assembly manual

User’s Guide

CX 1 & 2

AM 354

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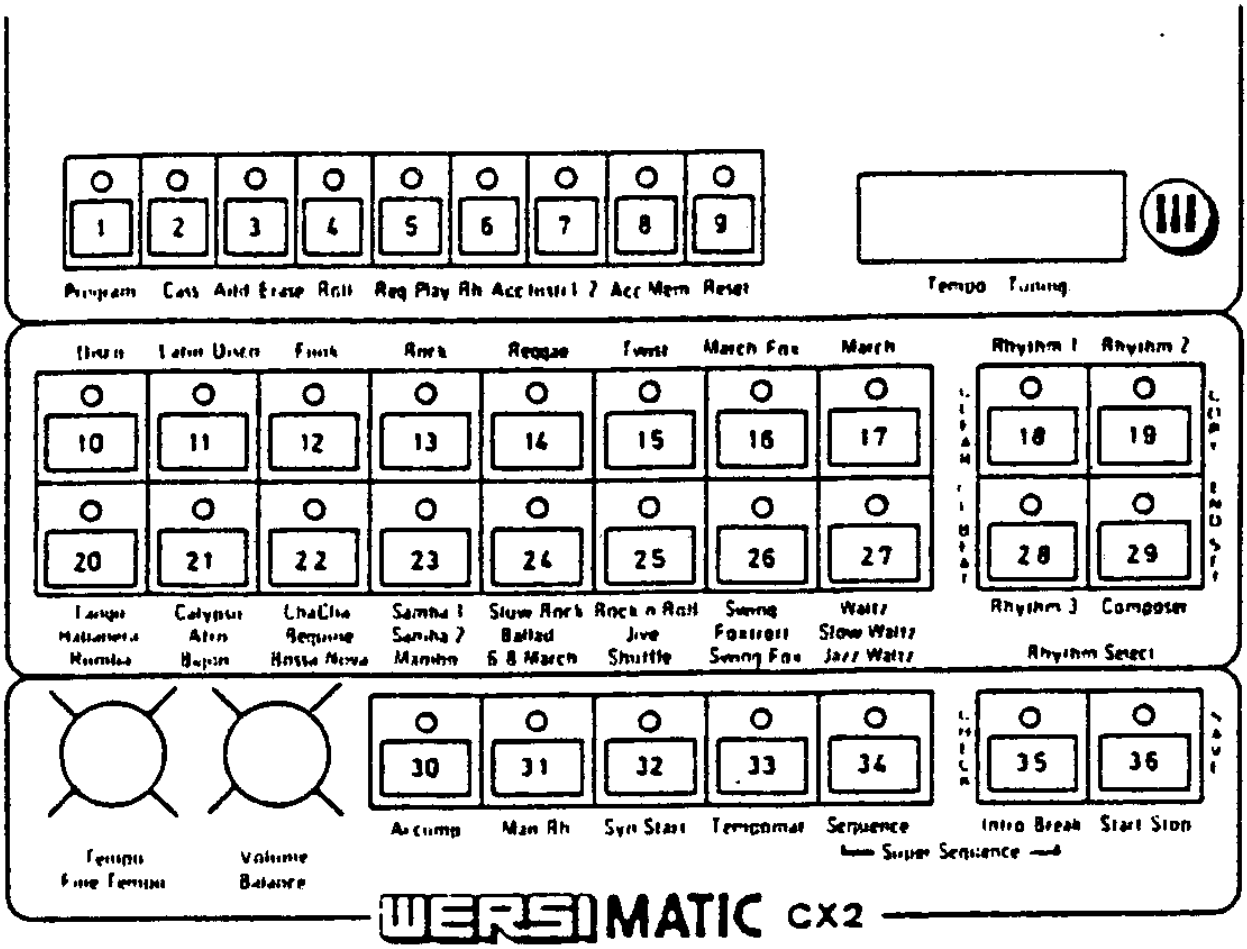
A. Introduction

With the Wersimatic CX 2 Rhythm & Accompaniment unit (hereafter known simply as the CX 2), you have the finest device of its kind available today. Not only does the CX 2 have a fantastic selection of instruments and patterns, but you can also program your own rhythms and accompaniments.

The purpose of this manual is to help you learn the CX 2 and all its capabilities, so you can play with a background orchestra that is the envy of the professionals.

We will use a simplified approach, showing you the purpose of each panel control and how you, may use it to get the desired effect. The control panel, with number-coded switches for easy reference, is shown throughout the manual, so you are never far away from a quick check on what we are calling for. Once you have learned how to use the CX2's basic functions, you can move on to programming, in which you get to use your creativity in composing your own rhythms and accompaniments. For programming, of course, you need the optional "Instrument and Programming" panel (standard in the freestanding CX 2 and Galaxy). The good news about programming the CX 2 is that you don't have to be a computer expert to do it!

The best way to learn the CX 2 is to have one in front of you so you can try the various functions as you learn about them. The instructions given here apply regardless of the organ model your CX 2 is in. There are a few slight differences in using the freestanding CX 2, but they are so noted in the text.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B. Operating Instructions

The Control Panel

You will find that the CX 2 is quite simple to operate, once you acquaint yourself with its controls. And, since all CX 2 functions are initiated from the control panel, we'll begin our operating instructions by introducing you to the various switches and controls on the main panel. (There is also an instrument and programming panel which we will get into later.)

Hopefully, you are in front of a CX 2 unit as you are reading this manual. You can learn faster by actually trying the functions as you read about them. Refer also to the line drawings of the panel found throughout this manual. To make it easy for you to locate the switches as they are called for, we have numbered each switch in the drawing, and refer to the switch both by title and number in the text; ex.: Start/Stop (36).

Looking at the panel, you will notice that the switches are color-keyed. This also will make using the CX 2 easier, since you will eventually be able to locate a switch more quickly, once you recognize it by color.

The switches are the momentary type (Digitast); that is, when you depress a switch, it doesn't lock, but spring-returns. Depressing a switch will initiate a function, as indicated by a light-emitting diode (hereafter known as LED), which glows when the function is active. Depressing the switch again stops the function (LED goes out).

In the lower left-hand corner of the panel you will see some conventional-looking rotary controls. The "Tempo" controls, of course, permit you to adjust the tempo of your rhythm over a wide range; Tempo - the upper knob - is a coarse adjustment; Fine Tempo - the outer ring - permits a closer adjustment. Volume is self-explanatory. The Balance control allows you to control the volumes of the rhythm and accompaniment with relation to each other - turn it clockwise and the rhythm instruments get louder relative to the accompaniment instruments; turn it counterclockwise and the reverse is true.

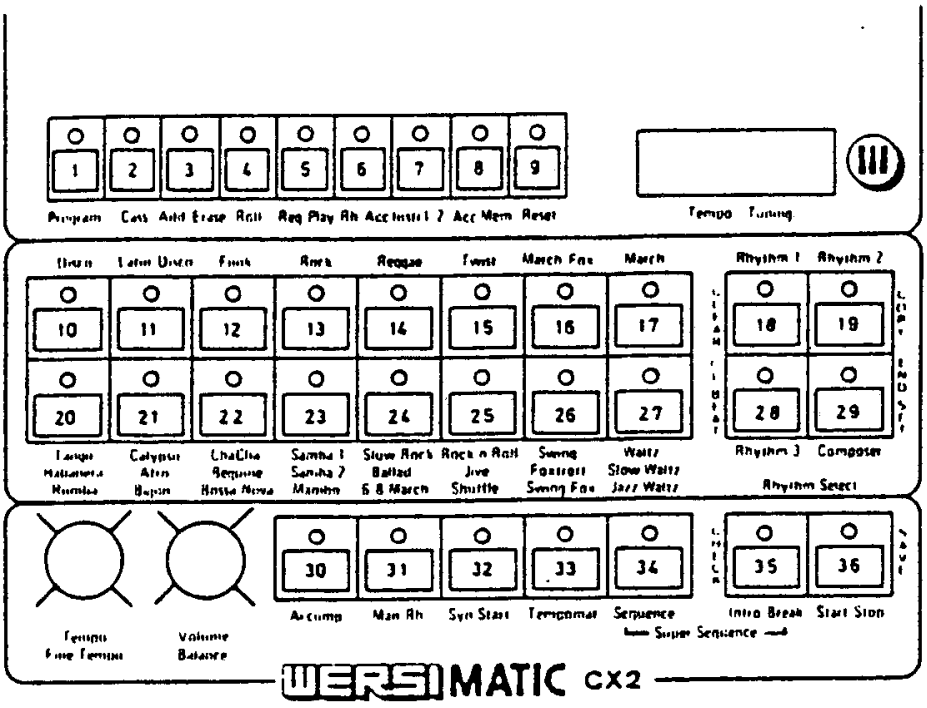
In the upper right-hand corner of the panel there is an LED display Tempo/Tuning that lights up in red numbers (like a calculator) when you turn on the unit. The numbers that appear there will have meaning as you go through the CX 2's functions.

There is no better way to learn to do something than by doing it, so let's turn on the CX 2and start learning.

Turning On the CX 2

If your CX 2 is in an organ, it will turn on with the organ. The free-standing unit has a power switch on the rear panel.

At turn-on, the LED display Tempo/Tuning will show the frequency of the organ's master generator, based on the note middle A, or 440Hz. This, of course, tells you if the organ is in tune; you should set the reading to 440 by varying the organ's Master Pitch control. (Disregard this for the free-standing unit, since it is an independent unit and has no separate "master



generator" to set) After about 30 seconds, the 440 indication will disappear and be replaced by the tempo rate. You can restore the tuning frequency by depressing the switch Reset (9).

You will note that the following switches are active (LED lit) at turn-on:

Reg/Play (5)
Acc/Mem (8)
Disco (10)
Composer (29)

To start the rhythm, depress Start/Stop (36). You will hear a disco rhythm (provided a free-programmable composer program is in memory; more about this in the section "Programming").

Tempomat

If the Tempo/Tuning display was indicating the tuning frequency, you will notice that it immediately switched to the tempo rate when you pushed Start/Stop (36). This transition also occurs if a rhythm (switches 10 - 17, 20 - 27) is selected. You can vary the tempo rate from 20 to 240 beats per minute via the Tempo controls. Or, if you wish. you can select a preset "standard" tempo rate for any rhythm you happen to be in by depressing Tempomat (33). This is a programmable feature; we'll show you how to do it in the chapter "Programming".

The Rhythm Section

The CX 2 has 64 different rhythm patterns, selectable in four groups of 16 rhythms each. The following instruments comprise the rhythm section: Bass drum, snare drum, hi hat (long/short), tom tom (low/high), conga (low/high), cymbal, tambourine, brushes, maracas, cowbells, claves and the synthesizer drum (synthe-drum).

While we're talking about instruments, it is worthwhile mentioning that the CX 2 is a stereo device; if you have a stereo organ, it uses both channels; if you have a free-standing CX 2, you can use it through a stereo amplifier system. Of course, if you have a monaural organ, the CX 2wilI have been wired for single-channel use. In stereo, you will notice that some instru-

ments predominate in one channel or the other. This gives the sound a remarkable "three-dimensional" effect. And note this: on intros and breaks, the rhythm "moves" between channels, adding to the realism.

To select the first group of rhythms, depress Rhythm 1 (18). Now, when you select a rhythm from switches 10 through 17, the rhythm you hear upon depressing Start/Stop (36) will be the first variation of that pattern. For example Disco (10) + Rhythm 1(18) = Disco 1.

Selecting Rhythm 2 (19) gives a second variation (Disco 2) and Rhythm 3 (28) gives a third variation (Disco 3). Selecting Composer (29) gives a variation dependent on what has been preprogrammed into the composer memory (more in "Programming").

Selecting from the rhythm groups 1 through 3 (switches 18, 19 and 28) plus the rhythms of switches 20 through 27 will give one of three distinct rhythms. For example, switch 25 + Rhythm 1(18) = Rock 'n Roll; 25 + Rhythm 2 (19) = Jive; 25 + Rhythm 3 (28) = Shuffle. Again, what is in the Composer (29) mode depends on what is in the composer memory.

Select a rhythm (any rhythm) and start the rhythm (switch 36). You will notice a small blinking indicator in the Tempo/Tuning display. This is the downbeat indicator, which flashes at the first beat of each measure. This gives you a visual reference to precisely determine the start of the rhythm.

Intro/Break

While the rhythm is running, momentarily depress the switch Intro/Break (35). In the next measure, you will get a solo drum break, consisting of a sequence of four different percussion instruments spanning one measure. If you press switch 35 and hold it down, the drum break will begin immediately and go on as long as you hold the switch down.

Now stop the rhythm (36). You can start the rhythm again by pressing Intro/Break (35), which will open the sequence with a percussive introduction lasting a measure, after which the selected rhythm will commence.

Syn/Start

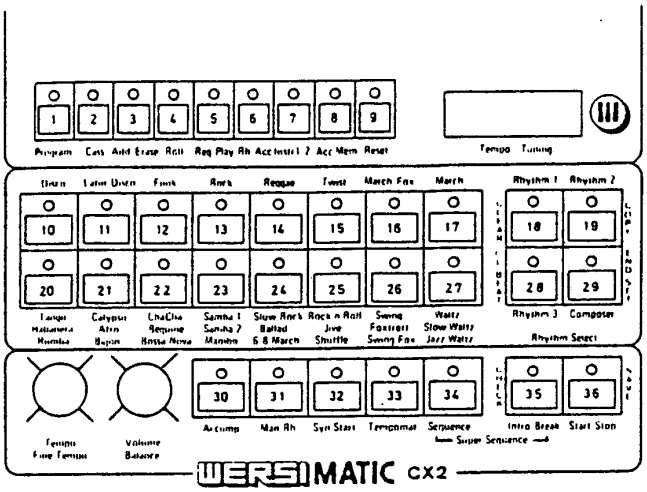
Another way to start the rhythm is via the lower manual or pedals. You must first preset the unit by depressing Syn Start (32). Then when you depress a note on the pedalboard or lower manual (or the keyboard of the free-standing unit), the rhythm will start. This is great when you want the rhythm to start during your performance. You then stop the rhythm the usual way (36).

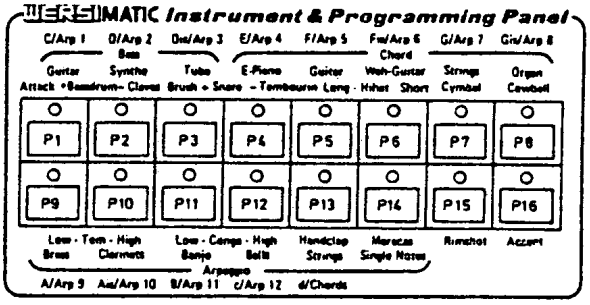
Manual Rhythm

Aside from the fully automatic functions of the rhythm section, there is also a semi-automatic function. Depress the switch Man Rh (31) but do not start the rhythm. Strike keys in the lower manual (or free-standing keyboard) and the snare will sound with each individual key struck. In legato playing, the snare will sound only with the first key stroke. The pedals will sound the bass drum and cymbals.

Pressing Start/Stop (36) or Intro/Break (35) cancels the semi-automatic mode and initiates the selected rhythm. However, pressing Man Rh (31) again will stop the rhythm and return the unit to semi-automatic mode.

Before we proceed further, you should review the functions introduced here and spend some time getting to know your rhythm section.





The Rhythm Instruments

At this point, let's look at the Instrument & Programming Panel (hereafter known as the I&P panel).

I&P Panel

Select a rhythm and start the rhythm unit. With switch Reg/Play (5) active (LED lit), you will see the switch has the name of one of the rhythm instruments printed (in orange) near it. Each time an LED flashes on, the instrument for that switch is active. By observing the LED's, you can see exactly which instruments comprise any rhythm and when they are active.

Roll

If you press an instrument switch, that instrument will sound, giving you the capability of a solo percussive performance from the I&P panel. And here's a bonus: If you depress and hold Snare loud (P3) and Snare soft (P4) simultaneously, you'll get a snare roll, somewhat faster than a 1/16th rate. If you activate Roll (4) - LED on - on the main panel, you can roll any instrument on the I&P panel at a 1/16th rate by holding its switch down.

If Roll (4) is active and you press P3/P4, the result is a unique tempo-variant-accentuated roll. . . well, you'll have to try it; words can't describe it.

Changing the Instruments

Your can change the instrumental makeup of your rhythm by switching out certain instruments. To do this, turn off Reg/Play (5) on the main control panel (LED off). All the LED's on the I&P panel will light. When you press an instrument switch, its LED will turn off and that instrument will be inactive. Press the switch again and the instrument will be restored. The bass drum or snare can be deactivated by pushing either "+" or "-" for either instrument.

Mixing Rhythms

Add/Erase

It is possible to mix rhythms in the CX 2. The switch Add/Erase (3) allows you to do this. For example, suppose you wish to mix the rhythms March 1 and Waltz. Here's how:

Example 1: Mixing Rhythms

Push switch:	Function:
Reset (9)	Resets CX1
March (17)	Rhythm select March
Rhythm 1(18)	Group Select
Start/Stop (36)	Starts rhythm
Add/Erase (3)	Add next selected rhythm
Waltz (27)	Rhythm select Waltz

The result is a March-Waltz.
Note: If you activate Tempomat (33), the tempo will be that of the march. If you wish a waltz tempo; you must select Waltz first, then add March.

You can also mix rhythms of different groups:

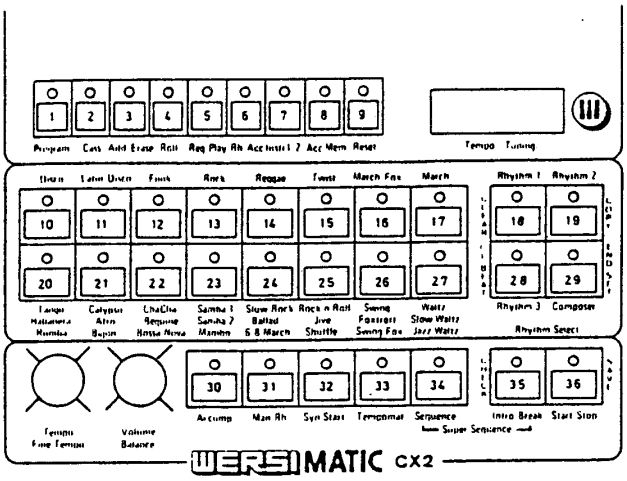
Reset (9)
March (17)
Rhythm 3 (28)
Start/Stop (36)
Add/Erase (3)
Rhythm 1(18
Waltz (27)

Or you can mix all the rhythms of the same select switch:

Reset (9)
Rhythm 1(18)
Swing (26)
Start/Stop (36)
Add/Erase (3)
Rhythm 2 (19)
Foxtrot (26)
Add/Erase (3)
Rhythm 3 (28)
Swing Fox (26)

If you push the rhythm switch (26), the rhythm will revert to group 1 - Swing. If you push one of the group switches (18, 19, 28), the rhythm will revert to that group.

Before we move on, we want to remind you that 24 instruments comprise the CX 2 rhythm section. A live drummer would have his hands (and feet) working overtime to keep that many instruments going



The Accompaniment Section

The accompaniment section of the CX 2 is a backup orchestra consisting of 13 instruments assigned to three parts:

Bass: Tuba, bass guitar, synthesizer bass;
Chords: Strings, piano, guitar, wah wah guitar, organ;
Melody (arpeggio): Brass, clarinet, strings, bells, banjo.

The accompaniment is activated via the switch Accomp (30) and is compatible with the selected rhythm pattern.

As a first step in getting to know your accompaniment section, depress Accomp (30), but do not start the rhythm. The tuning frequency of the accompaniment generator will appear on the Tempo/Tuning display. (This is also true of the free-standing CX 2, which, while it shows no master frequency indication at turn-on, will show the frequency of its internal generator when 30 is pressed.) If the unit has been on, depress Reset (9), then Accomp (30) to see the tuning frequency.

The accompaniment frequency should be close to that of the organ master generator, or 440 Hz. The frequency should be pre-adjusted, so you should be ready to go. The organ frequency can be set by the organ's master pitch control. Compare the two frequencies by turning Accomp (30) on and off (on = accompaniment; off = organ). For the free-standing unit, you can set the accompaniment to the pitch of another instrument with the Pitch adjustment on the front panel, under the I&P switches.

The frequencies involved here can be set to within tenths of a hertz. Don't worry about small differences, though; a 1 Hz difference is only 1/25 of a half-tone step. In fact, a little dissonance may be desirable, as in the "tempered" effect of a piano note when the three strings are slightly out of tune with each other. Let your ear be the final judge!

Now you're ready to start the accompaniment section.

LM Accompaniment Range

Select one of the rhythms and depress Start/Stop (36). The rhythm will start. Push Accomp (30) - LED on.

Bring in the accompaniment by depressing a key or chord between the lowest C and the E of the third octave of the lower manual (the first 29 keys of the lower manual, in other words).
Note: The keyboard of the free-standing CX 2 corresponds to the accompaniment range of the organ's lower manual.

If you hold a chord (at least three keys) on the lower manual, the accompaniment will play in that chord; this is the "Chord Accompaniment" mode. If you hold only a single note, the accompaniment will play the chords of that key; this is the "Chord Accompaniment" mode. If you hold only a single note, the accompaniment will play the chords of that key; this is the "One-finger Phantom Accompaniment" mode. If you hold two keys, the CX 2 will recognize only the lowest key and play in the one-finger phantom mode.

In the one-finger mode, it makes no difference if you depress a key in the first, second or third octave; the accompaniment will play within the range of A thru G of the first and second octaves.

Let us note in passing that these automatic functions need not replace the skilled artistry of the accomplished "full-handed" player. Quite the contrary! The artist can insert the little variations and dissonance's he desires for his number plus enjoy the computer artistry of the CX 2.

There is much more to say about the accompaniment, but before we go on, let's review the functions by setting up a rhythm/accompaniment registration:

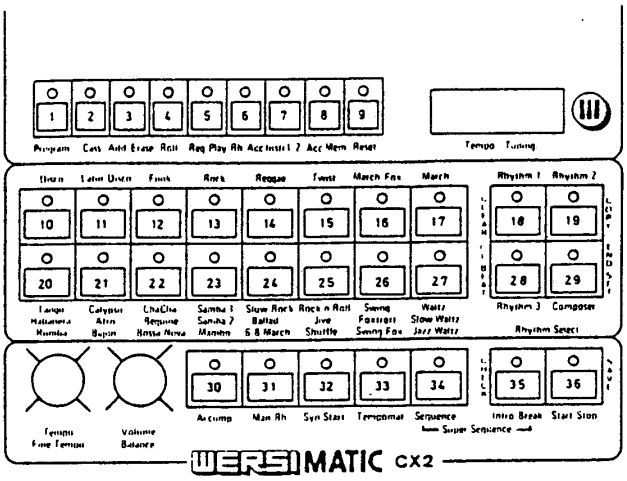
Example 2: "Jive"

Push switch:	What happens:
Reset (9)	Resets CX 2
Rhythm 2(19)	Rhythm group 2
Jive (25)	Rhythm select
Accomp (30)	Auto accompaniment
Start/Stop (36)	Starts rhythm

Press a note or chord in the lower manual accompaniment range. The accompaniment corresponding to Jive rhythm will start. You may also wish to activate Tempomat (33) to set the tempo to a "standard" rate.

Accompaniment Memory

The "Accompaniment Memory" feature permits you to keep the accompaniment going, even when you remove your fingers from the keyboard. With the switch Acc Mem (8) on (LED on), depress a chord or note in the accompaniment range of the lower manual. You may now lift your finger(s) from the keys and the accompaniment will continue in the same chord or note. If you wish to change, simply depress another chord or note.



Minor, Seventh

For the interpretation of some musical works, it is necessary to change the key. On one-finger accompaniment, you can change to a minor or seventh key from the pedalboard:

Minor -	Comet: Depress the G pedal.
	W1 thru W5: Depress the F # pedal.
Seventh -	Comet: Depress the F pedal.
	W1 thru W5: Depress the G # pedal.

The free-standing CX 2 has two switches on the front panel for these functions. For full-handed playing, these functions are nonessential, since the changeover is accomplished with the left hand.

Sometimes during a performance, it is necessary to silence the accompaniment while the rhythm continues. Operating Accomp (30) - LED off -achieves this. Even so, the unit will remember the last note or chord you selected and will start with it when you reactivate the accompaniment. Operating Intro/Break (35) will also silence the accompaniment for the duration of the break.

The Instruments and Their Functions

To review, here are your CX 2 accompaniment instruments and their functions:

> Bass guitar, synthe-bass and tuba for bass accompaniment. Electronic piano, guitar, wah wah guitar, strings and organ for chord accompaniment.
> Brass, clarinet, banjo, bells and strings for arpeggio and melody accompaniment.

Walking Bass

The CX 2 fulfills the dream of every musician to have an authentic "bass guitarist," not one who only plays monotonous chords, but one who can pick out a true "walking bass." The bass guitar of the CX 2 has a genuine "plucked" sound - a hard string attack followed by a soft sustain. Of course, the synthe-bass and tuba can also produce the walking bass effect.

Chords

A chord accompaniment to complement the walking bass is selectable in the voices electronic piano, guitar, wah wah guitar, strings and organ. The tone pitch corresponds to a footage of eight feet. The resulting sound is a mixture of three to five tones.

Arpeggio

The arpeggio is a progression of three-note chords up and down the scale. The CX 2 allows the arpeggiation to sound not only in the root position, but also its first and second inversions and in various octaves. The instruments used in arpeggiation are: bass, clarinet, banjo, bells and strings.

You can delete the accompaniment instruments the same way you deleted the rhythm instruments:

Turn off Reg/Play (5) - LED off.
Press the Rh/Acc (6) switch - LED on.
The I&P panel changes from its rhythm (yellow print) to its accompaniment (orange print) indication. The LED's in the panel then show the instruments active in the Bass, Chord and Arpeggio groups. The individual instruments can then be deleted or added, one for each group, by pressing the corresponding switches.

Single Notes

Further, it is possible to switch from Arpeggio to a "single note" mode to obtain a single note melodic accompaniment instead of a chord accompaniment. This is done by operating the Single Notes (P14) switch.

Your CX 2 has 48 accompaniment patterns (if you include those of the composer program). The accompaniment patters for rhythm groups 1 and 2 are the same, although the instrument complement is different. However, you can change the instrument complement, if you wish. Here is an example that shows you how:

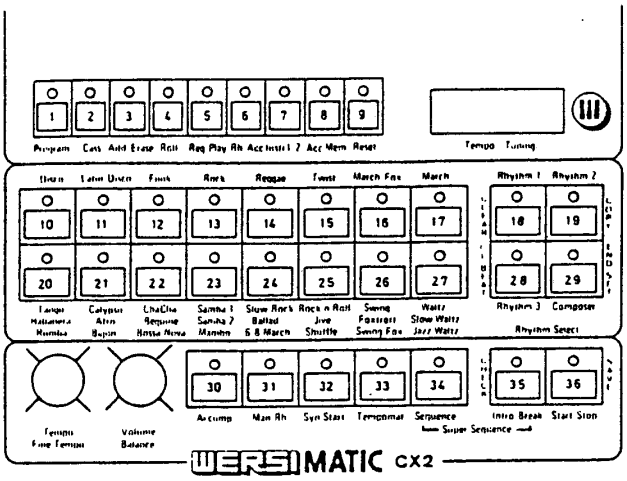
Example 3: Modifying an Accompaniment Registration

Push Switch:

Reset (9)
Rhythm 1(18)
Swing (26)
Start/Stop (36)
Accomp (30) Key or chord in accompaniment
Reg/Play (5) - LED off
Rh/Acc (6) - LED on

The I&P panel will go to the accompaniment registration mode.
The programmed registration for Swing is:

Bass-Guitar (P1); Chord-Guitar (P6); Arpeggio-Bells (P12).



Change the registration to:

Synthe-bass (P2)
Wah-Guitar (P6)
Strings (P13)
Single Notes (P14)

The result speaks for itself!

The new registration can be committed to the CX 2's memory. You will find out how to do that in the section on programming.

Sequences

The switch Sequence (34), along with the rhythm switches (10 - 17, 20-27), permits you to call up 16 sequences. By a "sequence" we mean a succession of one-measure segments of rhythm, accompaniment, intros or breaks. A sequence can have up to 32 measures.

Press Sequence (34)
Select a rhythm (10 - 17, 20 - 27)
Press Start/Stop (36)

You will hear a sequence unique to the rhythm switch you have selected. Each rhythm switch position has its own pre-programmed sequence. In this case, the rhythm switch serves as a "position" for one of the 16 available sequences.

If you press Intro/Break (35) instead of Start/Stop (36), you get a Super Sequence - the CX 2 will play all 16 sequences, one after the other. If you consider that each sequence has up to 32 measures and that each measure can consist of 16 beats and that there are 16 sequences, it is possible for the unit to play up to 8,192 beats in a single solo performance. Depending upon the tempo setting, the CX 2 could play a Super Sequence of 20 to 30 minutes without even repeating itself

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If you activate Accomp (30) and Tempomat (33), the appropriate manual accompaniment and automatic tempo will follow each sequence. Add Acc Mem (8) and the accompaniment will follow automatically. Of course, you can program your own sequences, as you will learn in the chapter "Programming." And here is something special: In a sequence, the accompaniment still runs through intros and breaks.

C. Programming

In this chapter, we will show you how you can "write" your own rhythm and accompaniment. Without further ado, let's start right in learning to program by actually doing it; for learning, you can't beat practice!

You should practice each procedure until you have it down pat. And don't worry if you should accidentally "wipe out" the composer program while experimenting. You can always reload the memory via the data cassette.

I. Programming Without the "Instrument & Programming Panel"

Programming the Tempomat

Select and start a rhythm.
Set up the desired tempo rate with the Tempo control
Push switch Program (1); the LED will not light!
Push the rhythm switch again.
The automatic tempo for this rhythm is programmed.

Stop the rhythm and test your program:
Push Tempomat (33).
Set the Fine Tempo control at mid-position.
Restart the rhythm.

The tempo rate will be that which you have pre-programmed. The Fine Tempo control allows a tempo variation of +/- 15 beats, independent of the programmed rate and, accordingly, not proportional to it.

Note: Tempomat is programmable only while the rhythm is running!

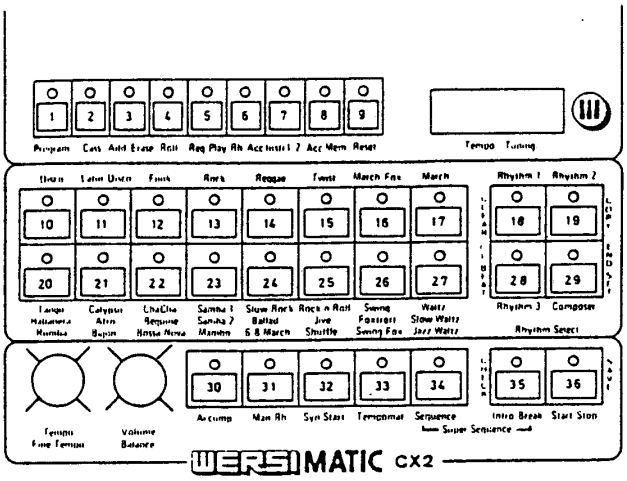
Sequence Programming

In this procedure, you will learn to compose your own sequences - successions - of one-measure segments of rhythm, accompaniment, intros and breaks (see Sequences in Chapter B).

Press switch Program (1)
Press switch Sequence (34)

The LED display will go dark for the moment. When you select a rhythm (next step, not now), the display will show a "1," indicating that the first measure of the rhythm you have selected has been entered as measure 1 of the sequence. The display shows the programmed measure after it has been programmed, and keeps a running tally of the measures you have programmed.

The odd-numbered sequence measures (1, 3, etc.) will accept only the first measure of a selected rhythm or its corresponding Intro. The even-numbered



measures (2, 4, etc.) will accept only the second measure of a selected rhythm or the corresponding break. If this isn't quite clear, you will see what we mean when we do an example.

Select the first rhythm: Group select (18, 19, 28, 29), then a rhythm (10 - 17, 20-27). If the sequence is to begin with an intro, press Intro/Break (35) after the group selection (18, 19, 28, 29). (Deactivate switch 35 after the entry.) The memory entry takes place automatically when the rhythm selection is made. Measure 1 of the rhythm is now measure 1 of the sequence, and the display will show a "1."

Select the second rhythm - it can be identical to the first if you wish, but its second measure will be the one to be entered in memory. The display will show a "2." If you wish a break in this slot, push lntro/ Break (35) before selecting the rhythm. (Deactivate switch 35 after the entry.)

Select the third rhythm, the fourth and so on until all 32 measures are entered. The display will then show a "P."

Endset

If the sequence is to be less than 32 measures, press switch Program (1) as a "stop sign" after the last-entered measure. The display will show a "P".

Now you must find a "position" in the computer memory for this new sequence.

Press a rhythm switch ('10 - 17, 20 - 27). The switch you just pressed will be the new "home" of the sequence you have programmed. When you want to play it back later, that is where you will find it.

The sequence that was originally in this position will be erased. The rhythm, of course, will remain.

You can test the new sequence by selecting the "positions" (rhythm switch) and pressing Start/Stop (36)

Let's take an example:

Example 4: Programming a March Sequence

Push switch:	What happens:
Reset (9)	
Program (1)	
Sequence (34)	Display goes dark
Rhythm 1 (18)	Group select
Intro/Break (35)	Intro on sequence count 1
March (17)	Rhythm; memory entry follows; the loaded count, in this case 1, appears on the display.
Intro/Break (35)	LED off.
March (17)	Rhythm; the second measure of the march rhythm will be entered in sequence measure 2.
March (17)	Rhythm; the first measure of the march rhythm will be entered in sequence measure 3.
Intro/Break (35)	Drum break to be entered as sequence measure 4.
March (17)	March drum break entered in sequence measure 4
Intro/Break (35)	LED off.
Rhythm 2 (19)	Group select
March (17)	Measure 1 of March 2 entered in sequence measure 5.
March (17)	Measure 2 of March 2 entered in sequence measure 6.
Intro/Break (35)	Intro to be entered as measure 7.
March (17)	Intro entered in measure 7 Drum break to be entered as measure 8.
March (17)	Drum break entered in measure 8.
Intro/Break (35)	LED off.

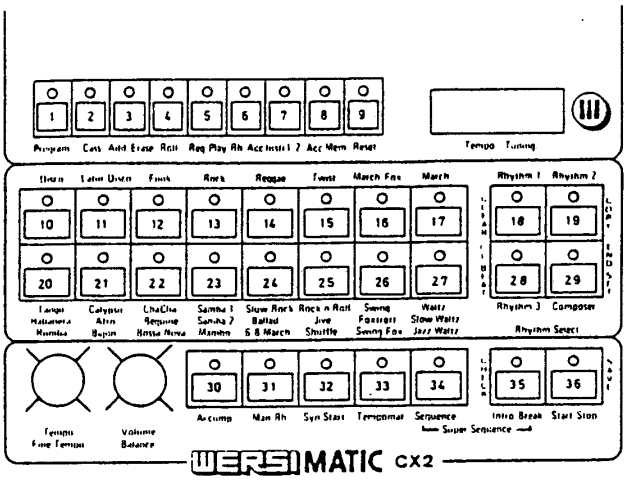
You can continue like this until all 32 measures are entered, or you can stop here, if you wish, by pushing Program (1). Then your sequence will be eight measures long.

The display will show a "P." Pressing a rhythm switch - in this case, March (17) is best - establishes a recall position for the sequence. It is the sequence's "home" is the computer memory.

Now press Start/Stop (36) to play back your sequence.

Rhythm Programming

Without the "Instrument & Programming Panel," no new basic rhythm can be programmed. However, a combination of rhythms (see "Mixing Rhythms," Chapter B) can be programmed.



Mix rhythms as instructed in Chapter B.
Press Program (1).
Select rhythm group Composer (29).
Press Program (1) again; the display will show a "P."
Select a memoryposition by pressing a rhythm switch (10 - 17, 20 - 27).

The combined rhythm is now in memory and can be recalled and tested.

Cassette Programming

A WERSI data cassette will load the following programs into your CX 2's memory:

16 Composer rhythm, including intros, breaks and accompaniment rhythms.
64 Tempomat preset tempos.
64 Accompaniment instrument registrations
16 Sequences of up to 32-measure length.

Data Cassette Read-In

Connect a cassette recorder to the five-pin Tape jack of the organ or free-standing CX 2.

Place the WERSI Data Cassette in the recorder with Side 1 up. Start the recorder on playback and you will hear the data through the speakers as a series of "tweedle-beeps." Set the organ Tape Volume control to an agreeable listening level.

Stop the recorder and rewind the tape to its beginning.

Push switch Cassette (2).
Push switch Program (1); the display will show a "P" to the left and a "0" to the right.
Start the cassette on playback.

The contents of the cassette will now "read into" the CX 2 composer memory. As the data is being read in, the display will show the individual data "blocks," as they are being loaded, as P0 thru P15. Each.

block is about ten seconds long. After block P15, the display will revert to the organ tuning frequency, 440.

Turn off the recorder. The composer program is now loaded.

NOTE: If the program fails to load, the display will show "E" or "F."

E = Data failure
F = Framing error: Block beginning or end not recognized.

The cassette recorder volume may be set too high; turn it down. If the display never moves off P0, the volume may be too low. (The organ Tape Volume has no effect on the data level.)

If you get a failure indication, rewind the cassette, push Program (1) again and start the playback again. You may have to experiment with volume settings on the recorder.

Once the data is loaded, you can call up and test the new sounds and functions.

Saving Programs

A program you have entered into the CX 2yourself can be saved for future use by recording it on a standard, readily available cassette (we recommend a quality cassette).

Connect the recorder to the Tape jack and start the recorder on record mode. If your recorder has a record level set provision, the data record level should be 0 dB or 100% or "in the green," depending on the kind of level meter you have.

Press switch Cassette 2.
Press switch Start/Stop (36).

The system is now in the "save" mode, and the display will read "S,' on the left and the blocks "0" thru "15" on the right.

After the program has "read out," the CX 2 will revert to normal operation. The recorder can be turned off.

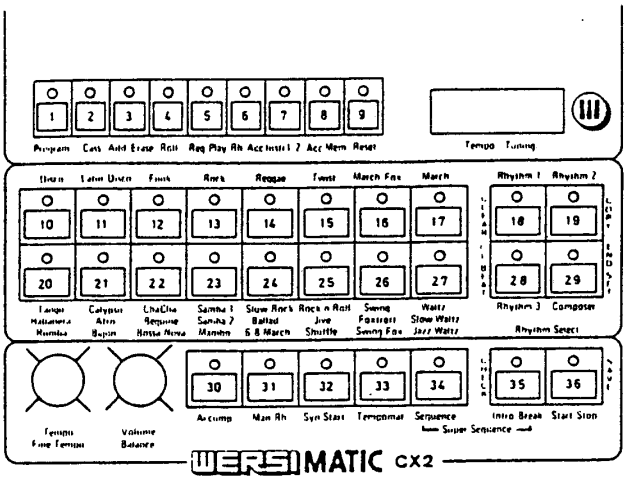
The program length is three minutes. If you wish to save several programs on tape, we recommend that you have some method of cataloging them, such as a tape counter.

Please don't skimp on cassette quality; it would be a pity if you lost your painstakingly composed program due to tape failure. For this reason, we recommend the following program test of your recorded cassette:

Program Test

Rewind the cassette to the beginning of the program.
Press Cassette (2) and then Intro/Break (35).
Start the cassette on playback.

The system is now in "check" mode; the display will read "C" on the left and the blocks "0" thru "15" on the right. The CX 2 will compare the data on the cassette with the data in its memory. If the two agree, the CX 2



will proceed through the test, indicating each block, then reverting to normal operation. If an error is found, the display will show an "E" or an "F." Rewind the tape slightly, then run it forward again, pressing Check (35) again. I there is an error at the same spot, the program must be re-recorded. If data has been lost (a "drop-out"), another cassette should be used.

II. Programming with the Instrument & Programming Panel

The Instrument & Programming (l&P) Panel enables you to program your own rhythms, accompaniment and accompaniment registration. (The I&P Panel is an integral part of the free-standing and Galaxy CX 2's.)

Rhythm Programming

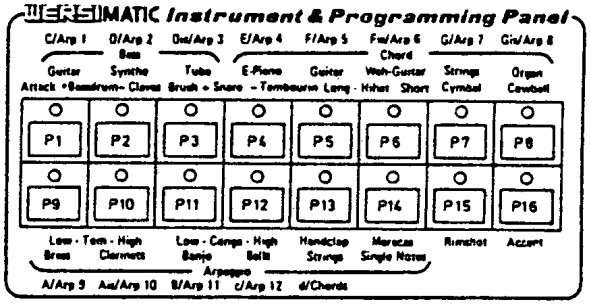
Push Program (1), then Composer (29).

The display will indicate measure 1 on the left and beat 1 on the right. Each beat represents an individual programming step.

Push Start/Stop (36) and listen to the existing rhythm.
Stop the rhythm.

When you enter a new rhythm program (or intros, breaks and accompaniments), you will initially be working into a so-called "working memory." Consider this a kind of "holding tank" that permits you to work with your program and revise it until it is just the way you want it. Then you can load the contents of the working memory into the CX 2's composer memory, where it will be stored for recall any time you wish.

Anything in the working memory can be erased in its entirety by pushing CLEAR (18). Each composer memory position holds its contents, however, until a new program from the working memory is loaded into it.



You can choose one of two ways to program the CX 2:

1. Static programming: With this method, you enter the individual instruments beat-by-beat, following a pre-planned score.

2. Dynamic programming: With this method, you play the instruments while the CX 2 is running, simultaneously loading them into memory.

1. Static Programming

The display reads "1 1" (if not, briefly press Sequence (34) repeatedly until it does).

For step 1 1, select your instruments. If you have not pushed Clear (18), the I&P panel will show the instruments already in memory for this step. Now you can push CLEAR BEAT (28) and erase all the instruments for this beat (LED's Out), or you can add or delete individual instruments - press a switch with a lighted LED, the LED goes out and the instrument is erased; press a switch with a dark LED, the LED goes on and the instrument is entered into memory.

Push switch Sequence (34) once; the display will read "1 2" for the second beat of the first measure. You may now enter the instruments for step 1 2.

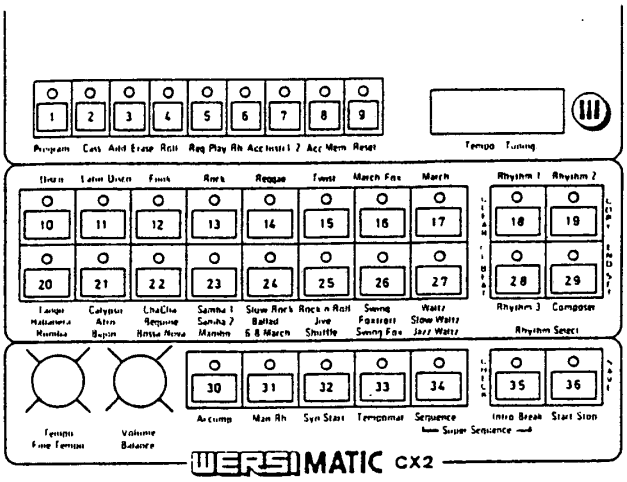
Push switch Sequence (34) again; enter the instruments for step 1 3.

If a beat is to have no instruments, you may erase all the instruments already in memory by pressing CLEAR BEAT (28).

Push Sequence (34) to call up the next beat.

If the measure is not to run to 1 16 or 2 16 (=32), push END SET (29) after the last beat. For example, push 29 at step 1 13 for a 3/4 measure.

If measure 2 is to be identical with measure 1, push COPY (19) after entering measure 1.



After entering the rhythm, enter intros and breaks:

Press Intro/Break (35)
Program the intro instruments in steps 1 1 thru 1 16 and the break in steps 2 1 thru 2 16, just as you did the rhythm.

A volume boost (accent) can be programmed, dynamically on desired beats via Accent (P 16).

lnstr 1/2 (7) activates the second "instrument track". Now P 1 will switch the programmed "first track" instruments Bassdrum and Snare to the Disco rhythms; P 2 activates Claves, P 3 the Brush and P 4 the Tambourine. Note: the instruments of the second track can only be programmed statically, not dynamically. Otherwise, these instruments will automatically be taken over by the Intro (from first measure) and Break (from second measure).

NOTE: If the rhythm measure has been shortened by an END SET (29), this applies also to intros, breaks and accompaniments; these cannot occupy more beats than the actual rhythm.

After the memory has been loaded, the rhythm, intros and breaks can be recalled and checked - Start/Stop (36) or Intro/Break (35).

You can change any programmed steps; call up the desired beat with Sequence (34) and change it as you wish.

Here is an example of programming the Rhythm:

Example 5: Static Programming

Push Switch:	What happens:
Reset (9)	
Program (1)	
Composer (29)	Display shows "1 1," Reg/Play (5) lights.
Clear (18)	Erases all previously programmed instruments.
Bass Drum (P1)	Entered as beat 1 1.
Sequence (34)	Advance to beat 1 2.
Bass Drum (P1)	Entered as beat 1 2.
Sequence (34)	Advance to beat 1 3.
Snare + (P3)	Entered as beat 1 3.
Sequence (34)	Advance to beat 1 4.
Snare (P4)	Entered as beat 1 4
Sequence (34)	Advance to beat 1 5.
Hi Hat Long (P5)	Entered as beat 1 5.
and so on, to:	
Cowbell (P8)	Entered as beat 1 8.
Sequence (34)	Advance to beat 1 9.
Accent (P16)	Entered as beat 1 9.
and so on, across the lower row to:	
Tom Low (P9)	Entered as beat 116.

Then continue the steps, entering the instruments in reverse order until and including beat 2 16.

Start/Stop (36)	You will hear all the rhythm instruments play in sequence exactly as you have entered them. Set the tempo low and watch the LED's on the I&P panel sequence.
Start/Stop (36)	Stop the rhythm.

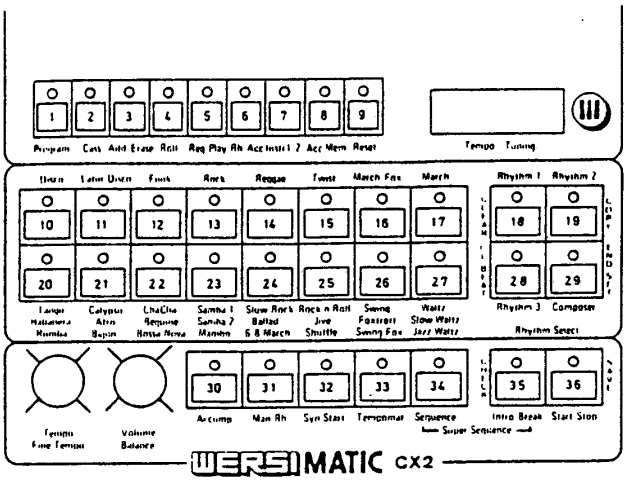
You can now commit this program to the CX 2's memory by pressing Program (1) and the "home" rhythm switch - for example, Disco (10). Or you can erase the program by pushing CLEAR (18) and push Reset (9) to start the process over again or restore the unit to normal operation.

Entering the Memory

Press Program (1); "P" will appear on the display.

Select one of the rhythm switches (10 - 17, 20 - 27) as the "home" memory position for each rhythm you free-program. Any previous free-programmed rhythm in the position you select will be erased. The fixed rhythms at that position will not be affected, however.

The Tempomat automatic tempo program can be entered later or immediately after the rhythm programming as you wish.



2. Dynamic Programming

Instead of entering your rhythm step-by-step, you can start the rhythm unit and, by actually playing the instruments on switches P1 thru P16, dynamically program the rhythm.

Since a previously entered rhythm would detract from this process, you should erase it by using the CLEAR (18) switch as indicated in the last example. In order to have a reference beat for entering the rhythm, however, you can statically program a "metronome" into the unit.

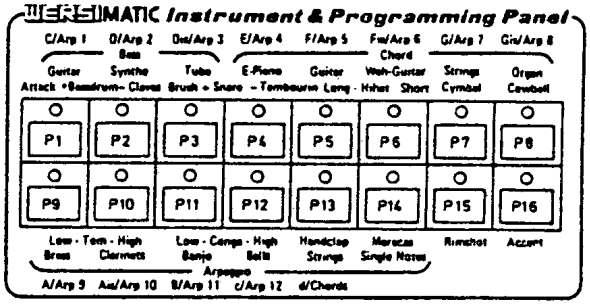
> Statically program beats 1, 5, 9 and 13 of both measure 1 and measure 2 with one instrument, such as, for example, claves. Press lnstr 1/2 (7) when you do, however, so that you won't get a bass drum with your claves. To better distinguish between the two measures, enter something like the handclap at 1 1 and the cowbell at 2 1. Enter
> (the latter with lnstr 1/2 (7) on "1" (LED off).

Now you will have a basis upon which to build your own rhythm as you program dynamically on the I&P panel. You can set the tempo to a speed that suits you.

Here is an example:

Example 6: Dynamic Programming

Push Button:	What happens:
Reset (9)	
Program (1)	
Composer (29)	Display shows "1 1."
CLEAR (18)	



Statically program the "metronome:"

lnstr 1/2 (7)	LED on
Claves (P2)	
Instr 1/2 (7)	LED off
Rimshot (P15)	
Sequence (34)	
four times	
Instr 1/2 (7)	LED on
Claves (P2)	
Sequence (34)	
four times	
Claves (P2)	
Sequence (34)	
four times	
Claves (P2)	
lnstr 1/2 (7)	LED off
Cowbell (P 8)	
and so on, repeating	
the above for measure 2	

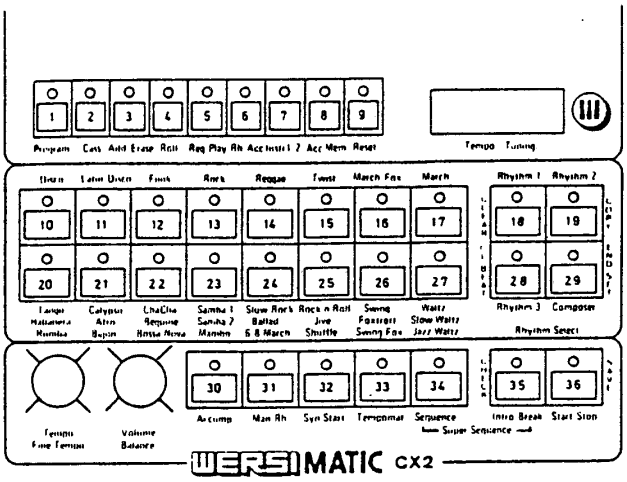
Start/Stop (36) You will hear the "metronome."

Now "play" the instruments on the I&P panel, for example:

Cymbal (P7)	Play on beats 2,6, 7, 10, 14, 15, both measures.
Rimshot (P15).	Play on beat 1, both measures.
Snare (P3)	Play on beats 5 and 13, both measures.
Intro/Break (35)	Program on measure 1 an intro consisting of:
+ Snare - (P3, P4)	A roll on seven beats
Snare + (P3)	Play on beats 9, 11, 13, and 15.

Program on measure 2 a break consisting of:

Rimshot (P15) two times
Conga High (P12) four times
Conga Low (P11) four times
Tom High (P10) three times
Tom Low (P9) three times



You can erase your "metronome" instruments, if you wish, as follows:

Press lnstr 1/2 (7) - LED on
Press Add/Erase (3)
Press Claves (P2)

Press Instr 1/2 (7) - LED off
Press Add/Erase (3)
Press Rimshot (P15)
Press Cowbell (P16)

As you see, you can erase any instrument within a rhythm without having to call up each individual beat that contains that rhythm.

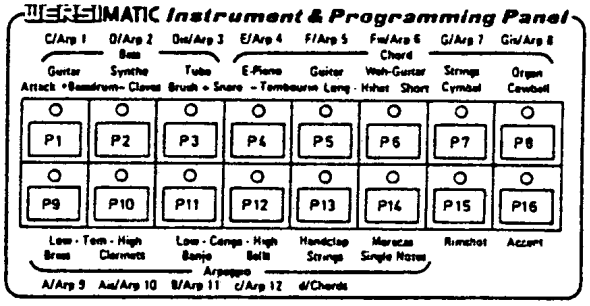
Enter your program into the CX 2 memory by pressing Program (1) and a rhythm select switch (the rhythm's "home" position).

Programming the Accompaniment Instruments

The instrument complement can be altered for all 64 accompaniments. If you wish to program new instrumentation for an accompaniment, here's how:

First, change the instrumentation as you did in Example 3, Chapter B. To repeat:

Push Reset (9)
Push Rhythm 1(18)
Push Swing (26)
Push Start/Stop (36)
Push Accomp (30)
Start the accompaniment (key or chord).
Push Reg/Play (5) - LED off.
Push Rh/Acc (6) - LED on.



The normal registration for Swing is:

Bass Guitar (P1); Chord-Guitar (P 5); Arpeggio-Bells (P12).

Change the instrumentation to:

Synthe-bass (P2); Wah-Guitar (P6); Strings (P13); Single Notes (P14).

Now you can commit this new registration to the CX1 's memory in two simple steps:

Push Program (1)
Push the rhythm select switch Swing (26).

The new instrumentation is now programmed.

NOTE: The Tempomat is also programmed in this step, so be sure you have the correct tempo.

Programming the Accompaniment

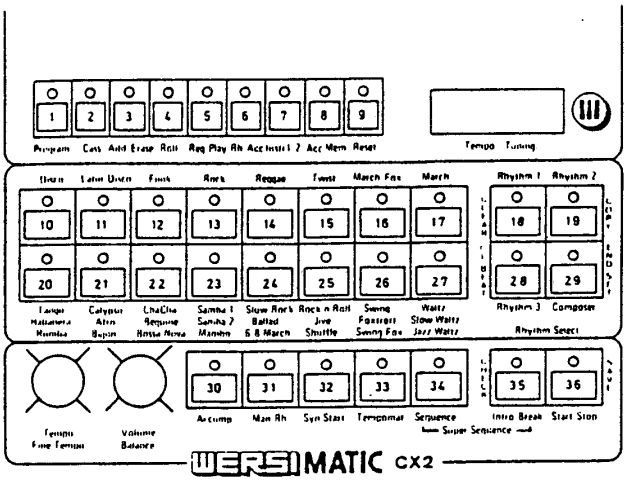
Before we start, let's make it clear that there is a difference between programming the accompaniment instrumentation (registration), as you did in the last step, and programming the accompaniment. In this step, we will program the accompaniment patterns, writing our own walking bass, arpeggiation and chording. Sixteen individual accompaniments can be programmed for the 16 composer rhythms.

Push Program (1)
Push Composer (29)
Push Rh/Acc (6)
To check out the accompaniment now in memory, push Accomp (30).

To clear an existing memory, push CLEAR (18). Be sure Rh/Acc (6) is on Acc - LED on - or you will erase the rhythm.

Reg/Play in Reg - LED off.
Enter the desired instruments for walking bass, arpeggiation and chords (orange letters on I&P panel).

You can erase bass, arpeggio and chord instruments by using switch Add/ Erase (3).



Push Reg/Play (5) - LED on.
Enter the walking bass. The display will show the measure number (1 or 2) to the left and the beat (1 thru 16) to the right. Select the notes for each beat of the walking bass according to the notes printed in yellow on the I&P panel: C (P1), D (P2), etc.
(NOTE: Dis = D#, Fis = F #, etc.). Advance each beat by pushing Sequence (34).

You can determine the length of the note as follows:

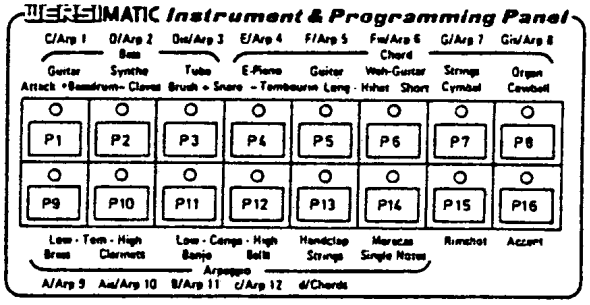
Push note once (lx) = 1/32 length; staccato - short, damped bass.
Push note twice (2x) = 1/16 length; legato - long bass with sustain.
Push note three times (3x) = Forget it - note erased.

NOTE: The percussion instruments - guitar, piano, bells - should be entered in staccato fashion or with "gaps" in the steps. If you enter them in close-knit steps, or legato fashion, only the first-entered note will sound. The legato instruments - tuba, strings, organ, brass and clarinet - can be entered legato style.

The length of the measure is, of course, restricted by the length of the rhythm measure: An end set may hold the rhythm to less than 16 beats. The function Copy (19) automatically enters the contents of measure 1 into measure 2.

Activate lnstr 1/2 - LED on - and enter the arpeggiation steps (yellow print on the I&P panel) beat by beat via switches P1 thru P12. Enter the chording by pushing Chords (P13) at each beat where you want a chord.

When you play back your accompaniment later, the arpeggio and chords will play according to the chord you select on the lower manual. If you press the chord C-major, for example, the arpeggios will chord up five octaves as follows: Arp 1 = C-E-G; Arp 2 = E-G-C2 (= C of 2nd octave); Arp 3 = G-C2-E2; Arp 4=C2-E2-G2... Arp 12 = G4-CS-ES.



If you use one-finger accompaniment, however, you will get an inversion on chords and arpeggios. You should try both full chord selection and one-finger key selection to hear the difference.

After entering your accompaniment program, run it through in its entirety as a test; press Accomp (30), Start/Stop (36) and select a chord or note on the lower manual.

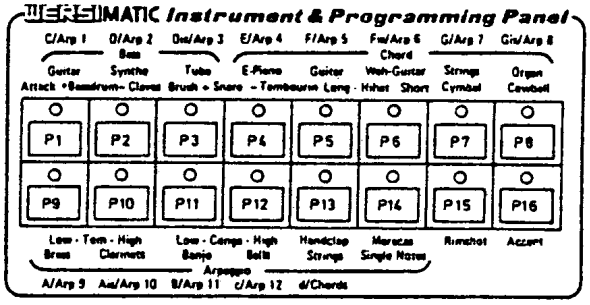
If you are satisfied with your composition, enter it into the computer memory: Stop the CX2, press Program (1) and select a desired "home" position - rhythm selects switches (10 - 17, 20 - 27). The instrument complement will not be memorized; this must be newly registered per page 26 and entered into memory with a running rhythm.

NOTE: Since your accompaniment must fit the rhythm you select, you should listen first to the rhythm that is in the "home" memory position before entering the accompaniment.

Here is a step-by-step example to guide your accompaniment programming.

Example 7: Accompaniment Programming

Push Switch	What happens
Reset (9)	
Program (1)	
Composer (29)	LED in Reg/Play (5) turns on.
Rh/Acc (6)	LED on. I&P panel goes to accompaniment indication.
Reg/Play (5)	LED off. In "registration" mode.
I&P switches with LED's on	LED's go off.
I&P switches for registration of choice	For example: Tuba (P3), Wah Guitar (P6) and Strings (P13).
Reg/Play (5)	LED on. In "play" mode.
Clear (18)	Erase existing program.



Sequence (34) 4x Display goes to 2 1.
Arp 1 2 (P12)
Sequence (34)
Arp 1 1 (P11)
Sequence (34)
Arp 1 0 (Pl0)
Sequence (34)

.... and so on, to:

Arp 1 (P1)

The arpeggiation and inversion are now programmed.

Start/Stop (36) Listen to your bass and arpeggiation program, then stop the unit.

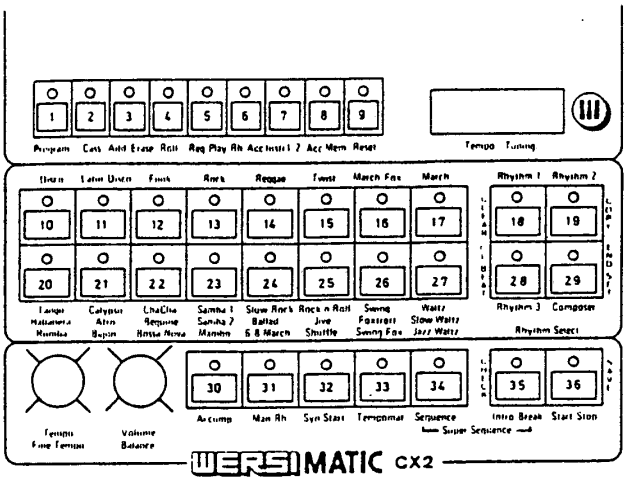
Intro/Break (35) 2x Display reverts to 1 1.

Now program the chords. For chording, only a chord trigger can be entered. Unlike the arpeggiation, the chord pitch is determined by the notes or chords played on the lower manual while the CX1 is running. An example program:

Chords (P13) on 1 1
Sequence (34) to 1 5
Chords (P13) on 1 5
Sequence (34) to 1 9
Chords (P13) on 1 9
Sequence (34) to 1 13
Chords (P13) on 1 13

... and so on, repeating for measure 2.

Acc Mem (8)
Accomp (30)
Start/Stop (36) Listen to the complete accompaniment (bring in the accompaniment by playing a note or chord on the lower manual).



Just for fun, change the bass instrumentation to Guitar (P1). The guitar triggers only on the first beats, making for a rather interesting sound.

Feel free to change the other registrations too, perhaps listening to the sounds of all the arpeggio instruments in conjunctions with Single Notes
(P14).

You may now commit the program to memory Program (1) + a rhythm select switch - or erase it with Clear (18) or Reset (9).

D. Program Writing

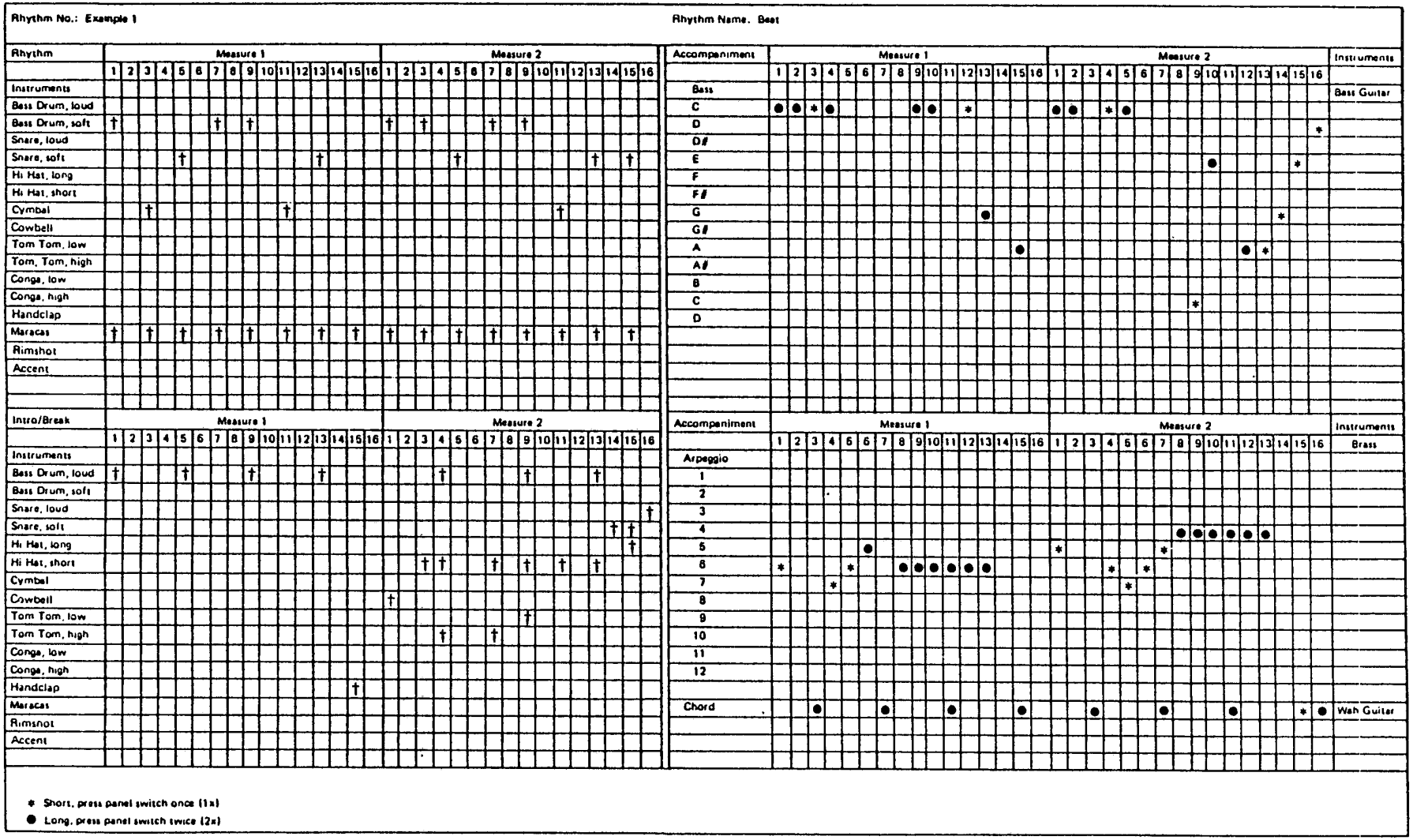
We gave you several relatively simple programming examples in the preceding chapters. Now you are ready to compose your own programs. You will find that a truly satisfactory program will require a certain amount of practice, concentration and preparation.

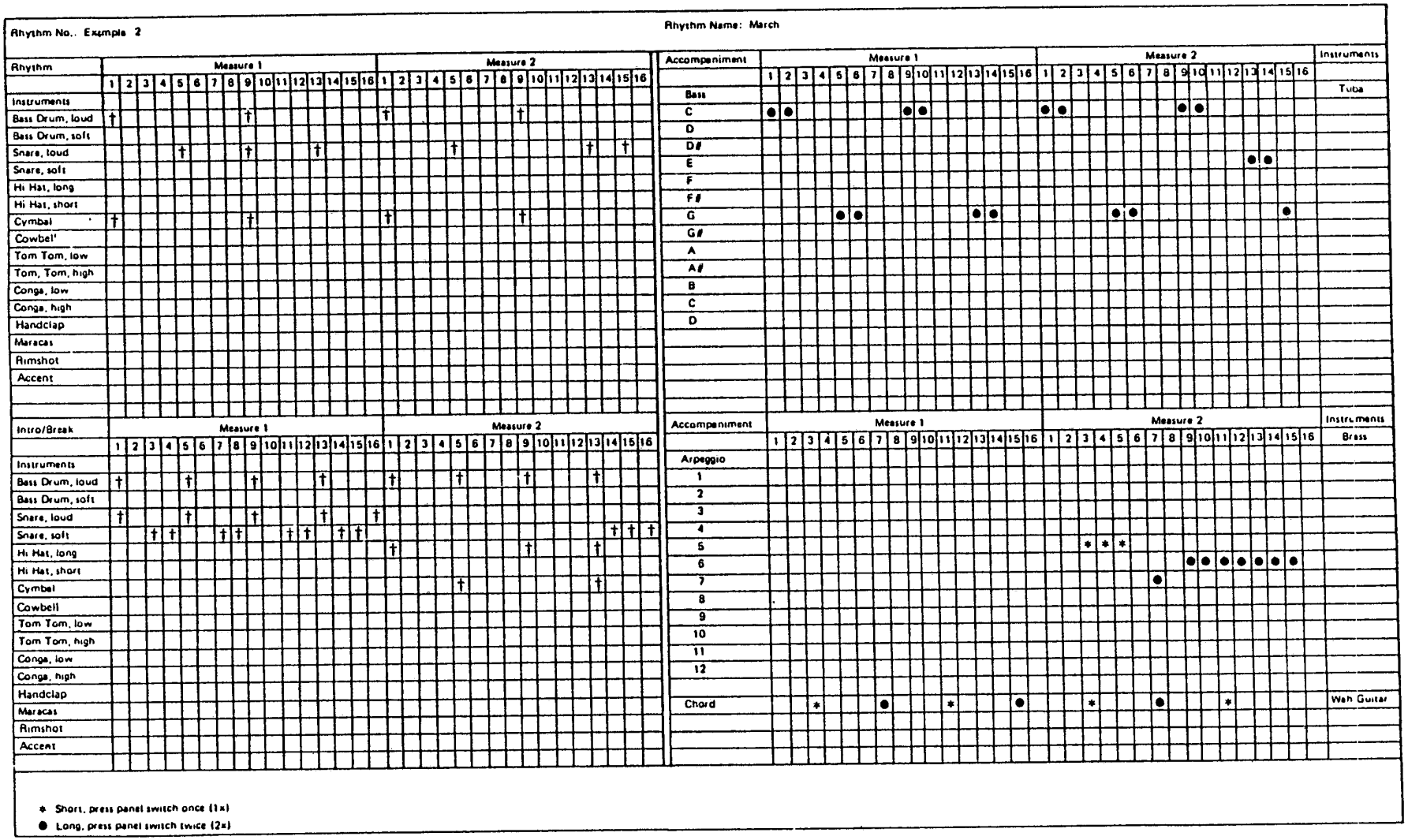
Of course, it is beyond the scope of this manual to give you a complete course on rhythm and chord theory and their composition. Our aim has been to show you how the CX 2can be used to develop some unique rhythm and accompaniment patterns. The rest depends on your own creativity and personal musical taste.

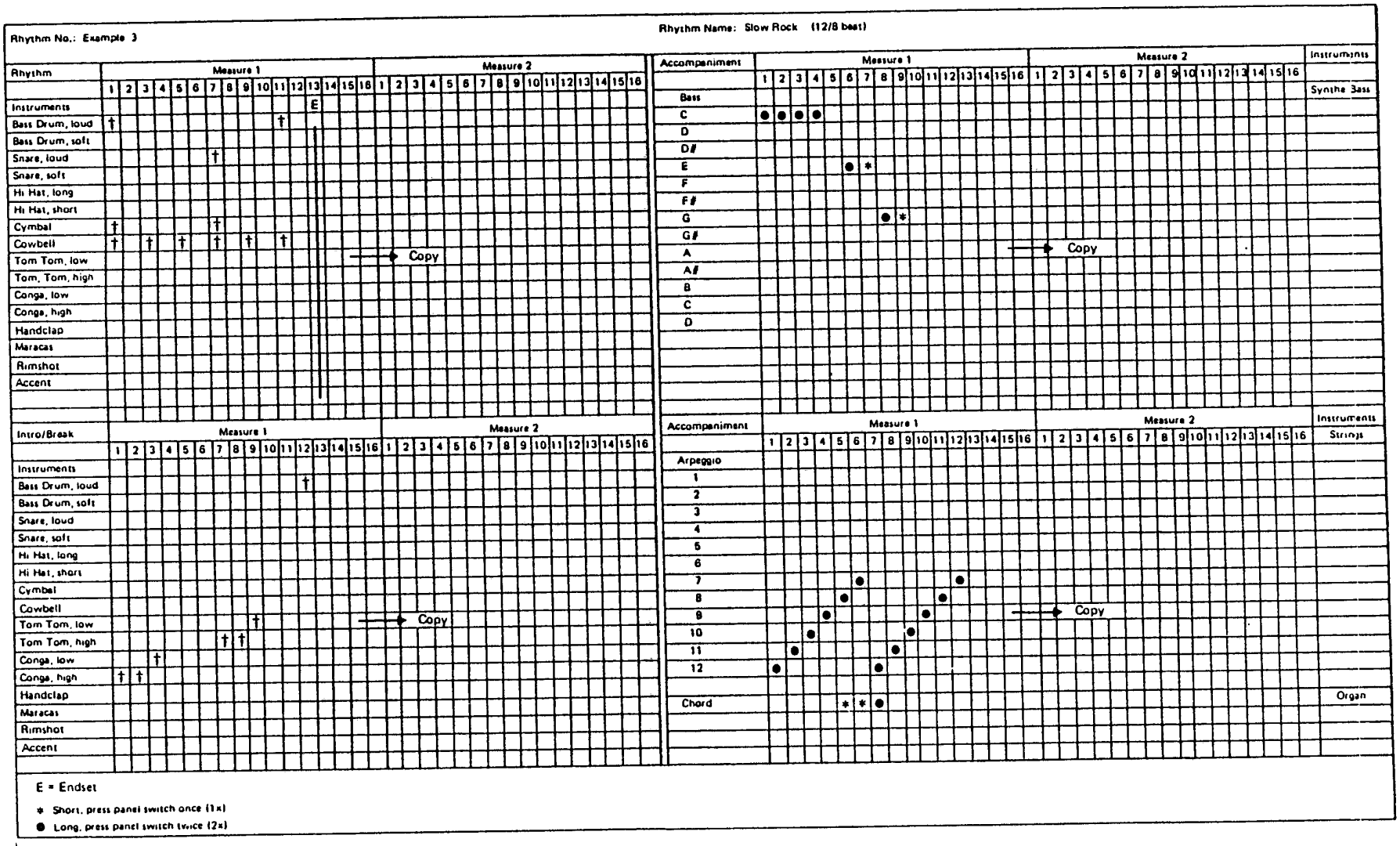
To aid you in your compositions, we are including some program tables which can be used for preparing rhythms and accompaniments in advance. The first three tables are examples of actual patterns.

CX 2 Switch Functions

Switch No.	Switch Name	Function
1	Program	Switches CX 2 to program mode.
2	Cass	Cassette; use with switches 1, 35, 36 for cassette read-in, check and read-out, respectively.
3	Add/Erase	Use to mix rhythms (add) or to erase an instrument from a program in one step.
4	Roll	Initiates a roll on any rhythm instrument pressed and held on the I&P panel.
5	Reg/Play	Switches I&P panel from "registration" mode to "play" mode.
6	Rh/Acc	Rhythm/Accompaniment; switches the I&P panel from rhythm select/program function to accompaniment select/program function.
7	lnstr 1/2	Switches the I&P panel between instrument groups 1 and 2.
8	Acc/Mem	Accompaniment Memory: enables the accompaniment to continue after fingers are lifted from keyboard.
9	Reset	Resets the computer and returns it to its start position.
10-17, 20-27		Rhythm select switches.
18		Rhythm Group 1; also, as CLEAR, erases entire rhythm and entire accompaniment.
19		Rhythm Group 2; also, as COPY, copies measure 1 program into measure 2.
28		Rhythm Group 3; also, as CLEAR BEAT, erases a complete beat or an endset.
29		Composer Rhythms; also, as ENDSET, sets the end of a measure with fewer than 16 beats.
30	Accomp	Activates the accompaniment function; activates display of accompaniment generator frequency.
31	Man Rh	Manual Rhythm; semi-automatic rhythm: snare plays from lower manual, bass drum and cymbals from pedals.
32	Syn Start	Synchostart: Rhythm starts via lower manual or pedals.
33	Tempomat	Activates preset tempo rate.
34	Sequence	Activates sequential playing of the rhythms selectable on 10 - 17 and 20 - 27.
35	Intro/Break	Activates drum intros and breaks; as CHECK, permits program test.
36	Start/Stop	Starts and stops rhythm; also, as SAVE, enables readout of composed program.
P1 - P16		I&P panel instrument select and activate switches; also for chord and arpeggio programming.


Rhythm No.: Example 1
Rhythm Name. Beat
Rhythm
Measure 1
Measure 2
Instruments
Bass Drum, loud
Bass Drum, soft
Snare, loud
Snare, soft
Hi Hat, long
Hi Hat, short
Cymbal
Cowbell
Tom Tom, low
Tom, Tom, high
Conga, low
Conga, high
Handclap
Maracas
Rimshot
Accent
Intro/Break
Accompaniment
Bass
C
D
D#
E
F
F#
G
G#
A
A#
B
C
D
Bass Guitar
Arpeggio
1
2
3
4
5
6
7
8
9
10
11
12
Chord
Brass
Wah Guitar
* Short, press panel switch once (1x)
● Long, press panel switch twice (2x)


Rhythm No.. Example 2
Rhythm Name: March
Rhythm
Measure 1
Measure 2
Instruments
Bass Drum, loud
Bass Drum, soft
Snare, loud
Snare, soft
Hi Hat, long
Hi Hat, short
Cymbal
Cowbell
Tom Tom, low
Tom, Tom, high
Conga, low
Conga, high
Handclap
Maracas
Rimshot
Accent
Intro/Break
Accompaniment
Bass
C
D
D#
E
F
F#
G
G#
A
A#
B
C
D
Tuba
Arpeggio
1
2
3
4
5
6
7
8
9
10
11
12
Chord
Brass
Wah Guitar
* Short, press panel switch once (1x)
● Long, press panel switch twice (2x)


Rhythm No.: Example 3
Rhythm Name: Slow Rock (12/8 beat)
Rhythm
Measure 1
Measure 2
Instruments
Bass Drum, loud
Bass Drum, soft
Snare, loud
Snare, soft
Hi Hat, long
Hi Hat, short
Cymbal
Cowbell
Tom Tom, low
Tom, Tom, high
Conga, low
Conga, high
Handclap
Maracas
Rimshot
Accent
Copy
Intro/Break
Accompaniment
Bass
C
D
D#
E
F
F#
G
G#
A
A#
B
C
D
Instruments
Synthe Bass
Arpeggio
1
2
3
4
5
6
7
8
9
10
11
12
Chord
Strings
Organ
E = Endset
* Short, press panel switch once (1x)
● Long, press panel switch twice (2x)

PROGRAM TABLES YOU CAN USE!

Rhythm No.. Example

Rhythm Name: Beat

Rhythm	Measure 1																Measure 2															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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Long, press panel switch twice (2×)

Rhythm No.: Example

Rhythm Name: Beat

Rhythm

Measure 1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Measure 2

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Instruments

Bass Drum, loud

Bass Drum, soft

Snare, loud

Snare, soft

Hi Hat, long

Hi Hat, short

Cymbal

Cowbell

Tom Tom, low

Tom Tom, high

Conga, low

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Accompaniment

Measure 1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Measure 2

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Instruments

Bass

C

D

D#

E

F

F#

G

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Chord

Intro/Break

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Bass Drum, soft

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Accompaniment

Measure 1

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Measure 2

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Instruments

Arpeggio

1

2

3

4

5

6

7

8

9

10

11

12

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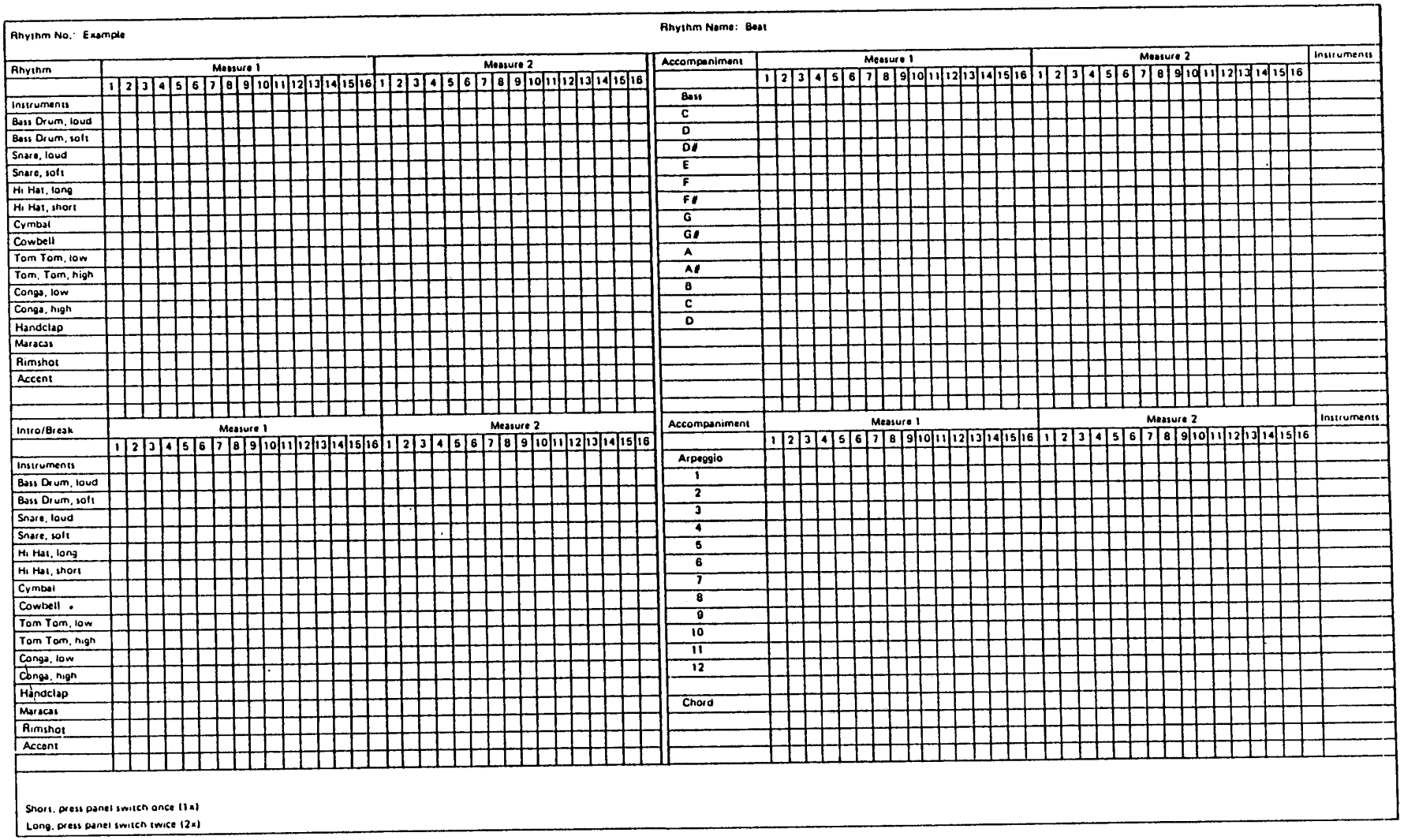

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