YAMAHA

PORTATONE

KB-210/410

使　用　说　明　书

OWNER'S MANUAL

Congratulations on your purchase of the Yamaha PortaTone!

You now own a portable keyboard that combines advanced functions, great sound and exceptional ease-of-use in a highly compact package. Its outstanding features also make it an expressive and versatile musical instrument.
Read this Owner's Manual carefully while playing your new PortaTone in order to take full advantage of its various features.

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Main Features

The PortaTone is a sophisticated yet easy-to-use keyboard with the following features:

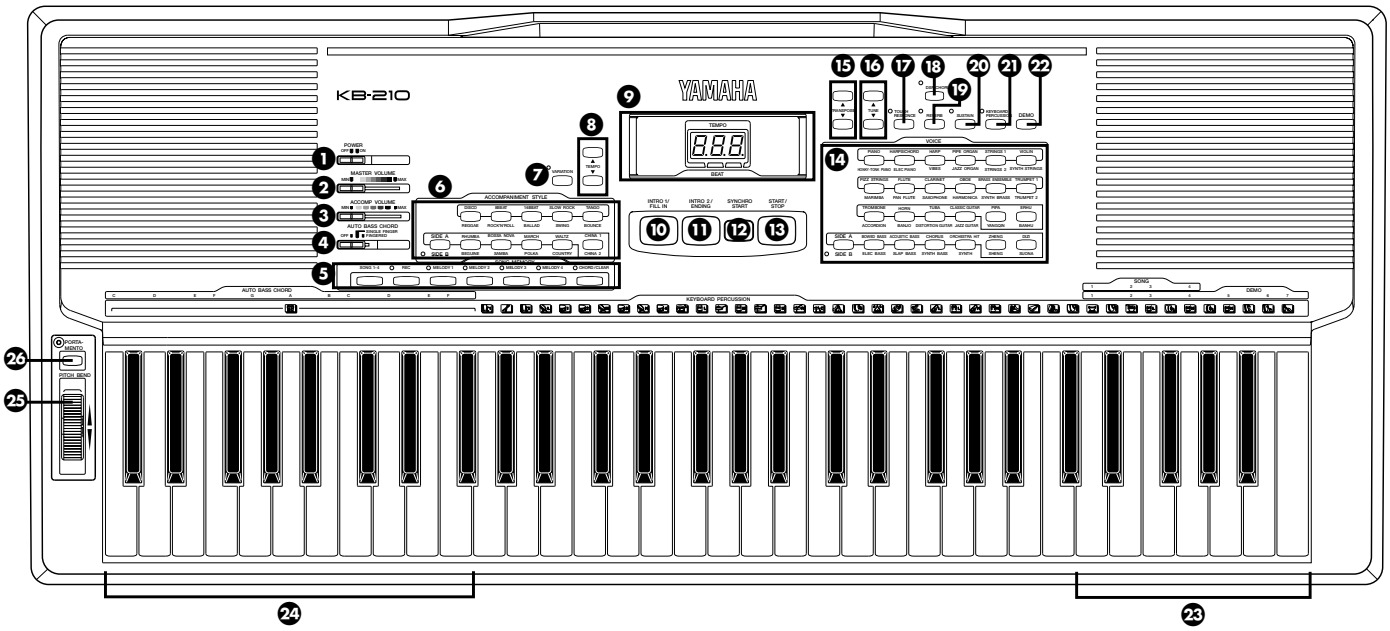
- Exceptionally realistic sounds with 48 AWM (Advanced Wave Memory) Voices, featuring digital recordings of actual instruments.
- Keyboard Percussion function that lets you play 61 realistic drum and percussion sounds from the keyboard.
- Portamento (glissand), Sustain (decay control), Digital Reverb (room ambience) and Chorus (space and warmth) effects for getting just the right sound, plus convenient Pitch Bend wheel for bending the pitch up or down as you play.
- 20 dynamic Accompaniment Styles, each with Intro, Main, Fill In, and Ending patterns, plus Variations for each.
- Sophisticated Auto Bass Chord function that provides automatic bass and chord accompaniment to perfectly match the Accompaniment Styles.
- Song Memory feature that lets you record your performance.

Plus...

- Custom Percussion feature that lets you create an original rhythm pattern for your unique performance (KB-410).
- Registration feature that lets you store a current panel setting and recall it with a touch of a button (KB-410).
- MIDI (IN & OUT) and TO HOST ports that allow expansion of your keyboard, for use with other MIDI instruments as well as a personal computer (KB-410).

Panel Controls and Terminals

KB-210 Top Panel



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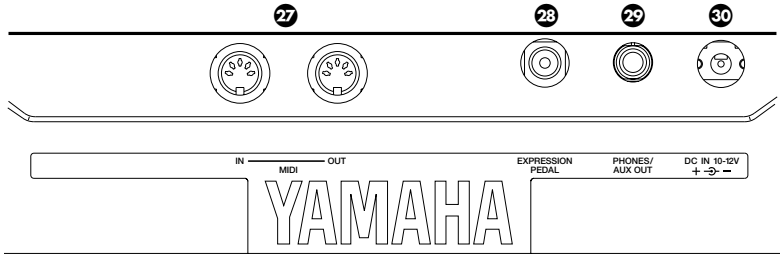

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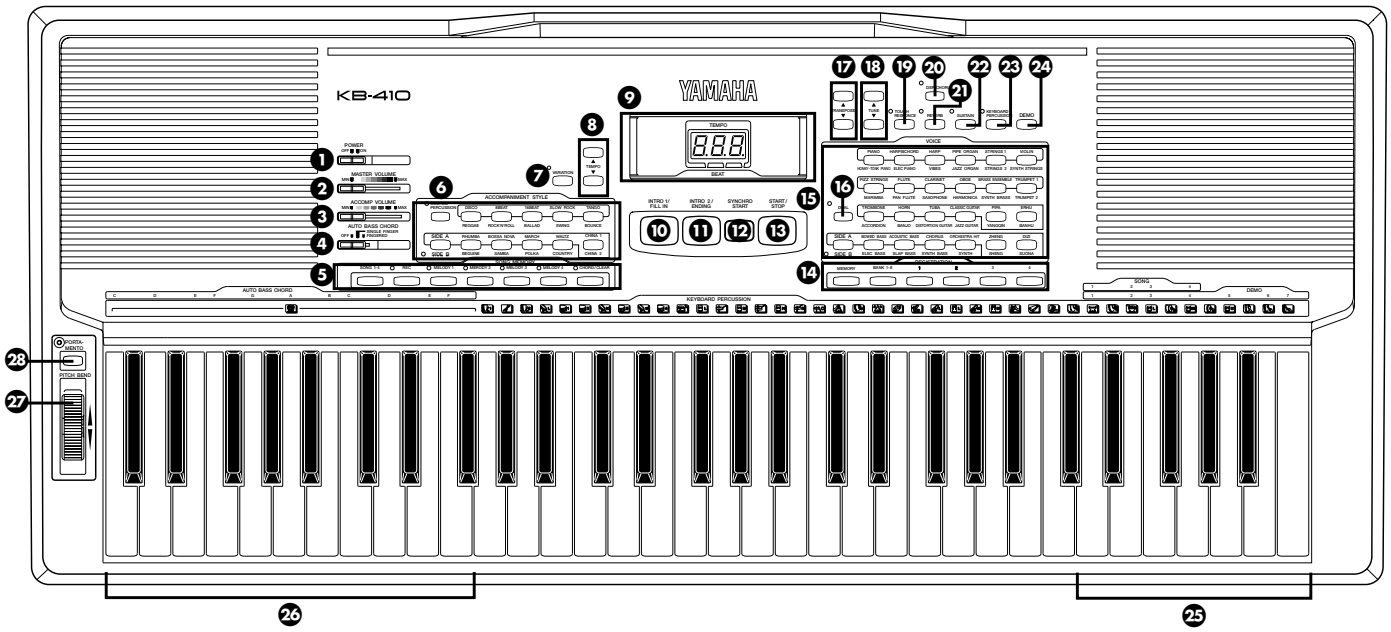

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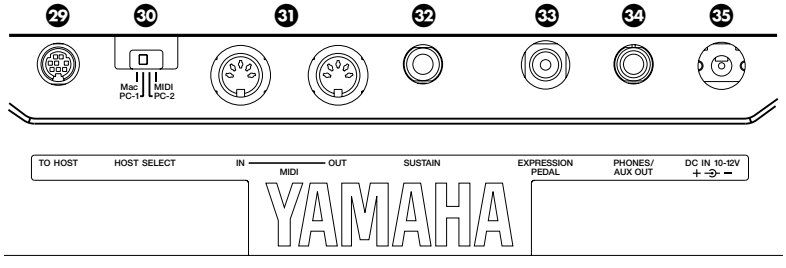

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Before You Begin

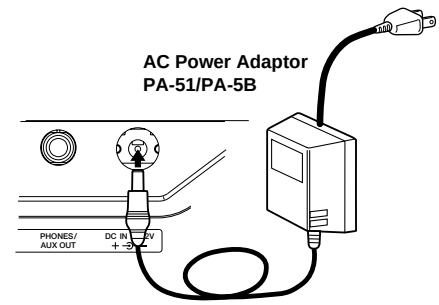
Although you are probably eager to try out your new PortaTone, we recommend that you read through the brief instructions below on setting up the instrument.

Power Supply

Your PortaTone can run either on normal household current by using the included Yamaha PA-51/PA-5B Power Adaptor, or on batteries (sold separately).

■ Using the AC Power Adaptor

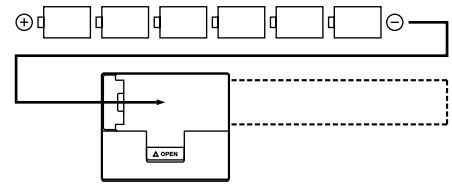
Insert the standard two-prong plug of the included PA-51/PA-5B adaptor into a convenient AC outlet, and the other plug into the DC 10-12V IN jack on the back of your PortaTone.



WARNING: Use only the PA-51/PA-5B Power Adaptor. Use of the wrong adaptor can result in overheating or damage to the PortaTone.

CAUTION: Remove the adaptor from the outlet when not using the PortaTone for extended periods of time or during electrical storms.

■ Installing Batteries



1. **Open the battery compartment on the underside of the instrument.**
2. **Insert six 1.5-volt size "D" batteries as shown in the illustration. Make sure that the positive (+) and negative (-) terminals are properly aligned with the markings in the compartment.**
3. **Securely replace the compartment cover.**

CAUTION: When replacing batteries, never mix old and new batteries or different types of batteries (e.g., alkaline and manganese). Also, to prevent possible damage from battery leakage or overheating, remove the batteries from the instrument if it is not to be used for an extended period of time.

NOTE

When the batteries run low and the battery voltage drops below a certain level, the PortaTone may not sound or function properly. As soon as this happens, replace them with a complete set of six new batteries.

Connecting to Audio Equipment

Although the PortaTone is equipped with a built-in amplifier/speaker system, it can also be connected to external audio equipment, such as a set of headphones or an amplifier.

■ Using Headphones

For private practicing and playing without disturbing others, connect a set of stereo headphones to the rear panel PHONES/AUX OUT jack. Sound from the built-in speaker system is automatically cut off when you insert a headphone plug into this jack.

■ Using an External Amplifier or Stereo System

You can also connect your PortaTone to a keyboard amplifier, stereo system, mixing console, or tape recorder. First, make sure the PortaTone and any external devices are turned off, then connect one end of a stereo audio cable to the LINE IN or AUX. IN jack(s) of the other device and the other end to the rear panel PHONES/AUX OUT jack on the PortaTone.

Setting Up a Keyboard Stand

If you intend to set the PortaTone on a keyboard stand, Yamaha recommends that you use only the optionally available keyboard stand such as L-21, L-2. (Setup instructions are included with the stand.)

NOTE

Use only the keyboard stands described above.

Setting Up the Music Stand

Insert the bottom edge of the included music stand into the slot located at the top rear of the PortaTone control panel.

Using an EP-1 Expression Pedal

When an EP-1 Expression Pedal is connected to the EXPRESSION PEDAL jack on the rear panel, you can adjust the volume from the pedal as you play, without having to take your hands from the keyboard. Press the pedal down (with your toes) to increase the volume. (The maximum volume is determined by the MASTER VOLUME control.)

Using a Footswitch (KB-410)

An optional Yamaha FC4 or FC5 footswitch can be plugged into the rear-panel SUSTAIN jack for sustain control. The footswitch functions like the damper pedal on a piano—press for sustain, release for normal sound.

NOTE

When the Sustain button on the panel is on, the footswitch does not function.

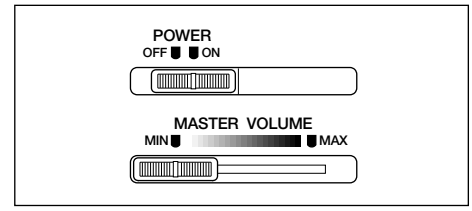
Playing Your PortaTone

Getting Started

First, turn on the power and set the volume.

Set the POWER switch to ON and adjust the MASTER VOLUME control to a suitable level.

Whenever the power is turned on, the PortaTone is automatically set to play the PIANO Voice and the DISCO Accompaniment Style.



Demo Songs

The PortaTone has seven different Demo Songs, specially recorded to showcase the dynamic sounds and rhythms, and give you an idea of what you can do with the instrument.

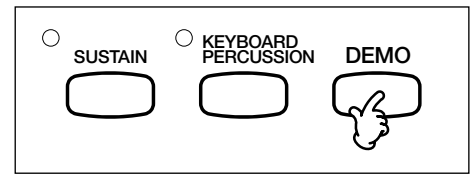
■ Playing All Demo Songs

To play all Demo Songs in order, press the DEMO button.

The seven Demo Songs begin playing in order and repeat indefinitely. You can stop playback at any point by pressing the DEMO or START/STOP button.

NOTE

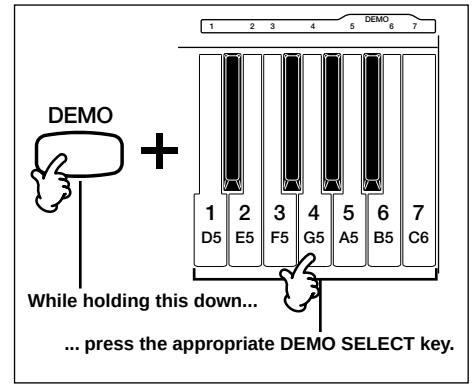
The demonstration songs have been specially programmed for demonstration purposes – it is not possible to reproduce the demonstration songs 100% using the PortaTone by yourself.



■ Playing Individual Demo Songs

To play an individual Demo Song, press and hold down the DEMO button and press the appropriate DEMO selection key.

Each of the seven highest white keys on the keyboard corresponds to a different Demo Song (as shown in the chart below). Though playback stops automatically after the song is finished, you can stop playback at any point by pressing the DEMO or START/STOP button.



■ *Demo Songs/DEMO Selection Keys*

Song Number	Key	Song Name
1	D5	China Song
2	E5	William Tell Overture (Rossini)
3	F5	China Song
4	G5	When the saint go marching in (Traditional)
5	A5	An der shönen, blauen Donau (J. Strauss)
6	B5	Air de toréador from Carmen (Bizet)
7	C6	Choral movement of 9th Symphony (Beethoven)

NOTE

• You can play the keyboard while a Demo Song is playing. However, if the maximum polyphony of the PortaTone is exceeded, some of the played notes may be cut off.
• Following functions do not function while a Demo Song is playing.

SONG: SONG, REC, MELODY 1-4, CHORD ACCOMPANIMENT: SIDE A/B, selection buttons, CUSTOM PERCUSSION, INTRO 1/ FILL, INTRO 2/ ENDING, ACCOMP volume, AUTO BASS CHORD mode, VARIATION

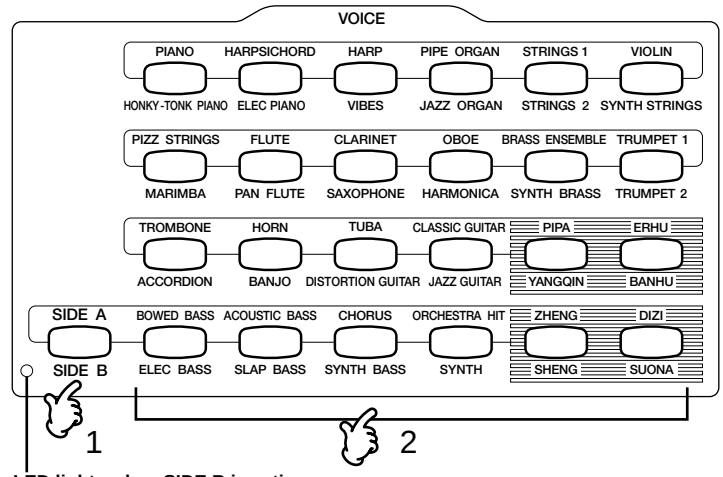
Voices

The PortaTone features 48 high-quality Voices in two banks of 24 each, SIDE A and SIDE B. The SIDE A Voices are printed in white above each VOICE button, and SIDE B Voices are printed in red below.

■ *Selecting Voices*

1. Press the SIDE A/B select button to select the desired bank of Voices.
The button toggles between the two banks; when the LED is lit, SIDE B Voices can be selected.

2. Press the VOICE button corresponding to the desired Voice.



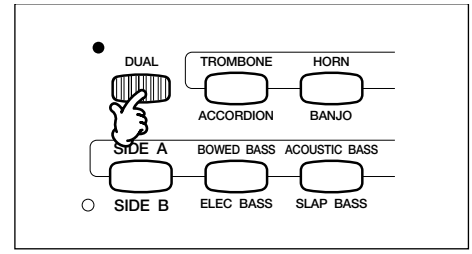
LED lights when SIDE B is active.

Dual Voice (KB-410)

This feature allows you to select a second voice to play along with a first voice that is normally selected.

1. Select a first voice as explained in "Selecting Voices" above.

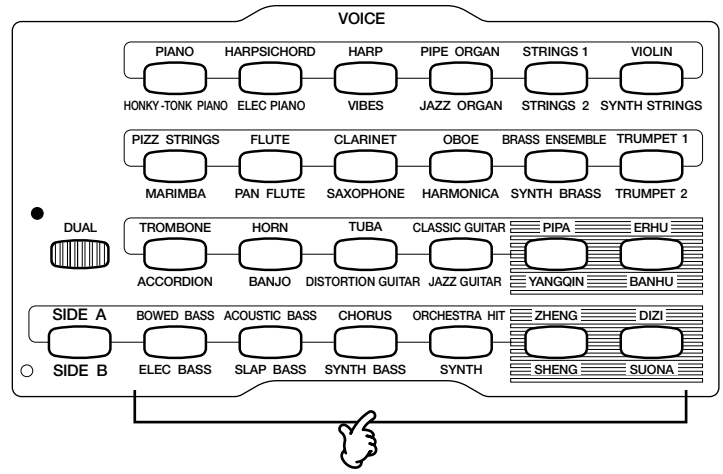
2. Press the DUAL button to light up its LED. This indicates the PortaTone is in Dual Voice mode.



NOTE

When you play the keyboard, you can hear another voice, or the second voice layered to the first voice. If you first press DUAL after turning on the KB-410, the SIDE B/ STRINGS 2 voice will be automatically selected as the default.

3 . Select the desired second voice as explained in "Selecting Voices" above.



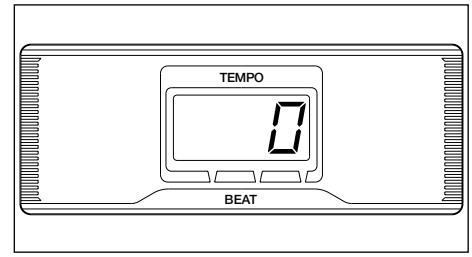
■ *Balancing a Dual Voice*

You can determine the volume balance between the first and second voices.

1 . Press and hold down DUAL, LED Display shows the level such as "0".

2 . Set the balance by using TEMPO Up or Down, within a range of –7 to +7. The zero value is a standard level.

3 . Press the DUAL button again to exit the Dual Voice mode.



NOTE

You cannot select the first voice in the Dual Voice mode. Always select the first voice before entering the Dual Voice mode.

Controls & Effects

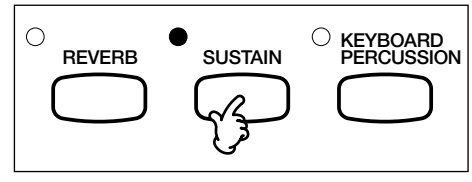
Your PortaTone provides a variety of controls and effects that are freely adjustable to meet your musical taste.

■ *Sustain*

Sustain adds a slow, natural decay to the Voices. It is particularly effective on piano and stringed instrument Voices, making the sound richer and more authentic on slowly played passages.

Press the SUSTAIN button. (The LED lights.)

To turn Sustain off, press the SUSTAIN button again so that the LED turns off.



NOTE

The length of the Sustain effect differs depending on the selected Voice. Also, Sustain does not affect the Accompaniment Styles or Keyboard Percussion (except for the timpani sound).

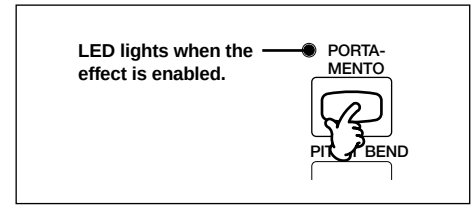
NOTE

(KB-410 only)
• An optional Yamaha FC4 or FC5 footswitch can be plugged into the rear-panel SUSTAIN jack for sustain control. The footswitch functions like the damper pedal on a piano–press for sustain, release for normal sound.
• Be sure that you don't press the footswitch when turning the power on. If you do, the ON/OFF status of the footswitch will be reversed.

■ *Portamento*

Portamento is an effect similar to a glissando, where the pitch changes in a continuous glide from one note to the next, through all the intermediate pitches. You can select from three types of portamento time (1 -3, short to long).

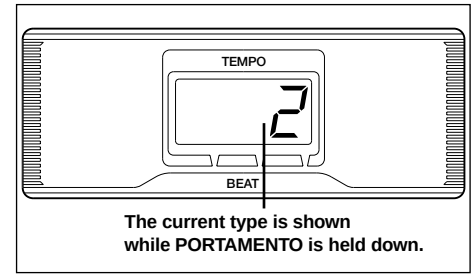
1 . Press the PORTAMENTO button to turn on the effect.
When the effect is enabled, its LED lights. Press the button again to turn it off.



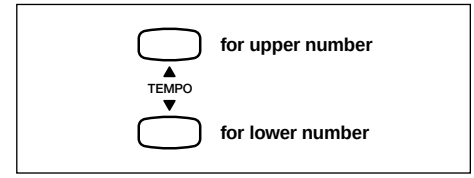
NOTE

Portamento is only enabled by legato performance.

2 . To change the Portamento Time, press and hold down PORTAMENTO to display the current type in LED Display.



3 . While holding down the PORTAMENTO (continued from Step 2), press the TEMPO Up and Down button to select an upper number (long) and a lower number (short), respectively.



NOTE

Portamento function is not effective to the Keyboard Percussion and the second voice in the Dual Voice mode.

NOTE

After turning on the PortaTone, type 2 is automatically selected.

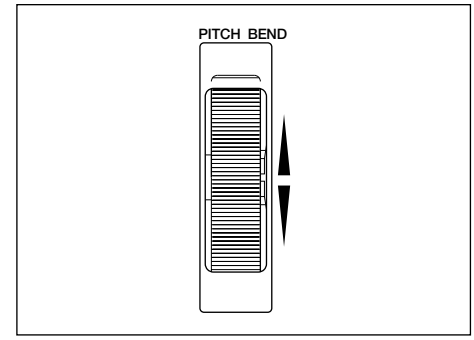
■ *Pitch Bend Wheel*

The Pitch Bend wheel lets adjust the pitch of the Voices up or down as you play. This allows you to play certain Voices (such as guitar) more authentically, and recreate the pitch bending techniques used in various styles of music.

Using the Pitch Bend Wheel

While playing the keyboard with your right hand, move the Pitch Bend wheel up or down with your left hand.

The range of pitch change is +/- 200 cents (2 semitones).



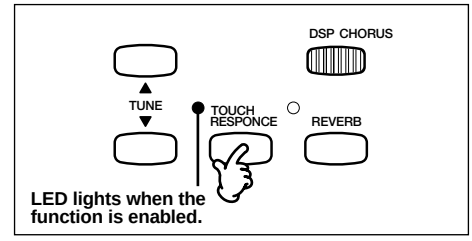
NOTE

Pitch Bend does not affect the pitch of the Auto Bass Chord accompaniment.

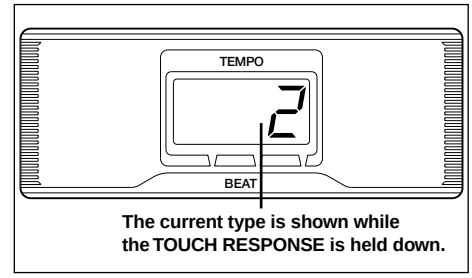
■ *Touch Response*

This function is useful if you are accustomed to play a keyboard dynamically by controlling your touch. With Touch Response feature enabled, you can choose from three response types (touch response curves 1-3).

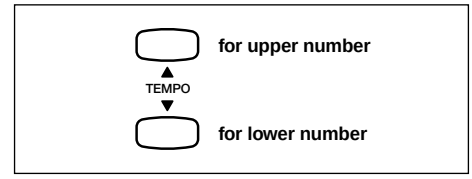
1 . Press the TOUCH RESPONSE button to turn on the function. When the function is enabled, its LED lights. Press the button again to turn it off.



2 . To select the touch response curve (type), press and hold down the TOUCH RESPONSE to have the current curve shown in LED Display.



3 . While holding down the TOUCH RESPONSE (continued from Step 2), press the TEMPO Up and Down button to select a upper numbered curve and a lower numbered curve, respectively.



NOTE

Touch response curve 3 is most sensitive and is suitable for a most dynamical play (smallest to loudest volume). Thus you have a loudest sound reproduced when you play (hit) a key very strongly. Oppositely, you can reproduce a loudest sound with a very light touch (without any dynamic volume change) if the function is disabled.

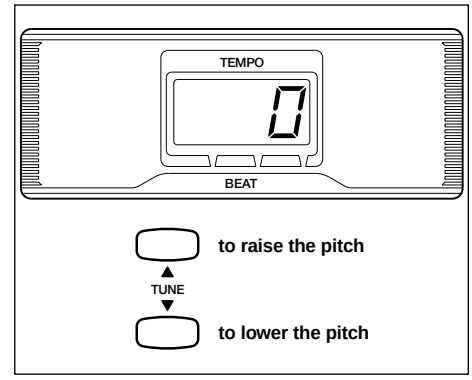
NOTE

After turning on the PortaTone, curve 2 is automatically selected.

■ *Tune*

You can change and set an overall tuning (master tuning) of the PortaTone with this function. It is very useful especially when you play along with other instruments or other music sources like a CD player.

Set the master tuning of the PortaTone by pressing the TUNE Up (to raise the pitch) or TUNE Down (to lower the pitch) button. Every time you press either button, you can change the pitch (master tuning) slightly by a cent within a range of –100 to +100 cents (100 cents = a semitone).



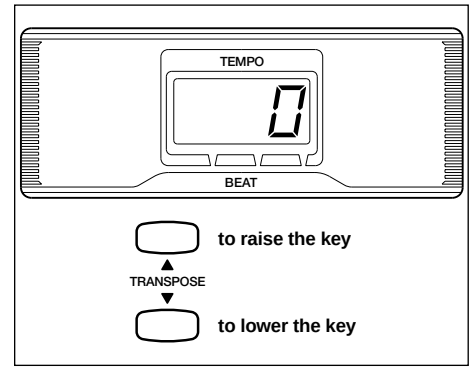
NOTE

Pressing both TUNE buttons at a time will reset the pitch to its default.

■ *Transpose*

This function allows to transpose the key of the PortaTone keyboard. You can play any melody that requires complicated fingerings by using this function.

Set the transpose value by pressing the TRANSPOSE Up (to raise the key) or TRANSPOSE Down (to lower the key) button. Every time you press either button, you can change the key by a semitone, within a range of –12 to +12 (two octaves).



NOTE

Pressing both TRANSPOSE buttons at a time will return to the default. The new key will be available with notes played after completion of the transposition.

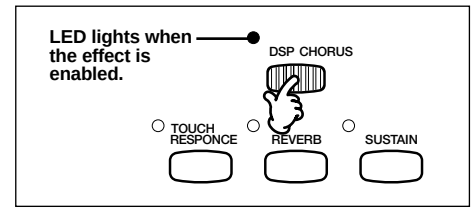
NOTE

This function only shifts the key position for the melody and accompaniment played in the current voice and style selection and has no effect over positions for Keyboard Percussion.

■ *DSP Chorus*

This feature gives a chorus effect that enriches a voice to be spacious, as if two or more same instrument are played in unison. Some voices are yet selected with this effect enabled, because they are preset to make best of the PortaTone's features. However you still have preference in use of the effect depending on the performance you make.

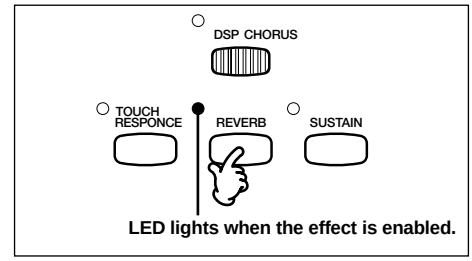
Press the DSP CHORUS button to turn on the effect. When the effect is enabled, its LED lights. Press the button again to turn it off.



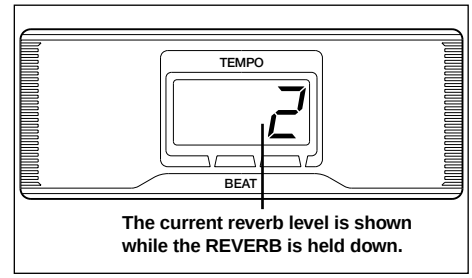
■ *Reverb*

This feature gives a reverb effect that gives ambience to a voice, sounded in a small room or concert hall. You can adjust the reverb depth (depth 1-3) to best fit to your performance.

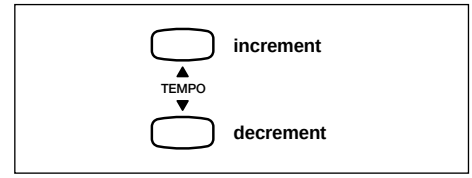
1 . Press the REVERB button to turn on the reverb effect. When the effect is enabled, its LED lights. Press the button again to turn it off.



2 . To change the effect depth, press and hold down the REVERB button to have the current reverb level shown in LED Display.



3 . While holding down the REVERB (continued from Step 2), press the TEMPO Up and Down button to increase and decrease the effect level, respectively. Every time you press either TEMPO button, the level value increments or decrements by one.



NOTE

After turning on the PortaTone, depth 2 is automatically selected.

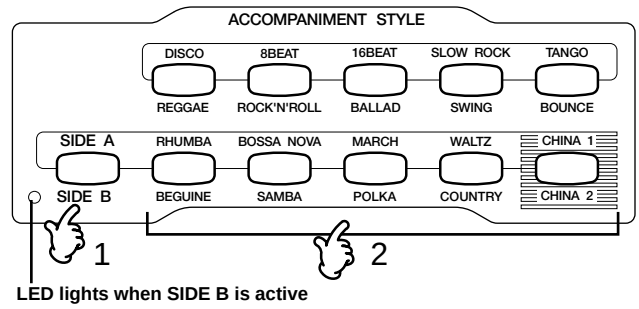
Accompaniment Style

The Accompaniment Style section features 20 specially programmed rhythm and accompaniment patterns — in a variety of musical styles. With the Auto Bass Chord function (page 17), the Accompaniment Styles give you full and exciting instrumental backing that automatically changes bass and chords according to the chords you play.

■ Selecting and Playing Accompaniment Styles

1 . Press the SIDE A/B select button to select the desired bank of Styles.
The button toggles between the two banks; when the LED is lit, SIDE B Styles can be selected.

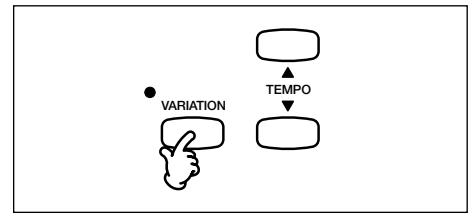
2 . Press the ACCOMPANIMENT STYLE button corresponding to the desired Style.



Variation

Each accompaniment style has its variation. With VARIATION button pressed, any of the accompaniment styles will change in its playing aspects.

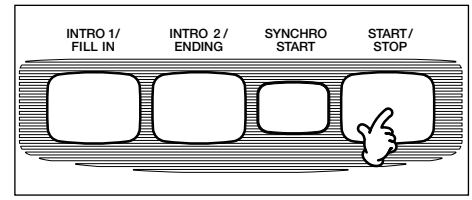
When you press the VARIATION button again, the accompaniment style will return to the normal pattern.



3 . Start the Style.
You can start the Style in one of three ways:
a) Straight Start, b) Start with an Intro, or c) Synchro Start.

a) Straight Start:

This is the normal way of starting a Style.

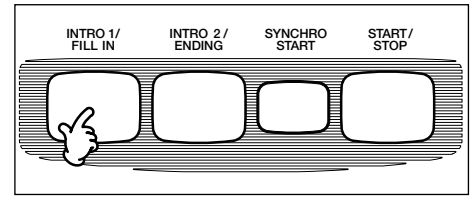


Press the START/STOP button.
The selected Style begins playing immediately.

To stop the Style, press START/STOP again.

b) Straight Start with an Intro:

This lets you start the Style with a special Intro pattern. There are two types of Intro patterns, Intro 1 and 2, available for each style.

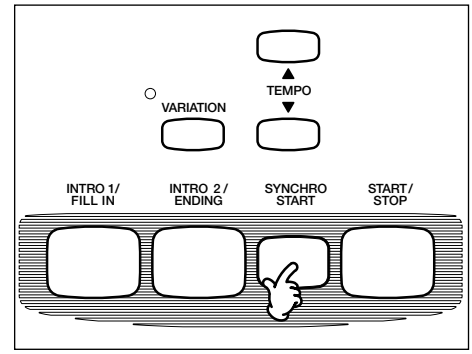


Press the INTRO 1/FILL IN or INTRO 2/ENDING button.
The Intro pattern plays, followed by the main pattern.

To stop the Style, press START/STOP.

c) Synchro Start:

Synchro Start puts the Style in standby and lets you start the Style simply by playing the keyboard.



1 . Press the SYNCHRO START button.

The BEAT LED flashes in time with the currently set tempo.

> ***Using Intro with Synchro Start***
> *If you wish, you can use an Intro pattern with Synchro Start. To do this, press the INTRO 1/FILL IN or INTRO 2/ENDING button (after pressing SYNCHRO START above).*

2 . Play a note on the keyboard.

The selected Style begins playing immediately. If the Auto Bass Chord function is off, any key on the keyboard will start the Style. If the Auto Bass Chord function is on, only keys in the AUTO BASS CHORD section will start the Style. Playing a note or chord in the AUTO BASS CHORD section also starts bass and chord accompaniment. (For more information on Auto Bass Chord, see page 17.)

To stop the Style, press the START/STOP or SYNCHRO START button.

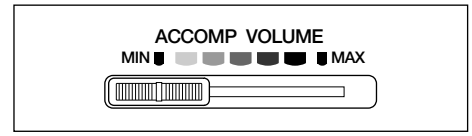
HINT

The accompaniment style returns to Synchro Start standby when it is stopped by pressing the SYNCHRO START button.

■ *Adjusting the Accompaniment Volume*

Use the ACCOMP VOLUME control to adjust the volume of the Style.

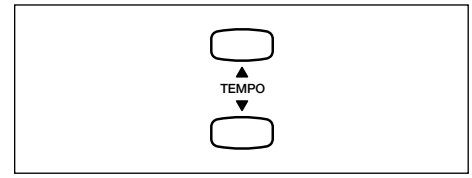
Play along on the keyboard, adjusting the control until the desired Voice/Style balance is set.



■ *Adjusting the Tempo*

Use the TEMPO up/down buttons to adjust the speed (tempo) of the Style.

Press the ▲ (up) button to increase the tempo, and press the ▼ (down) button to decrease it. Holding down either button rapidly changes the tempo. The tempo range is from 32 to 280 bpm (beats per minute).



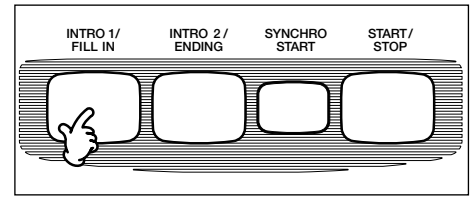
Restoring Preset Tempo

The original preset tempo for the Style is automatically restored when you select the Style from the stopped condition. (Selecting different Styles while the Style is running does not restore the preset tempo.) However, you can also restore the original preset tempo for the Style at anytime by pressing both TEMPO buttons simultaneously.

■ *Fill In*

Each Style has its own Fill In pattern, a one-measure rhythmic "break." Fill In patterns are designed to be played occasionally during a repeating rhythm (for example, every four, eight, or sixteen measures), or they can be used to lead into a new section of a song (for example, from the verse to the chorus).

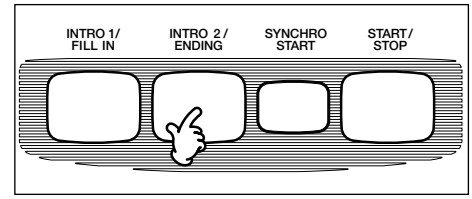
To play a Fill In, press the INTRO 1/FILL IN button while a Style is playing.



Generally you should be careful to press the INTRO 1/FILL IN button precisely on (or just slightly before) the beat that you want the Fill In pattern to begin. You can play partial Fill In patterns by pressing the button on the second or third beat of the measure. You can also repeat the Fill In pattern indefinitely by holding down the INTRO 1/FILL IN button.

■ *Ending*

Each Style has its own Ending, a short pattern that can be played to end a song or performance.



To play an Ending, press the INTRO 2/ENDING button while a Style is playing.

An Ending pattern is automatically played and the Style is stopped.

Each Style also has a slower Ending pattern (played ritardando). To play this pattern, press the INTRO 2/ENDING button twice quickly.

Although the Style normally stops after an Ending, you can have it continue. To do this, press the INTRO 1/FILL IN button while the Ending is playing. A Fill In pattern immediately follows the Ending, and the Style continues.

NOTE

- The Variation pattern starts to play after completing the Intro or Ending pattern when you press the VARIATION button while an Intro or Ending is playing.
- When you press the VARIATION button while a normal pattern is playing, a Fill In pattern will automatically be inserted functioning as a "bridge" between the normal and variation. Vice virsa.

Auto Bass Chord

The Auto Bass Chord function works with the Accompaniment Style section to automatically produce chord and bass accompaniment as you play. The accompaniment patterns perfectly match the selected Style. Also, special Voices are used for the various parts (bass, chord, and obbligato). Moreover, the accompaniment automatically changes chords as you do, letting you "direct" the accompaniment from the keyboard with your left hand.

The PortaTone has two Auto Bass Chord modes: Single Finger and Fingered.

■ *Single Finger and Fingered Modes*

Single Finger

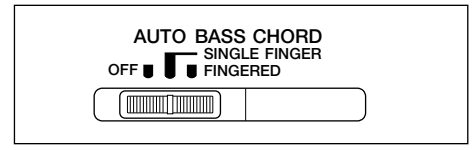
The Single Finger mode makes it exceptionally easy to "play" chords and produce automatic accompaniment, by simply using one, or at most, two or three fingers.

Fingered

The Fingered mode allows you to use a wider range of chord types than in the Single Finger mode. It is ideal if you already know how to play chords on a keyboard, since it automatically produces the appropriate accompaniment based on the full chords you play.

• *To use the Single Finger or Fingered mode:*

1. Set the AUTO BASS CHORD control to the desired mode: SINGLE FINGER or FINGERED.



2. Select a Style from the ACCOMPANIMENT STYLE buttons.

3. Start the Style.

Use one of the three methods described on page 14.

HINT

Using Synchro Start allows you to instantly start the bass and chord accompaniment with the chord you play with your left hand. Remember that this also applies to the Intro pattern, if you are using one. (See "Using Intro with Synchro Start" on page 15.)

4 . Play a Single Finger or Fingered chord in the AUTO BASS CHORD section of the keyboard.

Refer to the Single Finger Chords chart below or the Fingered Chords charts (on pages 19 and 20). Appropriate bass and chord accompaniment starts as soon as you play the chord.

5 . Adjust the accompaniment volume and tempo, if desired.

See page 15, 16 for information on accompaniment volume and tempo.

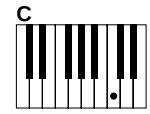
To stop the accompaniment, press the START/STOP or ENDING button.

■ *Single Finger Chords*

Major, minor, 7th, and minor 7th chords in all twelve keys can be played in the Single Finger mode. The fingering examples below are shown for the key of C.

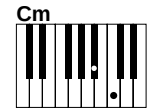
• Major chords:

Press the root note of the chord (the note that corresponds to the chord's name).



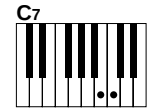
• Minor chords:

Simultaneously press the root and any black key to its left.



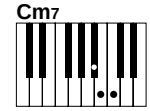
• 7th chords:

Simultaneously press the root and any white key to its left.



• Minor 7th chords:

Simultaneously press the root and both a white and black key to its left (three keys altogether).



■ *Fingered Chords*

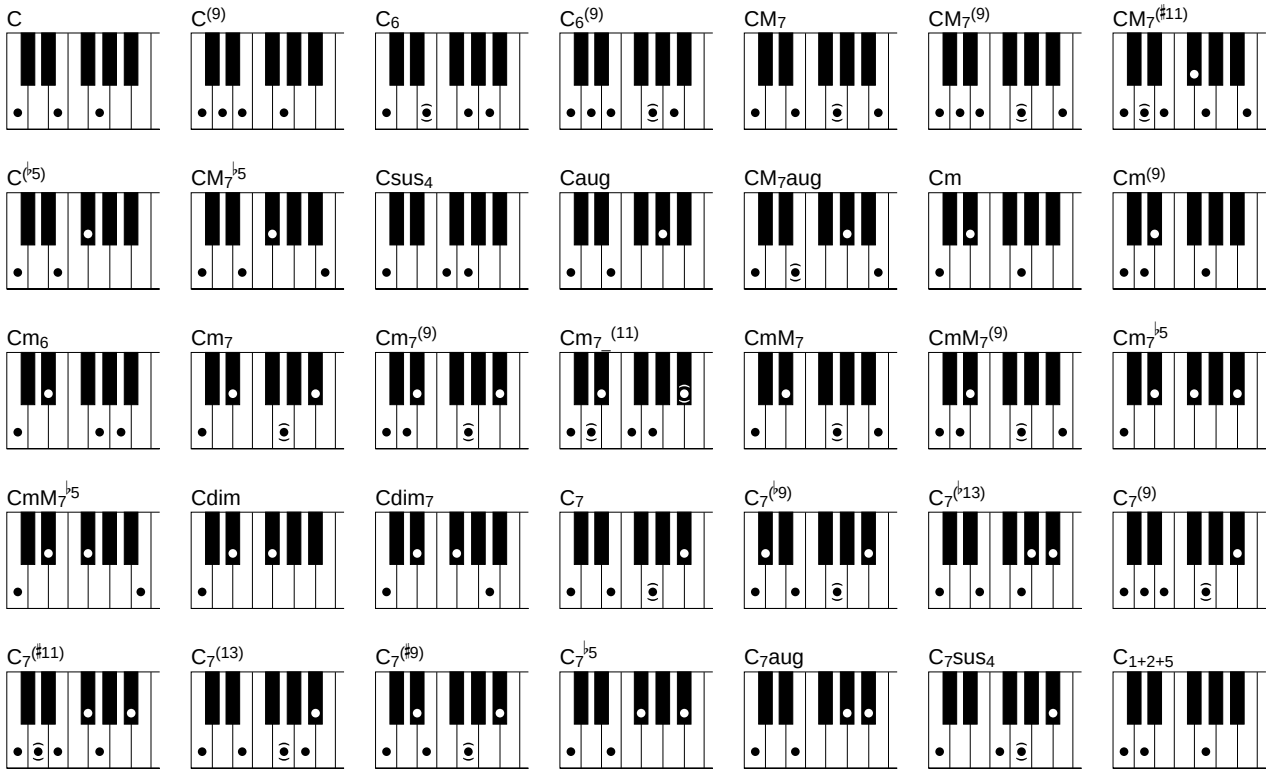
In the Fingered mode, the following chords can be played in all 35 keys:

Chord Name [Abbreviation]	Normal Voicing	Chord (C)
Major [M]	1 - 3 - 5	C
Add ninth [(9)]	1 - 2 - 3 - 5	C(9)
Sixth [6]	1 - (3) - 5 - 6	C6
Sixth add ninth [6(9)]	1 - 2 - 3 - (5) - 6	C6(9)
Major seventh [M7]	1 - 3 - (5) - 7 or 1 - (3) - 5 - 7	CM7
Mjor seventh ninth [M7(9)]	1 - 2 - 3 - (5) - 7	CM7(9)
Major seventh sharp add eleventh [M7(♯11)]	1 - (2) - 3 - ♯4 - 5 - 7 or 1 - 2 - 3 - ♯4 - (5) - 7	CM7(♯11)
Flatted fifth [(♭5)]	1 - 3 - ♭5	C(♭5)
Major seventh flatted fifth [M7♭5]	1 - 3 - ♭5 - 7	CM7♭5
Suspended fourth [sus4]	1 - 4 - 5	Csus4
Augmented [aug]	1 - 3 - ♯5	Caug
Major seventh augmented [M7aug]	1 - (3) - ♯5 - 7	CM7aug
Minor [m]	1 - ♭3 - 5	Cm
Minor add ninth [m(9)]	1 - 2 - ♭3 - 5	Cm(9)
Minor sixth [m6]	1 - ♭3 - 5 - 6	Cm6
Minor seventh [m7]	1 - ♭3 - (5) - ♭7	Cm7
Minor seventh add ninth [m7(9)]	1 - 2 - ♭3 - (5) - ♭7	Cm7(9)
Minor seventh add eleventh [m7_(11)]	1 - (2) - ♭3 - 4 - 5 - (♭7)	Cm7_(11)
Minor major seventh [mM7]	1 - ♭3 - (5) - 7	CmM7
Minor major seventh ninth [mM7(9)]	1 - 2 - ♭3 - (5) - 7	CmM7(9)
Minor seventh flatted fifth [m7♭5]	1 - ♭3 - ♭5 - ♭7	Cm7♭5
Minor major seventh flatted fifth [mM7♭5]	1 - ♭3 - ♭5 - 7	CmM7♭5
Diminished [dim]	1 - ♭3 - ♭5	Cdim
Diminished seventh [dim7]	1 - ♭3 - ♭5 - 6	Cdim7
Seventh [7]	1 - 3 - (5) - ♭7 or 1 - (3) - 5 - ♭7	C7
Seventh flatted ninth [7(♭9)]	1 - ♭2 - 3 - (5) - ♭7	C7(♭9)
Seventh add flatted thirteenth [7(♭13)]	1 - 3 - 5 - ♭6 - ♭7	C7(♭13)
Seventh ninth [7(9)]	1 - 2 - 3 - (5) - ♭7	C7(9)
Seventh add sharp eleventh [7(♯11)]	1 - (2) - 3 - ♯4 - 5 - ♭7 or 1 - 2 - 3 - ♯4 - (5) - ♭7	C7(♯11)
Seventh add thirteenth [7(13)]	1 - 3 - (5) - 6 - ♭7	C7(13)
Seventh sharp ninth [7(♯9)]	1 - ♯2 - 3 - (5) - ♭7	C7(♯9)
Seventh flatted fifth [7♭5]	1 - 3 - ♭5 - ♭7	C7♭5
Seventh augmented [7aug]	1 - 3 - ♯5 - ♭7	C7aug
Seventh suspended fourth [7sus4]	1 - 4 - (5) - ♭7	C7sus4
One plus two plus five [1+2+5]	1 - 2 - 5	C1+2+5

Note

- Notes in parentheses can be omitted.
- If you play any three adjacent keys (including black keys), the chord sound will be cancelled and only the rhythm instruments will continue playing (CHORD CANCEL function).
- An octave produces accompaniment based only on the root.
- A perfect fifth (1+5) produces accompaniment based only on the root and fifth which can be used with both major and minor chords.
- The chord fingerings listed are all in "root" position, but other inversions can be used with the following exceptions:
  m7, m7♭5, 6, m6, Sus4, aug, dim7, 7♭5, 6(9), m7_(11), 1+2+5.
- Inversion of the 7Sus4, 7♯11 chord are not recognized if the 5th is omitted.

The fingering examples below are shown for the key of C.



Keys indicated with a dot in parentheses can be omitted.

■ *Stopped Accompaniment*

The Stopped Accompaniment function allows you to produce bass and chords (using the special accompaniment Voices of the Style) without the rhythm. The bass and chords are held as long as you hold down the chord.

• To use Stopped Accompaniment:

1. Select the desired Auto Bass Chord mode: Single Finger or Fingered.

2. Play a Single Finger or Fingered chord in the AUTO BASS CHORD section of the keyboard.

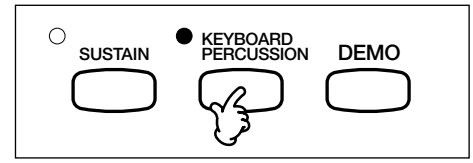
Keyboard Percussion

Keyboard Percussion function lets you play the realistic drum and percussion sounds of the PortaTone, manually on the keyboard. You can access 61 different sounds (42 in fixed pitch and Timpani in 19 different pitches) when playing with the entire keyboard.

1. Press KEYBOARD PERCUSSION button to activate the function. Its LED lights when the function is enabled.

2. Play any desired drum and percussion sounds manually on the keyboard. Each key has an instrument icon above it, indicating the sound which is available with that key. For a complete list of percussion/key assignments, see page 35.

3. To turn off the function, simply press KEYBOARD PERCUSSION button again. Its LED is turned off when the function is disabled.



NOTE

While Keyboard Percussion function is enabled, you cannot play a melody with the current voice selection. Also, Keyboard Percussion will be canceled if you make a voice selection while the function is enabled.

NOTE

You cannot access the lowest 19 keys, C1 to F#2, (Timpani) when Auto Bass Chord feature is enabled.

Custom Percussion (KB-410)

Now that you are accustomed to playing using Keyboard Percussion feature, you can create your own rhythm pattern using the Custom Percussion feature. The pattern you create is two-measure length, and is recorded onto the CUSTOM PERCUSSION button, and recalled anytime as you like by pressing the button.

■ Recording a Custom Percussion

1. While holding down the REC button, press the CUSTOM PERCUSSION buttons. The REC and KEYBOARD PERCUSSION LEDs light, the CUSTOM PERCUSSION LED flashes and the LED Display shows "CUS".

The click sound starts playing as the guide for your recording.

2. To start recording, press the START/STOP button or hit the key corresponding to the sound you want to enter.

3. Play the percussion sounds to record your accompaniment style.

4. To finish recording, press START/STOP button again.

HINT

Before you begin, select an accompaniment style which has the same time signature as the one you want to create since the click sounds (metronome) guide you to record.

NOTE

Press REC button again to cancel recording a custom pattern.

NOTE

The two measure beats you have entered will be repeatedly played back so that you can record even a single instrument in several turns. If you want to erase an unnecessary instrument, you can clear it by using the following method:

While holding down the CHORD/CLEAR button ("CLr" shown on the display), press the key corresponding to the instrument you want to clear.

■ *Playing a Custom Percussion*

Once your original pattern is recorded, you can select and use it in your performance. To use it, press the CUSTOM PERCUSSION button to select it and press the START/STOP button.

NOTE

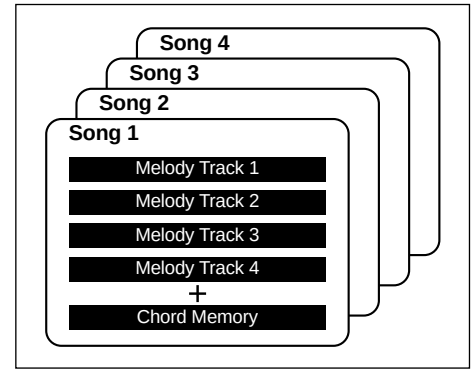
When playing the Custom Percussion, the Aoto Bass Chord Variation, Intro, Fill In and Ending buttons do not function.

Song Memory

The song Memory feature lets you digitally record your performance (4 melody parts) and accompaniment (chord part) as a song, and play it back any time you like. This feature includes storage space for up to four songs. The SONG MEMORY section consists of 7 button controls: SONG 1-4 for song selection, REC for record standby, MELODY 1 to MELODY 4 for melody track selection, CHORD/ CLEAR for chord track selection or clearing an existing song.

Actually, Song Memory provides four dedicated tracks for your melody (using a different voice selection for each, including Keyboard Percussion) and one dedicated track for accompaniment (using an Accompaniment Style and/or Auto Bass Chord feature). You can record as follows:

- Any single melody track or the chord track (single-track recording)
- When the Auto Bass Chord function is on: Combination of any single melody track and the chord track (double-track recording)



NOTE

• There is no specific difference between single- and double-track recording methods. Even if you choose double-track recording to record your melody and chord performance at the same time, it is automatically divided into melody and chord tracks, depending on your performance. Thus, you can re-record (to correct a mistake, etc.) either single track after double-track recording.
• That SONG MEMORY buttons with the exception of the REC button, will not work while an Accompaniment Style is playing.

Also, each track can record the following contents:

- MELODY 1 to 4: melody played on the keyboard, voice selection, DUAL on/off (with second voice selection), DUAL balance, REVERB on/off (with level setting), DSP CHORUS on/ off, SUSTAIN on/off, movement of Pitch Bend wheel or Expression pedal, PORTAMENTO on/off (with type selection), TOUCH RESPONSE on/off (with curve selection), your performance played using Keyboard Percussion
- CHORD: chords played on the keyboard (regardless of which Auto Bass Chord mode is used), movement of Expression pedal, style selection, accompaniment progression (with intro, fill-in, ending, VARIATION on/off, ACCOMP VOLUME change)

NOTE

The initial tempo and tempo change during recording can be recorded for the entire song.

■ *Recording a Song*

Each song can be recorded in the same manner as for multi-track recording. Thus, you can record a section (i.e., part) of the song onto a track, then another onto a second track along with playback of the first track, to match the size or length of a phrase on the existing track, etc. Here we start with a simple recording.

1 . Make the necessary panel settings for the song.

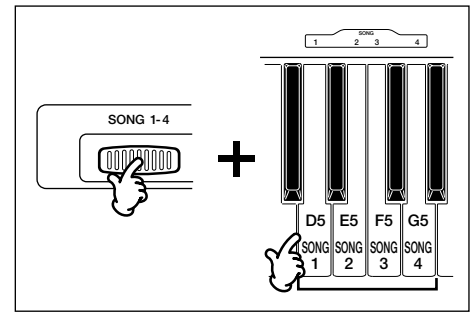
HINT

Here KB-410 users can also recall an entire panel setting from 32 REGISTRATION memories.

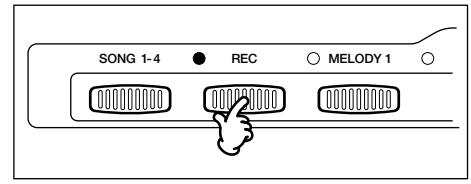
NOTE

- If you are recording a second time to a song which still contains data after recording once, the tempo cannot be changed in this step but can be changed in step 4.
- The style cannot be changed if already recorded.

2 . While holding down SONG 1-4, select a song number to record by pressing one of the SONG keys, 1 to 4. The LED Display shows the selected song number such as "S-1".

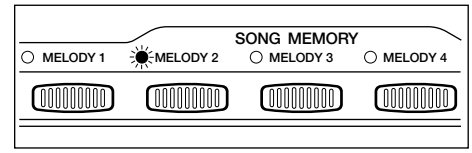


3 . Press the REC button to enter record standby. The REC LED lights to indicate the PortaTone is ready. If you cancel recording after pressing the REC, press the button a second time to turn the REC LED off.



When you enter record standby, the Synchro Start is automatically enabled. So please be careful not to touch the keyboard before you are ready to start recording. Or you can cancel the Synchro Start by pressing the SYNCHRO START button as necessary.

If the selected song has unrecorded tracks, a track LED will automatically start blinking to indicate the track is selected for recording.



NOTE

You can choose the recording method at this point, for single- or double-track recording. This decision is, however, made depending on the following situations:
• MELODY 1 to 4: automatically recordable alternately among these four tracks. When no data is recorded for any track, MELODY 1 is automatically selected. If you press another melody track button to select that track, the recording destination is switched to it and the previous track selection (initially MELODY 1) is canceled. Every time you enter record standby (after a recording), an unused melody track is automatically selected in numerical order.
• CHORD: automatically recordable if this track is empty and the Auto Bass Chord is engaged. If this track contains previously recorded data, the CHORD/CLEAR LED will be lit indicating that the accompaniment is ready to play (In this case you can record the melody track accompanied by the accompaniment).
After this point, switching the Auto Bass Chord between engaged and disengaged automatically switches the CHORD/CLEAR track between recordable and not recordable.

4 . Select a track you want to record onto by pressing the corresponding track button. If you press the same track button repeatedly, the track status toggles among recordable (LED blinks), playable (LED lights, only available when the track contains data), and mute (LED goes off).

HINT

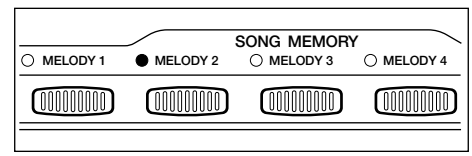
Thus, you can select which track is used for recording or playback. If a track LED lights, that track includes data already recorded and is selected for playback. After you record something onto several tracks, you can freely select which track should play back during the subsequent recording, by pressing a required track button to light up its LED. Conversely, you can mute an unneeded track for the next recording, by pressing its track button to turn off the track LED.

NOTE

Only one track can be set for recording at a time among MELODY 1 to 4 tracks.

5 . Press the START/STOP button to start recording. Playing the keyboard also starts recording during Synchro Start standby.

6 . Press the START/STOP or REC button to stop recording. Now any recorded track's LED changes from blinking to lit, indicating that track is ready for playback.



HINT

If you want to record an additional track, go back to step 3 and start another recording in the same manner.

7 . To return to the normal play mode, press SONG 1-4. The LED Display returns to the tempo indication.

NOTE

The recorded data will be cleared from memory if the power is turned off for a week or longer.
Important data should be stored to another device by using the Bulk Out function (page 34).

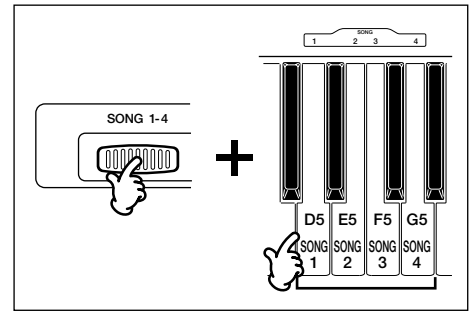
NOTE

If Song Memory reaches to its capacity, recording will automatically stop with "FUL" in the LED Display. If you need to do additional recording, first clear any unnecessary songs using the method described in "Clearing Song Data" on page 26.

■ *Playing a Song*

Once a song is recorded, you can play it any time, as follows:

1 . While holding down SONG 1-4, select a song number to play by pressing one of the SONG keys 1 to 4. The LED Display shows the selected song number such as "S-1".



2 . Start the current song by pressing the START/STOP button. If SYNCHRO START is enabled, you can start playback by hitting any key on the keyboard. You can play a melody with the current voice selection, along with the playback.

3 . Pressing the START/STOP button again will immediately stop the current playback. Otherwise, playback will stop automatically when the song is finished.

4 . To return to the normal play mode, press SONG 1-4. The LED Display returns to the tempo indication.

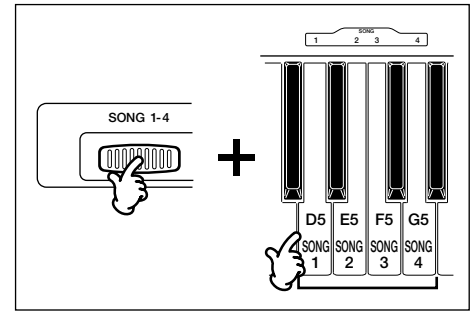
NOTE

You can play back a specific track by muting other ones. To do this, simply press an unneeded track button(s) to turn off its LED.

■ *Clearing Song Data*

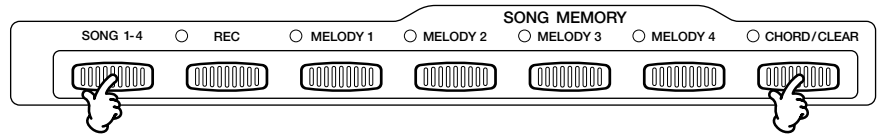
This function allows you to clear unnecessary song data to accommodate a new song.

1 . While holding down SONG 1-4, select a song number you want to clear by pressing one of the SONG keys, 1 to 4. The LED Displays shows the selected song number such as "S-1".

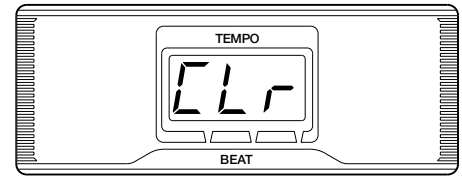


2 . Press REC to enter record standby.

3 . While holding down the CHORD/CLEAR, press the SONG1-4 to clear the unnecessary song data.



Press at the same time to clear the current song.



4 . To return to the normal play mode, press REC to turn off its LED, and then press SONG 1-4 so that the LED Display returns to the tempo indication.

Registration Memory (KB-410)

This feature allows you to save a maximum of 32 panel settings (into eight banks, four settings per bank) for your convenience. You can recall the saved setting at any time. One panel setting includes the following panel settings:

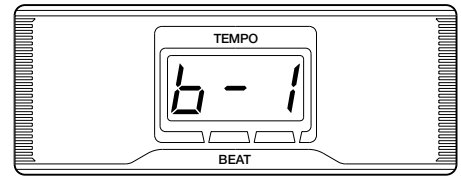
- Voice selection (with SIDE A/B selection)
- DUAL on/off (with second voice selection)
- SUSTAIN on/off
- TOUCH RESPONSE on/off (with curve selection and Dual Balance)
- DSP CHORUS on/off
- REVERB on/off (with depth setting)
- TRANSPOSE setting
- KEYBOARD PERCUSSION on/off
- * Accompaniment Style selection (with SIDE A/B selection)
- * CUSTOM PERCUSSION on/off
- * VARIATION on/off
- * TEMPO setting
- PORTAMENTO on/off (with type selection)

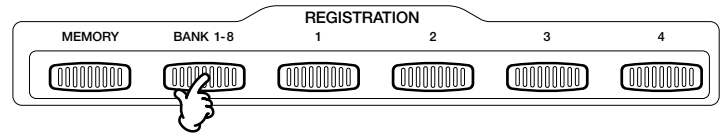
NOTE

That four panel settings with an asterisk(*) will not work while recording a song, playing a song or when a song is in standby.

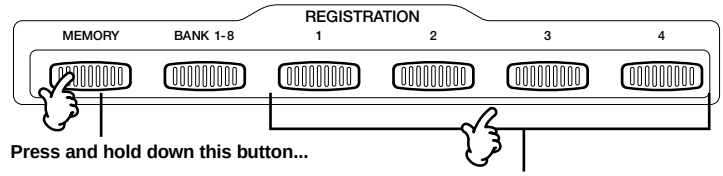
To save the current panel settings:

1. Press the BANK 1-8 button to select the bank you want to save the registration settings. The bank number will be shown on the LED display. Each time you press the button, you can increase the bank number by one. If the button is pressed and held down, the number will change continuously.





2. While holding down the MEMORY button, press one of the REGISTRATION 1 to 4 buttons.



To recall a saved panel settings:

1. Press the BANK 1-8 button to select the bank.

2. Press the REGISTRATION number you want to recall. The panel setting is recalled and replaced.

NOTE

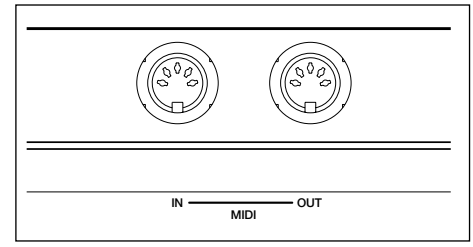
The recorded data will be cleared from memory if the power is turned off for a week or longer.
Important data should be stored to another device by using the Bulk Out function (page 34).

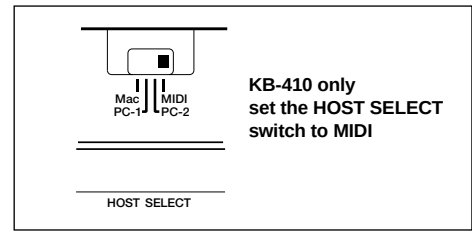
MIDI Functions

MIDI, which stands for Musical Instrument Digital Interface, is a world-standard communication interface that allows MIDI-compatible musical instruments and equipment to share musical information and control on another. This makes it possible to create a "system" of MIDI instruments and equipment that offer far greater versatility and control than possible with isolated instruments.

■ The MIDI Connectors

The MIDI IN connector receives MIDI data from an external MIDI device which can be used to control the PortaTone. The MIDI OUT connector transmits MIDI data generated by the PortaTone (e.g., note and velocity data produced by playing the keyboard).

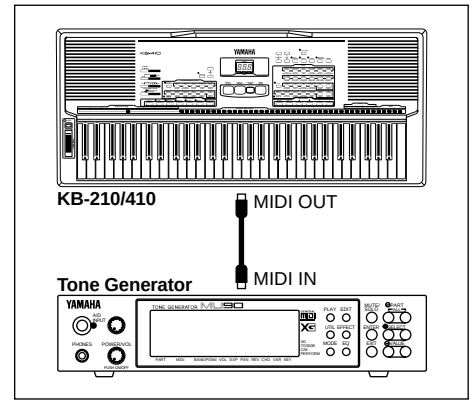




• Example of Connections

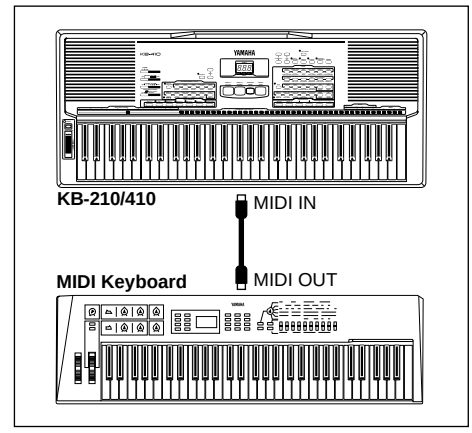
Connecting to a Tone Generator

Most MIDI keyboards (including the KB-210/410, of course) transmit note and velocity (touch response) information via the MIDI OUT connector whenever a note is played on the keyboard. If the MIDI OUT connector is connected to the MIDI IN connector of a second keyboard (synthesizer, etc.) or a tone generator (essentially a synthesizer with no keyboard), the second keyboard or tone generator will respond precisely to the notes you play on the original transmitting keyboard.
The result is that you can effectively play two instruments at once, providing thick multi-instrument sounds.
The KB-210/410 also transmits "program change" data when one of its voices is selected. Depending on how the receiving device is set up, the corresponding voice will automatically be selected on the receiving keyboard or tone generator whenever a voice is selected on the KB-210/410.



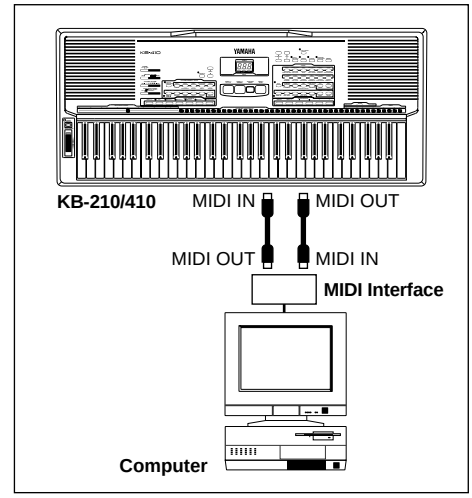
Connecting to a MIDI Keyboard

The KB-210/410 is capable of receiving the same MIDI data, so a second MIDI keyboard connected to the KB-210/410 MIDI IN connector can be used to remotely play the KB-210/410 and select voices as required.



Connecting to a Computer

Although the KB-210/410 features a built-in "sequencer " (the SONG recorder is a type of sequencer), the same type of musical information transfer described above can be used for more sophisticated MIDI sequence recording using an external sequencer or music computer. A MIDI sequence recorder or music computer can be used to "record" MIDI data received from a KB-210/410, for example. When the recorded data is played back, the KB-210/410 automatically "plays" the recorded performance exactly as it is.

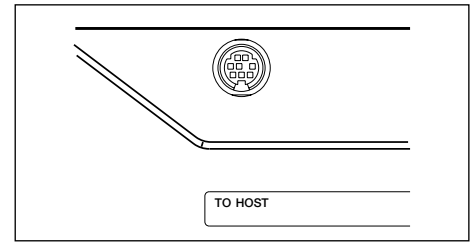


NOTE

Never use a MIDI cable longer than about 15 meters. Cables longer than this can pick up noise which can cause data errors.

■ *TO HOST Connector (KB-410)*

KB-410 features a built-in host computer interface, allowing you to connect it directly to your computer—eliminating the need for installing a special MIDI interface on your computer. The KB-410 can be used with the following computers: Apple Macintosh, IBM PC and the NEC PC-9800 Series.

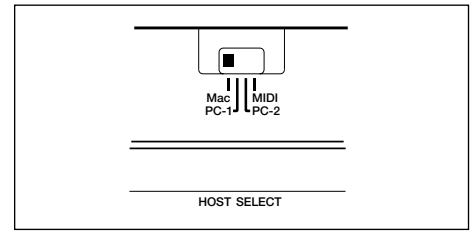


• *Macintosh*

Follow these instructions if you have an Apple Macintosh that is not equipped with an external MIDI interface. Connect the TO HOST terminal on the KB-410 to the Modem or Printer port on the Macintosh.

1. Set the HOST SELECT switch to MAC.

2. Connect the KB-410 to the host computer. Use a standard Macintosh cable (8-pin Mini DIN on both ends; see page 31).



3 . Turn on the host computer, then turn on the KB-410.

4 . Start up your music software, and set up the appropriate options on the software for operation with the KB-410.

The options you may have to set include:

MIDI Interface Type → Standard MIDI Interface
MIDI Time Piece → Off
MIDI CLOCK → 1 MHz

Other options and settings may have to be made as well. Refer to the owner's manual of your particular music software for more information.

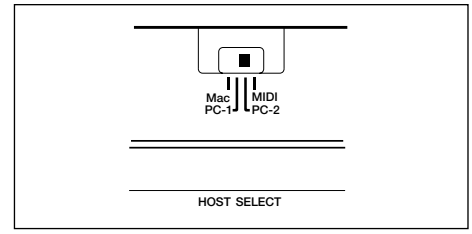
• *IBM PC and Clones*

Follow these instructions if you have an IBM PC/AT or compatible computer that is not equipped with an external MIDI interface. Connect the TO HOST terminal on the KB-410 to one of the computer's serial ports, COM 1 or COM 2.

NOTE

Your music software must be able to recognize the TO HOST connection. Consult your Yamaha dealer for more details. If your software is not compatible, you can still use the KB-410 by installing a MIDI interface (internal card or external) to the computer.

1 . Set the HOST SELECT switch to PC-2.



2 . Connect the KB-410 to the host computer. Use a standard computer cable (8-pin Mini DIN to 9-pin D-SUB; see page 31).

3 . Turn on the host computer, then turn on the KB-410.

4 . Start up your music software, and set up the appropriate options on the software for operation with the KB-410.

Refer to the owner's manual of your particular music software for more information.

• *NEC PC-9800 Series*

The NEC PC-9800 Series computers are widely used in Japan. For use with these computers, set the HOST SELECT switch on the KB-410 to PC-1. Operation is the same as for the PC-2 setting explained above. The only difference between PC-1 and PC-2 is the communication baud rate.

NOTE

When not using the TO HOST terminal of the KB-410, make sure the cable is disconnected from the TO HOST terminal. If the cable is left connected, the KB-410 may not function properly.

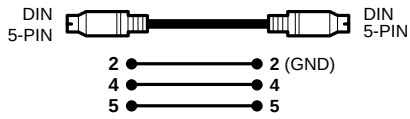
NOTE

When the HOST SELECT switch is set to "Mac", "PC-1", or "PC-2", no data transfer occurs via the MIDI connectors. To use the MIDI connectors for connection via a standard MIDI interface, set the HOST SELECT switch to "MIDI".

■ *MIDI/Computer Connecting Cables*

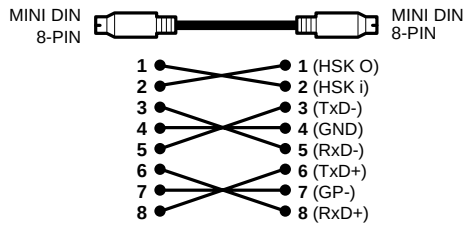
MIDI

Standard MIDI cable. Maximum length 1.5 meters.



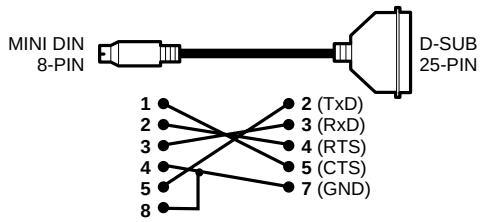
Macintosh

Apple Macintosh Peripheral cable (MO197). Maximum length 2 meters.



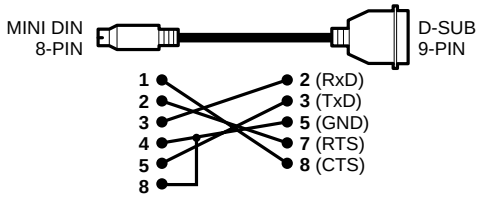
PC-1

8-pin MINI DIN to D-SUB 25-pin cable. If your PC-1 type computer has a 9-pin serial port, use the PC-2 type cable. Maximum length 1.8 meters.



PC-2

8-pin MINI DIN to D-SUB 9-pin cable. Maximum length 1.8 meters.



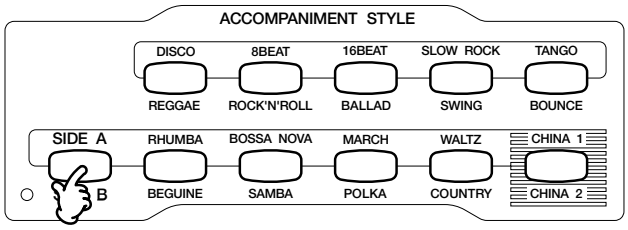
KB-210/410 MIDI functions

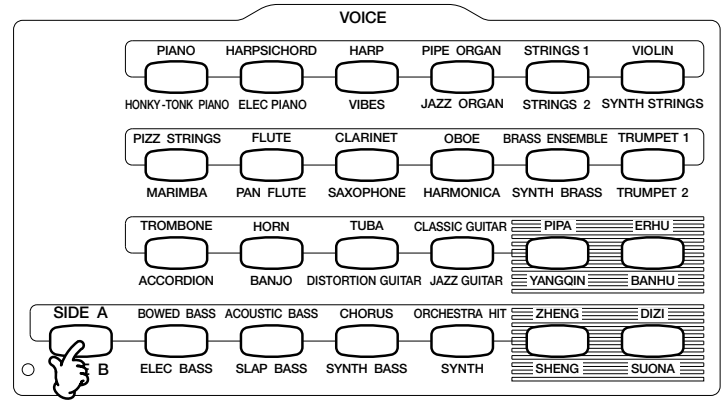
The PortaTone has MIDI functions in the following table.

MIDI Function	Selection/Exit	Value in LED Display
Local On/Off	REC	on, oFF
MIDI Clock Sync	MELODY 1	E, I
Song MIDI Out	MELODY 2	on, oFF
Accompaniment MIDI Out	MELODY 3	on, oFF
Main Voice Transmit Channel	MELODY 4	1~16, oFF
Dual Voice Transmit Channel	CHORD/CLEAR	1~16, oFF
Bulk Out	START/STOP	bUL
Bulk In	– –	bin (bEr: when bulk data reception fails)

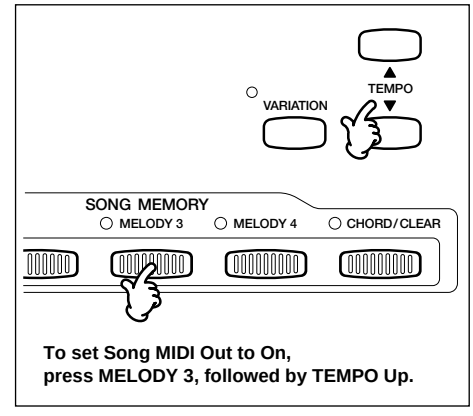
To set these MIDI functions:

1. First enter MIDI setup mode by simultaneously pressing both SIDE A/B buttons at VOICE and ACCOMPANIMENT STYLE sections. LED Display shows "nn" indicating the PortaTone is now in MIDI setup mode.





2. Referring to the above table, first select a necessary MIDI function by pressing a key described in "Selection/Exit" column. Then set a value by pressing TEMPO Up or Down. The value increments or decrements by 1.



To set Song MIDI Out to On, press MELODY 3, followed by TEMPO Up.

NOTE

For step 2 for Bulk Out or Bulk In functions, see their respective descriptions that follow. After any bulk data transfer is done, the PortaTone will be back in MIDI setup mode (step 3).

3 . When a function setup is finished, exit from the function setup by pressing the button described in "Selection/Exit" column. LED Display shows "nn" again. Repeat steps 2 and 3 as required, to set other MIDI functions.

4 . Exit from MIDI setup mode by simultaneously pressing both SIDE A/B buttons at VOICE and ACCOMPANIMENT STYLE sections.

NOTE

Be careful and sure when you set MIDI functions, because some MIDI settings adjust your PortaTone not to work by itself. Read the following instructions before you set above functions.

- Local On/Off: Determines whether or not internal tone generator responds to the notes you play on the KB-210/410 Keyboard. With Local On (LED Display: on), a normal setting, you can control it from the PortaTone keyboard, Pitch Bend wheel, etc. With Local Off (LED Display: oFF), disconnect the KB-210/410 Keyboard from the internal tone generator. However, notes played on the keyboard are still output through MIDI OUT port (or TO HOST port, KB-410 only).

- MIDI Clock Sync: Determines how the PortaTone rhythm or accompaniment (with tempo) run. With External Clock (LED Display: E), the PortaTone does not start it unless an external sequencer or rhythm machine provides MIDI clocks through MIDI IN port (or TO HOST port, KB-410 only). With Internal Clock (LED Display: I), a normal setting, the PortaTone play a rhythm or accompaniment by itself.

- Song MIDI Out: Determines whether Song Memory's performance data is output during a song play back. With On (LED Display: on), the PortaTone outputs song data through MIDI OUT port (or TO HOST port, KB-410 only). With Off (LED Display: oFF), the PortaTone does not output song data.

- Accompaniment MIDI Out: Determines whether Auto Accompaniment's performance data is output while the rhythm or accompaniment is playing. With On (LED Display: on), the PortaTone outputs that performance data through MIDI OUT port (or TO HOST port, KB-410 only). With Off (LED Display: oFF), the PortaTone does not output that performance data.

- Main Voice Transmit Channel: The PortaTone can output your melody play (including movement of the Pitch Bend wheel) using one of MIDI channels (initially, channel 1). This function determines MIDI transmission channel for performance data played in the melody section of the keyboard.

- Dual Voice Transmit Channel: When DUAL is pressed and enabled, the PortaTone can output dual voice data sent on a second channel (initially, channel 2). This function determines that MIDI transmission channel.

- Bulk Out: Outputs a complete data set (bulk data) in the PortaTone, to an external sequencer or data filer. Bulk data can be input again using Bulk In function. In MIDI setup mode (with "nn" shown in LED Display), pressing START/STOP immediately transmits that data through MIDI OUT port (or TO HOST port, KB-410 only). During that transmission, LED Display shows "bUL".

- Bulk In: Inputs bulk data into the PortaTone, from an external sequencer or data filer. The PortaTone receives bulk data through MIDI IN port (or TO HOST port, KB-410 only), LED Display shows "bin".

NOTE

The current data in the PortaTone is completely overwritten if the instrument receives bulk data, so that you should save the current data using Bulk Out function, before you execute Bulk In function.

NOTE

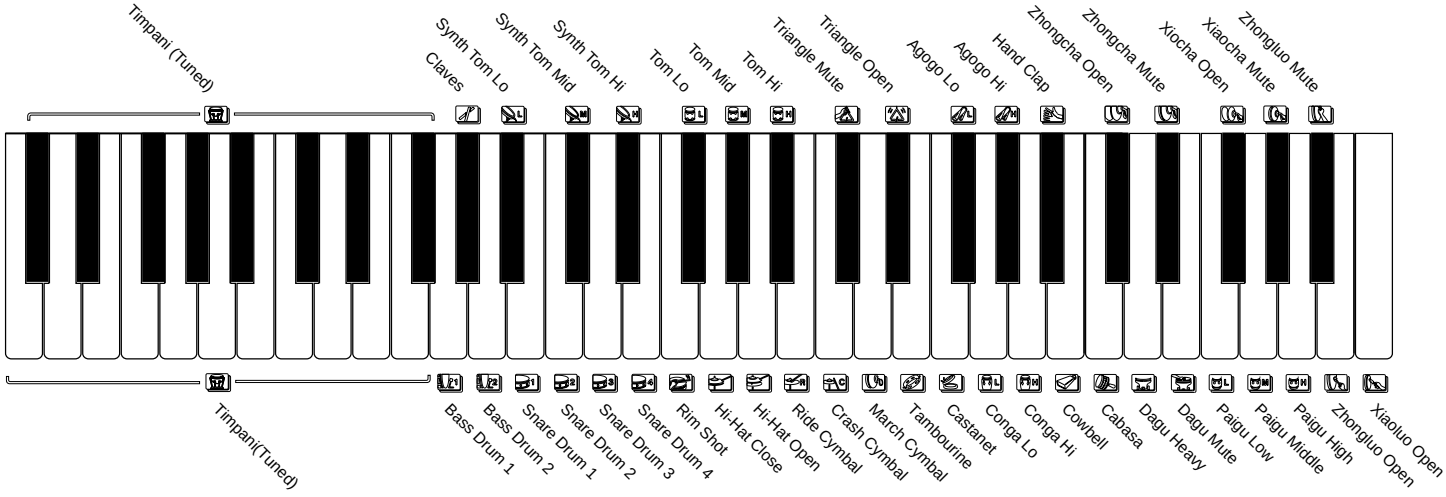
If bulk data reception fails, LED Display shows "bEr". In this case, simply try again.

NOTE

During bulk data reception or transmission, the PortaTone does not respond to any performance using the keyboard or other controllers.

Appendix

Keyboard Percussion Assignments



Troubleshooting

- **The PortaTone produces a "pop" or buzzing sound whenever the power is turned on or off.**
  — This is normal, and is no cause for concern.
- **There is no sound.**
  — Make sure MASTER VOLUME and Expression pedal are set to an appropriate level. Also, if something is connected to PHONES/AUX OUT, sound from the built-in speaker system is automatically muted.
- **The sound is distorted or intermittent.**
  — The battery power may be too low for proper operation. Replace the batteries or use the included AC power adaptor.
- **The tone quality of certain voices changes slightly from note to note.**
  — This is normal and is a result of the sampling system of the PortaTone.
- **When using Sustain, some voices sustain for a long time and others only for a short time.**
  — This is normal. Sustain has been preset to the ideal length for each voice.
- **The overall volume is too low, or the volume balance of the voices and styles isn't right.**
  — Make sure that MASTER VOLUME, ACCOMP VOLUME, and Expression Pedal (if connected) are all set to suitable levels.
- **The Auto Accompaniment and Song do not start.**
  — Make sure that MIDI Clock Sync is set to Internal.
- **Even when Synchro Start is enabled and a key is played, the accompaniment doesn't start.**
  — If Auto Bass Chord is set to SINGLE FINGER or FINGERED (page 17), the accompaniment can start when a key in the chord section is played. (Also see page 15.)
- **Some MIDI data cannot be transmitted correctly.**
  — Try to exit from the MIDI setup mode (see page 33). This operation will send the current panel setting data.
- **When changing voices from Jazz Organ or Distortion Guitar to another, the sound may be cut off.**
  — This is not a malfunction.
- **For certain voices, use of the expression pedal may result in slight noise.**
  — This is not a malfunction.

Specifications

Keyboard

61 keys (C1-C6)

Voices

SIDE A: Piano, Harpsichord, Harp, Pipe Organ, Strings 1, Violin, Pizz Strings, Flute, Clarinet, Oboe, Brass Ensemble, Trumpet 1, Trombone, Horn, Tuba, Classic Guitar, Pipa, Erhu, Bowed Bass, Acoustic Bass, Chorus, Orchestra Hit, Zheng, Dizi

SIDE B: Honky-tonk Piano, Elec Piano, Vibes, Jazz Organ, Strings 2, Synth Strings, Marimba, Pan Flute, Saxophone, Harmonica, Synth Brass, Trumpet 2, Accordion, Banjo, Distortion Guitar, Jazz Guitar, Yangqin, Banhu, Elec Bass, Slap Bass, Synth Bass, Synth, Sheng, Suona

Voice Controls

VOICE buttons, SIDE A/SIDE B button, DUAL button (KB-410), SUSTAIN button, KEYBOARD PERCUSSION button, TRANSPOSE buttons, TUNE buttons, TOUCH RESPONSE button, PORTAMENTO button, PITCH BEND wheel

Keyboard Percussion

61 drum/percussion sounds

Effects

Reverb, DSP Chorus

Accompaniment Styles

SIDE A: Disco, 8 Beat, 16 Beat, Slow Rock, Tango, Rhumba, Bossa Nova, March, Waltz, China 1

SIDE B: Reggae, Rock'n'Roll, Ballad, Swing, Bounce, Beguine, Samba, Polka, Country, China 2

Accompaniment Style Controls

ACCOMPANIMENT STYLE buttons; SIDE A/SIDE B button; TEMPO buttons; INTRO 1/FILL IN, INTRO 2/ENDING, SYNCHRO START, and START/STOP buttons, VARIATION button

Auto Bass Chord

AUTO BASS CHORD selector (OFF, SINGLE FINGER, FINGERED)

Demo Songs

7 songs

Song Memory

4 tracks x (4 Melodies + 1 Chord)

Registration memory

8 Banks x 4

Other Controls

POWER switch, MASTER VOLUME control, ACCOMP VOLUME control, DEMO button

Jacks and Terminals

EXPRESSION PEDAL, PHONES/AUX OUT, DC IN 10-12V, MIDI IN/OUT, TO HOST (KB-410), SUSTAIN (KB-410)

Main Amplifier

6W+6W (EIAJ)

Speaker System

12cm x 2 (KB-210)
(12+5)cm x 2 (KB-410)

Power Supply

"D" size/R-20/SUM-1 batteries (1.5V x 6)
DC 10-12V AC power adaptor

Dimensions (W x D x H)

934mm x 398mm x 155mm (36"3/4 x 15"2/3 x 6"1/8)

Weight

7.2kg(KB-210)
7.4kg(KB-410)

Included Accessories

PA-51/PA-5B AC Power Adaptor; EP-1 Expression Pedal; Music Stand

Optional Accessories

L-21 Keyboard Stand
HPE-150 Stereo Headphones
FC5 Footswitch
SCC-38 Soft Case

Specifications are subject to change without notice.

MIDI Data Format

Many MIDI messages listed in the MIDI Data Format are expressed in decimal numbers, binary numbers and hexadecimal numbers. Hexadecimal numbers may include the letter "H" as a suffix. Also, "n" can freely be defined as any whole number.
To enter data/values, refer to the table below.

Decimal	Hexadecimal	Binary
0	00	0000 0000
1	01	0000 0001
2	02	0000 0010
3	03	0000 0011
4	04	0000 0100
5	05	0000 0101
6	06	0000 0110
7	07	0000 0111
8	08	0000 1000
9	09	0000 1001
10	0A	0000 1010
11	0B	0000 1011
12	0C	0000 1100
13	0D	0000 1101
14	0E	0000 1110
15	0F	0000 1111
16	10	0001 0000
17	11	0001 0001
18	12	0001 0010
19	13	0001 0011
20	14	0001 0100
21	15	0001 0101
22	16	0001 0110
23	17	0001 0111
24	18	0001 1000
25	19	0001 1001
26	1A	0001 1010
27	1B	0001 1011
28	1C	0001 1100
29	1D	0001 1101
30	1E	0001 1110
31	1F	0001 1111
32	20	0010 0000
33	21	0010 0001
34	22	0010 0010
35	23	0010 0011
36	24	0010 0100
37	25	0010 0101
38	26	0010 0110
39	27	0010 0111
40	28	0010 1000
41	29	0010 1001
42	2A	0010 1010
43	2B	0010 1011
44	2C	0010 1100
45	2D	0010 1101
46	2E	0010 1110
47	2F	0010 1111
48	30	0011 0000
49	31	0011 0001
50	32	0011 0010
51	33	0011 0011
52	34	0011 0100
53	35	0011 0101
54	36	0011 0110
55	37	0011 0111
56	38	0011 1000
57	39	0011 1001
58	3A	0011 1010
59	3B	0011 1011
60	3C	0011 1100
61	3D	0011 1101
62	3E	0011 1110
63	3F	0011 1111

Decimal	Hexadecimal	Binary
64	40	0100 0000
65	41	0100 0001
66	42	0100 0010
67	43	0100 0011
68	44	0100 0100
69	45	0100 0101
70	46	0100 0110
71	47	0100 0111
72	48	0100 1000
73	49	0100 1001
74	4A	0100 1010
75	4B	0100 1011
76	4C	0100 1100
77	4D	0100 1101
78	4E	0100 1110
79	4F	0100 1111
80	50	0101 0000
81	51	0101 0001
82	52	0101 0010
83	53	0101 0011
84	54	0101 0100
85	55	0101 0101
86	56	0101 0110
87	57	0101 0111
88	58	0101 1000
89	59	0101 1001
90	5A	0101 1010
91	5B	0101 1011
92	5C	0101 1100
93	5D	0101 1101
94	5E	0101 1110
95	5F	0101 1111
96	60	0110 0000
97	61	0110 0001
98	62	0110 0010
99	63	0110 0011
100	64	0110 0100
101	65	0110 0101
102	66	0110 0110
103	67	0110 0111
104	68	0110 1000
105	69	0110 1001
106	6A	0110 1010
107	6B	0110 1011
108	6C	0110 1100
109	6D	0110 1101
110	6E	0110 1110
111	6F	0110 1111
112	70	0111 0000
113	71	0111 0001
114	72	0111 0010
115	73	0111 0011
116	74	0111 0100
117	75	0111 0101
118	76	0111 0110
119	77	0111 0111
120	78	0111 1000
121	79	0111 1001
122	7A	0111 1010
123	7B	0111 1011
124	7C	0111 1100
125	7D	0111 1101
126	7E	0111 1110
127	7F	0111 1111

- Except the table above, for example 144-159(decimal)/9nH/1001 0000-1001 1111(binary) displays the Note On Message for each channel (1-16). 176-191/BnH/1011 0000-1011 1111 displays the Control Change Message for each channel (1-16). 192-207/CnH/1100 0000-1100 1111 displays the Program Change Message for each channel (1-16). 240/FOH/1111 0000 denotes the start of a System Exclusive Message. 247/F7H/1111 0111 denotes the end of a System Exclusive Message.

(1) TRANSMIT

```
MIDI<—+—KEY ON/OFF                          9nH
OUT   |   |
      |   +—CONTROL CHANGE                   BnH
      |   |    BANK SELECT MSB               BnH,00H
      |   |    BANK SELECT LSB               BnH,20H
      |   |    PORTAMENTO TIME               BnH,05H
      |   |    PORTAMENTO                    BnH,41H
      |   |    MAIN VOLUME                   BnH,07H
      |   |    PANPOT                        BnH,0AH
      |   |    EXPRESSION                    BnH,0BH
      |   |    SUSTAIN                       BnH,40H
      |   |    REVERB SEND LEVEL             BnH,5BH
      |   |    VARIATION SEND LEVEL          BnH,5EH
      |   |    CHORUS SEND LEVEL             BnH,5DH
      |   +—PROGRAM CHANGE                   CnH
      |   +—PITCH BEND CHANGE                EnH
      |
      +—+—SYSTEM EXCLUSIVE MESSAGE
      |   |    <YAMAHA MIDI FORMAT>
      |   |    <UNIVERSAL>
      |   |—— UNIVERSAL REALTIME             F0H 7FH.....F7H
      |   |—— UNIVERSAL NON-REALTIME         F0H 7EH.....F7H
      |   |    <SPECIAL OPERATORS>
      |
      +———SYSTEM REALTIME MESSAGE
              MIDI CLOCK                     F8H
              START                          FAH
              STOP                           FCH
              ACTIVE SENSING                 FEH
```

(2) RECEIVE

```
MIDI>—+—KEY OFF                             8nH
IN    |   |
      |   +—KEY ON/OFF                      9nH
      |   |
      |   +—CONTROL CHANGE
      |   |    BANK SELECT MSB              BnH,00H
      |   |    BANK SELECT LSB              BnH,20H
      |   |    MODULATION                   BnH,01H
      |   |    PORTAMENTO TIME              BnH,05H
      |   |    DATA ENTRY MSB               BnH,06H
      |   |    DATA ENTRY LSB               BnH,26H
      |   |    MAIN VOLUME                  BnH,07H
      |   |    PANPOT                       BnH,0AH
      |   |    EXPRESSION                   BnH,0BH
      |   |    SUSTAIN                      BnH,40H
      |   |    PORTAMENTO                   BnH,41H
      |   |    SOSTENUTO                    BnH,42H
      |   |    SOFT PEDAL                   BnH,43H
      |   |    HARMONIC CONTENT             BnH,47H
      |   |    RELEASE TIME                 BnH,48H
      |   |    ATTACK TIME                  BnH,49H
      |   |    BRIGHTNESS                   BnH,4AH
      |   |    PORTAMENTO CONTROL           BnH,54H
      |   |    REVERB SEND LEVEL            BnH,5BH
      |   |    CHORUS SEND LEVEL            BnH,5DH
      |   |    VARIATION SEND LEVEL         BnH,5EH
      |   |    DATA INCREMENT               BnH,60H
      |   |    DATA DECREMENT               BnH,61H
      |   |    NRPN LSB                     BnH,62H
      |   |    NRPN MSB                     BnH,63H
      |   |    VIBRATO RATE                 BnH,63H,01H,62H,08H,06H,mmH
      |   |    VIBRATO DEPTH                BnH,63H,01H,62H,09H,06H,mmH
      |   |    VIBRATO DELAY                BnH,63H,01H,62H,0AH,06H,mmH
      |   |    FILTER CUTOFF FREQ.          BnH,63H,01H,62H,20H,06H,mmH
      |   |    FILTER RESONANCE             BnH,63H,01H,62H,21H,06H,mmH
      |   |    EG ATTACK TIME               BnH,63H,01H,62H,63H,06H,mmH
      |   |    EG DECAY TIME                BnH,63H,01H,62H,64H,06H,mmH
      |   |    EG RELEASE                   BnH,63H,01H,62H,66H,06H,mmH
      |   |    DRUM INST
      |   |    CUTOFF FREQ.                 BnH,63H,14H,62H,rrH,06H,mmH
      |   |    FILTER RESONANCE             BnH,63H,15H,62H,rrH,06H,mmH
      |   |    EG ATTACK RATE               BnH,63H,16H,62H,rrH,06H,mmH
      |   |    EG DECAY RATE                BnH,63H,17H,62H,rrH,06H,mmH
      |   |    PITCH COARSE                 BnH,63H,18H,62H,rrH,06H,mmH
      |   |    PITCH FINE                   BnH,63H,19H,62H,rrH,06H,mmH
      |   |    LEVEL                        BnH,63H,1AH,62H,rrH,06H,mmH
      |   |    PANPOT                       BnH,63H,1CH,62H,rrH,06H,mmH
      |   |    REVERB SEND                  BnH,63H,1DH,62H,rrH,06H,mmH
      |   |    CHORUS SEND                  BnH,63H,1EH,62H,rrH,06H,mmH
      |   |    VARIATION SEND               BnH,63H,1FH,62H,rrH,06H,mmH
      |   |    RPN LSB                      BnH,64H
      |   |    RPN MSB                      BnH,65H
      |   |    PITCH BEND SENS.             BnH,65H,00H,64H,00H,06H,mmH
      |   |    FINE TUNING                  BnH,65H,00H,64H,01H,06H,mmH,26H,llH
      |   |    COARSE TUNING                BnH,65H,00H,64H,02H,06H,mmH
      |   |    NULL                         BnH,65H,7FH,64H,7FH
      |   |    ALL SOUND OFF                BnH,78H,00H
      |   |    RESET ALL CONTROLLERS        BnH,79H,00H
      |   |    ALL NOTES OFF                BnH,7BH
      |   |    OMNI OFF                     BnH,7CH
      |   |    OMNI ON                      BnH,7DH
      |   |    MONO                         BnH,7EH
      |   |    POLY                         BnH,7FH
      |   |
      |   +—PROGRAM CHANGE                  CnH
      |   |
      |   |
      |   +—PITCH BEND CHANGE               EnH
      |
      +—+—SYSTEM EXCLUSIVE MESSAGE
      |   |    <YAMAHA MIDI FORMAT>
      |   |    <UNIVERSAL>
      |   |—— UNIVERSAL REALTIME            F0H 7FH.....F7H
      |   |—— UNIVERSAL NON-REALTIME        F0H 7EH.....F7H
      |   |    <SPECIAL OPERATORS>
      |   |    <Others>
      |
      +—+—SYSTEM REALTIME MESSAGE
      |   |    MIDI CLOCK                   F8H
      |   |    START                        FAH
      |   |    STOP                         FCH
      |   |    ACTIVE SENSING               FEH
```

(3) TRANSMIT/RECEIVE DATA

(3-1) CHANNEL VOICE MESSAGES

(3-1-1) KEY OFF (Receive only)

STATUS	1000nnnn(8nH)	n = 0 - 15 VOICE CHANNEL NUMBER
NOTE NUMBER	0kkkkkkk	k = 0 (C-2) - 127 (G8)
VELOCITY	0vvvvvvv	v:ignored

(3-1-2) KEY ON/OFF

STATUS	1001nnnn(9nH)	n = 0 - 15 VOICE CHANNEL NUMBER
NOTE NUMBER	0kkkkkkk	k = 0 (C-2) - 127 (G8)
		:Receive k = 24 (C0) - 108(C7)
VELOCITY	0vvvvvvv	(v≠0) NOTE ON
	00000000	(v=0) NOTE OFF

(3-1-3) PROGRAM CHANGE

STATUS	1100nnnn(CnH)	n = 0 - 15 VOICE CHANNEL NUMBER
PROGRAM NUMBER	0ppppppp	p = 0 - 127

When DRUM VOICE is selected and program change data for a different DRUM VOICE is received, the currently selected DRUM VOICE will be replaced with the new DRUM VOICE.

(3-1-4) CHANNEL AFTER TOUCH (Receive only)

STATUS	1101nnnn(DnH)	n = 0 - 15 VOICE CHANNEL NUMBER
VALUE	0vvvvvvv	v = 0 - 127 AFTER TOUCH VALUE

(3-1-5) PITCH BEND CHANGE

STATUS	1110nnnn(EnH)	n = 0 - 15 VOICE CHANNEL NUMBER
LSB	0vvvvvvv	PITCH BEND CHANGE LSB
MSB	0vvvvvvv	PITCH BEND CHANGE MSB

(3-1-6) CONTROL CHANGE

STATUS	1011nnnn(BnH)	n = 0 - 15 VOICE CHANNEL NUMBER
CONTROL NUMBER	0ccccccc	
CONTROL VALUE	0vvvvvvv	

*** Transmit CONTROL NUMBER**

c = 0	BANK SELECT MSB		
c = 32	BANK SELECT LSB	; v = 0 - 127	*3
c = 5	PORTAMENTO TIME		
c = 65	PORTAMENTO		
c = 7	MAIN VOLUME	; v = 0 - 127	
c = 10	PANPOT	; v = 0 - 127	
c = 11	EXPRESSION	; v = 0 - 127	
c = 64	SUSTAIN	; v = 0-63:OFF , 64-127:ON	*2
c = 91	REVERB SEND LEVEL	; v = 0 - 127	
c = 93	CHORUS SEND LEVEL		
c = 94	VARIATION SEND LEVEL	; v = 0 - 127	

*** Receive CONTROL NUMBER**

c = 0	BANK SELECT MSB		
c = 32	BANK SELECT LSB	; v = 0 - 127	*3
c = 1	MODULATION	; v = 0 - 127	*2
c = 5	PORTAMENTO TIME	; v = 0 - 127	*2
c = 6	DATA ENTRY MSB	; v = 0 - 127	*1
c = 38	DATA ENTRY LSB	; v = 0 - 127	*1
c = 7	MAIN VOLUME	; v = 0 - 127	
c = 10	PANPOT	; v = 0 - 127	
c = 11	EXPRESSION	; v = 0 - 127	
c = 64	SUSTAIN	; v = 0-63:OFF , 64-127:ON	*2
c = 65	PORTAMENTO	; v = 0-63:OFF , 64-127:ON	*2
c = 66	SOSTENUTO	; v = 0-63:OFF , 64-127:ON	*2
c = 67	SOFT PEDAL	; v = 0-63:OFF , 64-127:ON	*2
c = 71	HARMONIC CONTENT	; v = 0:-64 - 64:0 - 127:+63	*2
c = 72	RELEASE TIME	; v = 0:-64 - 64:0 - 127:+63	*2
c = 73	ATTACK TIME	; v = 0:-64 - 64:0 - 127:+63	*2
c = 74	BRIGHTNESS	; v = 0:-64 - 64:0 - 127:+63	*2
c = 84	PORTAMENTO CONTROL	; v = 0 - 127	*2
c = 91	REVERB SEND LEVEL	; v = 0 - 127	
c = 93	CHORUS SEND LEVEL	; v = 0 - 127	
c = 94	VARIATION SEND LEVEL	; v = 0 - 127	
c = 96	DATA INCREMENT	; v = 127	*1
c = 97	DATA DECREMENT	; v = 127	*1

*1 Only when setting the appointed parameter with RPN, NRPN.
*2 Does not effect Rhythm Voice.
*3 anything other than MSB=0 or 63 is 0.

- Until a PROGRAM CHANGE message is received, the BANK SELECT operation will be suspended. When a Voice, including VOICE BANK, is changed, set the BANK SELECT and Program Change Message, and transmit in the following order, BANK SELECT MSB, LSB, PROGRAM CHANGE.
- MODULATION controls the Vibrato Depth.
- PORTAMENTO TIME controls the Pitch Change Speed when the Portamento Switch = ON. 40 being the shortest time, and 75 being the longest.
- PANPOT changes the value for the melody voice and rhythm voice in relation to the preset value.
- Portamento time is fixed to 0 when the PORTAMENTO CONTROL is used.
- HARMONIC CONTENT applies adjustment to the resonance value that is set by the voice. This parameter specifies relative change with the value of 64 producing 0 adjustment. As values get higher the sound becomes increasingly eccentric. Note that for some voices the effective parameter range is narrower than the legal parameter range.
- RELEASE TIME applies adjustment to the envelope release time set by the voice. This parameter specifies relative change with the value of 64 producing 0 adjustment.
- ATTACK TIME applies adjustment to the envelope attack time set by the voice. This parameter specifies relative change with the value of 64 producing 0 adjustment.
- BRIGHTNESS applies adjustment to the cut-off frequency set by the voice. This parameter specifies relative change with the value of 64 producing 0 adjustment. Lower voices produce a softer sound. For some voices the effective parameter range is narrower than the legal parameter range.

(3-2) CHANNEL MODE MESSAGES

STATUS	1011nnnn(BnH)	n = 0 - 15 VOICE CHANNEL NUMBER
CONTROL NUMBER	0ccccccc	c = CONTROL NUMBER
CONTROL VALUE	0vvvvvvv	v = DATA VALUE

(3-2-1) ALL SOUND OFF (Receive only) (CONTROL NUMBER = 78H , DATA VALUE = 0)

Switches off all sound from the channel. Resets Note On and Hold On conditions established by Channel Messages.

(3-2-2) RESET ALL CONTROLLERS (Receive only) (CONTROL NUMBER = 79H , DATA VALUE = 0)

Resets controllers as follows.

PITCH BEND CHANGE	0 (Center)
AFTER TOUCH	0 (min.)
MODULATION	0 (min.)
EXPRESSION	127 max.)
SUSTAIN	0 (off)
SOSTENUTO	0 (off)
SOFT PEDAL	0 (off)
NRPN	Sets number to null. (Internal data remains unchanged)
RPN	Sets number to null. (Internal data remains unchanged)
PORTAMENTO CONTROL	Reset
PORTAMENTO	0 (off)

(3-2-3) ALL NOTES OFF (Receive only) (CONTROL NUMBER = 7BH , DATA VALUE = 0)

Switches off all of the channel's "on" notes. However, any notes being held by SUSTAIN or SOSTENUTO continue to sound until SUSTAIN/SOSTENUTO goes off.

(3-2-4) OMNI OFF (Receive only) (CONTROL NUMBER = 7CH , DATA VALUE = 0)

Same processing as for All Notes Off.

(3-2-5) OMNI ON (Receive only) (CONTROL NUMBER = 7DH , DATA VALUE = 0)

Same processing as for All Notes Off. Omni On is not executed.

(3-2-6) MONO (Receive only)(CONTROL NUMBER = 7EH , DATA VALUE = 0~16)

Same processing as for All Sound Off. If the 3rd byte is in a range of 0-16 the corresponding channel will be changed to Mode 4 (m=1).

(3-2-7) POLY (Receive only)(CONTROL NUMBER = 7FH , DATA VALUE = 0)

Same processing as for All Sounds Off and the corresponding channel will be changed to Mode 3.

(3-3) REGISTERED PARAMETER NUMBER(RPN) [Receive only]

STATUS	1011nnnn(BnH)	n = 0 - 15 VOICE CHANNEL NUMBER
RPN LSB	01100100(64H)	
RPN LSB NUMBER	0ppppppp	p = RPN LSB(refer to the list below)
RPN MSB	01100101(65H)	
RPN MSB NUMBER	0qqqqqqq	q = RPN MSB(refer to the list below)
DATA ENTRY MSB	00000110(06H)	
DATA VALUE	0mmmmmmm	m = Data Value
DATA ENTRY LSB	00100110(26H)	
DATA VALUE	01111111	l = Data Value

First appoints the parameter for RPN MSB/LSB, then sets the parameter value for data entry MSB/LSB.

RPN LSB	RPN MSB	D.ENTRY LSB	PARAMETER NAME	DATA RANGE
00H	00H	mmH —	PITCH BEND SENSITIVITY	00H - 18H (0 - 24 semitones)
01H	00H	mmH llH	FINE TUNE	{mmH,llH} = {00H,00H} - {40H,00H} - {7FH,7FH} (-8192*100/8192) - 0 - (+8192*100/8192)
02H	00H	mmH —	COARSE TUNE	28H - 40H - 58H (-24 - 0 - +24 semitones)
7FH	7FH	— —	NULL	Clears the current RPN number setting. Does not change the internal parameter settings.

(3-4) NON-REGISTERED PARAMETER NUMBER(NRPN) (Receive only)

STATUS	1011nnnn(BnH)	n = 0 - 15 VOICE CHANNEL NUMBER
NRPN LSB	01100010(62H)	
NRPN LSB NUMBER	0ppppppp	p = NRPN LSB(refer to the list below)
NRPN MSB	01100011(63H)	
NRPN MSB NUMBER	0qqqqqqq	q = NRPN MSB(refer to the list below)
DATA ENTRY MSB	00000110(06H)	
DATA VALUE	0mmmmmmm	m = Data Value

First appoints the parameter for NRPN MSB/LSB, then sets the parameter value for data entry MSB/LSB.

NRPN MSB	NRPN LSB	D.ENTRY MSB	D.ENTRY LSB	PARAMETER NAME	DATA RANGE
01H	08H	mmH	—	VIBRATO RATE	00H - 40H - 7FH (-64 - 0 - +63)
01H	09H	mmH	—	VIBRATO DEPTH	00H - 40H - 7FH (-64 - 0 - +63)
01H	0AH	mmH	—	VIBRATO DELAY	00H - 40H - 7FH (-64 - 0 - +63)
01H	20H	mmH	—	FILTER CUTOFF FREQUENCY	00H - 40H - 7FH (-64 - 0 - +63)
01H	21H	mmH	—	FILTER RESONANCE	00H - 40H - 7FH (-64 - 0 - +63)
01H	63H	mmH	—	EG ATTACK TIME	00H - 40H - 7FH (-64 - 0 - +63)
01H	64H	mmH	—	EG DECAY TIME	00H - 40H - 7FH (-64 - 0 - +63)
01H	66H	mmH	—	EG RELEASE	00H - 40H - 7FH (-64 - 0 - +63)
14H	rrH	mmH	—	DRUM FILTER CUTOFF FREQ.	00H - 40H - 7FH (-64 - 0 - +63)
15H	rrH	mmH	—	DRUM FILTER RESONANCE	00H - 40H - 7FH (-64 - 0 - +63)
16H	rrH	mmH	—	DRUM AEG ATTACK RATE	00H - 40H - 7FH (-64 - 0 - +63)
17H	rrH	mmH	—	DRUM AEG DECAY RATE	00H - 40H - 7FH (-64 - 0 - +63)
18H	rrH	mmH	—	DRUM PITCH COARSE	00H - 40H - 7FH (-64 - 0 - +63)
19H	rrH	mmH	—	DRUM PITCH FINE	00H - 40H - 7FH (-64 - 0 - +63)
1AH	rrH	mmH	—	DRUM LEVEL	00H - 7FH (0 - max.)
1CH	rrH	mmH	—	DRUM PANPOT	00H ,01H - 40H - 7FH (random,left - center - right)
1DH	rrH	mmH	—	DRUM REVERB SEND LEVEL	00H - 7FH (0 - max.)
1EH	rrH	mmH	—	DRUM CHORUS SEND LEVEL	00H - 7FH (0 - max.)
1FH	rrH	mmH	—	DRUM VARIATION SEND LEVEL	00H - 7FH (0 - max.)

The MSB14H-1FH (for drums) message is accepted as long as the channel is set with a drum voice.
rrH : drum instrument note number

(3-5) SYSTEM REALTIME MESSAGES

(3-5-1) MIDI CLOCK

STATUS	11111000	(F8H)

Transmission: 96 clocks per measure are transmitted.
Reception: If the instrument's clock is set to external, after FAH is received from the external device the instrument's clock will sync with the 96 beats per measure received from the external device.
Decides whether the internal clock, or Timing Clocks received via the MIDI IN will be used

(3-5-2) START

STATUS	11111010	(FAH)

Transmission: Transmitted when instrument's Rhythm or Song playback is started.
Reception: Depending upon the condition, Rhythm, Song Playback, or Song Rec will start.
FA is not received when Clock mode is Internal.

(3-5-3) STOP

STATUS	11111100	(FCH)

Transmission: Transmitted when instrument's Rhythm or Song playback is stopped.
Reception: Depending upon the condition, Rhythm, Song Playback, or Song Rec will stop.
"FC" is not received when clock mode = INTERNAL.

(3-5-4) ACTIVE SENSING

STATUS	11111110	(FEH)

Transmission: Transmitted approximately once every 200msec.

Reception: Sensing is started once this Code is received. If Status or Data is not received within 400ms, the MIDI Receive Buffer will be cleared, and all notes, including those being sustained, will be cut OFF. Also, all control values will be reset to their factory defaults.

(3-6) SYSTEM EXCLUSIVE MESSAGE

(3-6-1) YAMAHA MIDI FORMAT

(3-6-1-1) SECTION CONTROL

binary	hexadecimal		
11110000	F0	Exclusive status	
01000011	43	YAMAHA ID	
01111110	7E	Style	
00000000	00		
0sssssss	SS	Switch No.	
		00H	: INTRO A
		01H~07H	: INTRO B
		08H	: MAIN A
		09H~0FH	: MAIN B
		10H	: FILL IN AA
		11H~17H	: FILL IN BB
		18H	: FILL IN AB
		19H~1FH	: FILL IN BA
		20H	: ENDING A
		21H~27H	: ENDING B
0ddddddd	DD	Switch On/Off	: 00H(Off),7FH(On)
11110111	F7	End of Exclusive	

When the ON data is received, the section will be changed to the appointed section.

(3-6-1-2) TEMPO CONTROL

binary	hexadecimal	
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
01111110	7E	Style
00000000	01	
0ttttttt	TT	Tempo4
0ttttttt	TT	Tempo3
0ttttttt	TT	Tempo2
0ttttttt	TT	Tempo1
11110111	F7	End of Exclusive

The internal clock will be set to the received Tempo value.
Tempo Meta Event is a large data block (24-bit), it is divided into 4 groups with 7-bits going into each of the Tempos 1-4 (4 receives the remaining 3 bits).

(3-6-2) UNIVERSAL SYSTEM EXCLUSIVE

(3-6-2-1) UNIVERSAL REALTIME MESSAGE

(3-6-2-1-1) MIDI MASTER VOLUME(receive only)

binary	hexadecimal	
11110000	F0	Exclusive status
01111110	7F	Universal Realtime
01111111	7F	ID of target Device
00001001	04	Sub-ID #1=Device Control Message
00000001	01	Sub-ID #2=Master Volume
0sssssss	SS	Volume LSB
0ttttttt	TT	Volume MSB
11110111	F7	End of Exclusive
or		
11110000	F0	Exclusive status
01111110	7F	Universal Realtime
0xxxnnnn	XN	When N is received N=0-F, whichever is received.
		X = don't care
00001001	04	Sub-ID #1=Device Control Message
00000001	01	Sub-ID #2=Master Volume
0sssssss	SS	Volume LSB
0ttttttt	TT	Volume MSB
11110111	F7	End of Exclusive

The volume for all channels will be changed simultaneously.
The TT value is used as the MIDI Master Volume value. (the ss value is ignored.)

(3-6-2-2) UNIVERSAL NON REALTIME MESSAGE

(3-6-2-2-1) GENERAL MIDI SYSTEM ON

binary	hexadecimal	
11110000	F0	Exclusive status
01111110	7E	Universal Non-Realtime
01111111	7F	ID of target Device
00001001	09	Sub-ID #1=General MIDI Message
00000001	01	Sub-ID #2=General MIDI On
11110111	F7	End of Exclusive
or		
11110000	F0	Exclusive status
01111110	7E	Universal Non-Realtime
0xxxnnnn	XN	When N is received N=0-F, whichever is received.
		When N is transmitted N always=0.
		X = don't care
00001001	09	Sub-ID #1=General MIDI Message
00000001	01	Sub-ID #2=General MIDI On
11110111	F7	End of Exclusive

Depending upon the received ON message, the System Mode will be changed to GM.
Except MIDI Master Tuning, all control data be reset to default values.
This message requires approximately 50ms to execute, so sufficient time should be allowed before the next message is sent.

(3-6-3) SPECIAL OPERATORS

(3-6-3-1) VOLUME ,EXPRESSION AND PAN REALTIME CONTROL OFF

binary	hexadecimal	
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
01110011	73	Clavinova ID
00000001	01	Clavinova common ID
00010001	11	Sub ID
0000nnnn	0N	N = MIDI Channel
01001001	45	Volume and Expression Realtime Control Off
0vvvvvvv	VV	Value VV: 00H=on, 7FH=off
11110111	F7	End of Exclusive

When "On" is received, subsequent volume, expression, and PAN changes are only valid after the reception of the next key on. Normal operation resumes when "Off" is received.

(3-6-4) Others

(3-6-4-1) MIDI MASTER TUNING(Receive only)

binary	hexadecimal	
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0001nnnn	1N	When N is received N=0-F, whichever is received.
00100111	27	Model ID
00110000	30	Sub ID
00000000	00	
00000000	00	
0mmmmmmm	MM	Master Tune MSB
01111111	LL	Master Tune LSB
0ccccccc	CC	don't care
11110111	F7	End of Exclusive

Changes tuning of all channels.
MM, LL values are used to define the MIDI Master Tuning value.(N and CC are ignored)

T = M-128

T : Tuning value (-100cent - +100cent)
M : A single byte value (28-228) consists of bits 0-3 of MM = MSB, bits 0-3 of LL = LSB.

These settings will not be reset by the GM System ON or XG System ON.

(3-6-4-2) Bulk Dump

User Song, Custom Style (KB-410 only)

binary	hexadecimal	
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
01110011	73	Clavinova ID
0nnnnnnn	NN	Model ID (4DH;KB-410, 4EH;KB-210)
00110000	06	Bulk ID
0kkkkkkk	KK	Bulk No.(0AH;User Song, 07H;Custom Style)
00001lll	0L	Data Length
00001lll	0L	Data Length
00001lll	0L	Data Length
00001lll	0L	Data Length
00001lll	0L	Data Length
00001lll	0L	Data Length Date Length=LLLLLL HByte
0ddddddd	DD	Bulk Data
	:	:
0ccccccc	CC	Check Sum
11110111	F7	End of Exclusive

Registration Memory (KB-410 only)

binary	hexadecimal	
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
01110011	73	Clavinova ID
01001101	4D	Model ID (KB-410)
00110000	06	Bulk ID
0kkkkkkk	KK	Bulk No.(09H;Registration Memory)
00001lll	0L	Data Length
00001lll	0L	Data Length
00001lll	0L	Data Length
00001lll	0L	Data Length Date Length=LLLL HByte
0ddddddd	DD	Bulk Data
	:	:
0ccccccc	CC	Check Sum
11110111	F7	End of Exclusive

Bulk Dump reception does not work in following condition.
When Demo is playing.
When in the Song mode.
When Accompaniment is started.
When Custom Percussion is being recorded or is in the stand-by mode (KB-410 ony).
When Registration Memory is in operation (KB-410 only).
When Bulk data is being transmitted.

(3-6-4-3) XG SYSTEM ON

binary	hexadecimal	
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0001nnnn	1N	Device Number (transmittion:N=0, reception:N=0~F)
01001100	4C	Model ID
00000000	00	Address High
00000000	00	Address Mid
01111110	7E	Address Low
00000000	00	Data
11110111	F7	End of Exclusive

Depending upon the received ON message, the SYSTEM MODE will be changed to XG. Some data (e.g. Controller) will be reset. This message requires approximately 50ms to execute, so sufficient time should be allowed before the next message is sent.

MIDI Implementation Chart

YAMAHA [Portable Keyboard] / Model : KB-210/410

Date: 1997. 5. 6
Version: 1.0

Function		Transmit	Receive	Remarks
Basic Channel	Default	1 - 16 (*1)	1 - 16 (*2)	
	Changed	1 - 16 (*1)	1 - 16 (*2)	
Mode	Default	3	3	
	Messages	×	×	
	Altered	**********	×	
Note Number	: True voice	24 - 108 **********	0 - 127 0 - 127	
Velocity	Note ON	○ 9nH, v = 1–127	○ 9nH, v = 1–127	
	Note OFF	○ 9nH, v = 0	×	
After Touch	Key's	×	×	
	Ch's	×	×	
Pitch Bender		○	○	
Control Change	0,32	○	○	Bank Select
	1	× (*3)	○	Modulation
	5	○	○	Portament Time
	7,11	○	○	
	6,38	× (*3)	○	Data Entry
	64,65	○	○	
	66,67	×	○	
	71-74	× (*3)	○	Sound Controller
	84	× (*3)	○	Portamento Cntrl
	91,93,94	○	○	Effect Depth
	96-97	×	○	RPN Inc,Dec
	98-99	× (*3)	○	NRPN LSB,MSB
	100-101	×	○	RPN LSB,MSB
	120	×	○	All Sound Off
	121	×	○	Reset All Cntrls
Prog Change	: True #	○ 0 -127 **********	○ 0 - 127	
System Exclusive		○	○	
System Common	: Song Pos.	×	×	
	: Song Sel.	×	×	
	: Tune	×	×	
System Real Time	: Clock	○	○	
	: Commands	○	○	
Aux	: Local ON/OFF	×	×	
	: All Notes OFF	×	○ (123 - 127)	
Mes-	: Active Sense	○	○	
sages	: Reset	×	×	

Notes :
(*1) ; Main voice, Dual voice, Accompaniment and Song data can be transmitted by individual channel (See page 32).
(*2) ; MIDI data is always received in multi timber mode (16 channels available), and the panel settings such as voice selection etc. are not affected by received MIDI data with the exception of the data listed below.
• MIDI MASTER TUNE
• REVERB
• CHORUS
• SYSTEM EXCLUSIVE MESSAGE (When DSP EFFECT setting is changed)
(*3) ; These messages can't be transmitted by keyboard play or panel operation, but may be transmits as Song or Style data.

Mode 1: OMNI ON, POLY
Mode 2: OMNI ON, MONO
Mode 3: OMNI OFF, POLY

○ : Yes
× : No

YAMAHA

YAMAHA CORPORATION

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