



RadioShack®

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MD-1210 MIDI Keyboard



Owner's Manual
Please read before using this equipment.

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□ **Features**

Your RadioShack MIDI Keyboard is a state-of-the-art musical instrument that offers you a vast array of sounds. You can choose from 200 different musical instruments or sound effects and 100 rhythms, as well as automatic accompaniments and percussion sounds.

Your keyboard also includes a MIDI (Musical Instrument Digital Interface) feature, which lets you connect it to other MIDI-equipped musical instruments or devices — even your personal computer.

This versatile keyboard can provide hours of fun and is ideal for anyone who wants to make music, from the beginner to the experienced musician.

Note: The keyboard conforms to most, but not all, General MIDI specifications. Because of this, you might experience some incompatibility when using the keyboard with another General MIDI device. For more information, see “Using MIDI” on Page 34.

Your keyboard's features include:

24-Note Polyphonic Sound — lets you play and hear up to 24 notes at the same time, so you can play or create almost any type of music.

Synthesizer Function — lets you create up to 32 of your own original tones.

Memory — lets you set the keyboard to record up to 2 songs, 6 tracks, and 4,900 notes. The recording remains stored even while the keyboard is off.

Large LCD Music Information Display — shows you the notes and chords as

you play them, along with the current tone, rhythm, and tempo. The display's built-in backlight makes it easy to read it even in dim light.

Two Built-In Stereo Bass-Reflex Speakers — let you feel the bass your keyboard can produce and hear the sound you create.

Registration Memory — lets you store up to 32 different setups of the keyboard's controls, letting you instantly recall them when you need them.

Drum Pads — play drum sounds regardless of the keyboard's tone setting.

61 Full-Sized Keys — provide the feel of a fine musical instrument.

Touch Response — the keyboard's volume varies in response to the force of your touch, just like an acoustic piano or organ, so you can add emotion to your music.

Pitch Bender Wheel — lets you bend notes by altering their pitch, creating realistic effects for tones such as reed instruments or guitar tones.

200 Tones — you can set your keyboard to sound like anything from a harpsichord to a honky-tonk piano. You can even create your own tones with the custom tone synthesizer feature.

100 Auto-Rhythms — provide a steady beat for many styles of music, from rumba to rock.

Headphones/Output Jack — lets you connect headphones so you can play without disturbing others, or an external

amplifier so you can play for a crowd (neither supplied).

Assignable Jack — lets you connect a sustain pedal (not supplied) to the keyboard so you can sustain or soften your keyboard's sound, or start/stop an auto-rhythm.

Tune Control — lets you adjust the pitch of your keyboard so you can play in tune with other instruments.

Transpose Function — lets you instantly change the key of the music, even while you are playing.

Tempo Control — lets you speed up or slow down the tempo of any selected music pattern.

Fill-In Rhythm — lets you insert a short variation into any auto-rhythm.

Auto Accompaniment — lets you automatically play a preset harmonic pattern to match the selected auto-rhythm.

Reverb — lets you add depth and space to the sound.

Layer Function — lets you set the keyboard to play two different tones at the same time, giving your music a "layered" effect.

Split Function — lets you use different sounds for the low-end and high-end keys.

Mixer Function — lets you make the keyboard sound multiple tones for auto accompaniment, memory playback, or to play MIDI data received from another MIDI device.

Automatic Intro/Ending Rhythm — you can set the keyboard so it automatically adds a 3- to 8-measure introduc-

tion or 3- to 8-measure ending to the selected auto-rhythm.

MIDI In/Out Jacks — let you connect the keyboard to another MIDI-equipped device.

Two Power Options — let you power the keyboard from internal batteries (not supplied) or standard AC power (with an optional adapter), so you can make music almost anywhere.

Note: This Owner's Manual explains how to use this electronic keyboard. It does not teach music.

THE FCC WANTS YOU TO KNOW

This equipment complies with the limits for a Class B digital device as specified in Part 15 of *FCC Rules*. These limits provide reasonable protection against radio and TV interference in a residential area. However, your equipment might cause TV or radio interference even when it is operating properly. To eliminate interference, you can try one or more of the following corrective measures:

- reorient or relocate the receiving antenna
- increase the distance between the equipment and the radio or TV
- use outlets on different electrical circuits for the keyboard and the radio or TV.

Consult your local RadioShack store if the problem still exists.

You must use shielded interface cables with this equipment.

□ Preparation

Note: To connect a MIDI device to your keyboard, see “Making the MIDI Connections” on Page 35. To connect a sustain pedal, see “Using a Sustain Pedal” on Page 26.

CONNECTING POWER

You can power your keyboard using internal batteries or with standard AC power using an optional AC adapter

Notes:

- Connecting an AC or DC adapter automatically disconnects any internal batteries.
- Always disconnect the AC or DC adapter when you finish using the keyboard.

Using Batteries

Your keyboard can use six D batteries (not supplied) for power. For the best performance and longest life, we recommend RadioShack alkaline batteries.

Cautions:

- Use only fresh batteries of the required size and recommended type.
- Do not mix old and new batteries, different types of batteries (standard, alkaline, or rechargeable), or rechargeable batteries of different capacities.

Follow these steps to install batteries.

1. While pressing the tabs on the battery compartment cover on the bot-

tom of the keyboard, pull up the cover to remove it.

2. Place the batteries in the compartment as indicated by the polarity symbols (+ and –) marked below the compartment.
3. Replace the cover.

When the keyboard stops operating properly, replace the batteries.

Warning: Dispose of old batteries promptly and properly. Do not burn or bury them.

Caution: If you do not plan to use the keyboard with batteries for a week or more, remove the batteries. Batteries can leak chemicals that can destroy electronic parts.

Using AC Power

You can power the keyboard using a 9V, 1200-mA AC adapter and a size M Adaptaplug™ adapter (neither supplied). Both are available at your local RadioShack store.

Cautions:



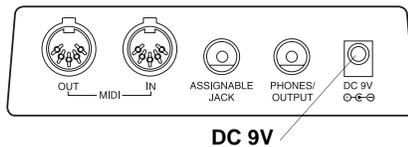
You must use a Class 2 power source that supplies 9V DC and delivers at least 1200 mA. Its center tip must be set to negative and its plug must fit the keyboard's **DC 9V** jack. Using an adapter that does not meet these specifications could damage the keyboard or the adapter.

- Always connect the AC adapter to the keyboard before you connect it

to AC power. When you finish, disconnect the adapter from AC power before you disconnect it from the keyboard.

Follow these steps to connect an AC adapter to the keyboard.

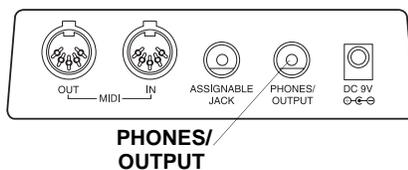
1. Set the DC adapter's voltage switch to 9V.
2. Insert the Adaptaplug adapter into the adapter's cord so it reads – TIP.
3. Connect the AC adapter's barrel plug to the **DC 9V** jack on the back of the keyboard.



4. Plug the AC adapter's other end into a standard AC outlet.

CONNECTING HEADPHONES

To listen to your keyboard without disturbing others, you can connect an optional pair of stereo headphones with a 1/4-inch (6.35-mm) plug. Your local RadioShack store sells a wide selection of headphones. Insert the headphones' plug into the **PHONES/OUTPUT** jack on the back of the keyboard.



Note: Connecting headphones disconnects the keyboard's built-in speakers.

Listening Safely

To protect your hearing, follow these guidelines when you use headphones.

- Set the volume to the lowest setting before you begin listening. After you begin listening, adjust the volume to a comfortable level.
- Do not listen at extremely high volume levels. Extended high-volume listening can lead to permanent hearing loss.
- Once you set the volume, do not increase it. Over time, your ears adapt to the volume level, so a volume level that does not cause discomfort might still damage your hearing.

CONNECTING AN EXTERNAL AMPLIFIER

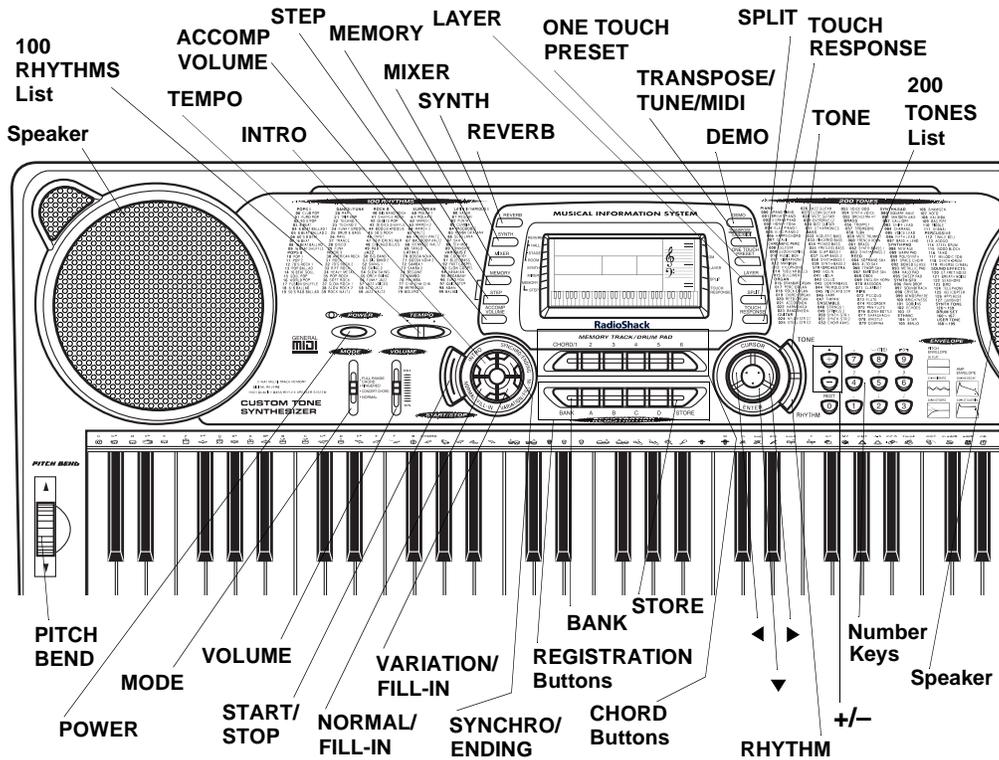
To amplify your keyboard's sound, you can connect it to an optional external amplifier using an audio cable with a 1/4-inch (6.35-mm) plug (not supplied). To connect an external amplifier to your keyboard, insert the cable's plug into the **PHONES/OUTPUT** jack on the back of the keyboard, and connect the cable's other end to the amplifier's input jack(s) (such as AUX IN or TAPE IN).

Your local RadioShack store sells a full line of amplifiers, speakers, and cables.

USING THE SHEET MUSIC STAND

To easily view sheet music while playing your keyboard, insert the supplied sheet music stand into the slot on the top back panel.

□ A Quick Look at Your Keyboard



□ Operation

BASIC OPERATION

1. Slide **VOLUME** to **MIN** (minimum).

Important: To prevent hearing damage, always set the keyboard's volume to **MIN** before you turn it on.

2. To turn on the keyboard, press **POWER**. The **POWER** indicator lights and the display turns on.

Note: To save power, the keyboard automatically turns off after about 6

minutes if you do not press a key. To turn on the keyboard again, press **POWER**. To cancel auto power off, see "Cancelling Auto Power Off" on Page 9.

3. Slide **MODE** to **NORMAL**.
4. Slide **VOLUME** toward **MAX** slightly and begin playing the keyboard.

Notes:

- The keyboard automatically selects the tone **GRAND PIANO**

(No. 000) when you turn the power on. Each time you turn it on after that, it selects the last selected tone. To select a different tone, see “Using the Preset Tones”.

- To select an auto-rhythm, see “Using the Preset Auto-Rhythms” on Page 13.
 - To play auto accompaniment, see “Using Auto Accompaniment” on Page 15.
5. Slide **VOLUME** toward **MAX** to increase the sound level or toward **MIN** to decrease it.
 6. To turn off the keyboard, press **POWER**. The POWER indicator and the keyboard’s display turn off.

Canceling Auto Power Off

To have the keyboard not automatically turn off during a session, turn on the keyboard while holding down **TONE**.

The next time you turn the keyboard off then back on again, it will automatically turn off after about 6 minutes.

PLAYING THE DEMONSTRATION TUNES

To showcase its sounds, your keyboard can play two preprogrammed demonstration tunes. To start the demonstration, press **DEMO**. The keyboard plays the first demonstration tune (No. 0). To select the other tune, press **-** or **+** on the keypad. The selected tune’s number appears and the tune plays.

The *demo tune number* and **Demo** appear at the top of the display. The mid-

dle row shows the *tempo* in beats per minute, the *number of the measure playing* and the *beat count* in each measure. The *treble and bass clefs* to the right of the display show the notes as they play. The bar graph shows the *sound level* on each of the 16 channels (see “Using the Mixer” on Page 18). The *keyboard* at the bottom of the display shows the location of the keys being pressed.

USING THE PRESET TONES

Your keyboard can sound like 200 different musical instruments or sound effects. The name and three-digit number for each preset tone is listed on the 200 TONES list on the keyboard’s top panel.

Notes:

- The keyboard has 24-note (maximum) polyphonic sound. This means that you can play up to 24 different notes at the same time with most of the keyboard’s preset tones. Some of the keyboard’s preset tones, however, are capable of only 12-note polyphony.
- Most tones on this keyboard have been recorded and processed using a technique called digital sampling. To ensure a high level of tonal quality, samples are taken in the low, mid, and high ranges and are then combined to sound amazingly close to the originals. You might notice very slight differences in volume or sound quality for some tones when you play them at different positions on the keyboard. This is an unavoidable result of multiple sampling and is not a malfunction.

Follow these steps to select and play a preset tone.

1. Press **TONE**. **TONE** and the current tone's number appear.

Note: The first time you turn the keyboard on, it automatically selects the tone GRAND PIANO (No. 000).

2. To play a different tone, choose a preset tone from the 200 TONES list and enter its three-digit number on the keypad. As you press the keys, the selected digits appear.

Notes:

- You can select the next highest or lowest numbered tone by simply pressing + or – on the keypad.
- The names of tone numbers 000–127 are marked to the right of the keyboard's display. The names for tone numbers 128–167 appear in the table below. Memory locations 168–199 are reserved for custom tones that you create (see "Using the Custom Tone Synthesizer" on Page 20).

No.	Tone
128	SYNTH PAD 1
129	SYNTH PAD 2
130	OCT PIANO
131	OCT HARP
132	12 STR GUITAR 1
133	JAZZ OCT GUITAR
134	OCT SAXOPHONE
135	TOUCH BASS

No.	Tone
136	STRINGS PIANO
137	E. PIANO STRINGS
138	STEREO PIANO
139	12 STR GUITAR 2
140	BRASS FALL
141	BASS SLIDE
142	FEEDBACK GT
143	PIANO → STRINGS
144	ECHO ORGAN
145	ROTARY ORGAN
146	CHORUSED EP
147	STRINGS GT
148	PAD ENS 1
149	PAD ENS 2
150	SEQUENCE 1
151	SEQUENCE 2
152	SYNTH PAD 3
153	SYNTH PAD 4
154	SYNTH PAD 5
155	SYNTH PAD 6
156	SYNTH PAD 7
157	SYNTH PAD 8
158	REVERSE ECHO
159	FAST TREMOLO
160–167	DRUM SET 1-8

- Precede a single-digit number with **0 0**. For example, to select

ELEC PIANO 1 (No. 004), press **0 0 4**.

- If you enter an incorrect first digit, press **TONE** to clear your entry, then enter the correct digit.
 - When you select one of the drum sets (tone numbers 160–167), each key plays a different percussion sound. See “Drum Assignment List” on Page 44.
 - The drum set sounds change when you change the rhythm number, play back data stored in memory, or receive MIDI program change data.
 - Tone numbers 168–199 are the user tone area. See “Using the Custom Tone Synthesizer” on Page 20.
3. Play the keyboard to hear the selected tone and adjust **VOLUME** to the desired level.
 4. To select a different tone, repeat Step 2 while **TONE** appears.

USING THE DRUM PADS

The keyboard has six drum pads that you can use to play percussion sounds independent of the keyboard keys. Simply tap on a drum pad to play the percussion sound currently assigned to it.

To change the drum pad sounds, use the mixer function to change the tone assigned to Channel 10. See “Using the Mixer” on Page 18.

USING REVERB

The REVERB feature creates ambiance effects by causing the sound to linger

and reverberate. To turn on the reverb, repeatedly press **REVERB** until an indicator appears next to the type of reverb you want.

HALL — creates a concert hall effect.

STAGE — creates the acoustics of a small club.

ROOM — adds the acoustics of a studio.

To turn off the reverb, repeatedly press **REVERB** until the indicator disappears.

USING SPLIT

The SPLIT feature lets you play two different tones on opposite ends of the keyboard, so the low-end keys play one tone, and the high-end keys play another. Follow these steps to use SPLIT.

1. Press **TONE**.
2. Enter the three-digit number for the tone you want the high-end keys to play.
3. Press **SPLIT**. The SPLIT indicator appears.
4. Enter the three-digit number for the tone you want the low-end keys to play.
5. Hold down **SPLIT**, and press the key where you want the high-end tones to begin. The selected key’s name appears.

For example, if you set the split point to be F below middle C, **F3** appears.

Note: You can change the split point at any time.

6. Play both the low and high-end keys to hear the selected split tones.

To select a different low-end tone, enter the three-digit number for the new low-end tone while the **SPLIT** indicator appears. To select a different high-end tone, press **SPLIT** to turn off its indicator, then enter the three-digit number for the new high-end tone. Then press **SPLIT** again so the **SPLIT** indicator appears.

To cancel **SPLIT** play, repeatedly press **SPLIT** until its indicator disappears.

Notes:

- If **SPLIT** is on when you turn off the keyboard, **SPLIT** will still be on the next time you turn on the keyboard.
- When you turn on **SPLIT**, the last selected settings appear.

USING LAYER

The keyboard lets you play two different preset tones at the same time, creating a “layered effect” when you press one key. The first tone you select when using **LAYER** is called the *base tone* and the second tone is called the *layer tone*.

1. Press **TONE**.
2. Enter the three-digit number for the base tone then press **LAYER**. The **LAYER** indicator appears.
3. Enter the three-digit number for the layer tone.
4. Play the keyboard to hear the selected layered tones.

To select a different layer tone, enter the three-digit number for the new layer tone while the **LAYER** indicator appears. To select a different base tone, press **LAYER** to turn off its indicator, then enter the

three-digit number for the new base tone. Then press **LAYER** again so the **LAYER** indicator appears.

To cancel **LAYER**, repeatedly press **LAYER** until its indicator disappears.

Notes:

- If **LAYER** is on when you turn off the keyboard, **LAYER** will still be on the next time you turn on the keyboard.
- When you turn on **LAYER**, the previous tone settings appear.

USING SPLIT AND LAYER TOGETHER

You can combine the **SPLIT** and **LAYER** features, so you can play one layered combination of tones on the low-end keys and another on the high-end keys.

1. If the **SPLIT** or **LAYER** indicator is on, press **SPLIT** or **LAYER** to turn it off.
2. Enter the number for the high-end base tone on the keypad.
3. Repeatedly press **SPLIT** until the **SPLIT** indicator appears.
4. Enter the number for the low-end base tone.
5. Repeatedly press **SPLIT** until the **SPLIT** indicator disappears.
6. Repeatedly press **LAYER** until the **LAYER** indicator appears.
7. Enter the number of the layered tone for the high-end keys.
8. Press **SPLIT**. The **SPLIT** indicator appears.

9. Enter the number of the layered tone for the low-end keys.
10. If desired, hold down **SPLIT** then press the key where you want the high-end tones to begin.
11. Play the keyboard to hear the selected tones.

To cancel the SPLIT/LAYER combination, press each button so both the SPLIT and LAYER indicators disappear.

USING THE PRESET AUTO-RHYTHMS

Your keyboard has 100 preset auto-rhythms that provide a steady beat for your music. The name and two-digit number of each preset auto-rhythm is listed on the keyboard's top panel.

You can play a preset auto-rhythm on the keyboard in any of the following ways:

- select and play a rhythm (see "Selecting/Playing an Auto-Rhythm")
- synchronize the start of a rhythm with your music (see "Using SYNCHRO" on Page 14)
- start a rhythm with a special introduction (see "Using INTRO" on Page 14)
- briefly vary the pattern of a rhythm (see "Using FILL-IN" on Page 14)
- stop a rhythm with a special ending (see "Using ENDING" on Page 14)
- play an alternate version (variation) of a rhythm (see "Using VARIATION" on Page 14)

Selecting/Playing an Auto-Rhythm

1. Press **RHYTHM**. **RHYTHM** and the name and number of the current auto-rhythm appears.

Note: The keyboard automatically selects the rhythm CLUB POP (No. 00) when you turn the power on. Each time you turn it on after that, it selects the last selected rhythm.

2. To select a different rhythm, choose an auto-rhythm from the 100 RHYTHMS list and enter its two-digit number on the keypad. Or, repeatedly press **+** or **-** to move to the next higher or lower numbered rhythm.

Notes:

- Precede a single-digit number with a 0. For example, press **0 5** to select 8-BEAT BALLAD 2 (No. 05).
- If you incorrectly enter the first digit of the rhythm, press **RHYTHM** to clear the entry and return to the last selected auto-rhythm.

3. Set **MODE** to **NORMAL**, then press **START/STOP** to start the selected auto-rhythm.
4. Adjust **VOLUME** to the desired level.
5. To change the auto-rhythm speed, press **TEMPO ▼** or **▲**. The current tempo setting appears.

Notes:

- You can adjust the tempo to play an auto-rhythm from 40 to 255 beats per minute.

- To quickly slow down or speed up the tempo, hold down **TEMPO ▼** or **▲**.
 - You can also adjust the tempo by first pressing **TEMPO ▼** or **▲**, then entering the desired number of beats per minute in three digits (040 to 255), or by holding down + or – on the keypad.
 - To reset the tempo to its default (original) speed, press **TEMPO ▼** or **▲** at the same time.
6. Play the keyboard along with the auto-rhythm.
 7. To select a different rhythm, repeat Steps 1–2.
 8. To stop the auto-rhythm, press **START/STOP**.

Using SYNCHRO

This feature lets you synchronize the start of an auto-rhythm with the beginning of your music.

After you select and enter an auto-rhythm, press **SYNCHRO/ENDING**, then begin playing the keyboard. The keyboard automatically begins to play the rhythm when you press any key within the first 1½ octaves of the lower end of the keyboard (the first 18 keys from the left side of the keyboard).

Using INTRO

This feature lets you start the selected auto-rhythm with a light, 3- to 8-measure introduction that blends easily into the selected rhythm.

To start a rhythm with an introduction, select and enter the rhythm, then press

INTRO. The introduction plays, then the selected auto-rhythm automatically starts.

Using FILL-IN

This feature lets you insert a short (1- to 2-measure) variation in the beat pattern of a selected auto-rhythm.

Simply press and release **NORMAL/FILL-IN** while the auto-rhythm is playing. The keyboard inserts a 1- to 2-measure variation, then the original rhythm automatically resumes at the end of the current measure.

Using VARIATION

Each of the keyboard's 100 preset auto-rhythms has a built-in variation (alternate) to its normal beat pattern. The variation differs slightly from the normal rhythm, so it is almost like having two rhythms in one!

To play the alternate rhythm, press **VARIATION/FILL-IN**. The variation plays continuously at the selected tempo.

To insert the fill-in segment in the alternate rhythm, press **VARIATION/FILL-IN**. The keyboard adds a 1- to 2-measure variation in the rhythm.

To return to the normal rhythm, press **NORMAL/FILL-IN**.

To stop the auto-rhythm, press **START/STOP**.

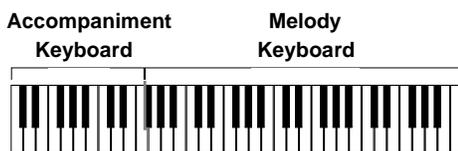
Using ENDING

To end the selected rhythm with a special 3- to 8-measure flourish, press **SYNCHRO/ENDING** while the auto-rhythm is

playing, about 3–8 measures before you want the rhythm to end. The keyboard plays a special ending, then automatically stops the rhythm.

USING AUTO ACCOMPANIMENT

The 18 keys on the left side of the keyboard with note labels above them are called *accompaniment keys*.



You can set the keyboard to play three different types of auto accompaniment using the accompaniment keys.

- *Concert Chord* — lets you play chords on the accompaniment keys using chord formations of from one to four notes. The number of keys you press determines the type of chord that plays (see “Concert Chord” on Page 16).
- *Standard Fingering* — lets you play chords on the accompaniment keys using standard chord formations of three or four notes (see “Standard Fingering” on Page 16).
- *Full-Range Chord* — lets you play the melody using the entire keyboard while the keyboard plays accompaniment based on your auto-rhythm selection.

Notes:

- You can use the keyboard’s rhythm controls (**INTRO**, **NORMAL/FILL-IN**, **VARIATION/FILL-IN**, and **SYNCHRO/**

ENDING) with all three types of auto accompaniment.

- After you press the auto accompaniment keys while using concert chord or standard fingering, the keyboard plays the same chord until you press other accompaniment keys to play a different chord or press **START/STOP**.

Adjusting the Accompaniment Volume

The keyboard lets you adjust the volume of your accompaniment separately from the overall volume of the keyboard.

1. Press **ACCOMP VOLUME**. The current accompaniment volume setting appears.
2. Within 5 seconds, enter a number from **0 0 0** (softest) to **1 2 7** (loudest) on the keypad. The numbers appear as you press the keys.

Or, press **ACCOMP VOLUME** then repeatedly press – or + to select the next lowest or highest accompaniment volume setting.

To reset the accompaniment volume to its default value of 87, press **ACCOMP VOLUME** then press – and + at the same time.

Note: The auto-accompaniment patterns consist of four parts: chord 1, chord 2, bass, and rhythm. You can delete any of the parts by using the mixer function. See “Using the Mixer” on Page 18.

Concert Chord

The concert chord method lets beginning keyboard players easily select and play a chord.

The number of accompaniment keys you press determines the type of chord that plays. This chart shows the chord type that plays when you press one, two, three, or four accompaniment keys at the same time.

Number of Keys Pressed	Chord Type
	Major
	Minor (m)
	Dominant Seventh (7)
	Minor Seventh (m7)

The lowest note you play determines the key of the chord. For example, if the lowest note is C, the keyboard plays a C chord.

Note: You can press *any* labeled note(s) to the right of the lowest note in the chord to produce a minor, a dominant seventh, or minor seventh chord.

Follow these steps to start concert chord auto accompaniment.

1. Set **MODE** to **CONCERT CHORD**.
2. Enter a two-digit auto-rhythm number.
3. To start the auto-rhythm before the auto accompaniment, press **START/STOP** or **INTRO**.

Or, to synchronize the start of the selected auto-rhythm with your accompaniment, press **SYNCHRO/ENDING**.

4. Begin the accompaniment at the desired interval by pressing the desired accompaniment key(s).

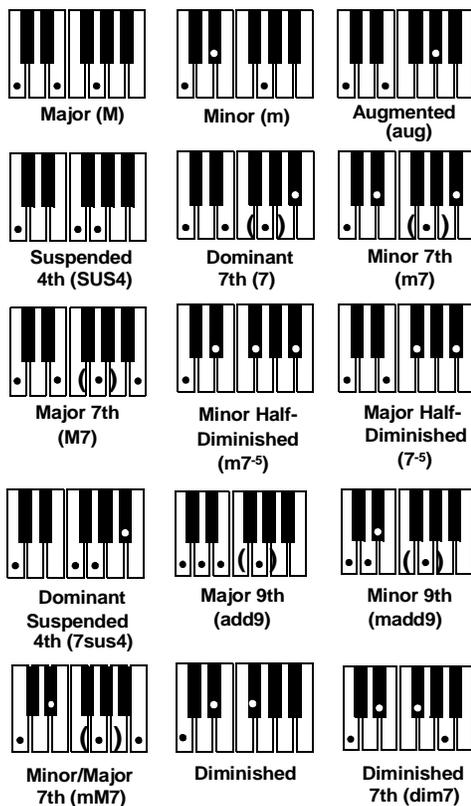
To play a melody along with the accompaniment, press any key(s) to the right of the accompaniment keys.

5. Adjust the tempo and **VOLUME** to the desired levels.
6. To change chords without interrupting the rhythm, simply press the auto accompaniment key(s) required to form the new chord.
7. To stop auto accompaniment and the auto-rhythm, press **START/STOP**.

Standard Fingering

The standard fingering method uses standard formations of three or four notes, and lets the experienced musician play a wider variety of accompaniment chords.

This chart shows the 15 chord types you can play on your keyboard by using standard fingering.



Notes:

- You do not have to press the key marked with parentheses on the keyboard in the preceding chart to produce a 7, m7, M7, mM7, add9, or madd9 chord.
- This chart shows only one possible fingering position for each chord. It is possible to play a chord using several different positions. For example, the following three fingering positions produce the same C chord.



- When you play an aug, 7⁻⁵, or dim7 chord, the lowest note you play determines the root of the chord. Be sure that your fingering correctly defines the root you want.

Note: See “Fingered Chord Chart” on Page 45 for a list of all the chords you can play on your keyboard using standard fingering accompaniment.

Follow these steps to start standard fingering auto accompaniment.

- Set **MODE** to **FINGERED**.
- Select and enter an auto-rhythm.
- To start the auto-rhythm before your auto accompaniment, press **START/STOP** or **INTRO**.

Or, to synchronize the start of the selected auto-rhythm with your accompaniment, press **SYNCHRO/ENDING**.

- Begin the accompaniment at the desired interval by pressing at least three accompaniment keys to play the desired chord.

To play a melody along with the accompaniment, press any key(s) to the right of the accompaniment keys.

- Adjust **TEMPO** and **VOLUME** to the desired levels.
- To change chords without interrupting the rhythm, simply press the auto accompaniment keys required to form the new chord.
- To stop auto accompaniment and the auto-rhythm, press **START/STOP**.

Full-Range Chords

While the easy random and standard fingering methods limit chord formations to the accompaniment keys, the full-range chord method lets you play chords of any type using any of the keyboard's keys.

Set **MODE** to **FULL RANGE CHORD** and follow the steps under "Standard Fingering" on Page 16. If you press three or more keys anywhere on the keyboard that form a chord, the keyboard plays that chord. The keyboard responds with melody sounds if you press fewer than three keys.

Notes:

- In the full-range chord mode, the keyboard recognizes these 23 chords in addition to the 15 chords in the standard fingering mode (examples show C as the base note):

C6	Cm6	C69	C#/C	D/C	E/C
F/C	G/C	A ^b /C	B ^b /C	B/C	C#m/C
Dm/C	Fm/C	Gm/C	Bm/C	Dm7-5/C	A ^b 7/C
F7/C	Fm7/C	Gm7/C	A ^b add9/C		

- When the composite notes of a chord are more than five notes apart, the lowest sound becomes the base note.

Using One-Touch Preset

The keyboard's one-touch preset feature recalls the tone and tempo best suited for the rhythm you selected. After

selecting a rhythm, press **ONE TOUCH PRESET**, then start the accompaniment. The rhythm starts playing at a suitable tempo, and the keyboard sounds the suitable tone for the rhythm you selected as you play the keyboard.

USING THE MIXER

The keyboard plays multiple parts at the same time during auto accompaniment, or memory playback, or when receiving MIDI data, in up to 16 separate channels. You can control the on/off setting, volume, and parameters of each of the keyboard's channels just as you would with a sound mixer.

This chart shows the parts assigned to each channel.

Channel	Part
1	Main tone
2	Layered tone
3	Split tone
4	Layered/split tone
5	These channels only produce sound when they receive MIDI signals
6	
7	Auto accompaniment chord part 1
8	Auto accompaniment chord part 2
9	Auto accompaniment bass part
10	Auto accompaniment rhythm part, drum pad
11	Memory Track 1

Channel	Part
12	Memory Track 2
13	Memory Track 3
14	Memory Track 4
15	Memory Track 5
16	Memory Track 6

Notes:

- Normally, keyboard play is assigned to Channel 1 and the drum pads are assigned to Channel 10. When you use auto accompaniment, each part is assigned to Channels 7–10.
- When you use the keyboard as the sound source for another MIDI device, all 16 channels are assigned musical instrument parts (Channel 10 is reserved for drum parts only, per MIDI standard).
- The mixer settings also affect the corresponding MIDI output.

Editing the Status of a Channel

You can edit the status (on, off, solo) of a channel to delete a specific part or to play a specific part by itself.

Follow these steps to edit the status of a channel.

1. Press **MIXER**. The MIXER indicator and the last selected channel appear.
2. Use **+** or **-** on the keypad to select the channel you want to edit.

3. Repeatedly press **◀** or **▶** (**CURSOR**) to display the current status of the channel — **on**, **oFF**, or **SoL** (solo).

4. Repeatedly press **+** or **-** to select the status you want.

on (default): Turns on the current channel. A bar appears at the bottom of the level meter for the selected channel.

oFF: Turns off the current channel. The bar at the bottom of the level meter disappears.

SoL: Turns the current channel on and all the other channels off. A bar appears over only the current channel.

5. To edit other channels, press **◀** or **▶** to return to the channel selection screen and repeat Steps 2–4.

To exit the edit mode, press **MIXER**. The display shows the performance status of the channels as edited.

Editing the Parameter

You can change the settings of six parameters such as tone, volume, and pan (relative position of the tone between the left and right speaker channels) for the selected channel.

Follow these steps to edit the parameters.

1. Select the channel you want to edit as described in Steps 1 and 2 of “Editing the Status of a Channel”.
2. Press **▼** (**ENTER**) to enter the parameter edit mode.

3. Repeatedly press ◀ or ▶ to select the parameter you want to change.

Program Change Number (000 to 199) — sets the tone assigned to the channel.

Note: Channel 10 is reserved for percussion, so only tone numbers 160 (DRUM SET1) through 167 (DRUM SET 8) can be set for Channel 10.

Volume (000 to 127) — controls the volume of the selected channel.

Pan (000 to 127) — controls the pan. 000 is fully left, 64 is the center position, and 127 is fully right.

Fine Tune (-50 to +50) — fine tunes the pitch of the selected channel in cent units. A cent is one hundredth of a semitone. There are 12 semitones per octave.

C (Coarse) Tune (-12 to +12) — coarsely tunes the pitch of the selected channel in semitone units.

Express (Expression) (000 to 127) — controls the volume of the selected channel. Similar to the volume setting, this is often used to control crescendo/decrescendo.

4. Use the number buttons or + or - to change the parameter setting.
5. To edit other channels, press ▼ to return to the channel selection display, select the channel, then repeat Steps 2–4.
6. To exit the parameter edit mode, press **MIXER**.

USING THE CUSTOM TONE SYNTHESIZER

The keyboard's custom tone synthesizer lets you create up to 32 of your own original tones. To create a "user" tone, you simply select one of the keyboard's 200 preset tones, change its parameters, then store the new tone in any memory location from 168–199. You select and use a user tone the same as a preset tone.

Notes:

- You cannot use tones 160–167 (drum set tones) as base tones.
- The preset tone you use as the basis for a user tone is not changed.
- The tone locations 168–199 are not empty (before you store user tones there). They initially contain duplicate versions of tone numbers 128–159. The user tone you store in any of those locations replaces the existing tone. If you delete a user tone, the keyboard automatically restores the initial, duplicate tone there.

The parameters you can change are divided into four groups. For the details of each parameter, see "Creating and Storing a User Tone" on Page 21.

- **Tone Characteristic Waveform** — PCM Set
- **Volume Characteristic** — Amp Envelope Set
- **Tone Pitch** — Pitch and Pitch Envelope Set
- **Tone Characteristic** — Attack Rate, Release Rate, Level, Touch Sensitivity, and Pan

Understanding 1DCO and 2DCO Tones

A Digital Controlled Oscillator (DCO) controls the sound output of a digital signal. Some of the keyboard's built-in tones are simple tones (1DCO), and some are layered tones (2DCO). When you select a 2DCO tone as the basis for creating a user tone, you need to change the parameters of both tones.

When you select a layered tone, **dCo1** appears, indicating that this is the first tone of a layered tone.

Creating and Storing a User Tone

Follow these steps to create and store your own tone. (Refer to "Hints on Creating a User Tone" on Page 23.)

Notes:

- A new or revised user tone replaces the existing user tone.
 - Layer, split, auto accompaniment, demo tune play, and MIDI functions are all disabled while the keyboard is in the Custom Tone Synthesizer mode.
1. Select the preset tone (except 160–167) you want to use as a basis for your user tone.
 2. Press **SYNTH**. The keyboard enters the Custom Tone Synthesizer mode and the first parameter (PCM Set) appears. The display also shows whether the tone you selected is a **DCO1** or **DCO2** tone (if it is a layered tone), and shows the current PCM setting.

For example, if you selected tone 19 (Church Organ), **019 ChrchOrg** appears. Then, when you press **SYNTH**, **026 ChrchOrgA** appears.

Note: To cancel the save operation at any time, press **SYNTH** or **TONE** twice.

3. Repeatedly press ◀ or ▶ to display the parameter you want to change.

PCM Set (0 to 173) — Determines the characteristic of a tone by changing its digitally sampled waveform.

Amp Envelope Set (Amp.Set) (0 to 137) — Selects the volume envelopes. 000 to 048 set volume envelopes for a decaying note (how fast or slow the sound diminishes). 049 to 137 set volume envelopes that sustain the note. Samples of the amp envelopes appear in a graph near your keyboard's right speaker.

Attack Rate (Atk Rate) (1 to 127) — Sets the speed of the attack (the period from when you press a key to when the tone reaches its maximum volume). The greater the value, the quicker the attack. Use this parameter to make fine adjustments to the tone characteristics of the amp envelope.

Release Rate (Rel.Rate) (1 to 127) — Controls the speed of a tone's release (the period from when you release a key to when the tone stops sounding). The greater the value, the quicker the release. Use this parameter to make fine adjustments to the tone characteristics of the amp envelope.

Pitch Envelope Set (PitchSet) (0 to 49) — Selects the pitch envelope.

lopes. 00 specifies no change, a value from 01 to 19 changes the vibrato, and a value from 20 to 49 changes a parameter other than the vibrato. Samples of the pitch envelopes appear in a graph near your keyboard's right speaker.

Pitch (Pitch) (-64 to +63) — Controls the overall pitch of the tone. A positive value increases the pitch, a negative value lowers it. A setting of zero sets the pitch to the standard setting for the selected tone.

Level (Level) (0 to 127) — Controls the overall volume of the tone. The greater the value, the greater the volume. Setting a level of zero means that the tone does not sound at all.

Touch Sensitivity (TchSense) (-64 to +63) — Controls changes in the volume of the tone depending on how hard you strike the keys. You can specify more volume for stronger striking and less volume for lighter striking, or you can specify 00 to set the same volume regardless of how hard you strike the keys.

Pan (Pan) (-64 to +63) — Controls the relative position of the tone between the left and right speaker channels. A greater positive value moves the center point further to the right, a negative value moves it to the left.

4. Use + or - to change the parameter's setting. You can also use the number buttons to directly enter a value for the parameter.

Notes:

- If you want to change another parameter, repeat Steps 3 and 4.
- If you selected a layered preset tone, press ▼ to recall the DCO2 parameters (d Co2 appears), and repeat Steps 3 and 4 to set the parameters. Press **TONE** again to return to the DCO1 parameters.

5. Press **SYNTH**. **Save?** appears.

To store the settings, press ▼ to display the tone number where you want to save the user tone.

To exit the Custom Tone Synthesizer mode without storing a new tone, press ►. **Cancel?** appears. Press ▼ to cancel.

6. Press + or - until the tone number you want appears. If you do not want to assign a name, skip to Step 10.
7. To give a name to your tone, press ►. The first character of the tone name flashes.
8. Repeatedly press + or - until the first character of the new name appears.
9. Press ► to move to the next character position. Repeat Steps 8 and 9 to enter the rest of the characters in the new name.

Note: Press ◀ to change the tone number (the name of the tone returns to its preset name).

10. Press ▼ to save the user tone. **Save OK** appears briefly and the keyboard exits the Custom Tone Synthesizer mode.

Hints on Creating a User Tone

- Use a preset tone that is similar to the one you are trying to create. When you already have a general idea of the tone you are trying to create, it is a good idea to start with a similar preset tone. If you want to use a layered tone, start out with a 2DCO tone.
- Determine the most important parameter. The PCM Set and Amp Envelope Set parameters are the major factors that determine the overall tone characteristic. Start out by setting these two parameters to get the general sound you want, and then set the other parameters to add the finishing touches.
- Experiment with different settings. There are no real rules about what a tone should sound like. Let your imagination run free and experiment with different combinations. You might be surprised at what you can achieve!

Deleting a User Tone

To delete an existing user tone, follow Steps 1–5 of “Creating and Storing a User Tone” on Page 21. When **SAVE ?** appears in Step 5, press **▶** twice. **Delete?** appears. Press **▼** to delete. The parameters of the default tone for that number are restored.

USING THE REGISTRATION MEMORY

Your keyboard can save different setups of controls in its registration memory. This lets you instantly recall your favorite settings. The registration memory con-

sists of eight banks (0-7), and each bank has four memory locations (A – D), totaling up to 32 settings. You can save each of the following settings in each registration memory:

- tone
- rhythm
- tempo
- split on/off
- split point
- layer on/off
- mixer settings (Channels 1 – 4)
- keyboard channel on/off (Channels 1 – 10)
- reverb settings
- touch response settings
- assignable jack setting (see “Using a Sustain Pedal” on Page 26)
- transpose (see “Changing Keys” on Page 24)
- tuning (see “Tuning the Keyboard” on Page 25)
- pitch bend range (see “Using Pitch Bend” on Page 26)
- accompaniment volume

Notes:

- You cannot use the registration memory while you are using the synthesizer, memory, or demo tune functions.
- You cannot delete a registration setup from memory, but you can store a different setup in its place.

- You can use the keyboard's MIDI function to save your setup data to your PC or other storage device.

Storing a Setup

1. Set the desired controls to the setting you want to store.
2. Within 5 seconds, repeatedly press **BANK** until the desired bank number appears.
3. While holding down **STORE**, press the desired **REGISTRATION** button (**A**, **B**, **C**, or **D**). **Store** appears after the selected bank/location number/letter.

4. Release **STORE** and **REGISTRATION**.

5. Repeat Steps 1–4 to store more setups.

Recalling a Setup

1. Repeatedly press **BANK** until the desired bank number appears.
2. Within 5 seconds, press the desired **REGISTRATION** button (**A**, **B**, **C**, or **D**). **Recall** appears after the selected bank/location number/letter.

Note: You can skip Step 1 if the setting you want to recall is in the same bank as the current one.

□ *Special Features*

CHANGING KEYS

The keyboard automatically selects the key of middle C each time you turn it on.

For added flexibility as you play, the keyboard lets you change (transpose) the musical key in which it plays.

Note: You cannot change the key while a prerecorded tune is selected or playing.

1. Repeatedly press **TRANPOSE/TUNE/MIDI** until **00 Trans** appear.

Note: The number on the display is the number of “semitones” to which the keyboard is set, compared to its default key. A semitone is a measurement that represents the acoustical interval between the tones of any two keys on the keyboard. For

example, the difference between C and C[♯] or B and B[♭] is one semitone. You can transpose the key down 6 semitones (to an F[♯]) and up 5 semitones (to an F) — a full octave.

2. Within 5 seconds, press **-** or **+** to lower or raise the key. Each time you press **-** or **+**, the number decreases or increases by 1 (semitone).

As you raise the key, **1** is C[♯], **2** is D, and so on. As you lower the key, **-1** is B, **-2** is B[♭], **-3** is A, and so on.

Notes:

- The transpose setting also affects memory playback (see “Playing Back from Memory” on Page 29) and auto accompaniment.

- The keyboard automatically resets the key to the default value of 0 (middle C) each time you play a pre-recorded tune.

TUNING THE KEYBOARD

Although your keyboard never goes out of tune, it lets you adjust its pitch to match other instruments or musical recordings.

Note: You cannot tune the keyboard while a prerecorded tune is displayed or playing.

Follow these steps to tune the keyboard.

1. Repeatedly press **TRANSPOSE/TUNE/MIDI** until **00 Trans** appears.
2. Repeatedly press ◀ or ▶ until **00 TUNE** appears.

Note: The number on the display is the number of “cents” to which the keyboard is currently tuned, compared to its default pitch. A cent is the measurement that represents the acoustical interval between two tones. 1,200 cents equal 1 octave. You can tune the keyboard to within 50 cents (101 levels) of its default pitch.

3. Within 5 seconds, repeatedly press – or + to lower or raise the keyboard’s pitch. Each time you press the key, the number decreases or increases by 1 (cent).

Notes:

- Memory playback uses the pitch with which the memorized tune was recorded.

- Auto accompaniment uses the currently set pitch.
- The keyboard automatically resets the tuning pitch to the default value of 00 (cents) each time you turn off the keyboard.

USING TOUCH RESPONSE

Your keyboard has a touch response feature that lets you adjust the volume of your music’s tone based on how hard you strike the key(s), so you can add emotion to your music.

Repeatedly press **TOUCH RESPONSE** until its indicator appears (to turn touch response on) or disappears (to turn it off).

Notes:

- The touch response setting does not affect auto accompaniment or received MIDI data.
- The MIDI data sent out from the keyboard is affected by the touch response setting.

CHANGING AUTO POWER OFF

When you operate the keyboard with battery power, the keyboard automatically shuts off after about 6 minutes if you do not press a key. Press **POWER** again to turn power back on.

To have the keyboard not automatically turn off during a session, turn the keyboard on while holding down **TONE**.

The next time you turn the keyboard off then back on again, it automatically turns off after about 6 minutes.

USING PITCH BEND

Your keyboard has a pitch bend feature that lets you bend a note by altering its pitch. Pitch bend lets you create realistic effects for sounds such as a saxophone, other reed instruments, and guitar tones.

To use pitch bend, rotate and hold **PITCH BEND** while holding down a key. The pitch of the key you pressed slides smoothly up and down. Release **PITCH BEND** to stop the effect.

Adjusting the Pitch Bend Range

You can adjust the bend range of pitch controls from 1 to 12 semitones.

Note: The keyboard automatically selects a bend range of 2 semitones the first time you turn it on after connecting power. Each time you turn it on after that, it recalls the last selected bend range.

Follow these steps to adjust the pitch bend range.

1. Repeatedly press **TRANPOSE/TUNE/MIDI** until a number and **Bend** appear.
2. Within 5 seconds, repeatedly press **+** or **-** until the pitch bend range you want appears, or enter a number from **01-12**.

USING A SUSTAIN PEDAL

For added flexibility and control as you make music, you can connect a sustain

pedal (not supplied), available through your local RadioShack store. A sustain pedal lets you sustain or soften the keyboard's sound, and even start or stop an auto-rhythm.

To connect a sustain pedal to your keyboard, insert the pedal's plug into **ASSIGNABLE JACK** on the back of the keyboard.

You can adjust the keyboard to these settings when you use a sustain pedal.

Setting	Description
SUS (Sustain)	Causes one or more notes to linger after they are played
SoS (Sostenuto)	Similar to SUS, but only sustains one note just played
SFt (Soft)	Softens the sound
rHy (Rhythm)	Starts or stops the selected auto-rhythm

Follow these steps to change the **ASSIGNABLE JACK** jack's setting.

1. Repeatedly press **TRANPOSE/TUNE/MIDI** until **Bend** appears. Then repeatedly press **▶** until the current setting for **ASSIGNABLE JACK** and **Jack** appear.
2. Within 5 seconds, repeatedly press **+** or **-** until the desired setting (**SUS**, **SoS**, **SFt**, or **rHy**) appears.

Press the sustain pedal as you play to hear the desired sound or to start/stop the selected auto-rhythm.

□ Using the Memory

The keyboard lets you record up to two separate songs in memory for later playback. You can use either of two methods to record a song — *real-time recording* (you record as you play) or *step recording* (you enter notes and chords one-by-one).

You can record on each of the keyboard's six tracks separately. Besides notes, each track can have its own tone number. Then, when you play back the tracks together, it sounds like an entire six-piece band. Also, you can use different mixer settings for each track.

Track 1 is the main track, and you can use it to record auto accompaniment and drum pad sounds, as well as keyboard play. Tracks 2 through 6 are melody tracks, and you can use these for recording a secondary melody that includes keyboard play and the drum pad.

Because each track is independent of the others, you only need to re-record a single track if you make a mistake while recording on it.

REAL-TIME RECORDING

With real-time recording, the notes are recorded as you play them on the keyboard. Before you start, read these tips.

- To record without an auto-rhythm, skip Step 5 of “Real-Time Recording.” Recording starts when you press a key.
- To start recording with synchro start, press **SYNCHRO/ENDING** instead of **START/STOP** in Step 5 of “Real-Time Recording.” Recording starts when

you play a note or a chord on the accompaniment keys.

- To record using an intro, ending, or fill-in, use **INTRO**, **SYNCHRO/ENDING**, **NORMAL/FILL-IN**, or **VARIATION/FILL-IN** as you normally would.
- To synchro start auto accompaniment with an intro pattern, press **SYNCHRO/ENDING** and then **INTRO** instead of **START/STOP** in Step 5 of “Real-Time Recording.” Recording starts with the intro pattern when you play a note or a chord on the accompaniment keys.
- To start auto accompaniment during a recording, press **SYNCHRO/ENDING** instead of **START/STOP** in Step 5. Play the melody keys to start recording. When you reach the point where you want accompaniment to start, play a chord on the accompaniment keys.

Follow these steps to record as you play.

1. Repeatedly press **MEMORY** until **Rec. No.** appears.

Note: **MEMORY** is a three-way switch. When you press it once, the keyboard enters the memory playback mode. When you press it again, it enters the memory record mode. When you press the button a third time, it turns off the memory function.

2. Within 5 seconds, press **+** or **-** (or **0** or **1**) to select a song number.

3. Press **CHORD/1** to select Track 1.

While the keyboard is in memory record mode, the level meters for channels 11 through 16 correspond to memory tracks 1 through 6. When all four bars are lit, that channel has something in memory: if only one bar is lit, that track is empty.

4. If desired, you can change these settings:

- tone number
- rhythm number
- tempo
- **MODE**

Note: Do not change the tempo unless you already know the desired tempo. Pressing **START/STOP** to hear the tempo causes recording to begin.

5. Press **START/STOP** to start recording.

6. Play the keyboard.

You can also record auto accompaniment chords, the drum pad, pitch bender, and pedal operations.

7. Press **START/STOP** to end recording.

If you make a mistake, press **START/STOP** to stop recording and begin again from Step 1, or you can edit the contents. See “Editing Memory Contents” on Page 33.

Press ▼ after you select Track 1 in Step 3 to use the drum pads. That way, you can also start recording by playing a drum pad.

This data is stored on Track 1 along with the notes you played:

- tone number
- rhythm number
- rhythm controller (**INTRO**, **NORMAL/FILL-IN**, etc.) operations
- pitch bender operations
- pedal operations
- drum pad operations

See “Recording Multiple Tracks” on Page 31 to record on the other five tracks.

Notes:

- When you record on a track that contains data, the new recording replaces the previous recording.
- The touch response setting (on/off) is not recorded. However, the strength of the strike is recorded.
- Channel 1 mixer parameters are automatically recorded to Track 1.
- The memory can store a total of about 4,900 notes. If the remaining memory is less than 100 notes, the measure and beat numbers flash. When memory becomes full, recording automatically stops (and auto-accompaniment or rhythm stops playing, if used).
- Memory contents are saved as long as power is supplied to the keyboard. Unplugging the adapter without batteries or with weak batteries erases the memory. To prevent data loss, connect an adapter before replacing the batteries.

- Turning off the keyboard while recording erases the contents of the track you were recording.
- You can transfer memory contents to another MIDI device.

PLAYING BACK FROM MEMORY

1. Repeatedly press **MEMORY** until **Play No.** appears.
2. Within 5 seconds, use **+** or **-** (or **0** or **1**) to select a song number.
3. Within 5 seconds, press **START/STOP** to play back the song you selected. You can use **TEMPO** to adjust the playback tempo.
4. Press **START/STOP** again to stop playback.

Notes:

- You can use layer and/or split during memory playback.
- You can change the rhythm during playback.
- Pressing **START/STOP** during the song restarts the song from the beginning.
- You can set the volume and pan position of the playback tracks using the mixer. This setting data is output through **MIDI OUT**.
- The entire keyboard functions as a melody keyboard during playback, regardless of the **MODE** setting.

STEP RECORDING

With step recording, you can record a chord progression one chord at a time. Before you start, read these tips. (If you want to record one note at a time, refer to “Recording Multiple Tracks” on Page 31.)

- To start accompaniment with an intro pattern, press **INTRO** after **SYNCHRO/ENDING** in Step 6 of “Step Recording.”
- To switch to a rhythm variation, press **VARIATION/FILL-IN** immediately before entering the chord in Step 6 of “Step Recording.”
- To insert an ending or fill in, press **SYNCHRO/ENDING** or **NORMAL/FILL-IN** (**VARIATION/FILL-IN** for variation rhythm) immediately before entering the chord in Step 6 of “Step Recording.”
- To step-record chords without a rhythm, skip Step 5 of “Step Recording.” The chord of the specified length is recorded. A rest can be specified there, so you can create an original chord pattern.
- To add chord accompaniment during rhythm play, enter rests from the beginning of the recording up to where you want accompaniment to start. Then enter only the chords (no rests).

Follow these steps to record chords with step recording.

1. Repeatedly press **MEMORY** until **REC.No.** appears.
2. Within 5 seconds, repeatedly press **+** or **-** to select a song number.

3. Press **CHORD/1** to select Track 1.
4. If desired, you can change these settings:
 - rhythm number
 - tempo
 - **MODE**
5. Press **STEP** to start recording.
6. Press **SYNCHRO/ENDING**, then play a chord.
 - Use the chord play method determined by the current **MODE** setting (Fingered, Concert Chord, Full Range Chord, or Normal).
 - When **MODE** is set to **NORMAL**, specify the chord using the root keys and chord-type keys. See “Specifying Chords in the Normal Mode”.
7. Use the number buttons to specify the length of the chord. See “Specifying the Length of a Note”.
8. For each additional chord you want to enter, play the chord and use the number buttons to specify its length.
9. When you finish recording, press **MEMORY**, **STEP**, or **START/ STOP**.

To play back the song, press **START/ STOP**.

Notes:

- To correct entry mistakes, see “Editing Memory Contents” on Page 33.
- When you record on a track that already contains data, the keyboard automatically locates the end of the previous recording — measure,

beat, or clock ($1/48$ of a beat) — and adds your new entry to it.

- You can enter a 0 (a rest) in Step 6, but the rest is ignored when the accompaniment plays.
- The rhythm number and **INTRO**, **SYNCHRO/ENDING**, **NORMAL/FILL-IN**, and **VARIATION/FILL-IN** operations are stored on Track 1, along with the notes you played.

See “Recording Multiple Tracks” on Page 31 to record on the other five tracks.

Specifying Chords in the Normal Mode

To enter chords when **MODE** is set to **NORMAL** during step recording, you must specify them using a method other than Concert Chord or Fingered. That way, you can enter 18 chord types using only two keys.

While holding down the desired chord root key, press the chord key to specify the chord.

The root and chord types are labeled above each key. The chord root letter and type of chord also appear as you play a chord.

Specifying the Length of a Note

During step recording, use the number buttons (or + or -) to specify the length of each note.

Use numbers **1** through **6** to specify whole notes (**1**), half notes (**2**), quarter notes (**3**), eighth notes (**4**), 16th notes (**5**), and 32nd notes (**6**).

Hold down **7** (dot) or **9** (triplicate), then press **1** through **6** to enter the lengths of the notes.

To enter a tie, press **8** and enter the first then the second notes.

To enter a rest, press **0** then use numbers **1** through **9** to specify the length of the rest.

Correcting Mistakes

Before finishing your step recording entry, you can move the entry point back to correct the data you entered. However, this operation deletes all data after the point where you make corrections.

1. Before you press **MEMORY**, **STEP**, or **START/STOP** to end recording, press **◀**. This moves the entry point back one "space."

The data recorded at the current entry point appears.

2. While monitoring the data on the display, repeatedly press **◀** or **▶** to move the entry point to the data you want to change.
3. Press **+** and **-** at the same time. **Rewrite?** appears.
4. Press **▼** to clear all data after the current entry point.
5. Press **◀**, **▶**, **+**, or **-** to cancel the rewrite operation. After that, you can press **◀** or **▶** to move the entry point to another location if you want.

Note: **TrackEnd** appears if you press **▶** at the end of the recording.

RECORDING MULTIPLE TRACKS

In addition to Track 1, where you record auto accompaniment as well as keyboard play, there are five other melody tracks that you can use to record melody parts only. You can record different tones on these tracks and build a full ensemble of instruments.

You can play back what you already recorded on Track 1 (or any other track) while you record on Tracks 2–6.

Real-Time Recording

1. Repeatedly press **MEMORY** until **Rec. No.** appears.
2. Within 5 seconds, repeatedly press **+** or **-** to select a song number.
3. Press the desired **CHORD** button (**2–6**) to select the track you want to record on.

Note: Check the display for Channels 11–16 to see which memory tracks contain data and which are empty.

4. If desired, you can change these settings:
 - tone number
 - tempo (to a tempo that is easy for you to follow)
5. Press **START/STOP** to start recording. The contents of any tracks already recorded start to play.
6. Play on the keyboard what you want to record on the selected track.

7. Press **START/STOP** to end recording.

This data is stored on the selected track in addition to the notes you played:

- tone number
- optional pedal operations
- pitch bender operations
- drum pad operations

Step Recording

1. Repeatedly press **MEMORY** until **Rec. No.** appears.
2. Within 5 seconds, repeatedly press **+** or **-** to select a song number.
3. Press the desired **CHORD** button (**2-6**) to select the track you want to record on.
4. Change the tone, if desired.
5. Press **STEP** to start recording.
6. Use the keyboard or **+** or **-** to enter notes, or **0** to enter rests.
 - When you enter the note using the keyboard with touch response turned on, the key pressure is also recorded.
 - You can also enter the chords using the keyboard.
 - When you use **+** or **-** to enter a note, a staff on the display shows the note you enter.
 - To delete a rest entry, press **0** again.

7. Use **1-9** to enter the length of the note or rest.
8. Repeat entering chords by playing them and specifying their length.
9. Press **MEMORY**, **STEP**, or **START/STOP** to end recording.

Notes:

- If you make a mistake, see “Correcting Mistakes” on Page 31.
- When you record on a track that already contains data, the keyboard automatically locates the end of the previous recording — measure, beat, or clock ($1/48$ of a beat) — and appends your new entry from there.
- To record a drum pad part, play a drum pad in Step 5.
- During recording on Tracks 2 through 6, the entire keyboard functions as a melody keyboard, regardless of the current **MODE** setting.
- This data is stored on the selected track in addition to the notes you played:
 - tone number
 - drum pad operations
- You can turn off a specific track during playback by using the mixer function (see “Using the Mixer” on Page 18).

Changing the Navigation Track

After you record, the display shows the contents of the last recorded or edited track. To display a different track, repeatedly press **TRANSPOSE/TUNE/MIDI** until **Band** appears, then repeatedly

press ► until **Navi. Tr.** appears. Then repeatedly press + or – until the track you want appears.

EDITING MEMORY CONTENTS

You can recall and change individual notes and parameter settings (such as tone number) in memory contents.

1. Repeatedly press **MEMORY** until **Play No.** appears.
2. Within 5 seconds, use + or – to select a song number.
3. Press **STEP**.
4. Use the **CHORD** buttons to select the track you want to edit.
5. Repeatedly press ◀ or ▶ to move to the entry point you want to change.

You can change the parameter that is flashing on the display. To change a different parameter, press ▼ so the parameter you want to edit starts flashing.

Make the desired changes to the selected parameter.

The actual procedures you use to change a parameter depend on the type of data it contains. See “Editing Techniques and Display Contents”.

Notes:

- Do not change a note identical to the preceding or succeeding note. Doing so might alter the length of the note and you will have to re-record the entire track.

- When you change note, key pressure, chord, or drum pad data, the keyboard sounds the new setting so you can hear what it sounds like.

6. Repeat Steps 5 and 6 to edit other parameters.

7. Press **MEMORY**, **STEP**, or **START/STOP** when you are finished.

Notes:

- When you interrupt playback of a song and immediately start an editing operation, the entry point (or point of interruption) appears on the editing screen.
- The only parameters that can be edited for Tracks 2–6 are notes, chords, tone, rhythm, key pressure, and drum pad.
- You cannot add data to a recording.
- You cannot move portions of a recording to a different location within the recording.
- You cannot change note lengths.

Editing Techniques and Display Contents

Note: You can edit Chord, Tone Number/Rhythm Number, and Rhythm Controller controls only when you first record these items.

Key Pressure (Velocity) — Use the keyboard, number buttons, or + and – to adjust the key pressure. To change the key pressure using the keyboard, be sure to turn on touch response.

Pitch — Enter a new note on the keyboard or use + or – to change to the next higher or lower note. The keyboard and the staff on the display show your new entry.

Chord — Use the appropriate chord fingering method as determined by the **MODE** setting.

Tone Number/Rhythm Number — Use the number buttons or + or –.

Rhythm Controller (INTRO, NORMAL/FILL-IN, VARIATION/FILL-IN, SYNCHRO/ENDING), CHORD — Press the button for the function you want to change to.

Deleting Individual Data

1. Follow Steps 1–5 under “Editing Memory Contents” on Page 33.
2. Press + and – at the same time. **DataDel?** appears.
3. Press ▼ to delete the selected data.

Or press ◀ or ▶ (or + or –) to cancel the procedure without deleting anything.

Deleting All Data in a Specific Track

1. Repeatedly press **MEMORY** until **Rec. No.** appears.

2. Within 5 seconds, repeatedly press + or – to select a song number.

3. Hold down **MEMORY** until **Tr.Del.?** appears.

4. Within 5 seconds, press the **CHORD** number (2–6) for the track(s) you want to delete.

- You can specify more than one track by pressing more than one button.
- To deselect a track, simply press its button again.

The track contents indicator(s) for the selected track flash(es).

5. To delete the data in the selected track(s), press ▼. The keyboard goes into playback standby mode.

To exit the track deletion procedure without changing any data, press **MEMORY**.

Notes:

- You cannot change the song number after **Tr.Del.?** appears.
- You cannot select a track that does not contain any recorded data.

□ *Using MIDI*

Your keyboard includes a feature called MIDI (Musical Instrument Digital Interface). MIDI is the universal standard for sending and receiving performance data between all types of electronic musical

instruments, regardless of the manufacturer. Using MIDI, you can play music on your keyboard and another instrument at the same time while pressing the keys on only one, record your music to a se-

quencer, acquire a wider selection of preset tones from a sound module, and much more.

ABOUT MIDI

Every MIDI-equipped instrument has MIDI OUT and IN terminals, and some also have a MIDI THRU terminal. Each of these terminals serves a different purpose.

MIDI OUT sends MIDI data to (“talks to”) the other MIDI instrument(s).

MIDI IN receives (“listens to”) MIDI data sent by the other MIDI instrument(s).

MIDI THRU lets you connect (“network”) additional MIDI instruments, and sends along to other MIDI devices a copy of all data it receives through its MIDI IN terminal.

Your keyboard has **MIDI OUT** and **MIDI IN** terminals.

The cable that connects MIDI devices does not actually carry sound between them, like a speaker wire carries sound from a receiver to a speaker. Instead, MIDI-equipped devices communicate with each other using digital codes (instructions). One MIDI device sends digital instructions representing exactly what is being played on it. The other MIDI device receives and translates those instructions, then produces (or records) the sound exactly as it was played on the first device.

Note: Connecting your keyboard to another MIDI device requires a MIDI cable (not supplied). See “Making the MIDI Connections”.

MAKING THE MIDI CONNECTIONS

To connect your keyboard to another MIDI-equipped device, you must use a MIDI cable (available at your local RadioShack store).

Cautions:

- Always turn off power to your keyboard and the other MIDI device before you connect or disconnect MIDI cables.
- As you make the cable connections, be sure to align the MIDI cable pins with the matching holes on your keyboard’s **MIDI OUT** and **MIDI IN** terminals. If you have trouble plugging in the cable, do not force it! You might damage the plug or the instrument.

To send MIDI data from your keyboard, use a MIDI cable to connect the keyboard’s **MIDI OUT** terminal to the other device’s MIDI IN terminal.

To receive MIDI data on your keyboard, use a MIDI cable to connect the keyboard’s **MIDI IN** terminal to the other device’s MIDI OUT terminal.

Note: You do not need to make both connections if you are only either sending or receiving.

MIDI DATA

Your keyboard can send and receive several different types of MIDI data. The keyboard’s tones, rhythms, and other types of MIDI data are sent automatically as you play.

Notes:

- The keyboard's prerecorded tunes cannot be sent as MIDI data.
- For detailed specifications of the MIDI function, see the "MIDI Implementation Chart" on Page 46.

Note On/Off — specifies which keys are pressed (Note On) or released (Note Off). Also includes how loud a note is played as a value from 0 to 127.

Notes:

- The pitch of a note depends on the tone that is being used, as shown in the "MIDI Implementation Chart" on Page 46.
- If the keyboard receives a "request" to play notes outside of its range (higher or lower), it automatically selects the same note in the nearest octave.

Program Change — specifies the tone.

Pitch Bend — supplies pitch bend information. The keyboard's pitch changes as it receives a Pitch Bend message through the **MIDI IN** terminal, and the keyboard sends pitch bend information through the **MIDI OUT** terminal as you rotate **PITCH BEND**.

Control Change — adds effects such as vibrato and volume changes applied during keyboard play. The message includes a control number (the effect type) and a control value (the on/off and depth of the effect).

Here is the data that can be received with this keyboard and the corresponding control number.

Effect	Control Number
Bank Select	0, 32
Volume	7
Pan	10
Expression	11
Hold1 (Sustain)	64
Sostenuto	66
Soft Pedal	67
RPN (Registered Parameter Number)	100/101
Data Entry	6/38

Use the Bank Select setting to select the keyboard's tone groups to be changed by the Program Number message.

- Bank 0 — 0 to 127 (General MIDI tones)
- Bank 1 — 128 to 159 (synthesized tones)
- Bank 2 — 160 to 167 (drum sets)
- Bank 3 — 168 to 199 (user tones)

Just before sending a Program Change message, send two Control Change messages with this data to the keyboard:

- Control Number = 0, Control Value = <bank number>
- Control Number = 32, Control Value = 0

For example, to select tone number 190 (user tone number 22), enter:

- Control Number = 0, Control Value = 3 (bank number for user tone)
- Control Number = 32, Control Value = 0

- Program Change = 22 (22nd tone in bank 3)

Note: Channel 10 is reserved for drum sounds only, so it is not necessary to send bank select data when changing tones.

RPN is used when combining multiple control changes. RPN (100 and 101) selects the parameter to control, and Data Entry (6 and 38) sets the contents of the parameter. On the keyboard, RPN is used to set pitch bend range, transpose, and tune control from an external MIDI device.

All Sound Off forces all sound on the current channel to turn off, regardless of how the sound is being produced.

All Notes Off turns off all note data sent from an external device on the channel. The notes being sustained by the pedal continue to sound until the next pedal off signal is received.

Reset All Controllers initializes pitch bend and all other control changes.

System Exclusive controls fine tone adjustments unique to a particular system. The system exclusives are unique to a particular system; however, there are “universal” system exclusives that are common among devices produced by individual manufacturers.

These are the system exclusive messages supported by this keyboard.

- **GM Mode On** ([F0][7E][7F][09][01][F7]) — used to turn on the keyboard’s GM (General MIDI) mode from an external MIDI device.

Notes:

- GM is a standard list of specifications that allows music created on one MIDI device to sound the same when played on another MIDI device. This keyboard’s GM mode incorporates most of these specifications.
- This message takes more time to process than other messages; when you program GM Mode On in the sequencer, leave at least a 100 msec pause before the next message.
- **GM Mode Off** ([F0][7E][7F][09][02][F7]) — used to turn off the keyboard’s GM mode.
- **Reverb Change** ([F0][44][0E][09][yy][F7]) — switches the keyboard’s reverb function. yy determines the type of reverberation effect.

yy Value	Reverb
00	Room
01	Stage
02	Hall
0F	Off

Note: The contents of the System Exclusive message affect the entire keyboard. Other messages affect only the current MIDI channel.

CHANGING MIDI SETTINGS

The keyboard lets you change a number of MIDI parameters, including turning

General MIDI mode on/off and selecting a MIDI channel.

Follow these steps to change MIDI parameters.

1. Repeatedly press **TRANPOSE/TUNE/MIDI** until **OFF GM Mode** appears.
2. Within 5 seconds, repeatedly press ◀ or ▶ to select the parameter you want to change.

GM Mode on/off (Default: Off): set to **on** when you want to have the keyboard receive GM data from another MIDI device. Turning GM mode on automatically turns **CHORD** off, since GM mode and MIDI In Chord Judge cannot be used at the same time.

Set to **OFF** to turn GM mode off. The tone, volume and other parameter settings of each channel are initialized. When playing received MIDI data, bass tones are lowered one octave and the piccolo tone is raised one octave.

Keybd Ch (Keyboard Basic Channel) (Default: 01): sets the channel for sending MIDI data to an external device.

Chord (MIDI In Chord Judge) (Default: Off): when set to on, the keyboard determines basic channel note data as auto accompaniment chords per the current chord fingering method. Turning GM mode on automatically turns **Chord** off, since GM mode and MIDI In Chord Judge cannot be used at the same time.

Local (Local Control) (Default: On): set to on to send data simultaneously to the keyboard's speakers

and as MIDI data. Set to **OFF** to send data only as MIDI data (the speakers on the keyboard remain silent).

AcompOut (Accompaniment Out) (Default: Off): set to on to send auto accompaniment as MIDI data. Set to **OFF** to turn it off.

3. Within 5 seconds, use + or - to change the setting of the parameter.

DUMPING/IMPORTING DATA

The keyboard's internal data, including data recorded to memory and synthesizer data, can be sent and received in bulk as MIDI exclusive data through the MIDI terminals. Thus, you can use a computer or other MIDI device as an external storage device.

First make connections from the **MIDI IN** and **MIDI OUT** terminals to an external device using MIDI cables.

Note: Some software does not support MIDI exclusive data.

Dumping Data

1. Put the other device in its receive standby mode.
See the owner's manual that comes with the receiving device for details.
2. Repeatedly press **TRANPOSE/TUNE/MIDI** until **BulkSnd?** appears.
3. Within 5 seconds, press ▼ to start data send. **Sending** appears. The

keyboard automatically exits the data transfer mode after all the data is sent.

Importing Data

1. Repeatedly press **TRANPOSE/TUNE/MIDI** until **BulkSnd?** appears.
2. Within 5 seconds, repeatedly press ◀ or ▶ until **BulkRcv?** appears.
3. Within 5 seconds, press ▼ to prepare the keyboard to receive data.
4. Start the send operation on the sending device. See the owner's manual that comes with the connected device for details. The keyboard automatically exits the data transfer mode after all the data is received.

NOTES ABOUT THE MIDI IMPLEMENTATION CHART

The "MIDI Implementation Chart" on Page 46 illustrates the details of the keyboard's MIDI function. An **O** in the chart means that the keyboard has this feature; **X** means it does not have this feature. This section explains what the keyboard can do.

Basic Channel — MIDI uses up to 16 channels to exchange data. As in a TV broadcast, different channels send different data.

Mode — The chart shows that Mode 3 is OMNI OFF, POLY. This means the keyboard sends and receives polyphonic data on only one channel at a time.

Note Number — This number represents each key of the keyboard. The lowest number (0) is five octaves below middle C. Since the keyboard's lowest note is two octaves below middle C and the highest is three octaves above middle C, your keyboard can send a note number between 36 and 96. But, it can receive all 0 through 127 note numbers, so those keys outside the keyboard's key range are interpreted as notes inside the key range.

Velocity — This number shows how fast the key was pressed, or how loud the note should sound. 1 is the lowest velocity, pianissimo; 127 is the loudest, fortissimo. 0 means the key is released.

9n — This means that the Note On message is 9 hexadecimal, and n is the channel number.

For example, if you select Channel 16 and press Key D in mezzo-piano, 9E (E is 15 in hexadecimal; note that Channel 1 is 0 in MIDI data) is first sent from MIDI OUT, then 3D (decimal 61) is sent as the key number, finally 21 (decimal 33) is sent as velocity.

Pitch Bender — The keyboard sends and receives pitch bending signals.

Control Change — This feature sends data on various controllers, each having its own number. For the details of each parameter, see "MIDI Data" on Page 35.

Program Change — This feature changes the preset sounds. Each sound number corresponds to a program number between 0 and 127.

System Exclusive — This feature sends special signals unique to the key-

board. For details, see “MIDI Data” on Page 35.

System Real Time — “Clock” is like a metronome to send the synchronizing signal.

System real time commands send three kinds of signals — *start* tells the keyboard to start playing from the beginning, *stop* tells all the synchronized instruments to stop playing, and *continue* is similar to start, but it signals the

music to begin at whatever point it was last stopped.

All Notes Off — This feature is a kind of panic button: it stops the sounds currently playing. The keyboard only receives this message.

Active Sensing — This means the keyboard’s sound turns off in the event the connection cable to **MIDI IN** terminal is accidentally disconnected.

☐ Troubleshooting

If your keyboard is not performing as it should, these suggestions might help. If you still cannot solve the problem, take the keyboard to your local RadioShack store for assistance.

Trouble	Possible Cause	Remedy
No sound, even if keys are pressed.	The keyboard has turned off automatically.	Set MODE to OFF then ON .
	Volume is turned down.	Repeatedly press MAIN VOLUME ▲ to increase the volume.
	Headphones connected.	Disconnect headphones.
	Power supply problem.	Check the power supply. Are battery symbols (+/–) facing correctly? Are the batteries fresh? Is the AC or DC adapter connected properly?
	You are pressing too few accompaniment keys while MODE is set to FIN-GERED .	Set MODE to NORMAL or CONCERT CHORD . Press 3 or 4 keys to form a chord while MODE is set to FIN-GERED .
No sound when connected to an external amplifier.	Volume is turned down.	Repeatedly press VOLUME ▲ to increase the volume.
	Defective connection cord.	Replace the connection cord.

Trouble	Possible Cause	Remedy
No sound when receiving and playing MIDI data.	MIDI cables are not connected properly.	Check the connection.
The key or tuning does not match when playing along with another MIDI instrument.	The tuning or transpose parameter is set to a value other than 0 or 00 .	Set the tuning or transpose to 0 or 00 .
Bass notes in General MIDI data are sent out one octave lower.	Tone map parameter is set to N .	Set the tone map parameter to G (see "Changing MIDI Settings" on Page 37).
Sounds sent to another MIDI device by the keyboard do not sound correct.	The other device's MIDI THRU function is turned on.	Turn off the MIDI THRU function on the other device.

CARE

To enjoy your MIDI Keyboard for a long time:

- Keep the keyboard dry. If it gets wet, wipe it dry immediately.
- Use and store the keyboard only in normal temperature environments.
- Handle the keyboard gently and carefully. Do not drop it.
- Keep the keyboard away from dust and dirt.
- Wipe the keyboard with a damp cloth occasionally to keep it looking new.

Modifying or tampering with the keyboard's internal components can cause a malfunction and might invalidate its warranty and void your FCC authorization to operate it. If your keyboard is not performing as it should, take it to your local RadioShack store for assistance.

□ Appendix

NOTE TABLE

(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
000	24	1	A	A0 - C8	010	12	2	A	C4 - C6	020	24	1	A	C2 - C7	030	24	1	A	E2 - D6
001	24	1	A	A0 - C8	011	24	1	A	F3 - F6	021	12	2	A	F3 - F6	031	24	1	A	E2 - D6
002	12	2	A	A0 - C8	012	24	1	A	C3 - C6	022	24	1	A	C4 - C6	032	24	1	B	E1 - G3
003	12	2	A	A0 - C8	013	24	1	A	F4 - C7	023	12	2	A	F3 - F6	033	24	1	B	E1 - G3
004	24	1	A	E1 - G7	014	24	1	A	C4 - F5	024	24	1	A	E2 - C6	034	24	1	B	E1 - G3
005	24	1	A	E1 - G7	015	12	2	A	C4 - C6	025	24	1	A	E2 - C6	035	24	1	B	E1 - G3
006	24	1	A	F2 - F6	016	12	2	A	C2 - C7	026	24	1	A	E2 - D6	036	24	1	B	E1 - G3
007	24	1	A	C2 - C7	017	12	2	A	C2 - C7	027	24	1	A	E2 - D6	037	24	1	B	E1 - G3
008	24	1	A	C4 - C8	018	12	2	A	C2 - C7	028	24	1	A	E2 - D6	038	24	1	B	E1 - G3
009	24	1	A	C5 - C8	019	12	2	A	A0 - C8	029	24	1	A	E2 - D6	039	24	1	B	E1 - G3
(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
040	24	1	A	G3 - C7	050	24	1	A	C2 - C7	060	12	2	A	F2 - F5	070	24	1	B	A#1 - C5
041	24	1	A	C3 - C6	051	12	2	A	C2 - C7	061	24	1	A	C2 - C7	071	24	1	A	D3 - G6
042	24	1	A	C2 - C5	052	24	1	A	C3 - G5	062	12	2	A	C2 - C7	072	24	1	C	D5 - C8
043	24	1	B	E1 - G3	053	24	1	A	C3 - G5	063	12	2	A	C2 - C7	073	24	1	A	C4 - C7
044	24	1	A	E1 - C7	054	12	2	A	C3 - C6	064	24	1	A	F#3 - D#6	074	24	1	A	C4 - C7
045	24	1	A	E1 - C7	055	12	2	A	C3 - C5	065	24	1	A	C#3 - G#5	075	24	1	A	C4 - C7
046	24	1	A	B0 - G7	056	24	1	A	A#3 - A#6	066	24	1	A	F#2 - D#5	076	12	2	A	C4 - C7
047	24	1	B	C2 - A3	057	24	1	A	A#1 - D#5	067	24	1	B	C#2 - G#4	077	24	1	A	G3 - C6
048	24	1	A	E1 - C7	058	24	1	B	F1 - G3	068	24	1	A	A#3 - G6	078	24	1	A	C4 - C7
049	24	1	A	E1 - C7	059	24	1	A	A#3 - A#5	069	24	1	A	E3 - A5	079	24	1	A	C4 - C6
(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
080	12	2	A	A0 - C8	090	12	2	A	C2 - C7	100	12	2	A	C2 - C7	110	12	2	A	G3 - C7
081	12	2	A	A0 - C8	091	12	2	A	C2 - C7	101	12	2	A	C2 - C7	111	24	1	A	C3 - C5
082	12	2	A	C2 - C7	092	12	2	A	C2 - C7	102	12	2	A	C2 - C7	112	24	1	A	C5 - C6
083	12	2	A	C2 - C7	093	12	2	A	C2 - C7	103	12	2	A	C2 - C7	113	24	1	A	C4 - C5
084	12	2	A	C2 - C7	094	12	2	A	C2 - C7	104	24	1	A	C3 - F5	114	12	2	A	E3 - E5
085	12	2	A	C2 - C7	095	12	2	A	C2 - C7	105	24	1	A	C3 - C6	115	24	1	D	C4 - C5
086	12	2	A	C2 - C7	096	12	2	A	C2 - C7	106	24	1	A	D3 - G5	116	24	1	D	C4 - C5
087	12	2	A	A0 - C8	097	12	2	A	C2 - C7	107	24	1	A	G3 - C6	117	24	1	D	C4 - C5
088	12	2	A	C2 - C7	098	12	2	A	C2 - C7	108	24	1	A	C3 - G5	118	12	2	D	C4 - C5
089	24	1	A	C2 - C7	099	12	2	A	C2 - C7	109	12	2	A	C2 - F5	119	24	1	D	C4 - C5
(1)	(2)	(3)	(4)	(5)															
120	24	1	D	C4 - C5															
121	24	1	A	C4 - C5															
122	12	2	D	C4 - C5															
123	24	1	D	C4 - C5															
124	24	1	D	C4 - C5															
125	24	1	D	C4 - C5															
126	12	2	D	C4 - C5															
127	24	1	D	C4 - C5															

Legend:

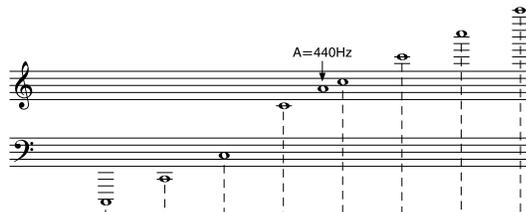
1. Tone number
2. Maximum polyphony
3. Digital Controlled Oscillator
4. Range type
5. Recommended sound range for General MIDI

* Tones without scale

* The following shows maximum polyphone for synthesized tones 128 through 159:

141 BASS SLIDE: 24 notes 1 DCO

Other tones: 12 notes 2 DCO



Range Type	C-1	C0	C1	C2	C3	C4	C5	C6	C7	G7	C8	C9	G9	
A (Standard type)														
B (Low pitch instruments)														
C ("072 PICCOLO" only)														
D (Sound Effect)	No scale for tones.													



.....Range of keyboard play



.....Playable range (Transpose, when receiving MIDI data)



.....Range in which same note is played in nearest octave as a result of transpose and MIDI data receive operation.
(Transpose, when receiving MIDI data)

DRUM ASSIGNMENT LIST

Key/Note number	Drumset 1 STANDARD SET	Drumset 2 ROOM SET	Drumset 3 POWER SET	Drumset 4 VOICE SET	Drumset 5 SYNTH SET	Drumset 6 JAZZ SET	Drumset 7 BRUSH SET	Drumset 8 ORCHESTRA SET
E1 28	HIGH C							CLOSED HH/HAT
F1 29	SLAP							PEDAL HH/HAT
F1 30	SCRATCH BRUSH							CONCERT SNARE
G1 31	SCRATCH FULL							BIHE CYMBAL 1
A1 32	STICKS							
A1 33	SQUARE CLICK							
A1 34	METRONOME CLICK							
B1 35	ACQUSTIC BASS DRUM	POWER BASS DRUM 2	POWER BASS DRUM 2	SYNTH BASS DRUM 1	SYNTH BASS DRUM 2	JAZZ BASS DRUM 2	JAZZ BASS DRUM 2	JAZZ BASS DRUM 1
C2 36	BASS DRUM	POWER BASS DRUM 1	POWER BASS DRUM 1	VOICE BASS DRUM	SYNTH BASS DRUM 1	JAZZ BASS DRUM 1	JAZZ BASS DRUM 1	CONCERT BASS DRUM
D2 38	SIDE STICK	ROOM SNARE 1	POWER SNARE 1	SYNTH RIM SHOT	SYNTH RIM SHOT	JAZZ SNARE 1	BRUSH TAB	CONCERT SNARE
E2 39	ACQUSTIC SNARE 1	ROOM SNARE 2	POWER SNARE 2	VOICE SNARE	SYNTH SNARE 1	JAZZ SNARE 2	BRUSH SWIRL	CONCERT SNARE
E2 40	ACQUSTIC SNARE 2	ROOM SNARE 2	POWER SNARE 2	VOICE SNARE 1	SYNTH SNARE 2			TIMPANI F
F2 41	LOW FLOOR TOM	ROOM LOW FLOOR TOM	ROOM LOW FLOOR TOM	VOICE LOW FLOOR TOM	SYNTH LOW FLOOR TOM			TIMPANI G
G2 42	CLOSED HH/HAT	ROOM HIGH FLOOR TOM	ROOM HIGH FLOOR TOM	VOICE CLOSED HH/HAT	SYNTH CLOSED HH/HAT 1			TIMPANI A
A2 44	PEDAL HH/HAT	ROOM LOW TOM	ROOM LOW TOM	VOICE PEDAL HH/HAT	SYNTH HIGH FLOOR TOM			TIMPANI A
A2 45	LOW TOM	ROOM LOW TOM	ROOM LOW TOM	VOICE OPEN HH/HAT	SYNTH LOW TOM			TIMPANI B
B2 46	OPEN HH/HAT	ROOM LOW MID TOM	ROOM LOW MID TOM	VOICE OPEN HH/HAT	SYNTH OPEN HH/HAT			TIMPANI B
B2 47	LOW MID TOM	ROOM HIGH MID TOM	ROOM HIGH MID TOM	VOICE OPEN HH/HAT	SYNTH LOW MID TOM			TIMPANI G
C3 48	CRASH CYMBAL 1	ROOM HIGH MID TOM	ROOM HIGH MID TOM	SYNTH LOW MID TOM	SYNTH HIGH MID TOM			TIMPANI C
C3 49	CRASH CYMBAL 2	ROOM HIGH TOM	ROOM HIGH TOM	SYNTH CYMBAL	SYNTH CYMBAL			TIMPANI D
D3 50	HIGH TOM	ROOM HIGH TOM	ROOM HIGH TOM	SYNTH HIGH TOM	SYNTH HIGH TOM			TIMPANI E
E3 52	RIDE CYMBAL 1							TIMPANI E
E3 53	RIDE CYMBAL 2							TIMPANI F
F3 54	RIDE BELL							
F3 55	TAMBOURINE							
G3 56	COMBELL							
A3 57	SPUSH CYMBAL			SYNTH COMBELL	SYNTH COMBELL			CONCERT CYMBAL 2
B3 59	CRASH CYMBAL 2							CONCERT CYMBAL 1
B3 59	RIDE CYMBAL 2							
C4 60	HIGH BONGO							
C4 61	LOW BONGO							
D4 62	MUTE HIGH CONGA			SYNTH MUTE HIGH CONGA	SYNTH MUTE HIGH CONGA			
E4 63	OPEN HIGH CONGA			SYNTH OPEN HIGH CONGA	SYNTH OPEN HIGH CONGA			
E4 64	LOW CONGA			SYNTH LOW CONGA	SYNTH LOW CONGA			
F4 65	HIGH TIMBALES							
G4 67	LOW TIMBALES							
A4 68	HIGH AGOGO							
A4 68	LOW AGOGO							
A4 69	CABASA							
B4 70	MARACAS			SYNTH MARACAS	SYNTH MARACAS			
B4 71	SHORT WHISTLE							
C5 72	LONG WHISTLE							
D5 74	SHORT GUIRO							
D5 74	LONG GUIRO							
E5 75	CLAVES							
E5 76	LOW WOOD BLOCK			SYNTH CLAVES	SYNTH CLAVES			
F5 77	LOW WOOD BLOCK							
G5 79	MUTE CLUCA							
G5 79	OPEN CLUCA							
A5 81	MUTE TRIANGLE							
A5 81	OPEN TRIANGLE							
B5 83	SHAKER							
B5 83	JINGLE BELL							
C6 84	BELL TREE							
D6 86	OPEN SURDO							
D6 86	MUTE SURDO							
E6 87	OPEN SURDO							
E6 88								APPLAUSE

FINGERED CHORD CHART

Chord Type / Root	M	m	7	m7	dim7	M7	m7 ⁵	dim	aug	sus4	7sus4	madd9	mM7	7 ⁵	add9
C															
C [♯] /D [♭]															
D															
D [♯] /E [♭]															
E															
F															
F [♯] /G [♭]															
G															
G [♯] /A [♭]															
A					※										
A [♯] /B [♭]					※				※						
B					※										

Note: Chords marked with a ※ cannot be played in the FINGERED mode due to the limitation of the accompaniment keyboard range. Use FULL RANGE CHORD to play pieces that contain these chords.

❑ MIDI Implementation Chart

FUNCTION		TRANSMITTED	RECOGNIZED	REMARKS
Basic Channel	Default Changed	1-16 ^{*1} 1-16	1-16 1-16	^{*1} Held in memory with power supplied
Mode	Default Messages Altered	Mode 3 X *****	Mode 3 X *****	
Note Number:	True voice	36-96 *****	0-127 12-108 ^{*2}	^{*2} See "Note Table" on Page 42
Velocity	Note ON Note OFF	O 9nH v=1-127 X 9nH v=0	O 9nH v=1-127 X 9nH v=0, 8nH v=XX	XX=no relation
After Touch	Keys Channels	X X	X O ^{*3}	
Pitch Bender		O	O	
Control Change:	0, 32 1 6, 38 7 10 11 64 66 67 100, 101 120 121	O X O ^{*4} O O O O ^{*5} O ^{*5} O ^{*5} O ^{*4} X X	O O ^{*3} O ^{*4} O O O O O O ^{*4} O O	Bank Select Modulation Data entry Volume Pan Expression Hold 1 Sostenuto Soft pedal RPN LSB, MSB All sound off Reset all controller
Program Change:	True #	O 0-127 *****	O 0-127 *****	
System Exclusive		O ^{*6}	O ^{*6}	
System Common	: Song Pos : Song Sel : Tune	X X X	X X X	
System Real Time	: Clock : Commands	O O	X X	
Aux Messages	: Local ON/OFF : All notes OFF : Active Sense : Reset	X X X X	O O X X	

Recording Methods Real-time, Step
 Memory Capacity Approximately 4,900 notes (total for two songs)
 Edit Function Equipped

Custom Tone Parameter Function

Parameters PCM set, amp envelope set, attack rate, release rate,
 pitch envelope set, pitch, level, touch sense, pan

Mixer Function

Channels 16
 Parameters Program change number, volume, expression,
 pan, coarse tuning, fine tuning, on/off/solo
 MIDI 16 multi-timbre receive, GM Level 1 standard
 Transpose -12 semitones to +12 semitones
 Tuning Adjustable A4 = 440 Hz \pm 50 cents
 Pitch Bend Range 12 semitones up and down
 Built-In Speakers 12 cm \times 2

Terminals

MIDI Terminals IN, OUT
 Assignable Terminal 1/4-Inch Phone Jack
 (sustain, sostenuto, soft, rhythm start/stop)
 Power Supply 9V DC Jack
 Headphones Stereo Standard Jack Output Impedance:150 Ohms
 Output Voltage: 5 V (RMS) MAX at 47K ohm load
 Power Sources DC: 6 D batteries
 AC: 9V with AC adapter
 Power Consumption 7.7 W
 Dimensions (HWD) $5^{15}/_{16} \times 37^{7}/_{8} \times 14^{13}/_{16}$ Inches
 (15.2 \times 96 \times 37.6 cm)
 Weight (Without Batteries) 12 lbs 12 oz
 (5.8 kg)
 Included Accessories Sheet Music Stand
Play Guide for the Prerecorded Tunes

Specifications are typical; individual units might vary. Specifications are subject to change and improvement without notice.

Notes

Limited One-Year Warranty

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