PORTATONE

YAMAHA

PSR-420
PSR-320

Owner's Manual

··············· Congratulations! ················

You are the proud owner of a fine electronic keyboard. The Yamaha PSR-320/420 PortaTone combines the most advanced AWM tone generation technology with state-of-the-art digital electronics and features to give you stunning sound quality with maximum musical enjoyment. A new large graphic display and easy-to-use interface also greatly enhance the operability of this advanced instrument.

In order to make the most of your PortaTone's features and extensive performance potential, we urge you to read the manual thoroughly while trying out the various features described. Keep the manual in a safe place for later reference.

··············· Important Features ···············

● 128 outstanding voices with eight percussion kits.

● A Voice Set function automatically selects appropriate voice parameters whenever a voice is selected.

● 100 accompaniment styles, each with independent intro, main A and B, 4 fill-ins, and ending sections.

● Advanced auto-accompaniment technology gives you fully-orchestrated accompaniment to back up what you play on the keyboard.

● Large multi-function LCD display panel makes it easy to select and edit parameters.

● One Touch Setting feature automatically selects appropriate voice, effect, and other settings for the selected accompaniment style — all you have to do is select a style and play.

● Digital effects add depth and ambience to your sound.

● Guide, Minus One, and Repeat functions are ideal for learning new songs and polishing your keyboard technique.

● Song recording feature lets you record two melody tracks with an accompaniment track.

● Multi Pads play a number of short rhythmic and melodic sequences that can be used to add impact and variety to your performances.

● Registration Memory saves your favorite panel settings for instant recall when needed.

● Optional Yamaha Music Cartridges can be plugged in for enjoyable automated performance, keyboard practice, and extra accompaniment styles.

● Built-in amplifier and speaker system delivers top-quality sound without the need for external equipment.

⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯ Contents ⋯⋯⋯⋯⋯⋯⋯⋯⋯

··········· Taking Care of Your PortaTone ···········

Your PortaTone will give you years of playing pleasure if you follow the simple rules given below:

■ Location

Do not expose the instrument to the following conditions to avoid deformation, discoloration, or more serious damage.

- Direct sunlight (e.g. near a window).
- High temperatures (e.g. near a heat source, outside, or in a car during the daytime).
- Excessive humidity.
- Excessive dust.
- Strong vibration.

■ Power Supply

- Turn the power switch OFF when the instrument is not in use.
- An AC adaptor, if used (the PSR-320/420 runs from either batteries or an optional AC adaptor), should be unplugged from the AC outlet if the instrument is not to be used for an extended period of time.
- Unplug the AC adaptor during electric storms.
- Avoid plugging the AC adaptor into the same AC outlet as appliances with high power consumption, such as electric heaters or ovens. Also avoid using multi-plug adaptors since these can result in reduced sound quality, operation errors, and possibly damage.

■ Turn Power OFF When Making Connections

- To avoid damage to the instrument and other devices to which it is connected, turn the power switches of all related devices OFF prior to connecting or disconnecting MIDI cables.

■ Handling and Transport

- Never apply excessive force to the controls, connectors or other parts of the instrument.
- Always unplug cables by gripping the plug firmly, not by pulling on the cable.

- Disconnect all cables before moving the instrument.
- Physical shocks caused by dropping, bumping, or placing heavy objects on the instrument can result in scratches and more serious damage.

■ Cleaning

- Clean the cabinet and panel with a dry soft cloth.
- A slightly damp cloth may be used to remove stubborn grime and dirt.
- Never use cleaners such as alcohol or thinner.
- Avoid placing vinyl objects on top of the instrument (vinyl can stick to and discolor the surface).

■ Electrical Interference

- This instrument contains digital circuitry and may cause interference if placed too close to radio or television receivers. If this occurs, move the instrument further away from the affected equipment.

■ Data Backup

- Internal data (registration memory and song data) will be retained in memory even if the power switch is turned OFF as long as an AC power adaptor is connected or batteries are installed.

■ Service and Modification

- The PSR-320/420 contains no user serviceable parts. Opening it or tampering with it in anyway can lead to irreparable damage and possibly electric shock. Refer all servicing to qualified YAMAHA personnel.

YAMAHA is not responsible for damage caused by improper handling or operation.

PSR-320

PSR-420

YAMAHA

PSR-320

■ Top Panel Controls ....

PSR-420

■ Rear Panel Controls ....

This section contains information about setting up your PSR-320/
420 and preparing to play. Be sure to go through this section
carefully before using your PSR-320/420.

Power Supply

Your PSR-320/420 will run either from batteries or an optional power adaptor. Follow the instructions below according to the power source you intend to use.

■ Using An Optional AC Power Adaptor ....

Plug the DC output cable from an optional Yamaha PA-5, PA-5B, or PA-5C AC Power Adaptor into the **DC IN** jack on the rear panel of the PSR-320/420, then plug the Power Adaptor (or the AC cable of the Power Adaptor) into a convenient wall AC power socket. The internal batteries are automatically disconnected when an AC Power Adaptor is used.

DC IN 10-12V
+ –⊙– –

PA-5,
PA-5B,
or
PA-5C → AC power socket
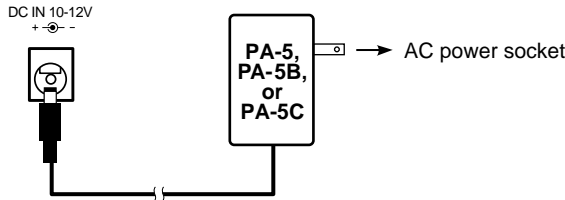
■ Using Batteries ....

For battery operation the PSR-320/420 requires six 1.5V SUM-1, "D" size, R-20 or equivalent batteries.

When the batteries need to be replaced "Btry Low" will appear on the display. Also the volume may be reduced, the sound may be distorted, and other problems may occur. When this happens, turn the power off and either replace the batteries or connect an AC adaptor.

Replace the batteries as follows:

1 Open the battery compartment cover located on the instrument's bottom panel.

2 Insert the six new batteries, being careful to follow the polarity markings on the inside of the compartment.

3 Replace the compartment cover, making sure that it locks firmly in place.
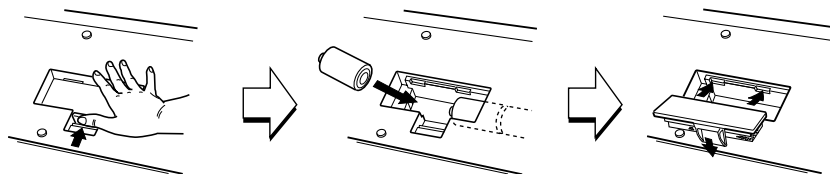
⚡ CAUTION

• **Never interrupt the power supply (e.g. remove the batteries or unplug the AC adaptor) during any PSR-320/420 record operation! Doing so can result in a loss of data.**

⚡ CAUTION

• **Use ONLY a Yamaha PA-5, PA-5B, or PA-5C AC Power Adaptor to power your instrument from the AC mains. The use of other adaptors may result in irreparable damage to both the adaptor and the PSR-320/420.**

⚡ CAUTION

• **When the batteries run down, replace them with a complete set of six new batteries. NEVER mix old and new batteries.**

• **Do not use different kinds of batteries (e.g. alkaline and manganese) at the same time.**

• **To prevent possible damage due to battery leakage, remove the batteries from the instrument if it is not to be used for an extended period of time.**

Connections

■ The PHONES Jack

A standard pair of stereo headphones can be plugged in here for private practice or late-night playing. The internal stereo speaker system is automatically shut off when a pair of headphones is plugged into the **PHONES** jack.
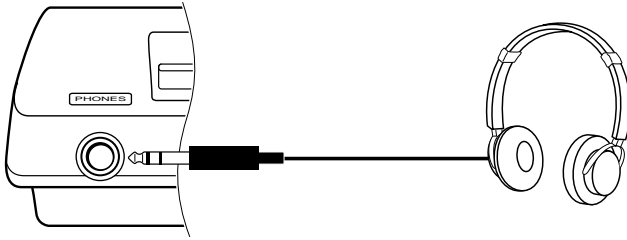
■ SUSTAIN Jack

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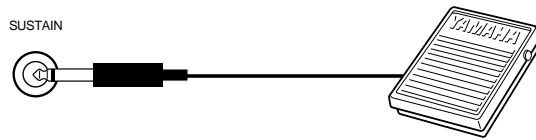
SUSTAIN

■ MIDI IN and OUT Connectors

The **MIDI IN** connector receives MIDI data from an external MIDI device (such as a MIDI sequencer) which can be used to control the PSR-320/420. The **MIDI OUT** connector transmits MIDI data generated by the PSR-320/420 (e.g. note and velocity data produced by playing the keyboard). More details on MIDI are provided on page 56.

OUT — MIDI — IN
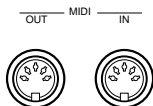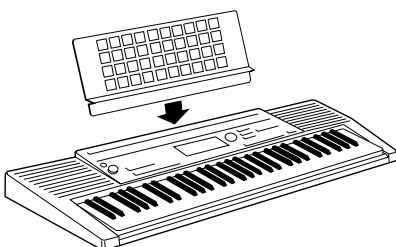
The Music Stand

The PSR-320/420 is supplied with a music stand that can be attached to the instrument by inserting it into the slot at the rear of the control panel.
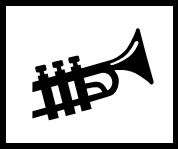
The Demonstration

Once you've set up your PSR-320/420, try listening to the pre-programmed demonstration songs — they'll give you a good idea of what the PSR-320/420 can do! A total of 16 demo songs are provided — songs 01 through 08 have been created to demonstrate several of the instrument's voices, while songs 09 through 16 demonstrate a range of accompaniment styles.
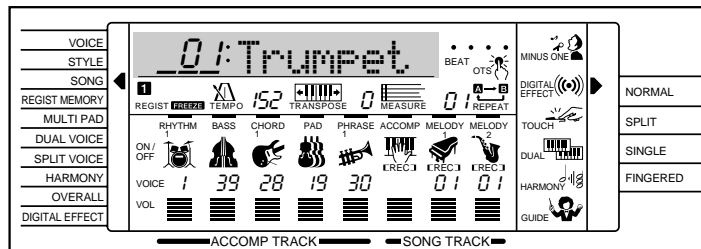
PSR-420

1 Switch ON

Turn the power ON by pressing the **[POWER]** switch.

POWER
ON / OFF

2 Set an Initial Volume Level

Turn the **[MASTER VOLUME]** control up (clockwise) about a quarter-turn from its minimum position. You can re-adjust the **[MASTER VOLUME]** control for the most comfortable overall volume level after playback begins.

MASTER VOLUME

MIN   MAX
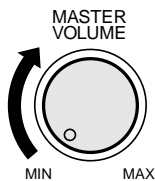
3 **Press the [DEMO] Button**

Press the **[DEMO]** button to start demo playback. The PSR-320/420 SONG mode will automatically be selected and the number and name of the first demo song will appear on the top line of the display and the SONG **[PLAY/STOP]** indicator will light. The demo will begin playing automatically. The demo songs will play in sequence, and the sequence will repeat until stopped.

01:Trumpet.

PSR-420

4 **Skip to the Beginning Of a Different Demo Song**
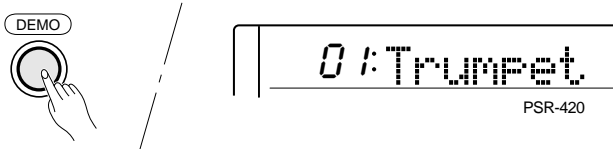
While the demonstration is playing you can select any of the 16 demo songs by using the **[–/NO]** and **[+/YES]** buttons or the number buttons. Playback will skip to the beginning of the selected song.
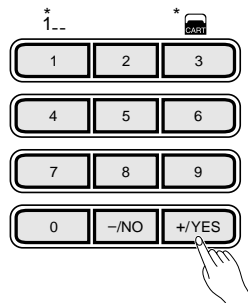
5 **Exit When Done**

Press the **[DEMO]** button, the SONG **[PLAY/STOP]** button, or the AUTO ACCOMPANIMENT **[START/STOP]** button to stop demo playback, then press the **[VOICE]** button to exit from the song mode and return to the normal play-mode display when you've finished playing the demo songs.

Basic Display Operation ----------

The PSR-320/420 LCD panel is a large multi-function type that simultaneously displays and provides access to a number of important parameters. Basic operation of the display as well as the CURSOR, FUNCTION, MODE, and NUMBER buttons, and the meaning of the icons which appear in the display, are summarized briefly below.

The Cursor Buttons

The CURSOR buttons are used to select the various parameters which appear in the display. Depending on the selected parameter, the "cursor" may appear as an underline, or the selected icon or value may simply flash. Each CURSOR button moves the cursor in the corresponding direction. The [▲] and [▼] CURSOR buttons are also used to select functions within the function groups selected by the FUNCTION buttons in some cases.

Parameter Icons

CART (Cartridge)
Appears when a Music Cartridge song, style, or registration memory is selected (page 44).

BEAT
Flashes at the current tempo and indicates the current beat during accompaniment and song playback. (page 26)

OTS (One Touch Setting)
Appears when the ONE TOUCH SETTING feature is engaged (page 31).

The Functions

The PSR-320/420 has a range of functions selected via the FUNCTION [▲] and [▼] buttons — e.g. voice selection, style selection, song number selection, etc. The currently selected function is indicated by an arrow in the display next to the function list printed immediately to the left of the display. All of the listed functions can be selected by pressing either the FUNCTION [▲] or [▼] button as many times as necessary until the arrow in the display appears next to the name of the desired function.

CURSOR

FUNCTION
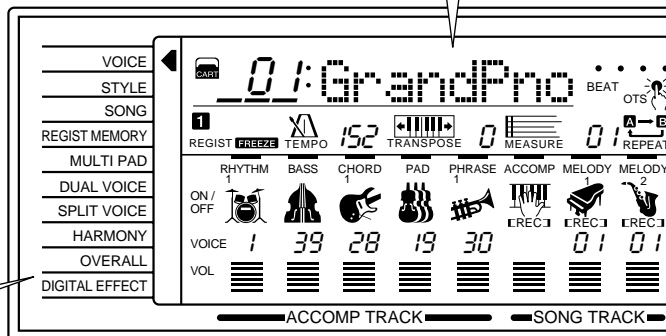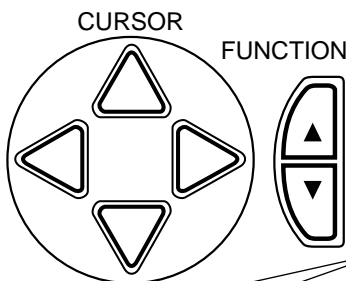
Accompaniment Track Parameters & Icons

The PSR-320/420 has 5 accompaniment tracks, each with on/off, voice number, and volume parameters that can be set as required (page 29). Each track has its own icon which appears when the track is on.

RHYTHM   BASS   CHORD   PAD   PHRASE
1   1

REGIST (Registration Memory)
Indicates the currently selected REG-ISTRATION MEMORY number (page 33).

TEMPO
Shows the current tempo of accompaniment/song playback (page 24).

TRANSPOSE
The current transpose value (page 20).
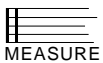
MEASURE
Indicates the current measure number during song recording and playback (page 40).

REPEAT
Indicates the "A" and "B" repeat points when programming a repeat section. (page 51)

The Modes

The MODE button to the right of the display selects one of the PSR-320/420's four operational modes: NORMAL, SPLIT, SINGLE, and FINGERED. The currently selected mode is indicated by an arrow in the display next to the mode list printed immediately to the right of the display. All of the listed modes can be selected by pressing the MODE button as many times as necessary until the arrow in the display appears next to the name of the desired mode.

NORMAL: The normal play mode (page 12).

SPLIT: The split-keyboard mode in which different voices can be played by the left and right hands (page 15).

SINGLE: The single-finger accompaniment mode which allows fully-orchestrated accompaniment to be produced by specifying chords using only one, two or three fingers (page 22).

FINGERED: The fingered accompaniment mode in which fully-orchestrated accompaniment is produced according to chords you play on the keyboard (page 22).

MODE
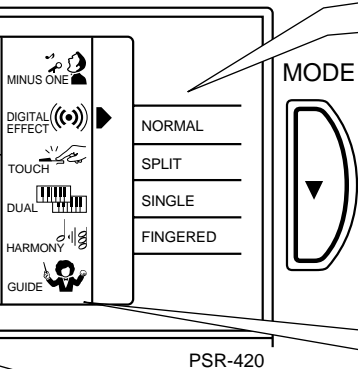
PSR-420

Feature On/Off Icons

MINUS ONE
Appears when the MINUS ONE feature is on (page 49).

DIGITAL EFFECT
Appears when the DIGITAL EFFECT is on (page 19).

TOUCH (Touch Response)
Appears when TOUCH RESPONSE is on (page 17).

DUAL (Dual Voice)
Appears when the DUAL VOICE feature is on (page 18).

HARMONY
Appears when HARMONY is on (page 31).

GUIDE (PSR-420)
Appears when the GUIDE feature is on (page 50).

Song Track Parameters & Icons

Like the accompaniment tracks, each of the 3 song tracks has on/off, voice number (MELODY tracks), and volume parameters that can be set as required (page 35). Each track has its own icon which appears when the track is on.

ACCOMP   MELODY 1   MELODY 2
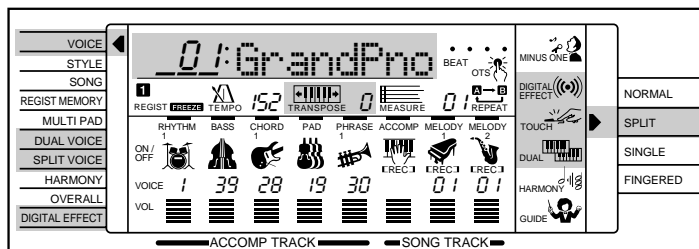
PSR-420

Selecting & Playing Voices

The PSR-320/420 has 128 outstanding "pitched" voices (voice numbers 01 through 128) and 8 percussion kits (numbers 129 through 136) that you can select and play on the keyboard.

1 Select the NORMAL Mode

If you want to play a single voice over the entire range of the PSR-320/420 keyboard, you'll need to select the NORMAL mode. To do this, press the **[MODE]** button to the right of the display as many times as necessary until the arrow in the display appears next to "NORMAL" in the mode list to the right of the display. The other modes will be described later in this manual.
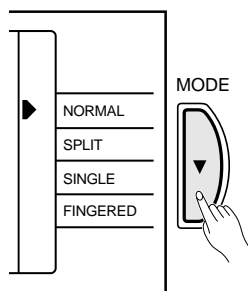
2 Select the VOICE Function

Before you select a voice to play, the PSR-320/420 voice function must be selected. The simplest way to do this is to press the **[VOICE]** button. This immediately selects the VOICE function no matter what function was previously selected.

An alternative method is to press the **[FUNCTION]** button to the left of the display as many times as necessary until the arrowhead in the display appears next to "VOICE" in the function list to the left of the display.

NOTES

• "Kybd Vol" function in the OVER-ALL function group can be quickly selected by pressing and holding the [VOICE] button.

3 Select a Voice

The PSR-320/420 has 136 voices that can be selected by using either the **[–/NO]** and **[+/YES]** buttons or the number buttons. The voices are listed in the VOICE list printed at the top of the instrument's control panel. The number and name of the currently selected voice appears on the top line of the display panel while the VOICE function is selected.

● **The [–/NO] and [+/YES] Buttons**

When the VOICE function is selected these buttons step up or down through the PSR-320/420's voices. Press either button briefly to step to the next voice in the corresponding direction, or hold the button to scroll rapidly through the voices in the corresponding direction.
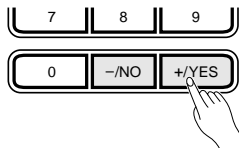
● **The Number Buttons**

The number buttons can be used to directly enter the number of the desired voice, thereby immediately selecting that voice without having to step through a number of other voices.

Two-digit voice numbers (i.e. "01" through "99") are selected simply by entering the two digits in sequence — e.g. to select voice number "57", briefly press the **[5]** buttons and then the **[7]** button.
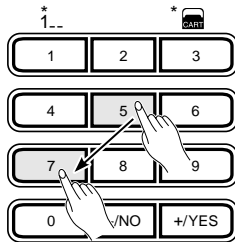
Three-digit voice numbers (i.e. "100" through "136") are entered by first pressing and holding the **[1]** button until "1" appears in the hundreds position on the display, then press the remaining two digits in sequence.

4 Play & Adjust Volume

You can now play the selected voice on the PSR-320/420 keyboard. On the PSR-420 the keyboard guide lamps will light according to the keys played (page 50). Use the **[MASTER VOLUME]** control to adjust the over-all volume level.

⌨ NOTES

- *The keyboard volume can be adjusted independently from the accompaniment volume via the "Kybd Vol" function in the OVER-ALL function group — see page 53. "Kybd Vol" function can be quickly selected by pressing and holding the [VOICE] button.*

■ Keyboard Percussion

When one of the eight PERCUSSION KIT voices are selected — voice numbers 129 through 136 — you can play drums and percussion instruments on the keyboard. The drums and percussion instruments played by the various keys are marked by symbols below the keys.

```
VOICE ◀
STYLE      129:Std.Kit
SONG
```

● The Percussion Kits

129	Standard Kit
130	Room Kit
131	Rock Kit
132	Electronic Kit
133	Analog Kit
134	Jazz Kit
135	Brush Kit
136	Classic Kit
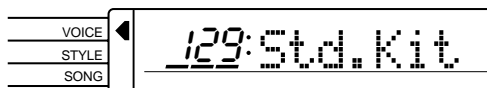
⌨ NOTES

- *The Harmony, Dual and Digital Effect functions (pages 31, 18 and 19) cannot be turned on while a keyboard percussion voice is selected, and will automatically be turned off if a keyboard percussion voice is selected while they are on.*

- *The TRANSPOSE parameter (page 20) has no effect on the keyboard percussion voices.*

- *See page 66 for a complete listing of the keyboard percussion drum instrument assignments.*

The Split Mode

The SPLIT mode lets you play different voices with the left and right hands. You could, for example, play bass with the left hand while playing piano with the right. The right-hand voice is the keyboard voice you select in the normal way (page 12), and the left hand voice is selected via the SPLIT VOICE function, described below. The "split point" is initially set at B2 (note number 59), but it can be set at any key on the keyboard.

The SPLIT mode is engaged by pressing the **[MODE]** button so that the indicator in the display appears next to "SPLIT" in the mode list to the right of the display.

Split Point
Voice selected via the VOICE function
MODE

NORMAL
SPLIT
SINGLE
FINGERED
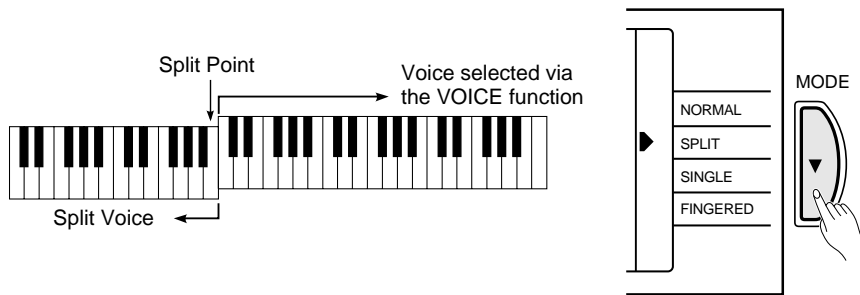
Split Voice

> **NOTES**
>
> • *The SPLIT mode and DUAL VOICE feature (page 18) can be used together. In this case the dual voice plays simultaneously with the right-hand voice only.*

— Changing the Split Voice & Related Parameters —

1 Select the SPLIT VOICE Function ....

Press the **[FUNCTION]** button to the left of the display as many times as necessary until the arrowhead in the display appears next to "SPLIT VOICE" in the function list to the left of the display.

FUNCTION

VOICE
STYLE
SONG
REGIST MEMORY
MULTI PAD
DUAL VOICE
SPLIT VOICE
HARMONY
OVERALL
DIGITAL EFFECT

33:Aco.Bass

2 Select the Function and Set As Required ....

Use the cursor **[▲]** and **[▼]** buttons to select the desired function, and then the **[–/NO]** and **[+/YES]** buttons or number buttons to set as required (the name of the selected function and its current setting appear on the top line of the display).

CURSOR

Function	Description
Split Voice	The split voice can be changed as required while the number and name of the current split voice appear on the top line of the display.
S. o luNE	Sets the volume of the split voice so you can create the optimum blend with the right-hand voice. The volume range is from "00" (no sound) to "127" (maximum split voice volume).
S.OctaE	Shifts the pitch of the split voice up or down one or two octaves. "–1" is down one octave, "–2" is down two octaves; "+1" and "+2" are up one and two octaves, respectively.
S.PAn	Positions the split voice in the stereo sound field. The pan range is from "–7" to "+7". "–7" is full left and "+7" is full right.
S.SPl it	Sets the keyboard split point — i.e. the key that separates the left- and right-hand voices (the split-point key is included in the left-hand section of the keyboard). Simply press the key you want to assign as the split point. The key number of the key you press will appear to the left of "S.Split" on the top line of the display. You can also use the [–/NO] and [+/YES] buttons or number buttons to enter the split point key number. The lowest key on the keyboard (C1) is key number "36", middle C (C3) is "60", and the highest key (C6) is 96. The split point can be set at any key number from 00 through 127, allowing the split point to be set outside the range of the PSR-320/420 keyboard for MIDI applications. The default split point is 59 (B2).

📖 NOTES

• *If the Voice Set function is ON (page 54), the Split Voice parameters will change automatically whenever a different keyboard voice is selected.*

• *The selected Split Voice parameter can be reset to its initial value by simultaneously pressing the [–/NO] and [+/YES] buttons.*

• *Negative values with "S.Octave" and "S.Pan" parameters can be entered by pressing the number buttons while holding the [–/NO] button.*

3 Exit ....

Press the **[VOICE]** button or select a different function to exit from the SPLIT VOICE function.

Touch Response

This function turns the touch response of the keyboard on or off. Use the KEYBOARD **[TOUCH RESPONSE]** button to turn touch response ON or OFF as required. The touch-response icon will appear next to "TOUCH" in the display when touch response is turned ON. The actual touch response sensitivity of the keyboard can be adjusted via the "Touch Sensitivity" function in the OVERALL function group (page 54). When OFF (i.e. when the touch-response icon is not showing) the same volume is produced no matter how hard you play on the keyboard. Touch response can be turned OFF to produce a more realistic effect with voices that normally do not have touch response: e.g. organ and harpsichord.
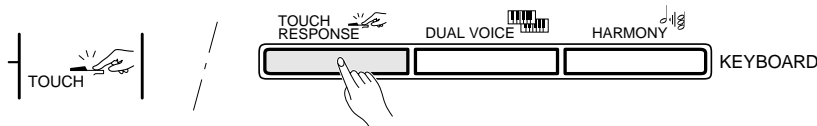
NOTES

• *Touch Response is turned on whenever the power switch is turned on.*

• *"Touch Sensitivity" function in the OVERALL function group can be quickly selected by pressing and holding the [TOUCH RESPONSE] button.*

Dual Voice

When the DUAL VOICE feature is engaged you can play two voices simultaneously across the entire keyboard — the keyboard voice you select in the normal way (page 12), and a "dual" voice selected via the DUAL VOICE function.

The DUAL VOICE feature is turned on and off by pressing the **[DUAL VOICE]** button. The dual-voice icon (overlapping keyboards) will appear next to "DUAL" in the display when DUAL VOICE is turned on.
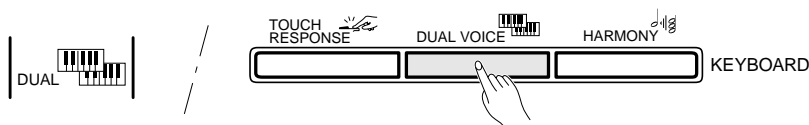
─────── Changing the Dual Voice & Related Parameters ───────

1 Select the DUAL VOICE Function ....

Press the **[FUNCTION]** button to the left of the display as many times as necessary until the arrowhead in the display appears next to "DUAL VOICE" in the function list to the left of the display.

2 Select the Function and Set As Required ....

Use the cursor **[▲]** and **[▼]** buttons to select the desired function, and then the **[–/NO]** and **[+/YES]** buttons or number buttons to set as required (the name of the selected function and its current setting appear on the top line of the display).

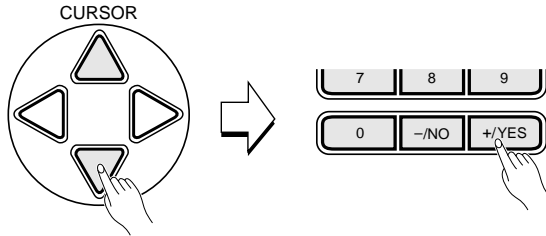| Function	Description
Dual Voice	The dual voice can be changed as required while the number and name of the current dual voice appear on the top line of the display.
. o luПE	Sets the volume of the dual voice so you can create the optimum blend with the main keyboard voice. The volume range is from "00" (no sound) to "127" (maximum dual voice volume).
.Oct∂ 2	Shifts the pitch of the dual voice up or down one or two octaves. "–1" is down one octave, "–2" is down two octaves; "+1" and "+2" are up one and two octaves, respectively. The original octave of the dual voice is determined by the Octave function in the OVERALL function group — page 53.
.P∂n	Positions the dual voice in the stereo sound field. The pan range is from "–7" to +"7". "–7" is full left and "+7" is full right.

3 Exit ....

Press the **[VOICE]** button or select a different function to exit from the DUAL VOICE function.

Digital Effects

The PSR-320/420 has four digital effects — Ambience, Ensemble, and Ambience+Ensemble, and Sustain — that can be turned ON or OFF via the **[DIGITAL EFFECT]** button. The individual effects are as follows:
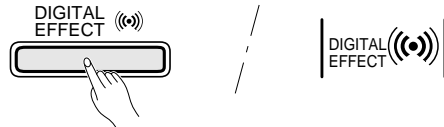
1:*Amb ience*	A reverb-like effect that adds an "ambient" feel to notes played on the keyboard.
2:*Ensemble*	This effect produces a thicker, "detuned" sound. Please note that the DUAL VOICE function (described below) cannot be used at the same time as the Ensemble effect. DUAL VOICE will be automatically turned off when the Ensemble effect is turned on, and vice versa.
3:*Amb+Ens*	A combination of the Ambience and Ensemble effects described above.
4:*Sustain*	When Sustain is selected, all notes played on the keyboard have a longer sustain.

You can change the digital effect applied to the current voice as follows:

Changing the Digital Effect

1 **Select the DIGITAL EFFECT Function**...

Press the **[FUNCTION]** button to the left of the display as many times as necessary until the arrowhead in the display appears next to "DIGITAL EFFECT" in the function list to the left of the display.

You can also select the DIGITAL EFFECT function by pressing and holding the **[DIGITAL EFFECT]** button until the arrow jumps the DIGITAL EFFECT position on the display.

FUNCTION

VOICE
STYLE
SONG
REGIST MEMORY
MULTI PAD
DUAL VOICE
SPLIT VOICE
HARMONY
OVERALL
DIGITAL EFFECT ◄

3:Amb+Ens
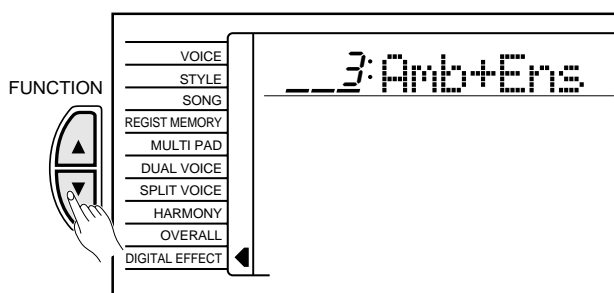
2 Select the Effect

Use the **[–/NO]** and **[+/YES]** buttons or number buttons to select the various effects (the name of the selected effect appears on the top line of the display.
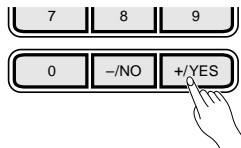
3 Exit

Press the **[VOICE]** button or select a different function to exit from the DIGITAL EFFECT function.

Transposition

This functions allow the overall pitch of the PSR-320/420 to be transposed up or down by a maximum of one octave in semitone increments.

1 Move the Cursor to the Transpose Value

Use the **CURSOR** buttons to select the number to the right of the keyboard icon labeled "TRANSPOSE" on the display (the number will flash when selected).
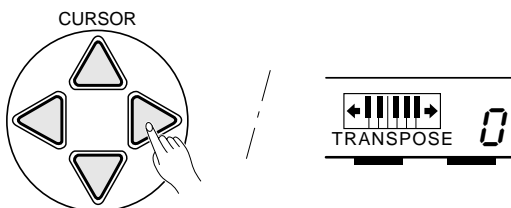
TRANSPOSE 0

▦ NOTES

- *Press the [–/NO] and [+/YES] buttons simultaneously to instantly reset the transpose value to "0".*

- *The new transpose value will apply from the next note played.*

2 Set the Transposition As Required

Use the **[–/NO]** and **[+/YES]** buttons or the number buttons to set the desired degree of transposition. The transpose range is from –12 to +12, allowing a maximum upward or downward transposition of 1-octave. A setting of "0" produces the normal pitch.
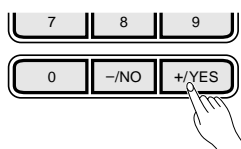
▦ NOTES

- *Negative values can be entered by pressing the number buttons while holding the [–/NO] button.*

Using Auto Accompaniment

The PSR-320/420 has 100 different accompaniment "styles" that can be used to provide fully-orchestrated or rhythm-only accompaniment. The PSR-320/420's sophisticated Auto Accompaniment system can provide automated bass and chord backing that is perfectly matched to the selected accompaniment style.

⌨ **NOTES**

• *The maximum number of notes that can be played simultaneously on the PSR-320/420 keyboard is reduced when the Accompaniment mode is used.*
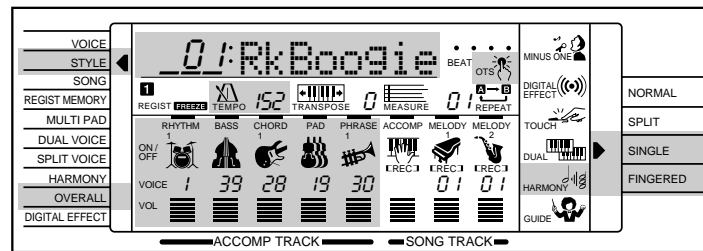
PSR-420

1 Select the SINGLE or FINGERED Accompaniment Mode

Press the **[MODE]** button to the right of the display as many times as necessary until the arrow in the display appears next to "SINGLE" or "FINGERED" in the mode list to the right of the display. If you select the "SINGLE" mode, accompaniment chords are played as follows:
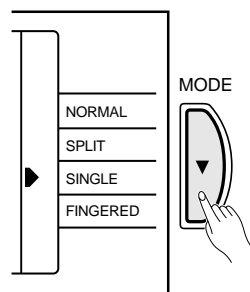
● SINGLE FINGER ACCOMPANIMENT

Single-finger accompaniment makes it simple to produce beautifully orchestrated accompaniment using major, seventh, minor and minor-seventh chords by pressing a minimum number of keys on the left-hand section of the keyboard. The abbreviated chord fingerings described below are used:

C

■ For a major chord, press the root key only.

Cm

■ For a minor chord, simultaneously press the root key and a black key to its left.

C7

■ For a seventh chord, simultaneously press the root key and a white key to its left.

Cm7
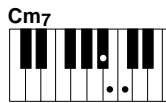
■ For a minor-seventh chord, simultaneously press the root key and both a white and black key to its left.

2 If the FINGERED Mode is Selected, Select the Desired Fingering Mode ....
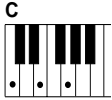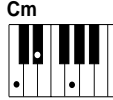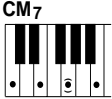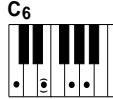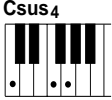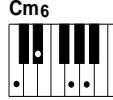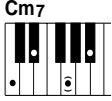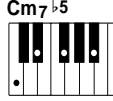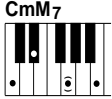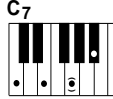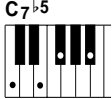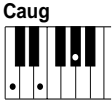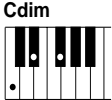
The PSR-320/420 has two fingering modes for fingered accompaniment — Normal and Full. The NORMAL mode is automatically selected whenever the power is turned ON. To select a different fingering mode first select the OVERALL functions by pressing the **[FUNCTION]** button to the left of the display as many times as necessary until the arrowhead in the display appears next to "OVERALL" in the function list to the left of the display. "FngrngMd" should appear on the top line of the display (if a different OVERALL function is selected, press the cursor **[▲]** or **[▼]** button as many times as necessary until "FngrngMd" appears). Then use the **[–/NO]** and **[+/YES]** buttons to select the desired fingering mode (the mode abbreviation appears to the left of "FngrngMd" on the display).
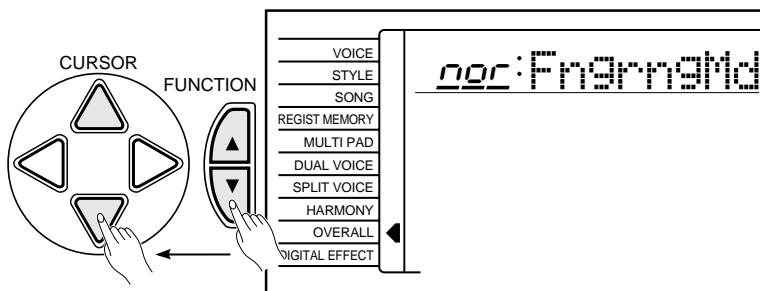
The normal ("nor") and full ("Full") fingering modes function as follows:

● NORMAL

This is the default FINGERED accompaniment mode. The NORMAL mode lets you finger your own chords on the left-hand section of the keyboard (i.e. all keys to the left of and including the split-point key — normally 54 while the PSR-320/420 supplies appropriately orchestrated rhythm, bass, and chord accompaniment in the selected style.
The FINGERED mode will accept the chord types listed below (notes in parentheses may be omitted).

Example for "C" chords

C   Cm

CM7   C6

Csus4   Cm6

Cm7   Cm7♭5

CmM7   C7

C7♭5   C7sus4

Caug   C7aug

Cdim   Cdim7

C1+2+5

Chord Name/[Abbreviation]	Normal Voicing
Major [M]	1-3-5
Minor [m]	1-♭3-5
Major seventh [M7]	1-3-(5)-7
Major sixth [6]	1-(3)-5-6
Suspended fourth [sus4]	1-4-5
Minor sixth [m6]	1-♭3-5-6
Minor seventh [m7]	1-♭3-(5)-♭7
Minor seventh flatted fifth [m7♭5]	1-♭3-♭5-♭7
Minor major seventh [mM7]	1-♭3-(5)-7
Seventh [7]	1-3-(5)-♭7
Seventh flatted fifth [7♭5]	1-3-♭5-♭7
Seventh suspended fourth [7sus4]	1-4-5-♭7
Augmented [aug]	1-3-♯5
(Seventh augmented [7aug]	1-3-♯5-♭7)
Diminished [dim]	1-♭3-♭5
(Diminished seventh [dim7]	1-♭3-♭5-6)
One + Two + Five	1-2-5

NOTES

- If you play any three adjacent keys (including black keys), the chord sound will be canceled and only the rhythm instruments will continue playing (CHORD CANCEL function).

- An octave produces accompaniment based only on the root.

- The chord fingerings listed are all in "root" position, but other inversions can be used — with the following exceptions:
  * 6 chords are only recognized in root position. All other inversions are interpreted as m7.
  * m6 chords are only recognized in root position. All other inversions are interpreted as m7♭5.
  * 1+2+5 chords are only recognized in root position. All other inversions are interpreted as sus4.
  * With augmented chords the lowest note played is assumed to be the root.
  * With 7♭5 chords the lowest note played is assumed to be the root or ♭7.

● FULL

In this mode chords played anywhere on the keyboard are detected and used for Auto Accompaniment. Otherwise the keyboard functions normally, and the entire range is available for playing. Chord recognition is the same as in the NORMAL mode. This means you can play in just about any style anywhere on the keyboard, and the PSR-320/420 will automatically produce appropriate accompaniment.

NOTES

- A single note eleven notes higher than the lowest note of the chord is recognized as a melody note.

- The Harmony function (page 31) has no effect in the FULL mode.

3 Select the Style Function

Press the **[STYLE]** button to directly select the STYLE function.

Another way to do this is to press the **[FUNCTION]** button to the left of the display as many times as necessary until the arrowhead in the display appears next to "STYLE" in the function list to the left of the display.
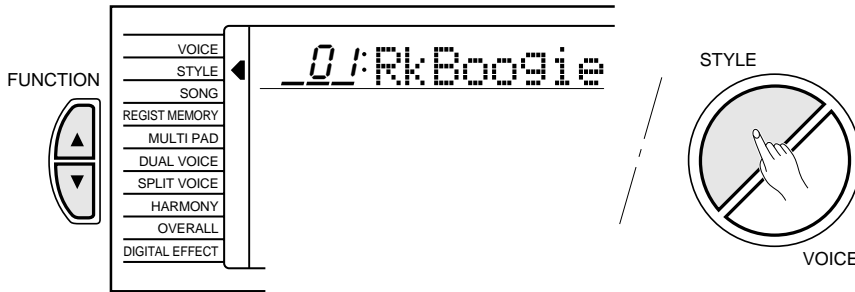
4 Select a Style

The PSR-320/420 has 100 styles that can be selected by using either the **[–/NO]** and **[+/YES]** buttons or the number buttons (these controls function in the same way as for voice selection — see page 13). The styles are listed in the STYLE list printed at the top of the instrument's control panel. The number and name of the currently selected style appears on the top line of the display while the STYLE function is selected.

5 Set the Tempo

When you select a different style while the accompaniment is not playing, the "default" tempo for that style is also selected, and the tempo is displayed to the right of the metronome icon ("TEMPO") in quarter-note beats per minute. If the accompaniment is playing and the One Touch Setting function is off (page 31), the same tempo is maintained even if you select a different style.

You can change the tempo to any value between 32 and 280 beats per minute, however, by using TEMPO **[▲]** and **[▼]** buttons. Press either button briefly to decrement or increment the tempo value by one, or hold the button for continuous decrementing or incrementing. The default tempo for the selected style can be recalled at any time by pressing both the TEMPO **[▲]** and **[▼]** buttons simultaneously.
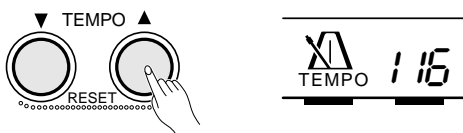
You can also use the **CURSOR** buttons or the number buttons to select the tempo value in the display, and then use the **[–/NO]** and **[+/YES]** buttons to set the tempo value as required. In this case the **[–/NO]** and **[+/YES]** buttons can be pressed simultaneously to recall the default tempo. This can be done either before the accompaniment is started or while it is playing.

*   *In this case, three-digit numbers (i.e. "100" through "280") are entered by first pressing and holding the [1] or [2] button until "1" or "2" appears in the hundreds position on the display, then press the remaining two digits in sequence.*

6 Start the Accompaniment

There are several ways to start the accompaniment:

● **Straight start:**
Press the **[START/STOP]** button. The rhythm will begin playing immediately without bass and chord accompaniment. The currently selected MAIN **[A]** or **[B]** section will play.

● **Start with an introduction followed by the MAIN A variation:**
Press the **[INTRO]** button so that its indicator lights, press the MAIN **[A]** button (not necessary if its indicator is already flashing), then press **[START/STOP]**.
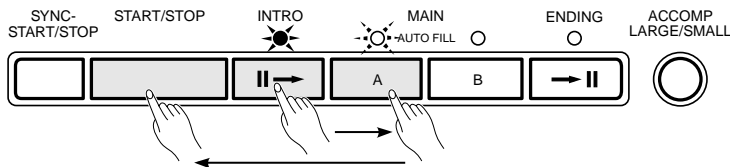
● **Start with an introduction followed by the MAIN B variation:**
Press the **[INTRO]** button so that its indicator lights, press the MAIN **[B]** button (not necessary if its indicator is already flashing), then press **[START/STOP]**.

*   *It is possible to select the MAIN A or B section prior to a straight start — refer to "8. Select the MAIN A and B Sections as Required," below.*
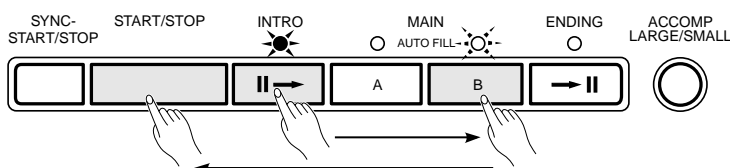
Using Auto Accompaniment

● **Synchronized start:**

Any of the above start types can be synchronized to the first note or chord played on the left-hand section of the keyboard (i.e. keys to the left of and including the split-point key — normally 54) by first pressing the **[SYNC-START/STOP]** button. Pressing the **[SYNC-START/STOP]** button alone causes a straight start to occur when the first note or chord is played. Press **[SYNC-START/STOP]** and then the appropriate **[INTRO]** and **[MAIN]** buttons for a synchronized introduction start. The BEAT display will flash at the current tempo when a synchronized start mode has been selected. The synchro start mode can be disengaged prior to actually starting the accompaniment by pressing the **[SYNC-START/STOP]** button a second time.
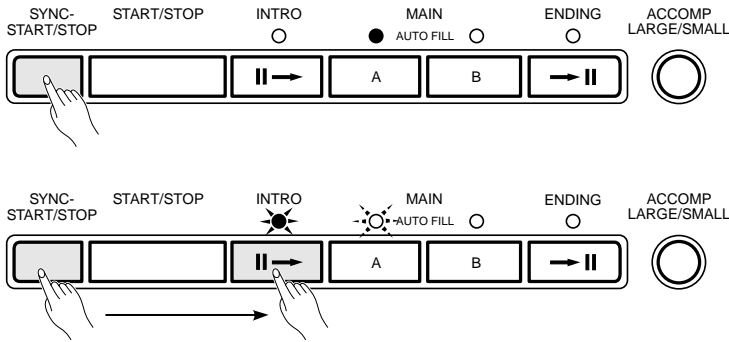
7 Play On the Auto-accompaniment Section Of the Keyboard

As soon as you play any fingering that the PSR-320/420 can "recognize" on the left-hand section of the keyboard (or anywhere on the keyboard if the FULL fingering mode is selected), the PSR-320/420 will automatically begin to play the chord along with the selected rhythm and an appropriate bass line. The accompaniment will continue playing even if you release the keys.
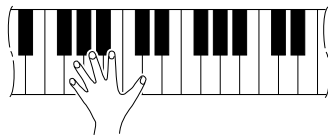
● **The Beat Indicator**

The four dots of the BEAT display provide a visual indication of the selected tempo and beat as shown below.

	4/4 time	3/4 time
1st beat	◉ • • •	◉ • •
2nd beat	• ◉ • •	• ◉ •
3rd beat	• • ◉ •	• • ◉
4th beat	• • • ◉	
	BEAT	BEAT

8 Select the MAIN A and B Sections as Required

The MAIN A and MAIN B sections can be selected at any time during playback by pressing the corresponding button. Whenever you press the MAIN **[A]** or **[B]** button during playback, the PSR-320/420 will generate an appropriate "fill-in" (one of four types) which will smoothly connect the current section to the selected section — even if it is the same section. For example, if you press the MAIN **[A]** button while the MAIN A section is playing, a fill-in will be produced, then the MAIN A section will continue playing. When you select a different section, the fill-in will begin immediately and the new section will actually begin playing from the top of the next measure unless the MAIN **[A]** or **[B]** button is pressed during the last beat of the measure, in which case the fill-in will begin from the first beat of the next measure.
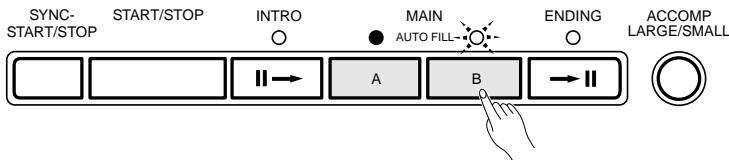
9 Stop the Accompaniment

The accompaniment can be stopped at any time by pressing the **[START/STOP]** button. Press the **[ENDING]** button if you want to go to the ending section and then stop. The ending section will begin from the top of the next measure.
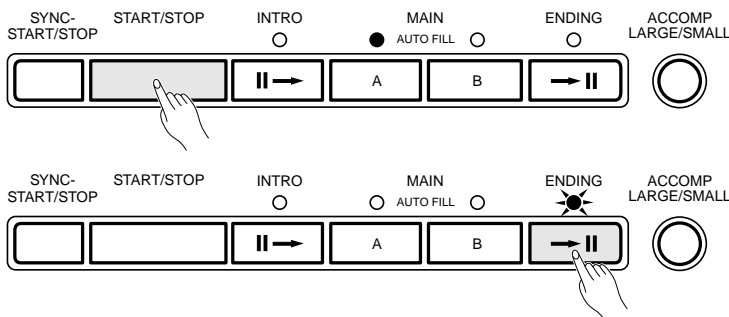
NOTES

- Some INTRO and ENDING sections have their own chord progressions which play in the current accompaniment key.

- If the MAIN [A] or [B] button is pressed while the ENDING section is playing, an appropriate fill-in will be played, followed by a return to the MAIN A or B section.

- The accompaniment volume can be adjusted independently of the main keyboard volume via the "Accompaniment Volume" function in the OVERALL function group — see page 54.

■ **The Stop Accompaniment Function**

While the SINGLE or FINGERED mode is selected chords played in the Auto Accompaniment section of the keyboard are also detected and played by the PSR-320/420 Auto Accompaniment system when the accompaniment is stopped (except when the FULL FINGERED mode is engaged). In this case the bass note and chord voices are selected automatically.

Accompaniment Track Control

The PSR-320/420 has five accompaniment tracks — RHYTHM, BASS, CHORD, PAD, and PHRASE — that you can control to modify the "orchestration" and therefore the overall sound of the accompaniment.

● What's in the Tracks
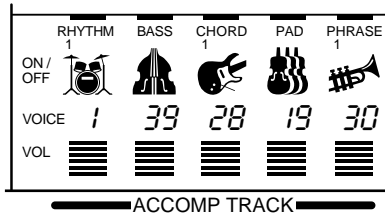
RHYTHM	This is the main rhythm track. The RHYTHM track usually plays one of the keyboard percussion kits.
BASS	The BASS track always plays a bass line, but the voice will change to fit the selected style … acoustic bass, synth bass, tuba, etc.
CHORD	This track provides the rhythmic chordal accompaniment required by each style. You'll find guitar, piano, and other chordal instruments here.
PAD	This track plays long chords where necessary, using sustained instruments such as strings, organ, choir.
PHRASE	This is where the musical embellishments reside. The PHRASE track is used for punchy brass stabs, arpeggiated chords, and other extras that make the accompaniment more interesting.

⌨ NOTES

• *Some INTRO and ENDING sections have 2 PHRASE tracks (PHRASE 1 and PHRASE 2). The melody of the INTRO and ENDING sections is played using the PHRASE 2 track.*

• *The icons for all tracks that contain data in any section will appear whenever an accompaniment style is selected.*

■ Large/Small Accompaniment

The simplest form of accompaniment track control is provided by the **[ACCOMP LARGE/SMALL]** button. This button alternately turns the PAD and PHRASE tracks on and off, thereby changing the number of parts in the accompaniment. When the LARGE accompaniment is selected and the PAD and PHRASE tracks are ON, their respective icons (violins for the PAD track and a trumpet for the PHRASE track) will appear in the appropriate positions in the display. The PAD and PHRASE 1 icons will not show when the SMALL accompaniment is selected. Please note that some styles do not use the PAD track, so the PAD icon may not appear even if the LARGE accompaniment is selected.
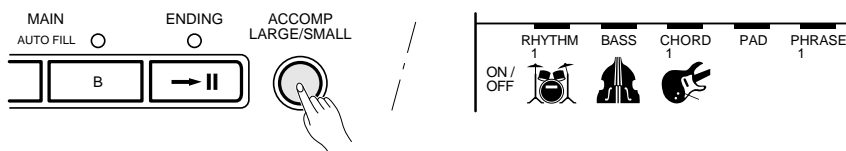
⌨ NOTES

• *The LARGE accompaniment is always selected whenever a new style is selected.*

• *When SMALL accompaniment is selected for a cartridge style (page 45), the appropriate track for that style will be turned off.*

28

■ Muting Individual Tracks

Individual accompaniment tracks can be turned OFF (muted) or ON by using the cursor buttons to select the icon of the target track (the icon and track name will flash), and then using the **[–/NO]** and **[+/YES]** buttons to turn the track OFF or ON, respectively. The track icon will disappear when a track is muted.
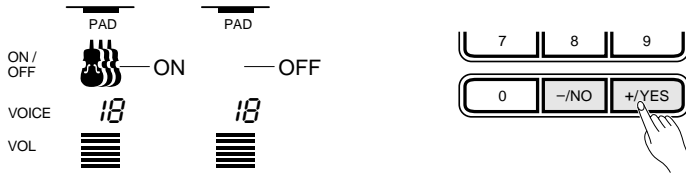
■ Changing Accompaniment Track Voices

You can change the voice played by any individual accompaniment track by using the cursor buttons to select the voice number of the target track (the voice number will flash), and then using the number buttons or **[–/NO]** and **[+/YES]** buttons to select the desired voice number. Please note that only numbers 1 through 8 can be selected for the RHYTHM track, and that these numbers correspond to PERCUSSION KIT numbers 129 through 136. Voice numbers 01 through 136 can be selected for all other tracks.
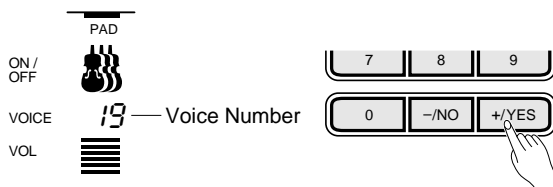
■ Adjusting Accompaniment Track Volume

The volume of each accompaniment track can be adjusted to produce the ideal "mix" between tracks. Use the cursor buttons to select the volume bar of the target track (the volume bar will flash), and then use the **[–/NO]** and **[+/YES]** buttons to set the maximum volume of the track as required. The shorter the bar, the lower the volume. During playback the top segment of each volume bar will remain at the maximum volume level, while the lower bars will move according to the amount of activity in each track.
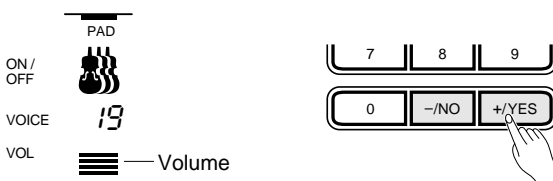
NOTES

• PHRASE 1, 2 tracks can also be selected by moving the cursor. If the PHRASE 1 track is selected and the cursor is moved once to the right, the cursor will not actually move but "PHRASE 2" will appear in place of "PHRASE 1" and the parameters for the PHRASE 2 track can be changed as required.

• Muting individual tracks, changing accompaniment track voices and adjusting accompaniment track volume cannot be executed during song recording.

NOTES

• When a different style number is selected, all accompaniment track parameters will be reset to their initial values. Use the REGISTRATION MEMORY — page 33 — if you want to store a particular set of settings for instant recall when needed.

• After changing the voice or volume, the [–/NO] and [+/YES] buttons can be pressed simultaneously to reset the initial values.

• The track data changed applies to all sections.

• See page 46 for information on accompaniment track control with cartridge styles.

Changing the Accompaniment Split Point

1 Select the Accompaniment Split Point Function ....

Press the **[FUNCTION]** button to the left of the display as many times as necessary until the arrowhead in the display appears next to "OVERALL" in the function list to the left of the display. Then use the cursor **[▲]** and **[▼]** buttons to select the "AccSpPnt" function from within the OVERALL function list.
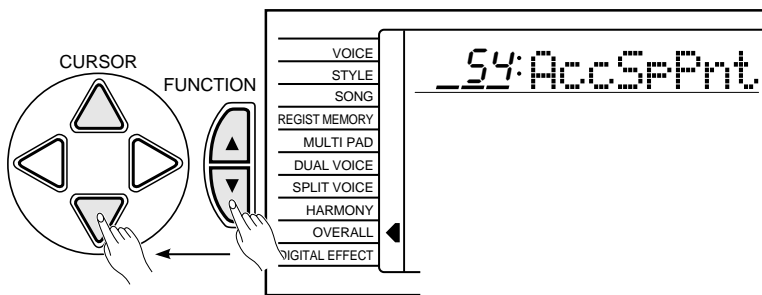
2 Set As Required ....

Simply press the key you want to assign as the split point. The key number of the key you press will appear to the left of "AccSpPnt" on the top line of the display. You can also use the **[–/NO]** and **[+/YES]** buttons or number buttons to enter the split point key number. The lowest key on the keyboard (C1) is key number "36", middle C (C3) is "60", and the highest key (C6) is 96. The split point can be set at any key number from 00 through 127, allowing the split point to be set outside the range of the PSR-320/420 keyboard for MIDI applications.

3 Exit ....

Press the **[VOICE]** button or select a different function to exit from the OVERALL functions.
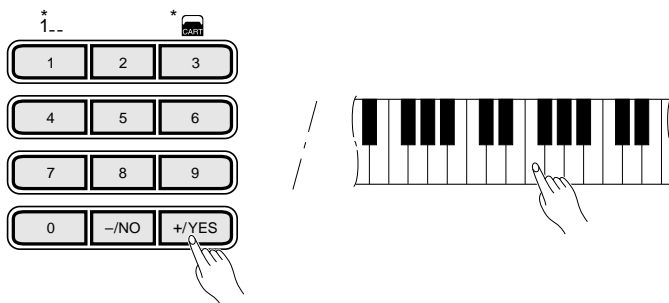
NOTES

- *The split point key becomes the highest key in the Auto Accompaniment section of the keyboard.*
- *The default split point (54) can be instantly recalled by pressing the [–/NO] and [+/YES] buttons at the same time.*

One Touch Setting

The PSR-320/420's 100 internal styles and styles added via a plug-in supplied Music Cartridge (page 44) have recommended "panel setups" that can be instantly selected via the **[ONE TOUCH SETTING]** button. The One Touch Setting feature automatically sets the following parameters:

One Touch Setting Parameter List

- Voice number
- Octave
- Pan
- Dual Voice (Voice number, volume, octave, pan)
- Dual on/off

- Split Voice (Voice number, volume, octave, pan, split point = 59)
- Keyboard volume
- Harmony on/off, type
- Digital effect on/off, type
- Multi Pad set
- Style parameters = default

- Synchro start = ON
- Accomp volume = 100
- Accomp split point = 54
- Accomp large/small = large
- Tempo = Default (for the currently selected style)

NOTES

- If a Registration Memory is selected while One Touch Setting is on, One Touch Setting will automatically be turned off.

The One Touch Setting feature can be used either while an accompaniment is playing or prior to starting an accompaniment by simply pressing the **[ONE TOUCH SETTING]** button so that "OTS" appears on the display (below the BEAT display). One Touch Setting can be turned off by pressing the **[ONE TOUCH SETTING]** button a second time so that "OTS" disappears from the display.

If a different accompaniment style is selected while One Touch Setting is engaged, the One Touch Setting settings for that style will also be selected automatically.

NOTES

- If the One Touch Setting is turned on when the NORMAL or SPLIT mode is selected, the FINGERED mode is automatically selected.
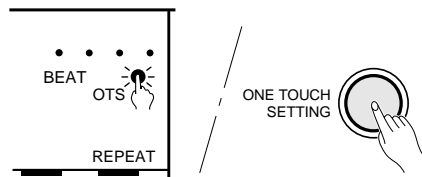
Harmony

The harmony effect can be used when an Auto Accompaniment mode is selected. Press the **[HARMONY]** button to turn the HARMONY effect on or off. When HARMONY is on (the harmony icon will appear next to "HARMONY" in the display), playing single notes or chords on the right-hand section of the keyboard produces automatic harmony matched to the accompaniment chords. The type of harmony produced can be selected via the Harmony Type function described on page 32.
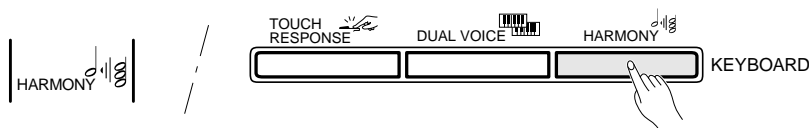
— Selecting a Harmony Type —

1 **Select the HARMONY Function**

To select a harmony type, first select the HARMONY function (either use the **[FUNCTION]** buttons or press and hold the **[HARMONY]** button until the indicator in the display appears next to "HARMONY" in the function list to the left of the display).

FUNCTION

| VOICE |
| STYLE |
| SONG |
| REGIST MEMORY |
| MULTI PAD |
| DUAL VOICE |
| SPLIT VOICE |
| HARMONY ◀ |
| OVERALL |
| DIGITAL EFFECT |

__3:Block

2 **Select a HARMONY Type**

Use the **[–/NO]** and **[+/YES]** buttons or the number buttons to select one of the five available harmony types (listed below).

1: *uΩt*	One harmony note is added to notes you play on the keyboard, creating a two-part harmony.
2: *r io*	Two harmony notes are added to notes you play on the keyboard, creating three-part harmony.
3: *loc*	Three harmony notes are added to notes you play on the keyboard, creating the effect of playing block chords.
4:*Countr4*	One harmony note is added to notes you play on the keyboard, using intervals that produce a country feel.
5:*Octд Ρ*	One note is added, one octave below notes you play on the keyboard.

3 **Exit**

Press the **[VOICE]** button or select a different function to exit from the HARMONY function.

📖 **NOTES**

- *Harmony can not be turned on when a keyboard percussion kit is selected.*
- *Harmony applies only to the main voice when the Dual Voice function is engaged.*
- *Harmony can not be used when the Auto Accompaniment Chord Cancel function (page 23) is in use.*
- *Harmony does not apply in the NORMAL mode.*
- *Harmony can be used in the SPLIT mode as well as in the SINGLE and FINGERED modes.*
- *If the Voice Set function is on (page 54), the harmony type will change automatically whenever a different voice is selected via the VOICE function.*
- *3: Block can be selected by simultaneously pressing the [–/NO] and [+/YES] buttons.*
- *The Harmony function can not be turned on when the FINGERED FULL mode (page 23) is in use and will automatically be turned off when the FINGERED FULL mode is selected.*

Registration Memory ----------

The PSR-320/420 Registration Memory feature can be used to memorize 32 complete control-panel setups (8 banks, 4 setups each) that you can recall whenever needed.
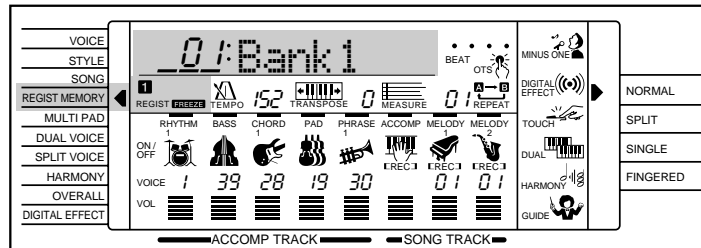
PSR-420

Registering the Panel Settings

1 Set Up the Controls as Required ....

Make the desired control settings. The following settings are memorized by the Registration Memory function:

● Data Stored By the Registration Memory
VOICE PARAMETERS
- Voice number
- Keyboard volume
- Octave
- Pan
- Split voice (Voice number, volume, octave, pan, split point)
- Dual voice (Voice number, volume, octave, pan)

- Dual voice on/off
- Touch response on/off, sensitivity
- Harmony on/off, type
- Digital effect on/off, type

ACCOMPANIMENT PARAMETERS
- Mode (NORMAL/SPLIT/SINGLE/FINGERED)
- Style number (includes cartridge styles)
- Tempo
- Split point (Accomp.)
- Fingering mode
- Accompaniment volume
- Track data (Track on/off, voice, volume)
- Main A/B section
- Transpose
- Multi Pad set

2 Select a Registration Bank (if necessary) ....

Any of the eight Registration Memory banks can be selected via the REGIST MEMORY function. Use the **[FUNCTION]** buttons to move the indicator next to "REGIST MEMORY" in the function list to the left of the display, then use the **[–/NO]** and **[+/YES]** buttons or number buttons to select the desired Registration Memory bank (01 through 08).
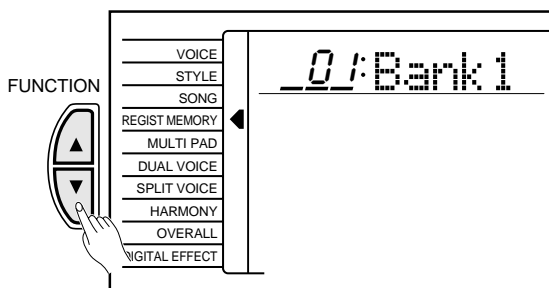
3 Register the Settings ⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯

While holding the **[MEMORIZE]** button, press one of the REGISTRA-
TION MEMORY buttons. Any data that was previously in the selected loca-
tion is erased and replaced by the new settings. The corresponding Registra-
tion Memory number will appear above "REGIST" in the display.
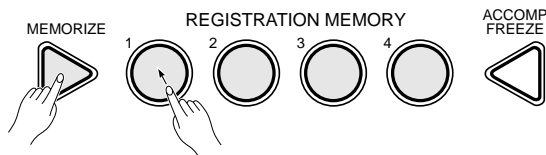
Recall the Registered Panel Settings

Simply select the appropriate bank as described above, then press the de-
sired REGISTRATION MEMORY button at any time to recall the memorized
settings. The corresponding Registration Memory number will appear above
"REGIST" in the display, and the appropriate setting changes will appear in the
display.

The indicator of the selected REGISTRATION MEMORY will flash as
soon as any change is made to the panel settings. In other words, if the REGIS-
TRATION MEMORY indicator is flashing, the current panel settings are differ-
ent from those stored in the memory.

No REGISTRATION MEMORY indicator will be showing when the PSR-
320/420 is turned on or when a bank is selected.

NOTES

- *Music Cartridge registration settings can be recalled in the same way — see page 48.*
- *If the Accomp Freeze function is on when a REGISTRATION MEMORY is recalled, the registration number will flash.*
- *Registration bank 01 can be instantly recalled by simultaneously pressing the [–/NO] and [+/YES] buttons.*
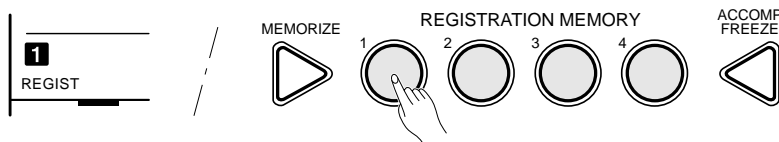
The Accomp Freeze Function

When the ACCOMP FREEZE function is engaged, the accompaniment pa-
rameters listed above will not be changed when a REGISTRATION MEMORY
is recalled. This allows you to recall different REGISTRATION MEMORY
settings while using Auto Accompaniment, without suddenly disturbing the
flow of the accompaniment. The ACCOMP FREEZE function is turned on and
off by pressing the **[ACCOMP FREEZE]** button. The "FREEZE" indicator
appears in the "REGIST" area in the display when it is turned on.

NOTES

- *Accomp Freeze remains on even if a different registration bank is selected.*
- *When you recall the REGISTRATION MEMORY settings while song recording or playback, only the voice parameter settings can be recalled even if the ACCOMP FREEZE function is turned off.*
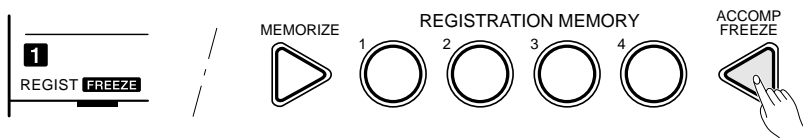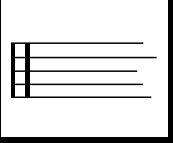
The PSR-320/420 SONG TRACKS allows you to record and play back complete songs including chord sequences created using the Auto Accompaniment feature and a melody line you play on the keyboard. The SONG TRACKS include one ACCOMP track and two MELODY tracks. The PSR-320/420 can retain up to 3 complete songs in internal memory, and these can be selected and played back simply by selecting the appropriate SONG.

NOTES

- Material recorded on the SONG TRACKs is retained in memory even when the POWER switch is turned OFF if batteries are present or an AC adaptor is connected.

- The recorded data will be lost if the power is turned off, the AC adaptor is unplugged, or the batteries fail during recording.
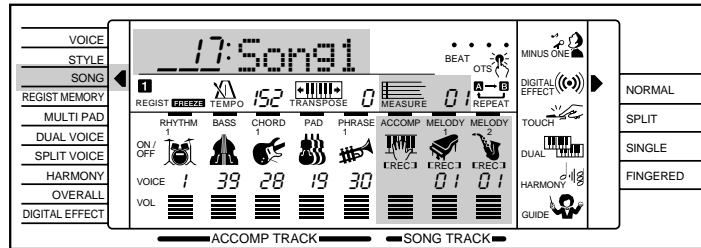
PSR-420

Recording a Melody Track

The SONG MELODY tracks record the following operations and data:

- Note on/off
- Velocity
- Voice number
- Octave
- Pan
- Dual voice on/off

- Dual voice (Voice number, volume, octave, pan)
- Keyboard volume*
- Harmony on/off, type
- Digital effect on/off, type (Sustain Pedal on/off)
- (Tempo common to melody & accomp tracks)

* Recorded only at the beginning of a song; changes cannot be made during recording.

NOTES

- Up to approximately 1300 notes (for 3 songs) can be recorded in the PSR-320/420 MELODY tracks.

1 Select a SONG Number ....

If necessary, use the **[FUNCTION]** buttons to select the SONG function, and then the **[–/NO]** and **[+/YES]** buttons to select the SONG number ("17", "18", or "19") to which you want to record.
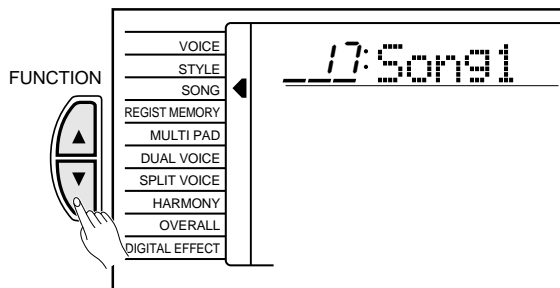
Song Recording ------------------------------

2 Select a Voice and Set the Voice Parameters ....

Select the voice you want to record with, and set the digital effects and other parameters as required.

3 Engage the MELODY Track Record Ready Mode ....

Press the SONG **[REC]** button. The **[REC]** button indicator will flash, and "REC" will appear in the MELODY 1 track position on the display indicating that the PSR-320/420 is ready to record. Flashing square brackets in both the MELODY 1 and MELODY 2 track positions indicate that either track can be selected for recording at this point — use the **[–/NO]** and **[+/YES]** buttons to select the MELODY track to be recorded ("REC" appears in the selected track position).

The BEAT indicator dots flash at the current tempo. If the "Metronom" function in OVERALL function group is turned "on", the metronome will also begin to sound at the currently selected tempo (page 55).

4 Record ....

Recording will begin as soon as you play a note on the keyboard or press the SONG **[PLAY/STOP]** button, and the BEAT indicator dots will begin to indicate the current beat as in the Auto Accompaniment mode. The MEASURE parameter will also show the current measure number. The **[REC]** indicator lights continuously once recording has started.

You can play the melody using the entire keyboard if you are recording only a MELODY track.

5 Stop Recording ....

Stop recording by pressing the SONG **[PLAY/STOP]** button. The **[REC]** button indicator will go out and the MEASURE number on the display will return to "01".

The melody track voice number and volume settings will appear on the display.

NOTES

- *You cannot record in the SPLIT mode — the NORMAL mode will automatically be selected when the SONG record ready mode is engaged.*

NOTES

- *If a previously-recorded SONG ACCOMP. track is on (the SONG ACCOMP track icon is showing), it can be monitored while recording a MELODY track. If you don't want to hear the ACCOMP track while recording, move the cursor to the ACCOMP track icon and press the [–/NO] button to turn it off.*
- *If a non-user song number is selected when the record ready mode is engaged, user song number 17 will automatically be selected.*
- *The melody track volume is the current Keyboard Volume setting — see page 53.*
- *When the record-ready mode is engaged, the measure number reset to "01". (Recording can not start from the specified measure).*

NOTES

- *Whenever you record using the SONG MEMORY, any previously recorded material in the same track will be erased.*
- *If the SONG MEMORY becomes full while the MELODY track recording, "Mel Full" will appear on the display and recording will stop.*
- *Melody Track data can be cleared by pressing the [PLAY/STOP] button to start recording and stop it without playing the keyboard (Melody Track Data Clear).*
- *Recording is carried out in 1-measure increments. If you stop recording in the middle of a measure, rests will automatically be recorded until the end of that measure.*
- *If you start recording by pressing the [PLAY/STOP] button, nothing will be recording until you begin playing on the keyboard.*
- *Only VOICE function voice numbers are shown in the melody track displays (dual voice numbers are not shown).*

Recording Accompaniment With or Without a Melody

The SONG ACCOMP track records the following operations and data:

- Accompaniment start/stop
- Section changes
- Style number* (includes cartridge styles)
- Accompaniment track changes* (track on/off, voice number, volume)
- Accompaniment volume*
- Chord changes, timing
- (Tempo common to melody & accomp tracks)

    * Recorded only at the beginning of a song; changes cannot be made during recording.

⌨ **NOTES**

- Up to approximately 200 chords (for 3 songs) can be recorded in the ACCOMP track.

1 Select a SONG Number ....

If necessary, use the **[FUNCTION]** buttons to select the SONG function, and then the **[–/NO]** and **[+/YES]** buttons to select the SONG number ("17", "18", or "19") to which you want to record.

FUNCTION

VOICE
STYLE
SONG ◄
REGIST MEMORY
MULTI PAD
DUAL VOICE
SPLIT VOICE
HARMONY
OVERALL
DIGITAL EFFECT

_17: Song1
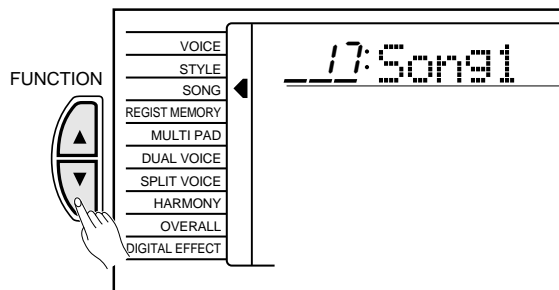
2 Select the SINGLE or FINGERED Mode and a Style ....

Select the SINGLE or FINGERED mode (page 21) and an accompaniment style that is appropriate for the type of music you want to record. Also select the FINGERED fingering mode you want to use, if necessary.

MODE

NORMAL
SPLIT
► SINGLE
FINGERED
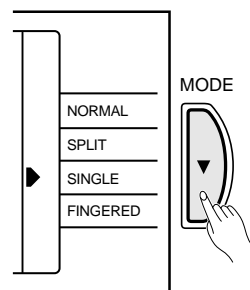
Song Recording --

3 Engage the ACCOMP/MELODY Track Record Ready Mode

Press the SONG **[REC]** button. The **[REC]** button indicator will flash, and "REC" will appear in the ACCOMP and MELODY 1 track positions on the display indicating that the PSR-320/420 is ready to record. Flashing square brackets in both the MELODY 1 and MELODY 2 track positions indicate that either track can be selected for recording at this point — use the **[–/NO]** and **[+/YES]** buttons to select the MELODY track to be recorded, or none if you only want to record the ACCOMP track ("REC" appears in the selected track position).

The BEAT indicator dots flash at the current tempo. If the "Metronom" function in OVERALL function group is turned "on", the metronome will also begin to sound at the currently selected tempo (page 55).

4 Record

Recording will begin as soon as you play a chord on the Auto Accompaniment section of the keyboard. If you've selected the MELODY track to record with the ACCOMP track, a right-hand note will also start the recording process. The **[REC]** indicator lights continuously once recording has started.

Recording can also be started by pressing the ACCOMPANIMENT CONTROL **[START/STOP]** button. In this case only the rhythm will begin without bass and chord accompaniment until you play the first chord on the Auto Accompaniment section of the keyboard.

Play the required chords in the Auto Accompaniment section of the keyboard. If you've also selected the MELODY track to be recorded, play the melody on the right-hand section of the keyboard. The MEASURE number on the display will increment as recording progresses.

5 Stop Recording

Stop recording by pressing the SONG **[PLAY/STOP]** button, the AUTO ACCOMPANIMENT **[START/STOP]** button, or stop with an ending by pressing the AUTO ACCOMPANIMENT **[ENDING]** button. The **[REC]** button indicator will go out and the MEASURE number on the display will return to "01".

The ACCOMP track volume setting will appear on the display.

NOTES

- *If a previously-recorded MELODY track is turned on (its icon is showing), it can be monitored while recording. If you don't want to hear the previous track while recording, move the cursor to the corresponding track icon and press the [–/NO] button to turn it off.*

- *The accompaniment track volume is the current Accompaniment Volume setting — see page 54.*

- *When the record-ready mode is engaged, the measure number resets to "01". (Recording can not start from the specified measure).*

NOTES

- *Whenever you record using the SONG MEMORY, any previously recorded material in the same track will be erased.*

- *If the SONG MEMORY becomes full while the ACCOMP track recording, "Acc Full" will appear on the display and recording will stop.*

- *Recording is carried out in 1-measure increments. If you stop recording in the middle of a measure, rests will automatically be recorded until the end of that measure.*

- *If you start the ACCOMP track recording by pressing the [PLAY/STOP] button, no chord data will be recording until you begin playing on the keyboard.*

Accompaniment and Melody Playback

1 Select a SONG Number

If necessary, use the **[FUNCTION]** buttons to select the SONG function, and then the **[–/NO]** and **[+/YES]** buttons to select the SONG number ("17", "18", or "19") containing the song you want to play.

```
                    VOICE
                    STYLE         __17:Song1
FUNCTION            SONG      ◄
            REGIST MEMORY
              MULTI PAD
              DUAL VOICE
    ▲         SPLIT VOICE
              HARMONY
    ▼         OVERALL
            DIGITAL EFFECT
```
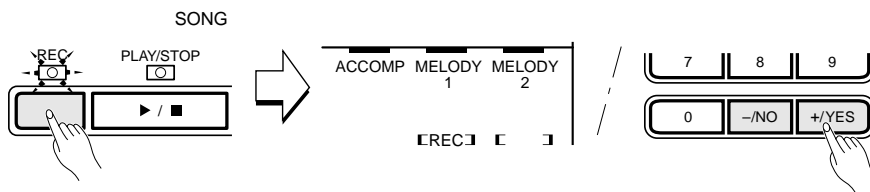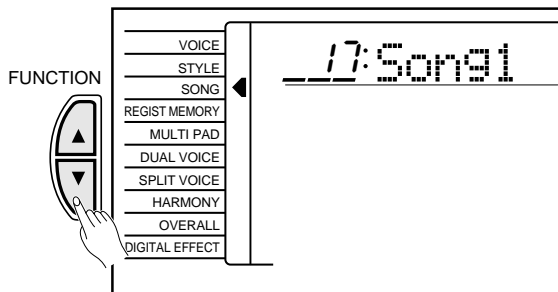
2 Start Playback

Playback will begin as soon as the SONG **[PLAY/STOP]** button is pressed. You can turn the ACCOMP and MELODY tracks on and off during playback as required.

```
                      SONG
 REC    PLAY/STOP   REPEAT   MINUS
  ○        ◉        PLAY      ONE

          ▶ / ■       ↻
```
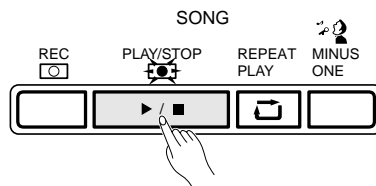
3 Play Along If You Like

Play along on the keyboard if you like. You can also change the tempo during playback.

4 Stop Playback

Accompaniment and melody playback will stop automatically when all recorded data has been played back. You can also stop playback at any time by pressing the SONG **[PLAY/STOP]** button.

⌨ **NOTES**

- *You can also start playback from any specified measure (see page 40).*

- *Individual tracks can be turned OFF (muted) or ON by using the cursor buttons to select the icon of the target track (the icon and track name will flash), and then using the [–/NO] and [+/YES] buttons to turn the track OFF or ON, respectively. The track icon will disappear when a track is muted.*

- *The NORMAL mode is automatically selected when SONG playback is started.*

- *Voice and volume data can be rewritten during playback — see "Voice & Volume Rewrite", below.*

———— **Play from a Specified Measure** ————

You can start SONG playback from any specified measure, as long as the specified measure is within the range of measures that has already been recorded:

1 Select the MEASURE Parameter ....

Use the **CURSOR** buttons to select the MEASURE parameter in the display.
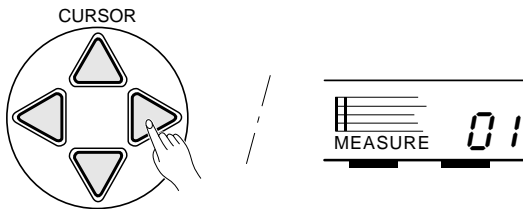
2 Enter the Desired Measure Number ....

Use the **[–/NO]** and **[+/YES]** buttons or the number buttons to enter the desired measure number.

NOTES

• *Three-digit numbers are entered by first pressing and holding the [1] or [2] button until "1" or "2" appears in the hundreds position on the display, then press the remaining two digits in sequence.*
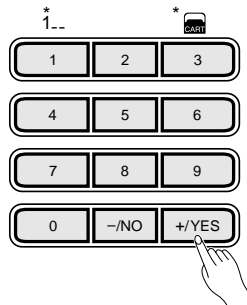
3 Start Playback ....

You can now start playback from the specified measure number.

■ Voice & Volume Rewrite

You can rewrite the last recorded voice change in the MELODY tracks during playback by using the cursor buttons to select the voice number of the target track (the voice number will flash), and then using the number buttons or **[–/NO]** and **[+/YES]** buttons to select the desired voice number. The data will actually be rewritten when the **[PLAY/STOP]** button is pressed, the end of the song is reached, or the next voice change is encountered in the recorded data. The original voice number can be recalled before it is actually rewritten by simultaneously pressing the **[–/NO]** and **[+/YES]** buttons. Any other voice changes included in the recorded track data will take effect at the appropriate times.

The volume of each track can be rewritten during playback in the same way. Use the cursor buttons to select the volume bar of the target track (the volume bar will flash), and then use the **[–/NO]** and **[+/YES]** buttons to set the maximum volume of the track as required. The shorter the bar, the lower the volume. The data will actually be rewritten when the **[PLAY/STOP]** button is pressed or the end of the song is reached. The original volume can be recalled before it is actually rewritten by simultaneously pressing the **[–/NO]** and **[+/YES]** buttons. The new volume data is written only at the beginning of the track and affects the entire track.
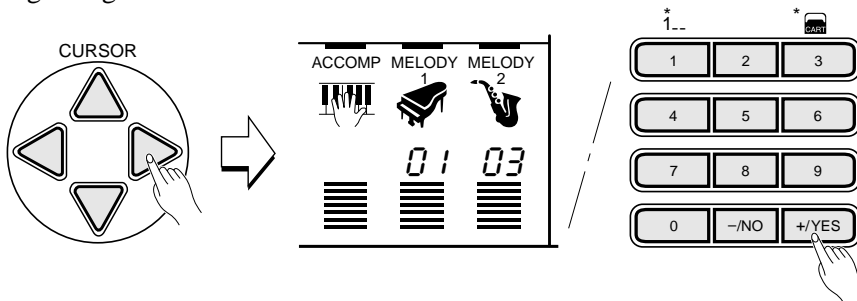
■ Clearing the SONG TRACKS

All data in the ACCOMP, MELODY 1 and MELODY 2 tracks of the currently selected song can be completely erased by first pressing the **[MINUS ONE]** button while holding the **[REC]** button, and then press the **[+/YES]** button in response to the "Clear?" confirmation prompt on the display (press **[–/NO]** if you decide not to erase the data).
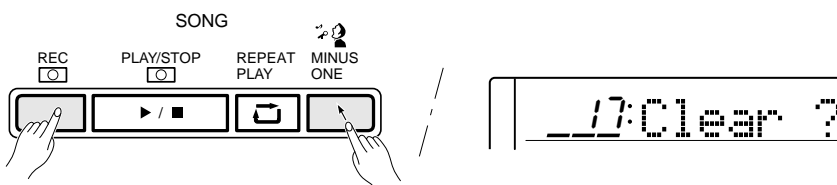
The Multi Pads

The PSR-320/420 MULTI PADS can be used to play a number of short pre-recorded rhythmic and melodic sequences, that can be used to add impact and variety to your keyboard performances and SONG recordings. Some of the pad phrases simply play back as programmed, while others are "chord match" types which are automatically transposed to match chords played using the PSR-320/420 Auto Accompaniment feature.
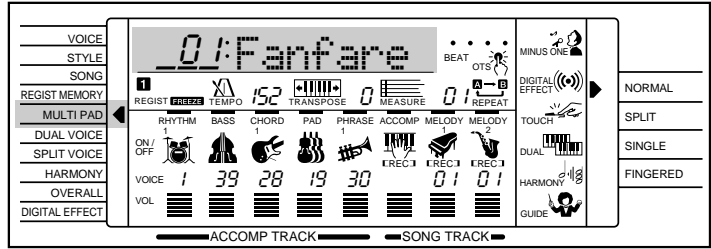
PSR-420

Selecting a MULTI PAD KIT

The PSR-320 has 11 multi pad kits and the PSR-420 has 14, each containing a complete set of 4 MULTI PAD phrases — 44 and 56 phrases in all, respectively. Before using the MULTI PADS, select the MULTI PAD containing the phrases you want to use as follows:

1 Select the MULTI PAD Function

To select a multi pad kit, first select the MULTI PAD function by pressing one of the **[FUNCTION]** buttons until the indicator in the display appears next to "MULTI PAD" in the function list to the left of the display.

FUNCTION

_0 1:Fanfare

PSR-420
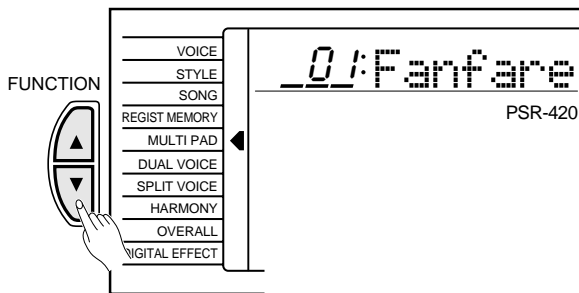
2 Select a Multi Pad Kit Number

Use the **[–/NO]** and **[+/YES]** buttons or the number buttons to select one of the 11 or 14 available multi pad kits.

42
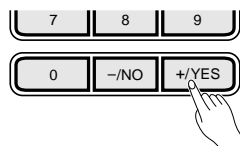
Playing the MULTI PADS

Simply tap any of the MULTI PADS at any time to play back the corresponding phrase. MULTI PAD playback begins as soon as the button is pressed. You can even play two, three, or four MULTI PADS at the same time. Also, you can create "retriggered sample" effects by repeatedly pressing a pad before its contents are completely played back.

The MULTI PAD voices are independent from the voices you have currently selected for keyboard performance. You could, for example, play piano on the keyboard while a MULTI PAD plays a brass chord stab.

When a "chord match" type MULTI PAD phrase is played, the phrase will be automatically transposed to match chords played using the PSR-320/420 Auto-accompaniment feature.

- MULTI PAD playback speed is determined by the current TEMPO setting.
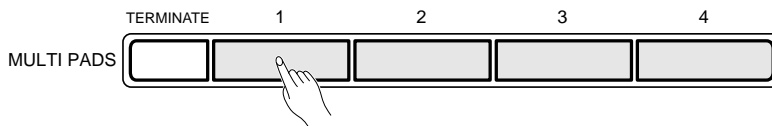
MULTI PAD playback can be terminated by pressing the MULTI PADS **[TERMINATE]** button.

● **The Milti Pad Kits**

PSR-320	Chord Match			
Kit	Pad 1	Pad 2	Pad 3	Pad 4
01 WildWest	–	–	–	–
02 StarShip	–	–	–	–
03 Wedding	–	–	○	○
04 HarpGlis	○	○	○	○
05 BrassChd	○	○	○	○
06 Fanfare	–	–	–	–
07 TechnoFX	–	–	○	○
08 Drum-Kit	–	–	–	–
09 DrumFlam	–	–	–	–
10 AnalogDr	–	–	–	–
11 Timbales	–	–	–	–

PSR-420	Chord Match			
Kit	Pad 1	Pad 2	Pad 3	Pad 4
01 Fanfare	–	–	–	–
02 HiTechno	–	–	○	○
03 Arpeggio	–	–	○	○
04 GuitRiff	○	○	–	–
05 DrumFill	–	–	–	–
06 DrumFlam	–	–	–	–
07 Drum Kit	–	–	–	–
08 Class.Dr	–	–	–	–
09 Timbales	–	–	–	–
10 CongaSet	–	–	–	–
11 TrumpHit	○	○	○	○
12 Amazonas	–	–	–	–
13 Xeno-SFX	–	–	○	○
14 WildWest	–	–	○	○

Using Music Cartridges

The PSR-320/420 features a cartridge slot which accepts pre-programmed Yamaha Music Cartridges containing style, song and/or registration data. One sample Music Cartridge is supplied with the PSR-320/420. Others are available from your Yamaha dealer.
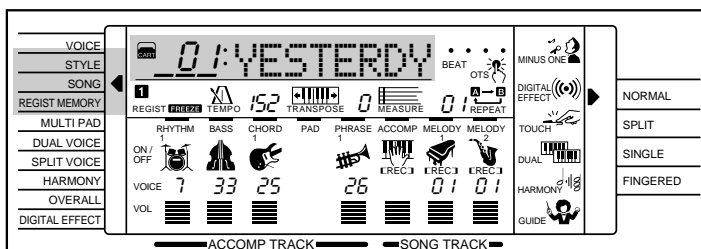
PSR-420

■ Inserting a Music Cartridge

With the power OFF, insert the Music Cartridge into the cartridge slot as shown, and press down firmly until the Cartridge is seated properly (as shown in the illustration). The Cartridge is shaped so that it will only fit in the slot one way - don't try to force it in the wrong way. Turn the power back ON again after inserting.

The triangular mark on the front of the Cartridge should be completely below the panel edge when the Cartridge is properly seated.

For Cartridges without the mark, the bottom of the serrated edges of the Cartridge should be even with the panel edge (not above it).
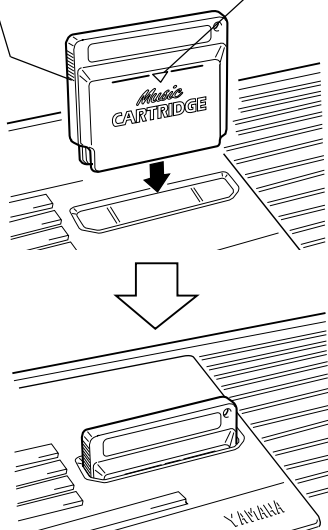
■ Music Cartridge Handling Precautions

- Do not leave Music Cartridges in locations which are subject to excessive heat or humidity.
- Do not drop Music Cartridges or subject them to strong shock.
- Do not disassemble Music Cartridges.
- Do not directly touch the Music Cartridge's electrical contacts. Persistently touching it may cause to break electrical contacts or generate static electricity. Static electric charges can cause loss of data and unreliable operation.
- Do not insert objects or cartridges other than Yamaha Music Cartridges in the PortaTone cartridge slot. Doing so can result in serious damage to the instrument.
- Never attempt to insert or remove a cartridge when the power switch is ON. Doing so can result in loss of the PSR-320/420 memory data (song data/registration memory data) or complete lack of control.
- The Music Cartridge data may not be selected or played back correctly, if the electrical contacts on the Music Cartridge are affected with dust. If this happens, insert and remove the Music Cartridge several times. This may solve the problem. If the problem still happens, wipe and clean the electrical contacts on the Music Cartridge with a dry soft cloth.

📖 **NOTES**

- Be sure to insert the Music Cartridge when you recall the registration settings based on the cartridge data or playback the song based on the cartridge data. Otherwise, "No Cart (Cartridge)" will appear on the display.

Cartridge Accompaniment Styles

The Music Cartridge supplied with the PSR-320/420 provides an extra 8 accompaniment styles that can be used in the same way as the internal accompaniment styles.

Selecting Cartridge Styles

1 Select the Style Function

Press the **[STYLE]** button to directly select the STYLE function, or press the **[FUNCTION]** button to the left of the display as many times as necessary until the arrowhead in the display appears next to "STYLE" in the function list to the left of the display.

2 Select and Use a Cartridge Style

To select a cartridge style, first press and hold the number **[3]** button (below the cartridge icon on the panel) until the cartridge icon appears to the left of the style name in the display, then enter the number of the cartridge style you want to select via the number buttons in the normal way (2 digits). The cartridge styles can also be selected by using the **[–/NO]** and **[+/YES]** buttons to go beyond the highest or lowest internal style numbers — e.g. pressing the **[+/YES]** button while internal style number 00 is selected will select cartridge style number 01 (the cartridge icon will appear).

The cartridge styles are used in exactly the same way as the internal accompaniment styles (page 24).

NOTES

- *"No OTS" will appear on the display if the optional cartridge styles have no one touch setting data.*

Using Music Cartridges ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪
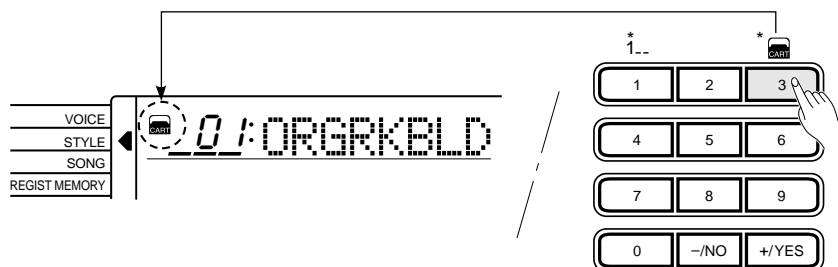
■ The Yamaha Style File Format

The Yamaha "Style File Format", is an original Yamaha auto-accompaniment data format which has evolved through years of development and refinement of the Standard MIDI File and GM System Level 1 formats on which it is based. Style File Format makes it possible to provide exceptionally high-quality accompaniments on many of our instruments, and in the Music Cartridges used by the PSR-320/420.

Due to the sophisticated accompaniment capabilities provided by Style File Format, some cartridge styles may have a different number of sections and/or accompaniment tracks than the internal styles provided by the PSR-320/420.

● Different Number of Sections

Some cartridge styles, for example, have A and B intro and ending sections as well as A and B main sections. In such a case, if the **[INTRO]** and MAIN **[A]** buttons are pressed in order to start the accompaniment with an introduction and then go to the main A section, the intro A section will play. If the **[INTRO]** and MAIN **[B]** buttons are pressed, the intro B section will play. A similar situation applies to endings: if the main A or B section is playing and the **[ENDING]** button is pressed, the ending A or B section will play accordingly.

● Different Number of Tracks

While the PSR-320/420 styles have one rhythm, one bass, one chord, one pad, and one phrase track, some cartridge styles may have two rhythm, chord, and/or phrase tracks. In such a case these individual tracks can be selected by moving the cursor from track to track in the normal way. If the RHYTHM 1 track is selected and the cursor is moved once to the right, for example, the cursor will not actually move but "RHYTHM 2" will appear in place of "RHYTHM 1" and the parameters for the RHYTHM 2 track can be changed as required. The same applies to the CHORD 1 and 2, and PHRASE 1 and 2 tracks.

Cartridge Songs

Using Yamaha Music Cartridges (the one supplied with the PSR-320/420 includes 8 songs, others are available from your Yamaha dealer), the PSR-320/420 will let you enjoy listening to automated performances, or function as your "private music tutor," allowing you to practice various parts of a piece while the others are played automatically. The PSR-420 also shows you which keys to play with keyboard guide lamps that light up above each key.

Cartridge Song Playback

1 Select the SONG Function ....

Use the FUNCTION **[▲]** and **[▼]** buttons to select the SONG function.

2 Select a Cartridge Song Number ....

To select a cartridge song, first press and hold the number **[3]** button (below the cartridge icon on the panel) until the cartridge icon appears to the left of the song name in the display, then enter the number of the cartridge song you want to select via the number buttons in the normal way. The cartridge songs can also be selected by using the **[–/NO]** and **[+/YES]** buttons to go beyond the highest or lowest internal song numbers — e.g. pressing the **[+/YES]** button while user song number 19 is selected will select cartridge song number 01 (the cartridge icon will appear).
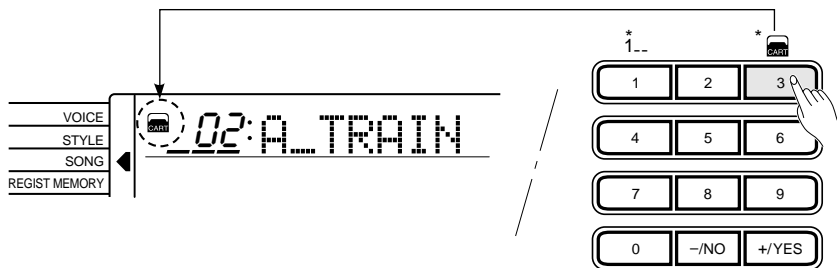
3 Start Playback ....

Playback will begin as soon as the SONG **[PLAY/STOP]** button is pressed.

Playback can be stopped at any time by pressing the SONG **[PLAY/STOP]** button.

📖 **NOTES**

- *Playback can be started from any measure — page 40.*

- *The playback tempo can be changed freely as required.*

- *The keyboard guide lamps corresponding to the keys being played will light in real time. The keyboard guide lamps can be turned off via the "Lamp" function in the OVERALL function group — page 55. (PSR-420)*

- *Cartridge song track voice and volume data cannot be rewritten.*

- *Harmony effect (see page 31) may not be available for some cartridge songs.*

Cartridge Registration Presets

The Music Cartridge supplied with the PSR-320/420 provides 8 banks of preset registration settings (8 banks x 4 registration memories = 32 total) that provide a number of useful registration setups (refer to page 33 for details on the registration memory).

Selecting Cartridge Registration

1 Select the Regist Memory Function

Press either of the **[FUNCTION]** buttons to the left of the display as many times as necessary until the arrowhead in the display appears next to "REGIST MEMORY" in the function list to the left of the display.

2 Select and Use a Cartridge Registration

To select a cartridge registration memory, first press and hold the number **[3]** button (below the cartridge icon on the panel) until the cartridge icon appears to the left of the registration bank number in the display, then enter the number of the bank you want to select via the number buttons in the normal way (page 33). The cartridge registration memories can also be selected by using the **[–/NO]** and **[+/YES]** buttons to go beyond the highest or lowest internal bank numbers — e.g. pressing the **[+/YES]** button while internal bank number 08 is selected will select cartridge registration bank number 01 (the cartridge icon will appear).

The individual cartridge registration memories are recalled via the REGISTRATION MEMORY buttons and used in exactly the same way as the internal registration memories (page 34).

📖 **NOTES**

- *Original data cannot be stored in the cartridge registration memory.*

- *The voices recalled by a cartridge registration are not the panel voices (page 13) on the PSR-320/420 but the GM System Level 1 voices. As for the cartridge registration voices, voice numbers are not displayed. As a result, "- - - " will appear to the left of the voice name in the display.*
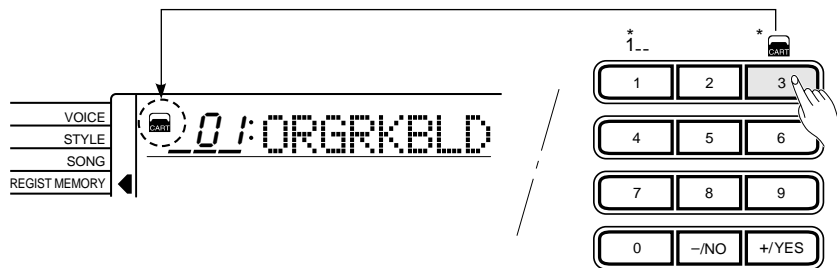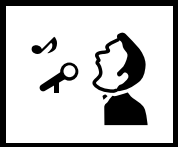
Practice Features

The PSR-320/420 includes several features that can be a great aid in learning to play and practicing on the keyboard.
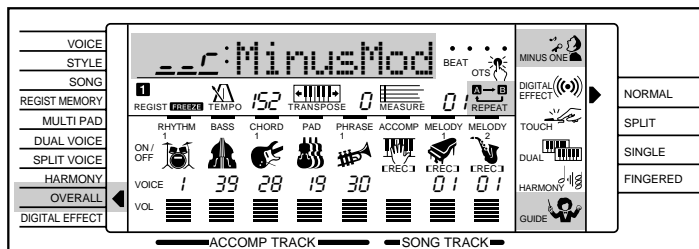
PSR-420

The Minus One Mode

When the Minus One mode is engaged, the left-hand, right-hand, or both keyboard parts of a song — internal demo or Music Cartridge — are turned off so you can practice them on the PSR-320/420 keyboard. The "MinusMod" function in the OVERALL function group determines which part or parts are turned off when the Minus One mode is engaged.

To turn the Minus One function on, thus canceling the specified parts, press the **[MINUS ONE]** button. The MINUS ONE icon will appear in the display when the Minus One function is engaged.
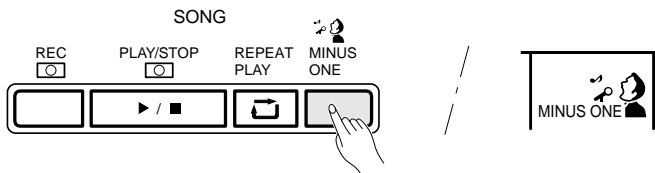
■ Specifying the Parts To Be Turned On or Off ....

To specify the right-hand, left-hand, or both parts to be turned off when the Minus One mode is engaged, first select the OVERALL functions by pressing either of the **[FUNCTION]** buttons to the left of the display as many times as necessary until the arrowhead in the display appears next to "OVERALL" in the function list to the left of the display. Then use the cursor **[▲]** and **[▼]** buttons to locate the "MinusMod" function. Finally use the **[–/NO]** and **[+/YES]** buttons to select the desired Minus One mode.

NOTES

- "MinusMod" function in the OVERALL function group can be quickly selected by pressing and holding the [MINUS ONE] button.

- See page 55 for information on using the Minus One mode with the specified channel.

- With songs you record yourself, the MELODY 1 track corresponds to the right-hand part and the MELODY 2 track is the left-hand part.

- "_ _ r" (Right hand) is selected whenever the power switch is turned on.

Practice Features ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪

Mode	Part Turned Off
＿ ＿ ⌐	Right hand.
Ⅼ ＿ ＿	Left hand.
Ⅼ ＿ ⌐	Left and right hands.

The Guide Mode (PSR-420 only)

With this feature, the PSR-420 waits for you to play the appropriate keys before playing ahead, so you can learn to play the piece at your own pace.

Press the **[GUIDE]** button so that its icon appears in the display to turn the guide mode on. The "MinusMod" function in the OVERALL function group determines which part(s) is guided. If you want to play the guided part(s) yourself, press the **[MINUS ONE]** button to on to mute the guided part(s).
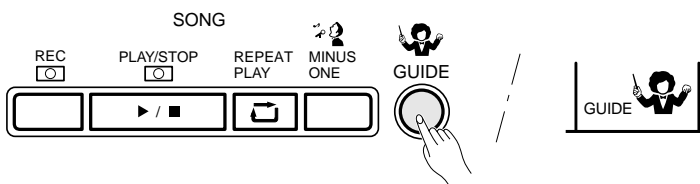
When you press the SONG **[PLAY/STOP]** button to begin playback, the introduction will play automatically but then the PSR-420 will stop and wait for you to play the next key(s). The next key(s) to be played are indicated via the guide lamps above the keyboard. As you play the appropriate keys, the piece will continue, pausing until you play the right keys each time.

As with automated performance, the song will stop automatically when the end is reached, or it can be stopped at any time by pressing the SONG **[PLAY/STOP]** button.

📖 **NOTES**

- *Song playback tempo can be set to any desired value after a song has been selected by using the TEMPO [▲] and [▼] buttons.*

- *If the guide lamps flashing above the keyboard distract you, or you want to try playing along without them, use the "Lamp" function in the OVERALL function group to turn them off — page 55. The guide function operates as described above whether the lamps are turned on or off.*

Repeat Play

This function allows you to specify any section of a song — cartridge or internal — for continuous repeat playback.

While the song is playing, press the **[REPEAT PLAY]** button once at the beginning of the section to be repeated (the "A" repeat icon will appear on the display) and again at the end of the section to be repeated (the "B" repeat icon will appear). Repeat playback will begin automatically from the A point as soon as the B point has been specified, and will continue until either the **[REPEAT PLAY]** button is pressed again to cancel the repeat function.
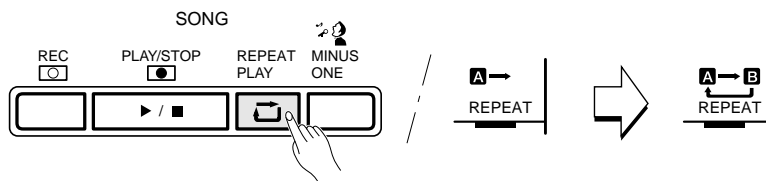
It is also possible to specify the repeat section while playback is stopped. First use the MEASURE parameter to specify the A point, then press the **[REPEAT PLAY]** button. Next specify the B measure number and press **[REPEAT PLAY]** again. The specified A-B section will play repeatedly when the **[PLAY/STOP]** button is pressed.

NOTES

- *When only the A point is specified, playback will repeat from the A point to the end of the song.*

- *If you specify, for example, measure number 8 for A point and measure number 2 for B point, playback will repeat from measure number 2 to 8.*

Some of the functions in the OVERALL function group have already been described in appropriate sections of this manual. Others will be introduced for the first time in this section. Refer to the chart below for the page numbers on which each function is described. The chart also lists the full name of each function, the abbreviated name which appears on the display, and the available settings or range of settings. Ranges are indicated by two or more values separated by ellipses (…).
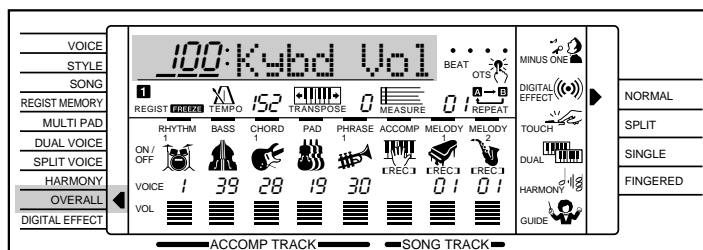
PSR-420

Function	Display	Settings	Page
Keyboard Volume	4bd ol	00 … 127	53
Octave	Octave	–2 … 0 … 2	53
Pan	Pan	–7 … 0 … 7	54
Voice Set	oicE5Et	oFF, on	54
Fingering Mode	Fngrng d	nor, Full	22
Accompaniment Volume	AcoNP ol	00 … 127	54
Accompaniment Split Point	Acc5PPnt	00 … 127	30
Touch Sensitivity	ouch5n5	00 … 127	54
Minus-one Mode	inu5 od	__r, L__, L_r	49
Minus-one Right-hand Channel	inu5Ch	01 … 16	55
Minus-one Left-hand Channel	inu5ChL	01 … 16	55
Lamp (PSR-420 only)	LaNP	oFF, on	55
Metronome	Ptronon	oFF, on	55
Remote Channel	PNotPCh	oFF, 01 … 16	57
Keyboard Out	4bdOut	oFF, on	58
Song Out	5ongOut	oFF, on	58
Accompaniment Out	AcoNPOut	oFF, on	58
Local Control	Local	oFF, on	59
External Clock	E tC loc	oFF, on	59
Initial Data Send	In it5nd?	None	59
Bulk Data Send	u l 5nd?	None	60

To access an OVERALL function press either of the **[FUNCTION]** buttons to the left of the display as many times as necessary until the arrowhead in the display appears next to "OVERALL" in the function list to the left of the display. Then use the cursor **[▲]** and **[▼]** buttons to select the desired function from within the OVERALL function list. Once the function has been selected, use the **[–/NO]** and **[+/YES]** buttons (or number buttons, where applicable) to set the function as required).
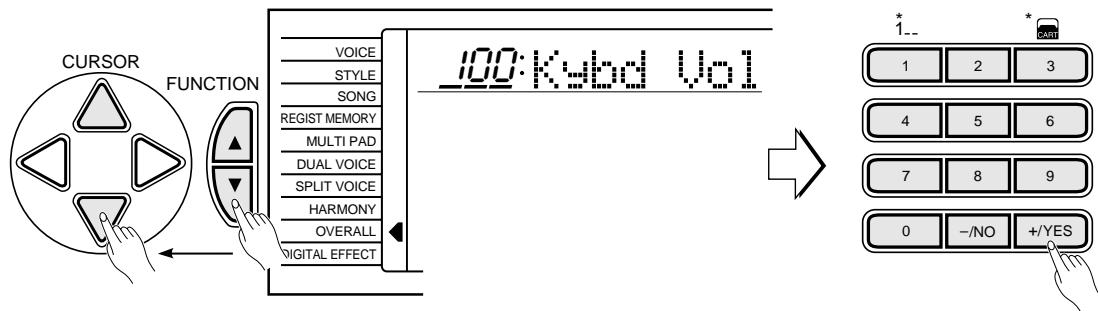
General Functions

■ Keyboard Volume

Sets the volume of the keyboard sound (including dual and split voices) in relation to the accompaniment and song playback sound. The range is from "00" to "127". A setting of "00" produces no sound. "127" produces maximum volume. The default setting — "100" — can be recalled by pressing the **[–/NO]** and **[+/YES]** buttons simultaneously.

NOTES

• "Kybd Vol" function can be quickly selected by pressing and holding the [VOICE] button.

■ Octave

Shifts the right-hand keyboard voice (including the dual voice) up or down by one or two octaves. "–1" is down one octave, "–2" is down two octaves; "+1" and "+2" are up one and two octaves, respectively. The default setting — "0" — can be recalled by pressing the **[–/NO]** and **[+/YES]** buttons simultaneously.

NOTES

• Negative values can be entered by pressing the number buttons while holding the [–/NO] button.

■ Pan

Sets the stereo pan position of the right-hand keyboard voice (selected in the VOICE section). The pan range is from "–7" (full left) to +7 (full right). The default setting for the current voice can be recalled by pressing the **[–/NO]** and **[+/YES]** buttons simultaneously.

$$\_\_\_0{:}\text{Pan}$$

■ Voice Set

The VOICE SET feature brings out the best in each individual voice by automatically setting a range of important voice-related parameters whenever a voice is selected. The parameters that may be set by the VOICE SET feature are listed below. This function lets you turn VOICE SET on or off, as required. The Voice Set function is turned on whenever the power switch is turned on.

- Dual voice (Voice number, volume, octave, pan = 0)
- Split voice (Voice number, volume, octave, pan)
- Harmony type
- Pan (0)

$$\_\_on{:}\text{VoiceSet}$$

■ Accompaniment Volume

Sets the volume of the accompaniment sound in relation to the keyboard and song melody track sound. The range is from "00" to "127". A setting of "00" produces no sound. "127" produces maximum volume. The default setting — "100" — can be recalled by pressing the **[–/NO]** and **[+/YES]** buttons simultaneously.

$$\_100{:}\text{AcompVol}$$

■ Touch Sensitivity

This function sets the keyboard touch sensitivity when the TOUCH RE-SPONSE function (page 17) is on. The range is from "00" to "127". The higher the value the higher the sensitivity. Higher sensitivity means that greater volume can be produced by playing the keys relatively softly.

$$\_100{:}\text{TouchSns}$$

📖 **NOTES**

- *If the Voice Set function is on, the pan setting = 0 will be selected automatically whenever a different voice is selected via the VOICE function.*

- *Negative values can be entered by pressing the number buttons while holding the [–/NO] button.*

📖 **NOTES**

- *The Voice Set function has no effect on the keyboard percussion voices.*

📖 **NOTES**

- *"AccompVol" function can be quickly selected by pressing and holding the [STYLE] button.*

📖 **NOTES**

- *The default setting — "100" — can be recalled by pressing the [–/NO] and [+/YES] button simultaneously.*

- *The "TouchSns" function can be quickly selected by pressing and holding the [TOUCH RE-SPONSE] button.*

■ Minus-one Right/Left-hand Channel

You can practice the specific part (in the Minus One mode) by selecting the demo/cartridge song you want to practice and by assigning the appropriate channel to the desired part.

Any channel —1 through 16 — can be selected. The default setting "01" for the right-hand channel, "02" for the left-hand channel recalled by pressing the **[–/NO]** and **[+/YES]** buttons simultaneously.

$$\_01\text{:MinusChR}$$

$$\_02\text{:MinusChL}$$

■ Lamp (PSR-420 only)

Turns the keyboard guide lamps on or off. The guide mode functions normally whether the lamps are turned on or off (page 50). The red guide lamps correspond to the white keys and the green guide lamps correspond to the black keys.

$$\_on\text{:Lamp}$$

■ Metronome

Turns the metronome function on or off. The metronome will sound during auto accompaniment playback and song recording when turned on.

$$oFF\text{:Metronom}$$

NOTES

• The channel for the specific part will automatically be selected if the selected song contains the Minus-one (Right-/Left-hand) channel settings. In this case, "- - -" will appear on the display and you can not change it.

• Regardless of the Minus-one channel settings, with songs you record yourself, the MELODY 1 track corresponds to the right-hand part and the MELODY 2 track is the left-hand part. While playing songs you record yourself, "- - -" will appear on the display and you cannot change the Minus-one channel settings.

NOTES

• The lamp feature is turned on whenever the power switch is turned on.

NOTES

• The metronome function is turned off whenever the power switch is turned on.

• While playing demo songs in sequence, the metronome function cannot be used.

MIDI Functions

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

● The MIDI Connectors

The **MIDI IN** connector receives MIDI data from an external MIDI device which can be used to control the PSR-320/420. The **MIDI OUT** connector transmits MIDI data generated by the PSR-320/420 (e.g. note and velocity data produced by playing the keyboard).
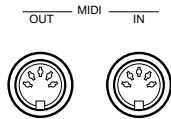
● Simple MIDI Control

Most MIDI keyboards (including the PSR-320/420, of course) transmit note and velocity (touch response) information via the **MIDI OUT** connector whenever a note is played on the keyboard. If the **MIDI OUT** connector is connected to the **MIDI IN** connector of a second keyboard (synthesizer, etc.) or a tone generator (essentially a synthesizer with no keyboard), the second keyboard or tone generator will respond precisely to notes played on the original transmitting keyboard. The result is that you can effectively play two instruments at once, providing thick multi-instrument sounds. The PSR-320/420 also transmits "program change" data when one of its voices is selected. Depending on how the receiving device is set up, the corresponding voice will be automatically selected on the receiving keyboard or tone generator whenever a voice is selected on the PSR-320/420.
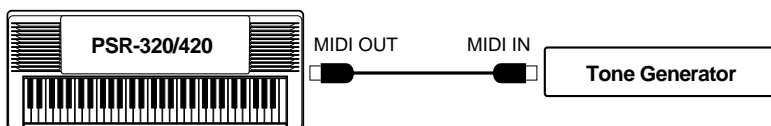
The PSR-320/420 is capable of receiving the same MIDI data, so a second MIDI keyboard connected to the PSR-320/420 **MIDI IN** connector can be used to remotely play the PSR-320/420 and select voices as required.

```
┌─────────────────┐                              ┌─────────────────┐
│   PSR-320/420   │  MIDI IN      MIDI OUT       │  MIDI Keyboard  │
│                 │  ■───────────────────■       │                 │
└─────────────────┘                              └─────────────────┘
```
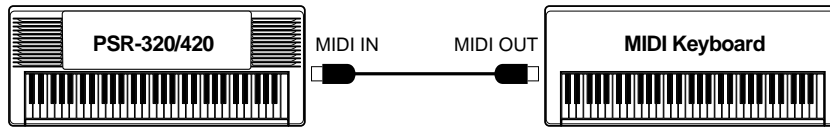
● MIDI Sequence Recording

Although the PSR-320/420 features a built-in "sequencer (the SONG recorder is a type of sequencer), the same type of musical information transfer described above can be used for more sophisticated MIDI sequence recording using an external sequencer or music computer. A MIDI sequence recorder or music computer can be used to "record" MIDI data received from a PSR-320/420, for example. When the recorded data is played back, the PSR-320/420 automatically "plays" the recorded performance in precise detail.

```
┌─────────────────┐  MIDI OUT     MIDI IN   ┌──────────┐
│   PSR-320/420   │  ■──────────────────■   │  Music   │
│                 │                         │ Computer │
└─────────────────┘  MIDI IN      MIDI OUT  └──────────┘
```
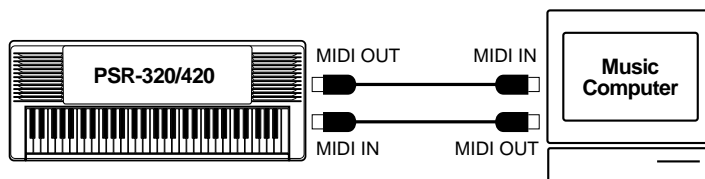
■ Remote Channel

Sets the MIDI channel on which data from a remote keyboard will be received. Any of the standard MIDI channels — 1 through 16 — can be specified. The remote keyboard must be set up to transmit on the specified remote channel, and the keyboard's **MIDI OUT** connector must be connected to the PSR-320/420 **MIDI IN** connector via a standard MIDI cable. Refer to the "MIDI Implementation Chart" section (page 68) for technical details. When set to "oFF" data is received on all 16 MIDI channels. The default setting — "oFF" — can be recalled by pressing the **[–/NO]** and **[+/YES]** buttons simultaneously.

$$oFF:RemoteCh$$

NOTES

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

NOTES

• Remote Channel is automatically turned off when a MIDI "GM ON" message is received.

• The Remote channel setting is retained in memory even when the power switch is turned off, as long as batteries are installed or an AC adaptor is connected.

■ **Keyboard Out**

Determines whether keyboard data will or will not be transmitted via the **MIDI OUT** connector. Keyboard data is transmitted when this function is turned "on" (default). When set to "on" the keyboard data is transmitted on the following MIDI channels:

Voice	Channel
Right-hand main voice	1
Dual voice	11
Left-hand voice (Split voice)	2

_on:KybdOut.

NOTES

• Keyboard Out setting is retained in memory even when the power switch is turned off, as long as batteries are installed or an AC adaptor is connected.

■ **Song Out**

Determines whether song data (Melody track/s only) will or will not be transmitted via the **MIDI OUT** connector. Song data is transmitted when this function is turned "on". The default setting is "oFF". When set to "on" the song data is transmitted on the following MIDI channels:

Track/voice	Channel
Melody 1/main voice	13
Melody 1/dual voice	14
Melody 2/main voice	15
Melody 2/dual voice	16

oFF:SongOut.

NOTES

• Song Out setting is retained in memory even when the power switch is turned off, as long as batteries are installed or an AC adaptor is connected.

• Only the user song you recorded can be transmitted.

• If you want to transmit all the song data (including Accomp track), set "Song Out" and "Accompaniment Out" to on.

■ **Accompaniment Out**

Determines whether auto-accompaniment data will or will not be transmitted via the **MIDI OUT** connector. Accompaniment data is transmitted when this function is turned "on". The default setting is "oFF". When set to "on" the accompaniment data is transmitted on the following MIDI channels:

NOTES

• Accompaniment Out setting is retained in memory even when the power switch is turned off, as long as batteries are installed or an AC adaptor is connected.

● **Internal Styles**

Track	Channel
Rhythm	10
Bass	3
Chord	4
Pad	6
Phrase 1	7
Phrase 2	8
Phrase 2 (Dual voice)	5

● **Cartridge Styles**

Track	Channel	Track	Channel
Rhythm 1	9	Chord 2	5
Rhythm 2	10	Pad	6
Bass	3	Phrase 1	7
Chord 1	4	Phrase 2	8

oFF:AcompOut.

■ Local Control

"Local Control" refers to the fact that, normally, the PSR-320/420 keyboard controls the internal tone generator, allowing the internal voices to be played directly from the keyboard. This situation is "Local Control on" since the internal tone generator is controlled locally by its own keyboard. Local control can be turned off, however, so that the keyboard does not play the internal voices, but the appropriate MIDI information is still transmitted via the **MIDI OUT** connector when notes are played on the keyboard. At the same time, the internal tone generator can respond to MIDI information received via the **MIDI IN** connector. This means that while an external MIDI sequencer, for example, plays the PSR-320/420 internal voices, an external tone generator can be played from the PSR-320/420 keyboard. The default Local Control setting is "on".

```
_on:Local
```

■ External Clock

Reception of external MIDI clock signal can be enabled or disabled as required.

When disabled ("oFF"), the PSR-320/420 is controlled by its own internal clock. When MIDI clock reception is enabled ("on"), however, the PSR-320/420 is controlled by an external MIDI clock signal received via the **MIDI IN** terminal. The default setting is "oFF".

```
oFF:ExtClock
```

NOTES

- If the External Clock function is turned "on" but the external clock signal is interrupted for more than 400 milliseconds, the internal clock is re-selected automatically.

- External Clock setting is retained in memory even when the power switch is turned OFF, as long as batteries are installed or an AC adaptor is connected.

■ Initial Data Send

Transmits all current panel settings to a MIDI data storage device before actually recording your performance. With the "InitSnd?" function selected, press the **[+/YES]** button to start transmission. When the data has been transmitted, "End" will appear momentarily on the display and return to the "InitSnd?".

```
YES:InitSnd?
```

NOTES

- The song data will not be played back correctly, if the panel settings for the song has not been recorded in advance. To record the panel settings to an external device, engage the external device in the record mode and execute the Initial Data Send operation.

Overall Functions ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪

■ Bulk Data Send

This function causes the contents of the registration and song memories to be transmitted via the **MIDI OUT** connector. This data can be saved to memory or disk via a MIDI sequence recorder or MIDI data recorder, and then reloaded when required. The bulk data can also be sent directly to a second PSR-320/420.

To send the bulk data select the "BulkSnd?" function, then press the **[+/YES]** button. "Sure?" will appear on the display. Press **[+/YES]** again to begin transmission of the bulk data. "BkSnd:Sg" (song data) and then "BkSnd:Rg" (registration data) will appear on the display during transmission. When the bulk data has been transmitted, "End" will appear momentarily on the display and return to the "BulkSnd?".

```
YES:BulkSnd?
```

■ Receiving Bulk Data

The PSR-320/420 will automatically receive compatible bulk data from an external MIDI device as long as no style playback or song recording/playback operation is in progress. "BkRcv:Sg" (song data) and then "BkRcv:Rg" (registration data) will appear on the display during reception. When the bulk data has been received, "End" will appear momentarily on the display and return to the previously selected display.

```
:BkRcv:Sg
```

Appendix: Data Backup & Initialization

Except for the data listed below, all PSR-320/420 panel settings are reset to their initial settings whenever the power is turned on. The data listed below are backed up — i.e. retained in memory — as long as an AC adapter is connected or a set of batteries is installed.

- Registration Memory
- Song Memory
- Remote Channel
- Keyboard Out
- Song Out
- Accomp Out
- External Clock

■ Data Initialization

All data can be initialized and restored to the factory preset condition by turning on the power while holding the **[–/NO]** and **[+/YES]** buttons. "CLr Backup" will appear briefly on the display.

POWER
ON / OFF

CLr:Backup

7   8   9
0   –/NO   +/YES

Appendix: Voice & Polyphony List

The PSR-320/420 can play up to 28 individual notes at the same time (i.e. it has a maximum "polyphony" of 28). This number includes all voices used: dual, split, auto accompaniment, song, and multi pads. If the maximum polyphony of the PSR-320/420 is exceeded, the excess notes will be truncated (they will not sound).

Another feature affecting polyphony is the fact that some PSR-320/420 voices actually use two voices at once, as shown in the voice list below. The effective maximum polyphony of the PSR-320/420 is correspondingly reduced when these voices are used.

⌨ NOTES

- The voice list includes the MIDI program numbers that control each voice when the PSR-320/420 is played from an external MIDI device.

- The following voices use only one voice in the indicated ranges: 46 (Pizzicato Strings): all notes below C#2 and above F5. 110 (Bagpipe): all notes above A#2.

Voice Number	MIDI Program Number	Voice Name	Number of Voices Used
		Piano	
01	0	Acoustic Grand Piano	1
02	1	Bright Acoustic Piano	1
03	2	Electric Grand Piano	2
04	3	Honky-tonk Piano	2
05	4	Electric Piano 1	2
06	5	Electric Piano 2	2
07	6	Harpsichord	1
08	7	Clavi	1
		Chromatic Percussion	
09	8	Celesta	1
10	9	Glockenspiel	1
11	10	Music Box	2
12	11	Vibraphone	1
13	12	Marimba	1
14	13	Xylophone	1
15	14	Tubular Bells	1
16	15	Dulcimer	2
		Organ	
17	16	Drawbar Organ	2
18	17	Percussive Organ	2
19	18	Rock Organ	2
20	19	Church Organ	2
21	20	Reed Organ	1
22	21	Accordion	2
23	22	Harmonica	1
24	23	Bandoneon	2
		Guitar	
25	24	Acoustic Guitar (nylon)	1
26	25	Acoustic Guitar (steel)	1
27	26	Electric Guitar (jazz)	1
28	27	Electric Guitar (clean)	2
29	28	Electric Guitar (muted)	1
30	29	Overdriven Guitar	1
31	30	Distortion Guitar	1
32	31	Guitar Harmonics	1
		Bass	
33	32	Acoustic Bass	1
34	33	Electric Bass (finger)	1
35	34	Electric Bass (pick)	1
36	35	Fretless Bass	1
37	36	Slap Bass 1	1
38	37	Slap Bass 2	1
39	38	Synth Bass 1	1
40	39	Synth Bass 2	1
		Strings	
41	40	Violin	1
42	41	Viola	1
43	42	Cello	1
44	43	Contrabass	1

Voice Number	MIDI Program Number	Voice Name	Number of Voices Used
45	44	Tremolo Strings	2
46	45	Pizzicato Strings	2
47	46	Orchestral Harp	1
48	47	Timpani	1
		Ensemble	
49	48	Strings Ensemble 1	1
50	49	Strings Ensemble 2	1
51	50	Synth Strings 1	2
52	51	Synth Strings 2	2
53	52	Choir Aahs	2
54	53	Voice Oohs	1
55	54	Synth Voice	1
56	55	Orchestra Hit	1
		Brass	
57	56	Trumpet	1
58	57	Trombone	1
59	58	Tuba	1
60	59	Muted Trumpet	1
61	60	French Horn	1
62	61	Brass Section	1
63	62	Synth Brass 1	2
64	63	Synth Brass 2	2
		Reed	
65	64	Soprano Sax	1
66	65	Alto Sax	1
67	66	Tenor Sax	1
68	67	Baritone Sax	1
69	68	Oboe	1
70	69	English Horn	1
71	70	Bassoon	1
72	71	Clarinet	1
		Pipe	
73	72	Piccolo	1
74	73	Flute	1
75	74	Recorder	1
76	75	Pan Flute	1
77	76	Blown Bottle	2
78	77	Shakuhachi	1
79	78	Whistle	1
80	79	Ocarina	1
		Synth Lead	
81	80	Lead 1 (square)	2
82	81	Lead 2 (sawtooth)	2
83	82	Lead 3 (calliope)	2
84	83	Lead 4 (chiff)	2
85	84	Lead 5 (charang)	2
86	85	Lead 6 (voice)	2
87	86	Lead 7 (fifth)	2
88	87	Lead 8 (bass+Lead)	2

Voice Number	MIDI Program Number	Voice Name	Number of Voices Used
		Synth Pad	
89	88	Pad 1 (new age)	2
90	89	Pad 2 (warm)	2
91	90	Pad 3 (polysynth)	2
92	91	Pad 4 (choir)	2
93	92	Pad 5 (bowed)	2
94	93	Pad 6 (metallic)	2
95	94	Pad 7 (halo)	2
96	95	Pad 8 (sweep)	2
		Synth Effects	
97	96	FX 1 (rain)	2
98	97	FX 2 (soundtrack)	2
99	98	FX 3 (crystal)	2
100	99	FX 4 (atmosphere)	2
101	100	FX 5 (brightness)	2
102	101	FX 6 (goblins)	2
103	102	FX 7 (echoes)	2
104	103	FX 8 (sci-fi)	2
		Ethnic	
105	104	Sitar	1
106	105	Banjo	1
107	106	Shamisen	1
108	107	Koto	1
109	108	Kalimba	1
110	109	Bagpipe	2
111	110	Fiddle	1
112	111	Shanai	1
		Percussive	
113	112	Tinkle Bell	2
114	113	Agogo	1
115	114	Steel Drums	2
116	115	Woodblock	1
117	116	Taiko Drum	1
118	117	Melodic Tom	1
119	118	Synth Drum	1
120	119	Reverse Cymbal	1
		Sound Effects	
121	120	Guitar Fret Noise	1
122	121	Breath Noise	1
123	122	Seashore	2
124	123	Bird Tweet	2
125	124	Telephone Ring	1
126	125	Helicopter	2
127	126	Applause	2
128	127	Gunshot	1

Appendix: Troubleshooting

Something not working as it should? In many cases what appears to be a malfunction can be traced to a simple error that can be remedied immediately. Before assuming that your PSR-320/420 is faulty, please check the following points.

PROBLEM	POSSIBLE CAUSE/SOLUTION
The speakers produce a "pop" sound whenever the power is turned ON or OFF.	This is normal and is no cause for alarm.
Reduced volume. Poor sound quality. Improper song playback. "Btry Low" sometimes appears. Display has gone out and the panel setting has been set to default.	The batteries probably need to be replaced. Replace all six batteries with new ones of the same type, as described on page 6.
No sound when the keyboard is played.	The Local Control function could be turned off. Make sure Local Control is turned on (page 59).
Not all simultaneously-played notes sound.	You are probably exceeding the maximum polyphony of the PSR-320/420. The PSR-320/420 can play up to 28 notes at the same time — including split, dual, auto-accompaniment, song memory, and multi pad notes. Notes exceeding this limit will not sound.
Auto accompaniment won't function properly. No lower keyboard sound.	Auto accompaniment won't sound right if you're using SINGLE FINGER type fingering when the SINGLE FINGER mode is not selected (page 22).
	Are you sure you're playing in the Auto-Accompaniment section of the keyboard?
	Are you playing chords that the PSR-320/420 can recognize (see chord types on page 23)?
The selected voice does not sound when the keyboard is played.	Make sure that the Keyboard Volume, Split Voice Volume, and/or Dual Voice Volume parameters are set at an appropriate level (pages 53, 16, and 18).
Rhythm doesn't sound when started.	Some sections of some styles do not use the accompaniment rhythm track.
Operation of the sustain pedal is reversed.	Sustain pedal operation will be reversed if you turn on the power or plug in the pedal while pressing the pedal. For normal operation turn off the power then turn it back on while the pedal is not pressed.
The desired parameter cannot be edited.	The cursor is not located at the parameter to be edited. Make sure that the cursor is located at the parameter to be edited (the parameter should be flashing).
Accompaniment does not play properly.	Make sure that the accompaniment tracks you want to hear are not muted (page 29), and that the Accomp Volume parameter is turned up to a reasonable level (page 54).
The Harmony/Dual Voice/Digital Effect function will not turn on.	Neither of these functions can be turned ON if a percussion kit voice is selected. Make sure a voice between number 01 and 141 is selected.
	The Harmony effect cannot be turned ON when the FINGERED FULL mode is in use.
Cartridge data cannot be selected or cannot be played back correctly.	Make sure that an appropriate Yamaha Music Cartridge is properly plugged into the cartridge slot (page 44).
	The electrical contacts on the Music Cartridge are affected with dust. Insert and remove the Music Cartridge several times. This may solve the problem. If the problem still happens, wipe and clear the electrical contacts on the Music Cartridge with a dry soft cloth.
Individual registration or song memory data transmitted via bulk dump from an external sequencer or other device is not received by the PSR-320/420.	Transmit the data with no more than a 2-second break between blocks, or transmit as entirely separate data.

Percussion Kit List

* "<——" indicates the content is the same as that of Standard Kit.
* The number in parentheses ( ) after the percussion kit name is the MIDI program number.
* The corresponding MIDI note numbers for the notes listed in the chart below are actually one octave lower. For example, the MIDI note number for note #36 (C1) in the chart is note #24 (C0).

* Each drum/percussion voice uses one note.
* The drum and percussion voices in same alternate group *1–4 can not be played at the same time.

Note#	Note	129: Standard Kit (0)	130: Room Kit (8)	131: Rock Kit (16)	132: Electronic Kit (24)
36	C1	Click (Square wave)	<——	<——	<——
37	C#1	Brush Tap	<——	<——	<——
38	D1	Brush Swirl	<——	<——	<——
39	D#1	Brush Slap	<——	<——	<——
40	E1	Brush Swirl W/Attack	<——	<——	Reverse Cymbal
41	F1	Snare Roll	<——	<——	<——
42	F#1	Castanet	<——	<——	Hi-Q
43	G1	Snare H Soft	Snare Room L	Snare Rock L	Snare Gate L
44	G#1	Sticks	<——	<——	<——
45	A1	Bass Drum H Soft	Bass Drum Room L	Bass Drum Rock L	Bass Drum Gate L
46	A#1	Open Rim Shot	<——	<——	<——
47	B1	Bass Drum L	Bass Drum Room M	Bass Drum Rock M	Bass Drum Gate M
48	C2	Bass Drum H Hard	Bass Drum Room H	Bass Drum Rock H	Bass Drum Gate H
49	C#2	Closed Rim Shot	<——	<——	<——
50	D2	Snare L	Snare Room M	Snare Rock M	Snare Gate M
51	D#2	Hand Clap	<——	<——	<——
52	E2	Snare H Hard	Snare Room H	Snare Rock H	Snare Gate H
53	F2	Floor Tom L	Room Tom 1	Rock Tom 1	Electronic Tom 1
54	F#2	Hi-Hat Closed　*1	<——	<——	<——
55	G2	Floor Tom H	Room Tom 2	Rock Tom 2	Electronic Tom 2
56	G#2	Hi-Hat Pedal　*1	<——	<——	<——
57	A2	Low Tom	Room Tom 3	Rock Tom 3	Electronic Tom 3
58	A#2	Hi-Hat Open　*1	<——	<——	<——
59	B2	Mid Tom L	Room Tom 4	Rock Tom 4	Electronic Tom 4
60	C3	Mid Tom H	Room Tom 5	Rock Tom 5	Electronic Tom 5
61	C#3	Crash Cymbal 1	<——	<——	<——
62	D3	High Tom	Room Tom 6	Rock Tom 6	Electronic Tom 6
63	D#3	Ride Cymbal 1	<——	<——	<——
64	E3	Chinese Cymbal	<——	<——	<——
65	F3	Ride Cymbal Cup	<——	<——	<——
66	F#3	Tambourine	<——	<——	<——
67	G3	Splash Cymbal	<——	<——	<——
68	G#3	Cowbell	<——	<——	<——
69	A3	Crash Cymbal 2	<——	<——	<——
70	A#3	Vibraslap	<——	<——	<——
71	B3	Ride Cymbal 2	<——	<——	<——
72	C4	Bongo H	<——	<——	<——
73	C#4	Bongo L	<——	<——	<——
74	D4	Conga H Mute	<——	<——	<——
75	D#4	Conga H Open	<——	<——	<——
76	E4	Conga L	<——	<——	<——
77	F4	Timbale H	<——	<——	<——
78	F#4	Timbale L	<——	<——	<——
79	G4	Agogo H	<——	<——	<——
80	G#4	Agogo L	<——	<——	<——
81	A4	Cabasa	<——	<——	<——
82	A#4	Maracas	<——	<——	<——
83	B4	Samba Whistle H	<——	<——	<——
84	C5	Samba Whistle L	<——	<——	<——
85	C#5	Guiro Short	<——	<——	<——
86	D5	Guiro Long	<——	<——	<——
87	D#5	Claves	<——	<——	<——
88	E5	Wood Block H	<——	<——	<——
89	F5	Wood Block L	<——	<——	<——
90	F#5	Cuica Mute	<——	<——	Scratch H
91	G5	Cuica Open	<——	<——	Scratch L
92	G#5	Triangle Mute　*2	<——	<——	<——
93	A5	Triangle Open　*2	<——	<——	<——
94	A#5	Shaker	<——	<——	<——
95	B5	Jingle Bell	<——	<——	<——
96	C6	Bell Tree	<——	<——	<——
97	C#6	Voice 'One'	<——	<——	<——
98	D6	Voice 'Two'	<——	<——	<——
99	D#6	Voice 'Three'	<——	<——	<——
100	E6	Voice 'Four'	<——	<——	<——
101	F6	Voice 'Are You Sure?'	<——	<——	<——

Note#	Note	133: Analog Kit (25)	134: Jazz Kit (32)	135: Brush Kit (40)	136: Classic Kit (48)
36	C1	<——	<——	<——	<——
37	C#1	<——	<——	<——	<——
38	D1	<——	<——	<——	<——
39	D#1	<——	<——	<——	<——
40	E1	Reverse Cymbal	<——	<——	<——
41	F1	<——	<——	<——	<——
42	F#1	Hi-Q	<——	<——	<——
43	G1	Snare Analog L	<——	Brush Slap L	Snare Classic L
44	G#1	<——	<——	<——	<——
45	A1	Bass Drum Analog L	<——	<——	Gran Casa L
46	A#1	<——	<——	<——	<——
47	B1	Bass Drum Analog M	<——	<——	Gran Casa M
48	C2	Bass Drum Analog H	<——	<——	Gran Casa H
49	C#2	Closed Rim Shot Analog	<——	<——	<——
50	D2	Snare Analog M	<——	Brush Slap H	Snare Classic M
51	D#2	<——	<——	<——	<——
52	E2	Snare Analog H	<——	Brush Tap	Snare Classic H
53	F2	Analog Tom 1	Natural Tom 1	Brush Tom 1	Natural Tom 1
54	F#2	Analog Hi-hat Closed 1 *3	Dark Hi-Hat Closed *4	Dark Hi-Hat Closed *4	Dark Hi-Hat Closed *4
55	G2	Analog Tom 2	Natural Tom 2	Brush Tom 2	Natural Tom 2
56	G#2	Analog Hi-hat Closed 2 *3	Dark Hi-Hat Pedal *4	Dark Hi-Hat Pedal *4	Dark Hi-Hat Pedal *4
57	A2	Analog Tom 3	Natural Tom 3	Brush Tom 3	Natural Tom 3
58	A#2	Analog Hi-hat Open *3	Dark Hit Hat Open *4	Dark Hit Hat Open *4	Dark Hit Hat Open *4
59	B2	Analog Tom 4	Natural Tom 4	Brush Tom 4	Natural Tom 4
60	C3	Analog Tom 5	Natural Tom 5	Brush Tom 5	Natural Tom 5
61	C#3	<——	<——	<——	Hand Cymbal Long L
62	D3	Analog Tom 6	Natural Tom 6	Brush Tom 6	Natural Tom 6
63	D#3	<——	<——	<——	Hand Cymbal Short L
64	E3	<——	<——	<——	<——
65	F3	<——	<——	<——	<——
66	F#3	<——	<——	<——	<——
67	G3	<——	<——	<——	<——
68	G#3	<——	<——	<——	<——
69	A3	<——	<——	<——	Hand Cymbal Long H
70	A#3	<——	<——	<——	<——
71	B3	<——	<——	<——	Hand Cymbal Short H
72	C4	<——	<——	<——	<——
73	C#4	<——	<——	<——	<——
74	D4	<——	<——	<——	<——
75	D#4	<——	<——	<——	<——
76	E4	<——	<——	<——	<——
77	F4	<——	<——	<——	<——
78	F#4	<——	<——	<——	<——
79	G4	<——	<——	<——	<——
80	G#4	<——	<——	<——	<——
81	A4	<——	<——	<——	<——
82	A#4	<——	<——	<——	<——
83	B4	<——	<——	<——	<——
84	C5	<——	<——	<——	<——
85	C#5	<——	<——	<——	<——
86	D5	<——	<——	<——	<——
87	D#5	<——	<——	<——	<——
88	E5	<——	<——	<——	<——
89	F5	<——	<——	<——	<——
90	F#5	Scratch H	<——	<——	<——
91	G5	Scratch L	<——	<——	<——
92	G#5	<——	<——	<——	<——
93	A5	<——	<——	<——	<——
94	A#5	<——	<——	<——	<——
95	B5	<——	<——	<——	<——
96	C6	<——	<——	<——	<——
97	C#6	<——	<——	<——	<——
98	D6	<——	<——	<——	<——
99	D#6	<——	<——	<——	<——
100	E6	<——	<——	<——	<——
101	F6	<——	<——	<——	<——

MIDI Implementation Chart

MIDI Implementation Chart

Function	Transmitted	Recognized	Remarks
Basic Default Channel Changed	1~16 CH 1~16 CH	1~16 CH (*0) 1~16 CH (*0)	
Default Mode Messages Altered	Mode 3 × *****************	(*0) × ×	
Note Number : True voice	0~127 *****************	0~127 0~127	
Velocity Note on Note off	○ 9nH, v=1~127 × 9nH, v=0	○ 9nH, v=1~127 × 9nH, v=0 or 8nH	
After key's Touch Ch's	× ×	× ×	
Pitch Bender	○	○	

Control Change   0, 32
                  1
         6, 38
            7
          10
          11
         64
         66
         84
         91
         96
         97
     100, 101
        120
        121
	○ (*1)
	○
	○
	○
	○
	○
	○
	×
	○
	○
	×
	×
	○ (*2)
	○
	×
		○ (*1)
		○
		○
		○
		○
		○
		○
		○
		○
		○ (*7)
		○
		○
		○ (*2)
		○
		○ (*3)
			Bank select MSB, LSB
			Modulation depth
			Data entry MSB, LSB
			Volume
			Pan
			Expression
			Sustain
			Sostenuto
			Portamento control
			Ambience depth
			RPN data increment
			RPN data decrement
			RPN LSB, MSB
			All sound off
			Reset all controllers

Program Change : True #	○ 0~127 *****************	○ 0~127 0~127	
System Exclusive	○ (*4)	○ (*4)	
System : Song Position : Song Select Common : Tune	× × ×	× × ×	
System : Clock Real Time : Commands	○ ○ (*6)	○ (*5) ×	

Aux   : Local ON/OFF
          : All Notes Off
Messages : Active Sense
         : Reset
	×
	×
	○
	×
		×
		○
		○
		×	

Mode 1: OMNI ON, POLY   Mode 2: OMNI ON, MONO   ○: Yes
Mode 3: OMNI OFF, POLY   Mode 4: OMNI OFF, MONO   ×: No

*0 PSR-320/420 functions as 16 MIDI channel multi-timbral tone generator.
The Remote Keyboard channel can be set by the panel settings.
The designated channels on the PSR-320/420 can be controlled by an external device and receive all the data excepting the following control change data:

Data entry, MSB, LSB
Portamento control
RPN data increment
RPN data decrement
RPN LSB, MSB

*1 Bank select transmission: The LSB is fixed at 00H.

Bank select reception: The bank select MSB is used for melody voice and rhythm voice switching.

MSB 00H: Melody voice.
MSB 7FH: Rhythm voice.

The bank select LSB is ignored.
The bank select on the channel 10 is ignored.
No voice change will occur when only a bank select is received.
When a program change is received the latest bank select value is used.

*2 RPN transmits and receives the following data:
Pitch bend sensitivity: BnH, 64H, 00H, 65H, 00H
Fine tuning: BnH, 64H, 01H, 65H, 00H
Coarse tuning: BnH, 64H, 02H, 65H, 00H
Null: BnH, 64H, 7FH, 65H, 7FH

*3 Reset all controllers.
Pitch bend, modulation, expression, sustain, sostenuto, and registered parameter number are returned to their default values.
Portamento is reset.

*4 Exclusive.
<GM1 System ON>   F0H, 7EH, 7FH, 09H, 01H, F7H
All parameters except MIDI Master Tuning are reset to their default values.

<DISK ORCHESTRA ON>   F0H, 43H, 73H, 01H, 14H, F7H
Disk Orchestra Collection disk can be played on the PSR-320/420 via an external FDD device.

<DISK ORCHESTRA OFF> F0H, 43H, 73H, 01H, 13H, F7H

<MIDI Master Volume>   F0H, 7FH, 7FH, 04H, 01H, II, mm, F7H
Allows the volume of all channels to be changed simultaneously (universal system exclusive).
"mm" is used as the MIDI Master Volume value ("ll" is ignored).
The relation between MIDI Master Volume value and the actual volume is the same as the one between control change master volume value and the actual volume.

The default value for "mm" is 7FH.

<MIDI Master Tuning>
F0H, 43H, 1nH, 27H, 30H, 00H, mm, ll, cc, F7H
Allows the pitch of all channels to be changed simultaneously.
"mmll" is used as the MIDI Master Tuning value, and the actual tuning value is represented as follows:

$T = M - 128$ $(28 <= M <= 228)$
Where T is the actual tuning value in cents. M is decimal value represented by 1-byte using bits 0..3 of "mm" as the MSB and bits 0..3 of "ll" as the LSB.
The default values of "mm" and "ll" are 08H and 00H, respectively.
n and cc are also recognized.
This value is not reset by a GM1 System On or Reset All Controllers message.

<Panel Voice>   F0H, 43H, 76H, 1B, cc, vv, F7H
This message alternately selects Panel voice or GM voice.
cc: MIDI channel
vv: 00=GM voice mode, 01=Panel Voice mode
The channel designated as the Remote Keyboard channel is fixed to Panel voice mode.

<Bulk Dump>
Song Memory:
F0H, 43H, 76H, 20H, bl, bh, <DATA>, cs, F7H
Registration Memory:
F0H, 43H, 76H, 21H, bl, bh, <DATA>, cs, F7H
"bl" and "bh" represent the total byte count as "bl + bh*128".
cs= Checksum.

*5 Internal/External clock selectable.

*6 Start/Stop messages is transmitted.

*7 Each channel receives the message (in Panel voice mode), but ignores the message if the channel is in GM voice mode.
The relation between the ambience depth value and actual effect value is defined as follows:

0~25:OFF, 26~81:1, 82~121:2, 122~127:3 (MAX)

■ GM System Level 1

The existing MIDI protocol allows performance and other data to be transferred between different instruments, even if they are from different manufacturers. This means, for example, that sequence data that was originally created to control a tone generator from manufacturer A can also be used to control a different tone generator from manufacturer B. Since the voice allocation in different devices from different manufacturers is usually different, however, appropriate program change data must be transmitted to select the right voices.

The General MIDI protocol was developed to minimize confusion and the need for re-programming when playing software created by one MIDI device on another. This has been achieved by defining a standard voice allocation in which the same or similar voices are accessed by the same program change numbers or MIDI channels. The current standard recognized by the International MIDI Association is known as "GM System Level 1." The PSR-320/420 voice allocation complies with the GM System Level 1 standard.

Specifications

Keyboards:
61 standard-size keys (C1-C6) with touch response.

Display:
Large multi-function LCD display

Setup:
Power: ON/OFF
Master Volume: MIN-MAX

Control & Ten Keys:
CURSOR ▲▼◄ ►, FUNCTION ▲▼, MODE ▼, [0]–[9],
[+/YES], [–/NO]

Cartridge Slot

Keyboard Guide Lamps (PSR-420 only)

Demo:
Voice Demo: 8 Songs
Style Demo: 8 Songs

Mode:
NORMAL, SPLIT, SINGLE, FINGERED

Voice:
AWM128 voices +8 Keyboard Percussion Kits
Polyphony: 28
Voice Set
Split Voice: Volume, Octave, Pan, Split Point
Dual Voice: Volume, Octave, Pan
Touch Response: Touch Sensitivity
Harmony: 5 types
Others: Keyboard Volume, Octave, Pan

Auto Accompaniment:
100 styles
Accomp Track: RHYTHM, BASS, CHORD, PAD, PHRASE
ACCOMP LARGE/SMALL
Accomp Track Settings: ON/OFF, VOICE, VOLUME
Accompaniment Control: SYNC-START/STOP, START/
STOP, INTRO, MAIN A/B (AUTO FILL), ENDING
Tempo: 32–280
Beat Indicator
Fingering (FINGERED Mode): Normal, Full
Accompaniment Volume
Split Point (Accomp Mode)

One Touch Setting

Overall Controls:
Transpose
Metronome
Lamp (PSR-420 only)

Digital Effect:
4 types (Ambience/Ensemble/Ambience+Ensemble/Sustain)

Registration Memory:
8 Regist Bank: 1–4
ACCOMP FREEZE

Multi Pads:
14 Multi Pad Kits (PSR-420)
11 Multi Pad Kits (PSR-320)
4 Pads+Terminate

SONG:
Song: 3 songs
Recording Tracks: ACCOMP, MELODY 1, 2
Edit: Volume, Voice (MELODY TRACK), Song Clear
Minus One: 3 Modes
Minus One Right-hand Channel, Minus One Left-hand
Channel
Repeat
Guide (PSR-420 only)

MIDI:
Remote Channel, Keyboard Out, Song Out, Accompaniment Out, External Clock, Local Control, Initial Data Send,
Bulk Data Send

Auxiliary Jacks:
DC IN 10-12V, PHONES, SUSTAIN, MIDI IN/OUT

Amplifiers:
6.0 W + 6.0 W (when using PA-5B AC power adaptor)
4.5 W + 4.5 W (when using batteries)
Phones output: 100Ω ±5% Impedance

Speakers:
12cm (4-3/4") x 2

Power Consumption:
26 W (when using PA-5B AC power adaptor)

Batteries:
Six SUM-1, "D" size, R-20 or equivalent batteries

Rated Voltage:
DC 10-12V

Dimensions (W x D x H):
933 x 372 x 127mm (36-3/4" x 14-5/8" x 5")

Weight:
PSR-320: 5.9 kg (13.0 lbs.) excluding batteries
PSR-420: 6.1 kg (13.4 lbs.) excluding batteries

Supplied Accessories:
• Music Cartridge
• Music Stand
• Owner's Manual

Optional Accessories:
• Headphones   HPE-3, HPE-150
• AC Power Adaptor   PA-5, PA-5B, PA-5C
• Foot switch   FC4, FC5
• Music Cartridge

* Specifications subject to change without notice.

Index

SPECIAL MESSAGE SECTION

This product utilizes batteries or an external power supply (adapter). DO NOT connect this product to any power supply or adapter other than one described in the manual, on the name plate, or specifically recommended by Yamaha.

This product should be used only with the components supplied or; a cart, rack, or stand that is recommended by Yamaha. If a cart, etc., is used, please observe all safety markings and instructions that accompany the accessory product.

SPECIFICATIONS SUBJECT TO CHANGE:
The information contained in this manual is believed to be correct at the time of printing. However, Yamaha reserves the right to change or modify any of the specifications without notice or obligation to update existing units.

This product, either alone or in combination with an amplifier and headphones or speaker/s, may be capable of producing sound levels that could cause permanent hearing loss. DO NOT operate for long periods of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
IMPORTANT: The louder the sound, the shorter the time period before damage occurs.

NOTICE:
Service charges incurred due to a lack of knowledge relating to how a function or effect works (when the unit is operating as designed) are not covered by the manufacturer's warranty, and are therefore the owners responsibility. Please study this manual carefully and consult your dealer before requesting service.

ENVIRONMENTAL ISSUES:
Yamaha strives to produce products that are both user safe and environmentally friendly. We sincerely believe that our products and the production methods used to produce them, meet these goals. In keeping with both the letter and the spirit of the law, we want you to be aware of the following:

Battery Notice:
This product MAY contain a small non-rechargeable battery which (if applicable) is soldered in place. The average life span of this type of

battery is approximately five years. When replacement becomes necessary, contact a qualified service representative to perform the replacement.

This product may also use "household" type batteries. Some of these may be rechargeable. Make sure that the battery being charged is a rechargeable type and that the charger is intended for the battery being charged.

When installing batteries, do not mix batteries with new, or with batteries of a different type. Batteries MUST be installed correctly. Mismatches or incorrect installation may result in overheating and battery case rupture.

Warning:
Do not attempt to disassemble, or incinerate any battery. Keep all batteries away from children. Dispose of used batteries promptly and as regulated by the laws in your area. Note: Check with any retailer of household type batteries in your area for battery disposal information.

Disposal Notice:
Should this product become damaged beyond repair, or for some reason its useful life is considered to be at an end, please observe all local, state, and federal regulations that relate to the disposal of products that contain lead, batteries, plastics, etc. If your dealer is unable to assist you, please contact Yamaha directly.

NAME PLATE LOCATION:
The name plate is located on the bottom of the product. The model number, serial number, power requirements, etc., are located on this plate. You should record the model number, serial number, and the date of purchase in the spaces provided below and retain this manual as a permanent record of your purchase.

Model _____

Serial No. _____

Purchase Date _____

PLEASE KEEP THIS MANUAL

92-BP

FCC INFORMATION (U.S.A.)

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.

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.

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.

If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact Yamaha Corporation of America, Electronic Service Division, 6600 Orangethorpe Ave, Buena Park, CA90620

• This applies only to products distributed by Yamaha Corporation of America.

Limited Warranty

90 DAYS LABOR   **1 YEAR PARTS**

Yamaha Corporation of America, hereafter referred to as Yamaha, warrants to the original consumer of a product included in the categories listed below, that the product will be free of defects in materials and/or workmanship for the periods indicated. This warranty is applicable to all models included in the following series of products:

PSR SERIES OF PORTATONE ELECTRONIC KEYBOARDS

If during the first 90 days that immediately follows the purchase date, your new Yamaha product covered by this warranty is found to have a defect in material and/or workmanship, Yamaha and/or its authorized representative will repair such defect without charge for parts or labor.

If parts should be required after this 90 day period but within the one year period that immediately follows the purchase date, Yamaha will, subject to the terms of this warranty, supply these parts without charge. However, charges for labor, and/or any miscellaneous expenses incurred are the consumers responsibility. Yamaha reserves the right to utilize reconditioned parts in repairing these products and/or to use reconditioned units as warranty replacements.

THIS WARRANTY IS THE ONLY EXPRESS WARRANTY WHICH YAMAHA MAKES IN CONNECTION WITH THESE PRODUCTS. ANY IMPLIED WARRANTY APPLICABLE TO THE PRODUCT, INCLUDING THE WARRANTY OF MERCHANT ABILITY IS LIMITED TO THE DURATION OF THE EXPRESS WARRANTY. YAMAHA EXCLUDES AND SHALL NOT BE LIABLE IN ANY EVENT FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Some states do not allow limitations that relate to implied warranties and/or the exclusion of incidental or consequential damages. Therefore, these limitations and exclusions may not apply to you.

This warranty gives you specific legal rights. You may also have other rights which vary from state to state.

CONSUMERS RESPONSIBILITIES

If warranty service should be required, it is necessary that the consumer assume certain responsibilities:

1. Contact the Customer Service Department of the retailer selling the product, or any retail outlet authorized by Yamaha to sell the product for assistance. You may also contact Yamaha directly at the address provided below.

2. Deliver the unit to be serviced under warranty to: the retailer selling the product, an authorized service center, or to Yamaha with an explanation of the problem. Please be prepared to provide proof purchase date (sales receipt, credit card copy, etc.) when requesting service and/or parts under warranty.

3. Shipping and/or insurance costs are the consumers responsibility.* Units shipped for service should be packed securely.

    *Repaired units will be returned PREPAID if warranty service is required within the first 90 days.

    IMPORTANT: Do NOT ship anything to ANY location without prior authorization. A Return Authorization (RA) will be issued that has a tracking number assigned that will expedite the servicing of your unit and provide a tracking system if needed.

4. Your owners manual contains important safety and operating instructions. It is your responsibility to be aware of the contents of this manual and to follow all safety precautions.

EXCLUSIONS

This warranty does not apply to units whose trade name, trademark, and/or ID numbers have been altered, defaced, exchanged removed, or to failures and/or damages that may occur as a result of:

1. Neglect, abuse, abnormal strain, modification or exposure to extremes in temperature or humidity.

2. Improper repair or maintenance by any person who is not a service representative of a retail outlet authorized by Yamaha to sell the product, an authorized service center, or an authorized service representative of Yamaha.

3. This warranty is applicable only to units sold by retailers authorized by Yamaha to sell these products in the U.S.A., the District of Columbia, and Puerto Rico. This warranty is not applicable in other possessions or territories of the U.S.A. or in any other country.

Please record the model and serial number of the product you have purchased in the spaces provided below.

Model_____   Serial #_____   Sales Slip #_____

Purchased from_____   Date_____
(Retailer)

YAMAHA CORPORATION OF AMERICA
Electronic Service Division
6600 Orangethorpe Avenue
Buena Park, CA 90620

KEEP THIS DOCUMENT FOR YOUR RECORDS. DO NOT MAIL!