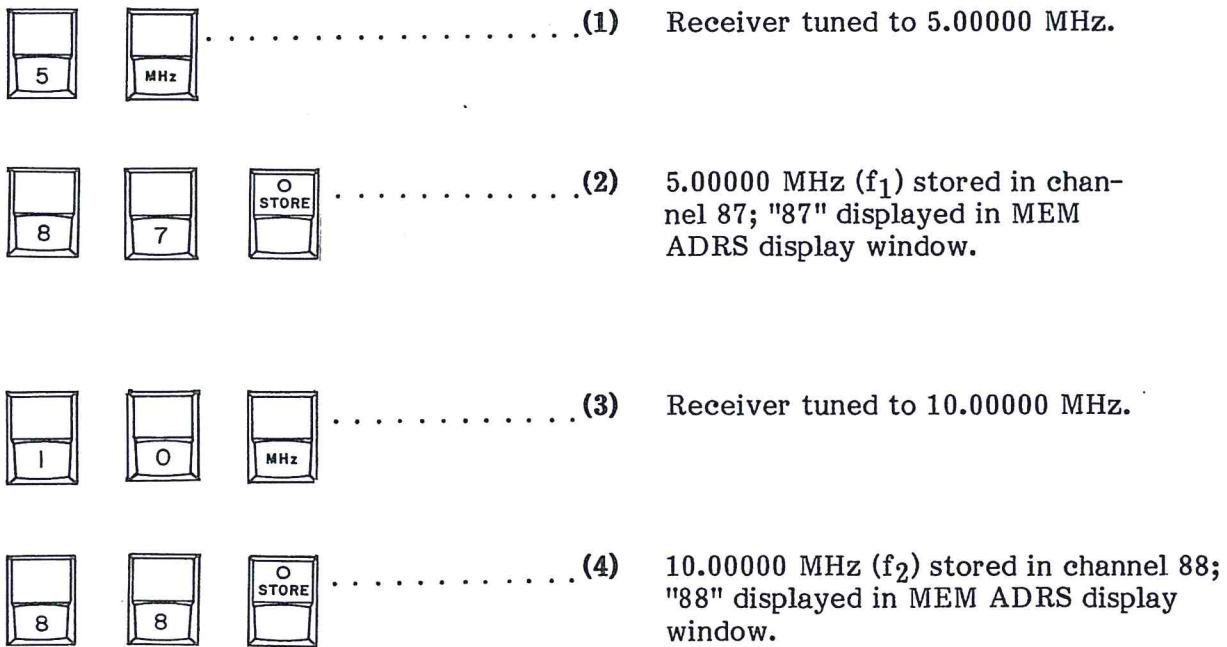
The RF tuned frequency data stored in channel 89 represents the start frequency (f_1) of the second sector (Sector B). The RF tuned frequency data stored in channel 90 represents the stop frequency (f_2) of Sector B. During a Sector B scan the receiver scans between f_1 and f_2. The frequency step size during a Sector B scan will be equal to the RF tuned frequency stored in channel 91. If an RF tuned frequency of 00.00000 MHz is stored in channel 91 the step size will be equal to one-half the selected IF bandwidth.

The following procedure stores Sector A frequency limits.   **Example 18** shows a typical Sector A frequency data entry sequence.

- **Sector A Frequency Data Entry – Procedure**

    1)   Tune receiver to desired f_1.

    2)   Store f_1 data in channel 87 by entering "87" on keypad and pressing STORE termination switch.

    3)   Tune receiver to desired f_2.

    4)   Store f_2 data in channel 88 by entering "88" on keypad and pressing STORE termination switch.

Example 18:   Establish a Sector A scan between 5 MHz and 10 MHz.

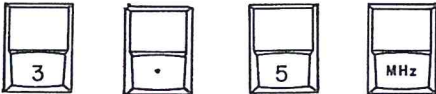|	
[5] [MHz] . . . .(1)	Receiver tuned to 5.00000 MHz.
[8] [7] [STORE] . . . .(2)	5.00000 MHz (f_1) stored in channel 87; "87" displayed in MEM ADRS display window.
[1] [0] [MHz] . . . .(3)	Receiver tuned to 10.00000 MHz.
[8] [8] [STORE] . . . .(4)	10.00000 MHz (f_2) stored in channel 88; "88" displayed in MEM ADRS display window.

The following procedure stores Sector B frequency limits and scan step size. **Example 19** shows a typical Sector B data entry.

31

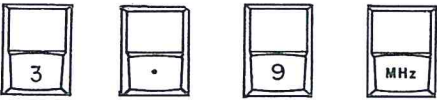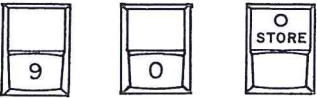● **Sector B Frequency Data Entry – Procedure**

1) Tune receiver to desired f_1.

2) Store f_1 data in channel 89 by entering "89" on keypad and pressing STORE termination switch.

3) Tune receiver to desired f_2.

4) Store f_2 data in channel 90 by entering "90" on keypad and pressing STORE termination switch.

5) Tune receiver to desired scan step size.

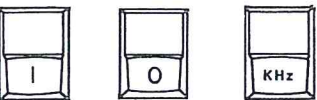6) Store step size data in channel 91 by entering "91" on keypad and pressing STORE termination switch.

Example 19: Establish a Sector B scan between 3.50000 MHz and 3.90000 MHz in 10 kHz steps.
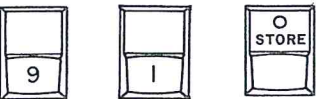
| [3] [·] [5] [MHz] | ....(1) | Receiver tuned to 3.50000 MHz. |
[8] [9] [STORE]	.........(2)	3.50000 MHz (f_1) stored in channel 89; "89" displayed in MEM ADRS display window.
[3] [·] [9] [MHz]	.......(3)	Receiver tuned to 3.90000 MHz.
[9] [0] [STORE]	.........(4)	3.90000 MHz (f_2) stored in channel 90; "90" displayed in MEM ADRS display window.
[1] [0] [KHz]	.........(5)	Receiver tuned to 10.00 kHz.
[9] [1] [STORE]	.........(6)	10.00 kHz (step size) stored in channel 91; "91" displayed in MEM ADRS display window.

2.5.2   **SECTOR LOCKOUT (SINGLE SECTOR SCAN OPERATION)**

When a single sector scan is desired, the undesired sector must be locked out. The following procedure locks out a sector to establish a single sector scan. **Example 20** shows a typical sector lockout command.

- **Sector Lockout – Procedure**

    1)   Enter designated sector channel number on keypad (87 or 88 to lockout Sector A, 89 or 90 to lockout Sector B).

    2)   Terminate command by pressing LOCK OUT termination switch.

Example 20:   Lockout Sector B (Establish a single sector scan of Sector A).
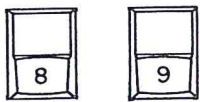
[8] [9] . . . .(1)   Data entry; "89" displayed in FREQUENCY/MHz display window.

[LOCK OUT] . . . .(2)   Termination command; channels 89 and 90 will display a lockout attribute when accessed; Sector B locked out.

The following procedure restores a previously locked out sector to establish a two sector scan. **Example 21** shows a typical scan sector restoration command.
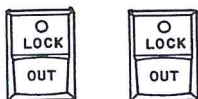
- **Return Previously Locked Out Sector – Procedure**

    1)   Enter designated sector channel number on keypad (87 or 88 for Sector A, 89 or 90 Sector B).

    2)   Terminate command by pressing LOCK OUT termination switch <u>twice</u>.

Example 21:   Return previously locked out Sector B.
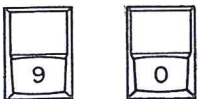
[9] [0] . . . .(1)   Data entry; "90" displayed in FREQUENCY/MHz display window.

[LOCK OUT] [LOCK OUT] . . . .(2)   Termination command; Sector B returned to the scan.

Sector lockout and sector return commands may be made at any time. If a sector lockout command is made while the receiver is scanning the designated lockout sector, the scan will continue until the sector's f_2 frequency is reached. At that time, the lockout command will take effect.

2.5.3   SECTOR SCAN RECEIVER REGISTER DATA

The receiver register parameters (parameters other than RF tuned frequency) should be set prior to initiating a sector scan. This may be done manually, or by recalling receiver register data previously stored in any of the MFP's 100 memory channels. The method chosen for adjusting the receiver register parameters determines the type of command used to initiate a sector scan.

There are three types of sector scan commands. They are discussed in detail in **paragraphs 2.5.4** through **2.5.7.**

2.5.4   SECTOR SCAN CONTROL

The procedures and examples given in **paragraphs 2.5.5** through **2.5.7** can be utilized to initiate a single sector scan or a two sector scan. If a single sector scan is desired the other sector must be locked out as shown in **paragraph 2.5.2.** If the microprocessor receives a sector scan command and the other sector is not locked out, the receiver first scans the desired sector and then scans the other sector.

2.5.5   SECTOR SCAN/RECEIVER REGISTER DATA SOURCE - MANUAL

The following procedure manually sets the receiver register parameters, and then initiates a sector scan. **Example 22** shows a typical sector scan command sequence.

    o   **Sector Scan Command – Procedure 1**

        1)   Set receiver register parameters as desired.

        2)   Enter designated channel number (87 for Sector A, 89 for Sector B) on keypad.

        3)   Terminate command by pressing AUTO SCAN termination switch.

Example 22:	Initiate a Sector B scan with the receiver parameters set as follows: AM detection mode, FAST AGC gain mode, 6 kHz IF bandwidth, Threshold level of 5.				

[AM] [FAST] [6] . . . . **(1a)** Receiver set to AM detection mode, FAST AGC, and 6 kHz IF bandwidths.

[5] [THRS] . . . . **(1b)** Threshold level set to 5 (-70 dBm); "5" displayed in BFO OFS/THRS LVL display window.

[8] [9] . . . . **(2)** Data entry; "89" displayed in FREQUENCY/MHz display window.

[AUTO SCAN] . . . . **(3)** Termination command; receiver scans Sector B; "89" displayed in MEM ADRS display window.

2.5.6   SECTOR SCAN/RECEIVER REGISTER DATA SOURCE – f_1 OR f_2 CHANNEL
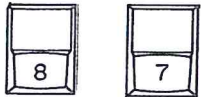
The receiver register data stored with each sector's f_1 and f_2 frequencies can be utilized to set the receiver parameters prior to initiating a sector scan. This feature provides the capability to store two sets of receiver register data for each scan sector.

The following procedure recalls receiver register data from a sector f_1 or f_2 frequency storage channel and initiates a sector scan in that sector. Examples 23 and 24 show typical command sequences.

● **Sector Scan Command Sequence – Procedure 2**

1)   Enter designated channel number (87 or 88 for Sector A, 89 or 90 for Sector B).

2)   Terminate recall command by pressing RECALL termination switch.

3)   Terminate command sequence by pressing AUTO SCAN termination switch.

Example 23: Initiate a Sector A scan utilizing the receiver register parameters stored with the sector's f_1 frequency in memory channel 87.

[8] [7] . . . .(1)   Data entry; "87" displayed in FREQUENCY/MHz display window.

[RECALL] . . . .(2)   Termination command; receiver parameters set to those stored in channel 87; "87" displayed in MEM ADRS display window.

[AUTO SCAN] . . . .(3)   Termination command; receiver scans Sector A; "87" remains displayed in MEM ADRS display window.

Example 24: Initiate a Sector A scan utilizing the receiver register parameters stored with the sector's f_2 frequency in memory channel 88.

[8] [8] . . . .(1)   Data entry; "88" displayed in FREQUENCY/MHz display window.

[RECALL] . . . .(2)   Termination command; receiver parameters set to those stored in channel 88; "88" displayed in MEM ADRS display window.

[AUTO SCAN] . . . .(3)   Termination command; receiver scans Sector A; "87" displayed in MEM ADRS display window.

Comments: In either of the above examples, it is not necessary to enter "87" on the keypad before pressing AUTO SCAN. Pressing AUTO SCAN without entering keypad data beforehand, and with "87" or "88" displayed in the MEM ADRS display window, automatically initiates a Sector A scan. Likewise, pressing AUTO SCAN, with a "89" or "90" displayed automatically initiates a Sector B scan.

2.5.7   SECTOR SCAN/RECEIVER REGISTER DATA SOURCE - MEMORY CHANNEL

The receiver register data stored in any of the 100 memory channels may be utilized to set the receiver parameters prior to initiating a sector scan.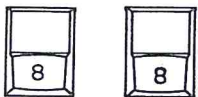 The following procedure recalls receiver register data from any memory channel and initiates a sector scan. **Example 25** shows a typical command sequence.

● **Sector Scan Command Sequence - Procedure 3**
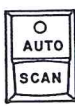
1)   Enter receiver register data location (channel number) on keypad.

2)   Terminate recall command by pressing RECALL termination switch.

3)   Enter sector channel number (87 for Sector A, 89 for Sector B) on keypad.

4)   Terminate command sequence by pressing AUTO SCAN termination switch.

Example 25:   Initiate a Sector B scan utilizing receiver register parameters stored in memory channel 45.

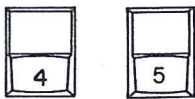|	
[4] [5] . . . .(1)	Data entry; "45" displayed in FREQUENCY/MHz display window.
[○ RECALL] . . . .(2)	Termination command; receiver parameters set to those stored in channel 45. "45" displayed in MEM ADRS display window.
[8] [9] . . . .(3)	Data entry; "89" displayed in FREQUENCY/MHz display window.
[○ AUTO SCAN] . . . .(4)	Termination command; receiver scans Sector B; "89" displayed in MEM ADRS display window.

Comments: If the above command sequence is utilized to initiate a Sector A scan, the scan step size will be equal to one-half the IF bandwidth set in steps 1 and 2.

2.5.8   FREQUENCY LOCKOUT

The frequency lockout feature of the MFP allows up to four frequencies per sector to be locked out of the scan. A desired tuned frequency is locked out by storing it in one of eight designated scan frequency lockout channels. Sector A lockout frequencies must be stored in memory channels 92 through 95. Sector B lockout frequencies must be stored in memory channels 96 through 99.

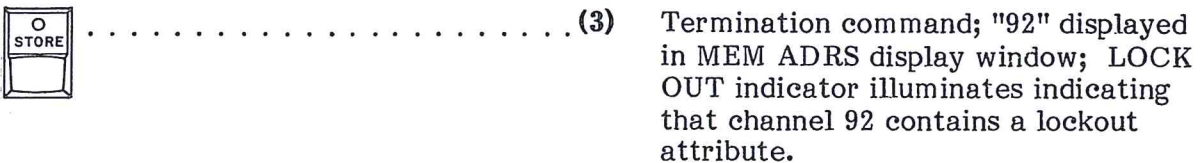When a specific frequency is locked out of a sector scan, all active channels within a certain frequency band surrounding that frequency are ignored during the scan operation. The width of the locked out frequency band is determined by the IF bandwidth selected for use during the sector scan, and is approximately equal to the 60 dB bandwidth of the selected IF filter.

The following procedure locks out a specific tuned frequency. **Example 26** shows a typical tuned frequency lockout command.

- **Tuned Frequency Lockout - Procedure**

    1) Tune receiver to desired lockout frequency.

    2) Enter designated lockout channel number (92 through 95 for Sector A, 96 through 99 for Sector B).

    3) Terminate command sequence by pressing STORE termination switch.

Example 26:   Lockout 1.30000 MHz from a previously established Sector A scan.

[1] [.] [3] [MHz] ......(1)	Tuned frequency data entry and termination command; receiver tuned to 1.30000 MHz; "1.30000" displayed in FREQUENCY/MHz display window.
[9] [2] ....(2)	Data entry; "92" displayed in FREQUENCY/MHz display window.
[O STORE] ....(3)	Termination command; "92" displayed in MEM ADRS display window; LOCK OUT indicator illuminates indicating that channel 92 contains a lockout attribute.
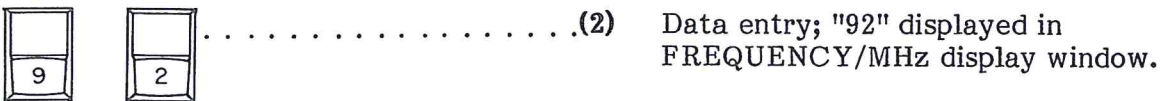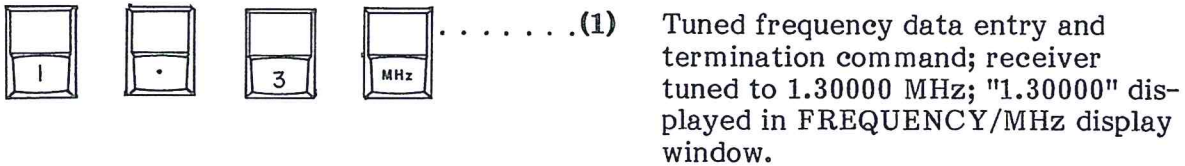
Comments: Returning previously locked out frequencies to the scan is accomplished by entering the designated lockout channel number on the keypad and pressing the LOCK OUT termination switch <u>twice</u>.

2.6   SPECIAL FUNCTION TERMINATION SWITCH (*)

The special function key located in the lower left hand corner of the general purpose keypad is utilized to access MFP special functions. The following paragraphs define the MFP special functions. The special access commands for each function are shown in parenthesis in the paragraph headings.

2.6.1   BUILT-IN TEST EQUIPMENT (BITE) (17*)

Entering 17* on the keypad accesses the MFP's Built-In Test Equipment (BITE) program. Accessing the BITE program has the following initial effects on the front panel LED displays and indicators:

- Illumination of all front panel LED indicators.

- Display of an eight in all front panel seven segment displays (except the BFO +/- display).

After the BITE program is accessed, it may be utilized to verify proper operation of the front panel switches. As each switch is pressed, a corresponding two-digit code appears at one of two designated locations on the front panel.

The front panel switches are divided into two groups. Group 1 switches are on the right side of the front panel and Group 2 switches are on the left. Pressing a Group 1 switch causes its corresponding two-digit code to be displayed in the 100 Hz and 10 Hz digits of the FREQUENCY/MHz display window. Pressing a Group 2 switch causes its two-digit code to be displayed in the MEM ADRS display window. Group 1 and Group 2 display codes are listed in **Tables 2-5** and **2-6** respectively. To take the receiver out of the BITE mode, press the CLEAR key.

Table 2-5. Group 1 Switch Codes			
Switch	**Code**	**Switch**	**Code**
0	0 0	.	2 2
1	0 1	CLEAR	Clears BITE
2	0 2	BFO +/-	6 0
3	0 3	MHz	6 1
4	1 0	kHz	6 2
5	1 1	Special Function (*)	6 3
6	1 2	LOCK	7 0
7	1 3	SLOW	7 1
8	2 0	MED	7 2
9	2 1	FAST	7 3

TABLE 2-6
TABLE 2-7

WJ-8718A/MFP

Table 2-6. Group 2 Switch Codes				
Switch	**Code**		**Switch**	**Code**	
AM	0	0	16	2	4
FM	0	1	6	2	3
USB	0	2	LOCAL	3	1
LSB	0	3	RECALL	3	5
ISB	0	4	REMOTE	4	1
CWV	0	5	STORE	4	5
CWF	0	6	LINE AUDIO	5	0
MGC	1	0	SIGNAL STR	5	1
SLOW	1	1	EXAM	6	0
FAST	1	2	HAND OFF	6	1
BFO (TUNE)	1	5	AUTO SCAN	6	2
.3	2	0	LOCK OUT	6	5
1	2	1	THRS	6	6
3.2	2	2	DWELL	6	7

2.6.2 RECEIVER BITE TESTS (18*)

Entering 18* on the keypad invokes the Receiver BITE Tests. Once started, these tests run continually until the CLEAR key is pressed. These seven tests along with their error codes are listed in **Table 2-7**.

Table 2-7. Receiver BITE Tests		
Number	**Test**	**Error Code**
1	RAM	0001
2	+15 V	0002
3	-15 V	0004
4	1st LO	0008
5	2nd LO	0016
6	Bandwidth Selection	0032
7	BFO Tuning	0064

The test in progress is displayed by number in the BFO/THRS LVL display window. The error code is a binary-weighted code. Any errors detected will be summed and displayed in

the FREQUENCY/MHz display window at the end of the seventh test. For example, an error code of "3" indicates errors in the RAM and +15 V tests. If no errors are detected, the FREQUENCY/MHz display will be blank.

2.6.3   SIGNAL DWELL MODE (21*, 22*)

Entering 21* on the keypad enables signal dwell mode. Entering 22* disables the signal dwell mode. Signal dwell mode is discussed in paragraph 2.4.3.

2.6.4   MASTER/SLAVE OPERATION (23*, 24*)

Master/Slave operation is a feature available in WJ-8718A/232M or WJ-8718A/488M (Remote I/O Option) equipped receivers.

Figure 2-1 shows a typical master/slave setup. In a master/slave system, such as the one shown in Figure 2-1, only one receiver may be designated as the master. When standard WJ-8718A Receivers are utilized, designation of each receiver as a master or slave can be accomplished only by an internal dip switch. To change the designation, it is necessary to remove the receiver's protective covers. Both receivers' dip switches must be set to the same address.

MFP-equipped receivers may have their designation as master or slave changed by entering 23* on the keypad. Entering 23* on the keypad when the receiver's internal switch is set to master position places the receiver in slave mode. Likewise, entering 23* on the keypad of a receiver internally set to slave mode places the receiver in master mode.

Entering 24* on the keypad returns the receiver to the mode designated by its internal master/slave selector switch.

2.6.5   MASTER/SLAVE HAND OFF OPERATION (25*, 26*)

A unique feature of the MFP-equipped receiver is its ability to hand off front panel data to a number of slave receivers of the same type. All WJ-8718A/232M and WJ-8718A/488M equipped receivers have the functional capability to act as a master, but in a given system only one receiver may so act. Master/Slave hand off configuration is shown in Figure 2-2.

In order to hand off front panel data from the master to the slaves, the master receiver must first be in master mode. This is accomplished by entering 25* on the front panel keypad.

Once the receiver is in master mode, its front panel parameters may be transferred to the slave receivers by depressing the master's front panel HAND OFF switch. The HAND OFF LED indicator light should light momentarily, indicating that the hand off has been accomplished. If the indicator light remains on, the hand off has not taken place.

FIGURE 2-1   WJ-8718A/MFP
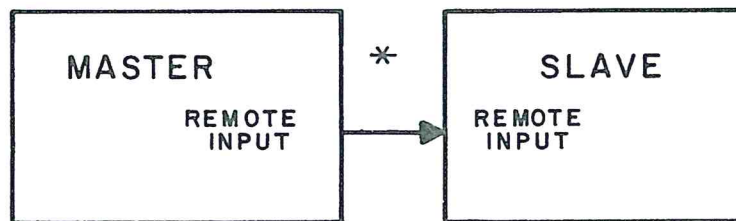
*NOTE: In the 232M Option, the master must be connected
to the first Slave using a reverse (modem bypass)
cable. See paragraph 2.4.5.1 of WJ-8718A/MFP
Instruction Manual.
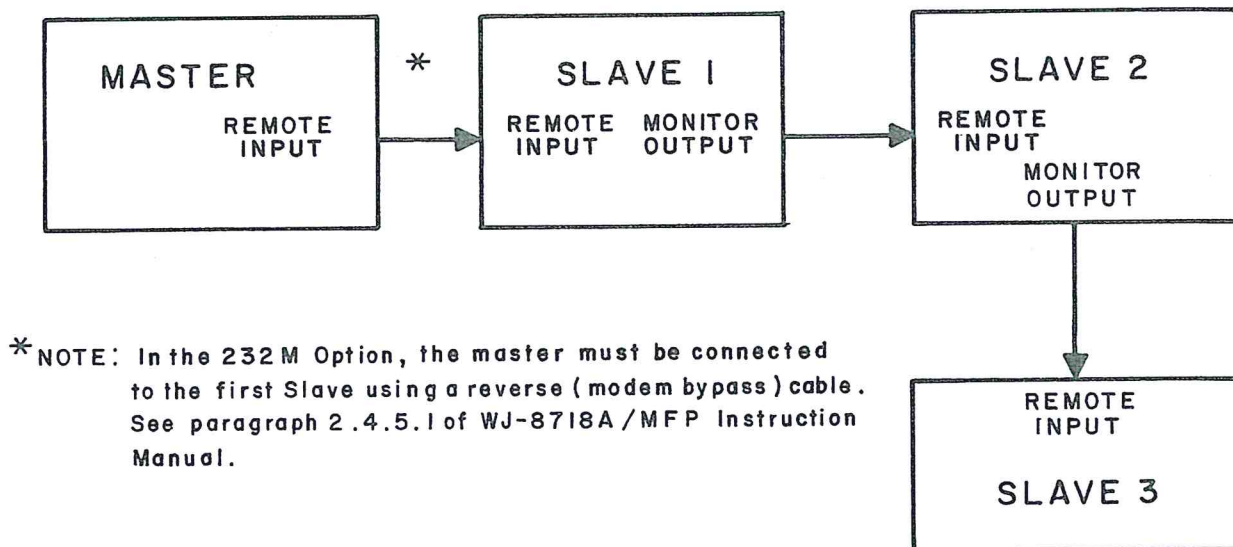
Figure 2-1. Master/Slave Setup

Figure 2-2. Master/Slave Hand Off

The operating parameters of the slave receivers are not affected by the hand off operation. The data is instead stored in the first available hand off memory channel of each slave receiver. The hand off memory channels are channels 30 through 86. The first hand off received from the master receiver will be stored in channel 30, the second in channel 31, and so on until all hand off memory channels have been utilized. At that time, the next hand off data received will be stored in channel 30 and the cycle repeats.

When hand off data from the master receiver is stored, the channel storing the data is flashed on the two least significant digits of the BFO display. The HAND OFF switch also flashes. These flashing displays remain until the slave receiver's BFO, dwell or threshold operations are utilized, or until the data is transferred to the slave receiver's front panel by depressing its HAND OFF switch. Depressing the HAND OFF switch causes the slave receiver's operating parameters to be changed to those of the hand off memory channel.

Another unique feature of the WJ-8718A/232M, or WJ-8718A/488M equipped receiver is its ability to hand off front panel data to the front panel of an addressed slave receiver. The receiver must be in master mode and the slave receiver must be in REMOTE. The hand off is accomplished by entering the slave receiver's address on the master receiver's keypad and terminating it with HAND OFF.

Entering 26* on the keypad takes the receiver out of master hand off mode.

2.6.6   SPECIAL FUNCTION DISPLAY MODE (*)

Pressing the special function (*) key, without entering data beforehand, initiates the special function display mode. During the special function display mode, the four least significant digits in the FREQUENCY/MHz window will display (in sequential order) the receiver address and the entry code number of any active MFP special functions.

For example, assume a receiver with an address of 8 is operating in signal dwell (21*) and master/slave hand off (25*) modes. Depressing * would cause the following codes to be displayed in the four least significant digits of the FREQUENCY/MHz display window.

1.   "cc08" displayed in the four least significant digits indicating receiver address 8.

2.   "21" displayed in the two least significant digits indicating active signal dwell mode.

3.   "25" displayed in the two least significant digits indicating active master/slave hand off mode.

It is not necessary to press the special function key more than once. The previously listed displays occur in sequence, with each display remaining for approximately 1 second.

2.6.7   ERASE MEMORY (999*)

Entering 999* on the keypad erases the contents of all memory channels, including the quick access channel, and then performs a RESET sequence. The RESET sequence leaves the receiver in local mode.