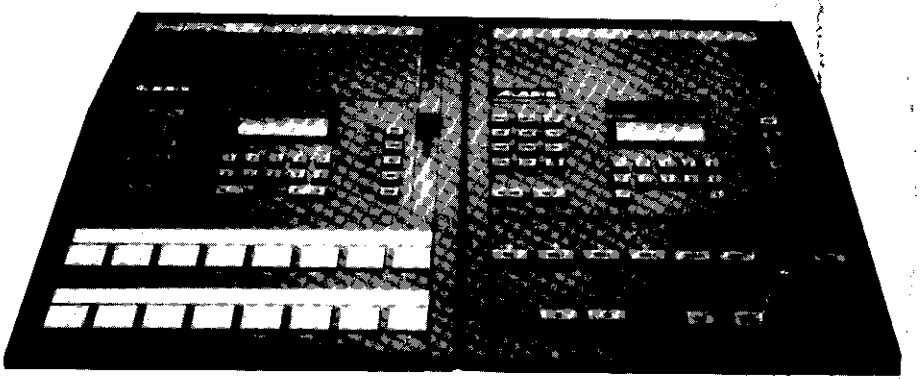
ALESIS

HR-16

HIGH SAMPLE RATE/ 16 BIT DIGITAL DRUM MACHINE

MMT-8

MULTI TRACK MIDI RECORDER



Instruction Manual

ALESIS CORPORATION • LOS ANGELES: 3630 Holdredge Avenue, Los Angeles, CA 90016-9801
LONDON: 6, Letchworth Business Center, Avenue One, Letchworth, Hertfordshire S66 2 HR

PLEASE READ THIS

Concerning the backup memory of the HR-16 and MMT-8.

The backup memories in the HR-16 and the MMT-8 are non-volatile. They are protected by a lithium cell battery with an expected life of 10 years. This means you can turn power off on both machines and your work will be retained in memory.

However, please be aware that any computer based device with memory backup can be subject to losing its memory at any time for the following reasons:

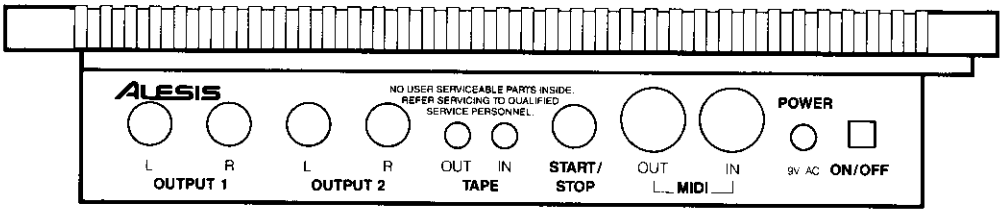
1) If power is interrupted, even briefly, during RECORD, ERASE, or LENGTH CHANGE, you may lose all memory or some minute portion of memory. This is possible because the MMT-8 and HR-16's internal computers are moving information around in memory during these operations. A power surge, or power interruption could cause an unfortunate memory loss during these vulnerable operations.

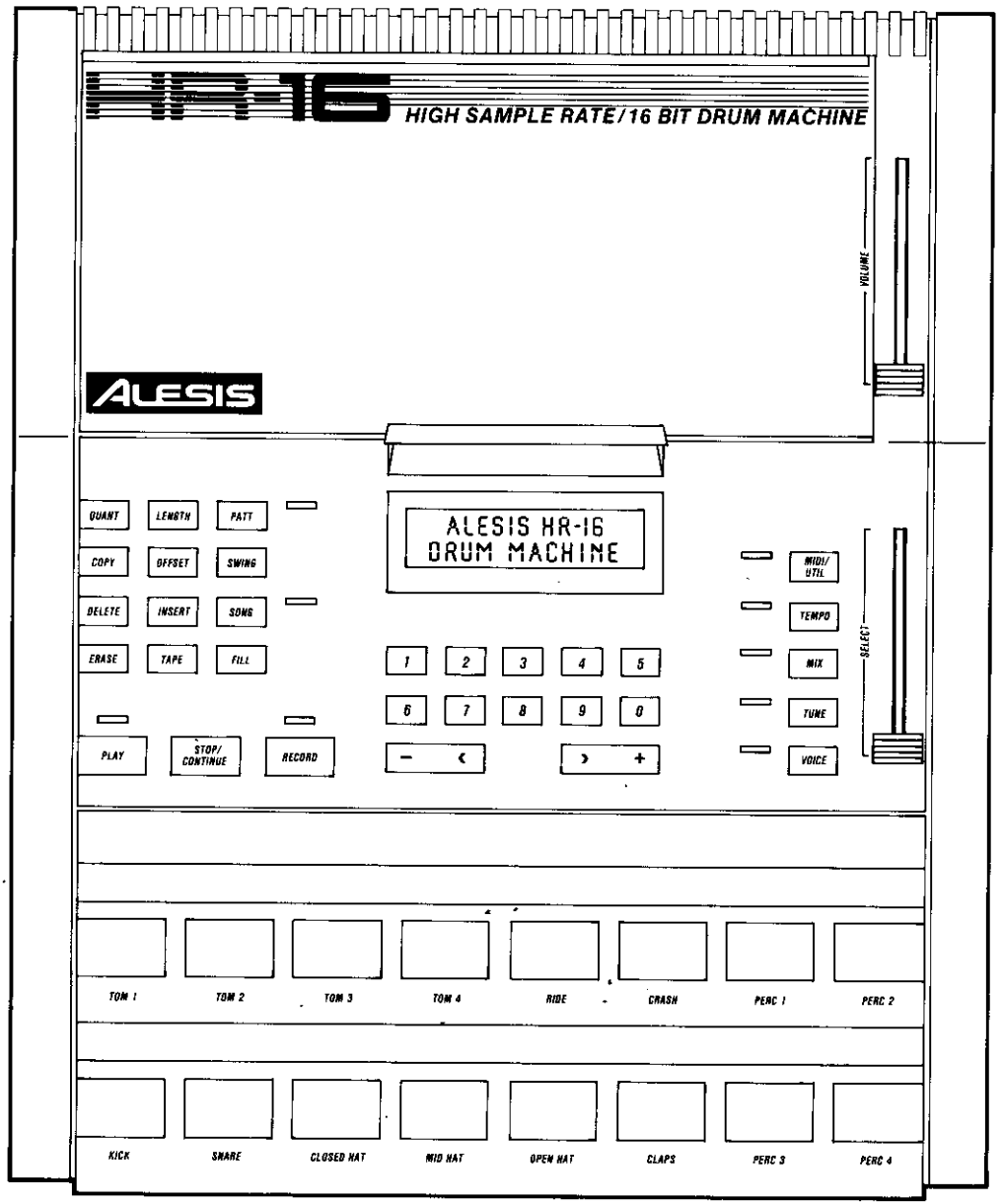
2) Static electricity can also cause a full or partial memory loss.

Therefore, it is recommended that you frequently backup any important work you are involved in. It is a simple operation. Please make it a habitual part of your use of the HR-16 and MMT-8, so that your enjoyment and musical progress won't be interrupted. See the sections on TAPE in this Instruction Manual.

ALESIS HR-16 HIGH SAMPLE RATE 16 BIT DIGITAL DRUM MACHINE

TABLE OF CONTENTS PAGE


ALESIS
NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED
SERVICE PERSONNEL.
POWER
L
R
OUTPUT 1
L
R
OUTPUT 2
OUT
IN
TAPE
START/
STOP
OUT
IN
MIDI
9V AC
ON/OFF


HR-16
HIGH SAMPLE RATE/16 BIT DRUM MACHINE
VOLUME
ALESIS
QUANT
LENGTH
PATT
COPY
OFFSET
SWING
DELETE
INSERT
SONG
ERASE
TAPE
FILL
PLAY
STOP/
CONTINUE
RECORD
ALESIS HR-16
DRUM MACHINE
1
2
3
4
5
6
7
8
9
0
MIDI/
UTIL
TEMPO
MIX
TUNE
VOICE
SELECT
TOM 1
TOM 2
TOM 3
TOM 4
RIDE
CRASH
PERC 1
PERC 2
KICK
SNARE
CLOSED HAT
MID HAT
OPEN HAT
CLAPS
PERC 3
PERC 4

INTRODUCTION

The Alesis HR-16 (High sample Rate / 16 bit drum machine) is a user friendly, yet extremely powerful MIDI drum sequencer / sound generator. The sound generation capabilities of the HR-16 include 16 independent drum "voices", each of which can be assigned to any one of 49 digital samples, and can be routed with a 7 position pan to one of two sets of stereo outputs. Each voice can also be tuned independently in 32 seperate increments over an octave an a half.

The sequencing of the drums is accomplished by entering record, and then playing on the touch-sensitive drum buttons on the front panel, which is then stored into a "pattern." There can be up to 100 patterns in the HR-16's memory (00-99). These patterns can be anywhere from 1 to 682 beats long. The patterns can be combined into lists of patterns, which are called "songs." There can be up to 100 songs in the HR-16's memory(00-99), and each can contain a list of patterns up to 255 steps long.

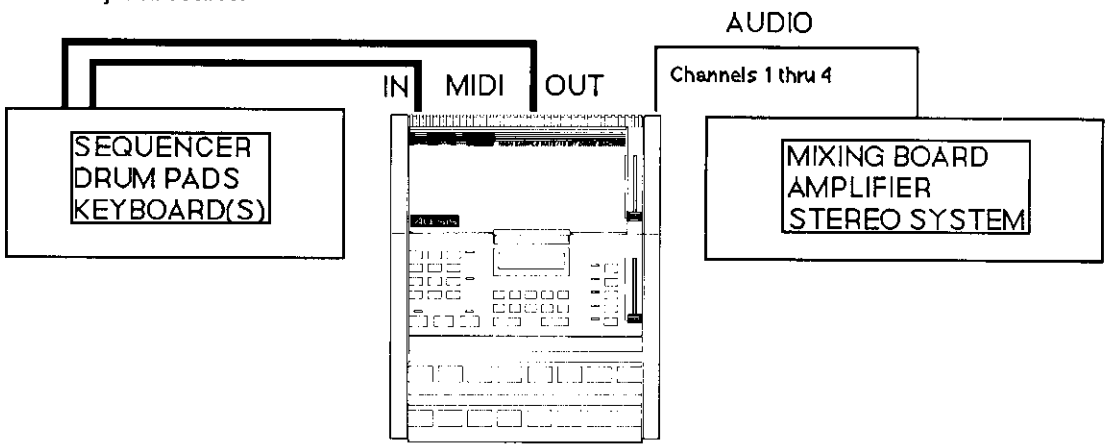
The 16 drum pads at the front of the HR-16 are velocity-sensitive. How hard the pad is hit determines the volume of the drum on 8 levels. 12 of the pads (all pads except Closed Hat, Mid Hat, Open Hat, and Crash) are each directly assigned to a voice. This means that playing a pad repeatedly will retrigger the same voice, and no other pad will effect that voice.

Any sounds assigned to the three Hi Hat pads will all be assigned to the same voice. This is so that playing the Closed Hat will cut off the Open or Mid Hat, for a more realistic hi hat sound. The Crash pad is assigned to two voices that alternate. This means that repeatedly hitting the crash pad results in two independent crashes (of the same sound) that can overlap as they decay.

More sounds can be made to overlap by assigning the same sound to two different pads and alternating which pad is pressed each time the sound is to be played. Only 15 voices have been used (12 normal pads, 1 voice for Hi Hats, 2 for Crash). The 16th voice is used for the Click, which can also be assigned to be any of the 49 available sounds.

HR-16 QUICK BASIC SETUP

1. Connect output 1 (either left , right or both) to a suitable monitoring system. If output 2 is connected, the desired drum pads must be assigned to output 2 using the **MIX** button. (See MIX.)
2. Connect the MIDI IN jack of the HR-16 to the MIDI OUT jack of a sequencer, an external drum pad controller, or a keyboard.
3. Connect the MIDI OUT jack of the HR-16 to other MIDI sound sources when daisey chaining MIDI devices or to an external drum source. The MIDI OUT jack also doubles as a MIDI THRU jack and both MIDI IN data and data produced on the HR-16 are present at the MIDI OUT jack if desired.



For stand alone operation the MIDI jacks need not be connected.

MIDI allows rhythm triggering and programming of the HR-16 from external MIDI devices, such as keyboards or drum pads that are equipped with MIDI. Also, MIDI can be used to sync different devices to the HR-16, save and recall the memory using an external disk drive via MIDI system exclusive data dump, and receive program change commands which will call up patterns.

The program change command is useful for accessing different sets of sounds when triggering sounds from drum pads or sequencers. Program change commands are ignored during PLAY mode.

The HR-16 has two stereo outputs (four individual outputs). The volume slider is active on only the first stereo output (output 1). In addition, if only one side of an output is connected, the stereo mix assigned on that stereo output becomes a mono mix on that single output. This saves having to reconstruct a mono mix from a stereo mix, when only a single output is being used.

Using Four outputs, assign the kick to output 2 panned hard left and the snare to output 2 panned hard right. This leaves all other drums on output 1 panned in stereo as desired and the kick and snare assigned to their own output.

For more information on setting up drum machines and sequencers, see MMT-8 BASIC SET UP in the MMT-8 Instruction Manual.

PATTERN MODE

When power is first turned on, the HR-16 will be in SONG or PATT mode (SONG or PATT LED lit), depending on the mode that was selected before power was turned off. The song or pattern number will also be the same as when power was turned off.

PATT (pattern) Button
Press the PATT button to enter pattern mode. PATT LED will light. Now, the display reads:

```
SELECT PATT 00
```

Selecting a PATTern
The 00 is underlined to indicate that it will be changed if a new number is selected with the keypad or the +/- arrow buttons. Pressing the +/- arrow buttons immediately selects the next pattern number, with the numbers looping past 99 to 00 and looping down from 00 to 99. If a single digit on the keypad is pressed (3, for example), the display will change to:

```
SELECT PATT 3_
```

The display is now indicating that the second digit of the pattern should be entered. After entering the second digit, the new pattern is selected. If the second digit is not entered within 2 seconds, the display will revert back to the previous pattern number, and no new pattern will have been selected. This type of keypad entry is consistent with all entries made with the keypad described in this manual. Pressing PLAY will start playing the selected pattern from its beginning, and the PLAY LED will light. The display will read, for example:

```
PLAYING PATT 00
  BEAT 001
```

The display is now showing the current beat number and the pattern number that is being played. As each beat occurs, the display will advance the beat count. While the pattern is playing, the keypad and +/- arrow buttons can be used to select a new pattern number. The display will read:

```
PATT 00 NEXT 01
  BEAT 001
```

Selecting new PATTerns in PLAY
At the end of the current pattern, the newly selected pattern number will play, with the beat count starting again at 001. The NEXT pattern to play can be changed up until the end of the current pattern is reached, after which the new pattern will begin playing, and the display will revert back to PLAYING PATT.

STOP/CONTINUE Buttons
Pressing STOP/CONTINUE will stop playing a pattern, and the display will return to the select pattern display. Pressing STOP/CONTINUE again will begin playing a pattern from the beginning of the beat it was on when it was stopped. Pressing PLAY will always start a pattern from the beginning. When a pattern reaches its end, it will loop back and continue playing from the beginning.

RECORDING A PATTern (Also see LENGTH and QUANTIZE)

To record on a pattern, press and hold the RECORD button, and then press the PLAY button. The HR-16 will immediately begin playing back any existing drums in the currently selected pattern from the beginning, and will add any new drums played on the buttons or via MIDI to the pattern. The PLAY and RECORD LEDs will be lit, and the display will read:

```
RECRDING PATT 00
   BEAT 001
```

The pattern number is not underlined, indicating that a new pattern cannot be selected while recording. When a drum button is pressed, it is recorded along with its dynamics on eight levels. The drums are always recorded quantized to the nearest currently selected quantize beat. Pressing STOP exits record mode, and both the RECORD and PLAY LEDs will turn off. If PLAY is pressed while in RECORD, the RECORD LED will turn off, and the pattern will immediately begin playing from the start.

LENGTH

When recording for the first time on an empty pattern, the length will default to 8 beats, unless it was set previously with the LENGTH button .

The LENGTH button is used to set the length of a pattern to a specified number of beats. While holding the LENGTH button, the display will show the current length of the current pattern. If it is an empty pattern, the display will read:

```
   PATT 00
LENGTH 008 BEATS
```

8 beats is the default length of an empty pattern. If it is desired to change the length, the +/- arrow buttons can be used to move the length up or down in single beat increments (001 minimum, 682 maximum), or a three digit number can be entered with the keypad. In either case, the new length is not entered into the pattern until the RECORD button is pressed. When RECORD is pressed the display changes to:

```
   PATT 00
LENGTH CHANGED
```

This display remains until RECORD is released. If LENGTH is released before RECORD is pressed, no change to the length will be made, regardless of what was pressed on the keypad. If RECORD is pressed after entering a partial length (1 or 2 digits), nothing will happen. When entering in digits, the first digit entered (1, for example) results in the following display:

```
   PATT 00
LENGTH 1_ BEATS
```

The display is now waiting for the entry of the second digit. If the second digit is not entered within 2 seconds, the display will revert to its previous value. If RECORD is pressed after entering an incomplete length (1 or 2 digits), the display will revert to its previous value.

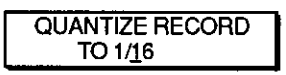
When a new length is entered (RECORD), any drum events that were beyond the new set length will be erased. If the new length is longer than the previous one, the additional length will be filled with silence. If it is desired to remove or add length to the beginning of a pattern, first set the desired length (as described above), and then press and release the PATT button. The display will change to:

Pressing the PATT button again will toggle back to the original display. If RECORD is pressed with the above display showing, any additional beats will be placed at the beginning of the pattern, and any beats removed will be removed from the pattern top. Drum events that were stored in the removed beats will be removed from the pattern.

The LENGTH button has no effect in song mode, or while a song or pattern is playing.

QUANTIZE

The QUANTIZE button is used to select the resolution at which drum events are to be recorded. While holding down the QUANTIZE button in pattern mode, the display will read:



The 10 quantize choices are 1/4, 1/6, 1/8, 1/12, 1/16, 1/24, 1/32, 1/48, 1/64, and OFF. The +/- arrow buttons of the keypad can be used to scroll through the choices. The keypad buttons 0-9 can also be used to select the quantize value directly, with 0=1/4 and 9=OFF.

Quantize will only affect newly recorded events, and will not change any events already recorded. Whenever a new quantize value is selected, the swing amount will be reset to 50%. Also, the quantize value determines the step amount to be used when in pattern step mode (PATT+RECORD). If quantize is set to OFF, the steps will be in 384th notes.

ERASE

The erase button is used to erase a single drum, a pattern, or a song. When in PATT mode, pressing and holding the ERASE button causes the following display:

The number 01 would actually be the currently selected pattern number. To erase the selected pattern, press RECORD. The display will change to:

The display will remain this way until the RECORD button is released, after which the display will return to its previous state. To erase a single drum, press and hold the ERASE button, and select the desired drum button. If, for example, TOM 1 is pressed, the display will read:

```
ERASE PATT 01
TOM 1 ERASED
```

TOM 1 is now completely erased from pattern 1. When erasing a single drum, it is not necessary to press RECORD.

In SONG mode, holding the ERASE button will cause the following display:

```
ERASE SONG 01
```

Pressing the RECORD button will erase the currently selected song number.

When erasing a pattern or song, the erase is not executed until RECORD is pressed, and will be aborted if ERASE is released before pressing RECORD. When erasing a drum, the erase occurs as soon as the drum button is pressed. The ERASE button has no effect while a song or pattern is playing.

Erasing individual drums in RECORD mode (selected beats)
While recording in a pattern, individual drums can be erased by holding the ERASE button while playing the drum on the desired beat to be erased. If the drum was hit within a quantize window in which that same drum had been previously recorded, it will be erased. Holding the drum button down will continue to erase any of the same drum events that may occur.

This means that a drum button can be held down with ERASE throughout a part of a pattern while in record in order to erase all of that drum's events that occur within the current quantize step. If eighth notes existed on a snare for example, and erase and snare were held down in record while in quarter note quantize, only the snare events on quarter notes would be erased.

NOTE:
Erase in Record is not active if the quantize value is set to OFF. Events recorded with quantize off can be erased (edited) in step edit mode. See STEP EDIT MODE.

Erasing an entire drum button's rhythm (all beats) or erasing and entire PATTern
While not playing or recording a pattern, the ERASE button can be used to erase all of a drum's events (regardless of quantize mode) from the entire pattern by holding erase and hitting the drum. It can also be used to erase the entire pattern by holding ERASE and hitting RECORD.

STEP EDIT MODE

How to enter STEP EDIT mode
To enter step record / step edit, press and hold PATTERN, and then press RECORD, then release both buttons. The RECORD LED will light, but the PLAY LED will not, indicating that you are in step mode. The display will look as follows:

```
STEP 001 + 00/96
PERC 1  VOLUME:8
```

The first line of the display shows the current beat number, followed by the sub-beat shown as a fraction of 96ths of a beat. The + arrow button is used to move forwards in

single steps of the current quantize value (you cannot move backwards). If quantize is set to 1/16, each step will equal 24/96 (If swing is set to 50%).

If a drum existed on a step in between the current quantize value, it will play as it is stepped past, but the display will not stop on that drum. The lower display shows the drum that was triggered followed by the volume of that drum. Since only one drum can be displayed at a time, if more than one drum occurred on the same beat, the + arrow button will advance through each drum one at a time before advancing to the next step. If a quantize step does not have any drum recorded on it, the display will read EMPTY in place of the drum name. The 16 possible drums are displayed with 7 characters each as follows:

TOM 1	TOM 2	TOM 3	TOM 4	RIDE	CRASH	PERC 3	PERC 4
KICK	SNARE	CLS HAT	MID HAT	OPN HAT	CLAPS	PERC 1	PERC 2

These same displays appear elsewhere in this manual when the drum buttons are displayed. The volume is shown as one of eight possible volumes. To add a new drum to a beat, just press a drum button. That drum, along with its volume (how hard the pad was hit), will be recorded onto the displayed step.

If there were other drums already recorded on that beat, they are not effected. If the drum played already existed on the current beat, it will be replaced with the new volume played.

Erasing a drum from a step
To erase a drum from a step, hold ERASE, and press RECORD, the drum that was being displayed will be erased. To edit the volume of a drum, the 1-8 buttons on the keypad are used, or the displayed drum is replayed. Step mode is exited by pressing STOP or PATTERN. If PLAY is pressed, step mode will be exited, and the pattern will begin playing from the beginning. If swing is on, STEP mode will step in "swinged" increments.

SONG MODE

Selecting and Playing a SONG / SONG Button
Press the SONG button to enter song mode. The display will read as follows, with the last song entered being indicated in the number portion of the display.

```
SELECT SONG 00
STEP 01  PATT 27
```

Selecting a SONG
A SONG is a list of patterns in a specific order, with each entry into the list being a STEP which contains a pattern number. The 00 is underlined to indicate that it will be changed if a new number is selected with the keypad . If a single digit on the keypad is pressed (2, for example), the display will change to:

```
SELECT SONG 2_
STEP 01  PATT 27
```

The display is now indicating that the second digit of the song should be entered. After entering the second digit, the new song is selected. If the second digit is not entered within 2 seconds, the display will revert back to the previous song number, and no new song will have been selected. The +/- arrow buttons are used to scroll forwards and backwards through the steps within a song. Pressing PLAY will start playing the selected song from its beginning, and the PLAY LED will light. The display will read, for example:

```
SONG 00 BEAT 001
STEP 01  PATT 27
```

The first line of the display is now showing the current song number being played, and the current beat number of the pattern being played. The second line of the display is showing the step number and the pattern assigned to the step that is playing at the moment. When the song advances to the next step, the display will show the pattern for step 2, etc. Pressing STOP/CONTINUE will stop playing the song, and the display will return to the select song display. Pressing STOP/CONTINUE again will begin playing the song from the point at which it was stopped. Pressing PLAY will always start the song from the beginning of the first step. When a song reaches its end, it will stop and the PLAY LED will turn off, unless SONG LOOP (see MIDI/UTIL) is on, which will cause the song to loop back to step one and continue playing.

SONG EDIT

A song is edited by using the DELETE, INSERT, and OFFSET buttons, along with the +/- arrow buttons. The arrow buttons are used to move forward and backward through the list of steps in a song. If a song is empty, the display will read:

```
SELECT SONG 00
 STEP 01  END
```

Inserting a Step / INSERT Button

To insert a step into a song at the currently displayed step, press and hold INSERT. The display will read:

```
 INSERT INTO
STEP 01  PATT 00
```

While holding the INSERT button, the keypad or +/- buttons can be used to change the pattern number displayed. To complete the insertion, the RECORD button must be pressed while still holding the INSERT button. The display will read:

```
INSERT COMPLETED
 STEP 01  PATT 00
```

This display will remain until RECORD is released, after which the display will revert to the first INSERT display. If it is desired to insert the same pattern many times, the RECORD button can be pressed repeatedly while holding the INSERT button. Each time a pattern is inserted, the previous pattern at the displayed step is moved to step +1, and all other steps after it are also stepped +1. If a tempo change is desired, pressing TEMPO while holding INSERT causes the following display:

```
 INSERT INTO
STEP 01  TEM 120
```

The keypad can now be used to change the desired tempo to be inserted into the song. Again, pressing RECORD completes the insertion. Pressing the TEMPO button again will change the display to PATT again. The programmable tempo range of a step in a song is from 46 to 200 beats per minute.

Deleting a step / DELETE Button

To delete a step from a song, press and hold the DELETE button, and the display will read:

```
DELETE STEP
STEP 01  PATT 27
```

To complete the deletion, the RECORD button must be pressed while still holding the DELETE button. This shifts all patterns after the displayed step down one step. After all steps have been deleted, the display will show step 1 being END (empty song). The END step cannot be deleted (RECORD will be ignored).

Replacing a step / OFFSET Button

The OFFSET button is used to replace the currently displayed step's pattern or tempo with another patten or tempo. It is provided as a convenience, and essentially does the same thing as DELETE followed by INSERT. Pressing and holding the OFFSET button causes the following display:

```
REPLACE STEP
STEP 01  PATT 00
```

While holding the OFFSET button, the keypad can be used to change the pattern number displayed. To complete the replacement, the RECORD button must be pressed while still holding the OFFSET button. The display will read:

```
STEP REPLACED
STEP 01  PATT 00
```

This display will remain until RECORD is released, after which the display will revert to the first REPLACEMENT display. If the step being replaced contained a tempo, the display will read TEM instead of PATT. Whether replacing a pattern or a tempo, the TEMPO button can be turned on or off so as to change what the replacement will be. When replacing a step, all other steps remain unchanged, since the number of steps does not change.

Erasing an entire SONG

To erase an entire song, press and hold the ERASE button. The display will read:

```
ERASE SONG 00
```

While holding the ERASE button, if RECORD is pressed, the song will be erased, and the display will read:

```
ERASE SONG 00
SONG ERASED
```

This display will remain until RECORD is released. In all of the above editing examples, no changes to the song will occur until RECORD is pressed.

COPY

Copying a PATTern to itself

The copy button is used to append a pattern or song to another pattern or song. It only functions while the COPY button is held down. If the COPY button is released (either before or after the copy is executed), the previous mode will show up on the display, and copy mode is exited. When in PATT mode, and COPY is pressed and held, the display will read:

Both displayed pattern numbers will actually display the current pattern number (00-99). Pressing RECORD completes the operation, and the display reads:

This display remains until the RECORD button is released, which then returns the display to its previous state. The above example demonstrated copying a pattern to itself, which will double the length of that pattern.

Copying a PATTern to another PATTern

To copy a pattern to another pattern, press and hold COPY, then enter the two digit pattern number with the keypad. The display will show the selected pattern number. Pressing RECORD initiates the copy, and appends the source pattern (the current pattern before COPY was pressed) to the destination pattern (the pattern entered with the keypad). If the destination pattern was empty, then the destination now contains an exact copy of the source pattern.

If the destination was not empty, then the destination's length is increased by the length of the source pattern, and the source pattern is appended to the end of the destination pattern. All voice, mix, and tuning assignments made on the source pattern will be overridden by the destination pattern's assignments. If the length of the destination pattern would result in more than 682 beats after copying, the copy will not be executed, and the display will read:

Copying a single drum pad's rhythm to another drum pad

Single drum pads can also be copied to other pads. If a drum pad (CLOSED HAT, for example) is pressed while holding the COPY button, the display will read:

The display is now waiting for a second drum pad to be pressed (pressing RECORD at this point will do nothing). If for example, TOM 1 was pressed, the display would read:

```
COPY FROM PATT
CLS HAT > TOM 1
```

The display of the second pad pressed remains underlined, indicating that it can still be changed by selecting another drum pad. As in copying patterns, once RECORD is pressed, the copy will be complete, and the display will read "COPY COMPLETE."

The length of the rhythm of the destination pad will not be changed, and the source drum rhythm will be merged with the destination drum rhythm. The destination drum will remain assigned to its previous voice, mix, and tuning. A drum from one pattern can be copied to a drum of another pattern if the destination pattern is selected before selecting the source and destination drum buttons.

Copying a SONG to itself
In SONG mode, pressing and holding the COPY button will result in the following display:

```
COPY FROM SONG
01 TO SONG 01
```

The 01 display will actually show the currently selected song number. Like in PATT mode, pressing RECORD will append the current song to itself, making it twice as long.

Copying a SONG to another SONG
If a new song number is selected, the display will show the newly selected song number, and pressing RECORD will append the source song number (the number selected before pressing COPY), to the destination song number (the number selected while holding COPY).

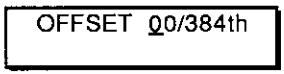
This mode is very useful, since a verse consisting of more than one pattern could be entered into a song, and then appended into another song when needed without having to re-enter the patterns for the verse. If the destination song would result in more than 255 steps after copying, the copy will not be executed, and the display will read:

```
TOO MANY STEPS
IN SONG
```

In all cases, the copy is not executed until RECORD is pressed, and will be aborted if COPY is released before pressing RECORD. The COPY button has no effect while a song or pattern is playing.

OFFSET

The OFFSET button is used to add or subtract a number of clock pulses (384th notes) to a drum or pattern. If OFFSET is held down, the display will show:



The keypad can be used to enter a two-digit number (00-99), or the +/- arrow buttons can be used to increment or decrement the amount. The range of the offset is ±99. Entering a value with the keypad will remain the current display sign (+ or -). To change the sign, the +/- buttons must be used to "pass through" zero. Pressing the RECORD button executes the offset command for all drums in a pattern, resulting in the following display:

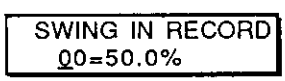
This display remains until RECORD is released. The offset function moves drum events ahead (+) or behind (-) the beat in 384th note steps. This is used to change the "feel" of the pattern. If an event is moved past the end of a pattern, it is put at the beginning. Likewise, if an event is moved to before the beginning, it is put at the end. Like the ERASE function, individual drums can be offset as well. If, for example, TOM 1 is pressed, the display will read:

TOM 1 is now offset ahead of its previous location by 3 384th notes. Unlike quantize, this feature modifies the already existing drum events in a pattern, and does not effect any newly recorded events in the pattern. Because of this, it is suggested that a copy of a pattern be made before changing the offset so that the original will be easily retrievable if the results are undesirable.

The OFFSET button does not function while playing a pattern, or while in song mode.

SWING

The SWING button is used to change the ratio between two equal rhythmic values (such as 1/16th notes) in order to achieve a shuffle feel. If SWING is held down, the display will show:



The display above shows the current swing value. The +/- arrow buttons can be used to increment or decrement the swing number, with the percentage of swing

shown beside it. 0 swing = 50% = no swing. The range of the swing is determined by the current quantize value. The swing amount will only effect newly recorded drum events, like in quantize. The swing amounts are shown below:

QUANT	SWING	PERCENTAGE
1/4	00	50.0%
1/6	00-16	50.0%-75.0%
1/8	00-12	50.0%-75.0%
1/12	00-08	50.0%-75.0%
1/16	00-06	50.0%-75.0%
1/24	00-04	50.0%-75.0%
1/32	00-03	50.0%-75.0%
1/48	00-01	50.0%-62.5%
1/64	00	50.0%
OFF	00	50.0%

The SWING button does not function while playing a pattern, or while in song mode.

FILL

The FILL button is used to allow repeated entries of drums into a pattern without having to repeatedly press the drum buttons. While FILL is held down, pressing and holding any drum button will cause that drum to repeat at the current quantize rate until either the FILL button or the drum button is released. The volume of the repeats will be determined by how hard the drum button is first hit. Fill will only work while playing or recording.

MODE / DATA ENTRY BUTTONS

All MODE buttons function as on/off switches. This means that they are pressed once to enter the mode, and pressed again to exit the mode. When any of the modes have been entered, the associated LED will be lit. For simplicity, any time PATTERN or SONG is pressed, any previously selected mode will be turned off.

The VOICE, TUNE, and MIX settings can be stored with each pattern by holding the RECORD button and pressing VOICE, TUNE, or MIX, respectively. Any changes made to these parameters without storing them are temporary edits that will be lost if a new pattern is selected. Copying a pattern to an empty pattern will also copy these settings. Copying a pattern to a not empty pattern will not copy these settings, but will instead retain the settings of the pattern being copied to. An empty pattern defaults to a standard voice assignment with no pitch shift, and nominal mix levels.

IMPORTANT NOTE: ***VOICE, TUNE, AND MIX ASSIGNMENTS CANNOT BE STORED IN AN EMPTY PATTERN UNLESS THE LENGTH HAS BEEN CHANGED TO A LENGTH OTHER THAN 8 BEATS.***

VOICE

Selecting a VOICE

To change the sound of any of the drum pads, the desire pad is pressed. If KICK is pressed, for example, the display will show:

```
KICK PAD = 01
24" POWER KICK
```

The slider, keypad, or +/- arrow buttons can be used to change the selected sound, and the lower display will show the name of the currently selected sound. There are a total of 49 sounds to choose from. Any changes made to any of the drum pads are temporary until stored and will be lost as soon as a new pattern is selected, or the current pattern is reselected (unless Manual Voice/Tune/Mix is off, see below) .

Storing VOICE settings

To store the VOICE settings, press and hold RECORD, and then press VOICE. When this is done, the voice settings will be permanently stored with the current pattern.

IMPORTANT NOTE: ***VOICE, TUNE, AND MIX ASSIGNMENTS CANNOT BE STORED IN AN EMPTY PATTERN UNLESS THE LENGTH HAS BEEN CHANGED TO A LENGTH OTHER THAN 8 BEATS.***

TUNE

The TUNE mode is used to select the desired pitch for each drum pad, and the click. When it is pressed, its LED will light, and the display will read:

```
CLICK
PITCH = 0
```

This display appears when TUNE is first pressed, and the display was not previously in MIX or VOICE mode for a drum pad. It is used to select the pitch of the click (metronome). The pitch amount can be changed with the slider,or the +/- arrow buttons. The range is from -16 to +15. As with the voice mode, pressing a drum pad will select that drum for pitch editing. Also like in voice mode, changes made to drum pads are temporary until stored by holding RECORD and pressing TUNE. **See IMPORTANT NOTE under storing voice settings.**

MIX

The MIX button is used to change the volume, panning, and output assignment of each drum button. When MIX is pressed its LED lights, and the display reads:

```
CLICK OUTPUT 1
VOL: 65  PAN: < >
```

This display appears when MIX is first pressed, and the display was not previously in VOICE or TUNE mode for a drum pad. It is used to select the output, the volume, and the panning of the click (metronome). The output is selected with the 1 and 2 buttons of the keypad to select stereo outputs 1 or 2, respectively. The volume control is adjusted with the slider (00 to 99), and the panning is adjusted with the +/- arrow buttons. The panning is seven position, and the display will show <3, <2, <1, <>, 1>, 2>, or 3>. As with the voice mode, pressing a drum pad will select that drum for mix editing. Also like in voice mode, changes made to drum pads are temporary until stored by holding RECORD and pressing MIX. **See IMPORTANT NOTE under storing voice settings.**
NOTE: The Volume slider on the front controls output 1 only.

TEMPO

The TEMPO button is used to change the tempo of a pattern or song. The tempo can be stored with a song, but not with a pattern. While in pattern mode, the tempo remains at its previous setting until changed. While in song mode, the tempo changes to the programmed tempo each time a tempo step is encountered within a song. While in pattern mode, pressing the TEMPO button causes the TEMPO LED to light, and results in the following display:

```
TEMPO = 120
BEATS PER MINUTE
```

The +/- arrows and the SELECT slider can be used to select a new tempo, or a tempo can be entered directly with three digits on the keypad. Tempo changes are effective as soon as they are entered, and the RECORD button does not have to be pressed.

In SONG mode, the tempo is displayed as a relative amount of change from the pre-programmed song tempo. The display reads:

```
SONG TEMPO ±100%
  TEMPO = 120
```

The current tempo (the one most recently recalled within a song) will be displayed in the lower display, and the upper display shows the percentage of programmed tempos to be used. The keypad can be used to enter a three-digit number, or the +/- arrow buttons can be used to increment or decrement the amount. The range of the shift is 50% (half tempo) to 200% (double tempo). This change is shown as a percentage so that any tempo changes that occur in the song will keep their time ratios constant.

MIDI / UTIL

The MIDI / UTIL button is used to access a number of miscellaneous functions that usually do not need to be accessed very often. The functions are scrolled through with the SELECT slider, with the display showing the current function, and each function being numbered for easy reference. The keypad and +/- arrow buttons are used to change the parameters. All of these parameters are global parameters, e.g., they are set once for the entire machine and are not programmable for each pattern or song. The pages are as follows:

MIDI CHANNEL

The first MIDI UTIL page is MIDI CHANNEL. The display looks like this:

```
01 SET MIDI
CHANNEL: 01
```

The keypad and +/- buttons can be used to change the MIDI channel from 01 to 16. This sets the MIDI channel that the HR-16 will transmit and receive on. If 00 is selected, the display will read OMNI. In OMNI mode, the HR-16 will transmit on channel 1, and will receive on all channels. The default is OMNI.

RECEIVE MIDI DRUMS

The RECEIVE MIDI DRUMS function is used to determine whether or not incoming MIDI notes from a sequencer, keyboard, or MIDI drum pad controller should trigger the drums. The display looks like this:

The +/- buttons are used to turn this function on or off. The default is OFF.

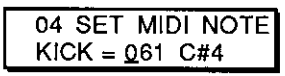
TRANSMIT MIDI DRUMS

The TRANSMIT MIDI DRUMS function is used to determine whether or not the HR-16 drum events should be transmitted out MIDI. The display looks like this:

The +/- arrow buttons are used to turn this function on or off. The default is OFF.

MIDI NOTE ASSIGNMENT

The MIDI NOTE ASSIGNMENT function is used to assign a specific MIDI note to each drum button. The display looks like this



The lower display shows the currently selected drum pad name, and the MIDI note number and key assigned to it. The drum pads can be used to select another drum to assign, and the keypad and +/- arrow buttons can be used to select the desired note.

LISTING OF MIDI NOTE ASSIGNMENT DEFAULTS

DRUM	MIDI NOTE	KEY VALUE
CLICK	034	A#0
KICK	035	B0
SNARE	038	D1
CLS HAT	042	F#1
MID HAT	044	G#1
OPN HAT	046	A#1
CLAPS	039	D#1
PERC 3	067	G3
PERC 4	068	G#3
TOM 1	048	C2
TOM 2	045	A1
TOM 3	041	F1
TOM 4	063	D#3
RIDE	051	D#2
CRASH	049	C#2
PERC 1	065	F3
PERC 2	062	D3

MIDI ECHO

The MIDI ECHO function is used to echo any MIDI information that is received at the MIDI input to the MIDI output. The display looks like this:

```
05 ECHO MIDI IN
TO MIDI OUT: ON
```

The +/- arrow buttons are used to turn this function on or off. The default is ON. The HR-16 will not echo system exclusive data.

MIDI PROGRAM CHANGE

The MIDI PROGRAM CHANGE function is used to allow MIDI program change commands to select pattern numbers. MIDI programs 00 through 99 will select patterns 00-99, and MIDI programs 100-127 will select patterns 00 through 27. The display looks like this:

```
06 MIDI PROGRAM
PATT SELECT: OFF
```

The +/- arrow buttons are used to turn this function on or off. The default is OFF. When ON, incoming MIDI program change commands will select patterns. Program changes will be ignored while a pattern or song is playing.

CLOCK SOURCE

The clock source function is used to select what clock will drive the HR-16. The display will show one of the three following choices:

```
07 CLOCK SOURCE:
MIDI & INTERNAL
```

```
07 CLOCK SOURCE:
INTERNAL ONLY
```

```
07 CLOCK SOURCE:
TAPE SYNC IN
```

By using the keypad or +/- arrow buttons, one of the three clocking sources can be selected. The default setting is MIDI & INTERNAL (1), with the other choices being INTERNAL ONLY (2), and TAPE SYNC IN (3).

MIDI CLOCK OUT

The MIDI CLOCK OUT function is used to turn on or off the transmission of MIDI clocks. The display is as follows:

```
08 MIDI CLOCK
OUT ENABLE: ON
```

The +/- arrow buttons are used to turn this function on or off. The default is ON.

AUTO START

The AUTO START function is used to turn on or off the capability of starting a pattern or song automatically if a MIDI start or tape sync signal occurs. The display is as follows:

```
09 AUTO START
ENABLE: ON
```

The +/- arrow buttons are used to turn this function on or off. The default is ON.

The HR-16 does not need to turn on or off its internal clock, since it intelligently determines what clock to use when necessary. A functional description of the clocking possibilities are shown in the table below:

CLOCK SOURCE	AUTO START	PRESS PLAY	RECEIVE MIDI START	RECEIVE TAPE SYNC
MIDI & INTERNAL	OFF	2	6	1
MIDI & INTERNAL	ON	2	6	1
INTERNAL ONLY	OFF	2	1	1
INTERNAL ONLY	ON	2	2	1
TAPE SYNC	OFF	3	1	4
TAPE SYNC	ON	3	1	5

1. Do nothing.
2. Start playing from beginning with internal clock.
3. Enter play mode, but don't start playing until tape sync clock occurs.
4. If in play mode, start playing, otherwise ignore sync.
5. Start playing from beginning with tape sync clock.
6 Start playing from beginning with MIDI clock.

If tape sync and auto start are on and a pattern or song is playing, it will stop playing automatically if the tape sync signal is interrupted for more than 1 second. If auto start is not on, the HR-16 will wait in play for more sync pulses.

CLICK VALUE

The click value function is used to set the metric value of the click (metronome). The display looks like this:

The possible values are the same as in quantize: 1/4, 1/6, 1/8, 1/12, 1/16, 1/24, 1/32, 1/48, 1/64, and OFF. The keypad and +/- arrow buttons are used to change the value. The default is 1/8. If the CLICK value is set to OFF, it will not click in either RECORD or PLAY.

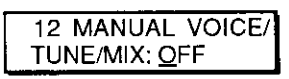
CLICK IN PLAY

The CLICK IN PLAY function is used to turn on or of the click while playing a pattern or song. It does not effect the click in record. The display looks like this:

The +/- arrow buttons are used to turn this function on or off. The default is ON.

MANUAL VOICE / TUNE / MIX

The MANUAL VOICE / TUNE / MIX function is used to disable any programmed voice assignment, tuning, and mix settings so that all patterns and songs play with the current assignments. The display is as follows:



The +/- arrow buttons are used to turn this function on or off. The default is OFF, so that the programmed settings can be used.

BUTTON DYNAMICS

The BUTTON DYNAMICS function is used to select the response of the drum pads. The display will look like this:

The +/- arrow buttons are used to select the pad dynamics choices. The choices are LOUD, MEDIUM, SOFT, and FIXED 1 through FIXED 8. The first three choices are 3 different loudness curves. In the FIXED 1 through 8 settings, the pads will always play the same dynamics (1 through 8), regardless of how hard they are

hit. These curves will also effect MIDI input triggering of the drums. In addition, MIDI input velocity sensitivity allows 32 steps of volume control per drum when used with external controllers such as drum pads or sequencers. Note, however, that recording MIDI input information on the HR-16 will only store 8 steps of velocity inside the HR-16's internal record memory.

SONG LOOP

The SONG LOOP function turns on or off song looping. The display is as follows:

```
  14 SONG LOOP
ENABLE: OFF
```

The +/- arrow buttons are used to turn this function on or off. The default is OFF. When ON, a song that reaches its end will loop back to the beginning of that song.

TAPE

The TAPE button is used to access the tape interface features of the HR–16. This allows the user to save and retrieve sequence data with an ordinary cassette recorder. Pressing and holding the TAPE button results in the following display:

```
SAVE ALL PATTS &
SONGS TO TAPE
```

Pressing the RECORD button initiates the save to tape. Both buttons can now be released, since this operation may take over two minutes, during which the display will read:

```
SAVING TO TAPE..
PATT: 00
```

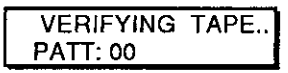
The display shows the current pattern or song being output. This display will advance until all data is output. Pressing the STOP button will abort the operation. Before pressing RECORD, the +/- arrow buttons can be used to access the other five tape pages. They are as follows:

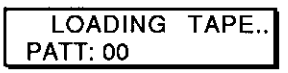
```
CHECK TAPE DATA
FOR ERRORS
```

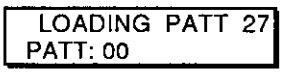
```
LOAD ALL PATTS &
SONGS FROM TAPE
```

```
  LOAD ONE PATT
FROM TAPE: 00
```

In all five of these pages, pressing RECORD initiates the operation. The verify function is used to insure that the data just recorded to tape is good. Load from tape loads the entire memory with the data on tape. Load patt and load song allow a single pattern or song to be loaded from a tape. The keypad can be used to select the desired number. After pressing RECORD, the display will change to the following (depending on the page shown when it was pressed):







Again, the RECORD and TAPE buttons can be released, and the display will continue until the operation is complete, with the currently loading or verifying pattern or song number being shown in the display. When loading one pattern or song, the display will continue to show the selected pattern or song number in the upper display. When sending out MIDI data, the display shown above will remain until the data has been sent out. After completion of the tape functions, the display will return to its previous state (select pattern or select song). If an error is encountered while loading a tape, the display will show ERROR as soon as it occurs, for example,

The tape will attempt to continue to load, but it is possible that the data will be corrupted and therefore unusable.

During any of the tape operations (but not the send MIDI function), the STOP/CONTINUE button can be used to abort the operation. When loading in all patterns and songs, aborting the tape may leave unusable data in memory. When loading one pattern or song, aborting after the selected pattern or song has passed will not cause any problems.

STORING TO DISK USING MIDI SYSTEM EXCLUSIVE BULK DATA DUMP

The HR-16 send to MIDI function is provided so that the data can be stored on a computer, a Yamaha MDF-1 (MIDI Filer) or a Yamaha DX-7IIFD. The data is sent out as one block of system exclusive data, with the length being determined by the amount of memory being used. No more than 50% of memory should be full when saving to a DX-7IIFD or its buffer will be filled. The HR-16 will automatically receive MIDI system exclusive sequence data from any of these devices without having to select a specific page. If the system exclusive data starts to come in, the display will read:

```
RECEIVING DATA
FROM MIDI.....
```

This display will remain until the data has been completely loaded, after which the HR-16 will return to song 99. Note that any time the HR-16 receives sequence data from MIDI, any data previously in memory will be lost.

SYNCING THE HR-16 TO TAPE

It is possible to sync the HR-16 to a tape recorder with the help of the TAPE SYNC mode. In this mode, the HR-16 reads a master clock pulse from a track of a tape recorder, which keeps all of the sequencers/drum machines perfectly in time with the recorded information on the tape machine. This method has the advantage of eliminating the need to print drum machine or synthesizer parts on tape, since you can use the master clock recorded on tape (or "sync track") to trigger the drum machine and synthesizers via the sequencer.

RECORDING THE SYNC TONE

Before recording any audio information on the tape machine, you must lay a "Sync Tone" down on one track of the tape machine. This is usually done on an outside track (track 1 or 8 on an eight track machine; track 1 or 16 on a sixteen track machine; etc.) to keep the crosstalk to a minimum.

1) Connect the TAPE OUT jack of the HR-16 to the input of the desired track of the tape machine.

2) Press PLAY on the HR-16, then adjust the level of the track so that it reads approximately "0VU".

3) *You must select a tempo for the song on the HR-16 at this time as it cannot be changed later.*

4) Begin recording on the tape machine.

5) Press PLAY on the HR-16. Allow the HR-16 to play through its entire song before stopping the recording. When the song has ended, stop the recording and rewind the tape machine. You are now ready to trigger the HR-16 from the sync tone that you just recorded.

NOTES:
A) There is no TAPE SYNC OUT switch as this is always active.

B) Keep the Sync signal at about 0VU in order to avoid dropouts. If the HR-16 does not see the sync tone for 1/2 second, it will assume that the sync tone has ended and will go into STOP mode.
C) If possible, do not use any noise reduction , EQ, or signal processing on the sync tone.
D) Avoid recording high energy, high-frequency tracks next to the sync track.

TO CLOCK THE HR-16 FROM TAPE SYNC

1) Connect the output of the track of the tape machine that has the sync tone to the TAPE IN jack of the HR-16.

2) Press and hold the CLOCK button. The display will read:

CLOCK SOURCE
MIDI & INTERNAL

3) Use the keypad or + and - buttons to select TAPE SYNC IN. The display will read:

CLOCK SOURCE
TAPE SYNC IN

4) Put the tape machine into PLAY. The HR-16 will automatically start as soon as it receives the sync tone, causing any other sequencers connected to it to play. *Be careful to return to the beginning of the sync tone since the HR-16 will automatically begin playing any time that it receives the sync tone.*

USING THE HR-16 AS A SOUND SOURCE

It is possible to trigger the HR-16 from an external controller such as a sequencer, keyboard, or drum pad controller through MIDI. The HR-16 built in sequencer remains idle while the external contoller triggers the voices. Be sure to activate MIDI / UTIL #2 RECEIVE MIDI DRUMS ON. If this is set to OFF, it will not be possible to trigger any voices on the HR-16 from the controller.

MIDI program change commands sent to the HR-16 can access patterns. MIDI /UTIL #6 MIDI PROGRAM PATT SELECT must be set to ON to activate this function. This feature was designed to give external MIDI controllers access to different sound set ups stored in any of the 100 available patterns.

IMPORTANT NOTE: ***VOICE, TUNE, AND MIX ASSIGNMENTS CANNOT BE STORED IN AN EMPTY PATTERN UNLESS THE LENGTH HAS BEEN CHANGED TO A LENGTH OTHER THAN 8 BEATS.***

START/STOP FOOTSWITCH

The START/STOP footswitch jack is provided for a momentary normally open footswitch that connects the jack's tip to its sleeve (ground). While in stop, the footswitch will function like the play button and start a pattern or song from the beginning. While in play, the footswitch acts like the stop button, and stops playing.

REMAINING MEMORY

Holding RECORD and pressing LENGTH causes the following display:

```
REMAINING MEMORY
100 PERCENT
```

This shows the amount of memory that has not been used. Note that some operations may not be possible even though it seems that there is still a small amount of memory available. This is due to the fact that the HR-16 requires enough memory to duplicate a pattern before it can be recorded on, or length changed, or offset, etc. If a large pattern is attempted to be altered when there is not enough memory to complete the operation, the display will indicate that there is not enough memory available to complete the operation.

CLEARING MEMORY

To clear all of the HR-16's memory and reinitialize all of its variables, turn power off, press and hold ERASE, DELETE, and RECORD, and turn on the power while holding these buttons down for 3 seconds.

HR-16 MIDI IMPLEMENTATION CHART

Function		Transmitted	Recognized	Remarks
CHANNEL	Default	1-16	1-16	Memorized
	Changed	1-16	1-16	
MODE	Default	Mode 3	Mode 1	Honors modes 1,3
	Messages			
	Altered			
NOTE NUMBER	True Voice	00-127	00-127	see note 1
VELOCITY	Note on	O	O	
	Note Off	X	X	
TOUCH	Key's	X	X	
	Chan's	X	X	
PITCH BENDER		X	X	
CONTROL CHANGE		X	X	
PROGRAM CHANGE		X	O	Program change commands select pattern numbers
	True #		00-99	
SYSTEM EXCLUSIVE		O	O	
SYSTEM COMMON	Song Pos	O	O	
	Song Sel	X	X	
	Tune	X	X	
SYSTEM REAL TIME	Clock	O	O	
	Messages	O	O	
AUX	Local Control	X	X	
	All Notes Off	X	X	
	Active Sense	X	X	
	Reset	X	X	

NOTES: Note 1:Transmitted and recognized note numbers can be assigned by panel operation.

Mode 1: OMNI ON, POLY Mode 2 : OMNI ON, MONO **O: YES**
Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO **X : NO**

HR-16 TROUBLESHOOTING CHART

SYMPTOM	WHAT 'S PROBABLY WRONG	WHAT TO DO
No power.	Power supply not properly connected. Power switch not turned on. Power supply malfunction.	Check power supply connection. Push in power switch. Check with dealer to test the power supply on a different unit.
No sound.	Audio cable shorted. Output selection. Volume slider down. Wrong output connected.	Check cable. Check MIX parameter. Raise volume slider. Connect proper output.
One or more pads not functioning	MIX setting	Check MIX parameters for proper output selection and volume.
Seems to miss recording some beats	Quantize value	Select proper quantize value.
Not working from external controllers.	Receive MIDI notes is OFF. MIDI channels aren't matched.	Set receive MIDI notes to ON . Select the MIDI channel on the HR-16 that is being output by the controller.
Not memorizing voice, tune, and mix assignments.	Trying to store in a pattern that is empty.	Select a length other than 8 beats.
Not recalling the sound set up when the pattern is selected.	Never memorized . Manual voice/tune/mix is ON.	Never stored (see above). Turn Manual voice, tune, mix OFF.
Won't save or load to tape.	Bad connections. Bad tape. Level of sync tone is too high or low. Errors in data.	Check wiring. Use a certified data tape. Try a higher or lower level to tape. Re-save the data.
Won't sync to tape.	Bad connections. Level on tape.	Check wiring. Set level at or near 0 vu, Turn off noise reduction if possible.

If problems aren't solved after troubleshooting and refering to the manual, consult your Alesis dealer for assistance.