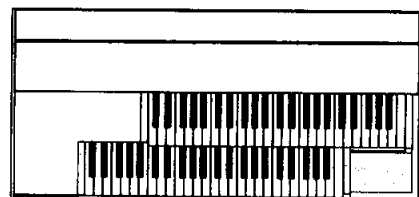


6 Music Disk Recorder

The Music Disk Recorder (M.D.R.) is a sophisticated recording device built into the Electone that lets you record your performances. It works like a cassette tape recorder, but it records performance data instead of sounds. The Music Disk Recorder not only records the notes you play; it also remembers the voices and rhythms you select, the front panel controls you change, as well as all expression pedal, footswitch and knee lever positions, to reproduce your performance exactly as you play it. Moreover, you can separately record different parts of your performance, building up a song part by part.

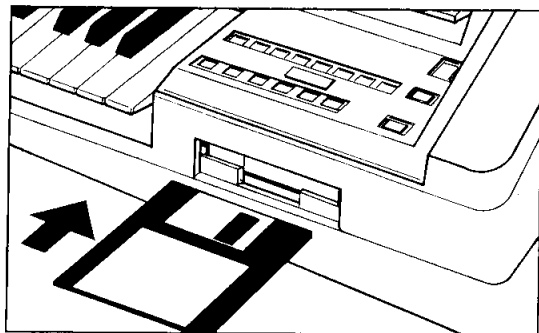


Using Disks With the Music Disk Recorder

The M.D.R. records all your performance data to disks. A blank disk has been included with your Electone for you to record your performances.

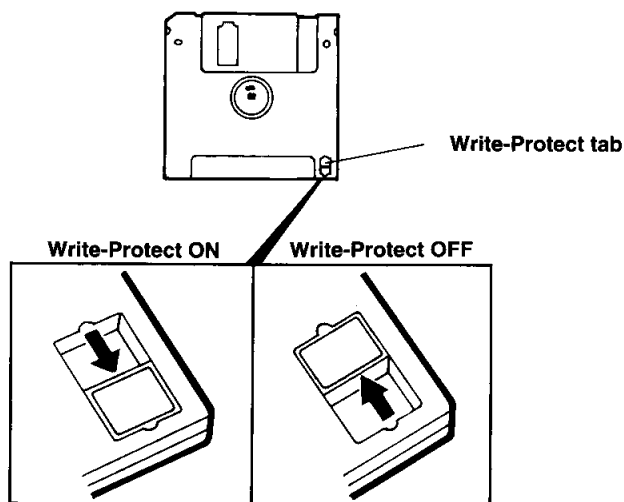
Inserting the disk:

Put the included disk, face up, into the disk slot under the M.D.R.



LED lights briefly when disk is inserted.

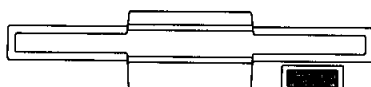
Note: Either double-sided double-density (2DD) or double-sided high-density (2HD) 3.5-inch microfloppy disks can be used with the M.D.R.



Note: When you wish to record to a disk, make sure the disk's Write - Protect tab is set to OFF. Set it to ON when you wish to protect valuable data from being accidentally erased.

Ejecting the disk:

To remove the disk, press the EJECT button next to the disk slot.



Formatting a Disk

Before recording a performance to your blank disk, the disk must first be formatted.

To format a disk:

1. Put the disk, label facing up, into the disk drive.

2. Press the STOP button.

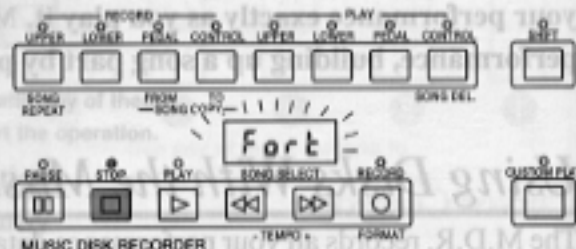
3. While holding down the SHIFT button, press the FORMAT button.

This step puts the format operation on stand-by, indicated by the dashes in the M.D.R. display and the flashing LED above the FORMAT button.

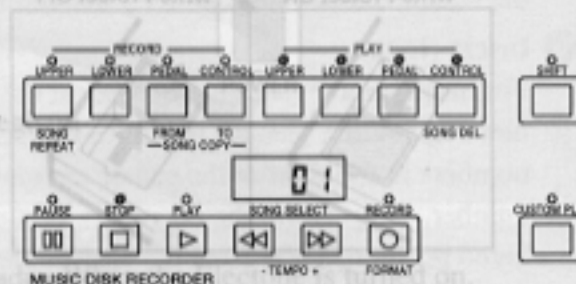
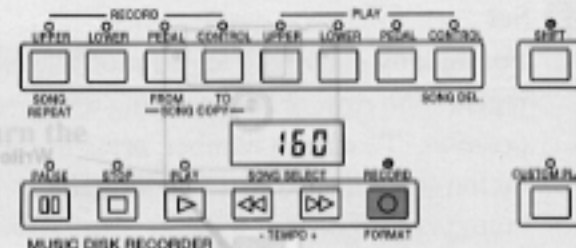
First delete unnecessary registrations, then perform the operation again.

4. Press the FORMAT button again to begin formatting.

The LED above the FORMAT button stays lit. The number "160" appears in the M.D.R. display and counts down to "001" as the disk is being formatted. When formatting is completed, operation returns to the original STOP status.



Note: If you format a disk that contains previously recorded data, all data on the disk will be erased. To avoid inadvertently formatting a disk after this step, press the STOP button.

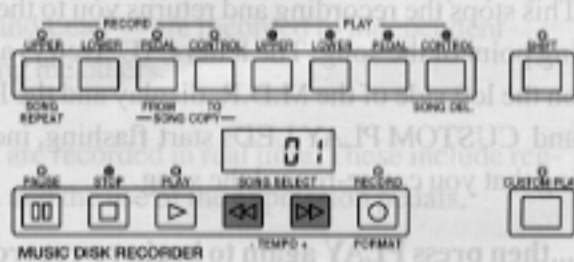


Making a Recording

Recording with the Music Disk Recorder is as easy as using a tape recorder. In this section, you'll learn how to record your first complete performance with the Music Disk Recorder.

To record a song:

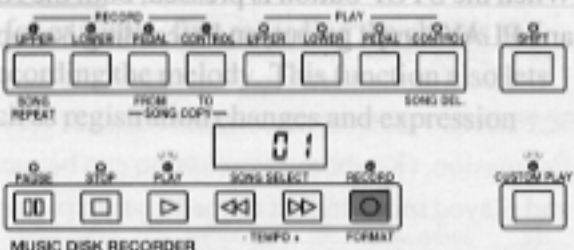
- 1. Set the desired registrations on the Electone.**
Make all the Electone settings necessary for the song you will record. This means entering the all registrations you will need for the entire performance in the Registration Memory. Make sure also to select the registration that you will use at the beginning of the song.
- 2. Put a formatted disk into the disk slot.**
- 3. Use the SONG SELECT (◀◀, ▶▶) buttons to select the song number for recording.**
Up to 40 songs can be stored on a disk. When a disk is first inserted, song number 01 is automatically selected.



Note: If the disk has songs already recorded to it, use the SONG SELECT buttons to search for a song number that has not yet been recorded to.

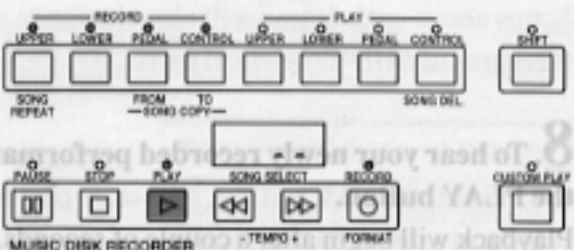
4. Press the RECORD button.

The RECORD lamp lights up and the PLAY lamps begins blinking, indicating that the Music Disk Recorder is ready to record.



5. Press the PLAY button.

The PLAY lamp lights up and small bars flash across the M.D.R. display from left to right, indicating that the recorder is being set up.

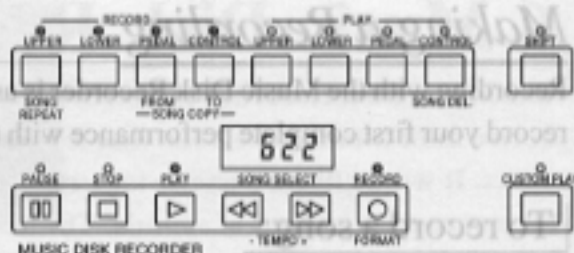


Note: In this step, the registrations and other settings on the Electone are recorded — before the recording of any performance data.

- Select the song number to which you will record your performance.
- Press the RECORD button.

6. After numbers appear in the display of the Recorder, begin playing.

Once the setup operation in step #5 is complete, a number will appear on the recorder display indicating that you can begin recording your performance. The number also indicates the amount of memory left on the disk.



Note: The short time it takes to set up for recording is recorded as well, causing a short pause before playback of the song.

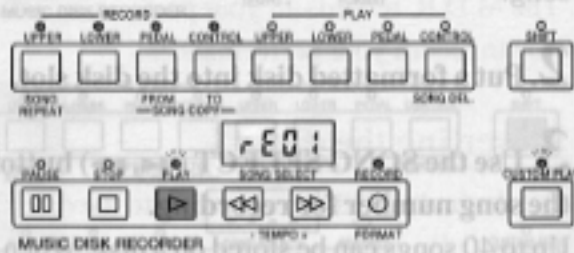
2. Press the STOP button.

If you make a mistake during recording: Press the PLAY button while the recorder is still running...

This stops the recording and returns you to the starting point of the song. The letters "rE" (retry) appear on the left side of the M.D.R. display and the PLAY and CUSTOM PLAY LEDs start flashing, indicating that you can re-record the song.

...then press PLAY again to begin re-recording the song.

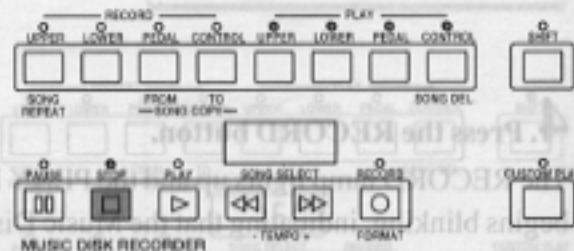
Re-recording starts from the beginning of the song and replaces the previously recorded performance with the newly recorded performance.



Note: If you format a disk that contains previously recorded data, all data on the disk will be erased. To avoid inadvertently formatting a disk after this step, press the STOP button.

7. When you finish playing, press the STOP button.

When the STOP button is pressed, both the RECORD and PLAY lamps go out, and recording is stopped.



Note: When the available memory reaches "008" or less, the numbers begin flashing to warn you. If this happens, stop recording before the display reaches "000."

8. To hear your newly recorded performance, press the PLAY button.

Playback will begin after a couple of seconds.

Note: In this step, the registrations and other settings on the Electronic are recorded — before the recording of any performance data.

Note: For more information on playback and other playback-related functions, see the Normal Playback section below.

Outline of M.D.R. Operation

Though the M.D.R. is as easy to operate as a cassette tape recorder, it is far more versatile. Since it records all Electone settings and control movements as well as the notes you play as digital data, it allows you much more flexibility and control than even the most sophisticated tape recorder. Basically, the M.D.R. independently records the following three types of data:

1) Registration data (including Bulk data)

All registrations stored to the Registration Memory numbered buttons as well as the registration currently set to the panel, are recorded at the beginning of a song, before the actual recording of your performance. Bulk data is also saved to the song with the Registration data. Bulk data includes: Registration Shift settings, Rhythm Pattern (User rhythms) and Rhythm Sequence data, and User voices.

2) Performance data

The M.D.R. records your performance on the keyboards and pedalboard of the Electone exactly as you play it, even recording the strength at which you play the keys and how hard you press them down while playing. The various types of performance data — Upper, Lower, Pedal and Lead — are recorded to independent "tracks," so that you can change any one of them without affecting the others.

3) Control data

All changes you make on the Electone during your performance are recorded in real time. These include registration changes (excepting those made from the LCD display), and the use of the expression pedals, footswitches and knee lever.

Note: The data created by other Electones is not compatible with the EL-90/70. Only the Rhythm Program data is compatible between EL-90 and EL-70.

Separately Recording the Parts of a Song

You can also record the parts of your performance independently; for example, first recording the chords and bass to the song (using the Lower and Pedal parts), and after that recording the melody. This function also lets you record keyboard percussion and performance control data, such as registration changes and expression pedal operation, separately from the other parts of the song.

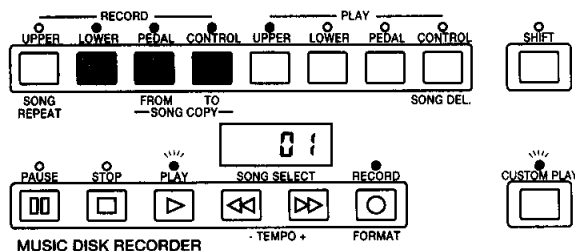
To record parts separately:

1. Set up the Music Disk Recorder for recording, as you did in the section Making a Recording above.

The first steps in recording parts separately are the same as for normal recording:

- 1) Memorize all the registrations needed for your performance to the Registration Memory numbered buttons, and set the registration that will be used at the beginning of the song.
- 2) Insert a formatted disk.
- 3) Select the song number to which you will record your performance.
- 4) Press the RECORD button.

2. If you wish to, you can select individual parts for recording by pressing the appropriate RECORD buttons in the upper row. (For this example, press LOWER, PEDAL and CONTROL.)



LEDs above selected parts light.

- UPPER** – Selects performance data of the Upper keyboard.
- LOWER** – Selects performance data of the Lower keyboard.
- PEDAL** – Selects performance data of the Pedalboard.
- CONTROL** – Selects Control functions (e.g., expression pedal and footswitch movements, and registration changes).

The LED lamps above the buttons indicate the record status of the parts.

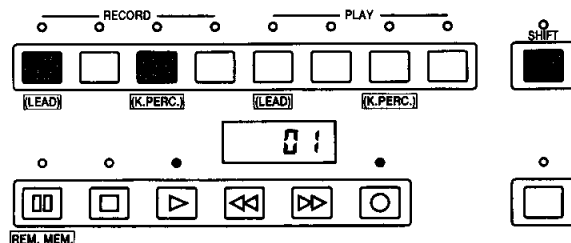
This example operation disables recording of the Upper part.

Note: If you want to record any one or all of these four basic parts (Upper, Lower, Pedal and Control) at the same time, this step is actually unnecessary. Pressing the RECORD button automatically sets up the M.D.R. to record the above four parts. The Upper, Lower, Pedal and Control performance data will automatically be selected when you press the RECORD button, but only those parts that you actually play will be recorded. Later (in step #6 below), you can also record the Upper part without having to select it here in step #2.

If you wish to select the Lead and/or Keyboard Percussion parts for recording:

Hold down the SHIFT button and simultaneously press the appropriate button in the top row. The two buttons (indicated in the illustration at right) function as Lead and Keyboard Percussion selectors in the record mode.

[Hidden Functions on MDR]



- LEAD** – Selects performance data of the Lead voice.
- K.PERC.** – Selects performance data of Keyboard Percussion. (Keyboard Percussion can be recorded and played independent of the Rhythm patterns.)

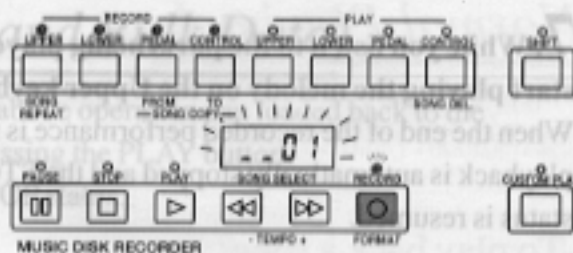
Holding down the SHIFT button in the record condition lets you select these "hidden" functions. The lamps above each button will also change to indicate the status of SHIFT- selected parts.

Note: The Lead and Keyboard Percussion parts can be selected for playback in the Play or Record functions by using the buttons in the PLAY section (indicated in the illustration above).

3. Press the PLAY button, and start playing after numbers appear in the display.

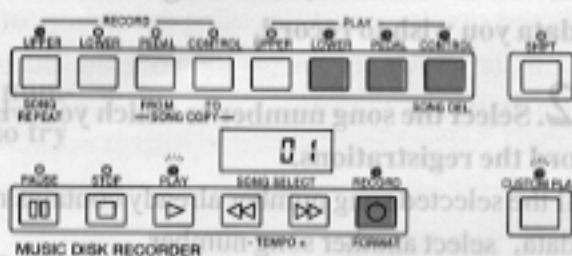
For this example, play the lower keyboard and pedalboard. Press the STOP button when you are finished with your performance to stop recording.

4. Now that you've recorded the first parts of your performance, press **RECORD** to set up recording of the next part.



Note: Since the song now contains recorded data of the Lower and Pedal parts (recorded in step #2), small bars ("—") appear at the leftmost part of M.D.R. display and flash along with the song number, warning you that the selected song number already contains recorded data.

5. Press the **RECORD** button again and switch the parts you recorded in step #2 to **Play** in the **PLAY** section.

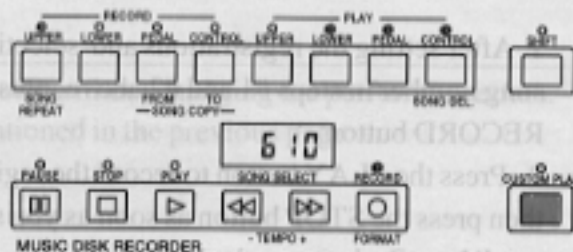


Note: The **PLAY** buttons in the top row are used and function in exactly the same way as the **RECORD** buttons (described above in step #2).

3. By repeating the above steps, you can run through an entire performance without having to change the panel settings.

Note: If you want to record the Lead and Keyboard Percussion parts separately, or if you want to re-record any individual parts, you should select those parts here before going to the next step. (See step #2 above.)

6. Press the **CUSTOM PLAY** button to start recording of the new part or parts.



Playback of the previously recorded parts starts immediately.

Note: The length of a subsequently recorded part cannot exceed the length of the previously recorded parts.

The **CUSTOM PLAY** button is used here to record only the parts that have been selected for recording, and play back only those parts that have been selected for playback. Since registration data has already been recorded with the first parts of the song, recording begins immediately.

7. While you listen to the parts being played back, start playing the melody on the Upper keyboard. When the end of the recorded performance is reached, playback is automatically stopped and the STOP status is resumed.

Recording Registrations (and Bulk Data)

You can also record registrations by themselves, without recording a performance. Bulk data, including Registration Memory and Registration Shift settings, Rhythm Pattern (User rhythms) and Rhythm Sequence data, and User voices, is also saved in the operation.

To record only the registrations:

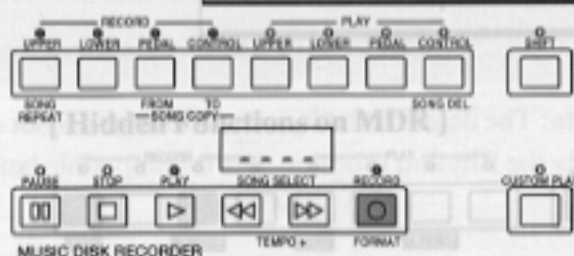
1. On the Electone, set the registrations and all other data you wish to record.

2. Select the song number to which you wish to record the registrations.

If the selected song number already contains recorded data, select another song number.

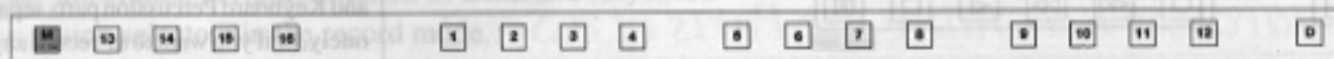
3. While holding down the RECORD button, press the M (Memory) button on the Registration Memory panel.

Note: Songs that already contain recorded data are indicated by small bars on the left side of the M.D.R. display, when the RECORD button is pressed in the next step.



1) While holding down RECORD button...

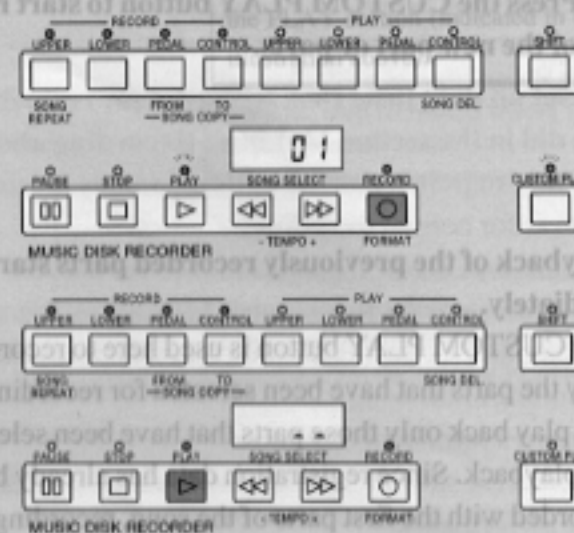
2) ...press M button.



Another method for recording registrations, using only the M.D.R. controls, is also available.

1. After setting the registrations and selecting the song number in steps #1 and #2 above, press the RECORD button.
2. Press the PLAY button to record the registrations, then press the STOP button as soon as you see the small bars flash across the M.D.R. display.

The small bars that flash across the display indicate that the M.D.R. is being set up for normal recording; pressing the STOP button interrupts this process. The bars then flash simultaneously, indicating that only registration and other data is being recorded. When recording is completed, operation automatically returns to the original STOP status.



Recalling Recorded Registrations (and Bulk Data)

The registrations (and bulk data) recorded to song numbers in the above operation can be loaded back to the Electone by simply selecting the appropriate song number and pressing the PLAY button.

When the operation has been completed, the M.D.R. returns to STOP status.

The M.D.R. also makes it possible to use more than the 16 Registration Memory registrations (8 on the EL-70) in a performance — without having to alter the current panel settings. This would come in handy when performing several songs in succession that use more than 16 registrations.

To do this:

- 1.** First record the registrations you need into several song numbers on the M.D.R. before the performance. (You should also try to record them in the order that you'll use them, if possible.)
- 2.** During the performance, after all 16 registrations from a certain song number have been used, select the next song number and press the PLAY button on the M.D.R. This replaces all 16 registrations in Registration Memory with the new ones from the selected song number.
- 3.** By repeating the above steps, you can run through an entire performance without having to change the panel settings.

Replacing Registrations

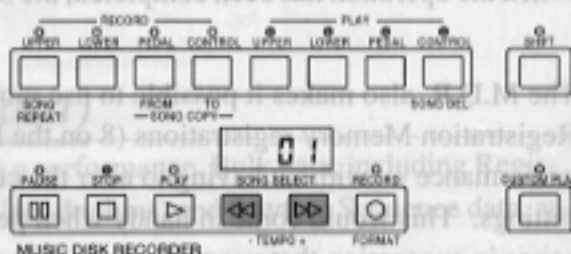
The M.D.R. also lets you change the registrations of an existing song without changing the performance data. The procedure is the same as that of Recording Registrations mentioned in the previous page.

Normal Playback

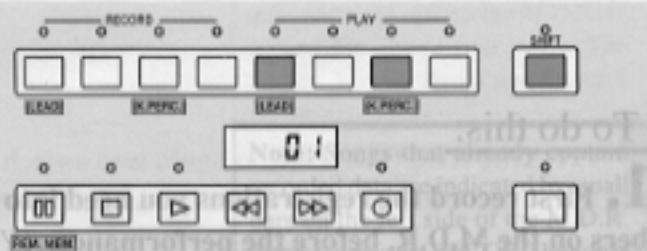
You can play back your recorded performance by simply pressing the PLAY button. Registrations and other data will be recalled to the Electone.

To play back a song:

1. Select the number of the song you wish to play back by using the SONG SELECT buttons.

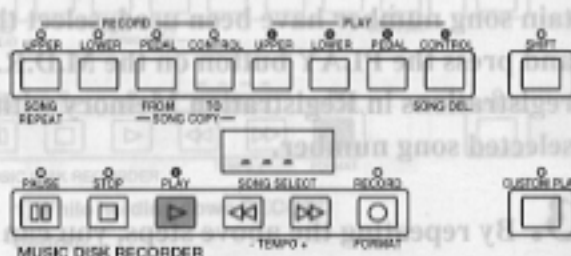


Turn on the Lead and/or Keyboard Percussion parts for play back by holding down the SHIFT button and simultaneously pressing the appropriate button in the PLAY section (as shown in the illustration on the right).



2. Press the PLAY button.

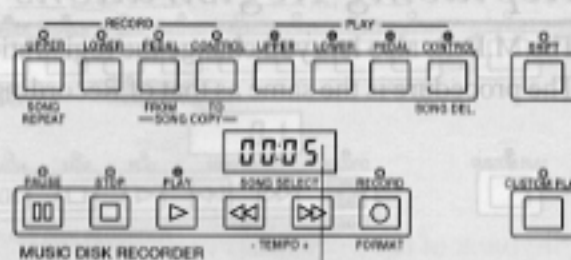
The PLAY lamp lights up and a small bar moves across the display, indicating that the Recorder is resetting registrations on the Electone.



Note: The time required to reset the registrations is the same as the time required during recording.

3. Playback of the song begins after the Electone data is reset and the song time is shown on the recorder's display.

Playback automatically stops at the end of a song. You can, however, stop playback in the middle of a song by pressing the STOP button.



Note: Never turn off the power switch or press the EJECT button during playback and recording.

Playback of Selected Parts

You can also play back selected parts of your recorded performance, while other parts are temporarily turned off. This function is especially useful for playing a single part, such as the melody, over previously recorded accompaniment parts.

To select specific parts for playback:

1. Select the number of the song to be played back.

2. Set the parts you wish to mute to OFF, by pressing the appropriate PLAY button. The LED of the selected part should be off.

3. Select the parts you wish to play back by setting them to ON.

4. Press the PLAY button.

First the PLAY LED lights and the registration and other data are transmitted, then playback of the performance starts (excepting the parts that were turned off in step #2).

5. Now perform your new part or parts over the playback parts.

When the end of the recorded performance is reached, playback is automatically stopped and the STOP status is resumed.

Repeated Playback

This feature allows you to repeatedly play back either all songs on a disk or only one specific song.

To repeat playback of a song or songs:

To play back a song:

1. Select the song number you wish to play back.
If you wish to play back all songs on a disk, this selects the first song that will be played back. The others will follow in order.

2. Hold down the SHIFT button and simultaneously press the SONG REPEAT button.

The LEDs above SHIFT and SONG REPEAT light up, and "ALL" appears in the M.D.R. display.

To repeatedly playback all songs starting with the selected song:

Press the PLAY button at this point (go to step #3 below).

To repeatedly playback only the selected song:

Again hold down the SHIFT button and simultaneously press the SONG REPEAT button.

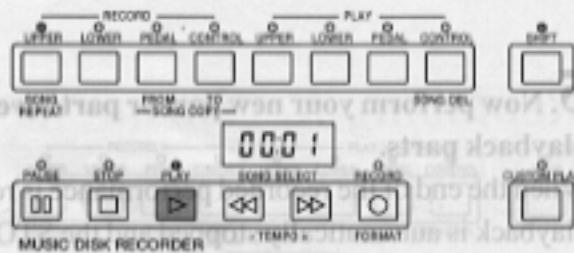
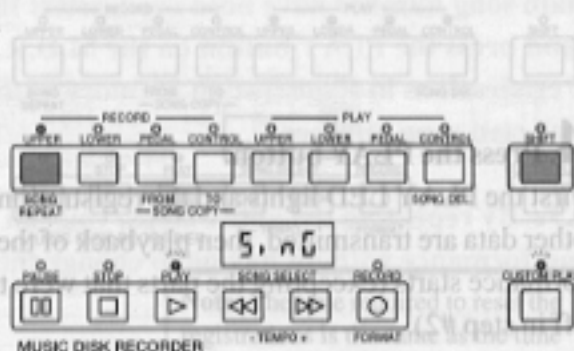
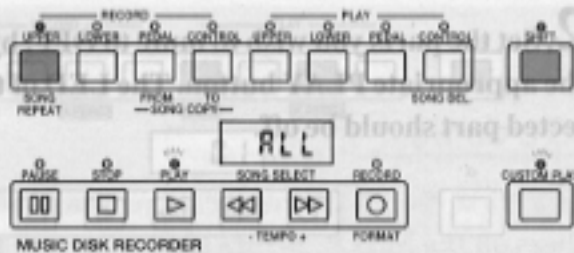
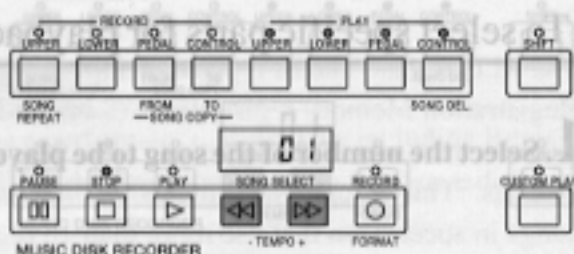
"SinG" appears in the M.D.R. display to indicate that a single song will be repeatedly played back.

3. Press the PLAY button to begin playback of the song or songs.

Playback will begin from the song selected and repeat indefinitely. To stop playback, press the STOP button.

Playback automatically stops at the end of a song.

You can, however, stop playback in the middle of a song by pressing the STOP button.

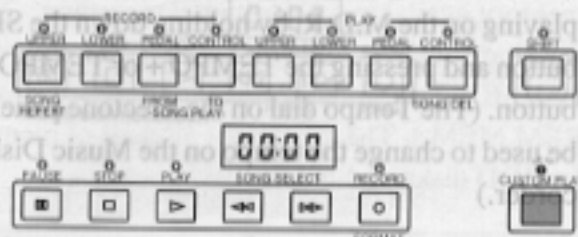


Note: Never turn off the power switch or press the EJECT button during playback and recording.

Other Functions

Custom Play

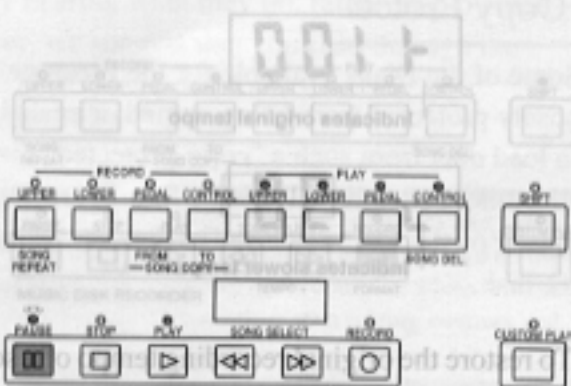
If you want to play back the song without resetting the registrations and other data, press the CUSTOM PLAY button. This displays the song time and starts playback immediately.



Note: If you hold down the SHIFT and CUSTOM PLAY buttons simultaneously, all data will be loaded and played, except for that of Rhythm Pattern Program, Rhythm Sequence and user voices.

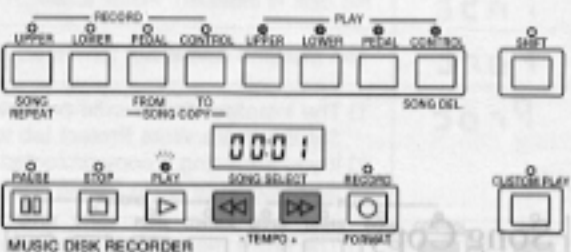
Pause

If you want to temporarily stop playback of the song or songs, press the PAUSE button. To resume playback from the point at which the song was paused, press the PAUSE button again.



Fast Forward and Fast Reverse

During playback, these buttons function as fast forward and fast reverse buttons, much like those of a tape recorder. Press ►► to advance to a later point in the song or press ◀◀ to return to an earlier position. While either of these buttons is held down, playback stops and the song time is advanced or reversed accordingly. Hold down the button until the desired song time is shown. When the button is released, playback is paused. To resume playback from the point you've advanced or reversed to, press the PLAY button.



Note: Fast Forward and Fast Reverse operate at five times the normal playback speed.

Changing the Tempo

You can change the tempo of the song as the song is playing on the M.D.R. by holding down the SHIFT button and pressing the TEMPO + or TEMPO - button. (The Tempo dial on the Electone panel cannot be used to change the tempo on the Music Disk Recorder.)

Each press of the button slows down or speeds up the tempo by a small amount. Changing the tempo does not change the pitch of the music.



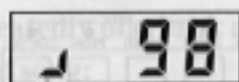
7 102

Indicates faster tempo



7 100

Indicates original tempo



7 98

Indicates slower tempo

To restore the original recording tempo of a song, hold down the SHIFT button and simultaneously press both TEMPO buttons.



3. Press the PLAY button to begin playback of the song.

Song Copy

This function lets you copy the data recorded at one song number to another song number.

To use the Song Copy function:

1. Select the song number to be copied with the SONG SELECT buttons.
2. While holding down the SHIFT button, press the SONG COPY FROM button.

The song number to be copied from appears at the left of the M.D.R. display.



Note: When tempo is changed, the M.D.R. display indicates the change as a percentage of the original recording tempo (100). Values less than 100 indicate a slower tempo; values greater than 100 indicate a faster tempo.



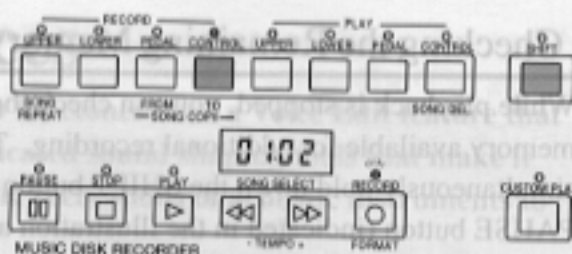
Note: Tempo changes remain in effect even through changes in song number. If you have changed the tempo in one song, you should perform the above step to restore the original tempo before playing another song. Turning the power switch off and on again also restores the original tempo.



Note: If the specified song number has no recorded data, the M.D.R. automatically searches for and selects the next song that contains recorded data.

3. While holding down the SHIFT button, press the SONG COPY TO button.

The M.D.R. automatically searches for an empty song number to copy the data to, and displays that number at the right side of the display. If all songs numbers contain recorded data, "FULL" appears on the M.D.R. display. In this case, you should erase one of the songs on the disk by using the Song Delete function (see below).

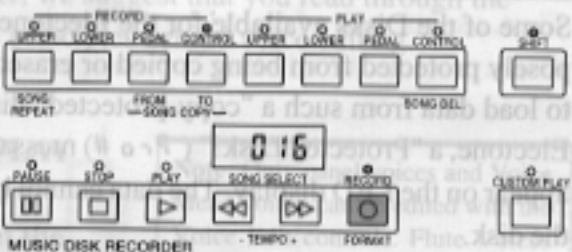


4. Use the SONG SELECT buttons to select a destination song number for copying.

Follow this step if you wish to select a different destination song number than the one displayed. The M.D.R. will display only those song numbers that have no data.

5. Press the RECORD button to execute the Song Copy function.

The RECORD LED stops flashing and remains lit, indicating that the Song Copy function is in process. The M.D.R. display shows the "size" of the song in numbers, and counts down as the data is being copied. When the display shows "000", the song has been completely copied.



Song Delete

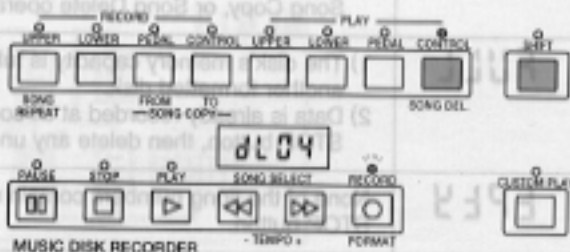
You can erase a song on disk by performing this function.

To use Song Delete:

1. Use the SONG SELECT buttons to select the number of the song you wish to delete.

2. While holding down the SHIFT button, press the SONG DEL. button.

The letters "dL" appear on the left side of the M.D.R. display, next to the selected song number. If you wish to, you can still select a different song number in this step by using the SONG SELECT buttons.



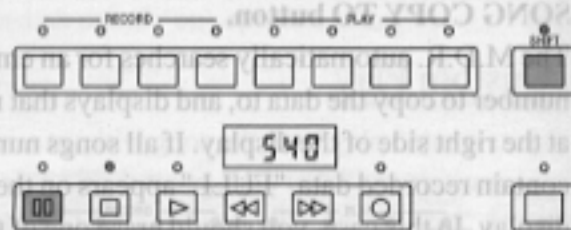
3. Press the RECORD button to execute the Song Delete function.

The RECORD LED stops flashing and remains lit, indicating that the Song Delete function has begun. When the Song Delete function is completed, the STOP status is automatically resumed.

RECORD LED flashes to indicate that the M.D.R. is ready to delete the song.

Checking the Remaining Memory

While playback is stopped, you can check the amount of memory available for additional recording. To do this, simultaneously hold down the SHIFT button and the PAUSE button (indicated in the illustration at right as REM.MEM.). The maximum amount of memory is 634 for 2DD disks or 1264 for 2HD disks.



Registration Menus and Voice Disks

The M.D.R. also allows you to select registrations and voices from disks. For more information about Registration Menus, see page 8; for more on Voice Disks, see page 78

Copy Protect

Some of the Disks available for the Electone are purposely protected from being copied or erased. If you try to load data from such a "copy-protected" disk to the Electone, a "Protected Disk!" (PRO #) message will appear on the LED display. The data cannot be saved to the disk.

Messages on the MDR LED Display

Display	Description of the Messages
Inst	No disk is installed. Install a disk.
Formt	The installed disk is not formatted. Format the disk. (See page 57.)
Prot	1) The installed disk is write-protected, so the Record, Song Copy, and Song Delete jobs cannot be performed. Set the disk's Write Protect tab to the OFF position. (See page 56.) 2) If you are using a copy-protected playback-only disk, this message may appear when you attempt the Record, Song Copy, or Song Delete operations.
FULL	1) The disk's memory capacity is full, so the Record or Song Copy operation cannot be performed. Install another formatted disk. 2) Data is already recorded at all song numbers, so the Song Copy operation cannot be performed. Press the STOP button, then delete any unnecessary songs.
Empty	None of the song numbers contain recorded data, so the Song Copy operation cannot be performed. Press the STOP button.
-out	An error occurred because the disk was removed during recording or playback. Replace the disk, press the STOP button, then start the operation over again.
disc	The installed disk cannot be played back on the M.D.R. Press the STOP button, then insert a compatible disk.
lots	Recording cannot be performed because too much data was received at once. Press the STOP button.
bad	The disk is defective and cannot be formatted. Press the STOP button, then insert another disk.
Error	An error occurred during the transmission or reception of data. Press the STOP button.
0000	In the case of Voice Disk operation, an incompatible Voice Disk has been inserted.