AFTER TOUCH™

THE OFFICIAL PUBLICATION OF THE YAMAHA USERS GROUP

RX Digital Rhythm Programmers

SEPTEMBER 1986

YAMAHA®

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AFTERTOUCH

September 1986 **Volume 2, Number 9**
Issue #12

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A product of
GPI Editorial Services
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P.O. Box 2338, Northridge, CA 91323-2338

AFTERTOUCH is published monthly. Third class postage paid at Long Prairie, MN and additional points of entry. **SUBSCRIPTIONS:** Free. Address subscription correspondence to AFTERTOUCH, P.O. Box 2338, Northridge, CA 91323-2338. **POSTMASTER:** Send form 3579 to P.O. Box 2338, Northridge, CA 91323-2338.

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From The Editor

BY NOW, I HOPE THAT all of you have noticed that the last few issues of AfterTouch have been showing up at your mailbox more regularly in the last few months! Yes, we did get behind, but we didn't want to *stay* behind. And we haven't—we're on a roll, and we don't intend to let up. From now on, we will be a regular monthly publication. Count on it!

Remember, *you* can help too! Send us your patches (for the DX7, DX9, DX100, CX5M, FB-01, or whatever); send us your hot tips on novel applications of Yamaha professional musical products; send us your insights; send us your somments; send us your questions. We want to hear from you, and the other AfterTouch readers want to hear from you!

And now, for one final time (for a while, at least!), I want to reprint some information about AfterTouch subscriptions, AfterTouch back issues, and Yamaha product literature. We still get questions about these items, so I want to make sure all of you know exactly how to get the service you want as quickly as possible. Here goes:

Warranty Cards & AfterTouch: We have received a number of letters from Yamaha users complaining that they expected an AfterTouch subscriptionbecause they recently purchased a product and sent in a warranty card, but still haven't received an issue. It is true that our initial mailing was developed from a warranty card list, but no subscriptions were sent to those names—just a sample mailing of the first three issues. In order to receive a free subscription, you need to send us your request on the attached postcard below. And remember, don't combine your subscription request with a request for back issues: Send the two requests separately.

Back Issues: If a request for back issues is combined with a subscription request or other material, chances are it will not be fulfilled. All requests for AfterTouch subscriptions must go to our Mailing List input service. After the addresses are entered, the letters are normally kept on file, in keeping with various postal regulations. To be absolutely sure that you receive any available back issues that you want, *make back issue requests separately*, and include the indication "ATTN: Back Issues" on the envelope.

Product Literature: All requests for specific product literature must go directly to Yamaha [Yamaha International Corp., P.O. Box 6600, Buena Park, CA 90622]. We at AfterTouch are happy to receive specific questions concerning the *use* of Yamaha professional music products, and we will answer as many of them as we can in the Questions column; however, requests for general product information must be sent to Yamaha.

We are very happy to offer AfterTouch as a free informational service. In order to make sure that we can serve your needs (and continue to offer these various services *free*), we must ask you to help us by sending different requests in different envelopes. Thanks.

—*TD*

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Also, don't limit yourself to just sending in your address. Let us know what kind of articles you want to read. The more input we receive, the more we will be able to tailor the information in AFTERTOUCH to suit your musical needs.

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FB-01 Voicing

An Introduction To The New FB-PRO Program For The Apple Macintosh Computer. By K.C. Youngdale.

IN THE LAST ISSUE of AfterTouch, we introduced the YRM506 FB-01 Editor Program cartridge for the Yamaha CX5M music computer. In this issue, we will look at FB-PRO, a CAV program for the Apple Macintosh computer and the FB-01.

CAV is an acronym for Computer-Aided Voicing. [*Note: For more on CAV, please refer to the July 1986 and August 1986 issues of AfterTouch*]. The Apple Macintosh is an excellent computer for CAV. The Mac is the first personal computer to use a mouse-driven user interface extensively—for most operations, all you need to do is *point* and *click*. This user interface is the accepted standard for all Mac programs. Once you learn one application program on a Mac, generally it is very simple to learn a new application, because so many things are common between applications.

FB-01 FM digital tone module.

The Macintosh screen (though only black and white) has some of the best graphics available on any personal computer today. This graphics capability also lends itself to using the Mac for CAV. (You may have already come in contact with sampler-editing software for the Mac that takes advantage of the Mac's graphics capabilities.) The Mac is also quite portable. You can pack a Mac into an over-the-shoulder carrying case which is not overly cumbersome or heavy.

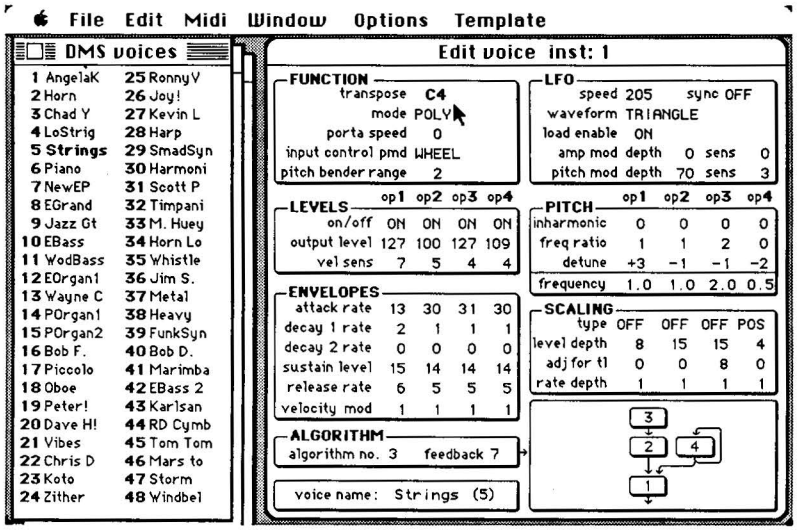
What is FB-PRO?

FB-PRO is a Mac CAV program written by Digital Music Services (the same people who wrote DX-PRO, which was the first CAV program for the DX7). Remember that in the case of the FB-01, Computer-Aided Voicing (CAV) is quite important, because the FB-01 *cannot be voiced from its front panel.*

The program includes both voicing and librarian functions, and takes advantage of the FB-01's complete MIDI implementation. Here are some of FB-PRO's main features:

- the program allows the user to alter the voices contained in the FB-01 FM digital tone module, as well as create new voices from scratch
- data on the screen can be changed by mouse or keyboard
- the Mac keyboard can be used to play the voice being edited so that it can be heard without having to hook-up an external keyboard
- a MIDI keyboard can be used to play the FB-01 while voices or configurations are being edited
- all voices and configurations can be saved to disk
- all voices and configurations may be printed out on a printer
- voices and configurations can be easily rearranged
- voices can be compared for similarities or differences
- extra (helpful) information is saved with each voice automatically

Figure 1: The Voice Edit window of FB-PRO.



- the program is very easy to use—it follows the Macintosh user interface fully

FB-PRO Voice Editing

The Voice Edit window (shown in Figure 1) contains all of the parameters of an FB-01 voice. [*Note: For a complete list of these parameters, please see the article on the YRM506 FB-01 Editor Program cartridge in the August 1986 issue of AfterTouch.*]

Figure 2: The Voice Bank window of FB-PRO.

File Edit Midi Window Options Template

DMS voices		pianos - 2		misc - 3	
1 AngelaK	25 RonnyV	1 UpPiano	25 EPiano5	1 initial	25 initial
2 Horn	26 Joy!	2 SPiano	26 HighTin	2 initial	26 initial
3 Chad Y	27 Kevin L	3 Piano2	27 HardTin	3 initial	27 initial
4 LoStrig	28 Harp	4 Piano3	28 PercPf	4 initial	28 initial
5 Strings	29 SmadSyn	5 Piano4	29 WoodPf	5 initial	29 initial
6 Piano	30 Harmoni	6 Piano5	30 EPStrng	6 initial	30 initial
7 NewEP	31 Scott P	7 PbGrand	31 EPBrass	7 initial	31 initial
8 EGrand	32 Timpani	8 Grand	32 Clav2	8 initial	32 initial
9 Jazz Gt	33 M. Huey	9 DpGrand	33 Clav3	9 initial	33 initial
10 EBass	34 Horn Lo	10 LPiano1	34 Clav4	10 initial	34 initial
11 WodBass	35 Whistle	11 LPiano2	35 FuzzClv	11 initial	35 initial
12 EOrgan1	36 Jim S.	12 EGrand2	36 MuteClv	12 initial	36 initial
13 Wayne C	37 Metal	13 Honkey1	37 MuteCl2	13 initial	37 initial
14 POrgan1	38 Heavy	14 Honkey2	38 SynClv1	14 initial	38 initial
15 POrgan2	39 FunkSyn	15 Pfbell	39 SynClv2	15 initial	39 initial
16 Bob F.	40 Bob D.	16 PfVibe	40 SynClv3	16 initial	40 initial
17 Piccolo	41 Marimba	17 NewEP2	41 SynClv4	17 initial	41 initial
18 Oboe	42 EBass 2	18 NewEP3	42 Harpsi2	18 initial	42 initial
19 Peter!	43 Karlsan	19 NewEP4	43 Harpsi3	19 initial	43 initial
20 Dave H!	44 RD Cymb	20 NewEP5	44 Harpsi4	20 initial	44 initial
21 Vibes	45 Tom Tom	21 EPiano1	45 Harpsi5	21 initial	45 initial
22 Chris D	46 Mars to	22 EPiano2	46 Circust	22 initial	46 initial
23 Koto	47 Storm	23 EPiano3	47 Celeste	23 initial	47 initial
24 Zither	48 Windbel	24 EPiano4	48 Squeeze	24 initial	48 initial

The three Voice Bank windows each display all 48 voices in a voice bank. Although there are only two user voice banks in the FB-01, FB-PRO contains a third bank which is used as temporary storage for edited voices. This is somewhat like a chalkboard where voices can be stored until you know where you want to put them. Figure 2 shows the three Voice Bank windows. Voices can be easily copied and pasted from window to window. You may have any or all windows anywhere on the Mac screen at any time.

Figure 3: The Configuration Edit window of FB-PRO.

File Edit Midi Window Options Template

Config list -1

1	user 1	11	user 11
2	user 2	12	user 12
3	user 3	13	user 13
4	rad con	14	user 14
5	user 5	15	user 15
6	user 6	16	user 16
7	user 7	17	single
8	user 8	18	mono 8
9	user 9	19	dual
10	user 10	20	split

Voice Names

	bank	#	voice
inst 1	1	20	Dave H!
inst 2	1	12	EOrgan1
inst 3	2	3	Piano2
inst 4	3	13	EOrgan2
inst 5	3	1	Brass
inst 6	3	1	Brass
inst 7	3	1	Brass
inst 8	3	1	Brass

Edit Configuration

name: rad con | lfo speed 104
configuration number 4 | lfo waveform TRI
key code receive mode ALL | pitch modulation depth 0
voice combine mode ON | amplitude modulation depth 0

instrument number	1	2	3	4	5	6	7	8
midi channel	1	2	3	4	5	6	7	8
number of notes	4	2	1	1	0	0	0	0
key limit /L	C-2	C-2	C-2	C-2	C-2	C-2	C-2	C-2
key limit /H	G8	G8	G8	G8	G8	G8	G8	G8
voice bank	1	1	2	3	3	3	3	3
voice number	20	12	3	13	1	1	1	1
output level	127	127	127	127	127	127	127	127
octave transpose	0	0	0	0	0	0	0	0
detune	0	0	0	0	0	0	0	0
stereo	LR	LR	LR	LR	LR	LR	LR	LR
lfo enable	ON	ON	ON	ON	ON	ON	ON	ON
pitch bender range	0	0	0	4	2	2	2	2
portamento time	0	0	0	0	0	0	0	0
poly/mono	POL	POL	POL	POL	POL	POL	POL	POL
input controller pmd	OFF	OFF	OFF	WHE	WHE	WHE	WHE	WHE

FB-PRO Configuration Editing

The Configuration Edit window (shown in Figure 3) contains all the parameters that are associated with the FB-01's configuration memory. All parameters can be edited just as easily as in the Voice Edit window. The smaller Configuration List window displays the 20 configurations that are contained in the FB-01.

The Voice Names window shows the voice names of all the instruments in the current configuration. Clicking on an instrument button (in Voice Names or Configuration Edit windows), will show the Voice Edit window for that instrument. This makes it very easy to balance parameters between instruments.

FB-PRO also allows you to compare any two voices for similarities or differences—this comes in very handy when you wish to find the differences in similar voices. Simply select the 2 voices to compare and each parameter that is different is shown in the Voice Edit window.

* * * *

FB-PRO is the first CAV program for the FB-01 designed to run on a computer other than the Yamaha CX5M music computer. There will undoubtedly be other CAV programs available soon for the FB-01 that run on different computers. Please watch the pages of AfterTouch and contact your dealer for information about such products. For more information about the FB-PRO program, write to: Digital Music Services, 23010 Lake Forest Drive, Suite D334, Laguna Hills, CA 92653; or call 714-951-1159.

Yamaha Product List

A Reference Guide To All Of The Yamaha AfterTouch Products. Compiled By Tom Darter & Sibyl Darter.

HERE IS A complete listing of currently-available Yamaha FM digital synthesizers, sequencers, music computer products, MIDI devices, and related accessories. The products are grouped according to type. Within each listing, you will find the product name, the current list price, and a short description.

Also, to make the listing more useful as a reference source, we are including some instruments that are no longer being manufactured, because we still intend to support these products within the pages of AfterTouch. To avoid confusion, these discontinued instruments are included in a separate list at the end of each grouping; and, instead of the list price, you will find the phrase "no longer manufactured."

We will update this entire product list periodically in AfterTouch, so that you can stay informed of the comings and goings in the Yamaha universe of professional electronic instruments and accessories.

FM Digital Synthesizers

DX5 $3,895.00

2 FM tone generator systems with 6 operators each; 32 algorithms; 64-voice onboard RAM; two cartridge slots for additional voice cartridges; 76 keys, plastic; 32-note polyphonic with single, dual, and split modes (16 notes each voice in dual and split modes); velocity sensitive with monophonic aftertouch; full function/performance memory per voice; dual channel operation.

DX7 $2,095.00

1 FM tone generator system with 6 operators; 32 algorithms; 32-voice onboard RAM; one cartridge slot for additional voice cartridges; 61 keys, plastic; 16-note polyphonic; velocity sensitive with monophonic aftertouch; one global function/performance memory.

DX21 $895.00

2 FM tone generator systems with 4 operators each; 8 algorithms; 128 permanent onboard voices (ROM), plus 32-voice onboard RAM memory; 61 keys, plastic; 8-note polyphonic with single, dual, and split modes (4 notes each voice in dual and split modes); full function/performance memory per voice.

DX27 $695.00

1 FM tone generator system with 4 operators; 8 algorithms; 192 permanent onboard voices (ROM), plus 24-voice onboard RAM memory; 61 keys, plastic; 8-note polyphonic; full function/performance memory per voice.

DX27S $795.00

1 FM tone generator system with 4 operators; 8 algorithms; 192 permanent onboard voices (ROM), plus 24-voice onboard RAM memory; 61 keys, plastic; 8-note polyphonic; full function/performance memory per voice; comes equipped with speakers.

DX100 $445.00

1 FM tone generator system with 4 operators; 8 algorithms; 192 permanent onboard voices (ROM), plus 24-voice onboard RAM memory; 49 mini-keys, plastic; 8-note polyphonic; full function/performance memory per voice; battery or A/C operation.

* * * *

DX1 no longer manufactured

2 FM tone generator systems with 6 operators each; 32 algorithms; 64-voice onboard RAM; two cartridge slots for additional voice cartridges; 73 weighted piano-type keys; 32-note polyphonic with single, dual, and split modes (16 notes each voice in dual and split modes); velocity sensitive with individual aftertouch; full function/performance memory per voice; dual channel operation; extensive LED display, plus illuminated LCD display.

DX9 no longer manufactured

1 FM tone generator system with 4 operators; 8 algorithms; 20-voice onboard RAM; voices loaded via cassette tape; 61 keys, plastic; 16-note polyphonic; one global function/performance memory.

FM Digital Tone Generators

TX816 $5,495.00

Complete rack-mount FM tone generator system, with main controlling rack and eight TF1 tone generator modules.

TX216 $2,495.00

Basic rack-mount tone generator system, with main controlling rack and two TF1 tone generator modules.

TF1 $625.00

Basic FM tone generator module for rack-mount system; 6 operators, 32 algorithms, 32-voice onboard RAM, full function/performance memory per voice; programmable via MIDI; only operates in conjunction with the rack-mount main controlling rack.

TX7 $925.00

FM tone generator module with 6 operators; 32 algorithms; 32-voice onboard RAM; full function/performance memory per voice, plus an additional 32-position function/performance memory for use in conjunction with a DX7; programmable via MIDI.

FB-01 $350.00

FM tone generator with 4 operators; 8 algorithms; 240 permanent on-board voices (ROM), plus 96-voice onboard RAM memory; 8-note polyphonic; extensive MIDI implementation; fully multi-timbral.

MIDI Keyboard Controllers

KX88 $1,845.00

88 weighted piano-type keys; velocity sensitive with monophonic aftertouch; single, dual, and split modes; inputs for two FC4-type foot controllers, two FC7-type foot controllers, and one BC1 breath controller; 4 slider controls, 5 momentary switch controls, 2 toggle switch controls, 2 wheel controllers; 16-position performance memory, allowing for programmable assignment of all controllers, sliders, and switches.

KX76 $1,145.00

76 keys, plastic; velocity sensitive with monophonic aftertouch; single, dual, and split modes; inputs for two FC4-type foot controllers, two FC7-type foot controllers, and one BC1 breath controller; 4 slider controls, 5 momentary switch controls, 2 toggle switch controls, 2 wheel controllers; 16-position performance memory, allowing for programmable assignment of all controllers, sliders, and switches.

KX5 $545.00

37 mini-keys, plastic; velocity sensitive with monophonic aftertouch; designed for strap-on use.

* * * *

KX1 no longer manufactured

44 keys, plastic; velocity sensitive with monophonic aftertouch; designed for strap-on use.

Electro/Acoustic MIDI Pianos

CP80M $6,295.00

88 keys; 7 band graphic EQ; MIDI OUT; portable.

CP70M $5,295.00

73 keys; 7 band graphic EQ; MIDI OUT; portable.

CP60M $2,995.00

76 keys; 7 band graphic EQ; MIDI OUT; foldup portable.

Electronic MIDI Pianos

PF80 $1,595.00

88 weighted keys, plastic; built-in stereo amp and speakers; full MIDI implementation.

PF70 $1,395.00

76 weighted keys, plastic; built-in stereo amp and speakers; full MIDI implementation.

MIDI Sequencers

QX1 $3,095.00

8-track digital MIDI sequence recorder; full compositional edit functions; MIDI IN, MIDI THRU, eight MIDI OUT ports; uses 5.25" floppy disk, 80,000+ note storage capacity; utility for storage of voice, function, and other MIDI data on disks.

QX21 $315.00

2-track digital MIDI sequence recorder; addresses all 16 MIDI channels; battery memory backup; storage of data via cassette.

* * * *

QX7 no longer manufactured

2-track digital MIDI sequence recorder; addresses all 16 MIDI channels; storage of data via cassette.

Digital Rhythm Programmers

RX11 $925.00

29 percussive sounds; stereo and individual outputs; memory storage via cartridge port or cassette; MIDI equipped; onboard memory for 100 patterns and 10 songs.

RX15 $525.00

15 percussive sounds; stereo outputs; memory storage via cassette; MIDI equipped; onboard memory for 100 patterns and 10 songs.

Continued on page 8

Product List *Continued*

RX21 $315.00
9 percussive sounds; stereo outputs; memory storage via cassette; MIDI equipped; onboard memory contains 44 preset patterns and 56 programmable patterns, plus 3 song memory.

RX21L $315.00
16 Latin percussive sounds; stereo outputs; memory storage via cassette; MIDI equipped; onboard memory for 50 patterns and 4 songs.

Related Musical Products

KM802 $295.00
Keyboard mixer; 8-in, 2-out; three AUX busses; three stereo effects returns.

MT1X $565.00
Multitrack cassette recorder; 4-track recording capability; extensive mixer section; separate monitor mix for headphones; AUX send with stereo return; SYNC switch for interface with the YMC10; portable; powered by A/C or batteries.

MS10 $180.00
20-watt, A/C-powered monitor speaker.

KS10 $90.00
6.5-watt powered monitor speaker.

MIDI Signal Processors

REV7 $1,325.00
Digital reverberator and effects device; stereo outputs; MIDI equipped; 30 preset programs, plus 60 user programmable memories; remote controller included.

SPX90 $745.00
Digital multi-effects processor; MIDI equipped; 30 preset programs, plus 60 user programmable memories.

* * * *

D1500 no longer manufactured
Digital delay device; MIDI equipped; 16 user programmable memories.

MIDI Devices & Accessories

MEP4 $395.00
MIDI event processor with 1 MIDI IN port and four OUT/THRU ports; 4 channels of processing for MIDI effects and control changes; 60 program memory locations.

MCS2 $325.00
MIDI control station with two MIDI IN ports and one MIDI OUT/THRU/MERGE port; pitch and mod wheels; inputs for FC, FS, and BC controllers; MIDI system routing memory; for use as an auxilliary controller with PF, CP, or other MIDI units.

MJC8 $325.00
MIDI junction controller with eight MIDI IN ports and eight MIDI OUT/THRU ports; 50 patch memory locations.

YMM2 $135.00
MIDI merge unit with two MIDI IN ports, one merged MIDI OUT port, and two MIDI THRU ports (one corresponding to each MIDI IN port).

YME8 $95.00
MIDI junction box with 2 MIDI IN ports and eight OUT/THRU ports (coupled in two groups of four).

YMC10 $125.00
MIDI/tape-sync converter.

MIDI 03 $10.00
3-meter MIDI cable.

MIDI 15 $30.00
15-meter MIDI cable.

Voice Cartridges

ROM 3 $60.00
64-voice ROM.

ROM 4 $60.00
64-voice ROM.

VRC101 $60.00
Keyboard group; 64-voice ROM.

VRC102 $60.00
Wind instrument group; 64-voice ROM.

VRC103 $60.00
Sustain group; 64-voice ROM.

VRC104 $60.00
Percussion group; 64-voice ROM.

VRC105 $60.00
Sound effects group; 64-voice ROM.

VRC106 $60.00
Synthesizer group; 64-voice ROM.

VRC107 $60.00
Voices created by David Bristow; 64-voice ROM.

VRC108 $60.00
Voices created by Gary Leuenberger; 64-voice ROM.

RAM-1 $125.00
Random-access memory cartridge; 32-voice storage capacity.

Accessories

FC4 $25.00
Sustain/portamento footswitch controller for use with DX synthesizers and the KX88/KX76 keyboard controllers.

FC5 $10.00
Sustain/portamento footswitch controller for use with DX synthesizers and the KX88/KX76 keyboard controllers.

FC7 $45.00
Volume/modulation foot controller for use with DX synthesizers and the KX88/KX76 keyboard controllers.

FC8 $35.00
Sustain footswitch controller for use with the PF70/PF80 electronic MIDI pianos; creates a half-pedal effect; can also be used for sustain with other units (such as DX synthesizers) that do not respond to the half-pedal command.

FC9 $50.00
Dual-purpose foot pedal with two inputs and two outputs; can be used to control the volume of one or two instruments; in addition, the second output may be used as a CV source (which can be used to control modulation on the DX7 and similar instruments).

BC1 $40.00
Breath controller for use with DX synthesizers and KX keyboard controllers.

RFB-01 $50.00
Rack-mount adapter for use with two FB-01s.

PA1 $15.00
12-volt DC adapter for use with YME8, YMC10, RX21, and RX21L.

PA1210 $25.00
12-volt DC adapter for use with the DX27, DX27S, and DX100.

PA11 $30.00
Battery-pack adapter for the MT1X.

LCMT1X $90.00
Carrying case for the MT1X.

Instrument Stands

ST100 $150.00
Special stand designed for the Studio 100 System.

ST200 $190.00
Telescoping stand for KX88, KX76, and other keyboards; adjustable height.

ET200 $90.00
Extension stand for use with the ST200.

LG7 $20.00
Stand for the TX7 and QX21.

LG100 $110.00
Standard base stand for DX and KX keyboards.

LG200 $125.00
Large base stand for KX88, DX1, and other keyboards.

LG60 $110.00
Short stand extension for keyboards and MIDI components.

LG80 $120.00
Long stand extension for keyboards and MIDI components.

LGPF80 $120.00
Stand for the PF80.

LGPF70 $120.00
Stand for the PF70.

Music Computers Programs & Data Cartridges

CX5M $469.00
MSX-based music computer; internal FM tone generating system with 4 operators, 8 algorithms, 8-note polyphonic.

SFG05 $130.00
MIDI-compatible FM tone generator unit.

STC01 $355.00
Teleword Word Processor/Phone Modem module.

YK01 $100.00
44-note mini-keyboard for use with the CX5M.

YK10 $200.00
49-note standard-size keyboard for use with the CX5M.

FD03 $355.00
Single-sided 3.5″ disk drive with controller.

FD052 $35.00
Disk drive expansion cable.

MU01 $75.00
Mouse input/controller device.

PN101 $355.00
Dot impact printer for use with the CX5M.

CB02 $35.00
Printer cable.

PN101PF $30.00
Pin-feed adapter for the PN101.

PN101RB $10.00
Printer ribbon cassette for the PN101.

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For more detailed product information, write to Yamaha International Corp., P.O. Box 6600, Buena Park, CA 90622.

RX Series

Exploring The Yamaha Family Of Digital Rhythm Programmers. By Michael A. Huisman.

THERE ARE FOUR units in the RX series of digital rhythm programmers: the RX11, the RX15, the RX21, and the RX21L. The RX11, RX15, and RX21 feature standard drum sounds while, the RX21L has Latin percussion sounds in its internal sound memory. Although some of these units have been around for some time now, many of their features are still not completely understood. Let's review some of the capabilities and features of each of the drum machines, and explore a few techniques that will help you expand the musical expressiveness of your RX units.

The RX11 & RX15

Figure 1 shows the drum and percussion sounds available on the RX11 and RX15. These sounds may be assigned (by category and type) to the 16 buttons on the front panel of the RX11 (12 on the RX15). Further control of the sounds can be accomplished by an adjustable pan setting, accent level, and instrument level for each sound.

Rhythm patterns can be created in both real-time or step-time, with or without quantization. Different quantizations can be used within the same pattern as well.

Both the RX11 and RX15 may be synced to MIDI (or to tape using the YMC10), or they may be used as the master clock which other units follow for tempo. The RX11 can utilize Yamaha's RAM cartridges in the event that a large amount of memory is needed.

There are 12 individual outputs for audio on the back of the RX11. These can be used for recording (or whenever more control over the shaping of individual sounds is necessary). Usage of the stereo outputs and the individual outputs is not mutually exclusive. You might want to use the stereo outputs for all the sounds except for the bass and snare drums. Doing this allows you to apply different effects on these sounds from the effects applied to the rest of the drums. This only uses 4 channels on your mixer for drum sounds.

Both the RX11 and RX15 have the following jacks on the back panel: MIDI IN and OUT jacks, tape in and out jacks, headphone output jack, and a footswitch jack. The RX15 does not have individual outputs (only stereo output jacks) and has no RAM cartridge slot.

Figure 1: Drum and percussion sounds available on the RX11 and RX15; sounds marked with an asterisk (*) are not available on the RX15.

Snare Drums	Tom-Toms	Bass Drums	High Hats	Cymbals	Percussion
heavy*	tom 1	heavy*	closed	ride	cowbell 1
medium	tom 2	md 1	pedal	crash	cowbell 2*
light*	tom 3	md 2*	open		sidestick 1
hi tune 1	tom 4*				sidestick 2*
hi tune 2*					shaker
hi tune 3*					handclap 1
hi tune 4*					handclap 2*
hi tune 5*					

The RX21 & RX21L

The RX21 is a low-cost drum machine that features stereo outputs and nine drum sounds. It is shaped for easy stacking on top of a TX7 tone module or a QX21 sequencer. Figure 2 shows the sounds available in the RX21.

The RX21L is a low-cost Latin percussion machine that is shaped exactly like the RX21L. It features stereo outputs and 16 Latin percussion sounds. Figure 3 shows the sounds available in the RX21L.

Figure 2: Drum and percussion sounds available on the RX21.

Snare Drums	Tom-Toms	Bass Drums	High Hats	Cymbals
snare drum	tom 1	bass drum	closed	crash
	tom 2		open	crash
	tom 3			

Figure 3: Latin percussion sounds available on the RX21L.

Drums	Hand Drums	Hand Percussion
timbale H	conga H mute	tambourine
timbale L	conga H open	agogo H
	conga L	agogo L
	bongo H	cowbell
	bongo L	whistle H
	cuica H	whistle L
	cuica L	claves

Using The RX Drum Machines

Each member of the RX family has special features that can make your rhythm parts less robotic—hopefully even more human sounding. Drummers aren't *ever* going to be replaced by any machine, but . . . if we can avoid that "look" that shows up on a drummer's face when he listens to to a piece where the rhythm tracks have been performed by a machine (where you know the guy is thinking "oh please . . . "), then as musicians we will know that we've done a good job.

Quantization

The best drummers in world have both great time (the ability to keep a tempo and to "play in the pocket") and what can be called controlled

lousy time. The great time is used to drive the tempo and mood of a piece so that everyone in the band can play along. The controlled lousy time is used to give "feel" to a piece. We've all heard the terms "front side," "back side," and "in the pocket." When talking about groove (correctly pronounced "*gruuuuuuuuv*"), these terms refer to the degree ahead or behind of the true beat that the note is articulated. This concept does not only apply to drummers either—we all should learn how to apply these techniques in our playing.

In order to "move around the pocket," a drummer will consciously wait just a split second (actually milliseconds) before playing a drum. In R&B music, many times the snare drum on beats 2 and 4 of a bar are just slightly on the back side of the beat. How do you accomplish this on your RX machine? Simply change the quantization value (or turn the quantization OFF) while entering the snare drum parts into your RX.

RX11 digital rhythm programmer.

Another good sound to move around is the hi-hat. If you watch drummers play, one of the first things you'll notice is that they don't always play straight eighth-notes (or sixteenth-notes) on their hi-hats. Further, the notes they play on the hi-hat can be all over the place in terms of time, yet they still sound great. Why? It's human to err . . . and it's human to listen.

Swing Values

Both the RX11 and RX15 have a feature called SWING. What is swing? Swing is the way jazz players take a part that would be written as straight eighth-notes and play it so that the rhythm *moves*. Drummers use differing amounts of *swing*, from just a tiny bit (which sounds like nothing more than a slight push on the first half of the beat) to a lot (which has a triplet feel).

Well, the RX11 and RX15 allow you to make a part *swing*; the amount is controlled by entering a value in percent of swing. There are settings of 50%, 54%, 58%, 63%, 67%, and 71%. If you feel uncomfortable entering rhythm parts with the quantization OFF, try turning the swing factor ON. This allows you to always "keep track of one" while still humanizing the part you are entering.

Using Accent Levels

Real drummers don't eat quiche, and they don't always play at the same volume level. Those minute changes they make in their attack make a part come to life. You can approximate the same effect by using ACCENT levels on RX series. Most musicians only use the accent button when they want a dramatic increase in a drum's volume, which is good; but they often forget to use a lesser accent value on the other parts in the same pattern. Using values of +2 or so for alternating hi-hat or shaker notes really makes a big difference. Try it out!

Two Hands, Two Feet

Drummers only have two hands and two feet. So why is it that when someone gets their brand-new RX11 out of the box, set it up, and see SIXTEEN buttons—they feel like they have to use *all* of them?! Remember that funny look from drummers that was mentioned earlier? Well the easiest way to get one of those looks is to overplay your drum machine. So relax, articulate the right drums sounds where they belong, and *gruuuuuuuuv*.

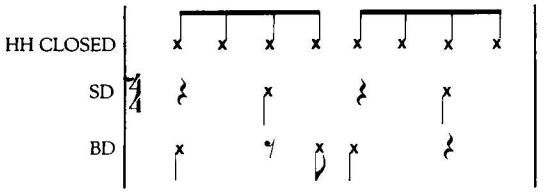
Using More Than One Drum Machine

Many records today feature many drum parts, both regular drums and percussion sounds. While the RX11 has several percussion sounds already in it, many times there is a need for more percussion sounds. Enter the RX21L. The RX21L has Latin sounds, so it is obviously the perfect sound module expander for the RX11.

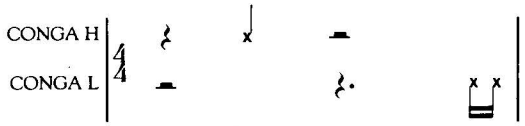
Let's examine two possibilities. One idea is

to have the RX21L play additional parts along with an RX11 pattern. Follow these steps:

1. Connect the MIDI OUT of the RX11 to the MIDI IN of the RX21L (see the accompanying diagram).
2. Record this pattern into the RX11 (following procedures outlined in the RX11 owners manual):



3. Now record this pattern into the RX21L (following procedures outlined in the RX21L owners manual):



4. On the RX21L, press MIDI once. The LCD will display:

CLOCK: INTERNAL

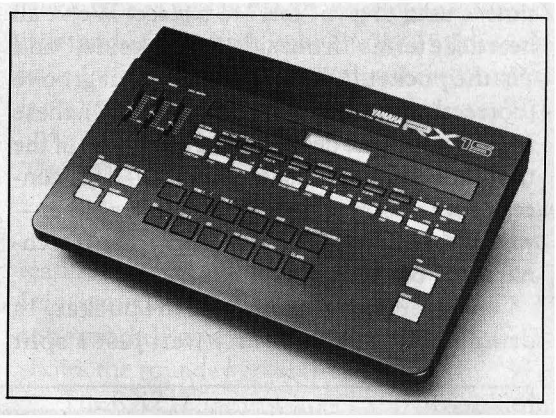
5. On the RX21L, press the +1/YES button once. The LCD should now display the following:

CLOCK: MIDI

6. On the RX21L, press MIDI again to resume PLAY mode.

Now, when you press START on the RX11, both machines will start playing at the same tempo. Adjust the tempo slider on the RX11 and note how the RX21L tempo changes accordingly.

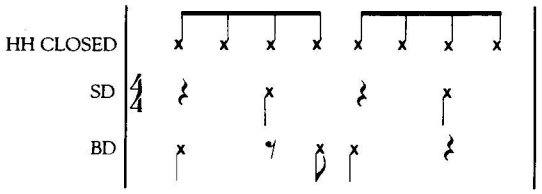
Another possibility is to enhance the sounds



RX15 digital rhythm programmer.

already in the RX11 with the sounds of the RX21L. For example, you could add the sound of a timbale to one of the snare drum sounds of the RX11. (This is especially useful for changing drum sounds in different parts of songs.) Follow these steps:

1. Connect the MIDI OUT of the RX11 to the MIDI IN of the RX21L (see the accompanying diagram).
2. Record this pattern into the RX11 (using procedures outlined in the RX11 owners manual):



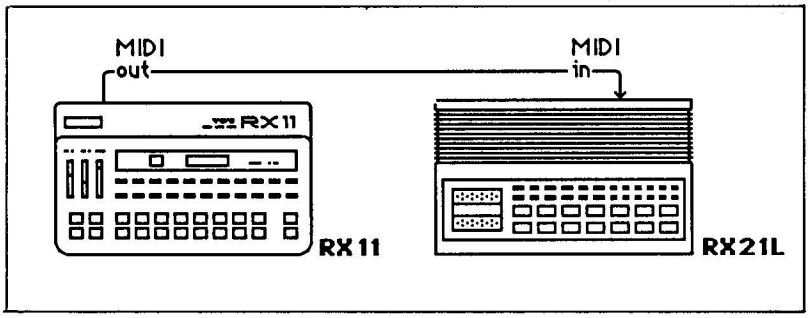
3. On the RX11, hold the FUNCTION button, and press MIDI IN.
4. On the RX11, press the SD1 snare drum pad. The display should read as follows:

SD1 NOTE = 52

5. On the RX 11, use the DATA ENTRY slider to adjust the display so that it reads like this:

SD1 NOTE = 69

6. On the RX11, press MIDI IN to return to



Basic MIDI connection for using an RX21L in conjunction with an RX11.

PLAY mode.

7. On the RX11, hold the FUNCTION button and press MIDI OUT.
8. On the RX11, press the +1/YES button so that the display reads:

CH INFO AVAIL

9. On the RX11, press the SD1 snare drum pad. The display should read:

SD1 TRNS CH=01

10. If the RX11's display is different, use the DATA ENTRY slider to adjust the SD1 setting to MIDI channel 1.
11. On the RX21L, press MIDI twice. The display should read:

RECEIVE CH = xx

12. On the RX21L, use the +1/YES and -1/NO buttons until the display reads as follows:

RECEIVE CH = 01

13. On the RX21L, press PLAY to return to PLAY mode.
14. Finally, on the RX21L, press MIDI three times. The display should read:

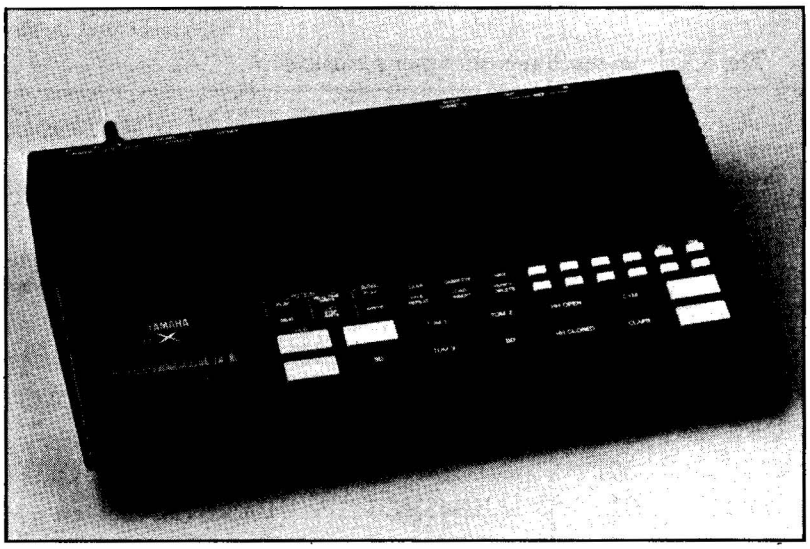
CH INFO AVAIL

Here's what you have accomplished with the above steps: You set up the RX11 so that the SD1 transmitted MIDI note #69 on MIDI channel 1 (steps 1-10), and you then set up the RX21L to receive that data on MIDI channel 1 (steps 11-14).

As long as the RX21l's display reads "CH INFO AVAIL," you can trigger the low timbale sound from the RX11's SD1 pad. To hear the low timbale as part of the pattern, press START on the RX11.

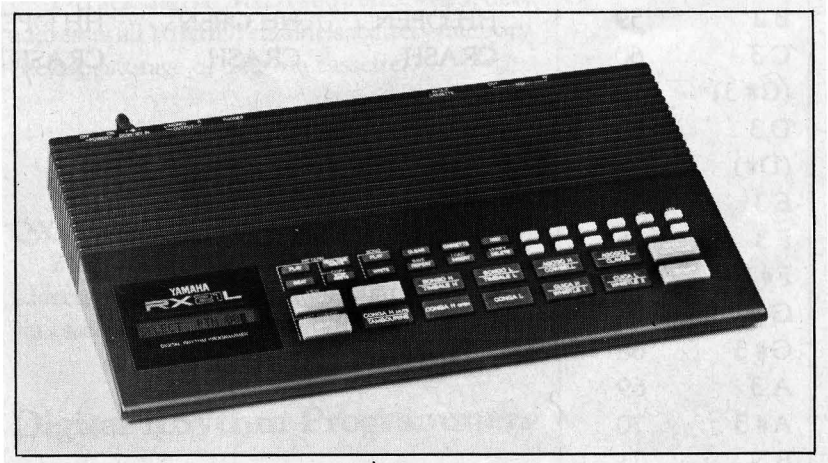
Using The RX Units As Velocity-Sensitive Tone Modules

Any of the RX drum sounds can be played from a MIDI controller. If the MIDI controller that you use is velocity sensitive, the drum sounds that you trigger will vary in volume according to how hard you play your MIDI controller. Some examples of velocity-sensitive controllers are the DX7 and DX5 synthesizers and the KX88 and KX76 MIDI keyboard controllers.



RX21 digital rhythm programmer.

If you record your MIDI controller performance into a MIDI sequencer, you can then playback your performance at will to control your RX unit. Since the sequencer records MIDI velocity information, you can have a velocity-sensitive drum machine by using the



RX21L digital rhythm programmer.

sequencer memory instead of writing patterns into the drum machine. (The memory of the RX machines only stores keystrokes played from the front panel, so MIDI-controlled performances of the drum sounds have to use an external sequencer for storage.)

The accompanying chart shows the MIDI note numbers that correspond to each of the RX drum machines sounds. The note numbers shown are the default note values for the RX11

and RX15—these note assignments can be changed on both units. The MIDI note number assignments for the RX21 and RX21L cannot be changed.

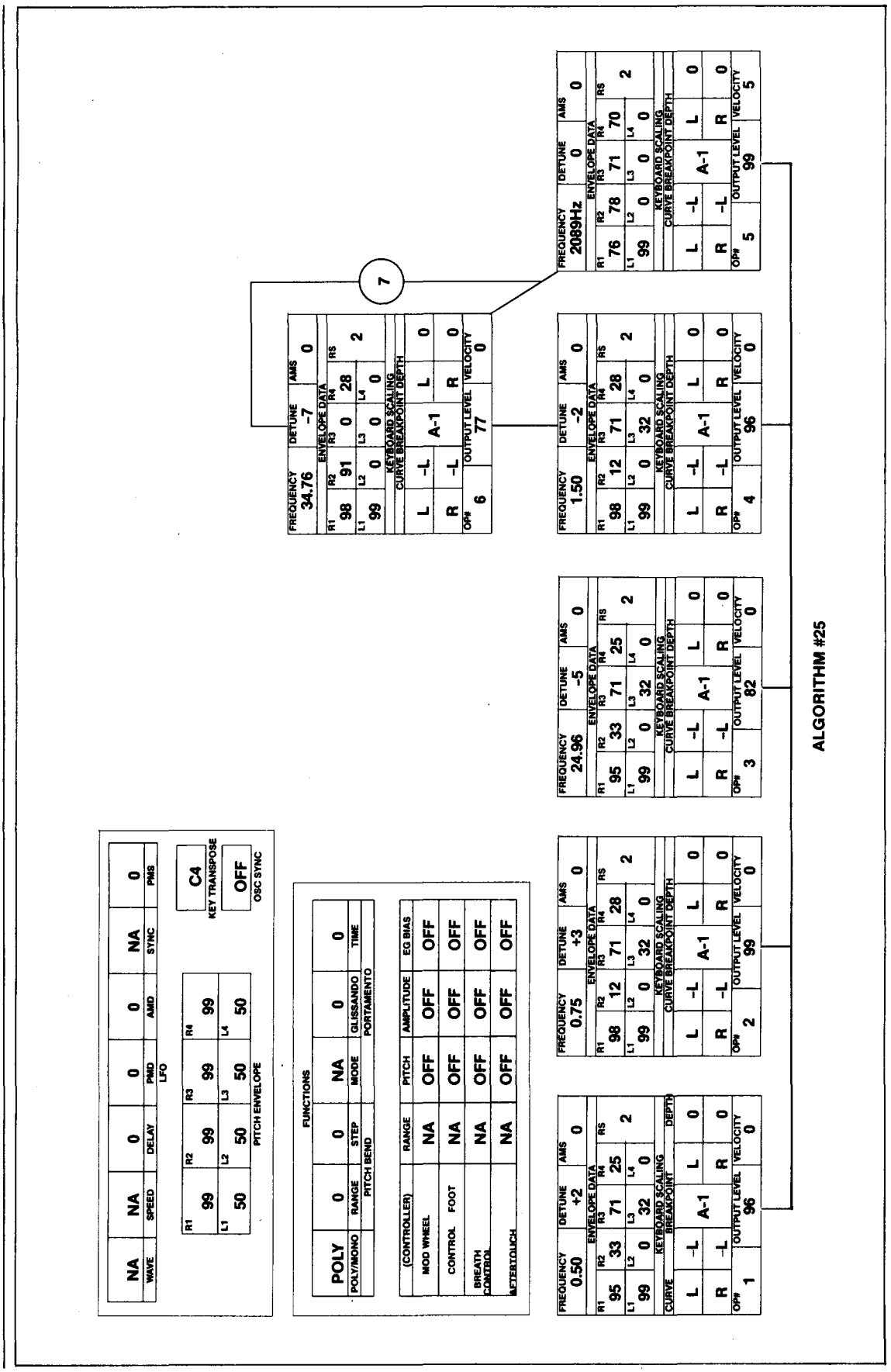
* * * *

The RX drum machines offer many musical possibilities that are often misunderstood (and are therefore not used). Try some of the ideas mentioned here the next time you program rhythm parts. If you like them, use them again. With a little creativity, you can come up with many new ideas of your own for exploiting the potential of the Yamaha's RX series of digital rhythm programmers.

This chart shows the MIDI key numbers assigned to the RX drum and percussion sounds when the instruments are shipped from the factory. The assignments can be changed in the RX11 and RX15, while those in the RX21 and RX21L are fixed.

Note	Key #	RX11	RX15	RX21	RX21L
G# 1	44	BD2			
A 1	45	BD1	BD	BD	
(A# 1)					
B 1	47	TOM4			
C 2	48	TOM3	TOM3	TOM3	
C# 2	49	SD2			
D 2	50	TOM2	TOM2	TOM2	
D# 2	51	RIMSHOT	RIMSHOT		
E 2	52	SD1	SD	SD	
F 2	53	TOM1	TOM1	TOM1	
F# 2	54	CLAPS	CLAPS	CLAPS	
G 2	55	COWBELL	COWBELL		
G# 2	56	SHAKER	SHAKER		
A 2	57	HH CLOSED	HH CLOSED	HH CLOSED	
(A# 2)					
B 2	59	HH OPEN	HH OPEN	HH OPEN	
C 3	60	CRASH	CRASH	CRASH	
(C# 3)					
D 3	62	RIDE	RIDE		
(D#)					
E 3	64				CONGA L
F 3	65				CONGA H OPEN
F# 3	66				CONGA H MUTE
G 3	67				BONGO L
G# 3	68				BONGO H
A 3	69				TIMBALE L
A# 3	70				TIMBALE H
B 3	71				TAMBOURINE
C 4	72				COWBELL
C# 4	73				CLAVES
D 4	74				AGOGO L
D# 4	75				AGOGO H
E 4	76				CUICA L
F 4	78				CUICA H
F# 4	79				WHISTLE 1
G 4	80				WHISTLE 2

LIV DNGSLY. A New DX7 Voice By Ted Wiseman.



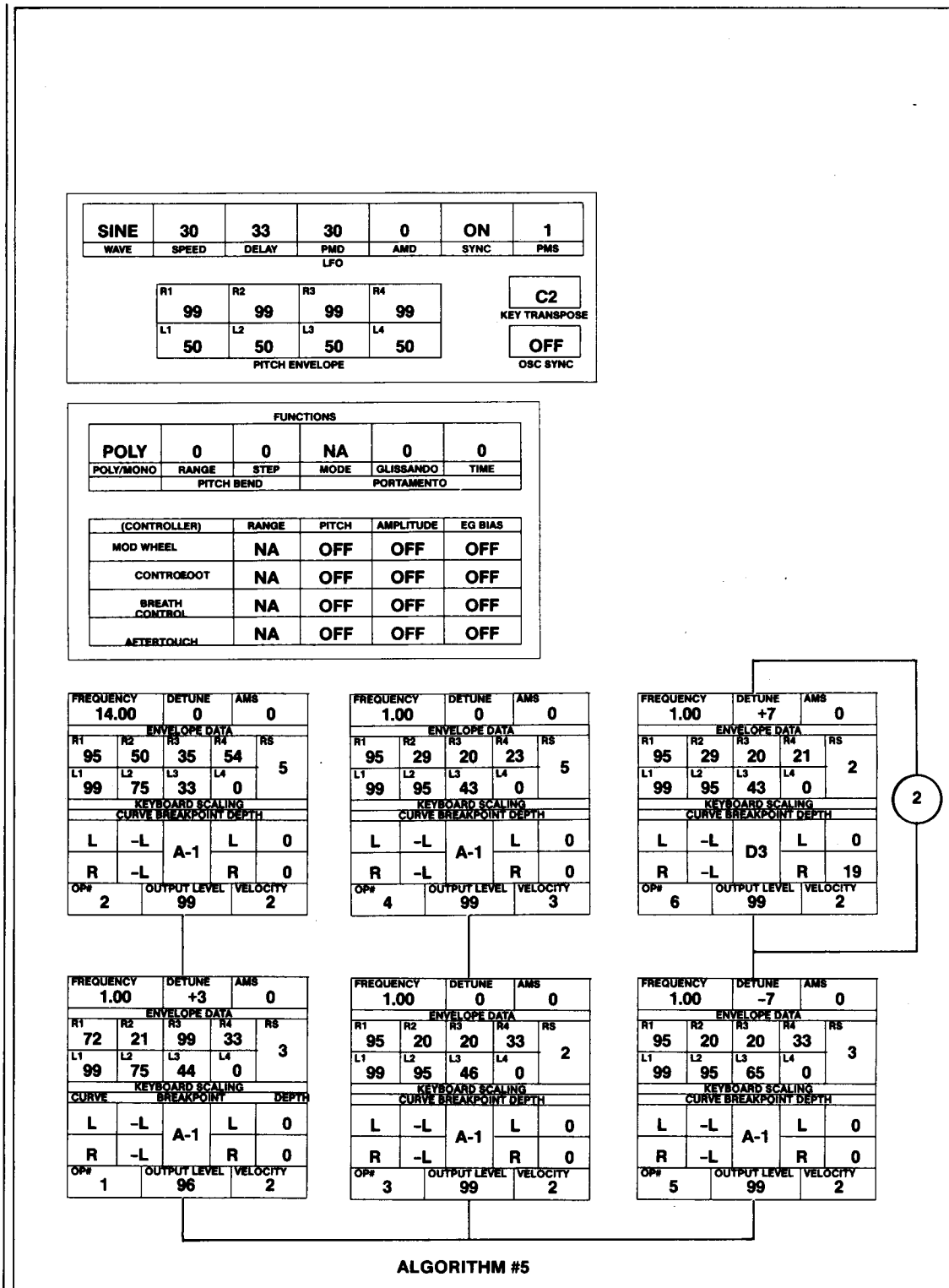
Notes:

This patch is the result of experimentation with the LOG DRUM voice on ROM 4. The sound began to revive memories of a recurring theme from the soundtrack to the film "The Year Of Living Dangerously," which used synthesizers extensively.

Octaves in the low range work well for rhythmic ostinatos; sixths in the lower midrange sound better than denser chords; and the high end is good for bell tones.

DX7

ARCTIC-KEYS. A New DX7 Voice By Bill Cammarota.



WAVE	SPEED	DELAY	PMD	AMD	SYNC	PMS
SINE	30	33	30	0	ON	1

LFO

R1	R2	R3	R4
99	99	99	99
L1	**L2**	**L3**	**L4**
50	50	50	50

PITCH ENVELOPE

C2 — KEY TRANSPOSE

OFF — OSC SYNC

FUNCTIONS

POLY/MONO	RANGE	STEP	MODE	GLISSANDO	TIME
POLY	0	0	NA	0	0
	PITCH BEND		PORTAMENTO		

(CONTROLLER)	RANGE	PITCH	AMPLITUDE	EG BIAS
MOD WHEEL	NA	OFF	OFF	OFF
CONTROLFOOT	NA	OFF	OFF	OFF
BREATH CONTROL	NA	OFF	OFF	OFF
AFTERTOUCH	NA	OFF	OFF	OFF

FREQUENCY	DETUNE	AMS
14.00	0	0

ENVELOPE DATA

R1	R2	R3	R4	RS
95	50	35	54	5
L1	**L2**	**L3**	**L4**	
99	75	33	0	

KEYBOARD SCALING

CURVE BREAKPOINT DEPTH

L	-L	A-1	L	0
R	-L		R	0

OP#	OUTPUT LEVEL	VELOCITY
2	99	2

FREQUENCY	DETUNE	AMS
1.00	0	0

ENVELOPE DATA

R1	R2	R3	R4	RS
95	29	20	23	5
L1	**L2**	**L3**	**L4**	
99	95	43	0	

KEYBOARD SCALING

CURVE BREAKPOINT DEPTH

L	-L	A-1	L	0
R	-L		R	0

OP#	OUTPUT LEVEL	VELOCITY
4	99	3

FREQUENCY	DETUNE	AMS
1.00	+7	0

ENVELOPE DATA

R1	R2	R3	R4	RS
95	29	20	21	2
L1	**L2**	**L3**	**L4**	
99	95	43	0	

KEYBOARD SCALING

CURVE BREAKPOINT DEPTH

L	-L	D3	L	0
R	-L		R	19

OP#	OUTPUT LEVEL	VELOCITY
6	99	2

2

FREQUENCY	DETUNE	AMS
1.00	+3	0

ENVELOPE DATA

R1	R2	R3	R4	RS
72	21	99	33	3
L1	**L2**	**L3**	**L4**	
99	75	44	0	

KEYBOARD SCALING

CURVE BREAKPOINT DEPTH

L	-L	A-1	L	0
R	-L		R	0

OP#	OUTPUT LEVEL	VELOCITY
1	96	2

FREQUENCY	DETUNE	AMS
1.00	0	0

ENVELOPE DATA

R1	R2	R3	R4	RS
95	20	20	33	2
L1	**L2**	**L3**	**L4**	
99	95	46	0	

KEYBOARD SCALING

CURVE BREAKPOINT DEPTH

L	-L	A-1	L	0
R	-L		R	0

OP#	OUTPUT LEVEL	VELOCITY
3	99	2

FREQUENCY	DETUNE	AMS
1.00	-7	0

ENVELOPE DATA

R1	R2	R3	R4	RS
95	20	20	33	3
L1	**L2**	**L3**	**L4**	
99	95	65	0	

KEYBOARD SCALING

CURVE BREAKPOINT DEPTH

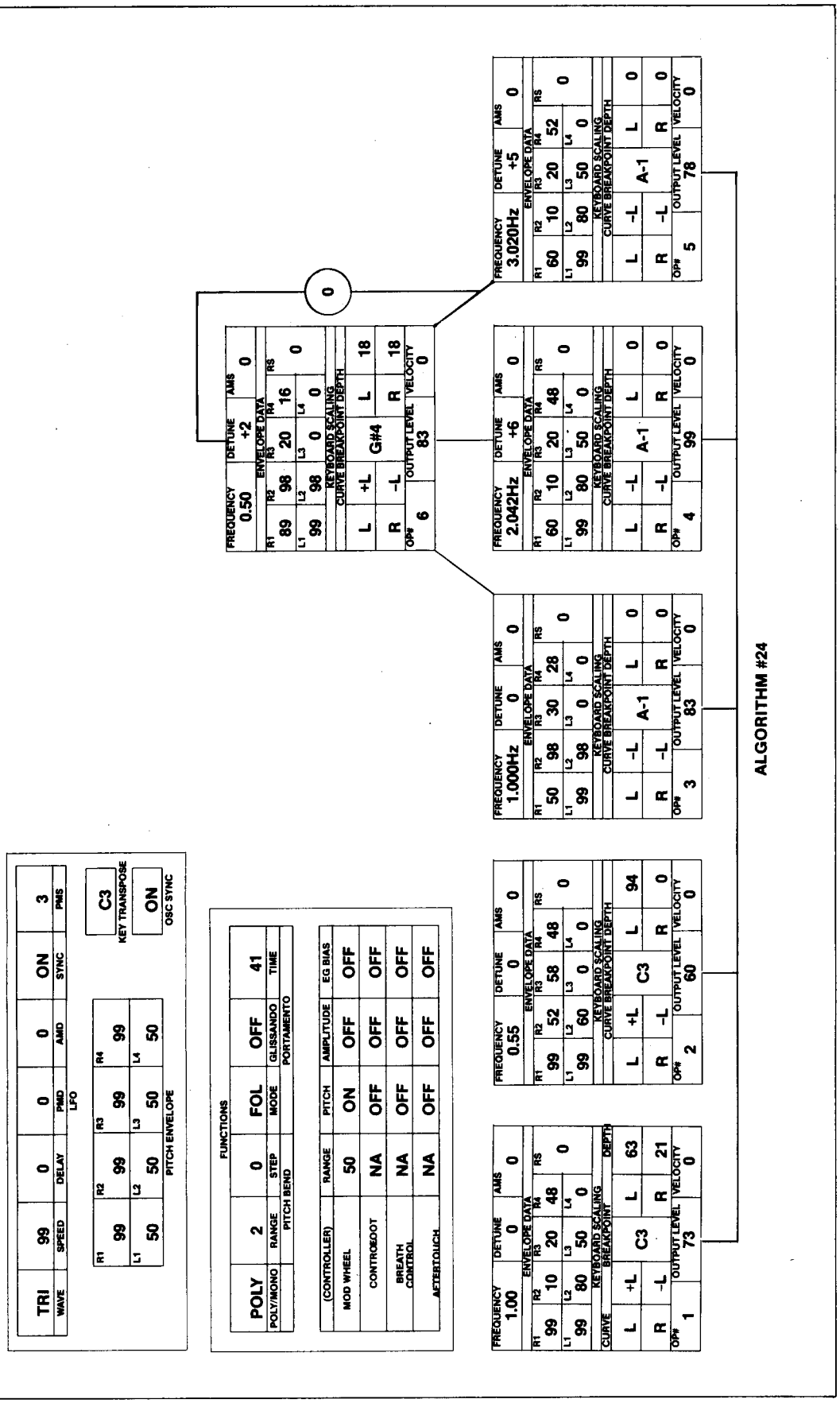
L	-L	A-1	L	0
R	-L		R	0

OP#	OUTPUT LEVEL	VELOCITY
5	99	2

ALGORITHM #5

These DX7 voices can also be loaded into all the other Yamaha 6-operator FM digital synthesizers and tone generators, including the DX1, DX5, TX7, TX216, TX816, and TF1.

TAJ MAHAL. A New DX7 Voice By Paul D. Alexander.



Notes:

This patch evokes the sound of Paul Horn's flute on his album "Inside," which was recorded inside the main dome of the Taj Mahal in India.

Ops #3-5 are used to the give the echo and reverb to the sound. The feedback may be increased to give a more tuba-like sound on the lower portion of the keyboard.

The MOD wheel (controlling the very fast LFO) can be used to interject a tonguing sound.

Final Touch

Hot Tips For The CX5M And The DX7.

Using The TWE01 Module With The CX5M Computer For MIDI Data Storage

By Cindy Koenig

The TWE01 Word Processor/TeleWord Enhancer cartridge, when used in conjunction with a CX5M music computer and an SFG05 MIDI/tone generator module, can be a very flexible MIDI storage system for many types of data. This includes voices from DX synthesizers, sequences from a QX MIDI recorder, and songs or patterns from RX rhythm machines. It can also be used with other MIDI equipment capable of manual data dumps.

Try the following example to begin using this system as a new data base for a DX7 voice library. We'll use a disk drive as our storage medium. Follow these steps, starting with both units turned OFF:

1. Make sure that the TWE01 cartridge is properly inserted into the CX5M's cartridge slot.
2. Connect the DX7's MIDI OUT to the CX5M/SFG module's MIDI IN, and connect the DX7's MIDI IN to the CX5M/SFG module's MIDI OUT.
3. Turn the DX7 ON, and set the SYSTEM EXCLUSIVE function to AVAILABLE.
4. Turn the CX5M ON, enter the WP mode (by pressing the F1 key), and access the file menu (by pressing the F2 key).
5. On the CX5M, set the function to "LOAD" and the device to "MIDI (SYS EX)" or "MIDI (ALL)."
6. Now, on the CX5M, press RETURN twice, and then press "MIDI TRANSMIT" on the DX7. Your CX5M should show this message:

RECEIVING . . .

When the transfer is complete to the CX5M's internal memory, you will be ready to save the voices to disk. Follow this procedure:

1. On the CX5M, press F2 again to call up the FILE menu, and this time set the function to "SAVE" and the device to "DISK."
2. Enter your file title in "named" and press RETURN.

You now have a file of voices stored in the disk. You can check the directory to make sure it is correct. To load the voices back into your DX7 (or to try one of the many other MIDI storage possibilities of the TWE01 cartridge), refer to the TWE01 owners manual (pages 26-28).

* * * *

FM Programming Hints: Answers To Some Basic DX7 Voicing Questions

By Ron Mills

Here are some frequently-asked DX7 editing questions, followed by straightforward answers. These Q/A interactions are intended to help beginners make their first steps towards assimilating the subtleties of FM programming.

How do I get a faster "attack" on string sounds or human voice sounds?

Raise (input a higher number for) Rate 1 of the Carrier operators in the algorithm you are using.

How do I get a longer fade-away after I've released a key (as in string sounds, effects, and so on)?

Lower (input a lower number for) Rate 4 of the Carrier operators in the algorithm you are using.

How do I get the "bright" tonal quality of a sound to stay strong while the keys are depressed?

Level 3 ("sustain" in ADSR terms) governs the breadth of the overall tone quality (brightness) of the sound.

CX5M music computer.

How do I "brighten" a sound overall—for instance, a brass sound using algorithm #18?

For algorithm #18, raise the output level of operator #3 to suit taste.

How do I get a higher-pitched "tine" on my electric piano sound?

Check the algorithm used (usually #5 or #6) and operator #2's Frequency Coarse. Raise the Frequency Coarse and adjust the output level to suit taste. Level scaling may have to be re-adjusted.

My good, thick synth sound (or brass sound) has a real "splat" at the low end of the keyboard. How can I clean that up?

Find out which operators are responsible for the timbre of the sound, and use *negative linear scaling* on them to eliminate the problem. Pick a Break Point to suit taste.

What are some good algorithm choices for "string pad" sounds?

Many programmers favor the side-by-side algorithm stacks (#1, #2, #14, #15, and so on). Try using a fixed frequency for one of the Carriers in the algorithm—this recreates the string "buzz" nicely.

DX7 FM digital synthesizer.

How can I get a double attack on something like a harp sound?

Use an algorithm with 2 stacks, and use a lower Rate 1 on one of the Carriers—this delays the attack of one portion of the sound.

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If you've got a hot tip on applications or use, send it along. If we use it, you'll receive full editorial credit, plus a check for $25.00.

Do you have a great new DX7 patch, a CX5M program, or a great pattern for the RX11? Send them in—we'll pay $25.00 for each one used.

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If you just have a question regarding the use of Yamaha professional products, send it along too, and we'll do our best to answer it in the pages of AFTERTOUCH. (We regret that we won't be able to answer questions through the mail, but we will use all of your questions to guide us in our choice of future topics.)

Finally, if you just want to get something off your chest, or if you'd like to establish direct contact with other X users, send something in to our letters column, "Touch Response." We'll do our best to print names and addresses of all those who are interested in starting up regional users groups.

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Product List

Continued from page 9

RF02 $50.00
RF adapter for connecting the CX5M to a standard television set.

VC02 $10.00
Video cable for connecting the CX5M to a CRT monitor.

CA01 $25.00
Single cartridge adapter, to allow connection of a second cartridge via the CX5M's back port.

UDC01 $75.00
Blank data memory cartridge.

* * * *

FD05 no longer manufactured
Double-sided 3.5″ disk drive *without* controller. Must be used in conjunction with the FD051 disk drive controller.

FD051 no longer manufactured
Disk drive controller for use with the FD05 disk drive.

Music Computer Programs & Data Cartridges

YRM301 $60.00
MIDI Recorder program.

YRM302 $60.00
RX Editor program.

YRM303 $60.00
MIDI Macro & Monitor program.

YRM304 $60.00
TX7/TF1 Voicing program.

YRM305 $60.00
DX21 Voicing program.

YRM501 $60.00
FM Music Composer II program.

YRM502 $60.00
FM Voicing II program.

YRM504 $60.00
FM Music Macro II program.

YRM506 $60.00
FB-01 Voicing program.

TWE01 $60.00
Teleword Enhancement program.

GAR01 $60.00
Graphic Artists program.

CMW31 $50.00
Keyboard Chord Master program.

CMW32 $50.00
Keyboard Chord Progression program.

CMW33 $50.00
Guitar Chord Master program.

FVD01 $20.00
FM Voice data cartridge #1.

FVD02 $20.00
FM Voice data cartridge #2.

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YRM101 no longer manufactured
FM Music Composer program.

YRM102 no longer manufactured
FM Voicing program, for use with the CX5M's internal FM tone generating system.

YRM103 no longer manufactured
DX7 Voicing program.

YRM104 no longer manufactured
FM Music Macro program.

YRM105 no longer manufactured
DX9 Voicing program.