

YAMAHA

PortaSound

PSS-790

Owner's Manual

Bedienungsanleitung

Mode d'emploi

Manual del usuario

FCC INFORMATION

1. **IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!**

This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.

2. **IMPORTANT:** When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product **MUST** be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.

3. **NOTE:** This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

Relocate either this product or the device that is being affected by the interference.

Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s.

In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to co-axial type cable.

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Porta Sound Typ: PSS-790
(Gerät, Typ, Bezeichnung)

in Übereinstimmung mit den Bestimmungen der VERFÜGUNG 1046/84

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Congratulations !

Thank you for purchasing YAMAHA PortaSound PSS-790. The PSS-790 is adopted with a unique synthesis "Advanced Wave Memory (AWM)" so that you can perform with a wide range of natural to hyper-natural sound qualities.

Additionally, the Vector Synthesizer function enables you to carry out time variance of a tone with controlling mixing ratio of any 4 AWM Voices you select.

Furthermore, the Auto Accompaniment function supports your performance on the keyboard with various music styles such as rock 'n' roll, jazz, latin, funk, and much more. Moreover, you can record and play back your performance with the Song Memory Function. And other useful functions are also provided. In order to fully enjoy your lifelong musical time spent with the PSS-790, please read the instructions in this Owner's Manual which should provide help and suggestions.

Features

- * **Built-in Hi-Fi stereo speakers** with Ported Bass Boost unit.
- * **100 pre-set AWM Voices and 50 rhythm patterns (50 styles)** included. (sound reproduction: 28 notes at the same time)
- * **Vector Synthesizer function** offers your original sound creation from any 4 Voices by mixing them with the Joy Stick.
- * **Harmony effect** gives harmonized notes to a phrase or passage you play. 6 Harmony Types are provided.
- * **Auto Accompaniment function** allows you to make an ensemble in any of 50 styles. A "Style" includes total arrangement for a certain musical style, which consists of rhythm patterns, chords, obbligati, formation of instruments and so on. You can easily and automatically incorporate these techniques into your playing which gives you the characteristics of the style you choose.
- * **Song Memory function** enables 8 track digital recording and memorization of up to 8 songs.
- * **8 Drum Pads** allow you to manually play up to 8 percussion sounds at any time. You can also assign to these pads any 8 instruments you like from among 50 percussion sounds provided.
- * **The PSS-790 has MIDI connectors** so that you can play it together with other MIDI-equipped devices. "MIDI" is an abbreviation for "Musical Instrument Digital Interface" and an international standard for electronic musical instruments. Furthermore the PSS-790 has the Multi-Timbre mode, which allows you to make an ensemble of Multiple Parts just only with one unit of the PSS-790.

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CAUTION!!

Pay special attention when handling the Song Memory.

The Song Memory data (= Songs you have Recorded) are so delicate that they will be easily destroyed by the electrical shock. Actually, the data will be lost partially. Remember this will definitely take place in the following situations:

The Song Memory data will be lost partially when the PSS-790 is turned Off intentionally or accidentally, that is, by using the POWER switch, or with batteries' voltage lowered or the authorized AC adaptor disconnected;

- Immediately after the PSS-790 is turned On
- During using the FAST FORWARD or REWIND buttons
- During Resetting the Song by the RESET button
- During Erasing Track(s) by the CLEAR button.
- During Selecting a Song by the operation explained in following pages
- During Recording or Playback

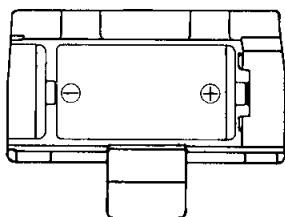
Getting Started

a. Setting up the power supply

The PSS-790 can be operated using either batteries or a standard outlet.

a) When you are using batteries

Flip the PSS-790 over and open the battery case. Insert six batteries (dry cells: 1.5V SUM-2 or R-14) all facing the same direction as shown. Replace cover.

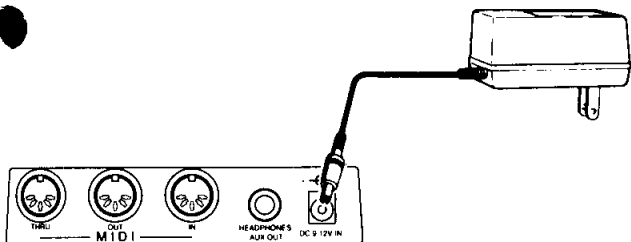


* In case batteries' voltage are low, you hear the sounds distorted. If you go on using the PortaSound, <bt chn> indication will be shown. In this case, it's the time to replace all of 6 batteries with new ones.

* Do not use the batteries of different types other than listed above.

b) When using an electrical outlet

An authorized optional AC adaptor (YAMAHA PA-3, PA-4 or PA-40) must be used. The adaptor is plugged into the DC 9-12V IN terminal located on the back of the instrument.

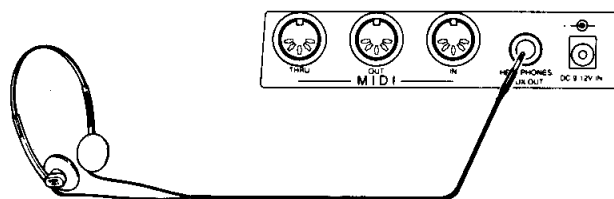


* There are different types of AC adaptors, be careful to use only the models mentioned above.

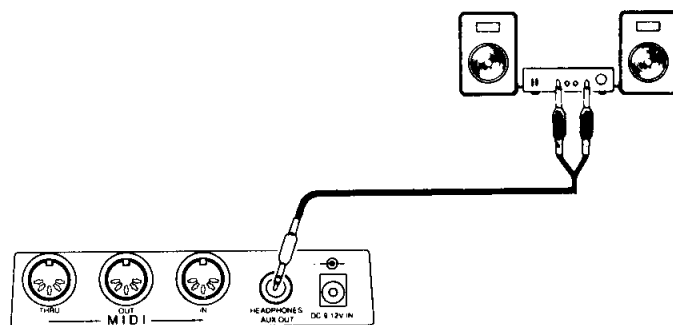
* If you leave the instrument without any power supply (batteries or adaptor) for a long period, your record in the Song Memory (explained later) will be lost, and the PSS-790 will be in the original status when shipped. But you don't mind the amount of time for changing batteries - 1 minute at most. This short period will not cause this to occur.

b. Hook-up terminals for attachments

To use headphones: Plug the jack of the headphones into the terminal marked HEADPHONES/AUX. OUT. When the jack is plugged in, the speakers will no longer play out, thereby enabling you to enjoy making music without disturbing those around you.



To connect to keyboard amplifier or stereo: (in using a keyboard or stereo amplifier you will enhance greatly the overall sound) Plug in an Audio connection cord from the PSS-790's HEADPHONES/AUX. OUT terminal to the keyboard or stereo amplifier's LINE IN, AUX IN, etc.



* Before inserting plugs in, MAKE SURE the volume controls on the amplifiers are turned all the way down to prevent damage to the speakers.

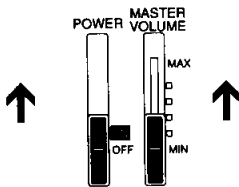
Note: In both cases of attachments (headphones and amplifiers), the Master Volume control located on the PSS-790 can be used in controlling levels of volume.

Quick Reference

Here the basic PSS-790 operations are outlined for easy reference. To get you started right away follow the instructions marked with a star (*) and you can make music instantly.

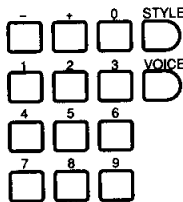
*Sound Set-Up

Step 1: Turn the power switch to the ON position.
Step 2: Slide the MASTER VOLUME control half way up. As you press the keys the tones will be Piano Sound Voice number 00.



*Selection of Voices

Step 1: Press the VOICE button.
Step 2: You may select one of 100 different Voices by pressing the buttons marked <0> thru <9> located to the left of the VOICE button. For example, if you wanted to select Voice number 35 - Strings 2, you enter the number <3>, then the number <5>.
Step 3: You may move up or down a single digit from the number entered by pressing the <+> or <-> buttons once. For example by pressing the <-> button once after entering Voice number 35, you will change to Voice number 34 - Strings 1.
 The Voice List located on the Control Panel indicates which Voice corresponds to number's 00 thru 99.



* In selecting a Voice number, you must enter a two digit figure, for example Voice number 02 would be selected by first pressing the number <0>, then the number <2>.

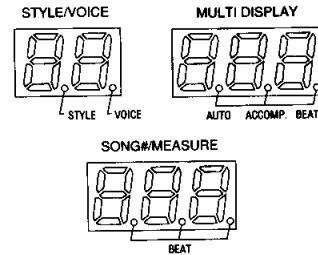
*Pitch Bend Wheel

By rotating the wheel up or down while playing on the keyboard, you will slide the pitch up or down accordingly, similar to the sound produced by a guitar when bending a string.

Note: For further details see page 9.

Displays

There are three LED displays located on the front panel of the PSS-790 using digital indication for clear viewing, so you can read the current status at a glance.



Voice Effects

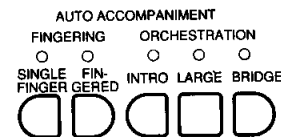
By controlling these effects well, you can achieve a variety of colors and moods in your music making. Also you can establish each of the Voice Effects levels individually.

Note: For further details see page 9.

Auto Accompaniment

This function is provided for you to easily carry out various Orchestrations all by yourself. There are two kinds of modes for fingering the chords. First is the "Single Finger" mode which provides Auto Accompaniment by easy fingerings. Secondly, you can select the "Fingered" mode which is suited for songs containing more complicated chords. By combining and balancing these Fingering modes with the Orchestration, you will be able to produce more sophisticated and pleasurable music.

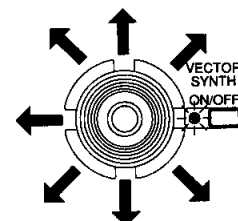
Note: For further details see page 19.



*Vector Synthesizer

This function allows you to mix any 4 Voices out of the 100 preset Voices to create your own kinds of sounds. You can balance the amounts of each voice selected as desired. Here's how it works: Push the VECTOR SYNTH ON/OFF switch, then as you press the keys, move the Joy Stick around freely. You will hear the mixed combinations of 4 Voices already programmed as a factory preset.

Note: For further details see page 12.



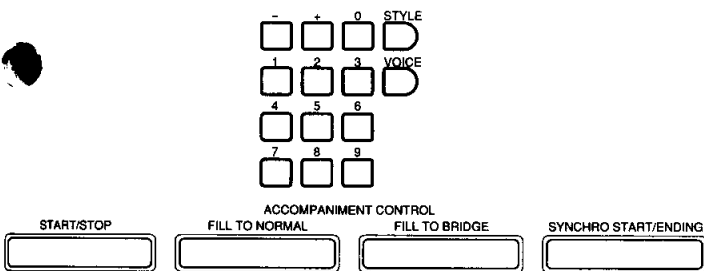
*Rhythm Accompaniment

Step 1: Push the **STYLE** button of the **STYLE/VOICE** section.

Step 2: Select one of the 50 Rhythm Styles listed on the control panel, and enter its 2 digit number using the same buttons <0> thru <9> used in selecting a Voice, also by pressing the <+> or <-> buttons to select a Style of a higher or lower number.

Step 3: To start the rhythm, push the **START/STOP** button of the **Accompaniment Control**. When you push the **FILL TO NORMAL**, or **FILL TO BRIDGE** buttons, you can have Fill-Ins that correspond to the Style you are using. To stop the rhythm, push the **START/STOP** button again.

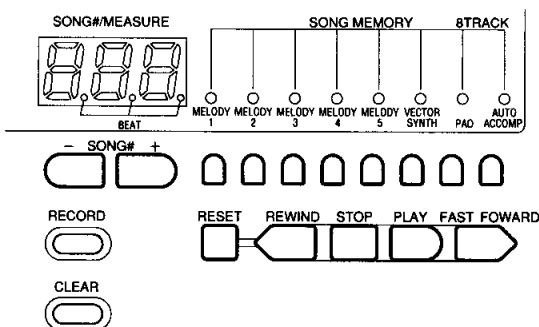
Note: for instructions on the **SYNCHRO START/ENDING** button, and controlling tempos refer to page 14.



Song Memory

By using the Song Memory function you can easily record and play back melodies, chords, and rhythm. But best of all, there are 8 separate recording tracks for each song, and up to 8 songs can be stored in memory, so that you will be able to create your own original multi-track recordings just like a studio.

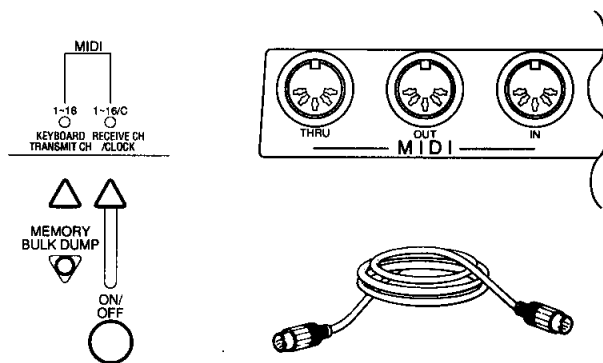
Note: For further details see page 26.



MIDI

By using a MIDI hook-up to another synthesizer (or MIDI equipment), you can operate the PSS-790 as a master keyboard to play the other synthesizer. Also you can hook-up to a sequencer or drum machine that will act as a master, and control the PSS-790.

Note: For further details see page 32.



* By pressing these buttons you can select a variety of MIDI modes.

*Drum Pads

To make a drum sound, press the drum pads manually marked <1> thru <8>. The PSS-790 comes from the factory with the following pre-assigned drum sounds already programmed:

PAD#1: Low Tom Tom

PAD#2: High Tom Tom

PAD#3: Bass Drum

PAD#4: Snare Drum

PAD#5: Closed High Hats

PAD#6: Open High Hats

PAD#7: Ride Cymbal

PAD#8: Crash Cymbal

But you are free to assign your own choices of drum sounds (of 50 kinds) to each pad.

Note: For further details see page 17.



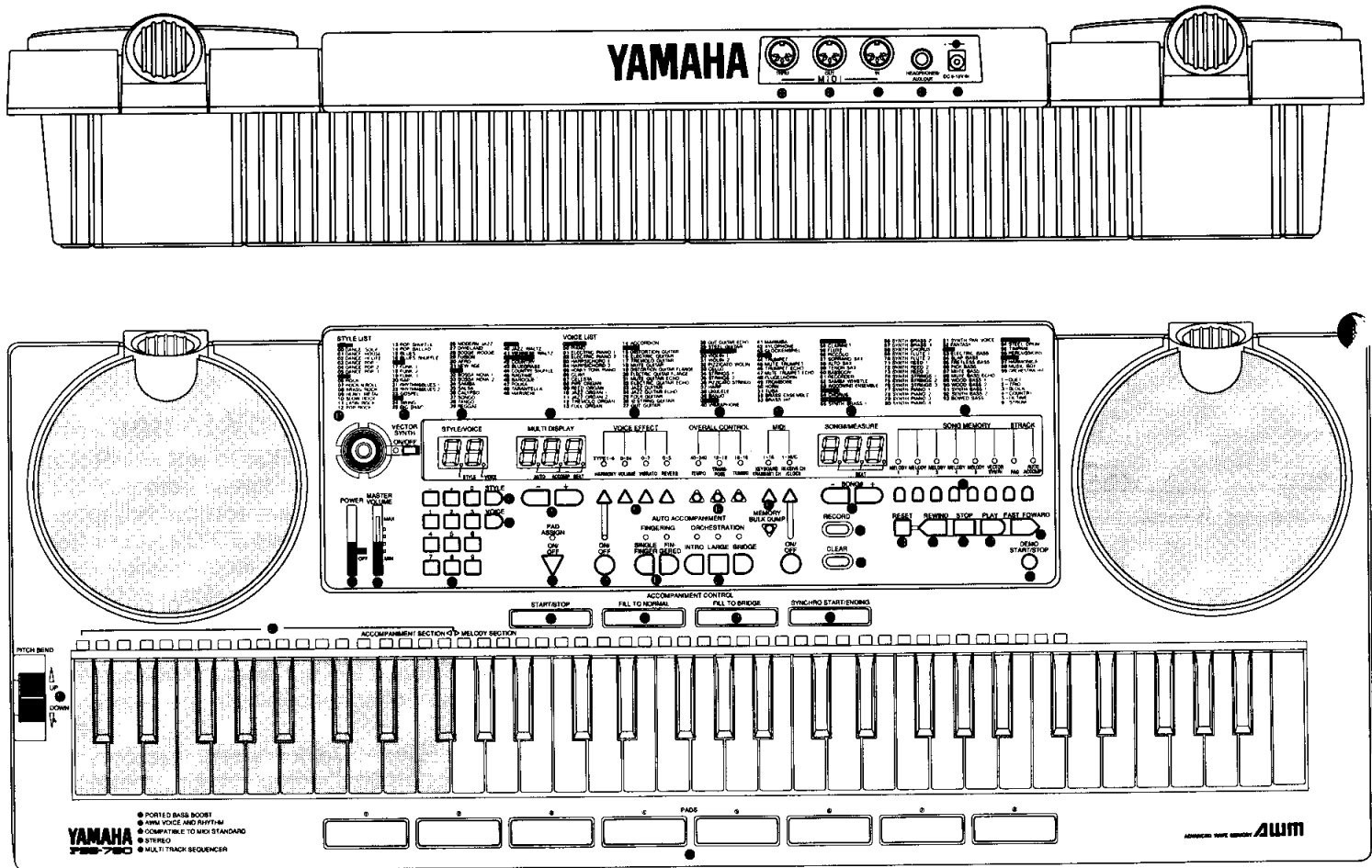
*Demonstration

The PSS-790 comes with an (A) Latin and (B) Fusion song to demonstrate its capabilities. To hear these examples press the **DEMO START/STOP** button anytime. The demonstration will keep repeating over and over until you stop it. To stop the demonstration: Push the **DEMO START/STOP** button, or push the **STOP** button of **SONG MEMORY**. The demonstration songs have been pre-assigned a tempo and style accordingly, but you can play along with the demo on the keyboard and drum pads, adjusting the Voice and Tempo as you like. The Voice selections, Voice Effects, and Vector Synthesizer function will work only on the keyboard as you play along (not the demo). If you wish to hear the second demonstration song, just press the <+> button of **SONG #** Select twice, the display will read 2, then press the **DEMO START/STOP** button.



Note: If you specify more than <3> for Demonstration Song number, and the **DEMO START/STOP** button is pressed, the demonstration will start with the first song.

Panel Description



1 Power switch

Turns PSS-790 on and off.

2 MASTER VOLUME control

Adjusts output of built-in speakers or HEADPHONES/AUX. OUT Terminal.

3 MULTI DISPLAY

Shows the Value of Voice Effects, Overall Controls and MIDI parameters.

4 Increment/Decrement buttons (+/-)

Set the Value of Voice Effects, Overall Controls and MIDI parameters.

<< For Style/Voice selection >>

5 STYLE/VOICE NUMBER display and LEDs

Shows the Style or Voice number currently selected with the corresponding LED lit up.

6 STYLE button

Before you select a Style, press this button.

7 VOICE button

Before you select a VOICE, press this button.

8 Number buttons (0 thru 9, +/-)

Specify a Style or Voice number in 2 digits as shown in each list printed on the front panel.

<< For Voice Effects control >>

9 VOICE EFFECT LEDs

Indicates which Voice Effect - Harmony/Volume/Vibrato/Reverb is available. Current Value of the effect is shown in Multi Display.

10 VOICE EFFECT Select buttons

When setting a Voice Effect, first press the corresponding button and ensure the Voice Effect LED is lit up. Then set it with Increment/Decrement buttons.

11 HARMONY Effect ON/OFF button

Allows for switching this effect ON/OFF in realtime.

12 Pitch Bend Wheel

Changes the pitch of Voices higher or lower smoothly.

13 VECTOR SYNTHesizer function ON/OFF button

Activates or disactivates the function.

14 Joy Stick

Used for setting the voice mix with Vector Synthesizer.

<< For Overall control >>

① Overall Control LEDs

Displays the current status of Overall control settings.

② Overall Control Select buttons

Sets the Value for Tempo/Transpose/Tuning when each corresponding button is pressed.

<< For MIDI control >>

③ MIDI LEDs

Indicates whether you are in KEYBOARD TRANSMIT CHannel or RECEIVE CHannel/CLOCK, while the Multi Display indicates what Value is set.

④ MIDI Select buttons

To select KEYBOARD TRANSMIT CH/RECEIVE CH/CLOCK or MIDI Mode, etc., press the corresponding button.

<< For Auto Accompaniment >>

⑤ FINGERING buttons

To select Single Fingered/Fingered mode of Auto Accompaniment.

⑥ ORCHESTRATION buttons

To select the instrumentation or variations of Auto Accompaniment.

⑦ Keys for Auto Accompaniment

These are the keys you push when using the Auto Accompaniment function.

<< For Accompaniment Control >>

⑧ START/STOP button

Activates or deactivates the Auto Accompaniment or Rhythm.

⑨ FILL TO NORMAL button

This provides a fill-in which then continues to play the normal accompaniment pattern.

⑩ FILL TO BRIDGE button

This provides a fill-in which then continues to play the accompaniment pattern used in the Bridge section of a song.

⑪ SYNCHRO START/ENDING button

Allows you to start the Auto Accompaniment and Rhythm simultaneously by pressing one of the Auto Accompaniment keys. Also provides an ending pattern for when you want to finish a song.

⑫ DRUM PADS

As you hit these pads, a percussion sound will be heard.

⑬ PAD ASSIGN button

To select which percussion sound will be assigned to each pad. After pressing this button, push one of the keys which has an illustration directly above it, to hear the various percussion sounds available.

<< For Song Memory >>

⑭ SONG#/MEASURE display

Shows which song and what measure of the song you are at.

⑮ 8 TRACK LEDs

Lights up LED of track currently selected for recording or playback.

⑯ SONG # Select buttons

To select which Song you want to record or playback (or which demonstration song you wish to hear).

⑰ 8 TRACK Select buttons

To select which track you want to record or playback.

⑱ RECORD button

To set-up recording by pressing simultaneously with one of the 8 TRACK buttons you wish to record on. You will be on pause, ready to record. (Press RECORD button, and as you hold it down also press your other selected button.)

⑲ CLEAR button

To erase a whole Song or one of the individual 8 Tracks currently selected, by pressing the 8 TRACK Select button. (Press CLEAR button, and as you hold it down also press your other selected button.)

⑳ RESET button

To return position to the first beat of the first bar.

㉑ REWIND button

By pressing button once, the position is moved back to first beat of the previous bar. When you press and hold the button down, you rewind accordingly.

㉒ STOP button

To stop recording or playback.

㉓ PLAY button

To start recording or playback.

㉔ FAST FORWARD button

By pressing button once, the position is moved forward to the first beat of the next measure. When you press and hold the button, the position is moved forward accordingly.

㉕ DEMO (Demonstration) START/ STOP button

To start or stop the demonstration song.

<< Accessory Terminals >>

① DC 9-12V IN Terminal (for AC adaptor)

Terminal for connecting an optional adaptor (: YAMAHA PA-3, PA-4, PA-40) for electrical power supply from AC outlet.

② HEADPHONES/AUX. OUT Terminal

Terminal for connecting headphones, keyboard amplifier, stereo amplifier, etc.

③ MIDI IN Terminal

Terminal for PSS-790 to receive MIDI information.

④ MIDI OUT Terminal

Terminal for PSS-790 to generate MIDI information.

⑤ MIDI THRU Terminal

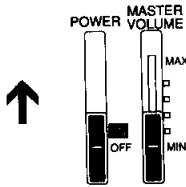
This Terminal allows you to send out the MIDI information received thru the MIDI IN Terminal.

Voice Section

a. Selecting a Voice

There are 100 different pre-set voices to choose from, providing a wide variety of sounds to accommodate many types of song styles.

Step 1: Turn the POWER ON.

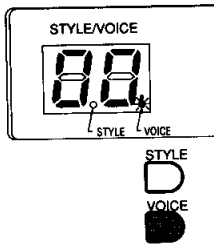


Turn the POWER switch to ON, and slide the MASTER VOLUME control up.

Step 2: Press the VOICE button.

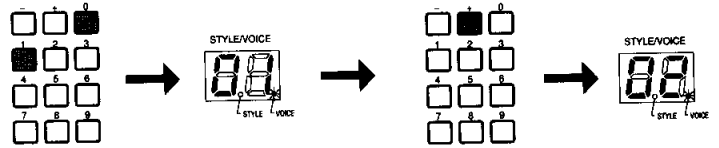
Press the VOICE button of STYLE/VOICE select.

The Voice LED in the STYLE/VOICE NUMBER display will light up. The number displayed indicates the Voice number.



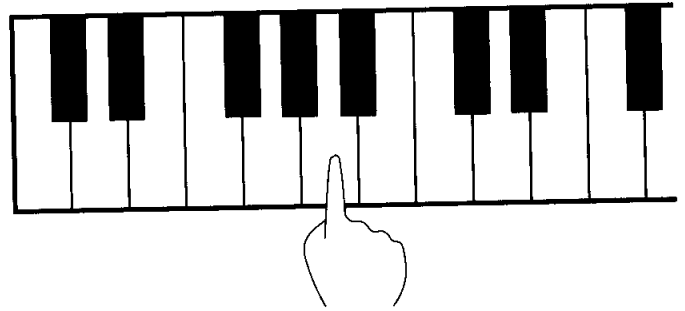
Step 3: Select a Voice.

Consult the Voice List on the Control Panel and enter the 2 digit number using the buttons <0> thru <9> of the STYLE/VOICE select. For example, if you want ELECTRIC PIANO 1, which is Voice number 01, you first press <0>, then <1>. You can increase or decrease the number selected by using the increment <+>/decrement <-> buttons, so if you wanted to change the Voice to ELECTRIC PIANO 2, which is Voice number 02, you can just press the <+> button once.



Note: By pressing and holding the <+> / <-> Buttons you will increase or decrease the number at an accelerated rate.

Step 4: Now when you press the keys of the keyboard, you will hear the Voice selected in Step 3 above. If you wish to change your Voice selection, just repeat Steps 2 & 3. (Unless you have been pressed the STYLE button, skip Step 2.)



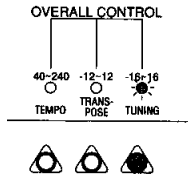
* The PSS-790 allows you to play up to 28 notes simultaneously. (But this number does vary depending on the mode of Auto Accompaniment, Orchestration, Voice, or playback status of Song Memory.)

b. Tuning

When you play along with another instrument, CD, tape or record, etc., it often happens that the tunings are slightly different. With the PSS-790 you don't have to worry about this. There is a Tuning function built in to this model that can adjust the pitch, allowing you to play in tune with other musical instruments, or musical sources.

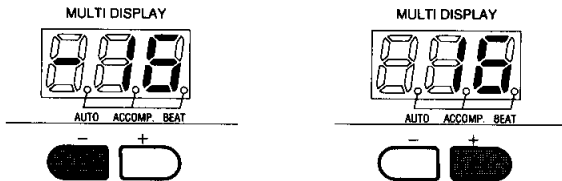
Step 1: Press the TUNING button.

Press the TUNING button located in the OVERALL CONTROL select. The LED will light up, and the MULTI DISPLAY shows the current Tuning Value. The initial Value displayed has been assigned as <0> which is A3=440Hz.



Step 2: Adjustment of Tuning:

Press the <+>/<-> buttons located under the MULTI DISPLAY to raise or lower the pitch. From the <0> setting, you can raise/lower the pitch to a maximum of <16>. Level <16> would almost be a Quarter step different from <0>, and each level is about 3.13 cents different from another level.

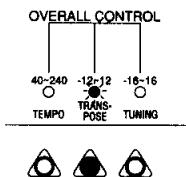


c. Transposing

This is a very useful function that allows you to change the key of the music you're playing, without changing the fingering at all. The notes you play can be heard as any pitch you select. This is especially useful for playing with other instruments, and Vocal accompaniment. You can easily change keys to match other musical sources, but still play the notes of your accustomed key. Also, you can extend the range of the lowest or highest notes on your keyboard.

Step 1: Press the TRANSPOSE button.

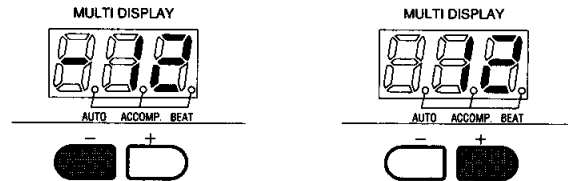
When you press the TRANSPOSE button located in the OVERALL CONTROL select, the LED lights up, and the MULTI DISPLAY shows the current parameter value transposed. The initial value is pre-assigned as <0>.



Step 2: Adjusting the Transposition:

Press the <+>/<-> buttons located under the MULTI DISPLAY, to raise or lower the key. From the <0> setting

you can raise/lower the key to a maximum of <12>. Level <12> would be 1 octave higher/lower than <0>. For example if you change the parameter value to <3>, and play a song on the keyboard in the key of "C", the notes you actually hear, will be transposed to the key of "E_b" (E flat). Each level is one half step different from another level, thus the key of "E_b" is 3 half steps away from the key of "C".



- * Both the Tuning and Transpose functions work simultaneously in all possible Voices. (except Rhythm sounds, for which the Tuning is available.)
- * Both the Tuning and Transpose functions will return instantly to <0> by pressing the <+> and <-> buttons BOTH at the same time.
- * By pressing and holding down the <+> or <-> buttons, you will increase or decrease the Value at an accelerated rate.
- * After setting up the Tuning or Transposition functions, the levels will be memorized until you shut off the POWER.
- * Both the Tuning and Transposing will also affect the notes sounded by the MIDI Note On message from the external Master device. However, they will not affect the MIDI Note On message itself. So the PortaSound will transmit the same message as it received.
- * The Transposition will not work while you are playing on the Keyboard. This means you cannot control the Transposition while any key is pressed down.

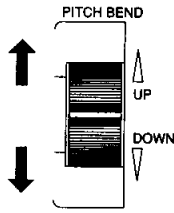
d. Voice Effects

The PSS-790 has a variety of Voice Effects to choose from, such as PITCH BEND WHEEL/REVERB/VIBRATO etc., that with a little practice and wise selection, can be effective in making your phrases and style more sophisticated.

a) Pitch Bending

By rotating the wheel up or down while playing on the keyboard, you will slide the pitch up or down accordingly, similar to the sound produced by a guitar when bending a string.

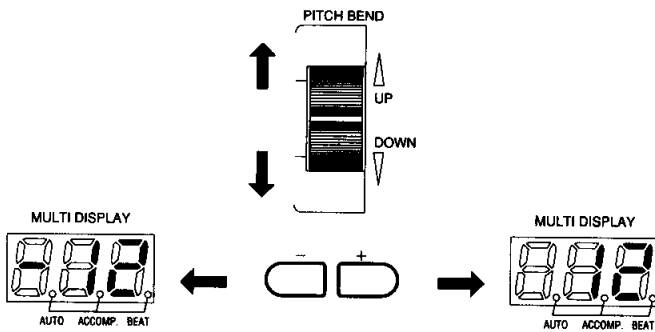
When you rotate the wheel in the upward direction, the pitch slides up, when you rotate the wheel in the downward direction, the pitch slides down.



>> Adjusting the Range of Pitch Bending:

You can adjust the range of how far the pitch can be bended from <+12> (1 octave) thru <-12> (-1 octave). To adjust the pitch, rotate the PITCH BEND Wheel all the way up or down, press the <+>/<-> button, watch the MULTI DISPLAY and select the desired value. For example if you select the value <1>, the pitch will slide up one half step (100 cents) when you rotate the wheel all the way up. If you select the value <12>, the pitch will slide up one octave (1200 cents) when you rotate the wheel all the way up. The same applies conversely by selecting <-> values, and rotating the wheel all the way down.

- * Initial value setting has been pre-assigned as the value <2>.
- * The value which you assign is common to each Voice. So it does not change even when you select a different Voice. The value will also be memorized while the PSS-790 is turned off if the power is being supplied (batteries are set in).
- * When you rotate the wheel, a kind of MIDI data - Pitch Bend Change message will be output from the MIDI OUT Terminal of the PortaSound. The PortaSound will actually output the Pitch Bend Change message to control the Receiver's Pitch Bending within the range of +/-1 octave. So if you control the pitch of another MIDI instrument connected to the PSS-790 as a Slave, you have to adjust the Pitch Bend Range on the instrument to +/-1 octave.



This table shows you the relationship between the possible value settings, and their corresponding pitch.

Assigned value	Degree of pitch change when wheel is fully rotated	
	UPWARD	DOWNWARD
+12	up 1 octave	down 1 octave
+11	up 11 half steps	down 11 half steps
+10	up 10 half steps	down 10 half steps
⋮	⋮	⋮
+1	up 1 half step	down 1 half step
-1	down 1 half step	up 1 half step
-2	down 2 half steps	up 2 half steps
-3	down 3 half steps	up 3 half steps
⋮	⋮	⋮
-12	down 1 octave	up 1 octave

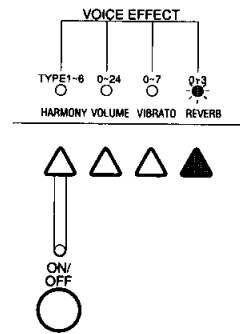
b) Reverb

This effect adds Reverberation to your sounds. It gives width and depth to your music that almost gives the impression of being in a concert hall. The PSS-790 Reverb Effect has a range of values that can be assigned from <0> to <3>. The Reverb Effect can be added to each Voice.

Step 1: Press the REVERB button.

When you press the REVERB button located in the VOICE EFFECT Select, the LED lights up, and the MULTI DISPLAY shows the current Reverb Effect value.

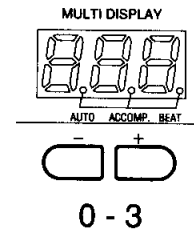
- * The initial value varies according to the Voice selection. If the MULTI DISPLAY shows <-->, this means the Reverb effect has been pre-fixed.



Step 2: Adjusting the value of Reverb Effect:

You can adjust the value of the Reverb Effect by using the <+>/<-> buttons located under the MULTI DISPLAY. <0> means the Reverb Effect is Off, <1> is weak, and thru <3> is strong.

- * When you select a different Voice, the Reverb Effect you assigned will return to the initial value.
- * Reverberation given by the Reverb Effect is heard to vary, even when you set the same value to several Voices. It depends on the Voice you select.



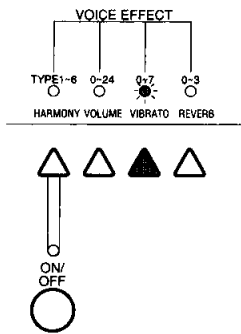
c) Vibrato

This Effect adds an alternating wave form that gives a warmth and richness to your music. The PSS-790 provides Vibrato Effect ranging from <0> to <7>, which can be added to each Voice selection.

Step 1: Press the VIBRATO button.

When you press the VIBRATO button located in the VOICE EFFECT Select, the LED lights up, and the MULTI DISPLAY shows the current VIBRATO Effect value.

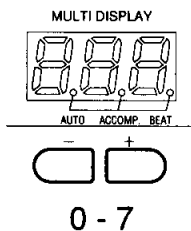
- * The initial value varies according to the Voice selection. If the MULTI DISPLAY shows <-->, this means the Vibrato effect has been pre-fixed.



Step 2: Adjusting the value of Vibrato Effect

You can adjust the value of the Vibrato Effect by using the <+>/<-> Buttons located under the MULTI DISPLAY. <0> means the Vibrato Effect is Off, <1> is weak, and thru <7> is strong.

* When you select a different Voice, Vibrato Effect you assigned will return to the initial Value.

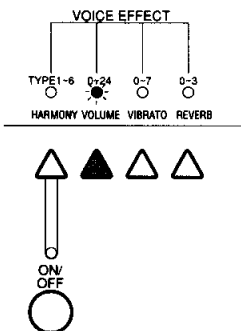


d) Volume

This function allows you to adjust the levels of Volume between your playing and Rhythm sounds, or between your playing and the background sounds of Auto Accompaniment. The Volume levels <0> to <24> apply to all Voice selections.

Step 1: Push the VOLUME button.

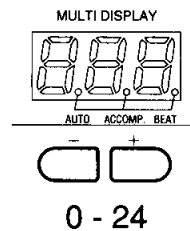
When you press the VOLUME button located in the VOICE EFFECT select, the LED lights up, and the MULTI DISPLAY shows the current VOLUME value. The initial value is pre-assigned as <21>.



Step 2: Adjusting the value of VOLUME:

You can adjust the Value of the VOLUME by using the <+>/<-> Buttons located under the MULTI DISPLAY. <0> VOLUME is Minimum and <24> is Maximum.

* When you select a different Voice, Volume Effect you assigned will return to the initial Value.

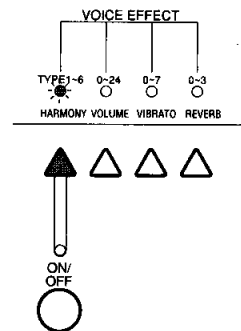


e) Harmony

This function allows you to produce chordal type sounds. When you use the Harmony Effect, you can achieve an image of more than one person playing while just utilizing one finger. The PSS-790 provides 6 different types of Harmony Effects. These Harmony sounds will automatically be selected according to the chord. That's why this Harmony Effect is so useful when you are in the Auto Accompaniment function.

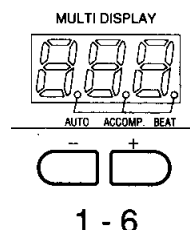
Step 1: Push the HARMONY button.

When you press the HARMONY button located in the VOICE EFFECT select, the LED lights up, and the MULTI DISPLAY shows the current HARMONY Type value. The initial value is pre-assigned as <1> Duet.



Step 2: Selecting the Type of Harmony:

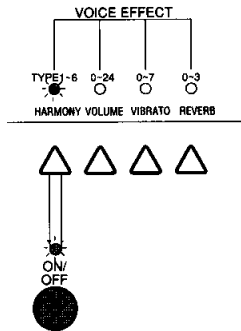
Consult the HARMONY TYPE List on the Control Panel and enter the number of your selection using the <+> / <-> Buttons located under the MULTI DISPLAY. The 6 different types of Harmony Effects are shown below:



Harmony Types	
1. Duet	Adds Harmony that sounds like two people are playing.
2. Trio	Adds Harmony that sounds like three people are playing.
3. Block	Adds Harmony that sounds like Jazz type chording.
4. Country	Adds Harmony that sounds like Country Music style.
5. Octave	Plays additional notes in Octaves.
6. Strum	Adds Harmony as given by playing the each chord tone in order.

* The Harmony Type you assign will be memorized until you shut off the POWER. Next time when you turn the PSS-790, <1> Duet will be selected automatically.

Step 3: Push the HARMONY ON/OFF button.
When you press the HARMONY ON/OFF button, the LED lights up, and you will be set-up to play in the currently selected Harmony Type.



- * When the Harmony ON/OFF button is turned ON, you can play only one note at a time (If you press more than one note at a time, the highest note, only is given priority and played).
- * When the VECTOR SYNTH or PAD ASSIGN is turned ON, you cannot use the HARMONY function.
- * The Harmony function works very effectively when you are using Auto Accompaniment. For you can have the Harmonized tones in accord with the Chord Progression.

<< Reference #1 >>

>> When you combine certain Voice Effects the result produced can be very effective. For example, by adding Vibrato and Reverb both to a member of the string family, (VIOLIN 1, CELLO, etc.), you can express reality and expanse simultaneously.

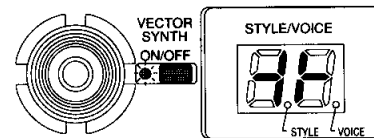
>> Also, it is possible to apply a Vibrato and/or Reverb combination with the Harmony Effects. Then on top of that, when you add the Pitch Bend Effect, it can sound really super.

e. Vector Synthesizer (for Realtime Voice Mixing)

The Vector Synthesizer function offers you a realtime sound creation out of any 4 Voices among the 100 factory pre-sets. This is easily carried out balancing the amounts of each Voice by the Joy Stick as you desire.

Step 1: Press the VECTOR SYNTH ON/OFF button.
When the VECTOR SYNTH ON/OFF button is turned ON, the LED lights up, and you will be set-up to use the Vector Synthesizer function. When you move the Joy Stick perpendicularly, STYLE/VOICE display shows the 4 following Voices currently mixed. If you press the key, you will be able to hear the mixed sound of 4 Voices.

* The initial pre-assigned 4 Voices are Voice No.00, No.99, No.34, and No.64.

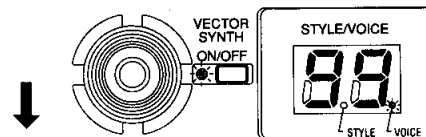


Step 2: Moving the Joy Stick:

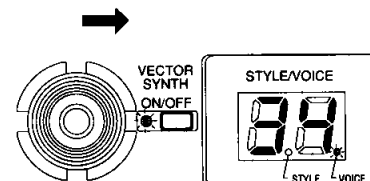
Move the Joy Stick around freely as you play, the Joy Stick moves in every direction. (upward, downward, and sideways Left and Right) Listen to how the balance of the 4 voices will change as you move the Joy Stick.

<Example> Change the volume of the pre-assigned (initial) 4 Voices, by the position of the Joy Stick.

>> When you move the Joy Stick Downward, Indication of the STYLE/VOICE display changes to <99>, and you can hear Voice No.99 (which is ORCHESTRA HIT), with emphasis.

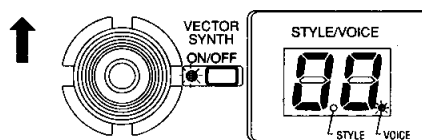


>> When you move the Joy Stick to the Right, Indication of the STYLE/VOICE display changes to <34>, and you can hear Voice No.34 (which is STRINGS 1), with emphasis.

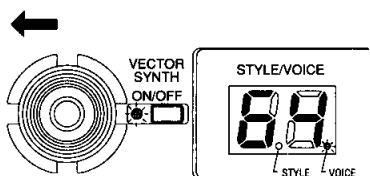


>> When you move the Joy Stick Upward, Indication of the STYLE/VOICE display changes to <00>, and you can hear Voice No.00 (which is PIANO), with emphasis.

* Also when the Vector Synth function is activated and you use the Pitch Bend Effect, it will apply to all 4 Voices at the same time and the same distance.



>> When you move the Joy Stick to the Left, indication of the STYLE/VOICE display changes to <64>, and you can hear Voice No.64 (which is CHORUS), with emphasis.



Step 3: Assigning 4 Voices:

Select and assign any 4 Voices which you like out of the 100 pre-set Voices in the Voice List located on the Control Panel.

When you move the Joy Stick all the way Upward, Downward, Right, or Left, STYLE/VOICE display shows one of 4 Voice numbers currently assigned.

Now you assign other 4 Voice numbers which you want:

Step 1: First move the Joy Stick in any direction (Upward, Downward, Right, or Left).

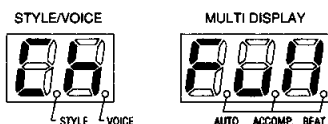
Step 2: Select a Voice using <+>/<->, and <1> thru <9> Voice Select buttons as in usual Voice selection.

Also, you can assign a value for a Voice Effect such as Vibrato/Reverb. But you cannot use the Harmony function.

By repeating Steps above to other 3 directions, assign all 4 voices.

* Even when you turn OFF the Vector Synth function, the 4 Voices assigned, and each Voice Effect's value, will be memorized.

* While the Vector Synth function is in use, the number of notes possible to play simultaneously will be reduced substantially. So when you use Vector Synth function together with Auto Accompaniment or Song Memory, there is a shortage of notes that can be sounded at the same time. So when this occurs, we suggest to play using the most economical choice of notes possible. (Like single finger playing instead of chords and Harmony, less tensions, etc.) In this case, the following indication will be shown until the total amount of notes is reduced under 28:



<< Reference #2 >>

How to make sounds using the Vector Synth function as explained in the previous section, you select any 4 Voices from the 100 pre-set Voices to mix easily. You find there are full of possibilities! It's all up to your artistic discretion.

Here are some hints for using the Vector Synth function:

>> Sometimes it's easy to become bewildered in attempting to make the kind of sound you wish to hear, (which Voices to choose, and how to mix them?) but please remember, you can simplify the 100 Voice selections, by dividing them into 2 categories. In the first category are: Voices which when the key is pressed and held, the sound will gradually diminish after being struck, like a piano or guitar; in the second category: Voices which are sustained for the duration the key is being pressed such as an organ or brass. So in creating your sounds, this is important to consider which category you want.

>> Of course the main merit of the Vector Synth function is to mix easily any 4 Voices, so it's a great way to experiment quickly and simply, and gives you a chance to bump into many exciting Voice combinations.

>> The Brass Family and String Family generally have Voices that begin with a smooth attack, while the Piano Family has Voices which begin with a sharper more percussive attack. Therefore, by adding a touch of Piano Family sound to a combination of Strings and/or Brass, you might come up with a beautiful sound worthy of a solo.

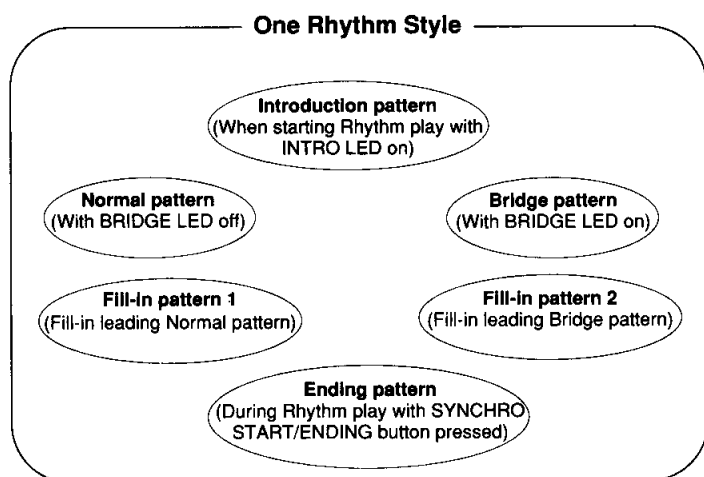
>> If you make effective use of Voice Effects, you can expand your range in sound production even further. For example, if you mix a Percussion Family Voice with a deep sustained Vibrato, you can have a strong attack followed by a sustained Vibrato which can create a remarkable and unusual type of sound.

>> Also, while you're playing you can freely move the Joy Stick to change the Volume balances between Voices, for example, you can start out playing using a Piano Family Voice, and then later smoothly mix in a String Family Voice etc. Depending on how to assign different combinations of Voices, and how to operate the Joy Stick, you will be able to represent high quality playing.

Rhythm Style Section

The PSS-790 has 50 kinds of realistic pre-set Rhythm Styles which have been professionally recorded. Each Rhythm Style has a variety of patterns such as Normal, Bridge, Intro., Ending, and two kinds of Fill-in patterns. So you have a storehouse of Styles and patterns to work with in varying your playing. Plus, the PSS-790 provides 50 kinds of percussion sounds, which you can play using the pads or keys, along with the Rhythm Style, in a flexible way that fits to the mood you wish to create. If you utilize the Song Memory function (explained in the Song Memory Section) it's possible to memorize the original Rhythm. We hope you enjoy the many options available for a variety of Rhythm Styles.

The following diagram shows the various patterns which one Rhythm Style contains, you can use it for reference as you learn more about each Style selection.



Every pattern is provided for you to construct a song as you wish. That is, each pattern is taken as a section of a song, so that you have various combination possibilities. Following are typical examples for song construction:

Ex.1
BRIDGE off Introduction → Normal → Fill-in 2 → Bridge → Ending
 INTRO FILL TO BRIDGE SYNCHRO START/ENDING

Ex.2
BRIDGE on Introduction → Bridge → Fill-in 1 → Normal → Ending
 INTRO FILL TO NORMAL SYNCHRO START/ENDING

Ex.3
BRIDGE off Normal → Bridge → Fill-in 1 → Normal → Bridge
 FILL TO NORMAL FILL TO BRIDGE

Ex.4
BRIDGE on Bridge → Fill-in 1 → Normal → Fill-in 2 → Bridge → Ending
 FILL TO NORMAL FILL TO BRIDGE SYNCHRO START/ENDING

You can easily order the patterns to press each corresponding button. Now, you learn about the operations about the Rhythm Style.

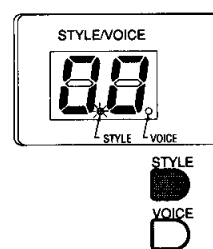
a. Basic Operations

a) Selecting a Rhythm Style

Step 1: Press the Style button.

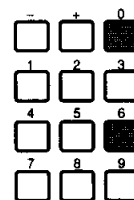
Press the STYLE button of STYLE/VOICE select.

The Style LED in the STYLE/VOICE NUMBER Display will light up. The Number displayed indicates the Style number.



Step 2: Select a Rhythm Style.

Consult the Style List on the Control Panel and enter the 2 digit number using the buttons <0> thru <9> of the STYLE/VOICE select. For example, if you want ROCK, which is Style NO.06, you first press <0>, then <6>. You can increase or decrease the Number selected by using the increment <+>/decrement <-> buttons.



* By pressing and holding the <+>/<-> buttons you will increase or decrease the number at an accelerated rate.

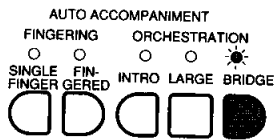
Step 3: Assigning NORMAL/BRIDGE:

Decide which you want, NORMAL pattern or BRIDGE pattern, of the selected Rhythm Style.

* Normal pattern offers a basic pattern of the Style (including its Auto Accompaniment). And Bridge pattern offers additional sounds or little complicated pattern. Actually, you can take Normal pattern is pre-made intended to fit the introduction of a Song. Oppositely, a Bridge pattern is pre-made to fit the most interesting part of a song, in other words a climax.

How you assign NORMAL/BRIDGE is: Press the BRIDGE button located in the Orchestration. The BRIDGE LED lights up and indicates the BRIDGE pattern has been assigned. Oppositely, when this LED is not lit, assigned is the NORMAL pattern.

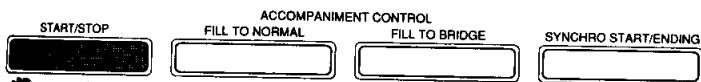
* Initial value pre-assigned is NORMAL pattern.



b) Start & Stop

Step 1: Starting the Rhythm:

Start the Rhythm by pressing the START/STOP button located in the ACCOMPANIMENT CONTROL. If you press the button the Rhythm pattern which you selected (in "Selecting a Rhythm Style" procedure) will sound.

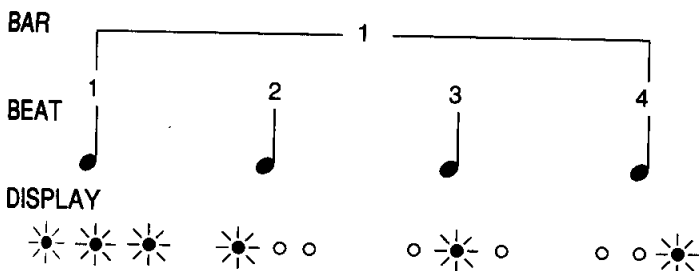


While playing the Rhythm pattern, if you select another Rhythm Style, the Rhythm will change automatically from the beginning of the next bar. Also, after you change the Voice, (by pressing the Voice button etc.), you need to do "Selecting a Rhythm Style" procedure again. You can also change NORMAL pattern to BRIDGE pattern, or vice versa. The timing of the changing is the same as Rhythm Style changing already explained. You can change NORMAL/BRIDGE pattern any time.

Step 2: Stopping the Rhythm:

Stop the Rhythm by Pressing the START/STOP button, a second time.

While the Rhythm Pattern is playing, 3 dots will flash on and off in time, in the MULTI DISPLAY.



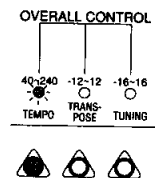
- * This diagram represents 4/4 Meter, if you are in another meter it displays differently.
- * How to construct the Rhythm pattern, depends on the Rhythm Style, sometimes the patterns are in 2 bar units, or in 4 bar units, or 8 bar units, etc..

c) Tempo Control

Tempos of the Rhythm have been pre-assigned different values according to the Rhythm Style, but you can adjust the Tempo easily even after starting the Rhythm or stopping using the following procedure. Here's how to change the Tempos to your liking:

Step 1: Press the TEMPO button.

When you press the TEMPO button located in the OVERALL CONTROL Select, the LED lights up, and the MULTI DISPLAY indicates the current Tempo value.



Step 2: Adjusting the Tempo:

You adjust the Tempo by pressing the <+>/<-> buttons located under the MULTI DISPLAY. The range of Tempo rates which you can adjust is from one quarter note = 40 to 240. Also, when the <+>/<-> buttons are both pressed simultaneously, the value of the Tempo automatically returns to the pre-assigned value of the current Rhythm Style selected.

- * The Tempo you changed has been memorized until you Stop, and then change the Rhythm.
- * When you Stop and change the Rhythm, Tempo will automatically become the pre-assigned value for the Rhythm Style selected.
- * While Rhythm is playing and you change to another Rhythm, only the Rhythm Style will change not the Tempo.

b. Advanced Operations

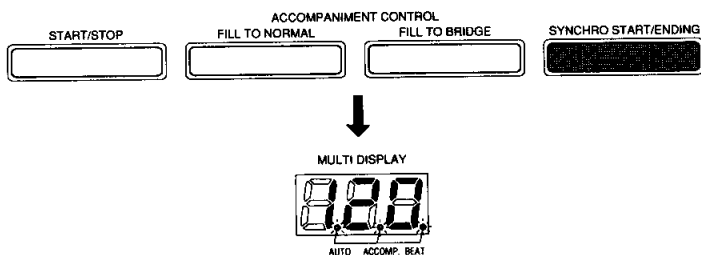
a) Synchro Start

When you start the Rhythm, if you use the SYNCHRO START/ENDING button, you can start the Rhythm exactly simultaneously when you start playing the song.

Step 1: Select the Rhythm Style.

Step 2: Press the SYNCHRO START/ENDING button.

When you press the SYNCHRO START/ENDING button, located in the ACCOMPANIMENT CONTROL, 3 dots in the MULTI DISPLAY flash all together in time. This is SYNCHRO START Stand By status.



- * If you want to cancel the SYNCHRO START Stand By status, press the SYNCHRO START/ENDING button again.

Step 3: Start the Rhythm.

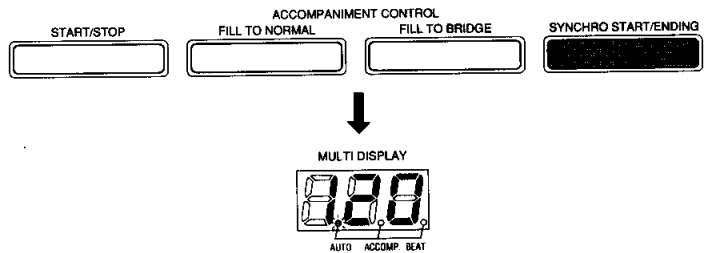
The Rhythm will Start simultaneously when you press any key on the keyboard as long as the Auto Accompaniment is OFF (with the SINGLE FINGER or FINGERED LED off). Also, when the Auto Accompaniment is ON (with the SINGLE FINGER or FINGERED LED on), you can start the Rhythm simultaneously by pressing the keys of the Accompaniment section of the keyboard (from F#2 and below).

- * To select the Fingering (by pressing SINGLE FINGER or FINGERED button), it means to activate the Auto Accompaniment. (See "Auto Accompaniment Section".)

b) Ending

When you press the SYNCHRO START/ENDING button, while the Rhythm is playing, the pre-set ENDING phrase which suits the current Rhythm Style, will start from the beginning of the next bar. And then the Rhythm will stop automatically.

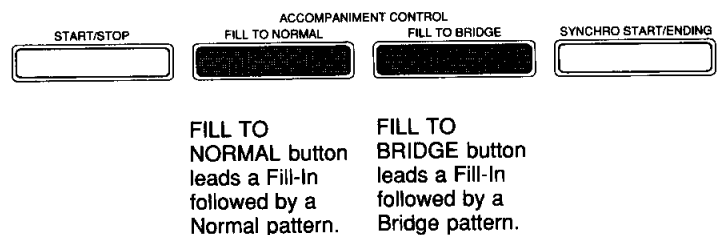
While the ENDING phrase is being played, the Left dot in the MULTI DISPLAY will flash.



- * The length of the ENDING phrase, varies depending on the Rhythm Style.
- * If you change the Style number while the ENDING is being played, the ENDING pattern does NOT change.

c) Fill-Ins

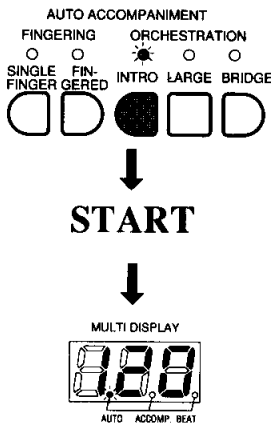
You can insert Fill-Ins while playing the Rhythm pattern. When you press the FILL TO NORMAL button, Fill-In pattern which fits to the current rhythm style will be played until the end of the bar, and then continues to play the NORMAL pattern from the beginning of the next bar. When you press FILL TO BRIDGE button, a different Fill-In pattern will be played until the end of the bar, and then continues to play the BRIDGE pattern from the beginning of the next bar. Each Rhythm Style has 2 Fill-in patterns, and depending on which button you press, the continued rhythm will be defined as either NORMAL pattern or BRIDGE pattern.



- * When you press the either of the Fill-in buttons and hold it down, the Fill-In pattern will be repeated for the duration it is held down.
- * Both buttons will function while playing Intro. or Ending.

d) Intro

When you set-up the Intro. function, you can automatically start off the Rhythm with an Intro. which matches the currently selected Rhythm Style. You can easily set-up the Intro. anytime by pressing the INTRO ON/OFF button located in the ORCHESTRATION Select. When the INTRO ON/OFF button has been pressed, the LED lights up and the Intro. function is ready. But if the LED is not lit up, the Intro. function doesn't work. After the Intro. is set-up, the Rhythm will start off with an Intro. when you press the START/STOP button. While the Intro. is being played, the Left dot in the MULTI DISPLAY will flash. Also, you can use this function with SYNCHRO START.



* The length of the Intro. differs depending on each Rhythm Style.

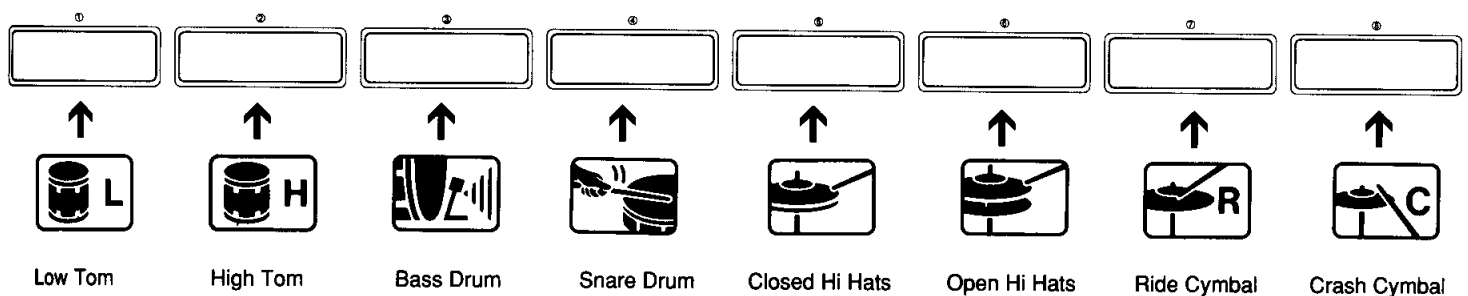
* When you press the INTRO button while the Rhythm is being played, the Intro. will not be played, (unlike when changing Rhythm Style or NORMAL/BRIDGE patterns), but the Intro. function will be set-up and ready.

e) Pad Assigning

As you hit any of the 8 Drum Pads, a percussion sound will be heard, regardless of the Rhythm's START/STOP status. You can easily assign to these pads any 8 instruments you like, from among the 50 percussion sounds provided. Now, why don't you try hitting the Pads and listen to the percussion sounds which are initially assigned to each Pad as shown below:

* These assignments will be memorized even after the POWER is turned OFF, if you have batteries in.

* You can press the PAD ASSIGN button at any time, regardless of the Rhythm START/STOP status; except when the Vector Synth function is ON.



* When the Fingering is selected with the corresponding LED lit, if you press the PAD ASSIGN button, the Fingering will be cancelled and the LED will be turned off.

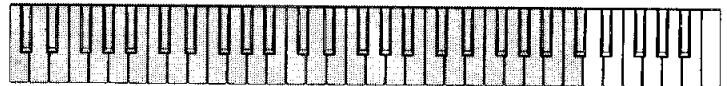
Step 1: Assigning Percussion sound to each PAD:

When you press PAD ASSIGN button, the LED will light up, and you can play on the keyboard, the 50 percussion sounds illustrated above each key. It is possible for you, of course, to enjoy playing these percussion sounds in this status before assigning them.

Actual procedure for assigning: First select a sound you like, by pressing and holding down the key corresponding to the sound. Then press a PAD to which you want to assign it. Repeat this procedure for the remaining PADS. When you assign the sounds to the PADS, the Pitch Bend Effect can be added, but in this case, you can NOT have them in the PADS with their pitch-bent sounds.



Press and hold down the key corresponding to the Percussion Sound you select.



Press the PAD you want to assign to.



<< Reference #3 >>

It seems difficult to control the Rhythm functions of the PSS-790, where even one style has many kind of Patterns, so we have provided a few hints.

>> You can start the Rhythm with an Intro. right away by: (a) selecting a Rhythm Style, (b) pressing the INTRO ON/OFF button, and (c) pressing the SYNCHRO START/STOP button. Now you are in SYNCHRO START Stand By status, and as soon as you start to play, with the touch of your first key pressed, the Rhythm with an Intro. will begin.

>> If you press the BRIDGE button, or FILL TO BRIDGE button, you can change the atmosphere of the song by switching to the BRIDGE patterns. This allows you to control the different sections and moods of a song when you go into a BRIDGE (using BRIDGE or FILL TO BRIDGE button) or by using the reverse actions (Fill to Normal, etc.) when returning to the Normal section of a song.

>> If you assign Percussion Sounds beforehand to each PAD in convenient locations, it can be a great technique when performing, to add your own Fills and Percussion accents. For example: while one hand continues to play the melody, use the other to play a Fill on the PADs. And of course, you can always depend on the FILL TO BRIDGE or FILL TO NORMAL buttons, for excellent effects in your playing.

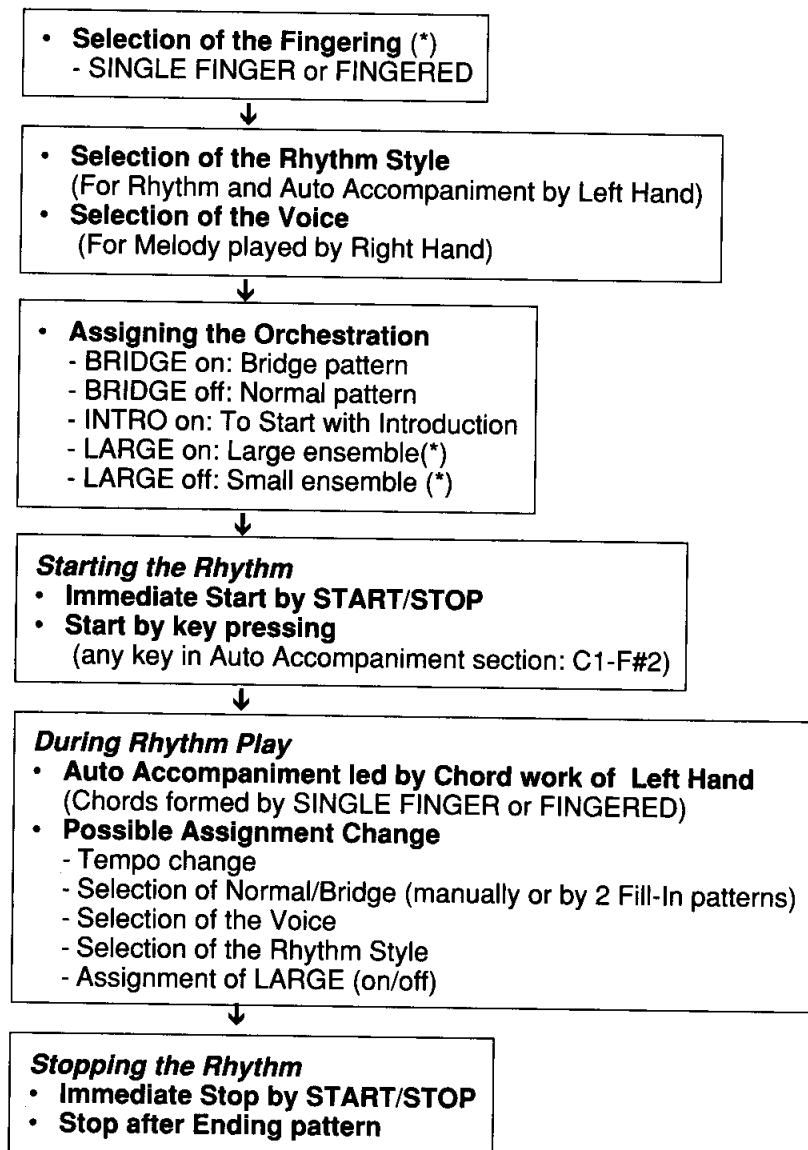
>> While you are playing, you can simulate a Drum Solo by pressing the PAD ASSIGN button and play using the keys corresponding to Percussion Sounds shown above each key (or alternatively, enter Voice NO. <96> which is PERCUSSIONS).

>> You can top off your performance with flair, by making use of the previously recorded Endings provided when you press the SYNCHRO START/ENDING button.

Auto Accompaniment Section

When you make use of this very effective function, you will be sounding like a Professional in no time at all. This Auto Accompaniment function is closely related to the Rhythm Style, because it functions in combination with (a) the arranging which fits to each Rhythm Style, or corresponding Intro. & Ending, and (b) accompaniment sound which fits to the chord work by FINGERING (SINGLE FINGER or FINGERED). So, as was explained in the Rhythm Style Section, regarding the Rhythm functions, you can control Auto Accompaniment in almost the same way. Let's take a look at the Basic steps involved, so you can have an overview of the whole function of Auto Accompaniment:

Steps for Auto Accompaniment



Note: Operations marked with (*) have not been discussed in the Rhythm Style Section.

Note: Normal, Bridge, Introduction and Ending will be affected with Assignment of LARGE (on/off).

a. Fingering of Auto Accompaniment

There are 2 kinds of Fingering Modes for Auto Accompaniment. One is SINGLE FINGER mode, which easily allows you to have Auto Accompaniment by easy fingering, the other is FINGERED mode which you play chords as usual. In either Mode it is possible for the function to provide chord work as you play the keys designated for Auto Accompaniment: C1 thru F#2.

< Auto Accompaniment Keys >

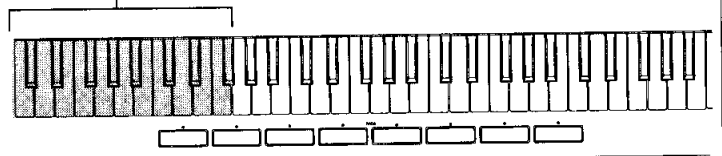
FINGERED mode



SINGLE FINGER mode

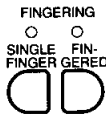


Auto Accompaniment Section
(C1 thru F#2)



* F#2 and below is the Auto Accompaniment key section, so when you select a Voice (using the Voice Select button) you will not be able to hear that Voice sounded on keys C1 thru F#2.

When a FINGERING Mode is OFF, (Normal keyboard)



* When the FINGERING modes are NOT being used, you will be able to play on the entire keyboard in any Voice you select.

b. 3 Orchestrations

Another important function to consider when you're using Auto Accompaniment is Orchestration. There are 3 buttons which are: INTRO, LARGE, and BRIDGE located in the Orchestration select. Depending on how you assign these Orchestrations in combining one another, you can produce many styles of arrangements.

>> INTRO button:

When you press the INTRO button, the LED will light up, and you are set-up for Intro. (Same as in Rhythm Style Section). Now, after selecting either SINGLE FINGER or FINGERED mode, when you start the Auto Accompaniment, it will play an Intro, controlled by the chords you play with your left hand, and in the Style which is currently selected.

>> LARGE button:

This button controls whether the Auto Accompaniment will be played with a SMALL ensemble or a LARGE ensemble (of Instrumentation). When you press the LARGE button and the LED lights up, you will have the LARGE ensemble Effect, and when the LED is not lit up, you have the SMALL ensemble Effect.

>> BRIDGE button:

When you press the BRIDGE button, the LED will light up and you will be in the BRIDGE pattern set-up (same as in the Rhythm Style Section) when the LED is not lit up it will be in NORMAL pattern set-up. The Auto Accompaniment will play in either case assigned, the arranging which fits to each Pattern. Also, depending on the status of the LARGE/SMALL ensemble selected using the LARGE button, the arranging will vary accordingly. You can play with various patterns combining these 3 Orchestration's activation and inactivation

* INTRO inactivation simply means Starting the Rhythm without Intro.. This has no concern with LARGE active or inactive.

* You can assign the Orchestration buttons at any time, regardless of the START/STOP status. The initial pre-set settings are: INTRO./Off, LARGE/On, BRIDGE/Off (NORMAL).

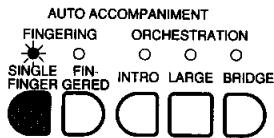
c. Single Finger Mode

This mode allows you to have Auto Accompaniment easily, without playing the whole exact chord. For example, if you want to play a Major chord, just one Finger is required. Even for other chords, you only need to press a few keys to establish the whole chord. The SINGLE FINGER mode is an Auto Accompaniment feature which consists of: Bass sound, Chord sound, and Melody sound. The Instrumentation, Volume, and Patterns vary according to the Rhythm Style selected.

Step 1: Select a Rhythm Style.

Step 2: Press the SINGLE FINGER button.

When you press the SINGLE FINGER button, LED will light up, and SINGLE FINGER mode has been assigned. At this time, the PSS-790 will automatically be in the SYNCHRO START Stand By status.



* When the PAD ASSIGN LED is lit, if the Fingering button (SINGLE FINGER or FINGERED) is pressed, the Pad Assigning will be cancelled and the LED will be turned off.

Step 3: Press any Auto Accompaniment keys.

Now, let's see HOW to play the chords of a song by pressing the Auto Accompaniment Keys. When you press the Auto Accompaniment Key(s), the Auto Accompaniment will start automatically.

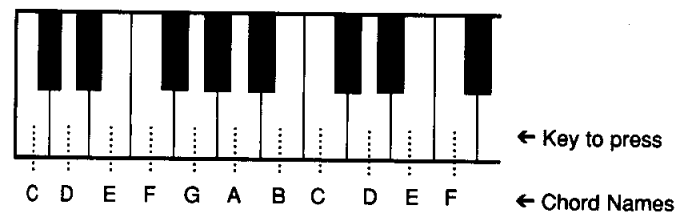
Step 4: Stop Auto Accompaniment.

When you want to Stop the Auto Accompaniment, press the SYNCHRO START/ENDING button, or the START/STOP button.

When you press the SYNCHRO START/ENDING button the song will finish after playing an ENDING.

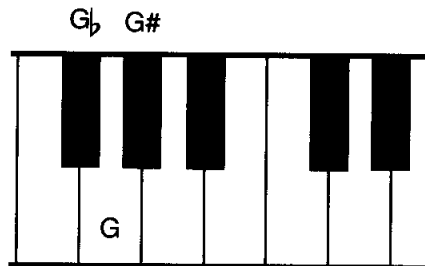
< Single Finger Chording >

The following diagram shows the relationship between the Chord Names, and which Keys to press of the Auto Accompaniment section on the keyboard.



< How to play Chords named with a Sharp or Flat >

When the Chord Name has a Sharp, press the black Key to the right of the Chord Name Key. When the Chord Name has a Flat, press the black Key to the left of the Chord Name Key.



< How to play 7th or Minor Chords >

When the Chord's Name consists of a Single Capital letter (C, D, etc.), this is a Major Chord. But the Chord progression of most songs also often use other Chords such as 7th chords (G7, E7, etc.) or Minor Chords (Cm, Am, etc.). For these types of Chords, you can press 2 Keys simultaneously as shown below:



Major Chord: Press the Root key.



Minor Chord: Press both Root key and any black key on the left of the Root key simultaneously. (with 2 fingers)



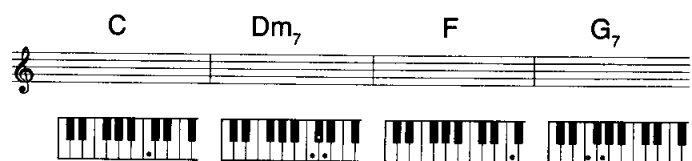
7th Chord: Press both Root key and any white key on the left of the Root key simultaneously. (with 2 fingers)



Minor 7th Chord: Press both Root key and any black and white keys on the left of the Root key simultaneously. (with 3 fingers)

* For further reference consult the Table on page 23.

< Example > The following diagram shows and example of playing using the SINGLE FINGER mode:



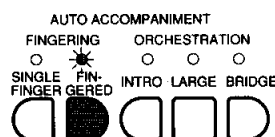
d. Fingered Mode

This Mode allows you to have Auto Accompaniment by playing Chords in the usual manner. It is well suited for the individual who is accustomed to playing Chords, and also for those songs containing Chords which are not possible to play using the SINGLE FINGER mode. The FINGERED mode consists of the same Auto Accompaniment sounds as SINGLE FINGER mode.

Step 1: Select a Rhythm Style.

Step 2: Press the FINGERED button.

When you press the FINGERED button, the corresponding LED will light up, and FINGERED mode has been assigned. At this time, the PSS-790 will automatically be in the SYNCHRO START Stand By status.



* When the PAD ASSIGN LED is lit, if the Fingering button (SINGLE FINGER or FINGERED) is pressed, the Pad Assigning will be cancelled and the LED will be turned off.

Step 3: Press the Auto Accompaniment keys.

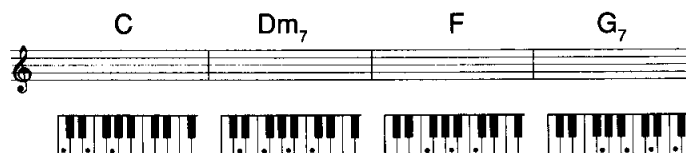
Now, let's see HOW to play the chords of a song by pressing the Auto Accompaniment keys. When you press the Auto Accompaniment keys which are detectable as a Chord, the Chords will change accordingly.

Step 4: Stop Auto Accompaniment.

When you want to Stop the Auto Accompaniment, press the SYNCHRO START/ENDING button, or the START/STOP button.

When you press the SYNCHRO START/ENDING button, the song will finish after playing an ENDING.

< **Example** > The following lit diagram shows and example of playing using the FINGERED mode:



e. Detectable Chords

Types of Chords for Auto Accompaniment detectable in the SINGLE FINGER/FINGERED modes are listed below:

Detected as a Chord if the Bracketted note is not played:

ex. Detectable Chords on the Root "C"

	Major Chord: C (*)		Suspended 4th Chord: Csus4
	Minor Chord: Cm (*)		Augmented Chord: Caug
	7th Chord: C7 (*)		Diminished Chord: Cdim
	Minor 7th Chord: Cm7		Minor Major 7th Chord: CmM7 (*)
	Major 7th Chord: CM7 (*)		Minor 6th Chord: Cm6
	Minor 7th Flatted 5th Chord: Cm7-5		Single Chord: CS
	7th Suspended 4th Chord: C7sus4 (*)		

* Specified Chords (marked with a star) are detected when you play its inversions. A Diminished or Augmented Chord will be detected with the lowest note you play taken as its Root.

* Minor 7th Flatted 5th Chords and Minor 6th Chords are similar in the intervals of Chord tones (ex. Bm7-5 and Dm6 includes the same notes.). So only when the lowest note played can be taken as the Root of a Minor 6th Chord, it will be detected as a Minor 6th Chord. Otherwise, it will be detected as a Minor 7th Flatted 5th Chord.

















































<< Reference #4 >>

>> Why don't you try using many different techniques such as LARGE/SMALL, BRIDGE/NORMAL, to vary the arrangements of your songs.

>> When you insert a Fill-in, by using the FILL TO NORMAL, and FILL TO BRIDGE buttons, the arranging of the accompaniment will automatically change to fit the Fill-in. So keep in mind how those changes occur, and use them to add flavor to your performances.


>> To use the Harmony Effect without Auto Accompaniment, simply press the SYNCRO START/ENDING button to cancel it. You still have the Harmonized tones in accord with the Chord Progression.


CHORD TABLE #1 - Single Fingering Chords


Major Chords		Minor Chords		7th Chords		Minor 7th Chords	
C		Cm		C ₇		Cm ₇	
C [#] (D ^b)		C [#] m (D ^b m)		C [#] ₇ (D ^b ₇)		C [#] m ₇ (D ^b m ₇)	
D		Dm		D ₇		Dm ₇	
D [#] (E ^b)		D [#] m (E ^b m)		D [#] ₇ (E ^b ₇)		D [#] m ₇ (E ^b m ₇)	
E		Em		E ₇		Em ₇	
F		Fm		F ₇		Fm ₇	
F [#] (G ^b)		F [#] m (G ^b m)		F [#] ₇ (G ^b ₇)		F [#] m ₇ (G ^b m ₇)	
G		Gm		G ₇		Gm ₇	
G [#] (A ^b)		G [#] m (A ^b m)		G [#] ₇ (A ^b ₇)		G [#] m ₇ (A ^b m ₇)	
A		Am		A ₇		Am ₇	
A [#] (B ^b)		A [#] m (B ^b m)		A [#] ₇ (B ^b ₇)		A [#] m ₇ (B ^b m ₇)	
B		Bm		B ₇		Bm ₇	

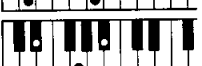
CHORD TABLE#2 - Fingered Chords


Major Chords


C 


C#(D^b) 


D 


D#(E^b) 


E 


F 


F#(G^b) 

G 


G#(A^b) 


A 


A#(B^b) 


B 


Minor Chords


Cm 


C#m (D^bm) 


Dm 


D#m (E^bm) 


Em 


Fm 


F#m (G^bm) 

Gm 


G#m (A^bm) 


Am 


A#m (B^bm) 


Bm 


7th Chords


C₇ 


C#₇ (D^b₇) 


D₇ 


D#₇ (E^b₇) 


E₇ 


F₇ 

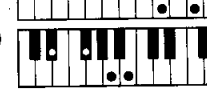
F#₇ (G^b₇) 

G₇ 


G#₇ (A^b₇) 


A₇ 


A#₇ (B^b₇) 


B₇ 


Minor 7th Chords


Cm₇ 


C#m₇ (D^bm₇) 

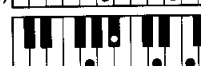
Dm₇ 


D#m₇ (E^bm₇) 


Em₇ 


Fm₇ 


F#m₇ (G^bm₇) 

Gm₇ 


G#m₇ (A^bm₇) 


Am₇ 


A#m₇ (B^bm₇) 


Bm₇ 


Major 7th Chords


C_{M7} 


C#_{M7} (D^b_{M7}) 


D_{M7} 


D#_{M7} (E^b_{M7}) 


E_{M7} 


F_{M7} 


F#_{M7} (G^b_{M7}) 

G_{M7} 


G#_{M7} (A^b_{M7}) 


A_{M7} 


A#_{M7} (B^b_{M7}) 


B_{M7} 


Minor 7th Flatted 5th Chords


Cm₇₋₅ 


C#m₇₋₅ (D^bm₇₋₅) 


Dm₇₋₅ 


D#m₇₋₅ (E^bm₇₋₅) 


Em₇₋₅ 


Fm₇₋₅ 


F#m₇₋₅ (G^bm₇₋₅) 

Gm₇₋₅ 


G#m₇₋₅ (A^bm₇₋₅) 


Am₇₋₅ 


A#m₇₋₅ (B^bm₇₋₅) 


Bm₇₋₅ 


7th Suspended 4th Chords


C_{7SUS4} 


C#_{7SUS4} (D^b_{7SUS4}) 


D_{7SUS4} 


D#_{7SUS4} (E^b_{7SUS4}) 


E_{7SUS4} 


F_{7SUS4} 


F#_{7SUS4} (G^b_{7SUS4}) 

G_{7SUS4} 


G#_{7SUS4} (A^b_{7SUS4}) 


A_{7SUS4} 


A#_{7SUS4} (B^b_{7SUS4}) 


B_{7SUS4} 


Augmented Chords


Caug 


C#aug (D^baug) 


Daug 


D#aug (E^baug) 


Eaug 


Faug 

F#aug (G^baug) 

Gaug 

G#aug (A^baug) 

Aaug 

A#aug (B^baug) 

CHORD TABLE#3 - Fingered Chords

Diminished Chords

C_{dim}
 C[#]_{dim}
 (D^b_{dim})
 D_{dim}
 D[#]_{dim}
 (E^b_{dim})
 E_{dim}
 F_{dim}
 F[#]_{dim}
 (G^b_{dim})
 G_{dim}
 G[#]_{dim}
 (A^b_{dim})
 A_{dim}
 A[#]_{dim}
 (B^b_{dim})
 B_{dim}

Minor Major 7th Chords

CmM₇
 C[#]mM₇
 (D^bmM₇)
 DmM₇
 D[#]mM₇
 (E^bmM₇)
 EmM₇
 FmM₇
 F[#]mM₇
 (G^bmM₇)
 GmM₇
 G[#]mM₇
 (A^bmM₇)
 AmM₇
 A[#]mM₇
 (B^bmM₇)
 BmM₇

Suspended 4th Chords

C_{SUS4}
 C[#]_{SUS4}
 (D^b_{SUS4})
 D_{SUS4}
 D[#]_{SUS4}
 (E^b_{SUS4})
 E_{SUS4}
 F_{SUS4}
 F[#]_{SUS4}
 (G^b_{SUS4})
 G_{SUS4}
 G[#]_{SUS4}
 (A^b_{SUS4})
 A_{SUS4}
 A[#]_{SUS4}
 (B^b_{SUS4})
 B_{SUS4}

Minor 6th Chords

Cm₆
 C[#]m₆
 (D^bm₆)
 Dm₆
 D[#]m₆
 (E^bm₆)
 Em₆
 Fm₆
 F[#]m₆
 (G^bm₆)
 Gm₆
 G[#]m₆
 (A^bm₆)
 Am₆

Single Chords

CS
 D^bS
 (C[#]S)
 DS
 E^bS
 (D[#]S)
 ES
 FS
 G^bS
 (F[#]S)

Song Memory Section

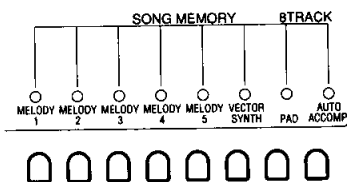
Song Memory function enables you to have 8 track digital recording and sound reproduction of up to 8 songs. When you use the Song Memory Function, you can record and playback your playing easily. You can enjoy Multi-track recording using the 8 recording tracks available for one song, and you can record up to 8 Songs that will be stored in the Memory. Please make the most of this easy to use function designed to assist your practicing, and composition, and provide many hours of musical pleasure.

a. On Multi-Track Recording

Before we get into the specific procedures, let's take a look at the general idea of Multi-Track Recording. Multi-Track Recording is a very popular and convenient method of recording used in making LPs, CDs, etc. You record each instrument on a separate track, and mix them together later into a finished product. For example, the PSS-790 has 8 tracks which you can use to record a high quality background of a song, or create your own original song. First you record the basic Chord Progression, or Rhythm, next lay the Bass sound on top of that, then record the Melody on top of that, etc., layer by layer. Also, this model comes equipped with a Punch In/Out feature that allows you to re-record only the part you want re-take or change. It even has FAST FORWARD and REWIND buttons, so you can start anywhere you like instantly, whether you are recording or playing back, you can use it just as easily as a cassette deck.

b. 8 Recording Tracks

The PSS-790 has 8 recording tracks, that have been pre-designated for recording sounds and data. Now, let's look at what can be recorded on each track.



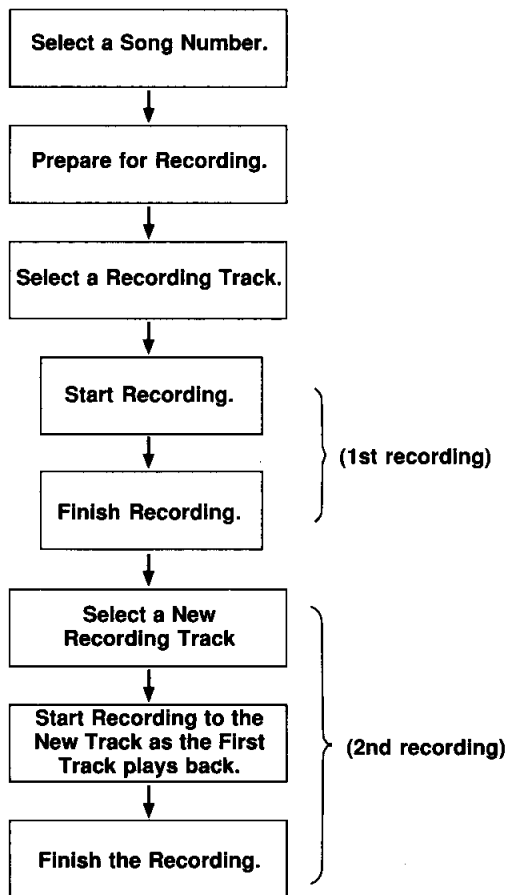
TRACK	WHAT CAN BE RECORDED
MELODY 1 to MELODY 5	Melodies played by using the 100 Pre-set sounds. * Voice numbers and the timing of changes of them. * Assigned value of Voice Effects and Harmony On/Off. * Pitch Bend range and degrees rotated.
VECTOR SYNTH	Melodies of the Vector Synthesizer. * 4 Voices (Voice numbers) which are assigned to the Vector Synthesizer and assigned values of Voice Effects, and all timing of changes of them. * Changing of the mixed balances of VOLUME by the Joy Stick. * Pitch Bend range and degrees of rotation.
PAD	Percussion played by the Drum Pads, or Keys from the 50 kinds of Percussion sounds. * Percussion sounds and the timing of playing.
AUTO ACCOMP.	Auto Accompaniment sounds, and Rhythm Style sounds. * Chords and the timing of changes in Chords. * Assigning of ORCHESTRATION, and the timing of changes of the ORCHESTRATION. * Timing of FILL-INs or ENDING. * RHYTHM STYLE number and the timing of changes of Rhythm Styles. * Tempos (*)

(*)Tempo Recording is available on the AUTO ACCOMP. Track. This procedure is not explained especially in the Instructions on the following pages, however, there are some points for the Tempo you have to remember:

- * In case you have Recorded your performance changing a Tempo to another, when you make a Playback just after finishing the recording, sometimes you cannot have it in the Tempo you intended. This comes from the Recording format adopted to the Song Memory (For more details see page 29.). To have a Playback as you recorded, first return to the 1st Bar of the Song by pressing the RESET button. Then start the Playback. (For detailed procedure, see page 29.)
- * In case you have stopped the Playback by pressing the STOP button, next time you make a Continued Playback by only pressing the PLAY button (without RESETTING), you will have it in the same Tempo as you have stopped.
- * When you Re-recorded the Tempo, you have to Retake all the performance for AUTO ACCOMP. Track, from the 1st Bar of the Song. Remember, in this case, the performance you have Recorded will be overwritten and lost.

c. Basic Recording Procedure

When you use the PSS-790's many different functions, they will give you a variety of recordings. First, we will explain the basic procedure simply.



* Repeat the steps for 2nd Time Recording, to complete Multi-Track Recording.

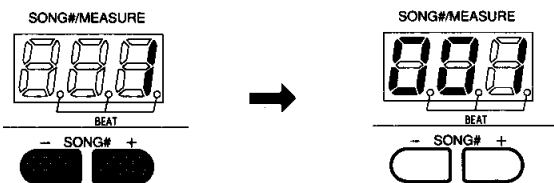
d. How to Record a Song

Now let's get into the actual steps for Recording.

Step 1: Select a Song number (#).

The PSS-790 has a Memory Bank for up to 8 songs (Song numbers <1> thru <8>). First, choose the Song number which you want to Record on by pressing the Song # Select <+/-> buttons. The SONG#/MEASURE display will show (NO. 1 thru 8) the number selected. After a few seconds, the display changes back to <001> which indicates the Bar number.

* In this manual, both Bar and Measure are explained as the same.



Select a Song number by pressing SONG # Select <+/-> buttons.

After a few seconds, changes back to Bar number indication.

Step 2: Prepare for Recording.

Before you select a Track, you will need some preparation depending on what you want to Record on which Track. So, please consider the following information regarding preparation of Recording:

1) Preparation when you want to select one of MELODY Tracks 1 thru 5:

Choose a Voice by consulting the Voice List located on the Control Panel, and assign the Voice Effects desired.

* Once you have Recorded melodies or phrases on MELODY 1 thru 5, you can hardly change the Volume balance among them. So if you wish to have an ensemble in good accordance during Playback, you need to follow the guidance in "1) Preparation when you want to select one of MELODY Tracks 1 thru 5". Additionally, each Voice's Volume can be assigned by the Voice Effect - VOLUME.

* You can change the assignments of Voice number or Voice Effects just before or during recording.

2) Preparation when you want to select the VECTOR SYNTH Track:

Select and mix desired 4 Voices (as explained in Voice Section: Vector Synthesizer).

* you can change the assignments of Voice number or Voice Effects just before or during recording.

* At the time you select to Record on the Vector Synth Track, the Vector Synth is automatically turned ON.

3) Preparation when you want to select the PAD Track:

Select and assign to the PADs desired Percussion sounds.

4) Preparation when you want to select the AUTO ACCOMP. Track:

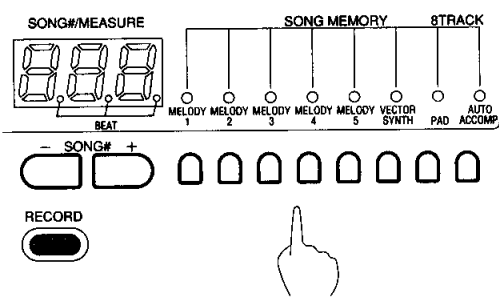
Select a Rhythm Style, and assign the ORCHESTRATION. At the time you select to Record on the AUTO ACCOMP. Track, the FINGERING will automatically be assigned to the FINGERED mode. If you have already selected the SINGLE FINGER mode before this preparation, even when selecting the AUTO ACCOMP. Track, the FINGERING is as it has been. If you want SINGLE FINGER mode you must assign it at that time. If you want to record just the Rhythm, press the FINGERING button assigned which will turn it off.

* You can change the assignments of Rhythm Style, Orchestration, or Fingering just before or during recording.

* In the AUTO ACCOMP. Track, be careful to remember only Auto Accompaniment Sounds, and Rhythm Style sounds will be recorded. Even though you play and can listen to the keys in the Melody Section (G2 and above) or Rhythms played on the PADs, they will not be Recorded on the AUTO ACCOMP. Track.

Step 3: Stand By for Recording.

As you press and hold down the RECORD button, simultaneously press the TRACK Select button which you want to Record on. The LED of the selected TRACK will flash indicating you are in STAND BY position and ready to Record. Also at this time, 3 dots in the SONG#/MEASURE display will flash together, and in time with the currently assigned Tempo. Along with the dots, a metronome sound will play out from the speakers.



Press and Hold
RECORD button.

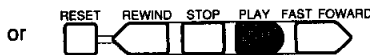
Press the TRACK Select
button of your choice.

If you want to cancel, press the chosen TRACK Select button again.

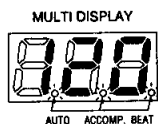
When you are in the STAND BY position, make sure the settings and assignments for Tempo, Voice numbers, etc., are all currently the ones you want.

Step 4: Start Recording.

You can start Recording in the currently selected Tempo by pressing any key of the keyboard, or pressing the PLAY button.



During Recording, the SONG#/MEASURE display shows the Bar number you are in. The 3 dots in the SONG#/MEASURE display and the 3 dots in the MULTI DISPLAY will show the beats of the measure in tempo, same as when in the Rhythm playing. In addition, from the speakers a metronome sound will play out with an accent on the first beat, and the LED of the Selected Track you are Recording on will continue to flash, but metronome sounds will not play out when recording on the AUTO ACCOMP. Track because of the Rhythm patterns being played at that time. (Also when in Playback the metronome is not played out.)



Displays the Beat.



Displays the Beat
and the Bar
Number.

Step 5: Stop Recording.

You can stop Recording by pressing the STOP button of the SONG MEMORY. Also, when you're Recording on the AUTO ACCOMP. Track, you can finish the Recording with an Ending pattern by pressing the SYNCHRO START/ENDING button of ACCOMPANIMENT CONTROL. After Stopping the Recording, the SONG#/MEASURE display will automatically indicate the Bar number you started Recording from. Also, the LED of the Track just Recorded on, will stop flashing but remains lit up. Now, you are in STAND BY position to Playback.

>> Verification of Recording:

When you press the PLAY button, you can Playback what you have Recorded. You can stop Playback at any time by pressing the STOP button. Also, you can Fast Forward, or Rewind, using the FAST FORWARD, or REWIND buttons, regardless of START/STOP Status. If you want to return to the Beginning of the Song, just press the RESET button (for further details see page 29 "e. How to Playback a Song".)



>> Continued Recording on Remaining Tracks (Multi-Track Recording):

If you want to Playback and hear the Tracks already Recorded while Recording on a New Track, the LED of the Track previously Recorded must be lit. Repeat Steps 2 thru 5 to Record on the remaining Tracks.

* If you don't want to hear a Track previously Recorded, turn OFF that Track's LED by pressing the corresponding Track Select button. You can hear any Tracks previously Recorded at any time, by pressing the corresponding Track Select buttons which will light up (turn ON) or turn off the LEDs, regardless of START/STOP Status.

* When you try a Multi-Track Recording, take care of the final length of the Song you wish to record. So remember the following:

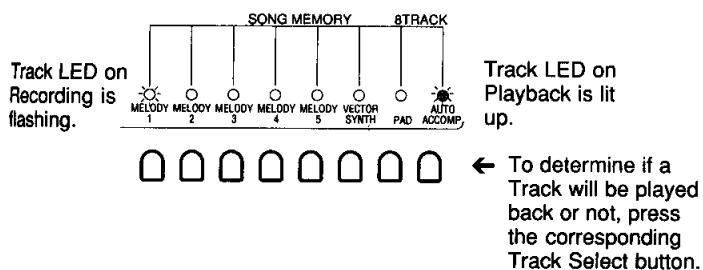
- In case the First Recorded Track is not the AUTO ACCOMP. Track:
>> Any longest Track (in regard of Bar numbers) will determine the Final length of the Song.

- In case the First Recorded Track is the AUTO ACCOMP. Track:

- >> The AUTO ACCOMP. Track will determine the final length of the Song. Any other Track cannot be Recorded longer than the AUTO ACCOMP. Track. If you wish to Record much longer than the current length, Re-record on the AUTO ACCOMP. Track as long as you wish.

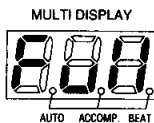
- In case you wish to shorten the final length of the Song:
>> Select the next Bar ahead to the Bar which you determine as the Last Bar. Then press the CLEAR and STOP button in the Song Memory simultaneously. Remember you cannot change the final length of the Song even pressing the CLEAR and Track Select buttons simultaneously.

< Example > Track LEDs' indications in the situation with the MELODY 1 Track on Recording, the AUTO ACCOMP. Track on Playback:



>> When you want to record another Song, choose another Song number as was explained in step 1, and then continue Recording following steps 2 thru 5.

The capacity of Song Memory is approximately 2,800 of quarter notes. But, if while you're Recording, the capacity has been reached, the STYLE/VOICE display & MULTI DISPLAY will show the following for a second and the Recording will automatically stop, and also at this time, the SONG#/MEASURE display will indicate <001> (the Beginning of the Song).



* The contents of SONG MEMORY will be Stored even after you turn OFF the POWER, if you have batteries installed.

Note: If while Recording or Playback, the POWER is accidentally turned OFF, it will sometimes cause disorders or damage to the PSS-790. Strictly saying, the damage will be given to the data of the Song Memory and the data will be lost partially. This will also take place if the batteries are low or the AC adaptor is disconnected.

e. How to Playback a Song

Step 1: Select a Song number.

First, choose the Song number which you want to Playback by pressing the Song # Select <+/-> buttons. The SONG#/MEASURE display will show (NO. 1 thru 8) the Number selected. After a few seconds, the Display changes back to <001> indicating the first Bar number.

* When you listen to the Playback of a Song you just recorded, this step can be skipped.

Step 2: Select the Track(s) for Playback.

>> When you choose the Song number, at this point the LEDs of all Tracks which have been recorded on previously, will light up indicating you are in STAND BY Status for Playback. For the Track Nothing has been recorded on, the corresponding Track LED is not lit up.

>> Also, you can determine which Track you want to Playback by pressing the Track Select button.

If the LED is lit, the Track will be Played Back, if the LED is not lit, the Track is OFF, and will not be Played Back.

* If you press the STOP button in this STAND BY status, it will turn OFF instantly all the Track LEDs that have been previously Recorded on. This will be a useful Shortcut in case you choose and Playback the only one Track among several ones activated.

Step 3: Start Playback.

When you press the PLAY button, Recorded data on selected Tracks will be Played Back simultaneously. It is possible to turn each Track select button ON or OFF during Playback, but if you turn OFF all of the Tracks, the Playback will stop immediately.

Step 4: Stop Playback.

When you reach the end of the Song, Playback will Stop automatically, the SONG#/MEASURE display will return to the Bar <001>, and the Track LEDs you selected will remain lit. Also, you can Stop the Playback at any time, by pressing the STOP button, but in this case the SONG#/MEASURE display's indication will be the Bar number when the Playback was Stopped, so now if you press the PLAY button again, Playback will Start from that Bar number. When you want to return to the Beginning of the Song, you can always press the RESET button at any time regardless of the START/STOP Status.

>> How to use FAST FORWARD & REWIND buttons:

Each time you press the FAST FORWARD or REWIND buttons, you can go Forward or Backward Bar by Bar, or by pressing and holding down either button, you can do it at an accelerated rate. After you reach the location desired, release the Button, and press the PLAY button to Start the Song.

* You can use the FAST FORWARD or REWIND buttons during Playback, but while you're holding the Button down the Playback sounds cannot be heard.

* When you begin to Playback a Song on the way, sometimes you may hear different sound (Voices or phrases) from you have Recorded. This happens because of the Recording format adopted to the Song Memory. (It records only Changes and their Timings - a Voice to another, or a duration of a certain chord accompaniment, etc.. Operation of Song Memory is very similar to that of a cassette deck. However, Recording format is quite different.) So if you Playback a Song on the way and the Change data for a Voice is missed, this results in Playback with the Voice unchanged. To have a Playback as you have Recorded, first you should Rewind to the Bar at which you made the Change. Then try a Playback. Or if you have made the Change at the beginning of a Bar, Rewind one more Bar behind. If you may have Recorded more fastly than you intended to, the Change will occur at the end of the Bar just before the Bar of your destination. Of course, when you Playback a Song from the beginning, this inconvenience will not take place but you have a good Playback. Remember, not only the Song Memory of the PSS-790, but also the device so called "Sequencer" is generally adopted with the Recording format mentioned above.

>> How to use RESET button:

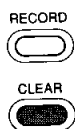
RESET button functions for you to return to the Beginning of the Song. If you press the RESET button during Playback, the Playback sounds will immediately Stop and you will be positioned at the Bar <001> again. Also, the RESET button will initialize the Song. That is, it brings the LEDs of the Tracks which are possible to be Played Back, all to light up and sets the Tempo to the one at the Beginning of the Song.

f. Other Useful Functions

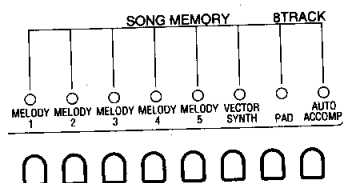
a) Clear Function

The Clear function enables you to Erase the Recorded data by Track.

>> **When you want to Clear by Track**, first press and Hold the CLEAR button, then select the Track you wish to Clear by pressing the corresponding Track Select button. The SONG#/MEASURE display will show < c l r > for a few seconds, and the Data on that Track of the Song will be Erased.



Press and Hold the CLEAR button.



Press the Track Select button of the Track you wish to Clear.

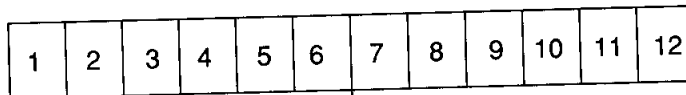
If you repeat this operation to all the Tracks including the Recorded data, you can Erase the Whole Song.

b) Punch In/Out Function

If you use the Punch In/Out function you can Re-record just the part where you made an error in units of 1 Bar. This can be very helpful because when you make one or two mistakes during the Whole Song, you don't have to Re-record the Whole Song again. First, you move the Bar to the location you want to start retaking, using FAST FORWARD or REWIND button. Then, decide which Track you want to retake, and follow the steps of "d. How to Record a Song". New Data from the Beginning of the Bar which you Start up to the End of the Bar you Stop to Re-record, will now be Punched In, and the Data before and after the Punched In Data will remain exactly the same. When you press the STOP button to Punch Out after correcting the mistake, the Bar location will automatically be that of the beginning Bar of the section you just Punched In. This is useful for when you Re-record the same section as many times you wish.

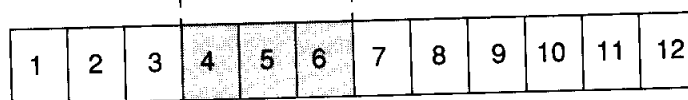
< **Example** > Retaking Bars 4 thru 6 of a Song:

Before Punch In/Out



Start Recording (Punch In) → Stop Recording (Punch Out).

After Punch In/Out



Same as Before. New Data. Same as Before.

c) Simultaneous Multi-Track Recording Function

You can also Record more than one Track at a time using the Simultaneous Multi-Track Recording function. For example, you can Record the Chord Progression by Auto Accompaniment on the AUTO ACCOMP. Track with your left hand, and simultaneously be Recording the Melody with your right hand on the MELODY 1 Track, etc. There are certain combinations of Tracks which are possible to Record simultaneously on, as shown below. **When you want to Record more than one Track at a time:** Press the RECORD button and Hold it down, while simultaneously pressing each of the Track Select buttons you want to Record on. The Recording procedures from here are the same as usual Track Recording.

* In case you are going to start Recording only by pressing the RECORD and PLAY buttons, the PSS-790 will automatically select the MELODY 1 and AUTO ACCOMP. Tracks and put them in the STAND BY position.

< Possible Track Combinations for Simultaneous Multi-Track Recording >

- 1) Any one Track of MELODY 1-5 or VECTOR SYNTH + PAD + AUTO ACCOMP.
- 2) Any one Track of MELODY 1-5 or VECTOR SYNTH + PAD
- 3) Any one Track of MELODY 1-5 or VECTOR SYNTH + AUTO ACCOMP.
- 4) PAD + AUTO ACCOMP.

* During Recording of Track(s), you cannot change other Tracks to a Recording position even if they are one of the possible combinations above.

<< Reference #5 >>

The Song Memory of PSS-790 is designed so that you can start Recording with any Track you choose to. So, for those of you who are wondering which Track is better to start with, and how you should proceed to Record, we have provided the following Hints:

>> Standard Examples of Multi-Track Recording:

Step 1: First, you Record the Rhythm Style and Chord Progression using Auto Accompaniment, onto the AUTO ACCOMP. Track. Of course, remember to make the most of the Intro and Ending available.

Step 2: Next, you Record your original Fill-Ins or "live" Rhythm variations Manually to the PAD Track, to contrast and enrich the Rhythm Pattern, while listening to Playback of the AUTO ACCOMP. Track which was Recorded beforehand in step 1.

Step 3: With the same idea in Step2, you can also Record another different type of Bass sound from the one pre-assigned to the Auto Accompaniment. For example, overdubbing a Slap Bass' lick to the regular Synth Bass sound, on one of the MELODY Tracks.

Step 4: Then, if your Background sounds seem lacking, you can fill them in with obbligato, ostinato, comping, etc. on the remaining MELODY Tracks.

Step 5: And finally, you can Record a dynamic Keyboard Solo to the VECTOR SYNTH Track using the Vector Synth function. While Recording it can be effective to use the Pitch Bend effect here.

Step 6: At this point, we can fix all the little mistakes made using the Punch In/Out function. Also, please keep in mind as you go along, the maximum amount of notes that can be sounded at any one time is 28, so you won't run short by

using them up in an early stage of the Recording.

Next, we will introduce examples for practical applications of the Song Memory function.

>> Using Song Memory for Minus One Settings:

You can use Song Memory as Backing for Vocals, or Instrumental Solos, for Practice or Live Performances.

>> Using Song Memory for Composition or Arranging:

You can log your Melodic and Harmonic ideas into the Song Memory. Then, when you are seriously thinking about these ideas more in depth, you can record several versions to many different Tracks, and then save the best ones. This can apply to solos as well. You can Record Multiple different versions of a Solo, and then store the best ones for future use or reference.

MIDI Section

The PSS-790 is a digital Keyboard operating with MIDI Standard. If you know about MIDI, you will come to know more about the workings and applications of the PSS-790. Now, we will gradually venture into the world of MIDI.

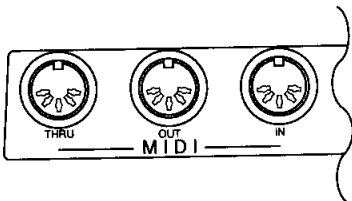
a. What is MIDI?

MIDI is an abbreviation for: Musical Instrument Digital Interface, which transmits and receives information about the music being played between MIDI-equipped electronic instruments/devices (such as personal computers). Since the concept of this World Standard has been adopted, it has allowed the interaction of many kinds of electronic equipment throughout the world. It may sound overwhelming but it really will be worth learning about MIDI. For example, you can connect different brands of instruments having a MIDI Standard, the melodies played on an instrument could be played out on another instrument, or if you connect even more instruments, it's easy to broaden your capabilities and coordinate many sounds which together could sound as big as an Orchestra with you as the conductor! Let's take a look into how the electronic instruments can be connected by using MIDI.

b. MIDI Terminals and MIDI Cables

MIDI instruments/devices always have MIDI Terminal hook-ups. If you view the rear panel of the PSS-790, you will see the MIDI Terminals fitted there as shown below. Starting from the right, they are: MIDI IN, MIDI OUT, and MIDI THRU.

* Depending on the type of machine or instrument, the order of the Terminals may vary.



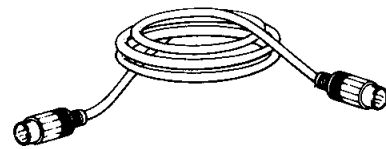
Each Terminal's role is as follows:

MIDI IN Terminal: This is the gateway which Receives MIDI information from other MIDI instruments/devices.

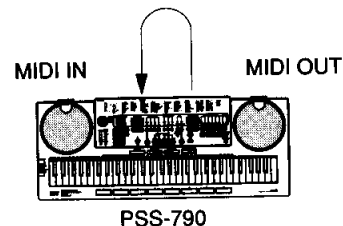
MIDI OUT Terminal: This is the gateway which Transmits MIDI information generated by the PSS-790. This Terminal also Transmits the same Channel Messages as Received by the MIDI IN Terminal.

MIDI THRU Terminal: This is the gateway which Transmits the same MIDI information that the one which came in via the MIDI IN Terminal of the PSS-790. It will not send out the MIDI information generated by the PSS-790.

When you connect those MIDI Terminals, use MIDI Cables which are shown below:

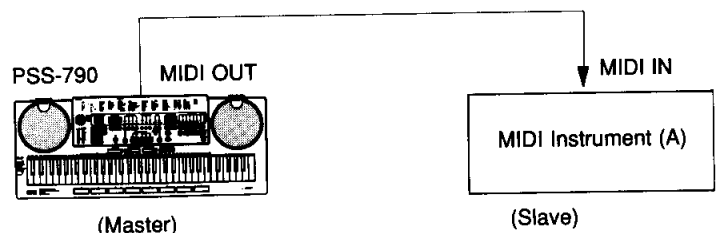


Note: Remember NOT to make a MIDI connection on one unit of the PortaSound. In other words, Don't connect the MIDI OUT Terminal with the MIDI IN Terminal of your PortaSound. This causes a Loop of MIDI connection, even a single key pressing will overdrive the internal Sound Module and Microcomputer to go on sounding all of 28 notes until the key is released.

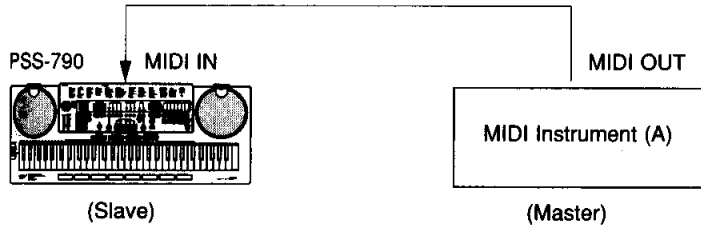


c. MIDI Connections

Now, let's connect the MIDI OUT Terminal which is an Exit of MIDI information, and the MIDI IN Terminal which is an Entrance of the information, using one MIDI cable. In this case of the connection illustrated, performance information from the PSS-790 will be sent out to MIDI instrument (A). In other words, you can say this is a situation where the PSS-790 controls (commands) the MIDI musical Instrument (A). Therefore, in this case the instrument that gives the command (PSS-790) is called the "Master", and the instrument that obeys the commands is called the "Slave" (Musical Instrument (A)). This is an important idea to remember when dealing with connecting MIDI Instruments.

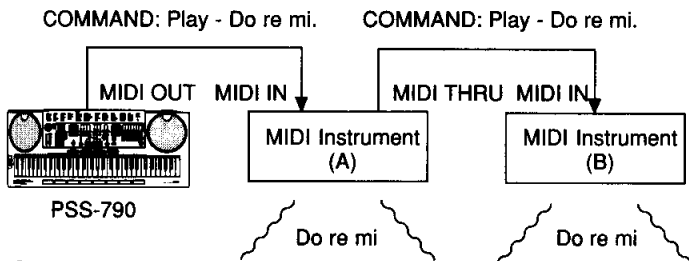


Oppositely, in the following case, MIDI instrument (A) will be the Master and the PortaSound will be the Slave.

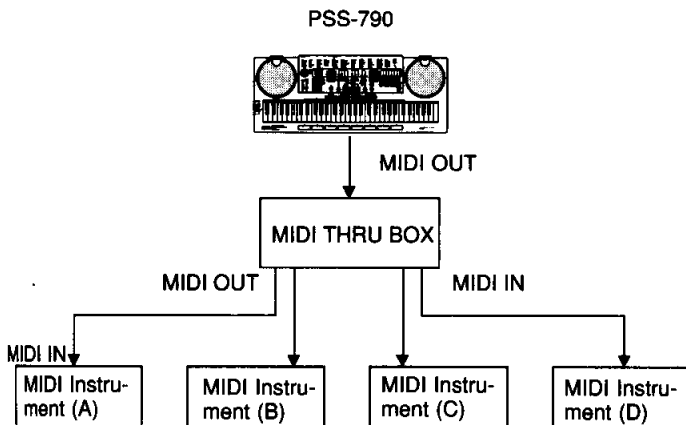


Note: Remember NOT to make a couple of MIDI OUT to MIDI IN connection between the PortaSound and a MIDI instrument (For both units to act Master and Slave simultaneously). In this case, if you play on the MIDI instrument, a Looped MIDI connection will be caused.

When you connect more than three MIDI instruments, you use the MIDI THRU Terminal as shown below. In this case you will see that the PSS-790 can have two "Slaves" simultaneously. In this case, MIDI instrument (A) cannot command MIDI musical instrument (B), because the MIDI THRU Terminal only Transmits the command, which came in via the MIDI IN Terminal, to MIDI instrument (B).



* When connecting using MIDI THRU Terminals, you may have no more than 3 or 4 Slaves at a time. For every time MIDI data pass the MIDI THRU Terminal on each MIDI device, the data will be delayed and even lowered. This may result in a wrong MIDI performance. So, when you wish to have much more Slaves, use a MIDI THRU BOX which distributes the same MIDI data to multiple Slaves simultaneously.



d. Types of MIDI Information

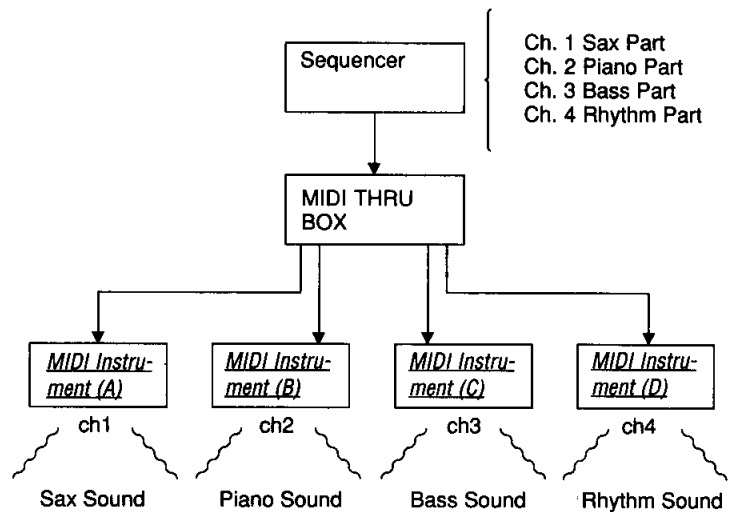
The kinds of information (commands) exchanged are many, but here we will try to explain some of them:

Even when you press a key with one finger, information like **Note number** (which pitch), **Note on/off** (when struck), **Velocity** (how fastly and strongly played), will be Transmitted. Not only these, but **Program Changes** (of Voice Selections), **Control Changes** (of Effects), can also be Transmitted. These kinds of information are called "**Channel Messages**". In order for these types of information to be communicated, you must select the same **MIDI Channel number** (from 1 to 16) on both the Transmitter (Master) and Receivers (Slaves) among the MIDI-connected instruments. There is another kind of information called "**System Messages**", which you need when you have a rhythm machine or sequencer synchronized to play together.

Any MIDI information is rapidly transmitted/received in digital signals comprised of just two numerals 0 and 1.

e. Matching MIDI Channels

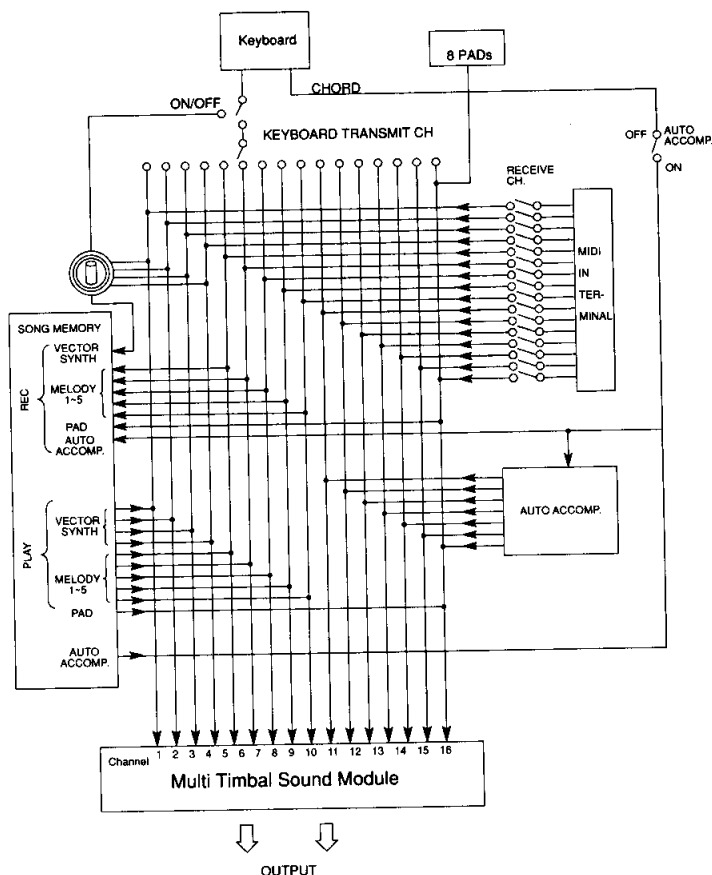
MIDI instruments/devices can exchange information only when using corresponding MIDI Channels, this is a basic rule to remember. For example consider how T.V. channels work; when you want to see a movie, you must select a certain Channel which is broadcasting the movie in order to watch it. In basically the same way, one MIDI cable can carry different kinds of MIDI performance information on 16 MIDI Channels, when the Receiver is turned to the same MIDI Channel of the information, you can have it play as the received information. The following example shows a sequencer (or computer) Transmitting MIDI performance information for several parts on corresponding MIDI Channels. Each Receiver's MIDI Channel has been prepared so as to receive the specified performance information and independently plays out with a different sound and melody.



Note: If a certain MIDI instrument can receive MIDI performance information on Multiple Channels and play out several parts' sounds at a time, this MIDI instrument has Multi-Timbre mode. And so the PSS-790 does.

f. What is Multi-Timbre?

Here we will give the little explanation about the Multi-Timbre. As the illustration on the previous page "e. Matching MIDI Channels", if you have a Master device which can control multiple Slave instruments on respective Channels (ex. Sequencer) and several Slave instruments, you will have them make an automatic ensemble and will be a MIDI beneficiary. However, imagine if you wish to reproduce a philharmonic orchestration, besides a solo, combo, or quartet.... Simply talking, it will be required as many Slave instruments as the parts or members in the orchestra. This is no easy way of musical enjoyment. Generally, Multi-Timbre is an easy and economical way to carry out multiple MIDI performances simultaneously. In this case, a single Multi-Timbral Sound module will accept the MIDI messages on multiple Channels and reproduce the multiple performances. The Sound Module of your PortaSound is provided with this function. The following diagram will help you understand the Multi-Timbre:



- * Multi-Timbre on the PortaSound will be performed with Dynamic Voice Allocation. (See page 36 for details.)
- * When recording on one of the MELODY Tracks 1-5 by the keyboard, KEYBOARD TRANSMIT CHannel will be automatically switched to the corresponding Channel.

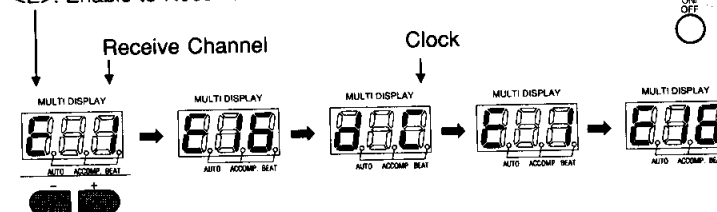
g. How to Operate MIDI Functions on PSS-790

a) Receive Channel Selection

When you press the RECEIVE CH/CLOCK button of the MIDI Select, the corresponding LED will light up, and you can decide to Receive the Channel Messages on each Channel and MIDI Clock, or not. MULTI DISPLAY shows <E 1>, and if you press the <+> button beneath the Display once, it will change to <E 2>. If you keep pressing, the numbers will be looped as shown below. Of course, if you use the <-> button you can loop backwards.

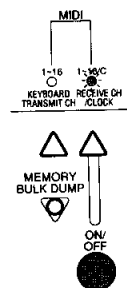
RECEIVE CH/CLOCK LED lit up.

<E>: Enable to Receive. <d>: Disable to Receive.



>> Receive Channel <E 1> - <E16>

As you press the <+/-> buttons to select one of the Channels (1-16) you can assign as Enable to Receive <E + Ch.#>, or Disable to Receive <d + Ch.#> by pressing the ON/OFF button located beneath the RECEIVE CH/CLOCK button of the MIDI Select.



>> MIDI Clock <d c>

You can assign either Enable to Receive MIDI Clock (Displayed as <E c>), or Disable to Receive (Displayed as <d c>), by pressing the ON/OFF button located beneath the RECEIVE CH/CLOCK button same as Receive Channel setting. Using MIDI Clock, when you connect such two MIDI instruments as Rhythm machines or Sequencers, you can synchronize the tempo of every machine. For example, if you assign Enable to Receive MIDI Clock (Displayed as <E c>) when you start to play on the other MIDI instrument (Rhythm machine, etc.), the PSS-790 will start playing simultaneously with an identical Tempo (during Recording or Playback with Song Memory). Or, if you assign the opposite, Disable to Receive MIDI Clock, the PSS-790 will play under its own start and Tempo, regardless of when the other MIDI instrument starts or with what Tempo.

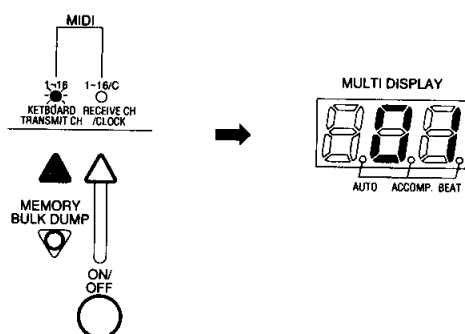
* The initial pre-set settings for the Receive Channel mode are: Every Receive Channel/Enable, MIDI Clock/Disable.

b) Transmit Channel Selection

When you press the KEYBOARD TRANSMIT CH button of the MIDI Select, the corresponding LED will light up, and you can assign the Transmit Channel for manual play on the keyboard and Voice selection for each individual Channel.

Additionally, to press the MEMORY BULK DUMP button consecutively, you can make a Data Transfer of the System Exclusive Message of the PortaSound.

KEYBOARD TRANSMIT CH LED lit up.



>> Transmit Channel

When you press the KEYBOARD TRANSMIT CH button, the value shown in the MULTI DISPLAY is the current MIDI Transmit Channel for manual play on the Keyboard. If you want to change the value, press the <+/-> buttons to select the Channel you wish to Transmit on, however, only one Transmit Channel can be assigned at a time.

>> Memory Bulk Dump

Memory Bulk Dump function allows you to Transfer out and save the following data as a MIDI System Exclusive Message.

• All Data in Song Memory

As you press the MEMORY BULK DUMP button once, with the KEYBOARD TRANSMIT CH LED lit, you will now be in the Bulk Dump mode, and the 3 digit LED of the MULTI DISPLAY will show <b d P>, and All other functions will automatically Stop, and you are in STAND BY Status for Data Transfer. When you press the MEMORY BULK DUMP button once again, the Display will show <b - 8> counting down to <0>, while the Bulk Dump will be executed on the Transmit Channel currently selected. After finishing the Bulk Dump process, the Display will automatically returns to the current Tempo indication.

* In case you wish to try a Data Transfer to another PSS-790, just make a typical MIDI connection between the Transmitter PSS-790 and the Receiver PSS-790. Then you press the MEMORY BULK DUMP button on the Transmitter, the MULTI DISPLAY on the Receiver will also indicate <b - 8> counting down to <0>. When the Bulk Dump process is successfully completed, the Receiver's MULTI DISPLAY will also return to the Receiver's current Tempo indication.

In case you try a Data Transfer to a MIDI-equipped personal computer or Sequencer, normally it should only be set in Recording mode, and operation on the PSS-790 (Transmitter) is the same as explained. However, keep in mind to refer to the Operation Manual of the Receiver in use.

* When in STAND BY Status for Data Transfer, if you can press any button for Voice Effects or Overall Controls, Data Transfer will be cancelled.

>> Voice selection for each individual Channel

After setting the Transmit Channel, make a normal Voice selection. That is all for setting a Voice selection for a single Channel. Repeat the same procedure for all Channels. See page 37 for the situation to actually do this. Additionally, initial settings when the PortaSound is turned on: Ch.1-15; Voice No.00, Ch.16; Voice No.96.

h. Transmitted and Received Data on PSS-790

a) Transmitted Data

<< Note On/Off >>

☞ Each Transmit Channel is as follows:

<Manual Play>

Whole Keys, when Auto Accompaniment used: G2 and above.

Channel Assignment (one of 1-16). Initial Value: 1.

☞ Transmitted by Manual play on the Keyboard, regardless of PSS-790's playing status.

<Manual Play with Vector Synth ON>

Whole Keys, when Auto Accompaniment used: G2 and above.

☞ Transmitted on Channels 1-4 by Manual play on the Keyboard, regardless of PSS-790's playing Status.

<Song Memory>

* <MELODY 1 Track>

☞ Transmitted on Channel 5.

* <MELODY 2 Track>

☞ Transmitted on Channel 6.

* <MELODY 3 Track>

☞ Transmitted on Channel 7.

* <MELODY 4 Track>

☞ Transmitted on Channel 8.

* <MELODY 5 Track>

☞ Transmitted on Channel 9.

* <VECTOR SYNTH Track>

☞ Transmitted on Channel 1-4.

* <PAD Track>

☞ Transmitted on Channel 16.

* <AUTO ACCOMP. Track>

☞ Transmitted on Channels 10-16.

* <Rhythm Key Notes>
(Including Manual Play on the Keyboard)

☞ Transmitted on Channel 16. Setting Transmit Channel to 16 will enable Manual Play of Percussion sounds. See page 39 for correspondence between Note Numbers and Percussion sounds.

* <Bass Key Notes>

☞ Transmitted on Channel 15.

* <Accompaniment Part>

☞ Transmitted on Channels 10-14.

Note: Asterisk (*) means that the performance information of the part is Transmitted on the specified Channel when it is played on the PSS-790.

<< Pitch Bend Change >>

☞ Hypothetical Pitch Bend Range of the Receiver is set at +/- 1 octave, the value will be calculated from PSS-790's Pitch Bend Range and Angle of Wheel Rotation and then Transmitted.

<< Control Change >>

☞ The value for Voice Effects (Volume, Vibrato, and Reverb) for the Voice will be Transmitted on each Channel.

<< Program Change >>

☞ Program Change of each Channel's Voice will be executed according to PortaSound Standard Voice Numbers. See page 39 for correspondence between Program Change numbers and Voices.

<< System Exclusive >>

☞ Transmitted by the MEMORY BULK DUMP button.

<< Active Sense, Start/Stop, MIDI Clock >>

☞ Transmitted according to MIDI Standard.

b) Received Data

<< Note On/Off >>

☞ Received including Velocity data (as strength and weakness of touch).

<Channels 1-16>

The PortaSound functions as a Multi-Timbral Sound Module. That is, the PortaSound's internal microcomputer accepts Note On/Off and Program Change messages on the respective Channels, with which it drives the Sound Module to reproduce the corresponding Voices independently at the maximum of 28 notes. This is called Dynamic Voice Allocation to save you a bothering manual allocation. The Dynamic Voice Allocation will be performed by Channel Messages (: Note On/Off, Program Change, Control Change and Pitch Bend Change). So, when you use the PortaSound as a Multi-Timbre Sound Module, you need to send the Messages from the Master device. Additionally, the Auto Accompaniment is an application based on the Dynamic Voice Allocation.

<< Pitch Bend Change >>

☞ Pitch Bend Change can be received on Every Channel. However, the Range of Pitch Bend is common for All Channels as shown below:

Status	1st Data	2nd Data	Range
EnH	00H	00H	-1 Octave
EnH	00H	40H	Center
EnH	7FH	7FH	+1 Octave

* EnH=Pitch Bend Change status, n=0-F (: Ch.1-16)

<< Control Change >>

☞ Each Channel Receives the Values of Volume, Vibrato, and Reverb for each sound, however the Value of each Effect is as shown below:

Status	Effects	Value
BnH	07H	00H-7FH
BnH	01H	00H-7FH
BnH	5BH	00H-7FH

* BnH=Control Change status, n=0-F (: Ch.1-16)

* Effects: 07H=Volume, 01H=Vibrato, 5BH=Reverb

<< Program Change >>

☞ Program Change of each Channel's Voice will be executed according to PortaSound Standard Voice Numbers. See page 39 for correspondence between Program Change numbers and Voices.

<< Active Sense, Start/Stop, MIDI Clock >>

☞ Active Sense, Start/Stop and MIDI Clock are Received according to MIDI Standard. In addition, Start/Stop message will be Received only by the Song Memory with the Clock synchronized to external MIDI device (when <E c> is selected, during Recording or Playback).

<< System Exclusive >>

Received when the data is Recognized as the Bulk Data (System Exclusive data) for the PSS-790.

	Description	Value
1st Byte	System Exclusive status	F0H
2nd Byte	Manufacturer ID	43H (YAMAHA)
3rd Byte	Classification ID	76H
4th Byte	Data Format NO. (Show below)	07H
Data		
Last Byte	End of Exclusive (EOX)	F7H

* "Classification ID" indicates the following "Data" is for "Portable Keyboard".

* "Data Format NO." indicates the following "Data" is exclusive for the PSS-790.

* System Exclusive "Data" of the PSS-790 are:

All the recorded data in Song Memory.

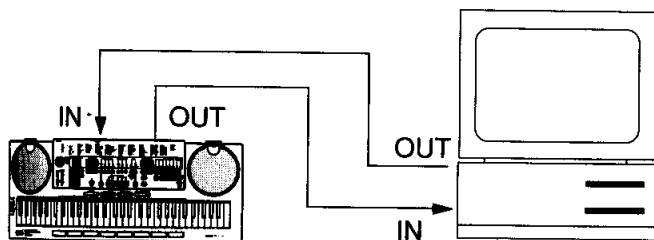
Data in Song Memory are Song data which consist of: Note On/Off, Program Change (for Voice selection), Control Change (for Voice Effects), Pitch Bend Change, Tempo Change.

* End of Exclusive is a MIDI standard message to indicate the System Exclusive Message's end.

i. Advanced Uses of PSS-790 in MIDI Connection

< Example 1 > When using with a Personal Computer or Sequencer

The PSS-790 can be used as a Multi-Timbral, 28 note Polyphonic Sound Module when used together with a Personal Computer or Sequencer, and can be a valuable aid in working with music. Also, you can easily Transmit Recorded data in Song Memory to a Personal Computer or Sequencer in order to store it on a floppy disk or cartridge tape, or modify it into the excellent ones on those machines.



* When you connect with a Personal Computer, You need a MIDI Interface authorized for the computer.

>> Setting of the PSS-790 used as a Sound Module After you assign a Voice on each Channel, you can play out MIDI performance data for every part from a Personal Computer or Sequencer.

<< Assigning Voice Selection on Each Receive Channel >>

Step 1: First, turn the PSS-790's Receive Channels (1-16) in need to <Enable> position. Of course for those Channels you do not wish to Receive MIDI information, leave <Disable>.

Step 2: Next, press the KEYBOARD TRANSMIT CH button, and as you select each Channel (Ch.# is being displayed in the MULTI DISPLAY) with <+/-> buttons beneath the Display, and assign a Voice with the VOICE and Number buttons in the STYLE/VOICE Select. Or, if you wish to do each Voice selection from the Master device, simply program it in the sequence data and send the data directly to the PortaSound. Due to the PortaSound's Dynamic Voice Allocation, you can concentrate on the operation of the Master device.

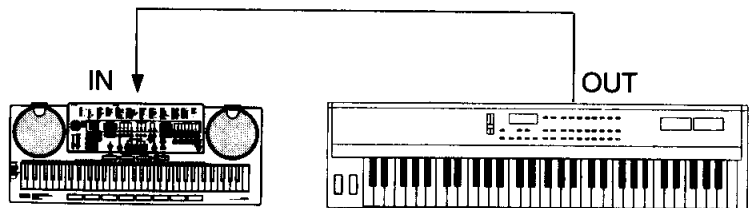
* When the PortaSound is turned on, the Voice number 00 PIANO is automatically selected for the Channels 1-15 and the Voice number 96 PERCUSSIONS for the Channel 16.

>> Data transmitting from the PSS-790:

Transmit the performance data of pre-made Song by using Song Memory to a Personal Computer or Sequencer in Real time. After setting the Personal Computer or Sequencer in Recording mode with its MIDI Clock synchronized to the PSS-790, on the PSS-790 you only Playback the Song to Transmit.

< Example 2 > When using a Regular-sized Keyboard

If you feel uncomfortable when playing on the mini-keys of the PSS-790, you can make a MIDI connection with an external MIDI-equipped keyboard which has Regular-sized keys.



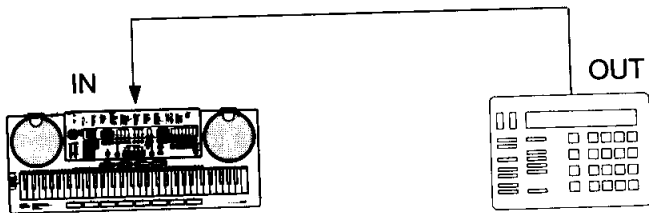
* If you use the Song Memory controlling the PSS-790 from an external keyboard, possible Recording Tracks are:

- MELODY 1 Track (fixed on Ch. 5)
- MELODY 2 Track (fixed on Ch. 6)
- MELODY 3 Track (fixed on Ch. 7)
- MELODY 4 Track (fixed on Ch. 8)
- MELODY 5 Track (fixed on Ch. 9)
- PAD Track (fixed on Ch. 16)

In this case, you have to set the external keyboard's Transmit Channel same Channel as that of the Track you select to Record on. For example, when Recording on the MELODY 1 Track, you set the external keyboard's Transmit Channel to <5> before Recording.

< Example 3 > When using a Drum Machine or Pad Controller

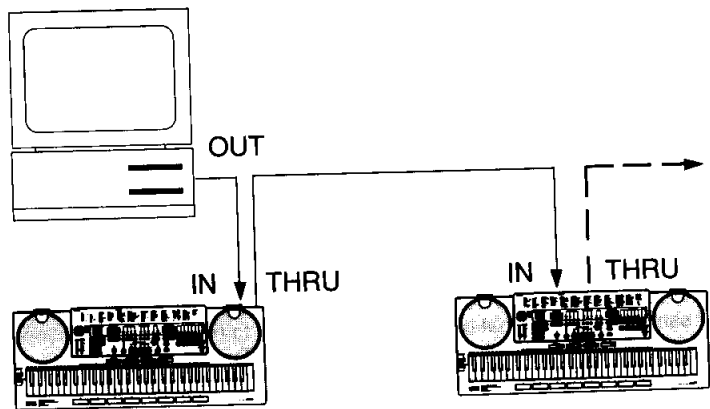
First, you set the Transmit Channel of the Drum Machine to <16>, and set each Transmit Note number same as the one corresponding to the PSS-790's Percussion sound you wish, referring to the correspondence list on page 39. When you play the Drum Machine, the Percussion sounds of PSS-790 will be sounded by the performance data including Strength and Weakness (according to Velocity data).



Note: If the Transmit Channel of the Drum Machine is fixed on a specific Channel number and disable to be changed, first (A) send MIDI Program Change number 100 (which is corresponding to Voice number 96 PERCUSSIONS) from the Drum Machine (or other Master device), or (B) assign the Voice number 96 PERCUSSIONS for the same Channel on the PSS-790 following the methods in "Assigning Voice Selection on Each Receive Channel" on page 37. Then set the Transmit Note number on the Drum Machine as already mentioned. Even if this is not available, when hitting the pads or buttons on the Drum Machine, Desired sounds are not always reproduced from the PSS-790.

< Example 4 > When making a Larger Polyphonic ensemble

When you Receive a larger composition data (in case it is required to sound more than 28 notes at a time), you can use a MIDI connection as shown below. For example, you can use two units of PSS-790, and assign the 1st PSS-790 (Receive Channels 1-8/Enable, the rest/Disable) and assign the 2nd PSS-790 (Receive Channels 9-16/Enable, the rest/Disable). If you use two PSS-790s dividing their Receive Channels like this, you can have them play in 56 Polyphonic Sounds capability.



1st PSS-790
Receive Channel: 1-8 Enable

2nd PSS-790
Receive Channel: 9-16 Enable

< Example 5 > When controlling an external Sound Module from PSS-790

Beforehand, set the Sound program number of the external Sound Module which matches to a MIDI Program Change Number of PSS-790, then you can change the external Sound program selections, using Voice Select of PSS-790. In this case, if you select a similar Sound Program to a PSS-790's voice and the Sound Module has Multi-Timbre mode, you can also apply Song Memory or Auto Accompaniment function to the Module.

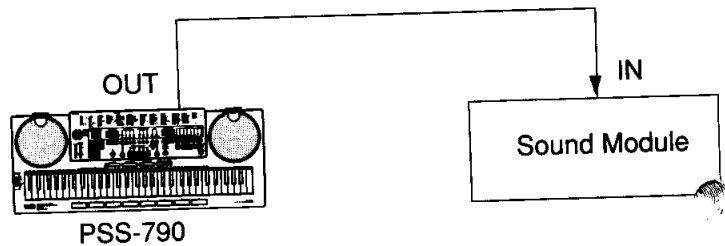


Chart 1: Correspondence between MIDI Note Numbers and Percussion Sounds

Note Name	Instrument Name	MIDI Note Number	Note Name	Instrument Name	MIDI Note Number
C1	BASS DRUM REVERB	36	C#3	SPLASH CYMBAL	61
C#1	TRIANGLE MUTE	37	D3	RIDE CYMBAL CUP	62
D1	SYNTH SNARE	38	D#3	RIDE CYMBAL EDGE	63
D#1	TRIANGLE OPEN	39	E3	CONGA LO	64
E1	SYNTH TOM BASS	40	F3	CONGA HI	65
F1	SYNTH TOM LO	41	F#3	CONGA HI MUTE	66
F#1	SYNTH TOM MID	42	G3	BONGO LO	67
G1	SYNTH TOM HI	43	G#3	BONGO HI	68
G#1	BASS DRUM LO	44	A3	TIMBALE LO	69
A1	BASS DRUM HI	45	A#3	TIMBALE HI	70
A#1	RIM SHOT 1	46	B3	TAMBOURINE	71
B1	TOM BASS	47	C4	CLAVES LO	72
C2	TOM LO	48	C#4	CLAVES HI	73
C#2	SNARE HI	49	D4	AGOGO LO	74
D2	TOM MID	50	D#4	AGOGO HI	75
D#2	RIM SHOT 2	51	E4	CUICA LO	76
E2	SNARE LO	52	F4	CUICA HI	77
F2	TOM HI	53	F#4	WHISTLE	78
F#2	HAND CLAPS	54	G4	BRASH SQUEEZE	79
G2	COWBELL	55	G#4	HI HAT FOOT	80
G#2	CABASA	56	A4	SNARE GATED REVERB	81
A2	HI HAT CLOSED	57	A#4	ONE	82
A#2	BRASH HIT	58	B4	TWO	83
B2	HI HAT OPEN	59	C5	THREE	84
C3	CRASH CYMBAL	60	C#5	FOUR	85

Chart 2: Correspondence between MIDI Program Change Numbers and PortaSound Standard Voices

Voice Number	Voice Name	MIDI Program Number	Voice Number	Voice Name	MIDI Program Number	Voice Number	Voice Name	MIDI Program Number
00	PIANO	3	34	STRINGS 1	41	68	SYNTH CHORUS	94
01	ELECTRIC PIANO 1	5	35	STRINGS 2	50	69	SYNTH FLUTE 1	112
02	ELECTRIC PIANO 2	54	36	PIZZICATO STRINGS	78	70	SYNTH FLUTE 2	47
03	HARPSICHORD 1	4	37	HARP	37	71	SYNTH REED 1	45
04	HARPSICHORD 2	53	38	UKULELE	40	72	SYNTH REED 2	85
05	HONKY-TONK PIANO	25	39	BANJO	34	73	SYNTH REED 3	113
06	CRAVI	30	40	VIBRAPHONE	7	74	SYNTH STRINGS 1	51
07	CELESTA	6	41	MARIMBA	8	75	SYNTH STRINGS 2	109
08	PIPE ORGAN	2	42	XYLOPHONE	59	76	SYNTH STRINGS 3	119
09	REED ORGAN	49	43	GLOCKENSPIEL	32	77	SYNTH PIANO 1	60
10	JAZZ ORGAN 1	1	44	TRUMPET	15	78	SYNTH PIANO 2	117
11	JAZZ ORGAN 2	27	45	MUTE TRUMPET	44	79	SYNTH PIANO 3	110
12	TREMOLO ORGAN	28	46	TRUMPET ECHO	118	80	SYNTH PIANO 4	95
13	FULL ORGAN	29	47	MUTE TRUMPET ECHO	120	81	SYNTH PAN VOICE	111
14	ACCORDION	31	48	FLUGELHORN	87	82	FANTASY	64
15	DISTORTION GUITAR	13	49	TROMBONE	16	83	ELECTRIC BASS	38
16	ELECTRIC GUITAR	68	50	HORN	17	84	SLAP BASS	39
17	TREMOLO GUITAR	69	51	TUBA	84	85	FRETLESS BASS	80
18	MUTE GUITAR	70	52	BRASS ENSEMBLE	92	86	PICK BASS	79
19	DISTORTION GUITAR FLANGE	108	53	BRASS HIT	104	87	MUTE BASS	114
20	E. GUITAR FLANGE	121	54	CLARINET	19	88	MUTE BASS ECHO	107
21	MUTE GUITAR ECHO	116	55	FLUTE	20	89	WOOD BASS 1	14
22	E. GUITAR ECHO	123	56	PICCOLO	103	90	WOOD BASS 2	81
23	JAZZ GUITAR	12	57	SOPRANO SAX	101	91	SYNTH BASS 1	58
24	JAZZ GUITAR ECHO	122	58	ALTO SAX	18	92	SYNTH BASS 2	86
25	FOLK GUITAR	36	59	TENOR SAX	102	93	BOWED BASS	35
26	12 STRING GUITAR	72	60	BASSOON	21	94	STEEL DRUM	9
27	GUT GUITAR	73	61	RECORDER	88	95	TIMPANI	66
28	GUT GUITAR ECHO	124	62	SAMBA WHISTLE	91	96	PERCUSSIONS	100
29	STEEL GUITAR	33	63	WOODWIND ENSEMBLE	93	97	HARMONICA	22
30	VIOLIN 1	10	64	CHORUS	96	98	MUSIC BOX	24
31	VIOLIN 2	67	65	SYNTH BRASS 1	0	99	ORCHESTRA HIT	90
32	PIZZICATO VIOLIN	65	66	SYNTH BRASS 2	82			
33	CELLO	11	67	SYNTH BRASS 3	115			

Troubleshooting

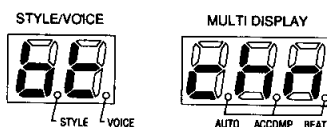
Symptom	Possible Causes	Solutions
When POWER switched ON speakers make a "pop" noise.	Initial Electric Current flows.	Don't worry (not a problem).
No sound coming from speakers.	MASTER VOLUME or the value of Voice Effect's VOLUME is turned down.	Turn up the MASTER VOLUME, or the value of Voice Effect's VOLUME.
	HEADPHONES/AUX. OUT Terminal has a jack plugged into it.	Remove the jack.
When you press multiple keys, there are notes which are not sounded.	Depending on the mode (Auto Accompaniment, Vector Synth, etc.), the amount of notes voiced are different.	Don't worry, you can play up to 28 notes simultaneously in Normal mode.
	You are playing with a Voice which consist of some notes. As you make a combination of Voices with the Vector Synthesizer, some preset Voices are made of several notes. For example, with a Voice made of 4 notes, you can play up to 7 notes at a time (4 by 7 equals 28: maximum notes).	This is not a problem. Lessen the notes you play at a time.
Cannot change the Voice or Rhythm Style.	The VOICE or STYLE button has not been pressed first.	See page 8 or 14 and read instructions.
Cannot get Rhythm Sounds.	START button of ACCOMPANIMENT CONTROL is not pressed.	Make sure of the instructions on pages 16 thru 22.
	After pressing the SYNCHRO START button or Keys have not been pushed (when you are in Normal mode).	
	After pressing the SYNCHRO START button, the keys for Auto Accompaniment have not been pushed (when using Auto Accompaniment function).	
Cannot get Auto Accompaniment sounds.	Because you are in Normal mode.	Assign FINGERING mode to obtain desired Auto Accompaniment.
Cannot turn ON the Harmony function.	Because the Vector Synthesizer is ON.	Turn OFF the Vector Synthesizer.
Cannot play the Chord you want while pressing the keys when using Auto Accompaniment.	You might be trying to play a Fingered Chord when you're in Single Finger mode, or in the opposite case.	Change either your fingering or the Fingering mode.

Symptom	Possible Causes	Solutions
Cannot turn ON the Vector Synthesizer.	Because the Pad Assign function is ON.	Turn OFF the Pad Assign function pressing the corresponding button.
	Because the VECTOR SYNTH Track in Song Memory is ON.	Clear the VECTOR SYNTH Track out.
Abnormally works or malfunctions. Any unfamiliar status found. Cannot control the PSS-790 any longer.	The PortaSound's internal micro-computer may have been "locked up" by Static Electricity or other factors.	Step 1: Turn the PortaSound OFF. Step 2: Then press the SINGLE FINGER and FINGERED buttons simultaneously and hold them down, and turn the POWER ON. This operation is called "All Reset", and brings the PSS-790 to the status when shipped. But remember this operation will clear the whole data in the Song Memory.

Warning Messages

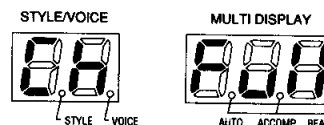
Battery Change:

If you play the PortaSound without cease, you may hear the sounds distorted. This is why batteries' voltage is lowered. If you go on using the PortaSound, <bt chn> indication will be shown in the STYLE/VOICE display and MULTI DISPLAY. In this case, change all of 6 batteries at a time. Be sure not to use the different type(s) of batteries together.



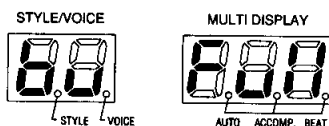
Channel Full:

While Transmitting or Receiving the MIDI performance information, or even playing on the Keyboard, if the total amount of notes on Channels 1 – 16 exceeds 28 (: Maximum of sound reproduction), the STYLE/VOICE display and MULTI DISPLAY will go on reading <Ch Full> until the total amount of notes is reduced under 28.



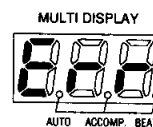
Buffer Full:

While the PSS-790 is Receiving the MIDI performance information from an external Master device, in case the quantity of MIDI information is over that the PSS-790 can process at a time, it will show <bu full> in the STYLE/VOICE display and MULTI DISPLAY for a second. Simultaneously, the notes currently sounding will automatically stop. Should this occur, lessen the MIDI information from the Master.



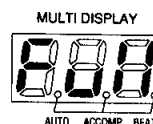
Check Sum Error:

While the PSS-790 is Receiving the "System Exclusive Message" (: the same data as the PSS-790 transmits in Memory Bulk Dump; General name for this kind of data in MIDI Standard), if the indication <Err> is shown in the MULTI DISPLAY, this means the Receiver PSS-790 failed to Receive the Exclusive data. In this case, specified Factory Preset data corresponding to the Exclusive data missed will be applied automatically.



Memory Full:

While using the Song Memory function, if <Full> indication is shown, this means the memory capacity of the Song Memory has been reached. At this time, Recording will be automatically stop and Bar indication in the SONG#/MEASURE display turns to <001>. If you wish to go on Recording, you have to Clear the Recorded data by Track. (See page 30 for Clear function.)



Maintenance

• Location

Avoid exposure to direct sunlight or other sources of heat. Never leave it inside a car where it can get very hot. It may cause discoloration or deformation. Vibration, excessive dust, cold, low or high humidity can also cause malfunction.

• Handling

Avoid rough handling. Don't drop or jolt the PortaSound as this can damage the internal circuitry. Pressing too hard on keys or controls may lead to malfunctions. When cords are plugged into the rear panel jacks, pay particular attention not to apply excessive force to them since this may damage the terminals.

• Adaptors

Use only the power adaptor described in the POWER section. Disconnect the AC adaptor when not using your PortaSound.

• Batteries

- When not using your PortaSound for long periods, be sure to remove the batteries to avoid damage through battery leakage.
- Replace weak batteries before they run down completely.

- Always replace all batteries with new ones.
- Do not use different kinds of batteries at the same time.
- In case electrolyte has leaked into the battery compartment, wipe it off completely before installing new batteries.

• Cleaning

Clean the exterior with a soft, dry cloth. Using chemical solvents will damage the finish.

• Interference Through Electromagnetic Fields

Do not use your PortaSound close to television sets or other equipment receiving electromagnetic signals as this could cause interference noise in the other appliance.

• Service and Modifications

Your PortaSound contains no user serviceable parts. Opening it or tampering with it in any way can lead to electrical shock as well as damage. Of course, any resulting damage will not longer be repaired free of charge. Refer all servicing to qualified YAMAHA personnel.

YAMAHA is NOT responsible for damage caused by improper use.

Specifications

Keyboard Master Controls

61 half-sized keys (C1-C6)
Power switch, Master Volume,
Demo Start/Stop button

Voices Styles

100 AWM Voices
50 Basic Rhythm Styles and
Arrangements

Style/Voice Select

Number buttons 0-9, Increment/
Decrement buttons, Style/Voice
buttons, Style/Voice Display
On/Off button, Joy Stick

Vector Synthesizer

Multi Display Voice Effects

Increment/Decrement buttons
Harmony (On/Off), Volume, Vibrato,
Reverb buttons, Pitch Bend wheel
Tempo, Transpose, Tuning buttons
Keyboard Transmit Channel,
Memory Bulk Dump buttons,
Receive Channel/Clock, Receive
On/Off buttons

Overall Controls MIDI Controls

Song Memory

Song#/Measure Display, Increment/
Decrement buttons, Record/Clear
buttons, Track Select buttons (Melody
1-5, Vector Synth, Pad, Auto
Accomp.) Reset/Rewind/Stop/Play/
Fast Forward buttons

Auto Accompaniment

Single Finger/Fingered buttons for
Fingering Assign, Intro/Large/Bridge
buttons for Orchestration Start/Stop,
Fill to Normal, Fill to Bridge, Synchro
Start/Ending buttons for
Accompaniment Control

Pads

Pads 1-8, Pad Assign On/Off button

Terminals

MIDI THRU, MIDI OUT, MIDI IN
HEADPHONES/AUX. OUT (stereo),
DC 9-12V IN

Amplifiers Speakers Power Source

3W × 2
10cm × 2 (8 ohms)
DC 9V
(6 batteries: 1.5V SUM-2, R-14)
AC power adaptor:
PA-3, PA-4, PA-40

Dimensions

776mm (W) × 302mm (D) × 141mm
(H)

Weight Accessories Optional Items

4.5 kg (without batteries)

PA-3, PA-4, PA-40 AC power
adaptor

YAMAHA reserves the right to make design and specification changes in the interests of product improvement without prior notice.

Function ...		Transmitted Manual / Accomp / Rhythm		Recognized	Remarks
Basic Channel	Default Changed	1 / 10-15 / 16	1-16	1-16 1-16(*1)	
Mode	Default Messages Altered	3(*2) x *****	3(*3) x x		
Note Number	True voice	0-127(*4) *****	0-127 0-127		
Velocity	Note on Note off	x 9nH, v=1-127(*5) x 9nH, v=0	o 9nH, v=1-127 x 9nH, v=0 / 8nH		
After Touch	Key's Ch's	x x	x x		
Pitch Bender		o	o	7 bit resolution	
Control Change	1 7 91	o o o	o(*6) o o(*6)	VIBRATO SW VOLUME SW REVERB SW (VOICE EFFECT)	
Program Change	True #	o(*7) *****	o 0-127(*8) 0-99		
System Exclusive		o	o		
System Common	Song pos Song Sel Tune	x x x	x x x		
System Real Time	Clock Commands	o o	o(*9) o(*10)		
Aux Messages	Local ON/OFF All Notes OFF Active Sense Reset	x x o x	x o o x		

Notes :

- *1: Possible to set ON/OFF individually on each channel (: 1-16ch).
- *2: Multi-timbre.
- *3: Multi-timbre Dynamic Voice Allocation.
- *4: Keys; 12-108, While the Song Memory data are being Played back; 0-127.
- *5: Manual; Fixed value 7FH when performed by pressing Keys or Pads. Recorded value when Song Memory is played back. Accomp.; Various values.
- *6: Not received by every VOICE selected.
- *7: A VOICE number transmitted after converted to the corresponding Program Change number according to PortaSound Standard Voice Number.
- *8: Received according to PortaSound Standard Voice Number. Ignores the Message based on Ch.16.
- *9: Possible to set ON/OFF manually.
- *10: Receives only STOP while the Song Memory data are being recorded.

Remark: Among all the MIDI Messages from MIDI IN, Channel Messages explained in "Recognized" fields above will be output from the MIDI OUT as they were received. (Merged to the data generated by the PSS-790.)

YAMAHA

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