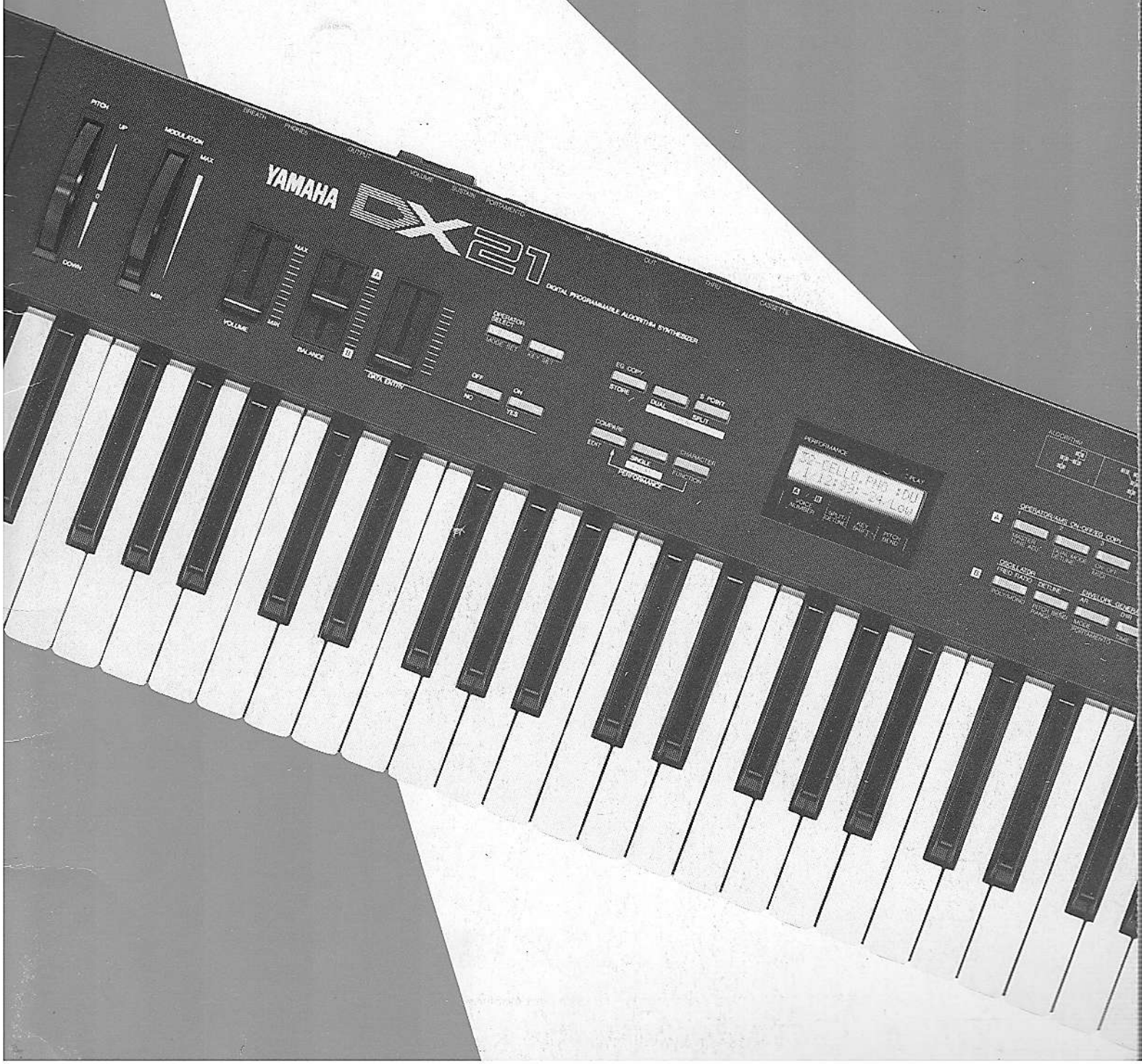
YAMAHA DX21

PLAY BOOK

<Manual>



■INTRODUCTION

First of all, some basic techniques should be mastered to make the most of the DX21.

The **DX 21** uses a **Frequency Modulation sound source** just as the rest of **the series of the DX synthesizers.**
The DX21 has three Modes in order to make the best use of the FM sound source; **Single Mode, Dual Mode,** and **Split Mode.**

PLAY MODE	CHARACTERISTICS
Single Mode	The Mode to play with a single voice.
Dual Mode	The Mode to play with two different voices at the same time. Special effect can be gained by slightly changing the pitches of the two voices.
Split Mode	The Mode to use when you choose a certain point on the keyboard and select one voice for the higher part and another voice for the lower part. For example, you may select the bass voice for the lower part and the piano voice for the higher part.

The following controllers of the DX21 have very characteristic usages.
PITCH BEND WHEEL
MODULATION WHEEL
FOOT CONTROLLER
BREATH CONTROLLER
The DX21 also contains the **KEY SHIFT** function, which transpose pitch to a selected interval. In addition to these special functions, the DX21 is equipped with a "Performance Memory". This is used to store DATA in special voice and functions combinations.
So this manual and the cassette tape will show you the **BASIC TECHNIQUES** of the **DX21**. The following three points will be stressed so that you can learn to handle the DX21's functions.

①Basic operations of the DX21.
②How to use the "Performance Memory".
③Creating sounds with the DX21.

In order to understand the DX21 fully, listen to the cassette and follow the charts and figures on the following pages.

The cassette tape explains the three points mentioned above. The cassette tape also contains voice data, which will be Loaded into the memory of the DX21 with the use of a Data Recorder or an ordinary cassette tape recorder. The tape will indicate when this data should be loaded. Sometimes the loading methods and other operations are not mentioned on this manual and the tape, so please refer to the DX21 owner's manual for further information. It will be necessary to keep the DX21 owner's manual at hand while listening to the tape. Now, let's start!

•CONTENTS

■BASIC OPERATIONS

HERE WE GO!

●How to recall the preset voices

First, connect the DX21 as indicated in Fig 1-1. Then follow the instructions shown below to listen to the preset voices.

1. Press FUNCTION Button
2. Press A-12 INTERNAL MEMORY LOAD SINGLE
"VOICE TO BUFF ?"
3. Press YES Button
4. Choose a group (G1-G16) by using buttons A1-A16 Select a voice by using buttons B1-B8 *
Play the Keyboard

* GROUP is indicated by a "G" followed by group number in upper LCD. VOICE is indicated by number and name in lower LCD.

●How to transfer preset voices to the Panel

1. Press FUNCTION Button
2. Press MEMORY PROTECT
3. Set MEMORY PROTECT to OFF
4. Press INTERNAL MEMORY LOAD (A11)
5. GROUP to BANK ?→ Press YES
Display will indicate GROUP Number (ex : G1 PIANOS)
6. Determine which GROUP to move → Press YES ※1
Display will indicate Sub-Group of 8 voices (ex : Sub-Group 1=A1−A8)
7. Determine the BANK into which to move
Display will indicate COMPLETED !
MEMORY PROTECT is now OFF ※2
8. Press MEMORY PROTECT (A16)
9. Set MEMORY PROTECT to ON

※1 See the DX21 owner's manual for a list of the group of preset voices.
※2 If it doesn't matter whether the voice already stored will be erased, keep the MEMORY PROTECT off from the beginning.

Fig. 1-1 The Connection of the DX21

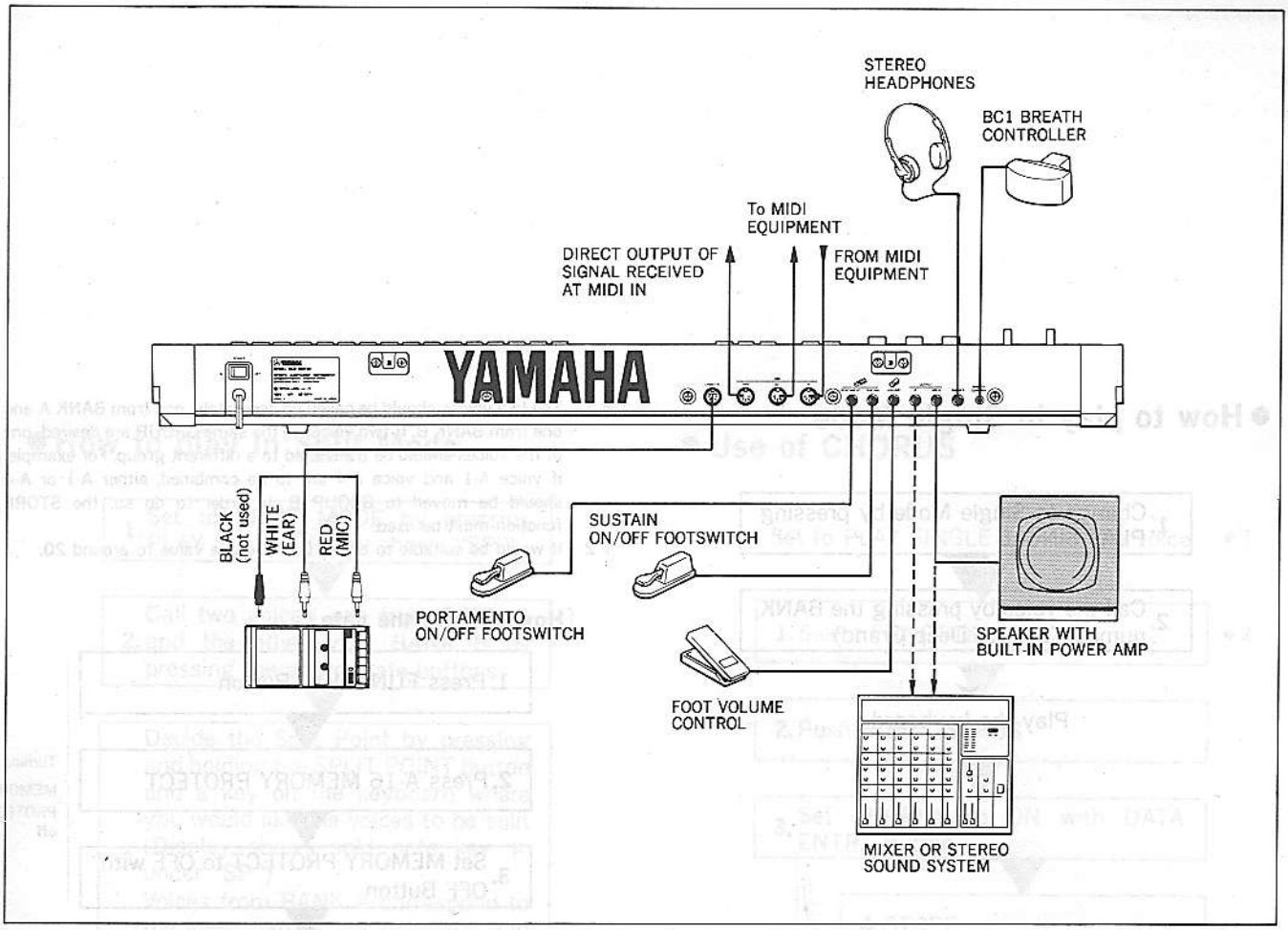
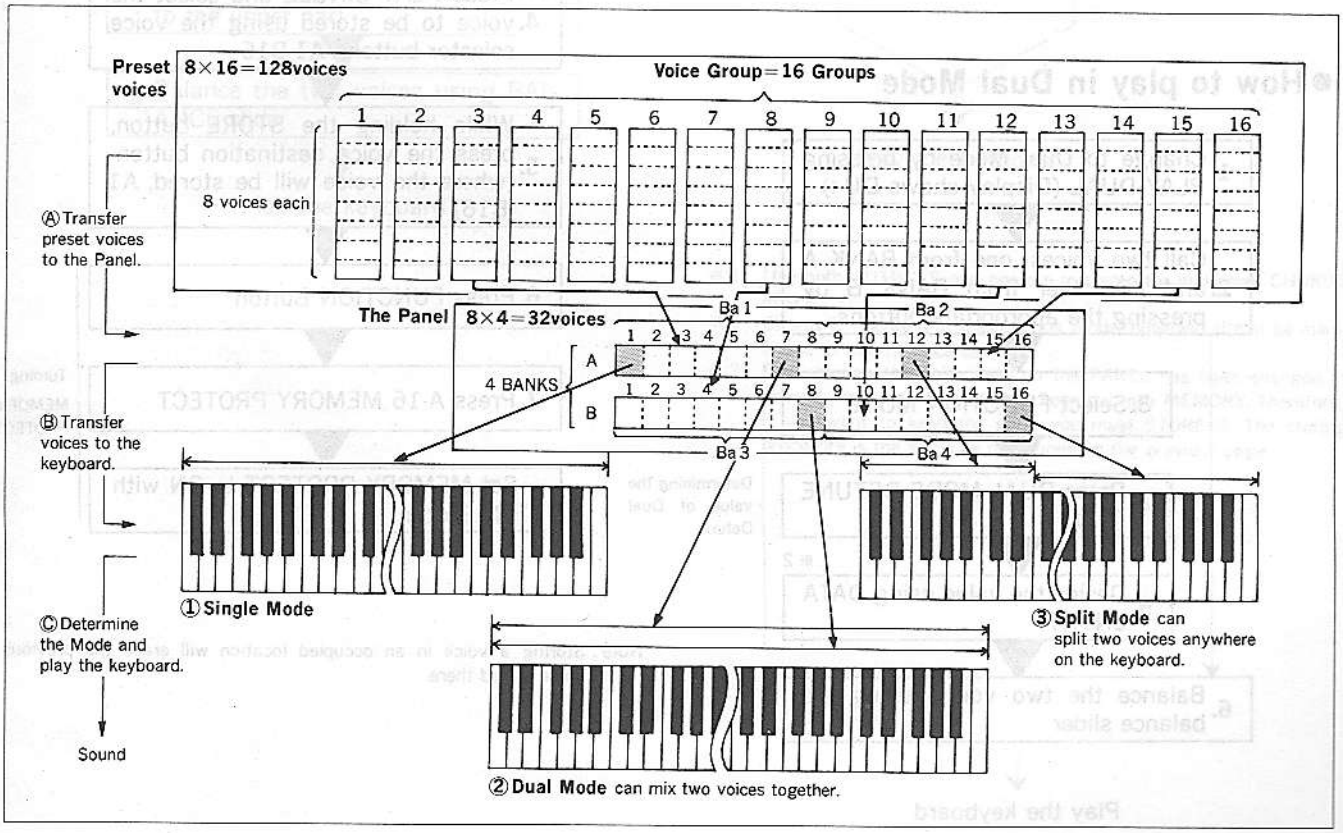


Fig. 1-2 Process of transfering voices as a group



● How to play in Single Mode

1. Change to Single Mode by pressing PLAY SINGLE
2. Call the voice by pressing the BANK number (ex : A1 Deep Grand)

↓

Play the keyboard

● How to play in Dual Mode

1. Change to Dual Mode by pressing PLAY DUAL (Display shows DU :)
2. Call two voices, one from BANK A and the other from BANK B by pressing the appropriate buttons ※1
3. Select FUNCTION MODE
4. Press DUAL MODE DETUNE (A2)

Determining the value of Dual Detune

※2

5. Decide the value using DATA ENTRY
6. Balance the two voices using the balance slider

↓

Play the keyboard

※1 The two voices should be called up seperately, one from BANK A and one from BANK B. If two voices in the same GROUP are desired, one of the voices should be transfered to a different group. For example, if voice A-1 and voice A-4 are to be combined, either A-1 or A-4 should be moved to GROUP B. In order to do so, the STORE function must be used.

※2 It would be suitable to adjust Dual Detune value to around 20.

[How to store the data]

1. Press FUNCTION Button
2. Press A-16 MEMORY PROTECT
3. Set MEMORY PROTECT to OFF with OFF Button

Turning MEMORY PROTECT off

4. Press PLAY SINGLE and select the voice to be stored using the voice selector buttons A1-B16
5. While holding the STORE button, press the voice destination button (where the voice will be stored, A1 -B16)
6. Press FUNCTION Button
7. Press A-16 MEMORY PROTECT
8. Set MEMORY PROTECT to ON with ON Button

Turning MEMORY PROTECT on

Note : Storing a voice in an occupied location will erase the previous voice stored there.

● How to play in Split Mode

1. Set to SPLIT MODE by pressing PLAY SPLIT (Display shows "SP")
2. Call two voices, one from BANK A and the other from BANK B by pressing the appropriate buttons
3. Decide the Split Point by pressing and holding the SPLIT POINT button and a key on the keyboard where you would like the voices to be split (Display shows split note key # under "SP")
   Voices from BANK A correspond to the lower part of the keyboard, and voices from BANK B will correspond to the upper part
4. Balance the two voices using BALANCE slider

Play the keyboard

● Use of CHORUS

Set to PLAY SINGLE and call the voice ※1

1. Select FUNCTION MODE ※2
2. Push B-14, CHORUS
3. Set CHORUS to ON with DATA ENTRY Button
4. STORE ※3

Play the keyboard

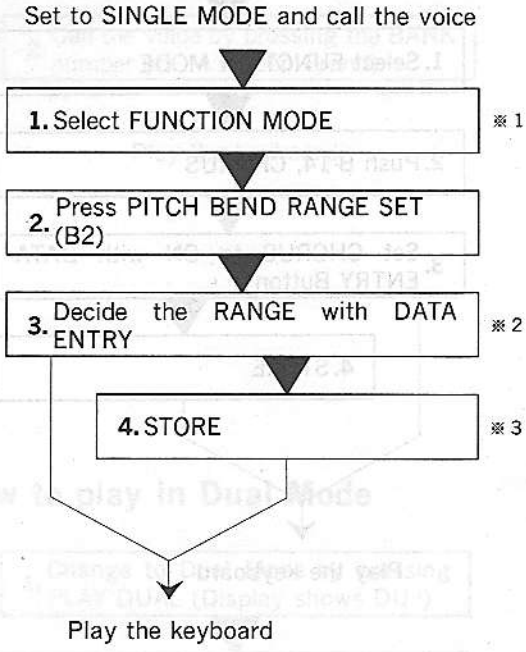
※1 Use both OUTPUTS and operate in stereo for maximum CHORUS effect.

※2 Chorus is operated in the function mode, however, if can be memorized as one of voice data.

※3 Even thongh the voice data on the PANEL has been changed, it doesn't mean that the data has been put into MEMORY. Therefore, if you want to keep the data, you must STORE it, The storing procedure is the same as mentioned on the previous page.

●Use of Pitch Bend Wheel

[How to determine Pitch Bend Range]



※1 PITCH BEND RANGE is operated in the function mode, however, it can be memorized as one of voice data.

※2 PITCH BEND RANGE can be adjusted from a semitone to an octave.

※3 PITCH BEND RANGE, which is also one of the parameters of voice data, doesn't remain unless it is stored.

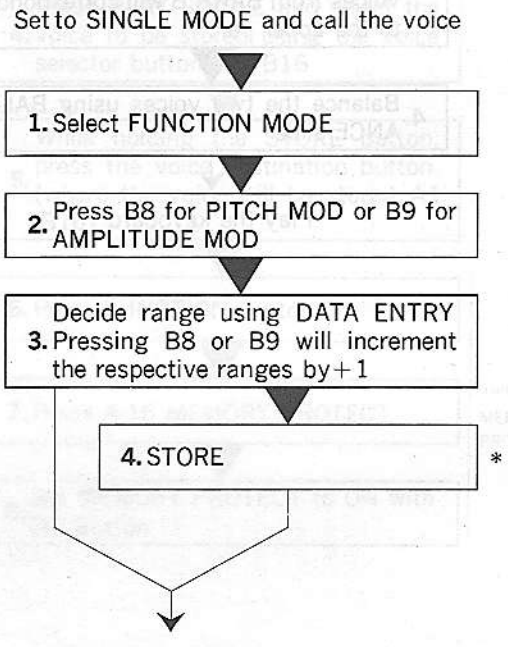
●Use of Modulation Wheel

[Modulation Wheel Range]

MODULATION	WAVE	EFFECT
Pitch	Pitch wave	Vibrato
Amplitude	Sound volume wave	Tremolo
	Timbre wave	Wow Wow

※ Turning the MODULATION WHEEL gives a wave to the voice as shown above. Some sound data has not had the value of the LFO determined, So will not gain a wave no matter how the Range of B-8 or B-9 may be changed.

[How to determine Modulation Wheel Range]



* MOD WHEEL range is accessed from the FUNCTION MODE. However, if can be stored as voice data.

● Use of Foot Controller

Select PLAY SINGLE and call the voice

1. Connect each controller correctly to the DX21 ※1
2. Set to FUNCTION MODE

Determining Volume Control
3. Press VOLUME Button (B6)
4. Decide the value by DATA ENTRY

Determing Sustain Control (that is, to prolong the sound) ※2
3. Press SUSTAIN Button (B7)
4. Decide either ON or OFF using DATA ENTRY

Determining Portamento Control (that is, to change pitch in succession) ※3
3. Press PORTAMENTO Button (B5)
4. Decide either ON or OFF using DATA ENTRY

5. STORE

※1 Though operated in FUNCTION MODE, all of these are voice data.
※2 Depending on the setting of the EG, there are some voices which cannot get a sustain effect with this operation only.
※3 There are some voices which do not have a portamento effect. In this case PORTAMENTO TIME must be set.

● Using of Breath Controller

Set to PLAY SINGLE and call the chosen voice

1. Select FUNCTION MODE
2. Press Control Button, B-10 (to B-13)
3. Decide each value by using DATA ENTRY
4. STORE each of them

※ In some cases Breath Controller doesn't work even if you follow these instructions. Please refer to the section on the Breath Controller in the DX21 owner's manual for details.

■PERFORMANCE MEMORY

LET'S PLAY & ENJOY!

●PERFORMANCE MEMORY

[List of items which can be memorized in PERFORMANCE MEMORY]

①PLAY MODE (either SINGLE, DUAL, or SPLIT)
②the voice(s) being used (two voices in the case of DUAL and SPLIT)
③DUAL DETUNE ④Split Point
⑤Pitch Bend Mode ⑥Key Shift
⑦Parameter of MIDI ⑧Performance Name

[Use of Key Shift] raises or lowers the pitch of the keyboard

1. Set to FUNCTION MODE by pressing FUNCTION Button ※1
2. Press KEY SHIFT Button
3. Decide the range by DATA ENTRY. Range can also be set by pressing any key above or below middle "C" (up to a 2 octave range) while holding the KEY SHIFT button ※2

※1 KEY SHIFT is performance data, but it is operated in the FUNCTION MODE.
※2 The range covers from 2 octaves up to 2 octaves down.

[Selecting of PITCH BEND MODE]

1. Press FUNCTION Button ※1
2. Press PB MODE Button
3. Select MODE by DATA ENTRY ※2

※1 PITCH BEND MODE is performance data, but it is operated in FUNCTION MODE.
※2 There are three types of PITCH BEND MODES.

Key on (Display shows "Kon")	Has an effect on all the key(s) being pressed.
Hi	Has an effect only on the highest of the keys being pressed.
Low	Has an effect only on the lowest of the keys being pressed.

●Use of PERFORMANCE MEMORY

[PERFORMANCE MEMORY storing procedure]

1. Set MEMORY PROTECT to OFF
2. Select the PLAY MODE
3. Select the voice
4. Set DUAL DETUNE / 4. Set SPLIT POINT
5. Select PITCH BEND MODE
6. Set KEY SHIFT
7. Select MIDI
8. Pressing FUNCTION Button and EDIT Button together
9. While holding the STORE Button, press the destination BANK number

[How to make the most of the PERFORMANCE MEMORY]

First input the data listed in Fig 2-1 according to the input procedure shown previously, Then load the sound data shown in Fig 2-2 to the DX21. After that if you operate in the following way, you can recall whichever setting you like. Please make these settings accurately so that the sound changes smoothly. See the next page for the loading method.

[How to recall data from the PERFORMANCE MEMORY]

1. Press FUNCTION Button and EDIT Button at the same time
2. Press the BANK number

[How to Load the voice data]

1. Connect a data recorder to the DX 21 with a supplied cable
2. Set MEMORY PROTECT to OFF
3. Press FUNCTION Button
4. Press A-14 LOAD
FUNCTION CONTROL Load from Tape ?
5. Press YES Button
from TAPE to MEM all ready ?
6. Set the data recorder to record and press YES Button again
TAPE to INT A-1
⟨
TAPE to INT B-16
Load Completed
Finish

※When voice data is being loaded, the volume of the cassette tape recorder should be around 8. Incidentally, depending on the tape recorder, it is sometimes difficult to load the data into the DX 21, Please be careful.

Fig. 2-1 DATA LIST for PERFORMANCE MEMORY

P.M. No.	PLAY MODE	Voice No. A	Voice No. B	DUAL DETUNE	SPLIT POINT	PB MODE	KEY SHIFT	COMENTS
A 1	Single	1	–	–		Hi	0	Uses Brass voice. Setting of PB MODE=Hi
A 2	Single	2	–	–		Low	0	Uses Brass voice. Setting of PB MODE=Low
A 3	Single	3	–	–		Key on	0	Uses Piano voice. Setting of PB MODE=KEY ON
A 4	Single	4	–	–		–	12	Uses Synthesizer voice. KEY SHIFT adjusted at 12
A 5	Dual	5	5	20	–	–	–	String, depth
A 6	Dual	6	6	20	–	–	–	Brass, depth, DETUNE
A 7	Dual	7	7	0	–	–	–	Strings, octave
A 8	Dual	8	8	0	–	–	–	Attack Sound plus timbre
A 9	Dual	9	9	0	–	–	–	Unison
A10	Dual	10	10	20	–	–	–	Built on 3rd and 5th interval
A11	Dual	11	11	0	–	–	–	Making timbre (using 2 algorithms)
A12	Dual	12	12	0	–	–	–	Stereo, in a slightly different timbre
A13	Split	13	13	–	68	–	–	Timpani roll sound
A14	Split	14	14	–	68	–	–	play with both hand at the same time
A15	Split	15	15	–	68	–	–	play one voice with right hand and another with left hand (Bass, Piano)
A16	Split	16	16	–	68	–	–	play one voice with right hand and another with left hand (Piano, Brass)

Fig. 2-2 List of Voices to LOAD

A Voices	B Voices
A 1 BRASS 1	B 1 –
2 BRASS 2	2 –
3 PIANO 1	3 –
4 SYN LEAD	4 –
5 STRINGS 1A	5 STRINGS 1B
6 BRASS 1A	6 BRASS 1B
7 STRINGS 2A	7 STRINGS 2B
8 ATTACK	8 VOICE 1 ※
9 UNISON A	9 UNISON B
10 HARMONY A	10 HARMONY B
11 VOICE 2 ※	11 VOICE 3 ※
12 STEREO A	12 STEREO B
13 TIMPANI A	13 TIMPANI B
14 VOICE 4 ※	14 VOICE 5 ※
15 BASS 1	15 PIANO 2
16 PIANO 3	16 BRASS 3

※VOICE 1~5 mean sample voices.

■Examples of Creating Voices-EDIT MODE

LET'S EDIT!

●The characteristics of the FM Sound Source

This section explains ① the theory of the FM Sound Source, ② How to make a Glockenspiel voice, and ③ How to make a Brass voice. To begin with, LOAD the voices listed in Fig. 3-1, as instructed in the cassette tape. You will hear each voice step by step as new voices are created.

Fig. 3-1 List of Voices to LOAD

No.	Voice	No.	Voice
A 1	INIT VOICE	B 1	BR STEP 1
2	FM STEP 1	2	BR STEP 2
3	FM STEP 2	3	BR STEP 3
4	FM STEP 3	4	BR STEP 4
5	FM STEP 4	5	BR STEP 5
6	FM STEP 5	6	BR STEP 6
7	FM STEP 6	7	BR STEP 7
8	BRASS CLA	8	BR STEP 8
9	GLOC STEP 1	9	BR STEP 9
10	GLOC STEP 2	10	BR STEP 10
11	GLOC STEP 3	11	BR STEP 11
12	GLOC STEP 4	12	BR STEP 12
13	GLOC STEP 5	13	BR STEP 13
14	GLOC STEP 6	14	BR STEP 14
15	GLOC STEP 7	15	BR STEP 15
16	GLOCKEN	16	BRASS

A-1

Set to Initial Voice

①Select FUNCTION MODE
↓
②Press INIT VOICE Button (A10)
↓
③Press YES Button twice

A-2

Step 1 : Choose Algorithm

Fig.3-2

ALG 5 1111
→00000000000000

This will be changed according to the setting when the power is turned off.

④Press ALGORITHM SELECT Button (A5)
↓
⑤Choose the number by DATA ENTRY
Pressing A5 will advance algorithm by +1

A-3

Step 2 : Set the Output of each Operator

⑥Press OPERATOR OUTPUT LEVEL (B8)
↓
⑦Choose the OPERATOR using OPERATOR SELECT and Set the OUTPUT LEVEL by DATA ENTRY Pressing B8 will increase output by +1

A-4

Step 3 : Set the FREQ. RATIO of each Operator

⑧Push B-1 FREQ. RATIO
↓
⑨Choose the Operator using OPERATOR SELECT and set the OUTPUT LEVEL by DATA ENTRY Pressing B1 will increase ratio

A-5

Step 4 : Adjust the OUTPUT LEVEL of each Operator again

A-6

Step 5 : Raise the Feedback value of the Operator which has feedback (Operator 4) by DATA ENTRY Slider

⑩Set to EDIT MODE and Push the A-6 Button

↓

⑪Set the value with DATA ENTRY Pressing A6 will increase feedback level by +1

A-7

Step 6 : Set the Envelope of each Operator

Fig. 3-3

OP.	AR	D1R	D1L	D2R	RR
4	14	21	14	9	7
3	31	31	15	0	7
2	17	31	15	10	9
1	20	31	15	6	8
	ENVELOPE GENERATOR				

AR : the speed of the sound from when keyboard is pressed until volume reaches maximum.

D1R : the speed of the sound from the maximum volume until the volume reaches the value of D1L.

D1L : After the volume reaches maximum value, it will resolve to the level which is determine here, by D1L.

D2R : If you want to make a big difference between D1L volume and the volume when you remove your hand from keyboard, you must put a large value here.

RR : To add sustain after you remove your hand from keyboard.

⑫Select operator by using OPERATOR SELECT and Push B-3 (EG-AR)

↓

⑬Set the value with DATA ENTRY

↓

⑭Push B-5 (EG-D1L)

↓

⑮Set the value with DATA ENTRY

↓

⑯Push B-4 (EG-D1R)

⑰Set the value with DATA ENTRY

↓

⑱Push B-6 (EG-D2R)

↓

⑲Set the value with DATA ENTRY

↓

⑳Push B-7 (EG-RR)

↓

㉑Set the value with DATA ENTRY

A-8

Step 7 : Adjust the OUTPUT LEVEL of each Operator

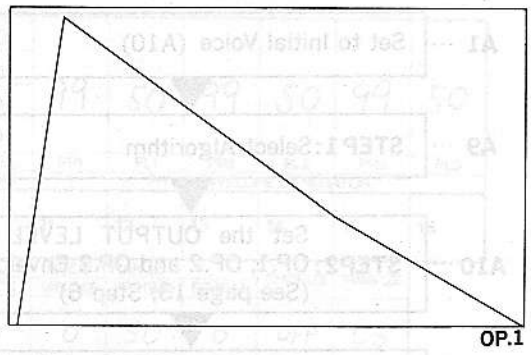
Completed

㉒Press OPERATOR OUTPUT LEVEL

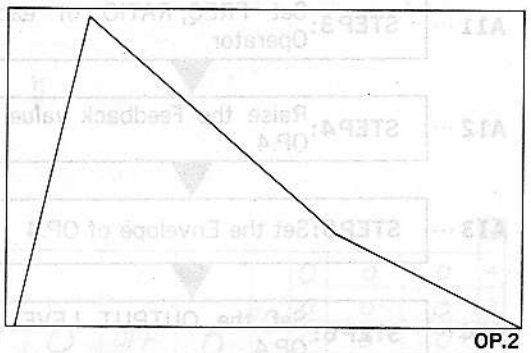
↓

㉓Choose Operator using OPERATOR SELECT and set the OUTPUT LEVEL by DATA ENTRY

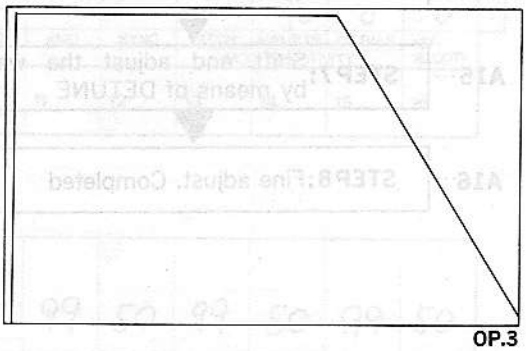
Envelope of each Operator



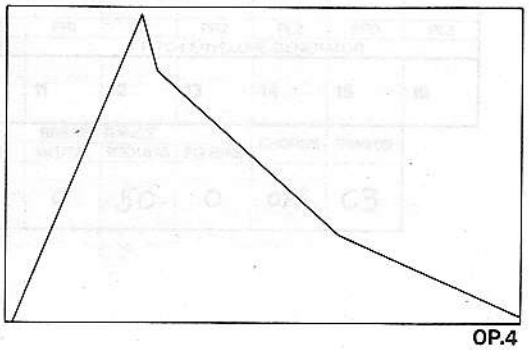
OP.1



OP.2



OP.3



OP.4

● How to make Glockenspiel Voice

A1 ··· Set to Initial Voice (A10)

A9 ··· **STEP 1:** Select Algorithm — Select No.6

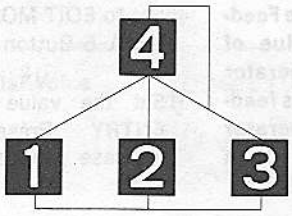


Fig. 3-4

OP.	OUTPUT LEVEL
4	0
3	99
2	99
1	99

A10 ··· **STEP 2:** Set the OUTPUT LEVEL of OP.1, OP.2 and OP.3 Envelope (See page 13, Step 6)

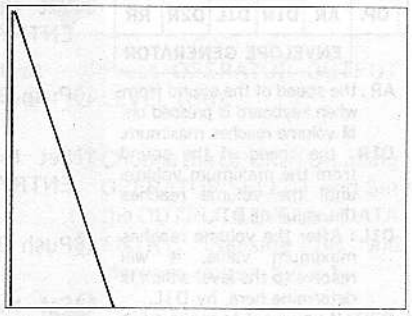
A11 ··· **STEP 3:** Set FREQ, RATIO of each Operator

Fig. 3-5 FREQ. RATIO

OP.1	OP.2	OP.3	OP.4
2.00	2.00	4.00	4.00

A12 ··· **STEP 4:** Raise the Feedback value of OP.4 — **Set at 7**

A13 ··· **STEP 5:** Set the Envelope of OP.4



A14 ··· **STEP 6:** Set the OUTPUT LEVEL of OP.4

A15 ··· **STEP 7:** Shift and adjust the wave by means of DETUNE

A16 ··· **STEP 8:** Fine adjust, Completed

Operator: the basis of the voice which produces sine wave. The DX21 has 4 operators.
Algorithm: the combination of operators.
Carrier: the lowest operator(s) in Algorithm.
Modulator: operator(s) in the Algorithm besides the Carrier(s).
FREQ. RATIO: it determine the pitch of the sound.
OUTPUT LEVEL: determines the volume of each operator.

Fig. 3-6 Voice DATA List of BRASS CLA.

					5	7	TRIANGL	35	0	0	0	OFF	6	0	0 0 0	OP
															0 0 0	4
															0 0 0	3
															0 0 0	2
															0 0 0	1
					ALGO-RITHM	FEED-BACK	WAVE	SPEED	DELAY	PMD	AMD	SYNC	PITCH	AMPLITUDE	EG BIAS	KEY-VELOCITY
							L F O						MOD. SENSITIVITY			
A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

OP																
4	1.00	0	14	21	14	9	7	72	0	0	99	50	99	50	99	50
3	1.00	0	31	31	15	0	7	95	0	0						
2	2.00	0	17	31	15	10	9	71	0	0						
1	1.00	0	20	31	15	6	8	99	0	0						
	FREQ. RATIO	DETUNE	AR	D1R	D1L	D2R	RR	OUTPUT L.	RATE	LEVEL	PR1	PL1	PR2	PL2	PR3	PL3
	OSCILLATOR		ENVELOPE GENERATOR					OPERATOR	KEYBOARD SCALING		PITCH ENVELOPE GENERATOR					

B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	POLY/MONO	PITCH-BEND RANGE	PORTAMENTO			FOOT CONTROL		WHEEL RANGE			BREATH RANGE			CHORUS	TRANSPOSE	
			MODE	TIME	FOOT SW.	VOLUME	SUSTAIN	PITCH	AMPLITUDE	PITCH	AMPLITUDE	PITCH BIAS	EG BIAS			
	POLY	4	Full time porta	0	ON	40	ON	50	0	0	0	50	0	OFF	C3	

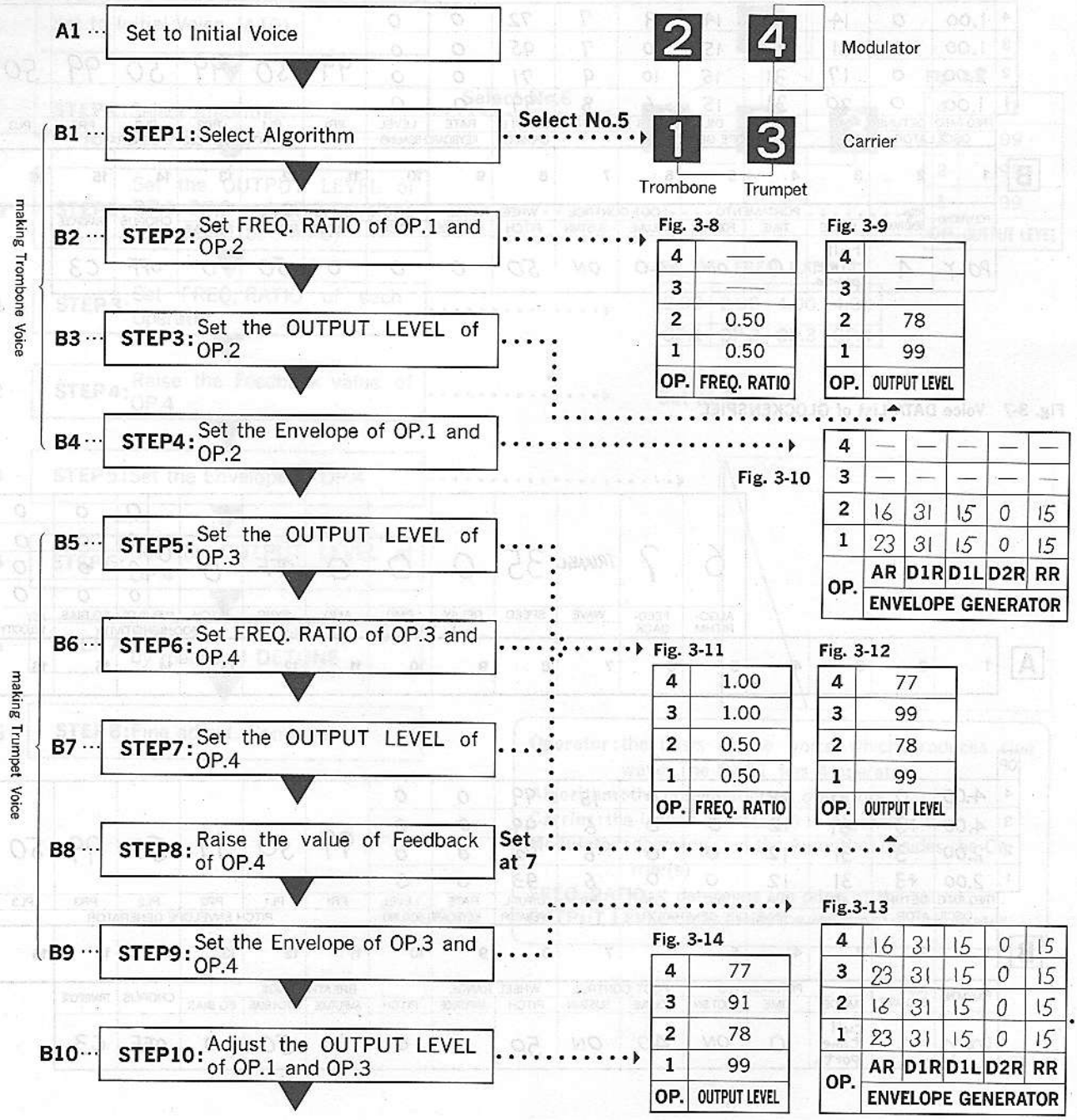
Fig. 3-7 Voice DATA List of GLOCKENSPIEL

					6	7	TRIANGL	35	0	0	0	OFF	6	0	0 0 0	OP
															0 0 0	4
															0 0 0	3
															0 0 0	2
															0 0 0	1
					ALGO-RITHM	FEED-BACK	WAVE	SPEED	DELAY	PMD	AMD	SYNC	PITCH	AMPLITUDE	EG BIAS	KEY-VELOCITY
							L F O						MOD. SENSITIVITY			
A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

OP																
4	4.00	0	31	28	0	0	15	99	0	0	99	50	99	50	99	50
3	4.00	+3	31	12	0	0	6	99	0	0						
2	2.00	-3	31	12	0	0	6	92	0	0						
1	2.00	+3	31	12	0	0	6	93	0	0						
	FREQ. RATIO	DETUNE	AR	D1R	D1L	D2R	RR	OUTPUT L.	RATE	LEVEL	PR1	PL1	PR2	PL2	PR3	PL3
	OSCILLATOR		ENVELOPE GENERATOR					OPERATOR	KEYBOARD SCALING		PITCH ENVELOPE GENERATOR					

B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	POLY/MONO	PITCH-BEND RANGE	PORTAMENTO			FOOT CONTROL		WHEEL RANGE			BREATH RANGE			CHORUS	TRANSPOSE	
			MODE	TIME	FOOT SW.	VOLUME	SUSTAIN	PITCH	AMPLITUDE	PITCH	AMPLITUDE	PITCH BIAS	EG BIAS			
	POLY	4	Full time porta	0	ON	40	ON	50	0	0	0	50	0	OFF	C3	

● How to make BRASS Voice



OP.	FREQ. RATIO
4	—
3	—
2	0.50
1	0.50

OP.	OUTPUT LEVEL
4	—
3	—
2	78
1	99

OP.	AR	D1R	D1L	D2R	RR
4	—	—	—	—	—
3	—	—	—	—	—
2	16	31	15	0	15
1	23	31	15	0	15

ENVELOPE GENERATOR

OP.	FREQ. RATIO
4	1.00
3	1.00
2	0.50
1	0.50

OP.	OUTPUT LEVEL
4	77
3	99
2	78
1	99

OP.	OUTPUT LEVEL
4	77
3	91
2	78
1	99

OP.	AR	D1R	D1L	D2R	RR
4	16	31	15	0	15
3	23	31	15	0	15
2	16	31	15	0	15
1	23	31	15	0	15

ENVELOPE GENERATOR

Effect Setting

B11··· **STEP11:** The Voice is completed Put DELAY VIBRATO in it

B12··· **STEP12:** Take DELAY VIBRATO out and Set Vibrato by using MODULATION WHEEL

B13··· **STEP13:** Set PITCH BENDER

B14··· **STEP14:** Set CHORUS to ON

B15··· **STEP15:** Set the Volume Range of FOOT CONTROLLER

B16··· **STEP16:** Set BREATH CONTROLLER

[EG COPY／Envelope Generator Copy]

When you want to produce the same kind of voices for both groups, or when you intend to set the same Envelope both for CARRIER and for MODULATOR, there is a Simple process. It is possible to COPY all five Parameters that determine the Envelope from one Operator to another in the following way.

1. Select EDIT MODE
2. Call the Parameter of which OPERATOR SELECT is possible
3. Call the Operator which you want to COPY by using OPERATOR SELECT
4. Hold STORE Button and press the number of the Operator to which you want to COPY ※

Completed

※The Buttons for the Operators are as follows

Operator	1	2	3	4
Button	A 1	A 2	A 3	A 4

Fig. 3-15 Voice DATA LIST of BRASS

LFO	WAVE	TRIANGL				
	SPEED	32				
	DELAY	32				
	PMD	21				
	AMD	0				
	SYNC	OFF				
MOD. SENSITIVITY	PITCH	6				
	AMPLITUDE	0				
	EG BIAS	0	0	0	0	
		1	2	3	4	OP

[Parameter of the BREATH CONTROLLER]

①Breath Range Pitch
The value of the LFO pitch determines the depth and speed of vibrato. The higher the value, the deeper the vibrato. Once the value is determined, vibrato can be added by blowing into the Breath Controller.

②Breath Range Amplitude
The value of the LFO amplitude determines the depth and speed of tremolo and wow wow, If the LFO affects a carrier, tremolo will result. If the LFO affects a modulator, wow wow will result. The higher the value, the deeper the effect. Once the value is determined, wow wow and tremolo can be added by blowing into the Breath Controller.

③Breath Pitch Bias
If the value is raised to around 50, blowing the Breath Controller will make the pitch rise. If the value is lowered down toward 0, blowing the Breath Controller will lower the pitch.

④Breath Range EG Bias
When the value is set, constant volume is attained when you blow the Breath Controller to it's full extent. If you don't blow the Breath Controller, the volume will remain lower.
When the value is set at 99, the effect will be at its maximum.

Fig. 3-16 Voice DATA List of Brass

																	OP
														/	7	0	4
														/	0	0	3
														/	7	0	2
														/	0	0	1
				5	7	TRIANGL	33	0	0	0	OFF	6	3				
				ALGO-RITHM	FEED-BACK	WAVE	SPEED	DELAY	PMD	AMD	SYNC	PITCH	AMPLITUDE	EG BIAS		KEY-VELOCITY	
						L F O						MOD. SENSITIVITY					
A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		

OP																	
4	1.00	0	16	31	15	0	15	77	0	0							
3	1.00	0	23	31	15	0	15	91	0	0							
2	0.50	0	16	31	15	0	15	78	0	0	99	50	99	50	99	50	
1	0.50	0	23	31	15	0	15	99	0	0							
	FREQ. RATIO	DETUNE	AR	D1R	D1L	D2R	RR	OUTPUT L.	RATE	LEVEL	PR1	PL1	PR2	PL2	PR3	PL3	
	OSCILLATOR		ENVELOPE GENERATOR					OPERATOR	KEYBOARD SCALING		PITCH ENVELOPE GENERATOR						
B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	

POLY/MONO	PITCH-BEND RANGE	PORTAMENTO			FOOT CONTROL		WHEEL RANGE		BREATH RANGE				CHORUS	TRANSPOSE
		MODE	TIME	FOOT SW.	VOLUME	SUSTAIN	PITCH	AMPLITUDE	PITCH	AMPLITUDE	PITCH BIAS	EG BIAS		
POLY	7	Full time porta	0	ON	70	ON	99	0	0	0	50	75	ON	C3

YAMAHA DX21

PLAY BOOK

〈Manual〉

SINCE 1887 YAMAHA

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